2023 Ski-Doo Back Country 600E & 850 E-Tec Series

If you're on a computer and don't see the clickable index on the left, please see the directions that were sent in the email with the download link, please check your junk mail if you don't see it.

If you're using a phone or tablet,
use the bookmark feature to help find what you need quickly

This manual is made up of the vehicle & engine manuals with all needed supplements organized into one easy to use manual.

If you bought this manual from any other seller, they are reselling our work. Please leave them negative feedback & email me at bestshopmanuals@gmail.com.

They will never be for sale or available on eBay, Amazon, Facebook or forums

Our goal is to be one of the BEST sellers on the internet by providing you with the BEST customer service and the BEST manuals on the market.

Thank you for choosing us.





2023
Vehicle Shop Manual

(Everything except engine, see the engine section for engine information)

Backcountry™ Series

ski-doo®

All page numbers below are clickable **TABLE OF CONTENTS**

Engine Manual (Click Here)

SAFETY NOTICE IX
IMPORTANT SAFETY PRECAUTIONS IX

INTRODUCTION XI
VEHICLE INFORMATION XI
ENGINE EMISSIONS INFORMATION XII
MANUAL INFORMATION XIII
TIGHTENING TORQUE XVI
FASTENER INFORMATION XVII

01 MAINTENANCE
01 – PERIODIC MAINTENANCE SCHEDULE 5
02 – STORAGE PROCEDURE 7
PROCEDURES 7
ENGINE LUBRICATION 7
03 – PRESEASON PREPARATION 9

02 ENGINE **Only covers the vehicle engine parts, see included engine manual for the rest**
01 – ENGINE REMOVAL AND INSTALLATION 11
GENERAL 14
PROCEDURES 14
ENGINE 14
ENGINE SUPPORT 21
ENGINE RUBBER MOUNTS 22
02 – AIR INTAKE SYSTEM 23
GENERAL 24
PROCEDURES 24
AIR FILTER (MESH) 24
PRIMARY AIR INTAKE SILENCER 25
SECONDARY AIR INTAKE SILENCER 27
03 – EXHAUST SYSTEM 29
GENERAL 31
MAINTENANCE 31
INSPECTING THE EXHAUST SYSTEM 31
PROCEDURES 31
MUFFLER 31
TUNED PIPE 36
EXHAUST GAS TEMPERATURE SENSOR (EGTS) 37
04 – COOLING SYSTEM - VEHICLE COMPONENTS 39
GENERAL 42
MAINTENANCE 42
COOLING SYSTEM 42
INSPECTION 44
COOLING SYSTEM LEAK TEST 44
PROCEDURES 45
COOLANT TANK CAP 45
COOLANT TANK 45
FRONT RADIATOR 45
RADIATOR COOLING FAN 46

03 ELECTRONIC MANAGEMENT SYSTEM
01 – ENGINE MANAGEMENT SYSTEM (EMS) - EFI 49
GENERAL 50
SYSTEM DESCRIPTION 50
SYSTEM FEATURES 50

TABLE OF CONTENTS

03 ELECTRONIC MANAGEMENT SYSTEM (cont'd)

02 – ENGINE MANAGEMENT SYSTEM (EMS) - E-TEC 51
GENERAL 52
SYSTEM DESCRIPTION 52
SYSTEM FEATURES 53
03 – CONTROLLER AREA NETWORK (CAN) 55
GENERAL 55
CONTROLLER AREA NETWORK (CAN) 55
TROUBLESHOOTING 55
CAN COMMUNICATION PROBLEMS 55
04 – COMMUNICATION TOOLS 57
GENERAL 57
REQUIRED TOOLS 57
TROUBLESHOOTING 58
COMMUNICATION PROBLEMS 58
05 – DIAGNOSTIC AND FAULT CODES 61
GENERAL 61
MONITORING SYSTEM 61
DIAGNOSTIC FAULT CODES (DTC) 62

04 FUEL SYSTEM

01 – FUEL TANK AND FUEL PUMP (EFI) 65
GENERAL 68
SYSTEM DESCRIPTION 68
MAINTENANCE 71
INSPECTING THE FUEL LINES AND CONNECTIONS 71
REPLACING THE IN-LINE FUEL FILTER 71
INSPECTING AND CLEANING THE THROTTLE BODY 71
INSPECTION 71
TESTING FUEL SYSTEM FOR LEAKS 71
TESTING FUEL TANK FOR LEAKS 72
TESTING FUEL PRESSURE 73
PROCEDURES 74
FUEL HOSE AND OETIKER CLAMPS 74
FUEL TANK 75
FUEL PUMP 76
FUEL PUMP INLET FILTER 77
FUEL LEVEL SENSOR 80
02 – FUEL TANK AND FUEL PUMP (E-TEC) 81
GENERAL 84
SYSTEM DESCRIPTION 84
INSPECTION 87
INSPECTING THE FUEL LINES AND CONNECTIONS 87
TESTING FUEL SYSTEM FOR LEAKS 87
TESTING FUEL TANK FOR LEAKS 87
TESTING THE FUEL PRESSURE 88
PROCEDURES 89
FUEL HOSE AND OETIKER CLAMPS 89
REPLACING THE IN-LINE FUEL FILTER 90
FUEL TANK 91
FUEL PUMP 92
FUEL PUMP INLET FILTER 93
FUEL LEVEL SENSOR 96

TABLE OF CONTENTS

05 ELECTRICAL SYSTEM

01 – POWER DISTRIBUTION 97
GENERAL 99
OVERVIEW 99
SYSTEM VOLTAGE (55 VDC) 99
SYSTEM VOLTAGE (12 VDC) 100
GROUNDS 100
02 – WIRING HARNESS AND CONNECTORS (EFI) 103
GENERAL 106
ACRONYMS 106
PROCEDURES 107
DIAGNOSTIC CONNECTOR (DEUTSCH) 107
ECM CONNECTOR (MOLEX) 108
MOLEX CONNECTORS (EXCEPT ECM) 110
DELPHI/PACKARD CONNECTORS 112
DELPHI CONNECTORS 112
BATTERY CABLES 113
SPLICES REPAIR PROCEDURE 114
03 – WIRING HARNESS AND CONNECTORS (E-TEC) 117
GENERAL 122
ACRONYMS 122
PROCEDURES 123
DIAGNOSTIC CONNECTOR (DEUTSCH) 123
ECM CONNECTOR (MOLEX) 124
MOLEX CONNECTORS (EXCEPT ECM) 127
DELPHI/PACKARD CONNECTORS 128
DELPHI CONNECTORS 128
BATTERY CABLES 129
SPLICES REPAIR PROCEDURE 130
04 – IGNITION SYSTEM (EFI) 133
GENERAL 133
SYSTEM DESCRIPTION 133
ADJUSTMENT 133
UNDERSTANDING THE TDC GAUGE 133
IGNITION TIMING 134
TROUBLESHOOTING 138
IGNITION SYSTEM TESTING SEQUENCE 138
PROCEDURES 138
SPARK PLUGS 138
SPARK PLUG CABLES 139
EMERGENCY ENGINE STOP SWITCH 139
IGNITION COILS 139
05 – IGNITION SYSTEM (E-TEC) 141
GENERAL 141
SYSTEM DESCRIPTION 141
ADJUSTMENT 142
UNDERSTANDING THE TDC GAUGE 142
IGNITION TIMING 143
TROUBLESHOOTING 147
IGNITION SYSTEM TESTING SEQUENCE 147
PROCEDURES 147
SPARK PLUGS 147
SPARK PLUG CABLES 149
EMERGENCY ENGINE STOP SWITCH 150
IGNITION COILS 150

TABLE OF CONTENTS

05 ELECTRICAL SYSTEM (cont'd)

06 – CHARGING SYSTEM 153
GENERAL 153
SYSTEM DESCRIPTION 153
TROUBLESHOOTING 153
TROUBLESHOOTING GUIDELINES 153
PROCEDURES 153
BATTERY 154
VOLTAGE REGULATOR/RECTIFIER 156
DC-DC CONVERTER 157
CAPACITOR 158

07 – STARTING SYSTEM 163
GENERAL 163
STARTING SYSTEM BASICS (WITHOUT BATTERY) 163
STARTING SYSTEM BASICS (WITH BATTERY) 163
TROUBLESHOOTING 164
DIAGNOSTIC TIPS 164
DIAGNOSTIC GUIDELINES 164
PROCEDURES 165
START/RER SWITCH 165
STARTER SOLENOID 165
STARTER 167

08 – RF DIGITALLY ENCODED SECURITY SYSTEM (RF D.E.S.S.) 169
GENERAL 169
SYSTEM DESCRIPTION 169
PROCEDURES 170
D.E.S.S. KEY 170
D.E.S.S. / ENGINE CUT-OFF OPERATION 170
BEEPER 170

09 – ROTAX ELECTRONIC REVERSE (RER) 171
GENERAL 171
TROUBLESHOOTING 171
DIAGNOSTIC TIPS 171
PROCEDURES 172
RER SWITCH 172
BEEPER (REVERSE ALARM) 173

10 – LIGHTS 175
GENERAL 175
SYSTEM TESTING 175
PROCEDURES 175
HEADLIGHTS 175
TAILLIGHT / BRAKE LIGHT 177

11 – GAUGE 7.2" DIGITAL DISPLAY 179
GENERAL 179
INDICATOR LAMPS DESCRIPTION 179
TROUBLESHOOTING 180
DIAGNOSTIC TIPS 180
MULTIFUNCTION GAUGE TROUBLESHOOTING 180
PROCEDURES 181
MULTIFUNCTION GAUGE 181

12 – ACCESSORIES 183
GENERAL 183
SYSTEM TESTING 183
SYSTEM DESCRIPTION (HEATED THROTTLE LEVER) 183
SYSTEM DESCRIPTION (HEATED HANDLEBAR GRIPS) 184

05 ELECTRICAL SYSTEM (cont'd)
12 – ACCESSORIES (cont'd)
GENERAL (cont'd)
SETTING THE HEATED THROTTLE LEVER RATIO 184
PROCEDURES 184
HEATED THROTTLE LEVER 184
HEATED HANDLEBAR GRIPS 185
TESTING THROTTLE LEVER HEAT SWITCH 188
TESTING HANDLEBAR HEATED GRIP SWITCH 189
HEATED SEATS AND PASSENGER HEATED GRIPS 190

06 DRIVE SYSTEM AND BRAKE
01 – DRIVE BELT 193
GENERAL 194
DRIVE BELT APPLICATION 194
TROUBLESHOOTING 194
PROCEDURES 194
DRIVE BELT GUARD 194
DRIVE BELT GUARD SUPPORT 195
DRIVE BELT 195
02 – DRIVE PULLEY (EFI) 199
GENERAL 200
PROCEDURES 200
DRIVE PULLEY 200
03 – DRIVE PULLEY (E-TEC) 211
GENERAL 212
ADJUSTMENT 212
MODIFYING THE RAMP CAM SETTING 213
PROCEDURES 213
DRIVE PULLEY 213
04 – DRIVEN PULLEY AND COUNTERSHAFT 223
GENERAL 224
PROCEDURES 224
DRIVEN PULLEY 224
COUNTERSHAFT 231
COUNTERSHAFT BEARING 231
COUNTERSHAFT BEARING SUPPORT 232
05 – BRAKE 233
GENERAL 235
MAINTENANCE 235
RECOMMENDED BRAKE FLUID 235
VERIFYING THE BRAKE FLUID LEVEL 235
REPLACING THE BRAKE FLUID 235
BLEEDING THE BRAKE SYSTEM 236
INSPECTING THE BRAKE HOSE, PADS AND DISC 237
LUBRICATING THE BRAKE LEVER PIVOT 237
PROCEDURES 237
BRAKE PADS 237
CALIPER 239
BRAKE DISC 241
MASTER CYLINDER 242
BRAKE LEVER 243
BRAKE LIGHT SWITCH 243
BRAKE HOSE 244

Midwest Manuals
Paperless Manuals
www.green-manuals.com
If you bought this manual from any other seller please leave them NEGATIVE feedback and notify us at bestshopmanuals@gmail.com

TABLE OF CONTENTS

06 DRIVE SYSTEM AND BRAKE (cont'd)

06 – CHAINCASE 245
- GENERAL 247
- MAINTENANCE 247
  - CHAINCASE OIL 247
  - DRIVE CHAIN 248
- PROCEDURES 248
  - CHAINCASE 248
  - SPEED SENSOR (VSS) 254

07 – DRIVE AXLE 257
- GENERAL 258
- PROCEDURES 258
  - DRIVE AXLE 258
  - MAGNETIC CAPS 259

08 – TRACK 261
- MAINTENANCE 261
  - INSPECTING THE TRACK 261
  - ADJUSTING AND ALIGNING THE TRACK 261
- PROCEDURES 263
  - TRACK 263

07 CHASSIS

01 – SUSPENSION ADJUSTMENTS 265
- GENERAL 265
- ADJUSTMENT 265
  - STOPPER STRAP 265
  - SPRING PRELOAD 267

02 – FRONT SUSPENSION 271
- GENERAL 272
- ADJUSTMENT 272
  - SPRINGS 272
  - DAMPERS 272
- PROCEDURES 273
  - SHOCK ABSORBER 273
  - SPRING 274
  - UPPER SUSPENSION ARM 274
  - UPPER BALL JOINT 275
  - LOWER SUSPENSION ARM 276
  - LOWER BALL JOINT 277
  - SKI LEG 278
  - STABILIZER BAR 278

03 – REAR SUSPENSION 281
- GENERAL 286
- ADJUSTMENT 286
- MAINTENANCE 286
- PROCEDURES 286
  - SUSPENSION ASSEMBLY 286
  - REAR AXLE 287
  - SHOCK ABSORBERS 288
  - REAR SPRINGS 291
  - SLIDER SHOES 292
  - FRONT ARM 293
  - REAR ARM 294
  - PIVOT ARM 295
  - STOPPER STRAP 295

07 CHASSIS (cont'd)
04 – STEERING SYSTEM 297
GENERAL 303
ADJUSTMENT 303
ALIGNING THE STEERING 303
INSPECTION 304
INSPECTING THE SKI AND RUNNER 304
INSPECTING THE STEERING MECHANISM 304
PROCEDURES 304
SKI RUNNER 304
SKIS 305
ADJUSTABLE RUNNER MECHANISM 307
SKI HANDLES 310
SKI FLOTATION EXTENSION (MOUNTAIN MODELS) 310
SKI LEG 311
HANDLEBAR GRIP 311
MULTIFUNCTION SWITCH 311
THROTTLE LEVER HOUSING 314
THROTTLE LEVER 315
HANDLEBAR 316
HANDLEBAR EXTENSION 317
TIE-RODS 318
STEERING COLUMN 320
STEERING RACK 322
05 – BODY 325
GENERAL 326
CLEANING 326
REPAIRING BODY PARTS 327
PROCEDURES 327
DECAL 327
SIDE PANEL 327
REWIND STARTER HANDLE HOUSING 328
WINDSHIELD 328
STORAGE COMPARTMENT COVER 329
GAUGE SUPPORT 329
UPPER BODY MODULE 330
HOOD 331
HEADLIGHT MODULE 332
CONSOLE 333
FRONT BUMPER 333
FRONT BOTTOM PAN 334
SIDE BOTTOM PAN 335
SEAT 336
REAR BUMPER 337
TAIL LIGHT HOUSING 337
06 – FRAME 339
GENERAL 342
PROCEDURES 342
RIVETS 342
FRAME 343
REAR BUMPER 343
REAR FRAME MEMBER 343
FRONT SUSPENSION MODULE 344
ENGINE MODULE 345
TUNNEL MODULE 348

TABLE OF CONTENTS

07 CHASSIS (cont'd)
06 – FRAME (cont'd)
PROCEDURES (cont'd)
HEAT EXCHANGER 350
COUNTERSHAFT BEARING SUPPORT 352

08 TECHNICAL SPECIFICATIONS
01 – VEHICLES - EFI 355
02 – VEHICLES - E-TEC 363

09 WIRING DIAGRAM
01 – WIRING DIAGRAM INFORMATION 381
GENERAL 381
WIRING DIAGRAM LOCATION 381
WIRING DIAGRAM WITH COLORED LINES 381
WIRING DIAGRAM CODES 381
FOLLOWING A CIRCUIT 382
WIRE COLORS AND SIZES 382
SPLICES IN WIRING HARNESS 382

Extras NOT Included In The Book Version

Online Parts Manual (Must have an internet connection to use)

2023 Technical Presentation (Dealer Only)

Expanded Diagnostic & Fault Codes (Dealer Only)

2023 Operator's Guide/Owner's Manual

2023 Product Spec Book (Vehicles, Accessories. Parts & Maintenance, and Apparel) (Page numbers clickable)

SAFETY NOTICE

This manual has been prepared as a guide to servicing and repair the Ski-Doo® snowmobile from the REV™ Gen4 platform.

This edition was primarily published to be used by mechanical technicians who are already familiar with all service procedures relating to BRP products. Mechanical technicians should attend training courses given by BRPTI.

Please note that the instructions in this manual will apply only if proper hand tools and special service tools are used.

The contents of this manual depicts parts and/or procedures applicable to a particular product at the time of writing. Service and warranty bulletins may be published to update the content of this manual. Dealer modifications that were carried out after manufacturing of the product, whether or not authorized by BRP, are not included.

In addition, the sole purpose of the illustrations throughout the manual, is to assist identification of the general configuration of the parts. They are not to be interpreted as technical drawings or exact replicas of the parts.

The use of BRP parts is most strongly recommended when considering replacement of any component. Dealer and/or distributor assistance should be sought in case of doubt.

The engines and the corresponding components identified in this document should not be utilized on product(s) other than those mentioned in this document.

It is understood that certain modifications may render use of the vehicle illegal under existing federal, provincial and state regulations.

This manual emphasizes particular information which, is denoted by the following wording and symbols:

⚠ WARNING

Indicates a potential hazard that, if not avoided, could result in serious injury or death.

⚠ CAUTION Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE Indicates an instruction which, if not followed, could result in severe damage to vehicle components or other property.

NOTE: Indicates supplementary information required to fully complete an instruction.

Although the mere reading of such information does not eliminate the hazard, your understanding of the information provided will promote its correct use.

Always observe common shop safety practice.

Unless otherwise noted, the engine must be stopped and the tether cord must be removed prior to perform any services.

Torque wrench tightening specifications must be strictly adhered to. Use the torque values and service products as in the exploded views or in the procedures when noted.

Locking devices when removed must be replaced (e.g.: locking tabs, elastic stop nuts, self-locking fasteners, cotter pins, etc.).

Hoses, cables and locking ties removed during a procedure must be reinstalled as per factory standards.

When ordering parts always refer to the specific model *PARTS CATALOGS*.

We strongly recommend that any services be carried out and/or verified by a highly skilled professional mechanic.

It is understood that this manual may be translated into another language. In the event of any discrepancy, the English version shall prevail.

BRP disclaims liability for all damages and/or injuries resulting from the improper use of the contents of this publication.

IMPORTANT SAFETY PRECAUTIONS

We do not provide warnings about many basic shop safety practices (e.g.: Use Grinding Wheel – wear safety glasses). If you have not received shop safety training or do not feel confident about your knowledge of safe servicing practices, we recommend that you do not attempt to perform the procedures described in BRP shop manuals.

You should have a clear understanding of all basic shop safety practices. You should be wearing the appropriate clothing, using appropriate safety

equipment and taking all necessary safety precautions. Please be especially careful of the following:

- Read and understand all instructions before you begin a procedure or repair.
- Ensure you have the proper tools, any necessary replacement parts and the skills to perform the tasks safely and completely.
- Protect your eyes by using approved and properly fitted safety glasses.
- Use other protective wear when necessary, for example safety shoes and gloves.
- Unless the service procedure requires that the engine remain running, make sure the engine is off **before** beginning service.
- Be sure there is adequate ventilation whenever you run the engine, to avoid the risk of Carbon Monoxide poisoning.
- To avoid injury from moving parts, make sure your hands, fingers and clothing are out of the way when the engine is running.
- Gasoline vapors and hydrogen gases from batteries are explosive. Keep all cigarettes, sparks and flames away from the battery, fuel-related components and other enclosed compartments.
- Never use gasoline to clean parts, always use an approved nonflammable solvent.
- Never drain or store gasoline in an open container.

⚠ WARNING

The foregoing list represents general safety practices. For details on workplace health and safety requirements in your area, consult your local workplace health and safety agency or association.

We have provided you with some of the most important general service safety precautions, above. We cannot, however, warn you of every conceivable hazard that can arise in performing the service and repair procedures depicted in BRP manuals. Only you can decide whether or not you should perform a given task.

INTRODUCTION

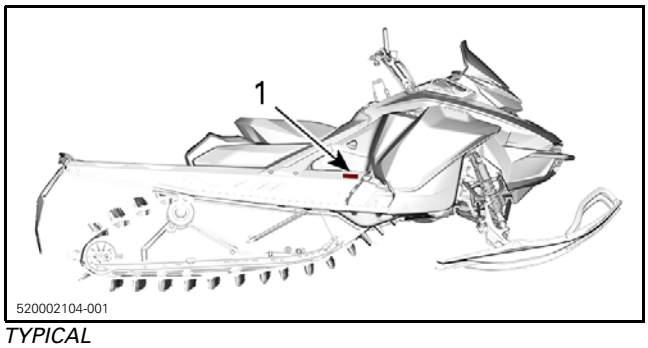
The information and component/system descriptions contained in this manual are correct at time of writing. BRP however, maintains a policy of continuous improvement of its products without imposing upon itself any obligation to install them on products previously manufactured.

Due to late changes, there may be some differences between the manufactured product and the description and/or specifications in this document.

BRP reserves the right at any time to discontinue or change specifications, designs, features, models or equipment without incurring obligation.

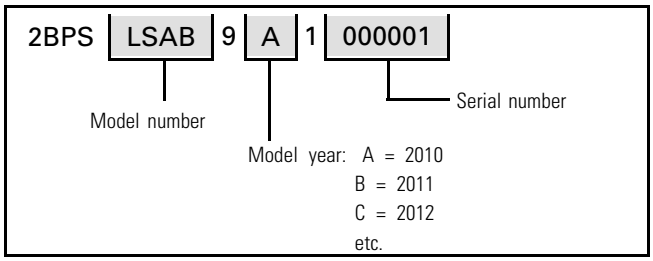
VEHICLE INFORMATION

VEHICLE IDENTIFICATION NUMBER (VIN)

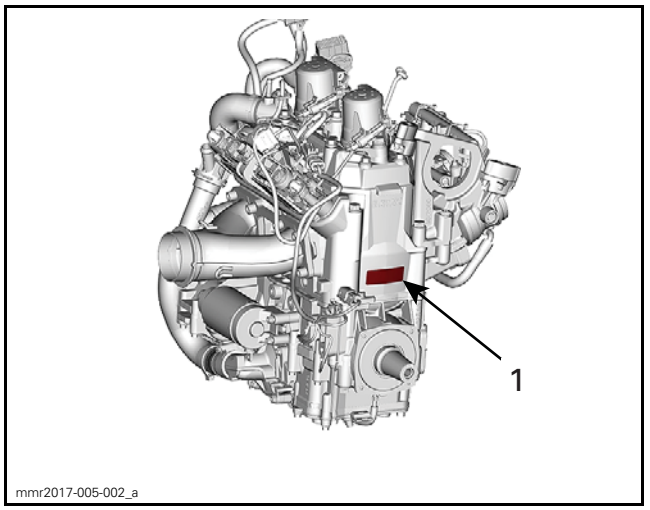


TYPICAL
1. Vehicle description decal

Identification Number Description



ENGINE IDENTIFICATION NUMBER (EIN)

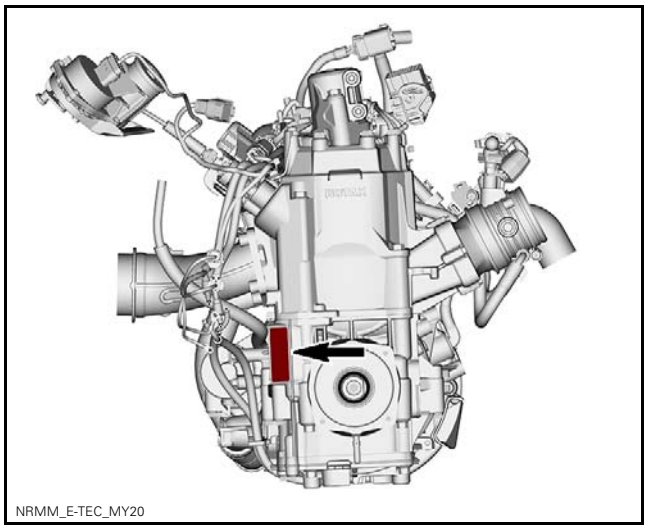


TYPICAL
1. Engine serial number

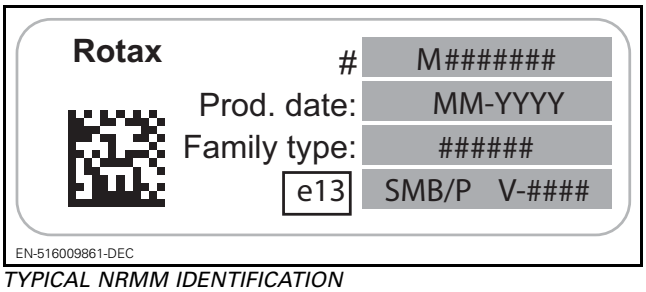
COMPLIANCE LABEL

Regulation (EU) 2016/1628 applicable for Non-Road Mobile Machineries

Vehicles who comply to Regulation (EU) 2016/1628 (NRMM) are identified on the engine.

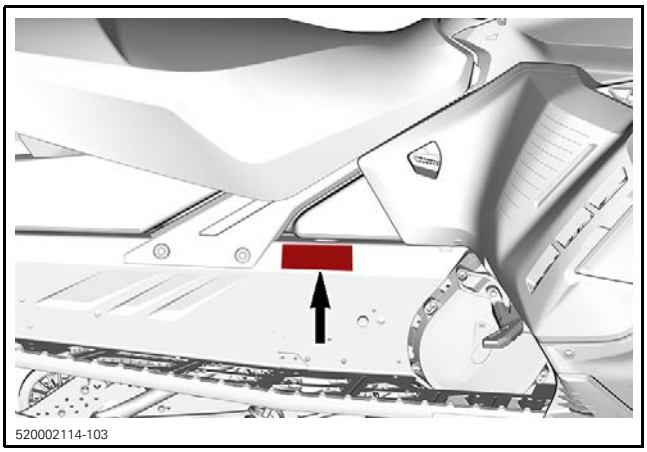


TYPICAL

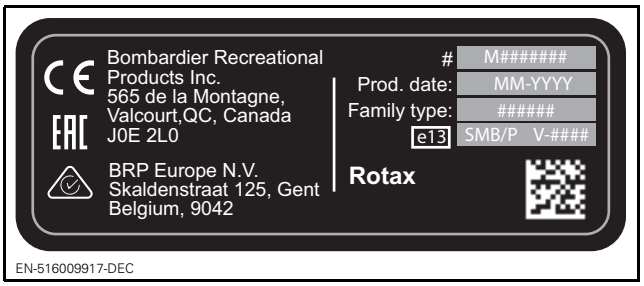


TYPICAL NRMM IDENTIFICATION

Depending on your particular vehicle configuration, an additional NRMM identification decal may be installed on the tunnel, near the chaincase.



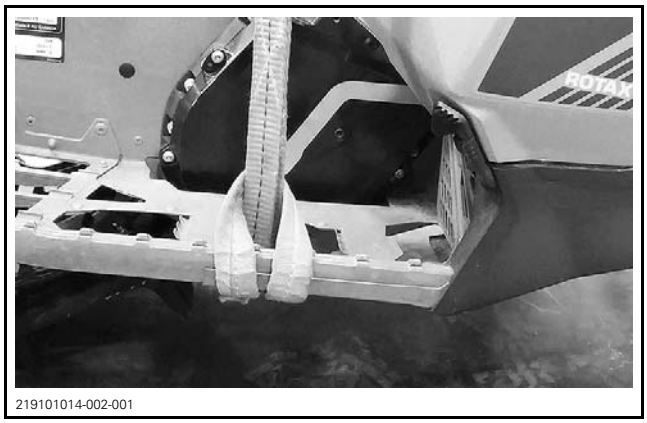
TYPICAL - ON RH SIDE OF TUNNEL



TYPICAL NRMM IDENTIFICATION ON VEHICLE

SNOWMOBILE LIFTING

To lift the snowmobile securely, place the loops of the lifting tool around the rollers at the front of the footrests.



NOTICE Do not use other footrest openings or steering column to lift the snowmobile. Frame or steering system could be seriously damaged.

ENGINE EMISSIONS INFORMATION

MANUFACTURER'S RESPONSIBILITY

Manufacturers of engines must determine the exhaust emission levels for each engine horsepower family and certify these engines with the United States of America Environmental Protection Agency (EPA). An emissions control information label, showing emission levels and engine specifications, must be placed on each vehicle at the time of manufacture.

DEALER RESPONSIBILITY

When servicing any vehicle that carry an emissions control information label, adjustments must be kept within published factory specifications.

Replacement or repair of any emission related component must be executed in a manner that maintains emission levels within the prescribed certification standards.

Dealers are not to modify the engine in any manner that would alter the horsepower or allow emission levels to exceed their predetermined factory specifications.

Exceptions include manufacturer's prescribed changes.

OWNER RESPONSIBILITY

The owner/operator is required to have engine maintenance performed to maintain emission levels within prescribed certification standards.

The owner/operator is not to, and should not allow anyone else to modify the engine in any manner that would alter the horsepower or allow emissions levels to exceed their predetermined factory specifications.

EMISSION REGULATIONS

The vehicle you are servicing may have been certified to applicable emission regulations in your country or state. Not as an exhaustive list; this may include standards for engine exhaust emissions, crankcase emissions, permeation emissions and evaporative emissions. Servicing procedures in this manual must be strictly followed in order to keep the vehicle within the factory specifications. Failure to follow servicing procedures in this manual may lead a vehicle to be out of compliance with applicable emission regulations.

When servicing any vehicle; adjustments must be kept within published factory specifications. Replacement or repair of any emission related component must be executed in a manner that maintains emission levels within the applicable certification standards. Nobody is allowed to modify the engine in any manner that would alter the horsepower or allow emission levels to exceed their predetermined factory specifications. Exceptions include manufacturer's prescribed changes.

The owner/operator is required to have engine maintenance performed to maintain emission levels within the prescribed certification standards. The owner/operator is allowed and should not allow anyone else to modify the engine in any manner that would alter the horsepower or allow emissions levels to exceed their predetermined factory specifications.

MANUAL INFORMATION

MANUAL PROCEDURES

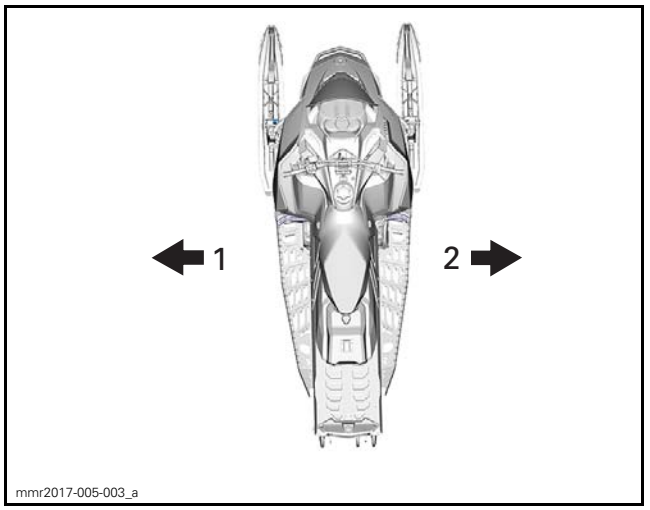
Many of the procedures in this manual are interrelated. Before undertaking any task, you should read and thoroughly understand the entire section or subsection in which the procedure is contained.

⚠ WARNING

Unless otherwise specified, the engine should be turned OFF and cold for all maintenance and repair procedures.

A number of procedures throughout the book require the use of special tools. Before starting any procedure, be sure that you have on hand all required tools, or their approved equivalents.

The use of RIGHT and LEFT indications in the text are always referenced to the driving position (sitting on the vehicle).



1. Left
2. Right

This manual uses technical terms which may be different from the ones of the *PARTS CATALOGS*.

When ordering parts always refer to the specific model *PARTS CATALOGS*.

NOTICE **Most fasteners are metric, and most components are built with parts dimensioned using the metric system. Consult the appropriate *PARTS CATALOG* to obtain and use the correct parts and fasteners. Mismatched or incorrect fasteners could cause damage to the vehicle.**

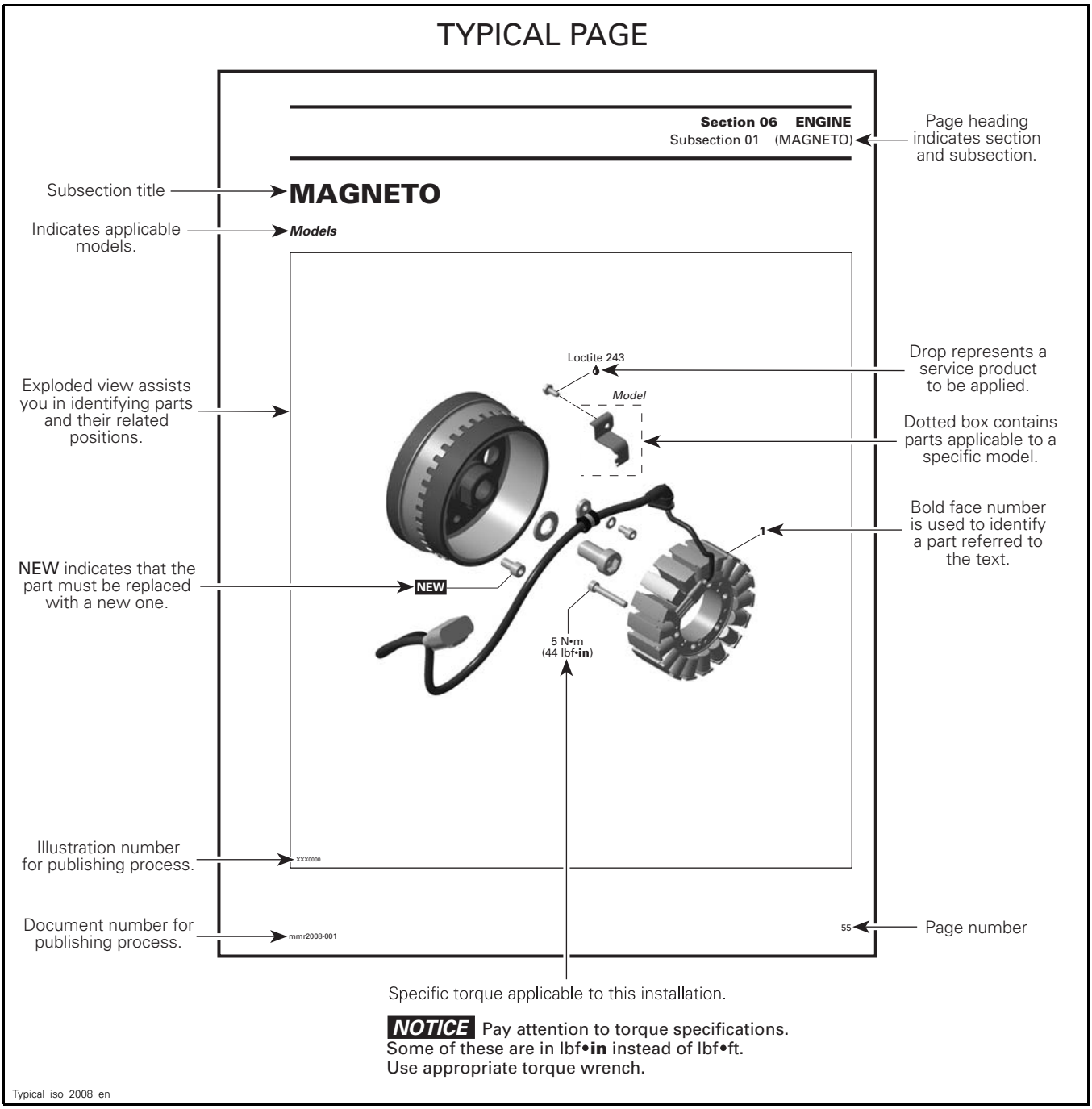
MANUAL LAYOUT

This manual is divided into many major sections as can be seen in the main table of contents at the beginning of the manual.

Each section is divided into various subsections, and again, each subsection has one or more divisions.

Illustrations and photos show the typical construction of various assemblies and, in all cases, may not reproduce the full detail or exact shape of the parts used in a particular model vehicle. However, they represent parts which have the same or a similar function.

TYPICAL PAGE



TYPICAL PAGE

Tittle in bold indicates category of information to be carried out.

GENERAL

NOTE: The following procedures can be done without removing the engine.

During assembly/installation, use the torque values and service products as in the exploded views.

Clean threads before applying a threadlocker. Refer to *SELF-LOCKING FASTENERS* and *LOCTITE APPLICATION* sections at the beginning of this manual for complete procedure.

Reference to a specific section or subsection.

⚠ WARNING

Torque wrench tightening specifications must be strictly adhered to.
Locking devices (e.g.: locking tabs, elastic stop nuts, self-locking fasteners, etc.) must be replaced with new ones.

PROCEDURES

Indicates component procedures apply to.

MAGNETO FLYWHEEL

Magneto Flywheel Cleaning

Clean all metal components in a non-ferrous metal cleaner.

CAUTION: Clean magneto flywheel using only a clean cloth.

Indicates specific procedure to be carried out.

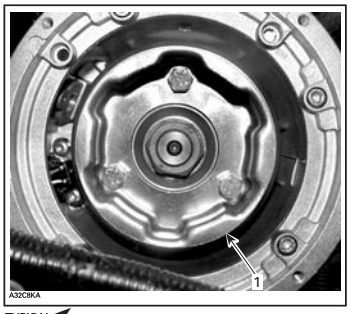
Magneto Flywheel Removal

Remove muffler, refer to the *EXHAUST SYSTEM* section.

Remove acoustic panel.

Remove rewind starter.

Remove starting pulley **no. 2**.



TYPICAL
1. Starting pulley

"TYPICAL" indicates a general view which may not represent exact details.

Call-outs pertaining to above illustration.

NOTE: To remove starting pulley bolts, hold magneto flywheel with a socket as shown.



TYPICAL

Illustration always follows text to which it applies.

Models

Remove the connecting flange retaining the rewind starter to the engine housing.

Italic bold face typesetting indicates a procedure applicable to a specific model(s).

Bold face number following part name refers to exploded view at beginning of subsection.

typical_txt_2008_en

TIGHTENING TORQUE

Tighten fasteners to the torque specified in the exploded view(s) and/or in the written procedure. When a torque is not specified, refer to the following table.

⚠ WARNING

Torque wrench tightening specifications must be strictly adhered to.
Locking devices when removed (e.g.: locking tabs, elastic stop nuts, self-locking fasteners, cotter pins, etc.) must be replaced.

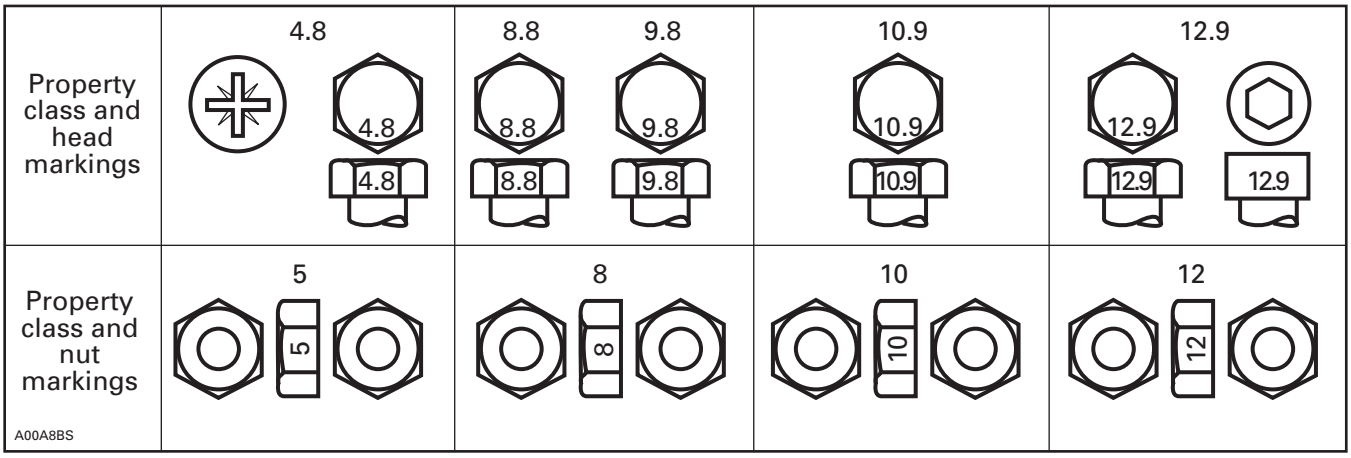
In order to avoid a poor assembly, tighten screws, bolts, or nuts in accordance with the following procedure:

1. Manually screw all screws, bolts and/or nuts.
2. Apply half the recommended torque value.
3. Tighten fastener to the recommended torque value.

NOTICE **Be sure to use the recommended tightening torque for the specified fastener used.**

NOTE: When possible, always apply torque on the nut.

NOTE: Always torque screws, bolts and/or nuts using a crisscross pattern when multiple fasteners are used to secure a part (eg. a cylinder head). Some parts must be torqued according to a specific sequence and torque pattern as detailed in the installation procedure.



FASTENER SIZE	FASTENER GRADE/TORQUE			
	5.8 Grade	8.8 Grade	10.9 Grade	12.9 Grade
M4	1.5 – 2 N•m (13 – 18 lbf•**in**)	2.5 – 3 N•m (22 – 27 lbf•**in**)	3.5 N•m - 4 N•m (31 lbf•**in** - 35 lbf•**in**)	4 N•m - 5 N•m (35 lbf•**in** - 44 lbf•**in**)
M5	3 N•m - 3.5 N•m (27 lbf•**in** - 31 lbf•**in**)	4.5 N•m - 5.5 N•m (40 lbf•**in** - 49 lbf•**in**)	7 N•m - 8.5 N•m (62 lbf•**in** - 75 lbf•**in**)	8 N•m - 10 N•m (71 lbf•**in** - 89 lbf•**in**)
M6	6.5 N•m - 8.5 N•m (58 lbf•**in** - 75 lbf•**in**)	8 N•m - 12 N•m (71 lbf•**in** - 106 lbf•**in**)	10.5 – 15 N•m (93 – 133 lbf•**in**)	16 N•m (142 lbf•**in**)
M8	15 N•m (133 lbf•**in**)	25 N•m (18 lbf•ft)	32 N•m (24 lbf•ft)	40 N•m (30 lbf•ft)
M10	29 N•m (21 lbf•ft)	48 N•m (35 lbf•ft)	61 N•m (45 lbf•ft)	73 N•m (54 lbf•ft)
M12	52 N•m (38 lbf•ft)	85 N•m (63 lbf•ft)	105 N•m (77 lbf•ft)	128 N•m (94 lbf•ft)
M14	85 N•m (63 lbf•ft)	135 N•m (100 lbf•ft)	170 N•m (125 lbf•ft)	200 N•m (148 lbf•ft)

FASTENER INFORMATION

NOTICE Most components in the vehicles are built with parts dimensioned in the metric system. Most fasteners are metric and must not be replaced by customary fasteners or vice-versa. Mismatched or incorrect fasteners could cause damage to the vehicle or possible personal injury.

SELF-LOCKING FASTENERS PROCEDURE



TYPICAL — SELF-LOCKING FASTENER

The following describes common procedures used when working with self-locking fasteners.

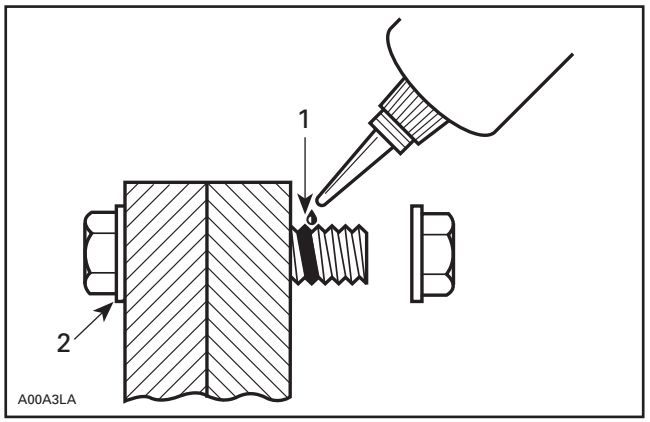
Use a metal brush or a tap to properly clean a threaded hole, then use a solvent. Allow the solvent time to act, approximately 30 minutes, then wipe off. Solvent utilization is to ensure proper adhesion of the product used for locking the fastener.

LOCTITE® APPLICATION PROCEDURE

The following describes common procedures used when working with Loctite products.

NOTE: Always use proper strength Loctite product as recommended in this shop manual.

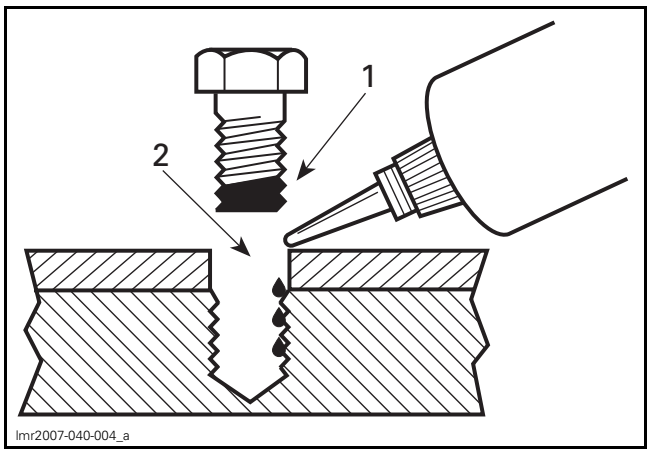
Threadlocker Application for Uncovered Holes (Bolts and Nuts)



1. Apply here
2. Do not apply

1. Clean threads (bolt and nut) with solvent.
2. Apply Loctite 7649 (primer) on threads and allow to dry.
3. Choose proper strength Loctite threadlocker.
4. Fit bolt in the hole.
5. Apply a few drops of threadlocker at proposed tightened nut engagement area.
6. Position nut and tighten as required.

Threadlocker Application for Blind Holes

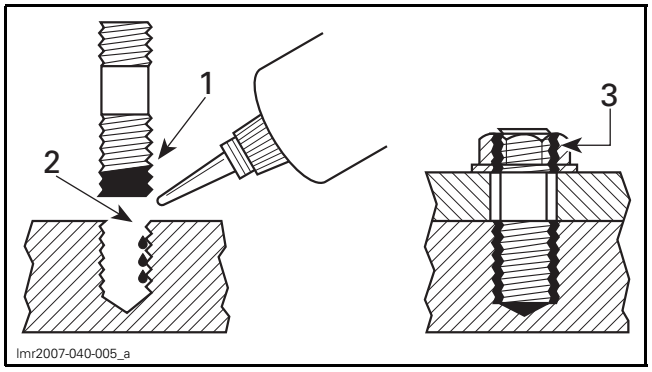


1. On fastener threads
2. On threads and at the bottom of hole

1. Clean threads (bolt and hole) with solvent.
2. Apply Loctite 7649 (primer) on threads (bolt and nut) and allow to dry for 30 seconds.
3. Choose proper strength Loctite threadlocker.
4. Apply several drops along the threaded hole and at the bottom of the hole.

5. Apply several drops on bolt threads.
6. Tighten as required.

Threadlocker Application for Stud Installation in Blind Holes



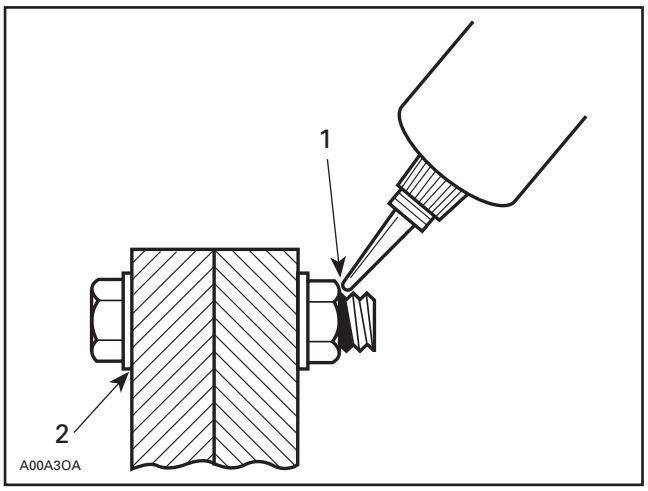
1. On stud threads
2. On threads and in the hole
3. On retaining nut threads

1. Clean threads (stud and hole) with solvent.
2. Apply Loctite 7649 (primer) on threads and allow to dry.
3. Put 2 or 3 drops of proper strength Loctite threadlocker on female threads and in hole.

NOTE: To avoid a hydro lock situation, do not apply too much Loctite.

4. Apply several drops of proper strength Loctite on stud threads.
5. Install stud.
6. Install cover, part, etc.
7. Apply a few drops of proper strength Loctite on uncovered stud threads.
8. Install and tighten retaining nut(s) as required.

Threadlocker Application for Pre-Assembled Parts

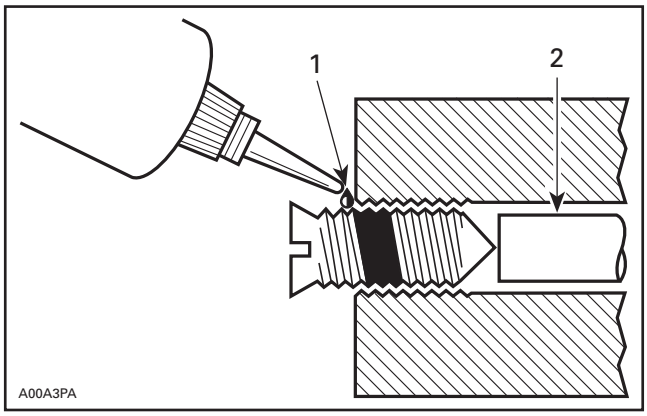


1. Apply here
2. Do not apply

1. Clean bolts and nuts with solvent.
2. Assemble components.
3. Tighten nuts.
4. Apply a few drops of proper strength Loctite on bolt/nut contact surfaces.
5. Avoid touching metal with tip of flask.

NOTE: For preventive maintenance on existing equipment, retighten nuts and apply proper strength Loctite on bolt/nut contact surfaces.

Threadlocker Application for an Adjustment Screw

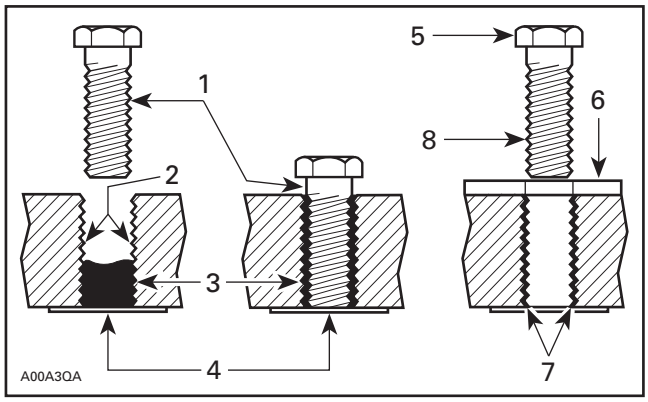


1. Apply here
2. Plunger

1. Adjust screw to proper setting.
2. Apply a few drops of proper strength Loctite threadlocker on screw/body contact surfaces.
3. Avoid touching metal with tip of flask.

NOTE: If it is difficult to readjust, heat screw with a soldering iron (232°C (450°F)).

Application for Stripped Thread Repair



1. Release agent
2. Stripped threads
3. Form-A-Thread
4. Tapes
5. Cleaned bolt
6. Plate
7. New threads
8. Threadlocker

Standard Thread Repair

Follow instructions on Loctite FORM-A-THREAD 81668 package.

If a plate is used to align bolt:

1. Apply release agent on mating surfaces.
2. Put waxed paper or similar film on the surfaces.
3. Twist bolt when inserting it to improve thread conformation.

NOTE: NOT intended for engine stud repairs.

Repair of Small Holes/Fine Threads

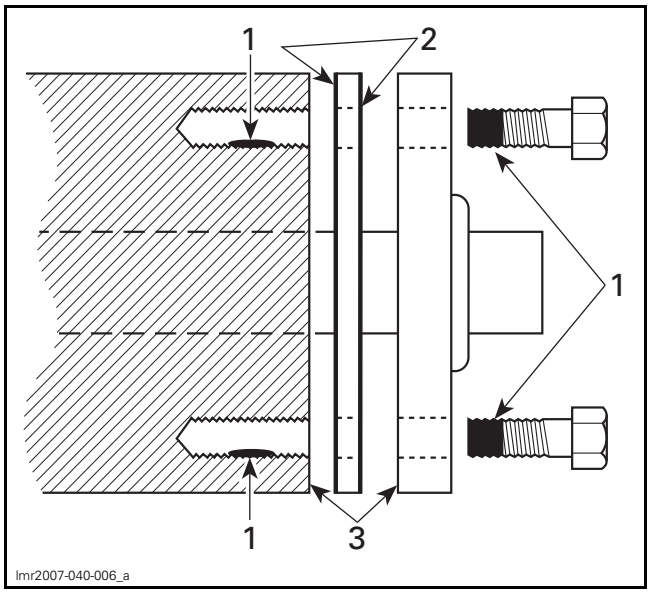
Option 1: Enlarge damaged hole, then follow *STANDARD THREAD REPAIR* procedure.

Option 2: Apply FORM-A-THREAD on the screw and insert in damaged hole.

Permanent Stud Installation (Light Duty)

1. Use a stud of the desired thread length.
2. DO NOT apply release agent on stud.
3. Follow Standard Thread Repair procedure.
4. Allow 30 minutes for Loctite FORM-A-THREAD to cure.
5. Complete part assembly.

Gasket Compound Application



1. Proper strength Loctite
2. Loctite Primer N (P/N 293 800 041) and Gasket Eliminator 518 (P/N 293 800 038) on both sides of gasket
3. Loctite Primer N only

1. Remove old gasket and other contaminants using Loctite chisel (gasket remover). Use a mechanical means only if necessary.

NOTE: Avoid grinding.

2. Clean both mating surfaces with solvent.
3. Spray Loctite Primer N on both mating surfaces and on both sides of gasket and allow to dry 1 or 2 minutes.
4. Apply Loctite 518 on both sides of gasket, using a clean applicator.
5. Place gasket on mating surfaces and assemble parts immediately.

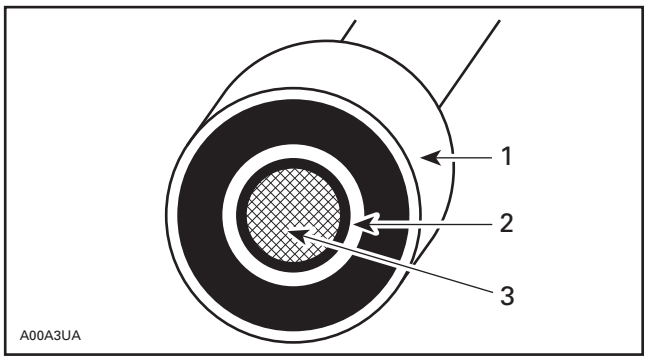
NOTE: If the cover is bolted to blind holes, apply proper strength Loctite in the hole and on threads. Tighten fastener.

If holes are sunken, apply proper strength Loctite on bolt threads.

6. Tighten as usual.

Threadlocker Application for Mounting on a Shaft

Mounting with a Press



1. Bearing
2. Proper strength Loctite
3. Shaft

1. Clean shaft external contact surface.
2. Clean internal contact surface of part to be installed on shaft.
3. Apply a strip of proper strength Loctite on circumference of shaft contact surface at insertion or engagement point.

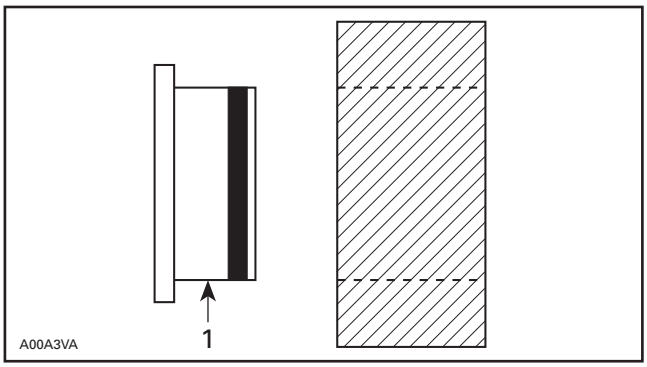
NOTE: Retaining compound is always forced out when applied on shaft.

4. DO NOT use antiseize Loctite or any similar product.
5. No curing period is required.

Mounting in Tandem

1. Apply retaining compound on internal contact surface (bore) of parts to be installed.
2. Continue parts assembly as per previous illustration.

Threadlocker Application for Case-In Components (Metallic Gaskets)



1. Proper strength Loctite

1. Clean inner housing diameter and outer gasket diameter.
2. Spray housing and gasket with Loctite 7649 (primer).
3. Apply a strip of proper strength Loctite on leading edge of outer metallic gasket diameter.

NOTE: Any Loctite product can be used here. A low strength liquid is recommended as normal strength and gap are required.

4. Install according to standard procedure.
5. Wipe off excess product.
6. Allow 30 minutes for product to cure.

NOTE: Normally used on worn-out housings to prevent leaking or sliding.

It is generally not necessary to remove gasket compound applied on outer gasket diameter.

SERVICE TOOLS INDEX

12 V BATTERY SUPPLY CABLE
(P/N 529 035 997)



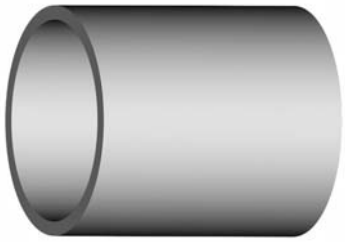
Page: 57, 156, 172, 175, 183

BALL JOINT EXTRACTOR
(P/N 529 035 827)



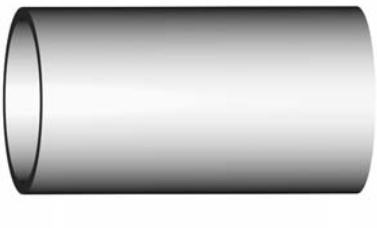
Page: 275

BALL JOINT INSTALLER SUPPORT
(P/N 529 036 398)



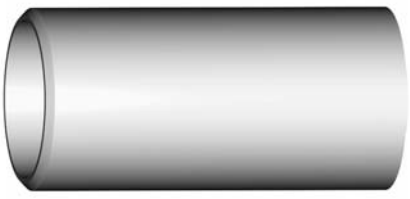
Page: 278

BALL JOINT INSTALLER
(P/N 529 036 399)



Page: 278

BALL JOINT REMOVER SUPPORT
(P/N 529 036 400)



Page: 278

BEARING PULLER DRIVEN SUPPORT
(P/N 529 036 485)



Page: 225

BEARING PULLER/PUSHER
(P/N 529 036 111)



Page: 250

BEARING PULLER/PUSHER
(P/N 529 036 112)



Page: 250

CALIPER PULLER
(P/N 529 036 145)



Page: 239

CIRCLIP INSTALLER/REMOVER
(P/N 529 036 375)



Page: 201, 214–215

CLUTCH HOLDER
(P/N 529 036 369)



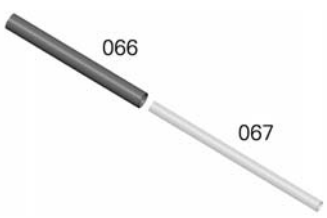
Page: 200, 210, 213, 222

COUNTERSHAFT ADAPTER
(P/N 529 036 424)



Page: 231

COUNTERSHAFT BEARING
INSTALLER
(P/N 529 036 066)



Page: 232

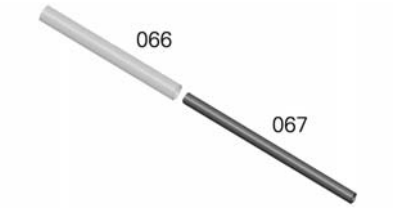
SERVICE TOOLS INDEX

COUNTERSHAFT BEARING REMOVER
(P/N 529 036 065)



Page: 231

COUNTERSHAFT SUPPORT
(P/N 529 036 067)



Page: 231

DIAGNOSTIC CABLE
(P/N 710 000 851)



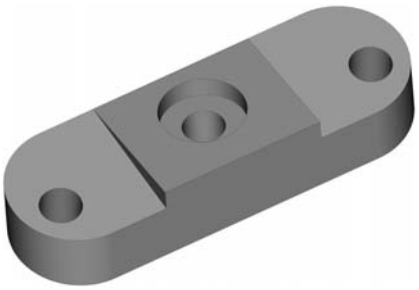
Page: 57, 172

DIAL INDICATOR ADAPTER
(P/N 529 036 132)



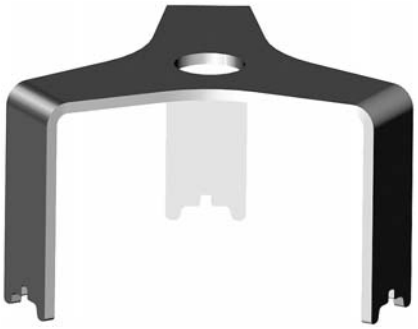
Page: 135, 144

DIAL INDICATOR ADAPTER
(P/N 529 036 418)



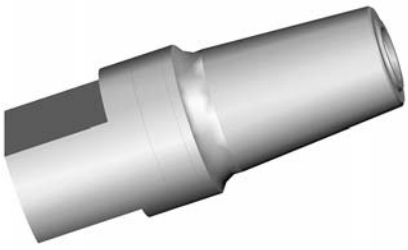
Page: 144

DRIVE PULLEY OPENING TOOL
(P/N 529 036 378)



Page: 201, 214, 218

DRIVE PULLEY SUPPORT
(P/N 529 036 371)



Page: 201, 214–215, 217

DRIVEN PULLEY SPRING COMPRESSOR
(P/N 529 036 182)



Page: 225

ECM ADAPTER TOOL
(P/N 529 036 166)



Page: 109, 126, 165–166, 172–173

ECM TERMINAL REMOVER 2.25
(P/N 529 036 175)



Page: 109, 126

ECM TERMINAL REMOVER 3.36
(P/N 529 036 174)



Page: 110, 126

ENGINE LIFTING HOOK
(P/N 529 035 829)



Page: 19

ENGINE LIFTING TOOL
(P/N 529 036 402)



Page: 19

SERVICE TOOLS INDEX

FLUKE 115 MULTIMETER
(P/N 529 035 868)



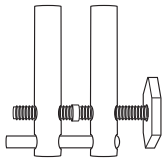
Page: 157, 159, 165, 172, 179, 188

GREASE INJECTOR
(P/N 529 036 376)



Page: 207, 220

LARGE HOSE PINCHER
(P/N 529 032 500)



Page: 45

LEAK TEST KIT
(P/N 529 033 100)



Page: 72, 87

MPI-2 INTERFACE CARD
(P/N 529 036 018)



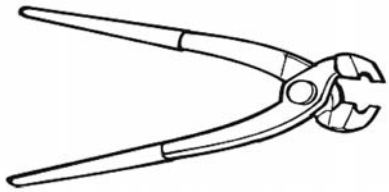
Page: 57, 172

MPI-3 INTERFACE CARD
(P/N 529 036 353)



Page: 57, 172

OETIKER PLIER
(P/N 295 000 070)



Page: 71, 75, 90

PDRIVE PULLER
(P/N 529 036 370)



Page: 200–201, 213–214

POWER INTERFACE
(P/N 515 177 223)



Page: 57, 156, 170, 172, 175, 183

PRESSURE GAUGE
(P/N 529 036 395)



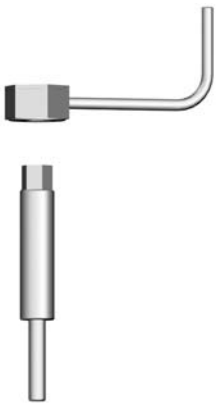
Page: 73, 88

PROTECTIVE CAP
(P/N 529 036 150)



Page: 239

PULLEY SPRING COMPRESSOR TOOL
(P/N 529 036 373)



Page: 201, 214–215, 217–218

SERVICE TOOLS INDEX

RADIATOR INSTALLATION GAUGES
(P/N 529 036 422)



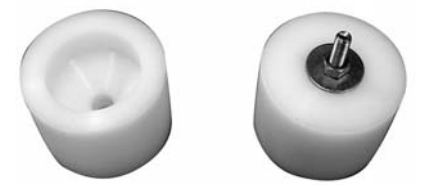
Page: 351

REMOVING AXLE TOOL
(P/N 529 036 372)



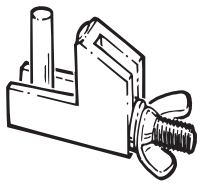
Page: 201, 214, 216–218

SHOCK ABSORBER SUPPORTS
(P/N 529 036 186)



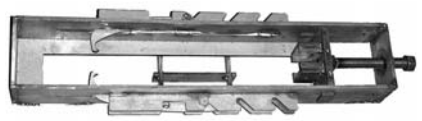
Page: 289

SMALL HOSE PINCHER
(P/N 295 000 076)



Page: 45, 72, 87

SPRING COMPRESSOR
(P/N 529 036 184)



Page: 274

SPRING INSTALLER/REMOVER
(P/N 529 035 983)



Page: 31, 36

SUPERTANIUM DRILL BIT 3/16"
(P/N 529 031 800)



Page: 333, 342

SUSPENSION ARM SUPPORT
(P/N 529 035 637)



Page: 276

T FITTING FUEL PRESSURE
(P/N 529 036 509)



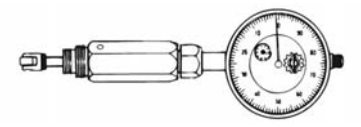
Page: 73, 88

TDC DIAL INDICATOR
(P/N 295 000 143)



Page: 135, 144

TDC DIAL INDICATOR
(P/N 414 104 700)



Page: 135, 144

TENSIOMETER
(P/N 414 348 200)



Page: 197, 261

TEST CAP
(P/N 529 035 991)



Page: 44

TRACK CLEAT INSTALLER
(P/N 529 036 044)



Page: 263

UPPER GEAR RETAINING TOOL
(P/N 529 036 110)



Page: 17, 224

VACUUM/PRESSURE PUMP
(P/N 529 021 800)



Page: 44, 72, 87

REFER TO UPDATED PERIODIC MAINTENANCE SCHEDULE

(Click Here)

STORAGE PROCEDURE

During summer, or when a snowmobile is not in use for more than three months, proper storage is necessary.

For detailed procedure refer to appropriate *SHOP MANUAL* subsections.

STORAGE	
VEHICLE	Clean the vehicle
ENGINE	Lubricate engine. Refer to *ENGINE LUBRICATION* procedure.
	Block muffler with rags
	Add fuel stabilizer to fuel following the product manufacturer recommendations Run the engine after adding the product to the fuel
DRIVE SYSTEM AND BRAKE	Lubricate brake lever pivot
	Lift rear of vehicle until track is clear of the ground. Do not release track tension
SUSPENSION	Inspect and lubricate rear suspension
	Lubricate front and rear suspension
ELECTRICAL SYSTEM	Charge battery monthly to keep it fully charged during storage

⚠ CAUTION Use appropriate lifting device or have assistance to share lifting stress. If a lifting device is not used, use proper lifting techniques, notably using your legs force. Do not attempt to lift the rear of vehicle if it is above your limits.

NOTICE The snowmobile has to be stored in a cool and dry place and covered with an opaque but ventilated tarpaulin. This will prevent sun rays and grime from affecting plastic components and vehicle finish.

NOTICE Fuel stabilizer should be added prior to engine lubrication to ensure carburetor protection against varnish deposits.

PROCEDURES

ENGINE LUBRICATION

The engine has to be properly lubricated at storage for internal parts protection.

Engine Storage Mode Using BUDS2 - E-TEC Engine

Connect the vehicle to the BRP diagnostic software (BUDS2). Refer to *COMMUNICATION TOOLS AND B.U.D.S.* subsection.

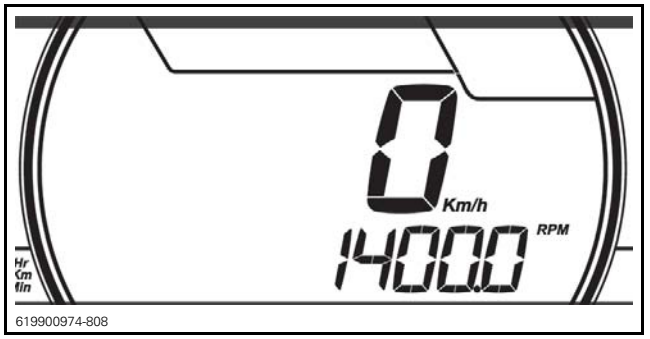
Select:
- **Functions** page
- **Vehicle** or **ECM** button
- **Routines** tab.

Click on the **Activate Storage** button.

Engine Storage Mode Using Multi-Function Gauge - E-TEC Engine

To engage procedure, do the following:

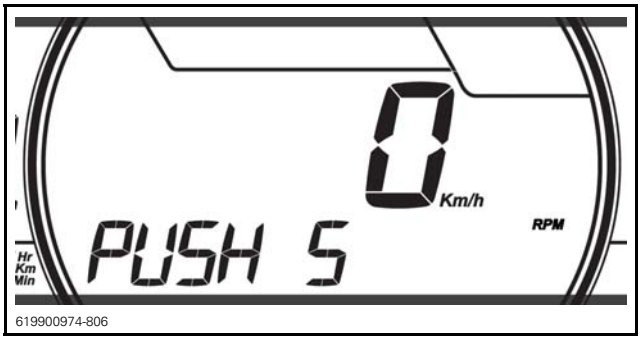
1. Place the vehicle in a well ventilated area.
2. Start the engine and let it run at idle speed until it reaches its operating temperature (watch the coolant temperature on the display or verify that the rear heat exchanger becomes warm).
3. Push the SET (S) button to select odometer mode.



619900974-808

NOTE: The storage mode does not function in other modes (trip A, trip B and hr trip).

4. Repeatedly depress the HI/LOW beam switch rapidly, then, **while doing this**, press and hold the **SET button** until PUSH S appears on the display.

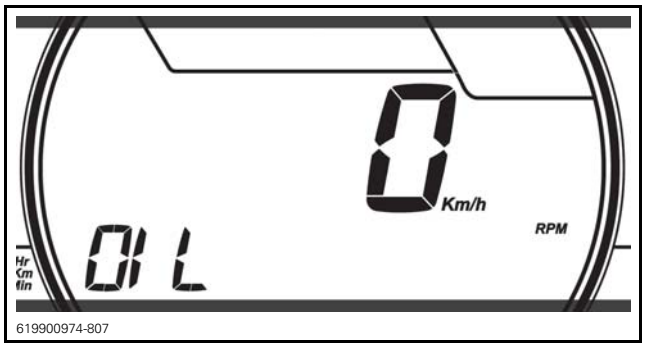


619900974-806

5. Release all buttons when gauge displays PUSH "S" appears.
6. Again, press and hold the SET (S) button for 2 - 3 seconds.

NOTE: The gauge will display OIL when the storage procedure is initiated.

7. When gauge displays OIL, release button and wait for the lubrication function to end.



619900974-807

Do not touch anything during engine lubrication cycle.

The engine lubrication function takes approximately 1 minute. During this time, engine RPM will increase slightly to approximately 1600 RPM and the oil pump will "oil flood" the engine.

At the end of engine lubrication function, the ECM will stop the engine.

8. Remove tether cord cap from engine cut-off switch.

NOTICE **Do not start the engine during storage period.**

Engine Storage Procedures - EFI engine

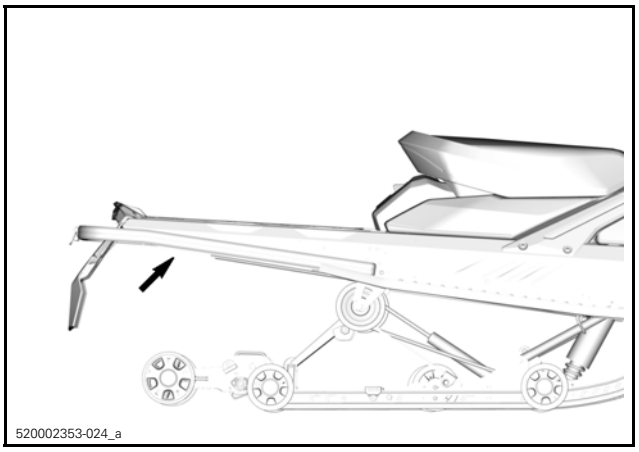
Follow these simple steps.

1. Place the vehicle in a well ventilated area.
2. Open the RH side panel.
3. Add Fuel stabilizer to fuel thank. Follow the manufacturer's recommendations.

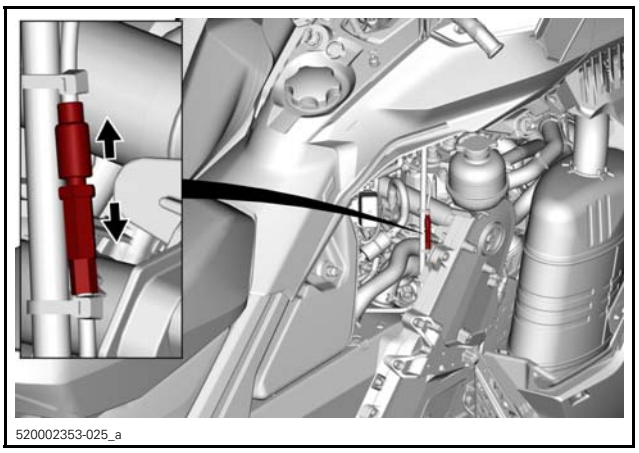
RECOMMENDED SERVICE PRODUCT
XPS fuel stabilizer

4. Start the engine and let idle until rear heat exchanger gets hot.

The rear heat exchanger can be reached from under the rear end of the chassis.


520002353-024_a

5. Pull on the oil pump cable - at the adjustment - until the exhaust gas turns to darker smoke.


520002353-025_a

6. Remove the spark plugs and spray storage oil for 5 seconds in each cylinder.

RECOMMENDED SERVICE PRODUCT
XPS storage oil

7. Spin the drive pulley for three complete revolutions by hand to distribute the storage oil to coat the cylinder walls.
8. Reinstall the spark plugs and tighten to specification.

TIGHTENING TORQUE	
Spark plug	28 N•m ± 2 N•m (21 lbf•ft ± 1 lbf•ft)

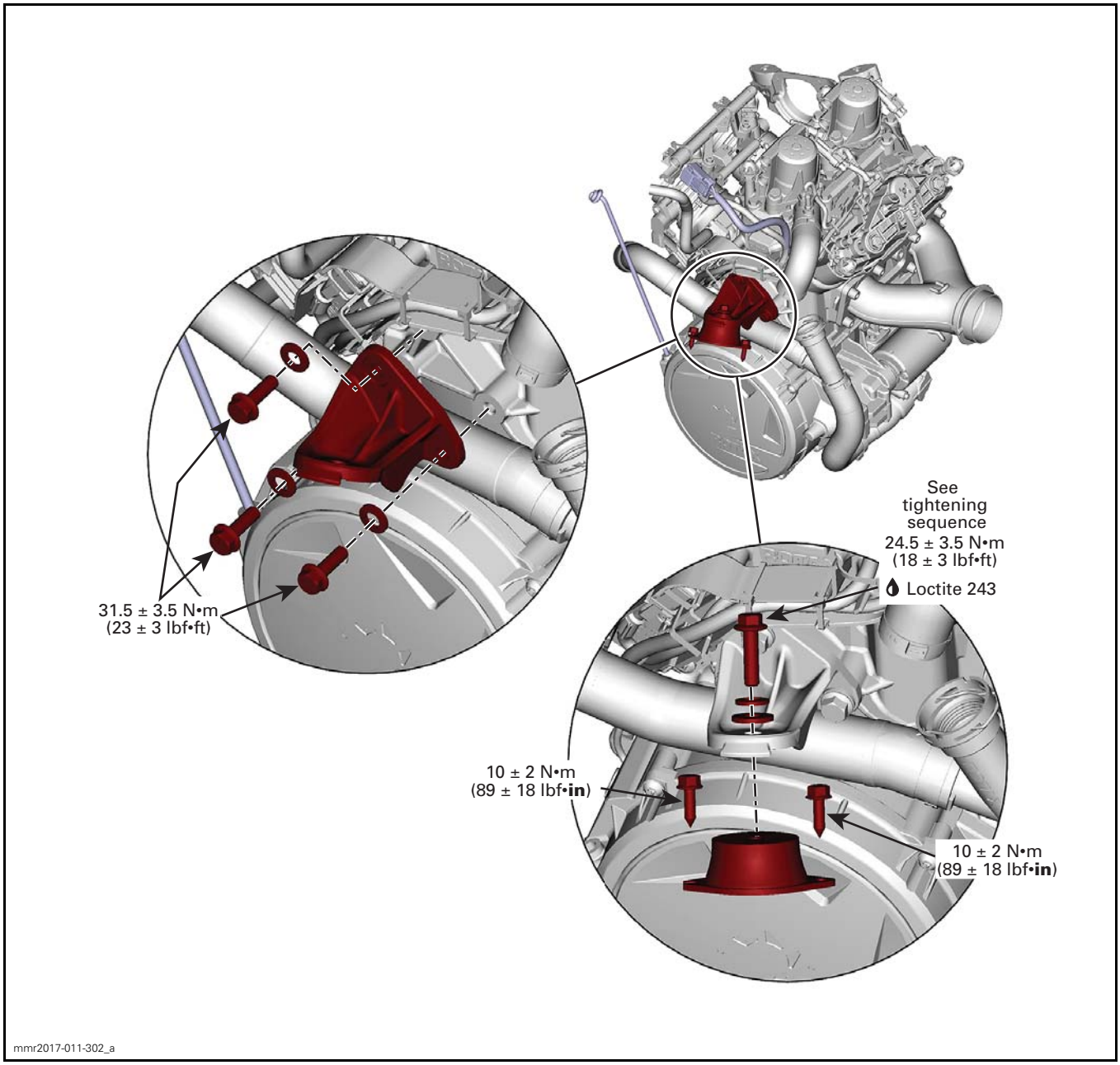
PRESEASON PREPARATION

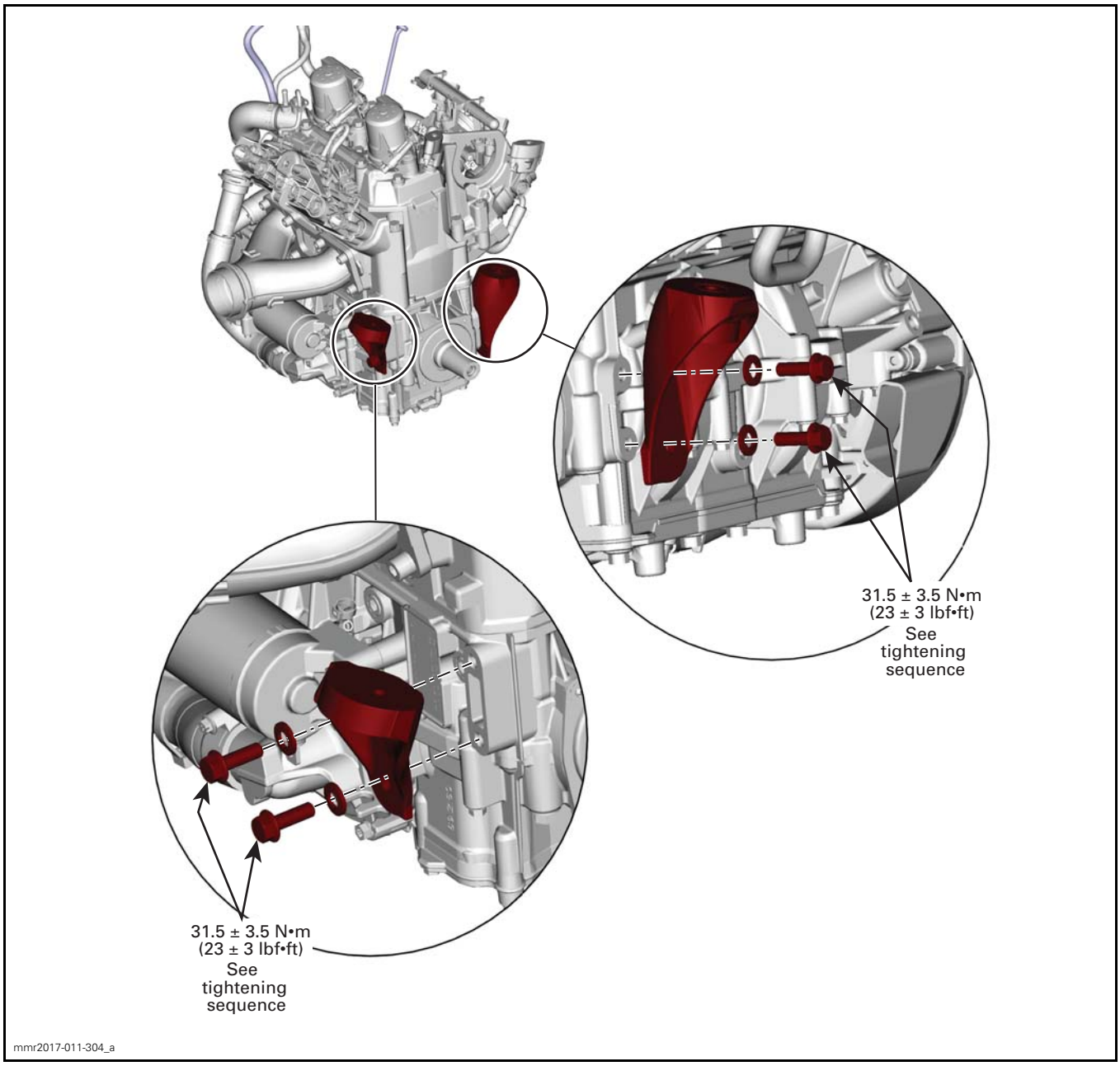
Proper vehicle preparation is necessary when a vehicle has not been used for more than three months. Using the *MAINTENANCE SCHEDULE*, perform the items titled *EVERY YEAR AT PRESEASON*.

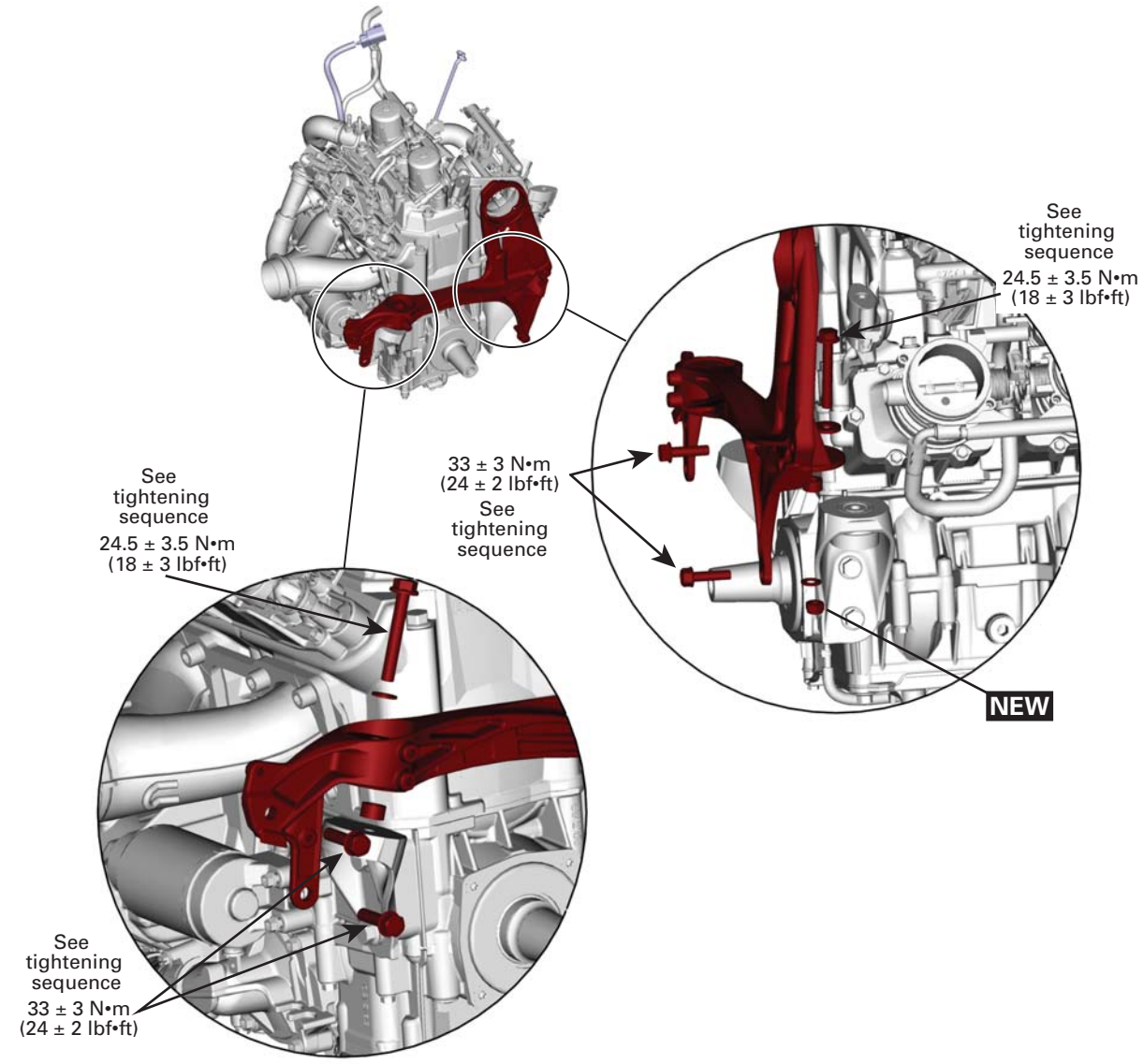
ENGINE REMOVAL AND INSTALLATION

SERVICE TOOLS

Description	Part Number	Page
ENGINE LIFTING HOOK	529 035 829	19
ENGINE LIFTING TOOL	529 036 402	19
UPPER GEAR RETAINING TOOL	529 036 110	17




31.5 ± 3.5 N•m
(23 ± 3 lbf•ft)
See
tightening
sequence
31.5 ± 3.5 N•m
(23 ± 3 lbf•ft)
See
tightening
sequence
mmr2017-011-304_a



NEW = Component must be replaced when removed.

mmr2017-011-303_a

GENERAL

During assembly/installation, use the torque values and service products as shown in the exploded views.

Clean threads before applying a threadlocker. Refer to *SELF-LOCKING FASTENERS* and *LOCTITE APPLICATION* at the beginning of this manual for complete procedure.

⚠ WARNING

Torque wrench tightening specifications must be strictly adhered to.
Locking devices when removed (e.g.: locking tabs, elastic stop nuts, cotter pin, etc.) must be replaced with new ones.

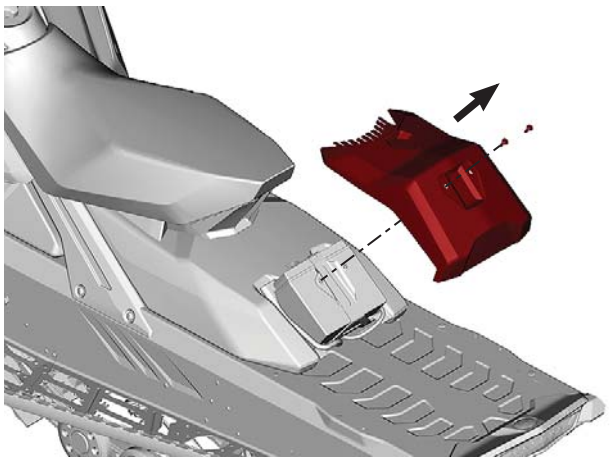
NOTICE **Hoses, cables and locking ties removed during a procedure must be reinstalled as per factory standards.**

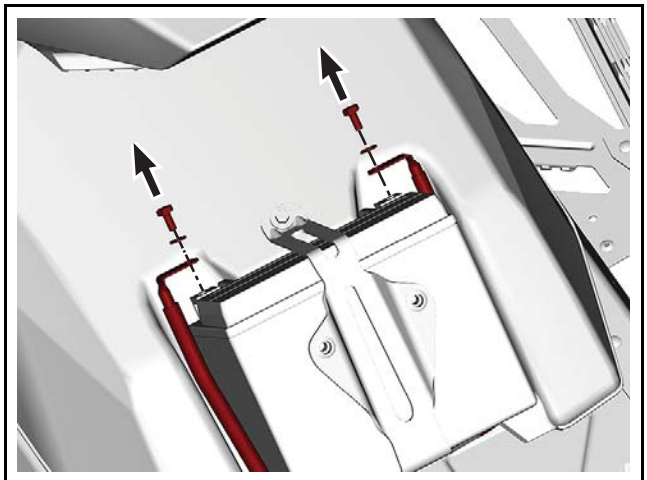
PROCEDURES

ENGINE

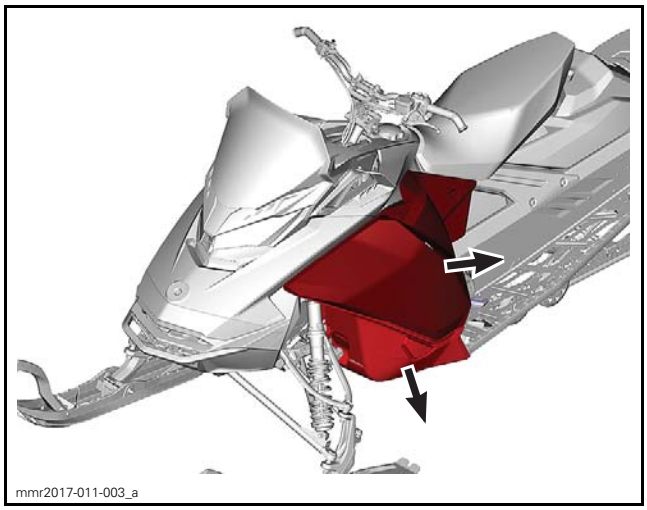
Removing the Engine

1. Place vehicle at workstation that will have access to an engine-lifting hoist.
2. Remove fuel pressure. Refer to *ELECTRIC FUEL PUMP* in *FUEL TANK AND FUEL PUMP* subsection.
3. Disconnect the battery.

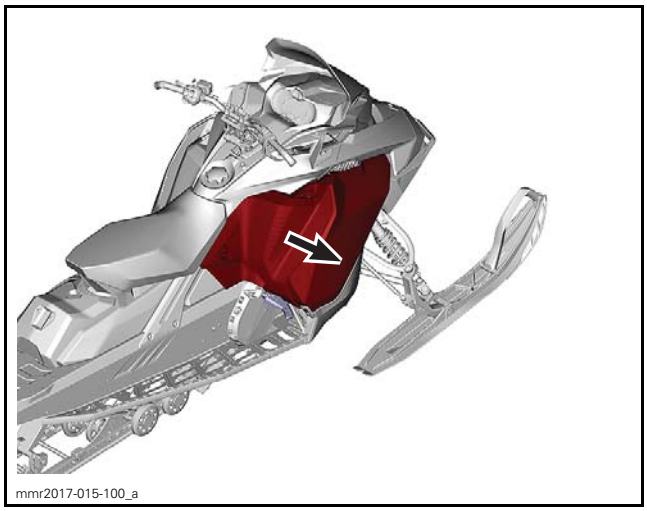

mmr2017-011-001_a


mmr2017-011-002_a

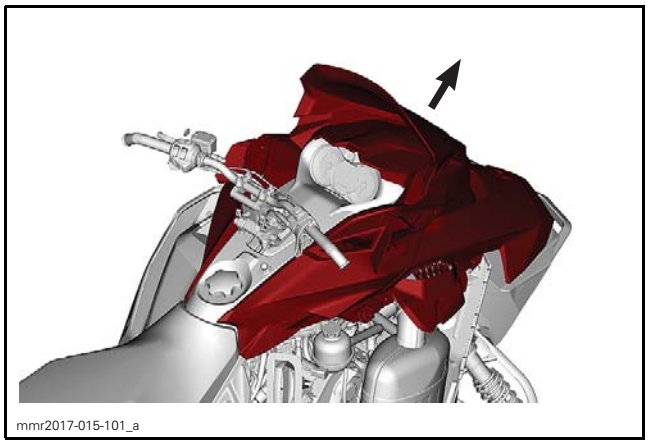
4. Remove the following parts. If required, refer to *BODY* subsection.


mmr2017-011-003_a

LH SIDE PANEL AND LH BOTTOM PAN

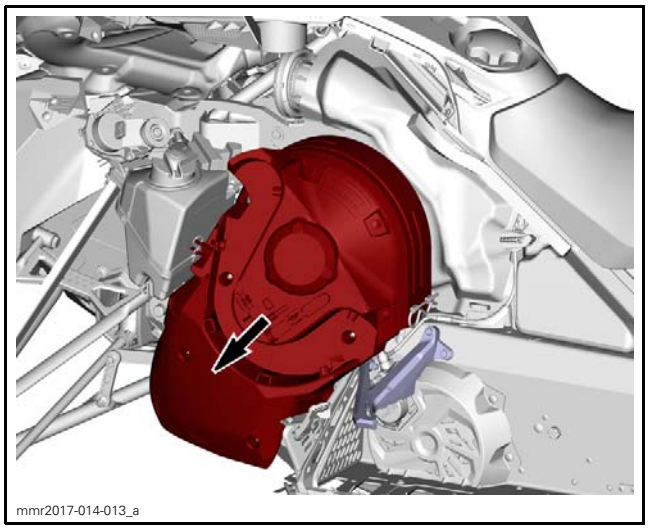

mmr2017-015-100_a

RH SIDE PANEL

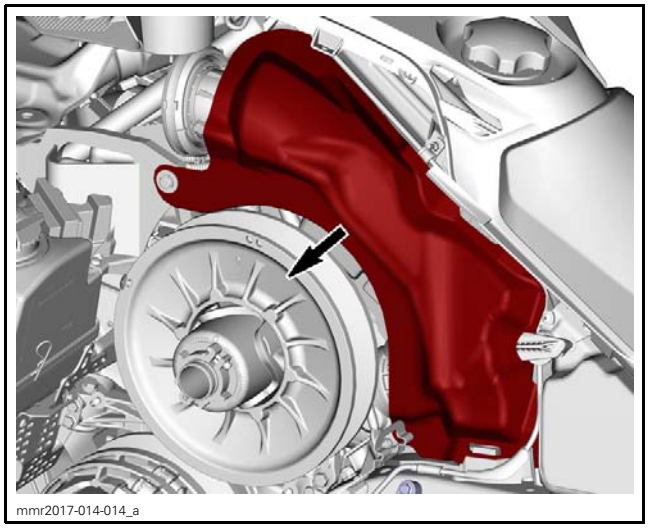


UPPER BODY MODULE

5. Remove the drive belt guard and acoustic panel.

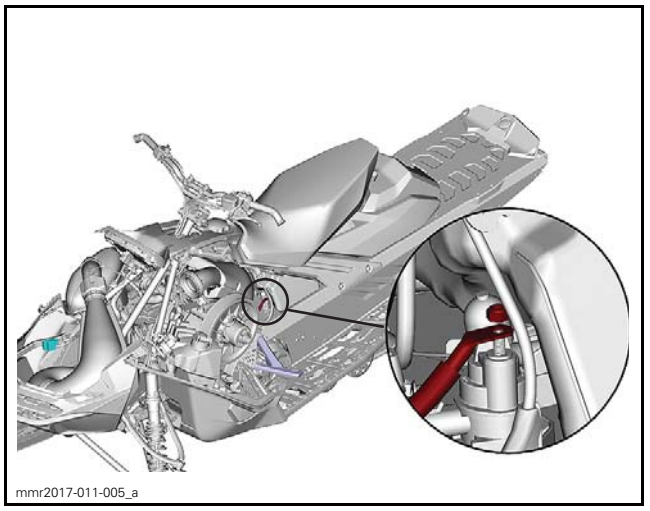


DRIVE BELT GUARD

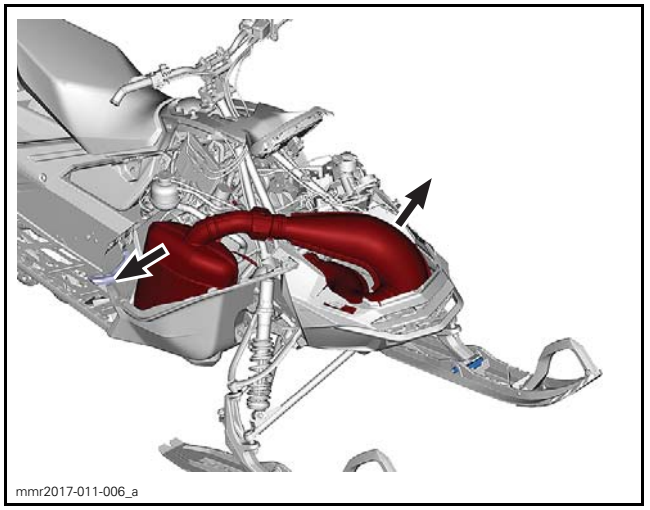


ACOUSTIC PANEL

6. Disconnect the BLACK wire from the starter solenoid.

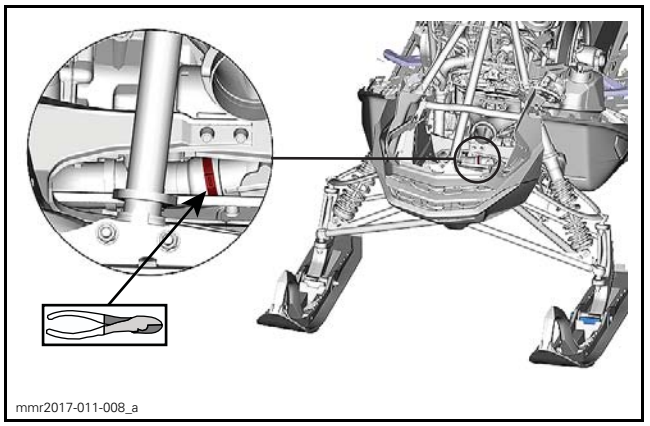


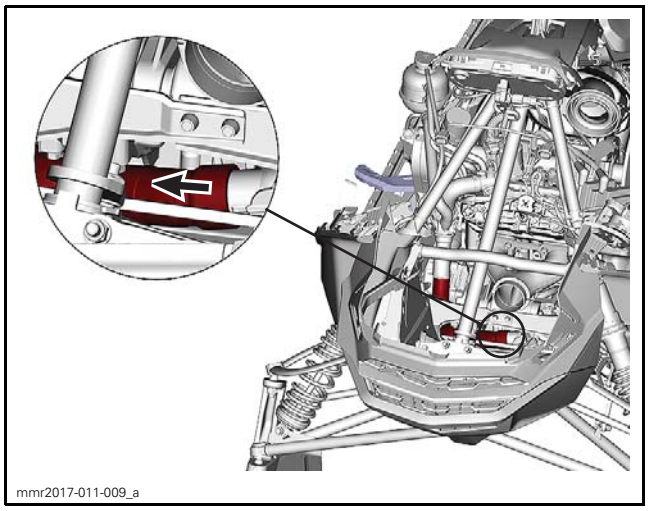
7. Remove the muffler and the tuned pipe. If required, refer to *EXHAUST SYSTEM* subsection.

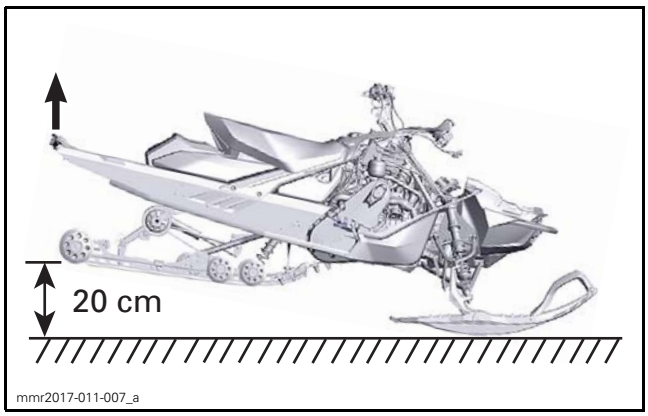


8. Place a drain pan under the front of the vehicle.
9. Drain the coolant by detaching the front cooling hose from the engine then lift the rear of the vehicle

NOTE: At the installation, replace the ear clamp by an hose clamp.

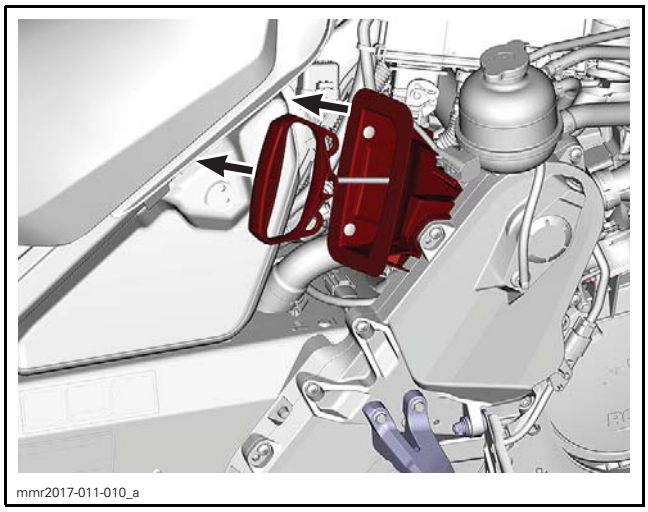



mmr2017-011-009_a

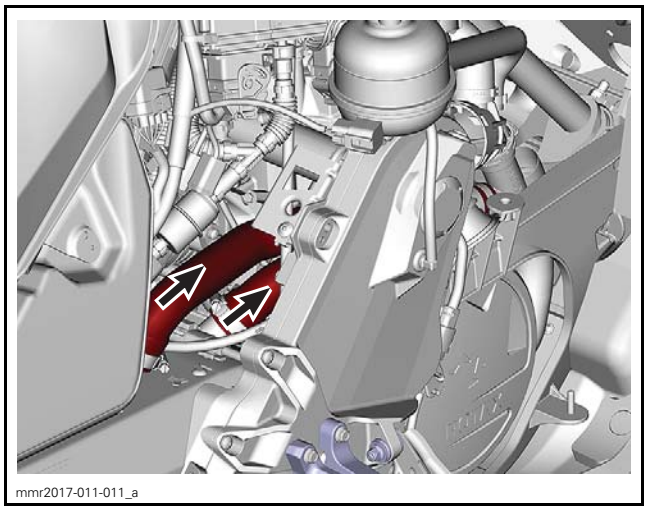


mmr2017-011-007_a

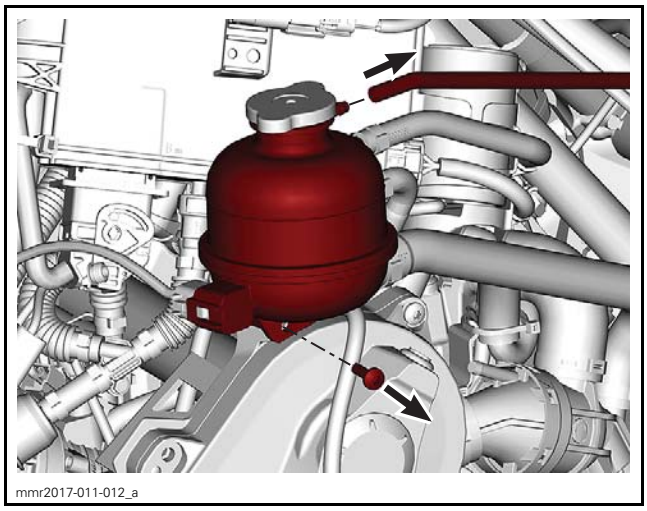
10. If equipped, remove the rewind starter handle and its housing.


mmr2017-011-010_a

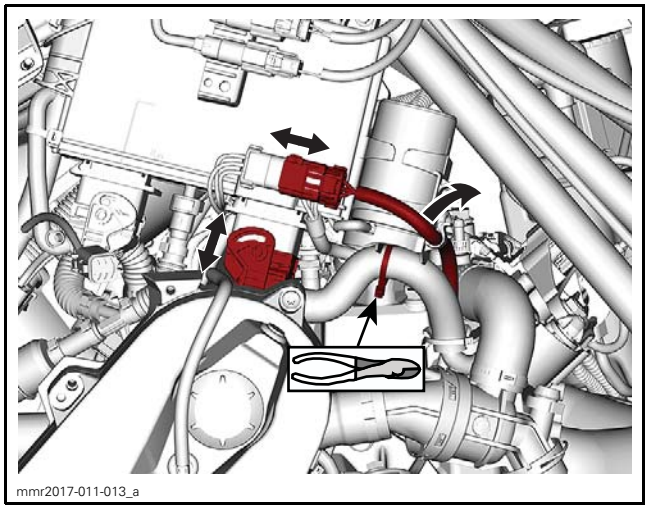
11. Unplug the inlet and outlet cooling hoses from the tunnel.


mmr2017-011-011_a

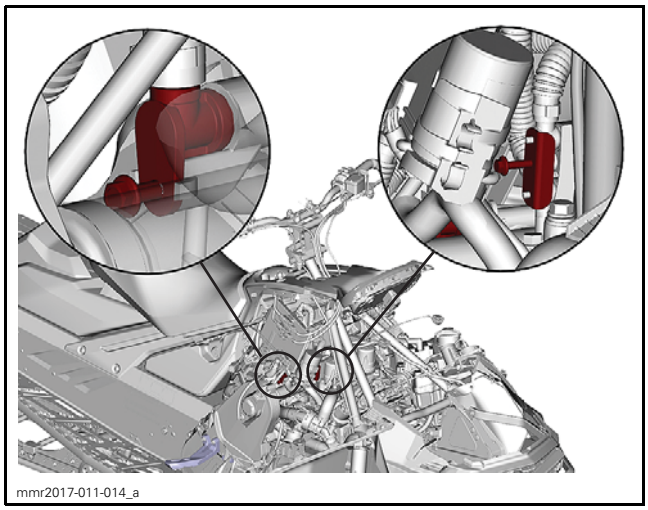
12. Detach the coolant tank from the top of the chaincase and unplug the vent hose from the tank.


mmr2017-011-012_a

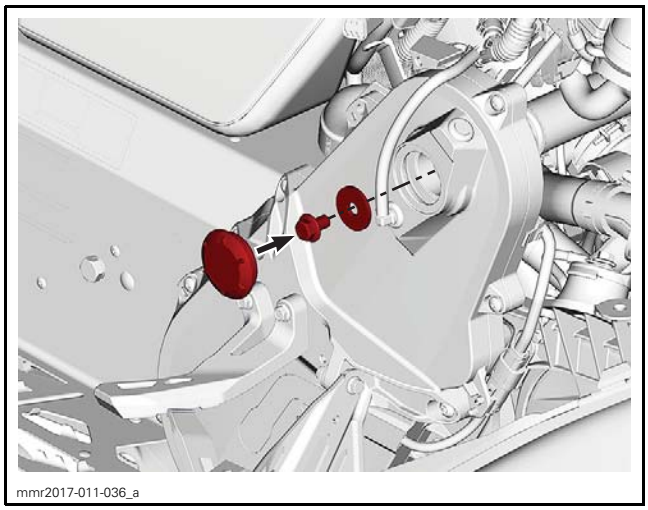
13. Disconnect the ECM connector A and the magneto connector.
14. Cut the locking tie retaining the engine harness to the capacitor support.


mmr2017-011-013_a

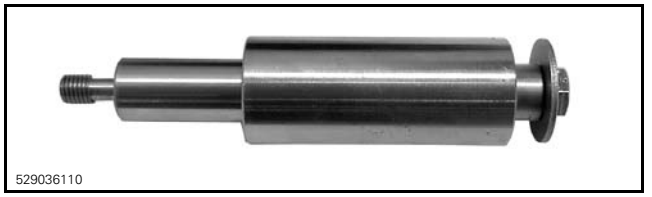
15. Unscrew fuel hoses from fuel rails.

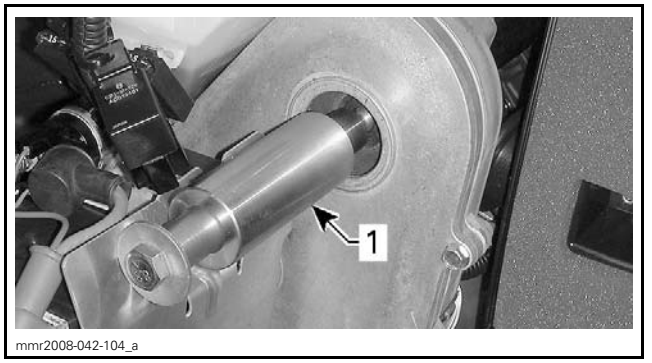

mmr2017-011-014_a

16. Apply parking brake and remove the upper gear screw and the conical spring washer.


mmr2017-011-036_a

17. Install the UPPER GEAR RETAINING TOOL (P/N 529 036 110) on countershaft end.

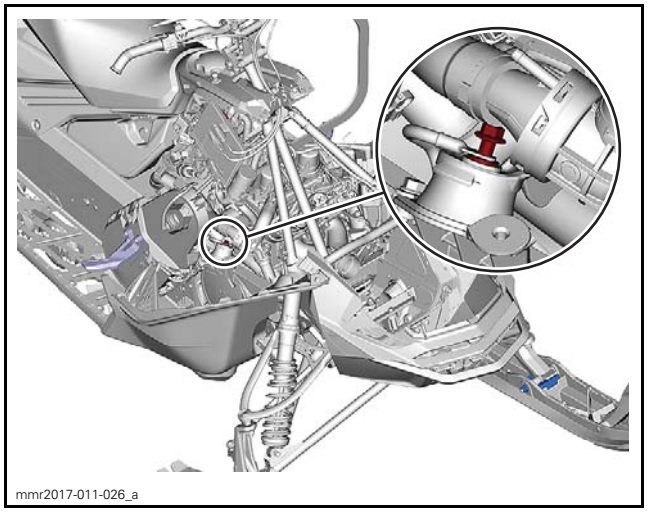

529036110



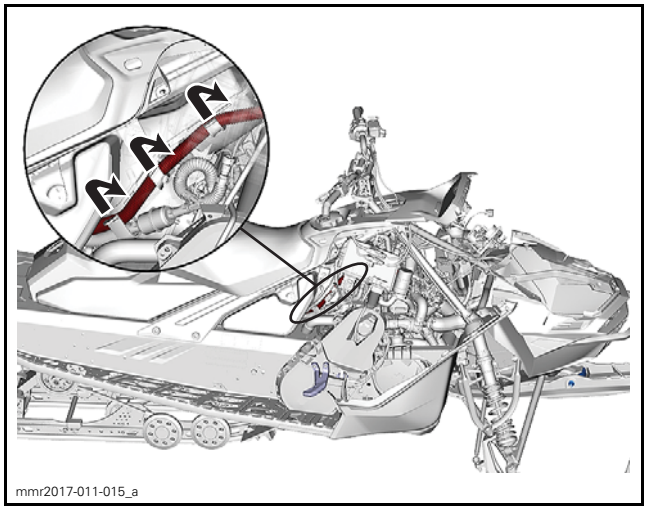
mmr2008-042-104_a

TYPICAL
1. Upper gear retaining tool

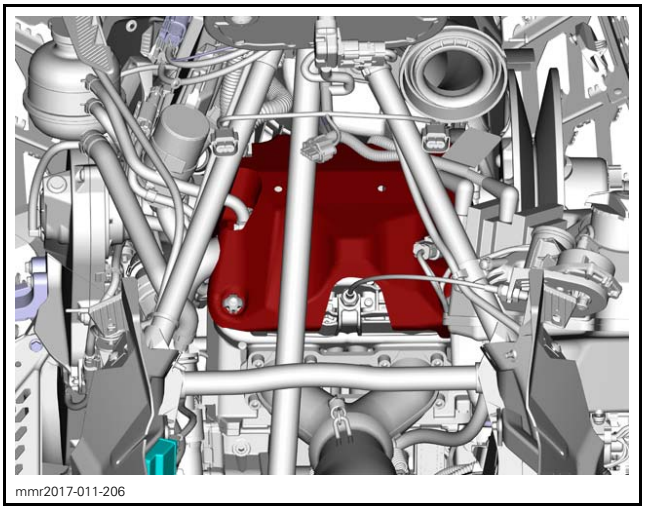
18. Remove the engine support screw.


mmr2017-011-026_a

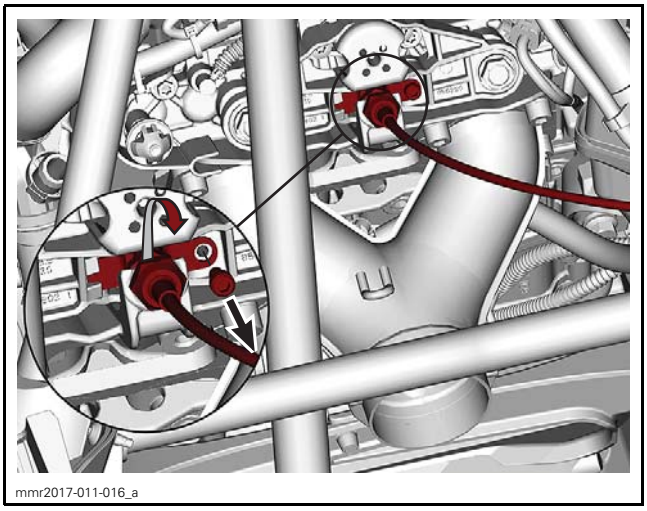
19. Unclip the fuel hose from the primary air silencer.


mmr2017-011-015_a

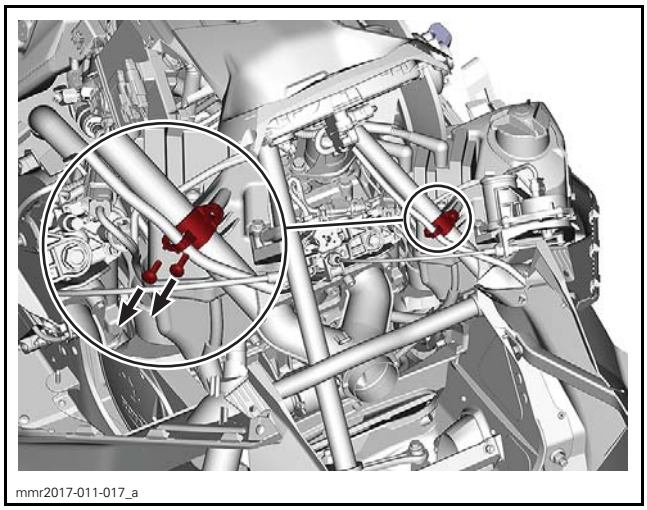
20. Remove engine cover.
    20.1 Remove the 3 screws.
    20.2 Pull on both halves of cover to remove.


mmr2017-011-206

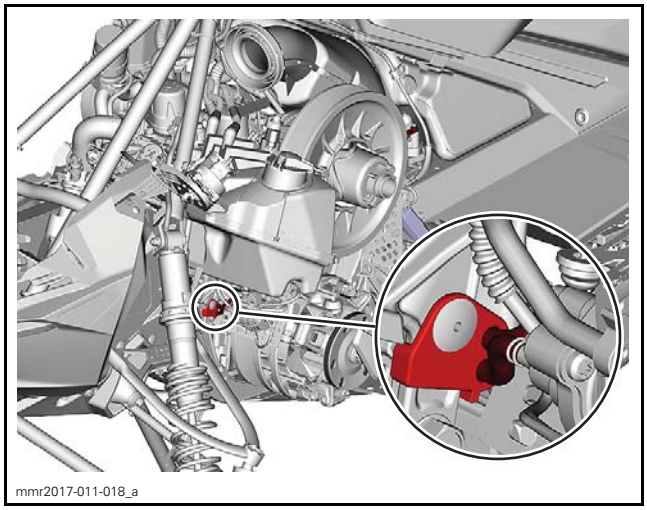
21. Detach the RAVE cable from the RAVE valve. Refer to *RAVE* subsection for proper procedure.


mmr2017-011-016_a

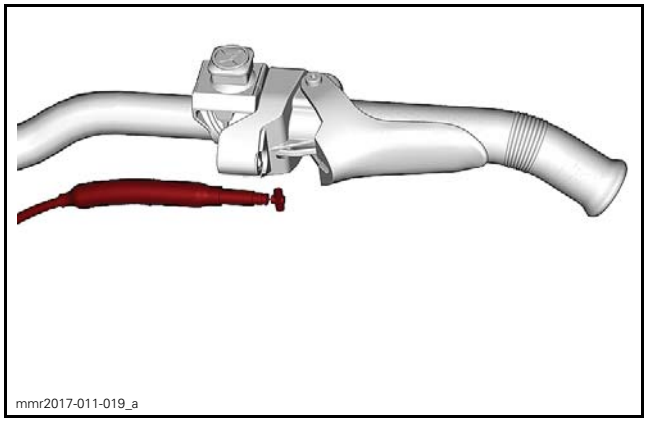
22. Unscrew the oil tank support.


mmr2017-011-017_a

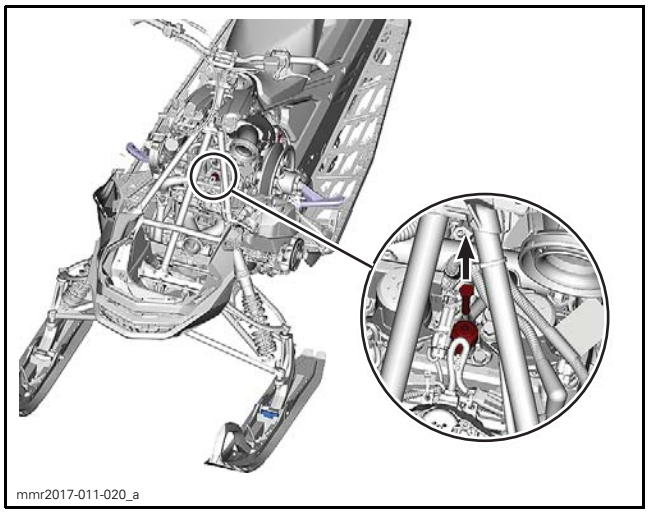
23. From underneath of the oil tank, detach both injection oil hoses from their support.


mmr2017-011-018_a

24. Detach the throttle cable from the throttle housing.

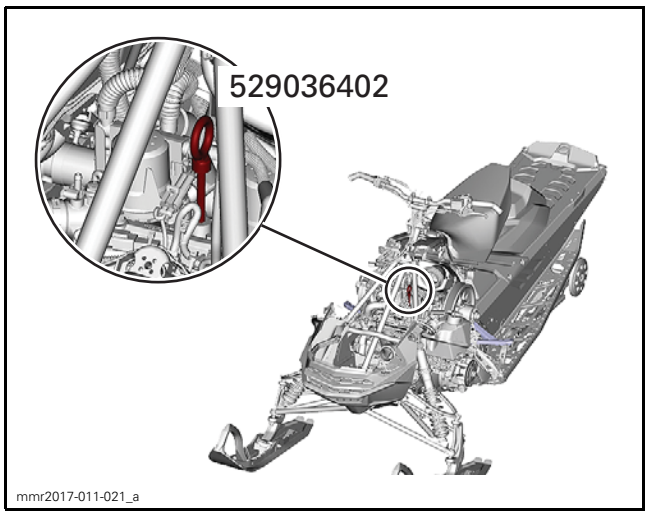

mmr2017-011-019_a

25. Remove the knock sensor from cylinder head cover.



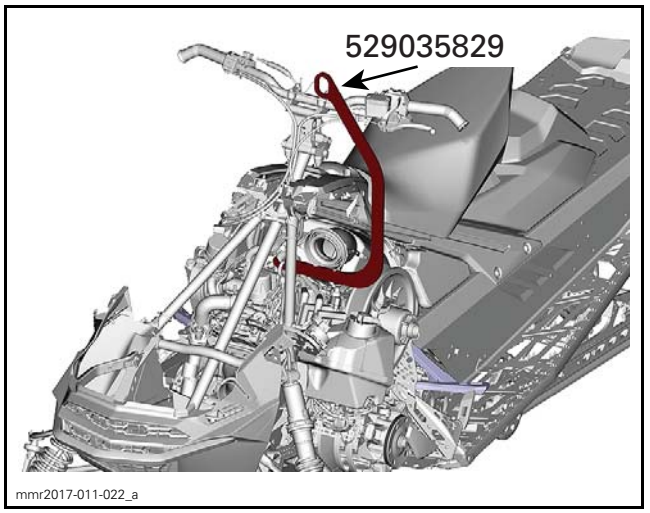
26. Install the engine lifting tool instead of knock sensor.

REQUIRED TOOL	
ENGINE LIFTING TOOL (P/N 529 036 402)	



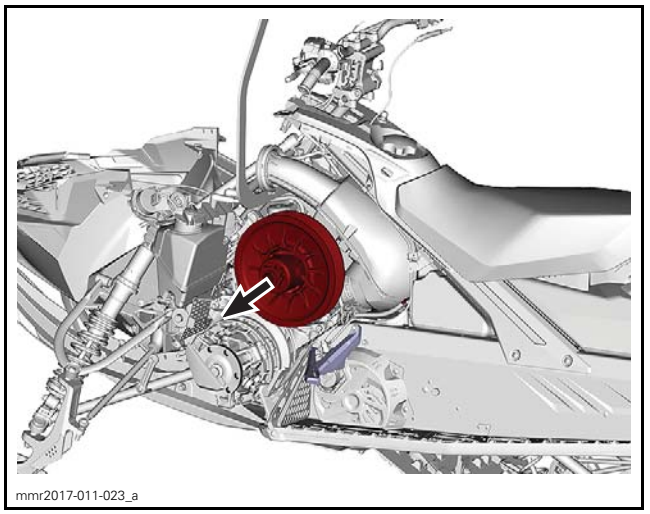
27. Install the engine lifting hook.

REQUIRED TOOL	
ENGINE LIFTING HOOK (P/N 529 035 829)	



28. Remove the driven pulley. Refer to appropriate *DRIVEN PULLEY AND COUNTERSHAFT* subsection.

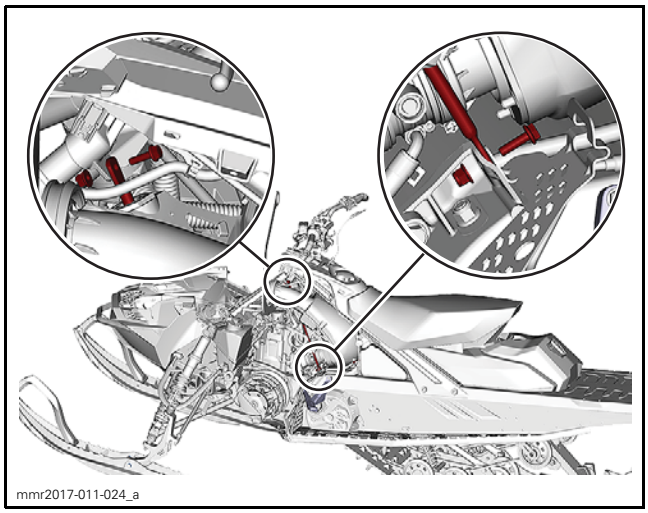
NOTE: If necessary, tap the upper gear retaining tool with a plastic hammer.



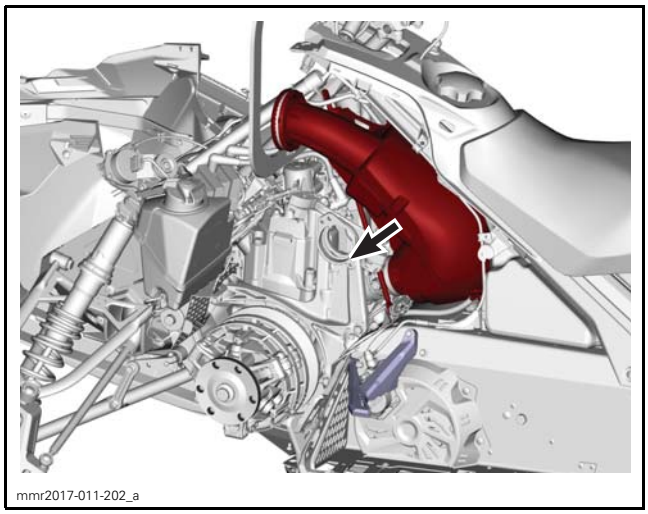
29. Unscrew countershaft from the upper gear retaining tool. **Do not** remove tool.

NOTE: While countershaft is removed from vehicle, the upper gear retaining tool maintains the drive chain and the upper gear in position inside chaincase.

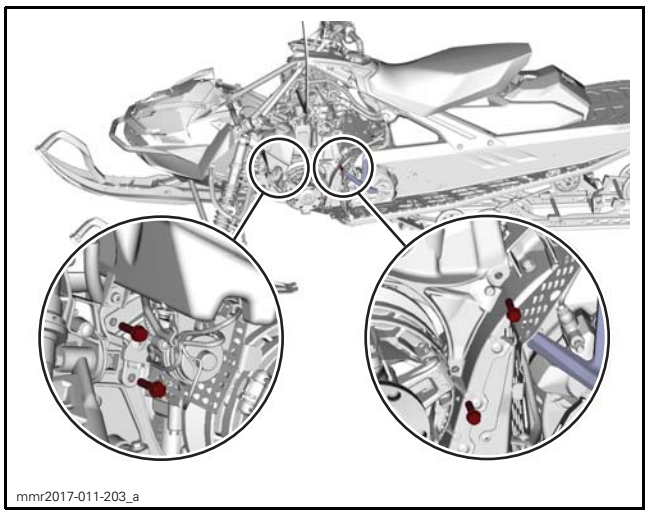
30. On LH side, remove the steering brace.



31. Remove the primary air silencer. Refer to *AIR INTAKE SYSTEM* subsection.



32. Remove engine support screws.



33. Lift engine and slide it out of vehicle.

Installing the Engine

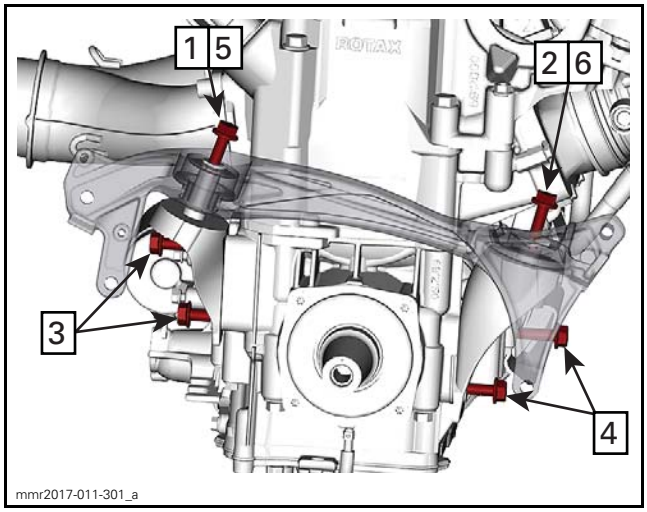
The installation is the reverse of the removal procedure. However, pay attention to the following details.

Install **NEW** self-locking fasteners (screw or nut) where required. Refer to exploded views at the beginning of this subsection.

When installing countershaft bearing support, refer to *FRAME* subsection for proper procedure.

Install and tighten engine support bolts as per the following sequence.

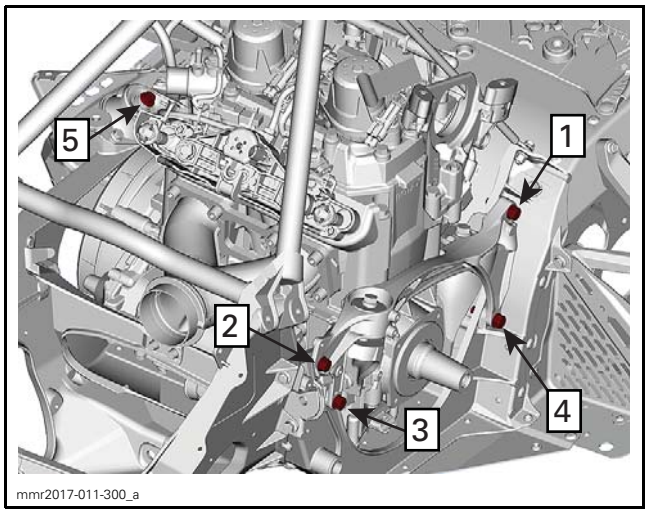
TIGHTENING TORQUE	
Step 1 and Step 2	Install the bolt loosely
Step 3 and Step 4	31.5 N•m ± 3.5 N•m (23 lbf•ft ± 3 lbf•ft)
Step 5 and Step 6	24.5 N•m ± 3.5 N•m (18 lbf•ft ± 3 lbf•ft)



Secure the engine to the frame as per the following sequence.

NOTE: Snug all bolts then tighten to specification.

TIGHTENING TORQUE	
Step 1 to Step 4	33 N•m ± 3 N•m (24 lbf•ft ± 2 lbf•ft)
Step 5	24.5 N•m ± 3.5 N•m (18 lbf•ft ± 3 lbf•ft)



mmr2017-011-300_a

If a new engine is installed or the engine was repaired, restart the break-in procedure using BUDS2.

ENGINE SUPPORT

Inspecting the Engine Support

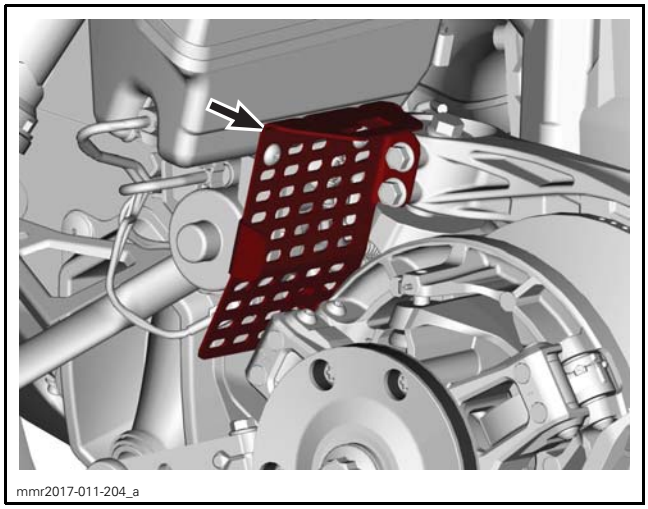
Check if engine supports are cracked, bent or damaged. Replace if necessary.

Replacing the PTO Side Engine Support

Remove the LH bottom pan. Refer to *BODY* subsection.

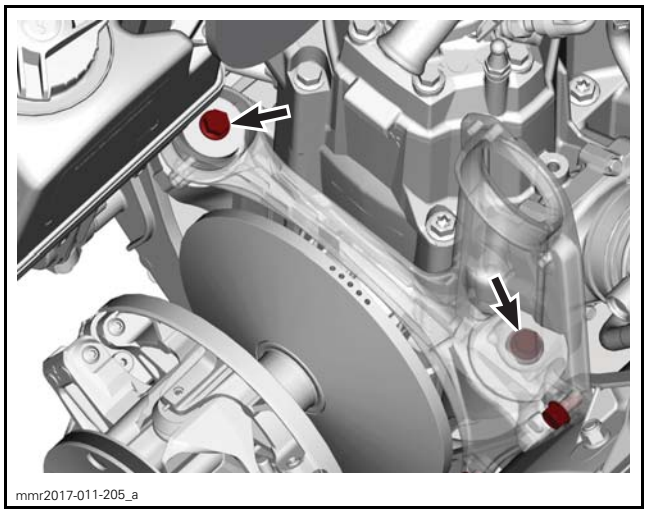
Remove driven pulley. Refer to appropriate *DRIVEN PULLEY AND COUNTERSHAFT* subsection.

Remove the injection oil tank support.

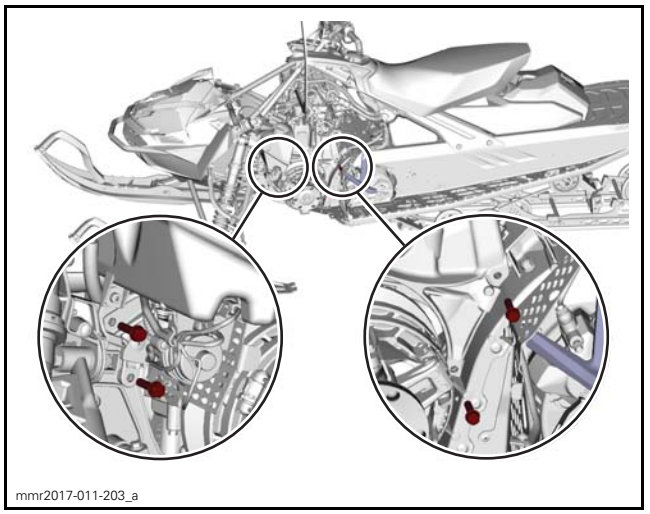

mmr2017-011-204_a

Place a piece of wood or any other appropriate tool under the engine to support it during engine support removal.

Remove screws securing engine support to rubber mount adapters.


mmr2017-011-205_a

Remove engine support screws.


mmr2017-011-203_a

Remove engine support.

To install the engine support, reverse the removal procedure.

Tighten screws as per the specifications indicated in the exploded views.

Replacing the MAG Side Engine Support

Remove muffler and tuned pipe. Refer to *EXHAUST SYSTEM* subsection.

Place a piece of wood or any other appropriate tool under the engine to support it during engine support removal.

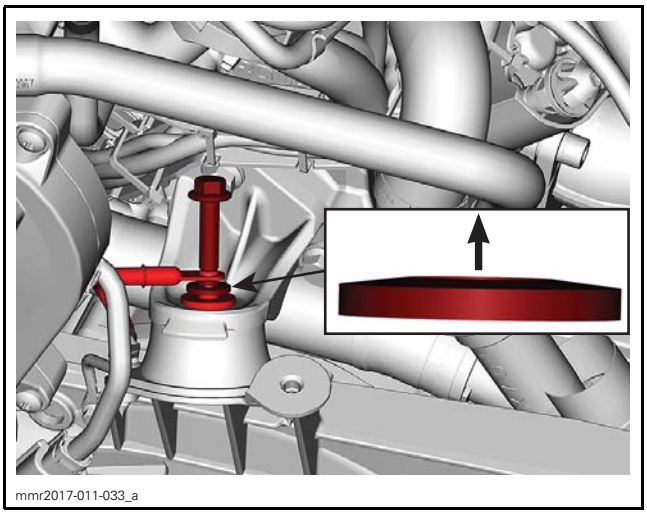
Remove screw securing engine support to rubber mount adapter.

Remove screw retaining engine support to engine.

Remove engine support.

To install the engine support, reverse the removal procedure.

Position the concave washer as shown.



SOME PARTS REMOVED FOR CLARITY

Tighten screws as per the specifications indicated in the exploded views.

ENGINE RUBBER MOUNTS

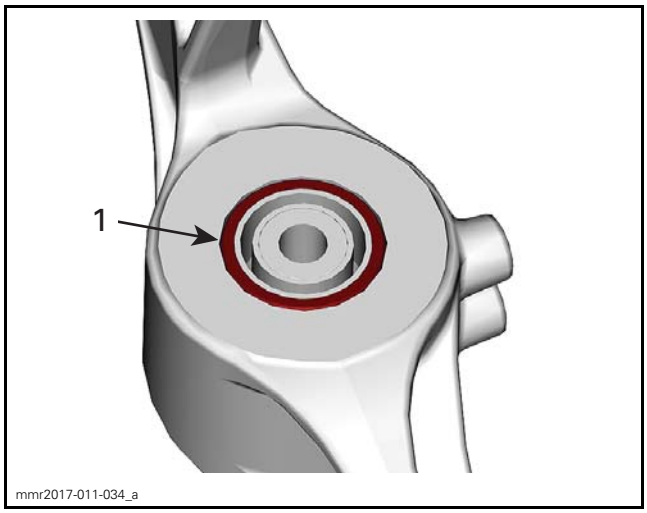
Inspecting the Engine Rubber Mount

Check rubber mounts. Replace them if brittle, cracked or damaged.

Replacing the PTO Side Engine Rubber Mount

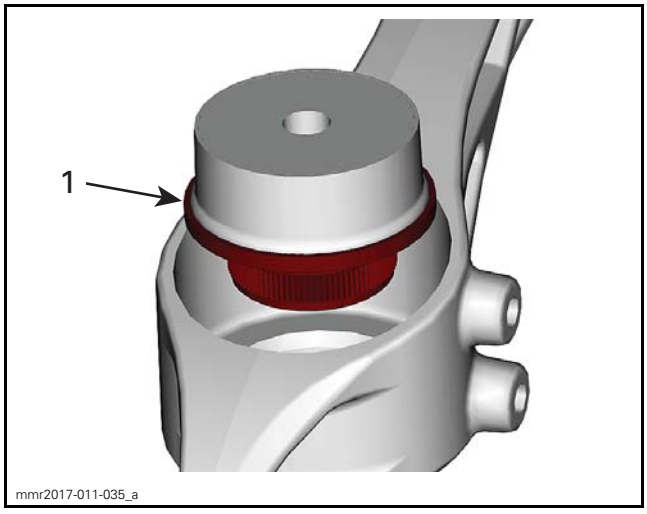
Remove the PTO side engine support. See procedure in this subsection.

Using a press, extract the engine rubber mount from the engine support.



1. Press on this ring

Install the new engine rubber mount by pressing on the external metallic ring.



1. Press on this metallic ring

Replacing the MAG Side Engine Rubber Mount

Remove muffler and tuned pipe. Refer to *EXHAUST SYSTEM* subsection.

Place a piece of wood or any other appropriate tool under the engine to support it during engine support removal.

Remove screw securing engine support to rubber mount adapter.

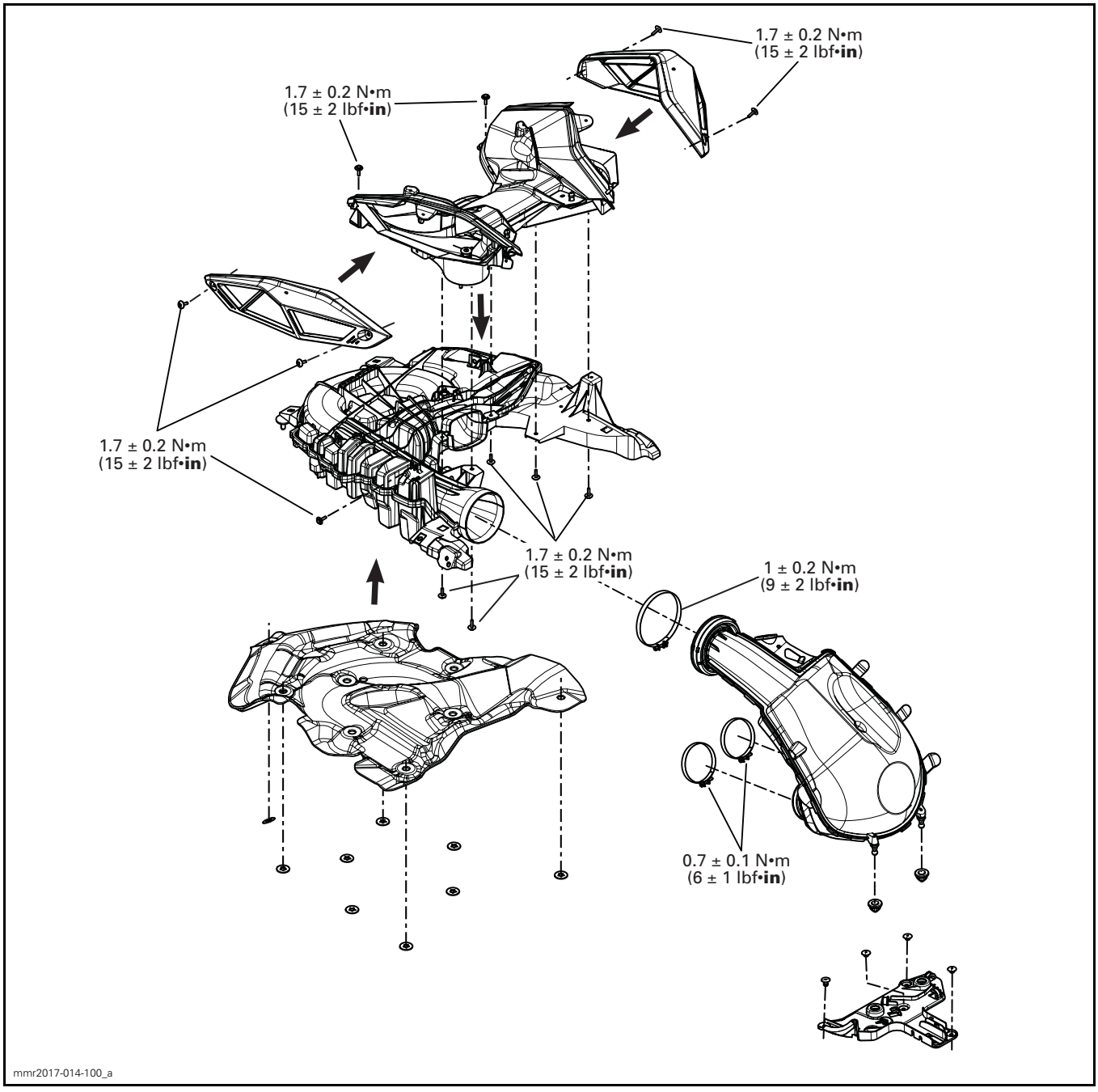
Remove screw retaining rubber mount adapter to frame.

Remove rubber mount adapter.

To install the rubber mount adapter, reverse the removal procedure.

Tighten screws as per the specifications indicated in the exploded views.

AIR INTAKE SYSTEM



GENERAL

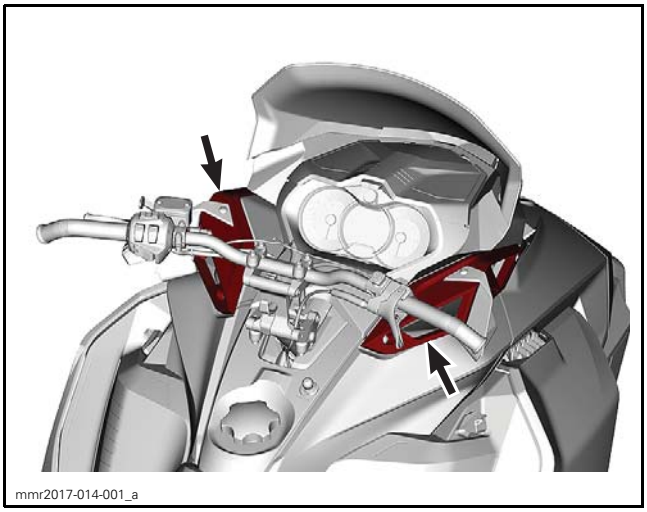
⚠ WARNING

Torque wrench tightening specifications must be strictly adhered to.
Locking devices must be replaced with a new ones when removed (e.g.: locking tabs, elastic stop nuts, cotter pins, etc.).

NOTICE Hoses, cables and locking ties removed during a procedure must be reinstalled as per factory standards.

PROCEDURES

AIR FILTER (MESH)

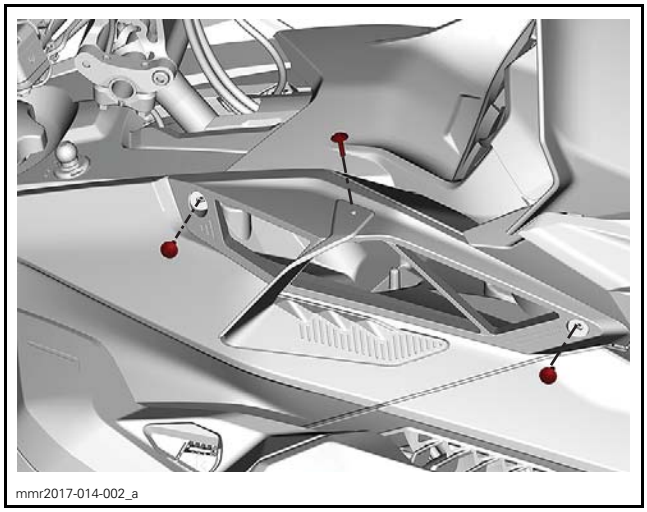


mmr2017-014-001_a

The same procedure applies for RH and LH side. Only one side is described in this procedure.

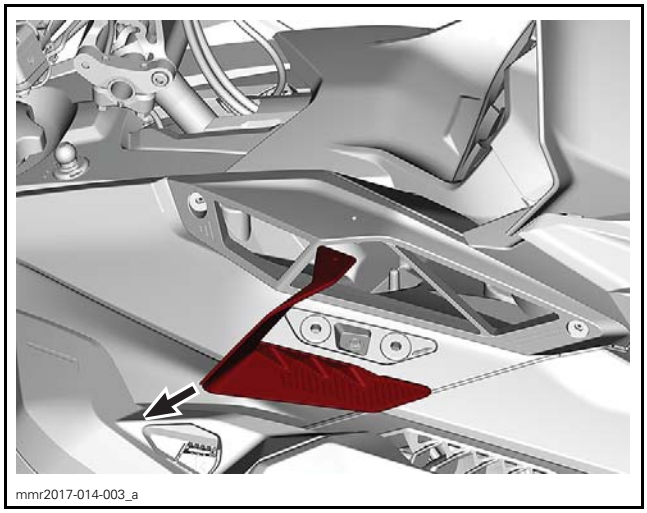
Removing the Air Filter

Remove screws from mesh filter housing.



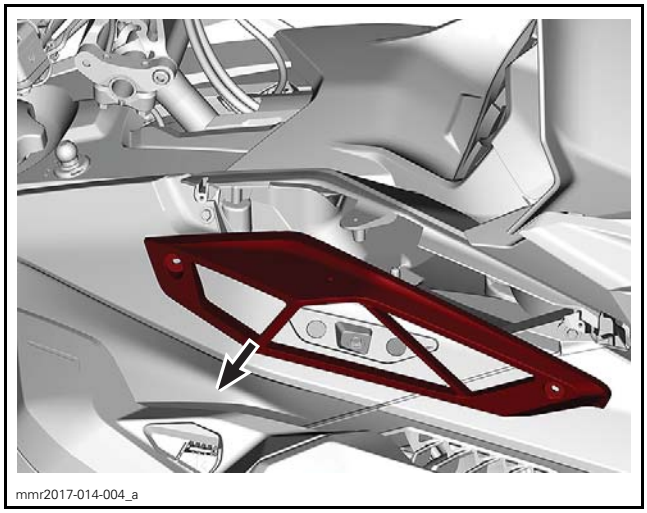
mmr2017-014-002_a

On some models, remove the air deflector.



mmr2017-014-003_a

Remove the mesh filter housing from the upper body module.



mmr2017-014-004_a

Cleaning the Air Filter

Clean with fresh water and mild soap.

Replace air filter if required.

NOTE: If the filter is very dirty, clean the interior of secondary air intake silencer at the same time.

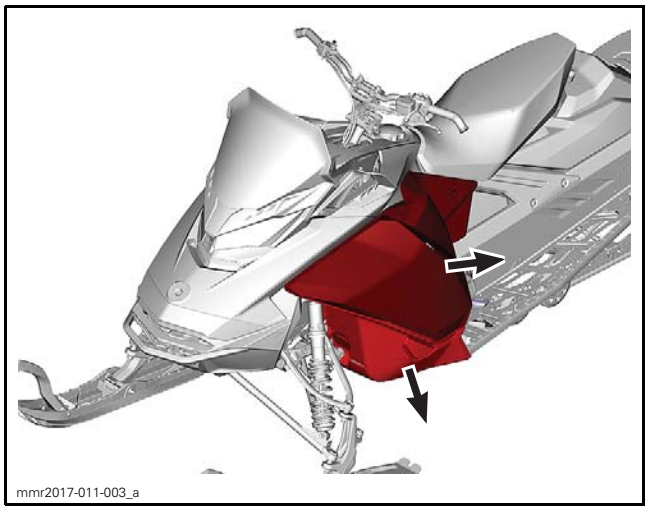
Installing the Air Filter

The installation is the reverse of the removal procedure.

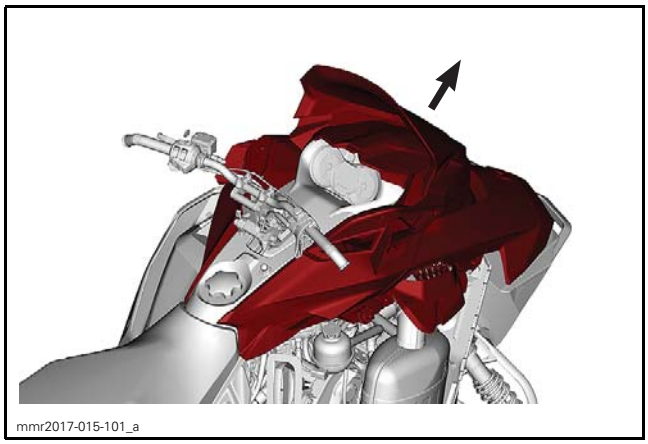
PRIMARY AIR INTAKE SILENCER

Removing the Primary Air Intake Silencer

1. Remove the following parts. If required, refer to *BODY* subsection.

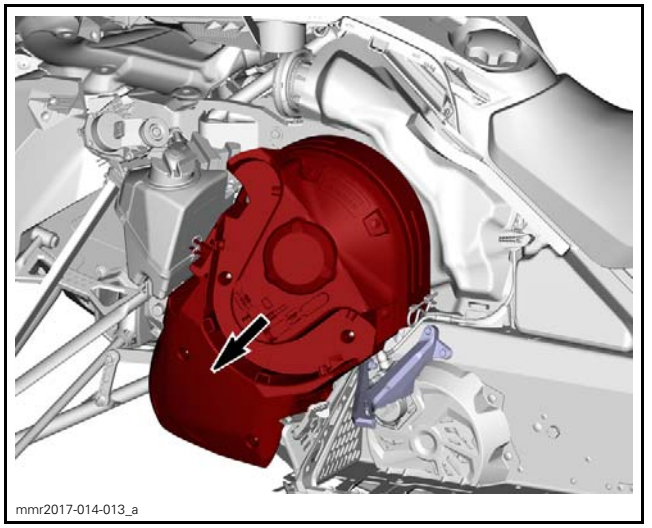


LH SIDE PANEL AND LH BOTTOM PAN

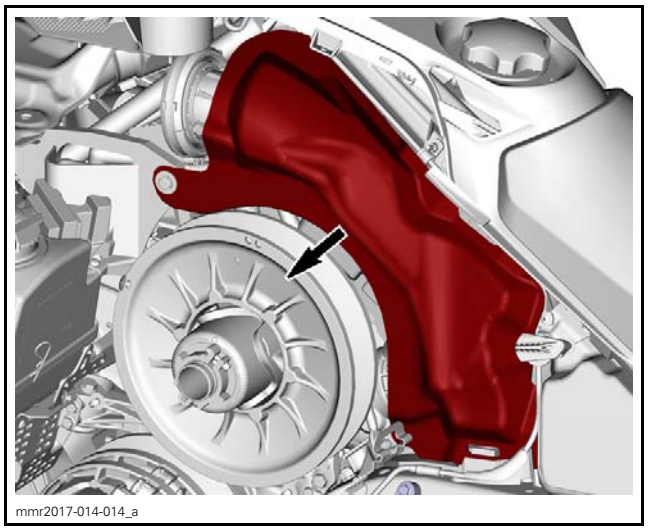


UPPER BODY MODULE

2. Remove the drive belt guard and acoustic panels.

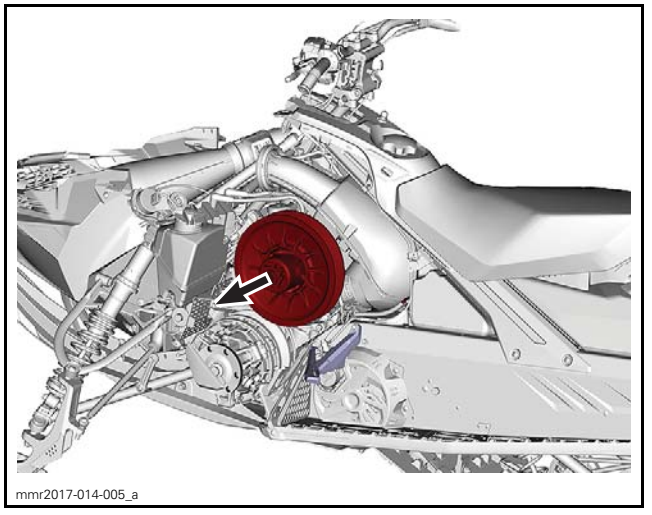


REMOVE DRIVE BELT GUARD

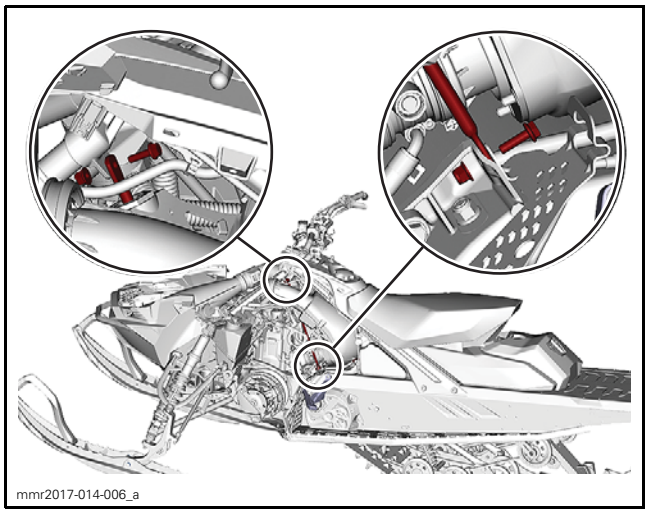


REMOVE ACOUSTIC PANEL

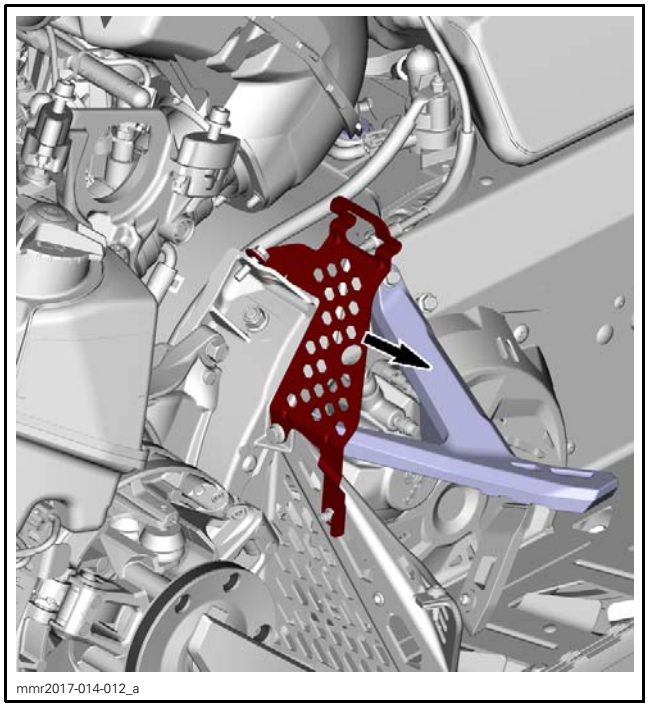
3. Remove the driven pulley. Refer to appropriate *DRIVEN PULLEY AND COUNTERSHAFT* subsection.



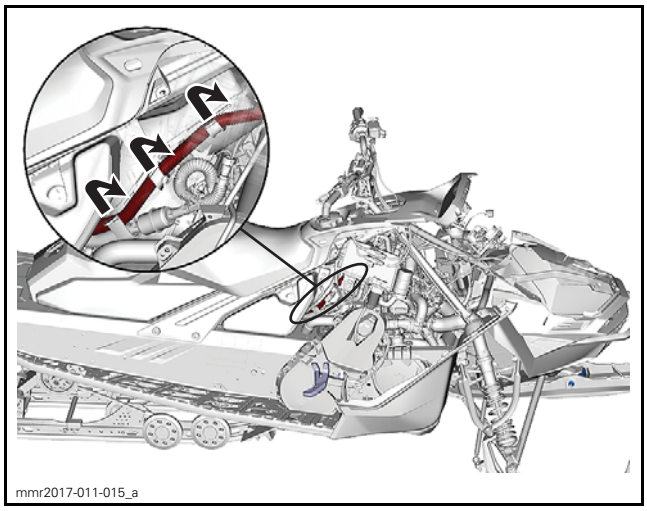
4. On LH side, remove the steering brace.


mmr2017-014-006_a

5. Remove the drive belt guard support.

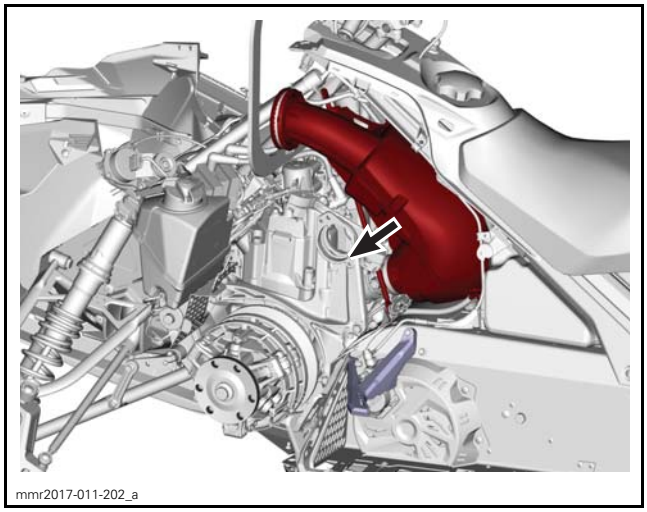

mmr2017-014-012_a

6. Unclip the fuel hose from the primary air silencer.


mmr2017-011-015_a

7. Remove the primary air silencer.
   7.1 Loosen clamps securing primary air silencer to intake adapters.
   7.2 Carefully pull out the primary air intake silencer with the steering brace.

NOTICE Make sure not touching the secondary injectors or their harnesses when removing the primary air intake silencer .

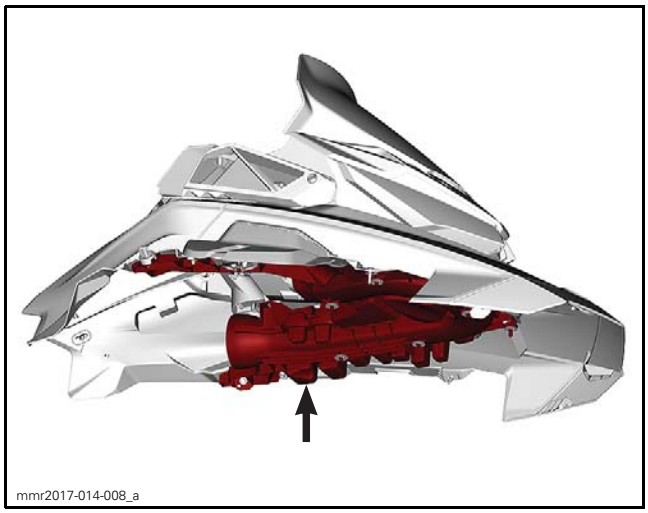

mmr2017-011-202_a

Installing the Primary Air Intake Silencer

The installation is the reverse of the removal procedure. However, pay attention to the following.

Make sure primary air intake is properly insert in the intake adapters before applying the tightening torque.

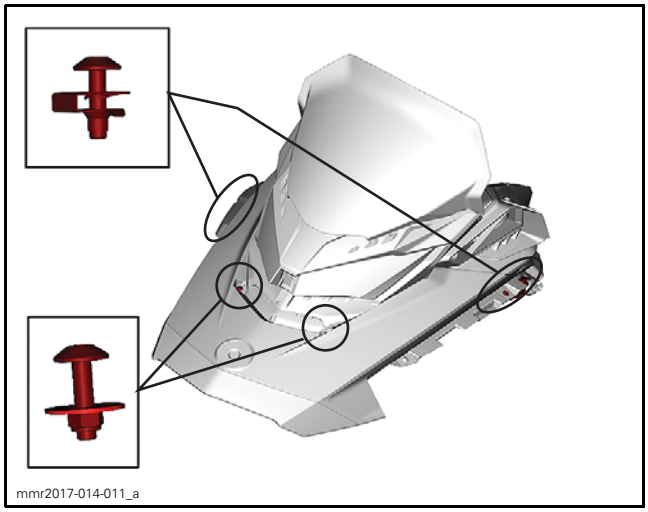
SECONDARY AIR INTAKE SILENCER


mmr2017-014-008_a

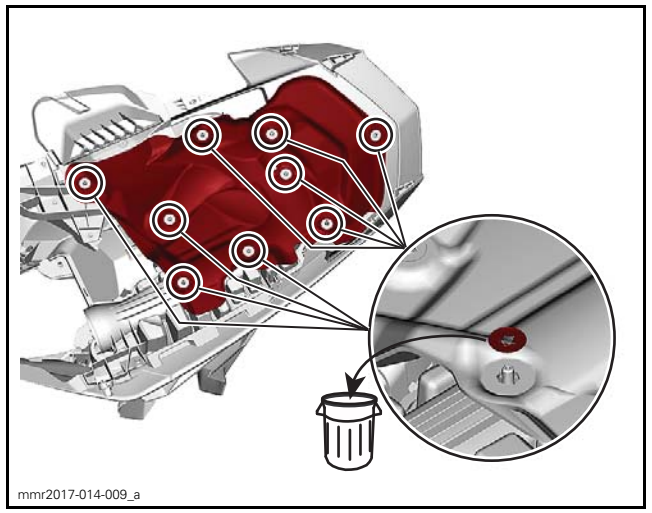
Removing the Secondary Air Intake Silencer

Referring to the *BODY* subsection, remove the upper body module.

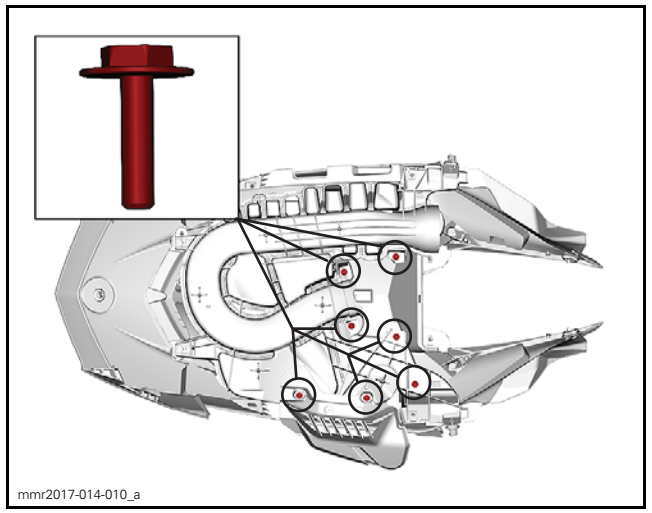
Remove the following screws.


mmr2017-014-011_a

Turn the upper body module upside down and remove the soundproofing panel.


mmr2017-014-009_a

Remove fasteners retaining secondary air intake silencer to upper body module.


mmr2017-014-010_a

Installing the Secondary Air Intake Silencer

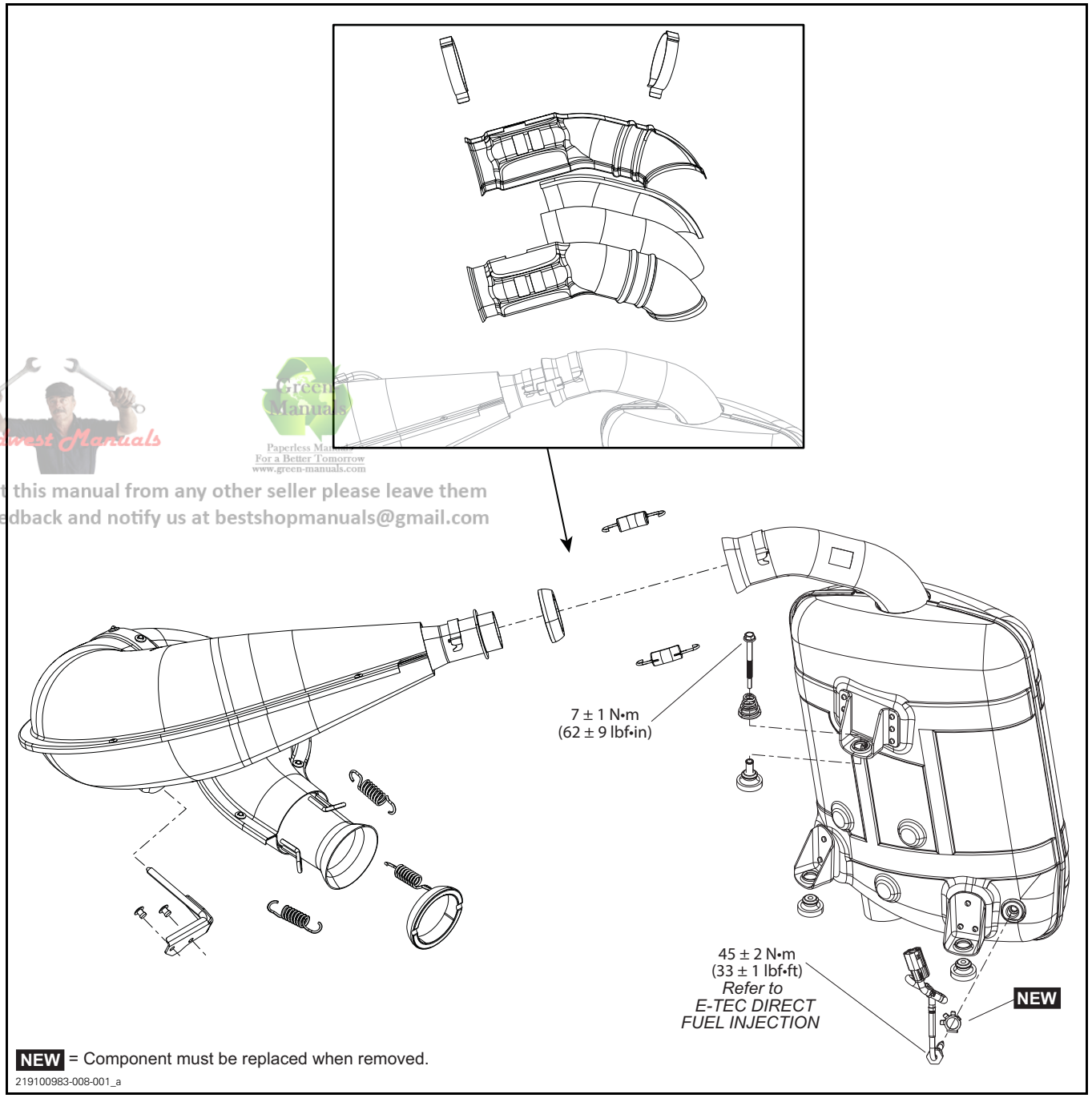
The installation is the reverse of the removal procedure.

EXHAUST SYSTEM

SERVICE TOOLS

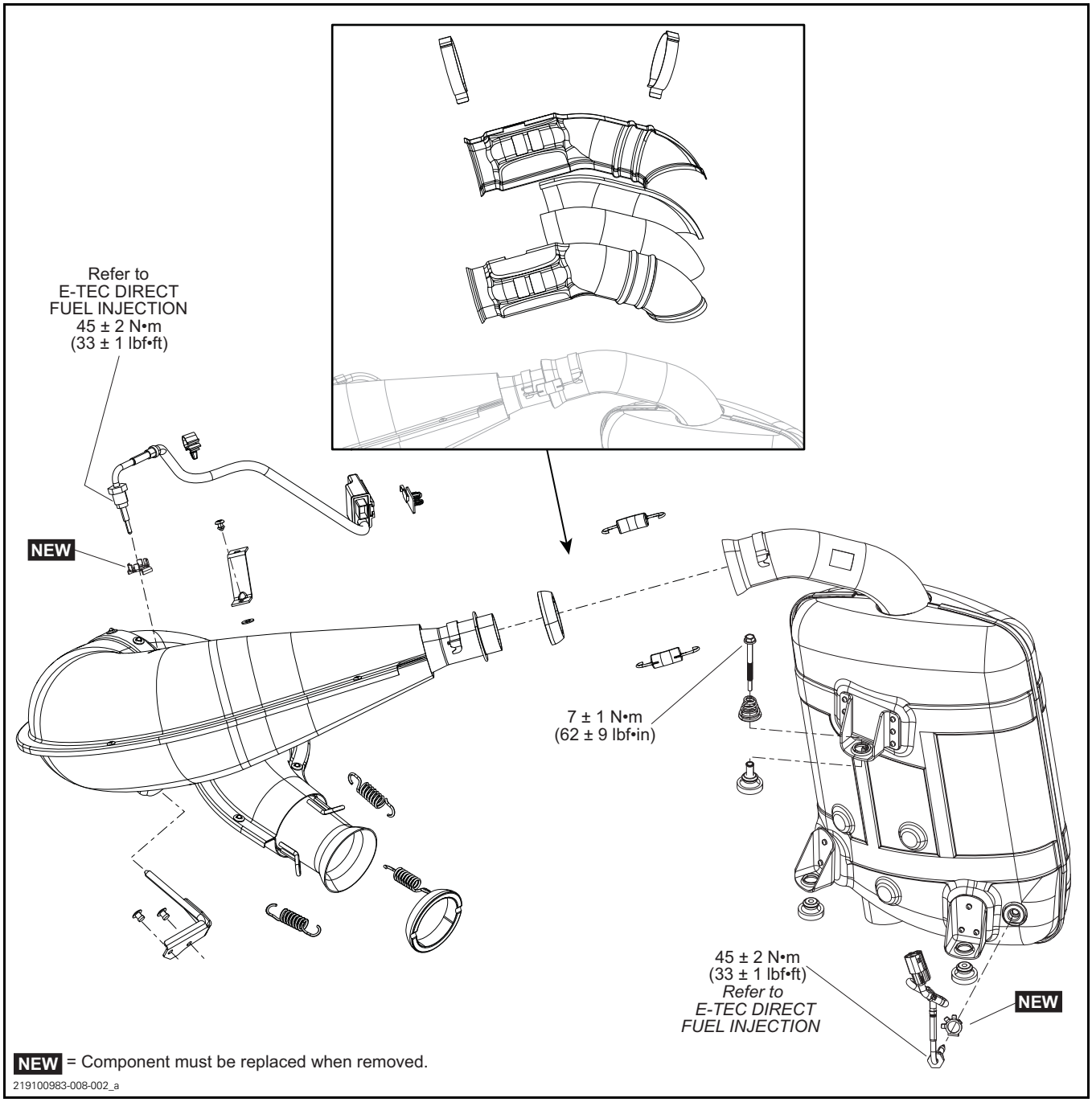
Description	Part Number	Page
SPRING INSTALLER/REMOVER	529 035 983	31, 36

Models With One Exhaust Gas Temperature Sensor (EGTS)



Midwest Manuals
Green Manuals
Paperless Manuals For a Better Tomorrow
www.green-manuals.com
If you bought this manual from any other seller please leave them NEGATIVE feedback and notify us at bestshopmanuals@gmail.com

Models With Two Exhaust Gas Temperature Sensors (EGTS)



GENERAL

⚠ WARNING

To avoid potential burns, never touch exhaust system components immediately after the engine has been running because these components are very hot. Let engine and exhaust system cool down before performing any servicing.

During assembly/installation, use the torque value and service products as in the exploded view.

⚠ WARNING

Torque wrench tightening specifications must be strictly adhered to.
Locking devices (e.g.: locking tabs, elastic stop nuts, self-locking fasteners, cotter pins, etc.) must be replaced with new ones.

MAINTENANCE

INSPECTING THE EXHAUST SYSTEM

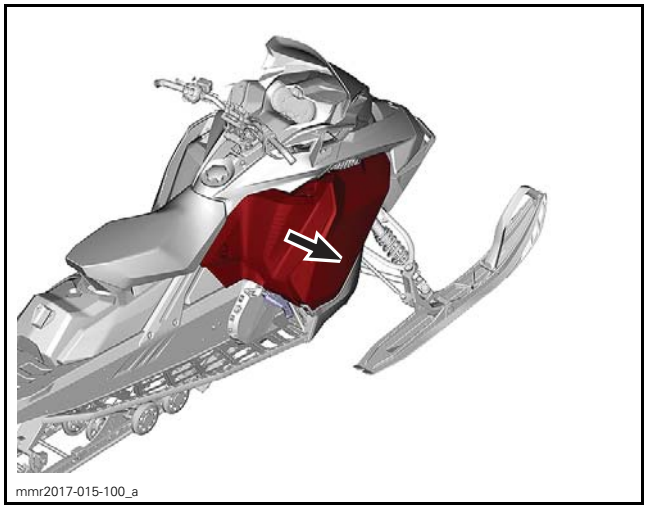
Check the following components for leaks, cracks, or other damages:
- Springs and retainers
- Exhaust system mounts
- Muffler
- Tuned pipe
- Donut gaskets
- Shields
- Manifold.

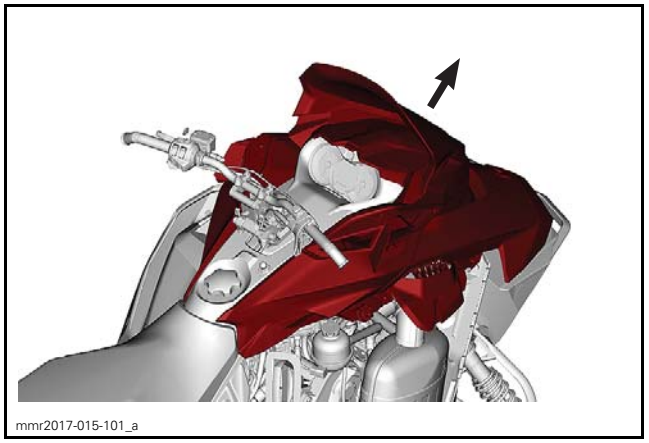
PROCEDURES

MUFFLER

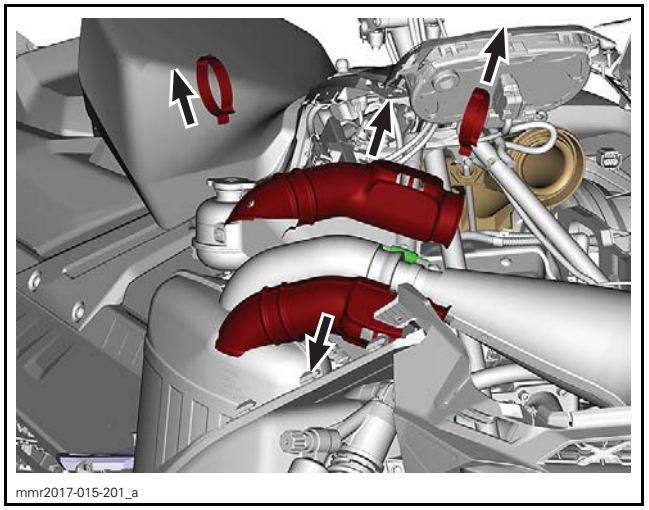
Removing the Muffler

1. Refer to *BODY* subsection and remove the following parts.


mmr2017-015-100_a

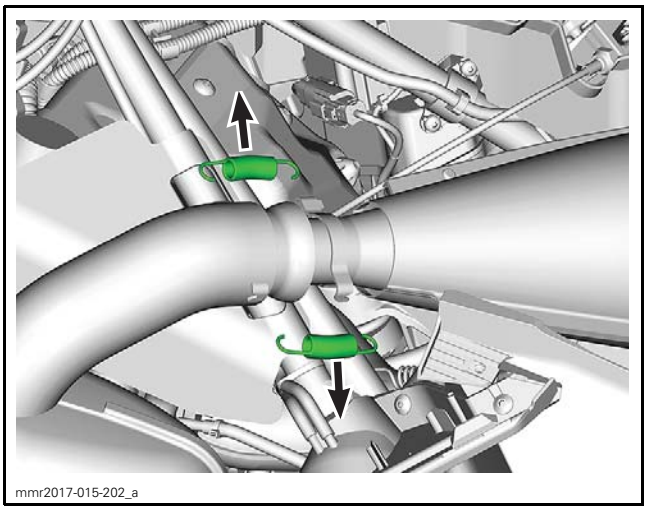

mmr2017-015-101_a

2. Remove heat shields from the muffler pipe.

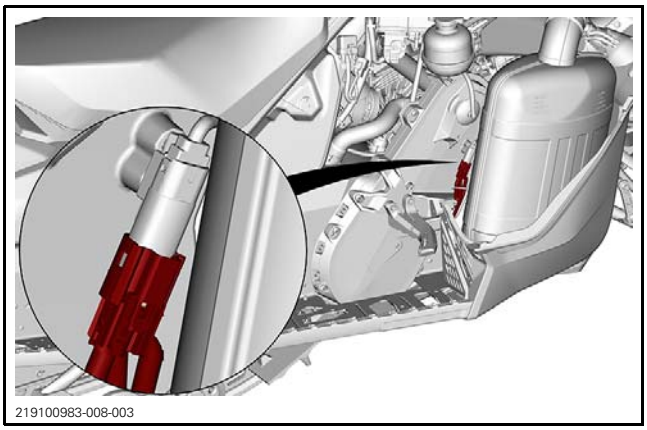

mmr2017-015-201_a

3. Remove exhaust springs retaining the tuned pipe to the muffler.

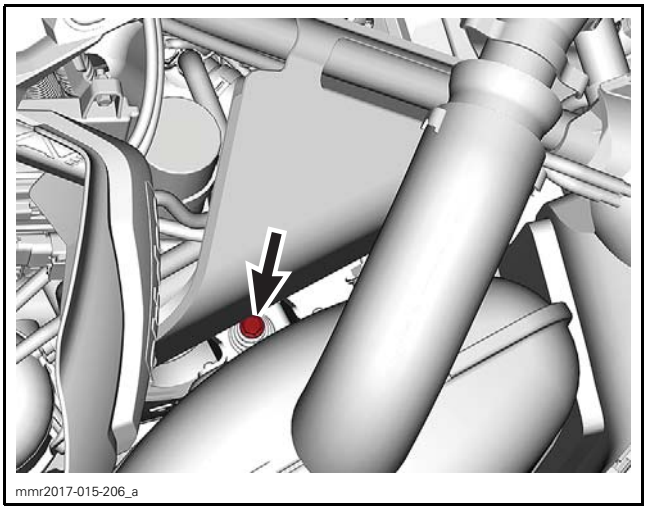
REQUIRED TOOL	
SPRING INSTALLER/REMOVER (P/N 529 035 983)	


mmr2017-015-202_a

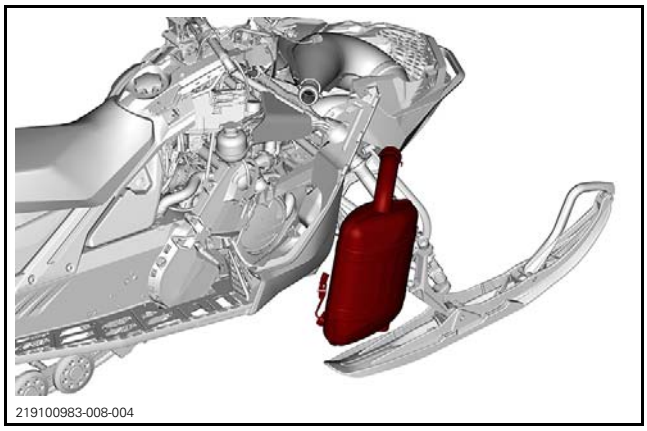
4. Disconnect the power harness from the muffler EGTS.


219100983-008-003

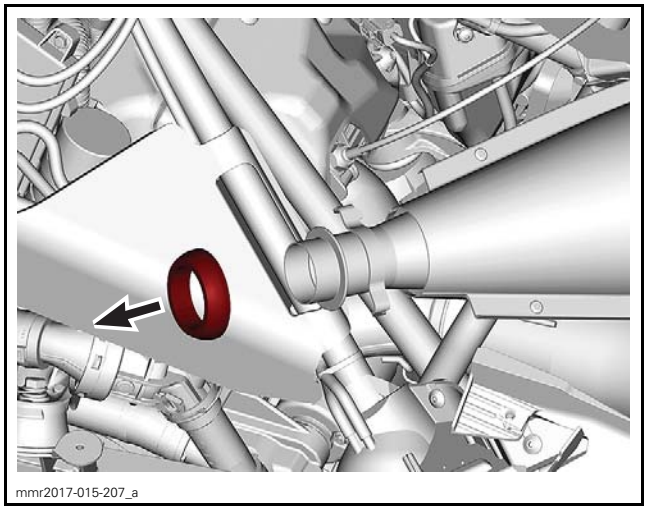
5. Behind the muffler, remove the retaining screw and its spring.


mmr2017-015-206_a

6. Remove the muffler.


219100983-008-004

7. Remove exhaust gasket.


mmr2017-015-207_a

Inspecting the Muffler

Check the muffler for cracks or other damages.

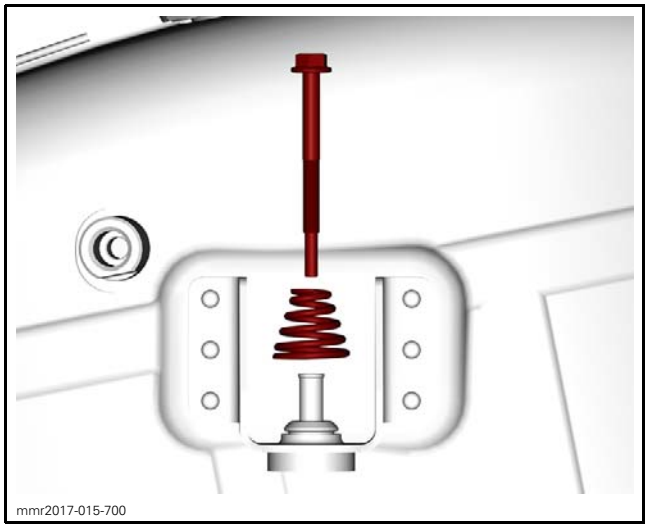
Check grommet condition.

Inspect exhaust gasket condition. Replace as required.

Installing the Muffler

The installation is the reverse of the removal procedure. However, pay attention to the following.

Muffler Retaining Screw

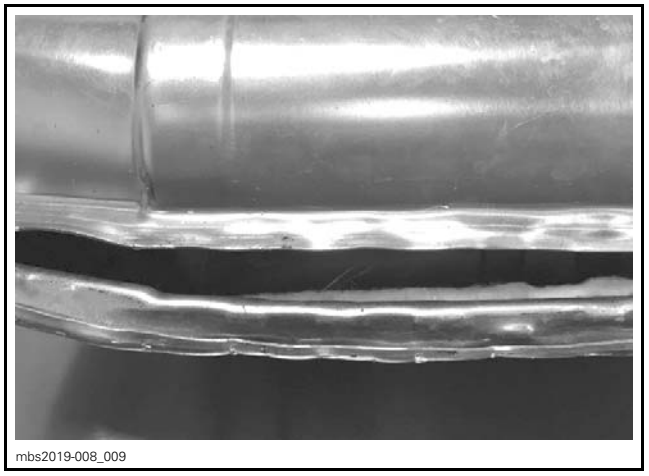

mmr2017-015-700

TIGHTENING TORQUE	
Muffler retaining screw	7 N•m ± 1 N•m (62 lbf•**in** ± 9 lbf•**in**)

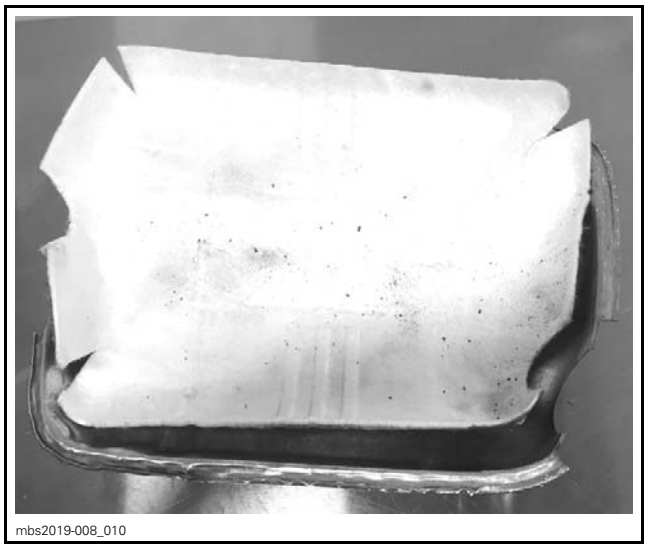
Replacing the Muffler Shell

1. Remove muffler.
2. Place muffler flat on a work bench.
3. Using a pair of adjustable channel lock pliers, unfold the deflectors lip/edges all around the muffler perimeter as depicted below.

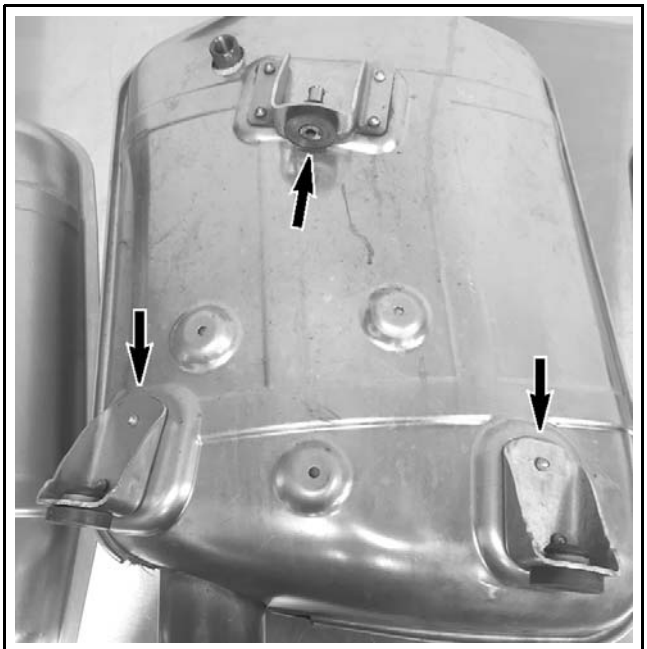

mbs2019-008_004


mbs2019-008_009

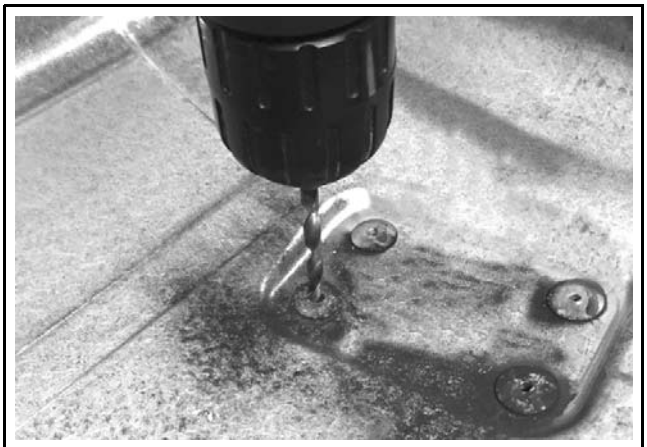
4. Remove and discard the two deflectors, keeping both insulating wool for reuse.


mbs2019-008_010

5. Using a 5 mm (3/16 in) drill bit, drill the rivets that hold the three brackets. Keep all three brackets for reuse.


mbs2019-008_012

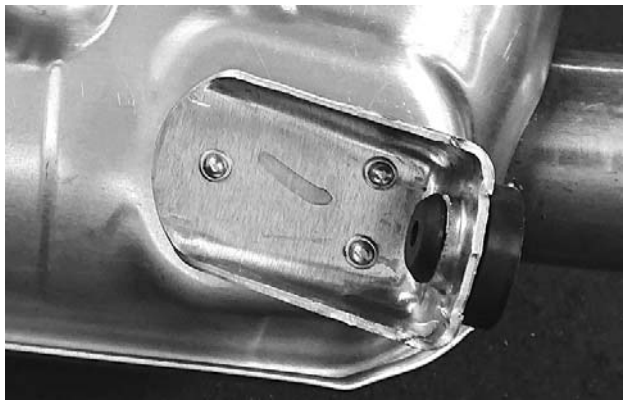
3 brackets


mbs2019-008_011

6. Put a clean rag on your work bench for protection, reinstall all three brackets on LH deflector using new rivets.


mbs2019-008_030

Upper center bracket


mbs2019-008_031

Lower bracket

7. Place the new LH deflector face down and insert insulating wool previously removed.


mbs2019-008_018

8. Place muffler into LH deflector.

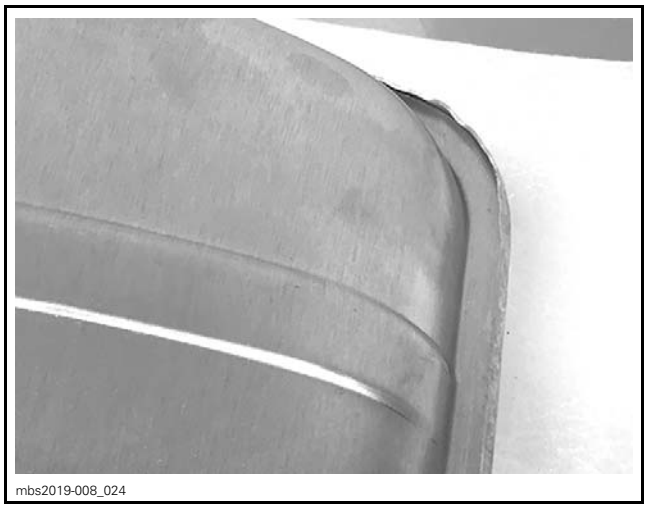

mbs2019-008_019

9. Place insulating wool previously removed onto muffler and install the new RH deflector.

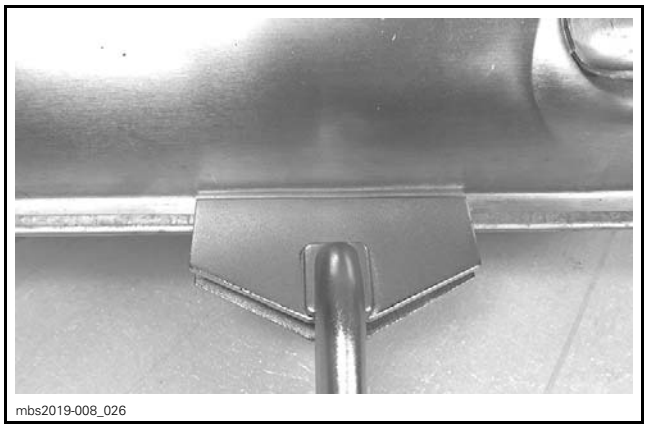

mbs2019-008_020

10. Start by folding the RH deflector edge onto LH deflector edge at an approximate 60° angle using a nylon head hammer all around the muffler perimeter.


mbs2019-008_022


mbs2019-008_024

11. Using a pair of flat nose pliers, fold down flat and squeeze tight the RH deflector edge onto LH deflector edge all around the muffler perimeter.

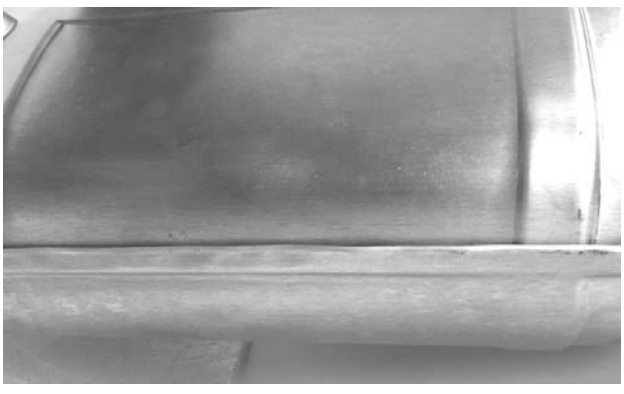

mbs2019-008_026

12. Using a cloth type protective tape, put a few layers of tape around deflectors edge for protection.


mbs2019-008_027

13. Using a steel head hammer, fold up deflector edges up against LH deflector sides, after working around the muffler perimeter, remove the protective tape.


mbs2019-008_028


mbs2019-008_029

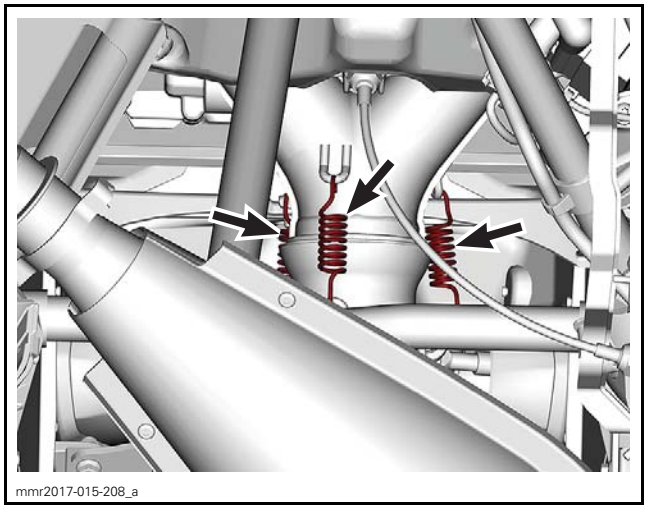
14. Reinstall muffler.

TUNED PIPE

Removing the Tuned Pipe

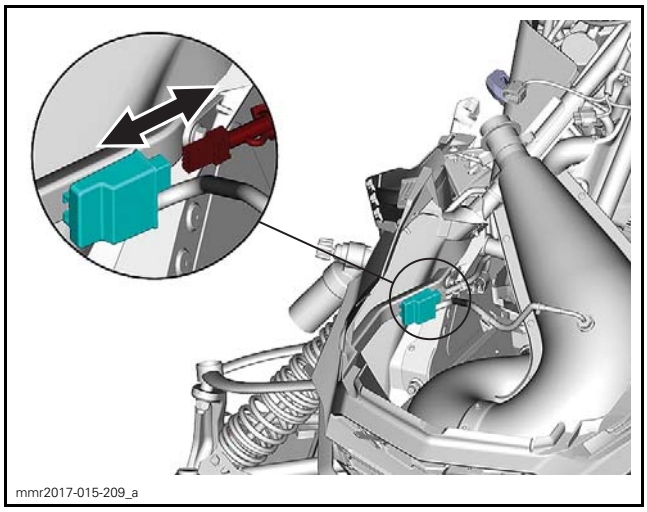
1. Remove the muffler.
2. Remove exhaust springs retaining the tuned pipe to the exhaust manifold.

REQUIRED TOOL	
SPRING INSTALLER/REMOVER (P/N 529 035 983)	

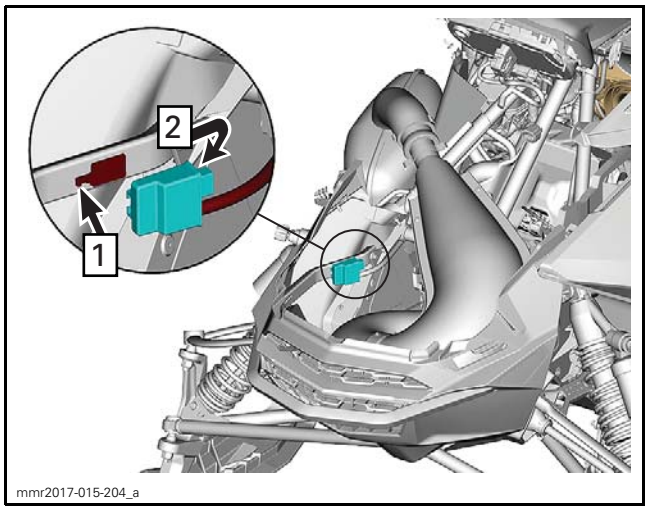

mmr2017-015-208_a

Models With 2 EGTS

3. Disconnect the THCM harness from the THCM module.

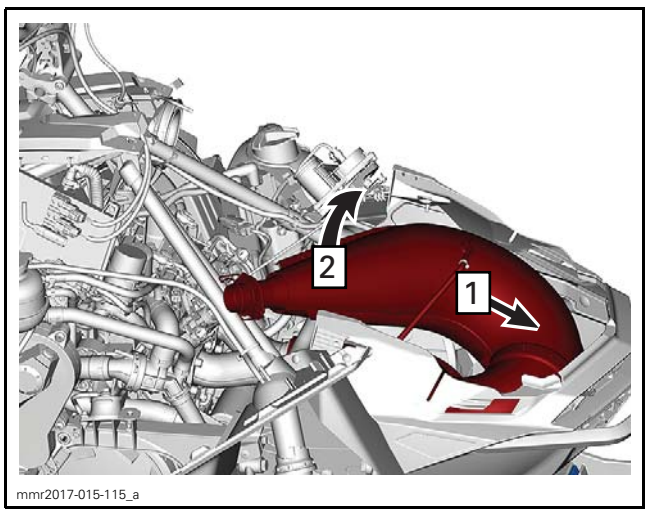

mmr2017-015-209_a

4. Detach the THCM from the vehicle side member.

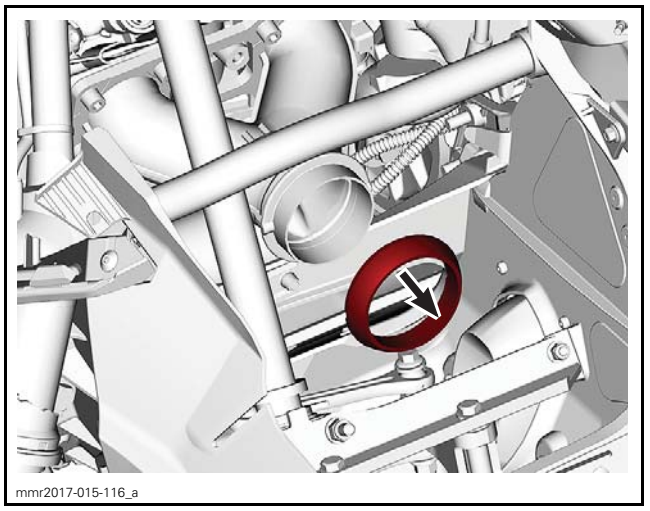


All Models

5. Remove tuned pipe.
   - 5.1 Move tuned pipe forwards until the hook gets out of the anti vibration rubber mount.
   - 5.2 Remove the tuned pipe by tilting it (engine side).



6. Remove exhaust gasket.



Inspecting the Tuned Pipe

Check exhaust pipe for:
- Damages
- Cracks.

Inspect exhaust gasket condition. Replace as required.

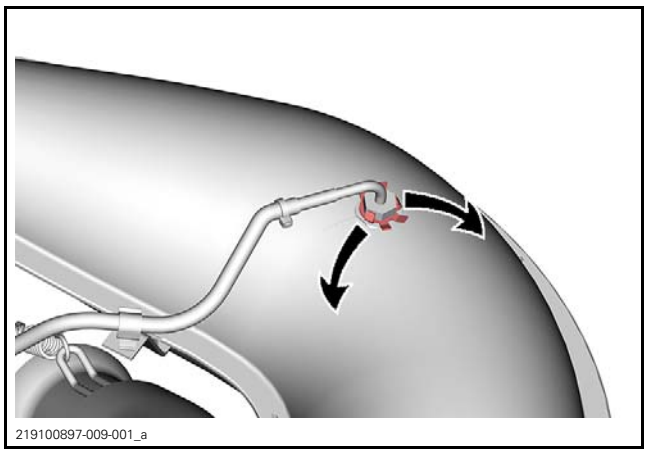
Installing the Tuned Pipe

The installation is the reverse of the removal procedure.

EXHAUST GAS TEMPERATURE SENSOR (EGTS)

Removing the EGTS

Unfold all tabs.



TYPICAL

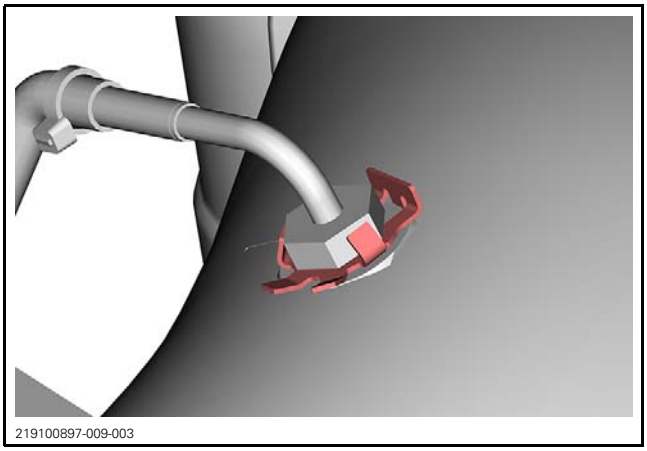
Remove sensor.

Installing the EGTS

The installation is the reverse of the removal procedure. However, pay attention to the following.

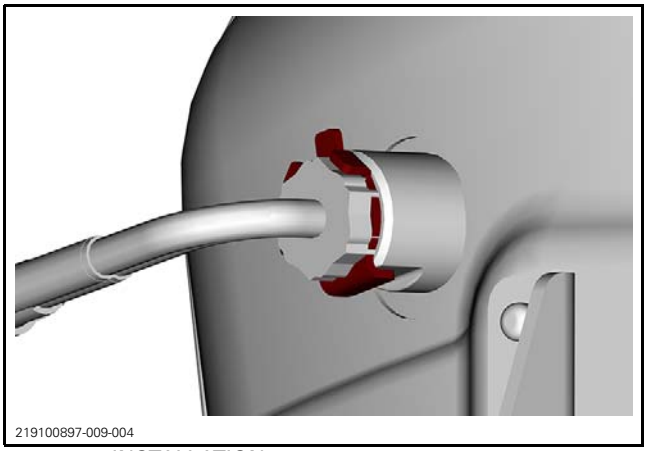
Install a new locking tab as shown and tighten sensor to specification.

On the tuned pipe, fold two (2) tabs on sensor.



TUNED PIPE INSTALLATION

On the muffler, fold one (1) tab on sensor.



MUFFLER INSTALLATION

TIGHTENING TORQUE	
Exhaust Gas Temperature Sensor	45 N•m ± 2 N•m (33 lbf•ft ± 1 lbf•ft)

COOLING SYSTEM - VEHICLE COMPONENTS

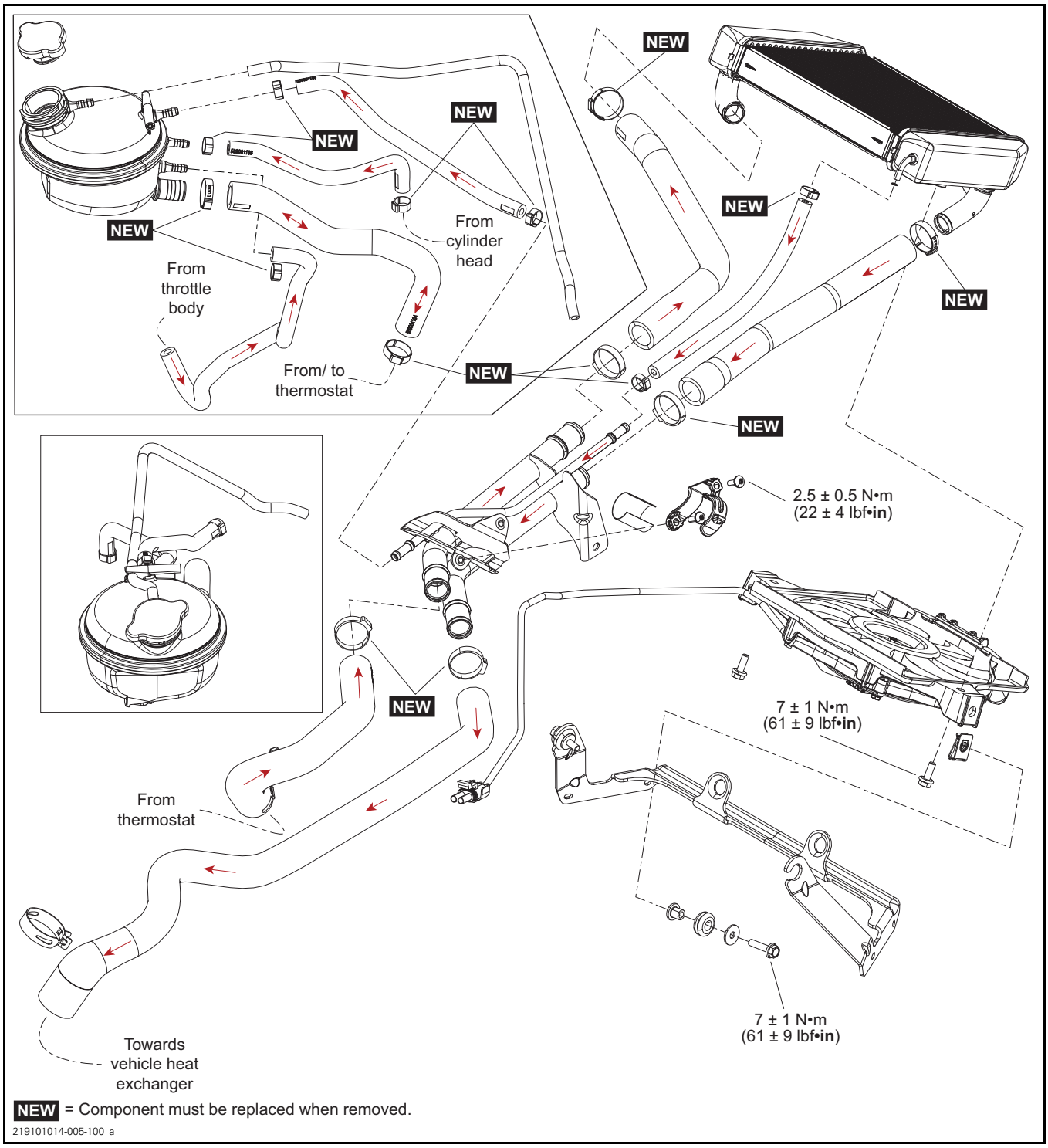
SERVICE TOOLS

Description	Part Number	Page
LARGE HOSE PINCHER	529 032 500	45
SMALL HOSE PINCHER	295 000 076	45
TEST CAP	529 035 991	44
VACUUM/PRESSURE PUMP	529 021 800	44

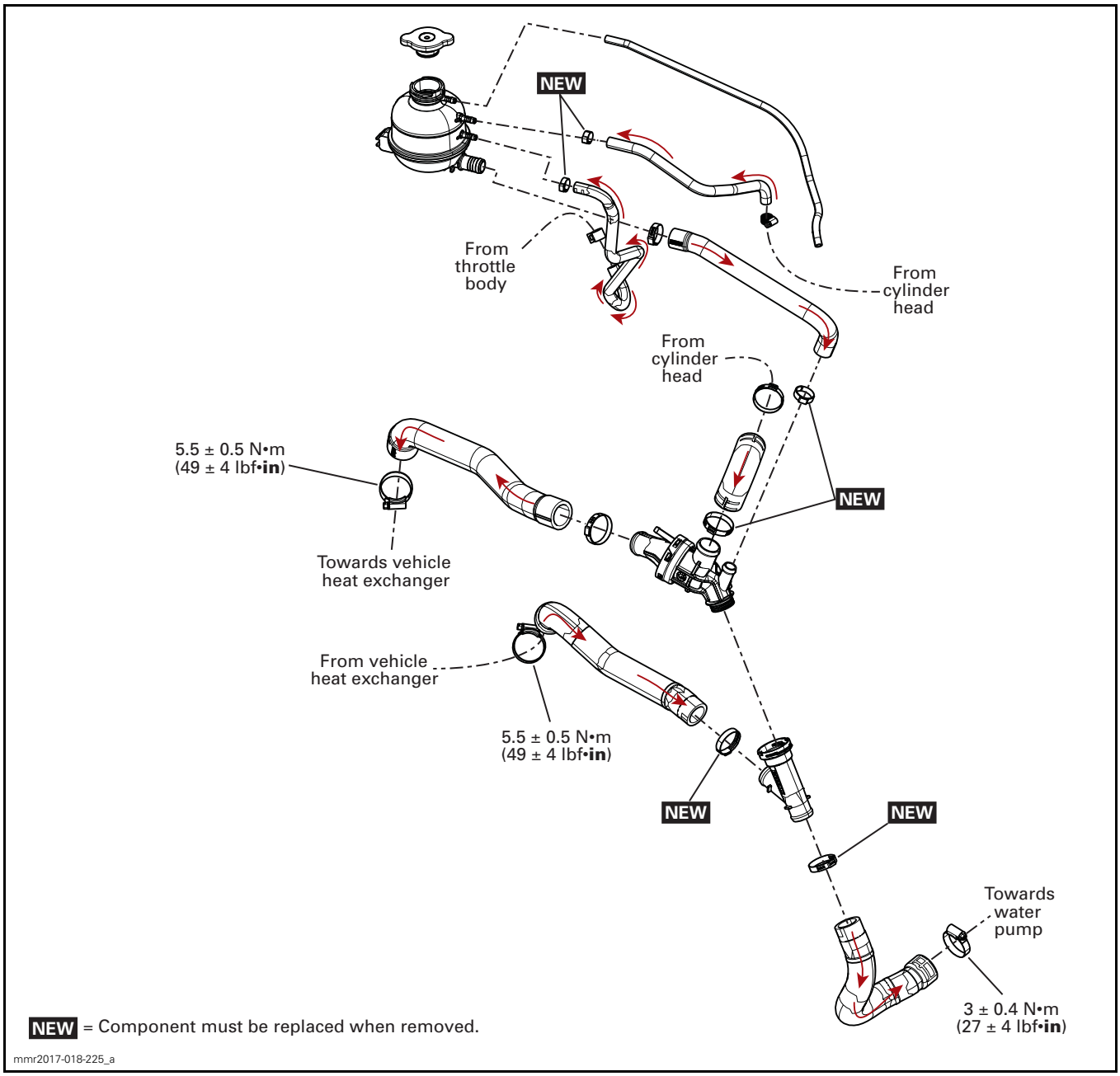
SERVICE PRODUCTS

Description	Part Number	Page
EXTENDED LIFE PRE-MIXED COOLANT (EUR)	779223	42
EXTENDED LIFE PRE-MIXED COOLANT	779150	42

With Front Radiator



Without Front Radiator



GENERAL

NOTE: It is a good practice to check for fault codes using BUDS2 software as a first troubleshooting step

During assembly/installation, use torque values and service products as shown in the exploded views.

Clean threads before applying a threadlocker. Refer to *SELF-LOCKING FASTENERS* and *LOCTITE APPLICATION* at the beginning of this manual for complete procedure.

⚠ WARNING

Torque wrench tightening specifications must be strictly adhered to.
Locking devices must be replaced with new ones when removed (e.g.: locking tabs, elastic stop nuts, self-locking fasteners, cotter pins, etc.).

MAINTENANCE

COOLING SYSTEM

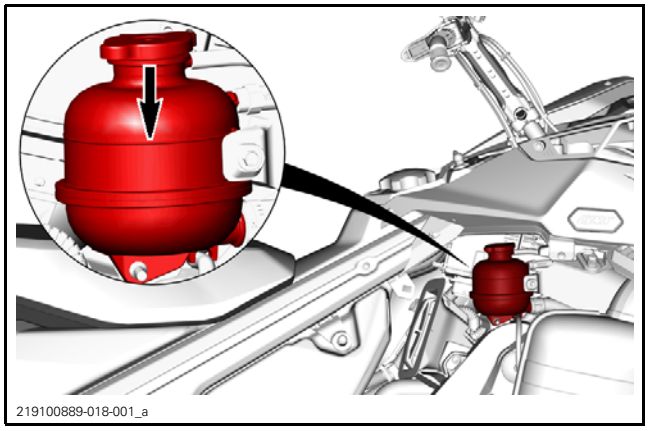
⚠ WARNING

Never open coolant tank cap when engine is hot.

Verifying the Engine Coolant Level

Check coolant level at room temperature with the cap removed. Liquid should be at cold level line (engine cold) of coolant tank.

NOTE: When checking level at low temperature it may be slightly lower then the mark.



COLD LEVEL LINE

Verifying the Engine Coolant Strength

Remove pressure cap.

Use an antifreeze tester to test coolant strength.

MINIMUM RECOMMENDED COOLANT STRENGTH
-30°C (-22°F)

Replacing the Engine Coolant

Recommended Engine Coolant

COUNTRY	RECOMMENDED SERVICE PRODUCT
Scandinavia	EXTENDED LIFE PRE-MIXED COOLANT (EUR) (P/N 779223)
All other countries	EXTENDED LIFE PRE-MIXED COOLANT (P/N 779150)
Alternative, or if not available	A blend of 50% distilled water with 50% antifreeze (especially formulated for aluminum engines

To prevent antifreeze deterioration, always use the same brand. Never mix different brands unless cooling system is completely flushed and refilled.

NOTICE **To prevent rust formation or freezing condition, always replenish the system with the BRP premixed coolant or with 50% antifreeze and 50% distilled water. Do not use tap water, straight antifreeze or straight water in the system. Tap water contains minerals and impurities which build up in the system. During cold weather, straight water causes the system to freeze while straight antifreeze thickens (like slush ice) and does not have the same efficiency. Always use ethylene glycol antifreeze containing corrosion inhibitors specifically recommended for aluminum engines.**

Draining the Cooling System

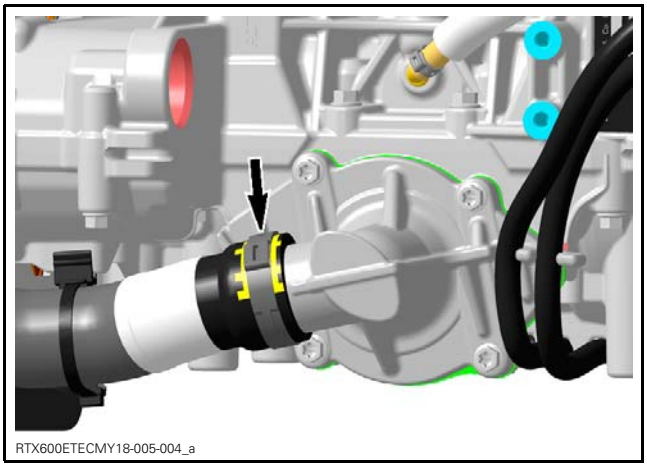
⚠ WARNING

Never drain or refill the cooling system when engine is hot.

Remove muffler and tuned pipe. Refer to *EXHAUST SYSTEM* subsection.

Place a large drain pan under the vehicle bottom pan.

Remove coolant hose from water pump to drain coolant.



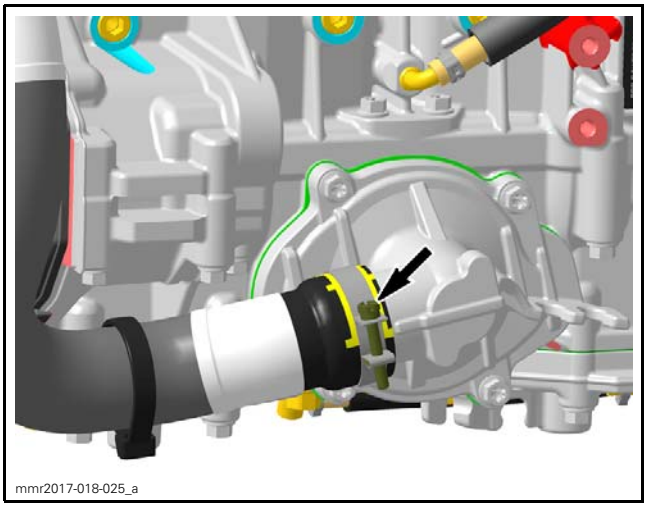
REMOVE CLAMP (DISCARD ORIGINAL INSTALLED 1–EAR CLAMP)

When coolant level is low enough, lift the rear of vehicle to drain the heat exchangers.



TYPICAL

Install and tighten coolant hose clamp on water pump.



TIGHTENING TORQUE	
Coolant hose clamp	3 N•m ± 0.4 N•m (27 lbf•**in** ± 4 lbf•**in**)

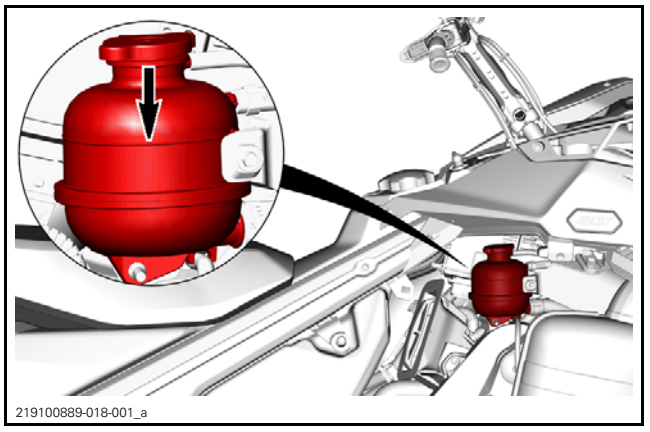
Refilling and Bleeding the Cooling System

1. Apply parking brake.
2. Lift front of vehicle as shown and support it safely.



TYPICAL
A. 25 cm ± 5 cm (10 in ± 2 in)

3. With engine cold, slowly fill coolant tank up to COLD LEVEL line allowing time for the air in the cooling system to seep out.



COLD LEVEL LINE

4. Start engine.
5. Refill coolant tank up to COLD LEVEL line while engine is idling until rear heat exchangers are warm to the touch (about 4 to 5 minutes).

NOTE: Always monitor coolant level while filling coolant tank to avoid emptying and thus allowing air to enter the system.

6. Install pressure cap.
7. Lower vehicle back to the ground.
8. Lift rear of vehicle and support it safely.



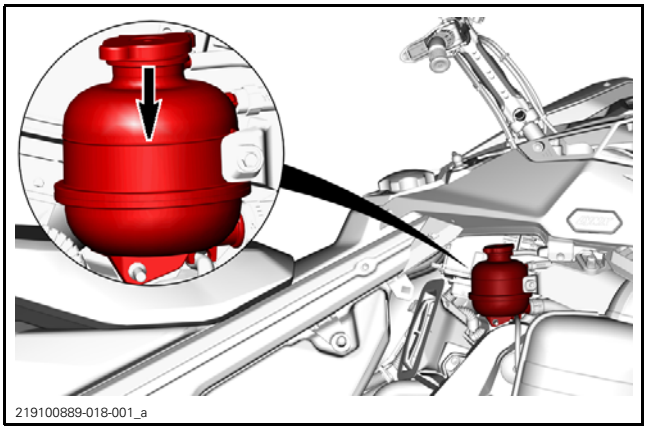
219100985-007-001

TYPICAL

⚠ WARNING

Before revving engine, ensure that the track is free of particles which could be thrown out while track is rotating. Keep hands, tools, feet and clothing clear of track. Always lift the snowmobile on a wide-base stand with a rear deflector panel. Ensure no one is standing in close proximity to the snowmobile, especially at the rear of the track. Centrifugal force could cause debris, damaged or loose studs, pieces of torn track, or an entire track to be violently thrown backwards out of the frame with tremendous force, possibly resulting in the loss of a leg or other serious injury.

9. Remove parking brake.
10. Activate throttle lever 3 - 4 times to bring engine speed to 7000 RPM.
11. Apply the brake.
12. Lower vehicle back to ground.
13. Stop engine.
14. Add coolant up to 15 mm (1/2 in) above the COLD LEVEL line.


219100889-018-001_a

COLD LEVEL LINE

15. When engine has completely cooled down, recheck coolant level in coolant tank and refill up to line if needed.
16. Visual check for any leakages.
17. Perform *VERIFYING THE ENGINE COOLANT STRENGTH*. See procedure in this subsection.
18. Adjust mixture as necessary.
19. Reinstall removed parts.

INSPECTION

COOLING SYSTEM LEAK TEST

NOTE: This test confirms if there is a leak in the cooling system, including the engine.

⚠ WARNING

To prevent potential burns, do not remove the coolant tank cap if the engine is hot.

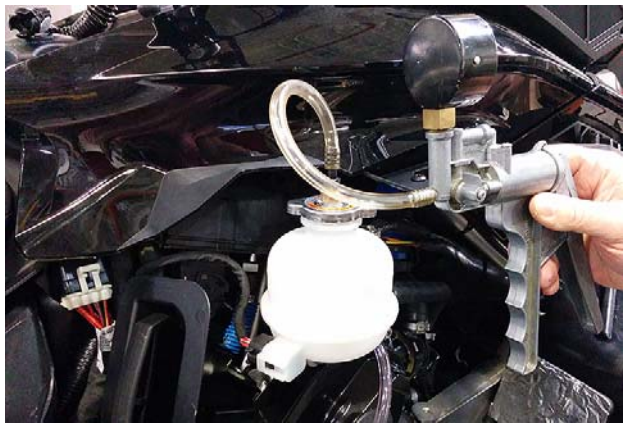
Remove the RH side panel.

Remove coolant tank cap.

Pressurize system through coolant tank.

REQUIRED TOOL	
TEST CAP (P/N 529 035 991)	
VACUUM/PRESSURE PUMP (P/N 529 021 800)	

TEST PRESSURE
100 kPa (15 PSI)


mmr2017-018-200

TYPICAL

If pressure drops, check all hoses and engine for coolant leaks. Spray a soap and water solution, and look for air bubbles.

If no external leak is found and pressure drops, carry out the *ENGINE COOLING CIRCUIT LEAK TEST* to find a potential engine internal leak.

PROCEDURES

COOLANT TANK CAP

Using a pressure cap tester, check the relief pressure of coolant tank cap as per specification.

CAP OPENING PRESSURE
110 kPa (16 PSI)

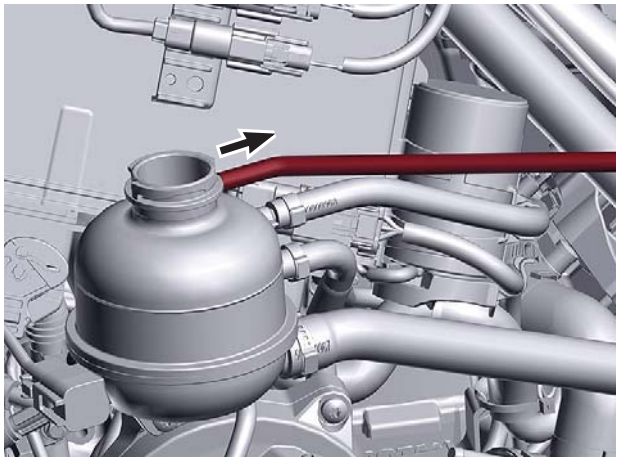
If the test failed, replace with a new cap with same specification.

NOTICE **Do not install a tank cap exceeding the recommended pressure.**

COOLANT TANK

Removing the Coolant Tank

1. Remove the RH side panel.
2. Siphon the coolant tank.
3. Unplug the upper vent hose.

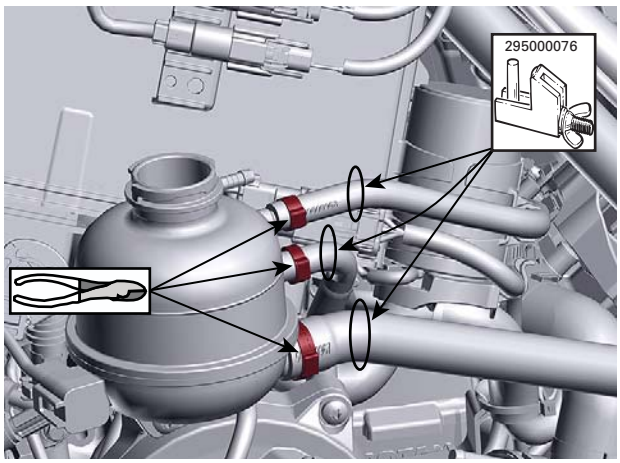

mmr2017-018-210_a

TYPICAL

4. Block the three lower coolant hoses with pinchers.

REQUIRED TOOL	
SMALL HOSE PINCHER (P/N 295 000 076)	

5. Cut Oetiker clamps and remove coolant hoses from coolant tank.



mmr2017-018-208_a

TYPICAL

6. Detach the coolant tank from the top of the chaincase.

Inspecting the Coolant Tank

Check if the tank is cracked or melted. Replace if necessary.

Installing the Coolant Tank

The installation is the reverse of the removal procedure. However, pay attention to the following.

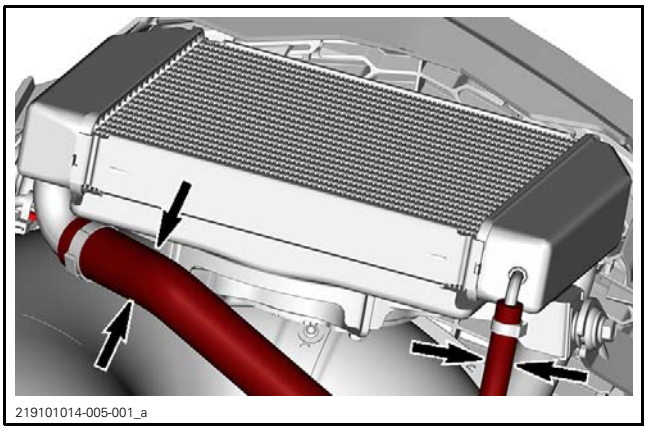
Properly refill cooling system. Refer to *REFILLING AND BLEEDING THE COOLING SYSTEM* in this subsection.

FRONT RADIATOR

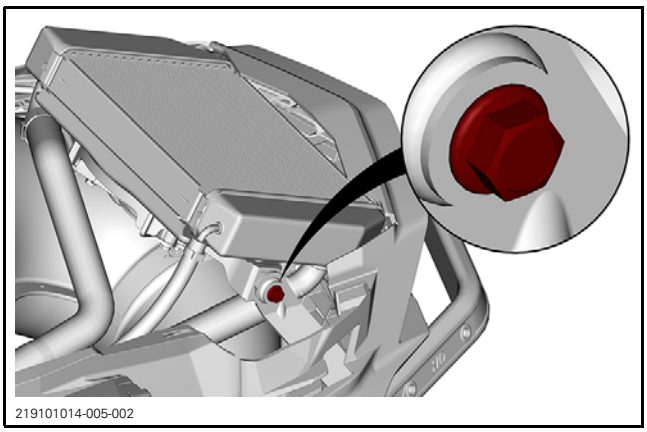
Removing the Front Radiator

1. Remove the upper body module. Refer to *BODY* subsection.
2. Cut cooling fan harness locking ties.
3. Disconnect cooling fan connector.
4. Install hose pinchers on radiator inlet and bleeder hoses.

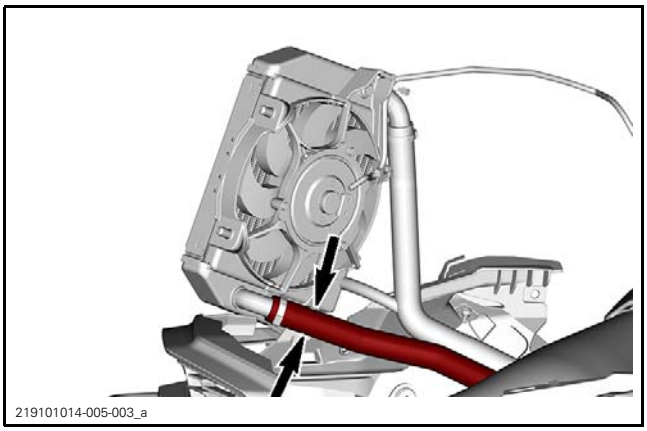
REQUIRED TOOL	
SMALL HOSE PINCHER (P/N 295 000 076)	
LARGE HOSE PINCHER (P/N 529 032 500)	


219101014-005-001_a

5. Remove radiator retaining screws.


219101014-005-002

6. Pivot radiator on the RH side.
7. Install a hose pincher on the outlet hose.


219101014-005-003_a

8. Place a coolant pan under the radiator.
9. Remove and discard Oetiker clamps.
10. Disconnect coolant hoses from radiator.
11. When empty, remove radiator from vehicle.

Installing the Front Radiator

The installation is the reverse of the removal procedure. However, pay attention to the following.

Install **NEW** Oetiker clamps to secure coolant hoses.

Properly refill cooling system. Refer to *REFILLING AND BLEEDING THE COOLING SYSTEM* in this subsection.

RADIATOR COOLING FAN

Radiator Cooling Fan Operation

The ECM controls the radiator cooling fan via the inputs of the coolant temperature sensor (CTS). Refer to the following table.

ENGINE TEMP.	65°C (149°F)	60°C (140°F)	85°C (185°F)
COOLING FAN	Turns ON	Turn OFF	ON
CHECK ENGINE LIGHT	—	—	OFF
MESSAGE IN GAUGE	—	—	- Limp Home - Hi Temp
LIMP HOME MODE	—	—	Gradual power reduction according to engine temperature.

If voltage decrease to 11 V and cooling fan is running, the ECM will shut it off. If voltage remains low and coolant temperature reaches 85°C (185°F), the ECM will turn on the cooling fan.

Cooling Fan Configuration in BUDS2

1. Connect vehicle to the BRP diagnostic software (BUDS2). Refer to *COMMUNICATION TOOLS* subsection.
2. In BUDS2, select the following:
   – **Settings** page
   – **ECM** button.
3. Ensure that **With fan** box is properly checked.

Testing the Radiator Cooling Fan

1. Connect the vehicle to the BRP diagnostic software (BUDS2). Refer to *COMMUNICATION TOOLS* for procedure and connector location.
2. In BUDS2, go to:
   – **Functions** page
   – **ECM** button
   – **IO Controls** tab.

3. Select **Activate Cooling Fan** action

If fan turns on, check the cooling temperature sensor (CTS). Refer to *ELECTRONIC FUEL INJECTION* subsection.

If fan does not turn on when the **Activate Cooling Fan** button is pressed, refer to the following troubleshooting chart.

COOLING FAN TROUBLESHOOTING CHART		
Is fan working?	YES →	Everything is OK
NO ↓		
Check fan fuse (15A). Is fuse burnt?	YES →	Replace fuse Is fan working?
NO ↓		
Bypass fan relay Refer to *BYPASSING THE RADIATOR FAN RELAY*		
↓		
Fan turns?	YES →	Replace relay Is fan working?
NO ↓		
Apply 12 Vdc to fan connector		
↓		
Fan turns?	NO →	Replace fan Is fan working?
YES ↓		
Check wiring harness and connectors (Refer to *TESTING THE COOLING FAN CIRCUIT CONTINUITY*)		
↓		
Harness and connectors good?	NO →	Repair or replace defective part(s)
YES ↓		
Check CTS (Refer to *ELECTRONIC FUEL INJECTION* subsection)		
↓		
CTS works?	NO →	Replace CTS Is fan working?
YES ↓		
Try a new ECM	→	Is fan working?

Bypassing the Radiator Fan Relay

1. Remove the fan relay. Refer to *WIRING DIAGRAM* for relay identification.

2. Install a fused jumper wire between relay pins 30 and 87.

Testing the Radiator Fan Relay

1. Pull on the fan relay without completely removing it. Refer to *WIRING DIAGRAM* for relay identification.
2. Install a fused jumper wire between pin 86 and battery negative (-) post.

If the relay "clicks", it is good.

If the relay does not "click", continue with the following test.

INPUT VOLTAGE AT COOLING FAN RELAY TEST		
FAN RELAY PIN	BATTERY POST	SPECIFICATION
85	Negative (-)	Battery voltage
87		

If reading is to specification, replace the relay.

If reading is not to specification:

– Check the fuse
– Check the power supply circuit continuity. Refer to *WIRING DIAGRAM*.

Testing the Cooling Fan Circuit Continuity

If one of the following tests is not to specification, repair the terminals and the wire accordingly.

COOLING FAN MOTOR POWER CIRCUIT CONTINUITY TEST		
FAN CONNECTOR PIN	FUSE BOX TERMINAL	SPECIFICATION
B	D6	Close to 0 Ω

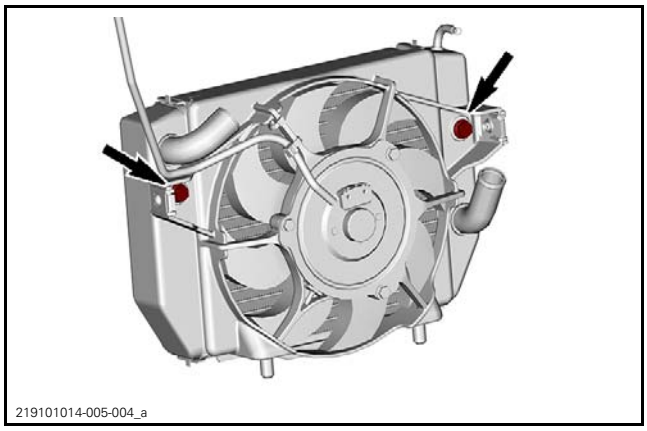
COOLING FAN MOTOR GROUND CIRCUIT CONTINUITY TEST		
FAN CONNECTOR PIN	BATTERY	SPECIFICATION
A	Negative (-) post	Close to 0 Ω

COOLING FAN MOTOR CONTROL CIRCUIT CONTINUITY TEST		
FUSE BOX TERMINAL	ECM ADAPTER PIN	SPECIFICATION
D5	B-J2	Close to 0 Ω

COOLING FAN MOTOR POWER CIRCUIT CONTINUITY TEST		
FUSE BOX TERMINAL		SPECIFICATION
C5	D4	Close to 0 Ω

Removing the Radiator Cooling Fan

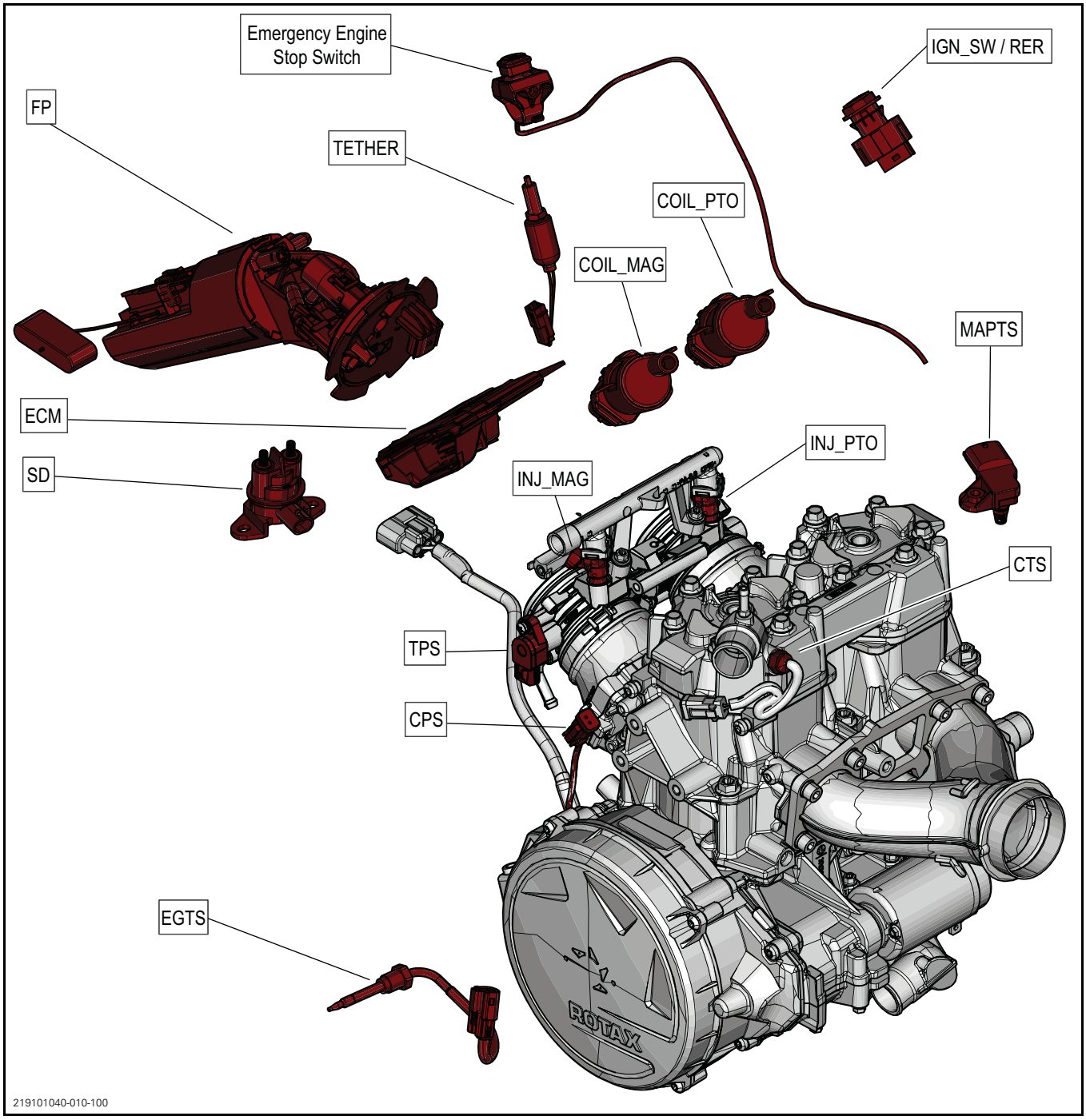
1. Remove the radiator.
2. Remove fan retaining screws.
3. Remove the radiator fan.



Installing the Radiator Cooling Fan

The installation is the reverse of the removal procedure.

ENGINE MANAGEMENT SYSTEM (EMS) - EFI



GENERAL

ACRONYM	DEFINITION
COILS	Ignition Coils
CPS	Crankshaft Position Sensor
CTS	Coolant Temperature Sensor
ECM	Engine Control Module
EGTS	Exhaust Gas Temperature Sensor
FP	Fuel Pump
IGN SW	Ignition Switch
INJ MAG	Fuel Injector (Mag Side)
INJ PTO	Fuel Injector (PTO Side)
MAPTS	Manifold (intake) Air Pressure / Temperature Sensor
RER	Rotax Electronic Reverse
SD	Starter Solenoid
TPS	Throttle Position Sensor

SYSTEM DESCRIPTION

The Engine Control Module (ECM) ensures a high power output with a clean combustion with practically no exhaust smoke.

There are 8 main systems that are controlled by the ECM:

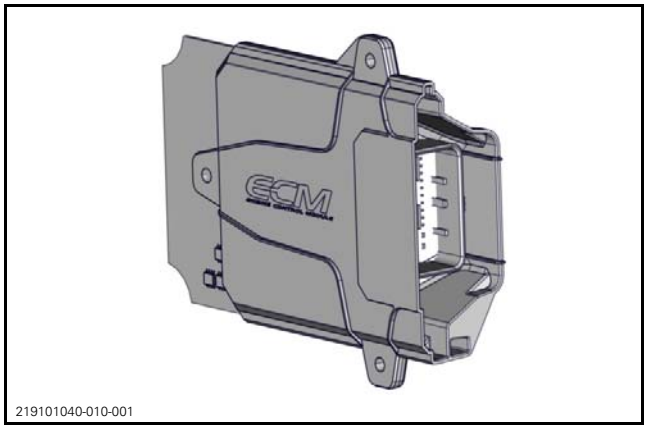
1. Fuel injection
2. Ignition system
3. Starting system
4. Rotax electronic reverse (RER)
5. Fuel pump
6. Electrical accessories.

The ECM features a monitoring system that self-diagnoses its electronic components. For more information, refer to *DIAGNOSTIC FAULT CODES* subsection.

Electrical power distribution is also controlled by the ECM. Refer to *POWER DISTRIBUTION* subsection.

Engine Control Module (ECM)

The ECM reads the inputs and makes computations by comparing them to pre-determined parameters, and sends the required control signals to the outputs to ensure proper engine management.



ECM

The ECM features a permanent memory that will store fault codes, customer information and other engine information when the engine is stopped.

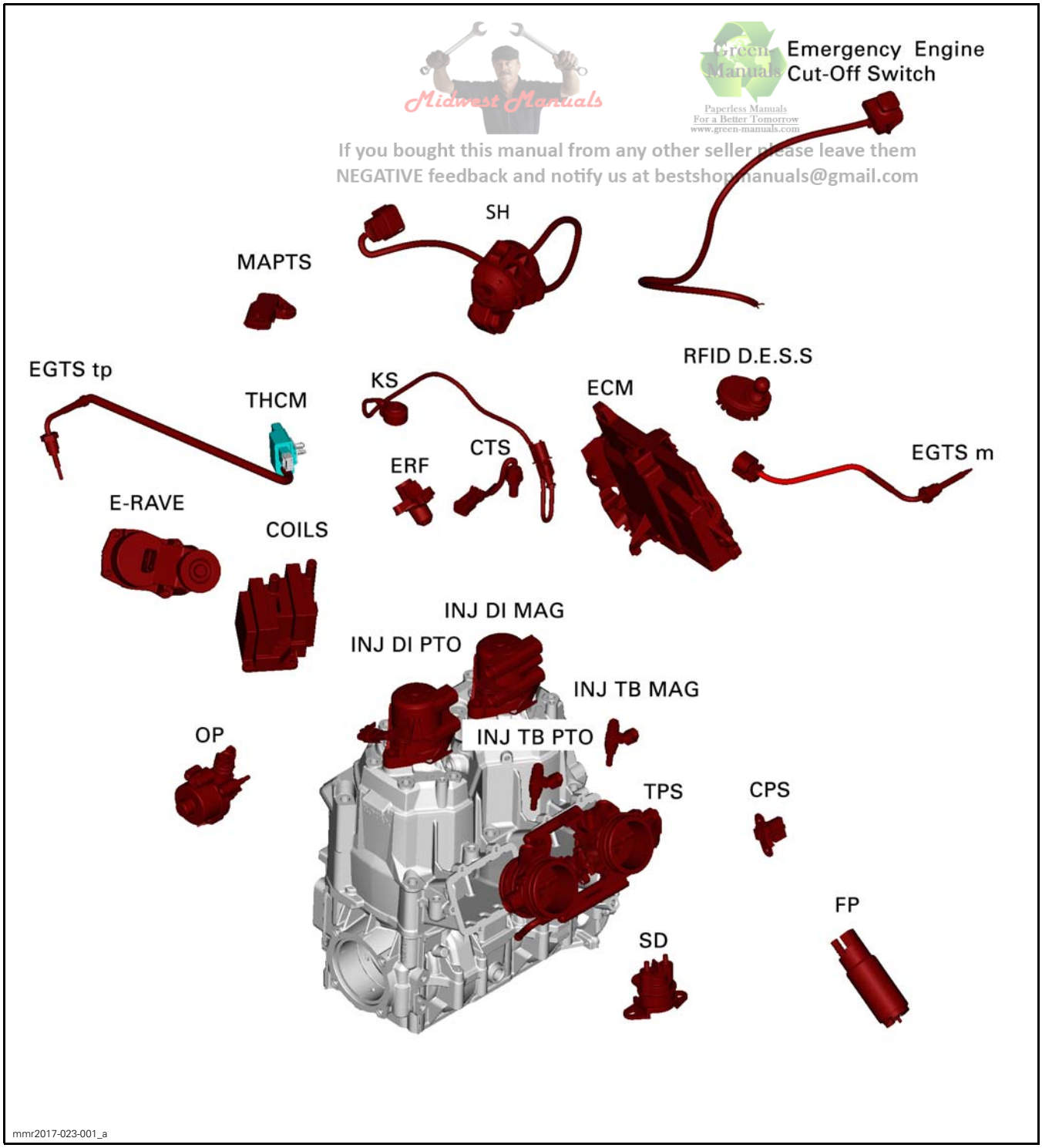
SYSTEM FEATURES

Throttle Protection

If the throttle is not completely closed during engine startup, engine RPM will be limited to idle speed by the ECM.

To revert to normal operation, release the throttle completely and then depress it again.

ENGINE MANAGEMENT SYSTEM (EMS) - E-TEC



Midwest Manuals
Green Manuals
Paperless Manuals For a Better Tomorrow www.green-manuals.com
If you bought this manual from any other seller please leave them NEGATIVE feedback and notify us at bestshopmanuals@gmail.com

GENERAL

ACRONYM	DEFINITION
SH	Left hand multi-function switch
COILS	Ignition Coils
CPS	Crankshaft Position Sensor
CTS	Coolant Temperature Sensor
RFID DESS	Digitally Encoded Security System
ECM	Engine Control Module
EGTSm	Exhaust Gas Temperature Sensor muffler
EGTStp	Exhaust Gas Temperature Sensor tuned pipe
FP	Fuel Pump
INJ DI MAG	E-TEC Direct Injector (Mag Side)
INJ DI PTO	E-TEC Direct Injector (PTO Side)
INJ TB MAG	Throttle body Injector (Mag Side)
INJ TB PTO	Throttle body Injector (PTO Side)
KS	Knock Sensor
MAPTS	Manifold (intake) Air Pressure / Temperature Sensor
OP	Oil Pump
RER	Rotax Electronic Reverse
ERF	Rave Position Sensor
E-RAVE	Rave Actuator
SD	Starter Solenoid
TPS	Throttle Position Sensor
THCM	Thermocouple Module

SYSTEM DESCRIPTION

The Engine Control Module (ECM) ensures a high power output with a clean combustion with practically no exhaust smoke.

There are 8 main systems that are controlled by the ECM:

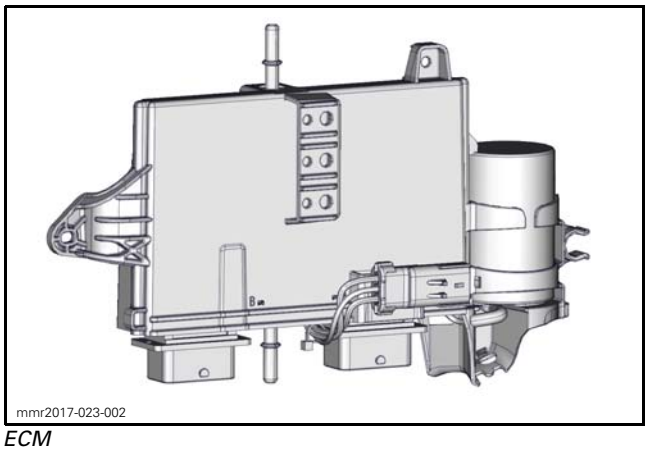
1. E-TEC Direct fuel injection
2. Throttle body injection
3. Ignition system
4. Starting system
5. Rotax electronic reverse (RER)
6. Digitally encoded security system (D.E.S.S.)
7. Lubrication system
8. 3D RAVE
9. Fuel pump
10. Electrical accessories.

The ECM features a monitoring system that self-diagnoses its electronic components. For more information, refer to *DIAGNOSTIC FAULT CODES* subsection.

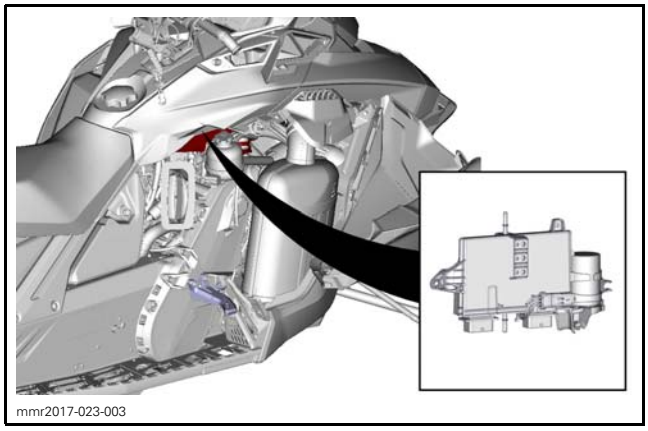
Electrical power distribution is also controlled by the ECM. Refer to *POWER DISTRIBUTION* subsection.

Engine Control Module (ECM)

The ECM reads the inputs and makes computations by comparing them to pre-determined parameters, and sends the required control signals to the outputs to ensure proper engine management.



ECM

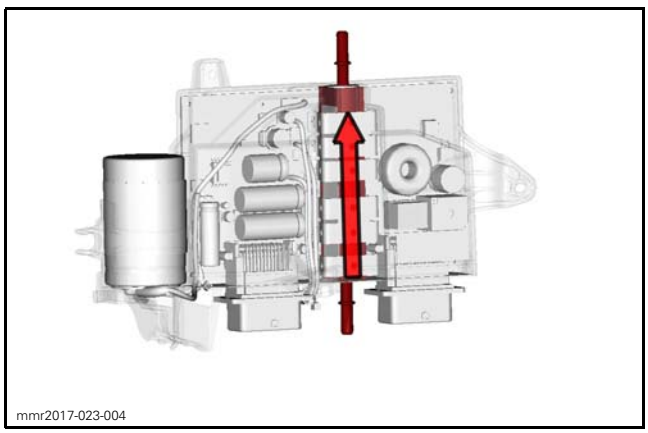


The ECM features a permanent memory that will store fault codes, customer information and other engine information when the engine is stopped.

ECM Cooling

Since the ECM manages all the vehicle's power needs as it incorporates the voltage regulator/ rectifier and other power components, a lot of heat needs to be dissipated.

To ensure adequate heat dissipation, a constant fresh fuel flow from the fuel pump is used to cool down the ECM.



ECM COOLING (FUEL FLOW DIRECTION)

SYSTEM FEATURES

Throttle Protection

If the throttle is not completely closed during engine startup, engine RPM will be limited to idle speed by the ECM.

To revert to normal operation, release the throttle completely and then depress it again.

Warm-Up Protection

The engine's RPM is limited until the desired engine and injection oil temperatures are obtained.

WARM-UP PROTECTION	ENGINE WARM-UP TEMPERATURE
850 E-TEC	20°C to 30°C (68°F to 86°F)

Engine Warm-Up

During the engine warm-up period, the RAVE valves will be limited to the MID position which, limits the engine to a maximum of 7500 ± 200 RPM.

Injection Oil Warm-Up

The injection oil warm-up period is based on oil viscosity.

This is accomplished by measuring the time it takes for the electric oil pump to complete a stroke (oil pump switch signal) from the time at which is was commanded. This provides an indication of the oil viscosity, and therefore temperature and flow capacity.

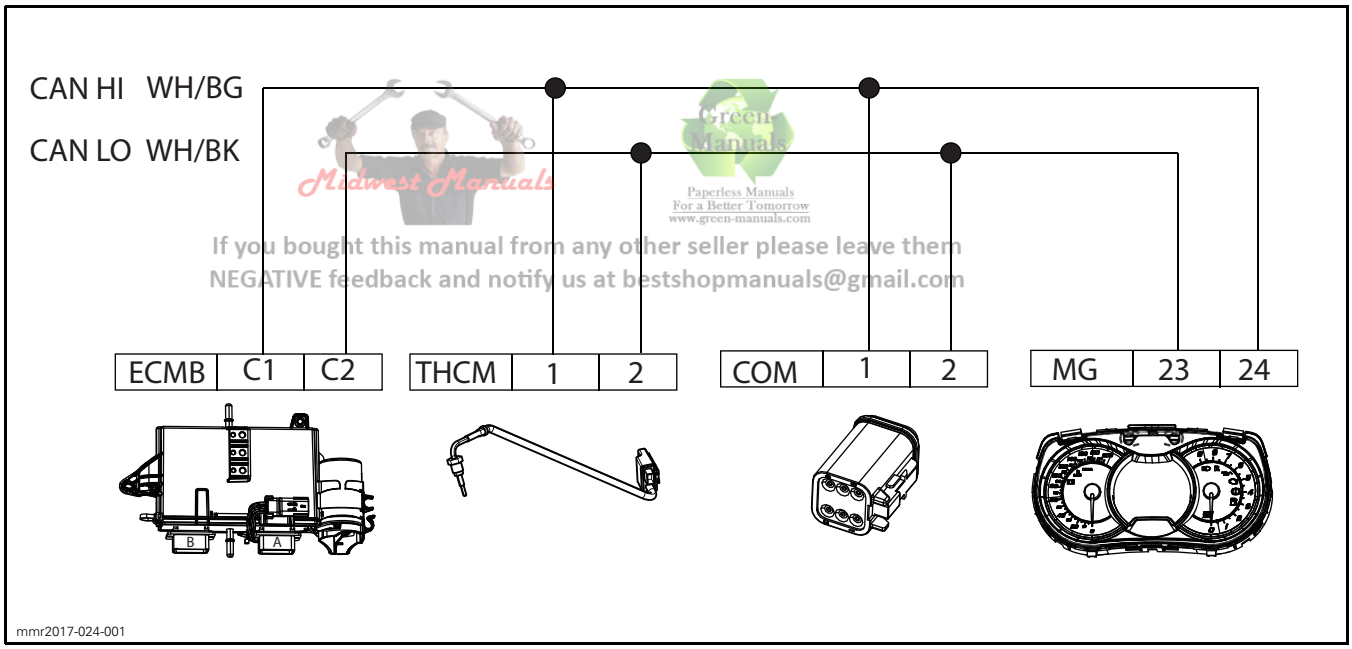
This function will limit engine speed to 5500 - 7500 RPM depending on detected oil viscosity.

This function may remain active for up to 10 - 15 minutes.

Automated Engine Oil Fogging (E-TEC)

An automated engine oil fogging has been implemented to automatically inject the required oil to protect the engine during vehicle storage. Refer to *STORAGE PROCEDURE* subsection for details.

CONTROLLER AREA NETWORK (CAN)



Midwest Manuals
Green Manuals
Paperless Manuals
For a Better Tomorrow
www.green-manuals.com
If you bought this manual from any other seller please leave them
NEGATIVE feedback and notify us at bestshopmanuals@gmail.com

COM (Diagnostic connector)
ECM (Engine control module)
MG (Multifunction gauge)
THCM (Thermocouple module)
WH/BG (White/beige)
WH/BK (White/black)

GENERAL

CONTROLLER AREA NETWORK (CAN)

The CAN protocol is an ISO standard for serial data communication.

The ECM forms a network with other components linked with the CAN bus.

The CAN bus (or CAN lines) consist of a pair of wires (WHITE/BEIGE and WHITE/BLACK) that connect every component to each other. The electronic modules are in constant communication within the network.

There are resistors on the CAN lines in the ECM, multifunction gauge and the thermocouple module.

CAN network resistance can be measured from the COM connector pins.

TROUBLESHOOTING

CAN COMMUNICATION PROBLEMS

1. Measure CAN network resistance from the COM connector pins.
2. Disconnect modules one by one and observe change in network resistance to find network communication fault.

NOTE: Disconnect THCM last.

CAN NETWORK RESISTANCE	
CONDITION	SPECIFICATION ± 10%
Good network or THCM fault	60 Ω
ECM or MG network fault	120 Ω

CAN NETWORK RESISTANCE	
CONDITION	SPECIFICATION ± 10%
ECM and MG network fault	above 1 MΩ
ECM, MG, and THCM network fault	O.L.
1 MΩ = 1,000,000Ω	

If the resistance does not vary when a module is unplugged ensure wiring harness and pins are in good condition before replacing a module.

NOTE: There is no resistor in the COM connector.

COMMUNICATION TOOLS

SERVICE TOOLS

Description	Part Number	Page
12 V BATTERY SUPPLY CABLE	529 035 997	57
DIAGNOSTIC CABLE	710 000 851	57
MPI-2 INTERFACE CARD	529 036 018	57
MPI-3 INTERFACE CARD	529 036 353	57
POWER INTERFACE	515 177 223	57

GENERAL

Refer to the **B.U.D.S. directory** on *KNOWLEDGE CENTER* for all BUDS related information, including:

- Download link
- User manual (programming keys, reading fault codes, navigation through menus, writing data to modules etc.)
- Installation instructions.

Download and install the software on a PC.

Connect the vehicle to the BRP diagnostic software (BUDS2).

REQUIRED TOOLS

MANDATORY TOOLS	
A personal computer (laptop or desktop)	
MPI-2 INTERFACE CARD (P/N 529 036 018)	
OR	
MPI-3 INTERFACE CARD (P/N 529 036 353)	
DIAGNOSTIC CABLE (P/N 710 000 851)	
POWER INTERFACE (P/N 515 177 223)	
12 V BATTERY SUPPLY CABLE (P/N 529 035 997)	
OPTIONAL TOOL	
Extension cable available at electronic retail outlets. Do not exceed 7.5 m (25 ft)	

Multi-Purpose Interface Card (MPI-2 or MPI-3)

The Multi-Purpose Interface (MPI) in conjunction with the diagnostic cable is used with BUDS2 to communicate with the engine control module (ECM) and other modules.

The MPI card uses the power from the PC computer's USB port.

Power Interface

The power interface and power supply cable allows the connection of a fully charged external battery to provide stable voltage to the unit and BUDS2.

Stable voltage is essential to prevent update crashes.

Do not use a charger on the battery (unit or external) during software updates.

The power interface and power supply cable connected to external battery can be used for extended diagnostic time.



mbs2018-006-002

TYPICAL

The power interface with or without the power supply cable will keep the unit powered even if the ignition switch is turned off or the D.E.S.S. key is removed.

The power interface has a fuse protected voltmeter included and an extra fuse to protect from polarity inversion of the power supply cable.

TROUBLESHOOTING

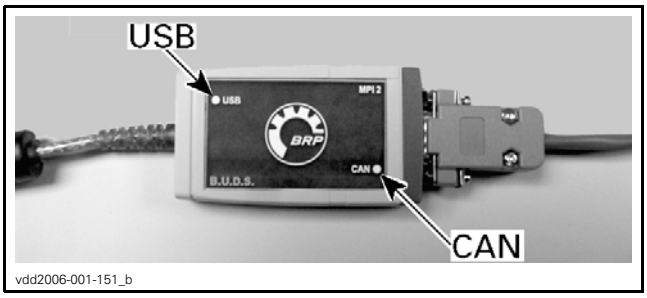
Refer to the BRP BUDS chart to ensure you are using the appropriate hardware and tools.

COMMUNICATION PROBLEMS

MPI Connection Troubleshooting

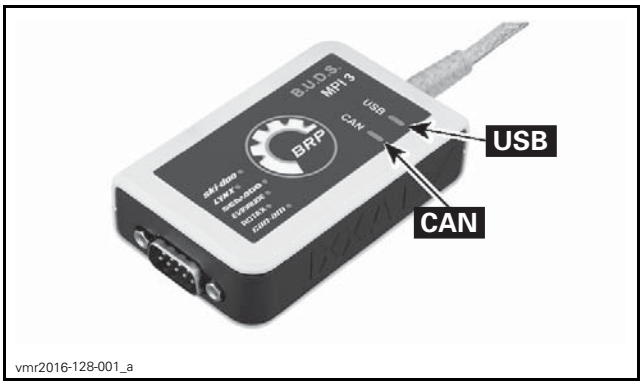
MPI Status Lights

The MPI includes 2 status lights to show the connection conditions: USB and CAN. **Both lights must be GREEN** for the MPI to function properly. Otherwise, refer to the following charts.



vdd2006-001-151_b

MPI-2 CARD



vmr2016-128-001_a

MPI-3 CARD

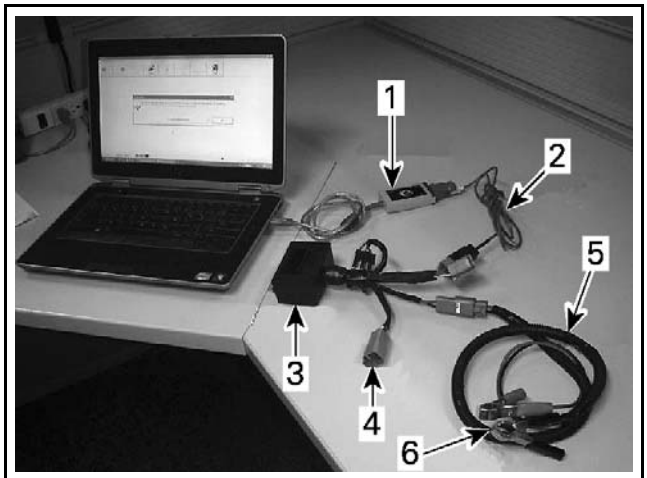
Prerequisite for USB Communication:

– PC Computer turned ON
– MPI connected to PC computer.

COMMUNICATION PROBLEM (USB)	
STATUS	WHAT TO DO
USB Light is OFF	– Check USB connection between MPI-2 and PC computer. – Check USB operation on PC computer (hardware or Windows drivers).
USB Light is GREEN	– Connections are GOOD. Communication can take place on USB side.

Prerequisite for CAN Communication:

1. MPI connected to diagnostic connector.
2. The tether cord cap (D.E.S.S. key) is installed on the engine cut-off switch and pull the emergency stop switch.
3. B.U.D.S. started and logged.
4. ECM is powered.



mmr2013-024-002_a

1. *MPI Interface card*
2. *Diagnostic cable*
3. *Power interface*
4. *To vehicle diagnostic connector*
5. *12 V battery supply cable*
6. *To 12 V battery*

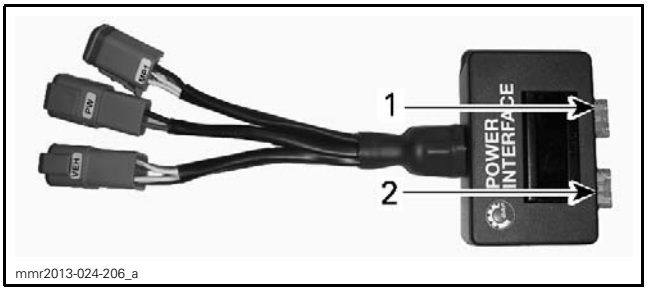
NOTE: The battery supply cable is only necessary on models without a battery.

COMMUNICATION PROBLEM (CAN)	
STATUS	WHAT TO DO
CAN Light is OFF	– B.U.D.S. does not communicate with the vehicle. – Check connections from computer to vehicle. – Check if B.U.D.S. is started. – Check if vehicle is powered: is cluster turned ON. If it is not ON, install the tether cord cap (D.E.S.S. key) on the engine cut-off switch and pull the emergency stop switch.
CAN Light is RED	This occurs when B.U.D.S. looses communication with vehicle. – Check connections from computer to vehicle. – Check if vehicle is powered: is cluster turned ON? If not, install the tether cord cap (D.E.S.S. key) on the engine cut-off switch and pull the emergency stop switch.
CAN Light is GREEN	– Connections are GOOD. B.U.D.S. communicates normally with the vehicle.

Power Interface Test

When the power interface is connected to the vehicle diagnostic connector and the emergency stop switch is pulled, the multifunction gauge and the headlight should turn on. If any test failed, check the following and repair or replace power interface.

1. Set the emergency stop switch to run position.
2. Power interface fuses.



1. Fuse 1
2. Fuse 2

3. External battery voltage should be displayed on Power interface (primary voltage if engine running).
   3.1 Ensure battery charge is high enough to keep the vehicle ON for the duration of the maintenance.

NOTE: This is especially IMPORTANT if you are updating vehicle software. In case of doubt, charge battery for at least 15 minutes; disconnect charger prior to updating software.

DIAGNOSTIC AND FAULT CODES

GENERAL

MONITORING SYSTEM

The ECM features a monitoring system that self-diagnose its electronic components.

When a predefined condition (engine overheat for example) or a fault occurs, the ECM sends a signal to the multifunction gauge and/or audible signals to a beeper to inform you of this particular condition.

The ECM monitors the following functions and components.

COMPONENT
ECM, TPS, CTS, CPS, KS, RAVE valve solenoids, MAPTS, RPS, ignition coils, fuel injectors and THCM (EGTSm and EGTStp)
12 volts under/over voltage 60 volts under/over voltage
D.E.S.S.
RER
Low oil level, electronic oil injection pump
Oil temperature (end of piston stroke feedback from electronic oil injection pump)
Engine RPM
CAN
Fuel pump

Limp Home Mode

The ECM may automatically set default parameters to ensure the adequate operation of the vehicle if a component of the engine management system is not operating properly.

NOTE: Sensor failures will not automatically result in limp home mode. The appropriate fault code will turn on and in some cases the beeper will sound.

The engine RPM may be limited if some critical components fail. In this case, releasing the throttle and letting the engine return to idle speed may allow normal operation to come back. If it does not, try removing and reinstalling the tether cord cap (D.E.S.S. key) on the engine cut-off switch.

These performance-reduced modes allow the rider to continue on to seek help, or return home, which would otherwise not be possible.

ECM ACTION	CAUSE
Engine is gradually stopped. Continuous fast short beeps and a shutdown message is displayed in multifunction gauge until shutdown.	Fuel pump wiring short circuit to ground or open circuit.
	Fuel pump current requirement is too high.
	Engine idle overheat protection: – Engine idled more than 5 seconds after engine temperature increased above 95°C (203°F). – Engine idled more than 5 minutes after engine temperature increased above 37°C (99°F).
Engine speed is limited to 2500 RPM.	D.E.S.S. key is not recognized by the ECM. The antitheft system is active. RAVE valves are kept at closed position.
Engine speed is limited to 5500 RPM (RAVE valves are kept closed).	Oil injection pump wiring shorted to ground or open circuit.
	Low voltage in the 55 Vdc system. Voltage dropped by 5 V.
	ECM overheat (85°C (185°F)). Engine overheat (100°C (212°F) and above).
	Exhaust gas temperature too high (800°C (1,472°F) and above).
	High engine detonation.
Engine speed is limited to 7000 RPM.	Max. RPM allowed to the engine in reverse. RAVE valves are kept closed.
Engine speed is limited (Variable limit)	Max. RPM allowed varies when engine is cold, according to oil viscosity
Engine speed is limited to 8600 RPM.	Maximum engine RPM allowed.

Pilot Lamps and Beep Codes

Warning lights in the multifunction gauge and/or a beeper provide signals as to a vehicle operation feedback, or to indicate a problem.

A pilot lamp can flash alone or in combination with another lamp.

Beeper codes will be heard and messages (depending on gauge model) will be displayed to attract your attention and inform you of the situation.

DIAGNOSTIC FAULT CODES (DTC)

A fault code is an indication that a glitch or malfunction is detected by the monitoring system of the vehicle.

When there is a problem, the ECM can provide fault codes to ease troubleshooting.

The faults registered in the ECM are stored in memory.

IMPORTANT: After a problem has been solved, be sure to clear the fault(s) in the ECM using the BUDS2 software. This will properly reset their states.

How to Read Fault Codes Using BUDS2 Software

Refer to *COMMUNICATION TOOLS AND B.U.D.S.* subsection.

For more information pertaining to the faults code status and report, refer to B.U.D.S. online help.

How to Read Fault Codes on the Multifunction Gauge

Same gauges can display fault codes.. Refer to the applicable *GAUGE* subsection.

How to Find Fault Code Descriptions

Connect BUDS2 to the vehicle. Refer to *COMMUNICATION TOOLS AND BUDS* subsection.

Navigate to the faults page in BUDS2.

Browse lists of active/occurred and inactive fault codes.

FUEL TANK AND FUEL PUMP (EFI)

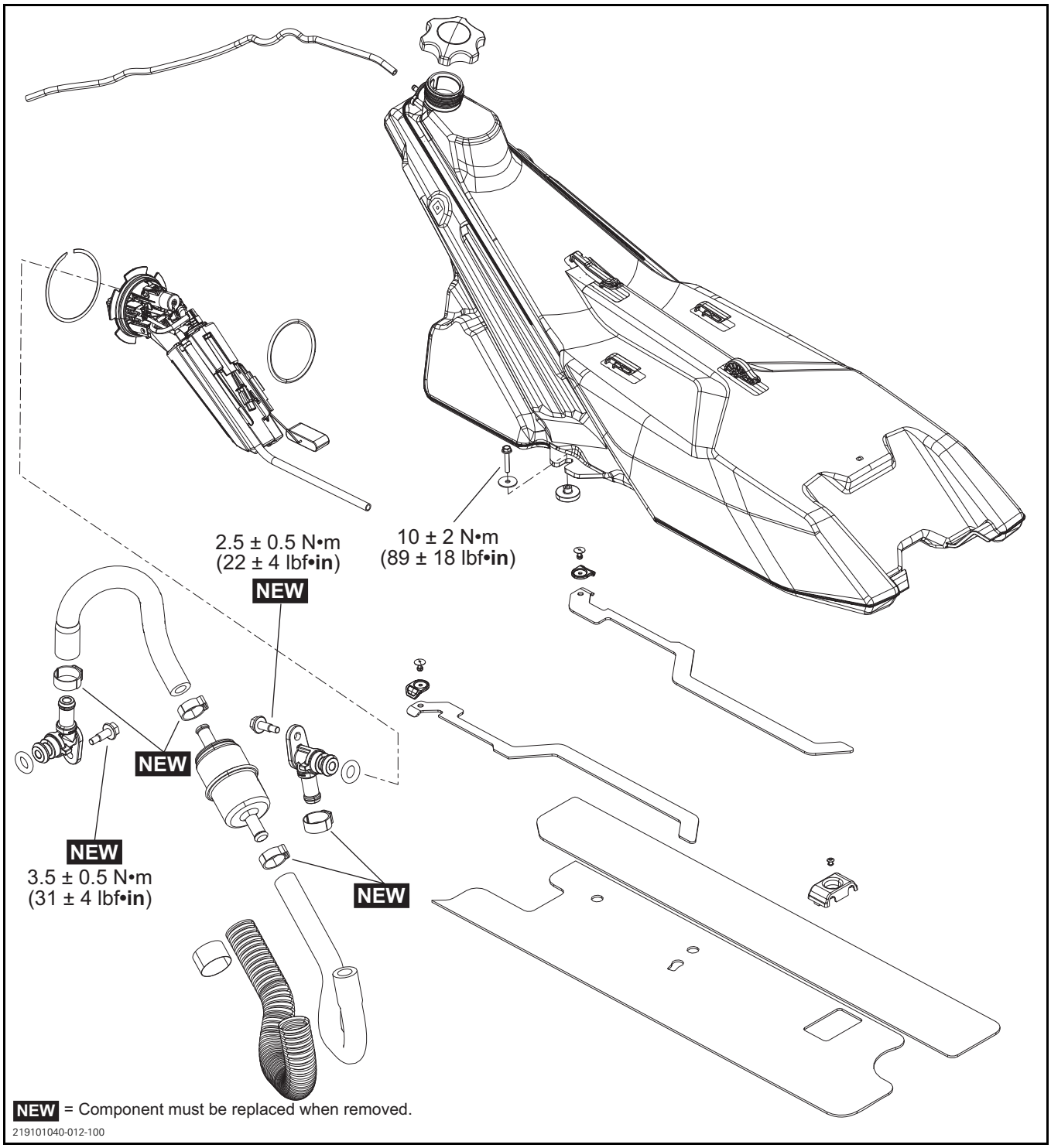
SERVICE TOOLS

Description	Part Number	Page
LEAK TEST KIT	529 033 100	72
OETIKER PLIER	295 000 070	71, 75
PRESSURE GAUGE	529 036 395	73
SMALL HOSE PINCHER	295 000 076	72
T FITTING FUEL PRESSURE	529 036 509	73
VACUUM/PRESSURE PUMP	529 021 800	72

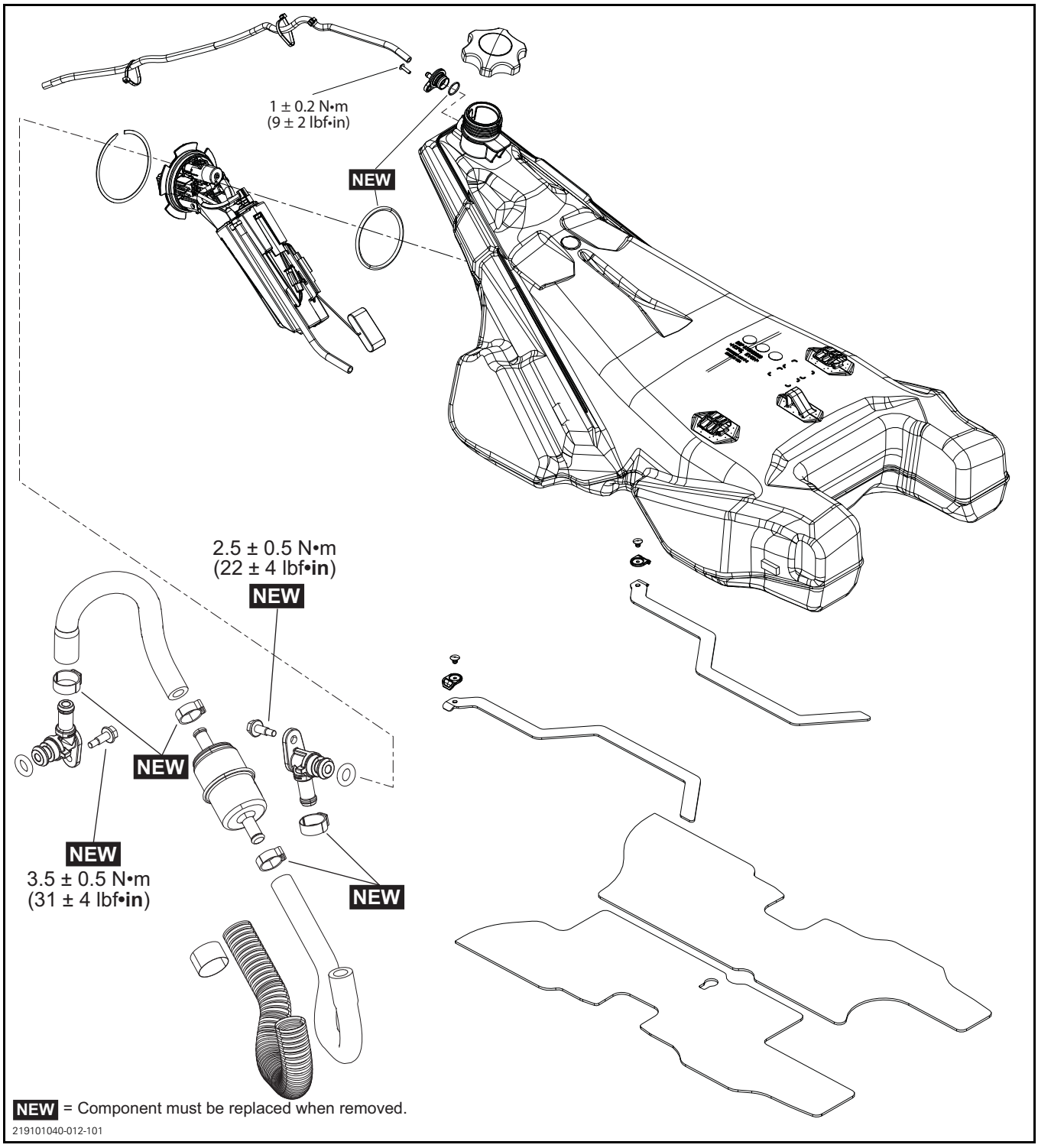
SERVICE PRODUCTS

Description	Part Number	Page
CLUTCH AND PULLEY FLANGE CLEANER PRO S1	779244	71

16 in Track


2.5 ± 0.5 N•m
(22 ± 4 lbf•in)
NEW
10 ± 2 N•m
(89 ± 18 lbf•in)
NEW
NEW
3.5 ± 0.5 N•m
(31 ± 4 lbf•in)
NEW
NEW = Component must be replaced when removed.
219101040-012-100

20 and 24 in Track



GENERAL

NOTE: It is a good practice to check for fault codes using the BRP diagnostic software BUDS2 as a first troubleshooting step. Refer to *DIAGNOSTIC AND FAULT CODES*.

⚠ WARNING

Always disconnect the magneto connector prior to:
– Disconnecting any fuel hose.
– Removing a fuel injector.
– Removing a spark plug cable or spark plug.
Otherwise, if the engine is cranked, fuel vapors may ignite in presence of a spark creating a fire hazard.

When disconnecting a fuel line, cover the connection with an absorbent shop rag and proceed slowly to minimize spilling.

⚠ WARNING

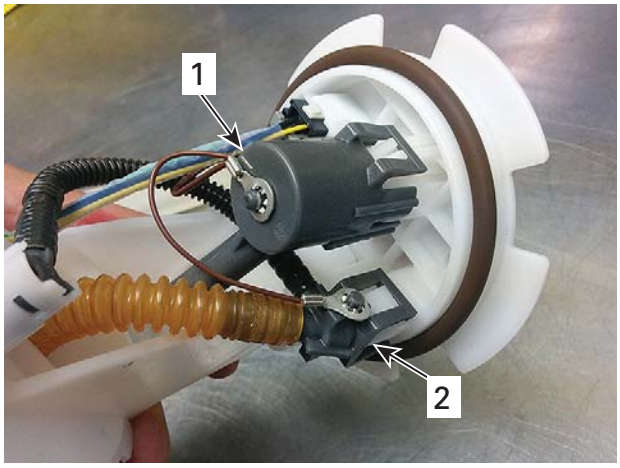
Do not allow fuel to spill on hot engine parts and/or on electrical connectors. Wipe off any fuel spillage in the engine compartment. Fuel is flammable and explosive under certain conditions.

⚠ WARNING

After working on the fuel system, always carry out a fuel system pressurization test to check for leaks.

⚠ WARNING

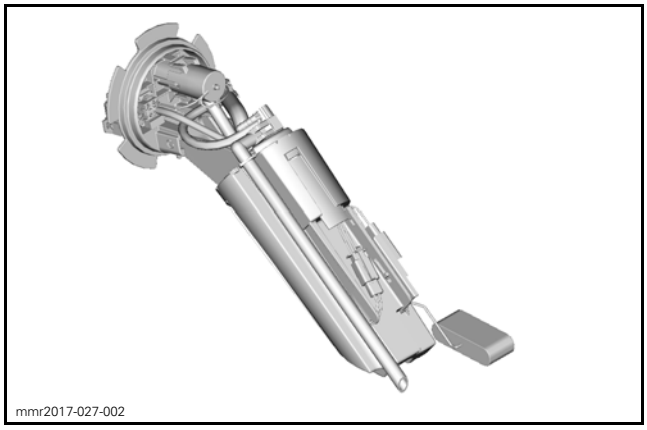
Never remove the eyelet connectors from the fuel pressure regulator and the fuel hose connector. A bad connection may create a static electricity discharge causing a fire hazard.



1. Fuel pressure regulator
2. Fuel hose connector

SYSTEM DESCRIPTION

Electric Fuel Pump



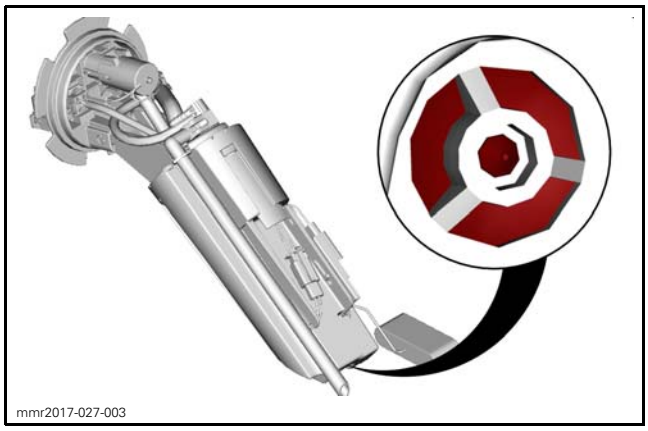
An electric fuel pump is mounted in the front center portion of the fuel tank.

A 12 Vdc high pressure fuel pump with an integrated jet pump is used.

As soon as the engine is cranking, the electric fuel pump turns on in preparation for the engine start. When the engine runs, the fuel pump is ON continuously to provide a constant fuel pressure to the injectors.

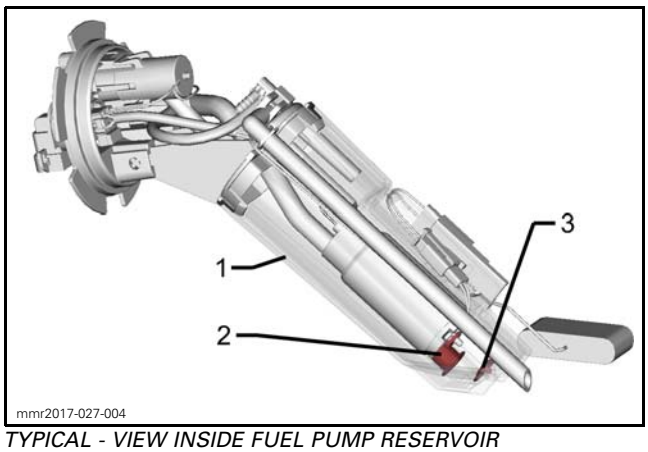
To ensure a constant delivery of fuel to the engine for all riding conditions when the fuel level is low, a rear pickup and a fuel pump reservoir is used.

The fuel pump reservoir is actually the housing of the fuel pump module in which the fuel pump is located. A check valve at the bottom of the housing allows the fuel in the tank to enter the fuel pump reservoir.



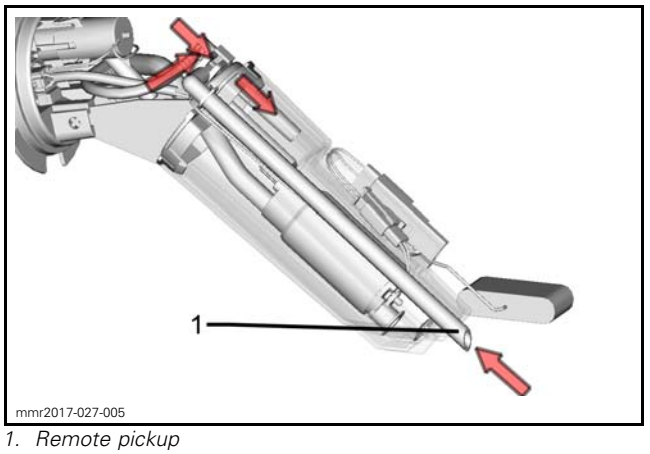
When the fuel pump runs, it draws the fuel from the fuel pump reservoir and feeds it to the injection system. This causes fuel in the tank to enter the fuel pump reservoir, by gravity, through its bottom inlet check valve.

At the same time, a portion of the fuel flow from the electric fuel pump flows through a jet pump that contains a venturi.



TYPICAL - VIEW INSIDE FUEL PUMP RESERVOIR
1. *Fuel pump reservoir*
2. *Bottom inlet*
3. *Check valve (open upwards)*

As the fuel accelerates through the venturi, it generates a low pressure area at a connection to the remote pickup, which draws fuel into the fuel pump reservoir from the remote pickup.



1. *Remote pickup*

When riding the vehicle on a level surface, fuel enters into the fuel pump reservoir through its check valve and through the remote pickup simultaneously, as long as there is enough fuel in the tank to cover the remote pickup.

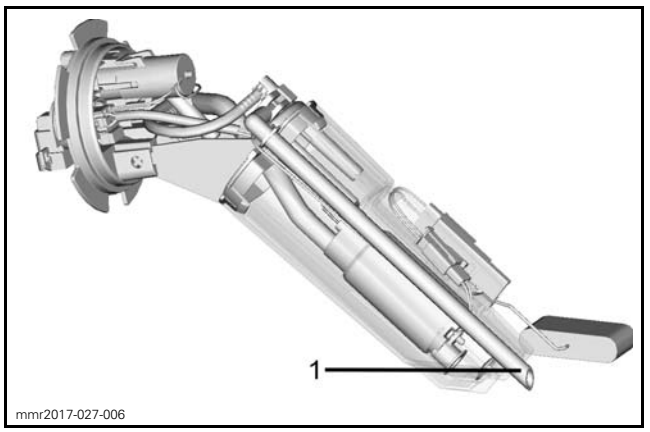
When riding downhill with a low amount of fuel in the tank, the fuel moves towards the front of fuel tank. The fuel enters the fuel pump reservoir through the check valve only as there is no fuel at the remote pickup.

When riding uphill with a low amount of fuel in the tank, the fuel moves towards the rear of the fuel tank. The check valve closes and traps the fuel in the pump reservoir. The fuel pump continues to draw fuel from the fuel pump reservoir, which is now only fed by the jet pump using the remote pickup. This prevents air from being drawn into the fuel lines from the fuel tank.

The continuous fuel flow cools down the fuel pump.

Fuel Pickup

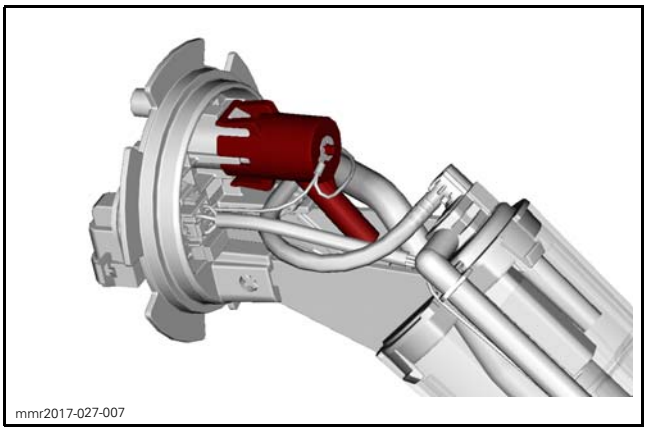
Fuel enters the fuel pump reservoir from either a check valve at the bottom of the fuel pump reservoir, or from a remote pickup in the rear portion of the fuel tank.



1. *Remote pickup*

Fuel Pressure Regulator

An integrated fuel pressure regulator is mounted on the fuel pump flange. It is basically a spring loaded valve that opens and closes the path of fuel returning to the tank, thus maintaining a constant fuel pressure in the system.



mmr2017-027-007

FUEL PRESSURE
Approximately 400 kPa ± 10 kPa (58 PSI ± 1 PSI) at 2000 RPM (will be lower at idle)

Fuel pressure should drop less than 35 kPa (5 PSI) when engine stops running.

If a leak is present, pressure will continue to drop within the first minute after engine stops running.

Fuel Tank Vent

The fuel tank is vented through a combination type check valve that allows ambient air pressure to enter fuel tank at all times.

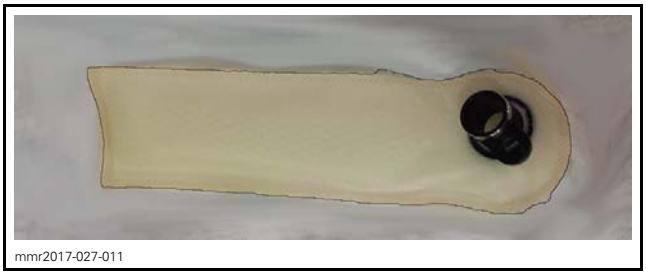
As fuel is consumed by the engine, a negative pressure would occur in the fuel tank. This could eventually prevent the fuel pump from drawing enough fuel. The **negative pressure relieve function** of the valve allows the higher outside air pressure in

If pressure builds up and exceeds 7.58 kPa (1.1 PSI) in the fuel tank, the check valve opens and lets the excess pressure vent out of the tank.

Fuel Filters

Fuel Pump Pre-Filter

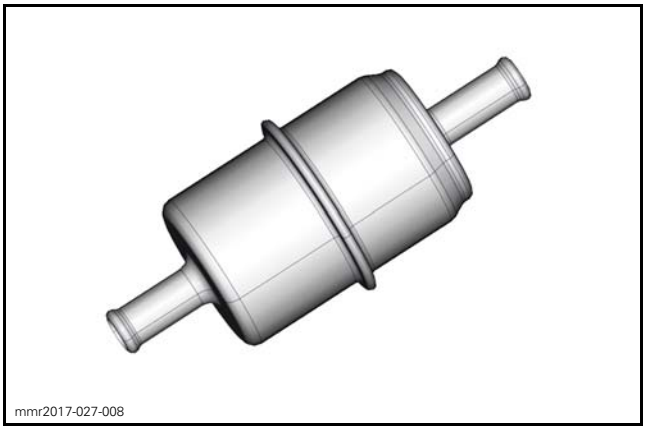
A fuel pump pre-filter is used at the electric fuel pump inlet. It is a replaceable nylon mesh filter located within the fuel pump module housing (fuel pump reservoir).



mmr2017-027-011

The fuel pump pre-filter protects the fuel pump and prevents clogging of the fuel passages within the fuel pump module.

In-Line Fuel Filter

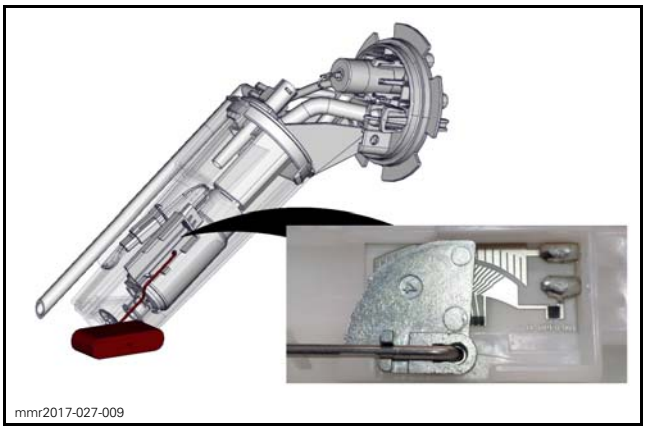


mmr2017-027-008

An in-line filter on the supply side is located between the fuel pump and the ECM.

It is a replaceable metallic canister type filter used to deliver dirt-free fuel to the injectors.

Fuel Level Indication



mmr2017-027-009

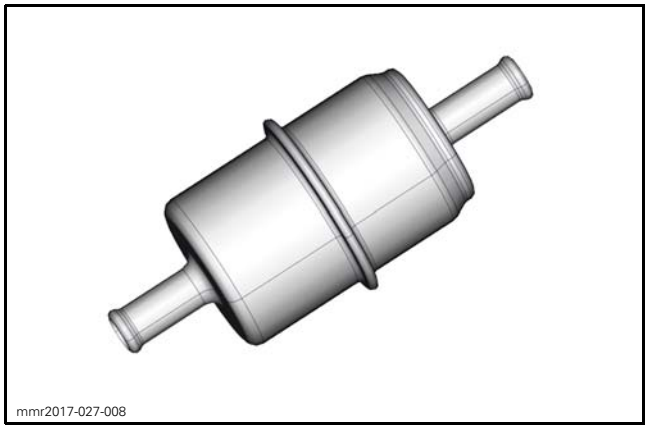
A float type fuel level sensor varies its resistance with fuel level thus providing a signal to the multifunction gauge for fuel level indication.

MAINTENANCE

INSPECTING THE FUEL LINES AND CONNECTIONS

Visually inspect fuel lines and connections for cracks or leaks.

REPLACING THE IN-LINE FUEL FILTER


mmr2017-027-008

Removing the In-line Fuel Filter

⚠ WARNING

Work in a well ventilated area. Wipe up all spilled fuel.

1. Release fuel pressure in the system. Refer to procedure in this subsection.
2. Remove the upper body module. Refer to *BODY* subsection.
3. Disconnect magneto connector.

⚠ WARNING

The magneto connector must be disconnected to prevent any spark in the engine compartment and to remove power from the fuel pump. Otherwise, if the engine is cranked, fuel vapors may ignite in presence of a spark creating a fire hazard.

4. Place a rag between fuel filter and oil injection tank.
5. Cut both Oetiker clamps securing the fuel filter.
6. Remove fuel filter from vehicle.

Dispose fuel filter as per your local environmental regulations.

Installing the In-Line Fuel Filter

The installation is the reverse of the removal procedure. However, pay attention to the following.

Insert new Oetiker clamps on both hoses.

Install the new filter. Make sure printed arrow pointed towards the fuel rail.

Secure the fuel filter with new Oetiker clamps.

REQUIRED TOOL	
OETIKER PLIER (P/N 295 000 070)	

⚠ WARNING

Ensure hose clamp is tight and that hose cannot turn on the fitting.

When installation is complete, carry out a fuel system leak test. Refer to procedure in this subsection.

⚠ WARNING

After working on the fuel system, carry out a fuel system pressurization test to check for leaks. Failure to carry out a fuel system leak test could result in severe injury or a life threatening situation should a leak occur.

Reinstall all removed parts.

INSPECTING AND CLEANING THE THROTTLE BODY

Clean throttle plates and throttle body bores.

SERVICE PRODUCT
CLUTCH AND PULLEY FLANGE CLEANER PRO S1 (P/N 779244)

INSPECTION

TESTING FUEL SYSTEM FOR LEAKS

Activate the fuel pump from the **Functions** page in BUDS2.

Check for fuel leaks.

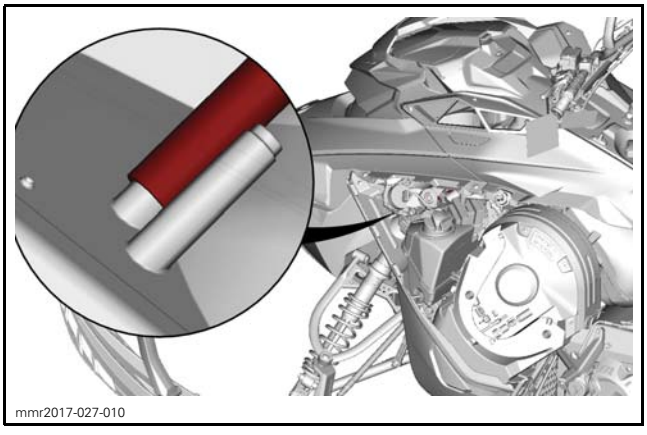
⚠ WARNING

After working on the fuel system, carry out a fuel system pressurization test to check for leaks. Failure to carry out a fuel system pressurization test could result in severe injury or a life threatening situation should a leak occur.

TESTING FUEL TANK FOR LEAKS

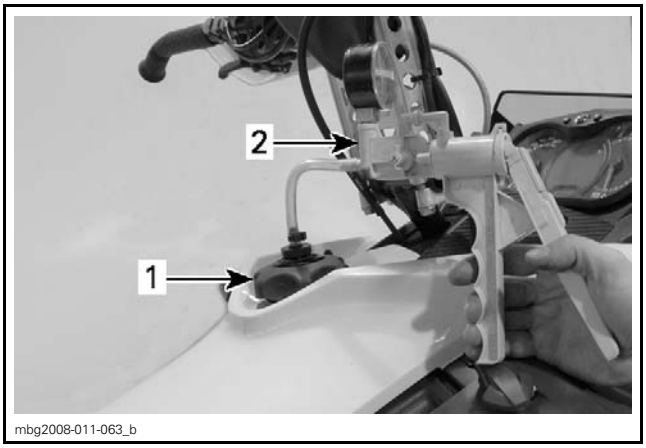
REQUIRED TOOLS	
SMALL HOSE PINCHER (P/N 295 000 076)	
LEAK TEST KIT (P/N 529 033 100)	
VACUUM/PRESSURE PUMP (P/N 529 021 800)	

1. Fill up fuel tank.
2. Open the left side panel to access the fuel vent tube.
3. Install a small hose pincher on the vent tube.



mmr2017-027-010

4. Install the appropriate test cap from the leak test kit on fuel tank inlet.
5. Install the vacuum/pressure pump on pressure test fuel cap.



mbg2008-011-063_b

TYPICAL
1. Pressure test fuel cap
2. Vacuum/pressure pump

6. Set pump selector to pressure.
7. Pressurize fuel tank as follows.

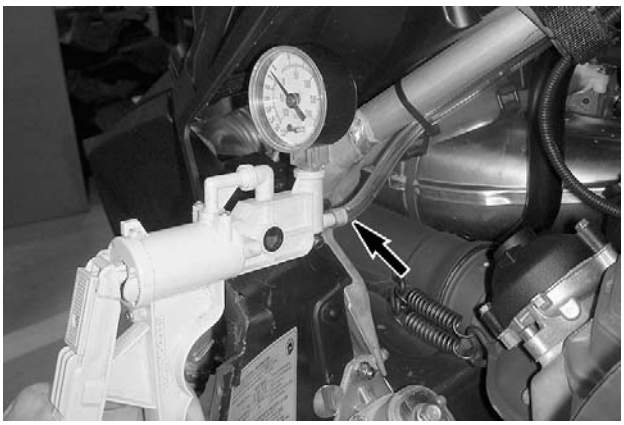
PRESSURE	TIME WITHOUT PRESSURE DROP
21 kPa (3 PSI)	3 minutes

If pressure drops, locate fuel leak(s) and repair or replace leaking component(s).

To ease locating leak(s), spray soapy water on components; bubbles will indicate leak location(s).

Fuel Tank Vent Valve Test

1. While the fuel tank is still pressurized as in the previous test, carry out the following:
2. Place a finger over the vent hose outlet.
3. When removing hose pincher, alternately touch and release vent hose outlet. You should feel pressurized air flowing out indicating the pressure relief valve function is working.
4. Release any remaining pressure in the fuel tank by slowly unscrewing fuel tank cap.
5. Remove the pressure test fuel cap.
6. Remove the fuel tank vent tube from its fitting on the lower left front body panel.
7. Install the vacuum/pressure pump on the vent tube and apply air pressure through the vent valve. Air must flow freely towards the fuel tank neck.


mmr2008-030-002_a

TYPICAL - VACUUM/PRESSURE PUMP ON VENT TUBE

NOTE: If fuel vent check valve does not function as indicated in test, replace vent valve.

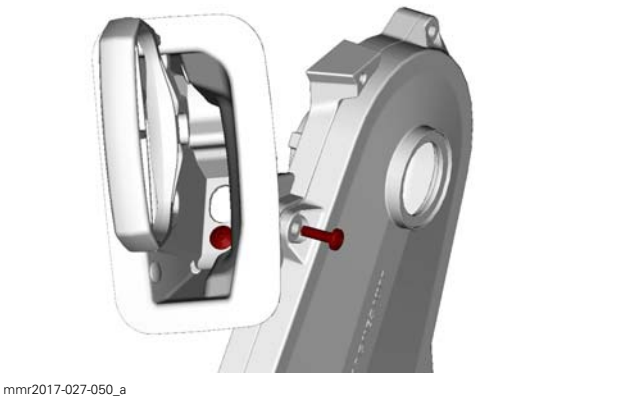
8. Remove vacuum/pressure pump.
9. Install vent tube on its fitting.
10. Install normal fuel tank cap.

TESTING FUEL PRESSURE

REQUIRED TOOLS	
PRESSURE GAUGE (P/N 529 036 395)	
T FITTING FUEL PRESSURE (P/N 529 036 509)	

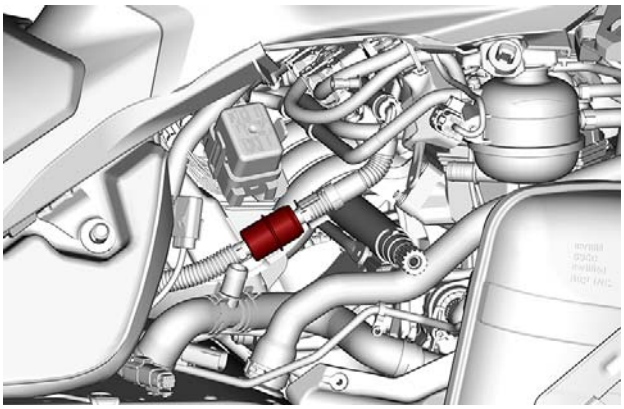
Open right hand side panel.

Move rewind starter handle assembly (applicable models).


mmr2017-027-050_a

The pressure test provides an indication of the available fuel pressure at the fuel pump outlet. It validates the pressure regulator and the fuel pump.

1. Ensure there is enough gas in fuel tank.
2. Install a rag under the fuel filter to catch fuel spillage.
3. Remove fuel filter.


219101015-011-001

4. Install the T fitting tool in place of the fuel filter. Secure with gear clamps.


219101040-012-001

5. Install the pressure gauge on the T fitting tool.

⚠ WARNING

When carrying out pressure test, ensure fuel is not leaking from test equipment onto hot exhaust system or electrical components. Ensure fuel hose do not come into contact with hot engine parts or hot exhaust system.

6. Start engine.
7. Run engine above 2000 RPM and observe the fuel pressure.

FUEL PRESSURE
400 kPa ± 10 kPa (58 PSI ± 1 PSI)

FUEL PRESSURE TROUBLESHOOTING	
RESULT	POSSIBLE CAUSE
Pressure above specifications	Defective fuel regulator
Pressure below specifications	Clogged fuel filter
	Poor electrical connection
	Defective fuel regulator
	Defective fuel pump
	Leak in the fuel system circuit

8. Stop engine.

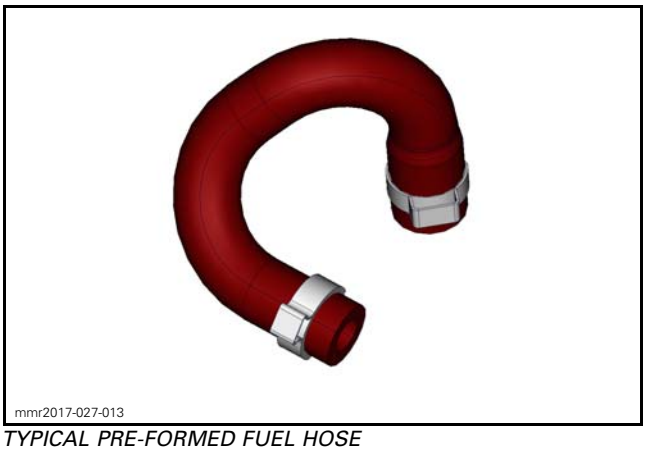
Fuel pressure should remain stable.

9. If fuel pressure drops, check the following for leaks:
   – Tools
   – Hoses
   – Fuel injectors
   – Fuel pressure regulator
   – Fuel pump.
10. Bleed away any remaining fuel in the pressure gauge and fuel hose adapter using the bleed valve on the fuel hose adapter.
11. Remove pressure gauge and T-fitting fuel pressure.
12. Reinstall the fuel filter with NEW Oetiker clamps Refer to *FUEL HOSE AND OETIKER CLAMPS* in this subsection..
13. Reinstall all remaining removed parts.

PROCEDURES

FUEL HOSE AND OETIKER CLAMPS

Replacing Fuel Hoses



TYPICAL PRE-FORMED FUEL HOSE

When replacing fuel hoses, be sure to use hoses as available from BRP parts department. This will ensure continued proper and safe operation.

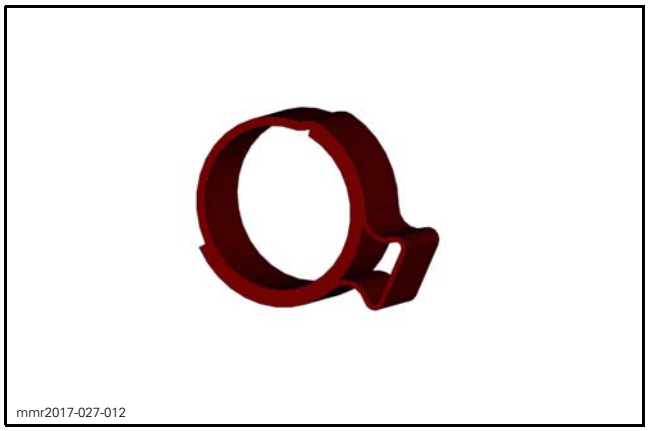
⚠ WARNING

Use of fuel lines other than those recommended by BRP may compromise fuel system integrity.

⚠ WARNING

- **Never use a hose pincher on high pressure hoses.**
- **Never change the routing of a fuel hose.**
- **Always reinstall the corrugated protective tubing on fuel hoses.**
- **Secure fuel hoses using the appropriate locking tie or fastener to prevent contact with sharp edges or hot, rotating and moving parts.**
- **After connecting a hose or a quick connect fitting, pull on the hose near the fitting to make sure it is securely locked.**
- **Always validate fuel system tightness by performing a *FUEL SYSTEM PRESSURIZATION AND LEAK TEST*.**

Replacing Oetiker Clamps


mmr2017-027-012

REQUIRED TOOL	
OETIKER PLIER (P/N 295 000 070)	

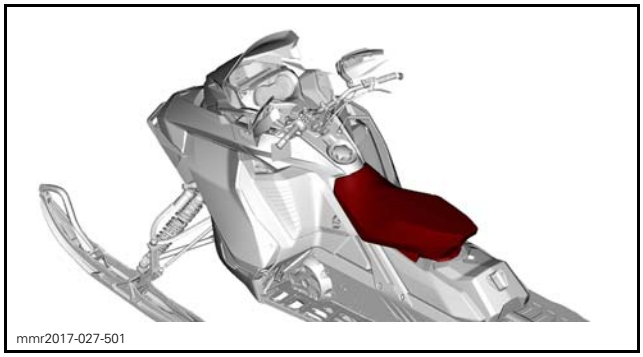
⚠ WARNING

Whenever removing a hose in the fuel system, always use new Oetiker clamps at assembly.

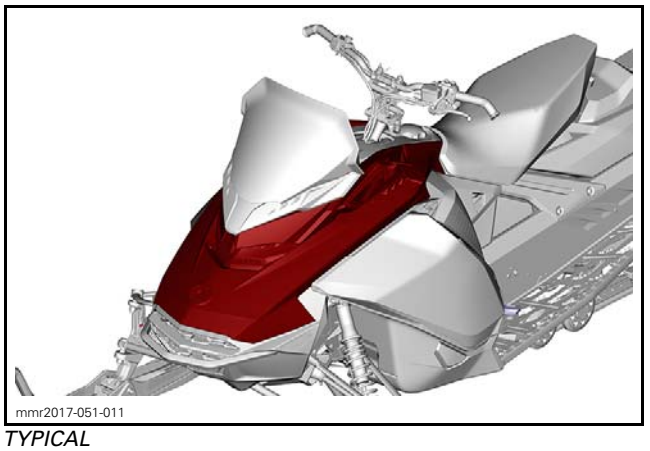
FUEL TANK

Removing the Fuel Tank

1. Remove seat.

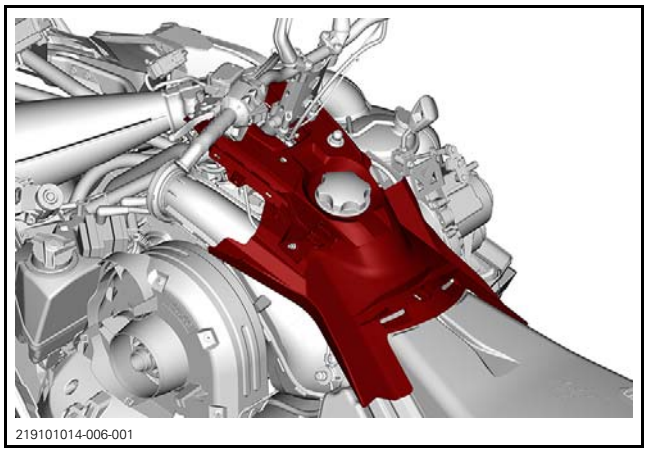

mmr2017-027-501

2. Remove upper body module. Refer to *BODY* subsection.


mmr2017-051-011

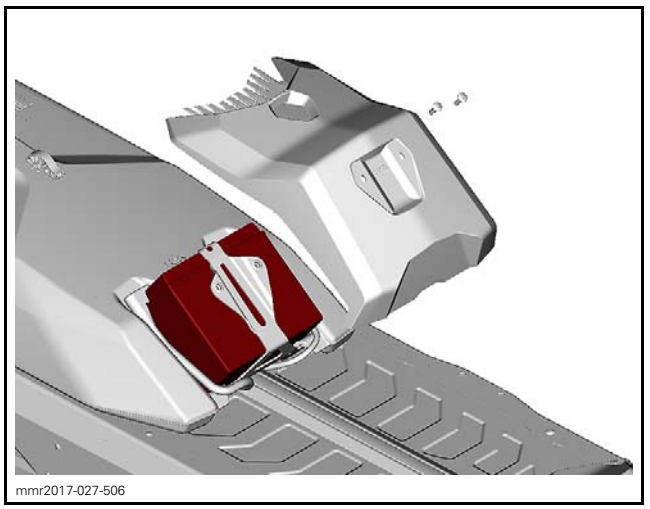
TYPICAL

3. Remove rear console. Refer to *BODY* subsection.

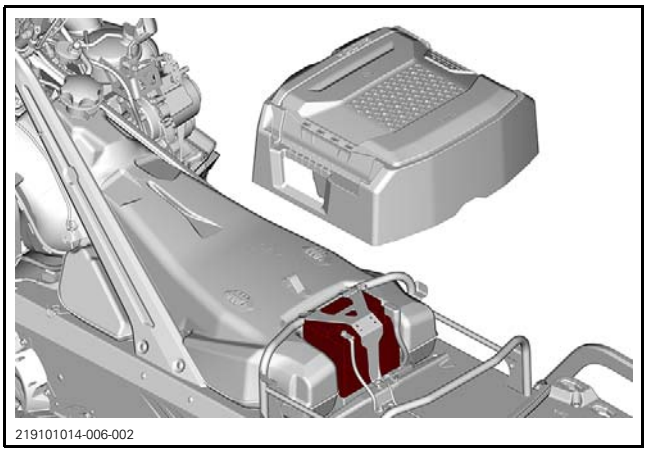

219101014-006-001

4. Remove the battery.

16 in Track

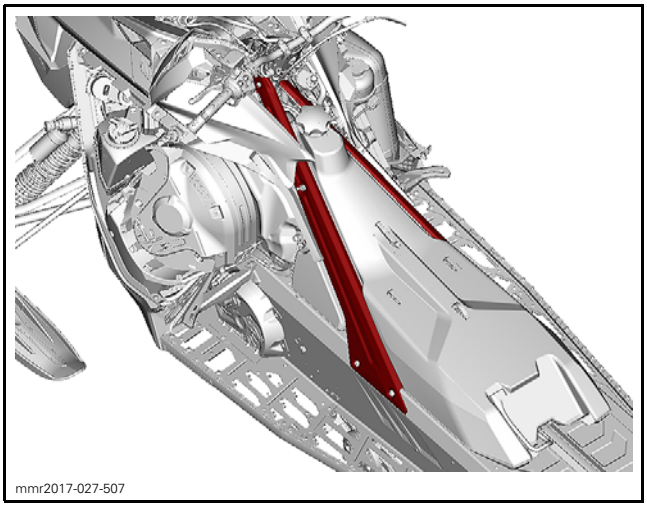

mmr2017-027-506

20 and 24 in Track


219101014-006-002

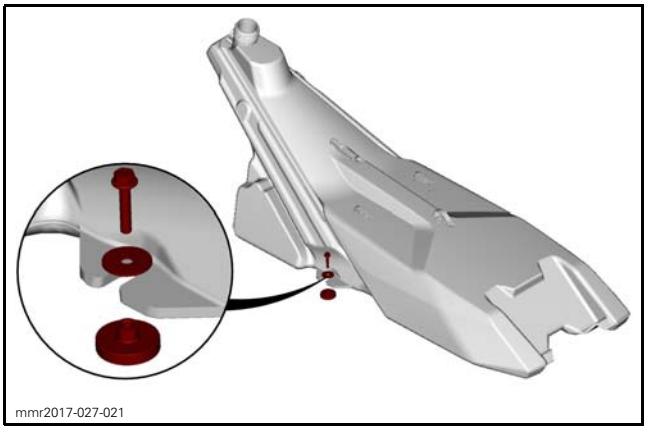
All Models

5. Remove rear frame members. Refer to *FRAME* subsection.


mmr2017-027-507

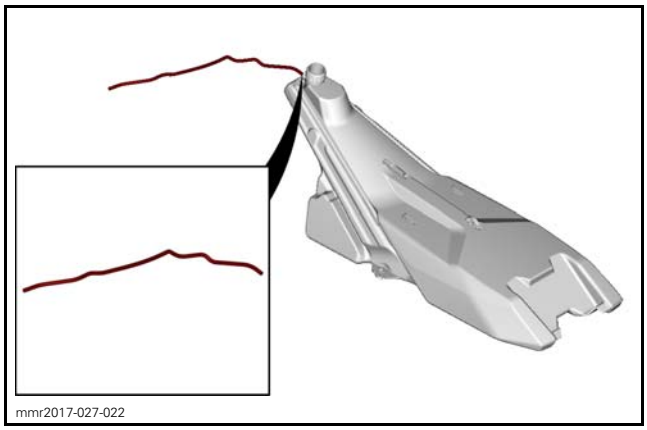
16 in Track

6. Remove and discard fuel tank retaining screws.

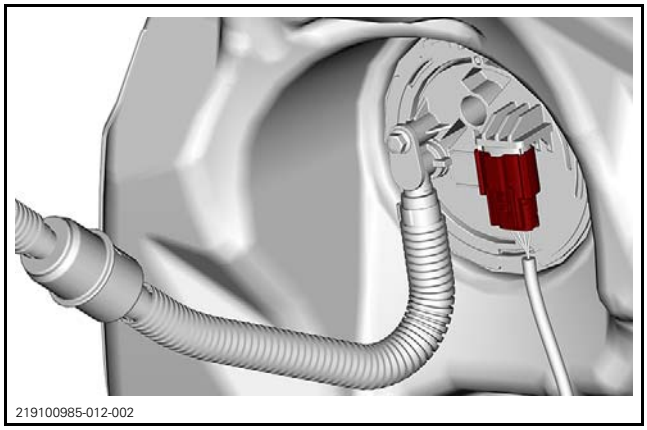

mmr2017-027-021

All Models

7. Disconnect fuel tank vent.


mmr2017-027-022

8. Remove fuel pump electrical connector.


219100985-012-002

9. Disconnect fuel hose from fuel rail.
10. Remove fuel tank.

Installing the Fuel Tank

The installation is the reverse of the removal procedure. However, pay attention to the following.

Refer to appropriate subsections to properly reinstall all removed components.

Pressurize and test fuel system for leaks.

FUEL PUMP

Relieving Fuel Pressure

1. Connect vehicle to BUDS2, refer to the *COMMUNICATION TOOLS* subsection.
2. From the **Functions** page, relieve fuel pressure.

Activating the Fuel Pump with BUDS2

NOTE: Activating the fuel pump as described in this procedure can be used for purging air from the fuel system whenever a fuel hose has been disconnected and reconnected. The pump should be activated for 15 seconds to ensure proper purging of the system.

1. Connect vehicle to BUDS2 software, refer to *COMMUNICATION TOOLS* subsection.
2. From the **Functions** page, activate the fuel pump.
3. Listen for fuel pump operation.

If you do not hear the pump come ON, select the **Faults** tab in BUDS2 and check for fault codes.

If there is no fault code, connect a known good fuel pump to the vehicle harness (in parallel) and repeat the test.

NOTE: No voltage test can be done when the fuel pump is disconnected.

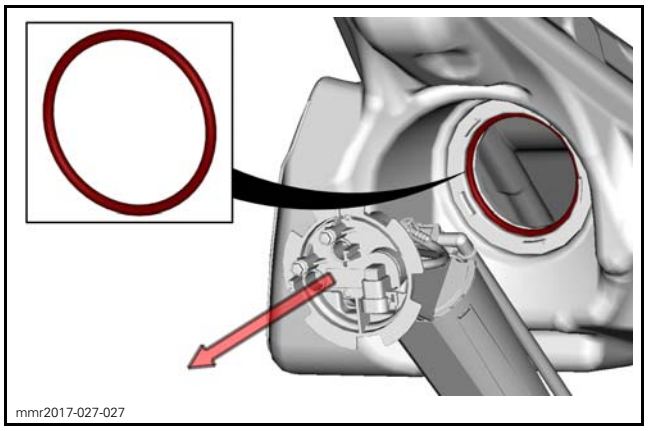
If the second fuel pump functions when connected to the vehicle harness, then replace the fuel pump installed in the vehicle.

Removing the Fuel Pump

1. Remove the fuel tank.
2. Remove fuel pump assembly snap ring from fuel tank.


mmr2017-027-026

3. Remove and discard fuel pump gasket.


mmr2017-027-027

4. Visually inspect for broken or damaged ground wires, if any issue are found, the module should be replaced.

Installing the Fuel Pump

The installation is the reverse of the removal procedure. However, pay attention to the following.

Make sure the remote pick-up is inserted all the way to the rear of fuel tank and does not interfere with the fuel level sensor float.

Install a **NEW** gasket on the fuel pump prior to installing the pump in the tank.

Ensure the fuel pump snap ring is fully engaged with the gap on top. Refer to image in removal procedure.

NOTE: The gasket must be installed on the fuel tank side so it is located between the pump and the fuel tank.

Install fuel tank.

⚠ WARNING

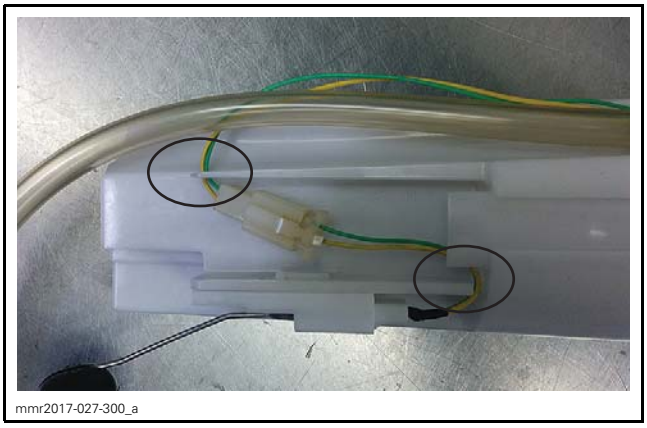
After working on the fuel system, carry out a fuel system pressurization test to check for leaks. Failure to carry out a fuel system leak test could result in severe injury or a life threatening situation should a leak occur.

FUEL PUMP INLET FILTER

Replacing the Fuel Pump Inlet Filter

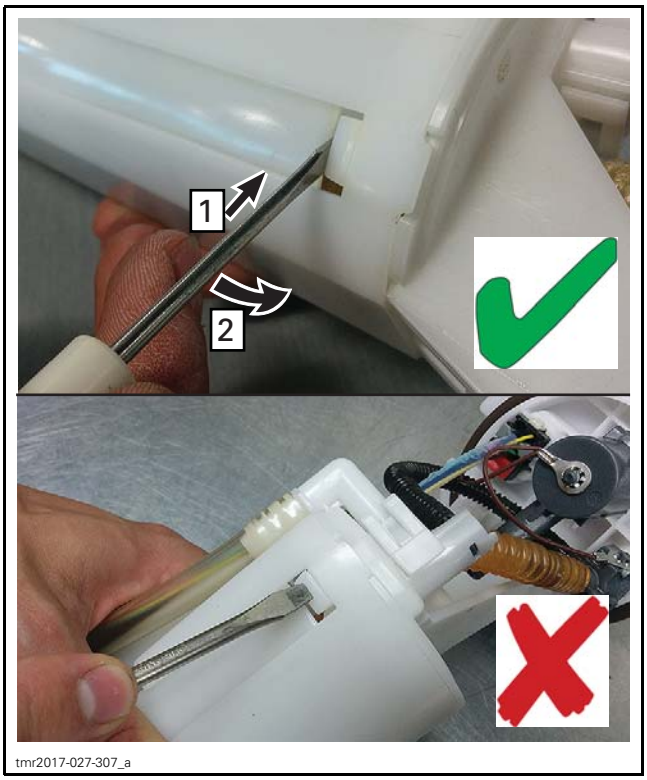
1. Remove fuel pump assembly from fuel tank. Refer to procedure in this subsection.
2. Free the wires of the fuel level sensor of the fuel pump reservoir.

NOTICE **Do not pull / push on wires or metal terminals that connect the grounding wires to the plastic parts. Keep hands and tools away from this area.**


mmr2017-027-300_a

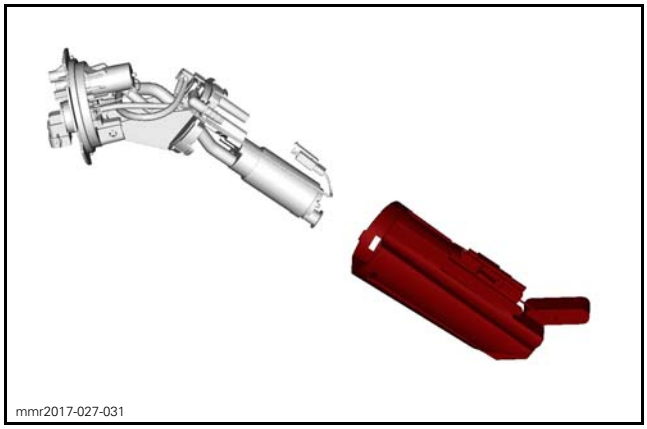
3. Unlock fuel pump reservoir by carefully inserting a small screwdriver between the tab and the fuel pump reservoir.

NOTICE Do not push directly on tabs or twist the screwdriver.



tmr2017-027-307_a

4. Completely remove fuel pump reservoir by pulling it carefully.


mmr2017-027-031

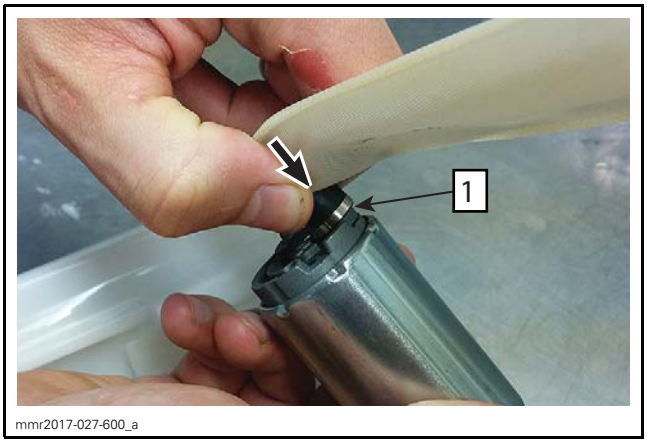
NOTICE To avoid damaging wires, Pull the reservoir carefully and do not let reservoir hang by wires.

5. Remove inlet fuel pump filter by pulling on it. If the filter is hard to remove, pry the filter gently using a small screwdriver.

NOTICE Be careful to avoid scratching the outside diameter of the pump inlet fitting where the filter fits.

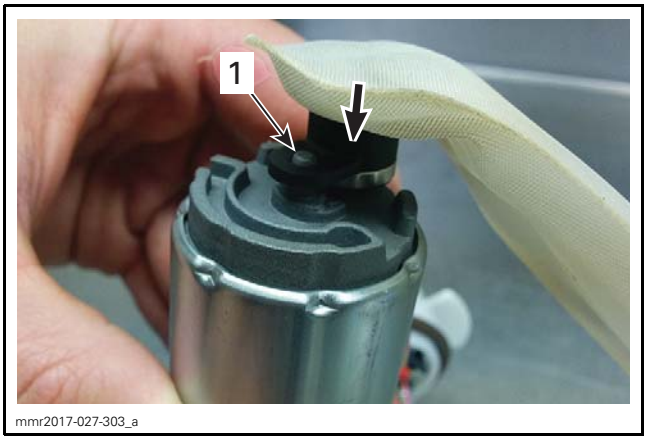

mmr2017-027-302_a

6. Discard inlet fuel pump filter and steel ring.
7. Install new fuel pump inlet filter.
   - 7.1 Insert inlet filter onto fuel pump by pressing it downward.
   - 7.2 Push the filter on until the fitting bottoms out on the pump inlet face, there should be no gap.



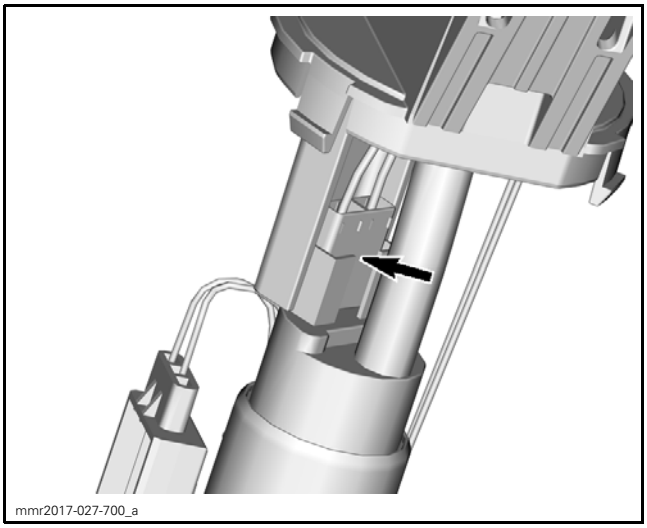
1. No gap here

7.3 Ensure that the filter hole is properly positioned into the pin.



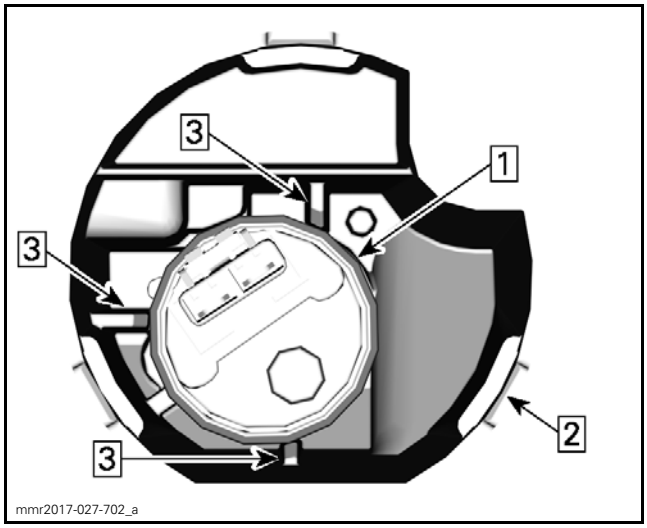
1. Pin

8. Install fuel pump reservoir carefully and ensure that all parts are properly positioned.

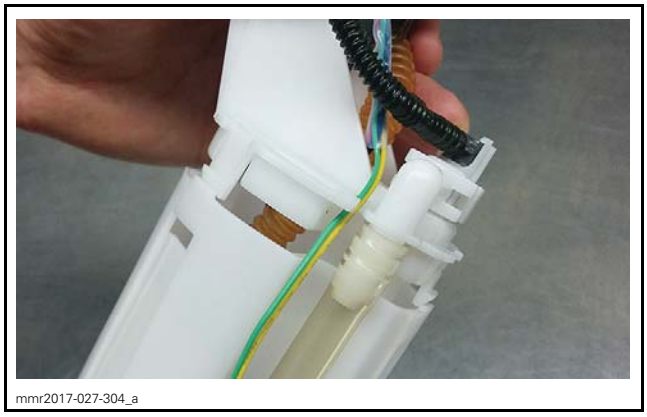


ELECTRICAL CONNECTOR MUST BE IN THIS POSITION

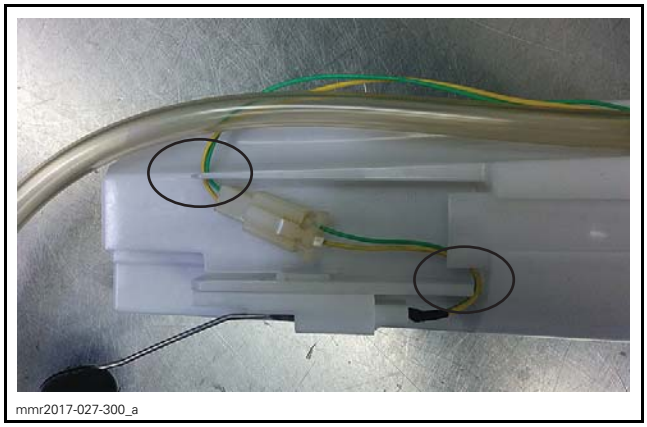
NOTE: Make sure the pump motor is positioned between the molded ribs in the reservoir.



1. Fuel pump motor
2. Reservoir
3. Ribs



9. Ensure that fuel tank reservoir tabs are properly locked.
10. Route the fuel level sensor wires properly.



11. Reinstall fuel pump in fuel tank. Refer to procedure in this subsection.

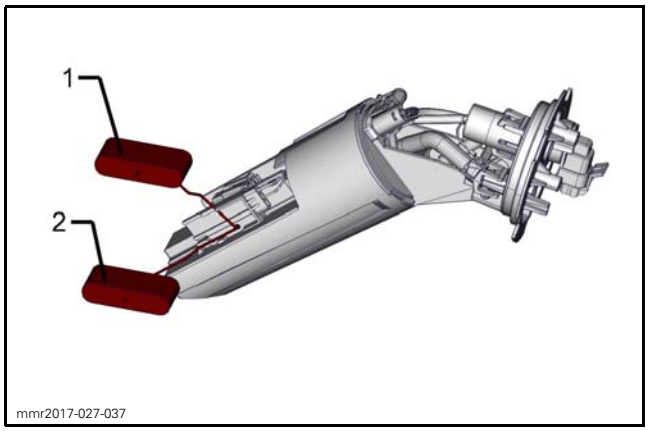
FUEL LEVEL SENSOR

NOTE: Verify the gauge functions related to the fuel level sensor before testing the sensor. Refer to *GAUGE* subsection.

Testing Fuel Level Sensor Resistance

1. Remove fuel pump from fuel tank, refer to *FUEL PUMP* in this subsection.
2. Ensure the fuel level sensor is properly connected in the fuel pump module.
3. Measure the resistance at the fuel pump connector **(FP)**.

FUEL LEVEL SENSOR BENCH TEST		
PROBE	FLOAT POSITION	RESISTANCE
FP- B to FP-D	Empty	95 Ω ± 5 Ω
	Full	9 Ω ± 2 Ω



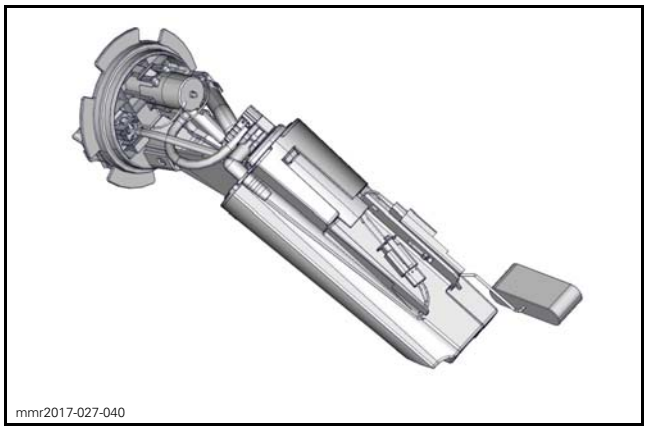
TYPICAL FUEL PUMP FLOAT
1. Full position
2. Empty position

4. When fuel level sensor travels from full to empty or vice-versa, there should be a constant linearity to the resistance readings. Any spike or drop of resistance indicates a "flat spot" in the fuel level sensor circuitry.

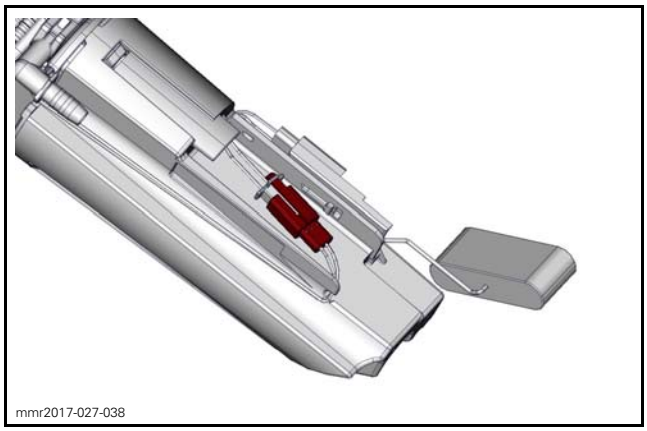
If fuel level sensor fails bench test, replace the fuel level sensor.

Replacing the Fuel Level Sensor

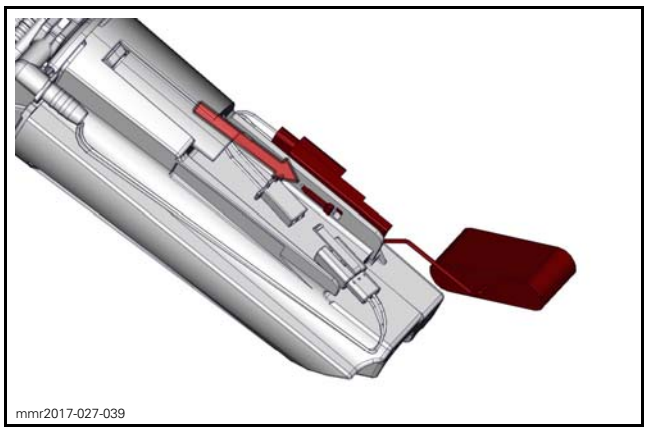
1. Remove the fuel pump.



2. Disconnect fuel level sensor connector.



3. Slide the potentiometer out of the fuel pump reservoir.



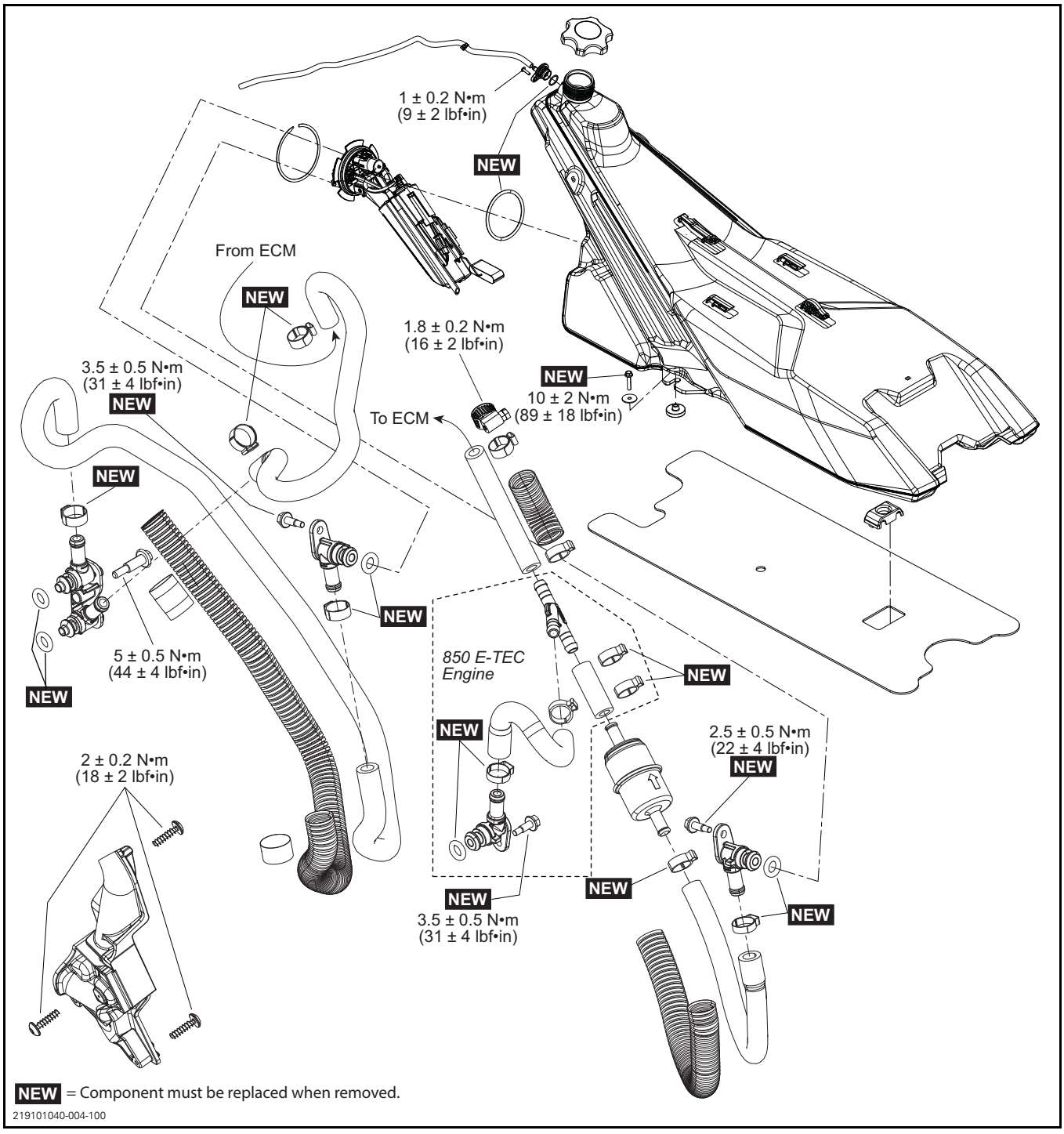
4. Remove fuel level sensor.
5. Replace the fuel level sensor with a new one and reverse steps.

FUEL TANK AND FUEL PUMP (E-TEC)

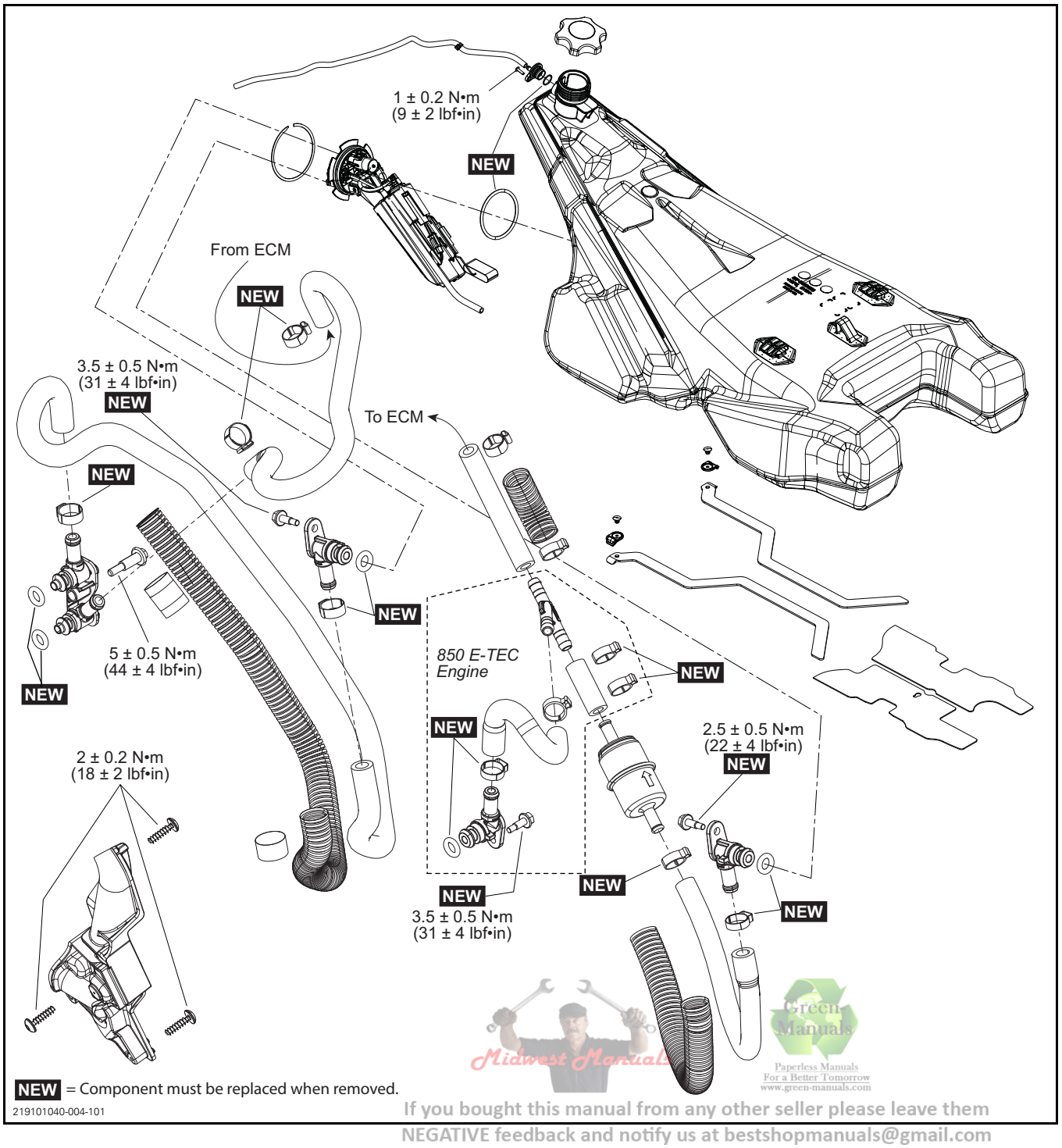
SERVICE TOOLS

Description	Part Number	Page
LEAK TEST KIT	529 033 100	87
OETIKER PLIER	295 000 070	90
PRESSURE GAUGE	529 036 395	88
SMALL HOSE PINCHER	295 000 076	87
T FITTING FUEL PRESSURE	529 036 509	88
VACUUM/PRESSURE PUMP	529 021 800	87

16 in Track


1 ± 0.2 N•m
(9 ± 2 lbf•in)
NEW
From ECM
NEW
1.8 ± 0.2 N•m
(16 ± 2 lbf•in)
3.5 ± 0.5 N•m
(31 ± 4 lbf•in)
NEW
NEW
10 ± 2 N•m
(89 ± 18 lbf•in)
To ECM
NEW
NEW
5 ± 0.5 N•m
(44 ± 4 lbf•in)
NEW
850 E-TEC
Engine
NEW
NEW
2.5 ± 0.5 N•m
(22 ± 4 lbf•in)
NEW
2 ± 0.2 N•m
(18 ± 2 lbf•in)
NEW
NEW
NEW
3.5 ± 0.5 N•m
(31 ± 4 lbf•in)
NEW = Component must be replaced when removed.
219101040-004-100

20 and 24 in Track



Midwest Manuals
Green Manuals
Paperless Manuals
For a Better Tomorrow
www.green-manuals.com
If you bought this manual from any other seller please leave them
NEGATIVE feedback and notify us at bestshopmanuals@gmail.com

GENERAL

NOTE: It is a good practice to check for fault codes using the BRP diagnostic software BUDS2 as a first troubleshooting step. Refer to *DIAGNOSTIC AND FAULT CODES*.

⚠ WARNING

Always disconnect the magneto connector prior to:
– Disconnecting any fuel hose.
– Removing a fuel injector.
– Removing a spark plug cable or spark plug.
Otherwise, if the engine is cranked, fuel vapors may ignite in presence of a spark creating a fire hazard.

When disconnecting a fuel line, cover the connection with an absorbent shop rag and proceed slowly to minimize spilling.

⚠ WARNING

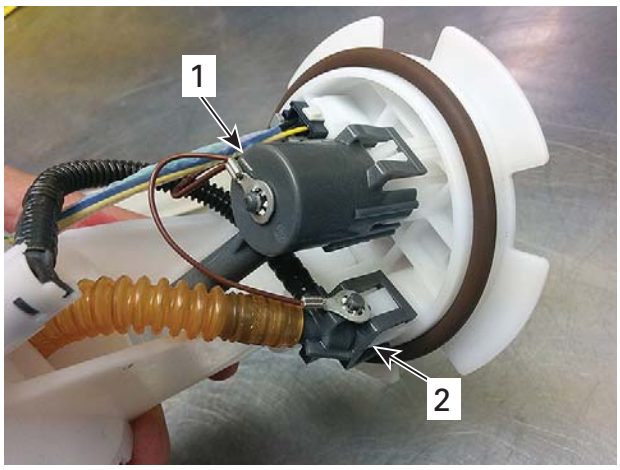
Do not allow fuel to spill on hot engine parts and/or on electrical connectors. Wipe off any fuel spillage in the engine compartment. Fuel is flammable and explosive under certain conditions.

⚠ WARNING

After working on the fuel system, always carry out a fuel system pressurization test to check for leaks.

⚠ WARNING

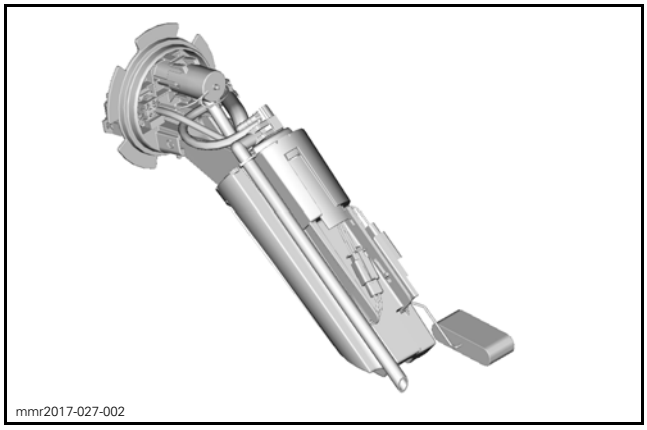
Never remove the eyelet connectors from the fuel pressure regulator and the fuel hose connector. A bad connection may create a static electricity discharge causing a fire hazard.



1. Fuel pressure regulator
2. Fuel hose connector

SYSTEM DESCRIPTION

Electric Fuel Pump



An electric fuel pump is mounted in the front center portion of the fuel tank.

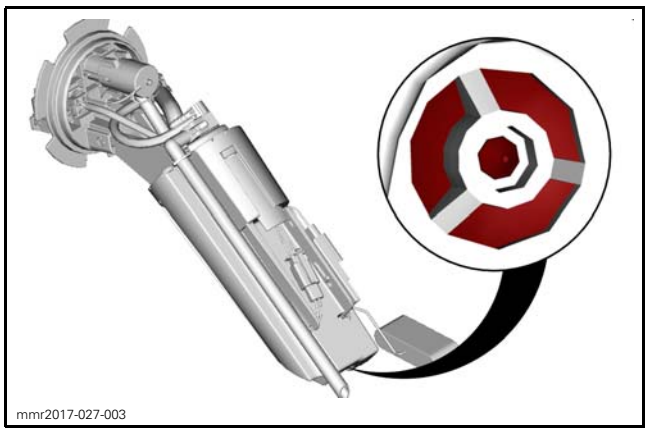
A 12 Vdc high pressure fuel pump with an integrated jet pump is used.

NOTE: Although the fuel pump is connected to the 55 Vdc system, the ECM modulates the voltage (Pulse Width Modulation) between 9 and 16 Vdc depending on the engine RPM. The fuel pump output will change as voltage changes.

As soon as the engine is cranking, the electric fuel pump turns on in preparation for the engine start. When the engine runs, the fuel pump is ON continuously to provide a constant fuel pressure to the injectors.

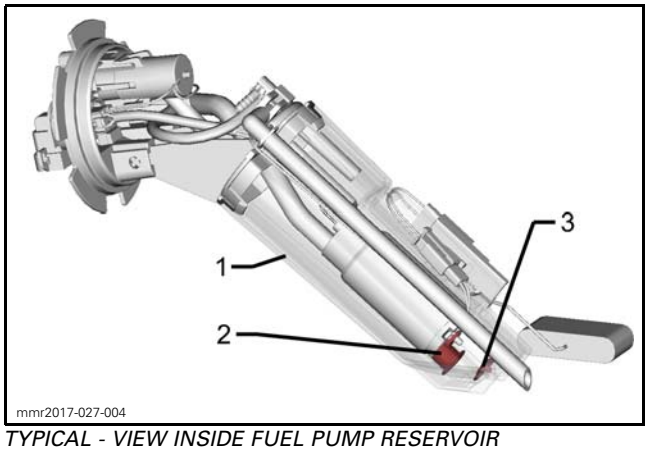
To ensure a constant delivery of fuel to the engine for all riding conditions when the fuel level is low, a rear pickup and a fuel pump reservoir is used.

The fuel pump reservoir is actually the housing of the fuel pump module in which the fuel pump is located. A check valve at the bottom of the housing allows the fuel in the tank to enter the fuel pump reservoir.



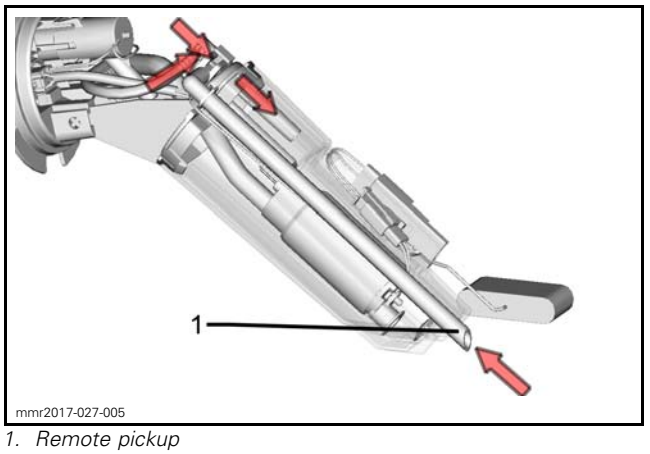
When the fuel pump runs, it draws the fuel from the fuel pump reservoir and feeds it to the injection system. This causes fuel in the tank to enter the fuel pump reservoir, by gravity, through its bottom inlet check valve.

At the same time, a portion of the fuel flow from the electric fuel pump flows through a jet pump that contains a venturi.



TYPICAL - VIEW INSIDE FUEL PUMP RESERVOIR
1. *Fuel pump reservoir*
2. *Bottom inlet*
3. *Check valve (open upwards)*

As the fuel accelerates through the venturi, it generates a low pressure area at a connection to the remote pickup, which draws fuel into the fuel pump reservoir from the remote pickup.



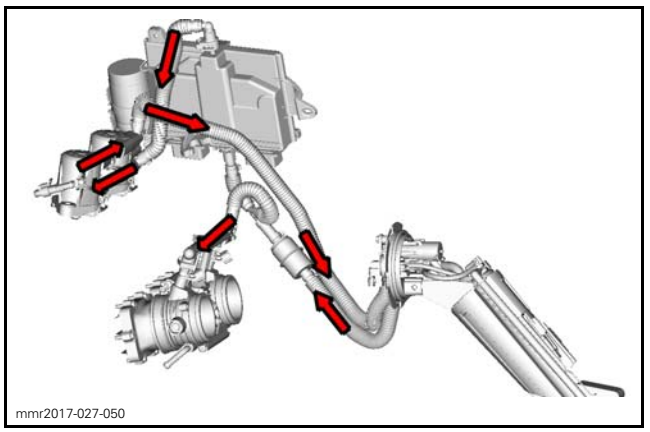
1. *Remote pickup*

When riding the vehicle on a level surface, fuel enters into the fuel pump reservoir through its check valve and through the remote pickup simultaneously, as long as there is enough fuel in the tank to cover the remote pickup.

When riding downhill with a low amount of fuel in the tank, the fuel moves towards the front of fuel tank. The fuel enters the fuel pump reservoir through the check valve only as there is no fuel at the remote pickup.

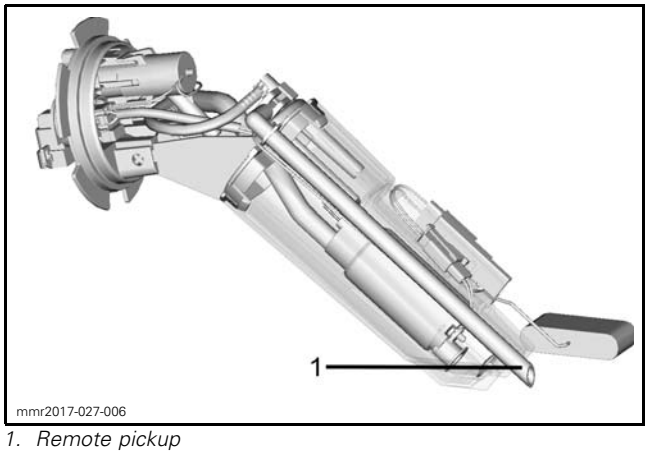
When riding uphill with a low amount of fuel in the tank, the fuel moves towards the rear of the fuel tank. The check valve closes and traps the fuel in the pump reservoir. The fuel pump continues to draw fuel from the fuel pump reservoir, which is now only fed by the jet pump using the remote pickup. This prevents air from being drawn into the fuel lines from the fuel tank.

The continuous fuel flow cools down the fuel pump, the injectors and the ECM. To cool these components, the fuel circulates as follows:
- Out of fuel pump
- Through the ECM
- To the direct injectors (around the voice coils)
- Through the pressure regulator
- Back to fuel tank.



Fuel Pickup

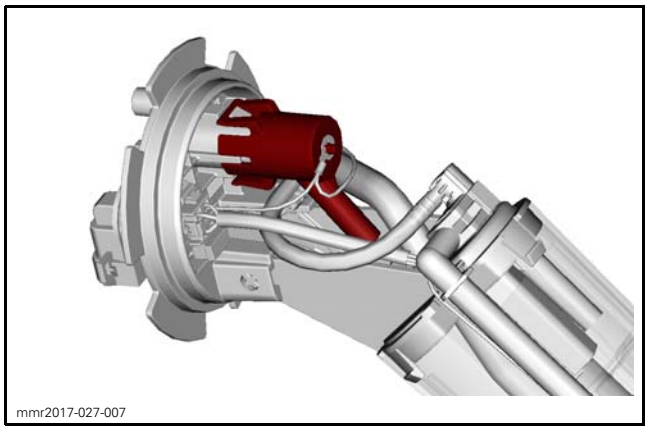
Fuel enters the fuel pump reservoir from either a check valve at the bottom of the fuel pump reservoir, or from a remote pickup in the rear portion of the fuel tank.



1. Remote pickup

Fuel Pressure Regulator

An integrated fuel pressure regulator is mounted on the fuel pump flange. It is basically a spring loaded valve that opens and closes the path of fuel returning to the tank, thus maintaining a constant fuel pressure in the system.



FUEL PRESSURE
Approximately 303 kPa (44 PSI) at 2000 RPM (will be lower at idle)

Fuel pressure should drop less than 35 kPa (5 PSI) when engine stops running.

If a leak is present, pressure will continue to drop within the first minute after engine stops running.

Fuel Tank Vent

The fuel tank is vented through a combination type check valve that allows ambient air pressure to enter fuel tank at all times.

As fuel is consumed by the engine, a negative pressure would occur in the fuel tank. This could eventually prevent the fuel pump from drawing enough fuel. The **negative pressure relieve function** of the valve allows the higher outside air pressure in.

If pressure builds up and exceeds 2.0 kPa to 4.8 kPa (.3 PSI to .7 PSI) in the fuel tank, the check valve opens and lets the excess pressure vent out of the tank.

Fuel Filters

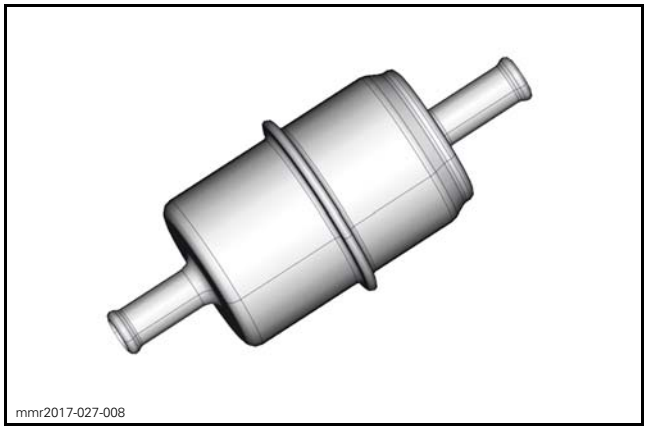
Fuel Pump Pre-Filter

A fuel pump pre-filter is used at the electric fuel pump inlet. It is a replaceable nylon mesh filter located within the fuel pump module housing (fuel pump reservoir).



The fuel pump pre-filter protects the fuel pump and prevents clogging of the fuel passages within the fuel pump module.

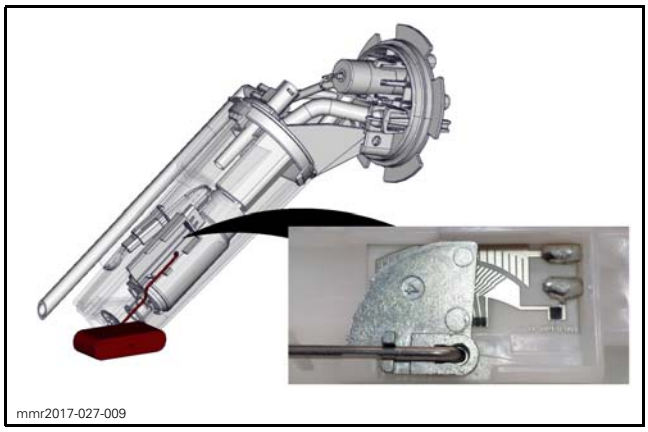
In-Line Fuel Filter



An in-line filter on the supply side is located between the fuel pump and the ECM.

It is a replaceable metallic canister type filter used to deliver dirt-free fuel to the injectors.

Fuel Level Indication


mmr2017-027-009

A float type fuel level sensor varies its resistance with fuel level thus providing a signal to the multifunction gauge for fuel level indication.

INSPECTION

INSPECTING THE FUEL LINES AND CONNECTIONS

Visually inspect fuel lines and connections for cracks or leaks.

TESTING FUEL SYSTEM FOR LEAKS

Activate the fuel pump from the **Functions** page in BUDS2.

Check for fuel leaks.

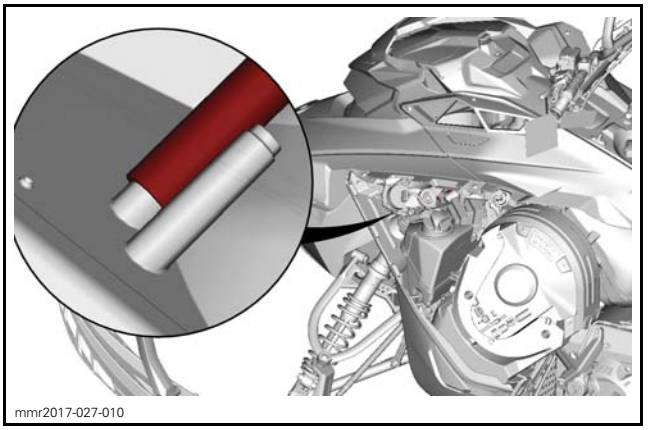
⚠ WARNING

After working on the fuel system, carry out a fuel system pressurization test to check for leaks. Failure to carry out a fuel system pressurization test could result in severe injury or a life threatening situation should a leak occur.

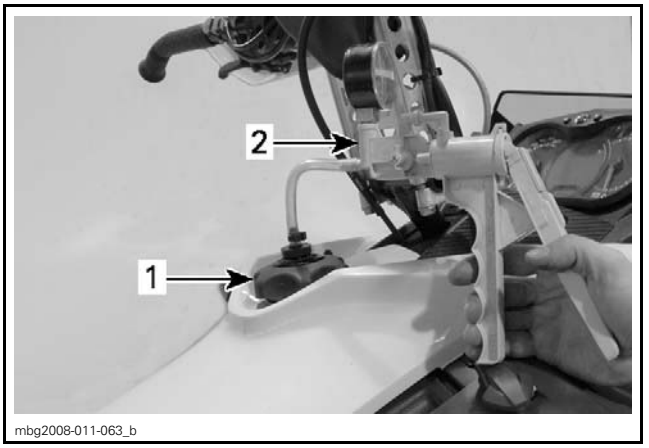
TESTING FUEL TANK FOR LEAKS

REQUIRED TOOLS	
SMALL HOSE PINCHER (P/N 295 000 076)	
LEAK TEST KIT (P/N 529 033 100)	
VACUUM/PRESSURE PUMP (P/N 529 021 800)	

1. Fill up fuel tank.
2. Open the left side panel to access the fuel vent tube.
3. Install a hose pincher on the vent tube.


mmr2017-027-010

4. Install the appropriate test cap from the leak test kit on fuel tank inlet.
5. Install the pressure pump on pressure test fuel cap.



mbg2008-011-063_b

TYPICAL
1. Pressure test fuel cap
2. Vacuum/pressure pump

6. Set pump selector to pressure.
7. Pressurize fuel tank as follows.

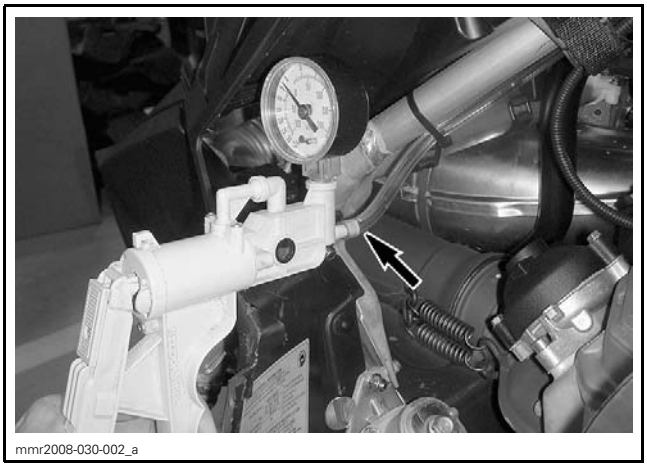
PRESSURE	TIME WITHOUT PRESSURE DROP
21 kPa (3 PSI)	3 minutes

If pressure drops, locate fuel leak(s) and repair or replace leaking component(s).

To ease locating leak(s), spray soapy water on components; bubbles will indicate leak location(s).

Fuel Tank Vent Valve Test

1. While the fuel tank is still pressurized as in the previous test, carry out the following:
2. Place a finger over the vent hose outlet.
3. When removing hose pincher, alternately touch and release vent hose outlet. You should feel pressurized air flowing out indicating the pressure relief valve function is working.
4. Release any remaining pressure in the fuel tank by slowly unscrewing fuel tank cap.
5. Remove the pressure test fuel cap.
6. Remove the fuel tank vent tube from its fitting on the lower left front body panel.
7. Install the pressure pump on the vent tube and apply air pressure through the vent valve. Air must flow freely towards the fuel tank neck.


mmr2008-030-002_a

TYPICAL - VACUUM/PRESSURE PUMP ON VENT TUBE

NOTE: If fuel vent check valve does not function as indicated in test, replace vent valve.

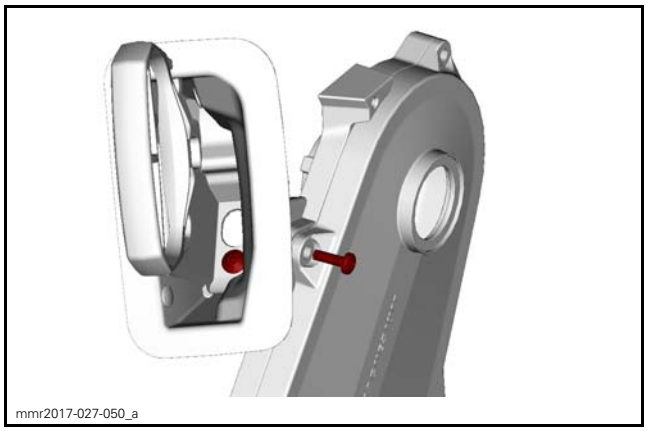
8. Remove vacuum/pressure pump.
9. Install vent tube on its fitting.
10. Install normal fuel tank cap.

TESTING THE FUEL PRESSURE

REQUIRED TOOLS	
PRESSURE GAUGE (P/N 529 036 395)	
T FITTING FUEL PRESSURE (P/N 529 036 509)	

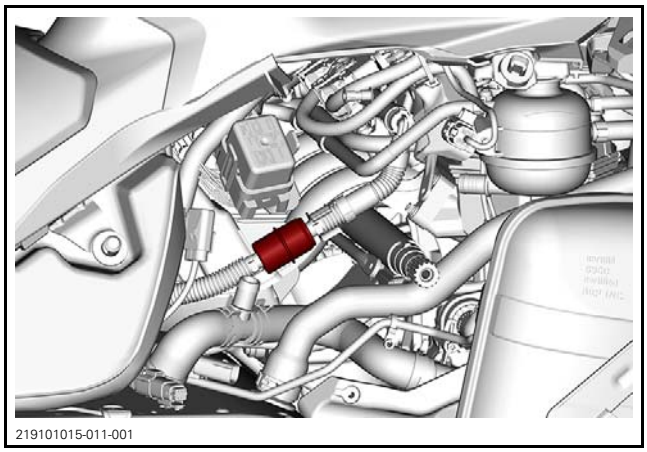
Open right hand side panel.

Move rewind starter handle assembly (applicable models).


mmr2017-027-050_a

The pressure test provides an indication of the available fuel pressure at the fuel pump outlet. It validates the pressure regulator and the fuel pump.

1. Ensure there is enough gas in fuel tank.
2. Install a rag under the fuel filter to catch the fuel spillage.
3. Remove the fuel filter.


219101015-011-001

4. Install the T fitting tool in place of the fuel filter. Secure with gear clamps.


219101040-012-001

5. Install the pressure gauge on the T fitting tool.

⚠ WARNING

When carrying out pressure test, ensure fuel is not leaking from test equipment onto hot exhaust system or electrical components. Ensure fuel hose do not come into contact with hot engine parts or hot exhaust system.

6. Start engine.
7. Run engine above 2000 RPM and observe the fuel pressure.

FUEL PRESSURE
303 kPa (44 PSI)

If pressure is lower than specified, momentarily block the return hose while monitoring the pressure gauge.

NOTICE **Do not block the fuel return for more than 2 seconds.**

If pressure rises to reach or exceed specification with the fuel return blocked, replace fuel regulator.

If pressure does not rise with the fuel return blocked, refer to *PRESSURE BELOW SPECIFICATIONS* in the following table.

FUEL PRESSURE TROUBLESHOOTING	
RESULT	POSSIBLE CAUSE
Pressure above specifications	Defective fuel regulator

FUEL PRESSURE TROUBLESHOOTING	
RESULT	POSSIBLE CAUSE
Pressure below specifications	Clogged fuel filter
	Poor electrical connection
	Defective fuel regulator
	Defective fuel pump
	Leak in the fuel system circuit

8. Stop engine.

Fuel pressure should remain stable.

9. If fuel pressure drops, check the following for leaks:
   - Tools
   - Hoses
   - Fuel injectors
   - Fuel pressure regulator
   - Fuel pump.
10. Bleed away any remaining fuel in the pressure gauge and fuel hose adapter using the bleed valve on the fuel hose adapter.
11. Remove pressure gauge and fuel hose adapter.
12. Reinstall the fuel pressure hose on ECM . Refer to *REPLACING THE ECM LOWER FUEL HOSE*
13. Reinstall all remaining removed parts.

PROCEDURES

FUEL HOSE AND OETIKER CLAMPS

Replacing Fuel Hoses


mmr2017-027-013

TYPICAL PRE-FORMED FUEL HOSE

When replacing fuel hoses, be sure to use hoses as available from BRP parts department. This will ensure continued proper and safe operation.

⚠ WARNING

Use of fuel lines other than those recommended by BRP may compromise fuel system integrity.

⚠ WARNING

- Never use a hose pincher on high pressure hoses.
- Never change the routing of a fuel hose.
- Always reinstall the corrugated protective tubing on fuel hoses.
- Secure fuel hoses using the appropriate locking tie or fastener to prevent contact with sharp edges or hot, rotating and moving parts.
- After connecting a hose or a quick connect fitting, pull on the hose near the fitting to make sure it is securely locked.
- Always validate fuel system tightness by performing a *FUEL SYSTEM PRESSURIZATION AND LEAK TEST*.

Replacing Oetiker Clamps



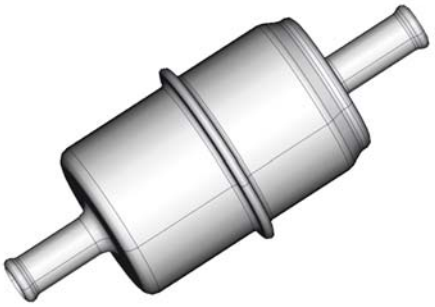
mmr2017-027-012

REQUIRED TOOL	
OETIKER PLIER (P/N 295 000 070)	

⚠ WARNING

Whenever removing a hose in the fuel system, always use new Oetiker clamps at assembly.

REPLACING THE IN-LINE FUEL FILTER



mmr2017-027-008

Removing the In-line Fuel Filter

⚠ WARNING

Work in a well ventilated area. Wipe up all spilled fuel.

1. Release fuel pressure in the system. .
2. Remove the upper body module. Refer to *BODY* subsection.
3. Disconnect magneto connector.

⚠ WARNING

The magneto connector must be disconnected to prevent any spark in the engine compartment and to remove power from the fuel pump. Otherwise, if the engine is cranked, fuel vapors may ignite in presence of a spark creating a fire hazard.

4. Place a rag between fuel filter and oil injection tank.
5. Cut both Oetiker clamps securing the fuel filter.
6. Remove fuel filter from vehicle.

Dispose fuel filter as per your local environmental regulations.

Installing the In-Line Fuel Filter

The installation is the reverse of the removal procedure however, pay attention to the following.

Insert new Oetiker clamps on both hoses.

Install the new filter. Make sure printed arrow pointed towards the ECM.

Secure the fuel filter with Oetiker clamps.

⚠ WARNING

Ensure hose clamp is tight and that hose cannot turn on the fitting.

When installation is complete, carry out a fuel system leak test, refer to *TESTING FUEL SYSTEM FOR LEAKS* in this subsection.

⚠ WARNING

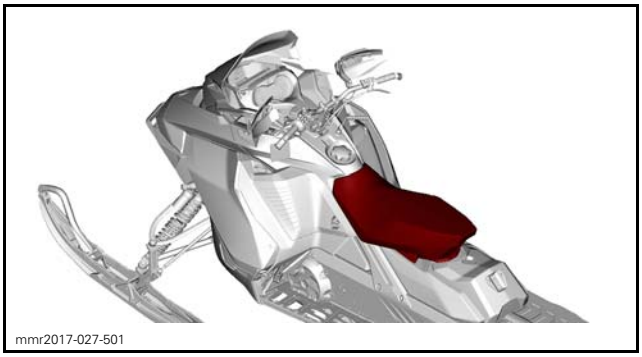
After working on the fuel system, carry out a fuel system pressurization test to check for leaks. Failure to carry out a fuel system leak test could result in severe injury or a life threatening situation should a leak occur.

Reinstall all removed parts.

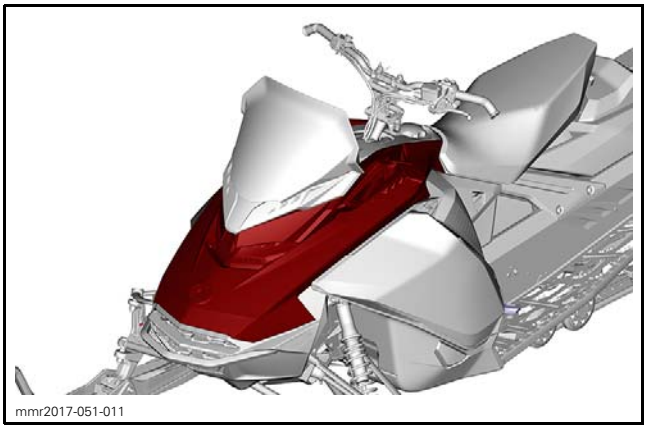
FUEL TANK

Removing the Fuel Tank

1. Remove seat.

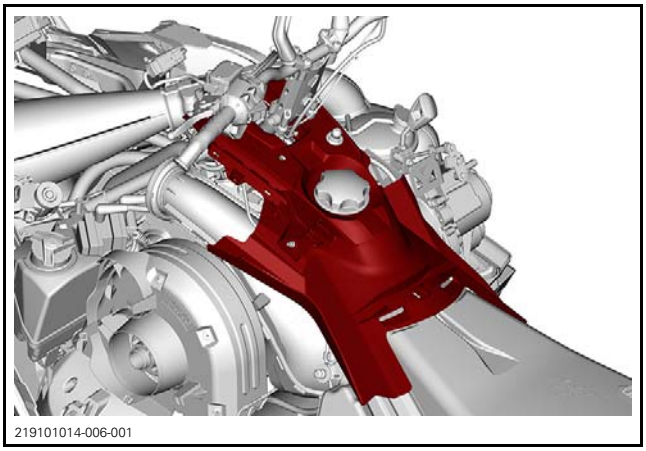


2. Remove upper body module. Refer to *BODY* subsection.



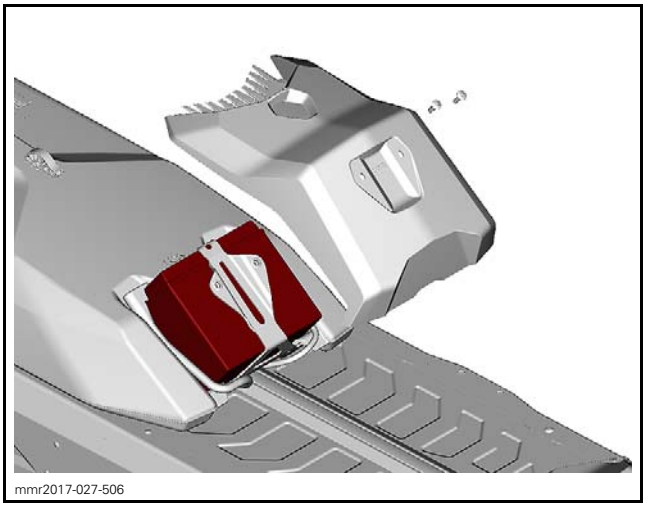
TYPICAL

3. Remove tank cover.

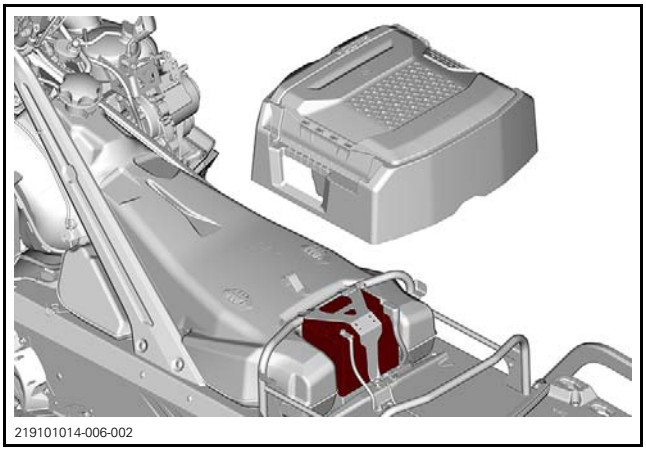


4. Remove the battery, if applicable.

16 in Track

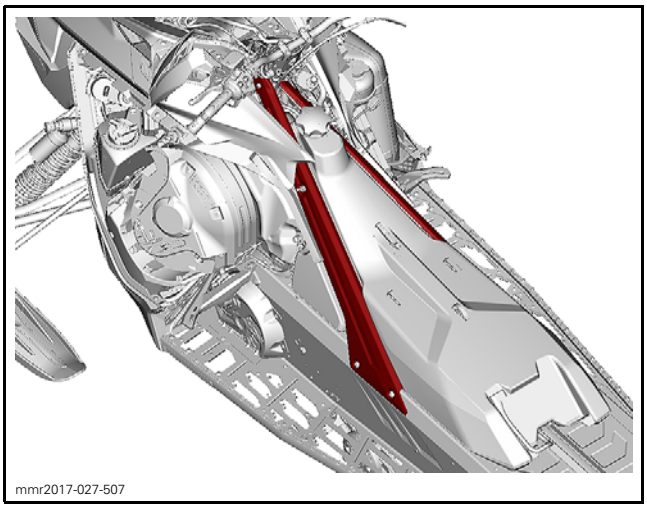


20 in Track

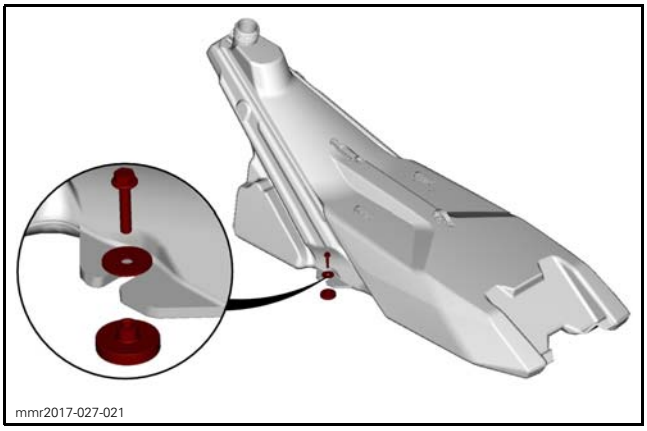


All Models

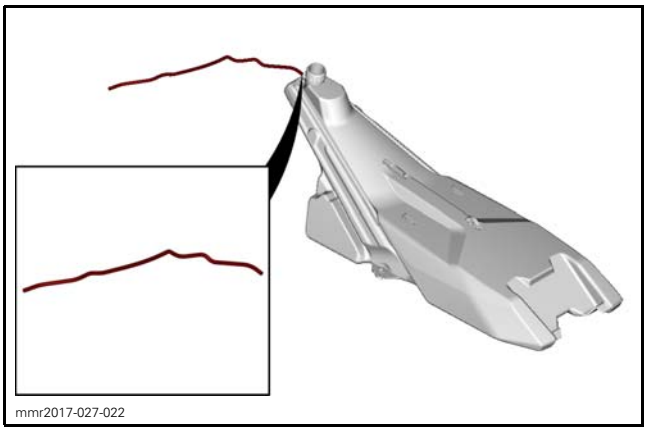
5. Remove rear frame members. Refer to *FRAME* subsection.


mmr2017-027-507

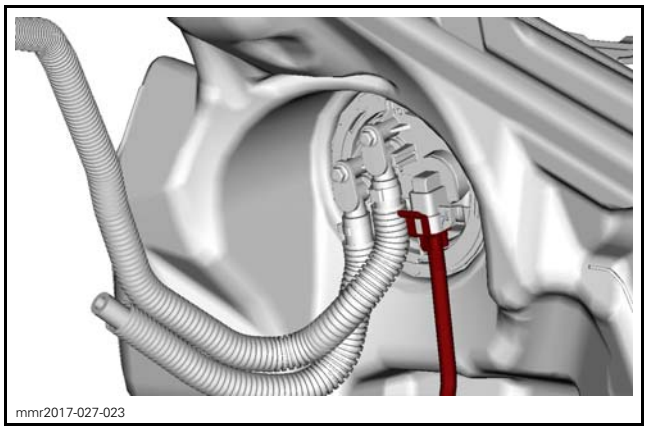
6. Remove and discard fuel tank retaining screws or rivets.


mmr2017-027-021

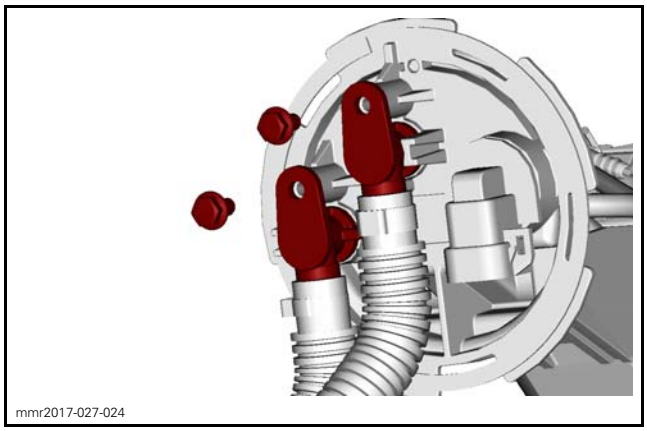
7. Remove fuel tank vent.


mmr2017-027-022

8. Remove fuel pump electrical connector.


mmr2017-027-023

9. Remove fuel hoses from pump. Discard screws.


mmr2017-027-024

10. Remove fuel tank.

Installing the Fuel Tank

The installation is the reverse of the removal procedure. However, pay attention to the following.

Refer to appropriate subsections to properly reinstall all removed components.

Pressurize and test fuel system for leaks.

FUEL PUMP

Relieving Fuel Pressure

1. Connect vehicle to BUDS2, refer to the *COMMUNICATION TOOLS* subsection.
2. From the **Functions** page, relieve fuel pressure.

Activating the Fuel Pump with BUDS2

NOTE: Activating the fuel pump as described in this procedure can be used for purging air from the fuel system whenever a fuel hose has been disconnected and reconnected. The pump should be activated for 15 seconds to ensure proper purging of the system.

1. Connect vehicle to BUDS2 software, refer to *COMMUNICATION TOOLS* subsection.
2. From the **Functions** page, activate the fuel pump.
3. Listen for fuel pump operation.

If you do not hear the pump come ON, select the **Faults** tab in BUDS2 and check for fault codes.

If there is no fault code, connect a known good fuel pump to the vehicle harness (in parallel) and repeat the test.

NOTE: No voltage test can be done when the fuel pump is disconnected.

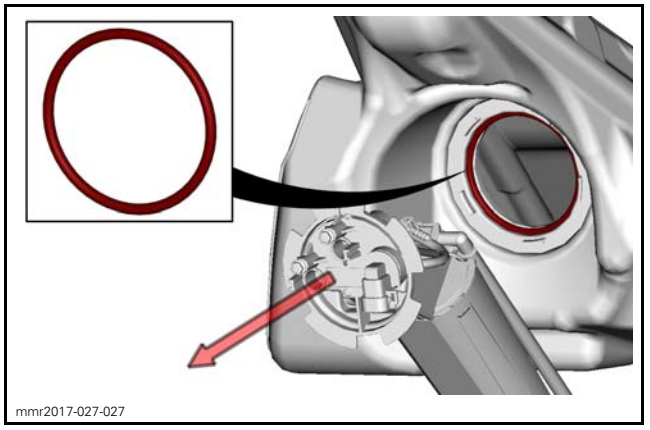
If the second fuel pump functions when connected to the vehicle harness, then replace the fuel pump installed in the vehicle.

Removing the Fuel Pump

1. Remove the fuel tank.
2. Remove fuel pump assembly snap ring from fuel tank.


mmr2017-027-026

3. Remove and discard fuel pump gasket.


mmr2017-027-027

4. Visually inspect for broken or damaged ground wires, if any issue are found, the module should be replaced.

Installing the Fuel Pump

The installation is the reverse of the removal procedure. However, pay attention to the following.

Make sure the remote pick-up is inserted all the way to the rear of fuel tank and does not interfere with the fuel level sensor float.

Install a **NEW** gasket on the fuel pump prior to installing the pump in the tank.

Ensure the fuel pump snap ring is fully engaged with the gap on top. Refer to image in removal procedure.

NOTE: The gasket must be installed on the fuel tank side so it is located between the pump and the fuel tank.

Install fuel tank.

⚠ WARNING

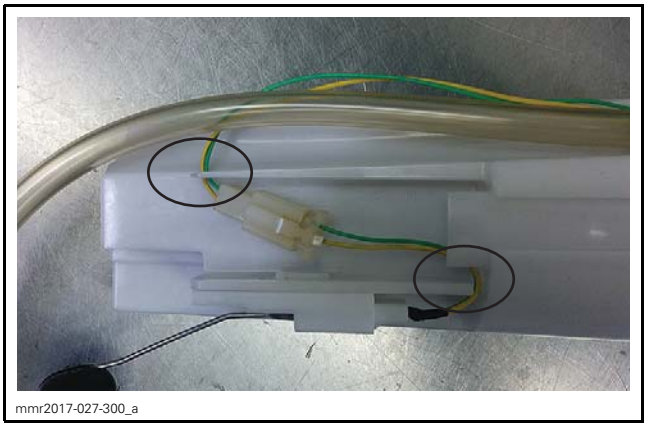
After working on the fuel system, carry out a fuel system pressurization test to check for leaks. Failure to carry out a fuel system leak test could result in severe injury or a life threatening situation should a leak occur.

FUEL PUMP INLET FILTER

Replacing the Fuel Pump Inlet Filter

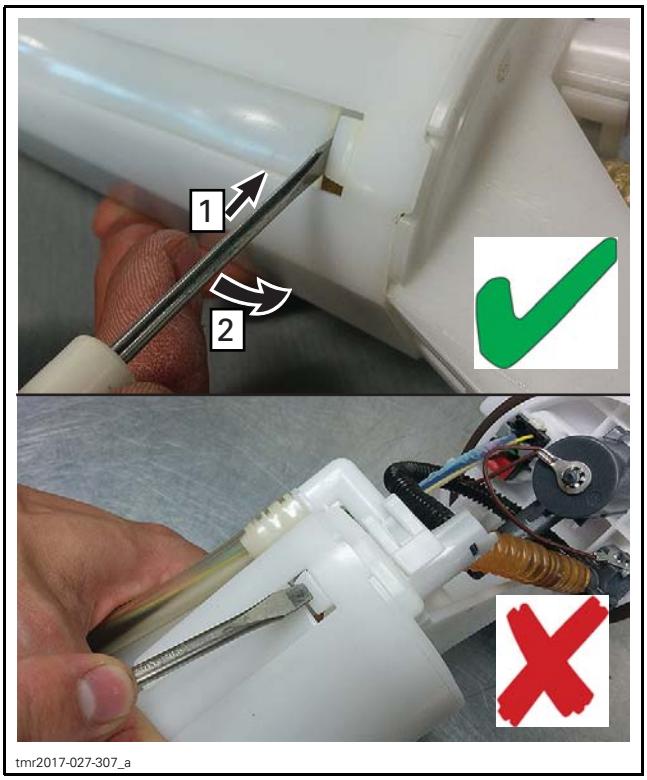
1. Remove fuel pump assembly from fuel tank. Refer to procedure in this subsection.
2. Free the wires of the fuel level sensor of the fuel pump reservoir.

NOTICE **Do not pull / push on wires or metal terminals that connect the grounding wires to the plastic parts. Keep hands and tools away from this area.**


mmr2017-027-300_a

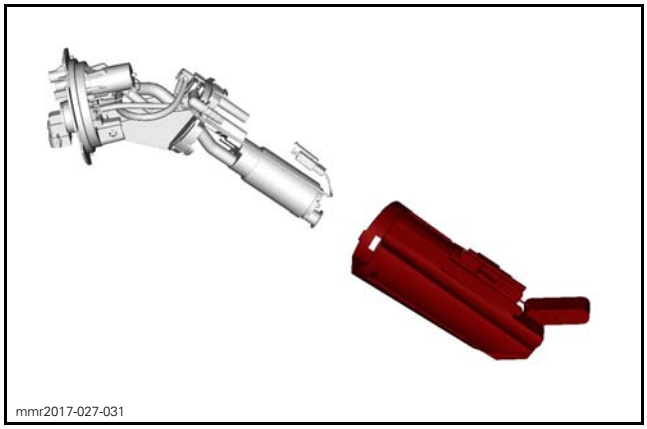
3. Unlock fuel pump reservoir by carefully inserting a small screwdriver between the tab and the fuel pump reservoir.

NOTICE Do not push directly on tabs or twist the screwdriver.



tmr2017-027-307_a

4. Completely remove fuel pump reservoir by pulling it carefully.


mmr2017-027-031

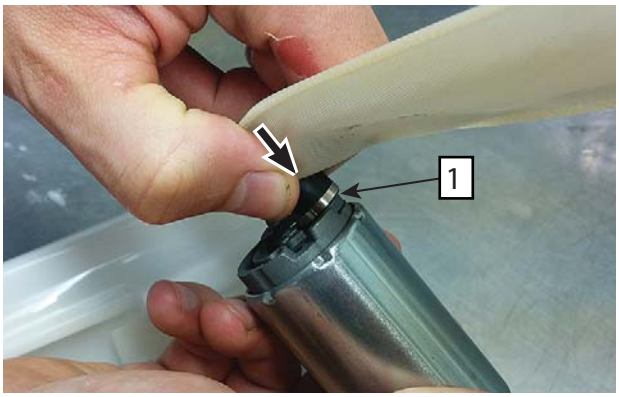
NOTICE To avoid damaging wires, Pull the reservoir carefully and do not let reservoir hang by wires.

5. Remove inlet fuel pump filter by pulling on it. If the filter is hard to remove, pry the filter gently using a small screwdriver.

NOTICE Be careful to avoid scratching the outside diameter of the pump inlet fitting where the filter fits.

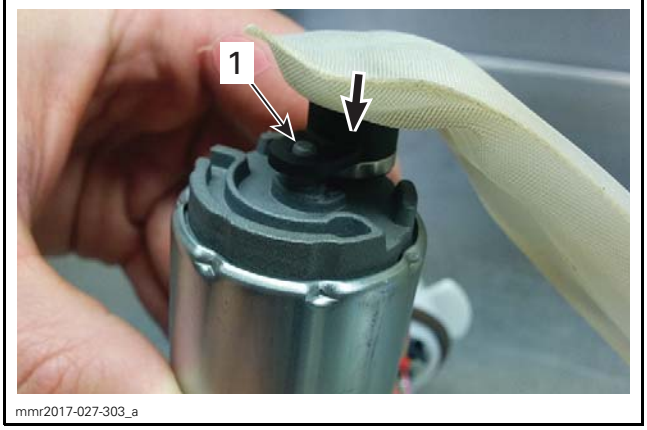

mmr2017-027-302_a

6. Discard inlet fuel pump filter and steel ring.
7. Install new fuel pump inlet filter.
   - 7.1 Insert inlet filter onto fuel pump by pressing it downward.
   - 7.2 Push the filter on until the fitting bottoms out on the pump inlet face, there should be no gap.



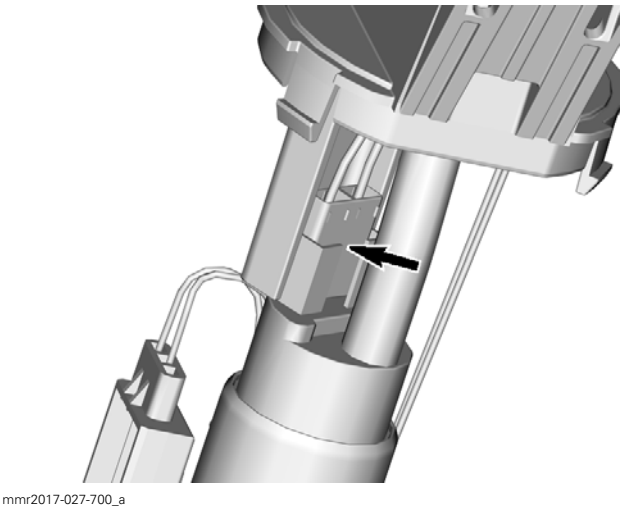
1. No gap here

7.3 Ensure that the filter hole is properly positioned into the pin.



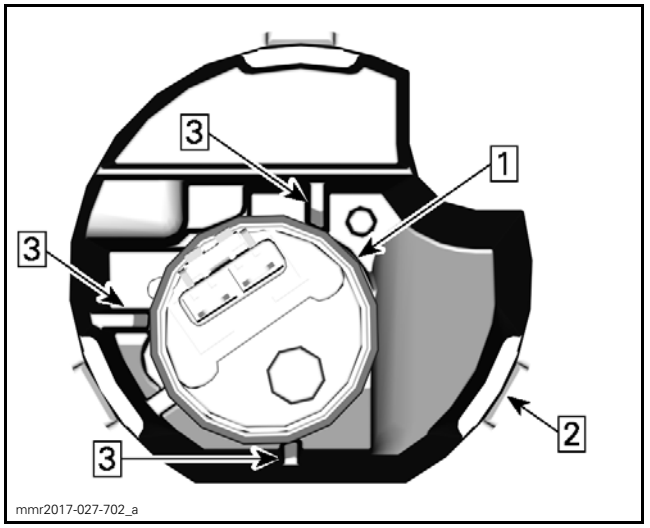
1. Pin

8. Install fuel pump reservoir carefully and ensure that all parts are properly positioned.

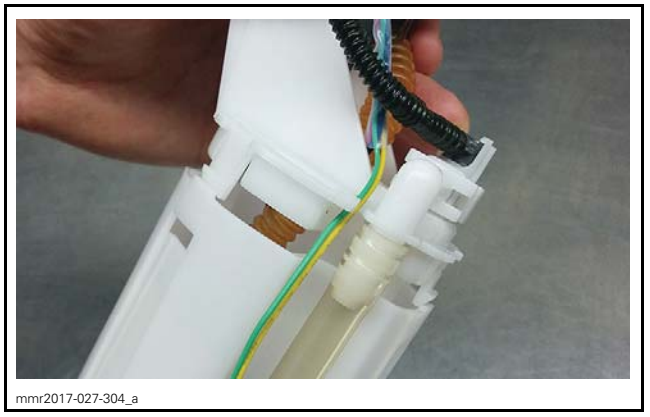


ELECTRICAL CONNECTOR MUST BE IN THIS POSITION

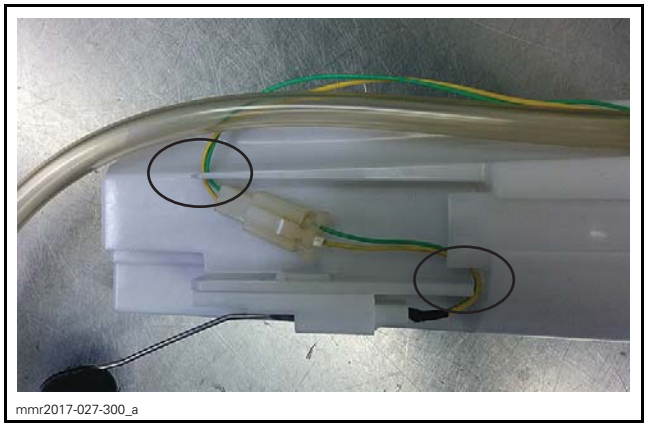
NOTE: Make sure the pump motor is positioned between the molded ribs in the reservoir.



1. Fuel pump motor
2. Reservoir
3. Ribs



9. Ensure that fuel tank reservoir tabs are properly locked.
10. Route the fuel level sensor wires properly.



11. Reinstall fuel pump in fuel tank. Refer to procedure in this subsection.

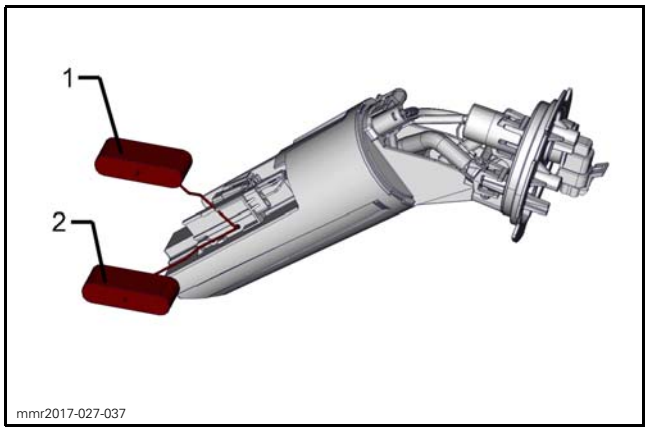
FUEL LEVEL SENSOR

NOTE: Verify the gauge functions related to the fuel level sensor before testing the sensor. Refer to *GAUGE* subsection.

Testing Fuel Level Sensor Resistance

1. Remove fuel pump from fuel tank, refer to *FUEL PUMP* in this subsection.
2. Ensure the fuel level sensor is properly connected in the fuel pump module.
3. Measure the resistance at the fuel pump connector **(FP)**.

FUEL LEVEL SENSOR BENCH TEST		
PROBE	FLOAT POSITION	RESISTANCE
FP- B to FP-D	Empty	95 Ω ± 5 Ω
	Full	9 Ω ± 2 Ω



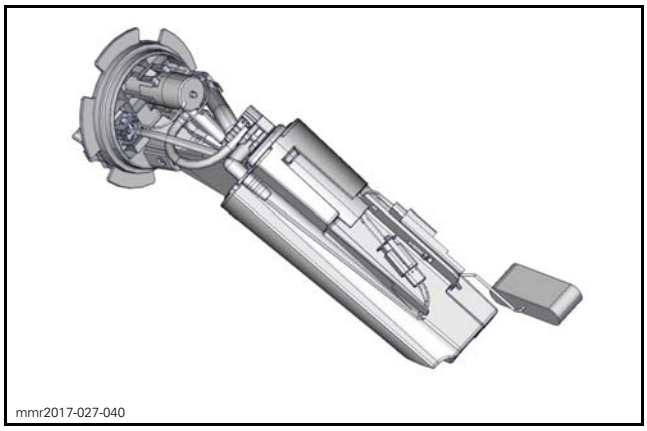
TYPICAL FUEL PUMP FLOAT
1. Full position
2. Empty position

4. When fuel level sensor travels from full to empty or vice-versa, there should be a constant linearity to the resistance readings. Any spike or drop of resistance indicates a "flat spot" in the fuel level sensor circuitry.

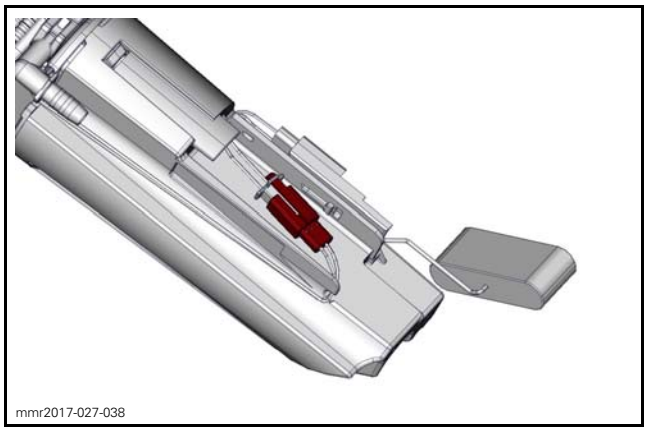
If fuel level sensor fails bench test, replace the fuel level sensor.

Replacing the Fuel Level Sensor

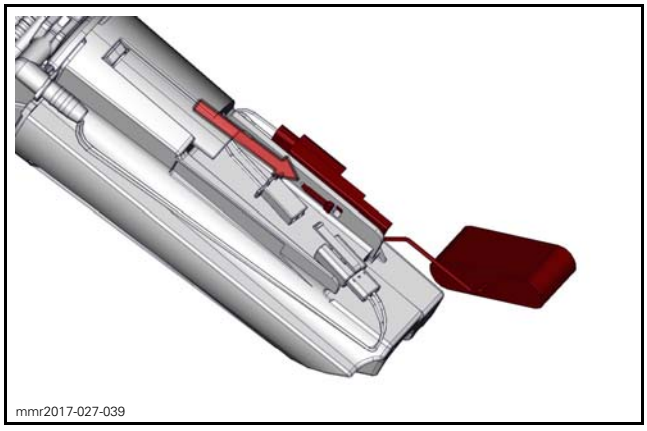
1. Remove the fuel pump.



2. Disconnect fuel level sensor connector.



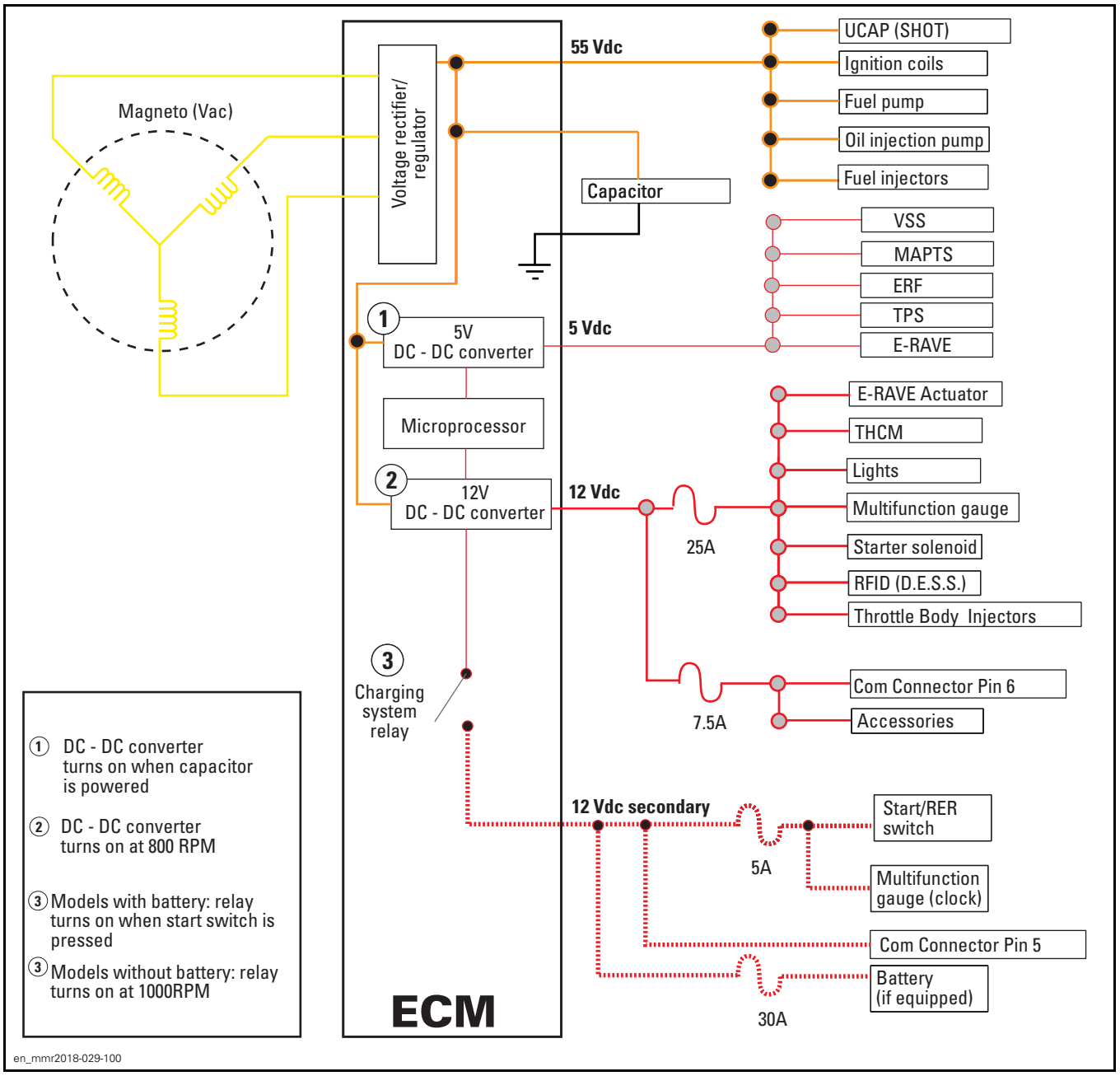
3. Slide the potentiometer out of the fuel pump reservoir.



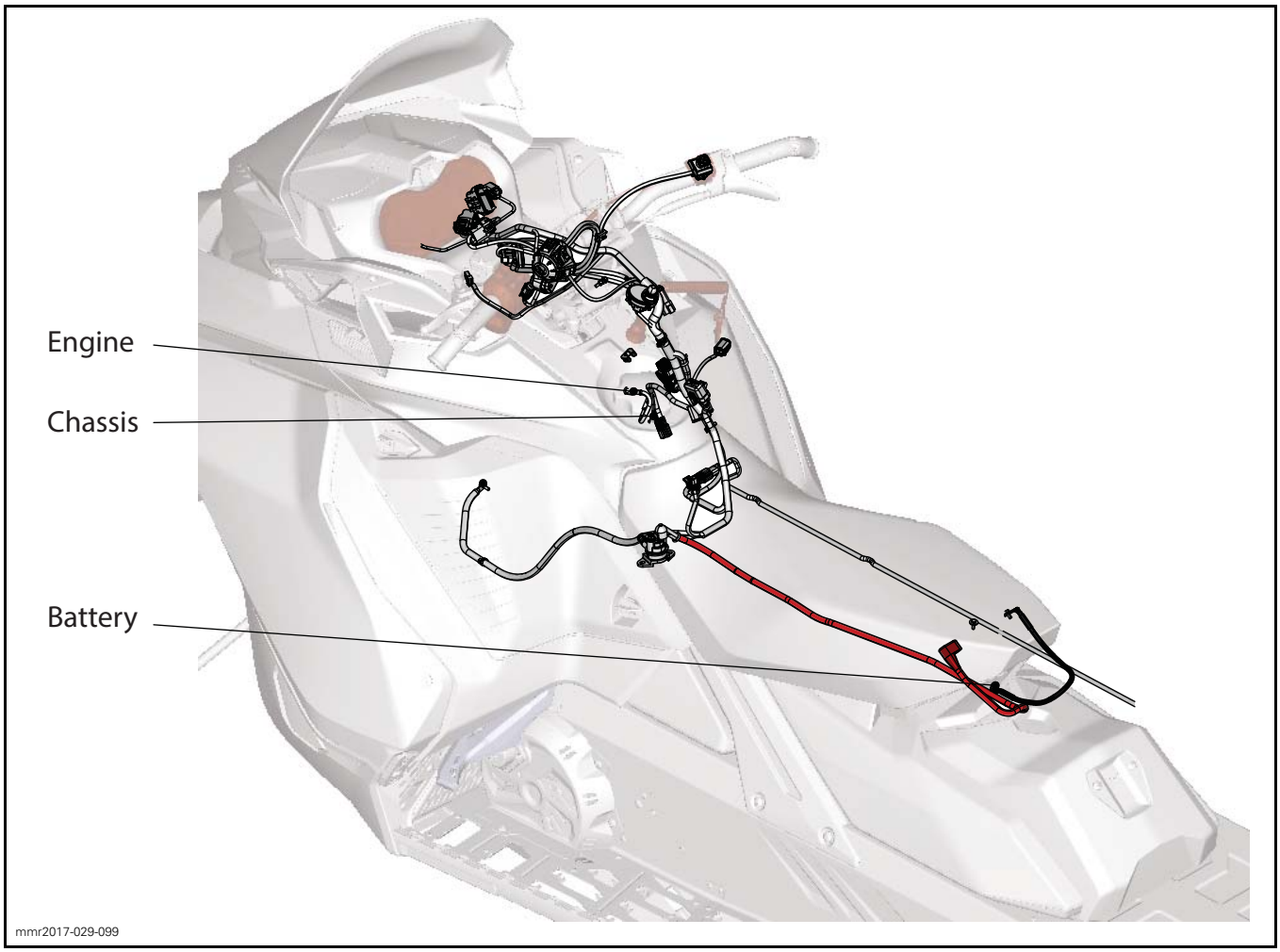
4. Remove fuel level sensor.
5. Replace the fuel level sensor with a new one and reverse steps.

POWER DISTRIBUTION

POWER DISTRIBUTION



GROUNDS



GENERAL

OVERVIEW

Power distribution is shown in red on the wiring diagram. Refer to *KNOWLEDGE CENTER*.

The magneto stator is wired with a 3 phase star configuration winding.

At high RPM if the magneto power is greater than the loads, the ECM will shunt the stator windings to regulate its power as necessary.

The voltage regulator/rectifier is part of the ECM.

The ECM receives the energy produced by the magneto, rectifies the alternating current (AC) to direct current (DC) and regulates the voltage.

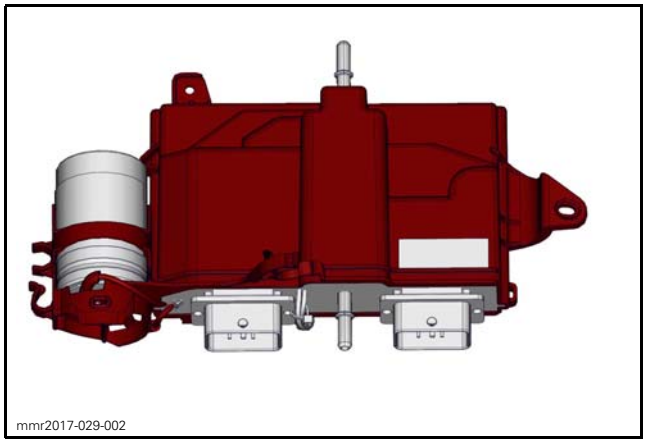
SYSTEM VOLTAGE (55 VDC)

Since the available power is low when cranking, the ECM first supplies 55 Vdc to the illustrated components that need voltage for the starting and the basic operation of the engine.

NOTE: When starting, voltage may be closer to 40Vdc until RPM increases.

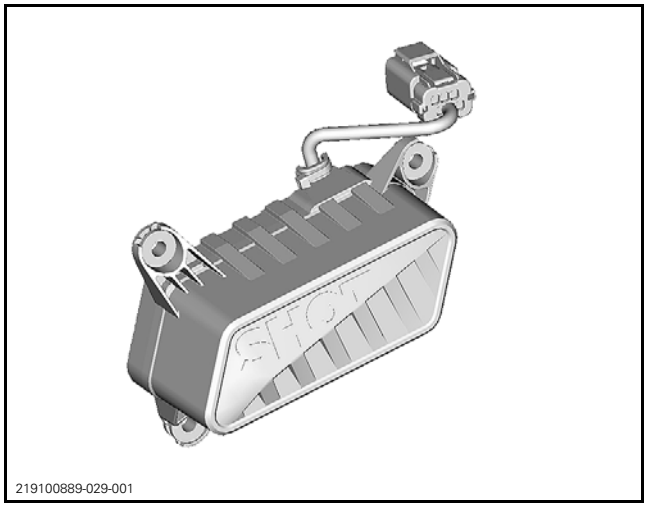
ECM

For more information, refer to *ENGINE MANAGEMENT SYSTEM* subsection.


mmr2017-029-002

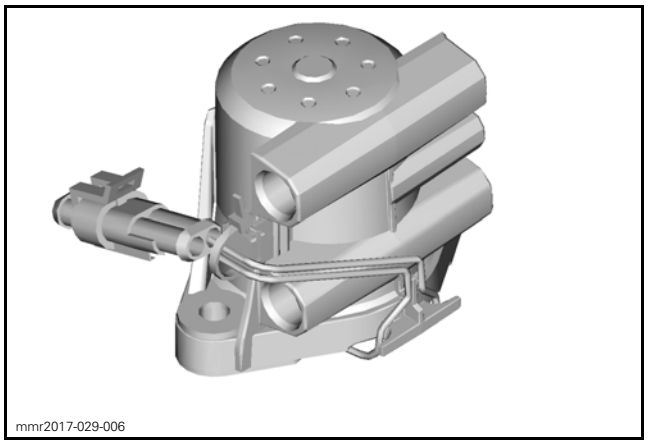
UCAP (SHOT System)

For information, refer to *SHOT SYSTEM* subsection.


219100889-029-001

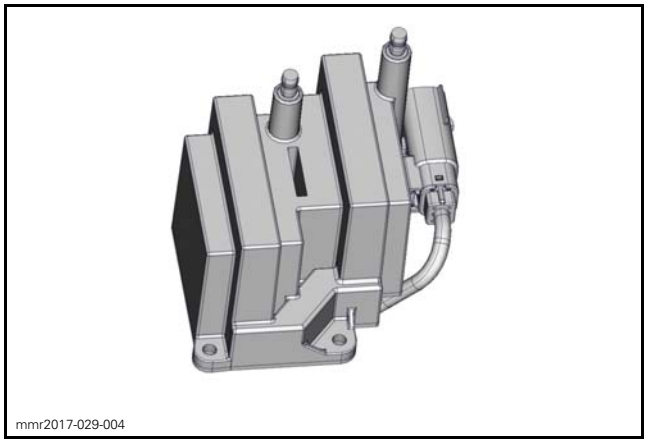
Fuel Injector

For more information, refer to *E-TEC DIRECT FUEL INJECTION* subsection.


mmr2017-029-006

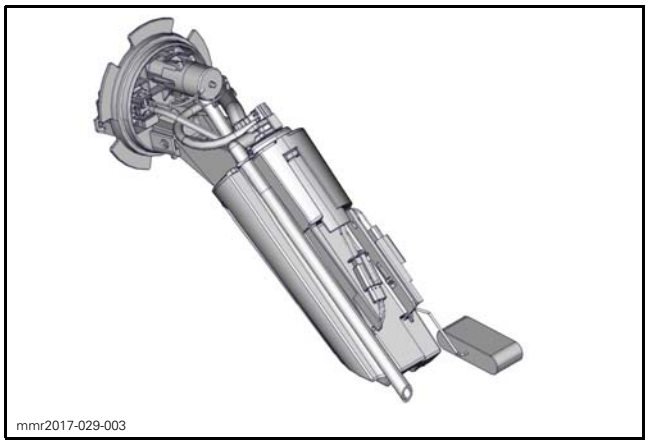
Ignition Coil

For more information, refer to *IGNITION SYSTEM* subsection.


mmr2017-029-004

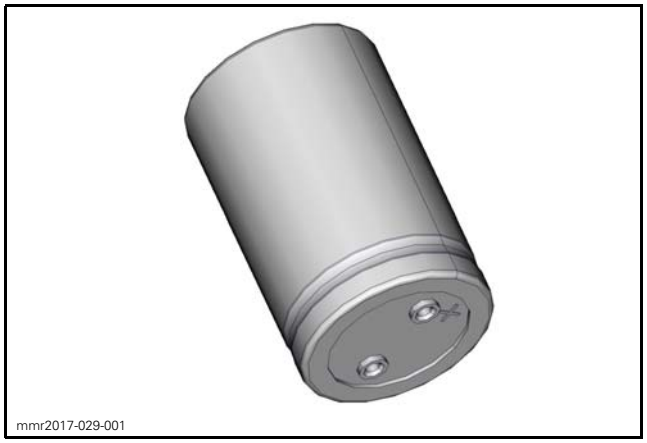
Fuel Pump

For more information, refer to *FUEL TANK AND FUEL PUMP* subsection.


mmr2017-029-003

Capacitor

For more information, refer to *CHARGING SYSTEM* subsection.


mmr2017-029-001

SYSTEM VOLTAGE (12 VDC)

A DC-DC converter, in the ECM, steps down the 55 DC voltage to 12 Vdc when the engine reaches 800 RPM.

Since the available power is not at its maximum at the early stage of engine starting, the ECM supplies 12 Vdc to the following components when engine reaches 800 RPM.

- THCM (thermocouple module)
- E-RAVE actuator
- Communication connector
- Lighting system
- Multifunction gauge
- Heaters
- Heated visor
- Auxiliary lights
- 12 V power outlet
- Other accessories.

Approximately 25 A are available at idle (1200 RPM). Refer to *CHARGING SYSTEM* for more information.

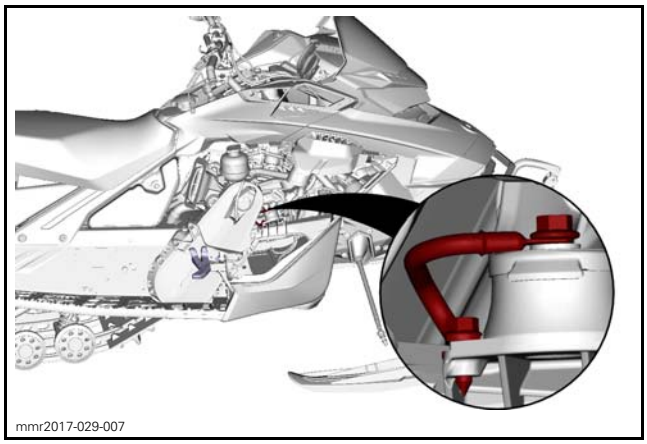
Below 2000 RPM, the total available current is limited to reduce the load on the system voltage.

Above 2000 RPM, the 12 Vdc system has a maximum of 30 A available.

If electrical system load is increased, or the RPM is decreased, the 12 Vdc system output is reduced in order to maintain 55 Vdc for engine operation.

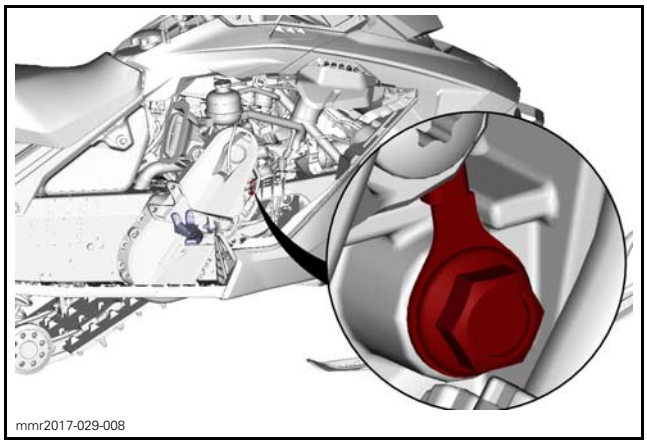
GROUNDS

Engine


mmr2017-029-007

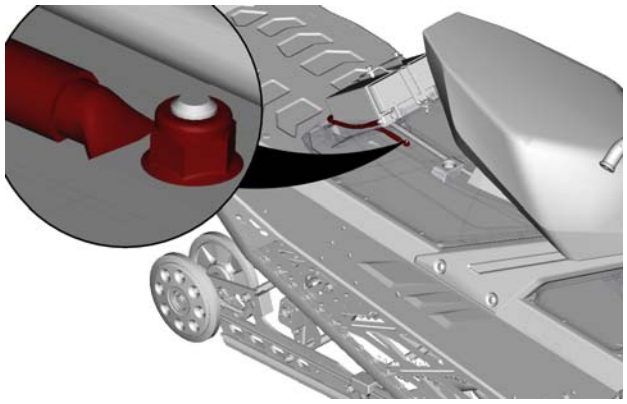
TIGHTENING TORQUE	
M6 screw on chassis	10 N•m ± 2 N•m (89 lbf•**in** ± 18 lbf•**in**)

Chassis


mmr2017-029-008

TIGHTENING TORQUE	
M5 screw on chassis	5 N•m ± 0.5 N•m (44 lbf•**in** ± 4 lbf•**in**)

Battery



mmr2017-029-005

TIGHTENING TORQUE	
M6 shoulder nut	10 N•m ± 2 N•m (89 lbf•**in** ± 18 lbf•**in**)

WIRING HARNESS AND CONNECTORS (EFI)

SERVICE TOOLS

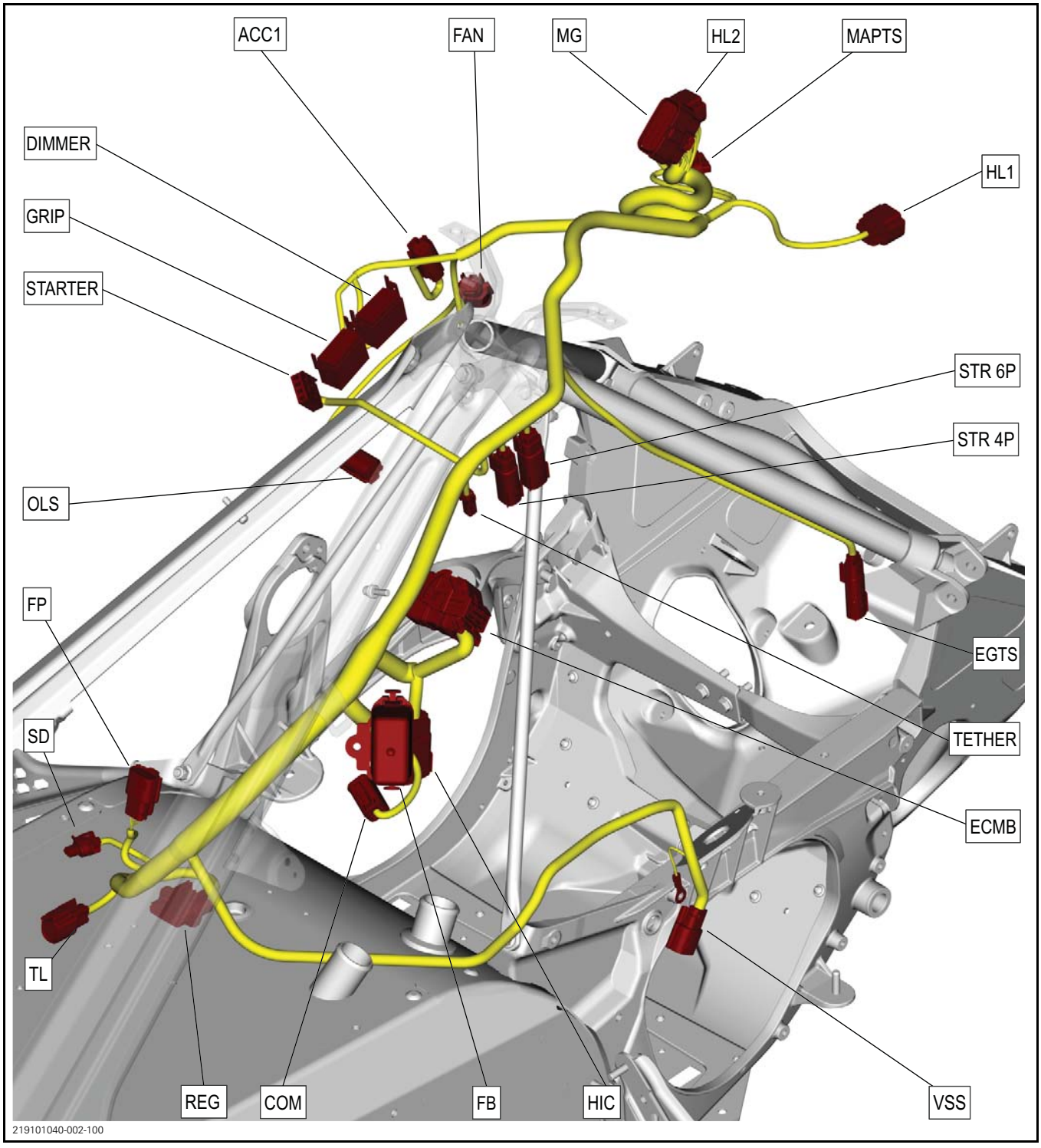
Description	Part Number	Page
ECM ADAPTER TOOL	529 036 166	109
ECM TERMINAL REMOVER 2.25	529 036 175	109
ECM TERMINAL REMOVER 3.36	529 036 174	110

SERVICE TOOLS – OTHER SUPPLIER

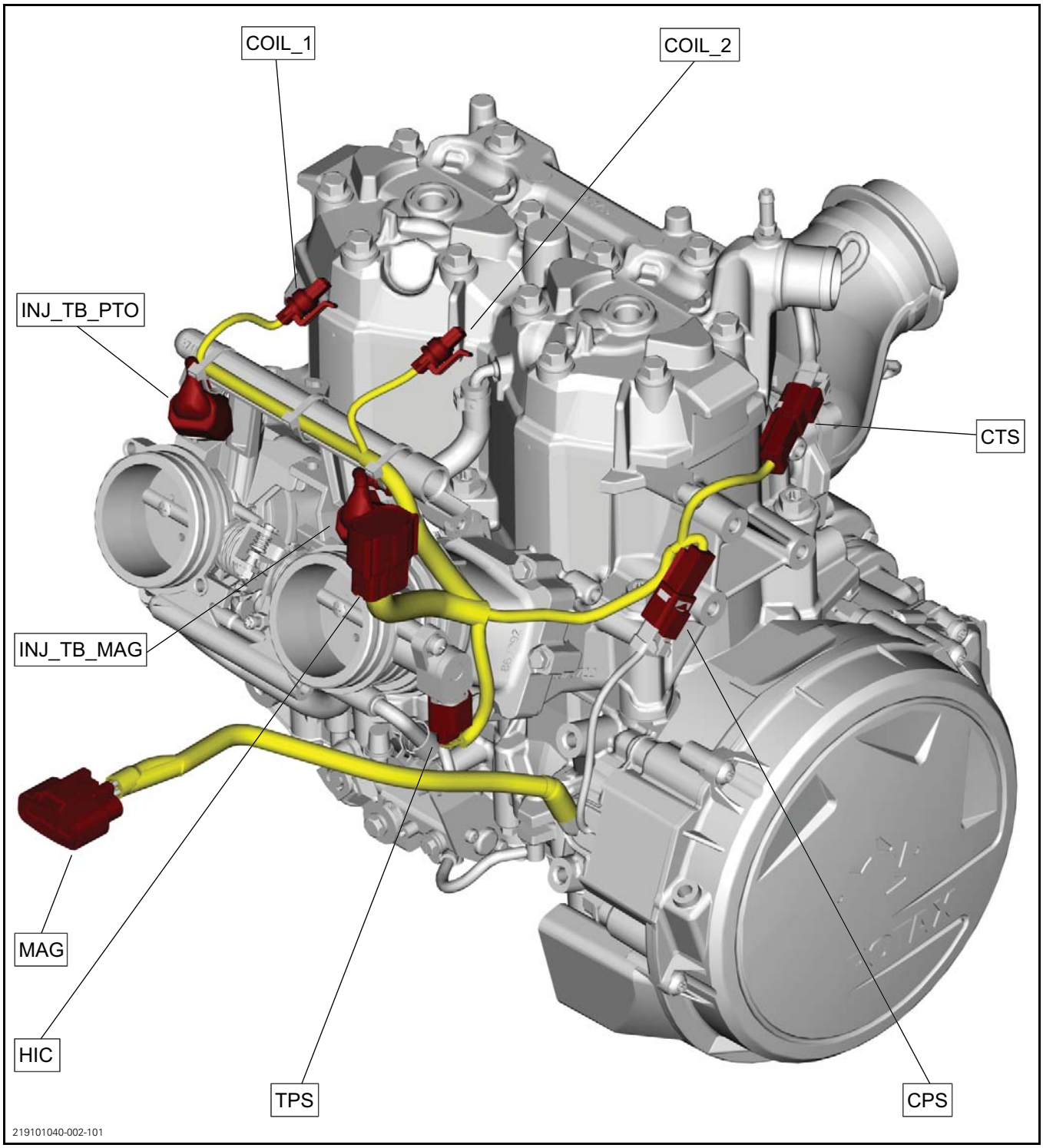
Description	Part Number	Page
DELPHI TERMINAL EXTRACTOR	12094429	112
FCI TERMINAL EXTRACTOR TOOL	54241678	111
MOLEX 150 TERMINAL EXTRACTOR TOOL	63813 - 1500	111

NOTE: Vehicles may not be equipped with all connectors shown in illustrations.

CHASSIS HARNESS



ENGINE HARNESS



GENERAL

ACRONYMS

ACRONYM	DESCRIPTION	ACRONYM	DESCRIPTION
ACC	Accessory	INJ_TB_MAG	Throttle Body Injector Magneto
COIL	Ignition Coil	INJ_TB_PTO	Throttle Body Injector PTO
COM	Diagnostic Link Connector	MAG	Magneto
CPS	Crankshaft Position Sensor	MAPTS	Manifold Air Pressure and Temperature Sensor
CTS	Coolant Temperature Sensor	MG	Multifunction Gauge
DIMMER	Dimmer switch	OLS	Oil Level Sensor
ECMB	ECM connector B (chassis harness)	REG	Voltage Regulator
EGTS	Engine Gas Temperature Sensor	SD	Starter Solenoid
FAN	Radiator fan	STARTER	Starter switch
FB	Fusebox	STR	Steering connector
FP	Fuel Pump	TETHER	Tether switch
GRIP	Heater switch	TL	Tail Light
HL	HeadLamp	TPS	Throttle Position Sensor
-	–	VSS	Vehicle Speed Sensor

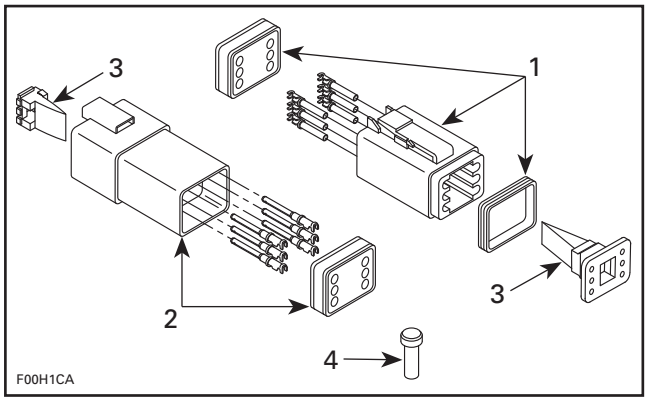
PROCEDURES

⚠ WARNING

When disassembling any connector for repair or replacement on the vehicle, always disconnect the battery to ensure all electrical power is removed and prevent any possibility of a short circuit. Refer to *CHARGING SYSTEM* subsection.

DIAGNOSTIC CONNECTOR (DEUTSCH)

Disassembling and Reassembling the Connector

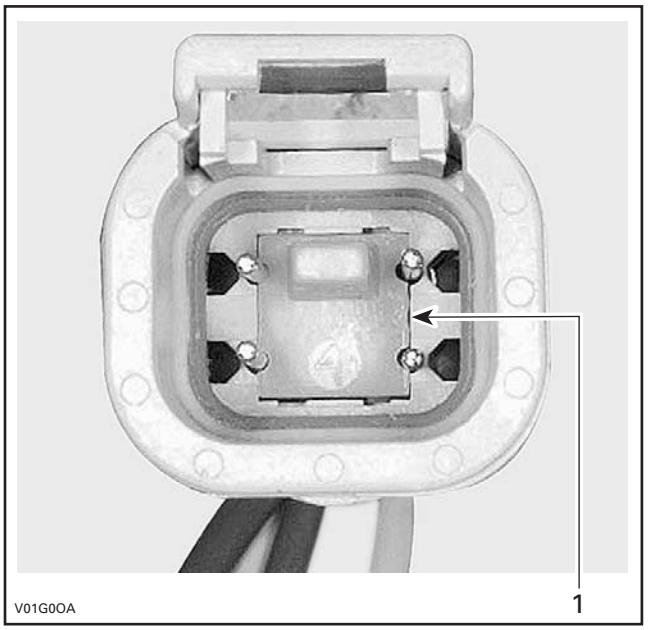


TYPICAL - DEUTSCH CONNECTOR
1. *Male connector*
2. *Female connector*
3. *Secondary lock*
4. *Sealing cap*

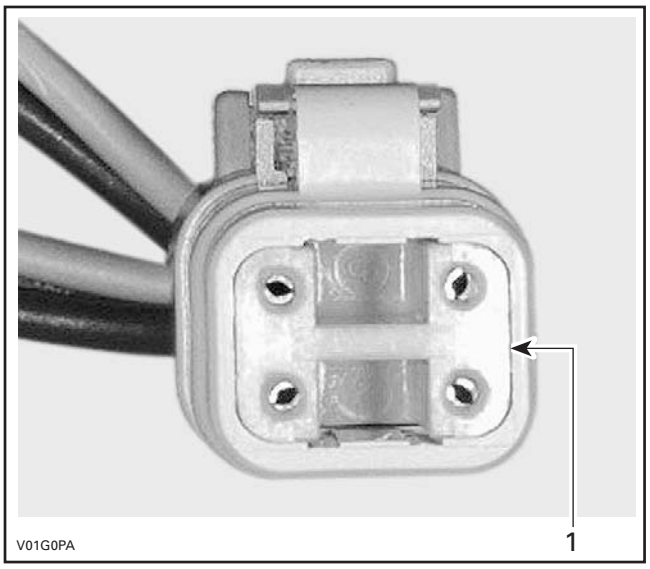
NOTICE Do not apply dielectric grease on terminal inside connector.

To remove terminals from connector, proceed as follows:

1. Using long nose pliers, pull out the plastic lock from between the terminals.



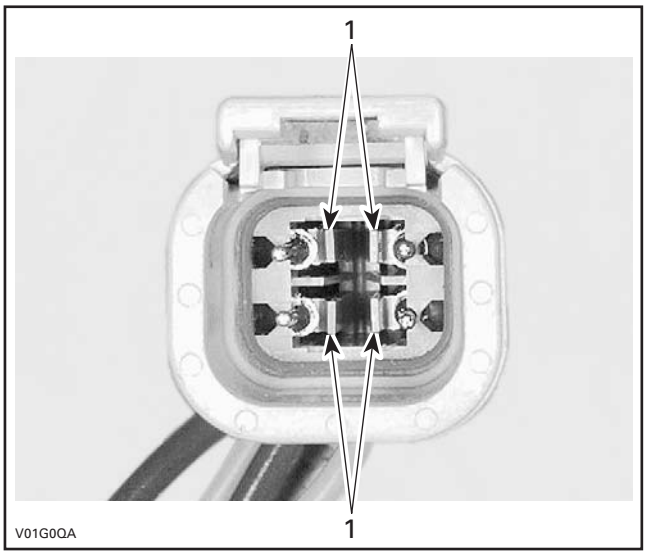
TYPICAL - FEMALE CONNECTOR
1. *Female lock*



TYPICAL - MALE CONNECTOR
1. *Male lock*

NOTE: Before pin extraction, push wire forward to relieve pressure on retaining tab.

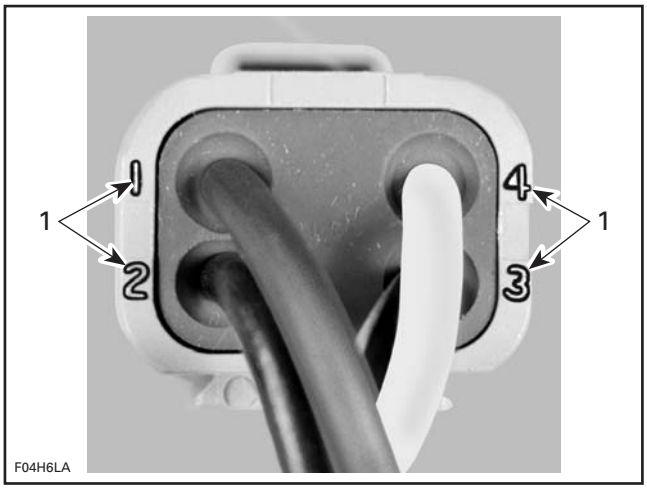
2. Insert a 4.8 mm (.189 in) wide screwdriver blade inside the front of the terminal cavity.
3. Pry the retaining tab away from the terminal while gently pulling the wire and terminal out of the back of the connector.



TYPICAL - FEMALE CONNECTOR
1. Retaining tabs

To install:

1. For insertion of a terminal, ensure the plastic lock is removed.
2. Insert terminal through the back of the connector in the appropriate position, and push it in as far as it will go. You should feel or hear the terminal lock engage.
3. Pull back on the terminal wire to ensure the retention fingers are holding the terminal.
4. After all required terminals have been inserted, the lock must be installed.



TYPICAL - CONNECTOR PIN-OUT
1. Terminal position identification numbers

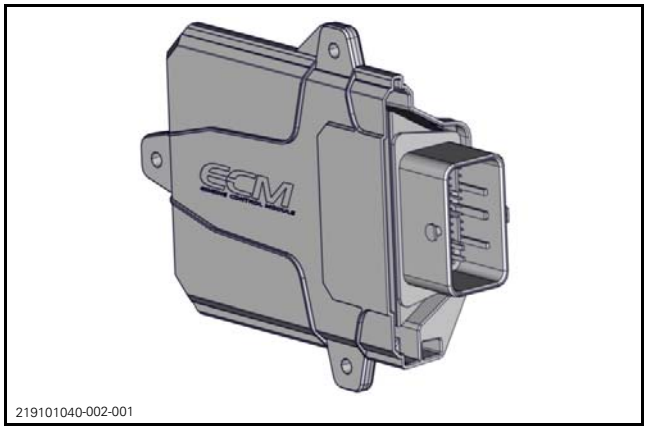
ECM CONNECTOR (MOLEX)

There is one connector on the ECM.

The vehicle wiring harness connector is connected to the ECM connector.

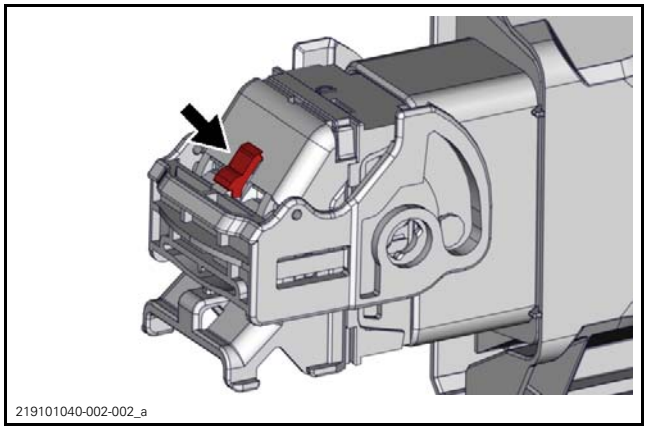
The engine wiring harness is connected to the vehicle harness through the HIC connector.

The ECM connector has 48 pins.

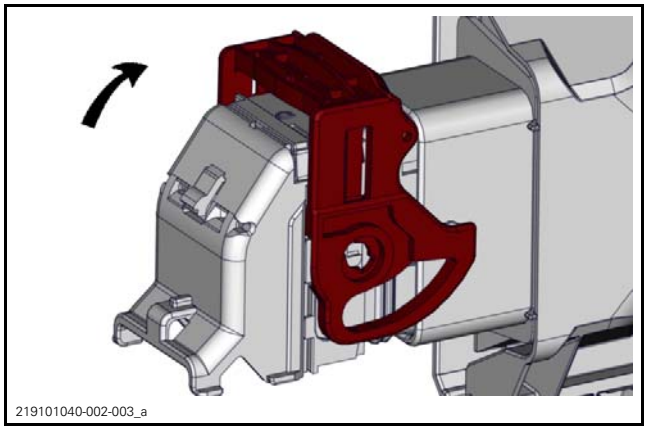


Removing the Connector

1. To access the ECM, refer to *ELECTRONIC FUEL INJECTION (EFI)* subsection.
2. Press **and hold** the locking tab on the connector to be disconnected.



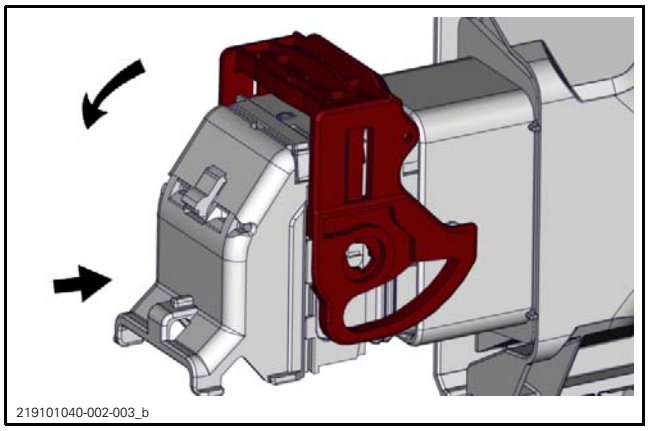
3. As you hold the locking tab, rotate the connector locking cam until it stops.



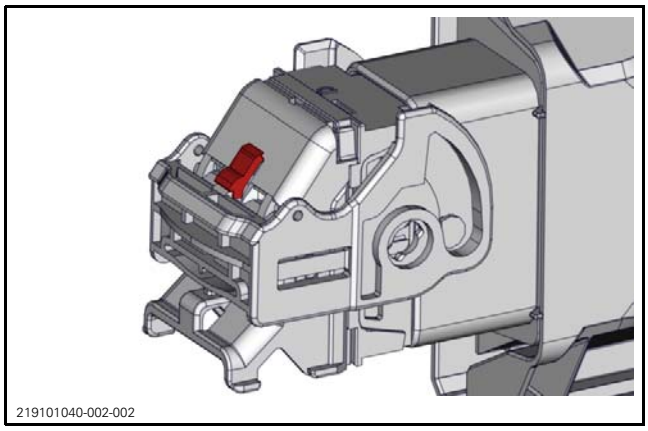
4. Pull connector off ECM.

Installing the Connector

1. Insert connector on ECM with the locking cam fully open.
2. As you push the connector onto the ECM, rotate the connector locking cam until it snaps locked.



3. Ensure the locking tab is fully out.



Inspecting the Connector

Before replacing an ECM, always check electrical connections.

1. Ensure connector locking mechanism is functioning properly.
2. Ensure all wire terminals (pins) are properly locked in the connector.
3. Ensure they are very tight, make good contact with the pins in the ECM.
4. Ensure the pins in the harness connector and the ECM connector are clean, shiny and corrosion-free.

NOTE: A "defective ECM module" could possibly be repaired simply by disconnecting and reconnecting it.

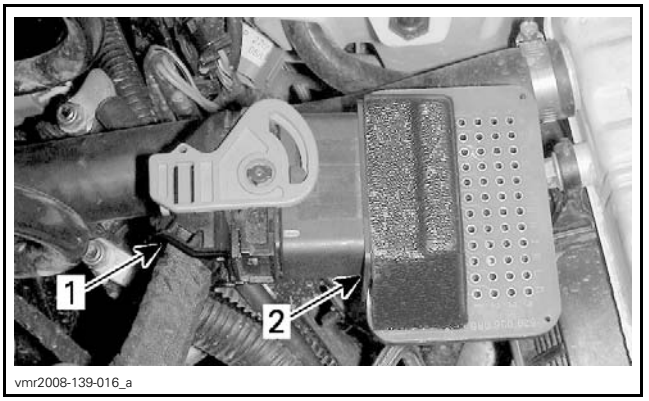
NOTICE Do not apply any lubricant product to the pins of the ECM connector.

Probing the Connector

The most recommended and safest method to probe the MOLEX (ECM) connector terminals is to use the ECM adapter tool. This tool will prevent deforming or enlarging of the terminals, which would lead to bad ECM terminal contact creating intermittent or permanent problems.

REQUIRED TOOL	
ECM ADAPTER TOOL (P/N 529 036 166)	

1. Disconnect the ECM connector to be probed, and reconnect it on the ECM adapter.
2. Probe wire terminals of the circuit to be tested directly in the adapter holes.



TYPICAL
1. ECM connector
2. ECM adapter

NOTICE Never probe directly on the ECM harness connector. This could change the shape or enlarge the terminals and create intermittent or permanent contact problems.

Removing the Connector Terminal (Harness Connector)

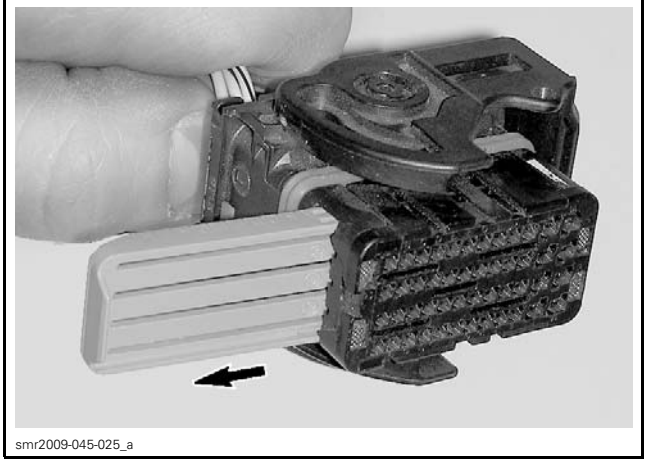
To remove a signal terminal from the ECM harness connector, use the ECM terminal remover 2.25.

REQUIRED TOOL	
ECM TERMINAL REMOVER 2.25 (P/N 529 036 175)	

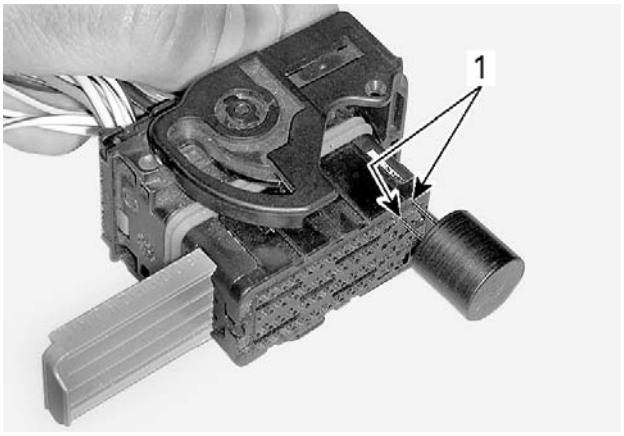
To remove a power terminal, use the ECM terminal remover 3.36.

REQUIRED TOOL	
ECM TERMINAL REMOVER 3.36 (P/N 529 036 174)	

1. Remove rear protector from connector.
2. Pull out the connector lock.


smr2009-045-025_a

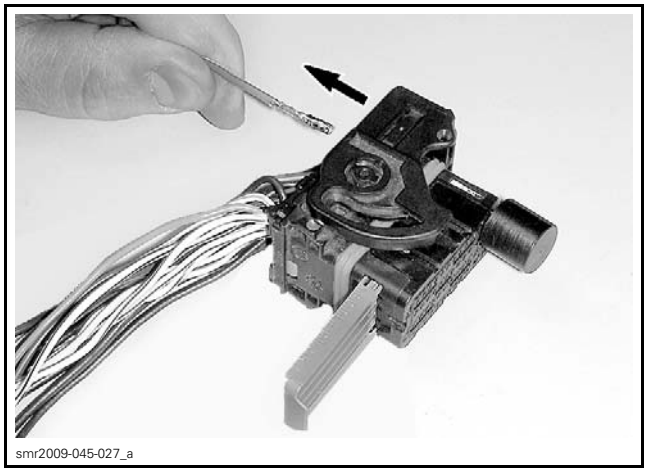
3. Insert tool to unlock terminal.



smr2009-045-026_a

1. Unlock here

4. Gently pull on the wire to extract the terminal out the back of the connector.


smr2009-045-027_a

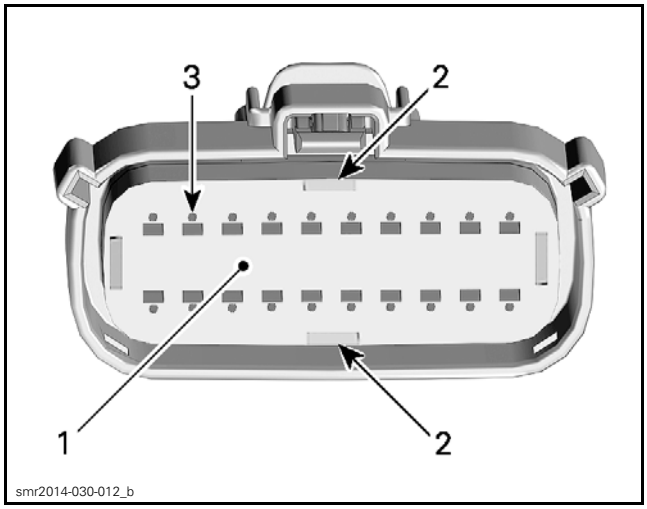
NOTICE Before installing wire terminals in the connector, ensure all terminals are properly crimped on wires. After installation of wire terminals in the connectors, ensure they are properly locked by gently pulling on them as if to extract them.

MOLEX CONNECTORS (EXCEPT ECM)

Extracting a Terminal (Female Connector)

The same procedure must be done to remove a seal plug.

1. Insert a small flat screwdriver in the pry holes of the terminal locator, on the terminal side of the connector.



smr2014-030-012_b

1. Terminal locator
2. Pry holes
3. Holes for inserting terminal extractor tool

2. Apply slight pressure and pry the terminal locator out until it clicks (± 4 mm (.16 in)).

NOTE: Do not remove the terminal locator from the connector housing.

3. Insert the extractor tool in the small hole adjacent to the terminal.

NOTE: Push the extractor tool in only as far as required to release the lock from the terminal. The tool should slide along the terminal and be inserted between the connector housing and the terminal lock.

REQUIRED TOOL	
FCI TERMINAL EXTRACTOR TOOL (P/N 54241678)	
or,	
MOLEX 150 TERMINAL EXTRACTOR TOOL (P/N 63813 - 1500)	

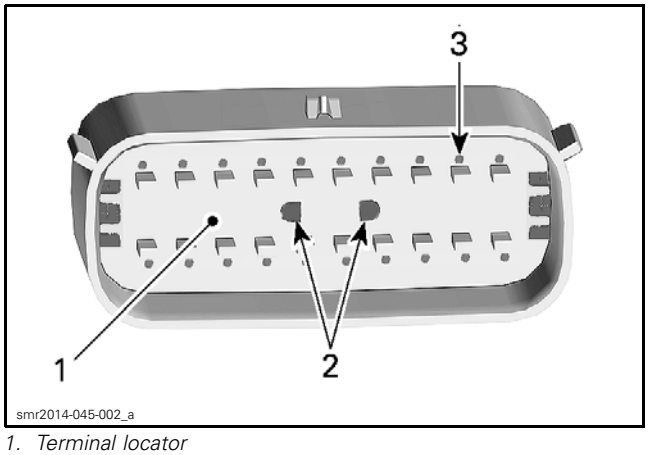
4. Gently pull on the wire to extract the terminal out the back of the connector.

Extracting the Terminal (Male Connector)

The same procedure must be done to remove a seal plug.

1. Using a pair of thin long nose pliers, pull the terminal locator (the white plastic insert in the connector) out to the detent position (± 13 mm (1/2 in) between terminal locator and connector housing face). This will allow unlocking of the pins.

NOTICE **Do not attempt to remove the terminal locator or damage will occur. Be careful not to bend the pins when using the pliers.**



1. Terminal locator
2. Insert long nose pliers here
3. Holes for inserting terminal extractor tool

2. Insert the extractor tool in the small hole adjacent to the terminal.

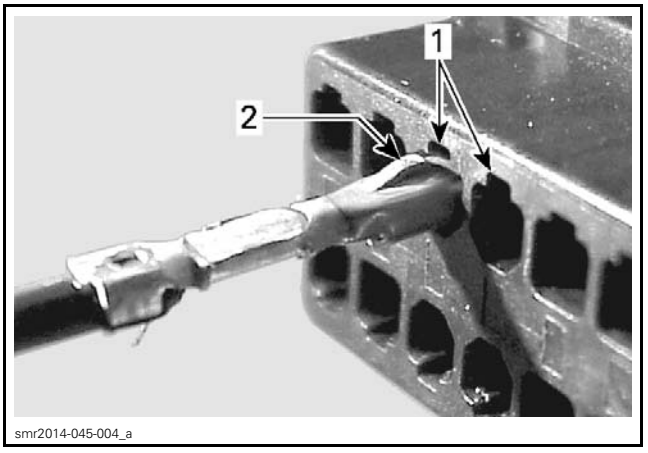
NOTE: Push the extractor tool in only as far as required to release the lock from the terminal. The tool should slide along the terminal and be inserted between the connector housing and the terminal lock.

REQUIRED TOOL	
FCI TERMINAL EXTRACTOR TOOL (P/N 54241678)	
or,	
MOLEX 150 TERMINAL EXTRACTOR TOOL (P/N 63813 - 1500)	

3. Gently pull on the wire to extract the terminal out the back of the connector.

Inserting the Terminal

1. Ensure the terminal is properly crimped onto the wire.
2. Ensure the terminal locator (the white plastic insert in the connector) is out in the detent position.
3. Orient the key on the back of the male terminal with the keyway on the rear of the housing



TYPICAL - PIN INSERTION
1. Keyway
2. Terminal key

4. Push the terminal into the housing until it clicks.
5. Gently pull on the terminal to ensure it is properly locked.
6. Repeat previous steps for each terminal to be inserted.
7. Push the terminal locator into the connector to the locked position.

DELPHI/PACKARD CONNECTORS

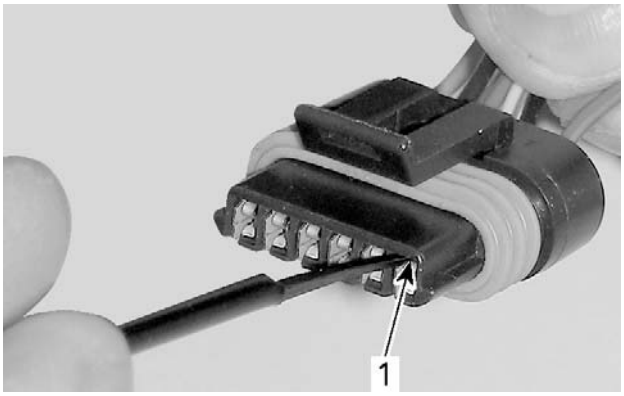
Removing the Connector Terminal

To remove a terminal (pin) from the connector, use a special tool such as the Delphi terminal extractor.

REQUIRED TOOL	
DELPHI TERMINAL EXTRACTOR (P/N 12094429)	

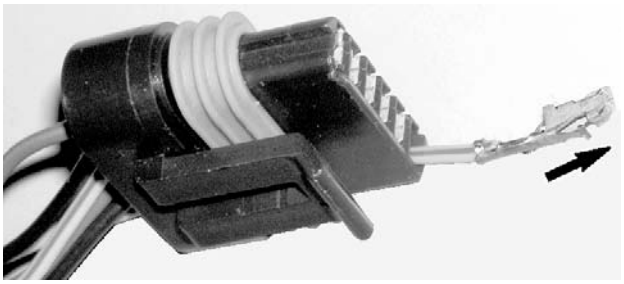
NOTE: Grinding the tool end to a taper is required.

1. Carefully insert the tool in the space provided to release the pin lock.
2. Push the pin out the front of the connector by pushing on the wire.



smr2009-045-014_a

1. Unlock terminal here

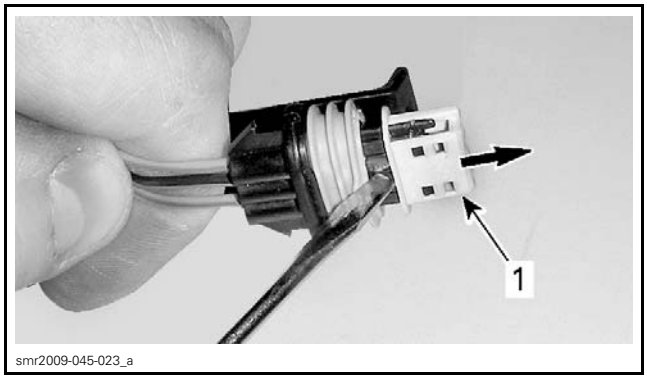

smr2009-045-015_a

NOTICE Before installing terminals in the connectors, ensure all terminals are properly crimped on the wires. After installation of the wire terminals in the connectors, ensure they are properly locked by gently pushing on them as if to extract them.

DELPHI CONNECTORS

Removing the Terminal

1. To remove a terminal from connector, first remove the locking cap.

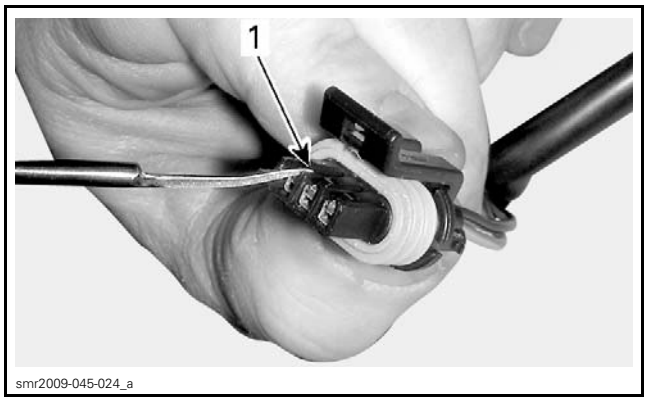


smr2009-045-023_a

1. Pry out locking cap

2. Carefully insert the Delphi terminal extractor in the space provided to release the pin lock.

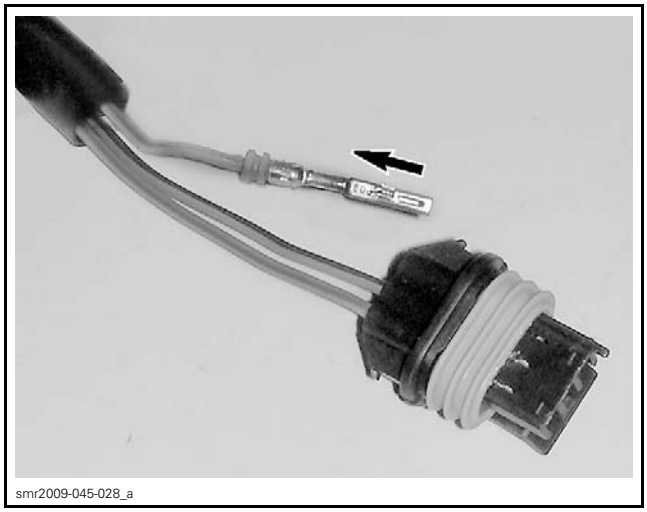
REQUIRED TOOL	
DELPHI TERMINAL EXTRACTOR (P/N 12094429)	



smr2009-045-024_a

1. Unlock here

3. Gently pull on the wire to extract the pin out the back of the connector.

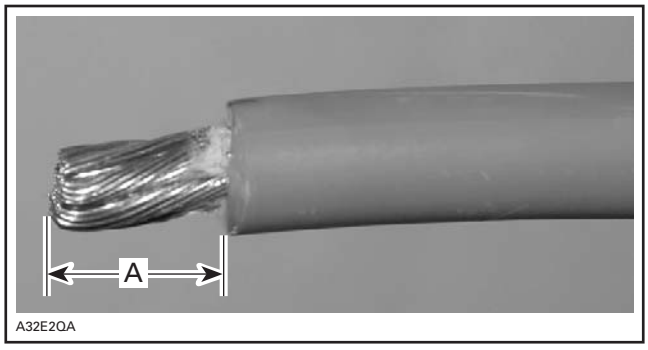

smr2009-045-028_a

NOTICE Before installing terminals in the connectors, ensure all terminals are properly crimped on the wires. After installation of the wire terminals in the connectors, ensure they are properly locked by gently pushing on them as if to extract them.

BATTERY CABLES

Crimping the Battery Cable

Carefully strip the wire approximately to 10 mm (3/8 in) in length, using a wire stripping tool or sharp blade/knife.

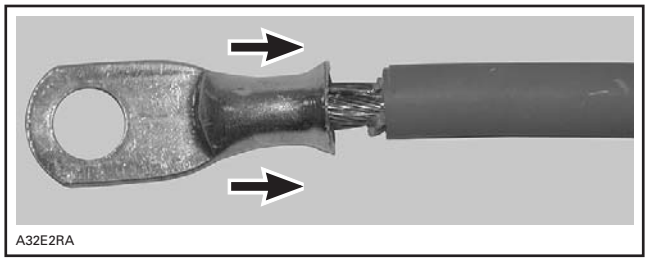


A32E2QA

A. 10 mm (3/8 in)

NOTE: Make sure not to cut wire strands while stripping the wire.

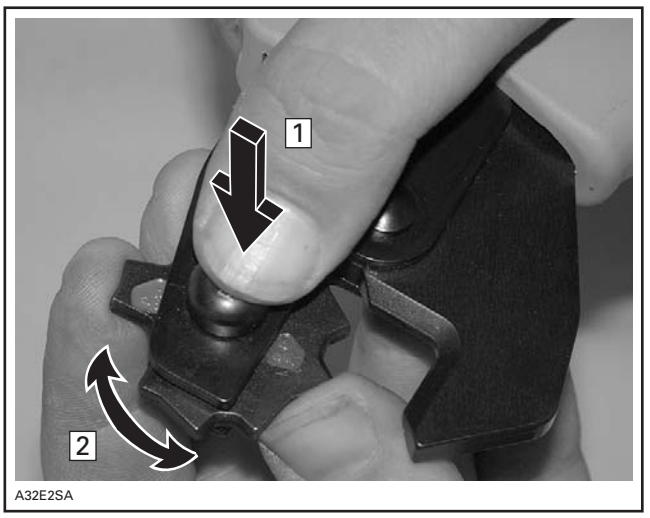
Install the appropriate terminal on the wire according to the requirement. Refer to appropriate *PARTS CATALOG*.


A32E2RA

INSTALLATION OF TERMINAL

Follow the instructions provided with the crimping tool to select the proper position of the tool.

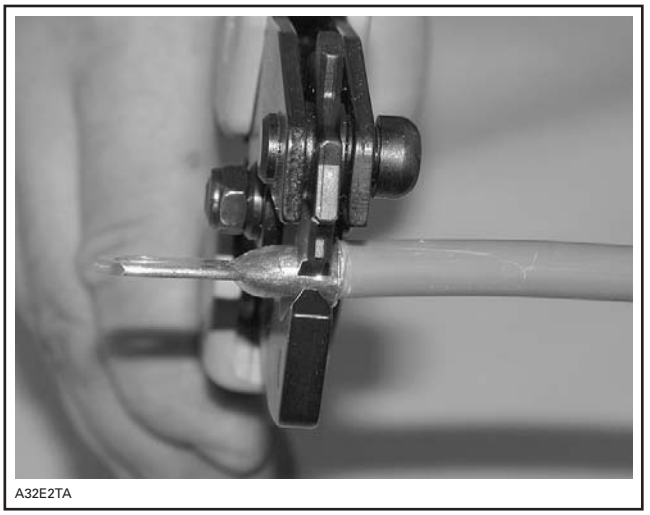
NOTE: Different wires require different crimping pliers settings, so make sure to follow the instruction supplied with the tool.



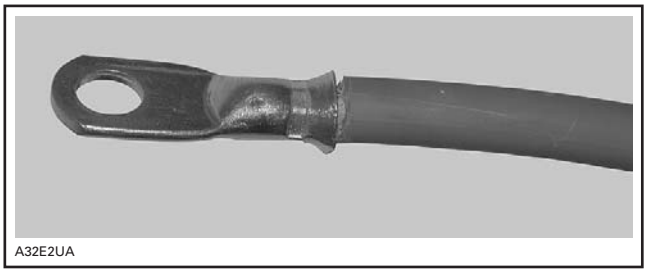
A32E2SA

POSITIONING THE CRIMPING PLIERS
Step 1: Press
Step 2: Rotate

After positioning the crimping pliers, crimp the terminal already installed on wire.


A32E2TA

CRIMPING OF WIRE


A32E2UA

PROPERLY CRIMPED WIRE

To verify, if the wire is properly crimped, apply some pulling force on wire and the terminal at the same time from both directions.

NOTICE Never weld the wire to the terminal. Welding can change the property of the wire and it can become brittle and break.

Install the protective heat shrink rubber tube on the terminal. Heat the heat shrink rubber tube using the heat gun so that it grasps the wire and the terminal.

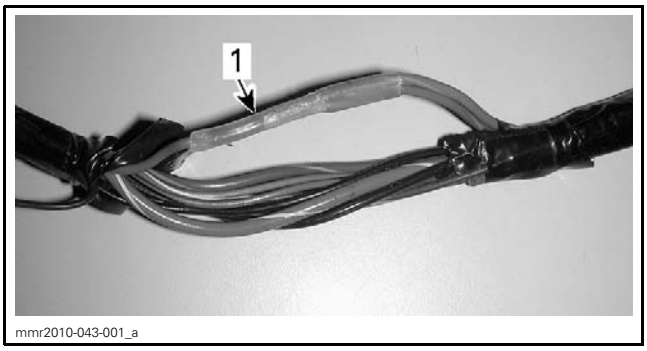
NOTICE Make sure that the protective heat shrink rubber tube has been properly installed and no part of wire is exposed.

SPLICES REPAIR PROCEDURE

CASE 1: Wire Detached from Splice

NOTICE Repairs described in this section should never be performed on harness sections that can be exposed to water.

1. Locate splice. Refer to splices location diagrams.
2. Remove wires from protector tube.
3. Locate the shrink tube protecting the defective splice.



mmr2010-043-001_a

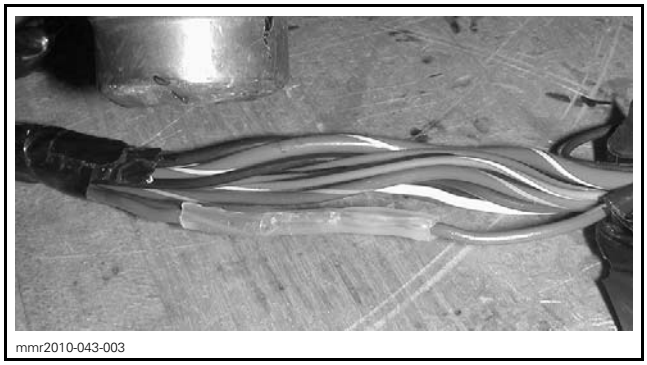
1. Shrink tube

4. Remove the shrink tube.
   4.1 Using a blade, cut the shrink tube.


mmr2010-043-002

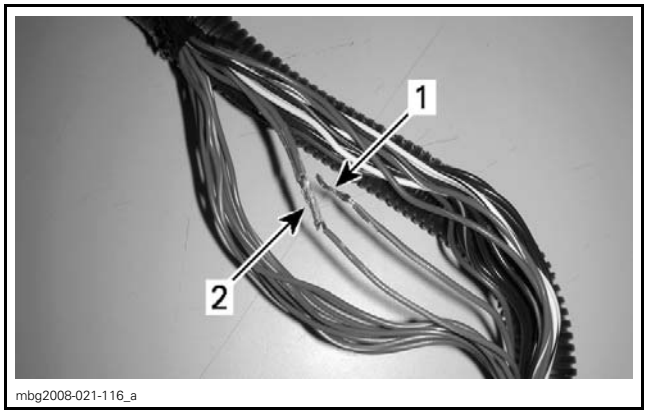
NOTICE Be careful with the blade to avoid cutting wires insulation.

   4.2 Slightly heat the shrink tube using a heat gun.


mmr2010-043-003

   4.3 Remove the shrink tube with long nose pliers.

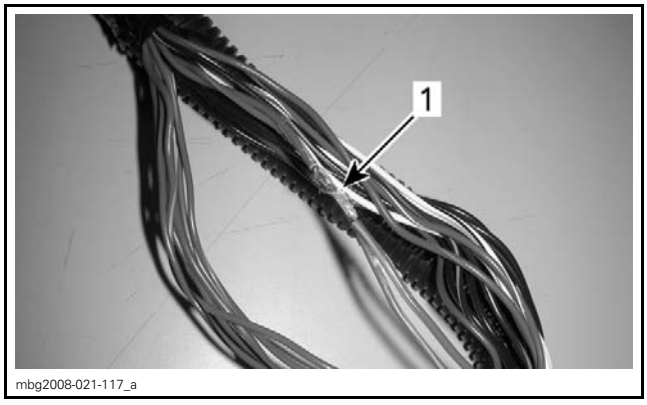
5. Locate detached wire from splice.



mbg2008-021-116_a

1. Detached wire
2. Splice

6. Twist detached wire around splice.



mbg2008-021-117_a

1. Twisted wire

7. Perform a tin solder on twisted wire.
8. Apply electrical tape to cover splice.

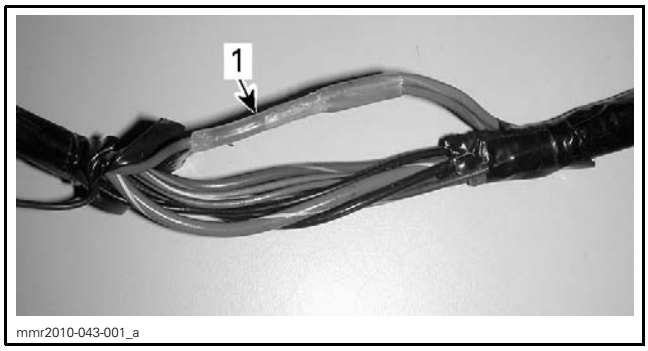
NOTE: Make sure tape overlaps on wire insulation, approximately 13 mm (1/2 in) each side.

9. Reinstall wires into protector tube.

CASE 2: Wire Broken from Splice

NOTICE Repairs described in this section should never be performed on harness sections that can be exposed to water.

1. Locate splice. Refer to splices location diagrams.
2. Remove wires from protector tube.
3. Locate the shrink tube protecting the defective splice.



mmr2010-043-001_a

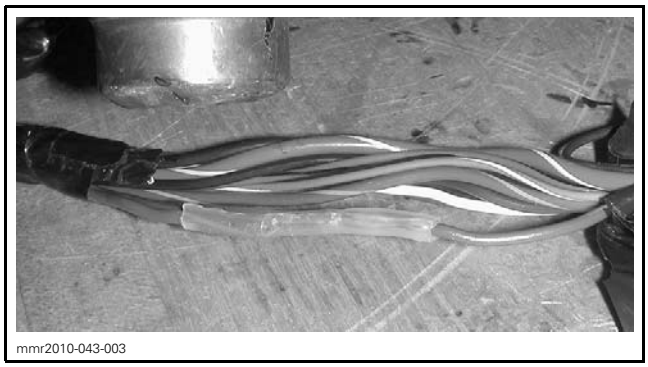
1. Shrink tube

4. Remove the shrink tube.
   4.1 Using a blade, cut the shrink tube.


mmr2010-043-002

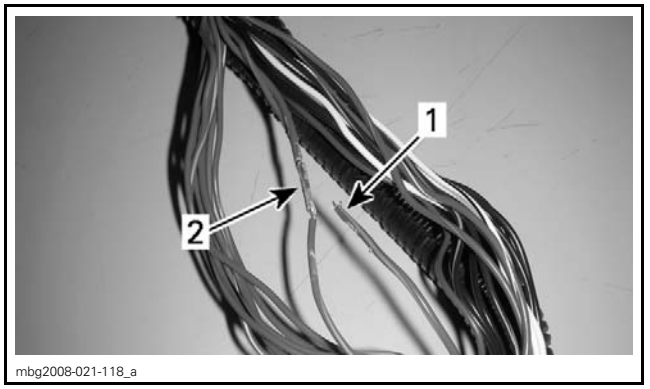
NOTICE Be careful with the blade to avoid cutting wires insulation.

   4.2 Slightly heat the shrink tube using a heat gun.


mmr2010-043-003

   4.3 Remove the shrink tube with long nose pliers.

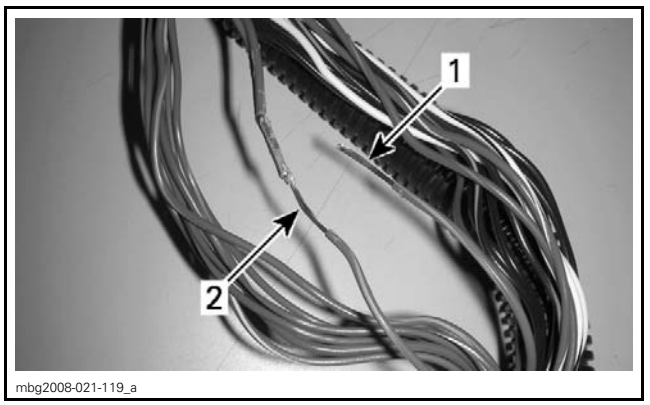
5. Locate broken wire from splice.



mbg2008-021-118_a

1. Broken wire
2. Splice

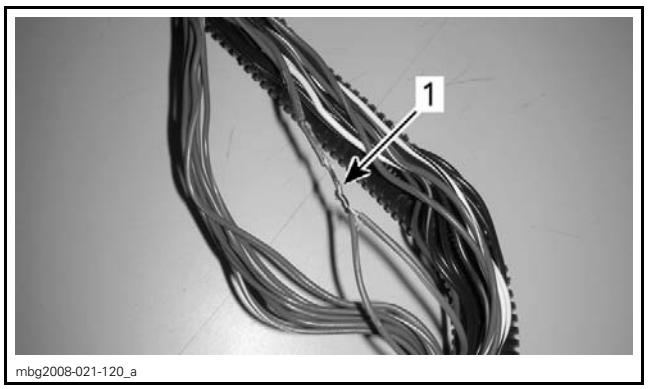
6. Strip wire insulation at the end of broken wire.
7. Strip wire insulation below the splice.



mbg2008-021-119_a

1. Broken wire stripped
2. Splice wire stripped

8. Twist wire around stripped wire.



mbg2008-021-120_a

1. Twisted wire

9. Perform a tin solder on twisted wire.
10. Apply electrical tape to cover splice.

NOTE: Make sure tape overlaps on wire insulation, approximately 13 mm (1/2 in) each side.

11. Reinstall wires into protector tube.

NOTE: Always perform a solder on a bigger wire (lower gage).

WIRING HARNESS AND CONNECTORS (E-TEC)

SERVICE TOOLS

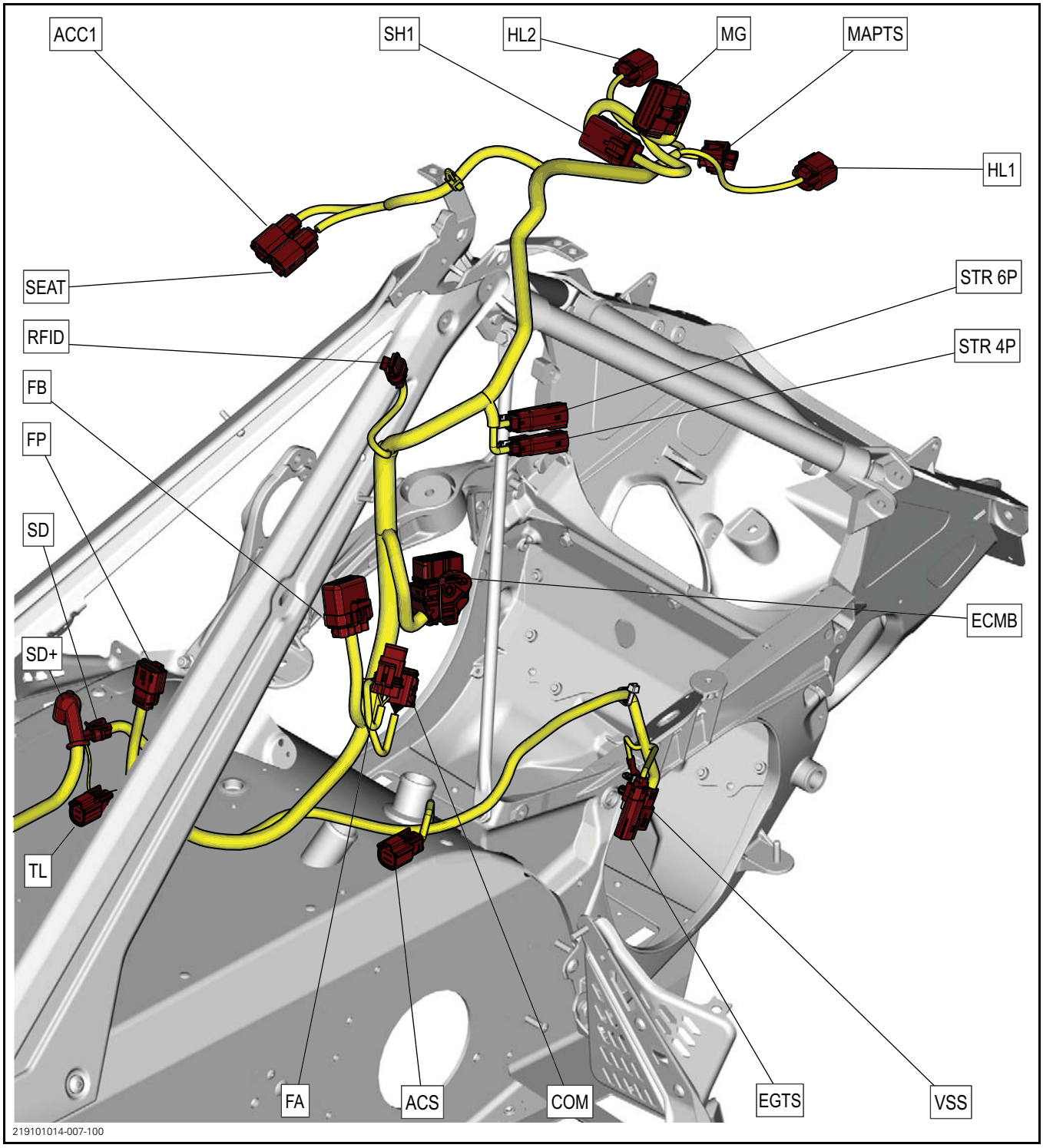
Description	Part Number	Page
ECM ADAPTER TOOL	529 036 166	126
ECM TERMINAL REMOVER 2.25	529 036 175	126
ECM TERMINAL REMOVER 3.36	529 036 174	126

SERVICE TOOLS – OTHER SUPPLIER

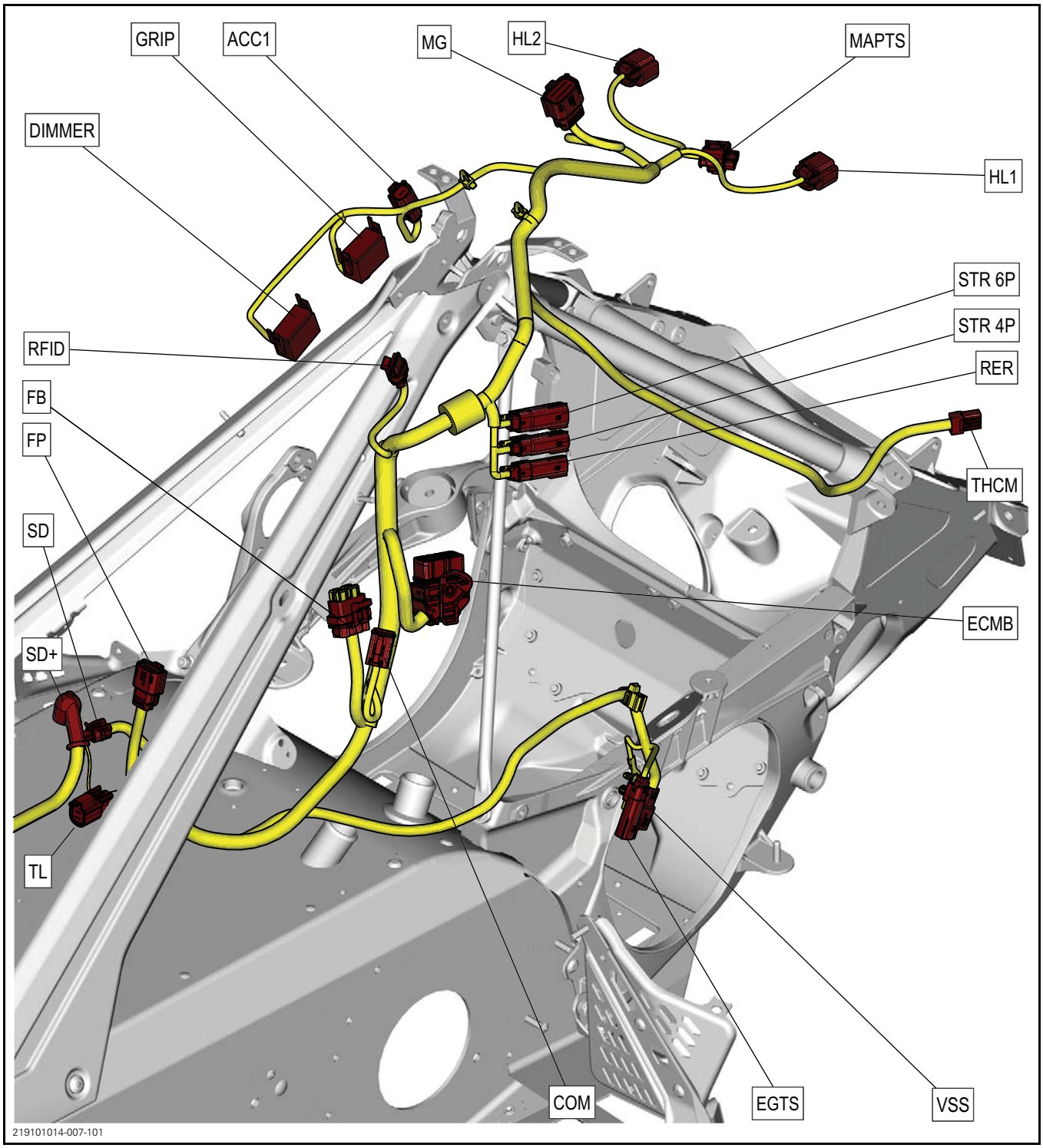
Description	Part Number	Page
DELPHI TERMINAL EXTRACTOR	12094429	128–129
FCI TERMINAL EXTRACTOR TOOL	54241678	127–128
MOLEX 150 TERMINAL EXTRACTOR TOOL	63813 - 1500	127–128

NOTE: Vehicles may not be equipped with all connectors shown in illustrations.

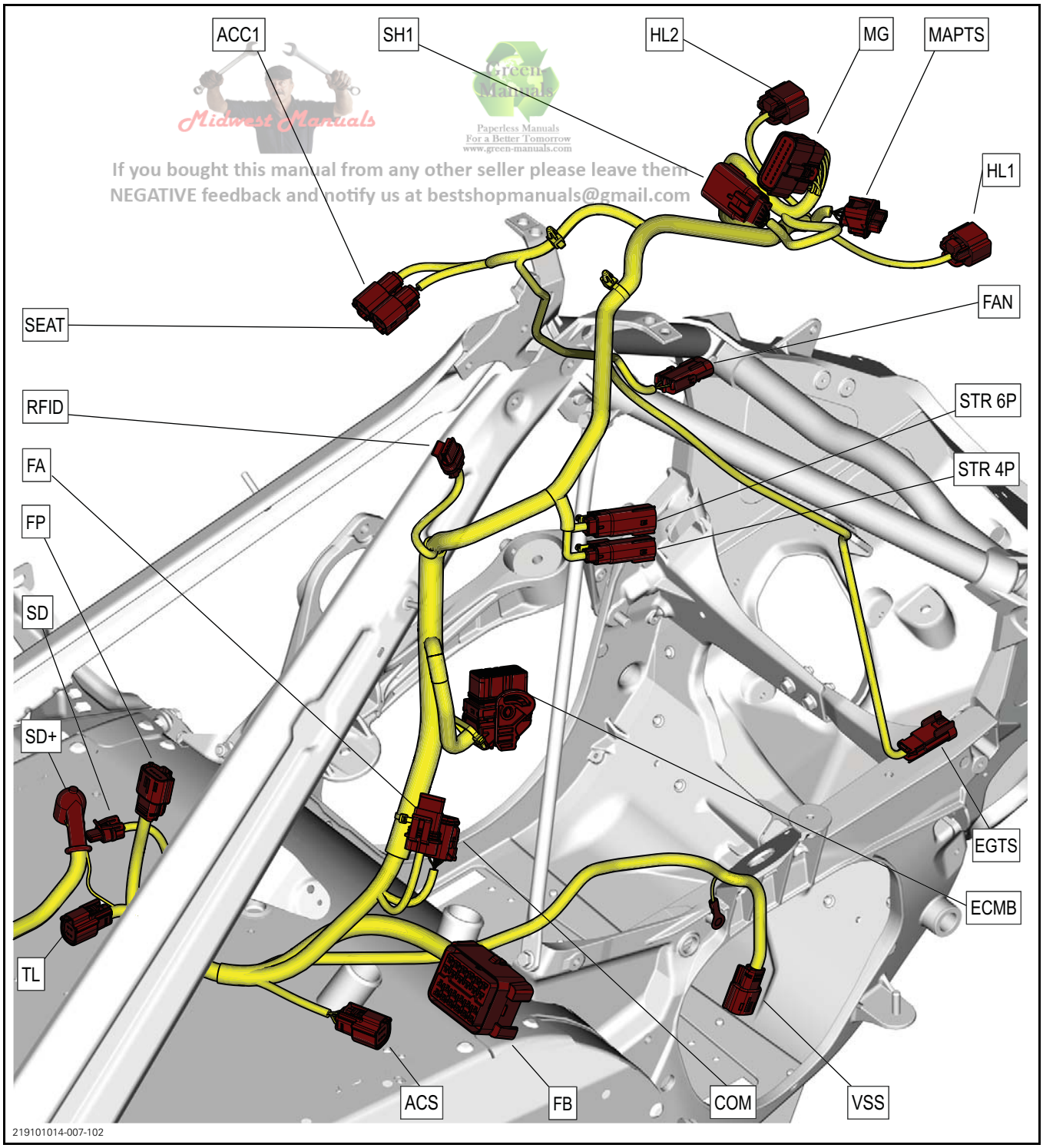
CHASSIS HARNESS - TRAIL AND CROSSOVER VEHICLES



CHASSIS HARNESS - DEEP SNOW VEHICLES

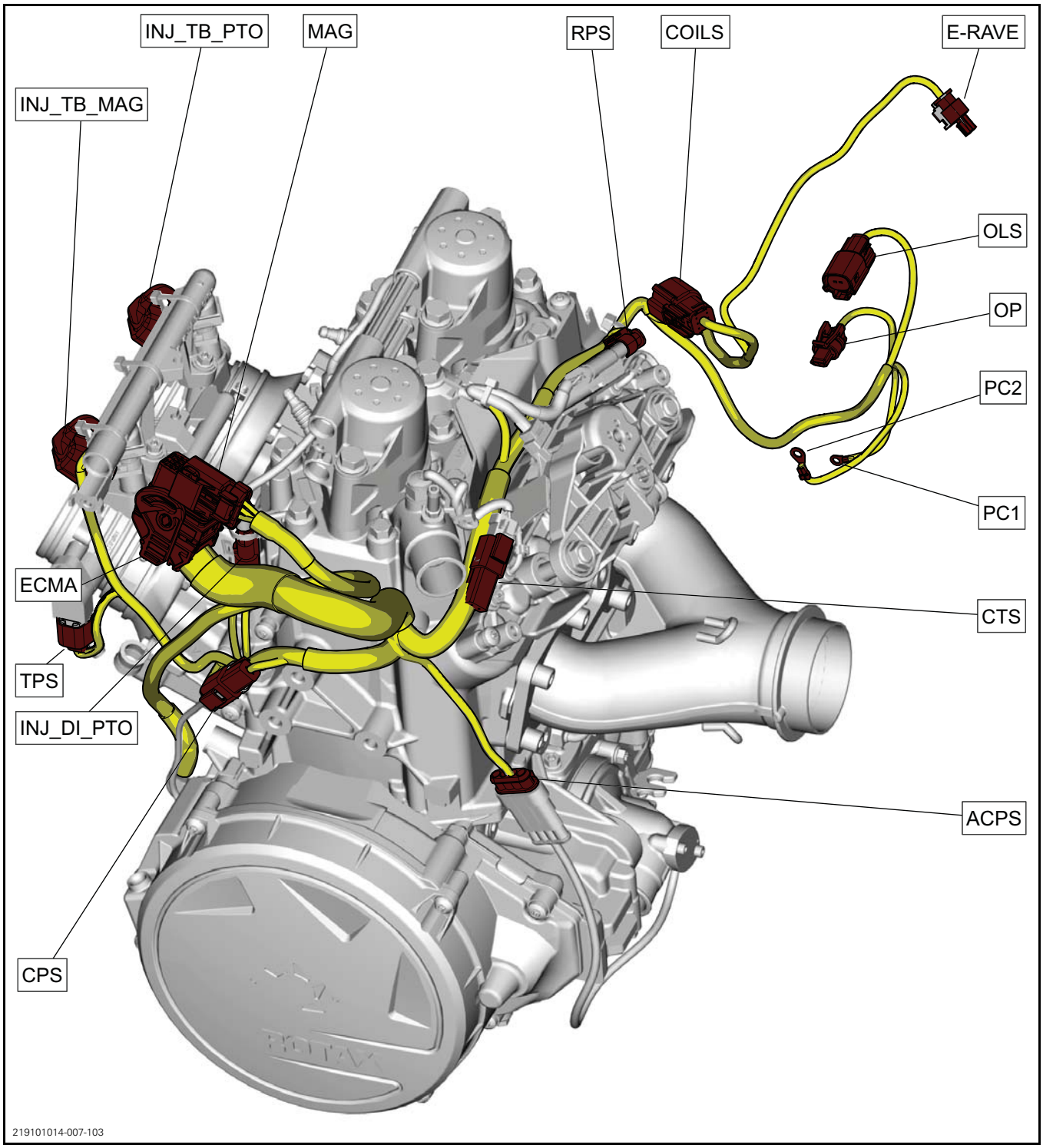


CHASSIS HARNESS - UTILITY VEHICLES



Midwest Manuals
Green Manuals
Paperless Manuals
For a Better Tomorrow
www.green-manuals.com
If you bought this manual from any other seller please leave them
NEGATIVE feedback and notify us at bestshopmanuals@gmail.com

ENGINE HARNESS



GENERAL

ACRONYMS

ACRONYM	DESCRIPTION	ACRONYM	DESCRIPTION
ACC	Accessory	INJ_TB_MAG	Throttle Body Injector Magneto
ACS	Air Controlled Suspension	INJ_TB_PTO	Throttle Body Injector PTO
COM	Communication	MAG	Magneto
CPS	Crankshaft Position Sensor	MAPTS	Manifold Air Pressure and Temperature Sensor
CTS	Coolant Temperature Sensor	MG	Multifunction Gauge
DIMMER	Dimmer switch	OLS	Oil Level Sensor
ECMA	ECM connector A (engine harness)	OP	Oil Pump
ECMB	ECM connector B (chassis harness)	PC	Oil Pump Feedback Switch
EGTS	Engine Gas Temperature Sensor	RER	Rotax Electronic Reverse
E-RAVE	RAVE Actuator	RFID	Radio Frequency Identification
RPS	Rave Position Sensor)	SD	Starter Solenoid
FA	Fuse holder	SEAT	Heated seat
FAN	Radiator fan	SH1	Switch Housing 1
FB	Fusebox	STR	Steering Connector
FP	Fuel Pump	THCM	Thermocouple Module
GRIP	Heater switch	TL	Tail Light
HL	HeadLamp	TPS	Throttle Position Sensor
INJ_DI_MAG	Direct Injector Magneto	VSS	Vehicle Speed Sensor
INJ_DI_PTO	Direct Injector PTO		

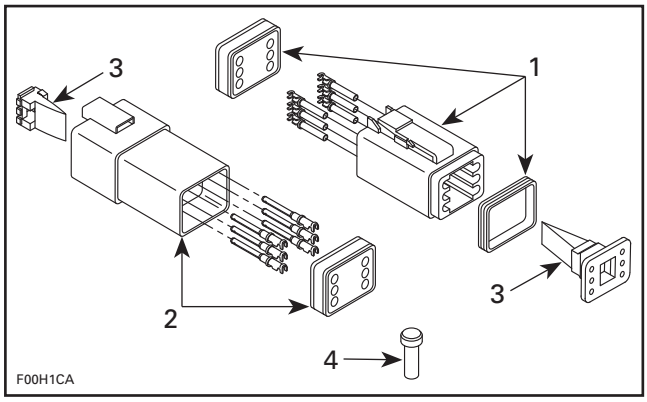
PROCEDURES

⚠ WARNING

When disassembling any connector for repair or replacement on the vehicle, always disconnect the battery to ensure all electrical power is removed and prevent any possibility of a short circuit. Refer to *CHARGING SYSTEM* subsection.

DIAGNOSTIC CONNECTOR (DEUTSCH)

Disassembling and Reassembling the Connector

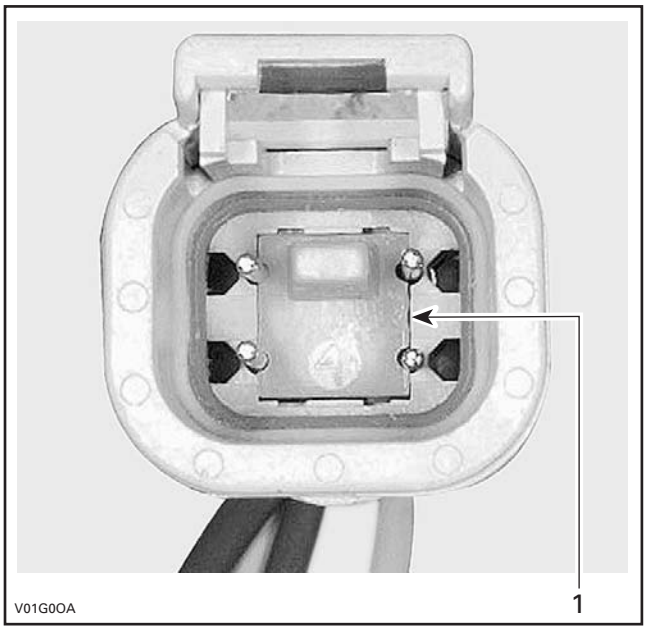


TYPICAL - DEUTSCH CONNECTOR
1. *Male connector*
2. *Female connector*
3. *Secondary lock*
4. *Sealing cap*

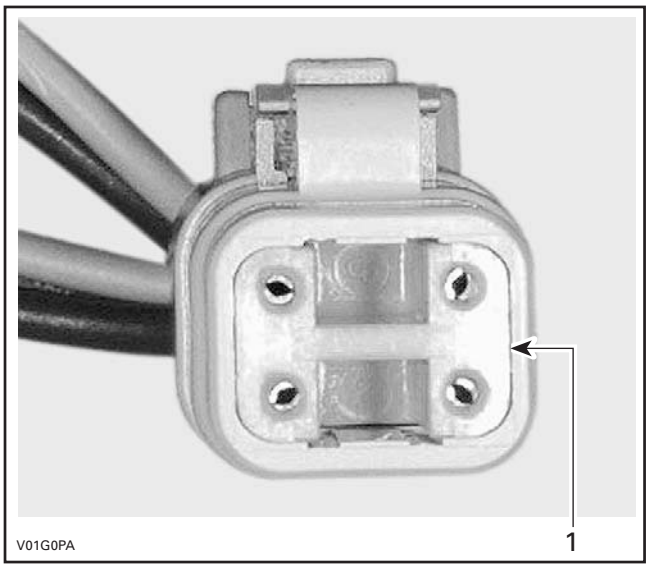
NOTICE Do not apply dielectric grease on terminal inside connector.

To remove terminals from connector, proceed as follows:

1. Using long nose pliers, pull out the plastic lock from between the terminals.



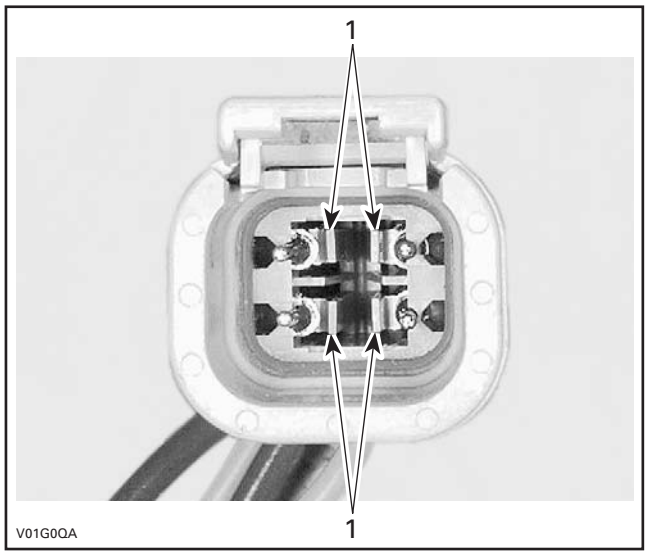
TYPICAL - FEMALE CONNECTOR
1. *Female lock*



TYPICAL - MALE CONNECTOR
1. *Male lock*

NOTE: Before pin extraction, push wire forward to relieve pressure on retaining tab.

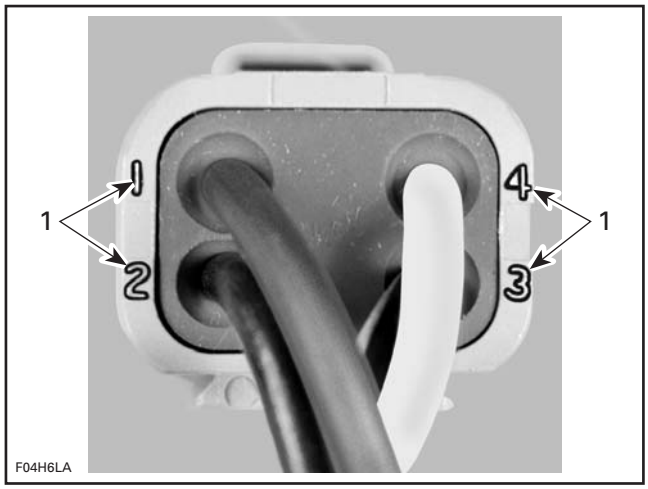
2. Insert a 4.8 mm (.189 in) wide screwdriver blade inside the front of the terminal cavity.
3. Pry the retaining tab away from the terminal while gently pulling the wire and terminal out of the back of the connector.



TYPICAL - FEMALE CONNECTOR
1. Retaining tabs

To install:

1. For insertion of a terminal, ensure the plastic lock is removed.
2. Insert terminal through the back of the connector in the appropriate position, and push it in as far as it will go. You should feel or hear the terminal lock engage.
3. Pull back on the terminal wire to ensure the retention fingers are holding the terminal.
4. After all required terminals have been inserted, the lock must be installed.



TYPICAL - CONNECTOR PIN-OUT
1. Terminal position identification numbers

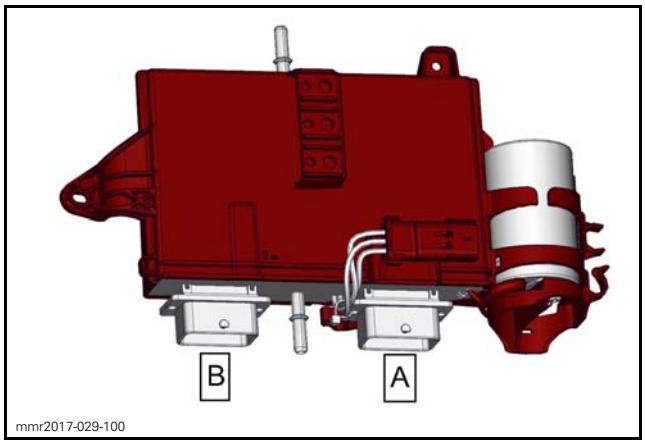
ECM CONNECTOR (MOLEX)

There are 2 connectors on the ECM.

The engine wiring harness connector is connected to ECM connector "A". The vehicle wiring harness connector is connected to ECM connector "B".

Each ECM connector has 48 pins however, connectors "A" and "B" are not interchangeable due to their specific keyways.

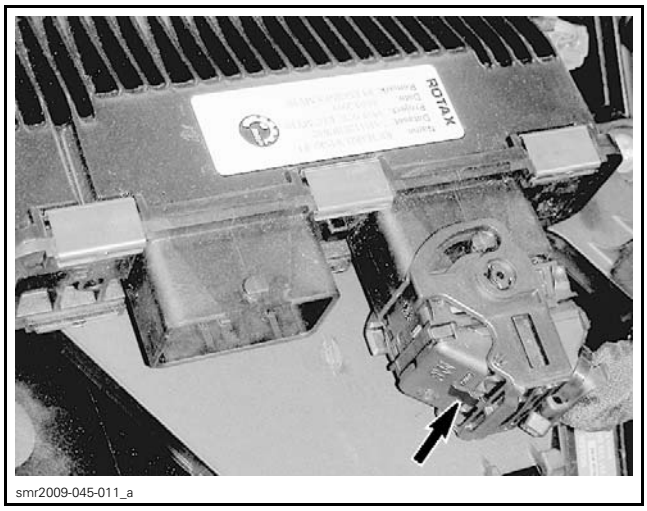
NOTE: If you need to remove the connector, be sure to not disconnect fuel quick-connector at ECM. If you need to remove the ECM or fuel quick connector, insure the ECM electrical connectors are securely in place and avoid fuel intrusion into connector/seal.



ECM CONNECTORS

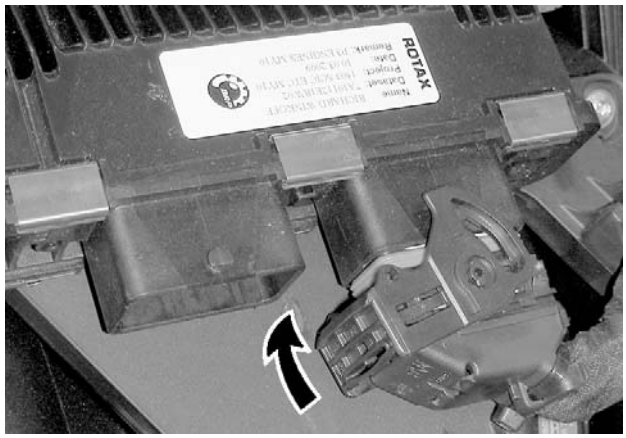
Removing the Connector

1. To access the ECM, refer to *ELECTRONIC FUEL INJECTION (EFI)* subsection.
2. Press **and hold** the locking tab on the connector to be disconnected.



LOCKING TAB TO PRESS AND HOLD

3. As you hold the locking tab, rotate the connector locking cam until it stops.



smr2009-045-012_a

CONNECTOR LOCKING CAM ROTATION TO RELEASE

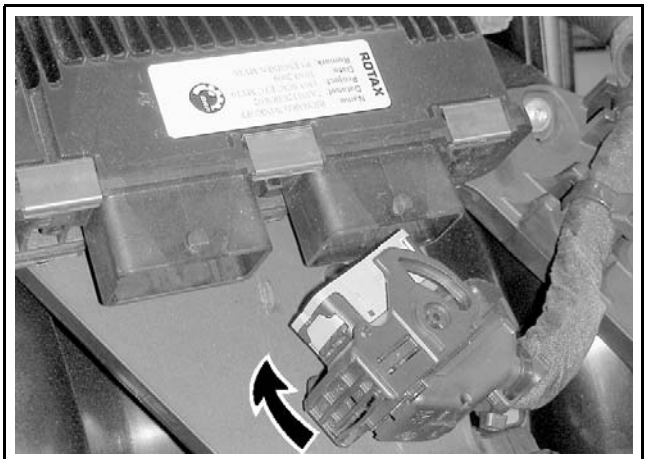
4. Pull connector off ECM.



smr2009-045-013_a

Installing the Connector

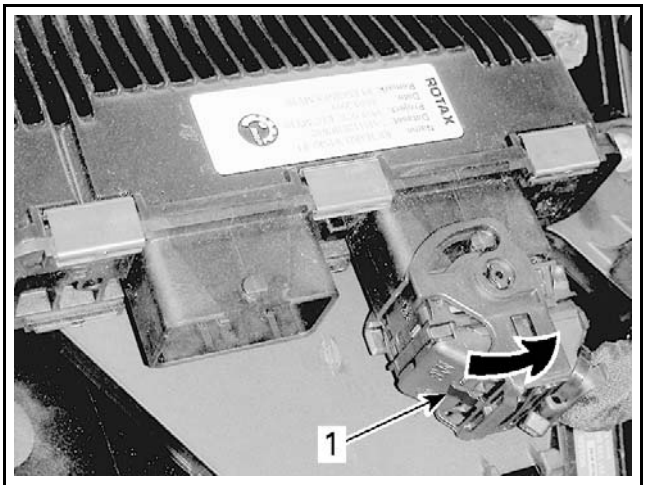
1. Fully open connector locking cam.



smr2009-045-013_b

CONNECTOR LOCKING CAM IN RELEASE POSITION

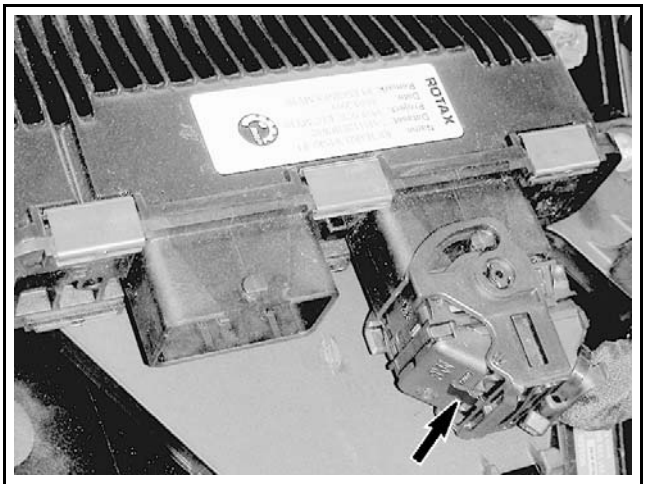
2. Insert connector on ECM.
3. As you push the connector onto the ECM, rotate the connector locking cam until it snaps locked.



smr2009-045-011_b

1. Locked here

4. Ensure the locking tab is fully out.



smr2009-045-011_a

LOCKING TAB FULLY OUT

Inspecting the Connector

Before replacing an ECM, always check electrical connections.

1. Ensure connector locking mechanism is functioning properly.
2. Ensure all wire terminals (pins) are properly locked in the connector.
3. Ensure they are very tight, make good contact with the pins in the ECM.
4. Ensure the pins in the harness connector and the ECM connector are clean, shiny and corrosion-free.

NOTE: A "defective ECM module" could possibly be repaired simply by disconnecting and reconnecting it.

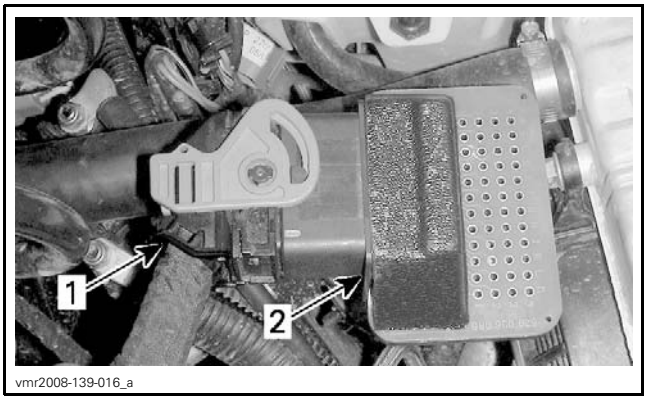
NOTICE Do not apply any lubricant product to the pins of the ECM connector.

Probing the Connector

The most recommended and safest method to probe the MOLEX (ECM) connector terminals is to use the ECM adapter tool. This tool will prevent deforming or enlarging of the terminals, which would lead to bad ECM terminal contact creating intermittent or permanent problems.

REQUIRED TOOL	
ECM ADAPTER TOOL (P/N 529 036 166)	

1. Disconnect the ECM connector to be probed, and reconnect it on the ECM adapter.
2. Probe wire terminals of the circuit to be tested directly in the adapter holes.



TYPICAL
1. ECM connector
2. ECM adapter

NOTICE Never probe directly on the ECM harness connector. This could change the shape or enlarge the terminals and create intermittent or permanent contact problems.

Removing the Connector Terminal (Harness Connector)

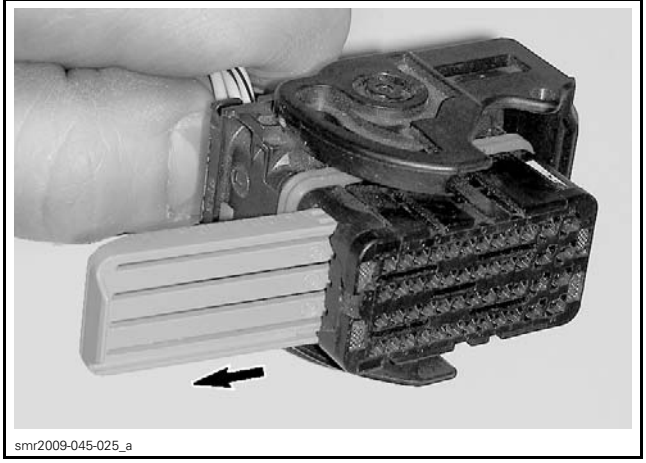
To remove a signal terminal from the ECM harness connector, use the ECM terminal remover 2.25.

REQUIRED TOOL	
ECM TERMINAL REMOVER 2.25 (P/N 529 036 175)	

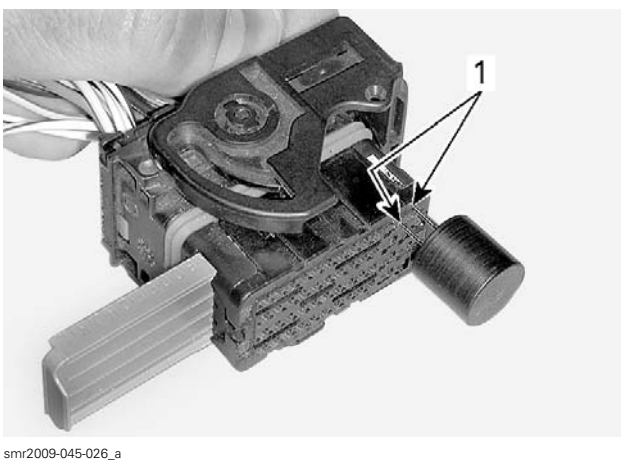
To remove a power terminal, use the ECM terminal remover 3.36.

REQUIRED TOOL	
ECM TERMINAL REMOVER 3.36 (P/N 529 036 174)	

1. Remove rear protector from connector.
2. Pull out the connector lock.

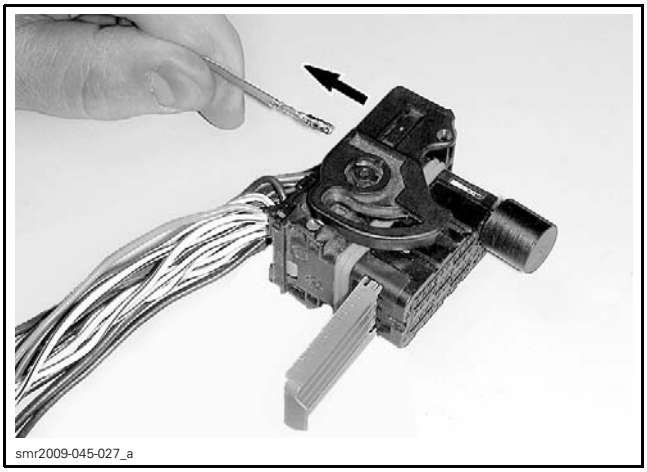


3. Insert tool to unlock terminal.



1. Unlock here

4. Gently pull on the wire to extract the terminal out the back of the connector.


smr2009-045-027_a

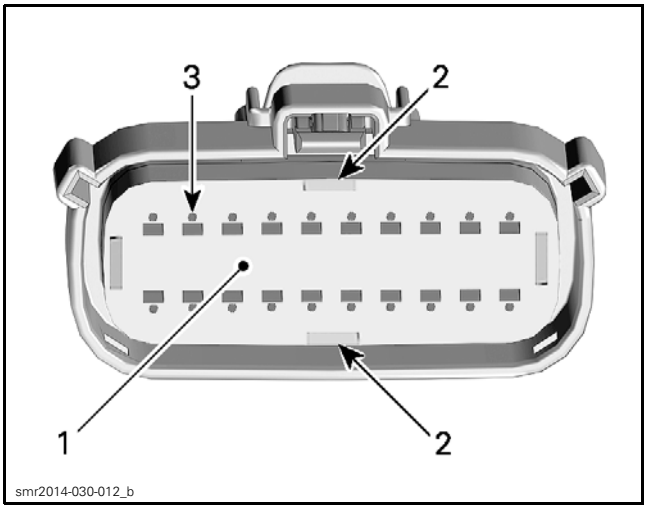
NOTICE Before installing wire terminals in the connector, ensure all terminals are properly crimped on wires. After installation of wire terminals in the connectors, ensure they are properly locked by gently pulling on them as if to extract them.

MOLEX CONNECTORS (EXCEPT ECM)

Extracting a Terminal (Female Connector)

The same procedure must be done to remove a seal plug.

1. Insert a small flat screwdriver in the pry holes of the terminal locator, on the terminal side of the connector.



smr2014-030-012_b

1. Terminal locator
2. Pry holes
3. Holes for inserting terminal extractor tool

2. Apply slight pressure and pry the terminal locator out until it clicks (± 4 mm (.16 in)).

NOTE: Do not remove the terminal locator from the connector housing.

3. Insert the extractor tool in the small hole adjacent to the terminal.

NOTE: Push the extractor tool in only as far as required to release the lock from the terminal. The tool should slide along the terminal and be inserted between the connector housing and the terminal lock.

REQUIRED TOOL	
FCI TERMINAL EXTRACTOR TOOL (P/N 54241678)	
or,	
MOLEX 150 TERMINAL EXTRACTOR TOOL (P/N 63813 - 1500)	

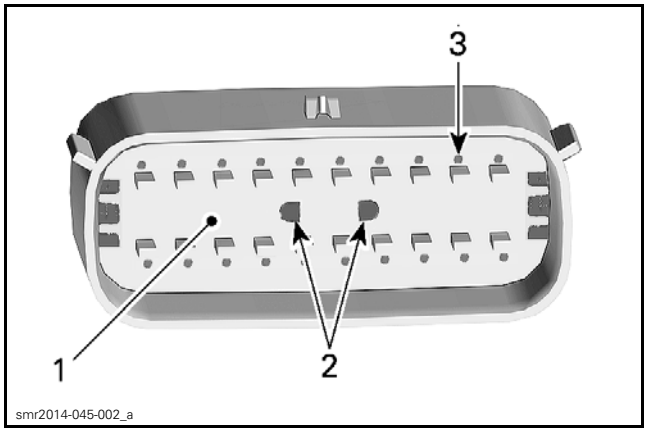
4. Gently pull on the wire to extract the terminal out the back of the connector.

Extracting the Terminal (Male Connector)

The same procedure must be done to remove a seal plug.

1. Using a pair of thin long nose pliers, pull the terminal locator (the white plastic insert in the connector) out to the detent position (± 13 mm (1/2 in) between terminal locator and connector housing face). This will allow unlocking of the pins.

NOTICE Do not attempt to remove the terminal locator or damage will occur. Be careful not to bend the pins when using the pliers.



smr2014-045-002_a

1. Terminal locator
2. Insert long nose pliers here
3. Holes for inserting terminal extractor tool

2. Insert the extractor tool in the small hole adjacent to the terminal.

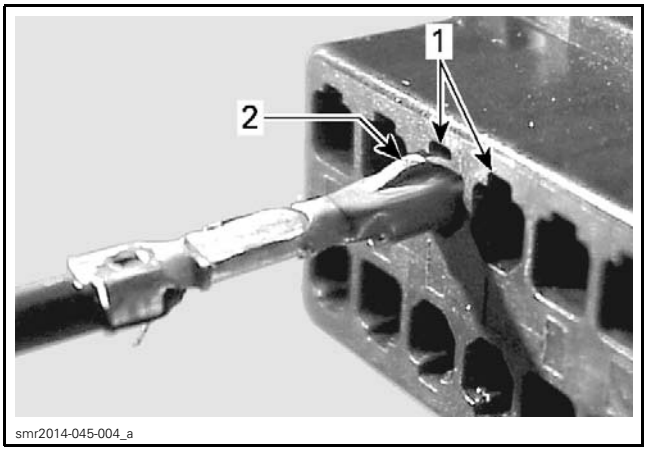
NOTE: Push the extractor tool in only as far as required to release the lock from the terminal. The tool should slide along the terminal and be inserted between the connector housing and the terminal lock.

REQUIRED TOOL	
FCI TERMINAL EXTRACTOR TOOL (P/N 54241678)	
or,	
MOLEX 150 TERMINAL EXTRACTOR TOOL (P/N 63813 - 1500)	

3. Gently pull on the wire to extract the terminal out the back of the connector.

Inserting the Terminal

1. Ensure the terminal is properly crimped onto the wire.
2. Ensure the terminal locator (the white plastic insert in the connector) is out in the detent position.
3. Orient the key on the back of the male terminal with the keyway on the rear of the housing



smr2014-045-004_a

TYPICAL - PIN INSERTION
1. Keyway
2. Terminal key

4. Push the terminal into the housing until it clicks.
5. Gently pull on the terminal to ensure it is properly locked.
6. Repeat previous steps for each terminal to be inserted.
7. Push the terminal locator into the connector to the locked position.

DELPHI/PACKARD CONNECTORS

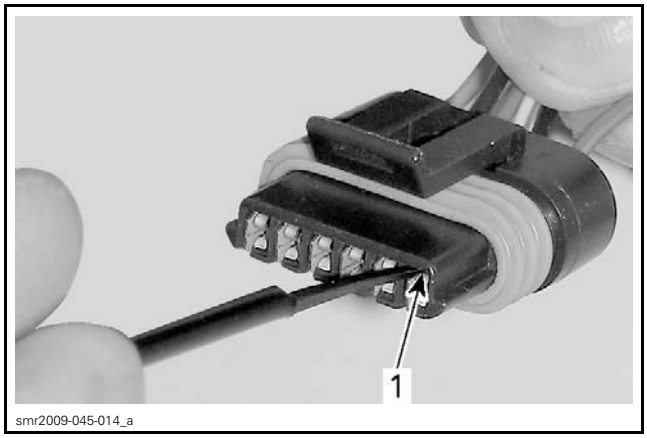
Removing the Connector Terminal

To remove a terminal (pin) from the connector, use a special tool such as the Delphi terminal extractor.

REQUIRED TOOL	
DELPHI TERMINAL EXTRACTOR (P/N 12094429)	

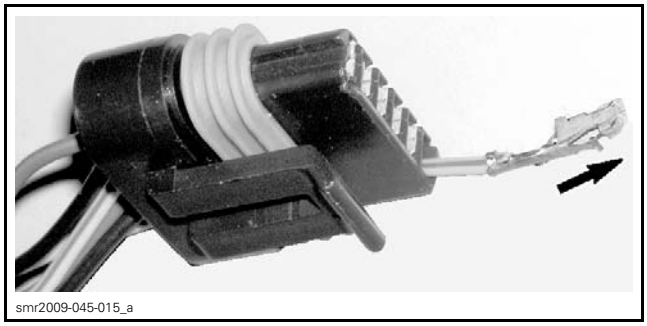
NOTE: Grinding the tool end to a taper is required.

1. Carefully insert the tool in the space provided to release the pin lock.
2. Push the pin out the front of the connector by pushing on the wire.



smr2009-045-014_a

1. Unlock terminal here

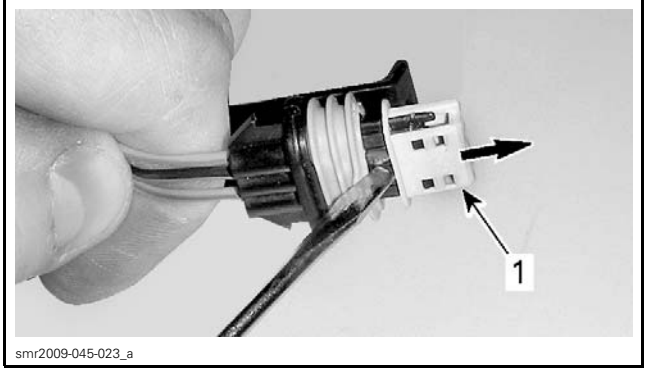

smr2009-045-015_a

NOTICE **Before installing terminals in the connectors, ensure all terminals are properly crimped on the wires. After installation of the wire terminals in the connectors, ensure they are properly locked by gently pushing on them as if to extract them.**

DELPHI CONNECTORS

Removing the Terminal

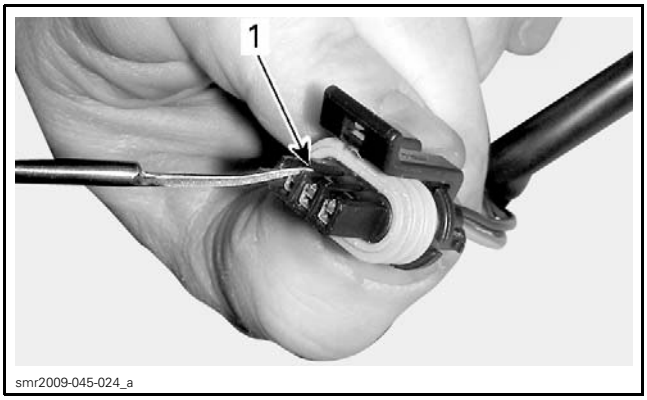
1. To remove a terminal from connector, first remove the locking cap.



1. Pry out locking cap

2. Carefully insert the Delphi terminal extractor in the space provided to release the pin lock.

REQUIRED TOOL	
DELPHI TERMINAL EXTRACTOR (P/N 12094429)	



1. Unlock here

3. Gently pull on the wire to extract the pin out the back of the connector.

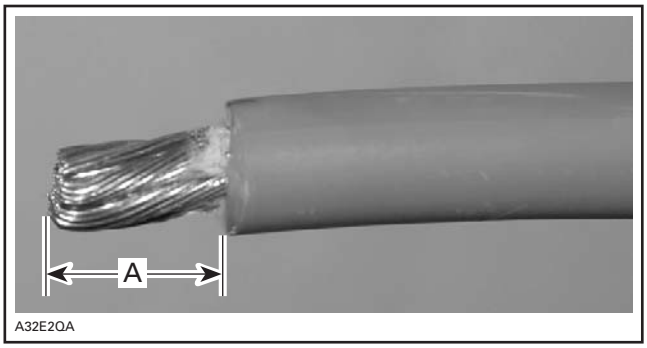


NOTICE Before installing terminals in the connectors, ensure all terminals are properly crimped on the wires. After installation of the wire terminals in the connectors, ensure they are properly locked by gently pushing on them as if to extract them.

BATTERY CABLES

Crimping the Battery Cable

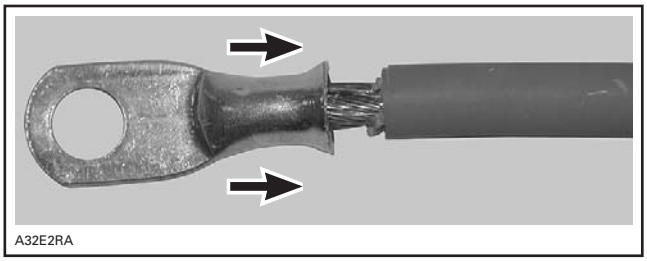
Carefully strip the wire approximately to 10 mm (3/8 in) in length, using a wire stripping tool or sharp blade/knife.



A. 10 mm (3/8 in)

NOTE: Make sure not to cut wire strands while stripping the wire.

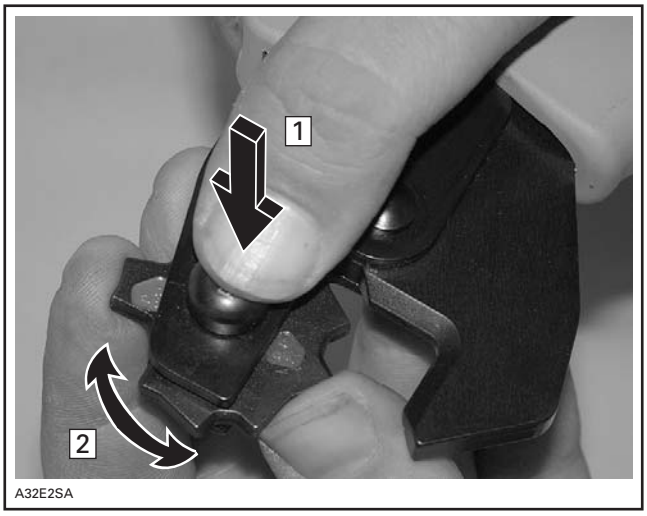
Install the appropriate terminal on the wire according to the requirement. Refer to appropriate *PARTS CATALOG*.



INSTALLATION OF TERMINAL

Follow the instructions provided with the crimping tool to select the proper position of the tool.

NOTE: Different wires require different crimping pliers settings, so make sure to follow the instruction supplied with the tool.

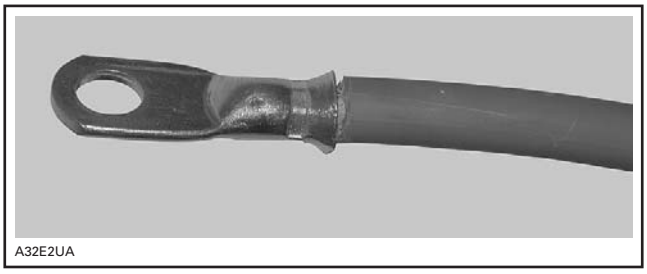


POSITIONING THE CRIMPING PLIERS
Step 1: Press
Step 2: Rotate

After positioning the crimping pliers, crimp the terminal already installed on wire.



CRIMPING OF WIRE



PROPERLY CRIMPED WIRE

To verify, if the wire is properly crimped, apply some pulling force on wire and the terminal at the same time from both directions.

NOTICE Never weld the wire to the terminal. Welding can change the property of the wire and it can become brittle and break.

Install the protective heat shrink rubber tube on the terminal. Heat the heat shrink rubber tube using the heat gun so that it grasps the wire and the terminal.

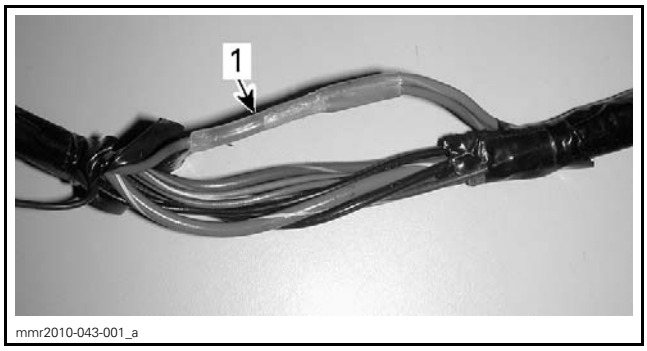
NOTICE Make sure that the protective heat shrink rubber tube has been properly installed and no part of wire is exposed.

SPLICES REPAIR PROCEDURE

CASE 1: Wire Detached from Splice

NOTICE Repairs described in this section should never be performed on harness sections that can be exposed to water.

1. Locate splice. Refer to splices location diagrams.
2. Remove wires from protector tube.
3. Locate the shrink tube protecting the defective splice.



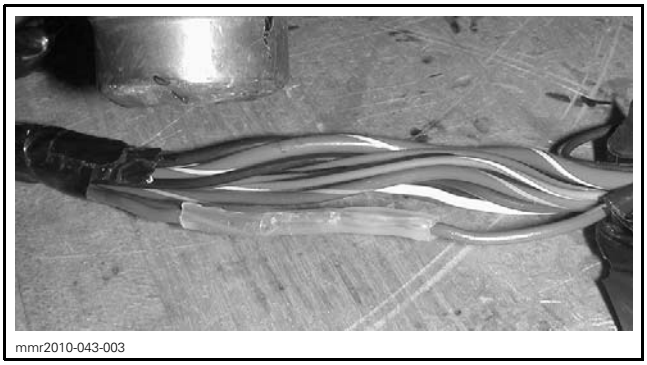
1. Shrink tube

4. Remove the shrink tube.
   4.1 Using a blade, cut the shrink tube.



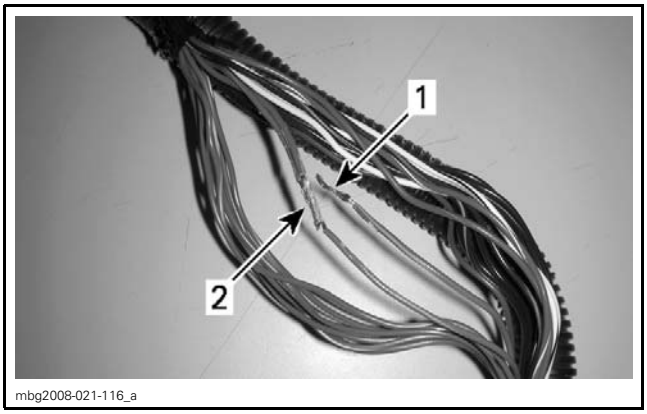
NOTICE Be careful with the blade to avoid cutting wires insulation.

   4.2 Slightly heat the shrink tube using a heat gun.


mmr2010-043-003

4.3 Remove the shrink tube with long nose pliers.

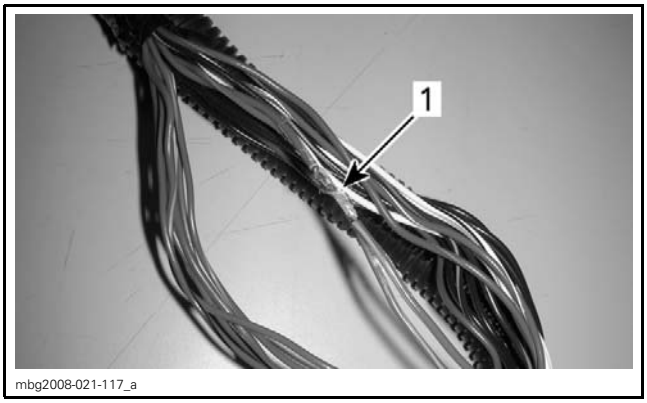
5. Locate detached wire from splice.



mbg2008-021-116_a

1. Detached wire
2. Splice

6. Twist detached wire around splice.



mbg2008-021-117_a

1. Twisted wire

7. Perform a tin solder on twisted wire.
8. Apply electrical tape to cover splice.

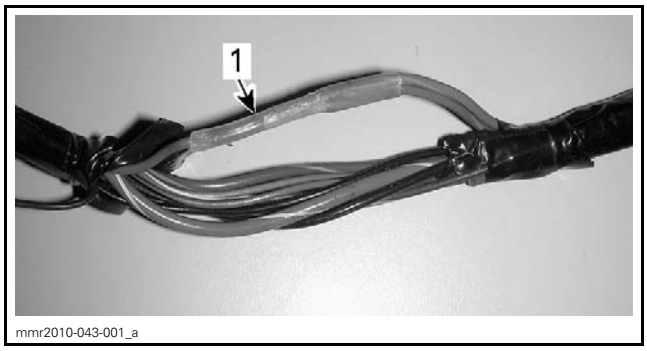
NOTE: Make sure tape overlaps on wire insulation, approximately 13 mm (1/2 in) each side.

9. Reinstall wires into protector tube.

CASE 2: Wire Broken from Splice

NOTICE Repairs described in this section should never be performed on harness sections that can be exposed to water.

1. Locate splice. Refer to splices location diagrams.
2. Remove wires from protector tube.
3. Locate the shrink tube protecting the defective splice.



mmr2010-043-001_a

1. Shrink tube

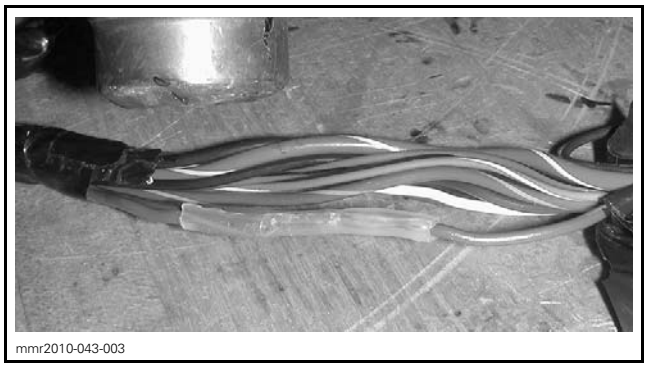
4. Remove the shrink tube.

4.1 Using a blade, cut the shrink tube.


mmr2010-043-002

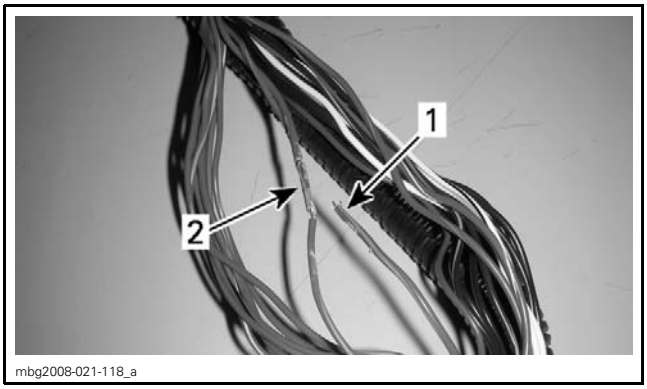
NOTICE Be careful with the blade to avoid cutting wires insulation.

4.2 Slightly heat the shrink tube using a heat gun.


mmr2010-043-003

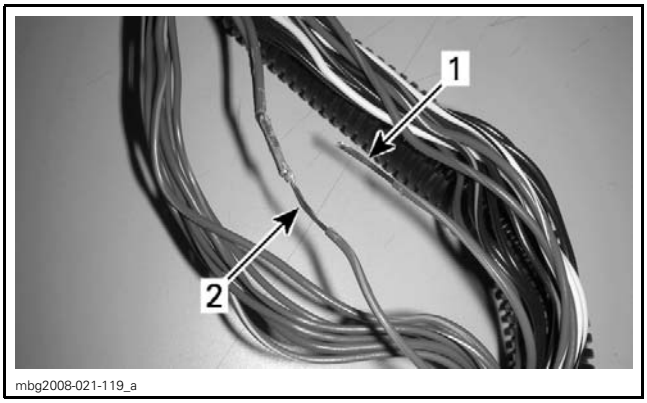
4.3 Remove the shrink tube with long nose pliers.

5. Locate broken wire from splice.



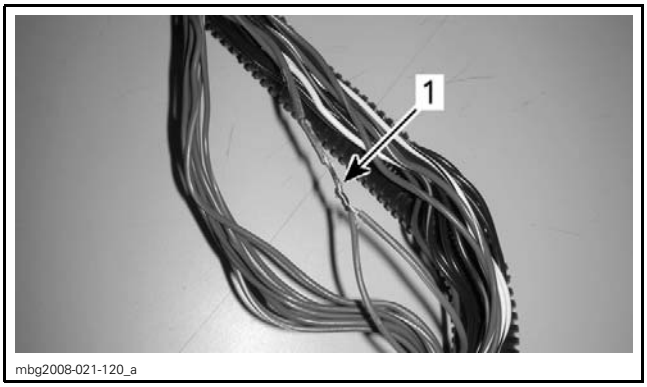
1. Broken wire
2. Splice

6. Strip wire insulation at the end of broken wire.
7. Strip wire insulation below the splice.



1. Broken wire stripped
2. Splice wire stripped

8. Twist wire around stripped wire.



1. Twisted wire

9. Perform a tin solder on twisted wire.
10. Apply electrical tape to cover splice.

NOTE: Make sure tape overlaps on wire insulation, approximately 13 mm (1/2 in) each side.

11. Reinstall wires into protector tube.

NOTE: Always perform a solder on a bigger wire (lower gage).

IGNITION SYSTEM (EFI)

SERVICE TOOLS

Description	Part Number	Page
DIAL INDICATOR ADAPTER	529 036 132	135
TDC DIAL INDICATOR	295 000 143	135
TDC DIAL INDICATOR	414 104 700	135

GENERAL

⚠ WARNING

Always electrically disconnect both fuel injectors prior to testing for ignition spark. Otherwise, fuel vapors may ignite in presence of a spark creating a fire hazard.

SYSTEM DESCRIPTION

A CDI ignition system is used.

The ECM sends the current to the primary winding of a dual ignition coil which provides a separate high voltage output to each spark plug.

The ECM is programmed for optimum ignition timing under all operating conditions. Using operating conditions provided by a variety of sensors, the ECM controls the ignition timing for optimum engine operation.

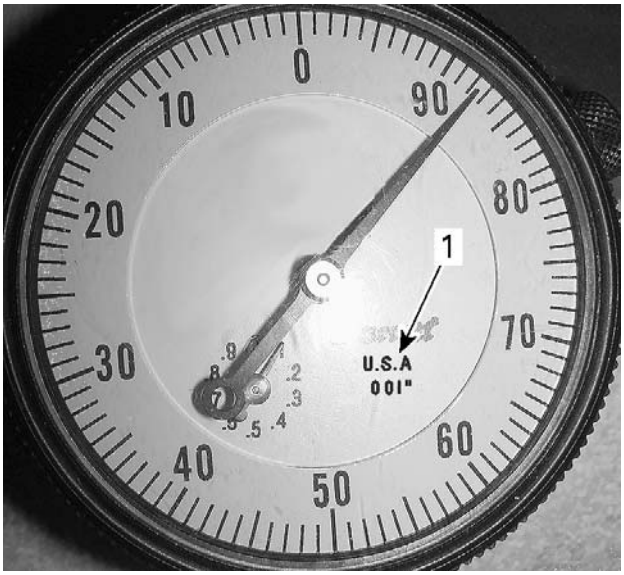
The ECM will limit the maximum engine speed to approximately 8600 RPM.

ADJUSTMENT

UNDERSTANDING THE TDC GAUGE

Dial gauges can be either in imperial or metric units. It is crucial to identify gauge units and graduation.

Imperial Dial Gauge

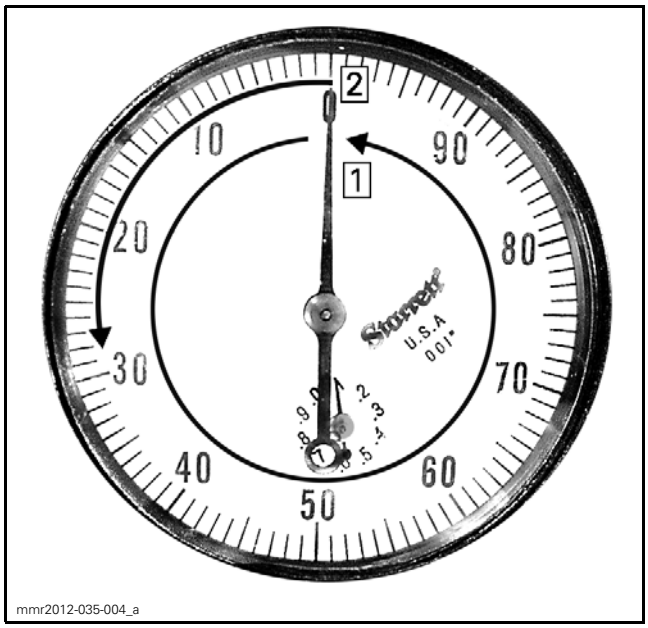


mmr2012-035-002_a

IMPERIAL GAUGE EXAMPLE
1. 001 inch means it is graduated each 1/1000 inch

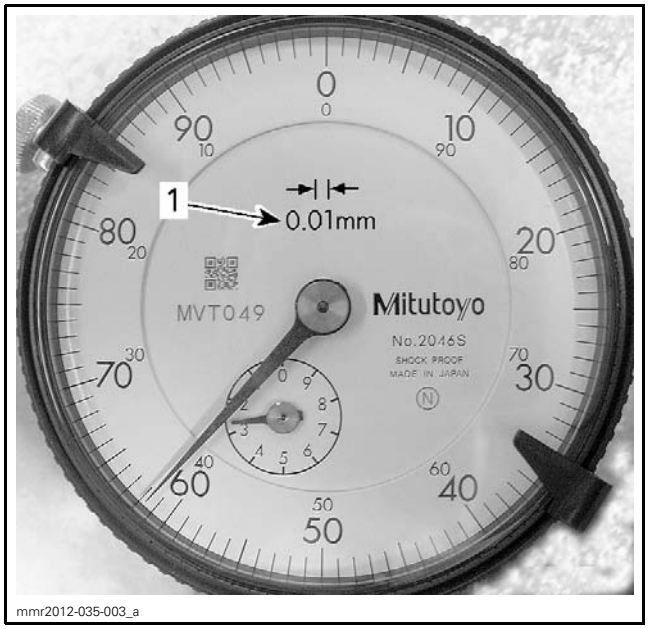
TYPICAL IMPERIAL DIAL GAUGE		
GRADUATION	MEASURE PER NEEDLE TURN	MEASURE EXAMPLE: .128 INCH
1/1000 inch (.001) per graduation line	1 turn = .100 inch	1 complete turn + 28 graduation lines

NOTE: The small dial indicates the number of turns the long needle traveled around the main dial.



.128 INCH AS AN EXAMPLE
Step 1: 1 complete turn
Step 2: 28 lines

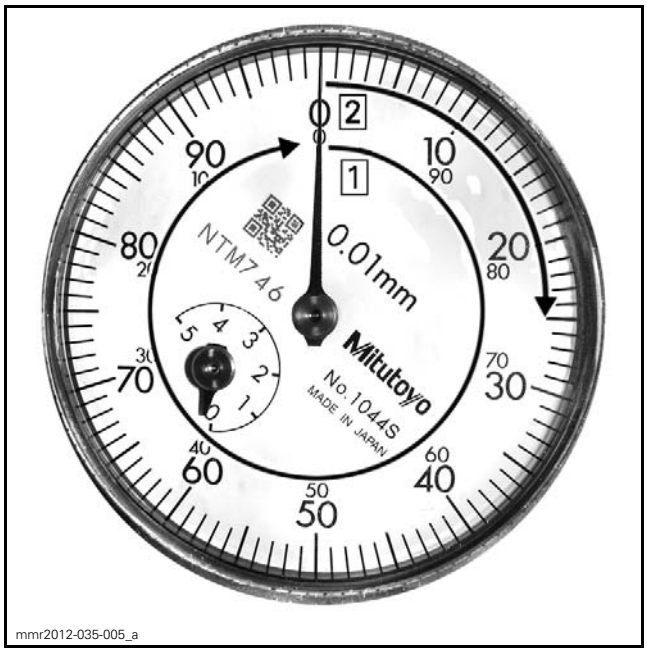
Metric Dial Gauge



METRIC GAUGE EXAMPLE
1. 0.01 mm means its graduated each 1/100 millimeter

METRIC DIAL GAUGE EXAMPLE		
GRADUATION	MEASURE PER NEEDLE TURN	MEASURE EXAMPLE: 3.25 mm
1/100 millimeter (.01) per graduation line	1 turn = 1 millimeter	3 complete turns + 25 graduation lines

NOTE: The small dial indicates the number of turns the long needle traveled around the main dial.



3.25 mm AS AN EXAMPLE
Step 1: Complete turns (3 X)
Step 2: 25 lines

IGNITION TIMING

Normally, ignition timing adjustments should not be required. It has been set at the factory and should remain correctly adjusted as every component is fixed and non adjustable.

The only time the ignition timing may require adjustment is when replacing the:
– Crankshaft
– Magneto flywheel
– CPS
– ECM.

Adjustment procedure summary:
– TDC Gauge Installation
– Locating Piston TDC
– Scribing the timing marks
– Checking Ignition timing
– Adjusting timing.

If the ignition timing is incorrect, first check for proper crankshaft alignment. This might be an indication of a twisted crankshaft. Refer to *BOTTOM END* subsection.

Installing the TDC Gauge

⚠ WARNING

Ensure tether cord is removed from engine cut-off switch and emergency engine stop switch is in the STOP position.

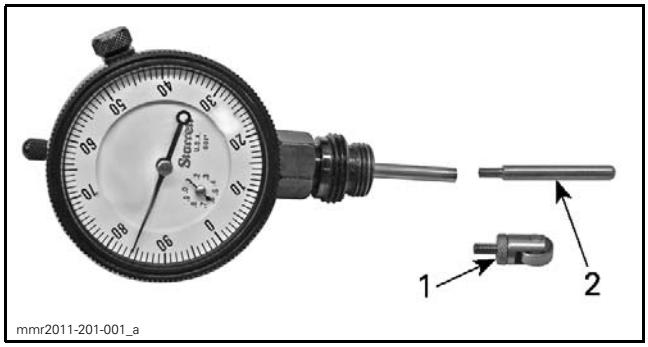
Two TDC gauges can be used:

TDC GAUGES	
Preferred Gauge TDC DIAL INDICATOR (P/N 295 000 143) **(short reach)**	
TDC DIAL INDICATOR (P/N 414 104 700) **(long reach)**	

Preparing the Gauge

REQUIRED TOOL	
Rounded tip from DIAL INDICATOR ADAPTER (P/N 529 036 132)	

1. Remove the roller tip from the gauge.
2. Use the rounded tip from the adapter.

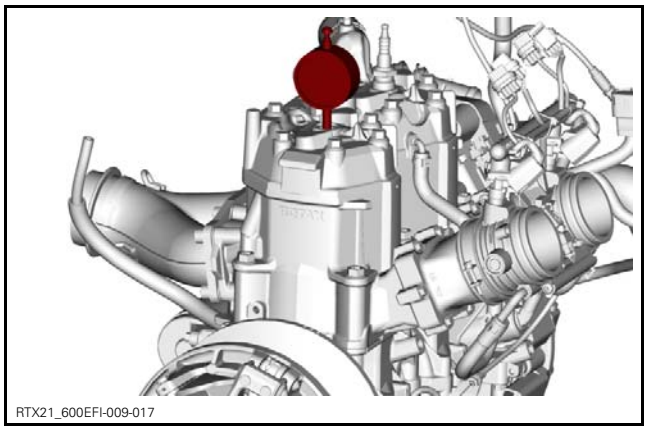


1. Roller tip removed
2. Rounded tip to install

3. Install the rounded tip on the gauge.

Installing the Gauge

1. Remove the PTO side spark plug.
2. Carefully insert the TDC gauge through the spark plug hole.



3. Screw the gauge into the spark plug hole with the dial face towards the PTO and tighten it sufficiently to prevent movement.

Locating Piston TDC

NOTE: Normal engine rotation as seen from the PTO side is counterclockwise.

1. With a firm hold on the drive pulley, slowly rotate the drive pulley counterclockwise while observing the TDC gauge needle.

NOTE: Note that the needle stops moving only as the piston is changing direction at the top of its stroke.

2. Rotate the dial face so the "0" is in line with the needle when it stops moving.
3. Resume rotating the engine in the same direction (counterclockwise) until the gauge needle has rotated approximately 1/4 turn past TDC.
4. Then slowly rotate the engine in a clockwise direction until needle stops moving.

NOTE: The needle should stop on the "0". If not, reset the dial "0" to the needle.

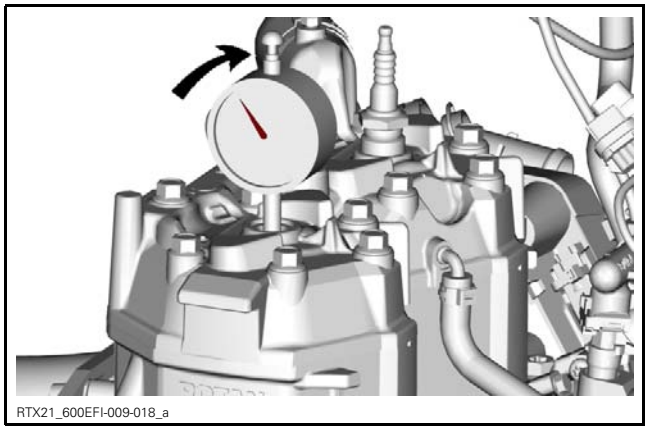
5. Again, slowly rotate the drive pulley back and forth across TDC and confirm the needle always stops exactly at "0" before changing direction. "0" now indicates exact TDC.
6. Lock the dial face with the dial lock screw.

NOTE: If a difference in "0" setting the dial in each direction of rotation is easily noticeable, the engine components may suffer from excessive wear. The engine may require further inspection and maintenance.

Scribing the Timing Mark

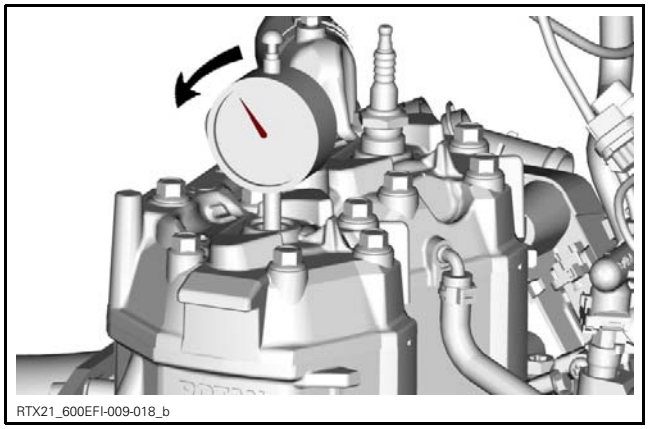
IMPORTANT: Make sure to understand the TDC gauge functioning. Refer to *UNDERSTANDING THE TDC GAUGE* in this subsection.

1. From the "0" (TDC), rotate the drive pulley clockwise (backwards engine rotation) until the dial needle rotates past the BTDC specification (see table below).



PASS THE BTDC SPECIFICATION

2. Then carefully rotate engine forward until needle precisely points the measurement specified in the table.

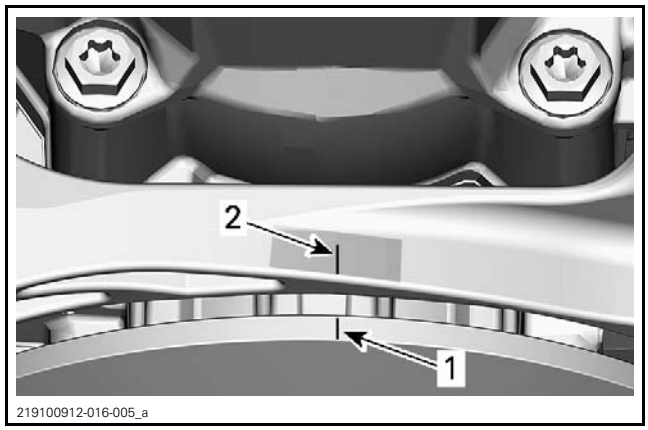


BRING DIAL NEEDLE TO THE BTDC SPECIFICATION

NOTE: Final setting must always be made in the normal engine rotation.

IGNITION TIMING BTDC	
BTDC SPECIFICATION	DEGREE SETTING BTDC
5.39 mm (.212 in)	28°

3. With the TDC gauge indicating specified timing, draw the reference mark and timing mark:
   3.1 Stick a piece of tape on the driven pulley bearing support.
   3.2 Use a permanent marker.
   3.3 Draw a line on the tape as a reference mark.
   3.4 Draw the timing mark on the drive pulley fixed sheave in line with the reference mark.



TYPICAL
1. Timing mark on fixed sheave
2. Timing mark on a tape, on driven pulley bearing support

4. Repeat the procedure to ascertain the marks are exactly aligned.
5. Remove the TDC gauge.
6. Reinstall the spark plug.
7. Reconnect magneto connector.
8. Check ignition timing as per applicable procedure in this subsection.

Checking Ignition Timing

The ignition timing can be checked with either the engine hot or cold at the specified RPM.

ENGINE SPEED FOR IGNITION TIMING CHECK
ENGINE RPM
2500 to 4000 (1)
(1) In this range, the spark advance does not change during the procedure.

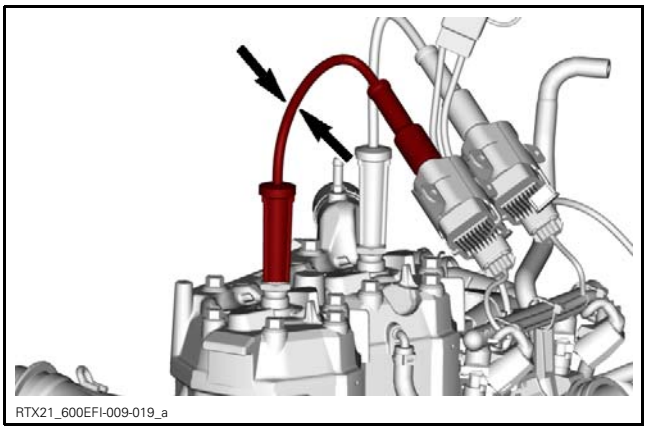
To check the ignition timing proceed as follows:

⚠ WARNING

Place ski tips against a wall, raise rear of vehicle on a stand, so that track does not contact the ground. Do not allow anyone in front of or behind the vehicle while engine is running. Keep clear of track and do not wear loose clothing which can get caught in moving parts.

1. Connect the timing light pick-up to the **PTO** spark plug cable.

NOTE: Be careful to route timing light cable away from drive belt and pulleys.


RTX21_600EFI-009-019_a

2. Connect the vehicle to the BRP diagnostic software (BUDS2).
3. Start engine and let idle.
4. In BUDS2, go to:
   - **Settings** page
   - **Vehicle** or **ECM** button
   - **Settings** tab
   - **Initializations - Ignition/Injection Timing**

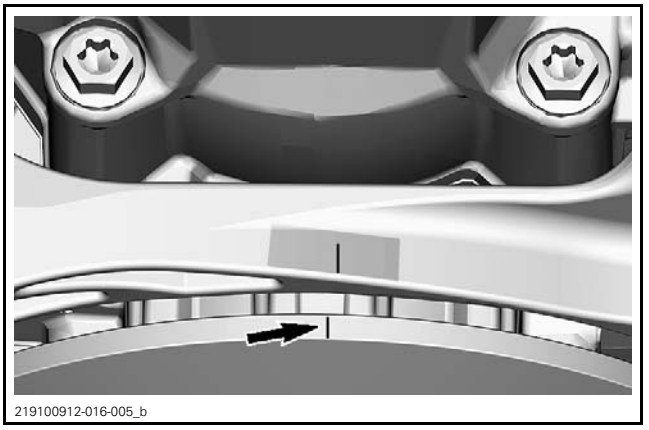
NOTE: Timing will be frozen on the PTO cylinder only for RPM stability. RPM will be limited to 4000 RPM.

5. Point the timing light on the timing mark and increase engine to **3500 RPM** for a brief instant.
6. The timing mark must be aligned with the pointer end within the specified tolerance.

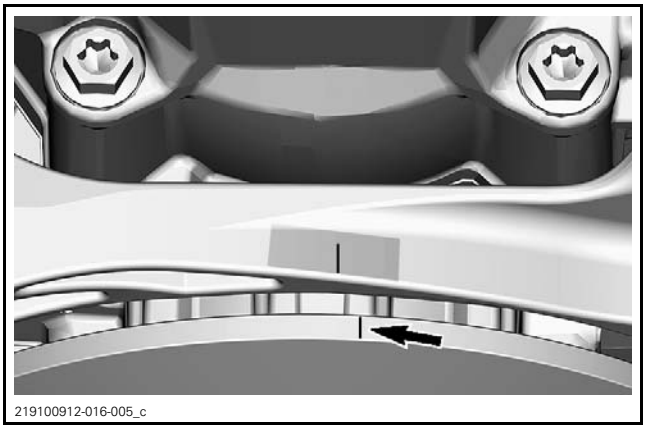
TOLERANCE
± 0.5°

If timing mark and pointer are aligned, no adjustment is required.

If they are not aligned, note if timing is retarded or advanced, see following illustrations. Then, adjust timing as described in *ADJUSTING TIMING* further in this subsection.


219100912-016-005_b

TYPICAL — TIMING RETARDED BY ABOUT 1°


219100912-016-005_c

TYPICAL — TIMING ADVANCED BY ABOUT 2°

Adjusting Timing

1. In the **Ignition/Injection Timing** area on the **Settings** page, select **Advance** or **Retard** to change the ignition timing.

NOTE: Timing will be changed in 0.5° increments.

2. Adjust the timing using the appropriate button until the timing mark is in line with the pointer, within 0.5°.
3. Unfreeze ignition timing.
4. Click **Close** button to store the ignition timing correction.
5. Shut down engine.
6. Restart engine and press the **Scan** icon in BUDS2.
7. Recheck timing to ensure ignition timing adjustment was properly stored in the ECM.
8. Increase engine RPM past 4000 RPM to ascertain the **Freeze Timing** function is no longer active.

NOTE: The **Freeze Timing** function automatically disengages when the engine is stopped.

9. Remove all tools.

TROUBLESHOOTING

IGNITION SYSTEM TESTING SEQUENCE

It is good practice to check for fault codes using the BRP diagnostic software BUDS2 as a first troubleshooting step. Refer to the *DIAGNOSTIC AND FAULT CODES* subsection.

In the case of ignition problems, check the following in the prescribed order until the problem can be solved:

1. Spark plugs
2. Spark plug cables
3. Wiring harness/electrical connectors
4. Emergency engine stop switch
5. Ignition cut-off switch
6. Ignition coil(s)
7. CPS
8. ECM (Engine Control Module).

If engine idles roughly or shows signs of increased emissions, the spark plugs may be incorrectly indexed. Refer to *INSTALLING THE SPARK PLUG* in this subsection.

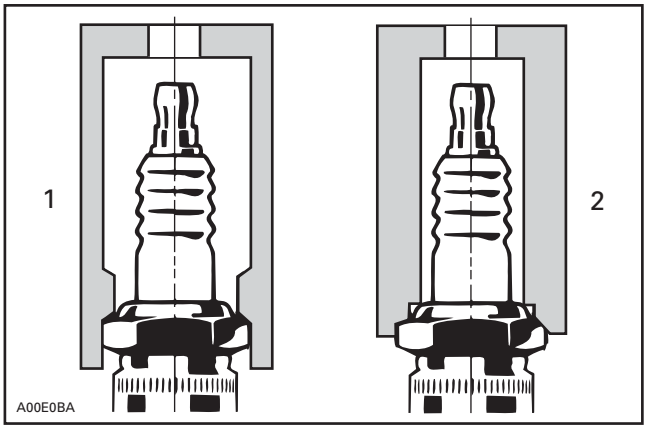
PROCEDURES

SPARK PLUGS

For spark plug type, refer to *TECHNICAL SPECIFICATIONS* subsection.

Replacing the Spark Plug

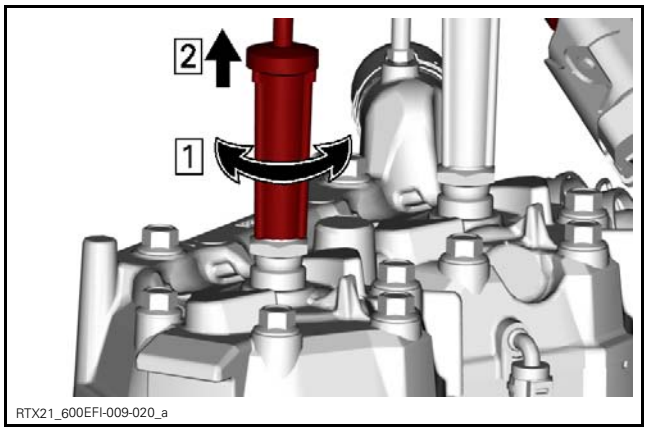
NOTE: Use only an approved spark plug socket for removal and installation. Extra care should be taken to avoid side stresses which could result in a broken spark plug.



TYPICAL
1. Approved socket
2. Improper socket

Removing the Spark Plugs

1. Disconnect the stator connector. Refer to *STATOR CONNECTOR ACCESS* in the *MAGNETO AND STARTER* subsection.
2. Remove the upper body module. Refer to *BODY* subsection.
3. Clean the spark plug and cylinder head with pressurized air.
4. Remove spark plug cables by gently rotating the cap and pulling it off the plug.



Step 1: Rotate
Step 2: Pull off

5. Unscrew the spark plug sufficiently to break the applied torque using the appropriate tools.



6. Remove spark plugs by hand.

Installing the Spark Plugs

1. Prior to installation, ensure the contact surfaces of the cylinder head and spark plug are free of grime.
2. Using a wire gauge, confirm electrode gap is as specified. Refer to *TECHNICAL SPECIFICATIONS*.

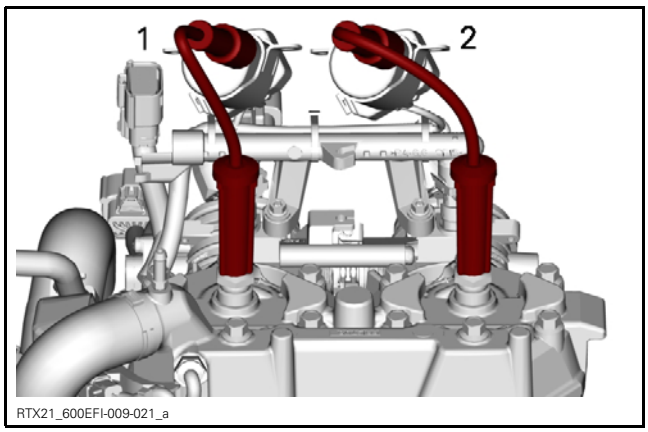
NOTE: If spark plug gap is incorrect, use another spark plug.

3. Hand screw spark plug into cylinder head until it bottoms out.
4. Apply specific torque using a torque wrench and approved spark plug socket.

TIGHTENING TORQUE	
Spark plug	27.5 N•m ± 2.5 N•m (20 lbf•ft ± 2 lbf•ft)

SPARK PLUG CABLES

NOTICE Do not connect spark plug to opposite side coil.



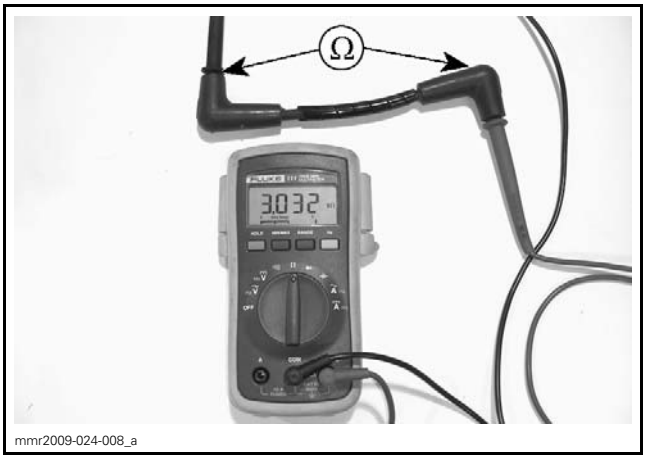
1. MAG side
2. PTO side

Measuring Spark Plug Cable Resistance

If the spark plug cables are in good condition, carry out the following resistance test.

1. Remove each spark plug cable from its ignition coil and spark plug.
2. Insert a probe in each cable end and measure the resistance.

SPARK PLUG CABLE SPECIFICATION
2160 – 6870 Ω



SPARK PLUG CABLE RESISTANCE TEST

If resistance is not as specified, replace spark plug cable.

EMERGENCY ENGINE STOP SWITCH

Emergency Engine Stop Switch Operation

The emergency engine stop switch provides a ground signal to the ECM when STOP is selected.

Refer to applicable *WIRING DIAGRAM* for details.

Testing Emergency Engine Stop Switch

1. Disconnect *STR 6P* connector. For connector location, refer to *WIRING HARNESS AND CONNECTORS*.
2. Measure resistance as per following table.

STR 6P CONNECTOR PIN	EMERGENCY ENGINE STOP SWITCH POSITION	SPECIFICATION
3 and 6	RUN	O.L.
	STOP	Close to 0 Ω (Continuity)

NOTE: If emergency engine stop switch is unplugged, engine will start and run. If emergency engine stop switch is jumped, engine will stop.

IGNITION COILS

Testing for Spark

Ensure emergency stop switch is set to *RUN*.

NOTE: Use ONLY an approved inductive spark plug tester or a new spark plug to test for ignition spark. In-line (series connected) spark testers must not be used. Radio frequency interference (RFI) generated by the arcing current may cause erratic behavior in the ECM.

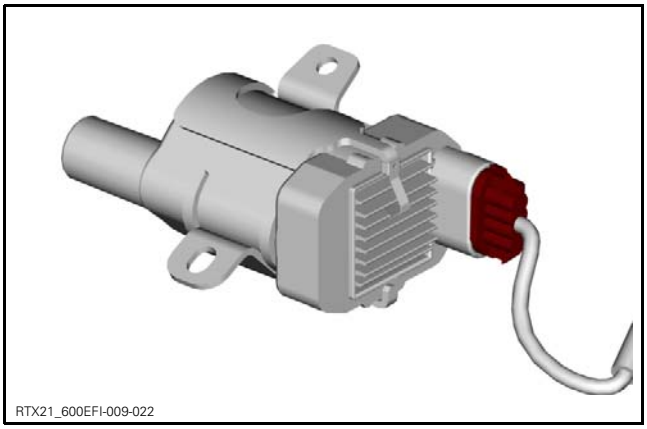
⚠ WARNING

Always electrically disconnect both fuel injectors prior to testing for ignition spark. Otherwise, fuel vapors may ignite in presence of a spark, creating a fire hazard.

1. Ensure emergency stop switch is set to *RUN*.
2. Install the inductive spark tester (or a new spark plug) on the spark plug cable **(Do not remove spark plugs installed on engine)**.
3. Activate ignition coil with BUDS2.
4. If no spark is produced, test ignition coil.
5. If a spark is produced, install new spark plugs in the engine and repeat the test to assure the new spark plugs are in good condition and functioning correctly.

Testing Ignition Coils

1. Set emergency stop switch to *RUN*.
2. Backprobe the ignition coil connector and measure voltage as per following table.



RTX21_600EFI-009-022

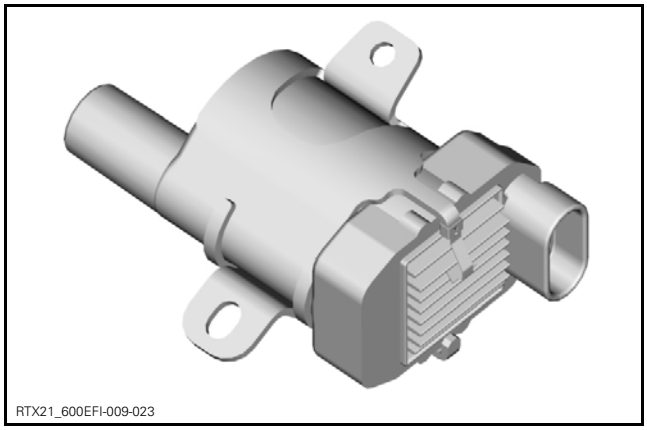
3. Use BUDS2 to activate ignition coil and measure the control signal.

IGNITION COIL CONNECTOR PIN	DESCRIPTION	SPECIFICATION
A	Ground	Battery ground
B	Control ground	-
C	Control	Vary when activated 0.015V-0.222V[1]
D	12 Volts	Battery voltage

[1] Control signal actually varies between 13 - 15 volts for 800 micro-seconds (DWELL time) but most multimeters cannot read it, it happens so fast.

4. If all inputs are as per specifications and there is no spark, replace ignition coil.
5. If a pin does not test as per specification, troubleshoot the affected wire continuity to ground or ECM. Refer to *WIRING DIAGRAM*.

Removing Ignition Coil



RTX21_600EFI-009-023

1. Note position of spark plug cables and remove them from the spark plugs.
2. Unplug ignition coil connector.
3. Remove the primary air intake silencer.
4. Remove and discard the push nut.
5. Remove ignition coil.

Installing Ignition Coil

The installation is the reverse of the removal procedure. However, pay attention to the following.

Install new push nuts.

IGNITION SYSTEM (E-TEC)

SERVICE TOOLS

Description	Part Number	Page
DIAL INDICATOR ADAPTER	529 036 132	144
DIAL INDICATOR ADAPTER	529 036 418	144
TDC DIAL INDICATOR	295 000 143	144
TDC DIAL INDICATOR	414 104 700	144

GENERAL

⚠ WARNING

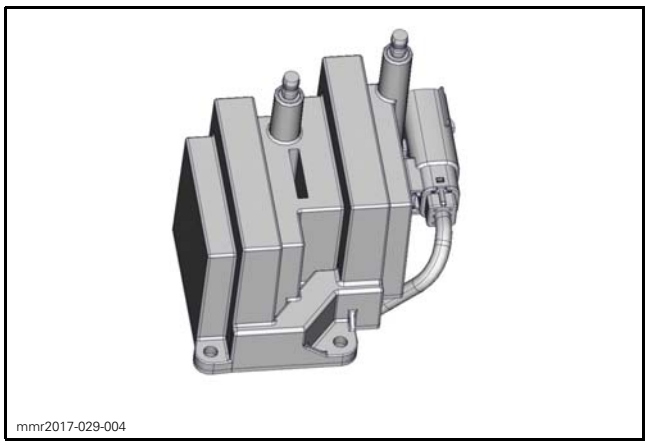
Always electrically disconnect both fuel injectors prior to testing for ignition spark. Otherwise, fuel vapors may ignite in presence of a spark creating a fire hazard.

SYSTEM DESCRIPTION

This ignition system is an inductive type specifically designed for the E-TEC engine with a rapid rise time to prevent spark plug fouling. It provides a quick spark with a long duration.

The ignition system is fully managed by the ECM which controls the ignition system parameters such as spark timing, dwell time, and firing order.

The system uses two separate ignition coils which induce high voltage in their secondary winding to produce a spark at each spark plug independently.


mmr2017-029-004

The ignition coils receive power from the 55 Vdc system. Their operating voltage varies from 20 to 55 Vdc.

Ignition System Basic Operation

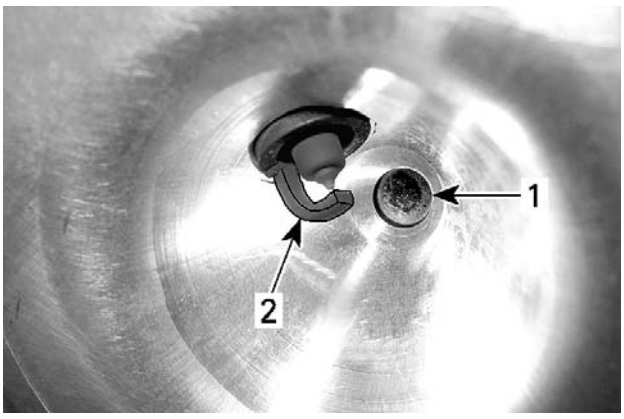
Each ignition coil uses an active circuitry to energize the primary winding when it receive a pulse from the ECM. The pulse has an amplitude of approximately 10 volts. At the end of the dwell time, the power is released from the primary winding which induces a current that produces a high voltage in the secondary winding. This high voltage is then fed to the spark plug.

A resistive core spark plug cable is used to prevent the RFI (Radio Frequency Interference). There is no resistor in the spark plug cap.

Spark Plugs

The OEM spark plug used is specially indexed for optimum engine operation and efficiency.

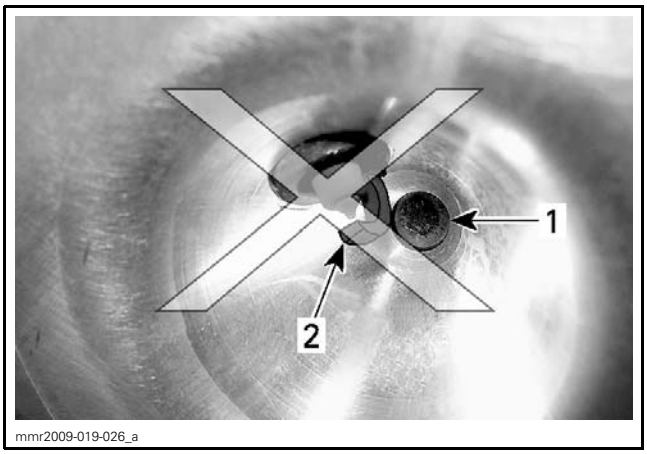
The threads on the spark plug and in the cylinder head are indexed so that when the plug is installed, the open end of the negative electrode will be facing the injection spray, within ± 90°. This ensures the negative electrode does not deviate the injection spray and ensures proper ignition.



mmr2009-019-027_a

CORRECTLY INDEXED
1. *Injector nozzle*
2. *Ground electrode*

NOTE: Using an incorrectly indexed spark plug will result in poor idle and increased emissions.



INCORRECTLY INDEXED
1. *Injector nozzle*
2. *Ground electrode*

If using a non OEM spark plug, a specific installation procedure must be followed. Refer to *INSTALLING THE SPARK PLUGS (NON-OEM)* in this subsection.

Ignition Timing

The crankshaft position sensor (CPS), the air pressure sensor (MAPTS) and the throttle position sensor (TPS) are the primary sensors used to control the ignition timing.

The ECM is programmed with data (ignition mappings). Using feedback provided by the sensors, the ECM controls the ignition timing for optimum engine operation under all operating conditions.

Ignition timing can be adjusted using BUDS2.

Knock Detection

The knock sensor detects specific vibration that would be typically generated by engine detonation.

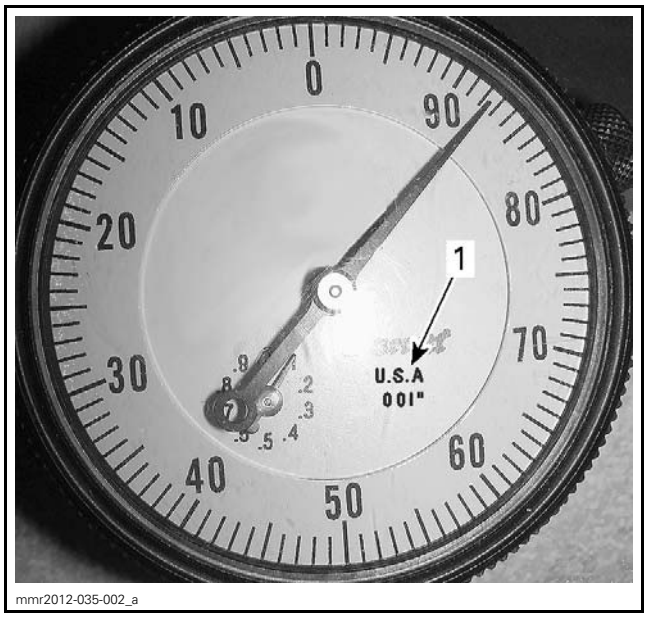
If detonation occurs, the ECMs retards the ignition and increases the fuel injected temporarily (it goes into a specific operating mode) until detonation stops.

ADJUSTMENT

UNDERSTANDING THE TDC GAUGE

Dial gauges can be either in imperial or metric units. It is crucial to identify gauge units and graduation.

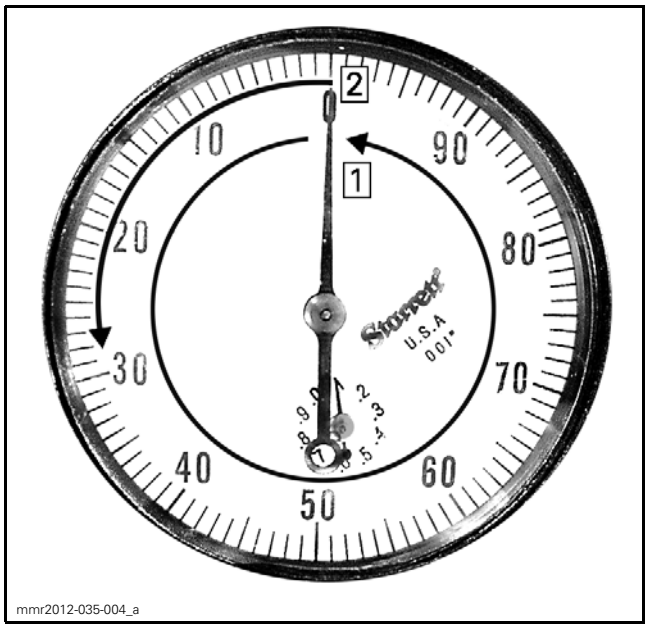
Imperial Dial Gauge



IMPERIAL GAUGE EXAMPLE
1. *001 inch means it is graduated each 1/1000 inch*

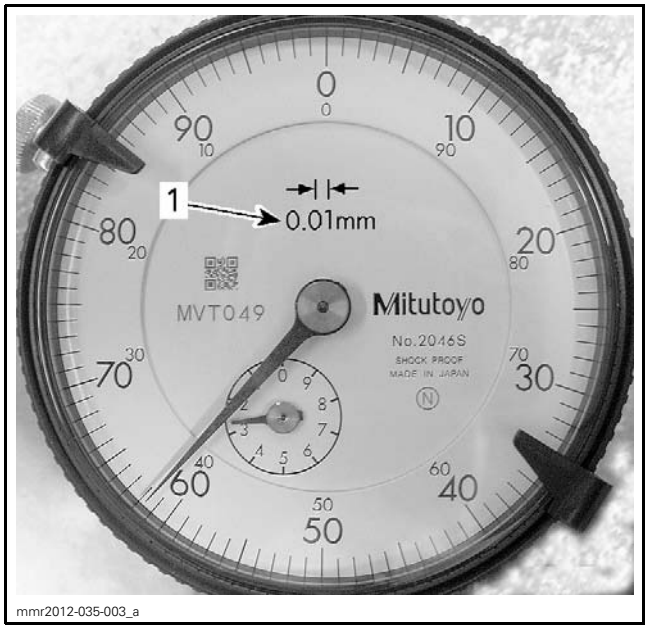
TYPICAL IMPERIAL DIAL GAUGE		
GRADUATION	MEASURE PER NEEDLE TURN	MEASURE EXAMPLE: .128 INCH
1/1000 inch (.001) per graduation line	1 turn = .100 inch	1 complete turn + 28 graduation lines

NOTE: The small dial indicates the number of turns the long needle traveled around the main dial.



.128 INCH AS AN EXAMPLE
Step 1: 1 complete turn
Step 2: 28 lines

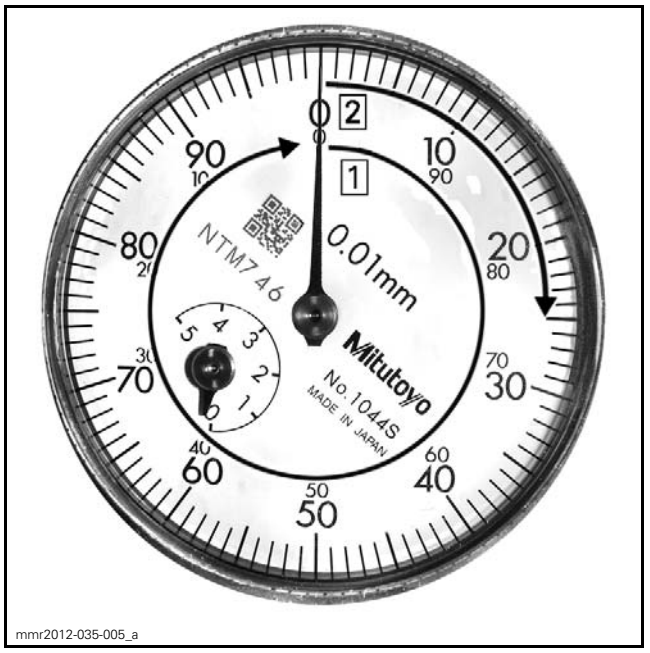
Metric Dial Gauge



METRIC GAUGE EXAMPLE
1. 0.01 mm means its graduated each 1/100 millimeter

METRIC DIAL GAUGE EXAMPLE		
GRADUATION	MEASURE PER NEEDLE TURN	MEASURE EXAMPLE: 3.25 mm
1/100 millimeter (.01) per graduation line	1 turn = 1 millimeter	3 complete turns + 25 graduation lines

NOTE: The small dial indicates the number of turns the long needle traveled around the main dial.



3.25 mm AS AN EXAMPLE
Step 1: Complete turns (3 X)
Step 2: 25 lines

IGNITION TIMING

Normally, ignition timing adjustments should not be required. It has been set at the factory and should remain correctly adjusted as every component is fixed and non adjustable.

The only time the ignition timing may require adjustment is when replacing the:
- Crankshaft
- Magneto flywheel
- CPS
- ECM.

Adjustment procedure summary:
- TDC Gauge Installation
- Locating Piston TDC
- Scribing the timing marks
- Checking Ignition timing
- Adjusting timing.

If the ignition timing is incorrect, first check for proper crankshaft alignment. This might be an indication of a twisted crankshaft. Refer to *BOTTOM END* subsection.

Installing the TDC Gauge

⚠ WARNING

Ensure tether cord is removed from engine cut-off switch and emergency engine stop switch is in the STOP position.

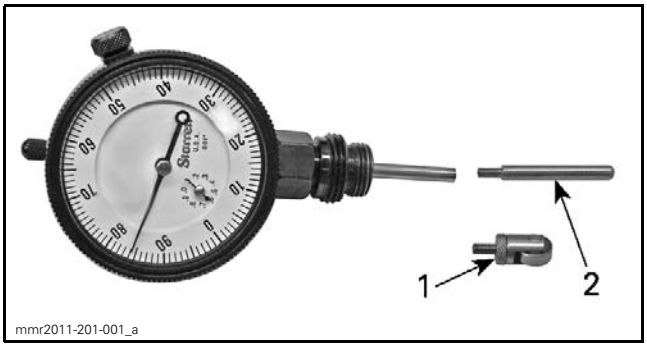
Two TDC gauges can be used:

TDC GAUGES	
Preferred Gauge TDC DIAL INDICATOR (P/N 295 000 143) **(short reach)**	
TDC DIAL INDICATOR (P/N 414 104 700) **(long reach)**	

Preparing the Gauge

REQUIRED TOOL	
Rounded tip from DIAL INDICATOR ADAPTER (P/N 529 036 132)	

1. Remove the roller tip from the gauge.
2. Use the rounded tip from the adapter.



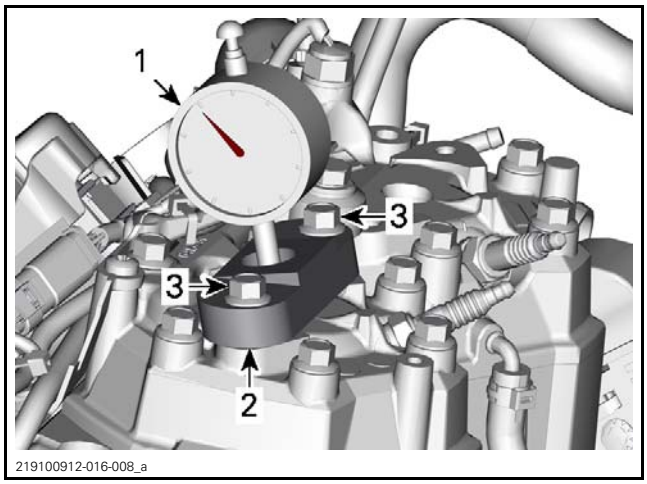
1. Roller tip removed
2. Rounded tip to install

3. Install the rounded tip on the gauge.

Installing the Gauge

REQUIRED TOOL	
DIAL INDICATOR ADAPTER (P/N 529 036 418)	

1. Remove the direct injectors, refer to *E-TEC DIRECT FUEL INJECTION* subsection.
2. Install the dial indicator adapter over the PTO injector hole.
3. Use two screws M8 x 1.5 x 35 to secure the adaptor.
4. Carefully insert the TDC gauge through the dial indicator adapter hole.



TYPICAL
1. TDC gauge
2. Dial indicator adaptor
3. Screws

5. Screw the gauge into the adapter plate with the dial face towards the PTO and tighten it sufficiently to prevent movement.

Locating Piston TDC

NOTE: Normal engine rotation as seen from the PTO side is counterclockwise.

1. With a firm hold on the drive pulley, slowly rotate the drive pulley counterclockwise while observing the TDC gauge needle.

NOTE: Note that the needle stops moving only as the piston is changing direction at the top of its stroke.

2. Rotate the dial face so the "0" is in line with the needle when it stops moving.
3. Resume rotating the engine in the same direction (counterclockwise) until the gauge needle has rotated approximately 1/4 turn past TDC.
4. Then slowly rotate the engine in a clockwise direction until needle stops moving.

NOTE: The needle should stop on the "0". If not, reset the dial "0" to the needle.

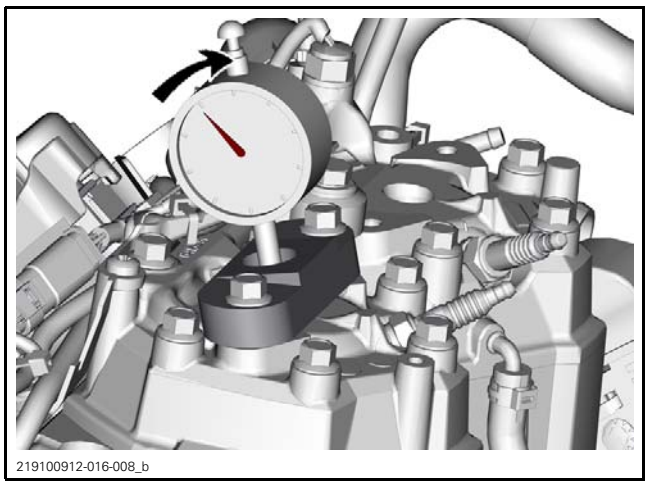
5. Again, slowly rotate the drive pulley back and forth across TDC and confirm the needle always stops exactly at "0" before changing direction. "0" now indicates exact TDC.
6. Lock the dial face with the dial lock screw.

NOTE: If a difference in "0" setting the dial in each direction of rotation is easily noticeable, the engine components may suffer from excessive wear. The engine may require further inspection and maintenance.

Scribing the Timing Mark

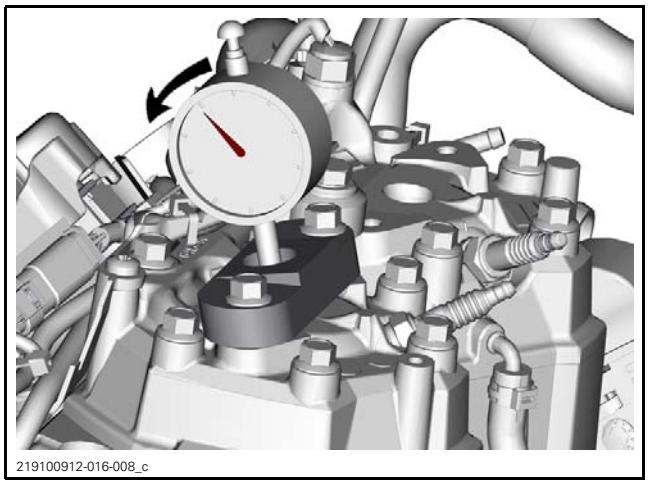
IMPORTANT: Make sure to understand the TDC gauge functioning. Refer to *UNDERSTANDING THE TDC GAUGE* in this subsection.

1. From the "0" (TDC), rotate the drive pulley clockwise (backwards engine rotation) until the dial needle rotates past the BTDC specification (see table below).



TYPICAL - PASS THE BTDC SPECIFICATION

2. Then carefully rotate engine forward until needle precisely points the measurement specified in the table.

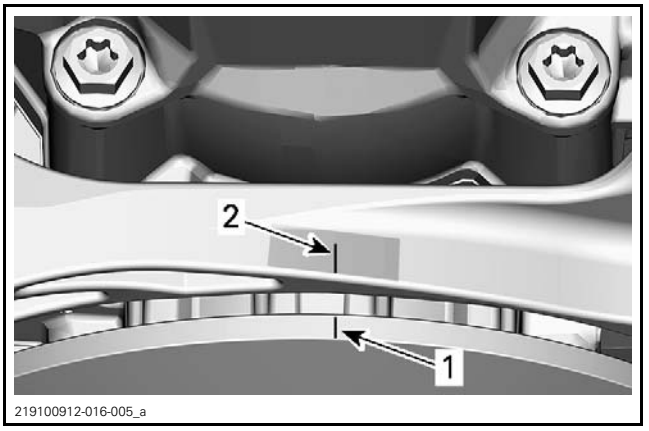


TYPICAL - BRING DIAL NEEDLE TO THE BTDC SPECIFICATION

NOTE: Final setting must always be made in the normal engine rotation.

IGNITION TIMING BTDC		
ENGINE	BTDC SPECIFICATION	DEGREE SETTING BTDC
850 E-TEC	5.98 mm (.235 in)	28°
600R E-TEC	5.39 mm (.212 in)	

3. With the TDC gauge indicating specified timing, draw the reference mark and timing mark:
   - 3.1 Stick a piece of tape on the driven pulley bearing support.
   - 3.2 Use a permanent marker.
   - 3.3 Draw a line on the tape as a reference mark.
   - 3.4 Draw the timing mark on the drive pulley fixed sheave in line with the reference mark.



TYPICAL
1. Timing mark on fixed sheave
2. Timing mark on a tape, on driven pulley bearing support

4. Repeat the procedure to ascertain the marks are exactly aligned.
5. Remove the TDC gauge and dial indicator adapter.
6. Reinstall the fuel injector. Refer to *E-TEC DIRECT INJECTION* subsection.
7. Reconnect magneto connector.
8. Check ignition timing as per applicable procedure in this subsection.

Checking Ignition Timing

The ignition timing can be checked with either the engine hot or cold at the specified RPM.

ENGINE SPEED FOR IGNITION TIMING CHECK
ENGINE RPM
2500 to 4000 (1)
(1) In this range, the spark advance does not change during the procedure.

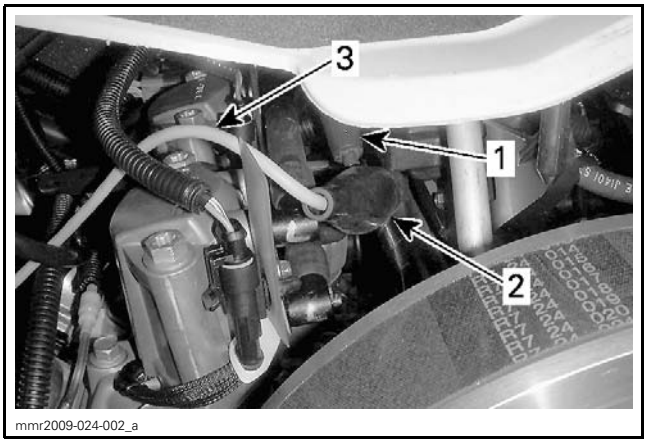
To check the ignition timing proceed as follows:

⚠ WARNING

Place ski tips against a wall, raise rear of vehicle on a stand, so that track does not contact the ground. Do not allow anyone in front of or behind the vehicle while engine is running. Keep clear of track and do not wear loose clothing which can get caught in moving parts.

1. Connect the timing light pick-up to the **PTO** spark plug cable.

NOTE: Be careful to route timing light cable away from drive belt and pulleys.



mmr2009-024-002_a

TYPICAL — TIMING LIGHT CONNECTION
1. *PTO spark plug cable*
2. *Timing light connection to PTO plug cable*
3. *Timing light wire routing*

2. Connect the vehicle to the BRP diagnostic software (BUDS2).
3. Start engine and let idle.
4. In BUDS2, go to:
   - **Settings** page
   - **Vehicle** or **ECM** button
   - **Settings** tab
   - **Initializations - Ignition/Injection Timing**

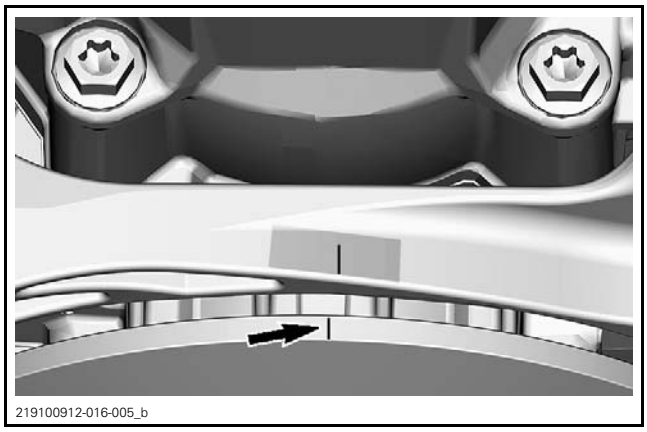
NOTE: Timing will be frozen on the PTO cylinder only for RPM stability. RPM will be limited to 4000 RPM.

5. Point the timing light on the timing mark and increase engine to **3500 RPM** for a brief instant.
6. The timing mark must be aligned with the pointer end within the specified tolerance.

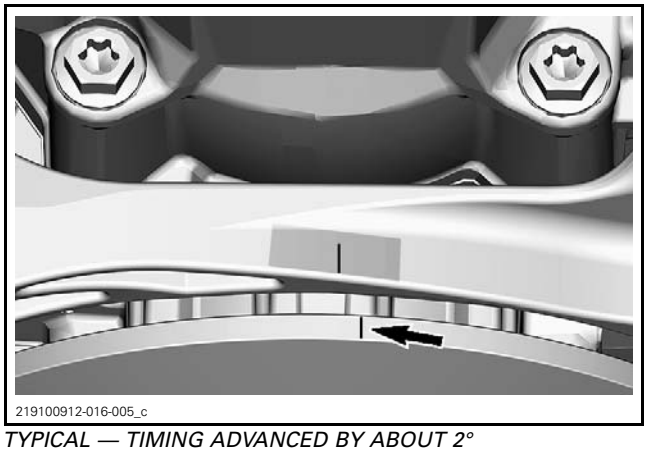
TOLERANCE
± 0.5°

If timing mark and pointer are aligned, no adjustment is required.

If they are not aligned, note if timing is retarded or advanced, see following illustrations. Then, adjust timing as described in *ADJUSTING TIMING* further in this subsection.


219100912-016-005_b

TYPICAL — TIMING RETARDED BY ABOUT 1°


219100912-016-005_c

TYPICAL — TIMING ADVANCED BY ABOUT 2°

Adjusting Timing

1. In the **Ignition/Injection Timing** area on the **Settings** page, select **Advance** or **Retard** to change the ignition timing.

NOTE: Timing will be changed in 0.5° increments.

2. Adjust the timing using the appropriate button until the timing mark is in line with the pointer, within 0.5°.
3. Unfreeze ignition timing.
4. Click **Close** button to store the ignition timing correction.

5. Shut down engine.
6. Restart engine and press the **Scan** icon in BUDS2.
7. Recheck timing to ensure ignition timing adjustment was properly stored in the ECM.
8. Increase engine RPM past 4000 RPM to ascertain the **Freeze Timing** function is no longer active.

NOTE: The **Freeze Timing** function automatically disengages when the engine is stopped.

9. Remove all tools.

TROUBLESHOOTING

IGNITION SYSTEM TESTING SEQUENCE

It is good practice to check for fault codes using the BRP diagnostic software BUDS2 as a first troubleshooting step. Refer to the *DIAGNOSTIC AND FAULT CODES* subsection.

In the case of ignition problems, check the following in the prescribed order until the problem can be solved:

1. Spark plugs
2. Spark plug cables
3. Wiring harness/electrical connectors
4. Emergency engine stop switch
5. Ignition cut-off switch
6. Ignition coil(s)
7. CPS
8. ECM (Engine Control Module).

If engine idles roughly or shows signs of increased emissions, the spark plugs may be incorrectly indexed. Refer to *INSTALLING THE SPARK PLUG* in this subsection.

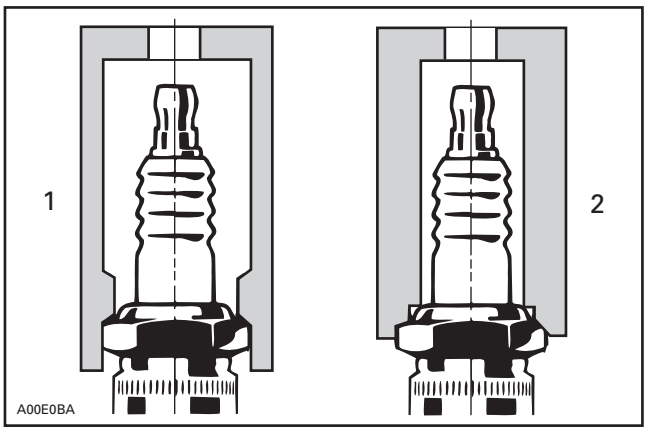
PROCEDURES

SPARK PLUGS

For spark plug type, refer to *TECHNICAL SPECIFICATIONS* subsection.

Replacing the Spark Plug

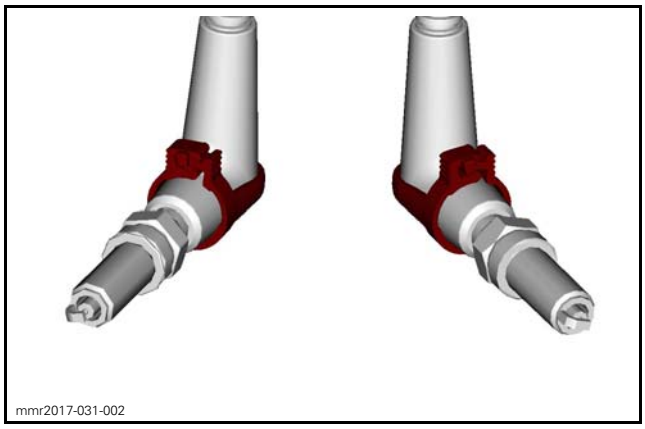
NOTE: Use only an approved spark plug socket for removal and installation. Extra care should be taken to avoid side stresses which could result in a broken spark plug.



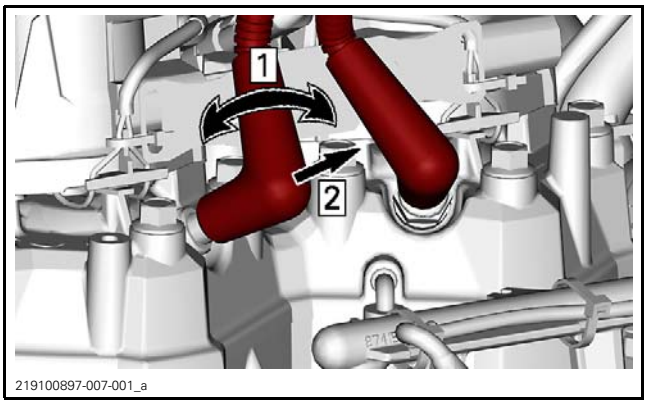
TYPICAL
1. Approved socket
2. Improper socket

Removing the Spark Plugs

1. Disconnect the stator connector. Refer to *STATOR CONNECTOR ACCESS* in the *MAGNETO AND STARTER* subsection.
2. Remove the upper body module. Refer to *BODY* subsection.
3. Clean the spark plug and cylinder head with pressurized air.
4. Remove lock securing spark plug wire to spark plug.



5. Remove spark plug cables by gently rotating the cap and pulling it off the plug.



TYPICAL
Step 1: Gently rotate
Step 2: Pull off

6. Unscrew the spark plug sufficiently to break the applied torque using the appropriate tools.

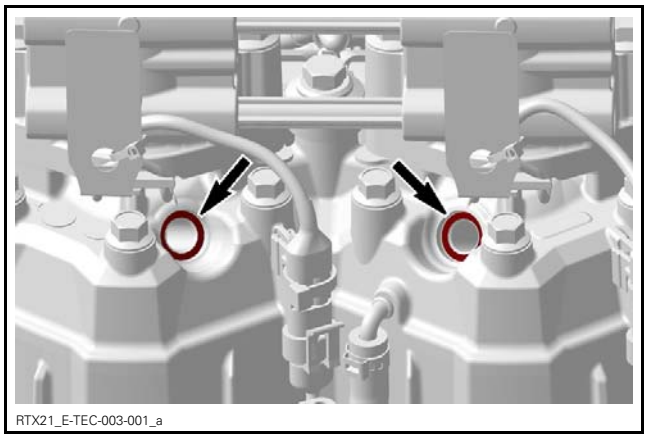


7. Remove spark plugs by hand.

Installing the Spark Plugs (OEM)

1. Prior to installation, ensure the contact surfaces of the cylinder head and spark plug are free of grime.
2. Lubricate contact surface of spark plug at the cylinder head.

SERVICE PRODUCT
Injection oil



3. Using a wire gauge, confirm electrode gap is as specified. Refer to *TECHNICAL SPECIFICATIONS*.

NOTE: If spark plug gap is incorrect, use another spark plug.

4. Hand screw spark plug into cylinder head until it bottoms out.
5. Apply specific torque using a torque wrench and approved spark plug socket.

NOTE: Spark plug tightening torque is particularly important on this engine as it contributes to the proper positioning of the negative electrode.

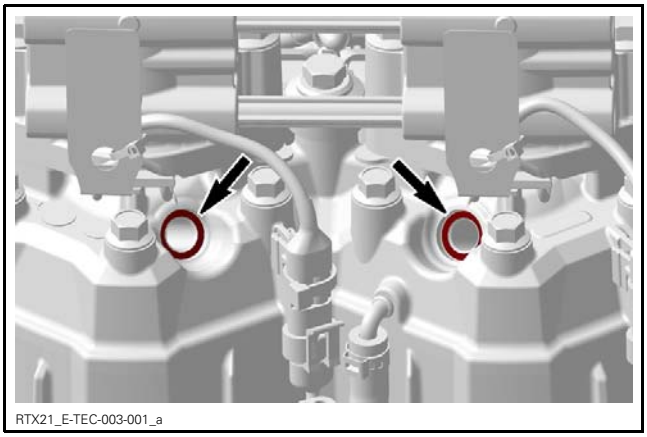
TIGHTENING TORQUE	
Spark plug	23 N•m ± 1 N•m (17 lbf•ft ± 1 lbf•ft)

Installing the Spark Plugs (Non-OEM)

NOTE: When using a non-OEM spark plug , it must be correctly indexed or engine may experience rough idling and higher emissions.

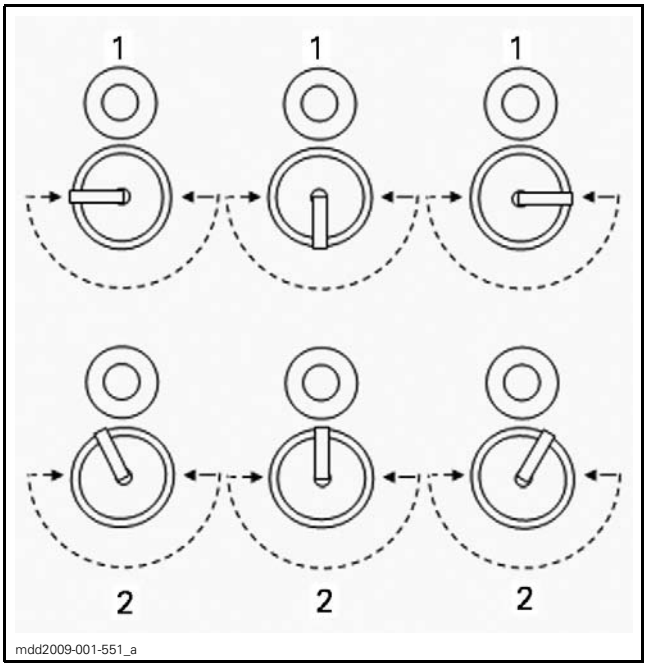
1. Using a marker, mark the open end of the negative electrode on the plug shell (above threads).
2. Ensure the contact surfaces of the cylinder head and spark plug are free of grime.
3. Lubricate contact surface of spark plug at the cylinder head.

SERVICE PRODUCT
Injection oil


RTX21_E-TEC-003-001_a

4. Install and torque the spark plug, refer to previous table for specific torque.
5. Visually check to ensure the open end of the negative electrode is facing the injector nozzle within 90° each side of nozzle.

NOTE: The following illustration uses the point of attachment of the negative electrode to depict the angle. The injector is illustrated above the spark plug.



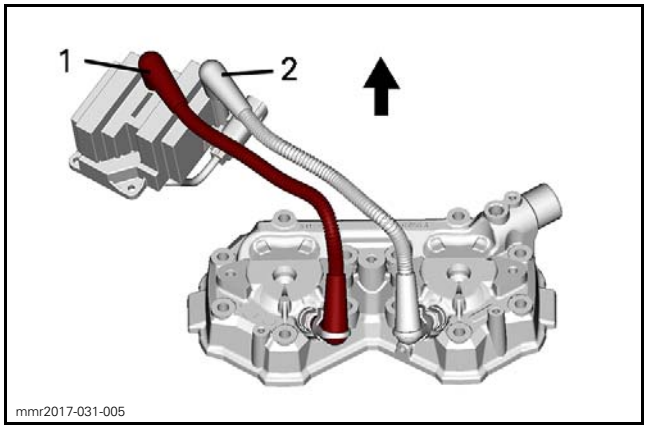
mdd2009-001-551_a

SPARK PLUG INDEXING
1. Acceptable installation
2. Unacceptable installation

If the plug indexing angle is not within specification, repeat procedure with another spark plug until correct indexing is achieved.

SPARK PLUG CABLES

NOTICE Do not interchange spark plug cables. The lower LH coil must be matched to the PTO spark plug.



mmr2017-031-005

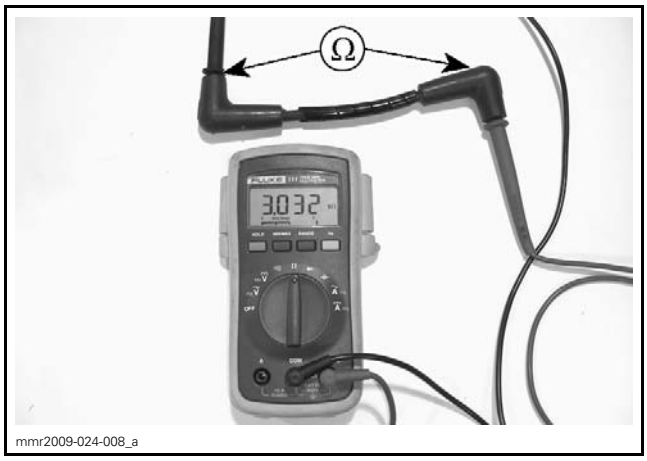
ARROW POINTS TO FRONT OF VEHICLE
1. PTO side
2. MAG side

Measuring Spark Plug Cable Resistance

If the spark plug cables are in good condition, carry out the following resistance test.

1. Remove each spark plug cable from its ignition coil and spark plug.
2. Insert a probe in each cable end and measure the resistance.

SPARK PLUG CABLE SPECIFICATION
2160 – 6870 Ω



mmr2009-024-008_a

SPARK PLUG CABLE RESISTANCE TEST

If resistance is not as specified, replace spark plug cable.

EMERGENCY ENGINE STOP SWITCH

Emergency Engine Stop Switch Operation

The emergency engine stop switch provides a ground signal to the ECM when STOP is selected.

Refer to applicable *WIRING DIAGRAM* for details.

Testing Emergency Engine Stop Switch

1. Disconnect STR 6P connector. For connector location, refer to *WIRING HARNESS AND CONNECTORS*.
2. Measure resistance as per following table.

STR 6P CONNECTOR PIN	EMERGENCY ENGINE STOP SWITCH POSITION	SPECIFICATION
3 and 6	RUN	O.L.
	STOP	Close to 0 Ω (Continuity)

NOTE: If emergency engine stop switch is unplugged, engine will start and run. If emergency engine stop switch is jumped, engine will stop.

IGNITION COILS

Testing for Spark

Ensure emergency stop switch is set to **run**.

NOTE: Use ONLY an approved inductive spark plug tester or a new spark plug to test for ignition spark. In-line (series connected) spark testers must not be used. Radio frequency interference (RFI) generated by the arcing current may cause erratic behavior in the ECM.

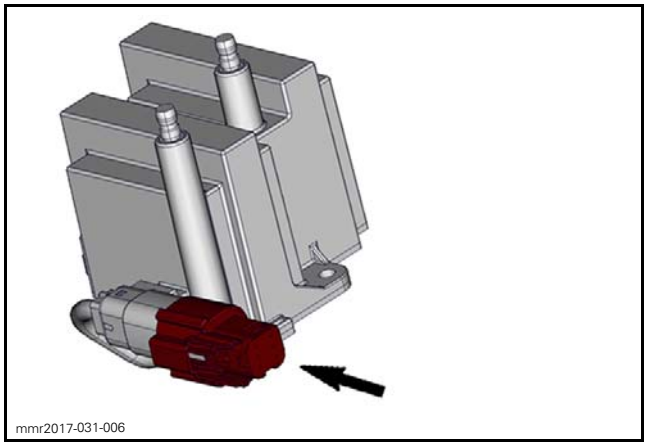
⚠ WARNING

Always electrically disconnect both fuel injectors prior to testing for ignition spark. Otherwise, fuel vapors may ignite in presence of a spark, creating a fire hazard.

1. Ensure emergency stop switch is set to **run**.
2. Install the inductive spark tester (or a new spark plug) on the spark plug cable **(Do not remove spark plugs installed on engine)**.
3. Activate ignition coil with BUDS2.
4. If no spark is produced, test ignition coil.
5. If a spark is produced, install new spark plugs in the engine and repeat the test to assure the new spark plugs are in good condition and functioning correctly.

Testing Ignition Coils

1. Set emergency stop switch to **run**.
2. Backprobe the ignition coil connector and measure voltage as per following table.


mmr2017-031-006

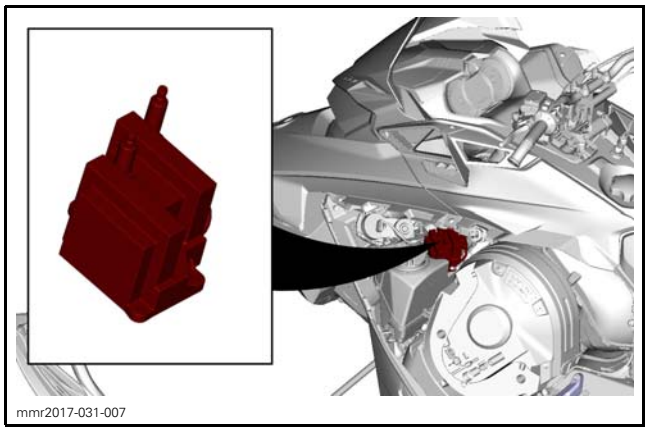
3. Use BUDS2 to activate ignition coil and measure the control signal.

IGNITION COIL CONNECTOR	DESCRIPTION	SPECIFICATION
Pin 1	Ground	Battery ground
Pin 2	Control MAG	Vary when activated 0.015V-0.222V[1]
Pin 3	55 Volts	40V engine off 55V engine running
Pin 4	Ground	Battery ground
Pin 5	Control PTO	Vary when activated 0.015V-0.222V[1]
Pin 6	55 Volts	40V engine off 55V engine running

[1] Control signal actually varies between 13 - 15 volts for 800 micro-seconds (DWELL time) but most multimeters cannot read it, it happens so fast.

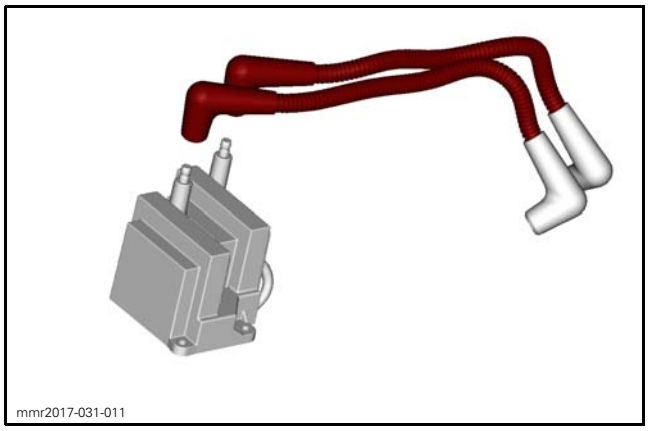
4. If all inputs are as per specifications and there is no spark, replace ignition coil.
5. If a pin does not test as per specification, troubleshoot the affected wire continuity to ground or ECM. Refer to *WIRING DIAGRAM*.

Removing Ignition Coil

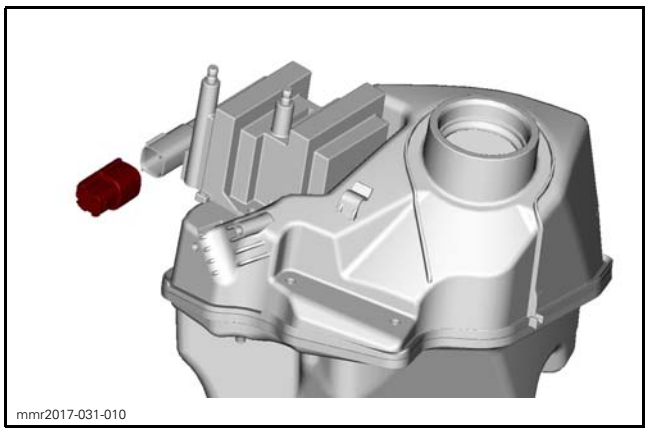

mmr2017-031-007

TYPICAL

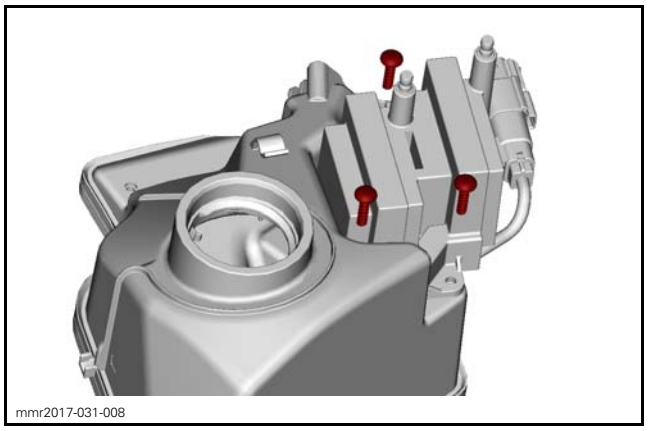
1. Remove the left hand side panel.
2. Note position of spark plug cables and remove them from the spark plugs.


mmr2017-031-011

3. Unplug ignition coil connector.


mmr2017-031-010

4. Remove retaining screws.


mmr2017-031-008

5. Remove ignition coil.

Installing Ignition Coil

The installation is the reverse of the removal procedure. However, pay attention to the following.

TIGHTENING TORQUE	
Ignition coil retaining screws	2.4 N•m ± 0.2 N•m (21 lbf•**in** ± 2 lbf•**in**)

CHARGING SYSTEM

SERVICE TOOLS

Description	Part Number	Page
12 V BATTERY SUPPLY CABLE	529 035 997	156
FLUKE 115 MULTIMETER	529 035 868	157, 159
POWER INTERFACE	515 177 223	156

SERVICE TOOLS – OTHER SUPPLIER

Description	Part Number	Page
NAPA ULTRA PRO BATTERY LOAD TESTER	95260	155

GENERAL

⚠ WARNING

Unless otherwise specified, always disconnect the magneto connector and ensure spark plugs are installed on the engine before carrying out electrical system checks. Should the engine be made to rotate with magneto connected, a spark may occur resulting in electrical shock, a fire, or an explosion.

SYSTEM DESCRIPTION

12V System Capacity

12V SYSTEM CAPACITY	
Over 2000 RPM	30 A
1200 RPM (Idle)	25 A

Magneto

A magneto provides the primary source of electrical energy. It transforms a magnetic field into an alternating current (AC).

The magneto stator is wired with a 3 phase star configuration winding.

AC current is rectified and regulated by a voltage regulator/rectifier circuit within the ECM to provide 55 volts for engine component operation. It is then converted into 14.5 volts by a DC to DC converter for vehicle operation.

TROUBLESHOOTING

NOTE: It is good practice to check for fault codes using B.U.D.S. as a first troubleshooting step. Refer to *DIAGNOSTIC AND FAULT CODES*.

TROUBLESHOOTING GUIDELINES

Low or No System Voltage (Engine May Not Start)

The vehicle cannot start without having a minimum voltage to the 55 V power circuit. If the engine does not start, see *VOLTAGE REGULATOR/RECTIFIER* in this subsection and test the Vdc Output using BUDS2

If voltage is not as specified, check the following items in the recommended order until you find the fault:

– Stator (refer to *MAGNETO* subsection)
– Capacitor (see procedure in this subsection).

NOTE: The 55 Vdc may be unstable or unobtainable if the capacitor is faulty, not connected, or incorrectly connected.

If the above mentioned checks were good, isolate each of the following components by disconnecting them individually, and repeating the voltage test after each one.

– Each injector
– Each ignition coil
– Fuel pump
– Oil injection pump.

NOTE: When the 55 Vdc test good after a component is disconnected, replace that component and repeat the test.

PROCEDURES

Ensure battery is fully charged (if applicable).

Refer to *WIRING HARNESS AND CONNECTORS* subsection for harness layout and connector locations on vehicle.

Refer to appropriate *WIRING DIAGRAM* for additional information.

The magneto is covered in *MAGNETO AND STARTER* subsection.

⚠ WARNING

Ensure vehicle cannot move when performing charging system tests with the engine running.

BATTERY

Charging Battery

Initial Charging

Sealed VRLA batteries require an initial charge before being used in the vehicle.

NOTE: Since batteries state of charge need to be checked 3 months after their manufacturing date or their last charge, it is highly recommended to check the batteries of all newly arrived vehicles. Consult the "Identification of reminder sticker" section and battery chart on last page.

If you are using a constant current charger, refer to the standard (STD) charging method printed on the battery.

For YTX20HL batteries (18.9 AH), the initial charge must be 1.8 A for 5 - 10 hours.



YTX20HL CHARGING METHOD

If you are using an automatic type taper charger, check to make sure that the charger current (amps) is equal to or greater than the standard charging method listed on the battery.

If the battery gets very hot to the touch, cease charging and allow battery to cool down for 6 to 12 hours. Check voltage using a voltmeter. A fully charged, battery should be 12.8 volts or higher after the battery has been off the charger 1-2 hours. If less, it needs additional charge.

Routine Charging

NOTICE **Overcharging can harm the battery beyond recovery.**

The single most important thing to maintaining a VRLA battery is to not let it sit discharged: keep it fully charged for peak performance.

Use the following guidelines for charging. Always verify battery state of charge before charging, and 30 minutes after charging.

It is not recommended to overcharge sealed VRLA batteries. Because of their characteristics, too much charging will decrease the volume of electrolyte. The longer the overcharge time, the greater the drop in electrolyte – and starting power.

Refer to the following tables for charging routine.

Note that charging times can vary depending on type of charger. Follow the manufacturer's instructions for details.

STATE OF CHARGE : 100%		
VOLTAGE	ACTION	CHARGE TIME
12.8 – 13.0	Check in 3 months or when vehicle is sold***	None required
*** Identify battery as being checked on "date" or needs to be rechecked at "date"		

STATE OF CHARGE : 75% - 100%		
VOLTAGE	ACTION	CHARGE TIME *
12.5 – 12.8	May need slight charge. If no charge given, check in 3 months or when vehicle is sold***	3 – 6 hours
* Using a constant current charger at standard amps specified on the battery		
*** Identify battery as being checked on "date" or needs to be rechecked at "date"		

STATE OF CHARGE : 50% - 75%		
VOLTAGE	ACTION	CHARGE TIME *
12.0 – 12.5	Need charge. Check in 3 months or when vehicle is sold***	5 – 11 hours
* Using a constant current charger at standard amps specified on the battery		
*** Identify battery as being checked on "date" or needs to be rechecked at "date"		

STATE OF CHARGE : 25% - 50%		
VOLTAGE	ACTION	CHARGE TIME *
11.5 – 12.0	Need charge. Check in 3 months or when vehicle is sold***	At least 13 hours verify state of charge
* Using a constant current charger at standard amps specified on the battery		
*** Identify battery as being checked on "date" or needs to be rechecked at "date"		

STATE OF CHARGE : 0% - 25%		
VOLTAGE	ACTION	CHARGE TIME *
11.5 or less (see instructions below)	Need charge. Check in 3 months or when vehicle is sold***	20 hours
* Using a constant current charger at standard amps specified on the battery		
*** Identify battery as being checked on "date" or needs to be rechecked at "date"		

Charging for Voltage of 11.5 V or Less

Batteries with voltage below 11.5 V may require special equipment and procedures to recharge.

In charging an over discharged battery having a terminal voltage of 11.5 V or lower, its internal resistance may be too high to charge at a normal charge voltage.

Therefore, it may be necessary to raise the voltage of the battery initially (20 V as a maximum), and charge for approximately 5 minutes. If the ammeter shows no change in current after 5 minutes, you need a new battery.

Current flowing into the battery at high voltage can become excessive. Monitor amperage and adjust voltage as necessary to keep current at the battery's standard amp rating. Charge for approximately 20 hours.

Testing Battery

Battery Load Test

1. Connect a battery load tester such as the NAPA ULTRA PRO BATTERY LOAD TESTER (P/N 95260).
2. Ensure proper test conditions.

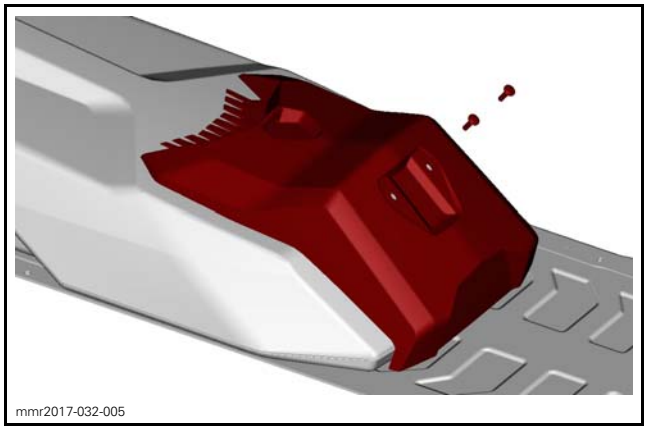
TEST CONDITIONS	
Initial battery voltage‡	Above 12.5 Vdc
Engine	OFF
Load	3 times the amp-hour (AH) rating
Time	15 seconds
‡ Required for accurate testing	

SPECIFICATION	
Battery	Above 9.6 Vdc

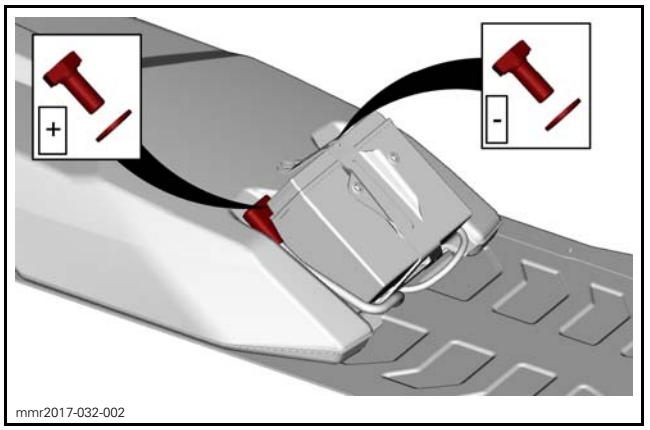
If battery voltage drops below specification during test, replace battery and test charging system.

Removing Battery

1. Remove seat.
2. Remove battery cover.

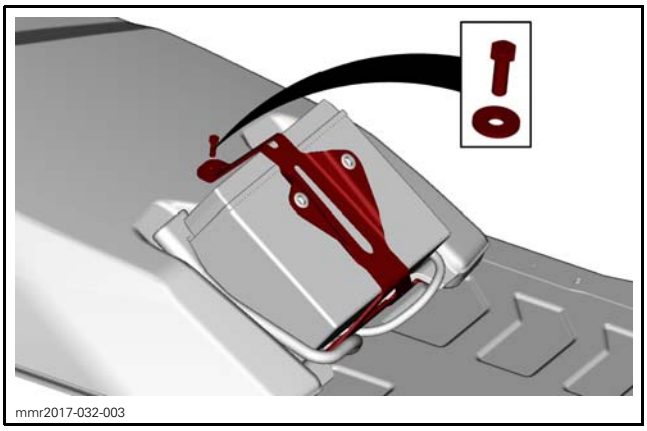

mmr2017-032-005

3. Disconnect negative before positive terminal.

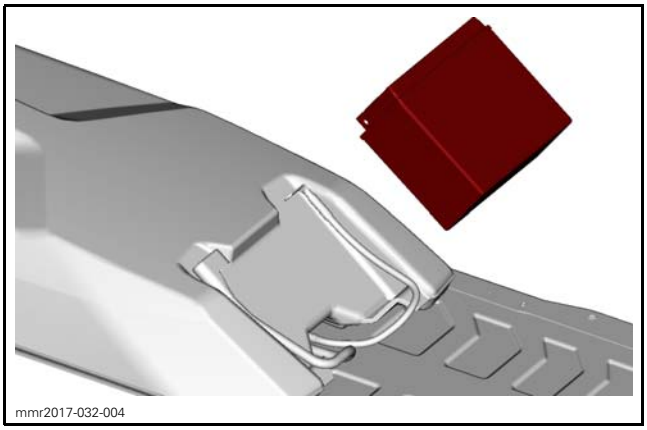


mmr2017-032-002

4. Remove battery hold down bracket.


mmr2017-032-003

5. Remove battery.


mmr2017-032-004

Installing Battery

TIGHTENING TORQUE	
Battery terminals (positive and negative)	10 N•m ± 2 N•m (89 lbf•**in** ± 18 lbf•**in**)
Battery hold down bracket	5 N•m ± 0.5 N•m (44 lbf•**in** ± 4 lbf•**in**)
Battery cover retaining screws	7 N•m ± 1 N•m (62 lbf•**in** ± 9 lbf•**in**)

VOLTAGE REGULATOR/ RECTIFIER

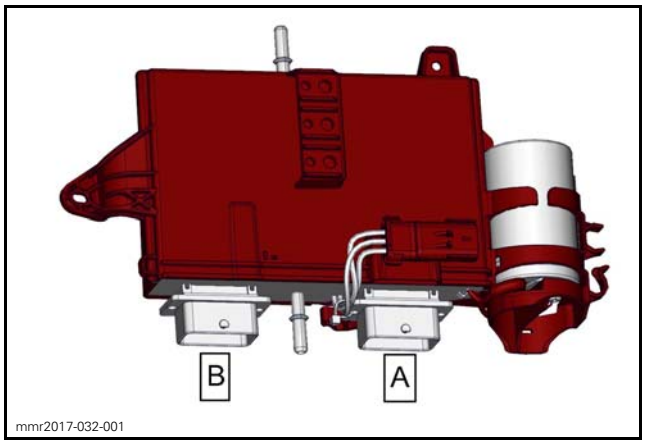
Description

The voltage regulator/rectifier is integrated within the ECM. It receives alternating current (AC) from the magneto which it rectifies and regulates to 55 Vdc.

On a single pull start with the engine between 250 and 500 RPM, the magneto, is capable of producing 30-40 Vdc.

55 Vdc Output

ECMB CONNECTOR
pins M1, M2, M4



mmr2017-032-001

Testing Continuity (Voltage Regulator/Rectifier)

Due to internal circuitry, there is no static test available to check continuity.

Testing 55 Vdc Voltage Output with B.U.D.S. (Voltage Regulator/Rectifier)

1. Raise vehicle so that the track is off the ground and can turn freely.

⚠ WARNING

Ensure vehicle track is completely raised off ground. If the track should come into contact with the ground when the engine is at 5000 RPM, equipment damage and severe injury may result.

2. Remove RH side panel, refer to *BODY* subsection.

Procedure When Engine Cannot be Started

1. Install the following tools to supply power to the 12 Vdc circuits for this test. Refer to *COMMUNICATION TOOLS AND B.U.D.S.* subsection for proper connections.
   - POWER INTERFACE (P/N 515 177 223)
   - 12 V BATTERY SUPPLY CABLE (P/N 529 035 997)
   - 12 volts battery.
2. Select the **Measurements** page.
3. Read the voltage on the **55V System Circuit** meter in B.U.D.S. as the engine is turning over.

55 VDC VOLTAGE OUTPUT TEST	
TEST ENGINE SPEED	VOLTAGE
Pull start (engine not running)	At least 30 Vdc

If you cannot obtain the specified voltage, refer to *TROUBLESHOOTING* in this subsection and carry out the required tests.

Also carry *TESTING VOLTAGE REGULATOR/RECTIFIER GROUND CIRCUIT* in this subsection.

Procedure with Engine Running

1. Connect vehicle to the applicable B.U.D.S. software version, refer to *COMMUNICATION TOOLS AND B.U.D.S.* subsection.
2. Start engine.
3. Select the **Measurements** page.
4. Read the voltage on the **55 V System Circuit** meter in B.U.D.S.

55 VDC VOLTAGE OUTPUT TEST (ENGINE RUNNING)	
TEST ENGINE SPEED	VOLTAGE
Any RPM from idle and above	55 Vdc ± 2

If voltage is below or above specification, refer to *TROUBLESHOOTING* in this subsection and carry out the required tests.

Also test the ECM ground circuit.

Testing ECM Ground Circuit

1. Disconnect the ECMA connector.
2. Test ground circuit continuity as follows.

ECM GROUND CIRCUIT		
Black wire of capacitor	ECMA Connector Pins L3, L4, M3, M4	Continuity
Black wire of capacitor	Chassis ground	Continuity

DC-DC CONVERTER

System voltage (12 Vdc) is explained in *POWER DISTRIBUTION AND GROUNDS* subsection.

12 Vdc Output Voltage Tests (DC-DC Converter)

12 VDC OUTPUT VOLTAGE	
OUTPUT	CONNECTOR - -PIN
Primary 12 Vdc	COM - 6
Secondary 12 Vdc	COM - 5

Testing Primary 12 Vdc Circuit with B.U.D.S.

1. Start engine.
2. Turn off any accessories.
3. Disconnect any external batteries.
4. Select the **Measurements** page.
5. Read the voltage on the **Primary 12 V Circuit** meter in B.U.D.S.

PRIMARY 12 VDC CIRCUIT TEST WITH B.U.D.S.	
TEST ENGINE SPEED	VOLTAGE
Any RPM from idle and above	14.5 ± 0.5 Vdc

If voltage is above specification, replace ECM.

If voltage is below specification, check the *PRIMARY 12 VDC CIRCUIT*

Also test the ECM ground circuit (voltage regulator/rectifier).

Install all removed parts and connectors.

Secondary 12 Vdc Circuit Test

The secondary 12 Vdc system is not monitored in B.U.D.S.

To test it, carry out the following procedure.

1. Remove RH side panel to expose the fuse(s). Refer to *BODY*.
2. Set FLUKE 115 MULTIMETER (P/N 529 035 868) to Vdc scale.
3. Start the engine.
4. Unplug battery (if applicable)
5. Probe the COM connector as follows.

12 VDC OUTPUT VOLTAGE	
OUTPUT	CONNECTOR - -PIN
Secondary 12 Vdc	COM - 5

SECONDARY 12 VDC CIRCUIT TEST	
TEST ENGINE SPEED	VOLTAGE
Any RPM from idle and above	14.5 ± 0.5 Vdc

If voltage cannot be measured, test continuity of wire from COM-5 to ECMB pins L1, L2, and L3.

If the wire continuity is good and other voltages from ECM tested good, ECM may not output secondary 12 Vdc.

Test the *VOLTAGE REGULATOR/RECTIFIER GROUND CIRCUIT*. If the ground circuit tests good, the ECM will need to be replaced.

NOTE: Before replacing ECM, all ECM grounds, power output circuits, and input circuits from the magneto must be tested.

Repair or replace as applicable.

CAPACITOR

The fuel injectors, which require a stable 55 Vdc for their operation, are particularly sensitive to voltage variations. A capacitor is connected to the 55 Vdc electrical system to stabilize the system voltage.

The capacitor is located next to the ECM on the RH side of the vehicle.

Quick Troubleshooting

A faulty capacitor will lead to the following symptoms:

– Unstable, low, or no system voltage (55 V).
– Engine will not start
– Engine hard to start
– Poor idling
– Engine misfiring.

NOTE: A defective capacitor is likely to give off a burning like odor.

Discharging Capacitor

⚠ WARNING

The capacitor remains charged approximately 10 seconds after engine is stopped. A high energy could suddenly be discharged if capacitor terminals were shorted. Always discharge capacitor before servicing.

To properly discharge capacitor, leave it connected for at least 5 minutes after engine has been stopped, or after engine was last cranked before carrying out any maintenance procedure on the capacitor or 55 volt electrical system.

Testing Capacitor Charge Hold

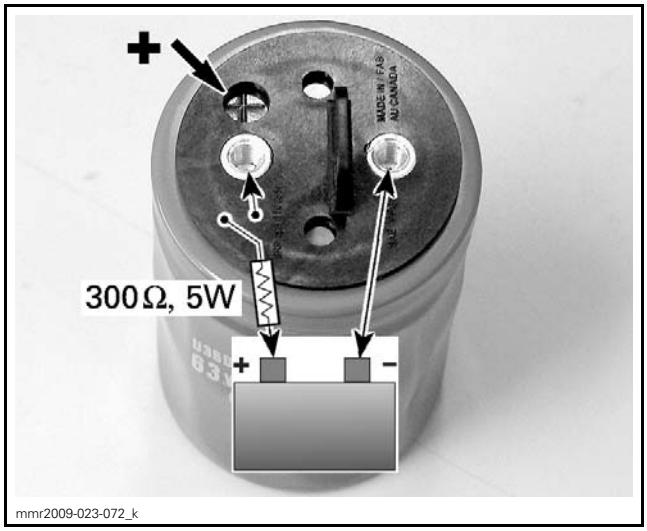
Procedure Setup

1. Remove capacitor from vehicle. Refer to *REMOVING CAPACITOR* in this subsection
2. Work on a non metallic workbench.
3. Connect the following items to the capacitor. See following illustration.
   – A switch
   – Resistor (300 Ω/5 W)
   – 12 V battery (fully charged).

NOTICE **Ensure the test switch is in the OFF position when connecting the battery to the capacitor to prevent sparking or electrical shock.**

⚠ WARNING

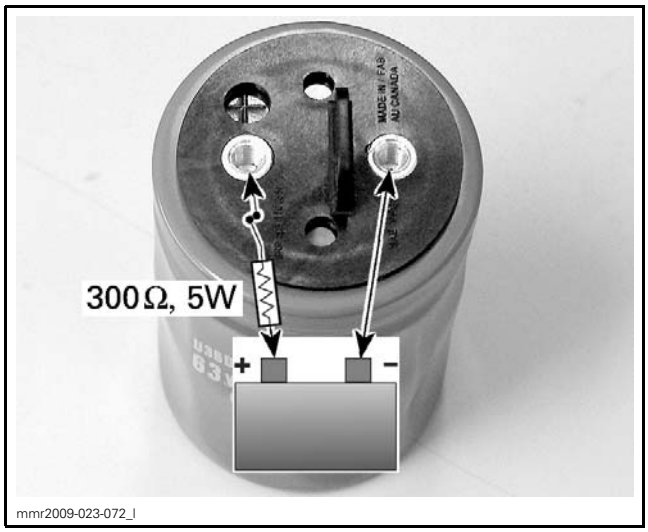
Connect the battery POSITIVE post to the capacitor POSITIVE terminal.



SWITCH AT OFF

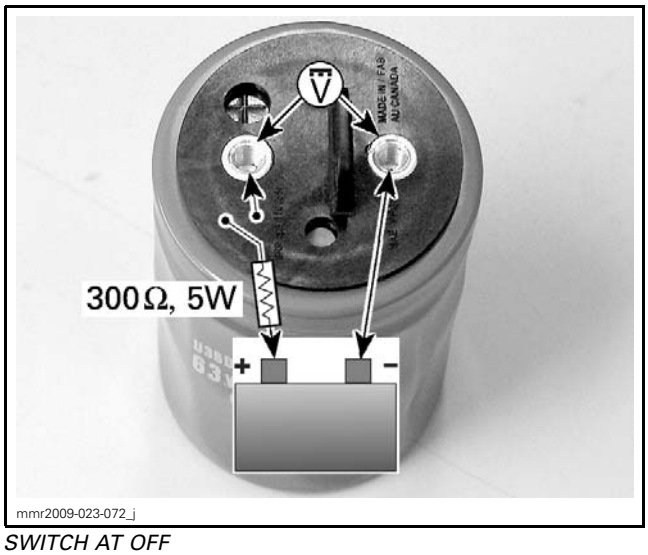
Test Procedure

1. Turn switch to **ON** and read capacitor voltage. Wait until voltage reaches 12 V.



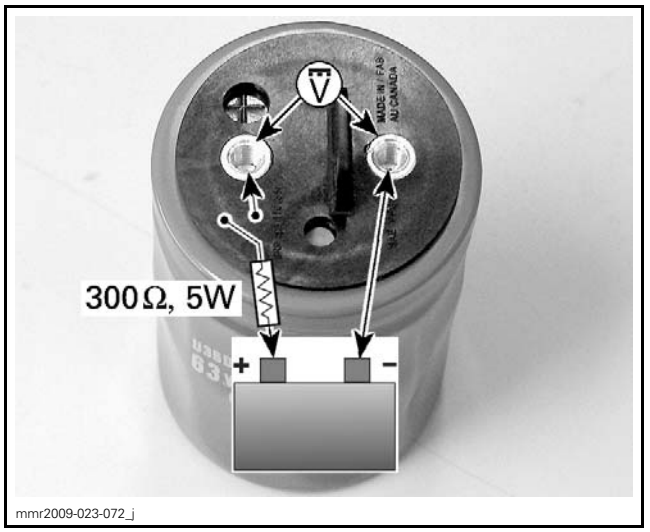
SWITCH AT ON

2. Turn test switch to OFF.
3. Use the FLUKE 115 MULTIMETER (P/N 529 035 868) set to Vdc.
4. Read capacitor voltage.



SWITCH AT OFF

5. Wait 5 minutes.
6. Read capacitor voltage again.



SWITCH AT OFF

7. The difference between the readings should not exceed the specification.

ALLOWED VOLTAGE DIFFERENCE BETWEEN READINGS
0.5 Vdc

If readings are out of specification, replace capacitor.

Reinstall capacitor. Refer to *INSTALLING CAPACITOR* in this subsection.

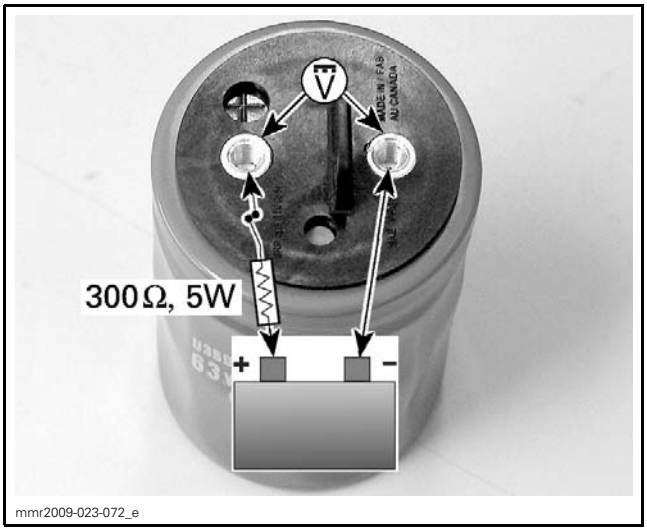
Testing Capacitor Residual Voltage

Procedure Setup

Follow the same steps as described in Procedure Setup of *TESTING CAPACITOR CHARGE HOLD*.

Test Procedure

1. Turn switch to ON and read capacitor voltage. Wait until voltage reaches 12 V to ensure the capacitor is fully charged.



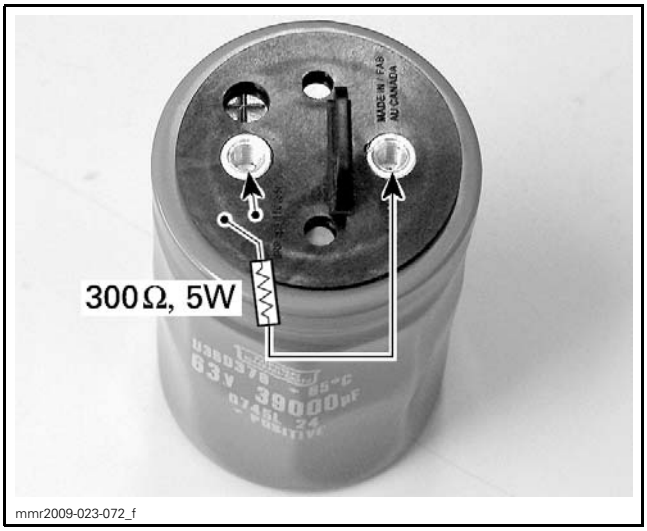
mmr2009-023-072_e

2. Turn test switch to OFF.

NOTE: Carry out the following steps **within one minute** to ensure the capacitor does not begin to discharge before the test.

3. Remove battery from circuit and connect the resistor and switch across capacitor terminals.

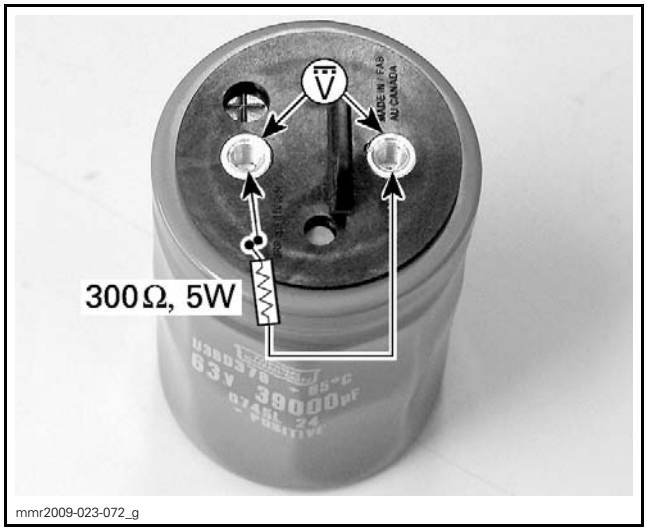
NOTICE **Ensure test switch is in the OFF position during the circuit configuration change.**



mmr2009-023-072_f

SWITCH AT OFF

4. Turn test switch to the ON position for 12 seconds ± 1 second to slowly discharge capacitor.
5. Read capacitor voltage.



mmr2009-023-072_g

SWITCH AT ON

CAPACITOR RESIDUAL VOLTAGE
Must be above 2.6 Vdc

If voltage is out of specification, replace capacitor.

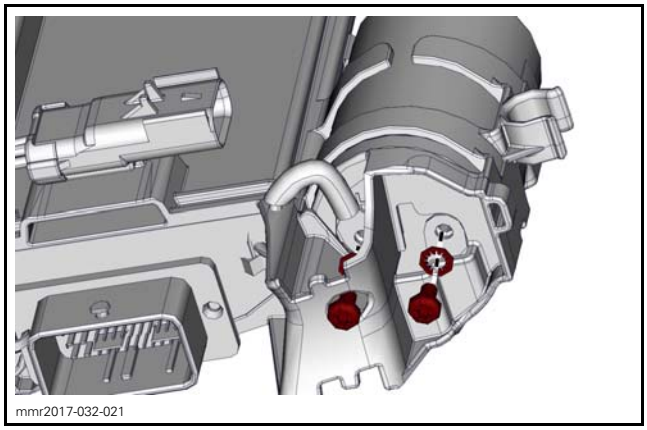
Removing Capacitor

1. Remove upper body module. Refer to *BODY* subsection.
2. Disconnect magneto connector.
3. Remove muffler.

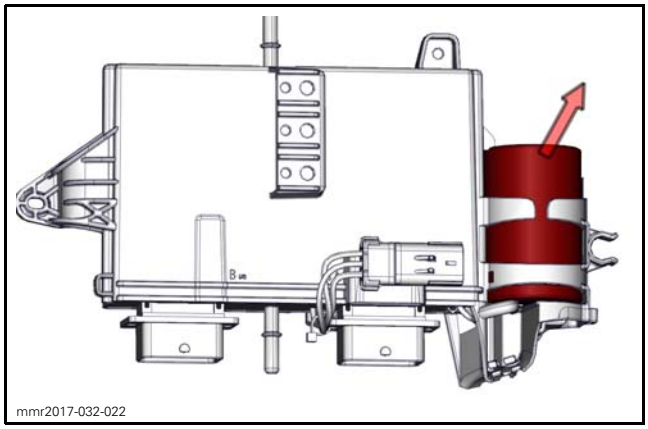
⚠ WARNING

Disconnect the magneto connector. Should the engine be made to rotate with magneto connected, a spark may occur resulting in electrical shock, a fire or an explosion.

4. Ensure capacitor remains connected for at least 1 minute after engine shut down, or after engine was last cranked. This ensures capacitor is fully discharged.
5. Disconnect wire terminals from capacitor.


mmr2017-032-021

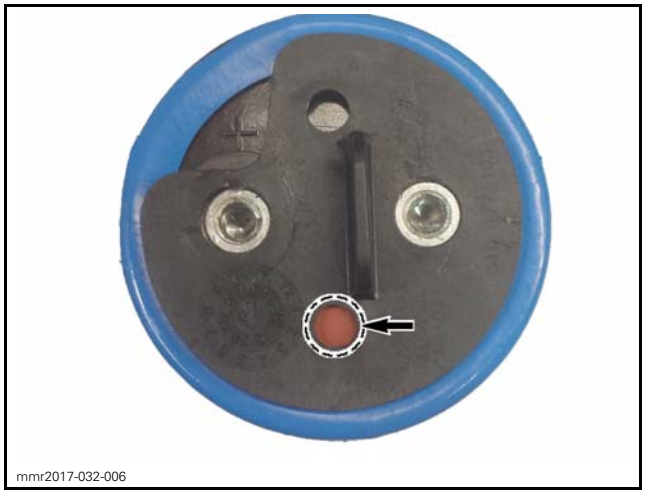
6. Remove capacitor from bracket.


mmr2017-032-022

⚠ WARNING

Do not remove plastic protector from top of capacitor unless the capacitor is to be replaced. The cover prevents the two capacitor contacts from being easily shorted together which may cause a spark, possibly resulting in a fire.

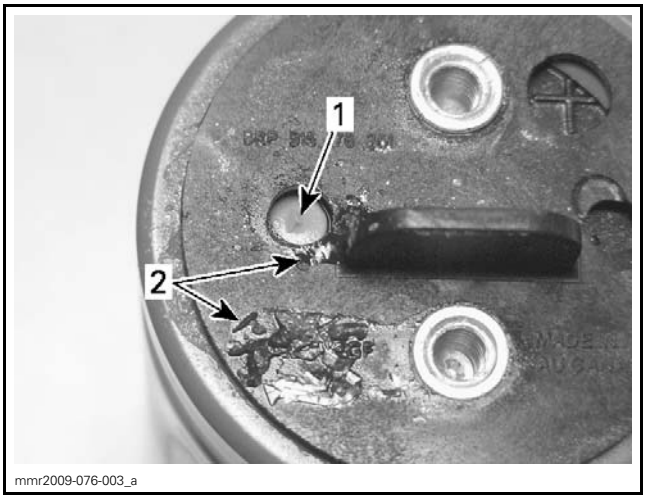
7. Check inspection hole on top of capacitor.


mmr2017-032-006

INSPECTION HOLE (SHIELD IS INTACT)

If the top shield is open (pierced), replace capacitor.

NOTE: The following illustration shows a perforated shield with capacitor fluid leakage. This capacitor was connected in reverse polarity.

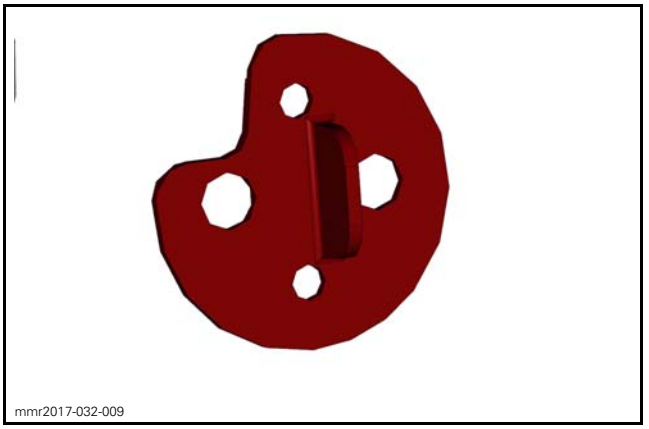


mmr2009-076-003_a

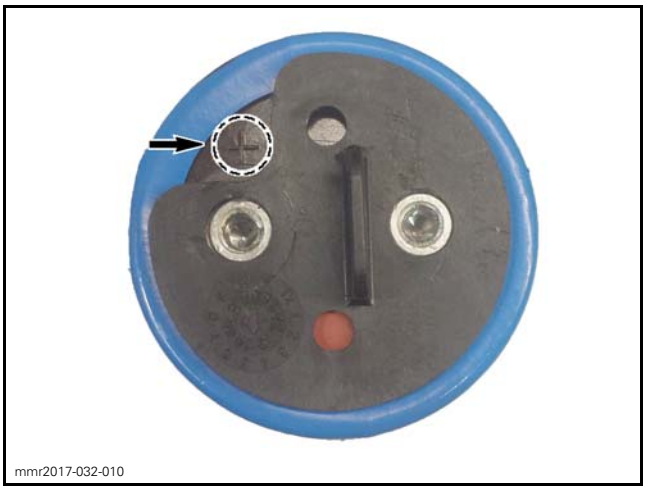
1. Perforated shield
2. Capacitor fluid leakage

Installing Capacitor

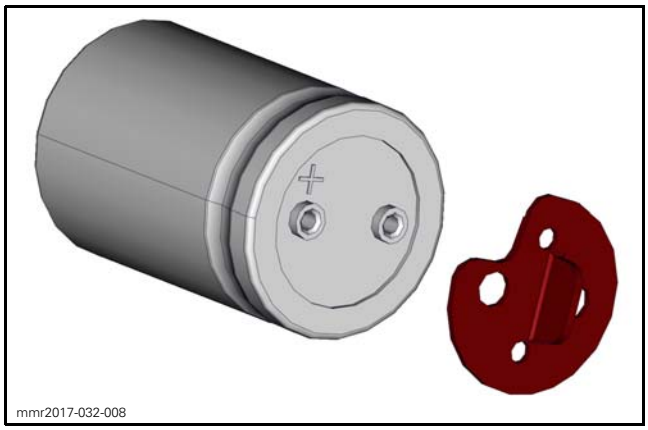
1. If capacitor was replaced, install a plastic protector cap on new capacitor.


mmr2017-032-009

NOTE: When reinstalling plastic protector, ensure the **+** sign on top of capacitor is visible through the hole in protector.

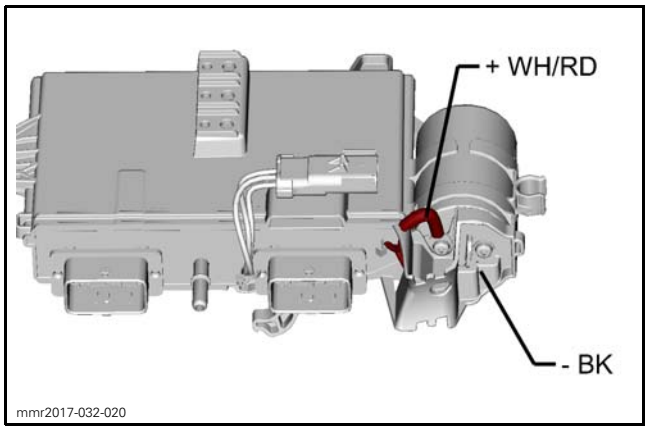

mmr2017-032-010

Otherwise, pull off protector, rotate it one half turn, then reinstall it.


mmr2017-032-008

2. Route capacitor wires as per illustration and connect wire terminals to capacitor. Connect the WH/RD wire to the **+** terminal.

NOTICE Improper polarity could destroy the capacitor while in operation.



mmr2017-032-020

NOTICE Be careful not to damage threads when tightening capacitor screws.

3. Torque screws to 2 N•m (18 lbf•**in**).
4. Complete assembly of remaining parts in the reverse order of removal.

STARTING SYSTEM

SERVICE TOOLS

Description	Part Number	Page
ECM ADAPTER TOOL	529 036 166	165–166
FLUKE 115 MULTIMETER	529 035 868	165

SERVICE PRODUCTS

Description	Part Number	Page
DIELECTRIC GREASE	293 550 004	167

GENERAL

STARTING SYSTEM BASICS (WITHOUT BATTERY)

Conditions for Engine Starting

– Emergency engine stop switch set to RUN;
– D.E.S.S. key on the D.E.S.S. post.

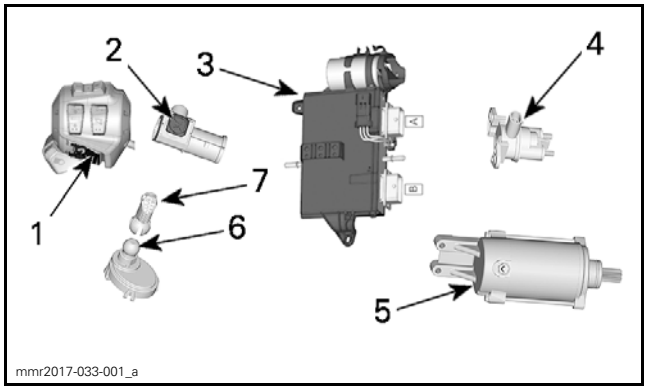
Starting System Operation

Refer to *REWIND STARTER* subsection for starting system operation.

STARTING SYSTEM BASICS (WITH BATTERY)

Basic Starting System Operation (With Battery)

When the START button is pressed, 12 Vdc is applied to the ECM. The ECM activates the internal ECM relay which provides 12 volts to one end of the coil of the starter solenoid. If the engine cranking conditions are met, the ECM completes the starter solenoid control circuit by providing a ground.



1. Start/RER button
2. Emergency engine stop switch
3. ECM
4. Starter solenoid
5. Starter
6. D.E.S.S. post
7. D.E.S.S. key

Engine Cranking Conditions

The following conditions must be met to allow engine cranking:

1. Emergency engine stop switch set to RUN.
2. D.E.S.S. key on the D.E.S.S. post.
3. START button pressed and held.

Starting System Logic

If the START button is activated while the throttle lever is depressed more than 60%, the engine will crank but will not start (engine drowned mode).

If the START button is held after engine has started, the ECM automatically stops the starter if engine speed reaches at least 1400 RPM.

TROUBLESHOOTING (WITH BATTERY)

DIAGNOSTIC TIPS

NOTE: It is a good practice to check for fault codes using B.U.D.S. as a first troubleshooting step. Refer to *DIAGNOSTIC SYSTEM AND FAULT CODES* subsection.

Starting system failures are not necessarily related to the starter but may be due to one the following:

– Crankshaft position sensor (CPS)
– Starter solenoid fuse and start fuse
– Battery, refer to *CHARGING SYSTEM*
– START/RER button
– Starter solenoid
– Emergency engine cut-off switch
– ECM
– Wiring/connections.

Check these components before removing the starter.

NOTE: This subsection assumes the problem is related to an electrical component of the starting system. If the starting system tests good, ensure engine is in good condition. Refer to applicable subsection.

DIAGNOSTIC GUIDELINES

NOTHING HAPPENS WHEN START/RER BUTTON PRESSED

1. Battery not connected
   - *Connect battery.*
2. Burnt fuse
   - *Check fuses*
3. Defective internal ECM relay or related circuits
   - *Test power and ground circuits to starter solenoid.*
4. Defective START/RER switch
   - *Test START/RER switch, wiring and connections.*

ENGINE DOES NOT CRANK

1. Discharged battery
   - *Recharge and test. Refer to CHARGING SYSTEM subsection.*
2. Battery connections
   - *Check/clean/tighten.*
3. Poor/bad or corroded ground contacts (engine, battery ground cable, starter etc.)
   - *Check/clean/repair, refer to POWER DISTRIBUTION AND GROUNDS subsection.*
4. Starter solenoid
   - *Test solenoid, wiring and connections.*
5. Damaged starter or ground cables
   - *Carry out SOLENOID DYNAMIC TEST.*
6. No ground provided by ECM to starter solenoid
   - *Refer to CONTINUITY TEST OF START/RER SWITCH CONTROL CIRCUIT in this subsection.*
7. Engine cannot be rotated (possibly seized)
   - *Refer to ENGINE subsection.*

ENGINE CRANKS SLOWLY

1. Loose, corroded or dirty battery cable connections
   - *Check/clean/tighten.*
2. Discharged/weak battery
   - *Recharge and test. Refer to CHARGING SYSTEM subsection.*
3. Low voltage from starter solenoid
   - *Carry out a SOLENOID DYNAMIC TEST.*
4. Damaged starter or ground cables
   - *Carry out SOLENOID DYNAMIC TEST.*

STARTER TURNS, BUT STARTER DRIVE DOES NOT MESH WITH RING GEAR

1. Worn starter drive gear/starter gear/ring gear
   - *Replace worn parts. Refer to MAGNETO AND STARTER subsection.*
2. Defective drive
   - *Replace starter drive. Refer to MAGNETO AND STARTER subsection.*

STARTER KEEPS RUNNING

1. Sticking solenoid contacts
   - *Replace solenoid.*
2. Sticking or defective starter drive
   - *Lubricate or replace. Refer to MAGNETO AND STARTER.*

PROCEDURES (WITH BATTERY)

REQUIRED TOOLS	
FLUKE 115 MULTIMETER (P/N 529 035 868)	
ECM ADAPTER TOOL (P/N 529 036 166)	

⚠ WARNING

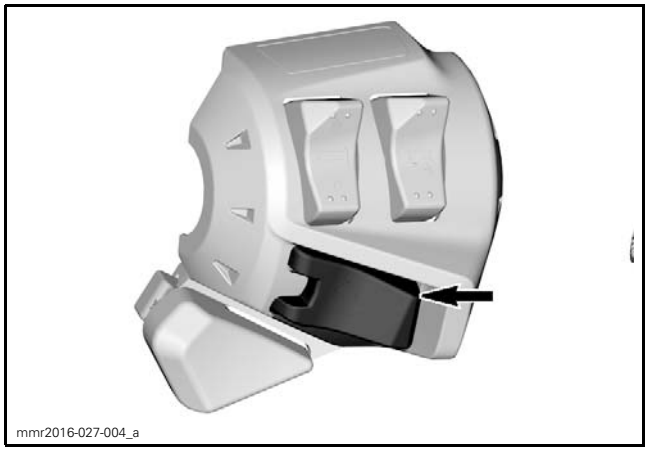
Ensure vehicle cannot move when performing starting system tests.

START/RER SWITCH

Pressing the start/RER switch sends a start signal (battery voltage) to the ECM. If the *ENGINE CRANKING CONDITIONS* are met, the ECM will ground the starter solenoid.

In B.U.D.S., select the **Measurements** page and press the start/RER button to see if the ECM receives the start signal.

START/RER Switch Continuity Test



1. Disconnect the steering connector SH2. Refer to *WIRING HARNESS AND CONNECTORS* subsection.
2. Measure resistance through switch as per following table.

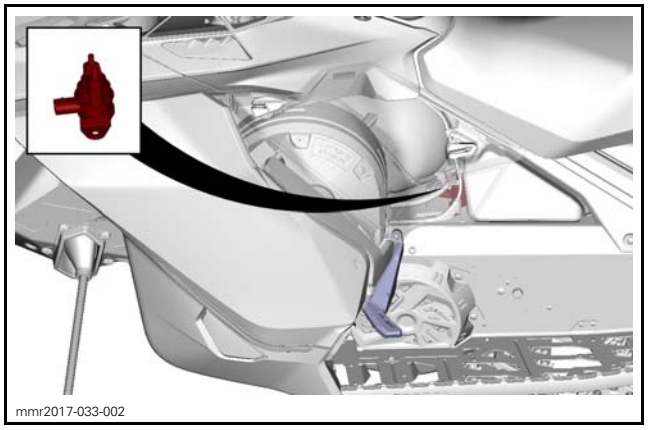
CONTINUITY TEST OF START/RER SWITCH CIRCUIT		
SWITCH POSITION	SH	RESISTANCE
Released	Pins 1 and 2	Close to 0 Ω
Pressed and held	Pins 2 and 8	Close to 0 Ω

If the switch does not test as specified, replace the START/RER switch.

If the switch tests as specified, check for an open circuit in harness.

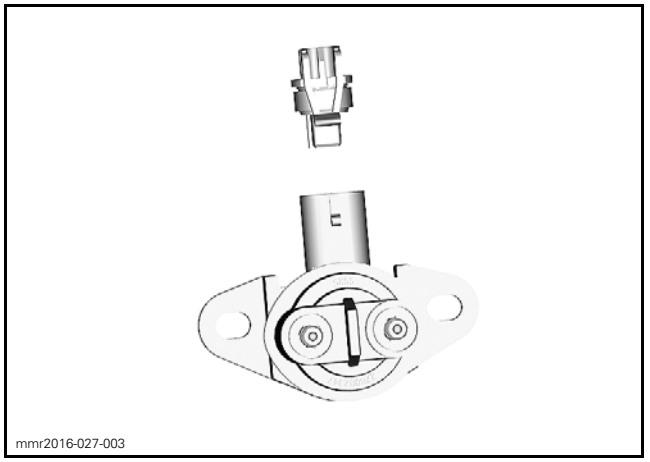
STARTER SOLENOID

Starter Solenoid Location



Testing Solenoid Input Voltage

1. Disconnect solenoid connector.



2. Set the multimeter to Vdc.
3. Install D.E.S.S. key on post.
4. Press the START/RER button to activate ECM.
5. Measure voltage.

SOLENOID INPUT VOLTAGE TEST (SOLENOID COIL)		
TEST PROBES		VOLTAGE READING
Pin A	Battery ground	Battery voltage

If test succeeded, carry out a *SOLENOID CONTROL CIRCUIT TEST*.

If test failed, carry out a *START/RER SWITCH CIRCUIT CONTINUITY TEST*.

Testing Solenoid Control Circuit

1. Set the multimeter to Ω.
2. Disconnect connector "B" from ECM, refer to *WIRING HARNESS AND CONNECTORS* subsection.
3. Install the ECM ADAPTER TOOL (P/N 529 036 166) on ECM harness connector.
4. Test continuity of wiring from solenoid to ECM as per following table.

SOLENOID CONTROL CIRCUIT TEST		
SOLENOID CONNECTOR	ECM CONNECTOR B	RESISTANCE
Pin B	ECMB-A1	Close to 0 Ω (continuity)

If test failed, repair or replace wiring/connectors.

If test succeeded, carry out a *SOLENOID COIL RESISTANCE TEST*.

Testing Solenoid Coil Resistance

1. Set multimeter to Ω.
2. Disconnect solenoid connector.
3. Measure solenoid coil resistance as per following table.

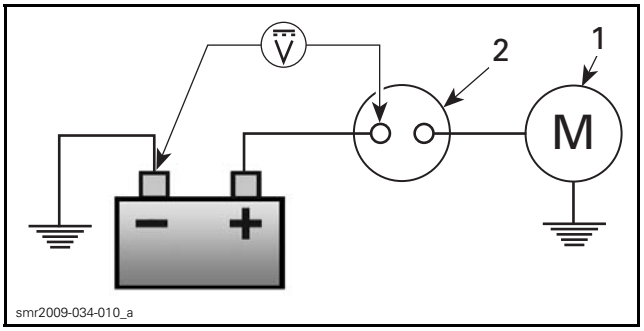
SOLENOID COIL RESISTANCE TEST		
SOLENOID CONNECTOR		RESISTANCE
Pin A	Pin B	4.5 to 5.5 Ω

If test fails, replace solenoid.

Testing Solenoid (Dynamic)

1. Depress the throttle lever to place the ECM in engine drowned mode. Hold throttle lever in place using a rubber band.
2. Set multimeter to Vdc.
3. Crank engine.
4. **As engine is cranking**, measure the voltage as per following tables.

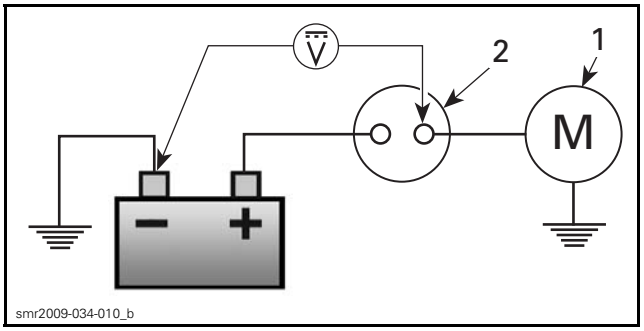
SOLENOID DYNAMIC TEST (ENGINE CRANKING)		
TEST PROBES		SPECIFICATION
Solenoid battery post	Battery ground	Battery voltage



1. Starter motor
2. Starter solenoid

5. If test failed, check battery positive cable (from battery to solenoid).
6. If test succeeded, continue with next step.

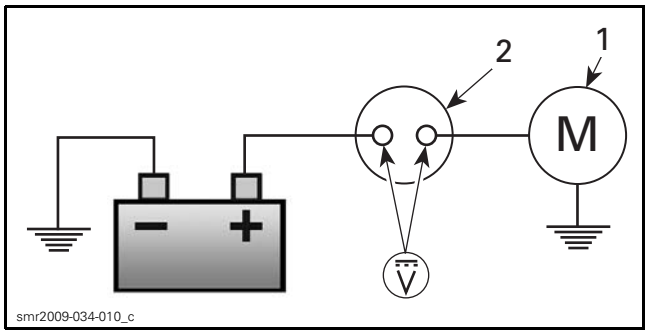
SOLENOID DYNAMIC TEST (ENGINE CRANKING)		
TEST PROBES		SPECIFICATION
Solenoid starter post	Battery ground	Battery voltage



1. Starter motor
2. Starter solenoid

7. If test failed, test *SOLENOID INPUT VOLTAGE*.
8. If test succeeded, continue with next step.

SOLENOID DYNAMIC TEST (ENGINE CRANKING)		
TEST PROBES		SPECIFICATION
Solenoid battery post	Solenoid starter post	0.2 Vdc max.



1. Starter motor
2. Starter solenoid

If test failed, replace solenoid.

If all solenoid dynamic tests are as specified, replace starter.

9. Remove rubber band from throttle lever.

10. Reinstall removed parts.

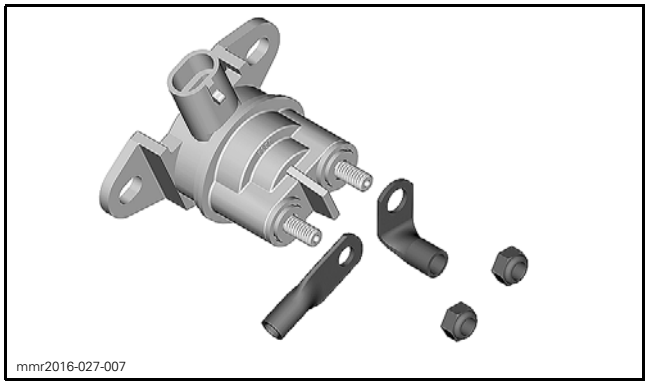
Removing Solenoid

1. Disconnect battery. Refer to *CHARGING SYSTEM* subsection.

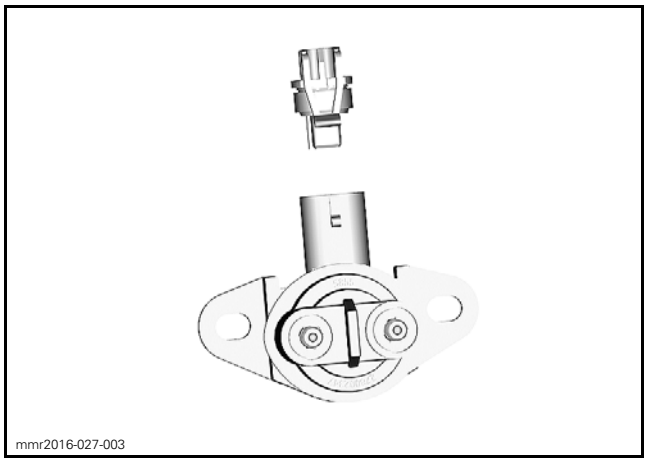
⚠ WARNING

Always disconnect the BLACK (-) battery cable first and reconnect last.

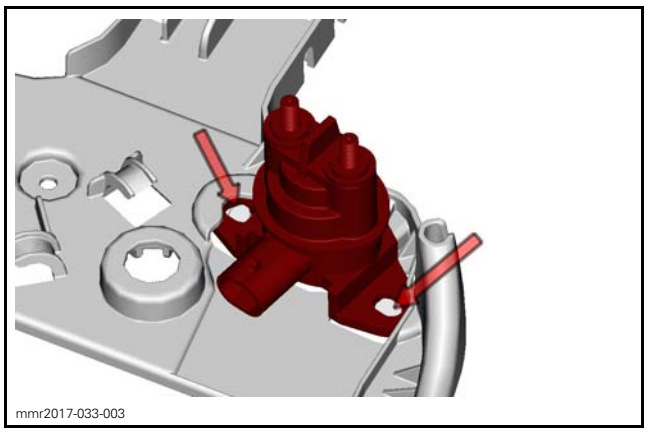
2. Disconnect solenoid cables.



3. Disconnect starter solenoid connector.



4. Press down on the tabs and release the solenoid.



Installing Solenoid

Reverse the removal procedure and pay attention to the following.

1. Secure solenoid on its support, ensure the tabs lock.

NOTE: Apply DIELECTRIC GREASE (P/N 293 550 004) under and over each connections and make sure each nut are well covered.

TIGHTENING TORQUE	
Solenoid cable retaining nuts	4 N•m ± 0.5 N•m (35 lbf•**in** ± 4 lbf•**in**)

2. Close or slide protective caps.

3. Reconnect battery and test starter solenoid operation.

STARTER

For starter information refer to *MAGNETO AND STARTER* subsection.

RF DIGITALLY ENCODED SECURITY SYSTEM (RF D.E.S.S.)

SERVICE TOOLS

Description	Part Number	Page
POWER INTERFACE	515 177 223	170

GENERAL

SYSTEM DESCRIPTION

The following components are specially designed for this system: ECM, D.E.S.S. key (inside tether cord cap) and engine cut-off switch.

This system allows the engine to reach pulley engagement speed only if a D.E.S.S. key is installed on engine cut-off switch and the key is recognized as valid by the ECM.

The D.E.S.S. key contains a magnet and a RFID chip.

– The magnet closes the hall effect switch inside the engine cut-off switch.
– The RFID chip contains a unique digital code. It is the equivalent of the tooth-pattern cut on a conventional ignition key.

Up to 8 D.E.S.S. keys may be programmed in the ECM memory using the B.U.D.S. The keys can also be erased individually.

NOTE: If desired, a D.E.S.S. key can be used on another vehicle equipped with the D.E.S.S. system. It only needs to be programmed for that vehicle.

D.E.S.S. Beeper Codes

When starting the engine with a D.E.S.S. key on the engine cut-off switch, the key is identified by the ECM and D.E.S.S. signals will be issued according to the key recognition. See table.

D.E.S.S. SIGNAL		DESCRIPTION	COMMENT
BEEPER	DISPLAYED MESSAGE		
2 shorts beeps	Compact digital gauge: "Good Key" Other gauges: DESS tell-tale light will flash	Valid key read	Working D.E.S.S. key.
Short beeps repeating slowly	CHECK KEY	Unable to read key	– Reinstall key – RPM limited to 2500 – Check D.E.S.S. status in B.U.D.S. – No voltage at RFID connector pin D
Shorts beeps repeating rapidly	BAD KEY	Invalid key or key not programmed	– Use the proper key for this vehicle or have the key programmed. – Vehicle can not be driven.

PROCEDURES

D.E.S.S. KEY

D.E.S.S. Key Programming

Refer to the **B.U.D.S. directory** on *KNOWLEDGE CENTER* for all BUDS related information, including:

– Download link
– User manual (navigation through menus, programming keys, reading fault codes, writing data to modules etc.)
– Installation instructions
– BRP BUDS chart.

D.E.S.S. / ENGINE CUT-OFF OPERATION

Connect the BRP diagnostic software (BUDS2) to the vehicle. Refer to *COMMUNICATION TOOLS AND BUDS*.

Navigate to the **keys** page.

Read key. Consult the sections below to troubleshoot a key problem.

Normal Operation (Good Key)

Refer to *WIRING DIAGRAM*.

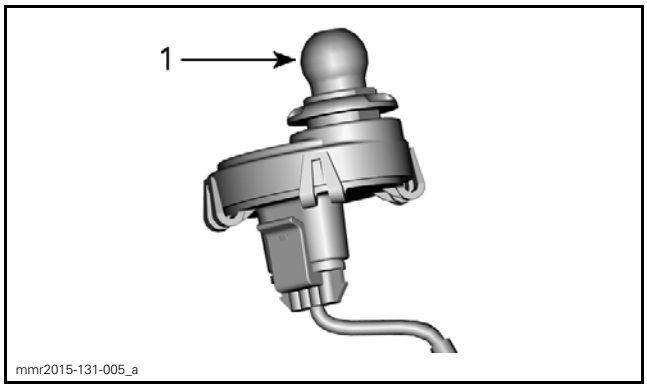
RFID CONNECTOR PIN	SPECIFICATIONS with POWER INTERFACE (P/N 515 177 223) installed
A	ECM ground
B	12 - 15 Vdc
C	5 Vdc
D	12 Vdc

Key Not Read

Possible causes:

– Damaged RFID chip
– No voltage at RFID-D connector
– No voltage at RFID-C connector

Condition can be duplicated with a magnet on the D.E.S.S. post.



1. D.E.S.S. post

Key Not Present

Possible causes:

– No key installed
– No voltage at RFID-B connector
– No ground at RFID-A connector

Condition can be duplicated by unplugging the RFID connector.

Invalid Key

Possible causes:

– Key not programmed to ECM

BEEPER

The beeper is integrated in the multifunction gauge and cannot be replaced alone.

If the beeper does not sound when starting the engine, check the beeper operation. Refer to *GAUGE* subsection.

ROTAX ELECTRONIC REVERSE (RER)

SERVICE TOOLS

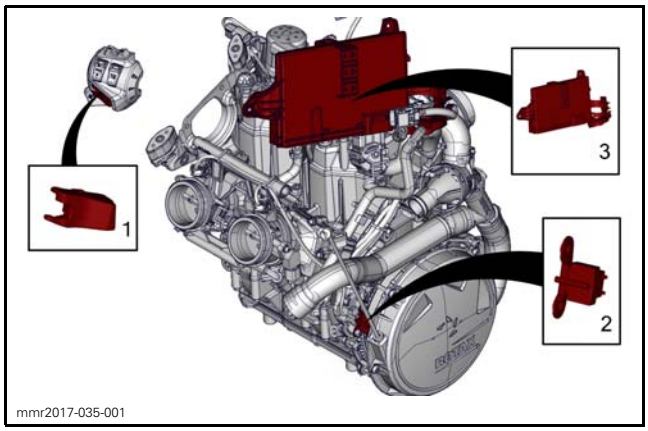
Description	Part Number	Page
12 V BATTERY SUPPLY CABLE	529 035 997	172
DIAGNOSTIC CABLE	710 000 851	172
ECM ADAPTER TOOL	529 036 166	172–173
FLUKE 115 MULTIMETER	529 035 868	172
MPI-2 INTERFACE CARD	529 036 018	172
MPI-3 INTERFACE CARD	529 036 353	172
POWER INTERFACE	515 177 223	172

SERVICE TOOLS – OTHER SUPPLIER

Description	Part Number	Page
OPTIONAL MALE-FEMALE EXTENSION SERIAL CABLE	(DB9)	172

GENERAL

The main components of the RER system are:



1. RER Switch
2. Crankshaft position sensor (CPS)
3. ECM

The ECM receives signals from the CPS for forward and reverse engine rotation.

The ECM recognizes a signal sent by the RER switch.

When the RER switch is activated and the engine is running at or near idle speed, the ECM cuts off ignition, therefore causing the engine RPM to drop off gradually.

When the engine reaches a predetermined low RPM (approximately 450 RPM), the ECM initiates an ignition spark that is greatly advanced in timing, creating a thrust which reverses engine rotation.

If the following condition are not meet, the RER function is disabled and nothing takes place when the RER button is pressed.

– RPM between 1000 and 4300 RPM
– Throttle lever released (TPS opening below 2%)
– Vehicle speed below 25 km/h (16 MPH).

NOTE: Refer to *E-TEC DIRECT FUEL INJECTION* subsection for crankshaft position sensor (CPS) testing.

TROUBLESHOOTING

DIAGNOSTIC TIPS

RER Does Not Respond When Depressing RER Button

Check the following:

– RER fuse condition
– Check if the vehicle is properly configured in B.U.D.S. (with Mechanical Reverse check box not selected)
– *TESTING RER SWITCH SIGNAL WITH B.U.D.S.*

Engine Stops after Pressing RER Button

This confirms that RER control circuits function normally. Check the following:

– CPS
– Engine compression, refer to *TOP END* subsection.
– Reed valves leaking, refer to applicable *TOP END* subsection

– RAVE valve adjustment or sticking, refer to *RAVE* subsection
– Drive belt adjustment, refer to *DRIVE SYSTEM AND BRAKE* subsection
– ECM
– Stator, refer to *MAGNETO SYSTEM* subsection
– Capacitor, refer to *CHARGING SYSTEM* subsection.

Ensure 55V system is in good condition at idle.

RER Functions Erratically

1. Check engine compression.

NOTE: A low compression resulting in loss of engine power may cause the RER to function erratically, leading you to believe the problem is in the electronic control system.

2. Low compression may be due to the following items:
   – REED valves leaking or broken
   – RAVE valves sticking
   – Worn engine parts.
3. Check piston condition through the intake and exhaust ports.

NOTE: Look for scoring on piston skirts. Scored piston skirts or other mechanical problems resulting in excessive friction which may cause the RER to function erratically.

4. Also check the following:
   – RER switch for intermittent operation, refer to *TESTING RER SWITCH CONTINUITY* in this subsection
   – Loose (intermittent) electrical connections
   – Drive belt adjustment, refer to *DRIVE SYSTEM AND BRAKE* subsection
   – ECM.

PROCEDURES

REQUIRED TOOLS	
FLUKE 115 MULTIMETER (P/N 529 035 868)	
ECM ADAPTER TOOL (P/N 529 036 166)	

RER SWITCH

Testing RER Switch Signal with BUDS2

1. Connect vehicle to BUSD2.Download from *KNOWLEDGE CENTER*. Refer to *COMMUNICATION TOOLS AND B.U.D.S.* subsection for proper connection instructions.

REQUIRED TOOLS	
MPI-2 INTERFACE CARD (P/N 529 036 018) or MPI-3 INTERFACE CARD (P/N 529 036 353)	
DIAGNOSTIC CABLE (P/N 710 000 851)	
POWER INTERFACE (P/N 515 177 223)	
12 V BATTERY SUPPLY CABLE (P/N 529 035 997)	
OPTIONAL MALE-FEMALE EXTENSION SERIAL CABLE (P/N (DB9))	

NOTE: A 12 volt battery is required to activate the electrical system.

2. In BUDS2, select the **Scan** button.
3. Select the **Measurements** tab.
4. Raise track and start the engine.
5. Press vehicle RER button and look for the **START/RER Button** status to change.

If the **START/RER Button** status changes, it indicates the RER switch, ECM and wiring are functioning properly. Test CPS. Refer to *E-TEC DIRECT FUEL INJECTION* subsection.

If the**START/RER Button** status does not change, carry out the RER switch tests that follow.

NOTE: When the B.U.D.S. RER test is carried out with engine running and reverse engages, the RER light on the **ECM Monitoring** page and the reverse light on the **Cluster Monitoring** page should both turn ON.

Testing RER Switch Continuity

1. Measure continuity of RER switch as per following table.

Models with multifunction switch on handlebar

2. Disconnect the RER switch (SH) connector.

SWITCH POSITION	SH CONNECTOR		RESISTANCE
Released	SH-1	SH-2	Continuity (0.4 Ω max.)
Press and held	SH-8	SH-2	Continuity (0.4 Ω max.)

Models with console switches

3. Disconnect the RER connector.

SWITCH POSITION	RER CONNECTOR		RESISTANCE
Release	RER-1	RER-2	O.L.
Press and hold	RER-1	RER-2	Continuity (0.4 Ω max.)

If continuity test fails, replace switch.

If continuity tests were good, measure voltage as per *TESTING RER SWITCH CIRCUIT*.

Testing RER Switch Circuit

Models with multifunction switch on handlebar

1. Backprobe SH2 connector pins as per table.
2. Lift track and idle vehicle.

(SH) CONNECTOR		SPECIFICATION
SH-1	Chassis ground	0Ω
SH-2	START / RER SIGNAL	Chassis ground when switch is released
		12 volts when switch is pressed and held
SH-8	Chassis ground	Unswitched 12 Vdc

If chassis ground SH-1 and 12 volts SH-8 measurements are good **but** START / RER SIGNAL SH-2 measurements are incorrect, replace switch.

If chassis ground is not measured, repair the wire between chassis ground and SH connector.

If 12 votls is not measured, repair the wire between RER fuse and SH connector.

Testing RER Switch Circuit

Models with console switches

1. Set multimeter to Vdc.
2. Backprobe RER connector pins as per table.
3. Lift track and idle vehicle.

(RER) CONNECTOR		SPECIFICATION
RER-2	Chassis ground	12 Vdc
RER-1	Chassis ground	No voltage when switch is released
		12 volts when switch is pressed and held

If no voltage is present at RER-1 when switch is pressed and held, replace switch.

If no voltage is present at RER-2, repair the wire between RER fuse and RER-2 connector.

Testing RER Switch Signal to ECM

Models with electric starter

1. If applicable, ensure the (SD) starter solenoid connector is disconnected.

All models

2. Disconnect ECMB connector and install the ECM ADAPTER TOOL (P/N 529 036 166).
3. Test wire continuity between the RER fuse and the ECMB connector as follows.

RER FUSE (F1)	ECMB CONNECTOR	RESISTANCE
FB-H	ECMB-A3	RER switch pressed and held Continuity (0.2 Ω max.)
FB-H	ECMB-A3	RER switch released Infinite (OL)

If continuity test is good, try a new ECM.

If test fails, repair or replace wiring.

BEEPER (REVERSE ALARM)

The reverse alarm (beeper) is integrated in the gauge cluster and is also used for emitting the vehicle beep codes. Refer to applicable *GAUGE* subsection for the testing procedure.

LIGHTS

SERVICE TOOLS

Description	Part Number	Page
12 V BATTERY SUPPLY CABLE	529 035 997	175
POWER INTERFACE	515 177 223	175

GENERAL

Refer to *WIRING HARNESS AND CONNECTORS* for electrical connector locations.

⚠ WARNING

Torque wrench tightening specifications must be strictly adhered to. Locking devices must be replaced with new ones when removed (e.g.: locking tabs, elastic stop nuts, self-locking fasteners, cotter pins, etc.).

SYSTEM TESTING

All vehicle lights are powered from the primary 12 Vdc circuit. This circuit is powered from and controlled by the ECM when the engine reaches 800 RPM. Refer to *POWER DISTRIBUTION AND GROUNDS* subsection for more information on how power is distributed to various systems.

For models without a battery, connect the following tools in order to provide electrical power to the vehicle.

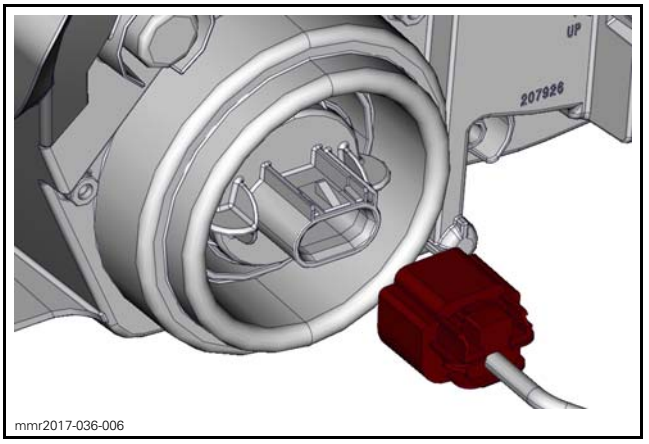
REQUIRED TOOLS
– POWER INTERFACE (P/N 515 177 223) – 12 V BATTERY SUPPLY CABLE (P/N 529 035 997) – 12-volt battery

PROCEDURES

HEADLIGHTS

Removing Headlight Bulb

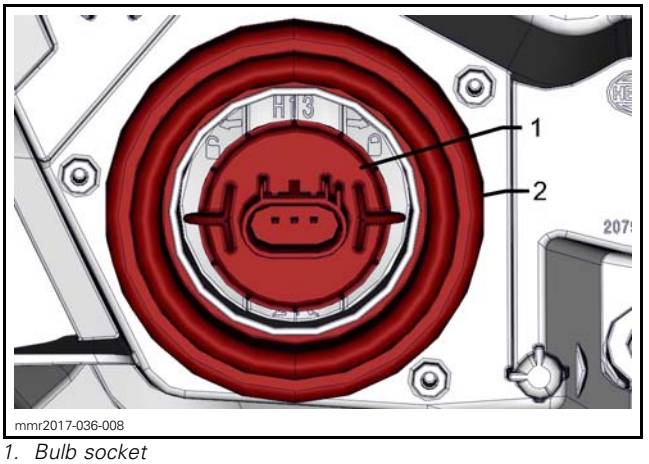
1. Remove gauge and trim. Refer to *BODY* subsection.
2. Remove front glove box. Refer to *BODY* subsection.
3. Unplug electrical connector.



mmr2017-036-006

4. Turn bulb socket to unlock and remove bulb.

NOTE: Ensure bulb seal stays in place.



mmr2017-036-008

1. Bulb socket
2. Bulb seal

Installing Headlight Bulb

NOTICE **Never touch glass portion of a halogen bulb with bare fingers, it shortens its operating life. If glass is touched, clean it with isopropyl alcohol which will not leave a film on the bulb.**

Reverse removal procedure.

Measuring Headlight Input Voltage

1. Disconnect headlight connector(s).
2. Provide electrical power to the headlights for testing.

3. Read voltage at headlight connector as follows.

SWITCH POSITION	WIRE COLOR (HEADLIGHT CONNECTOR)		VOLTAGE
LO beam	GY/OG	BK	Battery voltage (Vdc)
HI beam	GY/WH	BK	

If voltage is inadequate, carry out the following to find the source of the problem:
– Test headlights dimmer switch.
– Test wiring harness and connectors.
– Test primary 12 Vdc system. Refer to *CHARGING SYSTEM*.

Testing Headlight Dimmer with BUDS2

The headlight dimmer switch status can be monitored using BUDS2.

Testing Headlight Dimmer Switch Continuity

1. Disconnect the applicable connector depending on gauge, refer to following tables.
2. Test switch circuits on applicable connector on switch side as per table.

MODELS WITH COMPACT DIGITAL GAUGE			
SWITCH POSITION	DIMMER PINS		SPECIFICATION
HIGH	2	4	Close to 0 Ω
	2	1	Infinite (OL)
LOW	2	4	Infinite (OL)
	2	1	Close to 0 Ω

MODELS WITH ANALOG/DIGITAL GAUGE			
SWITCH POSITION	SH PINS		SPECIFICATION
HIGH	12	7	Close to 0 Ω
	6	7	Infinite (OL)
LOW	12	7	Infinite (OL)
	6	7	Close to 0 Ω

If tests were good, switch is functioning properly.

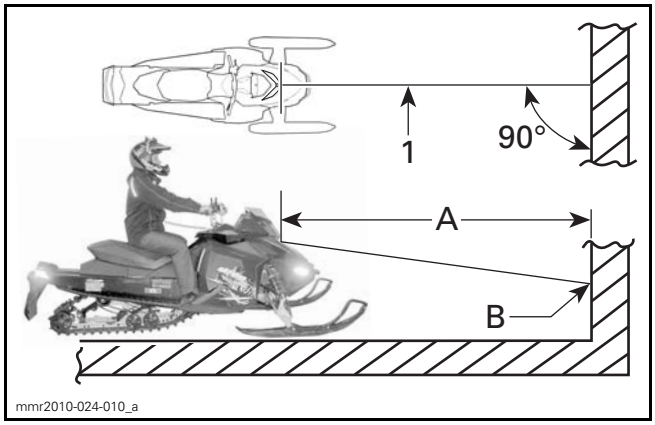
If any test failed, check wiring and connections going to switch.

If test of wiring and connections was good, replace switch.

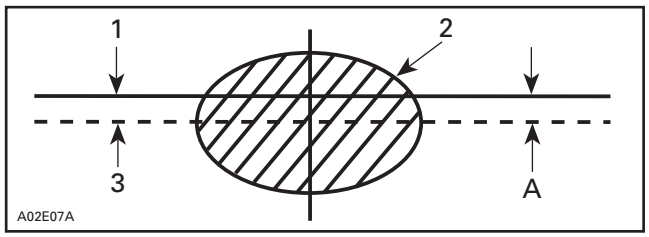
Aiming Headlight Beam

Beam aiming is correct when center of high beam is 25 mm (1 in) below the headlight horizontal center line, scribed on a test surface, 381 cm (12 ft 6 in) away.

1. Place the vehicle on a flat surface perpendicular to test surface (wall or screen) and 381 cm (12 ft 6 in) away from it.
2. Ask rider to sit on vehicle seat, or apply equivalent weight on the vehicle.
3. Select **high** beam.
4. Measure headlight center distance from ground. Scribe a line at this height on test surface (wall or screen). Light beam center should be 25 mm (1 in) below scribed line.



TYPICAL
1. Headlight center line
A. 381 cm (12 ft 6 in)
B. 25 mm (1 in) below center line



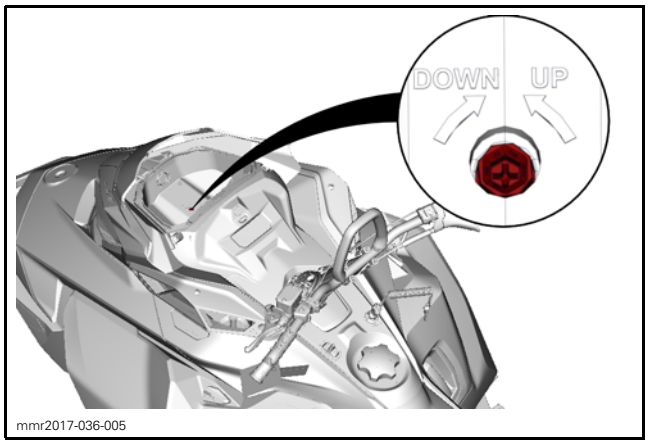
1. Headlight horizontal
2. Light beam (high beam) (projected on the wall)
3. Light beam center
A. 25 mm (1 in)

Adjusting Beam

Open the front storage compartment.

Turn knob to adjust the beam height.

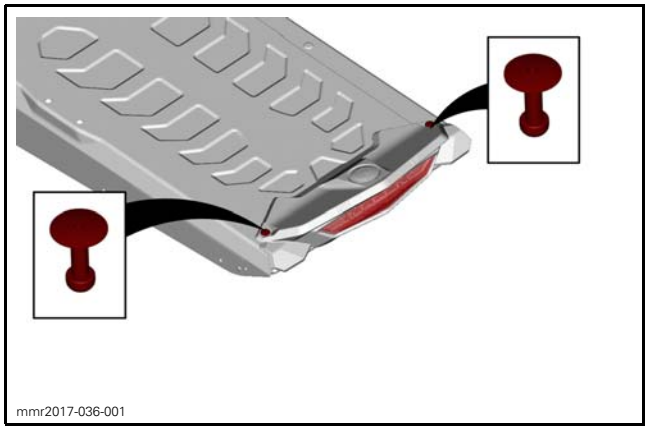
NOTE: Avoid reaching extreme adjustments as the headlight assembly might move out of position.

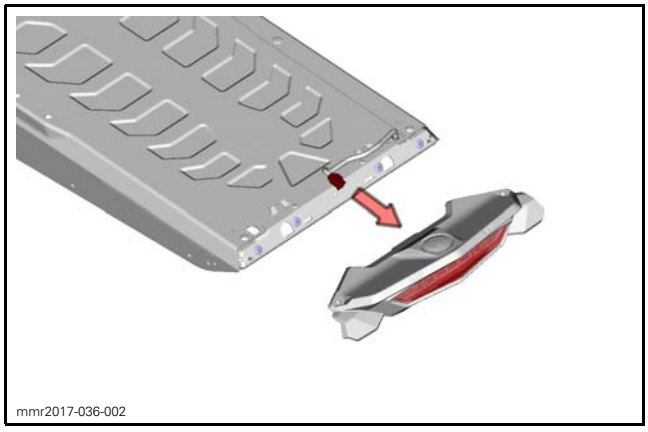


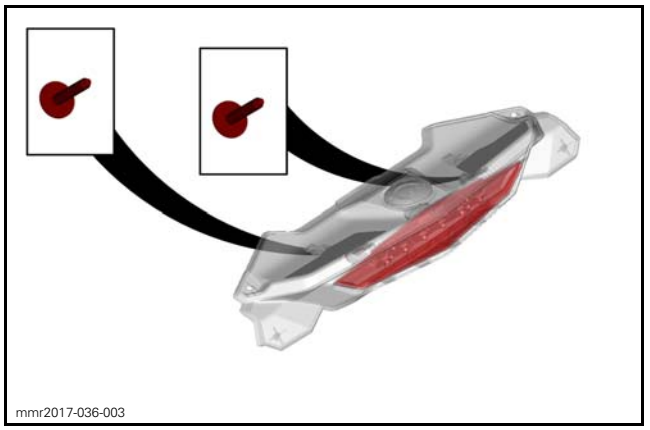
mmr2017-036-005

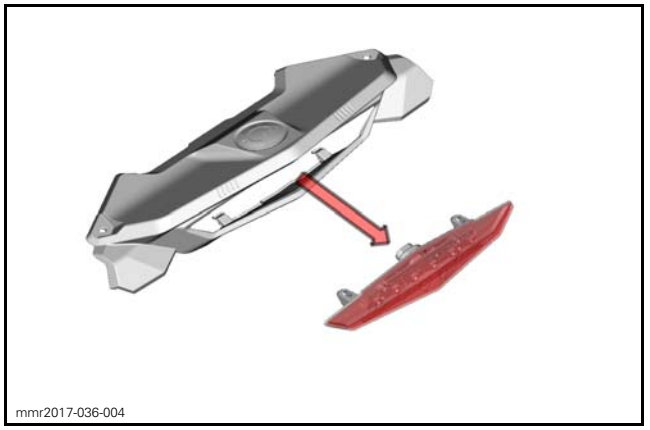
TAILLIGHT / BRAKE LIGHT

Replacing Taillight


mmr2017-036-001


mmr2017-036-002


mmr2017-036-003


mmr2017-036-004

Replace taillight.

Installation is the reverse of removal. However pay attention to the following.

TIGHTENING TORQUE	
Taillight retaining screw	0.4 N•m (4 lbf•**in**)

GAUGE 7.2" DIGITAL DISPLAY

SERVICE TOOLS

Description	Part Number	Page
FLUKE 115 MULTIMETER	529 035 868	179

GENERAL

Most of the electrical tests require the following tool.

REQUIRED TOOL	
FLUKE 115 MULTIMETER (P/N 529 035 868)	

Refer to *WIRING DIAGRAM INFORMATION* subsection for diagnostic tips on troubleshooting electrical problems.

NOTICE It is recommended to always disconnect the battery when replacing any electrical component. Always disconnect battery as specified, BLACK (-) cable first.

INDICATOR LAMPS DESCRIPTION

Important information about vehicle condition is displayed on the multifunction gauge. When starting the engine, always look at the gauge for any indicator lamps or special messages.

Important information messages can also be displayed temporarily in the lower display to assist indicator lamps.



619900975-501

NOTE: Depending on the vehicle, not all the indicator lamps and messages will be applicable.

INDICATOR LAMPS (MALFUNCTIONS)			
INDICATOR LAMP(S)	DIGITAL WARNING	CAUSE	WHAT TO DO
None	BAD KEY	Wrong or defective key	- Use the right key for the vehicle. - Program a new key if the previous key is defective. - Check wiring and connectors. Refer to the *WIRING DIAGRAM*.
None	BELT OVERLOAD	Belt reached its limit	- Stop vehicle. - Inspect drive belt. Replace as required.
 ON	HIGH ENGINE TEMPERATURE	Engine is overheating	- Stop and wait for engine to cool off. - Check for leaks. - Check and adjust the coolant level.

INDICATOR LAMPS (MALFUNCTIONS)			
INDICATOR LAMP(S)	DIGITAL WARNING	CAUSE	WHAT TO DO
 ON	LO BATT VOLT or HI BATT VOLT	Low or high battery voltage	- Recharge battery. - Check battery connections. - Check the charging system.
 ON	BRAKE	Throttle lever is applied when park brake is on	- Disengage park brake.
 ON	CHECK ENGINE	Engine management component malfunction	- Stop the engine. The cluster must be completely shut down.
 FLASHING	LIMP HOME MODE	Important engine management component	- Connect the vehicle to the BRP diagnostic software (BUDS2). Check faults codes and perform recommended actions.
ON	STOP ENGINE (ACE engines)	Low oil pressure	- Check for oil leaks. - Check and adjust the engine .
	LOW OIL (E-TEC engines)	Low oil tank level	
ON	Variable messages - The message changes in accordance with the defective component.		

TROUBLESHOOTING

DIAGNOSTIC TIPS

IMPORTANT: When solving an electrical problem, the first thing to do is to check the battery condition as well as its cables and connections.

Make sure the battery is fully charged or install a power pack for any tests that involves a prolonged "key ON" period. If battery voltage gets too low, not only test results can be altered, but the vehicle electrical system may not operate normally.

Pay attention to ground wires. They could become loose or corroded which causes them to act as an additional load in a circuit, dropping voltage and reducing current to components. Some components may be grounded through their outer casing and mounted hardware. This should also be considered.

Electrical Connectors

Pay particular attention to ensure that pins are not out of their connectors, loose, or damaged. The troubleshooting procedures may not cover problems resulting from one of these causes.

NOTICE Ensure all terminals are properly crimped on wires and connector housings are properly fastened. When replacing any electric or electronic part(s), always check electrical connections. Make sure that they are clean, corrosion-free, tight and make good contact. The voltage and current might be too weak to go through dirty or corroded connector pins or terminals.

MULTIFUNCTION GAUGE TROUBLESHOOTING

GAUGE FUNCTIONS INOPERATIVE OR WORKING INTERMITTENTLY

1. Power supply or ground problem
   - *Check power supply and ground circuits.*

PROCEDURES

MULTIFUNCTION GAUGE



619900975-500

Testing the Multifunction Gauge

Before beginning any troubleshooting, test or repair, always check for fault codes.

1. Check for fault codes using BUDS2.
2. Record all fault codes, then erase them.
3. Perform a complete shutdown of the electrical system and reactivate it.
4. Check fault codes. If a previous fault codes reappears, perform the required service actions.

Testing the Multifunction Gauge Using BRP Diagnostic Software (BUDS2)

Connect the vehicle to the BRP diagnostic software (BUDS2).

In BUDS2, go to:

– **Functions** page
– **Cluster** button
– **Routines - Execute Cluster WOW test**.

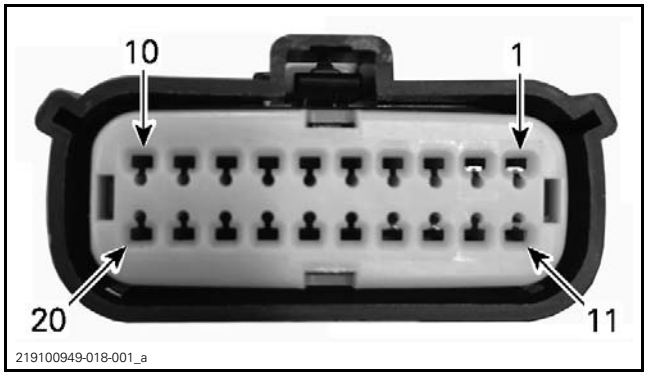
All indications will come and stay ON so that you can verify each indication.

NOTE: The **WOW Test** only tests the gauge **LEDs** and **LCD**. It does not test the actual circuit functions related to each indication.

Testing the Multifunction Gauge Power Input

If the multifunction gauge is inoperative, first check for fault codes with BRP Diagnostic Software, record all faults then erase them. Reactivate the electrical system and recheck for faults. If any fault code appears, perform service actions required. Refer to *COMMUNICATION TOOLS* subsection.

1. Remove multifunction gauge.
2. Perform the test at multifunction gauge connector as per following illustration and tables.



219100949-018-001_a

MULTIFUNCTION GAUGE CONNECTOR (PIN-OUT)

MULTIFUNCTION GAUGE POWER TEST			
CL_A CONNECTOR	BATTERY	IGNITION POSITION	RESULTS
Multifunction connector pin 1	Negative (-) post	Any	Close to battery voltage
Multifunction connector pin 11		ON	Close to battery voltage

If there is no power at pin 1, check fuse F4 and the related circuit.

If there is no power at pin 11, in check fuse F2 and the related circuit.

If the power test is within specification, continue with *TESTING THE MULTIFUNCTION GAUGE GROUND CIRCUIT*.

Testing the Multifunction Gauge Ground Circuit

Test as per the following table.

MULTIFUNCTION GAUGE GROUND TEST		
CL CONNECTOR	BATTERY	RESULT
Pin 2	Negative (-) post	Close to 1 Ω

If the ground at pin 2 is not within specification, check the related circuit.

If the ground tested to specification, continue with *TESTING THE MULTIFUNCTION GAUGE CAN WIRE CIRCUIT*.

Testing the Multifunction Gauge CAN Circuit

1. Remove the seats for access to the DLC (Diagnostic Link Connector). Refer to *BODY* subsection.
2. Test as per the following table.

MULTIFUNCTION GAUGE CAN WIRE TEST		
CL CONNECTOR	DLC	RESULTS
Pin 13 (CAN HI)	Pin 1	Close to 0.4 Ω
Pin 14 (CAN LO)	Pin 2	Close to 0.4 Ω

If the CAN wire verification test fails, check the related circuit.

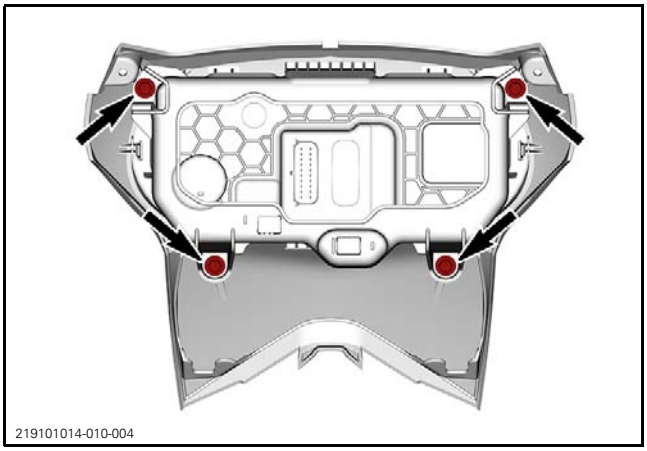
If the multifunction gauge functions, however there is a suspected communication problem with another component, perform this test between the multifunction gauge and that component.

If the multifunction gauge power, ground and CAN verification tests are all to specifications and the multifunction gauge is inoperative, replace the multifunction gauge.

Removing the Multifunction Gauge

Remove gauge support. Refer to procedure in *BODY* subsection

Disconnect the gauge connector. Remove following fasteners.



TYPICAL

Installing the Multifunction Gauge

The installation is the reverse of the removal procedure. However, pay attention to the following.

TIGHTENING TORQUE	
Multifunction gauge retaining screws	1 N•m ± 0.2 N•m (9 lbf•**in** ± 2 lbf•**in**)

If the multifunction gauge was replaced, connect the vehicle to the BRP diagnostic software (BUDS2) and apply any available updates.

When updates are completed, perform the following:

– Transfer the vehicle mileage as described in *VEHICLE MILEAGE TRANSFER*.
– Change settings as per customer preferences (language and units) as described in *SETTING LANGUAGE AND UNITS OF MEASUREMENT*

Vehicle Mileage Transfer

1. In BUDS2, go to:
   – SETTINGS page
   – CLUSTER button
   – SETTINGS tab.
2. Select Increase Odometer Mileage.
3. Click on the upper right arrow in the green circle.
4. Read carefully the on-screen instructions before clicking in the value box.
5. Enter the new mileage if it is different from the indicated one.
6. Press SET button.
7. Press the WRITE TOTAL button.
8. Select OK to confirm the mileage.
9. Close the window.

Setting Language and Units of Measurement

1. In BUDS2, go to:
   – SETTINGS page
   – CLUSTER button
   – SETTINGS tab
   – CONFIGURE LANGUAGE AND UNITS.

ACCESSORIES

SERVICE TOOLS

Description	Part Number	Page
12 V BATTERY SUPPLY CABLE	529 035 997	183
FLUKE 115 MULTIMETER	529 035 868	188
POWER INTERFACE	515 177 223	183

GENERAL

On multifunction analog/digital gauge, heated grips and heated throttle lever are limited at 50% output when idling.

NOTE: It is a good practice to check for fault codes using BUDS2 software as a first troubleshooting step. Refer to *DIAGNOSTIC AND FAULT CODES* subsection.

⚠ WARNING

Torque wrench tightening specifications must be strictly adhered to. Locking devices must be replaced with new ones when removed (e.g.: locking tabs, elastic stop nuts, self-locking fasteners, cotter pins, etc.).

SYSTEM TESTING

For models without a battery, connect the following tools in order to provide electrical power to the vehicle.

REQUIRED TOOLS
– POWER INTERFACE (P/N 515 177 223) – 12 V BATTERY SUPPLY CABLE (P/N 529 035 997) – 12-volt battery

SYSTEM DESCRIPTION (HEATED THROTTLE LEVER)



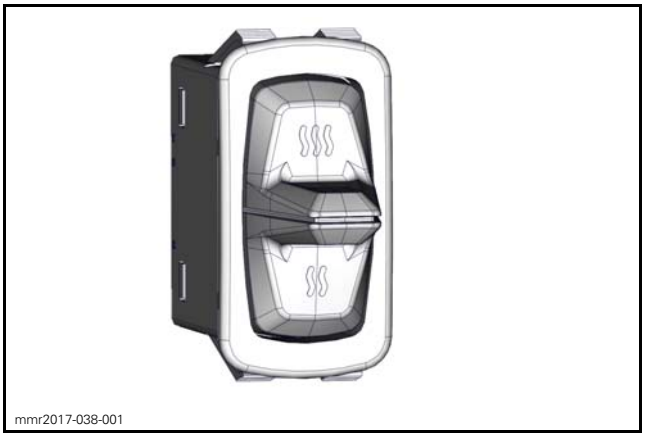
Power to the heated throttle lever is controlled through the gauge.

A three position switch allows the selection various heat levels, which are displayed in the gauge.

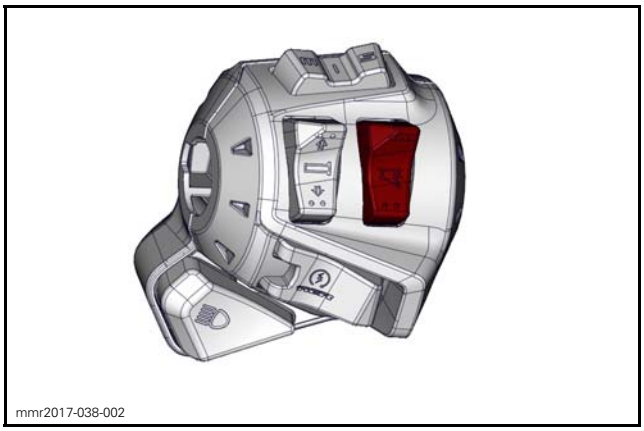
NOTE: The heated handlebar grips and the heated throttle lever are controlled by the same 3 position switch when used with the console switch. Refer to *SETTING THE HEATED THROTTLE LEVER RATIO*.

NOTE: The heating intensity is displayed via the gauge with the activation of the heated throttle lever switch.

The switch selection sends a signal to the gauge to increase or decrease heat.



HEATER SWITCH - MODELS WITH CONSOLE SWITCH



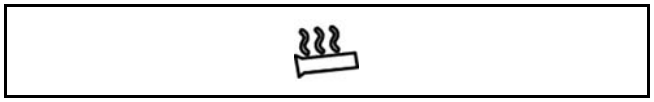
HEATER SWITCH - MODELS WITH MULTIFUNCTION SWITCH

The gauge then applies the appropriate amount of current to the heater according to the selection.

To turn OFF the heaters, select heat down until there is no more indication on the bar graph.

When released, the 3 position switch springs back to the center neutral position.

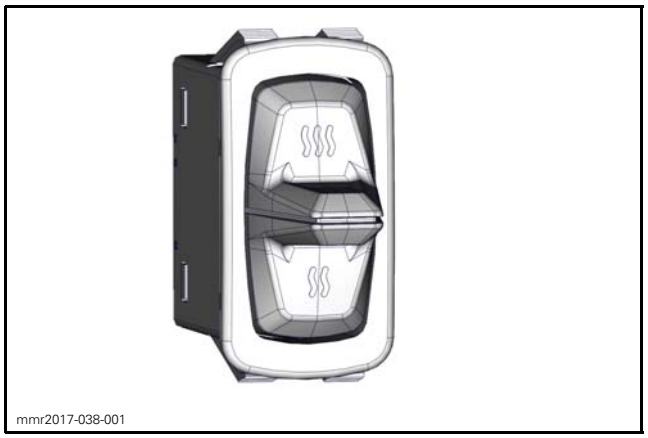
SYSTEM DESCRIPTION (HEATED HANDLEBAR GRIPS)



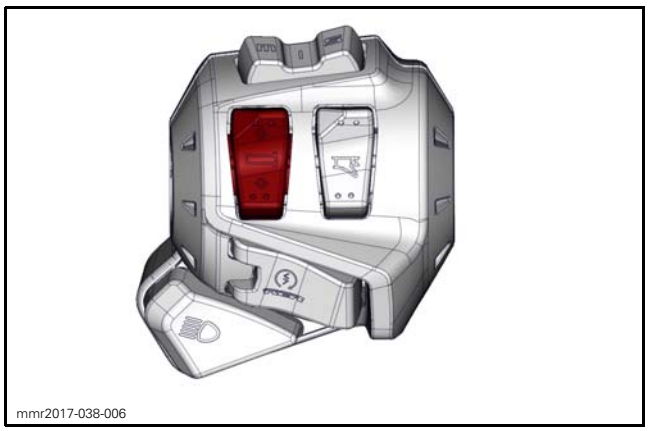
The grip heat is controlled through the gauge.

A three position switch allows the selection of various heat levels, which are displayed in the gauge.

NOTE: The heated handlebar grips and the heated throttle lever are controlled by the same 3 position switch when used with the console switch. Refer to *SETTING THE HEATED THROTTLE LEVER RATIO*.



HEATER SWITCH - MODELS WITH CONSOLE SWITCHES



HEATER SWITCH - MODELS WITH MULTIFUNCTION SWITCH

NOTE: The heating intensity is displayed via the gauge with the activation of the heated grips switch.

The gauge then applies the appropriate amount of current to the heater according to the selection.

To turn OFF the heaters, select heat down until there is no more indication on the bar graph.

When released, the switch springs back to the center neutral position.

SETTING THE HEATED THROTTLE LEVER RATIO

On models where one switch simultaneously controls the heated grip temperature and the throttle lever, use BUDS2 to set the heated throttle grip ratio.

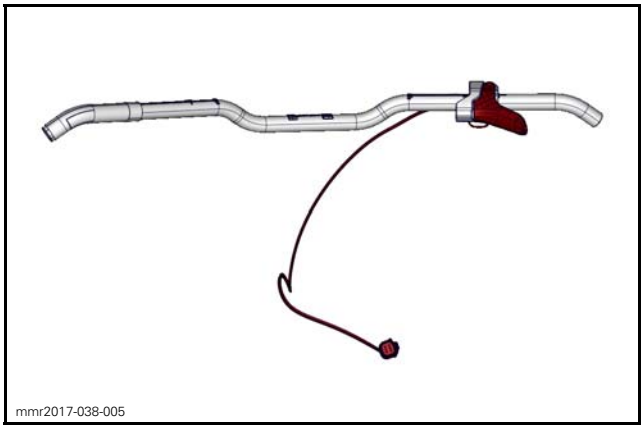
A higher ratio will increase the heated throttle temperature compared to the heated grips.

A lower ratio will lower the heated throttle temperature compared to the heated grips.

1. Connect BUDS2. Refer to *COMMUNICATION TOOLS AND BUDS* subsection.
2. Navigate to the settings page.
3. Change the **Heated Throttle Lever Ratio**.
4. Write the changes to the cluster.

PROCEDURES

HEATED THROTTLE LEVER



On multifunction analog/digital gauge heaters are limited to 50% under 2000 RPM.

For troubleshooting:

– Start engine and rev above 800 RPM for at least 2 seconds
– Use BUDS2 to activate the applicable heater.

NOTE: On models with console switches, there is only one switch that controls both the heated grips and heated throttle lever. Refer to *SYSTEM DESCRIPTION* and *SETTING THE HEATED THROTTLE LEVER RATIO*.

Testing Heated Throttle Lever Switch with BUDS2

Heating elements are permanently connected to ground. Positive voltages are supplied by gauges.

1. Provide electrical power to the gauge for testing.
2. Using BUDS2, select the **Measurements** page.
3. Alternately increase or decrease heat using heated throttle lever switch.
4. Look for the applicable value to change to confirm the gauge receives the signal.

If test is good, refer to *TESTING GAUGE HEATED THROTTLE LEVER POWER OUTPUT* in this subsection.

If test failed, refer to *TESTING THROTTLE LEVER HEAT SWITCH* in this subsection.

Testing Gauge Heated Throttle Lever Power Output

1. Provide electrical power to the gauge for testing.
2. Using BUDS2, select the **Functions** page..
3. In BUDS2, turn on the heated throttle grip.
4. Touch throttle lever to confirm it heats up.
5. Backprobe gauge **no. MG** connector as per following table.

MODELS WITH COMPACT DIGITAL GAUGE	
TERMINAL	SPECIFICATION
MG-7	2.7 to 14.5 Vdc depending on heated throttle lever ratio

MODELS WITH ANALOG/DIGITAL GAUGE	
TERMINAL	SPECIFICATION
MG-4	12 Vdc

6. If test is good, the gauge output to throttle lever heater is good. Proceed with *TESTING THROTTLE LEVER HEATING ELEMENT* in this subsection.
7. If the test failed, replace the gauge.

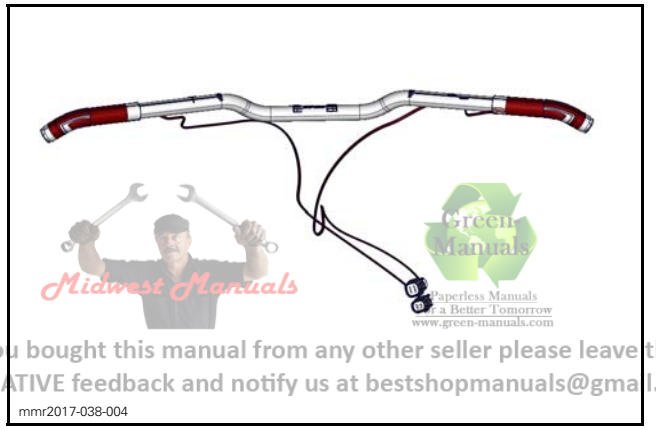
Testing Throttle Lever Heating Element

Refer to *WIRING HARNESS AND CONNECTORS* subsection for connector location.

STR 6P CONNECTOR		RESISTANCE @ 20°C (68°F)
STR 6P-5	STR 6P-2	1.73 - 4.22 Ω

1. If readings are out of specifications, replace throttle lever.
2. If heating element readings are within specifications, check wiring and connections to gauge.
3. Reconnect connectors.

HEATED HANDLEBAR GRIPS



Testing Handlebar Heated Grip Switch with BUDS2

Heating elements are permanently connected to ground. Positive voltages are supplied by gauges.

1. Provide electrical power to the gauge for testing.
2. Using the BUDS2, navigate to the **Measurements** page.
3. Press on the vehicle handle grip heat switch to alternately increase or decrease heat.
4. In BUDS2, look for the applicable to change.

If test is good, proceed with *TESTING GAUGE HEATER GRIPS POWER OUTPUT WITH BUDS2* in this subsection.

If test failed, proceed with *TESTING HANDLEBAR GRIP HEAT SWITCH* in this subsection.

Testing Gauge Heater Grips Power Output with BUDS2

1. Provide electrical power to the gauge for testing.
2. Using the BUDS2, navigate to the **Functions** page.
3. In BUDS2, turn the heated grips on.

MODELS WITH COMPACT DIGITAL GAUGE	
TERMINAL	SPECIFICATION
MG-1	12 Vdc

MODELS WITH ANALOG/DIGITAL GAUGE	
TERMINAL	SPECIFICATION
MG-5	12 Vdc

4. If test is good, the gauge heater to handlebar grip heater is good. Proceed with *TESTING HANDLEBAR GRIP HEATING ELEMENT* in this subsection.
5. If the test failed, replace the gauge.

Testing Handlebar Grip Heating Element

If you cannot feel the temperature increase of a hand grip heating element, carry out the following steps.

1. Disconnect heated grip connector.
2. Test heating elements on either side as per following specifications.

Refer to *WIRING HARNESS AND CONNECTORS* subsection for connector location.

RIGHT HEATED GRIP		RESISTANCE @ 20°C (68°F)
STR 6P-4	STR 6P-1	5.3 - 6.6 Ω

LEFT HEATED GRIP		RESISTANCE @ 20°C (68°F)
STR 6P-3	STR 6P-1	5.3 - 6.6 Ω

3. If readings are out of specifications, replace applicable handle grip heating element.
4. If heating element readings are within specifications, check wiring and connections.
5. Reconnect connectors.

Removing Heater Element

NOTICE **Heater wire routing may vary significantly due to different type handlebars and vehicles. Its highly important to take note of exact positioning of grip heaters, locking ties, and wire routing before removing them from the handlebars. Failure to properly route wires may lead to equipment damage or failure.**

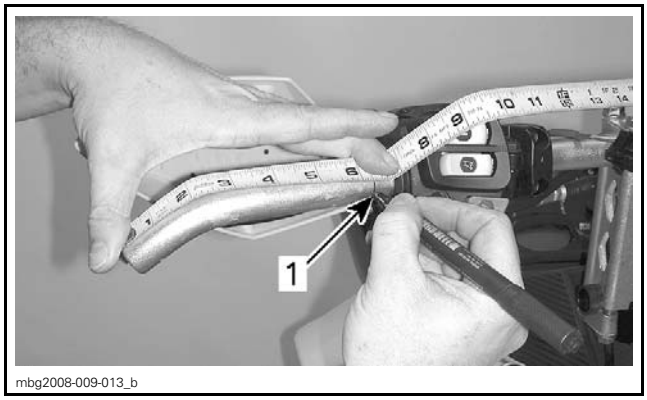
1. Disconnect the connector, Refer to *WIRING DIAGRAM AND CONNECTORS* subsection for connector location.
   1.1 STR 4P for left hand handlebar heater
   1.2 STR 6P for right hand handlebar heater

Use procedures for *MOLEX* connectors in the *WIRING DIAGRAM AND CONNECTORS* subsection.

2. Cut locking ties securing heater wires to handlebars.
3. Pull wires from harness protective sheath, multifunction switch housing or throttle lever housing.
4. Cut and remove black electrical tape from heater element and remove heater from cork insulator.
5. If damaged, remove cork insulator from handlebar and clean all adhesive residue from the handlebar.

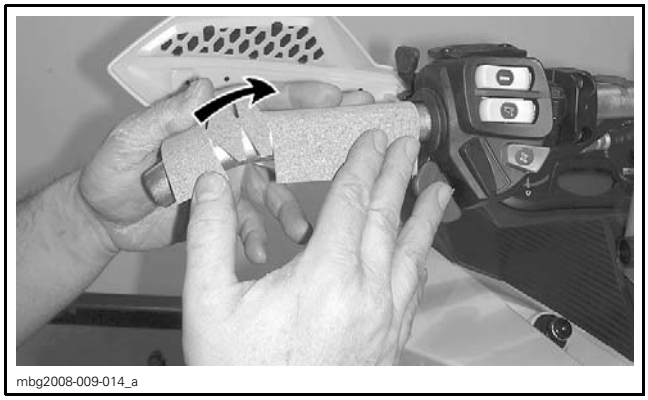
Installing Heated Grips Heater Element

1. Measure 159 mm (6.25 in) from the end of the handlebar, and across the top of the bend in the bar. Trace a reference line with a marker at that point on the handlebar.



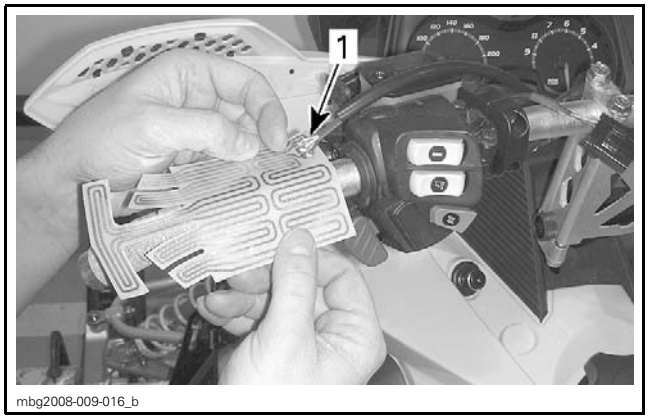
TYPICAL — MEASURING FOR HEATER POSITION
1. Trace reference line

2. Align the edge of the cork insulator with the reference line centered with the handlebar folding axis as illustrated.


mbg2008-009-014_a

TYPICAL — CORK INSULATOR ALIGNMENT

3. Apply firm pressure to cork insulator to assure proper adherence to handlebar.
4. Align the film heater element with the cork insulator and center of handlebar folding axis as illustrated.



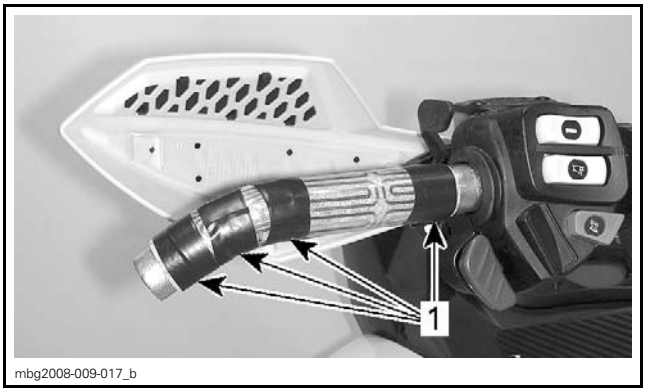
mbg2008-009-016_b

TYPICAL — HEATER ALIGNMENT
1. Heater wire position (LH front, RH rear)

5. Apply firm pressure to heater to assure proper adherence to cork insulator.

NOTE: The same heater element is used for both the LH and RH sides. Therefore, the electrical wiring will be in front of the handlebar on the LH side, and behind the handlebar (towards driver) on the RH side.

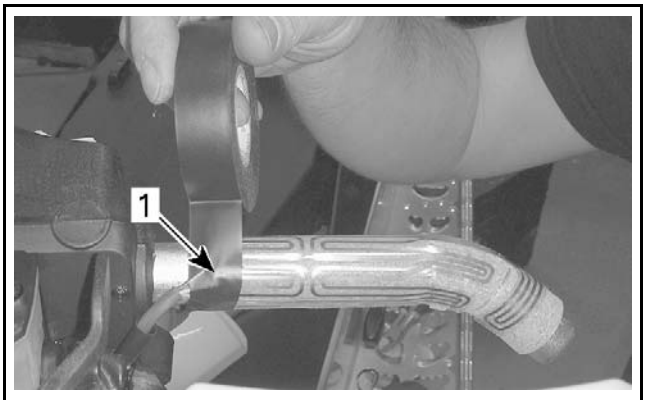
6. Apply two turns of black electrical tape at each of the four locations illustrated so that it covers the edges of the heater element and prevents snagging and damage to the element during rubber grip installation.



mbg2008-009-017_b

TYPICAL
1. Electrical tape application (4x)

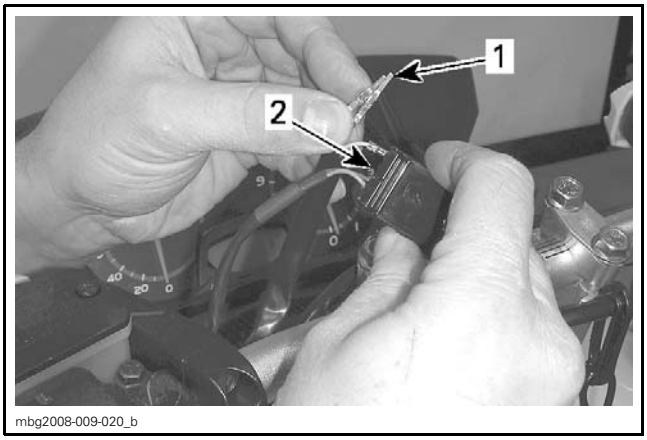
NOTE: It is highly important to apply tape so that it fully secures the electrical wire connections. This will ease installation of the rubber hand grip and prevent undue stress to the connections.



mbg2008-009-018_b

TYPICAL — IMPORTANT
1. Tape application over wire connections

7. Install rubber hand grip, refer to *STEERING SYSTEM* subsection for detail.
8. Route wiring as noted during the removal procedure.
9. Insert wire in housing, refer to *WIRING DIAGRAM* for wire color and pin number locations.

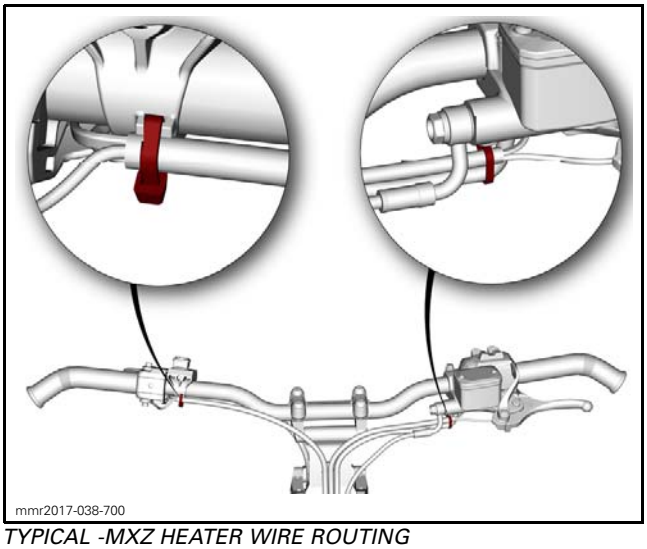


TYPICAL
1. *Heater wire terminals*
2. *Insertion through back of connector*

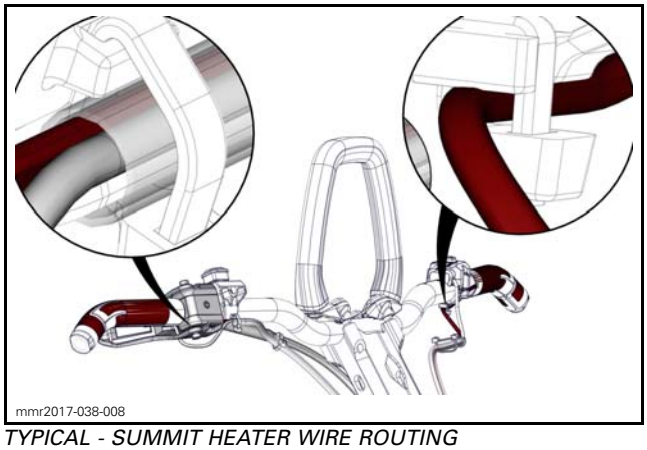
10. Install locking ties to secure the heater wire as it was routed originally..

⚠ WARNING

To ensure RH heater wires does not prevent smooth operation of throttle lever, it must be passed straight through the housing without any slack, and secured with a locking tie on the emergency engine cut-off switch housing.



TYPICAL -MXZ HEATER WIRE ROUTING



TYPICAL - SUMMIT HEATER WIRE ROUTING

NOTICE **Ensure LH heater wires are properly routed through multifunction switch housing to prevent them from being pinched when installing housing cover. Pinched or damaged wires may result in a short circuit.**

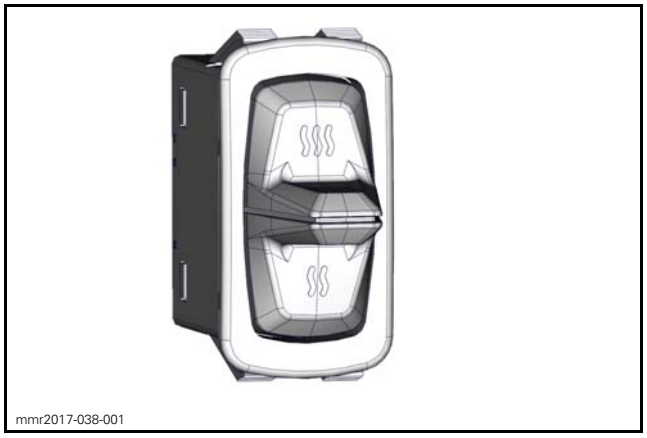
11. Provide electrical power to the heaters for testing.
12. Using the hand grip heat switch, turn on the hand grip heaters and ensure they are functioning correctly.

TESTING THROTTLE LEVER HEAT SWITCH

NOTE: On models with the compact digital gauge, there is only one switch that controls both the heated grips and heated throttle lever.

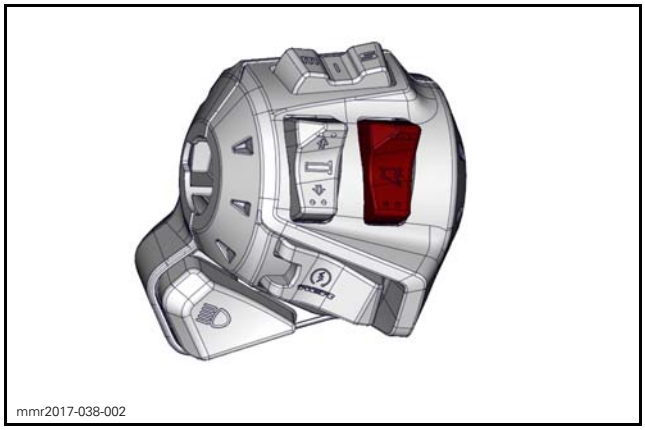
1. Using the FLUKE 115 MULTIMETER (P/N 529 035 868), select the Ω position.
2. Test throttle lever heat switch and circuits as per table.

Models with console switches



THROTTLE LEVER HEAT SWITCH TEST			
SWITCH SELECTION	TERMINAL		RESISTANCE
UP	GRIP-6	GRIP-8	Close to 0 Ω
	GRIP-6	GRIP-5	Infinite (OL)
DOWN	GRIP-6	GRIP-8	Infinite (OL)
	GRIP-6	GRIP-5	Close to 0 Ω

Models with multifunction switches


mmr2017-038-002

THROTTLE LEVER HEAT SWITCH TEST			
SWITCH SELECTION	TERMINAL		RESISTANCE
UP	SH-1	SH-9	Close to 0 Ω
	SH-1	SH-3	Infinite (OL)
DOWN	SH-1	SH-9	Infinite (OL)
	SH-1	SH-3	Close to 0 Ω

If continuity test is as per specification, check wiring to gauge connector.

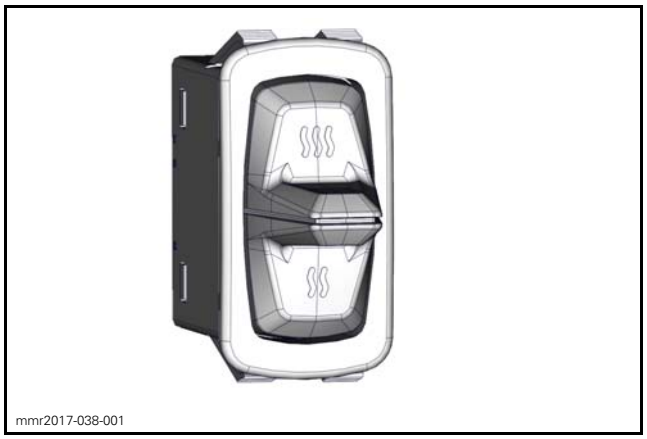
If continuity test is out of specification, check switch circuit as per wiring diagram. If good, replace switch.

TESTING HANDLEBAR HEATED GRIP SWITCH

NOTE: On models with the compact digital gauge, there is only one switch that controls both the heated grips and heated throttle lever.

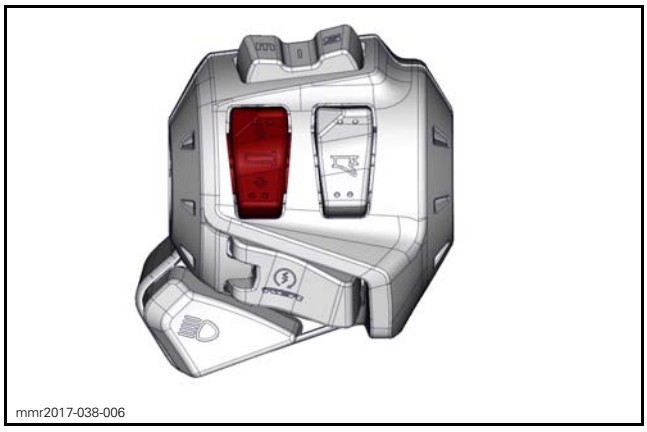
1. Test throttle lever heat switch and circuits as per table.

Models with console switches


mmr2017-038-001

HEATED GRIP HEAT SWITCH TEST			
SWITCH SELECTION	TERMINAL		RESISTANCE
UP	GRIP-6	GRIP-8	Close to 0 Ω
	GRIP-6	GRIP-5	Infinite (OL)
DOWN	GRIP-6	GRIP-8	Infinite (OL)
	GRIP-6	GRIP-5	Close to 0 Ω

Models with multifunction switches


mmr2017-038-006

HEATED GRIP HEAT SWITCH TEST			
SWITCH SELECTION	TERMINAL		RESISTANCE
UP	SH-1	SH-10	Close to 0 Ω
	SH-1	SH-4	Infinite (OL)
DOWN	SH-1	SH-10	Infinite (OL)
	SH-1	SH-4	Close to 0 Ω

If continuity test is as per specification, check wiring to gauge connector.

If continuity test is out of specification, check switch circuit as per wiring diagram. If good, replace switch.

HEATED SEATS AND PASSENGER HEATED GRIPS

Testing Heated Seats

Unplug connector and measure resistance as per following table.

HEATED SEAT CONNECTOR - PROBE		RESISTANCE (APPROXIMATELY) @ 20°C (68°F)
YE wire	BK wire	32 Ω
RD wire		17.5 Ω

If resistance is not as specified, replace heated seat.

If resistance is as specified, continue testing.

Start and idle engine.

NOTE: On some models, you may need to increase RPM to above 2000 RPM in order to power this secondary 12v circuit.

Measure voltage at the heated seat connector as indicated in following table.

HEATED SEAT SWITCH POSITION	HEATED SEAT CONNECTOR - PROBE		VOLTAGE (APPROXIMATELY)
High (single seat) Front + rear (double seat)	YE wire	BK wire	12Vdc
	RD wire		
Low (single seat) Rear only (double seat)	YE wire		12Vdc
	RD wire		0Vdc

If voltage is not as indicated, test switch and/or wires from element to switch. Refer to *WIRING DIAGRAM*.

Testing Passenger Heated Grips (Left or Right)

Unplug connector and measure resistance as per following table.

PROBE		RESISTANCE (APPROXIMATELY) @ 20°C (68°F)
OG wire	BK wire	9.5 Ω
OG/VT wire	BK wire	19 Ω

If resistance is not as specified, replace heated grip.

If resistance is as specified, continue testing.

Start and idle engine.

NOTE: On some models, you may need to increase RPM to above 2000 RPM in order to power this secondary 12v circuit.

Measure voltage at the heated grip connector as indicated in following table.

HEATED GRIP SWITCH POSITION	PROBE		VOLTAGE (APPROXIMATELY)
High	OG wire	BK wire	12Vdc
	OG/VT wire		0Vdc
Low	OG wire		0Vdc
	OG/VT wire		12Vdc

If voltage is not as indicated, test switch and/or wires from element to switch. Refer to *WIRING DIAGRAM*.

Testing Heated Seat and Grip Switches

Measure switch resistance as per following table.

SWITCH POSITION	PROBE		RESISTANCE
High	Pin 6	Pin 8	Close to 0 Ω
Off	Pin 6	Pin 8	O.L.
		Pin 5	O.L.
Low	Pin 6	Pin 5	Close to 0 Ω

If resistance is not as specified, replace switch.

If resistance is as specified, continue testing.

Start and idle engine.

NOTE: On some models, you may need to increase RPM to above 2000 RPM in order to power this secondary 12v circuit.

Measure voltage at the switch connector as indicated in following table.

SWITCH POSITION	PROBE		VOLTAGE (APPROXIMATELY)
Any	Pin 6	Chassis ground	12Vdc

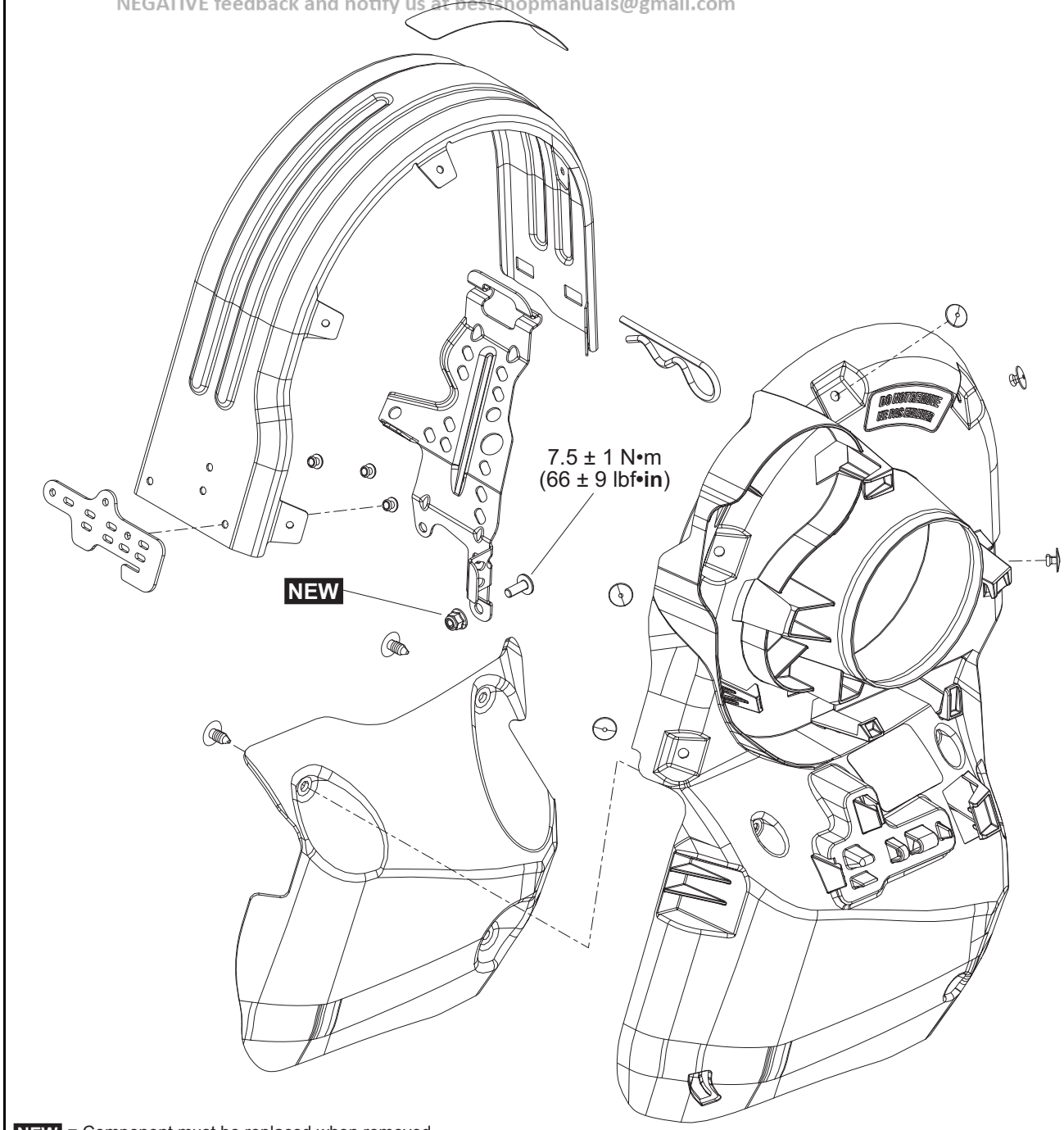
If voltage is not as indicated, test power distribution circuit to switch. Refer to *WIRING DIAGRAM*.

DRIVE BELT

SERVICE TOOLS

Description	Part Number	Page
TENSIOMETER	414 348 200	197

Midwest Manuals
Paperless Manuals For a Better Tomorrow www.green-manuals.com
If you bought this manual from any other seller please leave them NEGATIVE feedback and notify us at bestshopmanuals@gmail.com



NEW = Component must be replaced when removed.

219100983-013-100_a

GENERAL

DRIVE BELT APPLICATION

Always use the drive belt specified in the BRP *PARTS CATALOG* as applicable to vehicle and engine model.

TROUBLESHOOTING

VEHICLE CREEPS FORWARD AT IDLE

1. Improper drive belt height (too high)
   - *Refer to ADJUSTING THE DRIVE BELT HEIGHT procedure in this subsection.*

ENGINE STALLS WHEN ENGAGING RER

1. Improper drive belt height (too high)
   - *Refer to ADJUSTING THE DRIVE BELT HEIGHT procedure in this subsection.*

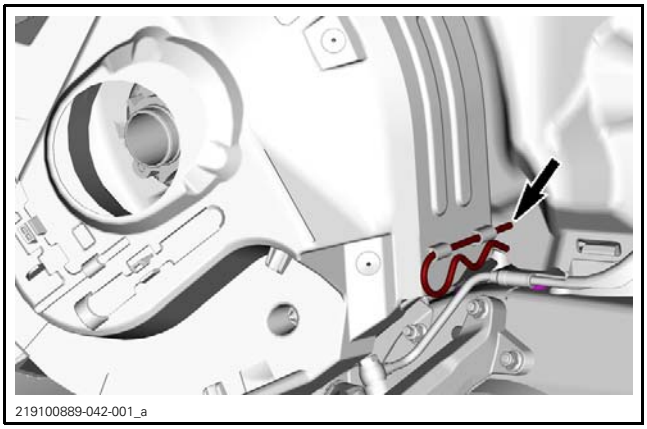
PROCEDURES

DRIVE BELT GUARD

NOTE: Belt guard is purposely made slightly oversize to maintain tension on its pins and retainers preventing undue noise and vibration.

Removing the Drive Belt Guard

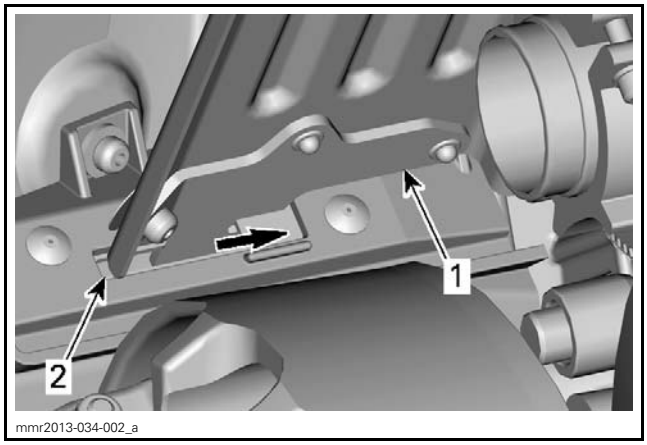
1. Remove LH side panel.
2. Remove retaining pin.


219100889-042-001_a

3. Lift rear portion of guard then release from front tabs.

Installing the Drive Belt Guard

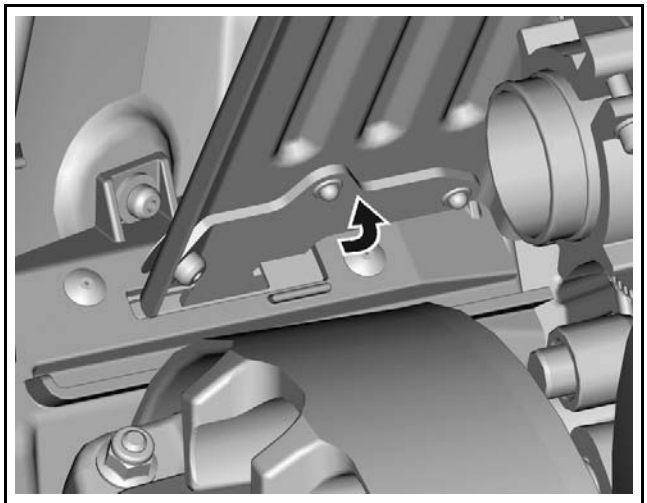
1. Insert belt guard tab in front support slot.



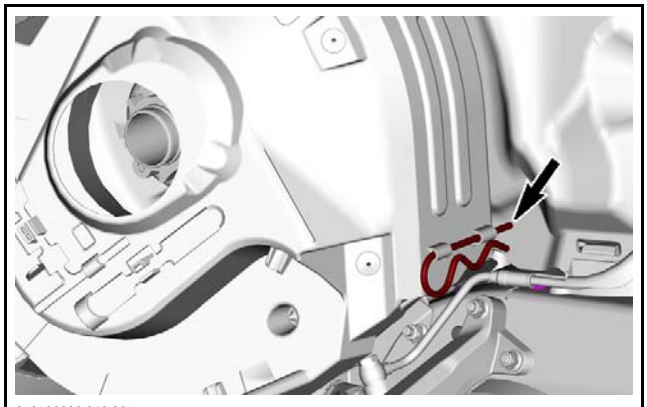
mmr2013-034-002_a

1. Belt guard tab
2. Front support slot

2. Push drive belt guard toward engine then toward front of vehicle.


mmr2013-034-006_a

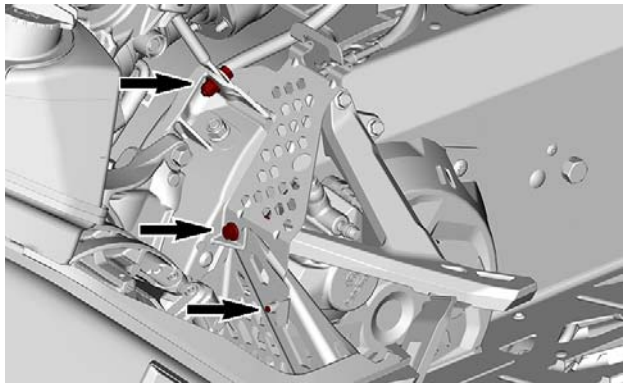
3. Position rear portion of the drive belt guard over the retainer and secure it using the retaining pin.


219100889-042-001_a

DRIVE BELT GUARD SUPPORT

Removing the Drive Belt Guard Support

1. Remove the drive belt guard.
2. Remove screws securing the support to vehicle.


mmr2017-039-003_a

Installing the Drive Belt Guard Support

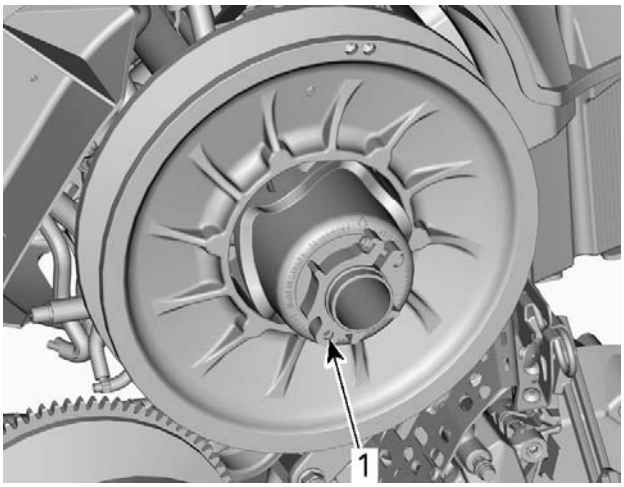
The installation is the reverse of the removal procedure. However pay attention to the following.

TIGHTENING TORQUE	
Drive belt guard support Torx screw	7.5 N•m ± 1 N•m (66 lbf•**in** ± 9 lbf•**in**)
Hexagonal flange elastic nut	10 N•m ± 2 N•m (89 lbf•**in** ± 18 lbf•**in**)

DRIVE BELT

Removing the Drive Belt

1. Remove tether cord cap from engine cut-off switch.
2. Remove LH side panel.
3. Remove drive belt guard, refer to *REMOVING THE DRIVE BELT GUARD*.
4. Insert the driven pulley expander provided in the tool kit in the threaded hole on the adjuster hub as illustrated.



mmr2013-034-005_a

1. PULLEY expander to be installed here - on Adjuster hub

5. Open the driven pulley by screwing the tool in.
6. Remove the belt by slipping it over the top of the driven pulley, then out of the drive pulley.

Inspecting the Drive Belt

Inspect belt for:
- Cracks
- Fraying
- Abnormal wear (uneven wear, wear on one side, missing cogs, torn fabric).

If abnormal wear is noted, the probable cause could be:
- Pulley misalignment
- Excessive RPM with frozen track
- Fast starts without warm-up period
- Scratched or rusty sheave
- Oil on belt
- Distorted spare belt.

Check drive belt width. Replace the drive belt if its width is under minimum recommended specification.

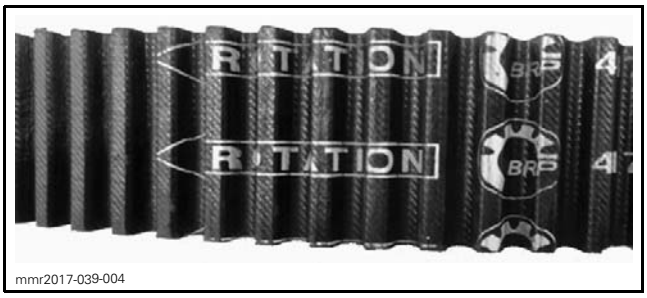
DRIVE BELT WIDTH	
NEW	WEAR LIMIT
38.3 mm (1.508 in)	35.9 mm (1.413 in)

Installing the Drive Belt

1. If necessary, open the driven pulley, refer to *REMOVING THE DRIVE BELT*.
2. Insert drive belt in the drive pulley, then pull it over the driven pulley.

NOTICE **Do not force or use tools to pry the belt into place, as this could cut or break the cords in the belt.**

NOTE: The maximum drive belt life span is obtained when the belt is installed with the arrows on the belt pointing in the direction of rotation.

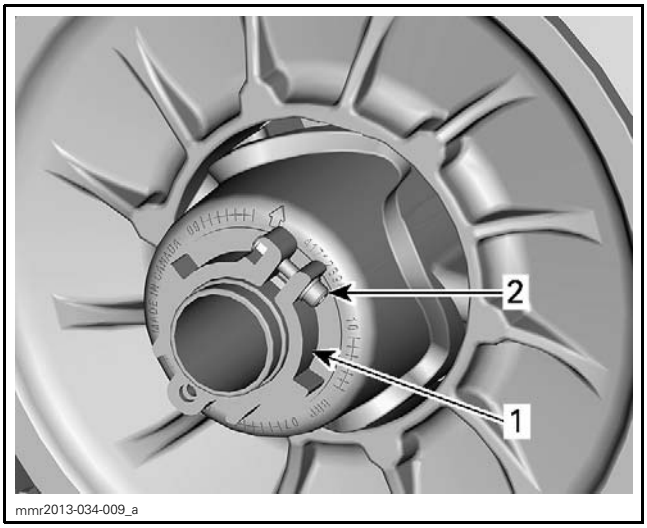


mmr2017-039-004

3. Unscrew and remove the driven pulley expander from the driven pulley.
4. Rotate the driven pulley several times to properly set the belt between the sheaves.
5. Adjust drive belt height. Refer to *ADJUSTING THE DRIVE BELT HEIGHT* procedure.
6. Install drive belt guard, refer to *INSTALLING THE DRIVE BELT GUARD*.
7. Install LH side panel.

Adjusting the Drive Belt Height

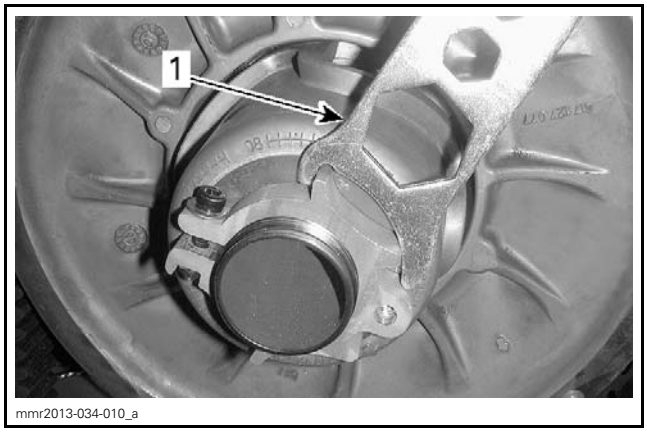
1. Remove tether cord cap from engine cutout switch.
2. Remove LH side panel.
3. Remove drive belt guard, refer to *REMOVING THE DRIVE BELT GUARD*.
4. Loosen the clamping screw.



mmr2013-034-009_a

1. Adjustment ring
2. Clamping screw

5. Using the suspension adjustment tool provided in the tool kit, turn the adjustment ring 1/4 turn at a time then rotate the driven pulley to properly set the belt between the pulley sheaves.



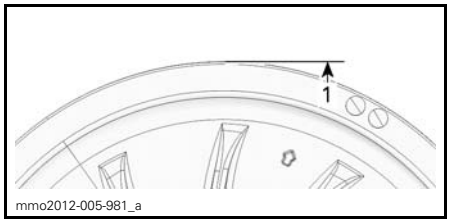
mmr2013-034-010_a

1. Suspension adjustment tool

NOTE: The adjustment ring has left hand treads.

600 EFI

Repeat step 5 until the drive belt outer surface is even with the driven pulley edge.

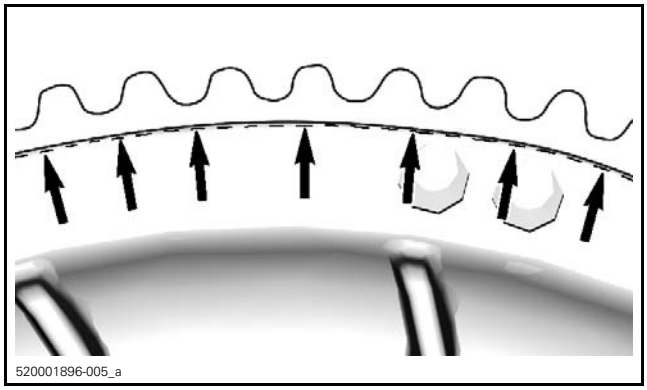


mmo2012-005-981_a

600 EFI - PRELIMINARY SETTING
1. Drive belt outer surface is even with the driven pulley edge

850 E-TEC

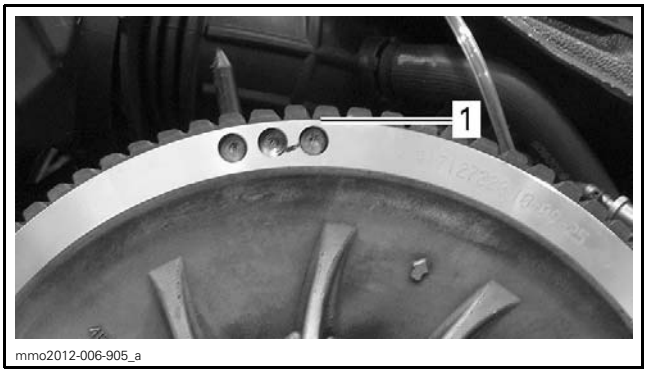
Repeat step 5 until the cord of drive belt is just hidden by the driven pulley edge.


520001896-005_a

850 E-TEC - PRELIMINARY SETTING

600R E-TEC

Repeat step 5 until the lowest portion of the cogs on the external surface of drive belt is even with the driven pulley edge.



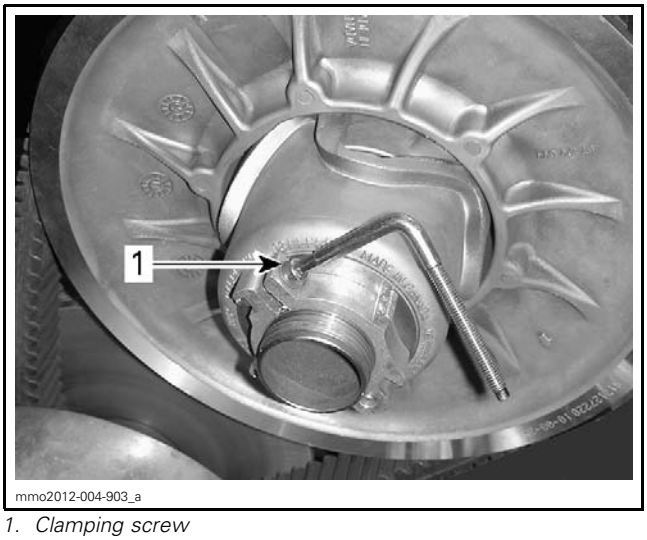
600R E-TEC - PRELIMINARY SETTING
1. Lowest portion of cogs even with external surface of drive belt

All engines

NOTE: Turning the adjustment ring counterclockwise lowers the belt in the pulley. Turning the ring clockwise raises the belt in the pulley.

6. Tighten the adjustment ring clamping screw.

TIGHTENING TORQUE	
Adjustment ring clamping screw	5.5 N•m ± 0.5 N•m (49 lbf•**in** ± 4 lbf•**in**)



1. Clamping screw

7. Install belt guard, refer to *INSTALLING THE DRIVE BELT GUARD*.
8. Install LH side panel.
9. Start engine and check if vehicle creeps.
   - 9.1 If vehicle does not creep, adjustment is complete.
   - 9.2 If vehicle creeps, check the drive belt deflection.

Reverse Activation

Reverse may not activate or may be harder to activate if the belt is positioned too high in the driven pulley. If reverse activation does not work properly, ensure the drive belt is properly adjusted.

Adjust the drive belt lower in the driven pulley if needed.

Verifying the Drive Belt Deflection

1. Make sure drive belt height is adjusted (preliminary setting).
2. Position a reference rule on drive belt.
3. Use the TENSIOMETER (P/N 414 348 200) as explained below.
4. Set deflection as per following table using bottom O-ring.

DRIVE BELT DEFLECTION	
DRIVE BELT DEFLECTION SETTING	32 mm ± 5 mm (1.26 in ± .2 in)



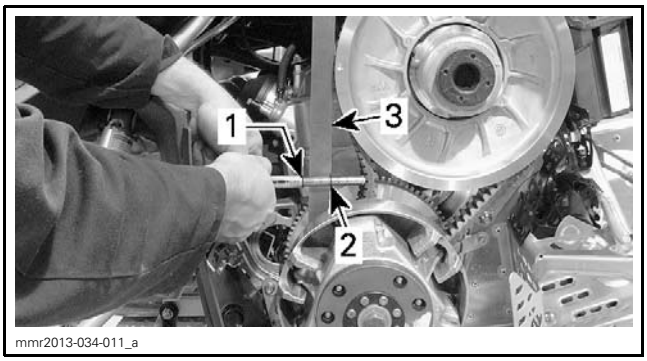
DEFLECTION SETTING
1. Bottom O-ring

5. Place upper O-ring to 0 kgf (0 lbf).



LOAD READING
1. Upper O-ring

6. Apply pressure until bottom O-ring (deflection) is flush with edge of rule.



TYPICAL
1. *Upper O-ring — load*
2. *Bottom O-ring — deflection*
3. *Reference rule*

7. Read drive belt load. Compare result with the following table.

DRIVE BELT DEFLECTION	
DRIVE BELT LOAD READING	11.30 kgf (25 lbf)

8. If deflection is within specification, drive belt is properly adjusted.
9. If deflection is out of specification, try the following:
   – Lower drive belt height from initial setting.
   – Try another drive belt.
10. If proper load still cannot be obtained, check the following:
   – Inspect engine supports.
   – Inspect countershaft and bearing.
   – Inspect chassis for damages.

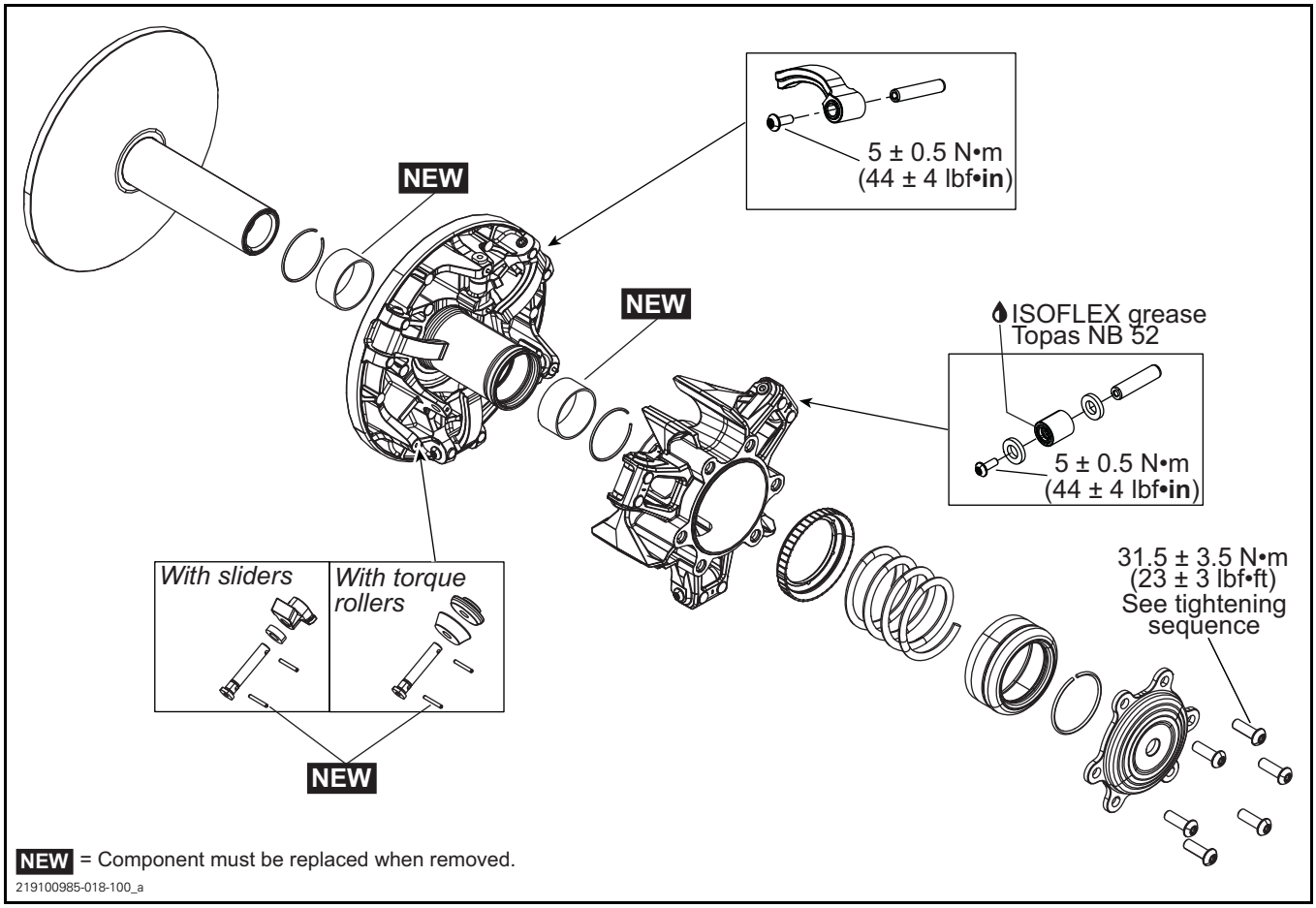
DRIVE PULLEY (EFI)

SERVICE TOOLS

Description	Part Number	Page
CIRCLIP INSTALLER/REMOVER	529 036 375	201
CLUTCH HOLDER	529 036 369	200, 210
DRIVE PULLEY OPENING TOOL	529 036 378	201
DRIVE PULLEY SUPPORT	529 036 371	201
GREASE INJECTOR	529 036 376	207
PDRIVE PULLER	529 036 370	200–201
PULLEY SPRING COMPRESSOR TOOL	529 036 373	201
REMOVING AXLE TOOL	529 036 372	201

SERVICE PRODUCTS

Description	Part Number	Page
CLUTCH AND PULLEY FLANGE CLEANER PRO S1	779244	206
ISOFLEX GREASE TOPAS NB 52	293 550 021	207



GENERAL

The pDrive pulleys are lubrication-free drive pulleys. Only the needle bearings inside the rollers need to be lubricated when replaced.

Always refer to appropriate *PARTS CATALOG* for replacement parts.

NOTICE Never use any type of impact wrench for drive pulley removal and installation. The use of impact wrench could damage the drive pulley and modify the calibration.

Some drive pulley components (like the spring and ramps) can be changed to improve vehicle performance in high altitude regions. A Service Bulletin provides information about calibration according to altitude.

NOTICE Such modifications should only be performed by experienced mechanics since they can greatly affect vehicle performance. Verify spring specifications before installation. Do not only refer to the spring color code.

⚠ WARNING

Any drive pulley repairs must be performed by an authorized Ski-Doo dealer. Subcomponent installation and assembly tolerances require strict adherence to procedures detailed.

During assembly/installation, use torque values as in the exploded view.

Clean threads before applying a threadlocker. Refer to *SELF-LOCKING FASTENERS* and *LOCTITE APPLICATION* at the beginning of this manual for complete procedure.

⚠ WARNING

Torque wrench tightening specifications must be strictly adhered to.
Locking devices must be replaced with new ones when removed (e.g.: locking tabs, elastic stop nuts, cotter pins, etc.).

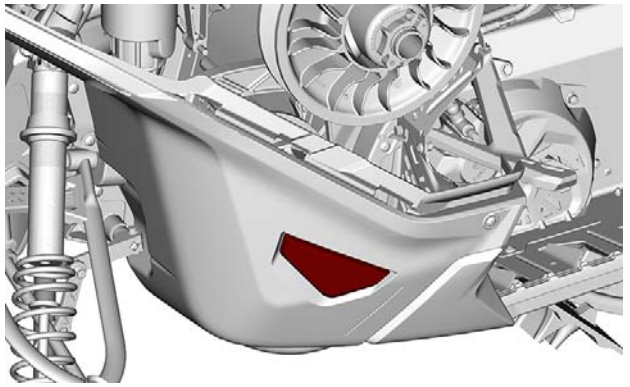
PROCEDURES

DRIVE PULLEY

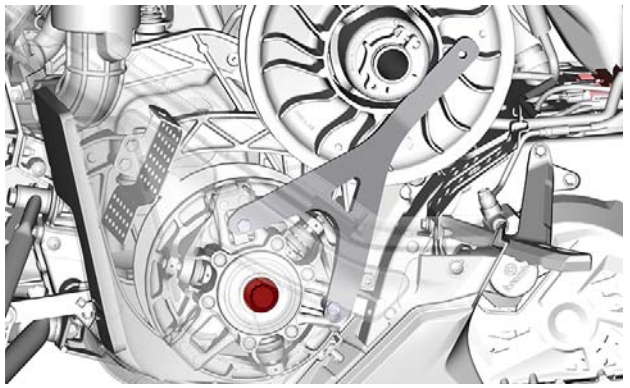
Removing the Drive Pulley

REQUIRED TOOLS	
CLUTCH HOLDER (P/N 529 036 369)	
PDRIVE PULLER (P/N 529 036 370)	

1. Remove drive belt. Refer to *DRIVE BELT* subsection.
2. Remove the drive pulley screw access cap from the LH hull.


219100985-018-012

3. Remove the drive pulley bolt.
   3.1 Secure the drive pulley with the clutch holder.
   3.2 Using a breaker bar, remove the drive pulley bolt and its conical spring washer.


219100985-018-013

4. Remove the drive pulley from engine.
   4.1 Make sure the clutches holder is properly installed.

4.2 Screw the pDrive puller in place of the drive pulley bolt.

4.3 Tighten the pDrive puller until pulley is disengaged from the crankshaft end.

NOTICE These pulleys have metric threads. Do not use a puller with ANS (American National Standard) or IS (International Standard) type threads. Always tighten puller by hand to ensure that the drive pulley has the same type of threads (metric vs ANS or IS) prior to fully tightening.

Disassembling the Drive Pulley

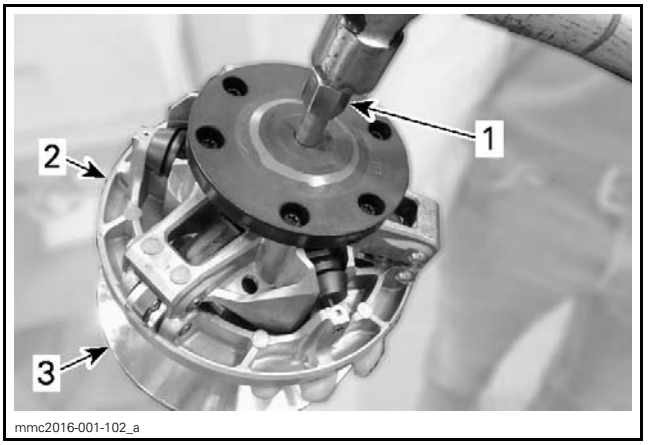
REQUIRED TOOLS	
PDRIVE PULLER (P/N 529 036 370)	
DRIVE PULLEY SUPPORT (P/N 529 036 371)	
PULLEY SPRING COMPRESSOR TOOL (P/N 529 036 373)	
CIRCLIP INSTALLER/REMOVER (P/N 529 036 375)	
REMOVING AXLE TOOL (P/N 529 036 372)	
DRIVE PULLEY OPENING TOOL (P/N 529 036 378)	

Separating Fixed and Sliding Sheaves

To separate fixed sheave from sliding sheave, screw puller into fixed sheave shaft about 13 mm (1/2 in).

Raise drive pulley and hold it by the sliding sheave while knocking on puller head to disengage fixed sheave.

NOTICE NEVER tap on spider.



mmc2016-001-102_a

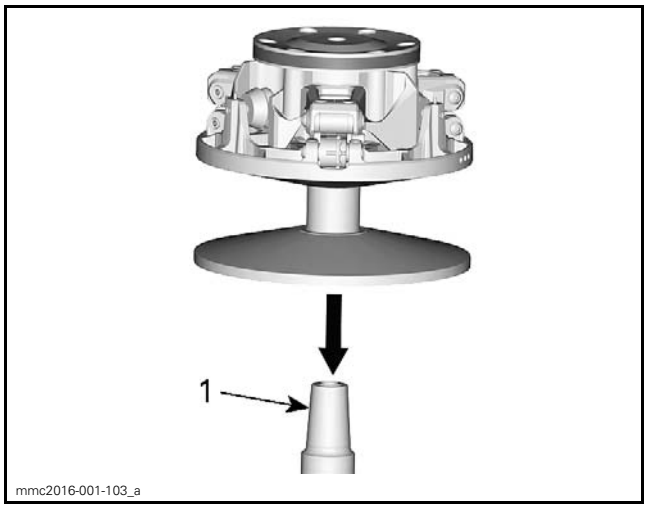
1. Puller screwed 13 mm (1/2 in) in fixed sheave
2. Sliding sheave
3. Fixed sheave

NOTE: No component marking is required before disassembly. This drive pulley features factory apposed index marks as references.

NOTICE Never use any type of torch to heat spider.

Removing the Damper

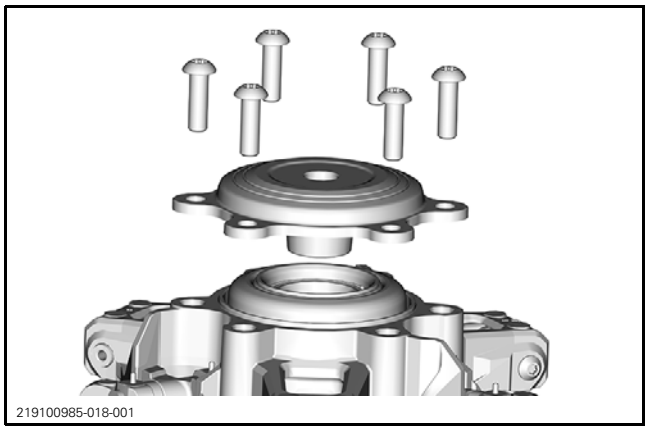
1. Secure the drive pulley support in a vice.
2. Install the drive pulley over the support.



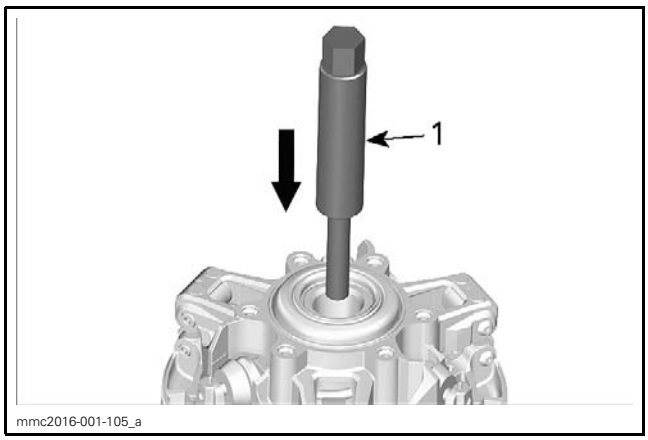
mmc2016-001-103_a

1. Drive pulley support

3. Remove the damper.

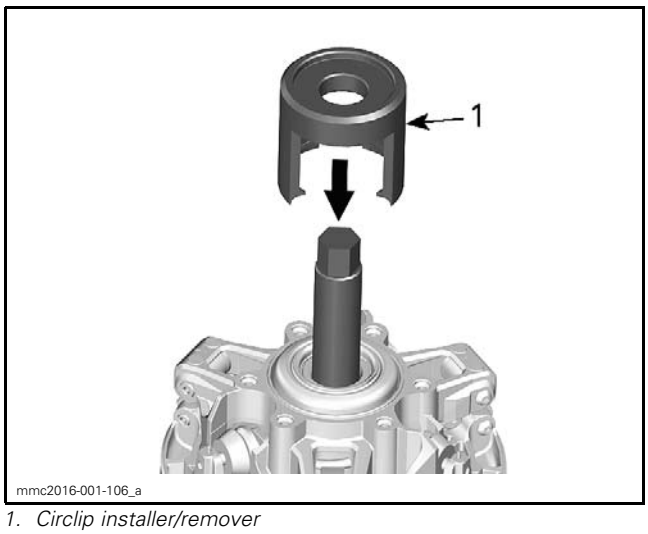

219100985-018-001

Removing the Spring



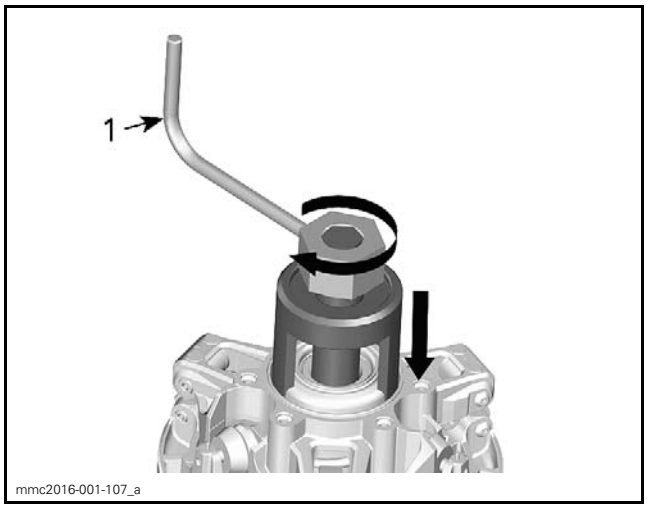
mmc2016-001-105_a

1. Threaded shaft of the pulley spring compressor



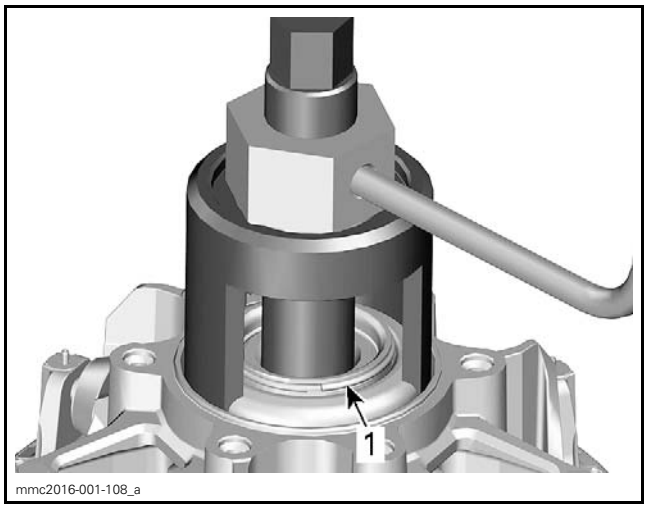
mmc2016-001-106_a

1. Circlip installer/remover



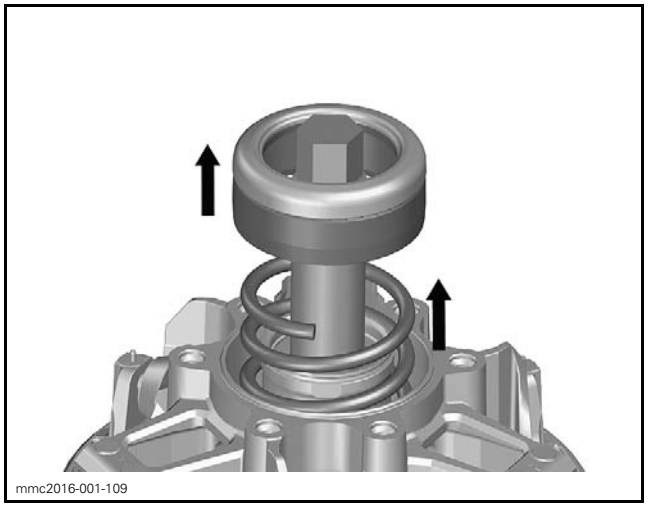
mmc2016-001-107_a

1. Handle of the pulley spring compressor



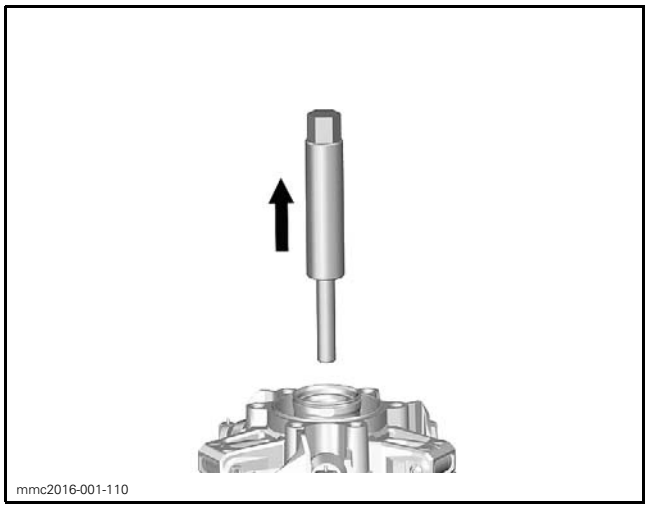
mmc2016-001-108_a

1. Remove the circlip


mmc2016-001-109

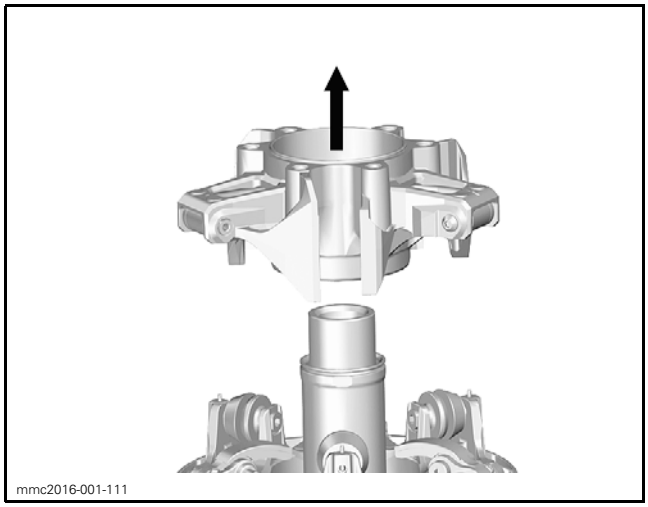
Removing the Spider

1. Remove the threaded shaft.


mmc2016-001-110

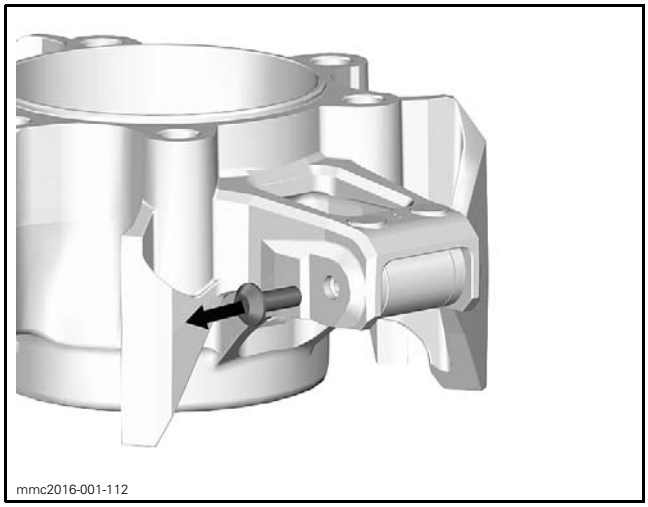
NOTICE Remove the threaded shaft to avoid damaging the bushings inside the spider.

2. Remove the spider.

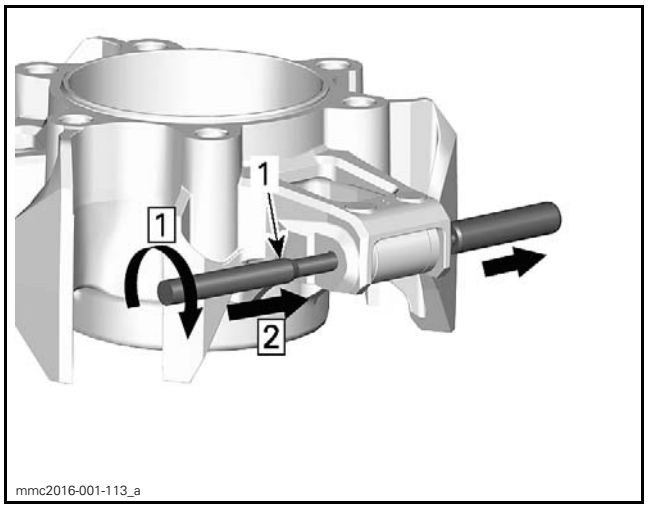

mmc2016-001-111

Removing the Roller

1. Remove axle retaining screw.


mmc2016-001-112

2. Remove the axle.

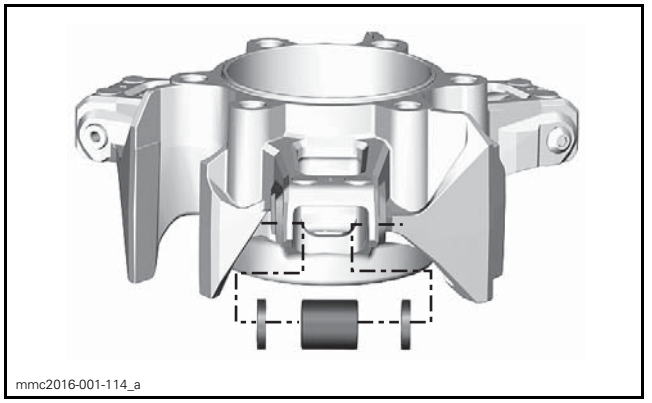


mmc2016-001-113_a

1. Removing axle tool

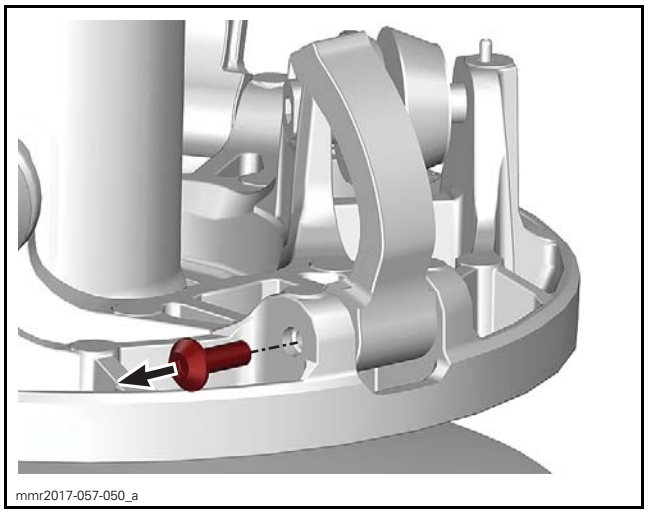
Step 1: Screw the tool into the axle
Step 2: Push axle to the right side

3. Remove the roller and its thrust washers.

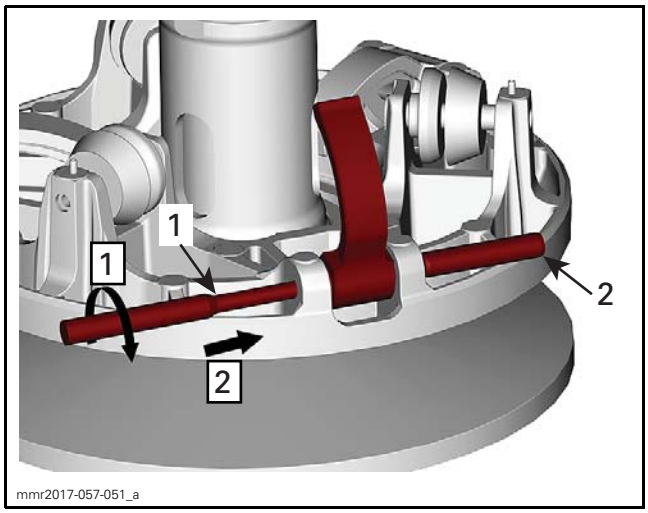

mmc2016-001-114_a

Removing the Ramp (without Spider)

1. Remove axle retaining screw.


mmr2017-057-050_a

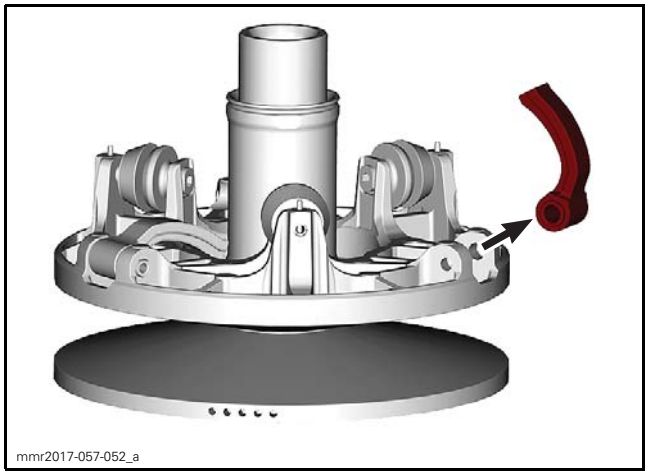
2. Remove the axle.



1. Removing axle tool
2. Axle

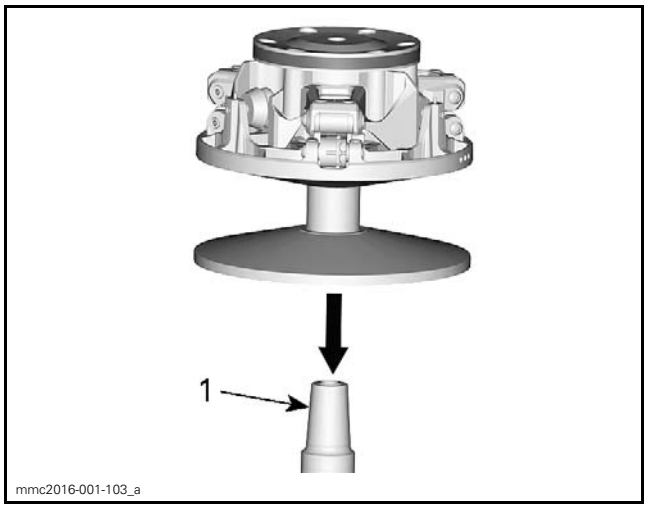
Step 1: Screw the tool into the axle
Step 2: Push axle to the right side

3. Remove ramp assembly.

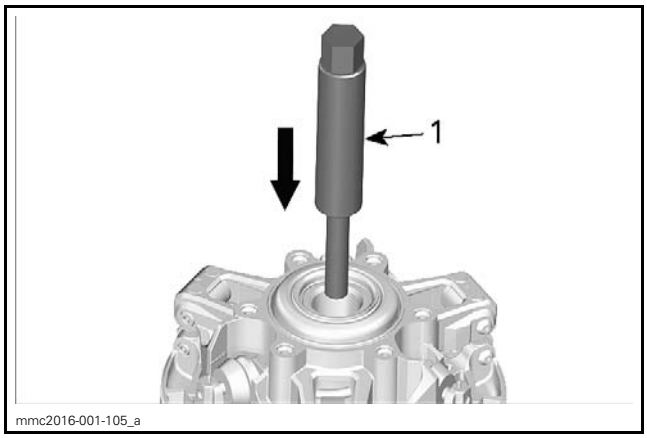


Removing the Ramp (Spider Installed)

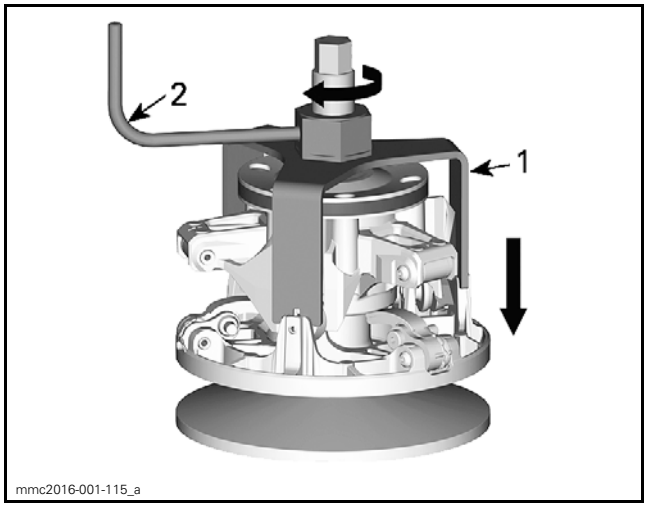
1. Lower the sliding sheave.
   1.1 Secure the drive pulley support in a vice.
   1.2 Install the drive pulley over the support.
   1.3 Install the drive pulley opening tool.



1. Drive pulley support

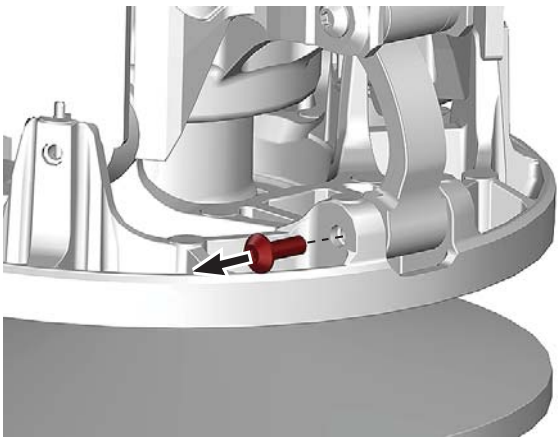


1. Threaded shaft of the pulley spring compressor

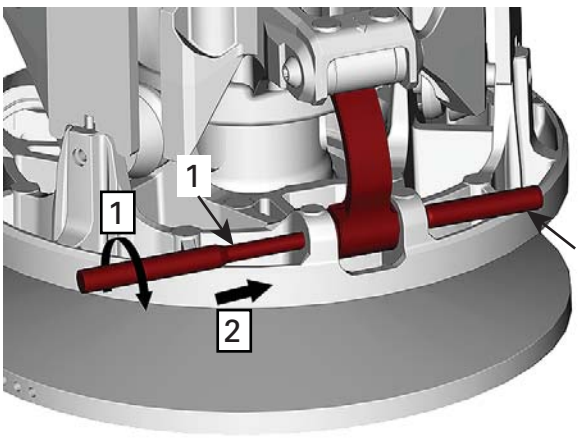


1. Drive pulley opening tool
2. Handle of the pulley spring compressor

2. Remove axle retaining screw.


mmr2017-057-053_a

3. Remove the axle.

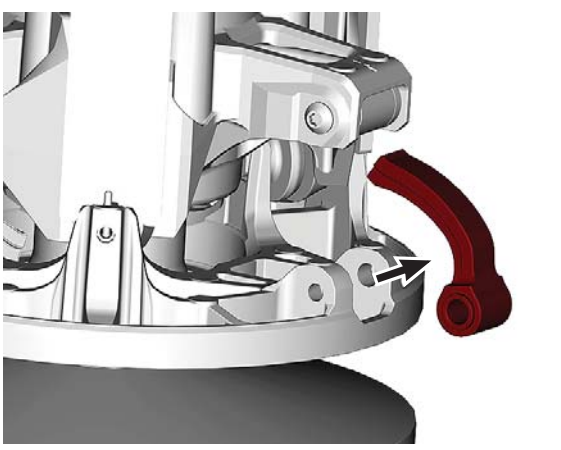


mmr2017-057-054_a

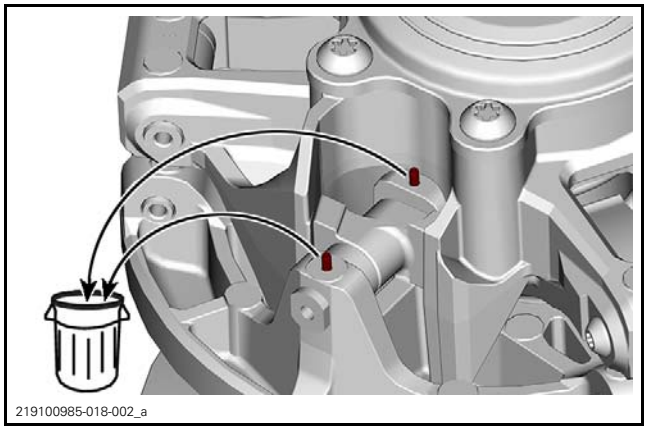
1. Removing axle tool
2. Axle

Step 1: Screw the tool into the axle
Step 2: Push axle to the right side

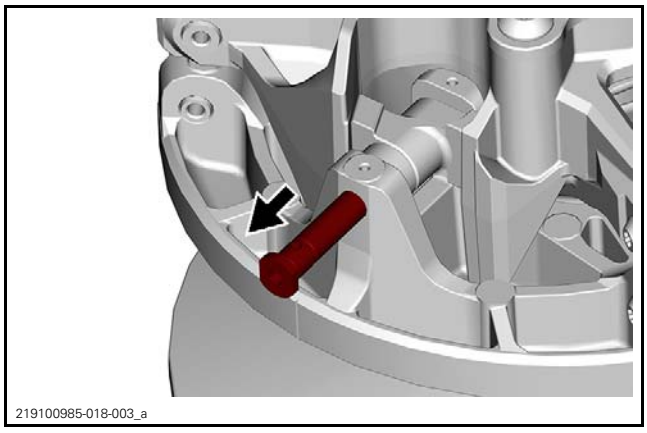
4. Remove ramp assembly.

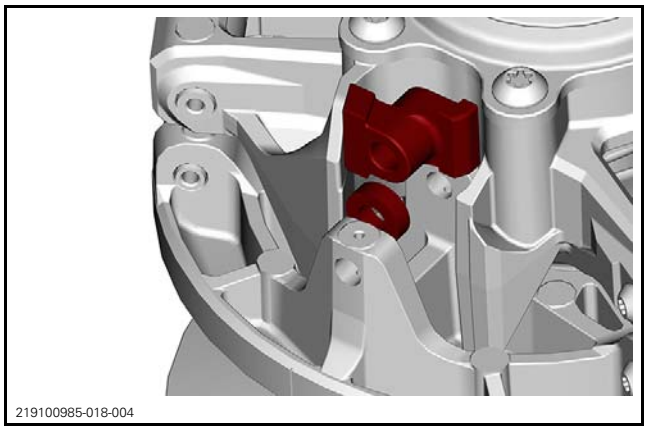

mmr2017-057-055_a

Removing the Torque Sliders (if equipped)


219100985-018-002_a

REQUIRED TOOL
Blind hole puller
M5 x 0.8 adaptor


219100985-018-003_a


219100985-018-004

Removing the Torque Rollers (if equipped)

Refer to *REMOVING THE TORQUE SLIDERS* procedure.

Replacing the Sliding Sheave Bushing

In case of worn out bushing, it is advisable to replace whole sliding sheave assembly as replacing just the bushing may reduce drive pulley performance.

Cleaning the Drive Pulley

NOTE: Parts must be at room temperature before cleaning.

Clean pulley sheaves and shaft with fine steel wool and dry cloth.

Using a paper towel and cleaner, clean the following components.

- Crankshaft tapered end
- Taper inside fixed sheave of drive pulley
- Crankshaft threads
- Retaining screw threads.

SERVICE PRODUCT
CLUTCH AND PULLEY FLANGE CLEANER PRO S1 (P/N 779244)

NOTICE Avoid contact between cleaner and crankshaft seal because damage may occur.

Remove all hardened oil deposits that are baked on crankshaft and pulley tapered surfaces with coarse or medium steel wool and/or sand paper no. 600.

NOTICE Do not use any other type of abrasive.

Reclean mounting surfaces with paper towel and cleaning solvent.

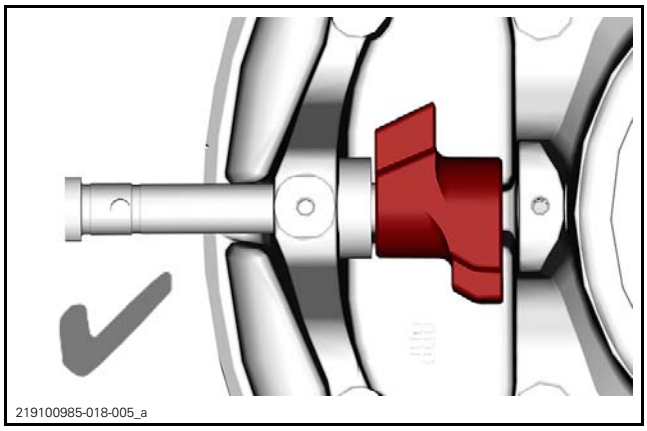
Wipe off the mounting surfaces with a clean, dry paper towel.

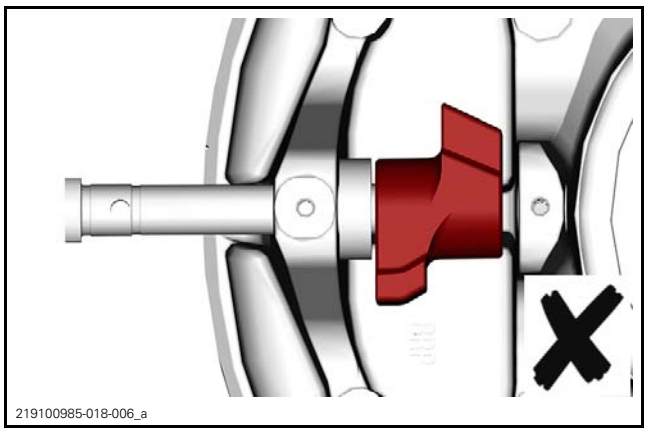
NOTICE Mounting surfaces must be free of any oil, cleaner or towel residue.

Assembling the Drive Pulley

Sliders

Position sliders as illustrated.

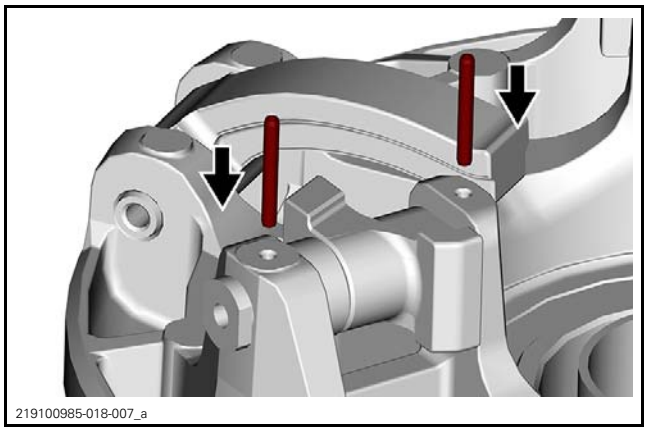




Position the flat sides of the axle head vertically.

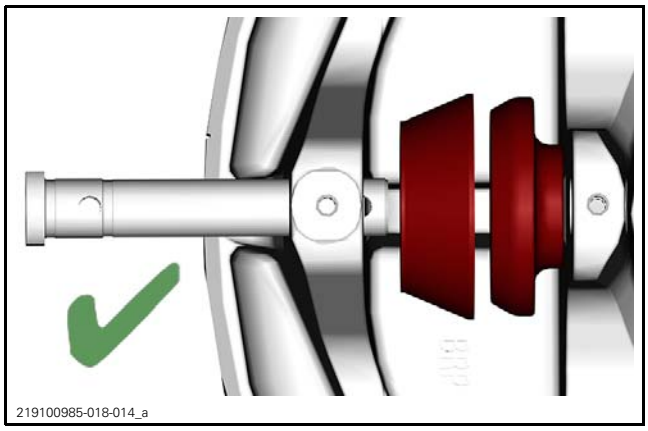
Use a C vise clamp to push the axle back in place.

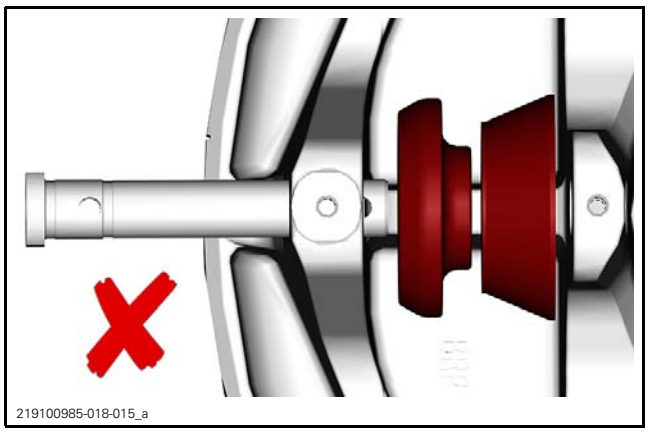
Install a new spring pin.



Torque Rollers

Position sliders as illustrated.

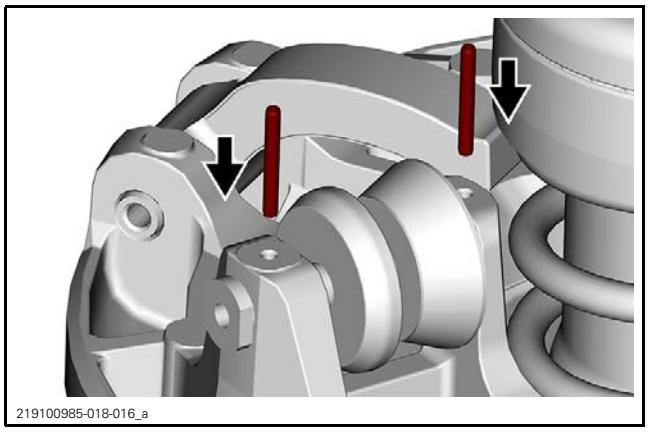




Position the flat sides of the axle head vertically.

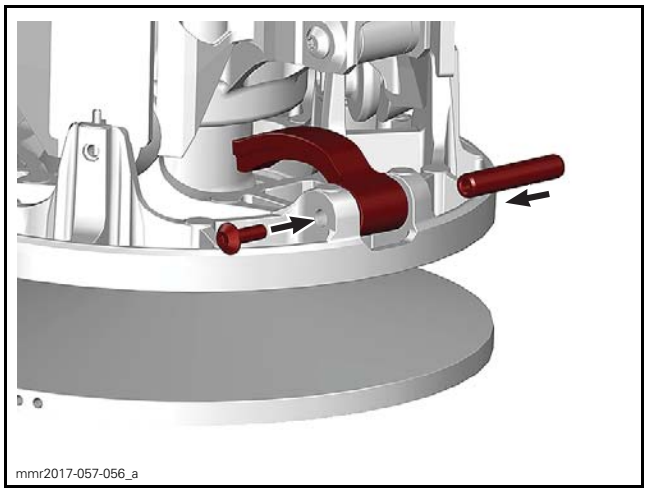
Use a C vise clamp to push the axle back in place.

Install a new spring pin.



Ramp

Install the ramp on the sliding sheave.



TIGHTENING TORQUE	
Axle screw	5 N•m ± 0.5 N•m (44 lbf•**in** ± 4 lbf•**in**)

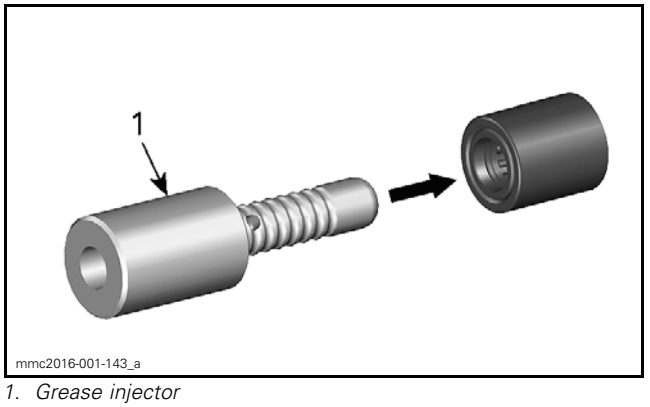
Roller

Lubricate the roller bearing.

REQUIRED SERVICE PRODUCT
ISOFLEX GREASE TOPAS NB 52 (P/N 293 550 021)

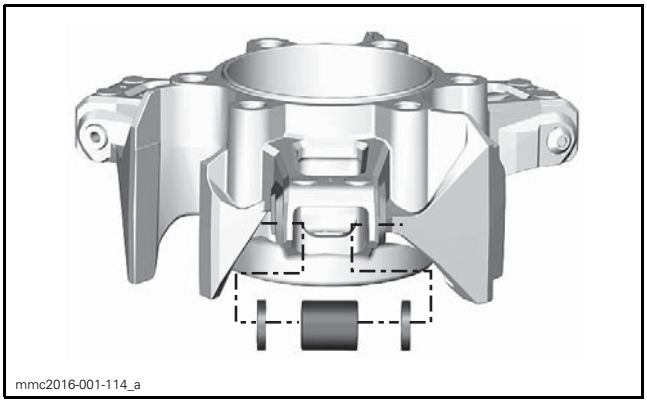
REQUIRED TOOL	
GREASE INJECTOR (P/N 529 036 376)	

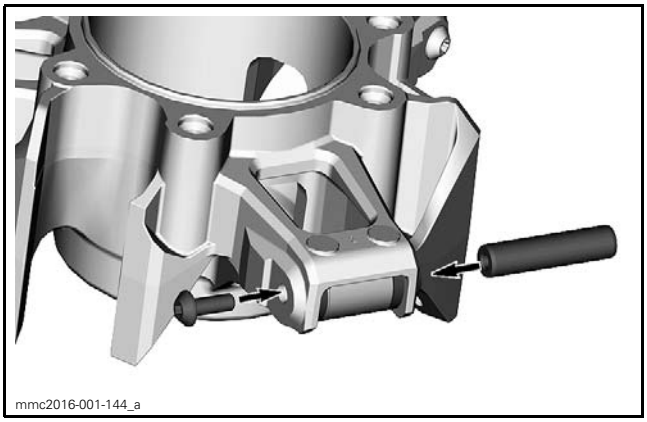
NOTE: A threaded end is required on the grease gun for using the grease injector.



1. Grease injector

Install roller.


mmc2016-001-114_a

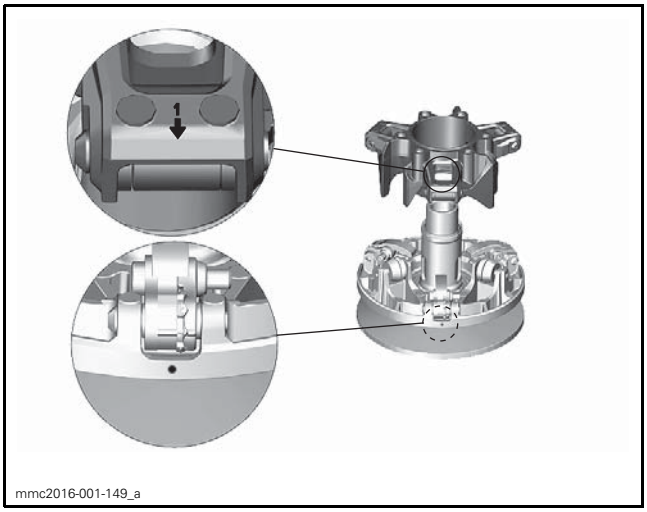

mmc2016-001-144_a

TIGHTENING TORQUE	
Roller axle screw	5 N•m ± 0.5 N•m (44 lbf•**in** ± 4 lbf•**in**)

Spider

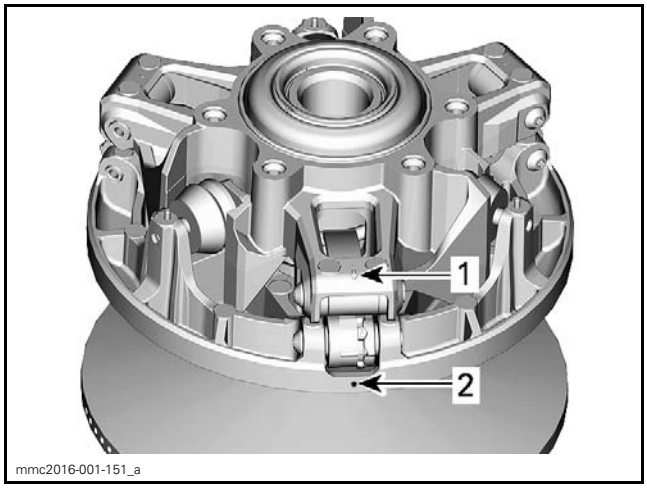
Install the spider on the sliding sheave by aligning the indexing marks.

– Spider - the arrow on the arms #1, just above the roller.
– Sliding sheave - the dot on the external side of the sheave.



mmc2016-001-149_a

TYPICAL

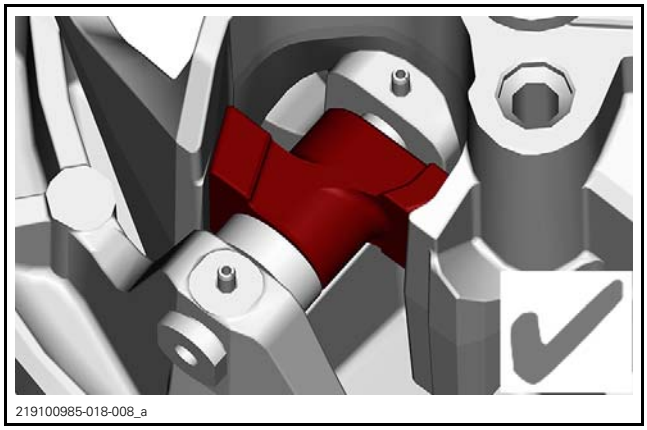


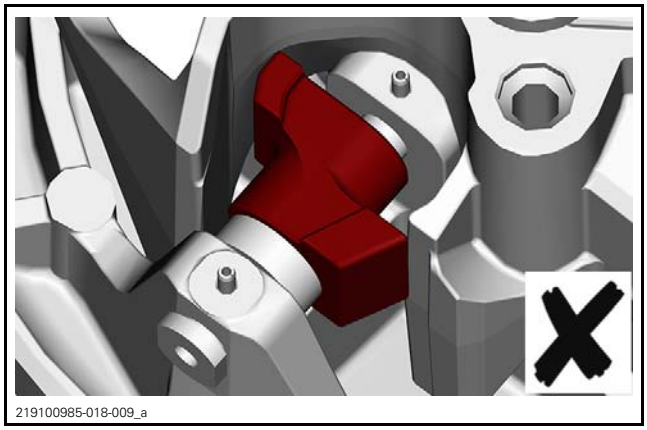
mmc2016-001-151_a

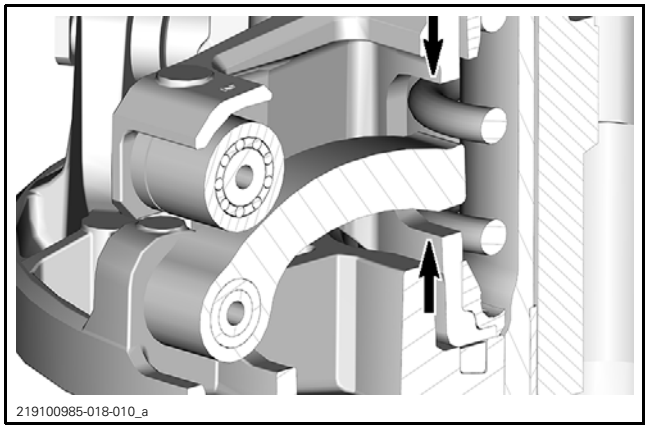
TYPICAL - FINAL POSITION
1. Arrow - spider arm
2. Dot - sliding sheave

With Sliders

NOTICE During installation of the spider, make sure to correctly position all three sliders with spider legs and ensure that ramps are positioned inside the openings of the spider.


219100985-018-008_a

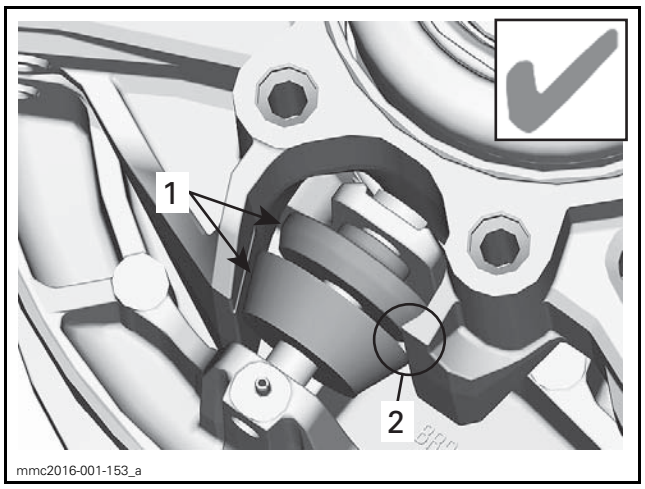

219100985-018-009_a



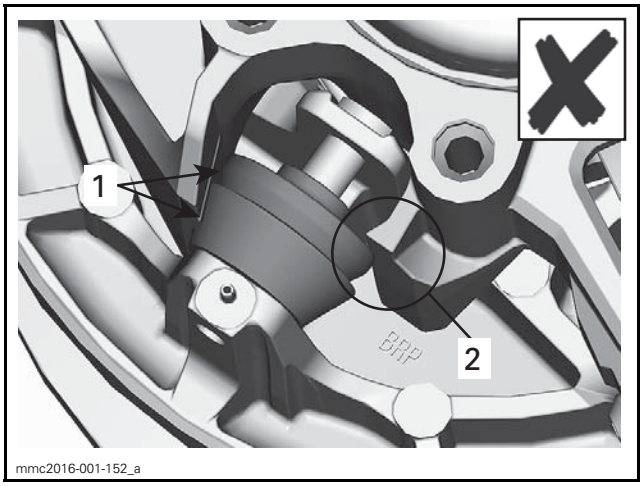
RAMP POSITIONING

With Torque Rollers

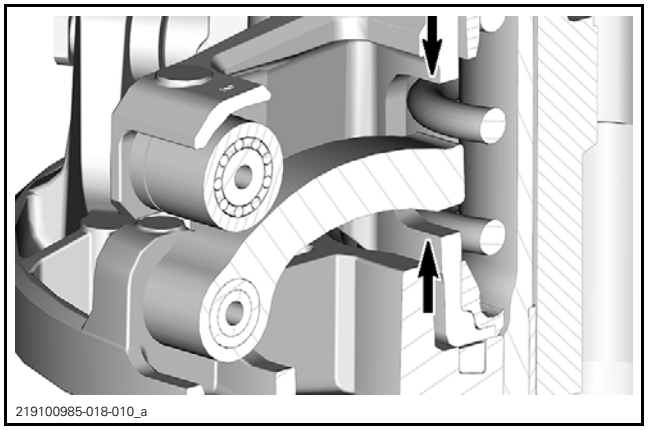
NOTICE During installation of the spider, make sure to position the three spurs of spider legs between torque rollers and ensure that ramps are positioned inside the openings of the spider.



ROLLER - GOOD INSTALLATION
1. *Torque rollers*
2. *Spur of the spider leg*



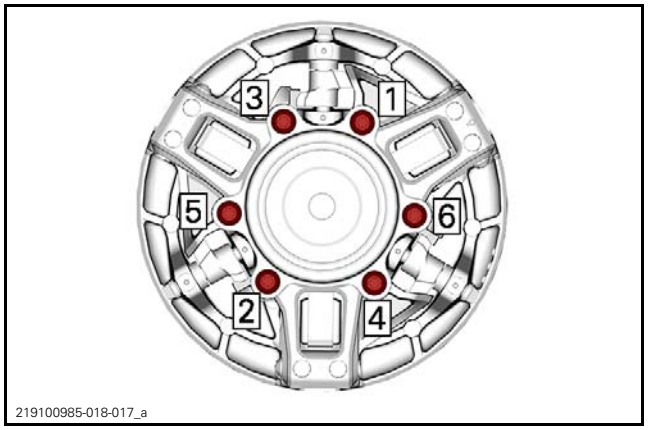
ROLLER - WRONG INSTALLATION
1. *Torque rollers*
2. *Spur of the spider leg*



RAMP POSITIONING

Damper

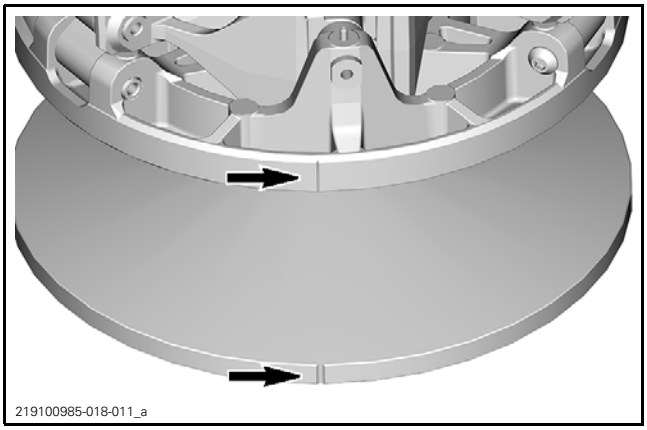
Install the damper using the following sequence.



TIGHTENING TORQUE	
Damper screws	31.5 N•m ± 3.5 N•m (23 lbf•ft ± 3 lbf•ft)

Sliding Sheave and Fixed Sheave Assembly

Index sliding sheave with fixed sheave by aligning index marks.



Drive Pulley Installation

REQUIRED TOOLS	
CLUTCH HOLDER (P/N 529 036 369)	

1. Clean mounting surfaces as described in *DRIVE PULLEY CLEANING* above.

NOTICE Do not apply antiseize or any lubricant on crankshaft and drive pulley tapers.

2. Install drive pulley on crankshaft end.

NOTE: The drive pulley can be installed in one position only. Drive pulley and crankshaft are indexed.

3. Install a NEW conical spring washer with its concave side towards drive pulley.
4. Install drive pulley bolt.

NOTICE Always use BRP genuine parts for conical spring washer and bolt.

5. Secure the drive pulley with the clutch holder.
6. Using a torque wrench, tighten the drive pulley bolt. Refer to *TIGHTENING THE DRIVE PULLEY* for the completed procedure.

Tightening the Drive Pulley

Tighten the drive pulley bolt.

TIGHTENING TORQUE		
Drive pulley bolt	First torque	120 N•m ± 5 N•m (89 lbf•ft ± 4 lbf•ft)

Before starting engine, perform drive pulley adjustment. Refer to *ADJUSTMENT*, at the beginning of this subsection.

Install drive belt and guard.

Raise the rear of the vehicle and support it with a mechanical stand.

⚠ WARNING

Ensure that the track is free of particles which could be thrown out while track is rotating. Keep hands, tools, feet and clothing clear of track. Ensure nobody is standing near the vehicle.

Accelerate the vehicle at low speed (maximum 32 km/h (20 MPH) and apply the brake, repeat 5 times.

Tighten the drive pulley bolt again.

TIGHTENING TORQUE		
Drive pulley bolt	Final torque	120 N•m ± 5 N•m (89 lbf•ft ± 4 lbf•ft)

⚠ WARNING

After 10 hours of operation the transmission system of the vehicle must be inspected to ensure drive pulley bolt is still properly torqued.

DRIVE PULLEY (E-TEC)

SERVICE TOOLS

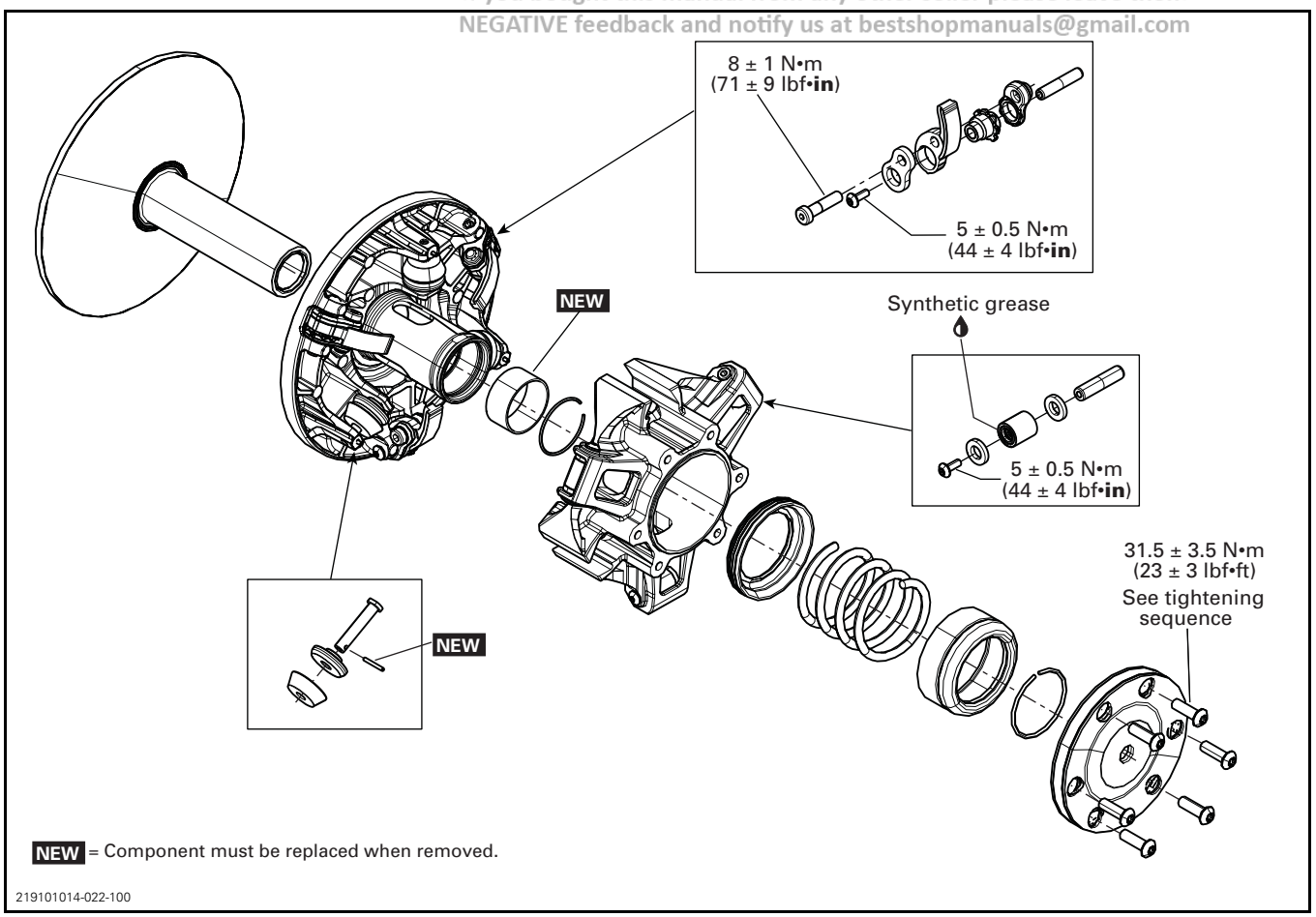
Description	Part Number	Page
CIRCLIP INSTALLER/REMOVER	529 036 375	214–215
CLUTCH HOLDER	529 036 369	213, 222
DRIVE PULLEY OPENING TOOL	529 036 378	214, 218
DRIVE PULLEY SUPPORT	529 036 371	214–215, 217
GREASE INJECTOR	529 036 376	220
PDRIVE PULLER	529 036 370	213–214
PULLEY SPRING COMPRESSOR TOOL	529 036 373	214–215, 217–218
REMOVING AXLE TOOL	529 036 372	214, 216–218

SERVICE PRODUCTS

Description	Part Number	Page
CLUTCH AND PULLEY FLANGE CLEANER PRO S1	779244	219
ISOFLEX GREASE TOPAS NB 52	293 550 021	220

Midwest Manuals
Green Manuals
Paperless Manuals
For a Better Tomorrow
www.green-manuals.com
If you bought this manual from any other seller please leave them
NEGATIVE feedback and notify us at bestshopmanuals@gmail.com

WITH CLICKER



GENERAL

The pDrive pulleys are lubrication-free drive pulleys. Only the needle bearings inside the rollers need to be lubricated when replaced.

Always refer to appropriate *PARTS CATALOG* for replacement parts.

NOTICE Never use any type of impact wrench for drive pulley removal and installation. The use of impact wrench could damage the drive pulley and modify the calibration.

Some drive pulley components (like the spring and ramps) can be changed to improve vehicle performance in high altitude regions. A Service Bulletin provides information about calibration according to altitude.

NOTICE Such modifications should only be performed by experienced mechanics since they can greatly affect vehicle performance. Verify spring specifications before installation. Do not only refer to the spring color code.

⚠ WARNING

Any drive pulley repairs must be performed by an authorized Ski-Doo dealer. Subcomponent installation and assembly tolerances require strict adherence to procedures detailed.

During assembly/installation, use torque values as in the exploded view.

Clean threads before applying a threadlocker. Refer to *SELF-LOCKING FASTENERS* and *LOCTITE APPLICATION* at the beginning of this manual for complete procedure.

⚠ WARNING

Torque wrench tightening specifications must be strictly adhered to.
Locking devices must be replaced with new ones when removed (e.g.: locking tabs, elastic stop nuts, cotter pins, etc.).

ADJUSTMENT

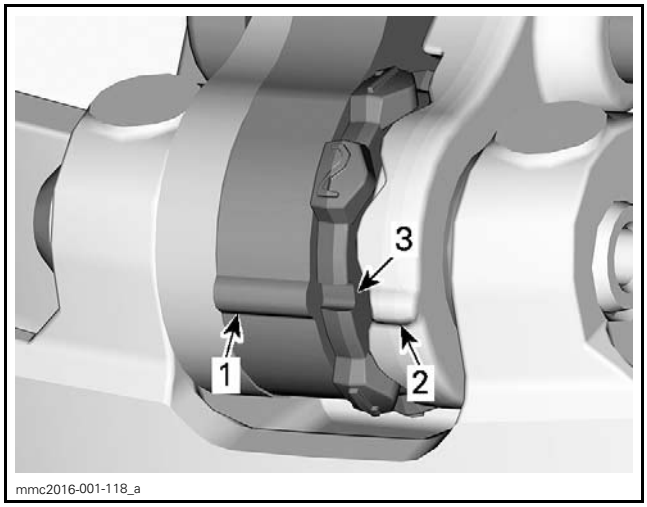
The drive pulley is factory calibrated to transmit maximum engine power at a predefined RPM. Factors such as ambient temperature, altitude or surface condition may vary this critical engine RPM thus affecting snowmobile efficiency.

This adjustable drive pulley allows setting maximum engine RPM in the vehicle to maintain maximum power. The adjustment has an effect on high RPM only.

Ramp cam should be adjusted so that actual maximum engine RPM in vehicle matches the maximum horsepower RPM given in *TECHNICAL SPECIFICATIONS*.

To adjust, modify ramp end position by turning ramp cams (3x).

The ramp and the right lever have a notch while ramp cam has 5 positions numbered 1 to 5.



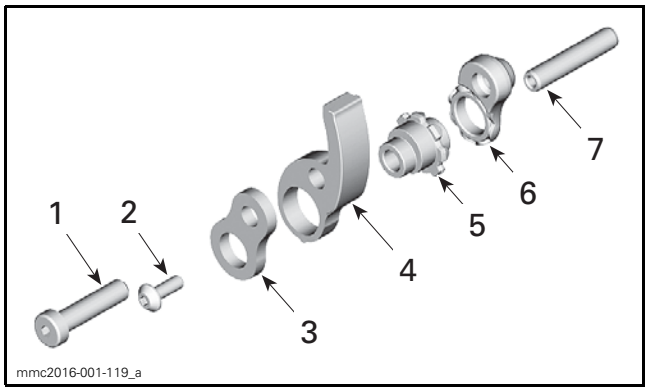
1. Ramp notch
2. Right lever notch
3. Cam position (here #3)

Each number modifies maximum engine RPM by about 200 RPM.

Lower numbers decrease engine RPM in steps of 200 RPM and higher numbers increase it in steps of 200 RPM.

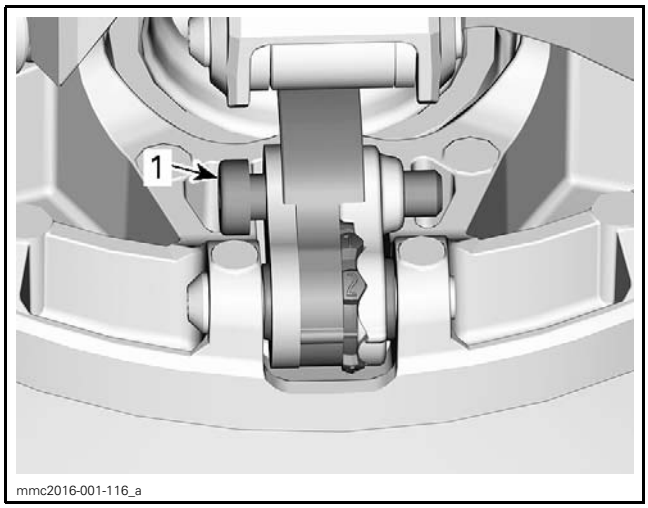
For example: If ramp cam is set at position 3 and is changed to position 5, the maximum engine RPM is increased by about 400 RPM.

MODIFYING THE RAMP CAM SETTING



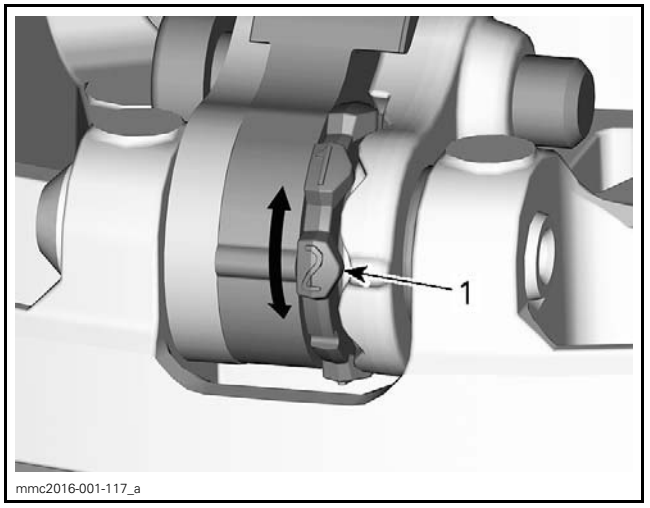
1. *Pivot*
2. *Axle retaining screw*
3. *Left lever*
4. *Ramp*
5. *Cam*
6. *Right lever*
7. *Axle*

1. Loosen the pivot.



1. *Pivot*

2. Move right lever aside to be able to turn the cam.
3. Turn cam to the desired position.



1. *Desired cam position (here #2)*

TIGHTENING TORQUE	
Pivot	8 N•m ± 1 N•m (71 lbf•**in** ± 9 lbf•**in**)

For factory setting, refer to *SPECIFICATIONS (VEHICLE)*.

NOTICE Always adjust all 3 cams and make sure they are all set at the same number.

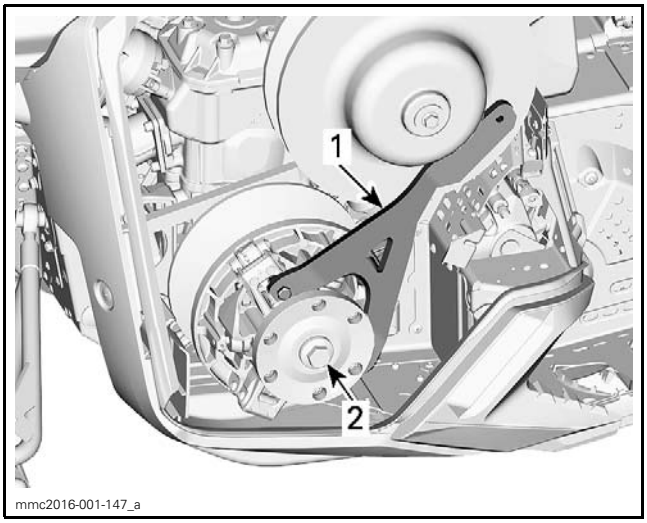
PROCEDURES

DRIVE PULLEY

Removing the Drive Pulley

REQUIRED TOOLS	
CLUTCH HOLDER (P/N 529 036 369)	
PDRIVE PULLER (P/N 529 036 370)	

1. Remove drive belt. Refer to *DRIVE BELT* subsection.
2. Remove the drive pulley bolt.
   2.1 Secure the drive pulley with the clutch holder.
   2.2 Using a breaker bar, remove the drive pulley bolt and its conical spring washer.



1. Clutches holder
2. Drive pulley bolt

3. Remove the drive pulley from engine.
   3.1 Make sure the clutches holder is properly installed.
   3.2 Screw the pDrive puller in place of the drive pulley bolt.
   3.3 Tighten the pDrive puller until pulley is disengaged from the crankshaft end.

NOTICE These pulleys have metric threads. Do not use a puller with ANS (American National Standard) or IS (International Standard) type threads. Always tighten puller by hand to ensure that the drive pulley has the same type of threads (metric vs ANS or IS) prior to fully tightening.

Disassembling the Drive Pulley

REQUIRED TOOLS	
PDRIVE PULLER (P/N 529 036 370)	
DRIVE PULLEY SUPPORT (P/N 529 036 371)	
PULLEY SPRING COMPRESSOR TOOL (P/N 529 036 373)	

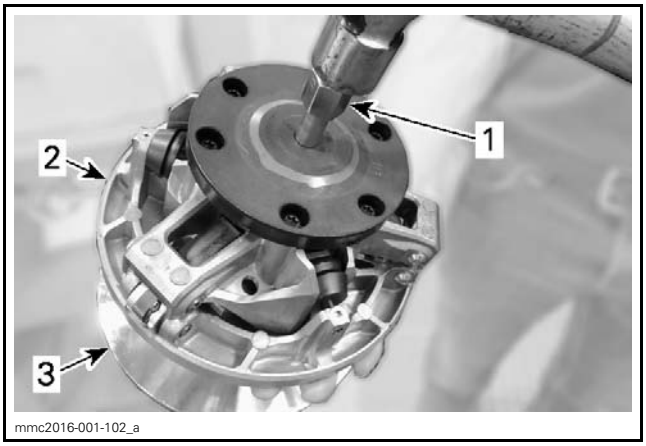
REQUIRED TOOLS	
CIRCLIP INSTALLER/REMOVER (P/N 529 036 375)	
REMOVING AXLE TOOL (P/N 529 036 372)	
DRIVE PULLEY OPENING TOOL (P/N 529 036 378)	

Separating Fixed and Sliding Sheaves

To separate fixed sheave from sliding sheave, screw puller into fixed sheave shaft about 13 mm (1/2 in).

Raise drive pulley and hold it by the sliding sheave while knocking on puller head to disengage fixed sheave.

NOTICE NEVER tap on spider.



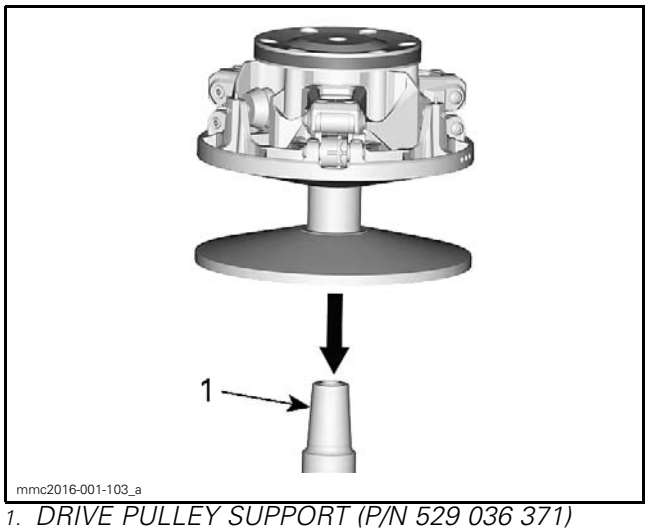
1. Puller screwed 13 mm (1/2 in) in fixed sheave
2. Sliding sheave
3. Fixed sheave

NOTE: No component marking is required before disassembly. This drive pulley features factory apposed index marks as references.

NOTICE Never use any type of torch to heat spider.

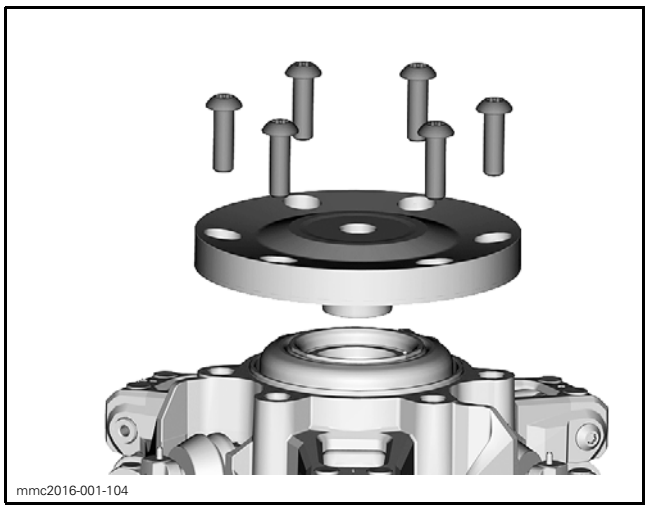
Removing the Damper

1. Secure the drive pulley support in a vice.
2. Install the drive pulley on the support.

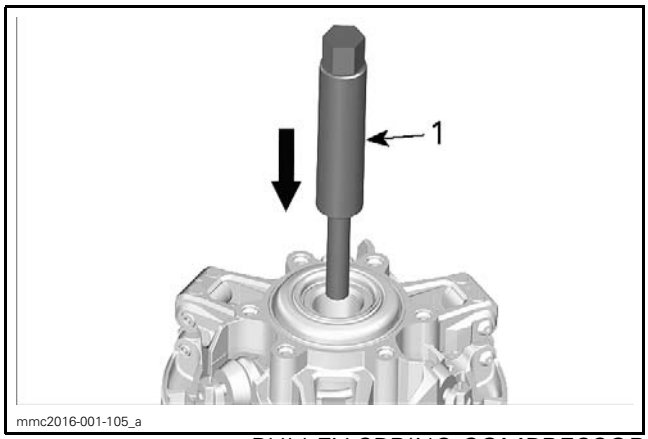


1. DRIVE PULLEY SUPPORT (P/N 529 036 371)

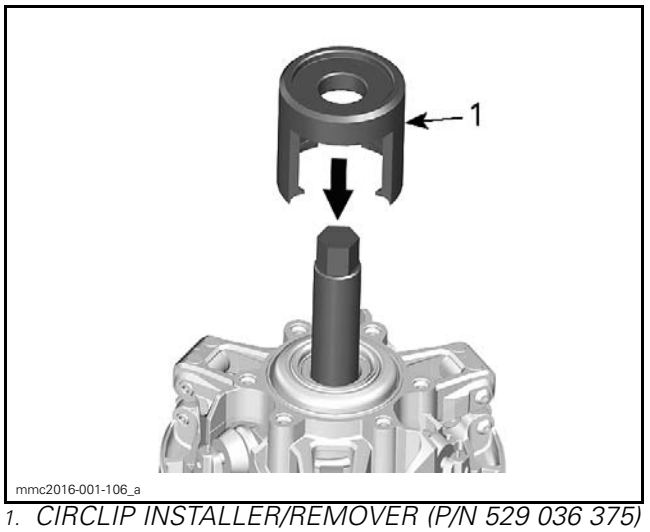
3. Loosen the damper screws.
4. Separate fixed and sliding sheaves. Refer to procedure above.
5. Remove the damper.



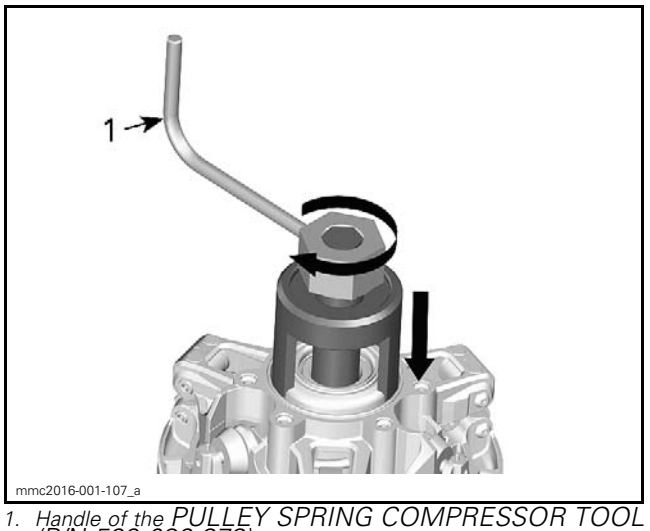
Removing the Spring



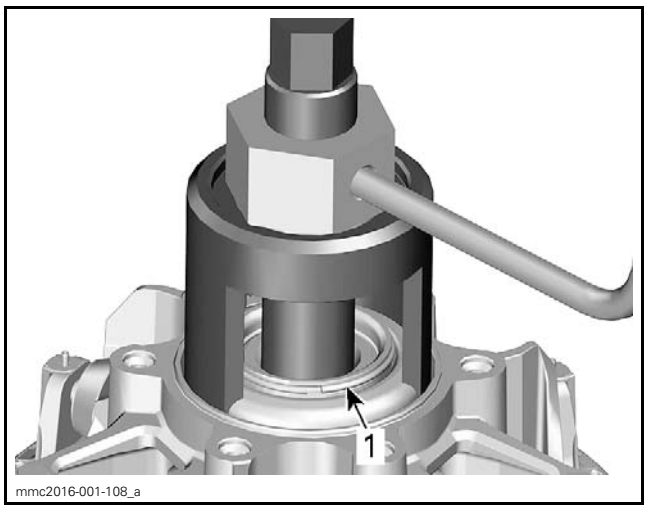
1. Threaded shaft of the PULLEY SPRING COMPRESSOR TOOL (P/N 529 036 373)



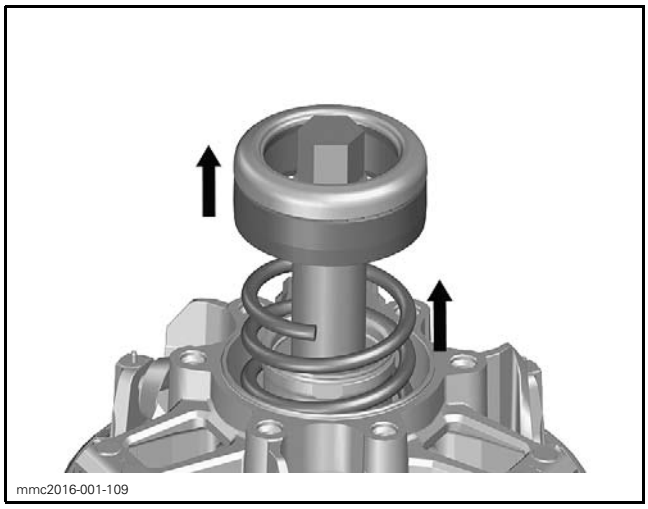
1. CIRCLIP INSTALLER/REMOVER (P/N 529 036 375)



1. Handle of the PULLEY SPRING COMPRESSOR TOOL (P/N 529 036 373)

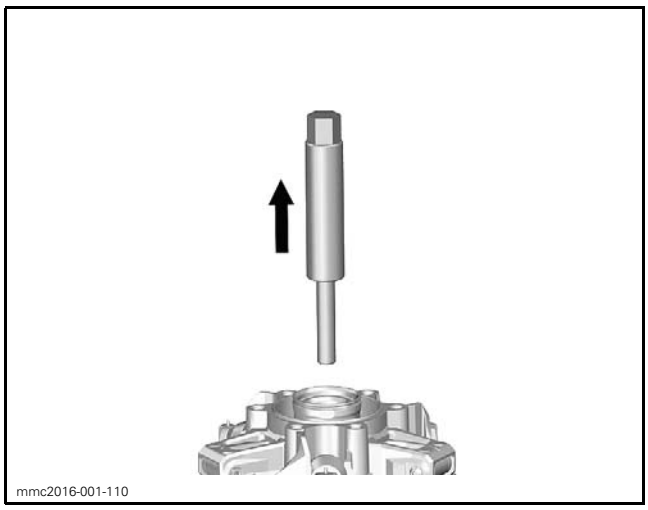


1. Remove the circlip


mmc2016-001-109

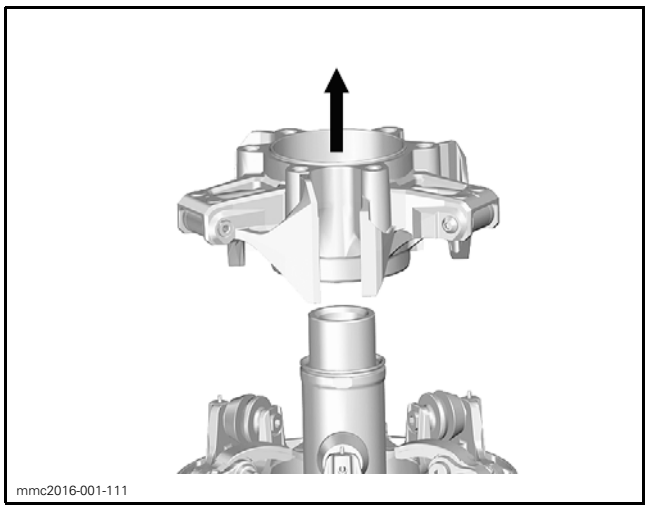
Removing the Spider

1. Remove the threaded shaft.


mmc2016-001-110

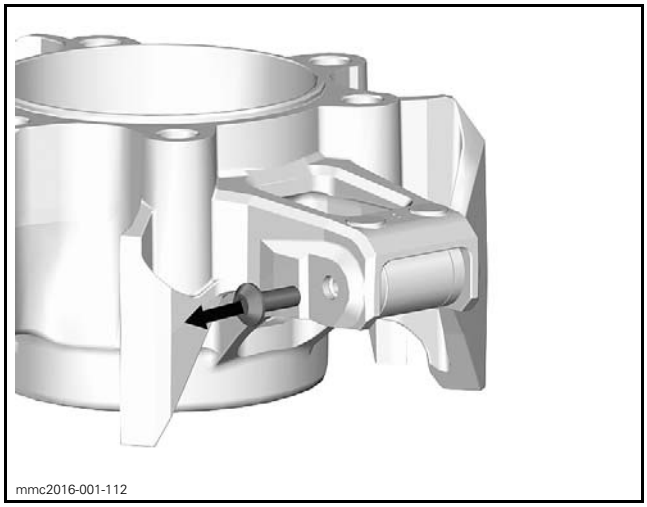
NOTICE Remove the threaded shaft to avoid damaging the bushings inside the spider.

2. Remove the spider.

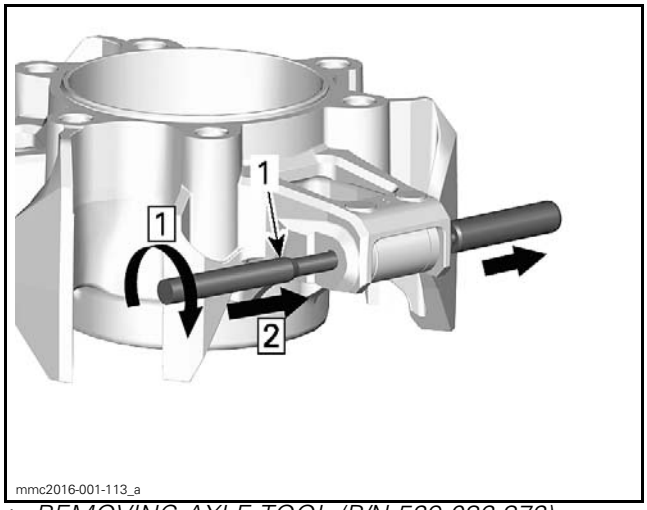

mmc2016-001-111

Removing the Roller

1. Remove axle retaining screw.


mmc2016-001-112

2. Remove the axle.

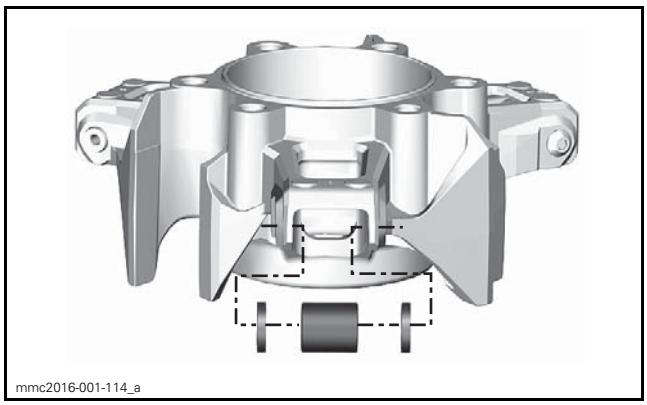


mmc2016-001-113_a

1. REMOVING AXLE TOOL (P/N 529 036 372)

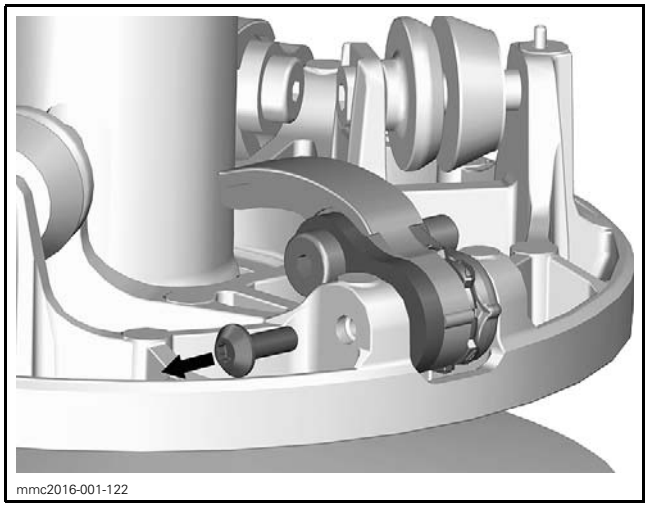
Step 1: Screw the tool into the axle
Step 2: Push axle to the right side

3. Remove the roller and its thrust washers.


mmc2016-001-114_a

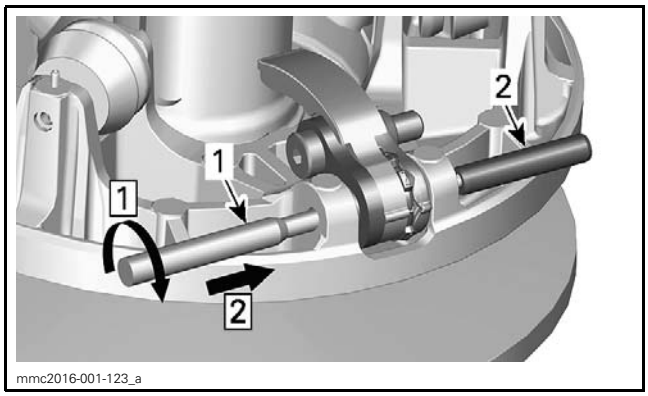
Removing the Ramp (without Spider)

1. Remove axle retaining screw.



TYPICAL

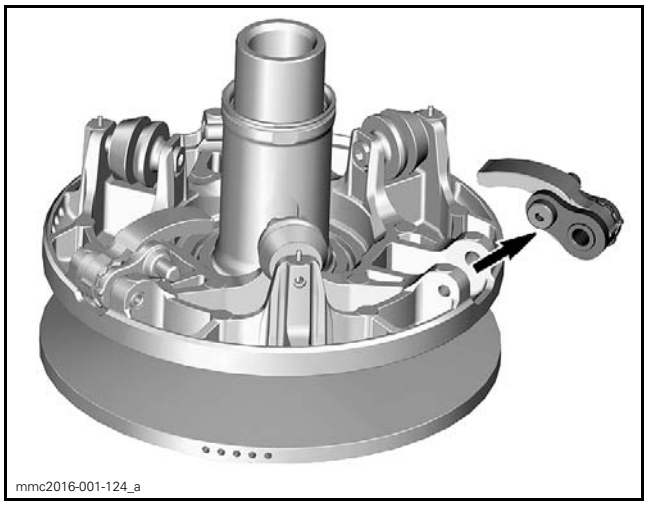
2. Remove the axle.



TYPICAL
1. REMOVING AXLE TOOL (P/N 529 036 372)
2. Axle

Step 1: Screw the tool into the axle
Step 2: Push axle to the right side

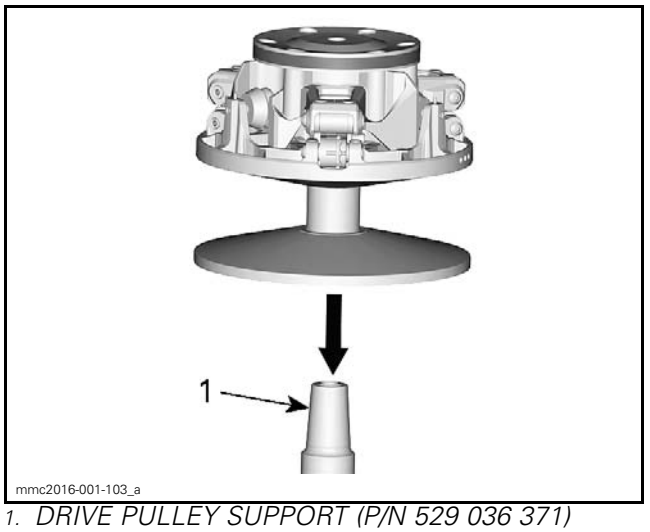
3. Remove ramp assembly.



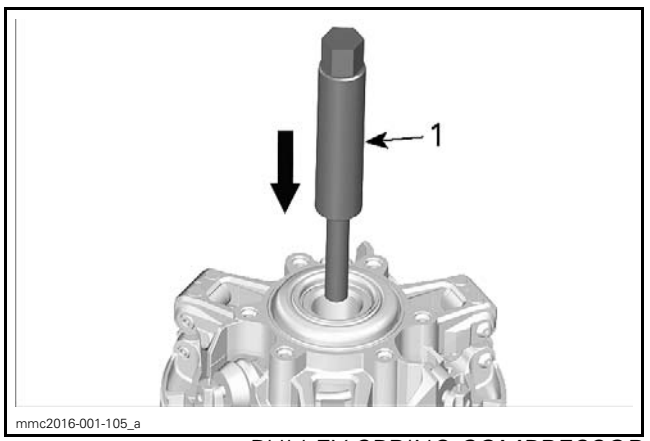
TYPICAL

Removing the Ramp (Spider Installed)

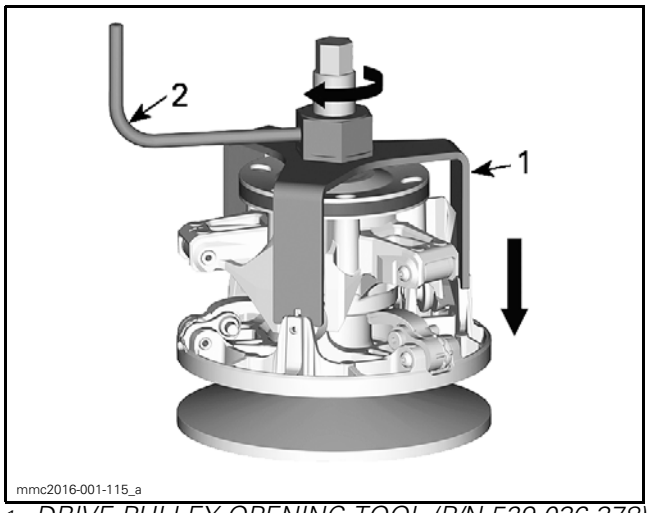
1. Lower the sliding sheave.
   1.1 Secure the drive pulley support in a vice.
   1.2 Install the drive pulley over the support.
   1.3 Install the drive pulley opening tool.



1. DRIVE PULLEY SUPPORT (P/N 529 036 371)

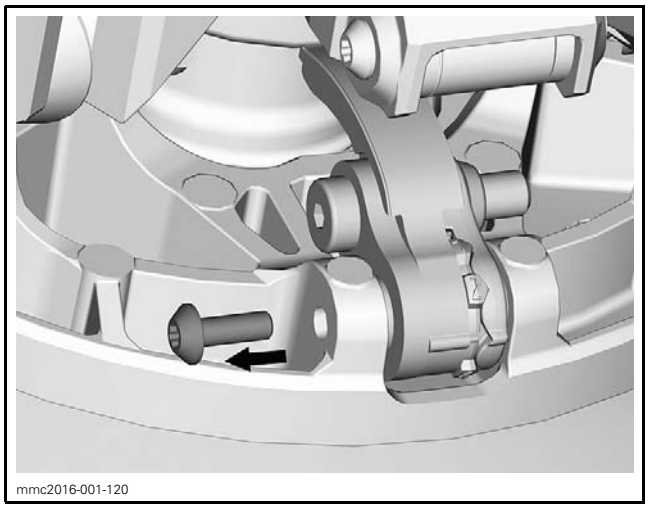


1. Threaded shaft of the PULLEY SPRING COMPRESSOR TOOL (P/N 529 036 373)

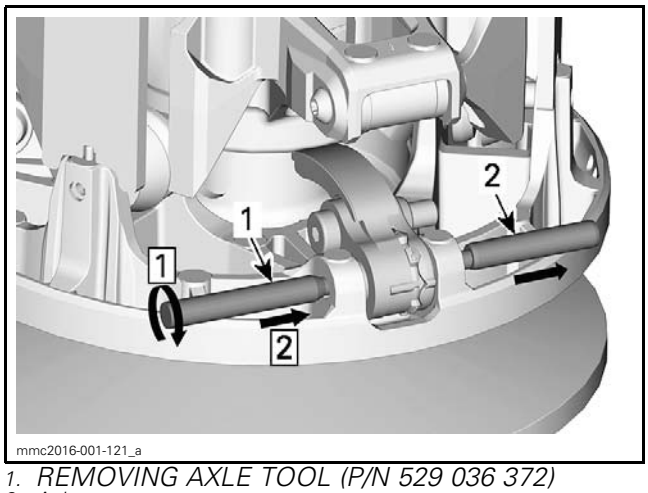


1. *DRIVE PULLEY OPENING TOOL (P/N 529 036 378)*
2. *Handle of the PULLEY SPRING COMPRESSOR TOOL (P/N 529 036 373)*

2. Remove axle retaining screw.



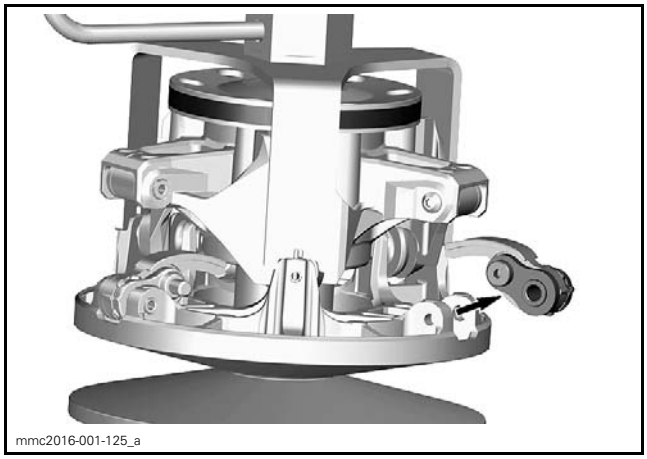
3. Remove the axle.



1. *REMOVING AXLE TOOL (P/N 529 036 372)*
2. *Axle*

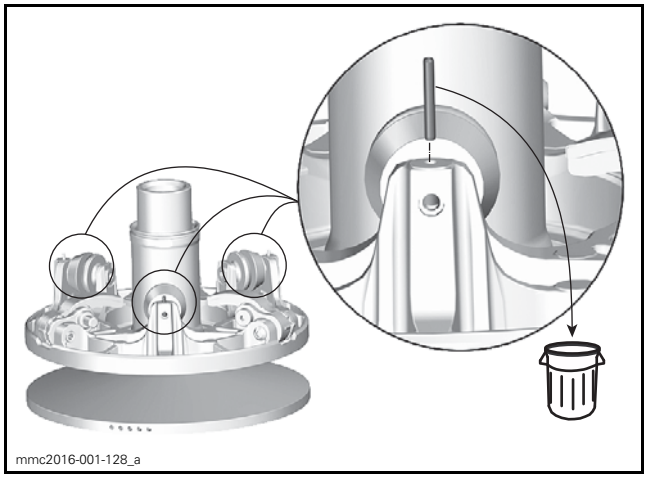
Step 1: Screw the tool into the axle
Step 2: Push axle to the right side

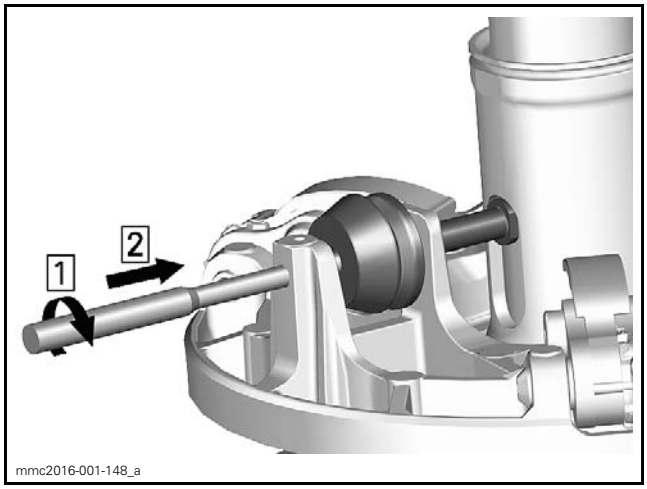
4. Remove ramp assembly.



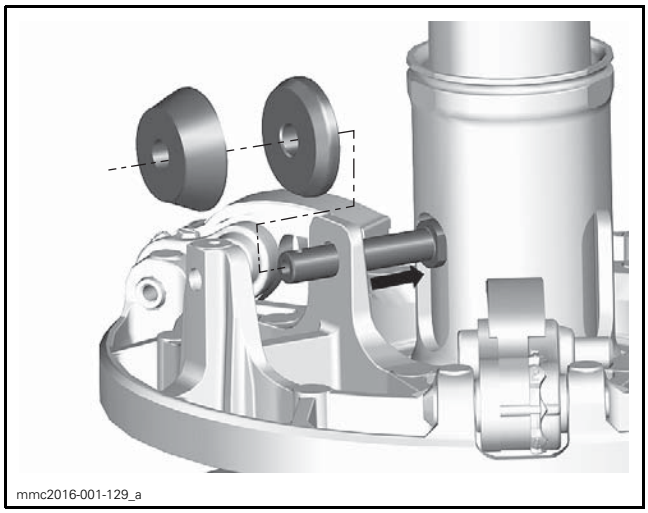
TYPICAL

Removing the Torque Rollers





Step 1: Screw the tool into the axle
Step 2: Push axle towards the center of the pulley


mmc2016-001-129_a

Replacing the Sliding Sheave Bushing

In case of worn out bushing, it is advisable to replace whole sliding sheave assembly as replacing just the bushing may reduce drive pulley performance.

Cleaning the Drive Pulley

NOTE: Parts must be at room temperature before cleaning.

Clean pulley sheaves and shaft with fine steel wool and dry cloth.

SERVICE PRODUCT
CLUTCH AND PULLEY FLANGE CLEANER PRO S1 (P/N 779244) + paper towel

Clean the following components.
- Crankshaft tapered end
- Taper inside fixed sheave of drive pulley
- Crankshaft threads
- Retaining screw threads.

NOTICE Avoid contact between cleaner and crankshaft seal because damage may occur.

Remove all hardened oil deposits that are baked on crankshaft and pulley tapered surfaces with coarse or medium steel wool and/or sand paper no. 600.

NOTICE Do not use any other type of abrasive.

Reclean mounting surfaces with paper towel and cleaning solvent.

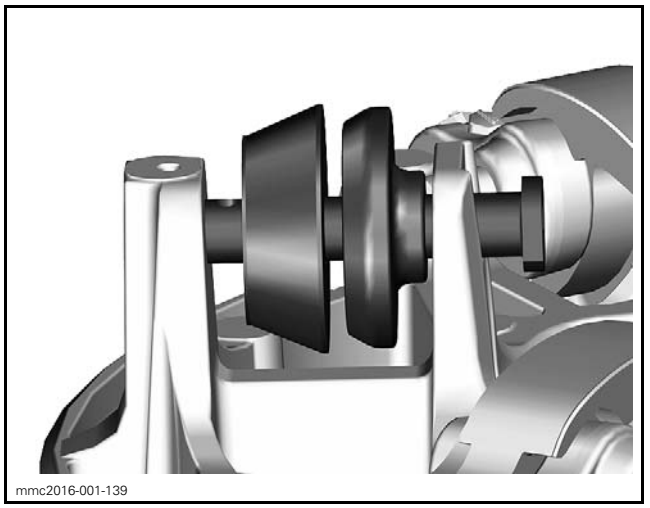
Wipe off the mounting surfaces with a clean, dry paper towel.

NOTICE Mounting surfaces must be free of any oil, cleaner or towel residue.

Assembling the Drive Pulley

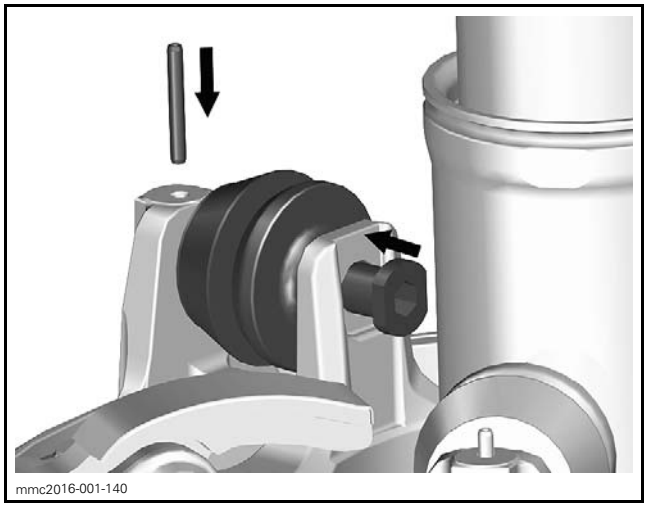
Torque Rollers

Position torque rollers as illustrated.


mmc2016-001-139

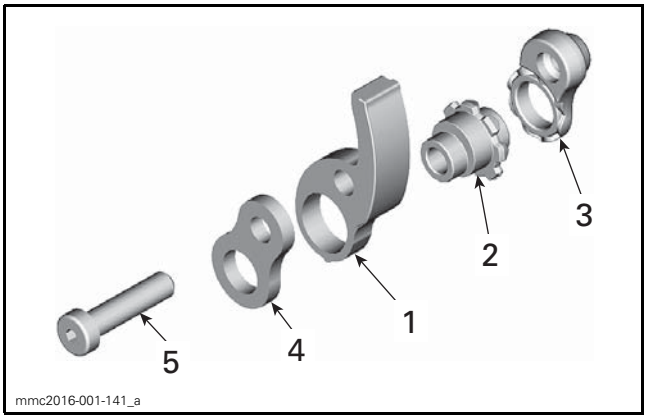
Position the flat sides of the axle head inside the slot of the mounting lug.

Install a new spring pin.


mmc2016-001-140

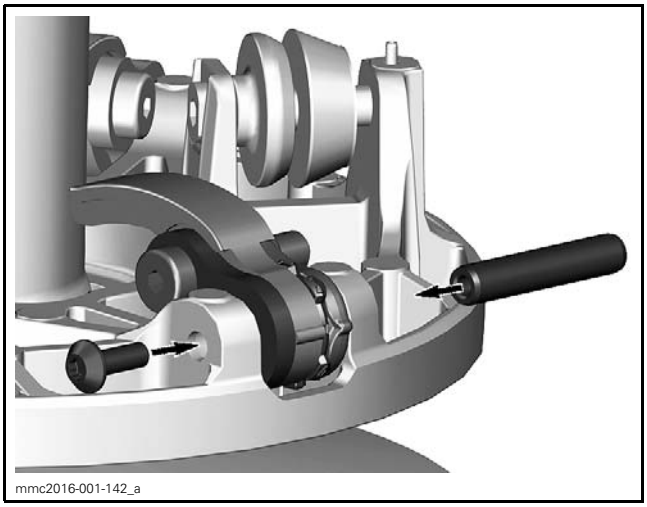
Ramp

Assemble the ramp as illustrated. Do not torque the pivot yet.



1. *Ramp*
2. *Cam*
3. *Right lever*
4. *Left lever*
5. *Pivot*

Install the ramp assembly on the sliding sheave.



TIGHTENING TORQUE	
Axle screw	5 N•m ± 0.5 N•m (44 lbf•**in** ± 4 lbf•**in**)

Position the cam to the desired position.

For factory setting, refer to *SPECIFICATIONS (VEHICLE)*.

NOTICE Make sure all cams are set at the same number.

TIGHTENING TORQUE	
Pivot	8 N•m ± 1 N•m (71 lbf•**in** ± 9 lbf•**in**)

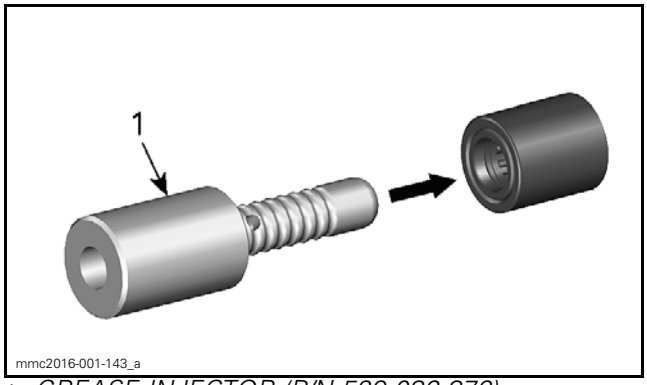
Roller

Lubricate the roller bearing.

SERVICE PRODUCT
ISOFLEX GREASE TOPAS NB 52 (P/N 293 550 021)

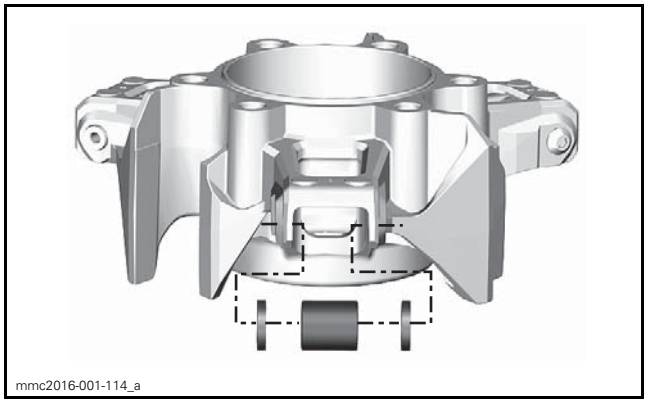
REQUIRED TOOL	
GREASE INJECTOR (P/N 529 036 376)	

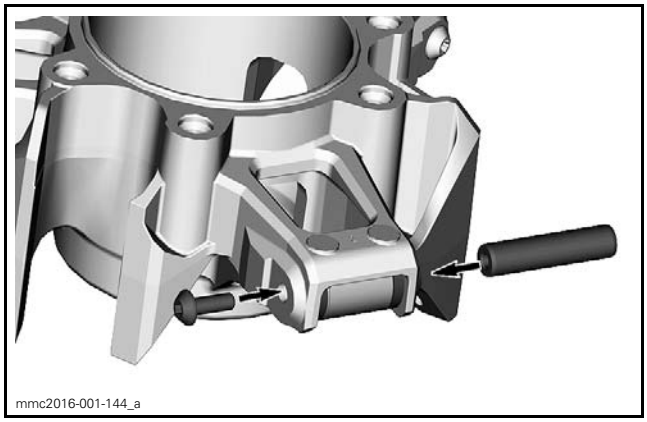
NOTE: A threaded end is required on the grease gun for using the grease injector.



1. *GREASE INJECTOR (P/N 529 036 376)*

Install roller.



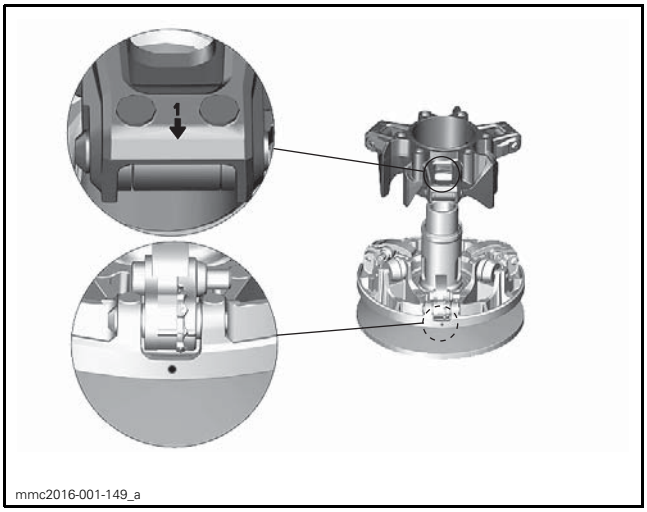


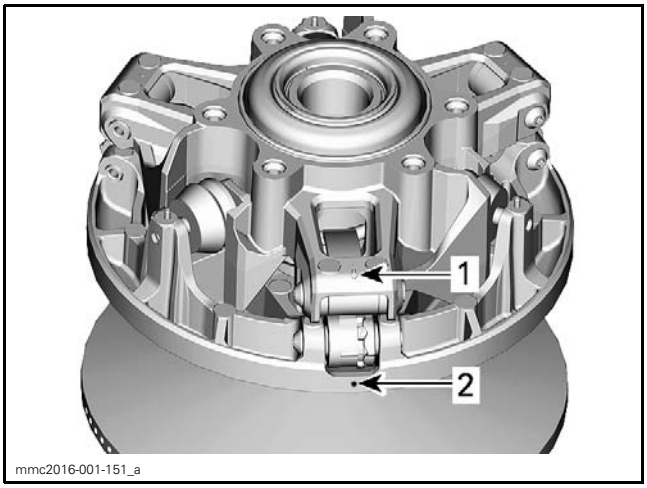
TIGHTENING TORQUE	
Roller axle screw	5 N•m ± 0.5 N•m (44 lbf•**in** ± 4 lbf•**in**)

Spider

Install the spider on the sliding sheave by aligning the indexing marks.

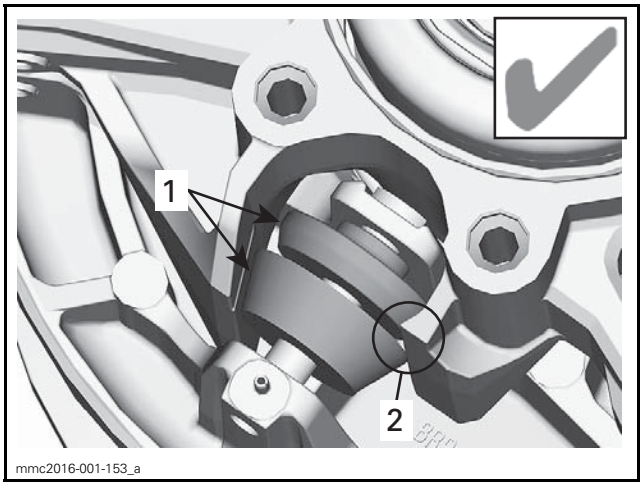
– Spider - the arrow on the arms #1, just above the roller.
– Sliding sheave - the dot on the external side of the sheave.



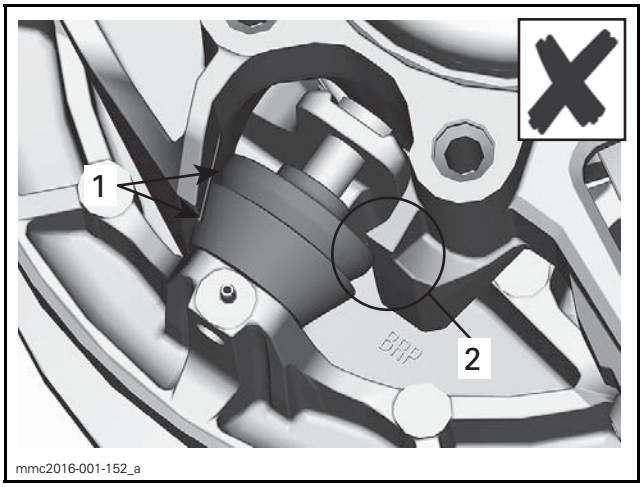


FINAL POSITION
1. *Arrow - spider arm*
2. *Dot - sliding sheave*

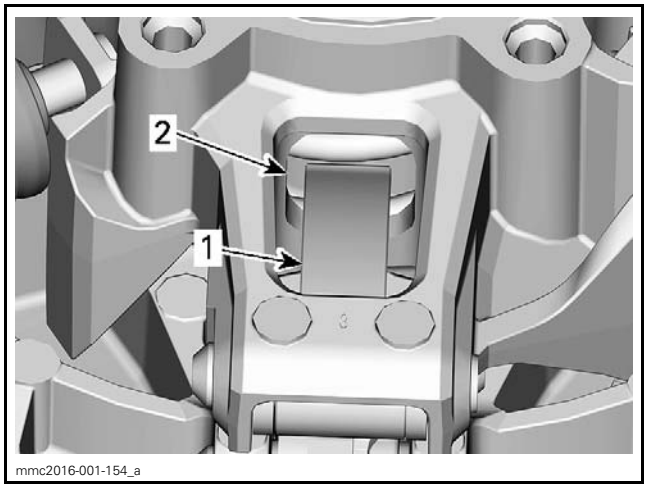
NOTICE During installation of the spider, make sure to position the three spurs of spider legs between torque rollers and ensure that ramps are positioned inside the openings of the spider.



ROLLER - GOOD INSTALLATION
1. *Torque rollers*
2. *Spur of the spider leg*



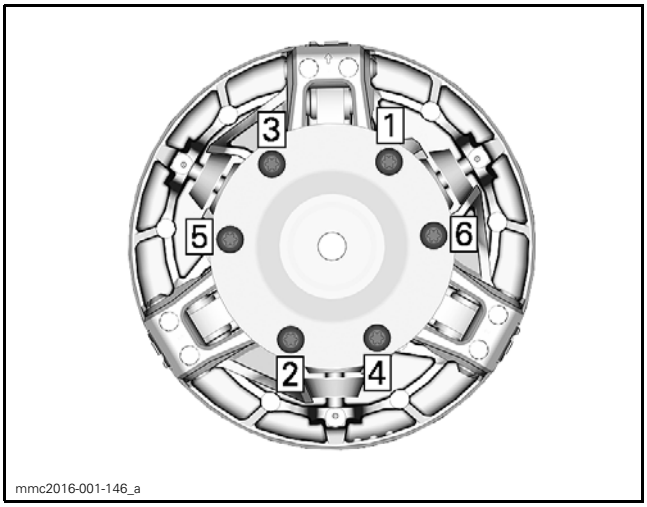
ROLLER - WRONG INSTALLATION
1. *Torque rollers*
2. *Spur of the spider leg*



RAMP POSITIONING

Damper

Install the damper using the following sequence.



TIGHTENING TORQUE	
Damper screws	31.5 N•m ± 3.5 N•m (23 lbf•ft ± 3 lbf•ft)

Sliding Sheave and Fixed Sheave Assembly

Index sliding sheave with fixed sheave by aligning index marks.

– Sliding sheave - the arrow on the spider arms #1, just above the roller.
– Fixed sheave- the dot on the external side of the sheave.

Installing the Drive Pulley

REQUIRED TOOLS	
CLUTCH HOLDER (P/N 529 036 369)	

1. Clean mounting surfaces as described in *DRIVE PULLEY CLEANING* above.

NOTICE Do not apply antiseize or any lubricant on crankshaft and drive pulley tapers.

2. Install drive pulley on crankshaft end.

NOTE: The drive pulley can be installed in one position only. Drive pulley and crankshaft are indexed.

3. Install a NEW conical spring washer with its concave side towards drive pulley.
4. Install drive pulley bolt.

NOTICE Always use BRP genuine parts for conical spring washer and bolt.

5. Secure the drive pulley with the clutch holder.
6. Using a torque wrench, tighten the drive pulley bolt. Refer to *TIGHTENING THE DRIVE PULLEY* for the completed procedure.

Tightening the Drive Pulley

Tighten the drive pulley bolt.

TIGHTENING TORQUE		
Drive pulley bolt	First torque	120 N•m (89 lbf•ft)

Before starting engine, perform drive pulley adjustment. Refer to *ADJUSTMENT*, at the beginning of this subsection.

Install drive belt and guard.

Raise the rear of the vehicle and support it with a mechanical stand.

⚠ WARNING

Ensure that the track is free of particles which could be thrown out while track is rotating. Keep hands, tools, feet and clothing clear of track. Ensure nobody is standing near the vehicle.

Accelerate the vehicle at low speed (maximum 32 km/h (20 MPH) and apply the brake, repeat 5 times.

Tighten the drive pulley bolt again.

TIGHTENING TORQUE		
Drive pulley bolt	Final torque	120 N•m (89 lbf•ft)

⚠ WARNING

After 10 hours of operation the transmission system of the vehicle must be inspected to ensure drive pulley bolt is still properly torqued.

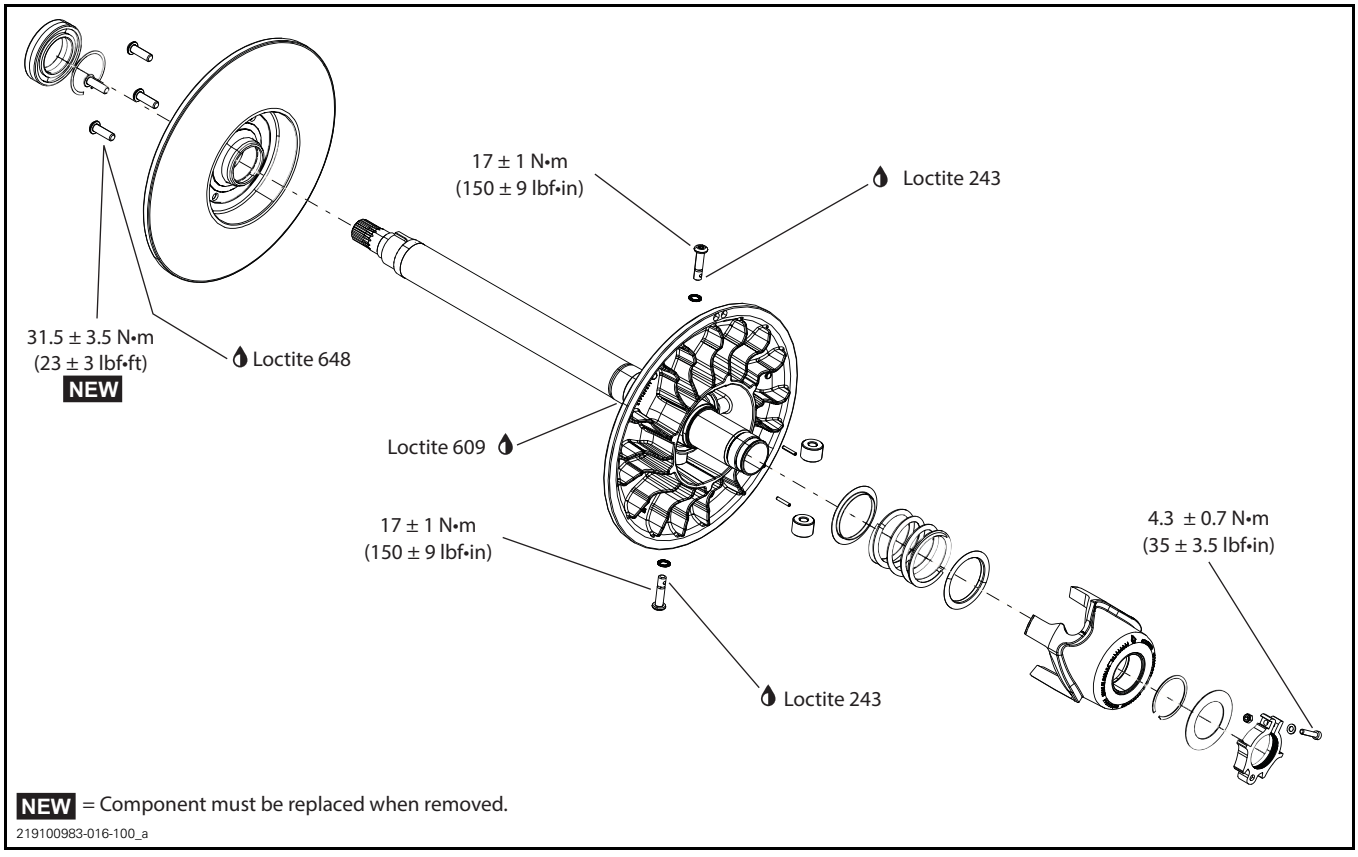
DRIVEN PULLEY AND COUNTERSHAFT

SERVICE TOOLS

Description	Part Number	Page
BEARING PULLER DRIVEN SUPPORT	529 036 485	225
COUNTERSHAFT ADAPTER	529 036 424	231
COUNTERSHAFT BEARING INSTALLER	529 036 066	232
COUNTERSHAFT BEARING REMOVER	529 036 065	231
COUNTERSHAFT SUPPORT	529 036 067	231
DRIVEN PULLEY SPRING COMPRESSOR	529 036 182	225
UPPER GEAR RETAINING TOOL	529 036 110	224

SERVICE PRODUCTS

Description	Part Number	Page
CLUTCH AND PULLEY FLANGE CLEANER PRO S1	779244	229, 232
LOCTITE 243 (BLUE)	293 800 060	229
LOCTITE 609	413 703 100	232
LOCTITE 648 (GREEN)	413 711 400	230
LOCTITE 7649 (F)	619 600 100	232
LOCTITE 7649 (PRIMER)	293 800 041	232
LOCTITE 767 (ANTI-SEIZE LUBRICANT)	293 800 070	231
PULLEY FLANGE CLEANER (F)	619 600 022	229, 232



GENERAL

During assembly/installation, use the torque values and the service products as in the exploded views.

Clean threads before applying a threadlocker. Refer to *SELF-LOCKING FASTENERS* and *LOCTITE APPLICATION* at the beginning of this manual for complete procedure.

⚠ WARNING

Torque wrench tightening specifications must be strictly adhered to.
Locking devices (e.g.: locking tabs, elastic stop nuts, cotter pins, etc.) must be replaced with new ones.

⚠ WARNING

Never start engine when the pulley guard is removed.

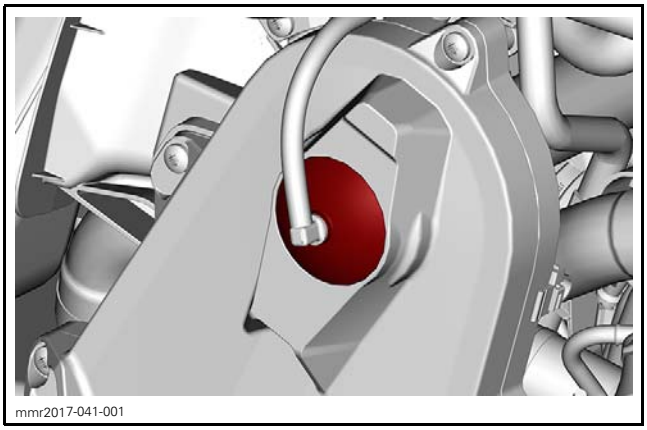
PROCEDURES

DRIVEN PULLEY

Removing the Driven Pulley

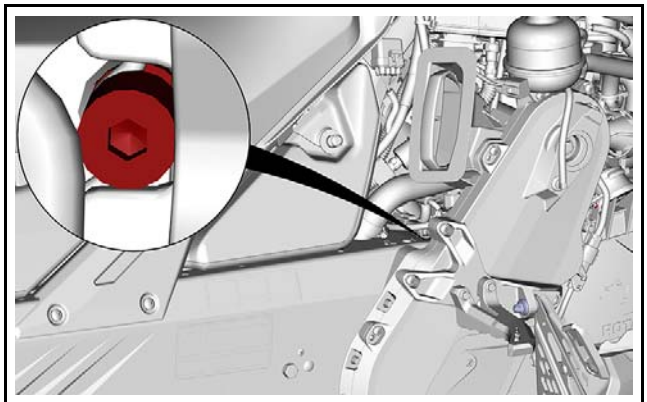
NOTE: The driven pulley is removed with the countershaft.

1. Remove the muffler. Refer to *EXHAUST SYSTEM* subsection.
2. Remove the filling plug on the chaincase cover.



mmr2017-041-001

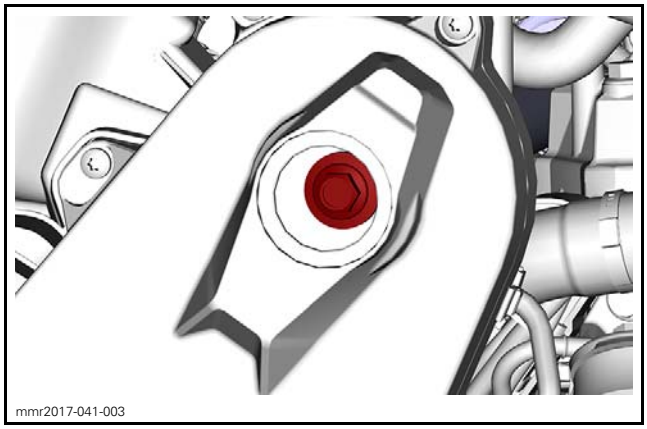
3. Release drive chain tension by unscrewing tensioner adjustment screw.



mmr2017-041-002

4. Remove the upper gear screw and the conical spring washer.

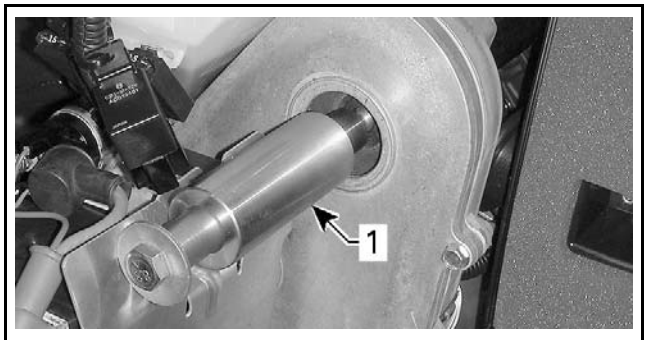
NOTE: Slightly tilt the bolt to avoid dropping washer inside chaincase.



mmr2017-041-003

5. Install the gear retaining tool on countershaft end.

REQUIRED TOOL	
UPPER GEAR RETAINING TOOL (P/N 529 036 110)	

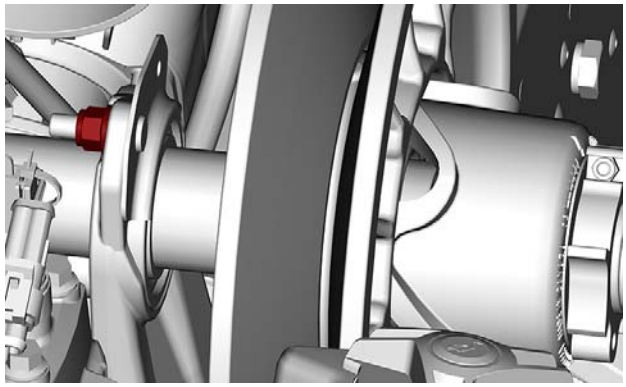


mmr2008-042-104_a

TYPICAL
1. Upper gear retaining tool

6. Remove the drive belt. Refer to *DRIVE BELT* subsection.

7. Behind driven pulley, remove nut securing the countershaft bearing flange.

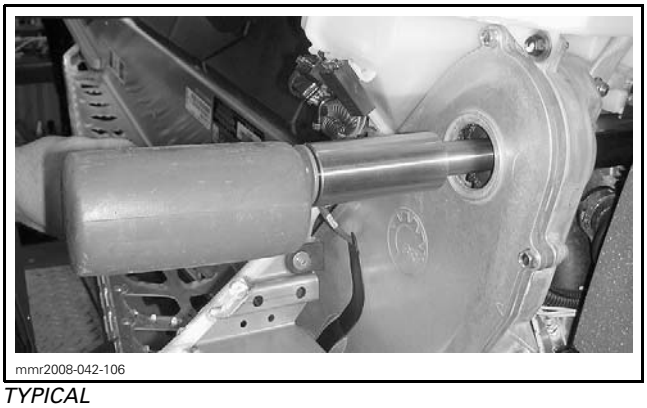

mmr2017-041-004

8. Pull out bearing flange.
9. Use the bearing puller to extract the bearing from the support.

REQUIRED TOOL	
BEARING PULLER DRIVEN SUPPORT (P/N 529 036 485)	

10. Pull the driven pulley to disengage countershaft and upper gear.

NOTE: If necessary, tap the upper gear retaining tool with a plastic hammer.


mmr2008-042-106
TYPICAL

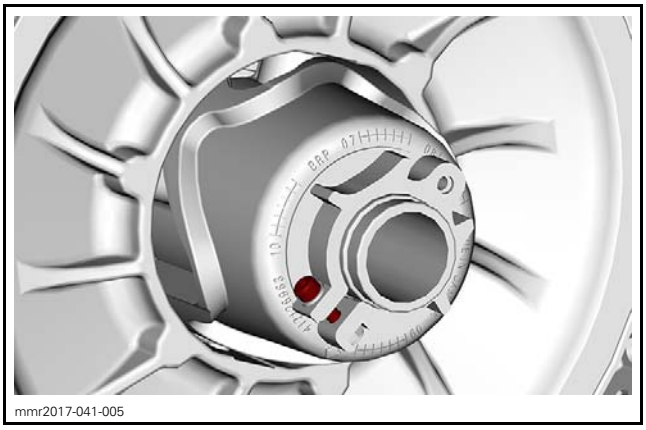
11. Unscrew countershaft from the upper gear retaining tool. **Do not** remove tool.

NOTE: While countershaft is removed from vehicle, the upper gear retaining tool maintains the drive chain and the upper gear in position inside chaincase.

Driven Pulley Disassembly

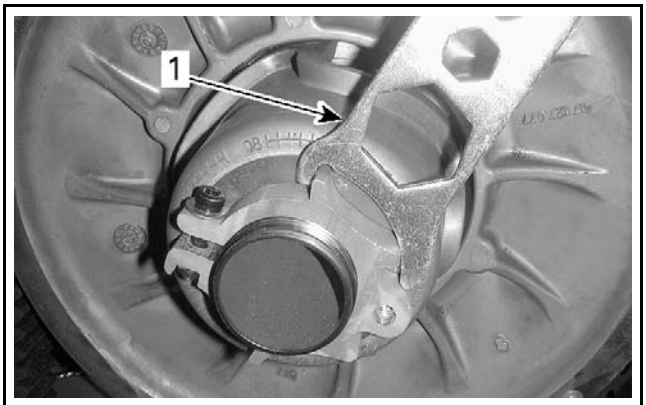
Removing Cam and Spring

1. Loosen the clamping screw.


mmr2017-041-005

2. Unscrew the adjuster hub **clockwise** using the suspension adjustment tool provided in the vehicle tool kit.

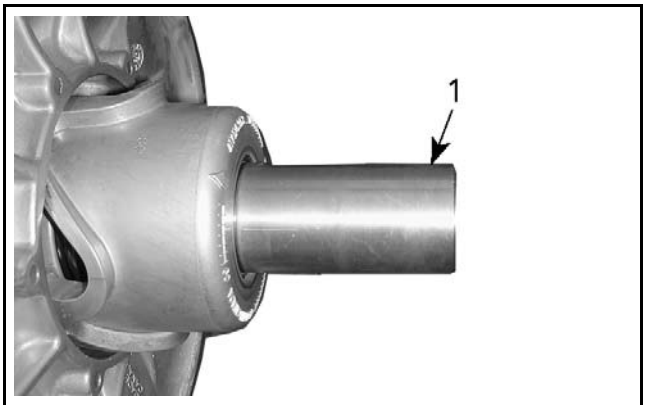
NOTE: The adjuster hub has LH treads.



mmr2013-034-010_a
1. Suspension adjustment tool shown

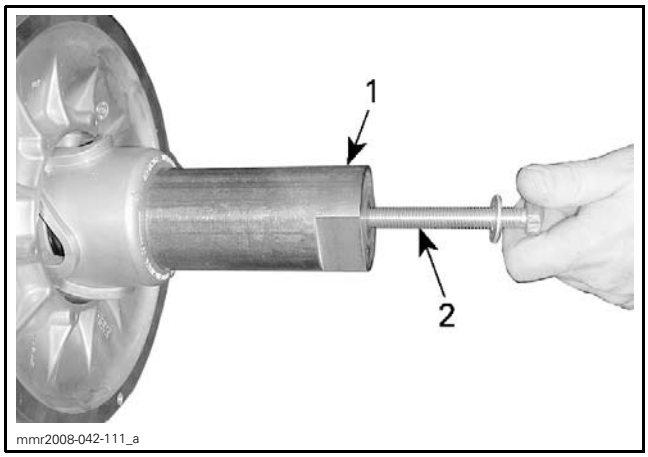
REQUIRED TOOL	
DRIVEN PULLEY SPRING COMPRESSOR (P/N 529 036 182)	

3. Install the threaded adapter of the spring compressor on the countershaft.



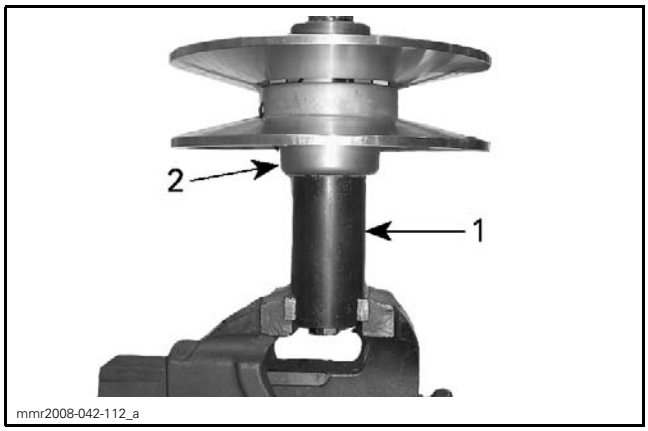
mmr2008-042-110_a
1. Threaded adapter

4. Install the external sleeve over the threaded adapter and secure sleeve with the tool screw.



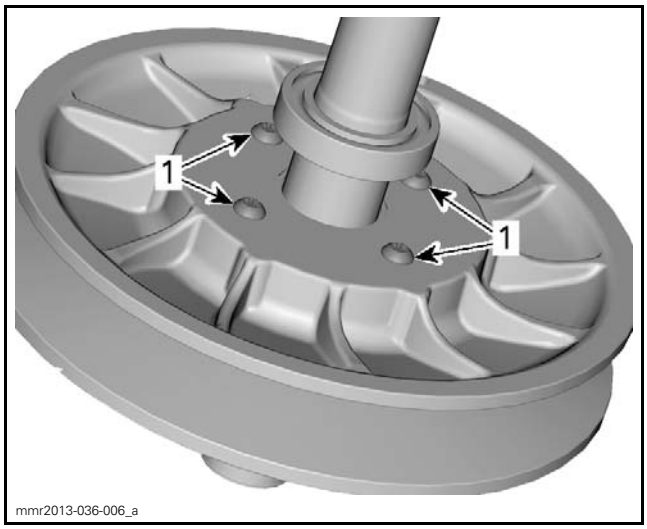
1. External sleeve
2. Driven pulley spring compressor screw

5. Tighten the tool screw to compress the cam.
6. Install the tool in a vice.



1. Driven pulley spring compressor
2. Driven pulley

7. Using a heat gun, heat cam screws to break the thread locker.

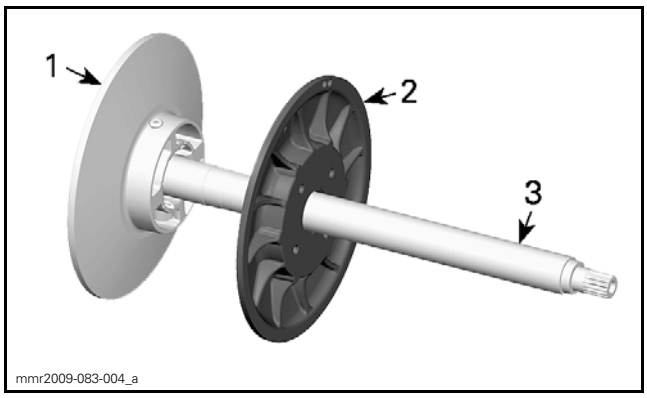


1. Heat cam screws

8. Remove and discard cam screws.
9. Unscrew the tool screw completely.
10. Remove cam, spring stoppers and spring.

Removing the Sliding Sheave

1. Remove the cam and spring. Refer to procedure in this subsection.
2. Remove the countershaft bearing. Refer to procedure in this subsection.
3. Remove sliding sheave.



1. Fixed sheave
2. Sliding sheave
3. Countershaft

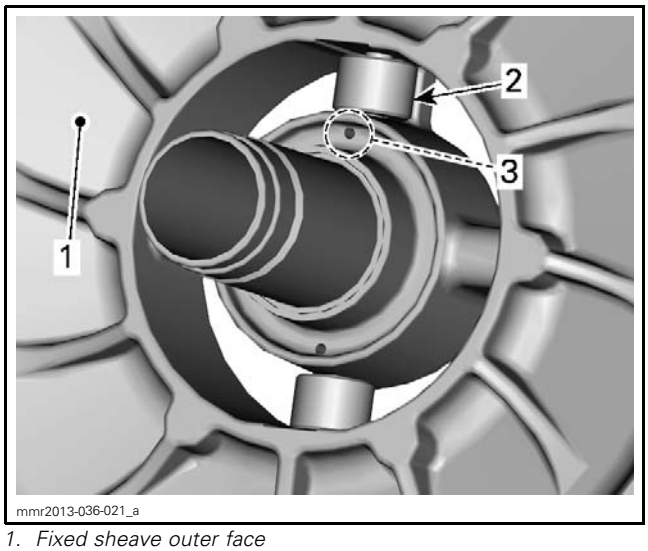
Removing the Fixed Sheave

The fixed sheave and countershaft are sold as an assembly. They are not available separately.

Removing the Driven Pulley Rollers

1. Move sliding and fixed sheaves apart.
2. Remove spring pins used to lock pivot screws.
   2.1 Use tap wrench to start removing spring pin.

2.2 Once spring pin is accessible to pliers, pull pin out using pliers.

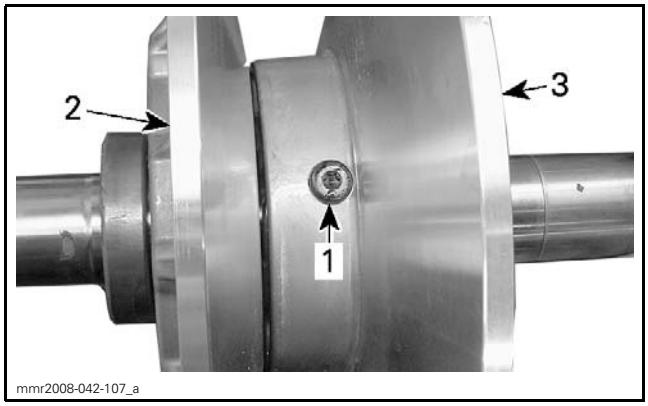


mmr2013-036-021_a

1. Fixed sheave outer face
2. Roller
3. Spring pin location

3. Identify pivot screws location before removal.
4. Remove pivot screw and ribbed lock washer; keep both for reuse.

NOTICE Make sure not to damage or lose pivot screws. If screws need to be replaced, replace fixed sheave assembly.

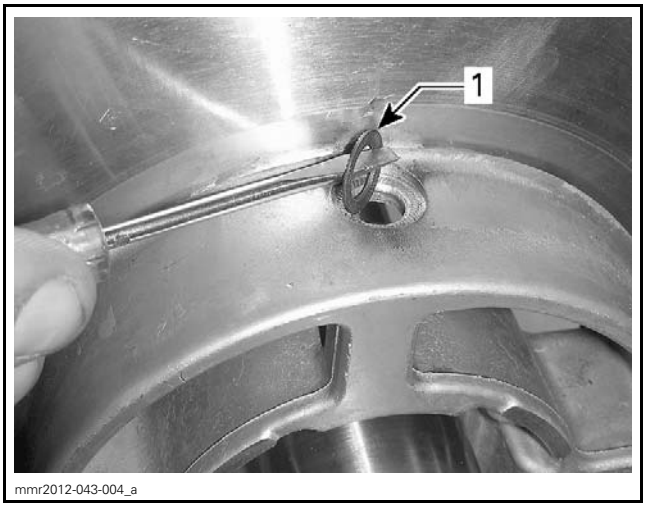


mmr2008-042-107_a

1. Pivot screw
2. Sliding sheave
3. Fixed sheave


mmr2012-043-003

PIVOT SCREW REMOVAL



mmr2012-043-004_a

1. Ribbed lock washer

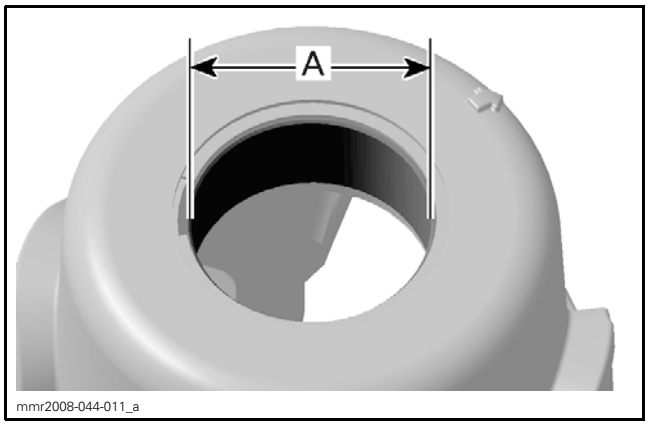
5. Remove roller.
6. Proceed with removal of other roller.

IMPORTANT: For proper fit, each pivot screw must be reinstalled where originally mounted in the fixed sheave.

Inspecting the Driven Pulley

Inspecting Cam and Spring

1. Verify contact surfaces of cam for visible damages. Ensure circlip properly locks the inner bushing. Replace part if necessary.
2. Using a dial bore gauge, measure the inner diameter of cam bushing. Measuring point must be at least 5 mm (1/4 in) from bushing edge.



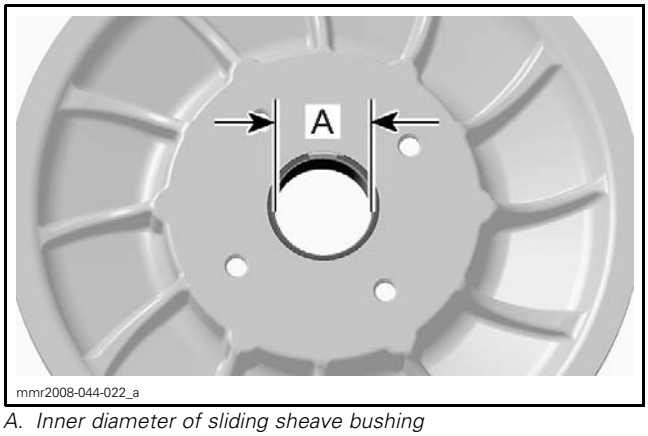
A. Inner diameter of cam bushing

CAM BUSHING	SERVICE LIMIT
Inner diameter	41.5 mm (1.634 in)

3. Replace the cam if the inner diameter of bushing is out of specification.

Inspecting the Sliding Sheave

1. Inspect pulley sheave for marks or scratches.
2. Ensure circlip properly locks the inner bushing. Replace part if necessary.
3. Using a dial bore gauge, measure the inner diameter of sliding sheave bushing. Measuring point must be at least 5 mm (1/4 in) from bushing edge.



A. Inner diameter of sliding sheave bushing

SLIDING SHEAVE BUSHING	SERVICE LIMIT
Inner diameter	41.5 mm (1.634 in)

4. Replace the sliding sheave if the inner diameter of bushing is out of specification.

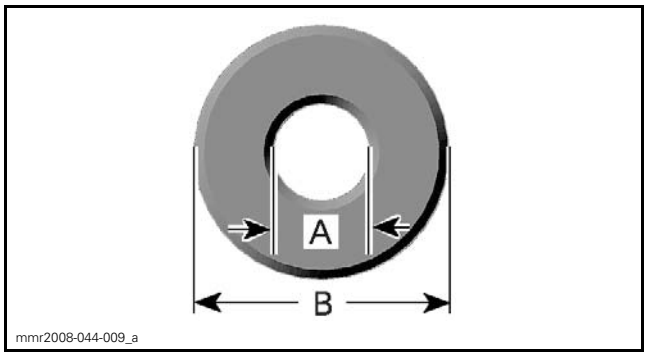
Inspecting the Fixed Sheave

Replace fixed sheave and countershaft if one of the following problem is detected:

– Marks or scratches on pulley sheave
– Bent, twisted or otherwise damaged countershaft
– Defective splines and threads at the end of countershaft.

Inspecting the Driven Pulley Roller

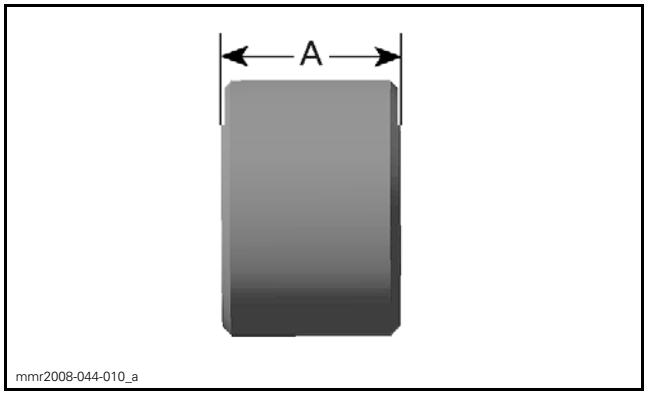
1. Check the rollers for flat spots, cracks or other visible damages. Replace if necessary (as a set).
2. Measure inner and outer diameter of rollers.



A. Inner diameter
B. Outer diameter

DRIVEN PULLEY ROLLER	SERVICE LIMIT
Inner diameter	8.5 mm (.335 in)
Outer diameter	21.5 mm (.846 in)

3. Measure the roller thickness.



A. Thickness of roller

DRIVEN PULLEY ROLLER	SERVICE LIMIT
Thickness	14.75 mm (.581 in)

4. If a roller is out of specifications, replace both rollers at the same time.

Cleaning the Driven Pulley

Use the a clean rag to clean pulley sheaves.

SERVICE PRODUCT	
Scandinavia	PULLEY FLANGE CLEANER (F) (P/N 619 600 022)
Other Countries	CLUTCH AND PULLEY FLANGE CLEANER PRO S1 (P/N 779244)

Cleaning Cam and Spring

During break-in period, teflon from bushing moves to cam or countershaft surface. A teflon over teflon running condition occurs, leading to low friction. So it is normal to see gray teflon deposit on cam or countershaft. Do not remove this deposit.

When a dust deposit has to be removed from the cam or the countershaft, use dry cloth to avoid removing transferred teflon.

Driven Pulley Assembly

Installing the Driven Pulley Roller

NOTE: Exceptionally, do NOT clean threaded hole to avoid changing the screw position when torqued.

1. Using a hand wire brush, clean pivot screw threads.

IMPORTANT: Do not use a thread die to clean pivot screw of threadlocker as this may alter the screw threads.

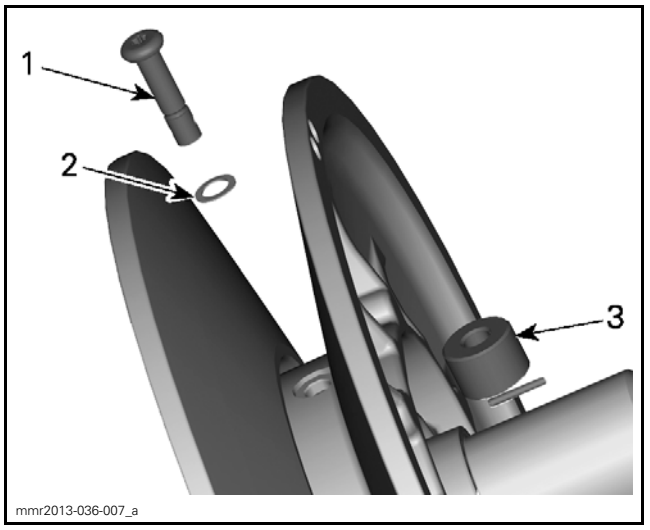
NOTE: Pivot screw and ribbed lock washer must be reused if in good condition. If damaged, replace fixed sheave assembly.

2. Apply the following threadlocker to the pivot screw threads.

SERVICE PRODUCT	
Pivot screw threads	LOCTITE 243 (BLUE) (P/N 293 800 060)

3. Insert roller in fixed sheave, thread in pivot screw with ribbed lock washer.

NOTE: The ribbed locked washer must be installed with the concave side towards the fixed sheave.



1. Pivot screw
2. Ribbed lock washer (concave side towards fixed sheave)
3. Roller

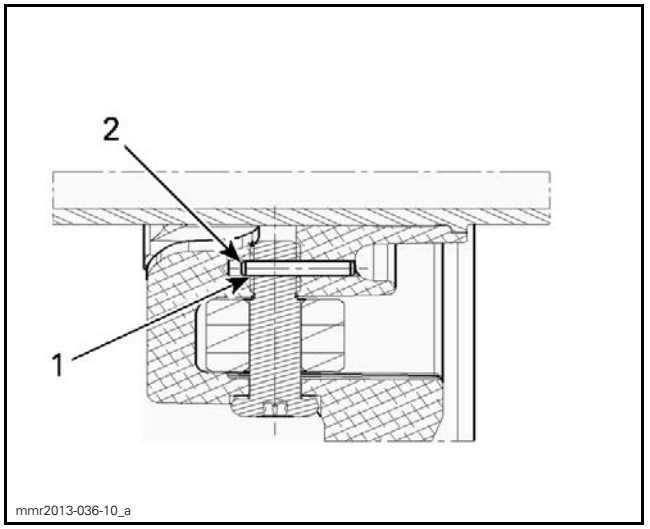
IMPORTANT: For proper fit, each pivot screw must be reinstalled where originally mounted in the fixed sheave.

4. Torque pivot screw as specified.

TIGHTENING TORQUE	
Pivot screws	17 N•m ± 1 N•m (150 lbf•**in** ± 9 lbf•**in**)

NOTE: Spring pin hole in the fixed sheave and pivot screw must perfectly line up when torque is applied.

NOTICE **If not properly aligned, spring pin will not insert in pivot screw hole and spring pin threads in fixed sheave will be damaged.**

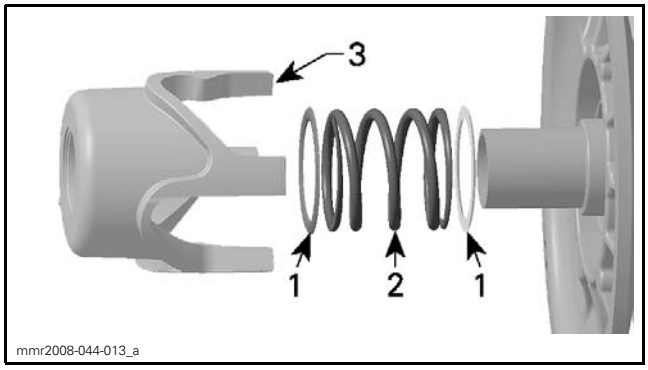


1. Hole in pivot screw
2. Spring pin

5. Install spring pin.

Installing Cam and Spring

1. Install a spring stopper, the spring, the other spring stopper and the cam.



1. Spring stopper
2. Spring
3. Cam

2. Align the arrow on the cam with the arrow on the fixed sheave.

NOTE: On completion of cam installation, the arrow on the cam should have moved clockwise (approximately 30°).



3. Install the driven pulley spring compressor sleeve and tighten the tool screw until the cam is completely pressed against the sliding sheave.
4. Apply threadlocker on the thread of 4 new cam screws.

RECOMMENDED SERVICE PRODUCT
LOCTITE 648 (GREEN) (P/N 413 711 400)

5. From the back of the sliding sheave, install the 4 new cam screws.
6. Torque cam screws as specified.

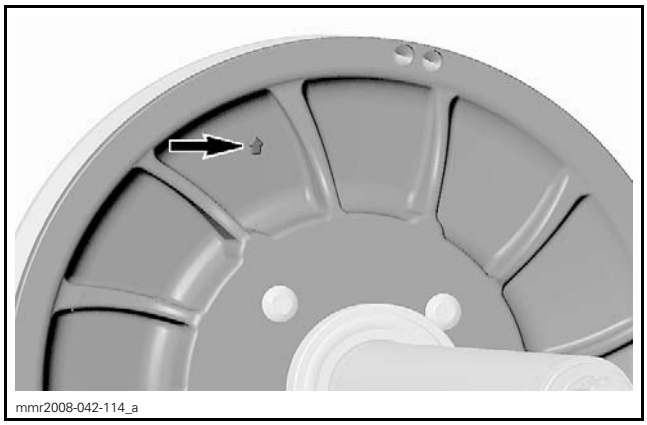
TIGHTENING TORQUE	
Cam screw	31.5 N•m ± 3.5 N•m (23 lbf•ft ± 3 lbf•ft) + LOCTITE 648 (GREEN) (P/N 413 711 400)

7. Remove the tool.

Installing the Sliding Sheave

The assembly of sliding sheave is the reverse of the disassembly. However, pay attention to the following.

When installing sliding sheave, make sure to align its arrow with the arrow on cam.



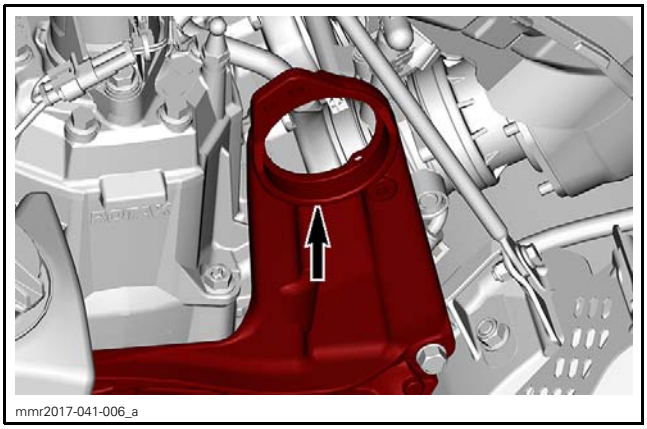
SLIDING SHEAVE ARROW



CAM ARROW

Installing the Driven Pulley

1. Using sand paper (600-grit or 1000-grit) or steel wool, remove any rust on bearing shoulder of countershaft bearing support.


mmr2017-041-006_a

BEARING SUPPORT SHOULDER

2. Apply a thin layer of antiseize lubricant on bearing shoulder.

SERVICE PRODUCT
LOCTITE 767 (ANTI-SEIZE LUBRICANT) (P/N 293 800 070)

3. Insert countershaft through countershaft bearing support.
4. Fasten the end of countershaft to upper gear retaining tool.
5. Align countershaft splines with upper gear splines.
6. Using the upper gear retaining tool as a puller, Engage countershaft splines in upper gear splines. Ensure countershaft bearing is installed properly in countershaft bearing support.
7. Remove the upper gear retaining tool.
8. Install the upper gear screw and the conical spring washer.

NOTE: The conical spring washer must be installed with its concave side towards upper gear.

9. Torque upper gear screw.
10. Install chaincase filler plug.
11. On LH side, install the bearing flange. Torque nut as specified.

TIGHTENING TORQUE	
Bearing flange nut	15.5 N•m ± 1.5 N•m (137 lbf•**in** ± 13 lbf•**in**)

12. Install the adjuster hub onto the countershaft end and temporarily tighten.
13. Install and adjust drive belt. Refer to *DRIVE BELT* subsection.
14. Install all other removed parts.

COUNTERSHAFT

The countershaft and the fixed sheave are sold as an assembly. They are not available separately.

Removing and Installing the Countershaft

Refer to *DRIVEN PULLEY* in this subsection for the procedures.

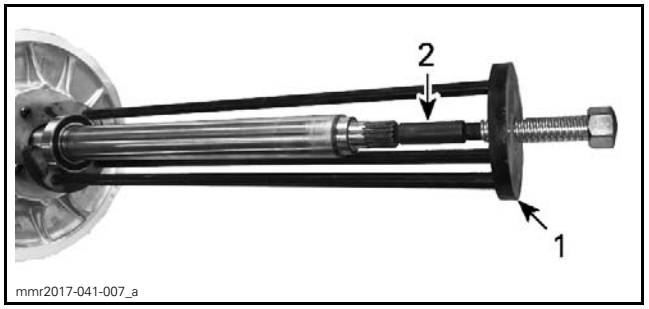
COUNTERSHAFT BEARING

Removing the Countershaft Bearing

Remove the driven pulley. Refer to procedure in this subsection.

Install the bearing remover on countershaft.

REQUIRED TOOL	
COUNTERSHAFT BEARING REMOVER (P/N 529 036 065)	
COUNTERSHAFT ADAPTER (P/N 529 036 424)	



mmr2017-041-007_a

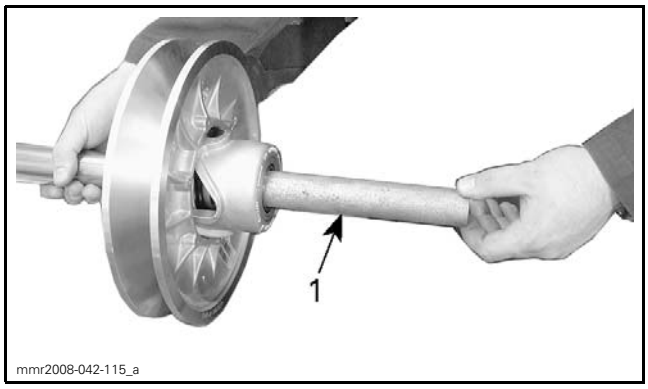
1. *Countershaft adapter*
2. *Countershaft bearing remover*

Tighten the screw at the end of tool to extract the bearing. Discard bearing.

Installing the Countershaft Bearing

1. Remove the adjuster hub from the cam.
2. Insert the countershaft support in the countershaft.

REQUIRED TOOL
COUNTERSHAFT SUPPORT (P/N 529 036 067)



1. Countershaft support

NOTICE The countershaft support is mandatory to avoid damaging the countershaft threaded end and the cam during bearing installation.

3. Clean residues on countershaft bearing surface.

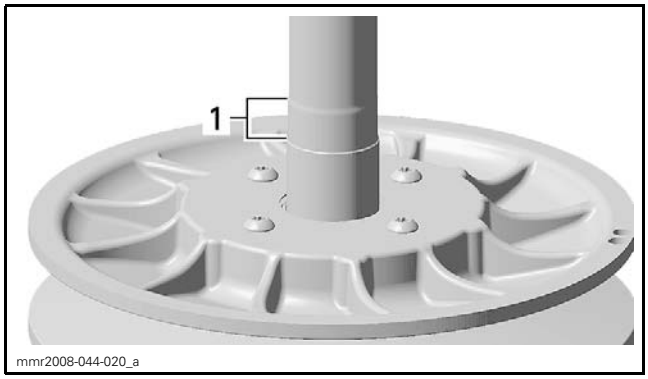
SERVICE PRODUCT	
Scandinavia	PULLEY FLANGE CLEANER (F) (P/N 619 600 022)
Other Countries	CLUTCH AND PULLEY FLANGE CLEANER PRO S1 (P/N 779244)

4. Check countershaft bearing surface for wear.
5. Apply Loctite 7649 on countershaft bearing surface and let dry 5 minutes.

SERVICE PRODUCT	
Scandinavia	LOCTITE 7649 (F) (P/N 619 600 100)
Other Countries	LOCTITE 7649 (PRIMER) (P/N 293 800 041)

6. Apply Loctite 609 on primer.

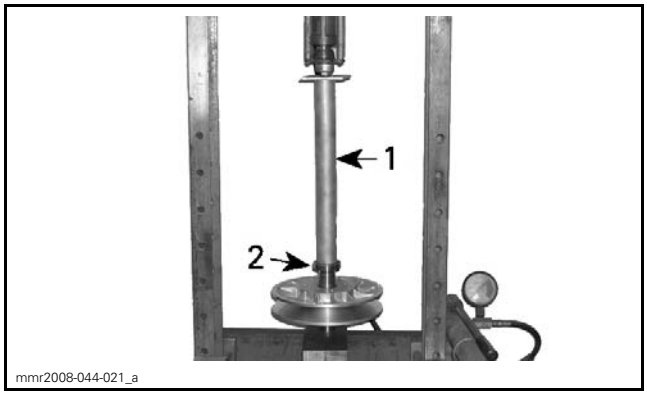
SERVICE PRODUCT
LOCTITE 609 (P/N 413 703 100)



1. Apply Loctite 7649 (Primer) before Loctite 609 in this region

7. Using a press and the bearing installer, install the new bearing on countershaft.

REQUIRED TOOL
COUNTERSHAFT BEARING INSTALLER (P/N 529 036 066)



1. Countershaft bearing installer
2. New bearing

NOTICE Use a press only, never tap on countershaft bearing installer with an hammer to avoid damaging bearing and countershaft.

8. Clean the surplus Loctite with a rag to avoid having Loctite on sliding sheave bushing.

COUNTERSHAFT BEARING SUPPORT

For countershaft bearing support removal and installation, refer to *COUNTERSHAFT BEARING SUPPORT* in *FRAME*.

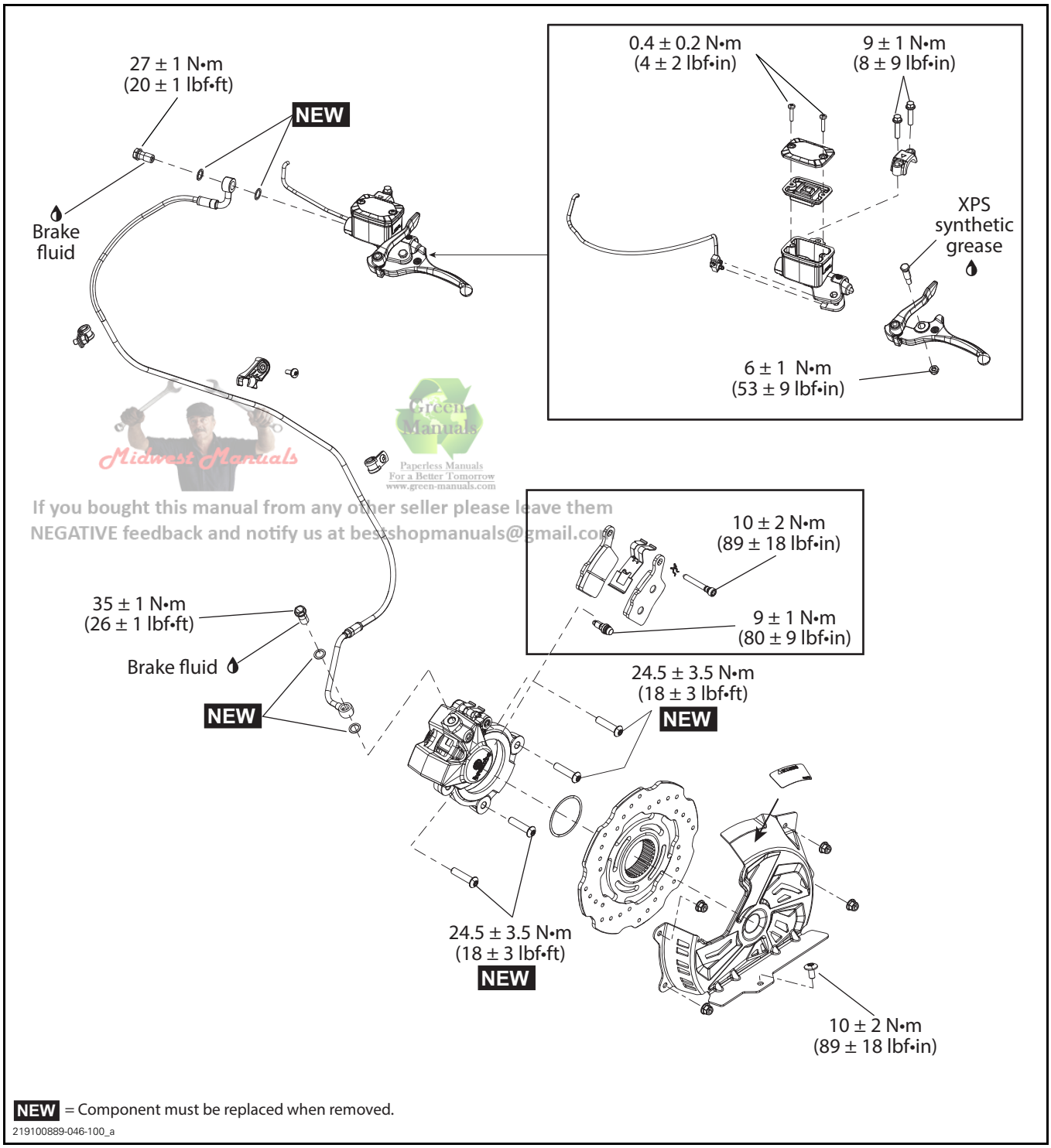
BRAKE

SERVICE TOOLS

Description	Part Number	Page
CALIPER PULLER	529 036 145	239
PROTECTIVE CAP	529 036 150	239

SERVICE PRODUCTS

Description	Part Number	Page
BRAKE FLUID DOT 4	779151	235
LOCTITE 767 (ANTI-SEIZE LUBRICANT)	293 800 070	240
SYNTHETIC GREASE	779162	237



Midwest Manuals
Green Manuals
Paperless Manuals
For a Better Tomorrow
www.green-manuals.com
If you bought this manual from any other seller please leave them
NEGATIVE feedback and notify us at bestshopmanuals@gmail.com

NEW = Component must be replaced when removed.

219100889-046-100_a

GENERAL

During assembly/installation, use torque values and service products as in the exploded view.

Clean threads before applying a threadlocker. Refer to *SELF-LOCKING FASTENERS* and *LOCTITE APPLICATION* at the beginning of this manual for complete procedure.

⚠ WARNING

Torque wrench tightening specifications must be strictly adhered to.
Locking devices must be replaced with new ones when removed (e.g.: locking tabs, elastic stop nuts, cotter pins, etc.).

Hoses or cables removed or disconnected must be installed and routed as per factory specifications.

NOTICE Locking ties removed must be replaced as per factory specifications.

⚠ WARNING

Never apply any product to brake fittings, The use of thread sealant or Teflon tape could cause brake system failure.

⚠ WARNING

A contaminated brake disc or pad reduces braking efficiency. Discard contaminated pads and clean contaminated disc with a high quality brake degreasing agent.

NOTICE Avoid spilling brake fluid on plastic, rubber or painted parts. Protect these parts with a rag when servicing the brake system.

NOTICE Wipe up any brake fluid spillage.

NOTICE To avoid serious damage to the brake system, use only DOT 4 brake fluid from a sealed container. Do not use brake fluid taken from an old or already opened containers, or mix different fluids for topping up the system.

NOTICE Sealing washers must be discarded and replaced with NEW ones every time a Banjo fitting is unscrewed.

Dispose of brake fluid as per your local environmental regulation.

MAINTENANCE

RECOMMENDED BRAKE FLUID

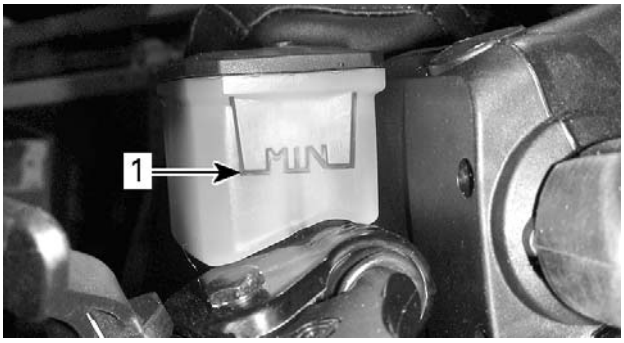
Always use brake fluid meeting the DOT 4 specification.

RECOMMENDED SERVICE PRODUCT
BRAKE FLUID DOT 4 (P/N 779151)

VERIFYING THE BRAKE FLUID LEVEL

With the vehicle on a level surface, position steering in the straight-ahead position to ensure reservoir is level.

Brake fluid must always be above the MIN. line when brake lever is squeezed.



TYPICAL
1. MINIMUM line

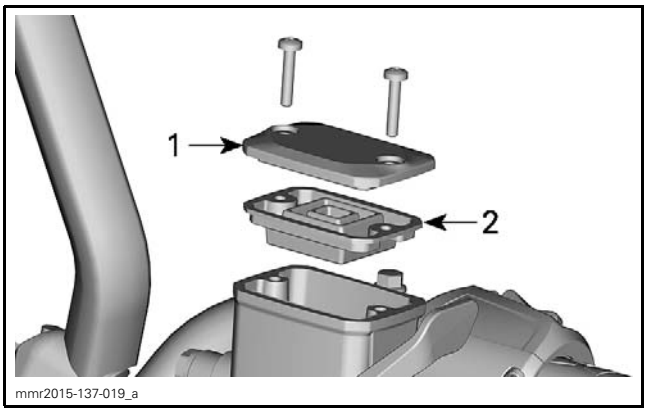
Add fluid as required. Do not overfill.

NOTE: A low level may indicate leaks or worn brake pads.

REPLACING THE BRAKE FLUID

Draining the Brake Fluid

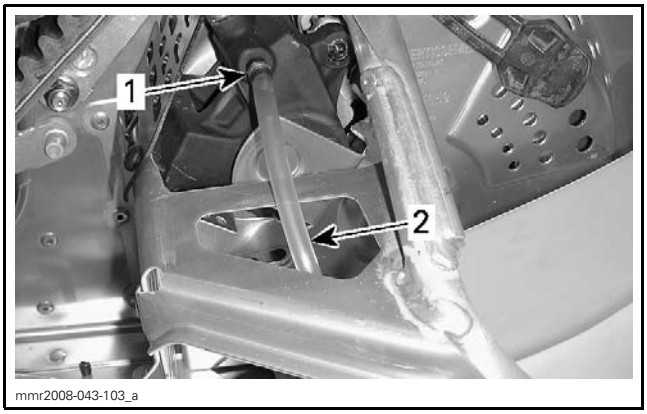
1. Place vehicle on a level surface.
2. Remove reservoir cover with its diaphragm.



mmr2015-137-019_a

1. Reservoir cover
2. Diaphragm

3. Connect a clear hose to caliper bleeder.
4. Place the other end of hose in a container.
5. Loosen bleeder and pump brake lever until no more fluid flows out of bleeder.



mmr2008-043-103_a

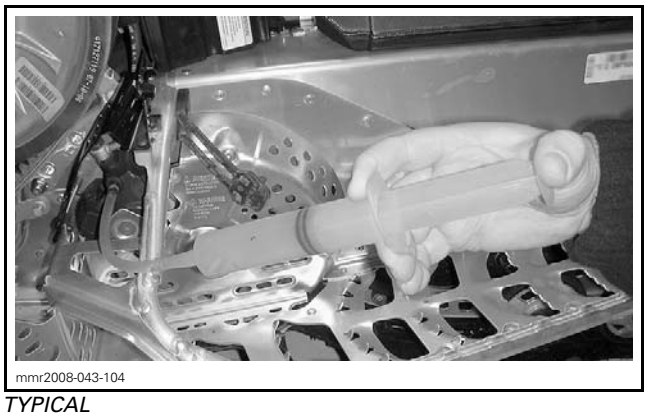
TYPICAL
1. Bleeder
2. Clear hose to catch used brake fluid

NOTE: To drain the fluid trapped in the caliper, push the pistons in.

Filling the Brake Fluid

To fill brake circuit when it is empty do the following:

1. Ensure reservoir cover is removed.
2. Using a large syringe and a suitable tube, push brake fluid slowly into the caliper.


mmr2008-043-104

TYPICAL

3. Continue to push brake fluid until master cylinder reservoir is half full.
4. Close bleeder.
5. Fill up reservoir and install diaphragm and cover.
6. Squeeze brake lever.
   6.1 If brake lever is firm, the brake system does not require bleeding. Torque bleeder as specified.

TIGHTENING TORQUE	
Brake caliper bleeder	8.5 N•m ± 1.5 N•m (75 lbf•**in** ± 13 lbf•**in**)

   6.2 If brake lever is spongy, bleed brake system as per following procedure.

BLEEDING THE BRAKE SYSTEM

1. Install a clear hose on bleeder.
2. Place the other end in a container partially filled with clean brake fluid.
3. Remove reservoir cover and diaphragm.
4. Pump up circuit pressure with brake lever until lever resistance is felt.
5. Squeeze brake lever and open bleeder. When lever touches the handlebar, do not release lever and close bleeder.
6. Release brake lever slowly.
7. Repeat the procedure until no more air bubbles appear in hose.

NOTE: Check fluid level often to prevent air from being pumped into the circuit.

8. Install cover and diaphragm on reservoir.
9. Squeeze brake lever.
   9.1 If brake lever is firm, bleeding procedure is completed. Torque bleeder as specified.
   9.2 If brake lever is still spongy, repeat step 2 to step 6.

10. Torque bleeder as specified.

TIGHTENING TORQUE	
Brake caliper bleeder	8.5 N•m ± 1.5 N•m (75 lbf•**in** ± 13 lbf•**in**)

11. Refill reservoir.
12. Install diaphragm and cover on reservoir.

INSPECTING THE BRAKE HOSE, PADS AND DISC

Break-In Inspection

Visually inspect the brake hose for leaks or any damage.

Visually inspect pads and disc for abnormal wear or any damage.

Scheduled Maintenance and Preseason

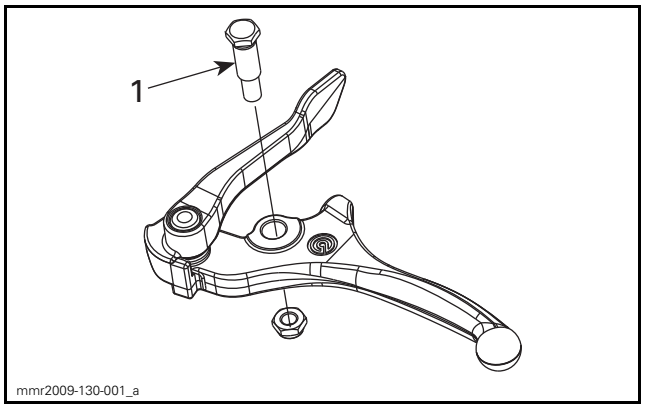
Visually inspect the brake hose for leaks or any damage.

Refer to *BRAKE* subsection and carry out:
– *INSPECTING THE BRAKE PAD*
– *INSPECTING THE BRAKE DISC*.

LUBRICATING THE BRAKE LEVER PIVOT

1. Remove brake lever pivot.
2. Lubricate brake lever pivot using recommended product.

SERVICE PRODUCT
SYNTHETIC GREASE (P/N 779162)



1. Lubricate this surface

3. Install brake lever pivot.
4. Torque pivot nut of brake lever as specified.

TIGHTENING TORQUE	
Brake lever pivot nut	6 N•m ± 1 N•m (53 lbf•**in** ± 9 lbf•**in**)

PROCEDURES

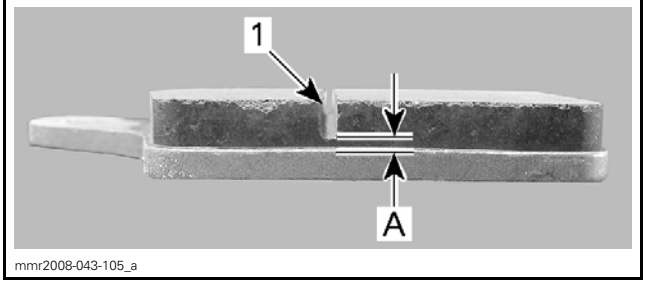
BRAKE PADS

Inspecting the Brake Pads

1. Measure brake pad lining thickness.

SERVICE LIMIT	
Brake pad thickness A	1 mm (1/32 in)

NOTICE Brake pads must always be replaced in pairs.



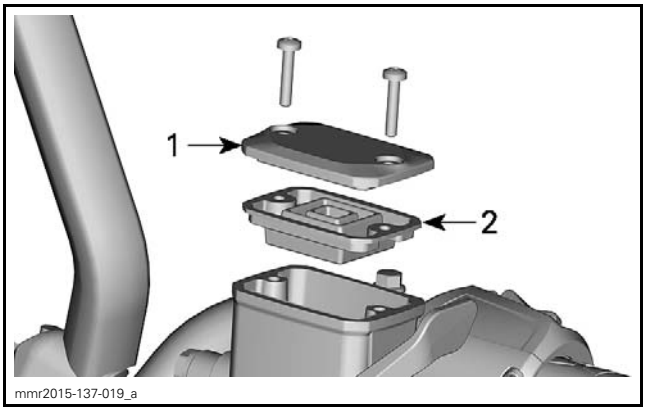
1. Groove on pad lining

2. Also inspect the brake disc, refer to *INSPECTING THE BRAKE DISC* in this subsection.

Replacing the Brake Pads

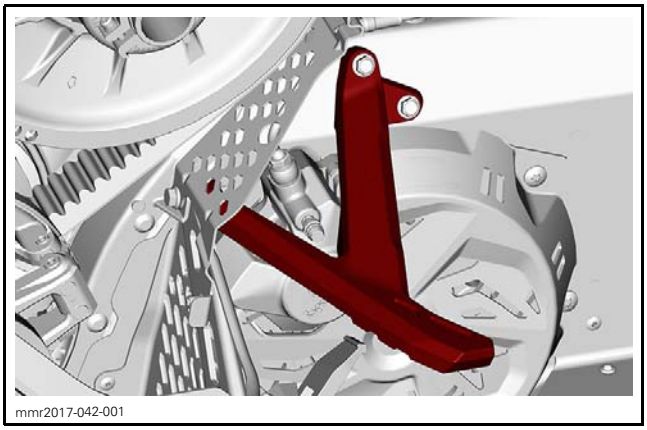
Removing the Brake Pads

1. Place the vehicle on a level surface.
2. Cover the plastic parts under and near master cylinder in the event that brake fluid would be spilled.
3. Remove reservoir cover with its diaphragm seal.

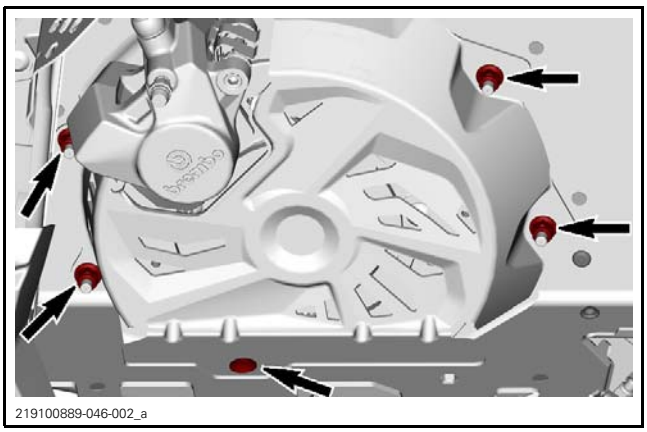


1. Reservoir cover
2. Diaphragm

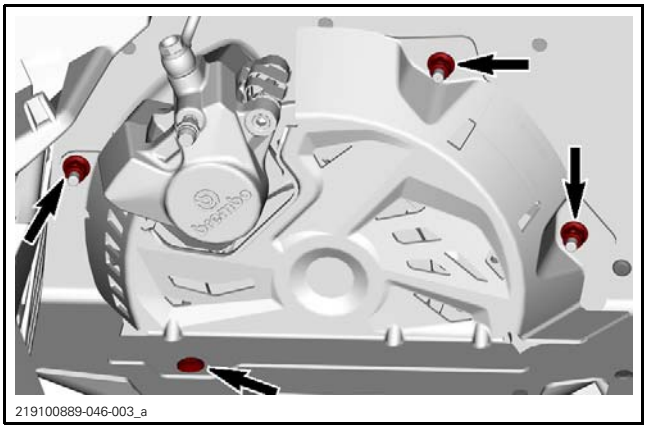
4. Open the LH side panel.
5. Remove the LH toe hook (if equipped).


mmr2017-042-001

6. Remove the disc brake protective cover.

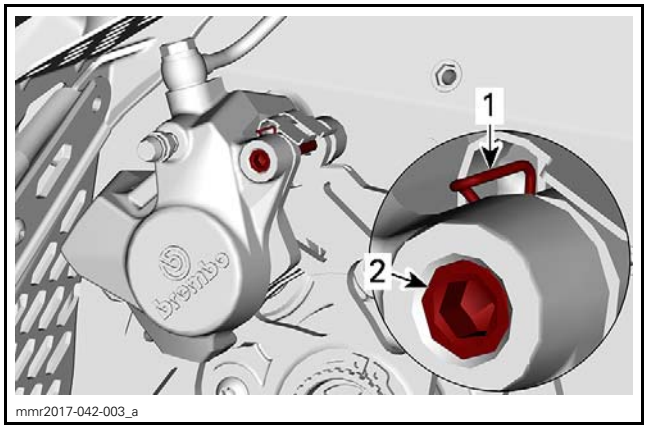

219100889-046-002_a

5 HOLES MOUNT


219100889-046-003_a

4 HOLES MOUNT

7. Remove the clip securing brake pad pin.
8. Unscrew and remove the brake pad pin.



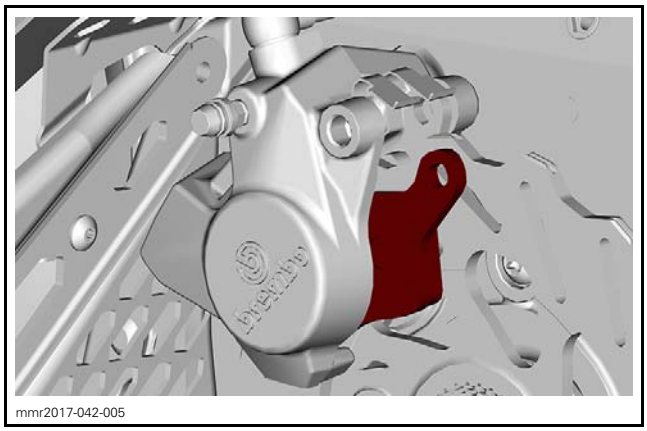
mmr2017-042-003_a

1. Clip
2. Brake pad pin

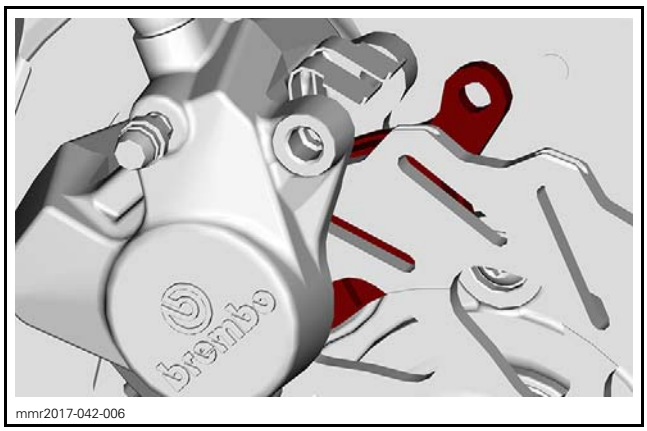
9. Using a flat screwdriver, depress caliper pistons into their bores. Pay attention for pistons to go back in straight. Insert screwdriver alternatively backwards and forwards and move pistons by small steps.

NOTICE **Pay attention to avoid scratching brake disc.**

10. Remove brake pads.
    10.1 Remove the external pad first.


mmr2017-042-005

    10.2 Pull the brake disc outward and remove the internal pad.


mmr2017-042-006

Installing the Brake Pads

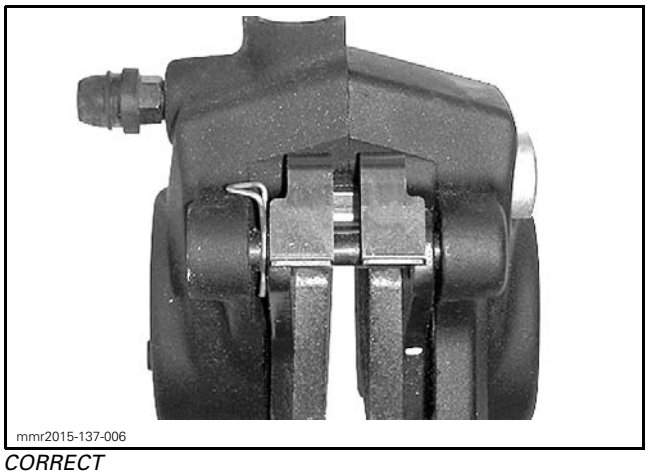
The installation is the reverse of the removal. However, pay attention to the following.

1. Install new brake pads with tabs facing upward.
2. Install brake pad pin and tighten to specification.

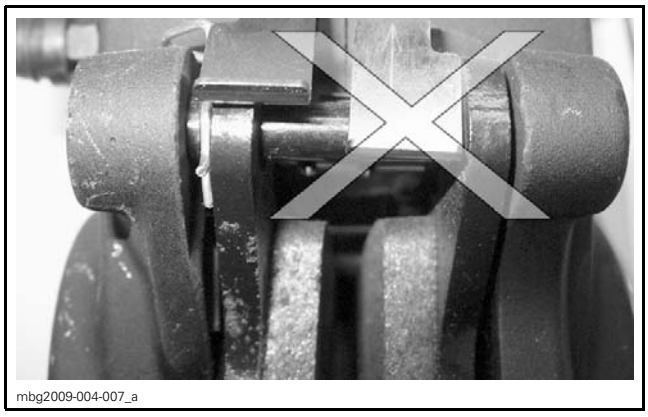
TIGHTENING TORQUE	
Brake pad pin	10 N•m ± 2 N•m (89 lbf•**in** ± 18 lbf•**in**)

3. Install spring clip on brake pad pin. If the clip seems loose, replace it with a new one.

NOTE: Make sure anti-rattle spring ends on brake pads tabs are correctly installed as per following pictures.


mmr2015-137-006

CORRECT


mbg2009-004-007_a

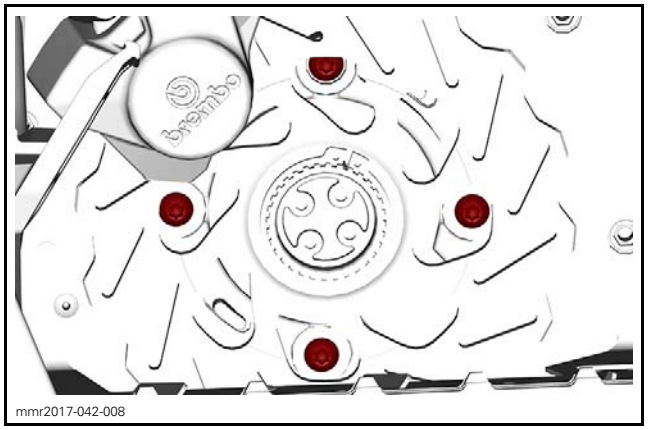
INCORRECT (RIGHT SIDE SPRING CLIP)

4. Operate the brake lever several times to bring the brake pads into contact with the disc brake.
5. Check brake fluid level in master cylinder and refill if necessary.
6. Reinstall the diaphragm and the cover.
7. Ride the vehicle a few minutes to make sure the repair is successful.

CALIPER

Removing the Caliper

1. Open LH side panel.
2. Remove the drive belt guard support. Refer to *DRIVE BELT* subsection.
3. Remove the LH toe hook (if equipped).
4. If the caliper is replaced, refer to *DRAINING THE BRAKE FLUID* in this subsection.
5. Remove the brake pads, Refer to procedure in this subsection.
6. Lift the rear of vehicle and release track tension completely.
7. Turn track to align brake disc slots with caliper bracket screws.
8. Remove caliper screws (4) behind brake disc.



mmr2017-042-008

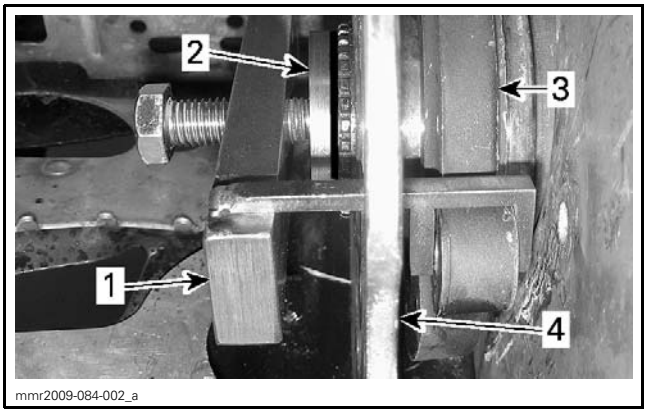
9. Unlock the caliper retaining plate from inside the tunnel.

REQUIRED TOOL	
CALIPER PULLER (P/N 529 036 145)	
PROTECTIVE CAP (P/N 529 036 150)	

10. Install the caliper puller on the brake caliper through brake disc slots.

NOTE: Make sure puller tabs are correctly engaged on caliper.

11. Install the protective cap between caliper puller bolt and plastic cap in drive axle end.



TYPICAL
1. *Caliper puller*
2. *Protective cap*
3. *Caliper bracket*
4. *Brake disc*

12. Tighten caliper puller bolt to separate caliper from drive axle bearing.

NOTICE Never use an impact tool to operate caliper puller. The caliper or the puller could break.

13. When brake disc is out of splines, remove it.
14. Remove caliper.

NOTICE Do not let caliper hang by the hose and do not stretch or twist the hose.

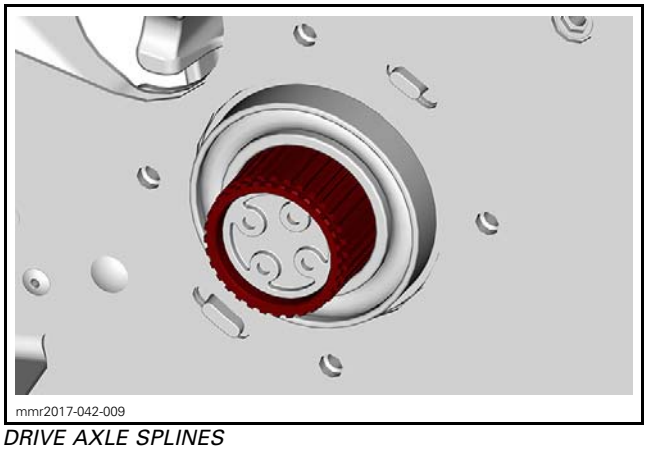
Inspecting the Caliper

1. Check caliper pistons for:
   - Proper operation
   - Rust
   - Scratches
   - Leaks.
2. Check caliper bracket for:
   - Cracks
   - Rust on bearing shoulder (clean with a steel wood).
3. Replace caliper if required.

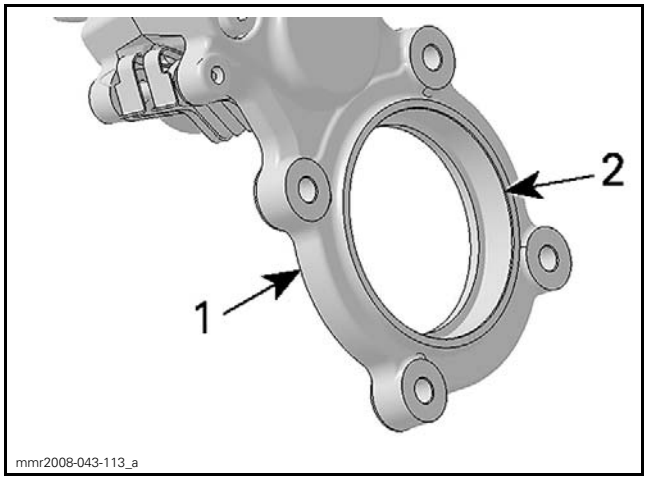
Installing the Caliper

1. Using your fingers or a small piece of wood, push both pistons into their bores.
2. Clean brake caliper bearing shoulder with fine steel wool.
3. Apply antiseize lubricant on drive axle splines and on bearing shoulder of caliper bracket.

SERVICE PRODUCT
LOCTITE 767 (ANTI-SEIZE LUBRICANT) (P/N 293 800 070)

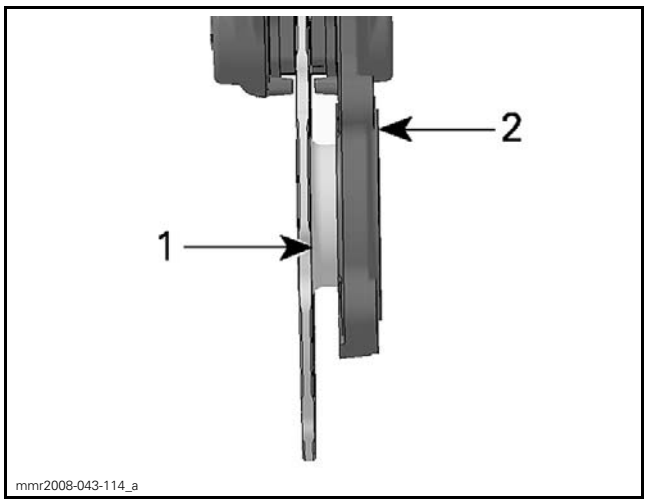


DRIVE AXLE SPLINES



1. *Caliper bracket*
2. *Bearing shoulder*

4. Insert brake disc in the caliper. The brake disc collar must be inserted in the caliper bracket.



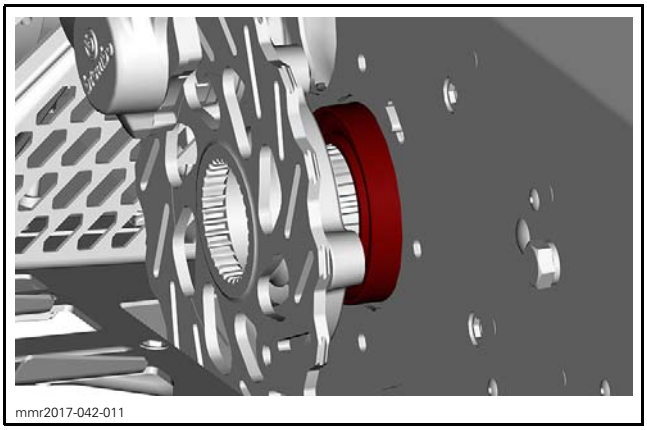
1. *Brake disc collar*
2. *Caliper bracket*

5. Ensure bearing flange is properly locked in the frame. Tabs must be properly inserted in frame slots.

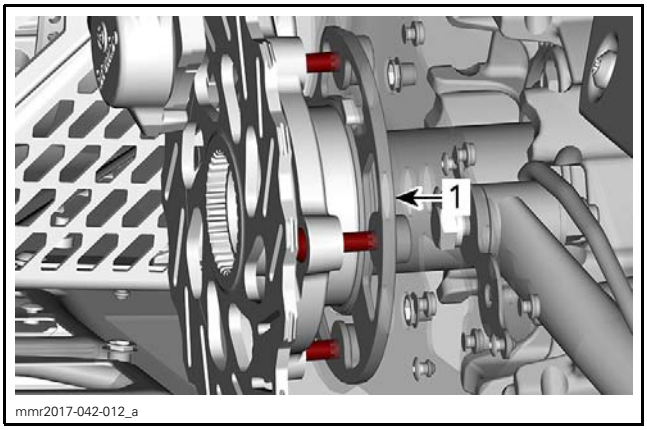


VIEW FROM OUTSIDE FRAME

6. Align brake disc splines with drive axle splines and push brake disc onto drive axle.
7. Push the caliper bracket over the drive axle bearing.



8. Align caliper bracket holes with bearing flange holes and install caliper screws.



TYPICAL - TUNNEL IS TRANSPARENT FOR CLARITY
1. Bearing flange (inside frame)

9. HAND TIGHTEN each caliper bracket screw evenly in a criss-cross pattern until bracket is correctly positioned against frame.

NOTICE Never use an air tool to tighten caliper screws. The caliper bracket could crack.

10. Install the brake pads. Refer to procedure in this subsection.
11. Install the brake disc circlip.
12. Tighten the brake caliper screws to specification.

TIGHTENING TORQUE	
Caliper screws	24.5 N•m ± 3.5 N•m (18 lbf•ft ± 3 lbf•ft)

13. Apply brake fluid on Banjo fitting threads.
14. Install the Banjo fitting with two new sealing washers.
15. Tighten Banjo fitting to specification.

TIGHTENING TORQUE	
Banjo fitting	35 N•m ± 1 N•m (26 lbf•ft ± 1 lbf•ft)

16. Fill and bleed the brake system. Refer to *MAINTENANCE* in this subsection.
17. Install all other removed parts.
18. Check the operation of the brake carefully before riding the snowmobile.

BRAKE DISC

Inspecting the Brake Disc (Not Removed)

1. Remove the disc brake protective cover.
2. Check for scoring, cracking or bending, replace as required.
3. Measure brake disc thickness. If the brake disc is out of specification, replace it with a new one.

NOTICE Brake disc should never be machined.

BRAKE DISC SPECIFICATION	
Minimum thickness	4.5 mm (.177 in)

Inspecting the Brake Disc (Removed)

1. Check brake disc splines and drive axle splines for wear or other damages. Replace defective parts.

Removing and Installing the Brake Disc

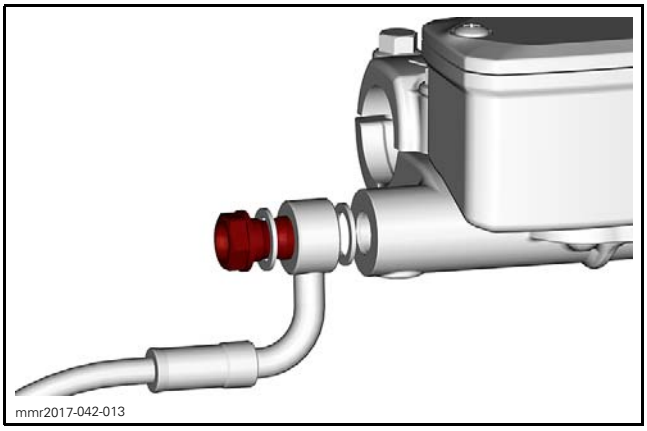
Follow procedures for caliper removal and installation.

MASTER CYLINDER

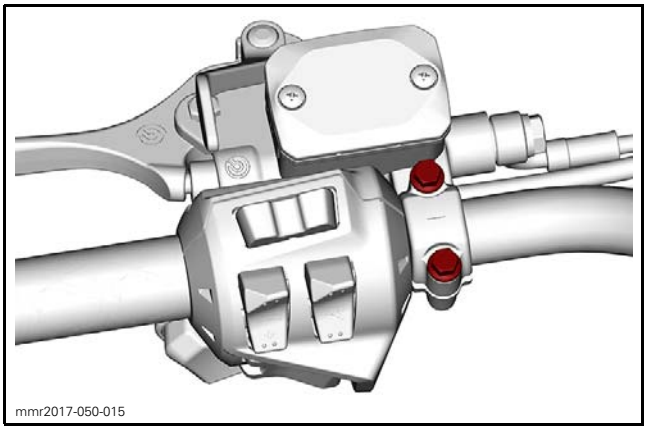
Removing the Master Cylinder

NOTE: If the master cylinder is not replaced, omit the steps concerning brake system draining and brake hose removal.

1. Drain brake system, Refer to *MAINTENANCE* in this subsection.
2. Remove the Banjo fitting and discard the sealing washers.


mmr2017-042-013

3. Remove screws and clamp securing master cylinder to handlebar.


mmr2017-050-015

4. Remove master cylinder.

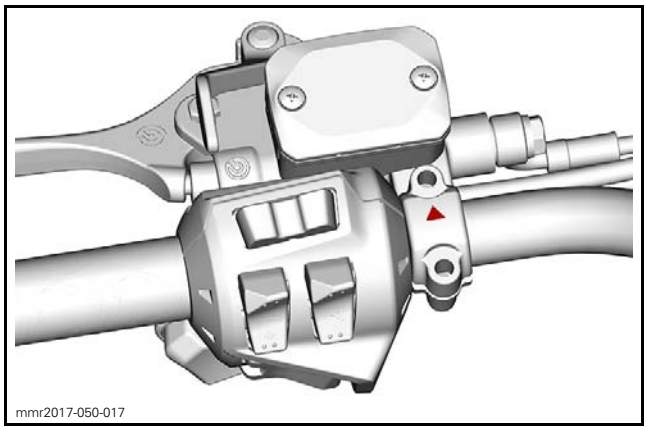
NOTICE Do not let master cylinder hang by the hose and do not stretch or twist the hose.

Inspecting the Master Cylinder

1. Discard all remaining fluid inside master cylinder reservoir.
2. Check if the reservoir cap seal is brittle, hard or damaged. Replace as necessary.
3. If the reservoir is damaged or leaking, replace master cylinder.
4. Check if brake lever is bent, cracked or otherwise damaged. Replace brake lever if required.

Installing the Master Cylinder

1. Place the master cylinder on the handlebar.
2. Install master cylinder retaining clamp with its arrow pointing toward the front of vehicle.


mmr2017-050-017

3. Install master cylinder clamp screws and tighten loosely.
4. With the handlebar in the straight ahead position, place the reservoir parallel to the ground.
5. Tighten master cylinder clamp screws to specification.

TIGHTENING TORQUE	
Master cylinder clamp screws	9 N•m ± 1 N•m (80 lbf•**in** ± 9 lbf•**in**)

6. Install the Banjo fitting with two new sealing washers.
7. Tighten Banjo fitting to specification.

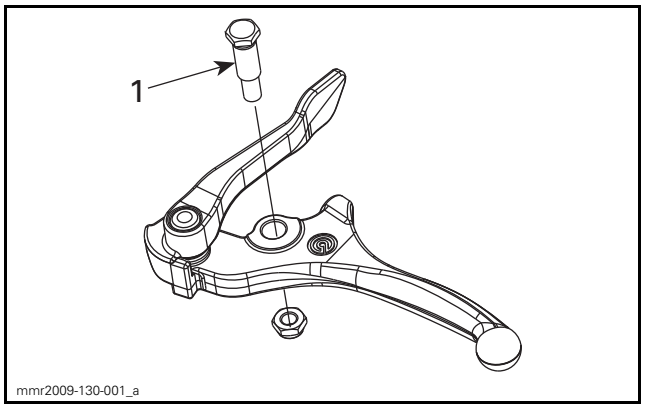
TIGHTENING TORQUE	
Banjo fitting	27 N•m ± 1 N•m (20 lbf•ft ± 1 lbf•ft)

8. Fill and bleed the brake system. Refer to *MAINTENANCE* in this subsection.
9. Install brake light switch.
10. Install steering cover.

BRAKE LEVER

Replacing the Brake Lever

Always lubricate brake lever pivot when replacing brake lever or pivot. Refert to *LUBRICATING THE BRAKE LEVER PIVOT*.



TYPICAL
1. Lubricate brake lever pivot

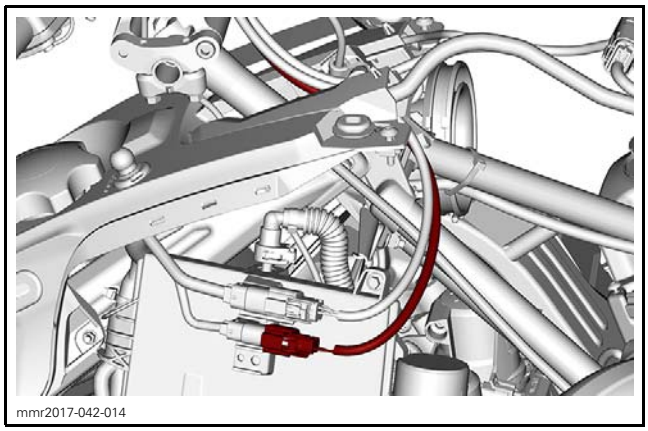
Tighten the pivot nut of brake lever to specification.

TIGHTENING TORQUE	
Brake lever pivot nut	6 N•m ± 1 N•m (53 lbf•**in** ± 9 lbf•**in**)

BRAKE LIGHT SWITCH

Testing the Brake Light Switch Resistance

1. Remove the upper body module. Refer to *BODY* subsection.
2. Disconnect the brake light switch connector located on the ECM.



3. Validate switch operation with an ohmmeter as follows.

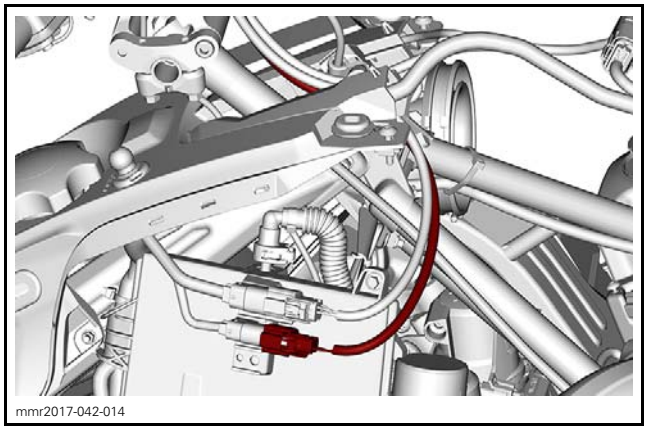
LH HANDLEBAR CONNECTOR (4-PIN)		
SWITCH	WIRE	RESISTANCE
Released	Pin 2 and pin 4	Infinite (OL)
Squeezed and held		Close to 0 Ω

If readings do not correspond to the above specifications, replace switch.

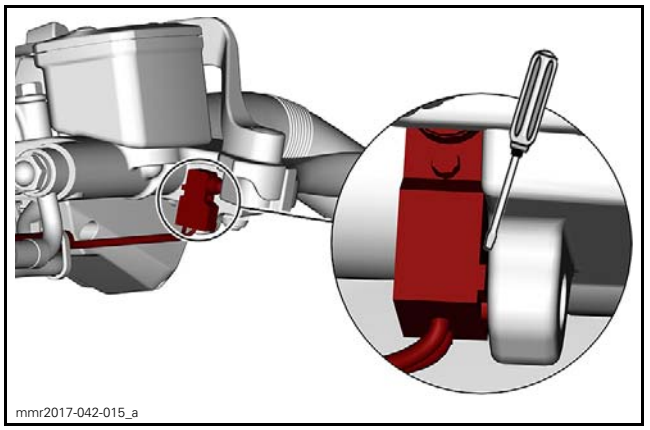
If readings correspond to the above specifications, check fuse, wiring and connectors going to switch. Repair or replace defective part(s).

Removing the Brake Light Switch

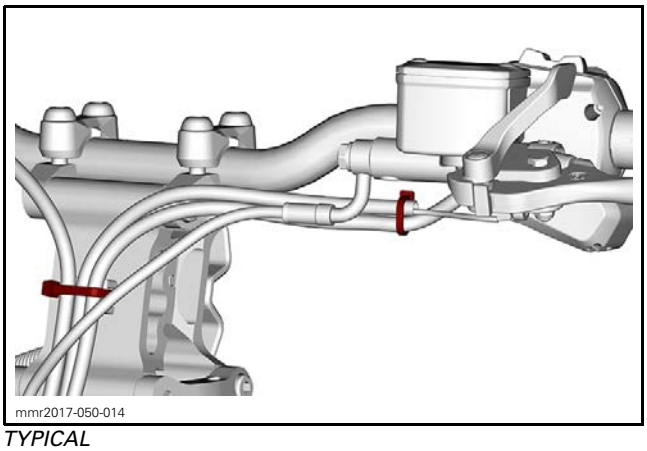
1. Remove the upper body module. Refer to *BODY* subsection.
2. Disconnect the brake light switch connector located on the ECM.



3. Slip a small screwdriver between brake light switch and master cylinder housing and separate them.



4. Cut all locking ties securing switch wires.


mmr2017-050-014

TYPICAL

5. Remove switch wires from connector. Refer to *WIRING HARNESS AND CONNECTORS*.

NOTE: Check wires location for reinstallation.

Installing the Brake Light Switch

The installation is the reverse of the removal procedure. However, pay attention to the following.

Plug switch wires into connector as per following tables.

LH HANDLEBAR CONNECTOR (4-PIN)	
WIRE	CONNECTOR
GRAY	Pin 4
BROWN	Pin 2

Check if switch is working properly.

Install new locking ties.

BRAKE HOSE

Replacing the Brake Hose

1. Remove the console. Refer to *BODY* subsection.
2. Drain the brake system. Refer to *MAINTENANCE* in this subsection.
3. Remove Banjo fittings at both ends of hose. Refer to *REMOVING THE MASTER CYLINDER* and *REMOVING THE CALIPER*.
4. Remove fasteners that secure the hose clamps to the frame.

NOTICE **Take care not to overdrill the lower clamp rivet. The fuel tank could be damaged.**

The installation is the reverse of the removal procedure. However, pay attention to the following.

Install new sealing washer.

TIGHTENING TORQUE	
Middle clamp nut	2.3 N•m ± 0.2 N•m (20 lbf•**in** ± 2 lbf•**in**)
Caliper Banjo fitting	35 N•m ± 1 N•m (26 lbf•ft ± 1 lbf•ft)
Master cylinder Banjo fitting	27 N•m ± 1 N•m (20 lbf•ft ± 1 lbf•ft)

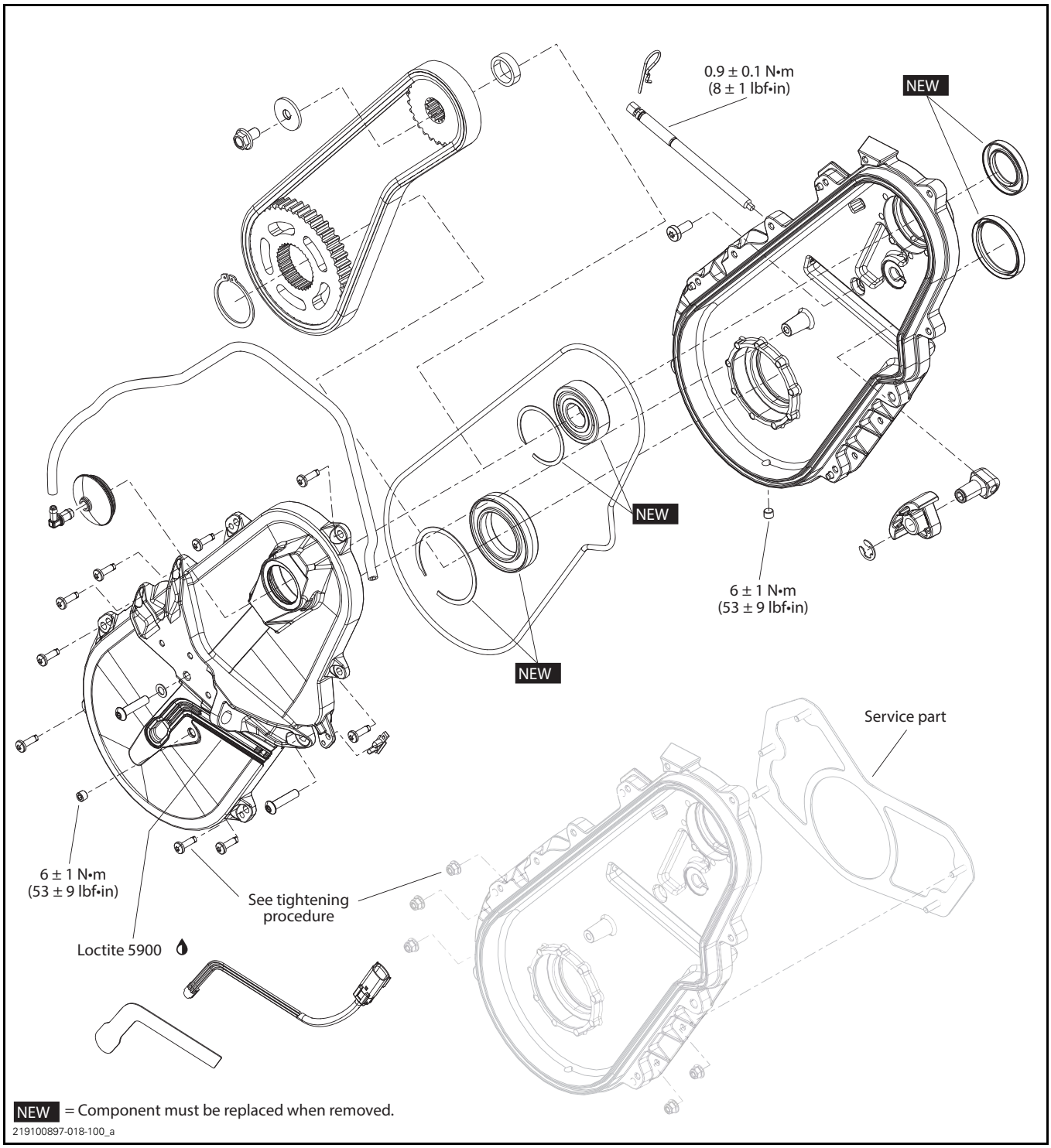
CHAINCASE

SERVICE TOOLS

Description	Part Number	Page
BEARING PULLER/PUSHER	529 036 111	250
BEARING PULLER/PUSHER	529 036 112	250

SERVICE PRODUCTS

Description	Part Number	Page
LOCTITE 5900	293 800 066	256
SYNTHETIC CHAINCASE OIL	779156	247


0.9 ± 0.1 N•m
(8 ± 1 lbf•in)
NEW
NEW
NEW
6 ± 1 N•m
(53 ± 9 lbf•in)
Service part
6 ± 1 N•m
(53 ± 9 lbf•in)
See tightening procedure
Loctite 5900
NEW = Component must be replaced when removed.
219100897-018-100_a

GENERAL

During assembly/installation, use the torque values and service products as in the exploded view.

Clean threads before applying a threadlocker. Refer to *SELF-LOCKING FASTENERS* and *LOCTITE APPLICATION* at the beginning of this manual for complete procedure.

⚠ WARNING

Torque wrench tightening specifications must be strictly adhered to.
Locking devices must be replaced with new ones when removed (e.g.: locking tabs, elastic stop nuts, cotter pin, etc.).

NOTICE **Hoses, cables and locking ties removed during a procedure must be reinstalled as per factory standards.**

MAINTENANCE

CHAINCASE OIL

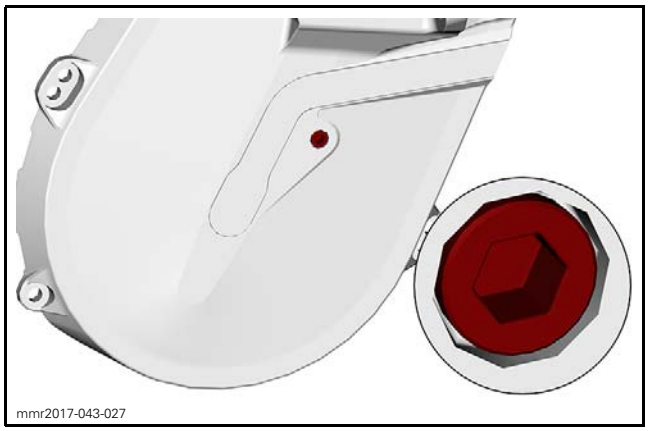
Recommended Chaincase Oil

RECOMMENDED SERVICE PRODUCT
SYNTHETIC CHAINCASE OIL (P/N 779156)

NOTICE **Use only the recommended type oil when servicing. Do not mix synthetic oil with other types of oil.**

Verifying the Chaincase Oil Level

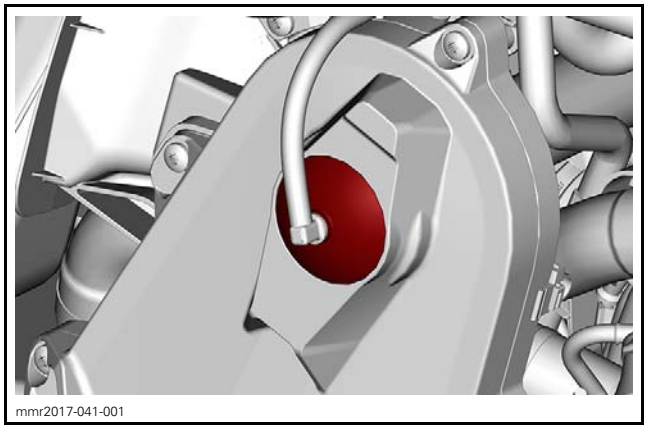
1. Place vehicle on a level surface.
2. Remove the check plug beside the speed sensor on the chaincase cover. Oil level must be equal with the lower edge.


mmr2017-043-027

3. Remove metal particles from magnetic check plug.

NOTE: It is normal to find metallic particles stuck to magnetic check plug. If bigger pieces of metal are found, remove the chaincase cover and inspect the chaincase parts.

4. To add oil, remove the filler cap on top of chaincase cover.

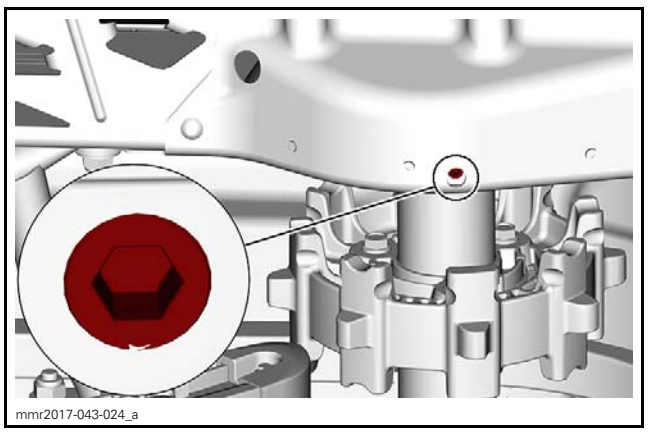

mmr2017-041-001

5. Pour recommended oil in chaincase by the filler hole until oil comes out by the magnetic check plug hole.
6. Reinstall magnetic check plug and torque to specification.

TIGHTENING TORQUE	
Magnetic check plug	6 N•m ± 1 N•m (53 lbf•**in** ± 9 lbf•**in**)

Replacing the Chaincase Oil

1. Place vehicle on a level surface.
2. Place a container under vehicle in line with chaincase to catch chaincase oil.
3. Remove the drain plug on the bottom of the chaincase.


mmr2017-043-024_a

4. Reinstall the drain plug.

TIGHTENING TORQUE	
Drain plug	6 N•m ± 1 N•m (53 lbf•**in** ± 9 lbf•**in**)

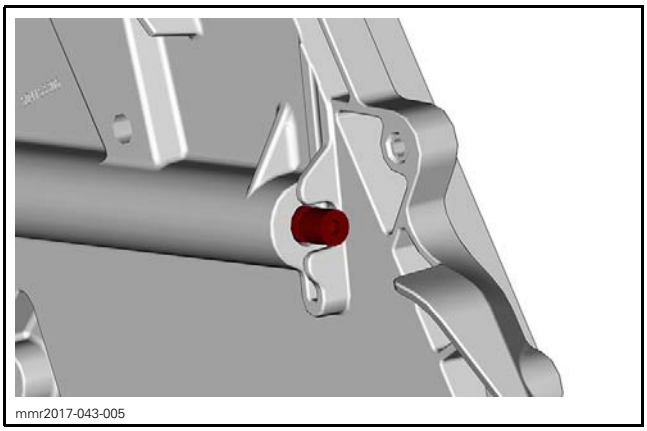
5. Remove the magnetic check plug
6. Pour approximately 350 ml (12 U.S. oz) of recommended oil in chaincase through the filler hole until oil comes out by the magnetic check plug hole.
7. Clean the magnetic check plug. Refer to *CHAINCASE OIL LEVEL VERIFICATION*, see procedure in this subsection.

DRIVE CHAIN

Adjusting the Drive Chain

1. Tighten tensioner adjustment screw BY HAND.

NOTE: Turn adjustment screw until resistance is strong enough that it can not be turned by hand.


mmr2017-043-005

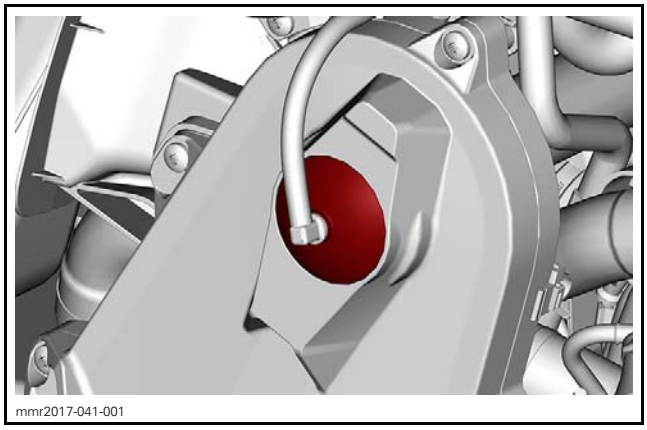
PROCEDURES

CHAINCASE

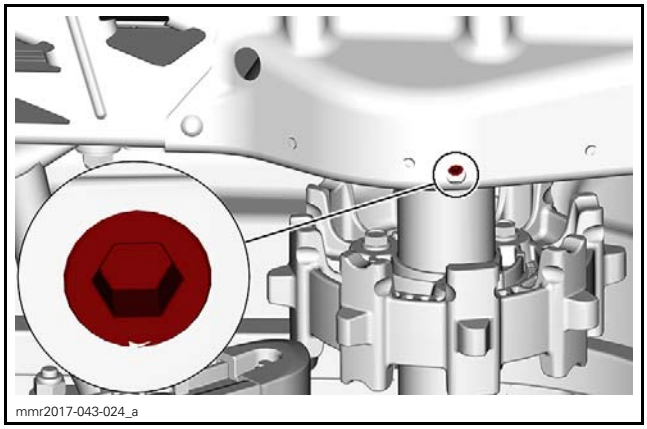
Chaincase Disassembly

Removing the Chaincase Cover

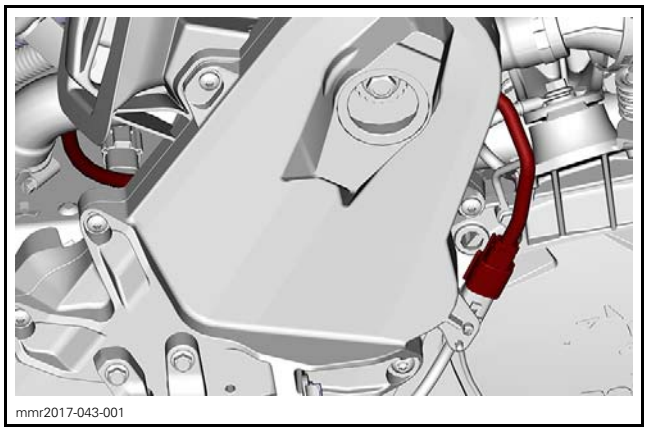
1. Apply parking brake.
2. Remove the muffler. Refer to *EXHAUST SYSTEM* subsection.
3. Remove the filler plug on the chaincase cover.


mmr2017-041-001

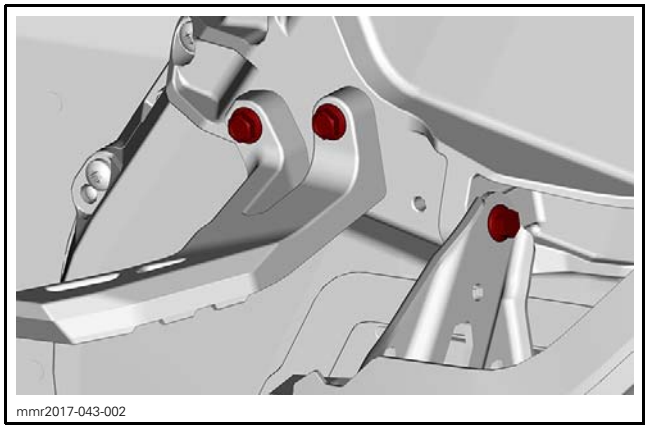
4. Place a container under vehicle in line with chaincase to catch chaincase oil.
5. Remove the drain plug on the bottom of the chaincase.


mmr2017-043-024_a

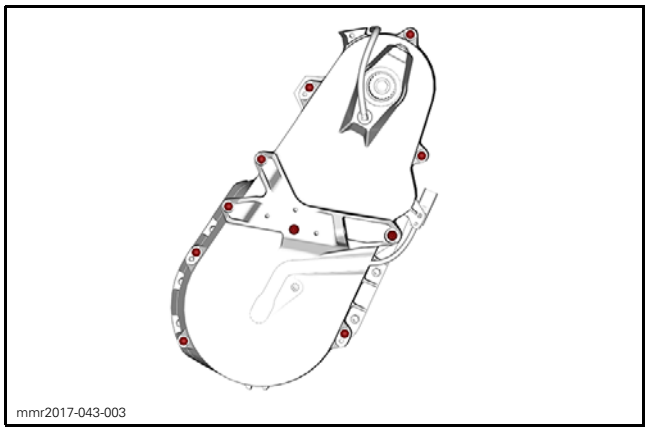
6. Disconnect speed sensor connector.


mmr2017-043-001

7. Remove the RH side toe hook and the screw securing the cover to the footrest.


mmr2017-043-002

8. Remove chaincase cover screws.

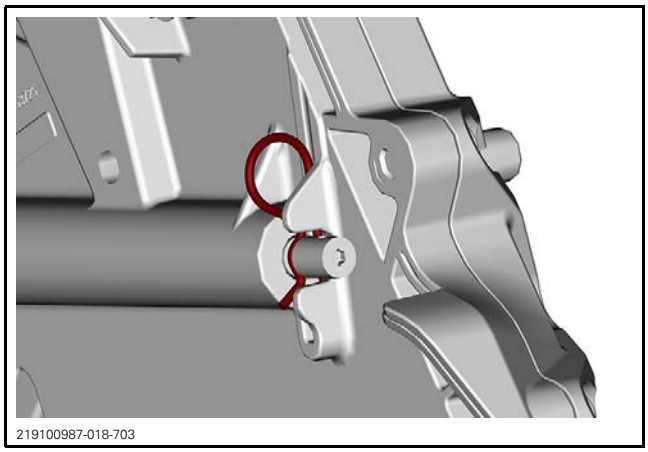

mmr2017-043-003

TYPICAL

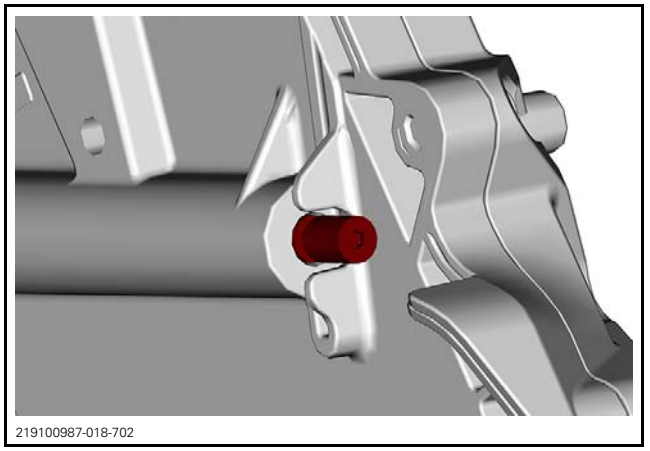
9. Pull on bottom of chaincase cover to drain oil.
10. Wait a moment then remove the cover completely.

Removing the Chain Tensioner

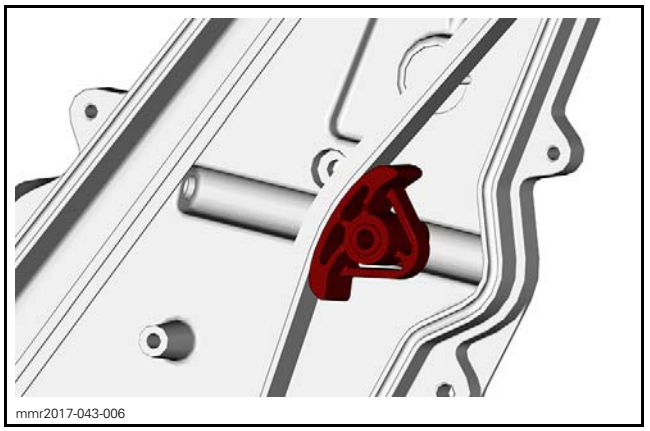
1. Remove the hair pin from behind the chaincase.


219100987-018-703

2. Remove the tensioner adjustment screw.

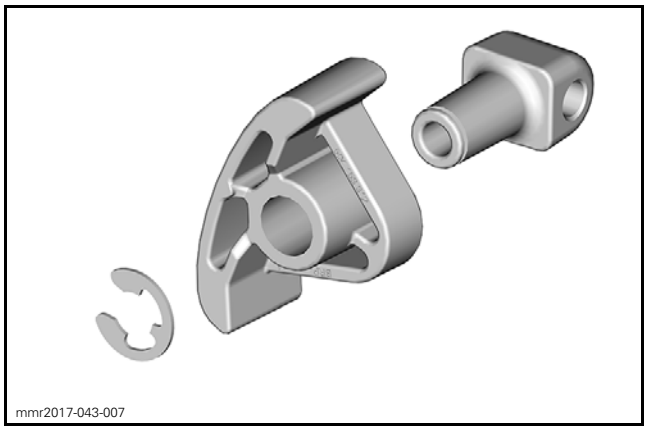

219100987-018-702

3. Remove tensioner.


mmr2017-043-006

NOTE: The following steps are required only if the tensioner or the slider is defective.

4. Remove the circlip securing the slider to tensioner.

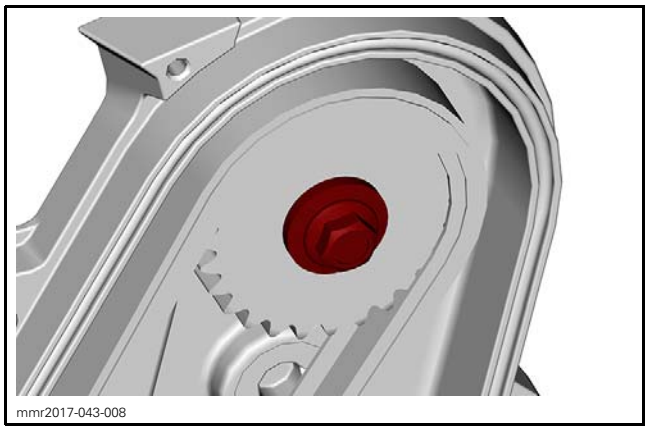

mmr2017-043-007

1. *Circlip*
2. *Tensioner*
3. *Slider*

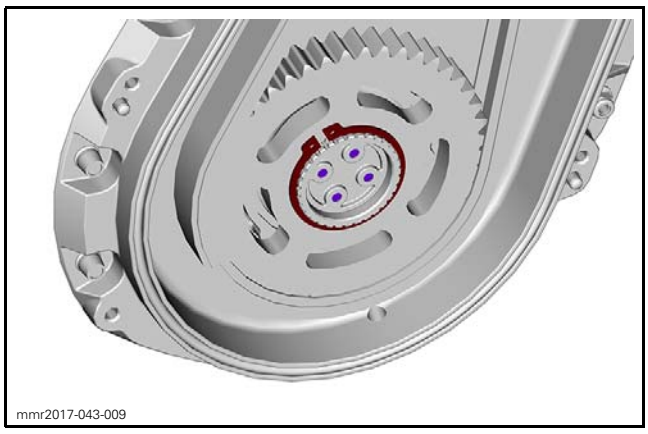
Removing the Drive Chain and Sprocket

NOTE: Prior to removing the drive chain, check the drive chain deflection.

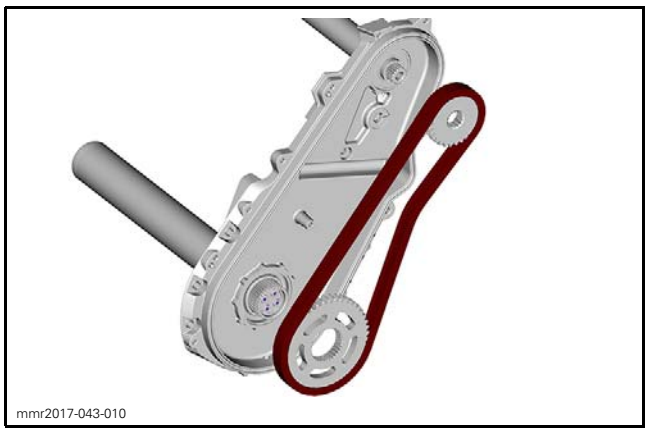
1. Remove the upper sprocket screw and its conical spring washer.


mmr2017-043-008

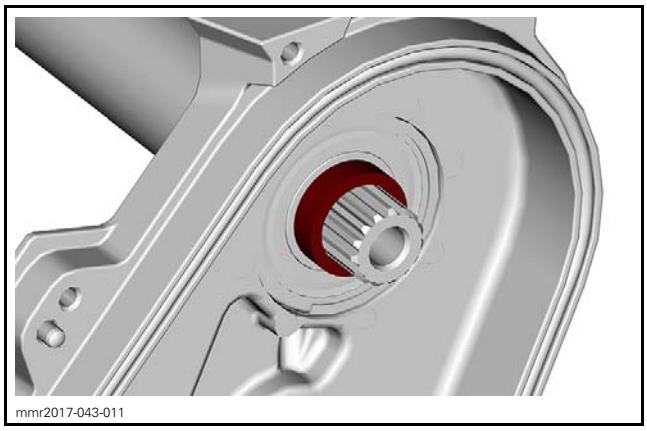
2. Remove the lower sprocket circlip.


mmr2017-043-009

3. Remove the upper sprocket, lower sprocket and drive chain simultaneously.

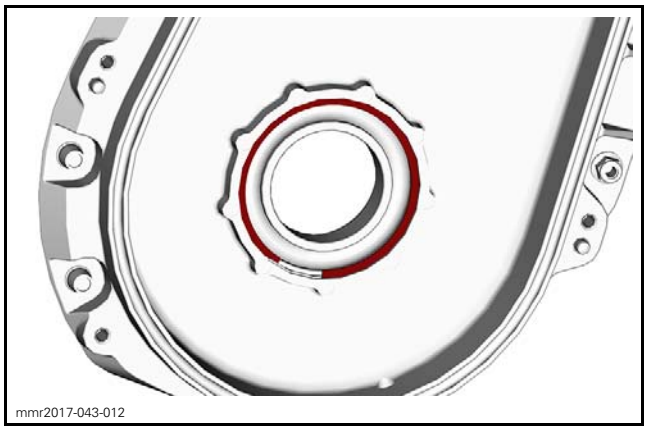

mmr2017-043-010

4. Remove the countershaft spacer.


mmr2017-043-011

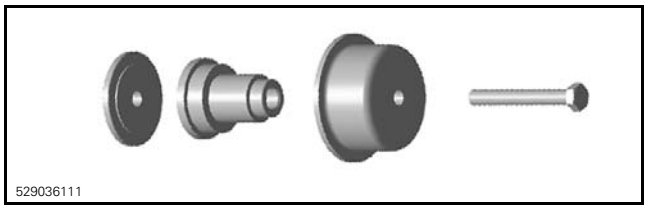
Removing the Chaincase Bearing

1. Remove countershaft or drive axle, depending which bearing is replaced. Refer to the appropriate subsection, *DRIVEN PULLEY AND COUNTERSHAFT* or *DRIVE AXLE*.
2. Remove snap ring securing bearing into chaincase.

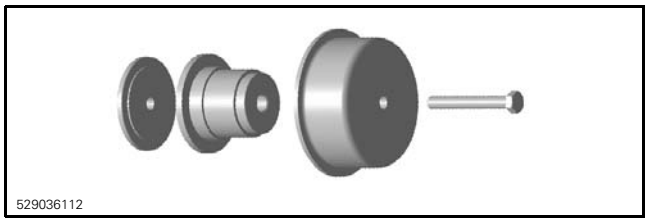

mmr2017-043-012

3. Install the appropriate bearing extractor:

BEARING	REQUIRED TOOL
Countershaft	BEARING PULLER/PUSHER (P/N 529 036 111)
Drive axle	BEARING PULLER/PUSHER (P/N 529 036 112)

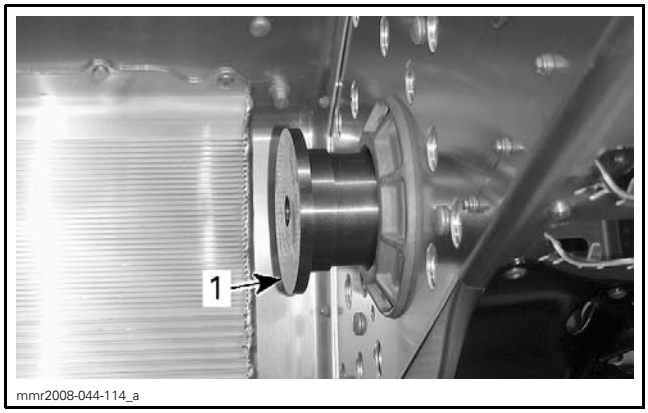

529036111

COUNTERSHAFT



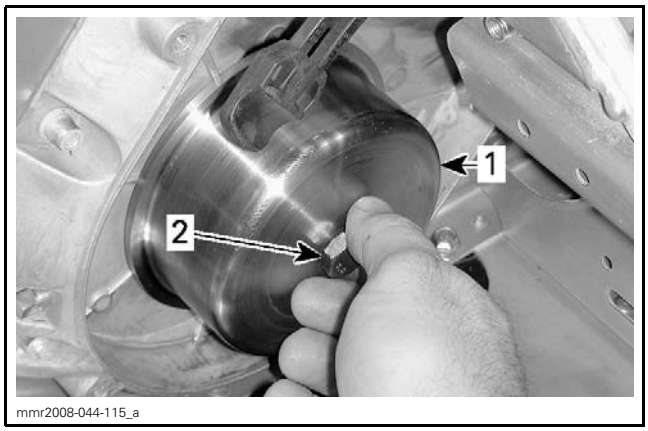
DRIVE AXLE

4. Install the extractor/installer tool behind the bearing.



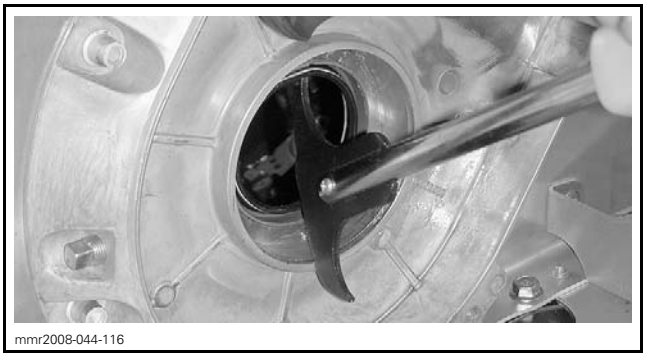
TYPICAL
1. Extractor/installer tool

5. Install the extractor cup over bearing.
6. Tighten the extractor/installer tool screw to remove the bearing.



TYPICAL
1. Extractor cup
2. Tighten to remove bearing

7. Using a seal puller, remove and discard the oil seal.

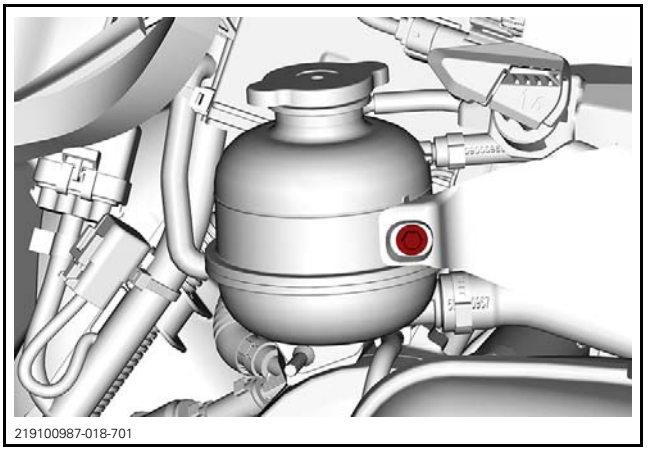


TYPICAL

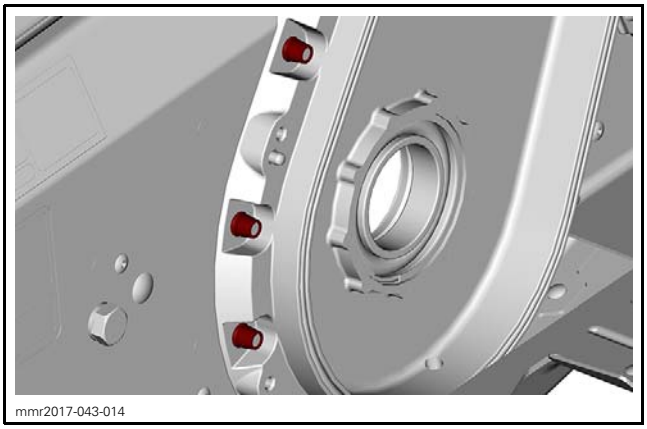
Removing the Chaincase Housing

IMPORTANT:Ensure you have a new mounting plate on hand along with the 5 attachment nuts before removing the chaincase assembly. Refer to the appropriate *ELECTRONIC PARTS CATALOG* that fits your model to determine required part number.

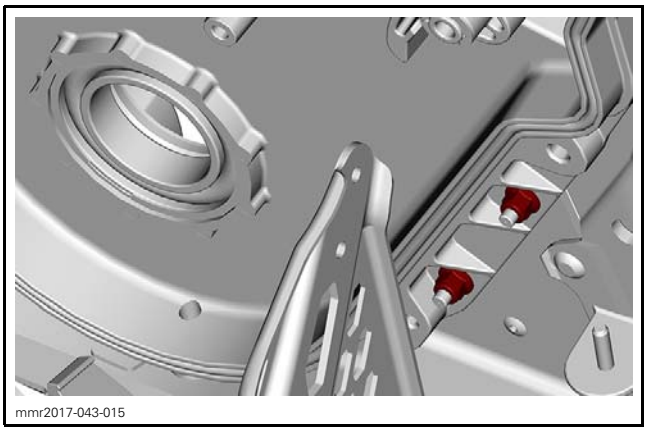
1. Remove the drive axle. Refer to *DRIVE AXLE* subsection.
2. Remove the countershaft. Refer to *DRIVEN PULLEY AND COUNTERSHAFT* subsection.
3. Remove the screw securing the coolant reservoir.



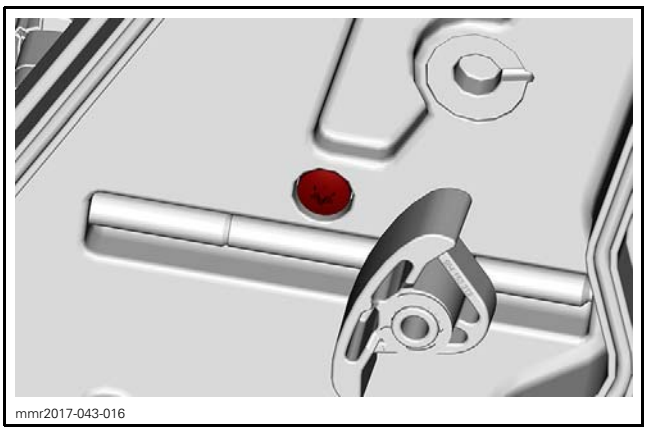
4. Remove the Huck rivets. Refer to *FRAME* subsection for proper removal procedure.


mmr2017-043-014

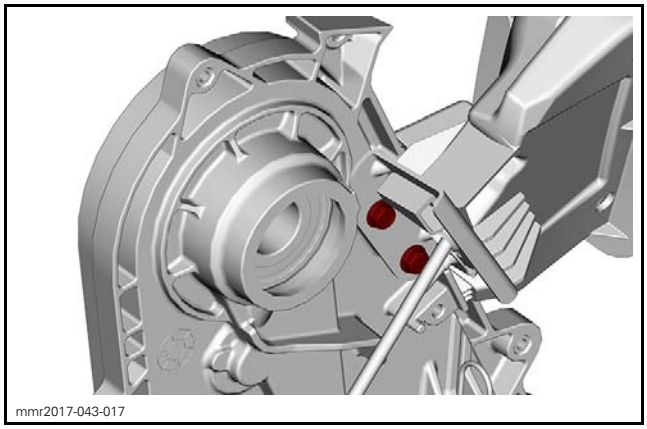
5. Remove nuts beside the footrest.


mmr2017-043-015

6. Remove the screw above the tensioner.


mmr2017-043-016

7. Using 2 large pry bars inserted between chaincase and frame, pry chaincase out of vehicle.
8. Remove the rewind starter rope guide screws.


mmr2017-043-017

Inspecting the Chaincase

Inspecting the Chaincase Cover

Check the cover for cracks or other damages. Replace it if necessary.

Check if O-ring inside cover is brittle, hard or damaged. Replace it if necessary.

Inspecting the Chain Tensioner

Check chain tensioner slider for wear or other damages. A longitudinal groove in the slider indicate a broken chain link. Replace if necessary.

Check threads of tensioner adjustment screw for damages or wear.

Check straightness of adjustment screw. Replace screw if necessary.Check chaincase for damages.

Inspecting the Drive Chain and Sprockets

Visually inspect the drive chain and sprockets for:
– Wear
– Cracks
– Damages teeth
– Missing or broken links.

If a problem is detected, replace drive chain and sprockets as an assembly.

Check the drive chain deflection.

If the deflection is greater than 38 mm (1-1/2 in) without the chain tensioner, replace the drive chain.

Inspecting the Chaincase Bearing

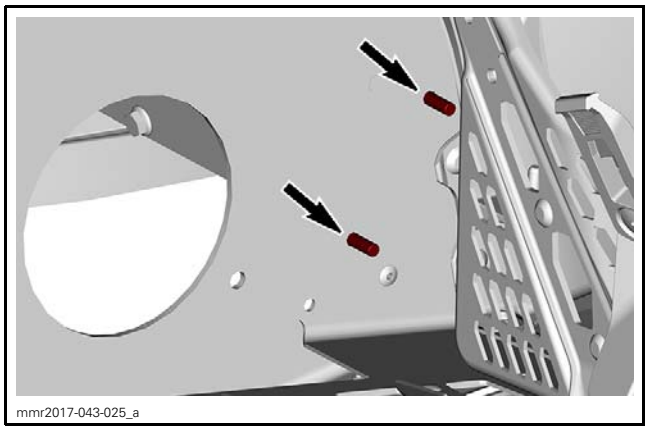
Check for worn or defective bearings.

Chaincase Assembly

Installing the Chaincase Housing

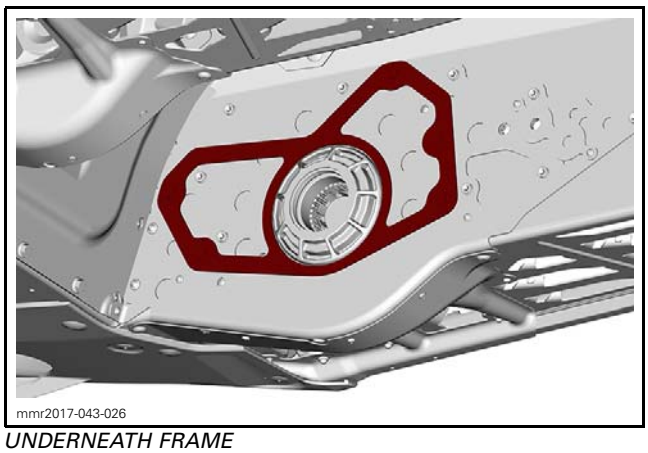
The installation is the reverse of the removal procedure. However, pay attention to the following.

Remove the clinch studs from the frame.


mmr2017-043-025_a

Use a suitable box to support the frame around the stud head and hit the stud from the outside with a hammer.

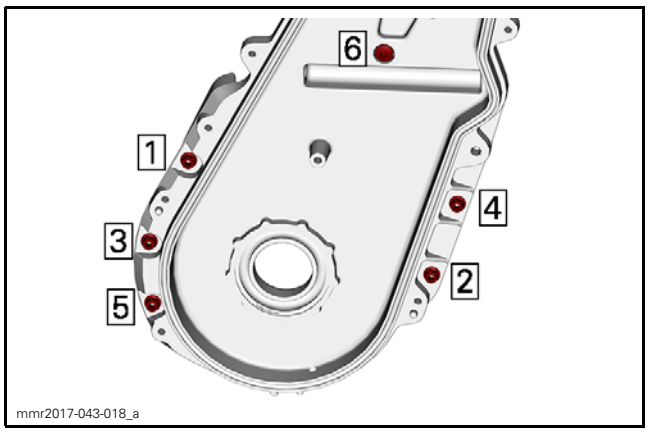
Install the new mounting plate underneath the frame.


mmr2017-043-026

UNDERNEATH FRAME

Install 5 elastic flanged nuts to secure chaincase on mounting plate.

Tighten fasteners as per the following sequence.



mmr2017-043-018_a

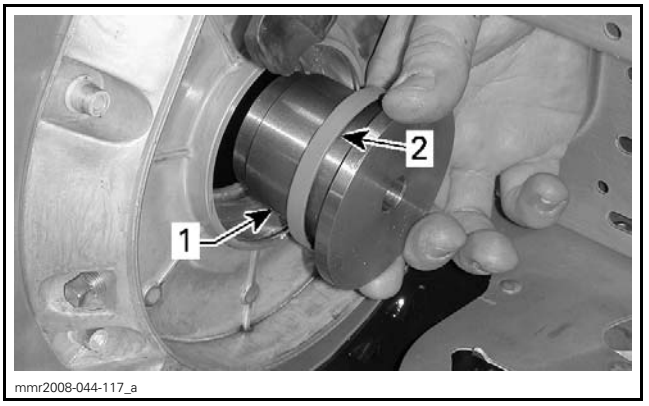
Proceed with drive chain adjustment. Refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.

Refill chaincase with recommended oil. Refer to *REPLACING THE CHAINCASE OIL* in *PERIODIC MAINTENANCE PROCEDURES* subsection.

Installing Chaincase Bearing

The installation is the reverse of the removal procedure. However, pay attention to the following.

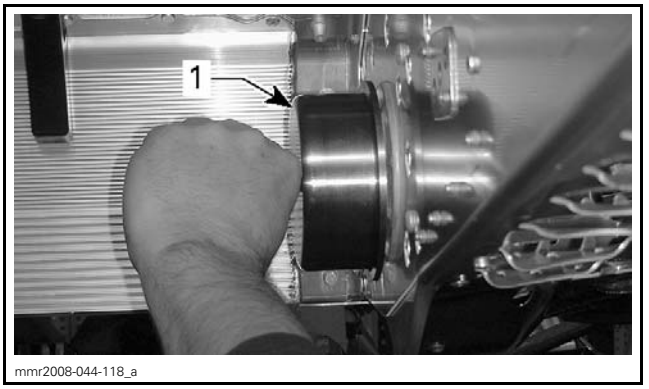
Install the new oil seal on the extractor/installer tool. Position the lips toward bearing.



mmr2008-044-117_a

TYPICAL
1. *Extractor/installer tool*
2. *Oil seal lips on this side*

Install the extractor cup inside frame.

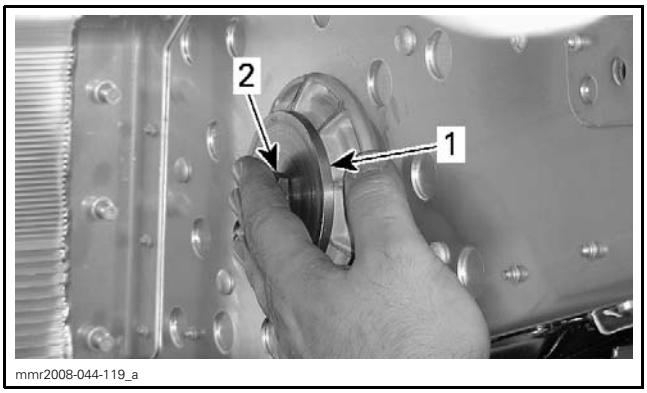


mmr2008-044-118_a

TYPICAL
1. *Extractor cup*

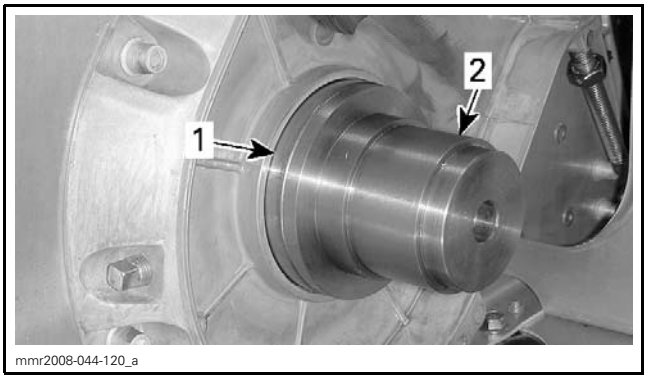
Tighten the extractor/installer tool screw to install the oil seal.

Install the large washer and the extractor/installer tool screw inside frame.



TYPICAL
1. *Large washer*
2. *Extractor/installer tool screw*

In chaincase, install new bearing and the extractor/installer tool.



TYPICAL
1. *Bearing*
2. *Extractor/installer tool*

Tighten the extractor/installer tool screw to install the bearing.

Install new snap ring.

Installing the Drive Chain and Sprockets

The installation is the reverse of the removal procedure. However, pay attention to the following.

Make sure to install sprockets with their inscriptions outward.

Install the conical spring washer on the upper sprocket with its concave side toward sprocket.

Installing the Chain Tensioner

The installation is the reverse of the removal procedure. However, pay attention to the following.

If the tensioner has been disassembled, make sure circlip turns freely and slider moves easily.

Proceed with drive chain adjustment. Refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.

Installing the Chaincase Cover

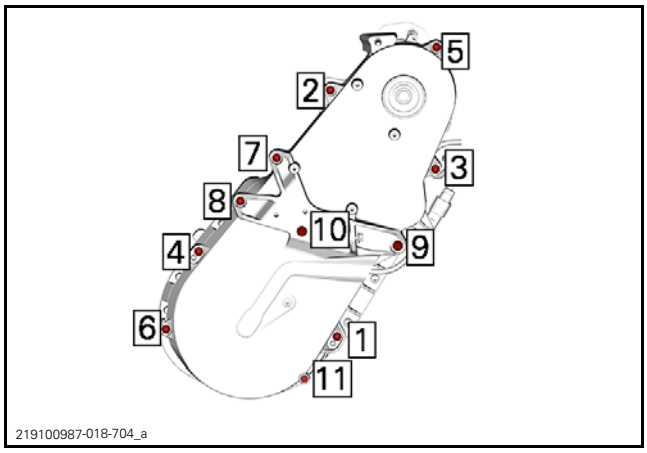
The installation is the reverse of the removal procedure. However, pay attention to the following.

Ensure cover seal is positioned correctly in its groove.

Install new sealing washer with screw no.10. See next illustration.

Tighten chaincase cover screws in accordance with the following sequence.

Screw 11 is present on long chaincase only.



TIGHTENING TORQUE		
Screws 1 to 8 and 11 (long chaincase)	Same chaincase	10 N•m ± 2 N•m (89 lbf•**in** ± 18 lbf•**in**)
	New chaincase	15 N•m ± 1 N•m (133 lbf•**in** ± 9 lbf•**in**)
Screw 9		24.5 N•m ± 3.5 N•m (18 lbf•ft ± 3 lbf•ft)
Screw 10		16 N•m ± 2 N•m (142 lbf•**in** ± 18 lbf•**in**)

Refill chaincase with recommended oil. Refer to *CHAINCASE OIL REPLACEMENT* in *PERIODIC MAINTENANCE PROCEDURES* subsection.

Reinstall all other removed parts.

SPEED SENSOR (VSS)

The speed sensor is a hall effect sensor.

Speed Sensor Location

The speed sensor is mounted in the chaincase cover.

Testing the Speed Sensor Signal

1. Ensure speed sensor is properly connected.
2. Wake up ECM.

3. Back-probe VSS connector as per table and test for proper specification.

NOTICE **Be careful not to damage connector seals when back probing.**

SPEED SENSOR (VSS) CONNECTOR	SPECIFICATION
Pin 2	Ground
Pin 3	5 Vdc reference voltage

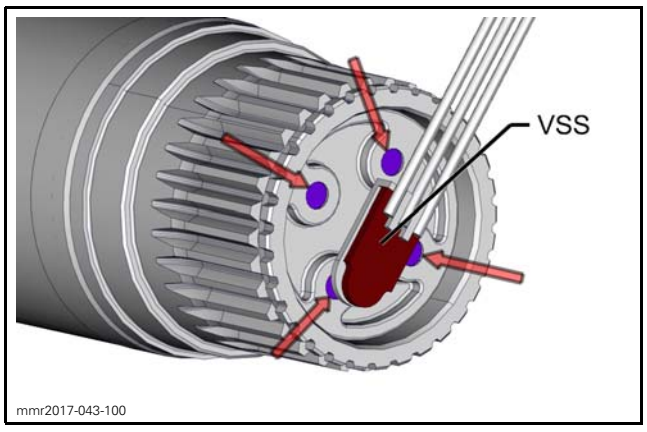
If test failed, check wiring harness going to ECM.

4. Lift and support rear of vehicle.
5. Back-probe VSS connector as per table and test for proper specification.
6. Rotate track/driven pulley.

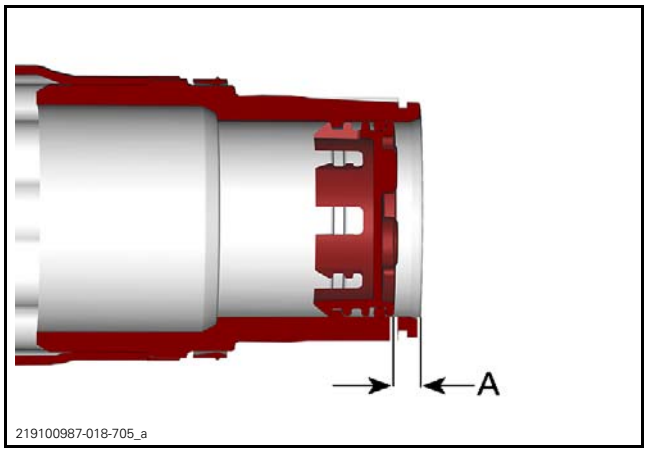
SPEED SENSOR SIGNAL TEST			
ROTATE DRIVEN PULLEY	SPEED SENSOR CONNECTOR (SENSOR SIDE)		VOLTAGE
	Pin 1	Pin 2	Alternate 7 Vdc and 0 Vdc

If reference voltage and ground are available at sensor, but no signal, replace sensor.

NOTE: During chaincase disassembly, ensure magnets are intact on shaft.



Measure the distance between magnetic cap and end of shaft. It must be as specified.



A. Distance to measure

DISTANCE SPECIFICATION	
no. A Measured between magnetic cap and shaft end	5 mm (.2 in)

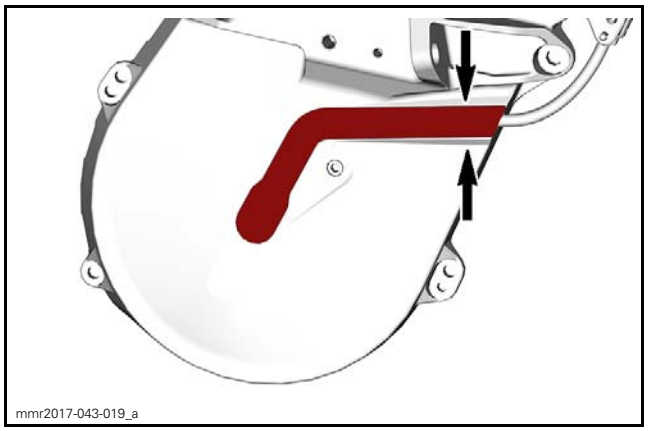
Replacing the Speed Sensor

The sensor can be replaced with the chaincase cover as an assembly. In such a case, refer to *CHAINCASE* subsection.

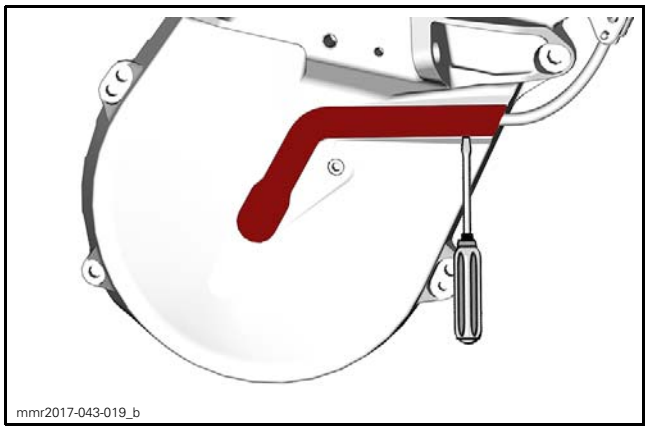
To replace sensor only, proceed as follows.

Removing the Speed Sensor

1. Remove chaincase cover. Refer to procedure in this subsection.
2. Heat the upper end of the speed sensor protective plate with a heat gun.



3. Use a flat screwdriver to pry out the end of the protective plate from chaincase cover.


mmr2017-043-019_b

NOTICE Use care when prying out the plate not to damage the chaincase cover.

4. Heat the next section of the plate.
5. Pry out the heated section using the flat screwdriver.
6. Repeat steps 4 and 5 until the protective plate is completely removed.
7. Remove the speed sensor.
8. Use the flat screwdriver to remove the remaining sealant from the chaincase cover.

NOTICE Do not apply excessive pressure when removing the remaining sealant not to damage the chaincase cover.

9. Rub the sealant using a scouring pad.

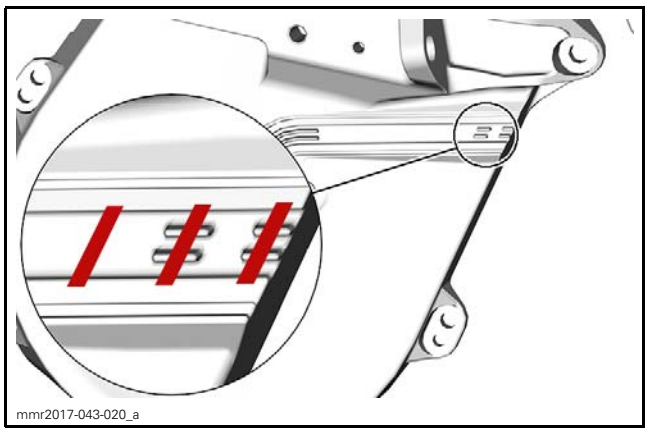
Installing the Speed Sensor

Make sure surface is clean and free of grease.

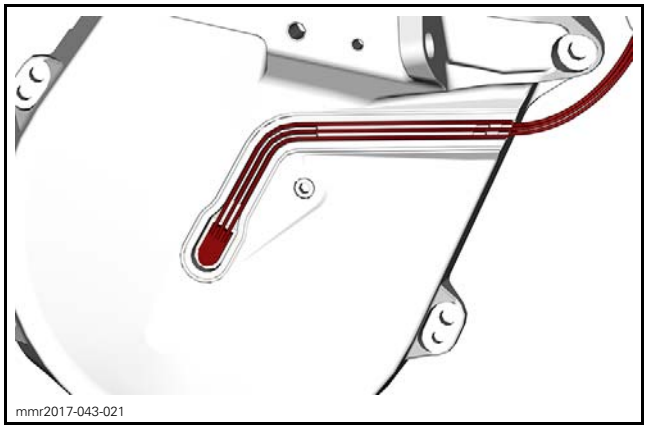
The assembly must be watertight.

PRODUCT REQUIRED
LOCTITE 5900 (P/N 293 800 066)

1. Apply 3 beads of sealant in the chaincase cover as per the following illustration.

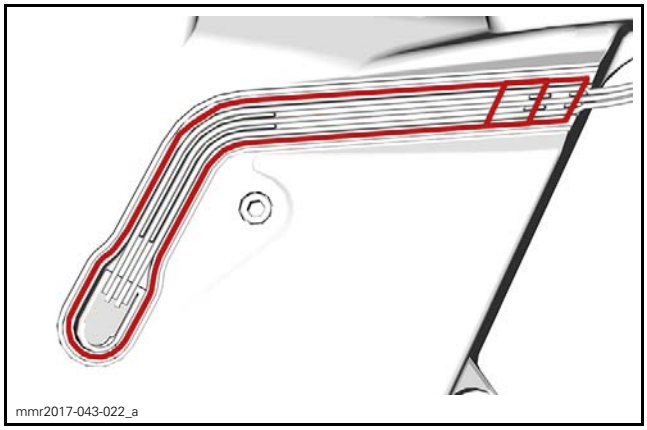

mmr2017-043-020_a

2. Install the speed sensor in the chaincase cover.


mmr2017-043-021

3. Apply sealant all around the protective plate bed on the chaincase cover.

Follow the pattern shown on the next picture.


mmr2017-043-022_a

4. Place the protective plate in position and firmly push in order to evacuate all the surplus sealant. Keep pressure for at least 1 minute.
5. Wipe off all the sealant surplus.
6. Once cleaned up, inspect all the circumference for sealant lacks.

NOTE: Sealant must be visible all around.

7. Place some adhesive tape on the protective plate to maintain a pressure for at least 24 hours.

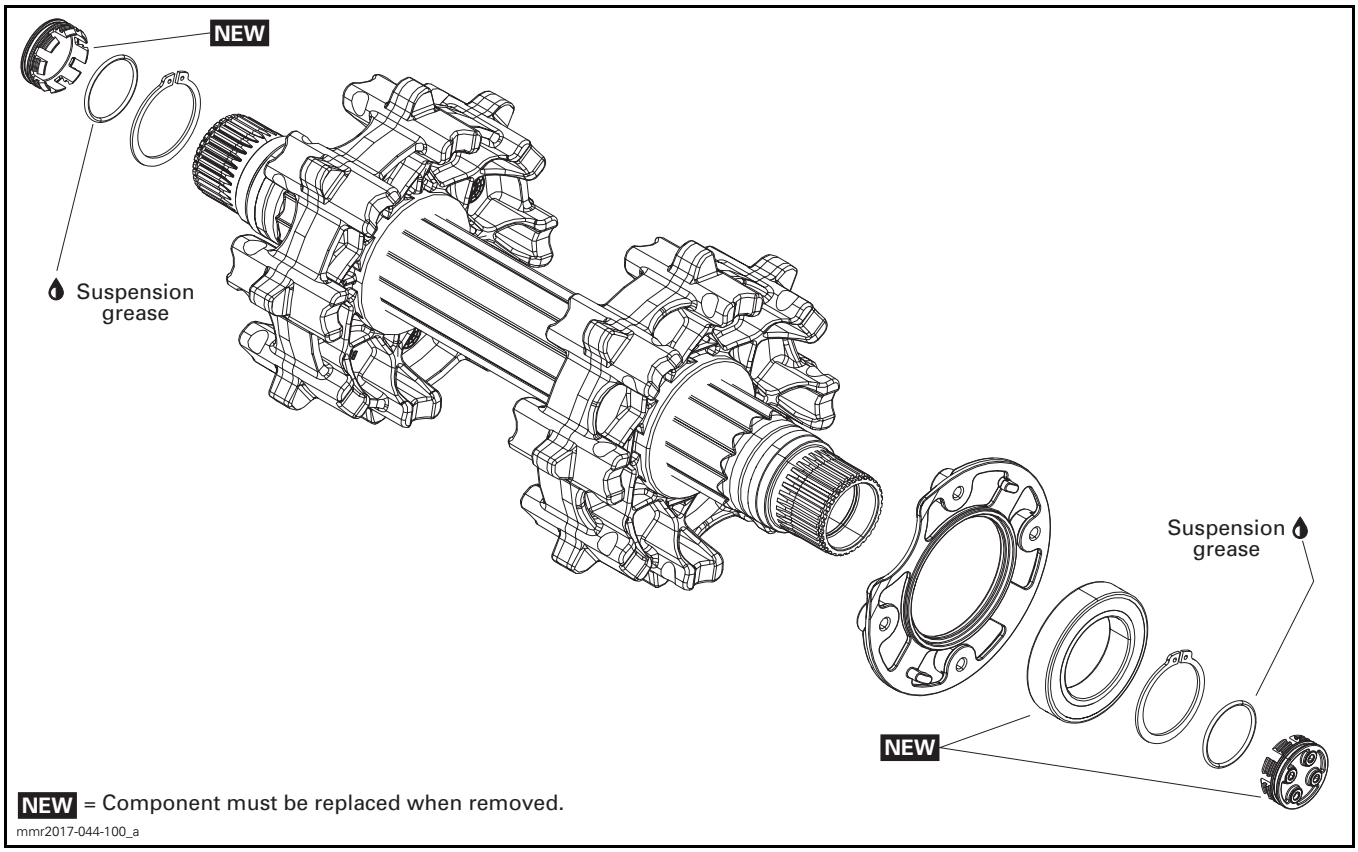
NOTE: Wait for at least 1 hour before exposing vehicle to cold temperature.

8. Reinstall chaincase cover. Refer to procedure in this subsection.

DRIVE AXLE

SERVICE PRODUCTS

Description	Part Number	Page
SYNTHETIC SUSPENSION GREASE	779163	259



GENERAL

During assembly or installation, use torque values and service products as in the exploded view.

Clean threads before applying a threadlocker. Refer to *SELF-LOCKING FASTENERS* and *LOCTITE APPLICATION* at the beginning of this manual for complete procedure.

⚠ WARNING

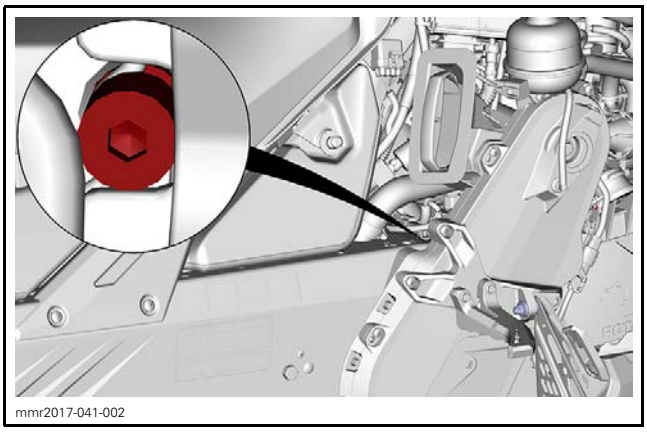
Torque wrench tightening specifications must be strictly adhered to.
Locking devices must be replaced with new ones when removed (e.g.: locking tabs, elastic stop nuts, cotter pins, etc.).

PROCEDURES

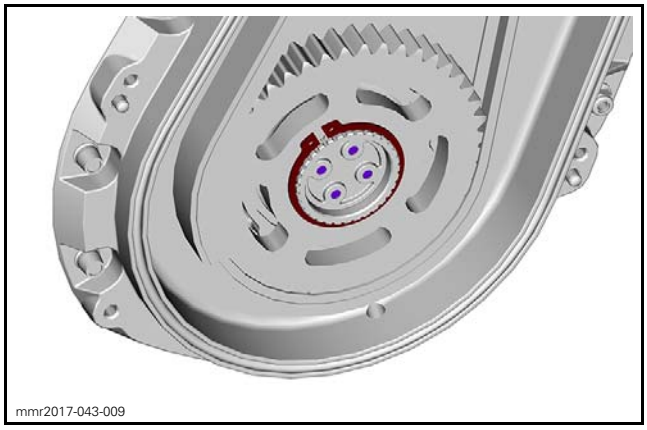
DRIVE AXLE

Removing the Drive Axle

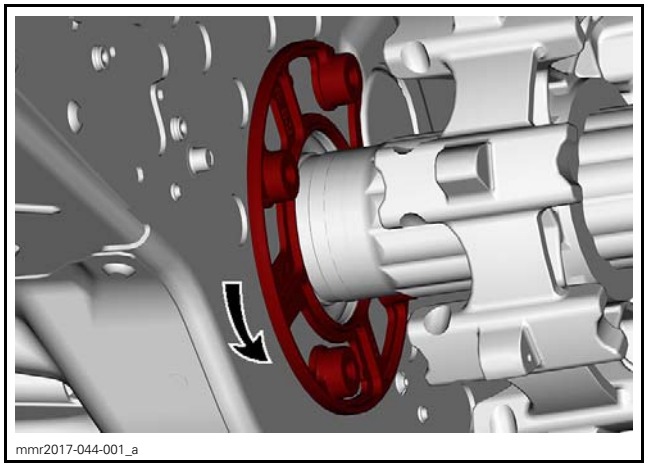
1. Remove the rear suspension. Refer to *REAR SUSPENSION* subsection.
2. Remove the chaincase cover. Refer to *CHAINCASE* subsection.
3. Release tension from drive chain by unscrewing the tensioner adjustment screw.


mmr2017-041-002

4. Remove the lower sprocket circlip.


mmr2017-043-009

5. Remove lower gear and drive chain.
6. Remove the caliper. Refer to *BRAKE* subsection.
7. From underneath of vehicle, turn the LH bearing flange counterclockwise to unlock it from frame.


mmr2017-044-001_a

8. Release drive axle sprockets from track and at the same time, push the drive axle towards left side until it comes out of the chaincase.
9. Move the drive axle towards the right side to remove it from vehicle.

Inspecting the Drive Axle

Check if bearing turns smoothly and freely. Replace bearing if necessary.

Check if bearing seals are damaged. Replace bearing if necessary.

Check if the bearing flange is cracked, bent or otherwise damaged. Replace if required.

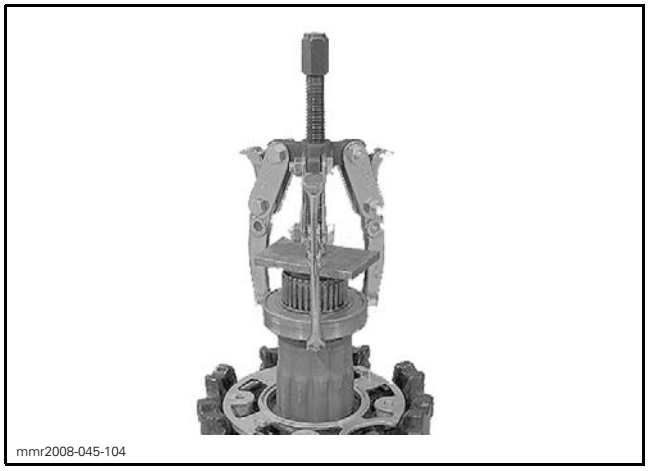
Replace drive axle if one of the following situations is detected:

– Cracked, worn or damaged drive axle
– Worn or damaged drive axle splines

– Worn or damaged sprockets
– Worn bearing journal.

Removing the Drive Axle Bearing

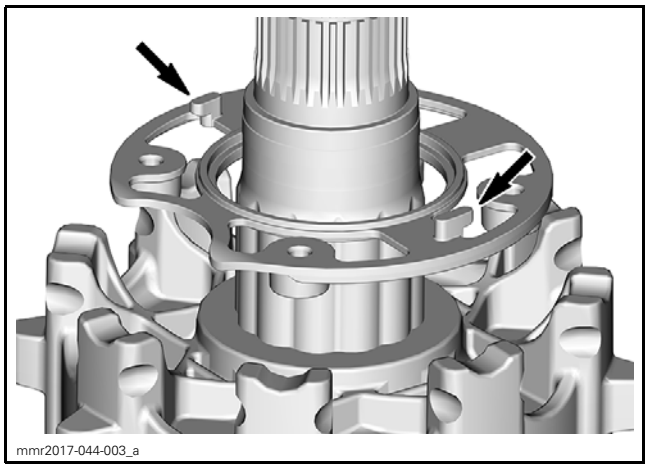
1. Use a 3-jaw puller to remove the drive axle bearing.


mmr2008-045-104

2. Remove the bearing flange.

Installing the Drive Axle Bearing

1. Install bearing flange on drive axle with locking tabs outwards.


mmr2017-044-003_a

2. Using a press and a suitable pipe, push the bearing onto drive axel.

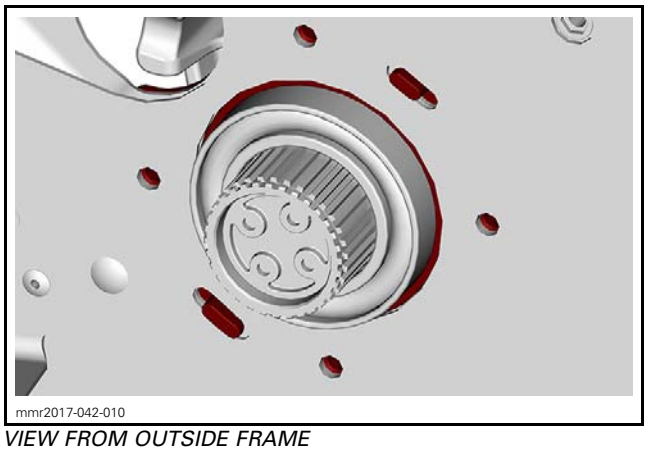
NOTICE **Always push the bearing by inner race.**

Installing the Drive Axle

The installation is the reverse of the removal procedure. However, pay attention to the following.

Insert drive axle and lock the bearing flange on frame.

NOTE: Ensure bearing flange is properly locked. Tabs must be properly inserted in frame slots.


mmr2017-042-010

VIEW FROM OUTSIDE FRAME

Install the caliper and the disc brake. Refer to *BRAKE* subsection for the specific procedure.

Install all other removed parts. Refer to appropriate subsections.

MAGNETIC CAPS

Removing the Magnetic Cap

1. For the LH cap, remove brake disc protective cover. Refer to *BRAKE* subsection.
2. For the RH cap, remove the chaincase cover. Refer to *CHAINCASE* subsection.
3. By screwing a large screw in the middle of the cap, pry or pull the magnetic cap out of drive axle end.
4. To remove the other cap, push through axle with a long metal bar or wood stick.
5. Discard the magnetic cap.

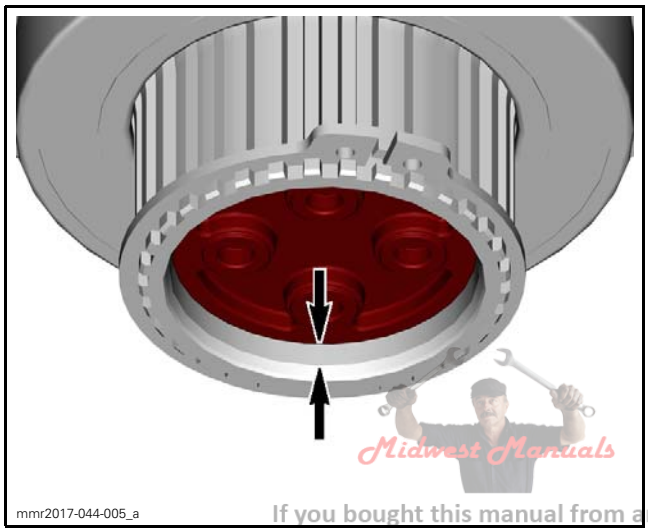
Installing the Magnetic Cap

1. Apply grease on O-ring.

SERVICE PRODUCT
SYNTHETIC SUSPENSION GREASE (P/N 779163)

2. Insert new magnetic cap in drive axle, Push until caps is secure into groove.

NOTE: Cap should have outside contour face 5 mm (.197 in) inwards.



5 MM (.197IN) INWARDS

Midwest Manuals
Green Manuals
Paperless Manuals
For a Better Tomorrow
www.green-manuals.com
If you bought this manual from any other seller please leave them
NEGATIVE feedback and notify us at bestshopmanuals@gmail.com

3. Install all other removed parts.

TRACK

SERVICE TOOLS

Description	Part Number	Page
TENSIOMETER	414 348 200	261
TRACK CLEAT INSTALLER	529 036 044	263

MAINTENANCE

INSPECTING THE TRACK

Visually inspect track for:
- Cuts and abnormal wear
- Broken rods
- Broken or missing track cleats
- Perforations in the track
- Tears in the track (particularly around traction product holes)
- Lugs that are broken or torn off, exposing portion of rods
- Delamination of the rubber
- Missing track guide(s).

If track is damaged or rods are broken, replace track. For damaged or missing cleats, replace by new ones.

⚠ WARNING

Do not operate a snowmobile with a cut, torn or damaged track.

ADJUSTING AND ALIGNING THE TRACK

Track tension and alignment are interrelated. Do not adjust one without checking the other. Track tension procedure must be carried out prior to track alignment.

Verifying the Track Tension

1. Lift rear of vehicle and support it off the ground.
2. Allow rear suspension to fully extend.
3. Use a tensiometer.

REQUIRED TOOL
TENSIOMETER (P/N 414 348 200) 

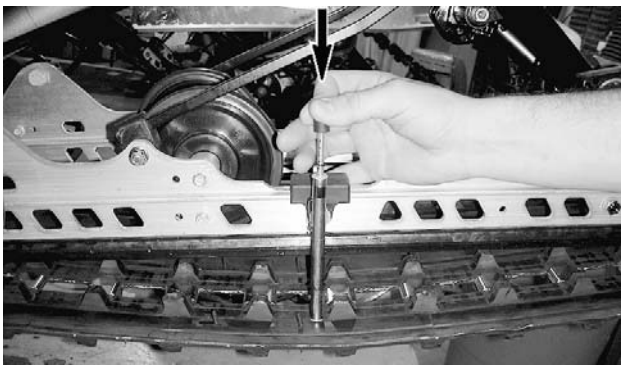
4. Set deflection to 3.2 cm (1.26 in) using bottom O-ring.



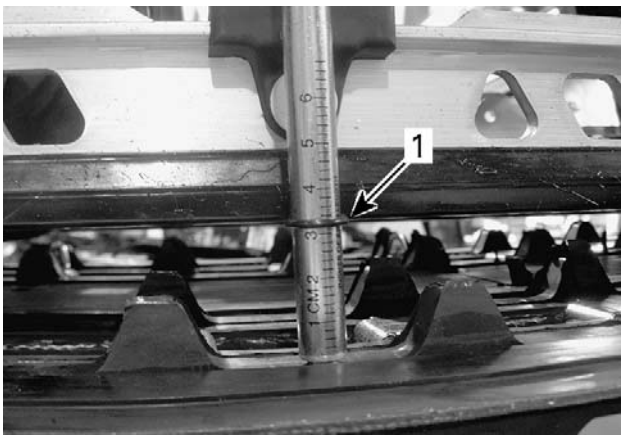
mmr2009-133-003_b

DEFLECTION SETTING
1. Bottom O-ring

5. Place upper O-ring to 0 kgf (0 lbf).
6. Position the tensiometer on track, halfway between runner ends.
7. Push the tensiometer downwards until bottom O-ring (deflection) is aligned with the bottom of slider shoe.


mmr2009-133-001_a

TYPICAL



mmr2009-133-002_a

1. Deflection O-ring aligned with slider shoe

8. Read load recorded by the upper O-ring on the tensiometer.



LOAD READING
1. Upper O-ring

Load reading must be as per the following table.

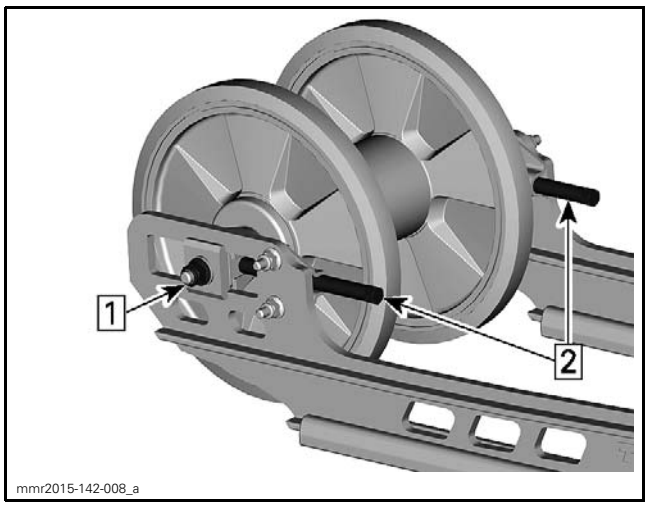
TRACK ADJUSTMENT SPECIFICATION	
Track deflection setting	3.2 cm (1.26 in)
Track load reading	6.0 kgf to 8.5 kgf (13 lbf to 19 lbf)

9. If load reading is not in accordance with the specification, adjust track tension. Refer to *ADJUSTING THE TRACK TENSION*.

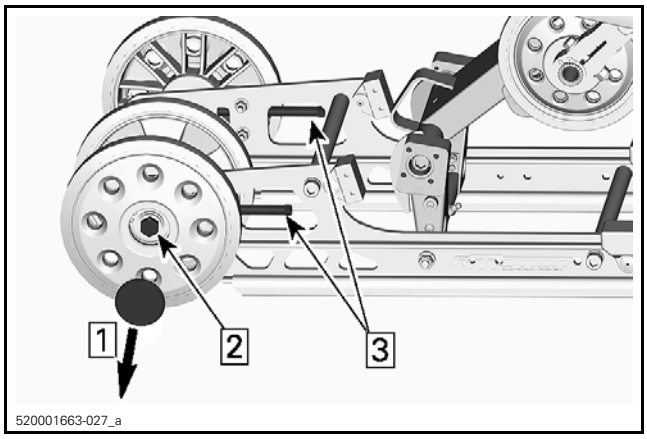
NOTICE Too much tension will result in power loss and excessive stresses on suspension components.

Adjusting the Track Tension

1. Lift rear of vehicle and support it off the ground.
2. Loosen rear axle
   2.1 Loosen nut on 2 wheel idler system
   2.2 Loosen screw on 3 or 4 wheel idler system
3. Tighten or loosen both adjustment screws to increase or decrease track tension.



TYPICAL - 2 IDLER WHEELS MODELS
Step 1: Loosen axle nut
Step 2: Tighten or loosen adjustment screws



TYPICAL - 3 OR 4 IDLER WHEELS MODELS
Step 1: Remove caps
Step 2: Loosen one the axle screw
Step 3: Tighten or loosen adjustment screws

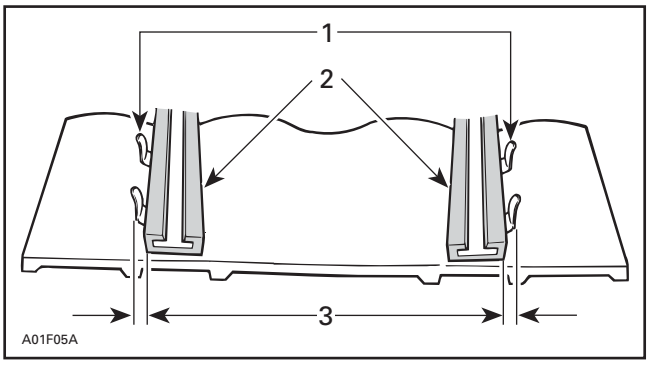
4. Verify track tension, refer to *VERIFYING THE TRACK TENSION*.
5. Ensure track is properly aligned, refer to *ALIGNING THE TRACK*.

Aligning the Track

⚠ WARNING

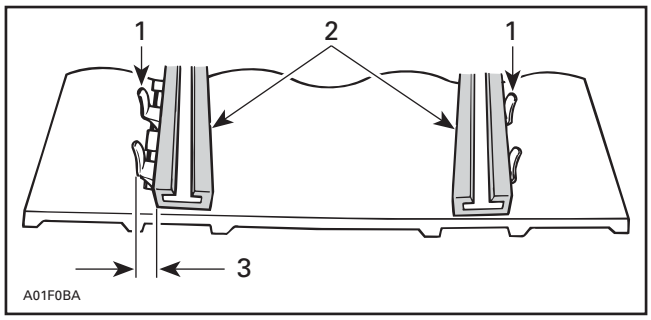
Before checking track alignment, ensure that the track is free of all particles which could be thrown out while track is rotating. Keep hands, tools, feet and clothing clear of track. Ensure no one is standing in close proximity to the vehicle. Never rotate at high speed.

1. Lift rear of vehicle and support it off the ground.
2. Start engine and accelerate slightly so that track barely turns. This must be done in a short period of time (10 seconds).
3. Check that the track is well centered; equal distance on both sides between edges of track guides and slider shoes.



1. Guides
2. Slider shoes
3. Equal distance

4. To correct track alignment:
   4.1 Stop engine.
   4.2 Loosen rear wheel nut.
   4.3 Tighten adjustment screw on side where the slider shoe is the farthest from the track insert guides.



1. Guides
2. Slider shoes
3. Tighten on this side

5. Restart engine.
6. Rotate track slowly and recheck alignment.
7. If satisfactory track alignment is achieved tighten idler wheels axle nut to specification:

TIGHTENING TORQUE	
Rear idler wheel retaining screws **(3 and 4 idler wheels system)**	48 N•m ± 6 N•m (35 lbf•ft ± 4 lbf•ft)
Rear idler wheel retaining nut and screw **(2 idler wheels system)**	24.5 N•m ± 3.5 N•m (18 lbf•ft ± 3 lbf•ft)

PROCEDURES

TRACK

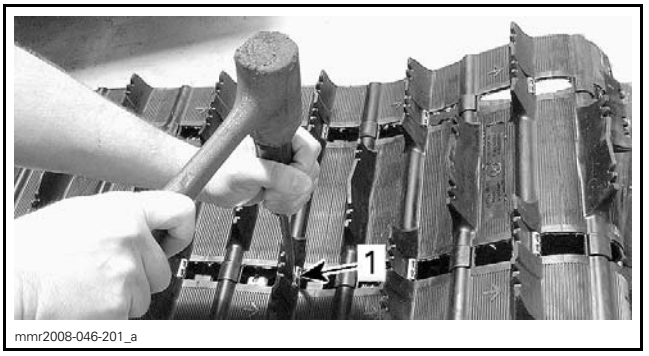
Replacing a Track Cleat

Raise rear of vehicle off the ground.

Lift snow guard.

Rotate track to expose a cleat to be replaced.

Remove cleat from track using plastic hammer and a big screwdriver.



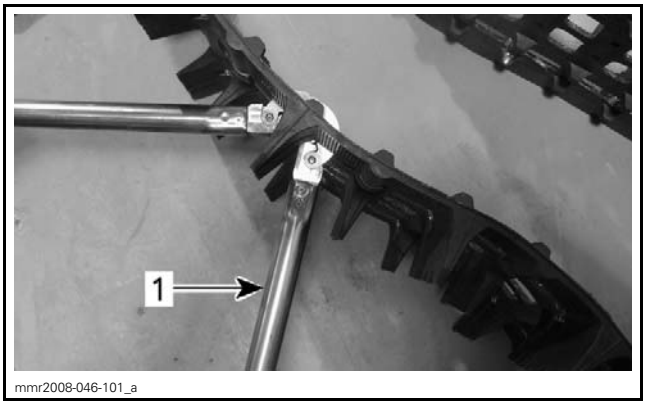
TYPICAL
1. Cleat

Place new cleat in position on the track.

Secure cleat with the cleat installer.

REQUIRED TOOL	
TRACK CLEAT INSTALLER (P/N 529 036 044)	

Bend cleat and push tabs into rubber.



TYPICAL
1. Narrow-cleat installer

Reopen narrow-cleat installer.

Position cleat tabs on open end of tool.

Squeeze tabs until they are indented in rubber.

Removing the Track

Remove rear suspension from vehicle. Refer to *REAR SUSPENSION*.

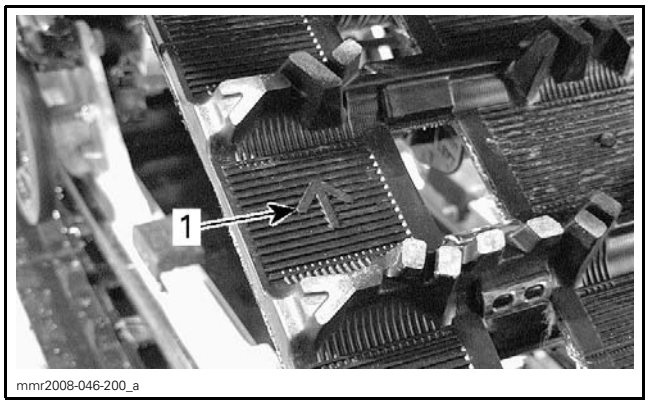
Remove drive axle. Refer to *DRIVE AXLE* subsection.

Remove track.

Installing the Track

Reverse the removal procedure.

NOTE: When installing the track, respect rotation direction indicated by an arrow on track thread.



1. Arrow pointing forwards

Adjusting and aligning the Track

Refer to *MAINTENANCE* in this subsection.

SUSPENSION ADJUSTMENTS

GENERAL

NOTICE **Whenever adjusting rear suspension, check track tension and adjust if necessary.**

ADJUSTMENT

Choice of suspension adjustments vary with vehicle load, personal preference, riding speed and terrain condition.

The best way to set up the suspension, is to start from factory settings, then customize each adjustment one at a time.

Front and rear adjustments are interrelated. It may be necessary to readjust the rear shock absorbers after adjusting front shock absorbers for instance.

Test run the vehicle under the same conditions; trail, speed, load, etc. Change one adjustment and retest. Proceed methodically until you are satisfied.

Following are guidelines to fine-tune suspension.

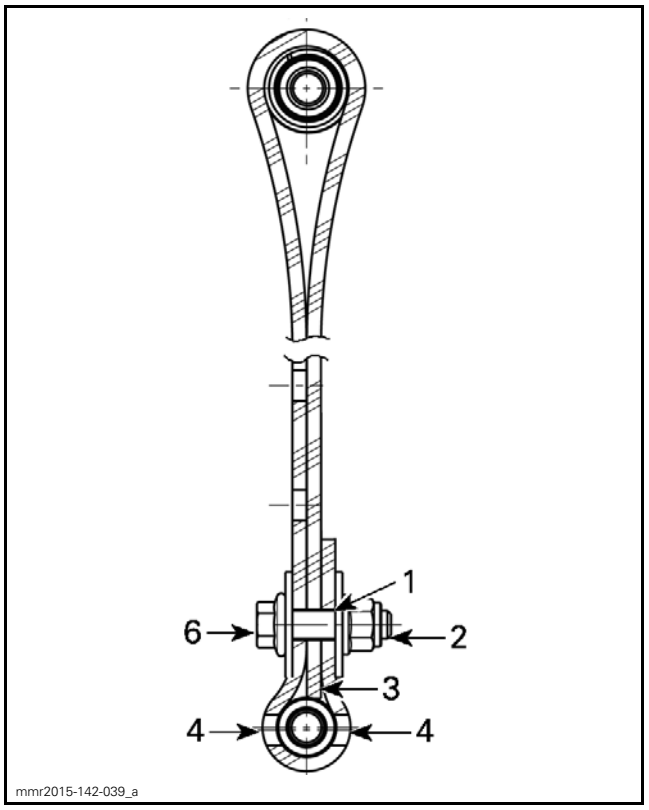
STOPPER STRAP

Stopper strap length has an effect on the amount of weight the center spring has to carry especially during acceleration, therefore on the front end uplift.

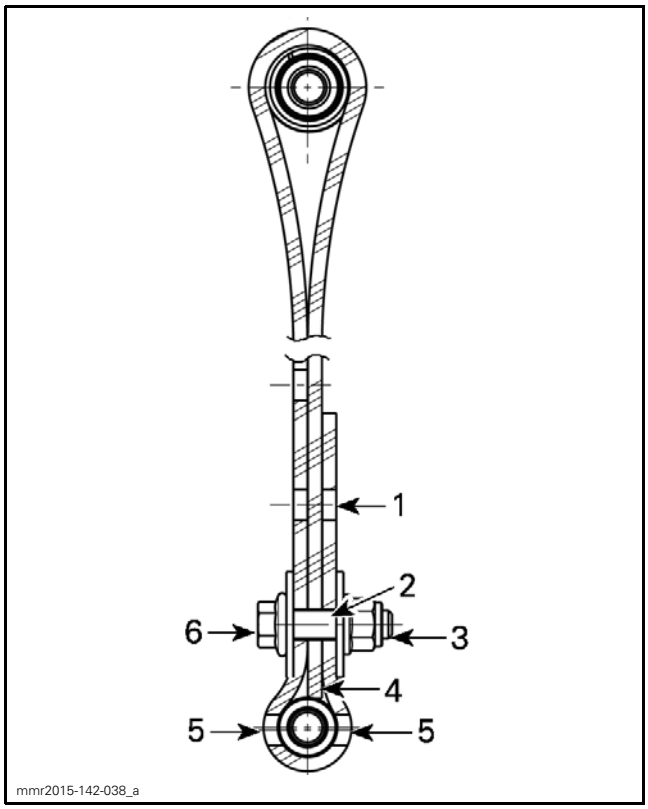
Stopper strap length also has an effect on center spring travel.

ACTION	RESULT
Increasing stopper strap length	Lighter ski pressure under acceleration
	More center spring travel
	More bump absorption capability
Decreasing stopper strap length	Heavier ski pressure under acceleration
	Less center spring travel
	Less bump absorption capability

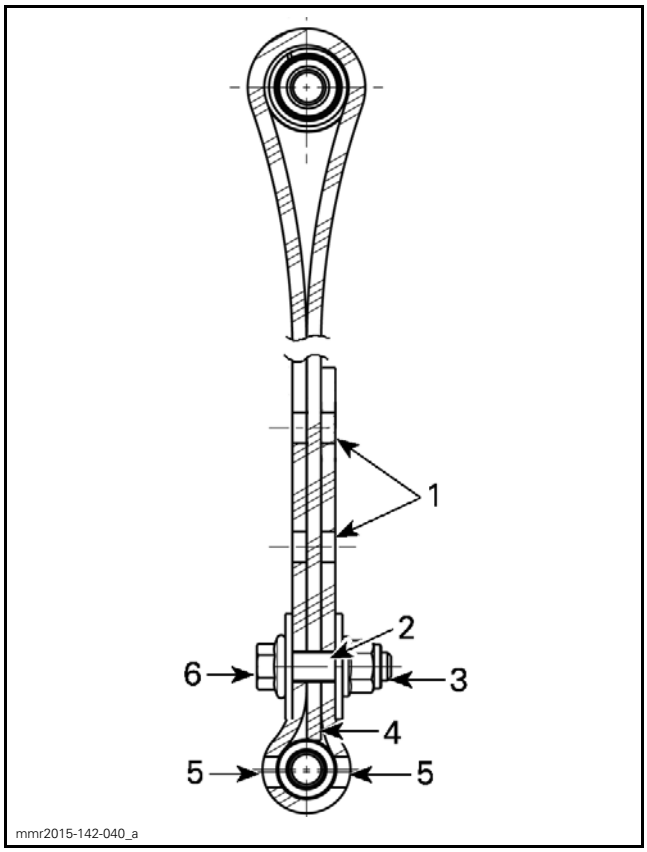
NOTE: Stopper strap could be set to position 1, 2, 3, 4 and 5. Below are illustrations for position 1, 2, 3. Smaller numbers correspond to a longer strap setting.



STOPPER STRAP POSITION 1 (1ST HOLE, LONGEST)
1. *1st hole from end*
2. *Towards rear*
3. *Tip of strap touching strap axis*
4. *Two holes left open between screw head and nut*
5. *Towards front*



STOPPER STRAP POSITION 2 (2ND HOLE)
1. *Free hole*
2. *2nd hole from end*
3. *Towards rear*
4. *Tip of strap touching strap axis*
5. *Two holes left open between screw head and nut*
6. *Towards front*



STOPPER STRAP POSITION 3 (3RD HOLE)
1. *Free holes*
2. *3rd hole from end*
3. *Towards rear*
4. *Tip of strap touching strap axis*
5. *Two holes left open between screw head and nut*
6. *Towards front*

NOTE: Always install stopper strap bolt as close as possible to the lower shaft.

When operating the snowmobile in deep snow or hill climbing, it may be necessary to vary stopper strap length and/or riding position, to change the angle at which the track rides on the snow. Operator's familiarity with the various adjustments as well as snow conditions will dictate the most efficient combination.

Generally, a longer stopper strap setting gives better performance on a flat landscape and a shorter setting will improve handling in steep hill climbing and deep snow conditions.

STOPPER STRAP SETTING	
POSITION	USE
1	Not used
2	Boon docking: – Better boon docking manoeuvrability – Better bump absorption – Better deep snow starts (forward and reverse)

STOPPER STRAP SETTING	
POSITION	USE
3	Factory setting: Best overall setting (General use)
4	Hill climb: – Better track attack angle for hill climbing
5	Steep hill climb: – Better track attack angle for hill climbing – Less transfer – Lower ride height

SPRING PRELOAD

Front Springs

Front springs preload has an effect on:
– front suspension firmness
– The steering behavior.

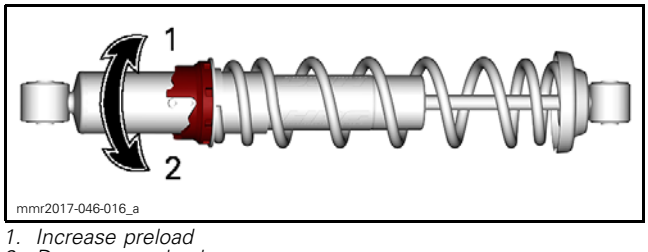
ACTION	RESULT
Increasing preload	Firmer front suspension
	Higher front end
	More precise steering
	More bump absorption capability
Decreasing preload	Softer front suspension
	Lower front end
	Lighter steering
	Less bump absorption capability

⚠ WARNING

Adjust both springs to the same preload. Uneven adjustment can cause poor handling and loss of stability, and/or control, and increase the risk of an accident.

Cam Type Adjuster

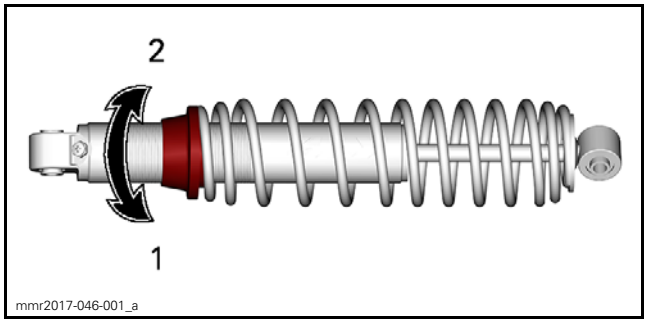
Using the suspension adjustment tool (included in the vehicle tool kit), turn the cam to increase or decrease spring preload.



1. *Increase preload*
2. *Decrease preload*

Ring Type Adjuster

Grab and turn the spring to increase or decrease spring preload.



1. *Increase preload*
2. *Decrease preload*

Center Spring

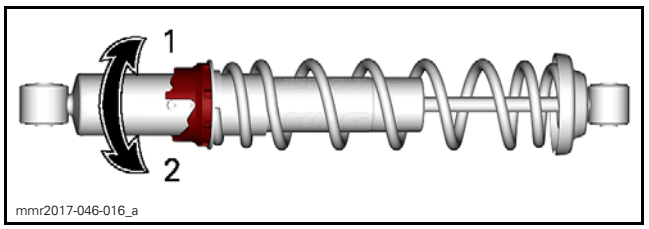
Center spring preload has an effect on steering effort, handling and bump absorption.

Also, since center spring preload adjustment puts more or less pressure on the front of the track, it has an effect on the performance in deep snow.

ACTION	RESULT
Increasing preload	Lighter steering
	More bump absorption capability
	Better deep snow starts
	Better deep snow performance and handling
Decreasing preload	Heavier steering
	Less bump absorption capability
	Better trail handling

Cam Type Adjuster

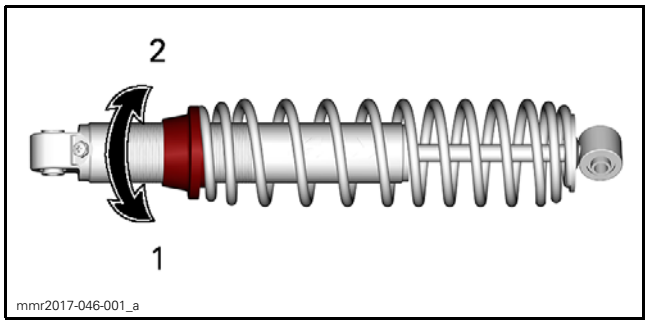
Using the suspension adjustment tool (included in the vehicle tool kit), turn the cam to increase or decrease spring preload.



1. *Increase preload*
2. *Decrease preload*

Ring Type Adjuster

Grab and turn the spring to increase or decrease spring preload.



1. Increase preload
2. Decrease preload

Rear Springs

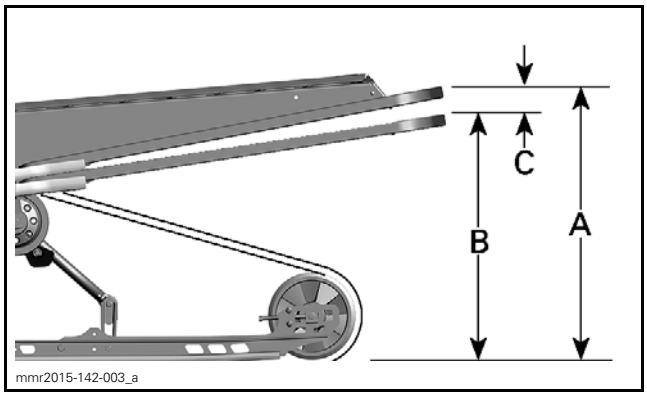
Rear spring preload has an effect on comfort, ride height and load compensation.

Also, adjusting rear spring preload shifts more or less weight to the snowmobile front end. As a result, more or less weight is applied to the skis. This has an effect on performance in deep snow, steering effort and handling.

Slight suspension bottoming occurring under the worst riding conditions indicates a good choice of spring preload.

ACTION	RESULT
Increasing preload	Firmer rear suspension
	Higher rear end
	More bump absorption capability
	Heavier steering
Decreasing preload	Softer rear suspension
	Lower rear end
	Less bump absorption capability
	Lighter steering
	Better deep snow performance and handling

Refer to the following to determine if preload is correct.



PROPER ADJUSTMENT
A. Suspension fully extended
B. Suspension has collapsed with operator, passenger and load added
C. Distance between dimension "A" and "B", see table below

SC-5 / SC-5M / rMOTION	
"C"	WHAT TO DO
50 mm to 75 mm (2 in to 3 in)	No adjustment required
More than 75 mm (3 in)	Adjusted too soft. Increase preload
Less than 50 mm (2 in)	Adjusted too firm. Decrease preload

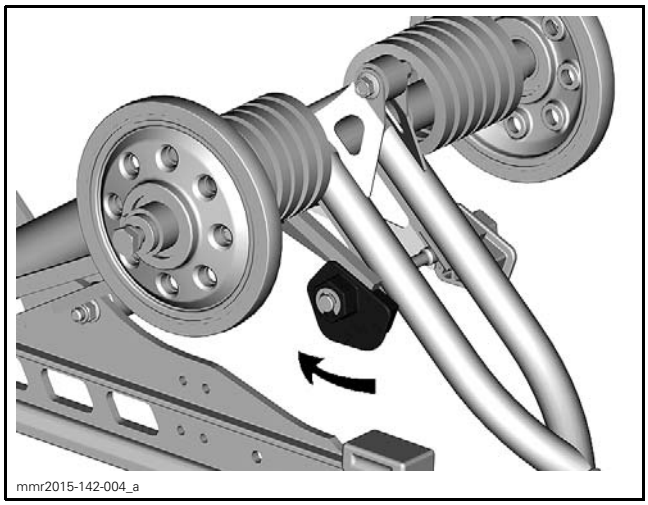
SC-5U / cMOTION / tMOTION	
"C"	WHAT TO DO
65 mm to 100 mm (2.5 in to 4 in)	No adjustment required
More than 100 mm (4 in)	Adjusted too soft. Increase preload
Less than 65 mm (2.5 in)	Adjusted too firm. Decrease preload

If the specification is unattainable with the original springs, refer to the applicable *SPRING CHART* bulletin for other available springs.

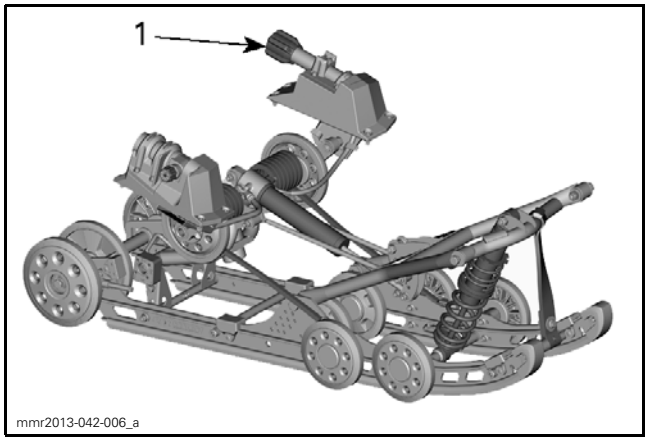
NOTICE **To increase spring preload, always turn the left side adjustment cam in a clockwise direction, and the right side cam in a counterclockwise direction.**

⚠ CAUTION **Never set preload cams directly from position 5 to 1 or directly from position 1 to 5.**

The adjustment cams have 5 different settings, 1 being the softest.



TYPICAL - EXCEPT QUICK ADJUST SYSTEM



rMOTION WITH QUICK ADJUST SYSTEM
1. LH side knob to adjust spring preload

Dampers

Compression Damping (KYB PRO Series)

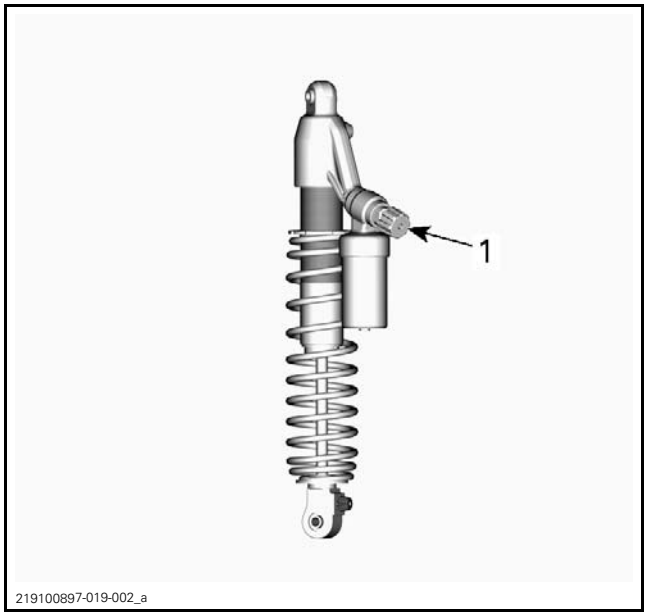
NOTE: Both low and high speed compression damping are adjusted simultaneously.

Low speed compression damping controls how the shock absorber reacts to a low suspension velocity (slow compression strokes, in most cases when riding at lower speeds).

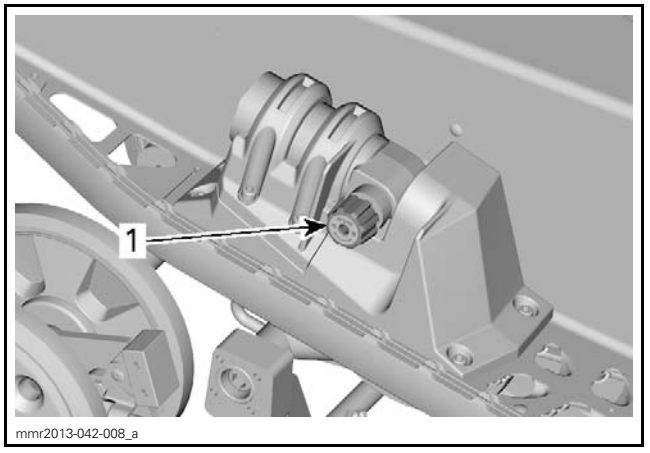
High speed compression damping controls how the shock absorber reacts to a high suspension velocity (quick compression strokes, in most cases when riding at higher speeds).

ACTION	RESULT
Increasing compression damping force	Firmer compression damping
Decreasing compression damping force	Softer compression damping

To adjust, turn compression damping adjustment knob clockwise to increase compression damping force and counterclockwise to decrease compression damping force.



TYPICAL - EXCEPT QUICK ADJUST SYSTEM
1. Compression damping adjustment knob



rMOTION WITH QUICK ADJUST SYSTEM
1. Knob to adjust low/high speed compression damping

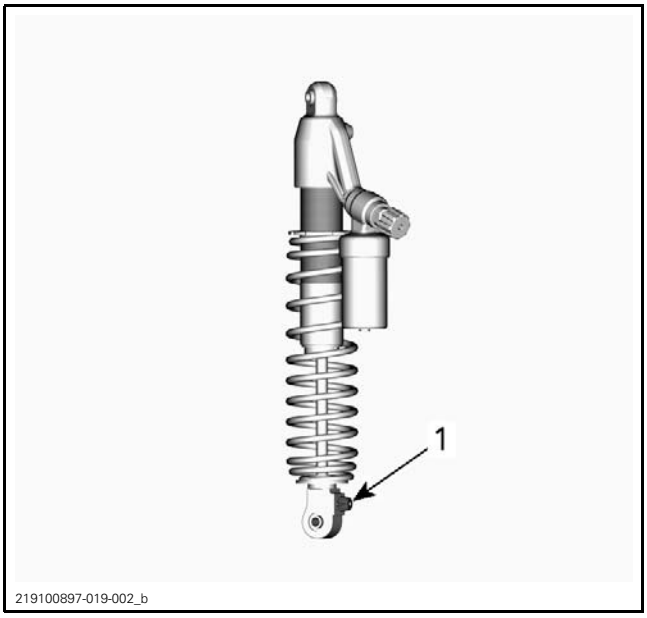
Rebound Damping (KYB PRO Series)

Rebound damping controls how the shock absorber restrains the extension stroke.

ACTION	RESULT
Increasing rebound damping force	Firmer rebound damping (slower extension speed)
Decreasing rebound damping force	Softer rebound damping (faster extension speed)

NOTE: In repetitive shorts small bumps (ripple), it is recommended to use a lower rebound damping setting.

To adjust, turn rebound adjustment knob clockwise to increase rebound damping force and counterclockwise to decrease rebound damping force.

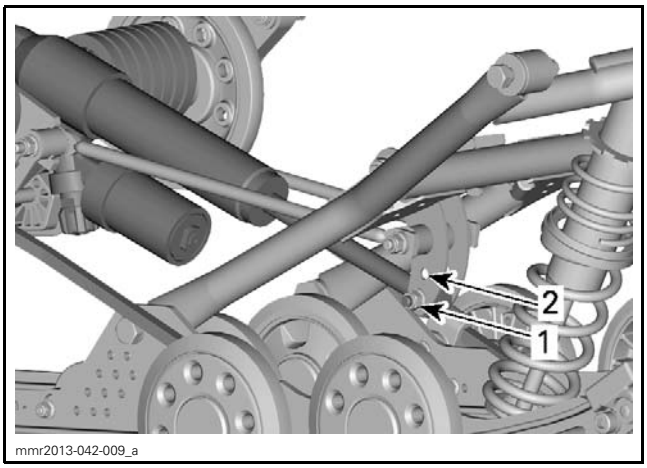


TYPICAL - EXCEPT QUICK ADJUST SYSTEM
1. *Rebound damping adjustment knob*

Rear Shock Mounting Position

Two rear shock mounting positions are available: high performance and sport.

Factory setting is set to lowest mounting position (high performance) which will suit most operators riding preferences. The sport mounting hole adjustment allows for another range of softer settings, but all other rear suspension adjustments should be performed before changing the rear shock mounting position.



REAR SHOCK MOUNTING POSITION
1. *High performance position*
2. *Sport position*

Coupling Blocks

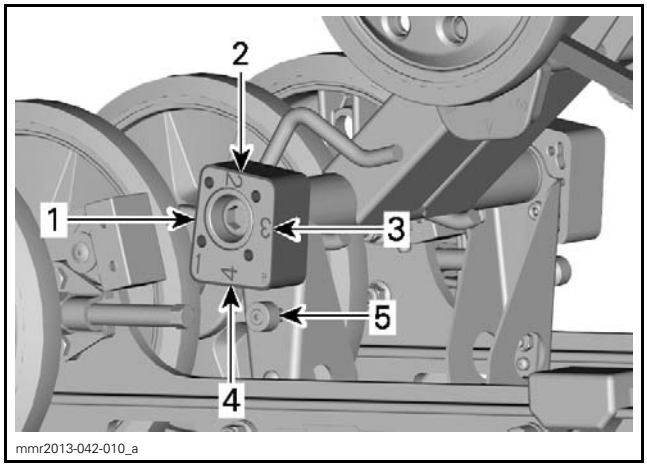
Coupling blocks adjustment has an effect on vehicle handling during acceleration only.

NOTE: A high coupling block setting will reduce both comfort and transfer under acceleration.

To adjust, push on release button under cam and turn coupling block to the desired setting.

⚠ WARNING

Both blocks must be set at the same position. Otherwise vehicle behavior may be unpredictable and suspension may become warped.



COUPLING BLOCK — RIGHT SIDE VIEW
("R" — RIGHT EMBOSSED ON BLOCK)
1. *Position 1 (minimum)*
2. *Position 2*
3. *Position 3*
4. *Position 4 (maximum)*
5. *Release button*

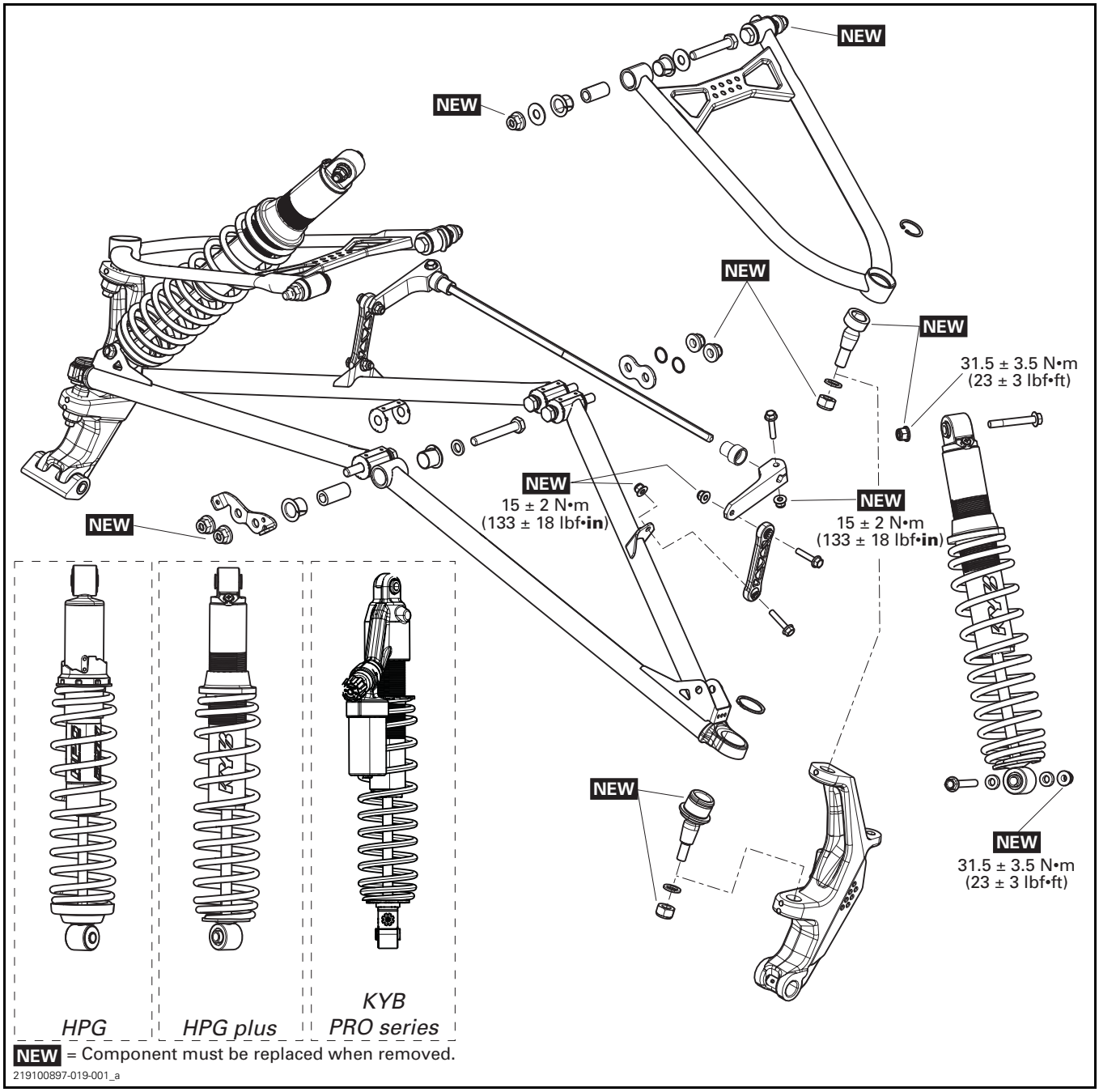
Coupling Blocks Setting

POSITION	USE
1	More ski lift during acceleration - and best comfort
2	Intermediate setting
3	Intermediate setting
4	Less ski lift during acceleration - and some comfort loss

FRONT SUSPENSION

SERVICE TOOLS

Description	Part Number	Page
BALL JOINT EXTRACTOR	529 035 827	275
BALL JOINT INSTALLER SUPPORT	529 036 398	278
BALL JOINT INSTALLER	529 036 399	278
BALL JOINT REMOVER SUPPORT	529 036 400	278
SPRING COMPRESSOR	529 036 184	274
SUSPENSION ARM SUPPORT	529 035 637	276



GENERAL

The procedure explained below is the same for the RH and LH sides unless otherwise noted.

During assembly/installation, use torque values and service products as in the exploded view.

Clean threads before applying a threadlocker. Refer to *SELF-LOCKING FASTENERS* and *LOCTITE APPLICATION* at the beginning of this manual for complete procedure.

⚠ WARNING

Torque wrench tightening specifications must be strictly adhered to.
Locking devices (e.g.: locking tabs, elastic stop nuts, cotter pins, etc.) must be replaced with new ones.

Check for loose, bent, worn out, rusted or otherwise damaged components. Replace the faulty components.

ADJUSTMENT

SPRINGS

Front spring preload has an effect on front suspension firmness.

Front spring preload also has an effect on the steering behavior.

ACTION	RESULT
Increasing preload	Firmer front suspension
	Higher front end
	More precise steering
	More bump absorption capability
Decreasing preload	Softer front suspension
	Lower front end
	Lighter steering
	Less bump absorption capability

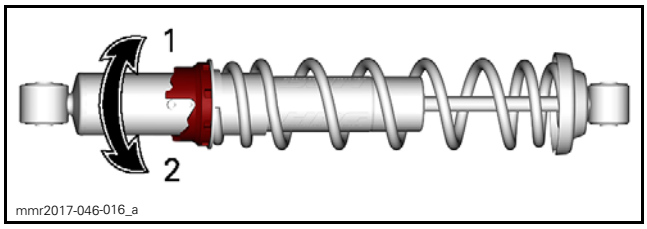
⚠ WARNING

Adjust both springs to the same preload. Uneven adjustment can cause poor handling and loss of stability, and/or control, and increase the risk of an accident.

Spring Preload Adjustment

Cam Type Adjustment

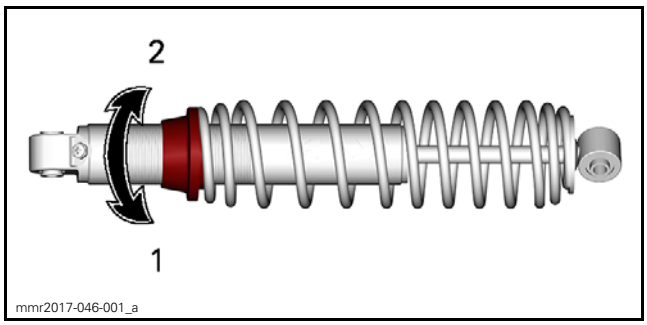
Using the suspension adjustment tool (included in the vehicle tool kit), turn the cam to increase or decrease spring preload.



1. Increase preload
2. Decrease preload

Ring Type Adjustment

Grab and turn the spring to increase or decrease spring preload.



1. Increase preload
2. Decrease preload

DAMPERS

Compression Damping (KYB PRO Series)

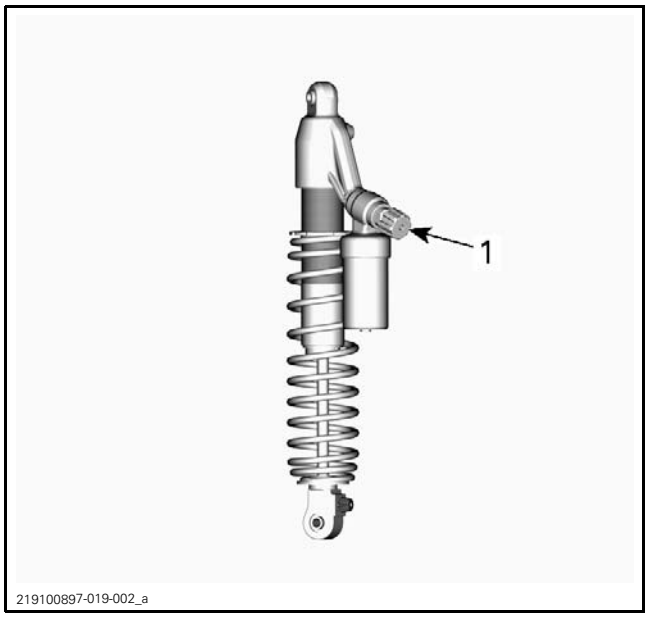
NOTE: Both low and high speed compression damping are adjusted simultaneously.

Low speed compression damping controls how the shock absorber reacts to a low suspension velocity (slow compression strokes, in most cases when riding at lower speeds).

High speed compression damping controls how the shock absorber reacts to a high suspension velocity (quick compression strokes, in most cases when riding at higher speeds).

ACTION	RESULT
Increasing compression damping force	Firmer compression damping
Decreasing compression damping force	Softer compression damping

To adjust, turn compression damping adjustment knob clockwise to increase compression damping force and counterclockwise to decrease compression damping force.



1. Compression damping adjustment knob

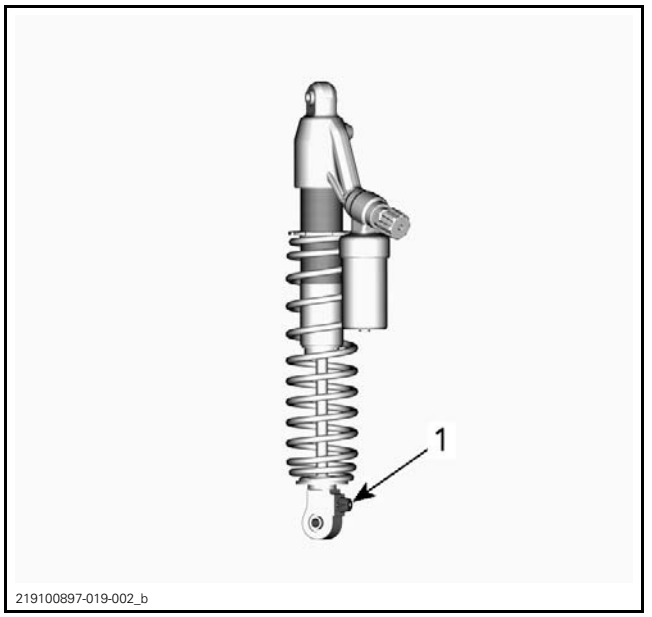
Rebound Damping (KYB PRO Series)

Rebound damping controls how the shock absorber restrains the extension stroke.

ACTION	RESULT
Increasing rebound damping force	Firmer rebound damping (slower extension speed)
Decreasing rebound damping force	Softer rebound damping (faster extension speed)

NOTE: In repetitive shorts small bumps (ripple), it is recommended to use a lower rebound damping setting.

To adjust, turn rebound adjustment knob clockwise to increase rebound damping force and counterclockwise to decrease rebound damping force.



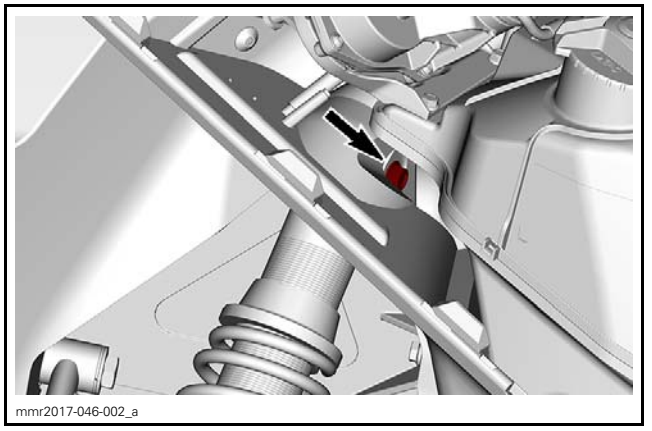
1. Rebound damping adjustment knob

PROCEDURES

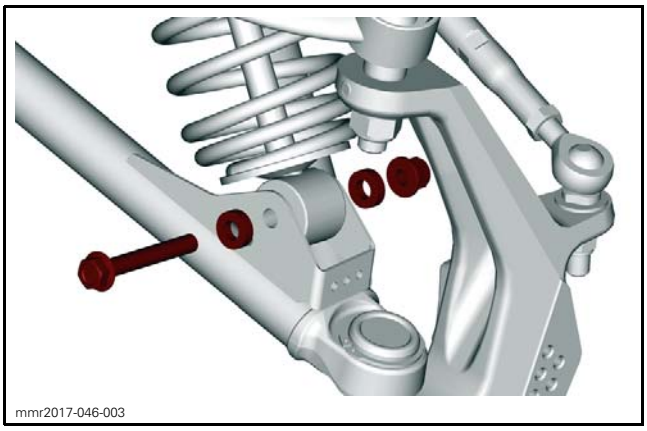
SHOCK ABSORBER

Removing the Shock Absorber

1. Remove the side panel. Refer to *BODY* subsection.
2. Lift the front of vehicle until skis are off the ground.
3. Remove the shock absorber upper bolt.



4. Remove the shock absorber lower bolt, nut, and spacers.


mmr2017-046-003

5. Remove the shock absorber.

Inspecting the Shock Absorber

Refer to *REAR SUSPENSION (RMOTION)* subsection.

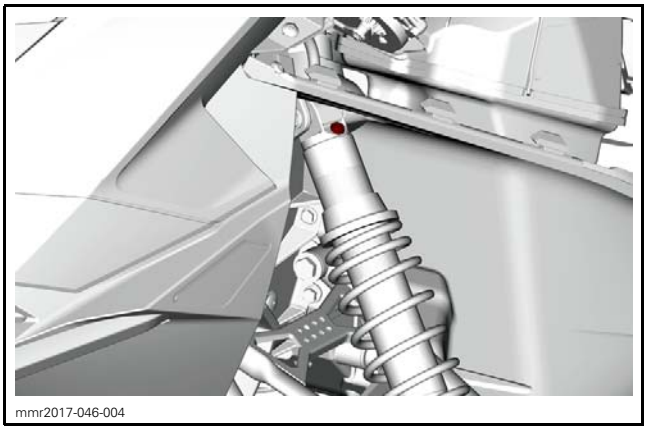
Installing the Shock Absorber

For installation, reverse the removal procedure, however, pay attention to the following.

Install upper bolt first while shock absorber lower mount is not engaged into the bracket.

Install shock absorber with body up and valve (if equipped) towards outside.

Make sure to install both of the lower spacers.

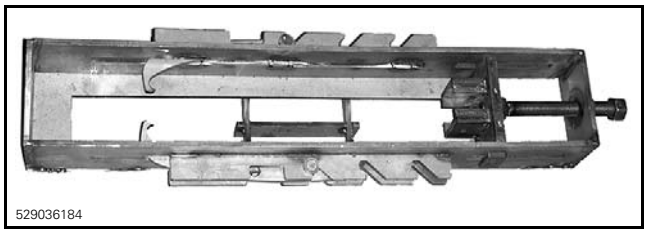

mmr2017-046-004

TIGHTENING TORQUE	
Front shock absorber retaining nuts	31.5 N•m ± 3.5 N•m (23 lbf•ft ± 3 lbf•ft)

SPRING

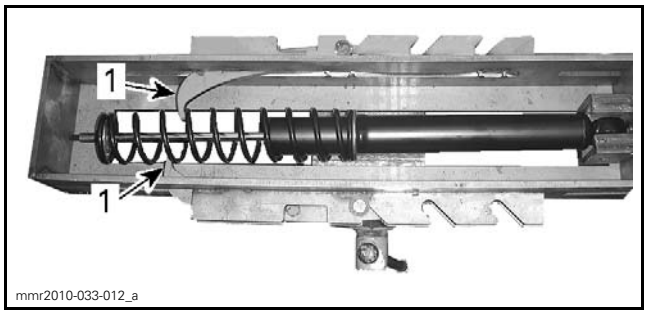
Removing the Spring

1. Secure the SPRING COMPRESSOR (P/N 529 036 184) in a vise.


529036184

SPRING COMPRESSOR

2. Position the shock absorber in the tool and install the spring compressor hooks.



mmr2010-033-012_a

TYPICAL
1. Spring compressor hooks

3. Tighten the spring compressor tool screw until the spring is sufficiently compressed to remove spring stopper.
4. Release the spring compressor tool screw.
5. Remove spring from shock absorber.

Inspecting the Spring

Inspect spring for apparent damage, any defect such as scratches or rust can affect the spring durability.

When the adjustment is at the lowest preload, ensure that adjustment cam and spring stopper are not loose. They must be under spring pressure. Otherwise, the spring stopper might fall off.

Installing the Spring

For installation, reverse the removal procedure.

UPPER SUSPENSION ARM

Inspecting the Upper Suspension Arm

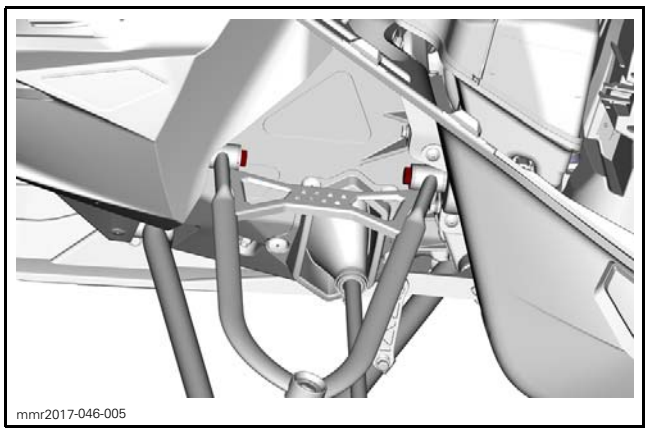
1. Check suspension arm for distortion or damage. Replace if necessary.
2. Lift the front of vehicle until skis are off the ground.
3. Move suspension arm from side to side.
4. Lower vehicle to the ground.
5. Move suspension up and down.
6. There should be no noticeable looseness. Replace bushings and/or sleeves if necessary.

NOTE: A play of 2 mm (.079 in) is acceptable when the suspension arm is moved forward and backward.

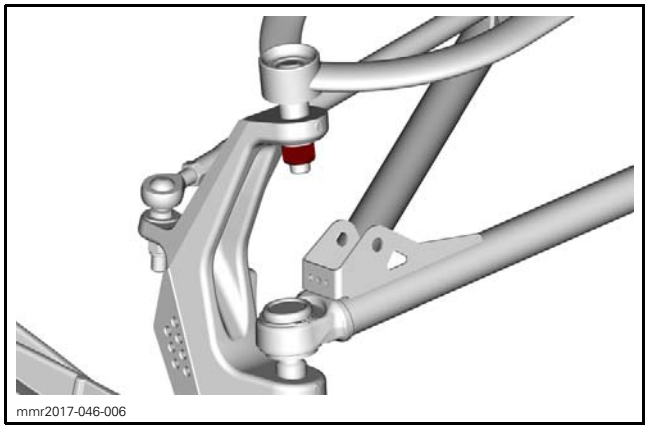
7. Check sleeves inside suspension arm attachments for wear or damage.

Removing the Upper Suspension Arm

1. Lift the front of vehicle until skis are off the ground.
2. Remove muffler and tuned pipe. Refer to *EXHAUST SYSTEM* subsection.
3. Remove shock absorber. See procedure in *REMOVING THE SHOCK ABSORBER* in this subsection.
4. Remove the upper suspension arm bolts.


mmr2017-046-005

5. Detach ball joint from ski leg as follows.
   5.1 Remove nut securing ball joint to ski leg.


mmr2017-046-006

   5.2 Use the extractor to detach ball joint from ski leg.

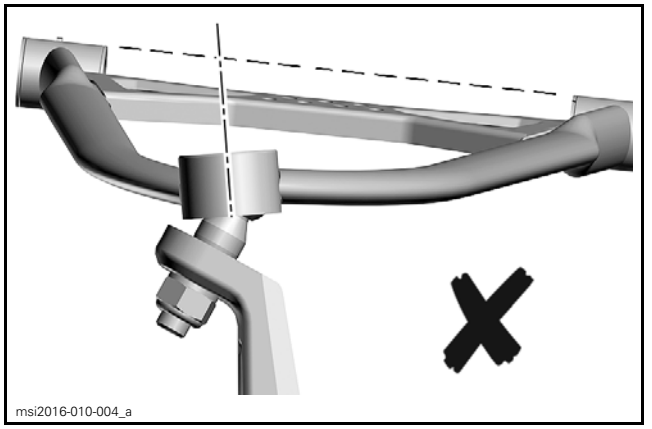
REQUIRED TOOL	
BALL JOINT EXTRACTOR (P/N 529 035 827)	

6. Remove upper suspension arm.

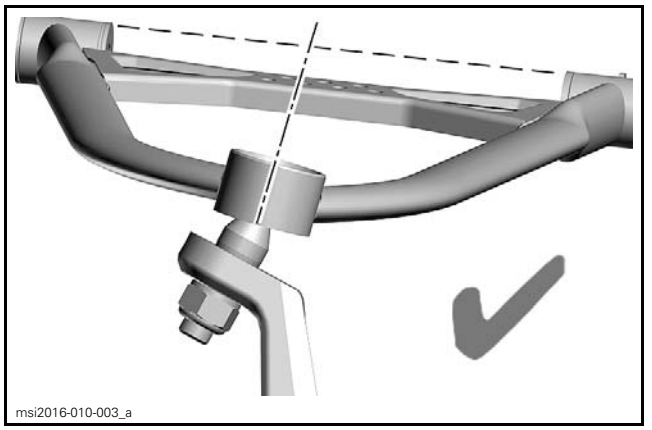
Installing the Upper Suspension Arm

The installation is the reverse of the removal procedure. However, pay attention to the following.

NOTICE **Make sure not to invert LH and RH arm.**


msi2016-010-004_a

RH UPPER ARM INSTALLED ON LH SIDE


msi2016-010-003_a

LH UPPER ARM INSTALLED ON LH SIDE

UPPER BALL JOINT

Inspecting the Upper Ball Joint

Check both upper ball joints for damage, pitting, looseness and roughness. If so, replace with a new one.

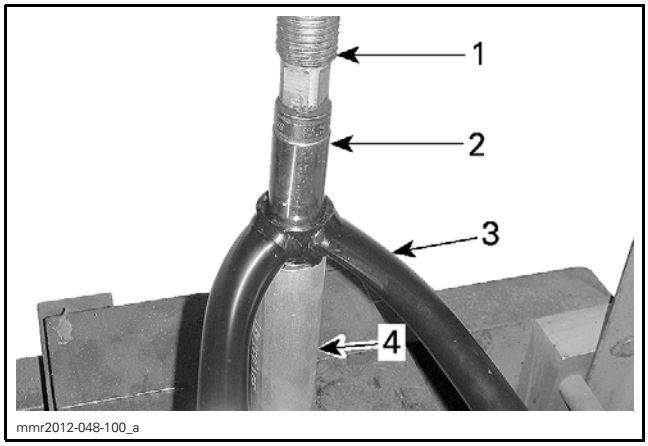
Removing the Upper Ball Joint

1. Remove the *UPPER SUSPENSION ARM*, see procedure in this subsection.
2. Remove circlip securing ball joint to suspension arm.


mmr2017-046-007

3. Press ball joint out of the suspension arm.

REQUIRED TOOLS	
Shop press	
SUSPENSION ARM SUPPORT (P/N 529 035 637)	
Suitable socket	



mmr2012-048-100_a

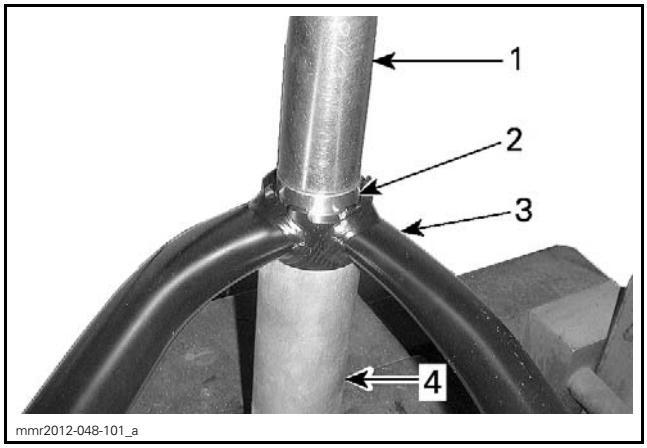
TYPICAL
1. *Press rod*
2. *Socket*
3. *Suspension arm*
4. *Suspension arm support*

Installing the Upper Ball Joint

The installation is the reverse of the removal procedure. However, pay attention to the following.

1. Press ball joint into the suspension arm.

REQUIRED TOOLS	
Shop press	
SUSPENSION ARM SUPPORT (P/N 529 035 637)	
Suitable socket	



mmr2012-048-101_a

TYPICAL
1. *Socket*
2. *Ball joint*
3. *Suspension arm*
4. *Suspension arm support (P/N 529 035 637)*

2. Reinstall the circlip. If it seems loose, replace it with a new one.

LOWER SUSPENSION ARM

Inspecting the Lower Suspension Arm

1. Check suspension arm for distortion or damage. Replace if necessary.
2. Lift the front of vehicle until skis are off the ground.
3. Detach shock absorber and stabilizer bar link from lower suspension arm.
4. Move suspension arm from side to side.
5. Lower vehicle to the ground.
6. Move suspension up and down.
7. There should be no noticeable loose. Replace bushings and/or sleeves if necessary.

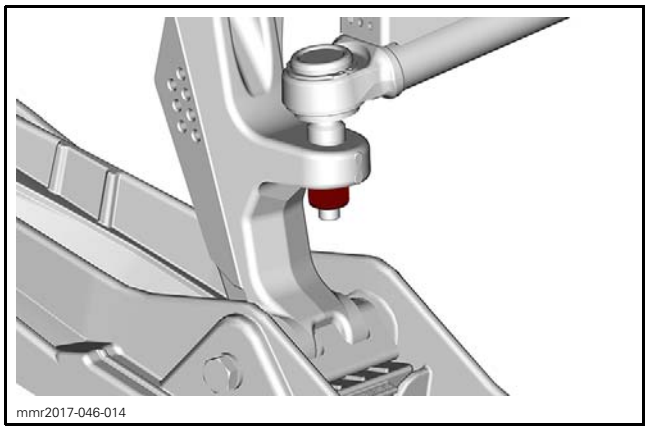
NOTE: A play of 2 mm (.079 in) is acceptable when the suspension arm is moved forward and backward.

8. Check sleeves inside suspension arm attachments for wear or damage.

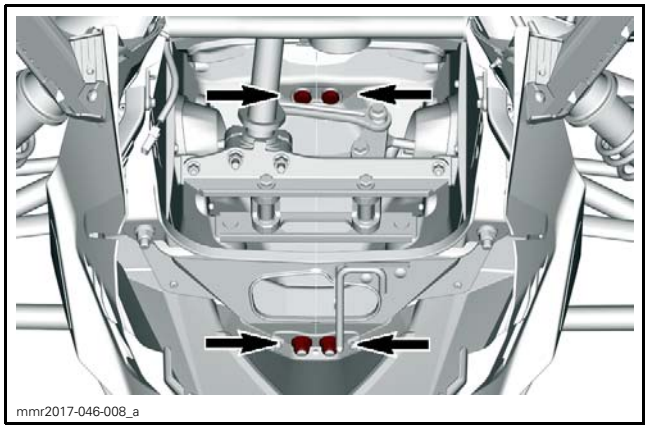
Removing the Lower Suspension Arm

1. Lift the front of vehicle until skis are off the ground.

2. Remove the tune pipe. Refer to *EXHAUST SYSTEM* subsection.
3. Remove shock absorber lower bolt.
4. Detach stabilizer bar link from lower suspension arm. Refer to *STABILIZER BAR* further in this subsection.
5. Remove lower ball joint nut.


mmr2017-046-014

6. Using a suitable ball joint remover, detach lower ball joint from ski leg.
7. Remove suspension arm screws from inside the vehicle.

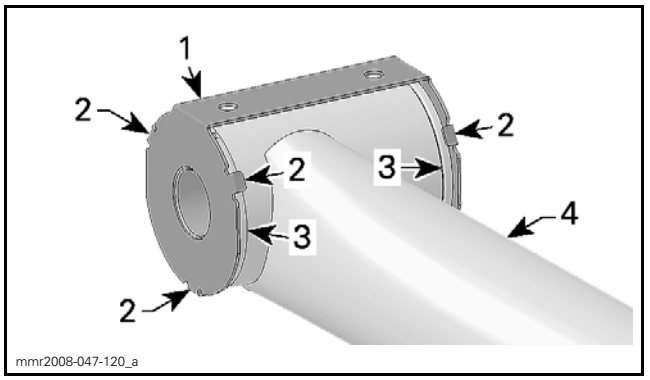

mmr2017-046-008_a

8. Remove lower suspension arm from vehicle.

Installing the Lower Suspension Arm

The installation is the reverse of the removal procedure. However, pay attention to the following.

1. Install a wear plate over bushings.
2. Position the wear plate on top.
3. Fold all tabs against bushings.



mmr2008-047-120_a

1. Wear plate
2. Wear plate tabs
3. Bushings
4. Lower suspension arm

Install all other removed parts.

LOWER BALL JOINT

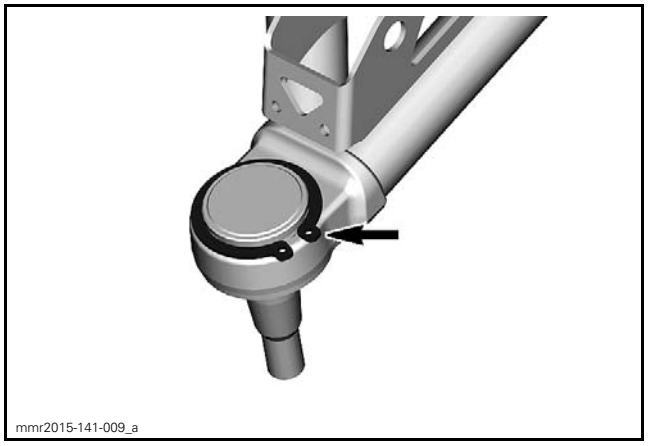
NOTE: The MX Z / Renegade lower ball joint is different from the Summit / Freeride lower ball joint.

Inspecting the Lower Ball Joint

Inspect ball joint end for damage. Ensure it's moving freely, a 0.3 mm (.012 in) axial play is acceptable. Replace ball joints as required.

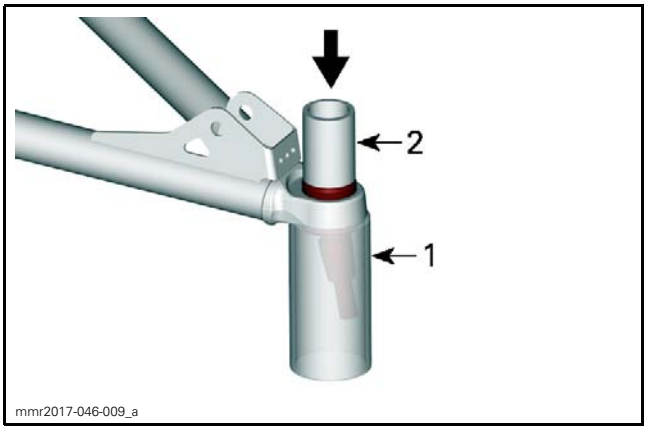
Removing the Lower Ball Joint

1. Remove the *LOWER SUSPENSION ARM*, see procedure in this subsection.
2. Remove circlip securing ball joint to suspension arm.


mmr2015-141-009_a

3. Use a shop press and the specified tools to press the ball joint out of the lower suspension arm.

REQUIRED TOOLS	
BALL JOINT REMOVER SUPPORT (P/N 529 036 400)	
Suitable box	

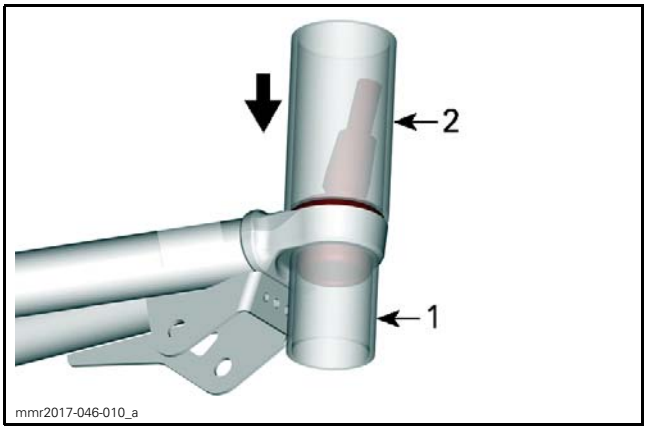


1. *Ball joint remover support*
2. *Suitable box*

Installing the Lower Ball Joint

1. Use a press and the specified tools to press the ball joint into the suspension arm end.

REQUIRED TOOLS	
BALL JOINT INSTALLER SUPPORT (P/N 529 036 398)	
BALL JOINT INSTALLER (P/N 529 036 399)	



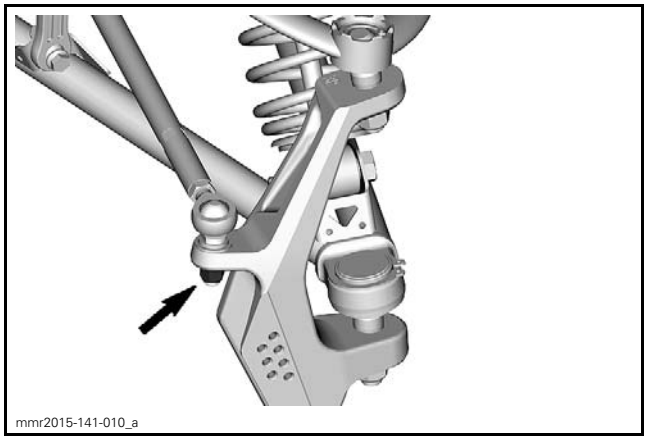
1. *Ball joint installer support*
2. *Ball joint installer*

2. Reinstall the circlip. If the circlip seems loose, replace it with a new one.
3. Install the *LOWER SUSPENSION ARM* on vehicle, see procedure in this subsection.

SKI LEG

Removing the Ski Leg

1. Remove ski from ski leg.
2. Detach tie-rod end from ski leg.



3. Remove upper and lower ball joints from ski leg. Refer to *UPPER BALL JOINT* and *LOWER BALL JOINT* in this subsection.

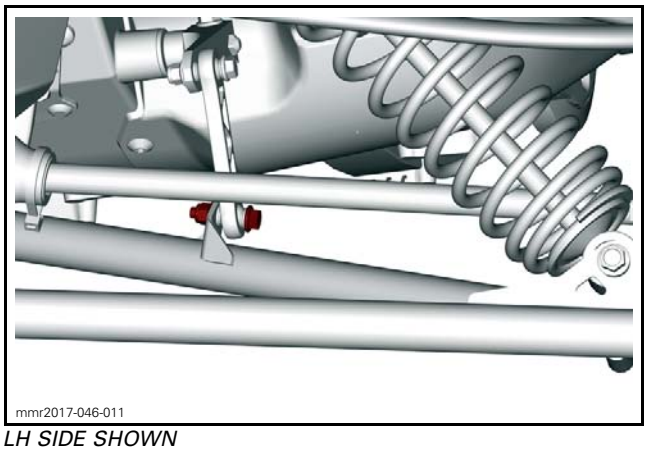
Installing the Ski Leg

The installation is the reverse of the removal procedure.

STABILIZER BAR

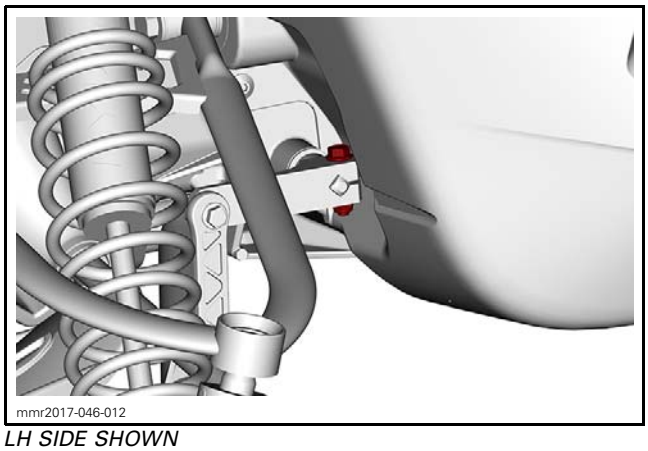
Removing the Stabilizer Bar

1. Remove bolts and nuts securing stabilizer links to lower suspension arms.

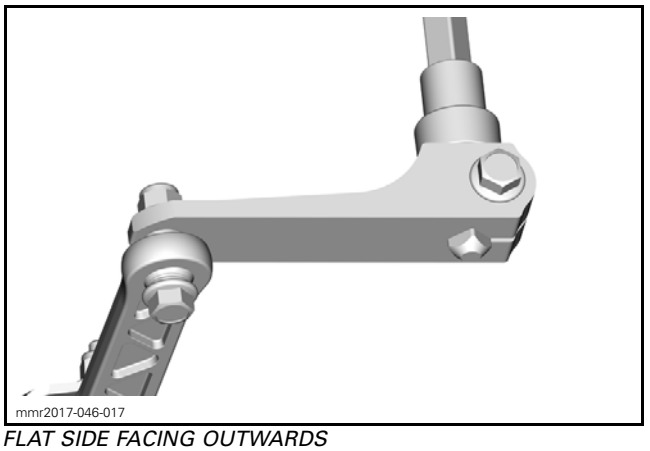


LH SIDE SHOWN

2. Remove stabilizer lever bolts and nuts.

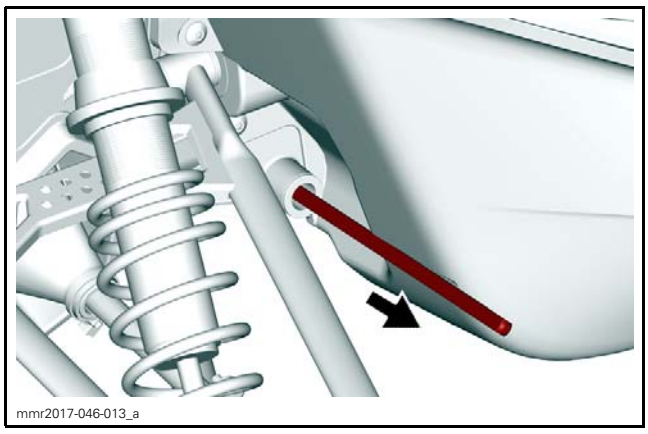

mmr2017-046-012

LH SIDE SHOWN


mmr2017-046-017

FLAT SIDE FACING OUTWARDS

3. Remove stabilizer levers and plastic bushings from stabilizer bar.
4. Slide stabilizer bar out of vehicle from the LH side.


mmr2017-046-013_a

Installing the Stabilizer Bar

The installation is the reverse of the removal procedure. However, pay attention to the following.

Ensure to install the flat side outwards.

Install the screw with the head upwards.

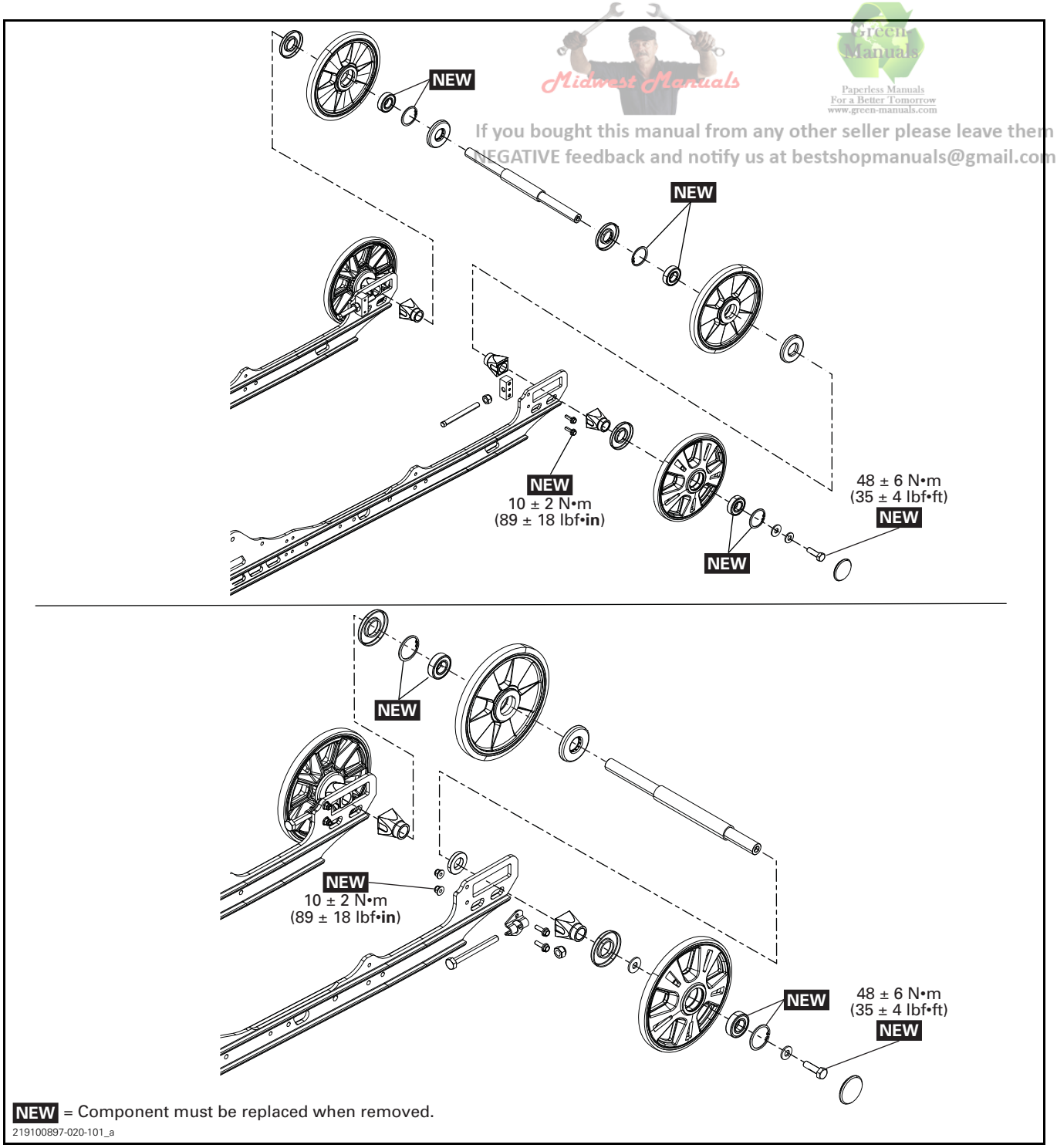
TIGHTENING TORQUE	
Stabilizer bar link nut	19 N•m ± 2 N•m (168 lbf•**in** ± 18 lbf•**in**)

REAR SUSPENSION

SERVICE TOOLS

Description	Part Number	Page
SHOCK ABSORBER SUPPORTS	529 036 186	289

REAR IDLER WHEELS (MOUNTED OUTSIDE)

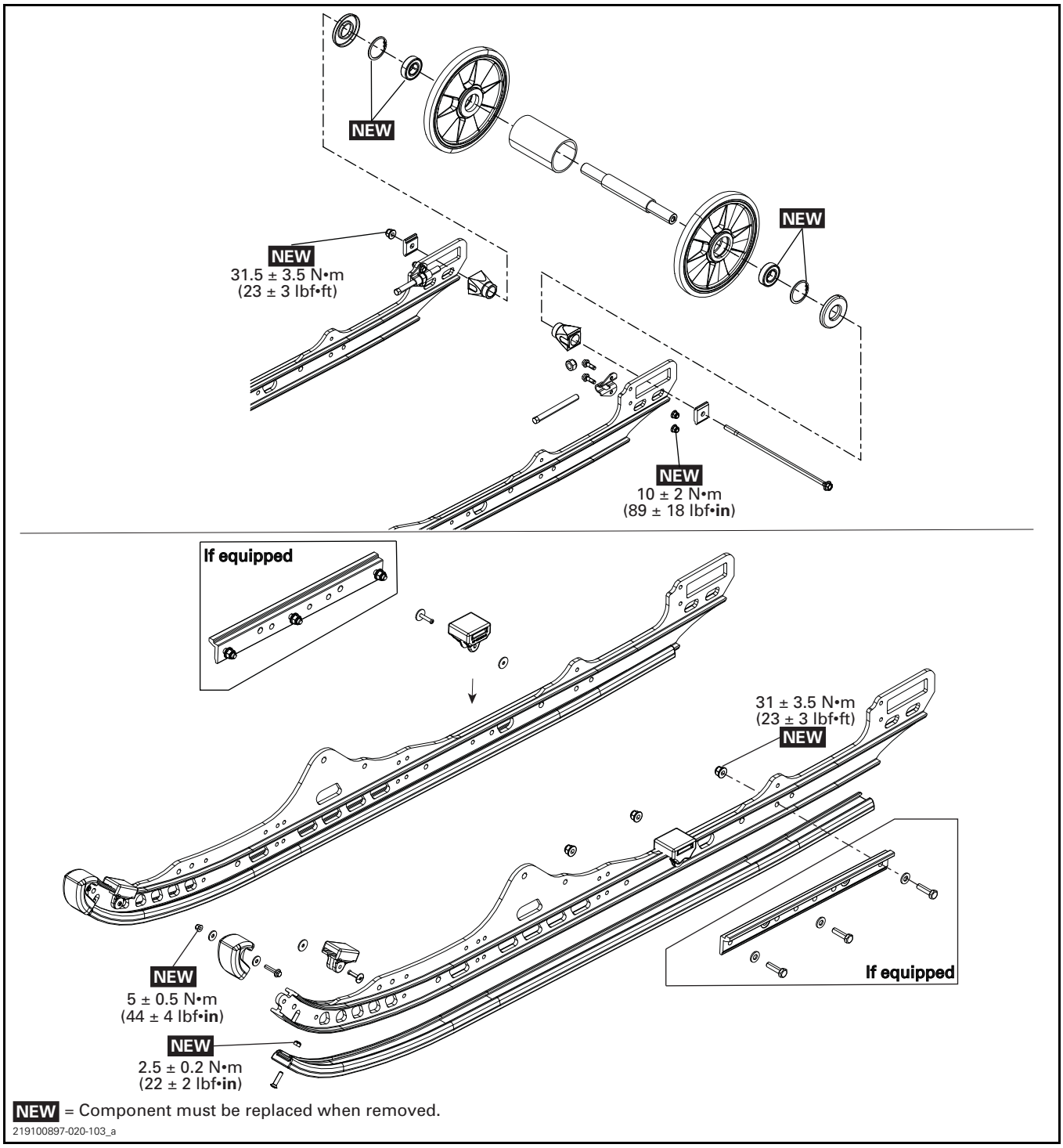


Midwest Manuals
Green Manuals
Paperless Manuals
For a Better Tomorrow
www.green-manuals.com
If you bought this manual from any other seller please leave them
NEGATIVE feedback and notify us at bestshopmanuals@gmail.com

NEW = Component must be replaced when removed.

219100897-020-101_a

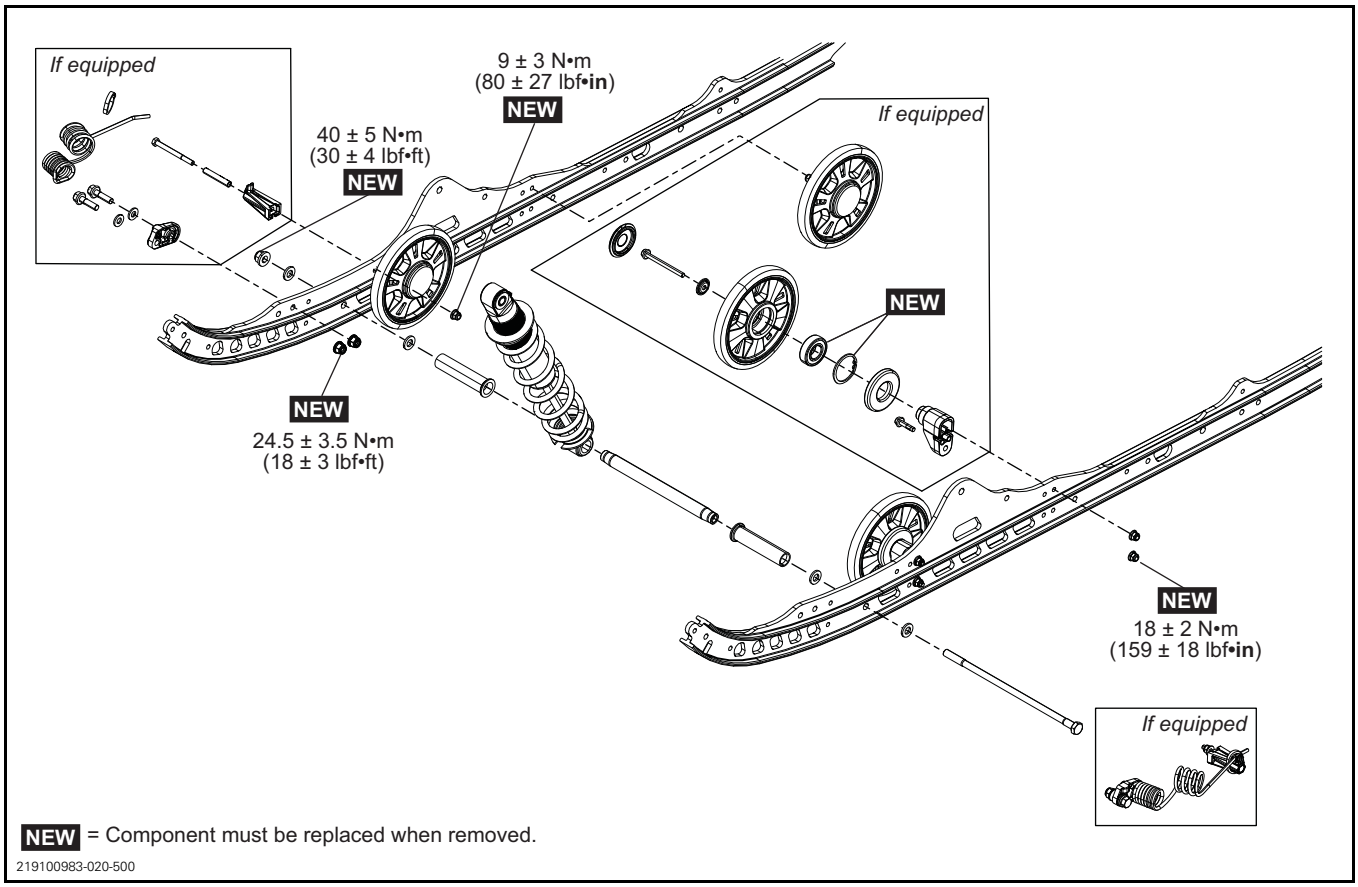
REAR IDLER WHEELS (MOUNTED INSIDE)



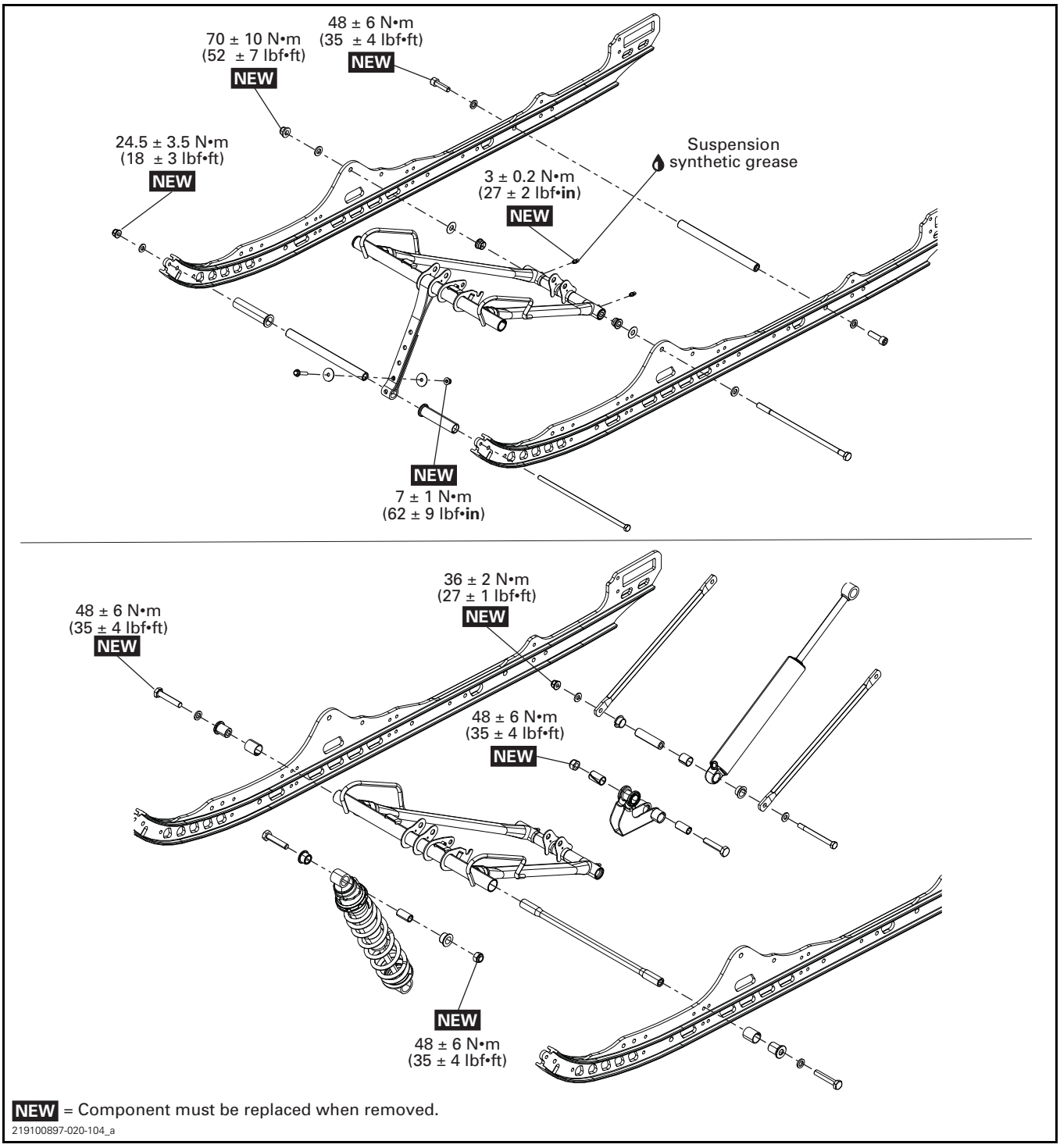
NEW = Component must be replaced when removed.

219100897-020-103_a

FRONT SHOCK ABSORBER AND FRONT IDLER WHEELS



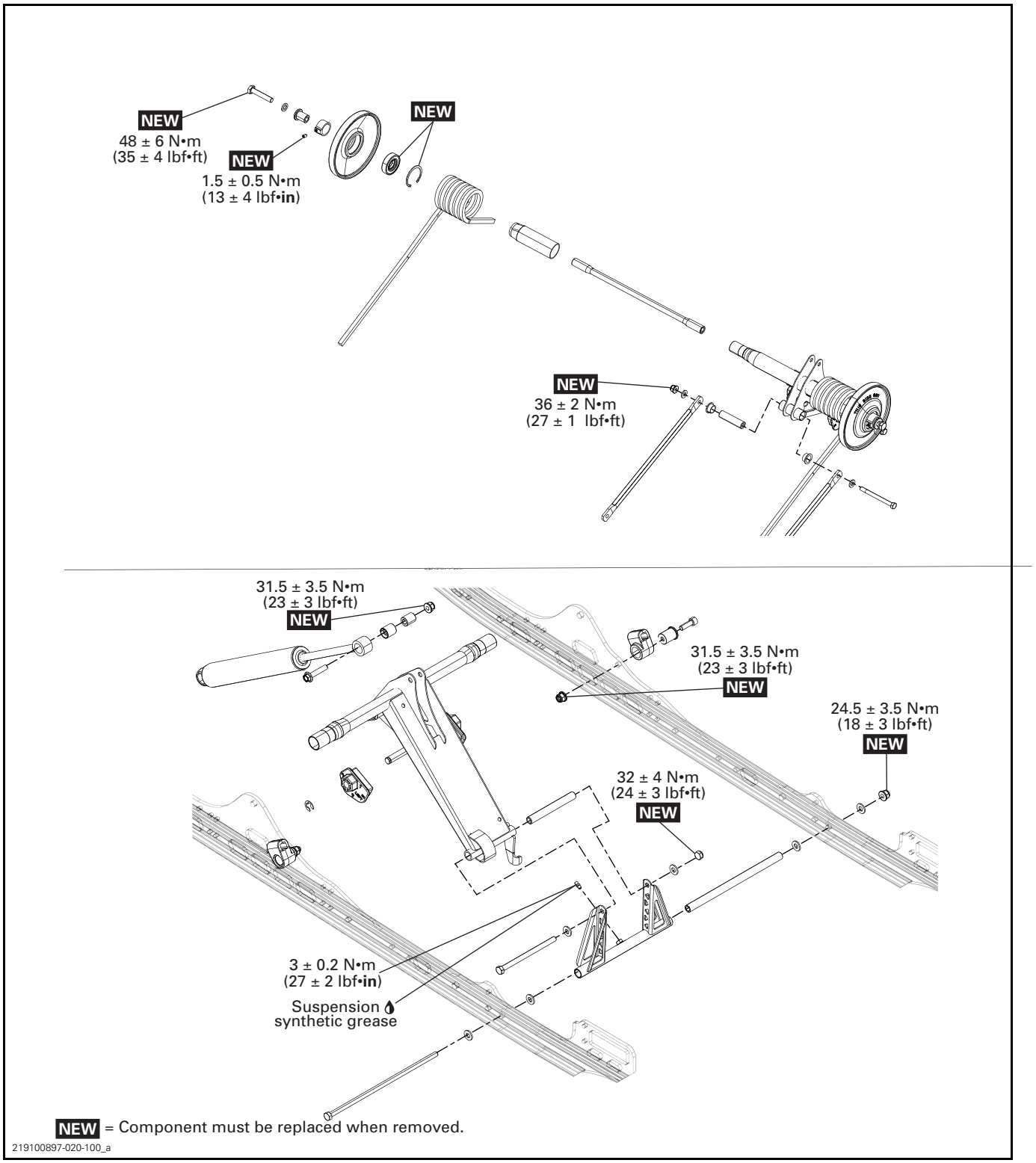
FRONT ARM



NEW = Component must be replaced when removed.

219100897-020-104_a

REAR ARM


NEW
48 ± 6 N•m
(35 ± 4 lbf•ft)
NEW
1.5 ± 0.5 N•m
(13 ± 4 lbf•in)
NEW
NEW
36 ± 2 N•m
(27 ± 1 lbf•ft)
31.5 ± 3.5 N•m
(23 ± 3 lbf•ft)
NEW
31.5 ± 3.5 N•m
(23 ± 3 lbf•ft)
NEW
24.5 ± 3.5 N•m
(18 ± 3 lbf•ft)
NEW
32 ± 4 N•m
(24 ± 3 lbf•ft)
NEW
3 ± 0.2 N•m
(27 ± 2 lbf•in)
Suspension
synthetic grease
NEW = Component must be replaced when removed.
219100897-020-100_a

GENERAL

NOTE: Refer to *TECHNICAL SPECIFICATIONS* to identify the snowmobile suspension type.

During assembly/installation, use torque values and service products as in the exploded views.

Clean threads before applying a threadlocker. Refer to *SELF-LOCKING FASTENERS* and *LOCTITE APPLICATION* at the beginning of this manual for complete procedure.

⚠ WARNING

Torque wrench tightening specifications must be strictly adhered to.
Locking devices when removed (e.g.: locking tabs, cotter pins, etc.) must replaced.

ADJUSTMENT

For suspension adjustments, refer to *SUSPENSION ADJUSTMENTS* subsection.

MAINTENANCE

For rear suspension lubrication, mechanism and stopper strap inspection, refer to *PERIODIC MAINTENANCE PROCEDURES*.

For shock absorbers inspection, refer to *SHOCK ABSORBERS* in this subsection.

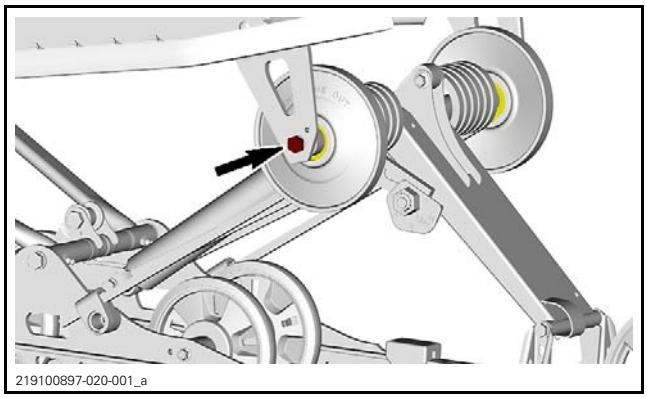
PROCEDURES

NOTE: Many parts can be changed with rear suspension in place. When specified, refer to *SUSPENSION ASSEMBLY* to remove rear suspension from vehicle.

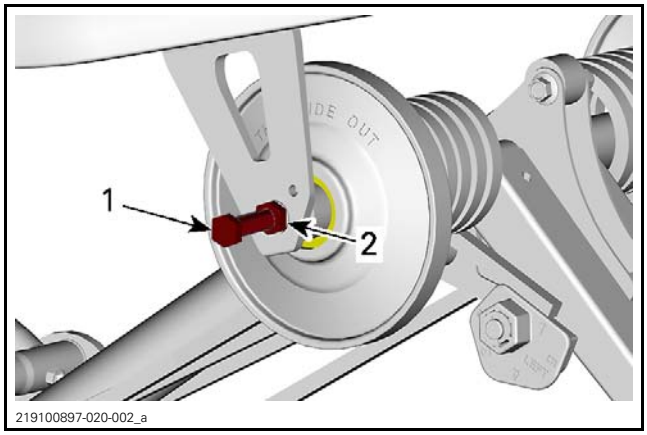
SUSPENSION ASSEMBLY

Removing Suspension Assembly

1. Lift rear of vehicle and support it off the ground.
2. Completely loosen track tension.
3. Remove and discard rear arm bolts from chassis. Use the following procedure to remove bolts easily.
   - 3.1 Remove one of the bolts securing the rear arm to frame.



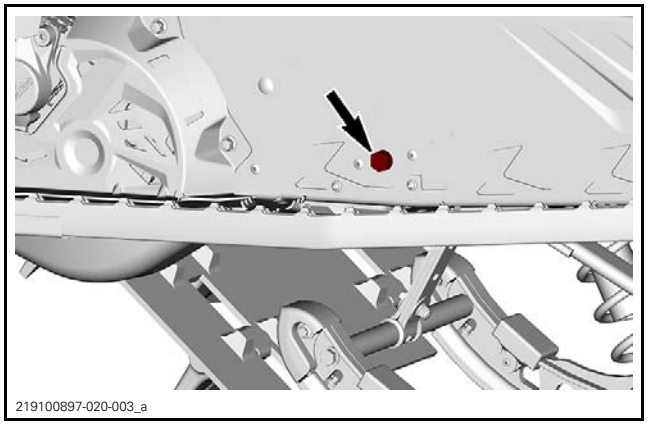
   - 3.2 Replace this bolt with a longer one and a nut.
   - 3.3 Screw in by approximately 7 turns.
   - 3.4 Hold the bolt and tighten locking nut.



1. Long bolt
2. Locking nut

   - 3.5 Remove the bolt on the other side then unlock nut and remove the long bolt.
4. Remove bolts retaining front arm to tunnel the same way rear arm bolts have been removed.

NOTE: Discard the front arm bolts.



5. Lift rear of vehicle until front arm has enough clearance to pass underneath tunnel.

6. Remove suspension.

Installing Suspension Assembly

The installation is the reverse of the removal procedure. However, pay attention to the following.

Inspect track thoroughly before reinstalling suspension. Refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.

Install suspension into track with front portion first.

Install new front and rear arm bolts.

Tighten bolts to specified torque.

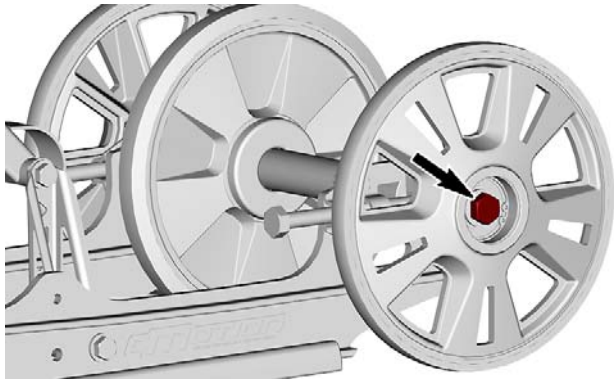
TIGHTENING TORQUE	
Front and rear arm upper bolts	48 N•m ± 6 N•m (35 lbf•ft ± 4 lbf•ft)

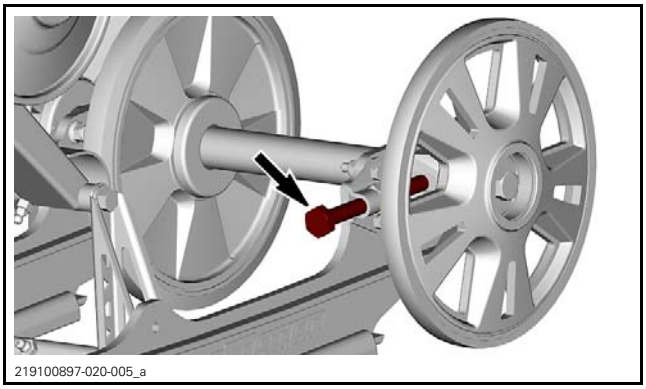
Adjust track tension, refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.

REAR AXLE

Removing Rear Axle

1. Lift rear of vehicle and support it off the ground.
2. Remove rear idler wheel caps (if equipped).
3. Loosen rear axle screws and washers (on both sides).
4. Completely loosen the track tension by unscrewing both adjustment screws.


219100897-020-004_a

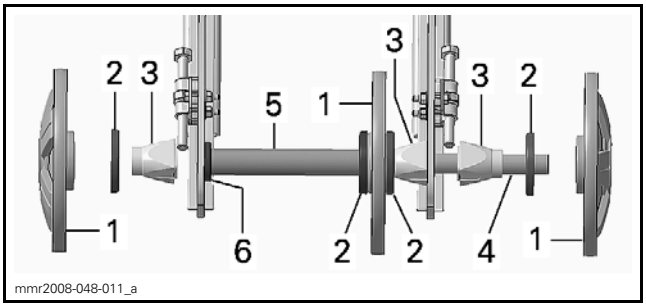

219100897-020-005_a

5. Remove rear axle screws.
6. Remove rear idler wheels, seals and wheel spacers.
7. Pull out the rear axle.

Installing Rear Axle

The installation is the reverse of the removal procedure. However, pay attention to the following.

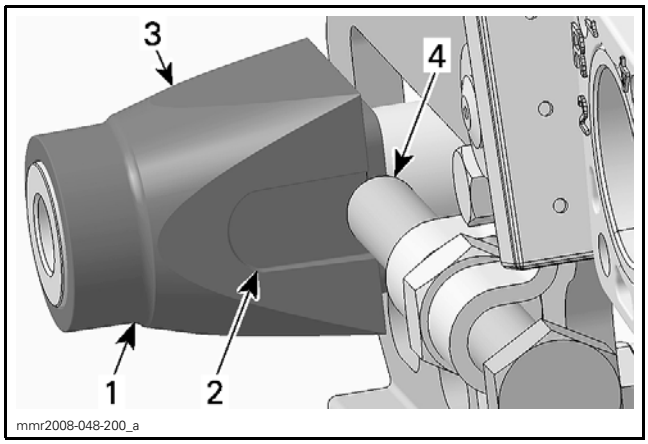
Make sure to position all parts correctly.



mmr2008-048-011_a

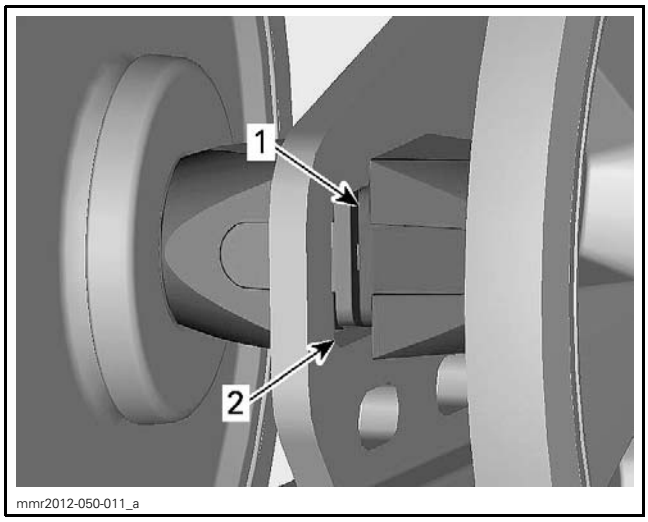
TYPICAL - 3 IDLER WHEELS LAYOUT
1. *Idler wheels*
2. *Seals*
3. *Wheel spacers*
4. *Rear axle*
5. *Rear axle spacer*
6. *Washer*

Position wheel spacers with a flat side up and a groove facing tensioner screw.



TYPICAL
1. *Wheel spacer*
2. *Groove*
3. *Flat side*
4. *Tensioner screw*

When tightening rear axle, make sure each wheel spacer protuberance is engaged into rail slot.



1. *Wheel spacer protuberance*
2. *Rail slot*

Adjust track tension. Refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.

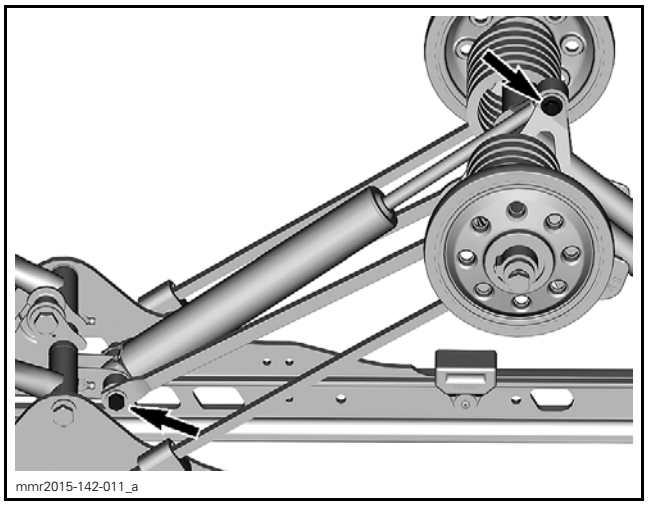
SHOCK ABSORBERS

Removing Rear Shock Absorber

1. Lift rear of vehicle and support it off the ground.

NOTE: If necessary, to ease shock removal, unfasten stopper strap to release shock pressure.

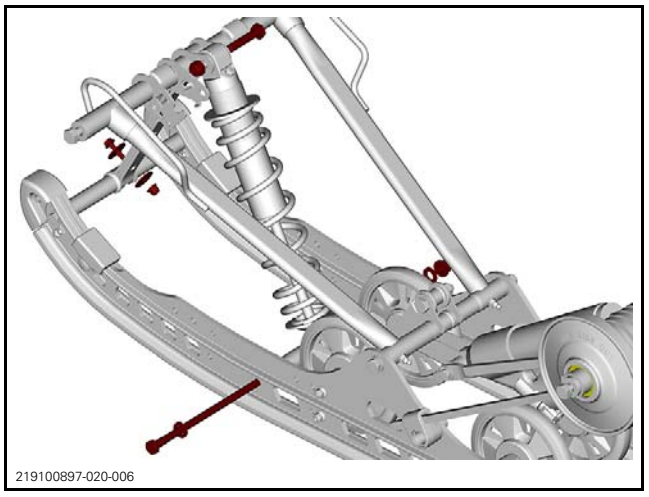
2. Remove bolts and nuts from shock.



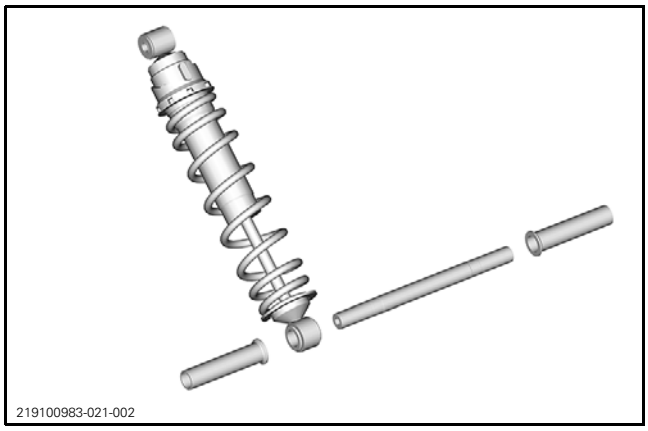
TYPICAL

Removing Center Shock Absorber

1. Lift the rear of vehicle and support it off the ground.
2. Unfasten stopper strap(s).
3. Remove the bolts securing the shock absorber.



4. Remove shock absorber from the suspension assembly.
5. Remove spacers and shaft from shock absorber.


219100983-021-002

Inspecting Shock Absorbers

NOTE: Unless otherwise noted, shock absorber must be at normal room temperature (21°C ± 2°C (70°F ± 36°F)) during inspection.

1. Perform a visual inspection of the shock:
   - The shock must be exempt of any dent or scratch, especially on the rod.
   - Any defect on the rod, as small as it is, can lead to seal failure and oil leak.
   - If such defect is detected, the shock must be replaced and this will not be covered under warranty.
2. Completely push down shock rod into the body and check result as per table.

HPG SHOCK	RESULT
All except 551 mm (21-11/16 in) rear shock	The rod should completely get in the shock body
551 mm (21-11/16 in) rear shock	The stroke must be at least 138 mm (5-7/16 in)

3. Release shock from completely collapsed position and check result as per table.

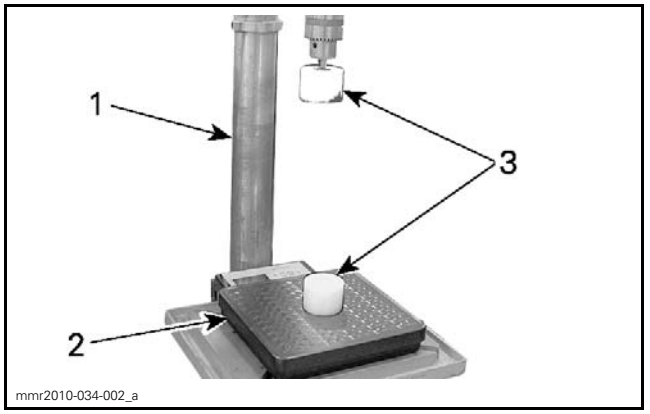
HPG SHOCK
– The shock should extend unassisted. – The rod must come out at a steady speed.

4. Proceed with *COMPRESSION TESTING SHOCK ABSORBERS*. See procedure in this subsection.
5. If any faults are present, replace shock.

Compression Testing Shock Absorbers

1. Ensure shock absorber is at normal room temperature (21°C ± 2°C (70°F ± 36°F)).
2. Remove spring from shock absorber (if applicable).
3. Place a bench scale on a suitable drill press.
4. Install the shock absorber supports onto drill press.

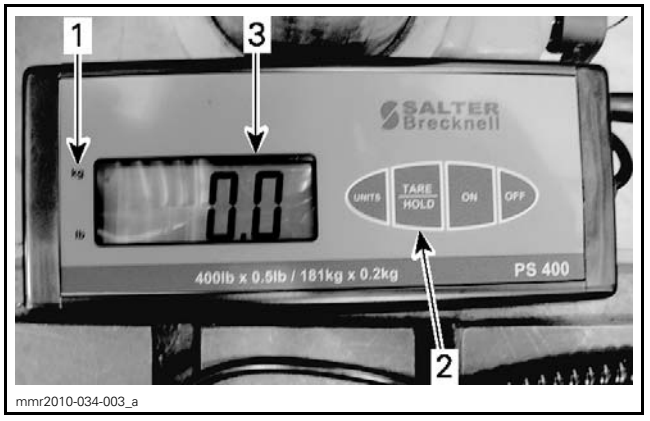
REQUIRED TOOL	
SHOCK ABSORBER SUPPORTS (P/N 529 036 186)	



mmr2010-034-002_a

1. Drill press
2. Bench scale
3. Shock absorber supports

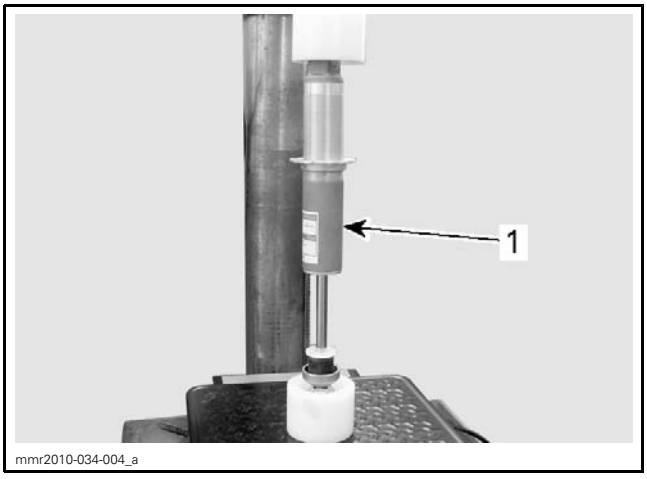
5. Set bench scale units to **kg** (or lb).
6. Press **TARE** to reset digits (must indicate (0) zero).



mmr2010-034-003_a

1. Units indicator lamp
2. TARE button
3. Digits

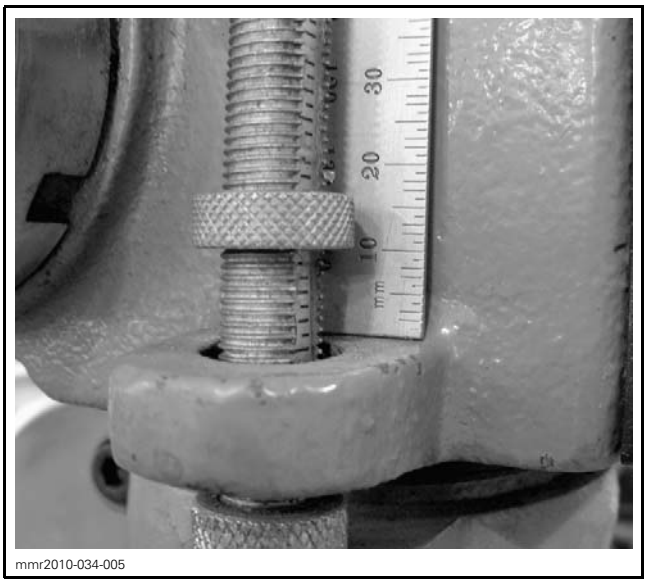
7. Install shock absorber into support with shock body upwards.
8. Adjust drill press table height in order to set the upper shock support flush with the shock body end.
9. Ensure shock absorber is aligned with drill press axis.



mmr2010-034-004_a

1. Shock body upwards

10. Set the drill press displacement to 10 mm (.394 in) using locking nut.



mmr2010-034-005

11. Compress shock absorber by 10 mm (.394 in) and hold it in position.
12. Read load recorded on the bench scale.



mmr2010-034-006

13. Load reading must be as per the following table.

ROD DIAMETER	SERVICE RANGE
12.5 mm (1/2 in)	24 kgf ± 4 kgf (53 lbf ± 9 lbf)
16 mm (5/8 in)	39 kgf ± 5 kgf (86 lbf ± 11 lbf)

Installing Rear Shock Absorber

The installation is the reverse of the removal procedure. However, pay attention to the following.

To ease shock installation, secure upper side of shock first.

NOTE: If the shock absorber has a separate reservoir, install with the reservoir facing downwards.

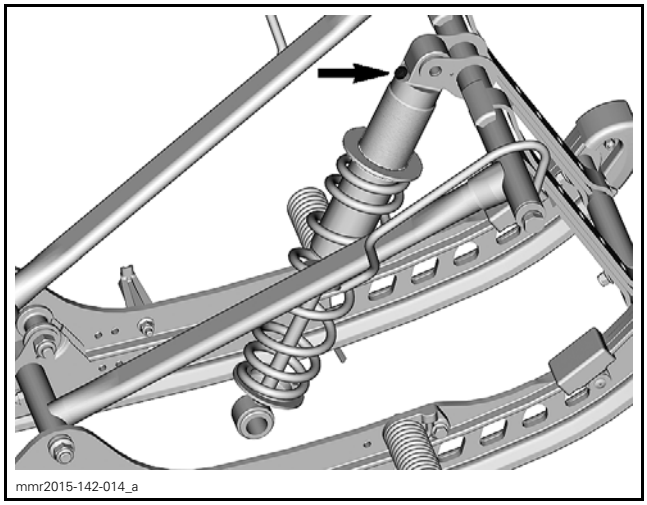
Install new shock absorber retaining nuts and tighten to specification.

TIGHTENING TORQUE	
Rear shock absorber fasteners	24.5 N•m ± 3.5 N•m (18 lbf•ft ± 3 lbf•ft)

Installing Center Shock Absorber

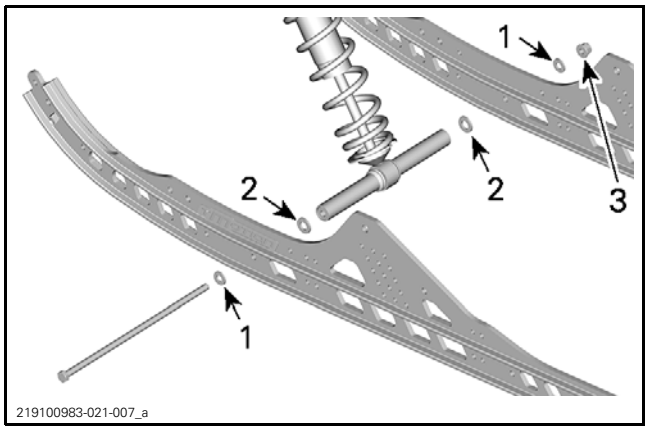
The installation is the reverse of the removal procedure. However, pay attention to the following.

1. Position the adjustment ring upwards and the valve towards the tunnel.


mmr2015-142-014_a

TYPICAL

2. Using new nut, install shock shaft to runners.
3. Position washers in proper position.



BOTTOM OF SHOCK ABSORBER
1. *Smaller washers*
2. *Larger washers*
3. *New nut*

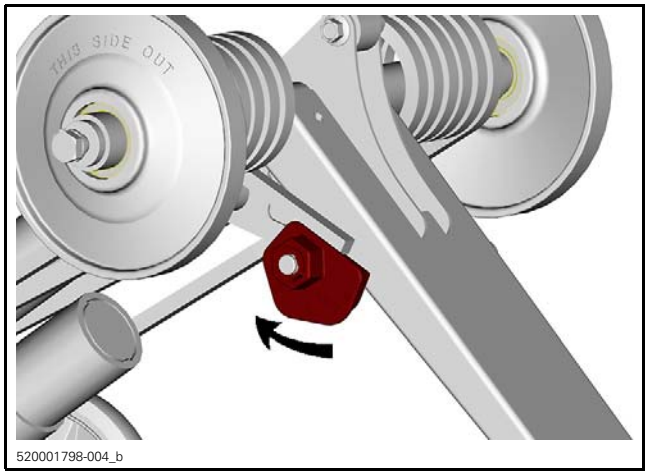
Tighten nut to the specification.

TIGHTENING TORQUE	
Center shock absorber lower nut	40 N•m ± 5 N•m (30 lbf•ft ± 4 lbf•ft)

REAR SPRINGS

Removing Rear Springs

1. Lift rear of vehicle and support it off the ground.
2. Completely loosen track tension by unscrewing both adjustment screws.
3. Decrease springs preload by turning cams accordingly.

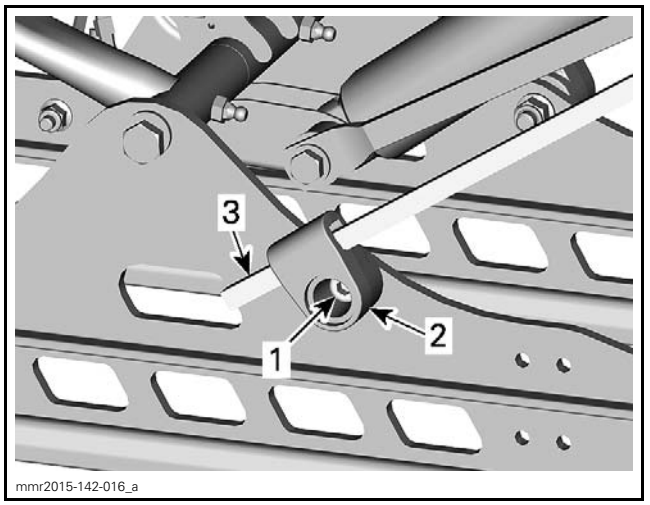


LH SIDE SHOWN

4. Firmly hold the spring support and unscrew its retaining bolt (one each side).

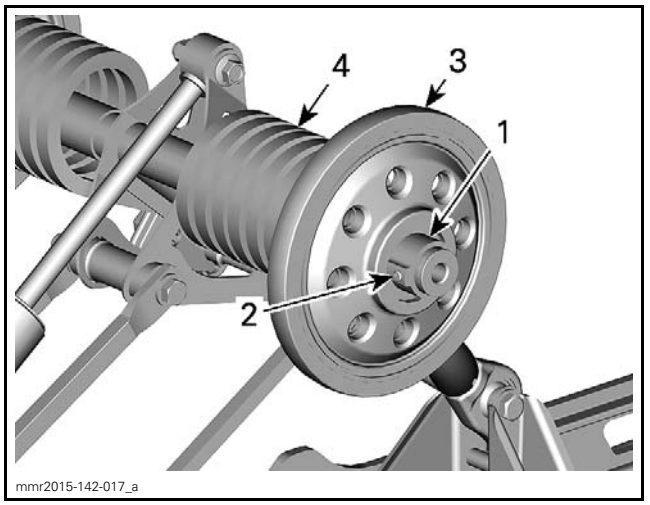
⚠ WARNING

Supports are spring loaded.



TYPICAL
1. *Spring support bolt*
2. *Spring support*
3. *Spring*

5. Remove screws and washers from rear arm top axle. Refer to *REMOVING SUSPENSION ASSEMBLY* for procedure to remove the bolts.
6. Loosen set screw from locking rings.
7. Remove locking rings.
8. Remove upper idler wheels.
9. Remove springs.

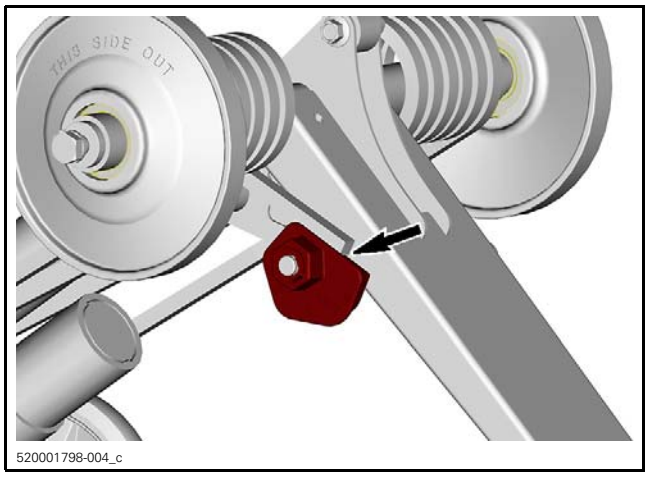


TYPICAL - LH SIDE SHOWN
1. *Locking ring*
2. *Set screw*
3. *Upper idler wheel*
4. *Rear spring*

Installing Rear Springs

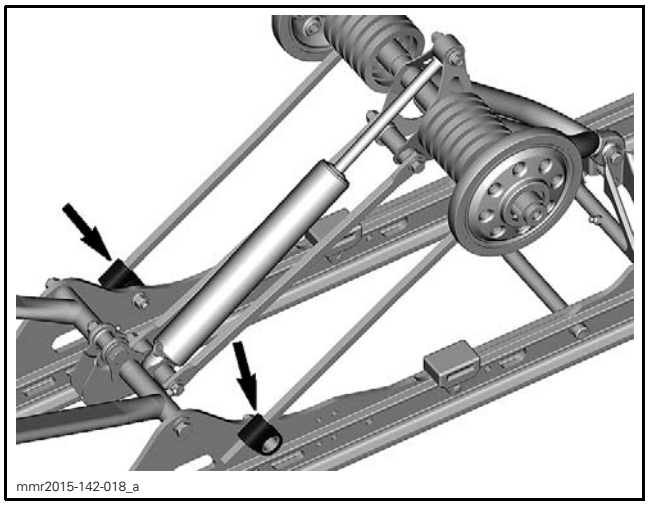
The installation is the reverse of the removal procedure. However, pay attention to the following.

1. Respect THIS SIDE OUT inscription on top idler wheels.
2. Make sure that spring end is in cam adjuster.



LH SIDE SHOWN

3. Install spring supports upwards.

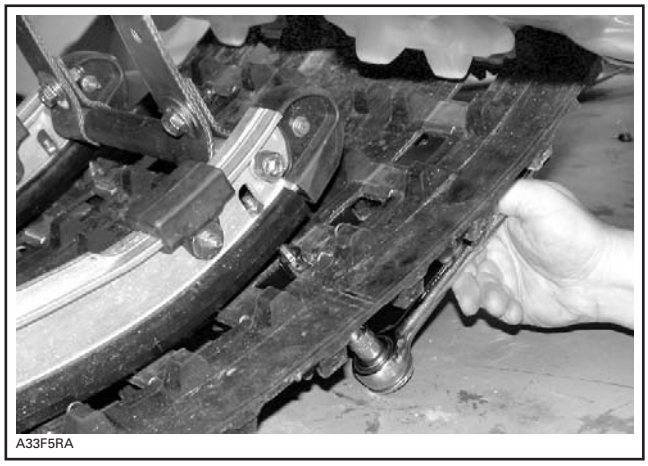


TYPICAL

SLIDER SHOES

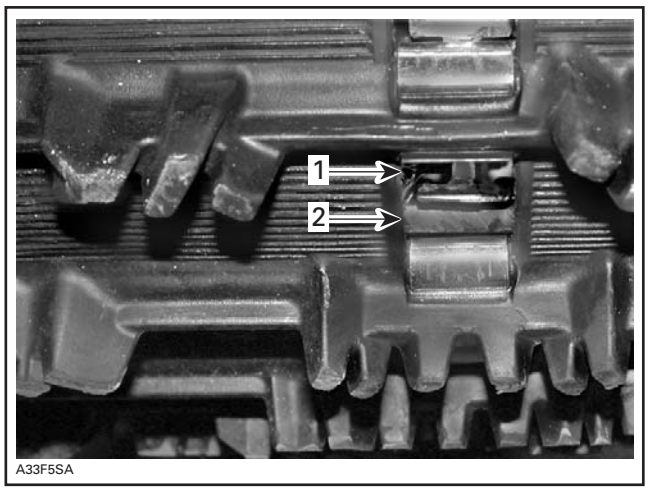
Removing Slider Shoes

1. Lift rear of vehicle and support it off the ground.
2. Completely loosen track tension.
3. Remove nut and screw of each runner.



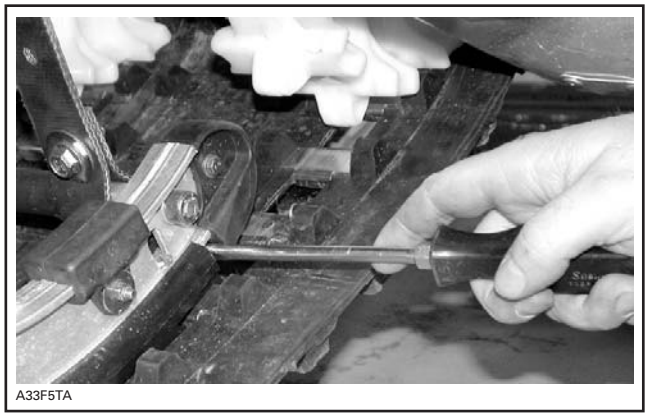
TYPICAL

4. At the rear of vehicle, align a track window with slider shoe.



TYPICAL
1. Track window
2. Slider shoe

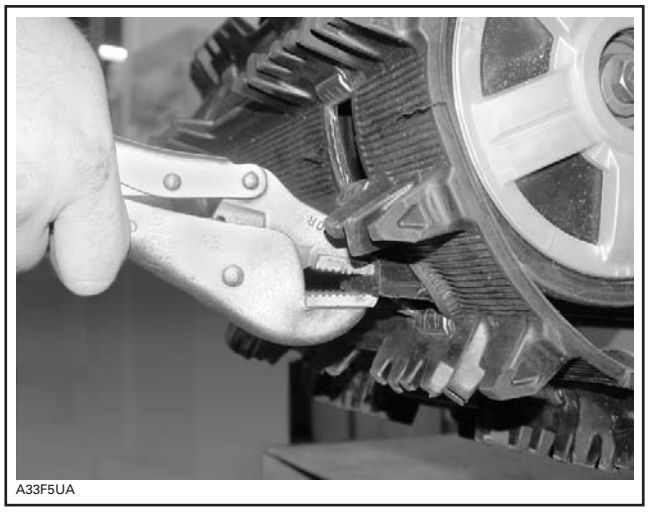
5. Using a pry bar or a screwdriver, push slider shoe rearward until it comes in contact with track.



TYPICAL - PUSH ON SLIDER SHOE

6. Using locking pliers, pull slider shoe through track window to remove.

NOTE: If necessary, lubricate track window to facilitate slider shoe removal.



TYPICAL - PULL ON SLIDER SHOE TO REMOVE

Installing Slider Shoes

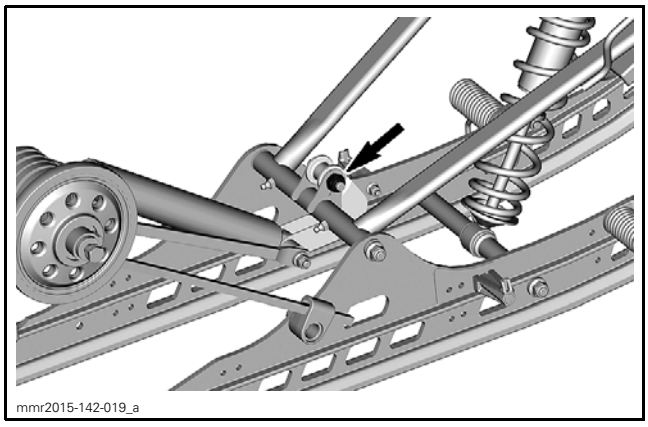
The installation is the reverse of the removal procedure. However, pay attention to the following.

Make sure to insert slider shoe end with a hole in it, first.

FRONT ARM

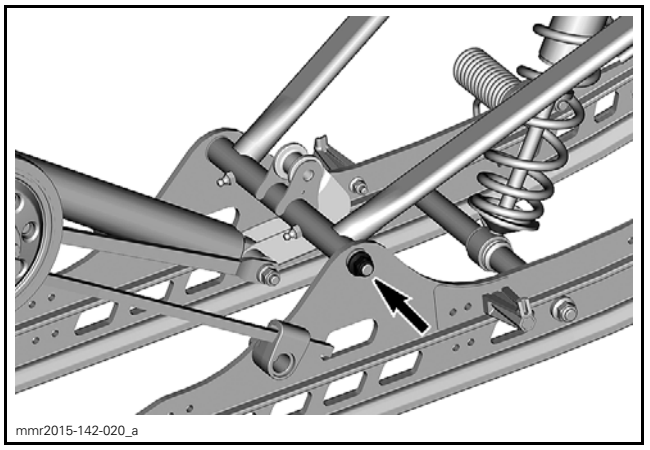
Removing Front Arm

1. Proceed with *REMOVING SUSPENSION ASSEMBLY*, see procedure in this subsection.
2. Remove nut and bolt securing rocker to front arm.



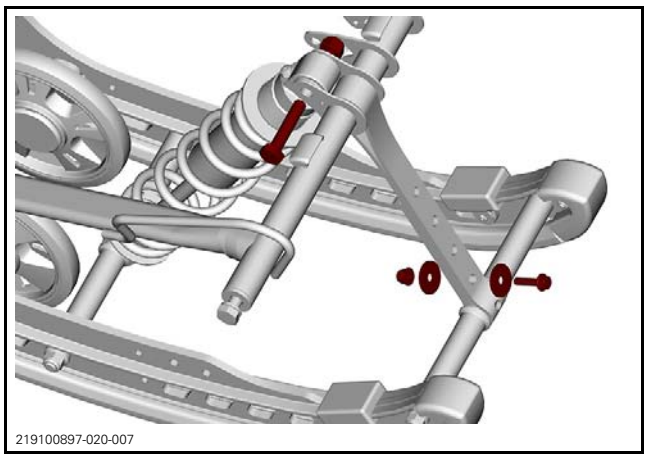
TYPICAL

3. Remove the front arm lower bolt, nut and washers. Discard retaining nut.



TYPICAL

4. Remove the shock absorber upper nut and bolt.
5. Unfasten stopper strap(s).

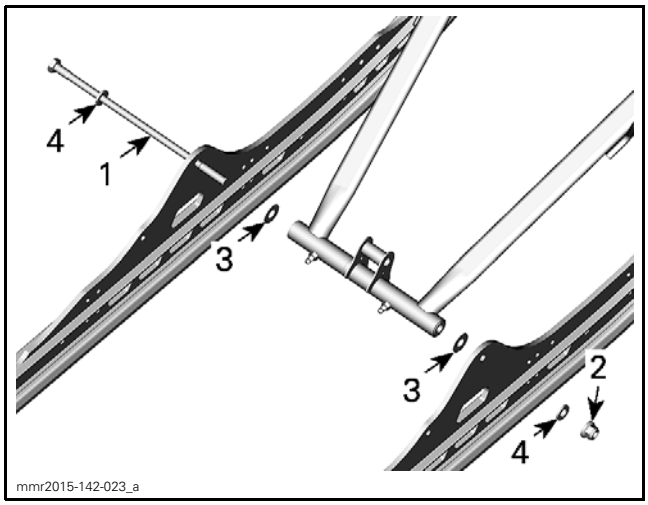


6. Remove front arm.

Installing Front Arm

The installation is the reverse of the removal procedure. However, pay attention to the following.

1. Install new nuts.
2. Install new front arm upper bolts.



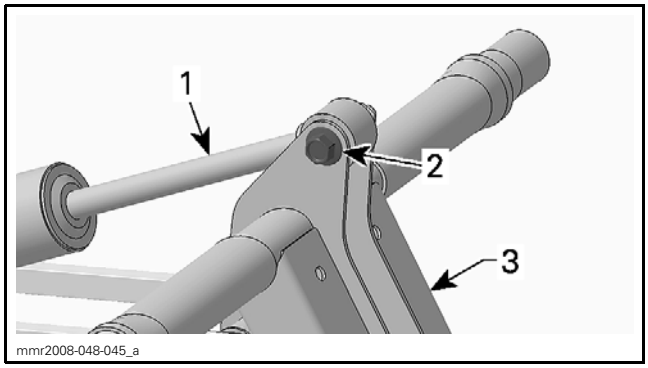
1. Front arm lower bolt
2. Nut
3. Spacer washers
4. Washers

3. See front arm exploded view for proper tightening torque.

REAR ARM

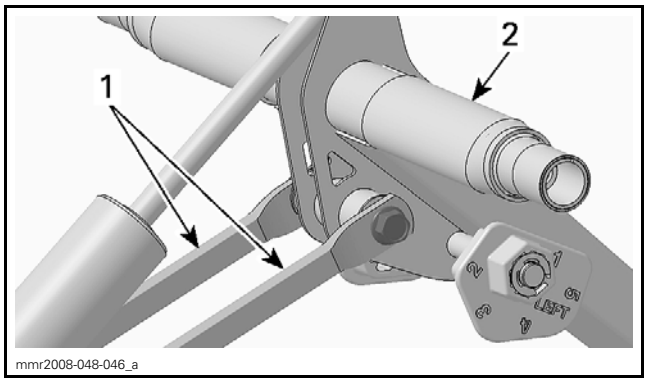
Removing Rear Arm

1. Lift rear of vehicle and support it off the ground.
2. Completely loosen track tension.
3. Proceed with *REMOVING REAR SPRINGS*, see procedure in this subsection.
4. Remove the rear shock absorber upper bolt.



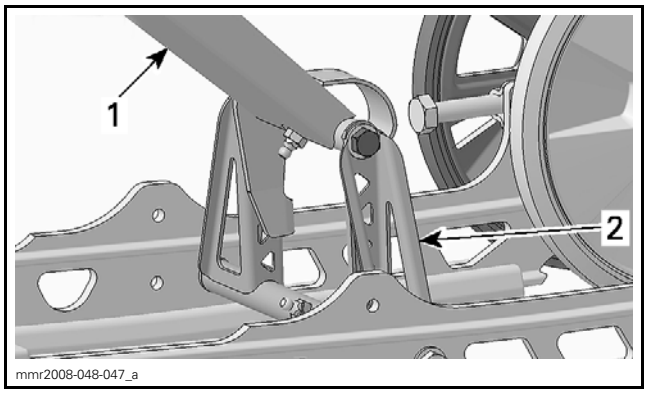
1. Rear shock absorber
2. Shock absorber bolt
3. Rear arm

5. Remove the bolt securing throttle rods to rear arm.



1. Throttle rods
2. Rear arm

6. Remove the bolt, nut and washer holding rear arm to pivot arm.



1. Rear arm
2. Pivot arm

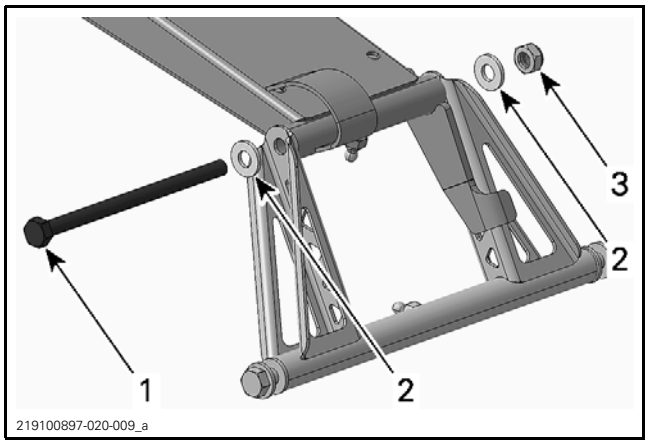
Installing Rear Arm

The installation is the reverse of removal procedure. However, pay attention to the following.

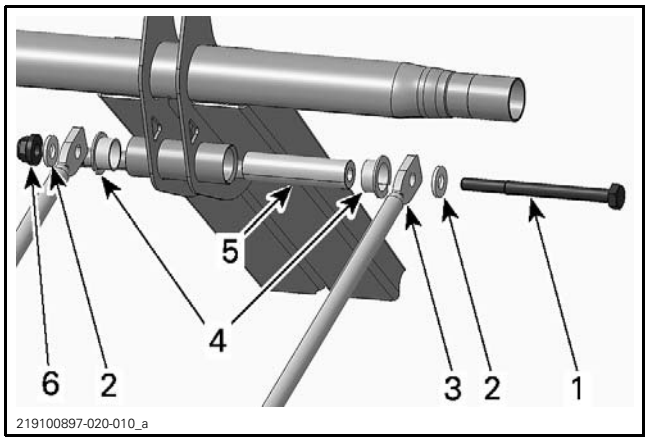
Make sure the rear arm stroke limiter is placed towards the rear.

Install **NEW** nuts and tighten to the specified torque.

Assemble rear arm fasteners as per following illustrations.



PARTS REMOVED FOR CLARITY
1. *Rear arm lower bolt*
2. *Washers*
3. *Rear arm lower nut*



SOME PARTS REMOVED FOR CLARITY PURPOSE
1. *Throttle rod upper bolt*
2. *Washer*
3. *Throttle rod*
4. *Bushings*
5. *Axle*
6. *Throttle rod upper nut*

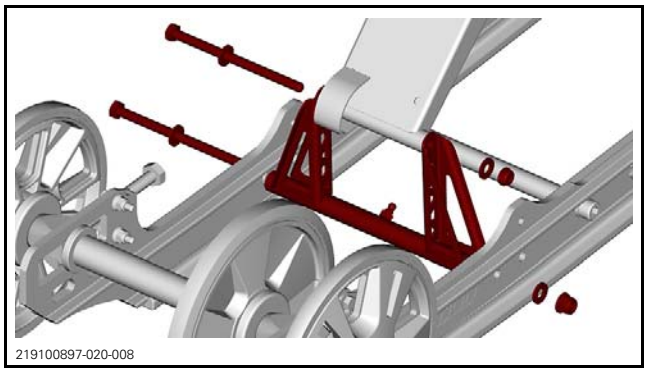
TIGHTENING TORQUE	
Rear shock absorber upper nut	24.5 N•m ± 3.5 N•m (18 lbf•ft ± 3 lbf•ft)
Throttle rods upper nut	36 N•m ± 2 N•m (27 lbf•ft ± 1 lbf•ft)
Pivot to rear arm nut	24.5 N•m ± 3.5 N•m (18 lbf•ft ± 3 lbf•ft)

Lubricate rear arm pivot at grease fitting. Refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.

PIVOT ARM

Removing Pivot Arm

1. Lift rear of vehicle and support it off the ground.
2. Completely loosen track tension by unscrewing both adjustment screws.
3. Remove the bolts, washers retaining the pivot arm to the rear arm and runners.



4. Carefully remove the pivot arm.

Installing Pivot Arm

The installation is the reverse of the removal procedure. However, pay attention to the following.

Refer to appropriate exploded view for parts installation sequence and applicable tightening torques.

Assemble pivot arm with the grease fitting towards front of vehicle.

Lubricate pivot arm. Refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.

STOPPER STRAP

Refer to appropriate exploded view for parts installation sequence and applicable tightening torques.

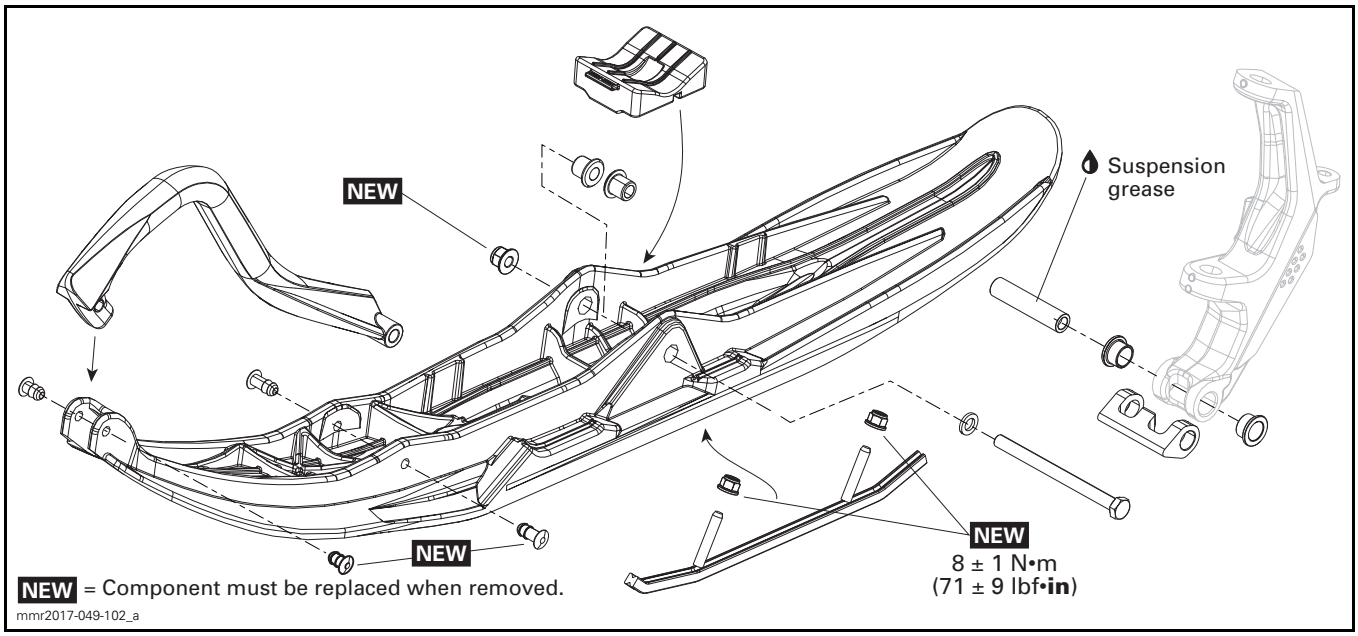
STEERING SYSTEM

SERVICE PRODUCTS

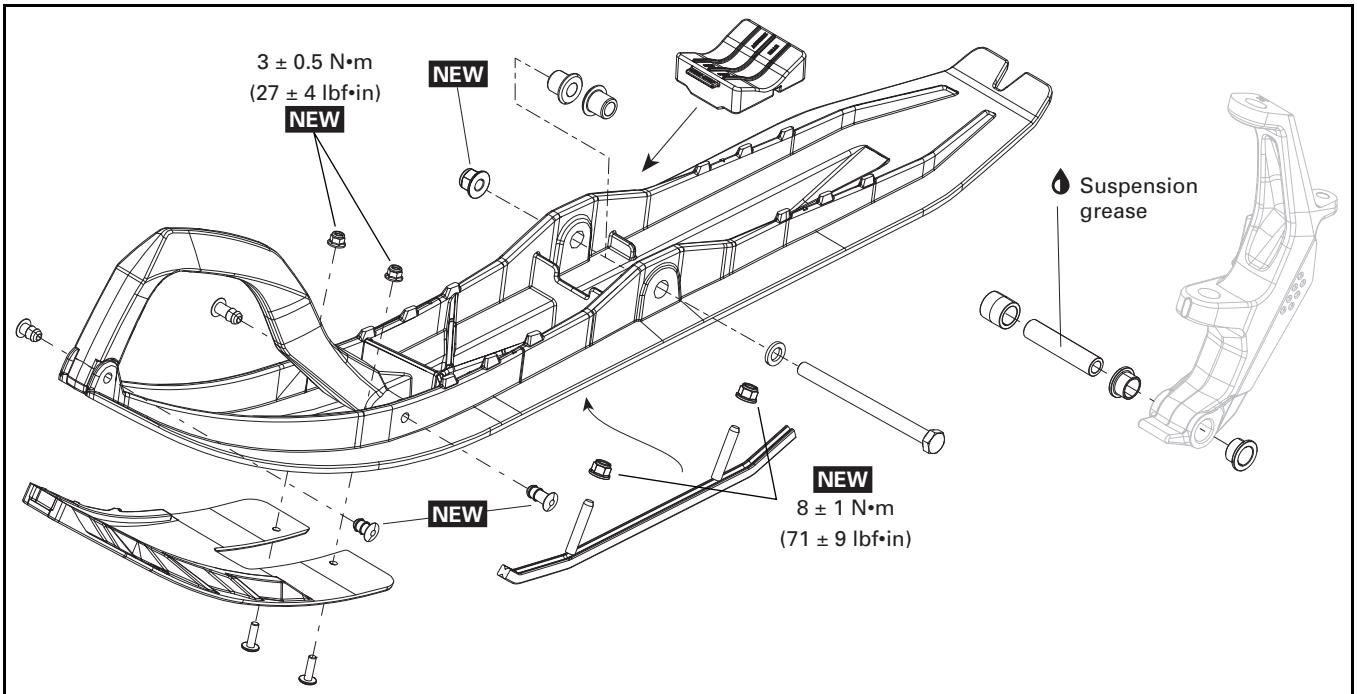
Description	Part Number	Page
SYNTHETIC GREASE	779162	309
SYNTHETIC SUSPENSION GREASE	779163	305, 322
XPS BRAKES AND PARTS CLEANER (USA)	219 701 705	308
XPS BRAKES AND PARTS CLEANER	219 701 776	308

SKIS (WITHOUT ADJUSTABLE RUNNER)

Trail and Crossover Models



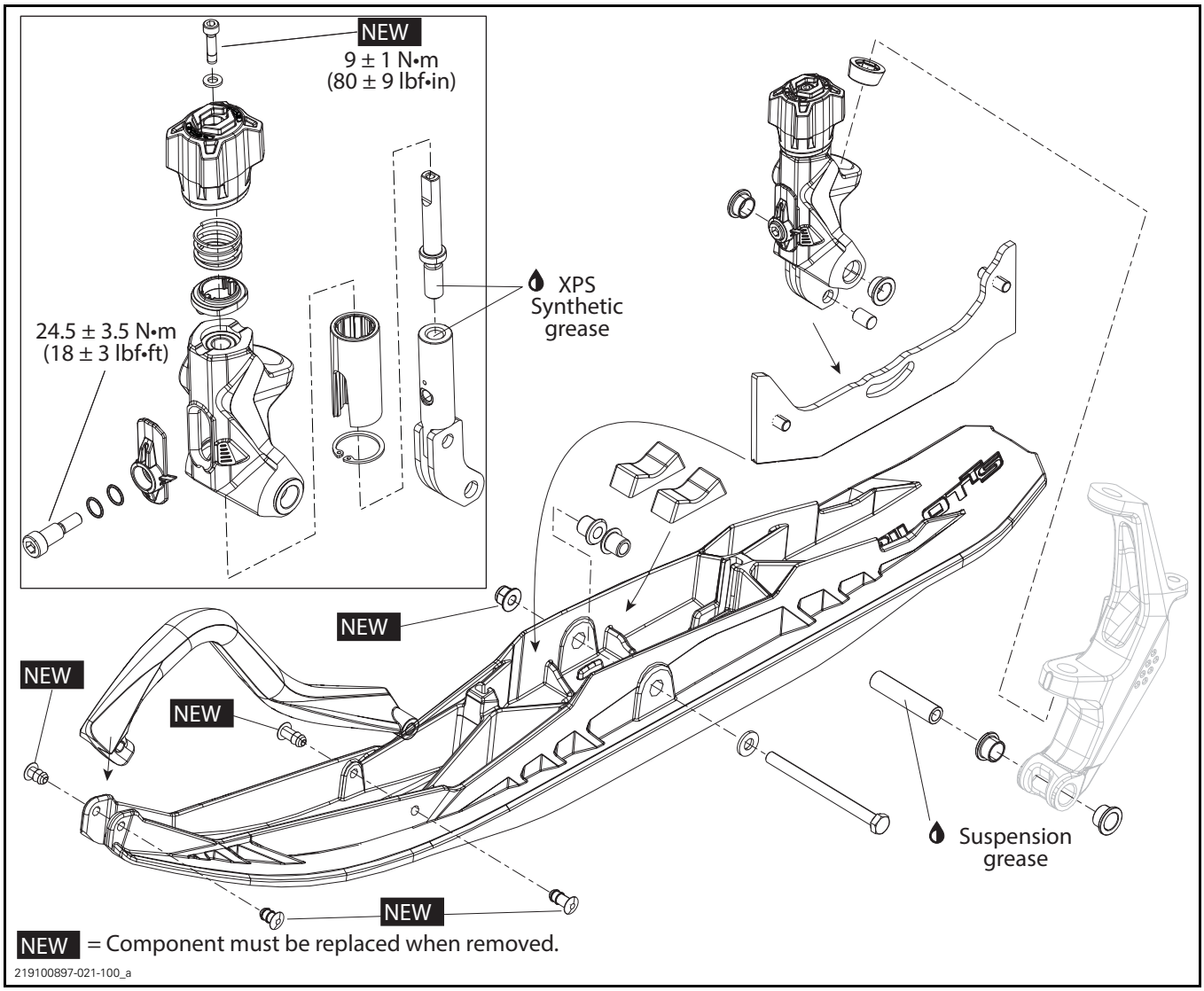
Mountain Models



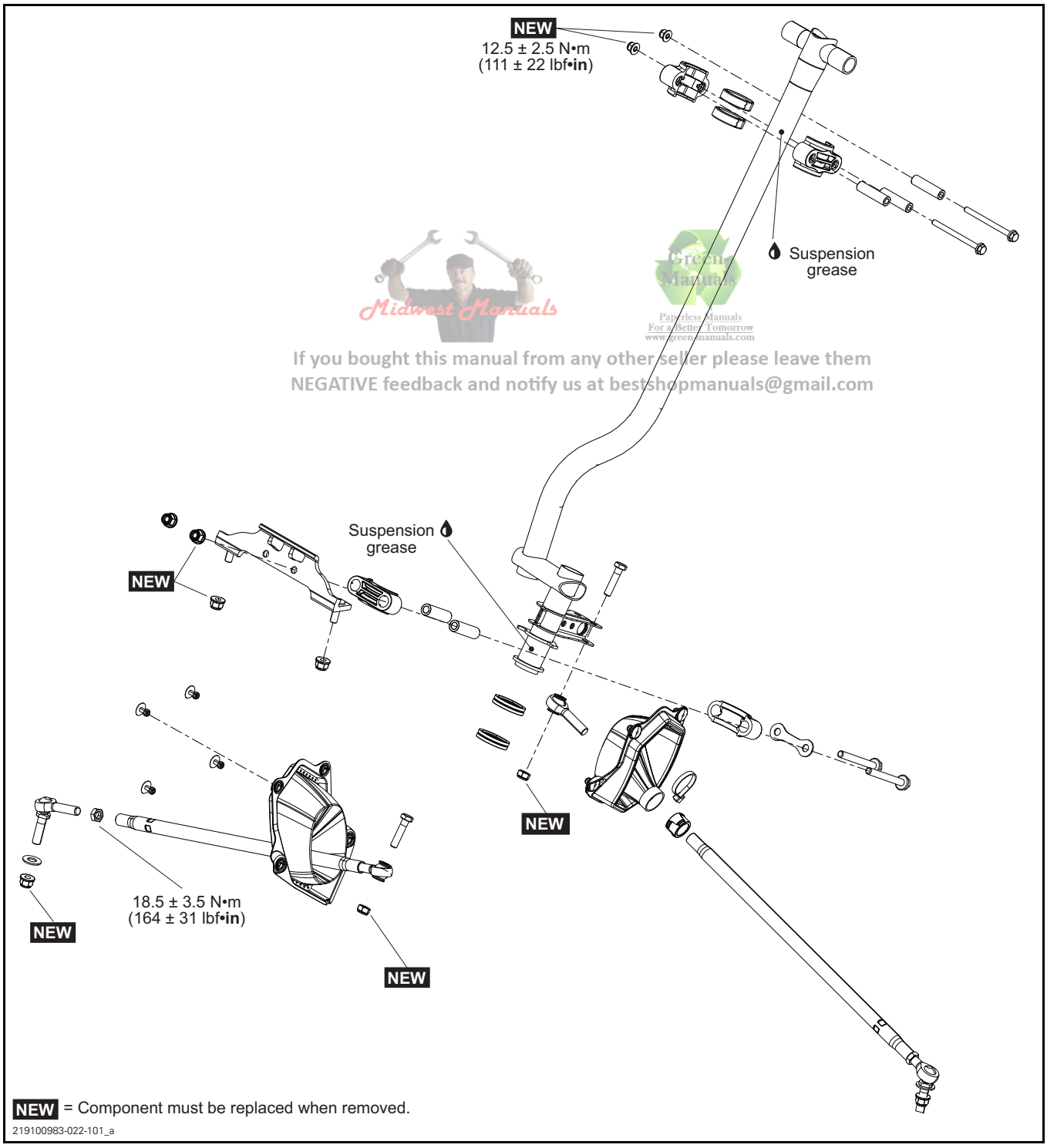
NEW = Component must be replaced when removed.

mmr2017-049-103_a

SKIS (WITH ADJUSTABLE RUNNER)

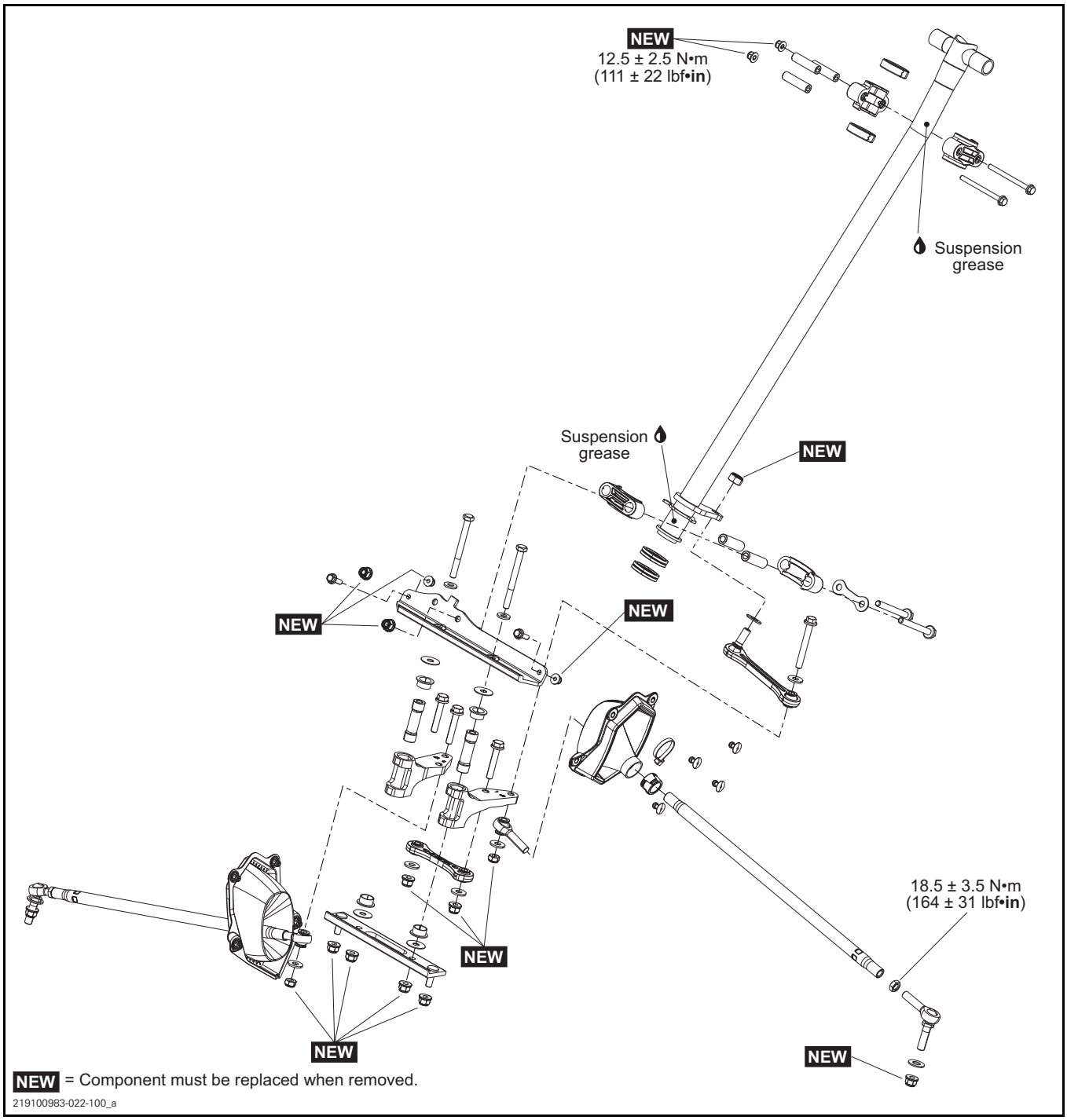


STEERING COLUMN AND TIE-RODS - PITMAN ARM

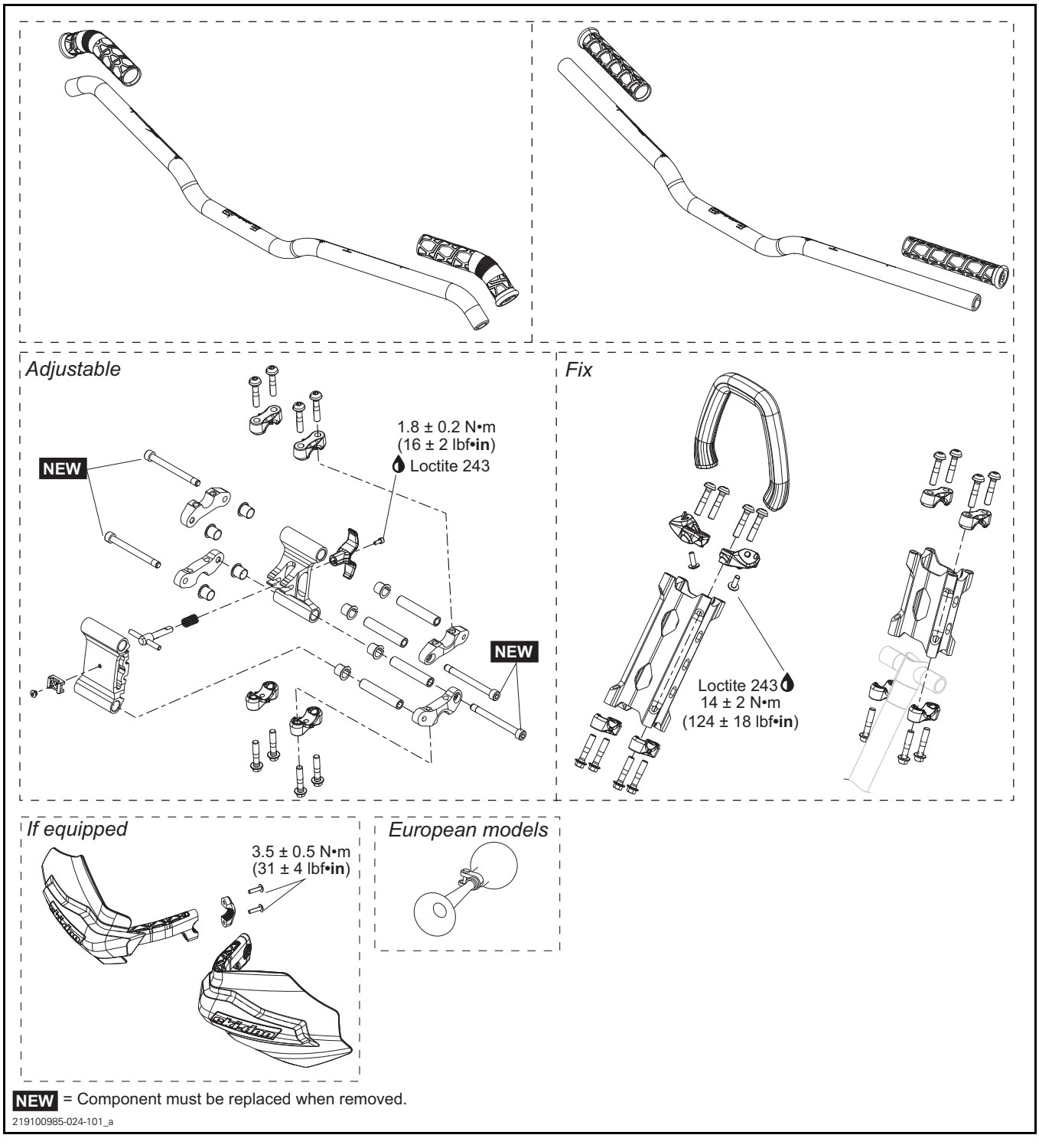


Midwest Manuals
Paperless Manuals For a Better Tomorrow www.greenmanuals.com
If you bought this manual from any other seller please leave them NEGATIVE feedback and notify us at bestshopmanuals@gmail.com

STEERING COLUMN AND TIE-RODS - RACK



HANDLEBAR



NEW = Component must be replaced when removed.

219100985-024-101_a

GENERAL

When removing or replacing a part of the steering mechanism, perform the steering alignment, refer to *ALIGNING THE STEERING* in this subsection.

During assembly/installation, use the torque values and service products as in the exploded views.

Clean threads before applying a threadlocker. Refer to *SELF-LOCKING FASTENERS* and *LOCTITE APPLICATION* at the beginning of this manual for complete procedure.

⚠ WARNING

Torque wrench tightening specifications must be strictly adhered to.
Locking devices when removed (e.g.: locking tabs, elastic stop nuts, cotter pins, etc.) must be replaced.

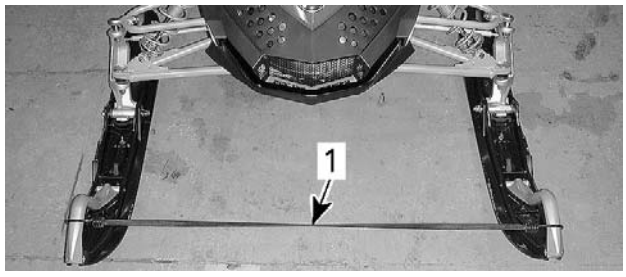
NOTICE **Hoses, cables and locking ties removed during a procedure must be reinstalled at the same location.**

ADJUSTMENT

ALIGNING THE STEERING

Ski alignment is performed by adjusting the length of left and right tie-rods.

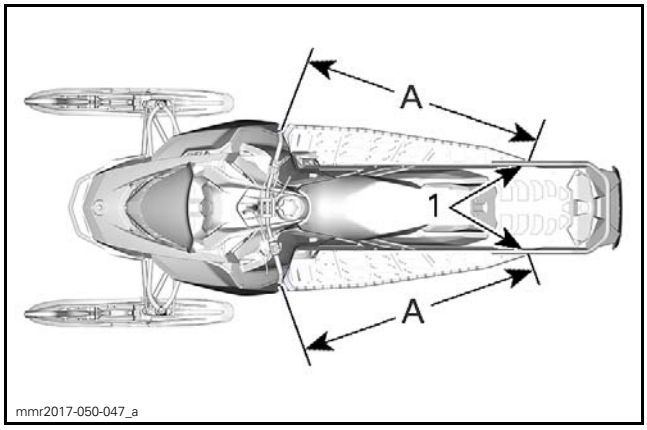
1. Leave the vehicle on the ground on its own weight.
2. Attach ski handles together with a bungee cord.



TYPICAL
1. Bungee cord

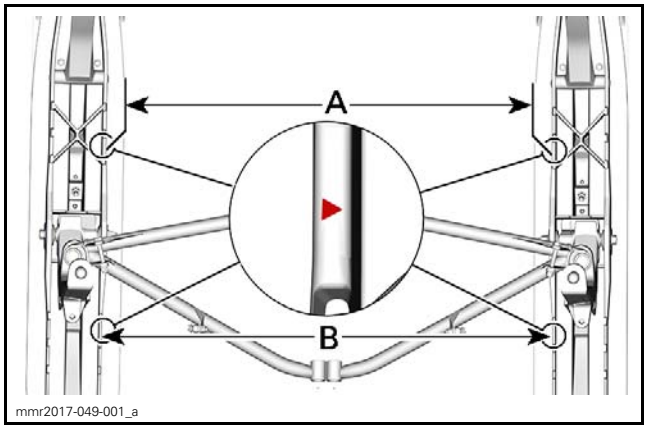
3. Position handlebar so that it is straight ahead position by measuring from the extremities of the grips to the rear most edge of the tunnel, as shown.

NOTE: The reference point must be the same to each side.



TYPICAL
1. Same reference point
A. Equal distance on each side

4. Ensure track is properly aligned.
5. Verify if skis are in straight-ahead position by placing a straight edge against track and measuring distance between front and rear ski bridges and straight edge.
6. With skis in straight ahead position, adjust the toe-out.
7. Measure the distance between front and rear ski bridges in line with arrows on skis.
8. Use the following illustration and this equation to determine the steering adjustment.



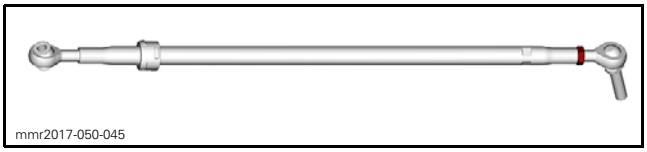
STEERING ALIGNMENT	
Toe-out	A – B = 5 mm (.197 in)

9. If adjustment is needed, loosen tie-rod jam nuts then turn tie-rods to change their length.

NOTE: There is no jam nut on the inner tie-rods.

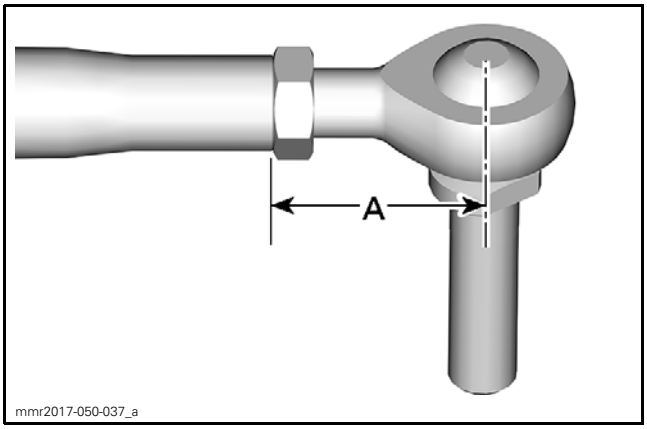
10. Tighten jam nuts to specification.

TIGHTENING TORQUE	
Jam nut	18.5 N•m ± 3.5 N•m (164 lbf•**in** ± 31 lbf•**in**)


mmr2017-050-045

⚠ WARNING

The maximum tie-rod end length (A) not engaged in the tie rod must not exceed 34 mm (1.339 in).



mmr2017-050-037_a

INSPECTION

INSPECTING THE SKI AND RUNNER

Lift the front of vehicle and check ski runners for wear or damage (missing or broken carbide). Replace if necessary.

Inspect ski for excessive wear or other damage. Replace if necessary.

Refer to *ADJUSTABLE RUNNER MECHANISM* in this subsection for adjustable ski mechanism inspection.

INSPECTING THE STEERING MECHANISM

Visually inspect steering mechanism for tightness of components (steering arms, tie rods, ski bolts, ski legs, etc.).

PROCEDURES

SKI RUNNER

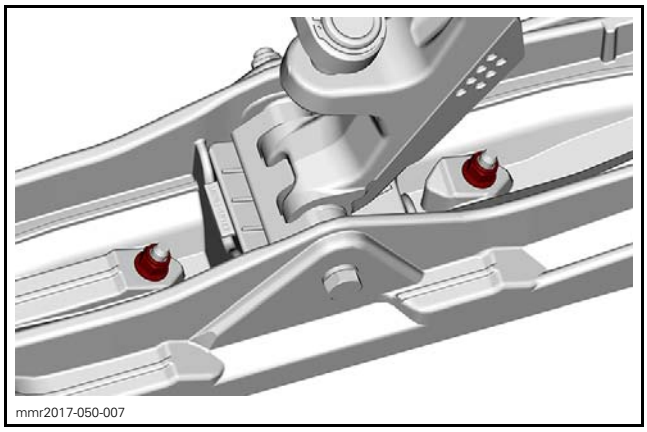
Inspecting the Ski Runner

Refer to *INSPECTION*.

Removing the Ski Runner

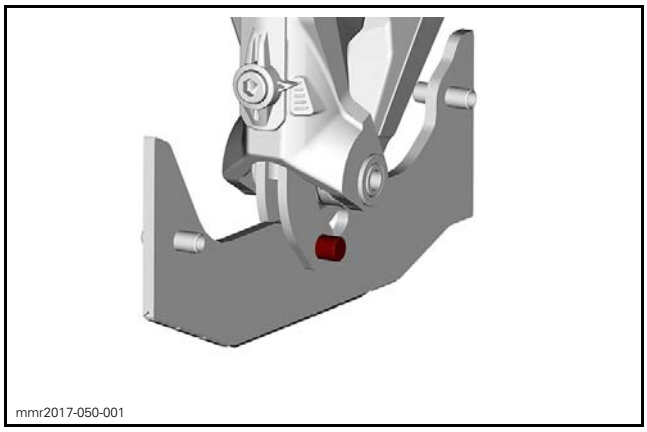
Ski Without Adjustable Runner

1. Lift the front of vehicle and support it off the ground.
2. Unscrew the ski runner nuts, then remove the ski runner.


mmr2017-050-007

Ski With Adjustable Runner

1. Remove the ski.
2. Remove the pin.


mmr2017-050-001

Installing the Ski Runner

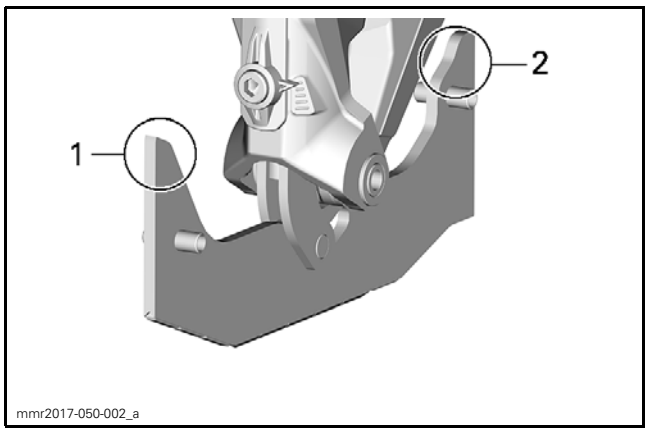
The installation is the reverse of the removal procedure. Pay attention to the following.

Ski Without Adjustable Runner

Tighten ski runner nuts to specification.

TIGHTENING TORQUE	
Runner nut	8 N•m ± 1 N•m (71 lbf•**in** ± 9 lbf•**in**)

Ski With Adjustable Runner



1. Towards front
2. Towards rear

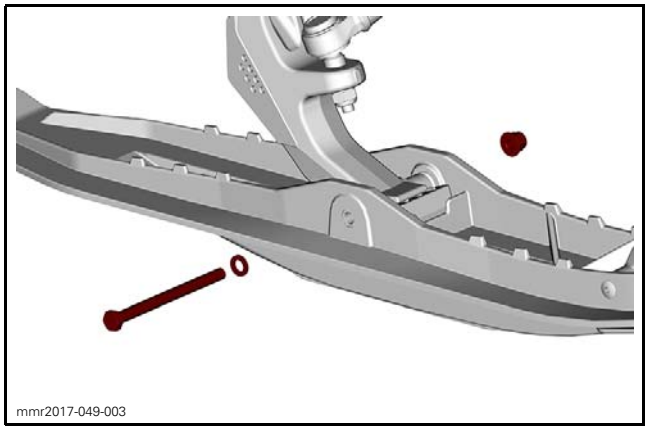
SKIS

Inspecting the Ski

Refer to *INSPECTION*.

Removing the Ski

1. Lift front of vehicle and support it off ground.
2. Unscrew nut then pull ski bolt out.

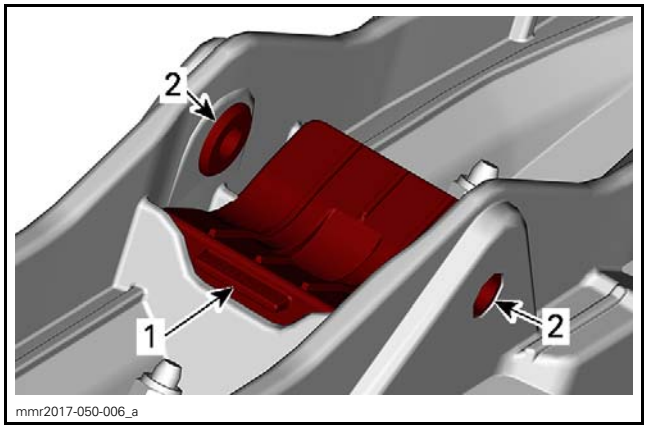


3. Remove ski from vehicle.

Installing the Ski - Without Adjustable Runner

Make sure bushings are installed in ski holes.

Install the ski stopper. Position indicator in front and make sure the bump in the ski is in the groove of the ski stopper.

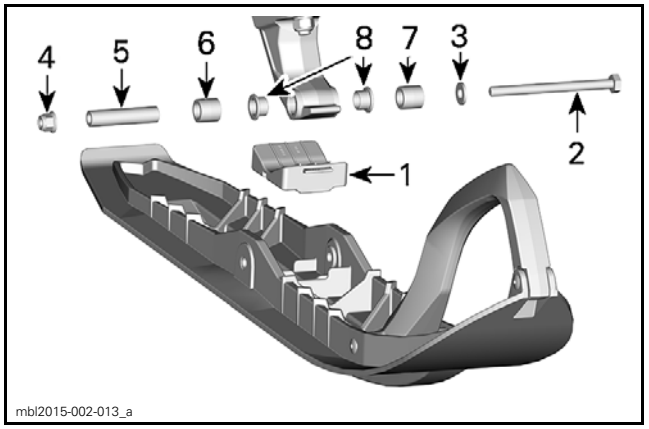


1. Ski stopper
2. Bushings

Apply grease on the ski axle.

SERVICE PRODUCT
SYNTHETIC SUSPENSION GREASE (P/N 779163)

Mountain Models

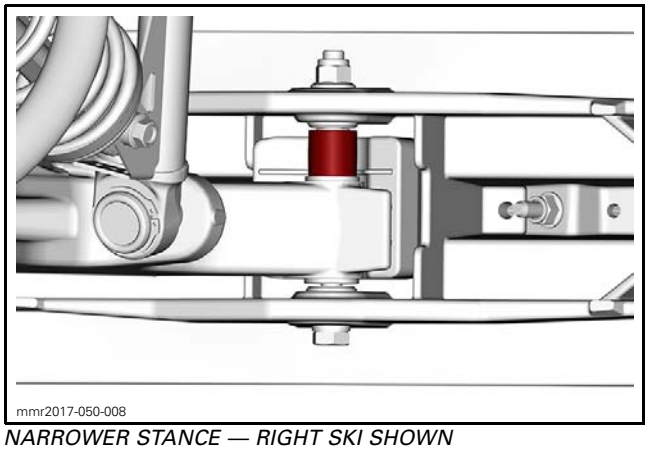


LH SIDE SHOWN
1. Ski stopper
2. M10 x 130 screw
3. M10 flat washer
4. M10 flanged nut
5. Ski axel
6. Narrow adjustment
7. Wide adjustment

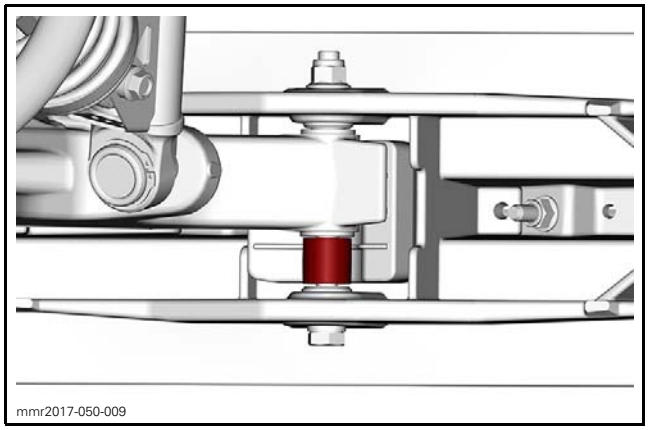
Install the spacer inside for the narrower stance and outside for the wider stance.

⚠ WARNING

Proceed to the same setting for both skis.



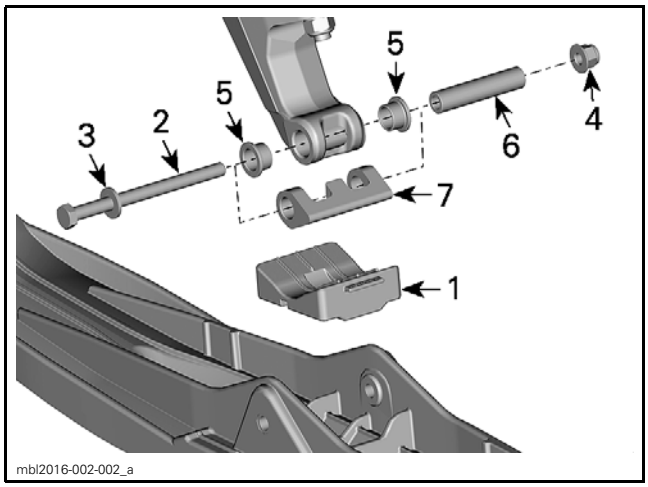
NARROWER STANCE — RIGHT SKI SHOWN



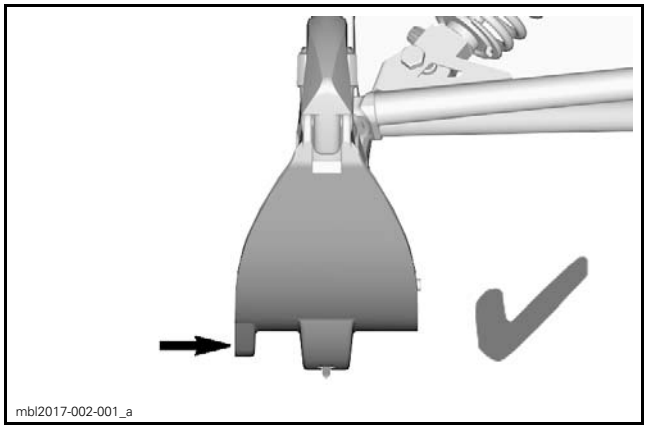
WIDER STANCE — RIGHT SKI SHOWN

Trail and Crossover Models

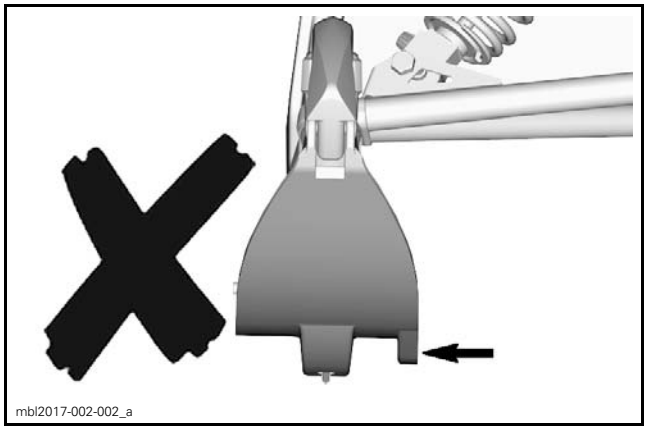
Install ski on ski leg as per the following illustrations.



1. *Ski stopper*
2. *M10 x 130 screw*
3. *M10 flat washer*
4. *M10 flanged nut*
5. *Ski leg bushings*
6. *Ski Axle*
7. *Ski leg stopper*



LATERAL SKI KEEL TOWARDS OUTSIDE (IF EQUIPPED) - CORRECT



LATERAL SKI KEEL TOWARDS INSIDE (IF EQUIPPED) - NOT CORRECT

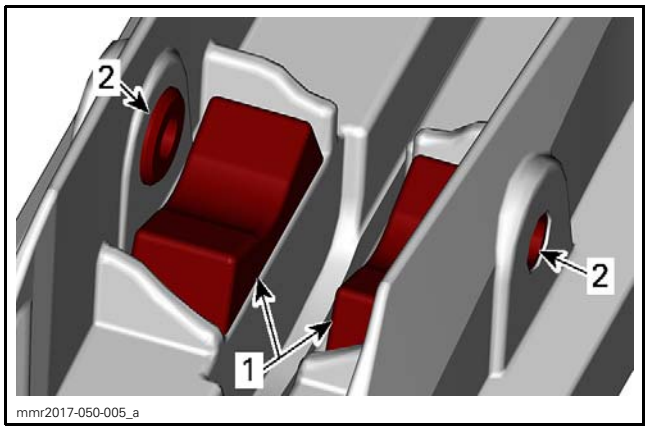
All Models

TIGHTENING TORQUE	
Ski nut	48 N•m ± 6 N•m (35 lbf•ft ± 4 lbf•ft)

Installing the Ski With Adjustable Runner

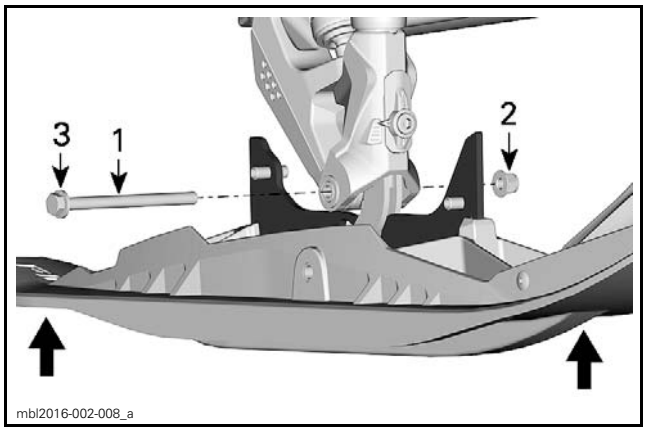
Make sure bushings are installed in ski holes.

Install the ski stopper.

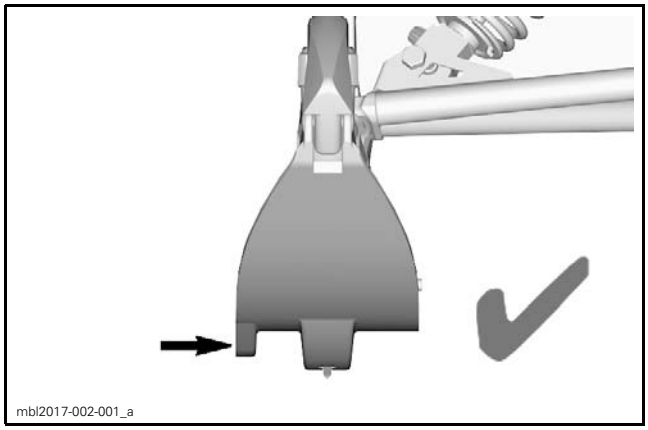


1. *Ski stopper*
2. *Bushings*

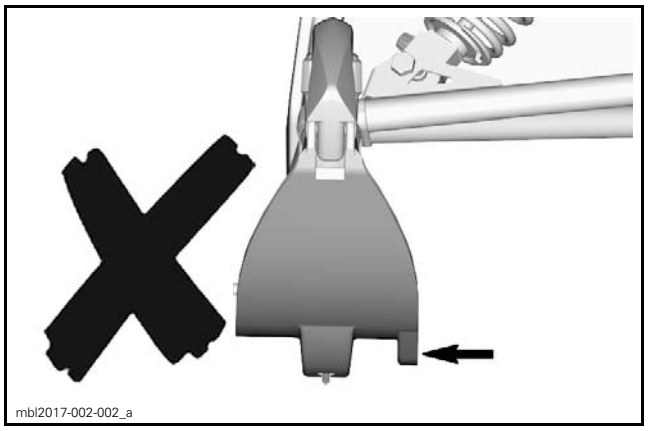
Install ski on ski leg as per the following illustrations.



1. *Ski screw*
2. *Nut*
3. *Washer*



LATERAL SKI KEEL TOWARDS OUTSIDE (IF EQUIPPED) - CORRECT



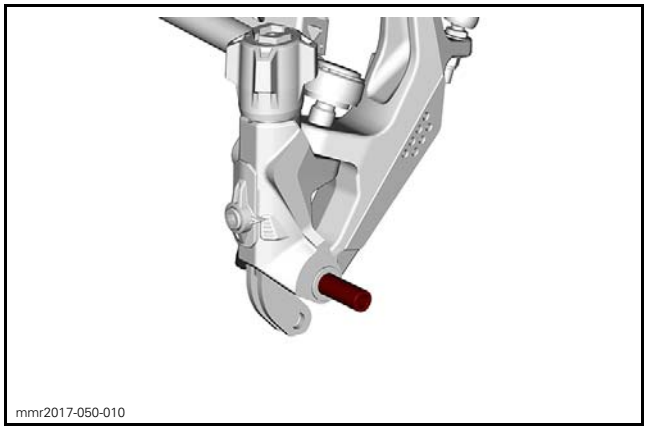
LATERAL SKI KEEL TOWARDS INSIDE (IF EQUIPPED) - NOT CORRECT

TIGHTENING TORQUE	
Ski nut	48 N•m ± 6 N•m (35 lbf•ft ± 4 lbf•ft)

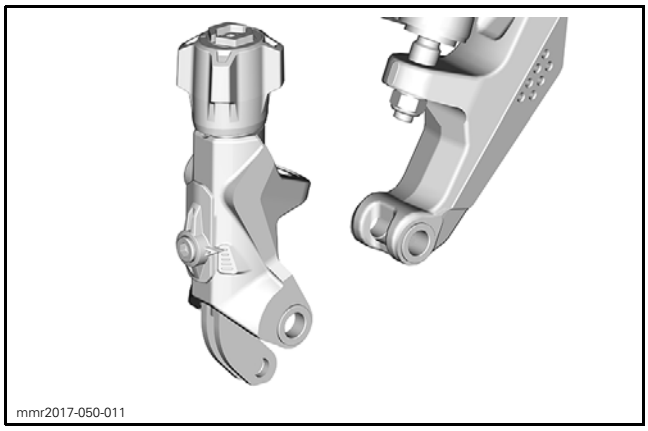
ADJUSTABLE RUNNER MECHANISM

Removing the Adjustable Runner Mechanism

1. Remove the ski and the runner.
2. Slide the sleeve out of the ski leg.



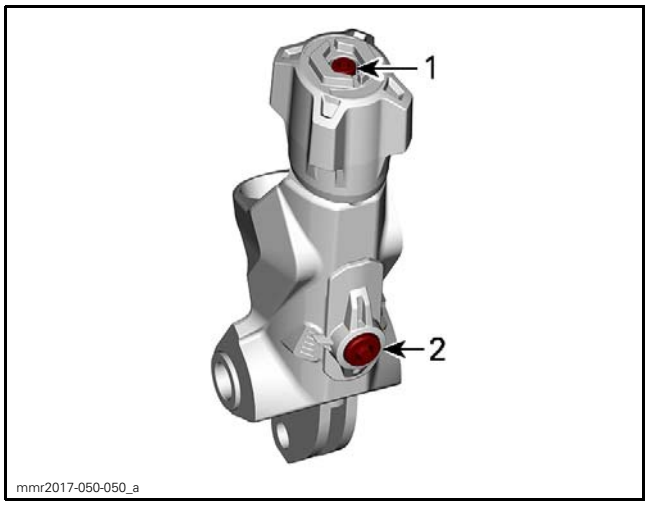
3. Remove the mechanism from the ski leg.



Disassembling the Adjustable Runner Mechanism

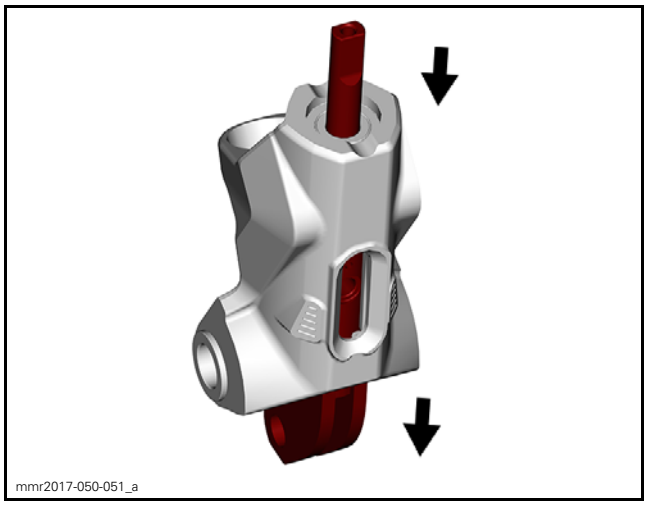
1. Remove the adjusting knob and the indicator screws.

NOTE: There are two O-rings on the indicator screw.

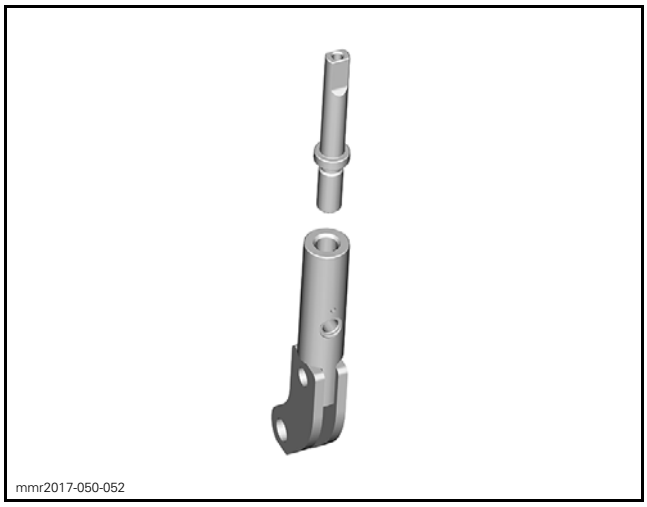


1. Adjusting knob screw
2. Indicator screw

2. Slide the adjusting screw and the adjusting shaft out of the body.

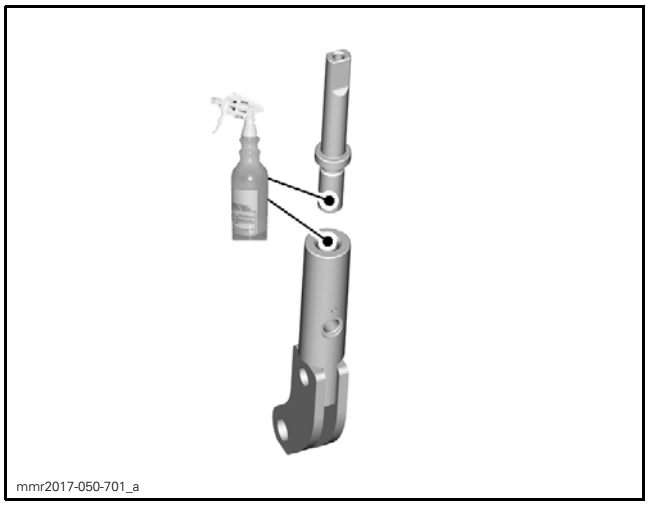


3. Remove the screw from the shaft.

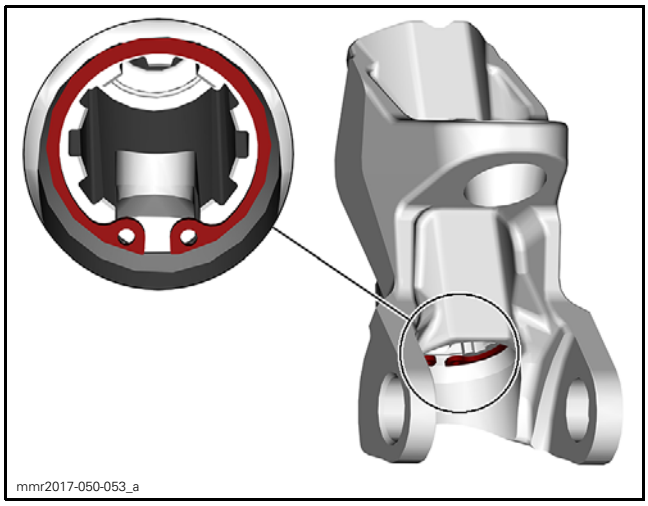


4. Clean the screw and the shaft inner threads with brake and parts cleaner and a small brush.

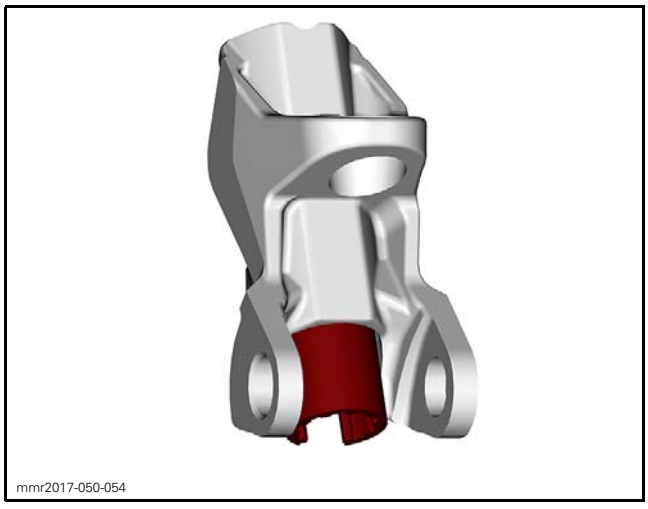
SERVICE PRODUCT
XPS BRAKES AND PARTS CLEANER (USA) (P/N 219 701 705) or XPS BRAKES AND PARTS CLEANER (P/N 219 701 776)


mmr2017-050-701_a

5. Remove the snap ring.


mmr2017-050-053_a

6. Slide the sleeve out of the body.


mmr2017-050-054

Inspecting the Adjustable Runner Mechanism

Inspect the mechanism body for cracks. Replace if required.

Inspect the adjusting screw and shaft for:
– Thread damages
– Bending.
Replace if required.

Inspect the sleeve for:
– Cracks
– Spline damages
Replace if required.

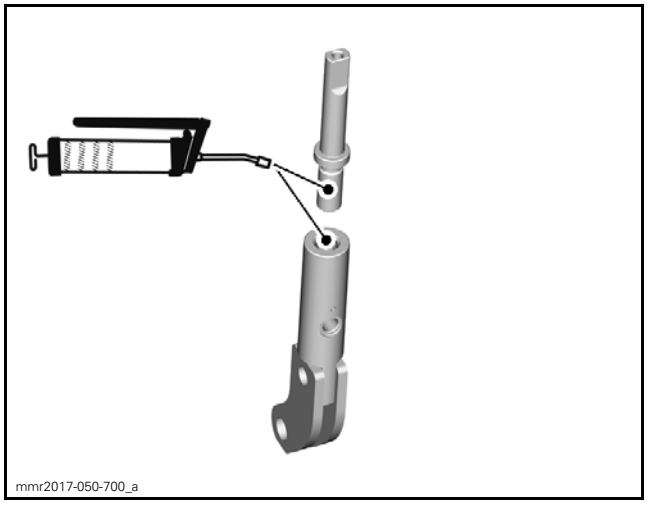
Inspect the ball bearing. It should turn freely and smoothly. If bearing needs to be replaced, replace the mechanism assembly.

Assembling the Adjustable Runner Mechanism

The assembly is the reverse of the disassembly procedure. However, pay attention to the following.

Apply grease on screw thread and shaft inner thread.

SERVICE PRODUCT
SYNTHETIC GREASE (P/N 779162)


mmr2017-050-700_a

Install a new knob screw.

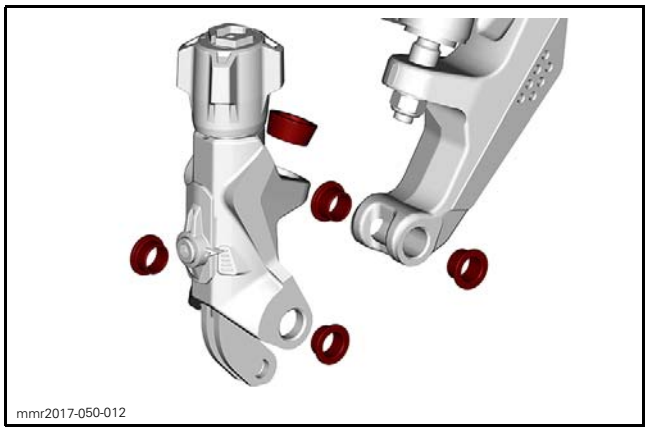
TIGHTENING TORQUE	
Adjusting knob screw	9 N•m ± 1 N•m (80 lbf•**in** ± 9 lbf•**in**)
Indicator screw	24.5 N•m ± 3.5 N•m (18 lbf•ft ± 3 lbf•ft)

Installing the Adjustable Runner Mechanism

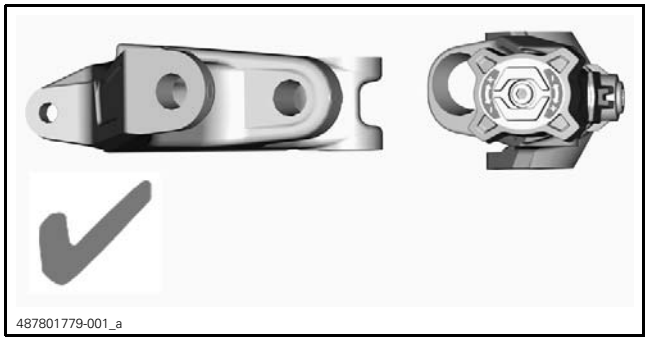
The installation is the reverse of the removing procedure. However, pay attention to the following.

Install rubber grommet on nut first. Align flat against flat.

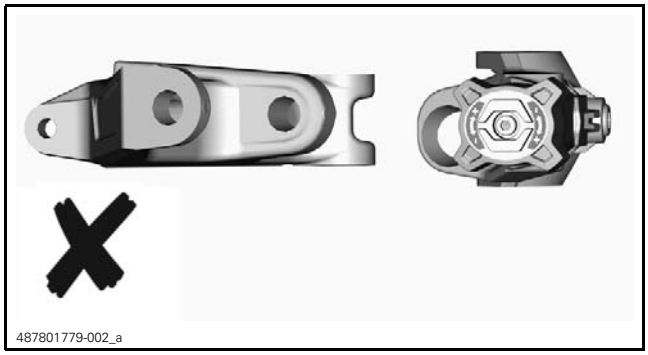
Ensure all bushings, and the grommet are in place and fully seated.



The mechanism is offset and has to be installed on the correct side.



RH SIDE SHOWN



RH SIDE SHOWN

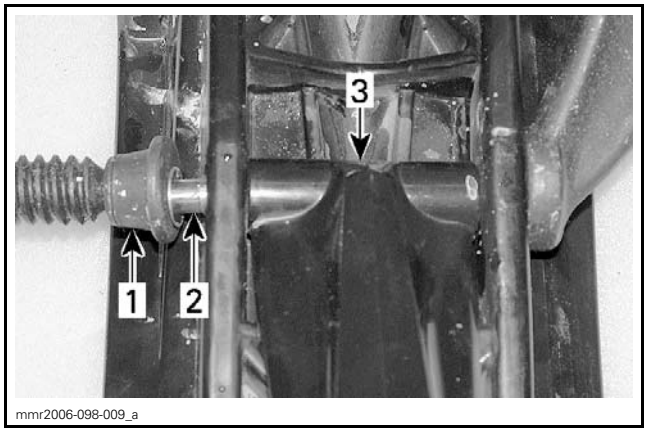
SKI HANDLES

Removing the Ski Handle

1. Remove ski from vehicle.
2. Using a 9 mm (3/8 in) drill bit, remove ski handle rivets. Only drill the head of rivet. Do not try to drill all the way through the rivet. Angle the drill bit to reduce the chance of spinning the rivet in the ski.
3. Remove handle from ski.
4. Place handle in hot water for 10 minutes then using a punch, drive the inner part of rivet out of handle.

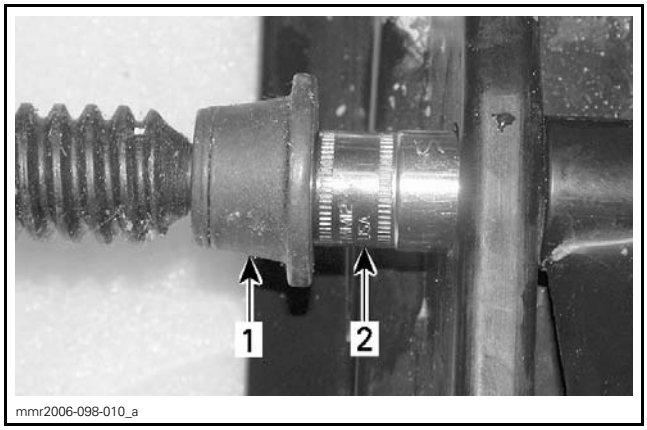
Installing the Ski Handle

1. To install rivets, use a C-clamp and a short 10 mm socket.
2. Place a rivet in position and insert it into ski and ski handle. Repeat the procedure for the other side.



1. C-clamp
2. Rivet
3. Handle

3. When both rivets are installed, use the short 10 mm socket to push rivet heads against the ski.



1. C-clamp
2. 10 mm socket

SKI FLOTATION EXTENSION (MOUNTAIN MODELS)

Condition Utilization

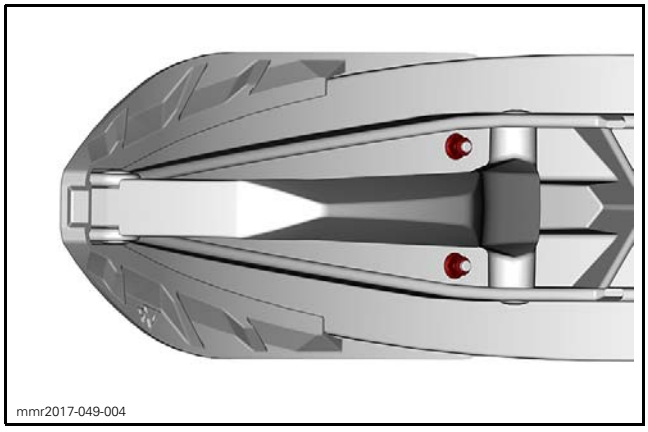
The key to the adjustable nose is to reduce the tip-hop that can slow down the vehicle.

In snow conditions with less than 41 cm (16 in) of fresh powder, specially when there is a crust, the narrow tip stays in the snow - which helps to maintain a carve. Also, when side hilling, and crossing a snowmobile rut, the narrow shape moves the impact point - where a change in snow density acts to tip-up the ski - more towards the spindle. This reduces kick back by 50% compared to the wider configuration, minimizing its impact on the attitude of the snowmobile holding a side hill.

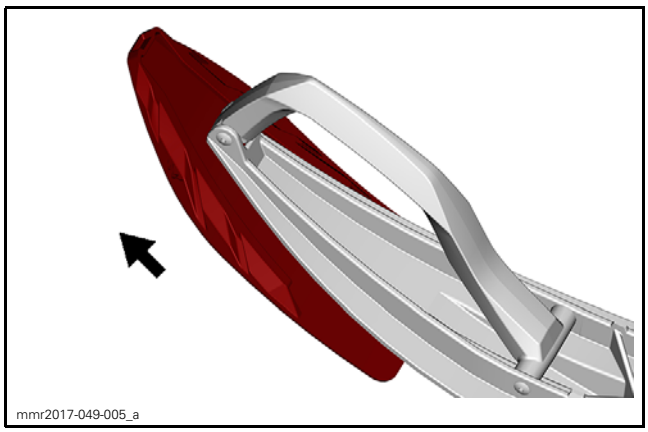
In snow conditions with more than 41 cm (16 in) of fresh powder, the wider tip configuration is desirable, as it increases flotation and will bring the nose of the snowmobile up.

Removing the Ski Flotation Extension

1. Remove nuts and screws securing the extension to ski.


mmr2017-049-004

2. Slide the extension off the ski.


mmr2017-049-005_a

Installing the Ski Flotation Extension

The installation is the reverse of the removal procedure. However, pay attention to the following.

1. Install extension nuts towards up and tighten to specification.

TIGHTENING TORQUE	
Extension nuts	3 N•m ± 0.5 N•m (27 lbf•**in** ± 4 lbf•**in**)

SKI LEG

To replace a ski leg, refer to *FRONT SUSPENSION* subsection.

HANDLEBAR GRIP

To verify or replace heating elements, refer to *ACCESSORIES* subsection.

Removing the Handlebar Grip

Remove grips by pulling while using compressed air, which will inflate or loosen the fit between the grip and handlebar.


mmr2015-143-007

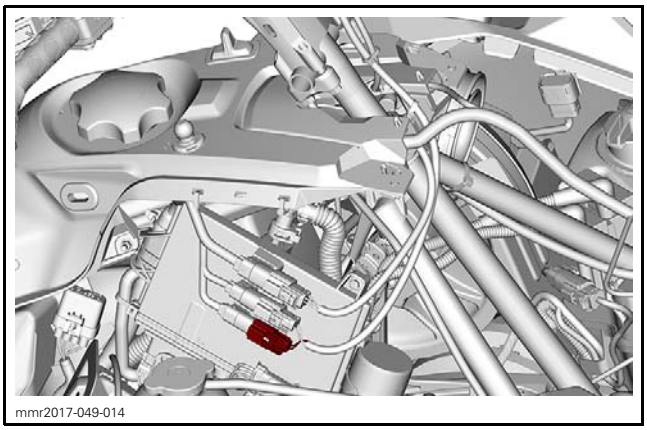
Installing the Handlebar Grip

Insert the handlebar grip on handlebar while blowing compressed air to inflate or loosen the fit between grip and handlebar.

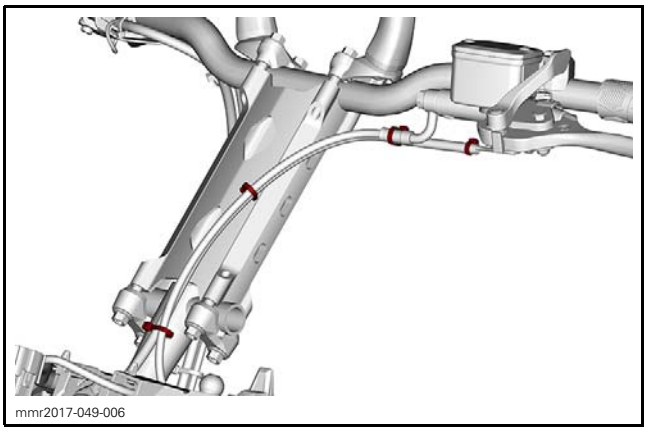
MULTIFUNCTION SWITCH

Removing the Multifunction Switch (Mountain models)

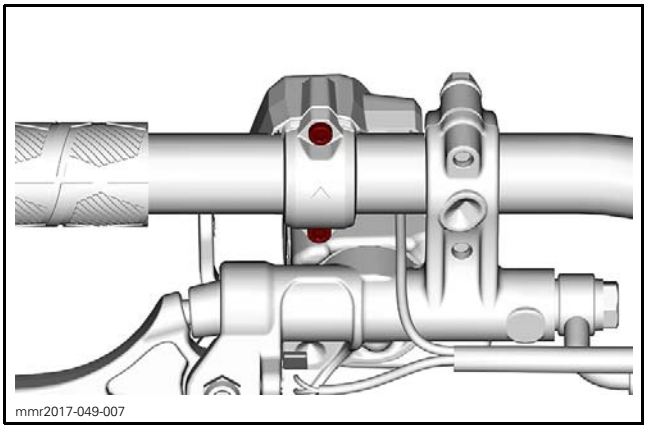
1. Remove the upper body module. Refer to *BODY* subsection.
2. Disconnect the multifunction switch connector (2-pin connector).


mmr2017-049-014

3. Cut locking ties securing multifunction switch harness.


mmr2017-049-006

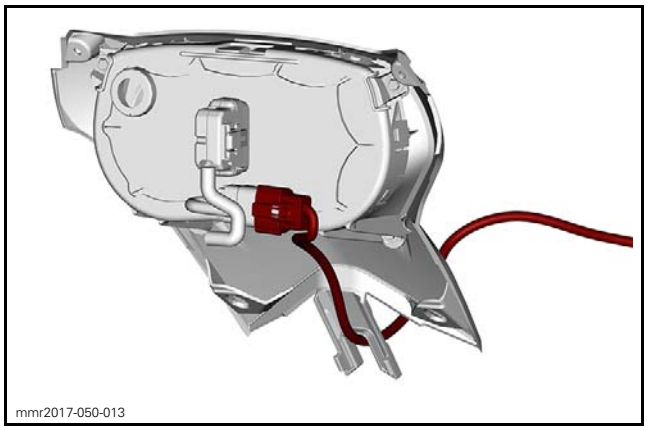
4. Remove multifunction switch screws.


mmr2017-049-007

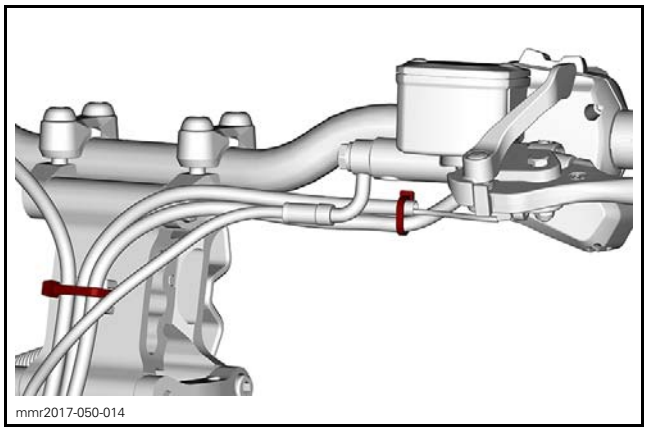
5. Remove multifunction switch from vehicle.

Removing the Multifunction Switch (Trail and Crossover models)

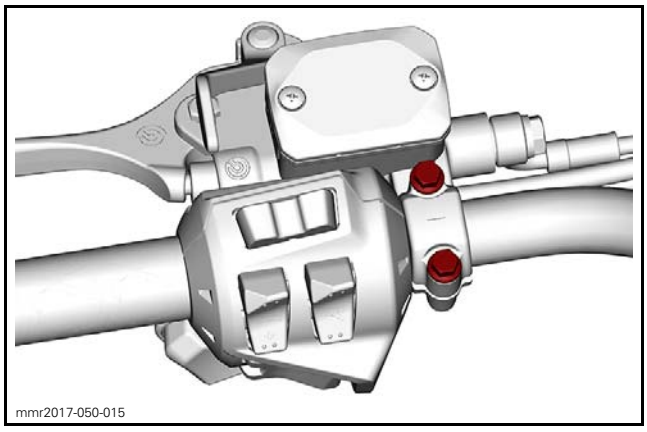
1. Remove the gauge support. Refer to *BODY* subsection.
2. Disconnect the multifunction switch connector.


mmr2017-050-013

3. Cut locking ties securing multifunction switch harness.


mmr2017-050-014

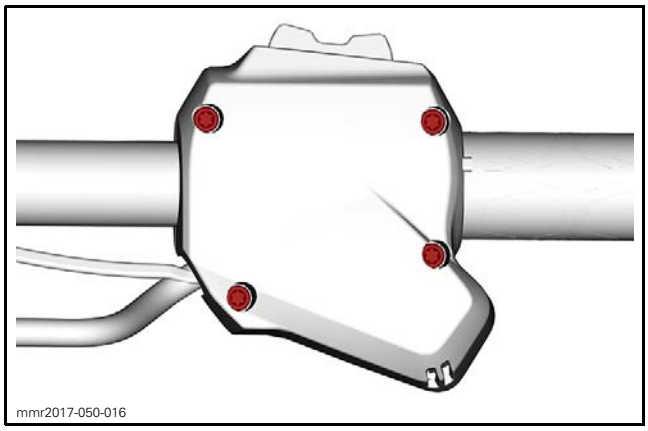
4. Unscrew master cylinder from handlebar.


mmr2017-050-015

5. Remove master cylinder.

NOTICE Do not let master cylinder hang by the hose and do not stretch or twist the hose.

6. Remove multifunction switch screws.



7. Remove multifunction switch from vehicle.

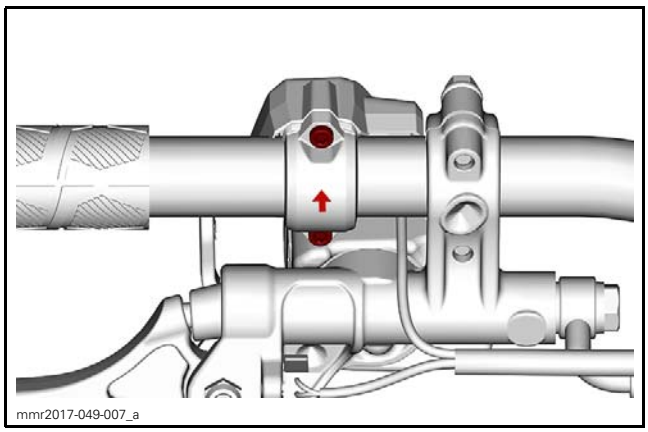
Installing the Multifunction Switch (Mountain models)

The installation is the reverse of the removal procedure. However, pay attention to the following.

Install the multifunction switch clamp with the arrow towards rear.

Tighten multifunction switch screws to specification as per the following sequence.

TIGHTENING TORQUE	
Multifunction switch screws	2.4 N•m ± 0.2 N•m (21 lbf•**in** ± 2 lbf•**in**)



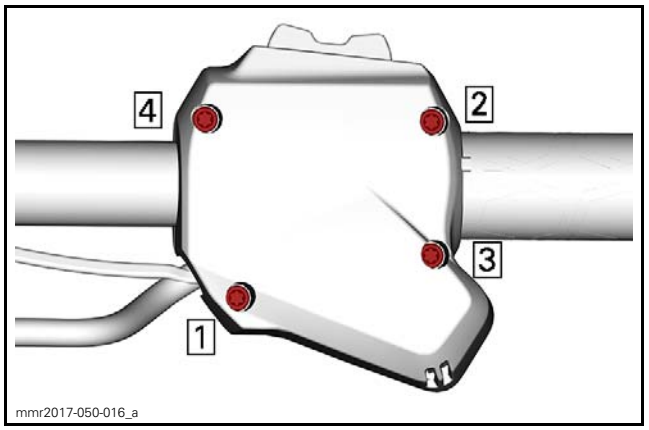
Turn handlebar completely from side to side making sure it does not exert unwanted tension on handlebar wires.

Installing the Multifunction Switch (Trail and Crossover Models)

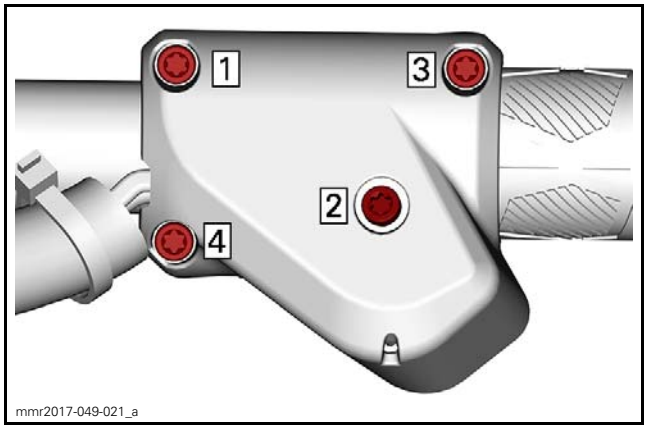
The installation is the reverse of the removal procedure. However, pay attention to the following.

Tighten the multifunction switch screws to specification, as per the following sequence.

TIGHTENING TORQUE	
Multifunction switch screw	2.4 N•m ± 0.2 N•m (21 lbf•**in** ± 2 lbf•**in**)



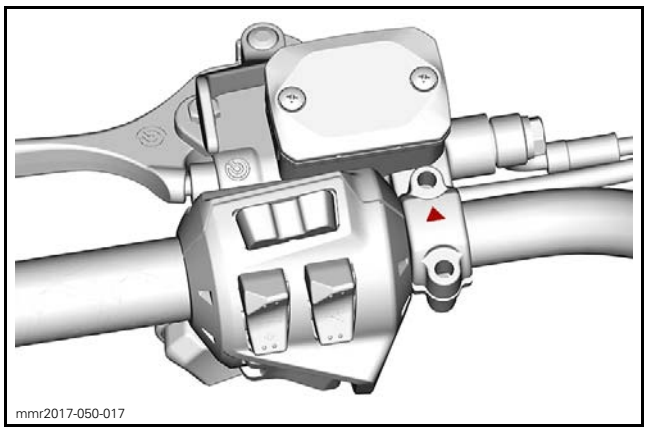
TRAIL AND CROSSOVER MODELS



MOUNTAIN MODELS

Place the master cylinder on the handlebar.

Install master cylinder retaining clamp with its arrow pointing toward the front of vehicle.



Install master cylinder clamp screws and tighten loosely.

With the handlebar in the straight ahead position, place the reservoir parallel to the ground.

Tighten master cylinder clamp screws to specification.

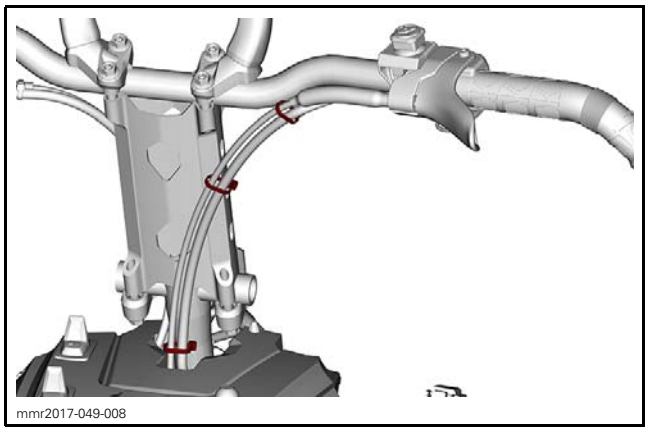
TIGHTENING TORQUE	
Master cylinder clamp screws	9 N•m ± 1 N•m (80 lbf•**in** ± 9 lbf•**in**)

Turn handlebar completely from side to side making sure it does not exert unwanted tension on handlebar wires.

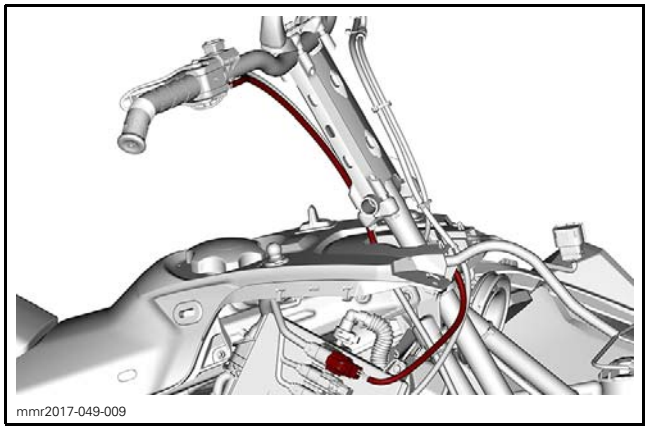
THROTTLE LEVER HOUSING

Removing the Throttle Lever Housing

1. Remove the upper body module. Refer to *BODY* subsection.
2. Cut the harness locking ties.


mmr2017-049-008

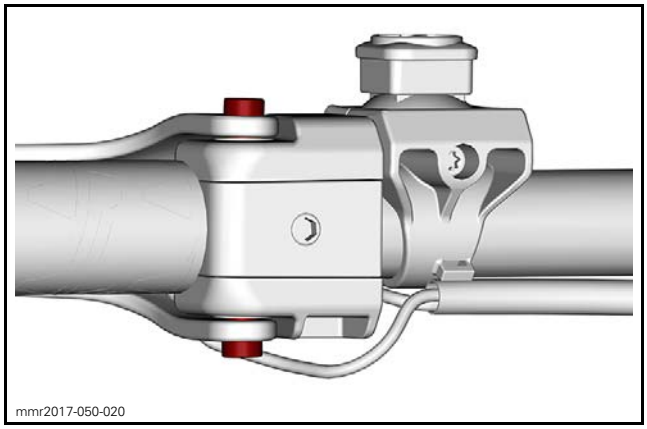
3. Disconnect the LH heater element connector (6-pin connector).


mmr2017-049-009

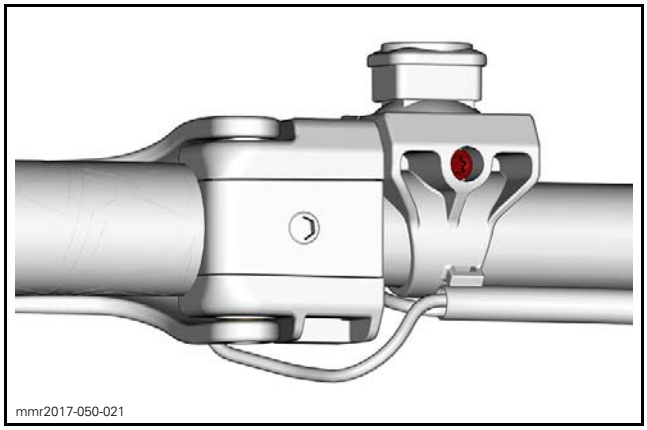
4. Remove the heater element wire terminals from connector. Refer to *WIRING HARNESS AND CONNECTORS* subsection.

NOTICE **Take note of exact positioning of multifunction wire before removing it from the connector.**

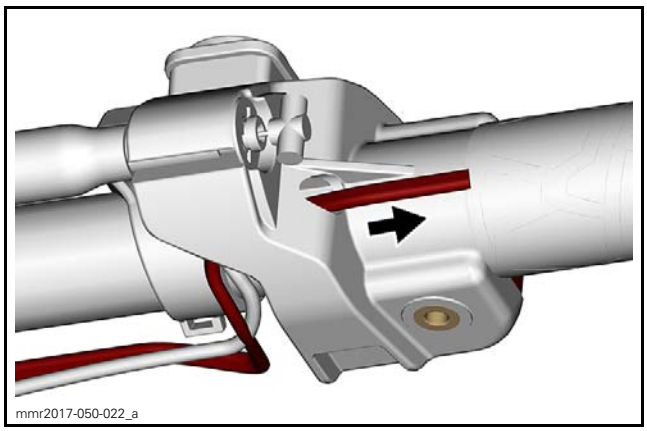
5. Disconnect throttle cable from throttle lever.
6. Remove both throttle lever pivot screws.


mmr2017-050-020

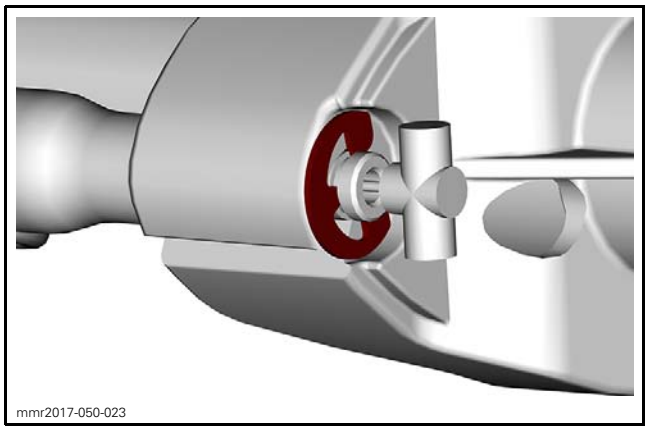
7. Loosen the emergency stop switch screw and slide the switch towards center of handlebar.


mmr2017-050-021

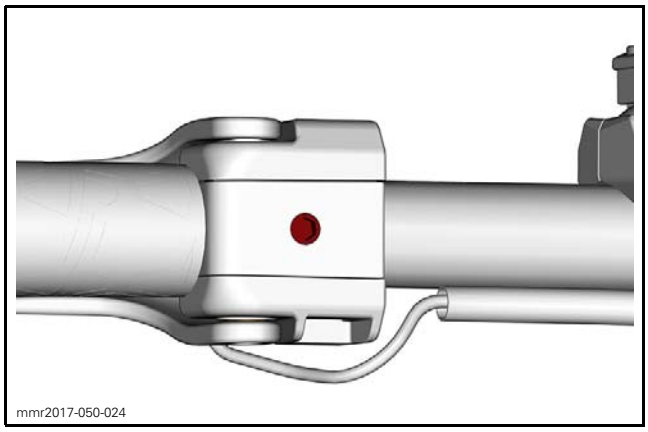
8. Pull the heater element wire out of the throttle lever housing.


mmr2017-050-022_a

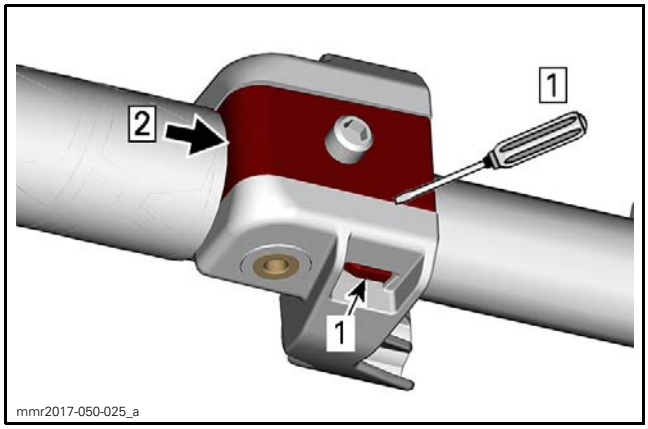
9. Remove throttle cable circlip.



10. Remove the throttle cable from the housing.
11. Loosen throttle lever housing retaining screw.

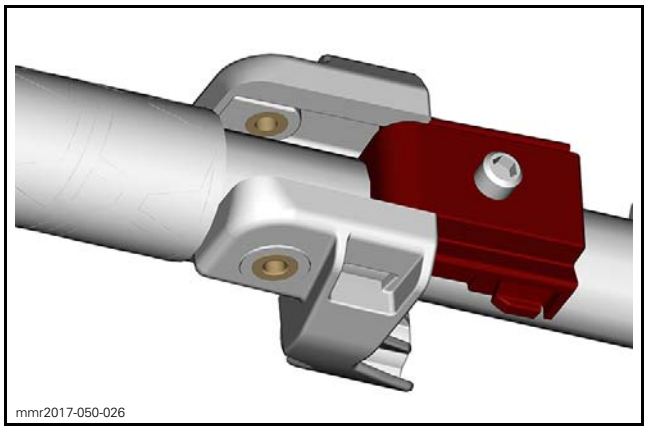


12. Insert a flat screwdriver between the housing and the clamp to release the tab.

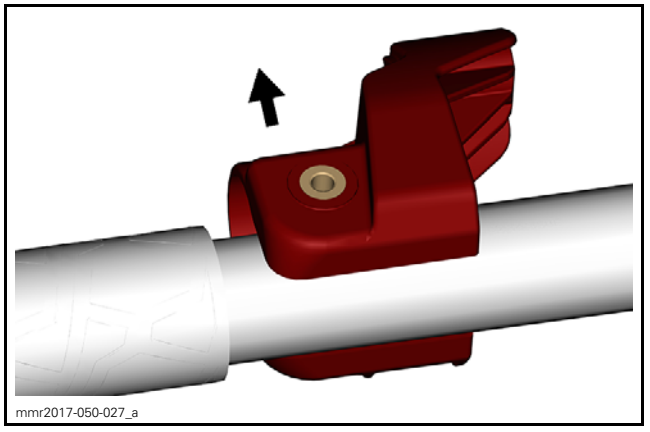


1. Tab

13. Slide the clamp out of the housing



14. Remove throttle lever housing from handlebar.



Installing the Throttle Lever Housing

The installation is the reverse of the removal procedure. However, pay attention to the following.

Tighten throttle lever pivot screws to specification.

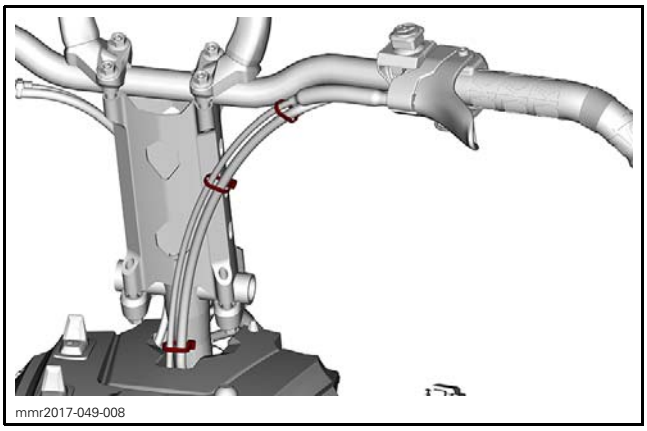
TIGHTENING TORQUE	
Throttle lever retaining screws	1.5 N•m ± 0.2 N•m (13 lbf•**in** ± 2 lbf•**in**)

Turn handlebar completely from side to side making sure it does not exert unwanted tension on handlebar wires.

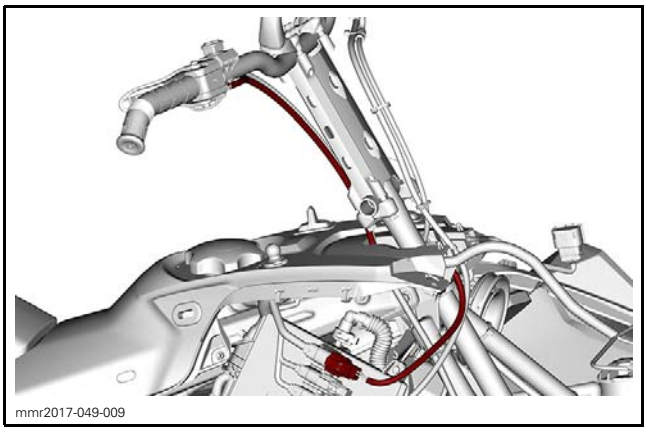
THROTTLE LEVER

Removing the Throttle Lever

1. Remove the upper body module. Refer to *BODY* subsection.
2. Cut the harness locking ties.


mmr2017-049-008

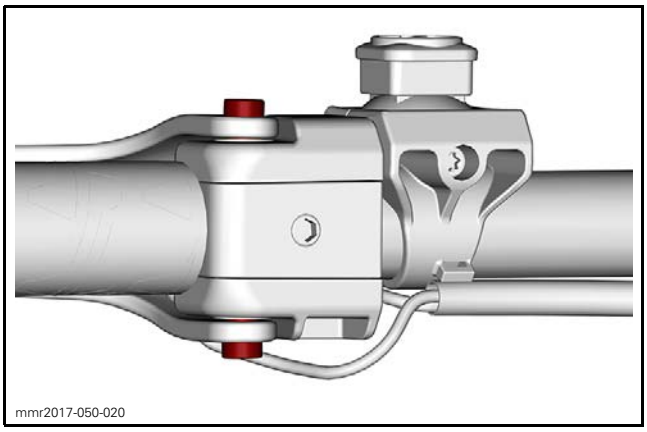
3. Disconnect the LH heater element connector.


mmr2017-049-009

4. Remove throttle lever heater wire terminals from connector. Refer to *CONNECTOR INFORMATION* subsection.

NOTICE **Take note of exact positioning of throttle lever heater before removing it from the connector.**

5. Disconnect throttle cable from throttle lever.
6. Remove throttle lever pivot screws.


mmr2017-050-020

7. Remove throttle lever and heater wires.

Installing the Throttle Lever

The installation is the reverse of the removal procedure. However, pay attention to the following.

Tighten throttle lever pivot screws to specification.

TIGHTENING TORQUE	
Throttle lever pivot screws	1.5 N•m ± 0.2 N•m (13 lbf•**in** ± 2 lbf•**in**)

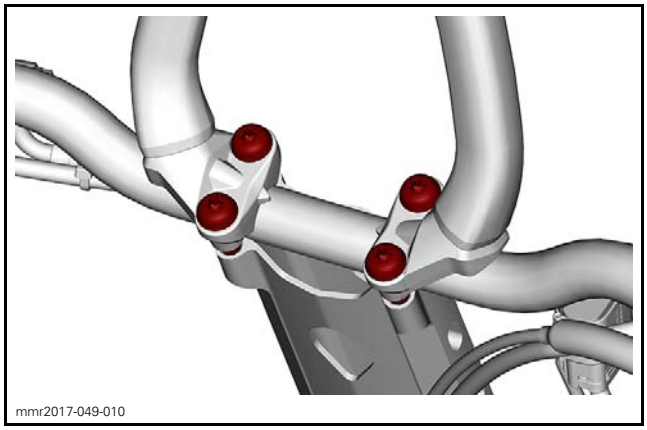
Turn handlebar completely from side to side making sure it does not exert unwanted tension on handlebar wires.

HANDLEBAR

Removing the Handlebar

NOTE: If the handlebar must be changed, remove all components (handlebar grip, throttle lever housing, etc.) before removing it from vehicle.

1. Remove handlebar retaining clamp screws.


mmr2017-049-010

2. Remove handlebar from handlebar extension.

Inspecting the Handlebar

1. Inspect the handlebar for:
   - Damages
   - Cracks
   - Bending.
2. Replace if any of these problems is detected.

⚠ WARNING

Do not try to repair a defective handlebar.

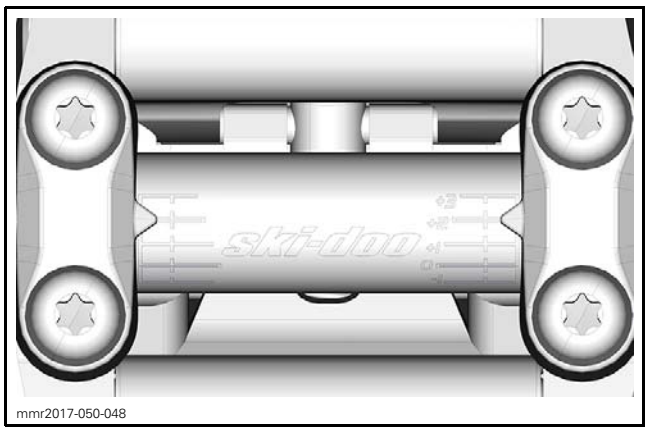
3. Check handlebar clamps for cracks or distortion, replace if necessary.

Installing the Handlebar

The installation is the reverse of the removal procedure. However, pay attention to the following.

With Adjustable Handlebar

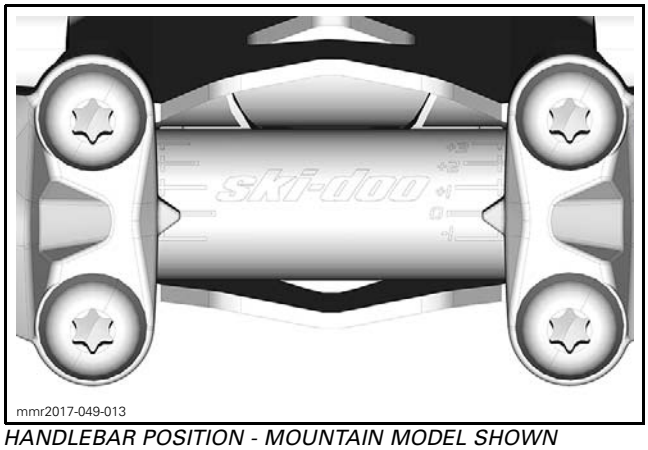
Position the handlebar at +2 with clamps.



Without Adjustable Handlebar

Position the handlebar with clamps, as per the following table.

MODEL	HANDLEBAR POSITION
Mountain	0
Trail and crossover	+1

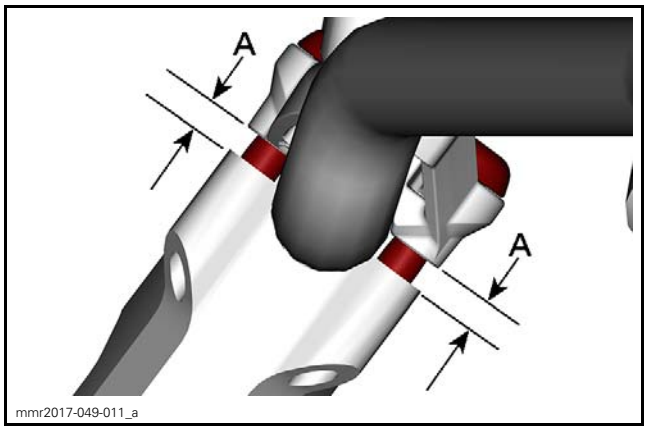


HANDLEBAR POSITION - MOUNTAIN MODEL SHOWN

Tighten handlebar clamps screws to specification.

TIGHTENING TORQUE	
Clamp screws	24.5 N•m ± 3.5 N•m (18 lbf•ft ± 3 lbf•ft)

Ensure handlebar clamps are parallel with handlebar extension.



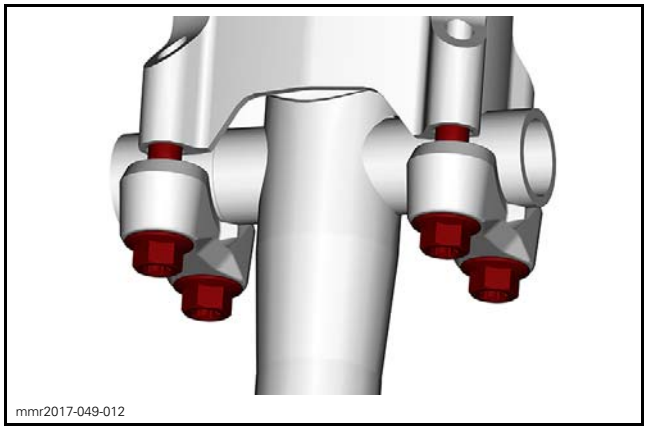
A. Must be equal on each side

Turn handlebar completely from side to side making sure it does not exert unwanted tension on handlebar wires.

HANDLEBAR EXTENSION

Removing the Handlebar Extension

1. Proceed with *REMOVING THE HANDLEBAR*, see procedure in this subsection.
2. Remove screws retaining the extension to steering column.



3. Remove handlebar extension from vehicle.

Inspecting the Handlebar Extension

1. Check handlebar extension for:
   - Cracks
   - Bending
   - Other damages.
2. Replace if any of these problems is detected.

⚠ WARNING

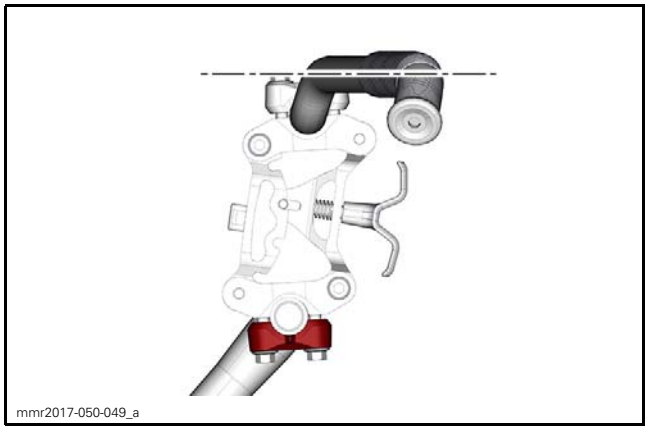
Do not try to repair a defective handlebar extension.

Installing the Handlebar Extension

The installation is the reverse of the removal procedure. However, pay attention to the following.

With Adjustable Handlebar

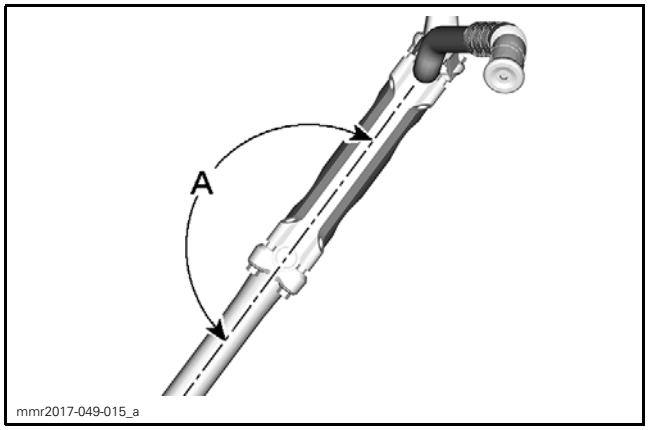
Position the extension in order to have the handlebar horizontal.



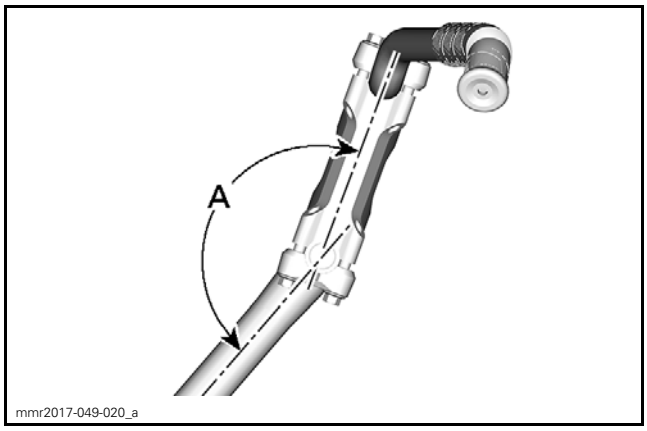
Without Adjustable Handlebar

Position the extension with the steering column, as per the following table.

MODEL	HANDLEBAR EXTENSION POSITION ANGLE
Mountain	180°
Trail and crossover	159°

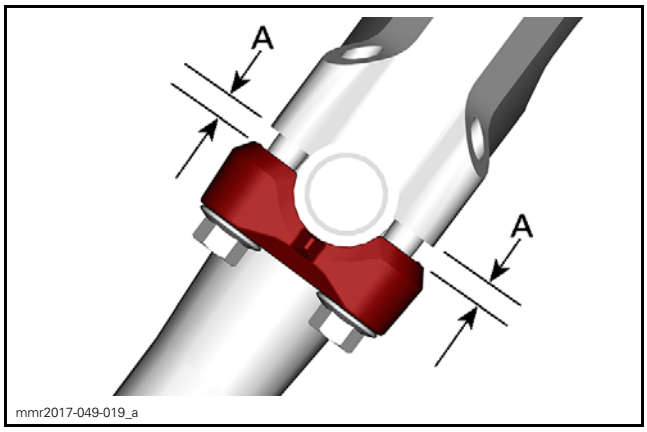


MOUNTAIN MODELS



TRAIL AND CROSSOVER MODELS

Ensure extension clamps are parallel with handlebar extension.



A. Must be equal on each side

⚠ WARNING

Handlebar and it's components must not get in contact with anything (windshield, fuel tank cap, etc.) when steering is turned.

TIE-RODS

NOTE: The same procedure is applied on RH and LH side.

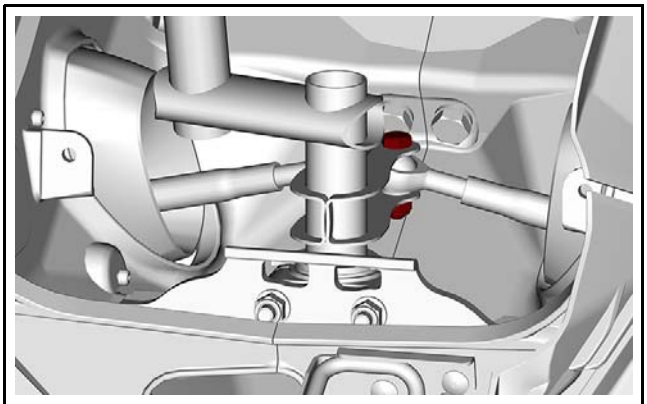
Inspecting the Tie-Rod

Check tie-rod ends for looseness. If play is excessive, replace tie-rod.

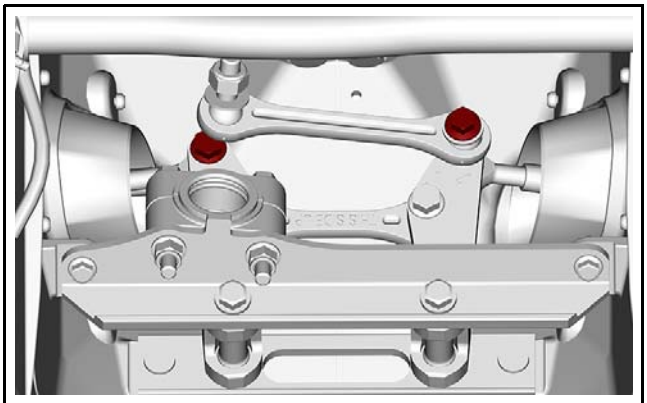
Check if the tie-rod is bent, cracked or otherwise damaged. Replace if necessary.

Removing the Tie-Rod

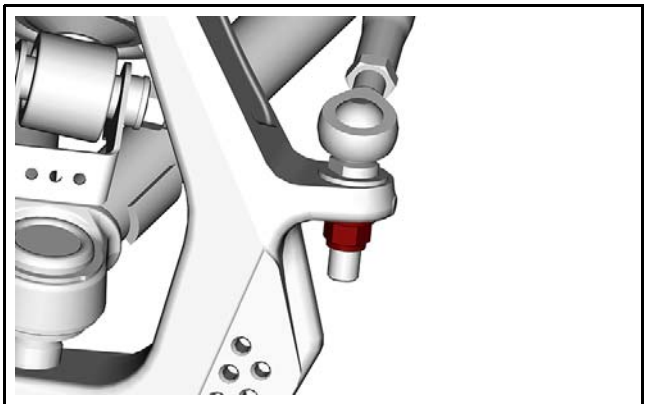
1. Remove the tuned pipe. Refer to *EXHAUST SYSTEM* subsection.
2. Remove the tie-rod end nuts and screws from the steering column and ski leg.


mmr2017-049-016

STEERING COLUMN WITH PITMAN ARM

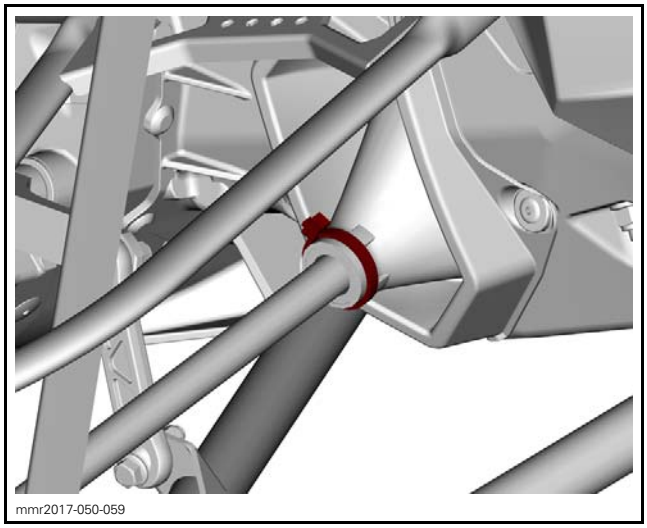

mmr2017-050-033

STEERING RACK - STEERING COLUMN REMOVED FOR CLARITY

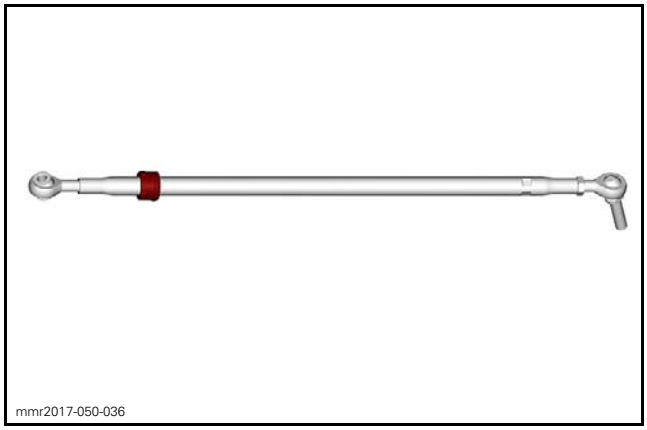

mmr2017-050-035

SKI LEG

3. Cut the locking tie on the steering boot.


mmr2017-050-059

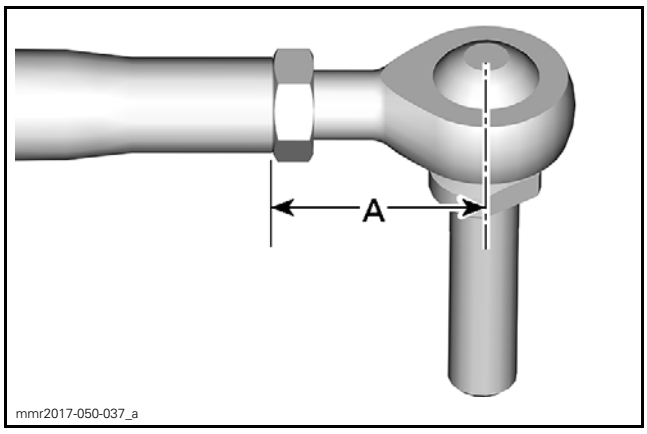
4. Remove tie-rod with ring from vehicle.


mmr2017-050-036

Installing the Tie-Rod

The installation is the reverse of the removal procedure. However, pay attention to the following.

Adjust the length of all tie-rod end to specification without tightening the jam nuts.



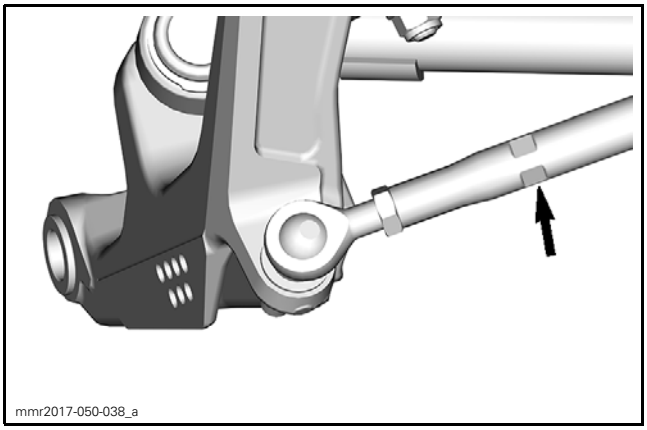
mmr2017-050-037_a

TIE-ROD LENGTH (A)
30 mm (1.181 in)

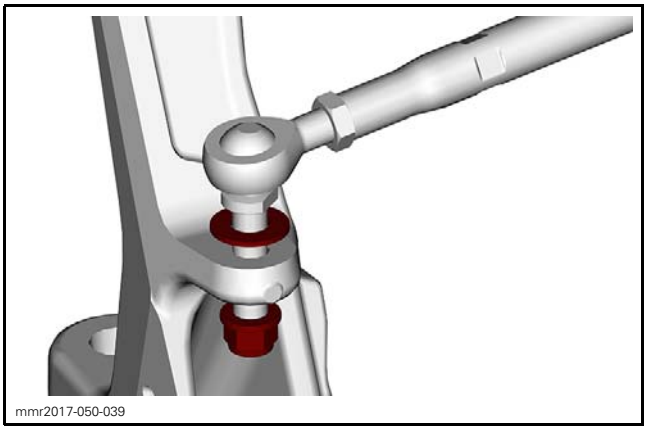
⚠ WARNING

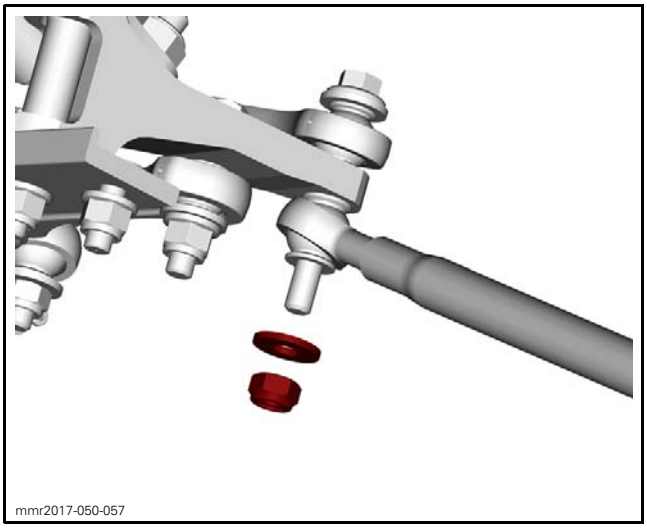
The maximum tie-rod end length (A) not engaged in the tie rod must not exceed 34 mm (1.339 in).

Install tie-rod with the groove on ski leg side.


mmr2017-050-038_a

Install the washer and the nut, and tighten to specification.

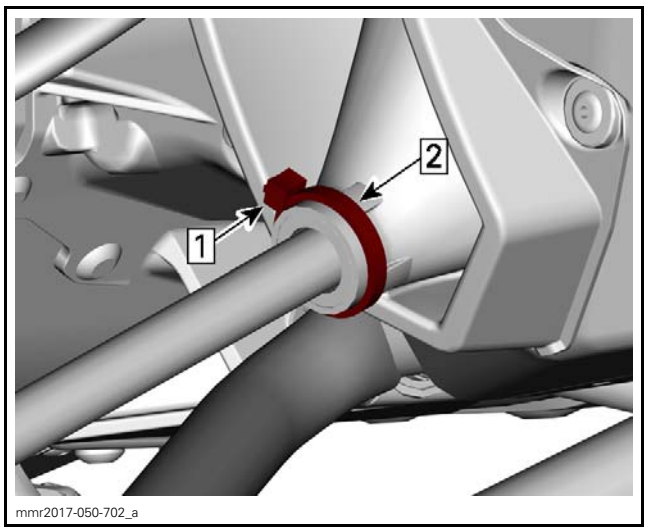

mmr2017-050-039


mmr2017-050-057

TIGHTENING TORQUE	
Outer tie-rod end nut	48 N•m ± 6 N•m (35 lbf•ft ± 4 lbf•ft)
Inner tie-rod end nut	24.5 N•m ± 3.5 N•m (18 lbf•ft ± 3 lbf•ft)

Ensure the new locking tie is fully seated and the head is positioned upwards.

NOTICE **To avoid bellows damage, make sure locking tie head is positioned upwards.**



mmr2017-050-702_a

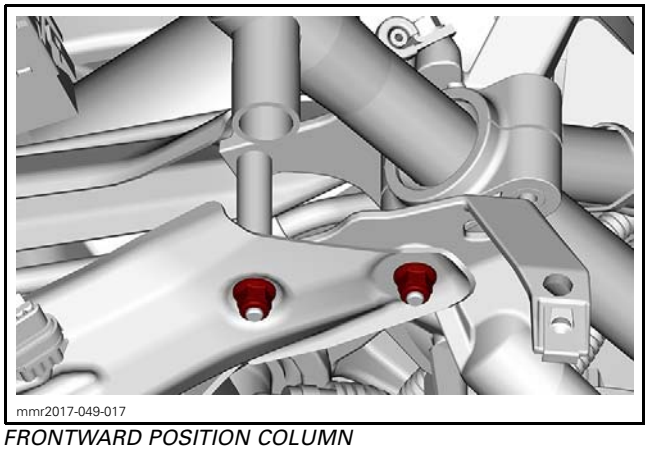
1. *Head up*
2. *Fully seated*

Perform the steering alignment, refer to *ALIGNING THE STEERING* in this section.

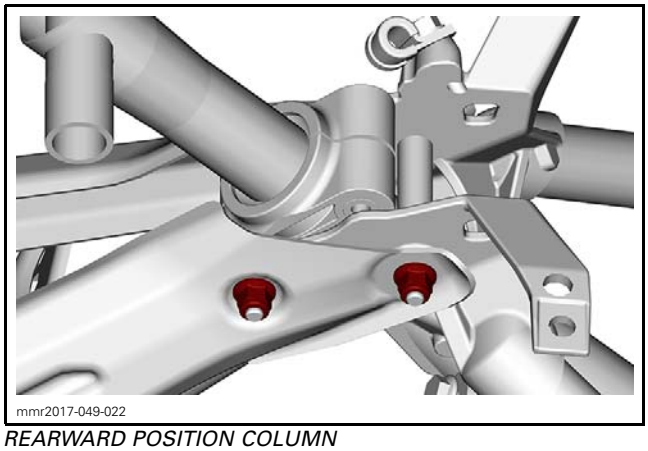
STEERING COLUMN

Removing the Steering Column - With Pitman Arm

1. Remove the tuned pipe. Refer to *EXHAUST SYSTEM* subsection.
2. Remove the rear console. Refer to *BODY* subsection.
3. Remove *HANDLEBAR EXTENSION* from steering column. Refer to the procedure in this subsection.
4. Remove the inner tie-rod end nuts and screws. Refer to *TIE-RODS* in this subsection.
5. Remove nuts and screws securing steering column upper support.

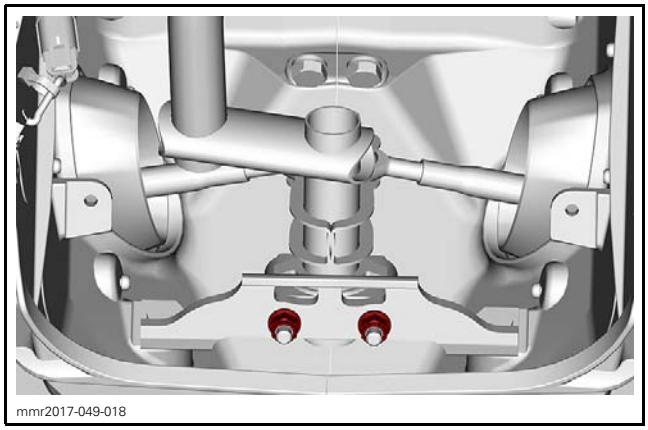

mmr2017-049-017

FRONTWARD POSITION COLUMN


mmr2017-049-022

REARWARD POSITION COLUMN

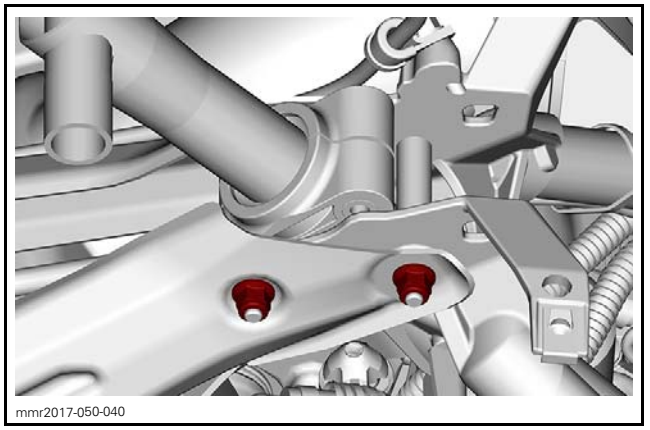
6. Remove nuts and screws securing the steering column lower support.


mmr2017-049-018

7. Pull steering column from top.

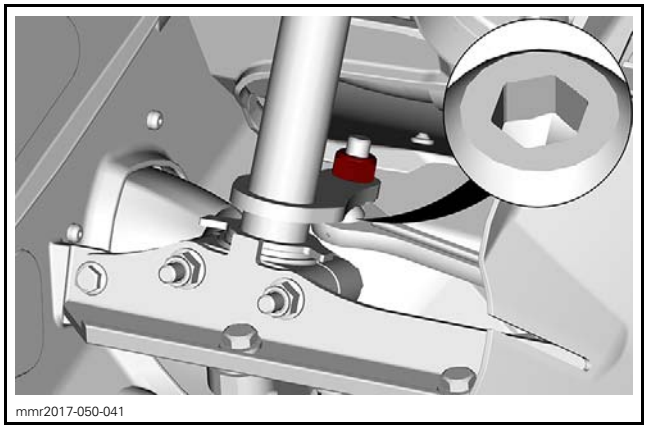
Removing the Steering Column - With Steering Rack

1. Remove the tuned pipe. Refer to *EXHAUST SYSTEM* subsection.
2. Remove the rear console. Refer to *BODY* subsection.
3. Remove *HANDLEBAR EXTENSION* from steering column. Refer to the procedure in this subsection.
4. Remove nuts and screws securing steering column upper support.

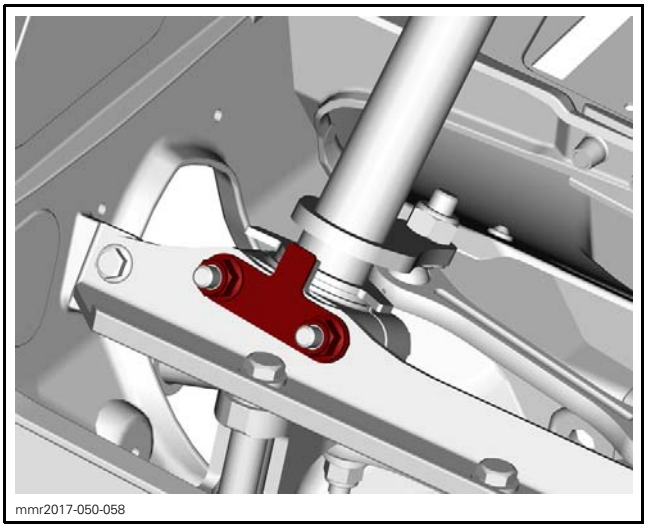

mmr2017-050-040

5. From inside engine compartment, remove the steering column pitman arm nut.

NOTE: Use an Allen key to lock the ball joint.


mmr2017-050-041

6. Remove nuts, stopper plate and screws securing the steering column lower support.


mmr2017-050-058

7. Pull steering column from top.

Inspecting the Steering Column

Check if steering column is:
– Cracked
– Bent
– Twisted
– Otherwise damaged.

Replace steering column if necessary.

⚠ WARNING

Do not try to repair a defective steering column.

Installing the Steering Column

The installation is the reverse of the removal procedure. However, pay attention to the followings.

1. Apply grease on vibration dampers before installing upper and lower supports.

SERVICE PRODUCT
SYNTHETIC SUSPENSION GREASE (P/N 779163)

2. Install new elastic nuts on the steering column retaining screws.
3. Tighten nuts to specification.

TIGHTENING TORQUE	
Upper steering column support nut	12.5 N•m ± 2.5 N•m (111 lbf•**in** ± 22 lbf•**in**)
Lower steering column support nut	23.5 N•m ± 3.5 N•m (17 lbf•ft ± 3 lbf•ft)

STEERING RACK

Inspecting the Steering Rack

Remove the tuned pipe. Refer to *EXHAUST SYSTEM* subsection.

Check if steering rack component are:
– Cracked
– Bent
– Twisted
– Otherwise damaged.

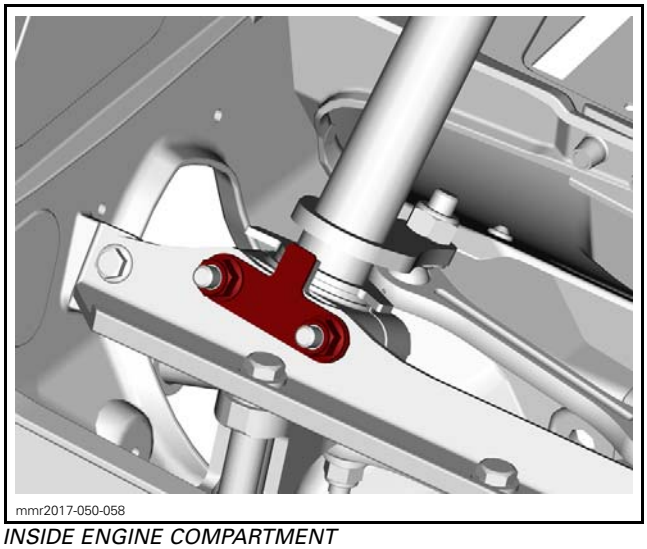
Check steering rack for looseness.

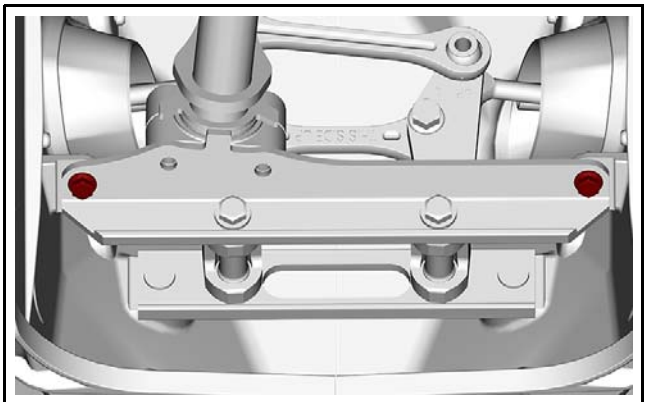
Check if stopper plate is deformed or otherwise damaged.

Replace component if necessary.

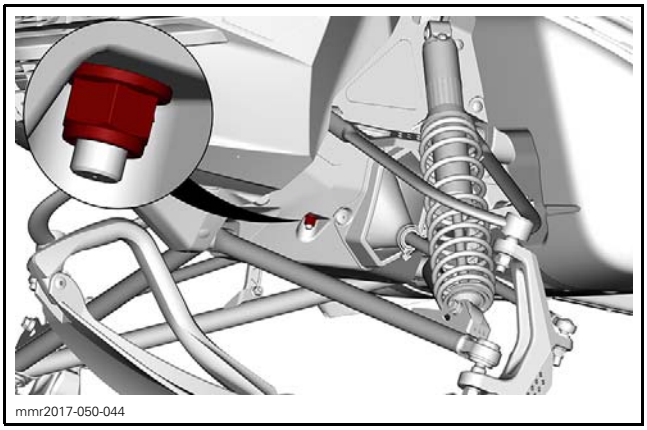
Removing the Steering Rack

1. Remove the tuned pipe. Refer to *EXHAUST SYSTEM* subsection.
2. Remove inner tie-rod end nuts and screws.
3. Remove the nuts, stopper plate and screws as per the following illustrations.


mmr2017-050-058
INSIDE ENGINE COMPARTMENT


mmr2017-050-043

INSIDE ENGINE COMPARTMENT


mmr2017-050-044

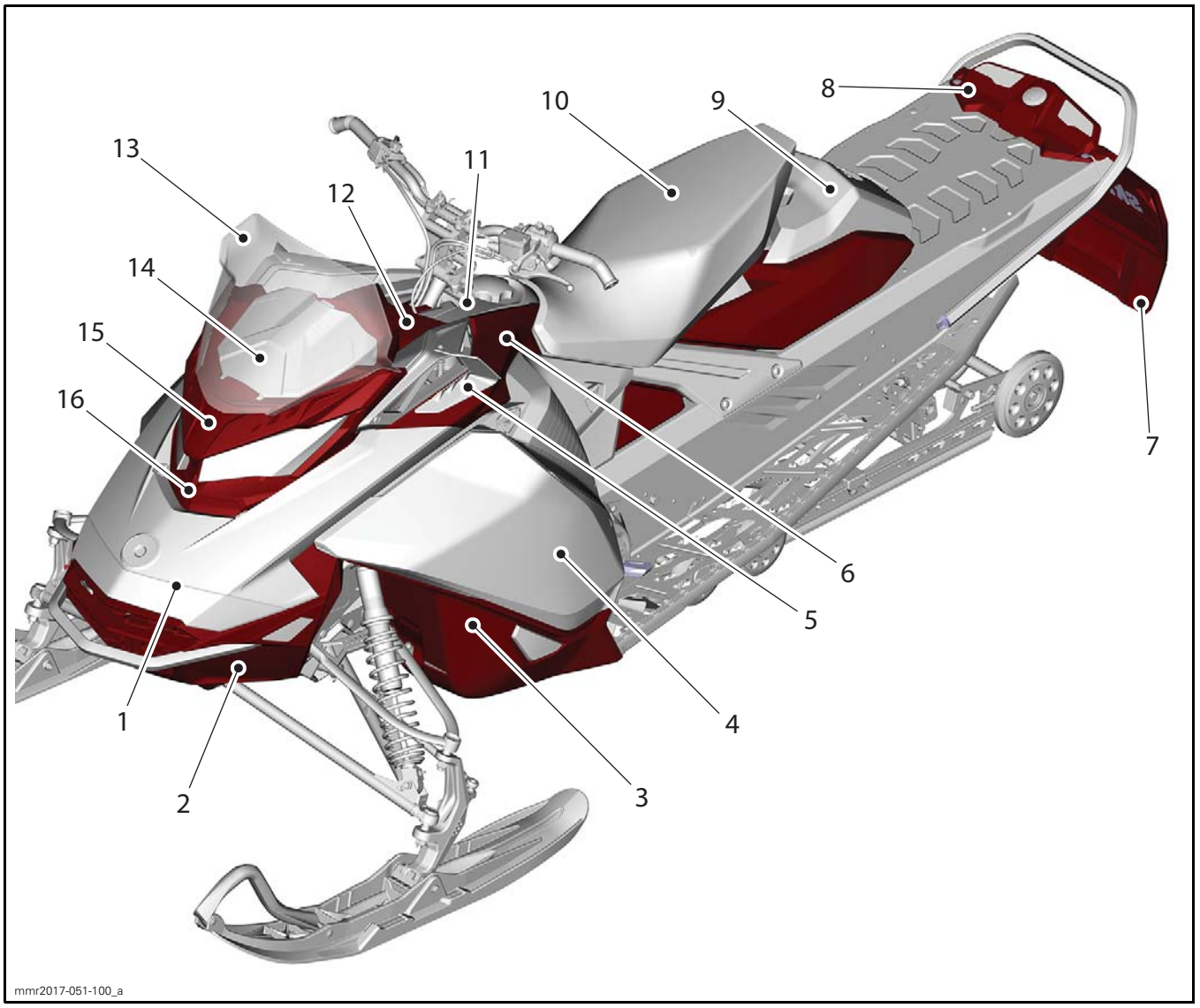
Installing the Steering Rack

The installation is the reverse of the removal procedure.

BODY

SERVICE TOOLS

Description	Part Number	Page
SUPERTANIUM DRILL BIT 3/16"	529 031 800	333



1. *Hood*
2. *Bottom pan*
3. *Side bottom pan*
4. *Side panel*
5. *Side wind deflector*
6. *Lateral hood*
7. *Snow guard*
8. *Taillight cover*
9. *Battery cover*
10. *Seat*
11. *Console*
12. *Gauge support*
13. *Windshield*
14. *Storage compartment cover*
15. *Windshield support*
16. *Headlight trim*

GENERAL

CLEANING

Cleaning the Seat

It is recommended to clean the seat with a solution of warm soapy water, using a soft clean cloth.

NOTICE **Avoid use of harsh detergents such as strong soaps, degreasing solvents, abrasive cleaners, paint thinners, etc. that may cause damage to the seat cover.**

Cleaning the Plastic

Clean the vehicle thoroughly, removing all dirt and grease accumulation.

To clean use a soft clean cloth and either soapy water or isopropyl alcohol.

To remove grease, oil or glue use isopropyl alcohol.

NOTICE **Do not apply isopropyl alcohol or acetone directly on decals.**

Follow these recommendations to protect the glossy finish of polypropylene parts.

Apply a non abrasive wax on glossy finish only.

Non Compatible Cleaning Products

NOTICE **Polypropylene is not compatible with PETROLEUM BASE PRODUCTS. Contact with petroleum base products, such as cleaners or lubricants will permanently alter the glossy finish of polypropylene parts.**

NOTICE **The following products must not be applied on the plastic components used on the vehicles:**

- Gasoline
- Brake fluid
- Kerosene
- Diesel fuel
- Lighter fluid
- Varsol
- Naphtha
- Acetone
- Strong detergents
- Abrasive cleaners
- Waxes containing an abrasive or a cleaning agent in their formula.

MATERIAL TYPE	NON-COMPATIBLE CLEANING PRODUCTS
Polypropylene	ANY PETROLEUM BASE CLEANING PRODUCTS
	XP-S ATV Finishing Spray (P/N 219 701 704)
	XP-S ATV Cleaning Kit (P/N 219 701 713) (it contains the above XP-S ATV Finishing Spray)



vbs2012-006-002_a

DO NOT USE ON POLYPROPYLENE

Compatible Cleaning Products

MATERIAL TYPE	COMPATIBLE CLEANING PRODUCT
Polypropylene	XPS ATV Wash (P/N 219 701 702)
	Soapy water



vbs2012-006-001

SAFE FOR POLYPROPYLENE

REPAIRING BODY PARTS

The very first step before repairing plastic materials is to find out exactly which type of material is involved.

On the inner surface of each part, the production date, part number, and material code are molded in.

PLASTIC PARTS	
CODE	MATERIAL
PP	Polypropylene
EMA+PA	Surlyn

NOTICE Some repair products are not compatible with certain plastics.

⚠ WARNING

Polycarbonate windshields must never be repaired by welding or otherwise.

The following company provides a complete line of products to repair plastic materials:

CREST INDUSTRIES, INC.
Trenton, MI 48183
Phone: 734 479-4141
Toll Free: 1 800 822-4100
Fax: 734 479-4040
E-Mail: info@crestauto.com
www.crestauto.com

PROCEDURES

NOTE: The same procedure applies for RH and LH side. Most of the time, only one side is described in this subsection.

DECAL

Replacing the Decal

1. To remove a decal; heat old decal with a heat gun (low temperature) and peel off slowly.
2. Using isopropyl alcohol, clean the surface and dry thoroughly.

NOTICE Do not apply isopropyl alcohol or solvent directly on decals. Use only in a well ventilated area.

3. Just before beginning to affix the new decals, wipe the surface with a clean damp cloth and allow to dry.
4. Use a pallet to affix the decal. Always work from the center towards the edges.

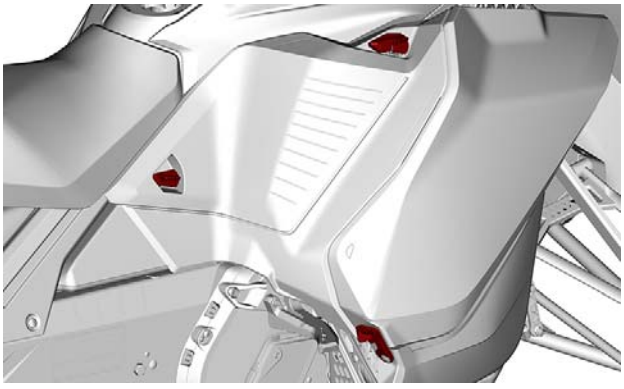
NOTICE Do not remove the pre-mask yet.

5. Once the decal is correctly affixed, carefully make a final pass with the pallet. Apply enough pressure to make sure the glue sticks well on the surface.
6. Remove the pre-mask.

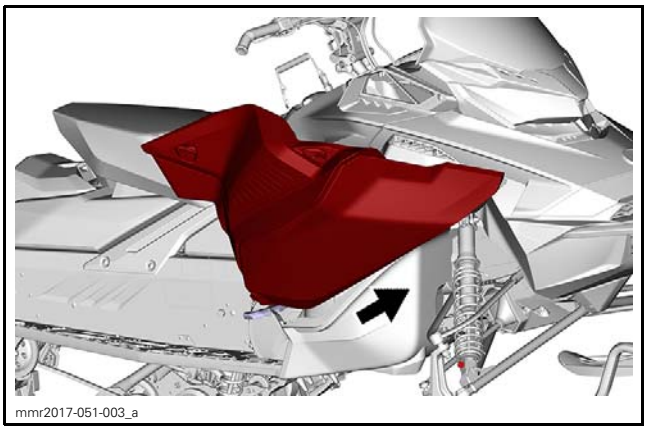
SIDE PANEL

Removing the Side Panel

1. Release all lock devices.


mmr2017-051-002

2. Open side panel.
3. Lift the side panel up and towards front.


mmr2017-051-003_a

NOTICE Make sure to place panels in a safe place to avoid scratching.

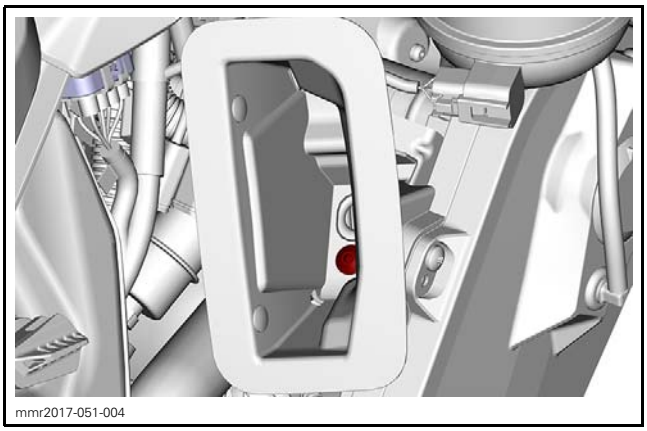
Installing the Side Panel

The installation is the reverse of the removal procedure.

REWIND STARTER HANDLE HOUSING

Removing the Rewind Starter Handle Housing

1. Open RH side panel.
2. Remove screw retaining housing to bracket.


mmr2017-051-004

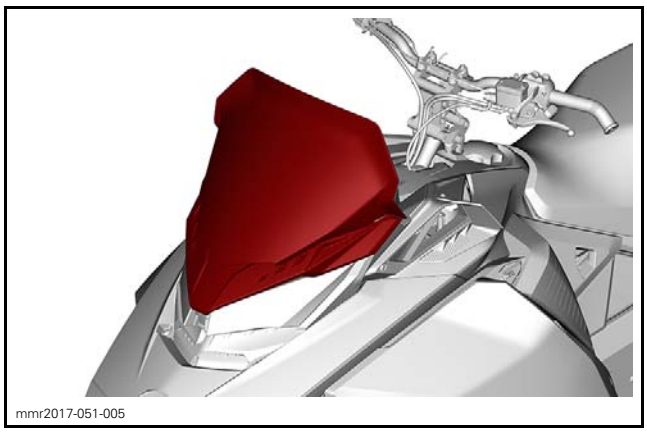
3. Remove rewind starter handle. Refer to *REWIND STARTER* subsection.

Installing the Rewind Starter Handle Housing

Installation is the reverse of removal procedure. Pay attention to the following.

TIGHTENING TORQUE	
Rewind starter handle housing screw	2.3 N•m ± 0.2 N•m (20 lbf•**in** ± 2 lbf•**in**)

WINDSHIELD


mmr2017-051-005

Removing the Windshield

Place your hands on each side of windshield.

Pull the windshield until its pins come out of rubber grommets then pull in the center to remove center pin from grommet.

Installing the Windshield

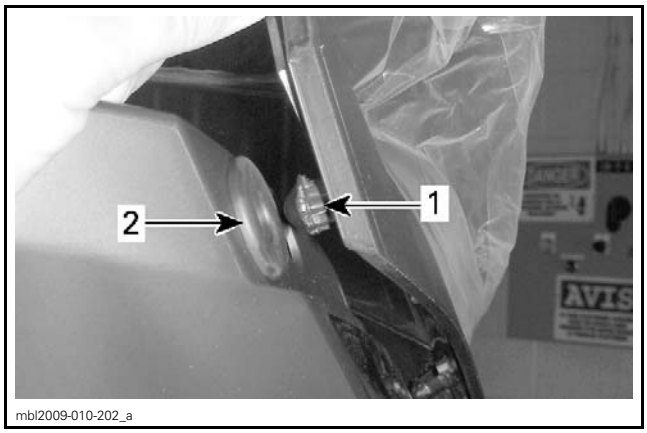
The installation is the reverse of removal procedure.

Lubricate the grommets using soapsuds.

NOTICE Do not lubricate grommets with any type of grease.

Secure windshield by inserting the windshield pins into the grommets.

NOTE: Make sure not to push grommets through gauge support holes.



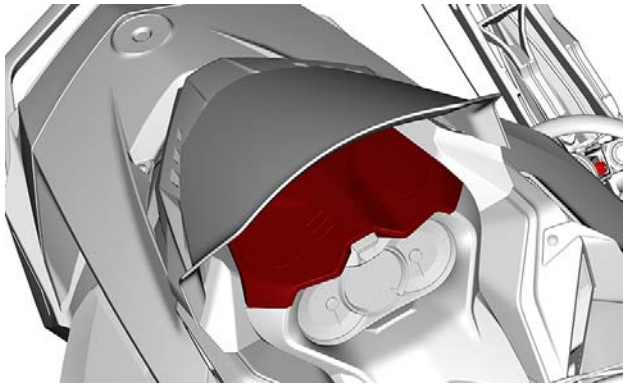
mbl2009-010-202_a

TYPICAL
1. Windshield tab
2. Gauge support front grommet

⚠ WARNING

Make sure that handlebar turns freely in both directions. Make sure that there is no contact at any time between handlebar wind deflectors (if so equipped) and windshield.

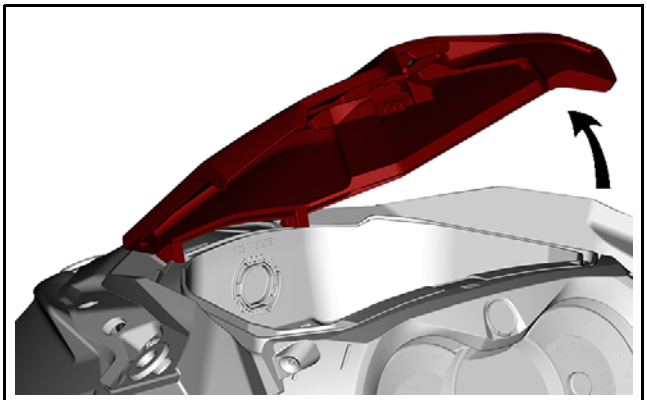
STORAGE COMPARTMENT COVER



mmr2017-051-006

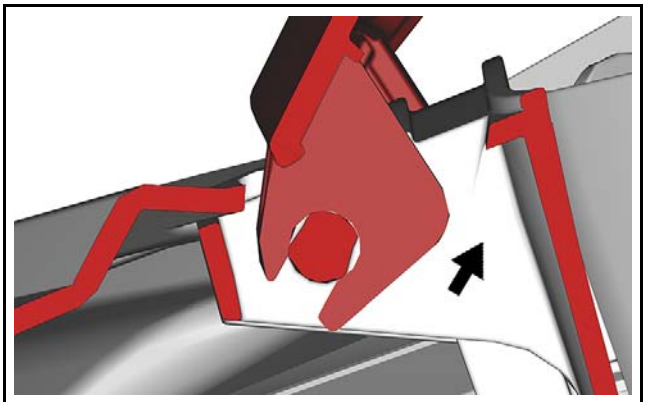
Removing the Storage Compartment Cover

1. Remove windshield.
2. Open storage cover until it is almost vertical.



mmr2017-051-007_a

3. Pull out storage cover.



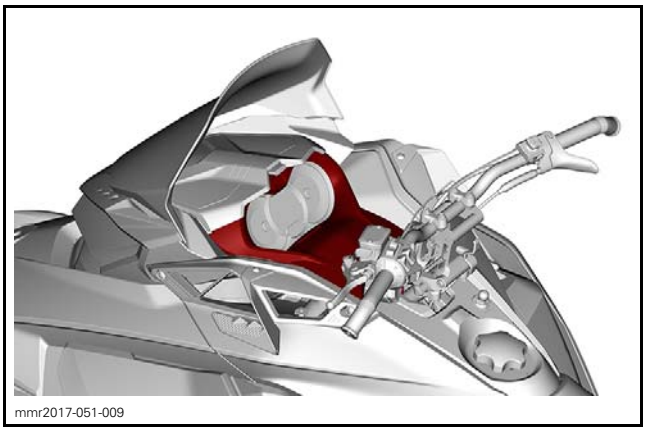
mmr2017-051-008_a

Installing the Storage Compartment Cover

The installation is the reverse of the removal procedure.

NOTICE Ensure windshield is NOT installed. Otherwise, the storage cover could be damaged during installation.

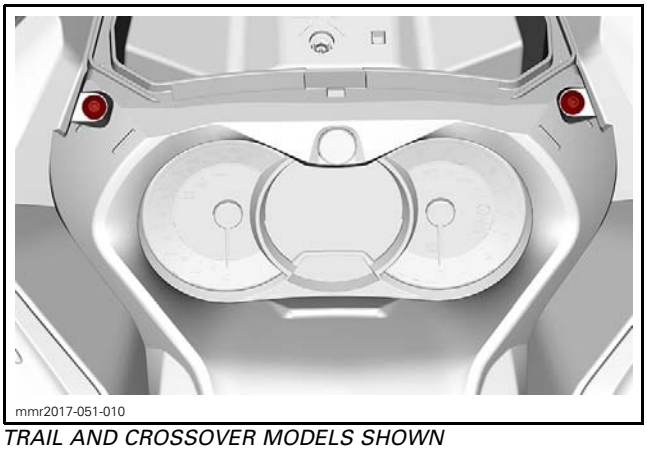
GAUGE SUPPORT



mmr2017-051-009

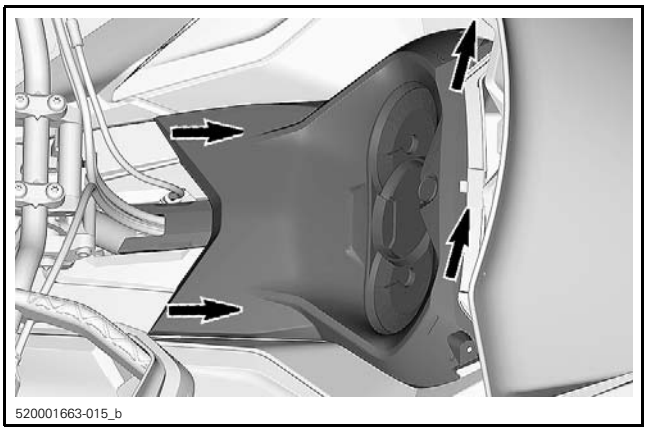
Removing the Gauge Support

1. Remove the windshield. Refer to procedure in this subsection.
2. Open the storage compartment cover
3. Remove the gauge support screws.


mmr2017-051-010

TRAIL AND CROSSOVER MODELS SHOWN

4. Lift the front of the gauge support, then slide it forward to remove it.


520001663-015_b

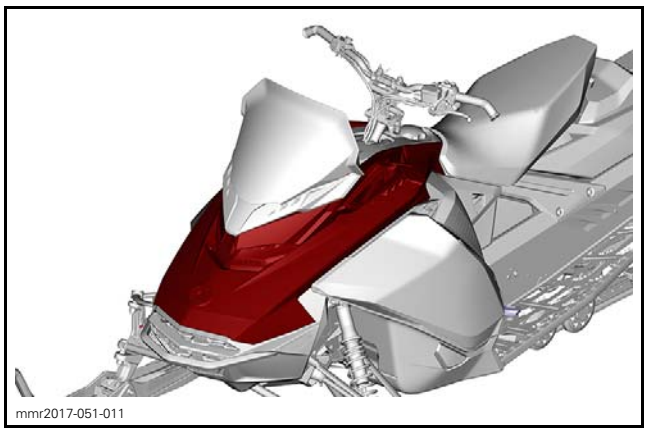
5. Remove the multifunction gauge from support. Refer to *GAUGE* subsection.

Installing the Gauge Support

The installation is the reverse of removal procedure.

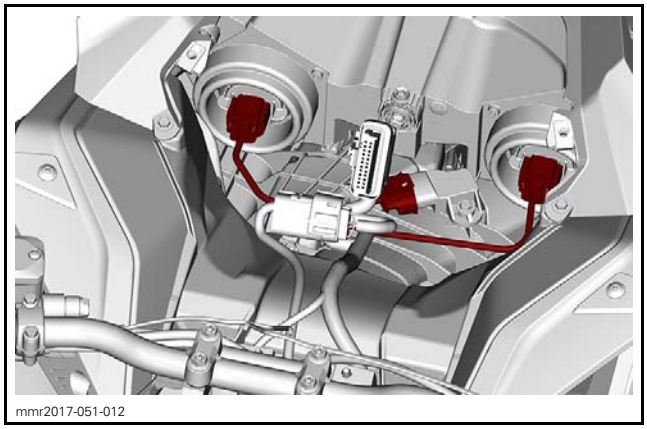
TIGHTENING TORQUE	
Gauge support screw	2.3 N•m ± 0.2 N•m (20 lbf•**in** ± 2 lbf•**in**)

UPPER BODY MODULE

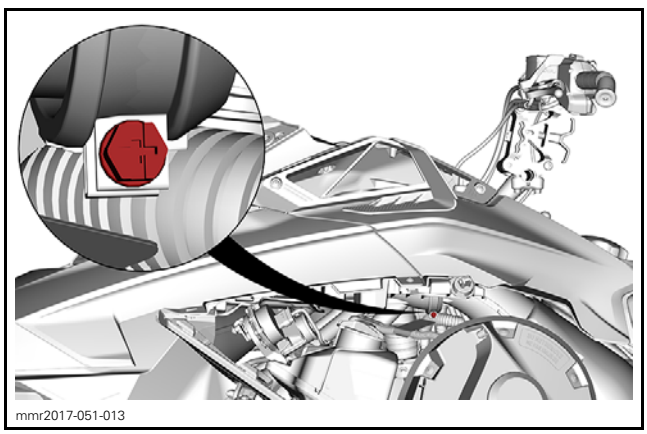

mmr2017-051-011

Removing the Upper Body Module

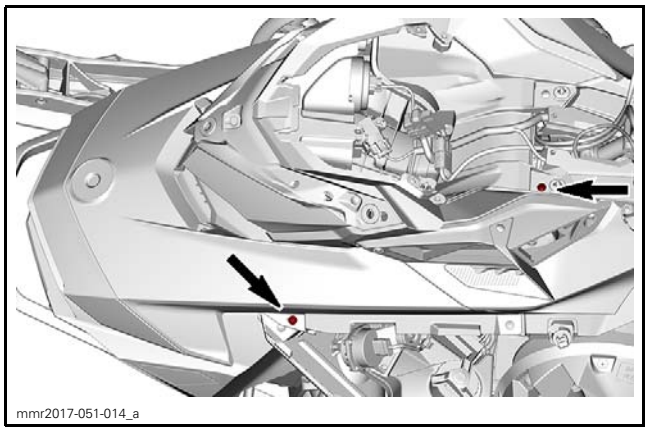
1. Refer to procedures in this subsection and remove:
   – Side panels
   – Gauge support
   – Storage compartment and its cover.
2. Disconnect the MAPTS and headlight connectors.


mmr2017-051-012

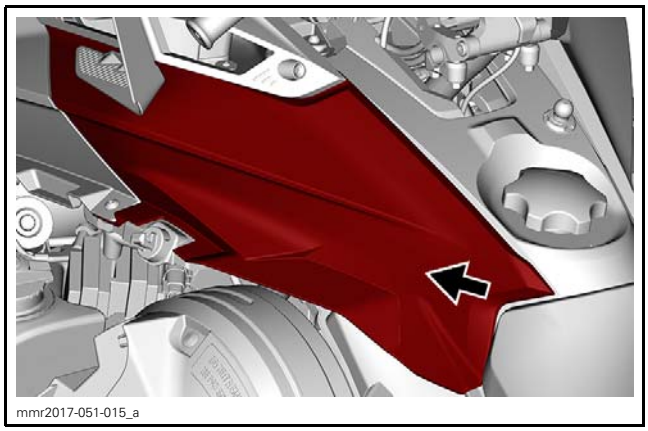
3. Loosen the air intake hose clamp.


mmr2017-051-013

4. Remove the upper body module retaining screws.


mmr2017-051-014_a

5. Pull on the rear end of both lateral hood until their tabs come out of the rear console.

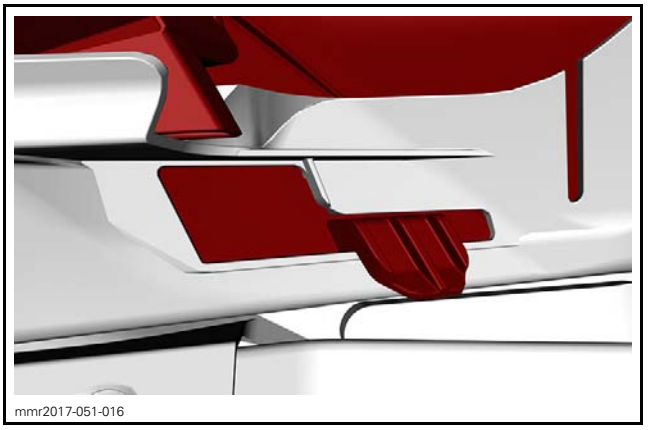

mmr2017-051-015_a

6. Remove the upper body module.
   6.1 Grab the upper body module in the gauge support section.
   6.2 Pull the module forward.
   6.3 Remove the module from the vehicle.

Installing the Upper Body Module

The installation is the reverse of the removal procedure. However, pay attention to the following.

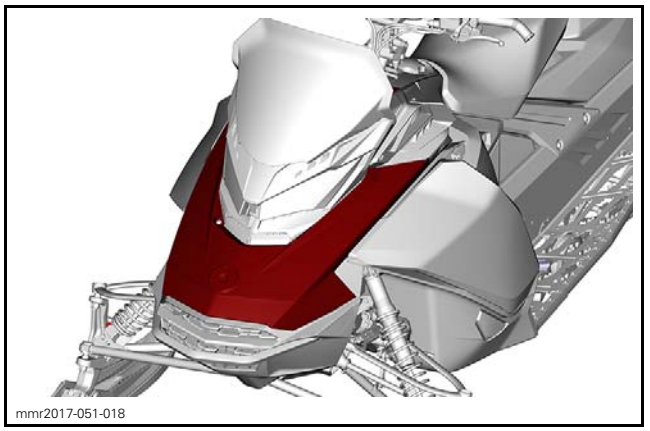
Ensure to engage rear hood tabs in rear console.


mmr2017-051-016

Ensure to connect the air intake hose.

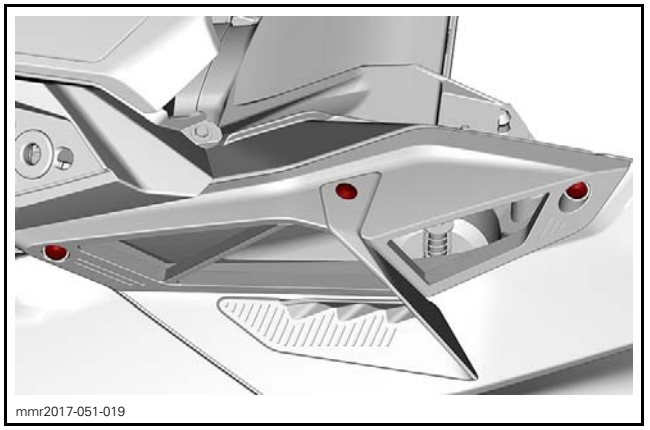
TIGHTENING TORQUE	
Upper body module screw	2.3 N•m ± 0.2 N•m (20 lbf•**in** ± 2 lbf•**in**)

HOOD

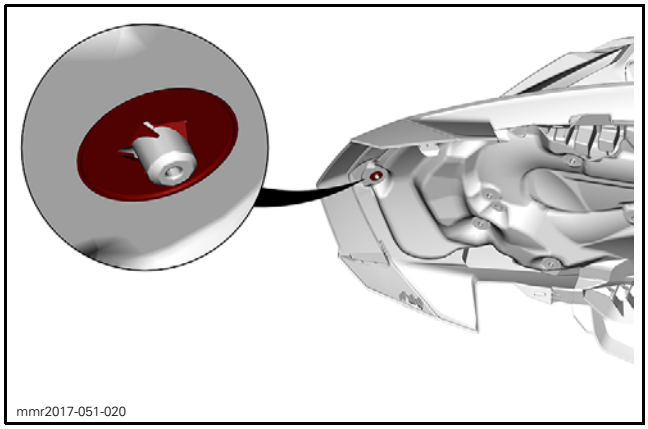

mmr2017-051-018

Removing the Hood

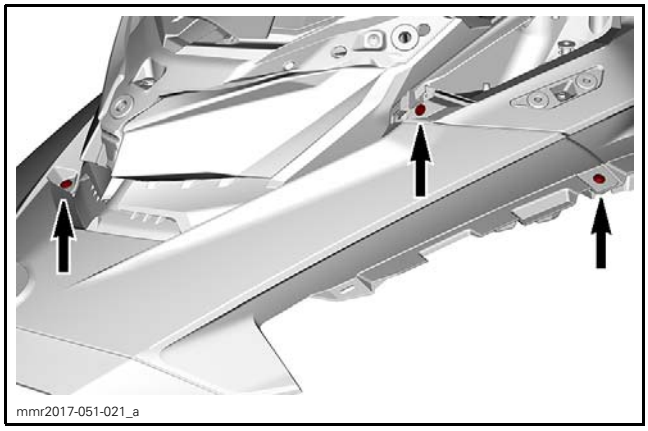
1. Remove the upper body module. Refer to procedure in this subsection.
2. Remove both sides air deflector and air intake filter.


mmr2017-051-019

3. Remove the front push nut under the hood.



4. Remove hood screws.



5. Pull out hood.

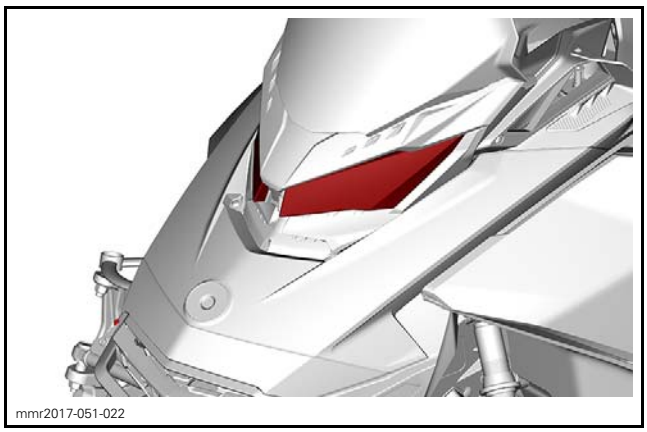
Installing the Hood

The installation is the reverse of removal procedure.

Install a new push nut.

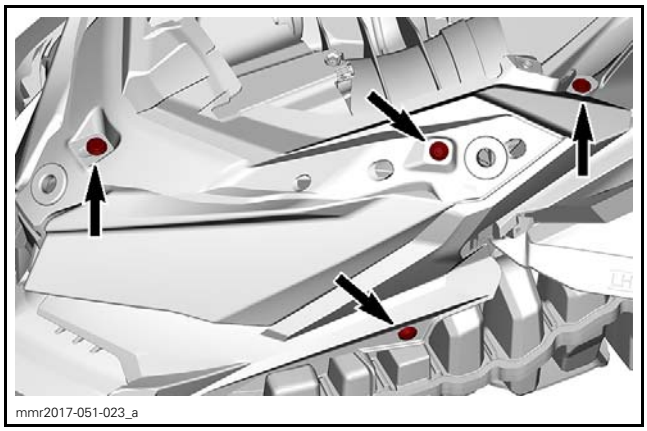
TIGHTENING TORQUE	
Hood hexagonal screw	1.8 N•m ± 0.2 N•m (16 lbf•**in** ± 2 lbf•**in**)
Hood Torx screw	2.3 N•m ± 0.2 N•m (20 lbf•**in** ± 2 lbf•**in**)

HEADLIGHT MODULE



Removing the Headlight Module

1. Remove the hood. Refer to procedure in this subsection.
2. Remove the headlight trim fasteners.



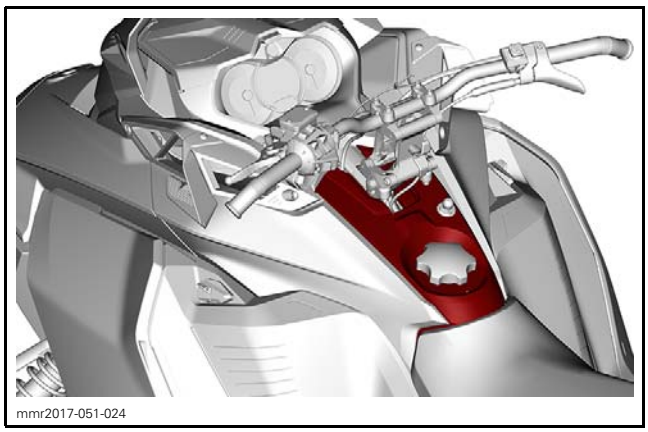
3. Pull out headlight housing and trim.

Installing the Headlight Module

The installation is the reverse of removal procedure.

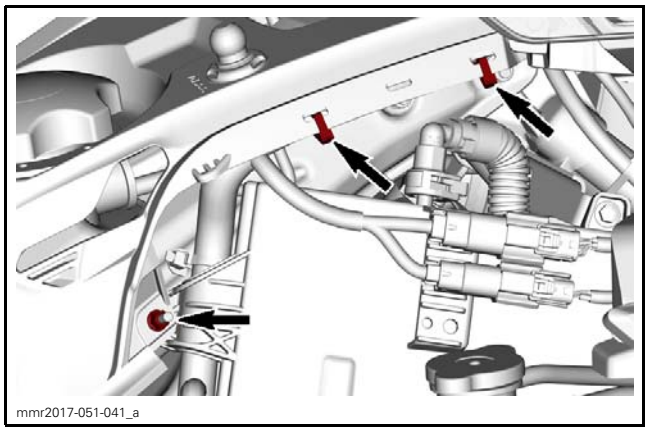
TIGHTENING TORQUE	
Headlight hexagonal screw	1.8 N•m ± 0.2 N•m (16 lbf•**in** ± 2 lbf•**in**)
Headlight Torx screw	2.3 N•m ± 0.2 N•m (20 lbf•**in** ± 2 lbf•**in**)

CONSOLE


mmr2017-051-024

Removing the Console

1. Remove *UPPER BODY MODULE*. Refer to procedure in this subsection.
2. Remove the seat. Refer to *SEAT* subsection.
3. Cut harness locking ties.
4. Remove console nuts.


mmr2017-051-041_a

5. Remove fuel tank cap.
6. Lift up the console and unplug all connectors.
7. Install fuel tank cap.

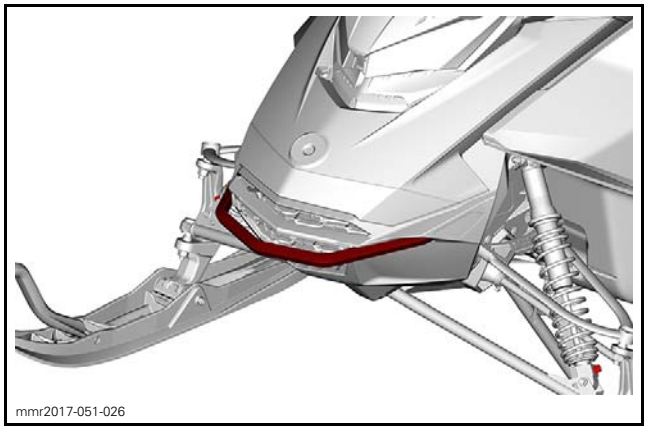
Installing the Console

The installation is the reverse of the removal procedure.

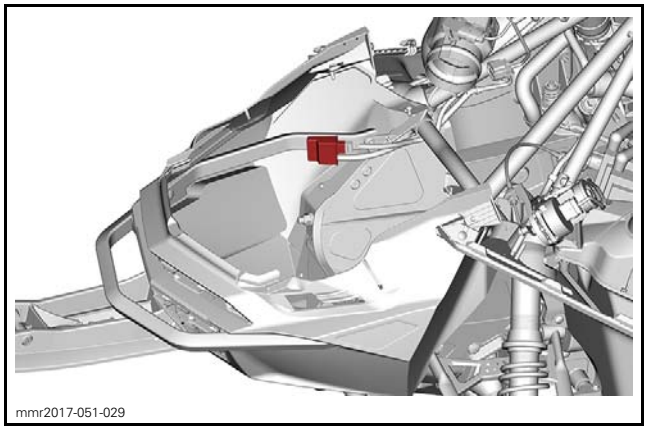
TIGHTENING TORQUE	
Console nut	2.3 N•m ± 0.2 N•m (20 lbf•**in** ± 2 lbf•**in**)

FRONT BUMPER

Removing the Front Bumper


mmr2017-051-026

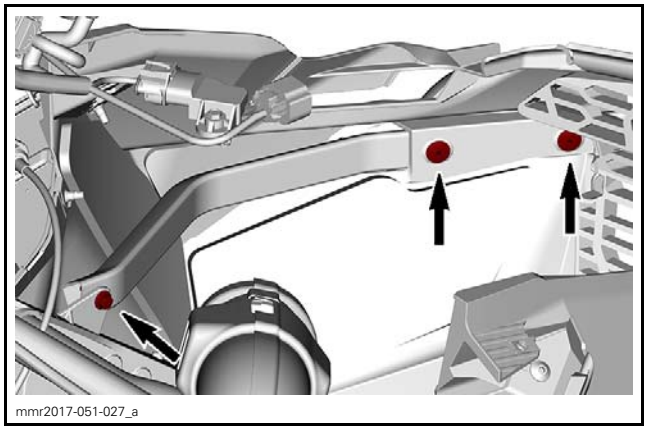
1. Remove tuned pipe. Refer to *EXHAUST SYSTEM* subsection.
2. Detach TCM from bumper.


mmr2017-051-029

3. Drill out rivets from front bumper.

REQUIRED TOOL
SUPERTANIUM DRILL BIT 3/16" (P/N 529 031 800)

4. Remove front bumper screws.

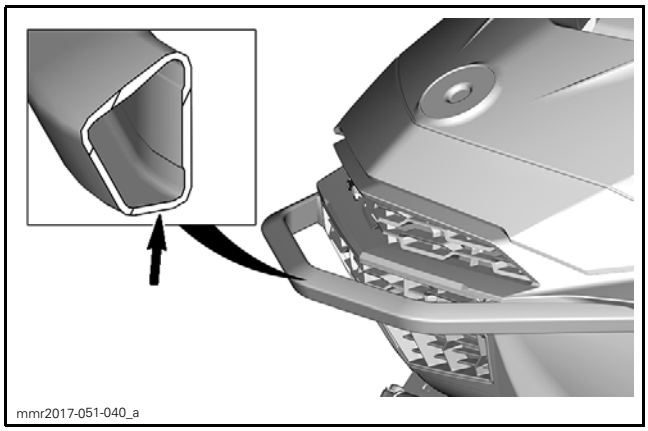

mmr2017-051-027_a

5. Pull out bumper towards front.

Installing the Front Bumper

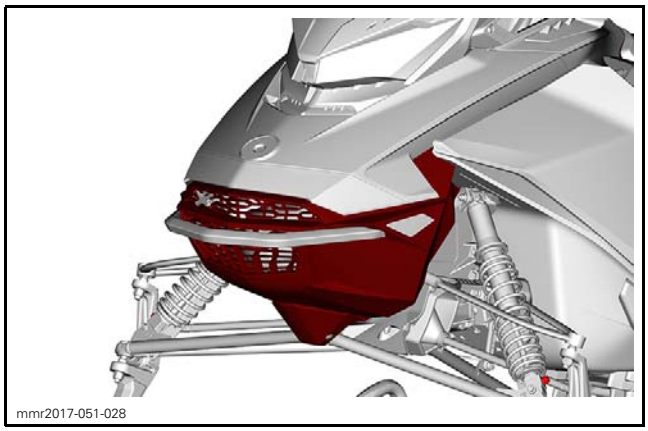
The installation is the reverse of the removal procedure.

Ensure the small surface of the bumper extrusion is facing downwards.


mmr2017-051-040_a

TIGHTENING TORQUE	
Front bumper nut	5 N•m ± 0.5 N•m (44 lbf•**in** ± 4 lbf•**in**)

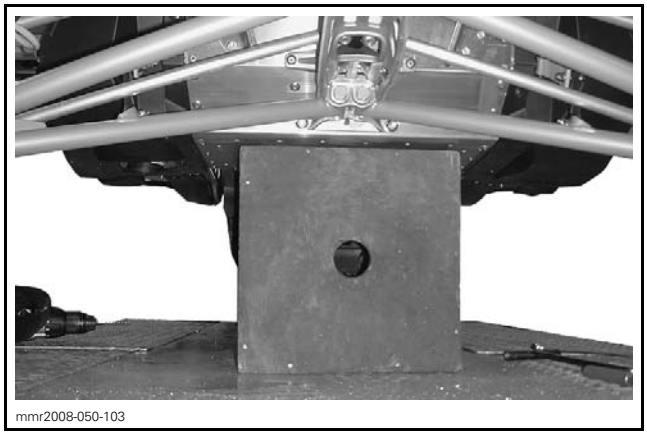
FRONT BOTTOM PAN


mmr2017-051-028

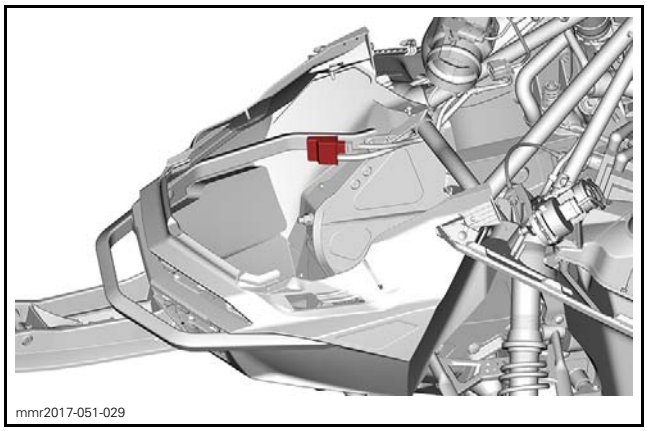
TYPICAL

Removing the Front Bottom Pan

1. Lift front of vehicle until skis are off the ground.
2. Place the front portion of frame on a wooden box to support it securely.


mmr2008-050-103

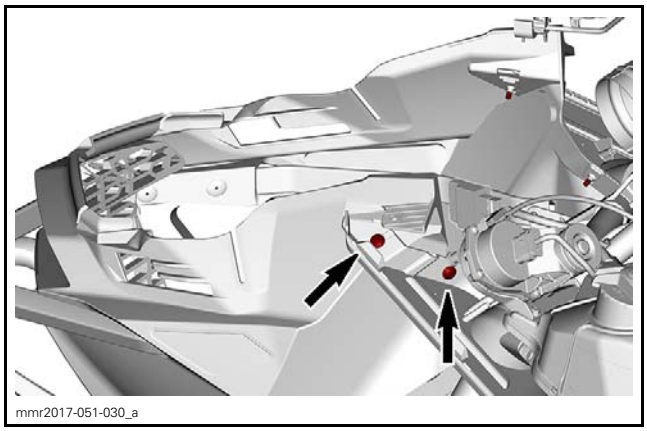
3. Remove the upper body module. Refer to procedure in this subsection.
4. Remove tuned pipe. Refer to *EXHAUST SYSTEM* subsection.
5. Detach TCM from bumper.


mmr2017-051-029

6. Remove *FRONT BUMPER*. See procedure in this subsection.

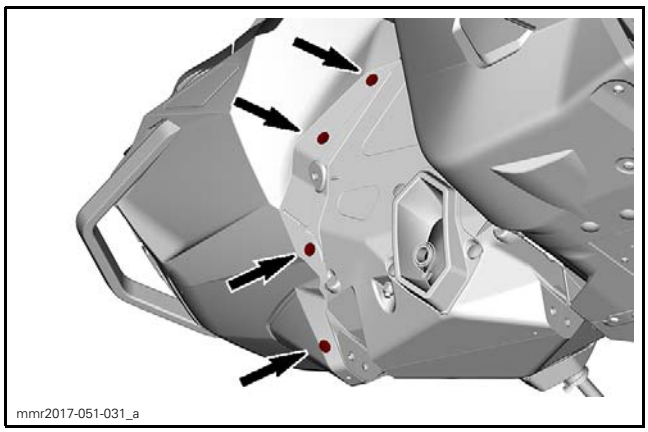
If the front bottom pan does not need to be replaced, the bumper may remain attached to bottom pan.

7. Remove bottom pan screws.


mmr2017-051-030_a

8. Remove front shock absorbers. Refer to *FRONT SUSPENSION* subsection.
9. Drill out all rivets retaining bottom pan.

NOTE: Refer to *FRAME* for proper procedure when drilling rivets retaining plastic parts.


mmr2017-051-031_a

LH SIDE SHOWN — SOME PARTS REMOVED FOR CLARITY

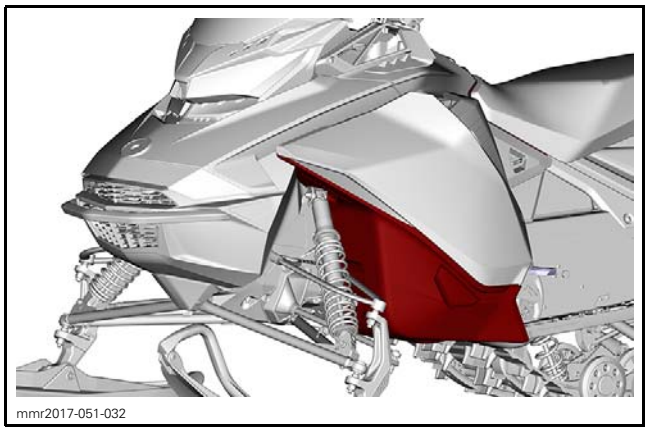
10. Remove bottom pan.

Installing the Front Bottom Pan

The installation is the reverse of the removal procedure.

TIGHTENING TORQUE	
Bottom pan screw	1.8 N•m ± 0.2 N•m (16 lbf•**in** ± 2 lbf•**in**)

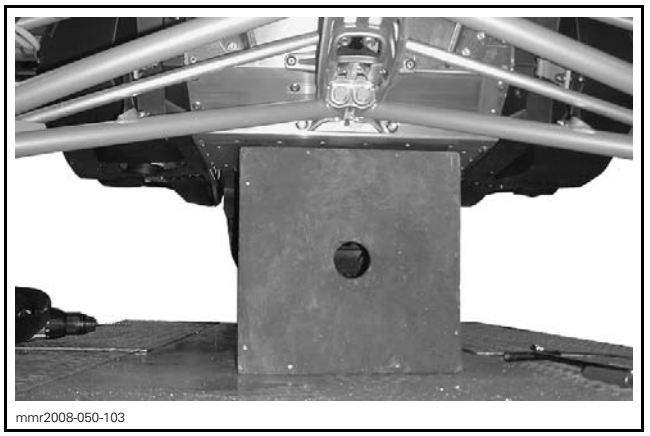
SIDE BOTTOM PAN


mmr2017-051-032

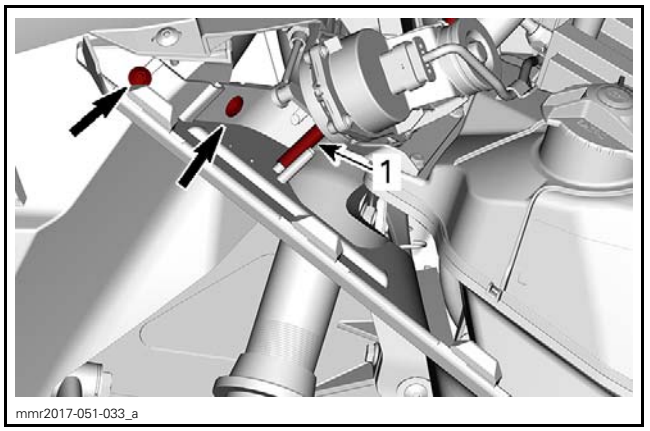
Removing the Side Bottom Pan

1. Remove the side panel. Refer to procedure in this subsection.
2. Lift front of vehicle until skis are off the ground.
3. Place the front portion of frame on a wooden box to support it securely.

NOTE: Ensure to clear side bottom pans so they can move freely.

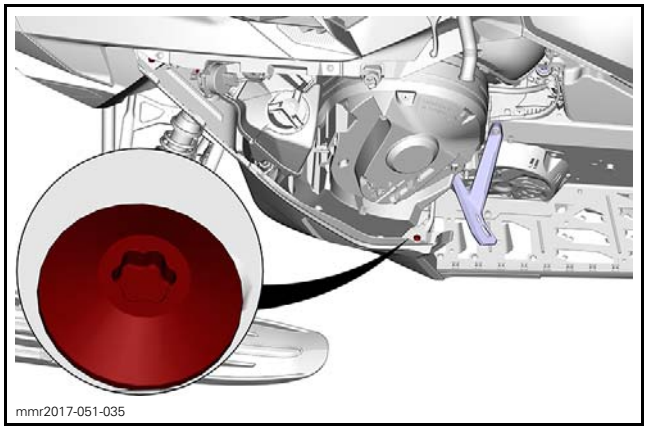

mmr2008-050-103

4. Disconnect vent tube from side bottom pan, and remove the screws.

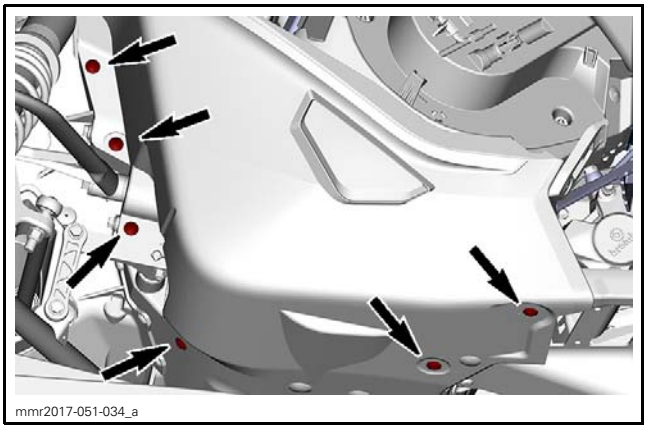


mmr2017-051-033_a

1. Vent tube


mmr2017-051-035

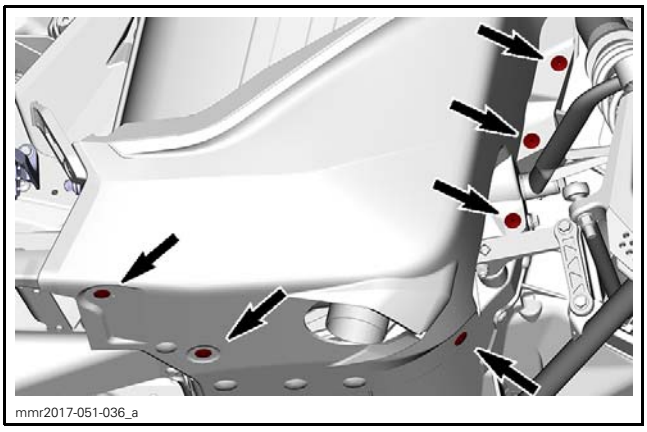
5. To remove the LH side bottom pan, remove the screws and washers.


mmr2017-051-034_a

6. To remove the RH side bottom pan, drill out all rivets

NOTE: Refer to *FRAME* for proper procedure when drilling rivets retaining plastic parts.

NOTICE Be careful not to drill through muffler.


mmr2017-051-036_a

RH SIDE SHOWN

Installing the Side Bottom Pan

The installation is the reverse of the removal procedure.

Reinstall the washers at the correct position.

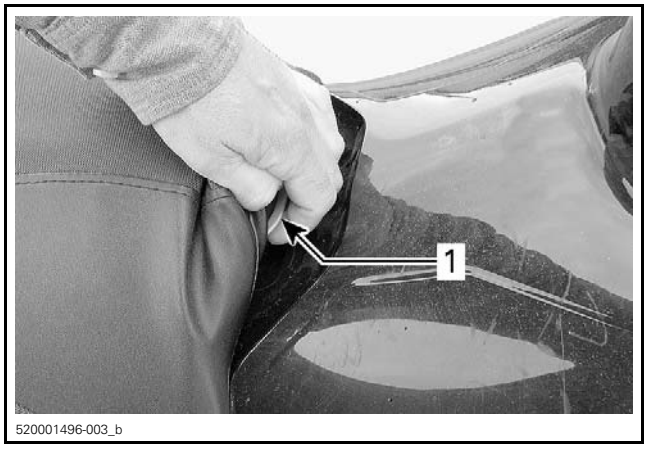
TIGHTENING TORQUE	
Side bottom pan screw	2.8 N•m ± 0.2 N•m (25 lbf•**in** ± 2 lbf•**in**)

SEAT

Seat Removal (Summit and Freeride models)

Roll up the front of the foam.

While pushing seat forward, pull up the latch.



520001496-003_b

1. Seat latch

Slide seat rearwards to remove it.

Seat Installation

NOTICE Riding the vehicle with any objects between the seat and the fuel tank could damage the fuel tank. NEVER place any objects between seat and fuel tank.

Place seat over the hooks, then slide it forward.

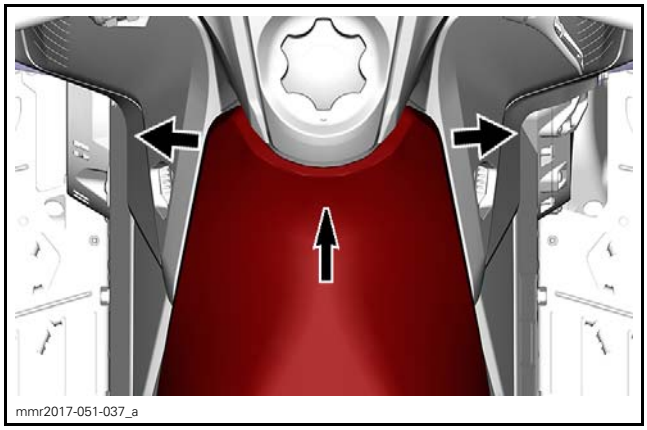
Securely engage latch.

⚠ WARNING

Make sure seat is securely latched before riding.

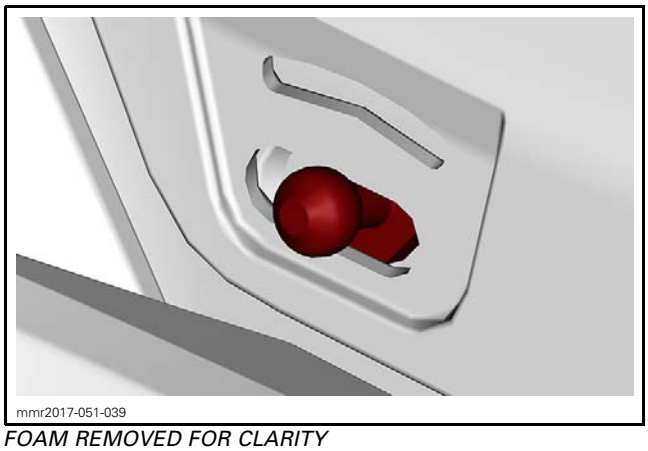
Removing and Installing the Seat (All models exc. Summit and Freeride)

1. While pushing in the center of the seat towards front, pull on both sides, to unlock, and slide rearwards.


mmr2017-051-037_a

The Installation is the reverse of the removal procedure.

Ensure the seat is locked.



FOAM REMOVED FOR CLARITY

Replacing the Seat Cover

NOTE: We strongly reccommand the use of an electric stapler to recover the seat.

Remove seat.

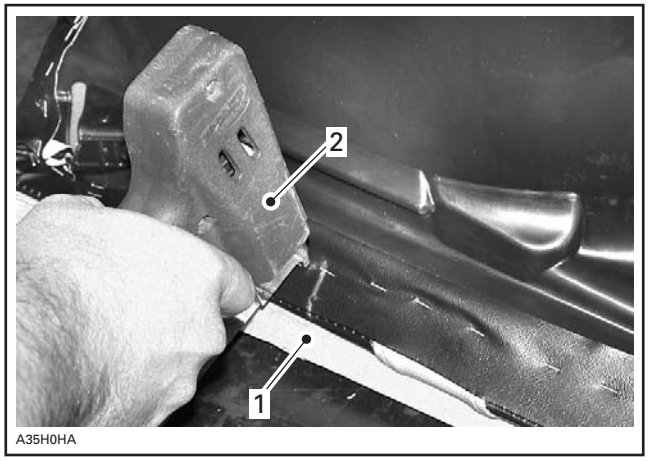
Remove the old seat cover. Check the foam and replace it if necessary.

Install the new seat cover with staples.

NOTICE **Ensure to use the proper length staples. Extra long staples would pierce the exposed side of the leatherette.**

NOTE: For an easier installation, it is highly recommended to use an electric tacker.

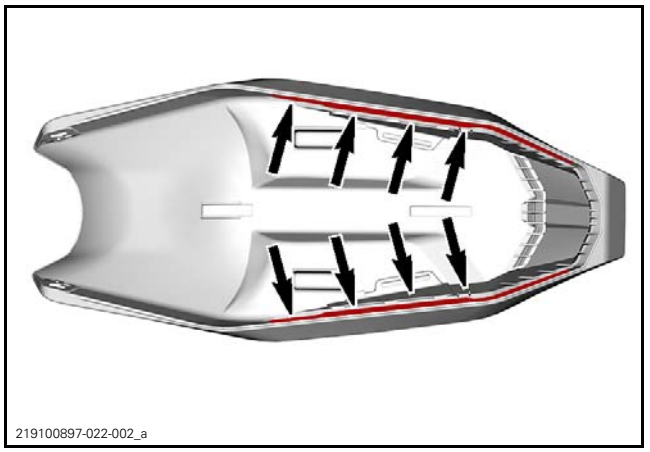
Ensure that the seat rest firmly against a hard surface such as a piece of wood. This is done to get the staples completely pushed in place.



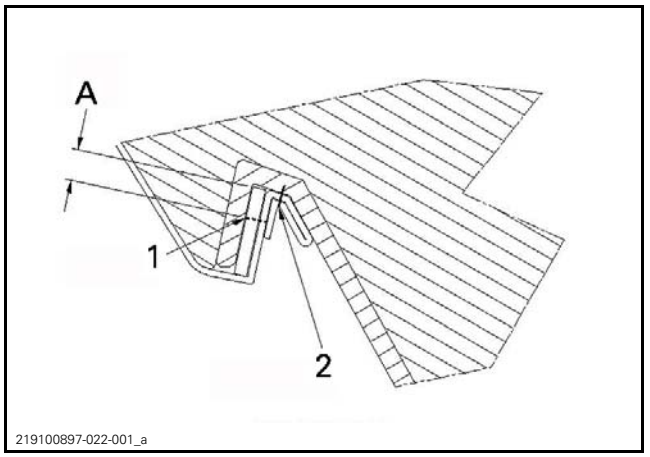
TYPICAL
1. *Piece of wood*
2. *Tacker*

All models except Summit and Freeride

The trail seat needs a special stapling procedure to ensure a strong and durable seat cover installation. Make sure the staples on the rear part of the seat are installed as shown.



The staples go inside the crease on each side of the seat.



A = 5 MM (1/4 IN)
1. *Sewing*
2. *Staple*

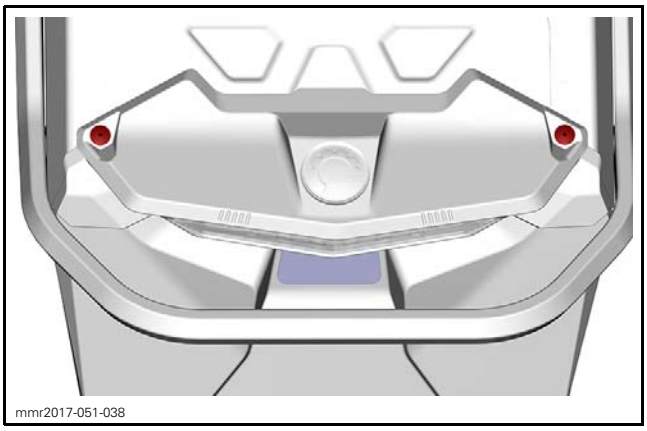
After seat cover installation, cut out excess material leaving 5 mm (1/4 in) between staple and edge.

REAR BUMPER

TIGHTENING TORQUE	
Rear bumper screws	16 N•m ± 2 N•m (142 lbf•**in** ± 18 lbf•**in**)

TAIL LIGHT HOUSING

Drill out the rivets.


mmr2017-051-038

Pull housing towards rear.

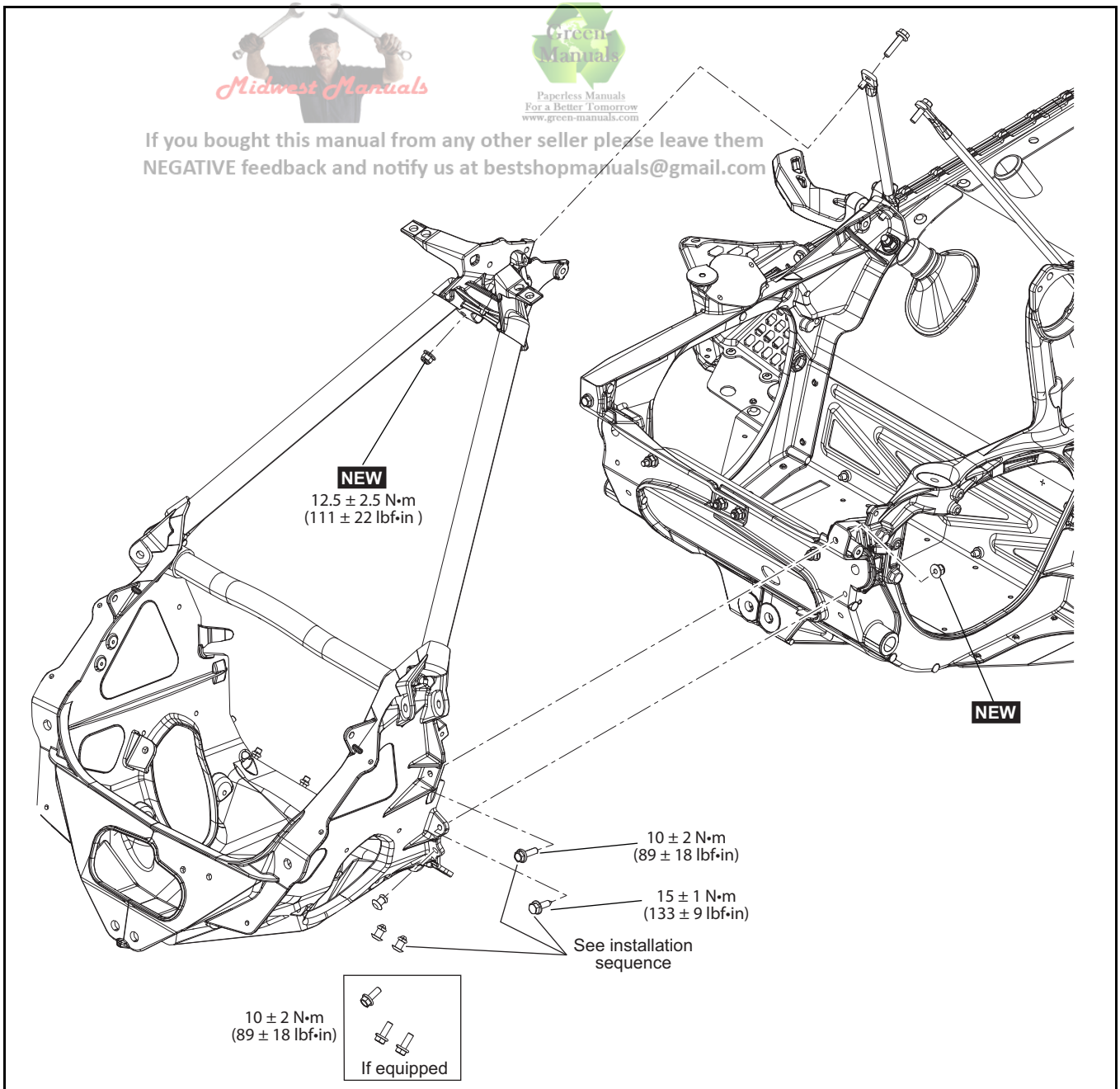
FRAME

SERVICE TOOLS

Description	Part Number	Page
RADIATOR INSTALLATION GAUGES	529 036 422	351
SUPERTANIUM DRILL BIT 3/16"	529 031 800	342

SUSPENSION MODULE

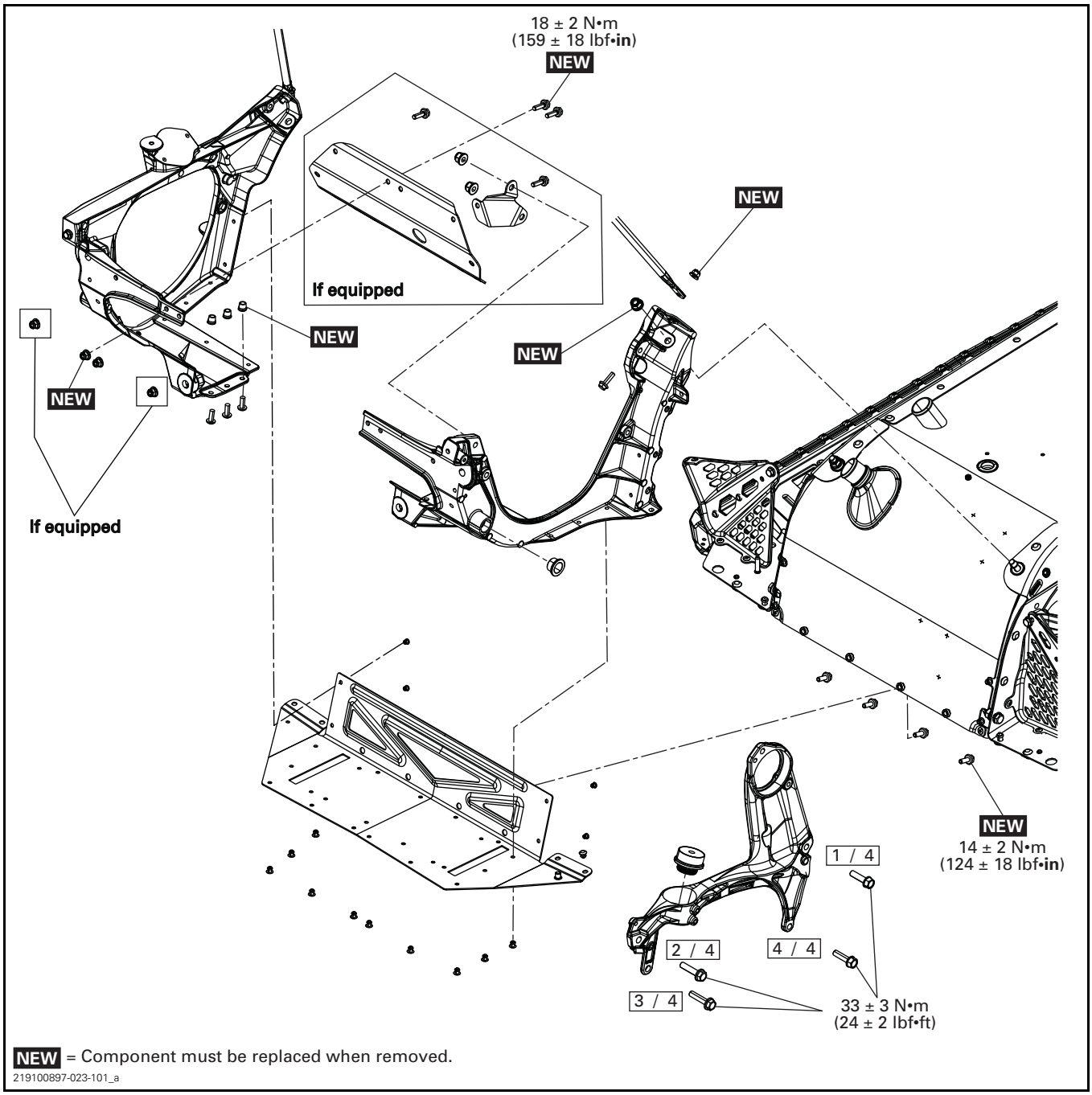
Midwest Manuals
Green Manuals
Paperless Manuals
For a Better Tomorrow
www.green-manuals.com
If you bought this manual from any other seller please leave them
NEGATIVE feedback and notify us at bestshopmanuals@gmail.com



NEW = Component must be replaced when removed.

219100897-023-100_a

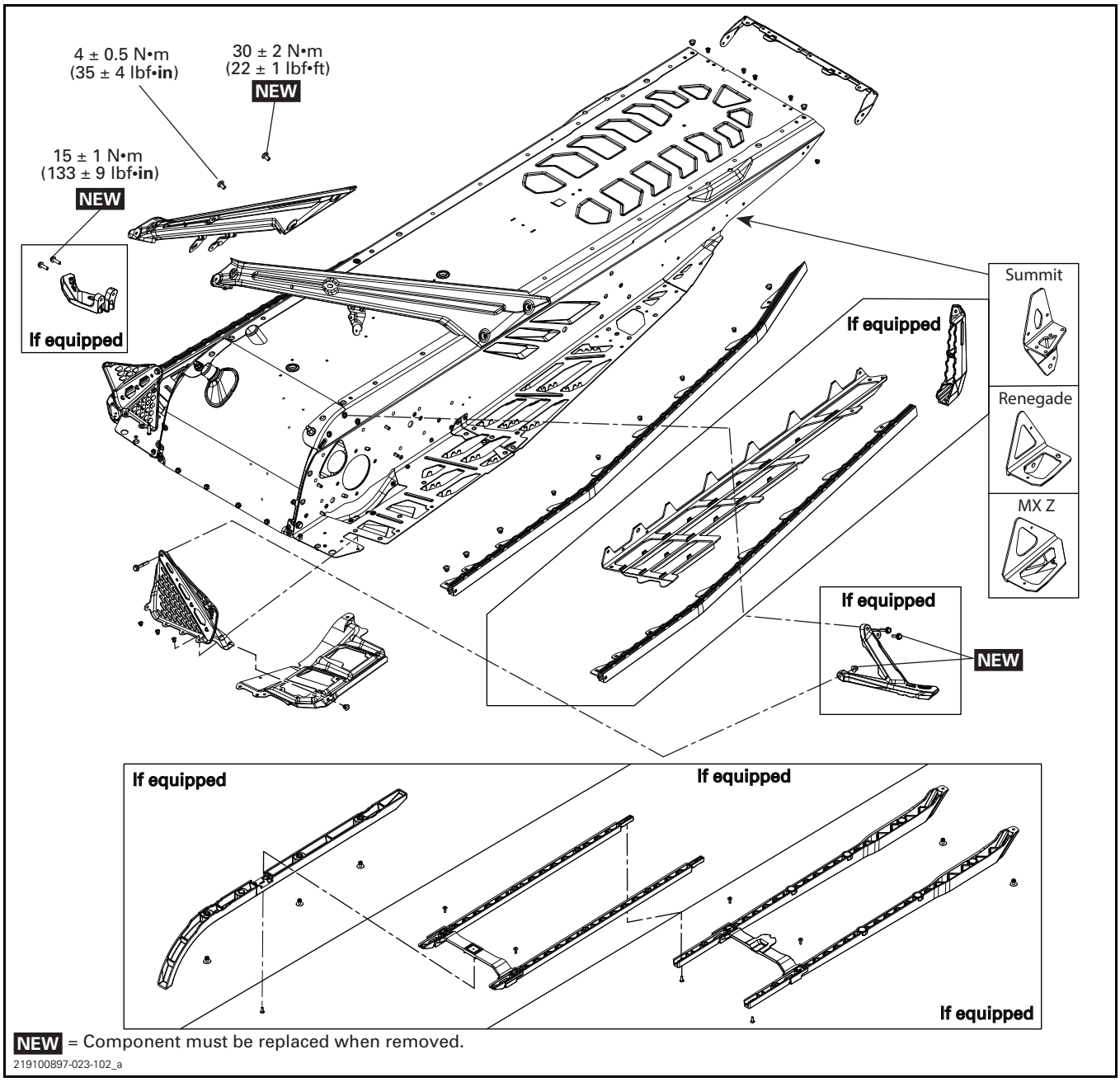
ENGINE MODULE



NEW = Component must be replaced when removed.

219100897-023-101_a

TUNNEL MODULE



NEW = Component must be replaced when removed.

219100897-023-102_a

GENERAL

During assembly/installation, use the torque values and the service products as in the exploded views.

Clean threads before applying a threadlocker. Refer to *SELF-LOCKING FASTENERS* and *LOCTITE APPLICATION* at the beginning of this manual for complete procedure.

⚠ WARNING

Torque wrench tightening specifications must be strictly adhered to.
Locking devices (e.g.: locking tabs, elastic stop nuts, cotter pins, etc.) must be replaced with new ones.

Check for loose, bent, worn out, rusted or otherwise damaged components. Replace the faulty components.

PROCEDURES

RIVETS

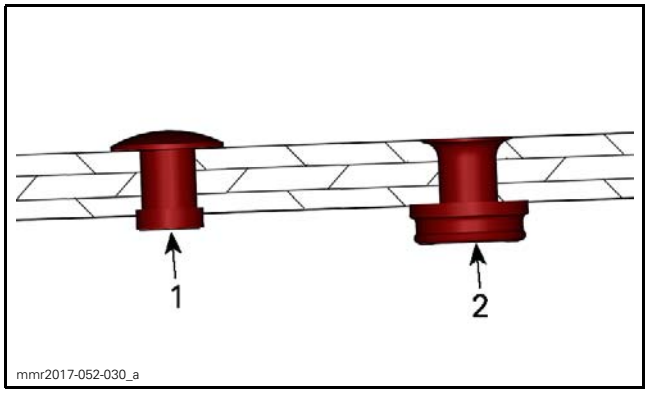
For proper drilling instructions and to prevent premature wear, follow the procedures as detailed.

NOTICE **When removing rivets, do not enlarge or deform the rivet holes in the frame.**

Removing a Self-Percing Rivet

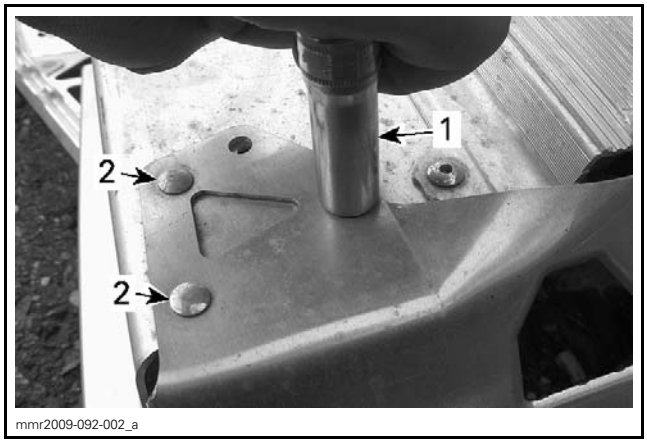
Henrob and Thomson rivets are self-piercing rivets. They are installed with specific robotized equipment.

1. Using a grinding disk, grind the rivet end.



1. Thomson rivet
2. Henrob rivet

2. Support the frame around the rivet head with a socket on the opposite side to avoid warpage.



TYPICAL
1. 11 mm socket over a rivet head
2. Rivet heads

3. Drive out remaining rivet using a punch.

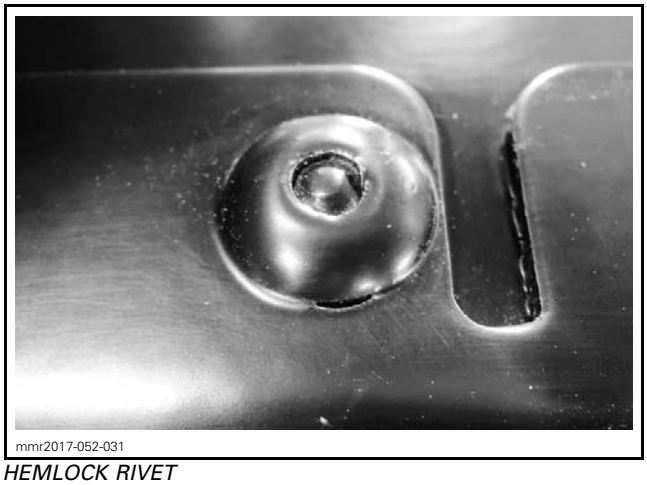
Removing a Pop Rivet

Stavex, Avibulb, and Hemlock rivets are standard pop rivets. They are installed with standard manual or pneumatic tool.

1. Drill rivet head sufficiently to cut through it.

NOTE: To drill a Hemlock rivet, remove the riveting nail using a punch first.

NOTICE **It is highly recommended to support the frame locally around a Hemlock rivet when punching its nail out.**



HEMLOCK RIVET

RECOMMENDED TOOL
SUPERTANIUM DRILL BIT 3/16" (P/N 529 031 800)

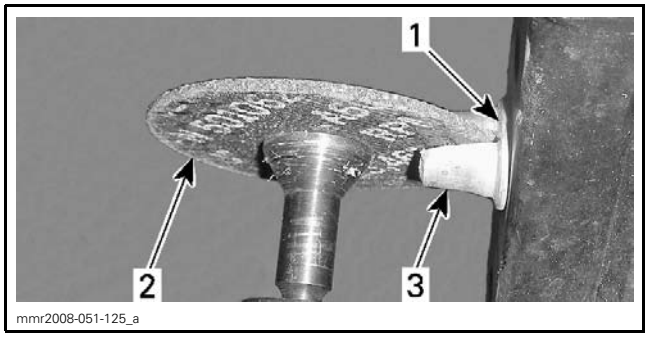
NOTICE **Drill only sufficiently to cut rivet head. Do not drill into frame material, or part secured using the rivet. When rivet is used to secure a plastic part, use pliers to avoid rotation of rivet with drill bit and heating or melting of the plastic part.**

2. Using a small punch, drive out the remaining rivet end.

Removing a HUCK Rivet

Huck rivet is a 2 parts type rivet. It is installed with a specific pneumatic tool.

1. Using a cut-off tool, cut the rivet retainer without touching the retainer's shoulder.



mmr2008-051-125_a

1. Rivet retainer's shoulder
2. Cutter wheel
3. Rivet retainer

NOTE: Apply a thin layer of grease on cutter wheel to increase its durability.

2. Break the rivet retainer's shoulder using a chisel.
3. Use a small punch to drive out the rivet stem.

FRAME

Cleaning the Frame

Clean frame and tunnel with appropriate cleaners and rinse with high pressure hose.

NOTE: For bare aluminum frames use only aluminum cleaner and follow instructions on container.

NOTICE **Never direct high-pressure water jet towards decals. They will peel off.**

Welding the Frame

No welding is permitted unless it is specified on a BRP bulletin.

Repairing the Frame

NOTE: The following is specific information for aluminum chassis painting. Use common painting techniques.

1. Sand the area to be painted.
2. Clean and dry the area.
3. Apply a thin layer of paint of the appropriate color.
4. Allow paint to dry before re-coating.

NOTE: Paint takes approximately 15 minutes to dry following application.

5. Apply a thin coat of clear.

NOTE: Immediately after the clear coat application, apply a thin coat of HR50 blending solvent **around** the painted area.

6. Allow clear coat to dry.

NOTE: Clear coat takes approximately 2 hours to dry following application.

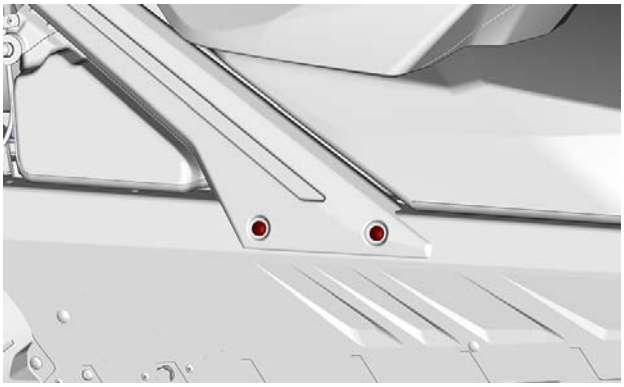
REAR BUMPER

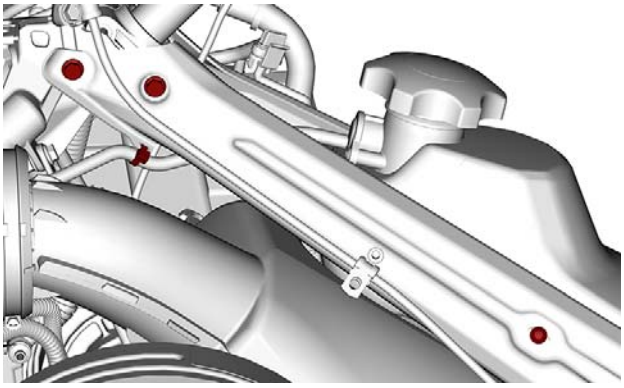
Refer to *BODY* subsection for rear bumper removal and installation procedure.

REAR FRAME MEMBER

Removing the Rear Frame Member

1. Refer to *BODY* subsection to remove the following:
   – Seat
   – Upper body module
   – Rear console.
2. Remove fasteners as per the following illustrations.


mmr2017-052-001


mmr2017-052-002

3. Remove rear frame member.

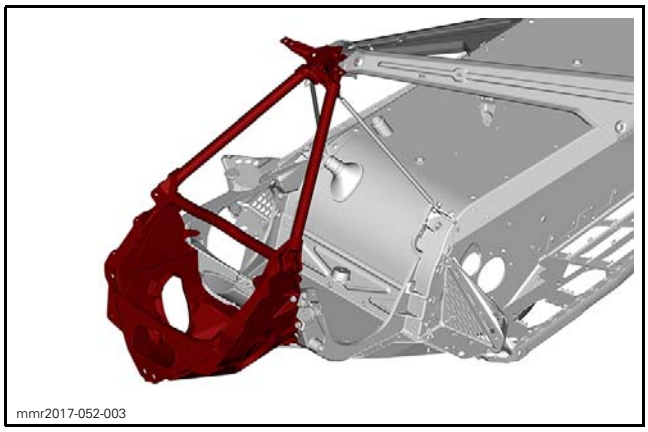
Installing the Rear Frame Member

The installation is the reverse of the removal procedure. However, pay attention to the following.

NOTE: Install all screws and nuts before tightening them.

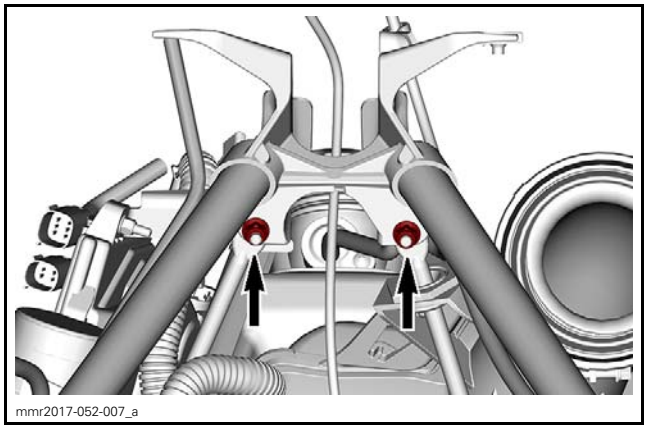
Refer to exploded view for proper tightening torque.

FRONT SUSPENSION MODULE

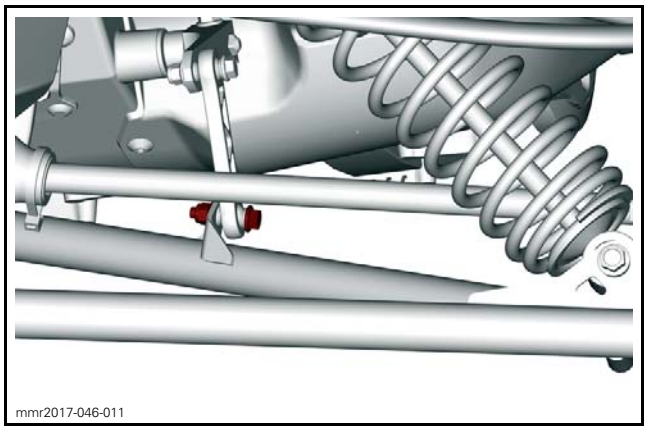

mmr2017-052-003

Removing the Front Suspension Module

1. Lift front of vehicle until skis are off the ground.
2. Place a wooden box under the engine module to support the frame securely.
3. Refer to the appropriate subsection and remove:
   – Engine
   – Steering column.
4. Detach the brake hose clamp next of the upper steering column support.
5. Detach side frame members from upper steering column support.


mmr2017-052-007_a

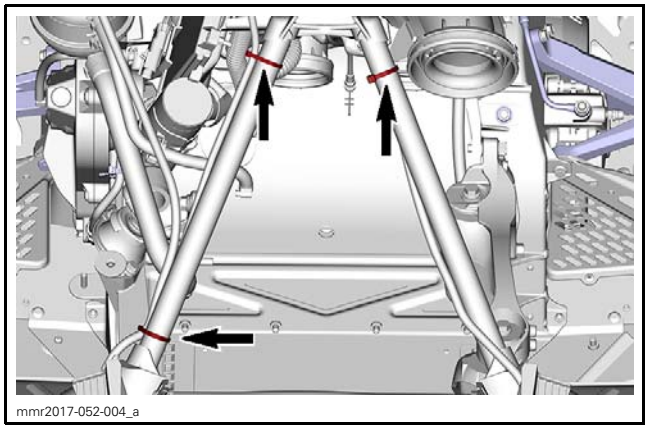
6. Remove the front suspension assembly in the following manner:
   6.1 Detach tie-rod ends from steering column.
   6.2 Remove upper shock absorber screws.
   6.3 Remove screw that secures stabilizer link to lower arm.


mmr2017-046-011

   6.4 Remove upper and lower suspension arms screws and nuts. Refer to *FRONT SUSPENSION* subsection.
   6.5 Remove front suspension assembly from vehicle.
7. Remove the stabilizer bar. Refer to *FRONT SUSPENSION* subsection.
8. Remove the front bottom pan. Refer to *BODY* subsection.

NOTE: Keep the front bumper installed on front bottom pan.

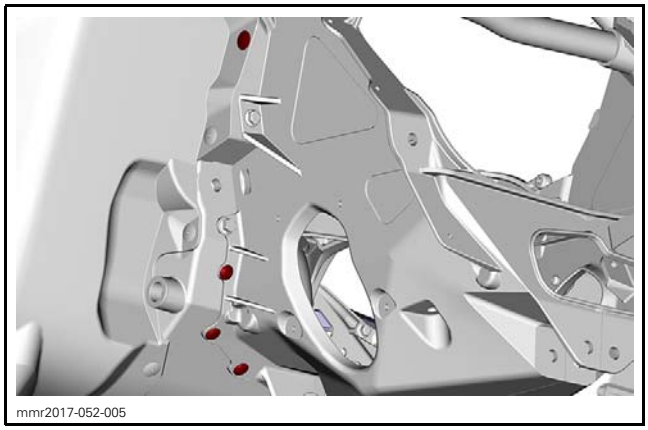
9. Cut locking ties that secure vents and electrical harness to module tubes.


mmr2017-052-004_a

10. If the suspension module needs to be replaced, remove:
    – Steering rack / lower steering column support
    – Tie rod boots.
    Refer to *STEERING SYSTEM* subsection.
11. Remove the lower retaining fasteners.

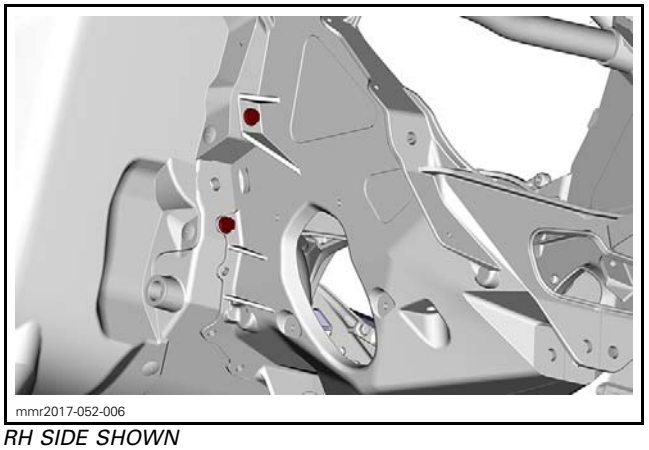
For riveted models, refer to *REMOVING A POP RIVET* at the beginning of this subsection for procedure.

NOTICE **It is highly recommended to support the frame locally around a Hemlock rivet when punching its nail out.**


mmr2017-052-005

RH SIDE SHOWN

12. Remove the upper retaining fasteners.


mmr2017-052-006

RH SIDE SHOWN

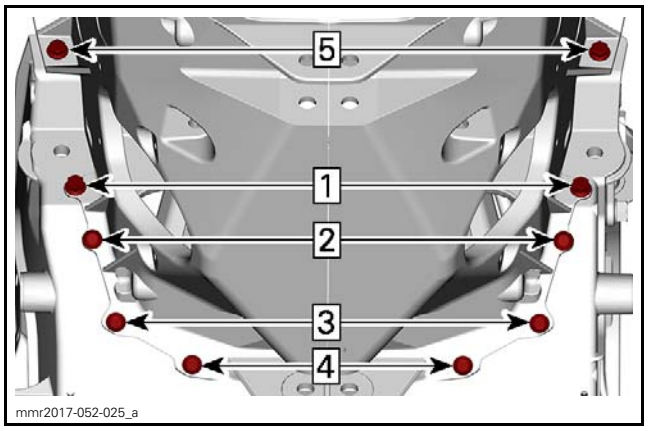
13. Remove the front suspension module.

Installing the Front Suspension Module

The installation is the reverse of the removal procedure. However, pay attention to the following.

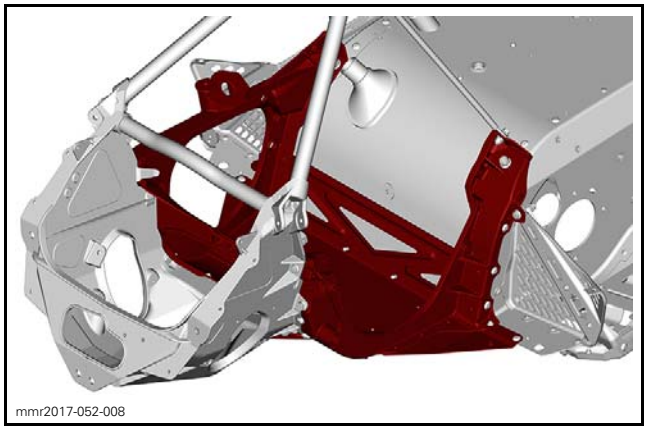
Refer to exploded view for proper tightening torque.

Install fasteners as per the following sequence.



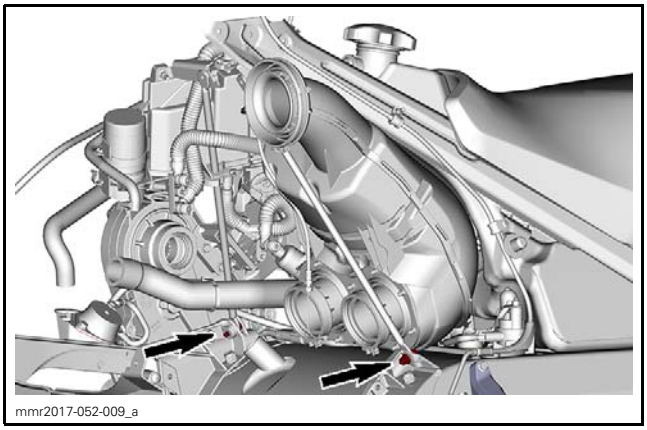
mmr2017-052-025_a

ENGINE MODULE

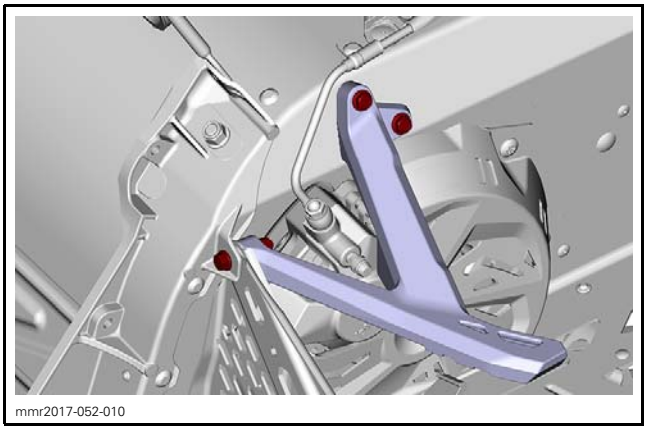

mmr2017-052-008

Removing the Engine Module

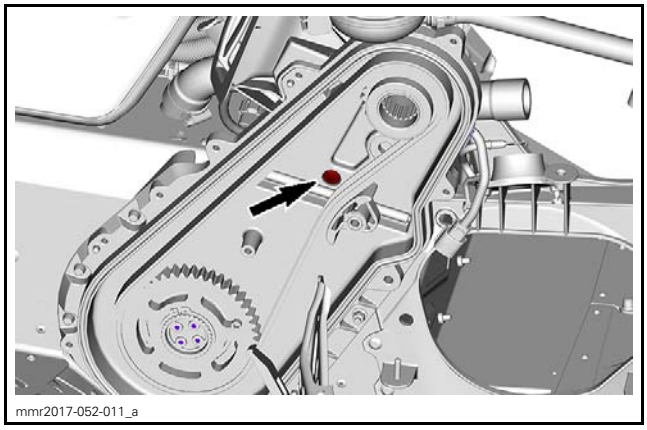
1. Remove the *FRONT SUSPENSION MODULE*, see procedure in this subsection.
2. Remove RH side bottom pan. Refer to *BODY* subsection.
3. Remove the RH side engine rubber mount. Refer to *ENGINE*.subsection.
4. Detach side frame members from engine module.


mmr2017-052-009_a

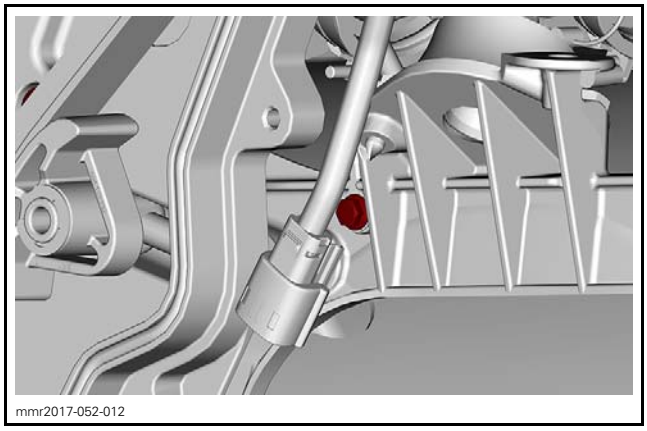
5. Remove toe hook fasteners, if equipped.


mmr2017-052-010

6. Remove the chaincase cover. Refer to *CHAINCASE* subsection.
7. Remove the screw that secure the chaincase to the engine module.

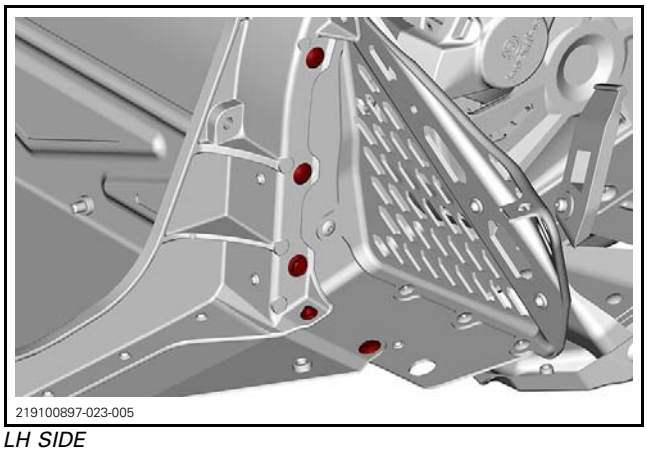

mmr2017-052-011_a

8. Remove the electrical ground screw located between the chaincase and the engine mount.

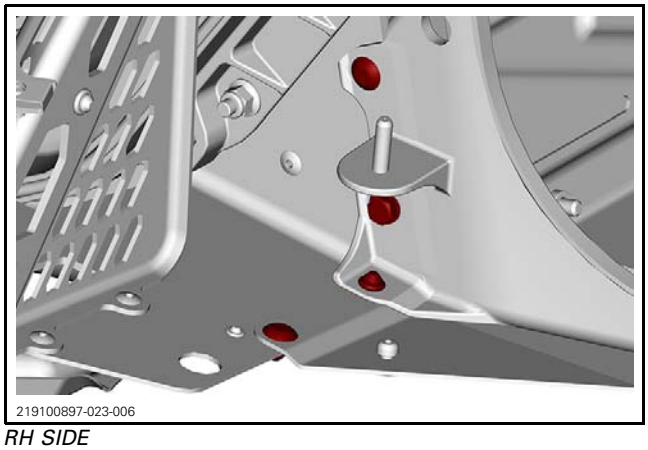

mmr2017-052-012

9. Remove rivets and bolts as per the following illustrations. Refer to *REMOVING A POP RIVET* in this subsection.

NOTICE **It is highly recommended to support the frame locally around a Hemlock rivet when punching its nail out.**

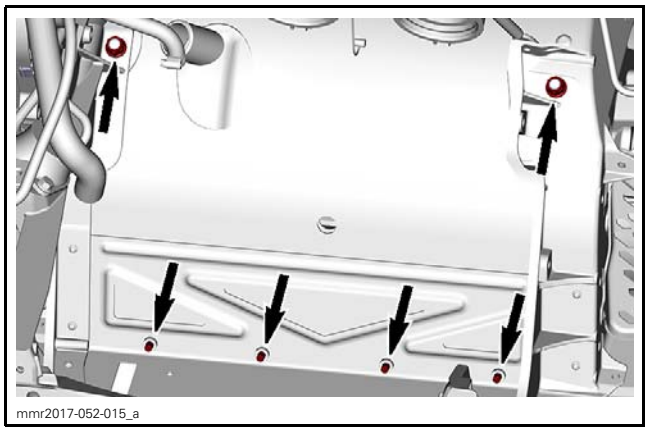

219100897-023-005

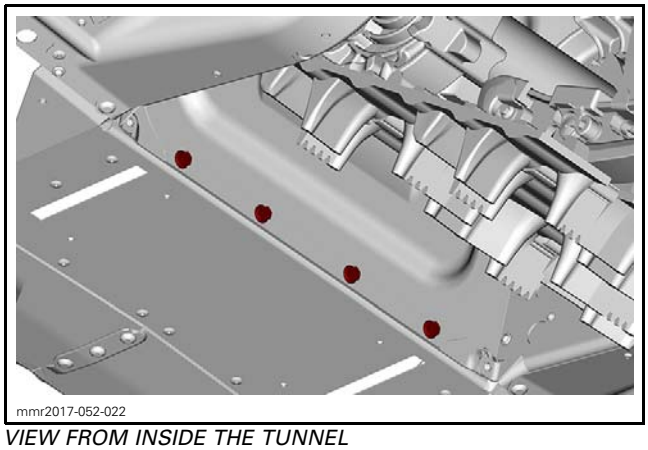
LH SIDE



RH SIDE

10. Remove nuts and screws securing the engine module to the tunnel.





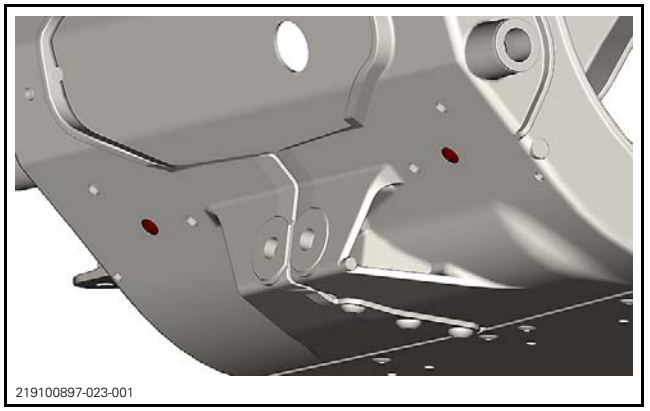
VIEW FROM INSIDE THE TUNNEL

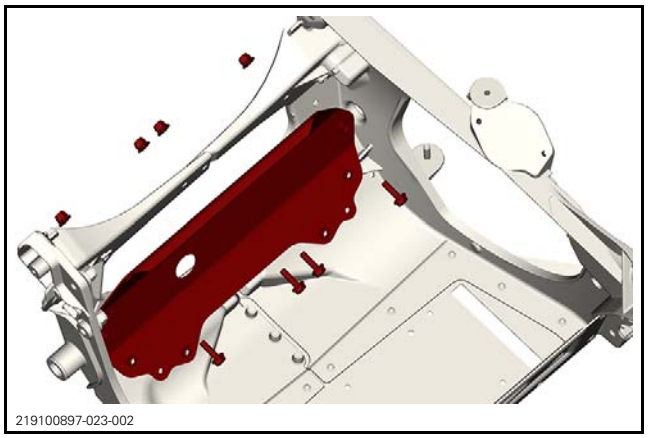
11. Remove the engine module.

If only one of the two side members is replaced:

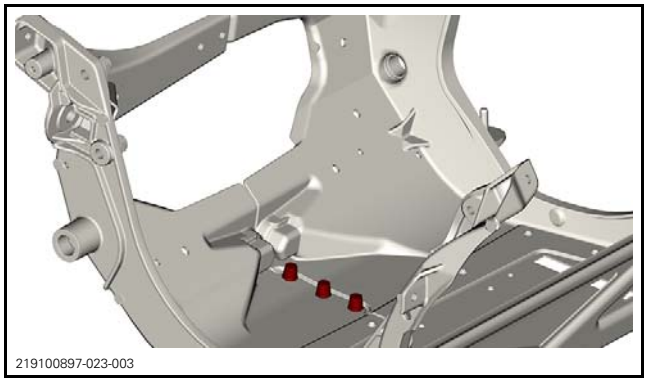
Models with Reinforcement Plate

Remove the rivets and bolts retaining the reinforcement plate.



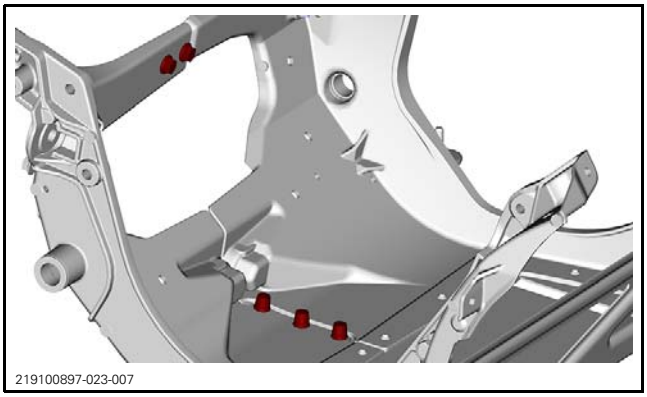


Remove HUCK rivets as per the procedure in this subsection.



Models without Reinforcement Plate

Remove HUCK rivets and bolts as per the procedure in this subsection.


219100897-023-007

Engine Module Installation

The installation is the reverse of the removal procedure. However, pay attention to the following.

Assemble LH and RH side frame member before to fix on the tunnel module.

If the HUCK rivets were removed, replace with the following parts.

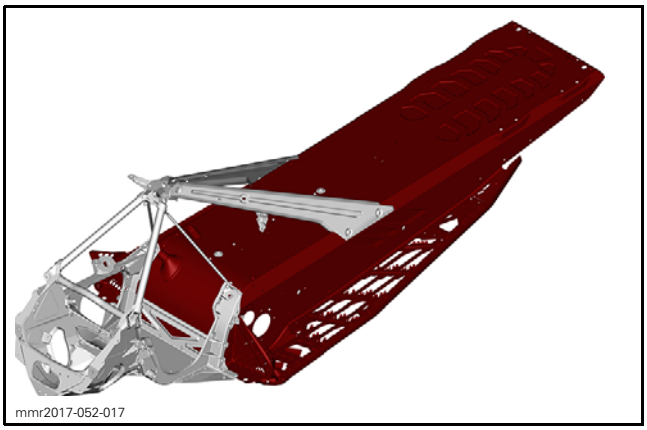
NEW FASTENERS	
Torx screw M6 x 20	(P/N 250000712)
Hexagonal flanged elastic stop nut M6	(P/N 233261414)

NOTE: Install the 3 bottom screws with heads downwards and the 2 upper screws with heads towards the engine.

Install all screws and rivets in there hole (including reinforcement fasteners) before tightening and riveting.

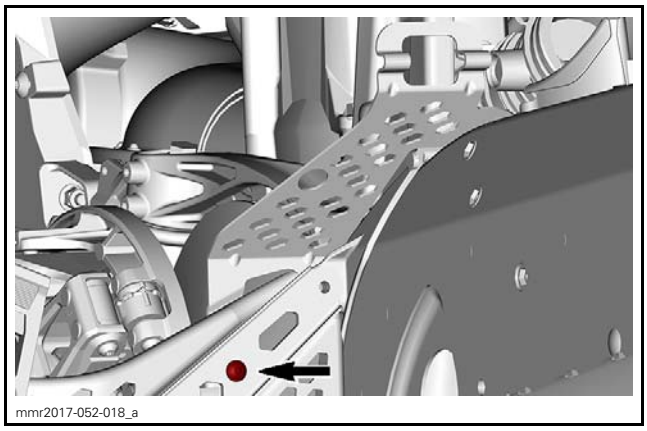
Refer to exploded view for proper tightening torque. Use standard tightening torque when not specified.

TUNNEL MODULE

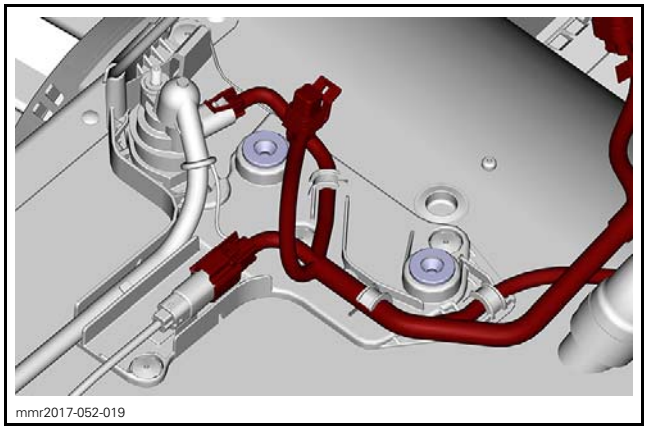

mmr2017-052-017

Removing the Tunnel Module

1. Drain cooling system, Refer to *COOLING SYSTEM DRAINING* in *PERIODIC MAINTENANCE PROCEDURES* subsection.
2. Place a wooden box under the engine module to support the frame.
3. Refer to the appropriate subsection and remove:
   - Driven pulley and countershaft
   - Fuel tank
   - Primary air intake silencer
   - LH bottom pan
   - Track
4. Remove the remaining drive belt guard bracket screw.

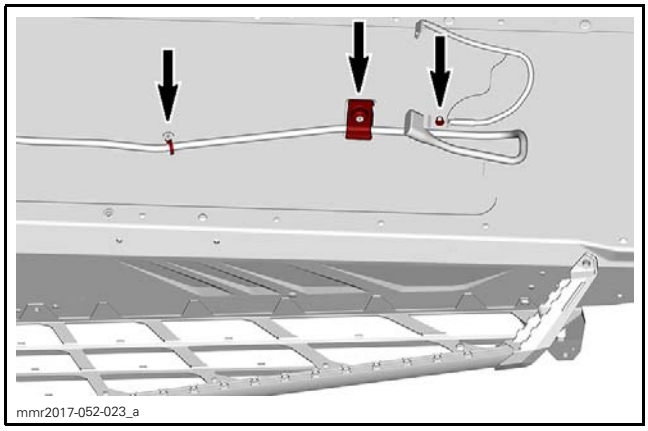

mmr2017-052-018_a

5. Disconnect the starter cable from the solenoid, if equipped.
6. Disconnect and remove the electric harness from the plastic bracket.

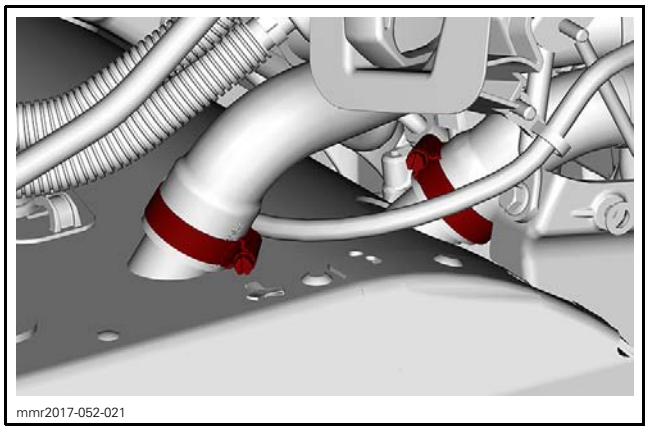

mmr2017-052-019

7. If the tunnel is replaced, remove:
   - Chaincase
   - The plastic bracket
   - Devices that retain the battery cable, if equipped

– Rear bumper
– Taillight
– Snowguard.

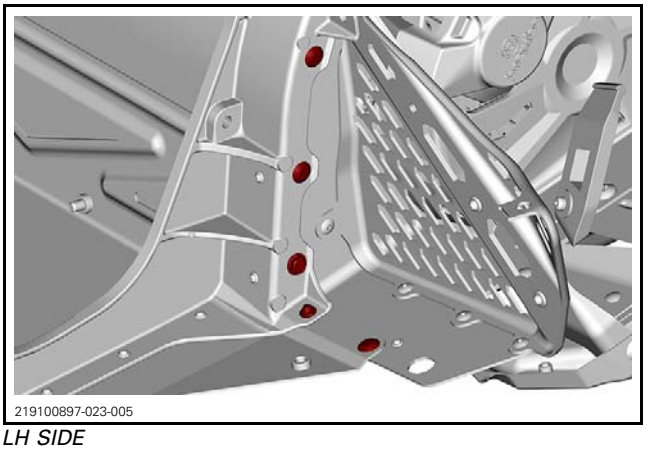

mmr2017-052-023_a

8. Move the plastic bracket, electrical harness, and fuel hoses aside to clear the tunnel.
9. Loosen the coolant hose clamps and disconnect hoses.

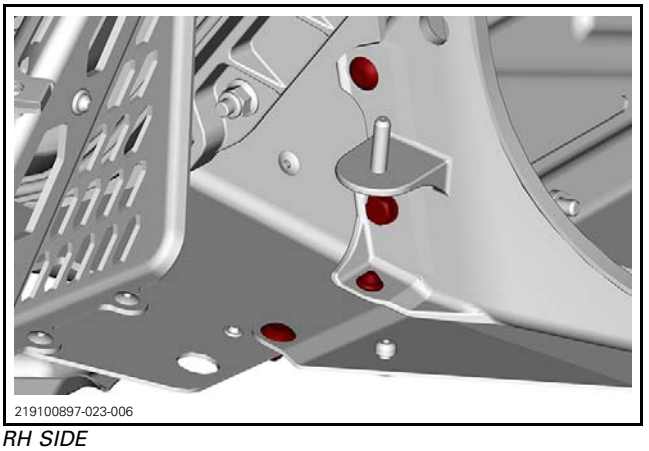

mmr2017-052-021

10. Remove rivets as per the following illustrations. Refer to *REMOVING A POP RIVET* in this subsection.

NOTICE **It is highly recommended to support the frame locally around a Hemlock rivet when punching its nail out.**

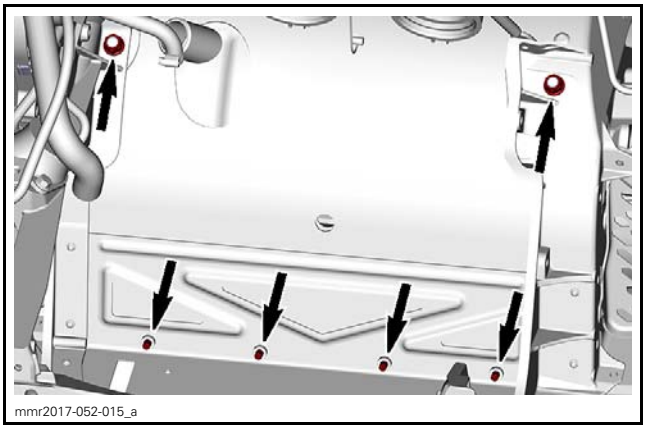

219100897-023-005

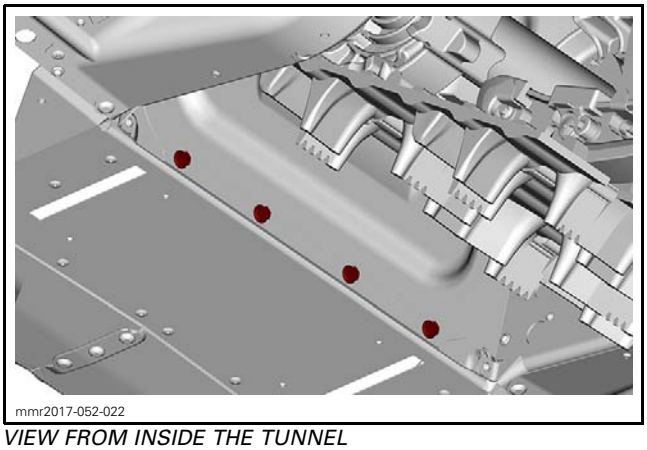
LH SIDE


219100897-023-006

RH SIDE

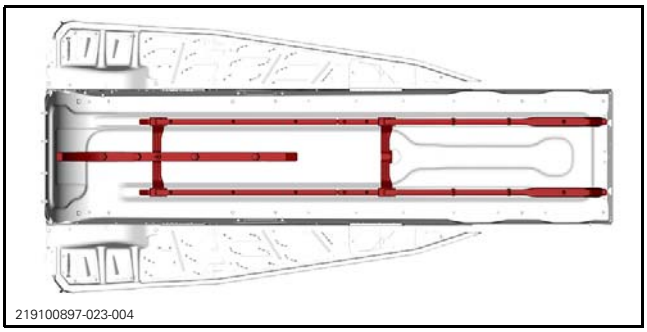
11. Remove nuts and screws securing the engine module to the tunnel.


mmr2017-052-015_a


mmr2017-052-022

VIEW FROM INSIDE THE TUNNEL

12. Separate the tunnel module from the rest of the frame.
13. Remove the tunnel protectors under the tunnel, if equipped.


219100897-023-004

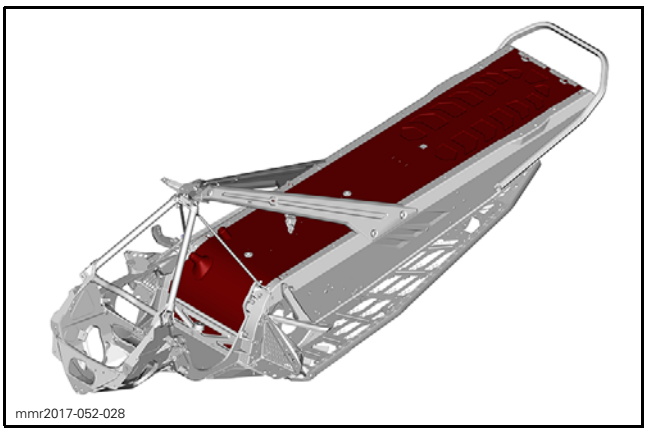
Installing the Tunnel Module

The installation is the reverse of the removal procedure. However, pay attention to the following.

Refer to exploded views or appropriate subsections for proper tightening torque.

Properly refill cooling system. Refer to *COOLING SYSTEM REFILL AND BLEEDING* in *PERIODIC MAINTENANCE PROCEDURES* subsection.

HEAT EXCHANGER


mmr2017-052-028

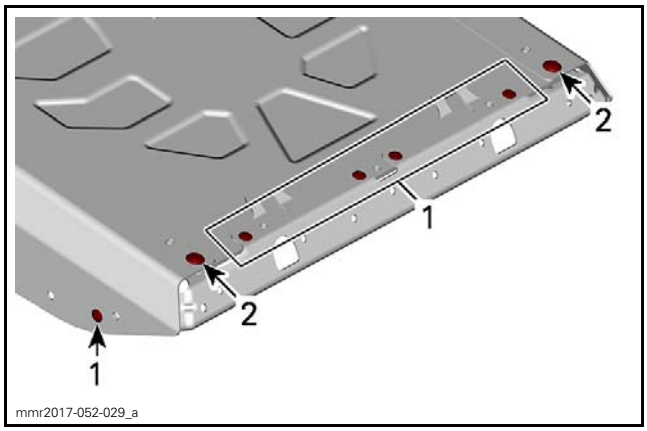
Replacing the Heat Exchanger

1. Remove the tunnel. Refer to the procedure in this subsection.

Do not remove the chaincase.

2. Remove the tunnel rear cap. Refer to *RIVETS* in this subsection.

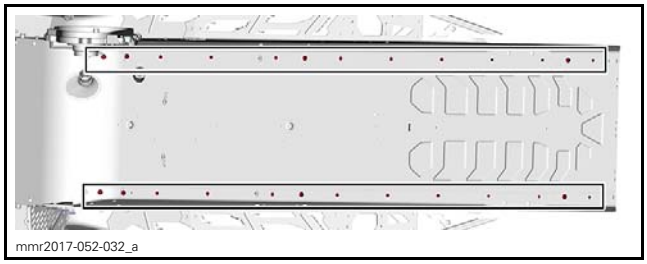
NOTICE **It is highly recommended to support the frame locally around a Hemlock rivet when punching its nail out.**

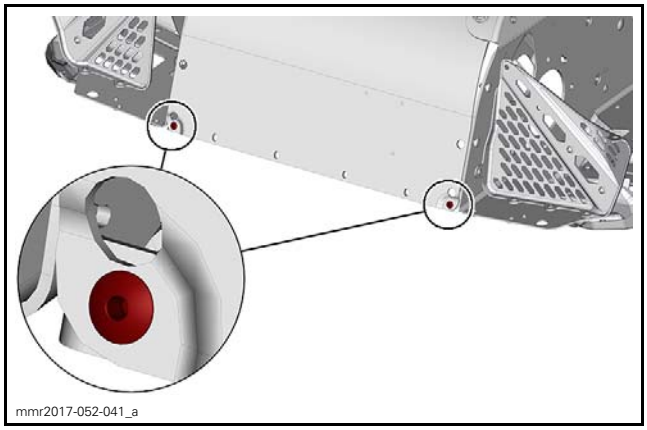


mmr2017-052-029_a

1. *Avibulb rivets (pop rivets)*
2. *Hemlock rivets (pop rivets)*

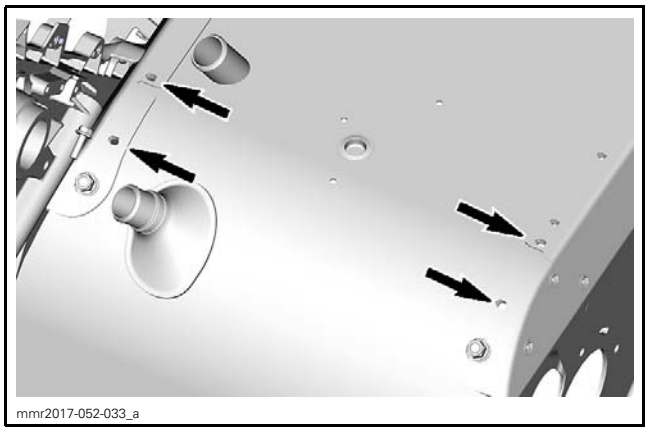
3. Remove the following rivets.


mmr2017-052-032_a

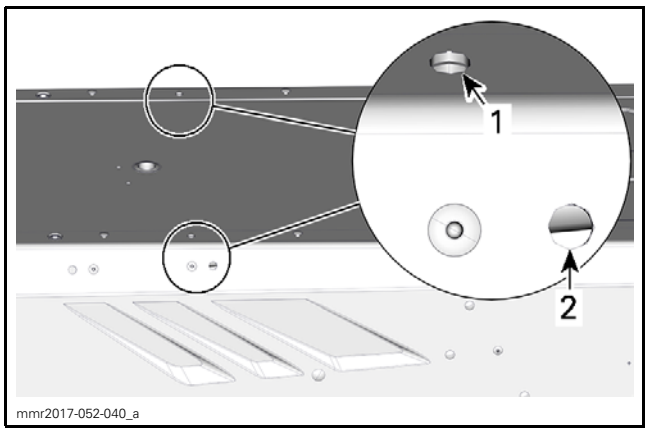

mmr2017-052-041_a

4. Position the new heat exchanger.
5. Install M6 screws and nuts loosely in the Hemlock rivet holes.

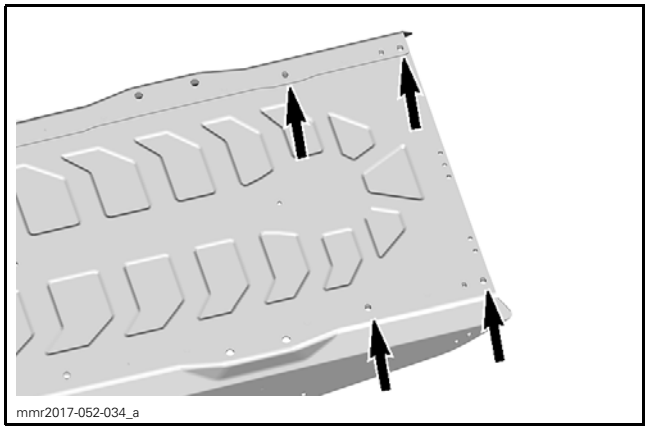
NOTE: M6 screws will not fit in self-piercing rivet holes.



FRONT RIVET HOLES



MID-LENTGH RIVET HOLES
1. *Install M6 screws and nuts here*
2. *Rear mounting hole for rear frame member*



REAR RIVET HOLES

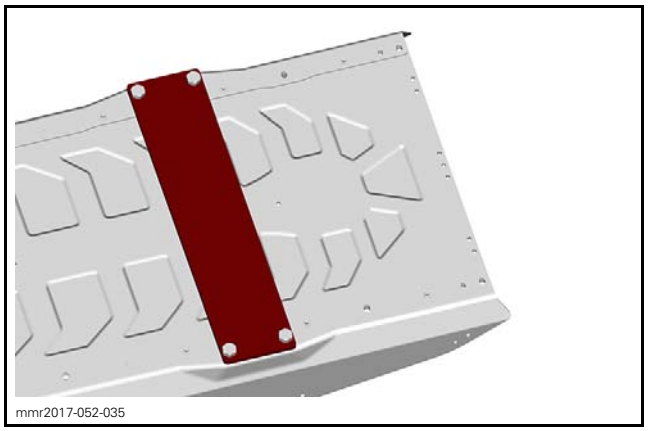
6. Install the gauge kit loosely with the appropriate screws, as per the following illustrations.

NOTICE It is imperative to use the gauge kit and to follow each steps of this procedure to avoid drive axle misalignment.

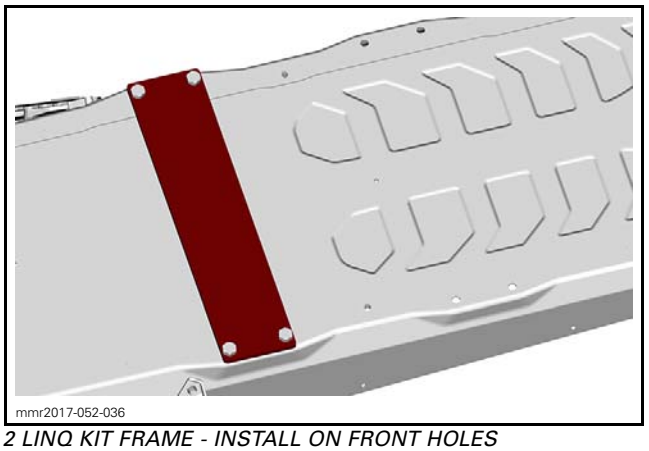
REQUIRED TOOL	
RADIATOR INSTALLATION GAUGES (P/N 529 036 422)	

CYLINDRICAL GAUGES LENGHT	
Rear suspension hole gauges	419.2 mm (16-1/2 in)
Tail gauge	426.4 mm (16-25/32 in)

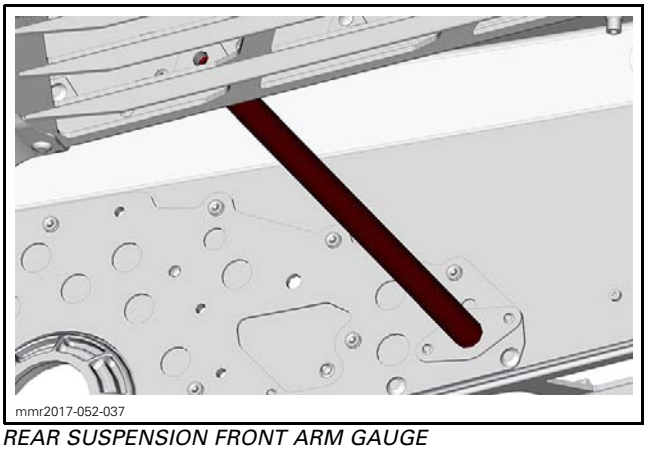
The gauge kit fits all tunnel sizes.



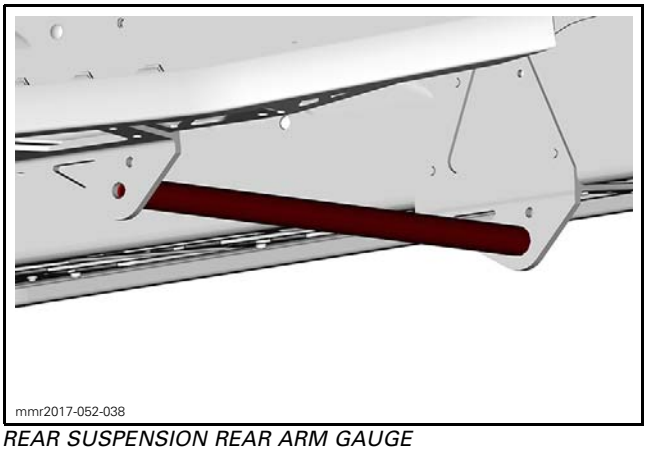
1 LINQ KIT FRAME



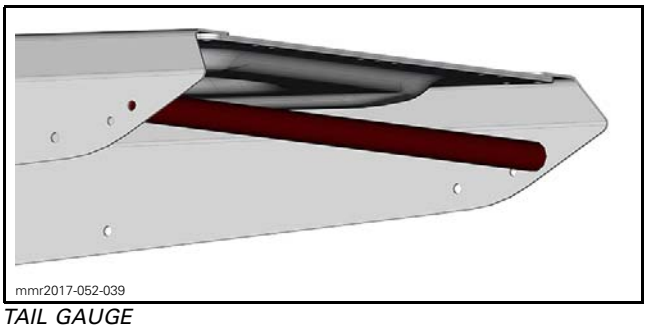
2 LINQ KIT FRAME - INSTALL ON FRONT HOLES


mmr2017-052-037

REAR SUSPENSION FRONT ARM GAUGE


mmr2017-052-038

REAR SUSPENSION REAR ARM GAUGE


mmr2017-052-039

TAIL GAUGE

7. Install the drive axle. Refer to *DRIVE AXLE* subsection.

NOTE: It is not required to install the chain and the brake disc.

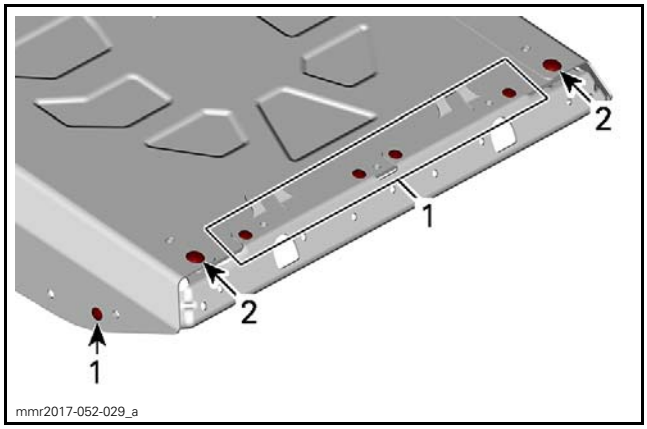
8. Tighten gauges and M6 screws with standard torque.
9. Enlarge self-piercing rivet holes.

REQUIRED TOOL
Drill bit6.35 mm (1/4 in)

10. Install Hemlock rivets in enlarged holes.

REQUIRED PARTS	
Hemlock rivets	293150119

11. Install the tunnel rear cap.



mmr2017-052-029_a

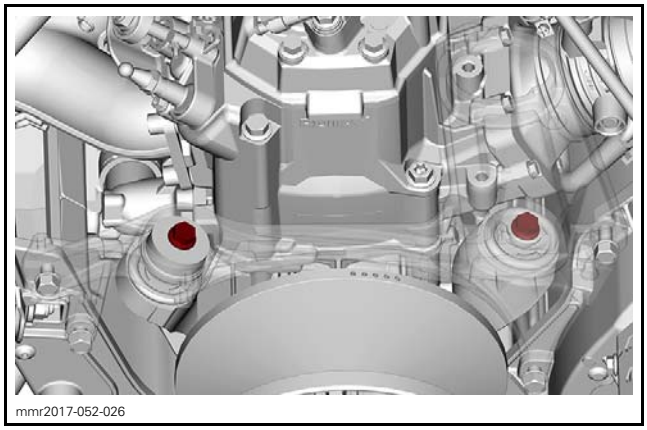
1. Avibulb 4.76 mm (3/16 in) rivets
2. Hemlock 6.4 mm (1/4 in) rivets

12. Remove the M6 screws and nuts, and install Hemlocks rivets.
13. Remove all gauges and the drive axle.
14. Reassemble the vehicle.

COUNTERSHAFT BEARING SUPPORT

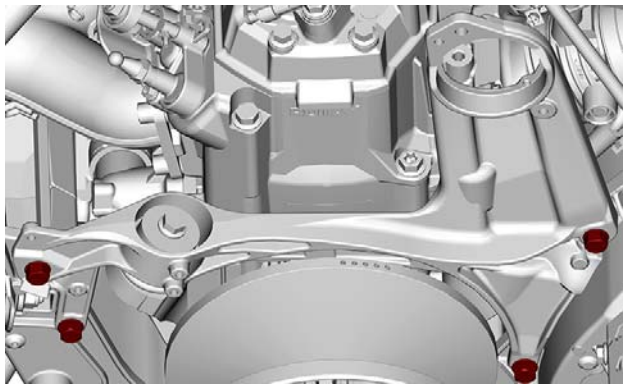
Removing the Countershaft Bearing Support

1. Refer to the appropriate subsection and remove:
   – Driven pulley and countershaft
   – LH side bottom pan.
2. Disconnect the Rave valve cable. Refer to *RAVE* subsection in *ENGINE*.
3. Install a shim between the engine bottom end and the engine module.
4. Remove both engine mount screws.


mmr2017-052-026

FRAME MEMBER IS TRANSPARENT FOR CLARITY

5. Remove countershaft bearing support screws.


mmr2017-052-027

6. Remove the countershaft bearing support.

Installing the Countershaft Bearing Support

The installation is the reverse of the removal procedure. However, pay attention to the following.

IF INSTALLED ON THE SAME FRAME MEMBER	
M8 Hexagonal flange screw (all fasteners)	207683044
IF INSTALLED ON A NEW FRAME MEMBER	
M8 Hexagonal flange self-tapping screw (at rear of bearing support)	210283040

Refer to exploded view for tightening torque and sequence.

VEHICLES - EFI

COOLING SYSTEM			
Coolant	Type	Recommended	XPS EXTENDED LIFE PRE-MIXED COOLANT
		Alternative, or if not available	Ethyl glycol and distilled water (50%/50%) or coolant specifically formulated for aluminum engines.
	Quantity	MXZ Sport	6.0 L (6.3 qt (U.S. liq.))
		Renegade Sport	6.2 L (6.6 qt (U.S. liq.))
		Backcountry Sport Tundra Sport	7.2 L (7.6 qt (U.S. liq.))
		Expedition Sport Skandic Sport / WT	7.4 L (7.8 qt (U.S. liq.))
		Tundra LT	8.6 L (9.1 qt (U.S. liq.))
Radiator cap opening pressure			110 kPa (16 PSI)

LUBRICATION SYSTEM		
Oil injection pump type		Mechanical oil injection pump
Injection oil	Type	2T Synthetic blend oil (semi-synthetic)
	Quantity	3.4 L (3.6 qt (U.S. liq.))

FUEL SYSTEM		
Fuel pump		In-tank electrical
Fuel	Type	Premium unleaded gasoline (fuel which may contain up to 10% MAX ethanol
	Octane rating	87 Pump Posted AKI (R+M)/2) 92 RON
Fuel tank capacity	All except Skandic	36 L (9.5 U.S. gal.)
	Skandic	42 L (11.1 U.S. gal.)

Midwest Manuals
Green Manuals
Paperless Manuals For a Better Tomorrow www.green-manuals.com
If you bought this manual from any other seller please leave them NEGATIVE feedback and notify us at bestshopmanuals@gmail.com

ELECTRICAL SYSTEM		
Battery		12 V, 18 A•h
Headlamp		2 x 60/55 W (H-13)
Taillight and stoplight	Single	0.14/2.6 W LED
	Double	2 x 2.6/3.5 W LED

ELECTRICAL SYSTEM		
Fuses	F1: Battery	30 A
	F2: ECM / Engine / Fuel Pump / Starter	20 A
	F3: Cluster	15 A
	F4: Lights / Accessory	25 A
Relays	RY1: Main	-
	RY2: Lights / Accessory	-

DRIVE SYSTEM - CHAINCASE			
Chaincase oil (if equipped)	Type	Recommended	XPS Synthetic chaincase oil
		Alternative, or if not available	75W140 gear oil that meets the API GL-5 specification
	Quantity		350 ml (12 U.S. oz)
Chain drive ratio	Expedition Sport		21/53
	Backcountry Sport		23/51
	MXZ Sport(600R)(1.25" track profile) Renegade Sport		23/45
	Skandic Sport Tundra Sport / LT		19/53
	Skandic WT		21/51
Chain	Pitch		9.530 mm (.375 in)
	Type		Silent
	Links qty	Skandic WT	100
		MXZ Sport Renegade Sport	108
		Backcountry Sport Expedition Sport Skandic Sport Tundra Sport / LT	116

DRIVE SYSTEM - GEARBOX			
Gearbox oil	Type	Recommended	XPS Synchromesh Transmission Synthetic Oil
		Alternative, or if not available	75W140 gear oil that meets the API GL-5 specification
	Capacity		900 ml (30.4 U.S. oz)
Gearbox ratio		Low	4.62:1
		High	2.57:1

DRIVE SYSTEM - DRIVE AND DRIVEN PULLEYS			
Drive pulley	Type		pDrive LC
Drive pulley calibration	Clutch engagement (RPM)	Expedition Sport Skandic Tundra	2300 ± 100 RPM
		Backcountry Sport MXZ Sport Renegade Sport	3200 ± 100 RPM
Drive pulley calibration	Spring color code	MXZ Sport Renegade Sport	Blue/Blue
		Expedition Sport Skandic Tundra	Yellow/Yellow
		Backcountry Sport	Blue/Yellow
	Spring length	Blue/Blue	108 mm (4.252 in)
		Blue/Yellow	123 mm (4.843 in)
		Yellow/Yellow	105.6 mm (4.157 in)
Drive pulley calibration	Screw length		14 mm (.551 in)
	Ramp	Backcountry Sport MXZ Sport Renegade Sport	886
		Expedition Sport Skandic Tundra	887
Driven pulley type	Type		QRS
	Spring color code	Except Backcountry Sport	Green
		Backcountry Sport	Black
	Spring length	Green/Green	98.5 mm (3.878 in)
		Black	88.8 mm (3.496 in)
	Spring preload		0
	Cam angle		40° - XTI
Pulley distance	Z		Not adjustable 20.9 mm (.823 in)
	X		Not adjustable 41.1 mm ± 1.8 mm (1.618 in ± .071 in)
Offset	Y - X	New	Not adjustable 3 mm (.118 in)
		After break-in	Not adjustable 2 mm ± .5 mm (.079 in ± .02 in)
Drive belt	Width		38.3 mm (1.508 in)
	Wear limit		35.9 mm (1.413 in)
Drive sprocket number of teeth			8

DRIVE SYSTEM - TRACK			
Track	Width	MXZ Sport Renegade Sport Backcountry Sport	381 mm (15 in)
		Expedition Sport Tundra Sport / LT	406.4 mm (16 in)
		Skandic	500 mm (20 in)
	Length	MXZ Sport	326.9 cm (129 in)
		Expedition Sport	392.3 cm (154 in)
		Renegade Sport	348.7 cm (137 in)
		Backcountry Sport Tundra Sport	370.5 cm (146 in)
		Skandic Sport / WT Tundra LT	392 cm (154 in)
Track	Profile height	MXZ Sport Renegade Sport Skandic Sport	31.8 mm (1.25 in) OR 38 mm (1.5 in)
		Backcountry Sport Tundra Sport	40.6 mm (1.6 in)
		Expedition Sport Skandic WT Tundra LT	38.1 mm (1.5 in)
Track adjustment	Deflection	Expedition	4 cm to 5 cm (1.57 in to 1.97 in)
		All other models	3.2 cm (1.26 in)
	Force	Expedition	7.3 kgf (16 lbf)
		All other models	6.0 kgf to 8.5 kgf (13 lbf to 19 lbf)

BRAKE SYSTEM		
Brake	Type	Single 200 mm cross drilled carbon steel disc
Brake fluid	Type	DOT 4
	Quantity	65 ml (2.2 U.S. oz)
Caliper		Fixed twin pistons (2 x 40mm)
Brake pad material		Organic
Minimum brake pad thickness (includes backing plate)		5 mm (.2 in)
Brake lining minimum thickness		1 mm (.039 in)
Minimum brake disc thickness		4.5 mm (.177 in)
Maximum brake disc warpage		0.25 mm (.01 in)

FRONT SUSPENSION		
Suspension type	Tundra models Skandic models	LTS
	All other models	RAS 3
Suspension maximum travel	MXZ Sport Backcountry Sport Renegade Sport	220 mm (8.7 in)
	Expedition Sport	210 mm (8.3 in)
	All Tundra All Skandic	150 mm (5.9 in)
Shock absorber type		Motion Control
Stabilizer bar type		Link

REAR SUSPENSION			
Suspension type		Expedition Sport Skandic Sport / WT Tundra LT	SC-5U
		MXZ Sport Renegade Sport	SC-5M
		Backcountry Sport Tundra Sport	cMotion
Suspension maximum travel Measured at rear arm		MXZ Sport	250 mm (9.8 in)
		Backcountry Sport Expedition Sport Tundra LT Skandic Sport / WT	239 mm (9.4 in)
		Renegade Sport Tundra Sport	245 mm (9.6 in)
Shock absorber type	Center		Motion control
	Rear	Renegade Sport Backcountry Sport Expedition Sport Skandic Sport / WT Tundra Sport / LT	HPG
		MXZ Sport	Motion Control
Stopper strap standard position			3

STEERING SYSTEM		
Handlebar	Except Backcountry Sport	U-shaped with J-Hooks
	Backcountry Sport	U-shaped aluminum with J-Hooks

STEERING SYSTEM		
Riser block height	MXZ Sport Renegade Sport Backcountry Sport	120 mm (4.7 in)
	Expedition Sport Skandic Tundra	145 mm (5.7 in)
Ski type	MXZ Sport Renegade Sport	Pilot 5.7
	Backcountry Sport Expedition Sport Tundra	Pilot DS2
	Skandic	Pilot 7.4
Ski alignment		5 mm (.197 in) (toe-out)

WEIGHT AND DIMENSIONS			
Mass (dry)	600 EFI	Backcountry Sport	202 kg (446 lb)
		Expedition Sport	228 kg (502 lb)
		MXZ Sport	198 kg (437 lb)
		Renegade Sport	200 kg (442 lb)
		Skandic Sport	241 kg (531 lb)
		Skandic WT	265 kg (583 lb)
		Tundra LT	223 kg (491 lb)
		Tundra Sport	220 kg (484 lb)
Overall length		MXZ Sport	292.5 cm (115 in)
		Renegade Sport	303.8 cm (119.6 in)
		Backcountry Sport	317.4 cm (125 in)
		Expedition Sport	330.9 cm (130.3 in)
		Skandic WT	322.2 cm (126.9 in)
		Skandic Sport Tundra LT	325.9 cm (128.3 in)
		Tundra Sport	311 cm (122.4 in)
Overall width		MXZ Sport Renegade Sport	121.7 cm (47.9 in)
		Backcountry Sport	114 cm (44.9 in) to 118 cm (46.5 in)
		Expedition Sport	114 cm (44.9 in) to 118 cm (46.5 in)
		Skandic	108.9 cm (42.8 in)
		Tundra	99.4 cm (39.1 in)

WEIGHT AND DIMENSIONS		
Overall Height	MXZ Sport Renegade Sport	126.7 cm (49.9 in)
	Backcountry Sport	128.3 cm (50.5 in)
	Expedition Sport	151.3 cm (59.6 in)
	Skandic Sport Tundra Sport	136.9 cm (53.9 in)
	Skandic WT Tundra LT	151.3 cm (59.6 in)
Ski stance	MXZ Sport Renegade Sport	107.7 cm (42.4 in)
	Backcountry Sport Expedition Sport	97.5 cm (38.4 in) to 102 cm (40.2 in)
	Skandic	88.9 cm (35 in)
	Tundra	81.3 cm (32 in)

MATERIAL	
Frame	Aluminum
Plastic parts	See material code from part

VEHICLES - E-TEC

COOLING SYSTEM			
Coolant	Type	Recommended	XPS EXTENDED LIFE PRE-MIXED COOLANT
		Alternative, or if not available	Ethyl glycol and distilled water (50%/50%) or coolant specifically formulated for aluminum engines.
	Quantity	MXZ	6.2 L (6.6 qt (U.S. liq.))
		Grand Touring Renegade	6.5 L (6.9 qt (U.S. liq.))
		Backcountry 146" Freeride 146" Summit 146"	7.2 L (7.6 qt (U.S. liq.))
		Backcountry 154" Freeride 154" Summit 154"	7.4 L (7.8 qt (U.S. liq.))
		Freeride 165" Summit 165"	7.6 L (8 qt (U.S. liq.))
		Summit 175"	7.8 L (8.2 qt (U.S. liq.))
		Expedition LE / SE / SWT / Xtreme Skandic	8.6 L (9.1 qt (U.S. liq.))
Radiator cap opening pressure			110 kPa (16 PSI)

LUBRICATION SYSTEM		
Oil injection pump type		Electronic oil injection pump
Injection oil	Type	XPS 2T E-TEC synthetic oil
	Quantity	3.4 L (3.6 qt (U.S. liq.))

FUEL SYSTEM			
Fuel pump			In-tank electrical
Fuel	Type		Premium unleaded gasoline (fuel which may contain up to 10% MAX ethanol
	Octane rating	Inside North America	91 Pump Posted AKI (R+M)/2)
		Outside North America	95 (RON)
Fuel tank capacity	All models except Expedition and Skandic		36 L (9.5 U.S. gal.)
	Expedition Skandic		42 L (11.1 U.S. gal.)

ELECTRICAL SYSTEM			
Battery		Expedition LE / SE / SWT	12 V, 30 A•h
		Other models	12 V, 18 A•h
Headlamp			2 x 60/55 W (H-13)
Taillight and stoplight		Single	0.14 / 2.6 W LED
		Double	2 x 2.6 / 3.5 W LED
Fuses	All models except Expedition and Skandic	F1: Start / RER / Clock	5 A
		F2: Loads	25 A
		F3: Battery	30 A
		F4: Accessories	7.5 A
	Expedition Skandic	FA: Battery	40 A
		F1: Start / RER	5 A
		F2: Headlamps	20 A
		F3: Cluster	15 A
		F4: RFID / Starter	10 A
		F5: Accessories	15 A
		F6: Fan	15 A
		F7: ACS	15 A
		F8: Taillights / PAC	15 A

DRIVE SYSTEM - CHAINCASE			
Chaincase oil (if equipped)	Type	Recommended	XPS Synthetic chaincase oil
		Alternative, or if not available	75W140 gear oil that meets the API GL-5 specification
	Quantity		350 ml (12 U.S. oz)

DRIVE SYSTEM - CHAINCASE		
Chain drive ratio	MXZ (600R) (1.5" track profile)	21/43
	All Backcountry / X / X-RS (1.6" track profile) Renegade X (1.50" track profile)	21/45
	Backcountry (600R) Backcountry X / X-RS (2.0" track profile)	23/51
	Expedition LE / SE MXZ (600R)(1.25" track profile) All Renegade (600R) except Renegade X (1.50" track profile) Renegade X-RS (1.50" track profile) Grand Touring LTD Skandic WT	23/45
	Expedition SWT Skandic SWT	23/49
	MXZ X (850) except (1.25" track profile) MXZ X-RS (850) except (1.25" track profile) All Renegade (850) except Renegade X-RS (1.50" track profile)	25/45
	MXZ TNT (850) / X / X-RS (1.25" track profile)	27/45
	Expedition Xtreme	27/49
	Freeride 146" Summit 146" Summit X with Expert Package	21/49
	Summit SP 154" Freeride 154"	21/51
	Freeride 165" Summit SP 165" / 175"	21/53

DRIVE SYSTEM - CHAINCASE			
Chain	Pitch		9.530 mm (.375 in)
	Type		Silent
	Links qty	Expedition LE / SE Skandic WT	96
		Expedition SWT / Xtreme Skandic SWT	100
		Renegade X (600R) (1.5" track profile)	106
		MXZ X / X-RS / TNT (600R) (1.25" track profile) MXZ X (850) (1.5" track profile) MXZ X-RS (850) Renegade Adrenaline / X / Enduro (600R) (1.25" track profile) Renegade Adrenaline / X / X-RS / Enduro (850) Grand Touring LTD	108
		MXZ X / TNT (850) (1.25" track profile)	110
		Backcountry / X / X-RS (850) (1.6" track profile) MXZ X / X-RS (600R) (1.5" track profile)	112
		Freeride 146" Summit SP 146"	114
		Backcountry (600R) Backcountry X / X-RS (2" track profile) Backcountry X-RS (2.5" track profile) Summit 154" / 165" / 175" Freeride 154" / 165" Summit SP (600R) (2.5" track profile) Summit SP (600R) (3.0" track profile)	116

DRIVE SYSTEM - GEARBOX			
Gearbox oil	Type	Recommended	XPS Synchromesh Transmission Synthetic Oil
		Alternative, or if not available	75W140 gear oil that meets the API GL-5 specification
	Capacity		900 ml (30.4 U.S. oz)

DRIVE SYSTEM - GEARBOX			
Gearbox ratio	600R	Low	3.87:1
		High	2.15:1
	850	Low	3.59:1
		High	2.0:1

DRIVE SYSTEM - DRIVE AND DRIVEN PULLEYS			
Drive pulley	Type		pDrive
Drive pulley calibration	Clutch engagement (RPM)	All models equipped with a 600R E-TEC	3400 ± 100 RPM
		Renegade Adrenaline 850 Renegade Enduro 850 Renegade X 850 Renegade X-RS	2900 ± 100 RPM
		Summit 175" (High Altitude Calibration)	3900 ± 100 RPM
		MXZ TNT 850 E-TEC MXZ X 850 MXZ X-RS 850	3200 ± 100 RPM
		Backcountry 850 Backcountry X Backcountry X-RS Summit X with Expert Package (Sea level calibration)	3300 ± 100 RPM
		Summit X with Expert Package (High altitude calibration)	3600 ± 100 RPM
		All others	3800 ± 100 RPM

DRIVE SYSTEM - DRIVE AND DRIVEN PULLEYS			
Drive pulley calibration	Spring color code	MXZ Renegade series (600R)	Blue/Blue
		Renegade series (850) Expedition LE / SE / SWT Grand Touring LTD Skandic WT / SWT	Yellow/Blue
		Backcountry (600R) Freeride (High Altitude Calibration) Summit 146" / 154" / 165" (High Altitude Calibration)	Blue/Violet
		Backcountry (850) Backcountry X / X-RS Expedition Xtreme Freeride (Sea Level Calibration) Summit 146" / 154" / 165" / 175" (Sea Level Calibration)	Blue/Yellow
		Summit 175" (High Altitude Calibration)	Violet/White
	Spring length	Blue/Blue	99.8 mm (3.929 in)
		Violet/White	98.5 mm (3.878 in)
		Blue/Yellow	115.1 mm (4.531 in)
		Blue/Violet	100.3 mm (3.949 in)
		Yellow/Blue	90.7 mm (3.571 in)

DRIVE SYSTEM - DRIVE AND DRIVEN PULLEYS			
Drive pulley calibration	Screw length		14 mm (.551 in)
	Ramp	Grand Touring LTD	901
		Expedition LE / SE / SWT Skandic WT / SWT	971
		Expedition Xtreme	982
		Backcountry (600R) Summit (600R) (EUR)	951
		All MXZ All Renegade	968
		Backcountry (850) Backcountry X / X-RS	990
		Freeride (High Altitude Calibration)	965
		Freeride (Sea Level Calibration)	990
		Summit (High Altitude Calibration)	965
		Summit (Sea Level Calibration)	990
Drive pulley calibration	Clicker position	Backcountry / X / X-RS Summit Freeride (Sea Level Calibration)	4
		All other models	3

DRIVE SYSTEM - DRIVE AND DRIVEN PULLEYS			
Driven pulley type	Type		QRS
	Spring color code	Grand Touring LTD MXZ Renegade	Green/Green
		Backcountry / X / X-RS Expedition Freeride (Sea level calibration) Summit (Sea level calibration) Skandic WT / SWT	Black
		Freeride (High altitude calibration) Summit (High altitude calibration)	Blue/Blue
	Spring length	Blue/Blue	124.3 mm (4.894 in)
		Green/Green	98.5 mm (3.878 in)
		Black	88.8 mm (3.496 in)
	Spring preload		0
	Cam angle	MXZ (850)	45°/42°
		MXZ (600R) Renegade (600R) Grand Touring LTD	44°
		Renegade (850)	44°/42°
		Backcountry (850) Backcountry X / X-RS Freeride 146" Summit 146" (850)	42°/38° - XTI
		Expedition Xtreme	42°/40° - XTI
		Backcountry (600R) Summit (600R)	46°/42° - XTI
		Freeride 154" / 165" Summit 154" (850) Summit 165" / 175" Expedition LE / SE / SWT Skandic WT / SWT	40° - XTIs
Pulley distance	Z		Not adjustable 20.9 mm (.823 in)
	X		Not adjustable 41.1 mm ± 1.8 mm (1.618 in ± .071 in)
Offset	Y - X	New	Not adjustable 3 mm (.118 in)
		After break-in	Not adjustable 2 mm ± .5 mm (.079 in ± .02 in)

DRIVE SYSTEM - DRIVE AND DRIVEN PULLEYS			
Drive belt	Width		38.3 mm (1.508 in)
	Wear limit		35.9 mm (1.413 in)
Drive sprocket number of teeth		Freeride 154" Freeride 165" Summit 154" Summit 165" Summit 175"	6
		All others models	8

DRIVE SYSTEM - TRACK			
Track	Width	All MXZ, Renegade and Backcountry (1.6" track Profile) Grand Touring LTD	381 mm (15 in)
		Backcountry (2.0" track profile) Freeride Summit	406 mm (16 in)
		Expedition LE / SE / SWT / Xtreme Skandic WT	500 mm (20 in)
		Expedition SWT Skandic SWT	600 mm (24 in)
	Length	All MXZ	326.9 cm (129 in)
		All Expedition All Skandic	392.3 cm (154 in)
		All Renegade Grand Touring LTD	348.7 cm (137 in)
		All Backcountry excluding X-RS	370.5 cm (146 in)
		Backcountry X-RS	370.8 cm (146 in) OR 391.2 cm (154 in)
		Summit	370.5 cm (146 in)
			392 cm (154 in)
			419 cm (165 in)
			444.5 cm (175 in)
		Freeride	348.7 cm (137 in)
			370.5 cm (146 in)
			392 cm (154 in)
			419 cm (165 in)

DRIVE SYSTEM - TRACK			
Track	Profile height	All MXZ All Renegade	31.8 mm (1.25 in) OR 38 mm (1.5 in)
		Backcountry Backcountry X Backcountry X-RS	40.6 mm (1.6 in) OR 50 mm (2 in) OR 63.5 mm (2.5 in)
		Grand Touring	31.8 mm (1.25 in)
		Expedition LE / SWT Skandic WT / SWT	38.1 mm (1.5 in)
		Expedition SE	38.1 mm (1.5 in) or 45.7 mm (1.8 in)
		Expedition Xtreme	45.7 mm (1.8 in)
		Freeride	63.5 mm (2.5 in) OR 76.2 mm (3 in)
		Summit	63.5 mm (2.5 in) OR 76.2 mm (3 in)
Track adjustment	Deflection	Expedition Skandic	4 cm to 5 cm (1.57 in to 1.97 in)
		All other models	3.2 cm (1.26 in)
	Force	Expedition Skandic	7.3 kgf (16 lbf)
		All other models	6.0 kgf to 8.5 kgf (13 lbf to 19 lbf)

BRAKE SYSTEM			
Brake	Type		Single 200 mm cross drilled carbon steel disc
Brake fluid	Type		DOT 4
	Quantity		65 ml (2.2 U.S. oz)
Caliper			Fixed twin pistons (2 x 40mm)
Brake pad material		Backcountry Expedition MXZ TNT Renegade Adrenaline Renegade Enduro Skandic	Organic
		Backcountry X / X-RS Freeride MXZ X / X-RS Renegade X / X-RS Summit	Ferrit
Minimum brake pad thickness (includes backing plate)			5 mm (.2 in)
Brake lining minimum thickness			1 mm (.039 in)
Minimum brake disc thickness			4.5 mm (.177 in)
Maximum brake disc warpage			0.25 mm (.01 in)

FRONT SUSPENSION		
Suspension type	Skandic	LTS
	All other models	RAS 3
Suspension maximum travel	MXZ X Renegade X	233 mm (9.2 in)
	MXZ TNT Renegade Adrenaline Backcountry Backcountry X Backcountry X-RS Renegade Enduro Grand Touring LTD Freeride 146"	220 mm (8.7 in)
	Expedition LE / SE / SWT / Xtreme	210 mm (8.3 in)
	Freeride 154" Freeride 165" All Summit	215 mm (8.5 in)
	MXZ X-RS Renegade X-RS MXZ 600R	255 mm (10 in)
	Skandic	150 mm (5.9 in)
Shock absorber type	MXZ X-RS Renegade X-RS Backcountry X-RS All Freeride	KYB PRO 36 R EA
	Expedition SE Grand Touring Summit SP	HPG
	MXZ (except X-RS) Renegade (except X-RS) Backcountry (except X-RS) Summit X Expedition Xtreme	HPG Plus
	Summit Expert	HPG Plus Kashima coated
	Expedition LE / SWT Skandic	Motion Control
Stabilizer bar type		Link

REAR SUSPENSION		
Suspension type	All Expedition All Skandic	SC-5U
	All MXZ All Renegade Grand Touring LTD	rMotion
	All Backcountry	cMotion
	All Summit All Freeride	tMotion

REAR SUSPENSION			
Suspension maximum travel Measured at rear arm		MXZ	272 mm (10.7 in)
		Renegade Grand Touring LTD	270 mm (10.6 in)
		Backcountry All Summit (except 175") All Freeride All Expedition All Skandic	239 mm (9.4 in)
		Summit 175"	242 mm (9.5 in)
Shock absorber type	Center	MXZ TNT MXZ X Renegade X Backcountry X Summit X Expedition Xtreme	HPG Plus
		Expedition SE Renegade Adrenaline Renegade Enduro Backcountry Grand Touring LTD Summit SP	HPG
		MXZ X-RS Renegade X-RS Backcountry X-RS All Freeride	KYB PRO 40 EA
		Expedition LE / SWT All Skandic	Motion control
	Rear	MXZ TNT Summit X	HPG Plus
		MXZ X Renegade X Renegade Backcountry X Expedition Xtreme Summit X with Expert Package	KYB PRO 36 EA
		Renegade Adrenaline Renegade Backcountry Summit SP Expedition LE / SWT All Skandic	HPG
		MXZ X-RS Renegade X-RS Backcountry X-RS All Freeride	KYB PRO 40 EA
		Renegade Enduro Expedition SE Grand Touring LTD	ACS (Air Controlled Suspension)

REAR SUSPENSION		
Stroke limiter standard position	Backcountry / X / X-RS Freeride Summit (except 175")	3
	Summit 175"	2
	MXZ Renegade	1

STEERING SYSTEM		
Handlebar	Grand Touring LTD	Aluminum U-shaped
	All Except Grand Touring	Aluminum U-shaped with J-Hooks
Riser block height	MXZ TNT Renegade Adrenaline Renegade Enduro Backcountry / X / X-RS Summit Expert	120 mm (4.7 in)
	Expedition SE MXZ X / X-RS Renegade X / X-RS Grand Touring LTD	Adjustable - 120 mm (4.7 in)
	Expedition LE / SWT / Xtreme All Skandic	145 mm (5.7 in)
	All Freeride All Summit (except Expert)	165 mm (6.5 in)
Ski type	MXZ TNT Renegade Adrenaline	Pilot 5.7
	Grand Touring LTD	Pilot 5.7 SL
	Renegade Enduro	Pilot TS
	MXZ X MXZ X-RS Renegade X Renegade X-RS	Pilot 5.7 Pilot TX (optional)
	All Backcountry Expedition Xtreme	Pilot DS2
	All Freeride All Summit	Pilot DS3
	Expedition LE / SE / SWT All Skandic	Pilot 7.4
Ski alignment		5 mm (.197 in) (toe-out)

WEIGHT AND DIMENSIONS			
Mass (dry)	600R	MXZ TNT	212 kg (467 lb)
		MXZ X (with Quick Adjust Suspension and ski Pilot TX)	223 kg (492 lb)
		MXZ X (without Quick Adjust Suspension and ski Pilot TX)	216 kg (476 lb)
		MXZ X-RS (without Quick Adjust Suspension and ski Pilot TX)	221 kg (487 lb)
		MXZ X-RS (with Quick Adjust Suspension and ski Pilot TX)	228 kg (503 lb)
		MXZ X-RS (with Quick Adjust Suspension and ski Pilot 5.7)	224 kg (494 lb)
		Backcountry	214 kg (471 lb)
		Renegade X (without Quick Adjust Suspension and ski Pilot TX)	216 kg (475 lb)
		Renegade X (with Quick Adjust Suspension and ski Pilot TX)	225 kg (496 lb)
		Renegade Enduro	231 kg (508 lb)
		Summit SP 146"	213 kg (470 lb)
		Summit SP 154" (electric start)	210 kg (463 lb)
		Summit SP 154" (SHOT and manual start)	202 kg (445 lb)
		Renegade Adrenaline	217 kg (478 lb)
		Grand Touring LTD	252 kg (554 lb)
		Expedition LE	280 kg (616 lb)
		Expedition SE / SWT	290 kg (639.3 lb)
		Skandic WT	275 kg (606.3 lb)
		Skandic SWT	287 kg (632.7 lb)

WEIGHT AND DIMENSIONS			
Mass (dry)	850	Expedition Xtreme	271 kg (595 lb)
		MXZ TNT	215 kg (474 lb)
		MXZ X (with Quick Adjust Suspension and ski Pilot TX)	226 kg (498 lb)
		MXZ X (without Quick Adjust Suspension and ski Pilot TX)	219 kg (483 lb)
		MXZ X-RS (without Quick Adjust Suspension and ski Pilot TX)	225 kg (496 lb)
		MXZ X-RS (with Quick Adjust Suspension and ski Pilot TX)	232 kg (511 lb)
		MXZ X-RS (with Quick Adjust Suspension and ski Pilot 5.7)	227 kg (500 lb)
		Renegade Adrenaline	221 kg (487 lb)
		Renegade Enduro	234 kg (516 lb)
		Renegade X (without Quick Adjust Suspension and ski Pilot TX)	221 kg (487 lb)
		Renegade X (with Quick Adjust Suspension and ski Pilot TX)	228 kg (503 lb)

WEIGHT AND DIMENSIONS			
Mass (dry)	850	Renegade X-RS (without Quick Adjust Suspension and ski Pilot TX)	227 kg (500 lb)
		Renegade X-RS (with Quick Adjust Suspension and ski Pilot TX)	234 kg (516 lb)
		Renegade X-RS (with Quick Adjust Suspension and ski Pilot 5.7)	237 kg (522 lb)
		Backcountry	217 kg (478 lb)
		Backcountry X (electric starter)	218 kg (481 lb)
		Backcountry X (SHOT starter)	210 kg (463 lb)
		Backcountry X-RS (electric starter) 146"	224 kg (494 lb)
		Backcountry X-RS (SHOT starter) 146"	216 kg (476 lb)
		Backcountry X-RS (electric starter) 154"	230 kg (507 lb)
		Backcountry X-RS (SHOT starter) 154"	221 kg (487 lb)
		Freeride 146" (SHOT and manual start)	214 kg (472 lb)
		Freeride 146" (electric starter)	222 kg (489 lb)
		Freeride 154" (SHOT and manual start)	209 kg (460.8 lb)
		Freeride 154" (electric starter)	218 kg (481 lb)
		Freeride 165" (SHOT and manual start)	212 kg (467 lb)
		Freeride 165" (electric starter)	221 kg (487 lb)
		Summit SP 146" (SHOT and manual start)	207 kg (456 lb)
		Summit SP 146" (electric starter)	216 kg (476 lb)

WEIGHT AND DIMENSIONS			
Mass (dry)	850	Summit SP 154" (SHOT and manual start)	205 kg (452 lb)
		Summit SP 154" (electric starter)	213 kg (470 lb)
		Summit SP 165" (SHOT and manual start)	209 kg (461 lb)
		Summit SP 165" (electric starter)	218 kg (481 lb)
		Summit SP 175" (SHOT starter)	210 kg (463 lb)
		Summit SP 175" (electric starter)	223 kg (492 lb)
		Summit X 154" (SHOT and manual start)	205 kg (452 lb)
		Summit X 154" (electric starter)	213 kg (470 lb)
		Summit X 165" (SHOT and manual start)	207 kg (456 lb)
		Summit X 165" (electric starter)	216 kg (476 lb)
		Summit X 175" (SHOT and manual start)	210 kg (463 lb)
		Summit X 175" (electric starter)	218 kg (481 lb)
		Summit X with Expert Package 154"	200 kg (440 lb)
		Summit X with Expert Package 165"	203 kg (448 lb)
Overall length		All MXZ	292.5 cm (115 in)
		All Renegade Grand Touring LTD	303.8 cm (119.6 in)
		Backcountry 146" Freeride 146" Summit 146"	311.0 cm (122.4 in)
		Backcountry X-RS (154 in) Freeride 154" Summit 154"	331.2 cm (130.4 in)
		Freeride 165" Summit 165"	344.5 cm (135.6 in)
		Summit 175"	350.3 cm (137.9 in)
		All Expedition	325.6 cm (128.2 in)
		All Skandic	322.2 cm (126.9 in)

WEIGHT AND DIMENSIONS		
Overall width	All MXZ All Renegade Grand Touring LTD	121.7 cm (47.9 in)
	All Backcountry Expedition Xtreme	114 cm (44.9 in) to 118 cm (46.5 in)
	All Freeride All Summit	108 cm to 111 cm (42.5 in to 43.7 in)
	Expedition LE / SE / SWT	120 cm (47.2 in) to 124 cm (48.8 in)
	All Skandic	108.9 cm to 111 cm (42.9 in to 43.7 in)
Overall Height	MXZ TNT MXZ X Renegade Adrenaline Renegade X	126.7 cm (49.9 in)
	Renegade Enduro	133.1 cm (52.4 in)
	MXZ X-RS Renegade X-RS	122.2 cm (48.1 in)
	Backcountry X-RS	122.9 cm (48.4 in)
	Grand Touring LTD	140.5 cm (55.3 in)
	Backcountry / X	127.4 cm (50.2 in)
	All Freeride	136.8 cm (53.9 in)
	Summit SP Summit X	138.6 cm (54.6 in)
	Summit X with Expert Package	129.2 cm (50.9 in)
	Expedition Xtreme	128 cm (50.4 in)
	Expedition LE / SE / SWT All Skandic	151.3 cm (59.6 in)
Ski stance	All MXZ All Renegade Grand Touring LTD	107.7 cm (42.4 in)
	All Backcountry All Expedition	97.5 cm (38.4 in) to 102 cm (40.2 in)
	All Freeride All Summit	91 cm to 95.5 cm (35.8 in to 37.6 in)
	All Skandic	88.9 cm (35 in)

MATERIAL	
Frame	Aluminum
Side bottom pan, Front bottom pan, gauge support, gauge support cover, side panel, rear console, windshield support, glove box cover and headlamp surrounding	Polypropylene
Rear lateral hood, front hood and top side panel	Surlyn

WIRING DIAGRAM INFORMATION

GENERAL

WIRING DIAGRAM LOCATION

Wiring diagrams are found in the *WIRING DIAGRAM BOOKLET*.

WIRING DIAGRAM WITH COLORED LINES

The wiring diagram on the *KNOWLEDGE CENTER* is in color.

Color Definition

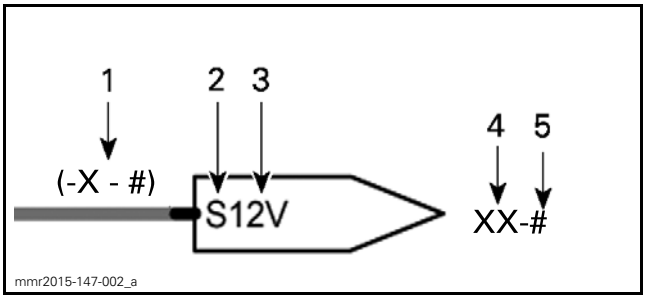
NOTE: To find the color of the wire on the vehicle skip to *WIRE COLORS AND SIZES* in this subsection.

The following colors refer to the color of the line drawn in the wiring diagram.

LINE COLOR	LINE TYPE	FUNCTION	DEFINITION
Red	Thick	Unswitched 12 V	Hot at all times
	Thin	3.3 and 5 V	Sensor reference voltage
Orange	Thick	55 - 60 V	High voltage
Blue	Thin	Analog signal	Variable voltage
Cyan	Thin	Digital signal	Pulsed or constant digital (on/off)
Pink	Thick	12V switched	Condition must be met to activate circuit
Green	Thin dotted	Communication	Data communication between modules using a protocol (CAN, LIN, & other)
Brown	Thick	Power control	Controls a circuit by providing an on/off control to activate the circuit
Yellow	Thick	AC Volts	Alternative current exiting the magneto
Black	Thick	Permanent ground	A ground that is in permanent contact
	Thin	Module (analog/digital) ground	A ground that is controlled by a module

WIRING DIAGRAM CODES

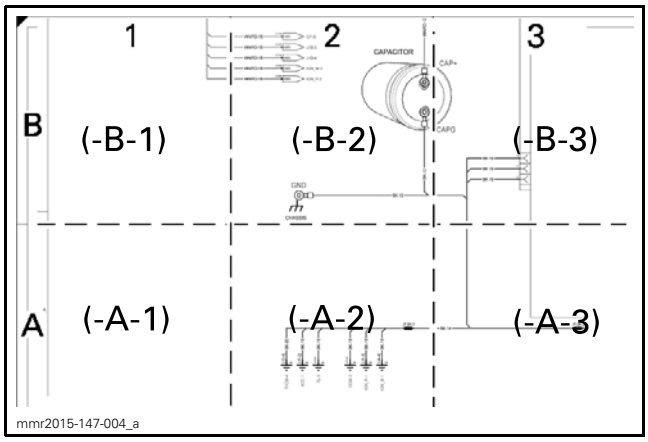
The wiring diagrams use the following codes.



1. *Wiring diagram index*
2. *Power condition*
3. *Voltage of a powered circuit*
4. *Connector code*
5. *Connector pin*

Wiring Diagram Index

The wiring diagram is separated by rows (letters) and columns (numbers).



WIRING DIAGRAM INDEX

Power Condition (12V Circuits Only)

The wiring diagram indicates when a circuit is powered:

– S: Switched. Certain conditions must be met;
– U: Unswitched (hot at all times).

Voltage of Powered Circuit

Voltage references are approximate for a powered circuit in good condition.

INDICATED VOLTAGE	APPROXIMATION
12V	Battery voltage
5V	Regulated 4.95 - 5V
60V	Regulated 55 - 60V

Connector Code

The wire connects to the indicated connector. See image at the beginning of this subsection.

Connector Pin

The wire is the indicated pin in the connector.

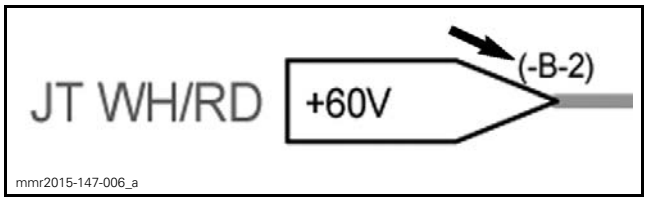
NOTE: Could be identified by either a number or by a letter depending on the type of connector used.

FOLLOWING A CIRCUIT

To follow a circuit, search the in section of the wiring diagram shown in the wiring diagram index.

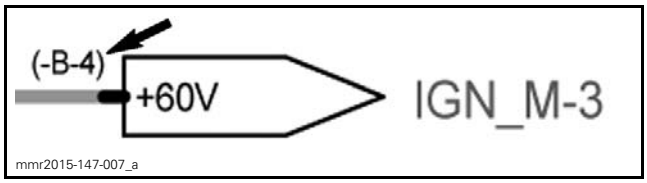
In this example, the 60V comes **from** JT WH/RD in section (-B-2).

NOTE: The arrow indicates the direction of the power in the circuit.



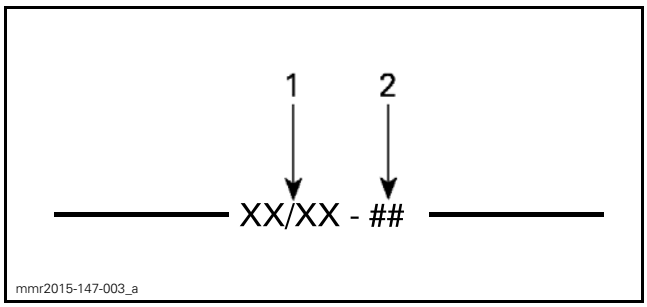
FROM JT WH/RD (-B-2)

In following example, the 60V goes **to** the IGN_M connector pin 3 in section (-B-4).



TO ING_M-3 (-B-4)

WIRE COLORS AND SIZES



1. *Wire color*
2. *Wire gauge (AWG)*

The first color of a wire is the main color, second color is the stripe.

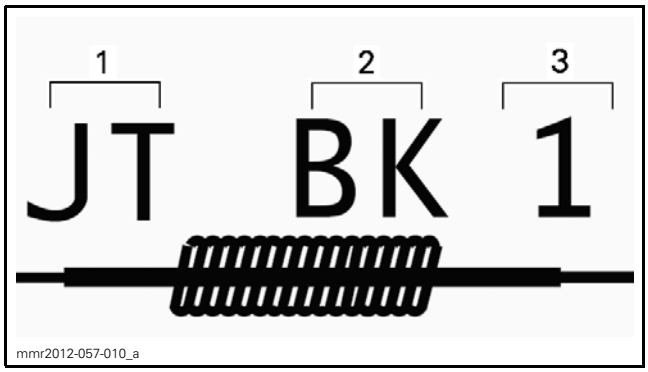
Example: YE/BK is a YELLOW wire with a BLACK stripe.

COLOR CODE					
BG	—	BEIGE	OG	—	ORANGE
BK	—	BLACK	RD	—	RED
BU	—	BLUE	VT	—	VIOLET
BN	—	BROWN	WH	—	WHITE
GN	—	GREEN	YE	—	YELLOW
GY	—	GRAY	PK	—	PINK

LT prefix means a "light" color. E.g: LT GN = Light green.

SPLICES IN WIRING HARNESS

Splices in wiring harness are indicated on the wiring diagram as follows.

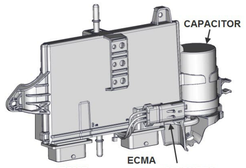


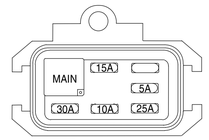
1. JT: Splice indication
2. Spliced wire color
3. Splice number on the wire

Refer to *SPLICE INFORMATION* subsection for more details.

2023 MXZ, 600R E-TEC & BACKCOUNTRY 600R and 850 E-TEC

ELECTRIC START





LINE TYPES

55 / 60 VOLTS	
12 VOLTS SWITCHED	
12 VOLTS UNSWITCHED	
5 OR 3.3 VOLTS	
DIGITAL SIGNAL	
POWER CONTROL	
ANALOG SIGNAL	
COMMUNICATION	
A-D GROUND	
POWER GROUND	
AC VOLTAGE	

Midwest Manuals
Green Manuals
Paperless Manuals For a Better Tomorrow www.green-manuals.com
If you bought this manual from any other seller please leave them NEGATIVE feedback and notify us at bestshopmanuals@gmail.com

2023 BACKCOUNTRY X, X-RS 850 E-TEC

SHOT START

ECMB

ONLY WITH SHOT START SYSTEM

UCAP

WAKE-UP SIGNAL — BG-18
CHARGE SIGNAL — BU/WH-18
55 VOLTS — WH/RD-14
12 VOLTS FROM UCAP — RD/WH-18
DISCHARGE SIGNAL — OG/BK-18
GROUND — BK-14

FUSEBOX FB

CLUSTER F4-15A
RER START F1-5A
ACCESSORY LOADS F2-25A

BATTERY CHARGING — L1 L2 L3 — RD/WH-16 — JT RD/WH
STARTER SOLENOID — A1 — OG/BK-18
VEHICULE LOADS — M1 M2 M4 — RD/GN-16 — JT RD/GN
START/SHOT/RER CONTROL — A3 — BG-20
START BUTTON 12V SUPPLY — H1 — YE-18
DIAGNOSTIC POWER — A2 — RD/BU-18
BRAKE SIGNAL INPUT — H3 — WH-20

SD

RD/OG-18

JT RD/OG 2

JT RD/OG 1

RD/OG-12

COMMUNICATION CONNECTOR

COM
RD/OG-16 — 12 VOLTS
RD/WH-16 — 12 VOLTS
RD/BU-18 — ECM POWER IN
BK-16 — GROUND
WH/BK-20 — CAN LO
WH/BG-20 — CAN HI

JT BK 2

RF IDENTIFICATION KEY

RFID
RD/OG-20 — S12V
WH/GY-20 — DATA
BK/WH-20 — CONTACT
BK/GN-20 — GROUND
HALL

DATA — K3
CONTACT — K2
GROUND — J3

CAN LO — C2 — WH/BK-20 — JT WH/BK
CAN HI — C1 — WH/BG-20 — JT WH/BG

GAUGE

CL — CL

CAN LO
CAN HI
S12V WAKE UP
U12V POWER
FUEL LEVEL GROUND
FUEL LEVEL SIGNAL
HEATED LEVER OUTPUT
HEATED GRIPS OUTPUT
LEVER DOWN
GRIP DOWN
SET
LEVER UP
GRIP UP
MODE
HIGH BEAM
GROUND

FUEL PUMP

FP
55V
CTRL
(+)
(-)

55 V FOR FUEL PUMP — L4 — WH/RD-18
FUEL PUMP PWM CTRL — M3 — BN/PK-16
BU-18
BK/BU-20

ENGINE CUT OFF CONTROL INPUT — G3 — BK/YE-20 — STR 6P-6
ENGINE CUT OFF CONTROL GROUND — G4 — BK/BU-20 — STR 6P-3

STEERING HARNESS GROUND — J1 — BK-20 — SH-1

EXHAUST GAS TEMPERATURE SENSOR

EGTS
SIGNAL
GND

EGTS SIGNAL — C3 — BG/GY-20
GROUND — D3 — BK/BU-20

VEHICLE SPEED SENSOR

VSS
5V
GND
SS
HALL

5 VOLTS — D2 — RD/BK-20
GROUND — F2 — BK/BU-20
SPEED SIGNAL INPUT — E2 — GN/WH-20

MANIFOLD AIR PRESSURE TEMP SENSOR

MAPTS
PS
5V
TS
GND

INTAKE MANIFOLD PRESSURE SIGNAL — F3 — WH/BU-20
5 VOLTS — E4 — PK/BU-20
INTAKE MANIFOLD TEMP. SIGNAL — B2 — WH/OG-20
GROUND — F4 — BK/BU-20

ENGINE
CHASSIS
GND
CHASSIS

BK-12 — JT BK 2 — BK-12 — JT BK 1

CCM-3 — BK-16 — C-C(L)
STR 6P-5 — BK-20 — E-E(L)
STR 4P-1 — BK-20 — C-C(R)
STR 6P-1 — BK-20 — E-E(L)
TL+ — BK-16 — C-C(L)
ACC 1+ — BK-16 — C-C(R)

ACC2
S12V
GND

TL

TAIL LIGHT
S12V
BRAKE
GND

JT BK 2

ACC 1
S12V
GND

JT BK 1

BRAKE SWITCH

STR 4P

LEFT GRIP WARMER

JT WH

JT BK 2

EMERGENCY ENGINE CUT OFF SWITCH

STR 6P

THROTTLE LEVER WARMER

RIGHT GRIP WARMER

ECMB-G3 — CONTROL — BK/YE-20
ECMB-G4 — GND — BK/BU-20

JT OG

JT BK 2 — JT BK 2

START / RER SWITCH

BACK LIGHT

LEVER DOWN
GRIP DOWN
LEVER UP
GRIP UP
SET
MODE

SH

ECMB-J1 — BH Ground — BK-20
ECMB-A3 — BATTERY — BG-20
BN/YE-20
OG/VT-20
YE/GN-20
GY/OG-16
RD/OG-16
RD/VT-18
BN-20
OG/WH-20
YE/BN-20
GY/WH-16

JT BK
JT RD

RD/GN-20
RD/VT-20
BK-20
RD-16
BN-22
OG/WH-22
YE/BN-22

DIMMER SWITCH

GY/OG-16
GY/WH-16
RD-16

HEADLAMP 1

HL1
HI
LO
GND

GY/WH-18
GY/OG-18
BK-18

HEADLAMP 2

HL2
HI
LO
GND

GY/WH-18
GY/OG-18
BK-18

JT GY/OG
JT GY/WH

LINE TYPES

55 / 60 VOLTS	
12 VOLTS SWITCHED	
12 VOLTS UNSWITCHED	
5 OR 3.3 VOLTS	
DIGITAL SIGNAL	
POWER CONTROL	
ANALOG SIGNAL	
COMMUNICATION	
A-D GROUND	
POWER GROUND	
AC VOLTAGE	

Midwest Manuals
Green Manuals
Paperless Manuals For a Better Tomorrow www.green-manuals.com
If you bought this manual from any other seller please leave them NEGATIVE feedback and notify us at bestshopmanuals@gmail.com

2023 600R E-TEC
ENGINE HARNESS



RAVE POSITION SENSOR
RPS
5 VOLTS 3 — PK/VT-18 — F3
SIGNAL 2 — WH/VT-18 — E3
GROUND 1 — BK/VT-18 — E2



THROTTLE POSITION SENSOR
TPS
5 VOLTS 3 — PK/BR-18 — D2
GROUND 2 — BK/BN-18 — C2
SIGNAL 1 — WH/BN-18 — D3



KNOCK SENSOR
KS
SIGNAL 2 — YE/BU-18 — G1
GROUND 1 — BG/BU-18 — H1



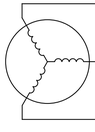
COOLANT TEMPERATURE SENSOR
CTS
GROUND 2 — BK/OG-18 — B1
SIGNAL 1 — BG/OG-18 — C1



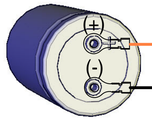
CRANKSHAFT POSITION SENSOR
CPS
SIGNAL 1 — BU/YE-18 — K2
GROUND 2 — WH/YE-18 — K1



OIL LEVEL SENSOR
OLS
SIGNAL 1 — LT BU-18 — F2
GROUND 2 — BK/BU-18 — G3

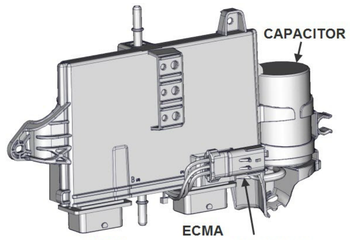


MAGNETO
MAG
YE-12
YE-12
YE-12



CAPACITOR
(+) — WH/RD-12
(-) — BK-12

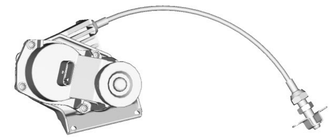
ECMA



ECMA

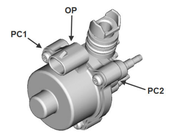
E4 — PK/BG-18 — 1 SENSOR 5 VOLTS
F4 — BK/BG-18 — 2 SENSOR GROUND
D4 — WH/BG-18 — 3 SENSOR SIGNAL
G4 — BG/RD-18 — JT BG/RD — BG/RD-18 — 4 ACTUATOR (+/-)
H4 — BG/RD-18 — JT BG/BN — BG/BN-18 — 5 ACTUATOR (-/+)
J4 — BG/BN-18
K4 — BG/BN-18

RAVE ACTUATOR
E-RAVE



E1 — BK/WH-18 — PC1
F1 — BG/BK-18 — PC2

OIL PUMP FEEDBACK SWITCH

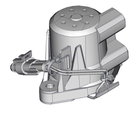


B4 — GN/YE-18 — 1 CONTROL
WH/RD-18 — 2 55 VOLTS

OIL PUMP
OP

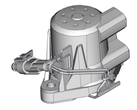
L1 — WH/RD-14 — JT WH/RD
M1 — BU-16 — 2 CONTROL
WH/RD-16 — 1 55 VOLTS

DIRECT INJECTOR MAG.
INJ DI MAG



M2 — GN-16 — 2 CONTROL
WH/RD-16 — 1 55 VOLTS

DIRECT INJECTOR PTO
INJ DI PTO



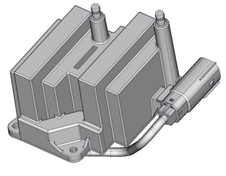
L3 — BK-16 — JT B K 1 — BK-16 — 1 GROUND
J3 — OG/BU-18 — 2 CONTROL MAG
WH/RD-16 — 3 55 VOLTS
M3 — BK-16 — JR BK 2 — BK-16 — 4 GROUND
K3 — OR/GN-18 — 5 CONTROL PTO
WH/RD-16 — 6 55 VOLTS

IGNITION COILS
COILS

BK-16
BK-16

GROUND
ENGINE

L4 — BK-16
M4 — BK-16



LINE TYPES

55 / 60 VOLTS	
12 VOLTS SWITCHED	
12 VOLTS UNSWITCHED	
5 OR 3.3 VOLTS	
DIGITAL SIGNAL	
POWER CONTROL	
ANALOG SIGNAL	
COMMUNICATION	
A-D GROUND	
POWER GROUND	
AC VOLTAGE	

Midwest Manuals
If you bought this manual from any other seller please leave them
NEGATIVE feedback and notify us at bestshopmanuals@gmail.com
green manuals
Paperless Manuals For a Better Tomorrow www.green-manuals.com

2023 850 E-TEC (SHOT START)

ENGINE HARNESS

BELT TEMPERATURE SENSOR
BELT_T
SIGNAL 2 OG/WH-18 D1
GROUND 1 BK/OG-18

ENGINE COOLANT TEMPERATURE SENSOR
ECTS
GROUND 2 BK/OG-18 JT BK/OG BK/OG-18 B1
SIGNAL 1 BG/OG-18 C1

THROTTLE POSITION SENSOR
TPS
5 VOLTS 3 PK/BR-18 D2
GROUND 2 BK/BN-18 C2
SIGNAL 1 WH/BN-18 D3

KNOCK SENSOR
KS
SIGNAL 2 YE/BU-18 G1
GROUND 1 BG/BU-18 H1

CRANKSHAFT POSITION SENSOR
CPS
SIGNAL 1 BU/YE-18 K2
GROUND 2 WH/YE-18 K1

OIL LEVEL SENSOR
OLS
SIGNAL 1 LT BU-18 F2
GROUND 2 BK/BU-18 G3

RAVE POSITION SENSOR
RPS
5 VOLTS 3 PK/VT-18 JT PK/VT PK/VT-18 F3
SIGNAL 2 WH/VT-18 E3
GROUND 1 BK/VT-18 JT BK/VT BK/VT-18 E2

ABSOLUTE CRANKSHAFT POSITION SENSOR
ACPS
GROUND 1 BK/VT-18
5 VOLTS 2 PK/VT-18
SIGNAL 1 3 BG/GN-18 G2
SIGNAL 2 4 YE/GN-18 H2

MAGNETO
MAG
YE-12
YE-12
YE-12

CAPACITOR
WH/RD-12
BK-12

ECMA
ECMB
ECMA
MAGNETO
SHOT UCAP MODULE

ECMA

E4 PK/BG-18 — 1 SENSOR 5 VOLTS
F4 BK/BG-18 — 2 SENSOR GROUND
D4 WH/BG-18 — 3 SENSOR SIGNAL
G4 BG/RD-18 JT BG/RD BG/RD-18 — 4 ACTUATOR (+/-)
H4 BG/RD-18 JT BG/BN BG/BN-18 — 5 ACTUATOR (-/+)
J4 BG/BN-18
K4 BG/BN-18

RAVE ACTUATOR
E-RAVE

A3 BN/BU-18 — 1 CONTROL
A4 VT/BU-18 — 2 12 VOLTS

THROTTLE BODY INJECTOR MAG
INJ TB MAG

A2 BN/GN-18 — 1 CONTROL
A1 VT/GN-18 — 2 12 VOLTS

THROTTLE BODY INJECTOR PTO
INJ TB PTO

E1 BK/WH-18 — PC1
F1 BG/BK-18 — PC2

OIL PUMP FEEDBACK SWITCH

B4 GN/YE-18 — 1 CONTROL
WH/RD-18 — 2 55 VOLTS

OIL PUMP
OP

L1 WH/RD-14 JT WH/RD
M1 BU-16 — 2 CONTROL
WH/RD-16 — 1 55 VOLTS

DIRECT INJECTOR MAG.
INJ DI MAG

M2 GN-16 — 2 CONTROL
WH/RD-16 — 1 55 VOLTS

DIRECT INJECTOR PTO
INJ DI PTO

L3 BK-16 JT B K 1 BK-16 — 1 GROUND
J3 OG/BU-18 — 2 CONTROL MAG
WH/RD-16 — 3 55 VOLTS
M3 BK-16 JR BK 2 BK-16 — 4 GROUND
K3 OR/GN-18 — 5 CONTROL PTO
WH/RD-16 — 6 55 VOLTS

IGNITION COILS
COILS

BK-16
BK-16

L4 BK-16
M4 BK-16

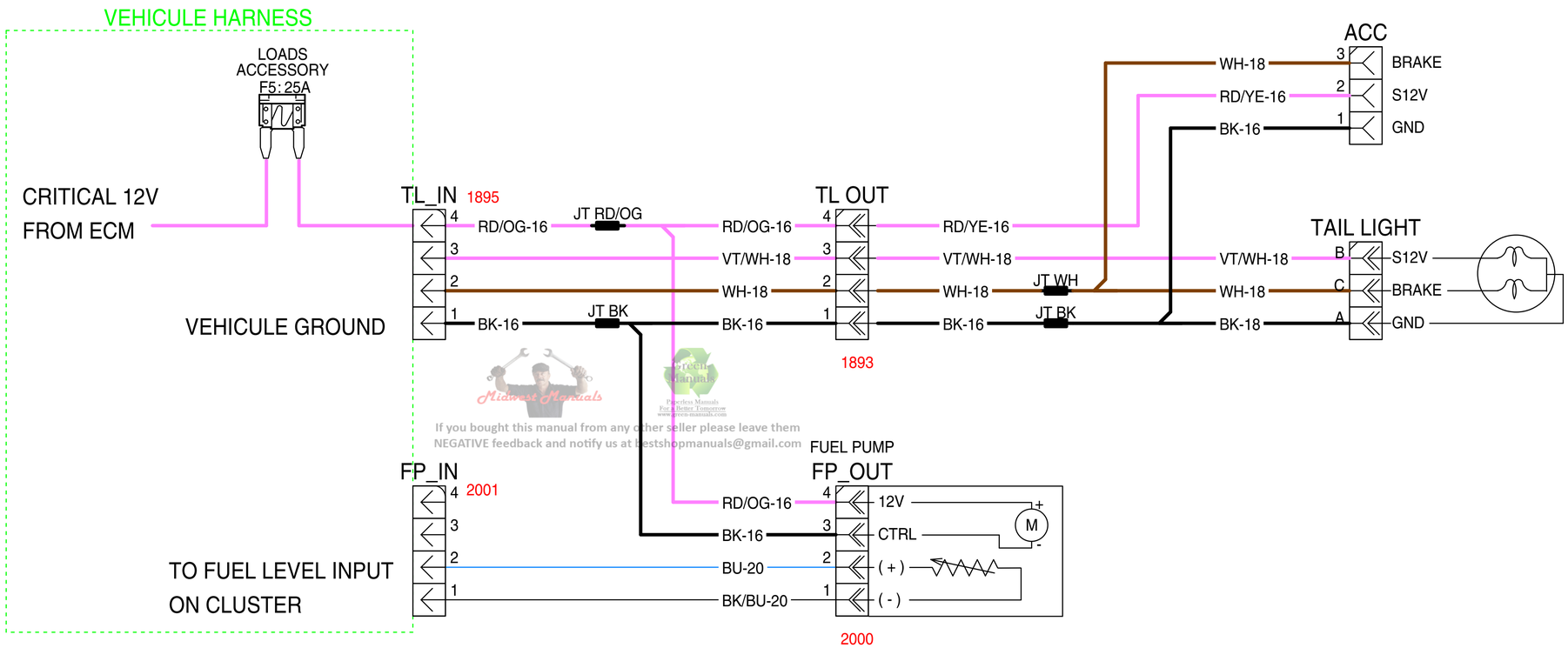
GROUND
ENGINE

LINE TYPES

55 / 60 VOLTS
12 VOLTS SWITCHED
12 VOLTS UNSWITCHED
5 OR 3.3 VOLTS
DIGITAL SIGNAL
POWER CONTROL
ANALOG SIGNAL
COMMUNICATION
A-D GROUND
POWER GROUND
AC VOLTAGE

Midwest Manuals
Green Manuals Paperless Manuals For a Better Tomorrow www.green-manuals.com
If you bought this manual from any other seller please leave them NEGATIVE feedback and notify us at bestshopmanuals@gmail.com

2023 FUEL PUMP POWER SUPPLY - E-TEC ENGINES



Midwest Manuals
Green Manuals
Paperless Manuals For a Better Tomorrow www.green-manuals.com
If you bought this manual from any other seller please leave them NEGATIVE feedback and notify us at bestshopmanuals@gmail.com

Maintenance Schedule

Make sure to perform proper maintenance at recommended intervals as indicated in the tables.

The maintenance chart indicates the items needing to be addressed based on 2 criteria, whichever happens first:

– Calendar time
– Odometer reading.

Your driving habits determines the factors you shall adhere too. For example:

– Someone who uses their vehicle every other weekend trail riding with friends would most likely follow the **odometer reading** to determine the frequency of his maintenance.
– Someone who uses their vehicle seldomly over the year or only on a few occasions would follow the **calendar time** to determine the frequency of his maintenance.

IMPORTANT: The following tables show the appropriate maintenance application for the first 3 years. For subsequent years, repeat the same pattern alternatively.

Maintenance Overview		
Calendar Time	Odometer	Deep Snow or Trail/ Cross Over/ Utility
Every Month	1500 km (1000 mi)	**A+**
1 Year	3000 km (2000 mi)	**A**
Every Month	4500 km (3000 mi)	**A+**
2 Years	6000 km (4000 mi)	**A** and **B**
Every Month	7500 km (5000 mi)	**A+**

600 EFI Engine

TRAIL / CROSSOVER / UTILITY	A+	A	B
A = Adjust **C = Clean** **I = Inspect** **L = Lubricate** **R = Replace** **T = Torque**	**Every month or 1500 km (1000 mi)**	**Every year or 3000 km (2000 mi)**	**Every 2 years or 6000 km (4000 mi)**
Air and Fuel Delivery			
Fuel components (fuel cap, hoses, clamps and tank fixation) and function		**I**	
In-line fuel filter		**R** Every 5 years	
Body and Chassis			
Body panels and hardware		**I, T**	
Pivots, latches, hinges and key barrels		**L**	
Engine and Cooling			
Engine cooling components (coolant concentration, coolant level, hose condition, clamps, leaks)		**I, A**	
Oil pump cable		**A**	
Engine rubber mounts			**I**
Rewind starter (manual start models)			**C, L**

TRAIL / CROSSOVER / UTILITY	A+	A	B
A = Adjust **C = Clean** **I = Inspect** **L = Lubricate** **R = Replace** **T = Torque**	**Every month or 1500 km (1000 mi)**	**Every year or 3000 km (2000 mi)**	**Every 2 years or 6000 km (4000 mi)**
Spark plugs			**R**
Oil injection pump strainer		**I, C** Every 3 years or 10 000 km (6000 mi)	
Engine coolant		**R** Every 5 years	
Exhaust and Emissions			
Exhaust components (gaskets, pipes, muffler condition, leaks)		**I**	
Exhaust manifold		**T**	
Brake			
Brake components and function		**I, L**	
Brake fluid			**R** Every 2 years
Drive			
Chaincase drive chain tension	**A**	**A**	

TRAIL / CROSSOVER / UTILITY	A+	A	B
A = Adjust **C = Clean** **I = Inspect** **L = Lubricate** **R = Replace** **T = Torque**	**Every month or 1500 km (1000 mi)**	**Every year or 3000 km (2000 mi)**	**Every 2 years or 6000 km (4000 mi)**
Gearbox / chaincase oil level	I	I	
Track alignment and tension	A	A	
Gearbox / chaincase oil			R
Continuously Variable Transmission (CVT)			
CVT components and function		I, C, L	
CVT drive belt condition	I		
CVT drive belt tension	A	A	
Drive pulley retaining screw		T	
Electrical			
Battery connections and condition		I	
Electrical harness routing		I	
Headlight aim		A	
Modules and applicable software updates		I	
Operation of control switches and lighting		I	
Steering and Controls			
Ski runners	I	I	

TRAIL / CROSSOVER / UTILITY	A+	A	B
A = Adjust **C = Clean** **I = Inspect** **L = Lubricate** **R = Replace** **T = Torque**	**Every month or 1500 km (1000 mi)**	**Every year or 3000 km (2000 mi)**	**Every 2 years or 6000 km (4000 mi)**
Gearbox position lever operation		**I, A**	
Steering alignment		**I, A**	
Steering components and function		**I**	
Throttle cable		**A**	
Throttle operation		**I**	
Suspension			
Suspension components and function		**I, L**	

DEEP SNOW	A+	A	B
A = Adjust **C = Clean** **I = Inspect** **L = Lubricate** **R = Replace** **T = Torque**	**Every month or 1500 km (1000 mi)**	**Every year or 3000 km (2000 mi)**	**Every 2 years or 6000 km (4000 mi)**
Air and Fuel Delivery			
Fuel components (fuel cap, hoses, clamps and tank fixation) and function		**I**	
In-line fuel filter		**R** Every 5 years	
Body and Chassis			
Body panels and hardware		**I, T**	
Pivots, latches, hinges and key barrels		**L**	
Engine and Cooling			
Engine cooling components (coolant concentration, coolant level, hose condition, clamps, leaks)		**I, A**	
Oil pump cable		**A**	
Engine rubber mounts			**I**
Rewind starter (manual start models)			**C, L**
Spark plugs			**R**
Oil injection pump strainer		**I, C** Every 3 years or	

DEEP SNOW	A+	A	B
A = Adjust **C = Clean** **I = Inspect** **L = Lubricate** **R = Replace** **T = Torque**	**Every month or 1500 km (1000 mi)**	**Every year or 3000 km (2000 mi)**	**Every 2 years or 6000 km (4000 mi)**
		10 000 km (6000 mi)	
Engine coolant		**R** Every 5 years	
Exhaust and Emissions			
Exhaust components (gaskets, pipes, muffler condition, leaks)		**I**	
Exhaust manifold		**T**	
Brake			
Brake components and function		**I, L**	
Brake fluid			**R** Every 2 years
Drive			
Chaincase drive chain tension	**A** After the first 75 km (50 mi) then every 500 km (300 mi), up to then every	**A**	

DEEP SNOW	A+	A	B
A = Adjust C = Clean I = Inspect L = Lubricate R = Replace T = Torque	**Every month or 1500 km (1000 mi)**	**Every year or 3000 km (2000 mi)**	**Every 2 years or 6000 km (4000 mi)**
	1500 km (1000 mi)		
Gearbox / chaincase oil level		**I**	
Track alignment and tension	**A** After the first 75 km (50 mi) then every 500 km (300 mi), up to then every 1500 km (1000 mi)	**A**	
Gearbox / chaincase oil			**R**
Continuously Variable Transmission (CVT)			
CVT components and function		**I, C, L**	
CVT drive belt condition	**I**		
CVT drive belt tension	**A**	**A**	
Drive pulley retaining screw		**T**	
Electrical			

DEEP SNOW	A+	A	B
A = Adjust **C = Clean** **I = Inspect** **L = Lubricate** **R = Replace** **T = Torque**	**Every month or 1500 km (1000 mi)**	**Every year or 3000 km (2000 mi)**	**Every 2 years or 6000 km (4000 mi)**
Battery connections and condition		**I**	
Electrical harness routing		**I**	
Headlight aim		**A**	
Modules and applicable software updates		**I**	
Operation of control switches and lighting		**I**	
Steering and Controls			
Ski runners		**I**	
Gearbox position lever operation		**I, A**	
Steering alignment		**I, A**	
Steering components and function		**I**	
Throttle cable		**A**	
Throttle operation		**I**	
Suspension			
Suspension components and function		**I, L**	

E-TEC Engine (except turbo)

TRAIL / CROSSOVER / UTILITY	A+	A	B
A = Adjust C = Clean I = Inspect L = Lubricate R = Replace T = Torque	**Every month or 1500 km (1000 mi)**	**Every year or 3000 km (2000 mi)**	**Every 2 years or 6000 km (4000 mi)**
Air and Fuel Delivery			
Fuel components (fuel cap, hoses, clamps and tank fixation) and function		**I**	
In-line fuel filter		**R** Every 5 years	
Body and Chassis			
Body panels and hardware		**I, T**	
Pivots, latches, hinges and key barrels		**L**	
Engine and Cooling			
Engine cooling components (coolant concentration, coolant level, hose condition, clamps, leaks)		**I, A**	
Engine rubber mounts			**I**
Rewind starter (manual start models)			**C, L**
Spark plugs			**R** Every 3 years

TRAIL / CROSSOVER / UTILITY	A+	A	B
A = Adjust **C = Clean** **I = Inspect** **L = Lubricate** **R = Replace** **T = Torque**	**Every month or 1500 km (1000 mi)**	**Every year or 3000 km (2000 mi)**	**Every 2 years or 6000 km (4000 mi)**
			or 10 000 km (6000 mi)
Oil injection pump strainer		**I, C** Every 3 years or 10 000 km (6000 mi)	
RAVE valves		**I, C** Every 3 years or 10 000 km (6000 mi)	
Engine coolant		**R** Every 5 years	
Exhaust and Emissions			
Exhaust components (gaskets, pipes, muffler condition, leaks)		**I**	
Exhaust manifold		**T**	

TRAIL / CROSSOVER / UTILITY	A+	A	B
A = Adjust **C = Clean** **I = Inspect** **L = Lubricate** **R = Replace** **T = Torque**	**Every month or 1500 km (1000 mi)**	**Every year or 3000 km (2000 mi)**	**Every 2 years or 6000 km (4000 mi)**
Brake			
Brake components and function		I, L	
Brake fluid			R Every 2 years
Drive			
Chaincase drive chain tension	A	A	
Gearbox / chaincase oil level	I	I	
Track alignment and tension	A	I, A	
Gearbox / chaincase oil			R
Continuously Variable Transmission (CVT)			
CVT components and function		I, C, L	
CVT drive belt condition	I		
CVT drive belt tension	A	A	
Drive pulley retaining screw		T	
Electrical			
Battery connections and condition		I	

TRAIL / CROSSOVER / UTILITY	A+	A	B
A = Adjust **C = Clean** **I = Inspect** **L = Lubricate** **R = Replace** **T = Torque**	**Every month or 1500 km (1000 mi)**	**Every year or 3000 km (2000 mi)**	**Every 2 years or 6000 km (4000 mi)**
Electrical harness routing		I	
Headlight aim		A	
Modules and applicable software updates		I	
Operation of control switches and lighting		I	
Steering and Controls			
Ski runners	I	I	
Gearbox position lever operation		I, A	
Steering alignment		I, A	
Steering components and function		I	
Throttle cable		A	
Throttle operation		I	
Suspension			
Suspension components and function		I, L	

DEEP SNOW	A+	A	B
A = Adjust **C = Clean** **I = Inspect** **L = Lubricate** **R = Replace** **T = Torque**	**Every month or 1500 km (1000 mi)**	**Every year or 3000 km (2000 mi)**	**Every 2 years or 6000 km (4000 mi)**
Air and Fuel Delivery			
Fuel components (fuel cap, hoses, clamps and tank fixation) and function		**I**	
In-line fuel filter		R Every 5 years	
Body and Chassis			
Body panels and hardware		**I, T**	
Pivots, latches, hinges and key barrels		**L**	
Engine and Cooling			
Engine cooling components (coolant concentration, coolant level, hose condition, clamps, leaks)		**I, A**	
Engine rubber mounts			**I**
Rewind starter (manual start models)			**C, L**
Spark plugs		R Every 3 years or 10 000 km	

DEEP SNOW	A+	A	B
A = Adjust **C = Clean** **I = Inspect** **L = Lubricate** **R = Replace** **T = Torque**	**Every month or 1500 km (1000 mi)**	**Every year or 3000 km (2000 mi)**	**Every 2 years or 6000 km (4000 mi)**
		(6000 mi)	
Oil injection pump strainer		**I, C** Every 3 years or 10 000 km (6000 mi)	
RAVE valves		**I, C** Every 3 years or 10 000 km (6000 mi)	
Engine coolant		**R** Every 5 years	
Exhaust and Emissions			
Exhaust components (gaskets, pipes, muffler condition, leaks)		**I**	
Exhaust manifold		**T**	
Brake			
Brake components and function		**I, L**	
Brake fluid			**R**

DEEP SNOW	A+	A	B
A = Adjust **C = Clean** **I = Inspect** **L = Lubricate** **R = Replace** **T = Torque**	**Every month or 1500 km (1000 mi)**	**Every year or 3000 km (2000 mi)**	**Every 2 years or 6000 km (4000 mi)**
			Every 2 years
Drive			
Chaincase drive chain tension	**A** After the first 75 km (50 mi) then every 500 km (300 mi), up to then every 1500 km (1000 mi)	**A**	
Gearbox / chaincase oil level		**I**	
Track alignment and tension	**A** After the first 75 km (50 mi) then every 500 km (300 mi), up to then every 1500 km	**I, A**	

DEEP SNOW	A+	A	B
A = Adjust **C = Clean** **I = Inspect** **L = Lubricate** **R = Replace** **T = Torque**	**Every month or 1500 km (1000 mi)**	**Every year or 3000 km (2000 mi)**	**Every 2 years or 6000 km (4000 mi)**
	(1000 mi)		
Gearbox / chaincase oil			**R**
Continuously Variable Transmission (CVT)			
CVT components and function		**I, C, L**	
CVT drive belt condition	**I**		
CVT drive belt tension	**A**	**A**	
Drive pulley retaining screw		**T**	
Electrical			
Battery connections and condition		**I**	
Electrical harness routing		**I**	
Headlight aim		**A**	
Modules and applicable software updates		**I**	
Operation of control switches and lighting		**I**	
Steering and Controls			
Ski runners		**I**	
Gearbox position lever operation		**I, A**	
Steering alignment		**I, A**	

DEEP SNOW	A+	A	B
A = Adjust C = Clean I = Inspect L = Lubricate R = Replace T = Torque	Every month or 1500 km (1000 mi)	Every year or 3000 km (2000 mi)	Every 2 years or 6000 km (4000 mi)
Steering components and function		I	
Throttle cable		A	
Throttle operation		I	
Suspension			
Suspension components and function		I, L	

Take me back to the Maintenance Section

ROTAX®

Engine Manual

600R E-TEC / 850 E-TEC / 850 E-TEC Turbo R Engines

Click HERE for the vehicle manual

01 ENGINE 1
ENGINE LEAK TEST 2
TROUBLESHOOTING 3
PROCEDURES 4
ENGINE LEAK TEST 4
PUMP SHAFT OIL GEAR RESERVOIR LEAK TEST 5
EXHAUST MANIFOLD – 600R E-TEC 7
GENERAL 8
PROCEDURES 8
EXHAUST MANIFOLD 8
EXHAUST MANIFOLD – 850 E-TEC 10
GENERAL 11
PROCEDURES 11
EXHAUST MANIFOLD 11
REWIND STARTER 12
MAINTENANCE 14
CLEANING AND LUBRICATING THE REWIND STARTER 14
INSPECTION 14
PROCEDURES 14
REWIND STARTER HANDLE 14
REWIND STARTER ROPE 15
REWIND STARTER 15
LUBRICATION SYSTEM 21
GENERAL 25
ENGINE LUBRICATION SYSTEM DESCRIPTION (850 E-TEC ENGINE) 26
SYSTEM DESCRIPTION 27
RECOMMENDED INJECTION OIL 28
MAINTENANCE 28
INSPECTING AND CLEANING THE OIL INJECTION PUMP STRAINER 28
LUBRICATING THE ENGINE 28
INSPECTION 28
OIL SYSTEM LEAK TEST 28
TROUBLESHOOTING 29
PROCEDURES 29
OIL INJECTION PUMP 29
OIL INJECTION TANK 32
OIL LEVEL SENSOR 34
CHECK VALVES AND FITTINGS 34
COOLING SYSTEM — ENGINE COMPONENTS 39
GENERAL 42
INSPECTION 42
COOLING SYSTEM LEAK TEST 42
ENGINE COOLING CIRCUIT LEAK TEST 42
PROCEDURES 43
COOLANT TEMPERATURE SENSOR (CTS) 43
FITTING (THROTTLE BODY HEATING) 44
WATER PUMP 45
BEARING CARRIER AND PUMP SHAFT 47
THERMOSTAT 51
MAGNETO AND STARTER 54
GENERAL 56
PROCEDURES 56
CRANKSHAFT POSITION SENSOR (CPS) 56
MAGNETO FLYWHEEL 58

MAGNETO HOUSING 61
STATOR 62
STARTER 64
STARTER DRIVE 66
RAVE VALVE 69
GENERAL 71
SYSTEM DESCRIPTION 71
MAINTENANCE 72
CLEANING THE 3D RAVE VALVE 72
TROUBLESHOOTING 72
DIAGNOSTIC TIPS 72
TROUBLESHOOTING GUIDELINES 75
PROCEDURES 75
3D RAVE VALVES POSITION SENSOR 75
3D RAVE VALVES 78
CHECK VALVES 84
RAVE CABLE 84
SERVOMOTOR 85
TOP END – 600R E-TEC 88
GENERAL 90
ENGINE BREAK-IN 90
INSPECTION 90
ENGINE COMPRESSION TEST 90
PROCEDURES 90
KNOCK SENSOR (KS) 90
REED VALVES 91
CYLINDER HEAD 92
CYLINDER BLOCK 95
PISTON PROJECTION MEASUREMENT 98
PISTONS 100
TOP END – 850 E-TEC 105
GENERAL 107
ENGINE BREAK-IN 107
INSPECTION 107
ENGINE COMPRESSION TEST 107
PROCEDURES 107
KNOCK SENSOR (KS) 107
REED VALVES 108
CYLINDER HEAD 109
CYLINDER BLOCK 112
PISTON PROJECTION MEASUREMENT 115
PISTONS 117
BOTTOM END – 600R E-TEC 122
GENERAL 124
ENGINE BREAK-IN 124
PROCEDURES 124
CRANKCASE 124
CRANKSHAFT 127
BOTTOM END – 850 E-TEC 135
GENERAL 137
ENGINE BREAK-IN 137
PROCEDURES 137
CRANKCASE 137
CRANKSHAFT 141
TURBOCHARGER 149
GENERAL 152

TURBOCHARGER 152
WASTE GATE ROD 153
MAINTENANCE 153
PRECAUTIONS 153
TROUBLESHOOTING 155
TROUBLESHOOTING 155
PROCEDURES 157
OIL PRESSURE LINE 157
OIL RETURN LINE 158
TURBO OIL CATCH TANK 159
TURBO OIL PUMP 160
TURBOCHARGER 162
WASTE GATE ACTUATOR 165

02 ELECTRONIC MANAGEMENT SYSTEM 169
ELECTRONIC CONTROL MODULE (ECM) 170
GENERAL 171
SYSTEM DESCRIPTION 171
IDLE SPEED 171
TROUBLESHOOTING 171
DIAGNOSTIC TIPS 171
PROCEDURES 171
ECM (ENGINE CONTROL MODULE) 171

03 FUEL SYSTEM 177
E-TEC DIRECT FUEL INJECTION 178
GENERAL 181
SYSTEM DESCRIPTION 181
IDLE SPEED 183
RESETTING CLOSED THROTTLE VALUE (TPS) 183
GENERAL INFORMATION 183
VERIFYING TPS CLOSED THROTTLE VALUE 183
RESETTING THE CLOSED THROTTLE VALUE 184
TROUBLESHOOTING ACTUAL TPS VOLTAGE OUT OF RANGE 184
INSPECTION 184
INSPECTING AND CLEANING THE THROTTLE BODY 184
TROUBLESHOOTING 184
DIAGNOSTIC TIPS 184
PROCEDURES 185
FUEL HOSES AND OETIKER CLAMPS 185
THROTTLE CABLE 186
E-TEC DIRECT INJECTORS 189
FUEL RAIL AND THROTTLE BODY INJECTORS (850 E-TEC) 200
THROTTLE BODY 204
TPS (THROTTLE POSITION SENSOR) 206

04 ELECTRICAL SYSTEM 209
IGNITION COILS AND SPARK PLUGS 210
GENERAL 211
SYSTEM DESCRIPTION 211
UNDERSTANDING THE TDC GAUGE 212
IMPERIAL DIAL GAUGE 212
METRIC DIAL GAUGE 212

Midwest Manuals
Green Manuals
Paperless Manuals
For a Better Tomorrow
www.green-manuals.com
If you bought this manual from any other seller please leave them
NEGATIVE feedback and notify us at bestshopmanuals@gmail.com

IGNITION TIMING 213
INSTALLING THE TDC GAUGE 213
LOCATING PISTON TDC 214
SCRIBING THE TIMING MARK 214
CHECKING IGNITION TIMING 215
ADJUSTING TIMING 216
TROUBLESHOOTING 216
IGNITION SYSTEM TESTING SEQUENCE 216
PROCEDURES 216
SPARK PLUGS 216
SPARK PLUG CABLES 218
EMERGENCY ENGINE STOP SWITCH 219
IGNITION COILS 219
ENGINE HARNESS – 600R E-TEC 221
GENERAL 221
PROCEDURES 224
REMOVING THE ENGINE WIRING HARNESS 224
ENGINE WIRING HARNESS ASSEMBLY 224
INSTALLING THE ENGINE WIRING HARNESS 226
ENGINE HARNESS – 850 E-TEC 230
GENERAL 230
PROCEDURES 234
REMOVING THE ENGINE WIRING HARNESS 234
ENGINE WIRING HARNESS ASSEMBLY 234
INSTALLING THE ENGINE WIRING HARNESS 236

05 TECHNICAL SPECIFICATIONS 241
ENGINE 242

12 V battery supply cable
(P/N 529035997)

Page:76

ACG adapter
(P/N 529036410)

Page:63

Bearing heater
(P/N 529035969)

Page:131, 145

Ceramic seal installer
(P/N 529036014)

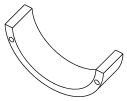
Page:50

Clutch holder
(P/N 529036369)

Page:58, 61

Crankshaft bearing puller
(P/N 529036004)

Page:130, 144

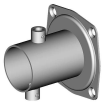
Crankshaft distance gauge
(P/N 529036453)

Page:133

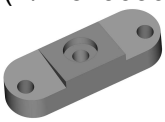
Crankshaft protector
(P/N 529036434)

Page:59, 130–131, 143

Degree wheel
(P/N 529035607)

Page:129, 143

Dial gauge adapter
(P/N 529036443)

Page:127, 141

Dial indicator adapter
(P/N 529036418)

Page:213

Distance gauge
(P/N 529036415)

Page:146

ECM adapter tool
(P/N 529036166)

Page:171

Extractor adaptor
(P/N 529036136)

Page:194

Fluke 115 multimeter
(P/N 529035868)

Page:34, 62–63, 76–77, 85–87

Half-ring
(P/N 529036414)

Page:143

Half-rings
(P/N 420977475)

Page:130

Half-rings
(P/N 420977479)

Page:131

Handle
(P/N 420877650)

Page:49, 67

Impulse fitting punch (BIG)
(P/N 529036412)

Page:37, 44

Impulse fitting punch (small)
(P/N 529036413)

Page:37

SERVICE TOOLS INDEX

Intake plugs
(P/N 529036421)



Page:4

Large hose pincher
(P/N 529032500)



Page:42

Leak test kit
(P/N 529033100)



Page:28

Magneto holder
(P/N 529036404)



Page:58–59, 61

Magneto puller
(P/N 529036403)



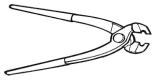
Page:59–60

Manifold plug 63 mm (2-1/2")
(P/N 529035961)



Page:4

Oetiker plier
(P/N 295000070)



Page:185

Oil seal pusher
(P/N 529035757)



Page:49

Piston circlip installer 21 mm
(P/N 529036138)



Page:120

Piston circlip installer
(P/N 529035686)



Page:103

Piston projection
(P/N 529036215)



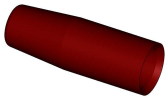
Page:99, 116

Power interface
(P/N 515177223)



Page:76

Protector sleeve (PUMP)
(P/N 529036406)



Page:50

Protector sleeve (RAVE)
(P/N 529036488)



Page:82

Puller ring
(P/N 420977490)



Page:130–131, 143

RAVE nut wrench
(P/N 529036439)



Page:77–79

Small hose pincher
(P/N 295000076)



Page:4, 14, 20, 42, 157, 162, 204

Starter drive needle installer
(P/N 529035934)



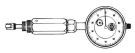
Page:67

Support plate
(P/N 529035976)



Page:133

TDC dial indicator
(P/N 414104700)



Page:99, 116, 213

Temperature indicator stick
(P/N 529035970)

Page:131, 145

Vacuum/pressure pump
(P/N 529021800)



Page:5, 29, 38, 42–43

Water pump bearing punch
(P/N 529036417)



Page:125, 139

Water pump impeller tool –
600R E-TEC
(P/N 529036446)



Page:45

Water pump impeller tool –
850E-TEC
(P/N 529036444)



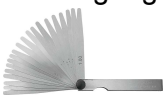
Page:45

Dial gauge



Page:128, 142

Feeler gauge



Page:102, 119, 129, 143

Magnetic-base dial gauge holder



Page:128, 142

Micrometer



Page:100, 117

Black neoprene paint
Page:66

Brake and parts cleaner PRO S2
Page:36, 44, 46, 50, 60, 81, 205

Clutch and pulley flange cleaner PRO S1
Page:131, 145

Dielectric grease
Page:199

Injection oil
Page:81–82, 98, 103, 115, 120, 127, 196–197, 203, 218

Isoflex grease Topas NB 52
Page:132, 134

Loctite 243 (blue)
Page:8, 11, 19, 46, 60–61, 64, 78–79, 87, 158, 167

Loctite 5910
Page:57, 126, 140

Loctite 648 (green)
Page:36, 44

Loctite chisel (gasket remover)
Page:97, 111, 114, 125, 139

Lubricant and anti-corrosive
Page:131, 144

Molykote G-N
Page:82

Molykote PG 54
Page:14, 17

O-ring chain lubricant
Page:85

Petamo grease GHY 133N
Page:49, 132, 134, 146, 148

Super Lube grease
Page:82

Triple Guard grease
Page:66–67

T

ENGINE

01 Engine

Engine Leak Test

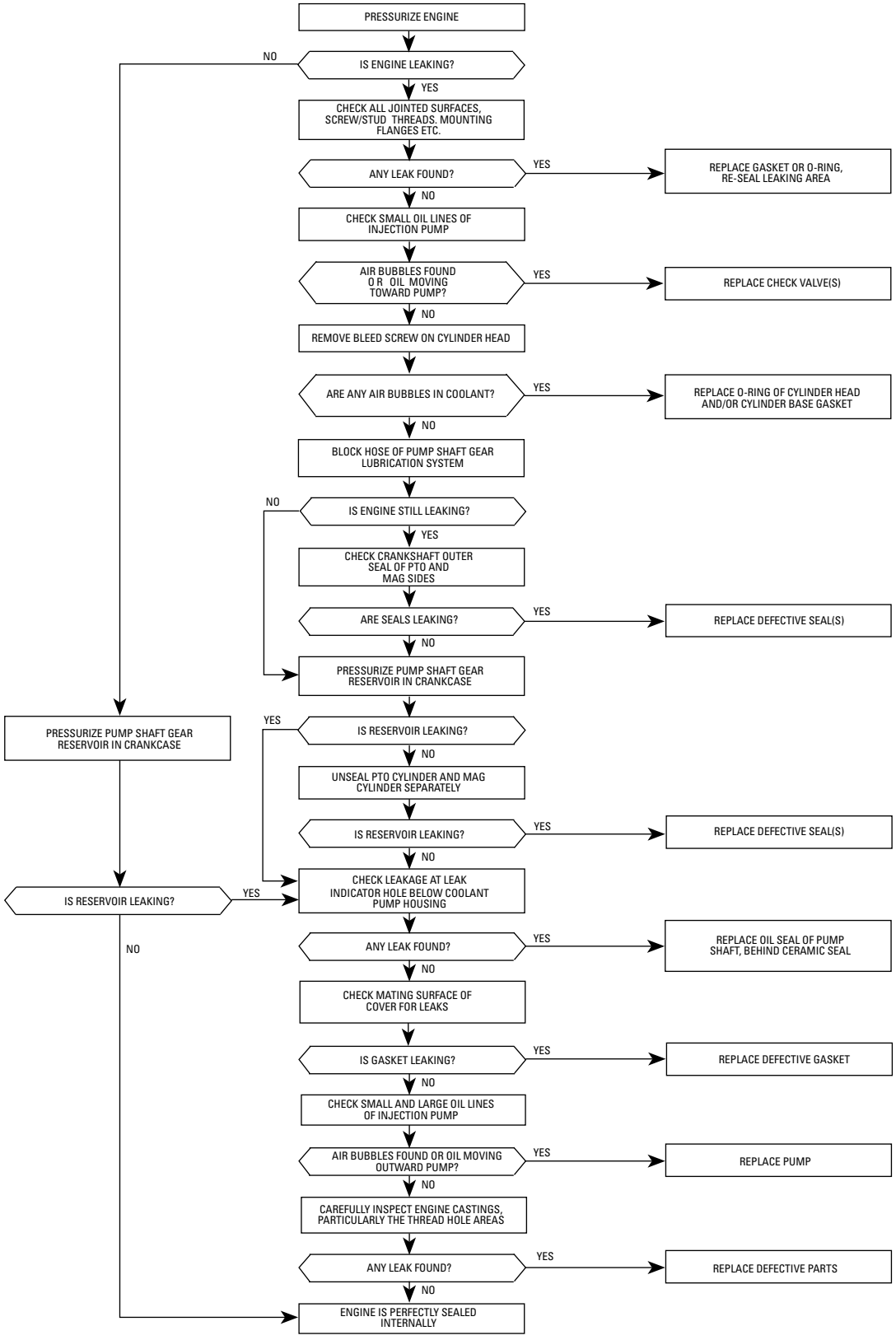
SERVICE TOOLS

Description	Part Number	Page
INTAKE PLUGS	(P/N 529036421)	4
MANIFOLD PLUG 63 MM (2-1/2")	(P/N 529035961)	4
SMALL HOSE PINCHER	(P/N 295000076)	4
VACUUM/PRESSURE PUMP	(P/N 529021800)	5

T

Troubleshooting

This flow chart must be used as a visual reference during the engine leak test procedure.



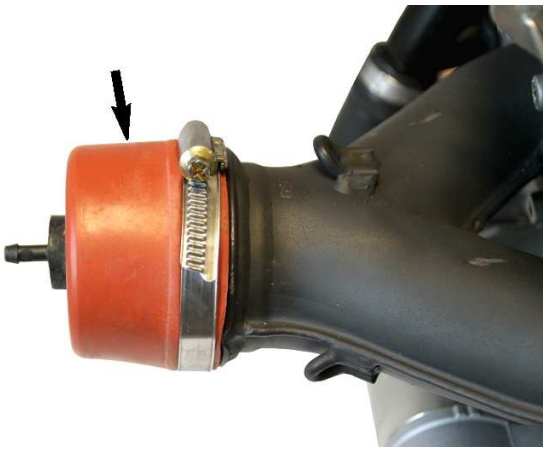
Procedures

Engine Leak Test

Prior to take apart an engine, it is important to proceed with a leak test to diagnose engine problems. Whenever the engine is disassembled, a leak test should be performed after reassembly.

1. Remove engine. Do not remove the exhaust manifold. Refer to *Engine Removal and Installation* subsection.
2. Remove throttle body. Refer to *E-TEC Direct Fuel Injection* subsection.
3. Install appropriate plug over exhaust manifold and secure with a clamp.

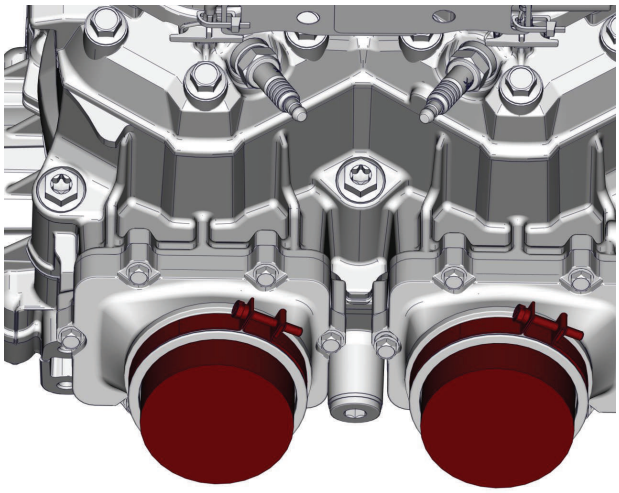
Manifold plug 63 mm (2-1/2") (P/N 529035961)	



4. Insert an intake plug in each intake adapters.

Intake plugs (P/N 529036421)	

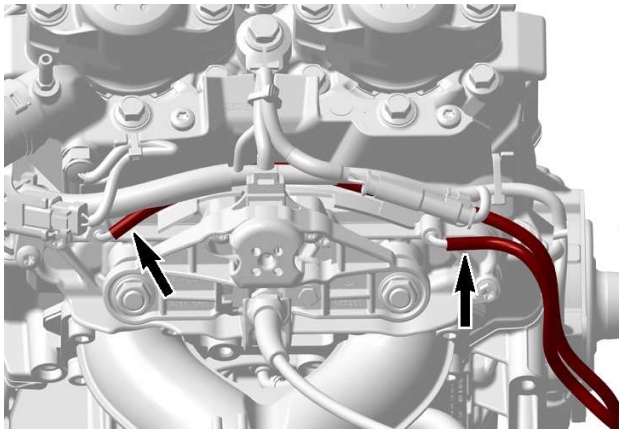
5. Tighten with existing clamps.



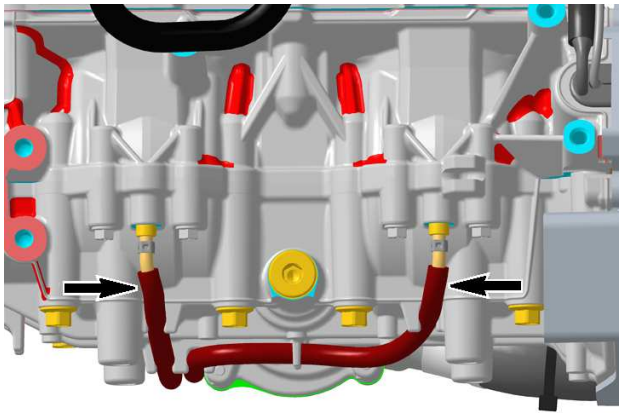
TYPICAL

6. Block oil hoses connected to the oil pump:
   1. Partially remove corrugated tube from oil hoses.
   2. Install hose pincher right after check valve.

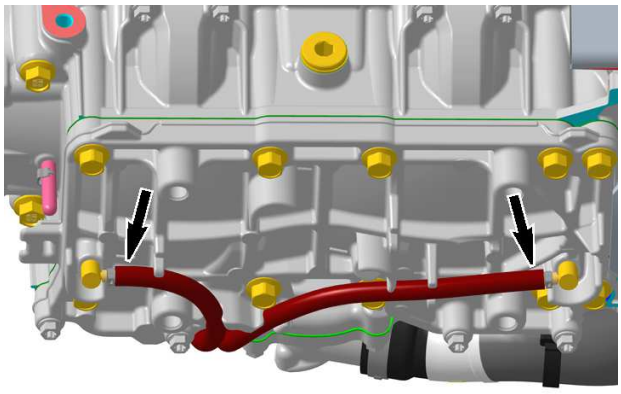
Small hose pincher (P/N 295000076)	



TYPICAL - EXHAUST SIDE SHOWN



INTAKE SIDE SHOWN - 600R E-TEC ENGINE



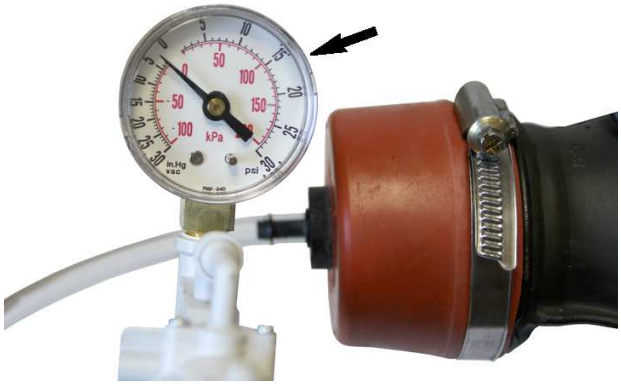
INTAKE SIDE SHOWN - 850 E-TEC ENGINE

NOTICE

Pay attention not to squeeze hose nipples.

7. Pressurize engine.

Vacuum/pressure pump (P/N 529021800)	



Engine Leak Test	
Pressure	**Time (Without Pressure Drop)**
30 kPa (4.35 lbf/in²)	3 minutes

NOTICE

Do not exceed the specified pressure.

8. If pressure drops before 3 minutes, spray a soapy solution on tester kit (manifold and intake plugs, vacuum/pressure pump and its hose).
   1. If tester kit (manifold and intake plugs, hoses and pump) is leaking, bubbles will indicate where leak comes from.
   2. If tester kit is not leaking, check engine, see *Engine Components to be Verified*.

Engine Components to be Verified

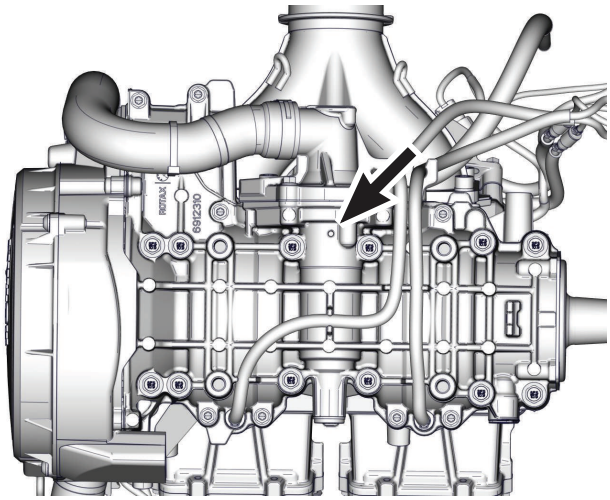
If air is escaping from engine check all jointed surfaces and screw or stud threads of engine:

- Spark plug base, insulator
- Cylinder head
- RAVE valve oil seals and housing
- Cylinder block
- Crankcase halves (joint)
- Crankshaft outer seals (PTO and MAG)
- Fuel injector gaskets
- Base plate gasket and base plate (850 E-TEC engine only)

Troubleshooting Tips

Air bubbles in cooling system indicate a defective cylinder head O-ring or cylinder base gasket.

Check leak indicator hole for oil or coolant.



TYPICAL - ENGINE BOTTOM VIEW

Leaking coolant indicates:

- A defective ceramic seal (on water pump side)
- Defective O-ring on bearing carrier, see *Cooling System* subsection.

Leaking oil indicates:

- A defective oil seal (behind ceramic seal)
- Defective O-ring on bearing carrier, see *Cooling System* subsection.

Pump Shaft Oil Gear Reservoir Leak Test

1. Install air pump on reservoir fitting and pressurize engine.

Pump Shaft Oil Gear Reservoir Leak Test	
Pressure	**Time (Without Pressure Drop)**
30 kPa (4.35 lbf/in²)	3 minutes

NOTICE
Do not exceed the specified pressure.

TYPICAL

2. If pressure drops check for:
   1. Leaking plug screw gasket.
   2. Defective O-ring on bearing carrier (see *Cooling System* subsection).
   3. Defective oil seal on water pump side.
   4. Defective crankshaft inner seal.

TYPICAL - CRANKCASE INSIDE VIEW

1. *Leakage through inner seal on MAG side*
2. *Leakage through inner seal on PTO side*

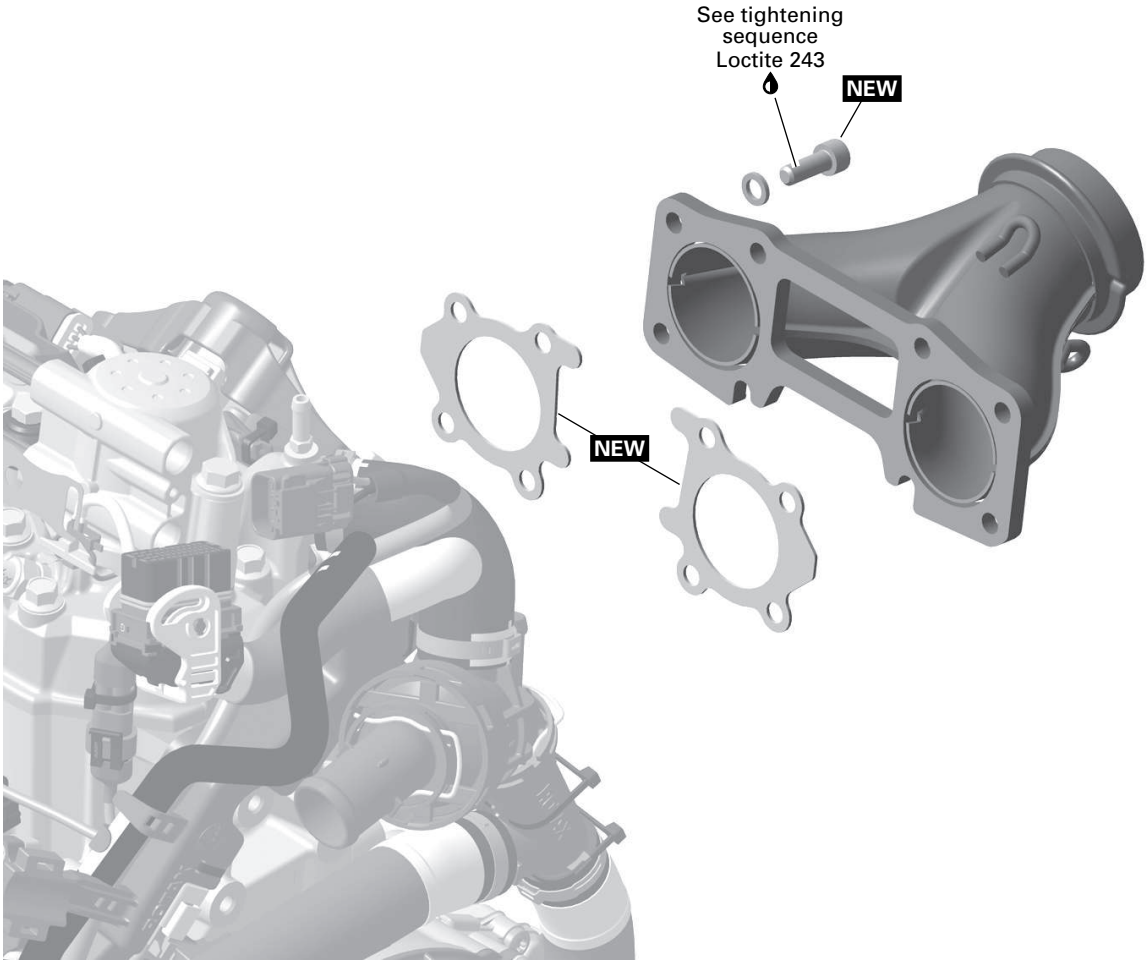
TYPICAL - CRANKCASE INSIDE VIEW

1. *Leakage through water pump oil seal (reservoir side)*
2. *Leakage on cover side (O-ring)*

Exhaust Manifold – 600R E-TEC

SERVICE PRODUCTS

Description	Part Number	Page
LOCTITE 243 (BLUE)		8



NEW = Component must be replaced when removed.

General

⚠ WARNING

To avoid potential burns, never touch exhaust system components immediately after the engine has been running because these components are very hot. Let engine and exhaust system cool down before performing any servicing.

During the assembly or the installation, use the torque value and service products as in the exploded view.

⚠ WARNING

Torque wrench tightening specifications must be strictly adhered to.
Locking devices (e.g.: locking tabs, elastic stop nuts, self-locking fasteners, cotter pins, etc.) must be replaced with new ones.

Procedures

Exhaust Manifold

Removing the Exhaust Manifold

1. Remove tuned pipe. Refer to *Exhaust System* subsection.
2. Remove and discard the exhaust manifold screws. Keep washers for reinstallation.

Allen spherical socket	

3. Remove the exhaust manifold and discard gaskets.

Inspecting the Exhaust Manifold

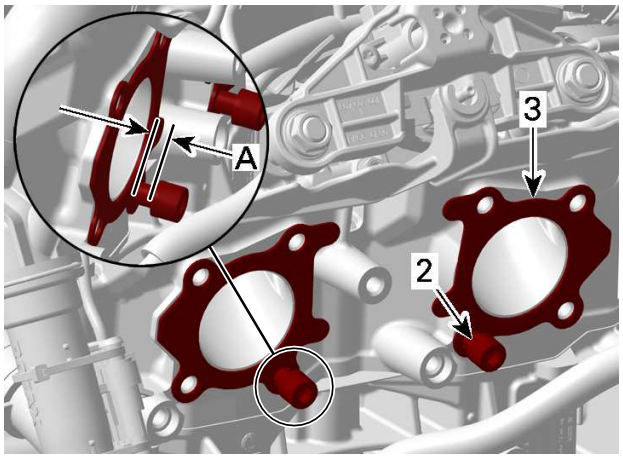
Check if manifold is cracked or damaged. Replace if necessary.

Installing the Exhaust Manifold

1. Apply a drop of threadlocker on threads of two (2) **NEW** screws.

Loctite 243 (blue)

2. Install both screws with previously removed washers and **NEW** gasket as shown.



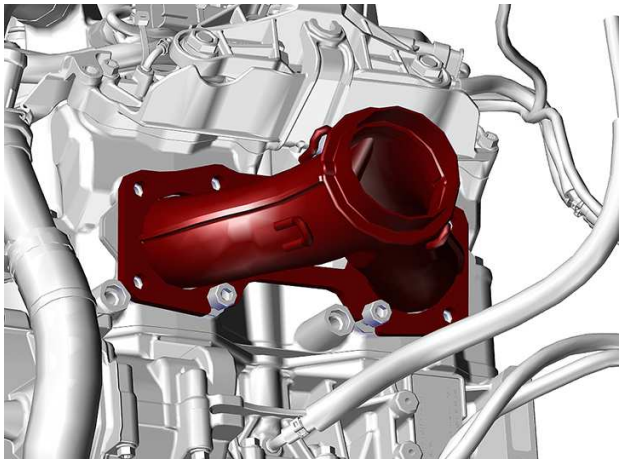
1. *New exhaust manifold screw*
2. *Previously removed washer*
3. *New gasket*

A. *10 mm (.394 in)*

3. Fit the exhaust manifold on the two (2) screws previously installed.

NOTICE

Make sure to position the exhaust manifold between washers and gaskets.



4. Apply a drop of threadlocker on threads of all remaining **NEW** screws.

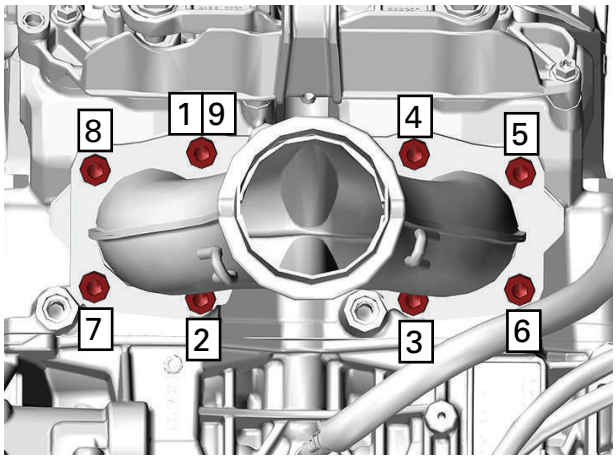
Loctite 243 (blue)

5. Install the screws with remaining washers and tighten them to specification as per the following tightening sequence and procedure.

Loctite 243 (blue)

NOTICE

Do not use an impact wrench to tighten exhaust manifold screws.



TIGHTENING SEQUENCE

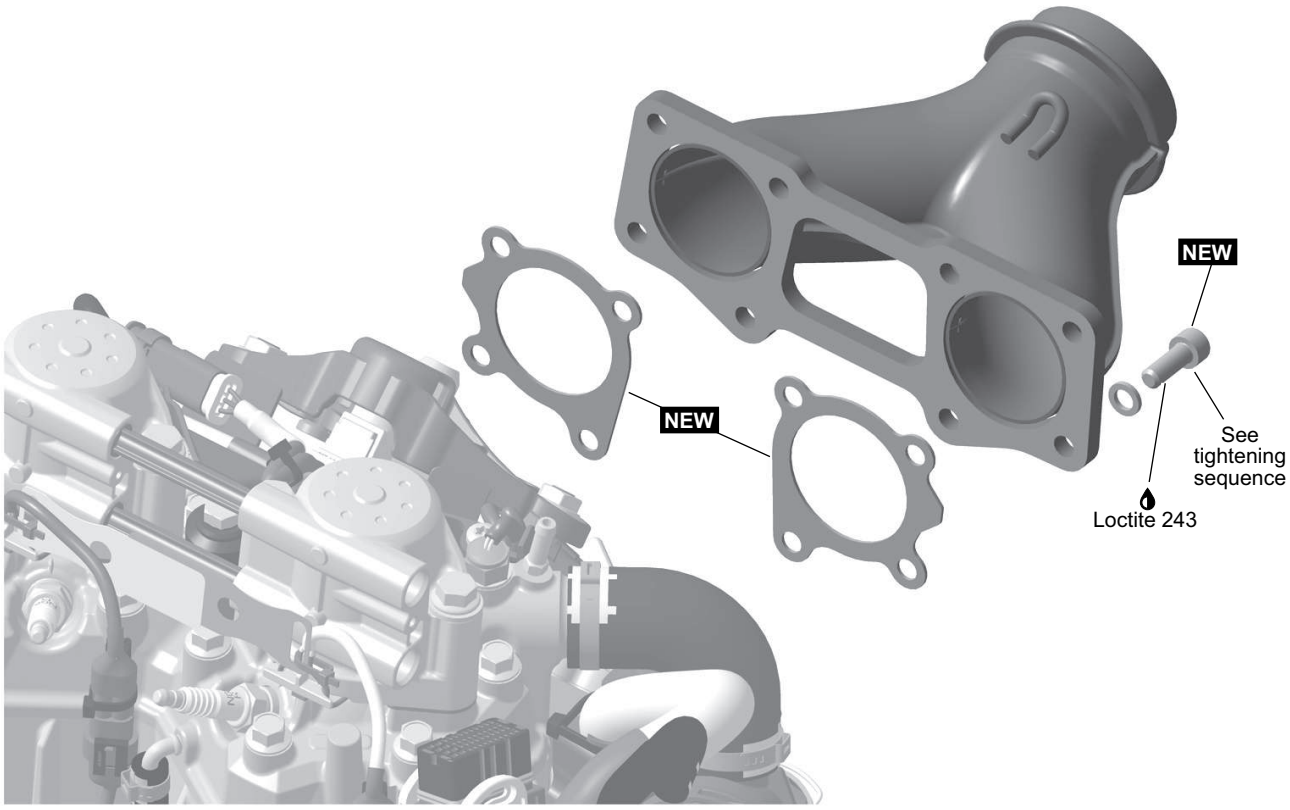
Tightening Torque	
Exhaust manifold screws	34 ± 4 N•m (25 ± 3 lbf•ft)

6. Install tuned pipe. Refer to *Exhaust System* subsection.

Exhaust Manifold – 850 E-TEC

SERVICE PRODUCTS

Description	Part Number	Page
LOCTITE 243 (BLUE)		11



NEW = Component must be replaced when removed.

General

⚠ WARNING

To avoid potential burns, never touch exhaust system components immediately after the engine has been running because these components are very hot. Let engine and exhaust system cool down before performing any servicing.

During the assembly or the installation, use the torque value and service products as in the exploded view.

⚠ WARNING

Torque wrench tightening specifications must be strictly adhered to.
Locking devices (e.g.: locking tabs, elastic stop nuts, self-locking fasteners, cotter pins, etc.) must be replaced with new ones.

Procedures

Exhaust Manifold

Removing the Exhaust Manifold

1. Remove tuned pipe. Refer to *exhaust system* subsection.
2. Remove and discard the exhaust manifold screws. Keep washers for reinstallation.

Allen spherical socket	

3. Remove the exhaust manifold and discard gaskets.

Inspecting the Exhaust Manifold

Check if manifold is cracked or damaged. Replace if necessary.

Installing the Exhaust Manifold

1. Install manifold with **NEW** gaskets.
2. Apply a drop of threadlocker on threads of each screw.

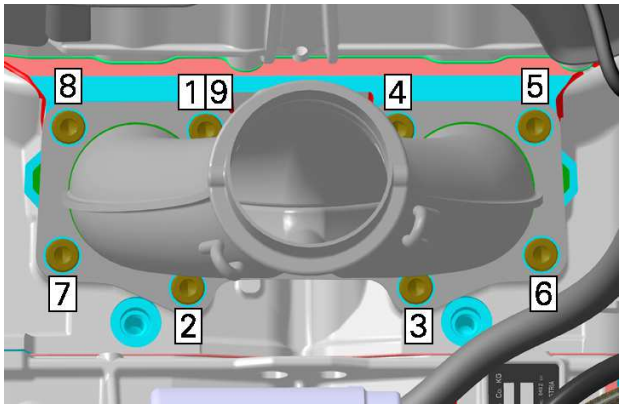
Loctite 243 (blue)

3. Install **NEW** exhaust manifold screws with washers and tighten them to specification as per the following tightening sequence and procedure.

Loctite 243 (blue)

NOTICE

Do not use an impact wrench to tighten exhaust manifold screws.



Tightening Torque	
Exhaust manifold screws	34 ± 4 N•m (25 ± 3 lbf•ft)

4. Install tuned pipe. Refer to *Exhaust System* subsection.

Rewind Starter

SERVICE TOOLS

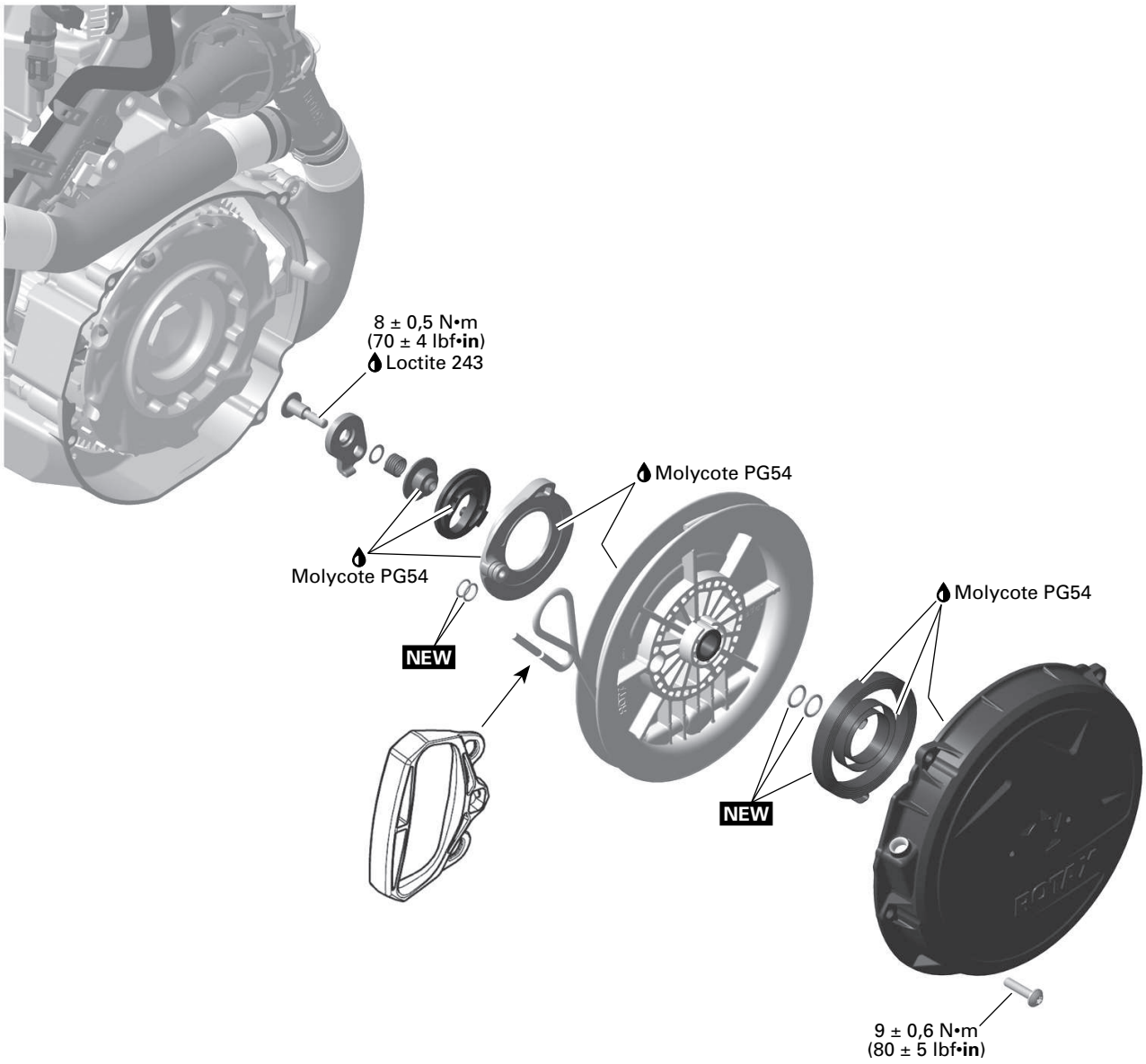
Description	Part Number	Page
SMALL HOSE PINCHER	(P/N 295000076)	14, 20

SERVICE PRODUCTS

Description	Part Number	Page
LOCTITE 243 (BLUE)		19
MOLYKOTE PG 54		14, 17

Rewind Starter

T



NEW = Component must be replaced when removed.

Maintenance

Cleaning and Lubricating the Rewind Starter

1. Refer to *Assembling The Rewind Starter* in this subsection.

NOTICE

It is of the utmost importance that the rewind starter spring be lubricated periodically using the recommended grease. The use of standard multipurpose grease could result in rewind starter malfunction under very cold temperatures and component life will be shortened.

Molykote PG 54

Inspection

Due to dust accumulation, rewind starter must be periodically cleaned, inspected and lubricated.

NOTICE

It is of the utmost importance that the rewind starter spring is lubricated periodically using specific lubricant. Otherwise, rewind starter component life will be shortened and/or rewind starter will not operate properly under very cold temperatures.

Check if starter rope is fraying, replace if necessary.

When pulling starter handle, starter mechanism must engage within 10 cm (3.94 in) of rope pull length. If not, disassemble rewind starter, clean and check for damaged plastic parts. Replace as required, lubricate, reassemble and recheck.

When releasing starter handle, it must return to its stopper and stay against it. If not, check for proper spring preload or damage. Readjust or replace as required.

When pulling starter handle 10 times in a row, it must return freely. If not, check for damaged parts or lack of lubrication. Replace parts or lubricate accordingly.

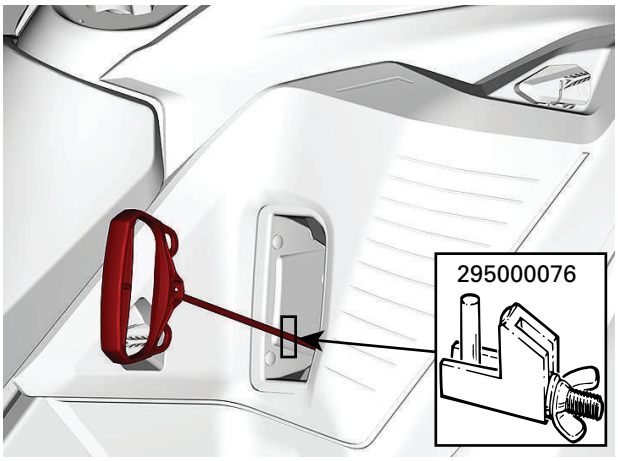
Procedures

Rewind Starter Handle

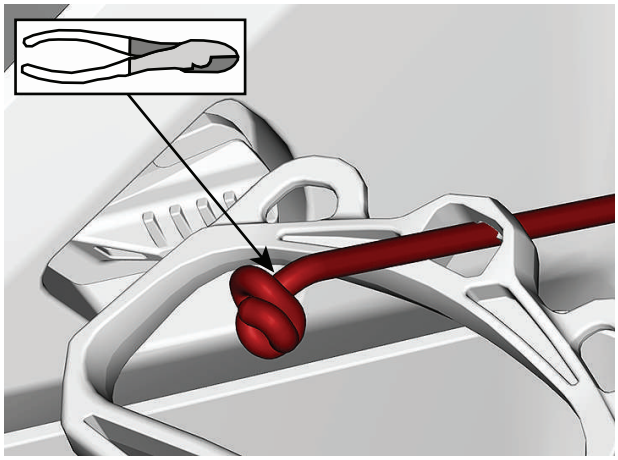
Removing the Rewind Starter Handle

1. Pull out starter handle/rope for 50 cm (20 in) approximately and lock rope near rewind starter.

Small hose pincher (P/N 295000076)	



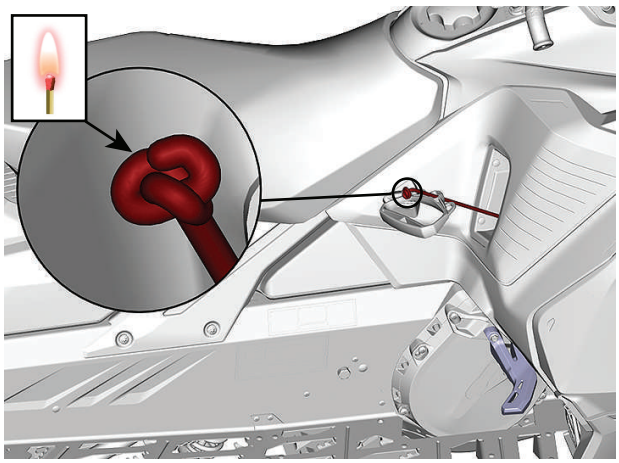
2. Using a small screwdriver, extract rope knot from stater handle.
3. Cut rope close to knot.



Installing the Rewind Starter Handle

Before installing starter handle on the rope, it is necessary to fuse the rope end with a lit match. Pass rope through starter handle and tie a knot on the rope end.

Fuse the knot with a lit match then insert rope end down and pull the starter handle over the knot.



Rewind Starter Rope

Replacing the Rewind Starter Rope

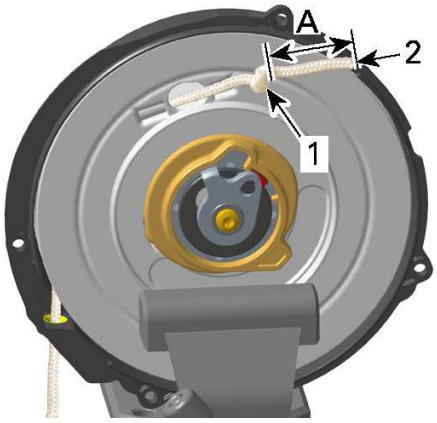
1. Remove rewind starter. Refer to *Rewind Starter* in this subsection.
2. Completely pull out rope. Hold rewind starter in a vise.



3. Slide rope and untie the knot.
4. Remove rope from rope sheave.

NOTE: A new rope must have a overall length of 200 cm (78.74 in).

5. Insert rope end in rope sheave orifice and lock it by making a knot, leaving behind a free portion of 30 to 35 mm (1.2 to 1.4 in) in length.
6. Fuse rope end with a lit match



A. 30 to 35 mm (1.2 to 1.4 in)
1. Knot
2. Fused rope end

7. Insert rope end into rope sheave.

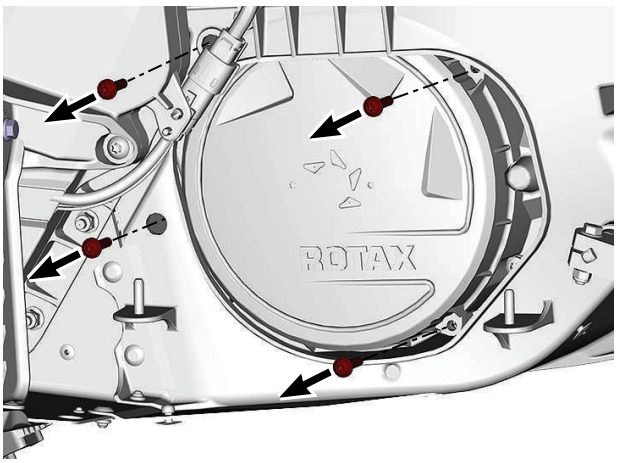


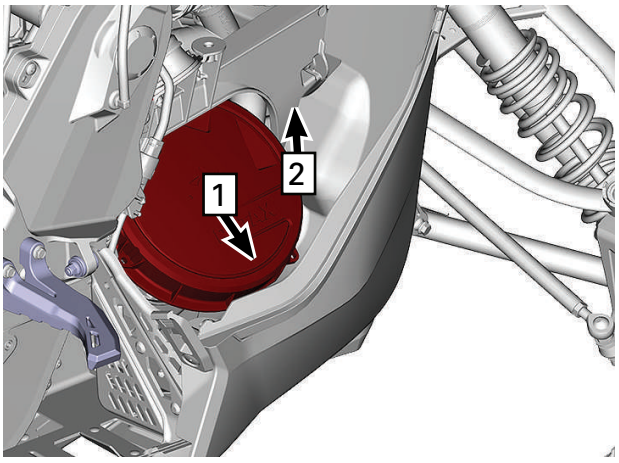
Rewind Starter

Removing the Rewind Starter

1. Remove starter handle.
2. Remove the rewind starter.

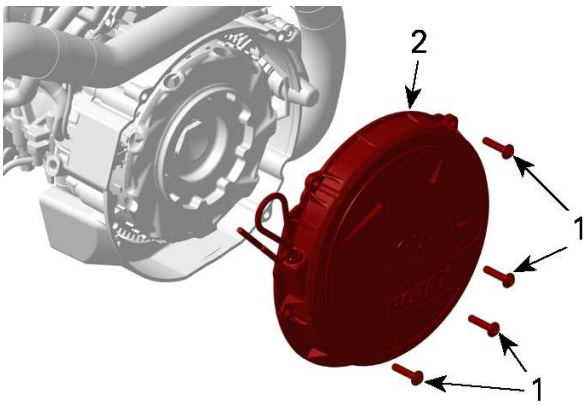
Engine Inside the Vehicle





Step 1. Slide the bottom of the rewind starter out of frame
Step 2. Remove rewind starter from engine

Engine Out of the Vehicle



1. *Retaining screws*
2. *Rewind starter*

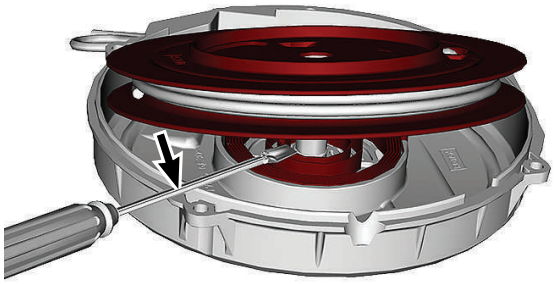
Disassembling the Rewind Starter

1. Remove the hose pincher previously installed on rope at rewind starter handle removal. Let rope sheave get free to release spring preload.
2. Remove the following parts:



1. *Bearing screw*
2. *Lock lever*
3. *Thrust washer*
4. *Compression spring*
5. *Step collar*
6. *Pawl lock*
7. *Pawl*

3. Remove rope sheave from starter housing. Hold spring in starter housing using a screwdriver.



⚠ WARNING

Since the spring is tightly wound inside the guide it may jump out when rewind is handled. Always handle with care.

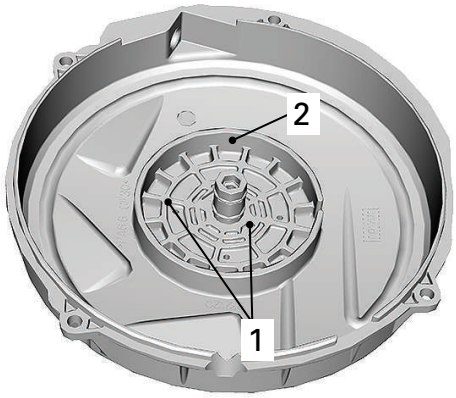
4. For removing the spring, it is of best practice to take the starter housing with the spring showing to the floor and than let the starter housing fall plane to the ground.
5. Discard spring.
6. Remove and discard O-rings.
7. Check sleeve for wear or any other damage. Replace rope sheave if necessary.

Assembling the Rewind Starter

1. Install new O-rings.

2. Apply the lubricant at these locations:

Molykote PG 54



1. *Spring contact area*
2. *Spring guide inside housing*

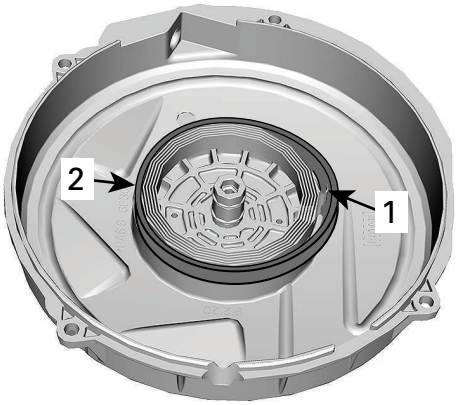
NOTICE

For rewind starter parts lubrication use following specified service product. The use of standard multipurpose grease could result in rewind starter malfunction under very cold temperatures and component life will be shortened.

3. Install the new spring.

⚠ CAUTION

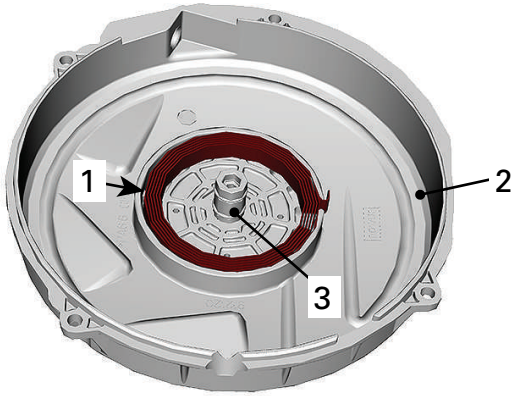
Since the spring is tightly wound inside the guide it may jump out when rewind is handled. Always handle with care.



1. *Outer spring end*
2. *Cardboard carrier (discard it)*

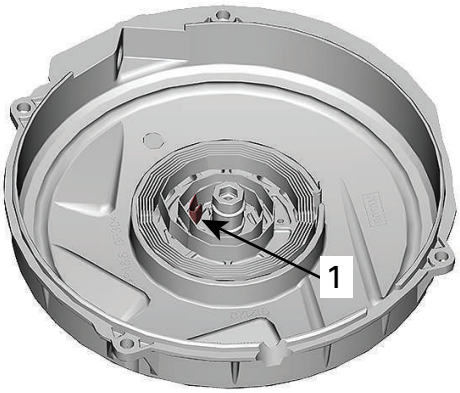
1. Position the cardboard carrier and the spring, over the spring guide wall.
2. Align the spring outer end in the spring guide notch. The spring end must pointed counterclockwise.
3. Using your both thumbs, and carefully press the spring evenly in its location.
4. Discard the cardboard carrier.

4. Apply the lubricant at these locations:



1. *Spring*
2. *1 cm (1/2 in) wide on bottom of housing*
3. *Housing post*

5. Wind rope on rope sheave
6. Place rope sheave in starter housing making sure the sheave hub notch engages in the rewind spring hook.

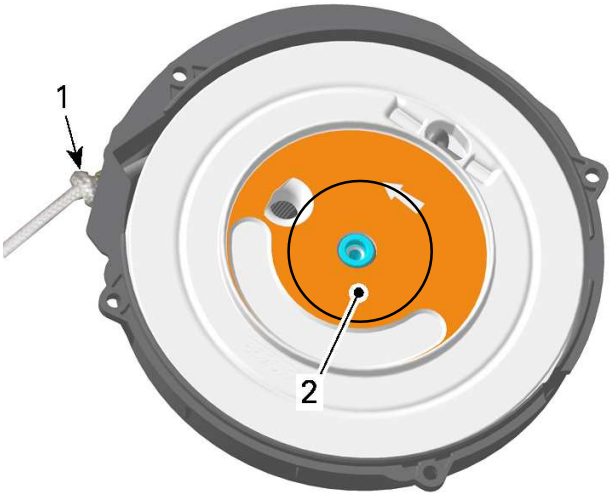


1. *Rewind spring hook*



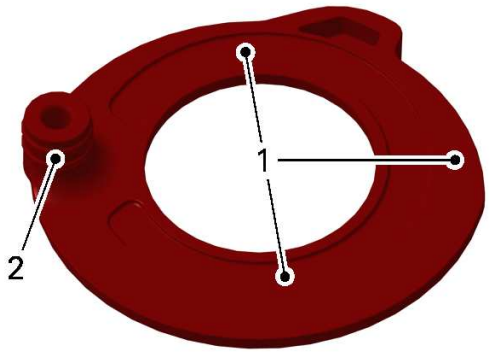
SHEAVE HUB NOTCH

7. Rotate the rope sheave counterclockwise by about 1/2 turn until rope end is accessible through rope exit hole.
8. Pull rope out of starter housing.
9. Rotate the rope sheave counterclockwise 1 full turn.
10. Temporarily make a knot to hold it.
11. Lubricate rope sheave at the contact surface of the pawl.



1. *Knot*
2. *Lubricate contact surface of the pawl*

12. Lubricate pawl at the contact surface and emboss.

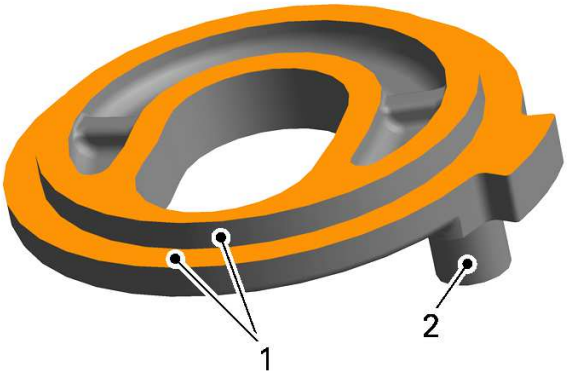


1. *Contact surface*
2. *Emboss*

13. Install pawl on rope sheave.



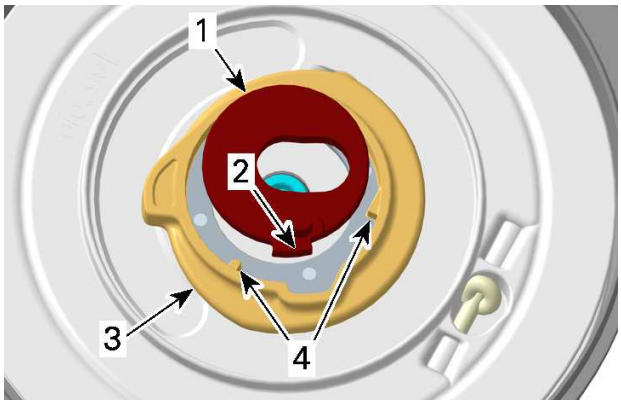
14. Lubricate pawl lock at the contact surfaces and emboss.



1. *Contact surfaces*
2. *Emboss*

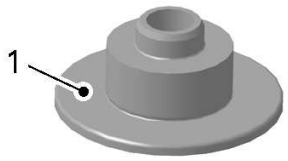
15. Install pawl lock on pawl.

NOTE: Pawl lock nose must engage between the pawl lock stoppers.



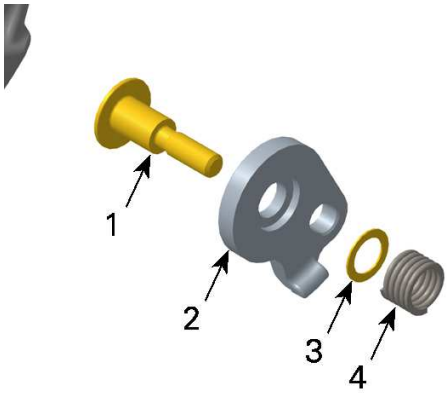
1. *Pawl lock*
2. *Pawl lock nose*
3. *Pawl*
4. *Pawl lock stoppers*

16. Lubricate step collar and install it on pawl lock.



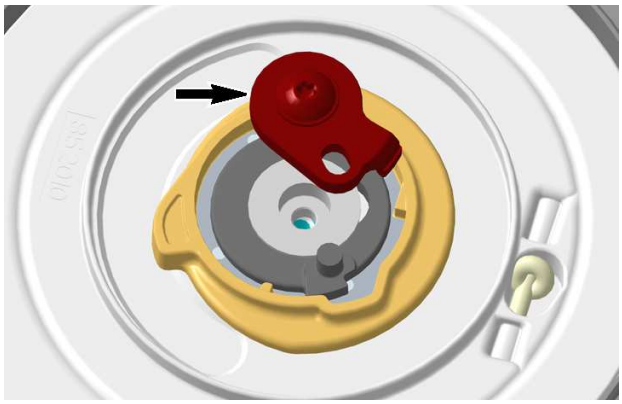
1. *Contact surface*

17. Preassemble as shown:



1. *Bearing screw*
2. *Lock lever*
3. *Thrust washer*
4. *Compression spring*

18. Install preassembled unit on rewind starter.



19. Tighten the bearing screw to specification.

Loctite 243 (blue)

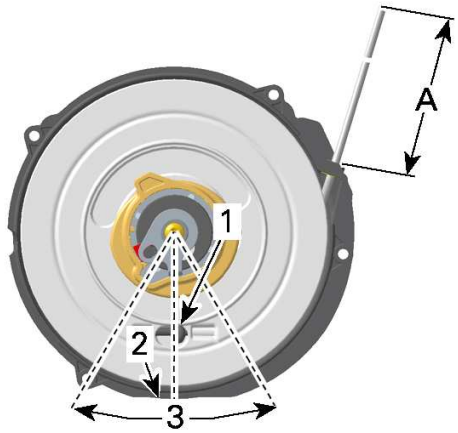
Tightening Torque	
Bearing screw	8 ± 0.5 N·m (71 ± 4 lbf·in)

20. After completion, check if the pawl lock engages and the rope is pulled back completely after releasing the rope.

Installing the Rewind Starter

1. Loosen the temporary knot.
2. Check correct rope length:
   1. Pull out rope until recess for knot in the rope sheave is within the specified range.
   2. Measure rope length.

Minimum Rope Length
275 mm (10.8 in)

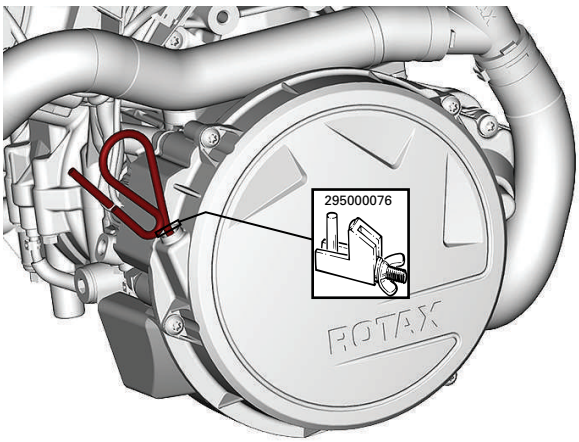


1. *Knot*
2. *Bottom side of rewind starter*
3. *Range of ± 30°*

If rope is too short replace rope, refer to *Rewind Starter Rope Replacement* in this subsection.

3. Lock rope near rewind starter housing.

Small hose pincher (P/N 295000076)	



TYPICAL

4. Reinstall rewind starter assembly on engine.

Tightening Torque	
Rewind starter retaining screws	9 ± 0.6 N•m (80 ± 5 lbf•in)

5. Thread starter rope through console.
6. Install handle. Refer to *Installing the Starter Handle* in this subsection.

Lubrication System

SERVICE TOOLS

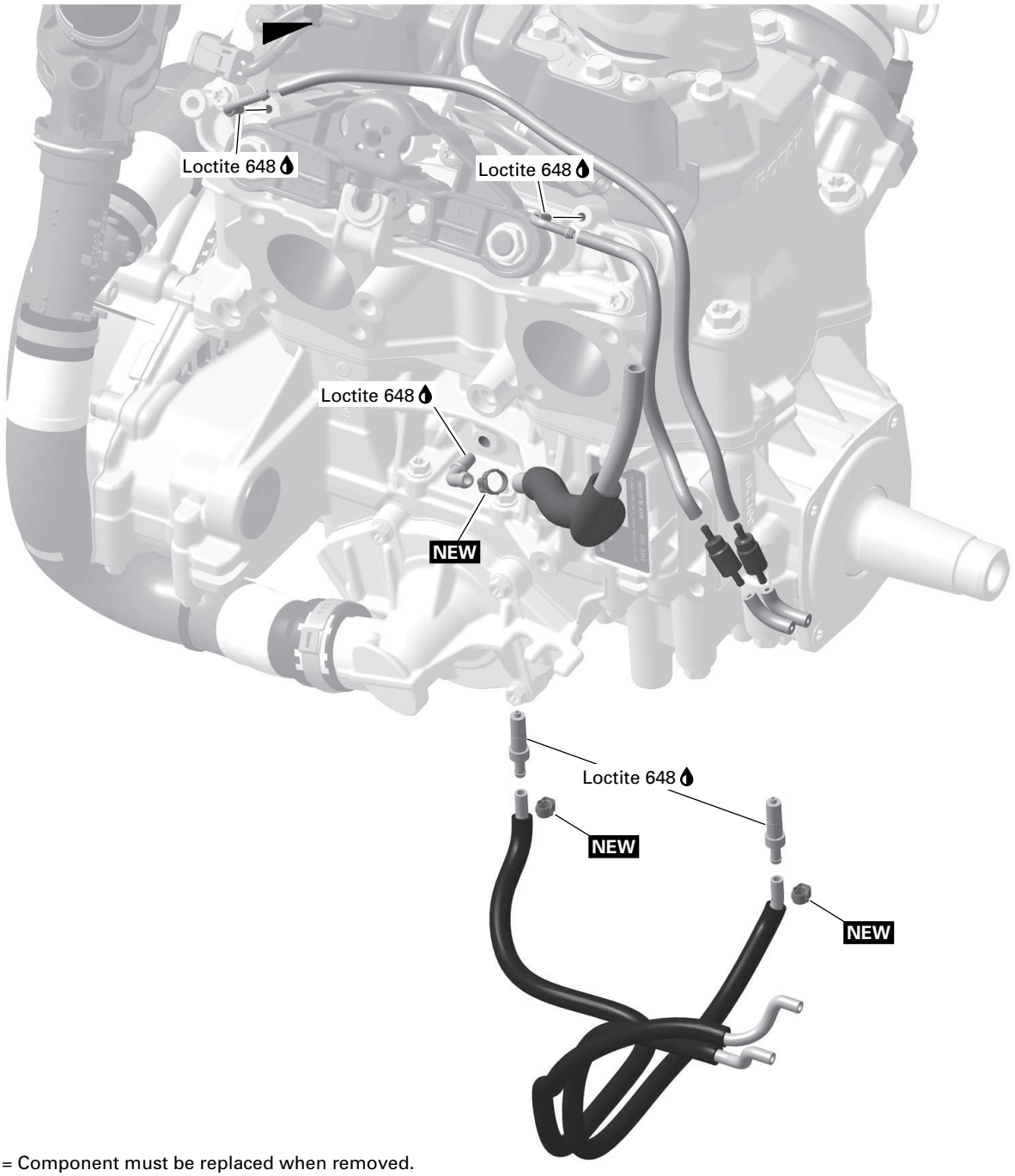
Description	Part Number	Page
FLUKE 115 MULTIMETER	(P/N 529035868)	34
IMPULSE FITTING PUNCH (BIG)	(P/N 529036412)	37
IMPULSE FITTING PUNCH (SMALL)	(P/N 529036413)	37
LEAK TEST KIT	(P/N 529033100)	28
VACUUM/PRESSURE PUMP	(P/N 529021800)	29, 38

SERVICE PRODUCTS

Description	Part Number	Page
BRAKE AND PARTS CLEANER PRO S2		36
LOCTITE 648 (GREEN)		36

Midwest Manuals
Green Manuals
Paperless Manuals For a Better Tomorrow www.green-manuals.com
If you bought this manual from any other seller please leave them
NEGATIVE feedback and notify us at bestshopmanuals@gmail.com

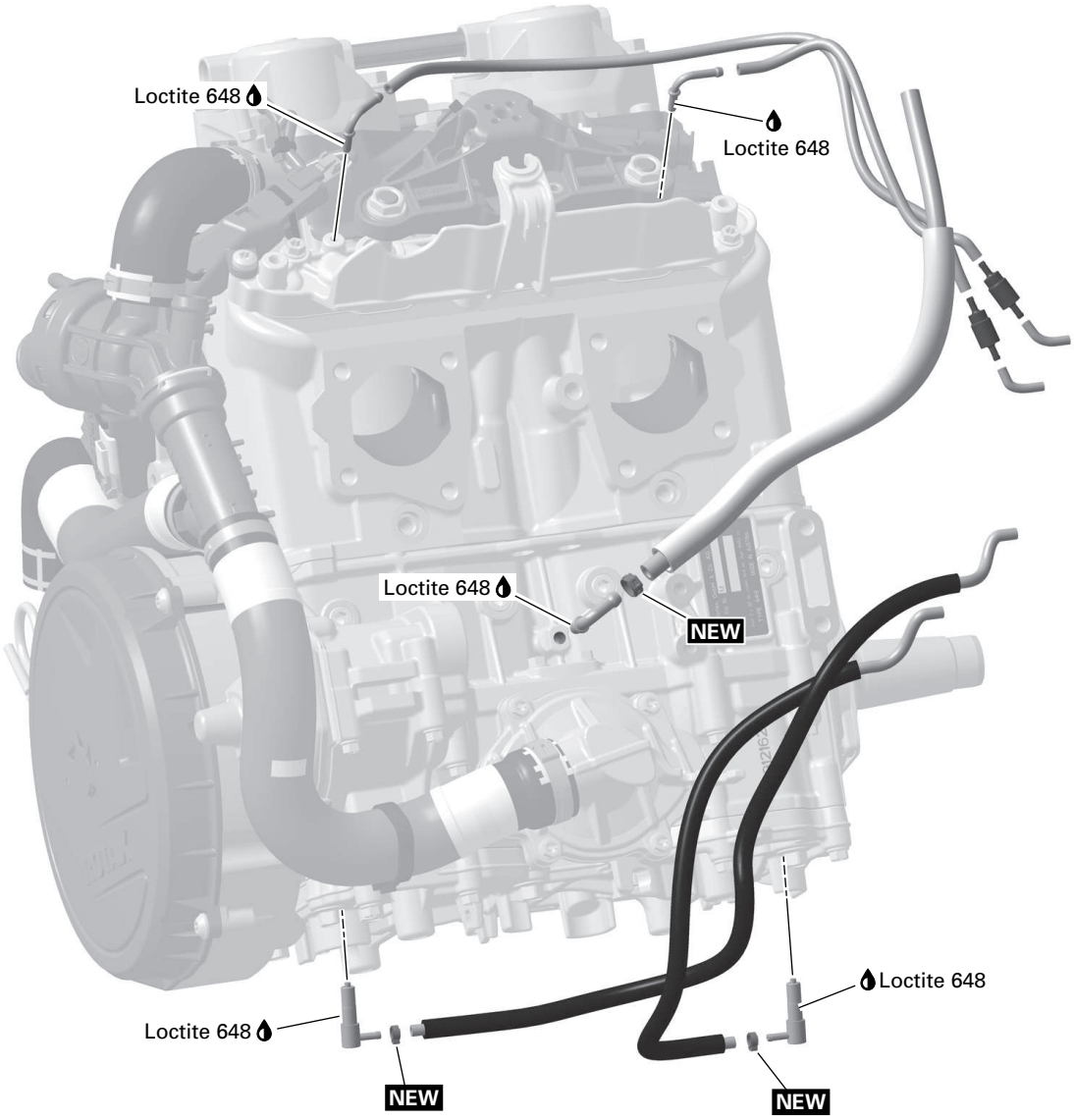
600R E-TEC Engine



NEW = Component must be replaced when removed.

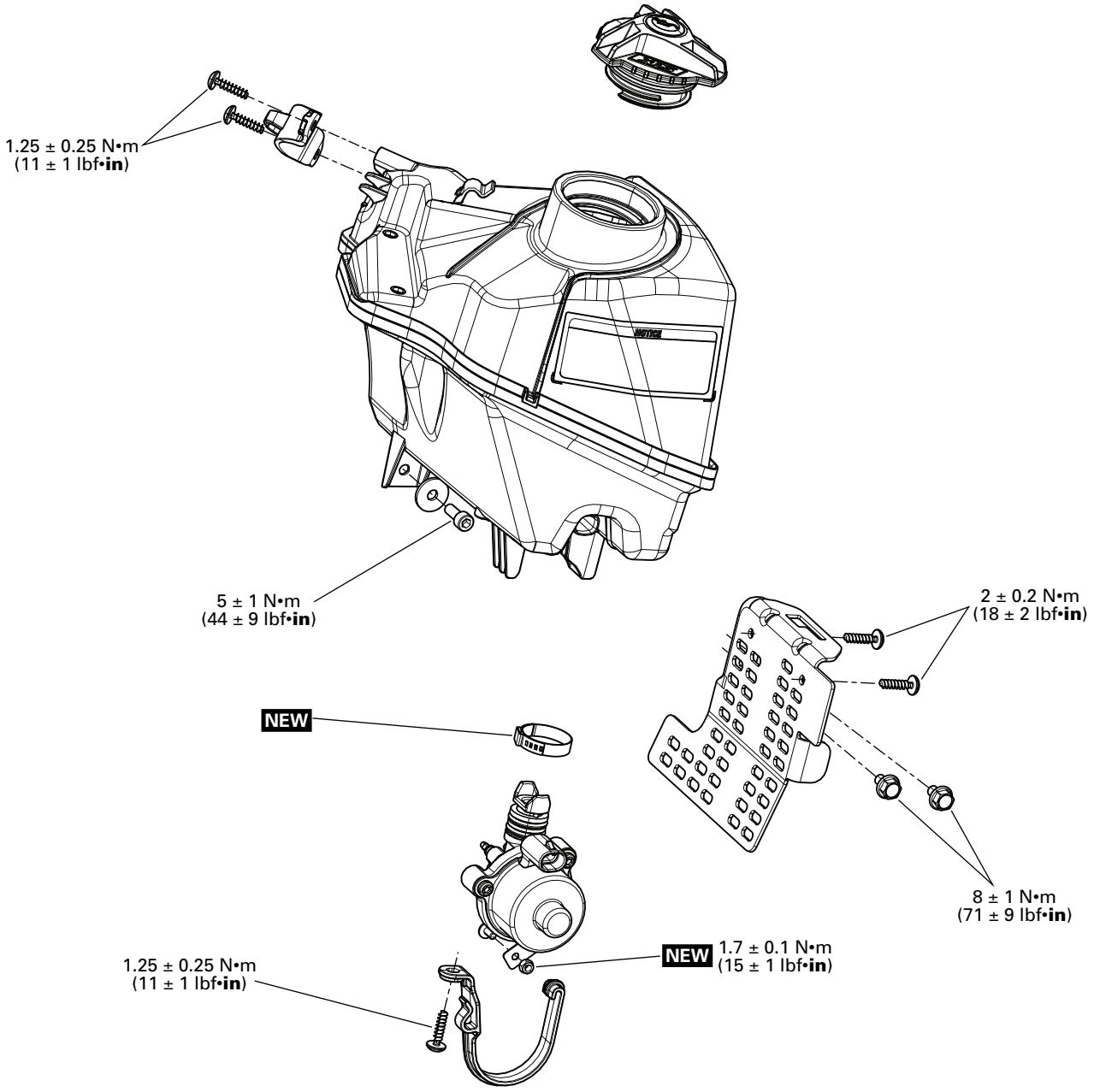
T

850 E-TEC Engine



NEW = Component must be replaced when removed.

Oil Injection Tank and Oil Injection Pump



NEW = Component must be replaced when removed.

General

During assembly or installation, use the torque values and service products as shown in the exploded view.

Clean threads before applying a threadlocker. Refer to *Self-Locking Fasteners* and *Loctite Application* at the beginning of this manual for complete procedure.

⚠ WARNING

Torque wrench tightening specifications must be strictly adhered to.
Locking devices when removed (e.g.: locking tabs, elastic stop nuts, self-locking fasteners, etc.) must be replaced with new ones.

⚠ WARNING

Wipe off any oil spills. Oil is highly flammable.

NOTICE

Do not use a hose pincher on outlet hose. This would damage the spring inside hose.

NOTICE

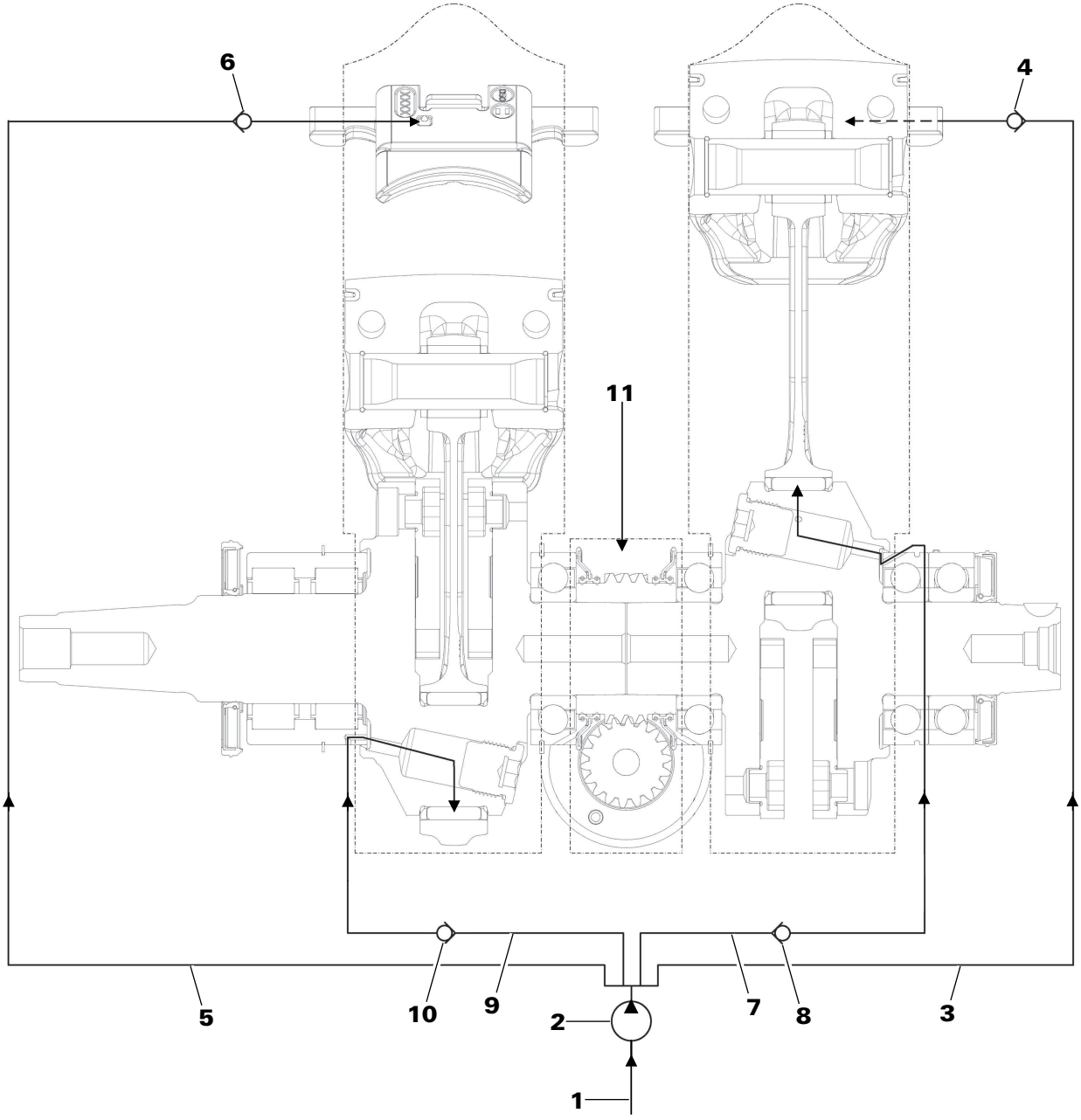
Hoses, cables and locking ties removed during a procedure must be reinstalled as per factory standards.

IMPORTANT

For any information concerning the turbo oil line routing, refer to the *Turbocharger* subsection.

T

Engine Lubrication System Description (850 E-TEC Engine)



1. *Oil supply from oil tank*
2. *Oil pump*
3. *To 3D RAVE valve MAG side*
4. *Check valve RAVE MAG side*
5. *To 3D RAVE valve PTO side*
6. *Check valve RAVE PTO side*
7. *To engine MAG side*
8. *Check valve MAG side main bearing*
9. *To engine PTO side*
10. *Check valve PTO side main bearing*
11. *Oil supply from oil tank*

The engine oil supplied by the oil pump is going through check valves to the outer main bearings. Through oil collecting grooves in the outer crank webs, the oil is going through the crank webs and by centrifugal force, the oil is directly transferred to the crank pins to lubricate the big end bearings. After this oil exits the big end bearings it lubricates the small ends, cylinder liners and pistons.

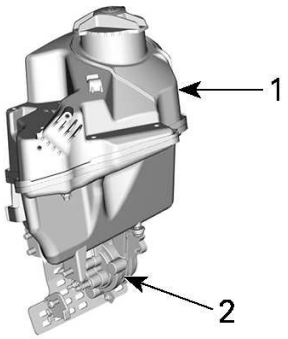
RAVE valves are lubricated by the electronic oil injection pump.

T

System Description

An electronic oil injection pump with a mechanical positive displacement type is used. An electronic pump is more accurate and injection rate can be changed according to engine requirements. This results in a greatly reduced oil consumption.

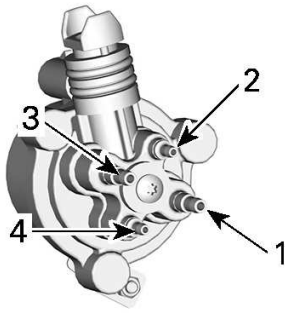
The electronic oil injection pump is directly attached under the oil injection tank.



1. *Oil injection tank*
2. *Electronic oil injection pump*

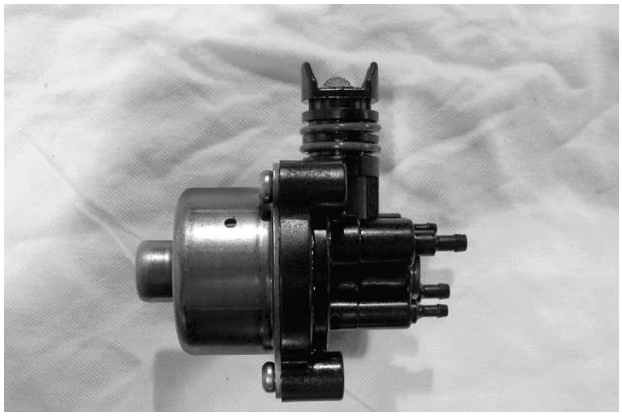
The E-TEC pump features a total of 4 outlets:

– 2 large outlets to the crankcase to lubricate engine internal parts.
– 2 small outlets to the 3D RAVE valves to lubricate valves to prevent carbon deposits.



1. *To engine PTO side*
2. *To 3D RAVE valve PTO side*
3. *To engine MAG side*
4. *To 3D RAVE valve MAG side*

The 4 plungers in the pump work synchronized. They pump all at the same time.



TYPICAL

The ECM controls the pump to inject a variable amount of oil through the entire engine operating range and conditions.

Oil Injection Pump Operation

For the first 6 hours of engine break-in period, oil delivery is increased.

After the break-in period, the oil/fuel ratio will return to its predetermined operating ratio.

Engine	Operating Ratio
600R	100:1
850	70:1

At idle, pump works at approximately less than 1 pulse per minute. A very low quantity of oil is injected to reduce engine smoke and to reduce engine emissions.

As engine speed increases, oil flow increases but not proportionally. It varies according to the specific engine requirements.

Engine	RPM	Pulses per Minute
600R	8000	100
850		180

When operating vehicle in high altitude area, oil flow is reduced proportionally as altitude increases.

Oil Warm-Up Mode

When injection oil is very cold and engine is above idle speed, the oil warm-up mode is active.

To warm-up the oil, the oil injection pump is kept ON after the oil delivery stroke, as long as possible, to then turn OFF for the return stroke. The extra time the pump is ON generates more heat that is dissipated through the oil.

NOTE: The premium gauge displays WARM UP whenever the oil warm-up or engine warm-up modes are active.

To determine if injection oil is cold, the ECM uses a feedback switch, located in oil injection pump, that closes at the end of the oil delivery stroke and opens when the oil injection pump coil is de-energized. Thus, the ECM can calculate the time it takes to deliver the oil which is related to the oil viscosity.

The ECM uses a complex algorithm to vary the warm-up time and the rev limiter according to oil pump requirements based on engine speed and TPS position. Therefore, the rev limiter is set dynamically as per the driver inputs.

NOTE: If a fault code related to the feedback switch is active (P1233, P1234), the oil injection warm-up mode uses data from the ATS but it uses the following parameter values. Engine lubrication does not change, only the warm-up time may be longer than usual.

Oil Warm-Up Mode Strategy When Feedback Switch is Faulty		
Air Temperature	**Warm-Up Time**	**Engine Speed Limitation**
Warm-up starts below -20 °C (-4 °F)	Within approx. 8 and 11 minutes	Within approx. 4000 - 6000 RPM

Automated Engine Oil Fogging

An automated engine oil fogging has been implemented to automatically inject the required oil to protect the engine during vehicle storage. Engine speed will be increased to approximately 1600 RPM and excess oil will be injected for approximately 30 seconds then, the engine will automatically be stopped.

The storage mode can be activated either by using the BRP diagnostic software (BUDS2) or the multifunction gauge on the vehicle. Refer to *Storage Procedure* subsection.

Recommended Injection Oil

Rotax® engines were developed and validated using the XPS™ oil. BRP recommends the use of its XPS injection oil or an equivalent at all time. Damages caused by the use of an injection oil not suitable for this 2-stroke direct fuel injection engine may not be covered by the BRP Limited Warranty.

XPS Recommended Engine Oil
2T E-TEC synthetic oil
If The Recommended Xps Engine Oil Is Not Available
Use a 2-stroke lubricant designed for snowmobiles meeting or exceeding the following lubricant industry specifications: – JASO FD (M345-2004) – SAE Grade 4 (F / M 4)

Maintenance

Inspecting and Cleaning the Oil Injection Pump Strainer

Refer to *Oil Injection Pump*.

Lubricating the Engine

Engine Storage Mode (Summerization Function)

Refer to *Storage Procedure* subsection.

Inspection

Oil System Leak Test

1. Install the test cap on oil tank.

Leak test kit (P/N 529033100)	



TYPICAL
1. Test cap on tank

2. Connect the pressure pump to test cap.

Vacuum/pressure pump (P/N 529021800)	

3. Pressurize oil system as follows.

Pressure	Time to Hold Pressure
18 kPa (2.6 lbf/in²)	3 minutes

4. If pressure drops, locate leak(s) and repair or replace leaking component(s).
5. If pressure does not drop, this validate the oil injection tank and the oil pump for leakage.

Troubleshooting

Symptom	Cause	Action
	Damaged or disconnected oil injection pump.	Check oil injection pump wires and connectors on oil injection pump.
	Circuit wires, connectors or ECM output pins.	Check WHITE/RED wire on oil injection pump connector for 55 volts.
		Check system circuit to connector A.
		Repair or replace defective part(s).
Engine seizure (PTO or MAG side)	Damaged, kinked or obstructed inlet hose.	Repair or replace hose and test oil injection pump (oil outflow).
	Damaged oil injection pump inner piston.	Replace oil injection pump.
	Mechanical engine problem.	Repair or replace engine defective part(s).

Procedures

Oil Injection Pump

Oil Injection Pump Identification

Every pump is bench tested. Its electrical and flow characteristics are registered throughout all its operating range and are associated to a compensation number.

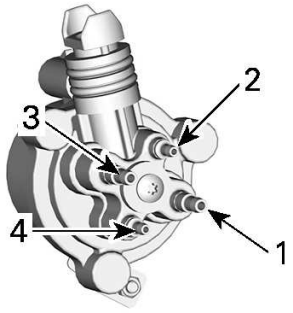
When a pump is replaced, the compensation number must be entered in the BRP diagnostic software (BUDS2). so that the ECM properly controls the pump according to its optimized characteristics.

The compensation number is located on a label on the pump as shown.

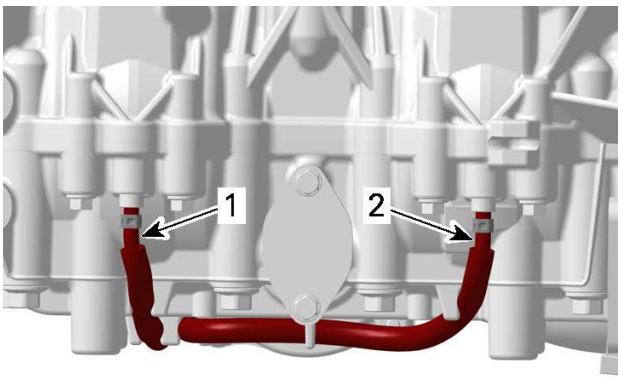


Oil injection pump bleeding is done with BUDS2. Refer to *Bleeding Oil Injection Pump* in this subsection.

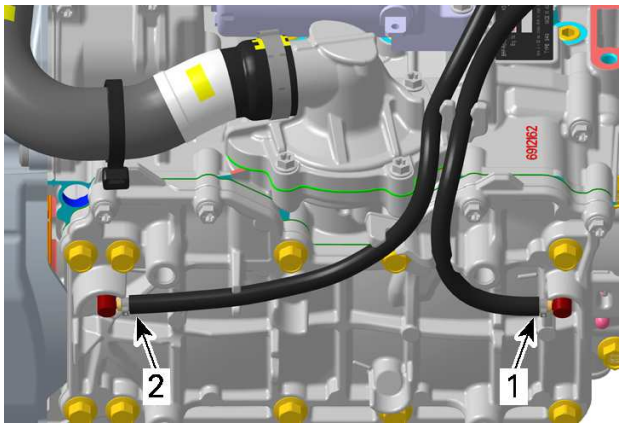
Oil Injection Pump Hoses Connection



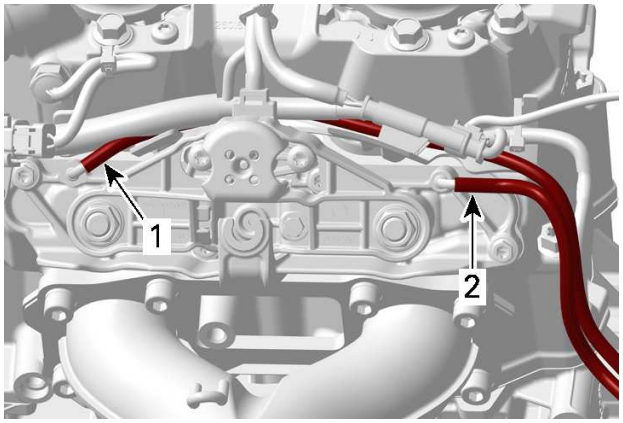
1. *To engine PTO side*
2. *To 3D RAVE valve PTO side*
3. *To engine MAG side*
4. *To 3D RAVE valve MAG side*



600R ENGINE
1. *Oil hose PTO side*
2. *Oil hose MAG side*



850 E-TEC ENGINE
1. *Oil hose PTO side*
2. *Oil hose MAG side*



TYPICAL
1. *Oil hose 3D RAVE valve MAG side*
2. *Oil hose 3D RAVE valve PTO side*

Testing Oil Injection Pump with BUDS2

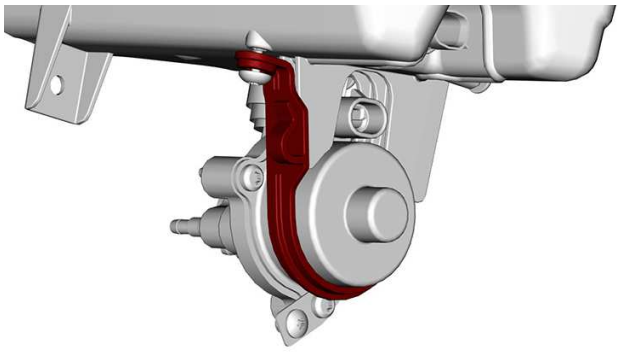
1. Connect the vehicle to the BRP diagnostic software (BUDS2).
2. In BUDS2, go to:
   - **Functions** page
   - **Vehicle** or **ECM** button.
3. Start engine.
4. Select **Routine _ Activate Storage** and follow information displayed.
5. Listen if oil injection pump is activated.

NOTE: Touching the oil injection pump may help to feel if pump is activated.

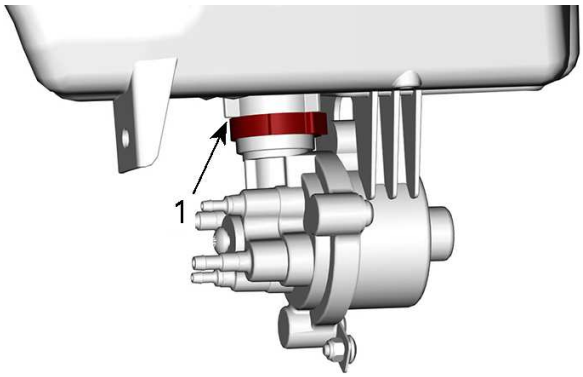
6. If test fails, check wires and connector.

Removing the Oil Injection Pump

1. Detach the oil injection pump hoses.
2. Unplug electrical connectors.
3. Remove the pump bracket.

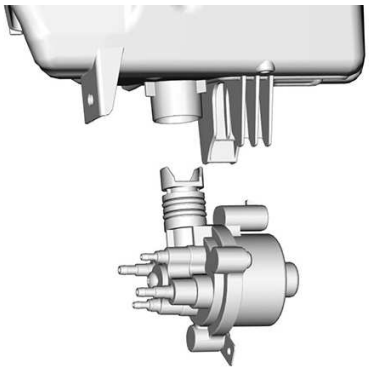


4. Remove and discard Oetiker clamp securing oil injection pump to oil tank.



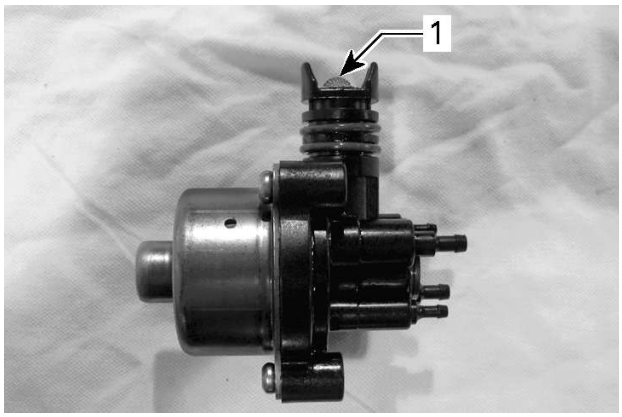
1. Oetiker clamp

5. Move oil injection pump downward to remove it from oil tank.



Inspecting the Oil Injection Pump

1. Check the strainer on the top of oil injection pump. Replace oil injection pump if the strainer is clogged.

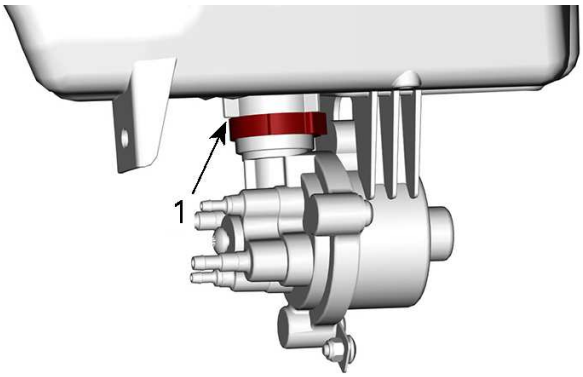


1. Oil injection pump strainer

NOTE: Do not replace oil injection pump needlessly. If strainer is slightly dented, oil injection pump is still functional.

Installing the Oil Injection Pump

1. The installation is the reverse of the removal procedure. However, pay attention to the following.
2. Install **NEW** Oetiker clamp to secure oil injection pump.
3. Ensure Oetiker clamp makes contact with oil tank ribs.



1. Oil tank rib

4. The installation is the reverse of the removal procedure. However, pay attention to the following.
5. Install **NEW** Oetiker clamp to secure oil injection pump.
6. Ensure Oetiker clamp makes contact with oil tank ribs.
7. Refer to *Installing The Oil Tank* to properly reinstall oil tank.

Bleeding Oil Injection Pump

1. Connect the vehicle to the BRP diagnostic software (BUDS2). Refer to *Communication Tools* subsection.
2. In BUDS2, go to:

- **Settings** page
- **ECM** button
- **Settings** tab
- **Configuration - Change oil compensation settings**

3. Compare oil pump codes and on oil injection pump sticker.



BACK OF OIL INJECTION PUMP
1. Oil injection pump code (0 to 9)

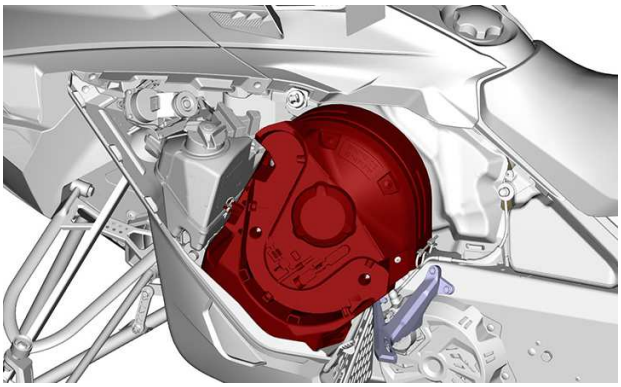
4. Correct oil injection pump code if required.

   Write any changes.
5. Navigate to the **Functions** page.
6. Activate the oil pump.
7. Start engine.
8. Check for air into hoses. If so, the bleeding procedure must be repeated as often as needed until all air is pumped through entire system.

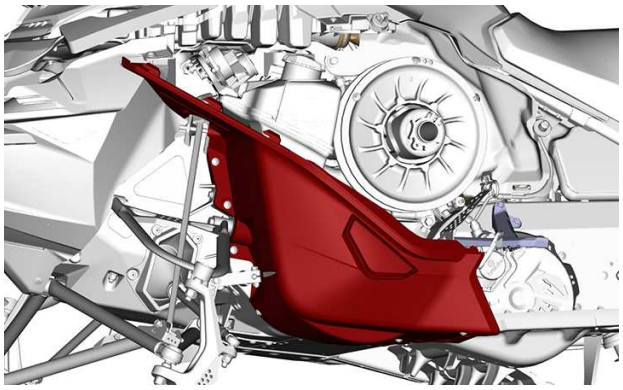
Oil Injection Tank

Removing the Oil Injection Tank

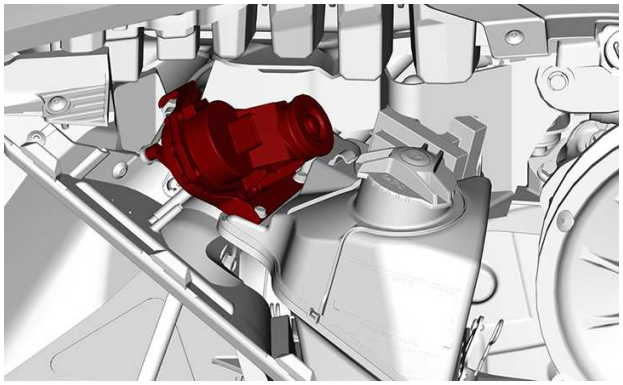
1. Remove upper body module. Refer to *Body* subsection.
2. Remove side panel.
3. Empty oil injection tank completely by siphoning injection oil.
4. Remove belt guard.



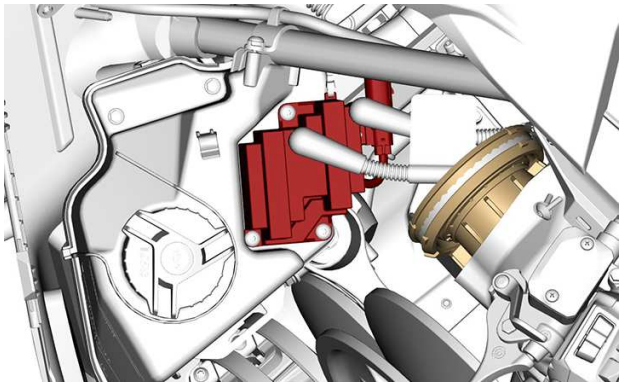
5. Remove bottom pan.



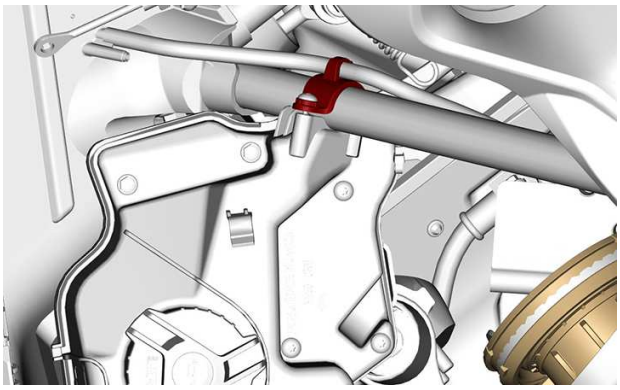
6. Unbolt Rave valve actuator and set aside.



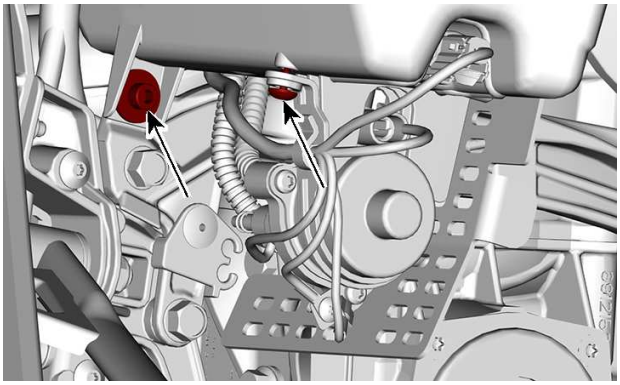
7. Remove the ignition coil.



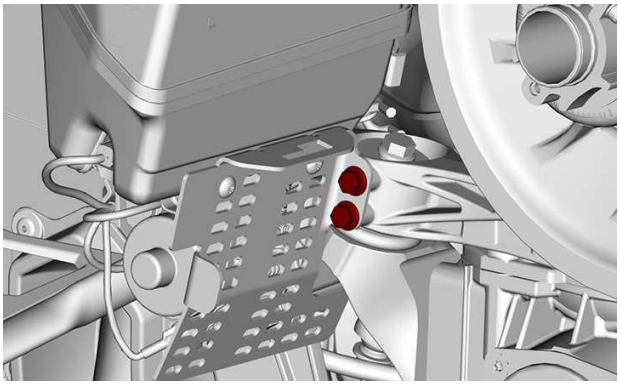
8. Remove bracket.



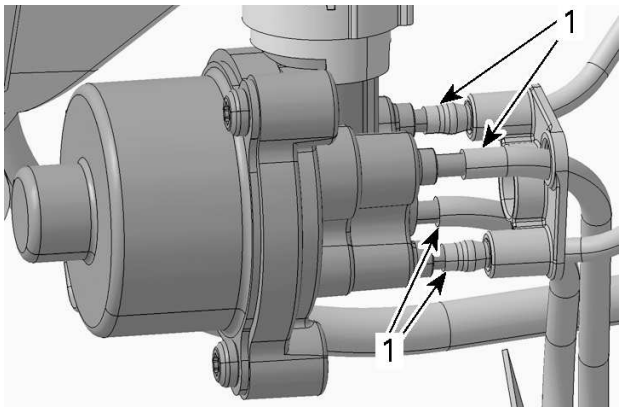
9. Remove screws.



10. Remove oil tank support screws.



11. Disconnect crankcase vent hose on oil injection tank side.
12. Disconnect oil level sensor connector.
13. Place a rag under oil injection pump to catch oil spillage.
14. Carefully disconnect hoses from oil injection pump using a small screwdriver.



SOME PARTS REMOVED FOR CLARITY PURPOSE
1. Oil hoses (4x)

NOTICE

Oil injection pump fittings are very fragile, care must be taken when removing hoses from oil injection pump.

15. Disconnect oil injection pump electrical connectors.
16. Slide out oil tank.
17. Remove oil injection pump from oil injection tank. Refer to *Removing the Oil Injection Pump* in this subsection.

Installing the Oil Injection Tank

Before tightening oil injection tank on vehicle, proceed as follows.

1. Install oil injection pump on oil injection tank. Refer to *Installing the Oil Injection Pump*.
2. Apply injection oil on oil injection pump hoses.
3. Properly route and connect oil hoses into oil injection pump. Refer to *Oil Injection Pump Hoses Connection* in this subsection.

NOTICE

Oil injection pump fittings are very fragile, care must be taken when installing hoses on oil injection pump.

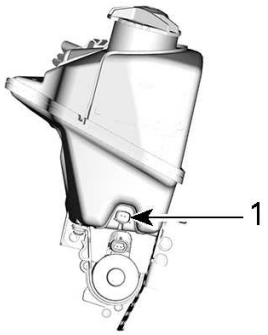
4. Position oil injection tank on vehicle.
5. Tighten oil injection tank screws to specification. Refer to exploded view.
6. Reinstall all remaining components as the reverse of removal procedure.
7. Fill up oil injection tank using recommended oil. See *Recommended Injection Oil* in this subsection.
8. Bleed oil injection system. Refer to *Bleeding Oil Injection Pump* in this subsection.

Oil Level Sensor

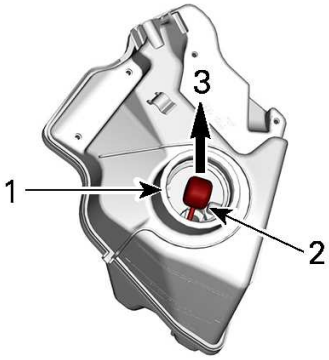
Testing the Oil Level Sensor

1. Empty the oil tank.
2. Measure resistance by probing sensor connector.

Fluke 115 multimeter (P/N 529035868)	



1. Probe sensor connector here



MEASURING RESISTANCE WITH FLOAT HELD IN HIGH POSITION
1. Oil tank cap removed
2. Float
3. Use a locking tie to lift float

Oil Level Sensor Resistance Test		
Sensor Test Condition	**Sensor Pin**	**Specification**
LOW float position	1 and 2	Closed circuit (close to 0 Ω)
HIGH float position		Open circuit infinite (OL)

3. If test fails, replace oil tank.
4. If test succeeds check float condition in oil tank.

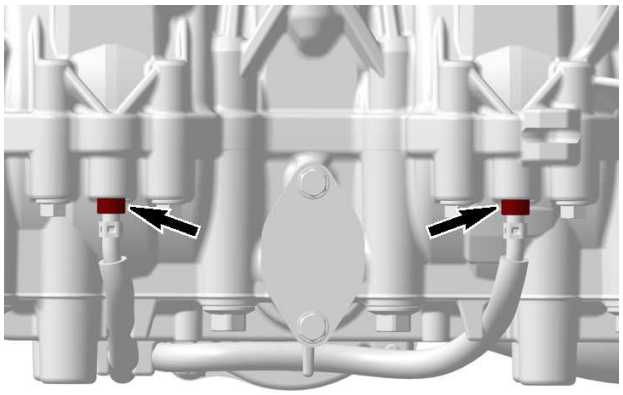
Removing the Oil Level Sensor

Oil level sensor is part of the oil tank and is not removable.

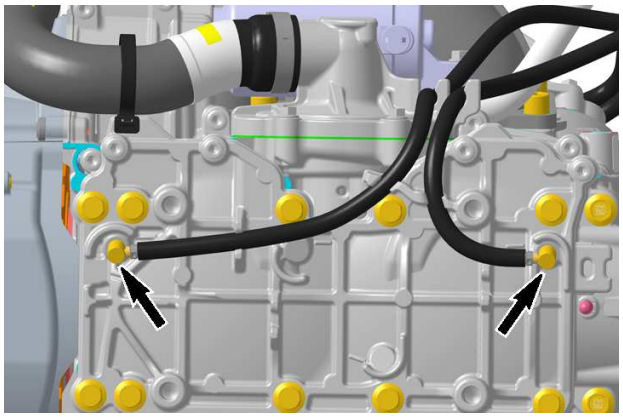
Check Valves and Fittings

Check Valves and Fittings Location

Check Valves and Fittings (Engine)

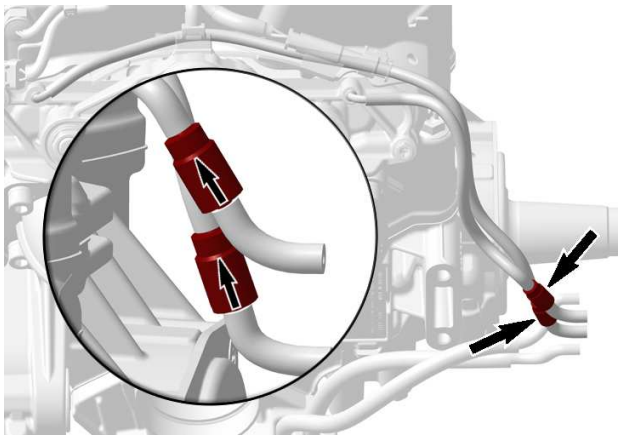


600R E-TEC ENGINE



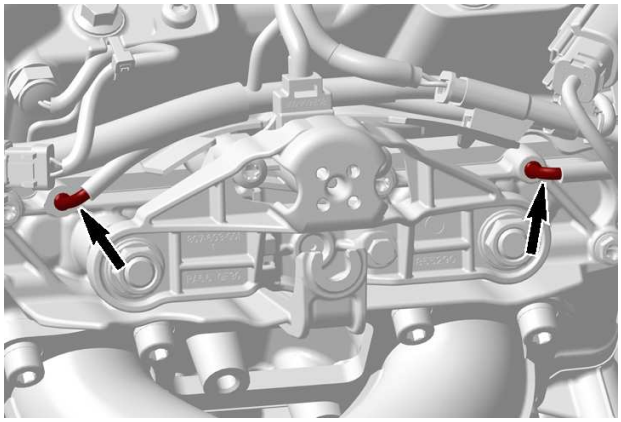
850 E-TEC ENGINE

Check Valves and Fittings (RAVE)



TYPICAL - RAVE CHECK VALVES

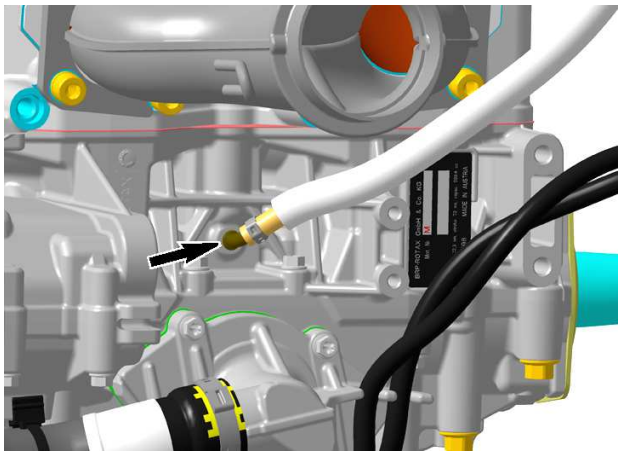
NOTE: Always take care that the arrows on the check valves are pointing towards the engine.



TYPICAL - RAVE FITTINGS

Fitting (Water Pump Drive)

Remove starter. Refer to *Magneto And Starter* subsection.



TYPICAL

Inspecting the Check Valves

1. Pressurize check valves at inlet side.

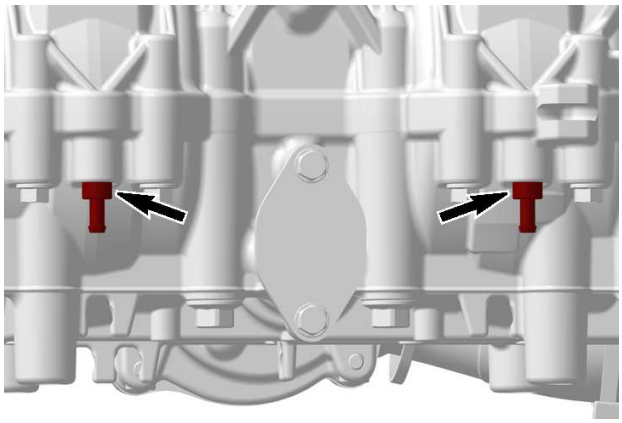
Vacuum/pressure pump (P/N 529021800)	

Pump Setting	Set to VACUUM	Set to PRESSURE
To do	Activate pump several times	Slowly activate pump and listen to check valve
Result	Air must **NOT** flow through check valve	You should hear it release pressure at approximately 20.7 kPa (3 lbf/in²)
Action	**Success:** Perform next test	**Success:** Check valve is good
	Failed: Replace check valve	**Failed:** Replace check valve

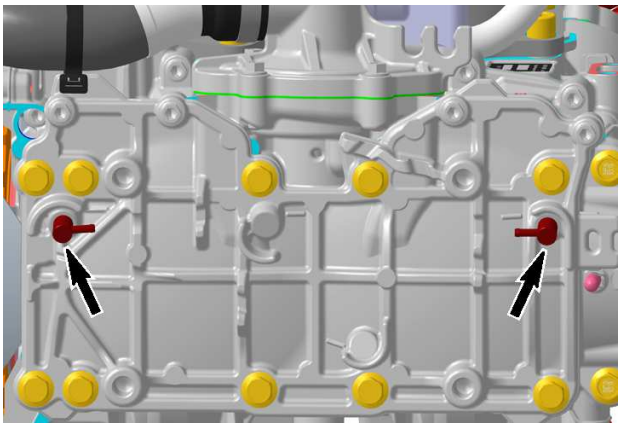
Removing the Check Valves and Fittings

NOTICE
Do not remove check valve needlessly. It is likely to be damaged.

Check Valves (Engine)



600R E-TEC ENGINE

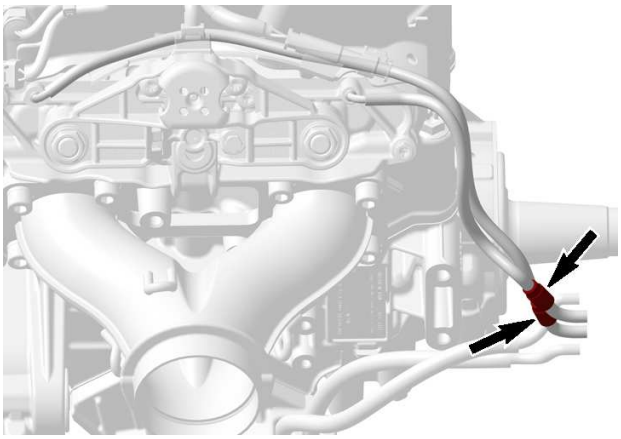


850 E-TEC ENGINE

1. Clean area around check valve or fitting to remove oil or dirt.
2. Heat check valve then pull it out of crankcase.

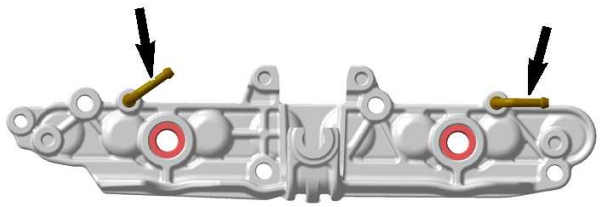
Check Valves (RAVE)

1. Remove oil hoses from check valve.



TYPICAL

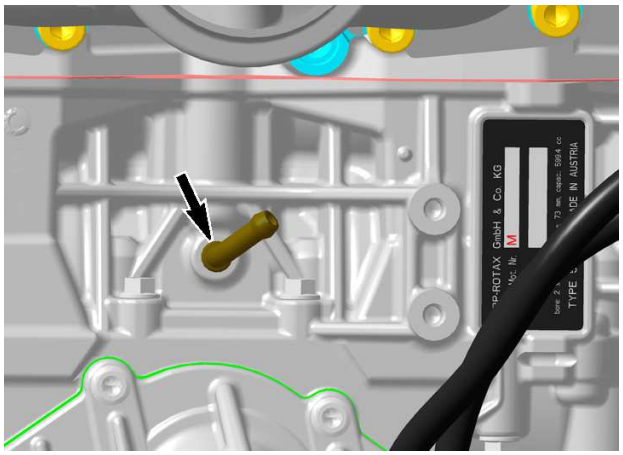
Fittings (RAVE)



RAVE FITTINGS

1. Remove RAVE valve housing. Refer to *RAVE* subsection.
2. Clean area around fittings to remove oil or dirt.
3. Heat fitting then pull it out of RAVE valve housing.

Fitting (Water Pump Drive)



TYPICAL

1. Clean area around fitting to remove oil or dirt.
2. Heat crankcase around fitting seat area then pull fitting out of crankcase.

Installing the Check Valves and Fittings

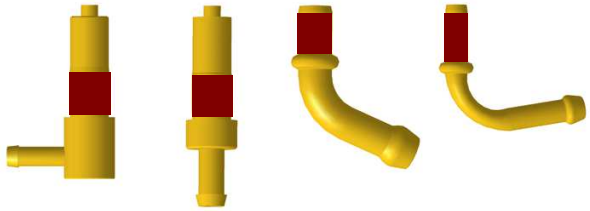
The installation is the reverse of the removal procedure. However, pay attention to the following.

1. Ensure check valve bodies and fittings are clean from dirt or oil and dry.

Brake and parts cleaner PRO S2

2. Apply sealant on the outer diameter of the check valve (machined section) or fitting. Apply sealant ONLY in the specified area.

Loctite 648 (green)

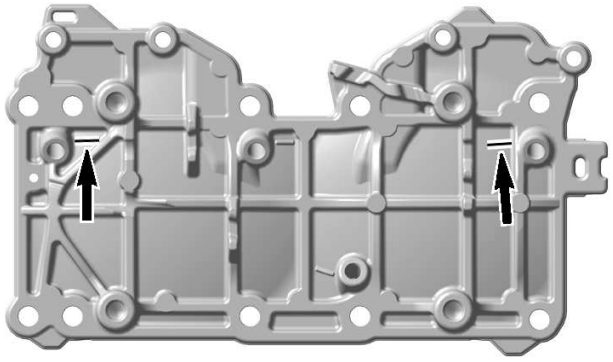


TYPICAL - APPLY SEALANT ON INDICATED AREA ONLY

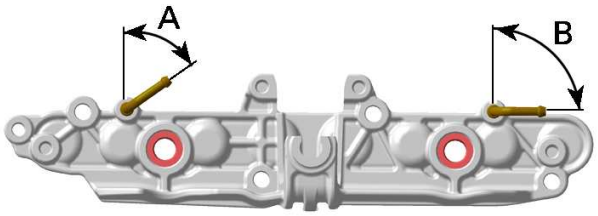
3. Punch in the check valves and fittings carefully with a plastic hammer by using a suitable punch.

Impulse fitting punch (BIG) (P/N 529036412)	
Impulse fitting punch (small) (P/N 529036413)	

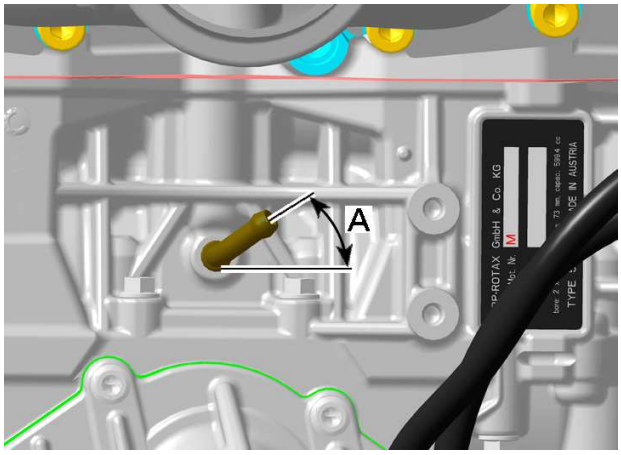
For correct orientation of the fittings refer to the next illustrations.



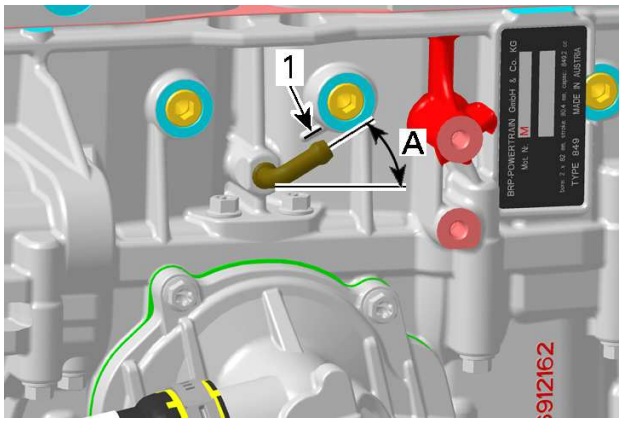
850 E-TEC ENGINE - CAST MARKS FOR CHECK VALVES AND FITTING ORIENTATION



A. 55°
B. 90



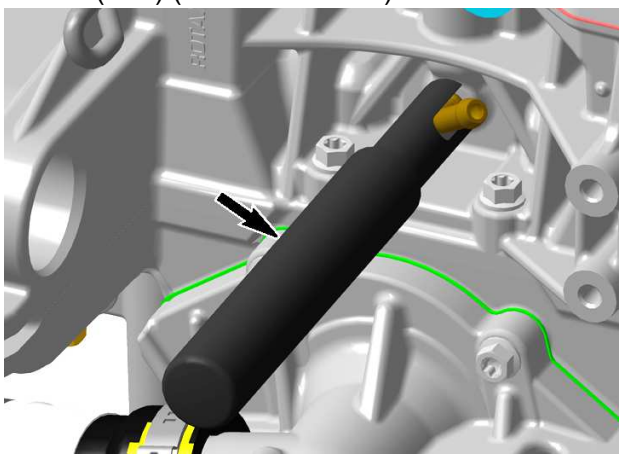
600R E-TEC ENGINE
A. 37°



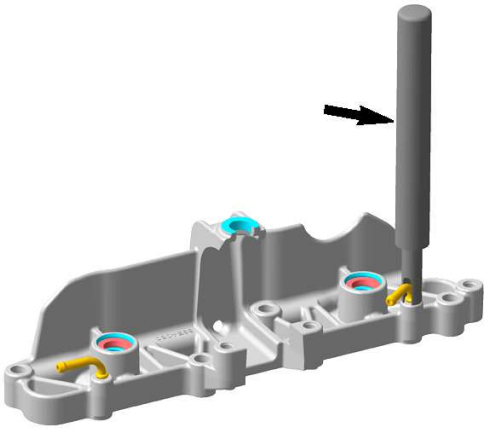
850 E-TEC ENGINE
A. 30°
1. Cast mark for fitting orientation

For bent fitting use following service tool for installation:

Punch (BIG) (P/N 529036412)



TYPICAL - FITTING (WATER PUMP DRIVE) - IMPULSE FITTING



FITTING (ENGINE) - IMPULSE FITTING PUNCH (SMALL) (P/N 529036413)

4. Clean area around check valve from surplus sealant with a rag.

5. Connect pressure pump and check if check valves and fittings are not blocked with glue after installation.

Vacuum/pressure pump (P/N 529021800)	

Cooling System — Engine Components

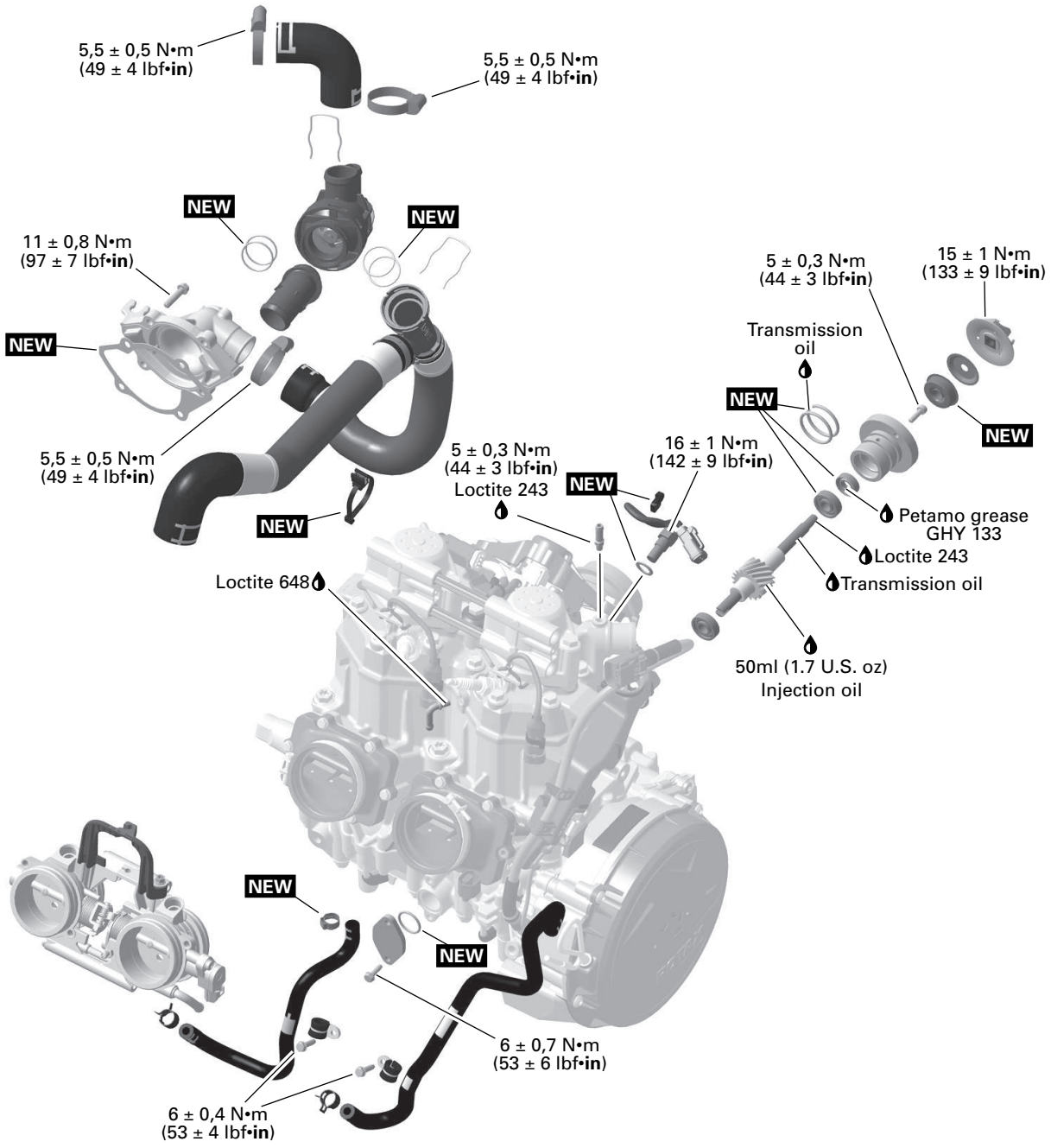
SERVICE TOOLS

Description	Part Number	Page
CERAMIC SEAL INSTALLER	(P/N 529036014)	50
HANDLE	(P/N 420877650)	49
IMPULSE FITTING PUNCH (BIG)	(P/N 529036412)	44
LARGE HOSE PINCHER	(P/N 529032500)	42
OIL SEAL PUSHER	(P/N 529035757)	49
PROTECTOR SLEEVE (PUMP)	(P/N 529036406)	50
SMALL HOSE PINCHER	(P/N 295000076)	42
VACUUM/PRESSURE PUMP	(P/N 529021800)	42–43
WATER PUMP IMPELLER TOOL – 600R E-TEC	(P/N 529036446)	45
WATER PUMP IMPELLER TOOL – 850E-TEC	(P/N 529036444)	45

SERVICE PRODUCTS

Description	Part Number	Page
BRAKE AND PARTS CLEANER PRO S2		44, 46, 50
LOCTITE 243 (BLUE)		46
LOCTITE 648 (GREEN)		44
PETAMO GREASE GHY 133N		49

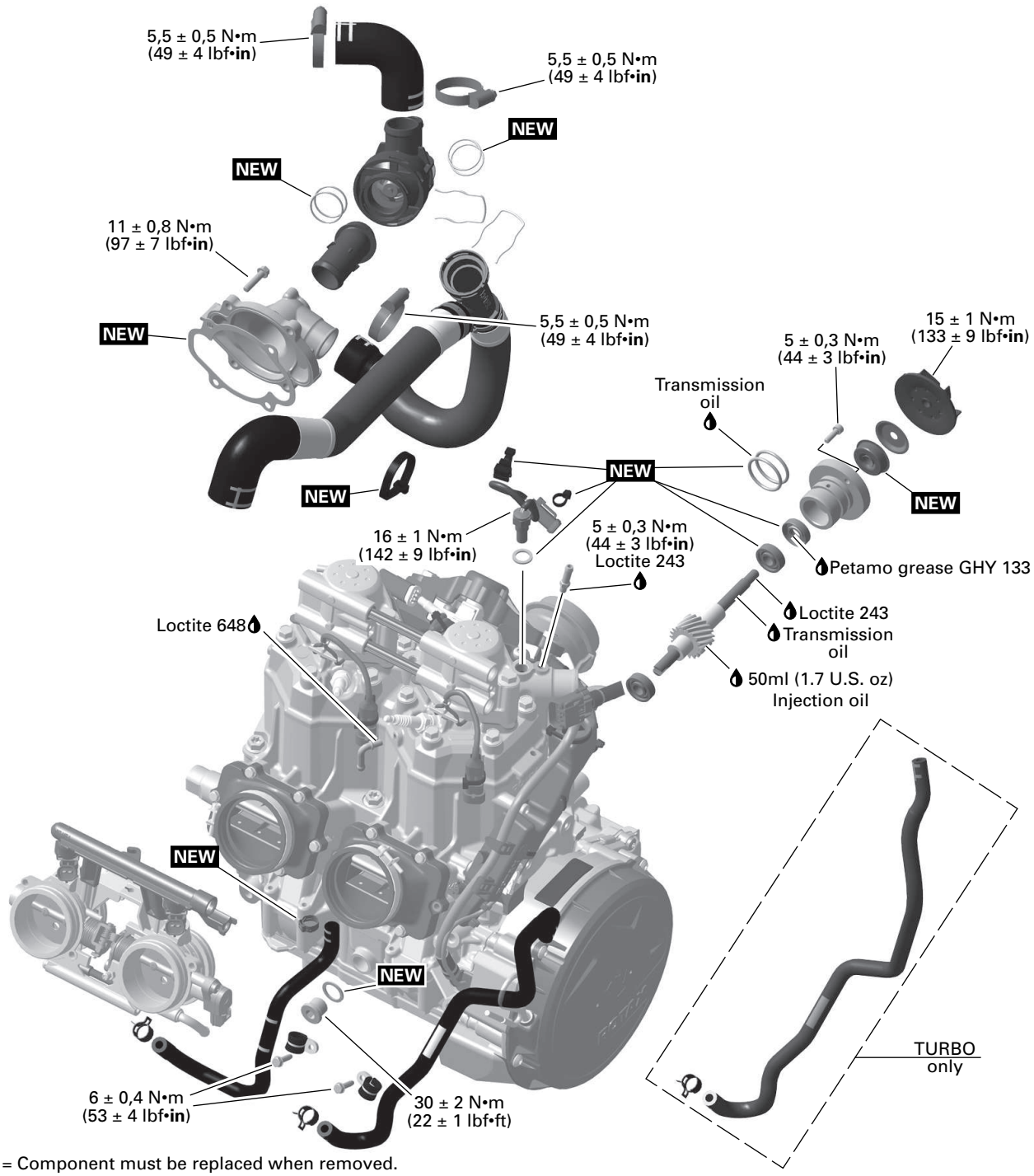
600R E-TEC



NEW = Component must be replaced when removed.

T

850 E-TEC



NEW = Component must be replaced when removed.

General

It is a good practice to check for fault codes using the BRP diagnostic software (BUDS2) as a first troubleshooting step.

During assembly or installation, use torque values and service products as shown in the exploded views.

Clean threads before applying a threadlocker. Refer to *Self-Locking Fasteners* and *Loctite Application* at the beginning of this manual for complete procedure.

⚠ WARNING

Torque wrench tightening specifications must be strictly adhered to.
Locking devices must be replaced with new ones when removed (e.g.: locking tabs, elastic stop nuts, self-locking fasteners, cotter pins, etc.).

Inspection

Cooling System Leak Test

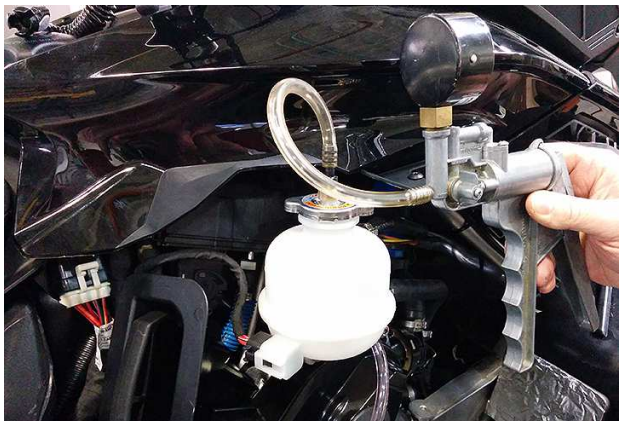
NOTE: This test confirms if there is a leak in the cooling system, including the engine.

⚠ WARNING

To prevent potential burns, do not remove the coolant tank cap if the engine is hot.

1. Remove the RH side panel.
2. Remove coolant tank cap.
3. Pressurize system through coolant tank.

Test cap (P/N 529035991)	
Vacuum/pressure pump (P/N 529021800)	



TYPICAL

4. If pressure drops, check all hoses and engine for coolant leaks. Spray a soap/water solution and look for air bubbles.
5. If no external leak is found and pressure drops, carry out the *Engine Cooling Circuit Leak Test* to find a potential engine internal leak.

Engine Cooling Circuit Leak Test

NOTE: An engine leak test should be performed prior to installing engine in vehicle each time the engine is disassembled.

1. Install a suitable hose on the water pump cover and block it.

Large hose pincher (P/N 529032500)	

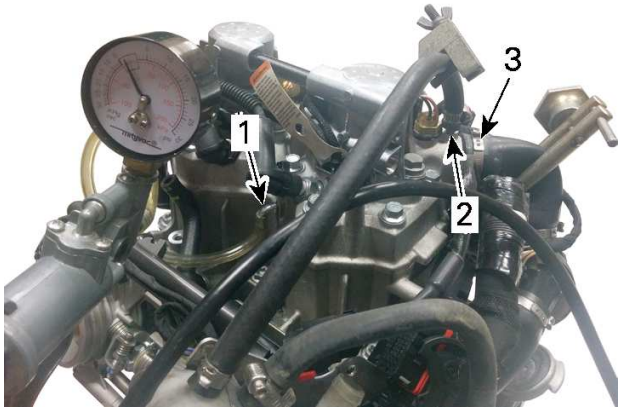


2. Install a suitable hose on the cylinder head and block it.

Small hose pincher (P/N 295000076)	

3. Install the pressure pump on the bent fitting for throttle body heating.

Vacuum/pressure pump (P/N 529021800)	



TYPICAL
1. *Bent fitting for throttle body heating*
2. *Bleeder nipple*
3. *Cylinder head hose*

4. Pressurize the engine.

Test Pressure
100 kPa (15 lbf/in²)

5. If pressure drops, spray a soap/water solution onto engine jointed surfaces and look for air bubbles.

Procedures

Coolant Temperature Sensor (CTS)

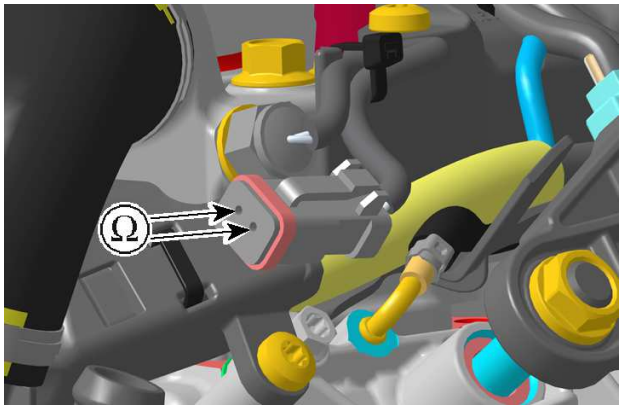
Testing the CTS with BUDS2

1. Connect the vehicle to the BRP diagnostic software (BUDS2). Refer to *Communication Tools* subsection.
2. In BUDS2, go to:
   - Measurements page
   - ECM button.
3. Monitor the Engine temperature indicator. It should show the coolant temperature. Otherwise, perform *Testing the CTS Resistance*.

Testing the CTS Resistance

1. Disconnect CTS sensor connector. Refer to *Wiring Harness and Connectors* for connector location.
2. Set multimeter to Ω.
3. Measure resistance between sensor terminals.

CTS Resistance Test		
CTS Pin		**Specification**
1	2	Refer to MAPTS Temperature sensor table



TYPICAL - CTS RESISTANCE CHECK

CTS Sensor Temperature Table	
Temperature	**Specification**
25 °C (77 °F)	2138 - 2570 Ω
38 °C (100 °F)	1284 - 1514 Ω
104 °C (219 °F)	156 - 174 Ω
121 °C (250 °F)	103 - 115 Ω

4. If resistance is out of specifications, replace CTS.
5. If resistance tests good, carry out the following steps.
6. Reconnect the CTS.
7. Disconnect the ECM-A connector from ECM and connect to the ECM adapter tool.
8. Measure CTS circuit resistance as follows.

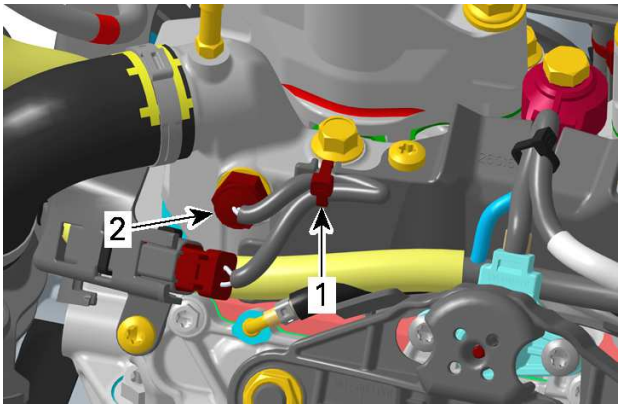
CTS Resistance Test		
ECM Adapter Pin		**Specification**
A-B1	A-C1	Refer to *CTS Sensor temperature table (E-TEC)*

9. If resistance value is correct, sensor, wiring and connectors are good.
10. If resistance value is incorrect, repair or replace wiring and connectors between ECM and CTS.

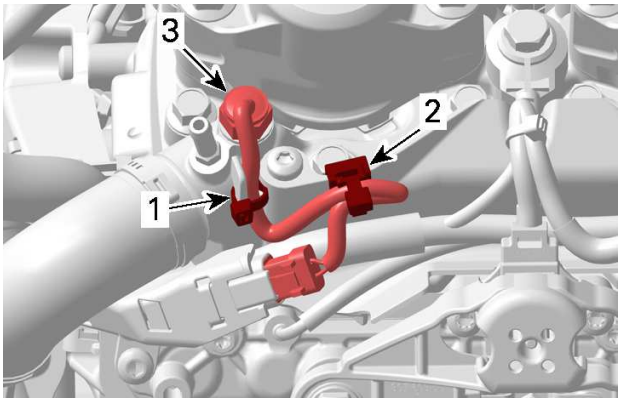
T

Replacing the CTS

1. Cut locking tie (s) and disconnect CTS connector.
2. Remove CTS.



600R E-TEC
1. Locking tie
2. CTS



850 E-TEC
1. Locking tie
2. Locking tie with mount
3. CTS

3. Install new CTS.

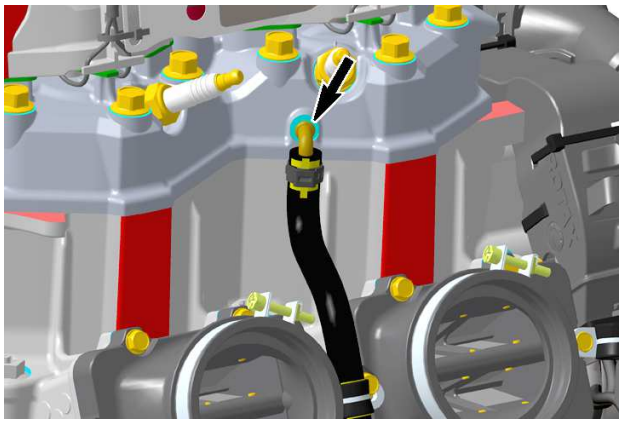
Tightening Torque	
CTS	16 ± 1 N•m (142 ± 9 lbf•in)

4. Reinstall removed parts.
5. Refill engine coolant. If an important quantity of coolant spilled from the engine, bleed cooling system. Refer to *Cooling System - Vehicle* subsection.

Fitting (Throttle Body Heating)

Fitting Replacement

1. Remove throttle body from intake manifolds and put it aside.



TYPICAL - PARTS REMOVED FOR CLARITY

2. Clean area around fitting to remove oil or dirt.
3. Heat cylinder head around fitting seat area then pull fitting out of cylinder head. Discard fitting.
4. Ensure **NEW** fitting and fitting bore in cylinder head is clean from dirt or oil and dry.

Brake and parts cleaner PRO S2

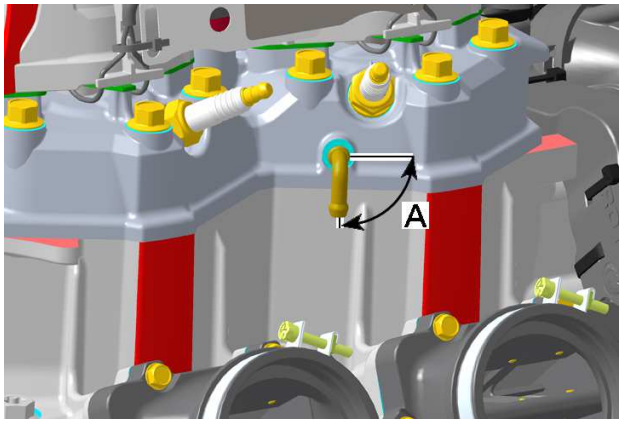
5. Apply sealant on the outer diameter of fitting.

Loctite 648 (green)

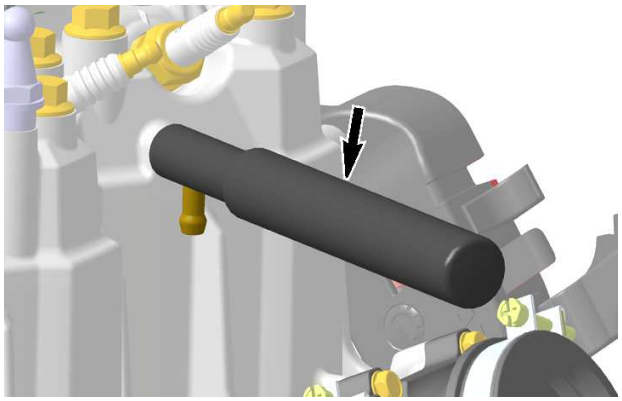
6. Punch in fitting

Impulse fitting punch (BIG) (P/N 529036412)	

For correct orientation of the fitting refer to the next illustration.



TYPICAL
A. 90°



TYPICAL - IMPULSE FITTING PUNCH (BIG) (P/N 529 036 412)

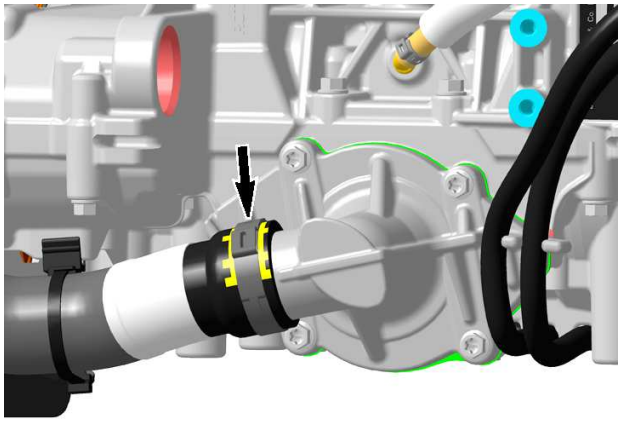
Water Pump

Water Pump Location

The water pump is located on the front of the engine, below the intake manifold.

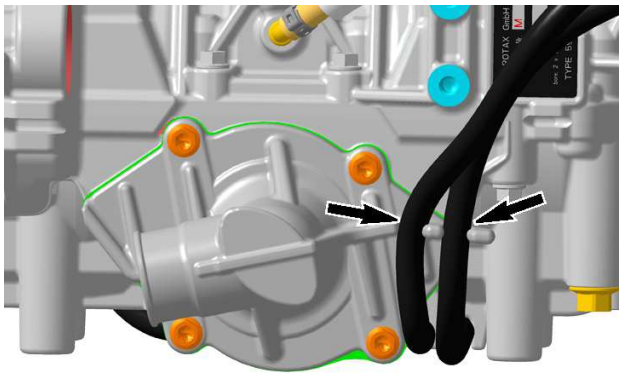
Removing the Water Pump

1. Drain cooling system. Refer to *Cooling System - Vehicle* subsection.
2. Remove starter (if applicable). Refer to *Magneto and Starter* subsection.
3. Remove coolant hose (only if necessary).



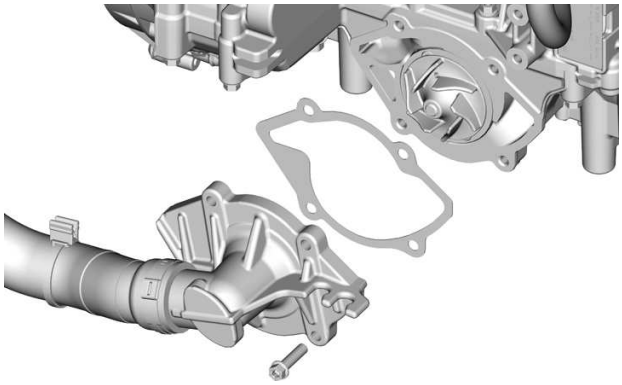
TYPICAL

4. Remove oil lines.



TYPICAL

5. Remove water pump cover. Discard gasket.

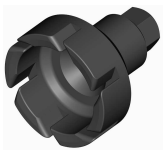


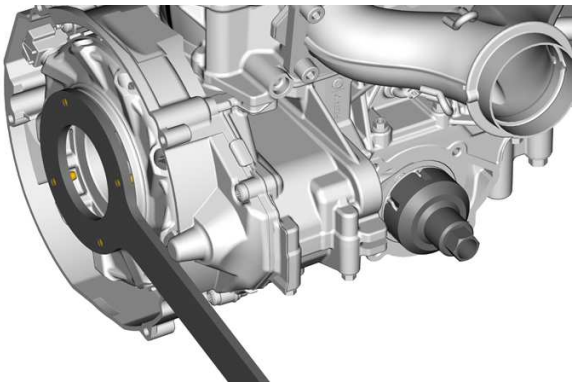
TYPICAL

6. Block engine:
   - **Engine installed in the vehicle** - block the drive pulley. Refer to *Drive System and Brake* subsection.
   - **Engine removed from vehicle** - block magneto flywheel. Refer to *Magneto and Starter* subsection.
7. Unscrew impeller counterclockwise.

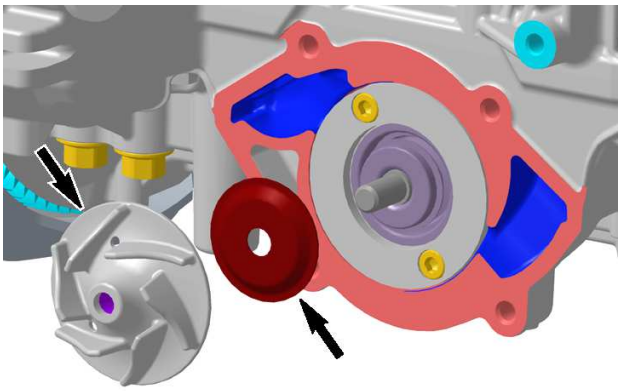
NOTICE

Be careful not to damage impeller fins.

Water pump impeller tool – 600R E-TEC (P/N 529036446)	
Water pump impeller tool – 850E-TEC (P/N 529036444)	



8. Remove:
   - Impeller
   - Cover washer.



TYPICAL

9. Clean gasket surfaces of water pump cover and crankcase.

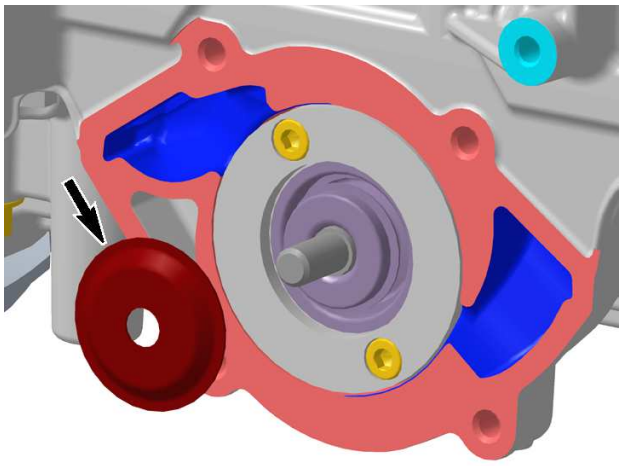
Installing the Water Pump

The installation is the reverse of removal procedure. However, pay attention to the following details.

1. Clean water pump shaft thread using a part cleaner and compressed air.

Brake and parts cleaner PRO S2

2. Install cover washer with convex side facing to the impeller.

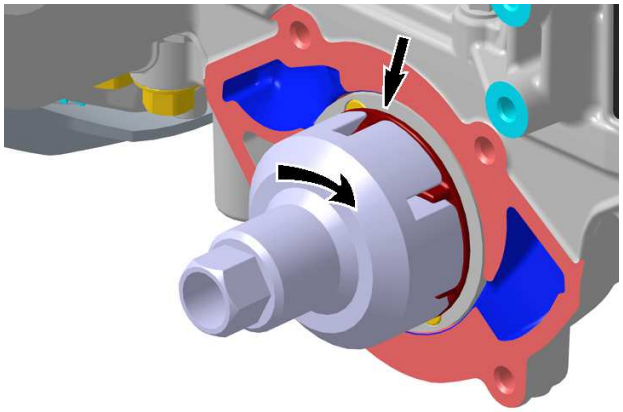


TYPICAL

3. Apply thread locker on water pump shaft thread.

Loctite 243 (blue)

4. Tighten impeller to specification.



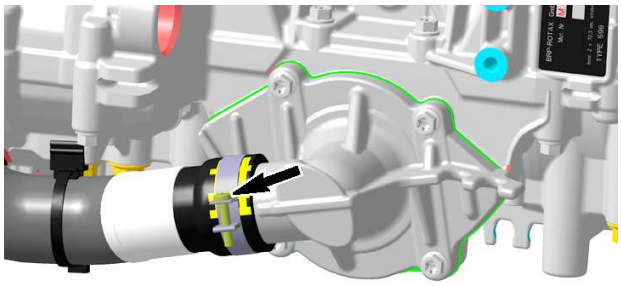
TYPICAL

Tightening Torque	
Impeller	15 ± 1 N•m (133 ± 9 lbf•in)

5. Install a **NEW** water pump cover gasket.
6. Tighten screws of water pump cover to specification in a crisscross sequence.

Tightening Torque	
Water pump cover screws	11 ± 0.8 N•m (97 ± 7 lbf•in)

7. Install and tighten coolant hose clamp on water pump.



TYPICAL

Tightening Torque	
Coolant hose clamp	5.5 ± 0.5 N•m (49 ± 4 lbf•in)

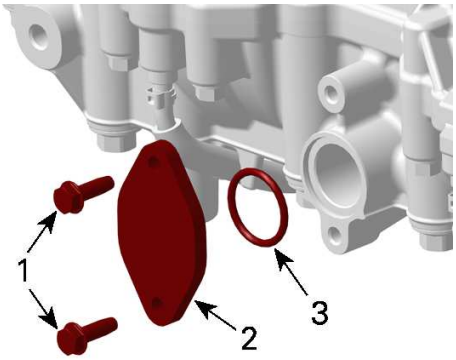
8. Properly refill and bleed cooling system. Refer to *Cooling System - Vehicle* subsection.

Bearing Carrier and Pump Shaft

Removing the Bearing Carrier and Pump Shaft

600R E-TEC

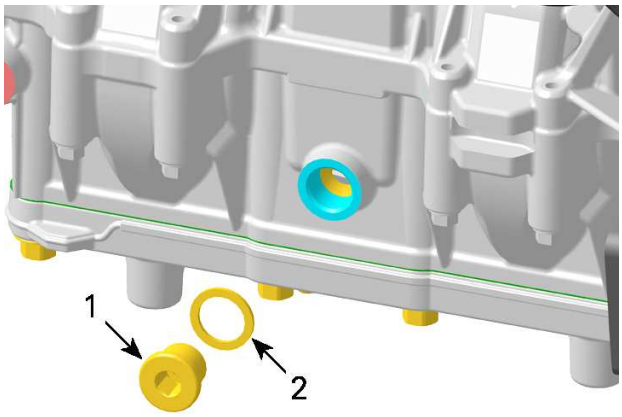
1. Place a bin underneath the cover plate to catch spilling injection oil.
2. Remove cover plate and discard O-ring.



1. *Taptite screws*
2. *Cover plate*
3. *O-ring*

850 E-TEC

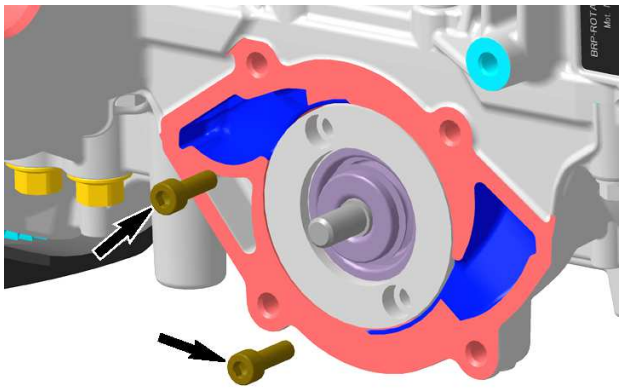
3. Place a bin underneath the plug screw to catch spilling injection oil.
4. Remove plug screw and discard sealing ring.



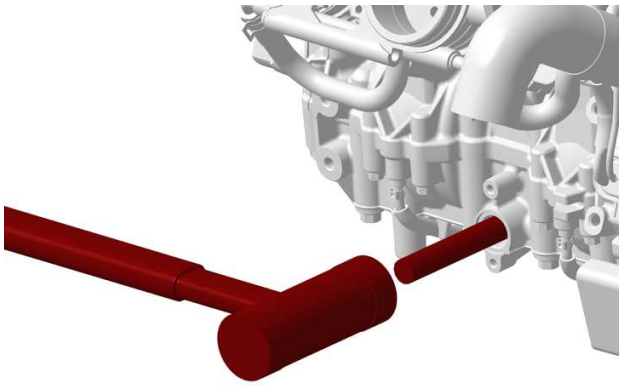
1. *Plug screw*
2. *Sealing ring*

All Engines

5. Remove *Water Pump*. See procedure in this subsection.
6. Remove bearing carrier retaining screws.

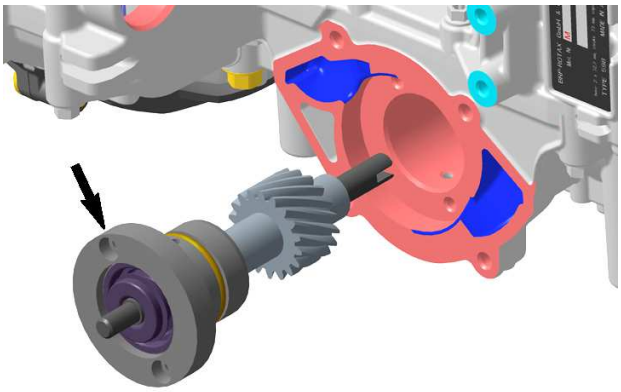


7. Push pump shaft out with a suitable drift punch and a hammer.



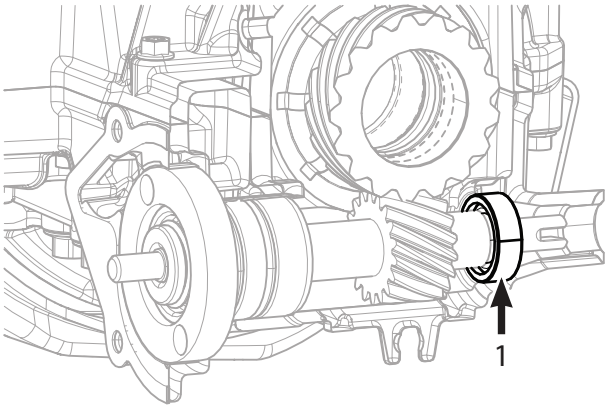
TYPICAL

8. Extract bearing carrier and pump shaft.



TYPICAL

9. For water pump shaft ball bearing replacement refer to *Bottom End* subsection.

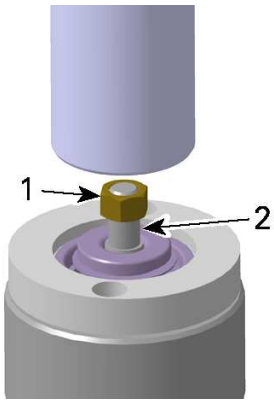


TYPICAL
1. Ball Bearing

Disassembling the Bearing Carrier and Pump Shaft

NOTE: The pump shaft cannot be disassembled without damaging the ceramic seal and oil seal.

1. Protect the threads of shaft with a suitable M8 nut.
2. Properly support bearing carrier.
3. Push pump shaft out using a press.



1. M8 nut
2. Shaft

NOTICE

Pay attention not to damage the bearing carrier during disassembly. Marks or other damages will lead to coolant or oil leakage.

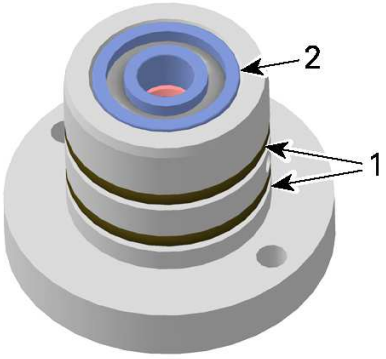
4. Pry inner part of ceramic seal out.



A35C4AA

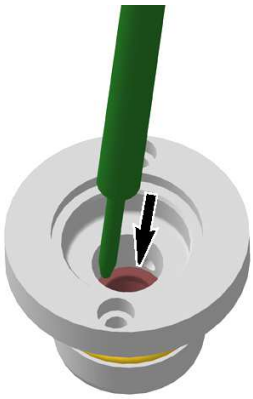
5. Remove O-rings and discard them.
6. Remove bearing.

Blind hole bearing puller	



1. O-rings
2. Ball bearing

7. Remove oil seal using as appropriate punch.

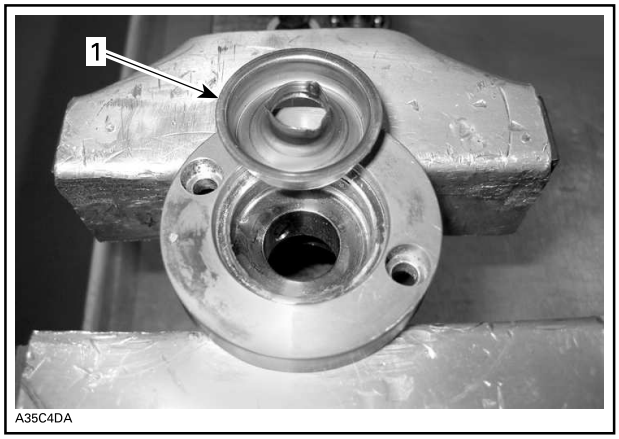


FOR CLARITY OUTER PART OF CERAMIC SEAL REMOVED

8. Carefully press the outer part of ceramic seal out.

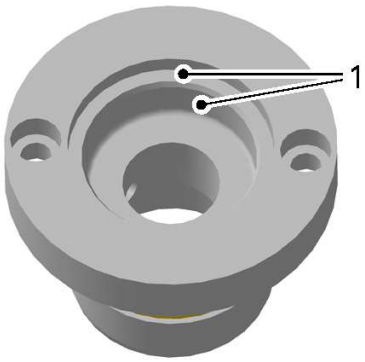
NOTE: Use a mandrel with a diameter of approximately 16 mm (.63 in).





1. *Outer part of ceramic seal*

9. Remove sealant from bearing carrier with sand paper no. 180.



1. *Remove sealant*

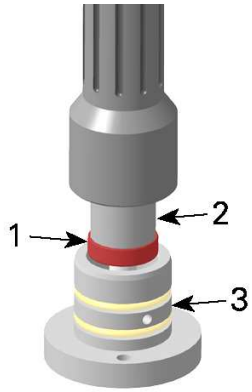
Reassembling the Bearing Carrier and Pump Shaft

Reverse disassembly procedure and pay attention to the following.

NOTE: Never put oil in the press fit area of the oil seal and ceramic seal.

1. Push the **NEW** oil seal in bearing carrier with the sealing lip facing to the ball bearing.

Handle (P/N 420877650)	
Oil seal pusher (P/N 529035757)	

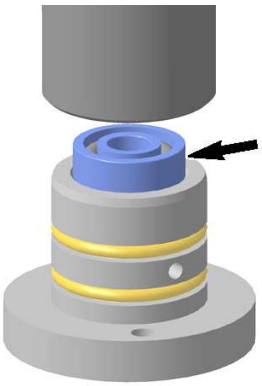


1. *Oil seal*
2. *Oil seal pusher*
3. *Bearing carrier*

2. Lubricate sealing lip of the oil seal.

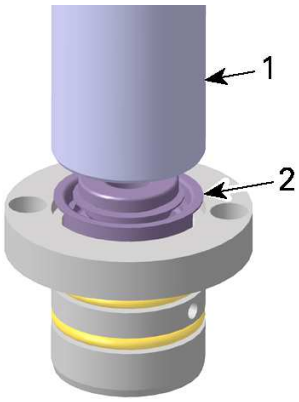
Petamo grease GHY 133N

3. Press bearing into bearing carrier.



4. Push the **NEW** ceramic seal in bearing carrier.

Ceramic seal installer (P/N 529036014)	

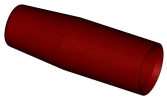


1. *Ceramic seal installer*
2. *Ceramic seal*

NOTICE

Never use a hammer for the ceramic seal installation. Only use a press to avoid damaging the ceramic component.

5. Install protector sleeve on pump shaft.

Protector sleeve (PUMP) (P/N 529036406)	

NOTE: Apply some grease inside the protector sleeve to prevent the protector sleeve fall off the pump shaft during installation.

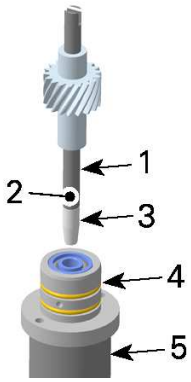
6. Apply injection oil on pump shaft.
7. Press pump shaft into the bearing carrier with the appropriate force.

Ceramic seal installer (P/N 529036014)	

NOTICE

Inadequate force will damage the oil seal and bearing.

NOTE: During installation support the ceramic seal as shown on the following illustration.



1. *Pump shaft*
2. *Apply injection oil*
3. *Protector sleeve*
4. *Bearing carrier*
5. *Ceramic seal installer*

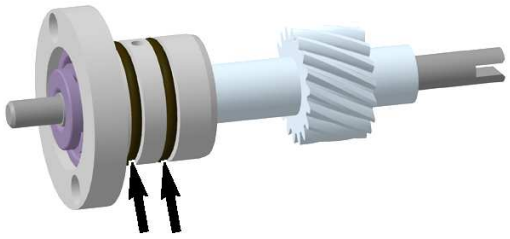
8. Remove oil seal guide from pump shaft.
9. Clean water pump shaft thread using a part cleaner and compressed air.

Brake and parts cleaner PRO S2

Installing the Bearing Carrier and Pump Shaft

The installation is the reverse of removal procedure, however pay attention to the following.

1. Install **NEW** O-rings on bearing carrier and apply injection oil.



2. Install pump shaft and bearing carrier in crankcase while turning shaft to mesh gears.
3. Tighten bearing carrier retaining screws to specification.

Tightening Torque	
Bearing carrier screws	5 ± 0.3 N•m (44 ± 3 lbf•in)

600R E-TEC

4. Install **NEW** O-ring and cover plate and tighten Taptite screws to specification.

Tightening Torque	
Taptite screws	6 ± 0.7 N•m (53 ± 6 lbf•in)

850E-TEC

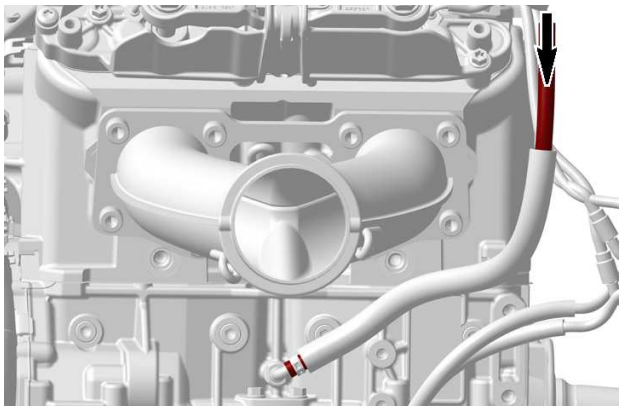
5. Install **NEW** sealing ring and tighten plug screw to specification.

Tightening Torque	
Plug screw	30 ± 2 N•m (22 ± 1 lbf•ft)

All Engines

6. Fill injection oil in the water pump drive chamber.

Injection oil (50 ml (1.7 fl oz(US)))



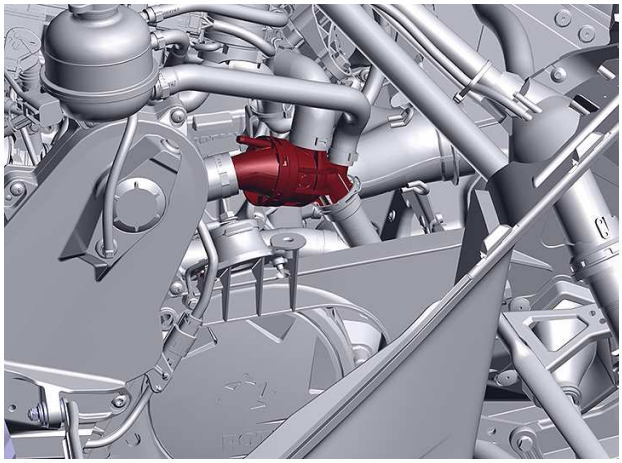
TYPICAL

Syringe	

Thermostat

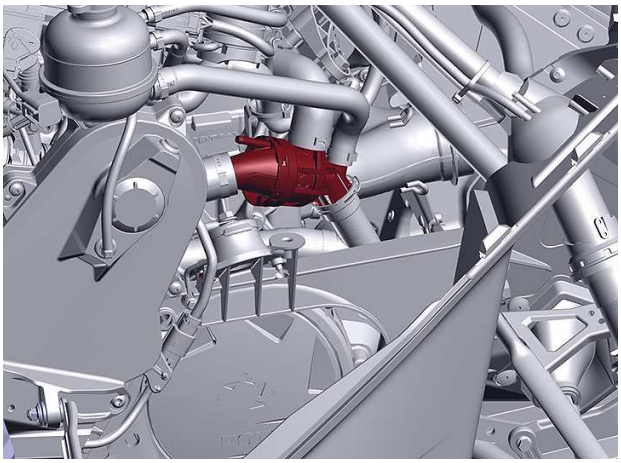
Thermostat Location

The thermostat is located on the RH side of the engine (PTO side), behind the muffler.

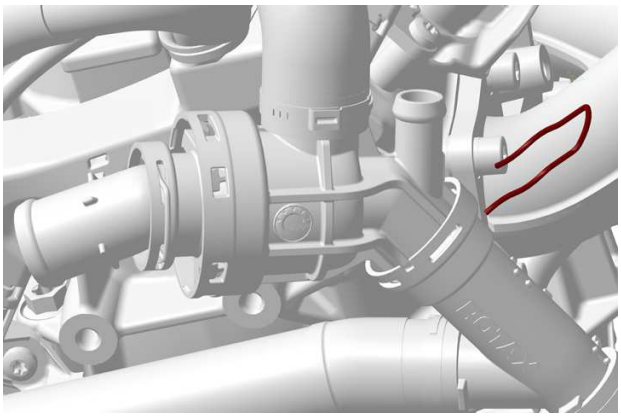


Removing the Thermostat

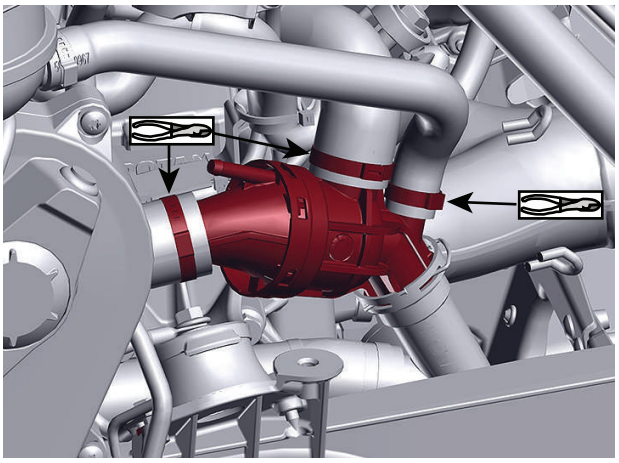
1. To remove thermostat:
   - Block all four thermostat hoses with hose pinchers **or**
   - Drain cooling system.



2. Remove spring clip from thermostat housing.

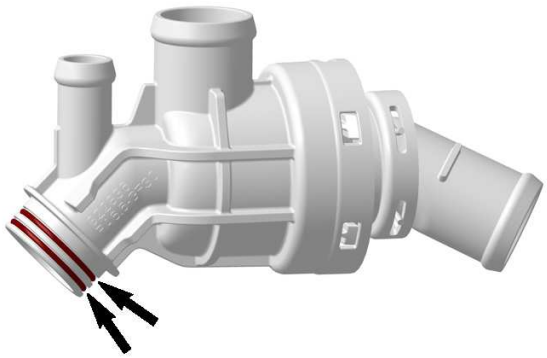


3. Cut Oetiker clamps (3x) then unplug hoses.
4. Remove thermostat housing from molded hose assembly.

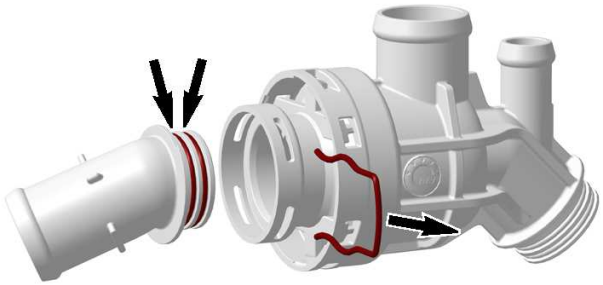


TYPICAL

5. Remove O-rings and discard them.



6. If required remove spring clip and O-rings and discard them.



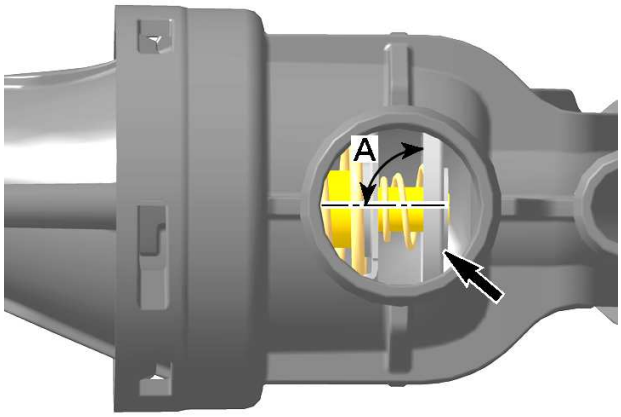
Testing the Thermostat

To check thermostat, put in water and heat water.

Thermostat Temperature	
Starts to open	37 °C (99 °F)
Fully open	55 °C (131 °F)

Inspecting the Thermostat

Check for proper alignment of the thermostat plunger.

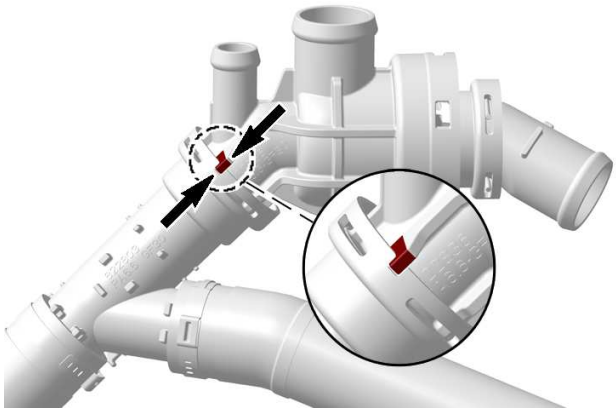


TYPICAL
A. 90°

Installing the Thermostat

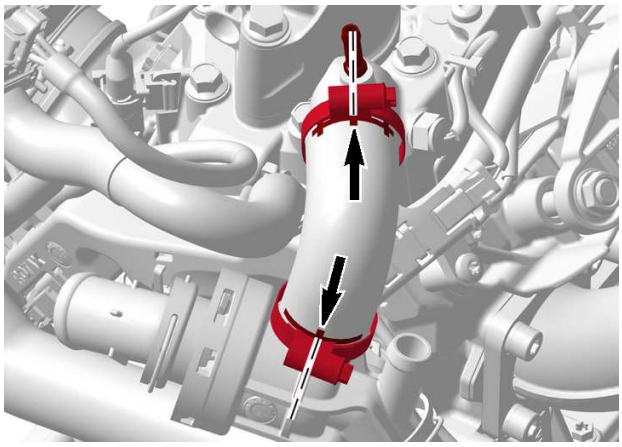
The installation is the reverse of the removal procedure. However, pay attention to the following.

1. Install **NEW** O-rings and apply coolant.
2. Take care that the nose of the thermostat housing is properly positioned in the recess of the molded hose assembly.



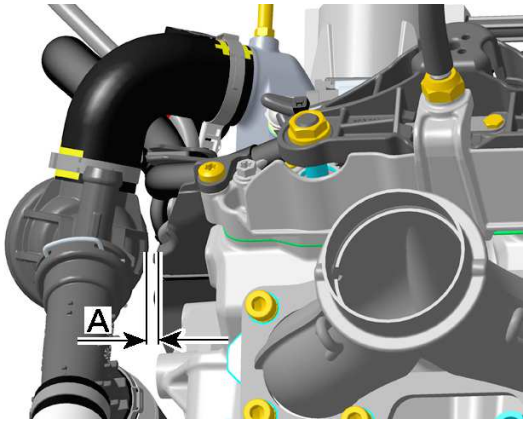
3. Install and tighten coolant hose clamps.

NOTE: Take care of the correct coolant hose orientation.



Tightening Torque	
Coolant hose clamp	5.5 ± 0.5 N•m (49 ± 4 lbf•in)

4. After installation ensure proper distance of thermostat housing to the cylinder block and exhaust manifold.



TYPICAL
A. 5 ± 2 mm (.2 ± .08 in)

5. Properly refill cooling system. Refer to *Cooling System Refill and Bleeding* in *Cooling System - Vehicle* subsection.

Magneto and Starter

SERVICE TOOLS

Description	Part Number	Page
ACG ADAPTER	(P/N 529036410)	63
CLUTCH HOLDER	(P/N 529036369)	58, 61
CRANKSHAFT PROTECTOR	(P/N 529036434)	59
FLUKE 115 MULTIMETER	(P/N 529035868)	62–63
HANDLE	(P/N 420877650)	67
MAGNETO HOLDER	(P/N 529036404)	58–59, 61
MAGNETO PULLER	(P/N 529036403)	59–60
STARTER DRIVE NEEDLE INSTALLER	(P/N 529035934)	67

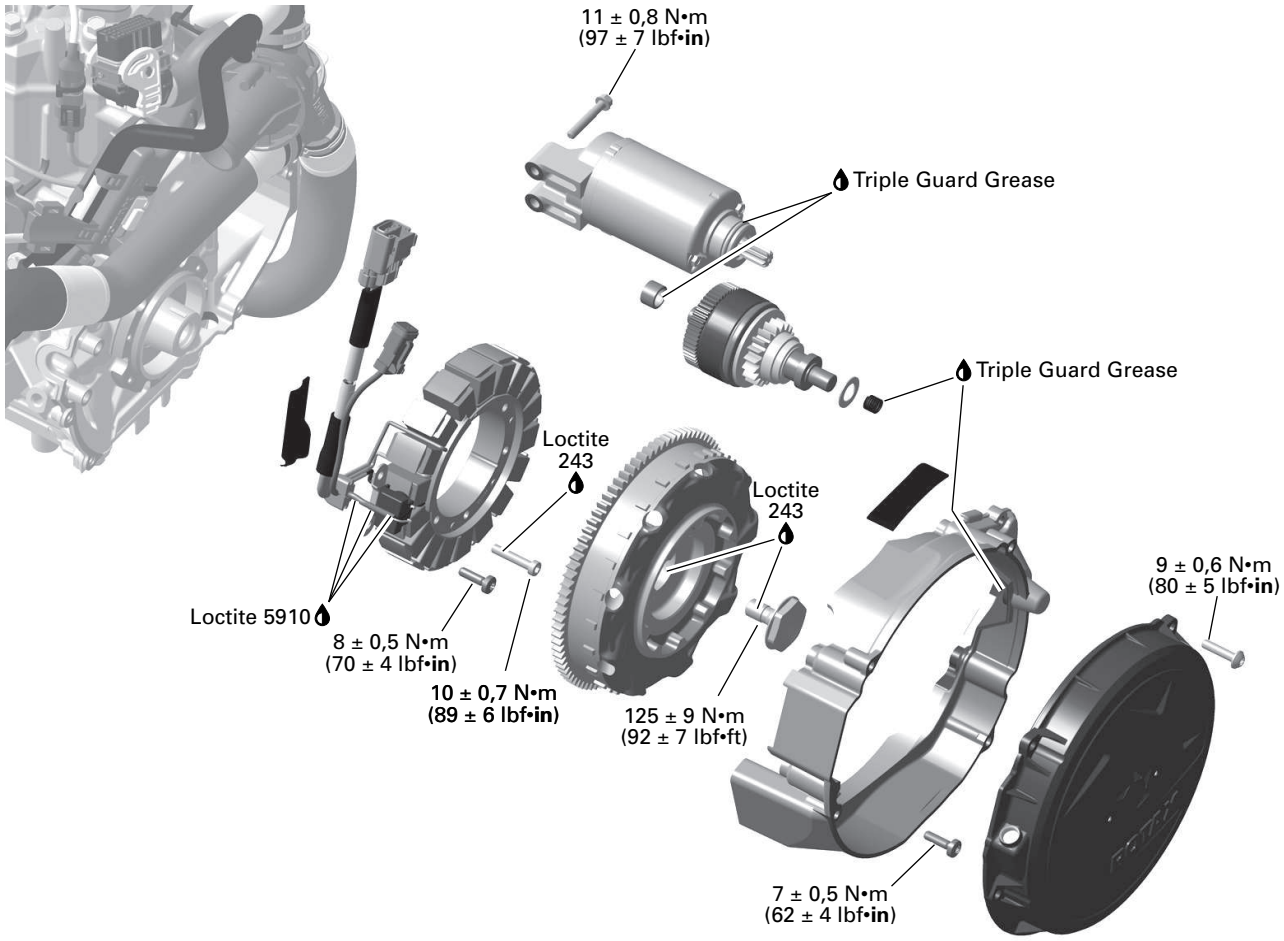
SERVICE PRODUCTS

Description	Part Number	Page
BLACK NEOPRENE PAINT		66
BRAKE AND PARTS CLEANER PRO S2		60
LOCTITE 243 (BLUE)		60–61, 64
LOCTITE 5910		57
TRIPLE GUARD GREASE		66–67

Midwest Manuals
Green Manuals
Paperless Manuals
For a Better Tomorrow
www.green-manuals.com
If you bought this manual from any other seller please leave them
NEGATIVE feedback and notify us at bestshopmanuals@gmail.com

T

Magneto and Starter



NEW = Component must be replaced when removed.

General

⚠ CAUTION

Ensure tether cord is removed from D.E.S.S. post and engine shut-off switch is in the OFF position.

During assembly or installation, use the torque values and service products as shown in the exploded view.

Clean threads before applying a threadlocker. Refer to the *Self-Locking Fasteners* and *Loctite Application* subsections at the beginning of this manual for complete procedure.

⚠ WARNING

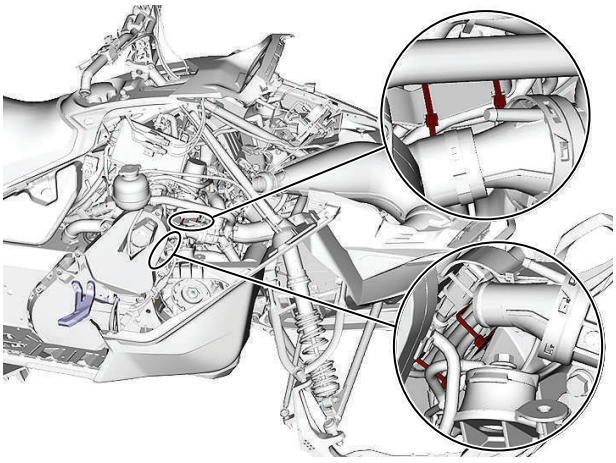
Torque wrench tightening specifications must be strictly adhered to.
Locking devices must be replaced with new ones when removed (e.g.: locking tabs, elastic stop nuts, self-locking fasteners, etc.).

Procedures

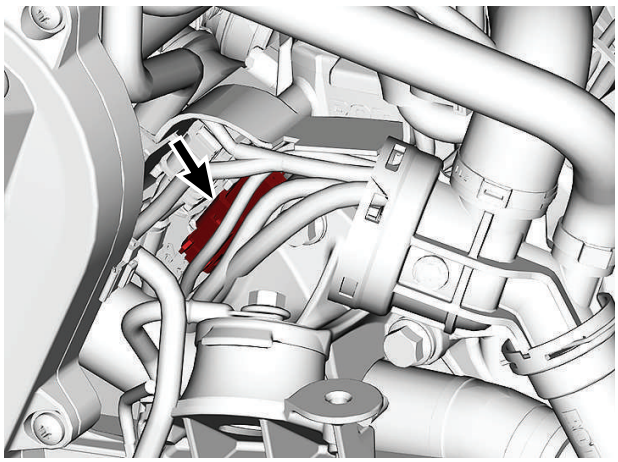
Crankshaft Position Sensor (CPS)

CPS Connector Access

1. Remove the muffler. Refer to *Exhaust System* subsection.
2. Cut locking ties securing the wiring harness to engine harness support.



3. Move wirings aside and disconnect the CPS connector.



Testing the CPS with BUDS2

1. Connect the vehicle to the BRP diagnostic software (BUDS2). Refer to *Communication Tools* subsection.
2. In BUDS2, navigate to the Measurements page
3. Monitor the Engine Speed (RPM) indicator while cranking engine.

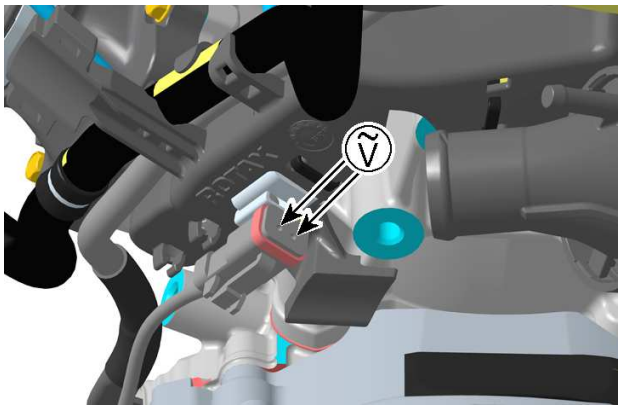
   The value should move proportionally to the cranking RPM. If no value movement is observed, test the *CPS output voltage*.

NOTE: A loose CPS or CPS connector can send an intermittent signal that can prevent the engine from starting.

Testing the CPS Output Voltage

1. Disconnect CPS connector (2-pin connector).
2. Probe terminals coming from CPS while cranking engine.

CPS Output Voltage Test		
CPS Connector Pin		Specification
1	2	1 - 2 Vac min.



If voltage is out of specification, inspect wiring/connectors. Replace CPS if wiring is good.

Testing the CPS Resistance

1. Disconnect ECM-A connector from ECM and connect it to ECM adapter tool.
2. Measure the resistance of the sensor through its wiring.

CPS Resistance Test		
ECM Adapter Pin		**Specification @ 20 °C (68 °F)**
A-K1	A-K2	190 - 290 Ω

If measurement is out of specification, check wiring continuity between ECM and CPS.

3. Also check for a shorted connection to ground as per table.

CPS Resistance Test		
ECM Adapter Pin	**Baterry**	**Specification @ 20 °C (68 °F)**
A-K1	Negative (-) post	Open circuit (OL)
A-K2		

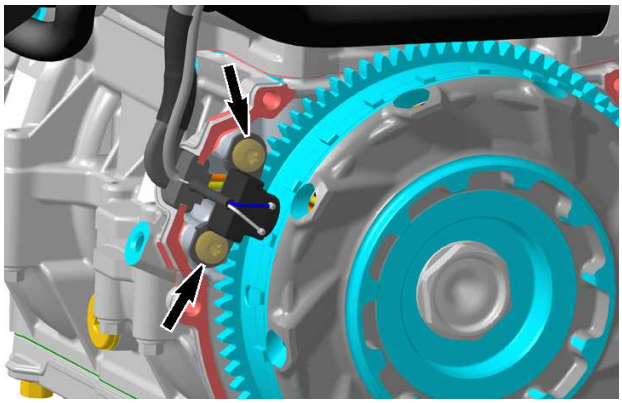
If the previous tests were good, replace CPS.

Removing the CPS

⚠ CAUTION

Ensure tether cord is removed from D.E.S.S. post and engine shut-off switch is in the OFF position.

1. Remove magneto housing. Refer to *Magneto Housing* in this subsection.
2. Remove CPS retaining screws.



3. Disconnect CPS connector. Refer to *CPS Connector Access* in this subsection.
4. Remove CPS.
5. Remove the old silicon at CPS sensor location

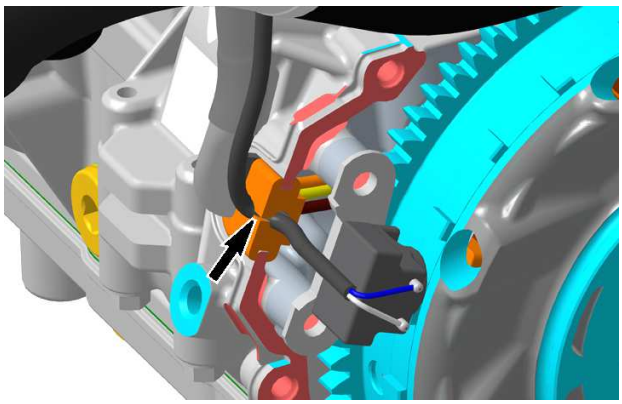
Installing the CPS

NOTICE

Do not apply silicone dielectric grease or any other product on Deutsch waterproof housings as housing seal may be damaged.

The installation is the reverse of the removal procedure. However, pay attention to the following.

1. Insert CPS cable into stator cable grommet.



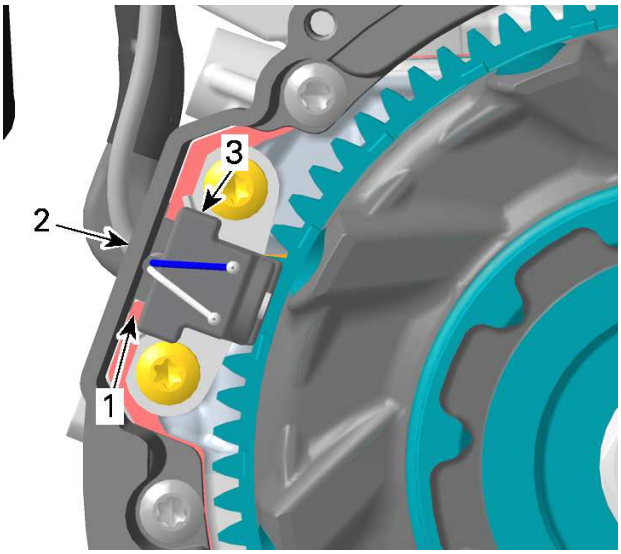
2. Tighten CPS retaining screws to specification.

Tightening Torque	
CPS retaining screws	8 ± 0.5 N·m (71 ± 4 lbf·in)

NOTE: It is important to remove the old silicon at CPS location.

3. Fill up the gap between CPS and magneto housing with silicon.

Loctite 5910



1. *Fill up with silicon.*
2. *Magneto housing*
3. *CPS*

Magneto Flywheel

Magneto Flywheel Access

Remove the rewind starter. Refer to *Rewind Starter* subsection.

Removing the Magneto Flywheel

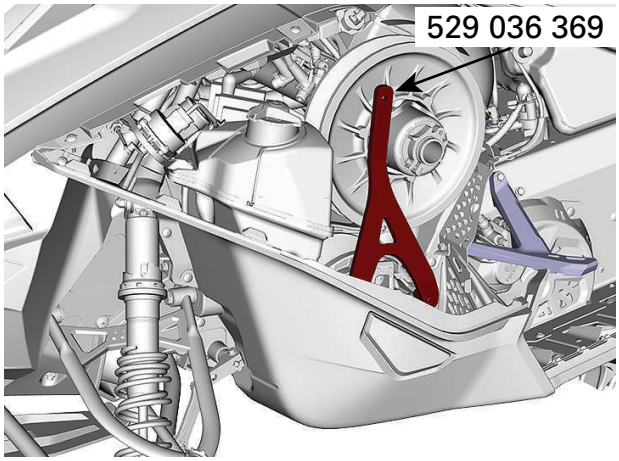
⚠ CAUTION

Ensure tether cord is removed from D.E.S.S. post and engine shut-off switch is in the OFF position.

Engine In the Vehicle

1. Block the drive pulley to avoid engine turning during the removal of the magneto retaining screw.

Clutch holder (P/N 529036369)	

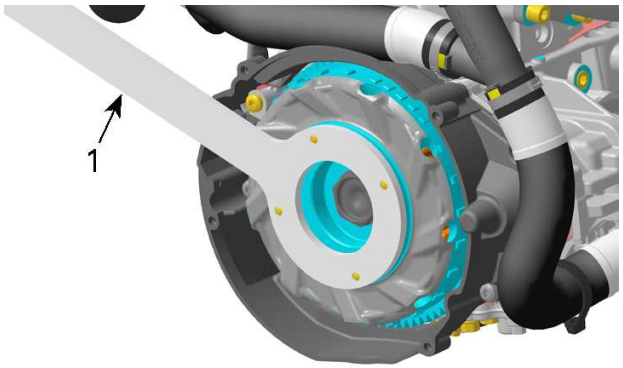


TYPICAL

Engine Out of the Vehicle

2. Install the magneto holder.

Magneto holder (P/N 529036404)	



1. *Magneto holder*

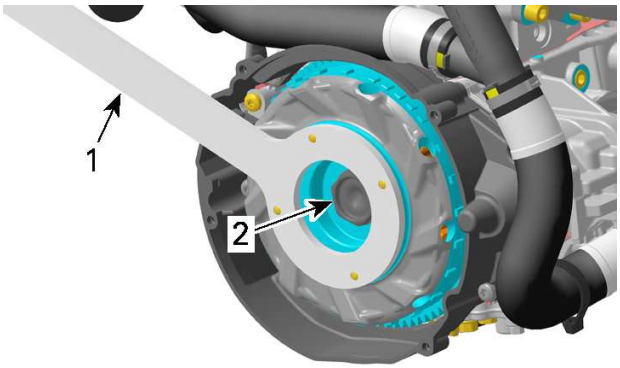
Engine In or Out of the Vehicle

3. Remove magneto flywheel retaining screw.

Magneto holder (P/N 529036404)	

NOTICE

The hexagon head of the retaining screw is very flat. To avoid slipping off thoroughly hold socket against the screw head when loosening the retaining screw.



1. *Magneto holder (engine out of vehicle)*
2. *Magneto flywheel retaining screw*

Engine In the Vehicle

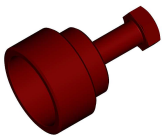
4. Remove the crankshaft position sensor (CPS). Refer to procedure in this subsection.

Engine Out of the Vehicle

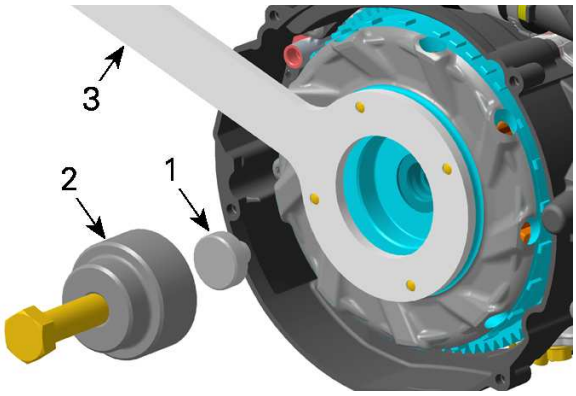
5. Unscrew crankshaft position sensor (CPS). Refer to procedure in this subsection.
6. Slightly pull crank position sensor and cut silicone sealer between crank position sensor and crankcase.
7. Move CPS aside.

Engine In or Out of the Vehicle

8. Remove magneto flywheel.

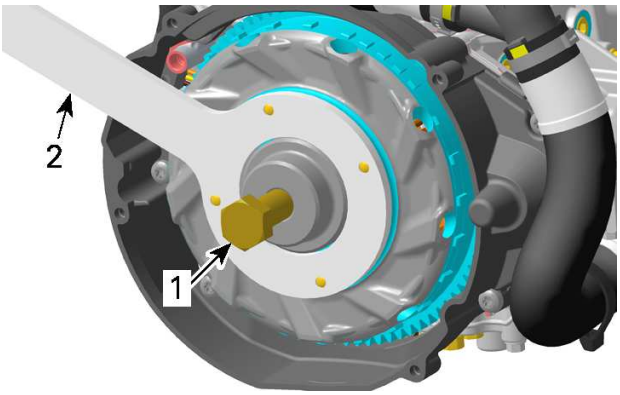
Crankshaft protector (P/N 529036434)	
Magneto puller (P/N 529036403)	
Magneto holder (P/N 529036404)	

9. Install service tools on engine.



1. *Crankshaft protector*
2. *Magneto puller*
3. *Magneto holder (engine out of vehicle)*

10. Tighten puller bolt, while holding the magneto flywheel in place until magneto flywheel releases from crankshaft.

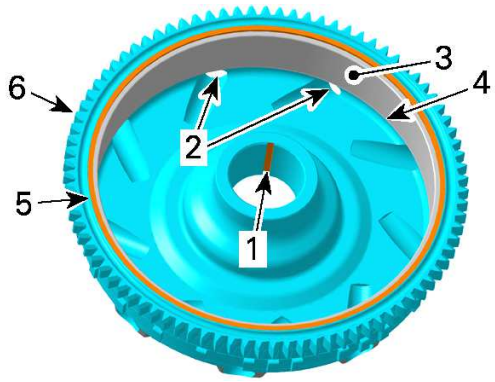


1. *Puller bolt*
2. *Magneto holder (engine out of vehicle)*

Inspecting the Magneto Flywheel

1. Clean magneto flywheel using only a clean cloth.
2. Inspect magneto flywheel for abnormal coloration (brown or blue) that would indicate overheating condition.
3. If overheating condition is suspected, carry out the following:
   - Check flywheel magnetic field using a piece of metal. If magnetic field is not felt or weak, replace flywheel.
   - Inspect flywheel for cracks, pay particular attention to the inside circumference (magnets), and the tapered center portion.
   - Check if magneto flywheel ventilation holes are clean.
   - Check if magneto housing ventilation holes are clean.
   - Check stator for signs of overheating.
   - Test stator, see procedures in this subsection.

4. Check INOX sheet metal ring on inside of magneto flywheel for proper position and fixation.
5. Check if bead of silicone is not damaged.
6. Check starter gear teeth for wear or any other damage.
7. Check keyway of the magneto flywheel for wear or damages.



1. *Keyway*
2. *Ventilation holes*
3. *INOX sheet metal ring (magnets underneath)*
4. *INOX sheet metal ring flush with flywheel (no gap)*
5. *Bead of silicone*
6. *Starter gear*

Installing the Magneto Flywheel

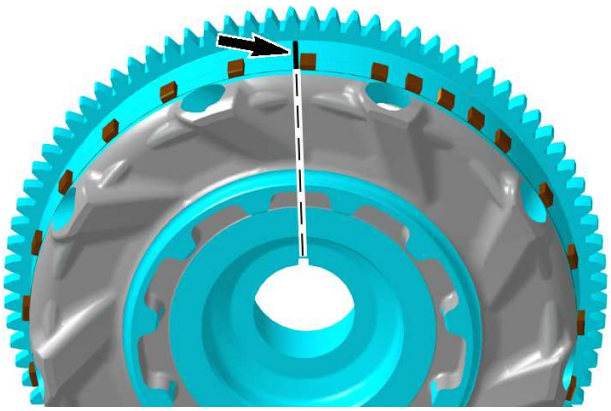
1. Clean:
   - Crankshaft taper
   - Thread in crankshaft
   - Magneto flywheel taper
   - Magneto flywheel retaining screw threads.

Brake and parts cleaner PRO S2

2. Apply threadlocker on magneto flywheel taper.

Loctite 243 (blue)

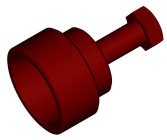
3. Install woodruff key on crankshaft.
4. Turn crankshaft to position woodruff key in top position.
5. Mark keyway position on magneto flywheel.



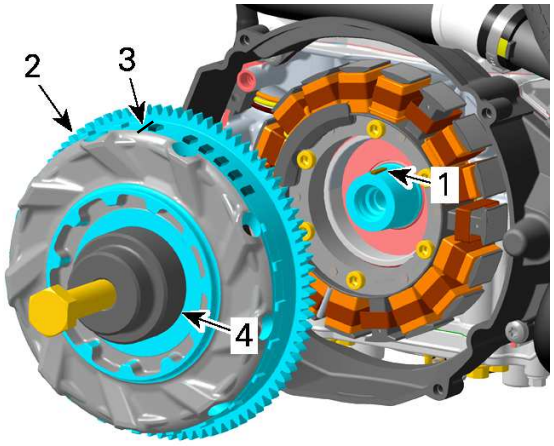
MARK KEYWAY POSITION

6. Install magneto flywheel.

⚠ CAUTION
For installation use magneto puller to avoid injuries due to the high magnetic pull of the magneto flywheel.

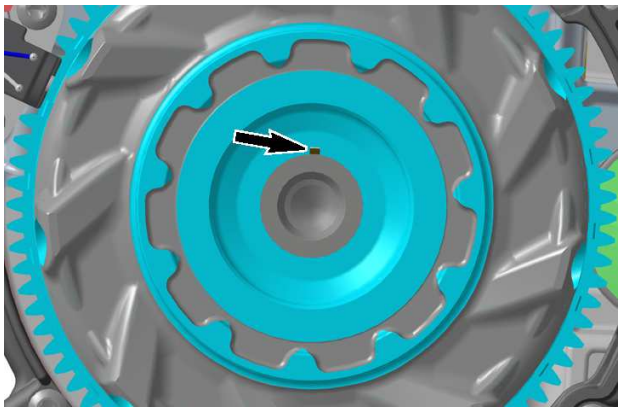
Magneto puller (P/N 529036403)	

7. Hold magneto flywheel with mark in top position.

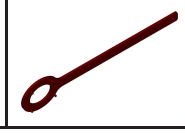


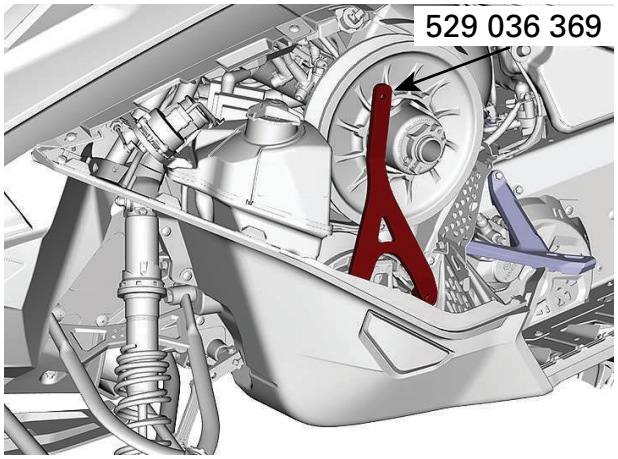
1. *Woodruff key in top position*
2. *Magneto flywheel*
3. *Mark on magneto flywheel*
4. *Magneto puller*

8. Check if Woodruff key is in proper position.

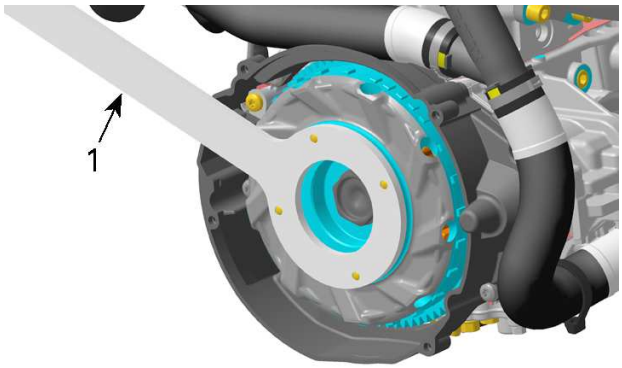


9. Block the drive pulley or the magneto flywheel using the appropriate tool.

Clutch holder (P/N 529036369)	
Magneto holder (P/N 529036404)	



TYPICAL - IN VEHICLE



OUTSIDE VEHICLE
1. *Magneto holder*
2. *Magneto flywheel screw*

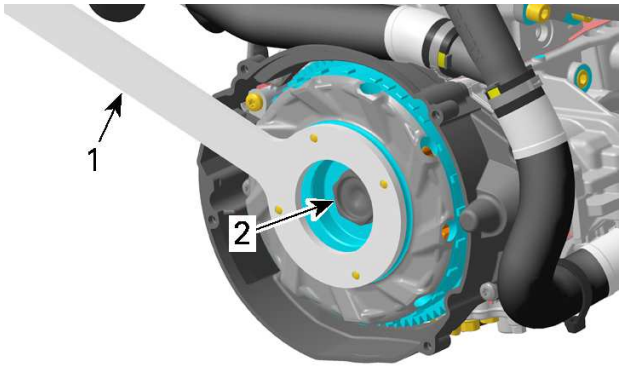
10. Install magneto flywheel retaining screw and tighten to specification.

Loctite 243 (blue)

NOTICE

The hexagon head of the retaining screw is very flat. To avoid slipping off thoroughly hold socket against the screw head when tightening the retaining screw.

Tightening Torque	
Magneto flywheel retaining screw	125 ± 9 N·m (92 ± 7 lbf·ft)



1. *Magneto holder*
2. *Magneto flywheel retaining screw*

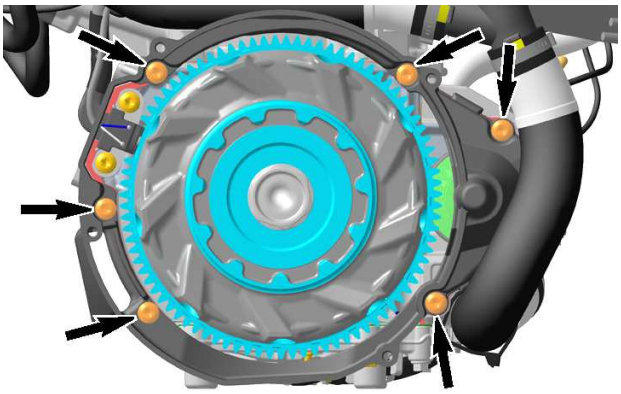
Magneto Housing

Inspecting the Magneto Housing

1. Inspect housing for cracks or other apparent damage. Replace if necessary.

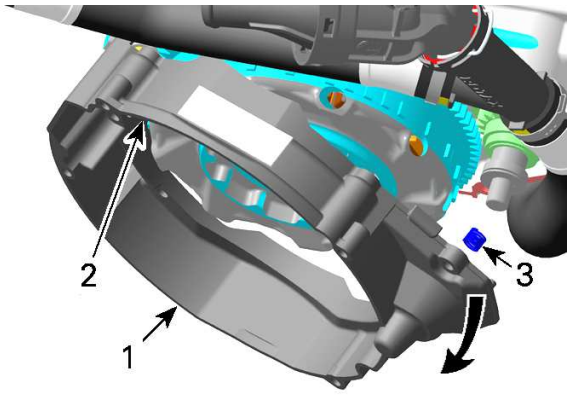
Removing the Magneto Housing

1. Remove the engine from the vehicle.
2. Remove magneto housing screws.



3. Slightly pull magneto housing and cut silicone sealer from between CPS and magneto housing.

NOTE: Do not lose starter drive spring during removal of magneto housing.



PULL MAGNETO COVER
1. *Magneto cover*
2. *CPS*
3. *Spring*

4. Remove magneto housing.

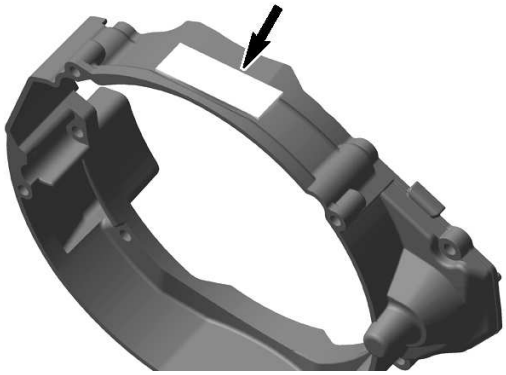
Installing the Magneto Housing

The installation is the reverse of the removal procedure. However, pay attention to the following.

1. Remove the old silicon at CPS.
2. Tighten magneto housing screws to specification.

Tightening Torque	
Magneto housing screws	7 ± 0.5 N•m (62 ± 4 lbf•in)

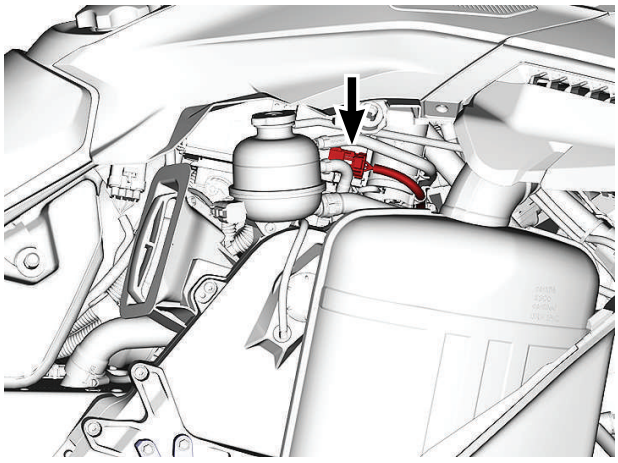
3. On a new magneto cover install adhesive pad.



Stator

Stator Connector Access

1. Remove the RH side panel.
2. Disconnect stator connector (3-pin connector).



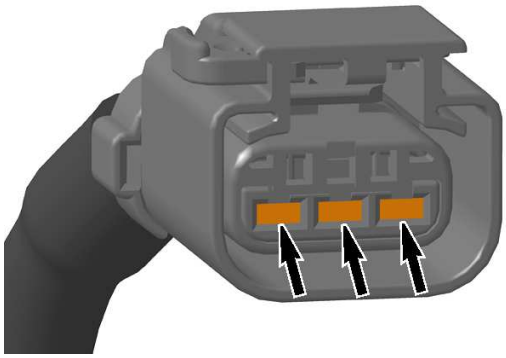
Testing the Stator Continuity

1. Disconnect stator connector.
2. Set multimeter to Ω.

Fluke 115 multimeter (P/N 529035868)	

3. Measure resistance of each stator coil as follows.

Stator Continuity Test		
Stator Connector Pin		**Specification @ 20 °C (68 °F)**
1	2	0.63 ± 0.03 Ω
1	3	
2	3	



STATOR CONNECTOR PIN-OUT

NOTE: The stator resistance values mentioned in the table are manufacturers specifications under ideal conditions. If stator coil resistance is less than 1 Ω, consider stator to be in good working condition.

4. If resistance is out of specification, replace stator.

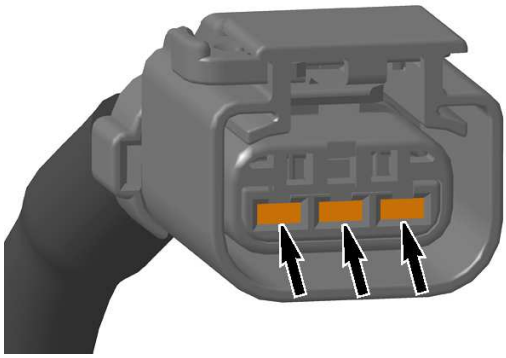
Testing the Stator Insulation

1. Disconnect stator connector.
2. Set multimeter to Ω.

Fluke 115 multimeter (P/N 529035868)	

3. Measure resistance as follows.

Stator Insulation Test		
Stator Connector Pin	**Ground**	**Specification @ 20 °C (68 °F)**
1	Engine ground	OL (open circuit)
2		
3		



STATOR CONNECTOR PIN-OUT

4. If results are out of specification, the stator and/or the wiring need to be repaired or replaced.

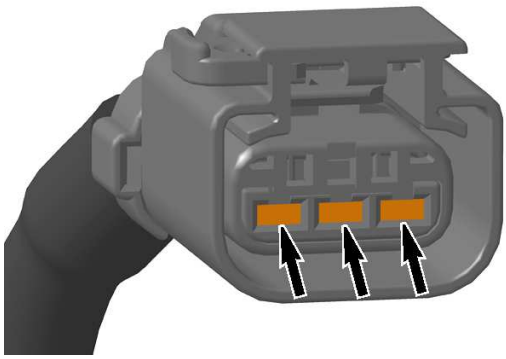
Testing the Stator Voltage Output

1. Disconnect stator connector.
2. Set multimeter to Vac and **manually set a scale** capable of reading at least 20 Vac.

Fluke 115 multimeter (P/N 529035868)	
ACG adapter (P/N 529036410)	

3. Manually crank engine and read voltage from each winding as follows.
4. Repeat the test 3 times for each winding.

Stator Output Voltage Test		
Stator Connector Pin		**Specification**
1	2	Approximately 15 - 20 Vac
1	3	
2	3	

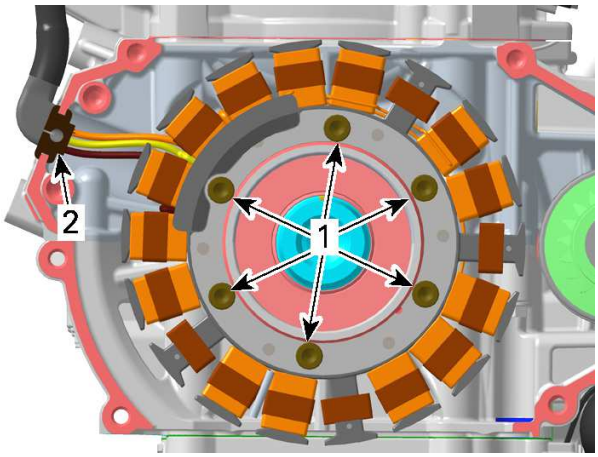


STATOR CONNECTOR PIN-OUT

5. If voltage is lower than specification, remove and inspect magneto flywheel and stator. Refer to *Magneto Flywheel* in this subsection.
6. Replace magneto flywheel and/or stator if applicable.

Removing the Stator

1. Refer to procedures in this subsection and remove:
   - Magneto flywheel
   - Magneto housing
   - CPS.
2. Remove stator retaining screws.
3. Remove grommet from crankcase.



1. *Stator retaining screws*
2. *Grommet*

4. Disconnect stator connector. Refer to *Stator Connector Access* in this subsection.

NOTE: To ease harness routing at installation, tie a string on the connector and let the string follow through as you pull on the harnesses.

5. Remove stator.

Cleaning the Stator

NOTICE
Clean stator using only a clean cloth.

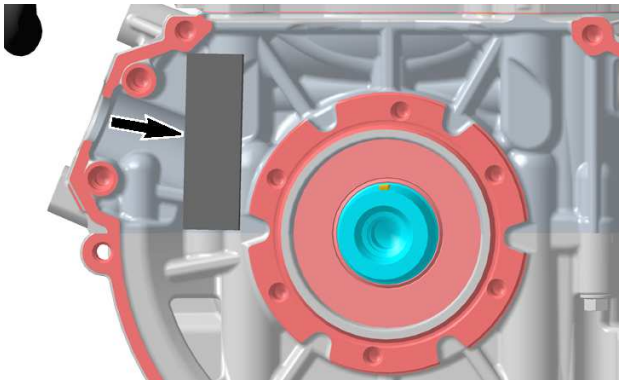
Inspecting the Stator

Refer to *Inspecting the Magneto Flywheel* in this subsection.

Installing the Stator

NOTICE
Do not apply silicone dielectric grease or any other product on Deutsch waterproof housings as housing seal may be damaged.

1. Install adhesive pad on crankcase.



2. Install stator into crankcase.

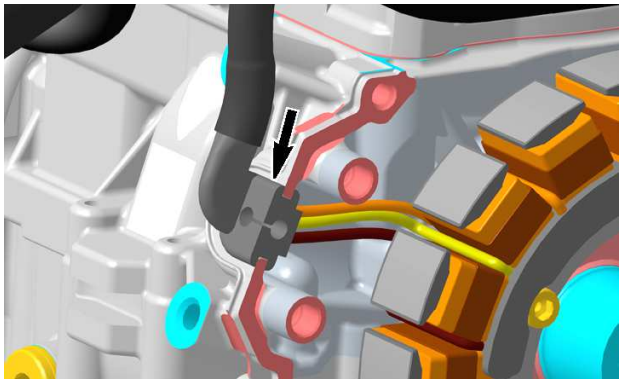
NOTE: During installation, ensure stator harness is located on the left side.

3. Tighten stator retaining screws to specification.

Loctite 243 (blue)

Tightening Torque	
Stator retaining screws	10 ± 0.7 N•m (89 ± 6 lbf•in)

4. Position grommet into crankcase recess.



5. Tie the string on the connector used during removal of the stator connector, then pull on him to route the harness up to his original locations.
6. Reinstall all other removed parts.

Starter

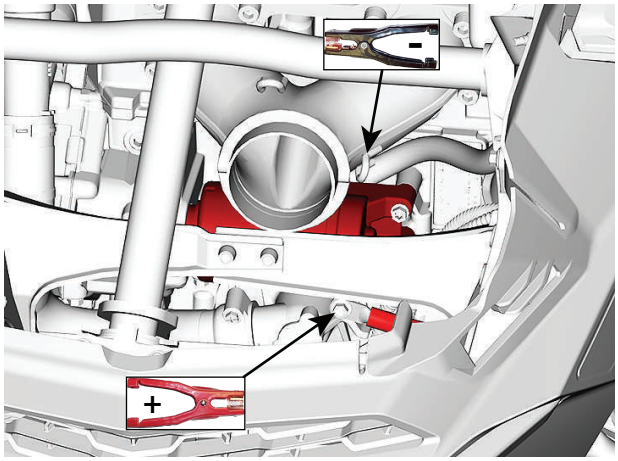
Starter Location

The starter is located at the front of the engine, below the exhaust manifold.

Testing the Starter Operation

Use booster cables and a booster battery to supply current directly to the starter.

1. Connect the RED jumper cable from the booster battery to the starter screw.
2. Momentarily connect the BLACK jumper cable to an ear of the exhaust manifold.



3. If the starter turns, test other starting system components. Refer to *Starting System* subsection.

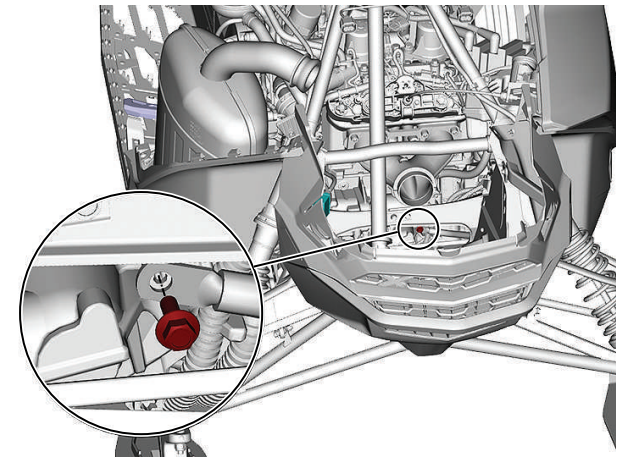
Removing the Starter

1. Disconnect the BLACK (-) battery cable from the battery.

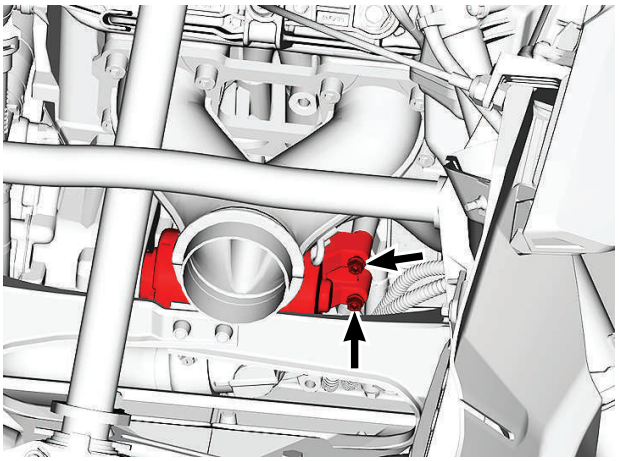
NOTICE

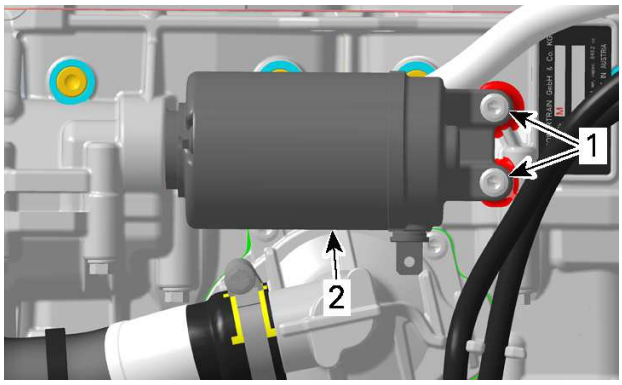
Always disconnect BLACK (-) battery cable first and reconnect last.

2. Remove the tuned pipe. Refer to *Exhaust System* subsection.
3. Disconnect the RED (+) power cable from starter.



4. Clean starter and surrounding area.
5. Remove starter mounting screws.





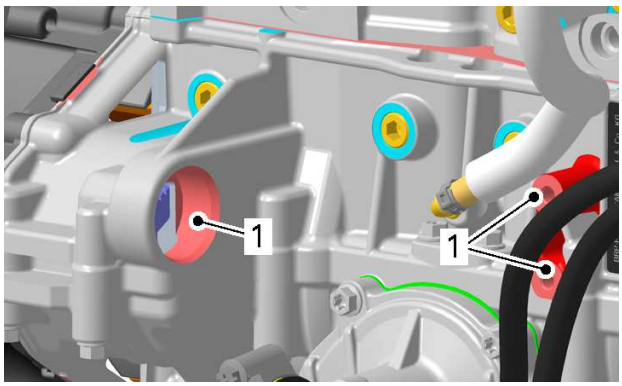
1. *Starter mounting screws*
2. *Starter*

6. Pull starter out of crankcase.

Installing the Starter

The installation is the reverse of the removal procedure. However, pay particular attention to the following:

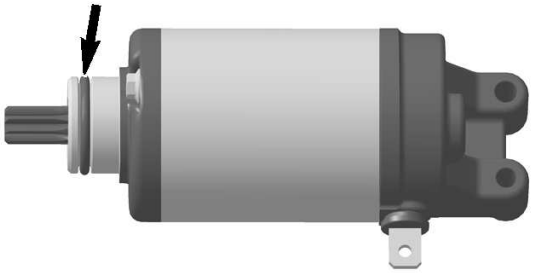
1. Make sure the starter and engine mating surfaces are free of debris. Serious problems may arise if the starter is not properly aligned.



1. *Clean starter mating surfaces*

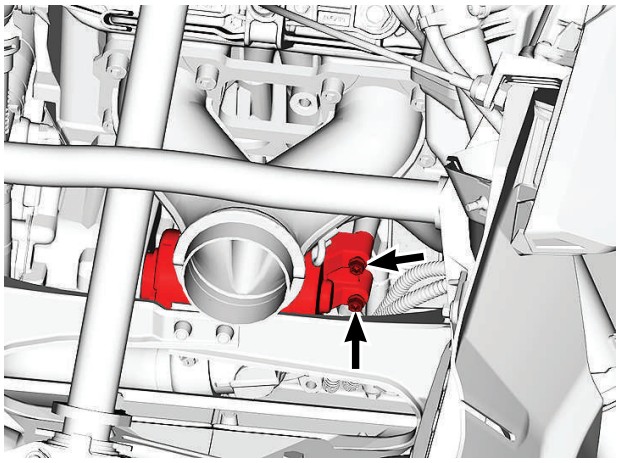
2. Lubricate starter O-ring.

Triple Guard grease



3. Install starter and tighten mounting screws to specification

Tightening Torque	
Starter mounting screws	11 ± 0.8 N•m (97 ± 7 lbf•in)



4. Connect the RED (+) cable to the starter and tighten screw to specification.

Tightening Torque	
RED (+) power cable screw	2.7 ± 0.7 Nm (24 ± 6 lbf-in)

5. Apply neoprene paint on RED (+) power cable screw.

Black neoprene paint

NOTE: If the neoprene paint is not available, use dielectric grease.

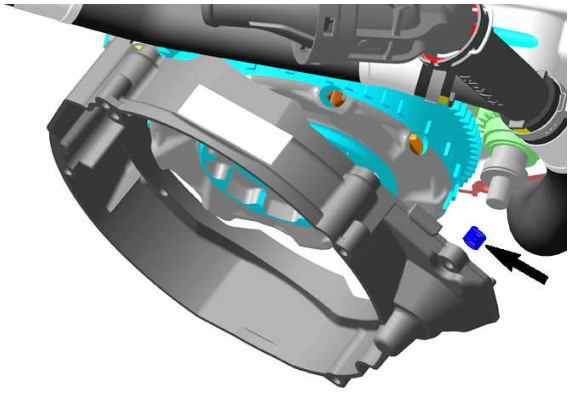
6. Connect the BLACK (-) battery cable last.
7. Test starter operation.

Starter Drive

Removing the Starter Drive

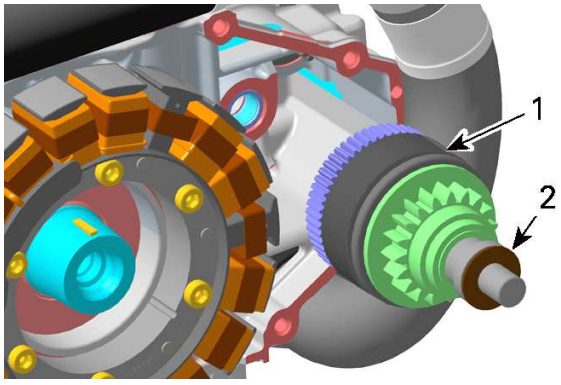
1. Remove the magneto flywheel. Refer to *Removing the Magneto Flywheel* in this subsection.
2. Remove the magneto housing screws and rotate the housing forwards to make enough room to remove the starter drive.

NOTE: Do not lose starter drive spring during removal of magneto housing.



3. Pull out starter drive.

NOTE: Do not lose washer of starter drive gear during removal.

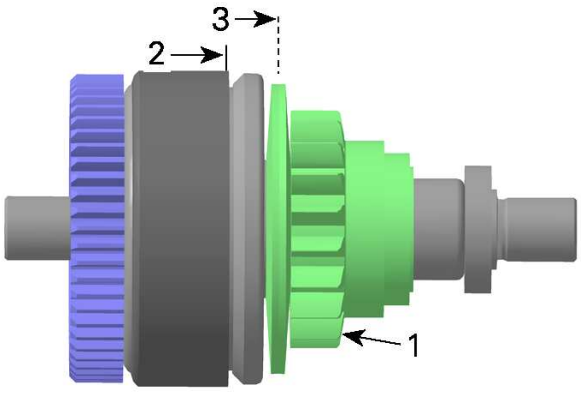


1. Starter drive
2. Washer

Inspecting the Starter Drive

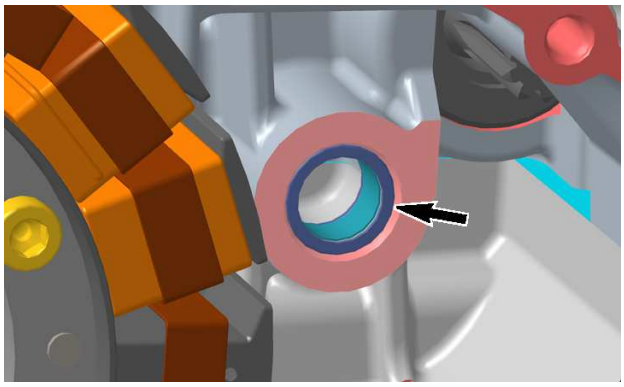
1. Check if starter drive pinion is free of movement.
2. Ensure proper operation of the starter drive sprag clutch.

NOTE: Centrifugal weights avoid disengaging of the pinion while starting the engine.



1. *Starter drive pinion*
2. *Starting position (spring released)*
3. *Gear is engaged drive pulley fixed half (spring loaded)*

3. Check needle bearing excessive play and smooth operation. If damaged see *Starter Drive Needle Bearing Replacement* in this subsection.

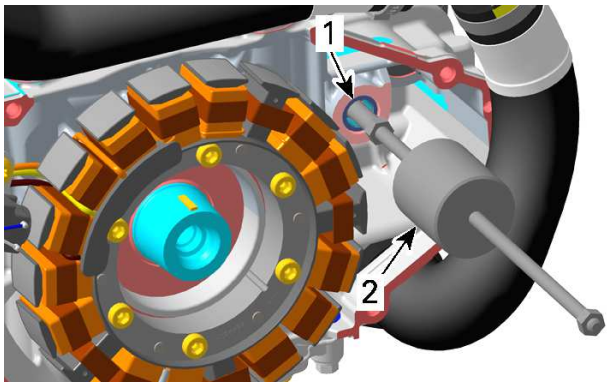


1. *Starter drive needle bearing*

4. Check magneto housing:
   - for cracks at the starter drive bore location
   - if starter drive bore is worn or otherwise damaged.
5. Replace magneto housing if necessary.

Replacing the Starter Drive Needle Bearing

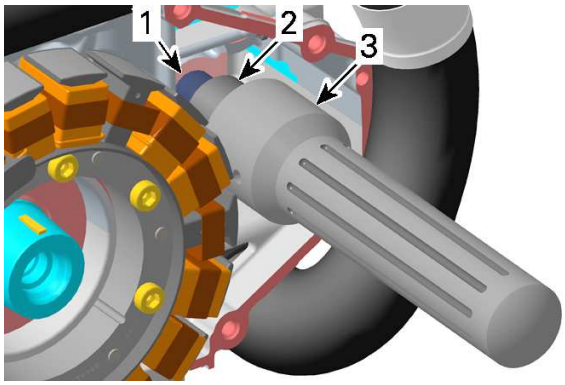
1. Remove needle bearing using a blind hole bearing puller.



1. *Needle bearing*
2. *Blind hole bearing puller*

2. Install needle bearing.

Starter drive needle installer (P/N 529035934)	
Handle (P/N 420877650)	



1. *Needle bearing*
2. *Starter drive needle bearing installer*
3. *Handle*

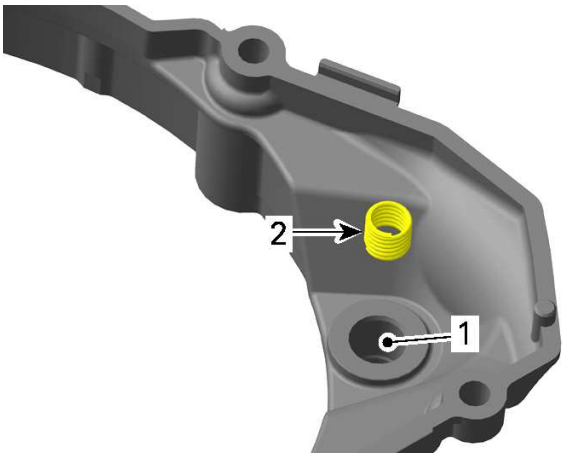
Installing the Starter Drive

The installation is the reverse of the removal procedure. However, pay attention to the following:

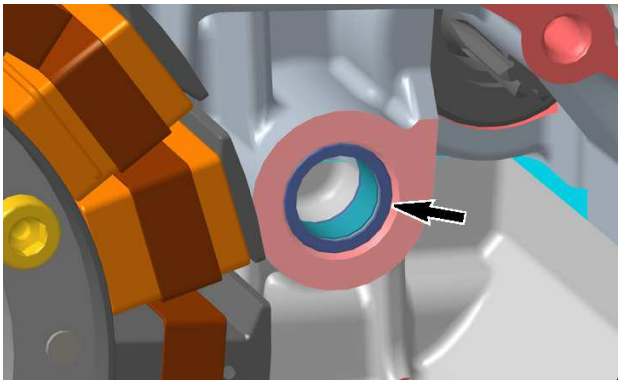
1. Clean out all residues of grease from:
   - Needle bearing in the crankcase
   - Starter drive journals
   - Starter drive bore in magneto housing
   - Spring.
2. Lubricate:

Triple Guard grease

   - Needle bearing in crankcase
   - Starter drive bore in magneto housing
   - Spring.

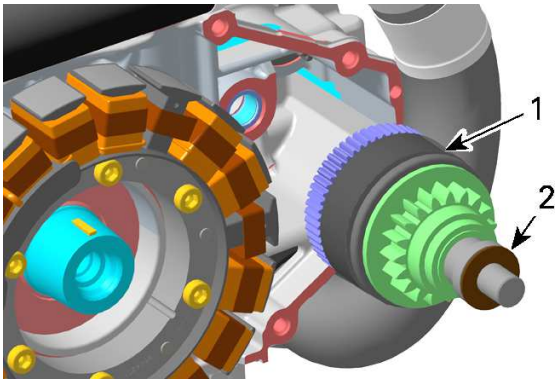


LUBRICATE
1. *Starter drive bore*
2. *Spring*



LUBRICATE NEEDLE BEARING IN CRANKCASE

3. Install starter drive with washer.



1. *Starter drive*
2. *Washer*

RAVE Valve

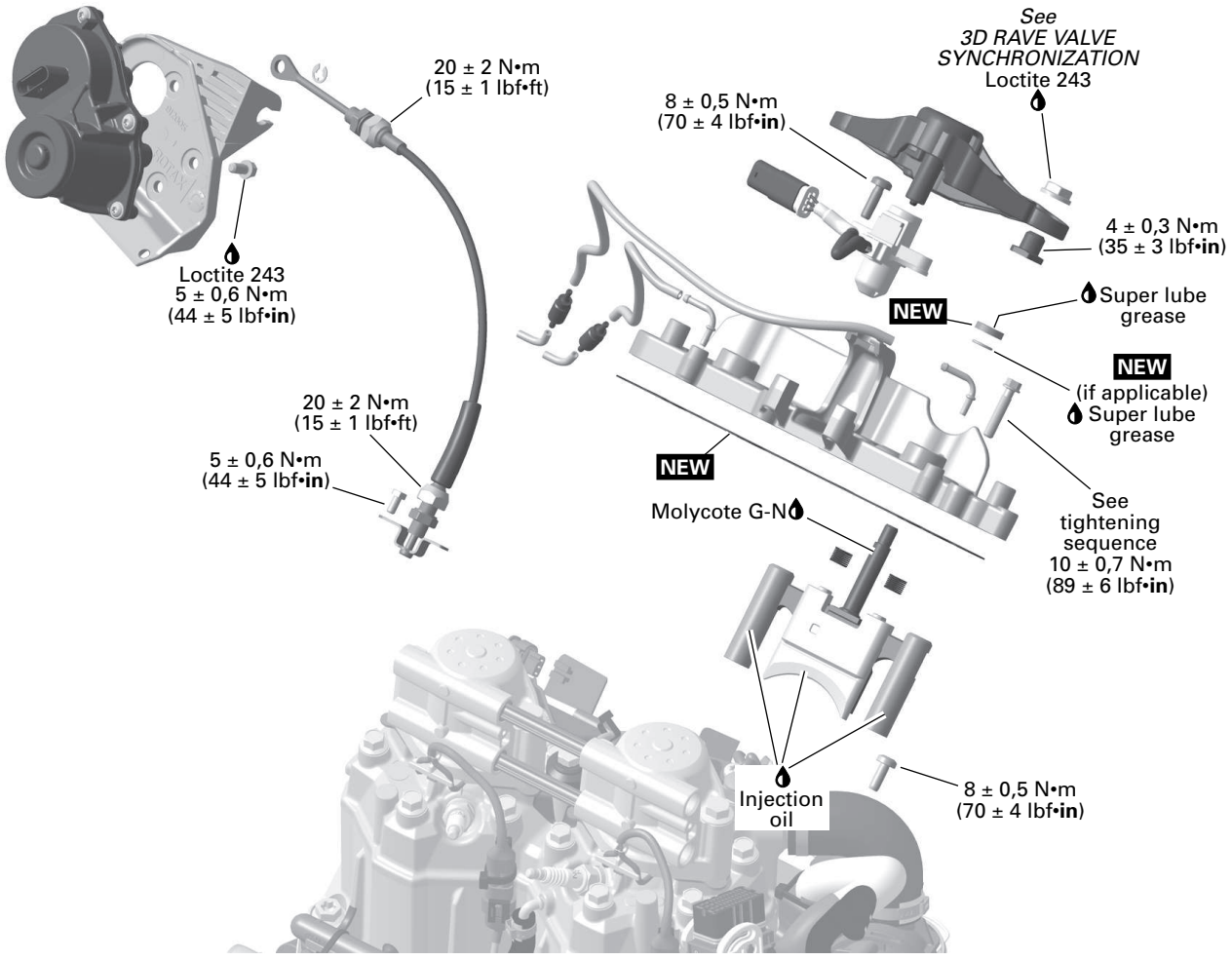
SERVICE TOOLS

Description	Part Number	Page
12 V BATTERY SUPPLY CABLE	(P/N 529035997)	76
FLUKE 115 MULTIMETER	(P/N 529035868)	76–77, 85–87
POWER INTERFACE	(P/N 515177223)	76
PROTECTOR SLEEVE (RAVE)	(P/N 529036488)	82
RAVE NUT WRENCH	(P/N 529036439)	77–79

SERVICE PRODUCTS

Description	Part Number	Page
BRAKE AND PARTS CLEANER PRO S2		81
INJECTION OIL		81–82
LOCTITE 243 (BLUE)		78–79, 87
MOLYKOTE G-N		82
O-RING CHAIN LUBRICANT		85
SUPER LUBE GREASE		82

RAVE Valve



NEW = Component must be replaced when removed.

General

During assembly or installation, use torque values and service products as shown in the exploded view.

Clean threads before applying a threadlocker. Refer to *Self-Locking Fasteners Procedure* and *Loctite Application Procedure* at the beginning of this manual for complete procedure.

⚠ WARNING

Torque wrench tightening specifications must be strictly adhered to.
Locking devices when removed (e.g.: locking tabs, elastic stop nuts, self-locking fasteners, cotter pins, etc.) must be replaced with new ones.

NOTICE

Hoses, cables and locking ties removed during a procedure must be reinstalled as per factory standards.

System Description

3D RAVE Basic Operation

3-step RAVE valves are used. Their positions vary according to engine operating condition.

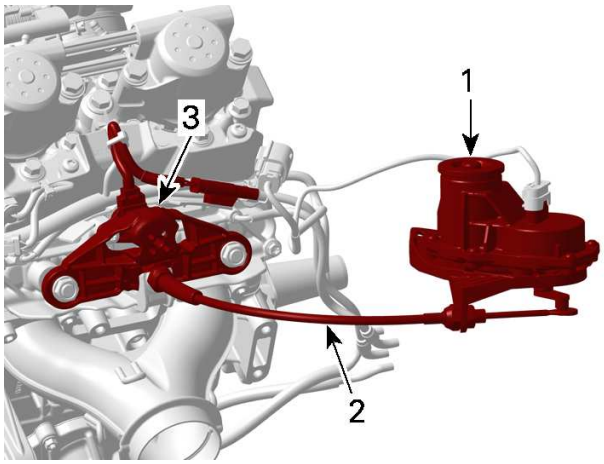
The RAVE valve steps are:

– Fully closed
– Partially opened
– Fully opened.

RAVE valves are moved to the desired position by a servomotor via a RAVE cable that is controlled by the ECM through mappings.

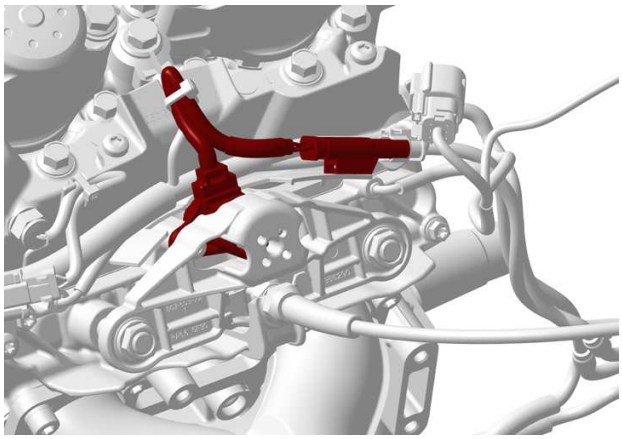
Different mappings are used by the ECM to control the 3D RAVE valves. The mappings are based on current engine RPM and the following inputs: intake temperature, TPS, knock sensor, engine coolant temperature and APS.

NOTE: 3D RAVE valves may go through all 3 positions or skip the partially opened position and go directly to either the fully opened or closed positions depending on present engine load and how quickly the throttle is depressed.



1. *Servomotor*
2. *RAVE cable*
3. *3D RAVE valve*

A hall-effect position sensor (RPS: RAVE position sensor) is used to provide RAVE valve position feedback to the ECM.

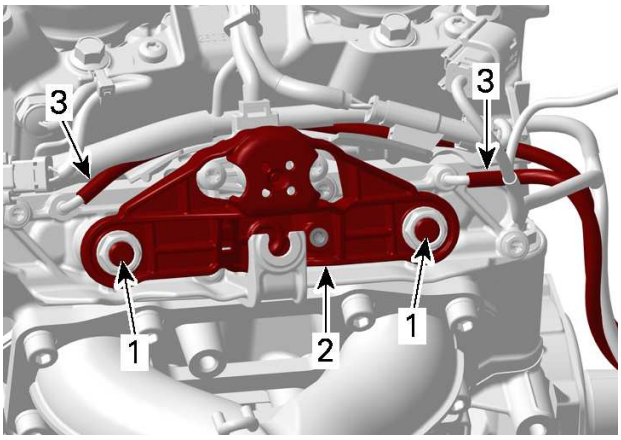


The RAVE position sensor (RPS) provides the ECM the actual position of the RAVE valves. Either closed, mid-position or opened. This informs the ECM that the RAVE valves are really at the expected position so that the proper amount of fuel is injected as well as other required operating parameters are applied.

RAVE valves are lubricated by the electronic oil injection pump.

RAVE valves are moved and monitored with a link bar.

T

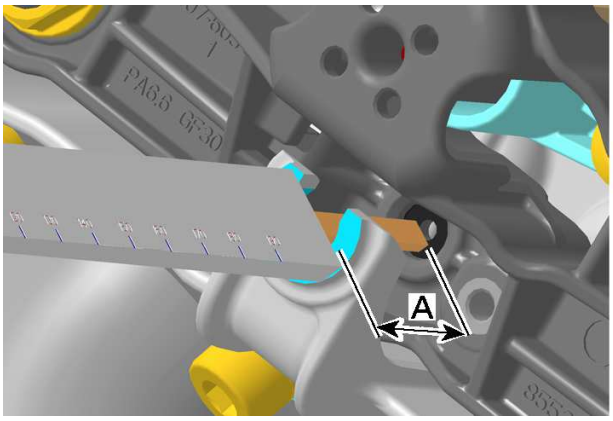


1. *Linked RAVE valves*
2. *Link bar*
3. *Oil lines to RAVE valves*

NOTICE

It is very important to perform *3D Rave Valve Synchronization* and *3D Rave Valves Position Sensor Setting* whenever link bar is removed.

3D RAVE Position According to Engine Operation



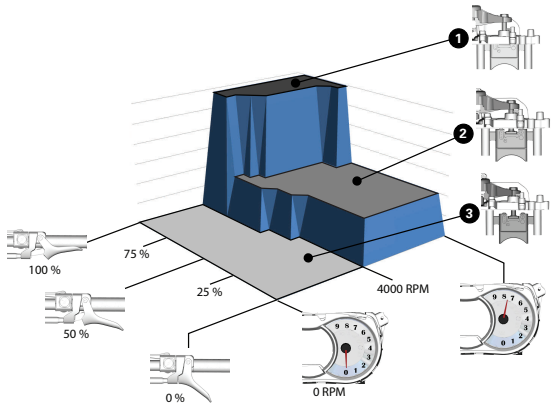
A. Measure from counter bearing to link bar

NOTICE

For correct measurement the RAVE cable must be removed.

Move both RAVE valves simultaneously to fully opened / mid / fully closed position by hand.

RAVE Valve Position Measured From Counter Bearing of the Rave Cable to the Link Bar		
Throttle Position	**600R E-TEC**	**850 E-TEC**
Fully closed	1. Measure from counter bearing to link bar. 2. Set calliper to 0 mm (0 in).	
Mid position	A: Approx. 7.2 mm (9/32 in) from 0 mm (0 in) (fully closed position)	A: Approx. 6 mm (15/64 in) from 0 mm (0 in) (fully closed position)
Fully opened	A: Approx.16 mm (5/8 in) from 0 mm (0 in) (fully closed position)	A: Approx. 17.5 mm (11/16 in) from 0 mm (0 in) (fully closed position)



RAVE POSITION
1. *Fully opened*
2. *Mid*
3. *Fully closed*

Maintenance

Cleaning the 3D RAVE Valve

Clean carbon deposits as required. Refer to *Cleaning the 3D RAVE Valve*.

Troubleshooting

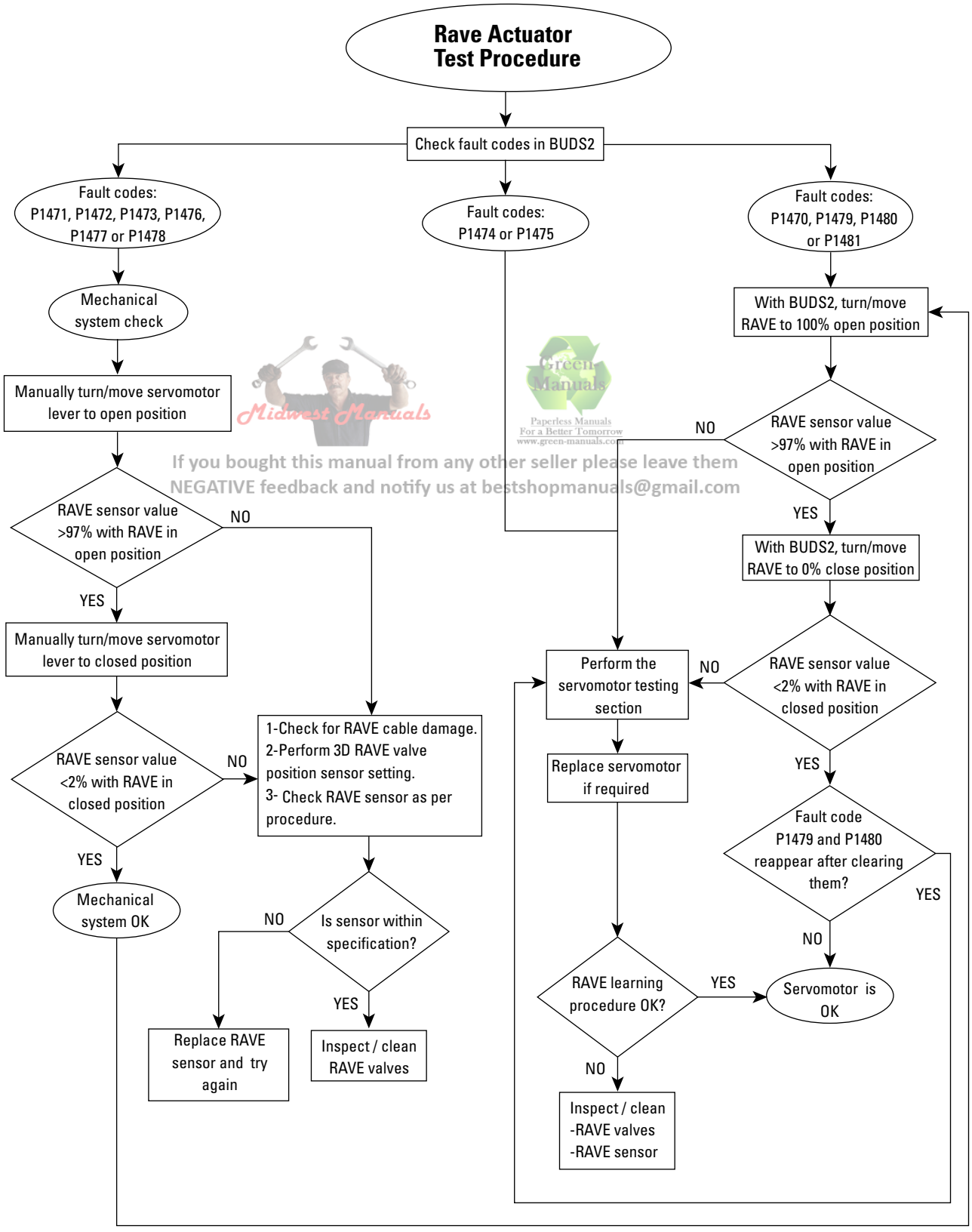
DIAGNOSTIC TIPS

As a first troubleshooting step, perform the following procedures to ensure RAVE system is properly adjusted.

1. *3D RAVE Valve Synchronization*
2. *3D RAVE Valves Position Sensor Setting*
3. *3D RAVE Valves Position Validation*.

If fault code still displayed, follow the steps on the flowchart.

RAVE



Midwest Manuals
Green Manuals
Paperless Manuals
For a Better Tomorrow
www.green-manuals.com
If you bought this manual from any other seller please leave them
NEGATIVE feedback and notify us at bestshopmanuals@gmail.com

Troubleshooting Guidelines

RAVE Valves Position Sensor Fault Code

The ECM may generate a **position sensor fault code** if the RAVE valve is not reaching the desired position.

If a position sensor fault code is generated by the ECM, check for the following:

Troubleshooting

1. DEFECTIVE POSITION SENSOR

Test position sensor operation, perform *3D RAVE Valves Position Validation*. See procedure in this subsection.

Check position sensor wiring, perform *Inspecting the 3D RAVE Valves Position Sensor*. See procedures in this subsection.

Check movement of the RAVE manually.

Troubleshooting

1. EXCESSIVE CARBON BUILD-UP IN RAVE VALVES

Use the recommended oil quality. Refer to *Lubrication System* subsection.

Check oil lines (installed incorrectly, air bubbles).

Check for proper oil injection pump code in the BRP diagnostic software (BUDS2). Refer to *Lubrication System* subsection.

NOTICE

Insufficient oil delivery to RAVE valves may result in a carbon build-up.

Procedures

3D RAVE Valves Position Sensor

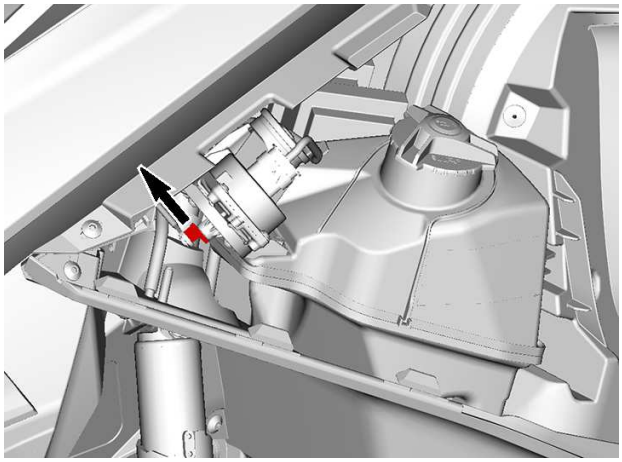
3D RAVE Valves Position Sensor Setting

1. Ensure RAVE valves are properly synchronized as per *3D RAVE Valve Synchronization* procedure.

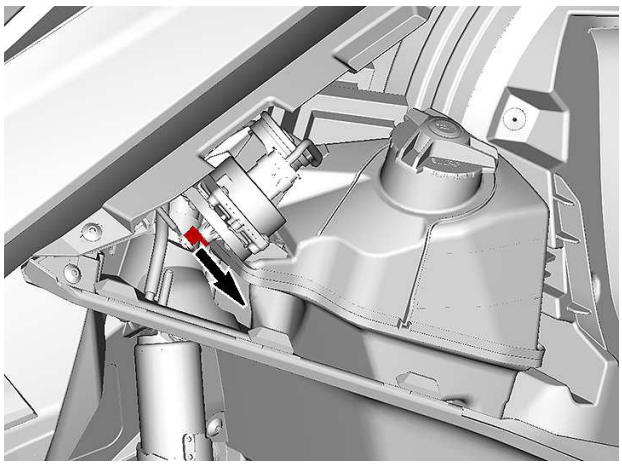
NOTICE

It is very important to perform *3D RAVE Valve Synchronization* and *3D RAVE Valves Position Sensor Setting* whenever link bar is removed.

2. Connect the vehicle to the BRP diagnostic software (BUDS2). Refer to *Communication Tools* subsection.
3. In BUDS2, go to:
   - **Settings** page
   - **ECM** button
   - **Settings** tab
   - **Initialization - RAVE Setting**.
4. Perform setting at **fully closed** position:
   1. Select "**RAVE Closed Position Setting**" in the list.
   2. **Push** the servomotor lever in **fully closed** position and **hold** it.

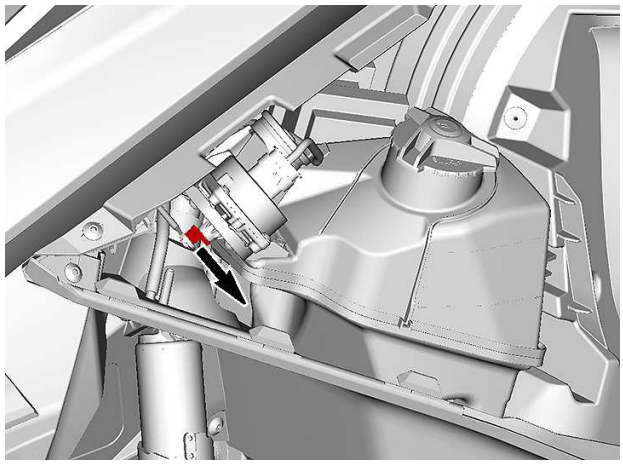


   3. Confirm that the *Saved Value* is within specification. Refer to *3D RAVE Valves Position Validation*.
   4. Save the value by pressing the **SET** button.
5. Perform setting at **fully opened** position:
   1. Select "**RAVE Fully Position Setting**" in the list.
   2. **Pull** the servomotor lever in **fully opened** position and **hold** it.



   3. Confirm that the *Saved Value* is within specification. Refer to *3D RAVE Valves Position Validation*.
   4. Save the value by pressing the **SET** button.
6. Perform setting at **middle** position:

1. Select "**RAVE Middle Position Setting**" in the list.
2. **Pull** the servomotor lever in **fully opened** position and **release** it.



3. Confirm that the *Saved Value* is within specification. Refer to *3D RAVE Valves Position Validation*.
4. Save the value by pressing the **SET** button.

7. Validate that position sensor is properly set. Refer to *3D RAVE Valves Position Validation* in this subsection.
8. Start engine.

   At first engine start after RAVE position sensor setting is completed RAVE valves travel to fully opened position and than moving slowly to fully closed position

NOTICE

Do not push throttle lever during this initialization procedure, otherwise the ECM will discontinue the initialization and starts initialization from the beginning.

Testing the 3D RAVE Valves Position Sensor

As a first troubleshooting step, always check for applicable fault codes using the BRP diagnostic software (BUDS2).

Testing the 3D RAVE Valves Position Sensor Voltage Input

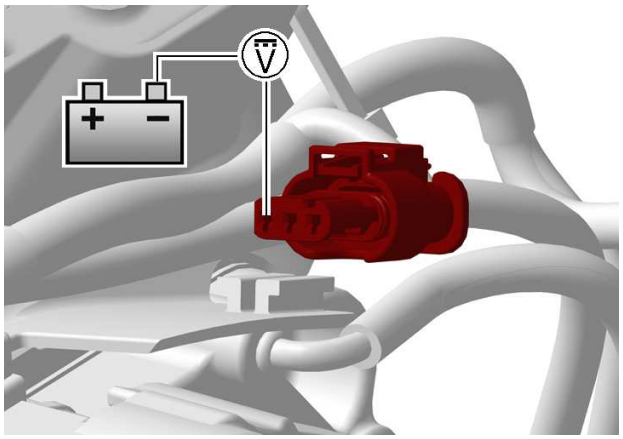
1. Disconnect position sensor connector.

Power interface (P/N 515177223)	
12 V battery supply cable (P/N 529035997)	

   On vehicle without electric starting, connect the vehicle to a booster battery.
2. Install D.E.S.S. key and press start/RER button to wake up ECM.
3. Set multimeter to Vdc and probe terminals as per following table.

Fluke 115 multimeter (P/N 529035868)	

3D RAVE Valves Position Sensor Input Voltage		
Position Sensor Connector Pin (harness side)	**Battery**	**Specification**
3	Ground	5 ± 0.25 Vdc



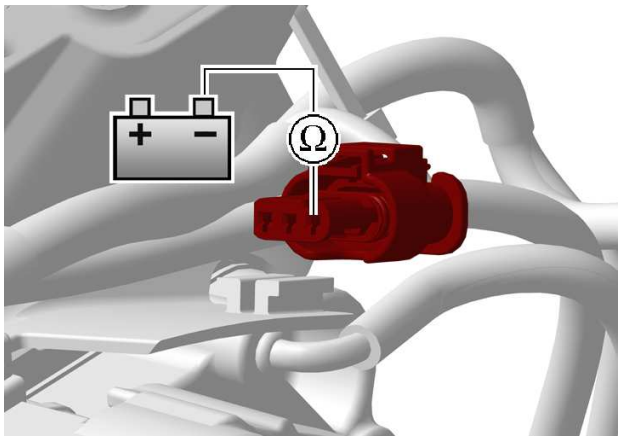
4. If voltage is exceeding the range check:
   - F1 - ECM power supply fuse
   - F3 - Battery fuse (electric starting vehicle)
   - Wiring harness.

Testing the Continuity of 3D RAVE Valves Position Sensor Ground Circuit

1. Disconnect position sensor connector.
2. Set multimeter to Ω and probe terminals as per following table.

Fluke 115 multimeter (P/N 529035868)	

3D RAVE Valves Position Sensor Resistance Test		
Position Sensor Connector Pin (harness side)	**Battery**	**Specification @ 20 °C (68 °F)**
1	Ground	Close to 0 Ω



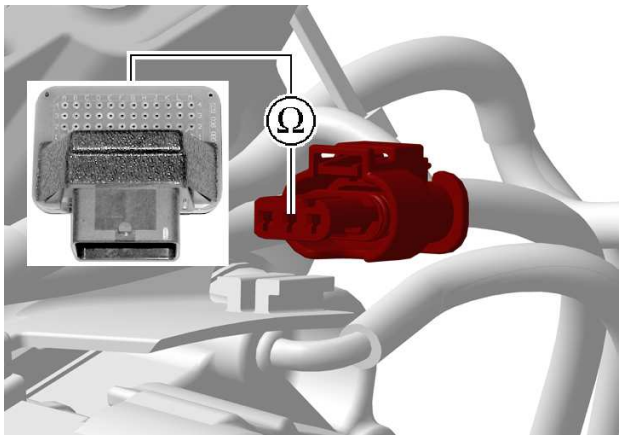
3. If resistance is out of specifications check ECM grounding and wiring harness.

Testing the Continuity of 3D RAVE Valves Position Sensor Circuit

1. Disconnect:
   - ECM-A connector
   - Position sensor connector.
2. Connect ECM-A connector to ECM adapter tool.
3. Set multimeter to Ω and probe terminals as per following table.

Fluke 115 multimeter (P/N 529035868)	

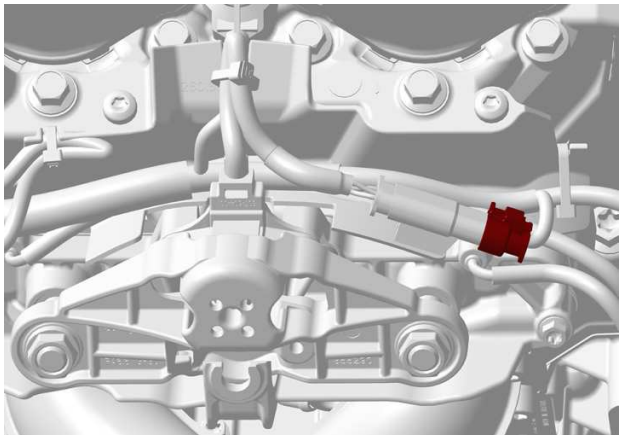
3D Rave Valves Position Sensor Resistance Test		
Position Sensor Pin	**ECM Adapter Pin**	**Specification @ 20 °C (68 °F)**
1	A-E2	Close to 0 Ω
2	A-E3	
3	A-E3	



4. If resistance is not within specification, repair or replace the wiring harness.

Removing the 3D Rave Valves Position Sensor

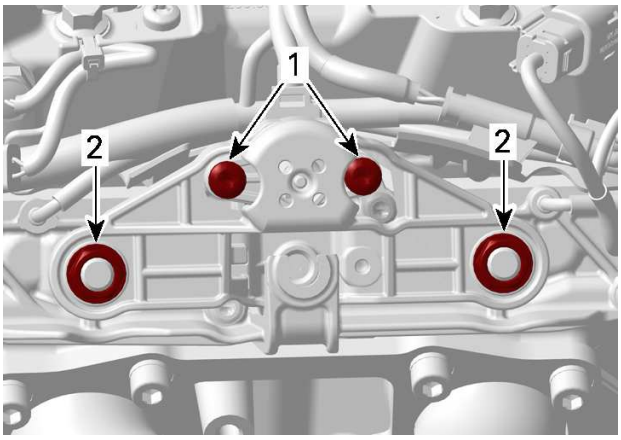
1. Remove upper body module. Refer to *Body*.
2. Remove RAVE cable from link bar. Refer to *Removing the Rave Cable* in this subsection.
3. Disconnect position sensor connector.



4. Unscrew:

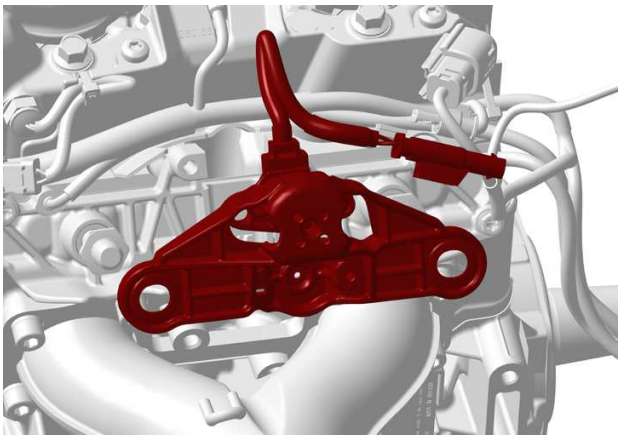
RAVE nut wrench (P/N 529036439) (to hold the plastic collar nuts)	

   - RAVE valves position sensor retaining screws
   - Link bar retaining nuts.



1. *RAVE valves position sensor retaining screws*
2. *Link bar collar nuts*

5. Remove link bar with RAVE valves position sensor.



NOTICE

It is very important to perform *3D RAVE Valves Synchronization* whenever link bar is removed.

Installing the 3D RAVE Valves Position Sensor

1. Position RAVE valves position sensor with link bar on RAVE valve housing.
2. Install position sensor retaining screws but do not tighten yet.
3. Perform *3D RAVE Valve Synchronization* procedure in this subsection to complete link bar installation.

NOTICE

It is very important to perform *3D RAVE Valves Synchronization* and *3D RAVE Valves Position Sensor Setting* whenever link bar is removed.

4. Install position sensor retaining screws.

Tightening Torque	
Position sensor retaining screws	8 ± 0.5 N•m (71 ± 4 lbf•in)

5. Install connector.

3D RAVE Valves

3D RAVE Valve Synchronization

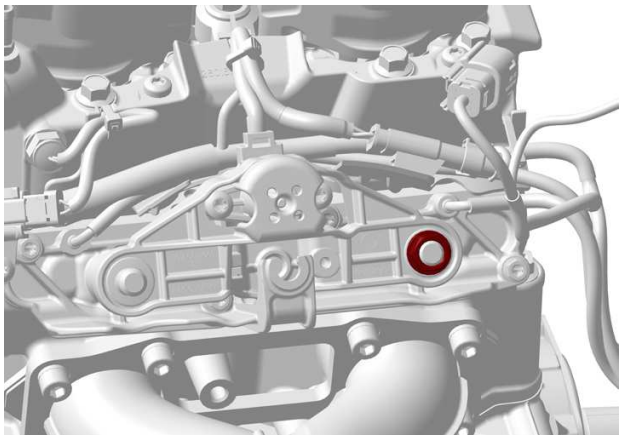
Synchronization Adjustment Procedure

1. Remove link bar retaining nuts and clean threads.
2. Hold the plastic collar nuts

RAVE nut wrench (P/N 529036439)	

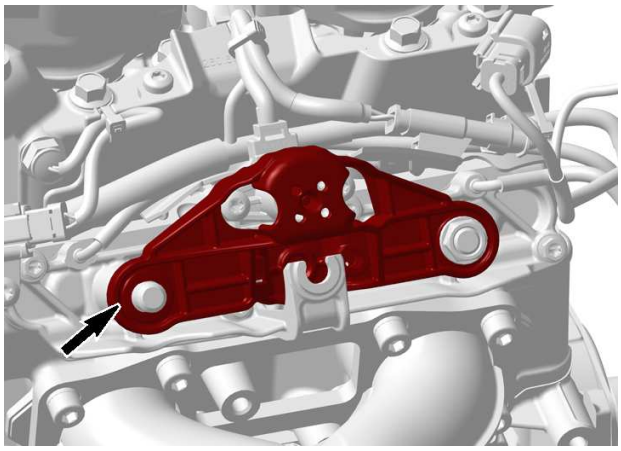
3. Install PTO link bar retaining nut and tighten by hand.

Loctite 243 (blue)



4. Check if the link bar rests flat on the retaining nut.

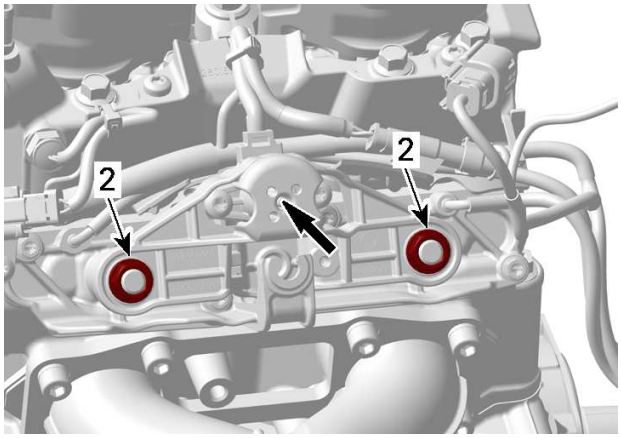
   Tip on link bar at MAG side an listen if link bar rests on retaining nut.



5. If the link bar does not rest flat:
   1. Unscrew PTO nut then slightly move link bar.
   2. Tighten PTO nut by hand and recheck position.
   3. Repeat above sequence until the link bar rests flat.
6. Install MAG link bar retaining nut and tighten by hand.

Loctite 243 (blue)

7. Push the center of link bar downwards in order to seat both RAVE valves on their fully closed position.
8. Firmly hold link bar downwards.
9. Tighten both retaining nuts.



Step 1. Push link bar
Step 2. Tighten retaining nuts

Tightening Torque	
Link bar retaining nuts	4 ± 0.3 N·m (35 ± 3 lbf·in)

10. Adjust position sensor using BUDS2. Refer to *3D RAVE Valves Position Sensor Setting*.
11. Push link bar down to fully closed position.
12. Install RAVE cable. Refer to *Installing the Rave Cable* in this subsection.

Synchronization Validation Procedure

1. Push and pull link bar to force RAVE valves to pass through their 3 positions:
   1. Ensure that only **one** step is felt at mid position.
   2. If out of specification, redo the *Synchronization Adjustment Procedure*.

3D RAVE Valves Position Validation

1. Ensure RAVE valves are properly synchronized as per *3D RAVE Valve Synchronization*.
2. Ensure position sensor is properly set as per *3D RAVE Valves Position Sensor Setting*.
3. Connect the vehicle to the BRP diagnostic software (BUDS2). Refer to *Communication Tools* subsection.
4. In BUDS2, go to:
   - **Settings** page
   - **ECM** button
   - **Settings** tab
   - **Initialization - RAVE Setting**
5. Select the appropriate RAVE position in the list.

RAVE Valves Position Test	
Rave Actual Position	**Specification**
Closed	0.25 V - 1.25 V
Middle	1.00 V - 3.00 V
Opened	3.00 V - 4.50 V

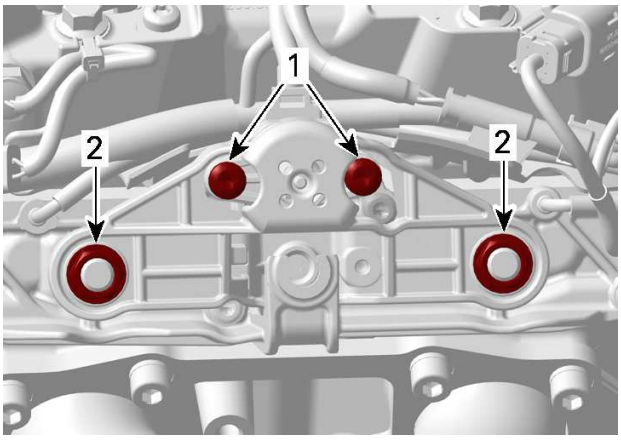
6. If RAVE valves actual position are out of specification, check the following:
   - RAVE valve position sensor setting
   - RAVE valve synchronization
   - RAVE valves cleanliness.

Removing the 3D RAVE Valves

1. Remove upper body module. Refer to *Body*.
2. Remove RAVE cable from link bar. Refer to *Removing the Rave Cable* in this subsection.
3. Disconnect RAVE valve position sensor connector and put harness away.
4. Hold the plastic collar nuts.

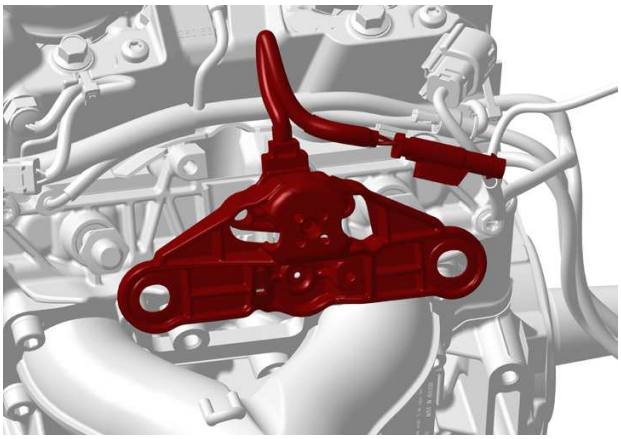
RAVE nut wrench (P/N 529036439)	

5. Unscrew:
   - RAVE valves position sensor retaining screws
   - Link bar retaining nuts.



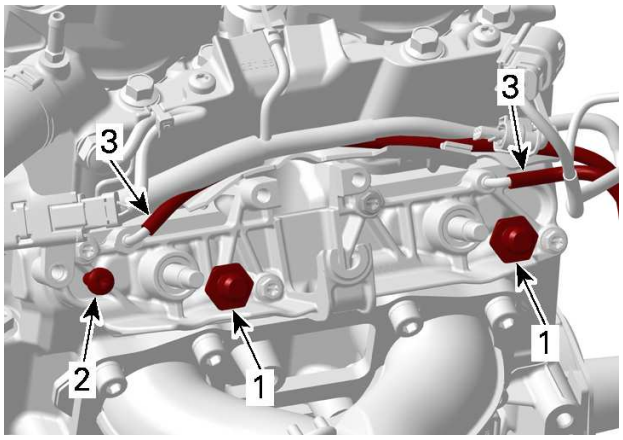
1. *RAVE valves position sensor retaining screws*
2. *Link bar retaining nuts*

6. Remove link bar with RAVE valves position sensor.



1. *Link bar*
2. *RAVE valves position sensor*

7. Remove collar nuts.
8. Remove screw from harness support.
9. Disconnect lubrication hose.



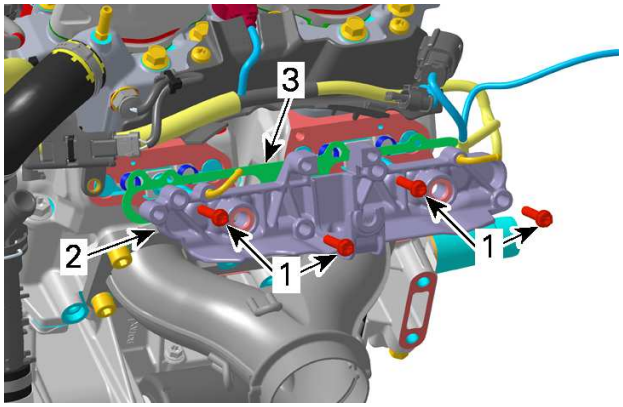
1. *Collar nuts*
2. *Harness support screw*
3. *Lubrication hoses*

10. Remove the RAVE valve housing.

NOTE: Be careful not to loose springs underneath housing.

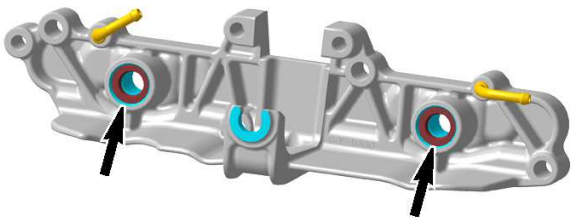
NOTICE

If signs of oil are found outside the housing, replace seals.



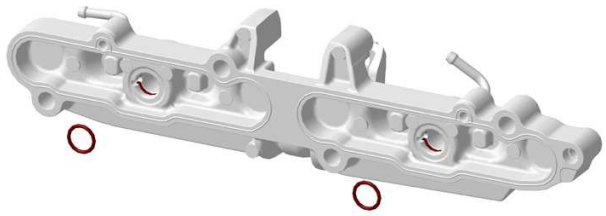
1. *Retaining screws*
2. *RAVE valve housing*
3. *Gasket (discard it)*

11. Take note of seals orientation and carefully pry them out using a screwdriver.

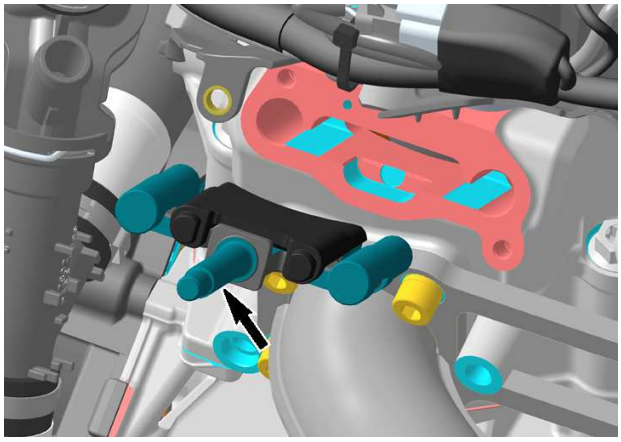


12. Discard oil seals

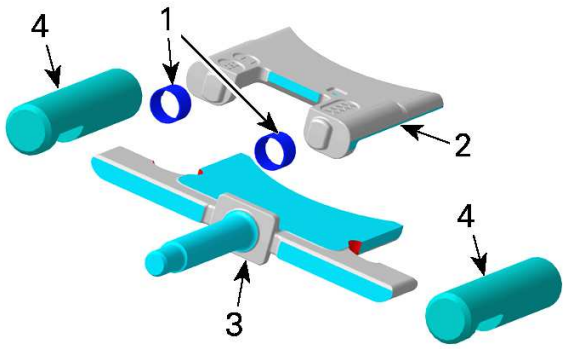
13. Carefully remove O-rings and discard them (if applicable)



14. Pull RAVE valve assembly out.



15. If necessary separate RAVE valve assembly.



1. *Springs*
2. *Main valve upper part*
3. *Main valve lower part*
4. *Side valves*

Cleaning the 3D RAVE Valve

1. Thoroughly clean all RAVE valves components and cylinder slots.

Brake and parts cleaner PRO S2

NOTICE

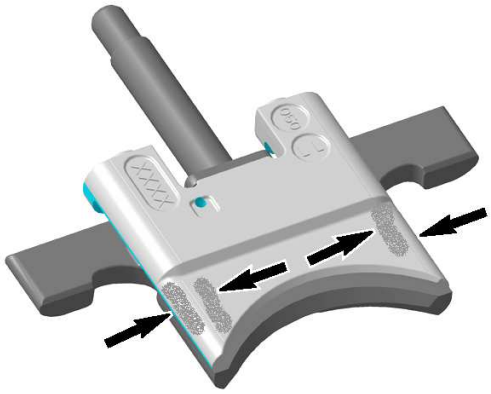
Use a moderate quantity of cleaner when cleaning the cylinder slots. Fluids can cause corrosion of the cylinder bore which may result in severe engine damage.

RAVE Valves Frequently Gummed

1. If the valves are getting gummed more frequently than usual, do the following:
   1. Check if the recommended injection oil is used.
   2. Check lubrication hoses for restriction.
   3. Check lubrication hoses for presence of air. Bleed system if needed.
   4. Check lubrication hose check valves as explained in this subsection.

Inspecting the 3D RAVE Valve

1. Check valves for:
   - wear at sliding points
   - straightness
   - breakage.



SIGNS OF WEAR

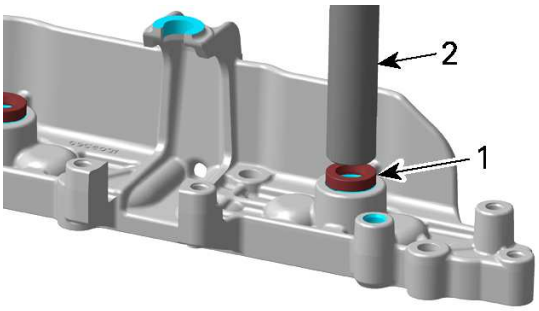
2. Check spring condition and straightness.

NOTE: Make sure hoses are not leaking, kinked or damaged.

Installing the 3D RAVE Valve

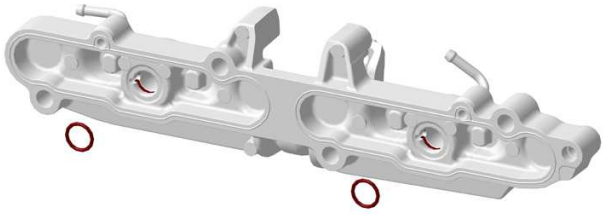
1. Use an appropriate pusher to install seals.
2. Lubricate outer diameter.

Injection oil



1. *Oil seal*
2. *Pusher*

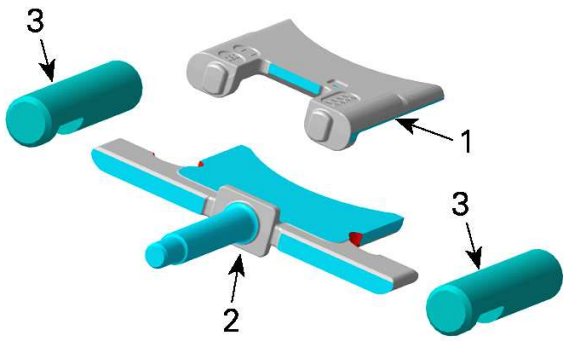
3. Install **NEW** O-rings (if applicable).



4. Lubricate sealing lips of oil seals.

Super Lube grease

5. Preassemble the main and side valves.



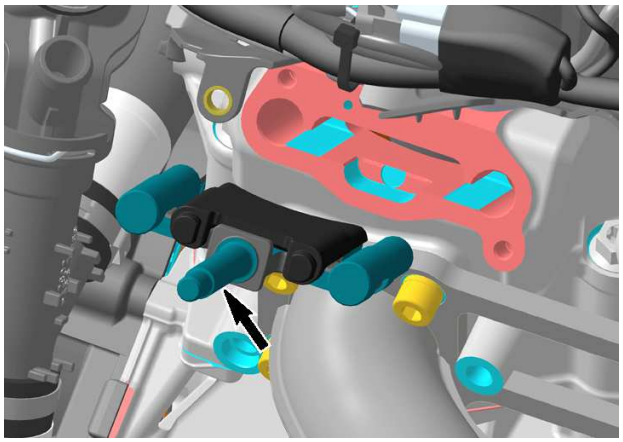
1. *Main valve upper part*
2. *Main valve lower part*
3. *Side valves*

6. Lubricate:

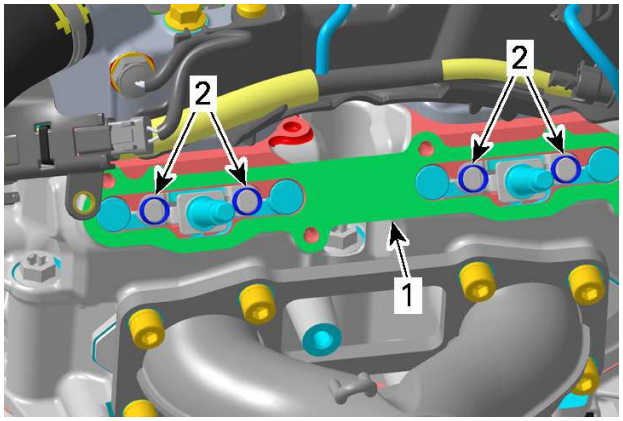
Injection oil

- RAVE chamber in cylinder block, main and side valves
- Sliding surfaces of RAVE valves.

7. Insert RAVE valves in cylinder.



8. Install **NEW** gasket.
9. Install springs on stud ends of valves.



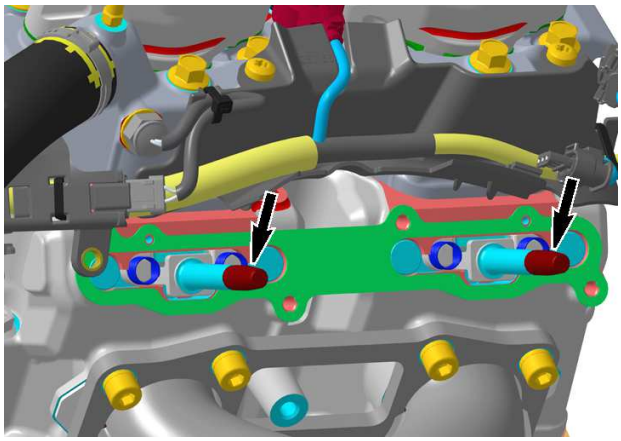
1. *Gasket*
2. *Springs*

10. Lubricate valve shaft.

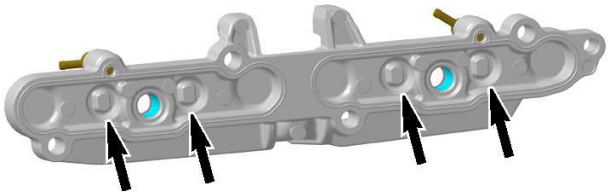
Molykote G-N

11. Place protector sleeves on RAVE valve threads.

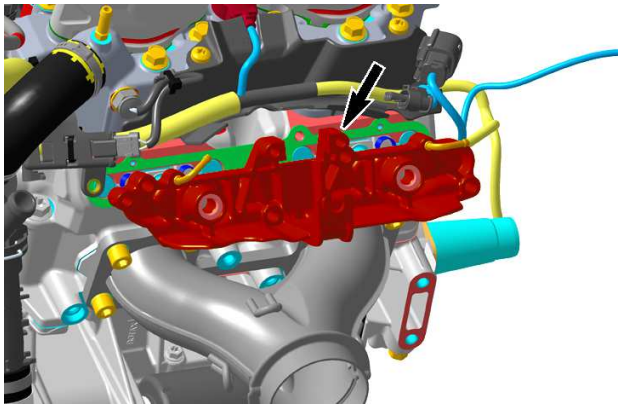
Protector sleeve (RAVE) (P/N 529036488)	



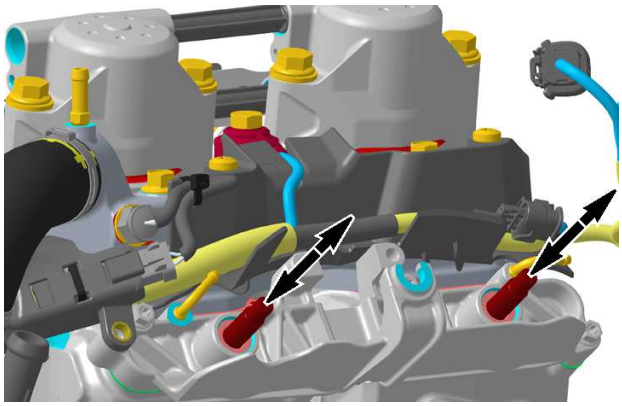
12. Install RAVE valve housing and carefully align springs in recess of RAVE valve housing.



RECESS FOR RAVE SPRINGS

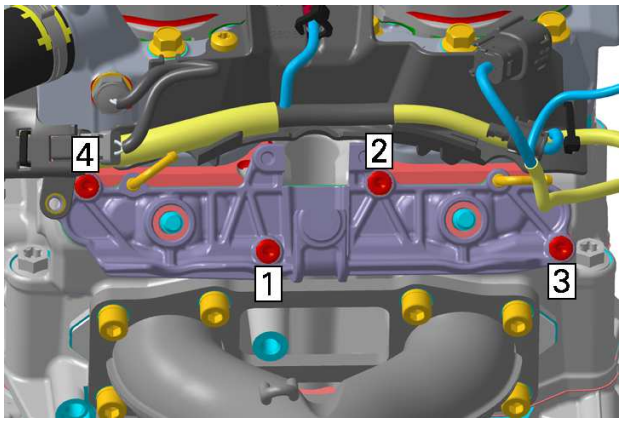


13. Remove protector sleeves.
14. Install and **hand tighten** screws.
15. Push and pull main valve stems to make sure they move freely.



16. Tighten RAVE valve housing screws and check valve stem for free movement again. If some friction is felt, slightly loosen screws and readjust housing then retighten screws.

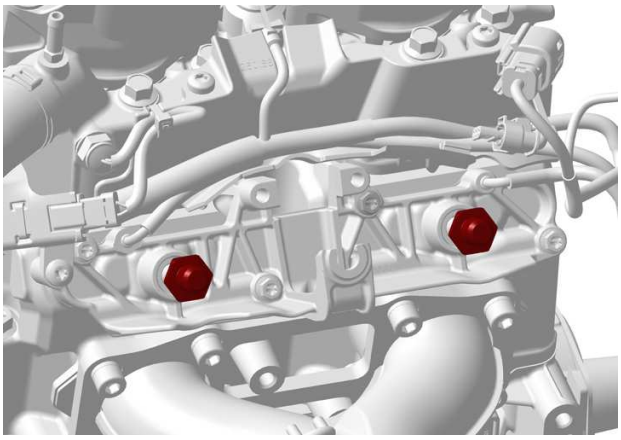
Tightening Torque	
RAVE valve housing screw	10 ± 0.7 N•m (89 ± 6 lbf•in)



TIGHTENING SEQUENCE

17. Repeat the process until a free movement is obtained.
18. Install lubrication hoses.
19. Tighten collar nuts to specification.

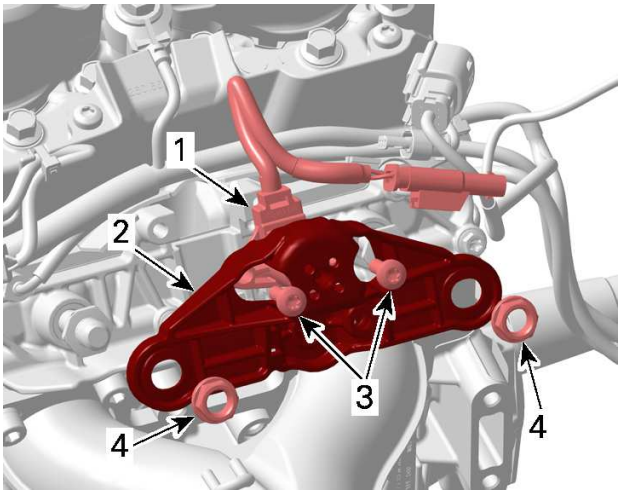
Tightening Torque	
Collar nuts	4 ± 0.3 N•m (35 ± 3 lbf•in)



20. Position RAVE valves position sensor with link bar on RAVE valve housing.
21. Refer to *Installing the 3D RAVE Valves Position Sensor* in this subsection and install:
    - Position sensor retaining screws
    - Link bar retaining nuts.

NOTICE

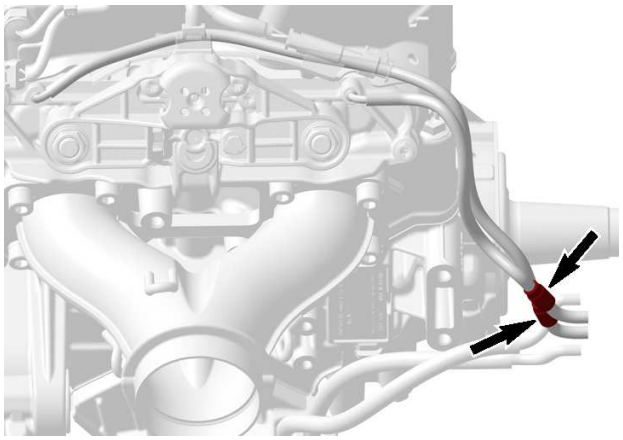
It is very important to perform *3D RAVE Valves Synchronization* whenever link bar is removed.



1. *RAVE valves position sensor*
2. *Link bar*
3. *Position sensor retaining screws*
4. *Link bar retaining nuts*

22. Connect the RAVE valves position sensor.
23. Install RAVE cable. Refer to *Installing the Rave Cable* in this subsection
24. Bleed oil lines. Refer to *Oil Injection Pump* in the *Lubrication System* subsection.

Check Valves



For testing and replacement refer to the *Lubrication System* subsection.

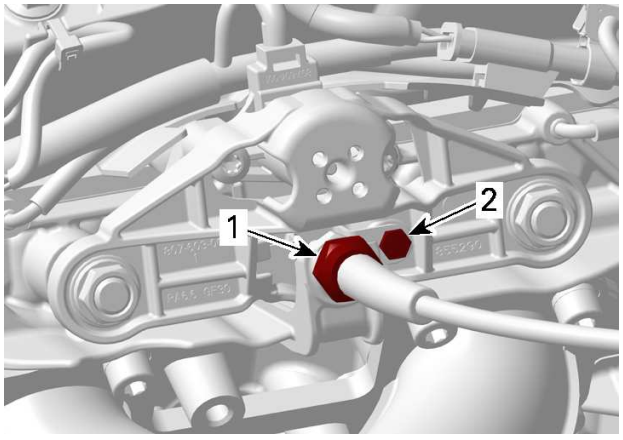
RAVE Cable

Removing the RAVE Cable

NOTICE

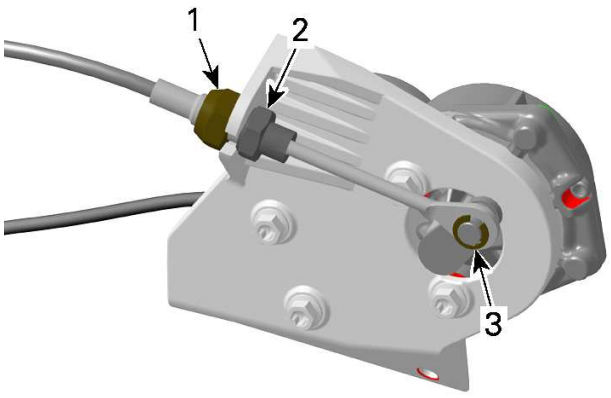
To avoid twisting the RAVE cable, start by removing it from the link bar.

1. Push RAVE valves to closed position.
2. Loosen RAVE cable lock nut. Hold counter nut.
3. Remove retaining plate screw.



1. *Rave cable lock nut*
2. *Retaining plate screw*

4. Remove RAVE cable.
5. Remove RAVE cable lock nut at servomotor bracket. Hold counter nut.
6. Remove snap ring from servomotor lever.

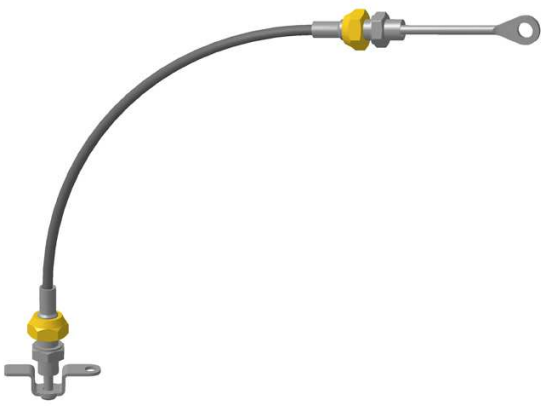


1. *Rave cable lock nut*
2. *Counter nut*
3. *Snap ring*

7. Remove RAVE cable.

Inspecting the RAVE Cable

1. Check RAVE cable and retaining plate for wear or any other damage.



2. Check if cable moves freely.
3. If not, lubricate both ends of the RAVE cable sleeve and check if the RAVE cable is sliding without any resistance. Replace if necessary.

O-ring chain lubricant

Installing the RAVE Cable

1. Install RAVE cable on the servomotor lever.
2. Install snap ring.
3. Install RAVE cable lock nut at the Servomotor bracket.

Tightening Torque	
RAVE cable lock nut	20 ± 2 N•m (15 ± 1 lbf•ft)

4. Install RAVE cable on the link bar.
5. Install retaining plate screw but do not tighten yet.
6. Install RAVE cable lock nut.

Tightening Torque	
RAVE cable lock nut	20 ± 2 N•m (15 ± 1 lbf•ft)

7. Tighten retaining plate screw.

Tightening Torque	
Retaining plate screw	5 ± 0.6 N•m (44 ± 5 lbf•in)

Servomotor

The servomotor consists of a brush DC motor (actuator) and a non-contacting angle sensor integrated in one housing.

Servomotor Location

The servomotor is located on the top of the oil tank, on the LH side of the vehicle.

Remove the upper body module to work on the servomotor.

Testing the Servomotor

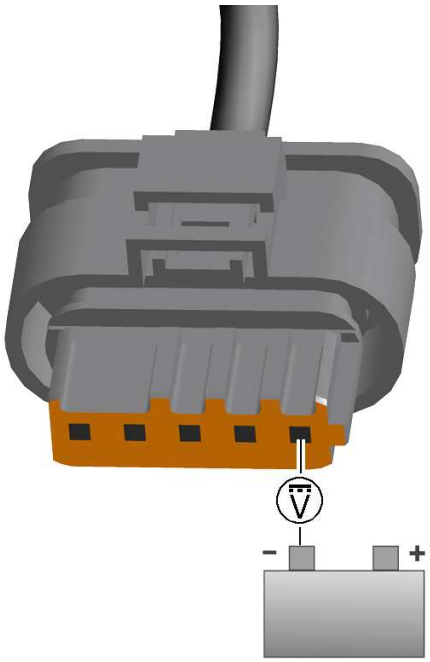
As a first troubleshooting step, always connect vehicle to the BRP diagnostic software (BUDS2) to check for applicable fault codes. Refer to *Communication Tools* subsection.

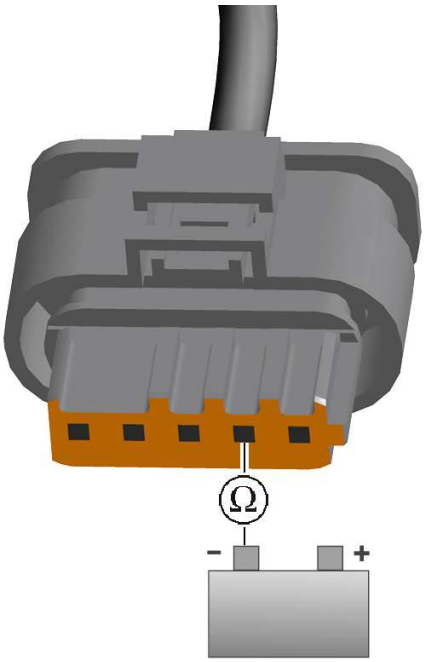
Testing the Sensor Input Voltage

1. Disconnect the servomotor connector.
2. Install D.E.S.S. key and press start/RER button to wake up ECM.
3. Set multimeter to Vdc and check voltage as per following table.

Fluke 115 multimeter (P/N 529035868)	

Sensor Input Voltage Test		
Servomotor Connector Pin	**Battery**	**Specification**
1	Negative (-) post	5 ± 0.25 Vdc





4. If voltage is exceeding the range check ECM power supply (Fuses F1 and F3) and servomotor wiring.

Testing the Sensor Ground

1. Disconnect the servomotor connector.
2. Set multimeter to Ω and probe terminals as per following table.

Fluke 115 multimeter (P/N 529035868)	

Sensor Ground Continuity Test		
Servomotor Connector Pin	**Battery**	**Specification**
2	Negative (-) post	Close to 0 Ω

3. If resistance is incorrect check ECM grounding and servomotor wiring.

Testing the Servomotor Wiring

1. Disconnect ECM-A connector.
2. Connect ECM-A connector to the ECM adapter tool.
3. Disconnect the servomotor connector.
4. Set multimeter to Ω and probe terminals as per following table.

Fluke 115 multimeter (P/N 529035868)	

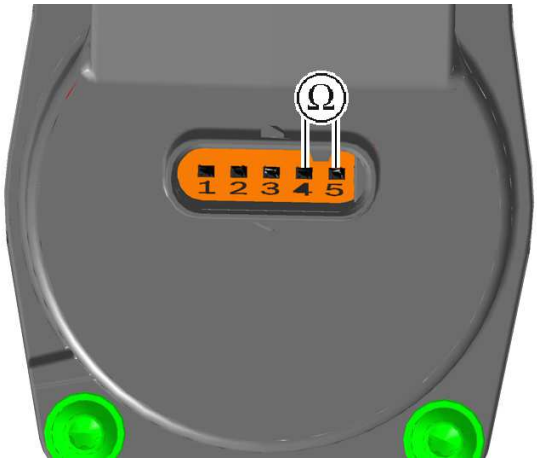
Servomotor Harness Continuity Test		
Servomotor Connector Pin	**ECM Adapter Pin**	**Specification**
1	E4	Close to 0 Ω
2	F4	
3	D4	
4	H4	
4	G4	
5	J4	
5	K4	

Testing the Servomotor Resistance

1. Disconnect the servomotor connector.

2. Set multimeter to Ω and probe the servomotor terminals as per following table.

Fluke 115 multimeter (P/N 529035868)	

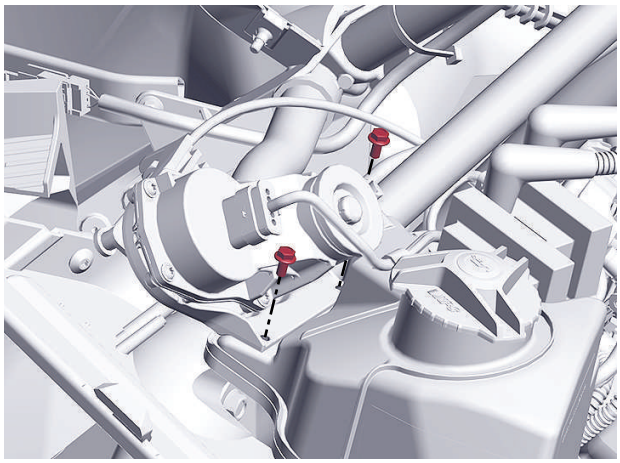


SERVOMOTOR TERMINALS

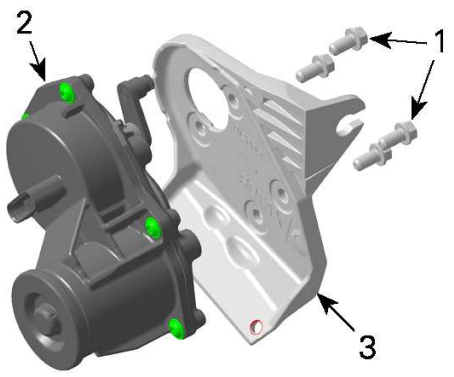
Servomotor Resistance Test		
Servomotor Connector Pin		**Specification @ 20 °C (68 °F)**
4	5	Close to 0 Ω

Removing the Servomotor

1. Remove RAVE cable. Refer to *Removing the Rave Cable* in this subsection.
2. Remove servomotor from the oil tank.



3. Separate servomotor from its bracket.



1. *Retaining screws*
2. *Servomotor*
3. *Servomotor bracket*

Inspecting the Servomotor

1. Check ease of movement of the servomotor lever.
2. Check mechanical end stop of servomotor lever.
3. Replace servomotor if required.

Installing the Servomotor

The installation is the reverse of the removal procedure. However, pay attention to the following:

1. Apply a drop of threadlocker on bracket retaining screws.

Loctite 243 (blue)

2. Tighten screws as per specification.

Tightening Torque	
Bracket retaining screws	11 ± 0.8 N·m (97 ± 7 lbf·in)
Servomotor retaining screws	4 ± 1 N·m (35 ± 9 lbf·in)

Top End – 600R E-TEC

SERVICE TOOLS

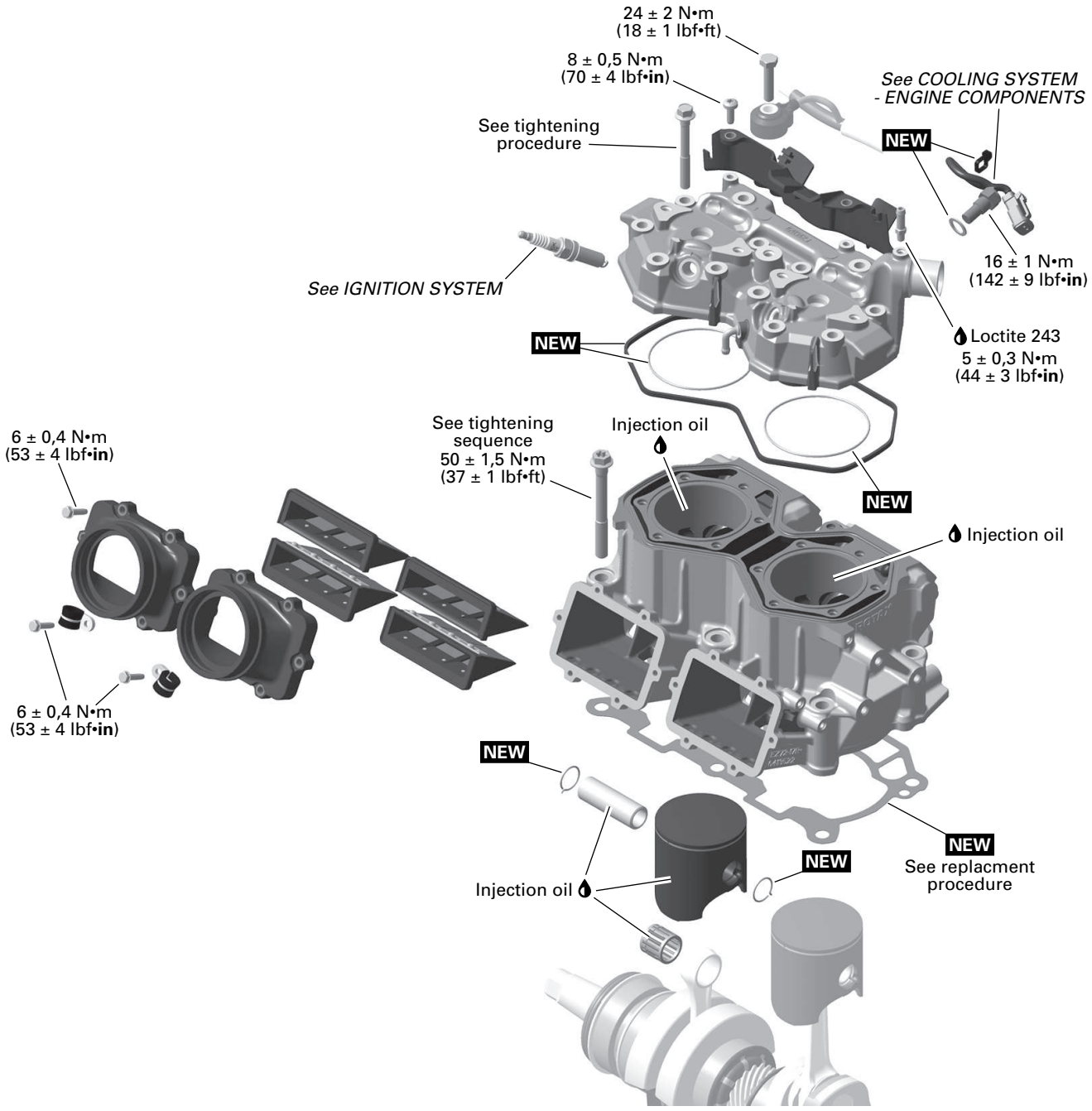
Description	Part Number	Page
PISTON CIRCLIP INSTALLER	(P/N 529035686)	103
PISTON PROJECTION	(P/N 529036215)	99
TDC DIAL INDICATOR	(P/N 414104700)	99

SERVICE TOOLS — OTHER SUPPLIER

Description	Part Number	Page
FEELER GAUGE		102
MICROMETER		100

SERVICE PRODUCTS

Description	Part Number	Page
INJECTION OIL		98, 103
LOCTITE CHISEL (GASKET REMOVER)		97



NEW = Component must be replaced when removed.

General

Before completely disassembling the engine, check airtightness. Refer to *Engine Leak Test* subsection.

During the assembly or the installation:

- Use torque values and service products as shown in the exploded view.
- Clean threads before applying a threadlocker. Refer to the *Introduction* subsection.

⚠ WARNING

Torque wrench tightening specifications must be strictly adhered to.
Locking devices when removed (e.g.: locking tabs, elastic stop nuts, self-locking fasteners, cotter pins, etc.) must be replaced with new ones.

NOTICE

Hoses, cables and locking ties removed during a procedure must be reinstalled as per factory standards.

⚠ WARNING

Always disconnect the magneto connector prior to:

- **Disconnecting any fuel hose.**
- **Removing a fuel injector.**
- **Removing a spark plug cable or spark plug.**

Otherwise, if the engine is cranked, fuel vapors may ignite in presence of a spark creating a fire hazard.

Engine Break-In

NOTICE

After a repair involving major parts replacement, a break-in period must be observed. Follow *OPERATOR'S GUIDE* recommendation relating to break-in.

To reactivate the break-in period, use the BRP diagnostic software (BUDS2).

In BUDS2, go to:

- **Settings** page
- **Vehicle** button
- **Settings** tab
- **Initialization - Restart Break In**.

Inspection

Engine Compression Test

1. Remove the upper body module to access the spark plugs. Refer to *Body* subsection.
2. Lift rear of vehicle to clear track from the ground. Support it with a wide base stand.

⚠ WARNING

Prior to measuring engine compression, ensure vehicle is properly lifted with the track off the ground.

3. Safely warm up engine.
4. Remove a spark plug.
5. Install an appropriate engine compression tool on engine.

   Place emergency engine stop switch to OFF position.

   Crank engine several times:
   - Pull rewind starter several times (if applicable) - or
   - Press START/STOP button to crank engine.
6. Check if engine compression is according to specification.

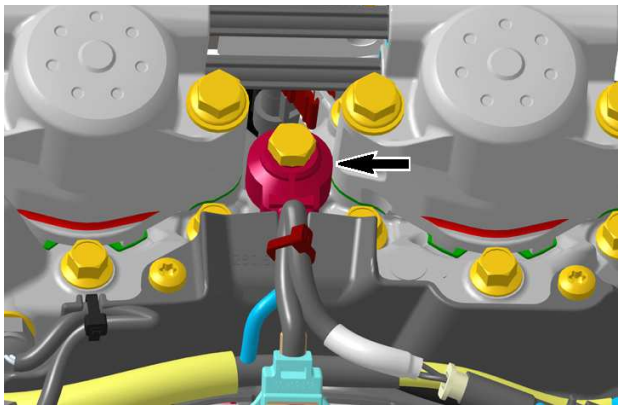
Engine Compression Specification	
Service limit	7.5 bar (110 lbf/in²)

Procedures

Knock Sensor (KS)

Knock Sensor Location

The knock sensor is located on top of the cylinder head, between the fuel injectors.



Testing the KS with BUDS2

1. Lift rear of vehicle off the ground and support it with a wide-base mechanical stand.
2. Connect the vehicle to the BRP diagnostic software (BUDS2).
3. In BUDS2, go to:
   - Measurements page
   - ECM button.
4. Monitor the Knock Sensor Noise Level
5. Start the engine.
6. Bring engine speed above 5200 RPM and vary engine RPM above 5200 RPM.

NOTE: Use the custom screen and graph the knock sensor signal.

The Knock Sensor Signal value should move between 0 and 100. The movement pattern is not important as long as it moves indicating the knock sensor senses the engine vibrations.

If the value changes as described, the knock sensor should be good.

If the value sticks either at 0 or 100, there is a problem.

NOTE: Ensure ignition coil cables are not close to knock sensor harness. If so, this might generate a false fault code.

Perform *Testing the KS Resistance*.

Testing the KS Resistance

1. Disconnect the ECM-A connector from the ECM and install it on the ECM adapter tool.
2. Using the multimeter, measure the knock sensor circuit resistance as per following table.

KS Resistance Test		
ECM Adapter Pin		Specification @ 20 °C (68 °F)
A-H1	A-G1	3.92 - 5.88 MΩ

If resistance is not as specified, replace engine wiring harness.

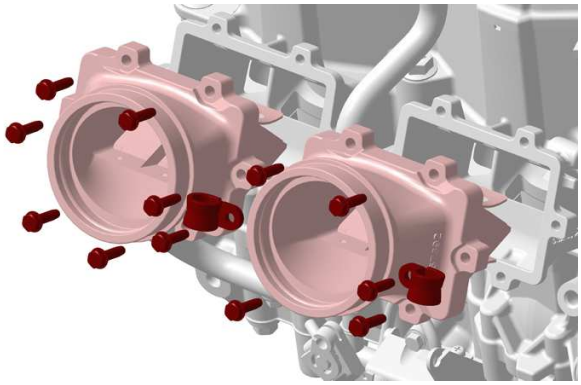
Replacing the KS

Replace engine wiring harness. Refer to *Engine Harness* subsection.

Reed Valves

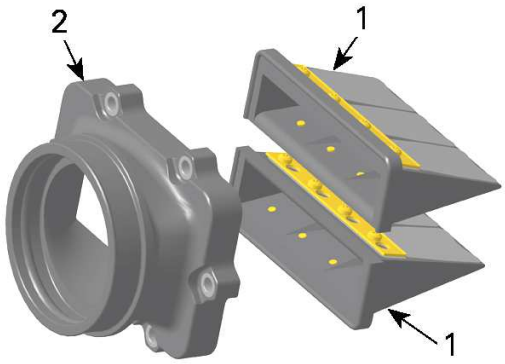
Removing the Reed Valve

1. Remove throttle body. Refer to *E-TEC Direct Fuel Injection* subsection.
2. Remove:



TYPICAL
1. *Retaining screws*
2. *Clamps*
3. *Intake adapter with reed valves*

3. Remove reed valves from intake adapter.



1. *Reed valves*
2. *Intake adapter*

Inspecting the Reed Valve

1. Check reed valve for proper tightness.

2. Check blades for breakouts at their end tips. In case of breakouts replace it.
3. There must not be any free play between blade and valve body when exerting a finger pressure on blade at blade stopper location.
4. In case of a free play, turn blade upside down and recheck.

Tightening Torque	
Reed valve blade screws	1.5 ± 0.3 N•m (13 ± 3 lbf•in)

5. If there is still a free play, replace blade and/or reed valve assembly.

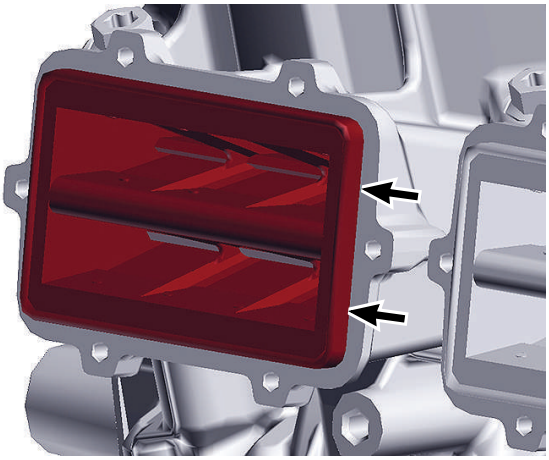
Installing the Reed Valve

The installation is the reverse of the removal procedure. However, pay attention to the following.

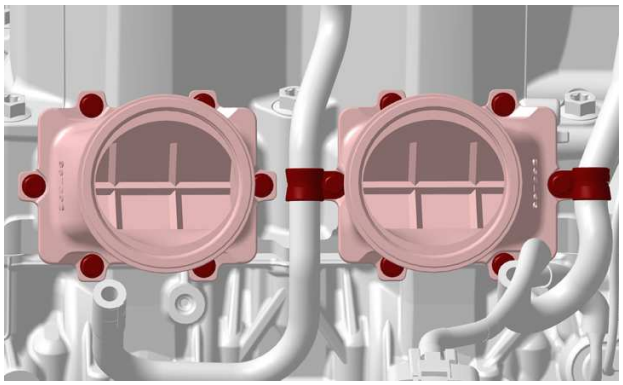
1. Blades have a curved shape. Install with their curve facing reed block.

Tightening Torque	
Reed valve blade screws	1.5 ± 0.3 N•m (13 ± 3 lbf•in)

2. Ensure to position reed valves so that they rest flat in intake opening.



3. Ensure to position intake adapter as shown.



TYPICAL

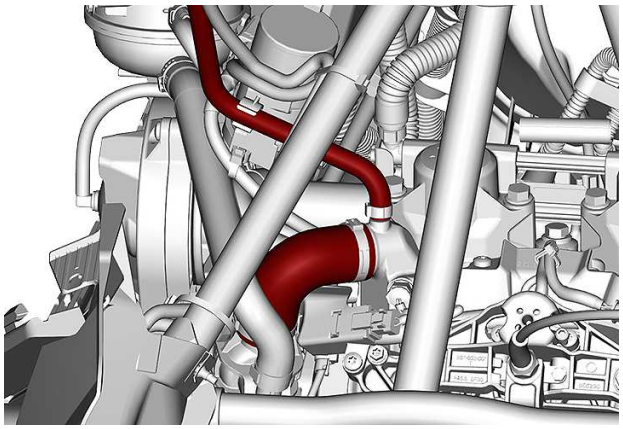
4. Tighten intake adapter retaining screws to specification.

Tightening Torque	
Intake adapter retaining screws	6 ± 0.4 N•m (53 ± 4 lbf•in)

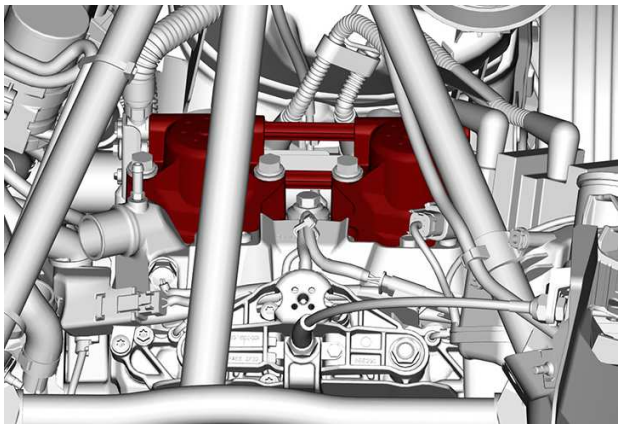
Cylinder Head

Removing the Cylinder Head

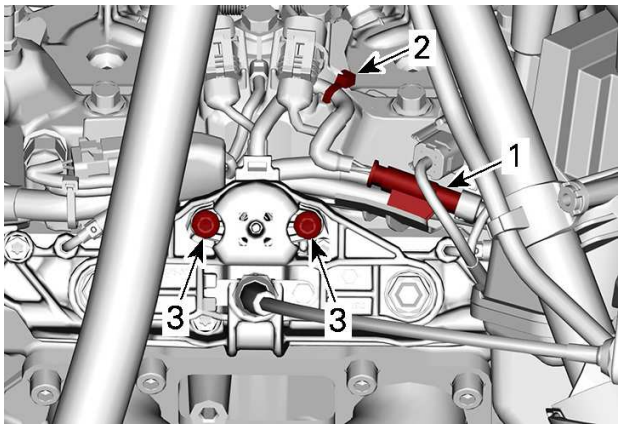
1. Drain coolant. Refer to *Cooling System* subsection.
2. Disconnect the coolant hose and the bleeding hose from the cylinder head.



3. Remove the E-TEC direct fuel injectors from the cylinder head. Refer to *E-TEC Direct Fuel Injection* subsection.

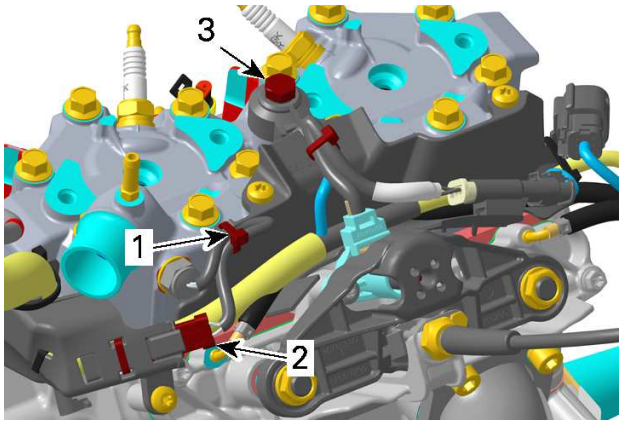


4. Disconnect the RAVE valve connector.
5. Detach the RAVE valve connector housing from the harness support.
6. Cut the locking tie securing the RAVE valve sensor harness to the knock sensor harness.
7. Loosen RAVE position sensor screws.



1. *RAVE valve connector housing*
2. *Locking tie to be cut*
3. *RAVE position sensor screws*

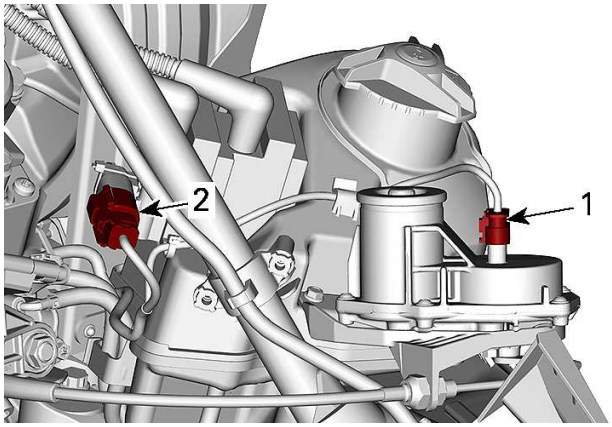
8. Cut the locking tie securing the CTS harness.
9. Disconnect the CTS connector.
10. Remove knock sensor retaining screw and move knock sensor aside.



TYPICAL

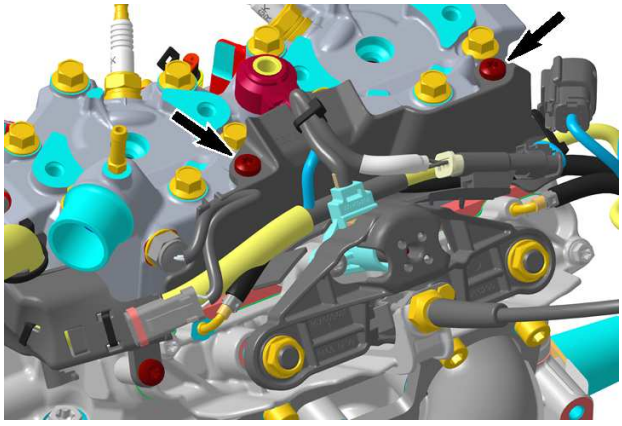
1. *Locking tie securing the CTS harness*
2. *CTS connector*
3. *Knock sensor screw*

11. Disconnect the following connectors.



1. *Ignition coil connector*
2. *RAVE servomotor connector*

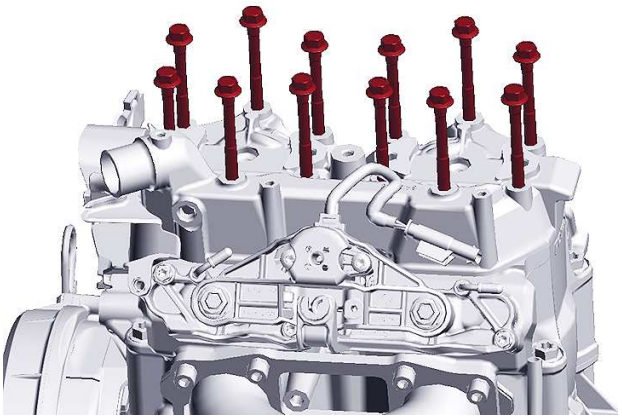
12. Remove screws securing the front harness support.



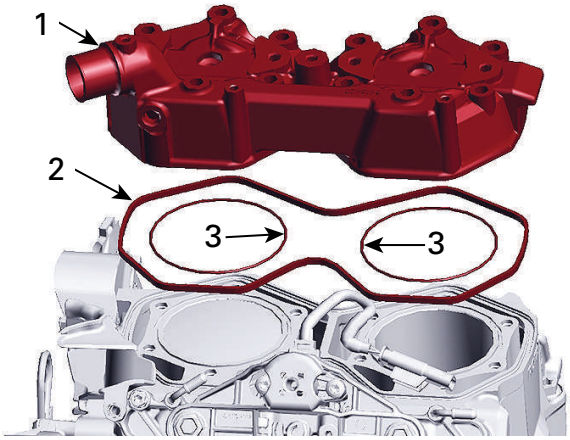
13. Move the support and the harness aside.
14. Unplug spark plug wires.
15. If necessary remove following parts from cylinder head:

- Spark plugs
- Coolant temperature sensor (CTS)
- Bleeding nipple.

16. Remove the cylinder head:
    1. Remove cylinder head screws.



    2. Remove the cylinder head and discard the cylinder rubber ring and O-rings.



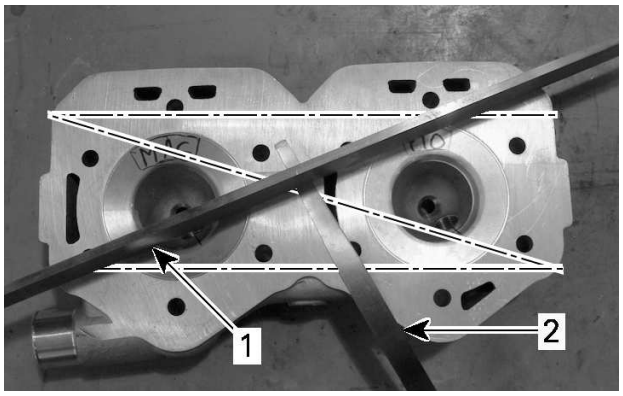
i. Cylinder head
ii. Cylinder rubber ring
iii. O-rings

Inspecting the Cylinder Head

Check cylinder head for cracks or other damages. Replace if necessary.

Cylinder Head Warpage

1. Check gasket mating surface of the cylinder head with a straight edge and a feeler gauge. Make sure part is within the given specification.
2. If cylinder head is out of specification, replace it.



TYPICAL
1. Straight edge
2. Feeler gauge

Cylinder Head Warpage	
Service limit	0.05 mm (.002 in) per 50 mm (2 in) of surface
	0.5 mm (.02 in) for total length of cylinder head

Cleaning the Cylinder Head

1. Scrape off any carbon deposits from cylinder head.

Loctite chisel (gasket remover)

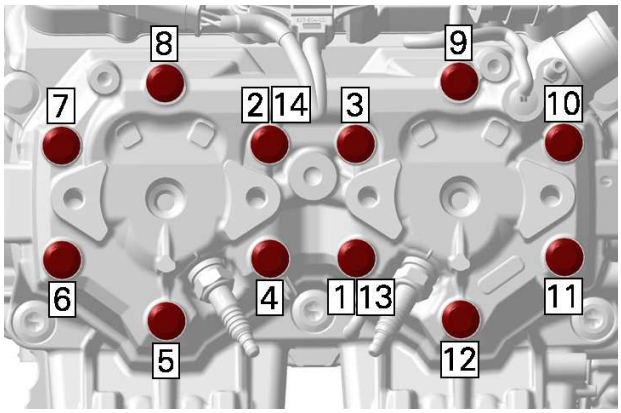
Installing the Cylinder Head

The installation is the reverse of removal procedure. However, pay attention to the following:

1. Install **NEW** rubber ring and round O-rings on cylinder block.
2. Tighten cylinder head screws to specification as per the following procedure.

NOTE: Always perform Step A on all cylinder head screws before going to Step B.

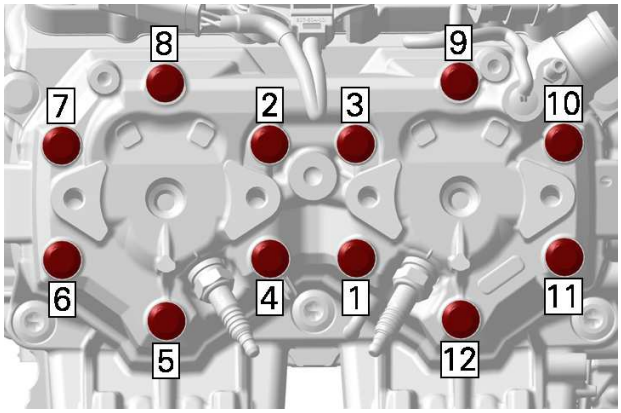
Tightening Torque		
Cylinder head screws	Step A	7 ± 0.2 N•m (62 ± 2 lbf•in)



TYPICAL

3. Use a torque angle gauge to carry out Step B.

Torque Angle		
Cylinder head screws	Step B	Additional 70°

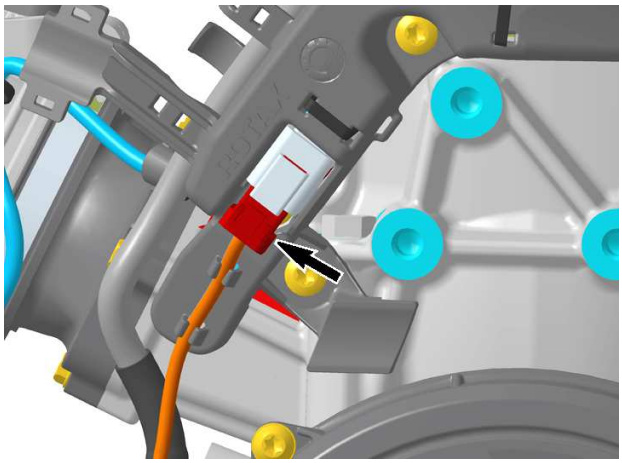


TYPICAL

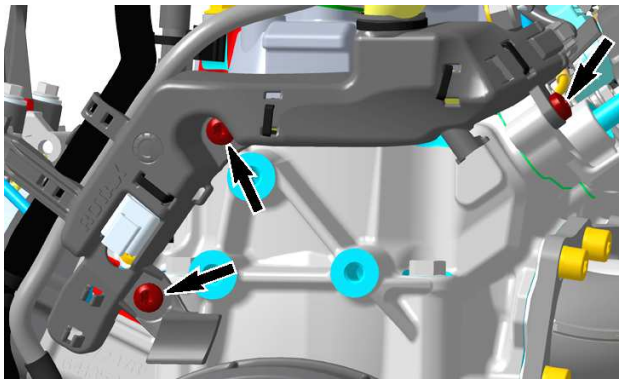
Cylinder block

Removing the Cylinder Block

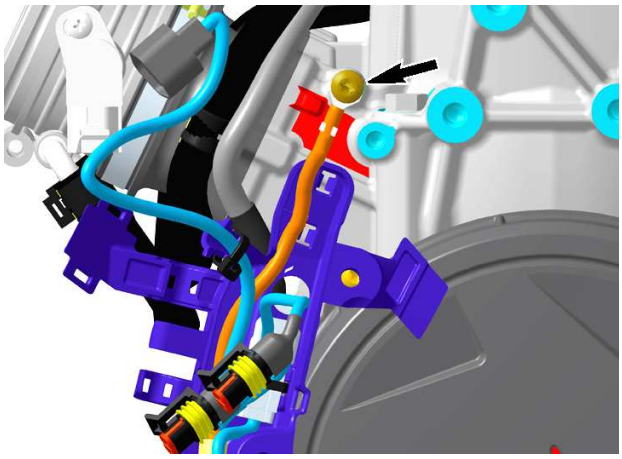
1. Drain coolant. Refer to *Cooling System* subsection.
2. Remove hose for throttle body heating. Refer to *Cooling System* subsection.
3. Remove *Cylinder Head*, see procedure in this subsection.
4. Remove the throttle body. Refer to *E-TEC Direct Fuel Injection* subsection.
5. Detach the RAVE cable from the 3D RAVE link bar. Refer to *RAVE* subsection.
6. Disconnect CPS.



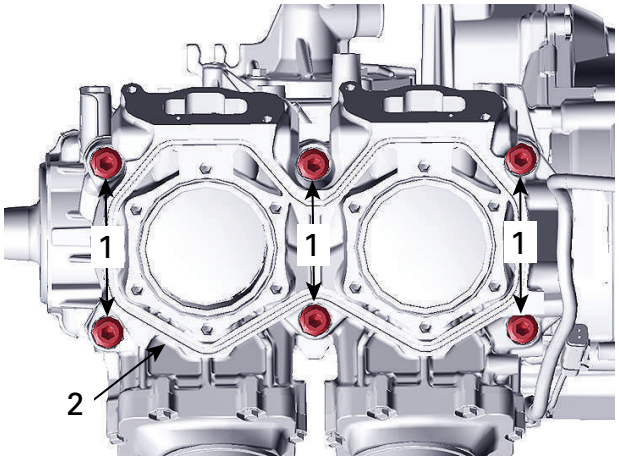
7. Remove screws from harness support.



8. Put wiring harness with support aside and remove screw from ground cable.



9. If necessary remove RAVE assembly. Refer to *RAVE* subsection.
10. Remove the cylinder block.



1. *Cylinder block screws*
2. *Cylinder block*

Inspecting the Cylinder Block

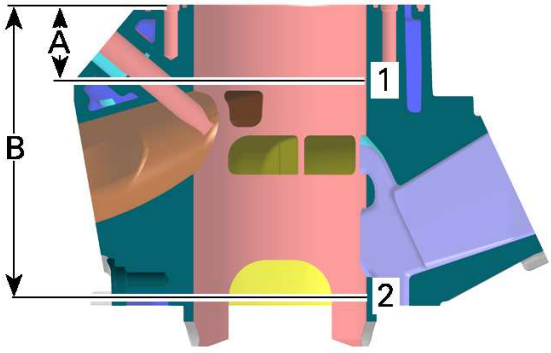
1. Remove RAVE valves. Refer to *RAVE* subsection.
2. Remove reed valves. Refer to *Removing the Reed Valves* in this subsection.
3. Check cylinder bores for cracks and scoring on the top and bottom of cylinders. Replace if necessary.

Cylinder Taper

1. Measure cylinder diameter at the following positions:

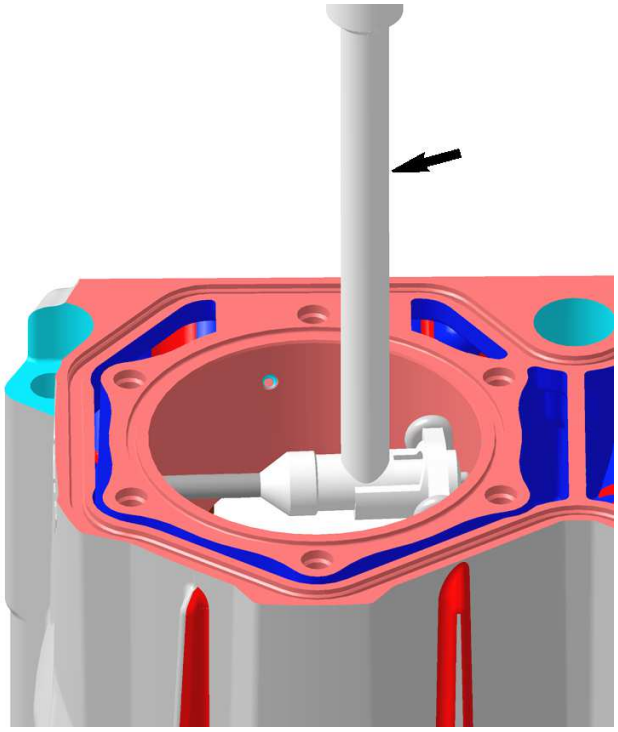
Cylinder bore gauge	

   – Above exhaust port
   – Below intake port.



TYPICAL

Cylinder Taper Measurements		
Position	**Measurement**	**From Top of Cylinder Block**
1	A	23 mm (.91 in)
2	B	130 mm (5.12 in)



TYPICAL

2. Compare cylinder diameters.
3. If the difference exceeds the specified dimension, replace the cylinder block.

Cylinder Bore Taper	
Service limit	0.10 mm (.0039 in)

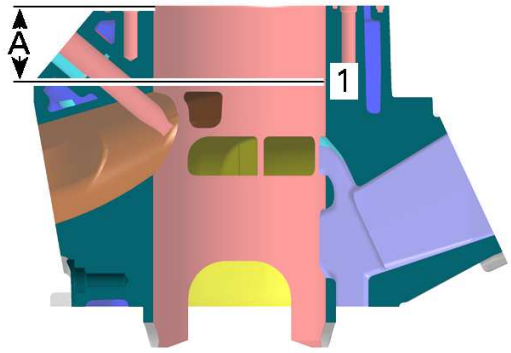
Cylinder out of Round

1. Check if the cylinder out of round is more than the specified dimension.

Cylinder bore gauge	

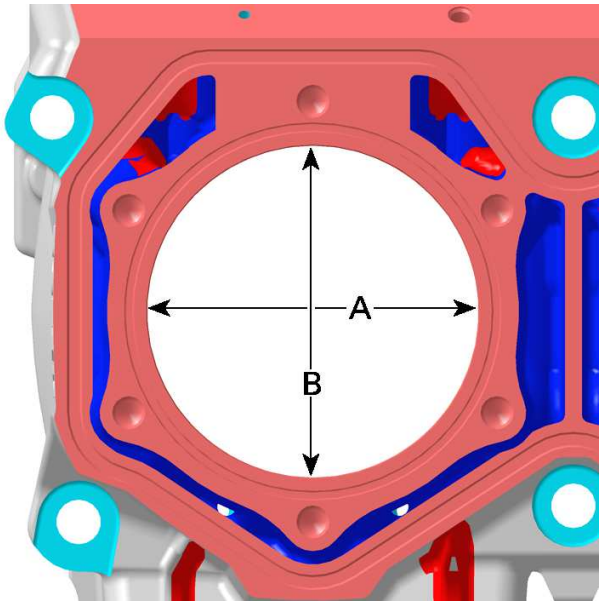
2. Measure above exhaust port:

– in piston pin axis
– perpendicular to piston pin axis.

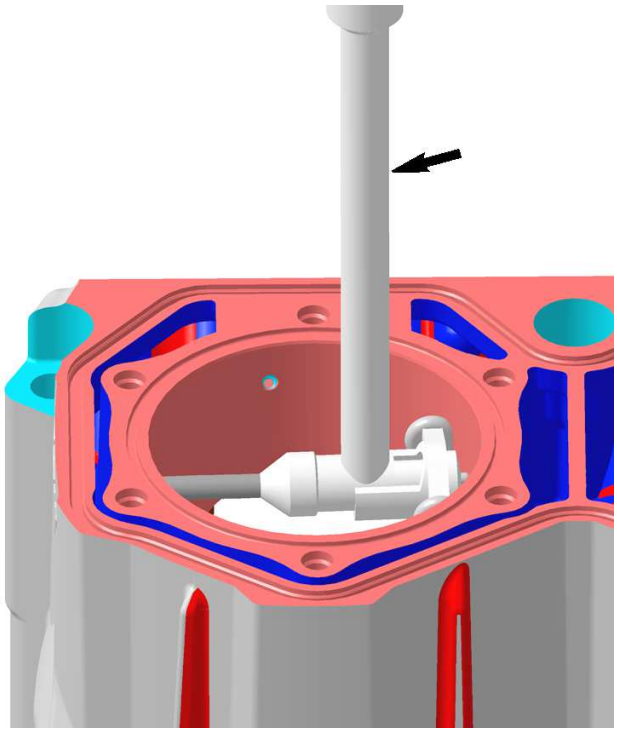


TYPICAL

Cylinder out of Round Measurement		
Position	**Measurement**	**From Top of Cylinder Block**
1	A	23 mm (.91 in)



TYPICAL
A. Measure in piston pin axis
B. Measure perpendicular to piston pin axis



TYPICAL

3. If the measurement exceeds the specifications, replace the cylinder block.

Cylinder Bore Out of Round	
Service limit	0.08 mm (.0031 in)

Cleaning the Cylinder Block

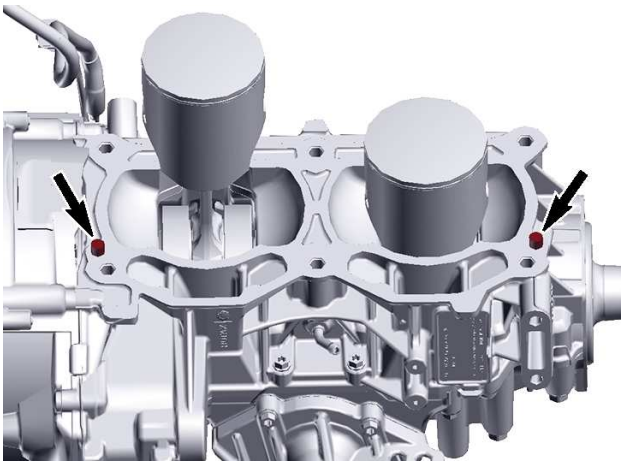
1. Scrape off any carbon deposits from exhaust ports.
2. Carefully clean cylinder block screws, specifically under screw head.

Loctite chisel (gasket remover)

Installing the Cylinder Block

The installation is the reverse of removal procedure. However, pay attention to the following.

1. Ensure top surface of crankcase is clean.
2. Check if dowel pins are in crankcase holes.



3. Install a **NEW** cylinder block base gasket of the same thickness as the old one. Refer to *Piston Projection Measurement* in this subsection.

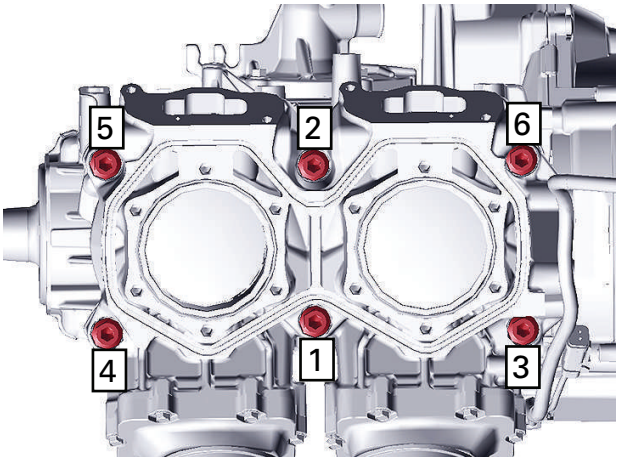
NOTE: If thickness of the factory-installed gasket is unknown, install a 5-holes gasket (0.5 mm (.02 in)) as a base line.

4. Lubricate cylinder bores.

Injection oil

5. Carefully slide cylinder block down while squeezing piston rings to allow cylinder insertion.
6. Proceed one piston at a time, the help of an assistant may be required.
7. Tighten cylinder block screws to specification as per the following sequence.

Tightening Sequence	
Cylinder block screws	50 ± 1.5 Nm (37 ± 1 lbf-ft)



TIGHTENING SEQUENCE

8. Measure piston projection as described in *Piston Projection Measurement* in this subsection.

NOTICE

Always install a cylinder block base gasket of the proper thickness. Failure to do so may cause detonation and severe engine damage.

9. Install the 3D RAVE valve. Refer to *Installing the 3D RAVE Valve* in the *RAVE* subsection.

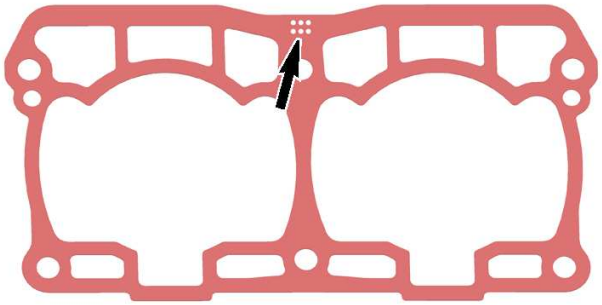
Piston Projection Measurement

The piston projection measurement is used to determine the correct cylinder base gasket thickness when engine components are replaced.

Cylinder Block Base Gasket

The cylinder block base gasket is available in different thicknesses to adjust precisely the piston projection.

Cylinder Block Base Gasket	
Thickness	**Holes Quantity**
0.9	9
0.8	8
0.7	7
0.6	6
0.5	5



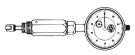
TYPICAL - GASKET THICKNESS IDENTIFICATION HOLES

NOTICE

Always install a cylinder block base gasket of the proper thickness. Failure to do so may cause detonation and severe engine damage.

Engine Preparation

1. Bring PTO piston to TDC.

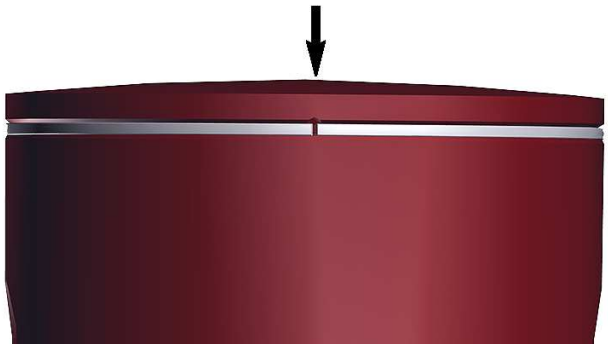
TDC dial indicator (P/N 414104700)	

2. Remove cylinder head from engine. Refer to *Cylinder Head* in this subsection.
3. Remove O-rings from cylinder block.
4. Clean top surface of cylinder block.
5. Ensure piston dome is clean and free of any carbon deposits.
6. Ensure cylinder block screws are properly tightened.

Piston Projection Measurement

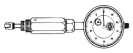
NOTICE

Before performing the piston projection measurement, check with a straight edge if the shape of the piston dome is still convex and does not show any flat spots. A deformed piston will lead to wrong piston protrusion which can result in a severe engine damage.



CONVEX SHAPE OF THE PISTON DOME

1. Place piston projection tool on a flat steel surface.

Piston projection (P/N 529036215)	
TDC dial indicator (P/N 414104700)	

2. Rotate dial indicator face to position the **0** in line with needle.



SETTING THE ZERO

3. Install tool on PTO cylinder.
4. Center tool with cylinder to ensure that dial indicator reads piston dome.



TYPICAL - TOOL PROPERLY CENTERED

5. Ensure that PTO piston is set to TDC.
6. Read dial indicator then note measurement.



TYPICAL

NOTE: Convert dial indicator measurement to millimeter.

Piston Projection Measurement
1.10 to 1.20 mm (.043 to .047 in)

7. If piston projection measurement is out of specification, change cylinder block base gasket thickness. Refer to *Cylinder Block* in this subsection.

Cylinder Block Base Gasket Selection Guideline	
Measured Piston Projection	**Gasket to Install**
Below specification	Thinner
Above specification	Thicker

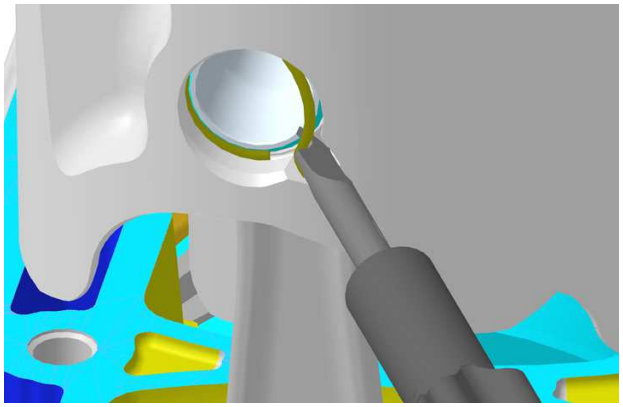
NOTICE

Take care to use the proper specification according to the type of engine and the model of vehicle.

Pistons

Removing the Piston

1. Remove *Cylinder Block*. See procedure in this subsection.
2. Place a clean cloth over crankcase.
3. Using a pointed tool inserted in piston notch, remove circlips from piston.



TYPICAL

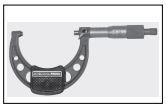
4. Push piston pin out of piston.
5. Remove piston.
6. Remove bearing.
7. Discard circlips.

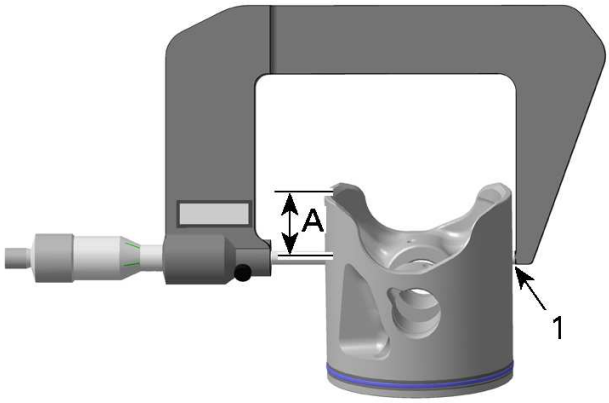
Inspecting the Piston

Inspect piston for scoring, cracking or other damage.

Cylinder/Piston Clearance

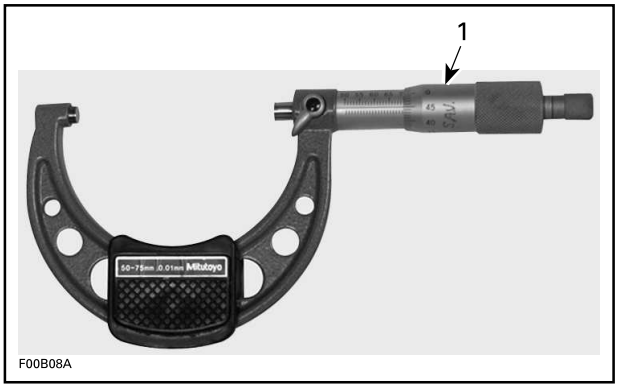
1. Measure piston diameter at “A” perpendicularly (90°) to piston pin.

Micrometer	



1. Measuring diameter perpendicularly (90°) to piston pin axis
A. 29 mm (1.142 in)

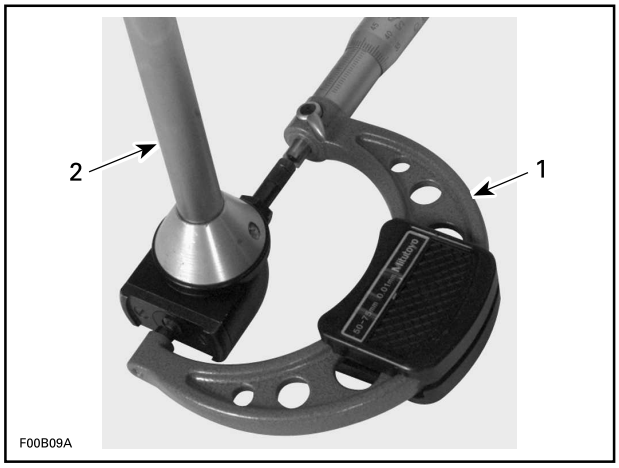
2. Adjust and **lock** a micrometer to the piston diameter.



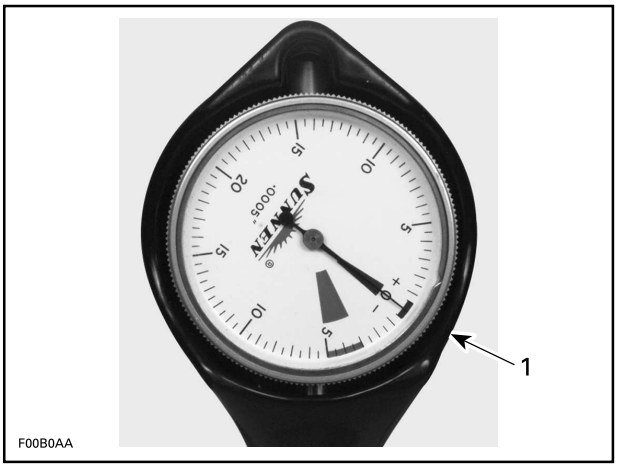
1. Micrometer set to the piston diameter

3. Adjust a cylinder bore gauge to the locked micrometer and set the indicator to 0.

Cylinder bore gauge	



1. Use the micrometer to set the cylinder bore gauge
2. Dial bore gauge



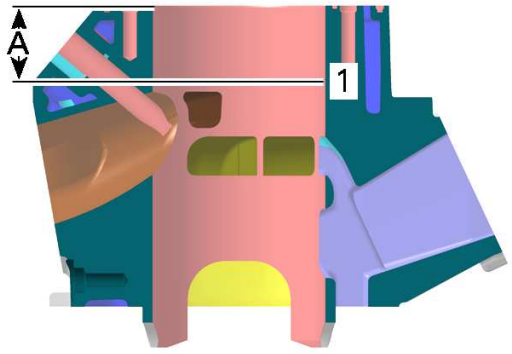
1. Indicator set to 0 (zero)

NOTE: Make sure the cylinder bore gauge indicator is set exactly at the same position as with the micrometer, otherwise the reading will be false.

4. Position the dial bore gauge above the exhaust port.

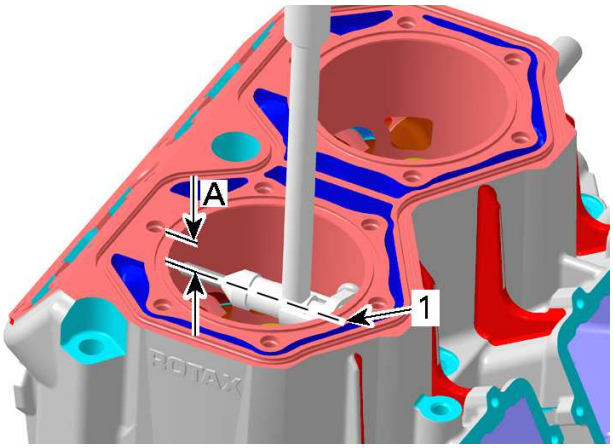
NOTICE

Always remove cylinder-block from crankcase before measuring.



TYPICAL

Cylinder Out of Round Measurement		
Position	**Measurement**	**From Top of Cylinder Block**
1	A	23 mm (.91 in)



TYPICAL
1. Measuring perpendicularly (90°) to piston pin axis
A. 23 mm (.91 in)

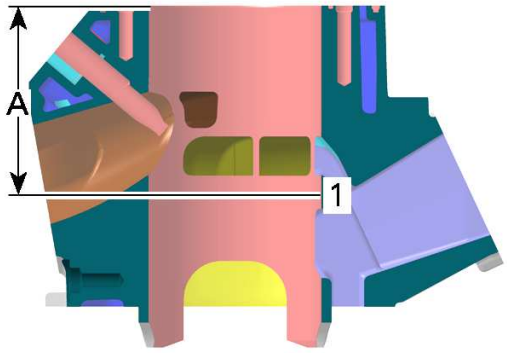
5. Read the measurement on the cylinder bore gauge. The result is the exact piston/cylinder wall clearance.

Cylinder/Piston Clearance	
New	0.083 to 0.161 mm (.0033 to .0063 in)
Service limit	0.200 mm (.0079 in)

6. If clearance exceeds specified tolerance, replace cylinder and piston.

Ring end Gap

1. Position ring halfway between transfer ports and intake port.



TYPICAL

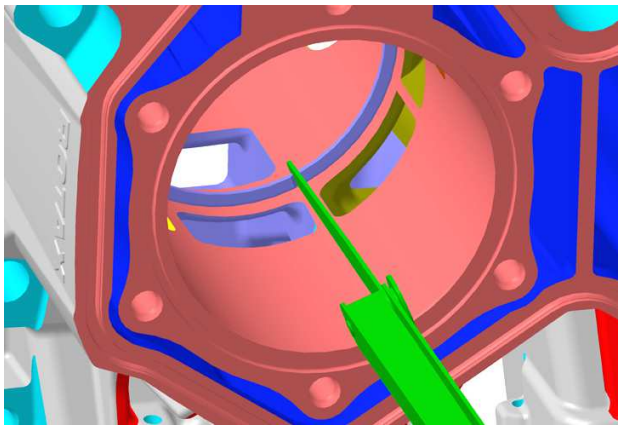
Ring End Gap Measurement		
Position	**Measurement**	**From Top of Cylinder Block**
1	A	80 mm (3.15 in)

NOTE: In order to correctly position the ring in the cylinder, use piston as a pusher.

2. Check ring end gap. Replace ring if gap exceeds specified tolerance.

Feeler gauge	

Ring End Gap	
New	0.400 to 0.600 mm (.0157 to .0236 in)
Service limit	0.800 mm (.0315 in)

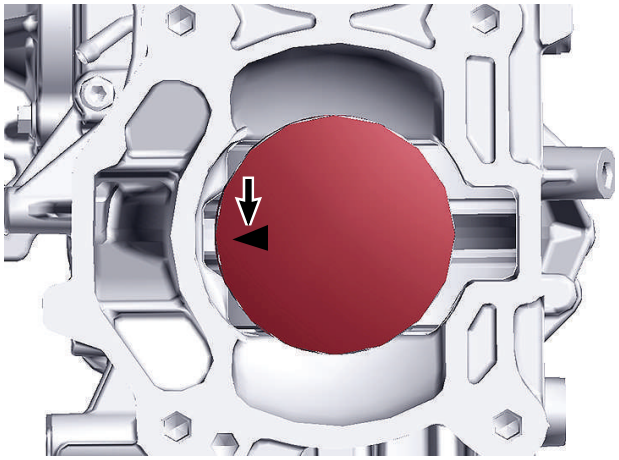


TYPICAL

Cleaning the Piston

1. Scrape off any carbon deposits from piston dome.

NOTE: The arrow on the piston dome must be visible after cleaning.



EXHAUST DIRECTION INDICATION

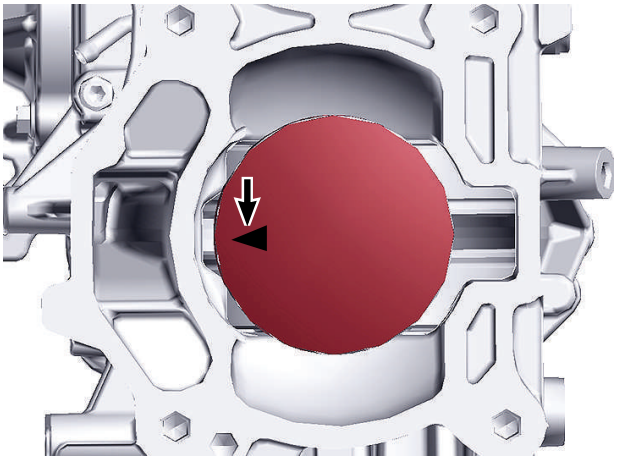
2. Clean the piston ring groove with a groove cleaner tool or with a piece of broken ring.

Installing the Piston

1. Lubricate needle bearing.

Injection oil

2. Insert bearing into connecting rod.
3. Place pistons over connecting rods with the arrow on the piston dome facing towards exhaust port.



EXHAUST DIRECTION INDICATION

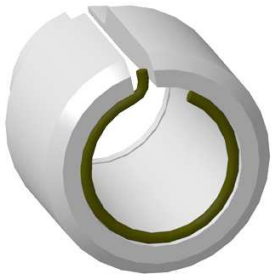
4. Install piston pin in piston.
5. Install **NEW** circlips.

Piston circlip installer (P/N 529035686)	

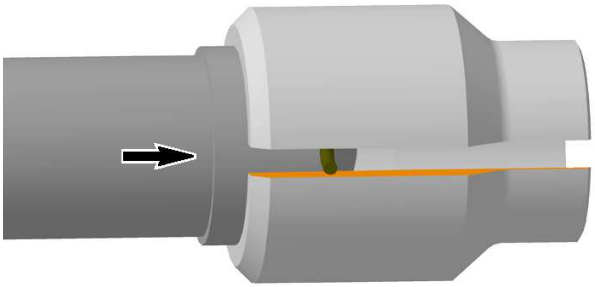
NOTICE

Always install NEW mono-hook circlips. If circlip installation fails at the first attempt, always retry with a new one.

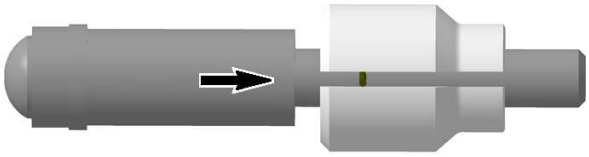
6. Use the following procedure to properly install circlip:
   1. Insert circlip into support so that, when installed in piston groove, the gap will be below the tab.

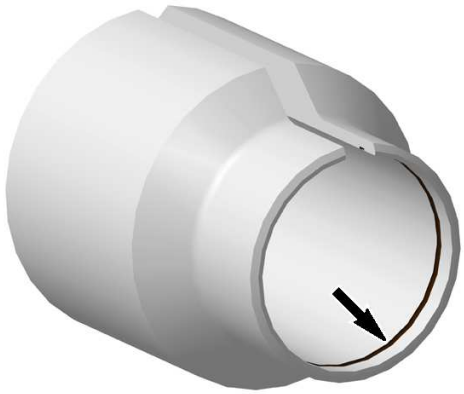


   2. With round end of pusher, position circlip perpendicularly to the support axis.

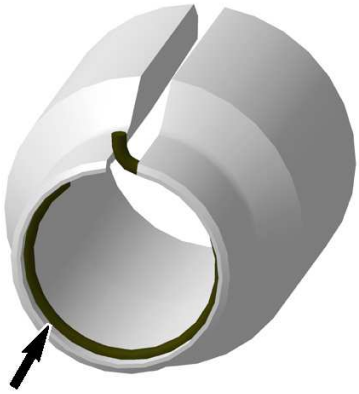


3. With the other end of the pusher, push circlip into the support groove.

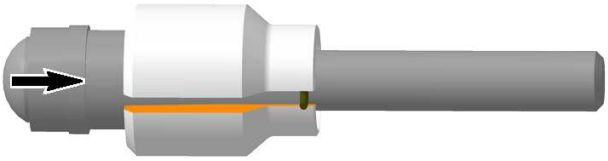




GROOVE

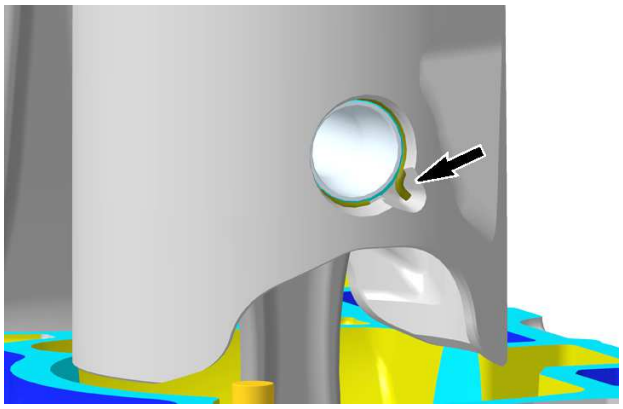


CIRCLIP READY TO BE INSTALLED ON PISTON



4. Using a plastic hammer, tap pusher to put the new circlip in place.

NOTE: Make sure to install new circlips with the gap below the tab exactly as shown on the following photo.



GAP BELOW THE TAB

NOTICE
Circlips must not move freely after installation; if so, replace them.

7. Install all other removed parts as the reverse of removal procedure.

Top End – 850 E-TEC

SERVICE TOOLS

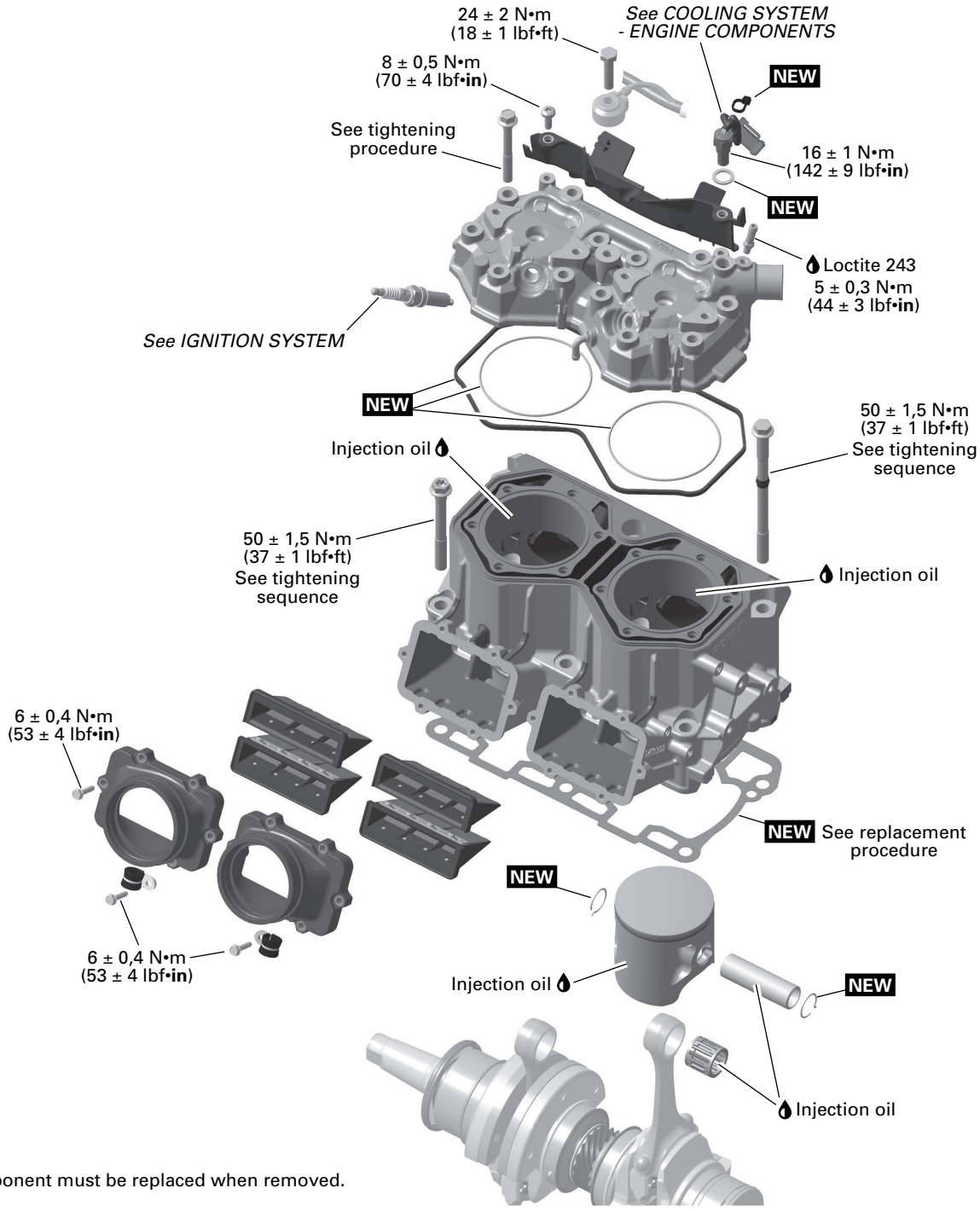
Description	Part Number	Page
PISTON CIRCLIP INSTALLER 21 MM	(P/N 529036138)	120
PISTON PROJECTION	(P/N 529036215)	116
TDC DIAL INDICATOR	(P/N 414104700)	116

SERVICE TOOLS — OTHER SUPPLIER

Description	Part Number	Page
FEELER GAUGE		119
MICROMETER		117

SERVICE PRODUCTS

Description	Part Number	Page
INJECTION OIL		115, 120
LOCTITE CHISEL (GASKET REMOVER)		111, 114



NEW = Component must be replaced when removed.

General

Before completely disassembling the engine, check airtightness. Refer to *Engine Leak Test* subsection.

During the assembly or the installation:

- Use torque values and service products as shown in the exploded view.
- Clean threads before applying a threadlocker. Refer to the *Introduction* subsection.

⚠ WARNING

Torque wrench tightening specifications must be strictly adhered to.
Locking devices when removed (e.g.: locking tabs, elastic stop nuts, self-locking fasteners, cotter pins, etc.) must be replaced with new ones.

NOTICE

Hoses, cables and locking ties removed during a procedure must be reinstalled as per factory standards.

⚠ WARNING

Always disconnect the magneto connector prior to:

- **Disconnecting any fuel hose.**
- **Removing a fuel injector.**
- **Removing a spark plug cable or spark plug.**

Otherwise, if the engine is cranked, fuel vapors may ignite in presence of a spark creating a fire hazard.

Engine Break-In

NOTICE

After a repair involving major parts replacement, a break-in period must be observed. Follow *OPERATOR'S GUIDE* recommendation relating to break-in.

To reactivate the break-in period, use the BRP diagnostic software (BUDS2).

In BUDS2, go to:

- **Settings** page
- **Vehicle** button
- **Settings** tab
- **Initialization - Restart Break In**.

Inspection

Engine Compression Test

1. Remove body parts as required to access to the spark plugs.
2. Lift rear of vehicle to clear track from the ground. Support it with a wide base stand.

⚠ WARNING

Prior to measuring engine compression, ensure vehicle is properly lifted with the track off the ground.

3. Safely warm up engine.
4. Remove a spark plug.
5. Install an appropriate engine compression tool on engine.

   Place emergency engine stop switch to OFF position.

   Crank engine several times:

   - Pull rewind starter several times (if applicable) - or
   - Press START/STOP button to crank engine.
6. Check if engine compression is according to specification.

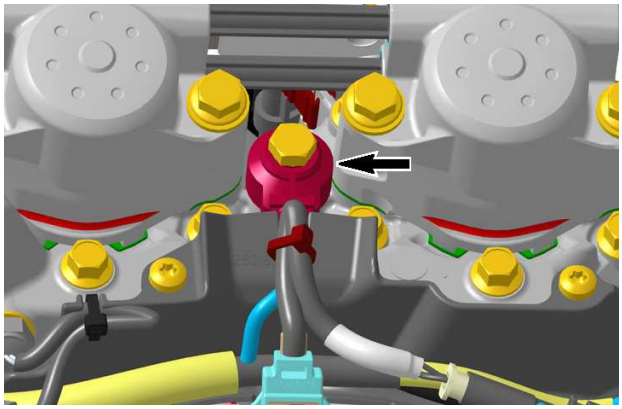
Engine Compression Specification	
Service limit	7.5 bar (110 lbf/in²)

Procedures

Knock Sensor (KS)

Knock Sensor Location

The knock sensor is located on top of the cylinder head, between the fuel injectors.



TYPICAL

Testing the KS with BUDS2

1. Lift rear of vehicle off the ground and support it with a wide-base mechanical stand.
2. Connect the vehicle to the BRP diagnostic software (BUDS2).
3. In BUDS2, go to:
   - Measurements page
   - ECM button.
4. Monitor the Knock Sensor Noise Level
5. Start the engine.
6. Bring engine speed above 5200 RPM and vary engine RPM above 5200 RPM.

NOTE: Use the custom screen and graph the knock sensor signal.

The Knock Sensor Signal value should move between 0 and 100. The movement pattern is not important as long as it moves indicating the knock sensor senses the engine vibrations.

7. If the value changes as described, the knock sensor should be good.
8. If the value sticks either at 0 or 100, there is a problem.

NOTE: Ensure ignition coil cables are not close to knock sensor harness. If so, this might generate a false fault code.

Perform *Testing the KS Resistance*.

Testing the KS Resistance

1. Disconnect the ECM-A connector from the ECM and install it on the ECM adapter tool.
2. Using the multimeter, measure the knock sensor circuit resistance as per following table.

KS Resistance Test		
ECM Adapter Pin		**Specification @ 20 °C (68 °F)**
A-H1	A-G1	3.92 - 5.88 MΩ

3. If resistance is not as specified, replace engine wiring harness.

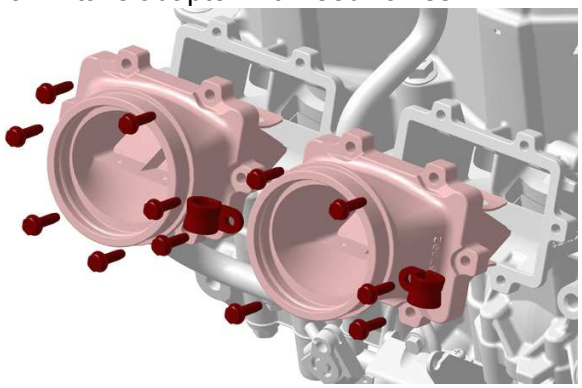
Replacing the KS

Replace engine wiring harness. Refer to *Engine Harness* subsection.

Reed Valves

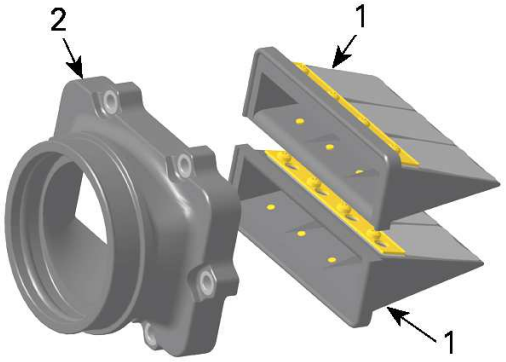
Removing the Reed Valve

1. Remove throttle body. Refer to *E-TEC Direct Fuel Injection* subsection.
2. Remove:
   1. Retaining srews
   2. Clamps
   3. Intake adapter with reed valves



TYPICAL
1. *Retaining screws (12x)*
2. *Clamp*
3. *Intake adapters with reed valves*

3. Remove reed valves from intake adapter.



1. *Reed valves*
2. *Intake adapter*

Inspecting the Reed Valve

1. Check reed valve for proper tightness.
2. Check blades for breakouts at their end tips. In case of breakouts replace it.
3. There must not be any free play between blade and valve body when exerting a finger pressure on blade at blade stopper location.
4. In case of a free play, turn blade upside down and recheck.

Tightening Torque	
Reed valve blade screws	1.5 ± 0.3 Nm (13 ± 3 lbf-in)

5. If there is still a free play, replace blade and/or reed valve assembly.

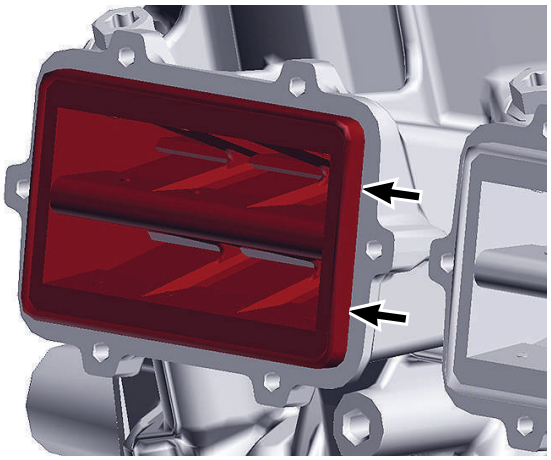
Installing the Reed Valve

The installation is the reverse of the removal procedure. However, pay attention to the following.

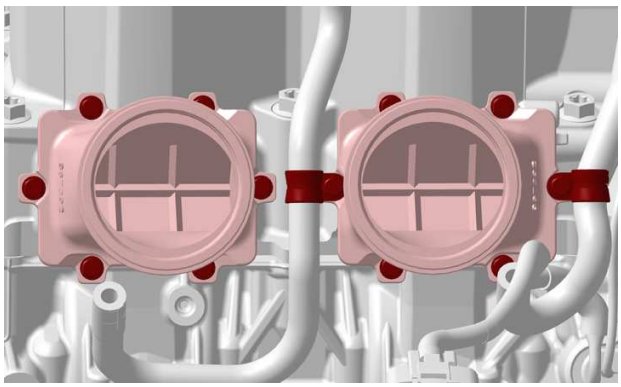
1. Blades have a curved shape. Install with their curve facing reed block.

Tightening Torque	
Reed valve blade screws	1.5 ± 0.3 N•m (13 ± 3 lbf•in)

2. Ensure to position reed valves so that they rest flat in intake opening.



3. Ensure to position intake adapter as shown.
4. Install clamps as shown in the illustration.



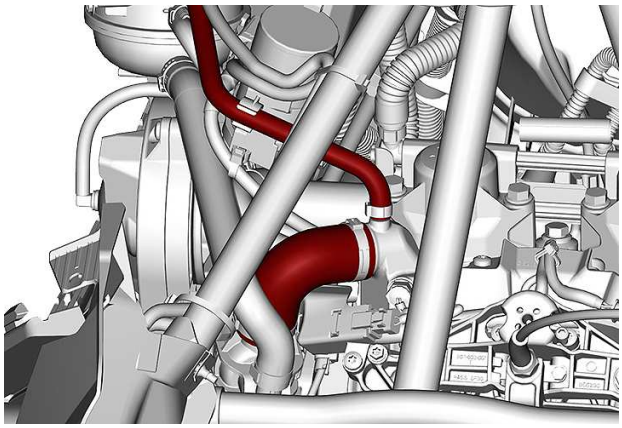
5. Tighten intake adapter retaining screws to specification.

Tightening Torque	
Intake adapter retaining screws	6 ± 0.4 N•m (53 ± 4 lbf•in)

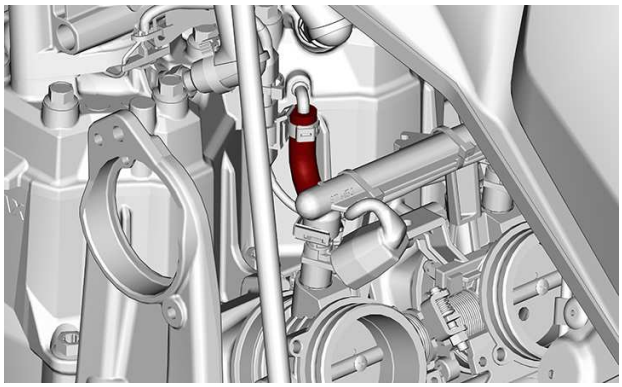
Cylinder Head

Removing the Cylinder Head

1. Drain coolant. Refer to *Cooling System* subsection.
2. Disconnect the coolant hose and the bleeding hose from the cylinder head.

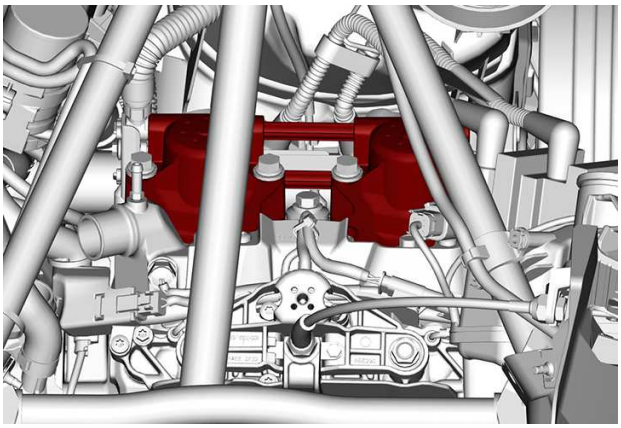


3. Remove the primary air intake silencer. Refer to *Air Intake System* subsection.
4. Disconnect the inlet hose for throttle body heating from the cylinder head.

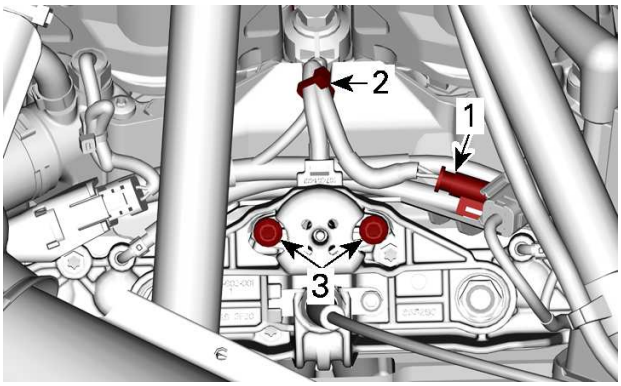


5. Remove the E-TEC direct fuel injectors from the cylinder head. Refer to *E-TEC Direct Fuel Injection* subsection.

T

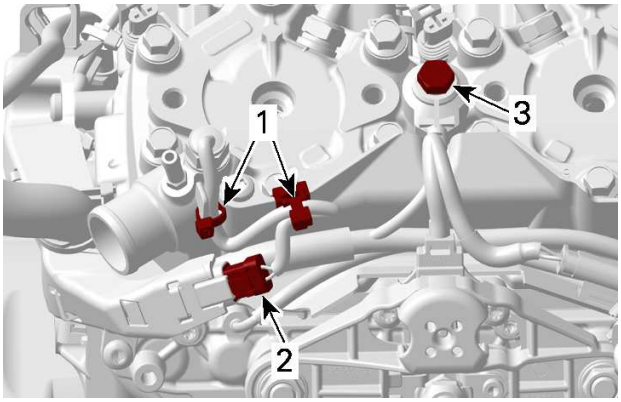


6. Disconnect the RAVE valve connector.
7. Detach the RAVE valve connector housing from the harness support.
8. Cut the locking tie securing the RAVE valve sensor harness to the knock sensor harness.
9. Loosen RAVE position sensor screws.



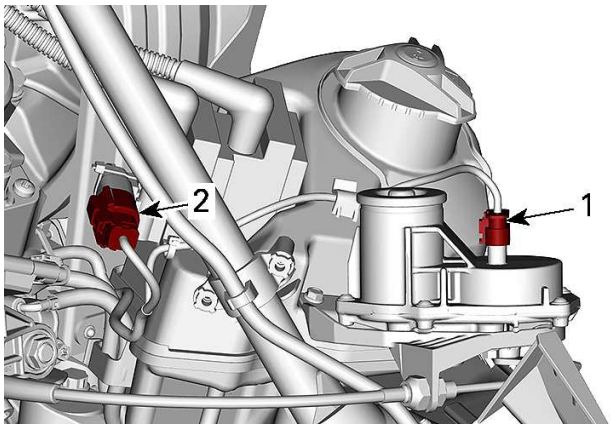
1. *RAVE valve connector housing*
2. *Locking tie to be cut*
3. *RAVE position sensor screws*

10. Cut locking ties securing the CTS harness.
11. Disconnect the CTS connector.
12. Remove knock sensor retaining screw and move knock sensor aside.



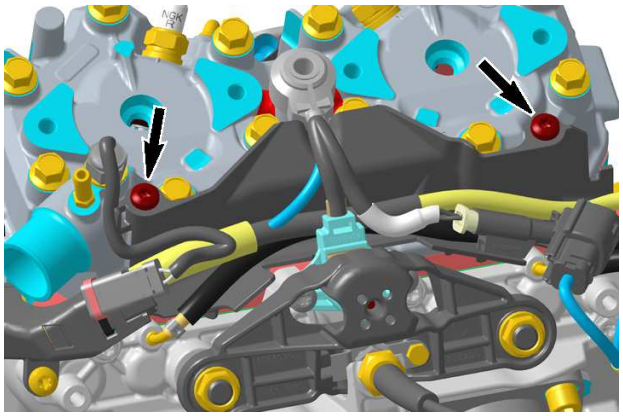
1. *Locking ties securing the CTS harness*
2. *CTS connector*
3. *Knock sensor screw*

13. Disconnect the following connectors.

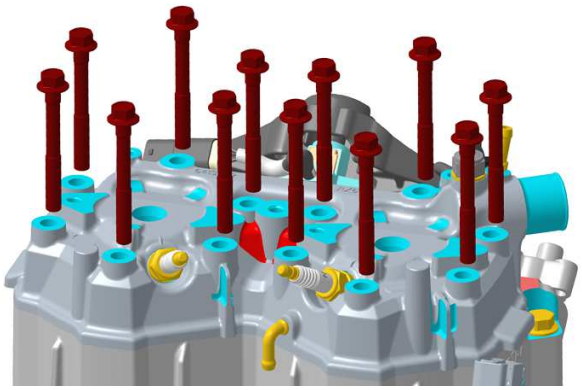


1. *Ignition coil connector*
2. *RAVE servomotor connector*

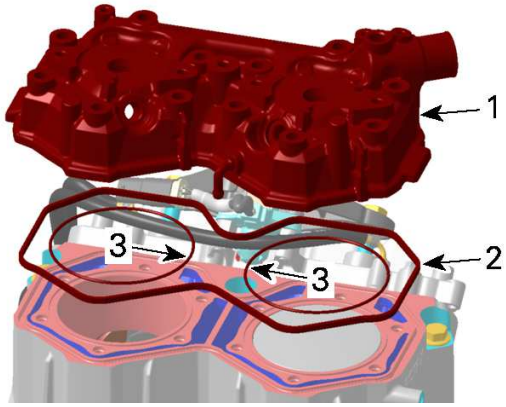
14. Remove screws securing the front harness support.



15. Move the support and the harness aside.
16. Unplug spark plug wires.
17. If necessary remove following parts from cylinder head:
    - Spark plugs
    - Coolant temperature sensor (CTS)
    - Bleeding nipple.
18. Remove the cylinder head:
    1. Remove cylinder head screws.



2. Remove the cylinder head and discard the cylinder rubber ring and O-rings.



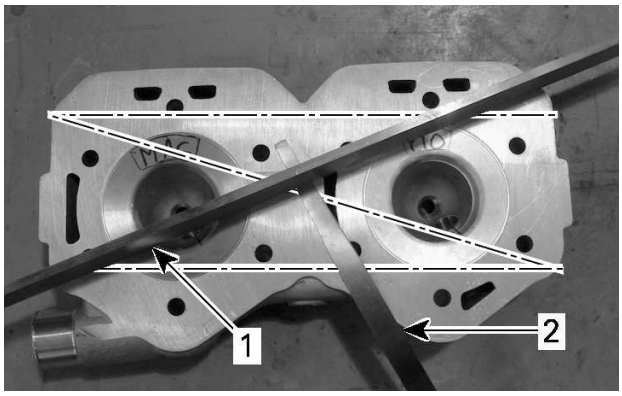
i. Cylinder head
ii. Cylinder rubber ring
iii. O-rings

Inspecting the Cylinder Head

Check cylinder head for cracks or other damages. Replace if necessary.

Cylinder Head Warpage

1. Check gasket mating surface of the cylinder head with a straight edge and a feeler gauge. Make sure part is within the given specification.
2. If cylinder head is out of specification, replace it.



TYPICAL
1. Straight edge
2. Feeler gauge

Service Limit	
Cylinder head warpage	0.5 mm (.02 in) for total length of cylinder head
	0.05 mm (.002 in) per 50 mm (2 in) of surface

Cleaning the Cylinder Head

1. Scrape off any carbon deposits from cylinder head.

Loctite chisel (gasket remover)

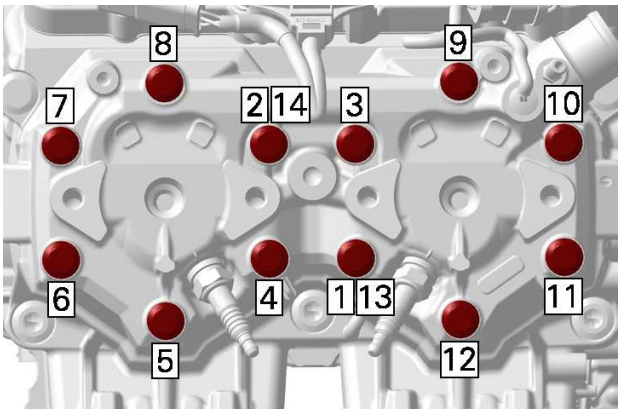
Installing the Cylinder Head

The installation is the reverse of removal procedure, however pay attention to the following.

1. Install **NEW** rubber ring and round O-rings on cylinder block.
2. Tighten cylinder head screws as per the following procedure.

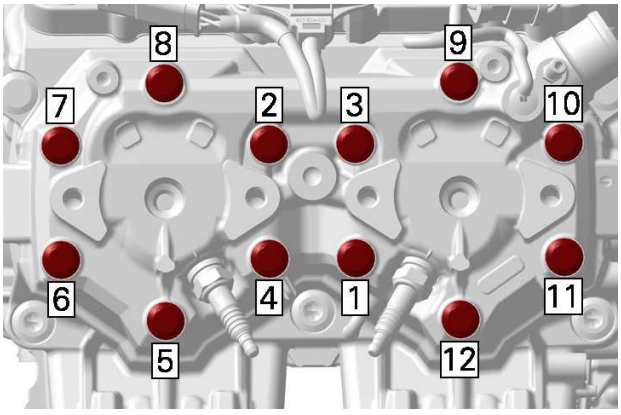
NOTE: Always perform Step A on all cylinder head screws before going to Step B.

Tightening Torque		
Cylinder head screws	Step A	7 ± 0.2 N·m (62 ± 2 lbf·in)



3. Use a torque angle gauge to carry out Step B.

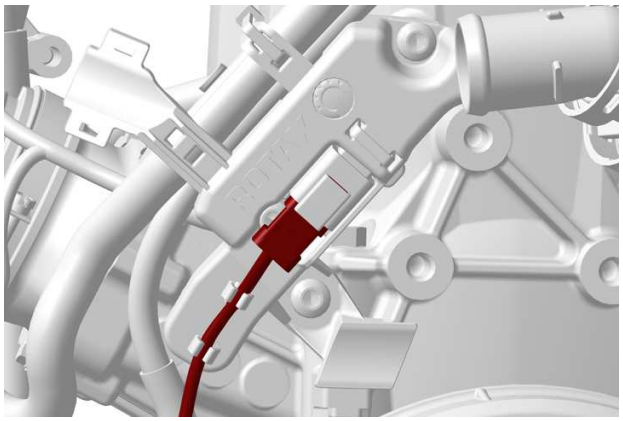
Torque Angle		
Cylinder head screws	Step B	Additional 70°



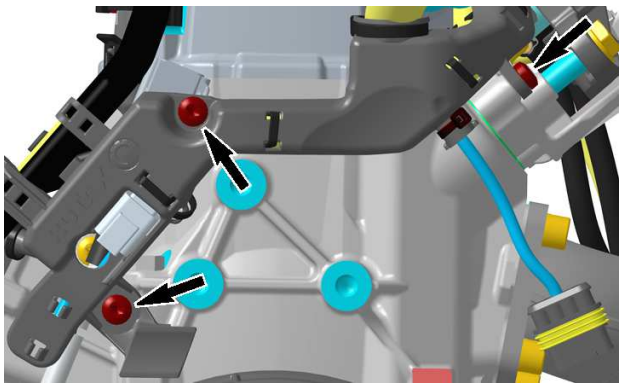
Cylinder Block

Removing the Cylinder Block

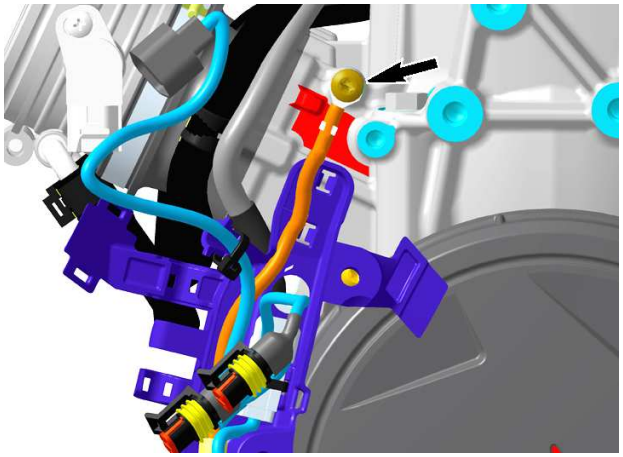
1. Drain coolant. Refer to *Cooling System* subsection.
2. Remove hoses for throttle body heating. Refer to *Cooling System* subsection.
3. Remove *Cylinder Head*, see procedure in this subsection.
4. Remove the throttle body. Refer to *E-TEC Direct Fuel Injection* subsection.
5. Detach the RAVE cable form the 3D RAVE link bar. Refer to *RAVE* subsection.
6. Disconnect CPS.



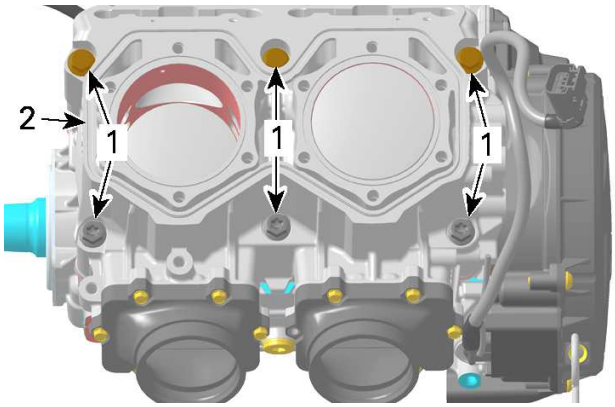
7. Remove screws from harness support.



8. Put wiring harness with support aside and remove screw from ground cable.



9. If necessary remove RAVE assembly. Refer to *RAVE* subsection.
10. Remove the cylinder block.



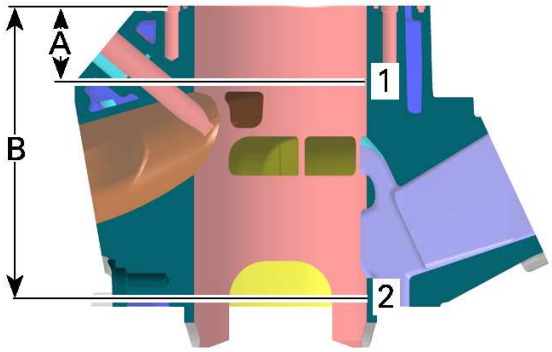
1. *Cylinder block screws*
2. *Cylinder block*

Inspecting the Cylinder Block

1. Remove RAVE valves. Refer to *RAVE* subsection.
2. Remove reed valves. Refer to *Removing the Reed Valves* in this subsection.
3. Check cylinder bores for cracks and scoring on the top and bottom of cylinders. Replace if necessary.

Cylinder Taper

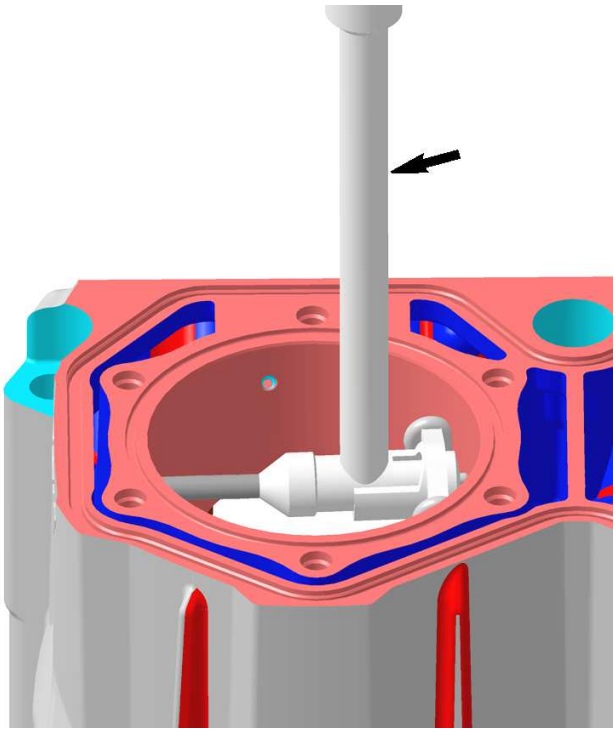
1. Measure cylinder diameter at the following positions:
   - Above exhaust port
   - Below intake port.



Cylinder Taper Measurements		
Position	**Measurement**	**From Top of Cylinder Block**
1	A	30 mm (1.18 in)
2	B	140 mm (5.51 in)

2. Compare cylinder diameters.

Cylinder bore gauge	



3. If the difference exceeds the specified dimension, replace the cylinder block.

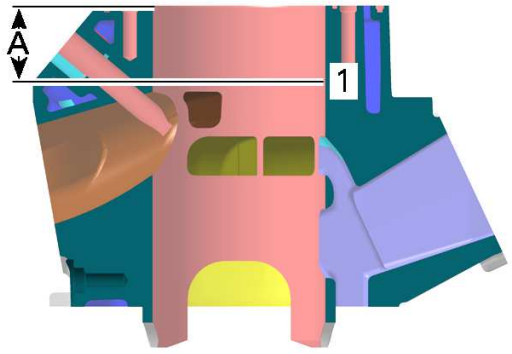
Cylinder Bore Taper	
Service limit	0.10 mm (.0039 in)

Cylinder out of Round

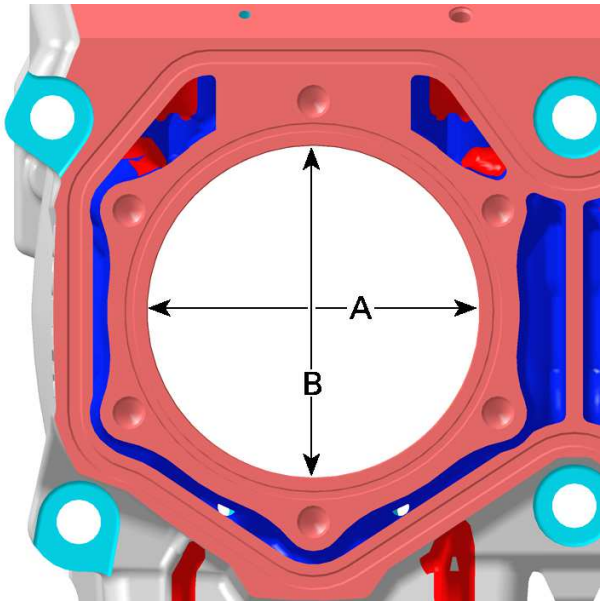
1. Check if the cylinder out of round is more than the specified dimension.

Cylinder bore gauge	

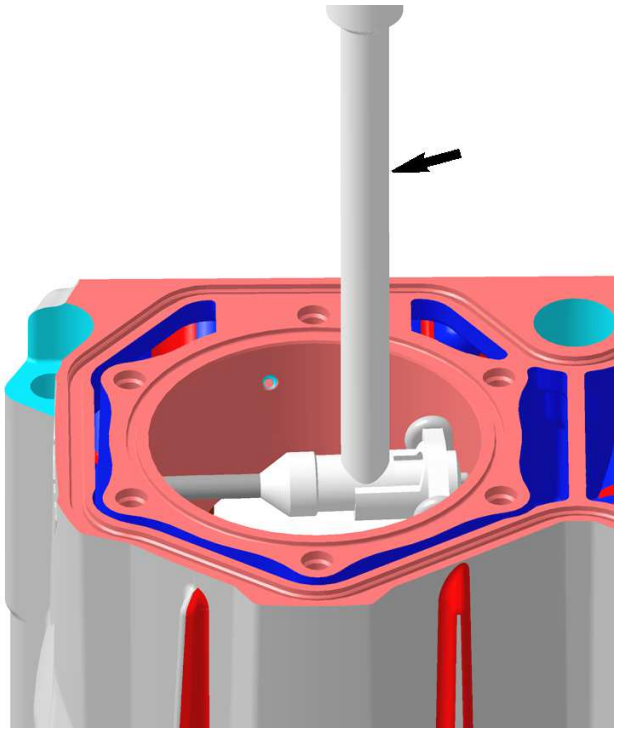
Measure above exhaust port:
- in piston pin axis
- perpendicular to piston pin axis.



Cylinder Out of Round Measurement		
Position	**Measurement**	**From Top of Cylinder Block**
1	A	30 mm (1.18 in)



A. Measure in piston pin axis
B. Measure perpendicular to piston pin axis



2. If the measurement exceeds the specifications, replace the cylinder block.

Cylinder Bore Out of Round	
Service Limit	0.08 mm (.0031 in)

Cleaning the Cylinder Block

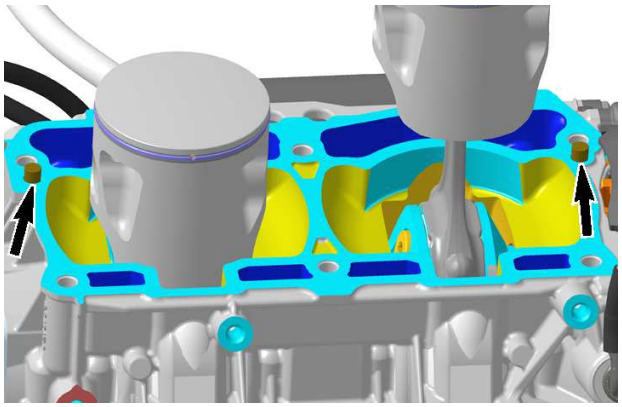
1. Scrape off any carbon deposits from exhaust ports.
2. Carefully clean cylinder block screws, specifically under screw head.

Loctite chisel (gasket remover)

Installing the Cylinder Block

The installation is the reverse of removal procedure. However pay attention to the following;

1. Ensure top surface of crankcase is clean.
2. Check if dowel pins are in crankcase holes.



3. Install a **NEW** cylinder block base gasket of the same thickness as the old one. Refer to *Piston Projection Measurement* in this subsection.

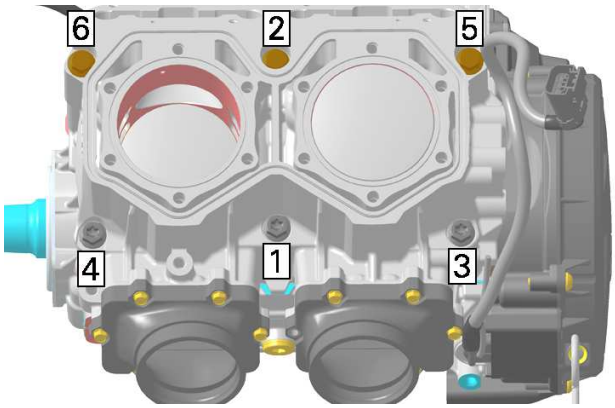
NOTE: If thickness of the factory-installed gasket is unknown, install a 7-holes gasket (0.7 mm (.028 in)) as a base line.

4. Lubricate cylinder bores.

Injection oil

5. Carefully slide cylinder block down while squeezing piston rings to allow cylinder insertion.
6. Proceed one piston at a time, the help of an assistant may be required.
7. Tighten cylinder block screws to specification as per the following sequence.

Tightening Sequence	
Cylinder block screws	50 ± 1.5 Nm (37 ± 1 lbf-ft)



TIGHTENING SEQUENCE

8. Measure piston projection as described in *Piston Projection Measurement* in this subsection.

NOTICE

Always install a cylinder block base gasket of the proper thickness. Failure to do so may cause detonation and severe engine damage.

9. Install the 3D RAVE valve. Refer to *Installing the 3D RAVE Valve* in the *RAVE* subsection.

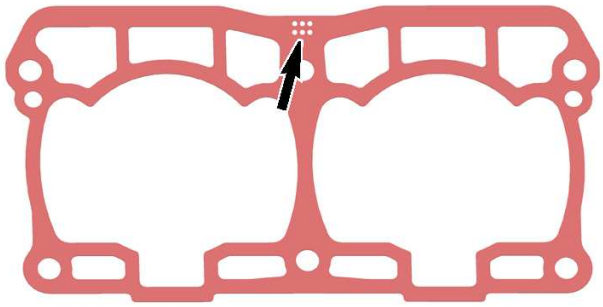
Piston Projection Measurement

The piston projection measurement is used to determine the correct cylinder base gasket thickness when engine components are replaced.

Cylinder Block Base Gasket

The cylinder block base gasket is available in different thicknesses to adjust precisely the piston projection.

Cylinder Block Base Gasket	
Thickness	**Holes Quantity**
0.9	9
0.8	8
0.7	7
0.6	6
0.5	5



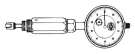
TYPICAL - GASKET THICKNESS IDENTIFICATION HOLES

NOTICE

Always install a cylinder block base gasket of the proper thickness. Failure to do so may cause detonation and severe engine damage.

Engine Preparation

1. Bring PTO piston to TDC.

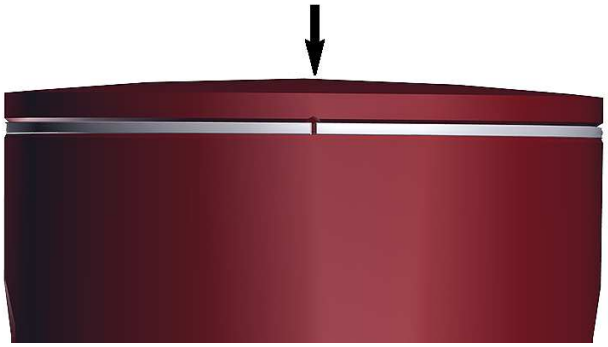
TDC dial indicator (P/N 414104700)	

2. Remove cylinder head from engine. Refer to *Cylinder Head* in this subsection.
3. Remove O-rings from cylinder block.
4. Clean top surface of cylinder block.
5. Ensure piston dome is clean and free of any carbon deposits.
6. Ensure cylinder block screws are properly tightened.

Piston Projection Measurement

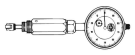
NOTICE

Before performing the piston projection measurement, check with a straight edge if the shape of the piston dome is still convex and does not show any flat spots. A deformed piston will lead to wrong piston protrusion which can result in a severe engine damage.



CONVEX SHAPE OF THE PISTON DOME

1. Place piston projection tool on a flat steel surface.

Piston projection (P/N 529036215)	
TDC dial indicator (P/N 414104700)	

2. Rotate dial indicator face to position the **0** in line with needle.



SETTING THE ZERO

3. Install tool on PTO cylinder.
4. Center tool with cylinder to ensure that dial indicator reads piston dome.



TYPICAL - TOOL PROPERLY CENTERED

5. Ensure that PTO piston is set to TDC.
6. Read dial indicator then note measurement.



TYPICAL

NOTE: Convert dial indicator measurement to millimeter.

Piston Projection Measurement
1.75 to 1.82 mm (.069 to .072 in)

7. If piston projection measurement is out of specification, change cylinder block base gasket thickness. Refer to *Cylinder Block* in this subsection.

Cylinder Block Base Gasket Selection Guideline	
Measured Piston Projection	**Gasket to Install**
Below specification	Thinner
Above specification	Thicker

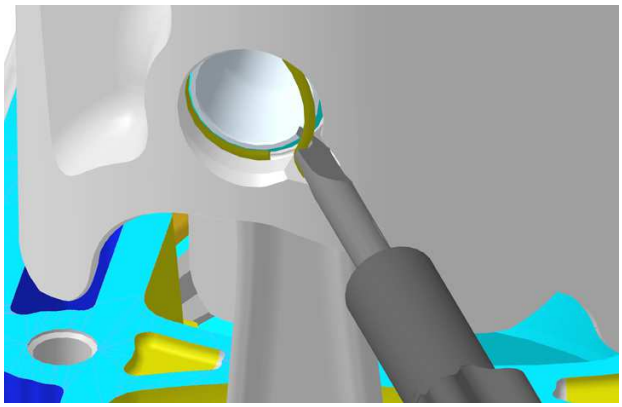
NOTICE

Take care to use the proper specification according to the type of engine and the model of vehicle.

Pistons

Removing the Piston

1. Remove *Cylinder Block*. See procedure in this subsection.
2. Place a clean cloth over crankcase.
3. Using a pointed tool inserted in piston notch, remove circlips from piston.



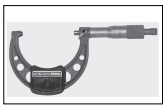
4. Push piston pin out of piston.
5. Remove piston.
6. Remove bearing.
7. Discard circlips.

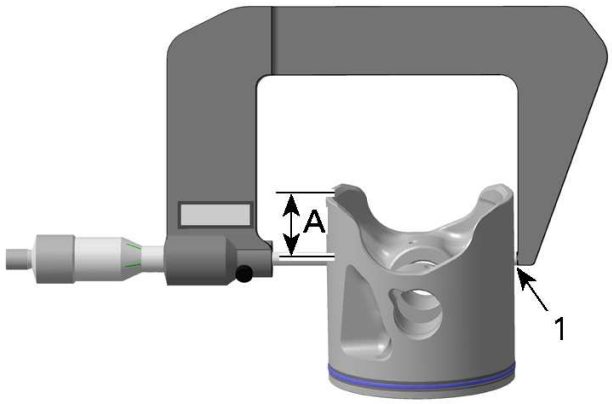
Inspecting the Piston

Inspect piston for scoring, cracking or other damage.

Cylinder/Piston Clearance

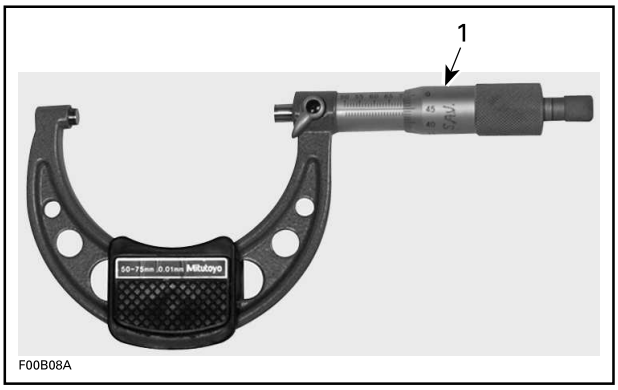
1. Measure piston diameter at “A” perpendicularly (90°) to piston pin.

Micrometer	



1. Measuring diameter perpendicularly (90°) to piston pin axis
A. 30 mm (1.181 in)

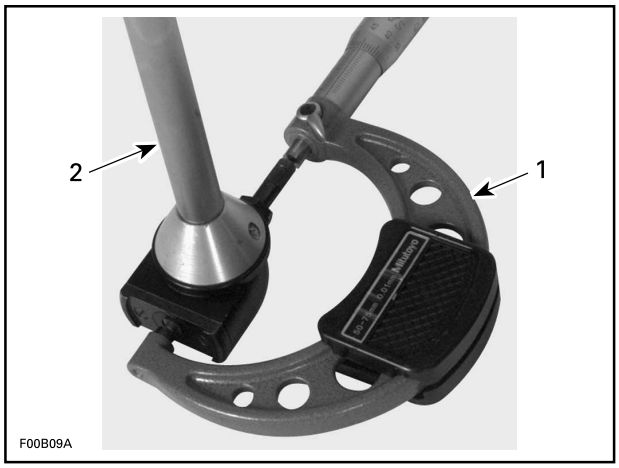
2. Adjust and **lock** a micrometer to the piston diameter.



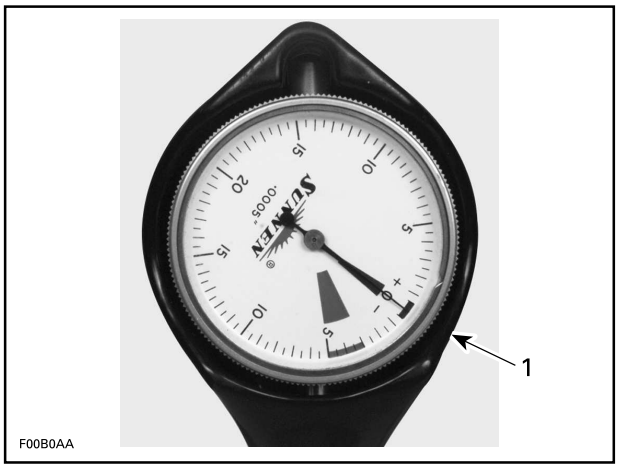
1. Micrometer set to the piston diameter

3. Adjust a cylinder bore gauge to the locked micrometer and set the indicator to 0.

Cylinder bore gauge	



1. Use the micrometer to set the cylinder bore gauge
2. Dial bore gauge



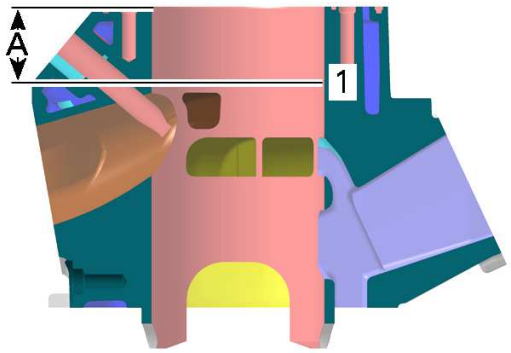
1. Indicator set to 0 (zero)

NOTE: Make sure the cylinder bore gauge indicator is set exactly at the same position as with the micrometer, otherwise the reading will be false.

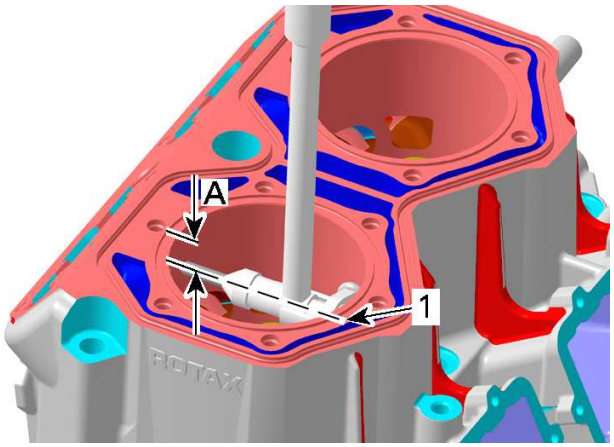
4. Position the dial bore gauge above the exhaust port.

NOTICE

Always remove cylinder-block from crankcase before measuring.



Cylinder Out of Round Measurement		
Position	**Measurement**	**From Top of Cylinder Block**
1	A	30 mm (1.18 in)



1. Measuring perpendicularly (90°) to piston pin axis
A. 30 mm (1.18 in)

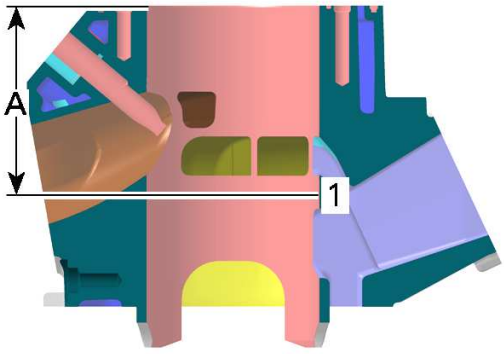
5. Read the measurement on the cylinder bore gauge. The result is the exact piston/cylinder wall clearance.

Cylinder/Piston Clearance	
New	0.135 to 0.161 mm (.005 to .006 in)
Service limit	0.200 mm (.0079 in)

6. If clearance exceeds specified tolerance, replace cylinder and piston.

Ring End Gap

1. Position ring halfway between transfer ports and intake port.



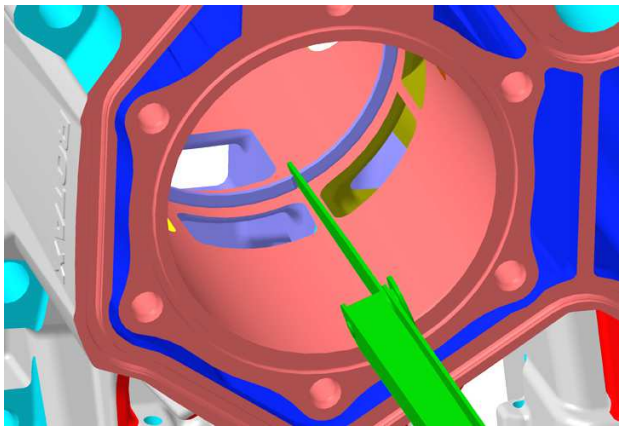
Ring End Gap Measurement		
Position	**Measurement**	**From Top of Cylinder Block**
1	A	89 mm (3.5 in)

NOTE: In order to correctly position the ring in the cylinder, use piston as a pusher.

2. Check ring end gap. Replace ring if gap exceeds specified tolerance.

Feeler gauge	

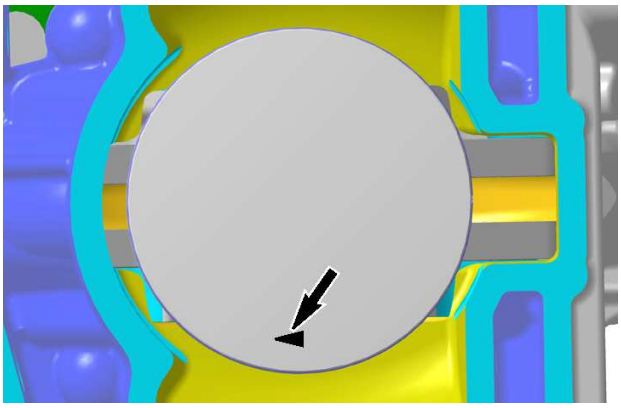
Ring End Gap	
New	0.400 to 0.600 mm (.0157 to .0236 in)
Service limit	1.000 mm (.0394 in)



Cleaning the Piston

1. Scrape off any carbon deposits from piston dome.

NOTE: The arrow on the piston dome must be visible after cleaning.



EXHAUST DIRECTION INDICATION

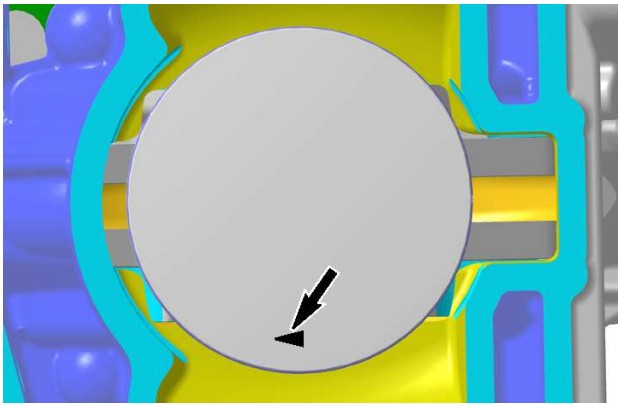
2. Clean the piston ring groove with a groove cleaner tool or with a piece of broken ring.

Installing the Piston

1. Lubricate needle bearing.

Injection oil

2. Insert bearing into connecting rod.
3. Place pistons over connecting rods with the arrow on the piston dome facing towards exhaust port.



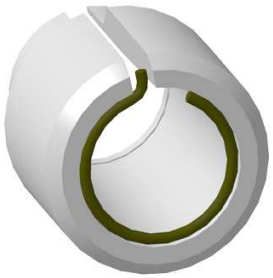
EXHAUST DIRECTION INDICATION

4. Install piston pin in piston.
5. Install **NEW** circlips.

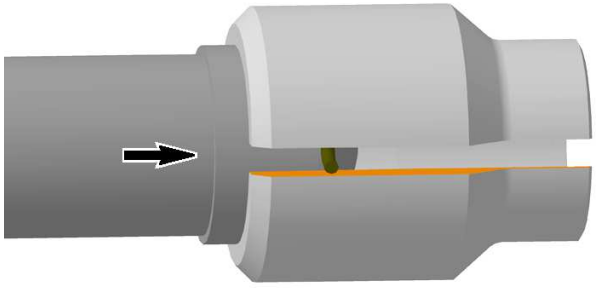
Piston circlip installer 21 mm (P/N 529036138)	

NOTICE
Always install NEW mono-hook circlips. If circlip installation fails at the first attempt, always retry with a new one.

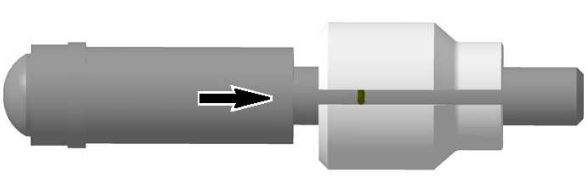
6. Use the following procedure to properly install circlip.
   1. Insert circlip into support so that, when installed in piston groove, the gap will be below the tab.

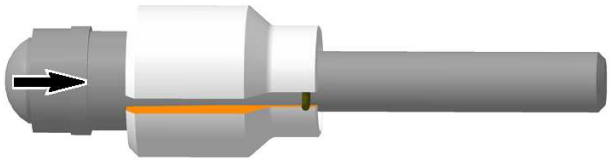


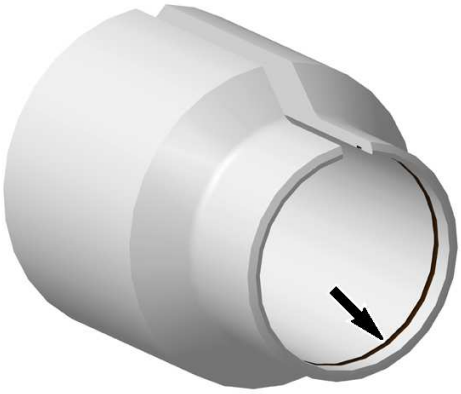
   2. With round end of pusher, position circlip perpendicularly to the support axis.



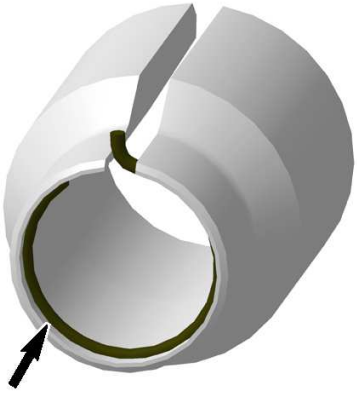
   3. With the other end of the pusher, push circlip into the support groove.







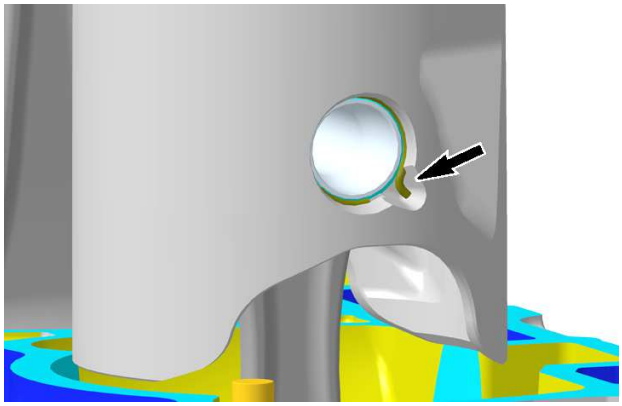
GROOVE



CIRCLIP READY TO BE INSTALLED ON PISTON

4. Using a plastic hammer, tap pusher to put the new circlip in place.

NOTE: Make sure to install new circlips with the gap below the tab exactly as shown on the following photo.



GAP BELOW THE TAB

NOTICE
Circlips must not move freely after installation; if so, replace them.

7. Install all other removed parts as the reverse of removal procedure.

Bottom End – 600R E-TEC

SERVICE TOOLS

Description	Part Number	Page
BEARING HEATER	(P/N 529035969)	131
CRANKSHAFT BEARING PULLER	(P/N 529036004)	130
CRANKSHAFT DISTANCE GAUGE	(P/N 529036453)	133
CRANKSHAFT PROTECTOR	(P/N 529036434)	130–131
DEGREE WHEEL	(P/N 529035607)	129
DIAL GAUGE ADAPTER	(P/N 529036443)	127
HALF-RINGS	(P/N 420977475)	130
HALF-RINGS	(P/N 420977479)	131
PULLER RING	(P/N 420977490)	130–131
SUPPORT PLATE	(P/N 529035976)	133
TEMPERATURE INDICATOR STICK	(P/N 529035970)	131
WATER PUMP BEARING PUNCH	(P/N 529036417)	125

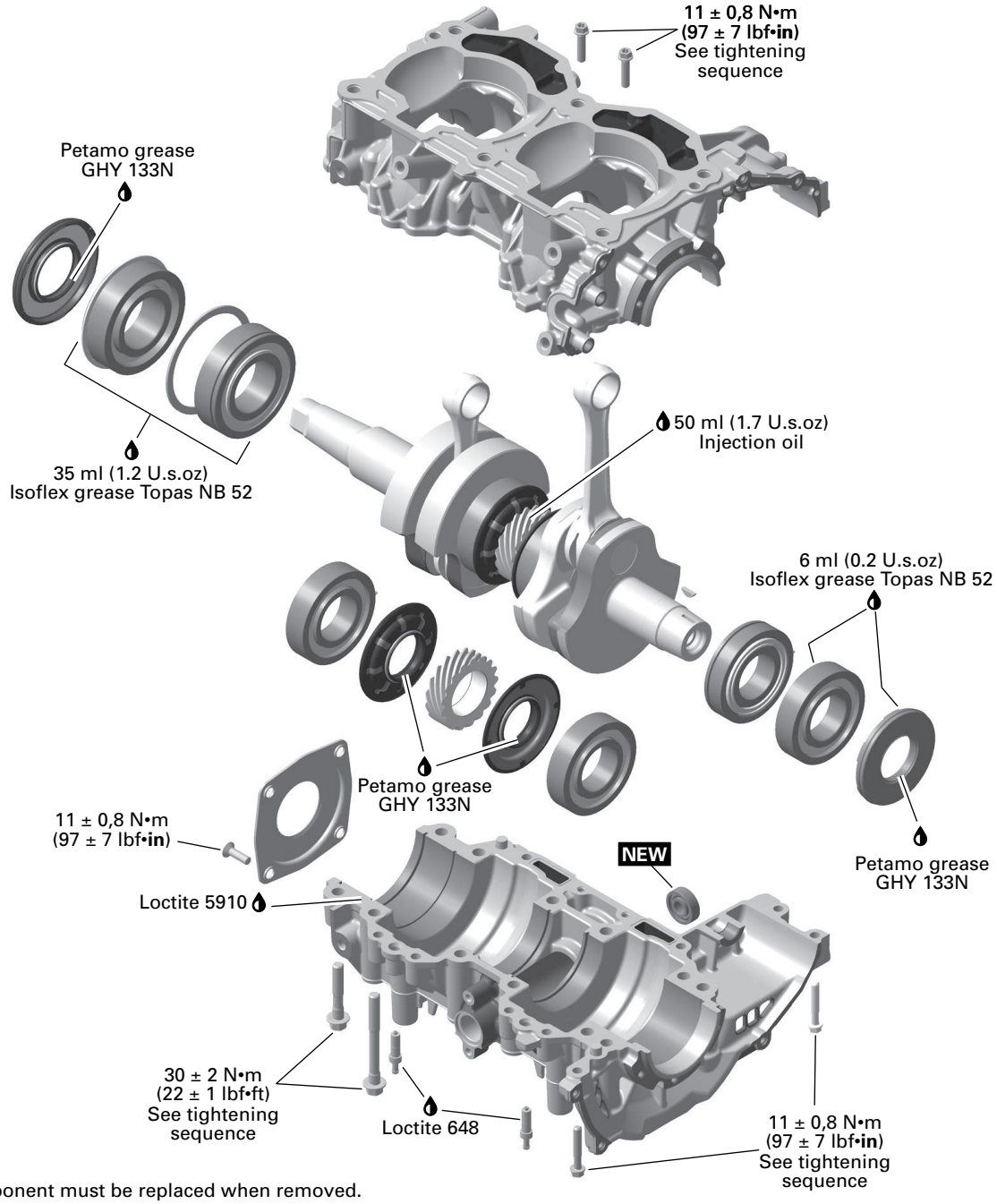
SERVICE TOOLS — OTHER SUPPLIER

Description	Part Number	Page
DIAL GAUGE		128
FEELER GAUGE		129
MAGNETIC-BASE DIAL GAUGE HOLDER		128

Midwest Manuals
Green Manuals
Paperless Manuals For a Better Tomorrow www.green-manuals.com
If you bought this manual from any other seller please leave them NEGATIVE feedback and notify us at bestshopmanuals@gmail.com

SERVICE PRODUCTS

Description	Part Number	Page
CLUTCH AND PULLEY FLANGE CLEANER PRO S1		131
INJECTION OIL		127
ISOFLEX GREASE TOPAS NB 52		132, 134
LOCTITE 5910		126
LOCTITE CHISEL (GASKET REMOVER)		125
LUBRICANT AND ANTI-CORROSIVE		131
PETAMO GREASE GHY 133N		132, 134



NEW = Component must be replaced when removed.

General

Engine removal is required to repair bottom end.

All oil seals and gaskets must be discarded and replaced with new ones when crankcase is split.

Clean all metal components in a non-ferrous metal cleaner.

During the assembly or the installation:

- Use torque values and service products as shown in the exploded view.
- Clean threads before applying a threadlocker. Refer to the *Introduction* subsection.

⚠ WARNING

Torque wrench tightening specifications must be strictly adhered to.
Locking devices when removed (e.g.: locking tabs, elastic stop nuts, self-locking fasteners, cotter pins, etc.) must be replaced with new ones.

NOTICE

Hoses, cables and locking ties removed during a procedure must be reinstalled as per factory standards.

⚠ WARNING

Always disconnect the magneto connector prior to:

- **Disconnecting any fuel hose.**
- **Removing a fuel injector.**
- **Removing a spark plug cable or spark plug.**

Otherwise, if the engine is cranked, fuel vapors may ignite in presence of a spark creating a fire hazard.

Engine Break-In

NOTICE

After a repair involving major parts replacement, a break-in period must be observed. Follow *OPERATOR'S GUIDE* recommendation relating to break-in.

To reactivate the break-in period, use the BRP diagnostic software (BUDS2).

In BUDS2, go to:

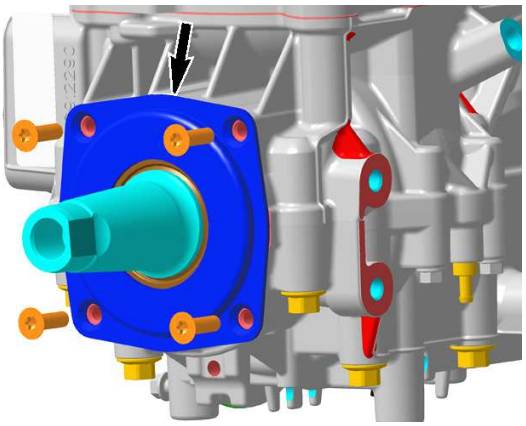
- **Settings** page
- **Vehicle** button
- **Settings** tab
- **Initialization - Restart Break In**.

Procedures

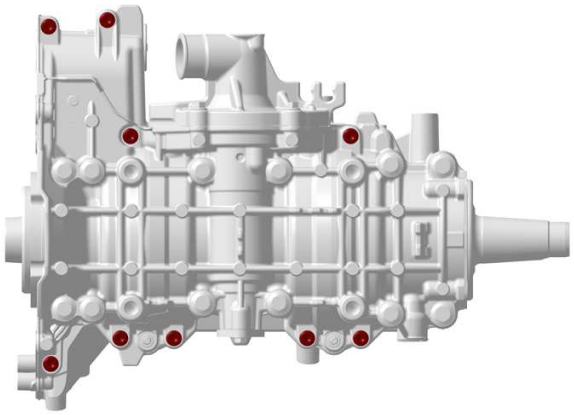
Crankcase

Disassembling the Crankcase

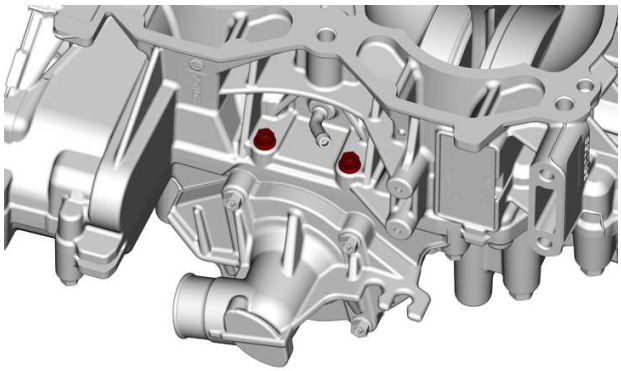
1. Remove engine from vehicle. Refer to *Engine Removal and Installation* subsection.
2. Refer to *Top End* subsection to remove:
   - Cylinder head
   - Cylinder block
   - Pistons.
3. Refer to *Magneto and Starter* subsection to remove:.
   - Stator
   - Magneto housing
   - Magneto flywheel.
4. Remove drive pulley. Refer to *Drive Pulley* subsection.
5. Remove PTO oil seal cover.



6. Remove engine front supports.
7. Remove M6 crankcase screws.

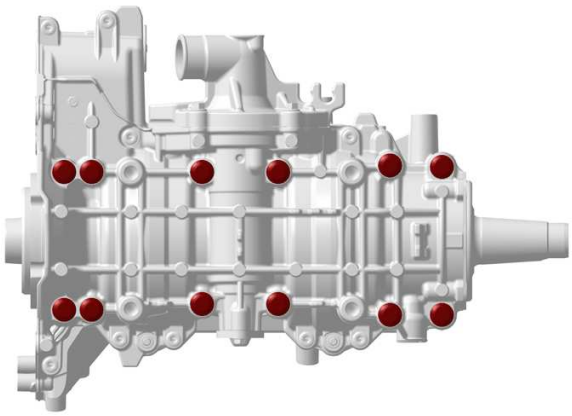


TYPICAL - M6 CRANKCASE SCREWS - BOTTOM SIDE



TYPICAL - M6 CRANKCASE SCREW - WATER PUMP SIDE

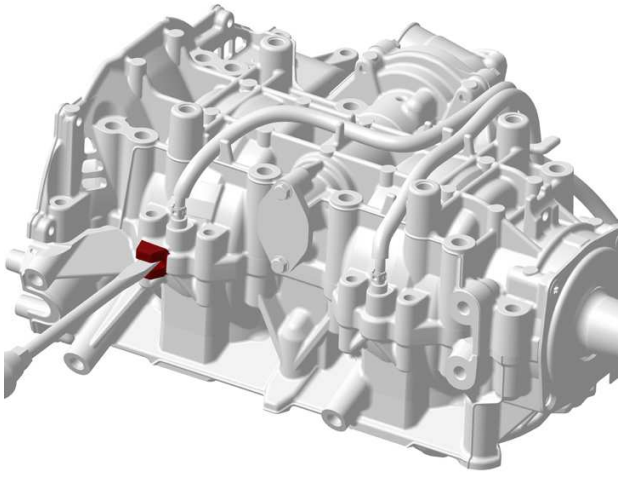
8. Remove M8 crankcase screws.



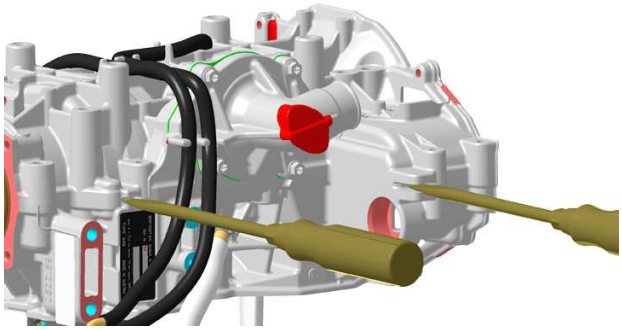
TYPICAL

9. Split crankcase.

NOTE: To prevent damage to crankcase mating surfaces, use prying lugs to “unstick” crankcase.



PRYING LUGS



PRYING LUGS

10. Remove crankshaft assembly.

Cleaning the Crankcase

1. Clean all metal components in a non-ferrous metal cleaner.

Loctite chisel (gasket remover)

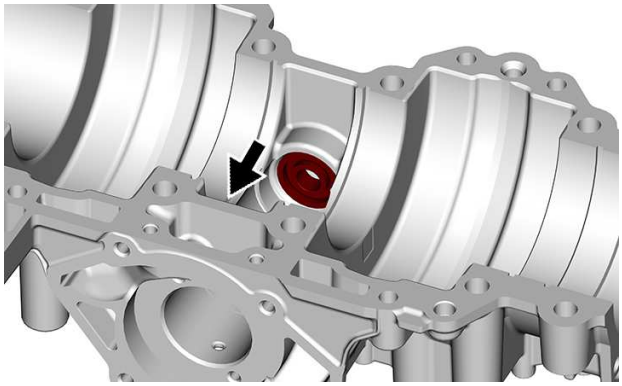
NOTICE
Never use a sharp object to remove sealant as score marks incurred are harmful to crankcase sealing.

Inspecting the Crankcase

Check crankcase for cracks or other damages. Replace if necessary.

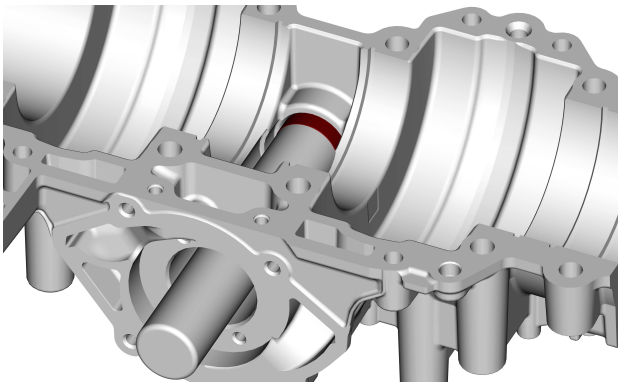
Water Pump Bearing Replacement

1. Use a suitable punch to push ball bearing out of crankcase.



2. Install **NEW** ball bearing.

Water pump bearing punch (P/N 529036417)	

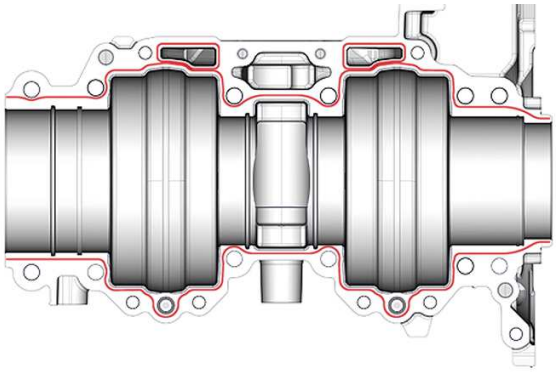


Assembling the Crankcase

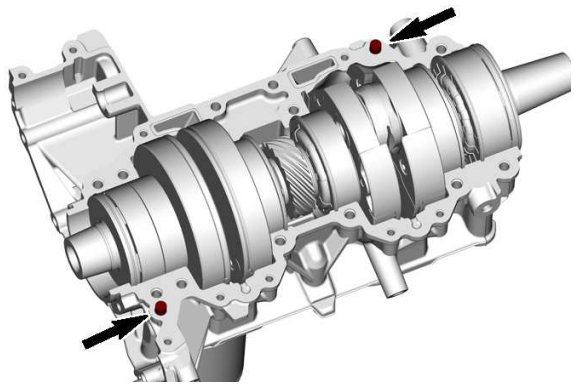
1. Install crankshaft in upper crankcase. See *Crankshaft* for procedure.
2. Apply sealant on lower crankcase as per following procedure.

Loctite 5910

NOTE: The total assembly sequence, including sealing compound application and crankcase torquing, must be performed within 10 minutes.

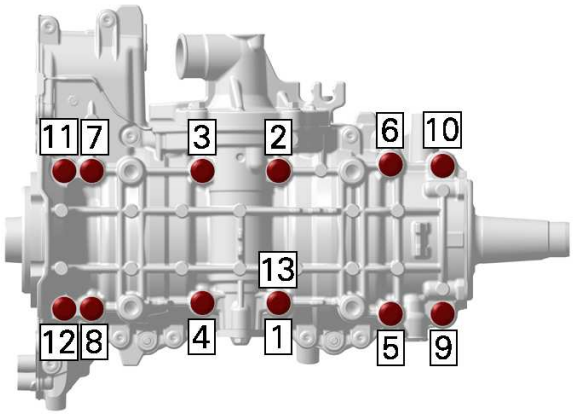


3. Ensure dowel pins are in their holes.



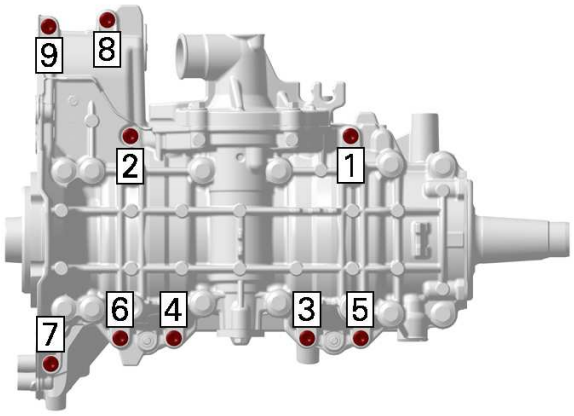
4. Assemble crankcase lower half.
5. Install crankcase screws.
6. Tighten crankcase screws to specification as per illustrated sequence.

Tightening Torque	
M8 Crankcase screws	30 ± 2 N•m (22 ± 1 lbf•ft)

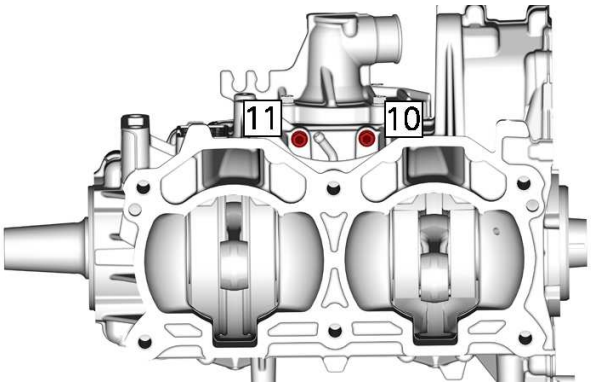


TYPICAL - TIGHTENING SEQUENCE - M8 CRANKCASE SCREWS

Tightening Torque	
M6 Crankcase screws	11 ± 0.8 N•m (97 ± 7 lbf•in)



TYPICAL - TIGHTENING SEQUENCE - BOTTOM VIEW



TYPICAL - TIGHTENING SEQUENCE- M6 CRANKCASE SCREWS - TOP VIEW

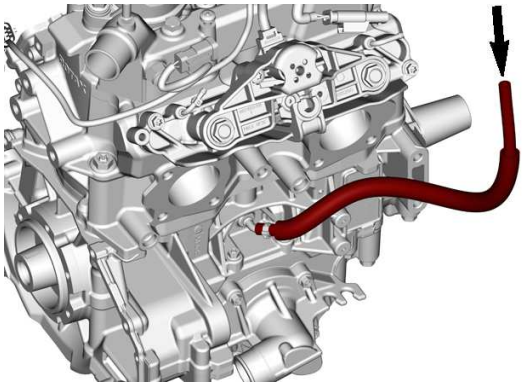
7. Install PTO oil seal cover.
8. Tighten oil seal cover to specification.

Tightening Torque	
Oil seal cover screws	11 ± 0.8 N•m (97 ± 7 lbf•in)

NOTE: It is recommended to test engine cooling system for leaks after engine assembly, before installation in vehicle. Refer to *Cooling System - Engine Components* subsection.

9. Using a syringe, fill the water pump gear chamber.

Injection oil
50 ml (1.7 fl oz (US)



TYPICAL

Crankshaft

Removing the Crankshaft

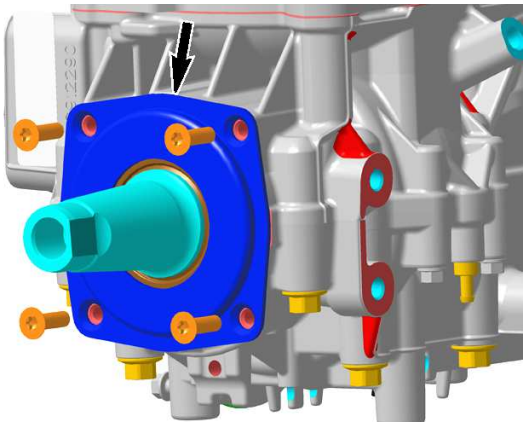
To remove crankshaft, use crankcase disassembly procedure.

Inspecting the Crankshaft

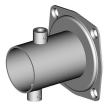
For crankshaft specifications refer to *Technical Specifications* subsection.

Crankshaft Deflection PTO Side (Measuring in Crankcase)

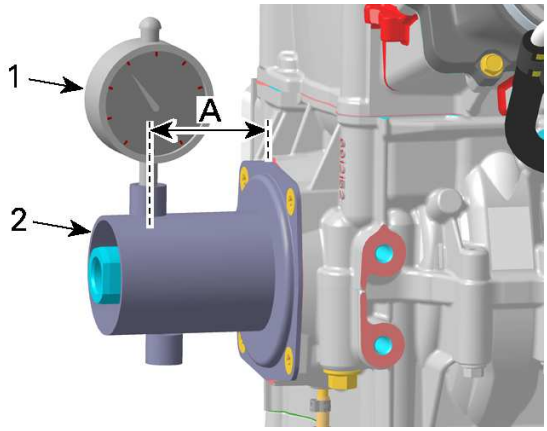
1. Remove the PTO oil seal cover.



2. Install the dial gauge adapter.

Dial gauge adapter (P/N 529036443)	
Dial gauge	

NOTE: Ensure that the dial gauge tip is compressed at least for 2 mm (.079 in) (2 full rotations of the dial gauge needle).



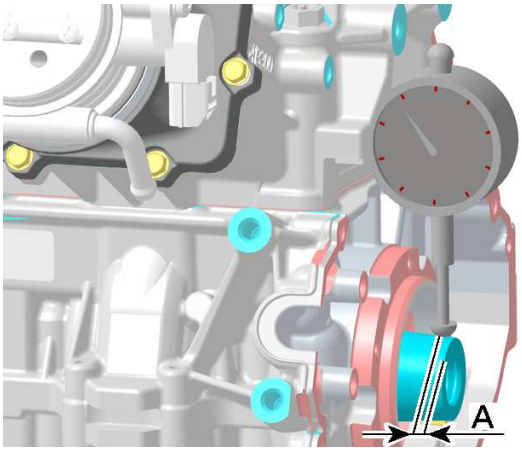
1. *Dial gauge*
2. *Dial gauge adapter*

A. *56 mm (2.2 in)*

Crankshaft Deflection PTO Side	
Service limit	0.06 mm (.0024 in)

3. If deflection exceeds the specified tolerance, recheck deflection using V-shaped blocks to determine the defective part (s). See *Crankshaft Deflection (Measuring on Bench)*.

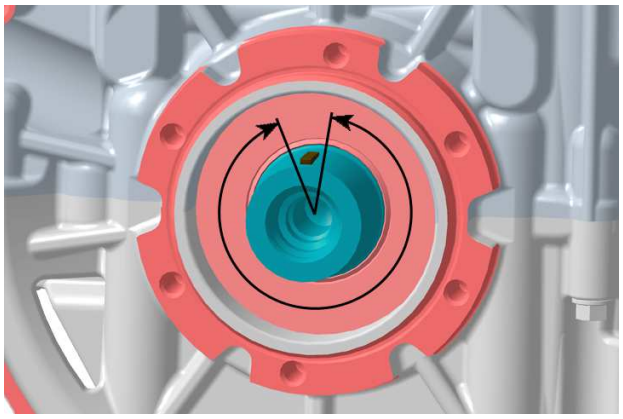
Crankshaft Deflection MAG Side (Measuring in Crankcase)



TYPICAL - CRANKSHAFT MAG SIDE
A. 3 mm (.12 in)

1. Measure deflection circumferential excluding the woodruff key.

Magnetic-base dial gauge holder	
Dial gauge	



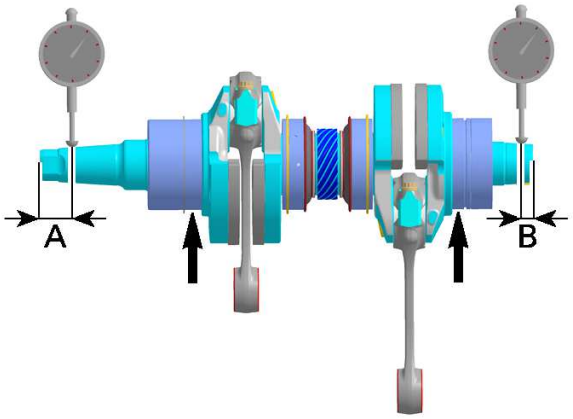
TYPICAL

Crankshaft Deflection Mag Side	
Service limit	0.06 mm (.0024 in)

2. If deflection exceeds the specified tolerance, recheck deflection using V-shaped blocks to determine the defective part (s). See *Crankshaft Deflection (Measuring on Bench)*.

Crankshaft Deflection (Measuring on Bench)

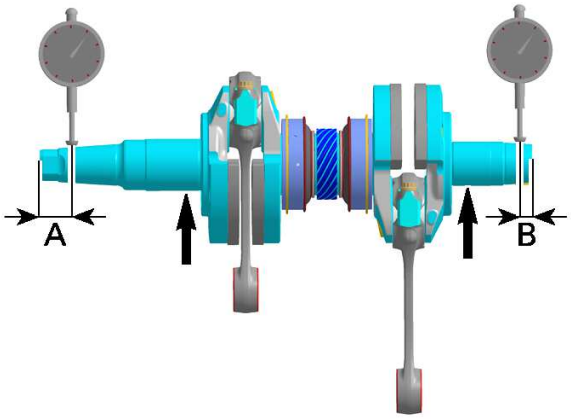
1. Once engine is disassembled, check crankshaft deflection on V-shaped blocks.



TYPICAL — V-SHAPED BLOCKS POSITION WITH BEARINGS
A. 3 mm (.12 in)
B. 3 mm (.12 in)

NOTE: Crankshaft deflection cannot be correctly measured between centers of a lathe.

2. If deflection exceeds the specified tolerance, it can be worn bearings or a bent crankshaft.
3. Remove crankshaft bearings and check deflection again on V-shaped blocks to determine the defective part(s).



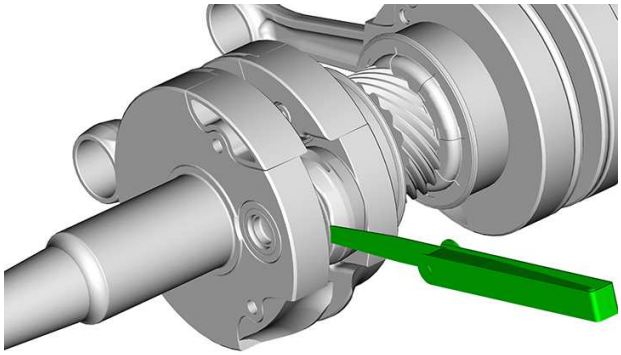
TYPICAL — V-SHAPED BLOCKS POSITION WITHOUT BEARINGS
A. 3 mm (.12 in)
B. 3 mm (.12 in)

4. If the deflection exceeds the specified tolerance, replace crankshaft.

Connecting Rod Big End Axial Play

1. Measure distance between connecting rod and crankshaft counterweight.

Feeler gauge	



TYPICAL

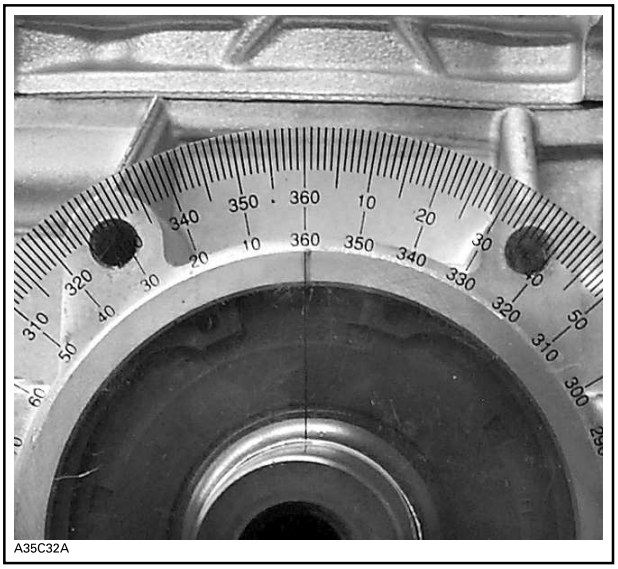
Connecting Rod Big End Axial Play	
New	0.280 to 0.680 mm (.011 to .0268 in)

2. If the distance exceeds specified tolerance, replace crankshaft.

Crankshaft Alignment

1. Remove injectors. Refer to *E-TEC Direct Fuel Injection* subsection.
2. Bring MAG piston at top dead center. Refer to *Ignition System* subsection.
3. Scribe a mark on crankcase (see illustration).
4. Install a degree wheel on crankshaft end so that 360° mark aligns with the mark on crankcase. Do not rotate crankshaft.

Degree wheel (P/N 529035607)	



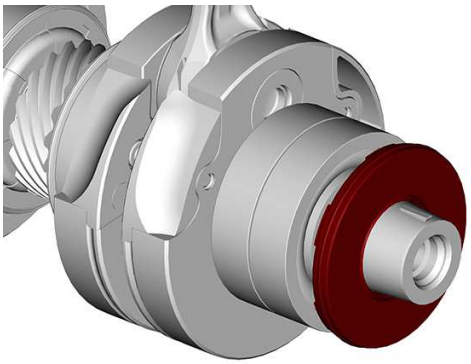
5. Remove dial indicator and install it in spark plug hole on PTO side.
6. Bring PTO piston to top dead center. Degree wheel must rotate with crankshaft.
7. Interval between cylinders must be 180° ± 0.5.
8. Any other reading indicates a misaligned (twisted) crankshaft.

Removing the Crankshaft Bearings

NOTE: 10 minutes is required to heat up a new bearing for its installation, To save time, it is recommended to start the heating process prior to bearing removal operation. See procedure further.

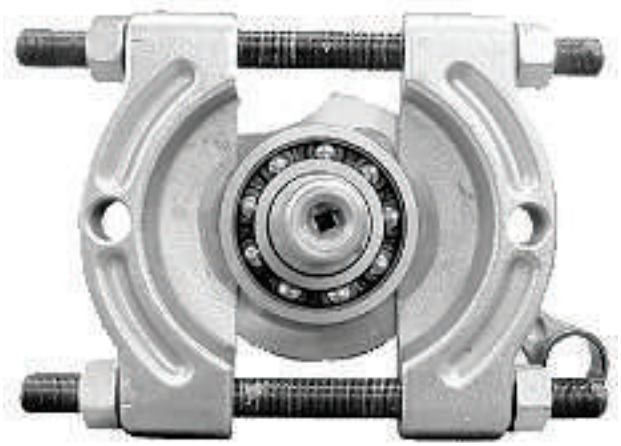
MAG Side

1. Remove and discard oil seal.



TYPICAL

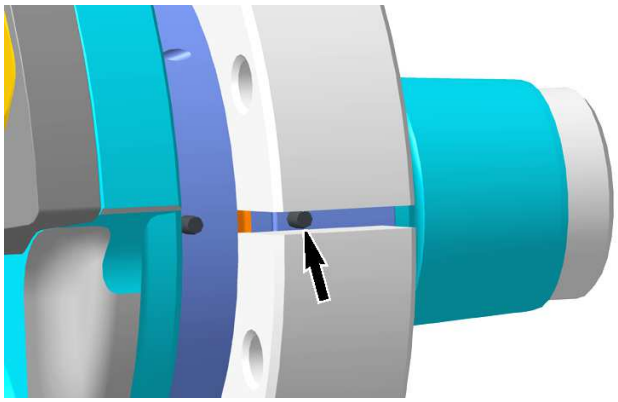
NOTE: In case of a damaged bearing or reduced clearance between crankshaft counterbalance and bearing, or on MAG side bearing, use a bearing separator to facilitate removal.



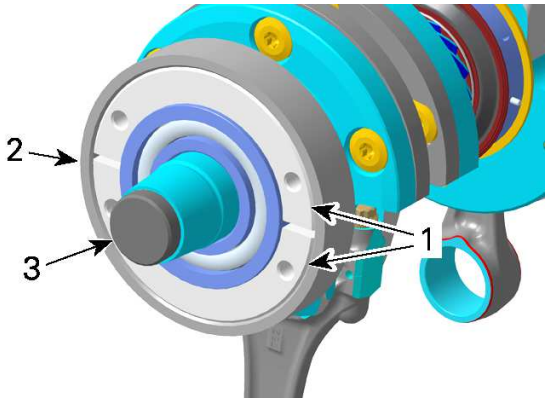
2. Install half rings and puller ring on the outer bearing race.

Half-rings (P/N 420977475)	
Puller ring (P/N 420977490)	
Crankshaft protector (P/N 529036434)	

3. Ensure to position bearing pin between half ring gap.



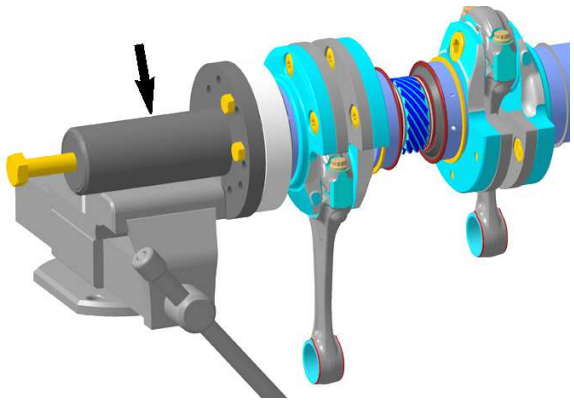
TYPICAL - MAG SIDE



TYPICAL - MAG SIDE
1. *Half rings*
2. *Puller ring*
3. *Crankshaft protector*

Crankshaft bearing puller (P/N 529036004)	

4. Secure the bearing puller in a vise at its rib.



TYPICAL - BEARING PULLER SECURED IN THE VISE

NOTICE

Never use any air impact tool for tightening the puller bolt. Lubricate the bolt to avoid damaging the threads.

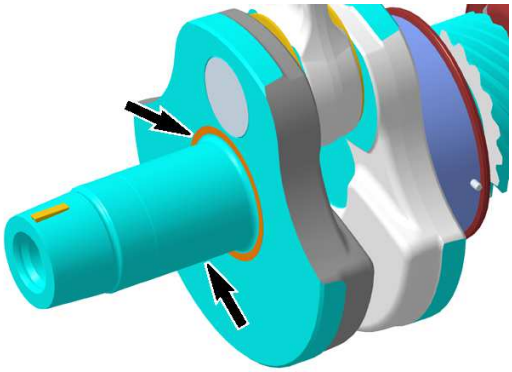
Lubricant and anti-corrosive

5. Screw in the puller bolt until the bearings come out.
6. Repeat same procedure to remove inner bearing.
7. Discard ball bearings.
8. ***PTO Side***
9. Repeat steps for PTO bearings. Pay attention to the following.

Half-rings (P/N 420977479)	
Puller ring (P/N 420977490)	
Crankshaft protector (P/N 529036434)	

Installing the Crankshaft Bearings

1. Inspect crankshaft ends for damage.
2. Clean crankshaft ends with sand paper no. 400 to remove possible seal marks and debris.



3. Remove all residue.

Clutch and pulley flange cleaner PRO S1

Heating the Bearing

1. Heat up the bearing(s) to ease installation.
2. If required put a suitable plate or shim between integrated seal and the heating surface to avoid direct contact.

Bearing heater (P/N 529035969)	

NOTICE

Bearing(s) should not be heated to more than 80 °C (176 °F). Do not heat bearing(s) with direct flame, or with a heat gun or soaked in a heated oil bath. Inappropriate bearing(s) heating may result in cage failure.

3. For even heat distribution, turn bearing several times during heating process.

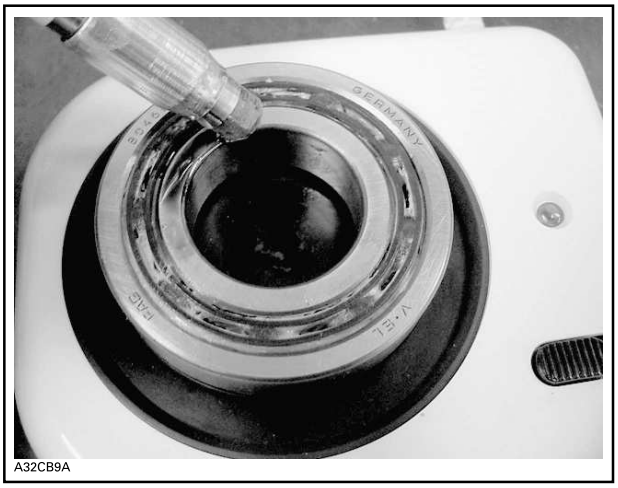
NOTE: Two bearings can be heated at the same time on one bearing heater.



1. Bearings

4. Probe the side of the inner race of the bearing with a temperature indicator stick. Stick will liquefy when the bearing reaches the proper temperature.

Temperature indicator stick (P/N 529035970)	


A32CB9A

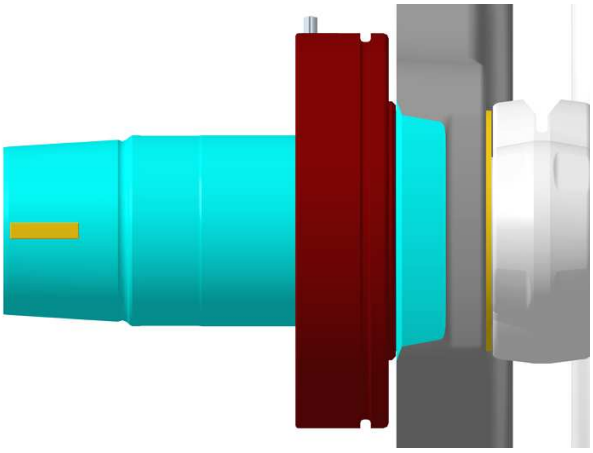
NOTICE

Never reinstall a bearing that has been removed.

MAG Side Bearings

1. Slide the inner MAG bearing on crankshaft until it bottoms on crank web.

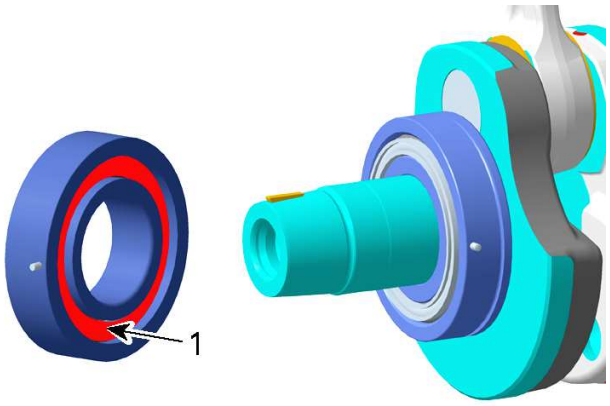
NOTE: The locating pin has to be positioned outwards.



NOTE: Heated bearing should slide easily onto the crankshaft. If required, push with a steel tube on the inner race of the bearing.

2. With a syringe, fill inner side of outer ball bearing with 6 ml (.2 fl oz (US)) of grease.

Isoflex grease Topas NB 52



1. Apply grease here

NOTICE

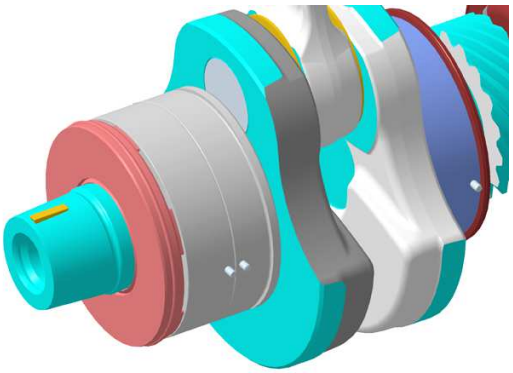
Use only the recommended service product. Do not exceed the recommended amount of grease.

3. Slide the outer bearing on crankshaft until it sits on inner bearing.

NOTE: The locating pin has to be positioned inbound.

4. Lubricate oil seal sealing lip and slide it on crankshaft until it sits on outer bearing.

Petamo grease GHY 133N

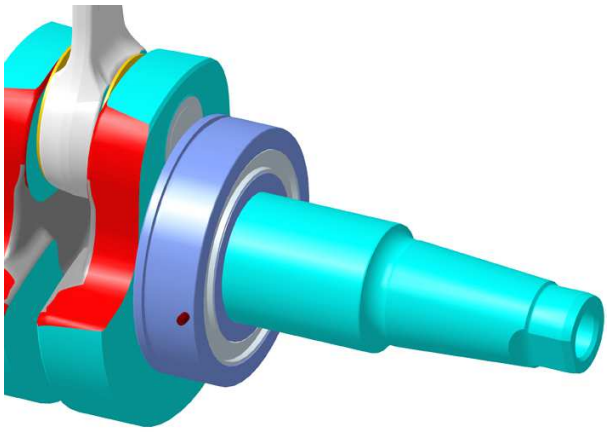


MAG SIDE

PTO Side Bearings

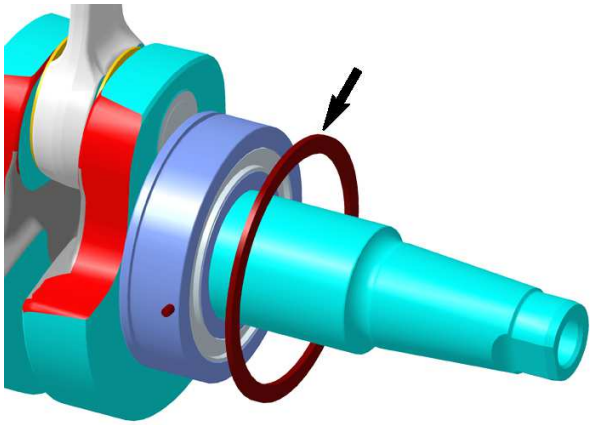
1. Slide the inner PTO bearing on crankshaft until it bottoms on crank web.

NOTE: The locating pin has to be positioned outwards.

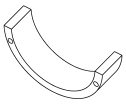


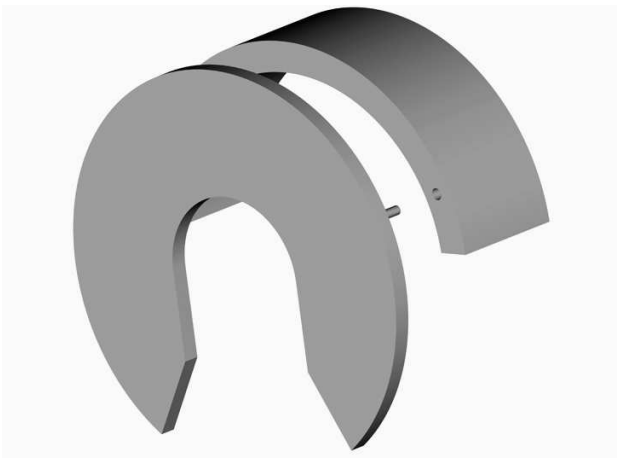
NOTE: Heated bearing should slide easily onto the crankshaft. If required, push with a steel tube on the inner race of the bearing.

2. Install the retaining disc.

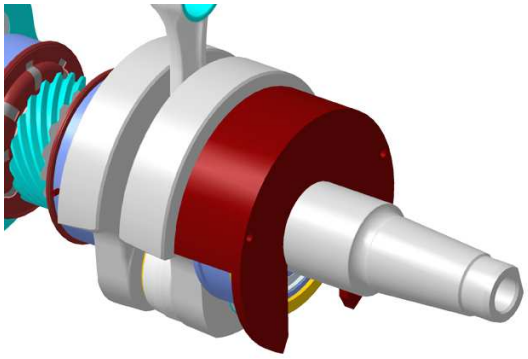


3. Install support plate with distance gauge.

Support plate (P/N 529035976)	
Crankshaft distance gauge (P/N 529036453)	



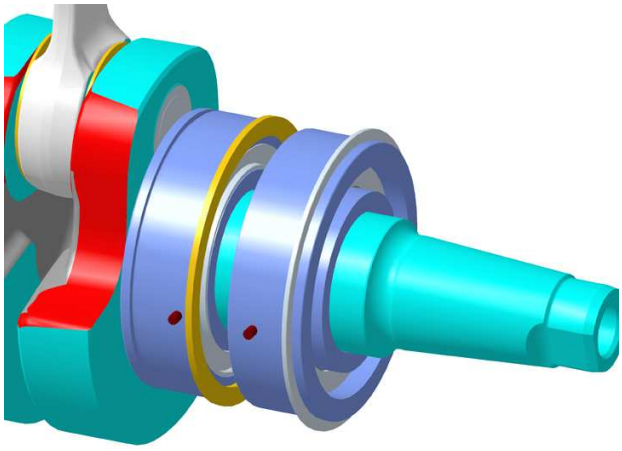
4. Install bearing locator.



5. Slide heated outer PTO bearing on crankshaft until it sits on distance gauge.

NOTE: The locating pin has to be positioned inbound.

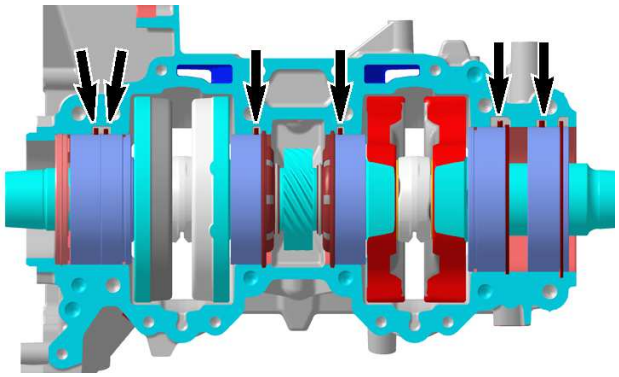
6. Remove bearing locator tool.



PTO SIDE

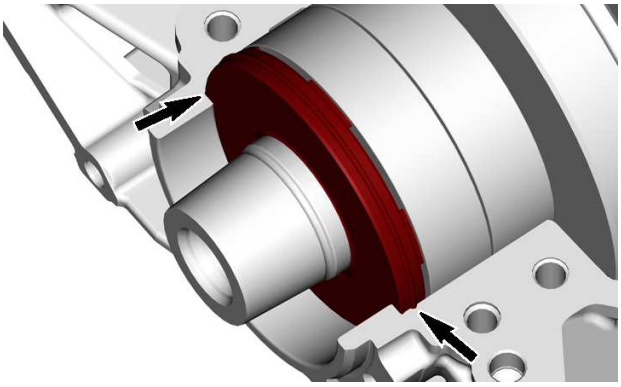
Installing the Crankshaft

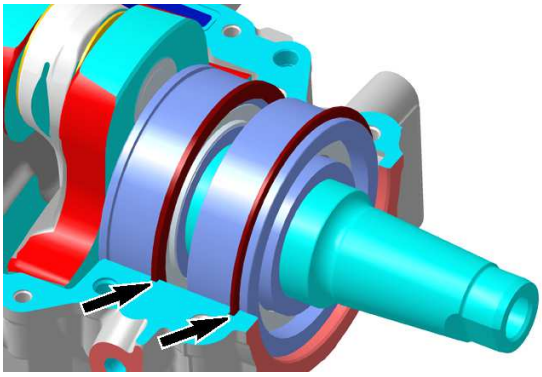
1. Position locating pins in their recess as illustrated.



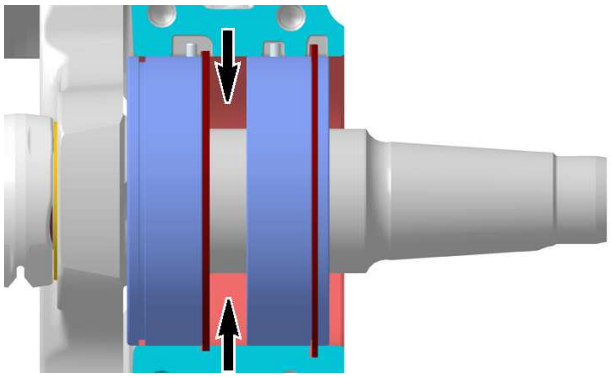
2. Pay attention to properly locate oil seals and retaining disc in their designated groove.

Isoflex grease Topas NB 52
Petamo grease GHY 133N

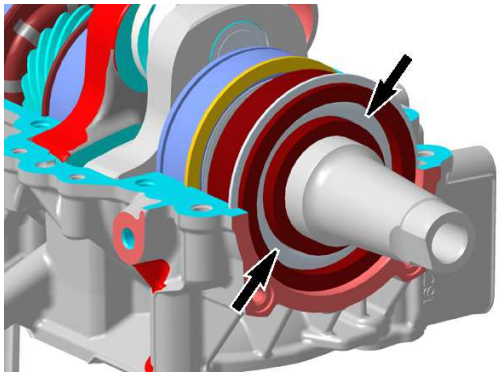




With a syringe, fill room between inner and outer ball bearing and outer side of outer ball bearing with 35 ml (1.2 fl oz(US)) of grease.



FILL WITH 30ML

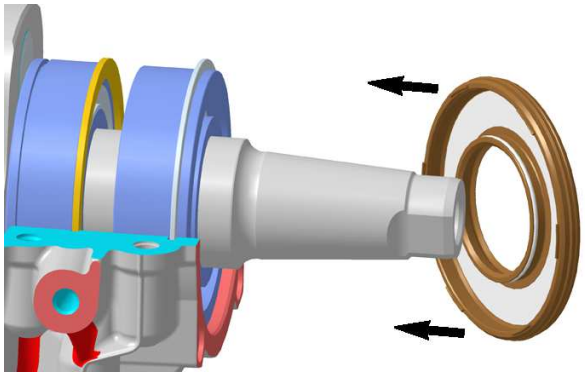


FILL WITH 5ML

NOTICE

Use only the recommended service product. Do not exceed the recommended amount of grease.

Lubricate oil seal sealing lip and slide it on crankshaft until it sits on outer bearing.



Bottom End – 850 E-TEC

SERVICE TOOLS

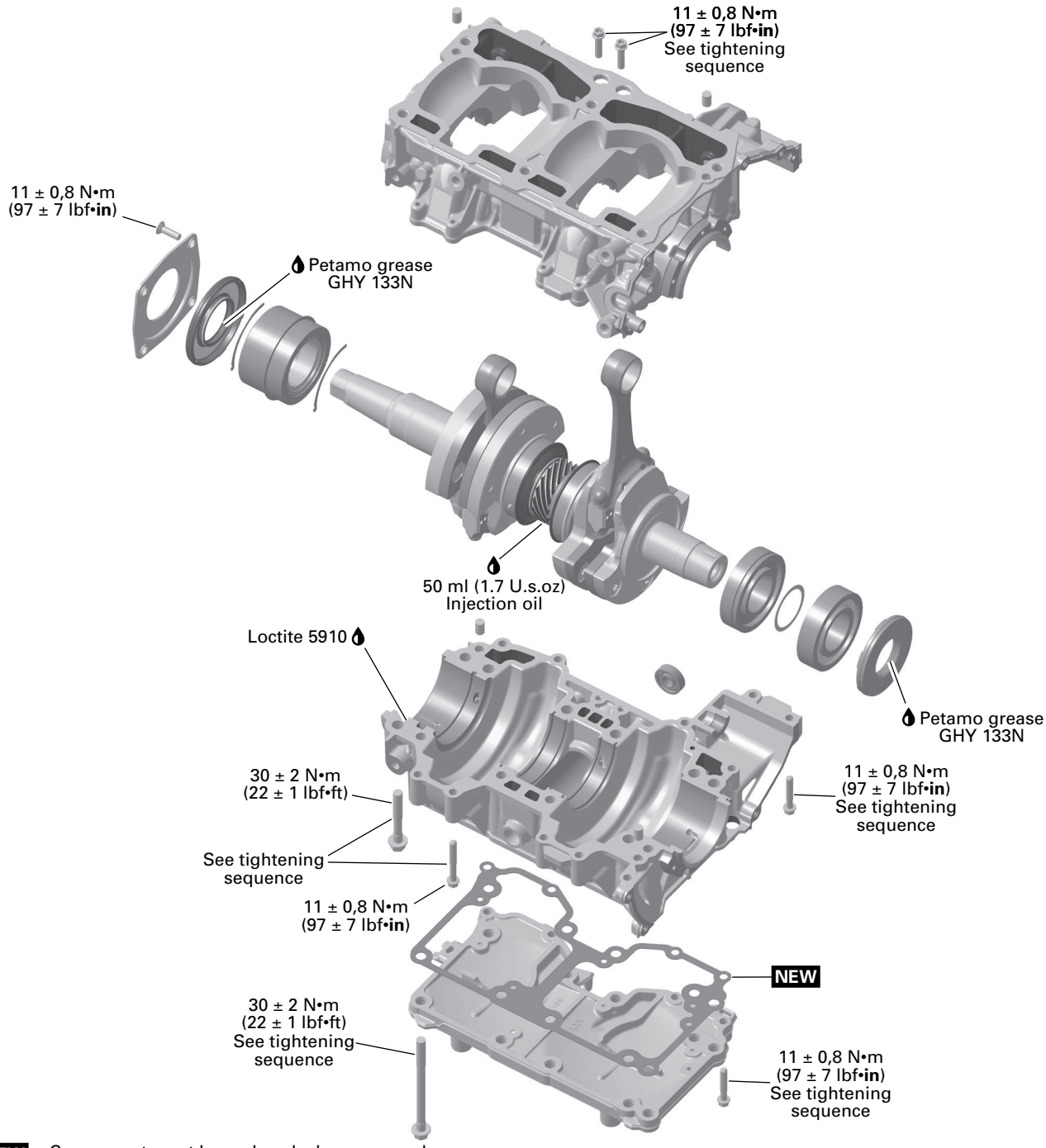
Description	Part Number	Page
BEARING HEATER	(P/N 529035969)	145
CRANKSHAFT BEARING PULLER	(P/N 529036004)	144
CRANKSHAFT PROTECTOR	(P/N 529036434)	143
DEGREE WHEEL	(P/N 529035607)	143
DIAL GAUGE ADAPTER	(P/N 529036443)	141
DISTANCE GAUGE	(P/N 529036415)	146
HALF-RING	(P/N 529036414)	143
PULLER RING	(P/N 420977490)	143
TEMPERATURE INDICATOR STICK	(P/N 529035970)	145
WATER PUMP BEARING PUNCH	(P/N 529036417)	139

SERVICE TOOLS — OTHER SUPPLIER

Description	Part Number	Page
DIAL GAUGE		142
FEELER GAUGE		143
MAGNETIC-BASE DIAL GAUGE HOLDER		142

SERVICE PRODUCTS

Description	Part Number	Page
CLUTCH AND PULLEY FLANGE CLEANER PRO S1		145
LOCTITE 5910		140
LOCTITE CHISEL (GASKET REMOVER)		139
LUBRICANT AND ANTI-CORROSIVE		144
PETAMO GREASE GHY 133N		146, 148



NEW = Component must be replaced when removed.

General

Engine removal is required to repair bottom end.

All oil seals and gaskets must be discarded and replaced with new ones when crankcase is split.

Clean all metal components in a non-ferrous metal cleaner.

During the assembly or the installation:

- Use torque values and service products as shown in the exploded view.
- Clean threads before applying a threadlocker. Refer to the *Introduction* subsection.

⚠ WARNING

Torque wrench tightening specifications must be strictly adhered to.
Locking devices when removed (e.g.: locking tabs, elastic stop nuts, self-locking fasteners, cotter pins, etc.) must be replaced with new ones.

NOTICE

Hoses, cables and locking ties removed during a procedure must be reinstalled as per factory standards.

⚠ WARNING

Always disconnect the magneto connector prior to:

- **Disconnecting any fuel hose.**
- **Removing a fuel injector.**
- **Removing a spark plug cable or spark plug.**

Otherwise, if the engine is cranked, fuel vapors may ignite in presence of a spark creating a fire hazard.

Engine Break-In

NOTICE

After a repair involving major parts replacement, a break-in period must be observed. Follow *OPERATOR'S GUIDE* recommendation relating to break-in.

To reactivate the break-in period, use the BRP diagnostic software (BUDS2).

In BUDS2, go to:

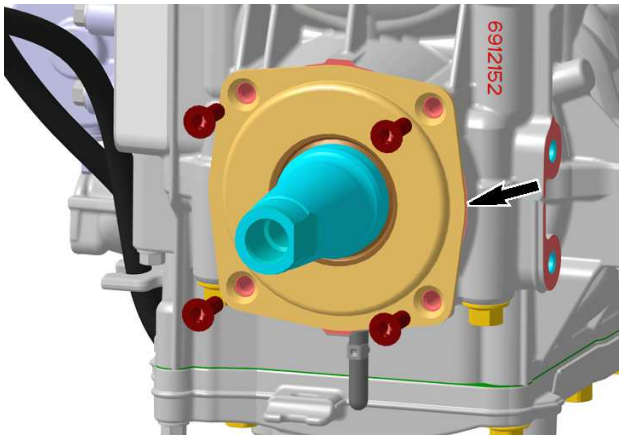
- **Settings** page
- **Vehicle** button
- **Settings** tab
- **Initialization - Restart Break In**.

Procedures

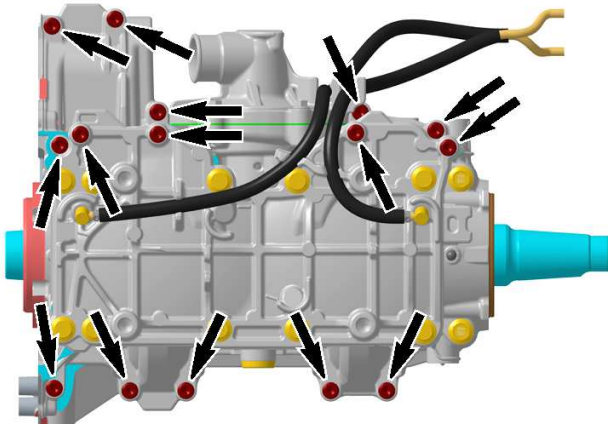
Crankcase

Disassembling the Crankcase

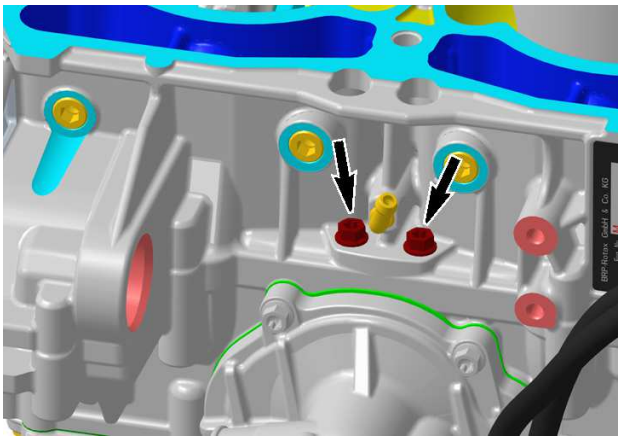
1. Remove engine from vehicle. Refer to *Engine Removal and Installation* subsection.
2. Refer to *Top End* subsection to remove:
   - Cylinder head
   - Cylinder block
   - Pistons.
3. Refer to *Magneto and Starter* subsection to remove:
   - Stator
   - Magneto housing
   - Starter drive
   - Starter.
4. Remove drive pulley. Refer to *Drive Pulley* subsection.
5. Remove PTO oil seal cover.



6. Remove engine front supports.
7. Remove M6 crankcase screws.

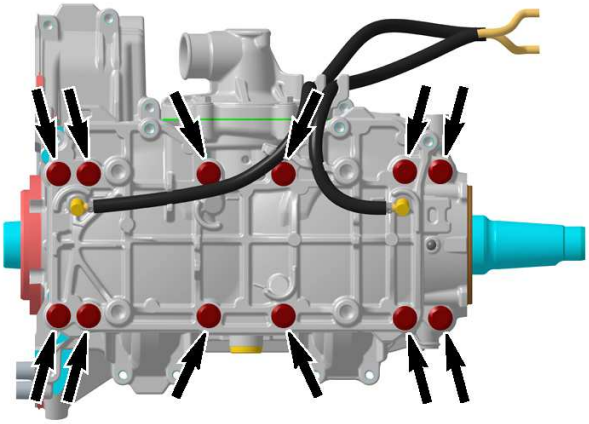


TYPICAL - M6 CRANKCASE SCREWS - BOTTOM SIDE



M6 CRANKCASE SCREW - WATER PUMP SIDE

8. Remove M8 crankcase screws.

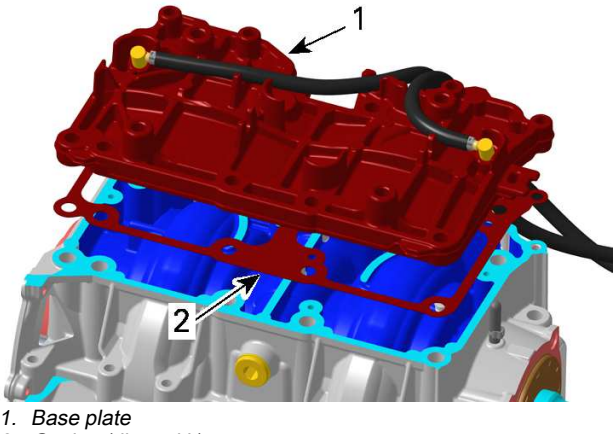


TYPICAL - BASE PLATE RETAINING SCREWS

9. Remove base plate and discard gasket.

NOTICE

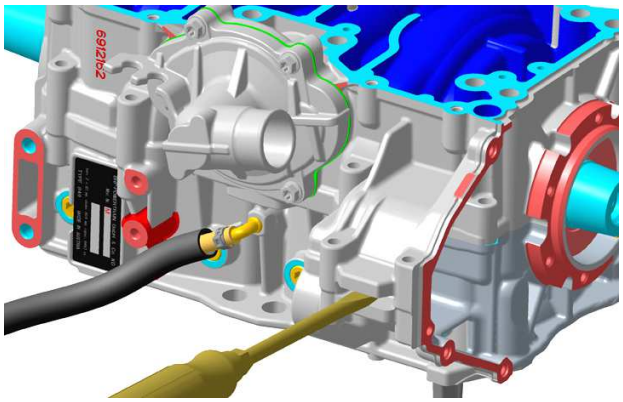
Whenever base plate is removed, crankcase must be opened, cleaned, and resealed.



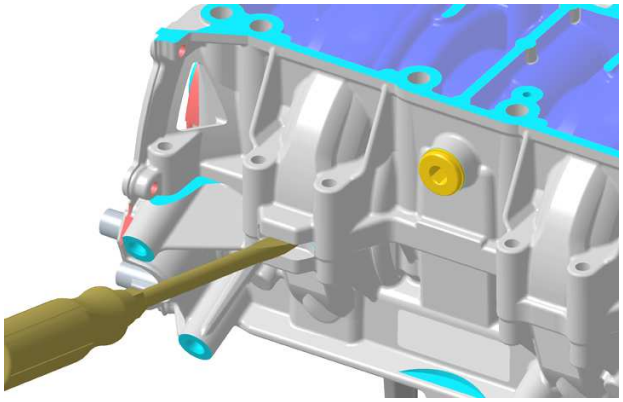
1. *Base plate*
2. *Gasket (discard it)*

10. Split crankcase.

NOTE: To prevent damage to crankcase mating surfaces, use prying lugs to “unstick” crankcase.



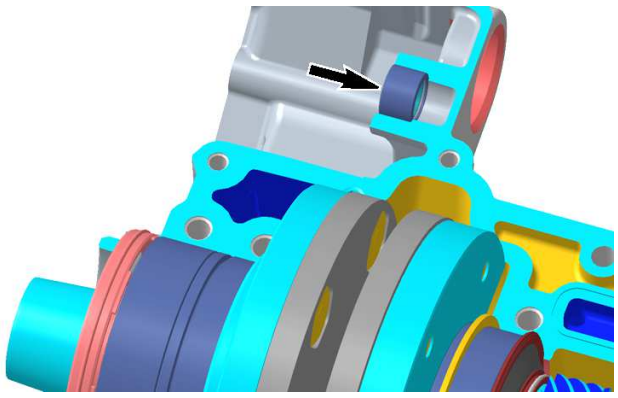
TYPICAL - PRYING LUGS



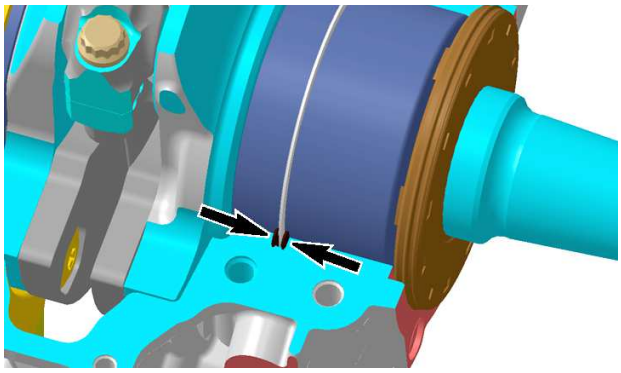
PRYING LUGS

11. Remove:

- Starter drive needle bearing
- Crankshaft assembly
- Shims.



STARTER DRIVE NEEDLE BEARING



SHIMS

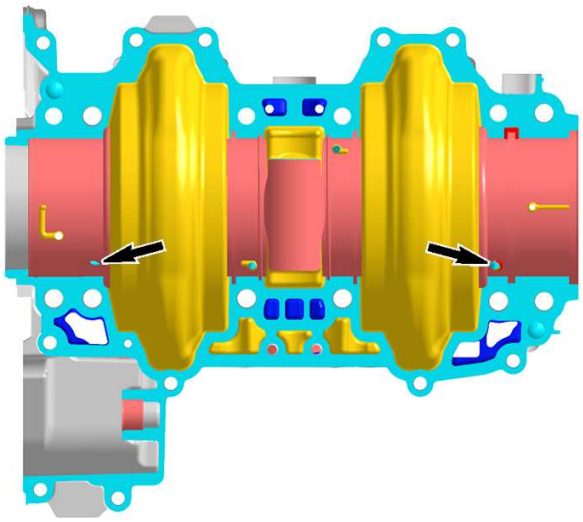
Cleaning the Crankcase and Base Plate

1. Clean all metal components in a non-ferrous metal cleaner.

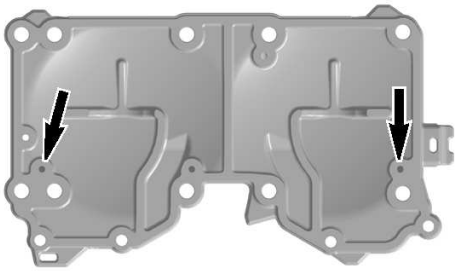
Loctite chisel (gasket remover)

NOTICE
Never use a sharp object to remove sealant as score marks incurred are harmful to crankcase sealing.

2. Blow out the oil orifices using compressed air and make sure they are not clogged.



OIL BORES IN CRANKCASE LOWER PART



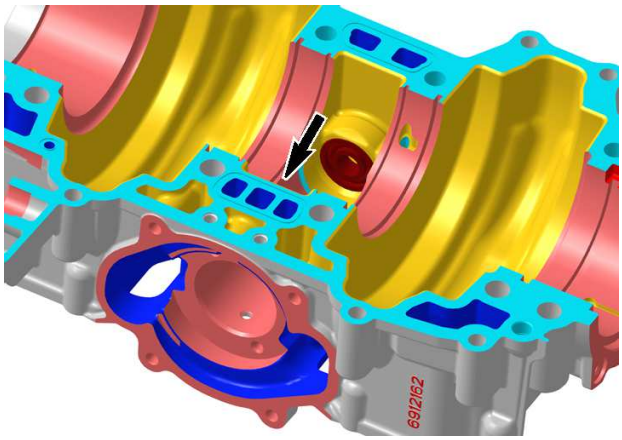
OIL BORES IN BASE PLATE

Inspecting the Crankcase and Base Plate

Check crankcase and base plate for cracks or other damages. Replace if necessary.

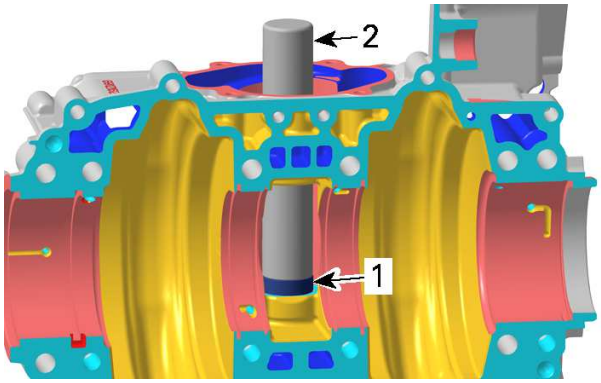
Water Pump Bearing Replacement

1. Use a suitable punch to push ball bearing out of crankcase.



2. Install **NEW** ball bearing.

Water pump bearing punch (P/N 529036417)	



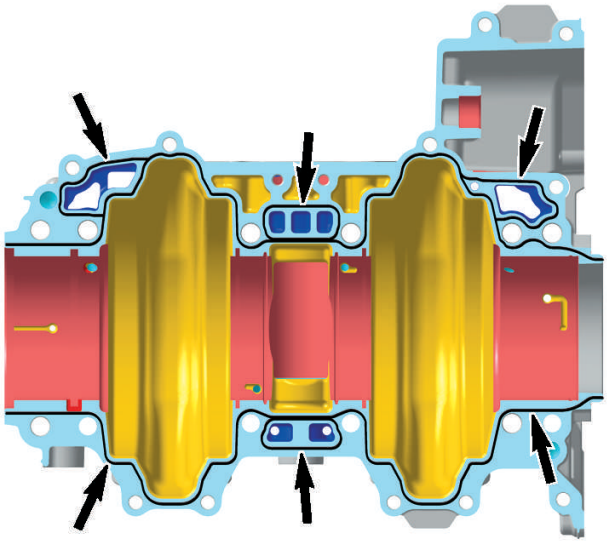
1. *Ball bearing*
2. *Water pump bearing punch*

Assembling the Crankcase

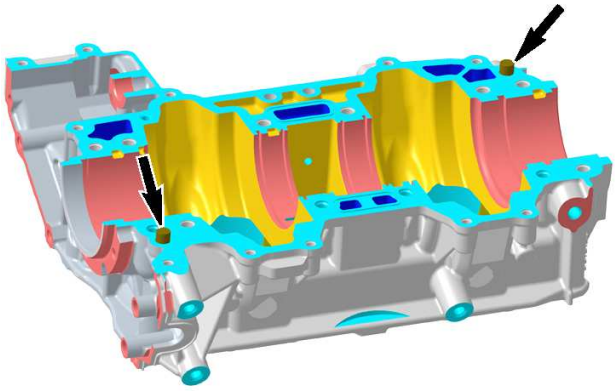
1. Install crankshaft in upper crankcase. See *Crankshaft* for procedure.
2. Install needle bushing in crankcase upper with the writing showing to the outside.
3. Apply sealant on lower crankcase as per following procedure.

Loctite 5910

NOTE: The total assembly sequence, including sealing compound application and crankcase torquing, must be performed within 10 minutes.

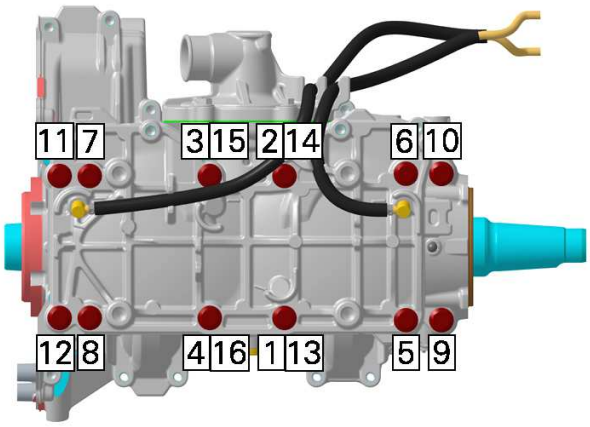


4. Ensure dowel pins are in their holes.



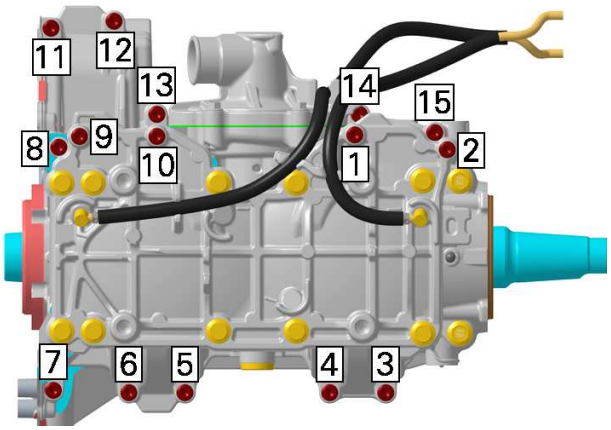
5. Assemble crankcase lower half.
6. Install base plate with **NEW** gasket.
7. Install crankcase screws.
8. Tighten crankcase screws to specification as per illustrated sequence.

Tightening Torque	
M8 Crankcase screws	30 ± 2 N·m (22 ± 1 lbf·ft)

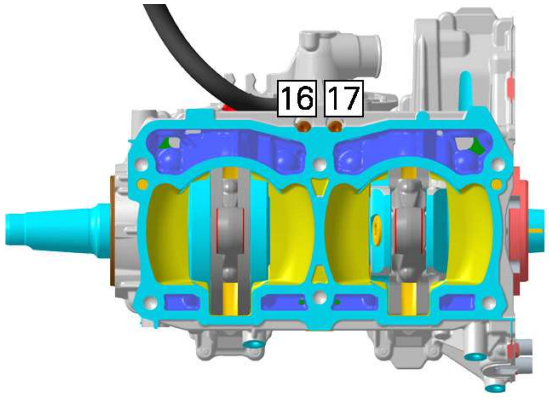


TYPICAL - TIGHTENING SEQUENCE - M8 CRANKCASE SCREWS

Tightening Torque	
M6 Crankcase screws	11 ± 0.8 N·m (97 ± 7 lbf·in)



TYPICAL - TIGHTENING SEQUENCE - BOTTOM VIEW



TYPICAL - TIGHTENING SEQUENCE- M6 CRANKCASE SCREWS - TOP VIEW

9. Install PTO oil seal cover.
10. Tighten oil seal cover to specification.

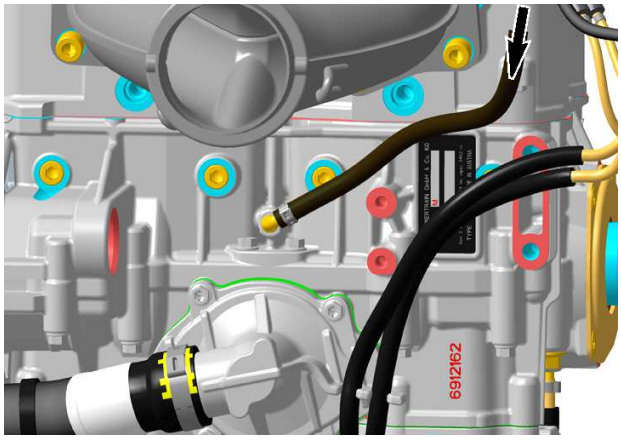
Tightening Torque	
Oil seal cover screws	11 ± 0.8 N•m (97 ± 7 lbf•in)

NOTE: It is recommended to test engine cooling system for leaks after engine assembly, before installation in vehicle. Refer to *Cooling System - Engine Components* subsection.

NOTE: It is recommended to always check the functionality of the check valves before installation in vehicle. Refer to *Check Valves and Fittings* in *Lubrication System* subsection.

11. Using a syringe, fill the water pump gear chamber with injection oil.

Injection oil (50 ml (1.7 fl oz(US)))



TYPICAL

Crankshaft

Removing the Crankshaft

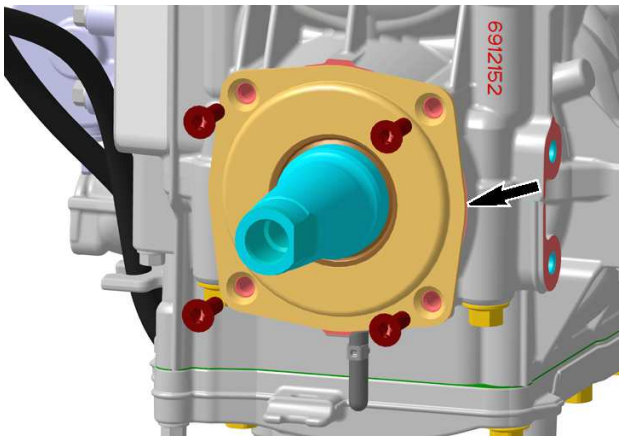
To remove crankshaft, use crankcase disassembly procedure.

Inspecting the Crankshaft

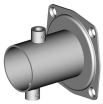
For crankshaft specifications refer to *Technical Specifications* subsection.

Crankshaft Deflection PTO side (Measuring in Crankcase)

1. Remove PTO oil seal cover.

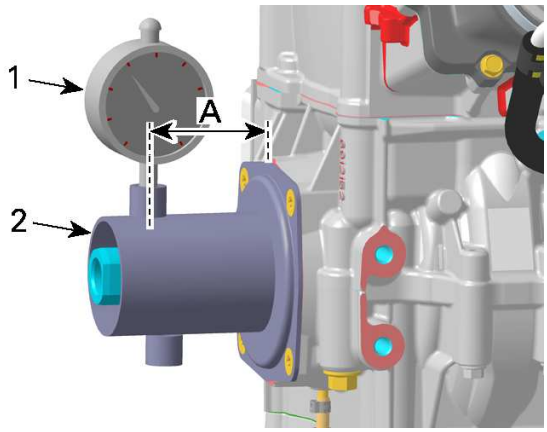


2. Install the dial gauge adapter.

Dial gauge adapter (P/N 529036443)	

Dial gauge	

NOTE: Ensure that the dial gauge tip is compressed at least for 2 mm (.079 in) (2 full rotations of the dial gauge needle).

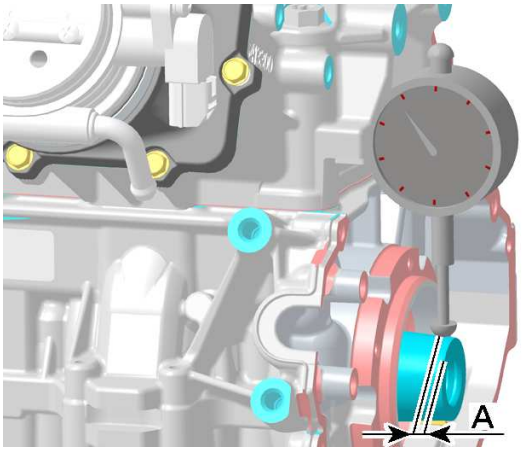


1. Dial gauge
2. Dial gauge adapter
A. 56 mm (2.2 in)

Crankshaft Deflection PTO Side	
Service limit	0.08 mm (.0031 in)

3. If deflection exceeds the specified tolerance, recheck deflection using V-shaped blocks to determine the defective part (s). See *Crankshaft Deflection (Measuring on Bench)*.

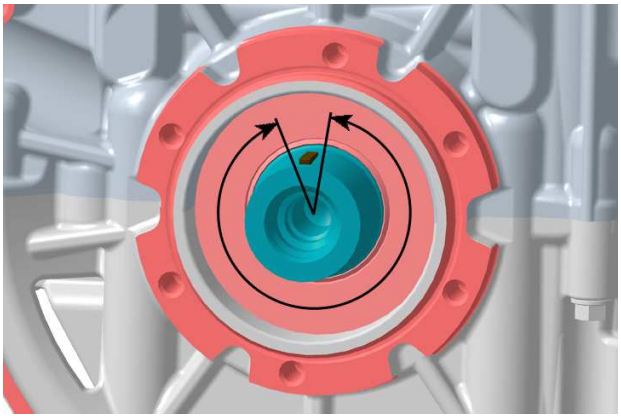
Crankshaft Deflection MAG Side (Measuring in Crankcase)



CRANKSHAFT MAG SIDE
A. 3 mm (.12 in)

1. Measure deflection circumferential excluding the Woodruff key.

Magnetic-base dial gauge holder	
Dial gauge	

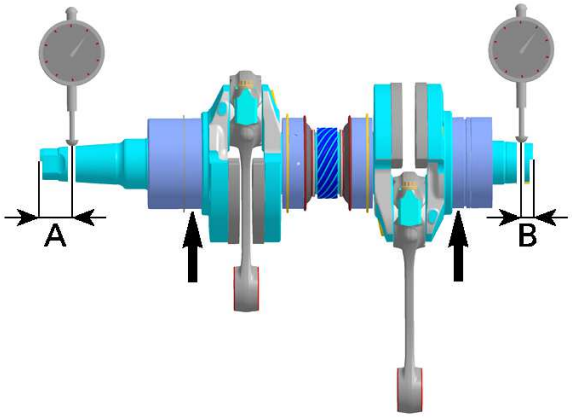


Crankshaft Deflection MAG Side	
Service limit	0.050 mm (.002 in)

2. If deflection exceeds the specified tolerance, recheck deflection using V-shaped blocks to determine the defective part (s). See *Crankshaft Deflection (Measuring on Bench)*.

Crankshaft Deflection (Measuring on Bench)

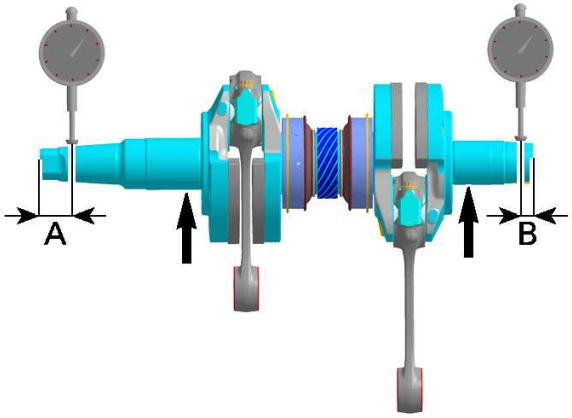
1. Once engine is disassembled, check crankshaft deflection on V-shaped blocks.



TYPICAL — V-SHAPED BLOCKS POSITION WITH BEARINGS
A. 17 mm (.67 in)
B. 3 mm (.12 in)

NOTE: Crankshaft deflection cannot be correctly measured between centers of a lathe.

2. If deflection exceeds the specified tolerance, it can be worn bearings or a bent crankshaft.
3. Remove crankshaft bearings and check deflection again on V-shaped blocks to determine the defective part(s).



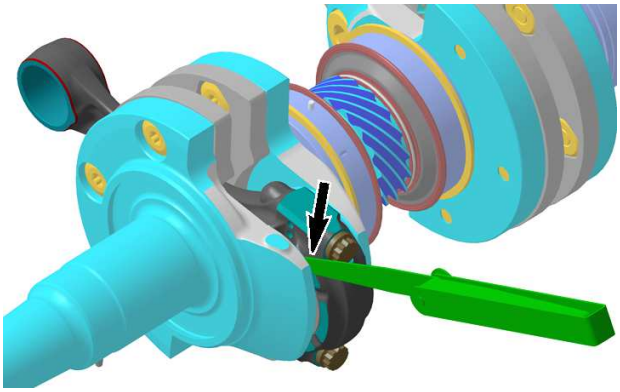
TYPICAL — V-SHAPED BLOCKS POSITION WITHOUT BEARINGS
A. 17 mm (.67 in)
B. 3 mm (.12 in)

4. If the deflection exceeds the specified tolerance, replace crankshaft.

Connecting Rod Big End Axial Play

1. Measure distance between connecting rod and crankshaft counterweight.

Feeler gauge	



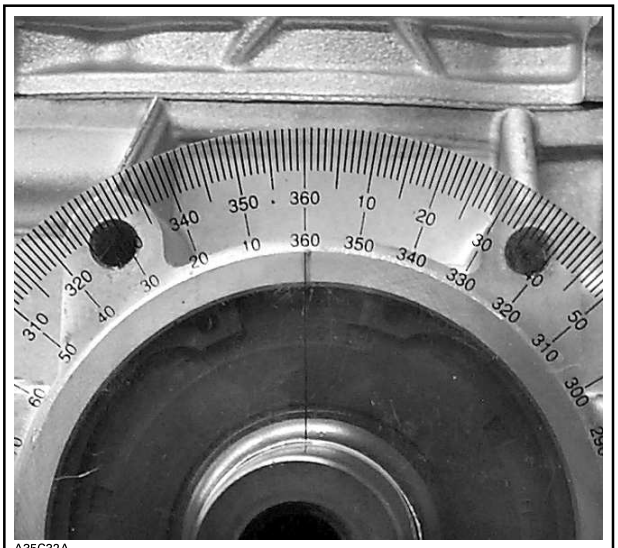
Connecting Rod Big End Axial Play	
New	0.152 to 0.352 mm (.006 to .0139 in)

2. If the distance exceeds specified tolerance, replace crankshaft.

Crankshaft Alignment

1. Remove injectors. Refer to *E-TEC Direct Fuel Injection* subsection.
2. Bring MAG piston at top dead center. Refer to *Ignition System* subsection.
3. Scribe a mark on crankcase (see illustration).
4. Install a degree wheel on crankshaft end so that 360° mark aligns with the mark on crankcase. Do not rotate crankshaft.

Degree wheel (P/N 529035607)	



A35C32A

5. Remove dial indicator and install it in spark plug hole on PTO side.
6. Bring PTO piston to top dead center. Degree wheel must rotate with crankshaft.
7. Interval between cylinders must be 180° ± 0.5.
8. Any other reading indicates a misaligned (twisted) crankshaft.

Removing the Crankshaft Bearing

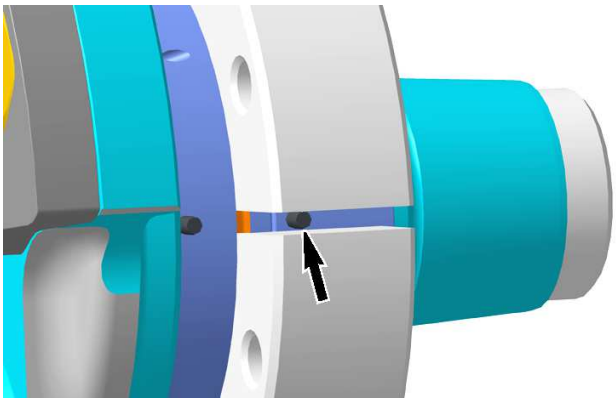
NOTE: 10 minutes is required to heat up a new bearing for its installation, To save time, it is recommended to start the heating process prior to bearing removal operation. See procedure further.

1. To remove MAG side bearings from crankshaft, install proper half rings and puller ring on the outer bearing race.
2. The roller bearing on PTO side has a sliding seat and can be removed without a tool.

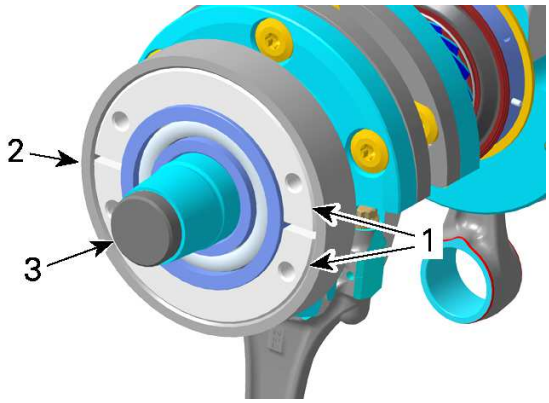
NOTE: Position tools in the groove of the inner bearing and pull out both bearings together.

Half-ring (P/N 529036414)	
Puller ring (P/N 420977490)	
Crankshaft protector (P/N 529036434)	

3. Ensure to position bearing pin between half ring gap.



MAG SIDE

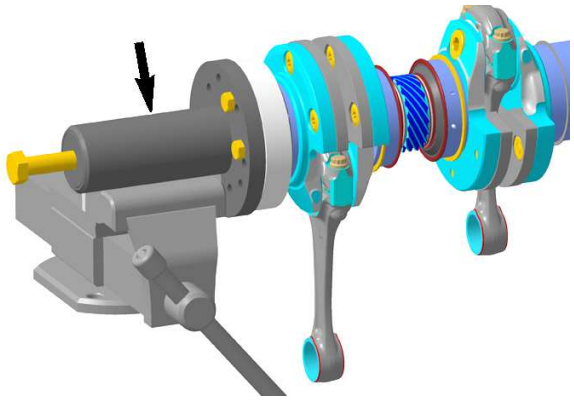


MAG SIDE
1. *Half rings*
2. *Puller ring*
3. *Crankshaft protector*

4. Install bearing puller on the half rings.

Crankshaft bearing puller (P/N 529036004)	

5. Secure the bearing puller in a vise at its rib.



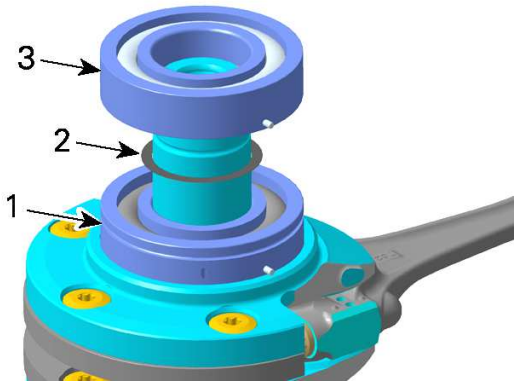
TYPICAL - BEARING PULLER SECURED IN THE VISE

NOTICE

Never use any air impact tool for tightening the puller bolt. Lubricate the bolt to avoid damaging the threads.

Lubricant and anti-corrosive

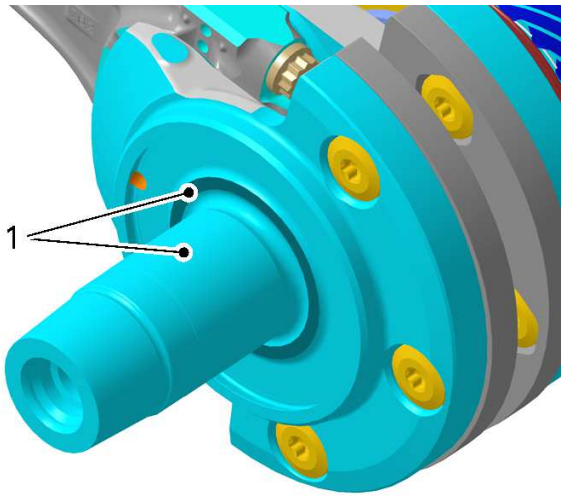
6. Screw in the puller bolt until the bearings come out.
7. During bearing removal take care not to lose the distance shim installed between inner and outer bearing.
8. Discard ball bearings.



MAG SIDE
1. *Inner bearing*
2. *Distance shim*
3. *Outer bearing*

Installing the Crankshaft Bearing

1. Inspect crankshaft ends for damage.
2. Clean crankshaft ends with sand paper no. 400 to remove possible seal marks and debris.



3. Remove all residue.

Clutch and pulley flange cleaner PRO S1

Heating the Bearing

1. Heat up the bearing(s) to ease installation.

Bearing heater (P/N 529035969)	

NOTICE

Bearing(s) should not be heated to more than 80 °C (176 °F). Do not heat bearing(s) with direct flame, or with a heat gun or soaked in a heated oil bath. Inappropriate bearing(s) heating may result in cage failure.

2. For even heat distribution, turn bearing several times during heating process.

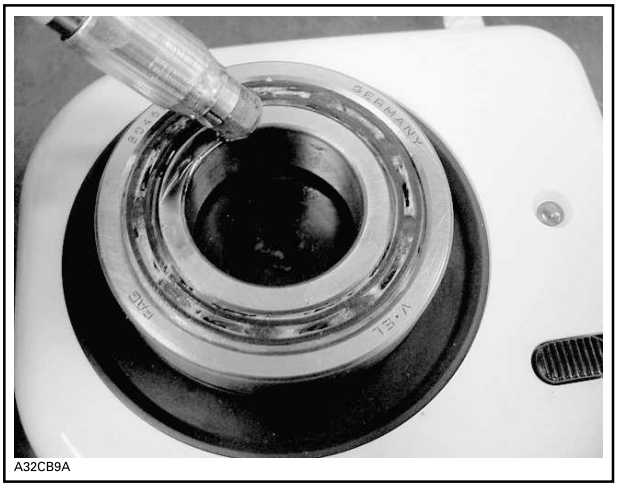
NOTE: Two bearings can be heated at the same time on one bearing heater.



1. Bearings

3. Probe the side of the inner race of the bearing with a temperature indicator stick. Stick will liquefy when the bearing reaches the proper temperature.

Temperature indicator stick (P/N 529035970)	

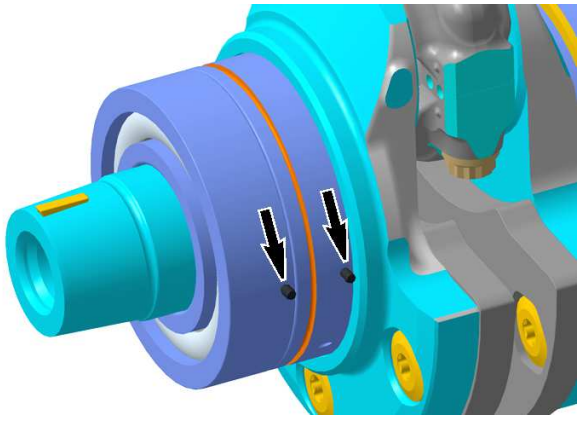


NOTICE

Never reinstall a bearing that has been removed.

MAG Side Bearings

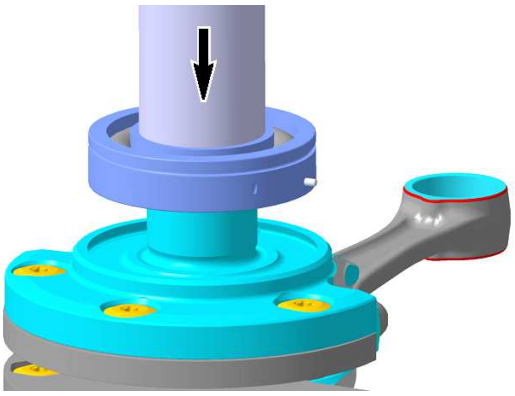
1. Install MAG bearings on crankshaft so that locating pins will be positioned as shown.



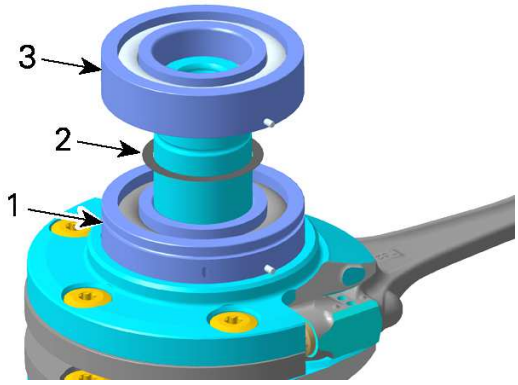
MAG SIDE

2. Slide the inner MAG bearing until it bottoms on crankshaft shoulder.

NOTE: Heated bearing should slide easily onto the crankshaft. If required, push with a steel tube on the inner race of the bearing.



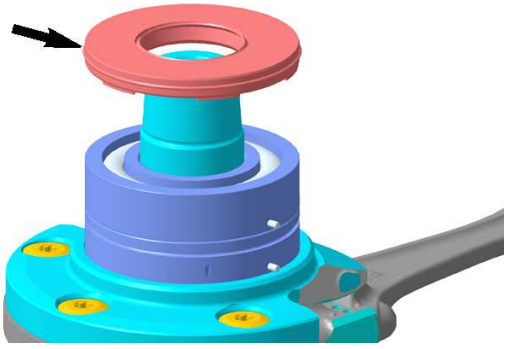
3. Put distance shim on inner MAG bearing.
4. Slide the outer bearing until it sits on distance shim.



MAG SIDE
1. *Inner bearing*
2. *Distance shim*
3. *Outer bearing*

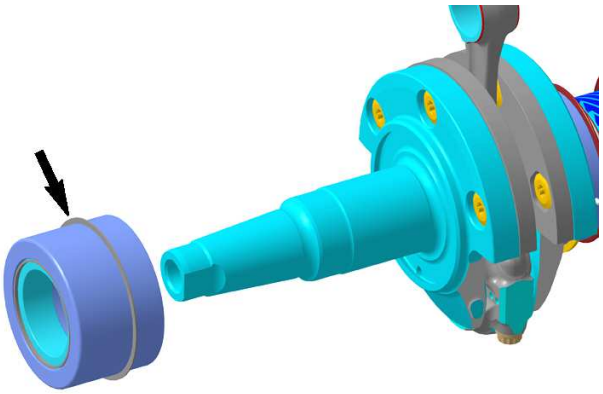
5. Lubricate oil seal sealing lip and slide it on crankshaft until it sits on outer bearing.

Petamo grease GHY 133N

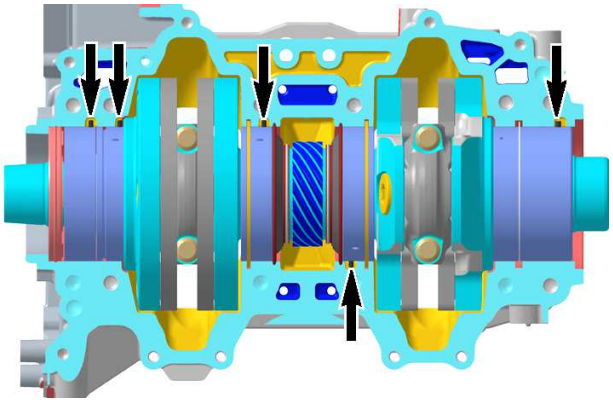


Installing the Crankshaft

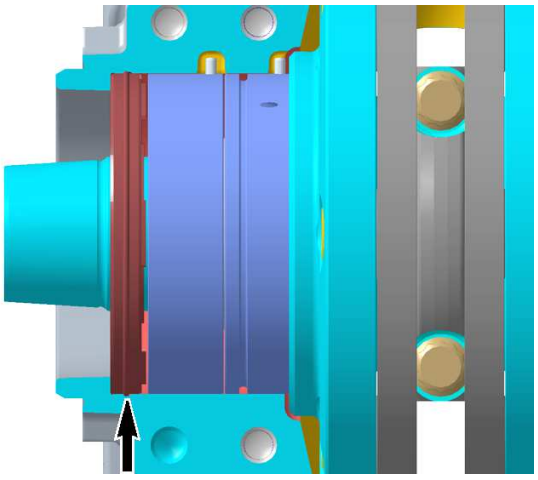
1. Slide cylinder roller bearing on crankshaft journal PTO side.



2. Position locating pins in their recess as illustrated.

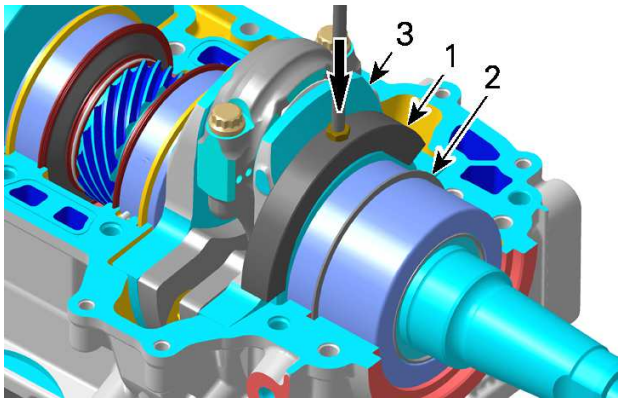


3. Pay attention to properly locate MAG seal in its groove.



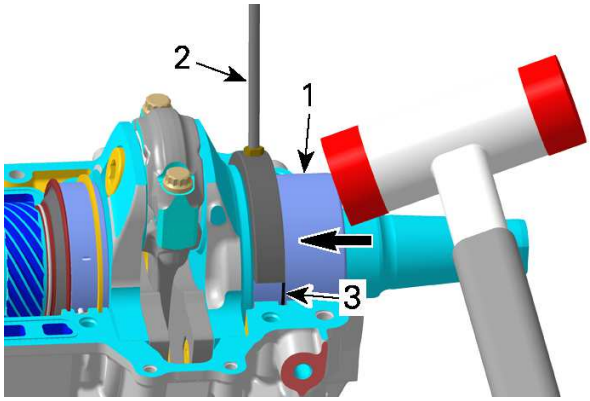
4. Place distance gauge between distance ring and crank web PTO.

Distance gauge (P/N 529036415)	



1. *Distance gauge*
2. *Distance ring*
3. *Crank web PTO*

5. Tap the cylinder roller bearing with a plastic hammer until the distance gauge is in contact with the distance ring and crank web.



1. *Roller bearing*
2. *Distance gauge*
3. *Distance ring*

6. Perform shimming procedure:

NOTICE

To achieve proper adjustment observe following rules:

- **A package of 3 shims must be installed.**
- **The complete package of the shims must achieve 3 mm (.12 in).**
- **Maximum 2 shims must be installed at any side beside the distance ring.**

Available Shims	
Shim Number	**Shim Thickness**
50	0.50 mm (.02 in)
75	0.75 mm (.03 in)
100	1.00 mm (.039 in)
125	1.25 mm (.049 in)
150	1.50 mm (.059 in)

EXAMPLE:

If right hand side of the distance ring shimming 50 + 150 is installed, on the left hand side the shim 100 must be installed.

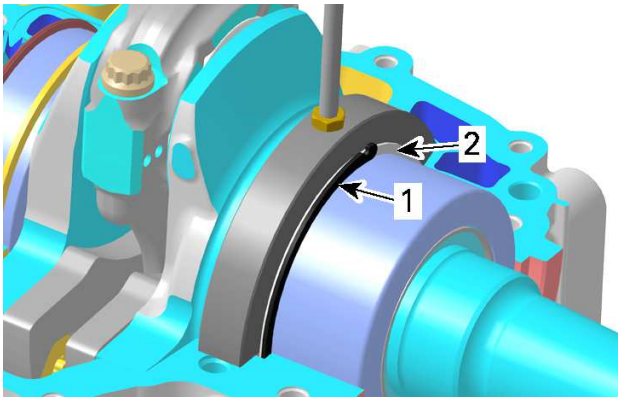
Shimming	
Right-Hand Side of Distance Ring	**Left-Hand Side of Distance Ring**
100 + 150	50
100 + 125	75
50 + 150	100
75 + 100	125
150	50 + 100
125	75 + 100
100	50 + 150
75	100 + 125
50	100 + 150

1. Try to install the thickest shimming right hand side of the distance ring.

NOTE: If the thickest shimming does not fit, try to install the next thinner shimming.

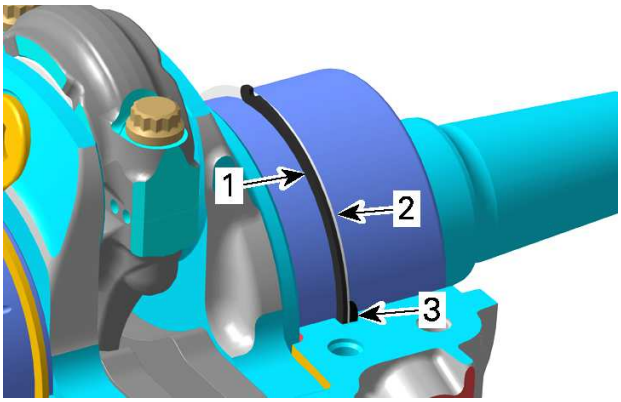
Shimming	
Right-Hand Side of Distance Ring	**Left-Hand Side of Distance Ring**
100 + 150	50
100 + 125	75
50 + 150	100
75 + 100	125
150	50 + 100
125	75 + 100
100	50 + 150

Shimming	
Right-Hand Side of Distance Ring	**Left-Hand Side of Distance Ring**
75	100 + 125
50	100 + 150



i. Shimming (right hand)
ii. Distance ring

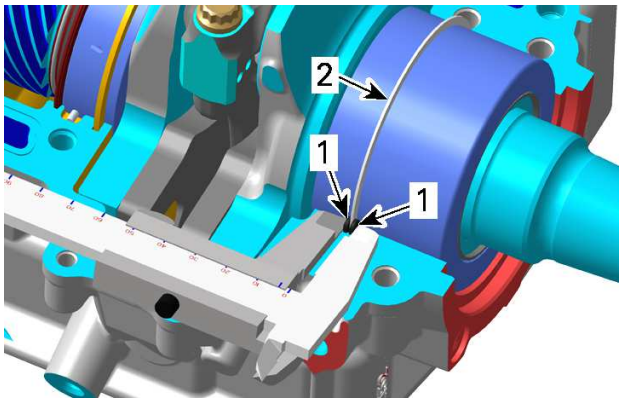
2. Remove the distance gauge carefully.
3. Install the proper shimming at left hand side of the distance ring.



i. Shimming (right hand)
ii. Shimming (left hand)
iii. Distance ring

7. Measure the width of the complete package (shims + distance ring).

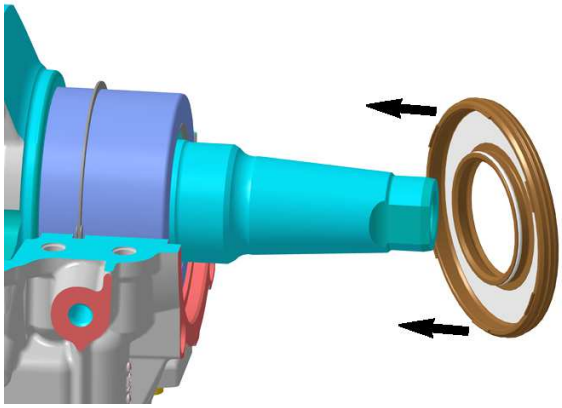
Minimum Width of the Package (shims + distance ring)
3.60 to 3.94 mm (.14 to .16 in)



1. Shims
2. Distance ring

8. Lubricate oil seal sealing lip and slide it on crankshaft until it sits on outer bearing.

Petamo grease GHY 133N



Turbocharger

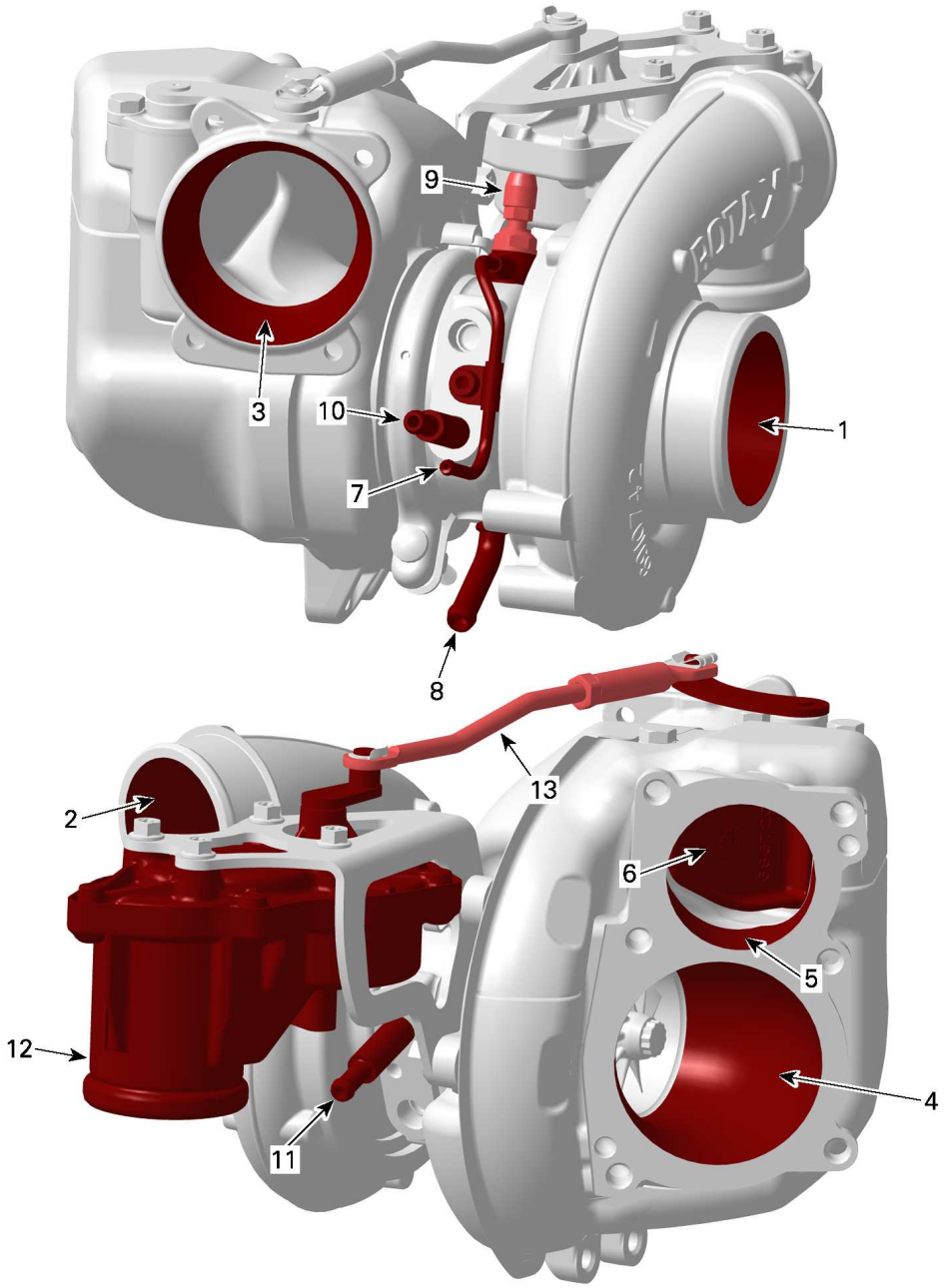
SERVICE TOOLS

Description	Part Number	Page
SMALL HOSE PINCHER	(P/N 295000076)	157, 162

SERVICE PRODUCTS

Description	Part Number	Page
LOCTITE 243 (BLUE)		158, 167

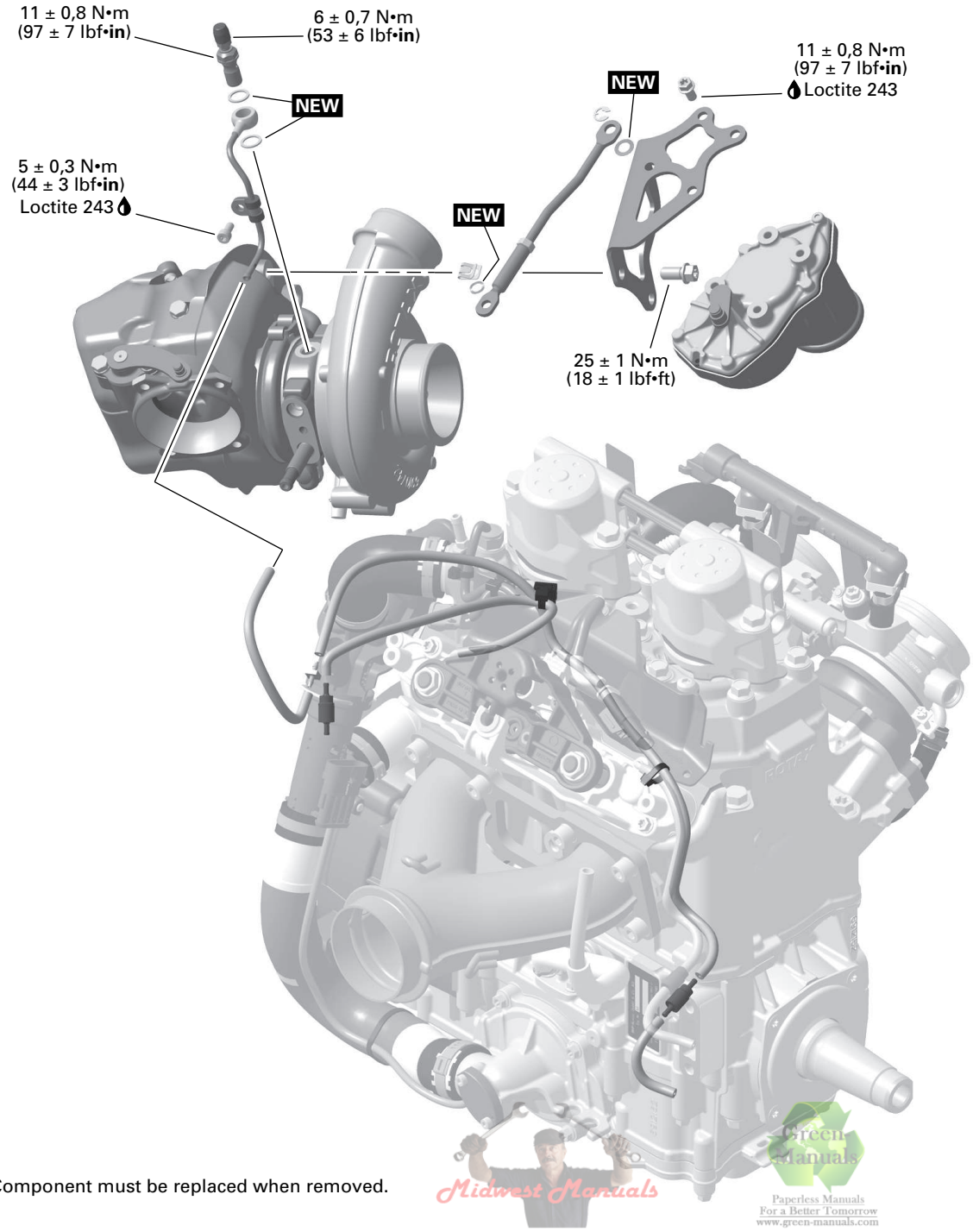
Turbocharger



1. Compressor inlet
2. Compressor outlet
3. Turbine inlet
4. Turbine outlet
5. Turbine bypass
6. Waste gate
7. Pressure oil in
8. Oil out
9. Bleeding nipple
10. Cooling inlet
11. Cooling outlet
12. Waste gate actuator
13. Waste gate rod

T

Turbocharger



NEW = Component must be replaced when removed.

Midwest Manuals
Green Manuals
Paperless Manuals
For a Better Tomorrow
www.green-manuals.com
If you bought this manual from any other seller please leave them
NEGATIVE feedback and notify us at bestshopmanuals@gmail.com

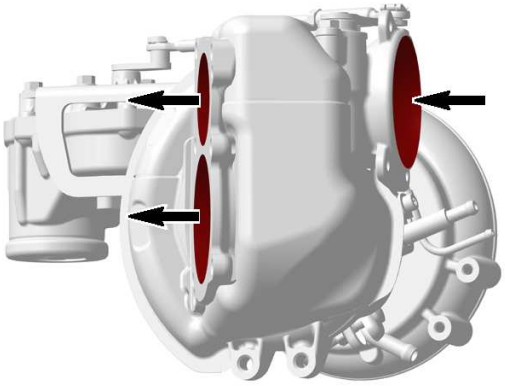
General

Turbocharger

Turbine

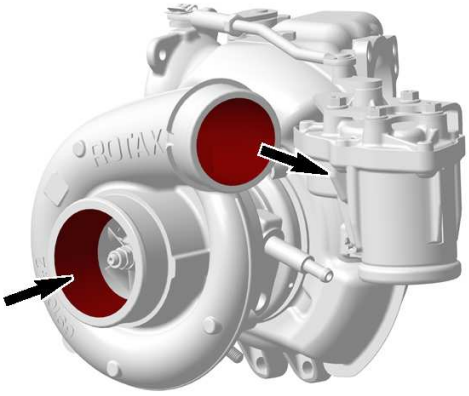
The exhaust gases cause the turbine wheel to spin and accelerate. The gases then exit through the turbine outlet and the turbine bypass towards the muffler.

The turbine wheel drives the compressor wheel through the rotor shaft. When the turbine wheel is spinning, the compressor wheel is spinning at the same speed.



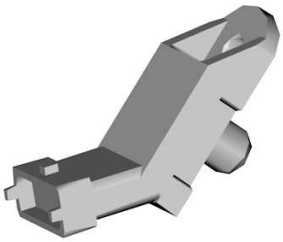
Compressor

The compressor wheel spinning causes filtered air to enter through the compressor inlet. The air is then compressed and exits through the compressor outlet.



Exhaust Pressure Sensor (EPS)

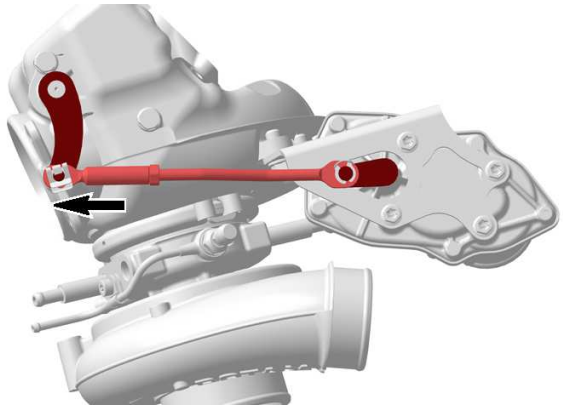
To ensure optimal engine operation in all conditions, the ECM system requires 2 pressure sensors: The EPS and the MAPTS. The MAPTS measures the air pressure upstream the throttle plate and the EPS measures the pressure downstream the throttle plate.



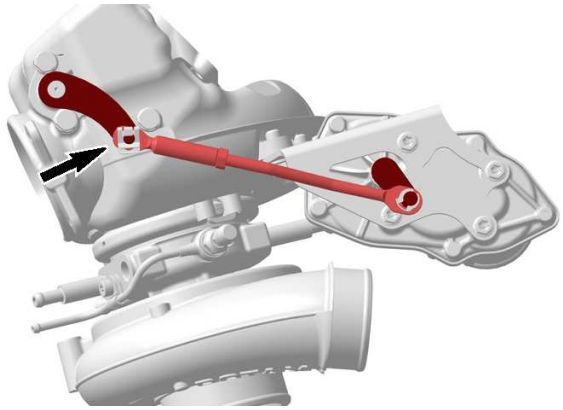
Refer to *Exhaust System* subsection for testing and replacement.

Waste Gate Actuator (WGA)

The WGA controls the waste gate. The ECM uses the waste gate actuator internal position sensor to adjust the waste gate position.



WASTE GATE CLOSED



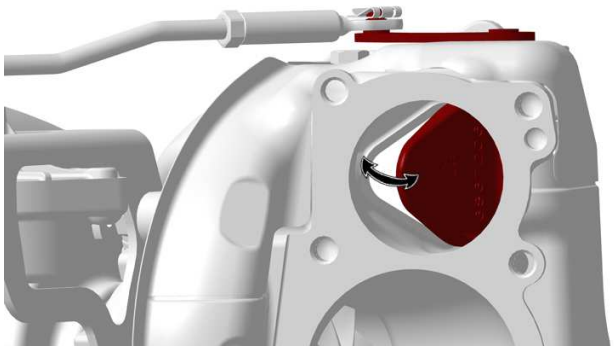
WASTE GATE OPEN

NOTE: A WGA malfunction will activate Limp Home Mode.

Refer to *Waste Gate Actuator* in this subsection for testing, setting and replacement.

Waste Gate

The waste gate regulates turbine speed by allowing exhaust gas to bypass the turbine.

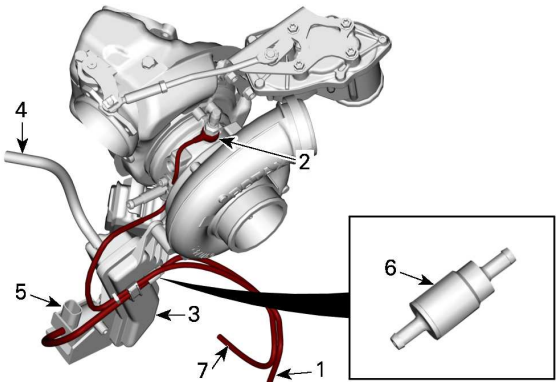


Turbocharger Oil Catch Tank and Oil Pump

The turbocharger is lubricated with injection oil provided by the injection oil system.

On the oil supplying line, the turbocharger oil inlet is positioned between the main oil pump and the MAG side RAVE valve impulse fitting.

When passing through the turbocharger, the oil temperature increase and mixes with small amount of exhaust gazes. The oil and gazes mixture is separated in the oil catch tank. A vent allows oil vapor and pressure to exit the circuit. Then, the turbo oil pump pushes the oil to the MAG side RAVE valve.



1. *From injection oil pump*
2. *Turbocharger oil inlet*
3. *Oil catch tank*
4. *Oil catch tank vent*
5. *Turbo oil pump*
6. *Check valve*
7. *To MAG side RAVE valve*

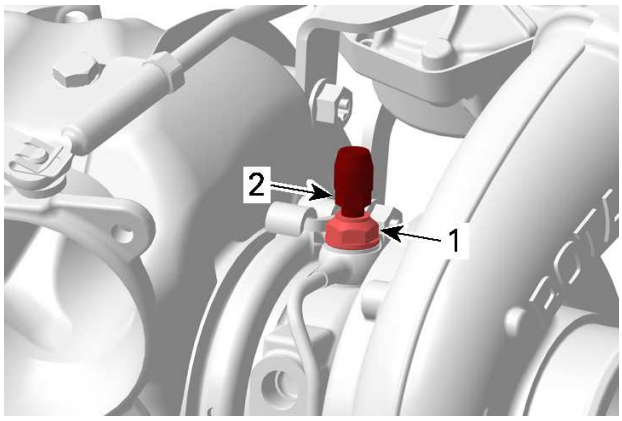
Waste Gate Rod

NEW turbocharger assembly are factory adjusted. Do not try to adjust the waste gate rod neither to break the sealed adjustment screws.

Maintenance

The turbocharger is basically maintenance free. In case of engine lubrication for storage, add injection oil at bleeding nipple after procedure is completed. Refer to *Storage Procedure* subsection.

Remove plug screw from bleeding nipple.



1. *Bleeding nipple*
2. *Plug screw*

Bleeding Nipple	Injection Oil
Quantity	10 ml (.34 fl oz (US))

Install plug screw.

Tightening Torque	
Plug screw	6 ± 0.7 N•m (53 ± 6 lbf•in)

However it is susceptible to damage caused by failures from other systems. Refer to *Troubleshooting* in this subsection.

NOTICE

If particles are suspected of entering the exhaust system, take the proper actions to remove them.

NOTICE

Never operate engine without an air filter.

For air filter cleaning, refer to *Air Intake System* subsection.

Precautions

Engine Warming and Cooling

Allow the vehicle to reach operating temperature before placing high demand on the engine.

Allow the vehicle to idle 30 seconds before turning it off. This will allow the engine and the turbo charger to cool down.

Troubleshooting

Troubleshooting

1. LACK OF POWER

Cold start

– *Allow vehicle to reach operating temperature up for turbo to be at maximum efficiency.*

Clogged air intake.

– *Check air intake. Refer to Air Intake System subsection.*

Intake system collapsed, restricted or leaking.

– *Check tightness of clamps and screws.*

– *Damaged or missing gaskets.*

– *Check for foreign object between air intake and turbocharger.*

– *Inspect parts for damage, cracks or obstructions. Repair or replace. Refer to Air Intake System subsection.*

Exhaust system collapsed, restricted or leaking.

– *Check if the exhaust system is blocked or damaged. Replace parts as necessary. Refer to Exhaust System subsection.*

– *Check the turbocharger housing for cracks, blown or missing gaskets. Replace parts as necessary. Refer to procedure in this subsection.*

– *Check for foreign object in the exhaust system.*

– *Check if the exhaust system springs tension is correct.*

Fuel pump malfunction.

– *Perform a fuel pump pressure test and check fuel pump. Refer to Fuel Tank And Fuel Pump subsection.*

Sensor or injector malfunction.

– *Check fault codes with the BRP diagnostic software (BUDS2). Refer to Engine Management System subsection.*

– *Check fuel injection system is in good condition and correctly adjusted. Refer to E-TEC Direct Fuel Injection subsection.*

– *Check Exhaust Pressure Sensor (EPS). Refer to Exhaust System subsection.*

– *Check Waste Gate Actuator (WGA) function and for correct installation. Refer to Waste Gate Actuator in this subsection.*

Engine damage or malfunction.

– *Perform engine leak test. Refer to Top End subsection.*

Waste gate malfunction.

– *Check waste gate actuator. Refer to procedure in this subsection.*

– *Check waste gate for smooth movement.*

Turbocharger blocked or damaged.

– *Check for excessive carbon build up on housing.*

– *Check for signs of contact of the compressor wheel on housing.*

– *Check for rotor axial and radial clearance.*

– *Check if rotor shaft bearing is worn out.*

– *Check turbocharger housing if damaged or restricted.*

2. NOISY PERFORMANCE

Support brackets, turbocharger flanges or clamps are loose.

– *Check tightness of clamps and screws.*

– *Check if support brackets and parts connected to the turbocharger are not loose or damaged.*

Foreign object in intake or exhaust system.

– *Check and clean intake and/or exhaust system.*

Intake system collapsed, restricted or leaking.

– *Check tightness of clamps and screws.*

– *Inspect parts for damage, cracks or obstructions.*

– *Check for damaged or missing gaskets.*

Exhaust system collapsed, restricted or leaking.

– *Check tightness of clamps and screws.*

– *Inspect parts for damage, cracks or obstructions.*

– *Check for damaged or missing gaskets.*

– *Check for stretched or broken exhaust system springs.*

Turbocharger blocked or damaged.

– *Check for excessive carbon build up on housing.*

– *Check for imbalance due to damaged or broken rotor blades.*

– *Check turbocharger housing if damaged or restricted.*

– *Check for rotor axial and radial clearance.*

– *Check if rotor shaft bearing is worn out.*

3. EXCESSIVE ENGINE OIL IN TURBOCHARGER

Malfunction of oil return pump.

– *Check for excessive quantity of oil in the oil catch tank. Only a small quantity of oil should be seen at the bottom of the tank when the vehicle is stopped.*

– *Check for turbo oil pump proper operation.*

Blocked oil return hose.

– *Check if oil return hose is free.*

Intake system collapsed or restricted.

– *Check tightness of clamps and screws.*

– *Check for damaged or missing gaskets.*

– *Check for foreign object between air filter and turbocharger.*

– *Inspect parts for damage, cracks or obstructions.*

– *Make sure the intake by-pass valve is closing correctly.*

Exhaust system collapsed, restricted or leaking.

– *Check tightness of clamps and screws.*

– *Inspect parts for damage, cracks or obstructions.*

– *Check for damaged or missing gaskets.*

– *Check for foreign object in the exhaust system.*

Support brackets, turbocharger flanges or clamps are loose.

– *Check tightness of clamps and screws.*

– *Check if support brackets and parts connected to the turbocharger are not loose or damaged.*

Excessive carbon build up on housing.

– *Check if crankcase ventilation system is blocked.*

4. DAMAGED ROTOR OF TURBINE OR COMPRESSOR

Intake system leaking.

– *Check for foreign object between air filter and turbocharger.*

– *Inspect air intake. Refer to air intake system subsection.*

– *Check tightness of clamps and screws.*

– *Inspect parts for damage, cracks or obstructions.*

Exhaust system collapsed, restricted or leaking.

– *Check tightness of clamps and screws.*

– *Inspect parts for damage, cracks or obstructions.*

– *Check for damaged or missing gaskets.*

– *Check for foreign object in the exhaust system.*

Turbocharger blocked or damaged

– *Check for excessive carbon build up on housing.*

– *Check for rotor axial and radial clearance.*

– *Check if rotor shaft bearing is worn out.*

– *Check turbocharger housing if damaged or restricted.*

Oil supply hose and/or oil return hose blocked.

– *Check and/or replace oil hoses, refer to procedures in this subsection.*

Too little warm up time.

– *Extend warm up period.*

5. EXCESSIVE RADIAL AND/OR AXIAL CLEARANCE OF ROTOR SHAFT

Intake system leaking.

– *Check for foreign object between air filter and turbocharger.*

– *Inspect air intake. Refer to air intake system subsection.*
– *Inspect parts for damage, cracks or obstructions.*

Exhaust system collapsed, restricted or leaking.

– *Check tightness of clamps and screws.*
– *Inspect parts for damage, cracks or obstructions.*
– *Check for damaged or missing gaskets.*
– *Check for foreign object in the exhaust system.*

Insufficient lubrication or oil lag at start up.

– *Inspect oil pressure line if restricted, blocked or leaking.*

Injection oil contaminated or unsuitable oil type.

– *Replace injection oil. Refer to Lubrication System subsection.*

Excessive carbon build up on housing.

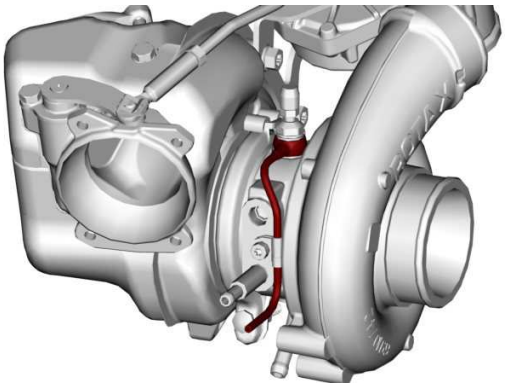
– *Check if crankcase ventilation system is blocked.*

Worn out bearings of rotor shaft.

– *Check if the rotor shaft turns smooth and easily.*

Procedures

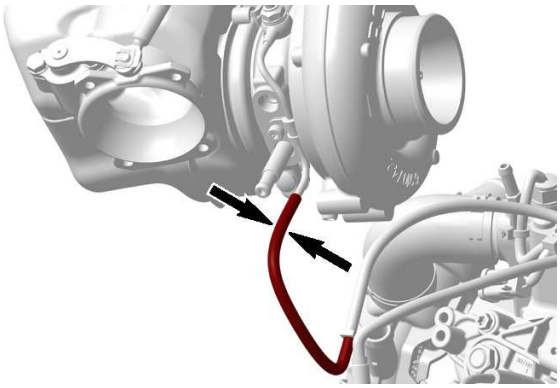
Oil Pressure line



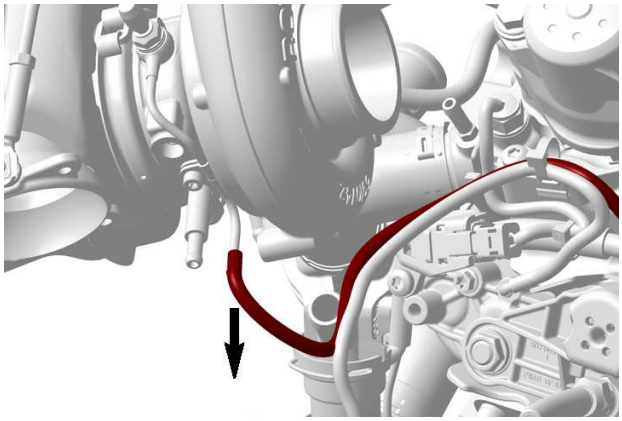
Removing the Oil Pressure Line

1. Remove the upper body module.
2. Install a hose pincher on the oil line.

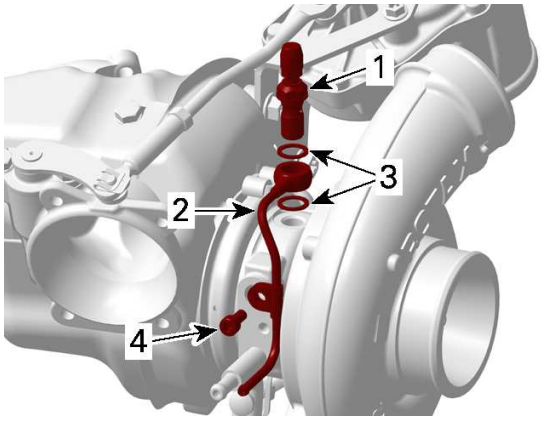
Small hose pincher (P/N 295000076)	



3. Place a large rag underneath the oil pressure line to catch up oil spillage.
4. Pull off oil line from oil pressure line.



5. Remove the oil pressure line.



1. Bleeding nipple
2. Oil pressure line
3. Sealing rings (discard them)
4. Oil pressure line retaining screw

NOTICE

Clean all spilled oil.

Installing the Oil Pressure Line

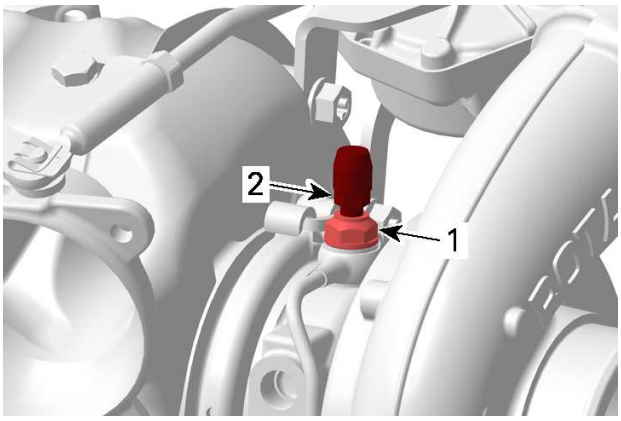
The installation is the reverse of the removal procedure. However, pay attention to the following.

1. Install **NEW** sealing rings.
2. Apply a drop of threadlocker on threads of each oil pressure line retaining screw

Loctite 243 (blue)

Tightening Torque	
Bleeding nipple	11 ± 0.8 N•m (97 ± 7 lbf•in)
Oil pressure line retaining screw	5 ± 0.3 N•m (44 ± 3 lbf•in)

3. Remove plug screw from bleeding nipple.



1. Bleeding nipple
2. Plug screw

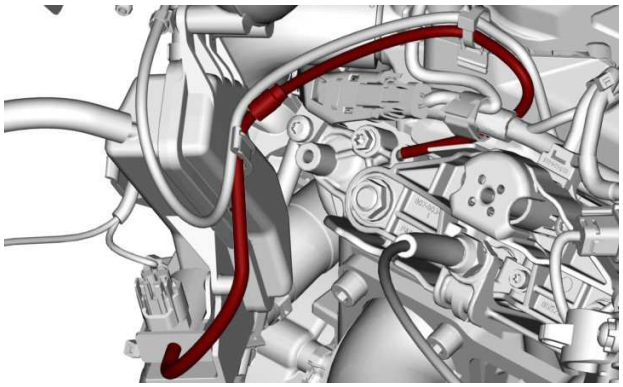
4. Add injection oil at bleeding nipple before starting the unit.

Bleeding Nipple	Injection Oil
Quantity	10 ml (.34 fl oz (US))

5. Install plug screw.

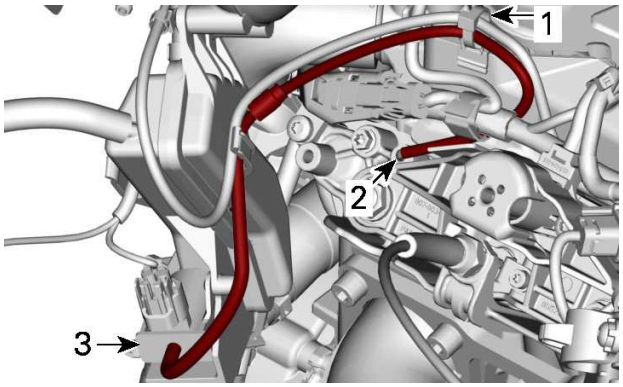
Tightening Torque	
Plug screw	6 ± 0.7 N•m (53 ± 6 lbf•in)

Oil return Line



Removing the Oil Return Line

1. Cut locking tie and pull off oil return line from impulse fitting and oil pump.



1. Locking tie
2. Impulse fitting
3. Oil pump

For testing and replacement of the check valve refer to *Lubrication System* subsection.

NOTICE

Clean all spilled oil.

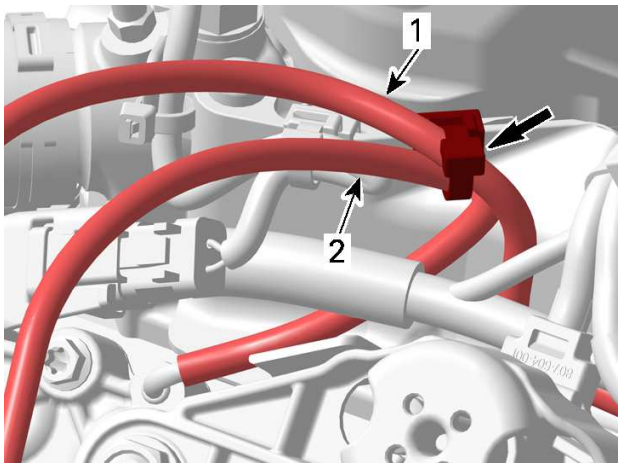
Installing the Oil Return Hose

The installation is the reverse of the removal procedure. However, pay attention to the following.

1. Install a new locking tie.

NOTICE

Take care that oil lines are routed behind the wiring harness and that they do not cross or squeeze each other.

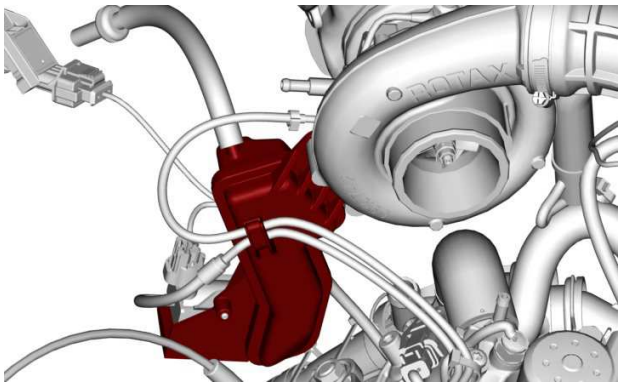


1. *Pressure oil line*
2. *Return oil line*

2. Add injection oil at bleeding nipple before starting the unit.

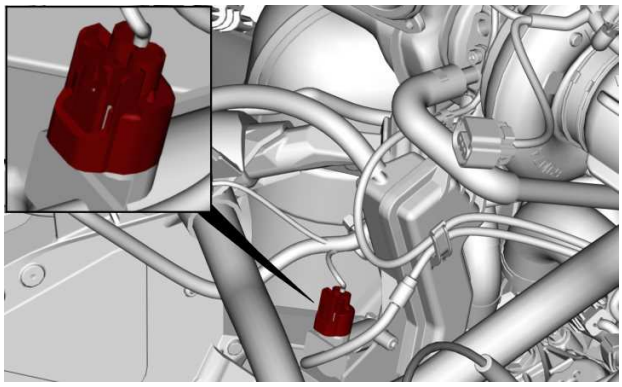
Bleeding Nipple	Injection Oil
Quantity	10 ml (.34 fl oz (US))

Turbo Oil Catch Tank

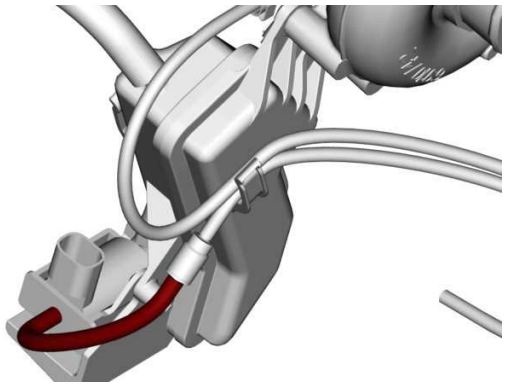


Removing the Oil Catch Tank

1. Remove the tuned pipe.
2. Disconnect oil pump connector.



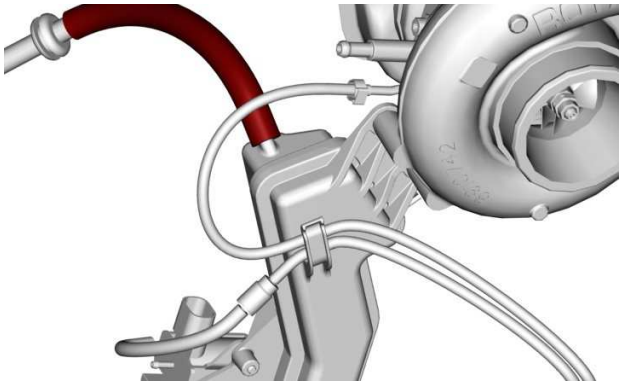
3. Using a rag to catch up oil spillage, disconnect the oil return hose from the oil pump.



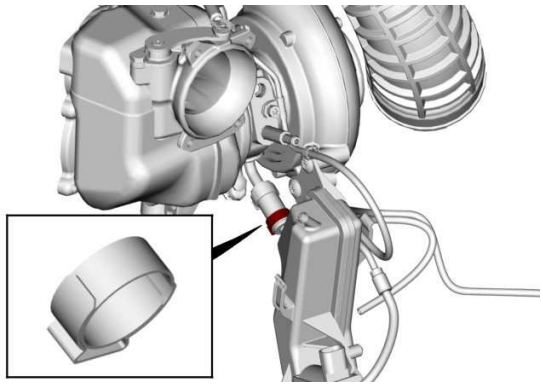
NOTICE

Clean all spilled oil.

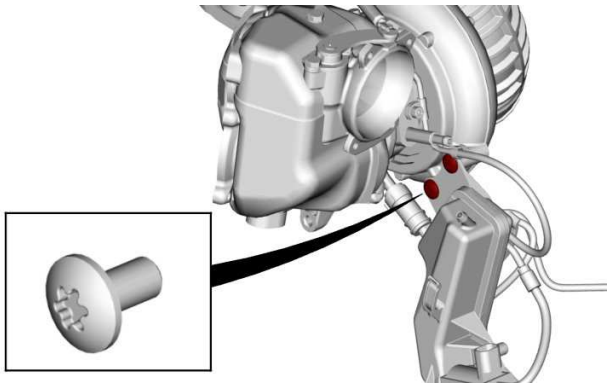
4. Disconnect the oil catch tank vent.



5. Remove the Oetiker clamp.



6. Remove the tank screws.



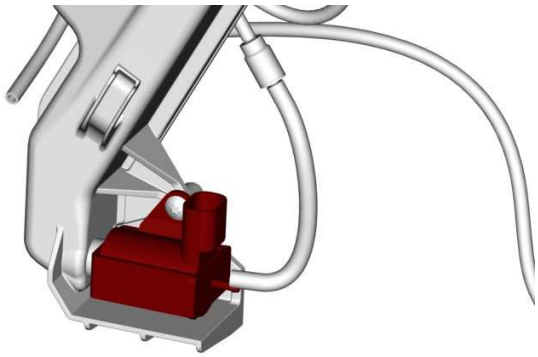
7. Remove the tank from the vehicle.

Installing the Turbo Oil Catch Tank

The installation is the reverse of the removal procedure. However, pay attention to the following.

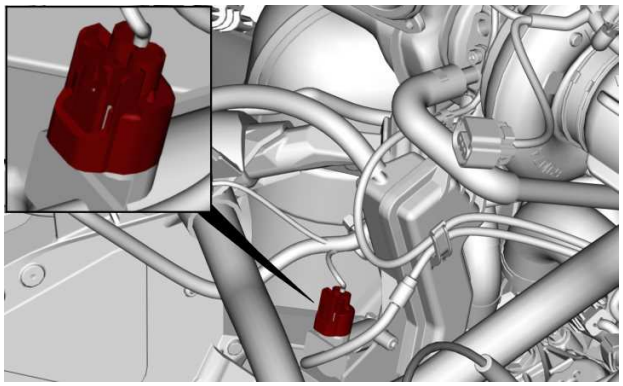
Tightening Torque	
Oil catch tank screw	7.5 ± 1 N•m (66 ± 9 lbf•in)

Turbo Oil Pump

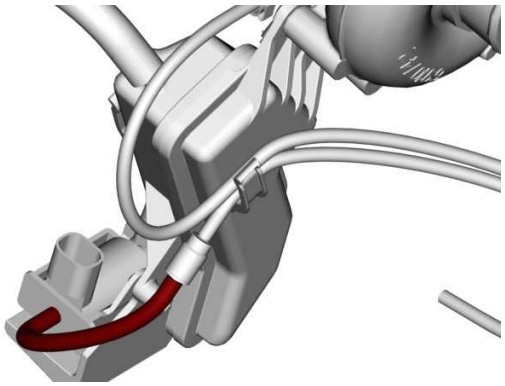


Removing the Turbo Oil Pump

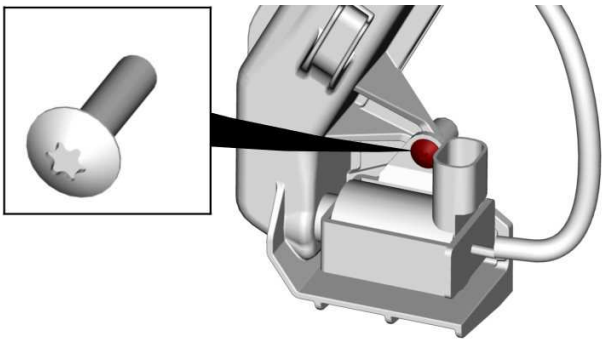
1. Remove the tuned pipe.
2. Disconnect oil pump connector.



3. Using a rag to catch up oil spillage, disconnect the oil return hose from the oil pump.



4. Remove the oil pump screw.



5. Using a rag to catch up oil spillage, pull the pump off the tank.

NOTICE
Clean all spilled oil.

Installing the Turbo Oil Pump

The installation is the reverse of the removal procedure. However, pay attention to the following.

Tightening Torque	
Oil pump screw	1.8 ± 0.2 N•m (16 ± 2 lbf•in)

Testing the Turbo Oil Pump in BUDS2

1. Connect the vehicle to the BRP diagnostic software (BUDS2). Refer to *Communication Tools* subsection.
2. Install D.E.S.S. key and press start/RER button to wake up ECM.
3. Select the following:
   - **Functions** page
   - **ECM** button
   - **Functions** tab
   - **IO Controls - Activate Turbo Oil Pump**.
4. If the turbo oil pump operates normally check for clogged or kinked oil hoses.
5. If oil pump does not operates continue with the following.

Testing the Turbo Oil Pump Resistance

1. Disconnect the oil pump connector.
2. Read the resistance on the pump as per the following table.

Turbo Oil Pump Resistance Test		
Oil Pump Pin		Specification @ 20 °C (68 °F)
1	2	Approx.12.4 Ω

3. If reading is not to specification, replace the pump.

Testing the Turbo Oil Pump Input Voltage

1. Disconnect the oil pump connector.
2. Read the voltage as per the following table while activating the pump using BUDS2.

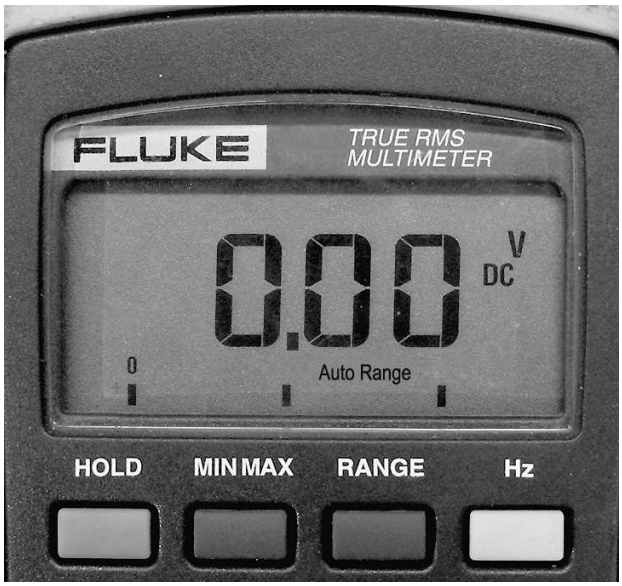
Turbo Oil Pump Input Voltage Test		
Oil Pump Connector Pin		Specification
1	2	Battery Voltage

3. If reading is not to specification, test the oil pump circuit continuity. Refer to *Wiring Diagram* for circuit details.

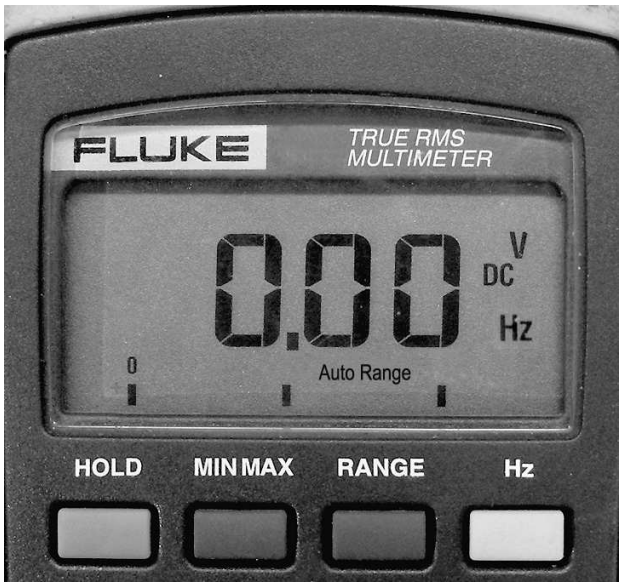
Testing the Turbo Oil Pump Control Signal

1. Disconnect the oil pump connector.
2. Set multimeter to Vdc.

NOTE: Make sure multimeter is in the **Auto Range** mode.



3. Press the **Hz** button so that the display shows Hz.



4. Read the frequency on the multimeter while activating the pump using BUDS2.

NOTE: The multimeter counts the pulses per seconds (Hertz) of current the ECM sends to the injector.

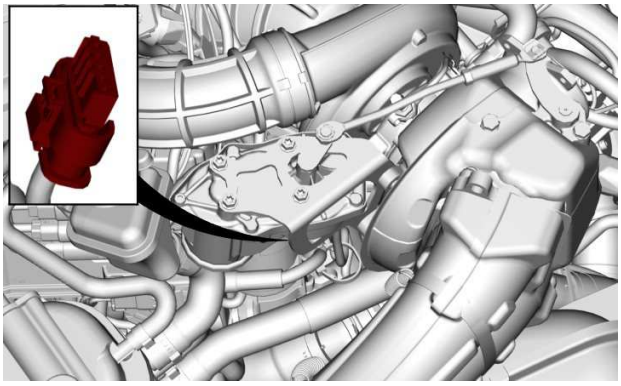
Turbo Oil Pump Input Voltage Test		
Oil Pump Connector Pin		Specification
1	2	2 Hz

5. If reading is good, the control circuit is functional.
6. If there is no reading, check continuity of control circuit (ECM to oil pump). Refer to *Wiring Diagram* for circuit details.

Turbocharger

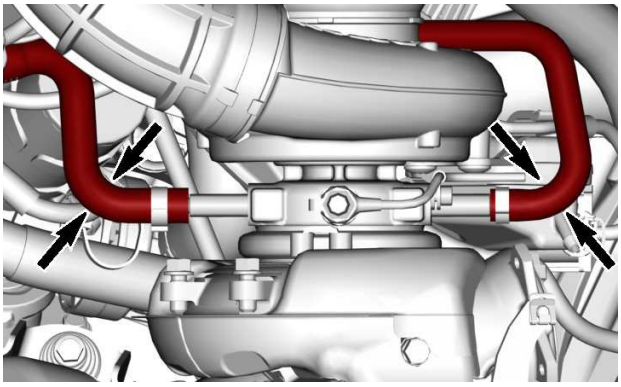
Removing the Turbocharger

1. Remove the upper body module. Refer to *Body* subsection.
2. Disconnect the waste gate actuator.

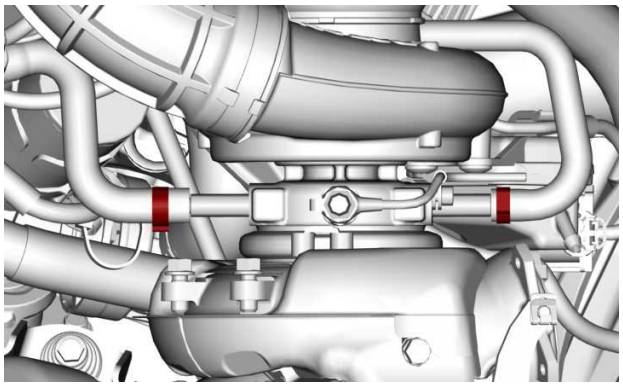


3. Remove the tuned pipe and the exhaust pipe springs. Refer to *Exhaust System* subsection.
4. Disconnect the oil line from the oil pressure line. Refer to procedure in this subsection.
5. Disconnect the vent from the oil catch tank.
6. Remove oil return hose from oil pump. Refer to procedure in this subsection.
7. Install hose pincher on inlet and outlet coolant hoses.

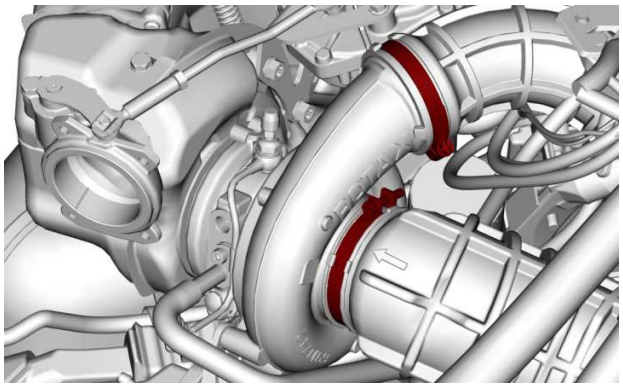
Small hose pincher (P/N 295000076)	



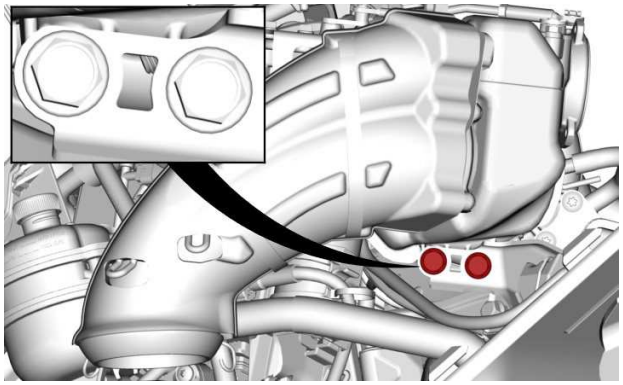
8. Remove Oetiker clamp and unplug the coolant hoses from the turbocharger.



9. Loosen clamps and disconnect air inlet and outlet hoses.



10. Remove the turbocharger retaining screws.



11. Lift turbocharger and pull it out of vehicle.

Inspecting the Turbocharger

Check turbocharger:

– for any damages or cracks
– for corrosion
– for any oil leak
– for contamination and/or oil coking at oil inlet and outlet
– if rotor shaft turns smooth and easily.

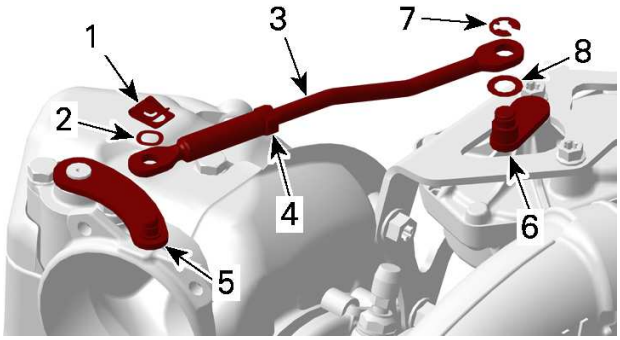
Waste Gate, Waste Gate Lever and Waste Gate Rod

1. Remove retaining clips.

2. Remove wave shims and discard them.
3. Check for waste gate rod play on lever pin and on actuator pin.
4. Disconnect the waste gate rod from the waste gate lever and the actuator pin.
5. Check counter nut of waste gate rod for tightness.

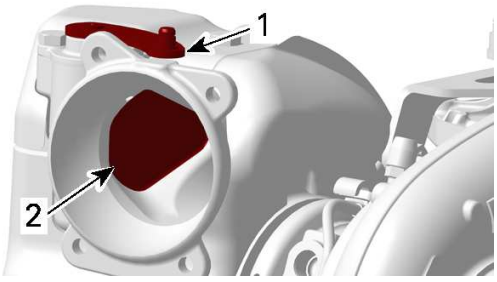
NOTICE

Do not open counter nut of waste gate rod. Length of waste gate rod assembly must not change.



1. Retaining clip waste gate lever
2. Wave shim waste gate lever
3. Waste gate rod
4. Counter nut
5. Waste gate lever
6. Waste gate actuator lever
7. Retaining clip actuator lever
8. Actuator lever

6. Check the waste gate lever for free movement.
7. Check waste gate and its seat for wear or damage.



1. Waste gate lever
2. Waste gate

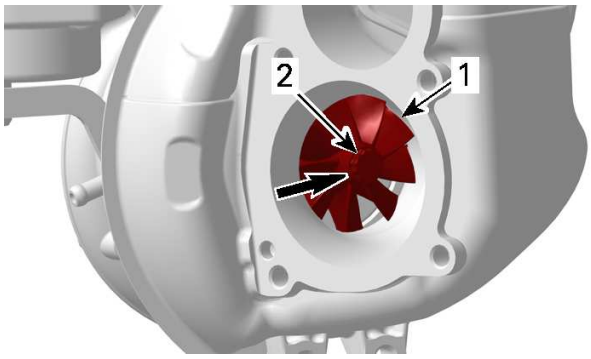
8. Check waste gate rod for wear or damage.



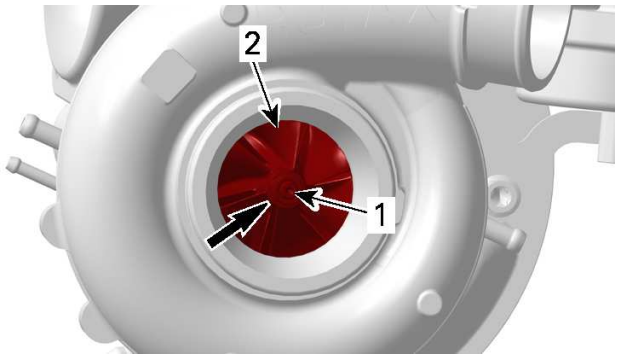
Waste Gate Rod Bore Roundness	
Service limit	Maximum 0.3 mm (.012 in) out-of-roundness

Rotor of Turbine and Compressor

1. Check rotor visually for:
   - bent blades
   - any damages
   - thermal stress (turbine rotor).
2. Apply slightly a radial pressure onto the shaft. The blades must not get in contact with the housing.
3. Check radial clearance of the rotors visually in the complete circumference.



TURBINE ROTOR
Step 1. Push slightly
1. Rotor
2. Shaft



COMPRESSOR ROTOR
Step 1. Push slightly
1. Rotor
2. Shaft

Rotor Shaft

Check discoloration of the shaft due to overheating.

Waste Gate Actuator

1. Connect the vehicle to BUDS2. Refer to *Communication Tools* subsection.
2. Select the following:
   - **Measurements** page
   - **ECM** button
   - **Custom** tab
   - **TI_WasteGateRawVoltage** line.
3. Look for the waste gate voltage indication.

Waste Gate Actual Position Validation	
Opened	0.4 V - 0.7 V
Closed	3.3 V - 4.1 V

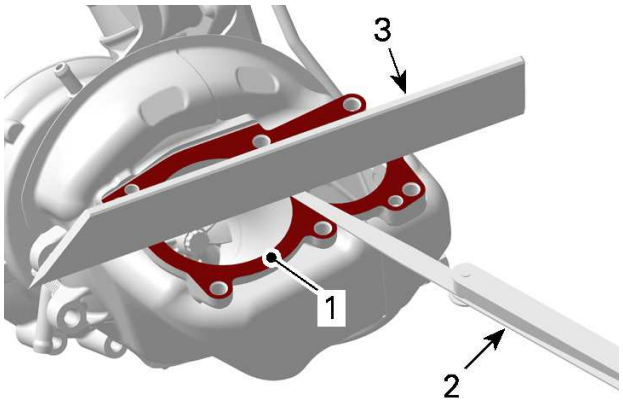
If waste gate actual position are out of specification, check the following:

- Tightness of waste gate support
- Waste gate rod is worn out.

Turbine Flange Surface

Check warpage of turbine flange.

Straight Edge
Feeler gauge 0.20 mm (.008 in)



1. Turbine flange
2. Straight edge
3. Feeler gauge

Turbine Flange Warpage	
Service limit	Maximum of 0.20 mm (.008 in)

Installing the Turbocharger

The installation is the reverse of the removal procedure. However, pay attention to the following.

1. Tighten turbocharger retaining screws to specification.

Tightening Torque	
Turbocharger retaining screw	24.5 ± 3.5 N·m (18 ± 3 lbf·ft)

2. Install new Oetiker clamps on coolant and oil hoses.
3. Adjust upper coolant tank level if required.
4. Add injection oil at bleeding nipple before starting the unit.

Bleeding Nipple	Injection Oil
Quantity	10 ml (.34 fl oz(US))

NOTICE
Clean all spilled oil.

5. Install all other parts which were previously removed.
6. Start the engine and let it idle for a few minutes to ensure proper turbocharger lubrication.

Waste Gate Actuator

The waste gate actuator consists of a brush DC motor (actuator) and a non-contacting angle sensor integrated in one housing.

Testing the Waste Gate Actuator

As a first troubleshooting step, always connect vehicle to the BRP diagnostic software (BUDS2) to check for applicable fault codes. Refer to *Communication Tools* subsection.

Testing the WGA in BUDS2

1. Connect the vehicle to the BRP diagnostic software (BUDS2). Refer to *Communication Tools* subsection.
2. Install D.E.S.S. key and press start/RER button to wake up ECM.
3. Select the following:
   - **Functions** page
   - **ECM** button
   - **Functions** tab
   - **IO Controls - Activate Turbo Oil Pump**.
4. If the turbo oil pump operates normally check for clogged or kinked oil hoses.
5. If oil pump does not operates continue with the following.

Testing the Waste Gate Input Voltage

1. Power the vehicle using the power interface. Refer to *Communication Tools* subsection.
2. Disconnect the waste gate actuator connector.
3. Install D.E.S.S. key and press start/RER button to wake up ECM.
4. set multimeter to Vdc and check voltage as per following table.

Waste Gate Input Voltage Test		
Waste Gate Actuator Connector Pin	**Frame**	**Specification**
1	Ground	5 ± 0.25 Vdc

If reading is not to specification, check ECM power supply and waste gate actuator wiring. Refer to *Wiring Diagram* for circuit detail.

Testing the Waste Gate Actuator Ground Circuit

1. Disconnect the waste gate actuator connector.
2. Set multimeter to Ω and probe terminals as per following table.

Waste Gate Actuator Ground Circuit Test		
Waste Gate Actuator Connector Pin	**Frame**	**Specification**
2	Ground	Close to 0 Ω

If resistance is incorrect check ECM grounding and waste gate actuator wiring.

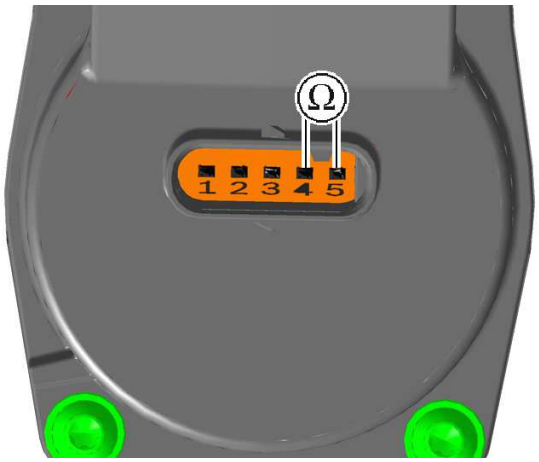
Testing the Waste Gate Actuator Wiring

1. Disconnect ECM-A connector.
2. Connect ECM-A connector to the ECM adapter tool.
3. Disconnect the waste gate actuator connector.
4. Set multimeter to Ω and probe terminals as per following table.

Waste Gate Actuator Circuit Test		
Ecm Adapter Pin	**Waste Gate Actuator Harness Connector**	**Specification**
E4	1	Close to 0 Ω
F4	2	
D1	3	
J1	4	
J2		
L2	5	

Testing the Waste Gate Actuator Resistance

1. Disconnect the waste gate actuator connector.
2. Set multimeter to Ω and probe the actuator terminals as per following table.



WASTE GATE ACTUATOR TERMINALS

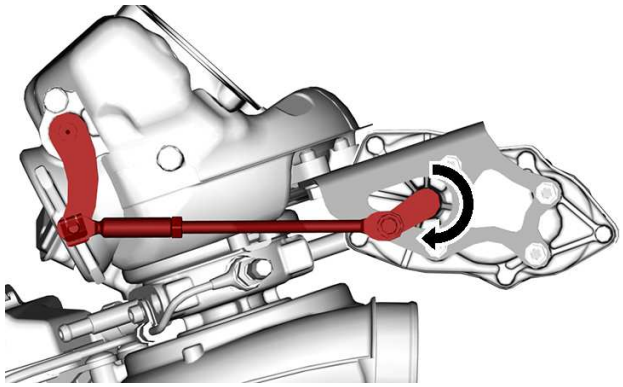
Waste Gate Actuator Resistance Test		
Waste Gate Pin		Specification @ 20 °C (68 °F)
4	5	Close to 0 Ω

Waste Gate Actuator Setting

NOTICE

It is very important to perform *Waste Gate Actuator Setting* procedure whenever the waste gate actuator rod, support or the actuator itself was removed or replaced.

1. Connect the vehicle to the BRP diagnostic software (BUDS2). Refer to *Communication Tools* subsection.
2. In BUDS2, go to:
   - **Settings** page
   - **ECM** button
   - **Settings** tab
   - **Manage Waste Gate Position**.
3. Perform setting at **fully closed** position:
   1. Pivot the waste gate actuator lever in **fully closed** position and **hold** it.

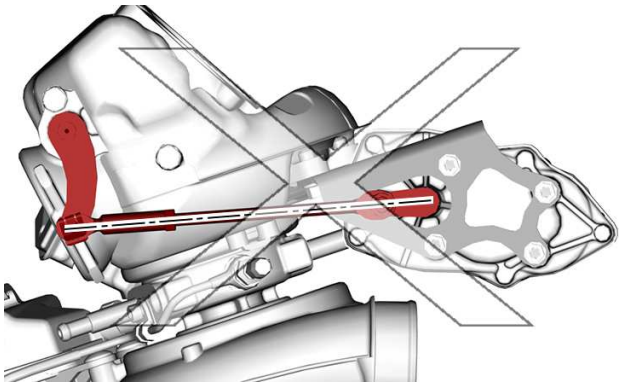


   2. Confirm that the voltage value is within specification.

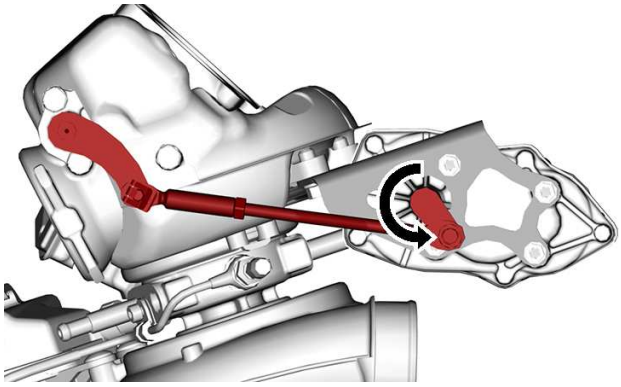
Waste Gate Actual Position Validation	
Closed	3.3 V - 4.1 V

   3. Save the value by pressing the **Set Close Setting** button.

The actuator lever and the waste gate rod should never come aligned. If this happened, the waste gate actuator support or the rod may have been bent. Inspect these parts and replace if required.



4. Perform setting at **fully opened** position:
   1. Pivot the waste gate actuator lever in **fully opened** position and **hold** it.



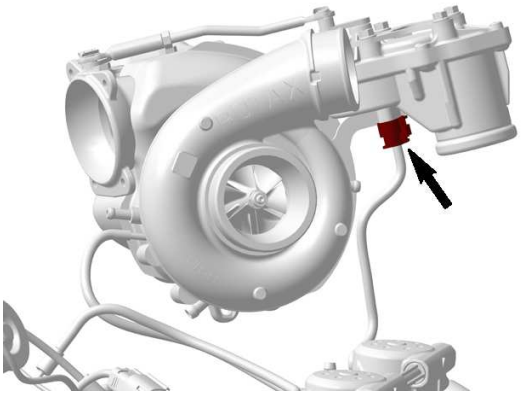
   2. Confirm that the voltage value is within specification.

Waste Gate Actual Position Validation	
Opened	0.4 V - 0.7 V

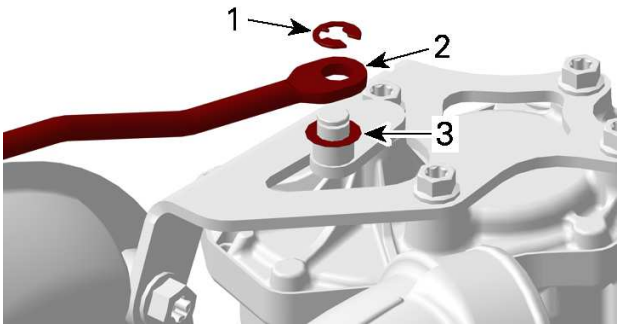
   3. Save the value by pressing the **Set Open Position** button.

Removing the Waste Gate Actuator

1. Disconnect waste gate connector.



2. Remove the waste gate rod from the waste gate actuator lever.

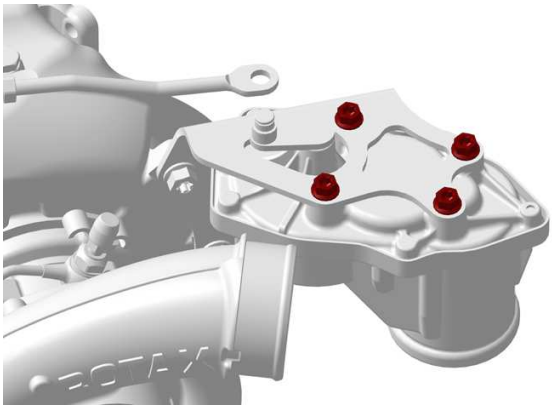


1. *Retaining ring*
2. *Waste gate rod*
3. *Wave shim*

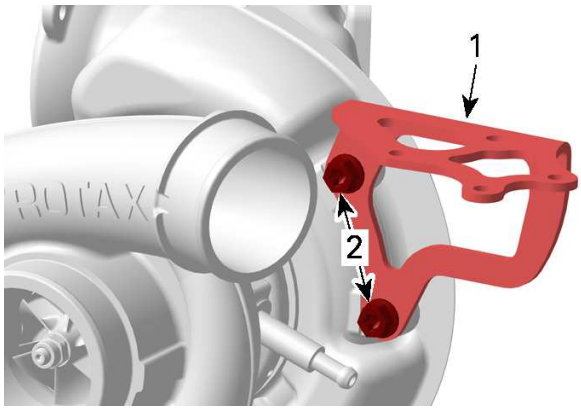
NOTICE

Take care not to lose the spring washer removing the waste gate rod.

3. Remove the waste gate actuator retaining screws.



4. If required, remove the waste gate actuator support from turbocharger.



1. *Turbocharger support*
2. *Retaining screws*

Inspecting the Waste Gate Actuator

1. Check ease of movement of the waste gate actuator lever.
2. Check mechanical end stop of waste gate actuator lever.
3. If necessary replace waste gate actuator.

Installing the Waste Gate Actuator

1. The installation is the reverse of the removal procedure. However, pay attention to the following.
2. Apply a drop of threadlocker on threads of each screw.

Loctite 243 (blue)

Tightening Torque	
Waste gate actuator support retaining screws	25 ± 1 N·m (18 ± 1 lbf·ft)
Waste gate actuator retaining screws	11 ± 0.8 N·m (97 ± 7 lbf·in)

Notes

Technician's Notes

Related Documents

Bulletins	
Instruction Sheets	
Other	

02

ELECTRONIC MANAGEMENT SYSTEM

02 Electronic Management System

Electronic Control Module (ECM)

SERVICE TOOLS

Description	Part Number	Page
ECM ADAPTER TOOL	(P/N 529036166)	171

General

For proper installation of the engine wiring harness and locking ties, refer to *Engine Wiring Harness* subsection.

When testing electrical systems, the emergency stop switch must always be in the RUN position unless otherwise mentioned, or test is performed while cranking engine.

System Description

The ECM reads the input signals from different sensors which indicate engine operating conditions at micro-second intervals.

The ECM calculates the proper air/fuel ratio and activates the output to fuel injectors.

Signals from sensors are used by the ECM to determine the injection parameters (fuel maps required for optimum air-fuel ratio).

Idle Speed

Idle speed is controlled by the ECM and is not adjustable with an idle screw.

If idle speed is not as per specification (refer to *Technical Specifications*), perform the *Resetting Closed Throttle Value (TPS)* in *E-TEC Direct Fuel Injection* subsection.

Troubleshooting

Diagnostic Tips

Electrical System

Electrical Connections

Pay particular attention to ensure that pins are not out of their connectors or out of shape.

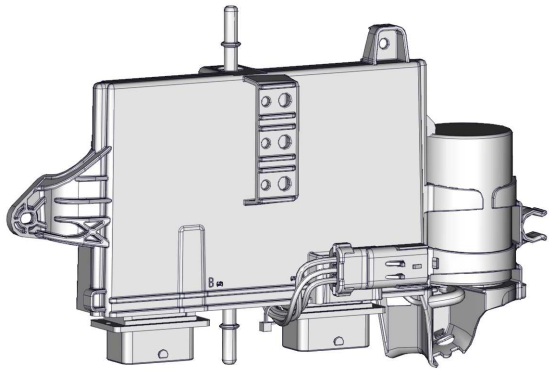
Make sure that connections are very tight, make good contact, are corrosion-free, and show no signs of moisture. Particularly check ECM ground connections.

NOTE: Do not apply dielectric grease or other lubricant in the ECM connectors.

Check if wiring harness shows any signs of scoring.

Procedures

ECM (Engine Control Module)



ECM

NOTE: Prior to replacing an ECM, carry out all testing procedures.

Troubleshooting ECM Power Supply

Verifying System Voltage

1. Set emergency stop switch to RUN.
2. Connect the vehicle to the BRP diagnostic software (BUDS2). Refer to *Communication Tools* subsection.

ECM adapter tool (P/N 529036166)	

3. In BUDS2, go to:
   - **Measurements** page
   - **ECM** button
   - **ECM - Basic** tab.
4. View high voltage system circuit voltage.
5. Start or crank engine while viewing System Voltage.

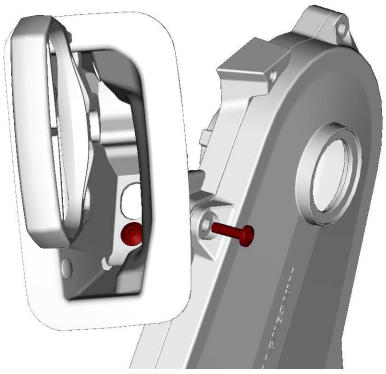
Test Condition	Specification
Manual crank speed	30 Vdc min.
Engine running	55 Vdc

6. If voltage is as per specification, ECM is properly powered.
7. If voltage is out of specification, refer to *Charging System*.

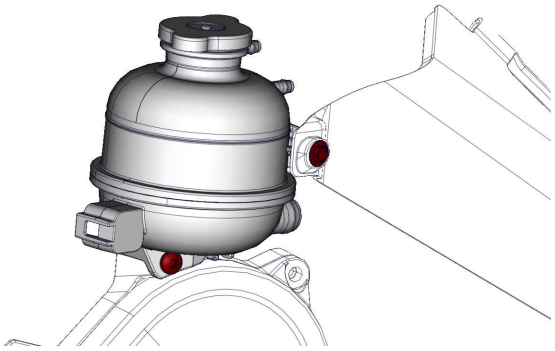
Removing the ECM

1. Save a **".buds2"** file.
2. Set emergency engine stop switch to STOP.
3. Remove upper body module. Refer to *Body* subsection.

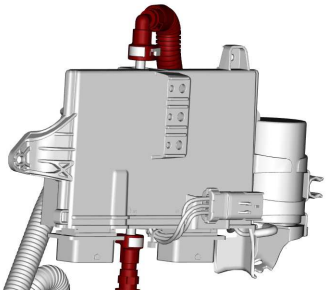
4. Move rewind starter handle assembly (applicable models).



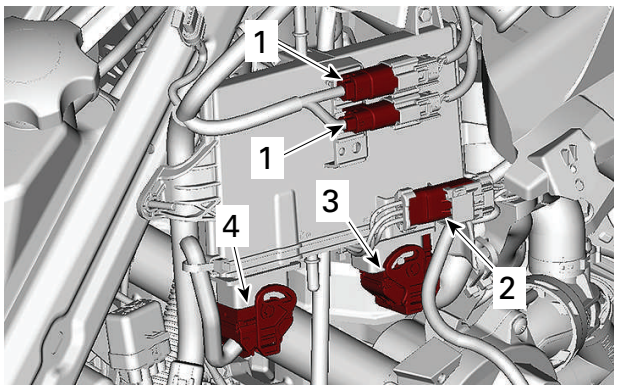
5. Detach coolant tank from its support.



6. Install a rag under the ECM fuel hose quick connect to catch fuel spillage.
7. Place a container under the hose connector to recover fuel.
8. Slowly disconnect fuel both hoses from ECM and drain fuel.

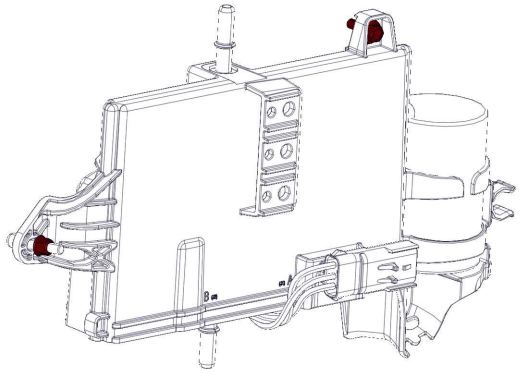


9. Disconnect heated grips, magneto, ECM-A, and ECM-B connectors. Refer to *Wiring Harness and Connectors*.

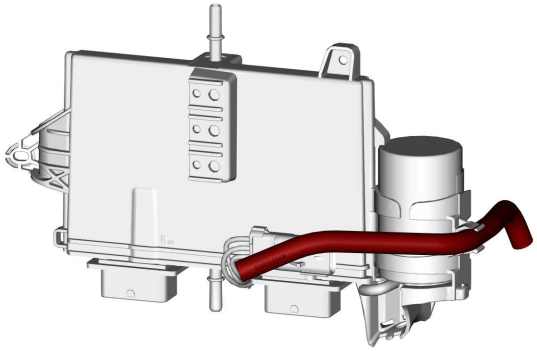


1. *Heated grip connectors*
2. *Magneto connector*
3. *Connector A*
4. *Connector B*

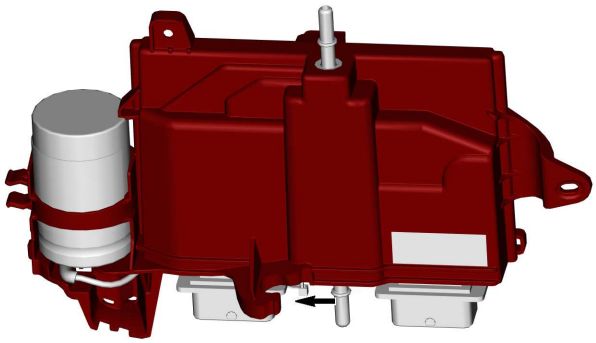
10. Remove connector housings from ECM.
11. Remove ECM retaining screw and nut.



12. Move coolant hose.



13. Carefully slide ECM forwards to unhook clip behind ECM.

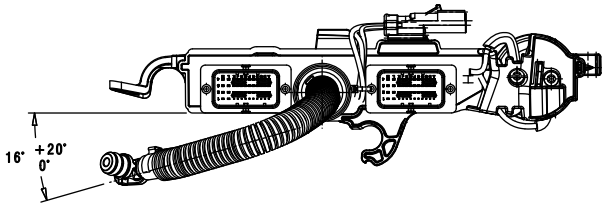


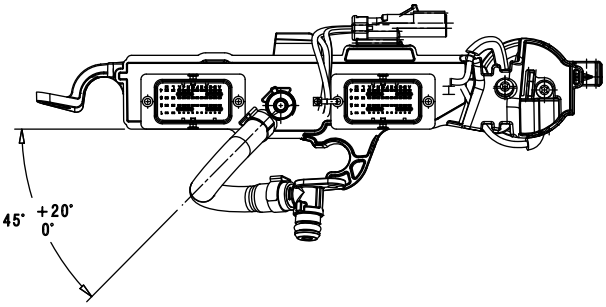
14. Remove. Cut locking ties as applicable.

Installing ECM

The installation is the reverse of the removal procedure. However, pay attention to the following.

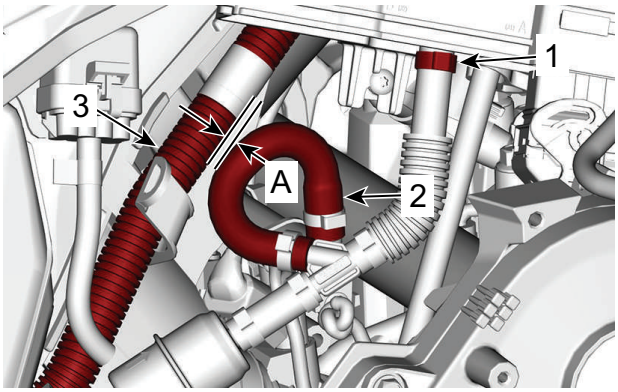
1. Position the inlet fuel hose as per the following illustrations.





NOTICE

Make sure to have a minimum of 5 mm (7/32 in) between the fuel hoses (inlet and outlet) before and after the clamp crimping.



1. Oetiker clamp
2. Fuel inlet hose
3. Fuel outlet hose
A. Required minimum distance: 5 mm (7/32 in)

All Engines

⚠ WARNING

Wipe up all spilled fuel.

2. Set engine stop switch to RUN.
3. Install tether cord cap on engine cut-off switch.
4. If a new ECM is installed, transfer or enter data in new ECM. Refer to *Programming a New ECM* in this subsection.

Collecting the Vehicle Information

There are 2 methods to collect the vehicle information.

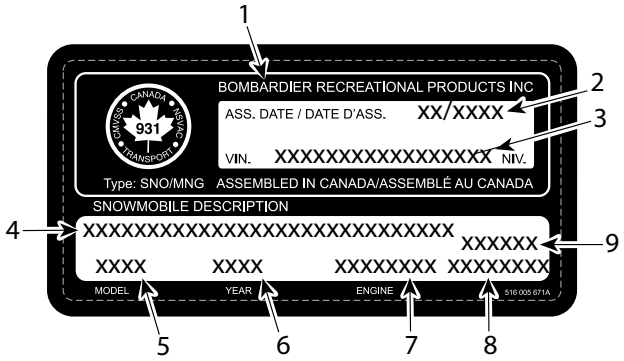
First Method

1. Use the BRP diagnostic software (BUDS2) and collect the data from the file saved previously.
2. From the **Summary** page:
   - VIN (vehicle identification number
   - Engine serial number
   - Vehicle model number
   - Customer name.
3. From the **Settings** page:
   - **Configuration - Change Oil Compensation Settings** under the **Settings** tab
   - **Options** values
   - Injector coefficient numbers, under **Injector Coefficient** tab.

Second Method

Collect the information from the vehicle.

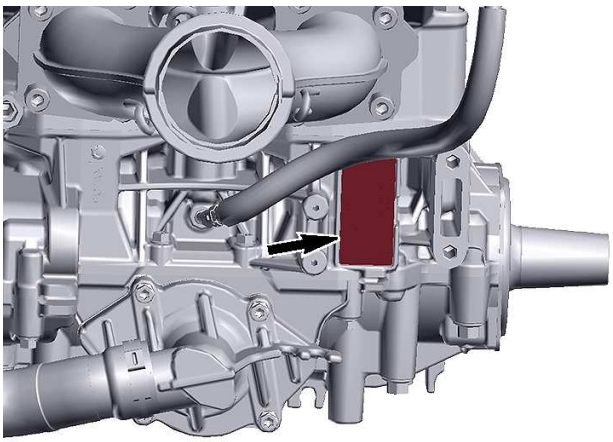
1. Record model number.



VEHICLE DESCRIPTION DECAL

1. *Manufacturer name*
2. *Manufacturing date*
3. *Vehicle identification number (VIN)*
4. *Model and package name*
5. *Model number*
6. *Model year*
7. *Engine type*
8. *Vehicle weight (European models)*
9. *Vehicle engine power (European models)*

2. The engine serial number can be found on the cylinder block.



TYPICAL - CYLINDER BLOCK, EXHAUST SIDE

3. Record MAG/PTO injector S/N and Checksum numbers.

1. *SN: Serial number*
2. *CS: Checksum number*

Programming a New ECM (when replacing the ECM)

Make sure to have the vehicle information in hand. Refer to *Collecting the Vehicle Information*.

1. Connect the vehicle to BRP diagnostic software (BUDS2) using the power interface. Refer to *Communication Tools*
   1. Disconnect SHOT connector if equipped.
2. In BUDS2, **Scan** the vehicle.
3. To flash the ECM, select the correct flash file for the right engine type and vehicle model year.
4. Click on the green **Play** button at the right end of the field.
5. In the **Summary** tab of the **Summary** page, enter the information collected previously:
   1. VIN
   2. Engine serial number
   3. Vehicle model number.
6. Wait for the second confirmation window before to continue.
7. **Scan** the vehicle to get all the ECM refreshed information.
8. Enter the customer name in the **Summary** tab of the **Summary** page.
9. To add a D.E.S.S. key, go to **Key** page:
   1. Click on the **Read** button
   2. Select the key type
   3. Click on the **Add** button.

   To add another key, shut down and power up the ECM, and repeat previous step.

10. In **Settings** page:
    1. Click on **Configuration - Change Oil Compensation Settings**
    2. Write the value saved previously.
11. Click on:
    1. **Initialization - Change Ignition/Injection Timing** button
    2. **Freeze time** button.
12. Click on:
    1. **Initialization - RAVE Setting** button
    2. **Set** button.
13. Click on:
    1. **Initialization - Reset TPS** button
    2. **Reset** button.
14. Go to:
    - **BOSSWeb** site
    - **Comcenter** page
    - **Injector Coefficient** tab.
15. Write the serial number and the checksum number previously collected for the MAG and PTO, and download the files.
16. In BUDS2, go to:
    1. **Settings** page
    2. **Injector Coefficient** tab
    3. Click on the **New** button
    4. Open the MAG file
    5. Click on the **Ok** button
    6. Write the checksum
    7. Click on the **Write** button.

    Repeat previous steps for the PTO file.
17. Check if options are correctly entered.
18. If equipped, perform a SHOT alignment procedure. Refer to *SHOT* subsection.
19. **Scan** the vehicle to confirm that all fault codes are cleared.

Notes

Technician's Notes

Related Documents

Bulletins	
Instruction Sheets	
Other	

03

FUEL SYSTEM

03 Fuel System

E-TEC Direct Fuel Injection

SERVICE TOOLS

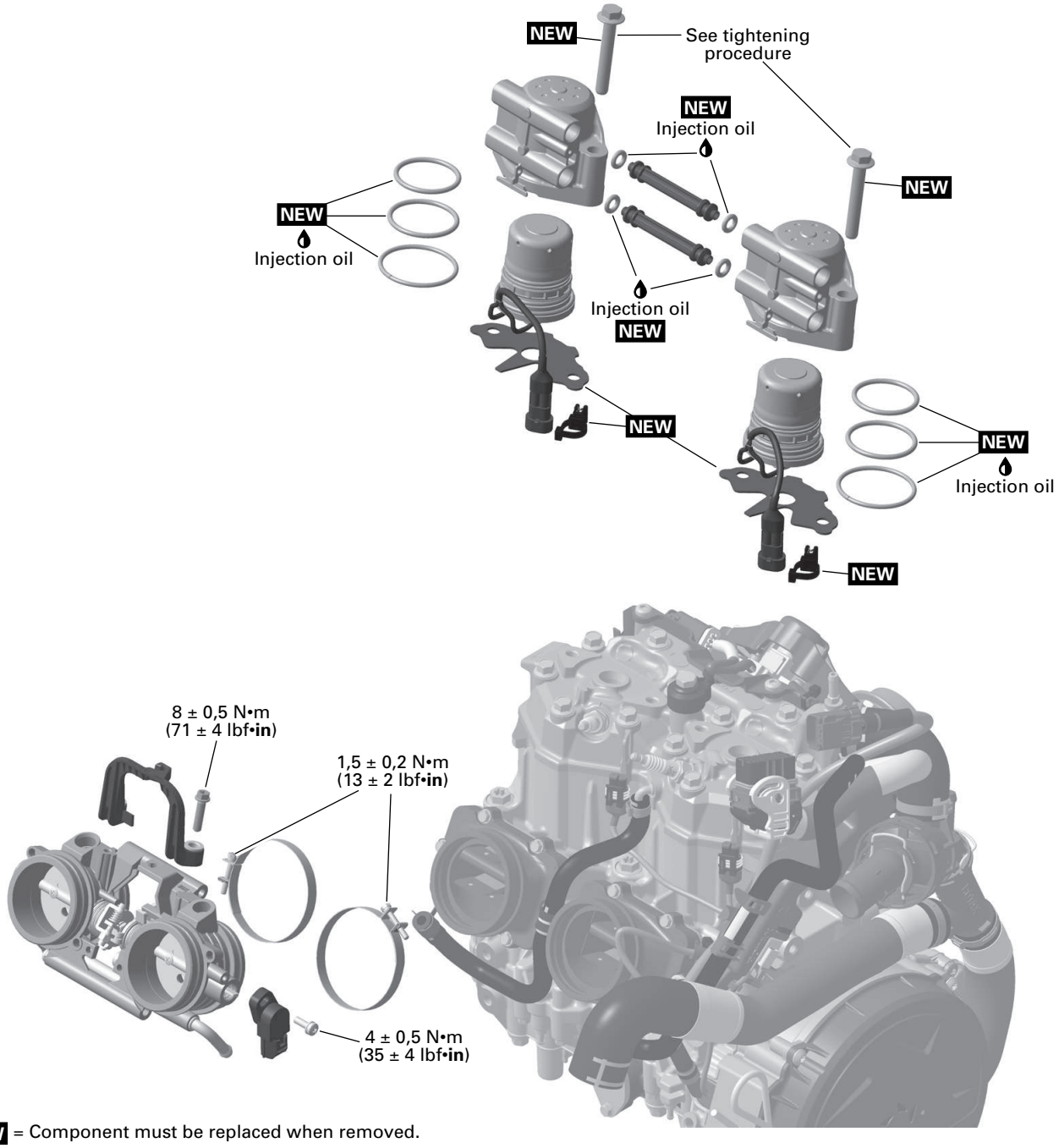
Description	Part Number	Page
EXTRACTOR ADAPTOR	(P/N 529036136)	194
OETIKER PLIER	(P/N 295000070)	185
SMALL HOSE PINCHER	(P/N 295000076)	204

SERVICE PRODUCTS

Description	Part Number	Page
BRAKE AND PARTS CLEANER PRO S2		205
DIELECTRIC GREASE		199
INJECTION OIL		196–197, 203

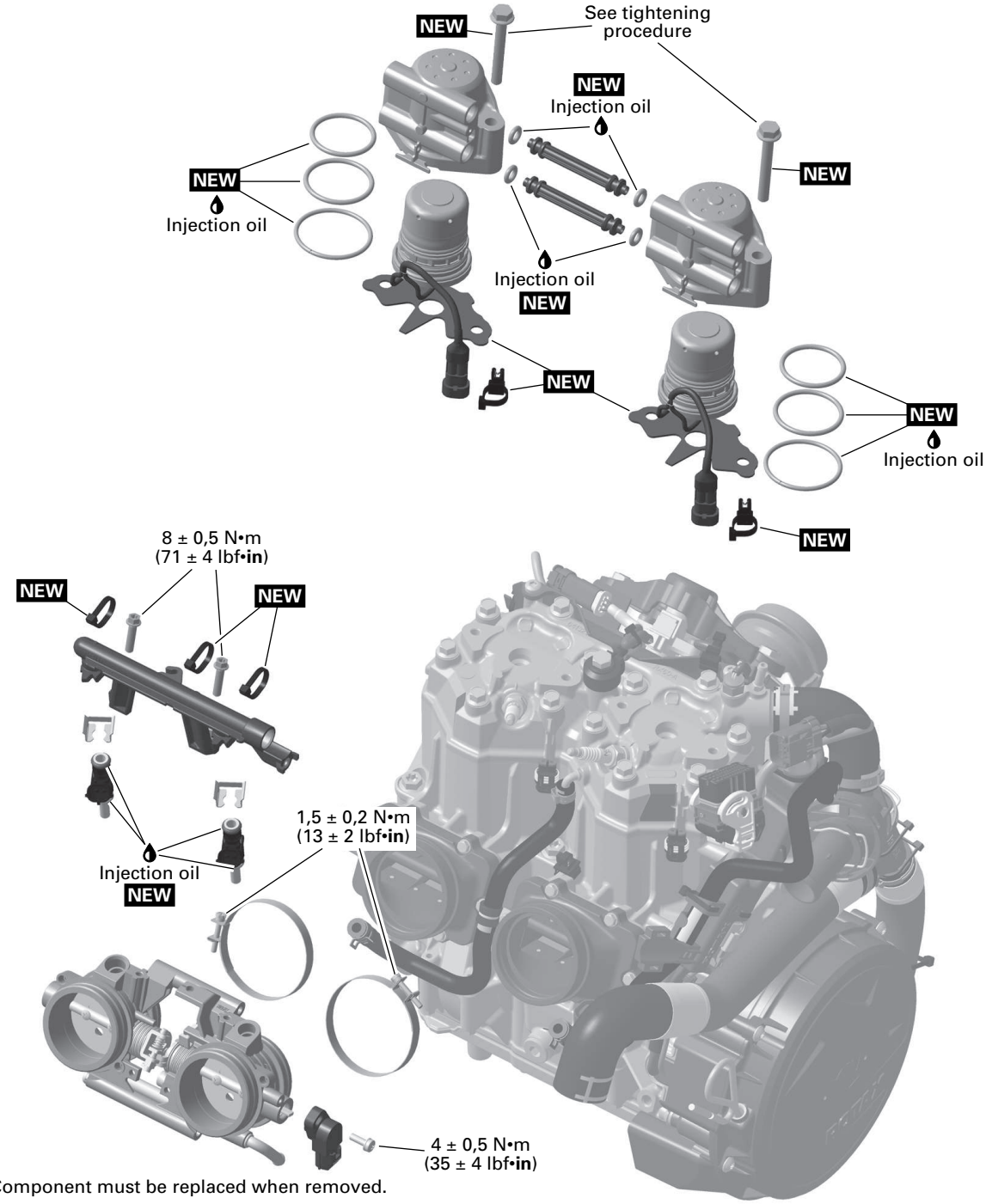
Midwest Manuals
Green Manuals
Paperless Manuals
For a Better Tomorrow
www.green-manuals.com
If you bought this manual from any other seller please leave them
NEGATIVE feedback and notify us at bestshopmanuals@gmail.com

600R E-TEC



NEW = Component must be replaced when removed.

850 E-TEC



NEW = Component must be replaced when removed.

General

For proper installation of the engine wiring harness and locking ties refer to *Engine Wiring Harness* subsection.

When testing electrical systems, the emergency stop switch must always be in the RUN position unless otherwise mentioned, or test is performed while cranking engine.

⚠ WARNING

Always disconnect the magneto connector prior to:

- **Disconnecting any fuel hose.**
- **Removing a fuel injector.**
- **Removing a spark plug cable or spark plug.**

Otherwise, fuel vapors may ignite in presence of a spark creating a fire hazard.

⚠ WARNING

The fuel system is under high pressure. Proceed with care when working on the fuel system. Wear safety glasses and work in a well ventilated area.

Release fuel system pressure prior to removing fuel system components. Refer to *Removing the Fuel Tank* in *Fuel Tank and Fuel Pump* subsection.

⚠ WARNING

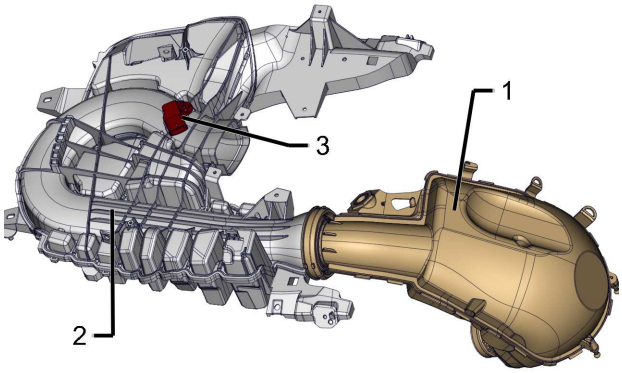
Perform a fuel pressure test each time a component from the fuel system is removed. Prior to starting the engine when a fuel hose was disconnected or a fuel injector removed:

- **Ensure all fuel lines are properly connected.**
- **Inspect engine compartment to detect any fuel leakage or an abnormally strong fuel odor which may be an indication of a fuel leak that is not readily visible.**

System Description

The crankshaft position sensor (CPS), the throttle position sensor (TPS) are the primary sensors used to control the injection. Other sensors (like temperature sensors, etc.) are used as secondary input.

Air Induction



1. *Primary air intake silencer*
2. *Secondary air intake silencer*
3. *MAPTS*

Air flows through a mesh filter in the secondary air intake silencer mounted on top of engine. The mesh filter prevents snow from being drawn into the engine.

Air pressure and temperature is measured in the secondary air intake silencer by the Manifold Absolute Air and Temperature Sensor (MAPTS).

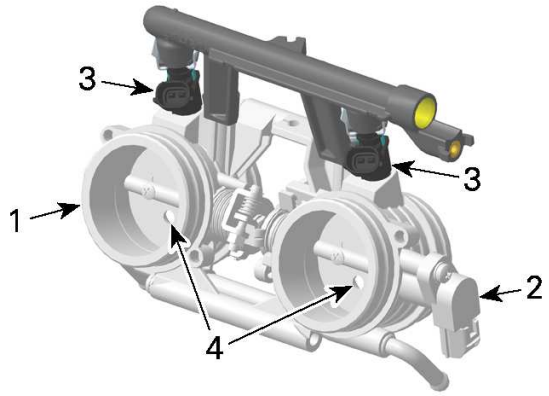
Air then flows through the primary air intake silencer.

Air is then drawn in through a dual throttle body mounted on the engine intake side.

Throttle Body

A dual throttle body assembly is directly mounted on the intake flange of each cylinder (52 mm (2.05 in)).

The air flow is controlled by two throttle plates. Each throttle plate has a 6.8 mm (.268 in) idle port in it.



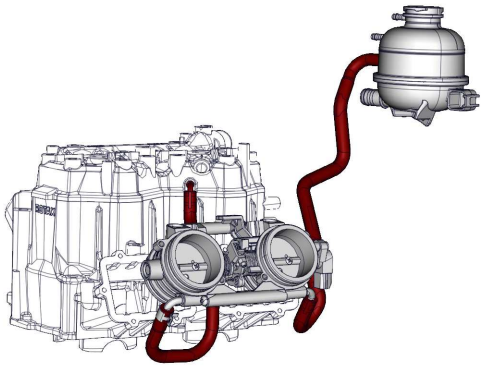
TYPICAL

1. *Throttle body*
2. *TPS (Throttle Position Sensor)*
3. *Throttle body injectors (850 E-TEC)*
4. *Idle ports*

Since there is a constant airflow through the idle ports of the throttle plates, the idle speed is controlled by the ECM by varying the amount of fuel injected in the combustion chamber and by controlling the injection timing.

The TPS (Throttle Position Sensor) is fitted on the throttle body. The TPS sends throttle angle position to the ECM.

Engine coolant flows through the throttle body to prevent potential freezing of throttle plates due to the temperature drop naturally created by the venturi.

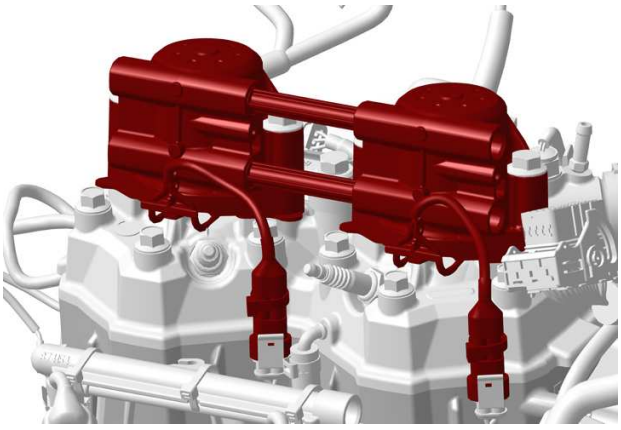


The air then continues through the reed valves into the cylinder base then into the crankcase.

Fuel Injectors

Each cylinder is supplied with fuel by a fuel injector on the top of the cylinder (high pressure direct E-TEC injectors).

High Pressure Direct E-TEC Injectors



DIRECT INJECTORS

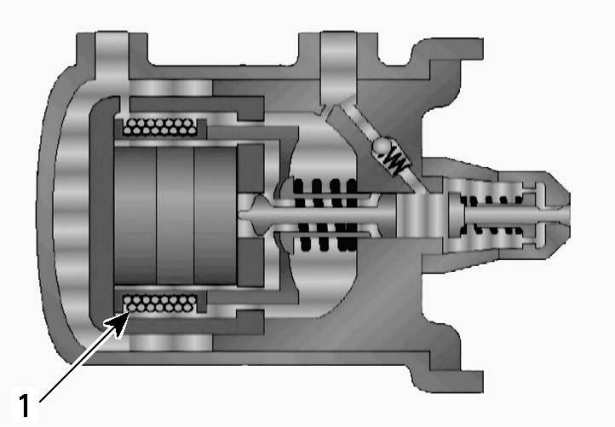
The fuel injectors are powered from the 55 Vdc system.

One fuel injector per cylinder is used.

The E-TEC fuel injector is mounted directly on top of the cylinder head.

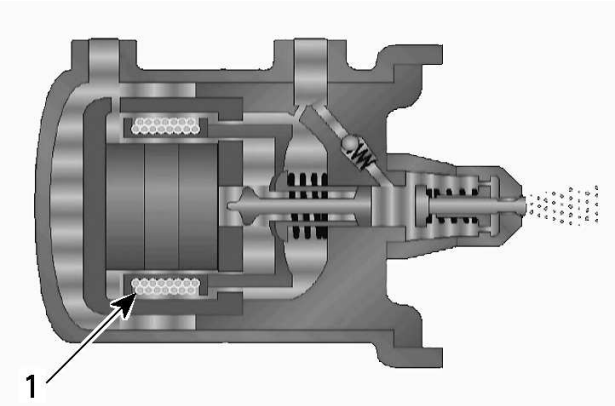
The fuel injector achieves a direct injection right into the combustion chamber. This keeps the piston cooler with less fuel.

A voice coil type is used to open and close the fuel injector nozzle. This allows for quick operation of the fuel injector; opening stage as well as the closing stage. This results in the ability to operate the engine at a higher RPM and lowers unburned fuel to the exhaust port.



FUEL INJECTOR CLOSED
1. Voice coil

When a positive current is supplied to the coil by the ECM, the fuel injector plunger moves towards the spring loaded injector needle. As the injector plunger moves, this builds up a pressure in the fuel injector chamber. When the pressure reaches approximately 2 068 kPa (300 lbf/in²), the injector needle spring is overcome and the needle opens. Fuel injection then takes place while the pressure peaks at 3 792 kPa (550 lbf/in²).



FUEL INJECTOR OPENED
1. Voice coil

Swirl channels are used in the fuel injector to better atomize the fuel charge.

The quantity of injected fuel is controlled by varying the injector plunger stroke.

To bring the injector plunger backward to its rest position, the current is reversed and the return springs close the injector needle and plunger. Near the end of the return stroke, a brief positive current is applied to “brake” the injector plunger. This results in a quieter operation of the fuel injectors.

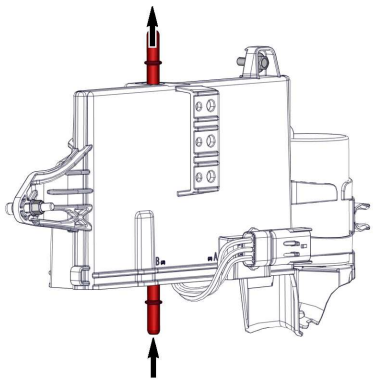
The fuel injectors provide a stratified fuel charge to the combustion chamber at idle speed only. Beyond this RPM, the fuel charge becomes homogeneous.

The stratified fuel charge provides a cleaner combustion, better idling and less smoke.

Fuel is used to maintain proper fuel injector operating temperature.

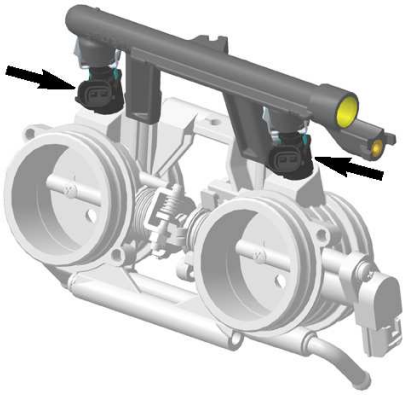
The flow starts from the fuel pump, through the ECM, then around the voice coil inside the fuel injector housings to cool down the fuel injector components.

Fuel enters the inlet port located at the bottom of the fuel injector housing and exits through the outlet port on top of the fuel injector.



Throttle Body Injectors (850 E-TEC)

The fuel injectors are mounted directly on top of the throttle body.



Fuel injectors are used to inject fuel directly before the reed valves. One injector is used per cylinder.

The fuel injectors are supplied with fuel by the fuel rail. The fuel rail ensures all times that enough fuel at the right pressure can be delivered to the fuel injectors. The fuel rail is fed by the fuel pump module.

Idle Speed

Idle speed is controlled by the ECM and is not adjustable with an idle screw.

If idle speed is not as per specification (refer to *Technical Specifications*), perform the *Resetting Closed Throttle Value (TPS)*.

Resetting Closed Throttle Value (TPS)

General Information

This operation performs a reset of the TPS (throttle position sensor) values in the ECM when the throttle is closed. This reset is very important as the setting of the TPS will determine the basic parameters for all fuel mapping and several ECM calculations for idle speed control of the engine.

NOTICE

An improperly set TPS may lead to poor engine performance.

Verifying TPS Closed Throttle Value

1. Connect the vehicle to the BRP diagnostic software (BUDS2). Refer to *Communication Tools* subsection.
2. In BUDS2, go to:
   - **Measurements** page
   - **ECM** button
   - **ECM - Basic** tab
   - **Throttle Opening**
3. Ensure throttle cable is properly adjusted, refer to *Adjusting Throttle Cable* in this subsection.

4. Look for the throttle opening value .

NOTE: The Throttle Opening indication must be within the following specification.

TPS Closed Throttle Value	
Throttle opening specification	(0 % ± 0.2)
Temperature	Above 5 °C (41 °F)

5. If the throttle opening is within the % specification, DO NOT reset the closed throttle value unless the following parts were replaced:
   - Engine control module (ECM)
   - Throttle body
   - Throttle position sensor (TPS).
6. If TPS is not within specification, reset the closed throttle value.

Resetting the Closed Throttle Value

NOTICE

Proper throttle cable adjustment must be verified before proceeding.

1. In BUDS2, go to:
   - **Settings** page
   - **Vehicle** or **ECM** button
   - **Settings** tab
   - **Initialization - Reset TPS**
2. Press on the Reset button.
3. Confirm Throttle Opening value indicates 0.0%.

NOTE: A throttle opening of 0.0% after reset indicates the operation is successful.

4. If the TPS cannot be reset, check the following:
   1. Fault codes related to TPS.
   2. Throttle cable adjustment.
   3. TPS properly installed.
   4. TPS connector and terminal condition.

Troubleshooting Actual TPS Voltage Out of Range

1. If the Actual TPS Voltage is out of specification, check the following.
   1. Fault codes related to TPS.
   2. Throttle cable adjustment.
   3. TPS properly installed.
   4. TPS connector and terminal condition.

Inspection

Inspecting and Cleaning the Throttle Body

1. Clean throttle plates and throttle body bores.

Clutch and pulley flange cleaner PRO S1

Troubleshooting

Diagnostic Tips

Engine problems are not necessarily related to the injection system.

It is important to ensure the mechanical integrity of the engine is present.

Spark Plugs

Improper spark plug indexing may lead to engine misfiring. Check if BRP spark plugs are installed or if spark plugs are properly indexed. Refer to *Spark Plugs* in the *Ignition System* subsection.

3D RAVE Valves

Improper position of RAVE valves may lead to engine misfiring. Check RAVE valves. Refer to *RAVE* subsection.

Electrical System

It is important to check that the electrical system is functioning properly:

- 55V system voltage
- Capacitor (refer to *Charging System*)
- Ground connections
- Wiring and connectors.

Ensure that all electronic components are original BRP recommended components.

Any modification to the wiring harness may lead to fault codes or bad operation.

Always refer to the wiring diagram when diagnosing an electrical problem.

⚠ WARNING

The EMS operates on high voltage (55 Vdc), be careful to avoid electrical shocks.

⚠ WARNING

All electrical actuators (example: fuel injectors, fuel pump, ignition coils and electronic oil injection pump) are powered as soon as engine is cranked when the emergency engine stop switch is at the RUN position.

Electrical Connections

Pay particular attention to ensure that pins are not out of their connectors or out of shape.

Make sure that connections are very tight, make good contact, are corrosion-free, and show no signs of moisture. Particularly check ECM ground connections.

NOTE: Do not apply dielectric grease or other lubricant in the ECM connectors.

Check if wiring harness shows any signs of scoring.

Resistance Measurement

When measuring the resistance with an ohmmeter, all values are given for a temperature of 20 °C (68 °F). The value of a resistor varies with the temperature. The value for common resistor or windings (such as solenoid) increases as the temperature increases. However, our temperature sensors are NTC types (Negative Temperature Coefficient) except for the EGTS, which means that the value decreases as the temperature increases. Use the provided tables for sensor resistive values at given temperature.

The resistive value of a temperature sensor may test good at a certain temperature but may be defective at other temperatures.

A good test is to put the sensor in a container filled with ice and water and measure resistance. Then, heat the water and read the resistance at different temperatures.

Procedures

Fuel Hoses and Oetiker Clamps

Removing and Installing Oetiker Clamps

Always use a shop rag when disconnecting a fuel hose.

⚠ CAUTION

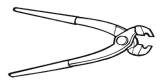
Fuel system is under high pressure.

⚠ WARNING

- **Never use a hose pincher on high pressure hoses.**
- **Never change the routing of a fuel hose.**
- **Always reinstall the corrugated protective tubing on fuel hoses.**
- **Secure fuel hoses using the appropriate locking tie or fastener to prevent contact with sharp edges or hot, rotating and moving parts.**
- **After connecting a hose or a quick connect fitting, pull on the hose near the fitting to make sure it is securely locked.**

Use of improper fuel lines could compromise fuel system integrity.

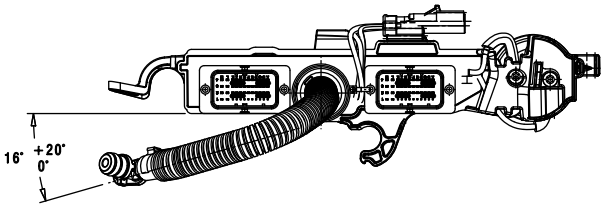
1.

Oetiker plier (P/N 295000070)	

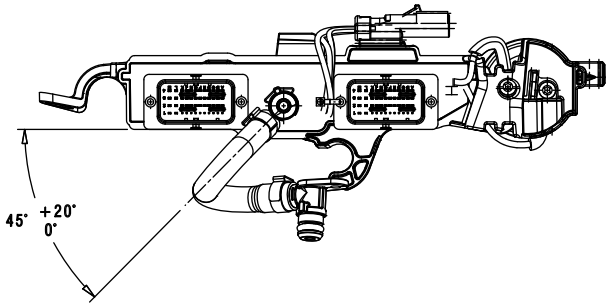
Installing the Inlet Fuel Hose

1. Position the inlet fuel hose as per the following illustrations.

600R E-TEC Engines

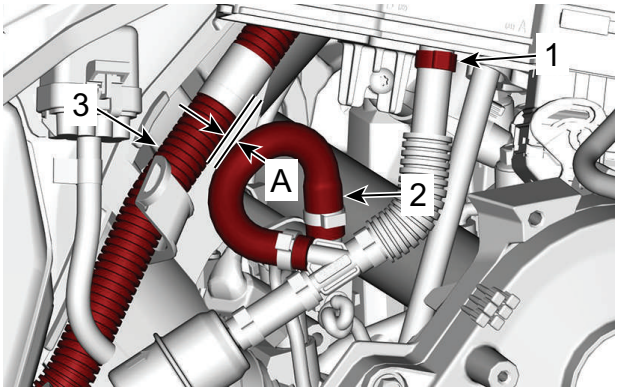


850 E-TEC Engines



NOTICE

Make sure to have a minimum of 5 mm (7/32 in) between the fuel hoses (inlet and outlet) before and after the clamp crimping.

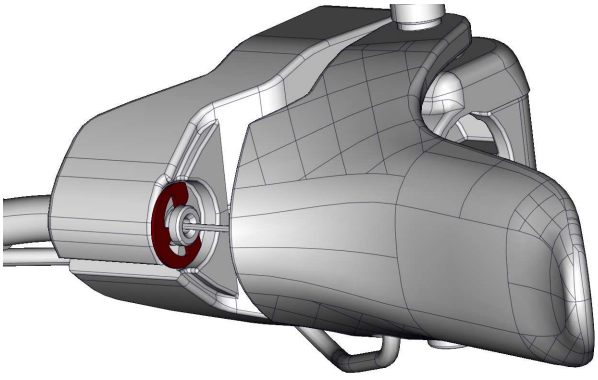


1. Oetiker clamp
2. Fuel inlet hose
3. Fuel outlet hose
A. Required minimum distance: 5 mm (7/32 in)

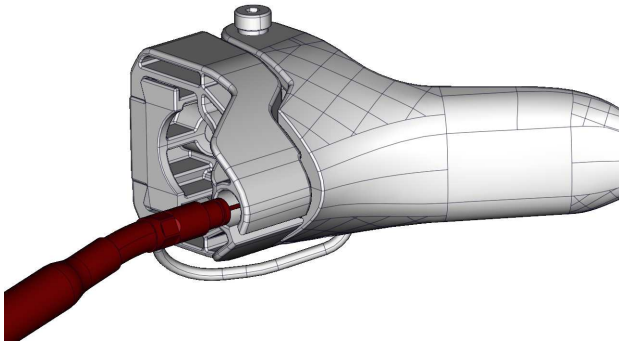
Throttle Cable

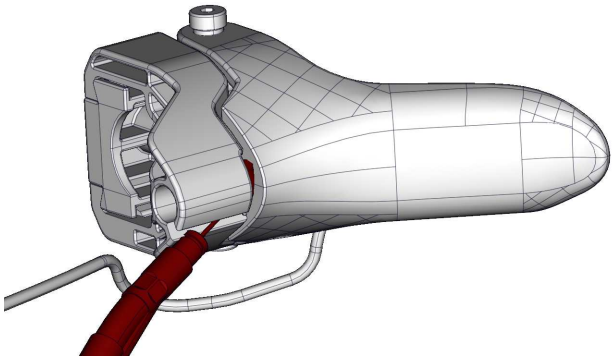
Removing the Throttle Cable

1. Depress and hold throttle lever.
2. Pull out circlip using long nose pliers. Keep circlip for re-use.

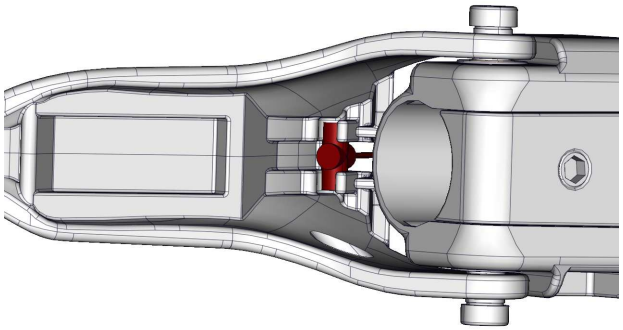


3. Pull throttle cable out of the throttle lever housing.



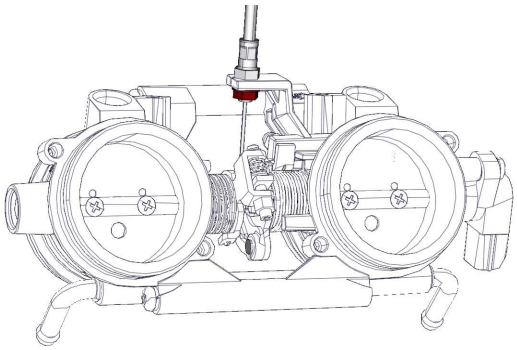


4. Unhook cable end barrel from throttle lever and remove cable.



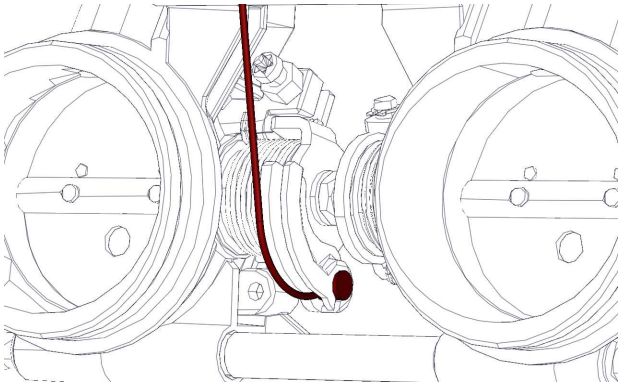
NOTE: Take note of cable routing before removal.

5. At throttle body, fully unscrew cable lock nut.



THROTTLE CABLE LOCK NUT

6. Unhook throttle cable end.



7. Remove throttle cable.

Inspecting the Throttle Cable

1. Visually inspect cable sheath for kinks, wear or other damage.
2. Visually inspect cable at throttle body and at throttle lever for fraying or other damage.
3. Make sure the throttle cable operates smoothly.

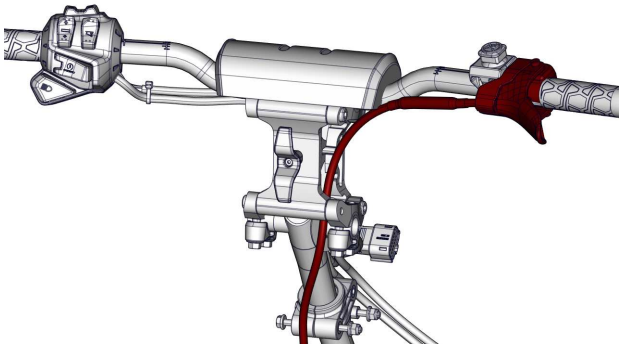
Installing the Throttle Cable

Reverse removal procedure however, pay attention to the following.

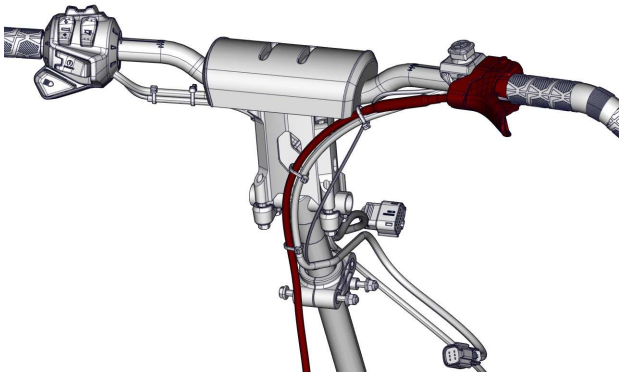
1. Route cable as noted prior to removal.

⚠ WARNING

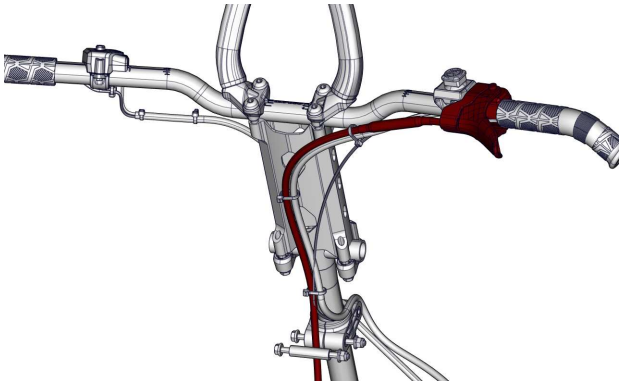
Ensure proper routing of throttle cable as per following illustration.



TRAIL MODEL WITH ADJUSTABLE RISER



TRAIL MODEL WITH FIXED RISER



MOUNTAIN MODEL

2. Ensure that cable ends are properly secured in their levers.
3. Proceed with throttle cable adjustment.

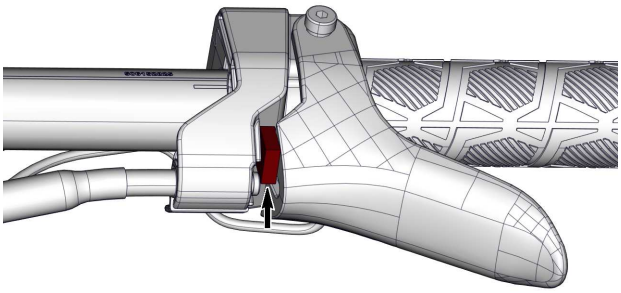
Adjusting the Throttle Cable

1. Connect the vehicle to the BRP diagnostic software (BUDS2). Refer to *Communication Tools* subsection.
2. In BUDS2, go to:
   - **Measurements** page
   - **ECM** button
   - **Presets** / **ECM-Basic** tabs
   - **Throttle opening %**.
3. Position handlebar straight and level.

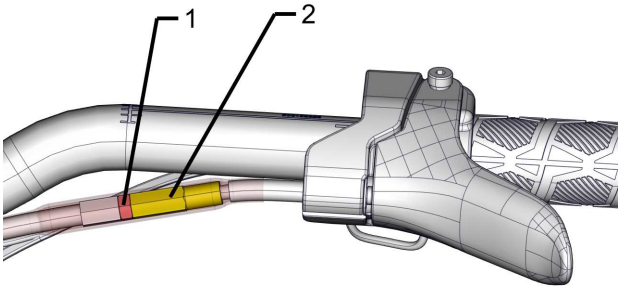


TYPICAL - HANDLEBAR IN STRAIGHT AHEAD POSITION

4. Insert a 4 mm (.157 in) spacer between throttle lever and throttle lever housing.



5. Unlock throttle cable adjuster lock nut.
6. Adjust throttle cable until the throttle opening value (%) is between 3 and 5% in BUDS2.



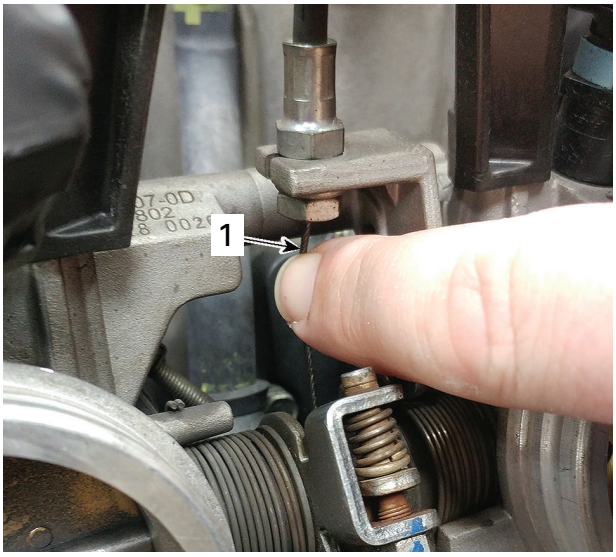
1. *Throttle cable adjuster lock nut*
2. *Throttle cable adjuster*

7. Lock throttle cable adjuster lock nut.
8. Remove the 4 mm (.157 in) spacer.
9. Fully depress the throttle lever and ensure the opening value is more than 95 % in BUDS2.
10. Ensure there is free play in the cable with the throttle lever at rest.

NOTICE

Do not tamper with any throttle body adjustment screws. Otherwise, throttle body must be replaced.

NOTE: To ensure cable free play, lightly press on throttle cable as in following illustration.

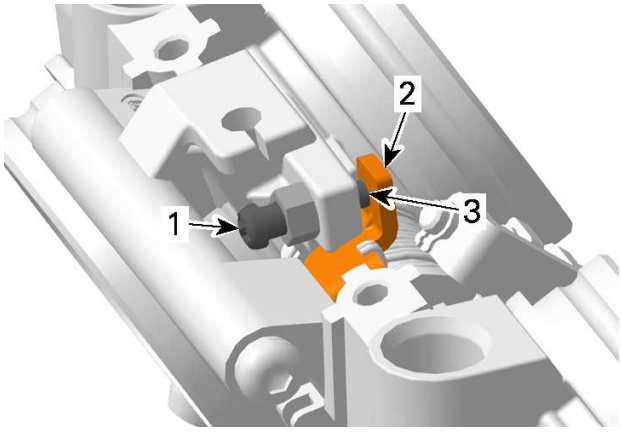


THROTTLE CABLE FREE PLAY
1. *Cable slightly loose here*

11. Activate and release throttle lever 2 - 3 times to settle throttle plate.
12. Confirm throttle plate stopper is STILL in contact with master zero position screw.

NOTICE

Do not tamper with any throttle body adjustment screws. Otherwise, throttle body must be replaced.



THROTTLE BODY MASTER ZERO POSITION
1. *Master zero position screw*
2. *Throttle plate stopper*
3. *Contact here*

13. Readjust throttle cable if necessary.
14. Inspect the throttle cable operating range with BUDS2.
15. Reset the Closed Throttle Value. Refer to procedure in this subsection.

Inspecting the Throttle Cable Operating Range

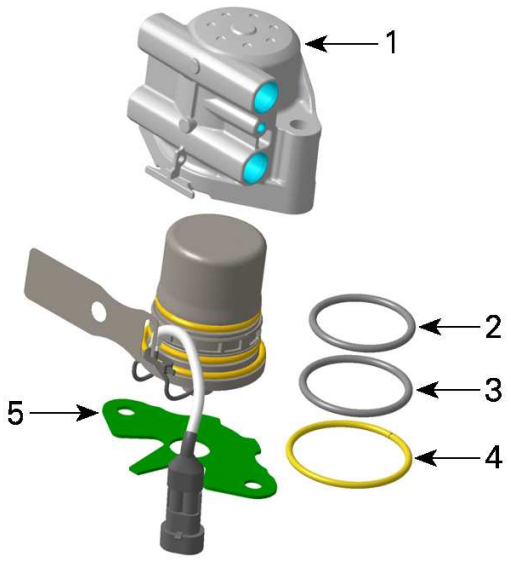
1. In BUDS2, go to:
   - **Measurements** page
   - **ECM** button
   - **Presets** / **ECM-Basic** tabs
   - **Throttle opening %**.
2. Fully depress throttle lever and hold.
   1. Confirm throttle opening is within specification.

Throttle Opening Specification (Wide Open Throttle)
More than 95%

3. If throttle opening is out of specification, readjust as follows.

Throttle Opening Out of Specification	
Above specification	Loosen throttle cable
Below specification	Tighten throttle cable

E-TEC Direct Injectors



E-TEC DIRECT INJECTOR
1. *Fuel injector housing*
2. *Top O-ring*
3. *Bottom O-ring*
4. *Crush ring*
5. *Gasket*

Every E-TEC direct injector is bench tested. Its electrical and flow characteristics are registered throughout all its operating range in a calibration file.

NOTICE

When an E-TEC direct injector is replaced, the matching calibrated file must be loaded in the ECM using the BRP diagnostic software (BUDS2) so that the ECM properly controls the fuel injector.

E-TEC Direct Injector Troubleshooting Tips

1. Usually, a faulty fuel injector will lead to poor engine idling and a low RPM (around 800 RPM and below). It may also lead to engine misfiring.
2. To troubleshoot a fuel injector 2 methods may be used. While engine is running, try disconnecting a fuel injector connector or use the BRP diagnostic software (BUDS2) to disable the injectors.

   If the engine RPM drops momentarily, the injector on this cylinder is functioning normally.

   If the engine RPM does not drop momentarily, this cylinder is not functioning properly. Check the following:
   - Fuel injector operation. Refer to *Testing the Fuel Injector Balance*.
   - Spark plug and ignition coil. Refer to *Ignition System* subsection.
   - Engine condition.
3. Ensure the correct E-TEC direct injector is installed on the proper cylinder. Refer to *E-TEC Direct Injector Position Validation*.
4. If one injector is thought to be faulty, proceed with the injector tests.

Inspecting E-TEC Direct Injectors Area Visually

1. If a fuel leak is noticed in the hoses area, inspect hoses and connections.
2. If a fuel leak is noticed in fuel injector base area, it indicates a leak of the lower O-ring of fuel injector.
3. If a dark carbon sooted area is noticed in fuel injector base area, it indicates a leak between the fuel injector nozzle and the cylinder head. The fuel injector retaining screws may not be tight enough.

Testing the E-TEC Direct Injectors for Leak

This test will check if all fuel injection components are clear of leakages, including the nozzle of each E-TEC direct injector.

1. First make sure fuel pressure is within specifications. Refer to *Fuel Tank And Fuel Pump* subsection.

NOTE: Keep the pressure gauge installed for the leak test.

2. Disconnect magneto connector. Refer to *Wiring Harness And Connectors* subsection.

⚠ WARNING

The magneto connector must be disconnected to prevent any spark in the engine compartment should the engine be cranked. Fuel vapors may ignite in presence of a spark creating a fire hazard.

3. Release fuel pressure. Refer to *Fuel Tank And Fuel Pump* subsection

NOTICE

If the fuel pressure is not released, the pressure will push the fuel injector out of its housing when removing the fuel injector from the engine. This could damage the fuel injector and lead to an important fuel spill.

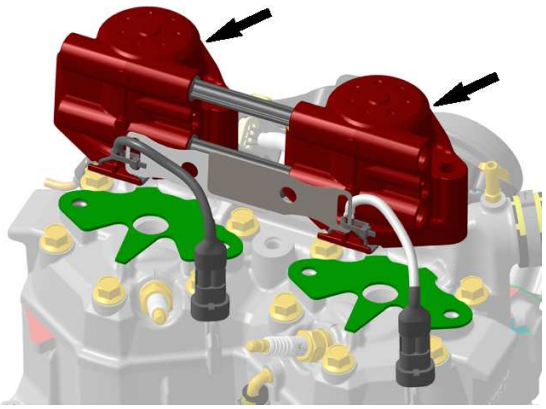
4. Remove upper body module. Refer to *Body* subsection.

NOTE: Fuel injector leak test can only be done on both injectors simultaneously.

5. Unscrew both E-TEC direct injectors. Refer to *Removing the E-TEC Direct Injector* in this subsection.
6. Carefully lift both fuel injectors. Be careful not to pry hoses against their plastic fittings.

⚠ CAUTION

If both fuel injectors are not lifted carefully from the engine together, the strain on the injector fuel fittings may cause them to crack and leak fuel when pressurized, resulting in a fire hazard.



TYPICAL

7. Install new crush rings on E-TEC direct injectors.

NOTICE

If a new crush ring is not installed, it will be difficult to determine if the E-TEC direct injector is leaking.

8. Secure the E-TEC direct injectors on a cylinder head (either remove it from engine or order a spare one as a tool).

⚠ WARNING

Fuel injector must be secured during the leak test to avoid the fuel injector to be projected.

9. Place a container under the E-TEC direct injectors.
10. Ensure there is enough fuel in fuel tank.
11. With the vehicle connected to the BRP diagnostic software (BUDS2), activate the fuel pump.
12. Check all fuel injection components and especially the injector nozzles for leakages.
13. Monitor fuel pressure at fuel pressure gauge. If pressure drops below 275 kPa (40 lbf/in²) during the test, re-activate fuel pump as necessary.

Fuel Injector Leakage	
Est. Duration	**Specification**
2 minutes	2 drops per minute maximum

14. If test is not within specification, find the problematic component and repair or replace it.
15. Properly reinstall E-TEC direct injectors on the engine. Refer to *Installing E-TEC Direct Injectors* in this subsection.

16. Reinstall remaining removed components.
17. Connect magneto connector.

⚠ WARNING

Wipe up any spilled fuel.

Testing the E-TEC Direct Injector

NOTICE

After fuel injector activation using BUDS2, always crank engine in drowned mode to ventilate engine and prevent a potential backfire due to fuel accumulation in engine.

1. Connect vehicle to the BRP diagnostic software (BUDS2). Refer to *Communication Tools* subsection.
2. In BUDS2, go to:
   - **Functions** page
   - **ECM** button
   - **Functions** tab
   - **IO Controls - Activate Fuel Injectors**.
3. Activate each fuel injector.

   With each activation a sound coming from the targeted injector should be heard.

   If the fuel injector does not work, possible causes are:
   - Injector
   - Harness
   - ECM.

   If the fuel injector does not work, connect it to the opposite fuel injector connector, then test again.

   If the suspected fuel injector works normally with the opposite fuel injector connector, carry out the *Testing the E-TEC Direct Injector Input Voltage* in this subsection.

   If the fuel injector still does not work, carry out the *Testing E-TEC Direct Injector Resistance*.

Testing the E-TEC Direct Injector Balance

NOTICE

After fuel injector activation using BUDS2, always crank engine in drowned mode to ventilate engine and prevent a potential backfire due to fuel accumulation in engine.

1. Set emergency stop switch to RUN.
2. Install a fuel pressure gauge as described in *Fuel Tank and Fuel Pump* subsection.
3. Connect vehicle to the BRP diagnostic software (BUDS2). Refer to *Communication Tools* subsection.
4. In **Functions** page, activate fuel pump.
5. Fuel pressure must be within specification. Refer to *Fuel Tank and Fuel Pump* subsection. Re-activate fuel pump as necessary.
6. Go to **Activate Fuel Injectors**.
7. Activate all injectors and record the fuel pressure drop for each.
8. The maximum fuel pressure drop between injectors should not exceed the following specification:

Maximum Fuel Pressure Drop Allowed Between Fuel Injectors
10 kPa (1.5 lbf/in²)

9. If pressure drop of any fuel injector is greater than the specification, replace that injector then repeat the test.
10. Remove fuel pressure gauge and reinstall removed parts.

Testing the E-TEC Direct Injector Input Voltage

1. Connect vehicle to the BRP diagnostic software (BUDS2). Refer to *Communication Tools* subsection.
2. In BUDS2, go to:
   - **Measurements** page
   - **ECM** button
   - **ECM - Basic** tab.
3. Read the voltage on the 55V/60V System Circuit Voltage meter.

55 V / 60 V System Circuit Value
30 Vdc minimun

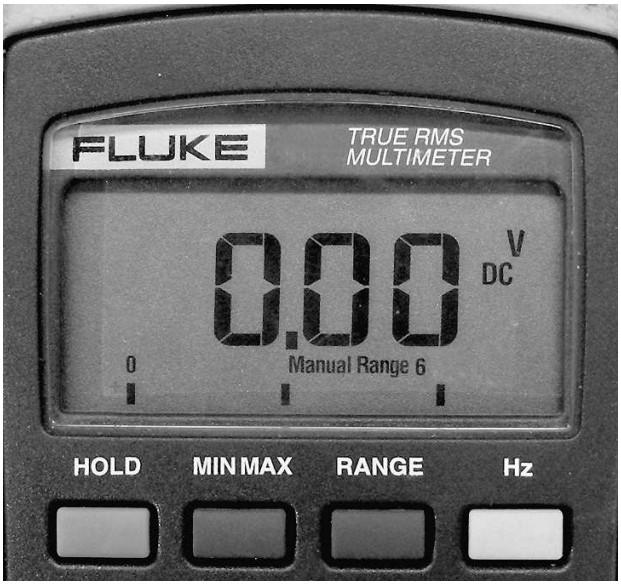
4. Measure voltage at E-TEC direct injector connector with a multimeter.

E-TEC Direct Injector Input Voltage Test			
Inj.	**Inj. DI Connector Pin**	**Battery**	**Specification**
MAG and PTO	1	Negative (-) post	30 Vdc minimun

5. If voltage test is as per specification, carry out *Testing the E-TEC Direct Injector Control Circuit Signal.*
6. If voltage test is not as per specification, check wire continuity between ECM and fuel injector connector.

Testing the E-TEC Direct Injector Control Circuit Signal

1. Connect vehicle to the BRP diagnostic software (BUDS2). Refer to *Communication Tools* subsection.
2. Back probe injector connector, do not disconnect injector connector.
3. Set multimeter to Vdc (Hz).
4. Repeatedly press the RANGE button until the display shows Manual Range 6.

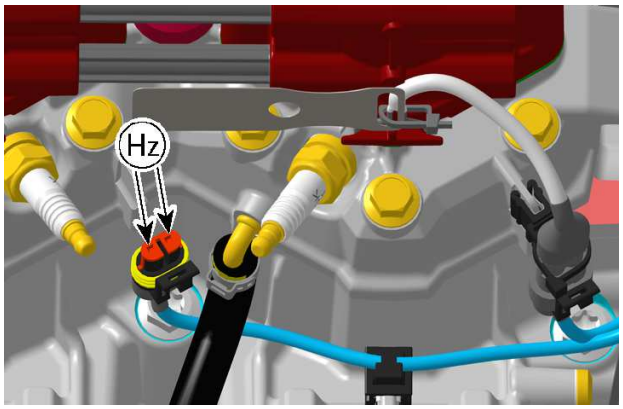


DC VOLTS AND MANUAL RANGE 6 SELECTED

5. Press the Hz button so that the display shows Hz.
6. Activate fuel injector and read the frequency on the multimeter.

NOTE: The multimeter counts the pulses per second (Hertz) of current the ECM sends to the fuel injector.

E-TEC Direct Injector Control Circuit Signal Test		
Inj. DI Connector Pin		**Specification**
1	2	Approx. 2 Hz



FUEL INJECTOR WIRING HARNESS CONNECTOR

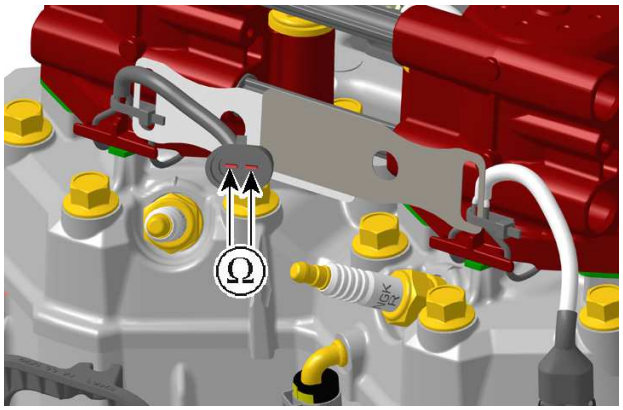
7. If there is no reading, check continuity of wiring between ECM and fuel injector connector.
8. If you hear the injector click, control circuit is good.
9. If reading is good, the control circuit is functional.

Testing the E-TEC Direct Injector Resistance

Injector Resistance

1. Disconnect the fuel injector connector.
2. Measure fuel injector resistance directly on its terminals.

E-TEC Direct Injector Resistance Test		
Inj. DI Pin		**Specification @ 22 °C (72 °F)**
1	2	Below 2.7 Ω



TYPICAL - FUEL INJECTOR CONNECTOR

3. If measurement is out of specification, replace fuel injector.

Injector Harness Resistance

1. Disconnect ECM-A connector from the ECM.
2. Connect the ECM-A connector to the ECM adaptor tool.

3. Check resistance value between terminals as follows.

E-TEC Direct Injector Resistance Test			
Inj.	**ECM Adapter Pin**		**Specification @ 22 °C (72 °F)**
MAG	M1	L1	Below 2.7 Ω
PTO	M2		

4. If resistance value is as specified, the injector and its circuits are good. Replace the fuel injector.

Removing the E-TEC Direct Injectors

NOTICE

Always replaced fuel injector screws, washers, O-rings and crush rings when the fuel injectors are removed. Otherwise, leakage or damage to fuel injector or cylinder head might occur.

1. Release the fuel pressure in the system. Refer to *Fuel Tank and Fuel Pump* subsection.

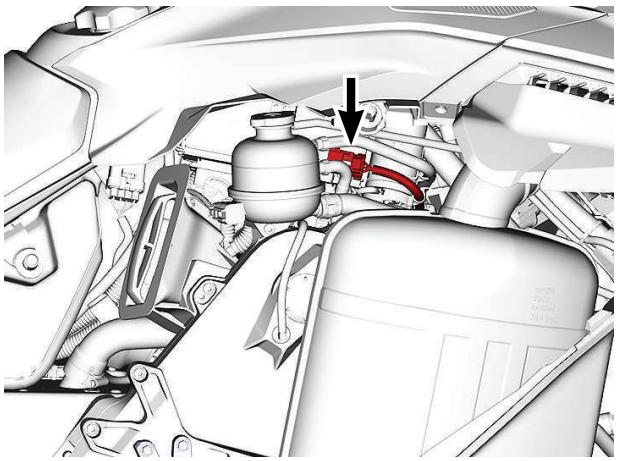
NOTICE

If fuel pressure is not released, the pressure will push the fuel injector out of its housing when removing the fuel injector. This could damage the fuel injector and lead to an important fuel spill.

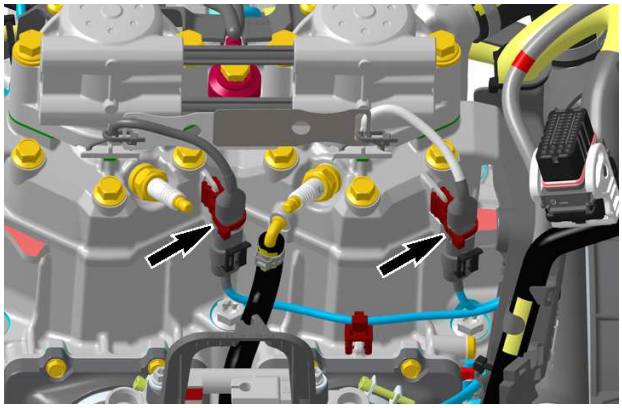
2. Disconnect magneto connector (3-pin connector).

⚠ WARNING

The magneto connector must be disconnected to prevent any spark in the engine compartment should the engine be cranked. Fuel vapors may ignite in presence of a spark creating a fire hazard.

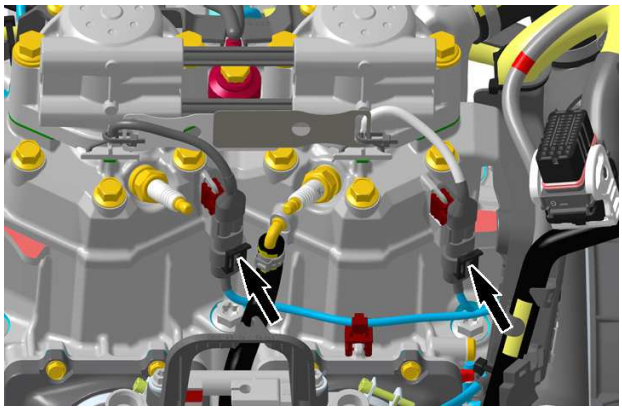


3. Remove upper body module.
4. Clean fuel injector area.
5. Cut locking ties.



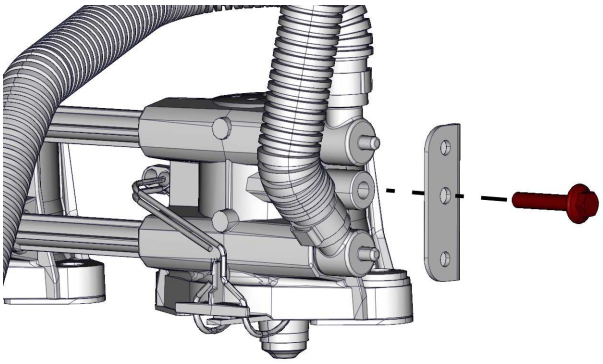
TYPICAL

6. Disconnect fuel injector connectors.

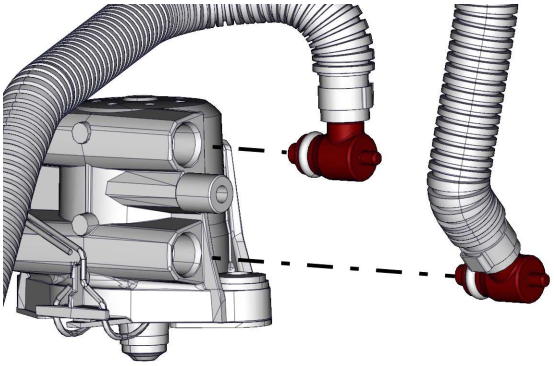


TYPICAL

7. Install a rag under the hose ends to catch fuel spillage.
8. Remove fuel hose retainer screw and retainer. Discard screw.



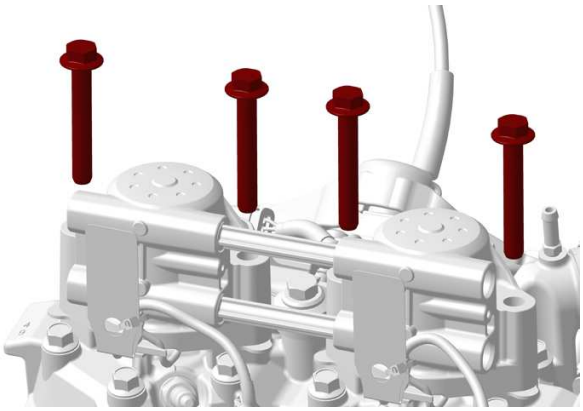
9. Disconnect fuel hoses from fuel injector.



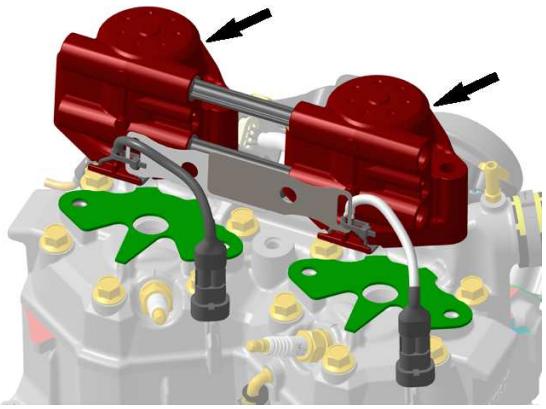
⚠ WARNING

More fuel than usual will flow out of the fuel injectors. Work in a well ventilated area and wipe up spilled fuel.

10. Remove and discard fuel injector screws.



11. Gently pull up on the fuel injectors to remove them.



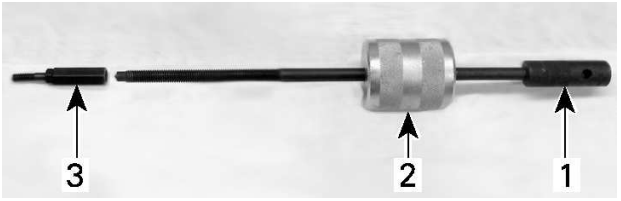
NOTICE

Use caution when handling fuel injector. Never hold injector by its electrical wires. Prevent dirt and debris from entering fuel inlet and outlet ports of fuel injectors or fuel hoses. Cover the fuel injector nozzle port in cylinder head to prevent contamination of combustion chamber.

Disassembling the E-TEC Direct Injector

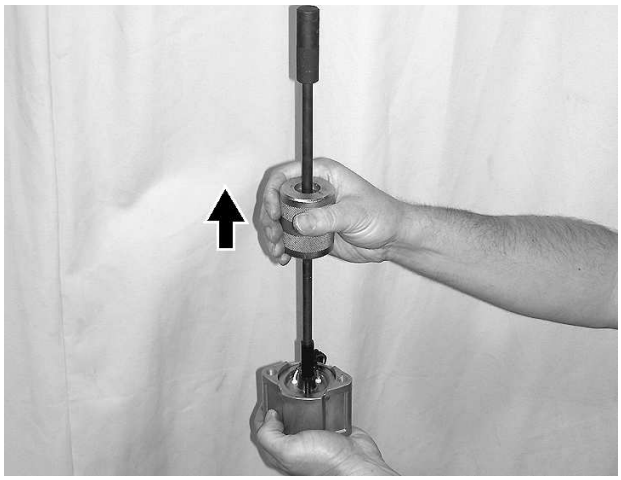
1. Separate fuel injectors and connecting tubes.
2. Remove and discard O-rings.
3. Thread the extractor adapter into the fuel injector.

Extractor adaptor (P/N 529036136)	



1. *Slide hammer shaft*
2. *Slide hammer weight*
3. *Extractor adapter*

4. Securely hold the fuel injector housing upside down to avoid dropping it.
5. Work slide hammer to pull the fuel injector out.



TYPICAL



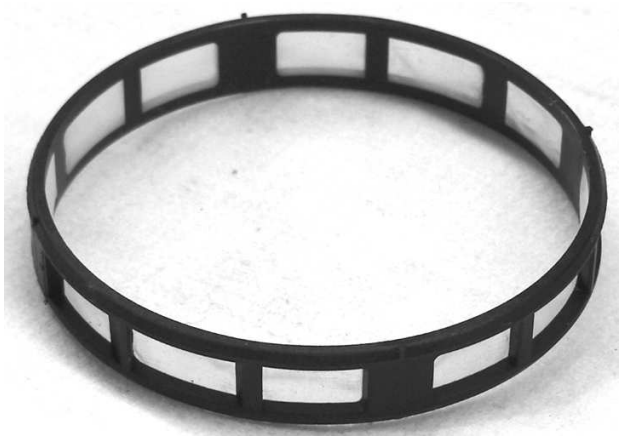
TYPICAL

6. Remove the extractor adaptor from the fuel injector.
7. Remove O-rings, crush ring and filter from the fuel injector.

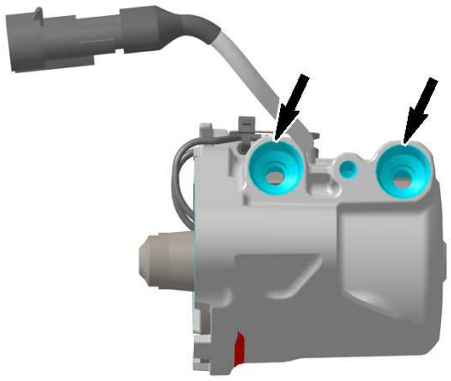


1. *Crush ring (discard)*
2. *ORANGE O-ring (discard)*
3. *Filter*
4. *BLUE O-ring (discard)*

8. Inspect and clean fuel injector filter.



9. Clean connecting tube bores in injector housing.



Assembling the E-TEC Direct Injector

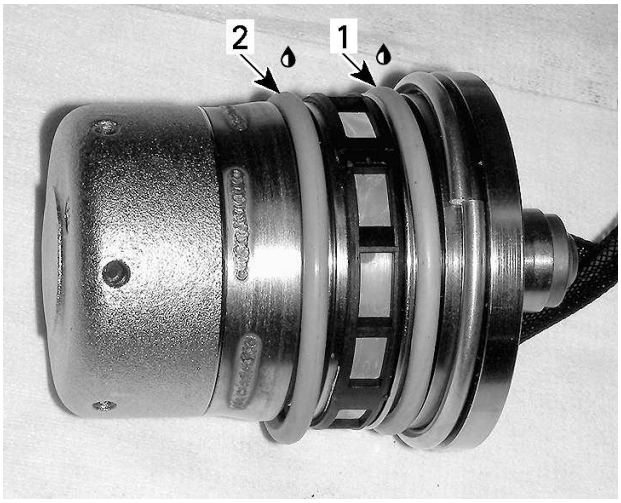
1. The assembly procedure is the reverse of disassembly. However, pay attention to the following:
2. Lubricate O-rings.

Injection oil

3. Install a **NEW** crush ring.
4. Install a **NEW** ORANGE O-ring next to the crush ring (bottom).

NOTICE
Always use the O-rings specifically designed for these fuel injectors.

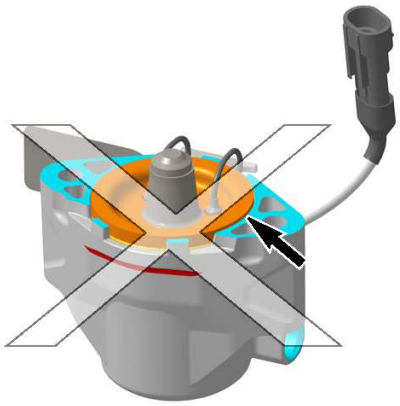
5. Install filter. Ensure filter is retained firmly on fuel injector. Otherwise, remove it, invert it half a turn, then reinstall. If it still not retained securely, install a new one.
6. Install a **NEW** BLUE O-ring above the filter (top).



OIL INJECTION ON O-RINGS
1. ORANGE
2. BLUE

7. Fully insert the fuel injector in its housing as shown on following illustrations.

NOTICE
Never press or tap the fuel injector tip.



WRONG INSTALLATION



CORRECT INSTALLATION

8. IMPORTANT: When installing a previously removed injector, make sure to install the injector in the same location. If no mark was inscribed on the injector during the removal, verify the correct injector-cylinder match using the BRP diagnostic software (BUDS2). Refer to *E-TEC Direct Injector Position Validation*.
9. Reinstall locking tie securing wires and tag according the illustration.



Installing the E-TEC Direct Injector

The following items and their mating surfaces must be cleaned and inspected prior to assembly:

- Fuel Injector
- Cylinder head: fuel injector housing and fuel injector tip contact surfaces
- Fuel injector screw threads and cylinder head threads (must be dry).

NOTICE

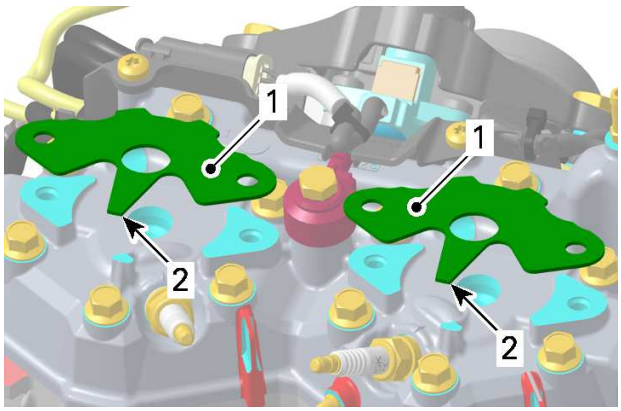
All fuel injector components must be clean to ensure correct torque tightening specifications and to avoid leakage. Carefully follow the installation instructions.

NOTE: When installing a used fuel injector, reinstall the fuel injector in the same location. If it was not marked at removal, verify the correct fuel injector-cylinder match using BUDS2, refer to *E-TEC Direct Injector Position Validation*.

1. Position the **NEW** gaskets on cylinder head.

NOTICE

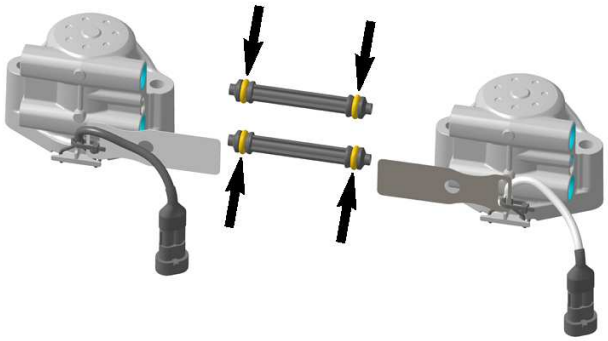
Smooth surface of gasket must face toward injector housing.



1. Smooth surface of gasket
2. Tab facing towards intake side

2. Install **NEW** O-rings on connecting tubes.
3. Lubricate O-rings and pre-assemble fuel injectors and connecting tubes.

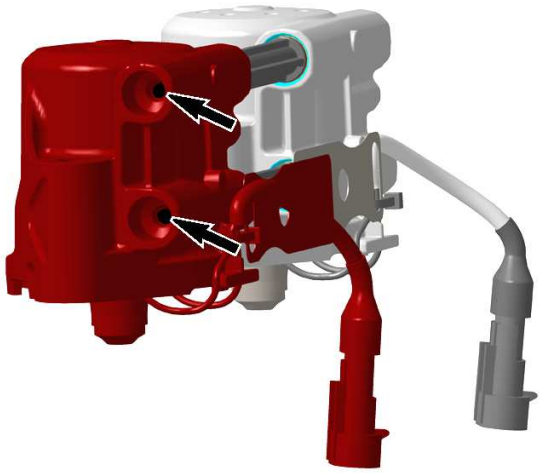
Injection oil



LUBRICATE O-RINGS

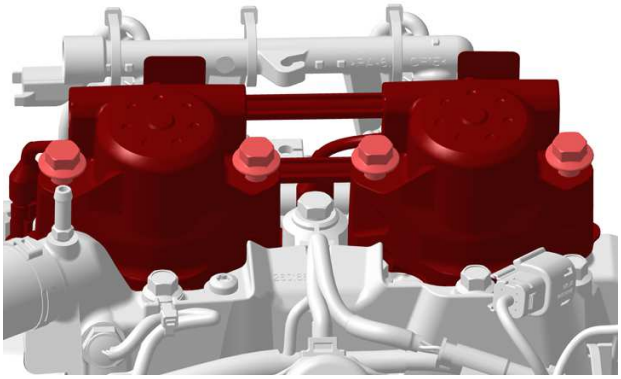
NOTICE

At installation do not interchange MAG and PTO injectors. PTO side fuel connection bores of the PTO fuel injector are blocked.



BLOCKED BORES

4. Place the fuel injectors on the cylinder head, then thread in **NEW** screws.



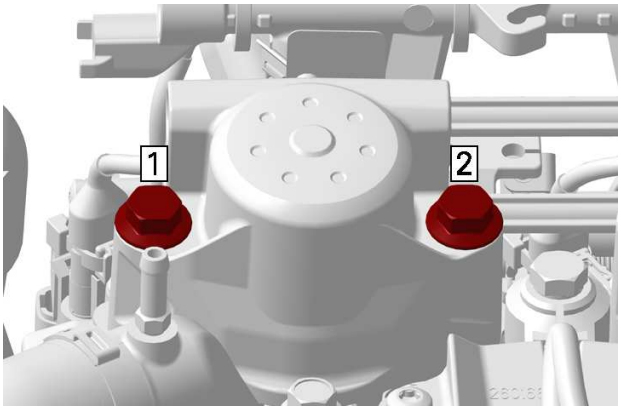
TYPICAL

5. Tighten fuel injector retaining screws as per the following procedure:

NOTICE

Perform tightening procedure on one injector before tightening the screws of the second injector.

Tightening Procedure		
Screw no.	"1"	"2"
Step A	7 ± 0.5 N·m (62 ± 4 lbf·in)	
Step B		50 ± 1.5 N·m (37 ± 1 lbf·ft)
Step C	50 ± 1.5 N·m (37 ± 1 lbf·ft)	

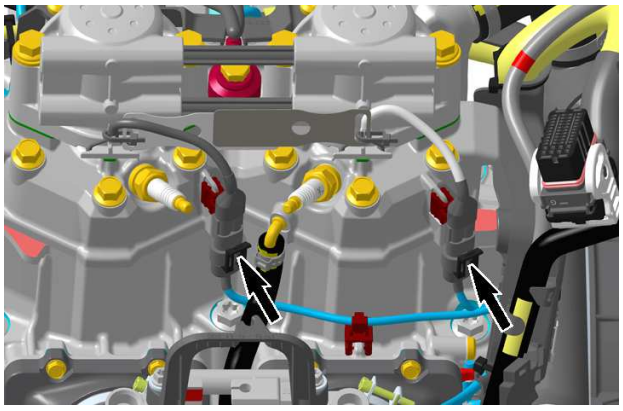


TYPICAL

6. Grease fuel injector connector.

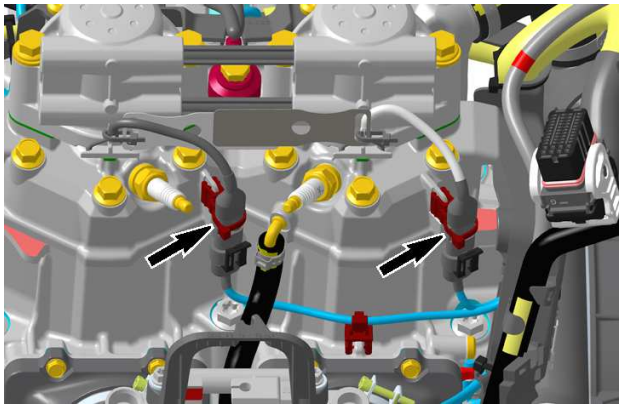
Dielectric grease

7. Connect both fuel injector connectors.



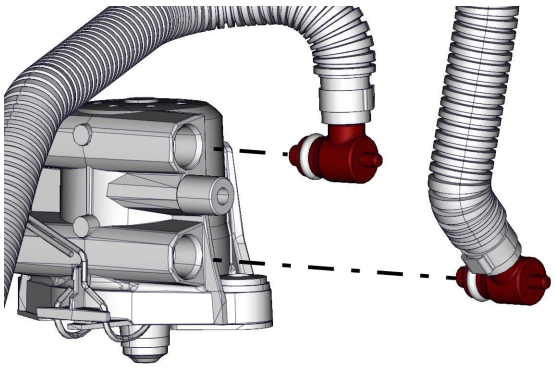
TYPICAL

8. Secure E-TEC direct fuel injector cables with locking ties.



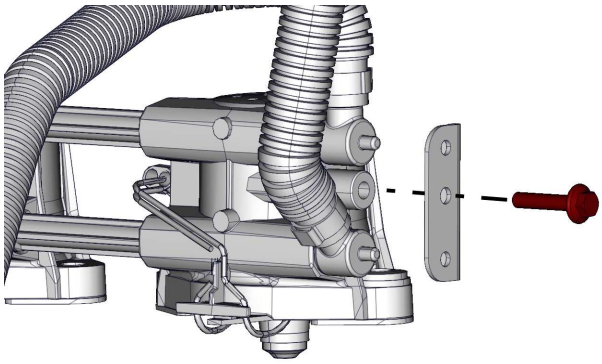
TYPICAL
1. E-TEC direct fuel injector connector
2. Locking ties

9. Check condition of fuel hose O-rings and plastic flange on hose fittings.
10. Apply injection oil on O-rings.
11. Insert fuel hoses in fuel injector housing.



NOTE: Both hose fittings must be fully seated in the fuel injector housing.

12. Insert the hose retainer so that it engages the groove in the fuel injector fittings.



NOTE: Ensure open end of retainer that locks in the fuel hoses faces inboard. The hole in the hose retainer used to secure the injector wiring must be on top for the PTO injector, and on the bottom for the MAG injector.

13. Install a NEW screw to secure hose retainer.

NOTICE

The screw features a threadlocker coating that is destroyed when loosening screw. Always replace screw with a new one each time it is loosened.

Tightening Torque	
Fuel hose retainer screw	5 Nm (44 lbf-in)

14. Secure fuel injector wiring. Refer to *Engine Harness* subsection.
15. Grease fuel injector connector.

Dielectric grease

16. Reconnect fuel injector connector.

NOTICE

Never fasten the electrical connector to the fuel injector. The connector must be "free floating".

17. If installing a NEW fuel injector, use BUDS2 to configure it in the ECM. Refer to *Matching the E-TEC Direct Injector to a Cylinder*.

NOTE: The engine will be able to run with an improperly matched fuel injector. However, the engine may misfire, run rough at idle, have poor fuel economy or run lean.

⚠ WARNING

Perform a fuel pressure test and make sure there is no leak.

Validating the E-TEC Direct Injector Position

When troubleshooting or reinstalling a fuel injector, the correct matching of the fuel injector and cylinder must be confirmed using BUDS2.

An incorrect match between the fuel injector and cylinder may lead to engine misfiring, improper idling or poor fuel economy.

To configure a new fuel injector at installation, refer to *Matching the E-TEC Direct Injector to a Cylinder*.

1. Look for the fuel injector identification.
2. Note the fuel injector serial number (SN) on the fuel injector you want to validate.

1. SN: Serial number
2. CS: Checksum number

3. In BUDS2, go to:
   - **Settings** page
   - **Injector Coefficient**.
4. In the **Injector Coefficient** box, look for the fuel injector serial numbers (S/N) that are registered in the ECM.

5. Compare the MAG or PTO Injector S/N that is configured in the ECM with the fuel injector SN installed on the engine.

   If numbers do not match, configure the fuel injector in BUDS2. Refer to *Matching a Fuel Injector to a Cylinder*.

Matching the E-TEC Direct Injector to a Cylinder

1. Note the serial number (SN) and the checksum number (CS) on the fuel injector tag.

1. SN: Serial number
2. CS: Checksum number

2. Download the E-TEC injector coefficient file.
   1. Login to BOSSWeb.
   2. Under the Com Center tab, click on E-TEC injector coefficient link.
   3. Save the calibration file on the computer.
3. Connect the vehicle to the BRP diagnostic software (BUDS2).
4. In BUDS2, go to:

   – **Settings** page
   – **Injector Coefficient**

5. In the Injector Coefficient box, click on the **New** button of the fuel injector to be replaced (MAG or PTO) and find the previously saved file.
6. Select and open the fuel injector serial number file that matches the fuel injector installed on the engine.
7. Enter the checksum number noted earlier and select **Write**.

NOTE: The file will be loaded in BUDS2

8. Click the OK button when the confirmation box appears.
9. Click on the **Write** button to save the changes to the ECM.

IMPORTANT: To ensure the proper file has been saved in the ECM, do the following:

10. Click on the Scan button.
11. Look in the Injector Coefficient area in the **Settings** page.
12. Ensure the S/N matches the SN of the fuel injector installed on the engine and the PTO/MAG numbers are not inverted.
13. If there is a mismatch, reload the proper configuration file. Write data and read it again to recheck.

Fuel Rail and Throttle Body Injectors (850 E-TEC)

Testing the Fuel Injector Operation Using BUDS2 (Dynamic)

1. Connect the vehicle to the BRP diagnostic software (BUDS2). Refer to *Communication Tools* subsection.
2. Start engine.
3. Using BUDS2, shut down fuel injection to each engine cylinder one at a time by clicking on the button under the applicable cylinder.
4. If the engine RPM drops momentarily when clicking on a cylinder, the injector on this cylinder is functioning normally.
5. If the engine RPM does not drop momentarily when clicking on a cylinder, this cylinder is not functioning properly. Check the following:
   1. Fuel injector operation. Refer to *Testing The Fuel Injector Balance.*
   2. Spark plug and ignition coil. Refer to *Ignition System* subsection.
   3. Engine condition.

Testing the Fuel Injector Balance

NOTICE

After fuel injector activation using BUDS2, always crank engine in drowned mode to ventilate engine and prevent a potential backfire due to fuel accumulation in engine.

1. Set emergency stop switch to RUN.
2. Install a fuel pressure gauge as described in *Fuel Tank and Fuel Pump* subsection.
3. Connect the vehicle to the BRP diagnostic software (BUDS2). Refer to *Communication Tools* subsection.
4. In BUDS2, activate fuel pump.

5. Fuel pressure must be within specification. Refer to *Fuel Tank and Fuel Pump* subsection. Re-activate fuel pump as necessary.
6. In BUDS2, energize fuel injector 1.
7. Record the fuel pressure drop for injector 1.
8. In BUDS2, activate fuel pump.
9. Repeat the procedure for fuel injector 2 and record the pressure drop.
10. The maximum fuel pressure drop between injectors should not exceed the following specification:

Maximum Fuel Pressure Drop Allowed Between Fuel Injectors
10 kPa (1.5 lbf/in²)

11. If pressure drop of any fuel injector is greater than the specification, replace that injector then repeat the test.
12. Using the valve on the fuel pressure gauge, release the pressure in the system (if so equipped).
13. Remove fuel pressure gauge and reinstall removed parts.

Testing for Fuel Injector Leaks

Carry out the *Testing the Fuel Pump Pressure* as detailed in the *Fuel Tank and Fuel Pump* subsection.

Testing the Fuel Injector Activation Using BUDS2

1. Connect the vehicle to the BRP diagnostic software (BUDS2). Refer to *Communication Tools* subsection.
2. On the **Functions** page of BUDS2, energize the fuel injector to be tested.
3. You should hear or feel the injector functioning.
4. This will validate the injector mechanical and electrical operation.
5. If the injector does not function, carry out the *Testing the Fuel Injector Resistance*.

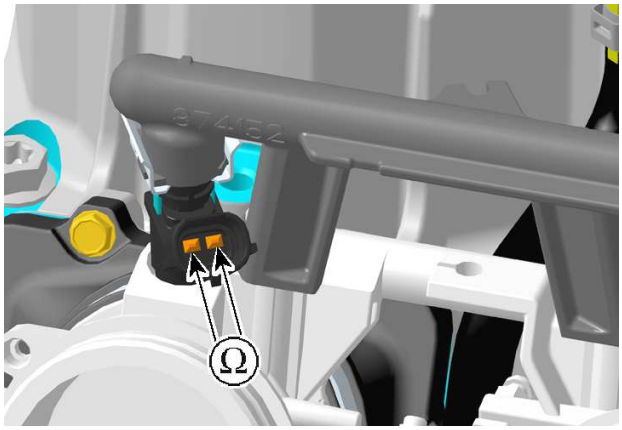
Testing the Fuel Injector Resistance

1. Disconnect ECM-A connector from the ECM and connect it to ECM adapter tool. Refer to *Wiring Harness and Connectors*
2. Check resistance value between terminals as follows.

Fuel Injector Resistance Test at ECM-A Connector			
Inj.	**ECM Adapter Pin**		**Specification @ 20 °C (68 °F)**
MAG	A-A3	A-A4	11.4 - 12.6 Ω
PTO	A-A2	A-A1	

3. If resistance value is as specified, the injector and its circuits are good. Refer to *Testing for Fuel Injector Input Voltage* in this subsection.
4. If resistance value is NOT as specified, remove injector connector and check resistance value between injector pins.

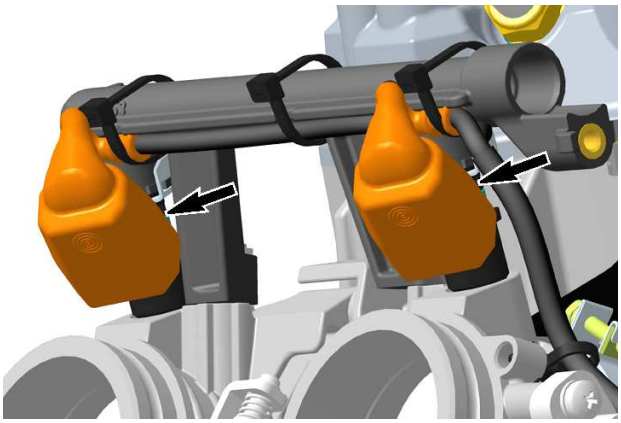
Fuel Injector Resistance Test at Injector Connector			
Inj.	**Injector Pin**		**Specification @ 20 °C (68 °F)**
MAG and PTO	1	2	11.4 - 12.6 Ω



5. If readings are out of specifications, replace injector.
6. If readings are good, carry out *Testing the Fuel Injector Circuit Resistance*.

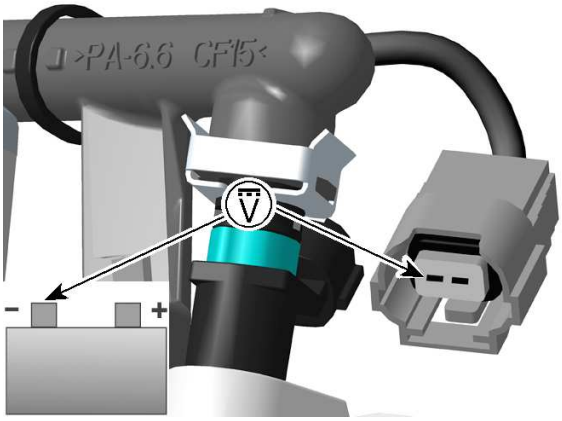
Testing the Fuel Injector Input Voltage

1. Disconnect the fuel injector connector.



2. It is not necessary to activate the injector since it is continuously powered when the emergency stop switch is set to RUN and BUDS2 is connected.
3. Set the multimeter to Vdc and read voltage.

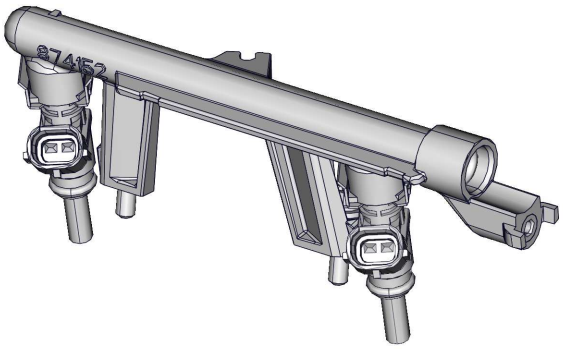
Fuel Injector Resistance Test at Injector Connector			
Inj.	**Inj. Pin**	**Battery**	**Specification @ 20 °C (68 °F)**
MAG and PTO	2	Negative (-) post	11.4 - 12.6 Ω



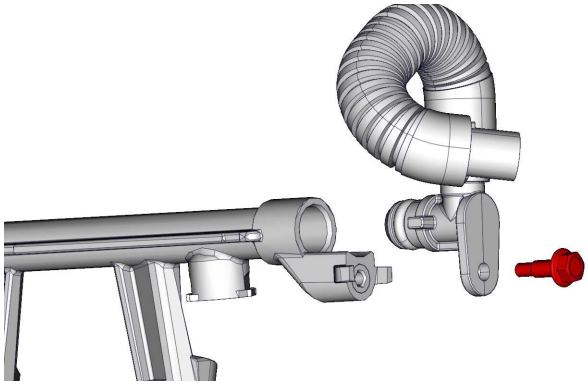
TYPICAL

4. If supply voltage is good:
   1. Check if ground circuit is faulty, repair/replace wiring and connectors. Refer to *Testing the Fuel Injector Circuit Resistance*.
   2. If the ground circuit is good, the injector problem may be mechanical. Replace the injector.
   3. If injector and ground circuit are good the problem may be in the power distribution system in the ECM (does not provide a ground signal) refer to *Troubleshooting ECM Power Supply*.

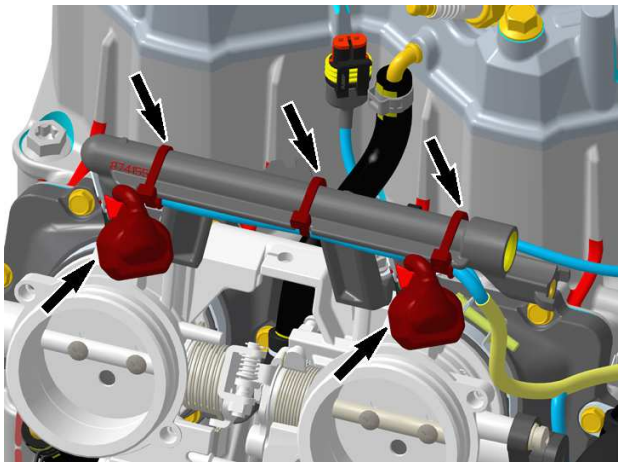
Removing the Fuel Rail with Throttle Body Injectors



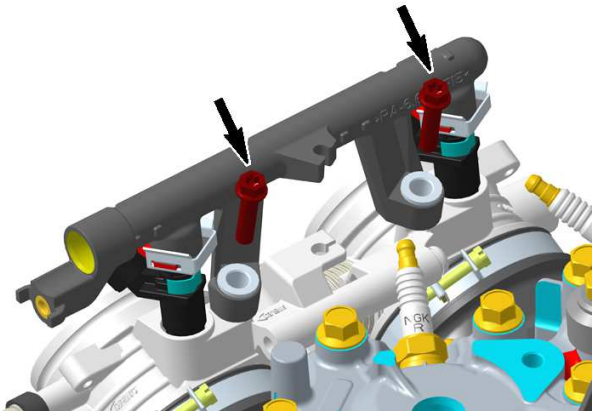
1. Release fuel pressure from fuel system. Refer to *Fuel Tank and Fuel Pump* subsection.
2. Place an absorbent shop rag around the fuel supply hose fitting at the fuel rail to catch any fuel leakage.
3. Disconnect fuel hose from fuel rail.



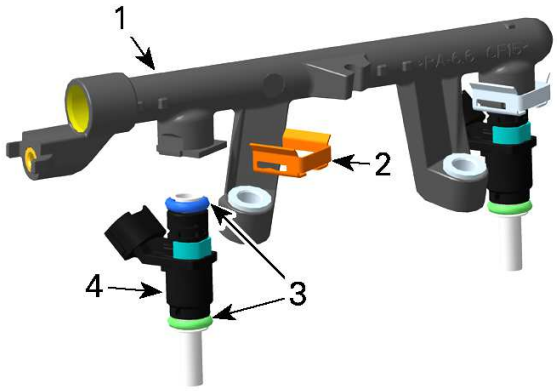
4. Cut locking ties securing engine harness to fuel rail.
5. Disconnect fuel injector connectors.



6. Remove fuel rail retaining screws.



7. Gently wiggle fuel rail side to side as you pull the fuel rail out with fuel injectors.
8. Remove the injector retaining clip.
9. Pull the fuel injector out of the fuel rail and discard the O-rings.



1. *Fuel rail*
2. *Retaining clip*
3. *Fuel injector*
4. *O-rings*

Installing the Fuel Rail and Fuel Injectors

For the installation, reverse the removal procedure. Pay attention to the following details.

NOTICE

If installing the removed injector(s), always install NEW O-rings.

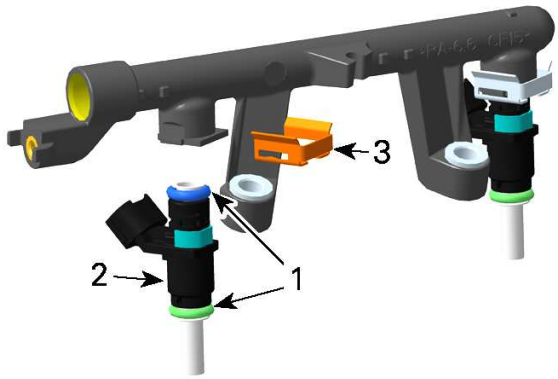
1. Lubricate **NEW** O-rings to ease insertion in rail.

Injection oil

NOTICE

Ensure that injector nozzle is free from oil. Surplus oil can close injector nozzle which may have a negative impact on engine performance.

2. Install fuel injector with your hand. Do not use any tool.
3. Carefully insert fuel injectors in fuel rail and install injector retaining clips.

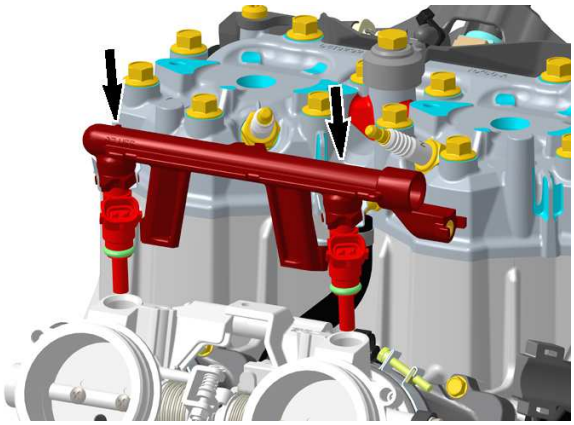


1. *O-rings*
2. *Fuel injector*
3. *Retaining clip*

4. Insert the injectors in the throttle body holes and gently push on the fuel rail to position it on throttle body.

NOTICE

Pay attention to not damage the O-rings.



5. Tighten fuel rail retaining screws.

Tightening Torque	
Fuel rail retaining screws	8 ± 0.5 N•m (71 ± 4 lbf•in)

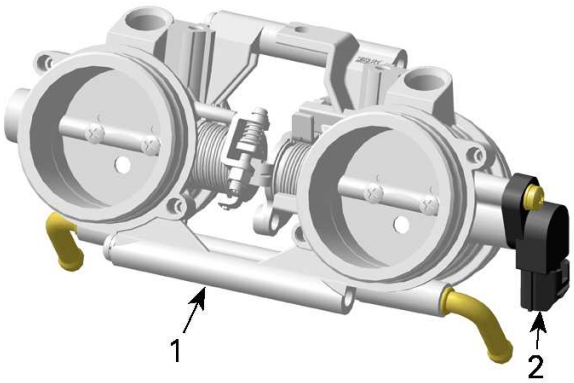
6. Connect fuel pressure hose to fuel rail.
7. Pressurize the fuel system and check for fuel leaks. Refer to *Fuel Tank and Fuel Pump* subsection.

⚠ WARNING

Failure to pressurize the fuel system and checking for fuel leaks may result in severe injury or a life threatening situation should a leak occur.

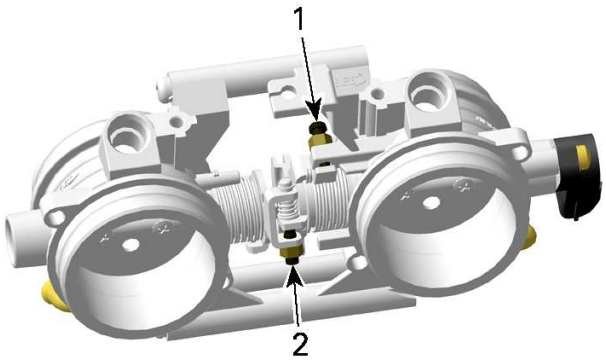
8. Reinstall all remaining removed parts.

Throttle Body



1. *Throttle body*
2. *TPS (Throttle position sensor)*

Throttle Body Screw Identification



1. *Master zero position screw*
2. *Synchronizing screw*

NOTICE

Do not tamper with any adjustment screw. Otherwise, throttle body may have to be replaced.

Inspecting the Throttle Body

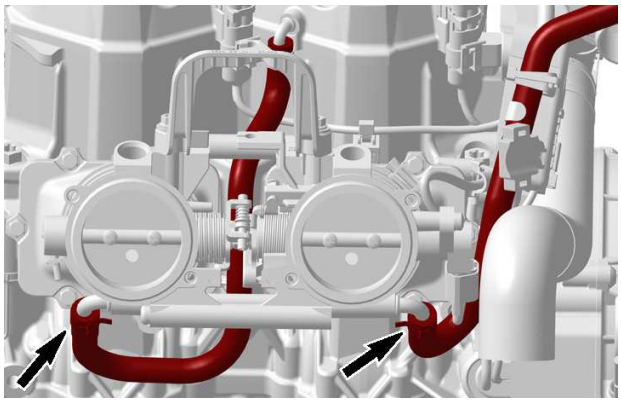
1. Ensure throttle plates move freely and smoothly when depressing throttle lever.
2. Ensure throttle body master zero position screw is NOT loose. If so, replace throttle body.
3. Ensure that the master zero position screw stops the throttle plate.
4. Ensure TPS is NOT loose.
5. Check for corroded or damaged wiring or connectors.

Removing the Throttle Body

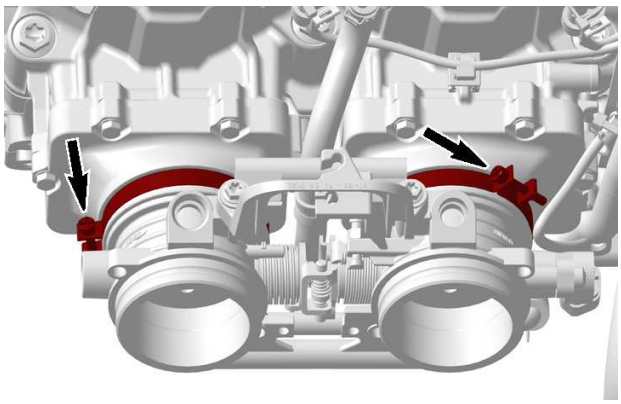
1. Remove upper body module. Refer to *Body* subsection.
2. Remove primary intake silencer. Refer to *Air Intake Silencer* subsection.***850 E-TEC***
3. Remove fuel rail with fuel injectors and put it aside. Refer to *Fuel Rail and Throttle Body Injectors* in this subsection.***All Models***
4. Block coolant hoses of throttle body heating.

Small hose pincher (P/N 295000076)	

5. Remove coolant hoses from throttle body.



6. Loosen clamps retaining throttle body.



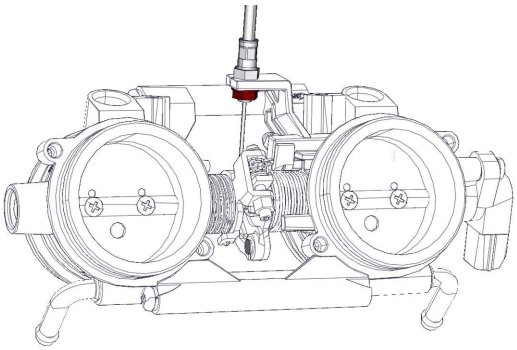
7. Disconnect TPS connector.



NOTICE

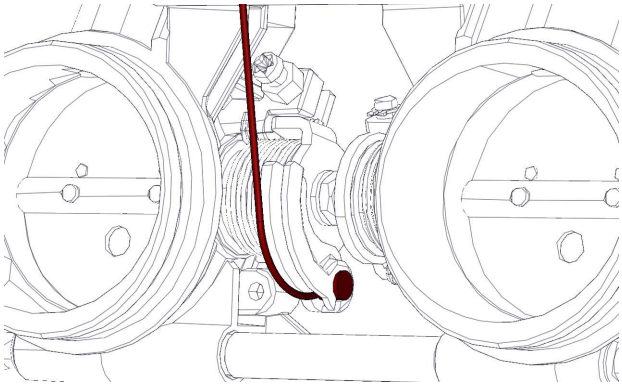
The TPS connector can be disconnected without cutting the tape.

8. Disconnect throttle cable.
9. At throttle body, fully unscrew cable lock nut.



THROTTLE CABLE LOCK NUT

10. Unhook throttle cable end.



11. Remove throttle cable.
12. Remove throttle body from vehicle.

Installing the Throttle Body

1. If installing the removed throttle body, clean throttle plates and bores before installation.

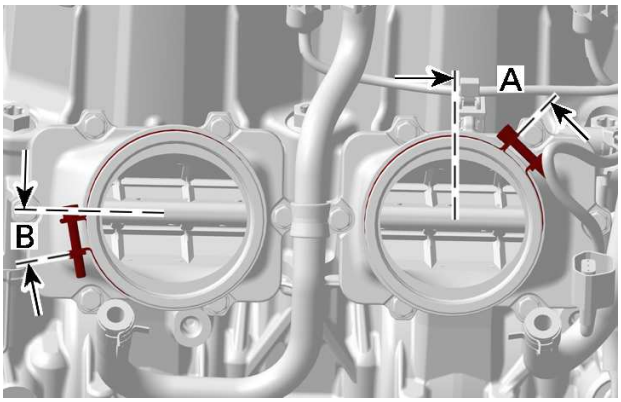
Brake and parts cleaner PRO S2

2. Install cooling hoses on throttle body.
3. Remove hose pinchers.
4. Connect TPS connector.

NOTICE

Ensure TPS connector tab is properly locked.

5. Install throttle body on intake adapters.
6. Position throttle body clamps and tighten to specification.



A. 25° +/- 5°
B. 4° +/- 5°

Tightening Torque	
Throttle body clamps	1.5 ± 0.2 N•m (13 ± 2 lbf•in)

7. Install throttle cable loosely.
8. Carry out the *Adjusting Throttle Cable* procedure as detailed in this subsection.

850 E-TEC

9. Install fuel rail with fuel injectors. Refer to *Fuel Rail And Throttle Body Injectors* in this subsection.

All Models

10. If a new throttle body or TPS is installed, carry out the *Closed Throttle Reset (TPS)* as detailed in this subsection.
11. Refill and bleed cooling system. Refer to *Cooling System - Vehicle* subsection.
12. Install adapter plate (primary air intake silencer) on throttle body.

Tightening Torque	
Adapter plate clamps	0.7 ± 0.1 N•m (6 ± 1 lbf•in)

13. Install primary air intake silencer. Refer to *Air Intake System* subsection.
14. Install all remaining removed parts.

NOTICE

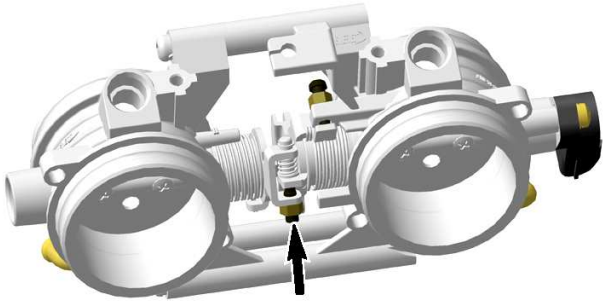
Make sure the TPS wire does not touch the frame. Secure TPS wire safely to the throttle body heating hose. Refer to *Engine Harness* subsection.

Throttle Body Synchronization

No synchronization is required as it has already been done at the factory.

NOTICE

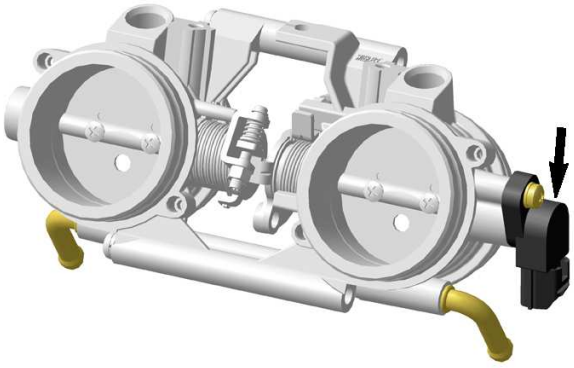
Do not alter synchronization screw setting. Otherwise throttle body must be replaced.



TPS (Throttle Position Sensor)

Description

The throttle position sensor (TPS) is a potentiometer that sends a signal to the ECM which is proportional to the throttle shaft angle.



THROTTLE POSITION SENSOR (TPS)

Reset TPS (Closed Throttle)

Refer to *Resetting the Closed Throttle Value* in the *Adjustment* topic of this subsection.

Testing the TPS Wear

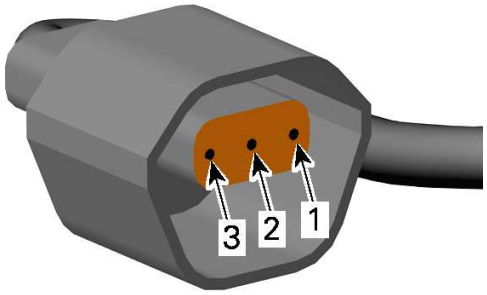
1. Ensure TPS connector is properly connected.
2. While engine is not running, activate throttle and pay attention for smooth operation without physical stops of the cable.
3. Connect the vehicle to the BRP diagnostic software (BUDS2).

4. Select the **Measurements** page and **ECM** button. Monitor the TPS voltage and percentage.
5. Slowly and regularly depress the throttle.

   The values must change gradually and regularly as the throttle is activated. If the values "stick", bounce, suddenly drops off or if any discrepancy between the throttle movement and the needle movement is noticed, it indicates a worn TPS that needs to be replaced.

Testing the TPS Input Voltage

1. Remove upper body module. Refer to *Body* subsection.
2. Connect the vehicle to the BRP diagnostic software (BUDS2).
3. Disconnect TPS connector.
4. Read voltage at TPS harness connector as follows.



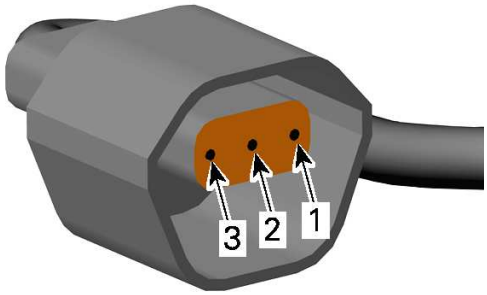
1. *Pin 1*
2. *Pin 2*
3. *Pin 3*

TPS Input Voltage Test		
TPS Connector Pin		Specification
3	2	5.0 Vdc

5. If voltage is good, carry out *Testing the TPS Resistance*.
6. If test result is out of specification, carry out *Testing the TPS Circuit Continuity*.

Testing the TPS Circuit Continuity

1. Disconnect ECM-A connector from ECM and connect it to ECM adapter tool.
2. Check the wiring continuity as follows.



1. *Pin 1*
2. *Pin 2*
3. *Pin 3*

TPS Circuit Continuity Test		
TPS Connector Pin	ECM Adapter Pin	Specification
1	A-D3	Close to 0 Ω
2	A-C2	
3	A-D2	

3. If tests are good, replace the TPS.
4. If tests are not good, continue to check the resistance of the remainder of the TPS circuit.

Testing the TPS Resistance

1. Reconnect the TPS.
2. Disconnect ECM-A connector from ECM and connect it to ECM adapter tool.

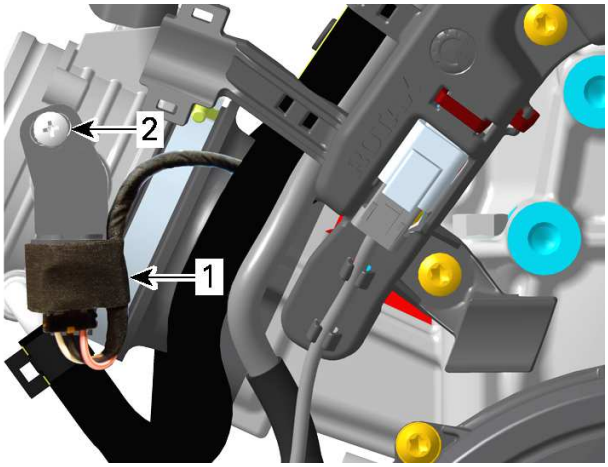
TPS Resistance Test			
ECM Adapter Pin		Idle Position	W.O.T. Position
		Specification	
A-D3	A-C2	1140±300 Ω	5140±1900 Ω
A-D3	A-D2	5140±1900 Ω	540±300 Ω
A-C2	A-D2	5000±2000 Ω	5000±2000 Ω

NOTE: The resistive value should change smoothly and proportionally to the throttle movement. Otherwise, replace TPS.

3. If resistive values are correct, try a new ECM. Refer to *Engine Control Module (ECM)* subsection.
4. If resistive values are incorrect:
   1. Repair or replace wiring or connectors.
   2. Replace TPS.

Replacing the TPS

1. Remove the throttle body. Refer to *Removing the Throttle Body* in this subsection.
2. Disconnect TPS connector.
3. Remove TPS retaining screw.



1. *TPS connector*
2. *Screw*

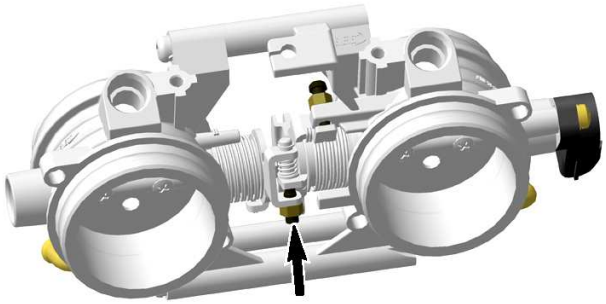
4. Remove TPS.
5. Install new TPS.

NOTICE
Ensure that the throttle body is fully closed before installing the TPS.

6. Tighten TPS retaining screw to specification.

Tightening Torque	
TPS retaining screw	4 ± 0.5 N·m (35 ± 4 lbf·in)

7. Open and quickly release throttle plates 6 times (throttle plates must snap shut).



PUSH TO OPEN THROTTLE PLATES

8. Reinstall remaining removed parts.
9. Reset TPS. Refer to *Closed Throttle Reset (TPS)* in this subsection.

04

ELECTRICAL SYSTEM

04 Electrical System

Ignition Coils And Spark Plugs

SERVICE TOOLS

Description	Part Number	Page
DIAL INDICATOR ADAPTER	(P/N 529036418)	213
TDC DIAL INDICATOR	(P/N 414104700)	213

SERVICE PRODUCTS

Description	Part Number	Page
INJECTION OIL		218

General

⚠ WARNING

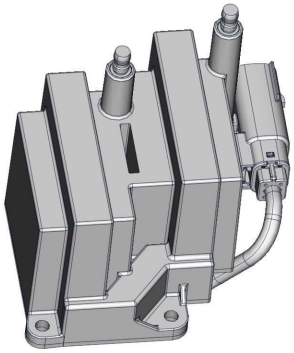
Always electrically disconnect both fuel injectors prior to testing for ignition spark. Otherwise, fuel vapors may ignite in presence of a spark creating a fire hazard.

System Description

This ignition system is an inductive type specifically designed for the E-TEC engine with a rapid rise time to prevent spark plug fouling. It provides a quick spark with a long duration.

The ignition system is fully managed by the ECM which controls the ignition system parameters such as spark timing, dwell time, and firing order.

The system uses two separate ignition coils which induce high voltage in their secondary winding to produce a spark at each spark plug independently.



The ignition coils receive power from the 55 Vdc system. Their operating voltage varies from 20 to 55 Vdc.

Ignition System Basic Operation

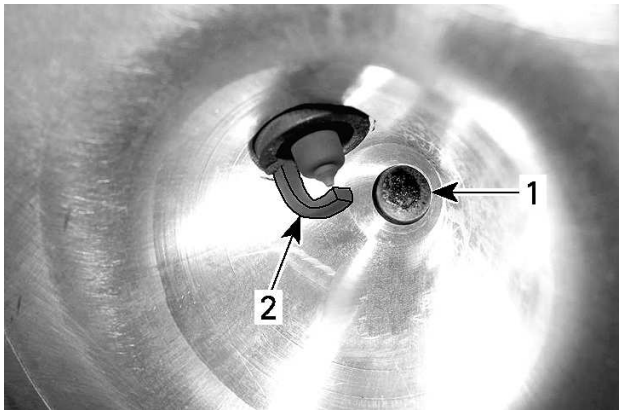
Each ignition coil uses an active circuitry to energize the primary winding when it receive a pulse from the ECM. The pulse has an amplitude of approximately 10 volts. At the end of the dwell time, the power is released from the primary winding which induces a current that produces a high voltage in the secondary winding. This high voltage is then fed to the spark plug.

A resistive core spark plug cable is used to prevent the RFI (Radio Frequency Interference). There is no resistor in the spark plug cap.

Spark Plugs

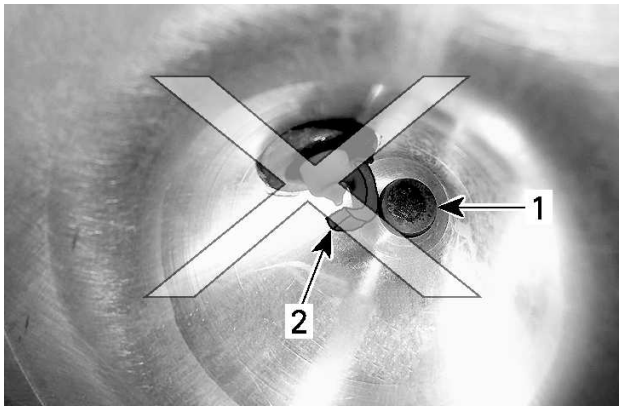
The OEM spark plug used is specially indexed for optimum engine operation and efficiency.

The threads on the spark plug and in the cylinder head are indexed so that when the plug is installed, the open end of the negative electrode will be facing the injection spray, within ± 120°. This ensures the negative electrode does not deviate the injection spray and ensures proper ignition.



CORRECTLY INDEXED
1. *Injector nozzle*
2. *Ground electrode*

NOTE: Using an incorrectly indexed spark plug will result in poor idle and increased emissions.



INCORRECTLY INDEXED
1. *Injector nozzle*
2. *Ground electrode*

If using a non OEM spark plug, a specific installation procedure must be followed. Refer to *Installing the Spark Plugs (NON-OEM)* in this subsection.

Ignition Timing

The crankshaft position sensor (CPS), the air pressure sensor (MAPTS) and the throttle position sensor (TPS) are the primary sensors used to control the ignition timing.

The ECM is programmed with data (ignition mappings). Using feedback provided by the sensors,

the ECM controls the ignition timing for optimum engine operation under all operating conditions.

Ignition timing can be adjusted using BUDS2.

Knock Detection

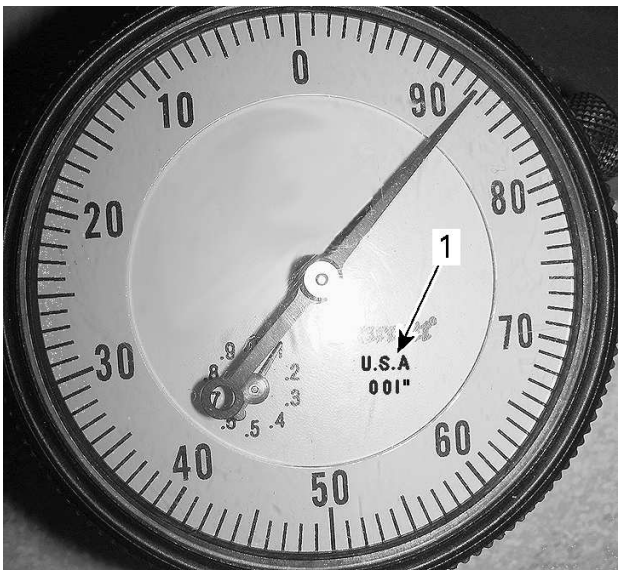
The knock sensor detects specific vibration that would be typically generated by engine detonation.

If detonation occurs, the ECMs retards the ignition and increases the fuel injected temporarily (it goes into a specific operating mode) until detonation stops.

Understanding the TDC Gauge

Dial gauges can be either in imperial or metric units. It is crucial to identify gauge units and graduation.

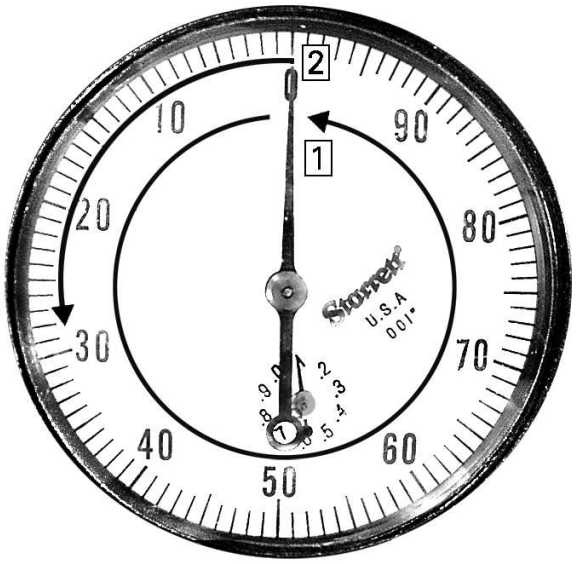
Imperial Dial Gauge



IMPERIAL GAUGE EXAMPLE
1. 001 inch means it is graduated each 1/1000 inch

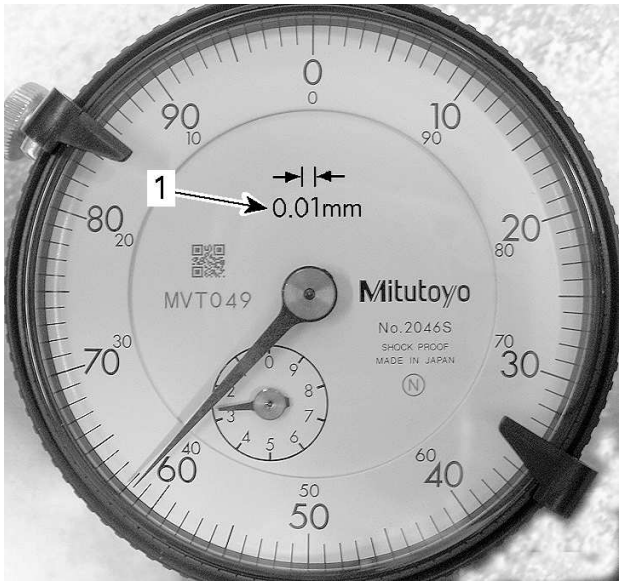
Typical Imperial Dial Gauge		
Graduation	**Measure per Needle Turn**	**Measure Example: .128 inch**
1/1000 inch (.001) per graduation line	1 turn = .100 inch	1 complete turn 28 graduation lines

NOTE: The small dial indicates the number of turns the long needle traveled around the main dial.



.128 INCH AS AN EXAMPLE
Step 1. 1 complete turn
Step 2. 28 lines

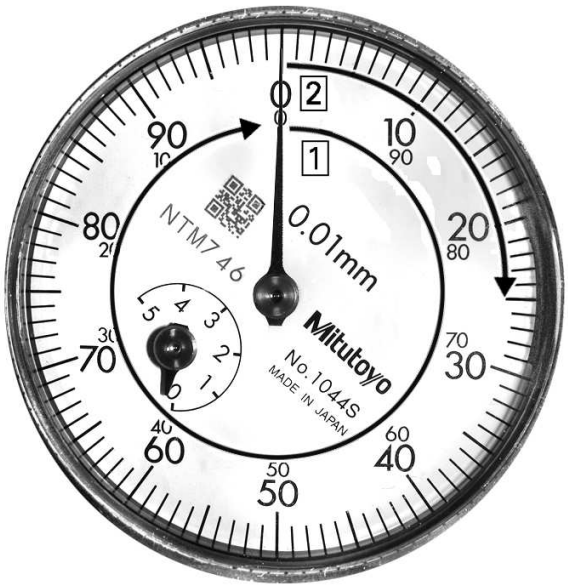
Metric Dial Gauge



METRIC GAUGE EXAMPLE
1. 0.01 mm means its graduated each 1/100 millimeter

Metric Dial Gauge Example		
Graduation	**Measure per Needle Turn**	**Measure Example: 3.25 mm**
1/100 millimeter (.01) per graduation line	1 turn = 1 millimeter	3 complete turns 25 graduation lines

NOTE: The small dial indicates the number of turns the long needle traveled around the main dial.



3.25 MM AS AN EXAMPLE
Step 1. Complete turns (3 X)
Step 2. 25 lines

Ignition Timing

Normally, ignition timing adjustments should not be required. It has been set at the factory and should remain correctly adjusted as every component is fixed and non adjustable.

The only time the ignition timing may require adjustment is when replacing the:

– Crankshaft
– Magneto flywheel
– CPS
– ECM.

Adjustment procedure summary:

– TDC Gauge Installation
– Locating Piston TDC
– Scribing the timing marks
– Checking Ignition timing
– Adjusting timing.

If the ignition timing is incorrect, first check for proper crankshaft alignment. This might be an indication of a twisted crankshaft. Refer to *Bottom End* subsection.

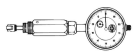
Installing the TDC Gauge

⚠ WARNING

Ensure tether cord is removed from engine cut-off switch and emergency engine stop switch is in the STOP position.

Preparing the Gauge

1. Remove the roller tip from the TDC gauge.

TDC dial indicator (P/N 414104700) (long reach)	
Dial indicator adapter (P/N 529036418)	

2. Use the rounded tip from the adapter.

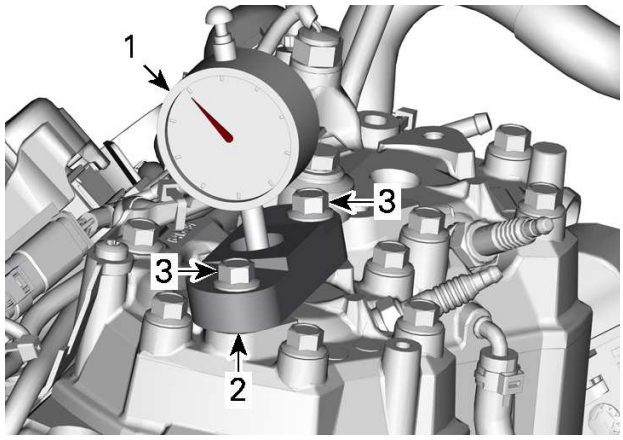


TYPICAL
1. Roller tip removed
2. Rounded tip to install

3. Install the rounded tip on the gauge.

Installing the Gauge

1. Remove the direct injectors. Refer to *E-TEC Direct Fuel Injection* subsection.
2. Install the dial indicator adapter over the PTO injector hole.
3. Use two screws M8 x 1.5 x 35 to secure the adaptor.
4. Carefully insert the TDC gauge through the dial indicator adapter hole.



TYPICAL
1. *TDC gauge*
2. *Dial indicator adaptor*
3. *Screws*

5. Screw the gauge into the adapter plate with the dial face towards the PTO and tighten it sufficiently to prevent movement.

Locating Piston TDC

NOTE: Normal engine rotation as seen from the PTO side is counterclockwise.

1. With a firm hold on the drive pulley, slowly rotate the drive pulley counterclockwise while observing the TDC gauge needle.

NOTE: Note that the needle stops moving only as the piston is changing direction at the top of its stroke.

2. Rotate the dial face so the “0” is in line with the needle when it stops moving.
3. Resume rotating the engine in the same direction (counterclockwise) until the gauge needle has rotated approximately 1/4 turn past TDC.
4. Then slowly rotate the engine in a clockwise direction until needle stops moving.

NOTE: The needle should stop on the “0”. If not, reset the dial “0” to the needle.

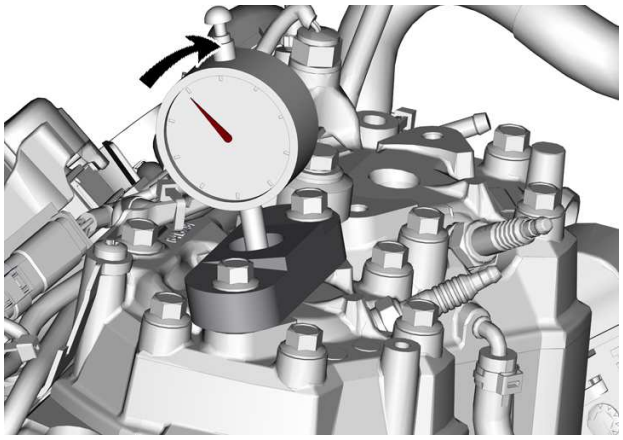
5. Again, slowly rotate the drive pulley back and forth across TDC and confirm the needle always stops exactly at “0” before changing direction. “0” now indicates exact TDC.
6. Lock the dial face with the dial lock screw.

NOTE: If a difference in “0” setting the dial in each direction of rotation is easily noticeable, the engine components may suffer from excessive wear. The engine may require further inspection and maintenance.

Scribing the Timing Mark

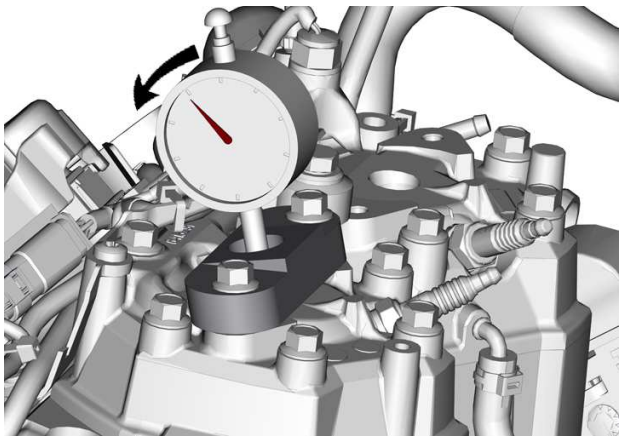
IMPORTANT: Make sure to understand the TDC gauge functioning. Refer to *Understanding the TDC Gauge* in this subsection.

1. From the “0” (TDC), rotate the drive pulley clockwise (backwards engine rotation) until the dial needle rotates past the BTDC specification (see table below).



TYPICAL - PASS THE BTDC SPECIFICATION

2. Then carefully rotate engine forward until needle precisely points the measurement specified in the table.

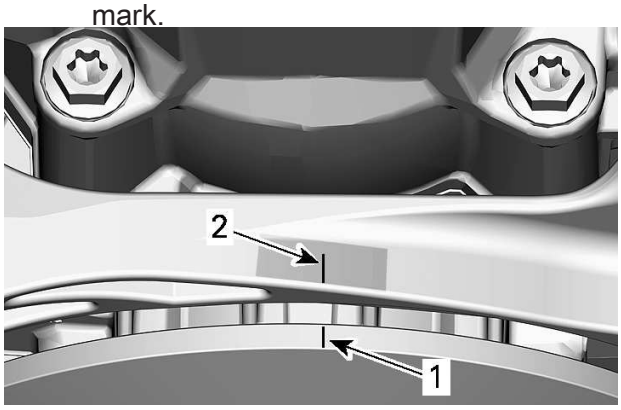


TYPICAL - BRING DIAL NEEDLE TO THE BTDC SPECIFICATION

NOTE: Final setting must always be made in the normal engine rotation.

Ignition Timing BTDC		
Engine	BTDC Specification	Degree Setting BTDC
850 E-TEC	5.98 mm (.235 in)	28°
600R E-TEC	5.39 mm (.212 in)	

3. With the TDC gauge indicating specified timing, draw the reference mark and timing mark:
   1. Stick a piece of tape on the driven pulley bearing support.
   2. Use a permanent marker.
   3. Draw a line on the tape as a reference mark.
   4. Draw the timing mark on the drive pulley fixed sheave in line with the reference mark.



TYPICAL
1. *Timing mark on fixed sheave*
2. *Timing mark on a tape, on driven pulley bearing support*

4. Repeat the procedure to ascertain the marks are exactly aligned.
5. Remove the TDC gauge and dial indicator adapter.
6. Reinstall the fuel injector. Refer to *E-TEC Direct Fuel Injection* subsection.
7. Reconnect magneto connector.
8. Check ignition timing as per applicable procedure in this subsection.

Checking Ignition Timing

The ignition timing can be checked with either the engine hot or cold at the specified RPM.

Engine Speed for Ignition Timing Check
Engine RPM
2500 to 4000 (1)
(1) In this range, the spark advance does not change during the procedure.

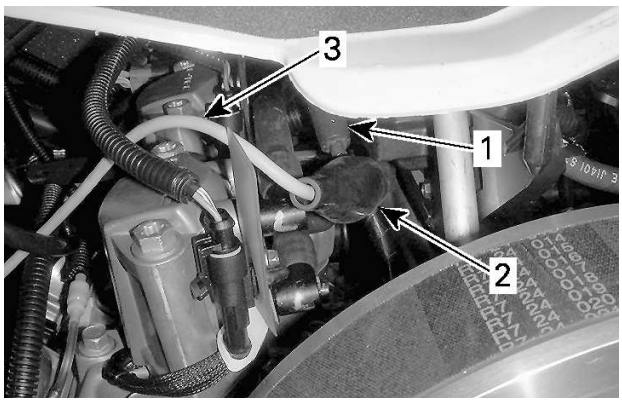
To check the ignition timing proceed as follows:

⚠ WARNING

Place ski tips against a wall, raise rear of vehicle on a stand, so that track does not contact the ground. Do not allow anyone in front of or behind the vehicle while engine is running. Keep clear of track and do not wear loose clothing which can get caught in moving parts.

1. Connect the timing light pick-up to the **PTO** spark plug cable.

NOTE: Be careful to route timing light cable away from drive belt and pulleys.



TYPICAL — TIMING LIGHT CONNECTION
1. *PTO spark plug cable*
2. *Timing light connection to PTO plug cable*
3. *Timing light wire routing*

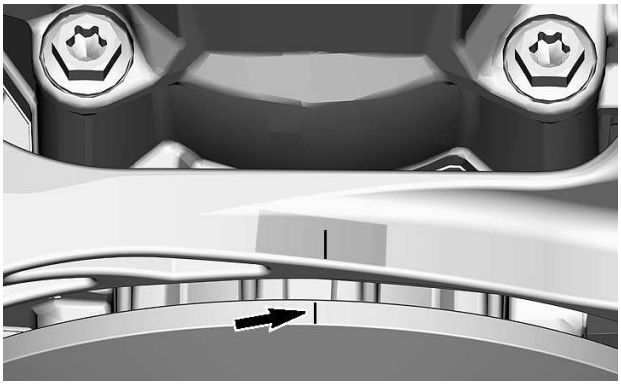
2. Connect the vehicle to the BRP diagnostic software (BUDS2).
3. Start engine and let idle.
4. In BUDS2, go to:
   - **Settings** page
   - **Vehicle** or **ECM** button
   - **Settings** tab
   - **Initializations - Ignition/Injection Timing**

NOTE: Timing will be frozen on the PTO cylinder only for RPM stability. RPM will be limited to 4000 RPM.

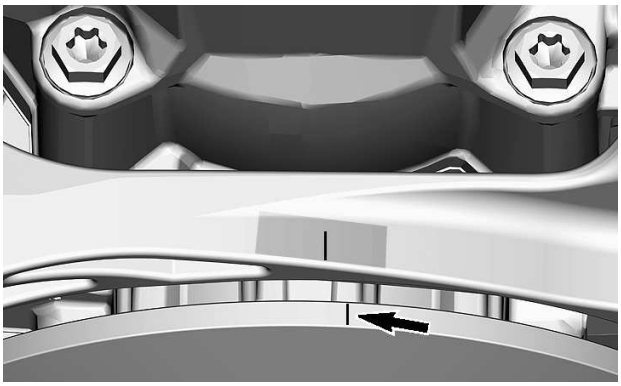
5. Point the timing light on the timing mark and increase engine to **3500 RPM** for a brief instant.
6. The timing mark must be aligned with the pointer end within the specified tolerance.

Tolerance
± 0.5°

7. If timing mark and pointer are aligned, no adjustment is required.
8. If they are not aligned, note if timing is retarded or advanced, see following illustrations. Then, adjust timing as described in *Adjusting Timing* further in this subsection.



TYPICAL — TIMING RETARDED BY ABOUT 1°



TYPICAL — TIMING ADVANCED BY ABOUT 2°

Adjusting Timing

1. In the **Ignition/Injection Timing** area on the **Settings** page, select **Advance** or **Retard** to change the ignition timing.

NOTE: Timing will be changed in 0.5° increments.

2. Adjust the timing using the appropriate button until the timing mark is in line with the pointer, within 0.5°.
3. Unfreeze ignition timing.
4. Click **Close** button to store the ignition timing correction.
5. Shut down engine.
6. Restart engine and press the **Scan** icon in BUDS2.
7. Recheck timing to ensure ignition timing adjustment was properly stored in the ECM.
8. Increase engine RPM past 4000 RPM to ascertain the **Freeze Timing** function is no longer active.

NOTE: The **Freeze Timing** function automatically disengages when the engine is stopped.

9. Remove all tools.

Troubleshooting

Ignition System Testing Sequence

It is good practice to check for fault codes using the BRP diagnostic software BUDS2 as a first troubleshooting step. Refer to the *Diagnostic and Fault Codes* subsection.

In the case of ignition problems, check the following in the prescribed order until the problem can be solved:

1. Spark plugs
2. Spark plug cables
3. Wiring harness/electrical connectors
4. Emergency engine stop switch
5. Ignition cut-off switch
6. Ignition coil(s)
7. CPS
8. ECM (Engine Control Module).

If engine idles roughly or shows signs of increased emissions, the spark plugs may be incorrectly indexed. Refer to *Installing the Spark Plug* in this subsection.

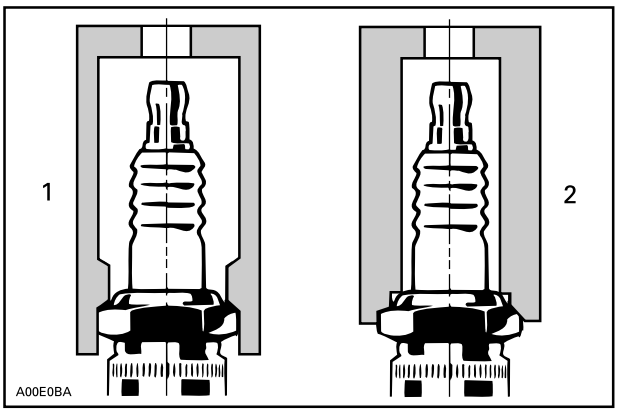
Procedures

Spark Plugs

For spark plug type, refer to *Technical Specifications* subsection.

Replacing the Spark Plug

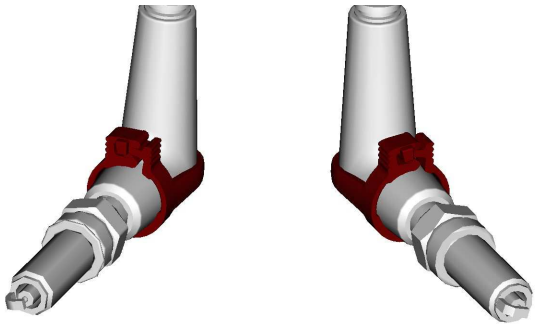
NOTE: Use only an approved spark plug socket for removal and installation. Extra care should be taken to avoid side stresses which could result in a broken spark plug.



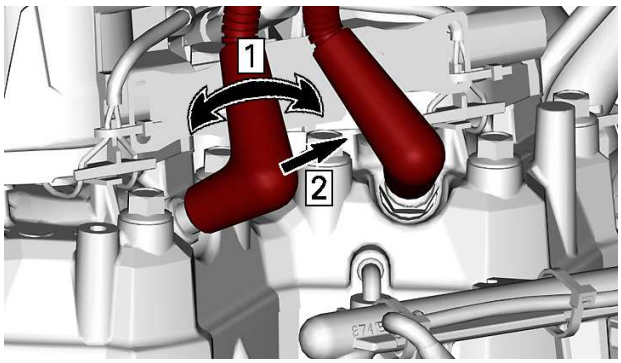
TYPICAL
1. Approved socket
2. Improper socket

Removing the Spark Plugs

1. Disconnect the stator connector. Refer to *Stator Connector Access* in the *Magneto and Starter* subsection.
2. Remove the upper body module. Refer to *Body* subsection.
3. Clean the spark plug and cylinder head with pressurized air.
4. Remove lock securing spark plug wire to spark plug.



5. Remove spark plug cables by gently rotating the cap and pulling it off the plug.



TYPICAL
Step 1. Gently rotate
Step 2. Pull off

6. Unscrew the spark plug sufficiently to break the applied torque using the appropriate tools.



7. Remove spark plugs by hand.

Installing the Spark Plugs (OEM)

1. Prior to installation, ensure the contact surfaces of the cylinder head and spark plug are free of grime.
2. Using a wire gauge, confirm electrode gap is as specified. Refer to *Technical Specifications*.

NOTE: If spark plug gap is incorrect, use another spark plug.

3. Hand screw spark plug into cylinder head until it bottoms out.
4. Apply specific torque using a torque wrench and approved spark plug socket.

NOTE: Spark plug tightening torque is particularly important on this engine as it contributes to the proper positioning of the negative electrode.

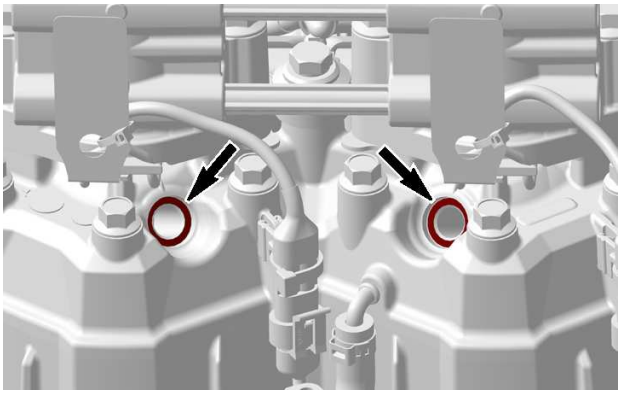
Tightening Torque	
Spark plug	23 ± 1 N•m (17 ± 1 lbf•ft)

Installing the Spark Plugs (Non-OEM)

NOTE: When using a non-OEM spark plug , it must be correctly indexed or engine may experience rough idling and higher emissions.

1. Prior to installation, ensure the contact surfaces of the cylinder head and spark plug are free of grime.
2. Lubricate contact surface of spark plug at the cylinder head.

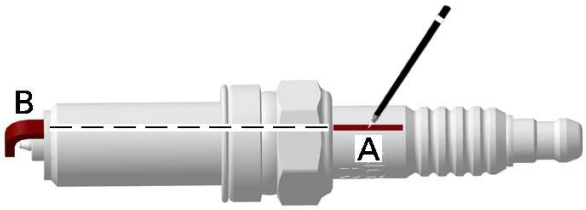
Injection oil



3. Using a wire gauge, confirm electrode gap is as specified. Refer to *Technical Specifications*.

NOTE: If spark plug gap is incorrect, use another spark plug.

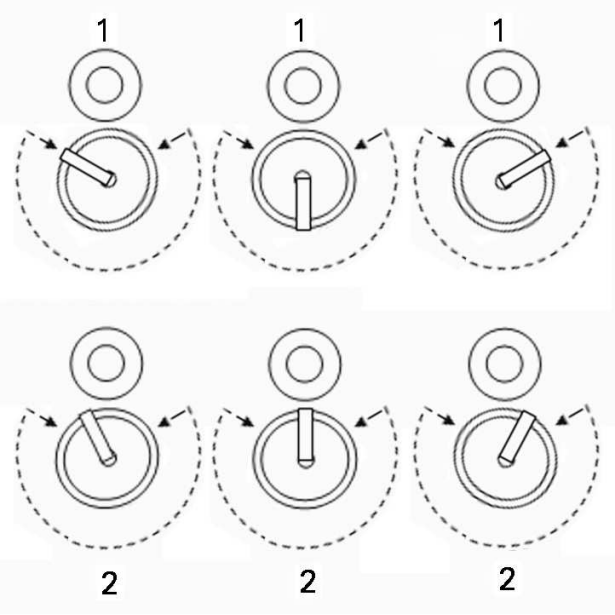
4. Using a marker, mark the spark plug on the isolator above the hexagon (A) in line with the closed end of the negative electrode (B).



A. Isolator
B. Closed end of the negative electrode

5. Install and torque the spark plug. Refer to previous table for specific torque.
6. Visually check to ensure the open end of the negative electrode is facing the injector nozzle within 120° each side of nozzle.

NOTE: The following illustration uses the point of attachment of the negative electrode to depict the angle. The injector is illustrated above the spark plug.



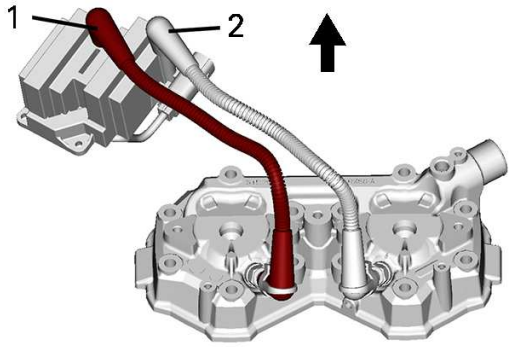
SPARK PLUG INDEXING
1. Acceptable installation
2. Unacceptable installation

7. If the plug indexing angle is not within specification, repeat procedure with another spark plug until correct indexing is achieved.

Spark Plug Cables

NOTICE

Do not interchange spark plug cables. The lower LH coil must be matched to the PTO spark plug.



ARROW POINTS TO FRONT OF VEHICLE
1. PTO side
2. MAG side

Measuring Spark Plug Cable Resistance

If the spark plug cables are in good condition, carry out the following resistance test.

1. Remove each spark plug cable from its ignition coil and spark plug.

2. Insert a probe in each cable end and measure the resistance.

Spark Plug Cable Specification
2160 – 6870 Ω



SPARK PLUG CABLE RESISTANCE TEST

3. If resistance is not as specified, replace spark plug cable.

Emergency Engine Stop Switch

Emergency Engine Stop Switch Operation

The emergency engine stop switch provides a ground signal to the ECM when STOP is selected.

Refer to applicable *Wiring Diagram* for details.

Testing Emergency Engine Stop Switch

1. Disconnect *STR 6P* connector. For connector location, refer to *Wiring Harness and Connectors*.
2. Measure resistance as per following table.

Emergency Engine Stop Switch Test		
STR 6P Connector Pin	**Emergency Engine Stop Switch Position**	**Specification**
3 and 6	RUN	O.L.
	STOP	Close to 0 Ω (Continuity)

NOTE: If emergency engine stop switch is unplugged, engine will start and run. If emergency engine stop switch is jumped, engine will stop.

Ignition Coils

Testing for Spark

Ensure emergency stop switch is set to *RUN*.

NOTE: Use ONLY an approved inductive spark plug tester or a new spark plug to test for ignition spark. In-line (series connected) spark testers must not be used. Radio frequency interference (RFI) generated by the arcing current may cause erratic behavior in the ECM.

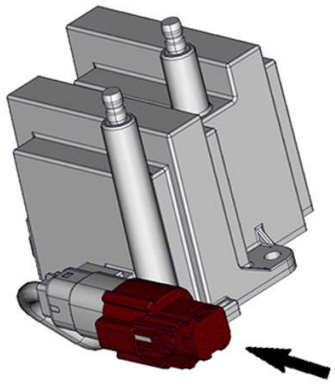
⚠ WARNING

Always electrically disconnect both fuel injectors prior to testing for ignition spark. Otherwise, fuel vapors may ignite in presence of a spark, creating a fire hazard.

1. Ensure emergency stop switch is set to *RUN*.
2. Install the inductive spark tester (or a new spark plug) on the spark plug cable **(Do not remove spark plugs installed on engine)**.
3. Activate ignition coil with BUDS2.
4. If no spark is produced, test ignition coil.
5. If a spark is produced, install new spark plugs in the engine and repeat the test to assure the new spark plugs are in good condition and functioning correctly.

Testing Ignition Coils

1. Set emergency stop switch to *RUN*.
2. Backprobe the ignition coil connector and measure voltage as per following table.



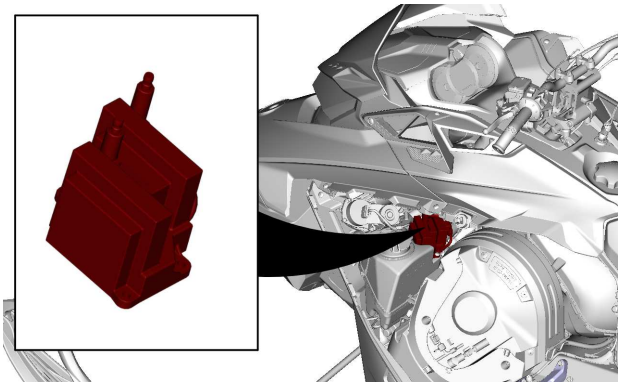
3. Use BUDS2 to activate ignition coil and measure the control signal.

Ignition Coil Connector	Description	Specification
Pin 1	Ground	Battery ground
Pin 2	Control MAG	Vary when activated 0.015 V - 0.222 V[1]

Ignition Coil Connector	Description	Specification
Pin 3	55 volts	40 V engine off 55 V engine running
Pin 4	Ground	Battery ground
Pin 5	Control PTO	Vary when activated 0.015 V - 0.222 V[1]
Pin 6	55 volts	40 V engine off 55 V engine running
[1] Control signal actually varies between 13 - 15 volts for 800 micro-seconds (DWELL time) but most multimeters cannot read it, it happens so fast.		

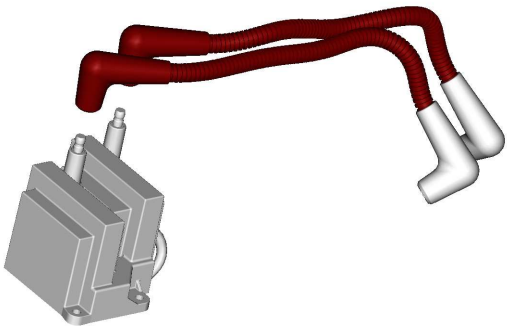
4. If all inputs are as per specifications and there is no spark, replace ignition coil.
5. If a pin does not test as per specification, troubleshoot the affected wire continuity to ground or ECM. Refer to *Wiring Diagram*.

Removing Ignition Coil

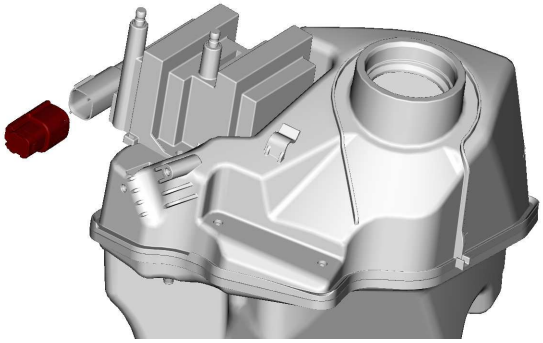


TYPICAL

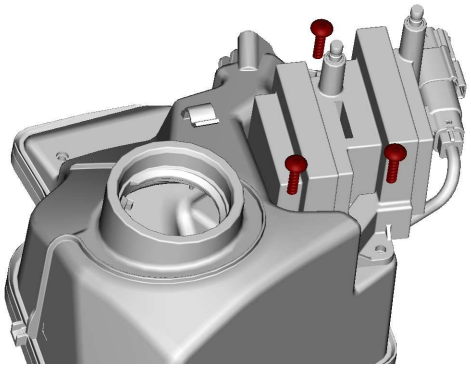
1. Remove the left hand side panel.
2. Note position of spark plug cables and remove them from the spark plugs.



3. Unplug ignition coil connector.



4. Remove retaining screws.



5. Remove ignition coil.

Installing Ignition Coil

The installation is the reverse of the removal procedure. However, pay attention to the following.

Tightening Torque	
Ignition coil retaining screws	2.4 ± 0.2 N•m (21 ± 2 lbf•in)

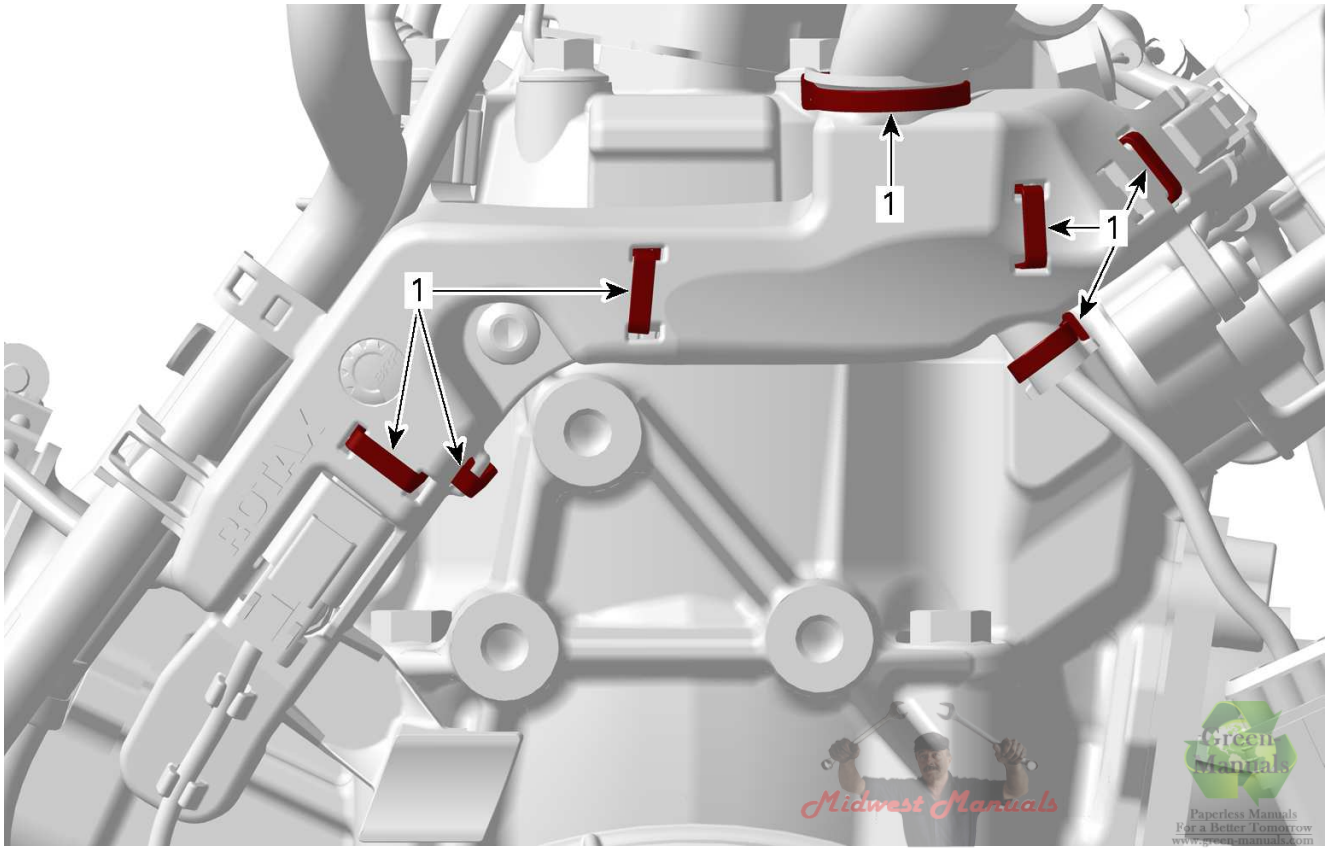
Engine Harness – 600R E-TEC

General

For connector replacement or wire repair procedures refer to *Wiring Harness and Connectors* subsection.

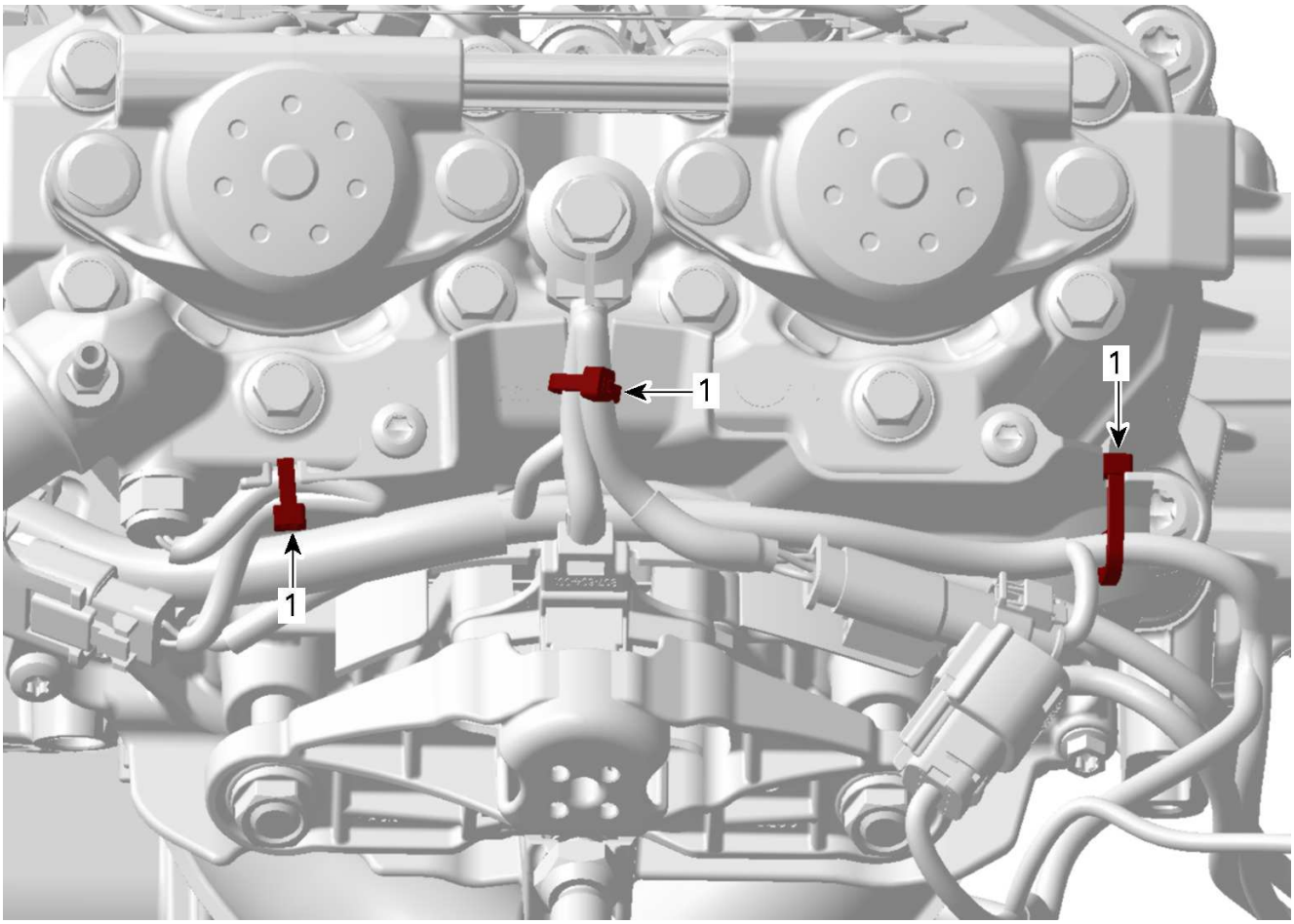
The adequate installation of the engine harness into the front and lateral harness supports is important to avoid electrical problems. The position of the wires, connectors and locking ties must be done as per the following illustrations.

To install the engine harness properly, the following parts are required:

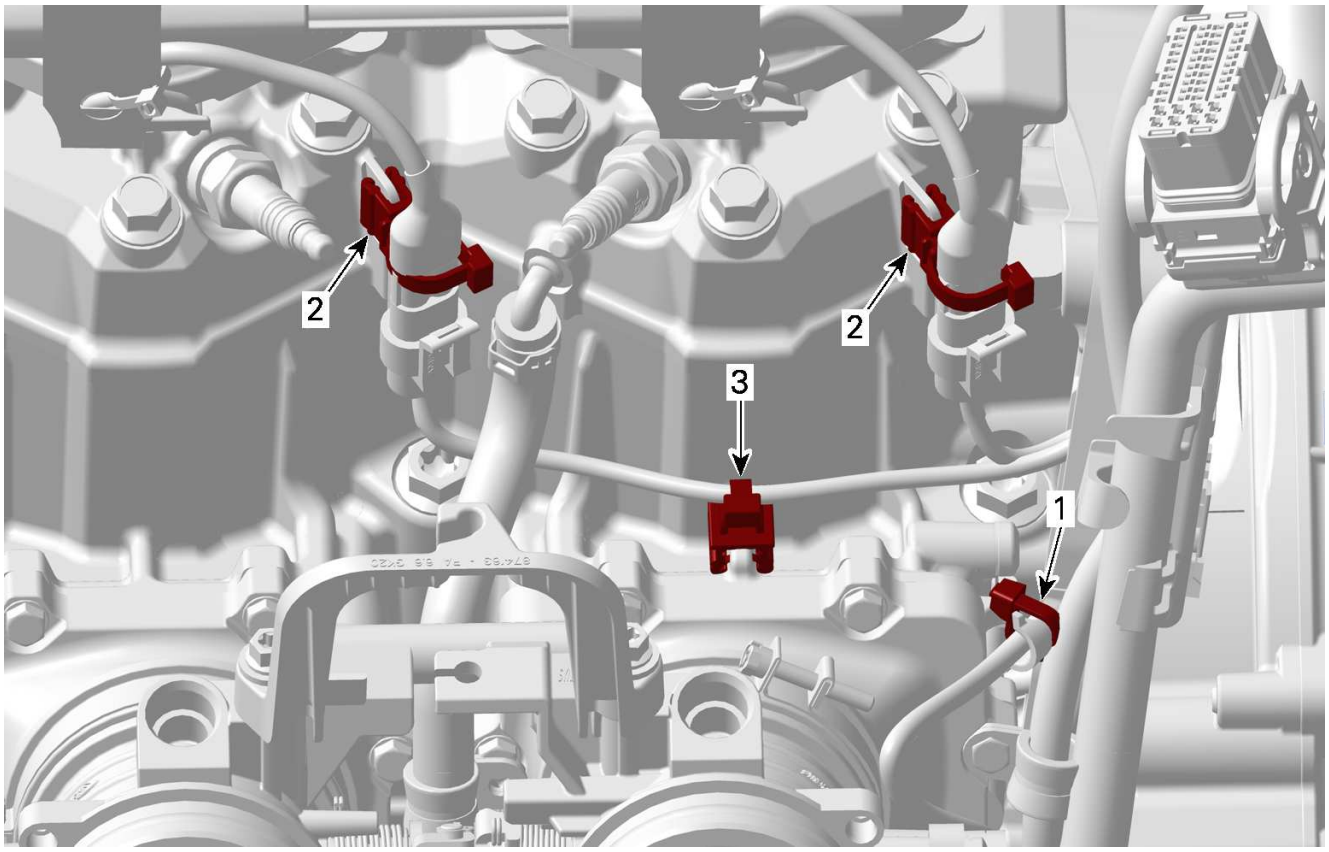


1. Locking tie 175 mm (6-29/32 in) x 4 mm (5/32 in)

If you bought this manual from any other seller please leave them NEGATIVE feedback and notify us at bestshopmanuals@gmail.com



1. Locking tie 175 mm (6-29/32 in) x 4 mm (5/32 in)



1. Locking tie 175 mm (6-29/32 in) x 4 mm (5/32 in)
2. Locking tie with mount 200 mm (7-7/8 in) x 4.6 mm (3/16 in)
3. Locking tie with mount 150 mm (6 in) x 4.6 mm (3/16 in)

Procedures

Removing the Engine Wiring Harness

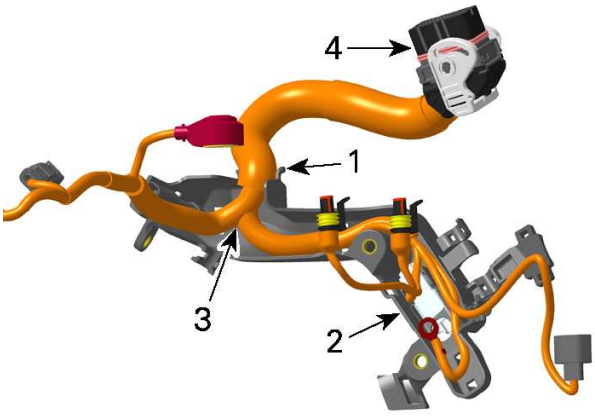
NOTICE

The TPS connector can be disconnected without cutting the tape.



Engine wiring harness assembly

1. Position the "Y" of the engine harness inside the molded recess of the harness support:
   - The ECM connector upwards.
   - The branch having 3 connectors and the ECM ground towards the right side of the harness support.

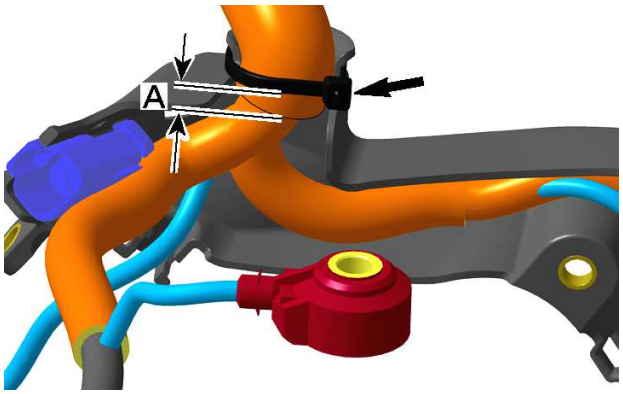


HARNESS SUPPORT
1. *Recess of harness support*
2. *Right side of harness support*
3. *"Y" of engine harness*
4. *ECM connector*

2. Secure the ECM connector harness to the harness support.

NOTICE

Make sure head of the locking tie is correctly positioned and in the proper direction.

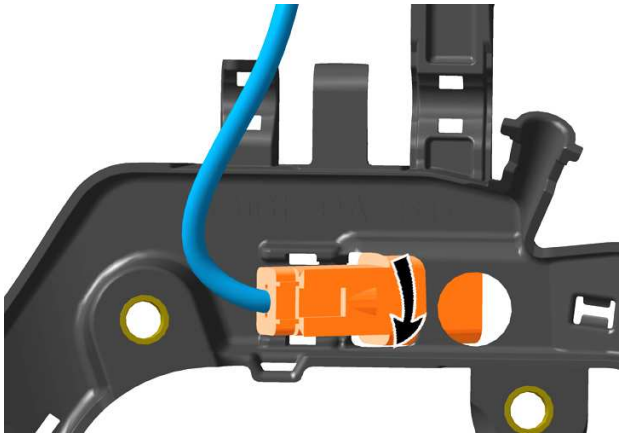


A. 5 mm (.2 in)

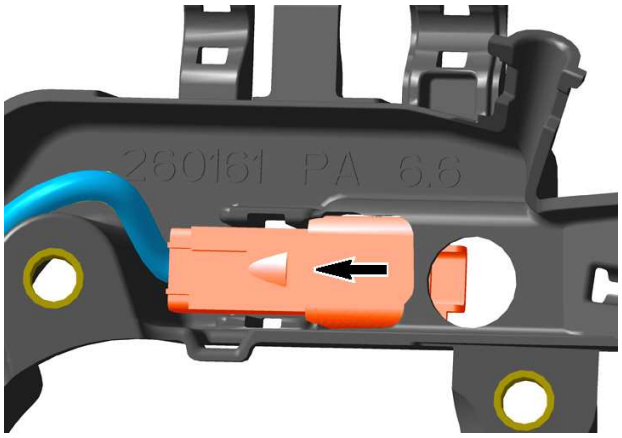
3. Engage CPS connector to the harness support:
   1. Lead connector through harness support.



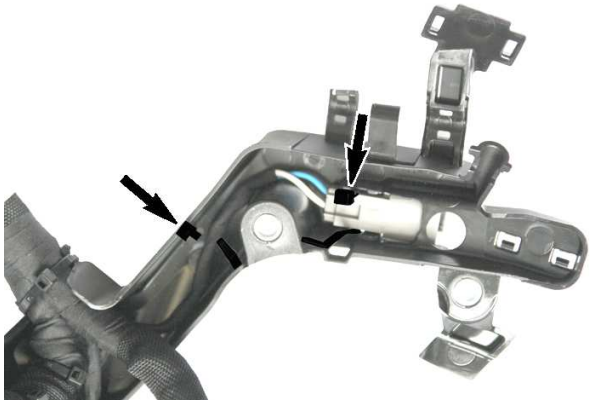
   2. Turn connector



   3. Move connector backwards to engage it proper in the harness support.



4. Install locking ties in harness support but do not lock yet.



5. Route the rear side portion of the harness into the harness support and secure it.

   Secure following:
   - GND cable
   - E-TEC direct fuel injector cable (PTO injector)
   - TPS cable.

NOTICE

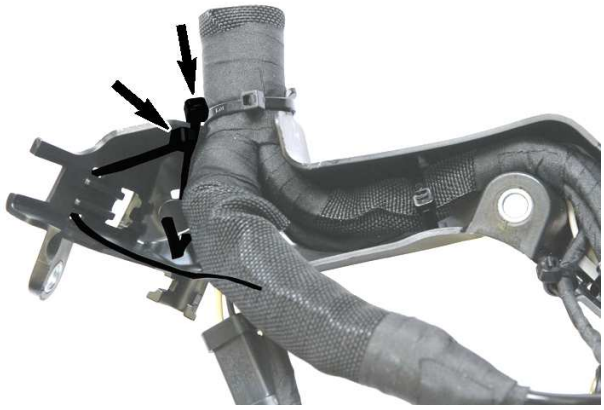
E-TEC direct fuel injector cable (MAG injector) is not secured by the locking tie.



6. Using a locking tie to secure:
   - TPS cable
   - E-TEC direct fuel injector cable (MAG injector).



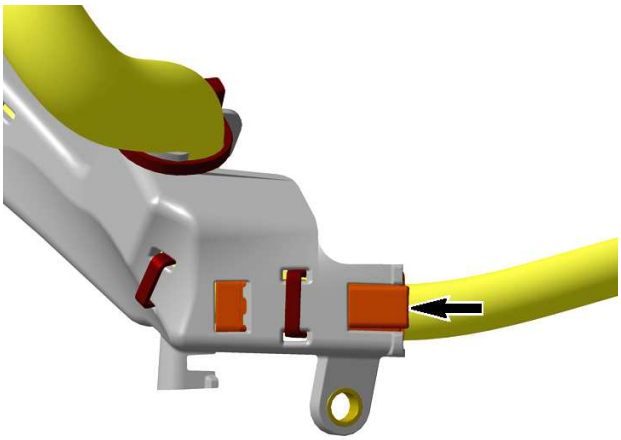
7. Place locking ties in harness support.



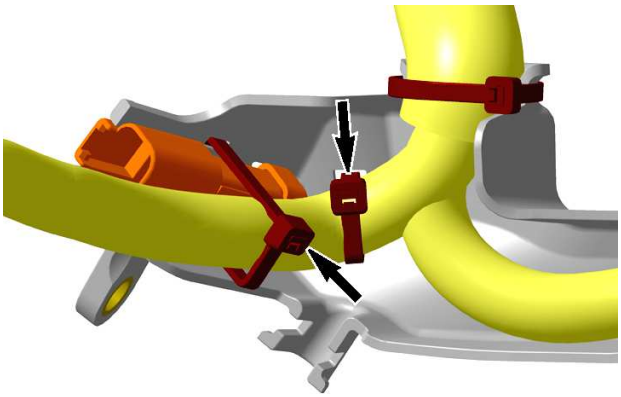
8. Engage CTS connector in harness support.

NOTICE

Ensure connector is properly locked.

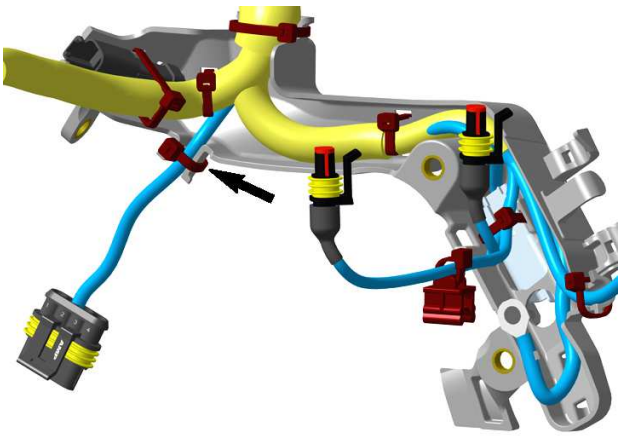


9. Secure CTS connector and wiring harness to harness support



SHOT models

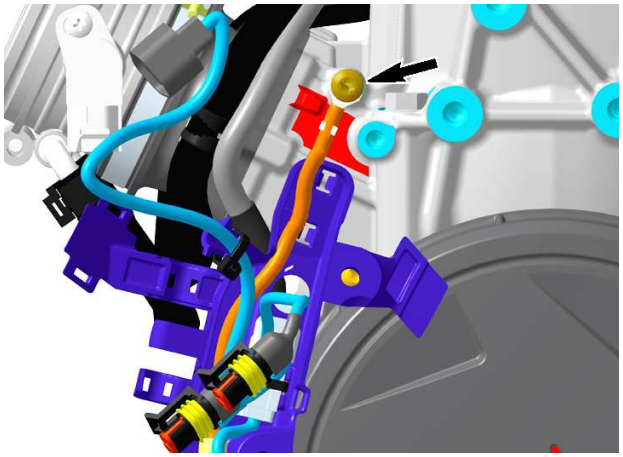
10. Secure Absolute CPS cable to harness support.



Installing the Engine Wiring Harness

1. Install the ground cable.
2. Tighten the ground cable screw to specification.

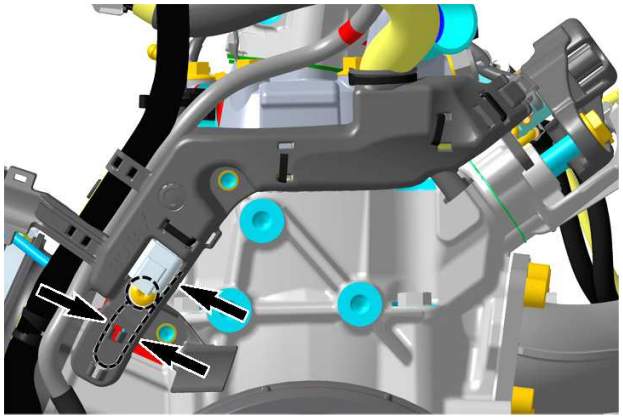
Tightening Torque	
Ground cable screw	8 ± 0.5 N•m (71 ± 4 lbf•in)



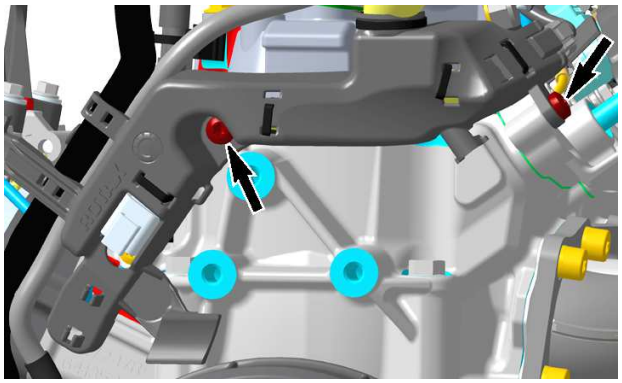
3. Place pre-assembled engine wiring harness with harness support on the engine MAG side.

NOTICE

Ensure that GND cable is placed proper underneath harness support.

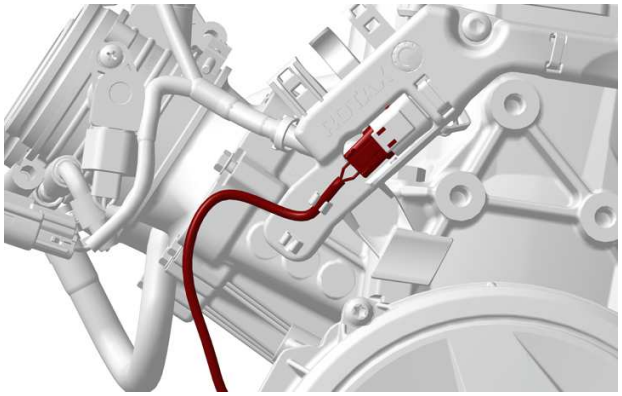


4. Tighten the harness support retaining screws to specification.

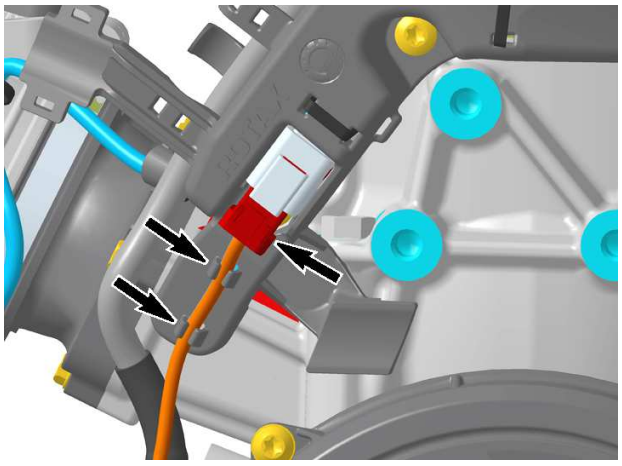


Tightening Torque	
Harness support retaining screws	8 ± 0.5 N•m (71 ± 4 lbf•in)

5. Connect the CPS connector.



6. Engage CPS cable in harness support.

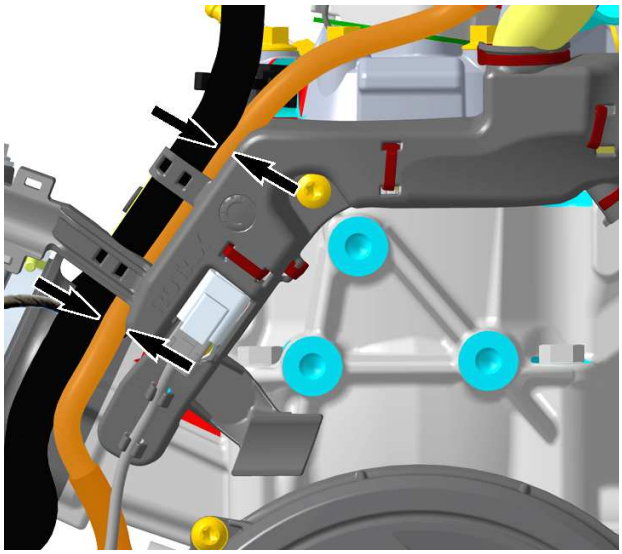


REV GEN4

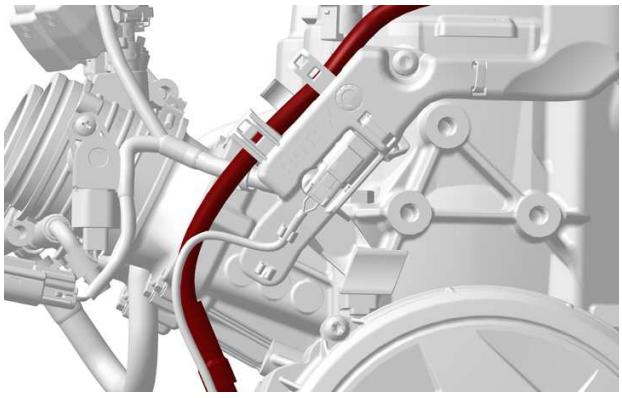
7. Route stator wire in the cable harness support.
8. Place throttle body heating hose in the cable harness support.

NOTICE

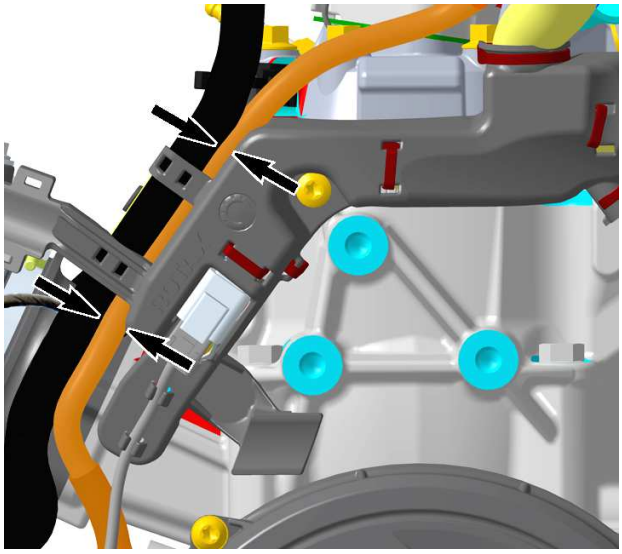
The stator wire is routed underneath the throttle body heating hose.



REV GEN4

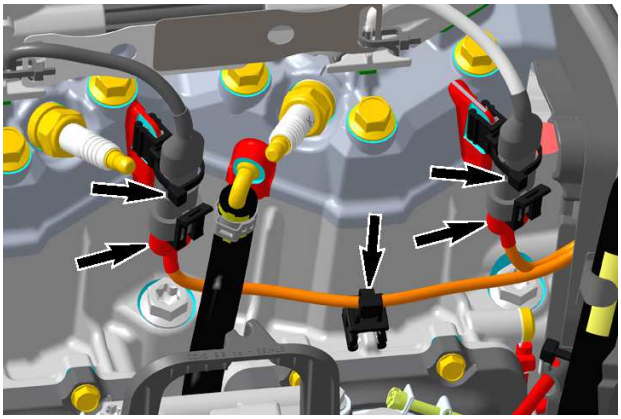


REV GEN5



REV GEN5

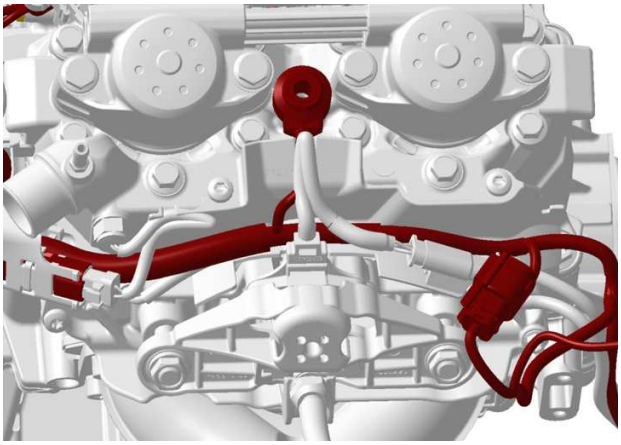
9. Route TPS wire behind the throttle body heating hose.
10. Connect TPS wiring harness connector.
11. Connect E-TEC direct fuel injector connectors.
12. Secure both E-TEC direct fuel injector cables.
13. Route fuel injector cable (PTO injector) underneath the throttle body heating hose.



14. Clean contact surface of knock sensor (KS) on cylinder head
15. Place the engine harness into the front harness support.

NOTICE

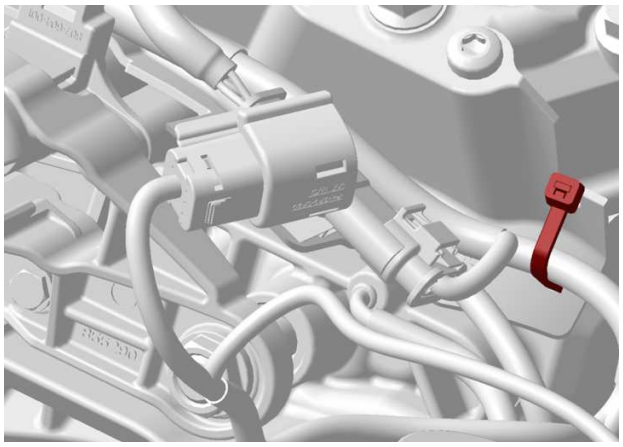
Engine harness must not cross the RAVE oil line after harness installation.



16. Secure engine wiring harness using a locking tie.

NOTICE

Make sure head of the locking tie is correctly positioned and in the proper direction.

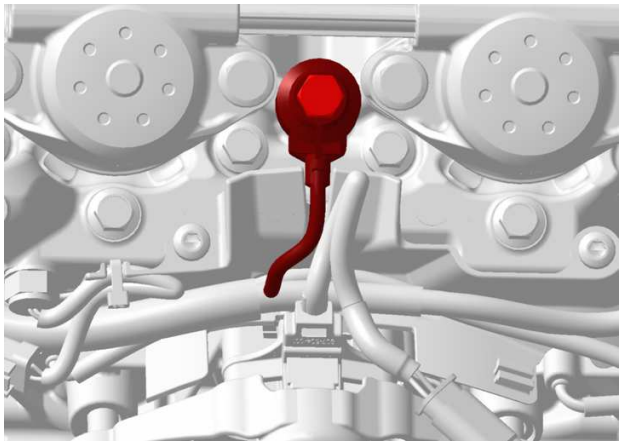


17. Put KS in place and tighten KS screw to specification.

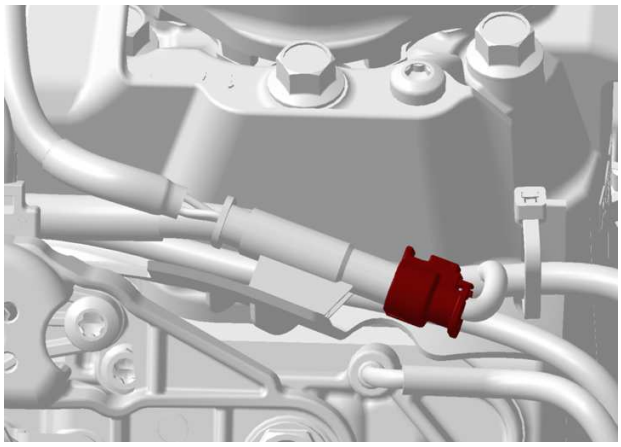
Tightening Torque	
Knock sensor screw	24 ± 1 N•m (18 ± 1 lbf•ft)

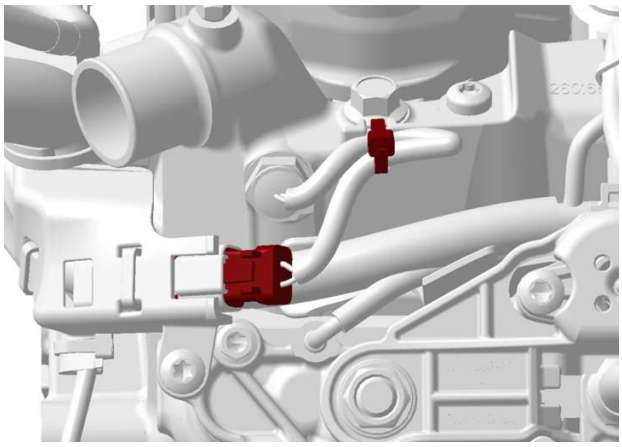
NOTICE

Improper torque may prevent sensor from functioning properly possibly leading to severe internal engine component damage.



18. Connect wiring harness connector to 3D Rave Valve Position Sensor and engage connector on harness support.

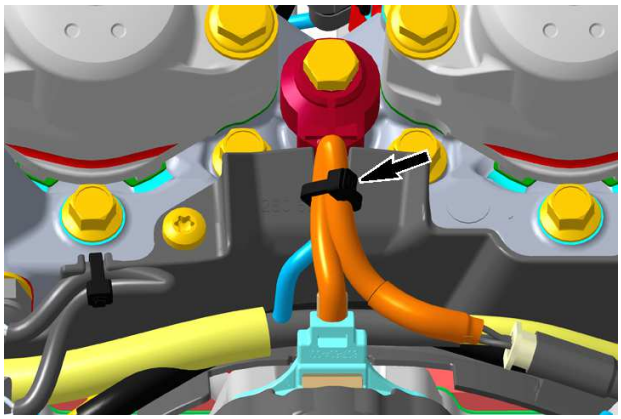




19. Route the 3D Rave Valve Position Sensor wire and secure it to the KS wire.
20. Position locking tie behind protection tape and make sure head of the locking tie is correctly positioned.

NOTICE

Ensure to route 3D Rave Valve Position Sensor wire free from tension.



21. Connect CTS connector to the wiring harness.
22. Secure the CTS wire to the harness support.

NOTICE

Ensure to route CTS wire free from tension.

Engine Harness – 850 E-TEC

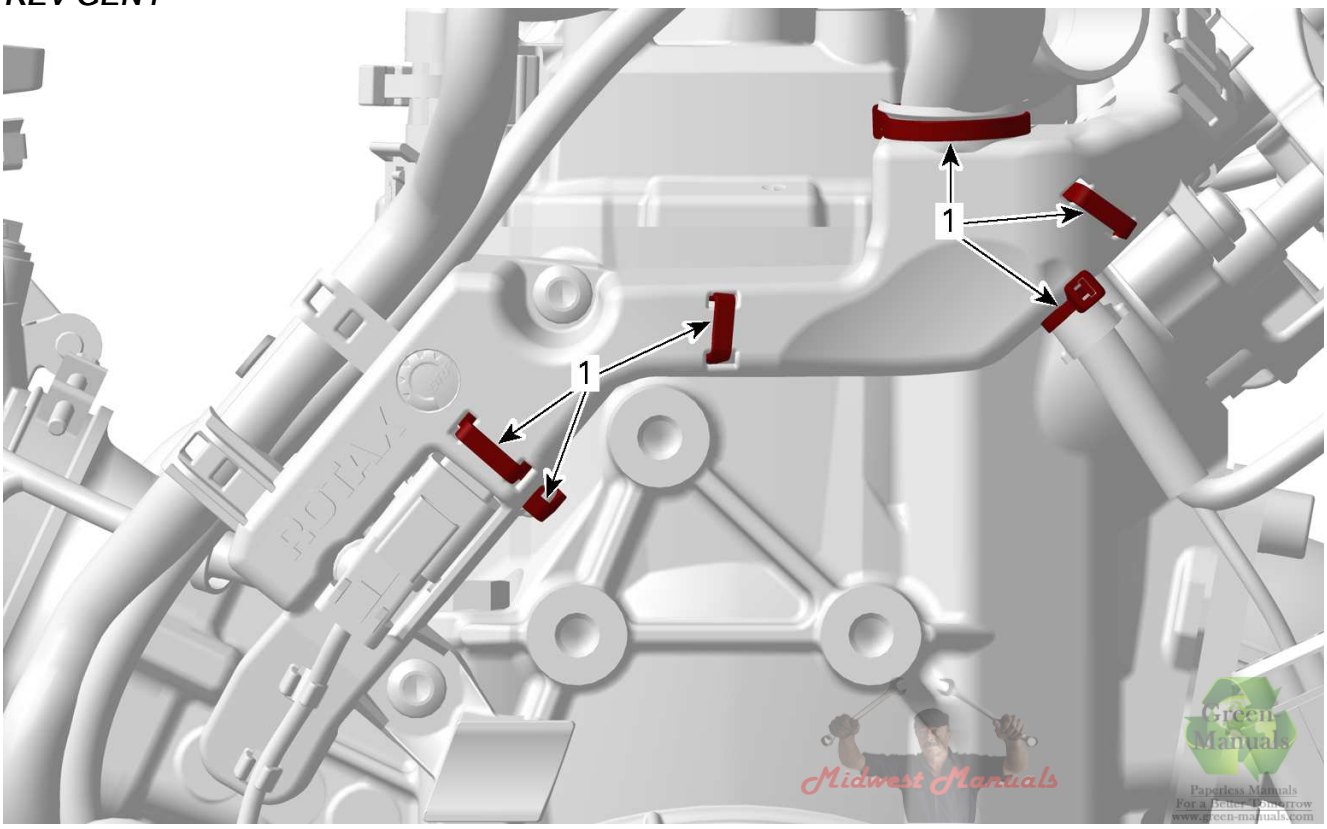
General

For connector replacement or wire repair procedures refer to *Wiring Harness and Connectors* subsection.

The adequate installation of the engine harness into the front and lateral harness supports is important to avoid electrical problems. The position of the wires, connectors and locking ties must be done as per the following illustrations.

To install the engine harness properly, the following parts are required:

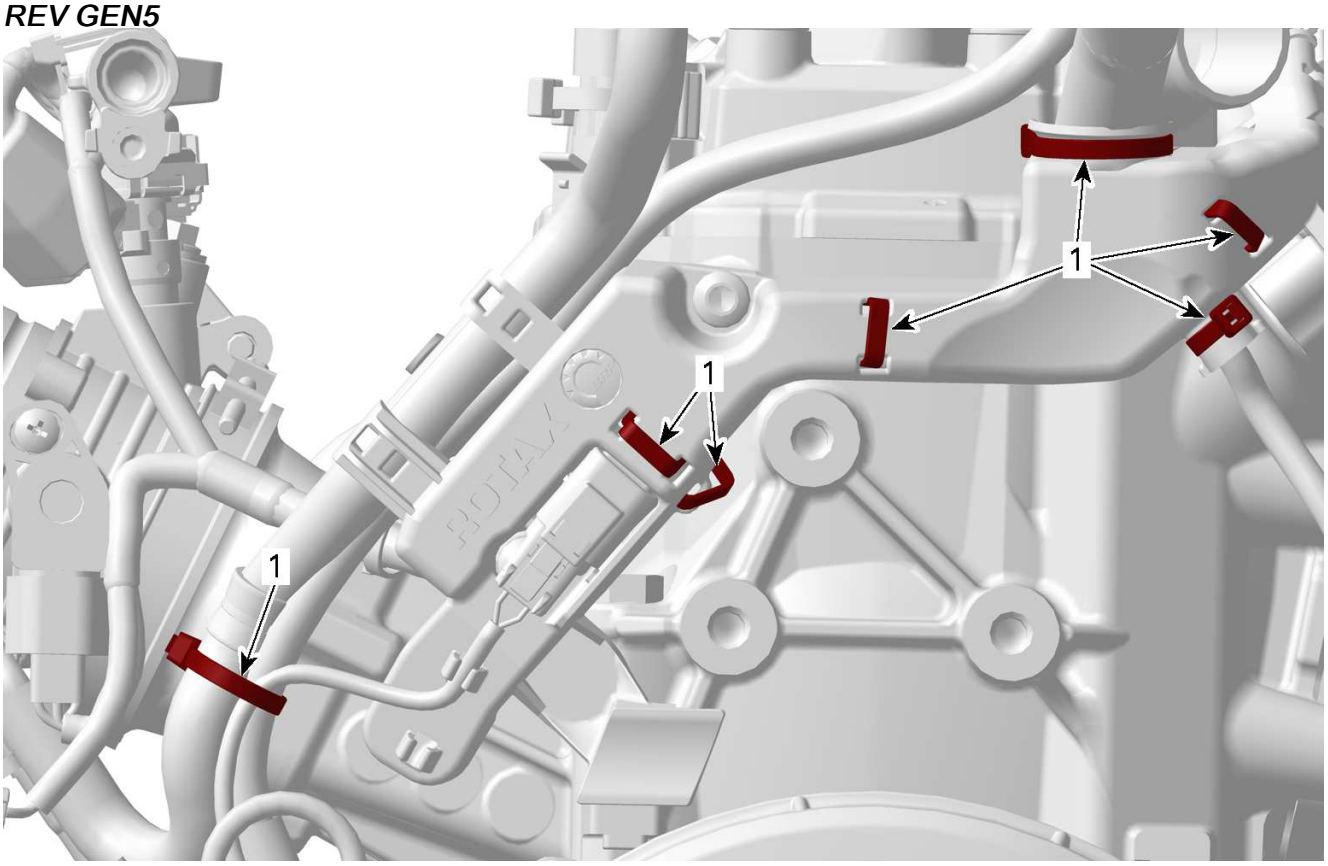
REV GEN4



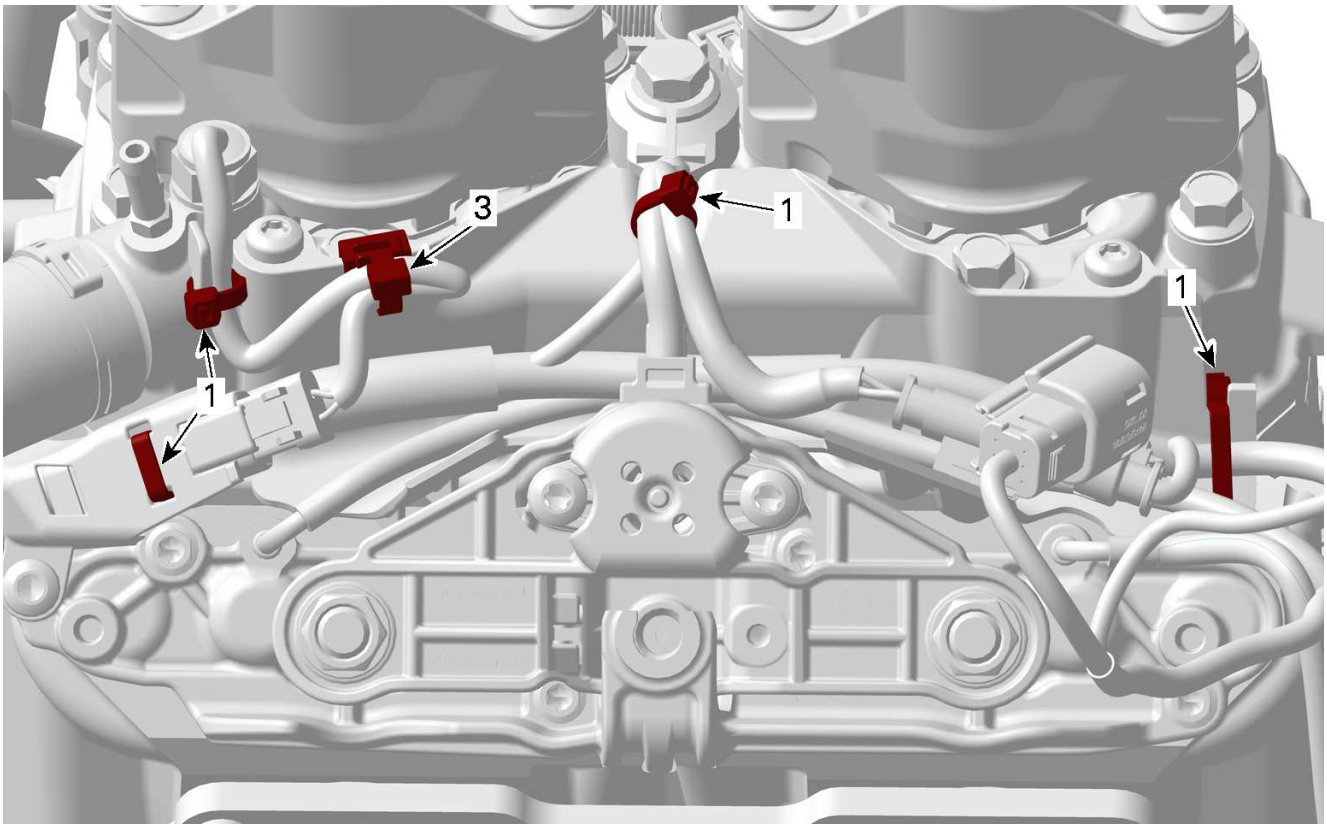
1. Locking tie 175 mm (6-29/32 in) x 4 mm (5/32 in)

If you bought this manual from any other seller please leave them NEGATIVE feedback and notify us at bestshopmanuals@gmail.com

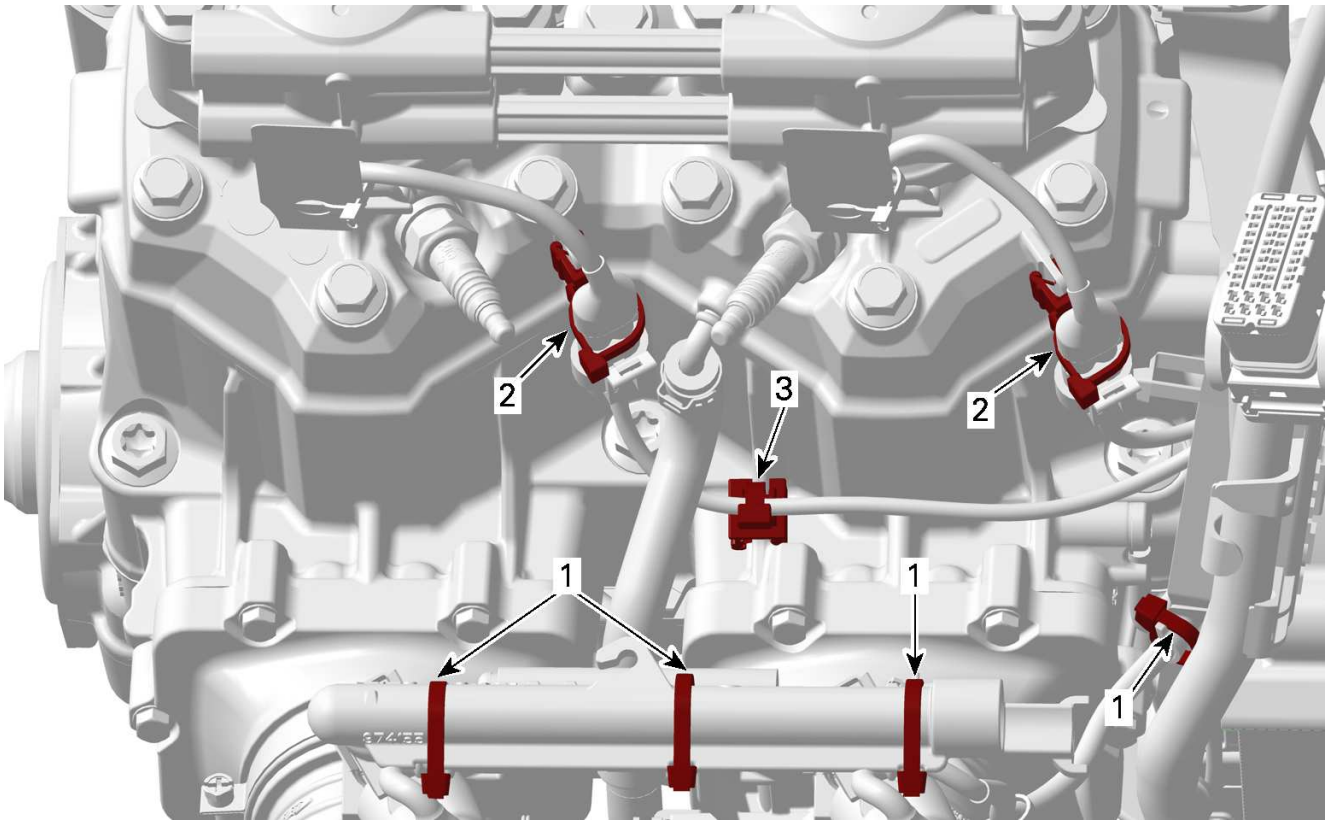
REV GEN5



1. Locking tie 175 mm (6-29/32 in) x 4 mm (5/32 in)



1. *Locking tie 175 mm (6-29/32 in) x 4 mm (5/32 in)*
2. *Locking tie with mount 200 mm (7-7/8 in) x 4.6 mm (3/16 in)*
3. *Locking tie with mount 150 mm (6 in) x4.6 mm (3/16 in)*



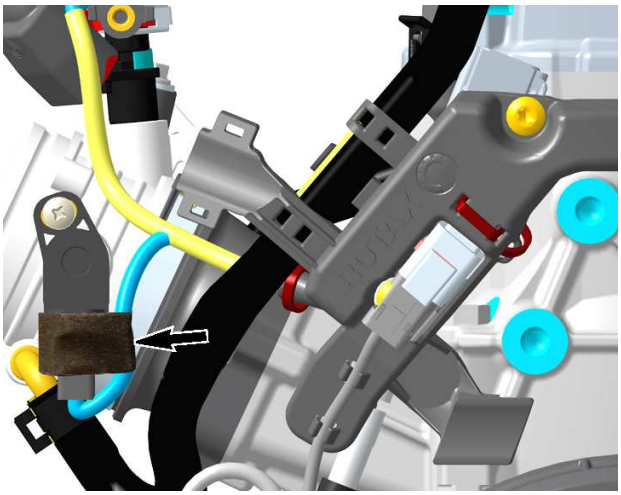
1. *Locking tie 175 mm (6-29/32 in) x 4 mm (5/32 in)*
2. *Locking tie with mount 200 mm (7-7/8 in) x 4.6 mm (3/16 in)*
3. *Locking tie with mount 150 mm (6 in) x4.6 mm (3/16 in)*

Procedures

Removing the Engine Wiring Harness

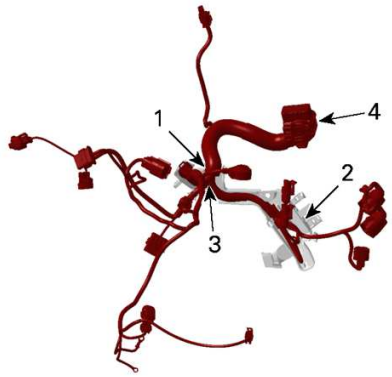
NOTICE

The TPS connector can be disconnected without cutting the tape.



Engine Wiring Harness Assembly

1. Position the "Y" of the engine harness inside the molded recess of the harness support.
   - The ECM connector upwards.
   - The branch having 5 connectors and the ECM ground towards the right side of the harness support.

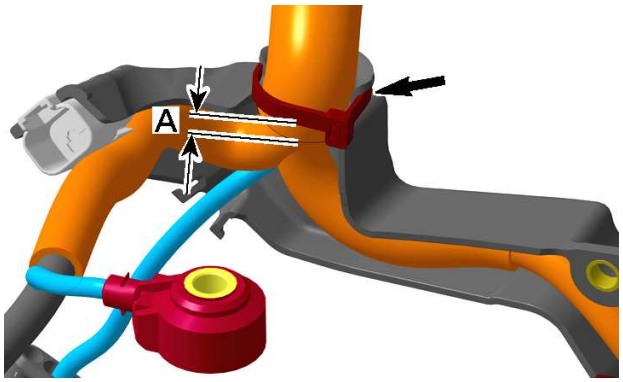


HARNESS SUPPORT
1. Recess of harness support
2. Right side of harness support
3. "Y" of engine harness
4. ECM connector

2. Secure the ECM connector harness to the harness support.

NOTICE

Make sure head of the locking tie is correctly positioned and in the proper direction.



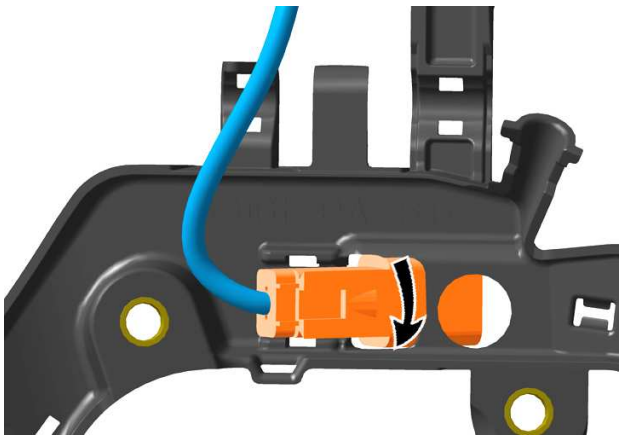
A. 5 mm (.2 in)

3. Engage CPS connector to the harness support:
   1. Lead connector through harness support.



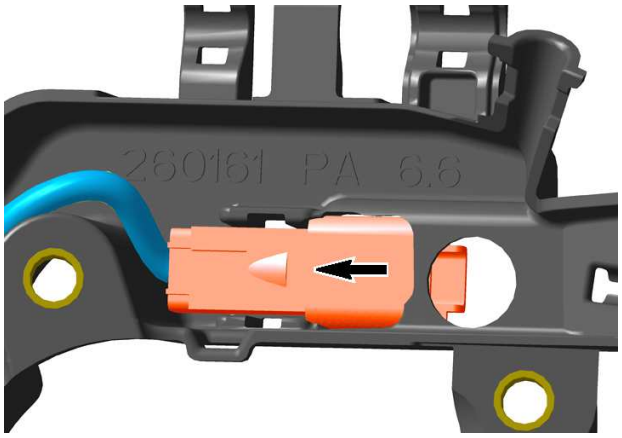
TYPICAL

   2. Turn connector



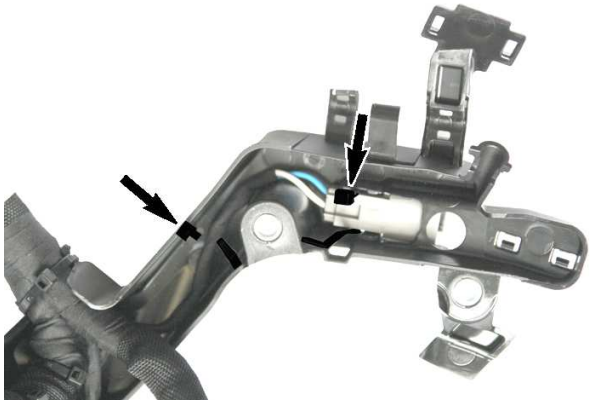
TYPICAL

   3. Move connector backwards to engage it proper in the harness support.



TYPICAL

4. Install locking ties in harness support but do not lock yet.



TYPICAL

5. Route the rear side portion of the harness into the harness support and secure it.

   Secure following:
   - GND cable
   - E-TEC direct fuel injector cable (PTO injector)
   - TPS/Throttle body injector cable.

NOTICE

E-TEC direct fuel injector cable (MAG injector) is not secured by the locking tie.



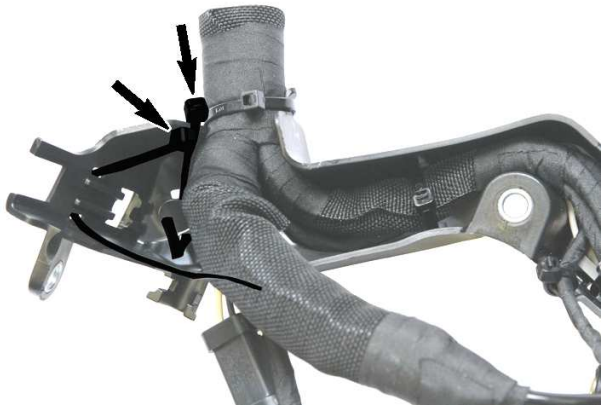
TYPICAL

6. Using a locking tie to secure:
   - TPS/Throttle body injector cable
   - E-TEC direct fuel injector cable (MAG injector).



TYPICAL

7. Place locking ties in harness support.

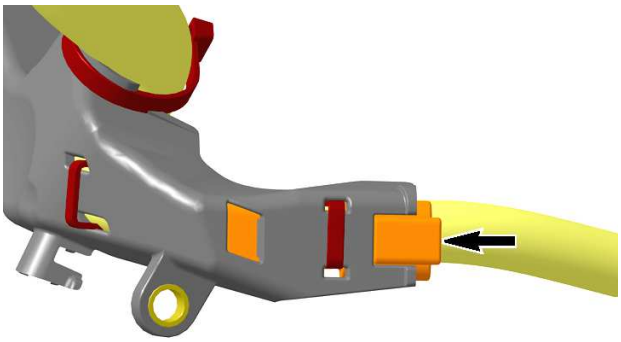


TYPICAL

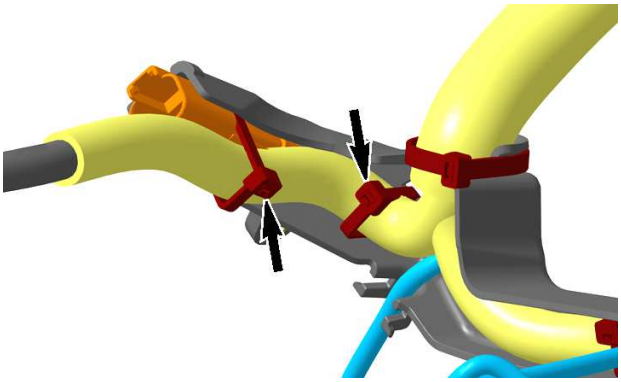
8. Engage CTS connector in harness support.

NOTICE

Ensure connector is properly locked.

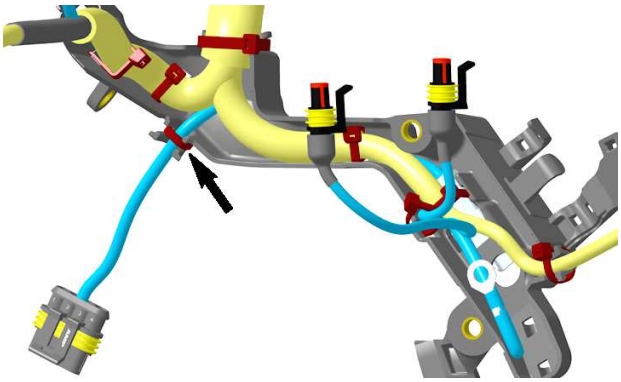


9. Secure CTS connector and wiring harness to harness support



SHOT models

10. Secure Absolute CPS cable to harness support.

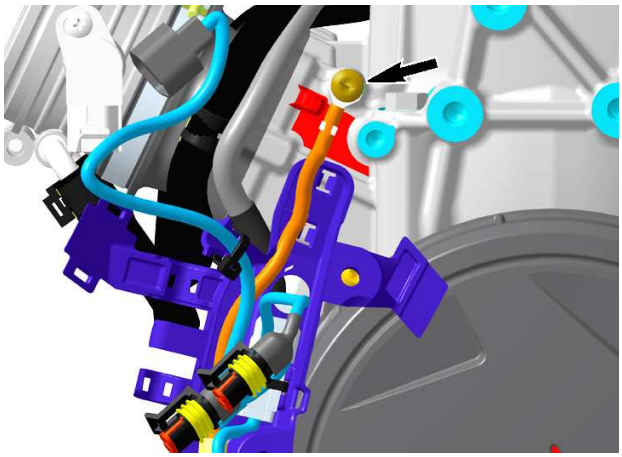


Installing the Engine wiring harness

1. Install the ground cable.

   Tighten the ground cable screw to specification.

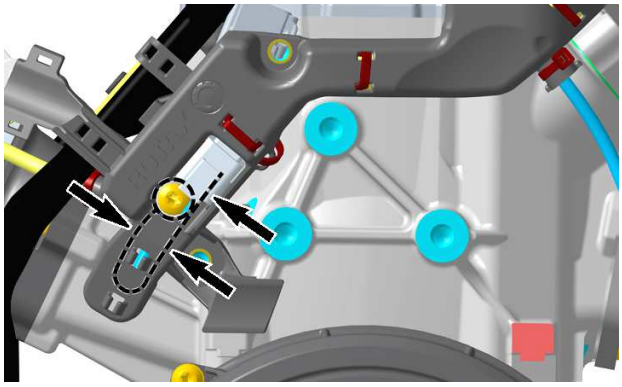
Tightening Torque	
Ground cable screw	8 ± 0.5 N·m (71 ± 4 lbf·in)



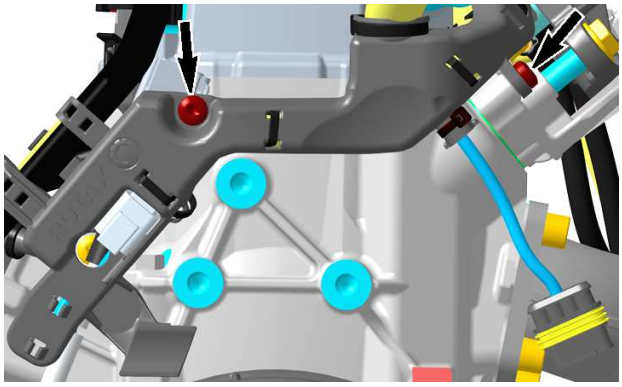
2. Place pre-assembled engine wiring harness with harness support on the engine MAG side.

NOTICE

Ensure that GND cable is placed proper underneath harness support.

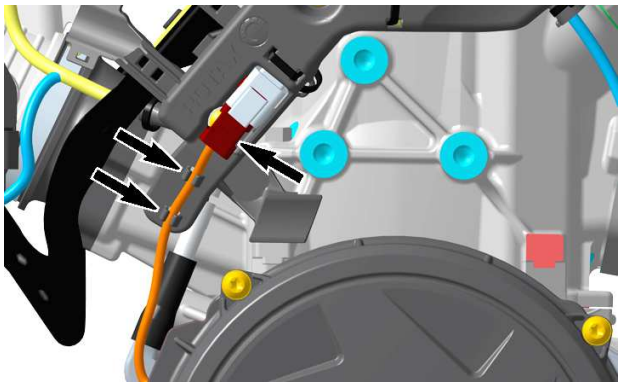


3. Tighten the harness support retaining screws to specification.



Tightening Torque	
Harness support retaining screws	8 ± 0.5 N·m (71 ± 4 lbf·in)

4. Connect the CPS connector.
5. Engage CPS cable in harness support.

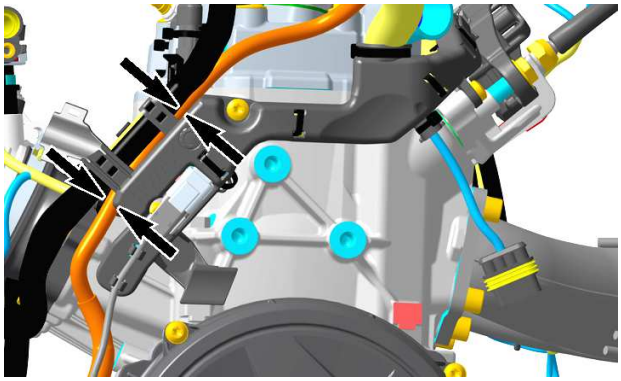


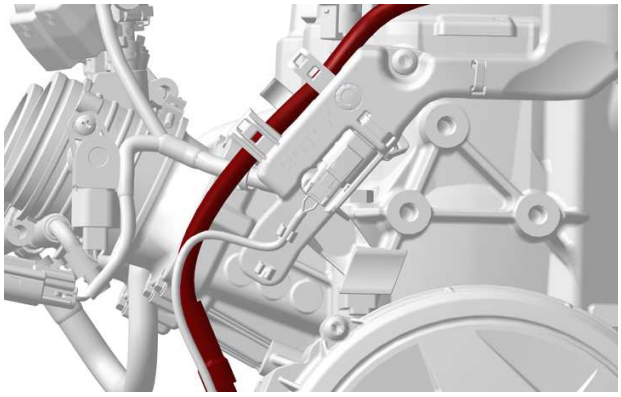
REV GEN4

6. Route stator wire in the cable harness support.
7. Place throttle body heating hose in the cable harness support.

NOTICE

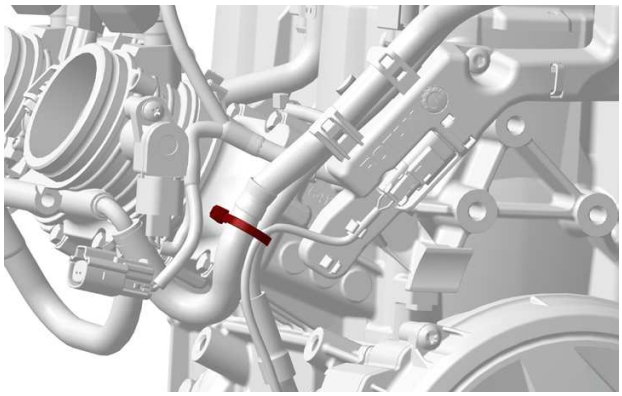
The stator wire is routed underneath the throttle body heating hose.





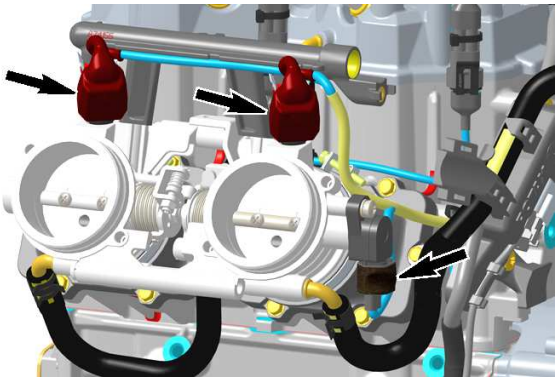
REV GEN5

8. Route CPS wire to the stator wire and secure them to the throttle body heating hose.

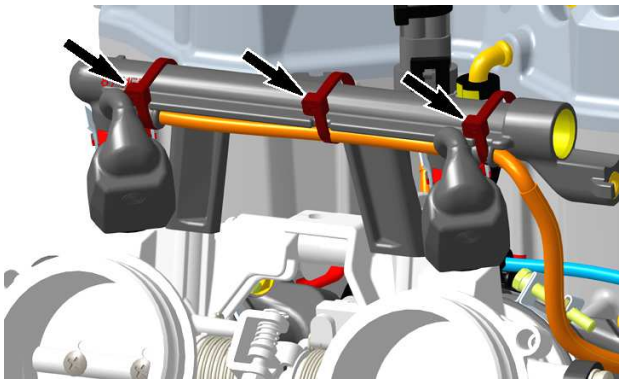


All models

9. Route TPS wire behind the throttle body heating hose.
10. Connect wiring harness connectors to
    - TPS
    - Throttle body injectors.

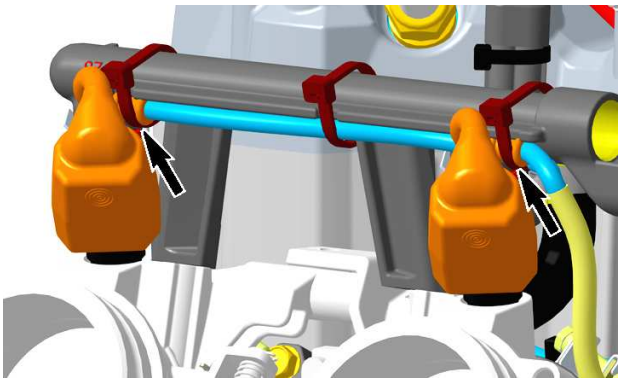


11. Secure the engine wiring harness to the fuel rail.



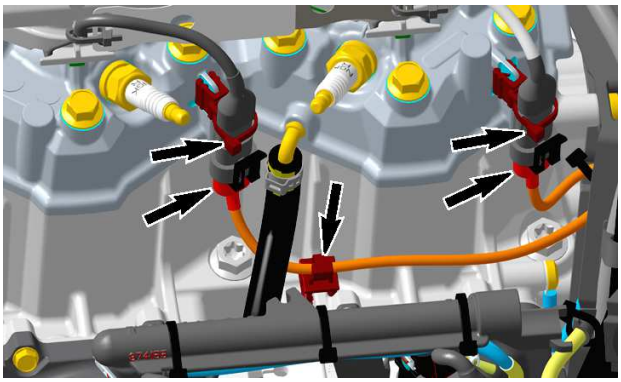
NOTICE

Ensure to install the locking ties in the grooves of the injector connector protecting covers.



12. Connect E-TEC direct fuel injector connectors.
13. Secure both E-TEC direct fuel injector cables.

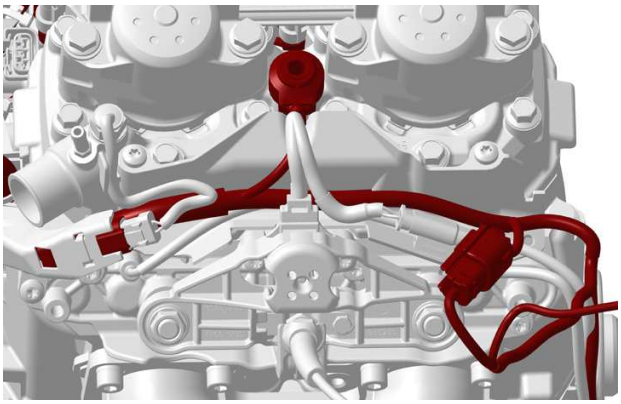
    Route fuel injector cable (PTO injector) underneath the throttle body heating hose.



14. Clean contact surface of knock sensor (KS) on cylinder head
15. Place the engine harness into the front harness support.

NOTICE

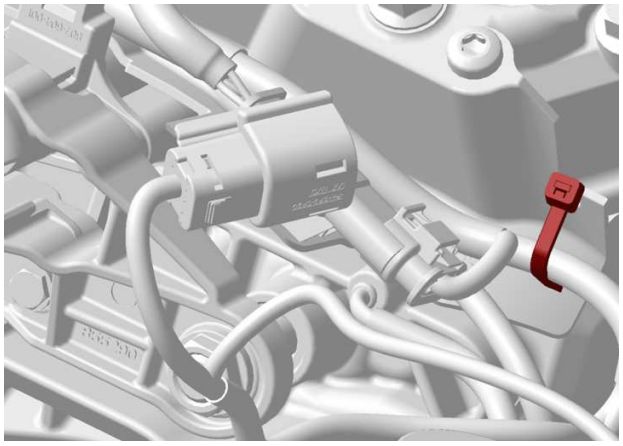
Engine harness must not cross the RAVE oil line after harness installation.



16. Secure engine wiring harness using a locking tie.

NOTICE

Make sure head of the locking tie is correctly positioned and in the proper direction.

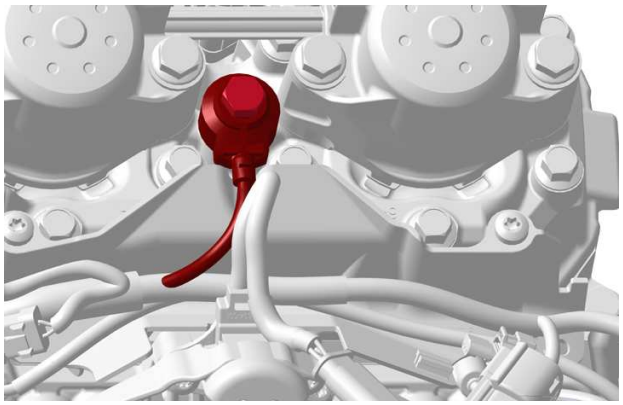


17. Put KS in place and tighten KS screw to specification.

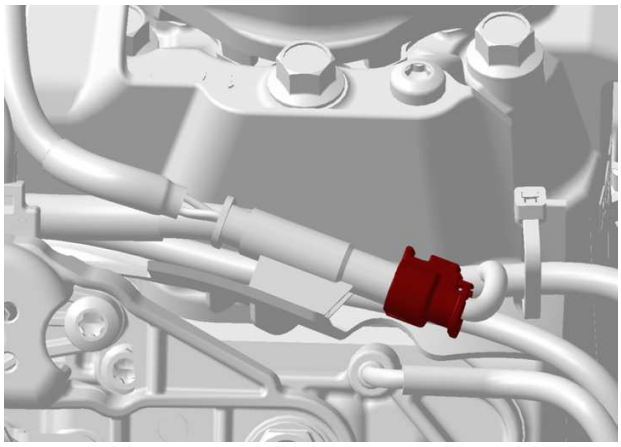
Tightening Torque	
Knock sensor screw	24 ± 1 N•m (18 ± 1 lbf•ft)

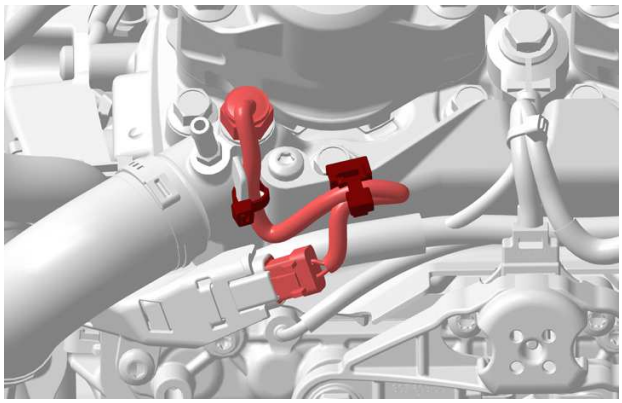
NOTICE

Improper torque may prevent sensor from functioning properly possibly leading to severe internal engine component damage.



18. Connect wiring harness connector to 3D Rave Valve Position Sensor and engage connector on harness support.



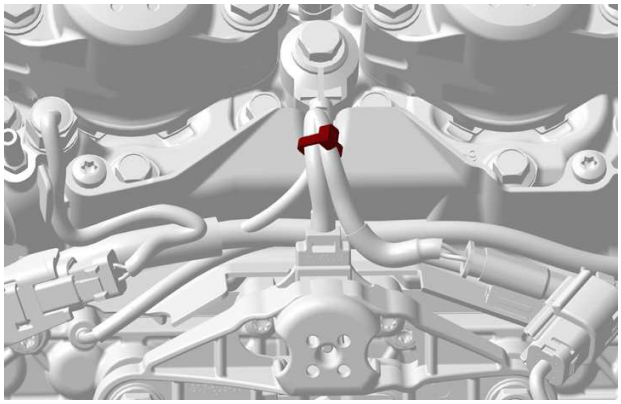


19. Route the 3D Rave Valve Position Sensor wire and secure it to the KS wire.

    Position locking tie behind protection tape and make sure head of the locking tie is correctly positioned.

NOTICE

Ensure to route 3D Rave Valve Position Sensor wire free from tension.



20. Connect CTS connector to the wiring harness.
21. Secure the CTS wire to the harness support.

NOTICE

Ensure to route CTS wire free from tension.

Notes

Technician's Notes

Related Documents

Bulletins	
Instruction Sheets	
Other	

05

TECHNICAL SPECIFICATIONS

05 Technical Specifications

Engine

Engine			
Engine type		600R E-TEC	liquid cooled with reed valves and electronic RAVE
		850 E-TEC 850 E-TEC TURBO	
Number of cylinders			2
Bore		600R E-TEC	72.3 mm (2.846 in)
		850 E-TEC 850 E-TEC TURBO	82 mm (3.228 in)
Stroke		600R E-TEC	73.0 mm (2.874 in)
		850 E-TEC 850 E-TEC TURBO	80.4 mm (3.165 in)
Displacement		600R E-TEC	599.4 cm³ (36.58 in³)
		850 E-TEC 850 E-TEC TURBO	849 cm³ (51.81 in³)
Compression ratio		600R E-TEC	12.40 ± 0,3
		850 E-TEC 850 E-TEC TURBO	12.50 ± 0.3
Combustion chamber volume		600R E-TEC	26.25 cc ± 0.93
		850 E-TEC 850 E-TEC TURBO	37.00 cc ± 0.93
Maximum power engine speed		600R E-TEC	8100 ± 100 RPM
		850 E-TEC 850 E-TEC TURBO	7900 ± 100 RPM
3D RAVE spring	Valve springs	Color	Yellow
		Wire diameter	0.7 mm (.0276 in)
		Minimum free length	35 mm (1.378 in)
Piston ring type			Semi-trapezoidal

Midwest Manuals
Green Manuals
Paperless Manuals
For a Better Tomorrow
www.green-manuals.com
If you bought this manual from any other seller please leave them
NEGATIVE feedback and notify us at bestshopmanuals@gmail.com

Engine			
Ring end gap	New		0.4 to 0.6 mm (.016 to .024 in)
	Service limit	600R E-TEC	0.8 mm (.031 in)
		850 E-TEC 850 E-TEC TURBO	1 mm (.039 in)
Engine compression specification	Service limit		7.5 bar (109 lbf/in²)
Piston/cylinder wall clearance	New	600R E-TEC	0.083 to 0.161 mm (.0033 to .0063 in)
		850 E-TEC 850 E-TEC TURBO	0.135 to 0.161 mm (.005 to .006 in)
	Service limit		0.200 mm (.0079 in)
Piston projection		600R E-TEC	1.10 to 1.20 mm (.043 to .047 in)
		850 E-TEC 850 E-TEC TURBO	1.75 to 1.82 mm (.069 to .072 in)
Cylinder head warpage	Service limit for total length of cylinder head		0.5 mm (.0197 in)
Cylinder taper	New (max.)		0.03 mm (.0012 in)
	Service limit		0.1 mm (.0039 in)
Cylinder out of round	New (max.)		0.010 mm (.0004 in)
	Service limit		0.080 mm (.0031 in)
Crankshaft deflection	Max.	600R E-TEC	MAG: 0.06 mm (.002 in) PTO: 0.06 mm (.002 in)
		850 E-TEC 850 E-TEC TURBO	MAG: 0.05 mm (.002 in) PTO: 0.08 mm (.0031 in)
Connecting rod big end axial play	New	600R E-TEC	0.28 to 0.68 mm (.011 to .027 in)
		850 E-TEC 850 E-TEC TURBO	0.152 to 0.352 mm (.006 to .0139 in)

Cooling System			
Coolant	Type		Ethyl glycol and distilled water (50%/50%) or coolant specifically formulated for aluminum engines For best performance use BRP Long Life Antifreeze
	Quantity		Refer to *Vehicle Technical Specifications* for the quantity required to fill up engine and vehicle.
Thermostat opening temperature			37 °C (99 °F)
Radiator cap opening pressure			90 kPa (13 lbf/in²)

Lubrication System		
Oil injection pump type		Electronic oil injection pump
Injection oil	Type	XPS synthetic 2-stroke oil
	Quantity	3 l (101.4 fl oz (US))

Fuel System		
Fuel delivery	600R E-TEC	E-TEC direct injection
	850 E-TEC 850 E-TEC TURBO	E-TEC direct injection + auxiliary throttle body injection system
Throttle body		52 mm (2x)
Idle speed (not adjustable)		1200 ± 200 RPM

Electrical System			
Lighting system output			1340 W @ 6000 RPM
Ignition type			Inductive
Spark plug	Make and type	600R E-TEC 850 E-TEC	NGK ILKR8Q7 (engine and spark plug threads are indexed)
	Gap		Not adjustable 0.6 to 0.7 mm (.024 to .028 in)

Electrical System		
Ignition timing BTDC @ 3500 RPM	600R E-TEC	28°
		5.39 mm (.212 in)
	850 E-TEC 850 E-TEC TURBO	28°
		5.98 mm (.235 in)

DIAGNOSTIC AND FAULT CODES

GENERAL

Some newer fault codes are only available on the BRP dealer only site, most can be found with a Google search

FAULT CODE TABLES

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0106	ECM	Manifold air pressure sensor voltage not plausible.	Vacuum leakage between throttle body and plenum (ex: rubber hose disconnected, loose screws, missing gasket at cylinder head flange, missing injector o-rings, cracks) Air intake duct or filter severely clogged MAPTS sensor Defective Damaged circuit wires, damaged connector or damaged ECM pins, ECM voltage supply.	Make sure sensor connector is fully inserted. Measure voltage between harness connector MAPTS-1and MAPTS-3 (expected value: 4.8 to 5.1 volts).
P0107	ECM	Manifold air pressure sensor voltage too low.	Voltage on system circuit MAPTS-4 reached a low value. Sensor may be disconnected. Circuit wires MAPTS-3 or MAPTS-4 may be disconnected. MAPTS-4 is shorted to ground No 5 volts supply on MAPTS-3 circuit. Damaged sensor.	Make sure sensor's connector is fully inserted. Measure voltage between harness connector MAPTS-1 and MAPTS-3 with the vehicle turned on (expected value: 4.8 to 5.1 volts) Check continuity between ECMA-H2 and MAPTS-1. Check continuity between ECMA-B4 and MAPTS-3. Check continuity between ECMA-G4 and MAPTS-4.
P0108	ECM	Manifold air pressure sensor voltage too high.	Voltage on system circuit MAPTS-4 reached a high value. Circuit wire MAPTS-4 shorted to a supply Circuit wire MAPTS-1 is not connected. Damaged sensor.	Make sure sensor's connector is fully inserted. Measure voltage between harness connector MAPTS-1 and MAPTS-3 with the vehicle turned on (expected value: 4.8 to 5.1 volts) Check continuity between ECMA-H2 and MAPTS-1. Check continuity between ECMA-B4 and MAPTS-3. Check continuity between ECMA-G4 and MAPTS-4.

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0112	ECM	Manifold air temperature sensor voltage too high.	Voltage on system circuit MAPTS-2 reached a high value. Sensor may be disconnected. Circuit wires MAPTS-1 or MAPTS-2 may be disconnected. Damaged sensor.	Make sure sensor's connector is fully inserted. If it is correct then disconnect it and perform the following tests. Check MAPTS sensor pins 1 and 2 for approximately 2280 to 2736 ohms at 19 to 21°C (66 to 70°F). If the sensor resistivity is out of range replace the sensor. Check system circuits ECMA-H3 for continuity to terminal 2 of the MAPTS sensor. Check system circuits ECMA-H2 for continuity to terminal 1 of the MAPTS sensor.
P0113	ECM	Manifold air temperature sensor voltage too low.	Voltage on system circuit MAPTS-2 reached a low value. System circuit MAPTS-2 shorted to ground. Damaged sensor.	Disconnect the sensor and check for a change in the fault code. If the fault code stays the same, look for a short circuit on the harness. If the fault code is different, replace the sensor. Check MAPTS sensor pins 1 and 2 for approximately 2280 to 2736 ohms at 19 to 21°C (66 to 70°F). If the sensor resistivity is out of range replace the sensor. If the sensor resistivity is correct according to the specified temperature range then check circuit wire MAPTS-2 for a short to the ground.
P0117	ECM	Engine coolant temperature sensor voltage too high.	Voltage on system circuit CTS-2 reached a high value. Sensor may be disconnected. Circuit wires CTS-1 or CTS-2 may be disconnected. Circuit CTS-2 shorted to 5 or 12 volts. Damaged sensor.	Make sure sensor's connector is fully inserted. Check system circuit ECMA-1A for continuity to terminal 1 of the CTS connector and ECMA-J2 for continuity to terminal 2 of the CTS connector. Check CTS resistivity on the sensor pins for approximately 2280 to 2736 ohms at 19 to 21°C (66 to 70°F). If the sensor resistivity is out of range replace the sensor.

Midwest Manuals
Green Manuals
Paperless Manuals
For a Better Tomorrow
If you bought this manual from any other seller please leave them NEGATIVE feedback and notify me at bestshopmanuals@gmail.com

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0118	ECM	Engine coolant temperature sensor voltage too low.	Voltage on system circuit CTS-2 reached a low value. Circuit wire CTS-2 shorted to ground. Damaged sensor.	Disconnect the sensor and check for a change in the fault code. If the fault code stays the same, look for a short circuit on the harness. If the fault code is different, replace the sensor. Check system circuit CTS-2 for resistivity to ground (Expected value = 1.2 Kohms when ECMA connector is still connected). Check system circuit ECMA-1A for continuity to terminal 1 of the CTS connector and ECMA-J2 for continuity to terminal 2 of the CTS connector. Check CTS sensor pins for approximately 2280 to 2736 ohms at 19 to 21°C (66 to 70°F). If the sensor resistivity is out of range replace the sensor.
P0122	ECM	First Throttle Accelerator Sensor (TAS) Short circuit to GND	Damaged circuit wires, damaged throttle position sensor or damaged ECM pins.	Make sure sensor connector is fully inserted. Measure resistance from connector: ECMB-K1 to TAS-D (expected value: < 2 ohms). Measure resistance from connector: ECMB-K3 to TAS-E (expected value: < 2 ohms). Measure resistance from connector: ECMB-E1 to TAS-F (expected value: < 2 ohms).
P0123	ECM	First Throttle Accelerator Sensor (TAS) shorted to supply	Damaged circuit wires, damaged throttle position sensor or damaged ECM pins.	Make sure sensor connector is fully inserted. Measure resistance from connector: ECMB-K1 to TAS-D (expected value: < 2 ohms). Measure resistance from connector: ECMB-K3 to TAS-E (expected value: < 2 ohms). Measure resistance from connector: ECMB-E1 to TAS-F (expected value: < 2 ohms).

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0127	ECM	Torque reduction due to high manifold air temperature.	Temperature detected by the MAPTS sensor exceeded the maximum limit. Could happen during extended idling at high ambient temperatures or very low speed with load	
P0201	ECM	Injector Cyl. #1 (PTO) open circuit.	Circuit wires INJ1-1 or INJ1-2 open circuit. Blown fuse. Disconnected injector connector. Disconnected HIC connector. Injector coil open circuit,	Check fuel injector fuse. Make sure injector connector is fully inserted. Make sure HIC connector is connected. Check system circuit ECMA-B3 for continuity to pin 2 of INJ1 connector. Check system circuit INJ-1 for continuity to the fusebox. Check injector resistivity for approximately 14.5 ohms.
P0202	ECM	Injector Cyl. #2 (MAG) open circuit.	Circuit wires INJ2-1 or INJ2-2 open circuit. Blown fuse. Disconnected injector connector. Disconnected HIC connector. Injector coil open circuit.	Check fuel injector fuse. Make sure injector connector is fully inserted. Make sure HIC connector is connected. Check system circuit ECMA-K1 for continuity to pin 2 of INJ1 connector. Check system circuit INJ-1 for continuity to the fusebox. Check injector resistivity for approximately 14.5 ohms.
P0217	ECM	Torque reduction due to high engine coolant temperature.	Warm riding condition, lack of cooling.	Check coolant level. Check for air pocket in cooling system.
P0222	ECM	2nd Throttle Accelerator Sensor (TAS) shorted to GND	Damaged circuit wires, damaged throttle position sensor or damaged ECM pins.	Make sure sensor connector is fully inserted. Measure resistance from connector: ECMB-J3 to TAS-A (expected value: < 2 ohms). Measure resistance from connector: ECMB-B3 to TAS-B (expected value: < 2 ohms). Measure resistance from connector: ECMB-A3 to TAS-C (expected value: < 2 ohms).

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0223	ECM	2nd Throttle Accelerator Sensor (TAS) shorted to supply	Damaged circuit wires, damaged throttle position sensor, or damaged ECM pins.	Make sure sensor connector is fully inserted. Measure resistance from connector: ECMB-J3 to TAS-A (expected value: < 2 ohms). Measure resistance from connector: ECMB-B3 to TAS-B (expected value: < 2 ohms). Measure resistance from connector: ECMB-A3 to TAS-C (expected value: < 2 ohms).
P0231	ECM	Fuel pump open circuit or shorted to ground.	There is no load on circuit wire ECMB-M1 or it is shorted to ground. Blown fuse. Fuel pump connector is not connected. Fuel pump motor is open.	Check fuse. Make sure the fuel pump connector is fully inserted. Open ECM ACTIVATION page in B.U.D.S. Activate fuel pump and check if it reacts as expected. With vehicule power ON check voltage on FP-C connector (Expected value = battery voltage). Check system circuit ECMB-M1 for continuity to FP-A connector. Measure resistance between FP-C and FP-A (expected value: < 2 ohms)
P0232	ECM	Fuel pump shorted to battery.	Circuit wire ECMB-M1 is shorted to 12 volts. Fuel pump motor is stuck or shorted.	Disconnect the fuel pump and check if the fault disapears. If it does then replace the fuel pump. Ckeck if system circuits FP-A and FP-C are shorted together.
P0261	ECM	Injector Cyl. #1 (PTO) shorted to ground.	Circuit wire INJ1-1 is shorted to ground.	Disconnect injector 1. Measure resistance between injector pin 1 and 2 (Expected value = 10 to 15 ohms). With vehicule power ON and engine not running, check the voltage on pin 2 of the INJ2 connector (Expected value = around 3.3 volts). If the voltage is close to 12 volts check for a short to 12 volts on this circuit.

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0262	ECM	Injector Cyl. #1 (PTO) shorted to battery.	Circuit wire INJ1-1 is shorted to battery. Injector coil is shorted.	Disconnect injector 1. Measure resistance between injector pin 1 and 2 (Expected value = 10 to 15 ohms). With vehicule power ON and engine not running, check the voltage on pin 2 of the INJ2 connector (Expected value = around 3.3 volts). If the voltage is close to 12 volts check for a short to 12 volts on this circuit.
P0264	ECM	Injector Cyl. #2 (MAG) shorted to ground.	Circuit wire INJ2-1 is shorted to ground. Injector coil is open	Disconnect injector 2. Measure resistance between injector pin 1 and 2 (Expected value = 10 to 15 ohms). With vehicule power ON and engine not running, check the voltage on pin 2 of the INJ2 connector (Expected value = around 3.3 volts). If the voltage is close to 12 volts check for a short to 12 volts on this circuit.
P0265	ECM	Injector Cyl. #2 (MAG) shorted to battery.	Circuit wire INJ2-1 is shorted to battery. Injector coil is shorted.	Disconnect injector 2. Measure resistance between injector pin 1 and 2 (Expected value = 10 to 15 ohms). With vehicule power ON and engine not running, check the voltage on pin 2 of the INJ2 connector (Expected value = around 3.3 volts). If the voltage is close to 12 volts check for a short to 12 volts on this circuit.
P0335	ECM	Crankshaft signal fault.	Slow engine cranking due to low battery voltage Intermittent signal from crankshaft position sensor. Damaged circuit wires, damaged sensor. Sensor may not be properly secured.	Verify that the battery is properly charged Make sure sensor connector is fully inserted. Measure resistance from connector: ECMA-H1 to CPS-1 (Expected value: < 2 ohms). Measure resistance from connector: ECMA-K2 to CPS-2 (Expected value: < 2 ohms).

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0340	ECM	Engine phase determination error.	CAPS signal not plausible, damaged circuit wires, damaged connector or damaged tooth wheel.	Make sure sensor connector is fully inserted. Measure voltage between harness connector CAPS-3 and CAPS-1 (expected value: 11 to 13 volts). Measure resistance between connector ECMA-E2 to CAPS-2. (expected value : <2 ohms)
P0359	ECM	Ignition coil Cyl. #2 (MAG) shorted to battery.	Circuit wire IGN2-3 is shorted to battery. Ignition coil is damaged.	Disconnect ignition coil #2. With vehicule power ON and engine not running check voltage on pin 3 of IGN2 connector. (Expected value = 0 volt). If voltage is close to 12 volts, check for a short on this circuit.
P0360	ECM	Ignition coil Cyl. #1 (PTO) shorted to battery.	Circuit wire IGN1-3 is shorted to battery. Ignition coil is damaged.	Disconnect ignition coil #1. With vehicule power ON and engine not running check voltage on pin 3 of IGN1 connector. (Expected value = 0 volt). If voltage is close to 12 volts, check for a short on this circuit.
P0361	ECM	ECM ignition coil driver #2 (MAG) fault	Ignition coil or HIC connector not connected or damaged. Blown fuse. Broken wire or terminal.	Check if HIC connector connected. Check ignition fuse. Check circuit wire IGN2-3.
P0362	ECM	ECM ignition coil driver #1 (PTO) fault	Ignition coil or HIC connector not connected or damaged. Blown fuse. Broken wire or terminal.	Check if HIC connector connected. Check ignition fuse. Check circuit wire IGN1-3.
P0480	ECM	Fan relay circuit	Blown fuse, damaged or disconnected relay, damaged circuit wires, damaged connectors or damaged ECM output pins.	Check fuse. Disconnect Fan relay. Measure voltage between harness connector CFM-4 and ground (expected value: 11 to 13 volts). Measure resistance from harness connector: ECMB-J4 to CFM-2 (expected value: < 2 ohms). With the engine turned off measure voltage between CFM-2 and ground (expected value: 11 to 13 volts). Use BUDS to activate the fan and measure voltage between CFM-2 and ground (expected value: close to 0 volts). Check fuse F4

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0513	ECM	Invalid Access Key Detected	A non stored access key was detected when key switch was turned to ON. If no access key is available, program a new one and retry.	
P0520	ECM	Engine oil pressure switch functional problem.	Defective oil pressure switch, damaged circuit wires, damaged connector or loose terminals, damaged ECM pins.	Measure resistance between harness connector EOP and ground when engine stopped (expected value < 2 ohms). Measure resistance between harness connector EOP and ground when engine running (expected value = open). Measure resistance from harness connector: EOP to ECMA-E3 (expected value: < 2 ohms). Check if HIC connector is properly connected (engine harness to the vehicle harness).
P0523	ECM	Engine oil pressure switch sticking	Disconnected oil pressure switch Damaged oil pressure switch, damaged circuit wires, damaged connector, damaged ECM pins.	Measure resistance between harness connector EOP and ground when engine stopped (expected value < 2 ohms). Measure resistance between harness connector EOP and ground when engine running (expected value = open). Measure resistance from harness connector: EOP to ECMA-E3 (expected value: < 2 ohms). Check if HIC connector is properly connected (engine harness to the vehicle harness).
P0524	ECM	Low oil pressure.	Oil level too low Engine mechanical problem Defective oil pressure switch, damaged circuit wires, damaged connector, damaged ECM pins. Vehicle was turned upside down with the engine running	Check oil level. Check system circuit ECMA-E3 for continuity to the terminal of the OPS connector. Check oil pressure. If the vehicle was turned upside down while the engine was running, delete the fault
P0560	ECM	Non-plausibility error on system voltage	ECU internal failure in reading system voltage	Replace ECU if fault is persisting

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0562	ECM	Battery voltage too low.	Battery voltage dropped under 11 volts.	Check battery voltage for 11 to 13 volts with engine stopped. Check battery voltage for 13.5 to 14.5 volts with engine speed above 2500 RPM. Check connections on regulator. Check charging system.
P0563	ECM	Battery voltage too high.	Battery voltage exceeded 15.6 volts.	Check battery voltage for 11 to 13 volts with engine stopped. Check battery voltage for 13.5 to 14.5 volts with engine speed above 2500 RPM. Check connections on regulator. Check charging system.
P060D	ECM	Throttle Accelerator Sensor (TAS) signals not synchronized.	Throttle Accelerator Sensors (TAS) plausibility check error.	Make sure sensor connector is fully inserted. Check voltages on connector TAS-F and TAS-C. Voltage on pin TAS-F must be 2 times greater than voltage on pin TAS-C at any given position of the lever. Check for 5 volts on pin TAS-A and TAS-D.
P060E	ECM	Electrical Throttle Actuator (ETA) control fault	Damaged wiring harness Damaged TPS Damaged ECM	Disconnect throttle body Measure resistance between ETC pin 3 and 5 (expected value = 2 to 3 ohms). Disconnect ECMA. Measure resistance from harness connector: ETC-5 to ECMA-L1 (expected value: < 2 ohms). Measure resistance from harness connector: ETC-3 to ECMA-L2 (expected value: < 2 ohms).
P0610	ECM	Variant Coding error.	Faulty variant coding, faulty programming, wrong ECM after replacement	

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P062C	ECM	Loss of vehicle speed information from multifunction gauge.	ECM lost communication with the cluster. Multifunction gauge may be disconnected. Loss of power on the multidunction gauge. Loss of communication with the multidunction gauge via the CAN bus. CAN bus lines shorted together. CAN bus line shorted to ground.	Make sure the multidunction gauge connector is fully inserted. Check for bent pin on the cluster connector Measure voltage between harness connector MG-8 and ground with the vehicle turned on (expected value: 11 to 13 volts). Measure voltage between harness connector MG-9 and ground with the vehicle turned off (expected value: 11 to 13 volts). Measure resistivity between harness connector MG-11 for continuity to the ground (Expected value < 2 ohms). Check continuity between harness connector MG-24 and ECMB-C1 Check continuity between harness connector MG-23 and ECMB-C2 Resistance between harness connector MG-23 and MG-24 should be around 120 ohms Verify that harness connector MG-23 and MG-24 are not shorted to ground or anything else

Midwest Manuals
Green Manuals
Paperless Manuals
For a Better Tomorrow
If you bought this manual from any other seller please leave them NEGATIVE feedback and notify me at bestshopmanuals@gmail.com

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0685	ECM	Lighting relay circuit	Blown fuse, damaged or disconnected relay, damaged circuit wires, damaged connectors or damaged ECM output pins.	Check fuse. Disconnect lighting relay. Measure voltage between harness connector FB-D1 and ground (expected value: 11 to 13 volts). Measure voltage between harness connector FB-D2 and ground (expected value: 11 to 13 volts). Measure resistance from harness connector: ECMB-G1 to FB-C2 (expected value: < 2 ohms). With the engine turned off measure voltage between FB-C2 and ground (expected value: 11 to 13 volts). With the engine turned on measure voltage between FB-C2 and ground (expected value: close to 0 volts). Measure resistance between terminals 85 and 86 on the 2 relays (expected value: 70 to 90 ohms).
P0686	ECM	Lighting relay circuit shorted to ground or open circuit	Blown fuse, damaged or disconnected relay, damaged circuit wires, damaged connectors or damaged ECM output pins.	Check fuse. Disconnect lighting relay. Measure voltage between harness connector FB-D1 and ground (expected value: 11 to 13 volts). Measure voltage between harness connector FB-D2 and ground (expected value: 11 to 13 volts). Measure resistance from harness connector: ECMB-G1 to FB-C2 (expected value: < 2 ohms). With the engine turned off measure voltage between FB-C2 and ground (expected value: 11 to 13 volts). With the engine turned on measure voltage between FB-C2 and ground (expected value: close to 0 volts). Measure resistance between terminals 85 and 86 on the 2 relays (expected value: 70 to 90 ohms).

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0687	ECM	Lighting relay circuit shorted to battery +	Damaged relay, damaged circuit wires, damaged connector or damaged ECM output pins.	Check fuse. Disconnect lighting relay. Measure voltage between harness connector FB-D1 and ground (expected value: 11 to 13 volts). Measure voltage between harness connector FB-D2 and ground (expected value: 11 to 13 volts). Measure resistance from harness connector: ECMB-G1 to FB-C2 (expected value: < 2 ohms). With the engine turned off measure voltage between FB-C2 and ground (expected value: 11 to 13 volts). With the engine turned on measure voltage between FB-C2 and ground (expected value: close to 0 volts). Measure resistance between terminals 85 and 86 on the 2 relays (expected value: 70 to 90 ohms).
P0691	ECM	Fan relay circuit shorted to ground or open circuit	Blown fuse, damaged or disconnected relay, damaged circuit wires, damaged connectors or damaged ECM output pins.	Check fuse. Disconnect Fan relay. Measure voltage between harness connector CFM-4 and ground (expected value: 11 to 13 volts). Measure resistance from harness connector: ECMB-J4 to CFM-2 (expected value: < 2 ohms). With the engine turned off measure voltage between CFM-2 and ground (expected value: 11 to 13 volts). Use BUDS to activate the fan and measure voltage between CFM-2 and ground (expected value: close to 0 volts). Check fuse F4

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0692	ECM	Fan relay circuit shorted to battery +	Damaged relay, damaged circuit wires, damaged connector or damaged ECM output pins.	Check fuse. Disconnect Fan relay. Measure voltage between harness connector CFM-4 and ground (expected value: 11 to 13 volts). Measure resistance from harness connector: ECMB-J4 to CFM-2 (expected value: < 2 ohms). With the engine turned off measure voltage between CFM-2 and ground (expected value: 11 to 13 volts). Use BUDS to activate the fan and measure voltage between CFM-2 and ground (expected value: close to 0 volts). Check fuse F4
P1120	ECM	Wrong ratio between both throttle position sensor (TPS)	Damaged wiring harness Damaged TPS Damaged ECM	Make sure the TPS connector is fully inserted. Reset TPS postion. Measure voltage between harness connector ETC-6 and ETC-2 with the vehicle turned on (expected value: 3.3 volts) Check for short between ETC-1 or ETC-4 and a supply or a ground Check continuity between harness connector ETC-1 and ECMA-F3 Check continuity between harness connector ETC-4 and ECMA-K3 Check continuity between harness connector ETC-6 and ECMA-K4 Check continuity between harness connector ETC-2 and ECMA-A2
P160E	ECM	Electrical Throttle Actuator (ETA) control fault	Damaged wiring harness Damaged TPS Damaged ECM	Disconnect throttle body Measure resistance between ETC pin 3 and 5 (expected value = 2 to 3 ohms). Disconnect ECMA. Measure resistance from harness connector: ETC-5 to ECMA-L1 (expected value: < 2 ohms). Measure resistance from harness connector: ETC-3 to ECMA-L2 (expected value: < 2 ohms).

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P1610	ECM	Electrical Throttle Actuator (ETA) shorted to supply	Damaged ETC module, damaged circuit wires, damaged connector or damaged ECM output pins.	Disconnect ETC module. Check for a short between ECMA-L1 or ECMA-L2 and a supply Measure resistance from connector: ECMA-L1 to ETC-5 (expected value: < 2 ohms). Measure resistance from connector: ECMA-L2 to ETC-3 (expected value: < 2 ohms).
P1611	ECM	Electrical Throttle Actuator (ETA) shorted to ground	Damaged ETC module, damaged circuit wires, damaged connector or damaged ECM output pins.	Disconnect ETC module. Check for a short between ECMA-1L or ECMA-L2 and gnd Measure resistance from connector: ECMA-L1 to ETC-5 (expected value: < 2 ohms). Measure resistance from connector: ECMA-L2 to ETC-3 (expected value: < 2 ohms).
P1612	ECM	Electrical Throttle Actuator (ETA) signal not plausible	Damaged ETC module, damaged circuit wires, damaged connector or damaged ECM output pins.	Disconnect ETC module. Measure resistance from connector: ECMA-L1 to ETC-5 (expected value: < 2 ohms). Measure resistance from connector: ECMA-L2 to ETA-3 (expected value: < 2 ohms).
P1613	ECM	Electrical Throttle Actuator (ETA) open electrical load	Damaged ETC module, damaged circuit wires, damaged connector or damaged ECM output pins.	Disconnect ETC module. Measure resistance from connector: ECMA-L1 to ETC-5 (expected value: < 2 ohms). Measure resistance from connector: ECMA-L2 to ETA-3 (expected value: < 2 ohms). Measure resistance between ETC-5 and ETC-3 (expected value < 5 ohms)

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P1614	ECM	Electronic throttle control (ETC) return spring check not passed	Throttle mechanical adjustment. No TPS reset after throttle body/ECM replacement. Damaged throttle body	Check throttle plate movement. Check idle stop for wear. Check throttle position sensor angle at idle, expected value 1-4.5 degrees Perform THROTTLE POSITION SENSOR RESET in B.U.D.S. with throttle grip accelerator not activated since at least 30 seconds. Refer to the SERVICE MANUAL for more details.
P1615	ECM	Electronic throttle control (ETC) position deviation fault	Throttle mechanical adjustment. No TPS reset after throttle body/ECM replacement.	Check throttle plate movement. Check idle stop for wear. Check throttle position sensor angle at idle, expected value 1-4.5 degrees Perform THROTTLE POSITION SENSOR RESET in B.U.D.S. with throttle grip accelerator not activated since at least 30 seconds. Refer to the SERVICE MANUAL for more details.
P1616	ECM	Electronic throttle control (ETC) check of limp-home position failed	Throttle mechanical stop. No TPS reset after throttle body/ECM replacement.	Check throttle plate movement. Check idle stop for wear. Check throttle position sensor angle at idle, expected value 1-4.5 degrees Perform THROTTLE POSITION SENSOR RESET in B.U.D.S. with throttle grip accelerator not activated since at least 30 seconds. Refer to the SERVICE MANUAL for more details.
P1619	ECM	TPS adaptation failure	Wrong throttle body mechanical position during reset of closed TPS or no TPS reset after ECM replacement.	Check idle stop for wear. Perform THROTTLE POSITION SENSOR RESET in B.U.D.S. with throttle grip accelerator not activated since at least 30 seconds.
P1620	ECM	TPS adaptation failure	Wrong throttle body mechanical position during reset of closed TPS or no TPS reset after ECM replacement.	Check idle stop for wear. Perform THROTTLE POSITION SENSOR RESET in B.U.D.S. with throttle grip accelerator not activated since at least 30 seconds.

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P1621	ECM	TPS adaptation cancelled lower mechanical stop failed	Throttle mechanical stop. No TPS reset after throttle body/ECM replacement.	Check idle stop for wear. Ensure throttle plate is against throttle stop. Check throttle Position sensor angle at idle. Perform THROTTLE POSITION SENSOR RESET in B.U.D.S. with throttle grip accelerator not activated since at least 30 seconds. Refer to the SERVICE MANUAL for more details.
P1622	ECM	TPS adaptation failed	Throttle mechanical stop. No TPS reset after throttle body/ECM replacement.	Check idle stop for wear. Check throttle position sensor angle at idle. Perform THROTTLE POSITION SENSOR RESET in B.U.D.S. with throttle grip accelerator not activated since at least 30 seconds. Refer to the SERVICE MANUAL for more details.
P1672	ECM	Accessories relay circuit shorted to battery +	Damaged relay, damaged circuit wires, damaged connector or damaged ECM output pins.	Check fuse. Disconnect lighting relay. Measure voltage between harness connector FB-C6 and ground (expected value: 11 to 13 volts). Measure voltage between harness connector FB-C5 and ground (expected value: 11 to 13 volts). Measure resistance from harness connector: ECMB-J2 to FB-D5 (expected value: < 2 ohms). With the engine turned off measure voltage between FB-D5 and ground (expected value: 11 to 13 volts). With the engine turned on measure voltage between FB-D5 and ground (expected value: close to 0 volts). Measure resistance between terminals 85 and 86 on the 2 relays (expected value: 70 to 90 ohms).

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P1673	ECM	Accessories relay circuit shorted to ground or open circuit	Blown fuse, damaged or disconnected relay, damaged circuit wires, damaged connectors or damaged ECM output pins.	Check fuse. Disconnect lighting relay. Measure voltage between harness connector FB-C6 and ground (expected value: 11 to 13 volts). Measure voltage between harness connector FB-C5 and ground (expected value: 11 to 13 volts). Measure resistance from harness connector: ECMB-J2 to FB-D5 (expected value: < 2 ohms). With the engine turned off measure voltage between FB-D5 and ground (expected value: 11 to 13 volts). With the engine turned on measure voltage between FB-D5 and ground (expected value: close to 0 volts). Measure resistance between terminals 85 and 86 on the 2 relays (expected value: 70 to 90 ohms).
P1674	ECM	Accessories relay circuit	Blown fuse, damaged or disconnected relay, damaged circuit wires, damaged connectors or damaged ECM output pins.	Check fuse. Disconnect lighting relay. Measure voltage between harness connector FB-C6 and ground (expected value: 11 to 13 volts). Measure voltage between harness connector FB-C5 and ground (expected value: 11 to 13 volts). Measure resistance from harness connector: ECMB-J2 to FB-D5 (expected value: < 2 ohms). With the engine turned off measure voltage between FB-D5 and ground (expected value: 11 to 13 volts). With the engine turned on measure voltage between FB-D5 and ground (expected value: close to 0 volts). Measure resistance between terminals 85 and 86 on the 2 relays (expected value: 70 to 90 ohms).
P16C0	ECM	ECU ADC plausibility check	Monitoring plausibility check failed.	Check for ECM fault.
P16C1	ECM	ECU ADC test failed	Monitoring plausibility check failed.	Check for ECM fault.

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P16C2	ECM	ECU monitoring error	Monitoring plausibility check failed.	Check for ECM fault.
P16C3	ECM	Throttle Accelerator Sensors (TAS) monitoring check fault	Monitoring plausibility check failed.	Check for ECM fault.
P16C4	ECM	Engine speed monitoring check fault	Monitoring plausibility check failed.	Check for ECM fault.
P16C5	ECM	Safety fuel cut-off activated monitoring check level 1	Monitoring plausibility check failed.	Check for ECM fault.
P16C6	ECM	Safety fuel cut-off activated monitoring check level 2	Monitoring plausibility check failed.	Check for ECM fault.
P16C7	ECM	Throttle valve plausibility check failed	Monitoring plausibility check failed.	Check for ECM fault.
P16C8	ECM	Permitted throttle valve position monitoring check exceeded	Monitoring plausibility check failed.	Check for ECM fault.
P16C9	ECM	function monitoring: monitoring of the emergency switch in level 2 (DFC_MoFEmgcySwOff)	Monitoring plausibility check failed.	Check for ECM fault.
P1790	ECM	Driving mode selector switch	Driving mode selector switch has the up and down selection pressed at the same time	Check for a short between ECMB-D3 or ECO-A with ECM-A1 or ECO-B Check for a short between ECMB-E3 or ECO-C with ECM-A1 or ECO-B
P20EB	ECM	Main relay de-energized too late or sticking	Damaged circuit wires Damaged connectors Damaged ECM output pins Damaged main relay	Disconnect main relay. Measure resistance between terminals 85 and 86 on relay (expected value: 70 to 90 ohms). Measure resistance between terminals 30 and 87 on relay (expected value: open circuit). Disconnect relay and measure resistance between terminals FB-A4 and ground (expected value: open circuit).

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P212C	ECM	Throttle position sensor #2 voltage too low.	Low voltage or short to ground on circuit wire ETC-4. No 3.3 volts supply on ETC-6. ETC-1 is shorted to ground Damaged sensor.	Make sure the TPS connector is fully inserted. Reset TPS postion. Measure voltage between harness connector ETC-6 and ETC-2 with the vehicle turned on (expected value: 3.3 volts) Check continuity between harness connector ETC-4 and ECMA-K3 Check continuity between harness connector ETC-6 and ECMA-K4 Check continuity between harness connector ETC-2 and ECMA-A2 Check for a short between ETC-4 and a supply
P212D	ECM	Throttle position sensor #2 voltage too high.	Voltage on circuit wire ETC-4 too high. Circuit wire ETC-4 shorted to a supply. Circuit wire ETC-2 is open.	Make sure the TPS connector is fully inserted. Reset TPS postion. Measure voltage between harness connector ETC-6 and ETC-2 with the vehicle turned on (expected value: 3.3 volts) Check continuity between harness connector ETC-4 and ECMA-K3 Check continuity between harness connector ETC-6 and ECMA-K4 Check continuity between harness connector ETC-2 and ECMA-A2 Check for a short between ETC-4 and a supply
P2279	ECM	Air leak from intake plenum	Cracked plenum Leak in air intake system. TPS learning position not done correctly. MAP Sensor problem. Throttle body air leakage.	Reset TPS postion. Check for faulty Air Pressure Sensor. Check for faulty TPS. Check for cracked plenum. Check for leak on the throttle body
P2299	ECM	Throttle and break paddle are used at the same time		

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P2621	ECM	Throttle position sensor #1 voltage too low.	Low voltage or short to ground on circuit wire ETC-1. No 3.3 volts supply on ETC-6. ETC-1 is shorted to ground Damaged sensor.	Make sure the TPS connector is fully inserted. Reset TPS postion. Measure voltage between harness connector ETC-6 and ETC-2 with the vehicle turned on (expected value: 3.3 volts) Check continuity between harness connector ETC-1 and ECMA-F3 Check continuity between harness connector ETC-6 and ECMA-K4 Check continuity between harness connector ETC-2 and ECMA-A2 Check for a short between ETC-1 and a supply
P2622	ECM	Throttle position sensor #1 voltage too high.	Voltage on circuit wire ETC-1 too high. Circuit wire ETC-1 shorted to a supply. Circuit wire ETC-2 is open.	Make sure the TPS connector is fully inserted. Reset TPS postion. Measure voltage between harness connector ETC-6 and ETC-2 with the vehicle turned on (expected value: 3.3 volts) Check continuity between harness connector ETC-1 and ECMA-F3 Check continuity between harness connector ETC-6 and ECMA-K4 Check continuity between harness connector ETC-2 and ECMA-A2 Check for a short between ETC-1 and a supply
U0167	ECM	No communication with DESS key.	Damaged circuit wires, damaged or disconnected DESS post, damaged DESS key.	Measure voltage between harness connector RFID-D and ground (expected value: 11 to 13 volts). Check continuity betweem hesness connector RFID-A and ECMB-F2 Check continuity betweem hesness connector RFID-B and ECMB-E4 Check continuity betweem hesness connector RFID-C and ECMB-B2

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
U0400	ECM	Variant coding failure software incompatibility	Faulty variant coding. Faulty programming.	Try updating the ECM. If the problem persists, make sure the ECM part number is correct for the model it is installed on.
U0426	ECM	DESS key communication error.	Damaged circuit wires, damaged or disconnected DESS post, damaged DESS key.	Measure voltage between harness connector RFID-D and ground (expected value: 11 to 13 volts). Check continuity betweem hesness connector RFID-A and ECMB-F2 Check continuity betweem hesness connector RFID-B and ECMB-E4 Check continuity betweem hesness connector RFID-C and ECMB-B2
U300A	ECM	State of the DESS key switch not plausible	Damaged wiring harness Damaged RFID module	Measure voltage between harness connector RFID-D and ground (expected value: 11 to 13 volts). Check continuity betweem hesness connector RFID-A and ECMB-F2 Check continuity betweem hesness connector RFID-B and ECMB-E4 Check continuity betweem hesness connector RFID-C and ECMB-B2

WHAT'S NEW 2023

ROBIN MARTEL
GLOBAL PRODUCT MANAGER – SKI-DOO, GPS

STEVE COWING
MEDIA RELATIONS MANAGER - SNOWMOBILES



ski-doo

SKI-DOO : WHAT'S NEW AGENDA

20 years ago, Ski-Doo dropped a bomb

…And 20 years later, the REVolution continues







2003 | 2008 | 2013 | 2017 | 2023





Introducing the REV Gen5 platform with specific designs tailored for Trail and Deep Snow riding



ARE YOU READY ?!?!

The REV Gen5 Trail is simply AWESOME !

- HIGH-TECH MODERN LOOK
- UNMATCHED NIGHTTIME VISION
- REFINED RIDING EXPERIENCE





The REV Gen5 Trail Platform is redesigned with next-level refinements!

HIGH-TECH MODERN LOOK



CLUB BRP 2023

The new tapered bodywork combines sleek aerodynamics with a refined cockpit



Model shown with accessories

The new REV Gen5 Trail Platform is redesigned with next-level refinements!

UNMATCHED NIGHTTIME VISION



CLUB BRP 2023


The new trail headlights with 4 high-performance LED modules
High-tech beauty with pure Ski-Doo DNA



Much more than a signature light!

The new REV Gen5 Trail Platform is redesigned with next-level refinements!

REFINED RIDING EXPERIENCE

Sound-reducing exhaust shield

Quieter and efficient CVT cooling system



Intuitive KYB Pro shocks adjustment

4th engine mount
(also on Deep Snow version)

CLUB BRP 2023

The REV Gen5 trail design provides a more refined riding experience



The relocation of the cold air intake for the CVT system reduces the sound level for the driver

New sound-reducing panels for a quieter ride



CVT acoustic layers and cold air duct



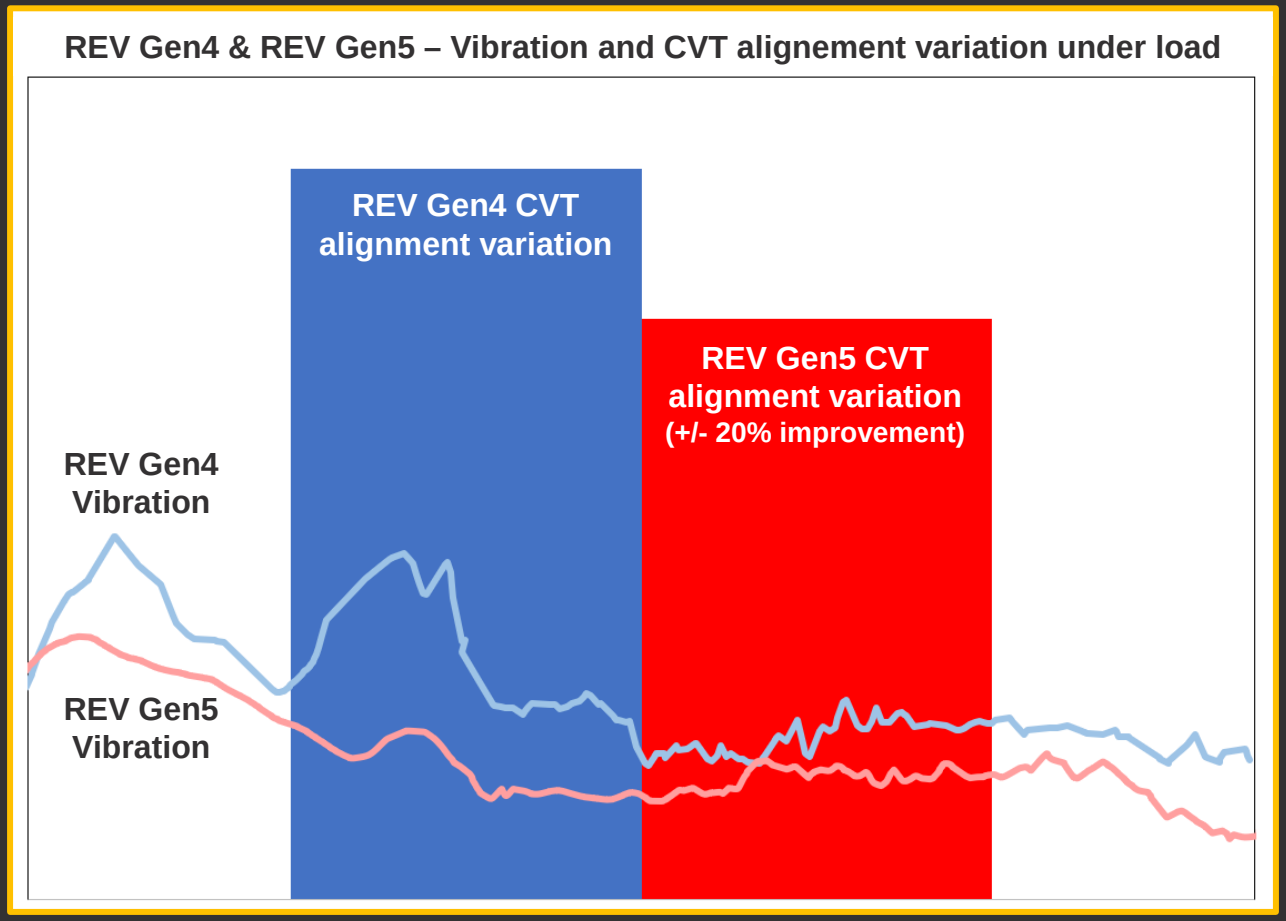
Exhaust acoustic panel assembly

Underneath the REV Gen5 skin, the refinement continues

Adding a 4th engine mount



Also available on Deep Snow REV Gen5



Resulting in reduced vibration level, better CVT alignment and further improved belt life

New intuitive 3-positions compression adjustment clickers on the KYB Pro EA-3 shocks





MY23 MXZ package offering

NEW MXZ Blizzard

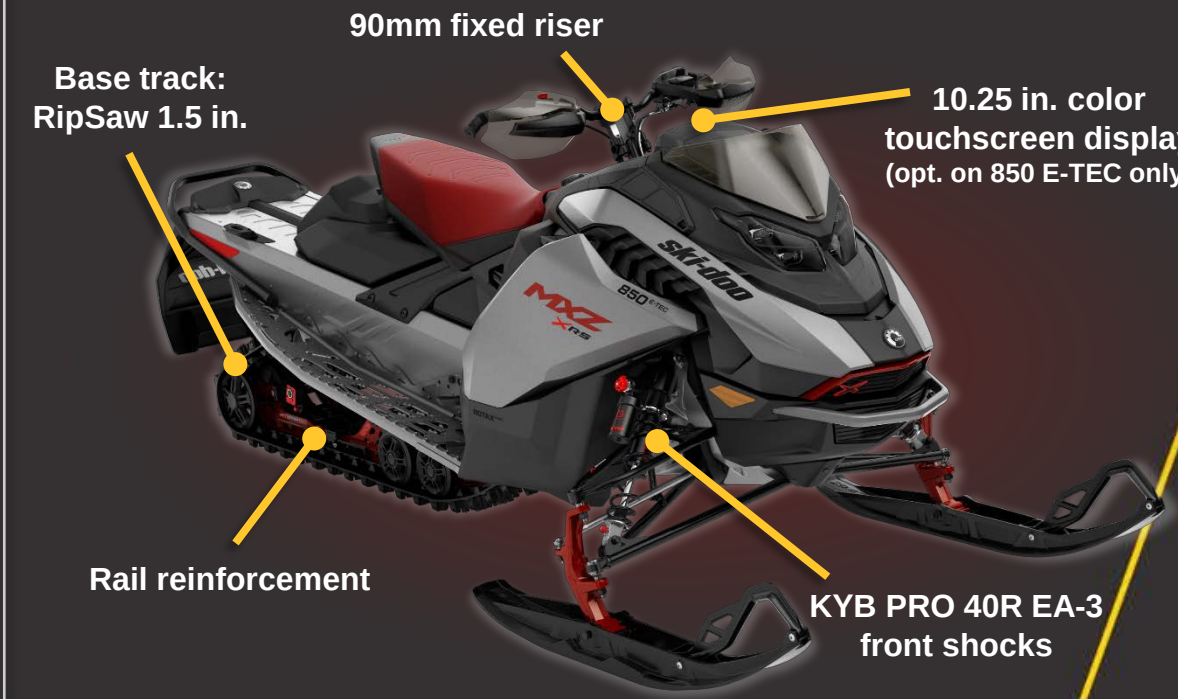
replacing the TNT and X packages and available in-season



In white: New features vs MY22 TNT package

MXZ X-RS

available during spring-only



In white: New features vs MY22 X-RS package

Revamping the MXZ into the ultimate trail performance weapon

REV Gen5 is available on select 850 E-TEC trail models



MXZ Blizzard



MXZ X-RS



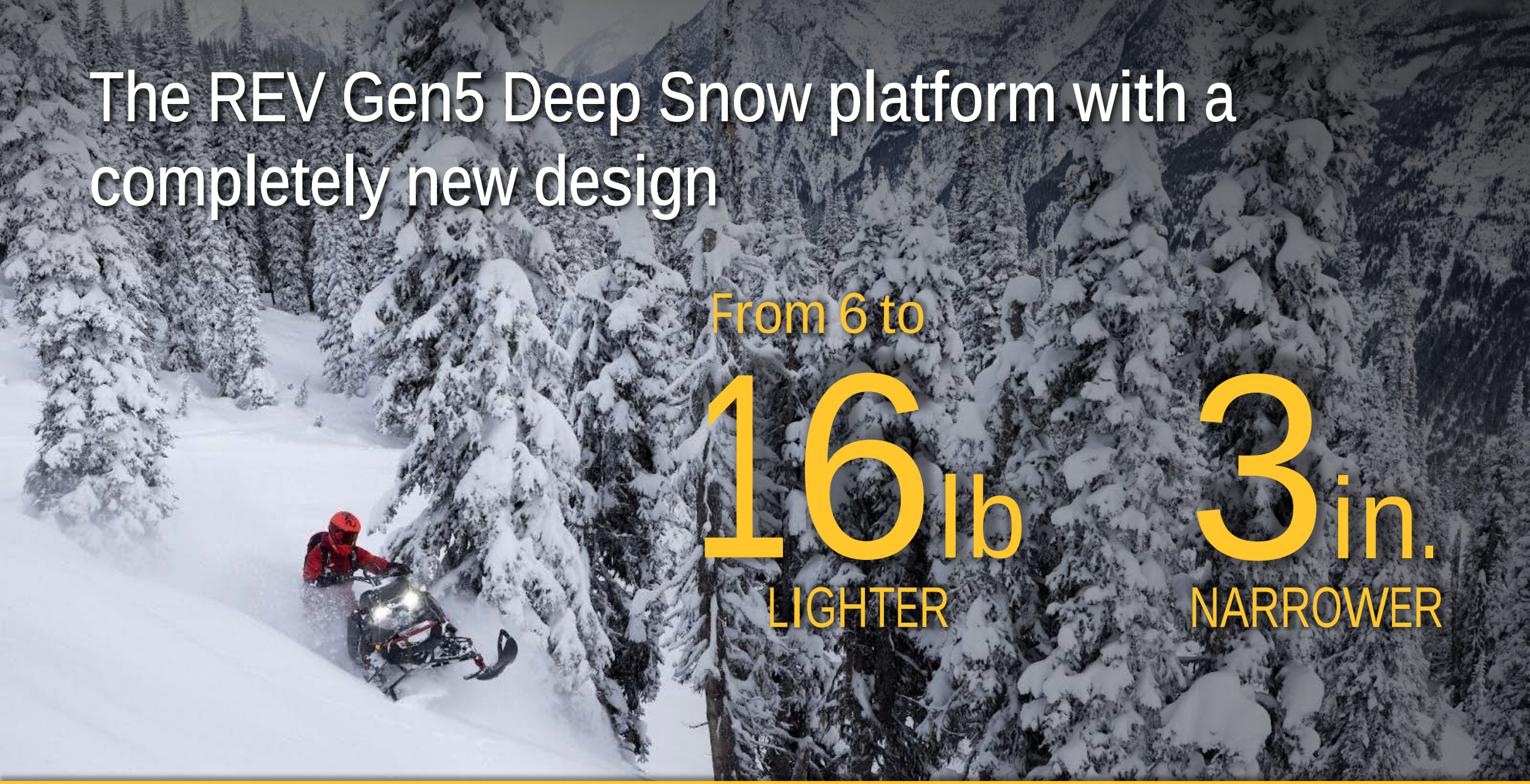
Renegade Adrenaline



Renegade X



Renegade X-RS


The REV Gen5 Deep Snow platform with a completely new design
From 6 to
16 lb
LIGHTER
3 in.
NARROWER
Delivering the most precise and predictable sidehilling

The Deep Snow REV Gen5 is new from front to back!



Lighter tunnel radiator

Relocated spare belt

Flat console

Standard storage

Lightweight LED headlights

Lighter 3.0 in. track

Completely revised rear suspension

High-efficiency CVT cooling compartment

Quick-removal drive shaft
(also on Trail version)

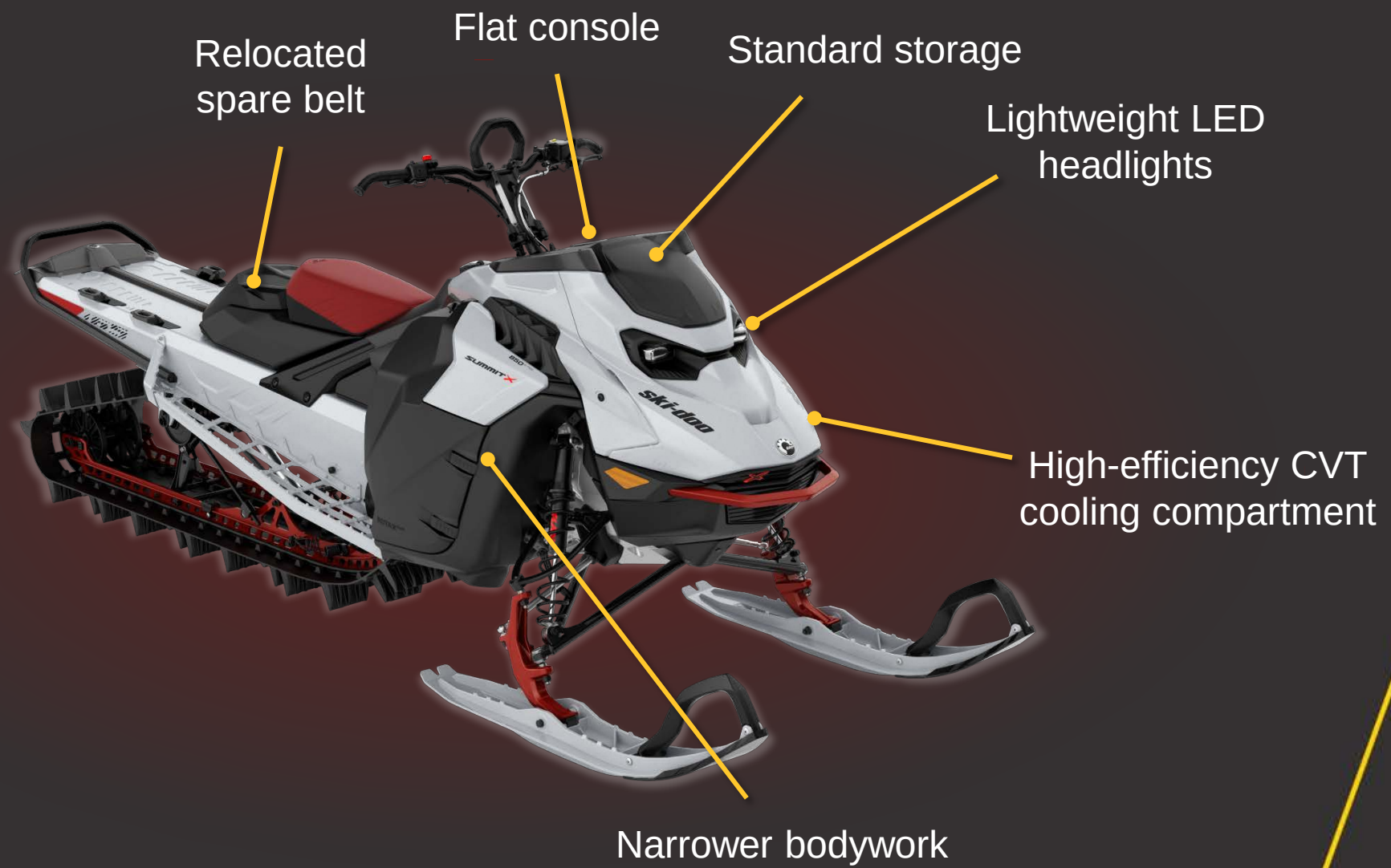
Narrower running boards

Narrower bodywork

4th engine mount
(also on Trail version)

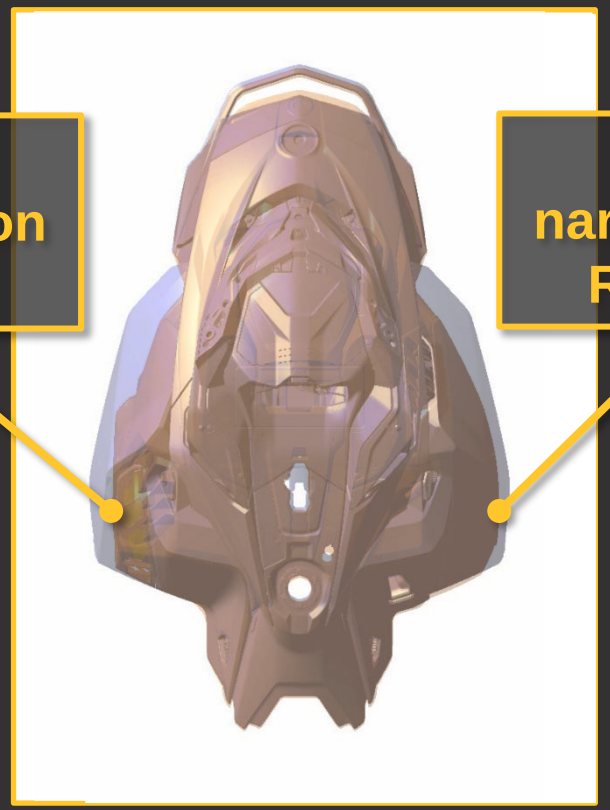
CLUB BRP 2023

The Deep Snow REV Gen5 is new from front to back!



The new technically sculpted Deep Snow bodywork is slimer than ever !

Top view



REV Gen4

REV Gen5

Model shown with accessories

The new compact design allows the rider to see the spindles while riding even with a narrow 34 in. ski-stance



Building confidence in highly technical maneuvers and tight situations

Redesigned Deep Snow specific console



Ultra-easy to swipe-off the snow, less exposed to branches

Deep Snow LED headlights strike the perfect balance between practicality and lightweight





- **2.0 lb lighter than REV Gen4**
- **More than 2,400 Lumens***
  High (1,376) + Low (1,032)
- **Sport-bike-inspired independent Low (LH) and High (RH+LH) beams**

*On premium deep snow version
Standard deep snow version: 2,064 lumens

All REV Gen5 get an easy-access glovebox



Model shown with accessories

The first enclosed CVT system in the industry

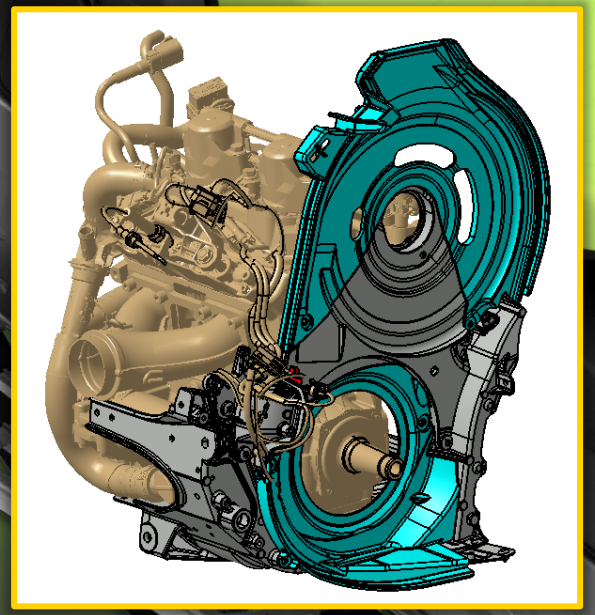


Benefits:

- Much narrower vehicle
- Better CVT cooling system
- Further increased belt life

The CVT venting system pulls twice as much cold air compared to the engine air intake !

Internal backing plate



Warm air outlet

Warm air outlet

Cold air inlets w/ snow chicane

So tight that we relocated the spare belt compartment



The Deep Snow REV Gen5 is new from front to back!

Lighter tunnel radiator



Narrower running boards

CLUB BRP 2023

The running boards are 1.5 in. narrower on each side with improved snow evacuation

REV Gen5

1.5 in.

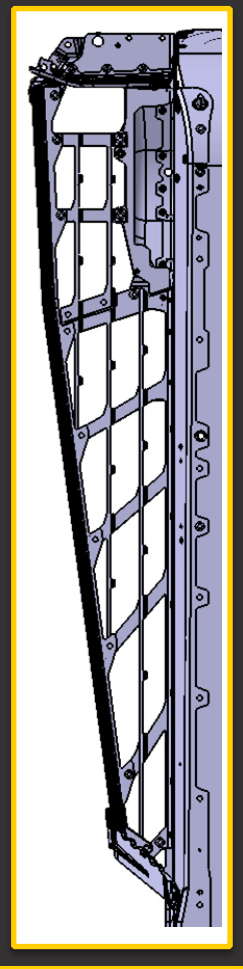


1.5 in.

REV Gen4



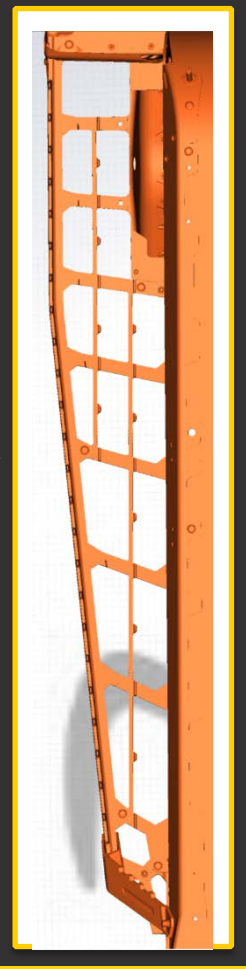
REV Gen4



Open surface: 47.5%

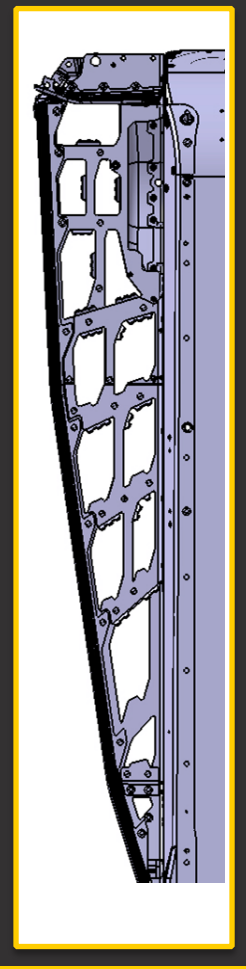
+11.5%

REV Gen5
X, Expert, Freeride



Open surface: 53%

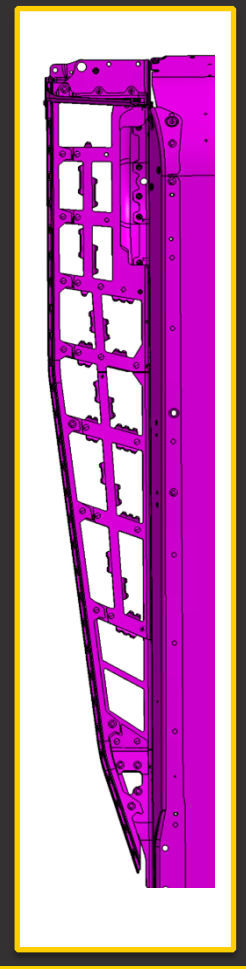
REV Gen4



Open surface: 36%

+14%

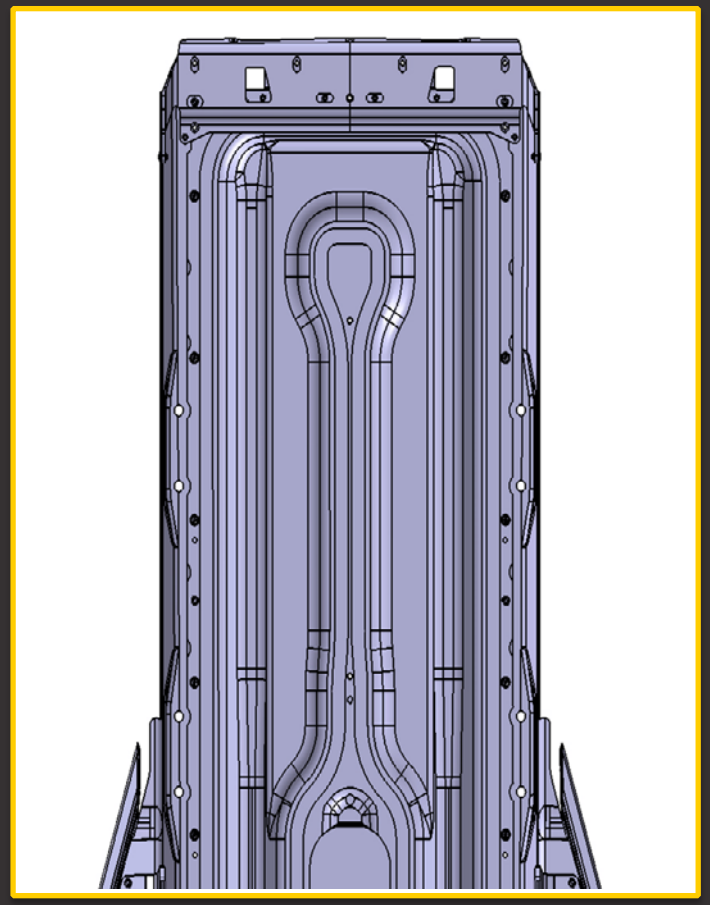
REV Gen5
SP, Edge



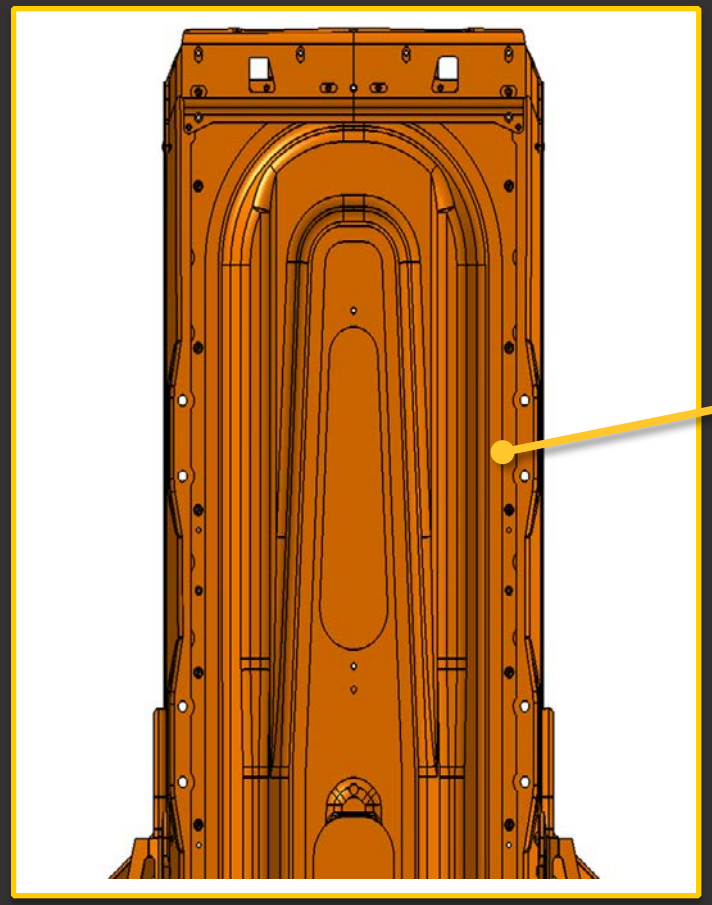
Open surface: 41%

The new Deep Snow specific tunnel radiator is lighter while maintaining peace-of-mind cooling efficiency

REV Gen4



REV Gen5



Upper aluminum sheet at 1.8mm instead of 2mm

Weight saving is close to 1.5 lbs Dry and 3.0 lbs Wet on a 165” short tunnel

The new Deep Snow REV Gen5 is new from front to back!

Lighter 3.0 in. track

Completely revised rear suspension

Quick-removal driveshaft
(also on Trail version)



CLUB BRP 2023

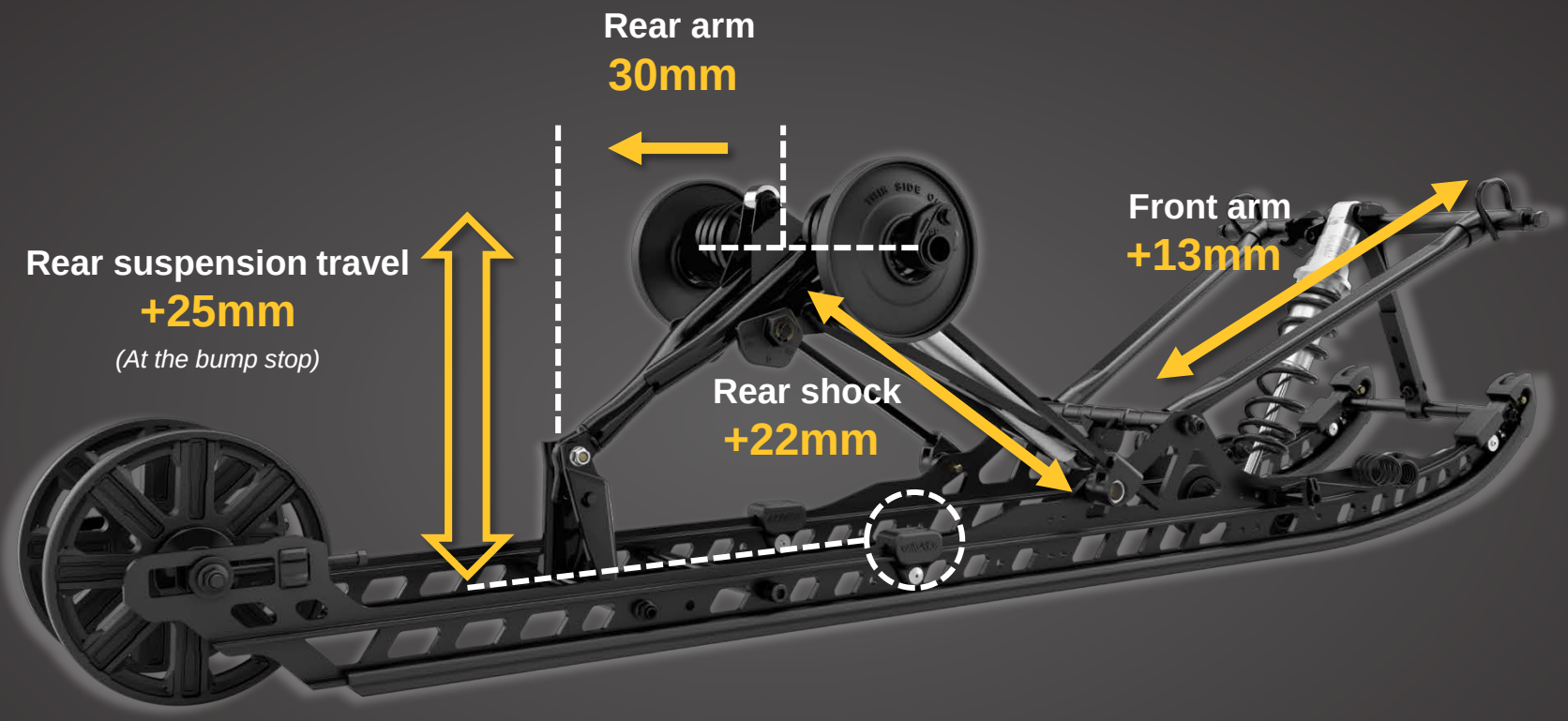
The tMotion X with 90% new parts sets new standards

- **New geometry**
  - Longer front arm
  - Rear arm moved back
  - More controlled weight transfer
- **- 3.0 lbs weight saving**
- **Increased capacity**
  - + 25mm more travel

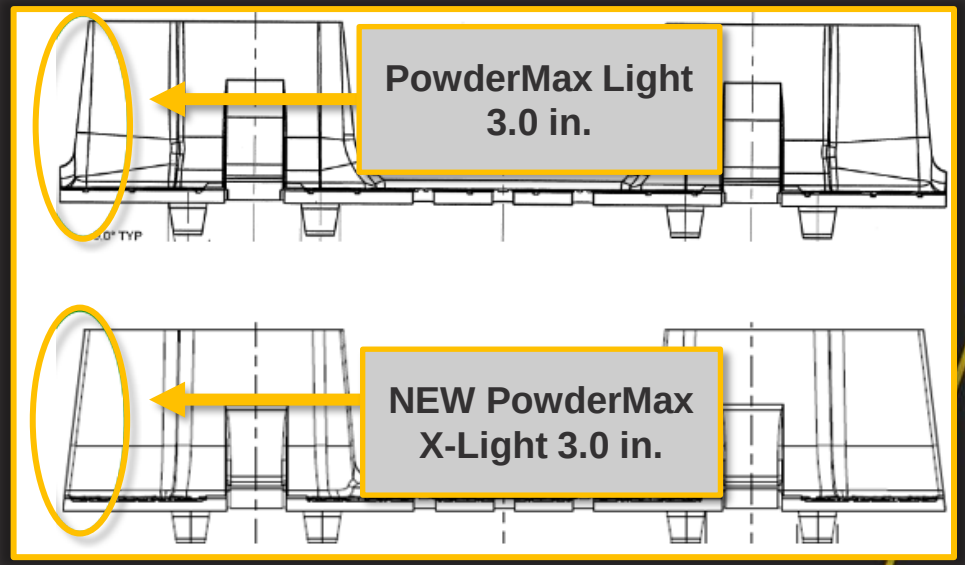


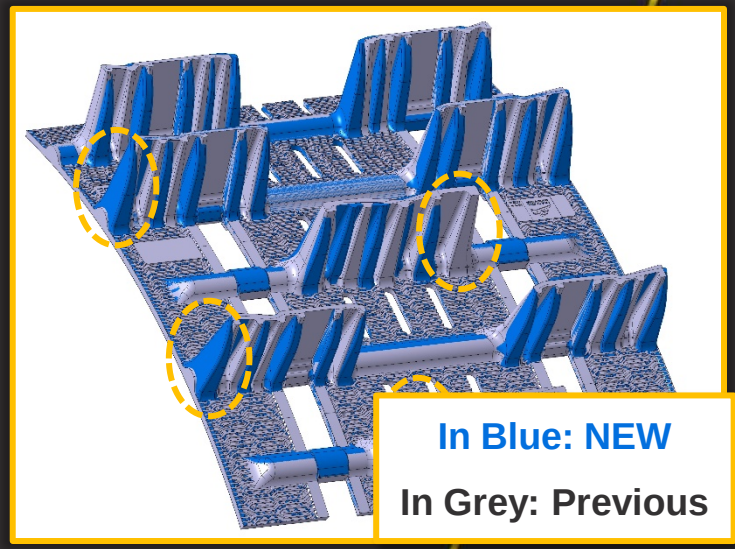
With reduced unsprung weight and increased capacity

tMotion X: What's changed?



NEW PowderMax X-Light 3.0 in. with FlexEdge



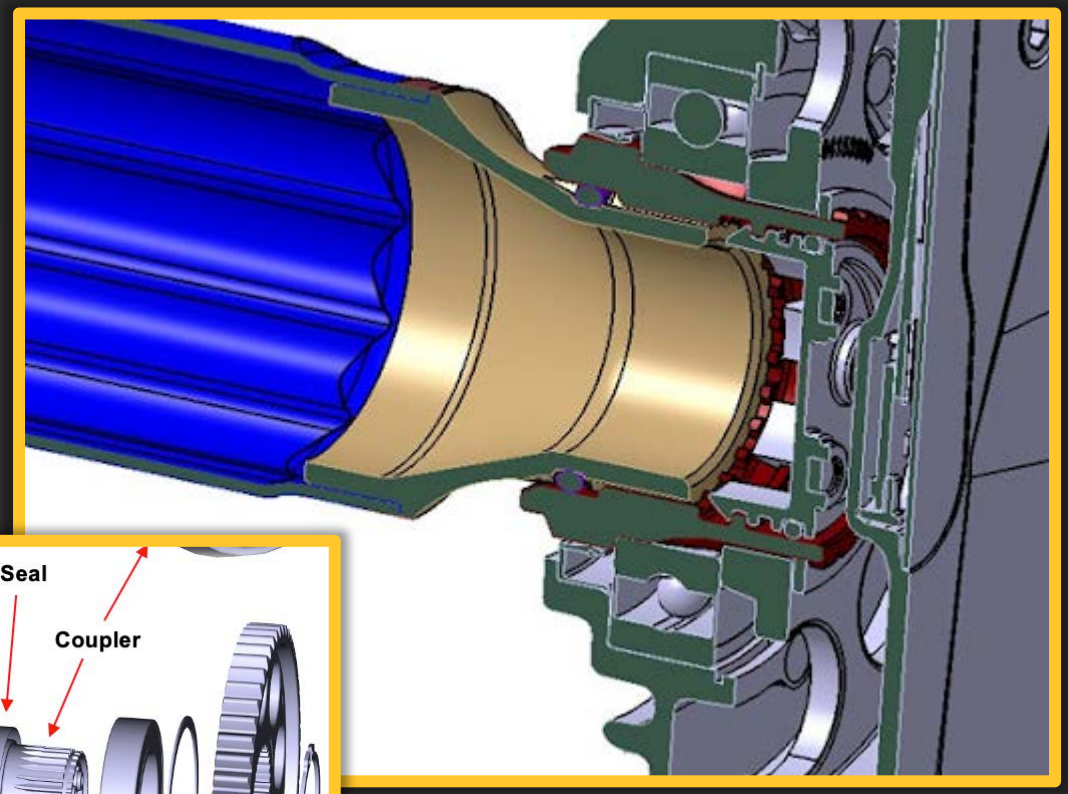


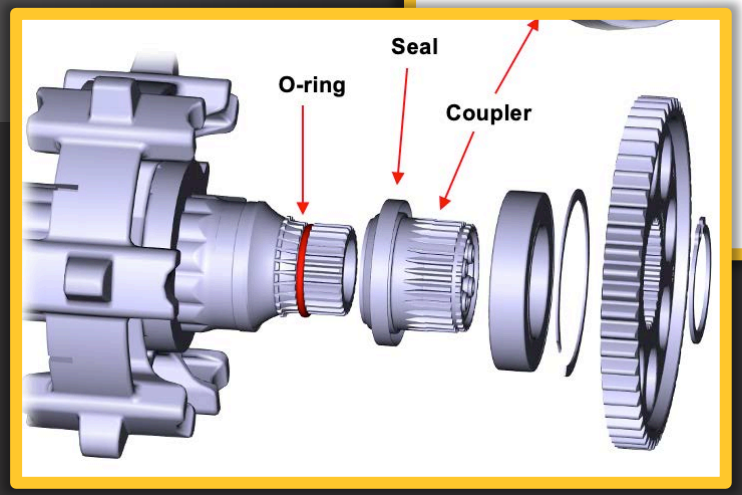
- **Up to 4 lb lighter**
- **Improved traction**
- **More durable**

CLUB 2023

Quick-removal driveshaft: New sealed bottom gear to separate the wet and dry side

No longer necessary to open the chaincase to remove the drive axle





Also on Trail REV Gen5

Track changes are now QUICKER, SIMPLIER and CHEAPER !

REV Gen5 is on all Summit and Freeride packages

In-season | *Spring-only*



Summit SP
(No 600R E-TEC available)

Summit Edge

Summit X

Summit X w/ Expert Pkg

Freeride

The Expert Package becomes even more specialized!



Adjustable brake lever

Expert specific lighter **and predictable**
3.0 in. track

Completely revised rear suspension **with Expert exclusive rear arm**

Improved adjustable limiter strap

Precise Pilot DS4 skis

CLUB BRP 2023

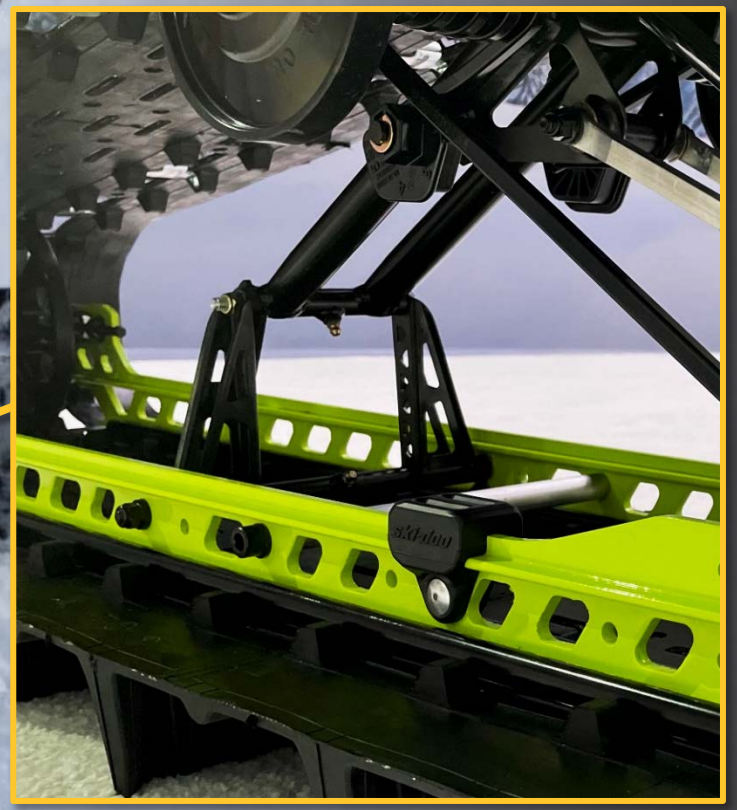
In Blue:
Differences with other REV Gen5 Deep Snow models

NEW tMotion XT designed for the most technical terrain



Adjustable limiter strap with more range

- *50 vs 30 mm*
- *PRECISION+ → shorter center*

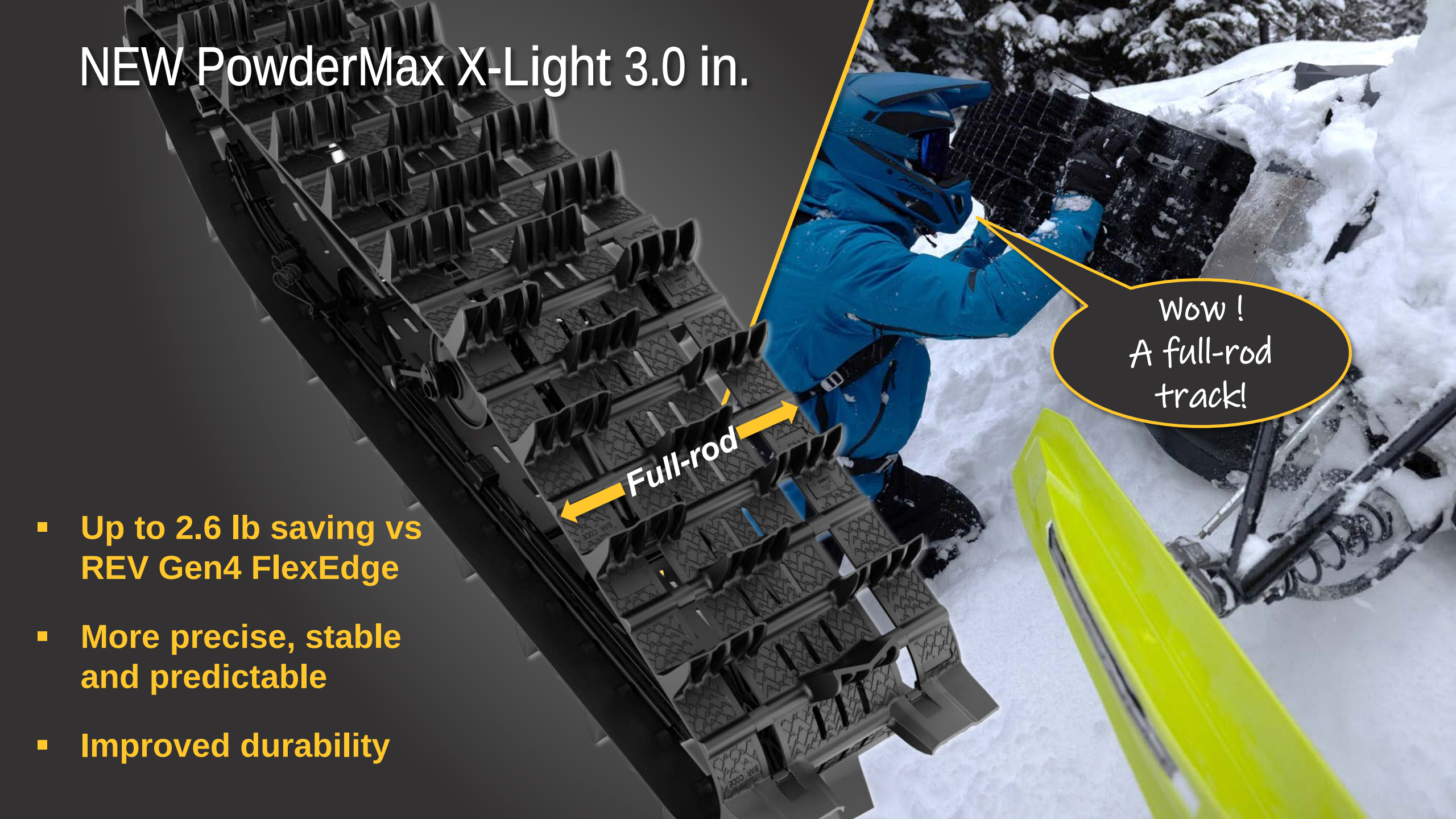


Fixed rear arm

- *More precise, stable and predictable*
- *Improved sidehilling performance*

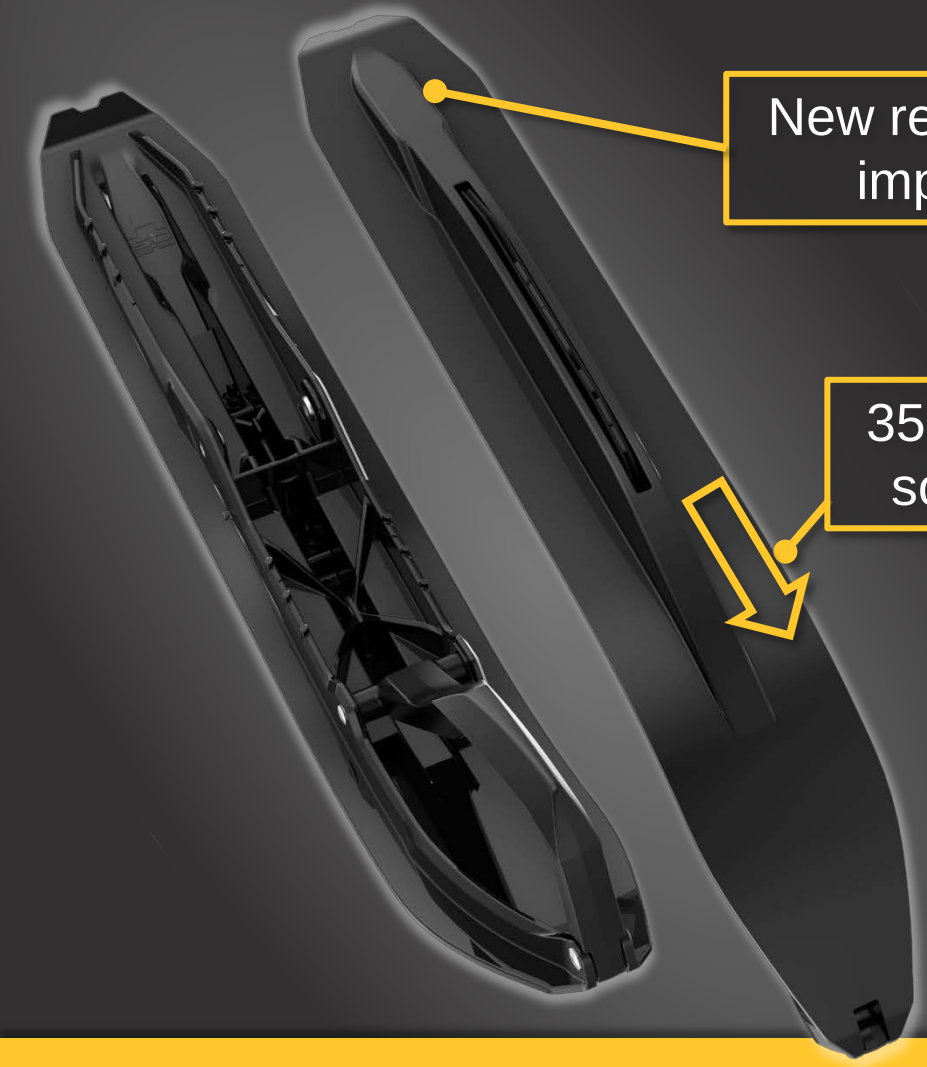
Model shown with accessories

NEW PowderMax X-Light 3.0 in.



- **Up to 2.6 lb saving vs REV Gen4 FlexEdge**
- **More precise, stable and predictable**
- **Improved durability**

NEW Pilot DS 4 Skis



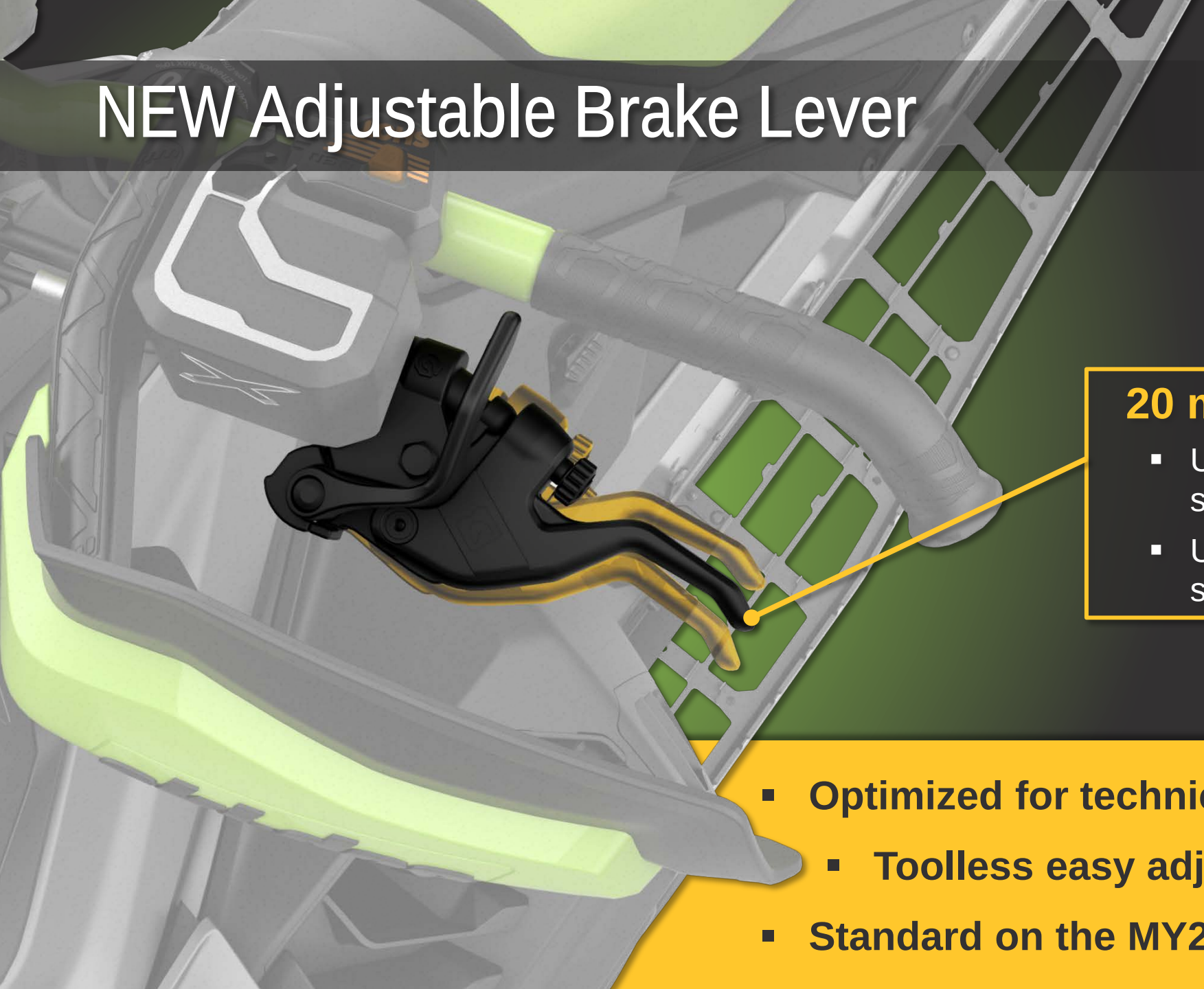
New rear keel design to improve stability

35mm Longer flat sole in the front



More stable in sidehilling, more precision and control in rough conditions

NEW Adjustable Brake Lever



20 mm adjustability range

- Up to 15.5mm closer than the standard lever
- Up to 4.5mm farther than the standard lever

- **Optimized for technical riding with 1 or 2 fingers**
- **Toolless easy adjustment**
- **Standard on the MY23 Expert and Freeride**

Which one is for who?

In-season *Spring-only*



Summit SP

(No 600R E-TEC available)

Most affordable Deep Snow option



Summit Edge

Well-balanced in-season with premium spring flavor



Summit X

Agile, playful and effortless now at 34-in.



Summit X w/ Expert Pkg

Stiffer ride and specialized for the most technical riding



Freeride

Extreme capacity with a stand out style

SKI-DOO : WHAT'S NEW AGENDA

20 years ago, Ski-Doo dropped a bomb

The NEW undisputed champion


The NEW undisputed champion
180 HP
850 E-TEC TURBO R
WITH THE SAME RENOWNED THROTTLE RESPONSE
WITH THE SAME OUTSTANDING REFINEMENT
WITH THE SAME VALUED PEACE OF MIND
WITH MORE POWER
The most powerful factory 2-stroke Turbo in the industry. Period.

Everyone benefits from the R



Delivering MORE BOOST and MORE POWER at ALL ALTITUDES!

3 complete *Turbo-Winters* with a flawless track record


2020


2021


2022

2023: 850 E-TEC Turbo *R* specific changes

- Revised cylinder head: better spark plug cooling
- New injectors
- Reinforced CVT components
- Reinforced chain
- REV Gen5 airbox
- New ECU
- More boost from sea-level to high-altitude
  - Ranges from 1.5 up to 6.5 psi
  - Average of +1.5 to 2 psi over the previous 165hp 850 E-TEC Turbo

Model shown with accessories

Ski-Doo is the undeniable leader in 2-stroke turbo knowledge

SKI-DOO : WHAT'S NEW AGENDA

20 years ago, Ski-Doo dropped a bomb

The NEW undisputed champion

Next-level connectivity and ride experience

10.25” Color Touchscreen Display with BRP Connect

REV Gen5 spring-model option



CLOSE TO

60%

MORE SCREEN SURFACE

THAN ITS CLOSEST COMPETITOR

Featuring an all-around new design on its larger customizable touchscreen display with improved connectivity functions

- New elegant and premium design
- Intuitive interface
- Enhance connectivity experience



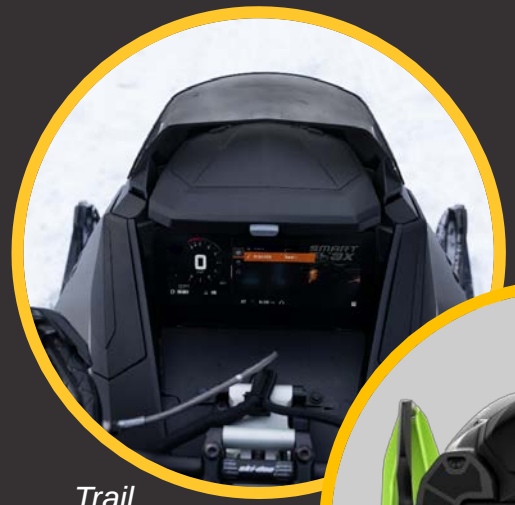
New elegant and premium design

A large and redesigned display with an emphasis on readability while riding

New elegant design



Optimized integration on REV Gen5



Trail



Deep Snow

Larger & better display

10.25”

Intuitive interface

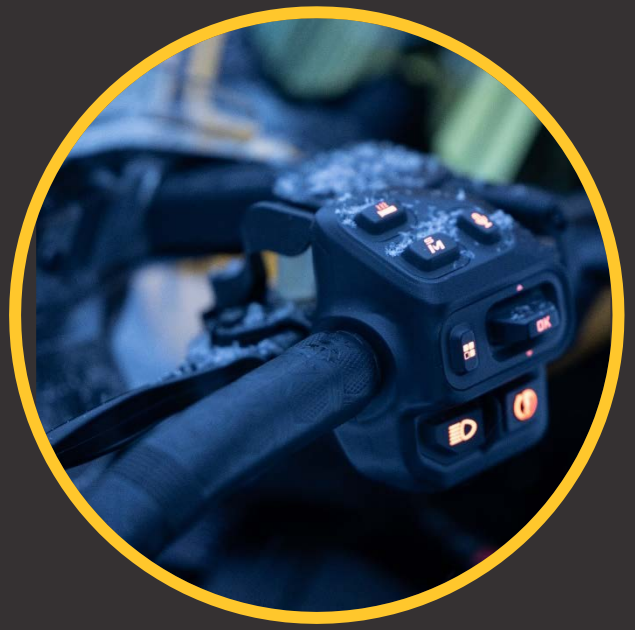
A simple, predictable and consistent interface that exemplifies “ease of use” with touchscreen and hand control capabilities

Touchscreen display



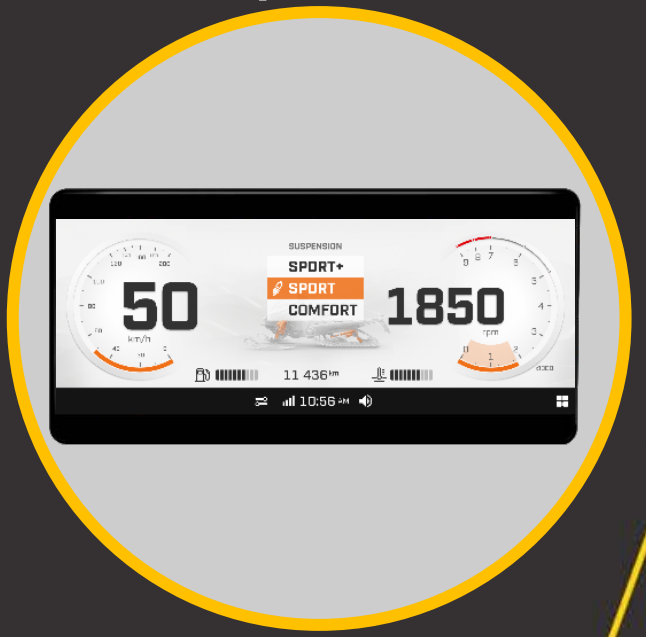
Trail and Deep Snow

New handlebar control module



Trail only

Many customizable options



Enhanced connectivity experience

Simple and intuitive experience that is elevated with BRP connectivity

GPS navigation with BRP GO!

Bluetooth connection is easier than ever

OTA updates via Wi-Fi

Apps and control overview

Apps menu



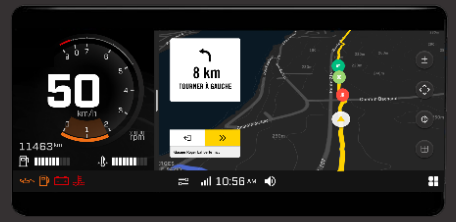
Gauge *(Dark mode)*



(Light mode)



Navigation



Vehicle



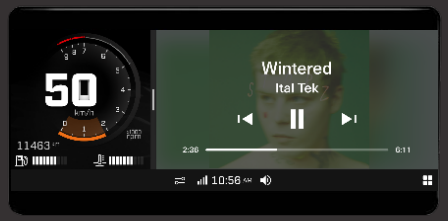




Phone

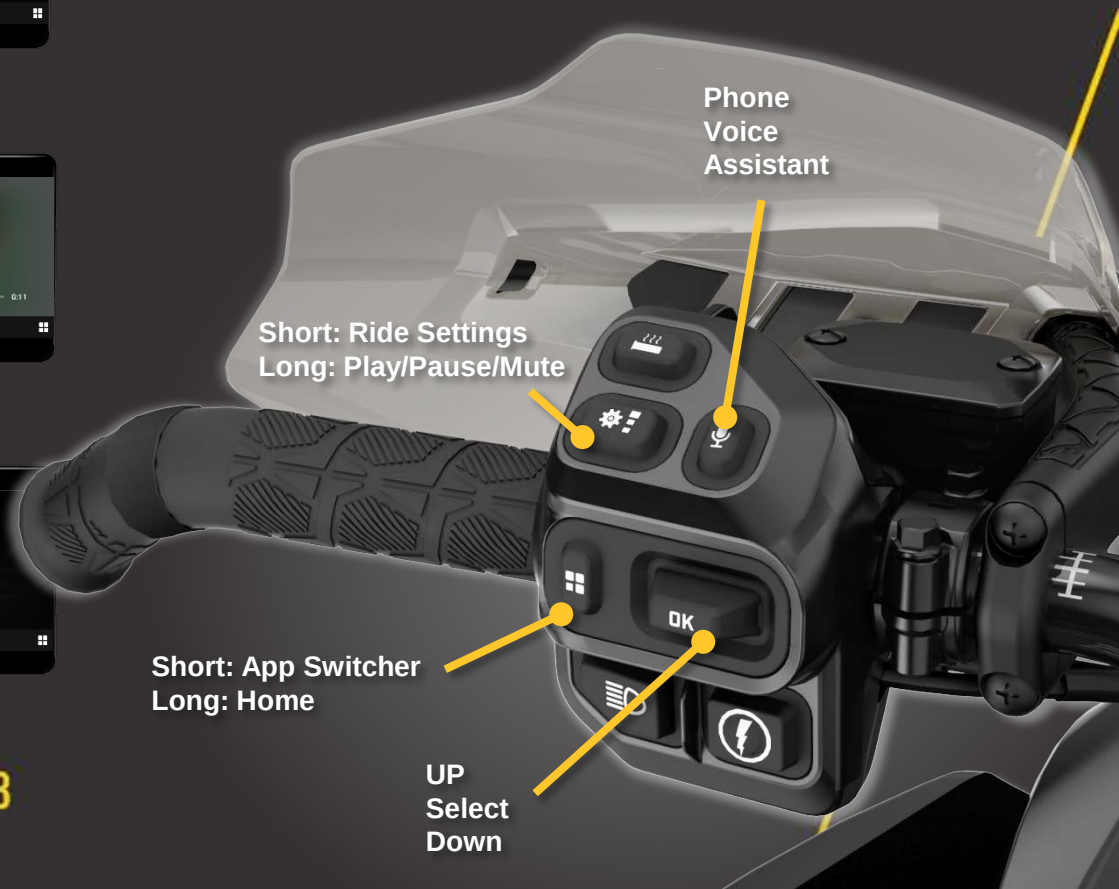


Media



Drive Stats

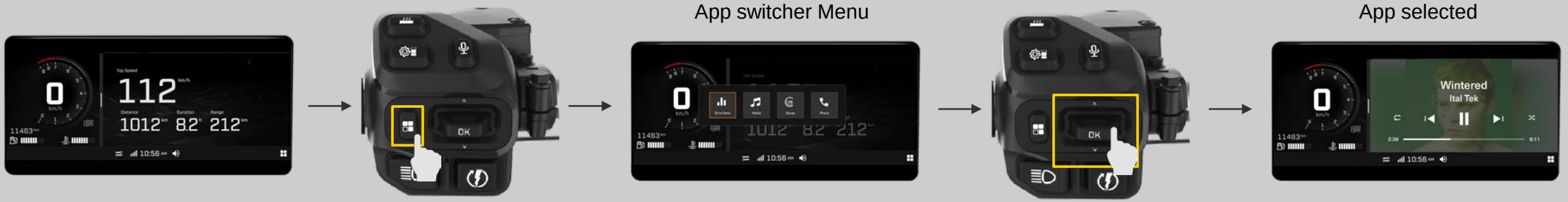




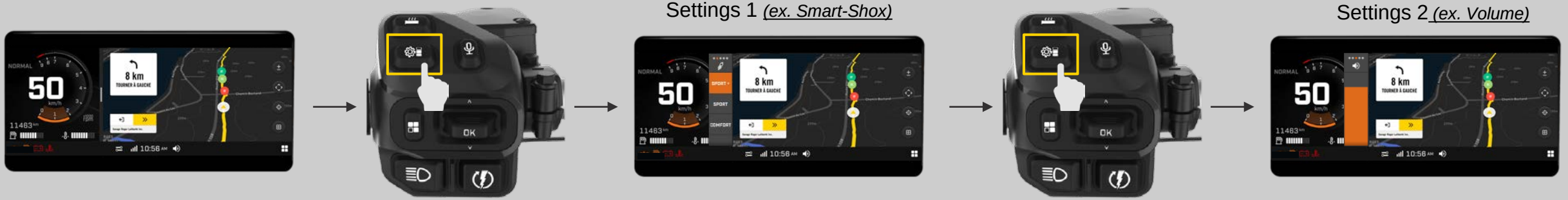
CLUB BRP 2023

App switcher and Ride settings functions

App Switcher



Ride Settings



SKI-DOO : WHAT'S NEW AGENDA

20 years ago, Ski-Doo dropped a bomb

The NEW undisputed champion

Next-level connectivity and rider's experience

A ride for everyone

MXZ Neo and Summit Neo models: Mid-Sized design to develop rider's skills and confidence level

AFFORDABLE

ATTRACTIVE AND FUN

EASY TO USE



Models shown with accessories

While delivering a full-size *Ski-Doo Feeling* !

Mid-sized sleds at mid-sized prices!

MXZ NEO



Starting at

$6,399 USD

$7,999 CAD

SUMMIT NEO



Starting at

$6,999 USD

$8,699 CAD

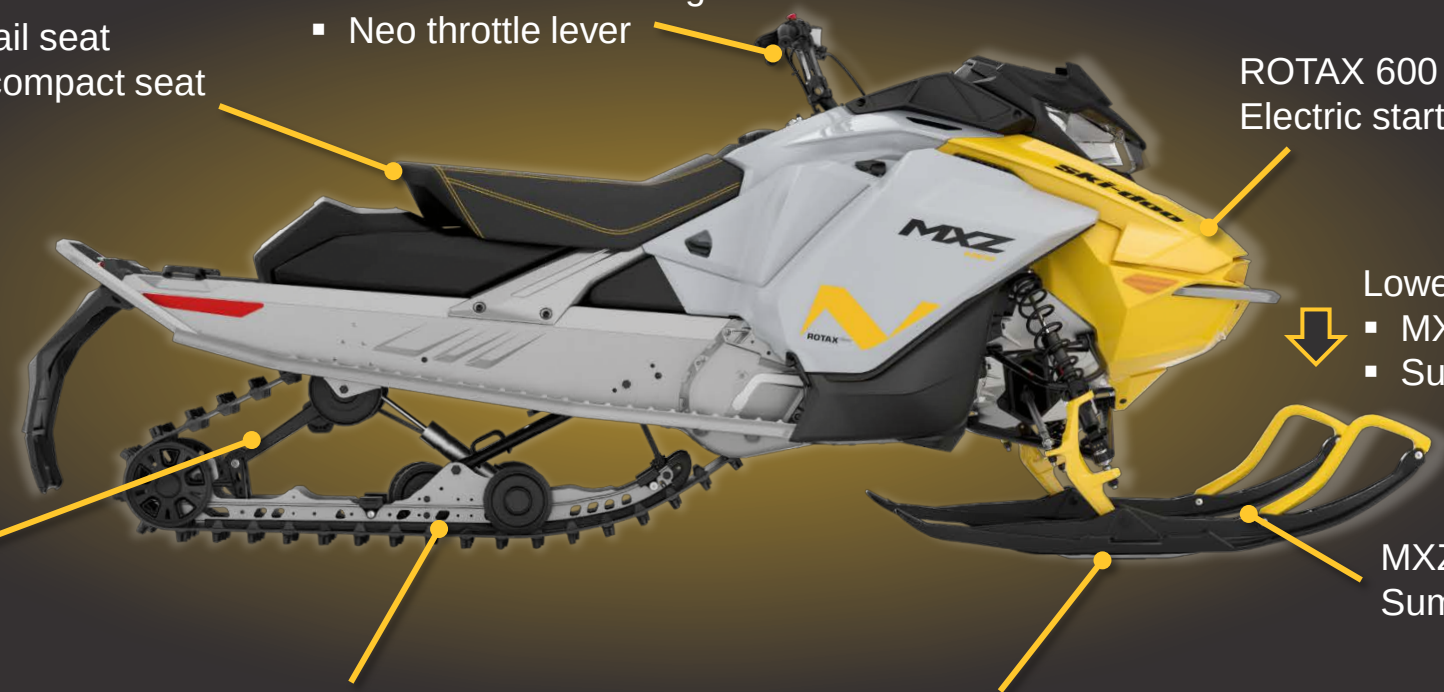
**Excluding freight, PDI and Commodity Surcharge*

MXZ Neo and Summit Neo specific configuration delivers full-blown fun factor

- Narrower and small diameter handlebar
- Lower handlebar height
- Neo throttle lever

MXZ: Neo compact trail seat
Summit: Deep snow compact seat

ROTAX 600 EFI engine – 40 HP
Electric start standard



Lower ride height
- MXZ: -45 mm
- Summit: -35 mm

Neo single-shock
rear suspension

MXZ: 39 in. ski-stance
Summit: 34 in. ski-stance

MXZ: 120x14x1.0 in. Cobra
Summit: 146x14x1.6 in. Cobra FlexEdge

MXZ: Pilot 5.7
Summit: Pilot DS2



Giving a whole new generation of customers access to the sport

Or get a Neo+ with upgraded features and more performance

For only

$800 USD **more**

Over the Neo package MSRP

$1,000 CAD

MXZ: **Transparent handguards with handlebar cover**
Summit: **Flexible handguards with mountain grab handle**

+15 HP

ROTAX 600 EFI engine – **55 HP**



Premium coloration with **painted tunnel**

MXZ: 120x**15x1.25 in. RipSaw**
Summit: 146x**15x1.75 in. Hurricane FlexEdge**

KYB HPG front shocks



In Blue:
Features over the standard Neo package

Offering amazing consumer value

Be fast, very limited quantities available !

MXZ Neo
$6,399 USD
$7,999 CAD



Summit Neo
$6,999 USD
$8,699 CAD



MXZ Neo+
$7,199 USD
$8,999 CAD



Summit Neo+
$7,799 USD
$9,699 CAD



CLUB BRP 2023

MXZ 120 and MXZ 200 models provide a great platform for very young enthusiasts



MXZ 120
$3,699 USD
$4,499 CAD



MXZ 200
$4,999 USD
$5,999 CAD

**Excluding freight, PDI and Commodity Surcharge*

Models shown with accessories

Now there really is a Ski-Doo for everyone in the family!

Other Lineup Updates



Models shown with accessories

MY23 Expedition and Skandic lineup: Simplified structure and updated engine offering



EXPEDITION

SPORT	**16 in.**	600 EFI 600 ACE	900 ACE
XTREME	**20 in.**	850 E-TEC **NEW – 900 ACE Turbo *R***	
LE	**20 in.** **24 in.**	600R E-TEC 900 ACE	**NEW – 900 ACE Turbo** **NEW – 900 ACE Turbo *R***
Spring-only			
SE	**20 in.**	**NEW – 850 E-TEC** 900 ACE	**NEW – 900 ACE Turbo** **NEW – 900 ACE Turbo *R***



SKANDIC

SPORT	**20 in.**	600 EFI	
NEW – LE	**20 in.** **24 in.***	600 EFI 600 ACE	600R E-TEC* 900 ACE*
Spring-only			
NEW – SE	**20 in.** **24 in.***	600R E-TEC 900 ACE	

The new spring-only Skandic SE raises the bar



Loaded with premium utility features

Due to overwhelming demand, the *Launch Mode* is back!

Now available on REV Gen4

Renegade X and Renegade X-RS

900 ACE Turbo *R*

with the 7.8 in. wide LCD color display*



*Selectable spring option

Complete Lineup Review



Model shown with accessories

TRAIL



2023 MXZ Lineup: Spring-Only Models

SPRING ONLY	X-RS	SPRING ONLY	~~X~~

850 E-TEC
600R E-TEC

REV Gen5 (850 E-TEC) **w/ Premium LED**
REV Gen4 (600R E-TEC)

KYB Pro 40R EA-3 front shocks
KYB Pro 40 **EA-3** center and rear shocks
Rails reinforcement
90mm riser
1.5 in. RipSaw or 1.5 in. Ice Ripper XT track
~~7.8 in. color display~~ **10.25 in. touchscreen** (850 E-TEC only opt.)
Smart-Shox (850 E-TEC only opt.) with Pilot X **and Pilot TX skis**
~~QAS with Pilot TX~~



Black

Platinum Silver / Spartan Red

CLUB BRP 2023

2023 MXZ Lineup: In-Season Models

NEW

Blizzard	~~TNT~~	Sport	Neo / Neo+
850 E-TEC 600R E-TEC		600 EFI	**600 EFI – 40** (Neo) **600 EFI – 55** (Neo+)
REV Gen5 (850 E-TEC) **w/ Premium LED** REV Gen4 (600R E-TEC)		REV Gen4	REV Gen4
KYB Pro 36 EA-3 front shocks **HPG Plus center shock** **KYB Pro 36 EA-3 rear shock** **Forward steering column** **Rack steering system** **90mm riser** 1.25 in. RipSaw or 1.25 in. Ice Ripper XT track **7.2 in. digital display**		**RAS X front suspension**	**Smaller ergonomics** **Neo rear suspension** **39 in. adjustable ski stance** **120x14x1.0 in. track** **Neo+ adds:** **+15 HP** **15x1.25 in. track** **HPG front shocks** **Steering pad** **Premium coloration**



Neo Yellow

Black



Neo Yellow / Black



Neo Yellow / Black *(Neo+)*

Neo Yellow / Catalyst Grey *(Neo)*

CLUB BRP 2023

2023 Renegade Lineup: Spring-Only Models

SPRING ONLY — X-RS

850 E-TEC

900 ACE Turbo R

REV Gen5 (850 E-TEC) **w/ Premium LED**
REV Gen4 (900 ACE Turbo R)

KYB Pro 36 **EA-3** front shocks
KYB Pro 40 **EA-3** center and rear shocks
10.25 in. touchscreen (850 E-TEC only opt.)
Launch Mode with 7.8 in. color display
(900 ACE Turbo R only opt.)
Smart-Shox with Pilot X **and Pilot TX skis**
~~QAS with Pilot TX~~



Platinum Silver / Spartan Red

Black

SPRING ONLY — X-RS w/ Competition Pkg

600R E-TEC

REV Gen4



Black

SPRING ONLY — X

850 E-TEC
600R E-TEC
900 ACE Turbo R

REV Gen5 (850 E-TEC) **w/ Premium LED**
REV Gen4 (600R E-TEC / 900 ACE Turbo R)

10.25 in. touchscreen (850 E-TEC only opt.)
Launch Mode with 7.8 in. color display
(900 ACE Turbo R only opt.)
~~QAS with Pilot TX~~



Neo Yellow

Black

CLUB BRP 2023

2023 Renegade Lineup: In-Season Models

Enduro	Adrenaline	Sport
850 E-TEC 600R E-TEC 900 ACE Turbo R 900 ACE Turbo 900 ACE	850 E-TEC 600R E-TEC 900 ACE Turbo R 900 ACE Turbo 900 ACE	600 EFI 600 ACE
REV Gen4	**REV Gen5** (850 E-TEC) **w/ Standard LED** REV Gen4 (All others)	REV Gen4 **RAS X front suspension**







CLUB BRP 2023

2023 Grand Touring Lineup

Limited

900 ACE Turbo R
900 ACE Turbo
900 ACE

REV Gen4

Luxury package available

- Premium coloration
- 7.8 in. color display
- Studded track



Platinum Silver /
Spartan Red
(Luxury package only)

Black *(standard)*

Sport

900 ACE
600 ACE

REV Gen4

RAS X front suspension



Neo Yellow / Black

CLUB 2023

CROSSOVER



Model shown with accessories

2023 Backcountry Lineup: Spring-Only Models

SPRING ONLY X-RS

850 E-TEC

REV Gen4

39 in. **RAS X** (spindle) adjustable front suspension



Black

Platinum Silver / Manta Green

SPRING ONLY X

850 E-TEC

REV Gen4

39 in. **RAS X** (spindle) adjustable front suspension



Black

Catalyst Grey / Spartan Red

CLUB 2023

2023 Backcountry Lineup: In-Season Models

Backcountry	Sport
850 E-TEC 600R E-TEC	600 EFI
REV Gen4	REV Gen4
39 in. **RAS X** (spindle) adjustable front suspension	39 in. **RAS X** (spindle) adjustable front suspension
Black HPG front shocks	
15 x 146 x 1.6 Cobra	
16 x 146 x 2.0 PowderMax opt.	



Black

Catalyst Grey / Neo Yellow



Neo Yellow / Black

CLUB BRP 2023

2023 Expedition Lineup

SPRING ONLY	SE	LE	~~SWT~~
	850 E-TEC ~~600R E-TEC~~ **900 ACE Turbo *R*** **900 ACE Turbo** 900 ACE	600R E-TEC **900 ACE Turbo *R*** **900 ACE Turbo** 900 ACE	
	REV Gen4	REV Gen4	
	39 in. **RAS X** (spindle) adjustable front suspension **Black** HPG front shocks	39 in. **RAS X** (spindle) adjustable front suspension **Black** HPG front shocks 20- and **24-in.** wide track options	



Black

Catalyst Grey / Orange Crush



Black

Arctic Desert / Black

CLUB BRP 2023

2023 Expedition Lineup

Xtreme

850 E-TEC
900 ACE Turbo *R*

REV Gen4

39 in. **RAS X** (spindle) adjustable front suspension



Black / Spartan Red

Sport

900 ACE
600 ACE
600 EFI

REV Gen4

39 in. **RAS X** (spindle) adjustable front suspension



Neo Yellow / Black

CLUB BRP 2023

DEEP SNOW



2023 Summit Lineup: Spring-Only Models

SPRING ONLY

X w/ Expert Package

850 E-TEC
850 E-TEC Turbo *R*

REV Gen5 w/ Premium LED

tMotion XT
PowderMax X-Light 3.0 in. (full-width rods) / ~~2.5 in.~~
10.25 in. touchscreen (opt.)
Adjustable brake lever
Pilot DS4 skis
Adjustable limiter strap **with more range**
KYB Pro 36 **EA-3** rear shock



Platinum Silver / Manta Green *(Painted)*

Timeless Black *(Painted)*

SPRING ONLY

X

850 E-TEC
850 E-TEC Turbo *R*

REV Gen5 w/ Premium LED

tMotion X
PowderMax X-Light with FlexEdge 3.0 in. (opt.)
10.25 in. touchscreen (opt.)
34 in. ski stance



Catalyst Grey / Spartan Red

Timeless Black *(Painted)*

CLUB BRP 2023

2023 Summit Lineup: In-Season Models

Edge

850 E-TEC

REV Gen5 w/ Premium LED

tMotion X
PowderMax X-Light with
FlexEdge 3.0 in. (opt.)
Black HPG front shocks



Catalyst Grey / Neo Yellow

Timeless Black *(Painted)*

SP

850 E-TEC
~~600R E-TEC~~

REV Gen5 w/ Standard LED

tMotion X
PowderMax X-Light with
FlexEdge 3.0 in. (opt.)
Black HPG front shocks



Catalyst Grey / Neo Yellow

Timeless Black *(Painted)*

CLUB BRP 2023

Neo / Neo+

600 EFI – 40 (Neo)
600 EFI – 55 (Neo+)

REV Gen4

Smaller ergonomics
Neo rear suspension
34 in. adjustable ski stance
146x14x1.6 in. track

Neo+ adds:
+15 HP
15x1.75 in. track
HPG front shocks
Handlebar grab strap
Premium coloration



Neo Yellow / Black *(Neo+)*

Neo Yellow / Catalyst Grey *(Neo)*

2023 Freeride Lineup

SPRING ONLY

Freeride

850 E-TEC

850 E-TEC Turbo *R*

REV Gen5 w/ Premium LED

tMotion X

PowderMax X-Light with FlexEdge 3.0 in.

10.25 in. touchscreen (opt.)

Adjustable brake lever

KYB Pro 36~~R~~ **EA-3** front shocks

KYB Pro 40 **EA-3** center and rear shocks



Timeless Black / Spartan Red *(Painted)*

CLUB 2023

SPORT-UTILITY



Model shown with accessories

2023 Skandic Lineup: In-Season Models

SPRING ONLY

NEW SE

600R E-TEC
900 ACE

REV Gen4

Three (3) 20-in. wide track options
Two (2) 24-in. wide track options
135L utility cargo box
7.2 in. digital display
Heated visor plug
9.8 in. ski liners
HPG center shock



Black

Catalyst Grey / Orange Crush

NEW LE

600R E-TEC
600 EFI
900 ACE
600 ACE

REV Gen4

20 or **24-in.** (600R E-TEC and 900 ACE only) wide track options



Black

Arctic Desert / Black

Sport

600 EFI

REV Gen4



Neo Yellow / Black

CLUB BRP 2023

2023 Tundra Lineup

LT	Sport
600 EFI 600 ACE	600 EFI 600 ACE
REV Gen4	REV Gen4
Black painted tunnel	



Black



Neo Yellow / Black

CLUB BRP 2023

YOUTH



Model shown with accessories

2023 Youth Lineup

MXZ 120	MXZ 200
123cc	192cc
Manual start	Electric start





CLUB BRP 2023

SKI-DOO : WHAT'S NEW RECAP

The REV Gen5 platform, tailored specifically for
Deep Snow and Trail applications

New Rotax 850 E-TEC Turbo R:
The most powerful factory-built 2-stroke turbo in the industry

New 10.25" Color Touchscreen Display delivers
next-level connectivity and ride experience

MXZ and Summit Neo models along with MXZ 120 and 200
provide a ride for everyone



PRODUCT SPEC BOOK

VEHICLES • ACCESSORIES • PARTS • MAINTENANCE
APPAREL • PLAY AND LICENSING PRODUCTS

2023

PRODUCT SPEC BOOK
2023

VEHICLE SPECIFICATIONS

5 Rotax Engines
6 Summit X with Expert Package
8 Summit X
10 Summit Edge
12 Summit SP
14 Summit Neo
16 Freeride
18 Backcountry X-RS
20 Backcountry X
22 Backcountry
24 Backcountry Sport
26 Renegade X-RS with Competition Package
28 Renegade X-RS
30 Renegade X
32 Renegade Enduro
34 Renegade Adrenaline
36 Renegade Sport
38 MXZ X-RS
40 MXZ Blizzard
42 MXZ Sport
44 MXZ Neo
46 MXZ 120/200
48 Grand Touring Limited
50 Grand Touring Sport
52 Expedition Xtreme
54 Expedition SE
56 Expedition LE
58 Expedition Sport
60 Tundra LT
62 Tundra Sport
64 Skandic SE
66 Skandic LE
68 Skandic Sport
70 Comparative Chart

ACCESSORIES

77 Platform/Accessory Fit Guide
78 LinQ Accessories
82 Fuel & Oil Caddies
82 Storage
93 Sleigh, Racks & Holders
96 Seats & Backrests
100 Windshields & Wind Protection
107 Handguards & Handlebar
109 Mirrors
110 Adjustable Risers & Extension Kits
113 LED Lights
114 Bumpers, Hitches & Winches
122 Protection & Reinforcement
126 Toe-Holds, Footrests & Knee Pads
128 Suspension & Fox Shock Kits
130 Vent Kits & Prefilters
132 Cooling & Lubrication
133 Electrical & Electronics
137 Trailering & Covers
140 Garage & Truck Sled Decks

PARTS

143 Traction & Control
154 Propulsion
156 Electrical

MAINTENANCE

159 Oils & Maintenance Products
162 Care Products

APPAREL

165 Sizing chart
166 TECHNOLOGY GUIDE
178 Helmets
180 Goggles
181 Riding Gear Deep Snow
185 Riding Gear Trail
193 Riding Gear Utility
194 Boots and Socks
195 TekVests
195 Bags
196 Base layers
197 Sportswear Performance
199 Sportswear Premium
202 Sportswear Signature
205 Headwear
207 Kids and Teens
210 Play and Licensing products

THAT ski-doo FEELING

For advertising purposes, some scenes depicted in this brochure include professional riders and racers executing maneuvers or performances under ideal and/or controlled conditions. Do not attempt any of these or any other risky maneuvers if they're beyond your level of riding ability, as well as your understanding and respect for the performance of your snowmobile. Always ride responsibly and safely. Always observe applicable local laws and regulations. Always wear the appropriate protective clothing, including a helmet. And remember, if you're going to drink, please don't ride. Because of its ongoing commitment to product quality and innovation, Bombardier Recreational Products Inc. (BRP) reserves the right, at any time, to discontinue or change specifications, prices, designs, features, models or equipment without incurring any obligation. Some models depicted herein may include optional equipment. Prices are based on Manufacturer Suggested Retail Prices. Dealer may sell for a different price. Taxes are not included. BRP is a proud member of the SSCC (Snowmobiling Safety Certification Committee), Machine Safety Standard, Operator Safety Training, Safe Trails, ISMA (International Snowmobile Manufacturers Association), National Snowmobile Foundation and Tread Lightly! Inc. By being a member of these important snowmobiling associations, we recognize and support their efforts in sharing the responsibility in promoting the growth of our sport. Isolfil is a registered trademark of Yarns and Threads For Textile. mcFIT is registered trademark of MCTECH Corporation. PrimaLoft Gold, PrimaLoft Silver and PrimaLoft Black are registered trademarks of Albany International Corp. Sympatex is a registered trademark of Sympatex Technologies GmbH. Dri-Lex is a registered trademark of Faytex Corp. Vespel, Teflon HT and Kevlar are trademarks of E.I. DuPont de Nemours & Co. Thermolite and Cordura are registered trademarks of INVISTA for durable fabrics. Thermocool is a registered trademark of ADVANSA. Velcro is a registered trademark of Velcro Industries. Scott is a trademark of Scott Sports SA. M-FORGE® Composite is a patented and registered trademark of MAT GROUP™ TekVest is a registered trademark of Tekrider. Fidlock is a registered trademark of Fidlock GmbH. clim8® is a trademark of clim8 SAS and is registered in the US and other countries. Terra is a trademark of Superwinch LLC. Bluetooth is a registered trademark of Bluetooth SIG, Inc. Warn is a registered trademark of Warn Industries Inc. GTX is a trademark of Castrol Limited used under license. Montana and Zumo are registered trademarks of Garmin Ltd. NGK is a registered trademark of NGK Spark Plugs, Ltd. Extender Trail III, Trail Blazer IV, Executive, Flat-top and Dooly are trademarks and registered trademarks of Woody's International Engineering and Manufacturing, Inc. RipSaw, RipSaw Lite, ICE Ripper, ICE Ripper XT, ICE Attak and Powder Max are trademarks of Camoplast Inc. Lexan is a registered trademark of SABIC Innovative Plastics. Superclamp II is a trademark of Bowdriks Industries. FOX is a registered trademark of Fox Racing Canada, Kolpin and Impact are registered trademarksof Kolpin Powersports Inc. Yuasa is a registered trademark of YUASA Batteries Inc. Schumacher® and the Schumacher logo are registered trademarks of Schumacher Electric Corporation. Depending onlocation, products are distributed by BRP US Inc., Bombardier Recreational Products Inc., BRP European Distribution SA, BRP Finland Oy., BRP Australia Pty Ltd. or Bombardier Recreational, Products Motores da Amazonia Ltda. In the U.S.A., products are distributed by BRP US Inc. In Canada, products are distributed by Bombardier Recreational Products Inc. ®/TM and the BRP logo are trademarks and registered of Bombardier Recreational Products Inc. or its affiliates. All other company and/or product names are trademarks or registered trademarks of their respective holders. © 2022 BRP. All rights reserved. Printed in Canada.

// SKI-DOO.COM

VEHICLE SPECIFICATIONS

// VEHICLE SPECIFICATIONS

5	ROTAX ENGINES
6	SUMMIT X WITH EXPERT PACKAGE
8	SUMMIT X
10	SUMMIT EDGE
12	SUMMIT SP
14	SUMMIT NEO
16	FREERIDE
18	BACKCOUNTRY X-RS
20	BACKCOUNTRY X
22	BACKCOUNTRY
24	BACKCOUNTRY SPORT
26	RENEGADE X-RS WITH COMPETITION PACKAGE
28	RENEGADE X-RS
30	RENEGADE X
32	RENEGADE ENDURO
34	RENEGADE ADRENALINE
36	RENEGADE SPORT
38	MXZ X-RS
40	MXZ BLIZZARD
42	MXZ SPORT
44	MXZ NEO
46	MXZ 120/200
48	GRAND TOURING LIMITED
50	GRAND TOURING SPORT
52	EXPEDITION XTREME
54	EXPEDITION SE
56	EXPEDITION LE
58	EXPEDITION SPORT
60	TUNDRA LT
62	TUNDRA SPORT
64	SKANDIC SE
66	SKANDIC LE
68	SKANDIC SPORT
70	COMPARATIVE CHART

ROTAX® ENGINES



ROTAX 2-STROKE ENGINES
Heart-thumping power, lightweight design, proven reliability – E-TEC direct-injection engine technology delivers the most sought-after attributes in the snowmobile industry.

Our lineup of 2-stroke engines now includes the brand-new 600 EFI (Electronic Fuel Injection) engine. Reliable, affordable and easy to use, it's an entry-level engine that far exceeds what you thought an entry-level engine had to be.

With the E-TEC engine lineup you also get:
- Industry-leading fuel economy[2]
- Excellent oil economy
- Virtually no smoke or smell
- Light, linear throttle pull
- Automatic summerization process

NEW 850 E-TEC TURBO R
- 180 hp up to 8,000 ft[1]
- World's most powerful factory-built 2-stroke turbo

850 E-TEC
- 165 horsepower[1]
- Up to 19 mpg (12.3 L/100 km)[2]

600R E-TEC
- 125 horsepower[1]
- Up to 21 mpg (11.3 L/100 km)[2]

600 EFI
- 85 horsepower[1]
- Up to 18 mpg (13.3 L/100 km)[2]

E-TEC engines are the best-selling 2-stroke engines in snowmobiling.[4]

ROTAX ACE™ 4-STROKE ENGINES
With the Advanced Combustion Efficiency (ACE) family of engines, BRP engineers optimized the combustion system, reduced mechanical friction, and freed intake and exhaust breathing. The result is the most efficient engine in snowmobiling. Not only are they efficient, they're a pleasure to operate and own. Very little maintenance is required; they run smoothly and produce a nice, solid – yet quiet – sound.

900 ACE TURBO R
- Rotax-designed turbocharger
- 180 horsepower[1]
- Cable-activated throttle with reconfigured iTC

900 ACE TURBO - 150 WITH iTC
- 150 horsepower[1]
- Up to 19.4 mpg (12.1 L/100 km)[3]

900 ACE TURBO - 130 WITH iTC
- Rotax-designed turbocharger
- 130 horsepower[1]

900 ACE WITH iTC
- 3 cylinders
- 95 horsepower[1]
- Up to 21.8 mpg (10.8 L/100 km)[3]

600 ACE WITH iTC
- 2 cylinders
- 62 horsepower[1]
- Up to 29 mpg (8 L/100 km) – the most fuel-efficient in the entire industry[3]

ACE engines are the best-selling 4-stroke engines in snowmobiling.[4]

INTELLIGENT THROTTLE CONTROL
Standard on the ACE engines, the iTC™ system delivers a whole different snowmobiling experience.

- **Driving Modes:** A button on the console enables you to select one of three driving modes. Standard mode ensures a smooth start and linear acceleration; Sport enables full performance and quicker acceleration; ECO® limits top speed and acceleration rates for a more relaxed, fuel-conserving ride.
- **Finger Throttle:** The throttle block can be rotated forward for use as a finger throttle, if preferred. Great for changing hand positions on a long ride and for more control through bumps.

1 Observed metric horsepower based on internal dyno test performed in optimal conditions.
2 Data based on internal engineering trail testing.
3 Data based on internal engineering trail testing in ECO mode.
4 Based on retail sale results as of December 31, 2019.

XPS
Experience the advantage of XPS. Oil and care products engineered to extend the life of your ride, tested in the world's harshest conditions, and designed to optimize your vehicle's performance. Learn more at XPSlubricants.com

SUMMIT® X® WITH EXPERT PACKAGE

The ultimate deep-snow sled with features sharpened for technical terrain riding.



SUMMIT X WITH EXPERT PACKAGE
154 850 E-TEC TURBO R SHOWN

// WHAT'S NEW

- REV® Gen5 platform
- Rotax® 850 E-TEC® Turbo R engine available
- tMotion™ XT rear suspension with rigid rear arm
- Premium LED headlights
- PowderMax[1] X-Light 3 in. with full-width rods
- Narrower running boards and bodywork
- 10.25 in. color touchscreen display with BRP Connect available
- Adjustable limiter strap with more range
- Adjustable brake lever
- Pilot™ DS 4 skis



SUMMIT X WITH EXPERT PACKAGE
165 850 E-TEC TURBO R SHOWN

// PACKAGE HIGHLIGHTS

- Rotax 850 E-TEC engine available
- Premium shock package with stiffer calibration
- Short tunnel with lightweight snowflap
- RAS™ 3 front suspension with 34 in. ski stance
- E-TEC SHOT™ starter standard
- Full-length extruded profile running boards with large openings
- Flexible handguards
- Short riser block (120 mm/4.7 in.)
- Sea-level calibration available on select configurations
- Ultra compact and lightweight deep-snow seat
- Belt monitoring system
- Brake reservoir protector

ROTAX ENGINE	850 E-TEC TURBO R	850 E-TEC
Engine details	Liquid-cooled, two-stroke, turbocharged, eRAVE™	Liquid-cooled, two-stroke, eRAVE
Horsepower	180 up to 8,000 ft.	165
Cylinders – Displacement	2 – 849 cc	2 – 849 cc
Bore – Stroke (mm)	82 – 80.4	82 – 80.4
Carburation	E-TEC direct injection with additional booster injectors	E-TEC direct injection with additional booster injectors
Fuel type – Octane	Premium unleaded – 91	Premium unleaded – 91
Fuel tank (L/US gal)	36/9.5	36/9.5
Oil tank capacity (L/qt)	3.4/3.6	3.4/3.6

POWERTRAIN		
Drive clutch	pDrive™ with clickers	pDrive with clickers
Driven clutch	QRS Vent Plus	QRS Vent Plus
Drive sprocket pitch	89 mm/3.5 in.	89 mm/3.5 in.

DRY WEIGHT	
Dry weight	449 lb (154 in.) 456 lb (165 in.) 462 lb (175 in.) 430 lb (154 in.) 437 lb (165 in.)

DIMENSIONS	
Overall vehicle length	3,188 mm/125.5 in. (154 in.) 3,299 mm/129.9 in. (165 in.) 3,454 mm/136 in. (175 in.)
Overall vehicle width	1,080 to 1,110 mm/42.5 to 43.7 in.
Overall vehicle height	1,306 mm/51.4 in.
Ski stance	864 mm/34 in. adjustable
Track (Length x Width x Profile)	PowderMax X-Light: 154 x 16 x 3.0 in. 165 x 16 x 3.0 in. 175 x 16 x 3.0 in. (850 E-TEC Turbo R only)

COLOR
Platinum Silver / Manta Green (painted)
Timeless Black (painted)

SUSPENSION	
Front suspension	RAS 3
Front shock	HPG[1] Plus with lightweight springs
Front suspension travel	207 mm/8.2 in.
Rear suspension	tMotion XT
Center shock	HPG Plus with lightweight spring
Rear shock	KYB[1] Pro 36 EA-3
Rear suspension travel	264 mm/10.4 in.

FEATURES	
Platform	REV Gen5
Skis	Pilot DS 4
Seating	Deep-snow ultra-compact and lightweight
Handlebar	Tapered with J-hooks/Grab handle
Riser block height	120 mm/4.7 in.
Starter	SHOT
Reverse	RER™
Brake system	Brembo[1] with adj. lever
Heated throttle lever/grips	Standard
Gauge type	4.5 in. digital 10.25 in. touchscreen (opt.)
Windshield	Optional
Runner – Carbide	Square 3/8 in. – 4 in.
Bumpers (front/rear)	Std/Std

// FEATURE HIGHLIGHTS

1 REV Gen5 deep-snow platform

Lighter, narrower and more refined for improved technical riding and a next-level experience that's all about spending unforgettable days in the deep stuff.

2 Rotax 850 E-TEC Turbo R engine

The most powerful factory-built 2-stroke turbocharged engine in snowmobiling. Its instant response cranks out a full 180 HP up to 8,000 feet of elevation. Sophisticated design keeps weight down and integrates flawlessly with the REV Gen5 chassis for maximum agility. Factory install ensures peace of mind and incredible reliability.

3 PowderMax X-Light with full-width rods

This lighter, redesigned track unique to the Expert package, has a stiffer edge that complements the tMotion XT for more rigidity in the rear skid.



SUMMIT X WITH EXPERT PACKAGE
165 850 E-TEC TURBO R SHOWN

4 tMotion™ XT with rigid rear arm

In addition to 3 lbs of weight savings and increased capacity, the tMotion XT dons a locked rear arm for more rigidity in technical maneuvers.

5 10.25 in. color touchscreen display with BRP Connect

A high-resolution infotainment system that puts an interactive, informative and customizable experience that's both seamless and simple, right at your fingertips.

6 E-TEC SHOT starter

Push-button start with almost no added weight. Uses energy stored in the lightweight ultracapacitor to turn the magneto and with E-TEC technology, start the engine.

SUMMIT® X®

Longer climbs, tighter tree lines and deeper powder.



SUMMIT X
154 850 E-TEC SHOWN



SUMMIT X
165 850 E-TEC TURBO R SHOWN

// WHAT'S NEW

- REV® Gen5 platform
- Rotax® 850 E-TEC® Turbo R engine available
- tMotion™ X rear suspension
- Premium LED headlights
- PowderMax[1] X-Light 3 in. with FlexEdge[1] available
- Narrower running boards and body work
- 10.25 in. color touchscreen display with BRP Connect available
- RAS™ 3 front suspension with 34 in. ski stance

// PACKAGE HIGHLIGHTS

- Rotax 850 E-TEC engine available
- Short tunnel with lightweight snowflap
- E-TEC SHOT™ starter available
- Full-length extruded profile running boards with large openings
- Low handlebar strap
- Sea-level calibration available on select configurations
- Compact and lightweight deep-snow seat
- Pilot DS 3 skis
- Belt monitoring system

ROTAX ENGINE	850 E-TEC TURBO R	850 E-TEC
Engine details	Liquid-cooled, two-stroke, turbocharged, eRAVE™	Liquid-cooled, two-stroke, eRAVE
Horsepower	180 up to 8,000 ft.	165
Cylinders – Displacement	2 – 849 cc	2 – 849 cc
Bore – Stroke (mm)	82 – 80.4	82 – 80.4
Carburation	E-TEC direct injection with additional booster injectors	E-TEC direct injection with additional booster injectors
Fuel type – Octane	Premium unleaded – 91	Premium unleaded – 91
Fuel tank (L/US gal)	36/9.5	36/9.5
Oil tank capacity (L/qt)	3.4/3.6	3.4/3.6

POWERTRAIN		
Drive clutch Driven clutch	pDrive™ with clickers QRS Vent Plus	pDrive with clickers QRS Vent Plus
Drive sprocket pitch	89 mm/3.5 in.	89 mm/3.5 in.

DRY WEIGHT		
Dry weight	448 lb (154 in.) 454 lb (165 in.)	429 lb (154 in.) 436 lb (165 in.)

DIMENSIONS	
Overall vehicle length	3,188 mm/125.5 in. (154 in.) 3,299 mm/129.9 in. (165 in.)
Overall vehicle width	1,080 to 1,110 mm/42.5 to 43.7 in.
Overall vehicle height	1,395 mm/54.9 in.
Ski stance	864 mm/34 in. adjustable
Track (Length x Width x Profile)	PowderMax Light with FlexEdge: 154 x 16 x 2.5 in. 165 x 16 x 2.5 in. (sea-level opt. only) PowderMax X-Light with FlexEdge: 154 x 16 x 3.0 in. 165 x 16 x 3.0 in.

COLOR	
Catalyst Grey / Spartan Red	
Timeless Black (painted)	

SUSPENSION	
Front suspension	RAS 3
Front shock	HPG[1] Plus with lightweight springs
Front suspension travel	207 mm/8.2 in.
Rear suspension	tMotion X
Center shock	HPG Plus with lightweight spring
Rear shock	HPG Plus
Rear suspension travel	264 mm/10.4 in.

FEATURES	
Platform	REV Gen5
Skis	Pilot DS 3
Seating	Deep-snow compact and lightweight
Handlebar	Tapered with J-hooks/Grab handle
Riser block height	165 mm/6.5 in.
Starter	SHOT, Electric (opt. select models), Manual (opt. select models)
Reverse	RER™
Brake system	Brembo[1]
Heated throttle lever/grips	Standard
Gauge type	4.5 in. digital 10.25 in. touchscreen (opt.)
Windshield	Optional
Runner – Carbide	Square 3/8 in. – 4 in.
Bumpers (front/rear)	Std/Std

// FEATURE HIGHLIGHTS

1 REV Gen5 deep-snow platform

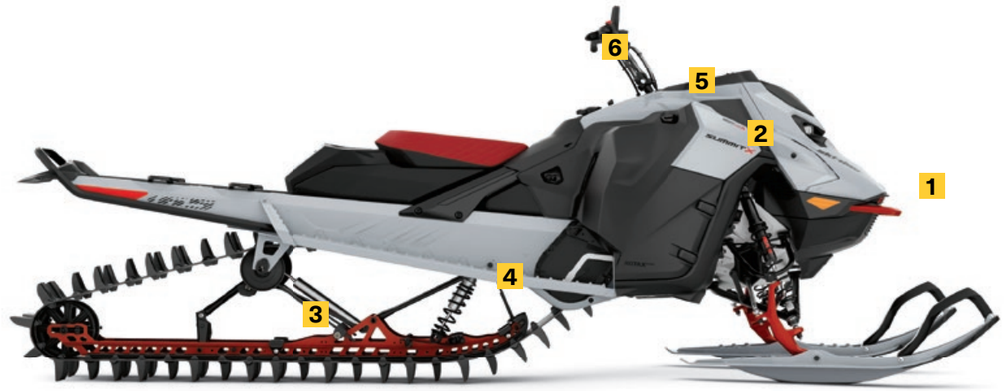
Lighter, narrower and more refined for improved technical riding and a next-level experience that's all about spending unforgettable days in the deep stuff.

2 Rotax 850 E-TEC Turbo R engine

The most powerful factory-built 2-stroke turbocharged engine in snowmobiling. Its instant response cranks out a full 180 HP up to 8,000 feet of elevation. Sophisticated design keeps weight down and integrates flawlessly with the REV Gen5 chassis for maximum agility. Factory install ensures peace of mind and incredible reliability.

3 HPG Plus shock package

Highest quality KYB[1] lightweight high-pressure gas shocks front and rear. Rebuildable and revalvable.



SUMMIT X
165 850 E-TEC TURBO R SHOWN

4 Improved profile running boards

Front-to-back extruded grid-style board allowing snow to pass through easily, preventing washout and trenching, plus clears footrests for grip. Flatter foot position for comfort and control.

5 10.25 in. color touchscreen display with BRP Connect

A high-resolution infotainment system that puts an interactive, informative and customizable experience that's both seamless and simple, right at your fingertips.

6 E-TEC SHOT starter

Push-button start with almost no added weight. Uses energy stored in the lightweight ultracapacitor to turn the magneto and with E-TEC technology, start the engine.

SUMMIT® EDGE®

This high-end in-season package is loaded with proven technical features.



SUMMIT EDGE
165 850 E-TEC SHOWN



SUMMIT EDGE
165 850 E-TEC SHOWN

// WHAT'S NEW

- REV® Gen5 platform
- tMotion™ X rear suspension
- Premium LED headlights
- PowderMax[1] X-Light 3 in. with FlexEdge[1] available
- Narrower running boards and body work

// PACKAGE HIGHLIGHTS

- Rotax® 850 E-TEC® engine
- High-quality HPG[1] shock package
- RAS™ 3 front suspension with lightweight ski spindle and revised ski stopper
- E-TEC SHOT™ starter standard
- Deep-snow running boards with large openings
- Compact and lightweight deep-snow seat
- Pilot™ DS 3 skis
- Belt monitoring system

ROTAX ENGINE	850 E-TEC
Engine details	Liquid-cooled, two-stoke, eRAVE™
Horsepower	165
Cylinders – Displacement	2 – 849 cc
Bore – Stroke (mm)	82 – 80.4
Carburation	E-TEC direct injection with additional booster injectors
Fuel type – Octane	Premium unleaded – 91
Fuel tank (L/US gal)	36/9.5
Oil tank capacity (L/qt)	3.4/3.6

POWERTRAIN	
Drive clutch	pDrive™ with clickers
Driven clutch	QRS Vent Plus
Drive sprocket pitch	89 mm/3.5 in.

DRY WEIGHT	
Dry weight	445 lb (154 in.) 448 lb (165 in.) 454 lb (175 in.)

DIMENSIONS	
Overall vehicle length	3,188 mm/125.5 in. (154 in.) 3,299 mm/129.9 in. (165 in.) 3,454 mm/136 in. (175 in.)
Overall vehicle width	1,080 to 1,110 mm/42.5 to 43.7 in.
Overall vehicle height	1,395 mm/54.9 in.
Ski stance	930 mm/36 in. adjustable
Track (Length x Width x Profile)	PowderMax Light with FlexEdge: 154 x 16 x 2.5 in. PowderMax X-Light with FlexEdge: 154 x 16 x 3.0 in. 165 x 16 x 3.0 in. 175 x 16 x 3.0 in.

COLOR
Catalyst Grey / Neo Yellow
Timeless Black (painted)

SUSPENSION	
Front suspension	RAS 3
Front shock	HPG
Front suspension travel	215 mm/8.5 in.
Rear suspension	tMotion
Center shock	HPG
Rear shock	HPG
Rear suspension travel	264 mm/10.4 in.

FEATURES	
Platform	REV Gen5
Skis	Pilot DS 3
Seating	Deep-snow compact and lightweight
Handlebar	Tapered U-shaped aluminum with J-hooks/Low grab handle
Riser block height	165 mm/6.5 in.
Starter	SHOT
Reverse	RER™
Brake system	Brembo[†]
Heated throttle lever/grips	Standard
Gauge type	4.5 in. digital
Windshield	Optional
Runner – Carbide	Square 3/8 in. – 4 in.
Bumpers (front/rear)	Std/Std

// FEATURE HIGHLIGHTS

1 REV Gen5 deep-snow platform
Lighter, narrower and more refined for improved technical riding and a next-level experience that's all about spending unforgettable days in the deep stuff.

2 Rotax 850 E-TEC engine
Incredible power and unmatched dynamic response with exclusive E-TEC direct-injection technology. Exceptional, proven durability and excellent fuel and oil economy.

3 Short tunnel
Shorter tunnel length without snowflap for greater deep-snow capabilities with more clearance and lighter overall weight. Standard rear fender with LinQ-ready attachment points.



SUMMIT EDGE
165 850 E-TEC SHOWN

4 High-quality HPG shock package
Extremely capable high-pressure gas shocks by KYB.[†]

5 tMotion X rear suspension
With 90% new parts, this complete redesign increases capacity and reduces weight by 2.5 lbs.

6 E-TEC SHOT starter
Push-button start with almost no added weight. Uses energy stored in the lightweight ultracapacitor to turn the magneto and with E-TEC technology, start the engine.

SUMMIT® SP®

An excellent deep-snow machine for any rider.



SUMMIT SP
165 850 E-TEC SHOWN



SUMMIT SP
165 850 E-TEC SHOWN

// WHAT'S NEW

- REV® Gen5 platform
- tMotion™ X rear suspension
- LED headlights
- PowderMax† X-Light 3 in. with FlexEdge† available
- Narrower running boards and body work

// PACKAGE HIGHLIGHTS

- Rotax® 850 E-TEC® engine
- High-quality HPG† shock package
- RAS™ 3 front suspension with lightweight ski spindle and revised ski stopper
- E-TEC SHOT™ starter available
- Deep-snow running boards with large openings
- Glove box with 3.5 L of storage
- Low handlebar strap
- Pilot™ DS 3 skis
- Belt monitoring system

ROTAX ENGINE	850 E-TEC
Engine details	Liquid-cooled, two-stroke, eRAVE™
Horsepower	165
Cylinders – Displacement	2 – 849 cc
Bore – Stroke (mm)	82 – 80.4
Carburation	E-TEC direct injection with additional booster injectors
Fuel type – Octane	Premium unleaded – 91
Fuel tank (L/US gal)	36/9.5
Oil tank capacity (L/qt)	3.4/3.6

POWERTRAIN	
Drive clutch	pDrive™ with clickers
Driven clutch	QRS Vent Plus
Drive sprocket pitch	73 mm/2.86 in. (146 in.) 89 mm/3.5 in. (154 – 165 in.)

DRY WEIGHT	
Dry weight	447 lb (146 in.) 443 lb (154 in.) 447 lb (165 in.)

DIMENSIONS	
Overall vehicle length	3,208 mm/122.4 in. (146 in.) 3,318 mm/130.6 in. (154 in.) 3,451 mm/135.9 in. (165 in.)
Overall vehicle width	1,080 to 1,110 mm/42.5 to 43.7 in.
Overall vehicle height	1,395 mm/54.9 in.
Ski stance	930 mm/36 in. adjustable
Track (Length x Width x Profile)	PowderMax II with FlexEdge: 146 x 16 x 2.5 in. PowderMax Light with FlexEdge: 154 x 16 x 2.5 in. 165 x 16 x 2.5 in. PowderMax X-Light with FlexEdge: 154 x 16 x 3.0 in. 165 x 16 x 3.0 in.

COLOR	
Catalyst Grey / Neo Yellow	
Timeless Black (painted)	

SUSPENSION	
Front suspension	RAS 3
Front shock	HPG
Front suspension travel	215 mm/8.5 in.
Rear suspension	tMotion X
Center shock	HPG
Rear shock	HPG
Rear suspension travel	264 mm/10.4 in.

FEATURES	
Platform	REV Gen5
Skis	Pilot DS 3
Seating	Deep-snow
Handlebar	Tapered with J-hooks/Grab handle
Riser block height	165 mm/6.5 in.
Starter	Electric, SHOT (opt.), Manual (opt. select models)
Reverse	RER™
Brake system	Brembo†
Heated throttle lever/grips	Standard
Gauge type	4.5 in. digital
Windshield	Optional
Runner – Carbide	Square 3/8 in. – 4 in.
Bumpers (front/rear)	Std/Std

// FEATURE HIGHLIGHTS

1 REV Gen5 deep snow platform
Lighter, narrower and more refined for improved technical riding and a next-level experience that's all about spending unforgettable days in the deep stuff.

2 PowderMax X-Light with FlexEdge Track
Refreshed with a new lug pattern and optimized to trim weight, this new track brings faster track speeds and better traction.

3 Lightweight ski spindle
Lightweight alloy spindle with revised geometry and new ski stopper to reduce ski drag for more predictable handling and a confidence-inspiring ride in technical sidehills and rough terrain.



SUMMIT SP
165 850 E-TEC SHOWN

4 High-quality HPG shock package
Extremely capable high-pressure gas shocks by KYB.†

5 tMotion X rear suspension
With 90% new parts, this complete redesign increases capacity and reduces weight by 2.5 lbs.

6 E-TEC SHOT starter
Push-button start with almost no added weight. Uses energy stored in the lightweight ultracapacitor to turn the magneto and with E-TEC technology, start the engine.

SUMMIT® NEO®

A brand new sled with compact ergonomics that gives riders of any age a less intimidating experience with a full-size fun factor.

// PACKAGE HIGHLIGHTS

- REV® Gen4 platform
- Compact ergonomics
- Rotax 600 EFI – 40 engine
- RAS™ 3 front suspension
- Neo rear suspension
- Motion control shocks
- 146 x 14 x 1.6 Cobra† with FlexEdge† track
- Pilot™ DS 2 skis
- Electric start
- RER™ reverse
- pDrive™ clutch

// NEO+ PACKAGE

- Rotax® 600 EFI – 55 engine
- HPG† Front shocks
- 146 x 15 x 1.75 Hurricane† with FlexEdge track
- Low mountain strap
- Handguards



SUMMIT NEO SHOWN



SUMMIT NEO+ SHOWN

ROTAX ENGINE	600 EFI – 55	600 EFI – 40
Engine details	Liquid-cooled, two-stroke	Liquid-cooled, two-stroke
Horsepower	55	40
Cylinders – Displacement	2 – 599.4 cc	2 – 599.4 cc
Bore – Stroke (mm)	72.3 – 73	72.3 – 73
Carburation	EFI	EFI
Fuel type – Octane	Regular unleaded – 87	Regular unleaded – 87
Fuel tank (L/US gal)	36/9.5	36/9.5
Oil tank capacity (L/qt)	3.4/3.6	3.4/3.6

POWERTRAIN		
Drive clutch Driven clutch	pDrive QRS Lite	pDrive QRS Lite
Drive sprocket pitch	73 mm/2.86 in.	73 mm/2.86 in.

DRY WEIGHT		
Dry weight	430 lb (Neo+)	419 lb (Neo)

DIMENSIONS	
Overall vehicle length	3,174 mm/125 in.
Overall vehicle width	1,080 to 1,110 mm/42.5 to 43.7 in.
Overall vehicle height	1,095 mm/43 in.
Ski stance	864 mm/34 in. adjustable
Track (Length x Width x Profile)	Cobra with FlexEdge (Neo): 146 x 14 x 1.35 in. Hurricane with FlexEdge (Neo+): 146 x 15 x 1.75 in.

COLOR
Neo Yellow / Catalyst Grey (Neo)
Neo Yellow / Black (Neo+)

SUSPENSION	
Front suspension	RAS 3
Front shock	Motion Control (Neo)/HPG (Neo+)
Front suspension travel	196 mm/7.7 in.
Rear suspension	Neo
Center shock	Torsion spring
Rear shock	Motion Control
Rear suspension travel	220 mm/8.7 in.

FEATURES	
Platform	REV Gen4
Skis	Pilot DS 2
Seating	Deep-snow compact and lightweight
Handlebar	Narrow standard with J-hooks Grab handle (Neo+)
Riser block height	90 mm/3.5 in.
Starter	Electric
Reverse	RER
Brake system	Brembo†
Heated throttle lever/grips	Standard
Gauge type	4.5 in. digital
Windshield	Optional
Runner – Carbide	Square 3/8 in. (optional)
Bumpers (front/rear)	Std/Std

// FEATURE HIGHLIGHTS



SUMMIT NEO+ SHOWN

1 REV Gen4 Neo off-trail platform

Built to go just about anywhere and loaded with mountain-inspired features for traction and flotability. The new Summit Neo re-imagines the REV Gen4 platform with a compact feel and delivers insane value to riders of any experience level.

2 Compact Ergonomics

Makes the vehicule easier to control and less intimidating. Includes lower vehicle height, smaller seat, lower handlebars, narrow handlebar grips and a shorter deplacement throttle lever.

3 600 EFI – 40 & 55 engines

Plenty of horsepower kick for a variety of experience levels and a truly high degree of reliability and ease of use with this electronic fuel injection two-stroke. Standard with electric start.

FREERIDE™

Live large, live free
and go big.



FREERIDE 165
850 E-TEC TURBO R SHOWN

// WHAT'S NEW

- REV® Gen5 platform
- Rotax® 850 E-TEC® Turbo R engine available
- tMotion™ X rear suspension
- Premium LED headlights
- PowderMax[1] X-Light 3 in. with FlexEdge[1] available
- Narrower running boards and body work
- 10.25" color touchscreen display with BRP Connect available
- Adjustable brake lever

// PACKAGE HIGHLIGHTS

- Rotax 850 E-TEC engine available
- High-performance KYB[1] Pro shock package with lightweight springs
- Short tunnel with lightweight snowflap
- RAS™ 3 front suspension with lightweight ski spindle and revised ski stopper
- E-TEC SHOT™ starter standard
- Full-length extruded profile running boards with large openings
- Sway bar quick-disconnect
- Low handlebar strap
- Sea-level calibration available on select configurations
- Compact and lightweight deep-snow seat
- Pilot™ DS 3 skis
- Belt monitoring system

ROTAX ENGINE	850 E-TEC TURBO R	850 E-TEC
Engine details	Liquid-cooled, two-stroke, turbocharged, eRAVE™	Liquid-cooled, two-stroke, eRAVE
Horsepower	180 up to 8,000 ft.	165
Cylinders – Displacement	2 – 849 cc	2 – 849 cc
Bore – Stroke (mm)	82 – 80.4	72.3 – 73
Carburation	E-TEC direct injection with additional booster injectors	E-TEC direct injection with additional booster injectors
Fuel type – Octane	Premium unleaded – 91	Premium unleaded – 91
Fuel tank (L/US gal)	36/9.5	36/9.5
Oil tank capacity (L/qt)	3.4/3.6	3.4/3.6

POWERTRAIN		
Drive clutch Driven clutch	pDrive™ with clickers QRS Vent Plus	pDrive with clickers QRS Vent Plus
Drive sprocket pitch	89 mm/3.5 in.	73 mm/2.86 in. (146 in.) 89 mm/3.5 in. (154–165 in.)

DRY WEIGHT		
Dry weight	461 lb (154 in.) 466 lb (165 in.)	447 lb (146 in.) 442 lb (154 in.) 446 lb (165 in.)

DIMENSIONS	
Overall vehicle length	3,058 mm/120.4 in. (146 in.) 3,188 mm/125.5 in. (154 in.) 3,299 mm/129.9 in. (165 in.)
Overall vehicle width	1,080 to 1,110 mm/42.5 to 43.7 in.
Overall vehicle height	1,395 mm/54.9 in.
Ski stance	930 mm/36 in. adjustable
Track (Length x Width x Profile)	PowderMax II with FlexEdge: 146 x 16 x 2.5 in. PowderMax Light with FlexEdge: 154 x 16 x 2.5 in. 165 x 16 x 2.5 in. (sea-level opt. only) PowderMax X-Light with FlexEdge: 154 x 16 x 3.0 in. 165 x 16 x 3.0 in.

COLOR	
Timeless Black / Spartan Red (painted)	

SUSPENSION	
Front suspension	RAS 3
Front shock	KYB Pro 36 EA-3 w/ lightweight springs
Front suspension travel	215 mm/8.5 in.
Rear suspension	tMotion X
Center shock	KYB Pro 40 EA-3 w/ lightweight spring
Rear shock	KYB Pro 40 EA-3
Rear suspension travel	264 mm/10.4 in.

FEATURES	
Platform	REV Gen5
Skis	Pilot DS 3
Seating	Deep-snow compact and lightweight
Handlebar	Tapered U-shaped aluminum with J-hooks/Low grab handle
Riser block height	165 mm/6.5 in.
Starter	850 E-TEC: SHOT, Electric (opt. Select models) 850 E-TEC Turbo R: SHOT
Reverse	RER™
Brake system	Brembo[1]
Heated throttle lever/grips	Standard
Gauge type	4.5 in. digital 10.25 in. touchscreen (opt.)
Windshield	Optional
Runner – Carbide	Square 3/8 in. – 4 in.
Bumpers (front/rear)	Std/Std

// FEATURE HIGHLIGHTS

1 REV Gen5 deep snow platform

Lighter, narrower and more refined for improved technical riding and a next-level experience that's all about spending unforgettable days in the deep stuff.

2 Rotax 850 E-TEC Turbo R engine

The first-ever factory-built 2-stroke turbocharged engine in any industry. It boasts instant response and a full 165 HP up to 8,000 feet of elevation. Sophisticated design integrates flawlessly with the REV Gen4 platform for maximum agility. Factory installation ensures peace of mind and incredible reliability.

3 tMotion™ X rear suspension with reinforced rails

With 90% new parts, this complete redesign increases capacity and reduces weight by 2.5 lbs. Reinforced rails ensure maximum durability in those big drops and jumps.



FREERIDE 165
850 E-TEC TURBO R SHOWN

4 High-performance KYB Pro shock package with lightweight springs

Lightweight, extreme-capability, extreme-durability shocks for control in the toughest conditions. Easy adjust-equipped for dialed-in compression.

5 10.25 in. color touchscreen display with BRP Connect

A high-resolution infotainment system that puts an interactive, informative and customizable experience that's both seamless and simple, right at your fingertips.

6 E-TEC SHOT starter

Push-button start with almost no added weight. Uses energy stored in the lightweight ultracapacitor to turn the magneto and with E-TEC technology, starts the engine.

BACKCOUNTRY™ X-RS®

The most aggressive crossover vehicle with snocross attitude and go-anywhere capability.



BACKCOUNTRY X-RS
154 850 E-TEC SHOWN

// PACKAGE HIGHLIGHTS

- Rotax® 850 E-TEC® engine
- High-performance KYB[1] Pro shock package
- 7.8 in. wide LCD display with BRP Connect available
- RAS™ X front suspension
- cMotion™ rear suspension
- E-TEC SHOT™ starter available
- RS running boards
- Glove box with 4 L/1 gal of storage
- *ULTIMATE* color options with panel wrap: Supreme look and finish, maximum protection
- Backlit multifunction handlebar controls
- pDrive™ clutch with clickers
- Transparent handguards
- Open toe-hold
- Pilot™ DS 2 skis
- Adjustable ski stance
- Belt monitoring system

ROTAX ENGINE	850 E-TEC
Engine details	Liquid-cooled, two-stroke, eRAVE™
Horsepower	165
Cylinders – Displacement	2 – 849 cc
Bore – Stroke (mm)	82 – 80.4
Carburation	E-TEC direct injection with additional booster injectors
Fuel type – Octane	Premium unleaded – 91
Fuel tank (L/US gal)	36/9.5
Oil tank capacity (L/qt)	3.4/3.6

POWERTRAIN	
Drive clutch Driven clutch	pDrive with clickers QRS Vent Plus
Drive sprocket pitch	73 mm/2.86 in.

DRY WEIGHT	
Dry weight	472 lb (146 in.) 485 lb (154 in.)

DIMENSIONS	
Overall vehicle length	3,174 mm/125 in. (146 in.) 3,284 mm/129.3 in. (154 in.)
Overall vehicle width	1,140 to 1,180 mm/44.9 to 46.5 in.
Overall vehicle height	1,283 mm/50.5 in.
Ski stance	1,000 mm / 39 in. adjustable
Track (Length x Width x Profile)	Cobra: 146 x 15 x 1.6 in. Ice Cobra: 146 x 15 x 1.6 in. PowderMax[1]: 146 x 16 x 2.0 in. 154 x 16 x 2.0 in. 154 x 16 x 2.5 in.

COLOR	
ULTIMATE Platinum Silver / Manta Green	
ULTIMATE Black	

SUSPENSION	
Front suspension	RAS X
Front shock	KYB Pro 36 R EA
Front suspension travel	220 mm/8.7 in.
Rear suspension	cMotion
Center shock	KYB Pro 40 EA
Rear shock	KYB Pro 40 EA
Rear suspension travel	239 mm/9.4 in. (154, 165 in.)

FEATURES	
Platform	REV® Gen4
Skis	Pilot DS 2
Seating	Trail performance
Handlebar	U-shaped aluminum with J-hooks/ Transparent handguards
Riser block height	120 mm/4.7 in.
Starter	Electric, SHOT (opt. select configurations)
Reverse	RER™
Brake system	Brembo[1]
Heated throttle lever/grips	Standard
Gauge type	7.2 in. digital Large panoramic 7.8 in. wide LCD color display in option
Windshield	Optional
Runner – Carbide	Round 7/16 in. – 4 in.
Bumpers (front/rear)	Std/Std

// FEATURE HIGHLIGHTS

1 Rotax 850 E-TEC engine

Next generation of the most advanced direct-injection 2-stroke engine technology. Designed for reliability and durability with proven 4-stroke and long-lasting automotive technologies.

2 High-performance KYB Pro shock package

Extreme-capability, extreme-durability shocks for control in the toughest conditions. Easy adjust-equipped for dialed-in compression and rebound.

3 cMotion 146 or 154 rear suspension

Crossover-specific suspension uses best principles of the rMotion™ trail and tMotion™ mountain skids for confident cornering and agile boondocking.



BACKCOUNTRY X-RS
146 850 E-TEC SHOWN

4 Large panoramic 7.8 in. wide LCD color display available

Wide-screen full-color display lets riders truly customize their ride from behind the bars. Choose your preferred sled info, and see app-integrated information in a split-screen format with GPS, Bluetooth[1] music, helmet-to-helmet communication and more.

5 RS running boards

Designed for aggressive stand-up riding, they are flatter for most of their length, wider and strong. Thicker aluminum sheet, plus front and rear reinforcements to withstand tough landings.

6 E-TEC SHOT starter

Push-button start with almost no added weight. Uses energy stored in the lightweight ultracapacitor to turn the magneto and with E-TEC technology, start the engine.

BACKCOUNTRY™ X®

A 50-50 sled with the most advanced technology, plus off-trail capability and rough-trail performance.



BACKCOUNTRY X
146 850 E-TEC SHOWN



BACKCOUNTRY X
146 850 E-TEC SHOWN

// PACKAGE HIGHLIGHTS

- Rotax® 850 E-TEC® engine
- High-performance shock package
- 7.8 in. wide LCD display with BRP Connect available
- RAS™ X crossover front suspension
- cMotion™ rear suspension
- E-TEC SHOT™ starter available
- Improved deep-snow running boards with large openings
- Glove box with 4 L/1 gal of storage
- Low windshield
- Backlit multifunction handlebar controls
- pDrive™ clutch with clickers
- Transparent handguards
- Open toe-hold
- Pilot™ DS 2 skis
- Adjustable ski stance
- Belt monitoring system

ROTAX ENGINE	850 E-TEC
Engine details	Liquid-cooled, two-stroke, eRAVE™
Horsepower	165
Cylinders – Displacement	2 – 849 cc
Bore – Stroke (mm)	82 – 80.4
Carburation	E-TEC direct injection with additional booster injectors
Fuel type – Octane	Premium unleaded – 91
Fuel tank (L/US gal)	36/9.5
Oil tank capacity (L/qt)	3.4/3.6

POWERTRAIN	
Drive clutch	pDrive with clickers
Driven clutch	QRS Vent Plus
Drive sprocket pitch	73 mm/2.86 in.

DRY WEIGHT	
Dry weight	462 lb

DIMENSIONS	
Overall vehicle length	3,174 mm/125 in.
Overall vehicle width	1,140 to 1,180 mm/44.9 to 46.5 in.
Overall vehicle height	1,283 mm/50.5 in.
Ski stance	1,000 mm/39 in. adjustable
Track (Length x Width x Profile)	Cobra: 146 x 15 x 1.6 in. Ice Cobra: 146 x 15 x 1.6 in. PowderMax†: 146 x 16 x 2.0 in.

COLOR
Catalyst Grey / Spartan Red
Timeless Black

SUSPENSION	
Front suspension	RAS X
Front shock	HPG† Plus
Front suspension travel	220 mm/8.7 in.
Rear suspension	cMotion
Center shock	HPG Plus
Rear shock	KYB† Pro 36 EA
Rear suspension travel	239 mm/9.4 in.

FEATURES	
Platform	REV® Gen4
Skis	Pilot DS 2
Seating	Trail performance
Handlebar	U-shaped aluminum with J-hooks/ Transparent handguards
Riser block height	120 mm/4.7 in.
Starter	Electric, SHOT (opt. select configurations)
Reverse	RER™
Brake system	Brembo†
Heated throttle lever/grips	Standard
Gauge type	7.2 in. digital Large panoramic 7.8 in. wide LCD color display in option
Windshield	360 mm/14 in.
Runner – Carbide	Square 3/8 in. – 4 in.
Bumpers (front/rear)	Std/Std

// FEATURE HIGHLIGHTS

1 Rotax 850 E-TEC engine

Next generation of the most advanced direct-injection 2-stroke engine technology. Designed for reliability and durability with proven 4-stroke and long-lasting automotive technologies.

2 Premium shock package

HPG Plus front and center shocks. KYB Pro 36 Easy-Adjust rear shock featuring compression adjustment. All four shocks are aluminum and rebuildable/revalvable.

3 cMotion rear suspension

Crossover-specific suspension uses best principles of the rMotion™ trail and tMotion™ mountain skids for confident cornering and agile boondocking.



BACKCOUNTRY X
146 850 E-TEC SHOWN

4 Large panoramic 7.8 in. wide LCD color display available

Wide-screen full-color display lets riders truly customize their ride from behind the bars. Choose your preferred sled info, and see app-integrated information in a split-screen format with GPS, Bluetooth† music, helmet-to-helmet communication and more.

5 Pilot DS2 skis

Single keel with excellent sidehilling bite, thanks to thin outer edges. Narrow and thin, yet stiff. Shorter behind the spindle with flat tail for easier counter-steering and sidehilling.

6 E-TEC SHOT starter

Push-button start with almost no added weight. Uses energy stored in the lightweight ultracapacitor to turn the magneto and with E-TEC technology, start the engine.

BACKCOUNTRY™

Loaded with crossover-specific features for spending equal time riding on- or off-trail.



BACKCOUNTRY
600R E-TEC SHOWN



BACKCOUNTRY
146 850 E-TEC SHOWN

// WHAT'S NEW

- Optional PowderMax[1] 146 x 16 x 2.0 in. track

// PACKAGE HIGHLIGHTS

- Rotax® 850 E-TEC® and 600R E-TEC engines available
- High-quality HPG[1] shock package
- 4.5 in. digital display
- RAS™ X crossover front suspension
- cMotion™ rear suspension
- Electric starter
- Improved deep-snow running boards with large openings
- Glove box with 4 L/1 gal of storage
- Low windshield with deflectors
- pDrive™ clutch with clickers
- Transparent handguards
- Open toe-hold
- Pilot™ DS 2 skis
- Adjustable ski stance
- Belt monitoring system (850 E-TEC only)

ROTAX ENGINE	850 E-TEC	600R E-TEC
Engine details	Liquid-cooled, two-stroke, eRAVE™	Liquid-cooled, two-stroke, eRAVE
Horsepower	165	125
Cylinders – Displacement	2 – 849 cc	2 – 599.4 cc
Bore – Stroke (mm)	82 – 80.4	72.3 – 73
Carburation	E-TEC direct injection with additional booster injectors	E-TEC direct injection
Fuel type – Octane	Premium unleaded – 91	Premium unleaded – 91
Fuel tank (L/US gal)	36/9.5	36/9.5
Oil tank capacity (L/qt)	3.4/3.6	3.4/3.6

POWERTRAIN		
Drive clutch Driven clutch	pDrive with clickers QRS Vent Plus	pDrive with clickers QRS Vent
Drive sprocket pitch	73 mm/2.86 in.	73 mm/2.86 in.

DRY WEIGHT		
Dry weight	482 lb	466 lb

DIMENSIONS	
Overall vehicle length	3,174 mm/125 in.
Overall vehicle width	1,140 to 1,180 mm/44.9 to 46.5 in.
Overall vehicle height	1,283 mm/50.5 in.
Ski stance	1,000 mm/39 in. adjustable
Track (Length x Width x Profile)	Cobra: 146 x 15 x 1.6 in. PowderMax: 146 x 16 x 2.0 in.

COLOR
Catalyst Grey / Neo Yellow
Timeless Black

SUSPENSION	
Front suspension	RAS X
Front shock	HPG
Front suspension travel	220 mm/8.7 in.
Rear suspension	cMotion
Center shock	HPG
Rear shock	HPG
Rear suspension travel	239 mm/9.4 in.

FEATURES	
Platform	REV® Gen4
Skis	Pilot DS 2
Seating	Trail performance
Handlebar	U-shaped aluminum with J-hooks/ Transparent handguards
Riser block height	120 mm/4.7 in.
Starter	Electric
Reverse	RER™
Brake system	Brembo[1]
Heated throttle lever/grips	Standard
Gauge type	4.5 in. digital display
Windshield	360 mm/14 in.
Runner – Carbide	Square 3/8 in. – 4 in.
Bumpers (front/rear)	Std/Std

// FEATURE HIGHLIGHTS

1 Rotax 850 E-TEC and 600R E-TEC engines

Incredible power and unmatched dynamic response with exclusive E-TEC direct-injection technology. Plasma-coated, mono-block cylinders are used for exceptional durability, while the precision of E-TEC injection means you get excellent fuel and oil economy.

2 High-quality HPG shock package

Extremely capable high-pressure gas shocks by KYB.[1]

3 cMotion rear suspension

Crossover-specific suspension uses best principles of the rMotion™ trail and tMotion™ mountain skids for confident cornering and agile boondocking.



BACKCOUNTRY
146 850 E-TEC SHOWN

4 Deep-snow running boards

Massive, strategically shaped openings keep the boards clear. A tall extruded edge adds stiffness and has aggressive boot grips.

5 Pilot DS 2 skis

Single keel with excellent sidehilling bite, thanks to thin outer edges. Narrow and thin, yet stiff. Shorter behind the spindle with flat tail for easier counter-steering and sidehilling.

6 pDrive clutch with clickers

Clicker ramps allow easy adjustment for top RPM. Ultra-responsive shifting, impressive RMP consistency, lightweight and maintenance-free.

BACKCOUNTRY™ SPORT

For the value-oriented 50-50 rider wanting an advanced platform and modern engine technology.



BACKCOUNTRY SPORT
146 600 EFI SHOWN

// PACKAGE HIGHLIGHTS

- Rotax® 600 EFI engine
- 4.5 in. digital display
- RAS™ X crossover front suspension
- cMotion™ rear suspension
- Electric starter
- Deep-snow running boards with large openings
- Glove box with 4 L/1 gal of storage
- Low windshield
- pDrive™ clutch
- Brembo† brake
- Standard with two sets of LinQ® attachment points
- Pilot™ DS 2 skis
- Adjustable ski stance

ROTAX ENGINE	600 EFI
Engine details	Liquid-cooled, two-stroke
Horsepower	85
Cylinders – Displacement	2 – 599.4 cc
Bore – Stroke (mm)	72.3 – 73
Carburation	EFI
Fuel type – Octane	Regular unleaded – 87
Fuel tank (L/US gal)	36/9.5
Oil tank capacity (L/qt)	3.4/3.6

POWERTRAIN	
Drive clutch	pDrive
Driven clutch	QRS
Drive sprocket pitch	73 mm/2.86 in.

DRY WEIGHT	
Dry weight	446 lb

DIMENSIONS	
Overall vehicle length	3,174 mm/125 in.
Overall vehicle width	1,140 to 1,180 mm/44.9 to 46.5 in.
Overall vehicle height	1,283 mm/50.5 in.
Ski stance	1,000 mm/39 in. adjustable
Track (Length x Width x Profile)	Cobra: 146 x 15 x 1.35 in. PowderMax†: 146 x 16 x 2.0 in. opt.

COLOR
Neo Yellow / Black

SUSPENSION	
Front suspension	RAS X
Front shock	Motion Control
Front suspension travel	220 mm/8.7 in.
Rear suspension	cMotion
Center shock	Motion Control
Rear shock	HPG†
Rear suspension travel	239 mm/9.4 in.

FEATURES	
Platform	REV® Gen4
Skis	Pilot DS 2
Seating	Trail compact
Handlebar	U-shaped aluminum with J-hooks
Riser block height	120 mm/4.7 in.
Starter	Electric
Reverse	RER™
Brake system	Brembo
Heated throttle lever/grips	Standard
Gauge type	4.5 in. digital display
Windshield	360 mm/14 in.
Runner – Carbide	Square 3/8 in. – 4 in.
Bumpers (front/rear)	Std/Std

// FEATURE HIGHLIGHTS

1 Rotax 600 EFI engine
600cc-class fuel-injected engine delivering 85 horsepower and outstanding economy at an incredible value. Design based on the 600R E-TEC® with proven reliability and ease of ownership at its core with an outsized fun factor.

2 Electric start
Saves time and energy, adding immense value for the rider.

3 cMotion rear suspension
Crossover-specific suspension uses best principles of the rMotion™ trail and tMotion™ mountain skids for confident cornering and agile boondocking.



BACKCOUNTRY SPORT
146 600 EFI SHOWN

4 RAS X crossover front suspension
An updated version of our RAS X trail front end for capability on- and off-trail. Light steering feel optimized for crossover usage with adjustable stance.

5 Pilot DS2 skis
Single keel with excellent sidehilling bite, thanks to thin outer edges. Narrow and thin, yet stiff. Shorter behind the spindle with flat tail for easier counter-steering and sidehilling.

6 Ergo-step side panels
Design offers natural progression to any of three riding positions for cornering on-trail – from neutral to extreme-forward position.

RENEGADE® X-RS® WITH COMPETITION PACKAGE

Powerful, lightweight and highly capable race-ready features.



RENEGADE X-RS
WITH COMPETITION PACKAGE SHOWN

// PACKAGE HIGHLIGHTS

- Rotax® 600R E-TEC® engine
- Racing KYB† Pro shock package
- 7.2 in. digital display
- RAS™ X front suspension
- rMotion™ X rear suspension
- Manual starter
- RS running boards
- pDrive™ clutch
- Low windshield with deflectors
- Two-ply Ripsaw† II Track
- Forward steering post position
- Transparent handguards
- Reinforced rails
- Open toe-hold
- Pilot™ X skis
- Low-profile 90mm riser block
- Backlit multifunction handlebar controls

ROTAX ENGINE	600R E-TEC
Engine details	Liquid-cooled, two-stroke, eRAVE™
Horsepower	125
Cylinders – Displacement	2 – 599.4 cc
Bore – Stroke (mm)	72.3 – 73
Carburation	E-TEC direct injection
Fuel type – Octane	Premium unleaded – 91
Fuel tank (L/US gal)	36/9.5
Oil tank capacity (L/qt)	3.4/3.6

POWERTRAIN	
Drive clutch	pDrive with clickers
Driven clutch	QRS
Drive sprocket pitch	73 mm/2.86 in.

DRY WEIGHT	
Dry weight	468 lb

DIMENSIONS	
Overall vehicle length	3,038 mm/119.6 in.
Overall vehicle width	1,209 – 1,232 – 1,255 mm/47.6 – 48.5 – 49.4 in.
Overall vehicle height	1,267 mm/49.9 in.
Ski stance	1,090 mm/43 in. adjustable
Track (Length x Width x Profile)	RipSaw II 2-ply: 137 x 15 x 1.25 in.

COLOR
Black

SUSPENSION	
Front suspension	RAS X
Front shock	KYB Pro 40 R EA
Front suspension travel	265 mm/10.4 in.
Rear suspension	rMotion™ X
Center shock	KYB Pro 40 EA (double-rate springs)
Rear shock	KYB Pro 40 EA
Rear suspension travel	292 mm/11.5 in.

FEATURES	
Platform	REV® Gen4
Skis	Pilot X
Seating	Trail performance
Handlebar	U-shaped aluminum with J-hooks/ Transparent handguards
Riser block height	90 mm/3.5 in.
Starter	Manual
Reverse	RER™
Brake system	Brembo†
Heated throttle lever/grips	Standard
Gauge type	7.2 in. digital display
Windshield	360 mm/14 in.
Runner – Carbide	Round 1/2 – 4 in.
Bumpers (front/rear)	Std/Std

// FEATURE HIGHLIGHTS

1 Rotax 600R E-TEC engine
The Rotax 600R E-TEC engine with second-generation E-TEC technology offers immediate throttle response, crisp acceleration while continuing to set the bar for reliability, and 2-stroke oil and fuel economy.

2 Competition shock package
The most robust shock package in the lineup for a race-ready setup.

3 Heavy-duty reinforcement
Competition-ready with reinforced rails and rear suspension plus heavy-duty track tensioner, acceleration link rods and arm extension.



RENEGADE X-RS
WITH COMPETITION PACKAGE SHOWN

4 RS riser
90 mm height for a more aggressive rider position.

5 Two-ply RipSaw racing track
Two-ply for extra durability. Excellent traction in all conditions.

6 Rack steering system
Derived from the MXZx race sled, further increases steering precision and straight tracking for a nimble and predictable ride in extreme bumps.

RENEGADE® X-RS®

A hard-charging, race-inspired machine with the most advanced features and technology.



RENEGADE X-RS
850 E-TEC SHOWN

// WHAT'S NEW

- REV® Gen5 platform (850 E-TEC® only)
- 10.25" color touchscreen display with BRP Connect available (850 E-TEC only)
- Smart-Shox™ semi-active suspension available with Pilot™ X or Pilot TX skis
- Premium LED headlights

// PACKAGE HIGHLIGHTS

- Rotax® 850 E-TEC and 900 ACE™ Turbo R engines available
- High-performance KYB† Pro shock package
- 7.8 in. wide LCD display with BRP Connect available (900 ACE Turbo R)
- RAS™ X front suspension
- rMotion™ X rear suspension
- Electric starter
- RS running boards
- pDrive™ clutch
- Forward steering post position (850 E-TEC)
- Rack steering system
- Forward adjustable riser
- Transparent handguards
- Open toe-hold
- Backlit multifunction handlebar controls

ROTAX ENGINE	850 E-TEC	900 ACE TURBO R
Engine details	Liquid-cooled, two-stroke, eRAVE™	Liquid-cooled, four-stroke D.O.H.C., dry sump, turbocharged
Horsepower	165	180
Cylinders – Displacement	2 – 849 cc	3 – 899 cc
Bore – Stroke (mm)	82 – 80.4	73 – 69.7
Carburation	E-TEC direct injection with additional booster injectors	EFI
Fuel type – Octane	Premium unleaded – 91	Premium unleaded – 91
Fuel tank (L/US gal)	36/9.5	36/9.5
Oil tank capacity (L/qt)	3.4/3.6	3.3/3.5

POWERTRAIN		
Drive clutch Driven clutch	pDrive with clickers QRS Vent	pDrive QRS Vent
Drive sprocket pitch	73 mm/2.86 in.	73 mm/2.86 in.

DRY WEIGHT		
Dry weight	496 lb	533 lb

DIMENSIONS	
Overall vehicle length	3,038 mm/119.6 in.
Overall vehicle width	1,209 – 1,232 – 1,255 mm/47.6 – 48.5 – 49.4 in.
Overall vehicle height	1,267 mm/49.9 in.
Ski stance	1,092 mm/43 in. adjustable
Track (Length x Width x Profile)	RipSaw†: 137 x 15 x 1.25 in. Ice Ripper† XT: 137 x 15 x 1.25 in. 137 x 15 x 1.5 in.

COLOR

Platinum Silver / Spartan Red

Black

SUSPENSION	
Front suspension	RAS X
Front shock	KYB Pro 36 EA-3 (REV Gen5) KYB Pro 36 EA (REV Gen4) KYB Pro Smart-Shox opt.
Front suspension travel	265 mm/10.4 in.
Rear suspension	rMotion X
Center shock	KYB Pro 40 EA-3 (REV Gen5) KYB Pro 40 EA (REV Gen4)
Rear shock	KYB Pro 40 EA-3 (REV Gen5) KYB Pro 40 EA (REV Gen4) KYB Pro Smart-Shox opt.
Rear suspension travel	292 mm/11.5 in.

FEATURES	
Platform	REV Gen5 (850 E-TEC only) REV Gen4
Skis	Pilot X Pilot TX (opt. w/ Smart-Shox)
Seating	Trail performance (2-stroke engines) Trail with storage (4-stroke engines)
Handlebar	U-shaped aluminum with J-hooks/ Transparent handguards
Riser block height	Adjustable 120 mm/4.7 in.
Starter	Electric
Reverse	RER™ (850 E-TEC) Electro-mechanical (900 ACE Turbo R)
Brake system	Brembo†
Heated throttle lever/grips	Standard
Gauge type	7.2 in. digital display 7.8 in. wide LCD color (opt. 900 ACE Turbo R) 10.25 in. touchscreen (opt. 850 E-TEC)
Windshield	Ultra-low (850 E-TEC), Optional (900 ACE Turbo R)
Runner – Carbide	Round 1/2 – 4 in.
Bumpers (front/rear)	Std/Std

// FEATURE HIGHLIGHTS

1 REV Gen5 trail platform

A sleek new design that brings a whole new level of refinement, connectivity and good looks to the trails.

2 Smart-Shox

An industry-first, Smart-Shox semi-active suspension instantly reads terrain and rider input to automatically dial in your suspension to give you the optimal ride in any conditions.

3 High-performance KYB Pro shock

Extreme capability, extreme durability shocks for control in the toughest conditions. Easy adjust-equipped for dialed in compression.



RENEGADE X-RS
850 E-TEC SHOWN

4 Rack steering system

Derived from the MXZx race sled, further increases steering precision and straight tracking for a nimble and predictable ride in extreme bumps.

5 10.25 in. color touchscreen display with BRP Connect

A high-resolution infotainment system that puts an interactive, informative and customizable experience that's both seamless and simple, right at your fingertips.

6 RS Running boards

Designed for aggressive stand-up riding, they are flatter for most of their length, wider and strong. Thicker aluminum sheet, plus front and rear reinforcements to withstand tough landings.

RENEGADE® X®

High-performance and high-tech features for the most demanding rider.



RENEGADE X
600R E-TEC SHOWN



RENEGADE X
850 E-TEC SHOWN

// WHAT'S NEW

- REV® Gen5 platform (850 E-TEC® only)
- 10.25" color touchscreen display with BRP Connect available (850 E-TEC only)
- Premium LED headlights

// PACKAGE HIGHLIGHTS

- Rotax® 850 E-TEC on REV Gen5 platform
- Rotax® 600R E-TEC and 900 ACE™ Turbo R available
- High-performance shock package
- 7.8 in. wide LCD display with BRP Connect available (900 ACE Turbo R)
- RAS™ X front suspension
- rMotion™ X rear suspension
- Electric starter
- pDrive™ clutch
- Forward adjustable riser
- Transparent handguards
- Backlit multifunction handlebar controls

ROTAX ENGINE	850 E-TEC	600R E-TEC	900 ACE TURBO R
Engine details	Liquid-cooled, two-stroke, eRAVE™	Liquid-cooled, two-stroke, eRAVE	Liquid-cooled, four-stroke D.O.H.C., dry sump, turbocharged
Horsepower	165	125	180
Cylinders – Displacement	2 – 849 cc	2 – 599.4 cc	3 – 899 cc
Bore – Stroke (mm)	82 – 80.4	72.3 – 73	73 – 69.7
Carburation	E-TEC direct injection with additional booster injectors	E-TEC direct injection	EFI
Fuel type – Octane	Premium unleaded – 91	Premium unleaded – 91	Premium unleaded – 91
Fuel tank (L/US gal)	36/9.5	36/9.5	36/9.5
Oil tank capacity (L/qt)	3.4/3.6	3.4/3.6	3.3/3.5

POWERTRAIN			
Drive clutch Driven clutch	pDrive with clickers QRS Vent	pDrive with clickers QRS	pDrive QRS Vent
Drive sprocket pitch	73 mm/2.86 in.	73 mm/2.86 in.	73 mm/2.86 in.

DRY WEIGHT			
Dry weight	486 lb	470 lb	524 lb

DIMENSIONS	
Overall vehicle length	3,038 mm/119.6 in.
Overall vehicle width	1,209 – 1,232 – 1,255 mm/47.6 – 48.5 – 49.4 in.
Overall vehicle height	1,267 mm/49.9 in.
Ski stance	1,090 mm / 43 in. adjustable
Track (Length x Width x Profile)	RipSaw†: 137 x 15 x 1.25 in. Ice Ripper†† XT: 137 x 15 x 1.25 in. 137 x 15 x 1.5 in.

COLOR
Neo Yellow / Black
Black

SUSPENSION	
Front suspension	RAS X
Front shock	HPG† Plus
Front suspension travel	243 mm/9.6 in.
Rear suspension	rMotion X
Center shock	HPG Plus
Rear shock	KYB† Pro 36 EA-3 (REV Gen5) KYB Pro 36 EA (REV Gen4)
Rear suspension travel	292 mm/11.5 in.

FEATURES	
Platform	REV Gen5 (850 E-TEC only) REV Gen4
Skis	Pilot™ X
Seating	Trail performance (2-stroke engines) Trail with storage (4-stroke engines)
Handlebar	U-shaped aluminum with J-hooks/ Transparent handguards
Riser block height	Adjustable-120 mm/4.7 in.
Starter	Electric
Reverse	RER™ (E-TEC engines) Electro-mechanic (ACE engines)
Brake system	Brembo†
Heated throttle lever/grips	Standard
Gauge type	7.2 in. digital
Windshield	360 mm/14 in.
Runner – Carbide	Round 7/16 – 4 in.
Bumpers (front/rear)	Std/Std

// FEATURE HIGHLIGHTS

1 REV Gen5 trail platform

A sleek new design that brings a whole new level of refinement, connectivity and good looks to the trails.

2 Rotax 850 E-TEC and 900 ACE Turbo R engines

Two incredibly powerful and reliable options, offering top performance for the most demanding riders.

3 Premium shock package

HPG Plus front and center shocks. KYB Pro 36 EA rear shock featuring compression adjustment with easy-adjust knob. All four shocks are aluminum and rebuildable/revalvable.



RENEGADE X
850 E-TEC SHOWN

4 rMotion X rear suspension

Built upon the same principles rMotion suspensions are renowned for, and then some. Completely redesigned for unmatched big-bump absorption and incredible comfort. Longer front arm with exclusive adjustable-angle design fits ideally with RAS X front suspension, creating superior cornering on trail.

5 10.25 in. color touchscreen display with BRP Connect

A high-resolution infotainment system that puts an interactive, informative and customizable experience that's both seamless and simple, right at your fingertips.

6 Three track choices

Superior performance assured with your choice of factory-installed Ripsaw or studded Ice Ripper tracks.

RENEGADE® ENDURO™

Adventure-ready with
top-tier technology,
comfort and performance.



RENEGADE ENDURO
900 ACE TURBO SHOWN

// PACKAGE HIGHLIGHTS

- Five Rotax® engines available
- 7.8 in. wide LCD display with BRP Connect
- rMotion™ X rear suspension with Air Control Suspension (ACS) rear shock
- RAS™ X front suspension
- Visor plug standard
- pDrive™ clutch
- Studded track standard
- Electric starter
- Glove box with 4 L/1 gal of storage
- Heated trail seat with 7 L/1.85 gal of storage
- Medium windshield (17 in.) with air deflectors
- Heavy-duty front bumper
- Pilot™ TX adjustable skis

ROTAX ENGINE	850 E-TEC®	600R E-TEC	900 ACE™ TURBO R	900 ACE TURBO	900 ACE
Engine details	Liquid-cooled, two-stroke, eRAVE™	Liquid-cooled, two-stroke, eRAVE	Liquid-cooled, four-stroke D.O.H.C., dry sump, turbocharged	Liquid-cooled, four-stroke D.O.H.C., dry sump, turbocharged	Liquid-cooled, four-stroke D.O.H.C., dry sump
Horsepower	165	125	180	130	95
Cylinders – Displacement	2 849 cc	2 599.4 cc	3 899 cc	3 899 cc	3 899 cc
Bore – Stroke (mm)	82 – 80.4	72.3 – 73	73 – 69.7	73 – 69.7	73 – 69.7
Carburation	E-TEC direct injection with additional booster injectors	E-TEC direct injection	EFI	EFI	EFI
Fuel type Octane	Premium unleaded 91	Premium unleaded 91	Premium unleaded 91	Premium unleaded 91	Regular unleaded 87
Fuel tank (L/US gal)	36/9.5	36/9.5	36/9.5	36/9.5	36/9.5
Oil tank capacity (L/qt)	3.4/3.6	3.4/3.6	3.3/3.5	3.3/3.5	3.3/3.5
POWERTRAIN					
Drive clutch Driven clutch	pDrive with clickers QRS Vent	pDrive with clickers QRS	pDrive QRS Vent	pDrive QRS Vent	pDrive QRS
Drive sprocket pitch	73 mm/2.86 in.	73 mm/2.86 in.	73 mm/2.86 in.	73 mm/2.86 in.	73 mm/2.86 in.
DRY WEIGHT					
Dry weight	518 lb	502 lb	556 lb	552 lb	531 lb

DIMENSIONS	
Overall vehicle length	3,038 mm/119.6 in.
Overall vehicle width	1,217 mm/47.9 in.
Overall vehicle height	1,331 mm/52.4 in.
Ski stance	1,090 mm/43 in. adjustable
Track (Length x Width x Profile)	Ice Ripper† XT: 137 x 15 x 1.25 in.

SUSPENSION	
Front suspension	RAS X
Front shock	HPG†
Front suspension travel	235 mm/9.3 in.
Rear suspension	rMotion X
Center shock	HPG
Rear shock	ACS (Air Control Suspension)
Rear suspension travel	276 mm/10.9 in.

COLOR

Black / Neo Yellow

Black

FEATURES	
Platform	REV® Gen4
Skis	Pilot TX
Seating	Trail heated with storage
Handlebar	U-shaped aluminum with J-hooks
Riser block height	120 mm/4.7 in.
Starter	Electric
Reverse	RER™ (E-TEC engines) Electro-mechanic (ACE engines)
Air radiator	
Brake system	Brembo†
Heated throttle lever/grips	Standard
Gauge type	7.8 in. wide LCD color display
Windshield	430 mm/17 in.
Runner – Carbide	Adjustable blade 1/4 – 4 in.
Bumpers (front/rear)	Heavy-duty/Std

// FEATURE HIGHLIGHTS

1 Rotax 850 E-TEC and 900 ACE Turbo R engines

Two incredibly powerful and reliable options, offering top performance for the most demanding riders.

2 rMotion X rear suspension with Air Control Shock (ACS)

rMotion X redefines big-bump capability in the harshest terrain, while improving overall handling thanks to a longer front arm with adjustable-angle design. Combined with ACS and its on-the-fly preload settings, you have the best of both handling and adjustable comfort.

3 RAS X front suspension

Flatter cornering and precision handling in all conditions. Developed in tandem with the rMotion X rear suspension to raise the bar in trail snowmobile chassis performance. Wider, adjustable ski stance and +10 mm of suspension stroke maximize stability, capability and comfort.



RENEGADE ENDURO
900 ACE TURBO SHOWN

4 Standard studded track

1.25 in. Ice Ripper XT direct from the factory with carbide studs for added grip.

5 7.8 in. LCD color display with BRP Connect

Wide-screen full-color display lets riders truly customize their ride from behind the bars. Choose your preferred sled info, and see app-integrated information in a split-screen format with GPS, Bluetooth† music, helmet-to-helmet communication and more.

6 Pilot TX skis

Redesigned with a longer front keel to provide more positive ski traction and less darting, this ski lets riders dial in their preferred amount of ski bite.

RENEGADE® ADRENALINE®

Tight cornering, big bumps, high speed and rough trails—this sled conquers it all.



RENEGADE® ADRENALINE
850 E-TEC SHOWN

// WHAT'S NEW

- REV® Gen5 platform with LED headlights (850 E-TEC® only)

// PACKAGE HIGHLIGHTS

- Five Rotax® engines available
- High-quality HPG[1] shock package
- pDrive™ clutch
- rMotion™ X rear suspension
- Electric starter
- Glove box with 4 L/1 gal of storage
- Transparent handguards
- Low windshield (14 in.) with air deflectors
- Pilot™ X skis

ROTAX ENGINE	850 E-TEC	600R E-TEC	900 ACE™ TURBO R	900 ACE TURBO	900 ACE
Engine details	Liquid-cooled, two-stroke, eRAVE™	Liquid-cooled, two-stroke, eRAVE	Liquid-cooled, four-stroke D.O.H.C., dry sump, turbocharged	Liquid-cooled, four-stroke D.O.H.C., dry sump, turbocharged	Liquid-cooled, four-stroke D.O.H.C., dry sump
Horsepower	165	125	180	130	95
Cylinders – Displacement	2 849 cc	2 599.4 cc	3 899 cc	3 899 cc	3 899 cc
Bore – Stroke (mm)	82 – 80.4	72.3 – 73	73 – 69.7	73 – 69.7	73 – 69.7
Carburation	E-TEC direct injection with additional booster injectors	E-TEC direct injection	EFI	EFI	EFI
Fuel type Octane	Premium unleaded 91	Premium unleaded 91	Premium unleaded 91	Premium unleaded 91	Regular unleaded 87
Fuel tank (L/US gal)	36/9.5	36/9.5	36/9.5	36/9.5	36/9.5
Oil tank capacity (L/qt)	3.4/3.6	3.4/3.6	3.3/3.5	3.3/3.5	3.3/3.5

POWERTRAIN					
Drive clutch Driven clutch	pDrive with clickers QRS Vent	pDrive with clickers QRS	pDrive QRS Vent	pDrive QRS Vent	pDrive QRS
Drive sprocket pitch	73 mm/2.86 in.	73 mm/2.86 in.	73 mm/2.86 in.	73 mm/2.86 in.	73 mm/2.86 in.

DRY WEIGHT					
Dry weight	486 lb	470 lb	524 lb	518 lb	497 lb

DIMENSIONS	
Overall vehicle length	3,038 mm/119.6 in.
Overall vehicle width	1,217 mm/47.9 in.
Overall vehicle height	1,267 mm/49.9 in.
Ski stance	1,090 mm/43 in. adjustable
Track [Length x Width x Profile]	RipSaw[1]: 137 x 15 x 1.25 in.

SUSPENSION	
Front suspension	RAS™ X
Front shock	HPG
Front suspension travel	235 mm/9.3 in.
Rear suspension	rMotion X
Center shock	HPG
Rear shock	HPG
Rear suspension travel	292 mm/11.5 in.

COLOR

Neo Yellow / Black

Black

FEATURES

Platform	REV Gen5 (850 E-TEC only) REV Gen4
Skis	Pilot X
Seating	Trail performance (2-stroke engines) Trail with storage (4-stroke engines)
Handlebar	U-shaped aluminum with J-hooks/ Transparent handguards
Riser block height	120 mm/4.7 in.
Starter	Electric
Reverse	RER™ (E-TEC engines) Mechanical (ACE engines)
Brake system	Brembo[1]
Heated throttle lever/grips	Standard
Gauge type	4.5 in. digital display
Windshield	360 mm/14 in.
Runner – Carbide	Square 3/8 in. – 4 in.
Bumpers (front/rear)	Std/Std

// FEATURE HIGHLIGHTS

1 REV Gen5 trail platform

A sleek new design that brings a whole new level of refinement, connectivity and good looks to the trails.

2 Rotax 850 E-TEC and 900 ACE Turbo R engines

Two incredibly powerful and reliable options, offering top performance for the most demanding riders.

3 rMotion X rear suspension

Built upon the same principles rMotion suspensions are renowned for, and then some. Completely redesigned for unmatched big-bump absorption and incredible comfort. Longer front arm with exclusive adjustable-angle design fits ideally with RAS X front suspension, creating superior cornering on trail.



RENEGADE ADRENALINE
850 E-TEC SHOWN

4 RAS X front suspension

Flatter cornering and precision handling in all conditions. Developed in tandem with the rMotion X rear suspension to raise the bar in trail snowmobile chassis performance. Wider, adjustable ski stance and +10mm of suspension stroke maximize stability, capability and comfort.

5 High-quality HPG shock package

Extremely capable high-pressure gas shocks by KYB[1].

6 Pilot X skis

Completely redesigned skis to match flawlessly with the most ride-compliant suspensions in the industry. Offering more positive ski traction and reduced darting for confident performance.

RENEGADE® SPORT

Value-oriented with exceptional handling, bump capability and light off-trail riding.



RENEGADE SPORT
600 EFI SHOWN

// WHAT'S NEW

- RAS™ X front suspension

// PACKAGE HIGHLIGHTS

- Rotax® 600 ACE™ with 420W magneto and 600 EFI engines available
- HPG† rear shock
- 4.5 in. digital display
- SC†–5M rear suspension
- Standard electric start
- Glove box with 4 L/1 gal of storage
- Low windshield (14 in.)
- D.E.S.S.™ key (600 ACE)
- Brembo† brake
- Ergo-step side panels
- U-shaped aluminum handlebar with integrated J-hooks
- Pilot™ 5.7 skis

ROTAX ENGINE	600 EFI	600 ACE
Engine details	Liquid-cooled, two-stroke	Liquid-cooled, four-stroke D.O.H.C., dry sump
Horsepower	85	62
Cylinders – Displacement	2 – 599.4 cc	2 – 600 cc
Bore – Stroke (mm)	72.3 – 73	73 – 69.7
Carburation	EFI	EFI
Fuel type – Octane	Regular unleaded – 87	Regular unleaded – 87
Fuel tank (L/US gal)	36/9.5	36/9.5
Oil tank capacity (L/qt)	3.4/3.6	2.1/2.2

POWERTRAIN		
Drive clutch	pDrive™	eDrive™ 2
Driven clutch	QRS	QRS
Drive sprocket pitch	73 mm/2.86 in.	73 mm/2.86 in.

DRY WEIGHT		
Dry weight	440 lb	469 lb

DIMENSIONS	
Overall vehicle length	3,038 mm/119.6 in.
Overall vehicle width	1,217 mm/47.9 in.
Overall vehicle height	1,267 mm/49.9 in.
Ski stance	1,090 mm/43 in. adjustable
Track (Length x Width x Profile)	Cobra: 137 x 15 x 1.35 in.

COLOR

Neo Yellow / Black

SUSPENSION	
Front suspension	RAS X
Front shock	Motion Control
Front suspension travel	235 mm/9.3 in.
Rear suspension	SC-5M
Center shock	Motion Control
Rear shock	HPG
Rear suspension travel	245 mm/9.6 in.

FEATURES	
Platform	REV® Gen4
Skis	Pilot 5.7
Seating	Trail compact (600 EFI) Trail performance (600 ACE)
Handlebar	U-shaped aluminum with J-hooks
Riser block height	120 mm/4.7 in.
Starter	Electric
Reverse	RER™ (600 EFI) Mechanical (600 ACE)
Brake system	Brembo
Heated throttle lever/grips	Standard
Gauge type	4.5 in. digital display
Windshield	360 mm/14 in.
Runner – Carbide	Square 3/8 in – 4 in.
Bumpers (front/rear)	Std/Std

// FEATURE HIGHLIGHTS

1 Rotax 600 ACE and 600 EFI engines

Two easy-to-own, reliable and fuel-efficient choices. 62 hp* (600 ACE) or 85 hp* (600 EFI) versions ensure great performance and an incredible value.

2 HPG rear shock

High-quality KYB† high-pressure gas shock for excellent performance and reliability.

3 Electric start

Saves time and energy, adding immense value for the rider.



RENEGADE SPORT
600 EFI SHOWN

4 Ergo-step side panels

Design offers natural progression to three natural positions for different cornering styles, including a new, extreme-forward position.

5 RAS X front suspension

Flatter cornering and precision handling in all conditions. Wider, adjustable ski stance and +10mm of suspension stroke maximize stability, capability and comfort.

6 Pilot 5.7 skis

Delivers outstanding grip and bite in corners with virtually no darting.

MXZ® X-RS®

A non-compromising race-inspired sled capable of taking on the roughest trails with ease.





MXZ X-RS
850 E-TEC SHOWN

// WHAT'S NEW

- REV® Gen5 platform (850 E-TEC® only)
- 10.25" color touchscreen display with BRP Connect available (850 E-TEC only)
- Smart-Shox™ semi-active suspension available with Pilot™ X or Pilot TX skis
- KYB† Pro 40R front shocks
- Renforts de rail de suspension

// PACKAGE HIGHLIGHTS

- Rotax® 850 E-TEC and 600R E-TEC engines
- High-performance KYB† Pro shock package
- RAS™ X front suspension
- rMotion™ X rear suspension
- Electric starter
- RS running boards
- pDrive™ clutch
- Backlit multifunction handlebar controls
- Forward steering post position
- Rack steering system
- Low-profile 90mm riser block
- Transparent handguards
- Open toe-hold
- Pilot X skis

ROTAX ENGINE	850 E-TEC	600R E-TEC
Engine details	Liquid-cooled, two-stroke, eRAVE™	Liquid-cooled, two-stroke, eRAVE
Horsepower	165	125
Cylinders – Displacement	2 – 849 cc	2 – 599.4 cc
Bore – Stroke (mm)	82 – 80.4	72.3 – 73
Carburation	E-TEC direct injection with additional booster injectors	E-TEC direct injection
Fuel type – Octane	Premium unleaded – 91	Premium unleaded – 91
Fuel tank (L/US gal)	36/9.5	36/9.5
Oil tank capacity (L/qt)	3.4/3.6	3.4/3.6

POWERTRAIN		
Drive clutch Driven clutch	pDrive with clickers QRS Vent	pDrive with clickers QRS
Drive sprocket pitch	73 mm/2.86 in.	73 mm/2.86 in.

DRY WEIGHT		
Dry weight	493 lb	479 lb

DIMENSIONS	
Overall vehicle length	2,925 mm/115.2 in.
Overall vehicle width	1,209 – 1,232 – 1,255 mm/47.6 – 48.5 – 49.4 in.
Overall vehicle height	1,267 mm/49.9 in.
Ski stance	1,090 mm/43 in. adjustable
Track (Length x Width x Profile)	RipSaw†: 129 x 15 x 1.5 in. Ice Ripper† XT: 129 x 15 x 1.5 in.

COLOR
Platinum Silver / Spartan Red
Black

SUSPENSION	
Front suspension	RAS X
Front shock	KYB Pro 40 R EA-3 KYB Pro Smart-Shox (opt.)
Front suspension travel	265 mm/10.4 in.
Rear suspension	rMotion X
Center shock	KYB Pro 40 R EA-3
Rear shock	KYB Pro 40 R EA-3 KYB Pro Smart-Shox (opt.)
Rear suspension travel	292 mm/11.5 in.

FEATURES	
Platform	REV Gen5 (850 E-TEC only) REV Gen4
Skis	Pilot X Pilot TX (opt. w/ Smart-Shox)
Seating	Trail performance
Handlebar	U-shaped aluminum with J-hooks/ Transparent handguards
Riser block height	90 mm/3.5 in.
Starter	Electric
Reverse	RER™
Brake system	Brembo†
Heated throttle lever/grips	Standard
Gauge type	7.2 in. digital display
Windshield	Optional
Runner – Carbide	Round 1/2 – 4 in.
Bumpers (front/rear)	Std/Std

// FEATURE HIGHLIGHTS

1 REV Gen5 trail platform
A sleek new design that brings a whole new level of refinement, connectivity and good looks to the trails.

2 Smart-Shox
An industry-first, Smart-Shox semi-active suspension instantly reads terrain and rider input to automatically dial in your suspension to give you the optimal ride in any conditions.

3 High-performance KYB Pro shock package
Extreme-capability, extreme-durability shocks for control in the toughest conditions. Easy adjust-equipped for dialed-in compression and/or rebound.



MXZ X-RS
850 E-TEC SHOWN

4 RS running boards
Designed for aggressive stand-up riding, they are flatter for most of their length, wider and strong. Thicker aluminum sheet, plus front and rear reinforcements to withstand tough landings.

5 10.25 in. color touchscreen display with BRP Connect
A high-resolution infotainment system that puts an interactive, informative and customizable experience that's both seamless and simple, right at your fingertips.

6 Rack steering system
Derived from the MXZx race sled, further increases steering precision and straight tracking for a nimble and predictable ride in extreme bumps.

MXZ® BLIZZARD®

High-tech features and racing
DNA for hard-core trail riders.





MXZ BLIZZARD
850 E-TEC SHOWN

// WHAT'S NEW

- REV® Gen5 platform with premium LED headlights (850 E-TEC® only)
- KYB† Pro 36 EA-3 front and rear shocks
- Rack steering system
- 7.2 in. digital display
- Forward steering post position

// PACKAGE HIGHLIGHTS

- Rotax® 850 E-TEC and 600R E-TEC engines
- RAS™ X front suspension
- rMotion™ X rear suspension
- Electric starter
- pDrive™ clutch
- Backlit multifunction handlebar controls
- Low windshield (14 in.) with air deflectors
- Transparent handguards
- Open toe-hold
- Lower 90mm riser

ROTAX ENGINE	850 E-TEC	600R E-TEC
Engine details	Liquid-cooled, two-stoke, eRAVE™	Liquid-cooled, two-stroke, eRAVE
Horsepower	165	125
Cylinders – Displacement	2 – 849 cc	2 – 599.4 cc
Bore – Stroke (mm)	82 – 80.4	72.3 – 73
Carburation	E-TEC direct injection with additional booster injectors	E-TEC direct injection
Fuel type – Octane	Premium unleaded - 91	Premium unleaded - 91
Fuel tank (L/US gal)	36/9.5	36/9.5
Oil tank capacity (L/qt)	3.4/3.6	3.4/3.6

POWERTRAIN		
Drive clutch Driven clutch	pDrive with clickers QRS Vent	pDrive with clickers QRS
Drive sprocket pitch	73 mm/2.86 in.	73 mm/2.86 in.

DRY WEIGHT		
Dry weight	480 lb	466 lb

DIMENSIONS	
Overall vehicle length	2,925 mm/115.2 in.
Overall vehicle width	1,209 - 1,232 - 1,255 mm/47.6 - 48.5 - 49.4 in.
Overall vehicle height	1,267 mm/49.9 in.
Ski stance	1,090 mm/43 in. adjustable
Track (Length x Width x Profile)	RipSaw†: 129 x 15 x 1.25 in. Ice Ripper† XT: 129 x 15 x 1.25 in.

COLOR
Neo Yellow
Black

SUSPENSION	
Front suspension	RAS X
Front shock	KYB Pro 36 EA-3
Front suspension travel	265 mm/10.4 in.
Rear suspension	rMotion X
Center shock	HPG† Plus
Rear shock	KYB Pro 36 EA-3
Rear suspension travel	292 mm/11.5 in.

FEATURES	
Platform	REV Gen5 (850 E-TEC only) REV Gen4
Skis	Pilot™ X
Seating	Trail performance
Handlebar	U-shaped aluminum with J-hooks/ Transparent handguards
Riser block height	90 mm/3.5 in.
Starter	Electric
Reverse	RER™
Brake system	Brembo†
Heated throttle lever/grips	Standard
Gauge type	7.2 in. digital display
Windshield	360 mm/14 in.
Runner – Carbide	Round 7/16 in – 4 in.
Bumpers (front/rear)	Std/Std

// FEATURE HIGHLIGHTS

1 REV Gen5 trail platform

A sleek new design that brings a whole new level of refinement, connectivity and good looks to the trails.

2 Rotax 850 E-TEC and 600R E-TEC engines

Incredible power and unmatched dynamic response with exclusive E-TEC direct-injection technology. Plasma-coated, mono-block cylinders are used for exceptional durability, while the precision of E-TEC injection means you get excellent fuel and oil economy.

3 Performance shock package

KYB Pro 36 Easy-Adjust front and rear shocks featuring compression adjustment. HPG Plus center shock. All four shocks are aluminum and rebuildable/revalvable.



MXZ BLIZZARD
850 E-TEC SHOWN

4 rMotion X rear suspension

Built upon the same principles rMotion suspensions are renowned for, and then some. Completely redesigned for unmatched big-bump absorption and incredible comfort. Longer front arm with exclusive adjustable angle design ideally mates with RAS X front suspension creating superior cornering on-trail.

5 RAS X front suspension

Flatter cornering and precision handling in all conditions. Developed in tandem with the rMotion X rear suspension to raise the bar in trail snowmobile chassis performance. Wider, adjustable ski stance and +10mm of suspension stroke maximize stability, capability and comfort.

6 Rack steering system

Derived from the MXZx race sled, further increases steering precision and straight tracking for a nimble and predictable ride in extreme bumps.

MXZ® SPORT

Dynamic trail performance and value-oriented features.



MXZ SPORT
600 EFI SHOWN

// WHAT'S NEW

- RAS™ X front suspension

// PACKAGE HIGHLIGHTS

- Rotax® 600 EFI engine
- 4.5 in. digital display
- SC¹-5M rear suspension
- Electric starter standard
- Low windshield (14 in.)
- U-shaped aluminum handlebar with integrated J-hooks
- Ergo-step side panels

ROTAX ENGINE	600 EFI
Engine details	Liquid-cooled, two-stroke
Horsepower	85
Cylinders – Displacement	2 - 599.4 cc
Bore – Stroke (mm)	72.3.7 – 73
Carburation	EFI
Fuel type – Octane	Regular unleaded - 87
Fuel tank (L/US gal)	36/9.5
Oil tank capacity (L/qt)	3.4/3.6

POWERTRAIN	
Drive clutch	pDrive™
Driven clutch	QRS
Drive sprocket pitch	73 mm/2.86 in.

DRY WEIGHT	
Dry weight	435 lb

DIMENSIONS	
Overall vehicle length	2,925 mm/115.2 in.
Overall vehicle width	1,217 mm/47.9 in.
Overall vehicle height	1,267 mm/49.9 in.
Ski stance	1,090 mm/43 in. adjustable
Track (Length x Width x Profile)	RipSaw¹: 129 x 15 x 1.25 in.

COLOR
Neo Yellow / Black

SUSPENSION	
Front suspension	RAS X
Front shock	Motion Control
Front suspension travel	235 mm/9.3 in.
Rear suspension	SC-5M
Center shock	Motion Control
Rear shock	Motion Control
Rear suspension travel	245 mm/9.6 in.

FEATURES	
Platform	REV® Gen4
Skis	Pilot™ 5.7
Seating	Trail compact
Handlebar	U-shaped aluminum with J-hooks
Riser block height	120 mm/4.7 in.
Starter	Electric
Reverse	RER™
Brake system	Brembo¹
Heated throttle lever/grips	Standard
Gauge type	4.5 in. digital display
Windshield	360 mm/14 in.
Runner – Carbide	Square 3/8 in. – 4 in.
Bumpers (front/rear)	Std/Std

// FEATURE HIGHLIGHTS

1 Rotax 600 EFI engine
600cc-class fuel-injected engine delivering 85 horsepower and outstanding economy at an incredible value. Design based on the 600R E-TEC® with proven reliability and ease of ownership at its core with an outsized fun factor.

2 Brembo disc brake
Fade-resistant, world-renowned stopping power from hydraulic brake. Braided stainless-steel line delivers a direct, solid feel and greater braking efficiency.

3 SC-5M rear suspension
Offers great balance of comfort and performance.



MXZ SPORT
600 EFI SHOWN

4 RAS X front suspension
Flatter cornering and precision handling in all conditions. Wider, adjustable ski stance and +10mm of suspension stroke maximize stability, capability and comfort.

5 Pilot 5.7 skis
Delivers outstanding grip and bite in corners with virtually no darting.

6 Ergo-step side panels
Design offers natural progression to three natural positions for different cornering styles, including a new, extreme-forward position.

MXZ® NEO®

A brand new trail sled with compact ergonomics that gives riders of any age a less intimidating experience with a full-size fun factor.



MXZ NEO SHOWN



MXZ NEO+ SHOWN

// NEO+ PACKAGE

- Rotax® 600 EFI – 55 engine
- HPG[1] front shocks
- 120 x 15 x 1.25 RipSaw[1] track
- Handguards
- Steering cover
- Premium look

// PACKAGE HIGHLIGHTS

- REV® Gen4 platform
- Intermediate size
- Rotax 600 EFI – 40 engine
- RAS™ X front suspension
- Neo rear suspension
- Motion control shocks
- 120 x 14 x 1.0 Cobra track
- pDrive™ clutch
- Pilot™ 5.7 skis
- RER™ electronic reverse

ROTAX ENGINE	600 EFI – 55	600 EFI – 40
Engine details	Liquid-cooled, two-stoke	Liquid-cooled, two-stoke
Horsepower	55	40
Cylinders – Displacement	2 – 599.4 cc	2 – 599.4 cc
Bore – Stroke (mm)	72.3 – 73	72.3 – 73
Carburation	EFI	EFI
Fuel type – Octane	Regular unleaded - 87	Regular unleaded - 87
Fuel tank (L/US gal)	36/9.5	36/9.5
Oil tank capacity (L/qt)	3.4/3.6	3.4/3.6

POWERTRAIN		
Drive clutch Driven clutch	pDrive QRS Lite	pDrive QRS Lite
Drive sprocket pitch	73 mm/2.86 in.	73 mm/2.86 in.

DRY WEIGHT		
Dry weight	404 lb	412 lb (Neo+)

DIMENSIONS	
Overall vehicle length	2,880 mm/113.4 in. (Neo)
Overall vehicle width	1,157 to 1,202 mm/45.6 to 47.3 in.
Overall vehicle height	1,060 mm/41.7 in.
Ski stance	1,000 mm/39 in. adjustable
Track (Length x Width x Profile)	Cobra (Neo): 120 x 14 x 1.0 in. RipSaw (Neo+): 120 x 15 x 1.25 in.

COLOR

Neo Yellow / Catalyst Grey (Neo)

Neo Yellow / Black (Neo+)

SUSPENSION	
Front suspension	RAS X
Front shock	Motion Control
Front suspension travel	175 mm/6.9 in.
Rear suspension	Neo
Center shock	Torsion spring
Rear shock	Motion Control
Rear suspension travel	212 mm/8.3 in.

FEATURES	
Platform	REV Gen4
Skis	Pilot 5.7
Seating	Trail ultra-compact
Handlebar	Narrow standard with J-hooks/ Handguards
Riser block height	90 mm/3.5 in.
Starter	Electric
Reverse	RER
Brake system	Brembo[1]
Heated throttle lever/grips	Standard
Gauge type	4.5 in. digital display
Windshield	Optional
Runner – Carbide	Square 3/8 in – 4 in. (Opt.)
Bumpers (front/rear)	Std/Std

// FEATURE HIGHLIGHTS



MXZ NEO+ SHOWN

1 REV® Gen4 Neo trail platform

The MXZ Neo brings newcomers and experienced riders alike an outsized fun-factor on the trail. A high level of control and a peppy attitude bring big value to a compact frame.

2 Compact Ergonomics

Makes the vehicle easier to control and less intimidating. Includes lower vehicle height, smaller seat, lower handlebars, narrow handlebar grips and a shorter deplacement throttle lever.

3 600 EFI - 40 & 55 engines

Plenty of horsepower kick for a variety of experience levels and a truly high degree of reliability and ease of use with this electronic fuel injection two-stroke. Standard with electric start.

MXZ® 120/200

Now, there's a new way to share the fun and excitement with the whole family.



MXZ 120
SHOWN



MXZ 200
SHOWN

// PACKAGE HIGHLIGHTS

- 120cc or 200cc 4-stroke engine
- A-arm front suspension with hydraulic twin tube shocks
- Sliderail rear suspension
- Tether switch
- Handlebar grips with handwarmers

ENGINE	200	120
Engine details	Air cooled, four-stroke	Air cooled, four-stroke
Horsepower	9	6.5
Cylinders – Displacement	1 – 192 cc	1 – 123 cc
Bore – Stroke (mm)	70 – 50	56 – 50
Carburation	Carburetor	Carburetor
Fuel type – Octane	Regular unleaded - 87	Regular unleaded - 87
Fuel tank (L/US gal)	8.3/2.2	1.9/0.5
Oil tank capacity (L/qt)	0.55/0.15	0.55/0.15

POWERTRAIN		
Drive clutch Driven clutch	CVT System	Centrifugal
Drive sprocket pitch	66 mm/2.59 in.	66 mm/2.59 in.

DRY WEIGHT		
Dry weight	217 lb	170 lb

DIMENSIONS		
Overall vehicle length	1,854 mm/73 in.	2,134 mm/84 in.
Overall vehicle width	914 mm/36 in.	914 mm/36 in.
Overall vehicle height	864 mm/34 in.	864 mm/34 in.
Ski stance	775 mm/30.5 in. adjustable	775 mm/30.5 in. adjustable
Track (Length x Width x Profile)	Cobra: 93 x 10 x 1.0 in.	Cobra: 67 x 10 x 0.75 in.

COLOR
Neo Yellow

SUSPENSION	
Front suspension	A-arms
Front shock	Hydraulic twin-tube
Front suspension travel	102 mm/4.5 in.
Rear suspension	Neo
Center shock	Slide rail, adjustable torsion spring
Rear suspension travel	203 mm/8.5 in. (200) 102 mm/4.5 in. (120)

FEATURES	
Platform	Youth
Starter	Electric (200) Manual (120)
Brake system	Hydraulic (200) Adjustable band (120)
Heated throttle lever/grips	Standard
Windshield	Low
Bumpers (front/rear)	Youth/Youth



GRAND TOURING LIMITED

The ultimate in 2-up trail comfort and technology with dynamic engine options.



GRAND TOURING LIMITED
900 ACE TURBO SHOWN



GRAND TOURING LIMITED
900 ACE TURBO R W/ LIMITED PACKAGE SHOWN

// PACKAGE HIGHLIGHTS

- Three Rotax® engines available: 900 ACE™ Turbo R, 900 ACE Turbo, 900 ACE
- Luxury Package available: Includes 7.8 in. wide LCD display with BRP Connect, premium Platinum Silver color and studded track
- RAS™ X front suspension
- rMotion™ X rear suspension with Air Control Suspension (ACS)
- Premium Protection: 23 in. ultra-high windshield, side panel wind deflectors, rear snow deflector and running boards with small openings
- Large rear LinQ® cargo box with 62 L/16.1 gal of storage
- Premium heated 2-up seat with heated passenger handholds and air deflectors
- Heated boot plug
- Heated visor outlets for driver and passenger
- pDrive™ clutch
- Electro-mechanical reverse
- Ergo-step side panels
- SilentDrive™ system
- Forward adjustable riser
- Heavy-duty rear bumper
- Glove box with 4 L/1 gal of storage
- Backlit multifunction handlebar controls
- Pivoting mirrors

ROTAX ENGINE	900 ACE TURBO R	900 ACE TURBO	900 ACE
Engine details	Liquid-cooled, four-stroke D.O.H.C., dry sump, turbocharged	Liquid-cooled, four-stroke D.O.H.C., dry sump, turbocharged	Liquid-cooled, four-stroke D.O.H.C., dry sump
Horsepower	180	130	95
Cylinders – Displacement	3 – 899 cc	3 – 899 cc	3 – 899 cc
Bore – Stroke (mm)	73 – 69.7	73 – 69.7	73 – 69.7
Carburation	EFI	EFI	EFI
Fuel type – Octane	Premium unleaded – 91	Premium unleaded – 91	Regular unleaded – 87
Fuel tank (L/US gal)	36/9.5	36/9.5	36/9.5
Oil tank capacity (L/qt)	3.3/3.5	3.3/3.5	3.3/3.5

POWERTRAIN			
Drive clutch Driven clutch	pDrive QRS Vent	pDrive QRS Vent	pDrive QSR
Drive sprocket pitch	36 mm/1.43 in.	36 mm/1.43 in.	36 mm/1.43 in.

DRY WEIGHT			
Dry weight	590 lb	586 lb	559 lb

DIMENSIONS	
Overall vehicle length	3,127 mm/123.1 in.
Overall vehicle width	1,217 mm/47.9 in.
Overall vehicle height	1,513 mm/59.6 in.
Ski stance	1,090 mm/43 in. adjustable
Track (Length x Width x Profile)	Silent Track II: 137 x 15 x 1.25 in. Studded Silent Track II: 137 x 15 x 1.25 in. (Luxury Package)

COLOR	
Platinum Silver / Spartan Red (Luxury Package)	
Black	

SUSPENSION	
Front suspension	RAS X
Front shock	HPG†
Front suspension travel	225 mm/8.9 in.
Rear suspension	rMotion X
Center shock	HPG
Rear shock	ACS (Air Control Suspension)
Rear suspension travel	276 mm/10.9 in.

FEATURES	
Platform	REV® Gen4
Skis	Pilot™ 5.7 SL
Seating	2-up heated
Handlebar	Standard
Riser block height	Adjustable–120 mm/4.7 in.
Starter	Electric
Reverse	Electro-mechanic
Air radiator	Fan (Turbo engines only)
Brake system	Brembo†
Heated throttle lever/grips	Standard (driver and passenger)
Gauge type	7.2 in. digital display 7.8 in. wide LCD color display (Luxury Package)
Windshield	585 mm/23 in. with mirrors
Runner – Carbide	Round 1/2 – 4 in.
Bumpers (front/rear)	Std/Heavy-duty

// FEATURE HIGHLIGHTS

1 Rotax 900 ACE Turbo R engine

Now the most powerful 4-stroke engine ever offered in a Ski-Doo. Ferocious instant acceleration and top speed through bigger fuel injectors, increased boost and optimized intake and exhaust systems. The new cable activated iTC throttle better matches a performance rider's profile while offering three driving modes.

2 Premium Protection

23 in. ultra-high windshield, side panel wind deflectors, rear snow deflector and running boards with small openings all make for the most comfortable ride possible.

3 Luxury Package

Three premium features consisting of a distinctive Platinum Silver and Spartan Red colorway, 7.8-in wide LCD display with BRP Connect and a studded Silent Track II.



GRAND TOURING LIMITED
900 ACE TURBO R W/ LIMITED PACKAGE SHOWN

4 rMotion X rear suspension with Air Control Shock (ACS)

rMotion X redefines big-bump capability in the harshest terrain, while improving overall handling thanks to a longer front arm with adjustable-angle design. Combined with ACS and its on-the-fly preload settings, you have the best of both handling and adjustable comfort.

5 Large cargo box

Hard-top weather-resistant LinQ box adds 62 L (16.1 gal) of storage on the tunnel.

6 Heated 2-up seat

Premium 2-up heated seat with backrest, including handholds.

GRAND TOURING SPORT

Trail comfort and 2-up features with precision handling and savvy style.



GRAND TOURING SPORT
900 ACE SHOWN

// WHAT'S NEW

- RAS™ X front suspension

// PACKAGE HIGHLIGHTS

- Rotax® 900 ACE™ and 600 ACE engines with 420W magneto
- 23 in. ultra-high windshield with side deflectors
- 2-up seat with heated passenger handholds and air deflectors
- SC¹-5M rear suspension
- Heated driver's visor power outlet
- pDrive™ clutch (900 ACE)
- Pivoting mirrors
- Reversible throttle lever (thumb or finger activated)
- Brembo¹ brake
- iTC™ Engine mapping modes (Standard, Sport or ECO™)
- Pilot™ 5.7 SL skis
- Mechanical reverse
- SilentDrive™ system

ROTAX ENGINE	900 ACE	600 ACE
Engine details	Liquid-cooled, four-stroke D.O.H.C., dry sump	Liquid-cooled, four-stroke D.O.H.C., dry sump
Horsepower	95	62
Cylinders – Displacement	3 – 899 cc	2 – 600 cc
Bore – Stroke (mm)	73 – 69.7	73 – 69.7
Carburation	EFI	EFI
Fuel type – Octane	Regular unleaded – 87	Regular unleaded – 87
Fuel tank (L/US gal)	36/9.5	36/9.5
Oil tank capacity (L/qt)	3.3/3.5	2.1/2.2

POWERTRAIN		
Drive clutch	pDrive	eDrive™ 2
Driven clutch	QRS	QRS
Drive sprocket pitch	36 mm/1.43 in.	36 mm/1.43 in.

DRY WEIGHT		
Dry weight	530 lb	509 lb

DIMENSIONS	
Overall vehicle length	3,127 mm/123.1 in.
Overall vehicle width	1,217 mm/47.9 in.
Overall vehicle height	1,513 mm/59.6 in.
Ski stance	1,090 mm/43 in. adjustable
Track (Length x Width x Profile)	Silent Track II: 137 x 15 x 1.25 in.

COLOR
Black / Neo Yellow

SUSPENSION	
Front suspension	RAS™ X
Front shock	Motion Control
Front suspension travel	225 mm/8.9 in.
Rear suspension	SC-5M
Center shock	Motion Control
Rear shock	HPG¹
Rear suspension travel	245 mm/9.6 in.

FEATURES	
Platform	REV® Gen4
Skis	Pilot 5.7 SL
Seating	2-up
Handlebar	Standard
Riser block height	120 mm/4.7 in.
Starter	Electric
Reverse	Mechanical
Brake system	Brembo
Heated throttle lever/grips	Standard (driver and passenger)
Gauge type	4.5 in. digital display
Windshield	585 mm/23 in. with mirrors
Runner – Carbide	Round 1/2 – 4 in.
Bumpers (front/rear)	Std/Std

// FEATURE HIGHLIGHTS

1 Rotax 900 ACE and 600 ACE engines
Two reliable, low-maintenance choices with proven ACE technology and Intelligent Throttle Control (iTC) with three driving modes. The 62 hp* 600 ACE is the industry's fuel-economy leader**, and the 95 hp* 900 ACE ensures lively performance at an incredible value.

2 RAS X front suspension
Flatter cornering and precision handling in all conditions. Wider, adjustable ski stance and +10mm of suspension stroke maximize stability, capability and comfort.

3 HPG rear shock
High-quality KYB¹ high-pressure gas shock for excellent performance and reliability.



GRAND TOURING SPORT
900 ACE SHOWN

4 SilentDrive system
Track drivers, interior track design and suspension geometry designed to reduce sound to the rider that are clearly noticeable as well as up to 70% less vibration to the rider's feet.

5 Ultra-high windshield
Sculpted to offer improved rider and passenger wind deflection.

6 2-up seat
Comfortable 2-up seat with backrest, including handholds.

EXPEDITION® XTREME™

The high-performance sport-utility sled with capability to go just about anywhere.



EXPEDITION XTREME
900 ACE TURBO R SHOWN

// WHAT'S NEW

- Two Rotax® engines available: 850 E-TEC® and 900 ACE™ Turbo R

// PACKAGE HIGHLIGHTS

- KYB† Pro 36 Easy-Adjust rear shock
- HPG™ Plus front shocks
- RAS™ X crossover front suspension
- SC†-5U articulating rear suspension with locking mechanism (no tool required)
- 20 in. wide Multi-LinQ® plate with 125 lb/56.7 kg cargo capacity
- Air radiator with fan
- Deep-snow running boards with large openings
- pDrive™ clutch with clickers
- Low handlebar strap
- Flexible handguards
- Electric start
- Pilot™ DS 3 skis
- Adjustable ski stance

ROTAX ENGINE	850 E-TEC	900 ACE TURBO R
Engine details	Liquid-cooled, two-stroke, eRAVE™	Liquid-cooled, four-stroke D.O.H.C., dry sump, turbocharged
Horsepower	165	180
Cylinders – Displacement	2 – 849 cc	3 – 899 cc
Bore – Stroke (mm)	82 – 80.4	73 – 69.7
Carburation	E-TEC direct injection with additional booster injectors	EFI
Fuel type – Octane	Premium unleaded – 91	Premium unleaded – 91
Fuel tank (L/US gal)	42/11.1	42/11.1
Oil tank capacity (L/qt)	3.4/3.6	3.3/3.5

POWERTRAIN		
Drive clutch Driven clutch	pDrive with clickers QRS Vent Plus	pDrive QRS Vent
Drive sprocket pitch	73 mm/2.86 in.	73 mm/2.86 in.

DRY WEIGHT		
Dry weight	596 lb	634 lb

DIMENSIONS	
Overall vehicle length	3,293 mm/129.6 in.
Overall vehicle width	1,140 to 1,180 mm/44.9 to 46.5 in.
Overall vehicle height	1,280 mm/50.4 in.
Ski stance	1,000 mm/39 in. adjustable
Track (Length x Width x Profile)	Cobra WT: 154 x 20 x 1.8 in.

COLOR
Black / Spartan Red

SUSPENSION	
Front suspension	RAS X
Front shock	HPG Plus
Front suspension travel	220 mm/8.7 in.
Rear suspension	SC-5U
Center shock	HPG Plus
Rear shock	KYB Pro 36
Rear suspension travel	239 mm/9.4 in.

FEATURES	
Platform	REV® Gen4
Skis	Pilot DS 3
Seating	1-up modular with rear seat storage
Handlebar	Standard with J-hooks/Grab handle
Riser block height	145 mm/5.7 in.
Starter	Electric
Reverse	RER™ (850 E-TEC) Electro-mechanic (Turbo R)
Air radiator	High-efficiency w/ fan (4-stroke) Fan (2-stroke)
Brake system	Brembo†
Heated throttle lever/grips	Standard
Gauge type	4.5 in. digital display
Windshield	360 mm/14 in.
Runner – Carbide	Square 3/8 in. – 4 in.
Bumpers (front/rear)	Heavy-duty/Std

// FEATURE HIGHLIGHTS

1 Rotax 900 ACE Turbo R engine

Now the most powerful engine ever offered in a Ski-Doo. Ferocious instant acceleration and top speed through bigger fuel injectors, increased boost and optimized intake and exhaust systems. The new cable activated iTC™ throttle better matches a performance rider's profile while offering three driving modes.

2 Rotax 850 E-TEC engine

Next generation of the most advanced direct-injection two-stroke engine technology. Designed for reliability and durability with proven four-stroke and long-lasting automotive technologies.

3 Like a Summit® with a 20 in. wide track

The REV Gen4 platform paired with the RAS X crossover front suspension allows effortless maneuvers in deep snow, while the 20 x 154 x 1.8 in. Cobra track provides incredible flotation and traction.



EXPEDITION XTREME
900 ACE TURBO R SHOWN

4 KYB Pro 36 piggyback rear shock with compression adjustment

Extreme-capability, extreme-durability shocks with compression adjustment for optimized control in the toughest conditions. Lightweight aluminum and rebuildable/revalvable.

5 SC-5U articulating rear suspension

The articulated rail maximizes deep-snow traction in reverse, and its toolless locking mechanism is ideal for towing.

6 Multi-LinQ plate

Standard LinQ adaptable storage. Fits 16- and 20-inch-wide LinQ accessories to maximize accessory options. Up to 125 lb (56.7 kg) of cargo capacity.

EXPEDITION® SE

The utmost touring sport-utility vehicle with an incredible list of work and luxury features.



EXPEDITION SE
900 ACE TURBO SHOWN



EXPEDITION SE
850 E-TEC SHOWN

// WHAT'S NEW

- Four Rotax® engines available: 850 E-TEC®, 900 ACE™ Turbo R, 900 ACE Turbo and 900 ACE

// PACKAGE HIGHLIGHTS

- Air Control Suspension (ACS) rear shock
- RAS™ X crossover front suspension
- 7.8 in. wide LCD display with BRP Connect available
- SC¹-5U articulating rear suspension with locking mechanism (no tool required)
- 20 in. wide Multi-LinQ® plate with 125 lb/56.7 kg cargo capacity
- Air radiator with fan
- Deep-snow running boards with large openings
- Removable passenger seat with heated grips
- Ultra-large LinQ utility cargo box with 135 L/35.7 US gal of storage
- Hitch receiver with 1,500 lb/680 kg towing capacity when equiped with an HD rear bumper. (1,200 lb/544 kg std.)
- High-capacity battery
- Forward adjustable riser
- Easy-shift transmission (H-L-N) with RER™ electronic reverse (2-stroke)/electro-mechanical reverse (4-stroke)
- 23 in. ultra-high windshield with side deflectors
- Pivoting mirrors
- Pilot™ 7.4 skis
- Heated driver's visor power outlet
- pDrive™ clutch
- Backlit multifunction handlebar controls

ROTAX ENGINE	850 E-TEC	900 ACE TURBO R	900 ACE TURBO	900 ACE
Engine details	Liquid-cooled, two-stroke, eRAVE™	Liquid-cooled, four-stroke D.O.H.C., dry sump, turbocharged	Liquid-cooled, four-stroke D.O.H.C., dry sump, turbocharged	Liquid-cooled, four-stroke D.O.H.C., dry sump
Horsepower	165	180	130	95
Cylinders – Displacement	2 - 849 cc	3 – 899 cc	3 – 899 cc	3 – 899 cc
Bore – Stroke (mm)	82 – 80.4	73 – 69.7	73 – 69.7	73 – 69.7
Carburation	E-TEC direct injection with additional booster injectors	EFI	EFI	EFI
Fuel type – Octane	Premium unleaded – 91	Premium unleaded – 91	Premium unleaded – 91	Regular unleaded – 87
Fuel tank (L/US gal)	42/11.1	42/11.1	42/11.1	42/11.1
Oil tank capacity (L/qt)	3.4/3.6	3.3/3.5	3.3/3.5	3.3/3.5
POWERTRAIN				
Drive clutch Driven clutch	pDrive with clickers QRS Vent Plus	pDrive QRS Vent	pDrive QRS Vent	pDrive QRS
Drive sprocket pitch	73 mm/2.86 in.	73 mm/2.86 in.	73 mm/2.86 in.	73 mm/2.86 in.
DRY WEIGHT				
Dry weight	654 lb	694 lb	689 lb	666 lb

DIMENSIONS	
Overall vehicle length	3,256 mm/128.2 in.
Overall vehicle width	1,200 to 1,240 mm/47.7 to 48.8 in.
Overall vehicle height	1,513 mm/59.6 in.
Ski stance	1,000 mm/39 in. adjustable
Track (Length x Width x Profile)	Silent Cobra WT: 154 x 20 x 1.5 in. Silent Ice Cobra WT: 154 x 20 x 1.5 in. opt. Silent Cobra WT: 154 x 20 x 1.8 in. opt.

SUSPENSION	
Front suspension	RAS X
Front shock	HPG†
Front suspension travel	220 mm/8.7 in.
Rear suspension	SC-5U
Center shock	HPG
Rear shock	ACS (Air Control Suspension)
Rear suspension travel	239 mm/9.4 in.

COLOR
Catalyst Grey / Orange Crush
Black

FEATURES	
Platform	REV® Gen4
Skis	Pilot 7.4
Seating	2-up modular with underseat storage
Handlebar	Standard with J-hooks/Grab handle
Riser block height	Adjustable- 120 mm/4.7 in.
Starter	Electric
Reverse	RER (2-stroke) Electro-mechanic (ACE engines)
Air radiator	High-efficiency w/ fan (4-stroke) Fan (2-stroke)
Brake system	Brembo†
Heated throttle lever/grips	Standard (driver and passenger)
Gauge type	7.2 in. wide digital 7.8 in. wide LCD color (opt. on ACE engines)
Windshield	585 mm/23 in. with mirrors
Runner – Carbide	Square 3/8 in. – 4 in.
Bumpers (front/ rear)	Heavy-duty/Hitch receiver

// FEATURE HIGHLIGHTS

1 Rotax 900 ACE Turbo R engine

Now the most powerful 4-stroke engine ever offered in a Ski-Doo. Ferocious instant acceleration and top speed through bigger fuel injectors, increased boost and optimized intake and exhaust systems. The new cable activated iTC throttle better matches a performance rider's profile while offering three driving modes.

2 SC-5U rear suspension with Air Control Shock (ACS)

The articulated rail maximizes deep-snow traction in reverse, and its toolless locking mechanism is ideal for towing. Combined with ACS and its on-the-fly preload settings, you have the best of both utility functions and adjustable comfort.

3 Ultra-large LinQ utility cargo box

135 L/35.7 US gal of lockable, weather-resistant storage capacity. Incorporated hatchet and saw holder, plus attachment points for bungees and two 16 in. LinQ positions on top for expandable accessory use.



EXPEDITION SE
850 E-TEC SHOWN

4 Multi-LinQ plate

Standard LinQ adaptable storage. Fits 16- and 20-inch-wide LinQ accessories to maximize accessory options. Up to 125 lb (56.7 kg) of cargo capacity.

5 Large panoramic 7.8 in. wide LCD color display available

Wide-screen full-color display lets riders truly customize their ride from behind the bars. Choose your preferred sled info, and see app integrated-information in a split-screen format with GPS, Bluetooth† music, helmet-to-helmet communication and more.

6 Three utility track choices

Choose from three different factory-installed Silent Cobra tracks, with or without carbine studs for extra traction in icy conditions.

EXPEDITION® LE

A hybrid touring sport-utility vehicle with premium features for off-trail exploration and on-trail cruises.



EXPEDITION LE
900 ACE TURBO SHOWN

// WHAT'S NEW

- Four Rotax® engines available: 600R E-TEC®, 900 ACE™ Turbo R, 900 ACE Turbo and 900 ACE engines
- Available with 20 in. or 24 in. track options

// PACKAGE HIGHLIGHTS

- 20 in. wide Multi-LinQ® plate with 125 lb/56.7 kg cargo capacity
- RAS™ X crossover front suspension
- SC¹-5U articulating rear suspension with locking mechanism (no tool required)
- Air radiator with fan
- Deep-snow running boards with large openings
- Removable passenger seat with heated grips
- Hitch receiver with 1,500 lb/680 kg towing capacity when equiped with an HD rear bumper. (1,200 lb/544 kg std.)
- High-capacity battery
- Easy-shift transmission (H-L-N) with RER™ electronic reverse (2-stroke)/electro-mechanical reverse (4-stroke)
- 23 in. ultra-high windshield with side deflectors
- Pivoting mirrors
- Pilot™ 7.4 skis
- Heated driver's visor power outlet
- Low handlebar strap
- pDrive™ clutch

ROTAX ENGINE	600R E-TEC	900 ACE TURBO R	900 ACE TURBO	900 ACE
Engine details	Liquid-cooled, two-stroke, eRAVE™	Liquid-cooled, four-stroke D.O.H.C., dry sump, turbocharged	Liquid-cooled, four-stroke D.O.H.C., dry sump, turbocharged	Liquid-cooled, four-stroke D.O.H.C., dry sump
Horsepower	125	180	130	95
Cylinders – Displacement	2 – 599.4 cc	3 – 899 cc	3 – 899 cc	3 – 899 cc
Bore – Stroke (mm)	72.3 – 73	73 – 69.7	73 – 69.7	73 – 69.7
Carburation	E-TEC direct injection	EFI	EFI	EFI
Fuel type – Octane	Premium unleaded – 91	Premium unleaded – 91	Premium unleaded – 91	Regular unleaded – 87
Fuel tank (L/US gal)	42/11.1	42/11.1	42/11.1	42/11.1
Oil tank capacity (L/qt)	3.4/3.6	3.3/3.5	3.3/3.5	3.3/3.5

POWERTRAIN				
Drive clutch Driven clutch	pDrive with clickers QRS Vent	pDrive QRS Vent	pDrive QRS Vent	pDrive QRS
Drive sprocket pitch	73 mm/2.86 in.	73 mm/2.86 in.	73 mm/2.86 in.	73 mm/2.86 in.

DRY WEIGHT				
Dry weight 20 in. track	617 lb	670 lb	666 lb	640 lb
Dry weight 24 in. track	626 lb	681 lb	676 lb	650 lb

DIMENSIONS	
Overall vehicle length	3,256 mm/128.2 in.
Overall vehicle width	1,200 to 1,240 mm/47.7 to 48.8 in.
Overall vehicle height	1,513 mm/59.6 in.
Ski stance	1,000 mm/39 in. adjustable
Track (Length x Width x Profile)	Silent Cobra WT: 154 x 20 x 1.5 in. 154 x 24 x 1.5 in.

SUSPENSION	
Front suspension	RAS X
Front shock	HPG†
Front suspension travel	220 mm/8.7 in.
Rear suspension	SC-5U
Center shock	HPG
Rear shock	HPG
Rear suspension travel	239 mm/9.4 in.

COLOR
Arctic Desert / Black
Black

FEATURES	
Platform	REV® Gen4
Skis	Pilot 7.4
Seating	2-up modular with underseat storage
Handlebar	Standard with J-hooks/Grab handle
Riser block height	145 mm/5.7 in.
Starter	Electric
Reverse	RER (600R E-TEC) Electro-mechanic (ACE engines)
Air radiator	High-efficiency w/ fan (4-stroke) Fan (2-stroke)
Brake system	Brembo†
Heated throttle lever/grips	Standard (driver and passenger)
Gauge type	4.5 in. digital display
Windshield	585 mm/23 in. with mirrors
Runner – Carbide	Square 3/8 in. – 4 in.
Bumpers (front/ rear)	Heavy-duty/Hitch receiver

// FEATURE HIGHLIGHTS

1 Rotax 900 ACE Turbo R engine

Now the most powerful 4-stroke engine ever offered in a Ski-Doo. Ferocious instant acceleration and top speed through bigger fuel injectors, increased boost and optimized intake and exhaust systems. The new cable activated iTC throttle better matches a performance rider's profile while offering three driving modes.

2 Utility 2-up seat

The ideal combination of comfort and convenience. Driver and passenger seat offering comfort and maneuverability for the driver, and convenience and protection for the passenger. Shielded and heated passenger hand grips.

3 SC-5U articulating rear suspension

The articulated rail maximizes deep-snow traction in reverse, and its toolless locking mechanism is ideal for towing.



EXPEDITION LE
900 ACE TURBO SHOWN

4 RAS X crossover front suspension

An updated version of our RAS X trail front end for capability on- and off-trail. Light steering feel optimized for crossover usage with adjustable stance.

5 20 in. and 24 in. wide tracks available

A wide range of options built to offer superb flotation and meet any towing needs.

6 Multi-LinQ plate

Standard LinQ adaptable storage. Fits 16- and 20-inch-wide LinQ accessories to maximize accessory options. Up to 125 lb (56.7 kg) of cargo capacity.

EXPEDITION® SPORT

Ultra-responsive chassis for on- or off-trail rides and extensive array of sport-utility and 2-up features.



EXPEDITION SPORT
900 ACE SHOWN

// WHAT'S NEW

- Three Rotax® engines available: 900 ACE™, 600 ACE and 600 EFI

// PACKAGE HIGHLIGHTS

- pDrive™ clutch
- RAS™ X crossover front suspension
- SC[1]-5U articulating rear suspension with locking mechanism (no tool required)
- Brembo[1] brake
- 420W magneto available with Rotax® ACE engines
- Heavy duty rear bumper with tongue-type hitch
- Air radiator with fan and engine oil cooler
- 2-up seat with removable LinQ® passenger backrest and handholds
- Deep-snow running boards with large openings
- Standard with 2 sets of LinQ attachment points
- Adjustable ski stance
- Pilot™ DS 2 skis

ROTAX ENGINE	600 EFI	900 ACE	600 ACE
Engine details	Liquid-cooled, two-stroke	Liquid-cooled, four-stroke D.O.H.C., dry sump	Liquid-cooled, four-stroke D.O.H.C., dry sump
Horsepower	85	95	62
Cylinders – Displacement	2 – 599.4 cc	3 – 899 cc	2 – 600.0 cc
Bore – Stroke (mm)	72.3 – 73	73 – 69.7	73 – 69.7
Carburation	EFI	EFI	EFI
Fuel type – Octane	Regular unleaded – 87	Regular unleaded – 87	Regular unleaded – 87
Fuel tank (L/US gal)	36/9.5	36/9.5	36/9.5
Oil tank capacity (L/qt)	3.4/3.6	3.3/3.5	2.1/2.2

POWERTRAIN			
Drive clutch Driven clutch	pDrive QRS	pDrive QRS	eDrive™ 2 QRS
Drive sprocket pitch	73 mm/2.86 in.	73 mm/2.86 in.	73 mm/2.86 in.

DRY WEIGHT			
Dry weight	504 lb	578 lb	532 lb

DIMENSIONS	
Overall vehicle length	3,309 mm/130.3 in.
Overall vehicle width	1,140 to 1,180 mm/44.9 to 46.5 in.
Overall vehicle height	1,513 mm/59.6 in.
Ski stance	1,000 mm/39 in. adjustable
Track (Length x Width x Profile)	Charger: 154 x 16 x 1.5 in.

COLOR
Black / Neo Yellow

SUSPENSION	
Front suspension	RAS X
Front shock	Motion Control
Front suspension travel	210 mm/8.3 in.
Rear suspension	SC-5U
Center shock	Motion Control
Rear shock	HPG[1]
Rear suspension travel	239 mm/9.4 in.

FEATURES	
Platform	REV® Gen4
Skis	Pilot DS 2
Seating	2-up
Handlebar	Standard with J-hooks
Riser block height	145 mm/5.7 in.
Starter	Electric
Reverse	RER™ (600 EFI) Mechanical (ACE engines)
Air radiator	Fan (4-stroke only)
Brake system	Brembo
Heated throttle lever/grips	Standard (driver only)
Gauge type	4.5 in. digital display
Windshield	585 mm/23 in.
Runner – Carbide	Square 3/8 in. – 4 in.
Bumpers (front/rear)	Std/Heavy Duty with tongue-type hitch

// FEATURE HIGHLIGHTS

1 Three engine choices
This versatile model benefits from three reliable, easy-to-own and fuel-efficient engine choices with the right power for any rider.

2 Modular 2-up seat
Easily remove or install the passenger backrest and handholds with the LinQ system.

3 RAS X crossover front suspension
An updated version of our RAS X trail front end for capability on- and off-trail. Light steering feel optimized for crossover usage with adjustable stance.



EXPEDITION SPORT
900 ACE SHOWN

4 Air radiator with fan
Extra cooling capacity when pulling heavy load, in low-snow conditions or at low speed.

5 Deep-snow running boards
Massive, strategically shaped openings keep the boards clear. A tall extruded edge adds stiffness and has aggressive boot grips.

6 SC-5U articulating rear suspension
The articulated rail maximizes deep-snow traction in reverse, and its toolless locking mechanism is ideal for towing.

TUNDRA™ LT

Great off-trail and deep-snow performance with light-utility capability.



TUNDRA LT
600 ACE SHOWN

// WHAT'S NEW

- Painted tunnel

// PACKAGE HIGHLIGHTS

- Rotax® 600 EFI and 600 ACE™ engine with 650W magneto available
- HPG[1] rear shock
- LTS telescopic front suspension
- SC[1]-5U articulating rear suspension with locking mechanism (no tool required)
- Brembo[1] brake
- Heavy-duty rear bumper with tongue-type hitch
- Air radiator with fan
- Standard electric start
- Deep-snow running boards with large openings
- Standard with two sets of LinQ® attachment points
- Pilot™ DS 2 skis
- Low handlebar strap

ROTAX ENGINE	600 EFI	600 ACE
Engine details	Liquid-cooled, two-stroke	Liquid-cooled, four-stroke D.O.H.C., dry sump
Horsepower	85	62
Cylinders – Displacement	2 – 599.4 cc	2 – 600 cc
Bore – Stroke (mm)	72.3 – 73	73 – 69.7
Carburation	EFI	EFI
Fuel type – Octane	Regular unleaded – 87	Regular unleaded – 87
Fuel tank (L/US gal)	36/9.5	36/9.5
Oil tank capacity (L/qt)	3.4/3.6	2.1/2.2

POWERTRAIN		
Drive clutch	pDrive™	eDrive™ 2
Driven clutch	QRS	QRS
Drive sprocket pitch	73 mm/2.86 in.	73 mm/2.86 in.

DRY WEIGHT		
Dry weight	491 lb	515 lb

DIMENSIONS	
Overall vehicle length	3,259 mm/129.3 in.
Overall vehicle width	994 mm/39.1 in.
Overall vehicle height	1,513 mm/59.6 in.
Ski stance	813 mm/32 in.
Track (Length x Width x Profile)	Charger: 154 x 16 x 1.5 in.

COLOR
Black

SUSPENSION	
Front suspension	LTS
Front shock	Motion Control
Front suspension travel	150 mm/5.9 in.
Rear suspension	SC-5U
Center shock	Motion Control
Rear shock	HPG
Rear suspension travel	239 mm/9.4 in.

FEATURES	
Platform	REV® Gen4
Skis	Pilot DS 2
Seating	Short 2-up
Handlebar	Standard with J-hooks/ Grab handle
Riser block height	145 mm/5.7 in.
Starter	Electric
Reverse	RER™ (600 EFI) Mechanical (600 ACE)
Air radiator	Fan
Brake system	Brembo
Heated throttle lever/grips	Standard
Gauge type	4.5 in. digital display
Windshield	430 mm/17 in.
Runner – Carbide	Square 3/8 in. – 4 in.
Bumpers (front/rear)	Std/Heavy-duty with tongue-type hitch

// FEATURE HIGHLIGHTS

1 Rotax 600 ACE and 600 EFI engines
Two easy-to-own, reliable and fuel-efficient choices. 62 hp* (600 ACE) or 85 hp* (600 EFI) versions ensure great performance and an incredible value.

2 154 in. track length
Provides extra flotation and traction when riding in deep-snow.

3 LTS front suspension
Industry-exclusive telescopic front suspension enables a large, flat belly pan for exceptional deep-snow flotation.



TUNDRA LT
600 ACE SHOWN

4 Air radiator with fan
Extra cooling capacity when pulling heavy load, in low-snow conditions or at low speed.

5 SC-5U articulating rear suspension
The articulated rail maximizes deep-snow traction in reverse, and its toolless locking mechanism is ideal for towing.

6 Heavy-duty rear bumper
For extra protection and extreme utility.

TUNDRA™ SPORT

Economical, nimble and fun light-utility vehicle.



TUNDRA SPORT
600 ACE SHOWN

// PACKAGE HIGHLIGHTS

- Rotax® 600 EFI and 600 ACE™ engine with 650W magneto available
- HPG† rear shock
- LTS telescopic front suspension
- cMotion™ rear suspension
- Brembo† brake
- Heavy-duty rear bumper
- Air radiator with fan (600 ACE only)
- Standard electric start
- Deep-snow running boards with large openings
- Standard with two sets of LinQ® attachment points
- Pilot™ DS 2 skis

ROTAX ENGINE	600 EFI	600 ACE
Engine details	Liquid-cooled, two-stroke	Liquid-cooled, four-stroke D.O.H.C., dry sump
Horsepower	85	62
Cylinders – Displacement	2 – 599.4 cc	2 – 600 cc
Bore – Stroke (mm)	72.3 – 73	73 – 69.7
Carburation	EFI	EFI
Fuel type – Octane	Regular unleaded – 87	Regular unleaded – 87
Fuel tank (L/US gal)	36/9.5	36/9.5
Oil tank capacity (L/qt)	3.4/3.6	2.1/2.2

POWERTRAIN		
Drive clutch	pDrive™	eDrive™ 2
Driven clutch	QRS	QRS
Drive sprocket pitch	73 mm/2.86 in.	73 mm/2.86 in.

DRY WEIGHT		
Dry weight	466 lb	486 lb

DIMENSIONS	
Overall vehicle length	3,110 mm/122.4 in.
Overall vehicle width	994 mm/39.1 in.
Overall vehicle height	1,369 mm/53.9 in.
Ski stance	813 mm/32 in.
Track (Length x Width x Profile)	Cobra: 146 x 16 x 1.6 in.

COLOR
Neo Yellow / Black

SUSPENSION	
Front suspension	LTS
Front shock	Motion Control
Front suspension travel	150 mm/5.9 in.
Rear suspension	cMotion
Center shock	Motion Control
Rear shock	HPG
Rear suspension travel	245 mm/9.6 in.

FEATURES	
Platform	REV® Gen4
Skis	Pilot DS 2
Seating	Short 2-up
Handlebar	Standard with J-hooks/ Grab handle
Riser block height	145 mm/5.7 in.
Starter	Electric
Reverse	RER™ (600 EFI) Mechanical (600 ACE)
Air radiator	Fan (600 ACE only)
Brake system	Brembo
Heated throttle lever/grips	Standard
Gauge type	4.5 in. digital display
Windshield	430 mm/17 in.
Runner – Carbide	Square 3/8 in. – 4 in.
Bumpers (front/rear)	Std/Heavy-duty

// FEATURE HIGHLIGHTS

1 Rotax 600 ACE and 600 EFI engines
Two easy-to-own, reliable and fuel-efficient choices. 62 hp* (600 ACE) or 85 hp* (600 EFI) versions ensure great performance and an incredible value.

2 146 in. track length
Outstanding versatility on rough trails or in deep snow.

3 LTS front suspension
Industry-exclusive telescopic front suspension enables a large, flat belly pan for exceptional deep-snow flotation.



TUNDRA SPORT
600 ACE SHOWN

4 Air radiator with fan (600 ACE only)
Extra cooling capacity when pulling heavy load, in low-snow conditions or at low speed.

5 cMotion rear suspension
Crossover-specific suspension uses best principles of the rMotion™ trail and tMotion™ mountain skids for confident cornering and agile boondocking.

6 Heavy-duty rear bumper
For extra protection and extreme utility.

SKANDIC® SE

New spring-only package with premium utility features for ultimate off-trail traction and flotation.





SKANDIC SE
900 ACE SHOWN

// WHAT'S NEW

- Available with five 20 in. or 24 in. track options
- Ultra large LinQ® utility cargo box with 135 L/35.7 US gal of storage
- Heated driver's visor power outlet
- 7.2 in. digital display
- Pilot™ 7.4 skis w/ liners
- HPG† center and rear shocks

// PACKAGE HIGHLIGHTS

- Tow Rotax® engines available: 600R E-TEC® and 900™ ACE engines
- Multi-LinQ plate with 125 lb/56 kg cargo capacity
- LTS telescopic front suspension
- SC†-5U articulating rear suspension with locking mechanism (no tool required)
- Removable passenger seat with grips
- 23 in. Ultra-high windshield with side deflectors
- Air radiator with fan
- Standard electric start
- Deep-snow running boards with large openings
- Easy Shift transmission (H-L-N) with RER™ electronic reverse (2 stroke) / electro-mechanical reverse (4 stroke)
- Pivoting mirrors
- pDrive™ clutch
- Low handlebar strap

ROTAX ENGINE	600R E-TEC	900 ACE
Engine details	Liquid-cooled, two-stroke, eRAVE™	Liquid-cooled, four-stroke D.O.H.C., dry sump
Horsepower	125	95
Cylinders – Displacement	2 – 599.4 cc	3 – 899 cc
Bore – Stroke (mm)	72.3 – 73	73 – 69.7
Carburation	E-TEC direct injection	EFI
Fuel type – Octane	Premium unleaded – 91	Regular unleaded – 87
Fuel tank (L/US gal)	42/11.1	42/11.1
Oil tank capacity (L/qt)	3.4/3.6	3.3/3.5

POWERTRAIN		
Drive clutch Driven clutch	pDrive with clickers QRS	pDrive QRS
Drive sprocket pitch	73 mm/2.86 in.	73 mm/2.86 in.

DRY WEIGHT		
Dry weight 20 in track	632 lb	656 lb
Dry weight 24 in track	669 lb	693 lb

DIMENSIONS	
Overall vehicle length	3,222 mm/126.9 in.
Overall vehicle width	1,089 mm/42.8 in.
Overall vehicle height	1,513 mm/59.6 in.
Ski stance	889 mm/35 in.
Track (Length x Width x Profile)	Silent Cobra WT: 154 x 20 x 1.5 in. Silent Cobra WT: 154 x 20 x 1.8 in. Silent Ice Cobra WT: 154 x 20 x 1.5 in. Silent Cobra SWT: 154 x 24 x 1.5 in. opt. Silent Ice Cobra SWT: 154 x 24 x 1.5 in. opt.

COLOR
Catalyst Grey / Orange Crush
Black

SUSPENSION	
Front suspension	LTS
Front shock	Motion Control
Front suspension travel	150 mm/5.9 in.
Rear suspension	SC-5U
Center shock	HPG
Rear shock	HPG
Rear suspension travel	239 mm/9.4 in.

FEATURES	
Platform	REV® Gen4
Skis	Pilot 7.4 w/ liners
Seating	2-up modular with underseat storage
Handlebar	Standard with J-hooks/Grab handle
Riser block height	145 mm/5.7 in.
Starter	Electric
Reverse	RER (2-stroke) Electro-mechanic (ACE engines)
Air radiator	High-efficiency w/ fan (4-stroke) Fan (2-stroke)
Brake system	Brembo†
Heated throttle lever/grips	Standard (driver only)
Gauge type	7.2 in. digital display
Windshield	585 mm/23 in. with mirrors
Runner – Carbide	Square 3/8 – 4 in.
Bumpers (front/rear)	Full wrap-around/Hitch receiver

// FEATURE HIGHLIGHTS

1 Multi-LinQ plate

Standard LinQ adaptable storage. Fits 16- and 20-inch-wide LinQ accessories to maximize accessory options. Up to 125 lb (56.7 kg) of cargo capacity.

2 Ultra large LinQ utility cargo box

135 L/35.7 US gal of lockable, weather resistant storage capacity. Incorporated hatchet and saw holder, plus attachment points for bungees and two 16 in. LinQ positions on top for expandable accessory use.

3 LTS front suspension

Industry-exclusive telescopic front suspension enables a large, flat belly pan for exceptional deep-snow flotation.



SKANDIC SE
900 ACE SHOWN

4 Ski liners

Added flotation for extreme capability when your day takes you into the deep stuff.

5 20 in. and 24 in. wide tracks available

A wide range of options built to offer superb flotation and meet any towing needs.

6 SC-5U articulating rear suspension

The articulated rail maximizes deep-snow traction in reverse, and its toolless locking mechanism is ideal for towing.

SKANDIC® LE

Additional in-season options for hardworking off-trail performance and towing capacity.



SKANDIC LE
600 EFI SHOWN



SKANDIC LE
900 ACE SHOWN

// WHAT'S NEW

- Available with 20 in. or 24 in. track options

// PACKAGE HIGHLIGHTS

- Four Rotax® engines available: 600R E-TEC®, 900 ACE™, 600 ACE and 600 EFI engines
- HPG† rear shock
- Multi-LinQ plate with 125 lb/56.7 kg cargo capacity
- LTS telescopic front suspension
- SC†-5U articulating rear suspension with locking mechanism (no tool required)
- Removable passenger seat with grips
- 23 in. ultra-high windshield with side deflectors
- Hitch receiver with 1,500 lb/680 kg towing capacity when equiped with an HD rear bumper. (1,200 lb/544 kg std.)
- Air radiator with fan
- Standard electric start
- Deep-snow running boards with large openings
- Easy-shift transmission (H-L-N) with RER™ electronic reverse (2-stroke)/electro-mechanical reverse (4-stroke)
- Pivoting mirrors
- pDrive™ clutch
- Low handlebar strap
- Pilot™ 7.4 skis

ROTAX ENGINE	600R E-TEC	600 EFI	900 ACE	600 ACE
Engine details	Liquid-cooled, two-stroke, eRAVE™	Liquid-cooled, two-stroke	Liquid-cooled, four-stroke D.O.H.C., dry sump	Liquid-cooled, four-stroke D.O.H.C., dry sump
Horsepower	125	85	95	62
Cylinders – Displacement	2 599.4 cc	2 599.4 cc	3 899 cc	2 600 cc
Bore – Stroke (mm)	72.3 – 73	72.3 – 73	73 – 69.7	73 – 69.7
Carburation	E-TEC direct injection	EFI	EFI	EFI
Fuel type Octane	Premium unleaded 91	Regular unleaded 87	Regular unleaded 87	Regular unleaded 87
Fuel tank (L/US gal)	42/11.1	42/11.1	42/11.1	42/11.1
Oil tank capacity (L/qt)	3.4/3.6	3.4/3.6	3.3/3.5	2.1/2.2

POWERTRAIN				
Drive clutch Driven clutch	pDrive with clicker QRS	pDrive QRS	pDrive QRS	eDrive™ 2 QRS
Drive sprocket pitch	73 mm/2.86 in.	73 mm/2.86 in.	73 mm/2.86 in.	73 mm/2.86 in.

DRY WEIGHT				
Dry weight 20 in track	596 lb	575 lb	620 lb	698 lb
Dry weight 24 in track	633 lb		657 lb	

DIMENSIONS	
Overall vehicle length	3,222 mm/126.9 in.
Overall vehicle width	1,089 mm/42.8 in.
Overall vehicle height	1,513 mm/59.6 in.
Ski stance	889 mm/35 in.
Track (Length x Width x Profile)	Silent Cobra WT: 154 x 20 x 1.5 in. Silent Cobra SWT: 154 x 24 x 1.5 in. (opt. 900 ACE and 600R)

SUSPENSION	
Front suspension	LTS
Front shock	Motion Control
Front suspension travel	150 mm/5.9 in.
Rear suspension	SC-5U
Center shock	Motion Control
Rear shock	HPG
Rear suspension travel	239 mm/9.4 in.

COLOR
Arctic Desert / Black
Black

FEATURES	
Platform	REV® Gen4
Skis	Pilot 7.4
Seating	2-up modular with underseat storage
Handlebar	Standard with J-hooks/ Grab handle
Riser block height	145 mm/5.7 in.
Starter	Electric
Reverse	RER (2-stroke) Electro-mechanic (ACE engines)
Air radiator	High-efficiency w/ fan (4-stroke) Fan (2-stroke)
Brake system	Brembo†
Heated throttle lever/grips	Standard (driver only)
Gauge type	4.5 in. digital display
Windshield	585 mm/23 in. with mirrors
Runner – Carbide	Square 3/8 in. – 14 in.
Bumpers (front/rear)	Heavy Duty/ Hitch receiver

// FEATURE HIGHLIGHTS

1 Multi-LinQ plate

Standard LinQ adaptable storage. Fits 16- and 20-inch-wide LinQ accessories to maximize accessory options. Up to 125 lb (56.7 kg) of cargo capacity.

2 Skandic 2-up seat

The ideal combination of comfort and convenience. Driver and passenger seat offering comfort and maneuverability for the driver, and convenience for the passenger.

3 LTS front suspension

Industry-exclusive telescopic front suspension enables a large, flat belly pan for exceptional deep-snow flotation.



SKANDIC LE
900 ACE SHOWN

4 Four engine options

This versatile model benefits from four reliable and easy-to-own engine choices. Powerful 4- and 2-stroke options ensure the right match for any rider.

5 20 in. and 24 in. wide tracks available

A wide range of options built to offer superb flotation and meet any towing needs.

6 SC-5U articulating rear suspension

The articulated rail maximizes deep-snow traction in reverse, and its toolless locking mechanism is ideal for towing.

SKANDIC® SPORT

The best 20 in. utility value in snowmobiling.



SKANDIC SPORT
600 EFI SHOWN

// PACKAGE HIGHLIGHTS

- Rotax® 600 EFI engine
- HPG† rear shock
- LTS telescopic front suspension
- SC†-5U articulating rear suspension with locking mechanism (no tool required)
- 1-up modular with rear seat storage
- Medium (17 in.) windshield with air deflectors
- Standard electric start
- Deep-snow running boards with large openings
- RER™ electronic reverse
- pDrive™ clutch with slider shoes

ROTAX ENGINE	600 EFI
Engine details	Liquid-cooled, two-stroke
Horsepower	85
Cylinders – Displacement	2 – 599.4 cc
Bore – Stroke (mm)	72.3 – 73
Carburation	EFI
Fuel type – Octane	Regular unleaded – 87
Fuel tank (L/US gal)	42/11.1
Oil tank capacity (L/qt)	3.4/3.6

POWERTRAIN	
Drive clutch	pDrive
Driven clutch	QRS
Drive sprocket pitch	73 mm/2.86 in.

DRY WEIGHT	
Dry weight	520 lb

DIMENSIONS	
Overall vehicle length	3,259 mm/129.3 in.
Overall vehicle width	1,089 mm/42.8 in.
Overall vehicle height	1,369 mm/53.9 in.
Ski stance	889 mm/35 in.
Track (Length x Width x Profile)	Utility WT 154 x 20 x 1.25 in.

COLOR
Black / Neo Yellow

SUSPENSION	
Front suspension	LTS
Front shock	Motion Control
Front suspension travel	150 mm/5.9 in.
Rear suspension	SC-5U
Center shock	Motion Control
Rear shock	HPG
Rear suspension travel	239 mm/9.4 in.

FEATURES	
Platform	REV® Gen4
Skis	Pilot™ 7.4
Seating	1-up modular with rear seat storage
Handlebar	Standard with J-hooks
Riser block height	145 mm/5.7 in.
Starter	Electric
Reverse	RER
Brake system	Brembo†
Heated throttle lever/grips	Standard
Gauge type	4.5 in. digital display
Windshield	430 mm/17 in.
Runner – Carbide	Square 3/8 in. – 4 in.
Bumpers (front/rear)	Std/Std

// FEATURE HIGHLIGHTS

1 Rotax 600 EFI engine
600cc-class fuel-injected engine delivering 85 horsepower and outstanding economy at an incredible value. Design based on the 600R E-TEC® with proven reliability and ease of ownership at its core with an outsized fun factor.

2 Utility 1-up seat
Big comfort with premium ride quality feel. Storage compartment behind the seat.

3 LTS front suspension
Industry-exclusive telescopic front suspension enables a large, flat belly pan for exceptional deep-snow flotation.



SKANDIC SPORT
600 EFI SHOWN

4 Pilot 7.4 skis
Designed to provide better reverse capability, more floatation off trail and more positive steering on trail and while hauling loads.

5 20 in. wide track
Superb flotation and towing capability.

6 SC-5U articulating rear suspension
The articulated rail maximizes deep-snow traction in reverse, and its toolless locking mechanism is ideal for towing.

COMPARATIVE CHART

SPECIFICATIONS		DEEP-SNOW						CROSSOVER									
		SUMMIT					FREERIDE	BACKCOUNTRY		BACKCOUNTRY			RENEGADE				
						NEW											
		 X WITH EXPERT PACKAGE	 X	 EDGE	 SP	 NEO	 FREERIDE	 X-RS		 X	 BACKCOUNTRY	 SPORT	 X-RS WITH COMPETITION PACKAGE	 X-RS	 X	 ENDURO	 ADRENALINE	 SPORT
COLOR		Platinum Silver / Manta Green (painted) Timeless Black (painted)	Catalyst Grey / Spartan Red Timeless Black (painted)	Catalyst Grey / Neo Yellow Timeless Black (painted)	Catalyst Grey / Neo Yellow Timeless Black (painted)	Neo Yellow / Catalyst Grey (Neo) Neo Yellow / Black (Neo+)	Timeless Black / Spartan Red (painted)	*ULTIMATE* Platinum Silver / Manta Green *ULTIMATE* Black		Catalyst Grey / Spartan Red Timeless Black	Catalyst Grey / Neo Yellow Timeless Black	Black / Neo Yellow	Black	Platinum Silver / Spartan Red Black	Neo Yellow / Black Black	Black / Neo Yellow Black	Neo Yellow / Black Black	Neo Yellow / Black
FEATURES	*Platform*	REV Gen5	REV Gen5	REV Gen5	REV Gen5	REV Gen4	REV Gen5	REV Gen4		REV Gen4	REV Gen4	REV Gen4	REV Gen4	REV Gen5 (850 E-TEC only) REV Gen4	REV Gen5 (850 E-TEC only) REV Gen4	REV Gen4	REV Gen5 (850 E-TEC only) REV Gen4	REV Gen4
	Skis	Pilot DS 4	Pilot DS 3	Pilot DS 3	Pilot DS 3	Pilot DS 2	Pilot DS 3	Pilot DS 2		Pilot DS 2	Pilot DS 2	Pilot DS 2	Pilot X	Pilot X Pilot TX (opt. w/ Smart-Shox)	Pilot X	Pilot TX	Pilot X	Pilot 5.7
	Seating	Deep-snow ultra-compact and lightweight	Deep-snow compact and lightweight	Deep-snow compact and lightweight	Deep-snow	Deep-snow compact and lightweight	Deep-snow compact and lightweight	Trail performance		Trail performance	Trail performance	Trail compact	Trail performance	Trail performance (2-stroke engines) Trail with storage (4-stroke engines)	Trail performance (2-stroke engines) Trail with storage (4-stroke engines)	Trail heated with storage	Trail performance (2-stroke engines) Trail with storage (4 -stroke engines)	Trail compact (600 EFI) Trail performance (600 ACE)
	Handlebar	Tapered with J-hooks/ Grab handle	Tapered with J-hooks/ Grab handle	Tapered U-shaped aluminum with J-hooks/ Low grab handle	Tapered with J-hooks/ Grab handle	Narrow standard with J-hooks Grab handle (Neo+)	Tapered U-shaped aluminum with J-hooks/ Low grab handle	U-shaped aluminum with J-hooks/ Transparent handguards		U-shaped aluminum with J-hooks/ Transparent handguards	U-shaped aluminum with J-hooks/ Transparent handguards	U-shaped aluminum with J-hooks	U-shaped aluminum with J-hooks/ Transparent handguards	U-shaped aluminum with J-hooks/ Transparent handguards	U-shaped aluminum with J-hooks/ Transparent handguards	U-shaped aluminum with J-hooks	U-shaped aluminum with J-hooks/ Transparent handguards	U-shaped aluminum with J-hooks
	Starter	SHOT	SHOT, Electric (opt. select models), Manual (opt. select models)	SHOT	Electric, SHOT (opt.), Manual (opt. select models)	Electric	850 E-TEC: SHOT, Electric (opt. Select models) 850 E-TEC Turbo R: SHOT	Electric, SHOT (opt. select configurations)		Electric, SHOT (opt. select configurations)	Electric	Electric	Manual	Electric	Electric	Electric	Electric	Electric
	Reverse	RER	RER	RER	RER	RER	RER	RER		RER	RER	RER	RER	RER (850 E-TEC) Electro-mechanical (900 ACE Turbo R)	RER (E-TEC engines) Electro-mechanic (ACE engines)	RER (E-TEC engines) Electro-mechanic (ACE engines)	RER™ (E-TEC engines) Mechanical (ACE engines)	RER (600 EFI) Mechanical (600 ACE)
	Windshield height (in.)	Optional	Optional	Optional	Optional	Optional	Optional	Optional		14	14	14	14	Ultra-low (850 E-TEC), Optional (900 ACE Turbo R)	14	17	14	14
GAUGE	*Type*	4.5 in. digital 10.25 in. touchscreen (opt.)	4.5 in. digital 10.25 in. touchscreen (opt.)	4.5 in. digital	4.5 in. digital	4.5 in. digital	4.5 in. digital 10.25 in. touchscreen (opt.)	7.2 in. digital Large panoramic 7.8 in. wide LCD color display in option		7.2 in. digital Large panoramic 7.8 in. wide LCD color display in option	4.5 in. digital display	4.5 in. digital display	7.2 in. digital display	7.2 in. digital display 7.8 in. wide LCD color (opt. 900 ACE Turbo R) 10.25 in. touchscreen (opt. 850 E-TEC)	7.2 in. digital	7.8 in. wide LCD color display	4.5 in. digital display	4.5 in. digital display
SUSPENSION	*Front suspension*	RAS 3	RAS 3	RAS 3	RAS 3	RAS 3	RAS 3	RAS X		RAS X	RAS X	RAS X	RAS X	RAS X	RAS X	RAS X	RAS X	RAS X
	Front shock	HPG Plus with lightweight springs	HPG Plus with lightweight springs	HPG	HPG	Motion Control (Neo)/ HPG (Neo+)	KYB Pro 36 EA-3 w/ lightweight springs	KYB Pro 36 R EA		HPG Plus	HPG	Motion Control	KYB Pro 40 R EA	KYB Pro 36 EA-3 (REV Gen5) KYB Pro 36 EA (REV Gen4) KYB Pro Smart-Shox opt.	HPG Plus	HPG	HPG	Motion Control
	Rear suspension	tMotion XT	tMotion X	tMotion	tMotion	Neo	tMotion X	cMotion		cMotion	cMotion	cMotion	rMotion X	rMotion X	rMotion X	rMotion X	rMotion X	SC-5M
	Center shock	HPG Plus with lightweight spring	HPG Plus with lightweight spring	HPG	HPG	Torsion spring	KYB Pro 40 EA-3 w/ lightweight spring	KYB Pro 40 EA		HPG Plus	HPG	Motion Control	KYB Pro 40 EA (double-rate springs)	KYB Pro 40 EA-3 (REV Gen5) KYB Pro 40 EA (REV Gen4)	HPG Plus	HPG	HPG	Motion Control
	Rear shock	KYB Pro 36 EA-3	HPG Plus	HPG	HPG	Motion Control	KYB Pro 40 EA-3	KYB Pro 40 EA		KYB Pro 36 EA	HPG	HPG	KYB Pro 40 EA	KYB Pro 40 EA-3 (REV Gen5) KYB Pro 40 EA (REV Gen4) KYB Pro Smart-Shox opt.	KYB† Pro 36 EA-3 (REV Gen5) KYB Pro 36 EA (REV Gen4)	ACS (Air Control Suspension)	HPG	HPG
ROTAX ENGINE	*Engine*	850 E-TEC Turbo R 850 E-TEC	850 E-TEC Turbo R 850 E-TEC	850 E-TEC	850 E-TEC	600 EFI – 55 600 EFI – 40	850 E-TEC Turbo R 850 E-TEC	850 E-TEC		850 E-TEC	850 E-TEC 600R E-TEC	600 EFI	600R E-TEC	850 E-TEC 900 ACE Turbo R	850 E-TEC 600R E-TEC 900 ACE Turbo R	850 E-TEC 600R E-TEC 900 ACE Turbo R 900 ACE Turbo 900 ACE	850 E-TEC 600R E-TEC 900 ACE Turbo R 900 ACE Turbo 900 ACE	600 EFI 600 ACE
	Fuel tank (L / US gal)	36 / 9.5	36 / 9.5	36 / 9.5	36 / 9.5	36 / 9.5	36 / 9.5	36 / 9.5		36 / 9.5	36 / 9.5	36 / 9.5	36 / 9.5	36 / 9.5	36 / 9.5	36 / 9.5	36 / 9.5	36 / 9.5
TRACK	*Lenght x Width x Profile (in.)*	PowderMax X-Light: 154 x 16 x 3.0 165 x 16 x 3.0 175 x 16 x 3.0 (850 E-TEC Turbo R only)	PowderMax Light with FlexEdge: 154 x 16 x 2.5 165 x 16 x 2.5 (sea-level opt. only) PowderMax X-Light with FlexEdge: 154 x 16 x 3.0 165 x 16 x 3.0	PowderMax Light with FlexEdge: 154 x 16 x 2.5 PowderMax X-Light with FlexEdge: 154 x 16 x 3.0 165 x 16 x 3.0 175 x 16 x 3.0	PowderMax II with FlexEdge: 146 x 16 x 2.5 PowderMax Light with FlexEdge: 154 x 16 x 2.5 165 x 16 x 2.5 PowderMax X-Light with FlexEdge: 154 x 16 x 3.0 165 x 16 x 3.0	Cobra with FlexEdge (Neo): 146 x 14 x 1.35 Hurricane with FlexEdge (Neo+): 146 x 15 x 1.75	PowderMax II with FlexEdge: 146 x 16 x 2.5 PowderMax Light with FlexEdge: 154 x 16 x 2.5 165 x 16 x 2.5 sea-level opt. only PowderMax X-Light with FlexEdge: 154 x 16 x 3.0 165 x 16 x 3.0	Cobra: 146 x 15 x 1.6 Ice Cobra: 146 x 15 x 1.6 PowderMax: 146 x 16 x 2.0 154 x 16 x 2.0 154 x 16 x 2.5		Cobra: 146 x 15 x 1.6 Ice Cobra: 146 x 15 x 1.6 PowderMax: 146 x 16 x 2.0	Cobra: 146 x 15 x 1.6 PowderMax: 146 x 16 x 2.0	Cobra: 146 x 15 x 1.35 PowderMax: 146 x 16 x 2.0 opt.	RipSaw II 2-ply: 137 x 15 x 1.25	RipSaw: 137 x 15 x 1.25 Ice Ripper XT: 137 x 15 x 1.25 137 x 15 x 1.5	RipSaw: 137 x 15 x 1.25 Ice Ripper XT: 137 x 15 x 1.25 137 x 15 x 1.5	Ice Ripper XT: 137 x 15 x 1.25	RipSaw: 137 x 15 x 1.25	Cobra: 137 x 15 x 1.35
OVERALL DIMENSIONS	*Ski stance (in.)*	34 adjustable	34 adjustable	36 adjustable	36 adjustable	34 adjustable	36 adjustable	39 adjustable		39 adjustable	39 adjustable	39 adjustable	43 adjustable	43 adjustable	43 adjustable	43 adjustable	43 adjustable	43 adjustable
	Length (in.)	125.5 (154 in.) 129.9 (165 in.) 136 (175 in.)	125.5 (154 in.) 129.9 (165 in.)	125.5 (154 in.) 129.9 (165 in.) 136 (175 in.)	122.4 (146 in.) 130.6 (154 in.) 135.9 (165 in.)	125.5	120.4 (146 in.) 125.5 (154 in.) 129.9 (165 in.)	125 (146 in.) 129.3 (154 in.)		125	125	125	119.6	119.6	119.6	119.6	119.6	119.6
	Width (in.)	42.5 to 43.7	42.5 to 43.7	42.5 to 43.7	42.5 to 43.7	42.5 to 43.7	42.5 to 43.7	44.9 to 46.5		44.9 to 46.5	44.9 to 46.5	44.9 to 46.5	47.6 – 48.5 – 49.4	47.6 – 48.5 - 49.4	47.6 - 48.5 - 49.4	47.9	47.9	47.9
	Height (in.)	51.4	54.9	54.9	54.9	43	54.9	50.5		50.5	50.5	50.5	49.9	49.9	49.9	52.4	49.9	49.9
ESTIMATED DRY WEIGHT	*By engine (lb)*	850 E-TEC Turbo: 449 (154 in.) 456 (165 in.) 462 (175 in.) 850 E-TEC: 430 (154 in.) 437 (165 in.)	850 E-TEC Turbo R: 448 (154 in.) 454 (165 in.) 850 E-TEC: 429 (154 in.) 436 (165 in.)	445 (154 in.) 448 (165 in.) 454 (175 in.)	447 (146 in.) 443 (154 in.) 447 (165 in.)	600 EFI – 55: 430 (Neo+) 600 EFI – 40: 419 (Neo)	850 E-TEC Turbo R: 461 (154 in.) 466 (165 in.) 850 E-TEC: 447 (146 in.) 462 (154 in.) 446 (165 in.)	472 (146 in.) 485 (154 in.)		462	850 E-TEC: 482 600R E-TEC: 466	446	468	850 E-TEC: 496 900 ACE Turbo R: 533	850 E-TEC: 486 600R E-TEC: 470 900 ACE Turbo R: 524	850 E-TEC: 518 600R E-TEC: 502 900 ACE Turbo R: 556 900 ACE Turbo: 552 900 ACE: 531	850 E-TEC: 486 600R E-TEC: 470 900 ACE Turbo R: 524 900 ACE Turbo: 518 900 ACE: 497	600 EFI: 440 600 ACE: 469

SPECIFICATIONS		TRAIL MXZ X-RS	TRAIL MXZ NEW BLIZZARD	TRAIL MXZ SPORT	TRAIL MXZ NEW NEO	TRAIL MXZ NEW 120/200	TRAIL GRAND TOURING LIMITED	TRAIL GRAND TOURING SPORT	SPORT-UTILITY EXPEDITION XTREME	SPORT-UTILITY EXPEDITION SE	SPORT-UTILITY EXPEDITION LE	SPORT-UTILITY EXPEDITION SPORT
COLOR		Platinum Silver / Spartan Red Black	Neo Yellow Black	Neo Yellow / Black	Neo Yellow / Catalyst Grey (Neo) Neo Yellow / Black (Neo+)	Neo Yellow	Platinum Silver / Spartan Red (Luxury Package) Black	Black / Neo Yellow	Black / Spartan Red	Catalyst Grey / Orange Crush Black	Arctic Desert / Black Black	Black / Neo Yellow
FEATURES	Platform	REV Gen5 (850 E-TEC only) REV Gen4	REV Gen5 (850 E-TEC only) REV Gen4	REV Gen4	REV Gen4	Youth	REV Gen4	REV Gen4	REV Gen4	REV Gen4	REV Gen4	REV Gen4
	Skis	Pilot X Pilot TX (opt. w/ Smart-Shox)	Pilot X	Pilot 5.7	Pilot 5.7		Pilot 5.7 SL	Pilot 5.7 SL	Pilot DS 3	Pilot 7.4	Pilot 7.4	Pilot DS 2
	Seating	Trail performance	Trail performance	Trail compact	Trail ultra-compact		2-up heated	2-up	1-up modular with rear seat storage	2-up modular with underseat storage	2-up modular with underseat storage	2-up
	Handlebar	U-shaped aluminum with J-hooks/ Transparent handguards	U-shaped aluminum with J-hooks/ Transparent handguards	U-shaped aluminum with J-hooks	Narrow standard with J-hooks/ handguards		Standard	Standard	Standard with J-hooks/ Grab handle	Standard with J-hooks/Grab handle	Standard with J-hooks/Grab handle	Standard with J-hooks
	Starter	Electric	Electric	Electric	Electric	Electric (200) Manual (120)	Electric	Electric	Electric	Electric	Electric	Electric
	Reverse	RER	RER	RER	RER		Electro-mechanic	Mechanical	RER (850 E-TEC) Electro-mechanic (Turbo R)	RER (2-stroke) Electro-mechanic (ACE engines)	RER (600R E-TEC) Electro-mechanic (ACE engines)	RER (600 EFI) Mechanical (ACE engines)
	Windshield height (in.)	Optional	14	14	Optional	Low	23 with mirrors	23 with mirrors	14	23 with mirrors	23 with mirrors	23
GAUGE	Type	7.2 in. digital display	7.2 in. digital display	4.5 in. digital display	4.5 in. digital display		7.2 in. digital display 7.8 in. wide LCD color display (Luxury Package)	4.5 in. digital display	4.5 in. digital display	7.2 in. wide digital 7.8 in. wide LCD color (opt. on ACE engines)	4.5 in. digital display	4.5 in. digital display
SUSPENSION	Front suspension	RAS X	RAS X	RAS X	RAS X	A-arms	RAS X	RAS X	RAS X	RAS X	RAS X	RAS X
	Front shock	KYB Pro 40 R EA-3 KYB Pro Smart-Shox opt.	KYB Pro 36 EA-3	Motion Control	Motion Control	Hydraulic twin-tube	HPG	Motion Control	HPG Plus	HPG	HPG	Motion Control
	Rear suspension	rMotion X	rMotion X	SC-5M	Neo	Neo	rMotion X	SC-5M	SC-5U	SC-5U	SC-5U	SC-5U
	Center shock	KYB Pro 40 R EA-3	HPG Plus	Motion Control	Torsion spring	Slide rail, adjustable torsion spring	HPG	Motion Control	HPG Plus	HPG	HPG	Motion Control
	Rear shock	KYB Pro 40 R EA-3 KYB Pro Smart-Shox opt.	KYB Pro 36 EA-3	Motion Control	Motion Control		ACS (Air Control Suspension)	HPG	KYB Pro 36	ACS (Air Control Suspension)	HPG	HPG
ROTAX ENGINE	Engine	850 E-TEC 600R E-TEC	850 E-TEC 600R E-TEC	600 EFI	600 EFI – 55 600 EFI – 40	200 120	900 ACE Turbo R 900 ACE Turbo 900 ACE	900 ACE 600 ACE	850 E-TEC 900 ACE Turbo R	850 E-TEC 900 ACE Turbo R 900 ACE Turbo 900 ACE	600R E-TEC 900 ACE Turbo R 900 ACE Turbo 900 ACE	600 EFI 900 ACE 600 ACE
	Fuel tank (L / US gal)	36 / 9.5	36 / 9.5	36 / 9.5		0.55 / 0.15	36 / 9.5	36 / 9.5	42 / 11.1	42 / 11.1	42 / 11.1	36 / 9.5
TRACK	Lenght x Width x Profile (in.)	RipSaw: 129 x 15 x 1.5 Ice Ripper XT: 129 x 15 x 1.5	RipSaw: 129 x 15 x 1.25 Ice Ripper XT: 129 x 15 x 1.25	RipSaw: 129 x 15 x 1.25	Cobra (Neo): 120 x 14 x 1.0 RipSaw (Neo+): 120 x 15 x 1.25	Cobra: 93 x 10 x 1.0 (200) 67 x 10 x 0.75 (120)	Silent Track II: 137 x 15 x 1.25 Studded Silent Track II: 137 x 15 x 1.25 (Luxury Package)	Silent Track II: 137 x 15 x 1.25	Cobra WT: 154 x 20 x 1.8	Silent Cobra WT: 154 x 20 x 1.5 Silent Ice Cobra WT: 154 x 20 x 1.5 opt. Silent Cobra WT: 154 x 20 x 1.8 opt.	Silent Cobra WT: 154 x 20 x 1.5 154 x 24 x 1.5	Charger: 154 x 16 x 1.5
OVERALL DIMENSIONS	Ski stance (in.)	43 adjustable	43 adjustable	43 adjustable	39 adjustable	30.5 adjustable	43 adjustable	43 adjustable	39 adjustable	39 adjustable	39 adjustable	39 adjustable
	Length (in.)	115.2	115.2	115.2	113.4 (Neo)	73 (200) 84 (120)	123.1	123.1	129.6	128.2	128.2	130.3
	Width (in.)	47.6 - 48.5 - 49.4	47.6 - 48.5 - 49.4	47.9	45.6 to 47.3	36	47.9	47.9	44.9 to 46.5	47.7 to 48.8	47.7 to 48.8	44.9 to 46.5
	Height (in.)	49.9	49.9	49.9	41.7	34	59.6	59.6	50.4	59.6	59.6	59.6
ESTIMATED DRY WEIGHT	By engine (lb)	850 E-TEC: 493 600R E-TEC: 479	850 E-TEC: 480 600R E-TEC: 466	435	600 EFI – 55: 404 600 EFI – 40: 412 (Neo+)	217 (200) 170 (120)	900 ACE Turbo R: 590 900 ACE Turbo: 586 900 ACE: 559	900 ACE: 530 600 ACE: 509	850 E-TEC: 596 900 ACE Turbo R: 634	850 E-TEC: 654 900 ACE Turbo R: 694 900 ACE Turbo: 689 900 ACE: 666	**20 in. track** 600R E-TEC: 617 900 ACE Turbo R: 670 900 ACE Turbo: 666 900 ACE: 640 **24 in. track** 600R E-TEC: 626 900 ACE Turbo R: 681 900 ACE Turbo: 676 900 ACE: 640	600 EFI: 504 900 ACE: 578 600 ACE: 532

SPECIFICATIONS		SPORT-UTILITY				
		TUNDRA		SKANDIC		
				NEW	NEW	
		 LT	 SPORT	 SE	 LE	 SPORT
COLOR		Black	Neo Yellow / Black	Catalyst Grey / Orange Crush Black	Arctic Desert / Black Black	Black / Neo Yellow
FEATURES	Platform	REV Gen4	REV Gen4	REV Gen4	REV Gen4	REV Gen4
	Skis	Pilot DS 2	Pilot DS 2	Pilot 7.4 w/ liners	Pilot 7.4	Pilot 7.4
	Seating	Short 2-up	Short 2-up	2-up modular with underseat storage	2-up modular with underseat storage	1-up modular with rear seat storage
	Handlebar	Standard with J-hooks/ Grab handle	Standard with J-hooks/ Grab handle	Standard with J-hooks/ Grab handle	Standard with J-hooks/ Grab handle	Standard with J-hooks
	Starter	Electric	Electric	Electric	Electric	Electric
	Reverse	RER (600 EFI) Mechanical (600 ACE)	RER (600 EFI) Mechanical (600 ACE)	RER (2-stroke) Electro-mechanic (ACE engines)	RER (2-stroke) Electro-mechanic (ACE engines)	RER
	Windshield height (in.)	17	17	23 with mirrors	23 with mirrors	17
GAUGE	Type	4.5 in. digital display	4.5 in. digital display	7.2 in. digital display	4.5 in. digital display	4.5 in. digital display
SUSPENSION	Front suspension	LTS	LTS	LTS	LTS	LTS
	Front shock	Motion Control	Motion Control	Motion Control	Motion Control	Motion Control
	Rear suspension	SC-5U	cMotion	SC-5U	SC-5U	SC-5U
	Center shock	Motion Control	Motion Control	HPG	Motion Control	Motion Control
	Rear shock	HPG	HPG	HPG	HPG	HPG
ROTAX ENGINE	Engine	600 EFI 600 ACE	600 EFI 600 ACE	600R E-TEC 900 ACE	600R E-TEC 600 EFI 900 ACE 600 ACE	600 EFI
	Fuel tank (L / US gal)	36 / 9.5	36 / 9.5	42 / 11.1	42 / 11.1	42 / 11.1
TRACK	Lenght x Width x Profile (in.)	Charger: 154 x 16 x 1.5	Cobra: 146 x 16 x 1.6	Silent Cobra WT: 154 x 20 x 1.5 154 x 20 x 1.8 Silent Ice Cobra WT: 154 x 20 x 1.5 154 x 24 x 1.5. opt. Silent Ice Cobra SWT: 154 x 24 x 1.5 opt.	Silent Cobra WT: 154 x 20 x 1.5 Silent Cobra SWT: 154 x 24 x 1.5 (opt. 900 ACE and 600R)	Utility WT: 154 x 20 x 1.25
OVERALL DIMENSIONS	Ski stance (in.)	32	32	35	35	35
	Length (in.)	129.3	122.4	126.9	126.9	129.3
	Width (in.)	39.1	39.1	42.8	42.8	42.8
	Height (in.)	59.6	53.9	59.6	59.6	53.9
ESTIMATED DRY WEIGHT	By engine (lb)	600 EFI: 491 600 ACE: 515	600 EFI: 466 600 ACE: 486	**20 in. track** 600R E-TEC: 632 900 ACE: 656 **24 in. track** 600R E-TEC: 669 900 ACE: 693	**20 in. track** 600R E-TEC: 596 600 EFI: 575 900 ACE: 620 600 ACE: 698 **24 in. track** 600R E-TEC: 633 900 ACE: 657	520



ACCESSORIES

// ACCESSORIES

77 PLATFORM/ACCESSORY FIT GUIDE
78 LinQ ACCESSORIES
82 FUEL & OIL CADDIES
82 STORAGE
93 SLEIGH, RACKS & HOLDERS
96 SEATS & BACKRESTS
100 WINDSHIELDS & WIND PROTECTION
107 HANDGUARDS & HANDLEBAR
109 MIRRORS
110 ADJUSTABLE RISERS & EXTENSION KITS
113 LED LIGHTS
114 BUMPERS, HITCHES & WINCHES
122 PROTECTION & REINFORCEMENT
126 TOE-HOLDS, FOOTRESTS & KNEE PADS
128 SUSPENSION & FOX SHOCK KITS
130 VENT KITS & PREFILTERS
132 COOLING & LUBRICATION
133 ELECTRICAL & ELECTRONICS
137 TRAILERING & COVERS
140 GARAGE & TRUCK SLED DECKS

SKI-DOO ACCESSORIES LIMITED WARRANTY*

// 1-YEAR ON BRP ACCESSORIES

*Purchased at an authorized BRP dealership/distributor or on a BRP-authorized online store. Other exclusions may apply, see complete limited warranty or contact your Ski-Doo authorized dealer. Unless otherwise stipulated or required by law, this limited warranty does not apply to factory-installed accessories.

GET THE RIGHT ACCESSORIES FOR YOUR SLED

You'll see a list of platforms like REV Gen4 (Narrow and Wide), REV-XP, REV-XS, REV-XM and REV-XU after the descriptions in this catalog—these indicators tell you which accessories fit your snowmobile.

Use this chart to find the platform you're riding and choose the right items to personalize your ride.



REV GEN4 (NARROW)



REV GEN4 (WIDE)

2023

MODEL	ENGINE	PLATFORM
MXZ®		
X-RS® Blizzard®	850 E-TEC	**REV Gen5**
X-RS® Blizzard® Sport	600R E-TEC 600 EFI	**REV Gen4 (Narrow)**
Neo	600 EFI	**REV Gen4 (Narrow)**
BACKCOUNTRY™		
X-RS® X® Backcountry™ Sport	All	**REV Gen4 (Narrow)**
RENEGADE®		
X-RS® X® Adrenaline®	850 E-TEC	**REV Gen5**
X-RS® X® Adrenaline® Sport	600R E-TEC 600 EFI	**REV Gen4 (Narrow)**
X-RS® X® Adrenaline® Sport	900 ACE 900 ACE Turbo 900 ACE Turbo R 600 ACE	**REV Gen4 (Wide)**
Enduro™	All	**REV Gen4 (Wide)**
GRAND TOURING		
Limited Sport	All	**REV Gen4 (Wide)**
SUMMIT®		
X® X® with Expert Package Edge® SP®	All	**REV Gen5**
Neo	600 EFI	**REV Gen4 (Narrow)**
FREERIDE™		
	All	**REV Gen5**
EXPEDITION®		
Sport	All	**REV Gen4 (Wide)**
LE SE Xtreme™	All	**REV Gen4 (Wide) 20"**
LE	All	**REV Gen4 (Wide) 24"**
TUNDRA™		
LT Sport	All	**REV Gen4 (Wide)**
SKANDIC®		
LE SE Sport	All	**REV Gen4 (Wide) 20"**
LE SE	All	**REV Gen4 (Wide) 24"**

2022

MODEL	ENGINE	PLATFORM
MACH Z™		
	900 ACE Turbo R	**REV Gen4 (Wide)**
MXZ®		
X-RS® X® TNT® Sport	All	**REV Gen4 (Narrow)**
BACKCOUNTRY™		
X-RS® X® Backcountry™ Sport	All	**REV Gen4 (Narrow)**
RENEGADE®		
X-RS® X® Adrenaline® Sport	850 E-TEC 600R E-TEC 600 EFI	**REV Gen4 (Narrow)**
X-RS® X® Adrenaline® Sport	900 ACE 900 ACE Turbo 900 ACE Turbo R 600 ACE	**REV Gen4 (Wide)**
Enduro™	All	**REV Gen4 (Wide)**
GRAND TOURING		
Limited Sport	All	**REV Gen4 (Wide)**
SUMMIT®		
X® X® with Expert Package SP	All	**REV Gen4 (Narrow)**
FREERIDE™		
	All	**REV Gen4 (Narrow)**
EXPEDITION®		
Sport	All	**REV Gen4 (Wide)**
LE SE Xtreme™	All	**REV Gen4 (Wide) 20"**
SWT	All	**REV Gen4 (Wide) 24"**
TUNDRA™		
	All	**REV Gen4 (Wide)**
SKANDIC®		
WT Sport	All	**REV Gen4 (Wide) 20"**
SWT	All	**REV Gen4 (Wide) 24"**

// YOU CAN ALSO VISIT THE SKI-DOO OWNERS CENTER: HTTPS://WWW.SKI-DOO.COM/OWNERS/PREVIOUS-MODEL-YEARS.HTML

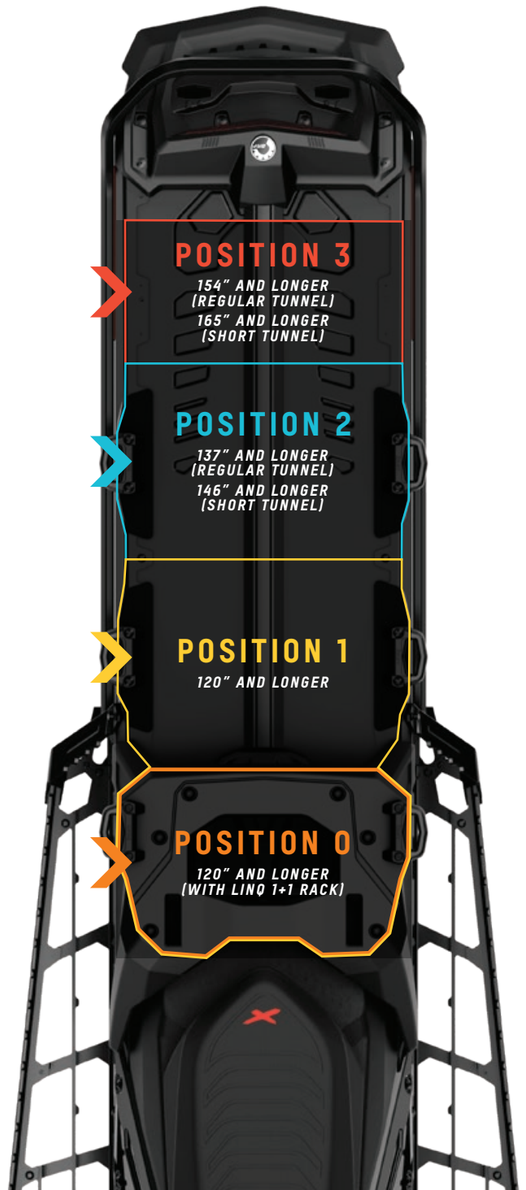
LinQ SYSTEM ACCESSORIES

// FAST, EASY AND SECURE

A BRP EXCLUSIVE, LinQ IS A TOOL-LESS SYSTEM FOR NEAR-INSTANT INSTALLATION OF ACCESSORIES.

- LinQ accessories to transform your machine to fit the moment.
- No tools needed: quickly install and remove accessories by hand.
- Stylish, fully integrated solution to your cargo needs.
- Sturdy mounting system that holds up in every terrain.

TUNNEL POSITIONS



LinQ is the industry standard in fast, secure and easy accessory attachment. Here's how you can use multiple LinQ items together to create the perfect ride.

REV GEN5, NEO AND REV GEN4 VEHICLES MULTIPLE TUNNEL CONFIGURATIONS

	POSITION 0	POSITION 1			POSITION 2		POSITION 3
	120" AND LONGER	120"	129" AND LONGER		137" AND LONGER (REGULAR TUNNEL) 146" AND LONGER (SHORT TUNNEL)		154" AND LONGER (REGULAR TUNNEL) 165" AND LONGER (SHORT TUNNEL)
	ON LINQ 1+1 RACK	ON MXZ NEO TUNNEL	ON THE TUNNEL	ON TOP OF LINQ STACKABLE FUEL CADDY	ON THE TUNNEL	BEHIND THE FUEL CADDY	ON THE TUNNEL
LinQ OIL CADDY 860202445	NO	YES	YES	YES	YES	YES	NO
LinQ STACKABLE FUEL CADDY 860202246	NO	YES	YES	NO	NO too heavy for this position	NO	NO
LinQ FUEL CADDY 860202247	NO	YES	YES	NO	NO too heavy for this position	NO	NO
LinQ DEEP SNOW PRO BAG 860202456	YES	NO	YES	YES	YES except 146" (Short Tunnel)	YES except 146" (Short Tunnel)	NO
LinQ TRAIL PRO BAG 860201986	YES	NO	YES	YES	YES except 146" (Short Tunnel)	YES except 146" (Short Tunnel)	NO
LinQ SLIM WATERPROOF TUNNEL BAG 860202451	NO	NO	YES position #1 and #2 required	NO	YES position #1 and #2 required	YES position #2 and #3 required	YES position #2 and #3 required
LinQ SNOWBOARD/SKI RACK 860202191	NO	NO	NO	NO	YES position #0 and #2 required	YES position #0 and #2 required	NO
LinQ ROLL-TOP BAG 715008110	YES	NO	YES	YES	YES on 146" and up	NO	NO
LinQ ADVENTURE TUNNEL BAG 860202444	NO	NO	YES position #1 and #2 required	NO	YES position #1 and #2 required	NO	NO
LinQ MODULAR CARGO BOX – 10 L 715005494	NO	NO	YES	NO	YES except 146" (Short Tunnel)	YES except 146" (Short Tunnel)	NO
LinQ THERMAL BOX 219400964	NO	NO	YES except when LinQ 1 + 1 Backrest is installed	NO	NO too heavy for this position	NO	NO
LinQ ADVENTURE CARGO BOX 860202448	NO	NO	NO	NO	YES position #1 and #2 required on 146" and up		NO
LinQ CARGO BOX – 62 L 860202446	NO	NO	YES position #1 and #2 required	NO	YES position #1 and #2 required	NO	NO
LinQ CARGO BOX – 40 L 860202442	NO	NO	YES position #1 and #2 required	NO	YES position #1 and #2 required	NO	NO
LinQ SR21 TUNNEL BAG 860202449	NO	YES	YES except when LinQ 1 + 1 Backrest and 1 + 1 Seat are installed		YES	NO	NO
LinQ SPORT BAG 860202447	YES	YES	YES	YES	YES	YES	NO
LinQ URBAN BAG 219401026	YES	NO	YES	YES	YES on 146" and up	NO	NO
LinQ TOOL BOX 715008111	NO	NO	YES except with 1 + 1 Seat	NO	NO too heavy for this position	NO	NO
LinQ SADDLEBAGS 860200624	NO	YES	YES	NO	NO	NO	NO
UNIVERSAL LinQ RACK 860202208	NO	YES	YES	NO	YES	YES	NO
LinQ REMOVABLE SNOW FLAP 860201914	NO	NO	YES Specific installation required, see instruction sheet for details.		YES Specific installation required, see instruction sheet for details.		YES Does not fit Short Tunnel.

LinQ ACCESSORIES REQUIREMENTS CHART

	COMPATIBILITY / REQUIREMENTS				COMPATIBILITY / REQUIREMENTS		
	REV GEN5, NEO, REV GEN4 16"		REV GEN4 20" – 24"*		RADIAN LYNX	REV-XM, REV-XS, REV-XP, REV-XU 16"	REV-XU 20" – 24"
	2022 AND UP	2021 AND PRIOR	2023 AND PRIOR		2022 AND UP		
LinQ ACCESSORIES WITH 16" BASE	LinQ anchors mounted 16 inches apart, center-to-center. Can be used on Can-Am ATV and SSV vehicles, Sea-Doo watercrafts and Ski-Doo snowmobiles.						
LinQ OIL CADDY – 1 GAL **860202445**	LinQ Cargo Base Kit **860201806** *(for installation on LinQ Stackable Fuel Caddy or on stackable LinQ accessories)*	LinQ Cargo Base Kit **860201806** *(for installation on tunnel or on stackable LinQ accessories)*	LinQ Cargo Base Kit **860202482** *(for installation on tunnel)* or **860201806** *(for installation on stackable LinQ accessories)*		LinQ Cargo Base Kit **860201806** *(for installation on LinQ Stackable Fuel Caddy or on stackable LinQ accessories)*	LinQ Cargo Base Kit **860201806**	LinQ Adaptor Plate **860200945** and LinQ Cargo Base Kit **860201806**
LinQ STACKABLE FUEL CADDY – 4 GAL **860202246**	No further requirements	LinQ Cargo Base Kit **860201806** *(for installation on tunnel)*	LinQ Cargo Base Kit **860202482** *(for installation on tunnel)*		No further requirements	LinQ Cargo Base Kit **860201806** and Shim Kit **860201432**	
LinQ FUEL CADDY – 3 GAL **860202247**						LinQ Cargo Base Kit **860201806**	
LinQ DEEP SNOW PRO BAG – 30 L **860202456**	LinQ Cargo Base Kit **860201806** *(for installation on LinQ Stackable Fuel Caddy or on stackable LinQ accessories)*	LinQ Cargo Base Kit **860201806** *(for installation on tunnel or on stackable LinQ accessories)*	LinQ Cargo Base Kit **860202482** *(for installation on tunnel)* or **860201806** *(for installation on stackable LinQ accessories)*		LinQ Cargo Base Kit **860201806** *(for installation on LinQ Stackable Fuel Caddy or on stackable LinQ accessories)*	LinQ Cargo Base Kit **860201806** and Shim Kit **860201432**	
LinQ TRAIL PRO BAG **860201986**							
LinQ SLIM WATERPROOF TUNNEL BAG – 26 L **860202451**	No further requirements	LinQ Cargo Base Kit 2 X **860201806** *(for installation on tunnel)*	LinQ Cargo Base Kit 2x **860202482** *(for installation on tunnel)*		No further requirements	Not compatible	Not compatible
SLIM TUNNEL BAG WITH SOFT STRAPS – 15 L **860202440**						LinQ Cargo Base Kit 2x **860201806** *(Not compatible on REV-XS)*	
LinQ SNOWBOARD/SKI RACK **860202191**		LinQ Cargo Base Kit **860201806** *(for installation on tunnel)*	Not compatible			Not compatible	
LinQ ROLL-TOP BAG – 40 L **715008110**	LinQ Cargo Base Kit **860201806** *(for installation on LinQ Stackable Fuel Caddy or on stackable LinQ accessories)*	LinQ Cargo Base Kit **860201806** *(for installation on tunnel or on stackable LinQ accessories)*	LinQ Cargo Base Kit **860202482** *(for installation on tunnel)* or **860201806** *(for installation on stackable LinQ accessories)*		LinQ Cargo Base Kit **860201806** *(for installation on LinQ Stackable Fuel Caddy or on stackable LinQ accessories)*	LinQ Cargo Base Kit **860201806** and Shim Kit **860201432**	LinQ Adaptor Plate **860200945** and LinQ Cargo Base Kit **860201806**
TUNNEL BACKPACK WITH LinQ SOFT STRAP – 28 L **860200939**	No further requirements	LinQ Cargo Base Kit 2 X **860201806** *(for installation on tunnel)*	Not compatible		No further requirements	LinQ Cargo Base Kit 2x **860201806** *(Not compatible on REV-XS)*	Not compatible
LinQ ADVENTURE TUNNEL BAG – 40 L **860202444**						Not compatible	
LinQ THERMAL BOX – 16 L **219400964**		LinQ Cargo Base Kit **860201806** *(for installation on tunnel)*	LinQ Cargo Base Kit **860202482** *(for installation on tunnel)*			LinQ Cargo Base Kit **860201806** and Shim Kit **860201432**	LinQ Adaptor Plate **860200945** and LinQ Cargo Base Kit **860201806**
LinQ ADVENTURE CARGO BOX – 90 L **860202448**		LinQ Cargo Base Kit 2 X **860201806** *(for installation on tunnel)*	LinQ Cargo Base Kit 2x **860202482** *(for installation on tunnel)*			REV-XM requires LinQ Cargo Base Kit 2x **860201806** *(Not compatible with REV-XU, REV-XP and REV-XS)*	Not compatible
LinQ CARGO BOX – 62 L **860202446**						Not compatible	
LinQ CARGO BOX – 40 L **860202442**						REV-XM requires LinQ Cargo Base Kit 2x **860201806** *(Not compatible with REV-XU, REV-XP and REV-XS)*	
LinQ SR 21 TUNNEL BAG – 21 L **860202449**	LinQ Cargo Base Kit **860201806** *(for installation on LinQ Stackable Fuel Caddy or on stackable LinQ accessories)*	LinQ Cargo Base Kit **860201806** *(for installation on tunnel or on stackable LinQ accessories)*	LinQ Cargo Base Kit **860202482** *(for installation on tunnel)* or **860201806** *(for installation on stackable LinQ accessories)*		LinQ Cargo Base Kit **860201806** *(for installation on LinQ Stackable Fuel Caddy or on stackable LinQ accessories)*	Not compatible	
LinQ SPORT BAG – 17 L **860202447**						LinQ Cargo Base Kit **860201806** *(Not compatible with REV-XU)*	LinQ Adaptor Plate **860200945** and LinQ Cargo Base Kit **860201806**
LinQ URBAN BAG **219401026**						LinQ Cargo Base Kit **860201806** and Shim Kit **860201432**	
LinQ TOOL BOX – 19 L **715008111**	No further requirements	LinQ Cargo Base Kit **860201806** *(for installation on tunnel)*	LinQ Cargo Base Kit **860202482** *(for installation on tunnel)*		No further requirements	LinQ Cargo Base Kit **860201806** and Shim Kit **860201432**	LinQ Adaptor Plate **860200945** and LinQ Cargo Base Kit **860201806**
LinQ MODULAR CARGO BOX – 10 L **715005494**	No further requirements	LinQ Cargo Base Kit **860201806** *(for installation on tunnel)*	LinQ Cargo Base Kit **860202482** or **860201806** *(for installation on tunnel)*		LinQ Cargo Base Kit **860201806**		
LinQ RACKS & HOLDERS							
LinQ UNIVERSAL RACK **860202208**	No further requirements	LinQ Cargo Base Kit **860201806** *(for installation on tunnel)*	LinQ Cargo Base Kit **860202482** *(for installation on tunnel)*		No further requirements	LinQ Cargo Base Kit **860201806**	Not compatible
LinQ TOOL HOLDER **860201846**							LinQ Cargo Base Kit **860201806**

Skandic Sport 2022 and 2021 may have specific requirements. Please refer to product descriptions.

FUEL & OIL CADDIES

LinQ FUEL CADDY – 1 GALLON

REV Gen5, Neo, REV Gen4, XS, XM, XR, XP, XU

860201774 • Canada only*
860201775 • US only*



- 1 US gallon (3.78 liter) capacity.
- Smaller size for less weight.
- Can be used in position 1 or 2 and on top of LinQ Stackable Fuel Caddy.
- Easy pour design for sleds or power tools.
- Doesn't fit Grand Touring REV-XS.

LinQ OIL CADDY – 1 GALLON

REV Gen5, Neo, REV Gen4, XS, XM, XR, XP, XU

860202445



- 1 US gallon (3.78 liter) capacity.
- Can be used in position 1 or 2.
- Can be used on top of LinQ Stackable Fuel Caddy.
- Doesn't fit Grand Touring REV-XS.
- See table on pages 80 and 81 for requirements.

LinQ STACKABLE FUEL CADDY – 4 GALLONS

REV Gen5, Neo, REV Gen4, XU, XS, XM, XR

860202246



- Quick, easy and secure installation with LinQ system.
- No-Spill spout for easy use.
- 3.7 US gallon (14 liter) capacity.
- Single LinQ tunnel bag or LinQ oil caddy stacks on top for more storage.
- Meets the new latest Flame Mitigation Device (FMD) standard.
- Cannot be used with Luggage Rack Reinforcement Plates (860200798).
- See table on pages 80 and 81 for requirements.

LinQ FUEL CADDY – 3 GALLONS

REV Gen5, Neo, REV Gen4, XS, XM, XR, XP, XU

860202247



- Quick, easy and secure installation with LinQ system.
- No-Spill spout for easy use.
- 3 US gallon (11 L) capacity.
- Meets the new latest Flame Mitigation Device (FMD) standard.
- Doesn't fit Grand Touring REV-XS.
- Cannot be used with Luggage Rack Reinforcement Plates (860200798).
- See table on pages 80 and 81 for requirements.

STORAGE

LinQ DEEP SNOW PRO BAG – 30 L

REV Gen5, Summit Neo, REV Gen4, XU, XS, XM, XR

860202456



- Watertight (with TiZip)—our highest level of waterproofing.
- Lightweight—uses one set of LinQ fasteners.
- Fits positions 1, 2 and on top of LinQ Stackable Fuel Caddy.
- Expandable 9 to 30 liters (2—6 US gallons, 550–1,831 cu in) capacity.
- Improved Shovel Holder System.
- See table on pages 80 and 81 for requirements.

DEEP SNOW PRO BAG COVER LID

Fits on Deep Snow Pro Bag and LinQ Trail Pro Bag

860202132



- Replacement cover for Deep Snow Pro Bag.
- Improved Shovel Holder System on lid.
- Mesh pocket under the lid for easy, quick access to smaller items.

*While supplies last.

SEAT STORAGE BOX – 6 L

REV Gen5 (Trail), REV Gen4 (Narrow)

860202532



- Low-profile integrated storage box utilizing the battery area.
- Added storage capacity of 1.5 L (0.4 US gallons, 916 cu in) with battery and 6 L for a vehicle without the battery.
- Same height as battery cover.
- Rainproof liner included.
- Works with Deluxe Tool Kit (860202029) (not included).
- Allows use of LinQ tunnel accessories.
- Does not work with 1 + 1 seat.

LinQ SLIM WATERPROOF TUNNEL BAG – 26 L

REV Gen5, Summit Neo, REV Gen4 (137" and longer)

860202451



- Rigid bottom and top design.
- Allows storage of removable snow flap.
- Waterproof inner roll top.
- Shovel can be stored while assembled on top of the bag.
- 16 to 26 liters (4.2 to 6.9 US gallons, 976 to 1,587 cu in) capacity.
- Fit on the tunnel in positions 1 & 2 and 2 & 3.
- See table on pages 80 and 81 for requirements.

SLIM TUNNEL BAG WITH SOFT STRAPS – 15 L

137" and longer with 1-up and 2-up seats (except XU 20" and 24" and XS)

860202440



- Low profile, positioned flat on tunnel, for convenient out-of-the-way storage.
- Easy access full wrap-around zipper.
- Top mount shovel pocket.
- 15 liters (4 US gallons, 915 cu in) capacity.
- See table on pages 80 and 81 for requirements.

SHOVEL WITH SAW HANDLE

860201919



- Design with better cutting edge.
- Features integrated saw handle.
- Blade flips 90° to pull snow away.
- Can be dismantled for easy storage.

SAW & HANDLE REPLACEMENT FOR SHOVEL

520002004



- D-shaped handle.

2.8 M AVALANCHE PROBE

520000408



- Lightweight, durable and strong ½ inch (12 mm) aluminum tubing construction.
- 7–16" (40 cm) color-coded sections.
- Weight: 13 oz (370 g).

SKI-DOO PULLING STRAP

860202195



- Save your back and get unstuck the easy way.
- Lightweight, compact, affordable.
- Extremely robust material.
- Available in yellow only. 2 per pack.

STORAGE

LinQ DEEP SNOW SEAT BAG – 5 L

REV Gen4 Summit and Freeride (without battery) — **860201274**



- 5 liters (1.3 US gallons, 305 cu in) capacity.
- Improved design with greater capacity than the LinQ Seat Bag (860201355).
- Thermoformed hard plastic base.
- Requires Low Profile Battery Compartment Cover (860201505).

EXTREME SEAT BAG – 5 L

REV-XM, XP, XU Tundra Xtreme — **860200745**



- A must for extreme deep snow riding.
- Low-profile bag lets you add storage without getting in the way of your riding needs.
- Fully integrated and allows for the REV-XM seat to easily clip on/off in seconds without taking away any tunnel space.
- Works in conjunction with REV-XM seat.
- 5 liters (1.2 US gallons, 305 cu in) capacity.
- Inner zipper to access underseat compartment.

LinQ SNOWBOARD/SKI RACK

REV Gen5, Summit Neo, REV Gen4 16", 146" and longer
Fits short tunnel — **860202191**



- Newly redesigned—simpler, quicker and easier way to attach skis or snowboards.
- Fits 2 snowboards or 1 pair of skis and poles.
- Easy to adjust from skis to boards or back in seconds.
- Fits all sizes of skis, snowboards and snowsurfs.
- Easy release straps can be operated with gloves on.
- Rubber cushions protect edges and hold ski poles securely without damage.
- Non-intrusive positioning.
- Can be installed with stock bumper using the Reinforcement Kit (860202385).
- Works with the new hitch and Adventure rear bumpers also.
- See table on pages 80 and 81 for requirements.

LinQ SNOWBOARD/SKI RACK REINFORCEMENT KIT

Fits with LinQ Snowboard/Ski Rack (860202191) except REV Gen5 and Renegade X-RS, Grand Touring, MXZ, Expedition Sport and Tundra LT — **860202385**



- Use to install the LinQ Snowboard/Ski Rack with the stock rear bumper.
- Adds strength and support to the tunnel.

PROTECTIVE DECAL FOR LinQ SNOWBOARD/SKI RACK

(Not illustrated) — **516006982**

- To protect your tunnel from ski tip scratches when using the LinQ Snowboard/Ski Rack.

RISER BLOCK BAG

REV Gen5 (Deep Snow), REV Gen4 with 235 mm riser, XP Summit, XU Tundra, Skandic, XM (for risers 175 mm and up) — **860201564** • Long

REV Gen5 (Deep Snow), REV Gen4 with 165 mm riser and longer, REV-XM, XP, XR, XU Tundra — **860201550** • Short



- Innovative 2-pocket carry bag for secure storage around the steering riser block.
- 3W heated insulated pocket design reduces the chance of water bottles freezing and increases the battery life of small electronic equipment.
- Includes RCA adaptor kit.
- Requires Heated Visor Kit (860201234) for REV-XU, XM, XS, XP, XR and (860201283) for REV Gen4, sold separately.

OIL SUPPORT CADDY/GOGGLE BAG

REV-XM, XS — **860200614**



- Multi-purpose bag.
- Allows you to easily access and carry an extra liter of XPS oil or a spare set of goggles.
- Installs conveniently on top of the CVT cooling system.
- Models without E-TEC engine need the Acoustic Plate (512060847).

GOGGLE DRYING BAG

Neo, REV Gen4 (Narrow) — **860201691**



- Designed specifically for a spare set of goggles.
- Under hood heat clears and dries wet fogged goggles.
- Protects goggles during the ride.

LinQ MODULAR CARGO BOX

REV Gen5, Summit Neo, REV Gen4 — **715005494** • 10 liters (2.6 gallons)



- 10 liters (2.6 gallons) of hard-sided modular storage capacity.
- Heavy duty construction with weather-resistant sealed lid.
- Stackable with single LinQ bag or additional modular boxes for the ideal storage solution.
- See table on pages 80 and 81 for requirements.

COMBO BAG – 30 L

REV Gen4 (Wide) Renegade (except Renegade Sport) — **860201821**



- Works with Comfort Seat (REV Gen4 (Wide)).
- 30 liters (6 US gallons, 1,831 cu in) capacity.
- Provides additional storage while not using any tunnel space.
- Compatible with LinQ tunnel accessories.
- Multiple compartments with easy access.
- Thermoformed hard plastic base, semi-rigid top and sides.
- Waterproof inner lining.

SR50 UTILITY BAG – 50 L

REV Gen4 (Wide) 20" and 24" — **860201939**



- Replaces passenger seat in seconds for additional storage.
- Quick release straps to easily access storage underneath.
- Waterproof to keep your cargo dry.
- 50 liters (11 US gallons, 3,052 cu in) capacity.
- Works with the 135-liters LinQ Utility Cargo Box (860201781).

COMBO BAG – 31 L

REV Gen5 (Trail), REV Gen4 (Narrow)
(MXZ, Backcountry and Renegade except Sport models) — **860201475**



- 31 liters (8.2 US gallons, 1,892 cu in) capacity.
- Multiple compartments with easy access.
- Thermoformed hard plastic base, semi-rigid top and sides.
- Vehicles with pull start require the Battery Cover (860201407).

LinQ ROLL-TOP BAG – 40 L

REV Gen5, Summit Neo, REV Gen4, XU — **715008110**



- Fully waterproof roll-top design secures gear tightly.
- 40 liters (10.6 US gallons, 2,441 cu in) of adjustable capacity.
- Heavy-duty rigid plastic base.
- Foam-lined bottom for additional protection.
- Integrated handle for easy transportation on/off the vehicle.
- See table on pages 80 and 81 for requirements.

NEW LinQ URBAN BAG

REV Gen5, Summit Neo, REV Gen4 — **219401026** • Black



- Versatile LinQ storage solution with up to 40 liters (10.5 US gallons) of added storage.
- Heavy-duty construction with high-quality zippers and water resistant outer shell.
- Easy-access large roll-top opening.
- Reversible integrated flap with water-resistant storage.
- Integrated vehicle key holder.
- Waterproof removable liner with integrated pocket and laptop storage.
- Backpack Option includes adjustable, removable shoulder system, ergo-fitted back padding and lightweight shoulder system design.
- See table on pages 80 and 81 for requirements.

TUNNEL BACKPACK WITH LinQ SOFT STRAP – 28 L

137" and longer (except XU 20" and 24") — **860200939** • Black, **860200940** • Orange



- Includes a compartment for the Ski-Doo Shovel (860201919) and 2.8 m Avalanche Probe (520000408) (not included).
- Quick-disconnect system instantly transforms the bag into a backpack.
- 28 liters (7.4 US gallons, 1709 cu in) capacity.
- See table on pages 80 and 81 for requirements.

STORAGE

LinQ ADVENTURE TUNNEL BAG – 40 L

REV Gen5, Summit Neo, REV Gen4 137" and longer — **860202444**



- 40 liters (10.6 US gallons, 2,441 cu in) capacity.
- Thermoformed hard base and semi-rigid sides and top.
- Cover can be removed for easier access.
- Multiple compartments, separators and fixation points for hooks or bungee cords.
- Inside goggle soft pocket.
- See table on pages 80 and 81 for requirements.

LinQ THERMAL BOX – 16 L

REV Gen5, Summit Neo, REV Gen4, XM, XS, XP, XU (except Grand Touring) — **219400964**



- Rotomolded design with 16 liters (4.2 US gallons, 976 cu in) capacity.
- High quality foam insulation for optimal performance hot or cold.
- Does not fit with 1+1 backrest.
- See table on pages 80 and 81 for requirements.

LinQ ADVENTURE CARGO BOX – 90 L

REV Gen5, Summit Neo, REV Gen4, XM, 146" and up — **860202448**



- Extra large 90 liters (24 US gallons, 1,465 cu in) capacity.
- Uses 16" LinQ mounts in position 1 and 2.
- Easy on and off.
- 2 LinQ anchors can be added on lid of box to install 16" LinQ accessories or additional storage.
- Rugged and tough rotomolded plastic construction.
- Not compatible with short tunnel.
- See table on pages 80 and 81 for requirements.

LinQ CARGO BOX – 62 L

REV Gen5, Summit Neo, REV Gen4 137" and up — **860202446**



- Standard on Grand Touring Limited model.
- Optional LinQ mounts can be added on top for even more capacity.
- 62 liters (16.3 gallons, 3,765 cu in) capacity.
- See table on pages 80 and 81 for requirements.

LinQ CARGO BOX BAG – 62 L

Fits with LinQ Cargo Box (860202446) — **860201635**



- Easy to take everything with you on arrival.
- 62 liters (16.3 gallons, 3,765 cu in) capacity.

LinQ CARGO BOX TOP COVER

Fits with LinQ Cargo Box (860202446) — **860201808** • Silver; **860201768** • Black



- Matches the color of the vehicle perfectly.

LinQ CARGO BOX – 40 L

Fits 137" and longer (except all XU and XS models) — **860202442**



- Rigid molded plastic construction with integrated design.
- Provides dry, safe storage.
- 40 liters (11 US gallons, 2,441 cu in) capacity.
- See table on pages 80 and 81 for requirements.

CARGO BAG – 80 L

REV Gen5, Neo, REV Gen4, XM, XP, XU, Backcountry, Freeride, Renegade, Summit, Tundra, 137" and up — **860200801**



- Rugged all-purpose utility design.
- Sealed PVC construction.
- 80 liters (21 US gallons, 4,882 cu in) capacity.
- Integrated attachment system.
- Includes rain cover for added resistance to the elements.
- Can also double as travel/duffle bag.

LinQ RETROFIT KIT FOR CARGO BAG

(Not illustrated) — **860200941**

- 4 straps to adapt the Cargo Bag (860200801) to LinQ system.
- LinQ Cargo Base Kit (2x) (860201806) not included but required to mount the bag on the tunnel.

LinQ TRAIL PRO BAG – 30 L

REV Gen5, Summit Neo, REV Gen4, XU, XS, XM, XR — **860201986**



- Premium bag with our highest level of waterproofing.
- Watertight zipper (TiZip).
- Map holder and quick access storage compartment on lid.
- Mesh pocket under the lid for easy, quick access to smaller items.
- Brightly colored interior makes locating items easier.
- Lightweight and mounts securely using one set of LinQ anchors.
- Expandabl capacity of 9 to 30 liters (2–6 US gallon, 550–1,831 cu in).
- See table on pages 80 and 81 for requirements.

TRAIL PRO BAG COVER LID

Fits on Deep Snow Pro Bag and LinQ Trail Pro Bag — **860202383**



- Replacement cover for Trail Pro Bag.
- Map holder and quick access storage compartment on lid.
- Mesh pocket under the lid for easy, quick access to smaller items.

LinQ SR 21 TUNNEL BAG – 21 L

REV Gen5, Neo, REV Gen4 — **860202449**



- Semi-rigid expandable LinQ tunnel bag.
- 21 liters (5.5 US gallons, 1,282 cu in) capacity.
- Can be installed on top of LinQ Stackable Fuel Caddy or behind seat.
- Easy one-second on/off tool-less system.
- See table on pages 80 and 81 for requirements.

LinQ SPORT BAG – 17 L

REV Gen5, Neo, REV Gen4, XM, XS, XP, XR (except GTX, Grand Touring) — **860202447**



- 17 liters (4.5 US gallons, 1,037 cu in) capacity.
- Rigid bottom, semi-rigid top.
- Does not fit on REV-XU Tundra with a rack.
- See table on pages 80 and 81 for requirements.

LinQ TRAIL SEAT BAG – 11 L

REV Gen5 (Trail), REV Gen4 (Narrow) MXZ, Backcountry and Renegade (except Sport models) — **860201275**



- 11 liters (2.9 US gallons, 671 cu in) capacity.
- Thermoformed hard plastic base, semi-rigid sides and top.
- Vehicles with pull start require the Battery Cover (860201407).

LinQ SEAT BAG – 4 L

REV Gen4 (Narrow) — **860201355**



- Integrated storage that stays out of the way.
- 4 liters (1 US gallons, 244 cu in) capacity.
- Easy on/off.
- Can be used with tunnel bags or fuel caddies.
- Vehicles with pull start require the Battery Cover (860201407).
- Thermoformed hard plastic base.

STORAGE

HANDLEBAR BAG – 2 L

REV Gen5 (Trail), REV Gen4 without mountain strap | **860201565**



- 2.3 liters (0.6 US gallons, 122 cu in) capacity.
- Semi-rigid construction.
- Mounted sturdily with clamp setup.
- Can be removed easily with vehicle's tool.
- Inside soft liner.
- Water-resistant.
- Thermoformed hard plastic base.
- Features a pocket to separate items.

LinQ TOOL BOX – 19 L

REV Gen5, Summit Neo, REV Gen4, XU, XM, XS, XP | **715008111**



- 19 liters (5 US gallons, 1,160 cu in) capacity.
- Weather-resistant design features a sealed cover.
- See table on pages 80 and 81 for requirements.

LinQ SADDLEBAGS – 26 L

REV Gen5, Neo, REV Gen4 16", XP, XR, XM, XS (except Grand Touring, GTX and MXZ X-RS) | **860200624**



- Premium semi-rigid saddlebags using the LinQ mounting system.
- Easy attach and remove.
- Can be used in conjunction with additional LinQ mounted accessories at the same time.
- 26 liters (6.9 US gallons, 1,587 cu in) capacity, (2 x 13 L (2 x 3.45 US gallons)).
- LinQ Fastener included (715001707).
- Requires LinQ Cargo Base kit (860201806) for installation on REV Gen4 16" tunnels (2021 and prior).

COMBO BAG – 45 L

REV-XP, XR, XS | **860200623***



- Uses easy on/off clip system.
- No need to remove seat.
- Multiple pockets.
- 45 liters (11.9 US gallons, 2,746 cu in) capacity.

TUNNEL BAG – 40 L

REV-XP, XR, XS, XM, XU Tundra | **860200824**



- Includes a compartment for the Ski-Doo Shovel (860201919) (not included).
- Chassis premarked for easier installation of bag on tunnel.
- 40 liters (10.6 US gallons, 2,441 cu in) capacity.
- Extension provides more cargo space when required.

TUNNEL BAG – 25 L

REV-XP, XR, XM, XS, XU | **860200826**



- Uses our cleat and bag retaining system (Patent USD607,313).
- Innovative thermoformed tunnel bag, designed for a slick look and rigid structure.
- Chassis premarked for easier installation of bag on tunnel.
- 25 liters (6.6 US gallons, 1,526 cu in) capacity.

MODULAR TUNNEL BAG EXTENSION – 38 L

REV-XR GTX and Grand Touring, REV-XS Grand Touring | **860200173***



- Versatile multi-configuration bag.
- Use alone, with or without Fuel Caddy, or with Semi-Rigid Tunnel Bag (860200174).
- Installs horizontally or vertically and removes easily.
- 38 liters (10 US gallons, 2,319 cu in) capacity.

*While supplies last.

LinQ UTILITY CARGO BOX – 135 L

REV Gen4 20" and 24" | **860201781**



- Massive capacity of 135 liters (36 US gallons, 8,238 cu in).
- 4 LinQ anchors (860201806) can be added on lid of box to install 16" LinQ accessories or additional storage.
- Slots molded in for plywood dividers.
- Rugged and tough rotomolded plastic construction.
- Integrated axe and saw holders.
- Removable/lockable lid.
- Dedicated hooks for bungee cords or elastic net to expand storage capacity on top of the box.
- 4 fixation hook points to secure cargo in the box and 4 molded handle features for ease of transportation.
- Multi LinQ Plate Retrofit Kit (860202133) required for REV Gen4 Skandic Sport.

EXTRA LARGE XU BAG – 150 L

REV-XU Skandic, XU Expedition | **860201179***



- Extra large 150 liters (40 US gallons, 9,154 cu in) capacity bag shaped to fit utility model racks.
- Weather-resistant polyester, includes compartment organizer.

CARGO BOX – 75 L

REV-XU Skandic WT, SWT, Expedition SE, LE, Xtreme MY19 and prior | **860200395**



- 75 liters (19.8 US gallons, 4,577 cu in) capacity.
- Made of durable polyethylene.
- Provides additional secure storage.
- Convenient flip top provides easy access to stored goods.
- Standard on SE 2019 and prior models.

RACK AND NET KIT FOR CARGO BOX

860201025



- Rack to carry additional items on top of Cargo Box.
- Net to better secure items inside Cargo Box (860200395).

CENTER CARGO BOX – 20 L

REV-XU Skandic and Expedition | **860200732**



- 20 liters (5.28 US gallons, 1,221 cu in) capacity.
- Easily interchangeable with passenger seat.
- Provides additional storage space.
- Can be padlocked.
- Can be installed in conjunction with Cargo Box (860200395).

UNDER-SEAT STORAGE BAG

REV-XU Skandic and Expedition | **860201063**



- Padded bag protects your items and makes them easy to transport.

STORAGE ACCESSORIES

HEATED TANK BAG – 2 L

REV-XR, XU | **860201127**



- Easy-access bag with full-length zipper.
- Map pocket.
- Access gas cap without removing bag.
- 3W heated, insulated pocket for battery-powered electronics, e.g., cell, GPS.
- Access to the 12V plug-in port.
- 2.4 liters (0.6 US gallons, 122 cu in) capacity.
- Includes RCA adaptor plug kit.
- Requires Heated Visor Kit (860201234) (not included but required for installation).

*While supplies last.

STORAGE ACCESSORIES

3W HEATER FOR BAGS — 515176786



- Replacement or additional heater for heated bags.

DASHBOARD BAG – 2 L

REV-XP — **860201176**



- Easy-access bag designed to provide extra storage.
- 2 liters (0.5 US gallons, 116 cu in) capacity.

BATTERY COVER

REV Gen4 16" without battery[1]	**860201720**
Neo, REV Gen4 16" with battery[2]	**511001210**



- Stock on REV Gen4 (Wide).
- [1]Support bracket and plastic cover included.
- [2]Plastic cover included.
- Required when installing Comfort Seat (860201551, 860201633) on REV Gen4 (Narrow).

BATTERY COVER

REV Gen4 16" (Narrow) without battery[1]	**860201407**
REV Gen4 16" with battery[2]	**511001053**



- Use in conjunction with LinQ Seat Bag (860201355), LinQ Trail Seat Bag (860201275), LinQ Combo Bag (860201475) or LinQ 1 + 1 Seat System (860201268) on models without a battery.
- Stock on REV Gen5 (Trail), Neo and REV Gen4 (Narrow) with battery.
- [1]Support bracket and plastic cover included.
- [2]Plastic cover included.

LOW PROFILE BATTERY COMPARTMENT COVER

REV Gen4 16" without battery — **860201505**



- Required for REV Gen4 sleds without battery for LinQ Deep Snow Seat Bag (860201274) and for improved aesthetics.

GLOVEBOX FOR ONE-PIECE LIGHTWEIGHT HOOD

REV Gen4 Summit and Freeride (2020-2021), Summit Expert (2022) with one-piece lightweight hood	**860202193**
REV Gen4 Summit and Freeride (2022) with one-piece lightweight hood	**860202572**



- Adds storage to one-piece lightweight hoods.
- Provides an additionnal 4.6 liters (1.2 gallons, 280 cu in) capacity.
- Approximately 2 water bottles or 2 pairs of goggles.
- Easy access for smaller items.
- Bright yellow interior to find objects easier.
- Water resistant.
- Includes new mount to reposition the factory gauge.
- Works with a windshield or deflector.
- Compatible with USB intelligent Power Outlet Kit (860202433) and 12-Volt Power Outlet Kits (860201423).

GLOVEBOX EXTENSION / CELL PHONE HOLDER

Neo, REV Gen4 — **860202072**



- Doubles the storage with additional 3.5 liters (0.9 US gallon, 211 cu in) capacity (includes Glovebox Extension (517305966)).
- Can be used with or without windshield.
- Door allows for perfect positioning and mounting of a cell phone.
- Cell Phone heater included.
- Requires USB intelligent Power Outlet Kit (860202433) and Harness Extension for Cellphone Holder and USB plug (515178153) for installation.
- For screen size up to 6.4" (16.26 cm) x 3.3" (8.38 cm).
- Fits all cell phones with a 6.4" screen or smaller.
- Works with capacitive and resistive touch screen technology.
- Not compatible with Summit and Freeride with one-piece lightweight hood.
- Does not include cell phone.

GLOVEBOX EXTENSION / GPS SUPPORT

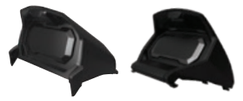
Neo, REV Gen4 — **860201249**



- Doubles the storage with additional 4 liters (1 US gallon, 244 cu in) capacity.
- Can be used with or without windshield.
- GPS sold separately.
- Door allows for perfect positioning and mounting of GPS.
- Replaces stock storage compartment cover.
- Not compatible with Summit and Freeride with one-piece lightweight hood.

NEW GLOVEBOX EXTENSION / GPS SUPPORT

REV Gen5 (Trail)	**860202436** • 5 liter (1.3 US gallon)
REV Gen5 (Deep Snow)	**860202501** • 6 liter (1.6 US gallon)



860202436 **860202501**

- Increases storage by an additional capacity.
- Door allows for perfect positionning and mounting of GPS.
- Replaces stock storage compartment cover.
- Can be used with or without windshield.
- Garmin Zumo 590 GPS sold separately.
- Ready to receive Cellphone Holder 860202372.

NEW HARNESS EXTENSION FOR USB PLUG

(Not illustrated)

REV Gen5 — **515178153**

- Required for USB intelligent Power Outlet Kit 860202433 when installed on REV Gen4 models.

GLOVEBOX REPLACEMENT DOOR / CELLPHONE HOLDER

(Not illustrated)

Fits with Glovebox Extension (860201249) — **860202169**

- Replacement door to update Glovebox Extension with a Cellphone Holder.
- Door allows for perfect positioning and mounting of a cell phone.
- Cell phone heater included.
- Requires USB Intelligent Power Outlet Kit (860202433) and Harness Extension for Cellphone Holder and USB plug (515178153) for installation.
- For screen size up to 6.4" (16.26 cm) x 3.3" (8.38 cm).
- Works with capacitive and resistive touch screen technology.

NEW CELLPHONE HOLDER

REV Gen5 — **860202372**



- New design is independent of the Glove Box Extension door.
- Water resistant door allows for perfect phone positioning.
- Heating element preserves cell phone battery longer.
- Features capacitive and resistive touch screen technology.
- Spring system in back plate automatically adjusts for thickness.
- USB Intelligent Power Outlet is included for charging.
- Fits all cellphones within 7.2" (185 mm) x 3.3" (85 mm) x (15 mm) dimensions.
- Works with almost all charger wires.
- Does not include cell phone or charging wires.
- Can be used with or without windshield.
- Requires Glovebox Extension (860202436 or 860202501) depending on the vehicle.

GLOVEBOX LINER

REV-XM, XS 2014 and up — **860201084***



- Padded inner liner protects items.
- Design seals against snow intrusion.
- Glovebox Extension compatible.
- Can be used with 3W Heater for Bags (515176786) (not included).

GLOVEBOX LINER

Neo, REV Gen4 — **860201270**



- Thermoformed liner has a soft finish interior.
- Features one pocket to separate items.
- Not compatible with Lightweight Hood (860202087).

**While supplies last.*

LinQ ACCESSORIES AND REPLACEMENT PARTS FOR LinQ STORAGE ACCESSORIES

MULTI LinQ PLATE RETROFIT KIT | Skandic Sport | **860202133**



- Retrofit to add Multi LinQ Plate on Skandic Sport.
- Allows more LinQ configurations on the tunnel.
- Includes rear double light.

LinQ LOCK | **860201968** • Pack of 1 with 2 keys
860202478 • Pack of 2 with 4 keys



- Simple way to lock most LinQ accessories in place.
- Retrofits most LinQ accessories.
- Lock cover prevents snow and ice build-up.
- Not compatible with LinQ Tool Holder, LinQ Working Light, LinQ 4.2 US gal (16L) cooler and LinQ Tool Box.

LinQ FASTENER | **715001707**



- Works with LinQ Snowboard/Ski Rack (860201255/860201222/860202191) and LinQ Saddlebags (860200624).
- Tool-less installation and removal.
- Sold in pairs.

LinQ CARGO BASE KIT | **860201806**



- Unique mounting fastener usable on any LinQ System accessory.
- Includes: 2 Cargo LinQ bases and hardware.

LinQ CARGO BASE KIT | REV Gen4 (Wide) 20" and 24" equipped with the Multi LinQ Plate | **860202482**



- Unique mounting fastener usable on any LinQ System accessory.
- Includes: 2 Cargo LinQ bases and hardware for Multi LinQ Plate (860202133).

LinQ CARGO BASE RETROFIT KIT | REV Gen4 (Wide) 20" and 24"equipped with the Multi LinQ Plate | **860201812**



- Hardware to fit LinQ Cargo Base Kit on 20" and 24" tunnels with Multi LinQ Plate Retrofit Kit (860202133).

LinQ PROTECTIVE DECAL KIT

REV Gen5, Summit Neo	**516010972**
REV Gen4	**516007627**



- Durable Lexan[1] decals to protect your tunnel.
- 2 decals included.

LinQ PROTECTIVE DECAL KIT | REV-XS, XM, XP, XU Tundra | **860200767**



- Replacement item on model years 2013 and up but required for using the LinQ accessories on model years 2012 and prior.
- 2 decals included.

RUBBER LATCH SERVICE KIT FOR LinQ TUNNEL ACCESSORIES
(Not illustrated)
LinQ Tunnel Bags and LinQ Fuel and Oil Caddies. | **860201057**

LinQ REPAIR KIT T-LOCK ALUMINUM
(Not illustrated)
860201753 • Left Side
860201754 • Right Side

- Replaces LinQ mechanism.
- Includes lever, T-lock and hardware.

LinQ REPAIR KIT T-LOCK PLASTIC
(Not illustrated)
860201137 • Left Side
860201138 • Right Side

- Replaces LinQ mechanism.
- Includes lever, T-lock and hardware.

SHIMS FOR LinQ ACCESSORIES | REV-XS, XM, XP, XU 16" | **860201432**



- Required to fit LinQ accessories on REV-XS, XM, XP and XU Tundra.
- See last column of the chart on page 79 for accessories that require shims.
- Does not fit 120" models.

LinQ ADAPTOR PLATE | REV-XU 20" and 24" | **860200945**



- Allows installation of LinQ Cargo Base (860201806) on embossed REV-XU tunnels.

SLEIGH, RACKS & HOLDERS

RACKS

LinQ SLEIGH | Fits on vehicles equiped with Tongue Hitch | **860202544**



- Comes with an easy to retract protective cover that prevents snow intrusion while still allowing the installation of LinQ accessories on the sleigh top.
- LinQ accessories can be installed on top and inside (LinQ Cargo Base Kit not included).
- Made of high-molecular-weight polyethylene.
- 2-part removable cover.
- Rain resistant.
- Carbide ready (860201044).
- Slots for dividers precast in. (Dividers not included.)
- Dimensions 81" (206 cm) L x 33" (84 cm) W x 21" (54 cm) H.
- Volume 485 L (110 US gallons, 29 597 cu in).
- Weight capacity: 750 lb (340 kg) TOTAL (including top); max on top 75 lb (34 kg).
- Spring dampened pull bar.

LinQ UNIVERSAL RACK | REV Gen5, Neo, REV Gen4 | **860202208**



- This Universal Rack can make generic accessories LinQ compatible.
- Allows a multitude of products and configurations on LinQ tunnels.
- See table on pages 80 and 81 for requirements.

RACKS

LinQ UNIVERSAL RACK – OTHER BRANDS

Other vehicles with tunnel of 15" to 17" wide (378 mm to 432 mm) — **860202357**



- Universal rack designed to fit non-LinQ tunnels (Ski-Doo and competitive brands).
- Install LinQ accessories on non-LinQ compatible tunnels.
- Allows a multitude of products and configurations on almost any sled.
- Double the storage by adding another on longer tunnels.
- Includes installation hardware for side mounting.
- Fits 14.875 to 17 inch (37.8 cm to 43.2 cm) wide tunnels.

LinQ REAR CARGO RACK

REV Gen4 (Wide) 20" and 24" — **860201800**



- Replaces passenger seat for extra cargo capacity.
- Simple attachment.
- Retains underseat access with clever hinge system.
- Allows use of more LinQ bags.

LinQ REAR CARGO RACK

REV-XU Skandic and Expedition — **860200914**



- Provides mounting point for LinQ Cargo Base Kit (860201806).
- Compatible with LinQ fuel caddies and tunnel bags.
- Easily interchangeable with passenger seat.
- Provides additional cargo space.

CARGO RACK KIT

REV Gen4 146" Backcountry (except Backcountry X-RS) , Summit SP, Tundra — **860202217**

REV Gen4 154" Summit SP, Tundra, Expedition Sport — **860202223**



- Maximizes tunnel cargo capacity.
- Integrated anchor points for bungees or tie downs.
- Adds functionality with mounts for LinQ Tool Holders (860201846).

LUGGAGE RACK REINFORCEMENT PLATES

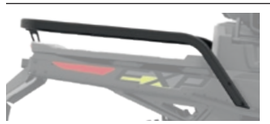
REV-XM, XP, XR, XS, XU Tundra — **860200798**



- Additional reinforcement for your long and short rear racks.
- Made of high strength steel.
- Sold in pairs.

CARGO RACK KIT

REV Gen4 (Wide) 20" Expedition Xtreme and Skandic Sport — **860202245**



- A convenient way to maximize tunnel cargo space.
- Required to install the Chain Saw Holder (860201827).
- Includes the rack and hardware.
- 1¼" Hitch included.

REAR RACK EXTENSION

REV-XU Skandic and Expedition — **860200700**



- Delivers increased cargo space.
- Does not fit with XU Heavy-Duty Rear Bumper (860201106).

HOLDERS

LinQ AXE HOLDER

REV Gen5, Neo, REV Gen4, XM, XS, XU,137" and up — **860201854**



- Securely mounts on either side of the tunnel using LinQ anchors.
- Universal sizing to fit a wide variety of axes.
- Can be mounted on either side of the vehicle.

CHAIN SAW HOLDER

REV Gen4 (Wide) 20" and 24" — **860201827**



- Securely mounts to rear of vehicle.
- Retains full function of LinQ accessories, including cargo box.
- Compatible with most blades up to 18".
- Cargo Rack Kit (860202245) required for Expedition Xtreme and Skandic Sport.
- Not compatible with LinQ Adventure Cargo Box (860202448).

LinQ ICE AUGER HOLDER

REV Gen4 (Wide) 20" and 24" except Skandic Sport and Expedition Xtreme — **860201828**



- Securely mounts to right side of vehicle.
- Easy on/off and installation.
- Retains full function of LinQ accessories.
- Handles augers with up to 10" blades.
- May be installed with Heavy-Duty Hitch Rear Bumper (860201795)

LinQ GUN BOOT HOLDER

REV Gen4 (Wide) 20" and 24" except Skandic Sport and Expedition Xtreme — **860201829**



- Securely mounts to side of vehicle.
- Easy on and off LinQ installation.
- Retains full function of LinQ accessories.
- Can be installed on either side of the tunnel.
- Required for Gun Boot use on vehicle.
- May be installed with Heavy-Duty Hitch Rear Bumper (860201795).

GUN BOOT HOLDER

REV-XU Skandic, XU Expedition — **860200984***



- Can be installed on either side of the sled, facing forward or rearward and at any angle.
- Required for Gun Boot use on vehicle.

LinQ TOOL HOLDER

REV Gen5, Neo, REV Gen4, XS, XM — **860201846**



- Designed for universal applications.
- Convenient swivel latch allows tools like a shovel to be stored in multiple positions.
- Designed specifically for winter use.
- Sold in pairs.
- See table on pages 80 and 81 for requirements.

GUN BOOT 6.0 IMPACT† BY KOLPIN†

715001419



- Features largest interior room of all Kolpin Gun Boot cases.
- Extra room for pistol-grip-type weapons and small bipods.
- Easily fits firearms up to 51" (130 cm) in total length.
- Provides ample room for 60 mm scopes.
- Hatchback design allows easy access.
- Snap-close cover with locking capability.
- Ergonomically designed handle and molded attachment points for sling.
- Designed to accommodate left- and right-hand bolt-action rifles and shotguns.
- Includes removable, shock-absorbing foam and nylon impact liner for superior interior protection.
- Requires Gun Boot Holder (860200984 or 860201829) for installation.

*While supplies last.

SEATS & BACKRESTS

SEATS

HEATED SEAT

REV Gen4 (Wide) 20" and 24" — **860202032**



- Adds warmth in the coldest conditions.
- Multiple High/Low/OFF settings.

PASSENGER HEATED SEAT

REV Gen4 (Wide) 20" and 24" (Expedition Xtreme and Skandic Sport) — **860202033**



- Complete seat adds warmth for a passenger.
- 1 + 1 configuration.
- Includes heated handles.
- Passenger Backrest (860202036) can be added for more comfort.
- Same seat as 860202037 with heat added.
- High/Low/Off settings.

HEATED SEAT

Neo, REV Gen4 16" — **860201633**



- Adds warmth in the coldest conditions.
- Multiple High/Low/OFF settings.
- Same base platform as Comfort Seat (860201551) providing additional hip support via wider cushion design.
- Integrated rear storage.
- Battery Cover with Support (860201720) required for REV Gen4 (Narrow) without battery.
- Battery cover (511001210) required for Neo and REV Gen4 (Narrow) with battery.
- 2 Summit seat posts (510006693) required for installation on REV Gen4 (Narrow) Summit 2020 and prior.
- 2 seat post (510007122) required for installation on REV Gen4 (Narrow) Summit and all Sport models, 2021 and up.

COMFORT SEAT

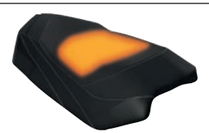
REV Gen5 (Trail), Neo, REV Gen4 16" — **860201551**



- Provides additional support and length.
- Provides additional hip support via wider cushion design.
- Integrated rear storage.
- Battery Cover with Support (860201720) required for REV Gen4 (Narrow) without battery.
- Battery cover (511001210) required for REV Gen5, Neo and REV Gen4 (Narrow) with battery.
- 2 Summit Seat Posts (510006693) required for installation on REV Gen4 (Narrow) Summit 2020 and prior.
- 2 Seat Posts (510007122) required for installation on REV Gen4 (Narrow) Summit and all Sport models, 2021 and up.
- Not compatible with Battery Cover (860201407).

HEATED SEAT

REV-XS, XM — **860201458**



- Add warmth with this heated seat.

LOW PROFILE SEAT

REV Gen5, Neo, REV Gen4 16" — **860202344**



- Compact design for freedom of movement.
- Great support for deep snow.
- Easy tool-less installation.
- 155 mm (6") height.

LIGHTWEIGHT PERFORMANCE SEAT

REV Gen5, Neo, REV Gen4 16" — **860202221**



- Ultra-compact design for active riders.
- Our smallest, lightest seat at 1.27 kg (2.8 lb.).
- Allows easier side-to-side changes.
- 100 mm (4") height.
- Provides great freedom of movement.
- Gripper style vinyl resists wear and tear and provides better control.
- Stock on the Summit X with Expert package.

FORTY7C PERFORMANCE SEAT

REV Gen5, Neo, REV Gen4 16" — **860201736**



- Developed by Deep Snow expert Carl Kuster.
- Provides even greater freedom of movement.
- Lower, narrower and lighter than stock Summit seat.
- Integrated grip areas.

LinQ 1 + 1 SEAT SYSTEM

REV Gen5, Neo, REV Gen4 16" — **860202348**



- The ultimate in modular seating.
- Allows quick changes between 1-up and 2-up riding.
- Ergonomically correct positions for driver and passenger.
- Two easy tool-less steps:
  1 – Clip in seat.
  2 – Add LinQ 1 + 1 Backrest.
- Battery Cover with Support (860201407) required for vehicle without battery.

LinQ 1 + 1 SEAT SYSTEM

REV-XM, XS, XP, XR (except GTX, Grand Touring), XU Tundra — **860202347**



- The ultimate in modular seating.
- Allows quick changes between 1-up and 2-up riding.
- Ergonomically correct positions for driver and passenger.
- Two easy tool-less steps:
  1 – Clip in seat.
  2 – Add LinQ 1 + 1 Backrest.

NEW DRIVER SEAT

REV Gen5, Neo, REV Gen4 16" (except Grand Touring) — **860202523**



- Longer, wider and flatter design provides more hip support.
- Modular design allows easy installation of LinQ Passenger Seat – Sport.
- Seat mounting posts included.

NEW LinQ PASSENGER SEAT – SPORT

REV Gen5, Neo, REV Gen4 16" (except Grand Touring and Tundra) — **860202325**



- The ultimate modular seating solution.
- Quickly changes from riding solo to riding with a passenger.
- Provides comfortable, ergonomically correct positions for both driver and passenger.
- Easy tool-less clip in attachment with the LinQ system.
- Compatible with LinQ Lock and Passenger Backrest.
- Requires LinQ 1+1 rack (860202414) and Driver Seat (860202523) or MXZ seat for installation.

NEW LinQ 1 + 1 RACK

REV Gen5, Neo, REV Gen4 16" (except Grand Touring and Tundra) — **860202414**



- Required for LinQ Sport Passenger Seat use.
- Great looks with or without the passenger seat mounted.
- Provides an additionnal LinQ position (for soft accessories only) when passenger seat isn't in use.
- Made of lightweight die cast aluminum.

1 + 1 SEAT

REV Gen5, Neo, REV Gen4 16" (except Grand Touring and Expedition) — **860201766**



- Quick, easy installation and ideal ergonomics for driver and passenger.
- Full tunnel capacity is maintained and allows additional accessories to be added.
- Battery Cover with Support (860201407) required for vehicle with rewind.

1 + 1 SEAT

REV-XM, XS, XP, XR (except GTX, Grand Touring), XU Tundra — **860200665**



- Quick, easy installation and ideal ergonomics for driver and passenger.
- Full tunnel capacity is maintained and allows additional accessories to be added.

SEATS

LinQ 1 + 1 SEAT HEATED GRIPS



Neo, REV Gen4 16" with 1 + 1 seat and passenger seat with handles, REV Gen4 (Wide) 20" and 24" with passenger seat with handles	**860201840**
REV-XS, XM 2016-2019	**860202030***

- Allow your passenger to ride in comfort in all conditions.
- Easy unplug.
- Requires Seat Wiring Harness (515178588) for installation on REV Gen4 (Wide) 20" and 24" models.

2-UP SEAT



REV-XP, XR, XM, XS, XU Tundra — **860201314**

- Extended seat providing convenient 2-up riding.
- Complete seat assembly with passenger strap.
- Replaces existing seat in seconds.
- Ideal use with LinQ Snowboard/Ski Rack (860201222).

COMPACT PASSENGER SEAT



REV Gen5 (Trail), Neo, REV Gen4 16" — **860202220**

- Longer seat allows for a passenger while being more compact than the 1+1 seat.
- Easy, tool-less installation.
- Complete assembly features a passenger strap.
- Tunnel capacity is maintained for additional accessories.
- 180 mm (7") height.
- Battery Cover with Support (860201720) required for REV Gen4 (Narrow) without battery.
- Battery Cover with Support (511001210) required for Neo and REV Gen4 (Narrow) with battery.

PASSENGER SEAT



REV Gen4 20" and 24" — **860202037**

- Passenger seat to transform into a 1 + 1 configuration.
- Includes safety handles.
- Passenger Backrest (860202036) can be added for more comfort.
- Stock on REV Gen4 Expedition LE, SE.

PASSENGER BACKREST



REV Gen4 20" and 24" — **860202036**

- Passenger backrest to complement the Passenger Seat (860202037) for added back comfort.
- Passenger Seat required for installation.
- Stock on REV Gen4 Expedition LE, SE.

PASSENGER MUFFS FOR 1 + 1 SEAT



REV Gen4, XS, XM 2018 and prior with 1+1 Seat	**860200831***
	860201028**

**Fits seat with handles and handguards.*
***Fits seat with handles only.*

- Muffs fit snugly around the passenger handles and provide total warmth even on the coldest days.
- Easy to install and remove.

PASSENGER MUFFS FOR 1 + 1 SEAT



REV Gen5 (Trail), Neo, REV Gen4, XS, XM 2019 and up with 1+1 Seat. — **860201929**

- Ultra warm passenger muffs with fleece liner.
- Designed for extreme cold conditions.
- Easy to remove in warmer weather.
- Fits with REV Gen4 new handles.

**While supplies last.*

HEATED GRIPS WITH GUARDS FOR 1 + 1 SEAT



REV-XS, XM 2016 and up — **860201322**

- Allow your passenger to ride in comfort in all conditions.
- Self disconnect.

BACKRESTS

LinQ 1 + 1 SEAT BACKREST



REV Gen5 (Trail), Neo, REV Gen4 16"	**860202360**
REV-XM, XS, XP, XR (except GTX, Grand Touring), XU Tundra	**860202362**

- Option for 1 + 1 Seat when not sold as a kit.
- Can be locked using a padlock (not included).

LinQ 1 + 1 BACKREST ANCHOR BASE KIT



REV Gen5 (Trail), Neo, REV Gen4 16"	**860202059**
REV-XM, XS	**860202060**

- Allows installation of LinQ 1 + 1 Backrest on more than one vehicle.

RUBBER LATCH FOR LinQ 1 + 1 BACKREST

(Not illustrated)

510005617 • Left Side
510005618 • Right Side

ADJUSTABLE BACKREST



REV-XP, XR, XM, XS, XU Tundra — **860200823**

- Adjustable and works in conjunction with 2-Up Seat (860201314).
- Positionable for passenger or driver use.
- Rigid steel frame and integrated foam pad.
- Easy, tool-less removal when not needed.

PASSENGER SEAT / BACKREST



REV-XU Skandic, XU Expedition — **619400068**

PASSENGER BACKREST



REV-XU Skandic, XU Expedition — **860200060**

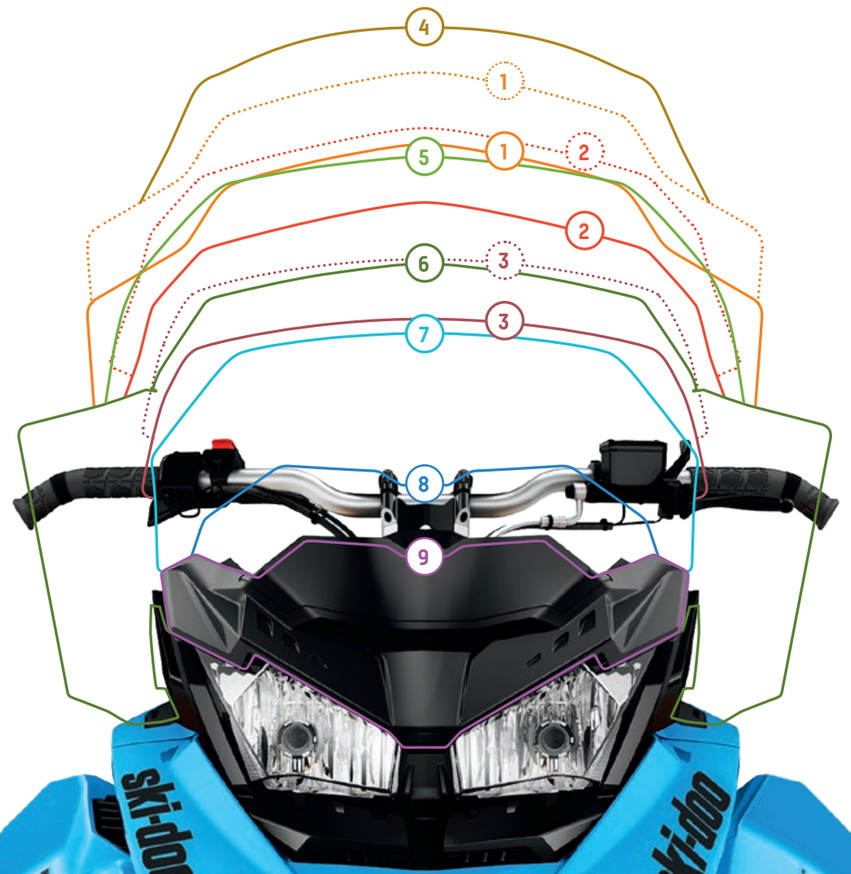
- Enhances the comfort level of your seat by adding this backrest option.

WINDSHIELDS & WIND PROTECTION

// EASILY CHOOSE YOUR IDEAL WINDSHIELD

ADJUSTABLE WINDSHIELDS		LOWEST POSITION	HIGHEST POSITION
1 *HIGH TO ULTRA HIGH*	860201782	23" (58.5 cm)	27" (68.5 cm)
2 *MEDIUM TO HIGH*	860201493	19" (48.5 cm)	23" (58.5 cm)
3 *LOW TO MEDIUM*	860201820	14.5" (37 cm)	17" (43 cm)

WINDSHIELDS		HEIGHT
4 *ULTRA HIGH*	860202124	27.5" (70 cm)
5 *HIGH*	860201495	23" (58.5 cm)
6 *MEDIUM*	860201258 / 860202471	17" (43 cm)
7 *LOW*	860201448 / 860202472 860202470 / 860202602	14" (36 cm)
8 *ULTRA LOW*	860201259	8" (20 cm)
9 *CENTRAL DEFLECTOR*	517305875	For REV Gen4 platform



REV GEN5

NEW WINDSHIELD SIDE DEFLECTORS
(Not illustrated)

REV Gen5 (Trail) — **860202469**

- Added wind protection for use with low height windshields.

NEW LOW WINDSHIELD

REV Gen5 (Trail) — **860202470**



- Low height – 14" (36 cm) in length.
- Offers additionnal wind protection with integrated style.
- Injection molded for clarity.
- Includes windshield support.

NEW MEDIUM WINDSHIELD
(Not illustrated)

REV Gen5 (Trail) — **860202471**

- Medium height – 17" (43 cm) in length.
- Offers additionnal wind protection with integrated style.
- Injection molded for clarity.
- Compatible with Windshield-Mount Mirrors.
- Complete kit includes windshield, side deflectors, windshield support and hardware.

NEW POWDER DEFLECTOR
(Not illustrated)

REV Gen5 (Deep Snow) — **860202601**

- Deflects snow to the sides and away from the rider's face.
- Compatible with Low Windshield.

NEW LOW WINDSHIELD
(Not illustrated)

REV Gen5 (Deep Snow) — **860202602**

- Low height – 19" (48 cm) in length.
- Offers additionnal wind protection with integrated style.
- Compatible with Powder Deflector.

NEW LOW WINDSHIELD

Youth — **860202570**

- Low height – 14" (36 cm) in length.
- Offers protection with integrated style.
- Thermoformed molded for clarity.

REV GEN4

ADJUSTABLE WINDSHIELD LOW TO MEDIUM

Neo, REV Gen4 — **860201820** • Smoke



- Quickly change your level of wind protection with the flip of a lever.
- Compatible with Glove Box Extension (860201249).
- Adjustable range of 14.5" (37 cm) to 17" (43 cm).
- Windshield support included.

REV GEN4

ADJUSTABLE WINDSHIELD MEDIUM TO HIGH

Neo, REV Gen4 (except X-RS)

860201493 • Smoke



- Quickly change your level of wind protection with the flip of a lever.
- Compatible with Glove Box Extension (860201249).
- Adjustable range of 19" (48.5 cm) to 23" (58.5 cm).
- Side deflectors and windshield support not included.
- Not compatible with One-Piece Lightweight Hood.

ADJUSTABLE WINDSHIELD HIGH TO ULTRA HIGH

Neo, REV Gen4 (except X-RS)

860201782 • Smoke



- Quickly change your level of wind protection with the flip of a lever.
- Compatible with Glove Box Extension (860201249).
- Adjustable range of 23" (58.5 cm) to 27" (68.5 cm).
- Side deflectors and windshield support not included.
- Not compatible with One-Piece Lightweight Hood.

ULTRA LOW WINDSHIELD

Neo, REV Gen4

860201259 • Smoke



- 8" (20 cm) in length.
- Sporty and aggressive look.
- Windshield support not included.

LOW WINDSHIELD

Neo, REV Gen4

860201448 • Smoke



- 14" (36 cm) in length.
- High quality, best durability.
- Includes low windshield support.

LOW WINDSHIELD

Neo, REV Gen4

860202472 • Dark Smoke



- 14" (36 cm) in length.
- High quality, best durability.
- Includes low windshield support.

MEDIUM WINDSHIELD KIT

Neo, REV Gen4

860201258 • Smoke



- 17" (43 cm) in length.
- Offers a generous amount of protection with integrated style.
- Injection molded for clarity.
- Compatible with Windshield-Mount Mirrors.
- Complete kit includes windshield, side deflectors, windshield support and hardware.
- Not compatible with One-Piece Lightweight Hood.

HIGH WINDSHIELD

Neo, REV Gen4 (except X-RS)

860201495 • Smoke



- 23" (58.5 cm) in length.
- Side deflectors and windshield support not included.
- Compatible with Windshield-Mount Mirrors.
- Not compatible with One-Piece Lightweight Hood.

ULTRA HIGH WINDSHIELD

Neo, REV Gen4 (except X-RS)

860202124



- New shape.
- 27.5" (70 cm) length.
- Provides maximum wind protection.
- Side deflectors and support not included.
- Compatible with Windshield-Mount Mirrors.
- Not compatible with One-Piece Lightweight Hood.

WINDSHIELD SIDE DEFLECTOR KIT

Neo, REV Gen4 – For low and ultra low windshields

860201449 • Smoke



- Increases wind deflection for windshields.
- Compatible with Adjustable Windshield – Low to Medium (860201820).
- Not compatible with One piece Lightweight Hood.

WINDSHIELD SIDE DEFLECTOR KIT

Neo, REV Gen4 – For low and ultra low windshields

860202473 • Dark Smoke



- Increases wind deflection for windshields.
- Compatible with Adjustable Windshield – Low to Medium (860201820).
- Not compatible with One-Piece Lightweight Hood.

WINDSHIELD SIDE DEFLECTOR KIT

Neo, REV Gen4 – For medium and higher windshields

860201256 • Smoke



- Increased wind deflection for windshields.
- Compatible with Windshield-Mount Mirrors.

SIDE PANEL DEFLECTOR KIT

REV Gen4 (Wide)

860201879 • Smoke



- Added wind protection.
- Standard on the Grand Touring Limited.

WINDSHIELD SUPPORT

Neo, REV Gen4 – For ultra low and low windshields

517305749 • Black
517306380 • Manta Green
517306375 • Sunburst Yellow



WINDSHIELD SUPPORT

Neo, REV Gen4 – For medium and high windshields

517306183 • Black
517306456 • Sunburst Yellow



- Not compatible with One-Piece Lightweight Hood.

CENTRAL DEFLECTOR

Neo, REV Gen4

517305875 • Black
517306432 • Sunburst Yellow
517306433 • Manta Green
517306473 • White Bright
517306697 • Lava Red
517306764 • Orange Crush
517307054 • Labrador Blue
517307061 • Nordic Teal
517307383 • Catalyst Grey



REV-XS & REV-XM

ULTRA LOW WINDSHIELD

REV-XM, XS

860200901 • Smoke



- 6" (15 cm) in length.

REV-XS & REV-XM

MEDIUM SPORT PERFORMANCE FLARED WINDSHIELD



REV-XM, XS — **860200696** • Smoke

- 12" (31 cm) in length.
- One piece with integrated deflectors.

MEDIUM INJECTED WINDSHIELD AND SIDE DEFLECTOR KIT



REV-XM, XS — **860200759** • Smoke

- 13.5" (34 cm) in length.
- Offers a generous amount of protection with integrated style.
- Medium side deflectors ready to receive Windshield Mirrors (860200694).
- Includes medium windshield support.

HIGH WINDSHIELD



REV-XM, XS — **860200928** • Smoke

- 18" (46 cm) in length.
- Side deflectors and windshield support not included.

HIGH SPORT PERFORMANCE FLARED WINDSHIELD



REV-XM, XS — **860200602** • Smoke*

- 16" (41 cm) in length.
- One piece with integrated deflectors.
- Redirects snow in deep powder conditions.

ULTRA HIGH WINDSHIELD



REV-XM, XS — **860201185** • Clear

- 24" (60 cm) in length.
- Our largest sport windshield ever.
- One piece with integrated deflectors.
- Maximum wind protection, for extreme cold conditions.

EXTRA HIGH WINDSHIELD



REV-XM, XS — **860201182** • Smoke*

- 20" (51 cm) in length.
- Standard on 2016-2018 Grand Touring Sport.
- Side deflectors and windshield support not included.

WINDSHIELD SIDE DEFLECTOR KIT



REV-XM, XS – For low and ultra low windshields — **860201012** • Smoke
REV-XM, XS – For medium and high windshields — **860200912** • Smoke

- Increases wind deflection for windshields.
- Ready for Windshield Mirrors (860200694).

WINDSHIELD SIDE DEFLECTOR KIT



REV-XM, XS – For medium and higher windshields — **860201221** • Smoke

- Adds lower body wind protection.
- Ready for Windshield Mirrors (860200694).
- Standard on 2016-2019 Grand Touring Sport.

*While supplies last.

WINDSHIELD BASE



REV-XM, XS – For ultra low, low and one-piece windshields — **517305403** • Grey, **517305617** • Manta Green, **517305808** • Sunburst Yellow — **517305948** • Lava Red, **517305952** • White, **860200937** • Black

REV-XM, XS – For medium and high windshields — **860200944** • Black

- Colored plastic trim.
- Hardware not included.

REV-XP

ULTRA LOW FIXED WINDSHIELD



REV-XP — **860200646** • Smoke with X graphic

- 6" (15 cm) in length.

LOW WINDSHIELD AND SIDE DEFLECTOR KIT



REV-XP — **860200545** • Smoke

- 12" (30 cm) in length.
- Same complete kit as found on the 2011–2012 X package models.
- Retrofittable on earlier REV-XP snowmobile models.
- Includes low windshield, side deflector and base kit.

MEDIUM WINDSHIELD KIT



REV-XP — **860200478** • Smoke

- Includes medium injected windshield, dark smoke side deflector kit and base kit.

SPORT PERFORMANCE FLARED WINDSHIELD



REV-XP — **860200547** • Smoke

- 17.5" (44.5 cm) in length.
- One piece with integrated side deflectors.
- Complete with base mounting kit.

ULTRA HIGH WINDSHIELD



REV-XP — **860200225** • Clear with fading*

- 23" (58 cm) in length.

Note: J-hooks need to be removed to install windshield.

WINDSHIELD SIDE DEFLECTOR KIT



REV-XP — **860200084** • Dark Smoke

- For medium and high windshields.
- Increases wind deflection.

*While supplies last.

REV-XP

WINDSHIELD BASE KIT — REV-XP — **860200089** • Black



- For ultra low and low windshields.
- Plastic trim for windshields.

WINDSHIELD BASE KIT — REV-XP — **860200091** • Black



- For medium, high and ultra high windshields.
- Plastic trim for windshields.

REV-XR & REV-XU

SPORT PERFORMANCE FLARED WINDSHIELD — REV-XR, XU — **860200438** • Smoke*



- 17.5" (44.5 cm) in length.
- One piece with integrated side deflectors.
- Top flare maximizes wind protection and redirects snow in deep powder conditions.
- Complete with base mounting kit.

SPORT PERFORMANCE FLARED WINDSHIELD — REV-XR, XU — **860200453** • Smoke



- 14" (35.6 cm) in length.
- One piece with integrated side deflectors.
- Top flare maximizes wind protection and redirects snow in deep powder conditions.
- Complete with base mounting kit.

EXTRA HIGH ONE-PIECE WINDSHIELD — REV-XR, XU — **860201000** • Clear



- 23" (58 cm) in length.
- One piece with integrated deflectors.
- Maximum wind protection, for extreme cold conditions.
- Ready to receive Windshield-Mount Mirrors (517305787).
- No windshield base required.

WINDSHIELD SIDE DEFLECTOR KIT — REV-XR, XU — **860200234** • Smoke



- Increased wind deflection for windshields.

Note: Fits medium and high windshields using base kit (860200229).

WINDSHIELD BASE KIT — REV-XR, XU — **860200229** • Black



- For medium and high windshields.
- Black plastic trim.

**While supplies last.*

WINDSHIELD BASE KIT — REV-XR, XU — **860200230** • Black



- For extra high and ultra high windshields.
- Black plastic trim.

HANDGUARDS & HANDLEBAR

HANDGUARDS

FLEXIBLE HANDGUARDS — REV Gen5, Neo, Youth, REV Gen4, XS, XM, XP, XR, XU — **860201561** • Black



- Designed to withstand roll-overs and tough boondocking conditions.
- Feature smaller size deflector made of flexible material.
- Mounts feature a flexible base.
- Does not fit with medium to ultra high windshields.
- Fits with Pivoting Mirror Kit for Handguards (860200893).

TRANSPARENT HANDGUARDS — REV Gen5, Neo, REV Gen4, XS, XM, XP, XR, XU — **860200789** • Clear



- Design delivers better protection and great style.
- Comes with Black/Grey colored interchangeable caps.
- Appropriate for trail riding.
- Sold in pairs.
- Does not fit with medium to ultra high windshields.

TRANSPARENT HANDGUARDS — REV Gen5, Neo, REV Gen4, XS, XM, XP, XR, XU — **860202474** • Dark Smoke



- Design delivers better protection and great style.
- Comes with Black/Grey colored interchangeable caps.
- Appropriate for trail riding.
- Sold in pairs.
- Does not fit with medium to ultra high windshields.

HANDGUARD EXTENSION KIT — Vehicles with Transparent Handguards — **860200781**



- Semi-rigid, won't collapse at high speed.
- Delivers additional hand protection from the elements.
- Can be installed and removed in seconds.

HANDGUARD CAPS — Vehicles with Transparent Handguards or Flexible Handguards

860201344 • Sunburst Yellow / Black
860201345 • Race Orange / Black
860201346 • Black / Grey
860201347 • White / Black
860201648 • Lava Grey
860201457 • Orange Crush / Black
860201649 • Manta Green / Black
860202098 • Octane Blue / Black



- Colored caps let you customize your look.
- Sold in pairs.

HANDLEBAR ACCESSORIES

DEEP SNOW LOW GRAB HANDLE

REV Gen5, Neo, REV Gen4 — **860201975**



- Provides more freedom of movement in active riding.
- Standard on Summit X with Expert package 2020 and up. Standard on Summit and Freeride 2021 and up.
- Not compatible with Handlebar Bag (860201565).

GRAB HANDLE

REV Gen5, Neo, REV Gen4 — **860202035**



- Molded rubber grab handle used for side-hilling maneuvers.
- Not compatible with Handlebar Bag (860201565).

PERFORMANCE SMALL DIAMETER HANDLEBAR

REV Gen5, Neo, REV Gen4 — **860201974**



- Narrow design used for more agile and precise maneuvers in mountain or trail applications, ideal for smaller hand grip.
- Smaller diameter providers a lighter, easier grip.
- 20 mm (0.79 in) grip, 22 mm (0.87 in) clamper diameter at riser.
- Less hand fatigue.
- Grips included.

HANDLEBAR PAD

REV Gen5, Neo, REV Gen4 – Vehicles without grab handle — **860201581**



HANDLEBAR MUFFS

Does not fit vehicles with large handlebar pad
Fits with all handguards 2015 and up — **860201144***



- Ultra-warm handlebar muffs with fleece liner.
- Designed for extreme cold conditions.
- Easy to remove in warmer weather.
- Can be used on handlebars with or without handguards and mirrors.
- Inner skeleton allows muffs to keep their shape and gives more space for hand movement.
- Transparent section allows visibility and easy manipulation of control switches.

Note: Never use handlebar muffs with finger throttle lever.

NEW HANDLEBAR MUFFS

REV Gen5, Neo, REV Gen4, (except Grand Touring 2016 and up) — **860202207**



- Ultra-warm muffs with faux-fur liner for extreme cold conditions.
- Thermoformed construction allows muffs to keep their shape and provides more space for hand movement.
- Robust attachment system with magnetic opening and closure.
- Easy to install and remove with gloves on.
- Large transparent section allows visibility of control switches.

Note: Never use handlebar muffs with finger throttle lever.

BRAKE RESERVOIR GUARD

REV Gen5 (Deep Snow), Summit Neo, REV Gen 4 Summit and Freeride — **860202519**



- Increases impact protection for the brake reservoir.
- Window to see fluid level.
- Cast aluminum construction.
- Detailed technical finish.

DEEP SNOW PERFORMANCE GRIPS

Fits with Performance Small Diameter Handlebar — **860202096**



- Aggressive pattern for extra grip.
- 20 mm (0.79 in) inner diameter grip.

*While supplies last.

TRAIL PERFORMANCE GRIPS

REV Gen5, Neo, REV Gen4, XM, XS, XU — **860201802**



- Aggressive pattern for extra grip.
- 22 mm (0.87 in) inner diameter grip.
- Doesn't fit on Performance Small Diameter Handlebar (860201974).

MIRRORS

PIVOTING MIRROR KIT FOR HANDGUARDS

Vehicles with Transparent Handguards or Flexible Handguards — **860200893**



- Perfectly integrated design and style.
- Mirrors fold away when not in use for easy storage or when covering vehicle.
- Sold in pairs.

WINDSHIELD-MOUNT MIRRORS

REV Gen5, Neo, REV Gen4 with medium and higher windshields — **860201285**



- Mirror shape creates an integrated look.
- Mounts on medium and higher windshield side deflectors and can be adjusted for 1-up or 2-up riding.
- Mirrors can fold away when not in use for easy storage or when covering vehicle.

WINDSHIELD-MOUNT MIRRORS

REV-XU, XR (with extra high one-piece windshield) — **517305787**



- 3" (7.6 cm) round reflector with adjustable angle.

MIRROR KIT

REV-XM, XS, XP, XR, XU (with medium and higher windshield side deflectors) — **860200694**



- Windshield extension mount design.
- Sold in pairs.

MIRROR KIT

REV-XM, XS (except 1200) — **860200607**



- Side panels mount design.
- Sold in pairs.
- Premarked side panels make installation easier.

MIRROR KIT

REV-XP, XR, XU Tundra — **860200693***



- Side panels body mount design.
- Sold in pairs.

*While supplies last.

ADJUSTABLE RISERS & EXTENSION KITS

// ADJUSTABLE RISERS

- Instantly modify your handlebar height to adapt to changing riding conditions.
- Utilize the lower position for trail/sit-down riding: extend to maximum height in seconds for stand-up riding.
- No tools required to make the adjustment, just flip the lever.
- Patent pending US20150360713A1.
- Work with all stock cable except MXZ/Renegade/Backcountry 2017–2018.

// EXTENSION KIT

- Handlebar Extension Kit to fit all riding styles.







			ADJUSTABLE RISERS				EXTENSION KITS								FORWARD ADJUSTABLE RISER
			860201834	860201549	860201276		860201944	860201427	860201718	860201632	860201428	860201560	860201392	860201320	860201836
MODELS	PACKAGES	ENGINES	(125-165 mm)	(150-210 mm)	(175-235 mm)		(95 mm)	(120 mm)	(145 mm)	(165 mm)	(190 mm)	(210 mm)	(235 mm)	(120 mm) (riser)	(45 mm) (extension)
SUMMIT	(X, SP and Edge) with 165 mm riser (2018 and up)	600R, 850 ETEC	860201880		512061066		860201880	860201880					512061066		
	(X and SP) with 190 mm riser (2017)	600R, 850 ETEC	860201880				860201880	860201880	512061224						
	(X package EXPERT) with 120 mm riser	600R, 850 ETEC		512061224	512061066						512061066	512061066	512061066		
SUMMIT NEO	Premium and Base with 120 mm riser	600 EFI													
FREERIDE	137-146" with 145 mm riser (2020 and prior)	600R, 850 ETEC	860201880		512061066		860201880	860201880					512061066		
	146-154-165" with 165 mm riser	600R, 850 ETEC	860201880		512061066		860201880	860201880					512061066		
EXPEDITION	(SE) with 120 mm *Forward Adjustable riser*	600R, 850 ETEC		512061224	512061066						512061066	512061066	512061066		
		600 ACE, 900 ACE, 900T, 900T D													
		900 Turbo R													
	(Sport, LE, Xtreme, SWT) with 145 mm riser	600 EFI					512061367	512061367						512061367	
		600R, 850 ETEC	860201880		512061066		860201880	860201880					512061066	860201880	860201880
		600 ACE, 900 ACE, 900T, 900T D													
		900 Turbo R													
SKANDIC	(WT, SWT and Sport) with 145 mm riser	600 EFI					512061367	512061367						512061367	
		600R, 850 ETEC	860201880		512061066		860201880	860201880					512061066	860201880	860201880
		600 ACE, 900 ACE, 900T, 900T D													
TUNDRA	(LT and Sport) with 145 mm riser	600 EFI					512061367	512061367						512061367	
		600 ACE, 900 ACE, 900T, 900T D													
BACKCOUNTRY	(Backcountry, X, X-RS, Sport) with 120 mm riser	600R, 850 ETEC	860201880*	512061224	512061066				860201880*	860201880*	512061066	512061066	512061066		860201880*
RENEGADE	(Adrenaline, Enduro and Sport) with 120 mm riser	600 EFI													
		600R, 850 ETEC	860201880*	512061224	512061066				860201880*	860201880*	512061066	512061066	512061066		860201880*
		600 ACE, 900 ACE, 900T, 900T D													
		900 Turbo R													
	(X and X-RS) 137" with 120 mm *Forward Adjustable riser*	600R, 850 ETEC	860201880*	512061224	512061066				860201880*	860201880*	512061066	512061066	512061066		860201880*
		900 Turbo R													
MXZ	(TNT and Blizzard) with 120 mm riser (2020 and prior)	600R, 850 ETEC	860201880*	512061224	512061066				860201880*	860201880*	512061066	512061066	512061066		860201880*
	(X and X-RS) with 120 mm *Forward Adjustable riser* (2020 and prior)	600R, 850 ETEC	860201880*	512061224	512061066				860201880*	860201880*	512061066	512061066	512061066		860201880*
	(Blizzard and X-RS) with 90 mm riser (2023)	600R, 850 ETEC		512061224	512061066						512061066	512061066	512061066		
	(Sport) with 120 mm riser	600 EFI													
MXZ NEO	Premium and Base with 120 mm riser	600 EFI													
GRAND TOURING	(Sport) with 120 mm riser	600 ACE, 900 ACE, 900T, 900T D													
	(Limited) with 120 mm *Forward Adjustable riser*	600R, 850 ETEC		512061224	512061066						512061066	512061066	512061066		
		600 ACE, 900 ACE, 900T, 900T D													
	(LE) with 120 mm *Forward Adjustable riser*	600 ACE, 900 ACE, 900T, 900T D													
		900 Turbo R													

Stock on vehicle.
No further requirement.
Must order indicated cable.
No fit, no adequate cable available.
** Only for 2017 and 2018.*

ADJUSTABLE RISERS & EXTENSION KITS

ADJUSTABLE RISER FOR STRAIGHT HANDLEBAR (REV-XS, XM, XP)



MXZ and Renegade with 4.5" (115 mm) or 5.1" (130 mm) stock riser 2013 and up[†]	**860201116** • Black / Aluminum
Backcountry (2011 and up) with 6.3" (160 mm) riser block[††]	**860200634** • Black / Aluminum
Summit SP, REV-XU Skandic—vehicles with 8" (205 mm) riser block[†††]	**860200972** • Black / Aluminum

- [†]Adjustable length: 4.7" to 6.3" (120 mm to 160 mm) high.
- [†]Requires steering pad (506152541) for MXZ, Renegade X-RS and Grand Touring XS.
- [††]Adjustable length: 5.1" to 8" (130 mm to 205 mm) high.
- [†††]Adjustable length: 7.3" to 9.8" (185 mm to 250 mm) high.

ADJUSTABLE RISER FOR TAPERED HANDLEBAR (REV-XS, XM, XP)

(Not illustrated)

Summit X, Freeride, Expedition XU—vehicles with 5.1" (130 mm) riser block	**860200973** • Black / Aluminum

- Works with all stock cables and wiring.
- For REV-XP platform; requires Steering Pad (506152717) (not included).
- Adjustable length: 4.5" to 6.9" (115 mm to 175 mm) high.
- Brake line (507032535) required for Freeride 2011 only. To be ordered separately.

EXTENSION KIT FOR STRAIGHT HANDLEBAR



REV-XS (except Grand Touring and Expedition), XR, XP, XU Tundra	**860200820** • 6.3" (160 mm)
REV-XS Renegade Backcountry (2011 and up) with 6.3" (160 mm) riser block	**860200821** • 8" (205 mm)
REV-XM Summit SP, REV-XU Skandic and Tundra—vehicles with 8" (205 mm) riser block	**860200822** • 9.8" (250 mm)

- Handlebar Extension Kit to fit all riding styles.
- Works with all stock wiring and cables.

LED LIGHTS

NEW AUXILIARY LED LIGHT



REV Gen5 (Deep Snow), Summit Neo, REV Gen4 Summit and Freeride — **860202429**

- Riser mounted adjustable auxiliary light for deep snow sleds.
- Provides 1375 extra lumens of light.
- Weighs 540 grams.
- Flips up when needed and folds down out of the way when not in use to avoid damage.
- Integrated switch automatically shuts light off when folded down.
- Operates with the high beam switch.
- Compatible with only ultra-low windshield on REV Gen4.
- Compatible with Tall and Short Riser.
- Required Harness (515179306) on REV Gen4 Summit and Freeride and Summit Neo.
- Not compatible with glovebox extensions 860202072 and 860201249 on REV Gen 4.
- Not compatible with glovebox extension 860202501 on REV Gen 5.

NEW AUXILIARY LED LIGHT HARNESS

(Not illustrated)

Summit Neo, REV Gen4 (Summit and Freeride) — **515179306**

- Required for Auxiliary LED Light 860202429 use on REV GEN4 Summit and Freeride.

NEW AUXILIARY LED WIDE LIGHT



REV Gen5 (Trail) — **860202428**

- Integrated design for factory look.
- LED lights add 2,000 additional lumens in an intense, super-wide foglight-type pattern.
- Covers the dark zone directly in front of the vehicle and to the sides.
- Easy to install with a simple plug-and-play hook-up.

NEW AUXILIARY HI BEAM



REV Gen5 (Trail) — **860202430**

- LED lamps add 2,752 additional lumens of Hi-Beam light wider and lower than the stock Hi-Beam.
- Easily to install in the nose with a simple plug-and-play hook-up.
- Operates with in tandem with the stock Hi-Beam Switch.

AUXILIARY LED LIGHT



REV-XM, XS (except Expedition Sport) — **860201235***

- 10 LED lamps provide more than 2,100 additional lumens in an intense, super-wide foglight-type pattern.
- Three-position OFF-ON-HI switch gives you the option of riding with these lights off, always on or only when switching to your high beams.
- Say goodbye to sacrificing close range lighting when switching to high beams.
- Easily installs below stock headlight with a simple plug-and-play hook-up.

AUXILIARY LED LIGHT



REV Gen4 (Wide)	**860201650***
Neo, REV Gen4 (Narrow)	**860201818**

- 8 LEDs provide more than 2,500 additional lumens for an intense super-wide foglight-type pattern.
- Say goodbye to sacrificing close range lighting when switching to high beams.
- Easily installs on hood with a simple plug-and-play hook-up.
- Dynamic scoop design integrates perfectly with REV Gen4 platform.
- Not compatible with One-Piece Lightweight Hood.

**Auxiliary Light Bracket Kit (860202315) required for installation on 2-stroke models with air radiator.*

HIGH BEAM AUXILIARY LED LIGHTS



Neo, REV Gen4 — **860201651**

- Increases considerably the stock high beam output.
- Light covers more distance for great night visibility.
- Works with existing Auxillary LED Lights (860201818, 860201650).
- Not compatible with One-Piece Lightweight Hood.

**While supplies last.*

LED LIGHTS

SIGNATURE LED LIGHTS FOR HANDGUARDS

REV Gen5, Neo, REV Gen4, with Transparent or Flexible Handguards — **860201587**



- Delivers a unique look at night.
- Replaces stock handguard cap with LED light.
- Includes wiring harness.
- Sold in pairs.

FRONT BUMPER LED WORKING LIGHTS

REV Gen4 (Wide) except Tundra and Skandic — **860201771**



- Adjustable work lights.
- Perfect for low light tasks.
- Point the light where you need it.
- Used with Full Wrap-Around Bumpers (860201676, 860201822, 860202027).
- Sold in pairs with toggle switch.
- Not compatible with Full Wrap-Around Front Bumpers (860201982, 860201983, 860201984).

LinQ WORKING LIGHT

Neo, REV Gen4 — **860201849**



- Convenient LinQ mount with swivel allows you to adjust as needed.
- Ultra-bright 1,000 lumens output.
- Works when at idle.
- Requires 12V outlet (860201888) for REV Gen4 (Wide) 20" and 24" and 12V outlet (860202069) for Neo and REV Gen4 (Narrow) 16".

BUMPERS, HITCHES & WINCHES

BUMPERS

NEW ADVENTURE FRONT PLATE

REV Gen5, Neo, REV Gen4 (except Skandic and Tundra)

- **860202563** • Manta Green
- **860202328** • Black
- **860202411** • Neo Yellow
- **860202410** • Spartan Red



- Between a bumper and a skid plate.
- Made of stacked lightweight aluminum plates.
- Adds a visual impact and extra protection.
- Requires XC Cast or Heavy-Duty Front Bumper.
- Required for Full Wrap-Around Front Bumpers installation.

NEW XC CAST FRONT BUMPER

REV Gen5, Neo, REV Gen4 (except Skandic and Tundra) — **860202327**



- Add extra protection and attitude with this bumper.
- Lightweight cast aluminum heat treated construction.
- Works with or without the Adventure Front Plate.
- Works with all skid plates.

ADVENTURE FRONT BUMPER

REV Gen4 (Narrow)

- **860201511** • Black / White*
- **860201474** • White / Black*
- **860201599** • Green / Black*
- **860201681** • Black / Black*
- **860201898** • Lava Red / Black*
- **860201897** • Octane Blue / Black*
- **860202135** • Yellow / Black*



- Made of stacked lightweight aluminum plates.
- Makes a visual impact and provides added protection.
- Not compatible on vehicle equipped with SAS suspension.

*While supplies last.

FRONT BUMPER

Neo, REV Gen4 (Narrow)

- **860201445** • White*
- **502007460** • Black



- Easy-install bumper changes the appearance of your sled in minutes.

FRONT BUMPER

REV-XM, XS

- **860201175** • Sunburst Yellow
- **860201168** • Orange Crush
- **860201167** • Black
- **860201172** • Fusion Red*
- **860201173** • Manta Green



- Easy-install bumper changes the appearance of your sled in minutes.

XC FRONT BUMPER

REV-XM, XS — **860201318** • Black — **860201099** • Aluminum



- The ultimate front protection for your sled, providing additional front and lateral protection.
- Large center grab area for additional leverage.
- Heavy-duty performance with lightweight aluminum construction.

FULL WRAP-AROUND FRONT BUMPER

REV Gen4 (Wide) 24" Skandic	**860201984**
REV Gen4 (Wide) 16" Tundra	**860201982***
REV Gen4 (Wide) 20" Skandic	**860201983****



- Modular full wrap-around front bumper system.
- Tubular steel construction for strength on mid section.
- Protects side panels while still allowing access to them.

Heavy-Duty Front Bumper (860202198) required for installation.
***Requires Heavy-Duty Front Bumper (860202198) for Skandic Sport.*

SIDE PANEL PROTECTORS

REV Gen4 (Wide) Tundra, 20" Skandic — **860202199**



- Use with Full Wrap-Around Front Bumper (860201982 or 860201983).
- Strong steel construction.
- Protects side panels and hood.
- Both swing out-of-the-way for easy access.
- Clean, rugged look.

FULL WRAP-AROUND FRONT BUMPER

REV Gen4 (Wide) 24" Expedition	**860202027***
REV Gen4 (Wide) 20" Expedition	**860201822**
REV Gen4 (Wide) 16"	**860201676****



- Modular full wrap-around front bumper system.
- Lightweight tubular steel construction for strength on mid section.
- Protects front and side panels while still allowing access to them.
- Requires Lightweight Y-Shaped Aluminum Bumper (860201881) and Heavy-Duty Front Bumper (860201819) for installation.

Not compatible with Side Panel Protectors (860201677).
***Not compatible with Driver Footrest (860201932, 860201613, 860201614).*

SIDE PANEL PROTECTORS

REV Gen4 (Wide) 16", REV Gen4 Expedition 20" — **860201677**



- Attaches to Full Wrap-Around Front Bumper (860201822 and 860201676).
- Lightweight aluminum construction.
- Provides protection to side panels and hood.
- Swings out-of-the-way for easy access.
- Rugged look.

*While supplies last.

BUMPERS

LIGHTWEIGHT Y-SHAPED ALUMINUM BUMPER

REV Gen4 (Wide) (except Skandic and Tundra)	**860201881***



- Aluminum construction.
- Offers great protection from frontal impacts by rocks, trees and other debris.
- Required for the installation of Full Wrap-Around Front Bumpers (860201822, 860201676 and 860202027).

HEAVY-DUTY FRONT BUMPER

REV Gen4 (Wide) (except Skandic and Tundra)	**860201819**
REV Gen4 (Wide) Tundra and Skandic	**860202198**



- Reinforced lightweight aluminum construction.
- Required for the installation of Full Wrap-Around Front Bumpers (860201676, 860201822 and 860202027).
- Standard on REV Gen4 (Wide) Renegade Enduro, Expedition LE and Expedition SE.

1¼" TRAILMAKER FRONT BUMPER RECEIVER

REV Gen4 (Wide) 20" and 24" (except Skandic)	**860201825**



- Receiver for use with Full Wrap-Around Front Bumper (860201822 and 860202027).
- Allows use of 1¼" draw bar on front of sled.

HEAVY-DUTY FRONT BUMPER WITH 2" RECEIVER

REV-XU Skandic	**860200987**



- Increases front protection.
- Integrated 2" Multi-Mount Receiver.
- Works with 2" Multi-Mount Drawbar (860201117) and Multi-Mount Winch (860200992).
- Note: Not compatible with Prefilter Grille Kit (860201152).

EXTRA FRONT BUMPER

REV-XU Expedition	**860200350**



- Heavy-duty front bumper.

FULL WRAP-AROUND FRONT BUMPER

REV-XU Tundra	**860200572***



- Full 1.25" (3.8 cm) diameter heavy-duty steel wrap-around model.
- Delivers added protection to front of sled and side panels.
- Attaches to existing bumper and footrests.

EXTRA FRONT BUMPER

REV-XU Skandic	**860200561**



- Heavy-duty front bumper.

*While supplies last.

NEW ADVENTURE REAR BUMPER

Neo – 120"	**860202224** • Neo Yellow/Black



- Stunning style that matches the Adventure Front Plate.
- Constructed with a combination of lightweight extruded and heat treated cast aluminum for strength – like the XC Cast Bumper.

NEW ADVENTURE REAR BUMPER 16"

REV Gen5, REV Gen4 – 129"	**860202412** • Black / Black **860202396** • Neo Yellow	**860202540** • Spartan Red



- Stunning style that matches the Adventure Front Plate.
- Constructed with a combination of lightweight extruded and heat treated cast aluminum for strength – like the XC Cast Bumper.

NEW ADVENTURE REAR BUMPER 16"

REV Gen5, REV Gen4 – 137" and 146" with short tunnel	**860202397** • Black / Black **860202398** • Neo Yellow	**860202539** • Spartan Red



- Stunning style that matches the Adventure Front Plate.
- Constructed with a combination of lightweight extruded and heat treated cast aluminum for strength – like the XC Cast Bumper.
- Compatible with LinQ Snowboard/Ski.
- Available in all tunnels lengths and multiple colors.

NEW ADVENTURE REAR BUMPER 16"

REV Gen5, Neo, REV Gen 4 – 146" and 154" with short tunnel	**860202400** • Black / Black **860202560** • Manta Green	**860202401** • Neo Yellow **860202543** • Spartan Red



- Stunning style that matches the Adventure Front Plate.
- Constructed with a combination of lightweight extruded and heat treated cast aluminum for strength – like the XC Cast Bumper.
- Compatible with LinQ Snowboard/Ski.
- Available in all tunnels lengths and multiple colors.

NEW ADVENTURE REAR BUMPER 16"

REV Gen5, REV Gen4 – 154" and 165" with short tunnel	**860202340** • Black / Black **860202561** • Manta Green	**860202402** • Neo Yellow **860202542** • Spartan Red



- Stunning style that matches the Adventure Front Plate.
- Constructed with a combination of lightweight extruded and heat treated cast aluminum for strength – like the XC Cast Bumper.
- Compatible with LinQ Snowboard/Ski.
- Available in all tunnels lengths and multiple colors.

NEW ADVENTURE REAR BUMPER 16"

REV Gen5, REV Gen4 – 165" and 176" with short tunnel	**860202403** • Black / Black **860202562** • Manta Green	**860202404** • Neo Yellow **860202541** • Spartan Red



- Stunning style that matches the Adventure Front Plate.
- Constructed with a combination of lightweight extruded and heat treated cast aluminum for strength – like the XC Cast Bumper.
- Compatible with LinQ Snowboard/Ski.
- Available in all tunnels lengths and multiple colors.

ADVENTURE REAR BUMPER 16"

REV Gen4 – 129"	**860202317** • Black / Black*



- Matches the Adventure front bumper.
- Stunning style and construction.
- Made of lightweight stacked aluminum plates.

ADVENTURE REAR BUMPER 16"

REV Gen4 137" (except Renegade Enduro and Renegade Sport)	**860201478** • White / Black* **860201597** • Green / Black*



- Matches the Adventure front bumper.
- Stunning style and construction.
- Made of lightweight stacked aluminum plates.
- Doesn't fit REV Gen4 146" short tunnel.

*While supplies last.

BUMPERS

ADVENTURE REAR BUMPER 16”

REV Gen4 137” regular tunnel and 146” short tunnel		**860202149** • Black / Black*



- Matches the Adventure front bumper.
- Stunning style and construction.
- Made of lightweight stacked aluminum plates.

ADVENTURE REAR BUMPER 16”

REV Gen4 146” and 154” with short tunnel	**860202150** • Black / Black	**860202157** • Black / Lava Red*



- Matches the Adventure front bumper.
- Stunning style and construction.
- Made of lightweight stacked aluminum plates.

ADVENTURE REAR BUMPER 16”

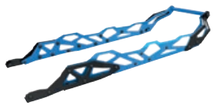
REV Gen4 154” and 165” with short tunnel	**860202151** • Black / Black	**860202159** • Black / Lava Red* **860202158** • Octane Blue / Black*



- Matches the Adventure front bumper.
- Stunning style and construction.
- Made of lightweight stacked aluminum plates.

ADVENTURE REAR BUMPER 16”

REV Gen4 165” and 175” with short tunnel	**860202152** • Black / Black	**860202161** • Black / Lava Red* **860202160** • Octane Blue / Black*



- Matches the Adventure front bumper.
- Stunning style and construction.
- Made of lightweight stacked aluminum plates.

HEAVY-DUTY REAR BUMPER

REV Gen5, Neo, REV Gen4 16”–146”	**860201610** • Black
REV Gen5, REV Gen4 16”–154”	**860201726** • Black
REV Gen5, REV Gen4 16”–165”	**860201727** • Black
REV Gen5, REV Gen4 16”–175”	**860201467** • Black*



- Premium finish heavy-duty aluminum bumper for REV Gen4 platform.
- Does not detract from deep snow performance.
- Cannot be used on vehicles with short tunnel.

REAR BUMPER

REV Gen5, REV Gen4 (Narrow) 129”	**518328745** • Black	**518329479** • White
REV Gen5, REV Gen4 (Narrow) 137”	**518328746** • Black	
REV Gen5, Neo, REV Gen4 (Narrow) 146”	**518329553** • Black	
REV Gen5, REV Gen4 (Narrow) 154”	**518328501** • Black	**518329152** • White*
REV Gen5, REV Gen4 (Narrow) 165”	**518328697** • Black	
REV Gen4 (Narrow) 175”	**518328834** • Black	
REV Gen4 (Wide) – Tundra 137”	**518330033** • Black	



- Easy-install bumper changes the appearance of your sled in minutes.
- Cannot be used on vehicles with short tunnel.

REAR BUMPER

REV-XP, XR, XS (120” and 137”)	**518325481** • Black



- Easy-install bumper changes the appearance of your sled in minutes.

*While supplies last.

XU HEAVY-DUTY REAR BUMPER

XU Skandic SWT, XU Expedition SWT	**860201106** • Aluminum
XU Skandic WT, Expedition SE, LE, Xtreme 2019 and prior	**860200991** • Aluminum*



- Ready to accept 2” Receiver (860201062).
- Essential for modular towing options.
- Provides complete rear protection.
- Works hard during intense use.
- Features convenient hand-gripping area.

HITCH REAR BUMPER

REV Gen5, REV Gen4 16” – 129”	**860201433** • Black
REV Gen5, REV Gen4 16” – 137”	**860201471** • Black
REV Gen5, Neo, REV Gen4 16” – 146”	**860201612** • Black
REV Gen5, REV Gen4 16” – 154”	**860201250** • Black
REV Gen5, REV Gen4 16” – 165”	**860201424** • Black
REV Gen4 16” – 175”	**860201472** • Black



- Required for hitch use.
- Easy attachment with no cutting or drilling.
- Can be used with the Lin0 Snowboard/Ski Rack (860202191).
- Does not fit with vehicles with short tunnel.

HITCH REAR BUMPER FOR SHORT TUNNEL

REV Gen5 (Deep Snow) short tunnel 146”	**860202647**
REV Gen5 (Deep Snow), REV Gen4 short tunnel Summit Edge 154”	**860202646**
REV Gen5 (Deep Snow), REV Gen4 short tunnel Summit Edge 165”	**860202648**
REV Gen5 (Deep Snow), REV Gen4 short tunnel Summit Edge 175”	**860202649**
REV Gen4 short tunnel Summit and Freeride 146” (except Summit Edge)	**860202213**
REV Gen4 short tunnel Summit and Freeride 154” (except Summit Edge)	**860202214**
REV Gen4 short tunnel Summit and Freeride 165” (except Summit Edge)	**860202215**
REV Gen4 short tunnel Summit 175” (except Summit Edge)	**860202216**



- Required for hitch use and towing.
- Easy mounting with no cutting.
- Also reinforces the tunnel.
- Can be used with the Lin0 Snowboard/Ski Rack (860202191).

HITCH REAR BUMPER

REV-XP, XM – 146”	**860200953** • Black
REV-XP, XM – 154”	**860200954** • Black
REV-XP, XM – 163”	**860200955** • Black
REV-XP, XM – 174”	**860201135** • Black



- Heavy-duty aluminum bumper for hitch applications.
- Easy attachment with no cutting or drilling.
- Doesn’t fit Grand Touring SE, LE.

HITCH REAR BUMPER

REV-XS, XR, XP – 120” and 137”	**860200952** • Black
REV-XS MXZ – 129”	**860201306** • Black
REV-XS Renegade X-RS, XM Freeride, XU Tundra – 137”	**860201307** • Black
REV-XS, XP, XR, XU Tundra – 120” and 137”	**860200803** • Black*



- Heavy-duty aluminum bumper for hitch applications.
- Easy attachment with no cutting or drilling.
- Doesn’t fit Grand Touring SE, LE.

*Does not fit on 137” Freeride.

HEAVY-DUTY HITCH REAR BUMPER

REV Gen4 (Wide) 24”	**860201942**
REV Gen4 (Wide) 20”	**860201795**



- Essential for modular towing options.
- Provides complete rear protection.
- Features convenient hand-gripping area.
- Adds towing capacity of 300 lb (136 kg), up to 1,500 lb (680 kg) total.
- 1¼” hitch receiver included.

*While supplies last.

HITCHES

1 ¼" FRONT RECEIVER

REV Gen4 (Wide) Skandic and Tundra — **860201991**



- Receiver for use with wrap-around front bumpers for LTS suspension models.
- Allows use of 1 ¼" draw bar on front of sled.

C-TYPE HITCH

REV Gen5, Neo, REV Gen4 16", XP, XR, XS, XM, XU Tundra — **860201381**



- Heavy-duty C-type hitch works in conjunction with hitch rear bumper.

TONGUE TYPE HITCH

REV Gen5, Neo, REV Gen4 16", XP, XR, XS, XM, XU Tundra — **860200902**



- Heavy-duty tongue type hitch works in conjunction with hitch rear bumper.

HEAVY-DUTY TONGUE HITCH

REV Gen4 20" and 24", XU 20" and 24" — **860201023** • Grey



- Cast stainless steel construction.
- Mounting pattern for Heavy-Duty Hitch Rear Bumpers and Multi-Mount Drawbars.
- Fits on Heavy-Duty Rear Bumper 20" and 24" (860201795, 860201942)
- Fits on Multi-Mount Drawbar.

HITCH TONGUE

511000521



- Easily transforms the C-Type Hitch (860201381) into a tongue-type hitch.

1¼" TRAILER HITCH

REV Gen4 Expedition Xtreme and Skandic Sport — **860202062**



- Allowing quick switching of towing hook-ups or winch use.
- Stock on REV Gen4 Expedition LE, SE.

1¼" MULTI-MOUNT DRAWBAR WITH NEW HITCH PIN

Fits on 1 ¼" Trailer Hitch (860202062) and Front Receiver (860201991, 860201825) — **860201804**



- Allows quick installation and removal of different towing platforms.
- Use with tongue or J-Hook style hitches as needed.

2" MULTI-MOUNT DRAWBAR

Fits on XU with Rear 2" Receiver (860201062) or Heavy-Duty Front Bumper (860200987) — **860201117**



- Allows quick installation and removal of different towing platforms.
- Compatible with J-Hitch (860201142) and Heavy-Duty Tongue Hitch (860201023).

FRONT & REAR HITCH DRAWBAR

Fits on XU Rear 2" Receiver (860201062) or Heavy-Duty Front Bumper (860200987) — **715000972**



- Fits 2" receiver hitch.
- Hitch ball not included.

J-HITCH

REV Gen4 20" and 24", XU 20" and 24" — **860201142**



- Fits on Heavy-Duty Rear Bumper 20" and 24" (860201795, 860201942).
- Fits on Multi-Mount Drawbar (860201804, 860201117).
- Spring-loaded latch system for quick, secure hook-up.

2" RECEIVER FOR HEAVY-DUTY REAR BUMPER

Fits on XU Heavy-Duty Rear Bumpers WT (860200991) or SWT (860201106) — **860201062**



- Easy installation.
- Standard 2" size for wide compatibility.
- Allows quick switching of towing hook-ups or winch use.
- Does not fit with stock tongue hitch 2016–2018.

ACCESSORIES

HD 2500 WINCH

REV Gen4 (Wide) 20" and 24" — **860202331**



- Ergonomic clutch handle.
- Rugged all-steel gears and bushings, provides more torque and longer life.
- Automatic 100% load-holding brake.
- Sealed solenoid for all weather protection.
- Weather-sealed handlebar mounted switch.
- Corded 10 ft. (3m) weather sealed hand-held remote.
- Pulling strength capability of 2,500 lb (1,134 kg).
- 50 ft. of 3⁄16" (15.2 m of 4.8 mm) wire steel cable.
- Heavy-duty 4-way roller fairlead.
- EC compliant.
- Fits Heavy-Duty Hitch Rear Bumper (860201795) and 1 ¼" Trailer Hitch Receiver.

HAWSE GUIDE

860201143



- Replaces Roller Fairlead for longer cable life.
- For use with synthetic cable only.
- Replaces Roller Fairlead when Synthetic Cable (715004254) is installed.

PROTECTION & REINFORCEMENT

REV GEN5, NEO & REV GEN4

NEW SKID PLATE

REV Gen5 (Deep Snow)	**860202417** • Black **860202418** • Yellow	**860202603** • Catalyst Grey **860202423** • Manta Green



- Narrower than a Full Body, but wider than an Extreme skid plate in size – good blend of protection and agility.
- Injection molded process provides perfect fit and easier installation with a clean look. Smooth surfaces also reduce drag.
- 4-mm thick high impact resistance polypropylene for durability.
- Attachment kit included.
- Chassis is premarked for easy installation.

NEW FULL BODY SKID PLATE

REV Gen5 (Trail)	**860202420** • Black **860202421** • Neo Yellow



- Injection molded process delivers clean lines, a perfect fit and easier installation. Smooth surfaces reduce drag.
- 4 mm thick high impact resistance polypropylene for durability.
- Attachment kit included.
- Chassis is premarked for easy installation.

FULL BODY SKID PLATE

Neo, REV Gen4 (Narrow)	NEW **860202604** • Neo Yellow **860201583** • Octane Blue **860201618** • Manta Green **860201227** • Black	**860201441** • Sunburst Yellow **860201442** • Orange Crush **860201443** • White **860201809** • Lava Red



- Injection molded process delivers clean lines, a perfect fit and easier installation. Smooth surfaces reduce drag.
- 4 mm thick high impact resistance polypropylene for durability.
- Attachment kit included.
- Chassis is premarked for easy installation.

FULL BODY SKID PLATE

REV Gen4 (Wide) 16" Tundra		**860202044** • Black
REV Gen4 (Wide) 20"		**860202045** • Black
REV Gen4 (Wide) 24"		**860202046** • Black



- 3-part kit includes main center section and easily removable extensions under running boards that protect brake and chaincase.
- Made of high molecular weight polyethylene.
- Provides maximum underbelly protection.

FULL BODY SKID PLATE

REV Gen4 (Wide) 16" and 20"	**860202391** • Sunburst Yellow **860201847** • Lava Red **860201848** • Manta Green	**860201653** • Black **860201810** • White



- Injection molded process provides smooth surface, better definition, a perfect fit and easier installation.
- For assertive riders who demand the utmost protection.
- Smooth bottom surface to reduce drag.
- 4 mm thick, high impact resistance polypropylene for durability.
- Extra wide, covers vital primary clutch, chaincase and front heat exchanger components to provide maximum underbelly protection.
- Attachment kit included.
- Chassis is premarked for easy installation.
- Except Expedition SWT, Skandic and Tundra

FULL BODY SKID PLATE

REV Gen4 (Wide) 24" Expedition SWT	**860202043** • Black



- 3-part kit includes main center section and easily removable extensions under running boards that protect brake and chaincase.
- Made of high molecular weight polyethylene.
- Provides maximum underbelly protection.

EXTREME SKID PLATE

Neo, REV Gen4 (Narrow)	**860202392** • Orange Crush **860202178** • Lava Red	**860201738** • Black **860202177** • Octane Blue



- Injection molded process provides smooth surface, better definition, a perfect fit and easier installation.
- For assertive riders who demand the utmost protection.
- Smooth bottom surface to reduce drag.
- 4-mm thick, high impact resistance polypropylene for durability.
- Attachment kit included.
- Chassis is premarked for easy installation.

RACING SKID PLATE

Neo, REV Gen4 (Narrow)	**860201579** • Black



- Injection molded process provides smooth surface, better definition, a perfect fit and easier installation.
- For assertive riders who demand the utmost protection.
- Smooth bottom surface to reduce drag.
- 4 mm thick, high impact resistance polypropylene for durability.
- Attachment kit included.
- Chassis is premarked for easy installation.

TUNNEL RADIATOR PROTECTOR

REV Gen5, REV Gen4 16"–137" (except short tunnel)	**860201830**
REV Gen5, Neo, REV Gen4 16"–146" (except short tunnel)	**860201831**
REV Gen5, REV Gen4 16"–154" (except short tunnel)	**860201832**
REV Gen5, REV Gen4 16"–165" (except short tunnel)	**860201833**



- Used on vehciles equiped with front tunnel protector to provide the additional protection required with studded tracks.
- Made of aluminum.

REV-XM & REV-XS

EXTREME SKID PLATE

REV-XM, XS	**860201145** • Manta Green* **860201146** • Sunburst Yellow* **860200606** • Black* **860200741** • Yellow*	**860200742** • Orange Crush* **860201032** • Lava Red* **860201033** • White*



- Injection molded process provides better definition, a perfect fit and easier installation.
- For assertive riders who demand the utmost protection.
- Smooth bottom surface to reduce drag.
- 4 mm thick, high impact resistance polypropylene for durability.
- Attachment kit included.
- Chassis is premarked for easy installation.
- Includes marking for 4-stroke oil change cut-out.

FULL BODY SKID PLATE

REV-XM, XS	**860200605** • Black* **860200739** • Yellow* **860200740** • Orange Crush*	**860201035** • White **860201147** • Manta Green*



- Wide shape for full protection and maximum flotation.
- Injection molded process provides better definition, a perfect fit and easier installation.
- For assertive riders who demand the utmost protection.
- Smooth bottom surface to reduce drag.
- 4-mm thick, high impact resistance polypropylene for durability.
- Extra wide, covers vital primary clutch, chaincase and front heat exchanger components to provide maximum underbelly protection.
- Attachment kit included.
- Chassis is premarked for easy installation.
- Includes marking for 4-stroke oil change cut-out.

**While supplies last.*

EXTREME & FULL BODY SKID PLATES

FULL BODY SKID PLATE

REV-XU Expedition SE, Xtreme, LE (2009-2019) — **860200563**



- Provides additional underbelly protection in off-trail conditions.
- Made of high molecular weight polyethylene.
- Helps glide on snow and prevents snow from sticking to the frame.
- Works with A-arm protectors.
- Standard on REV-XU Expedition SE (2009–2019).

REAR SKID PLATE

REV-XU Expedition — **860201361**



- Extra underbelly protection.
- Protects components such as brakes and gearbox from impacts.
- High molecular weight polyethylene.
- Can be combined with Full Body Skid Plate (860200563) for maximum protection.
- REV-XU Expedition SWT not compatible with Rear Rack Extension (860200700).

FULL BODY SKID PLATE

REV-XP — **860200287***



- High molecular weight polyethylene embossed with Ski-Doo logo.
- For assertive riders who demand the utmost protection.
- Attachment kit included.
- Chassis is premarked for easy installation.

FULL BODY SKID PLATE

REV-XU WT 2016 and up	**860201342**
REV-XU SWT 2016 and up	**860201343**
REV-XU Tundra	**860200601**



- High molecular weight polyethylene.
- Provides maximum underbelly protection in off-trail conditions.
- Helps glide on snow and prevents snow from sticking to the frame.

FRAME UNDERBELLY BRACE KIT / S-MODULE REINFORCEMENT KIT

REV-XM, XS, XP, XR, XU Expedition — **860200905***



- S module reinforcement, standard on 600 RS racing sled.
- Compatible with Ski-Doo skid plates.

SKID PLATE FASTENER KIT

(Not illustrated)

REV-XP, XR, XS, XM — **860200808**

- Made to fit and hold your skid plate securely in place.

*While supplies last.

REINFORCEMENT

TUNNEL REINFORCEMENT

REV Gen4 Summit X with Expert package, Summit X and Freeride 154"–165" with tMotion Adjustable Limiter Strap (860201861) — **860201995**



- Additional strength and traction along the running board.
- Machined aluminum extrusions.
- Colors to add some style.
- Provides more support and boot traction for aggressive riders.
- Compatible with tMotion Adjustable Limiter (860201861).
- Does not fit with Remote Limiter Strap Adjuster (860201855 and 860201496).

TUNNEL REINFORCEMENT

MXZ Neo, REV Gen4 MXZ and Renegade (except Renegade Backcountry, Backcountry X and X-RS and MXZ X-RS) — **860201584** • White* / **860201465** • Black



- Additional strength and traction along the running board.
- Machined aluminum extrusions.
- Colors to add some style.
- Provides more support and boot traction for aggressive riders.

TUNNEL REINFORCEMENT

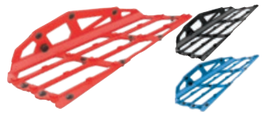
Summit Neo, REV Gen4 Summit SP, Backcountry, Backcountry X — **860201636** • Black / **860201730** • Octane Blue



- Additional strength and traction along the running board.
- Machined aluminum extrusions.
- Colors to add some style.
- Provides more support and boot traction for aggressive riders.
- Not compatible with tMotion Adjustable Limiter (860201861).

TUNNEL REINFORCEMENT

REV Gen4 Summit X (except with Expert package), Freeride 154"–165" — **860201638** • Black / **860201783** • Lava Red* / **860201734** • Octane Blue*



- Additional strength and traction along the running board.
- Machined aluminum extrusions.
- Colors to add some style.
- Provides more support and boot traction for aggressive riders.
- Not compatible with tMotion Adjustable Limiter (860201861).

CHASSIS REINFORCEMENT KIT

REV-XS — **860200521** • Viper Red* / **860200813** • Aluminum* / **860200814** • Black* / **860200815** • Yellow*



- Provides additional reinforcement to your tunnel along with improved grip.
- Easy installation.
- Except Renegade Backcountry and Backcountry X

RAIL REINFORCEMENT

REV Gen4 146" to 165" with tMotion and cMotion rear suspensions — **860201005**



- Increases rail strength and longevity.

RAIL REINFORCEMENT

REV Gen5, REV Gen4, XM, XP 146" and up with tMotion and cMotion rear suspensions — **860201464**



- Lightweight cast aluminum construction.
- Increases rail strength and longevity.
- Can replace stock stiffner on Freeride.

*While supplies last.

TOE-HOLDS, FOOTRESTS & KNEE PADS

TOE-HOLDS

REWIND COVER

Summit Neo, REV Gen4 (Narrow) Summit, Backcountry, Freeride | **860201463**



- Covers rewind handle to let your knees slide smoothly.
- Allows installation of Knee Pads (860201917).

ADJUSTABLE TOE-HOLDS

REV Gen5 (Deep Snow), Summit Neo, REV Gen4 16" Summit, Freeride, Backcountry and Expedition 16" | **860201765**



- Die-cast aluminum part.
- Allows user to adjust toe-hold position for different riding styles and control.
- Foldable for ease floorboard access.
- Adjustable 3" (7.6 cm) rearward and 1.5" (3.8 cm) upward.
- Forward/backward and top/down adjustments.

ADJUSTABLE TOE-HOLDS

MXZ Neo, REV Gen4 MXZ, Renegade and Grand Touring | **860201305***



- Adjustable solid toe-holds (non-folding).
- Provide 0.6" (1.5 cm) vertical and 1.6" (4 cm) horizontal adjustment range.
- Work with both size rubber shims and Lateral Footrests (860201402).

FIXED TOE-HOLDS

REV Gen5 (Deep Snow), Summit Neo, REV Gen4 Summit, Freeride and Backcountry | **860201510**



- Fixed toe-holds for control and leverage when boondocking.

SHIM KIT FOR TOE-HOLDS

MXZ Neo, REV Gen4 (Narrow) MXZ and Renegade | **860201408**



- Spacers in two heights (10 mm, 20 mm) let you determine how tight your boots fit the toe-holds.

ADJUSTABLE TOE-HOLDS KIT

REV-XP, XR, XS, XU Tundra, XM (except 600 ACE and 900 ACE) | **860200743** • Aluminum*



- Kit provides easy adjustment to the toe-holds to match your riding style.

TUNNEL GRIP PLATES

Fit all models (except Youth) | **860200164**



- Lightweight plastic grip plates for extra side boot grip in rough riding conditions.
- Developed for the 600 Race sled.
- Sold in pairs with complete hardware.

*While supplies last.

FOOTRESTS

DRIVER FOOTREST

MXZ Neo, REV Gen4 MXZ, Renegade, Backcountry and Grand Touring | **860201932** • Black, **860201613** • White, **860201614** • Manta Green



- Customize the fit and function of your sled.
- Offers a natural angled platform for riders that push with their feet.
- Machined aluminum extrusions in different colors, add traction and style.
- Fits with Lateral Footplates (860201402).

FRONT FOOTREST

REV-XS, XM | **860200906**



- A must for aggressive riders.
- Sloped plate provides a relaxed ankle position during long rides.

LATERAL FOOTPLATES

Neo, REV Gen4 (except Renegade Enduro, Grand Touring Limited and Expedition SE) | **860201402**



- Cast aluminum outer support for riders that use their feet to push in corners, or desire a more locked feel.
- Does not fit with air suspension.
- Not compatible with models equipped with SAS (Smart-Shock Semi-Active Suspension).

REAR FOOTREST

REV Gen5, REV Gen4 (Summit SP) | **860201504**



- Additional boot grip on rear tunnel.
- Integrated design, looks and functions great.

REAR FOOTREST KIT

REV-XM | **860200889***



- Provides additional boot grip at the rear of the tunnel when climbing.

KNEE PADS

KNEE PADS

Neo, REV Gen4 without manual reverse | **860201917**



- Designed for a perfect fit on REV Gen4 (Narrow).
- Provide comfort, impact absorption and extra knee grip.
- Injection molded soft material.
- Easy install with peel-off adhesive.
- REV Gen4 (Narrow): Rewind Cover (860201463) required if pull start.

SECOND STEP KNEE PADS

REV Gen4 (Wide) 16" | **860202063**



- Designed to add extra knee grip and absorbing impacts when leaning forward in aggressive cornering situations.
- Injection molded soft material.
- Easy install with peel-off adhesive.

MANUAL REVERSE KNEE PADS

REV Gen4 (Wide) 16" with manual reverse | **860201916**



- Provides comfort, impact protection and extra grip.
- Injection molded soft material.
- Easy install with peel-off adhesive.

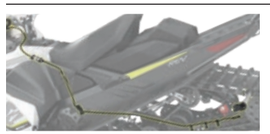
*While supplies last.

SUSPENSION & FOX† SHOCK KITS

SUSPENSION

REMOTE COUPLER BLOCK ADJUSTER

REV Gen4 129" and 137" with rMotion rear suspension (2020 and prior), MXZ Sport, Renegade Sport, Grand Touring Sport (2021 & up) — **860201902***



- Allows rider to attune ski-loading to current trail conditions.
- Quickly change coupler block position with a twist of the wrist.
- Go from uncoupled to your preferred coupled setting instantly.
- Coupled = less transfer, more weight on skis under acceleration.
- Uncoupled = more transfer, easier to lift skis under acceleration.
- Patent pending.

TMOTION ADJUSTABLE LIMITER STRAP

REV Gen5 (Deep Snow)	NEW 860202439
REV Gen4 (Narrow) with tMotion and cMotion rear suspensions (except Freeride 146" 2020 and prior and Backcountry X-RS)	860201861



- Quickly change limiter strap length by flipping a lever, to attune ride and handling to snow conditions and terrain.
- Shortening keeps the front end lower and improves track approach angle.
- Lengthening increases transfer and lifts the front end higher.
- Adjustment is equivalent to 2 holes on a conventional strap (1.3"/34 mm).
- Slim, non-intrusive design.
- 2 initial settings to choose from: holes 3 to 5 or 2 to 4 (compared to conventional strap hole positions).
- US patent 9022156.

TMOTION ADJUSTABLE LIMITER STRAP REPLACEMENT PARTS KIT

(Not illustrated)

REV-XM — **860201426**

NEW TMOTION RIGID ARM

REV Gen5 (Deep Snow) — **860202413**



- Convert a tMotion X to a fixed arm tMotion XT suspension.
- Fixed rear arm for technical riding in steep terrain.
- Improves sidehilling performance.
- More precise and predictable while sacrificing some ease and agility.

FRONT SUSPENSION WIDENING KIT

REV Gen5 (Deep Snow), REV Gen4 Summit and Freeride with 36" RAS 3 front suspension — **860201588**



- Adjustable width 38.4"–40.1" (975–1,019 mm).
- Includes X package shock absorbers and springs.

RAS X FRONT SUSPENSION UPGRADE KIT (WITHOUT SHOCKS)

REV Gen4 MXZ, Renegade and Grand Touring with RAS 3 front suspension — **860202187**



- Update your sled RAS 3 to the new RAS X configuration.
- Provides wider ski stance offering sure-footed cornering with improved bump performance.
- Kit includes new spindles and A-Arms and all necessary hardware.
- Compatible with Pilot X Skis.

FRONT SUSPENSION KIT (36")

REV-XM, XS, XP — **860201153**



- To update your sled to the REV-XM Summit X with T3 package.
- Delivers the agility of the original S-36 handling package, plus the benefits of the RAS 2.
- Better straightline tracking on big bumps.
- Lighter weight.
- Great styling.
- HPG shocks.
- Ski stance adjustable from 35.7" (90 cm) to 37.4" (95 cm).

*While supplies last.

FRONT SUSPENSION KIT (42" WITH SHOCKS)

REV-XM, XS, XP without 42" front suspension — **860201353**



- To update your sled to the RAS 2 X package configuration.
- 42" (107 cm) RAS 2 front suspension kit.
- Updates sleds to lastest REV-XS trail front end.
- Better straightline tracking on big bumps.
- Lighter weight.
- Great styling.
- HPG Plus R shocks with rebound adjustment.
- Includes spindle compatible with Pilot TS ski.

NEW RETROFITTABLE SWAY BAR

Neo — **860202206**



- Kit gives the rider the benefit of a sway bar stability trails.

SWAY BAR QUICK-DISCONNECT LINK KIT

Summit Neo, REV Gen4 Summit and Freeride, XM and XP Summit 2013 to 2020	860200811
REV-XP Summit 2012 and prior	860200667*



- Kit allows you to utilize the benefits of a sway bar on rough trails and quickly disconnect it for sidehilling.
- Sold individually.

NEW REAR SUSPENSION COIL

Neo — **860202457**



- Higher capacity springs for use with passengers or larger riders.

NEW SHOCK UPGRADE KIT

Neo Base — **860202210**



- Premium front shock upgrade for base Neo model.
- KYB 36mm high pressure gas shock absorber.
- Spring preload adjustment.
- Reverse mounting (body up) to minimize unsprung weight.

KYB SHOCKS

KYB PERFORMANCE SHOCKS KIT

REV Gen4 with RAS X suspension (except SAS) — **860202466**



- Race Edition KYB shock absorbers.
- Piggy Back 46 mm bodies with 16 mm shaft.
- Feature separate adjustments for high- and low-speed compression plus rebound damping.
- Kashima coated for friction-free performance and long life.
- Fits RAS X front suspension.

FOX SHOCK KITS

FRONT SHOCKS – LIGHTWEIGHT FLOAT 3 EVOL QS

REV Gen4 (Summit and Freeride) — **860202277**



- Two separate air chambers replace coil springs and offer multiple tuning options. The QS3 adjustments offer three positions for easy and quick compression and rebound adjustments.

- FEATURES:
  - Optimized lightweight shock design.
  - One piece, aluminum mounting hardware.
  - High-flow velocity-sensitive damping.
  - Internal groove position sensitive technology.
  - Fully rebuildable and re-tuneable.
  - Ski stance: 34" and 36".

REAR TRACK SHOCKS – LIGHTWEIGHT FLOAT 3 QS3 (CENTER) / 1.5 ZERO QSR WITH LOCK-OUT (REAR)

REV Gen4 Summit and Freeride 146", 154", 165" with tMotion — **860202278**



- This FOX kit features the Lightweight Float 3 center and 1.5 Zero with lock-out rear shocks to help your sled get skinny. The center shock features QS3 three position adjustment for quick and easy compression and rebound adjustments. The rear features QS3 compression adjustment plus a lockout feature.

- FEATURES:
  - Optimized lightweight shock design
  - One piece, aluminum mounting hardware
  - High-flow velocity-sensitive damping
  - Internal groove position sensitive technology
  - Fully rebuildable and re-tuneable
  - Fits 146"-165" track lengths

FRONT SHOCKS – LIGHTWEIGHT 1.5 ZERO QS3-R

REV Gen4 (Summit and Freeride, except Summit Expert) — **860202275**



- The newest version of FOX's renowned lightweight shocks and springs to fit deep snow sleds. They feature QS3 three position adjustment for quick and easy compression and rebound adjustments and fit S-36 front suspensions.

- FEATURES:
  - Optimized lightweight spring and shock design.
  - FOX ice scraper technology (FIST).
  - One piece, aluminum mounting hardware.
  - High-flow velocity-sensitive damping.
  - Internal groove position sensitive technology.
  - Fully rebuildable and re-tuneable.
  - Ski stance: 34" and 36".

REAR TRACK SHOCKS – LIGHTWEIGHT 1.5 ZERO QS3-R (CENTER) / LIGHTWEIGHT 1.5 ZERO QSR WITH LOCKOUT (REAR)

REV Gen4 Summit and Freeride 146", 154", 165" with tMotion — **860202276**



- The newest version of FOX's renowned lightweight shocks to fit deep snow rear suspensions. The center shock features QS3 three position adjustment for quick and easy compression and rebound adjustments. The rear features QS3 compression adjustment plus a lockout feature.

- FEATURES:
  - Optimized lightweight spring and shock design.
  - FOX ice scraper technology (FIST).
  - One piece, aluminum mounting hardware.
  - High-flow velocity-sensitive damping.
  - Internal groove position sensitive technology.
  - Fully rebuildable and re-tuneable.
  - Fits 146"–165" track lengths.

VENT KITS & PREFILTERS

PREFILTER GRILLE KIT

Neo, REV Gen4 (Narrow) — **860201224**



- Reduces water and snow intrusion with a clean, integrated look.
- Easily removable bottom grille.
- Snap-in top grille.
- Airbox pop-off valve filter.

UPPER PREFILTER AND POP-OFF VALVE FILTER KIT

MXZ Neo, REV Gen4 (Narrow) — **860201756***



AIRBOX POP-OFF VALVE FILTER KIT

REV Gen4 850 E-TEC, 600R E-TEC, 600 EFI — **860201755***



HEAVY-DUTY AIR INTAKE FILTERS

Neo, REV Gen4 — **860201399**



- Filters prevent water intrusion and snow buildup.
- Reinforced intake filters, preventing damage in heavy use.
- Replacement for stock filters.
- Not compatible with One-Piece Lightweight Hood

PREFILTER GRILLE KIT

REV-XM, XS — **860200610**



- Fully integrated overmolded prefilter snap-in grilles.
- Repels and prevents snow from entering bottom pan and hood openings.
- Kit includes easily removable bottom pan grille, lower pan cover plugs, hood grille, and air-box pop-off valve prefilter.

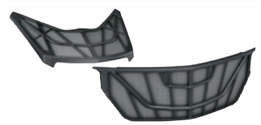
REPLACEMENT FRONT PREFILTER

REV-XM, XS — **517305029**



PREFILTER GRILLE KIT

REV-XU Expedition, Skandic — **860201152**



- Keeps snow and moisture out, lets air in.
- Plastic frame molded over mesh for strength.
- Installs easily.
- Totally integrated design.
- Kit includes filters for bottom pan and hood openings.
- Not compatible with Heavy-Duty Front Bumper with 2" Receiver (860200987).

VENT KIT FOR SIDE PANELS

REV-XM — **860200609**



- Fast air-evacuating overmolded prefilter vents.
- Easy do-it-yourself installation onto premarked production side panels.
- 1¾" holesaw required.
- Use in conjunction with your stock vehicle panels.
- For racing applications only.
- Kit includes vents for both side panels (24x).
- Foam with foil included.

VENT KIT

All models — **860200684**



- Assortment of replacement or additional vents (7x) with hardware.
- Can be installed on most body panels with relatively flat surface and 2.5 to 3.2 mm thickness.

While supplies last.

COOLING & LUBRICATION

LinQ LIGHTWEIGHT SNOWFLAP EXTENSION	REV Gen5, REV Gen4 (with short tunnel)	**860202393**



- Removable snowflap extension that helps engine cooling in hardpack, low and icy snow conditions when installed.
- Stows on the tunnel when not in use.
- Installs on the stock lightweight snowflap of Summit and Freeride models with short tunnel.
- Compatible with stock and hitch bumpers.

LinQ REMOVABLE SNOW FLAP	REV Gen5 and REV Gen4 Freeride and Summit 154" and longer Summit Neo, REV Gen4 146" Backcountry, Summit, Freeride: specific installation required, see instruction sheet for details	**860201914**



- Lets you play in the deep powder with no restriction.
- Retains cooling properties when installed.
- Stows on tunnel when not in use.
- Installs with stock snowflap.
- Does not fit with Hitch Rear Bumper.
- Does not fit short tunnel.

SNOWFLAP	REV-XP, XR except GTX, Grand Touring, XU Expedition 2009 to 2019	**860200106** • Black / Yellow **860200467** • Black / Grey



- Customize your sled.
- Hardware included.

TUNNEL ICE SCRATCHERS WITH REPLACEABLE TIPS	REV Gen 4 16" (129") and Grand Touring LTD	**860202267***
	REV Gen5 (Trail), REV Gen4 16" (137" and up) and Summit XM	**860202387**
	REV Gen4 20" and 24"	**860202388**



- Thoughtful design features replaceable carbide tips.
- Provides additional cooling in hard or icy snow conditions.
- Coil design allows reverse operation without damage.
- Easily stored below running board when not in use.
- Not compatible with models equipped with SAS (Smart-Shock Semi-Active Suspension).

*Not compatible with 129" and 137" Sport models with SC-5M suspension.
*Bracket (860201503) required for MXZ 129" with quick-adjusters.

NEW ICE SCRATCHER	REV Gen5 (Trail), MXZ Neo, REV Gen4 (except Summit and Freeride)	**860202330**



- Provides additional cooling in hard and icy conditions.
- Double coil allows use in reverse without damage.
- Small and discreet, can be stored along the rail when not in use.

ICE SCRATCHERS TIPS	Fits with all Ice Scratchers	**860201446** • Delta shape



- Ice scratcher replaceable carbide tips.

RAIL ICE SCRATCHERS	REV Gen5 (Deep Snow), Summit Neo, REV Gen4, XM, XP Summit and Freeride	**860201728**



- Provide additional lubrication in hard and icy conditions.
- Rail mounted, small, light.
- Design expands on coil concept to allow reversing without damage.
- Easily stored when not in use.

*While supplies last.

AIR RADIATOR KIT	REV-XS 1200 4-TEC (2016 and up)	**860201401**
	REV Gen4 (Wide) with 600 ACE, 900 ACE, 900 ACE Turbo and 900 ACE Turbo R	**860202038**
	REV Gen4 (Wide) Expedition, Skandic and Tundra with 600 EFI	**860202144**



- Provides additional cooling in extreme conditions.
- Not compatible with Auxiliary LED Light (860201235).

ELECTRICAL & ELECTRONICS

ELECTRICAL

ENGINE HEATER KIT	600 ACE, 900 ACE (2018 and prior)	**860201315**



- Improves starting in extreme cold temperatures.

BLOCK HEATER KIT	REV Gen4 (Wide) with 900 ACE Turbo and 900 ACE (2019 and up)	**860201671**



- Allow easy starts in the coldest of conditions.
- Easy installation.

PRIMER KIT	REV-XU Tundra	**860200416**



- Provides hassle-free starting in extreme cold temperatures.

ELECTRIC STARTER KIT	REV Gen5 (Deep Snow), Neo, REV Gen4 (Narrow)	**860201282**
	REV-XP, XM, XS 600 E-TEC (2009 and up), 800R, 800R E-TEC	**860200627**
	REV-XP with 500 SS, 600 Sport (2009 and up), XP Fan, XU Tundra	**860201085**



- Start your sled with the simple push of a button.
- Kit components may vary per model.

REWIND STARTER KIT	REV Gen5, REV Gen4 (with 7.8 in wide LCD color display)	**NEW 860202533**
	600 HO E-TEC, 800R E-TEC engines (except REV-XU Expedition, WT, SWT)	**860201053**
	REV Gen4 16" 600R E-TEC, 850 E-TEC and 600 EFI	**860201410**
	REV Gen4 20" (Wide) 850 E-TEC, 600R E-TEC, 600 EFI	**860202123**



- Complete rewind kit for those wanting extra security.
- Rewind handle located behind panel. Instant handle access requires different side panel.

ELECTRICAL

USB POWER OUTLET KIT

Neo, REV Gen4 — **860201261***



- Provides clean, stable power to recharge your electronics while riding.
- Dual USB ports.
- Plug-and-play installation.
- Includes wiring harness.
- Not compatible with 7.8 in. wide LCD color display.

12-VOLT POWER OUTLET KITS
(Not illustrated)

Neo, REV Gen4	**860201423**
REV-XP, XR, XU Tundra (except standard 2011–2012)	**860200196**
REV-XM, XS	**860200632**

- Power up all your electronics with these easy-to-mount 12V plugs.
- Install inside storage compartment.
- Wiring harness included.

NEW USB INTELLIGENT POWER OUTLET KIT

REV Gen5, Neo, REV Gen4 — **860202433**



- Power all your electronics with this easy to mount USB plug.
- Provides 1 USB-A (QC3.0) and 1 USB-C (PD) plugs.
- Power rate : 36 watts.
- Intelligent USB charger for a quick charge when battery is low.
- Installs inside storage compartment.
- Includes wiring harness for installation on REV Gen5 models.
- Requires Harness extension for Cellphone Holder and USB plug 515178153 for installation on REV Gen4 models.
- Glovebox for one-piece lightweight hood (860202193 or 860202572) is necessary If installed on REV Gen4 lightweight hood models.
- Not compatible with 7.8 in. wide LCD color display for REV Gen 4.

QC : quick charge
PD : power delivery

12-VOLT POWER OUTLET REPLACEMENT KIT

861507200



- Wiring harness is not included.

12-VOLT PLUG FOR LinQ MULTI-MOUNT PLATE

REV Gen4 (Wide) 20" and 24"	**860201888**
Neo, REV Gen4 16"	**860202069**



- Standard 12V outlet for the rear of the vehicle.
- Multi LinQ Plate Retrofit Kit (860202133) required for installation on Skandic Sport.

REAR 12-VOLT POWER OUTLET
(Not illustrated)

REV-XU Skandic and Expedition without E-TEC engine — **860200979***

- Mounts inside rear seat storage compartment.
- Wiring harness included.

HEATED VISOR KIT
(Not illustrated)

Neo, REV Gen4	**860201283**
REV-XM, XS, XP, XR, XU Tundra	**860201234**

- Easy install plug-in for visor kit or heated bags.
- Wiring harness included.

HEATED PASSENGER VISOR KIT

860200882



- Enjoy fog-free riding with this visor kit option for your 1 + 1 Seat.
- To be used in conjunction with Heated 1 + 1 Grips with Guards (860200584).

**While supplies last.*

1+1 SEAT ELECTRICAL VISOR/ HEATED BOOTS WIRE HARNESS

REV Gen5, Neo, REV Gen4 — **860201981**



- Works in conjonction with the LinQ 1+1 Seat Heated Grips (860201840).
- Provides 2 extra connections: one connection for electric visor and one connection for heated boots.

RCA ADAPTOR PLUG KIT

515176794



- Y plug power splitter lets you connect 2 heating components or 1 heater and 1 electrical visor.

ELECTRIC ACCESSORIES WIRING HARNESS
(Not illustrated)

REV-XS, XM, XP, XR, XU Tundra (except Tundra Standard 2011–2012) — **860200817**

- Electrical kit required when combining multiple accessories.

ELECTRONICS

E LinQ

REV Gen5	NEW **860202354**
Neo, REV Gen4 (except Summit, Freeride and 600 EFI)	**860201719**



860202354



860201719

- Combines both DESS cord and heated visor/accessory cord into one.
- Converts standard DESS cord into a powered cord.
- Easy and quick magnetic connection that self locates.
- Reduces chances of a broken connector.
- Increases freedom of movement with less cords.
- Works with any electric helmet and 12V heated visor.
- Maintains power connection 100% of the time.
- Supply power up to 3A.

E LinQ RF DESS KEY

REV Gen5	**515179017** *(Not illustrated)*
Neo, REV Gen4	**515178582**



- Sold as replacement part for the E LinQ vehicle connector.

DESS CORD HOLDER

REV Gen5, Neo, REV Gen4 — **278003870**



- Hook currently sold with the E LinQ vehicle connector (860201719).
- Sold both as a replacement part for the E LinQ and as an add-on for any DESS cord from the last 10 years.
- Allows rider to attach DESS cap to the jacket and provides out-of-the-way convenience when not in use.

PROGRAMMABLE RF D.E.S.S.™ KEY

2015 and up vehicles with 600, 900 ACE, 900 ACE Turbo or 1200 engine — **860201162** • Green, **515178286** • Black



- Digitally Encoded Security System (D.E.S.S.) key's ball-and-socket design provides the rider with quick and easy start every time.
- Anti-theft technology: the key communicates with the vehicle wirelessly so the vehicle starts only when the key code matches the vehicle, for ultimate peace of mind.
- Color options facilitate differentiation between the programmed keys.
- Programmable RF D.E.S.S.™ Key can also be programmed to limit the speed of the snowmobile and engine torque, enabling first-time users and less experienced operators to learn how to operate while gaining the necessary confidence and control.

Speed limitation is available on:
2015 and up 600, 900 ACE, 900 ACE Turbo models and on 2017 and up 1200 engine models.

ELECTRONICS

PROGRAMMABLE D.E.S.S.™ KEY

515178284



- Anti-theft technology, Digitally Encoded Security System (D.E.S.S) key easily snaps onto the vehicle and provides the rider with quick and easy start every time.
- The key communicates with the vehicle wirelessly so the vehicle starts only when the key code matches the vehicle, for ultimate peace of mind.
- The Programmable D.E.S.S. Key can also be programmed to limit the speed of the snowmobile and engine torque, enabling first-time users and less experienced operators to learn how to operate while gaining the necessary confidence and control.

Speed limitation is available on: 2014 900 Ace engines.

GARMIN ZUMO† 590 GPS

REV Gen5, Neo, REV Gen4 — **860201263** • US only*



- 5" (12.7 cm) sunlight readable, glove-friendly screen.
- Bluetooth† technology can pair with cell phones.
- Canadian topo maps included, trail maps can be downloaded.
- Cradle and harness included.
- Glovebox Extension/GPS Support (860201249) required for mounting.

GARMIN ZUMO† 590 GPS MOUNT SUPPORT KIT

REV Gen5, Neo, REV Gen4 — **860201262***



- Mount for Garmin Zumo 590 GPS allows use on more than one vehicle.
- Plug-and-play wire harness.
- Included in Garmin Zumo 590 GPS (860201263 for US and 860201412 for CA).

MONTANA GPS SUPPORT KIT

(Not illustrated)

REV-XS, XM — **860201029***

- Mounting kit and hardware for Garmin Montana GPS.
- To be able to use GPS on more than one vehicle.

UNIVERSAL GPS SUPPORT KIT

REV-XR, XU — **860201018***



- Kit includes mount, wiring harness and all hardware.
- GPS sold separately.
- Requires Montana GPS and Support Kit (860201417).

RH-5R RUGGED RADIO

860201966 • US only



- Dual band (VHF/UHF) frequency operation.
- 5 watts of power.
- High capacity lithium-ion battery.
- FM radio.
- Emergency alarm function.
- Dual watch/dual reception.
- Backlit display illumination.
- Battery "save" function.
- Selectable scan mode.
- Includes waterproof speaker hand microphone.

AMBIENT AIR AND ENGINE TEMPERATURE MODULE

2015 and up for all platforms	**860201021***
Neo, REV Gen4	**860201362**



- Get both outside air and engine temps on your cluster.
- Fits both analog and digital multifunction gauge.
- Plug-and-play in vehicle harness.

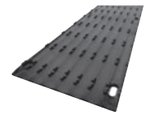
*Except fan-cooled engines and 2015 P-TEK.

*While supplies last.

TRAILERING & COVERS

SUPERGLIDE II PRO

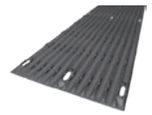
860201216



- No more ripping up the plywood on your trailer.
- Allows skis to glide with ease.
- Traction knobs incorporated for better traction.
- Exclusive venting, protects the deck of your trailer from moisture damage.
- Total length of 20' (6 m).
- Each box contains 8 pieces 8.5" x 29.5" (21.5 cm x 74.9 cm).
- Comes with 48 specially coated screws with grommets.

SUPERGLIDE II WIDE

860201592



- Allows sled skis to glide with ease.
- Specifically designed traction knobs provide improved traction for your feet.
- Oval mounting channels and custom shoulder screws prevent warping by allowing for expansion and contraction that results from varying temperature.
- Exclusive venting, protects the deck of your trailer from moisture damage.
- Each box contains 8 pieces 13.5" x 29.5" (34.3 cm x 74.9 cm).
- Comes with 72 specially coated screws with grommets.
- Total length of 20' (6 m).

SUPERGLIDE EDGE RAIL TRIM

860201217 • Aluminum



- To secure Superglides on ramps or decks leaving an encapsulated finished edge.

SUPER TRACTION GRID

860201593



- Super Traction Grids' strategic grid pattern provides incredible grip and accommodates all snowmobile tracks, even with paddles or studs.
- Each box contains 4 pieces 8.25" x 30" (20.9 cm x 76.2 cm) and hardware.

SUPERCLAMP II

860200950



- Innovative trailer tie-down system.
- Silicone rubber pads to protect your skis.
- Front and middle handles allow easy maneuverability.
- Padlock compatible, becomes a theft deterrent.
- Tension adjustment knob—fits all snowmobiles.
- Comes with screw-style deck hook.

REAR SUPERCLAMP WITH SUPERTRAC

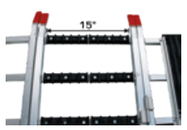
860201425



- Snowmobile tie-down system for rail.
- Silicone rubber pads to protect snowmobile suspension skid.
- Tension adjustment knob—fits all snowmobiles.
- 12" (30 cm) Supertrac kit included.
- Padlock compatible, becomes a theft deterrent.

RAMP CROSSBAR PROTECTORS

2 pieces with 6 screws	**860201672**
10 pieces with 30 screws	**860201673**
24 pieces with 72 screws	**860201674**



- Enhance and protect your ramp investment.
- Designed to mount over 1" ramp crossbars on solid, double and tri-fold loading ramps.
- 2 pieces together helps prevent stud damage to loading ramps from snowmobile-studded tracks while adding traction

TRAILERING & COVERS

SUPERTRAC KIT

860201413 • 12"
860201414 • 24"
860201415 • 48"



- Includes: 1 piece Supertrac, 1 Supertrac deck hook, 2 end caps and all mounting hardware.

T-STYLE DECK HOOK

860200995



- For trailers with a channel in the floor.

SUPERTRAC DECK HOOK

REV Gen5, Neo, REV Gen4 (Narrow)

860201416



- For Supertrac.
- Adjustable and removable hook.

SCREW STYLE DECK HOOK

860200994



- Most common.
- Comes standard with front Superclamps.
- Screws into the existing hole where you would screw the old style bar and crank into or make your own holes.

LIGHTWEIGHT PACKABLE COVER

Neo, REV Gen4

860202172



- Compact, lightweight and packable.
- Covers front lights, handlebar, cluster, glovebox and seat area.
- Fits all REV Gen4 from 16" to 24".

TUNNEL COVER

REV Gen5, Neo, REV Gen4 (Narrow) and (Wide) 16" up to 146" length sleds

860201844



- Protects tunnel accessories (single stacked).
- Compatible with all covers (except Grand Touring Limited).
- Easy to install.
- Not compatible with LinQ Saddlebags (860200624).

WHICH COVER BEST FITS YOUR SLED?

PLATFORMS AND STOCK MODELS		EQUIVALENT CONFIGURATION AND POSSIBLE OPTIONS																			SKU
		1-UP SEAT	1.5 UP SEAT (SHORT 2-UP SEAT TUNDRA)	2-UP SEAT and 1 + 1 SEAT	BACKREST	1+1 PASSAGER RACK	PASSENGER HANDGRIPS	PASSENGER WIND DEFLECTORS	NO WINDSHIELD	ULTRA LOW WINDSHIELD (20 CM)	LOW WINDSHIELD (36 CM)	MEDIUM WINDSHIELD (43 CM)	HIGH WINDSHIELD (58.5 CM)	EXTRA HIGH WINDSHIELD	ULTRA HIGH WINDSHIELD (70 CM)	MIRRORS ON WINDSHIELD SIDE DEFLECTORS	HANDLEBAR AIR DEFLECTORS	MXZ HI-RISER KIT OR SUMMIT HI-RISER KIT	EXTRA FRONT BUMPER	LUGGAGE BOX	WRAP-AROUND BUMPER	CARGO BOX	
RIDE-ON-COVER SYSTEM WITH RAP-CLIP																					
REV GEN5 (DEEP SNOW)	Summit (SP, Expert, EDGE, X) Freeride	•				•			•		•						•	•	•				**860202550**
REV GEN5 (TRAIL)	MXZ (blizzard, X-RS), Renegade (Adrenaline, X, X-RS), Renegate (Adrenaline, Sport, X, X-RS)	•	•			•			•	•	•						•	•	•				**860202546**
	With medium windshield accessory	•	•			•						•				•	•	•	•				**860202548**
	With 1+1 seat accessory			•	•	•	•					•	•		•	•	•	•	•				**860202551**
REV GEN4 16" NEO	Summit (Neo)	•				•			•	•	•						•	•	•				**860201884**
	Summit & Freeride with medium or high wind shield accessory	•				•						•	•			•	•	•	•				**860201885**
	MXZ (Sport, Blizzard, X-RS, NEO), Backcountry (Sport, Standard, X, X-RS)	•	•			•			•	•	•						•	•	•				**860202546**
REV GEN4 16"	Renegade (Enduro)	•	•			•						•				•	•	•	•				**860202548**
	MXZ, Renegade, Backcountry, with high or ultra high windshields accessory	•	•			•							•		•	•		•	•				**860202552**
	Expedition (Sport), Grand Touring (Sport)			•	•	•	•					•	•		•	•	•	•	•				**860202551**
	Grand Touring (Limited)			•	•		•	•				•	•		•	•	•	•	•	•			**860201887**
	1up with wrap around bumper	•				•						•	•		•	•	•	•	•		•		**860202608**
	2up with wrap around bumper			•	•	•	•					•	•		•	•	•	•	•		•		**860202609**
REV GEN4 LTS 16"	Tundra (LT & Sport)	•	•	•		•				•	•	•			•	•	•	•			•		**860202173**
REV GEN4 20"	Expedition (LE, SE)			•	•		•	•				•	•		•	•	•	•	•		•	•	**860201972**
	Expedition Xtreme	•							•	•	•	•				•	•	•	•		•	•	**860201973**
REV GEN4 LTS 20" & 24"	Skandic (Sport)	•							•	•	•	•				•	•	•	•		•	•	**860201973**
REV GEN4 24"	Expedition (SWT)			•	•		•	•				•	•		•	•	•	•	•		•	•	**860202200**
INTENSE RAP-CLIP COVER																							
YOUTH	Youth 120, Youth 200	•							•		•					•							**860202553**
REV-XM	Summit SP	•								•	•		•		•	•		•	•				**860201375**
	Renegade Backcountry	•										•	•			•		•	•				**860201374**
	REV-XM with Medium-High Windshield	•										•	•			•		•	•				**860201376**
REV-XS	MXZ X, Renegade X	•								•	•						•	•	•				**860201373**
	MXZ (Sport, TNT, Blizzard), Renegade (Sport, Adrenaline, Enduro)	•										•	•			•		•	•				**860201374**
	REV-XS 1-Up with Ultra High Windshield	•												•	•	•		•	•				**280000627**
	REV-XS with 1+1 and Backrest			•	•		•	•				•	•			•		•	•				**280000626**
	REV-XS with Side Panel Mirrors	•								•	•	•					•	•					**280000609***
	Grand Touring LE			•	•		•	•					•	•	•								**860201371**
	Grand Touring SE			•	•		•	•					•	•	•					•			**860201372**
	Expedition Sport, Grand Touring Sport			•	•		•	•					•	•	•	•		•	•				**280000630**
REV-XU	Tundra (Sport, LT, Xtreme)	•		•						•	•	•				•		•	•				**280000650**
	Tundra with Extra High Windshield	•		•									•		•				•				**280000673**
	Expedition (LE, SE, SWT), Skandic (WT, SWT)			•	•		•	•						•	•	•			•				**280000649**
	Expedition Extreme	•								•	•							•	•				**860201377**
NO RAP-CLIP, NO RIDE-ON-COVER SYSTEM																							
REV-XP	Summit Sport	•							•	•						•	•						**860201387**
	MXZ Sport, Renegade Sport	•										•	•			•	•	•					**860201388**
	Expedition Sport			•	•		•	•					•	•		•							**860201389**
	REV-XP with 1+1 and Backrest			•	•		•	•				•	•			•	•	•					**280000590***

*While supplies last.

GARAGE & TRUCK SLED DECKS

DELUXE TOOL KIT

860202029



- Casing fits perfectly in Seat Storage Box with or without battery (860202532).
- Features high-quality tools.
- Includes:
  - Stainless steel open end/ring end wrenches; 8–10mm, 10–13mm, 12–14mm, 15–17mm, 16–19mm.
  - ¼ drive ratchet with 4" extension, hexagonal 8 – 10 – 13 – 16, Torx 25 – 30 – 40, Allen 4 – 6 – 8 and Philips #2.
  - Long nose vise-grip.
  - Spring hook tool.

SLED SHOP WHEELS

860201805



- Non-slip rubber grips allow this steel 4-dolly system to move your sled easily throughout the garage.
- Works with both dual and single runner skis.
- 4-wheel dolly kit (kit includes 3 dollies with 4 wheels each).

RATCHET TIE-DOWNS

715008309



- 400 lb (181 kg) safe working load.
- 1" x 10' (2.5 cm x 3 m) strap with Sea-Doo, Ski-Doo and Can-Am logos.
- Deluxe ratchet with rubber handle.
- Coated hooks.
- Pack of 2.

HEAVY-DUTY RATCHET TIE-DOWNS

715008308 • 12" (300 mm) webbing included
715006227 • 18" (460 mm) webbing included.



- 1,000 lb (454 kg) safe working load.
- 1.5 in. x 6 in. (38 mm x 1.8 m) strap with with Sea-Doo, Ski-Doo and Can-Am logos.
- Deluxe ratchet with rubber handle.
- Vinyl-coated hooks.
- Pack of 2.

LOCKABLE VEHICLE FUEL CAP

860200387



- Lockable to protect your fuel.
- Meets latest EPA requirements.

SKI-DOO 2" (5 CM) RUBBER HITCH CAP

520001498







PARTS

// PARTS

145 TRACTION & CONTROL
156 PROPULSION
158 ELECTRICAL

SKI-DOO LIMITED WARRANTY*

// 1-YEAR ON GENUINE BRP PARTS

With Ski-Doo parts, you get the peace of mind of a FULL ONE-YEAR WARRANTY. And if they're installed by your authorized BRP dealer, labor is covered too. BRP-rebuilt components are a cost-effective solution.

Ski-Doo-rebuilt parts carry the same one-year warranty for major assemblies like short blocks, cylinders and crankshafts.

**Purchased at an authorized BRP dealership/distributor or on a BRP-authorized online store. Other exclusions may apply, see complete limited warranty or contact your Ski-Doo authorized dealer. Unless otherwise stipulated or required by law. This limited warranty does not apply to factory installed accessories.*

TRACTION & CONTROL

SKIS

RAPID ADJUST SKI STANCE

Fits all Pilot 7.4 and Pilot X skis	NEW 860202334
Fits all DS-1, DS-2, DS-3	860201619



Wide ski stance



Narrow ski stance

- Quick tool-less design adjusts ski stance in seconds.
- Go from on-trail stability to off-trail agility.
- Allows for 2" of ski stance adjustment.
- Sold in pairs.
- Needs Rubber Stopper Pads (505074748) to install on DS-1 and DS-2 skis (sold individually).

DEEP SNOW LIGHTWEIGHT SKI SPINDLE KIT

REV Gen4 with 36" ski stance — **860201976**



- Improves front dynamics when sidehilling.
- 400 g lighter than stock spindle.
- Standard on Summit X with Expert package and Freeride 154"–165" 2020 and up.

PILOT X CONVERSION KIT

REV Gen4 MXZ, Renegade & Grand Touring — **860202310**



- Upgrades earlier models to the latest Pilot X skis.
- Completes kit including 2 Pilot X ski assemblies with pre-installed handles, 2 carbides and all required hardware.

PILOT TS CONVERSION KIT

REV Gen4 MXZ, Renegade, Grand Touring — **860201484**



- Upgrade to the revolutionary adjustable Pilot TS skis.
- For 2016 and up REV-XS models with RAS 2 or previous vehicles with 42" RAS 2 upgrade kit and 2016 spindle (860201241).
- REV-XS 2016 and up with RAS 2, REV-XP, XR, XS with 42" RAS 2 and 2016 spindle (860201241 or 860201353).

PILOT 7.4 UPGRADE KIT

860202119 • Black



- Upgrade earlier models to the latest Pilot 7.4 skis.
- Complete kit including 2 Pilot 7.4 ski assemblies with pre-installed handles, 2 carbides and all required hardware.
- Does not fit with LTS suspension.

PILOT 5.7 SKI UPGRADE KIT

860200524 • Black



- Complete kit for upgrading earlier snowmobile models.
- Includes 2 skis, 2 handles with rivet kit, 2 Expedition carbides and all required hardware.

PILOT DS-2 SKI KIT

860201487 • Black



- Complete kit includes 2 ski assemblies with pre-installed handles, 2 Expedition carbides and all required hardware.

PILOT 7.4 SKI LINER

Pilot 7.4 skis — **860202115** • Black

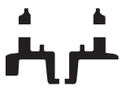
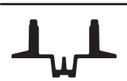
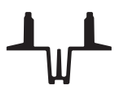


- Provides additional flotation and reduces ski wear.
- 260 mm (10.25") wide.
- Same durable material as 7.4 skis.
- Sold in pairs.

// SKIS

Skis make all the difference in getting your sled to handle just how you like. We offer eight different styles of skis for you to choose from. Which one is right for you? Here are some tips on choosing the right one:

PLATFORMS: REV GEN4 / XP / XR / XU / XS / XM / REV

					COLORS																	
					Black		Yellow		Sunburst Yellow		Black/Yellow		Black/White		Viper Red		Lava Red		Orange Crush		Race Orange		Manta Green	
					Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right
TOURING			**PILOT 5.7 SL** 2 carbides/ski	• Lightweight single or dual runner skis provide effortless steering at low speeds and constant grip without compromise at higher speeds. • Standard use is one carbide runner—add a second to reduce darting. • Great all-around trail performance.	505072443		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A	
UTILITY			**PILOT 7.4** 1 carbide/ski	• Specifically designed for utility purposes. • Deeper keels allow more control while towing. • Increased tip-up rear end for better reverse capability. • 1 inch wider than Pilot DS-2 for improved flotation in deep snow. • More aggressive cornering while keeping a light steering feeling.	505074736		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A	
TRAIL SPORT			**PILOT 5.7** 1 or 2 carbides/ski****	• Lightweight single or dual runner skis provide effortless steering at low speeds and constant grip without compromise at higher speeds. • Standard use is one carbide runner—add a second to reduce darting. • Great all-around trail performance.	505072854	505072855	505073028	505073029	505073575	505073576	505073030	505073031	505073032	505073033	505073026	505073027	N/A		505074071	505074072	505073645	505073646	505074239	505074240
			**PILOT TS ADJUSTABLE** 1 carbide/ski	• The industry's first and only adjustable ski. • The Pilot TS skis allow riders to change ski bite for changing snow conditions or riding styles easily and quickly. • With the Pilot TS skis you dial in the perfect setting by turning a knob on the ski leg. • The ski runner has ½" (12.5 mm) of travel up and down. • The thin runner and square keel design work together to eliminate darting.	505074829	505074830	N/A		505073851	505073852	N/A		N/A		N/A		N/A		505074067	505074068	N/A		505074235	505074236
			**PILOT X** 1 carbide/ski	• Completely redesigned from Pilot 5.7 with a new structural topside for 10% more rigidity. • 31 mm longer keel with a new shape reduces darting. • Adds 10% more lateral surface area and blends more smoothly with a new carbide. • 11° degree reduction in approach angle.	505074926	505074927	N/A		505075024	505075025	N/A		N/A		N/A		N/A		N/A		N/A		N/A	
			**PILOT TX** 1 carbide/ski	• Improved to better match the REV Gen4 features. • Redesigned top side for increased rigidity. • 20 mm shorter overall length and more dramatic tip-up at the rear. • 63 mm longer runner plate increases lateral surface for more effective cornering. • Smoother front approach angle to reduce darting even further.	505074776	505074777	N/A		505075026	505075027	N/A		N/A		N/A		N/A		N/A		N/A		N/A	
TRAIL PERFORMANCE			**PILOT R** 1 carbide/ski	• Straight from the MXZ X 600RS race sled. • Very aggressive profile for sharp handling. • Lightweight with high rigidity. • Proven on the ISOC race circuit.	505074670		N/A		505074690		N/A		N/A		N/A		N/A		N/A		N/A		N/A	
DEEP SNOW			**PILOT DS**** 1 carbide/ski	• Designed specifically for deep snow riding. • Works well in many off-trail applications from utility sleds to mountain sleds. • Thin edge is effective for grabbing side hills.	505073100		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A	
			**PILOT DS-2** 1 carbide/ski	• Evolution of the DS with a deeper and shorter keel. • Increased agility and less effort than the original. • Great all-around ski for deep snow use. • Standard on mountain sleds with 2.5" lug tracks and utility sleds.	505073227		505073277		505073658		N/A		505073279		N/A		505073510		505073511		505073654		505073354	
			**PILOT DS-3**** 1 carbide/ski **PILOT DS-3 REV Gen4***** 1 carbide/ski	• Deep snow ski designed to match the latest 3" lug and longer tracks. • 0.47" (12 mm) deeper keel than DS-2. • Works well for aggressive riders using the biggest tracks.	505073588 505074746		N/A N/A		505073627 505074756[i]		N/A N/A		N/A N/A		N/A 505074747		N/A N/A		505074023 505074757		N/A N/A		505073990 505074755	

***Does not fit REV Gen4. ***Fits only REV Gen4. ****Second carbide can be added to ski by drilling marked additional holes.*
Note: The use of aggressive skis, ski carbide runners or studs will alter the handling of your snowmobile, particularly in terms of maneuverability, acceleration and braking.
Please refer to your Operators Guide for more details.

SKIS

PILOT DS SKI LINER



Pilot DS-2 skis	**860201040** • Black
Pilot DS skis	**860200636** • Black

- Provides additional flotation and reduces ski wear.
- Same durable material as DS Ski.
- Sold in pairs.

SKI SKIN



Pilot 6.9 skis	**860200422** • Black

- Provides additional flotation and reduces ski wear.
- Made of durable polyethylene.
- Sold in pairs.

DS-3 SKI TIP KIT



Fits vehicles with DS-3 skis	**860201214** • Black **860201501** • Sunburst Yellow

- Easy-install custom color tips change the appearance of your sled in minutes.
- Adds flotation on the front of the DS-3 ski.
- Sold in pairs with mounting hardware.

SKI HANDLE RIVET KIT



	860200525

- Includes 2 long and 2 short aluminum rivets for repairing the handle on Pilot skis.

SKI HANDLE



Pilot 5.7, 6.9, Pilot SL and Pilot TS, Pilot X and TX	**505070917** • Yellow **505070963** • Black **505071038** • Scarlet Red **505071048** • Orange Saturn **505071059** • Viper Red **505071556** • Full Moon	**505072102** • White **505073649** • Race Orange **505073642** • Sunburst Yellow **505074226** • Manta Green **505074223** • Tactical Grey

- High-density colored polyethylene loops.

SKI HANDLE



Pilot 7.4, DS-1, DS-2, DS-3	**505072976** • Black **505073107** • Yellow **505073108** • White **505073388** • Lava Red	**505074229** • Manta Green **505073513** • Orange Crush **505073651** • Race Orange **505073665** • Sunburst Yellow

- High-density colored polyethylene loops.

SKI HANDLE



Pilot R	**505071674** • Yellow	**505073138** • Black

- ISR compliant race ski loop.
- High-density colored polyethylene loops.

SKI HANDLE



Pilot X, Pilot TX, 5.7, 6.9, SL and TS	**505075029** • Lava Red **505075028** • Sunburst Yellow	**505075275** • Manta Green **505074778** • Black

- High-density colored polyethylene loops.

SKI-DOO PILOT* SKIS AND CARBIDES TO SUIT ALL RIDING STYLES

NEW CARBIDES

Youth	**860202555**

- 7/16" flat top runner with 4" of 60 degree turning carbide.
- Sold in pairs.

PILOT X CARBIDES RUNNER



Pilot X and Pilot 5.7 Skis	**860202180**

- 4" 90° carbides.

PILOT TX CARBIDES RUNNER



Pilot TX Skis – 4" 90° carbides	**860202192**
Pilot TX Skis – 7" 60° carbides	**860202243**

- 12.5 mm longer runner: Increased front-end grip and steering stability.
- Smoother runner attack angle (10°) for increased predictability.

PILOT TS CARBIDE RUNNER



Pilot TS - (7" 60° tall)	**860201364**

- Increases front end bite with an extra ¼" (6 mm) of runner depth, plus 7" of 60° carbide.
- For Pilot TS adjustable skis.
- Sold in pairs.
- Patent pending US20150314800A1.

PILOT TS CARBIDE RUNNER



Pilot TS - (7" 60° carbides - Pilot TS)	**860201240**
Pilot TS (stock replacement) - (5" 90° carbides)	**860201178**

- For Pilot TS adjustable skis.
- Sold in pairs.
- Patent pending US20150314800A1.

PILOT EXPEDITION CARBIDES



Pilot X, Pilot 5.7 SL, Pilot 5.7, Pilot 7.4, Pilot DS, Pilot DS-2, Pilot DS-3 Skis	**860201044** • Square - Pack of 2 **860201220** • Round 7/16" - Pack of 2

- Protected under patent numbers US 7,413,198, US 7,389,995 and CA2535565.

PILOT EXTREME CARBIDES



Pilot X, Pilot 5.7 SL, Pilot 5.7, Pilot 7.4, Pilot DS, Pilot DS-2, Pilot DS-3 Skis	**860201045** • Round ½" - Pack of 4
Pilot X, Pilot 5.7 SL, Pilot 5.7, Pilot DS, Pilot DS-2, Pilot DS-3 Skis	**860201043** • Round ½" - Pack of 2

- Protected under patent numbers US 7,413,198, US 7,389,995 and CA2535565.

**Protected under patent numbers US 7,413,198, US 7,389,995 and CA2535565.*
Note: The use of aggressive skis, ski carbide runners or studs will alter the handling of your snowmobile, particularly in terms of maneuverability, acceleration and braking. Please refer to your Operators Guide for more details.

SKI-DOO PILOT* SKIS AND CARBIDES TO SUIT ALL RIDING STYLES

PILOT R CARBIDES

Pilot R skis — **860201697**



- Round, 7/16" runners with 4 fixation points and 6" of 60° carbides.
- Pack of 2.

SKI-DOO BY woodys CARBIDES

CARBIDE RUNNER

Pilot skis, except DS and DS-2	**860202557** • Preformed 4" 60°
Pilot X, Pilot 5.7 SL, Pilot 5.7, Pilot DS, Pilot DS-2, Pilot DS-3 skis	**860202558** • Preformed 6" 60°
Pilot X, Pilot 5.7 SL, Pilot 5.7, Pilot DS, Pilot DS-2, Pilot DS-3 skis	**860202559** • Preformed 8" 60°



- The Dooly† by Woodys has two 7/16" Flat-Top† runners mounted on a plate for each ski.
- Four contact lines on snow surface help decrease darting of sled as it makes own groove in a trail.
- When in a turn, only one of the Dooly bars is in contact with the snow or ice.
- A Dooly with 4", 6" or 8" of carbide on both runners provides the same turning power as a single runner with 4", 6" or 8" of turning carbide.
- Sold individually.

ACE SKI RUNNER

Pilot X, Pilot 5.7 SL, Pilot 5.7, Pilot 7.4, Pilot DS, Pilot DS-2, Pilot DS-3 skis

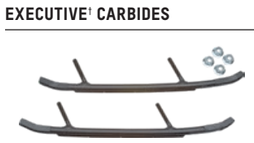
860201969 • Preformed 6" 60°	
860201970 • Preformed 8" 60°	



- Woodys ACE single runner line uses a 3/8" x 1/2" preformed steel square bar.
- Taller profile and more aggressive, providing excellent control in all conditions.
- Works great in deep snow.
- Carries innovative features like 60° carbide inserts that are guaranteed not to come out under any conditions, Flat-Top design, rounded wear pads, full-length hardweld and bevel-cut host bar that doesn't snag trailer edge.
- Pack of 2.

EXECUTIVE† CARBIDES

Pilot X, Pilot 5.7 SL, Pilot 5.7, Pilot 7.4, Pilot DS, Pilot DS-2, Pilot DS-3 skis — **860200580**



- 1/2" round preformed material swedged at each end to best fit ski contour fitted with 8" of 60° turning carbide.
- Performance trail riders are known to use this runner.
- Provides proper balance with a studded track.
- Pack of 2.

EXTENDER TRAIL III† CARBIDES

Pilot X, Pilot 5.7 SL, Pilot 5.7, Pilot 7.4, Pilot DS, Pilot DS-2, Pilot DS-3 skis — **860200578**



- 1/2" round preformed material swedged at each end to best fit ski contour.
- 4" of 60° turning carbide provides positive cornering control.
- Pack of 2.

TRAIL BLAZER IV† CARBIDES

Pilot X, Pilot 5.7 SL, Pilot 5.7, Pilot 7.4, Pilot DS, Pilot DS-2, Pilot DS-3 skis — **860200579**



- 1/2" round preformed material swedged at each end to best fit ski contour.
- With 6" of 60° turning carbide, this runner is designed for trail riders looking for performance in cornering power and control.
- Pack of 2.

WHEELS & SLIDER SHOES

SLIDER WITH VESPEL† INSERTS

All models with 163" and longer tunnels	**503194816**
All models with 154" and shorter tunnels	**503194815**



- Uses DuPont Vespel inserts for less friction.
- Can be cut to desired length.
- Better fuel efficiency, more power and increased vehicle speed due to reduced friction between the track clips and slides.
- Reduced need for maintenance and associated costs.
- Extended life due to enhanced wear characteristics of Vespel polyamide over incumbent UHMW PE.
- Allows riders to operate sleds in less than acceptable snow and trail conditions since water from snow is not needed for lubricity as with incumbent UHMW PE slide rails.

**Protected under patent numbers US 7,413,198, US 7,389,995 and CA2535565. ‡While supplies last.*
Note: The use of aggressive skis, ski carbide runners or studs will alter the handling of your snowmobile, particularly in terms of maneuverability, acceleration and braking.
Please refer to your Operators Guide for more details.

SLIDER SHOES



- Custom color-matched slider shoes with built-in wear marker.
- Long-lasting, impact-resistant.
- For all slide rail lengths.
- Easy-cut to desired length.

MODELS	
146" SC-5 – Mountain & tMotion	**503191499** • Black **503191695** • Yellow **503191947** • White
154" SC-5 – Mountain & tMotion	**503191198** • Black **503191696** • Yellow **503191948** • White
163" SC-5 – Mountain & tMotion	**503191501** • Black **503191697** • Yellow **503191949** • White
REV Gen4 154"	**503194251** • Black
REV Gen4 165"	**503194520** • Orange **503194254** • Black
REV Gen4 175"	**503194413** • Black **503194906** • Manta Green **503194908** • Sunburst Yellow
120" SC-5 & rMotion	**503191301** • Black **503191693** • Yellow **503191945** • White
rMotion and rMotion X 120"	**503192562** • Red
rMotion and rMotion X 137"	**503191306** • Black **503191694** • Yellow **503191946** • White **503192563** • Red
137" rMotion Grand Touring 900 ACE	**503193449** • Black
174" tMotion	**503193819** • Black
REV-XS 174"	**503194506** • Sunburst Yellow **503194505** • White

LIGHTWEIGHT WHEEL



- Color-matched lightweight snowmobile wheels.

MODELS	
141 mm – REV Gen4, XM, XS, XP, XR	**503192794** • Black **503191621** • Yellow **503191622** • Full Moon **503191942** • White
152 mm – REV Gen4, XM, XS, XP, XR	**503191755** • Black
180 mm – REV Gen4, XM, XS, XP, XR	**503191626** • Yellow **503191627** • Full Moon **503191742** • Black **503191943** • White
141 mm – rMotion	**503193477** • Black
147 mm – rMotion	**503193376** • Black
180 mm – rMotion	**503192766** • Black

EXTRA IDLER WHEEL KIT

REV-XP, XR (except rMotion)	**860201230** • 141 mm
REV Gen4 Summit, Freeride and Backcountry, XM, XM Summit X with T3 package	**860201183** • 152 mm



- Reduces drag and rolling resistance.
- Includes 2 wheels, brackets and hardware.

4TH REAR WHEEL KIT* - 180 MM

(Not illustrated)

REV-XS, XP, XR 120" and 137" — **860200358** • 180 mm

- 4th rear idler design reduces drag and rolling resistance.
- Works in conjunction with stock 3 wheel setup.

NEW REAR WHEEL KIT

Youth 200	**7639-963**
Youth 120	**7639-967**



- Additional wheels for the rear suspension for low snow conditions.
- Includes wheels and mounts.

NSK†

503190396 • 6004	**503191778 • 6006**
503193548 • 6005	**293350115 • 6205**



- High performance grease developed for extreme temperatures, water resistance and high speeds with low start torque.
- Advanced Winter Grade DUL1 double-contact seal design for optimum protection from moisture and contamination.
- Polyamide resin ball-guide cage facilitates smooth rolling contact and lubricant distribution.
- Ultra-clean steel for extended bearing life—high-grade balls for quiet and smooth operation even at high speed.
- Super finished raceways to minimize noise and improve lubricant distribution and life.

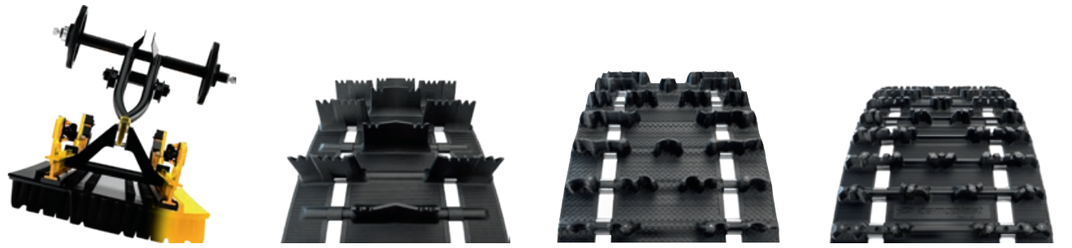
TRACTION

// TRACKS, YOUR CONNECTION TO THE SNOW

POWDER MAX LIGHT
- 3.5" (8.89 cm) pitch reduces weight and keeps snow between lugs for added performance.
- Exclusive 16" (41 cm) wide design adds flotation and traction without sacrificing maneuverability.
- Edges flex to reduce the effort to initiate roll-up.
- Available in either 2.5" or 3.0" (6.3 or 7.62 cm) lug heights.

POWDER MAX 3 / FLEXEDGE
- The track edges bend, making roll-up easy and predictable.
- Exclusive FlexEdge technology available in Powder Max, Powder Max 2 & 3 and Cobra 1.6 profiles.
- From 137" to 174".

PITCH	LENGTH	WIDTH	LUG HEIGHT	PROFILE	CLIP	SKU
3.5"	154"	16"	2.50"	Powder Max Light	1 clip every 2 profiles	504153791
	154"	16"	3.00"	Powder Max Light	1 clip every 2 profiles	504153785
	165"	16"	2.50"	Powder Max Light	1 clip every 2 profiles	504153792
	165"	16"	3.00"	Powder Max Light	1 clip every 2 profiles	504153786
	175"	16"	3.00"	Powder Max Light	1 clip every 2 profiles	504153787
3.00"	154"	16"	3.00"	Powder Max 3 / FlexEdge	1 clip every 2 profiles	504153349
	163"	16"	3.00"	Powder Max 3 / FlexEdge	1 clip every 2 profiles	504153224
	174"	16"	3.00"	Powder Max 3 / FlexEdge	1 clip every 2 profiles	504153234
2.86"	120"	15"	1.25"	ICE Ripper XT	Full clip	504153100
	120"	15"	1.00"	RipSaw	Full clip	504152760
	120"	15"	1.25"	RipSaw	Full clip	504152606
	129"	15"	1.25"	ICE Ripper XT	Full clip	504153345
	129"	15"	1.25"	RipSaw	Full clip	504153344
	129"	15"	1.25"	RipSaw 2 PLY	Full clip	504153346
	129"	15"	1.50"	RipSaw 2 PLY	Full clip	504153347
	129"	15"	1.50"	ICE Ripper XT	Full clip	504154056
	129"	15"	1.60"	Cobra	Full clip	504153420
	137"	15"	1,.25"	RipSaw (Silent Drive 2 System)	Full clip	504153789
	137"	15"	1.25"	Ice Ripper XT (Silent Drive 2 System)	Full clip	504154005
	137"	15"	1.25"	Cobra	1 clip every 2 profiles	504152838
	137"	15"	1.25"	ICE Ripper XT	Full clip	504153101
	137"	15"	1.25"	RipSaw	Full clip	504152905
	137"	15"	1.25"	RipSaw 2 PLY	Full clip	504154284
	137"	15"	1.50"	RipSaw	Full clip	504153237
	137"	15"	1.50"	ICE Ripper XT	Full clip	504154057
	137"	15"	1.60"	ICE Cobra 1.6 (REV Gen4 compatible)	Full clip	504153706
	129"	15"	1.60"	ICE Cobra 1.6 (REV Gen4 compatible)	Full clip	504153705
	146"	15"	1.60"	ICE Cobra 1.6 (REV Gen4 compatible)	Full clip	504153717
	146"	15"	1.60"	Cobra	Full clip	504153669



POWDER MAX 3 / FLEXEDGE | POWDER MAX 3 | ICE COBRA 1.6 | ICE RIPPER XT

PITCH	LENGTH	WIDTH	LUG HEIGHT	PROFILE	CLIP	SKU
2.86"	137"	16"	1.25"	Cobra	1 clip every 2 profiles	504152907
	137"	16"	1.75"	Powder Max	1 clip every 2 profiles	504152803
	137"	16"	1.75"	Powder Max / FlexEdge	Full clip	504153294
	137"	16"	2.25"	Powder Max	Full clip	504153103
	137"	16"	2.25"	Powder Max / FlexEdge	Full clip	504153293
	137"	16"	1.25"	RipSaw	1 clip every 2 profiles	504152734
	146"	16"	2.00"	Powder Max / FlexEdge	1 clip every 2 profiles	504153348
	146"	16"	2.00"	Powder Max	1 clip every 2 profiles	504153670
	146"	16"	2.25"	Powder Max / FlexEdge	1 clip every 2 profiles	504153222
	146"	16"	2.50"	Powder Max 2 / FlexEdge	1 clip every 2 profiles	504153198
	154"	16"	1.50"	Charger	1 clip every 2 profiles	504152761
	154"	16"	2.00"	Powder Max	Full clip	504153173
	154"	16"	2.25"	Powder Max	1 clip every 2 profiles	504153015
	154"	16"	2.25"	Powder Max / FlexEdge	1 clip every 2 profiles	504153223
	154"	16"	2.50"	Powder Max 2	1 clip every 2 profiles	504153009
	154"	16"	2.50"	Powder Max 2 / FlexEdge	1 clip every 2 profiles	504153199
	154"	16"	2.50"	ProLite	1 clip every 2 profiles	504153396
	154"	20"	1.25"	Utility	1 clip every 3 profiles	504152817
	154"	20"	1.50"	Extreme Utility	1 clip every 3 profiles	605613004
	154"	20"	1.50"	Silent Cobra WT	Full clip	504153973
	154"	20"	1.50"	Silent ICE Cobra WT	Full clip	504153974
	154"	20"	1.80"	Cobra WT	Full clip	504154041
	154"	20"	1.25"	ICE Ripper	Full clip	504153036
	154"	20"	1.50"	ICE Ripper	Full clip	504153037
	154"	20"	1.75"	Powder Max	1 clip every 3 profiles	504153133
	163"	16"	2.25"	Powder Max	1 clip every 2 profiles	504153016
	163"	16"	2.50"	Powder Max 2 / FlexEdge	1 clip every 2 profiles	504153200
2.52"	156"	24"	1.25"	ICE Ripper for SWT	Full clip	504153927

TRACTION



COBRA WT | ICE ATTAK XT | RIPSAW II 1.5 | BACKCOUNTRY X | CONQUER 280

PITCH	LENGTH	WIDTH	LUG HEIGHT	PROFILE	CLIP	SKU
3.5"	165"	15"	2.8"	Conquer 280	1 clip every 2 profiles	C9340M
	154"	15"	2.8"	Conquer 280	1 clip every 2 profiles	C9341M
3.00"	174"	15"	3.2"	Challenger X3.2	1 clip every 2 profiles	C9311M
2.86"	146"	16"	2.25"	Powder Max	1 clip every 2 profiles	C9064M
	137"	16"	1.6"	ICE Cobra 1.6*	Full clip	C9249C
	137"	15"	1.75"	Backcountry X	Full clip	C9289C
	137"	15"	1.5"	RipSaw II 1.5	Full clip	C9306C
	120"	15"	1.75"	Hurricane 175	Full clip	C9400C
	129"	15"	1.75"	Hurricane 175	Full clip	C9401C
	137"	15"	1.75"	Hurricane 175	Full clip	C9402C
	146"	15"	1.75"	Hurricane 175	Full clip	C9403C
2.52"	121"	15"	1.22"	ICE Attak XT	Full clip	C9200H
	156"	24"	1.75"	Cobra SWT	Full clip	C9260U

TRACTION ACCESSORIES

HEAVY-DUTY SPRING KIT
(Not illustrated)

Youth — **8639-208**

- Higher capacity springs for larger riders.
- Maintain handling and comfort as riders grow.

**Not compatible with REV Gen4.*

PHANTOM SHARP STUDS & SUPPORT PLATES BY WOODY'S 5/16 – 1.325"



- All the benefits of 286 Phantom Series studs.
- Unique track design makes it the only traction product available to maintain track warranty and track life.
- Kit complete with stud, nut and support plate.
- The only traction product approved by BRP.

MODELS	
REV Gen4, XS, XP, XR – 120" tracks	**860200729** • Pack of 84
REV Gen4, XS, XP, XR – 129" & 137" tracks	**860200730** • Pack of 96
REV Gen4, XS, XP, XR – (5/16 - 1.325")	**860200731** • Pack of 500

286 PHANTOM SERIES STUDS & SUPPORT PLATES BY WOODY'S



- A complete line of traction products developed specifically for Ski-Doo's REV Gen4, XS, XP, XR tracks.
- Due to the unique track design, this is the only traction product available to maintain track warranty and track life.
- Kit complete with stud, nut and support plate.
- The only traction product approved by BRP.

MODELS	
REV Gen4, XS, XP, XR – 120" tracks • 5/16 - 1.075"	**860200718** • Pack of 84
REV Gen4, XS, XP, XR – 129" & 137" tracks • 5/16 - 1.075"	**860200719** • Pack of 96
REV Gen4, XS, XP, XR • 5/16 - 1.075"	**860200720** • Pack of 500
REV Gen4, XS, XP, XR – 120" tracks • 5/16 - 1.325"	**860200721** • Pack of 84
REV Gen4, XS, XP, XR – 129" tracks • 5/16 - 1.325"	**860201281** • Pack of 90
REV Gen4, XS, XP, XR – 137" tracks • 5/16 - 1.325"	**860200722** • Pack of 96
REV Gen4, XS, XP, XR • 5/16 - 1.325"	**860200723** • Pack of 500

GOLD DIGGER[1] STUDS AND SUPPORT PLATES BY WOODY'S

MODELS	
REV Gen4 Mach Z (2021) & all 1 1/4" 137" 2 ply tracks • 5/16 - 1.325"	**415128957** • Pack of 96



- Through-hardened carbon steel with 60° carbide insert.
- 1" head with patented track trapping design.
- Due to the unique track design, this is the only traction product available to maintain track warranty and track life.
- Kit complete with stud, nut and support plate.
- The only traction product approved by BRP.

TUNNEL PROTECTOR KIT



- Protects your bulkhead and heat exchangers in all conditions.
- Provides proper protection for stud installation on pre-studded track.
- So unique—patent pending US20160152304.

MODELS	
Neo 120"	**860202212**
REV-XP fan-cooled 120" & 137", REV-XU Tundra 137"	**860200381**
REV-XU Expedition (2011 & up) and Skandic SWT, WT	**860200757**
REV-XP (except fan-cooled), REV-XR, REV-XS 120", 129" & 137"	**860200802**
REV Gen4 16", 129" and 137" tracks with Ice Ripper track or Woody's studs, REV Gen4 (Wide) 20" with Ice Ripper and Silent Ice Cobra WT.	**860201280**
REV Gen4 with 129'' Ice Cobra, Ice Attak XT track or Ice Ripper XT (Silent Drive 2 System)	**860201688**
REV Gen4 with 137'' Ice Cobra, Ice Attak XT track or Ice Ripper XT (Silent Drive 2 System)	**860201692**
REV Gen4 with 146'' Ice Cobra, Ice Attak XT track or Ice Ripper XT (Silent Drive 2 System)	**860201693**

DRILL BIT

415128884



⚠ WARNING
Install APPROVED studs in marked locations ONLY

To install the studs, always use the installation tools, procedures and torque specified in the instructions. Proper installation provides maximum product longevity and helps prevent track damage. BRP recommends that studs be installed by authorized BRP dealers and on approved pre-patterned tracks only. These tracks come standard on most 2022 Ski-Doo snowmobiles. Look for this symbol on your track. Woody's products are designed to fit and interact with each other. The stud nut and support plate form a complete unit. The use of aggressive skis, ski carbide runners or studs will alter the handling of your snowmobile, particularly in terms of maneuverability, acceleration and braking. Please refer to your Operators Guide for more details.

PROPULSION



PERFORMANCE DRIVE BELTS

- High performance drive belts calibrated to maximize your sled's performance.
- Aramid tensile cords used in construction for extra long life and dependability, also delivers a consistent length with minimal belt shrinkage and minimal length adjustments.
- High tensile reinforced fiber elastomer undercords provide minimal dusting and long term flex life.
- Flexweave overcord for superior adhesion and crack resistance.
- Consistent performance during life of belt.
- Quality you can count on for optimum performance.
- Built with distinctive durability features for mountain, trail or fast tracks.

SKU	DESCRIPTION
REV GEN5, REV GEN4, XM, XS, XP, XU, XR, REV	
417300571	850 E-TEC, 900 ACE Turbo R, 900 ACE Turbo – 150
417300531	800R E-TEC (all model years), 800R P-TEK (all model years)
417300558	900 ACE Turbo GT 2019, 900 ACE Turbo – 130
417300551	600R E-TEC, 600 E-TEC, 1200 4-TEC, 900 ACE
417300586	600 EFI
417300367	550 Fan (2010-2011)
415060600	Fan (2009 and prior)
414860700	550 Fan (2012, 2014)
417300585	600 ACE, 550 Fan
RT	
417300189	1000
ZX	
414860700	500, 600 LC
417300585	700, 800 LC
417300067	700 (1999, 2000)
415060600	Fan
417300586	V-1000, 600 SDI (2004), V-800
417300383	800 SDI (2004)
UTILITY (EXCEPT REV GEN4 (WIDE) 20" & REV-XU)	
605348425	All 2008 models, 2007 TUV and SWT V-800
414633800	All Fan Skandic except Tundra
417300326	Tundra RF 300
415060600	Tundra RF 500
417300586	Tundra RF V-800
414827600	Old Tundra 280 Fan
S-CHASSIS	
417300067	Semi-cogged
414860700	Not cogged

PISTON KIT

593 HO including SDI	415129406
Ski 552	415129542



- Kit includes: piston, rings, piston pin, needle bearing and circlips.

DRIVE PULLEY CAM FOR QRS ROLLER SECONDARY CAM

REV-XP

417126962 • 38°
417127372 • 42°
417127367 • 44°
417127325 • 44°-42°

417126975 • 44°-33°
417127426 • 46°-42°
417127326 • 40°
417127529 • 44°-40°



- Specially designed for the QRS driven pulley.
- For optimal smooth performance and durability.

MAINTENANCE KIT FOR TRA DRIVE PULLEY



- Includes: 1 spring cover assembly, 3 rollers assembly, 1 bushing (siding flange), 6 slider shoes, 6 O-rings, 1 circlip, 3 cotter pins and 3 lever axles.

MODELS	
REV-XP, XR, XS, XM, XU - 2011 (550F), 2011 to 2018 (600 & 600 E-TEC sea-level)	415129624
REV-XM, XU - 2012 (1200), 2012 to 2018 (600 E-TEC high altitude), 2013 to 2019 Tundra Xtreme	415129625
REV-XP, XS, XM, XU - 2011 to 2018 (800R P-TEK & 800R E-TEC)	415129626
REV-XP, XS, XM, XU - 2008 to 2010 (800R P-TEK & 800R E-TEC)	415129627
REV-XP, XS, XM, XU - 2011 and prior (1200), 2011 and prior (600 E-TEC high altitude)	415129708

MAINTENANCE KIT FOR DRIVE PULLEY
(Not illustrated)

All 2016 and up eDrive 2 Clutch with heptagonal roller. **415130055**

- Includes: 6 rollers assembly, 12 slider shoes, 3 O-rings.

FLOATING QRS SHORT SHAFT CONVERSION KIT

Fits 600 CARB, 600 E-TEC, 800 P-TEK and 800 E-TEC engines **860200832**



- Conversion kit allows installation of a removable floating secondary pulley.
- Also provides ability to remove driven pulley without removing countershaft.
- Includes gun-drilled lightweight shaft and all necessary parts and hardware for conversion.

EDRIVE 2 CLUTCH

4-TEC 1200 only 2010 and up **415130054**



- With double the number of rollers and arms compared to TRA designs, this clutch is designed for low maintenance and long life with 4-stroke powertrains.

NGK[1] SPARK PLUGS



- You'll see a difference with genuine NGK spark plugs.
- Solid steel terminal reduces the chance of arcing in the plug cap, which may interfere with the electric component.
- A necessity in today's ignition systems.

MODELS	
BR9-ES	219703120
600 CARB, 800 P-TEK - BR9-ECS (Gap 0.8 mm)	415128524
600 H.O. E-TEC - PZFR6F	415129375
1200 4-TEC - CR8EKB	415129429
800R E-TEC - PFR7AB	415129484
600 ACE - MR7B18	415129670
900 ACE - MR8DI8	415129944
850 E-TEC, 600R E-TEC - ILKR8Q	415130154
550F, 600RS - BR9ECS	512059552
900 ACE Turbo - LMAR9AI-8	715900492
600 CARB, 800R P-TEK - BR8ECS (Gap 0.8 mm)	512060029
600 EFI - BPR8ES	415130429

ELECTRICAL

YUASA[1] BATTERIES



- Maintenance free.
- No need to add water but periodic charging required when not in use.
- Absorbed Glass Mat (AGM) Separators—an advanced battery technology that eliminates the need to ever add water.
- Advanced lead-calcium technology—holds its specific gravity more than 3 times longer than conventional lead antimony batteries.

MODELS	
14 Amps Dry (12N14-3A)	**42215**
20 Amps Dry (Y50N18L-A)	**410301201**
3 Amps Wet (YTX4L-BS)	**410301204**
18 Amps Wet (YTX20L-BS)	**410301203**
18 Amps Wet (YTX20HL-PW)	**415129898**
21 Amps Wet (YTX24HL-BS)	**410922962**
30 Amps. Wet (YIX30L)	**515176151**

BATTERY CHARGER/MAINTAINER

715005061



- Fully automatic 3A battery charger/maintainer.
- Keeps stored lead-acid batteries charged.
- Charges and maintains small batteries.
- Microprocessor controlled multi-stage charging for added precision, safety and battery life.
- Auto-voltage detection.
- Automatically detects 6V or 12V batteries.
- Float mode monitoring automatically maintains optimum battery charge.
- Reverse hook-up protection helps protect battery and charger from damage.
- Hook attachment hangs outside the work area for safety and convenience.
- Display/on button.
- Press the display button to show the charge progress.
- Energy efficient/eco-friendly meets the highest industry standards for energy efficiency.
- Content: 3A battery charger, clamp adapter, DC adapter, 24" fused ring leads harness with weather cap and user manual.

JUMP STARTER

715005062



- IPX3 water-resistant—ABS + PC plastic and enclosed output ports.
- LED battery indicator—4 LED battery indicators for easy read on battery charge level.
- Compact design/travel bag—this durable case is compact and portable.
- Fits conveniently in the travel bag, your backpack or glovebox.
- Quickly starts vehicles in emergencies.
- Great for water and power sports, motorcycles and 4 and 6 cylinder vehicles.
- 2.4A + 1A/5V USP ports—fast charging.
- Charges all USB devices, including smartphones, MP3 players and tablets.
- Smart cable—provides protection against reverse polarity, short circuit, low voltage, high temperature and reverse charging.
- Built-in LED light (3 modes).
- Content: 300CA jump starter, SA858 smart cable clamp, MC-USB to USB charging cable, travel bag and user manual.

YUASA[1] SMART SHOT AUTOMATIC BATTERY CHARGER

Automatic 1A (1000 MA) 3-stage charge cycle

529036481



- The Yuasa Smart Shot Automatic Battery Charger is available in 1A charge capacity and ensures that optimum power is available from your battery when you need it.
- Charger is supplied with a fused-ring connector, in addition to the alligator clips that can be attached permanently to your battery, making charging and maintaining your battery a snap.



MAINTENANCE

// MAINTENANCE

159 OILS & MAINTENANCE PRODUCTS
162 CARE PRODUCTS

More information on XPS SKU changes to come this Spring.

OILS & MAINTENANCE PRODUCTS

ENGINE OILS

XPS 2T E-TEC SYNTHETIC OIL

NEW **9779126/779126** • 1 qt / 946 ml
NEW **9779127/779127** • 1 US gal / 3.785 L
NEW **9779128/779128** • 2.5 US gal / 9.46 L
NEW **9779129/779129** • 5 US gal / 18.92 L
NEW **9779130/779130** • 55 US gal / 205 L



- Specifically engineered to meet the unique needs of Rotax engines, it provides maximum protection against engine wear in E-TEC engines.
- Uses a highly effective package to keep engine parts lubricated, clean and free of wear.
- This low smoke, low odor formula also allows for maximum engine performance.
- Can be used in direct, semi-direct fuel injection system and high performance carburated 2-stroke engines.

XPS 2T RACING SYNTHETIC OIL

NEW **9779180/779180** • 1 qt / 946 ml
NEW **9779181/779181** • 1 US gal / 3.785 L



- Specially designed for high-performance or racing engines.
- Top-performing synthetic oil is formulated with a highly evolved additive package that includes performance enhancing esters.
- Withstands extreme operating temperatures, high RPM and heavy loads to deliver competition-level engine protection.
- Use in high-performance 2-stroke snowmobiles and off-road motorcycle engines.

XPS 2T SNOWMOBILE SYNTHETIC BLEND OIL

NEW **9779447/779447** • 1 qt / 946 ml
NEW **9779448/779448** • 1 US gal / 3.785 L
NEW **9779449/779449** • 2.5 US gal / 9.46 L



- Designed for all oil injection or pre-mix 2-stroke snowmobiles with electronic fuel injection or carburated engines.
- Recommended engine oil for Rotax 600 EFI engine.
- Facilitates cold starting with low-smoke emissions.
- Ensures maximum protection against wear by keeping the engine parts lubricated and clean.

XPS 2T SNOWMOBILE PREMIUM MINERAL OIL

NEW **9779119/779119** • 1 qt / 946 ml
NEW **9779120/779120** • 1 US gal / 3.785 L
NEW **9779121/779121** • 2.5 US gal / 9.46 L
NEW **9779122/779122** • 5 US gal / 18.92 L
NEW **9779123/779123** • 55 US gal / 205 L



- Powersport formula with premium anti-wear and anti-corrosion additives.
- The carefully balanced additives optimize detergency and lubrication through a broad range of operating temperatures.
- Additional corrosion protection for wet environments and during storage.
- Safe for winter/snowmobile use.

XPS 4T 0W-20 EXTREME COLD SYNTHETIC OIL

NEW **9779145/779145** • 1 qt / 946 ml
NEW **9779146/779146** • 1 US gal / 3.785 L
NEW **9779147/779147** • 5 US gal / 18.92 L
NEW **9779148/779148** • 55 US gal / 205 L



- EXTREME COLD engine oil is state-of-the-art, developed for easier cold starts in the most frigid, harshest winter climates.
- The custom formula promotes fast oil flow from the sump to critical engine components to ease starting.
- Protects 4-stroke snowmobiles, ATVs and power equipment from cold start engine wear.

XPS 4T 0W-40 SYNTHETIC OIL

NEW **9779139/779139** • 1 qt / 946 ml
NEW **9779140/779140** • 1 US gal / 3.785 L
NEW **9779141/779141** • 5 US gal / 18.92 L
NEW **9779142/779142** • 55 US gal / 205 L
NEW **9779143/779143** • 265 US gal / 1,003 L
NEW **9779144/779144** • 330 US gal / 1,249 L



- Powersport formula with premium anti-wear and anti-corrosion additives.
- The best choice for high-performance snowmobile, ATV and SXS 4-stroke engines used in cold weather.
- Provides superior engine and transmission protection against heat, rust and corrosion.
- Delivers optimal performance in high and low temperatures.

XPS 4T 0W-40 SYNTHETIC OIL CHANGE KIT

NEW **9779253/779253** • 600 ACE
NEW **9779254/779254** • 900 ACE
NEW **9779255/779255** • 1200 4-TEC



- Ultra-convenient "all-in-one" oil change kit saves time and money.
- Includes XPS Synthetic Oil, oil filter, O-rings and washer.

** Pricing not availbale due to pricing fluctuation of oil based products.*

MAINTENANCE PRODUCTS

OIL FILTER

420956124



- 900 ACE, 900 ACE Turbo, 600 ACE and 1203 engines.

UNIVERSAL PRE-MIXED COOLANT

NEW **9779149/779149** • 1 qt / 946 ml



- Antifreeze/coolant contains the correct dilution and the necessary additives to prevent corrosion and inhibit cavitation in powersport cooling systems.
- For vehicles that normally use a 2-year antifreeze/coolant (green).

EXTENDED LIFE PRE-MIXED COOLANT

NEW **9779150/779150** • 1 qt / 946 ml



- Antifreeze/coolant contains the correct dilution and the necessary additives to prevent corrosion and inhibit cavitation in BRP cooling systems.
- Long-life, 5-year formula specially formulated for BRP vehicles.
- Superior heat transfer.
- Ideal replacement for vehicles that normally use a 2-year antifreeze/coolant (green).
- 5 years (orange).

DOT 4 BRAKE FLUID

NEW **9779151/779151** • 12 fl. oz. / 355 ml



- Meets or exceeds all DOT3 and DOT4 brake fluid requirements.
- High-temperature formula resists fade, and also conditions seals and O-rings in braking systems.

RACING BRAKE FLUID RS600

NEW **9779152/779152** • 12 fl. oz. / 355 ml



- Exceeds DOT4 brake fluid requirements for extreme conditions and competition use.
- Extreme, 579-degree boiling point temperature is ideal for high-demand competition conditions to combat brake fade.
- Will not harm seals or braking system components.
- Should be added only to a clean/unfilled system to avoid dilution and diminished performance.
- Low-moisture formula slows water vapor absorption through multiple heat cycles.
- Recommended for use in Ski-Doo and Can-Am racing applications.

PREMIUM MINERAL CHAINCASE OIL

NEW **9779155/779155** • 8.45 fl. oz. / 250 ml



- Made with high-quality mineral oil stock and contains additives to help lubricate and protect chaincases from wear and corrosion.
- Offers excellent lubrication and complete protection for all Ski-Doo snowmobiles with a conventional chaincase.

** Pricing not availbale due to pricing fluctuation of oil based products.*

SYNTHETIC CHAINCASE OIL

NEW **9779156/779156** • 12 fl. oz. / 355 ml



- Specially developed for high-performance Ski-Doo models, it represents the best in state-of-the-art chaincase lubrication.
- This multigrade full-synthetic formula flows well at cold temperatures and won't break down at high temperatures.
- Made with additives that protect internal components from wear and corrosion and also conditions seals.
- Not for use in 2-speed snowmobile transmissions on Expedition, Skandic utility models.

SYNTHETIC GREASE SUSPENSION

NEW **9779163/779163** • 14 oz./ 400 g



- Designed to work specifically with the components found in Can-Am and Ski-Doo vehicles suspensions.
- It is highly stable and offers optimal lubrication at both extreme cold and high temperatures while protecting suspension components from dirt and moisture, as well as corrosion under extreme washout conditions.

SYNCHROMESH TRANSMISSION SYNTHETIC OIL

NEW **9779170/779170** • 24 fl. oz. / 710 ml



- Uses a unique combination of synthetic base stocks and additives that allow higher loads, superior shear stability and reduced oxidation compared to other synthetics and conventional API GL-5 gear oils.
- Its tremendous thermal stability and constant viscosity give exceptional wear protection and superior performance for excellent low-temperature characteristics and improved gear protection at higher temperatures.
- Recommended for use in all Ski-Doo and Lynx synchromesh transmissions requiring 75W-140 API GL-5 gear oils.
- Offers added assurance during extended drain intervals.
- Exceeds API GL-5 specifications.

ANTI-CORROSIVE LUBRICANT

NEW **9779166/779166** • US only • 12 oz./ 340 g
NEW **9779167/779167** • Canada only • 12 oz./ 340 g



- Multipurpose lubricant that can also be used to prevent rust, corrosion and moisture intrusion.
- It contains extreme pressure additives that work as an all-around lubricant for just about anywhere lubrication is needed.

FUEL STABILIZER

NEW **9779171/779171** • 8 fl. oz. / 236 ml



- Ethanol-compatible and will stabilize fuel in your tank to keep it from breaking down and causing hard starting, throttle hesitation and poor run quality.
- Ethanol attracts moisture, and this product contains powerful anti-corrosion additives to protect fuel system components.
- Prevents problems associated with E10 fuels.

STORAGE OIL

NEW **9779173/779173** • 12 oz./ 350 g



- High-performance fogging oil designed to protect internal engine parts from rust and corrosion.
- It coats engine internals throughout the whole storage period and is burned away through combustion when engine is started.
- Protects engines during non-use or storage.
- Burns complete upon start up.

** Pricing not availbale due to pricing fluctuation of oil based products.*

CARE PRODUCTS

ALL-PURPOSE CLEANER AND DEGREASER

NEW **9779328/779328** • 22 fl. oz. / 650 ml
NEW **9779329/779329** • 2 qt / 1.89 L



- Ready-to-use formula.
- Cleans toughest dirt and grime.
- Phosphate-free eco-friendly formula.
- Low-foam easy-rinse formula.

MATTE FINISH WATERLESS CLEANER

NEW **9779330/779330** • 22 fl. oz. / 650 ml



- Easy waterless use.
- Perfect for matte, flat and denim surfaces.
- Contains no wax or silicone.
- Leaves no unwanted streaks or marks.

MULTI-SURFACE & GLASS CLEANER

NEW **9779331/779331** • 22 fl. oz. / 650 ml



- Easy waterless spray and wipe use.
- Polymer formula cleans and protects.
- Contains no wax or silicone.
- Leaves no unwanted streaks or marks.

BLACK PLASTIC & RUBBER RESTORER

NEW **9779335/779335** • 7.6 fl. oz. / 225 ml



- Restores plastic, rubber and vinyl.
- Long-lasting formula.
- Protects against UV rays.

QUICK DETAILER GLOSS ENHANCING

NEW **9779332/779332** • 4 fl. oz. / 118 ml
NEW **9779333/779333** • 16 fl. oz. / 473 ml



- Quick detail spray wax.
- Leaves a high-gloss finish at every wipe.
- Nanotechnology polymer formula.
- Repels dirt.
- No water needed.

OFF-ROAD FOAMING WASH

NEW **9779337/779337** • 16 fl. oz. / 473 ml
NEW **9779338/779338** • 2 qt / 1.89 L



- Concentrated formula for off-road vehicles, it produces a thick foam to lift dirt and prevent scratching.
- The pH neutral formula is safe for wax and paint sealants.
- Works in pressure washers or by hand.

MUD & DUST OFF-ROAD WASH

NEW **9779340/779340** • 33 fl. oz. / 946 ml
NEW **9779341/779341** • 2 qt / 1.89 L



- Specially formulated for off-road vehicles, it breaks the bond holding grime and dirt to your vehicle's finish.
- The formula is biodegradable, eco-friendly with no phosphates or corrosive chemicals and is low-foam for easy, quick rinsing.
- Effective on oil, grease and other stubborn grime.
- Safe for use on all surfaces.

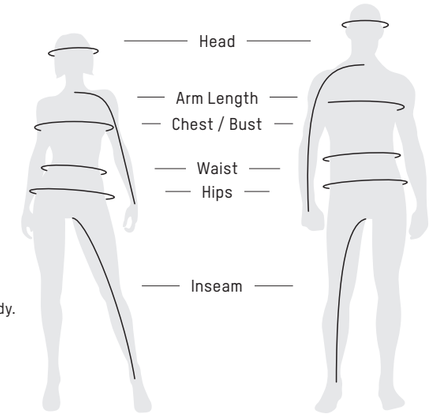


APPAREL

// APPAREL

165 *SIZING CHART*
166 *TECHNOLOGY GUIDE*
178 *HELMETS*
180 *GOGGLES*
181 *RIDING GEAR DEEP SNOW*
185 *RIDING GEAR TRAIL*
193 *RIDING GEAR UTILITY*
194 *BOOTS AND SOCKS*
195 *TEKVESTS*
195 *BAGS*
196 *BASE LAYERS*
197 *SPORTSWEAR PERFORMANCE*
199 *SPORTSWEAR PREMIUM*
202 *SPORTSWEAR SIGNATURE*
205 *HEADWEAR*
207 *KIDS AND TEENS*
210 *PLAY AND LICENSING PRODUCTS*

SIZING CHART
HOW TO MEASURE



- **For best results, have someone else take your measurements.**
- **Measure body in underwear.**
- **Tape must be snug but not tight.**
- **If measurements fall between two sizes, order the larger size.**

HEIGHT: Without shoes, standing with heels and back against a wall.

HEAD/HELMET: Around your head, from the center of the forehead, above the ears and over the natural bump at the back of the head.

ARM LENGTH: Let the hands hang down on the side in a slightly bent position. Measure from the center of the back of your neck, along the length of your arm, to the wrist.

CHEST/BUST: Measure under your arms, around the fullest part of your chest.

WAIST: Measure around your natural waistline, keeping one finger between the tape and body.

HIPS: Across the fullest part of the seat.

INSEAM: Without shoes, from crotch to the floor.

GLOVES: Measure palm width.

BOOTS: Foot length from heel to toe.

// WHAT CODE REPRESENTS YOUR SIZE?

1. Find your size.
2. The corresponding code is **THE CODE** you use to complete the part number on your order.
   Example: 440227__90
   Size: M = Code "**06**",
   therefore 440227**06**90

SIZE	CODE
One Size	00
XS	02
SS	03
S	04
MS	05
M	06
MT	07
LS	08

SIZE	CODE
L	09
LT	10
XLS	11
XL	12
XLT	13
2XL	14
2XLT	15
3XL	16

SIZE	CODE
3XLT	17
4XL	18
4XLT	19
5XL	88
1	20
2	21
3	22
4	23

SIZE	CODE
5	24
6	25
7	27
8	28
9	29
10	30
11	31
12	32

SIZE	CODE
13	33
14	34
16	35
18	78
3-4	79
5-6	52
6-8	48
7-8	54

SIZE	CODE
10-12	49
14-16	50
S/M	72
M/L	91
L/XL	73

OUTER, MID & BASE LAYERS + SPORTSWEAR

MEN'S – REGULAR 5'7"- 6'0"	XS	S	M	L	XL	2XL	3XL	4XL	5XL
Chest	33-35	35-38	38-41	41-45	45-49	49-53	53-57	57-61	61-65
Waist	27-29	29-32	32-35	35-39	39-43	43-48	48-52	52-57	57-62
Hips (Seat)	33-35	35-38	38-41	41-45	45-49	49-53	53-57	57-61	61-65
Arm Length	30	31	32	33	34	35	35	36	36
Inseam	31	31½	32	32	32	32	32	32	32

TALL 6'1"- 6'4"	MT	LT	XLT	2XLT	3XLT	4XLT
Chest	38-41	41-45	45-49	49-53	53-57	57-61
Waist	32-35	35-39	39-43	43-48	48-52	52-57
Hips (Seat)	38-41	41-45	45-49	49-53	53-57	57-61
Arm Length	33½	34½	35½	36½	36½	37½
Inseam	34	34	34	34	34	34

SHORT 5'6" AND BELOW	SS	MS	LS	XLS
Chest	35-38	38-41	41-45	45-49
Waist	29-32	32-35	35-39	39-43
Hips (Seat)	35-38	38-41	41-45	45-49
Arm Length	29½	30½	31½	32½
Inseam	29½	30	30	30

LADIES' – REGULAR 5'3"–5'8"	XS	S	M	L	XL	2XL	3XL	4XL	5XL
Chest	32-35	35-37	37-40	40-43	43-47	47-51	51-55	55-59	59-63
Waist	26-29	29-31	31-34	34-37	37-42	42-46	46-51	51-55	55-60
Hips (Seat)	35-38	38-40	40-43	43-46	46-50	50-54	54-58	58-62	62-66
Arm Length	29	30	30	31	31	32	32	33	33
Inseam	30	30	30	30	30	30	30	30	30

TALL 5'9"- 6'0"	MT	LT	XLT
Chest	37-40	40-43	43-47
Waist	31-34	34-37	37-42
Hips (Seat)	40-43	43-46	46-50
Arm Length	31½	32½	32½
Inseam	32	32	32

SHORT 5'2" AND BELOW	SS	MS	LS	XLS
Chest	35-37	37-40	40-43	43-47
Waist	29-31	31-34	34-37	37-42
Hips (Seat)	38-40	40-43	43-46	46-50
Arm Length	28½	28½	29½	29½
Inseam	28	28	28	28

JUNIOR	2	3	4	5	6	7	8	10	12	14	16	18
Height	2'11"	3'2"	3'5"	3'8"	3'11"	4'2"	4'5"	4'8"	4'11"	5'2"	5'5"	5'8"
Chest	21	22	23	24	25	26	27	28½	30	31½	33	35
Waist	20	20½	21	21½	22	22½	23	24	25	26	27	29¾
Hips (Seat)	21	22	23	24	25	26	27	28½	30	31½	33	36½
Arm Length	15½	17	18½	20	21½	23	24½	28½	30	31½	33	33¾
Inseam	13½	15½	17½	19½	21	22¾	24½	26¼	28	29½	31	31½

BOOTS

MEN'S / UNISEX	5	6	7	8	9	10	11	12	13
EU–Unisex Shoes Size	37	38	39.5	41	42	43	44.5	46	47
Foot (in.)	9	9⅜	9⅝	10	10⅜	10⅝	11	11⅜	11⅝
Foot (cm)	23	24	24.5	25.5	26.5	27	28	29	29.5

LADIES'	6	7	8	9	10
	35.5	37	38	39.5	41
	8⅛	9	9⅜	9⅝	10
	22	23	24	24.5	25.5

GLOVES & MITTS

MEN'S	XS	S	M	L	XL	2XL	3XL
Palm (in.)	3	3¼	3½	4	4½	5	5½
Palm (cm)	7.5	8	9	10	11.5	13	14

LADIES'	XS	S	M	L	XL	2XL
	2½	2¾	3	3½	4	4½
	6	7	8	9	10	11.5

KIDS'	2	4	6
Hand circumference (in.)	4⅜-5	5-5⅜	5⅜-5¾
Hand length (in.)	4-4½	4½-4¾	4¾-5

HELMETS

MEN'S & LADIES'	XS	S	M	L	XL	2XL	3XL
Head (in.)	20⅞–21¼	21⅜–22	22⅛–22¾	23⅛–23⅝	24–24⅜	24¾–25⅛	25½–25⅞
Head (cm)	53–54	55–56	57–58	59–60	61–62	63–64	65–66

SOCKS

	S	M	L
Men's	—	6–9½	10–13
Ladies'	4–8	8½–12	—

	S/M	L/XL
Kids	9½–12½	13–3

PYRA HELMET

// KEY BENEFITS

LIGHTWEIGHT · ACCESSIBLE · DOT AND ECE CERTIFIED

// USAGE

DEEP SNOW, RACING

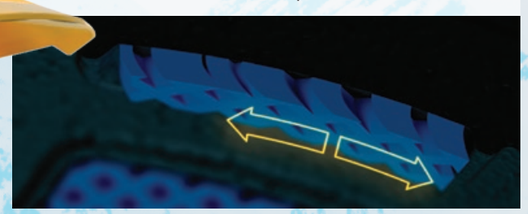
// PRODUCT PERFORMANCE

WARMTH · AIRFLOW · LIGHTWEIGHT



// ERT

Energy reduction technology helps absorb the shock in the case of a fall from both direct and rotational impacts.



// AIRFLOW

Don't sweat the ride with an open chin, removable wind deflector and rear vents.





929041
YELLOW (10)



929041
RED (30)



929041
INDIGO BLUE (82)



929041
CHARCOAL GREY (07)



929041
GREY (09)

EXOME HELMET

// KEY BENEFITS

HEATED AND NON HEATED · FOG FREE · CERTIFIED DOT

// USAGE

TRAIL

// PRODUCT PERFORMANCE

WARMTH · AIRFLOW · LIGHTWEIGHT



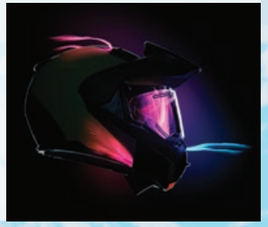
// MODULARITY

This modular helmet makes it easy for you to talk, eat and ride without taking your helmet off! Open the visor, the chin and the interior mask to adapt to your ride.



// AIRFLOW

The optimized mask system sucks out the moisture within your helmet for a fog free experience. The vents also allow for you to customize the air intake easily.



// EXOME



929035
BLACK (90)



929074
WHITE (01)

// EXOME SPORT



929036
YELLOW (10)



929036
RED (30)



929036
INDIGO BLUE (82)



929036
CHARCOAL GREY (07)



929036
GREY (09)

// EXOME SPORT RADIANT



929037
YELLOW (10)



929037
RED (30)



929037
INDIGO BLUE (82)



929037
CHARCOAL GREY (07)



929037
GREY (09)



BC SERIES
BY ski-doo

MADE FOR DEEP SNOW

Our gear is born and tested in the most extreme and legendary environments of British Columbia—the aspirational mecca of big mountain riding for snowmobilers and hybrid users, all around the snowbelt of the Northern Hemisphere.

3D ENGINEERED FIT

ELEMENT PROOF

HIGH AIRFLOW

sympatex®
3 LAYER FABRIC SHELL

BC: INSPIRED BY BRITISH COLUMBIA'S BACKCOUNTRY, BUILT BEYOND CONVENTION.

SPORT

// BC KONA

The Helium design principles inspired the foundation of the collection with a more competitive price.

MEN'S



LADIES'



SPORT VERSATILITY

// BC KONA +

The Swiss Army Knife of jackets. Customize the features to your riding style and/or lifestyle.

MEN'S



PRO COLLECTION

// BC ASPECT

Max mobility and stretch in a lightweight yet durable 3L design. Engineered in the lab, perfected in the field.

MEN'S



BC KONA

THE MOST COMPETITIVE 2 LAYER SYMPATEX, ONE PIECE SUIT AND JACKET/ PANT COMBO. BUILT FOR DEEP SNOW WITH SPECIFIC FIT, FLEX AND FEATURES.

// KEY BENEFITS

ELEMENT PROOF

HIGH AIRFLOW

LIGHTWEIGHT

// USAGE

DEEP SNOW MOUNTAINS

// PRODUCT PERFORMANCE

WARMTH

WATERPROOFNESS

BREATHABILITY



440932
MEN'S BC KONA ONE PIECE SUIT
BLACK (90), BRICK RED (33), DEEP PURPLE (42), INDIGO BLUE (82)



440931
MEN'S BC KONA JACKET
ARMY GREEN (77), BLACK (90), DEEP PURPLE (42), INDIGO BLUE (82)



440943
LADIES' BC KONA JACKET
ARMY GREEN (77), BRICK RED (33), DEEP PURPLE (42)



441682
LADIES' BC KONA HIGHPANTS
BLACK (90)



441672
MEN'S BC KONA HIGHPANTS
BLACK (90), DARK NAVY (16), INDIGO BLUE (82)

BC KONA +

OUR MOST VERSATILE JACKET IN OUR OFFERING, WITH REMOVABLE POWDER SKIRT, REMOVABLE HOOD, LAZER CUT WRIST GATOR, THIS JACKET IS STYLED SO YOU CAN LOOK GREAT ON AND OFF THE MOUNTAIN.

// KEY BENEFITS

ELEMENT PROOF

HIGH AIRFLOW

MULTI-USE

// USAGE

DEEP SNOW MOUNTAINS

// PRODUCT PERFORMANCE

WARMTH

WATERPROOFNESS

BREATHABILITY



440959
MEN'S BC KONA + JACKET
BURGUNDY (35), INDIGO BLUE (82), WHISKEY (28)



446323
MEN'S GRIP GLOVES
BLACK (90)



446364
MEN'S MOUNTAIN GLOVES
BLACK (90)

BC ASPECT

BUILT BY THE PROS FOR THE PROS. THIS COLLECTION IS EXTREMELY LIGHTWEIGHT AND STRETCHY, THE FIT HAS BEEN FULLY TESTED AND OPTIMIZED FOR EVEN THE MOST HARD CORE DEEP SNOW RIDERS.

// KEY BENEFITS

- ELEMENT PROOF
- MAX AIRFLOW
- NO FRILLS SHELL
- MAX MOBILITY

// USAGE

DEEP SNOW MOUNTAINS

// PRODUCT PERFORMANCE

- WARMTH
- WATERPROOFNESS
- BREATHABILITY



440942
MEN'S BC ASPECT ONE PIECE SUIT
BLACK (90), BRICK RED (33), DEEP PURPLE (42), INDIGO BLUE (82)



446352
MEN'S BC ASPECT LONG GLOVES
BLACK (90)



446354
MEN'S BC ASPECT SHORT GLOVES
BLACK (90)



440940
MEN'S BC ASPECT JACKET
BLACK (90), BRICK RED (33), DARK NAVY (16), INDIGO BLUE (82)



441678
MEN'S BC ASPECT HIGHPANTS
BLACK (90), BRICK RED (33)

sympatex® MEMBRANE

Discover the performance of Sympatex membrane.

sympatex®

PERFORMANCE AND SUSTAINABILITY GO HAND IN HAND

LIFETIME WARRANTY

PTFE-FREE AND PFC-FREE MEMBRANES AND LAMINATES

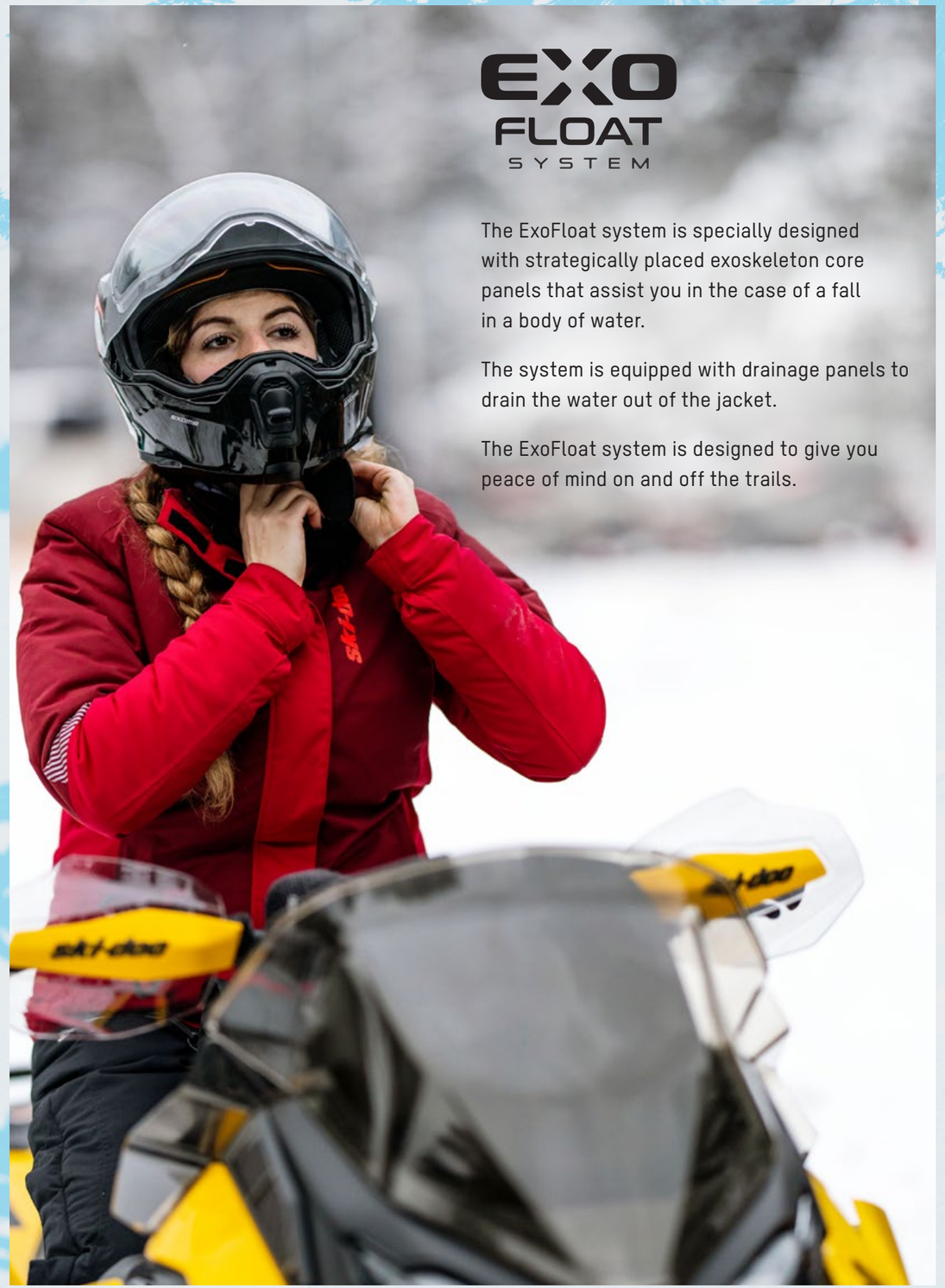
100% RECYCLABLE MEMBRANE AND LAMINATES

100% WINDPROOF AND WATERPROOF PROTECTION

OPTIMALLY BREATHABLE



WWW.SYMPATEX.COM



EXO FLOAT SYSTEM

The ExoFloat system is specially designed with strategically placed exoskeleton core panels that assist you in the case of a fall in a body of water.

The system is equipped with drainage panels to drain the water out of the jacket.

The ExoFloat system is designed to give you peace of mind on and off the trails.

VASA

// KEY BENEFITS

STAYS AFLOAT

GREAT VALUE

REFLECTIVE

// USAGE

TRAIL

// PRODUCT PERFORMANCE

WARMTH

WATERPROOFNESS

BREATHABILITY



440934
MEN'S VASA JACKET
BLACK (90), GREEN (70), INDIGO BLUE (82), KHAKI (05)



441674
MEN'S VASA HIGHPANTS
BLACK (90), DARK NAVY (16)



440944
LADIE'S VASA JACKET
BLACK (90), BURGUNDY (35), DARK NAVY (16)



441683
LADIES' VASA HIGHPANTS
BLACK (90), DARK NAVY (16)

EXPEDITION

// KEY BENEFITS

TEMPERATURE REGULATION | WINDPROOF | REINFORCED | REFLECTIVE

// USAGE

TRAIL
UTILITY

// PRODUCT PERFORMANCE

- WARMTH
- WATERPROOFNESS
- BREATHABILITY



440982
MEN'S EXPEDITION RADIANT JACKET
CLIM8 TECHNOLOGY
BLACK (90)



446346
EXPEDITION RADIANT GLOVES
CLIM8 TECHNOLOGY
BLACK (90)



488100
1 BATTERY PACK
FOR HEATED GEAR
BLACK (90)



440964
MEN'S EXPEDITION JACKET
BLACK (90), KHAKI (05)



446337
MEN'S EXPEDITION GLOVES
BLACK (90), KHAKI (05)



286814
MEN'S EXPEDITION HIGHPANTS
BLACK (90), KHAKI (05)



clim8®
intelligent thermal technology inside

U.S. PATENT NO. 10,721,977

clim8® IS AN INTELLIGENT HEATED GARMENT, THE AUTONOMOUS HEATING SYSTEM IS INTEGRATED INTO THIS GARMENT AND IS RESPONSIVE TO YOU. SET YOUR IDEAL TEMPERATURE AND LET clim8® DO THE WORK!



3 KEY MESSAGES ABOUT clim8® THE TECHNOLOGY

intelligent heat
clim8® autonomous heating system seamlessly integrated in your garment and responsive to you.

smart app control
for a personalized smart heating experience in real-time thanks to the clim8® mobile app.

design backed by science
body heat mapping by clim8® lab for optimal thermal comfort

HELMETS

HELMETS

NEW PYRA HELMET

DOT ECE 22.06

929041 • XS, S, M, L, XL, 2XL, 3XL

Charcoal Grey (**07**), Grey (**09**), Indigo Blue (**82**), Red (**30**), Yellow (**10**)



Description:
- Pyra Helmet (DOT/ECE) with plastic Composite shell.

Features and technologies:
- 4-year limited warranty.
- Advanced plastic composite shell with rotational impact absorbing system (ERT).
- Adjustable peak system.
- Removable wind deflector.
- Front and rear hi-max air vent system to maximize cooling.
- Removable, washable and replaceable moisture-wicking liner.
- Lightweight double-D chin strap.
- Weight: 1,295 grams for size Large.
- DOT/ECE 2206 certified.

NEW EXOME HELMET

DOT

929035 • XS, S, M, L, XL, 2XL, 3XL — Black (**90**)

929074 • XS, S, M, L, XL, 2XL, 3XL — White (**01**)



Description:
- Exome Helmet (DOT) with plastic Composite shell.

Features and technologies:
- 4-year limited warranty.
- Advanced plastic composite shell.
- Modular helmet.
- Breath Evac fog-resistant mask system.
- Dual lens anti-fog visor.
- Offered with amber sun visor for best vision in snow conditions.
- 2 shell sizes for better fit and comfort.
- Quick-release chin strap.
- Eyeglasses ready.
- Includes 5 absorbent pads for the breath Evac mask.
- D.O.T. certified.

NEW EXOME SPORT HELMET

DOT

929036 • XS, S, M, L, XL, 2XL, 3XL

Charcoal Grey (**07**), Grey (**09**), Indigo Blue (**82**), Red (**30**), Yellow (**10**)



Description:
- Exome Sport Helmet (DOT) with plastic Composite shell.

Features and technologies:
- 4-year limited warranty.
- Advanced plastic composite shell.
- Modular helmet.
- Breath Evac fog-resistant mask system.
- Removeable peak.
- Dual lens anti-fog visor.
- Offered with amber sun visor for best vision in snow conditions.
- 2 shell sizes for better fit and comfort.
- Quick-release chin strap.
- Eyeglasses ready.
- Includes 5 absorbent pads for the breath Evac mask.
- D.O.T. certified.

NEW EXOME SPORT RADIANT HELMET

DOT

929037 • XS, S, M, L, XL, 2XL, 3XL

Charcoal Grey (**07**), Grey (**09**), Indigo Blue (**82**), Red (**30**), Yellow (**10**)



Description:
- Exome Sport Radiant Helmet (DOT) with plastic Composite shell.

Features and technologies:
- 4-year limited warranty.
- Advanced plastic composite shell.
- Modular helmet.
- Breath Evac fog-resistant mask system.
- Removeable peak.
- Dual lens Radiant electric heated anti-fog visor.
- Offered with amber sun visor for best vision in snow conditions.
- 2 shell sizes for better fit and comfort.
- Quick-release chin strap.
- Eyeglasses ready.
- Includes 5 absorbent pads for the breath Evac mask.
- D.O.T. certified.

OXYGEN HELMET

DOT

929019 • XS, S, M, L, XL, 2XL, 3XL

Black (**90**), Matte Black (**93**), White (**01**)



Description:
- Oxygen Helmet (DOT) with M-FORGE Composite shell.

Features and technologies:
- 4-year limited warranty.
- Lightweight M-FORGE® Composite shell.
- Sun visor heated chamber.
- Amplified heated visor with pivot contact system.
- Retractable amber sun visor.
- Prescription eyeglasses friendly.
- Adjustable humidity extractor vents.
- Unobstructed panoramic field of vision for an incredible mask-less riding experience.
- Durable anti-fog and anti-scratch coatings.
- NCS System: Reduces noise.
- Robust detents allow precise opening adjustments for airflow.
- Optional front LED utility light.
- Neck skirt to reduce air intrusion.
- Lightweight battery-less rear LED light for added rider safety.
- E LinQ rear magnet connector.
- Unique remote control with visor heat indicators.
- Offered with amber sun visor for best vision in snow conditions.
- Ready to receive communication system.
- Operate all features with gloved hands.
- 2 shell sizes for better fit and comfort.
- Ratcheting quick-release chin strap.
- Recyclable helmet shell for minimal environmental impact.
- Aerodynamic shape to reduce neck fatigue.
- 1,800 g ± for size large.
- D.O.T. certified.

OXYGEN SE HELMET

DOT

929027 • XS, S, M, L, XL, 2XL, 3XL

Army Green (**77**), Lava Red (**17**)



Description:
- Oxygen SE Helmet (DOT) with M-FORGE Composite shell.

Features and technologies:
- 4-year limited warranty.
- Special edition; includes a rear removeable curtain, a vent in the chin curtain for extra airflow, exclusive colors and a softer interior.
- Lightweight M-FORGE® Composite shell.
- Sun visor heated chamber.
- Amplified heated visor with pivot contact system.
- Retractable amber sun visor.
- Prescription eyeglasses friendly.
- Adjustable humidity extractor vents.
- Unobstructed panoramic field of vision for an incredible mask-less riding experience.
- Durable anti-fog and anti-scratch coatings.
- NCS System: Reduces noise.
- Robust detents allow precise opening adjustments for airflow.
- Optional front LED utility light.
- Neck skirt to reduce air intrusion.
- Lightweight battery-less rear LED light for added rider safety.
- E LinQ rear magnet connector.
- Unique remote control with visor heat indicators.
- Offered with amber sun visor for best vision in snow conditions.
- Ready to receive communication system.
- Operate all features with gloved hands.
- 2 shell sizes for better fit and comfort.
- Ratcheting quick-release chin strap.
- Recyclable helmet shell for minimal environmental impact.
- Aerodynamic shape to reduce neck fatigue.
- 1,850 g ± for size large.
- D.O.T. certified.

NEW OXYGEN CARBON HELMET

DOT

929028 • XS, S, M, L, XL, 2XL, 3XL

Black (**90**)



Description:
- Oxygen Carbon Helmet with M-FORGE carbon composite shell.

Features and technologies:
- 4-year limited warranty.
- Lightweight CARBON M-FORGE® Composite shell.
- Sun visor heated chamber.
- Amplified heated visor with pivot contact system.
- Retractable amber sun visor.
- Prescription eyeglasses friendly.
- Adjustable humidity extractor vents.
- Unobstructed panoramic field of vision for an incredible mask-less riding experience.
- Durable anti-fog and anti-scratch coatings.
- NCS System: Reduces noise.
- Robust detents allow precise opening adjustments for airflow.
- Optional front LED utility light.
- Large neck skirt with vent.
- Rear removeable curtain.
- Lightweight battery-less rear LED light for added rider safety.
- E LinQ rear magnet connector.
- Unique remote control with visor heat indicators.
- Offered with amber sun visor for best vision in snow conditions.
- Ready to receive communication system.
- Operate all features with gloved hands.
- 2 shell sizes for better fit and comfort.
- Ratcheting quick-release chin strap.
- Recyclable helmet shell for minimal environmental impact.
- Aerodynamic shape to reduce neck fatigue.
- 1,750 g ± for size large.
- D.O.T. certified.

GOGGLES

ORIGINAL



NEW FLINT RADIANT GOGGLES

448751 • One size	Black (**90**)

Features and technologies:
- Heated Radiant Electric lens.
- Features Injection-molded PC cylindrical lens.
- Anti-scrtach, anti-fog performance while provides distortion free vision and enhanced impact resistance.
- Thermo-formed 3 layers face foam offers best fitting.
- No-slip silicone strap keeps goggles in place.
- Removable nose guard for extra deflection against roost and debris.



SKI-DOO TRENCH GOGGLES

448723 • One size	Black (**90**), Brick Red (**33**), Grey (**09**), Indigo Blue (**82**)

Features and technologies:
- Features injection double lens which is anti-scratch, anti-fog and distortion free optics.
- Thermo-formed 3 layers face foam offers best fitting.
- No-slip silicone strap keeps goggles in place.
- Injection-molded PC cylindrical lens provides distortion free vision and enhanced impact resistance.
- A vibrant lens tint with light silver mirror that increase visual acuity in extremely flat and low light conditions.
- Removable nose guard for extra deflection against cold and debris.



NEW EDGE GOGGLES

448724 • One size	Brick Red (**33**), Indigo Blue (**82**), Yellow (**10**)

Features and technologies:
- Features Injection-molded PC cylindrical lens.
- Anti-scrtach, anti-fog performance while provides distortion free vision and enhanced impact resistance.
- Thermo-formed 3 layers face foam offers best fitting.
- No-slip silicone strap keeps goggles in place.
- Removable nose guard for extra deflection against roost and debris.
- Bonus lens included: A vibrant lens tint with light silver mirror that increase visual acuity in extremely flat and low light conditions.

NEW XL VERSIONS



NEW FLINT XL RADIANT GOGGLES

448763 • One size	Black (**90**)

Features and technologies:
- Heated Radiant Electric lens.
- Features Injection-molded PC cylindrical lens.
- Anti-scrtach, anti-fog performance while provides distortion free vision and enhanced impact resistance.
- Thermo-formed 3 layers face foam offers best fitting.
- No-slip silicone strap keeps goggles in place.
- Removable nose guard for extra deflection against roost and debris.
- XL version is ideal for colder weather covering mor space between the goggle and the helmet.



NEW SKI-DOO TRENCH XL GOGGLES

448761 • One size	Black (**90**), Brick Red (**33**), Grey (**09**), Indigo Blue (**82**)

Features and technologies:
- Features injection double lens which is anti-scratch, anti-fog and distortion free optics.
- Wider thermo-formed 3 layers face foam offers best fitting.
- No-slip silicone strap keeps goggles in place.
- Injection-molded PC cylindrical lens provides distortion free vision and enhanced impact resistance.
- A vibrant lens tint with light silver mirror that increase visual acuity in extremely flat and low light conditions.
- Removable nose guard for extra deflection against cold and debris.
- XL version is ideal for colder weather covering mor spacee between the goggle and the helmet.



NEW EDGE XL GOGGLES

448762 • One size	Brick Red (**33**), Indigo Blue (**82**), Yellow (**10**)

Features and technologies:
- Features Injection-molded PC cylindrical lens.
- Anti-scrtach, anti-fog performance while provides distortion free vision and enhanced impact resistance.
- Wider thermo-formed 3 layers face foam offers best fitting.
- No-slip silicone strap keeps goggles in place.
- Removable nose guard for extra deflection against roost and debris.
- XL version is ideal for colder weather covering mor space between the goggle and the helmet.
- Bonus lens included: A vibrant lens tint with light silver mirror that increase visual acuity in extremely flat and low light conditions.

RIDING GEAR DEEP SNOW

JACKETS

MEN'S

NEW BC KONA JACKET

440931 • XS, S, M, L, XL, 2XL, 3XL

Army Green (**77**), Black (**90**), Deep Purple (**42**), Indigo Blue (**82**)



Description and terrain:
- Flexible and versatile shell.
- Use for Deep snow riding.

Features and technologies:
- Sympatex membrane 100% waterproof, breathable and windproof.
- 2-ply Sympatex membrane technology with lifetime warranty.
- 100% sealed seams and logos.
- Water-resistant zippers.
- Airflow vents (air in at front, air out at back tricep).
- Powder skirt.
- Backpack-friendly underarm venting.
- Offset front zipper for optimal comfort at chin.
- Reflective details for optimized visibility.
- 2 side pockets placed high for avalanche backpack strap.
- 2-way adjustment hood, integrated hood.
- E LinQ system.
- Laser-cut wrist gaiter.
- Inside cell phone pocket.
- Inside beanie pocket.
- Goggle wipe inside chest pocket.
- D-ring.

Performance:

Waterproofness | Breathability | Warmth

Key benefits:

Element Proof | High Airflow | Lightweight

NEW BC KONA ONE PIECE SUIT

440932 • XS, S, M, L, XL, 2XL, 3XL

Black (**90**), Brick Red (**33**), Deep Purple (**42**), Indigo Blue (**82**)



Description and terrain:
- Flexible and versatile shell.
- Use for Deep snow riding.

Features and technologies:
- Sympatex membrane 100% windproof, breathable and waterproof.
- 2 ply Sympatex membrane technology with lifetime warranty.
- Reinforcement in Cordura fabric at seat, crotch and bottom hem.
- 100% sealed seams and logos.
- Water-resistant zippers.
- Removable suspenders.
- Backpack-friendly underarm venting and chest vents.
- Collar extension zipper, off-set.
- Reflective details for optimized visibility.
- 2 side pockets placed high for avalanche backpack strap
- Cargo sized pockets with one radio holder, an elastic and a key loop.
- Preshaped knees and sleeves.
- 2-in-1 adjustable and removable hood.
- Laser-cut wrist gaiter.
- Inside cell phone pocket.
- Adjustable waistband.
- Boot gaiters and ankle adjustment.
- D-ring.

Performance:

Waterproofness | Breathability | Warmth

Key benefits:

Element Proof | High Airflow | Reinforced

LADIES'

NEW LADIES' BC KONA JACKET

440943 • XS, S, M, L, XL, 2XL, 3XL

Army Green (**77**), Brick Red (**33**), Deep Purple (**42**)



Description and terrain:
- Flexible and versatile shell.
- Use for Deep snow riding.

Features and technologies:
- Sympatex membrane 100% waterproof, breathable and windproof.
- 2-ply Sympatex membrane technology with lifetime warranty.
- 100% sealed seams and logos.
- Water-resistant zippers.
- Powder skirt.
- Backpack-friendly underarm venting.
- Offset front zipper for optimal comfort at chin.
- Reflective details for optimized visibility.
- 2 side pockets placed high for avalanche backpack strap.
- 2-way adjustment hood, integrated hood.
- E LinQ system.
- Laser-cut wrist gaiter.
- Inside cell phone pocket.
- Inside beanie pocket.
- Goggle wipe inside chest pocket.
- D-Ring.

Performance:

Waterproofness | Breathability | Warmth

Key benefits:

Element Proof | High Airflow | Lightweight

JACKETS

MEN'S

NEW BC KONA + JACKET

440959 • XS, S, M, L, XL, 2XL, 3XL

Burgundy (**35**), Indigo Blue (**82**), Whiskey (**28**)



Description and terrain:
- Flexible and versatile shell.
- Use for Deep snow riding.

Features and technologies:
- Sympatex membrane 100% waterproof, breathable and windproof.
- 2-ply Sympatex membrane technology with lifetime warranty.
- 100% sealed seams.
- 2-in-1 adjustable and removable hood.
- Removable powder skirt.
- Vent system at tricep with waterproof zipper.
- Reflective details for optimized visibility.
- 2 hand pockets for lifestyle use.
- Chest pocket placed high for avalanche backpack strap.
- Pocket on forearm.
- Collar extension zipper, off-set.
- E LinQ system.
- Laser-cut wrist gaiter.
- Inside cell phone pocket.
- Inside beanie pocket.
- D-Ring.

Performance:

Waterproofness | Breathability | Warmth

Key benefits:

Element Proof | High Airflow | Multi-use

NEW BC ASPECT JACKET

440940 • XS, S, M, L, XL, 2XL, 3XL

Black (**90**), Brick Red (**33**), Dark Navy (**16**), Indigo Blue (**82**)



Description and terrain:
- Flexible and versatile top quality shell.
- Use for Deep snow riding.

Features and technologies:
- Sympatex Membrane 100% waterproof, breathable and windproof.
- 3 ply Sympatex Toulon membrane technology with lifetime warranty.
- 100% seams and logos sealed.
- 3-way adjustment hood, integrated hood.
- Water resistant zippers.
- Airflow vents (air in at front, air out at back tricep).
- Reflective details for optimized visibility.
- Chest pocket, small pocket on forearm and cell phone pocket inside.
- E LinQ system.
- Collar extension snap with perforation venting holes.
- Hood fit with regular helmet size.
- Inside beanie pocket.
- D-ring.

Performance:

Waterproofness | Breathability | Warmth

Key benefits:

No-frills shell | Max airflow | Max mobility

NEW BC ASPECT ONE PIECE SUIT

440942 • XS, S, M, L, XL, 2XL, 3XL

Black (**90**), Brick Red (**33**), Deep Purple (**42**), Indigo Blue (**82**)



Description and terrain:
- Flexible and versatile shell.
- Use for Deep snow riding.

Features and technologies:
- Sympatex Membrane 100% waterproof, breathable and windproof.
- 3 ply Sympatex Toulon membrane technology with lifetime warranty.
- Reinforcement in Cordura fabric at bottom hem.
- 100% sealed seams and logos.
- Water-resistant zippers.
- 3-way adjustment hood, integrated hood.
- Removable suspenders.
- Backpack-friendly underarm venting.
- Airflow vents (air in at front, air out at back tricep).
- Full-length 2-way zipper at side leg.
- Storm gaiters and adjusment at ankle.
- Cargo sized pockets and beacon/radio pockets holder.
- 2 side pockets placed high for avalanche backpack strap and an inside cell phone pocket.
- Reflective details for optimized visibility.
- E LinQ system.
- Articulated sleeves and knees.
- Goggle wipe inside pocket.
- Improved boot strap adjustment and boot hook.
- Adjustable waistband.
- Inside beanie pocket.
- D-Ring.

Performance:

Waterproofness | Breathability | Warmth

Key benefits:

No-frills shell | Max airflow | Max mobility

MEN'S

MCODE JACKET

440958 • S, M, L, XL, 2XL, 3XL

Black (**90**), Dark Navy (**16**), Denim Blue (**79**)



Description and terrain:
- 3-in-1 construction that combines a shell and a zipped-in puffy jacket.
- Use for crossover.

Features and technologies:
- 100% waterproof, breathable and windproof.
- 200 g of ThermaLoft® insulation in removable puffy jacket.
- Seams and logos 100% sealed.
- 360° reflective details for maximum visibility.
- 2-way zipper to improve comfort in sitting position.
- E LinQ system.
- Puffer with contrast panels.
- Reflective elements.
- Bonded fleece at back collar.
- Inside cell phone pocket.
- Laser-cut wrist gaiter.
- D-Ring.

Performance:

Waterproofness | Breathability | Warmth

Key benefits:

Windproof | Reflective | Multi-use

LADIES'

LADIES' MCODE JACKET

440949 • XS, S, M, L, XL, 2XL, 3XL

Dark Navy (**16**), Deep Purple (**42**)



Description and terrain:
- 3-in-1 construction that combines a shell and a zipped-in puffy jacket.
- Use for crossover.

Features and technologies:
- 100% waterproof, breathable and windproof.
- 200 g of ThermaLoft® insulation in removable puffy jacket.
- Seams and logos 100% sealed.
- 360° reflective details for maximum visibility.
- 2-way zipper to improve comfort in sitting position.
- E LinQ system.
- Puffer with contrast panels.
- Reflective elements.
- Bonded fleece at back collar.
- Inside cell phone pocket.
- Laser-cut wrist gaiter.
- D-Ring.

Performance:

Waterproofness | Breathability | Warmth

Key benefits:

Windproof | Reflective | Multi-use

HIGHPANTS

MEN'S

NEW BC KONA HIGHPANTS

441672 • XS, S, M, L, XL, 2XL, 3XL

Black (**90**), Dark Navy (**16**), Indigo Blue (**82**)



Description and terrain:
- Flexible and adaptable shell.
- Use for Deep snow riding.

Features and technologies:
- 2-ply Sympatex membrane with lifetime warranty.
- Reinforcement in Cordura fabric at seat, crotch and bottom hem.
- 100% sealed seams and logos.
- Stretch fabric at side bib for extra comfort.
- Fleece at seat.
- Shaped knees.
- Storm gaiters with boot to lace snap connector.
- Reinforcement at inner legs, seat, knees, shins and bottom hem for abrasion resistance.
- 2-way knee-high water-resistant side zippers.
- 2-way front zipper.
- Reflective details for optimized visibility.
- Cargo pocket with ease pleat.
- Suspenders with 1 side adjustment.
- Bib pocket for smaller items.

Performance:

Waterproofness | Breathability | Warmth

Key benefits:

Element Proof | Optimized mobility | Reinforced

LADIES'

NEW LADIES' BC KONA HIGHPANTS

441682 • XS, S, M, L, XL, 2XL, 3XL

Black (**90**)



Description and terrain:
- Flexible and adaptable shell.
- Use for Deep snow riding.

Features and technologies:
- 2-ply Sympatex membrane with lifetime warranty.
- 100% sealed seams and logos.
- Stretch fabric at side bib for extra comfort.
- Fleece at seat.
- Shaped knees.
- Storm gaiters with boot to lace snap connector.
- Reinforcement at inner legs, seat, knees, shins and bottom hem for abrasion resistance.
- 2-way full-lenght water-resistant side zippers.
- Reflective details for optimized visibility.
- 1 side drop seat.
- Cargo pocket with ease pleat.
- Suspenders with 1 side adjustment.
- Bib pocket for smaller items.

Performance:

Waterproofness | Breathability | Warmth

Key benefits:

Element Proof | Optimized mobility | Reinforced

HIGHPANTS

MEN'S

NEW BC ASPECT HIGHPANTS

441678 • XS, S, M, L, XL, 2XL, 3XL

Black (**90**), Brick Red (**33**)



Description and terrain:
- Flexible and adaptable shell.
- Use for Deep snow riding.

Features and technologies:
- 3 ply Sympatex Toulon membrane technologies with lifetime warranty.
- Reinforcement in Cordura fabric at bottom hem.
- 100% seams and logos sealed.
- 2 thigh vents.
- Bib pocket, 2 hand pockets & thigh cargo pocket.
- Elastic radio holder in cargo pocket, with webbing loop.
- Waist buckle adjustment.
- Suspenders with 1 side adjustment.
- 2-way full-length side zippers at leg.
- 2-way front zipper.
- Stretch fabric at side bib for extra comfort.
- Storm gaitor, boot hook and adjustment at ankle.

Performance:

Waterproofness | Breathability | Warmth

Key benefits:

No-frills shell | Max airflow | Max mobility

HANDWEAR

MEN'S

MOUNTAIN GLOVES

446364 • S, M, L, XL, 2XL, 3XL

Black (**90**)



Description and terrain:
- Thin glove with good dextirity.
- Use for trail and Deep snow riding.

Features and technologies:
- Inside adhesive technology for a better grip control.
- Mild-weather glove.
- Hipora¹ waterproof, windproof and breathable glove insert.
- Shaped fingers.
- Velcro adjustment for easy sleeve fit.
- Suede at back thumb for lens wipe.
- Conductive leather at index.

Performance:

Waterproofness | Dextirity | Warmth

GRIP GLOVES

446323 • S, M, L, XL, 2XL, 3XL

Black (**90**)



Description and terrain:
- High-performance insulated glove with great grip feel.
- Use for trail and Deep snow riding.

Features and technologies:
- 100 g PrimaLoft® Gold to top hand.
- Waterproof, windproof and breathable glove insert.
- Inside adhesive technology for a better grip control, added tactility and dexterity.
- Light insulation at back hand only (85 g Primaloft Gold), for warmth without compromising grip.
- Print design on back hand to minimize snow accumulation.
- Rubber finger print for improved grip.
- Fully shaped fingers.
- Boxed fingertips to avoid air infiltration.
- Neoprene wrist with adjustment.
- Padded and reinforced palm.
- Leather palm construction for toughness.
- Suede at back thumb for lens wipe.
- Conductive leather at index.

Performance:

Waterproofness | Dextirity | Warmth

NEW BC ASPECT SHORT GLOVES

446354 • S, M, L, XL, 2XL, 3XL

Black (**90**)



Description and terrain:
- Breathable glove with some insulation perfect for moderate temperatures.
- Use in Deep snow riding.

Features and technologies:
- Pittards goat leather - resistant to the elements, stain resistant and durable leather.
- Sympatex fabric 2L.
- Light insulation at back hand (60 g Primaloft Gold) and grip taped insulation at palm, for warmth without compromising grip (60 g Primaloft Grip Control).
- Wateproof and windproof membrane.
- Xstatic mesh lined for antibacterial and stay dry moisture managment.
- Wrist strap adjustment with velcro to fit under a sleeve.
- Extra grip leather at palm and thumb.
- Shaped and articulated fingers for maximum grip control.
- Conductive leather at index for touchscreen.
- Wiper on left index + suede at back thumb for lens wipe.

Performance:

Waterproofness | Dextirity | Warmth

MEN'S

NEW BC ASPECT LONG GLOVES

446352 • S, M, L, XL, 2XL, 3XL

Black (**90**)



Description and terrain:
- Breathable glove with some insulation perfect for moderate temperatures.
- Use in Deep snow riding.

Features and technologies:
- Pittards goat leather - resistant to the elements, stain resistant and durable leather.
- Sympatex fabric 2L.
- Light insulation at back hand (60 g Primaloft Gold) and grip taped insulation at palm, for warmth without compromising grip (60 g Primaloft Grip Control).
- Wateproof and windproof membrane.
- Xstatic mesh lined for antibacterial and stay dry moisture managment.
- Wide and long cuff with elastic cord adjustment and puller at hem to fit over the sleeve.
- Inside adhesive technology for a better grip control.
- Shaped and articulated fingers for maximum grip control.
- Conductive leather at index for touchscreen.
- Wiper on left index + suede at back thumb for lens wipe.

Performance:

Waterproofness | Dextirity | Warmth

RIDING GEAR TRAIL

JACKETS

MEN'S

NEW VASA JACKET

440934 • S, M, MT, L, LT, XL, XLT, 2XL, 3XL

Black (**90**), Green (**70**), Indigo Blue (**82**), Khaki (**05**)



Description and terrain:
- New style featuring the Exofloat System.
- Use on trails.

Features and technologies:
- Critical seams and logos sealed.
- 200 g insulation + 60g Exo Float technology.
- Fabric performance 5,000 mm/5,000 g.
- Polar fleece at front body and top arms.
- Reflective details on back and sleeves for maximum visibility.
- E LinQ system.
- Underarm vents.
- Inner cuff.
- Brushed knit inside collar.
- Adjustable bottom hem and sleeve cuffs.
- Mesh at hem and as sleeves for water drainage.
- 2 handpockets.
- YKK zippers throughout.
- Inside cell phone pocket.
- D-ring.

Performance:

Waterproofness | Breathability | Warmth

Key benefits:

Stay Afloat | Great value | Reflective

LADIES'

NEW LADIE'S VASA JACKET

440944 • XS, S, M, L, XL, 2XL, 3XL

Black (**90**), Burgundy (**35**), Dark Navy (**16**)



Description and terrain:
- New style featuring the Exofloat System.
- Use on trails.

Features and technologies:
- Critical seams and logos sealed.
- 200 g insulation + 60g Exo Float technology.
- Fabric performance 5,000 mm/5,000 g.
- Polar fleece at front body and top arms.
- Reflective details on back and sleeves for maximum visibility.
- E LinQ system.
- Underarm vents.
- Inner cuff.
- Brushed knit inside collar.
- Adjustable bottom hem and sleeve cuffs.
- Mesh at hem and as sleeves for water drainage.
- 2 handpockets.
- YKK zippers throughout.
- Inside cell phone pocket.
- D-ring.

Performance:

Waterproofness | Breathability | Warmth

Key benefits:

Stay Afloat | Great value | Reflective

JACKETS

MEN'S

X-TEAM JACKET

440937 • XS, S, M, MT, L, LT, XL, XLT, 2XL
442453 • 2XLT, 3XL, 3XLT, 4XL, 5XL

Black (**90**), Charcoal Grey (**07**), Dark Navy (**16**), Heather Charcoal (**29**), Indigo Blue (**82**)



Description and terrain:
- Warm jacket with a racing look.
- Use on active trails.

Features and technologies:
- 100% waterproof, breathable and windproof.
- 200 g of PrimaLoft® Black insulation.
- Fabric performance 10,000 mm/5,000 g.
- 100% seams and logos sealed.
- Radiant Core technology to keep warm.
- Additionnal removable collar to seal air entry.
- 2 handpockets, 1 napoleon pocket with chamois and 1 inner mesh pocket.
- 360° reflective details for maximum visibility.
- Polar fleece at front body and top arms for added warmth.
- Double center front flap insulated for heat retention and wind protection.
- 200 g of Primaloft Black insulation.
- E LinQ system wire cable.
- Powder skirt.
- Underarm vent.
- Shaped sleeves.
- Adjustable cuffs with thumb hole gaiter.
- YKK zippers throughout and YKK AquaGuard at hand pockets.
- Inside cell phone pocket.
- Laser-cut wrist gaiter.

Performance:
Waterproofness: ++ | Breathability: + | Warmth: +

Key benefits:
Windproof: ++ | Reflective: + | Fleece lined: +

LADIES' X-TEAM JACKET

440945 • XS, S, M, L, XL, 2XL, 3XL

Black (**90**), Dark Navy (**16**), Deep Purple (**42**), Heather Charcoal (**29**)



Description and terrain:
- Warm jacket with a racing look.
- Use on trails.

Features and technologies:
- 100% waterproof, breathable and windproof.
- 200 g of PrimaLoft® Black insulation.
- Fabric performance 10,000 mm/5,000 g.
- Seams and logos 100% sealed.
- Radiant Core technology to keep warm.
- Additionnal removable collar to seal air entry.
- 2 handpockets, 1 napoleon pocket with chamois and 1 inner mesh pocket.
- 360° reflective details for maximum visibility.
- Polar fleece at front body and top arms for added warmth.
- Double center front flap insulated for heat retention and wind protection.
- E LinQ system wire cable.
- Powder skirt.
- Shaped sleeves.
- Adjustable cuffs.
- Laser-cut wrist gaiter.
- YKK zippers throughout and YKK AquaGuard at hand pockets.
- 2-way zipper at center front.
- Inside cell phone pocket.
- Underarm vent.

Performance:
Waterproofness: + | Breathability: + | Warmth: +

Key benefits:
Windproof: ++ | Reflective: + | Fleece lined: +

LADIES'

MEN'S

RACING JACKET

440933 • XS, S, M, L, XL, 2XL, 3XL

Orange (**12**)



Description and terrain:
- Racing look shell.

Features and technologies:
- Softshell-like fabric with windproof, water repellent and breathability properties.
- 2 large pockets at front.
- Watertight YKK zippers throughout.
- Room at upper back for identification.
- 2 front and 1 rear zippered vent.
- Longer back hem.
- Adjustable hem and sleeve hem.
- D-ring.

WARM-UP COAT

440957 • One size

Black (**90**)



Description and terrain:
- Warm coat to wear over.
- Use by the racing team members.

Features and technologies:
- Critical seams and logos sealed.
- Fabric performance 10,000 mm/5,000 g.
- Insulated pre-race overcoat.
- 200 g insulation.
- Hood fits over a Ski-Doo snocross helmet.
- Large handwearmer pockets with fleece lining.

MEN'S

ABSOLUTE O TEAM EDITION JACKET

440939 • S, M, L, XL, 2XL, 3XL

Black with Graphics (**94**)



Description and terrain:
- Warmest jacket in our collection.
- Use on trails.

Features and technologies:
- 100% windproof, waterproof and highly breathable membrane.
- 200 g of PrimaLoft® Gold insulation plus a removable inner liner with 100 g of PrimaLoft® Gold.
- 2 ply Sympatex membrane technology with lifetime warranty.
- 100% seams and logos sealed.
- Radiant Core technology to keep warm.
- Reflective details for optimized visibility.
- Removable hood with clip system.
- Removable and adjustable collar to seal air entry.
- Quadruple center front flaps insulated for heat retention and wind protection.
- E LinQ system.
- Underarm vents.
- 2 handpockets, 1 napoleon pocket with chamois and 1 inner mesh pocket.
- Inside cell phone pocket.
- D-ring.
- YKK zippers.

Performance:
Waterproofness: + | Breathability: + | Warmth: +

Key benefits:
Element proof: + | Max warmth: + | High airflow: +

ABSOLUTE O JACKET

440938 • S, M, L, XL, 2XL, 3XL

Black (**90**), Denim Blue (**79**), Khaki (**05**)



Description and terrain:
- Warmest jacket in our collection.
- Use on trails.

Features and technologies:
- 100% windproof, waterproof and highly breathable membrane.
- 200 g of PrimaLoft® Gold insulation plus a removable inner liner with 100 g of PrimaLoft® Gold.
- 2 ply Sympatex membrane technology with lifetime warranty.
- 100% seams and logos sealed.
- Radiant Core technology to keep warm.
- Reflective details for optimized visibility.
- Removable hood with clip system.
- Removable and adjustable collar to seal air entry.
- Quadruple center front flaps insulated for heat retention and wind protection.
- E LinQ system.
- Underarm vents.
- 2 handpockets, 1 napoleon pocket with chamois and 1 inner mesh pocket.
- Inside cell phone pocket.
- D-ring.
- YKK zippers.

Performance:
Waterproofness: + | Breathability: + | Warmth: +

Key benefits:
Element proof: + | Max warmth: + | High airflow: +

LADIES' ABSOLUTE O TEAM EDITION JACKET

440950 • XS, S, M, L, XL, 2XL, 3XL

Black with Graphics (**94**)



Description and terrain:
- Warmest jacket in our collection.
- Use on trails.

Features and technologies:
- 100% windproof, waterproof and highly breathable membrane.
- 200 g of PrimaLoft® Gold insulation plus a removable inner liner with 100 g of PrimaLoft® Gold.
- 2 ply Sympatex membrane technology with lifetime warranty.
- 100% seams and logos sealed.
- Radiant Core technology to keep warm.
- Reflective details for optimized visibility.
- Removable hood with clip system.
- Removable and adjustable collar to seal air entry.
- Quadruple center front flaps insulated for heat retention and wind protection.
- E LinQ system.
- Underarm vents.
- 2 handpockets, 1 napoleon pocket with chamois and 1 inner mesh pocket.
- Inside cell phone pocket.
- D-ring.
- YKK zippers.

Performance:
Waterproofness: + | Breathability: + | Warmth: +

Key benefits:
Element proof: + | Max warmth: + | High airflow: +

LADIES'

LADIES' ABSOLUTE O JACKET

440946 • XS, S, M, L, XL, 2XL, 3XL

Black (**90**), Brick Red (**33**), Denim Blue (**79**)



Description and terrain:
- Warmest jacket in our collection.
- Use on trails.

Features and technologies:
- 100% windproof, waterproof and highly breathable membrane.
- 200 g of PrimaLoft® Gold insulation plus a removable inner liner with 100 g of PrimaLoft® Gold.
- 2 ply Sympatex membrane technology with lifetime warranty.
- 100% seams and logos sealed.
- Radiant Core technology to keep warm.
- Reflective details for optimized visibility.
- Removable hood with clip system.
- Removable and adjustable collar to seal air entry.
- Quadruple center front flaps insulated for heat retention and wind protection.
- E LinQ system.
- Underarm vents.
- 2 handpockets, 1 napoleon pocket with chamois and 1 inner mesh pocket.
- Inside cell phone pocket.
- D-ring.
- YKK zippers.

Performance:
Waterproofness: + | Breathability: + | Warmth: +

Key benefits:
Element proof: + | Max warmth: + | High airflow: +

JACKETS

MEN'S

LEGACY JACKET

440935 • S, M, L, XL, 2XL, 3XL

Black (**90**), Brick Red (**33**)



Description and terrain:
- Warm jacket with a heritage look.
- Use on trails.

Features and technologies:
- 200 g of PrimaLoft® Black insulation plus a removable inner liner with 100 g of PrimaLoft® Silver.
- 100% seams and logos sealed.
- Fabric performance 10,000 mm/5,000 g.
- Radiant Core technology to keep you warm.
- Additionnal removable collar to seal air entry.
- Reflective details.
- Triple center front insulated flaps for heat retention and wind protection.
- 2-way front zipper to improve confort in sitting position.
- E LinQ system.
- Powder skirt.
- YKK zippers throughout.
- Underarm vent.
- 2 handpockets, 1 chest pocket and 1 napoleon pocket with chamois.
- Inside cell phone pocket.
- Articulated sleeves.
- Adjustable cuffs
- Laser-cut wrist gaiter.
- D-ring.

Performance:

Waterproofness | Breathability | Warmth

Key benefits:

Reflective | Removable lining | Vintage style

LADIES'

NEW LADIES' LEGACY JACKET

440960 • XS, S, M, L, XL, 2XL, 3XL

Black (**90**), Dark Navy (**16**)



Description and terrain:
- Warm jacket with a heritage look.
- Use on trails.

Features and technologies:
- 200 g of PrimaLoft® Black insulation plus a removable inner liner with 100 g of PrimaLoft® Silver.
- 100% seams and logos sealed.
- Fabric performance 10,000 mm/5,000 g.
- Radiant Core technology to keep you warm.
- Additionnal removable collar to seal air entry.
- Reflective details.
- Triple center front insulated flaps for heat retention and wind protection.
- 2-way front zipper to improve confort in sitting position.
- E LinQ system.
- Powder skirt.
- YKK zippers throughout.
- Underarm vent.
- 2 handpockets, 1 chest pocket and 1 napoleon pocket with chamois.
- Inside cell phone pocket.
- Articulated sleeves.
- Adjustable cuffs.
- Laser-cut wrist gaiter.
- D-ring.

Performance:

Waterproofness | Breathability | Warmth

Key benefits:

Reflective | Removable lining | Vintage style

HIGHPANTS

MEN'S

NEW VASA HIGHPANTS

441674 • XS, S, M, L, XL, 2XL, 3XL

Black (**90**), Dark Navy (**16**)



Description and terrain:
- New style featuring the Exofloat System.
- Use on trails.

Features and technologies:
- 200 g of thermal Loft insulation.
- 2-way ¾ length side zippers with flap.
- Fabric performance 5,000 mm/5,000 g.
- Critical seam sealed and logos sealed.
- Articulated knees.
- Reinforcement at seat and inner leg.
- Storm gaiters with boot snap connector.
- ExoFloat System, floating technology.
- 2-way zipper at side leg.
- Zipped handpockets.
- Velcro closure at fly.
- Elastic waist at back.
- Mesh at bottom hem to quickly drain out water weight.
- Adjustable suspenders.

Performance:

Waterproofness | Breathability | Warmth

Key benefits:

Stay afloat | Great value | Reinforced

LADIES'

NEW LADIES' VASA HIGHPANTS

441683 • XS, S, M, L, XL, 2XL, 3XL

Black (**90**), Dark Navy (**16**)



Description and terrain:
- New style featuring the Exofloat System.
- Use on trails.

Features and technologies:
- 200 g of thermal Loft insulation.
- 2-way ¾ length side zippers with flap.
- Fabric performance 5,000 mm/5,000 g.
- Critical seam sealed and logos sealed.
- Pre-shaped knees.
- Reinforcement at seat and inner leg.
- Storm gaiters with boot snap connector.
- 5K/5K coating.
- ExoFloat System, floating technology.
- 2-way zipper at side leg.
- Zipped handpockets.
- Velcro closure at fly.
- Elastic waist at back.
- Mesh at bottom hem to quickly drain out water weight.
- Adjustable suspenders.

Performance:

Waterproofness | Breathability | Warmth

Key benefits:

Stay Afloat | Great value | Reinforced

MEN'S

X-TEAM HIGHPANTS

441676 • XS, SS, S, MS, M, LS, L, XLS, XL, 2XL

442452 • MT, LT, XLT, 2XLT, 3XL, 3XLT, 4XL, 4XLT, 5XL

Black (**90**), Dark Navy (**16**)

Black (**90**)



Description and terrain:
- Warm Highpants.
- Use on active trails.

Features and technologies:
- Highly windproof, waterproof and breathable.
- 100% seams and logos sealed.
- Fabric performance 5,000 mm/5,000 g.
- Polar fleece-lined at seat.
- 200 g of PrimaLoft® Black insulation.
- Articulated, preshaped and padded knees.
- Adjustable waist.
- 2-way full-length waterproof zippers.
- Hand pockets with zipper.
- Reinforced seat, knees and inner legs.
- Storm gaiters.

Performance:

Waterproofness | Breathability | Warmth

Key benefits:

++ Windproof | Built-in protection | Warm seat

LADIES'

LADIES' X-TEAM HIGHPANTS

441679 • XS, SS, S, MS, M, LS, L, XLS, XL, 2XL, 3XL

Black (**90**), Dark Navy (**16**)



Description and terrain:
- Warm Highpants.
- Use on active trails.

Features and technologies:
- Highly windproof, awterproof and breathable.
- 100% seams and logos sealed.
- Fabric performance 10,000 mm/5,000 g.
- Polar fleece-lined at seat.
- 200 g of PrimaLoft® Black insulation.
- Articulated, preshaped and padded knees.
- Adjustable waist.
- 2-way full-length waterproof zippers.
- Hand pockets with zipper.
- Reinforced seat, knees and inner legs.
- Storm gaiters.
- Integrated drop seat.

Performance:

Waterproofness | Breathability | Warmth

Key benefits:

++ Windproof | Built-in protection | Drop seat

MEN'S

SKI-DOO RACING PANTS

441673 • XS, S, M, L, XL, 2XL, 3XL

Orange (**12**)



Description and terrain:
- Racing look shell.

Features and technologies:
- Water-repellent, windproof, flexible and optimally breathable fabric.
- Reinforcement fabric at in-seam and high wear areas.
- Higher back and lower front shape for optimal comfort.
- Pre-shaped knees.
- Extra grip stripes added to seating area.
- D-rings at crotch and at waist.

ABSOLUTE 0 HIGHPANTS

441677 • SS, S, MS, M, LS, L, XLS, XL, 2XL, 3XL

Black (**90**), Dark Navy (**16**)



Description and terrain:
- Warmest Highpants in our lineup.
- Use on trails.

Features and technologies:
- 2 ply Sympatex membrane technology with lifetime warranty.
- 200 g of PrimaLoft® Gold insulation.
- 100% seams and logos sealed.
- Polar fleece at seat and crotch for added warmth.
- Stretch knit material on sides for additional flexibility.
- Pre-shaped and padded knees.
- Adjustable waist.
- Bib pocket and 2 hand pockets with brushed knit fabric inside.
- Storm gaiters.

Performance:

Waterproofness | Breathability | Warmth

Key benefits:

Element proof | Max warmth | Built-in protection

HIGHPANTS

LADIES'

LADIES' ABSOLUTE 0 HIGHPANTS

441680 • XS, SS, S, MS, M, LS, L, XLS, XL, 2XL, 3XL

Black (**90**)



Description and terrain:
- Warmest Highpants in our lineup.
- Use on trails.

Features and technologies:
- 2 ply Sympatex membrane technology with lifetime warranty.
- 200 g of PrimaLoft® Gold insulation.
- 100% seams and logos sealed.
- Polar fleece at seat and crotch for added warmth.
- Preshaped and padded knees.
- Adjustable waist.
- Bib pocket and 2 hand pockets with brushed knit fabric inside.
- Storm gaiters.

Performance: Waterproofness, Breathability, Warmth

Key benefits: Element proof, Max warmth, Built-in protection

MEN'S

VOYAGER HIGHPANTS

441675 • S, M, L, XL, 2XL, 3XL

Black (**90**), Dark Navy (**16**)



Description and terrain:
- Use on trails.

Features and technologies:
- Highly windproof, waterproof and breathable.
- 100% seams and logos sealed.
- Fabric performance 10,000 mm/5,000 g.
- Preshaped and padded knees.
- Polar fleece at seat and crotch for extra warmth.
- 2-way zipper with double flaps at legs.
- 200 g of PrimaLoft® Silver insulation.
- Elastic at back.
- Storm gaiter.
- Reinforcement at inner legs, seat and knees for abrasion resistance.
- Zippered thigh pocket & chest pocket.

Performance: Waterproofness, Breathability, Warmth

Key benefits: Windproof, Built-in protection, Warm seat

LADIES'

LADIE'S VOYAGER HIGHPANTS

441681 • XS, S, M, L, XL, 2XL, 3XL

Black (**90**), Grey (**09**)



Description and terrain:
- Use on trails.

Features and technologies:
- Highly windproof, waterproof and breathable.
- 100% seams and logos sealed.
- Fabric performance 10,000 mm/5,000 g.
- Preshaped and padded knees.
- Polar fleece at seat and crotch for extra warmth.
- 2-way zipper with double flaps at legs.
- 200 g of PrimaLoft® Silver insulation.
- Elastic at back.
- Storm gaiter.
- Reinforcement at inner legs, seat and knees for abrasion resistance.
- Zippered thigh pocket & chest pocket.
- Integrated drop seat.

Performance: Waterproofness, Breathability, Warmth

Key benefits: Windproof, Built-in protection, Warm seat

HANDWEAR

MEN'S

X-TEAM CREW GLOVES

446297 • S, M, L, XL, 2XL, 3XL

Black (**90**)



Description and terrain:
- Soft, durable, flexible and breathable gloves.
- Use for trail and Deep snow riding.

Features and technologies:
- Stretch wrist for easy in and out.

Performance: Waterproofness, Dextirity, Warmth Non insulated

X-TEAM NYLON GLOVES

446351 • XS, S, M, L, XL, 2XL, 3XL

Black (**90**), Charcoal Grey (**07**)



Description and terrain:
- Insulated and breathable glove, perfect for active rides.
- Use for trail and Deep snow riding.

Features and technologies:
- Top hand: 200 g PrimaLoft® Gold
- Palm: 133 g PrimaLoft® grip control.
- Waterproof, windproof and breathable glove insert.
- Naturally moisture-wicking and antimicrobial wool blend lining.
- Boxed fingertips to avoid air infiltration.
- Grip control technology for a better grip in palm.
- Touch screen index finger.
- Visor wiper.

Performance: Waterproofness, Dextirity, Warmth

MEN'S

X-TEAM LEATHER GLOVES

446356 • S, M, L, XL, 2XL, 3XL

Black (**90**), Charcoal Grey (**07**), Khaki (**05**)



Description and terrain:
- Rugged, proven leather construction in a warm insulated glove.
- Use for trail and Deep snow riding.

Features and technologies:
- Top hand: 200 g PrimaLoft® Gold Palm: 133 g PrimaLoft® grip control.
- Waterproof, windproof and breathable glove insert.
- Naturally moisture-wicking and antimicrobial wool blend lining.
- Boxed fingertips to avoid air infiltration.
- Grip control technology for a better grip in palm.
- Touch screen index finger.
- Visor wiper.

Performance: Waterproofness, Dextirity, Warmth

ABSOLUTE 0 GLOVES

446317 • XS, S, M, L, XL, 2XL, 3XL

Black (**90**)



Description and terrain:
- Warmest glove in our lineup.
- Use on trails.

Features and technologies:
- Top hand: 200 g PrimaLoft® Gold and goose down Palm: 133 g PrimaLoft® grip control.
- Ethical goose down insulation.
- Waterproof, windproof and breathable glove insert.
- Naturally moisture-wicking and antimicrobial wool blend lining.
- Boxed fingertips to avoid air infiltration.
- Leather palm and fingers with grip reinforcement.
- Touch screen index finger.
- Nose wipe on thumb.

Performance: Waterproofness, Dextirity, Warmth

ABSOLUTE 0 MITTS

446318 • XS, S, M, L, XL, 2XL

Black (**90**)



Description and terrain:
- Warmest mitts in our lineup.
- Use on trails.

Features and technologies:
- Top hand: 200 g PrimaLoft® Gold and goose down Palm: 133 g PrimaLoft® grip control.
- Ethical goose down insulation.
- Waterproof, windproof and breathable glove insert.
- Naturally moisture-wicking and antimicrobial wool blend lining.
- Leather palm et fingers with grip reinforcement.
- Touch screen index finger.
- Nose wipe on thumb.

Performance: Waterproofness, Dextirity, Warmth

HEADWEAR

UNISEX

NEW PYRA BALACLAVA

448735 • One size

Black (**90**)



Description and terrain:
- Balaclava with a neoprene face guard for effective moisture exchange to promote breathing in extreme cold.
- Perfect when used with PYRA helmet.
- Use on trails.

Features and technologies:
- 65% nylon, 20% polyester, 10% spandex, 5% synthetic.
- Stretch, quick-dry fabric with brushed inner surface.
- Flatlocked seams prevent skin chafing.
- Perfect to use with open face helmets.
- Centered heat transfere PYRA logo.
- Mouth guard deflects moisture down and away from goggles.
- Windbreaker fabric around forehead, eyes and neck.

ULTIMATE TRAIL BALACLAVA

447736 • S/M, L/XL

Black (**90**)



Description and terrain:
- Ultimate balaclava that provides warm, breathability and winproofness.
- Perfect when used with the OXYGEN, EXOME and PYRA helmets.
- Use on trails.

Features and technologies:
- 60% polyester, 30% nylon, 10% spandex.
- Waterproof, windproof and breathable fabric at neck.
- Moisture-wicking fabric.
- Elastic channel at sides for contoured fit.

ACTIVE BALACLAVA SUBLIMATED

448745 • One size

Brick Red (**33**), Deep Purple (**42**), Hi-Vis Yellow (**26**)



Description and terrain:
- Balaclava warm and breathable.
- Use for Deep snow riding.

Features and technologies:
- 91% polyester, 9% spandex.
- Stretch, antibacterial fabric with brushed inner surface.
- Moisture-wicking anti-odor treatment.
- Flatlocked seams prevent skin chafing.

HEADWEAR

UNISEX

NEW COMBO BALACLAVA | **448743** • One size | Black (**90**)



Description and terrain:
- Warm and breathable balaclava that protects head and neck.
- Use for Deep snow riding.

Features and technologies:
- 100% polyester.
- 2 pieces construction that allows a better fit.
- Top piece allows a better breathability.
- Bottom piece allows a good protection against the cold.
- Stretch, antibacterial warming fleece fabric with brushed inner surface.
- Flatlocked seams prevent skin chafing.
- Ski-Doo screen print.

MEN'S

NEW ACTIVE BALACLAVA SOLID | **448729** • One size | Black (**90**)



Description and terrain:
- Balaclava that provides warmth and breathability.
- Use on trails.

Features and technologies:
- 91% polyester, 9% spandex.
- Stretch, antibacterial fabric with brushed inner surface.
- Moisture-wicking anti-odor treatment.
- Flatlocked seams prevent skin chafing.
- Non-branded.

UNISEX

ACTIVE TUBE | **454580** • One size | Black (**90**), Brick Red (**33**), White (**01**)



Description and terrain:
- Multi-purpose tube to keep warm.
- Use for trail and Deep snow riding.

Features and technologies:
- 88% polyester, 12% spandex.
- Stretch and comfortable fabric.
- 12 different configurations: bandana, headband, balaclava and more.

TECHNICAL WEAR

UNISEX

NECK GAITOR | **447841** • One size | Black (**90**)



Description and terrain:
- Neck gaitor to protect against the cold.

Features and technologies:
- 100% polyester.
- Spandex binding and elastic at back for a better fit.
- Anti-pilling fleece.

RIDING ACCESSORIES

MEN'S

MAGNETIC FACE SHIELD | **447819** • One size | Black (**90**), Hi-Vis Yellow (**26**)



Description and terrain:
- Face shield inspired by deep-snow riders.
- Use for trail and Deep snow riding.

Features and technologies:
- Magnetic attaches to helmet to protect exposed area under chin.
- Easily folds to store in pocket, or glove box without taking up valuable storage space.
- Compatible with XP-X & XC-4 helmet.

BATTERY AND CHARGER

UNISEX

1 BATTERY PACK FOR HEATED GEAR | **488100** • One size | Black (**90**)



- 1X Lithium ion battery, 7,4V, 3,000mA.
- Rechargeable.

BATTERY CHARGER FOR HEATED GEAR *(Not illustrated)* | **488101** • One size | Black (**90**)

- Battery Charger with dual output.
- EU / US interchangable plugs.

RIDING GEAR UTILITY

JACKETS

MEN'S

NEW EXPEDITION RADIANT JACKET | **440982** • S, M, L, XL, 2XL, 3XL | Black (**90**)



Description and terrain:
- Warm utility jacket.
- Use to work around your snowmobile.

Features and technologies:
- 200 g of insulation.
- Fabric performance 10,000 mm/5,000 g.
- Under arm vents.
- 8 multi-purpose pockets.
- Detachable hood.
- Wide reflective webbing for maximum visibility.
- Practical carabiner.
- Powder skirt.
- Reinforced elbows and forearms.
- Adjustable collar and wrists.
- Critical seam sealed.
- E LinQ system.
- Clim8 heated technology.
- Includes 1 battery and a charger
- YKK zippers.

Performance: Waterproofness, Breathability, Warmth

Key benefits: Temperature regulation, Cuts Wind, Reinforced

EXPEDITION JACKET | **440964** • S, M, L, XL, 2XL, 3XL | Black (**90**), Khaki (**05**)



Description and terrain:
- Warm utility jacket.
- Use to work around your snowmobile.

Features and technologies:
- 200 g of EcoLoft insulation.
- Fabric performance 10,000 mm/5,000 g.
- Under arm vents.
- 8 multi-purpose pockets.
- Detachable hood.
- Wide reflective webbing for maximum visibility.
- Practical carabiner.
- Powder skirt.
- Reinforced elbows and forearms.
- Adjustable collar and wrists.
- Critical seam sealed.
- E LinQ system.
- YKK zippers.

Performance: Waterproofness, Breathability, Warmth

Key benefits: Cuts Wind, Reinforced, Reflective

HIGHPANTS

MEN'S

EXPEDITION HIGHPANTS | **286814** • S, M, L, XL, 2XL, 3XL | Black (**90**), Khaki (**05**)



Description and terrain:
- Warm utility highpants.
- Use to work around your snowmobile.

Features and technologies:
- 90% nylon, 10% polyester.
- 200 g of EcoLoft insulation.
- Fabric performance 10,000 mm/5,000 g.
- Water resistant Teflon coating.
- Wide reflective webbing for maximum visibility.
- Reinforced seat and inner legs.
- Fleece-lined seat.
- Storm gaiters.
- 2 wide cargo pockets and 1 chest pocket.
- Suspenders with loop adjustment.
- Pre-shaped padded knees.
- Velcro closure at fly.

Performance: Waterproofness, Breathability, Warmth

Key benefits: Cuts Wind, Reinforced, Reflective

HANDWEAR

UNISEX

NEW EXPEDITION RADIANT GLOVES | **446346** • XS, S, M, L, XL, 2XL, 3XL | Black (**90**)



Description and terrain:
- Extra warm gloves for comfort in all riding conditions.
- Use for trail and Deep snow riding.

Features and technologies:
- Top hand: 200 g PrimaLoft® Gold Palm: 133 g PrimaLoft® Gold.
- Waterproof, windproof and breathable glove insert.
- Moisture-wicking fleece lining.
- Leather palm and fingers with grip reinforcement.
- Touch screen index finger.
- Nose wipe on thumb.
- Clim8 heated technology.
- Includes 2 batteries and a charger.

Performance: Waterproofness, Dextirity, Warmth

HANDWEAR

MEN'S

EXPEDITION GLOVES | **446337** • XS, S, M, L, XL, 2XL, 3XL | Black (**90**), Khaki (**05**)



Description and terrain:
- Extra warm gloves for comfort in all riding conditions.
- Use for trail and Deep snow riding.

Features and technologies:
- Top hand: 200 g PrimaLoft® Gold Palm: 133 g PrimaLoft® Gold.
- Waterproof, windproof and breathable glove insert.
- Naturally moisture-wicking and antimicrobial wool blend lining.
- Leather palm and fingers with grip reinforcement.
- Touch screen index finger.
- Nose wipe on thumb.

Performance:



BOOTS AND SOCKS

FOOTWEAR

MEN'S

TEC+ REC BOOTS | **444240** • 5, 6, 7, 8, 9, 10, 11, 12, 13 | Black (**90**)



Description:
- Tec + Rec Boots with tough abrasion resistant-leather outer.

Features and technologies:
- Breathable waterproof membrane.
- Limit of comfort temperature range: -40°F to -58°F or -40°C to -50°C*.
- Rugged ultra-grip outsole design.
- Removable/inner liner.

LADIES'

LADIES' TEC+ REC BOOTS | **444241** • 6, 7, 8, 9, 10 | Black (**90**)



Description:
- Ladies' Tec + Rec boots with tough abrasion-resistant leather outer.

Features and technologies:
- Breathable waterproof membrane.
- Limit of comfort temperature range: -40°F to -58°F or -40°C to -50°C*.
- Rugged ultra-grip outsole design.
- Removable/inner liner.

UNISEX

TEC+ BOOTS | **444253** • 5, 6, 7, 8, 9, 10, 11, 12, 13 | Black (**90**)



Description:
- Tec + Boots with moisture-wicking inner liner material.

Features and technologies:
- Improved comfort and flex.
- Removable insole.
- Unisex, smaller sizes added for ladies.
- Kevlar-reinforced laces.
- 600 g PrimaLoft ECO FOOTWEAR insulation for maximum comfort.
- Leather outer layer incorporates HydroGuard† waterproof membrane.
- Tapered rear shape for better achilles and ankle support.
- Abrasion- and impact-resistant ice breaker toe piece.
- Aggressive, durable anti-slip outsole for running board traction.

SOCKS

UNISEX

ACTIVE LIGHTWEIGHT SOCKS | **444254** • S, M, L | Brick Red (**33**), Hi-Vis Yellow (**26**), Indigo Blue (**82**)



Description:
- Active lightweight socks perfect to keep the warmth.

Features and technologies:
- Ventilation channels for a maximal breathability.
- Reinforced toe and heel in Primaloft and wool.
- Elastic fabric for comfort.

THERMAL HEAVYWEIGHT SOCKS | **444255** • S, M, L | Charcoal Grey (**07**), Dark Navy (**16**)



Description:
- Warmest sock of our lineup.

Features and technologies:
- Elastic fabric to ensure comfort.
- Ventilation channels for a maximal breathability.
- Thick fabric to keep the warmth.

UNISEX

NEW PERFORMANCE MIDWEIGHT SOCKS | **454597** • S, M, L | Brick Red (**33**), Hi-Vis Yellow (**26**), Raspberry (**39**)



Description:
- Performance sock with X-Team flavour.

Features and technologies:
- Elastic fabric to ensure comfort.
- Reinforcement in wool for durability.
- Ski-Doo and X logos.

TEKVEST

UNISEX

SKI-DOO TRAILMASTER TEKVEST | **469308** • XS, S, M, L, XL / **469309** • 2XL, 3XL | Grey (**09**)



Description:
- Ski-Doo TrailMaster TekVest.

Features and technologies:
- Zip-up fleece collar.
- 2 body-heated pockets are roomy enough to hold up to 4 smart phones/battery boosters in a vertical position. A perfect spot for a small wallet, a trail map or special medication.
- Insulated on the outside with a reflective aluminium layer.
- Quick attach points included for optional shoulder pads.

BAGS

UNISEX

SKI-DOO STAND-UP ROLLER GEAR BAG | **469319** • One size | Black (**90**)



Description:
- Ski-Doo Stand-Up Roller Gear Bag with heavy-duty polyester material.

Features and technologies:
- Structural skeleton ensures stand-up stability when loaded or unloaded.
- Waterproof cover included for extra protection against the elements.
- Compartmentalized design places helmets, goggles, boots and your gear in dedicated zones.
- Heavy duty 900D polyester material.
- 140-liter capacity.
- Dimensions: 85 cm x 47 cm x 40 cm

SKI-DOO GEAR BAG 90 L | **469321** • One size | Black (**90**)



Description:
- Ski-Doo Gear Bag 90L.

Features and technologies:
- Large main compartment with easy access to all gear.
- Large separated boot pocket.
- Zippered accessory pocket.
- Easy grab handles for transport.
- Detachable shoulder strap.
- Heavy-duty reinforced base.
- 900 D polyester.
- 90-liter capacity.
- Dimensions: 75 cm x 40 cm x 40 cm.

SKI-DOO DUFFLE BACKPACK | **469322** • One size | Black (**90**)



Description:
- Ski-Doo Duffle Backpack.

Features and technologies:
- Duffle bag with shoulder strap, can transform into a backpack.
- Adjustable shoulder and chest straps.
- Bottle holder.
- Foam padding on straps for comfort.
- 900 D polyester.
- 45-liter capacity.
- Dimensions: 65 cm x 28 cm x 30 cm.

SKI-DOO LAPTOP BACKPACK | **469323** • One size | Black (**90**)



Description:
- Ski-Doo Laptop Backpack.

Features and technologies:
- Laptop/tablet pocket holds up to 15" laptop.
- Fleece lined sunglasses pocket.
- Adjustable shoulder and chest straps.
- Organization pocket with key clip.
- Foam padding on straps and back for comfort.
- Carry-on slidder.
- Water bottle side pouch.
- 900 D polyester.

BASE LAYERS

UNDERWEAR

UNISEX

NEW ONE PIECE SUIT INSULATED LINER | **454623** • XS, S, M, L, XL, 2XL, 3XL | Black (**90**)



Description:
- Under shell one-piece.
- Use for Deep snow riding.

Features and technologies:
- 100% polyester mesh.
- Insulation: 120 gsm.
- Moisture-wicking mesh lining.
- Chest pocket.
- Stretch gussets at shoulders and lower back for a better flexibility.
- Drop seat.

MEN'S

MERINO BLEND BASE LAYER (TOP) | **454377** • S, M, L, XL, 2XL, 3XL | Black (**90**)



Description:
- Warm and breathable base layer.
- Use for Deep snow riding.

Features and technologies:
- 70% merino wool, 30% nylon.
- Permanent anti-odor performance.
- Moisture-wicking.
- Body temperature regulator.

MERINO BLEND BASE LAYER (BOTTOM) | **454378** • S, M, L, XL, 2XL, 3XL | Black (**90**)



Description:
- Warm and breathable base layer.
- Use for Deep snow riding.

Features and technologies:
- 70% merino wool, 30% nylon.
- Permanent anti-odor performance.
- Moisture-wicking.
- Body temperature regulator.
- Elastic waist band.

THERMAL BASE LAYER (TOP) | **454376** • S, M, L, XL, 2XL, 3XL | Black (**90**), Charcoal Grey (**07**)



Description:
- Warm base layer.
- Use on trails.

Features and technologies:
- 95% polyester, 5% spandex.
- Made of high-filament polyester enhanced by slight brushing to provide softness and warmth.
- Mesh paneled under arms for better ventilation and accelerated drying.
- Antimicrobial.

THERMAL BASE LAYER (BOTTOM) | **454374** • S, M, L, XL, 2XL, 3XL | Black (**90**)



Description:
- Warm base layer.
- Use on trails.

Features and technologies:
- 95% polyester, 5% spandex (brushed).
- Made of high-filament polyester enhanced by slight brushing to provide softness and warmth.
- Antimicrobial.

LADIES'

LADIES' MERINO BASE LAYER (TOP) | **454379** • XS, S, M, L, XL, 2XL, 3XL | Black (**90**)



Description:
- Warm and breathable base layer.
- Use for Deep snow riding.

Features and technologies:
- 70% merino wool, 30% nylon.
- Permanent anti-odor performance.
- Moisture-wicking.
- Body temperature regulator.

LADIES' MERINO BASE LAYER (BOTTOM) | **454380** • XS, S, M, L, XL, 2XL, 3XL | Black (**90**)



Description:
- Warm and breathable base layer.
- Use for Deep snow riding.

Features and technologies:
- 70% merino wool, 30% nylon.
- Permanent anti-odor performance.
- Moisture-wicking.
- Body temperature regulator.
- Elastic waist band.

LADIES'

LADIES' THERMAL BASE LAYER (TOP) | **454375** • XS, S, M, L, XL, 2XL, 3XL | Black (**90**), Charcoal Grey (**07**)



Description:
- Warm base layer.
- Use on trails.

Features and technologies:
- 95% polyester, 5% spandex.
- Made of high-filament polyester enhanced by slight brushing to provide softness and warmth.
- Mesh paneled under arms for better ventilation and accelerated drying.
- Antimicrobial.

LADIES' THERMAL BASE LAYER (BOTTOM) | **454373** • XS, S, M, L, XL, 2XL, 3XL | Black (**90**)



Description:
- Warm base layer.
- Use on trails.

Features and technologies:
- 95% polyester, 5% spandex.
- Made of high-filament polyester enhanced by slight brushing to provide softness and warmth.
- Antimicrobial.

SPORTSWEAR PERFORMANCE

FLEECE

MEN'S

X-TEAM MICRO-FLEECE | **454579** • S, M, L, XL, 2XL, 3XL | Black (**90**), Heather Charcoal (**29**), Indigo Blue (**82**)

Description:
- Mid weight microfleece excellent for warmth as a second layer.

Features and technologies:
- 96% polyester, 4% spandex.
- Moisture-wicking fabric.
- Zippered hand pockets.

SNO-X ZIP-UP FLEECE | **454605** • S, M, L, XL, 2XL, 3XL | Black (**90**), Charcoal Grey (**07**), Green (**70**), Grey (**09**)



Description:
- Heavy weight fleece for maximum warmth.

Features and technologies:
- 96% polyester, 4% spandex.
- Adjusted fit.
- 2 side pockets.
- Thumb hole.

LADIES'

LADIES' X-TEAM MICRO-FLEECE | **454601** • XS, S, M, L, XL, 2XL, 3XL | Black (**90**), Dark Navy (**16**), Heather Charcoal (**29**)



Description:
- Mid weight microfleece excellent for warmth as a second layer.

Features and technologies:
- 96% polyester, 4% spandex.
- Moisture-wicking fabric.
- Zippered hand pockets.
- Ski-Doo embossed binding at collar, cuff and hem.

LADIES' SNO-X ZIP-UP | **454603** • XS, S, M, L, XL, 2XL, 3XL | Black (**90**), Dark Navy (**16**), Deep Purple (**42**)



Description:
- Heavy weight fleece for maximum warmth.

Features and technologies:
- 96% polyester, 4% spandex.
- Adjusted fit.
- 2 side pockets.
- Thumb hole.

JERSEYS

MEN'S

NEW X-TEAM RACE JERSEY | **454604** • S, M, L, XL, 2XL | Blue (**80**), White (**01**)



Description:
- Semi-fitted V-neck jersey.

Features and technologies:
- 100% polyester.
- Quick-dry fabric.
- Antibacterial, moisture-wicking fabric.
- Sublimated print.
- Rib at collar and cuffs.
- Underarm gussets for ease of movements.
- Jersey longer at back to easily enter it in riding pants.

LADIES'

NEW LADIES' X-TEAM RACE JERSEY | **454622** • S, M, L, XL, 2XL | Dark Navy (**16**), Deep Purple (**42**)



Description:
- Semi-fitted V-neck jersey.

Features and technologies:
- 100% polyester.
- Quick-dry fabric.
- Antibacterial, moisture-wicking fabric.
- Sublimated print.
- Rib at collar and cuffs.
- Underarm gussets for ease of movements.
- Jersey longer at back to easily enter it in riding pants.

PIT SHIRTS

MEN'S

MEN'S SKI-DOO PIT SHIRT | **454576** • S, M, L, XL, 2XL, 3XL | Charcoal Grey (**07**)



Description:
- Ski-Doo Pit shirt perfect to wear when working around your snowmobile.

Features and technologies:
- 65% polyester, 32% cotton, 3% spandex.
- Teflon fabric protector; protects from stains.
- Chest pocket.
- Back pleats for ease of movement.
- Back loop to hang shirt.
- Ski-Doo logo on left chest.
- Sponsors logos on right chest.

T-SHIRTS

MEN'S

NEW PERFORMANCE LS TEE | **454574** • S, M, L, XL, 2XL, 3XL | Black (**90**), Charcoal Grey (**07**)



Description:
- Durable long sleeves Performance T-Shirt.

Features and technologies:
- 86% coconut polyester, 16% spandex.
- Relaxed fit.
- Raglan sleeve.
- Moisture-wicking, to stay dry and comfortable.
- Naturally anti-odor.
- Antimicrobial.
- UV protection.
- Reflective heat transfer logo at center back.

MEN'S X-TEAM T-SHIRT | **454606** • S, M, L, XL, 2XL, 3XL | Black (**90**), Indigo Blue (**82**), Red (**30**)



Description:
- X-Team short sleeves T-Shirt.

Features and technologies:
- 100% cotton.
- X-team artwork at front.
- Crew neck.

LADIES'

NEW LADIES' PERFORMANCE LS TEE | **454602** • XS, S, M, L, XL, 2XL | Dark Navy (**16**), Raspberry (**39**)



Description:
- Durable long sleeves Performance T-Shirt.

Features and technologies:
- 86% coconut polyester, 16% spandex.
- Relaxed fit.
- Moisture-wicking, to stay dry and comfortable.
- Naturally anti-odor.
- Antimicrobial.
- UV protection.
- Reflective heat transfer logo at center back.

SPORTSWEAR PREMIUM

CASUALWEAR

MEN'S

MEN'S SKI-DOO TURTLENECK | **454381** • S, M, L, XL, 2XL, 3XL | Black (**90**), Heather Grey (**27**)



Description:
- Ski-Doo Turtleneck with stretch fabric.

Features and technologies:
- 90% polyester, 10% spandex.
- Moisture-wicking, anti-microbial treatment & anti-pilling.
- Ski-Doo embroidery logo on collar.

SKI-DOO OVERSHIRT | **454613** • S, M, L, XL, 2XL, 3XL | Beige (**02**), Dark Navy (**16**)



Description:
- Classic warm Overshirt.

Features and technologies:
- 100% cotton.
- Front opening with press buttons branded Ski-Doo.
- Bonded fleece.
- 2 chest pockets.
- 2 hand pockets.
- Ski-Doo suede patch.

CLUB HOUSE SWEATER | **454583** • S, M, L, XL, 2XL | Charcoal Grey (**07**), Denim Blue (**79**)



Description:
- Heritage look sweater.

Features and technologies:
- 60% cotton, 40% acrylic.
- Half-zip.
- Ski-Doo suede patch on sleeve.

FLANNEL SHIRT | **454575** • S, M, L, XL, 2XL, 3XL | Beige (**02**), Brick Red (**33**)



Description:
- Warm and comfortable Flannel shirt.

Features and technologies:
- 100% cotton.
- 4-hole plastic side engraved buttons.
- Corduroy inside stand collar.
- Ski-Doo suede patch on sleeve.

LADIES'

LADIES FAIR ISLE SWEATER | **454562** • S, M, L, XL, 2XL | Dark Navy (**16**), Grey (**09**)



Description:
- Sweater for ladies.

Features and technologies:
- 100% acrylic.
- Ski-Doo woven label on left bottom side.

LADIES' SKI-DOO TURTLENECK | **454472** • XS, S, M, L, XL, 2XL, 3XL | Black (**90**), Heather Grey (**27**)



Description:
- Ski-Doo Turtleneck with stretch fabric.

Features and technologies:
- 90% polyester, 10% spandex.
- Moisture-wicking, anti-microbial treatment & anti-pilling.
- Ski-Doo embroidery logo on collar.

NEW LADIES' SKI-DOO OVERSHIRT | **454598** • XS, S, M, L, XL, 2XL | Dark Navy (**16**)



Description:
- Ladies Plaid flannel overshirt.

Features and technologies:
- 75% polyester, 17% acrylic, 4% polyamide, 2% viscose, 2% wool.
- Front opening with press buttons branded Ski-Doo.
- 2 chest pockets.
- 2 hand pockets.

FLEECE

MEN'S

NEW MID-LAYER FLEECE

454577 • S, M, L, XL, 2XL, 3XL

Charcoal Grey (07), Denim Blue (79), Khaki (05)



Description:
- Semi-fitted zipped sweatshirt.
- Use everyday and as a mid layer on trails.

Features and technologies:
- 100% polyester with anti-microbial.
- Heavy weight fleece for maximum warmth.
- Zipped pocket at arm.
- Ski-Doo embroidery logo at front chest.
- 2 zipped hand pockets.

NEW FLEECE VEST ZIP-UP

454612 • S, M, L, XL, 2XL, 3XL

Charcoal Grey (07), Denim Blue (79)



Description:
- Perfect mix of warmth and mobility.
- Use everyday and as a mid layer on trails.

Features and technologies:
- 100% polyester with anti-microbial.
- Heavy weight fleece for maximum warmth.
- Ski-Doo embroidery logo at front chest.
- 2 zipped hand pockets.

LADIES'

NEW LADIES' SHERPA FLEECE

454586 • XS, S, M, L, XL, 2XL, 3XL

Pink (36), Sand (03)



Description:
- Fleece made of sherpa to keep you warm and cozy in style.

Features and technologies:
- 100% polyester.
- Ski-Doo embroidered logo at chest.
- 1 chest pocket and 2 hands pockets.
- Elastic binding at cuffs and hem.

NEW LADIES' MID-LAYER FLEECE

454625 • XS, S, M, L, XL, 2XL

Dark Navy (16), Deep Purple (42)



Description:
- Semi-fitted sweatshirt.
- Use everyday and as a mid layer on trails.

Features and technologies:
- 100% polyester with anti-microbial.
- Heavy weight fleece for maximum warmth.
- Adjusted fit.
- Ski-Doo embroidery logo at front chest.
- 2 zipped hand pockets.

NEW LADIES' FLEECE VEST ZIP-UP

454621 • XS, S, M, L, XL, 2XL

Dark Navy (16), Deep Purple (42)



Description:
- Perfect mix of warmth and mobility.
- Use everyday and as a mid layer on trails.

Features and technologies:
- 100% polyester with anti-microbial.
- Heavy weight fleece for maximum warmth.
- Adjusted fit.
- Ski-Doo embroidery logo at front chest.
- 2 zipped hand pockets.

POLOS

MEN'S

NEW MEN'S SKI-DOO TECH POLO

454582 • S, M, L, XL, 2XL, 3XL

Black (90), Charcoal Grey (07), Grey (09)



Description:
- Short sleeve tech polo.

Features and technologies:
- 95% polyester, 5% spandex.
- Quick-dry and moisture-wicking.
- 4-hole plastic embossed buttons.
- Ski-Doo silver print logo at back.
- Ski-Doo label at chest.

SWEATSHIRTS

MEN'S

NEW MEN'S PREMIUM PULLOVER HOODIE

454570 • S, M, L, XL, 2XL, 3XL

Black (90), Heather Charcoal (29), Khaki (05)



Description:
- Comfortable Premium Pullover hoodie.

Features and technologies:
- 72% cotton, 23% polyester, 5% spandex.
- One side brushed fleece.
- Handwarmer kangaroo pocket.
- 3D heat transfer Ski-Doo logo.
- Rib at cuff and hem.

MEN'S

NEW MEN'S PREMIUM ZIP-UP HOODIE

454569 • S, M, L, XL, 2XL, 3XL

Charcoal Grey (07), Denim Blue (79), Heather Grey (27)



Description:
- Semi-fitted hooded sweatshirt with zip-up.

Features and technologies:
- 72% cotton, 23% polyester, 5% spandex.
- One side brushed fleece.
- Handwarmer kangaroo pocket.
- Ski-Doo artwork at back.
- 3D heat transfer Ski-Doo logo at left chest.
- Rib at cuff and hem.

LADIES'

NEW WOMEN'S PREMIUM PULLOVER HOODIE

454578 • S, M, L, XL, 2XL, 3XL

Deep Purple (42), Heather Grey (27)



Description:
- Comfortable Premium Pullover hoodie.

Features and technologies:
- 72% cotton, 23% polyester, 5% spandex.
- One side brushed fleece.
- Handwarmer kangaroo pocket.
- 3D embossed artwork at left chest.
- Rib at cuff and hem.

NEW WOMEN'S PREMIUM ZIP-UP HOODIE

454594 • XS, S, M, L, XL, 2XL, 3XL

Black (90), Burgundy (35)



Description:
- Semi-fitted hooded sweatshirt with zip-up.

Features and technologies:
- 72% cotton, 23% polyester, 5% spandex.
- Split, inset kangaroo hand pocket.
- Hood with drawsting adjustments.
- Rib at cuff and hem.

TECHNICAL WEAR

MEN'S

PUFFER JACKET

454571 • S, M, L, XL, 2XL, 3XL

Black (90), Charcoal Grey (07), Dark Navy (16), Khaki (05)



Description:
- Use everyday.

Features and technologies:
- 100% strechable polyester.
- Use as a light jacket for cool dry weather or as a very warm mid layer.
- Drawcord hem adjustment in pockets.
- Down-like insulation with high compression.
- Shaped sleeves.
- Removable hood.
- Inside chest pocket for cellphone.

CLASSIC SOFTSHELL JACKET

454572 • S, M, L, XL, 2XL, 3XL

Black (90), Charcoal Grey (07), Khaki (05)



Description:
- Windproof lightweight softshell with a water resistant membrane.
- Use everyday.

Features and technologies:
- 88% polyester, 12% spandex.
- Fabric performance: 5,000 mm/5,000 g.
- Breathable wicking technology.
- Backed by micro-fleece for a soft feel.
- Removable and adjustable hood with toggles.

NEW GARAGE MULTI-PANTS

454614 • XS, S, M, L, XL, 2XL, 3XL

Black (90), Charcoal Grey (07)



Description:
- Comfortable working pants.

Features and technologies:
- 65% polyester, 35% cotton.
- Adjustable and integrated waistband.
- Zippers at side legs.
- Adjustment system at ankle.
- Bottom leg insert with anti-tearing coating.
- Adjustable velcro tab at waistband.

LADIES'

LADIES' PUFFER JACKET

440929 • XS, S, M, L, XL, 2XL, 3XL

Black (90), Dark Navy (16), Deep Purple (42), Denim Blue (79)



Description:
- Use everyday.

Features and technologies:
- 100% stretchable polyester.
- Use as a light jacket for cool dry weather or as a very warm mid layer.
- Drawcord hem adjustment in pockets.
- Down-like insulation with high compression.
- Shaped sleeves.
- Removable hood.
- Inside chest pocket for cellphone.

SPORTSWEAR SIGNATURE

JERSEYS

MEN'S

EMBLEMATIC JERSEY

454600 • S, M, L, XL, 2XL

Black (**90**), Brick Red (**33**)



Description:
- Semi-fitted V-neck jersey.

Features and technologies:
- 100% polyester.
- Quick-dry fabric.
- Antibacterial, moisture-wicking fabric.
- Underarm mesh.
- Sublimated print.
- Rib at collar and cuffs.
- Underarm gusset for ease of movements.
- Jersey longer at back to easily enter it in riding pants.

LADIES'

LADIES' EMBLEMATIC JERSEY

454592 • S, M, L, XL, 2XL

Black (**90**), Dark Navy (**16**)



Description:
- Semi-fitted V-neck jersey.

Features and technologies:
- 100% polyester.
- Quick-dry fabric.
- Antibacterial, moisture-wicking fabric.
- Sublimated print.
- Rib at collar and cuffs.
- Underarm gusset for ease of movements.
- Jersey longer at back to easily enter it in riding pants.

SWEATSHIRTS

MEN'S

MEN'S SIGNATURE PULLOVER HOODIE

454588 • S, M, L, XL, 2XL, 3XL

Black (**90**), Heather Charcoal (**29**), Navy (**89**), Whiskey (**28**)



Description:
- Comfortable Pullover hoodie.

Features and technologies:
- 60% cotton, 40% polyester.
- One side brushed fleece.
- Handwarmer kangaroo pocket.
- Ski-Doo print at chest.
- Rib at cuff and hem.

MEN'S SIGNATURE CREW SWEATSHIRT

454731 • S, M, L, XL, 2XL, 3XL

Black (**90**), Burgundy (**35**), Heather Charcoal (**29**), Khaki (**05**)



Description:
- Signature sweatshirt with Ski-Doo logo.

Features and technologies:
- 60% cotton, 40% polyester.
- Relaxed fit.
- Dropped, set-in sleeves.
- Rib on collar, cuffs and hem.
- Printed logo Ski-Doo at center chest.

MEN'S SKI-DOO SIGNATURE ZIP-UP HOODIE

454730 • S, M, L, XL, 2XL, 3XL

Army Green (**77**), Black (**90**), Heather Grey (**27**)



Description:
- Semi-fitted hooded sweatshirt.

Features and technologies:
- 60% cotton, 40% polyester.
- Ski-Doo print at chest.
- Dropped sleeves.
- Rib on cuffs and hem.
- Drawstring hood.
- Handwarmer kangaroo pocket.

MEN'S PORTAL PULLOVER HOODIE

454752 • S, M, L, XL, 2XL, 3XL

Black (**90**), Heather Charcoal (**29**), Indigo Blue (**82**)



Description:
- Comfortable Premium Pullover hoodie.

Features and technologies:
- 60% cotton, 40% polyester.
- One side brushed fleece.
- Handwarmer kangaroo pocket.
- Atwork graphic at center front chest.

LADIES'

WOMEN'S SIGNATURE PULLOVER HOODIE

454595 • XS, S, M, L, XL, 2XL, 3XL

Black (**90**), Blue (**80**), Heather Grey (**27**)



Description:
- Comfortable Signature Pullover hoodie.

Features and technologies:
- 60% cotton, 40% polyester.
- Hood with drawcord.
- Kangaroo hands pocket.
- Rib on cuffs and hem.
- Logo center chest.

WOMEN'S SIGNATURE ZIP-UP HOODIE

454732 • XS, S, M, L, XL, 2XL, 3XL

Army Green (**77**), Deep Purple (**42**), Heather Charcoal (**29**)



Description:
- Semi-fitted hooded sweatshirt.

Features and technologies:
- 60% cotton, 40% polyester.
- Full-zip.
- Split, inset kangaroo hand pocket.
- Rib on cuffs and hem.
- Drawstring hood.

NEW WOMEN'S SIGNATURE CREW SWEATSHIRT

454585 • XS, S, M, L, XL, 2XL, 3XL

Black (**90**), Pink (**36**)



Description:
- Signature sweatshirt with Ski-Doo logo.

Features and technologies:
- 60% cotton, 40% polyester.
- Relaxed fit.
- Dropped, set-in sleeves.
- Rib on collar, cuffs and hem.
- Ski-Doo printed logo at center chest.

T-SHIRTS

MEN'S

MEN'S HIGH ALTITUDE LS T-SHIRT

454567 • S, M, L, XL, 2XL, 3XL

Black (**90**), Charcoal Grey (**07**), Denim Blue (**79**)



Description:
- Casual fit long sleeves t-shirt.

Features and technologies:
- 100% cotton.
- Artwork on right sleeve.
- Atwork on left chest.

MEN'S BOLD T-SHIRT

454566 • S, M, L, XL, 2XL, 3XL

Army Green (**77**), Black (**90**), Burgundy (**35**)



Description:
- Casual T-Shirt for everyday wear.

Features and technologies:
- 100% cotton.
- Artwork at left chest and at back.

MEN'S SKI-DOO SIGNATURE T-SHIRT

454728 • S, M, L, XL, 2XL, 3XL

Army Green (**77**), Black (**90**), Blue (**80**), Brick Red (**33**), Heather Grey (**27**), Navy (**89**), Whiskey (**28**)



Description:
- Signature T-Shirt.

Features and technologies:
- 100% cotton.
- Heather Grey (27): 90% cotton, 10% polyester.
- Ski-Doo logo at front.
- Crew neck.

MEN'S ALPS T-SHIRT

454565 • S, M, L, XL, 2XL, 3XL

Black (**90**), Dark Navy (**16**), Heather Grey (**27**)



Description:
- Casual T-Shirt for everyday wear.

Features and technologies:
- 100% cotton.
- Heather Grey (27): 90% cotton, 10% polyester.
- Ski-Doo artwork at center front.

T-SHIRTS

MEN'S

NEW MEN'S CLIFF T-SHIRT

454587 • S, M, L, XL, 2XL, 3XL | Black (**90**), Heather Grey (**27**)



Description:
- Casual T-Shirt for everyday wear.

Features and technologies:
- 100% cotton.
- Heather Grey (27): 90% cotton, 10% polyester.
- Squared artwork at center front.

LADIES'

WOMEN'S ALPS T-SHIRT

454589 • XS, S, M, L, XL, 2XL | Black (**90**), Burgundy (**35**), Denim Blue (**79**)



Description:
- Crew neck short sleeves T-Shirt.

Features and technologies:
- 100% cotton.
- Graphic at front.

WOMEN'S DREAM OF SNOW T-SHIRT

454590 • XS, S, M, L, XL, 2XL | Black (**90**), White (**01**)



Description:
- Crew neck short sleeves T-Shirt.

Features and technologies:
- 100% cotton.
- Squared graphic at front.

WOMEN'S SIGNATURE T-SHIRT

454729 • XS, S, M, L, XL, 2XL | Army Green (**77**), Burgundy (**35**), Heather Charcoal (**29**), Heather Grey (**27**), Indigo Blue (**82**)



Description:
- Signature T-Shirt.

Features and technologies:
- 100% cotton.
- Heather colors (27) (29): 90% cotton, 10% polyester.
- Ski-Doo logo at front.
- V-neck.

HEADWEAR

HEADWEAR

MEN'S

NEW SKI-DOO EXPLORER HAT

448742 • S/M, L/XL | Black (**90**), Brick Red (**33**)



Description:
- Insulated hat for optimized warmth.

Features and technologies:
- Black: 4-way stretch softshell.
- Brick Red: Yarn Dyed Herringbone Plaid.
- Windproof fabric.
- Lined with frosted fake fur.
- Ski-Doo synthetic patch.
- Membrane Performance: 5,000 mm/5,000 g.

POM-POM HAT

448732 • One size | Black (**90**), Dark Navy (**16**), Hi-Vis Yellow (**26**)



Description:
- Lifestyle hat with Pom-Pom to keep warm in style.

Features and technologies:
- 100% acrylic.
- Knitted hat with micro fleece lining.
- Ski-Doo fold up label at back.

LANDING HAT

448731 • One size | Black (**90**), Dark Navy (**16**), Deep Purple (**42**), Heather Grey (**27**), Whiskey (**28**)



Description:
- Lifestyle hat with the Ski-Doo logo.

Features and technologies:
- 95% acrylic, 4% nylon, 1% spandex.
- Foldover cuff.

UNISEX

REVERSIBLE SKI-DOO BEANIE

448736 • One size | Black (**90**), Brick Red (**33**), Deep Purple (**42**), Green (**70**), Grey (**09**), Heather Charcoal (**29**), Indigo Blue (**82**), Khaki (**05**)



Description:
- 2 in 1 reversible beanie.

Features and technologies:
- 95% acrylic, 4% nylon, 1% spandex.
- Knit in logos.

SKI-DOO SHORT BEANIE

447869 • One size | Black (**90**), Heather Grey (**27**)



Description:
- Minimalist beanie to keep warm in style

Features and technologies:
- 100% acrylic.
- Short roll beanie.
- Foldover cuff.
- Ski-Doo loop label.

SKI-DOO X HAT

454620 • One size | Black (**90**), Dark Navy (**16**), Heather Grey (**27**)



Description:
- Lifestyle hat with Ski-Doo logo.

Features and technologies:
- 100% acrylic.
- Hat with X knit logo and sponsors patches.
- Foldover cuff.

MICRO-FLEECE BEANIE

448738 • One size | Black (**90**), Burgundy (**35**), Charcoal Grey (**07**)



Description:
- Thin beanie to combine breathability and warmth.

Features and technologies:
- 92% polyester, 8% spandex.
- Logo in knit.
- Ski-Doo fold up label at back.

UNISEX

NEW MICRO-FLEECE HEADBAND | **447877** • One size | Black (**90**), Charcoal Grey (**07**)



Description:
- Micro-fleece headband to keep warm without sacrificing breathability.
- Use on trails.

Features and technologies:
- Micro polar fleece, spandex.
- Heat Ski-Doo embossed logo center at front.
- Ski-Doo fold up label at back.

NEW MICRO-FLEECE NECK WARMER | **448739** • One size | Black (**90**), Burgundy (**35**), Charcoal Grey (**07**)



Description:
- Neck warmer to protect against the cold.

Features and technologies:
- Micro fleece.
- Ski-Doo logo on the side.
- Ski-Doo fold up label at back.

MEN'S

NEW MICRO-FLEECE GLOVES | **446338** • S, M, L | Black (**90**), Charcoal Grey (**07**), Dark Navy (**16**)



Description:
- Lifestyle gloves.
- Use as everyday gloves.

Features and technologies:
- Heat embossed logo.
- Touch screen finger tip.
- Anti-peeling fleece.
- Elastic at wrist.

LADIES'

NEW LADIES' FAUX-FUR POM-POM BEANIE | **447889** • One size | Black (**90**), Brick Red (**33**), Grey (**09**)



Description:
- Faux-Fur Pom-Pom beanie to keep warm in style.

Features and technologies:
- 100% acrylic.
- Micro-fleece lining.
- Removable fur like pom-pom.
- Ski-Doo metal logo placket.

CAPS

UNISEX

NEW EXPLORER FLAP CAP HAT | **448744** • One size | Black (**90**)



Description:
- Perfect mixed between a hat and a cap to protect from the sun and keep warm.
- Perfect to wear during cold days.

Features and technologies:
- 100% cotton.
- Adjustable woven strap.

NEW 5 PANELS CAP | **448741** • One size | Burgundy (**35**), Sand (**03**)



Description:
- New stylish 5 panels cap.
- Perfect to wear everyday.

Features and technologies:
- 50% wool, 50% polyester.
- Adjustments at back.

FLEX FIT CAP | **448733** • S/M, L/XL, 2XL | Black (**90**), Brick Red (**33**), Heather Grey (**27**)



Description:
- Fitted cap with X logo patch at front.
- Perfect to wear everyday.

Features and technologies:
- 97% cotton, 3% spandex.
- Ski-Doo signature embroidered on side.

NEW SKI-DOO UNCONSTRUCTED CAP | **448730** • One size | Black (**90**), Charcoal Grey (**07**), Denim Blue (**79**)



Description:
- Flat cap with logo at front.
- Perfect to wear everyday.

Features and technologies:
- 100% cotton.
- Adjustable twill cap.

FREESTYLE CAP | **448734** • One size | Black (**90**), Indigo Blue (**82**), White (**01**)



Description:
- Flat cap with an embroidery at front.
- Perfect to wear everyday.

Features and technologies:
- 60% cotton, 40% polyester.
- Adjustable twill cap.

UNISEX

SKI-DOO X-TEAM CAP | **454619** • One size | Charcoal Grey (**07**), Dark Navy (**16**), Green (**70**)



Description:
- Racing look cap with a X logo artwork at front.
- Perfect to wear everyday.

Features and technologies:
- 100% cotton.
- Plastic adjustment at back.
- Sponsors logos embroideries on sides.

SIGNATURE CAP | **448682** • One size | Army Green (**77**), Black (**90**), Burgundy (**35**), Dark Navy (**16**), Heather Charcoal (**29**), Heather Grey (**27**), Whiskey (**28**), White (**01**)



Description:
- Cap with signature logo
- Perfect to wear everyday.

Features and technologies:
- 100% cotton.
- Plastic adjustment at back.
- Ski-Doo embroidery logo at front.

KIDS AND TEENS

JACKETS

TEEN

TEENS' PARTICLE JACKET | **440952** • 7, 8, 10, 12, 14, 16 | Black (**90**), Deep Purple (**42**), Indigo Blue (**82**)



Description and terrain:
- Use on trails.

Features and technologies:
- 200 g of ThermaLoft® insulation.
- Critical seams and logos sealed.
- Radiant Core technology to keep warm.
- Reflective details on back and sleeves for better visibility.
- Polar fleece at front body and top arms for added warmth.
- Growing sleeves system that allows an additional 2 in. Lenght.
- Waterproof zippers.
- Removable hood.
- Fixed powder skirt.
- Inside cell phone pocket.
- Inside beanie pocket.

Performance:
Waterproofness | Breathability | Warmth

Key benefits:
Cuts wind | Reflective | Adjustable lenght

KIDS'

KIDS' MINIUM JACKET | **440953** • 3, 4, 5, 6 | Indigo Blue (**82**), Pink (**36**)



Description and terrain:
- Use on trails.

Features and technologies:
- 200 g of ThermaLoft® insulation.
- Critical seams and logos sealed.
- Radiant Core technology to keep warm.
- Reflective details on back and sleeves for better visibility.
- Polar fleece at front body and top arms for added warmth.
- Growing sleeves system that allows an additional 2 in. Lenght.

Performance:
Waterproofness | Breathability | Warmth

Key benefits:
Cuts wind | Reflective | Adjustable lenght

HIGHPANTS

TEEN

TEENS' X-TEAM HIGHPANTS | **441605** • 7, 8, 10, 12, 14, 16 | Black (**90**)



Description and terrain:
- Warm Highpants with a racing look.
- Use on trails.

Features and technologies:
- 100% waterproof, breathable and windproof.
- 200 g of Thermal Loft® insulation.
- Reinforced fabric at seat, knees and bottom of legs
- Critical seams sealed.
- Articulated, padded and shaped knees.
- Adjustable waist.
- Full-length side zippers.
- Growing-leg system for lengthening legs by 4" (10 cm) as child gets taller.
- Storm gaiters.
- Polar fleece-lined seat for added warmth.

Performance:
Waterproofness | Breathability | Warmth

Key benefits:
Cuts wind | Reinforced | Adjustable lenght

HIGHPANTS

KIDS'

KIDS' X-TEAM HIGHPANTS

441580 • 3, 4, 5, 6 | Black (**90**)



Description and terrain:
- Warm Highpants with a racing look.
- Use on trails.

Features and technologies:
- 100% waterproof, breathable and windproof.
- 200 g of Thermal Loft® insulation.
- Reinforced fabric at knees and bottom legs.
- 100% seams and logos sealed.
- Articulated, padded and shaped knees.
- owing-leg system for lengthening legs by 4" (10 cm) as child gets taller.
- Adjustable waist.
- Full-length side zippers.
- Reinforced seat, knees and inner legs.
- Storm gaiters.
- Polar fleece-lined seat for added warmth.

Performance:

Waterproofness | Breathability | Warmth

Key benefits:

Cuts wind | Reinforced | Adjustable lenght

HANDWEAR

TEEN

TEENS' PARTICLE MITTS

446343 • 6-8, 10-12, 14-16 | Black (**90**), Indigo Blue (**82**)



Description and terrain:
- Extra warm mitts for teens.
- Use for trail and Deep snow riding.

Features and technologies:
- Top hand: 240 g Thermal Loft Palm: 140 g Thermal Loft.
- Waterproof, windproof and breathable insert.
- Heat pack pocket built into inner mitt lining.

Performance:

Waterproofness | Dextirity | Warmth

TEENS' PARTICLE GLOVES

446344 • 6-8, 10-12, 14-16 | Black (**90**), Indigo Blue (**82**)



Description and terrain:
- Extra warm gloves for teens.
- Use for trail and Deep snow riding.

Features and technologies:
- Top hand: 240 g Thermal Loft Palm: 100 g Thermal Loft.
- Waterproof, windproof and breathable insert.
- 4-ways stretch fleece cuff.

Performance:

Waterproofness | Dextirity | Warmth

KIDS'

KIDS' MINIUM MITTS

446345 • 2, 4, 6 | Black (**90**)



Description and terrain:
- Extra warm mitts for kids.
- Use for trail and Deep snow riding.

Features and technologies:
- Top hand: 100 g Thermal Loft, 133 g PrimaLoft Gold; Palm: 100 g Thermal Loft.
- Waterproof, windproof and breathable insert.
- Side zipper for easy in and out.

Performance:

Waterproofness | Dextirity | Warmth

KIDS'/TEEN

NEW MICRO-FLEECE KIDS MITTS

446341 • One size | Black (**90**), Dark Navy (**16**)



Description and terrain:
- Lifestyle mitts for kids.
- Use as everyday mitts.

Features and technologies:
- 92% polyester, 8% spandex.
- Silicone patch.
- Micro polar fleece.

HEADWEAR

KIDS'/TEEN

YOUTH ACTIVE BALACLAVA

454749 • S/M, L/XL | Black (**90**)



Description:
- Basic Balaclava for warmth, dryness and comfort.

Features and technologies:
- 91% polyester, 9% spandex.
- Flatlocked seams to prevent skin chafing.
- Non-branded.

KIDS'

KIDS' POM-POM BEANIE

448737 • One size | Dark Navy (**16**), Indigo Blue (**82**), Pink (**36**)



Description:
- Pom-Pom beanie to keep warm in style.

Features and technologies:
- 100% acrylic.
- Knitted beanie with micro fleece lining.
- Silicone logo patch.
- Ski-Doo fold up label at back.

NEW KIDS' NECK-WARMER

448728 • One size | Black (**90**), Dark Navy (**16**)



Description:
- Neck-warmer for kids to protect against the cold.

Features and technologies:
- Micro polar fleece, spandex.
- Silicone logo patch.
- Ski-Doo fold up label at back.

CAPS

KIDS'/TEEN

KIDS' SKI-DOO BALL CAP

447878 • One size | Deep Purple (**42**), Heather Charcoal (**29**)



Description:
- Ball cap for kids.

Features and technologies:
- 60% cotton, 40% polyester.
- Adjustable twill cap.
- Ski-Doo synthetic patch at front.

FLEECE

TEEN

TEENS' PULLOVER FLEECE

454610 • 7-8, 10-12, 14-16 | Army Green (**77**), Dark Navy (**16**)



Description:
- Mid weight polar fleece for additional warmth.

Features and technologies:
- 100% polyester.
- 2 handwarmer pockets.
- Suede patch with Ski-Doo logo at arm.
- ¼ snap opening.

KIDS'

KIDS' FULL ZIP FLEECE

454608 • 3-4, 5-6 | Dark Navy (**16**), Indigo Blue (**82**)



Description:
- Heavy weight polar fleece for maximum warmth.

Features and technologies:
- 100% polyester micro fleece.
- 2 handwarmer pockets.
- Ski-Doo patch print at chest.
- Elastic binding at hood, cuffs and hem.

JERSEYS

KIDS'/TEEN

YOUTH EMBLEMATIC JERSEY

454607 • 3-4, 5-6, 7-8, 10-12, 14-16 | Black (**90**), Pink (**36**)



Description:
- Semi-fitted V-neck junior jersey.

Features and technologies:
- 100% polyester.
- Quick-dry fabric.
- Antibacterial, moisture-wicking fabric.
- Sublimated print.
- Rib at collar and cuffs.
- Jersey longer at back to easily enter it in riding pants.

SOCKS

KIDS'

KIDS' THERMAL SOCKS

444252 • S/M, L/XL | Indigo Blue (**82**), Pink (**36**)



Description:
- Warm, breathable and comfortable sock for kids.

Features and technologies:
- Durable sock.
- Elastic materials for comfort.
- Ventialtion channels.
- Itch-free and shrink treated to retain their size and shape for years.

SWEATSHIRTS

KIDS'

NEW KIDS' ZIP-UP HOODIE | **454593** • 3-4, 5-6 | Burgundy (**35**), Dark Navy (**16**)



Description:
- Comfortable Zip-Up hoodie for kids.

Features and technologies:
- One side brushed fleece.
- Handwarmer kangaroo pocket.
- Bombardier logo at left chest and at the back.

T-SHIRTS

KIDS'

NEW KIDS' BASEBALL T-SHIRT | **454609** • 3-4, 5-6 | Black (**90**), Charcoal Grey (**07**)



Description:
- ¾ sleeves kids T-Shirt.

Features and technologies:
- 60% cotton, 40% polyester.
- Printed logo at chest.

KIDS' T-SHIRT | **454615** • 3-4, 5-6 | Burgundy (**35**), Heather Grey (**27**)



Description:
- Short sleeves kids T-Shirt.

Features and technologies:
- 100% cotton.
- Heather Grey (27): 90% cotton, 10% polyester.
- Printed logo at chest.

PLAY & LICENSING PRODUCTS

WINTER FUN

3-SKI SNOW SLED | **B103900000**



- Ski-Doo 3-Ski Snow Sled for single rider.
- Sturdy design features a strong tubular aluminum frame, high-density polyethylene hood and transparent windshield.
- Handlebars and 3 grooved skis enhance steering and maneuverability.
- Brake system and non-slipping seat offer a controlled ride.
- Suspension spring system ensures a steady and comfortable slide.
- Ski-Doo Renegade X-RS UV resistant decals.
- Tow leash to help transport uphill.
- Easy assembly.
- For ages 6 and up.
- Dimensions: 52" L x 20" W x 14" H.
- Weight: 5 lb.
- Maximum weight capacity: 88 lb/40 kg.

MINI SNOW SLED | **B106800000**



- Mini Ski-Doo Snow Sled for single rider.
- High-density durable plastic construction.
- Compact, lightweight and easy to carry uphill.
- Centered handle for enhanced steering and control.
- Textured seat for extra grip.
- Safe feet-first design to easily slow down or stop using feet.
- For ages 6 and up.
- Dimensions: 22" L x 13 ½" W x 15" H.
- Weight: 3.5 lb.
- Maximum weight capacity: 165 lb.

FOAM SLED (55" X 21 ½") | **B106830000/B106840000**



- Ski-Doo Foam Sled for up to two riders.
- Lightweight and easy to carry uphill.
- Revolutionary patented polymer foam bonding construction.
- EPS core absorbs shocks and integrates 4 molded handles.
- Water-resistant XPE top skin with colorful graphic designs.
- 3D padded textured grip deck.
- High-density polyethylene slick bottom for ultimate glide and speed.
- Parabolic rails for great stability and maneuverability.
- For ages 6 and up.
- Dimensions: 55" L x 21 ½" W.

EXPLORE AN ENTIRE WORLD OF ADVENTURE WITH ALL OF OUR BRP PRODUCTS. **BRP.COM**





BRP

ski-doo LYNX SEA-DOO can-am ROTAX ALUMACRAFT Manitou QUINTREX

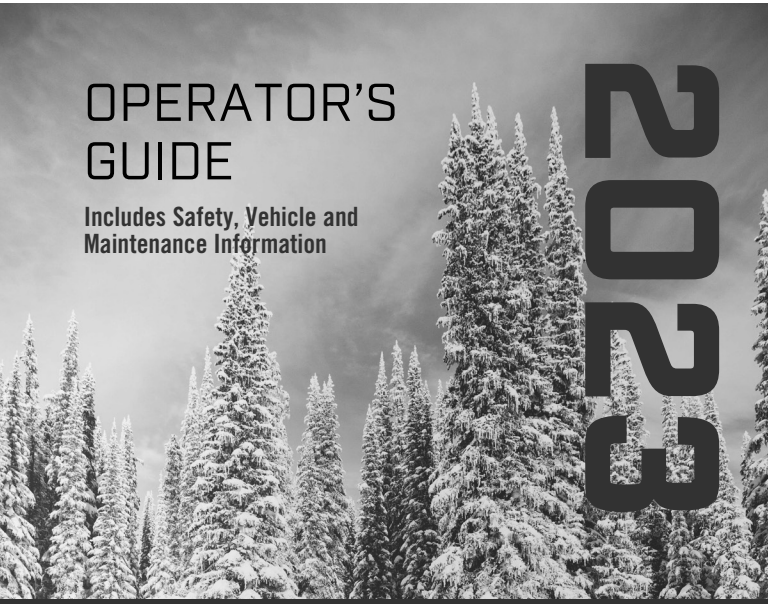


// SKI-DOO.COM

A BRP BRAND

ski-doo

CROSSOVER E-TEC AND EFI SERIES



OPERATOR'S GUIDE

Includes Safety, Vehicle and Maintenance Information

2023

⚠ WARNING

Read this guide thoroughly. It contains important safety information.
Minimum recommended operators age: 16 years old.
Keep this operator's guide with the vehicle at all times.

520002955

Original Instructions

⚠ WARNING

This vehicle may exceed the performance of other vehicles you may have ridden in the past. Take time to familiarize yourself with your new vehicle.

CALIFORNIA PROPOSITION 65 WARNING

⚠ WARNING

Operating, servicing and maintaining an off-road vehicle can expose you to chemicals including engine exhaust, carbon monoxide, phthalates, and lead, which are known to the State of California to cause cancer and birth defects or other reproductive harm. To minimize exposure, avoid breathing exhaust, do not idle the engine except as necessary, service your vehicle in a well-ventilated area and wear gloves or wash your hands frequently when servicing your vehicle. For more information go to www.p65warnings.ca.gov/products/passenger-vehicle.

In Canada, products are distributed and serviced by Bombardier Recreational Products Inc. (BRP).
In the USA, products are distributed and serviced by BRP US Inc.
In the European Economic Area (which is comprised of the member states of the European Union plus the United Kingdom, Norway, Iceland and Liechtenstein), the Commonwealth of the Independent States (including Ukraine and Turkmenistan) and Turkey, products are distributed and serviced by BRP European Distribution S.A. and other affiliates or subsidiaries of BRP.
For all other countries, products are distributed and serviced by Bombardier Recreational Products Inc. (BRP) or its affiliates.

™® Trademarks of BRP or its affiliates.
This is a non-exhaustive list of trademarks that are the property of Bombardier Recreational Products Inc. or its affiliates:

D.E.S.S.™	E-TEC™	HPG™
RAVE®	RER™	ROTAX®
SKI-DOO®	XPS®	

Deutsch	Dieses Handbuch ist möglicherweise in Ihrer Landessprache verfügbar. Bitte wenden Sie sich an Ihren Händler oder besuchen Sie: **www.operatorsguides.brp.com**
English	This guide may be available in your language. Check with your dealer or go to: **www.operatorsguides.brp.com**
Español	Es posible que este manual esté disponible en su idioma. Consulte a su distribuidor o visite: **www.operatorsguides.brp.com**
Français	Ce guide peut être disponible dans votre langue. Vérifier avec votre concessionnaire ou aller à: **www.operatorsguides.brp.com**
Italiano	Questa guida potrebbe essere disponibile nella propria lingua. Contattare il concessionario o consultare: **www.operatorsguides.brp.com**
中文	本手册可能有您的语种的翻译版本。请向经销商问询，或者登录 **www.operatorsguides.brp.com** 查询。
日本語	このガイドは、言語によって翻訳版が用意されています。. ディーラーに問い合わせるか、次のアドレスでご確認ください： **www.operatorsguides.brp.com**
Nederlands	Deze handleiding kan beschikbaar zijn in uw taal. Vraag het aan uw dealer of ga naar: **www.operatorsguides.brp.com**
Norsk	Denne boken kan finnes tilgjengelig på ditt eget språk. Kontakt din forhandler eller gå til: **www.operatorsguides.brp.com**
Português	Este manual pode estar disponível em seu idioma. Fale com sua concessionária ou visite o site: **www.operatorsguides.brp.com**
Русский	Воспользуйтесь руководством на вашем языке. Узнайте о его наличии у дилера или на странице по адресу **www.operatorsguides.brp.com**
Suomi	Käyttöohjekirja voi olla saatavissa omalla kielelläsi. Tarkista jälleenmyyjältä tai käy osoitteessa: **www.operatorsguides.brp.com**
Svenska	Denna bok kan finnas tillgänglig på ditt språk. Kontakta din återförsäljare eller gå till: **www.operatorsguides.brp.com**

Model	Package	Engine
Backcountry	Sport	600 EFI
	—	600R E-TEC
		850 E-TEC
	X	850 E-TEC
	X-RS	850 E-TEC
Expedition	Sport	600 EFI
	LE 20/ 24 in.	600R E-TEC
	SE 20 in.	850 E-TEC
	Extreme	850 E-TEC

TABLE OF CONTENTS

GENERAL INFORMATION

GENERAL INFORMATION 10
.....10
Know Before you Go 10
Safety Messages 10
About this Operator's Guide 11
Respect of the Environment 12

SAFETY INFORMATION

BEFORE YOU GO 16
Operating Age and Ability 16
Drugs and Alcohol 16
Avalanche Safety Training Courses 16
Protective Gear 17
Required Equipment 17
GET FAMILIAR WITH THE SNOWMOBILE 19
Track Propulsion System 19
Steering 19
Tether Cord 20
Braking 20
Parking Brake 20
Carrying Loads 20
Towing Loads 21
Towing Another Snowmobile 22
Accessories and Modifications 22
Traction Enhancing Products 23
RIDE SAFELY 27
Rider Position (Forward Operation) 27
Rider Position (Reverse Operation) 29
Riding with Passenger(s) 29
Riding Alone 30
Riding in a Group 30
Avoiding Collisions 32
Riding Behaviors 33
Speeding 33
Moving Parts 33
Know Terrain and Riding Variations 34
Respect of the Wildlife 38
Carbon Monoxide Poisoning 38
Gasoline Fires and Other Hazards 39
Burns from Hot Parts 39
PRACTICE EXERCISES 40
Where to Practice Exercises 40
Exercises to Practice 40
FUELING 43
Fueling Procedure 43

VEHICLE TRANSPORTATION 44
IMPORTANT ON-PRODUCT LABELS (CANADA/UNITED STATES) 45
Vehicle Safety Labels 45
Technical Information Labels 72
Hang Tag(s) 78
IMPORTANT ON-PRODUCT LABELS (ALL COUNTRIES EXCEPT CANADA/UNITED STATES) 80
Vehicle Safety Labels 80
Technical Information Labels 98
PRE-RIDE INSPECTION 105
Before Starting the Engine 105
After Engine is Started 105
Pre-Ride Check List 106
REPORTING SAFETY DEFECTS 108

VEHICLE INFORMATION

PRIMARY CONTROLS 110
Handlebar 110
Throttle Lever 110
Emergency Engine Stop Switch 111
Brake Lever 113
Parking Brake Lever 114
Engine Cut-off Switch 116
SECONDARY CONTROLS 118
Handlebar Multifunction Switch 118
Console Switches (if equipped) 127
Rotary Control (if equipped) 130
Gearshift Lever 132
Reverse Lever (if equipped) 133
Horn Button (if equipped) 134
Passenger Heated Grip Switch (if equipped) 134
BODY AND SEAT 136
Front and Rear Bumpers 136
Windshield 138
Adjustable Mirrors (if equipped) 141
Front Storage Compartment 142
Side Panels 143
Upper Body Module 146
Seat 153
EQUIPMENT 163
Operator's Guide 163
Heated Cell Case (if equipped) 163
Power Outlet - USB (if equipped) 163
Adjustable Handlebar Riser (If Equipped) 164
Mountain Strap 165
Electric Visor Jack Connector 165

Drive Belt Guard 166
Spare Drive Belt Holder 170
Tools 172
Rear Storage Compartment 174
Cargo Box (if equipped) 176
Hitch (if equipped) 178
COMPACT DIGITAL DISPLAY 182
Display Features 182
7.2" DIGITAL DISPLAY 191
Multifunction Display 191
Warning Lamps and Indicators 195
Settings 197
LARGE PANORAMIC 7.8" WIDE LCD DISPLAY 198
Basic Functions 198
Settings 205
Pairing your Smartphone Via Bluetooth 208
Pairing a Helmet 209
BRP GO! App 209
Quick Tour of the BRP GO! App 211
Messages in Multifunction Gauge 212
FUEL 214
Fuel Requirements 214
Fueling Procedure 215
INJECTION OIL 218
Recommended Injection Oil 218
Injection Oil Level Verification 218
BREAK-IN PERIOD 220
Operation During Break-In 220
BASIC PROCEDURES 221
Engine Starting Procedure 221
Emergency Starting 222
Vehicle Warm-Up 222
Shifting in High or Low range 223
Reverse (RER) 223
Shutting Off the Engine 226
RIDING CONDITIONS AND YOUR SNOWMOBILE 227
Altitude 227
Temperature 227
Hard Packed Snow 227
TUNE YOUR RIDE 229
Front Suspension Adjustments 229
Rear Suspension Adjustments 234
Adjustment Tips According to Vehicle Behavior 250

MAINTENANCE

MAINTENANCE SCHEDULE 252
EPA Regulation - Canadian and USA Vehicles 252

Deep Snow/ Trail/ Crossover/ Utility Usage 253
Maintenance Schedule 254
MAINTENANCE PROCEDURES 272
Engine Coolant 272
Exhaust System 273
Spark Plugs 274
Brake Fluid 274
Chaincase Oil 277
Gearbox Oil 281
Drive Chain 285
Drive Belt 286
Drive Pulley 292
Track 296
Suspension 305
Skis 307
Fuses 307
Headlights 311
Battery 315
VEHICLE CARE 322
Post-Operation Care 322
Vehicle Cleaning and Protection 322
STORAGE 324
Engine Storage Procedure 325
MAINTENANCE RECORDS 332

TECHNICAL INFORMATION

VEHICLE IDENTIFICATION 342
Vehicle Description Decal 342
Identification Numbers 343
COMPLIANCE LABELS 345
EPA Compliance Label 345
SSCC Label 346
Regulation (EU) 2016/1628 applicable for Non-Road Mobile Machineries 346
NOISE EMISSION AND VIBRATION VALUES 349
EU DECLARATION OF CONFORMITY 350
UK DECLARATION OF CONFORMITY 351
EAC DECLARATION OF CONFORMITY 352
EPA CERTIFIED ENGINES 353
Engine Emissions Information 353

RADIO FREQUENCY DIGITALLY ENCODED SECURITY SYSTEM (RF D.E.S.S. KEY) **355**
MULTIFUNCTION GAUGE REGULATORY INFORMATION **356**

TECHNICAL SPECIFICATIONS

ENGINE **362**
600 EFI 362
600R E-TEC 363
850 E-TEC 364
VEHICLE **366**
Backcountry 366
Expedition 373

TROUBLESHOOTING

TROUBLESHOOTING GUIDELINES **382**
MONITORING SYSTEM **385**
Pilot Lamps, Messages and Beeper Codes 385
Fault Codes 389

WARRANTY

BRP LIMITED WARRANTY USA AND CANADA: 2023 SKI-DOO® SNOWMOBILES **392**
SCOPE OF THE LIMITED WARRANTY 392
LIMITATIONS OF LIABILITY 392
EXCLUSIONS – ARE NOT WARRANTED 392
WARRANTY COVERAGE PERIOD 393
CONDITIONS REQUIRED FOR WARRANTY COVERAGE 393
WHAT TO DO TO OBTAIN WARRANTY COVERAGE 394
WHAT BRP WILL DO 394
TRANSFER 395
CONSUMER ASSISTANCE 395
US EPA EMISSION-RELATED WARRANTY **396**
Emission-Related Warranty Period 396
Components Covered 397
Limited Applicability 398
BRP INTERNATIONAL LIMITED WARRANTY: 2023 SKI-DOO® SNOWMOBILES **399**
SCOPE OF THE LIMITED WARRANTY 399
LIMITATIONS OF LIABILITY 399
EXCLUSIONS – ARE NOT WARRANTED 400
WARRANTY COVERAGE PERIOD 400
CONDITIONS TO HAVE WARRANTY COVERAGE 401
WHAT TO DO TO OBTAIN WARRANTY COVERAGE 402

WHAT BRP WILL DO 402
TRANSFER 402
CONSUMER ASSISTANCE 403
BRP LIMITED WARRANTY FOR THE EUROPEAN ECONOMIC AND THE COMMONWEALTH OF THE INDEPENDENT STATES (CIS) AREAS AND TURKEY: 2023 SKI-DOO® SNOWMOBILES 404
SCOPE OF THE LIMITED WARRANTY 404
LIMITATIONS OF LIABILITY 404
EXCLUSIONS – ARE NOT WARRANTED 405
WARRANTY COVERAGE PERIOD 405
CONDITIONS TO HAVE WARRANTY COVERAGE 406
WHAT TO DO TO OBTAIN WARRANTY COVERAGE 406
WHAT BRP WILL DO 407
TRANSFER 407
CONSUMER ASSISTANCE 407

CUSTOMER INFORMATION

DATA PRIVACY INFORMATION 410
CHANGE OF ADDRESS/OWNERSHIP 413

GENERAL INFORMATION

GENERAL INFORMATION

Congratulations on your purchase of a new BRP snowmobile. Whatever model you have chosen, it is backed by the Bombardier Recreational Products Inc. (BRP) warranty and a network of authorized BRP snowmobile dealers ready to provide the parts, service or accessories you may require.

Your dealer is committed to your satisfaction. He has taken training to perform the initial set-up and inspection of your snowmobile as well as completed the final adjustment required to suit your specific weight and riding environment before you took possession.

At delivery, you were informed of the warranty coverage and signed the Pre-delivery Check List to ensure your new vehicle was prepared to your entire satisfaction.

Know Before you Go

To learn how to reduce the risk for you, your passenger or bystanders being injured or killed, read the following sections before you operate the vehicle:

– *Safety Information*
– *Vehicle Information*.

Also read all safety labels on your snowmobile and watch attentively the safety video located at:

www.ski-doo.com/safety.

Or, use the following QR code.

Safety Messages

This operator's guide utilizes the following symbols and words to emphasize particular information:

The safety alert symbol ⚠ indicates a potential injury hazard.

⚠ WARNING
Indicates a potential hazard which, if not avoided, could result in serious injury or death.

⚠ CAUTION

Indicates a hazard situation which, if not avoided, could result in minor or moderate injury.

NOTICE

Indicates an instruction which, if not followed, could severely damage vehicle components or other property.

About this Operator's Guide

This operator's guide has been prepared to acquaint the owner, operator and passenger with this snowmobile and its various controls, maintenance and safe riding instructions.

The following terminology in regards to operator, passenger and vehicle configuration is used as follows throughout this guide:

- **Operator**: refers to the person being behind the controls and driving the snowmobile.
- **Passenger**: refers to a person sitting behind the operator.
- **1-UP**: refers to a model designed for an operator only.
- **2-UP**: refers to a model designed to accommodate **one** passenger.

Keep this operator's guide in the vehicle as you can refer to it for the operation, instructing others, maintenance and troubleshooting.

Note that this guide is available in several languages. In the event of any discrepancy, the English version shall prevail.

If you want to view and/or print an extra copy of your operator's guide, simply visit the following website:

www.operatorsguides.brp.com

The information contained in this document is correct at the time of publication. BRP, however, maintains a policy of continuous improvement of its products without imposing upon itself any obligation to install them on products previously manufactured. Due to late changes, some differences between the manufactured product and the descriptions and/or specifications in this guide may occur. BRP reserves the right at any time to discontinue or change specifications, designs, features, models or equipment without incurring any obligation upon itself.

This operator's guide should remain with the vehicle when it's sold.

Respect of the Environment

The guidelines that we support are not designed to limit your snowmobiling fun, but to preserve the beautiful freedom that you can experience only on a snowmobile! These guidelines will keep snowmobilers healthy, happy and able to introduce others to what they know and enjoy about their favorite winter pastime. So, the next time you hit the trails on a cool, crisp and clear winter day, we ask you to remember that you are paving the way for the future of our sport. Help us lead it down the right path! From all of us at BRP, thank you for doing your share.

There is nothing more exhilarating than snowmobiling. Venturing onto snowmobile trails that cross wild areas is an exciting and healthy winter sport. However, as the number of people using these recreational parks increases, so does the potential for damage to the environment. Abuse of land, facilities and resources inevitably leads to restrictions and closures of both private and public land.

In essence, the greatest threat to our sport, is all around us. Which leaves us with one logical choice. When we snowmobile, we must always ride responsibly.

The vast majority respect the law and the environment. Each of us must set an example for those who are new to the sport, young and old alike.

It is in every one's best interest to tread lightly into our recreational areas. Because, in the long run, to protect the sport we must preserve the environment.

Recognizing the importance of this issue and the need for snowmobilers to do their share in preserving areas that make it possible to enjoy our sport, BRP has developed the “Light Treading Is Smart Sledding” campaign for snowmobilers.

Light Treading refers to more than the thread of our tracks. It's a statement of concern, respect and willingness to take the lead and take action. It applies to the environment in general, its proper care and maintenance, its natural inhabitants and all enthusiasts and the public at large who enjoy the great outdoors. With this theme, we invite all snowmobilers to remember that respecting the environment is not only critical to the future of our industry but to future generations.

Light Treading in no way suggests you should curb your appetite for snowmobiling fun! It simply means tread with respect!

The fundamental objective of Light Treading is one of respect for where and how you ride a snowmobile. You're a light treader when you follow the principles below.

Become informed. Obtain maps, regulations and other information from the Forest Service or from other public land agencies. Learn the rules and follow them and that goes for speed limits, too!

Avoid running over young trees, shrubs, and grasses and don't cut wood. On flatlands or areas where trail riding is popular, it's important to ride only where authorized. Remember, there is a link between protecting your environment and your own safety.

Respect wildlife and be particularly sensitive of animals that are rearing young or suffering from food shortage. Stress can sap scarce energy reserves. Refrain from riding in areas where only animals are intended to tread!

Obey gate closures and regulatory signs and remember, light treaders don't litter!

Stay out of wilderness areas. They're closed to all vehicles. Know where the boundaries are.

Obtain permission to travel across private land. Respect the rights of landowners and other people's privacy. Remember, snowmobile technology has lowered the noise factor considerably, but you still shouldn't rev your engines where quiet “is the order of the day”.

Snowmobilers know all too well the efforts that have been made throughout the sport's history to enjoy access to areas where people can snowmobile safely and responsibly. This effort continues today, as strong as ever.

Respecting the areas where we ride... wherever they may be... is the only way to ensure their future enjoyment. That's one major reason why we know you'll agree that Light Treading is smart sledding! And there are more.

Enjoying the opportunity to see winter and all its natural majestic wonders, is an experience cherished by snowmobilers. Light Treading will preserve this opportunity and will make it possible for us to expose others to the beauty of winter and the unique thrill of our sport! Light Treading will help our sport to grow!

Finally, Light Treading is the sign of a smart snowmobiler. You don't have to leave big tracks or careen through a virgin forest to show you can ride. So whether you're driving a high performance BRP snowmobile or any other make or model, show you know what you're doing. Show you know how to send snow flying and make tracks with a light touch!

This page is intentionally blank

SAFETY INFORMATION

BEFORE YOU GO

⚠ WARNING

Disregarding any of the safety precautions and instructions contained in this section could cause injury including the possibility of death.

Operating Age and Ability

Operators must be qualified. Make sure the operator is 16 or older. Your state (or province) may have additional requirements. Laws regarding the minimum age and licensing requirements vary from one jurisdiction to another. Be sure to contact the local authorities for information regarding the legal operation of a snowmobile in the intended jurisdiction of use. BRP highly recommends that you take a safety riding course. Basic training is required for the safe operation of any snowmobile.

Operation of this snowmobile with a disability that impairs vision, reaction time, judgment, or operation of the controls is not recommended. The safe use of your snowmobile depends on many conditions such as visibility, speed, weather, environment, traffic, vehicle condition and the condition of the operator. The performance of some snowmobiles may significantly exceed that of other snowmobiles you have operated. Therefore, use by novice or inexperienced operators is not recommended.

Each passenger must be able to simultaneously place both feet firmly flat against each footboard when properly seated.

Drugs and Alcohol

Never ride after consuming alcohol or drugs. Riding on a snowmobile requires the operator and passenger (s) to be sober, attentive and alert. The use of drugs and alcohol, singly or in combination, decreases reaction time, impedes judgment, impairs vision, and inhibits your ability to safely ride on a snowmobile.

Avalanche Safety Training Courses

We recommend that all mountain riders take a local avalanche safety training course to become more familiar with snow conditions and learn how to properly use their equipment. Here are some web sites that can help you finding important information:

– – US: www.avalanche.org
– – Europe: www.avalanches.org
– – Canada: www.avalanche.ca

Protective Gear

Proper snowmobile clothing should be worn by all riders. It should be comfortable and not too tight. Always check the weather forecast before going on a ride. Dress for the coldest weather expected. Thermal underwear next to the skin also provides a good insulation.

Always wear an approved helmet at all times for safety and comfort. They provide both warmth and reduce injury. A stocking type cap, balaclava and face mask should always be carried or worn. Goggles or a face shield that attach to the helmet are indispensable.

Hands should be protected by a pair of snowmobile gloves or mitts which have sufficient insulation and allow use of thumbs and fingers for operation of controls.

Rubber bottom boots with either a nylon or a leather top, with removable felt liners are best suited for snowmobiling.

You should keep yourself as dry as possible when snowmobiling. When you come indoors, take your snowmobile suit and boots off and make certain they dry properly.

Do not wear a long scarf or loose apparels that could get caught in moving parts.

Carry colored lens goggles.

Required Equipment

As the owner of the snowmobile, you are responsible for ensuring that all required safety equipment is aboard. Check your local regulations about requirements.

First aid kit	Provided tool kit
Mobile phone	Knife
Spare spark plugs	Flashlight
Adhesive tape (duct tape)	Trail map
Spare drive belt	Snack
Probe*	Shovel*

Avalanche beacon*	-
*When riding in an area with avalanche risk	

GET FAMILIAR WITH THE SNOWMOBILE

This vehicle may exceed the performance of other vehicles you may have ridden. Take time to familiarize yourself with your new vehicle.

Inexperienced riders may overlook risks and be surprised by vehicle's specific behavior and terrain conditions. Ride slowly. Excessive speed and reckless driving can kill.

Make sure you read and understand the content of this operator's guide to become completely familiar with the controls and operation of the snowmobile before embarking on your first trip or taking on a passenger(s). If you have not had the opportunity to do so, practice driving solo in a suitable traffic-free area to become accustomed to the feel and response of each control.

It is very important to inform any operator, regardless of his experience, of the handling characteristics of this snowmobile. The snowmobile configuration, such as ski stance, ski type, suspension type, track length, width and type vary from a model to another. The snowmobile handling is greatly influenced by these characteristics.

Track Propulsion System

Your snowmobile features a track propulsion system. The track grips on the snow-covered surface and pushes the snowmobile in the opposite direction of the force applied on the surface. Stay away from the track. Personal injury will result if contact is made with the revolving track.

⚠ WARNING

Never stand behind or near a rotating track. Debris could be projected causing severe injuries.

The grip of the track will vary depending on the surface conditions. The grip may be reduced on hard-pack snow or ice. Reduce your speed and allow more space to turn. Refer to the *TRACTION ENHANCING PRODUCTS* subsection of this guide to learn how to balance the grip of the ski vs the grip of the track. If the front and rear of the snowmobile are out of balance due to an incorrect combination of traction enhancing products, the snowmobile may tend to oversteer or understeer, which could lead to a loss of control.

Steering

Skis are used to steer the snowmobile through the handlebar. The performance to steer will vary depending of the grip of the skis on the surface. Steering control ability may be reduced on hard-pack snow, ice or roads. Reduce speed and allow more space to turn. Refer to the *TRACTION ENHANCING PRODUCTS* subsection of this guide to learn how to balance the grip of the ski versus the grip of the track. If

the front and rear of the snowmobile are out of balance due to an incorrect combination of traction enhancing products, the snowmobile may tend to oversteer or understeer, which could lead to a loss of control.

Riding with a passenger or when carrying loads, the steering control will also be reduced. Reduce speed and allow more space to turn.

Tether Cord

Always attach tether cord eyelet to clothing before starting the engine to help ensure the engine stops should the operator fall off.

After riding, always remove the tether cord from the engine cut-off switch to avoid unauthorized use by children or others and to prevent starting in a closed environment (ex: garage).

Braking

Braking performances may vary suddenly under certain conditions. Always remember that the snowmobile braking distance may be affected when riding with a passenger and when loaded with cargo at the rear. Never jam the brake and lock the track. Be sure to use restraint in braking to keep from blocking the track in order to avoid surprises that could lead to a loss of control.

Using studs on the track will give you better braking capacity on packed snow or ice but will have no noticeable effect on soft snow. Refer to *Enhancing Traction Control Products* subsection for track studding application.

Parking Brake

Always engage parking brake before starting the engine. Parking brake should be used whenever snowmobile is parked.

Make sure parking brake is fully disengaged before operating the snowmobile. When you ride the vehicle, brake pads that are caused to drag by a continuous pressure on the lever may cause damage to the brake system and cause loss of braking capacity or fire.

Carrying Loads

Carrying loads affects the vehicle handling, stability and braking distance. Appropriate loading and weight distribution are therefore important.

When carrying loads it is very important to follow the recommendations:

– Never exceed the maximum cargo capacity. Refer to *Safety Information on the Vehicle* or *Technical Specifications* subsections for the applicable cargo load capacity of your snowmobile.
– Always adjust the suspensions according to the cargo load. Refer to *Tune Your Ride* subsection for more details.
– Never carry a load unless it is properly secured using a BRP LinQ certified accessory. Compatible accessories which are not BRP certified may not be considered as fit for this purpose.
– Always reduce your speed, turn gradually and allow longer braking distance when carrying loads.

⚠ WARNING

Failure to follow these recommendations when carrying or towing loads could lead to a loss of control and possibly in a tip over.

Towing Loads

Towing loads affects the vehicle handling, stability and braking distance. Appropriate loading and weight distribution are therefore important.

When towing a load it is very important to follow the recommendations:

– Always use a rigid tow bar to tow a cargo carrier or an accessory.
– Never tow a load using a rope. Using a rope would result in a collision between the load and the snowmobile and possibly in a tip over in case of a rapid deceleration or on a downward slope.
– Never tow a load by attaching it directly to the bumper. Use only the hitch to tow a load. Make sure that the cargo carrier hitch is compatible with the one on the vehicle. Use security chains or cables to secure the cargo carrier with the vehicle. Avoid excessive slack in the chains or cables, it could break and snap back.
– Never exceed the vehicle maximum tow capacity. Refer to *Safety Information on the Vehicle* or *Technical Specifications* subsections for the applicable towing capacity of your snowmobile.
– Never exceed the tongue weight capacity, if applicable.
– Always make sure load is evenly distributed and safely secured on the cargo carrier. Make sure there is at least some weight on the tongue, if applicable.
– Always adjust the suspensions according to the weight on the tongue, if applicable. Refer to *Tune Your Ride* subsection for more details.
– Reduce your speed and turn gradually. Avoid hills and rough terrain. Riding this vehicle with a cargo carrier substantially increases the risk of toppling, especially on inclined slopes. Never attempt steep hills.

– Allow more distance for braking, especially on inclined surfaces and when a passenger is on board. Be careful not to skid or slide.
– Use caution when disconnecting a loaded cargo carrier; its load may topple on you or others.

⚠ WARNING

Failure to follow these recommendations when carrying or towing loads could lead to a loss of control and possibly in a tip over.

On vehicle equipped with a gearbox, always put the shift lever to L (low range) when towing a cargo carrier.

Any towed accessory should have reflectors on both sides and at the rear.

Check country transport regulations for brake light(s) requirements.

Towing Another Snowmobile

If a snowmobile is disabled and must be towed, in an emergency situation only, a rope can be used

– Remove the drive belt. Refer to *Maintenance Procedures* for more details.
– Attach the rope to the ski legs (spindles), **not** to the skis. If the ski legs are not accessible, attach the rope to the bumper.
– Have someone sit on the towed snowmobile to steer and activate the brake.
– Tow at low speed with extra caution.

NOTICE

Always remove the drive belt of the snowmobile that is to be towed to prevent damage to its belt and drive system.

In some areas, it may be illegal to do so. Check with state or local authorities.

Accessories and Modifications

Never remove any original equipment from your snowmobile. Each vehicle has many built in safety features. Such features include various guards and consoles, plus reflective materials and safety labels.

Do not make unauthorized modifications, or use attachments or accessories that are not approved by BRP. Since these changes have

not been tested by BRP, they may increase the risk of crashes or injuries, and they can make the vehicle illegal.

Also, accessories are designed for specific applicable models only. It is not recommended for units other than the one (those) for which it was sold.

Accessory passenger seats approved by BRP and conforming to SSCC standards may be available for certain models. If such a seat is used, you must follow the guidelines and recommendations regarding a passenger in this guide.

Know your technical limits when installing a BRP approved accessory and, when in doubt, have your OEM accessories installed by an authorized BRP snowmobile dealer.

For more information about the use of BRP accessories visit this web site https://instructions.brp.com and search for the appropriate instruction sheet that may include important safety information.

Traction Enhancing Products

NOTE:
This section is applicable to all snowmobile models that are either equipped with a:

- Factory installed track approved by BRP for special studs installation.
- Factory pre-studded track.

or that can received one of these tracks.

Always refer to your authorized BRP snowmobile dealer to learn more on traction enhancing products and applicability on your snowmobile.

Using traction enhancing products such as, adjustable or more aggressive ski carbide runners and / or track studs on your snowmobile will change its behavior, particularly in terms of maneuverability, acceleration, and braking.

Using traction enhancing products gives a better grip on hard packed snow and ice, but has no noticeable effect in deep snow. For this reason, driving a snowmobile equipped with traction enhancing products requires a certain adaptation period. If your snowmobile is equipped with traction enhancing products, be sure to take plenty of time to get used to the way it handles when turning, accelerating, and braking.

The use of track studs can increase the load and the stress on certain snowmobile components, as well as the vibration level. This can cause premature wear on parts such as belt, brake linings, bearings, chain, chain sprockets, and shorten track life.

Track studs can also cause serious damage to your snowmobile if it is not equipped with the appropriate tunnel protectors.

Check local regulations concerning the use of traction enhancing products on snowmobiles.

Studding an unapproved track or using unapproved studs increase the risk of the track tearing or severing

Installing track studs and tunnel protector(s) requires technical knowledge. To ensure safe and proper installation, BRP recommends to have the studs installed by your dealer.

For maintenance and replacement refer to *Track* in *Maintenance Procedures*.

Maneuverability

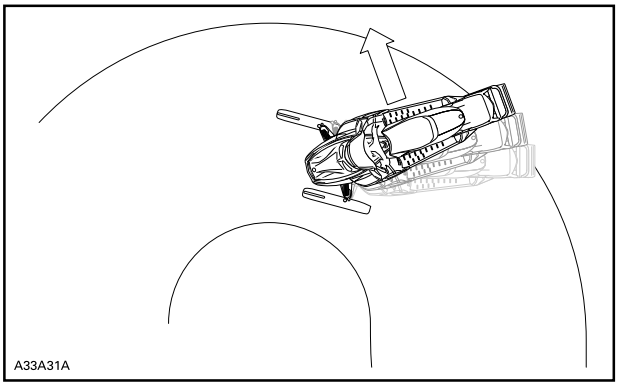
Using traction enhancing products such as, more aggressive ski carbide runners and/or studs makes the snowmobile grip the ground better at both the front and at the rear. The use of carbide runners is therefore required to give the skis a better grip, so that the front and rear of the snowmobile are in balance. While off-the-shelf carbide ski runners are adequate, they don't necessarily give you optimal control, since that depends on your personal preferences, your riding style, and how your suspension is adjusted.

⚠ WARNING

If the front and rear of the snowmobile are out of balance due to an incorrect combination of traction enhancing products, the snowmobile may tend to oversteer or understeer, which could lead to a loss of control.

Oversteering

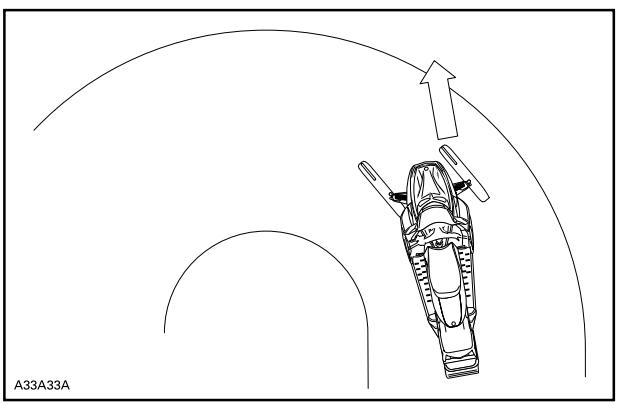
In certain conditions, using more aggressive ski carbide runners without studs on the rear track could make the snowmobile prone to oversteering, see illustration.



OVERSTEERING

Understeering

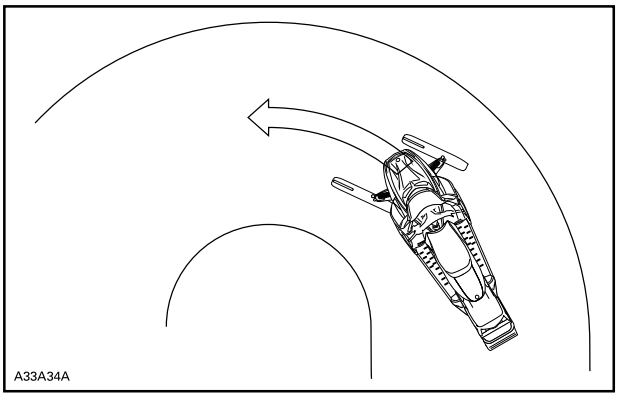
In certain conditions, the use of studs on the track could make the snowmobile prone to understeering if the skis are not equipped with more aggressive ski carbide runners, see illustration.



UNDERSTEERING

Controlled Driving

A balanced combination of carbide ski runners and studs on the track ensures adequate control and better handling, see illustration.



CONTROLLED DRIVING

Acceleration

Using studs on the track will allow your sled to accelerate better on packed snow and ice but will have no noticeable effect on soft snow. This can cause sudden variations in traction under certain conditions.

Always go easy on the throttle and never try to spin the track to make the rear of the snowmobile skid. This could cause debris or ice to be thrown violently backwards, possibly injuring others nearby or on snowmobiles behind you.

Braking

As in the case of acceleration, using studs on the track will give you better braking capacity on packed snow or ice but will have no noticeable effect on soft snow. Braking may thus vary suddenly under certain conditions. Be sure to use restraint in braking to keep from blocking the track in order to avoid surprises that could lead to a loss of control.

Rider Position (Forward Operation)

Your riding position and balance are the two basic principles of making your snowmobile go where you want it to. When turning on the side of a hill, you and your passenger must be ready to shift body weight to help it turn in the desired direction. Operator and passenger must never attempt this maneuvering by placing feet outside of the vehicle. Experience will teach you how much lean to put into turns at different speeds and how much you will have to lean into a slope to maintain proper balance.

Generally, the riding position for best balance and control is sitting. However, the posting, kneeling or standing positions are also used under certain conditions.

⚠ WARNING

Do not attempt any maneuvers if they are beyond your abilities.

Sitting

Feet on the running boards, body midway back on seat is an ideal position when operating the snowmobile over familiar, smooth terrain. Knees and hips should remain flexible to absorb shocks.



Posting

A semi-sitting position with the body off the seat and the feet under the body in a sort of squatting posture, thus allowing the legs to absorb the shocks when traveling over uneven terrain. Avoid abrupt stops.



Kneeling

This position is achieved by placing one foot firmly on the running board and the opposite knee on the seat. Avoid abrupt stops.



Standing

Place both feet on the running boards. Knees should be flexed to absorb the shock from surface bumps. This is an effective position to see better and to shift weight as conditions dictate. Avoid abrupt stop.



Rider Position (Reverse Operation)

When operating in reverse:

– Ensure the path behind is clear of obstacles or bystanders before proceeding in reverse.
– BRP recommends sitting on your snowmobile when operating in reverse.
– Avoid standing up. Your weight could shift forward against throttle lever while operating in reverse, causing an unexpected acceleration. Unexpected acceleration when snowmobile operates in reverse can cause a loss of control.

Fast reverse while turning, could result in loss of stability and control.

Riding with Passenger(s)

This vehicle is designed for one (1) operator and as many passengers as there are seats with straps or handholds installed on the vehicle conforming to SSCC standards. Passenger must only sit on designated passenger seat.

⚠ WARNING

– Never carry a passenger on a seat not approved by BRP.
– Never allow anyone to sit between the handlebar and the operator.

Even when a passenger is allowed, this person must be physically fit for snowmobiling.

Any passenger must always be able to firmly lay his feet on the footrests and keep his hands on the handholds or seat strap when seated. Respecting those physical criteria is important to ensure that the passenger is stable and to reduce the risks of ejection. Falls can result in severe injury or death.

The operator has a responsibility to ensure the safety of his passenger and should inform the passenger about snowmobiling basics.

Before riding the vehicle, adjust suspension according to weight. Refer to *Tune Your Ride* subsection for more details.

Ask your passenger to inform you to slowdown or stop immediately if he feels uncomfortable or insecure during the ride.

When going over bumps, riders(s) may raise their body slightly off the seat to absorb the shocks with their legs.

An unforeseen bump can leave you passenger-less. Remind your passenger to lean into the turn with you, without causing the vehicle to topple. Be extremely careful, go more slowly and check the passenger frequently. Keep a watchful eye on your passenger while riding.

Braking ability and steering control are reduced when riding with a passenger. Decrease speed and allow extra space to maneuver.

Riding Alone

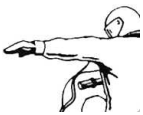
Venturing out alone with your snowmobile could also be hazardous. You could run out of fuel, have an accident, or damage your snowmobile. Remember, your snowmobile is capable of traveling further in half an hour than you may be able to walk in a day. Use the “buddy system”. Always ride with a friend or member of your snowmobile club. Even then, tell someone where you are going and the approximate time you plan to return.

Riding in a Group

Before starting out, designate a “trail boss” to lead the party and another person to follow-up at the end of the party. Ensure that all members of the party are aware of the proposed route and destination. When riding with others, limit your abilities to the experience of others. Never overtake the trail boss or, for that matter, any other snowmobile. Use down-the-line hand signals to indicate hazards or intent of direction change. It’s important to keep a safe distance between each snowmobile but each one behind the leader should know the position of the machine ahead.

Hand Signals

Every snowmobiler should relay any signal to the ones behind.

STOP Raise either hand straight above your head. 	**LEFT TURN** Extend your left hand straight out in the proper direction. 
RIGHT TURN Extend the left arm and raise the hand to a vertical position so it forms a right angle at the elbow. 	**SLOWING DOWN** Left hand extended out and down from the side of the body with downward flapping motion of hand to signal warning or caution. 

FOLLOWING SNOWMO BILES Arm raised, elbow bent with thumb pointing backward, in hitch-hicking motion move arm forward to backward over your shoulder. 	**ONCOMING SNOWMO BILES** Left arm raised at shoulder height, elbow bent and forearm verticl, wrist bent, move arm from left to right over head pointing to right side of trail. 
LAST SNOWMO BILE IN LINE Left arm raised at should height, elbow bent and forearm vertical with hand clenched in a fist. 	

Avoiding Collisions

Wherever riding your vehicle always be on the look-out for the unexpected. Operate defensively. Scan constantly for people, objects, conditions and upcoming vehicles. In the trail, always stay on the appropriate side - as per country regulation - to avoid collision, especially when the field of vision is reduced. E.g.: Before a hilltop and a curve. Use extra caution whenever off-trail.

Always keep a safe distance from other snowmobiles and bystanders. Tailgating another snowmobile should be avoided. If the snowmobile in front of you slows for any reason, its operator and passenger could be harmed through your neglect. Maintain a safe stopping distance between you and the snowmobile in front of you. Depending on the terrain condition, stopping may require a little more space than you think. Play it safe. Be prepared to use evasive driving.

On land or water, fog or visibility-limiting snow can form. If you must proceed into the fog or heavy snow, do so slowly with your lights on

and watch intently for hazards. If you are not sure of your way, do not proceed. Keep a safe distance behind other snowmobilers to improve visibility and reaction time.

Riding Behaviors

Injury or death may result to the snowmobile operator, passenger or bystander if the snowmobile is used in risky conditions which are beyond the operator's, passenger's or snowmobile's capabilities or intended use.

Remember, promotional material may show risky maneuvers performed by professional riders under ideal and controlled conditions. You should never attempt any such risky maneuvers if they are beyond your level of riding ability.

Jumping can be a hazardous situation. It requires practice and should be done in a known and controlled environment. Never attempt jumping in a trail. A loss of control could lead to an impact with different elements like rock or tree, or with another snowmobile. When jumping be prepared for landing to absorb the shock. Brace yourself for the impact and your knees must be flexed to act as shock absorbers.

Also, an uneven or mined surface in the trail could be enough to kick upward the snowmobile and generate an impact or a loss of control. When “gunning” the throttle, the vehicle digs into and leaves an irregular snow surface for others. So protect the other users by not spinning the track in the middle of the trail.

Speeding

Excessive speed and reckless driving can be fatal. Always adjust your speed according to snow conditions and circumstances. In many cases, you cannot react or respond quickly enough to the unexpected. Always ride at a speed which is suitable to the trail, weather conditions and your own ability. Know your local rules. Speed limit may be in effect and meant to be observed.

Moving Parts

Stay away from the track. Personal injury will result if contact is made with the rotating track.

To prevent serious injury to individuals near the snowmobile:

– Never stand behind or near a moving track
– Always use a wide-base snowmobile stand with a rear deflector panel if it is necessary to rotate track
– When the track is raised off the ground, only run it at the lowest possible speed. Centrifugal force could cause debris, damaged or

loose studs, pieces of torn track, or an entire severed track to be violently thrown backwards out of the tunnel with tremendous force
– Never operate the engine without the belt guard securely installed
– Never operate the vehicle without the brake disk guard securely installed
– Never operate the vehicle with the side panels opened, or the hood removed

Know Terrain and Riding Variations

Groomed Trail

On a maintained trail, sitting is the most preferred riding position. Do not race and, above all, keep to the right hand side of the trail. Be prepared for the unexpected. Observe all trail signs. Do not zigzag from one side of the trail to the other.

Ungroomed Trail

Unless there has been a fresh snowfall you can expect “washboard” and snowdrift conditions. Taken at excessive speeds, such conditions can be physically harmful. Slow down. Hold on the handlebar and assume a posting position. Feet should be under the body assuming a crouched position to absorb any jarring effect. On longer stretches of “washboard” trails, the kneeling position of one knee on the seat can be adopted. This provides a certain amount of comfort, while at the same time keeps the body loose and capable of vehicle control. Beware of hidden rocks or tree stumps partially hidden by a recent snowfall.

Deep Snow

In deep “powder” snow, your vehicle could begin to “bog” down. If this occurs, turn in as wide an arc as possible and look for a firmer base. If you do get “bogged”, and it happens to everyone, do not spin your track as this makes the vehicle sink deeper. Instead, turn the engine off, get off and move the back of the vehicle onto new snow. Then tramp a clear path ahead of the vehicle. A few feet will generally suffice. Restart the engine. Assume the standing position and rock the vehicle gently as you steadily and slowly apply the throttle. Depending on whether the front or rear end of the vehicle is sinking, your feet should be placed on the opposing end of the running boards. Never place foreign material beneath the track for support. Do not allow anyone to stand in front of, or to the rear of, the snowmobile with the engine running. Stay away from the track. Personal injury will result if contact is made with the revolving track.

Frozen Water

Traveling frozen lakes and rivers can be fatal. Avoid waterways. If you are in an unfamiliar area, ask the local authorities or residents about

the ice condition, inlets, outlets, springs, fast moving currents or other hazards. Never attempt to operate your snowmobile on ice that may be too weak to support you and the vehicle. Operating a snowmobile on ice or icy surfaces can be very dangerous if you do not observe certain precautions. The very nature of ice is foreign to good control of a snowmobile or any vehicle. Traction for starting, turning or stopping is much less than that on snow. Thus, these distances can be multiplied manyfold. Steering is minimal, and uncontrolled spins are an ever present danger. When operating on ice, drive slowly with caution. Allow yourself plenty of room for stopping and turning.

Slush

Slush should be avoided at all times. Always check for slush before starting across any lake or river. If dark spots appear in your tracks, get off the ice immediately. Ice and water can be thrown rearward into the path of a following snowmobile. Getting a vehicle out of a slush area is strenuous and in some cases, impossible.

Uphill

There are two types of hills you can encounter — the open hill on which there are few trees, cliffs or other obstacles, and a hill that can only be climbed directly. On an open hill, the approach is to climb it by side hilling or slaloming. Approach at an angle. Adopt a standing position with both feet on the same running board. Keep your weight on the uphill side at all times. Maintain a steady, safe speed. Continue as far as you can in this direction, then switch to an opposite hill angle and riding position.

A direct climb could present problems. Choose the standing position, accelerate before you start the climb and then reduce throttle pressure to prevent track slippage.

In either case, vehicle speed should be as fast as the incline demands. Always slow down as you reach the crest. If you cannot proceed further, don't spin your track. Apply the parking brake, turn the engine off, free the skis by pulling them out and downhill, place the rear of the snowmobile uphill, restart the engine, release the parking brake and ease it out with slow even throttle pressure. Position yourself to avoid tipping over, then descend.

Downhill

Downhill driving requires that you have full control of your vehicle at all times. On steeper hills, keep your center of gravity low and both hands on the handlebar. Maintain slight throttle pressure and allow the machine to run downhill with the engine operating. If a higher than safe speed is reached, slow down by braking but apply the brake with frequent light pressure. Never jam the brake and lock the track.

Side Hill

When crossing a side hill or traversing up or downhill, certain procedures must be followed. All riders should lean towards the slope as required for stability. The preferred operating positions are the standing position, with both feet on the running board that is facing uphill. Be prepared to shift your weight quickly as needed. Side hills and steep slopes are not recommended for a beginner or a novice snowmobiler.

Avalanche Hazard

When riding on mountainous terrain, you should be aware of the risk of avalanches. Avalanches vary in size and shapes and generally occur in steep terrain and on unstable snow.

New snow, animals, people, wind and snowmobiles can all trigger an avalanche. Avoid high marking or traversing steep terrain when avalanche conditions are possible. When in unstable snow conditions, travel should be restricted to lower angle slopes. Wind formed cornices should be avoided. Staying off unstable conditions is the key to safe mountain riding. Probably most important is to be aware of the conditions and dangers on a daily basis when in the mountains. Check local avalanche forecasts and threats each day before heading out to ride and heed forecasters advice.

You should always carry a snow shovel, probe and avalanche beacon while riding on mountains.

Bright Sunshine

Bright sunny days can considerably reduce your vision. The glare from sun and snow may blind you to the extent that you cannot easily distinguish ravines, ditches or other obstacles. Goggles with colored lenses should always be worn under these conditions.

Night Rides

The amount of natural and artificial light at a given time can affect your ability to see or to be seen. Be extra cautious. Drive at speeds that will allow you to stop in time when you see an unknown or dangerous object ahead. Stay on established trails and never operate in unfamiliar territory. Be sure both headlights and taillight are working and clean.

Unfamiliar Territory

Whenever you enter an area that is new to you, drive with extreme caution. There may be obstructions hidden beneath the snow. Go slow enough to recognize potential hazards such as fences or fence posts, brooks crossing your path, rocks, sudden dips, guy wires and countless other obstacles which could result in a termination of your snowmobile ride.

Driving off established trails and in the woods requires reduced speed and increased vigilance. Driving too fast in an area can make even minor obstacles very hazardous. Even hitting a small rock or stump could throw your snowmobile out of control and cause injury to its riders. Even when following existing tracks, be cautious. Travel at a speed so you can see what is around the next bend or over the top of the hill.

Hidden Wires

Always be on the lookout for hidden wires, especially in areas that may have been farmed at one time or another. Too many accidents have been caused by running into wires in the fields, guy wires next to poles and roads, and into chains and wires used as road closures. Slow speeds are a must.

Riding Uneven Surfaces

Unplanned jumps of snowdrifts, snowplow ridges, culverts, indistinguishable objects or sudden drop in the trail can be dangerous. You can avoid them by wearing the proper color lenses or face shields and by operating at a lower speed.

A good way to help seeing these terrain variations is to wear the proper color lenses or face shields and by operating at a lower speed. Crouch (stand) towards the rear of the vehicle and keep the skis up and straight ahead. Apply partial throttle and brace yourself for the impact. Knees must be flexed to act as shock absorbers.

Road Crossing

Your snowmobile is not designed to operate or turn on pavement of public streets, roads or highways. Avoid road traveling. If you must do so, and it is permitted, reduce speed and stay on the edge of the way where you can find snow to help providing capabilities to maintain directional control.

As snowmobile trails often cross roadways it is important for riders to know the proper crossing procedures. When approaching a roadway, signal to others that you are stopping at the intersection and slowly come to a complete stop back from the road's edge. In some cases, you will be approaching the road from a ditch or snowbank. Choose a place where you know you can climb without difficulty. Stop completely at the top of the bank and wait for all traffic to clear. Then, look carefully in both directions before crossing at a 90° angle. If needed, assume a standing position to look both ways. Be wary of parked vehicles. When you are certain that the road is clear proceed straight across the intersection without hesitation. Each rider needs to come to a complete stop, look both ways and then proceed when the roadways is clear of oncoming traffic.

Railroad Crossing

Never ride on railroad tracks. It is illegal. Railroad tracks and railroad rights-of-way are private property. A snowmobile is no match for a train. Before crossing a railroad track, stop, look and listen.

Respect of the Wildlife

Wildlife compliments your snowmobiling day. Snowmobile tracks provide firm ground over which animals can travel from area to area. Do not violate this privilege by chasing or harassing wildlife. Fatigue and exhaustion can lead to animal's death. Avoid areas posted for the protection or feeding of wildlife. If you happen to be fortunate enough to see an animal, stop your snowmobile and observe quietly.

Carbon Monoxide Poisoning

All engine exhaust contains carbon monoxide, a deadly gas. Breathing carbon monoxide can cause headaches, dizziness, drowsiness, nausea, confusion and eventually death.

Carbon monoxide is a colorless, odorless, tasteless gas that may be present even if you do not see or smell any engine exhaust. Deadly levels of carbon monoxide can collect rapidly, and you can quickly be overcome and unable to save yourself. Also, deadly levels of carbon monoxide can linger for hours or days in enclosed or poorly ventilated areas.

If you experience any symptoms of carbon monoxide poisoning, leave the area immediately, get fresh air and seek medical treatment.

To prevent serious injury or death from carbon monoxide:

– Never run the vehicle in poorly ventilated or partially enclosed areas such as garages, carports or barns. Even if you try to ventilate engine exhaust with fans or open windows and doors, carbon monoxide can rapidly reach dangerous levels.
– Never run the vehicle outdoors where engine exhaust can be drawn into a building through openings such as windows and doors.
– Never stand next to the vehicle while the engine is running. A person standing next to the vehicle when the engine is running may inhale high concentrations of exhaust fumes.

After riding, always remove the tether cord from the engine cut-off switch to avoid unauthorized use by children or others and to prevent starting in a closed environment (ex: garage).

Gasoline Fires and Other Hazards

Gasoline is extremely flammable and highly explosive. Fuel vapors can spread and be ignited by a spark or flame many feet away from the engine. To reduce the risk of fire or explosion, follow these instructions:

- Use only an approved gasoline container to store fuel.
- Strictly adhere to instructions in *Vehicle Fueling Procedure*.
- Never start or operate the engine if the fuel cap is not properly installed.
- Use only a BRP approved LinQ fuel caddy to carry extra fuel on the vehicle. It should be properly installed and secured.

Gasoline is poisonous and can cause injury or death.

- Never siphon gasoline by mouth.
- If you swallow gasoline, get any in your eye or inhale gasoline vapor, visit your doctor immediately.
- If gasoline spills on you, wash with soap and water and change your clothes.

Burns from Hot Parts

Certain components may become hot during operation. Avoid contact during and shortly after operation to avoid burns.

PRACTICE EXERCISES

Practice alone the following exercises after having done the entire Pre-ride inspection. Always start and stop the engine according to the instructions in *ENGINE STARTING PROCEDURE* and *SHUTTING OFF THE ENGINE* in *BASIC PROCEDURES*. Don't forget to attach the tether cord to your jacket.

Where to Practice Exercises

Find a suitable area to practice the exercises. Ensure the area meet the following requirements:

– No traffic
– No obstacles
– Hard packed snow
– Ample space to maneuver.

Exercises to Practice

Practice alone the following exercises after having done the entire Pre-ride inspection. Always start and stop the engine according to the instructions in *ENGINE STARTING PROCEDURE* and *SHUTTING OFF THE ENGINE* in *BASIC PROCEDURES*. Don't forget to attach the tether cord to your jacket.

Using the Emergency Engine Stop Switch

Purpose: Become familiar with the operation of throttle lever and to become familiar with using the engine stop switch.

Directions:

– With the parking brake engaged, start the engine and let idle until it reaches the operation temperature.
– Use the engine stop switch to shut the engine off. Press the switch with your right thumb while keeping your hand on the handgrip.
– Restart the engine and repeat the exercise. No idle time is required.

Tips for additional practice:

– Press the emergency engine stop switch without looking at it.

Starting, Stopping and Basic Handling

Purpose:

– Learn throttle control and how to get the vehicle moving.
– Become familiar with low speed deceleration and braking.

If you feel like you are losing control while doing this exercise, release the throttle to stop accelerating and apply the brake as needed to slow down. You can also use the engine stop switch to cut power entirely.

Directions: At first, you will only use the throttle for a moment at a time, then release it and coast.

– Start the engine and release the parking brake lever.
– Slowly apply throttle until the vehicle starts to creep forward. As soon as you start moving release the throttle and coast, then press the brake lever to stop.
– Continue with this part of the exercise until you are comfortable with applying and releasing the throttle.

Engine Stop While in Motion

Purpose: Become familiar with using the emergency engine stop switch when in motion so you know how the vehicle will react if you need to use it later.

Directions:

– Partway down the straightaway, while operating at 8 km/h (5MPH), toggle the engine stop switch to OFF position and coast to a stop.
– Restart the engine and repeat the exercise. Try increasing your speed (to a maximum of 20 km/h (12MPH) before using the engine stop switch.

In an emergency, the snowmobile engine can be stopped by pressing down on the emergency engine stop switch or by pulling the tether cord cap from the engine cut-off switch, while applying brake.

Basic Turns

Purpose: Get comfortable turning in a controlled manner on both sides.

Directions:

– Roll in a straight line at low speed and make a wide arcing turn. Make sure there is enough space to perform the entire turn.
– Repeat right and left turns and maintain a steady speed bellow 8km/h (5MPH). Hold the throttle to maintain your low speed.
– Leaning forward and into the curve may help you to turn the handlebar more easily.

Quick Stops

Purpose:

– Become familiar with the vehicle braking ability.
– Learn to apply brakes with maximum efficiency.

This exercise is like what you did before, except you'll be applying the brake more firmly, working up to braking at the maximum without locking the track rotation. Always release the throttle completely for quick stops. If you apply throttle and brake at the same time, your stopping distance will be longer.

Directions:

– Start at one end of the straightaway and accelerate to 8 km/h (5MPH). Partway down the straightaway, release the throttle completely and brake quickly.
– Keep head and eyes up, keep handlebar straight, and do not release the brake until fully stopped.
– Repeat, increasing your speed and braking harder. When you feel that the rotation of the track will be stopped you need to release the pressure on the break lever. To maintain control, you need to keep the track in rotation.

Operating in Reverse

Purpose: Become familiar with the vehicle handling and turning radius in reverse.

Directions:

– Shift into reverse and remain seated. Refer to *SHIFTING IN REVERSE* in *BASIC PROCEDURES*.
– Check that the area behind you is clear. While looking backwards, slowly reverse and stop by releasing throttle and using the brake, just like when operating normally.
– Keep your speed low and do not back up for long distances.
– Repeat the reverse and stop in straight line until you get comfortable.
– Once you are comfortable with reversing in straight line, you can slowly reverse while turning the handle bar.

FUELING

Fuel is flammable and explosive under certain conditions.

– Never use an open flame to check fuel level.
– Never smoke or allow flame or spark in vicinity.
– Always proceed in a well-ventilated area.

Fueling Procedure

1. Stop engine and engage the parking brake.
2. Have operator and passenger get off the vehicle. Do not sit or lean on seat when fuel tank cap is not properly installed.
3. Unscrew slowly the fuel reservoir cap counterclockwise to stabilize pressure before removing it.

NOTE:
A short whistling sound is normal.

4. Insert the spout into the filler neck.
5. Pour fuel slowly so that air can escape from the tank and prevent fuel flow back. Be careful not to spill fuel.
6. Stop filling after the release of the gas pump nozzle handle and wait a moment before removing the spout. Do not retract the gas pump nozzle to put more fuel into the fuel tank. **Do not overfill.**
7. Reinstall the fuel cap and fully tighten clockwise.
8. Always wipe off any small fuel spillage from the vehicle. If a major spillage occurs, remove side panels to remove fuel vapors from engine compartment before starting.
9. Before getting on the way don't forget to disengage the parking brake.
10. Never top up the fuel tank before placing the vehicle in a warm area. As temperature increases, fuel expands and may overflow.

VEHICLE TRANSPORTATION

Make sure that oil reservoir and fuel tank caps are properly installed.

Tilt bed trailers can easily be equipped with a winch mechanism to afford maximum safety in loading. Simple as it may seem, never drive your snowmobile onto a tilt bed trailer or any other kind of trailer or vehicle. Many serious accidents have resulted from driving up and over a trailer. Anchor your vehicle securely, front and rear, even on short hauls. Be certain all equipment is securely fastened. Cover your snowmobile when trailering to prevent road grime from causing damage.

Be certain your trailer meets state or provincial requirements. Ensure the hitch and safety chains are secure and the brake, turn indicators and clearance lights all function.

⚠ WARNING

Do not tow the vehicle facing backwards. If the vehicle is towed facing backwards, the wind may cause damage to the windshield or even loss of the windshield.

IMPORTANT ON-PRODUCT LABELS (CANADA/UNITED STATES)

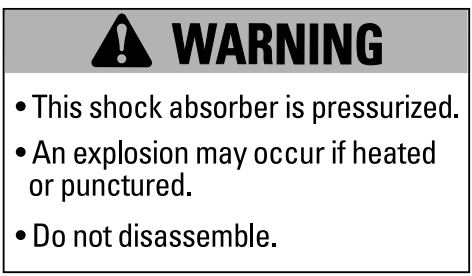
Vehicle Safety Labels

These labels are affixed to the vehicle for the safety of the operator, passenger or bystanders.

The following labels are on your vehicle and they should be considered permanent parts of the vehicle. If missing or damaged, the decals can be replaced free of charge. Visit an authorized BRP snowmobile dealer.

NOTE:
In the event of any discrepancy between this guide and the vehicle, the safety labels on the vehicle have precedence over the labels in this guide.

Shock Absorber - Warning Label



SHOCK ABSORBERS - WARNING LABEL

Disconnect Fuel Injectors - Warning Label

⚠ WARNING

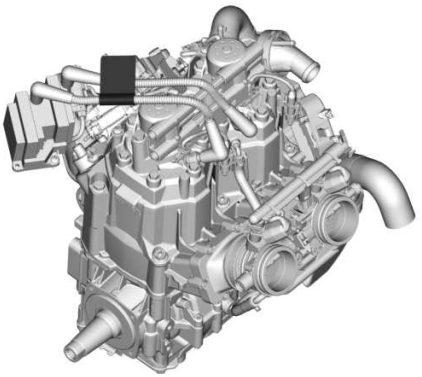
Always electrically disconnect both fuel injectors prior to testing for ignition spark. Otherwise, fuel vapors may ignite in presence of a spark creating a fire hazard.

516007661

⚠ AVERTISSEMENT

Toujours débrancher les connecteurs électriques des deux injecteurs d'essence avant de vérifier la production d'étincelles. Autrement, une étincelle pourrait allumer des vapeurs d'essence, ce qui représenterait un risque de feu.

DISCONNECT FUEL INJECTORS - WARNING LABEL



Pulley Guard and Drive Pulley Tightening Torque - Warning and Notice Label

⚠ WARNING / AVERTISSEMENT

This guard must ALWAYS be in place when the engine is running. Beware of rotating parts, they could cause injuries or catch your clothing.

Ce protecteur doit TOUJOURS être en place lorsque le moteur tourne, les pièces en rotation peuvent provoquer des blessures ou prendre dans vos vêtements.

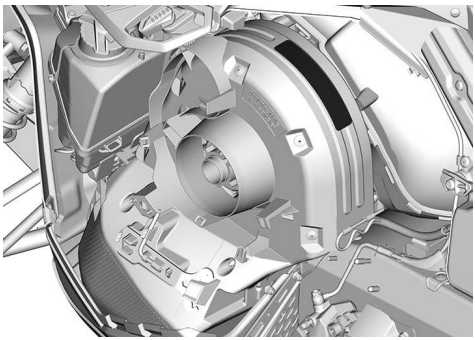
NOTICE

Drive pulley bolt recommended torque:
115-125 Nm (85-92 lbf-ft)

Not applying the recommended torque may result in a major failure of the drive pulley and the engine. Refer to the shop manual for the complete assembly procedure.

10898

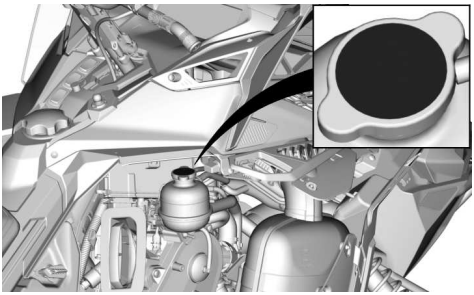
PULLEY GUARD AND DRIVE PULLEY TIGHTENING TORQUE – WARNING AND NOTICE LABEL



Do Not Open When Hot - Warning Label



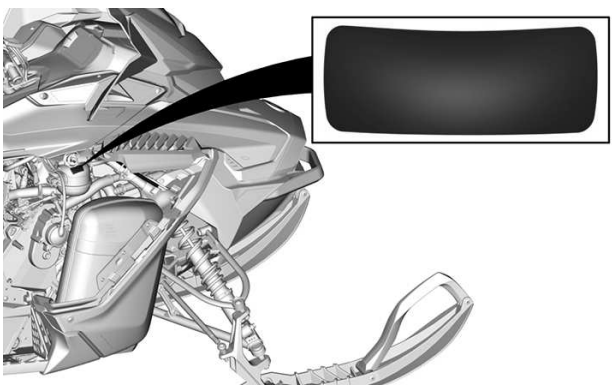
DO NOT OPEN WHEN HOT - WARNING LABEL



Do Not Open When Hot - Warning Label



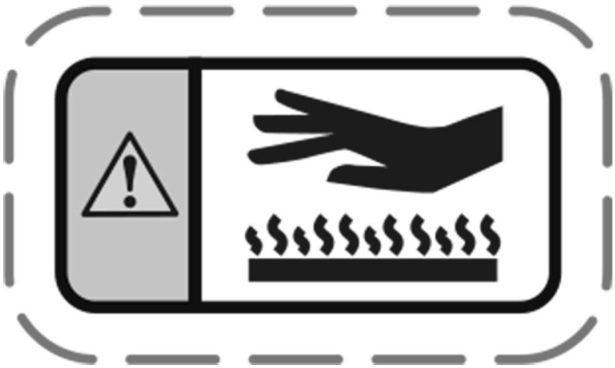
DO NOT OPEN WHEN HOT – WARNING LABEL



RH SIDE SHOWN

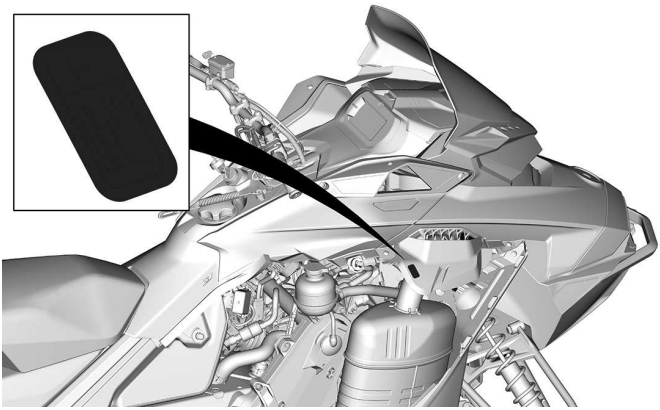
Beware of Hot Parts - Caution Label

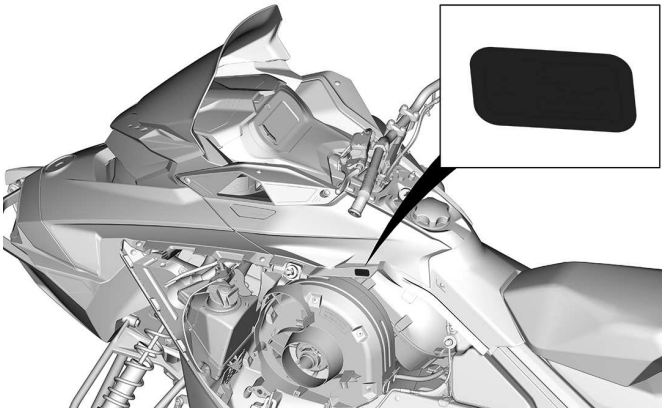
⚠ CAUTION
Beware of hot parts.



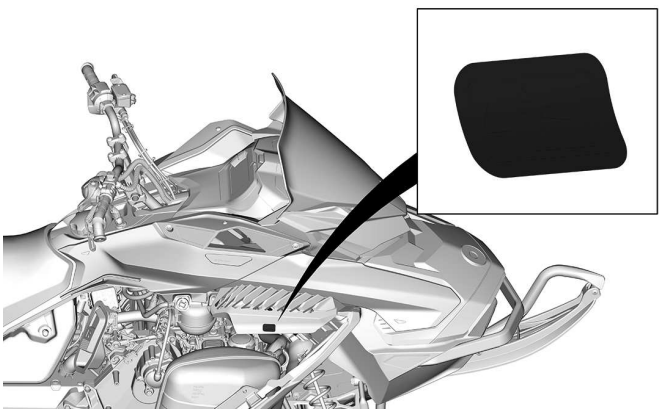
BEWARE OF HOT PARTS - CAUTION LABEL

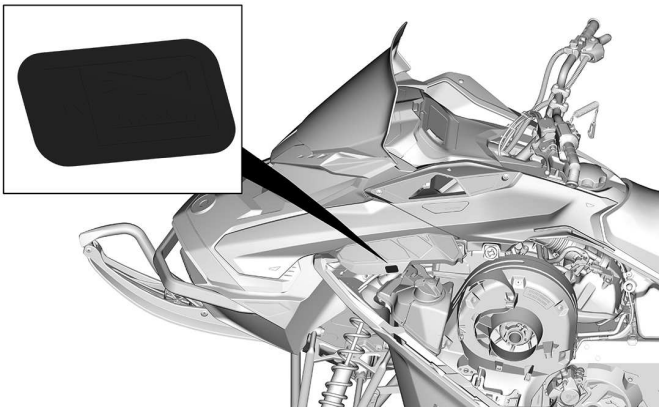
Backcountry Series





Expedition Series

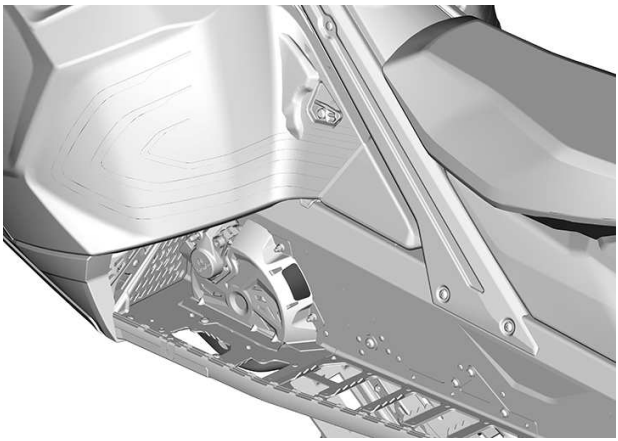




Disk Guard - Warning Label

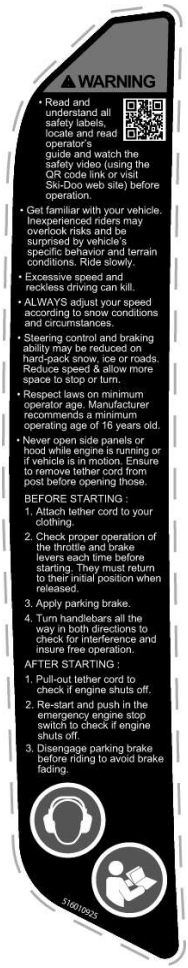


DISK GUARD – WARNING LABEL

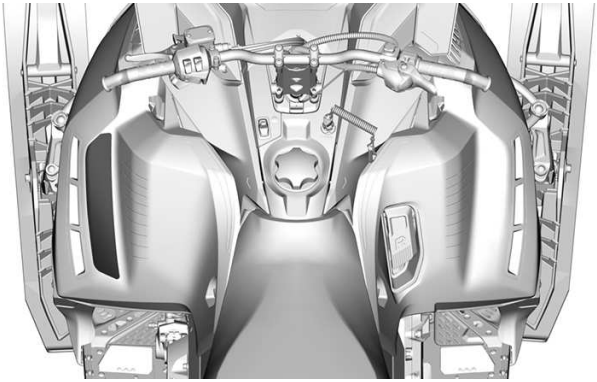


400 mm (16 in.) Tunnel Width

Starting Procedure - Warning Label



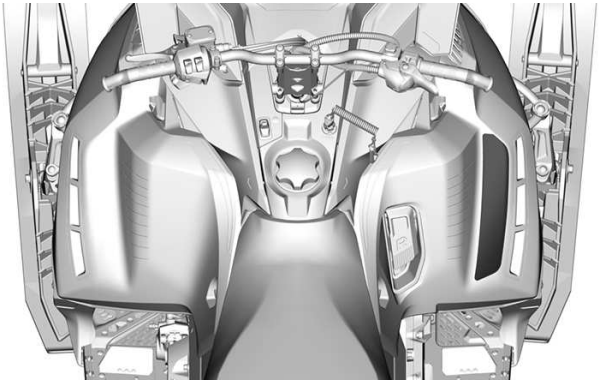
STARTING PROCEDURE – WARNING LABEL



Passenger Safety - Warning Label



PASSENGER SAFETY - WARNING LABEL



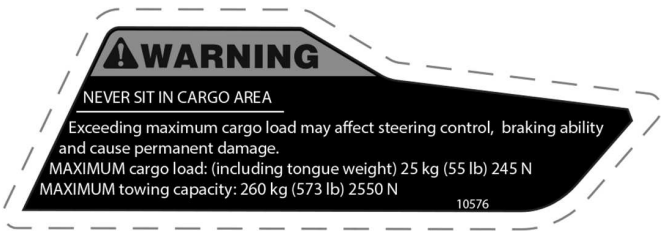
Maximum Cargo Load and Towing Capacity-Warning Label

Backcountry Series

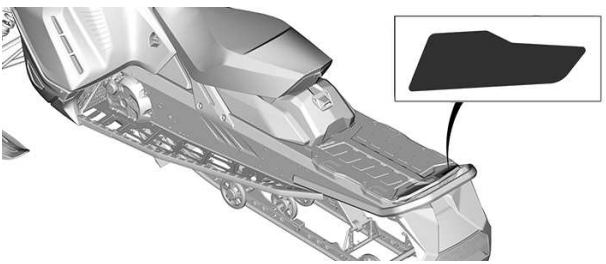


CARGO AREA – WARNING LABEL

Expedition Sport



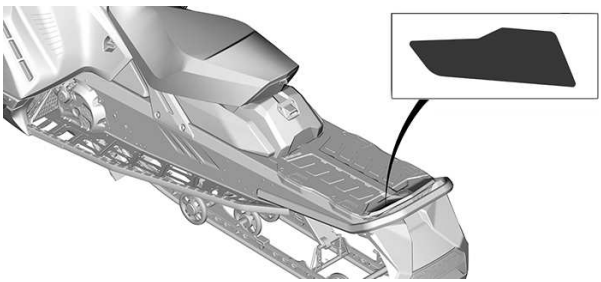
CARGO AREA – WARNING LABEL



Rotating Track - Warning Label



ROTATING TRACK– WARNING LABEL

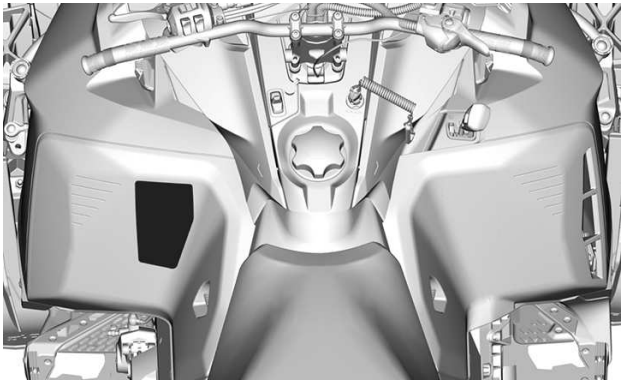


500 and 600 mm (20 and 24 in.) Tunnel Width

Starting Procedure – Warning Label



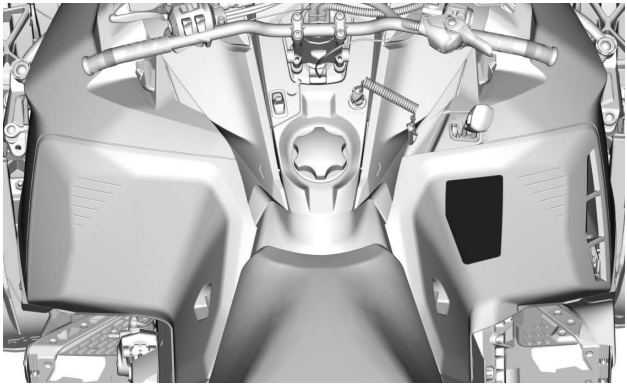
STARTING PROCEDURE – WARNING LABEL



Passenger Safety - Warning Label



PASSENGER SAFETY – WARNING LABEL



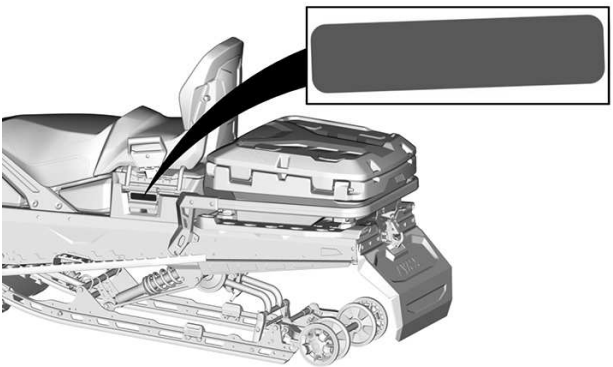
Passenger Seat - Warning Label

⚠WARNING

To reduce the risk of severe injury or death.
BEFORE riding, ALWAYS make sure that the latch on each side of the seat or the accessory is fully engaged.

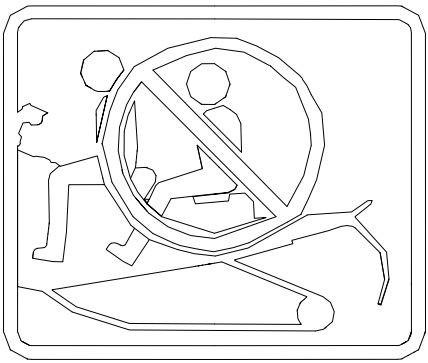
9941

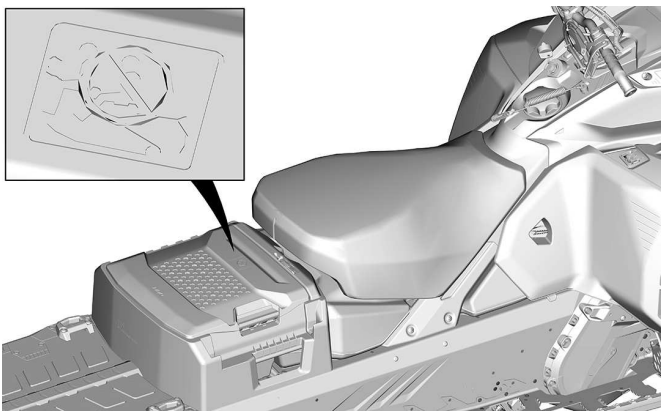
PASSENGER SEAT – WARNING LABEL



Molded Safety Pictogram

⚠ WARNING
Never carry passengers on the rear storage compartment.

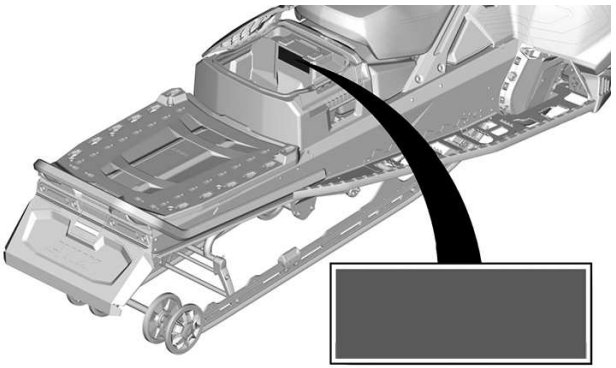




Rear Storage Compartment - Warning Label



REAR STORAGE COMPARTMENT – WARNING LABEL



Maximum Cargo Load and Tongue Weight Capacity — Warning Label

⚠WARNING

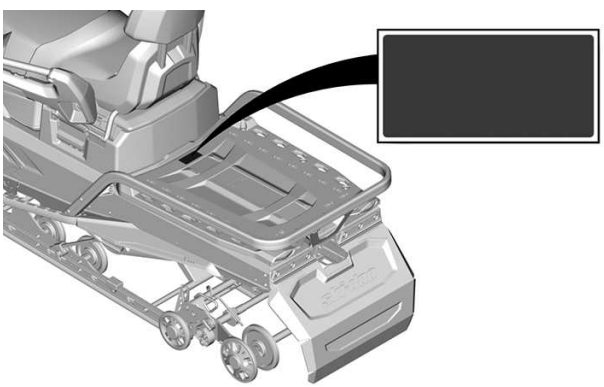
NEVER SIT IN CARGO AREA

Avoid losing control of the vehicle.

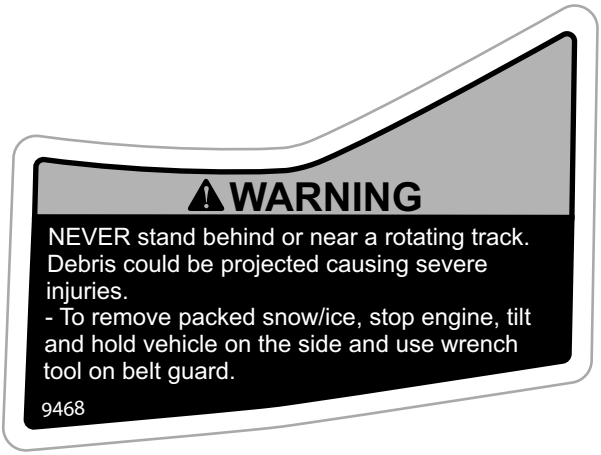
- Reduce your speed when carrying cargo.
- Always adjust suspension according to cargo load.
- MAXIMUM cargo load : 57 kg (125 lb) 556 N (including tongue weight).
- Maximum tongue weight : 16 kg (35 lb) 156 N.

9982

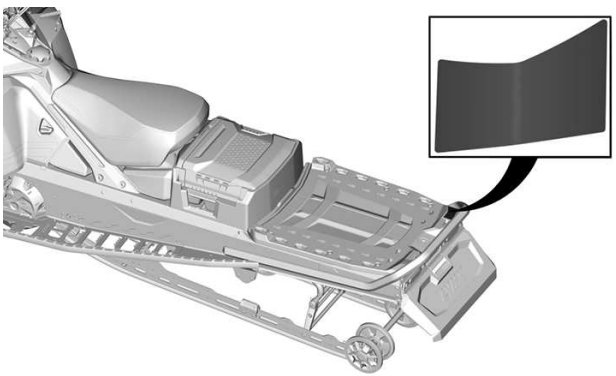
MAXIMUM CARGO LOAD AND TONGUE WEIGHT CAPACITY — WARNING LABEL



Rotating Track - Warning Label



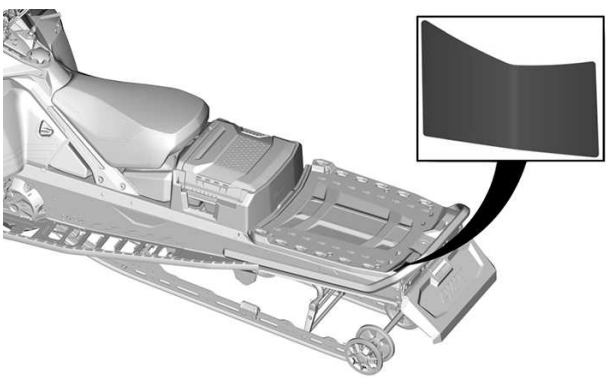
ROTATING TRACK - WARNING LABEL



Maximum Towing Capacity - Warning Label



MAXIMUM SPECIFICATIONS - WARNING LABEL



Rear Cargo Box - Warning Label

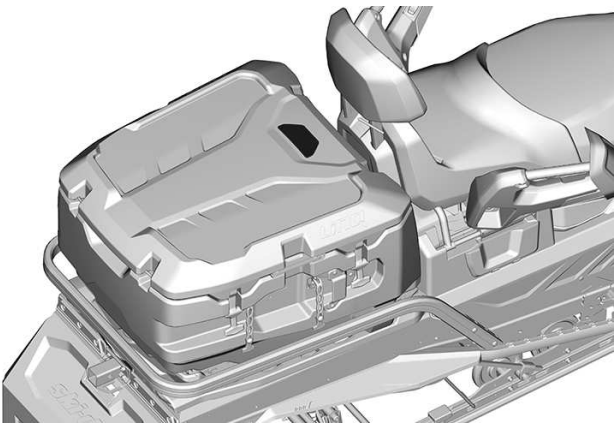
⚠ WARNING

- Exceeding maximum cargo load may affect steering control, braking ability and cause permanent damage.

- For maximum cargo load specification, refer to the Operator's Guide.

- Never exceed a cargo load of 20 kg (44 lb) on the lid.

REAR CARGO BOX (OUTSIDE) – WARNING LABEL

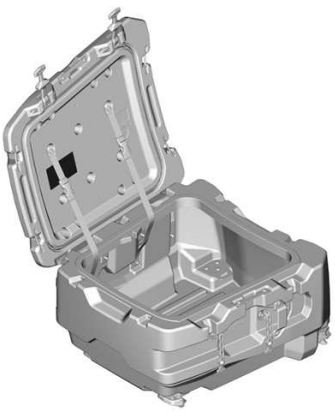


Rear Cargo Box - Warning Label

⚠ WARNING

- NEVER carry a child or pet in this cargo box. The cargo box is airtight which can lead to suffocation.
- NEVER carry flammables or dangerous liquids inside the cargo box. If ignited, this can lead to an explosion and cause severe injury of death.
- NEVER exceed the cargo load capacity of your vehicle.
- For maximum cargo load specification, refer to the Operator's Guide.
- Never carry more than 20 kg (44 lb) on the lid of the box.
- Max cargo load capacity of the box = 48 kg (105 lb), including cargo load on the lid.
- Refer to the instruction sheet of this cargo box for the installation of the LinQ Anchor on the lid.

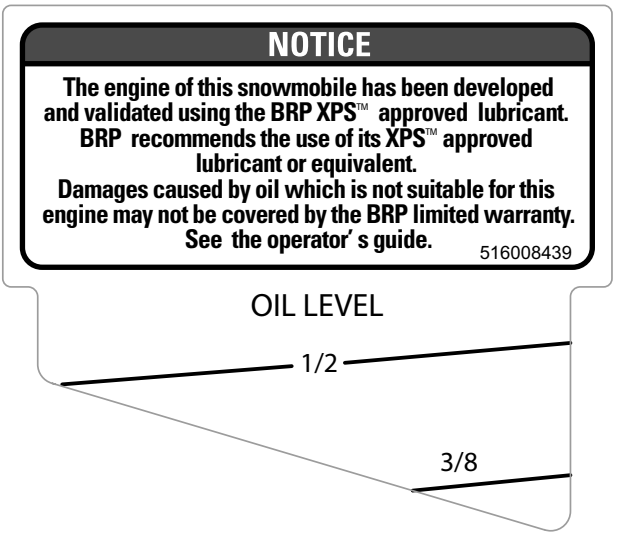
REAR CARGO BOX (INSIDE) – WARNING LABEL



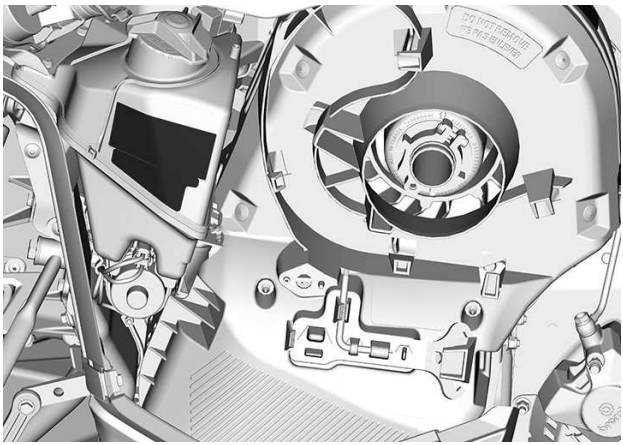
Technical Information Labels

Recommended Oil - Notice Label

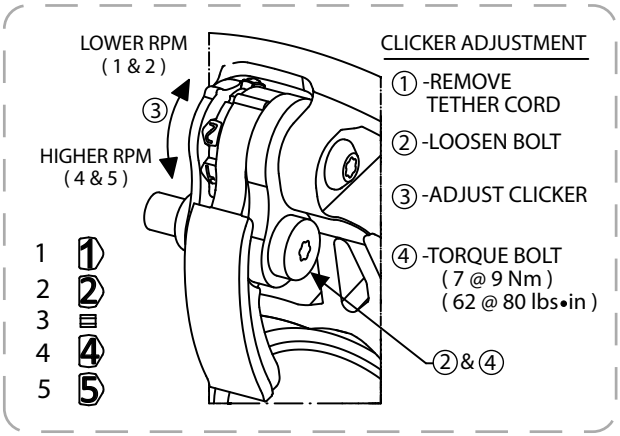
Refer to the *Technical Specifications* for appropriate injection oil type for your vehicle engine.

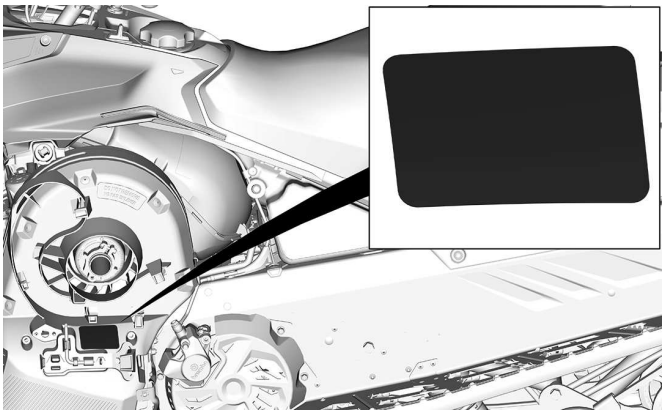


RECOMMENDED OIL - NOTICE LABEL



Clicker Adjustment Label

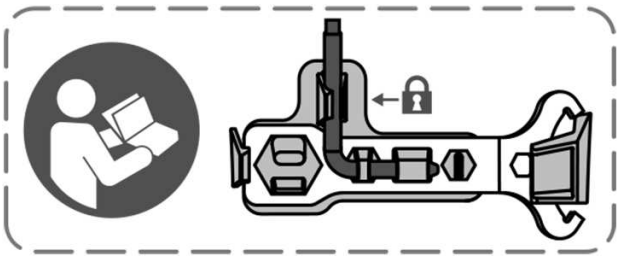




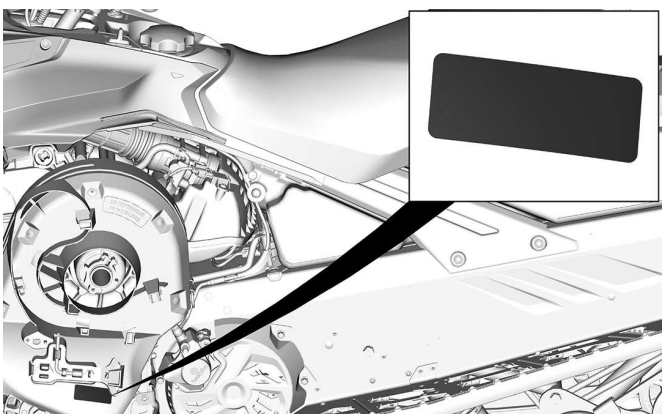
TYPICAL

Adjustment Tools Label

– Install suspension adjustment tool first. (Illustrated red on label)
– Install pulley expander and Headlight adjustment tool second. (Illustrated blue on label)
– Refer to *Tools* in *Equipment*.



ADJUSTMENT TOOLS



TYPICAL

Recommended Fuel — Notice Label

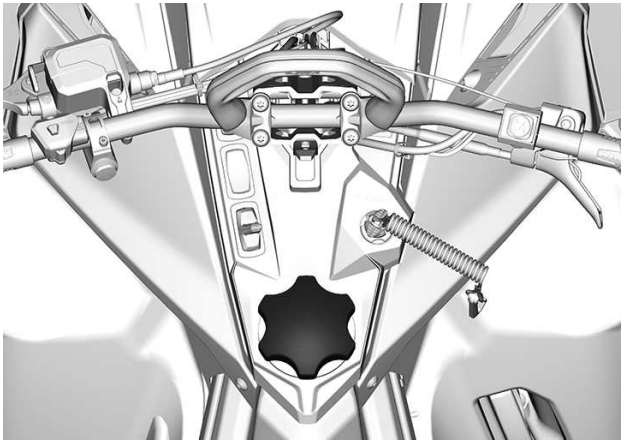
Refer to the *Technical Specifications* for appropriate fuel type for your vehicle engine.



AKI (RON+MON)/2 OCTANE RATING - NOTICE LABEL

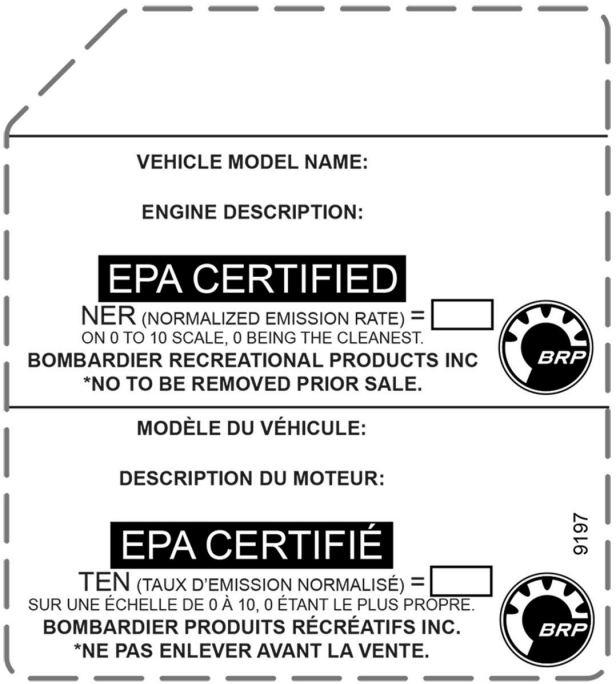


RON OCTANE RATING - NOTICE LABEL



Hang Tag(s)

EPA Certified Hang Tag



EPA CERTIFIED HANG TAG

California Proposition 65 Warning

⚠ **WARNING**. Operating, servicing and maintaining an off-road vehicle can expose you to chemicals including engine exhaust, carbon monoxide, phthalates, and lead, which are known to the State of California to cause cancer and birth defects or other reproductive harm.
To minimize exposure, avoid breathing exhaust, do not idle the engine except as necessary, service your vehicle in a well-ventilated area and wear gloves or wash your hands frequently when servicing your vehicle.

For more information go to www.P65Warnings.ca.gov/products/passenger-vehicle

704906872

IMPORTANT ON-PRODUCT LABELS (ALL COUNTRIES EXCEPT CANADA/UNITED STATES)

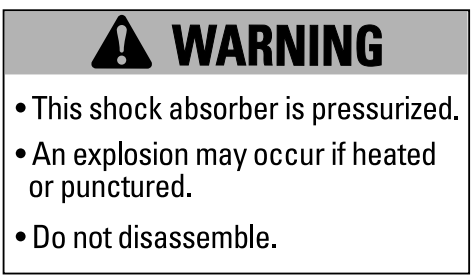
Vehicle Safety Labels

These labels are affixed to the vehicle for the safety of the operator, passenger or bystanders.

The following labels are on your vehicle and they should be considered permanent parts of the vehicle. If missing or damaged, the decals can be replaced free of charge. Visit an authorized BRP snowmobile dealer.

NOTE:
In the event of any discrepancy between this guide and the vehicle, the safety labels on the vehicle have precedence over the labels in this guide.

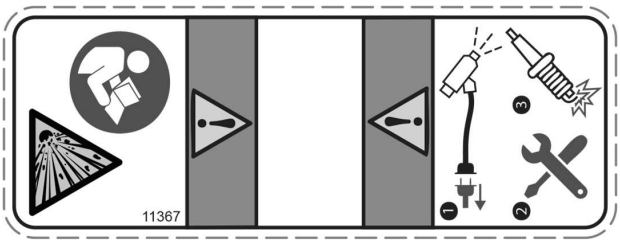
Shock Absorber - Warning Label



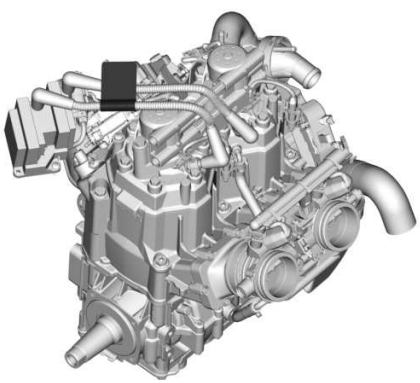
SHOCK ABSORBERS - WARNING LABEL

Disconnect Fuel Injectors - Warning Label

⚠ WARNING
– **Always electronically disconnect both fuel injectors prior to testing for ignition spark.** – **Otherwise fuel vapors may ignite in presence of a spark creating a fire hazard.**



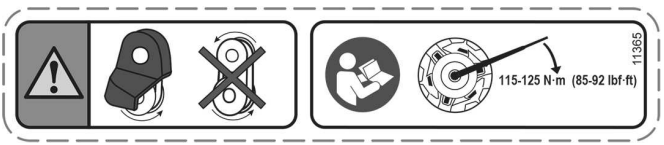
DISCONNECT FUEL INJECTORS - WARNING LABEL



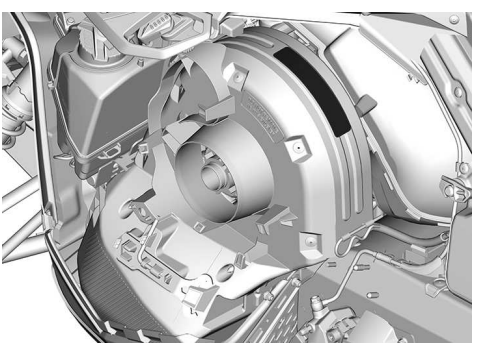
Pulley Guard and Drive Pulley Tightening Torque - Warning and Notice Label

⚠ WARNING
This guard must ALWAYS be in place when engine is running. Beware of rotating parts, they could cause injuries or catch your clothing.

NOTICE
– **Drive pulley bolt recommended torque is 115 to 125 Nm (85 to 92 lbf-ft).** – **Not applying the recommended torque may result in a major failure of the drive pulley and the engine.** – **Refer to the shop manual for the complete assembly procedure.**



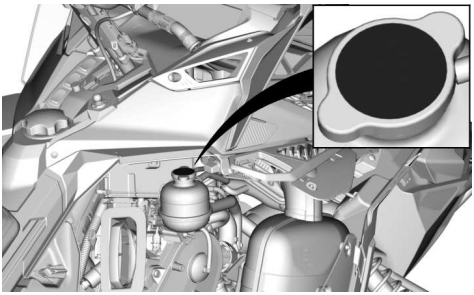
PULLEY GUARD AND DRIVE PULLEY TIGHTENING TORQUE – WARNING AND NOTICE LABEL



Do Not Open When Hot - Warning Label



DO NOT OPEN WHEN HOT - WARNING LABEL

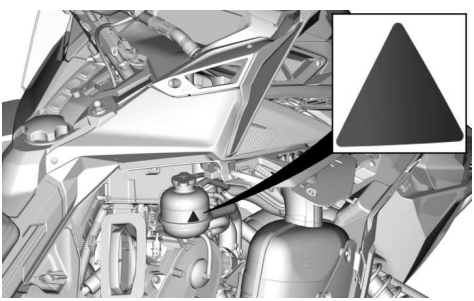


Do Not Open When Hot - Warning Label

⚠ WARNING
Do not open when hot.

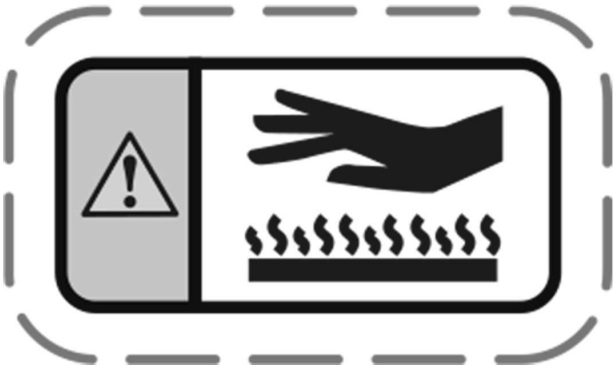


DO NOT OPEN WHEN HOT- WARNING LABEL



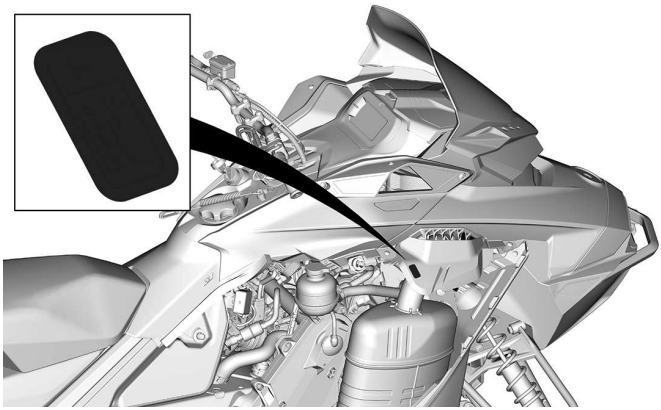
Beware of Hot Parts - Caution Label

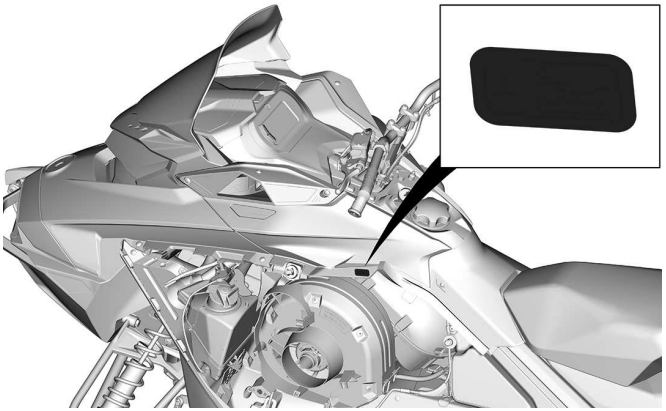
⚠ CAUTION
Beware of hot parts.



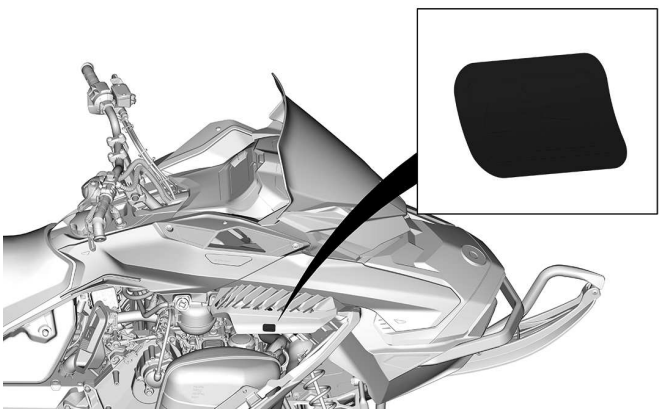
BEWARE OF HOT PARTS - CAUTION LABEL

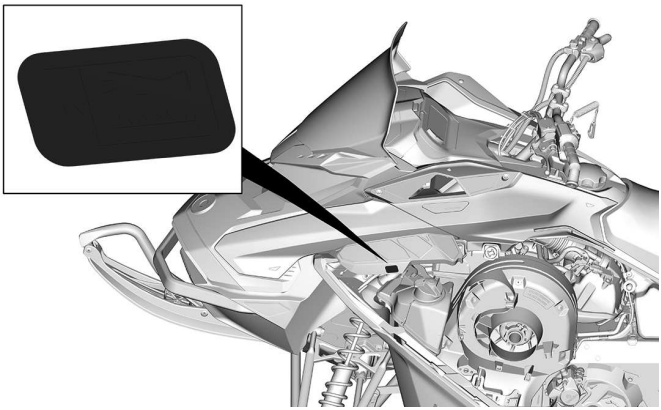
Backcountry Series





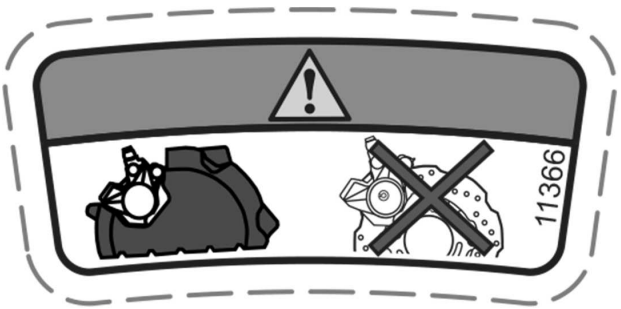
Expedition Series



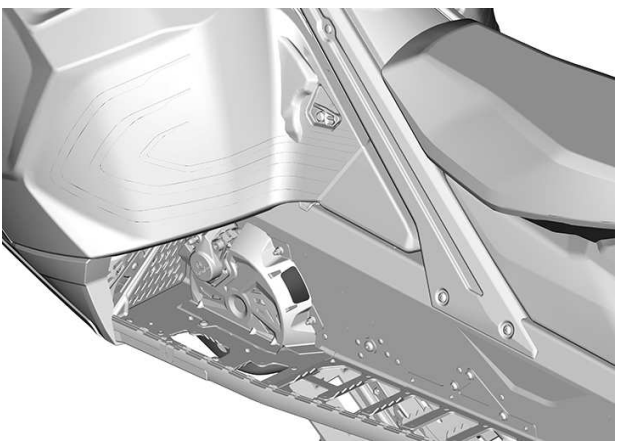


Disk Guard - Warning Label

⚠ WARNING
This guard must ALWAYS be in place when engine is running.



DISK GUARD – WARNING LABEL



Starting Procedure - Warning Label

⚠ WARNING

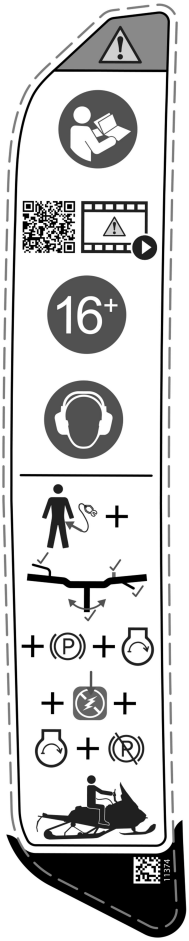
- Read and understand all safety labels, locate and read the operator's guide and watch the safety video (using the QR code link or visit Ski-Doo web site) before operation.
- Respect laws on minimum operator age. Manufacturer recommends a minimum operating age of 16 years old.
- ALWAYS wear ear protection.
- Get familiar with your vehicle. Inexperienced riders may overlook risks and be surprised by vehicle's specific behavior and terrain conditions. Ride slowly.
- Excessive speed and reckless driving can kill.
- ALWAYS adjust your speed according to snow conditions and circumstances.
- Steering control and braking ability may be reduced on hard-pack snow, ice or roads. Reduce speed & allow more space to stop or turn.
- Never open side panels or hood while engine is running or if vehicle is in motion. Ensure to remove tether cord from post before opening those.

Before starting

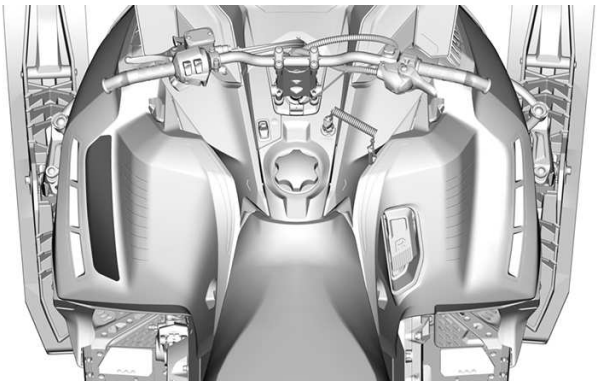
1. Attach tether cord to your clothing.
2. Turn handlebars all the way in both directions to check for interference and insure free operation.
3. Check proper operation of the throttle and brake levers each time before starting. They must return to their initial position when released.
4. Apply parking brake.

After Starting:

1. Pull-out tether cord to check if engine shuts off.
2. Re-start and push in the emergency engine stop switch to check if engine shuts off.
3. Disengage parking brake before riding to avoid brake fading.



STARTING PROCEDURE – WARNING LABEL



Passenger Safety - Warning Label

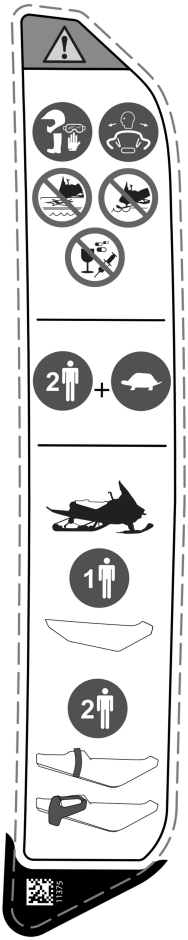
⚠ WARNING

Remember: you are responsible of the safety of your passenger.
All drivers and passengers must read the following:

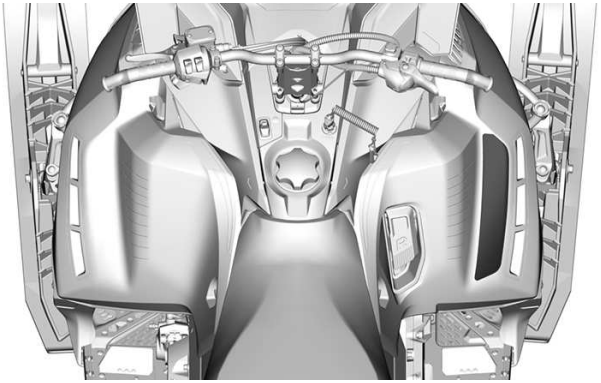
- **Always wear an approved helmet and clothing appropriate for snowmobiling.**
- **Operate defensively, scan constantly for people, objects, conditions and upcoming vehicles.**
- **Avoid surprise, be on the look out for the unexpected.**
- **Use extra caution whenever off-trail.**
- **Avoid thin ice/ open water.**
- **Never ride under the influence of alcohol or drugs, even as passenger.**
-

This vehicle is design for one (1) operator and as many passengers as there are seats with straps or handgrips installed on the vehicle conforming to SSCC standards.
When riding with a passenger:

- **Braking ability and steering control are reduced.**
- **Decrease speed and allow extra space to maneuver.**
- **Adjust suspension according to weight.**



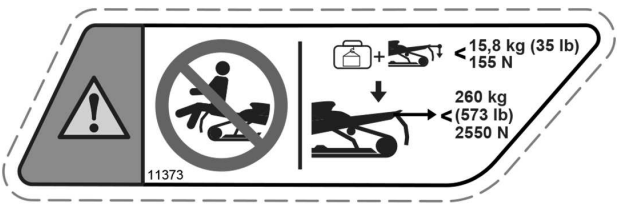
PASSENGER SAFETY - WARNING LABEL



Maximum Cargo Load and Towing Capacity — Warning Label

Backcountry Series

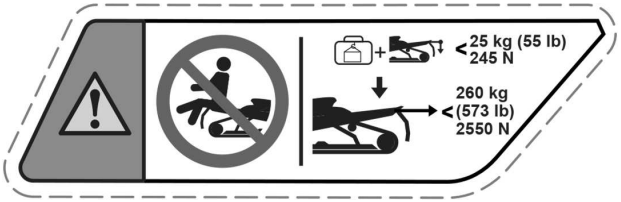
⚠ WARNING
– Never sit in the cargo area. – Always use a securely fastened rigid tow bar to tow. – Refer to the operator's guide for more details. – Exceeding maximum cargo may affect steering control, braking ability and cause permanent damage. – MAXIMUM cargo load (including tongue weight): 15.8 kg (155 N) – MAXIMUM tongue weight: 10 kg (98 N) – MAXIMUM towing capacity: 260 kg (2550 N)



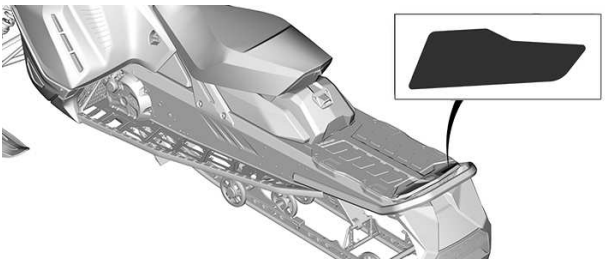
MAXIMUM CARGO LOAD AND TOWING CAPACITY — WARNING LABEL

Expedition Sport

⚠ WARNING
– Never sit in the cargo area. – Always use a securely fastened rigid tow bar to tow. – Refer to the operator's guide for more details. – Exceeding maximum cargo may affect steering control, braking ability and cause permanent damage. – MAXIMUM cargo load (including tongue weight): 25 kg (245 N) – MAXIMUM tongue weight: 10 kg (98 N) – MAXIMUM towing capacity: 260 kg (2550 N)

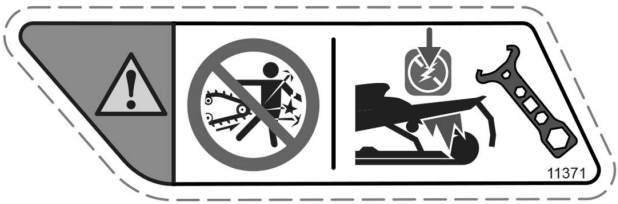


CARGO AREA – WARNING LABEL

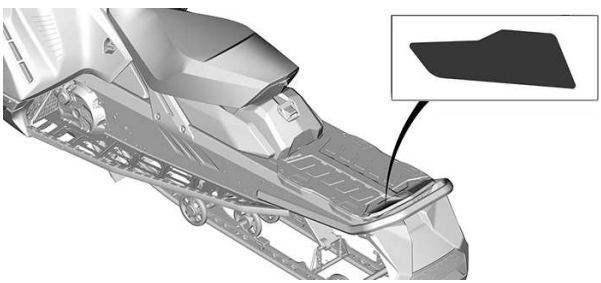


Rotating Track — Warning Label

⚠ WARNING
- NEVER stand behind or near a rotating track. Debris could be projected causing severe injuries. **- To remove packed snow/ ice, stop engine, lift and hold vehicle on the side and use wrench tool on the belt guard.**



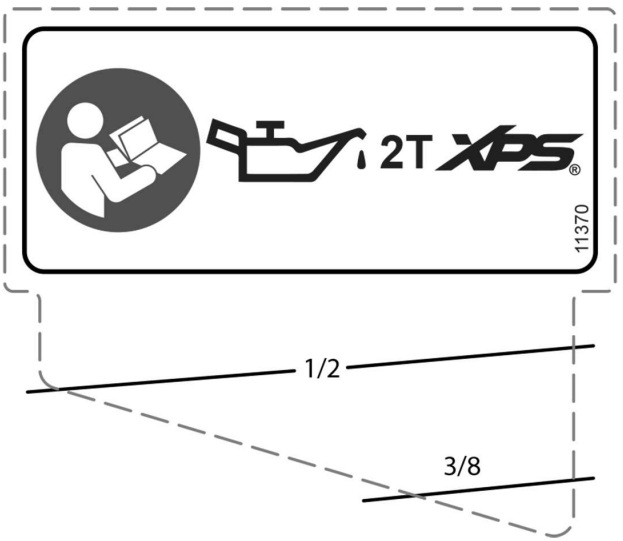
ROTATING TRACK — WARNING LABEL



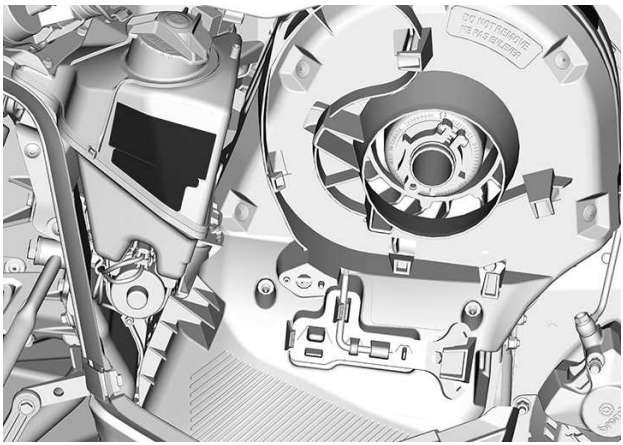
Technical Information Labels

Recommended Oil - Notice Label

Refer to the *Technical Specifications* for appropriate injection oil type for your vehicle engine.

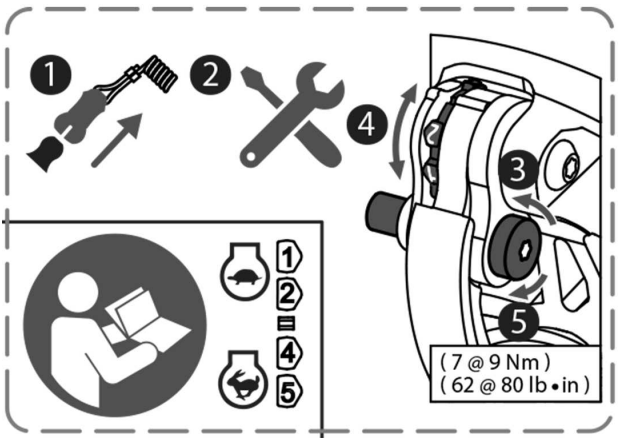


RECOMMENDED OIL - NOTICE LABEL

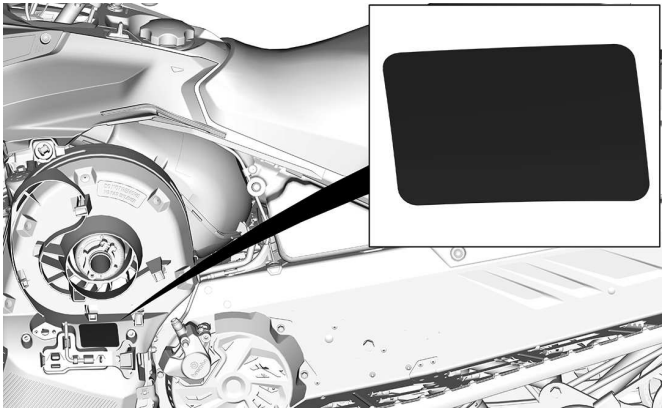


Clicker Adjustment Label

1. Remove tether cord.
2. Remove pulley expander from pulley guard.
3. Loosen bolt.
4. Adjust clicker.
5. Torque bolt.



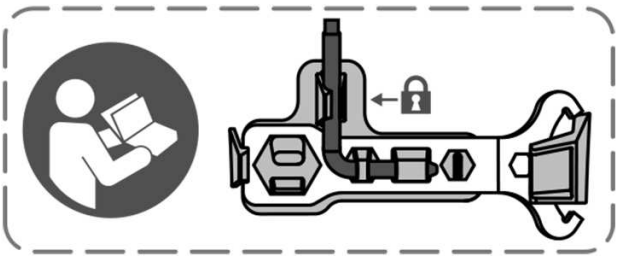
CLICKER ADJUSTMENT LABEL



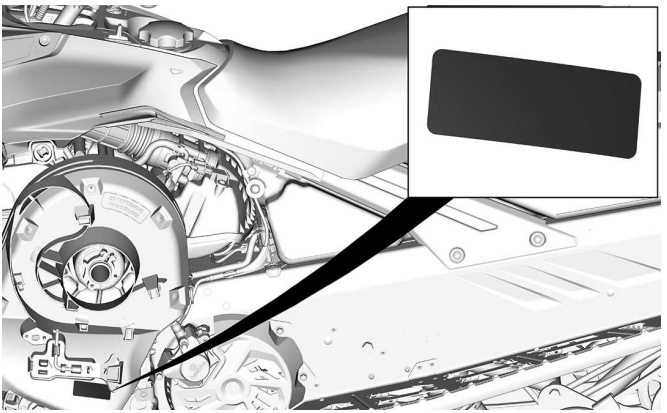
TYPICAL

Adjustment Tools Label

– Install suspension adjustment tool first. (Illustrated red on label)
– Install pulley expander and Headlight adjustment tool second. (Illustrated blue on label)
– Refer to *Tools* in *Equipment*.



ADJUSTMENT TOOLS



TYPICAL

Recommended Fuel — Notice Label

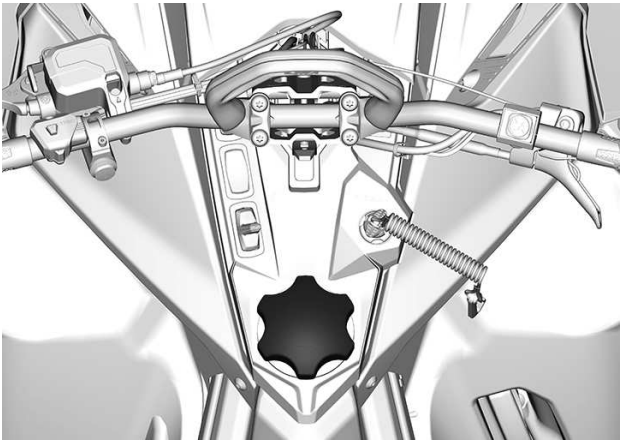
Refer to the *Technical Specifications* for appropriate fuel type for your vehicle engine.



AKI (RON+MON)/2 OCTANE RATING - NOTICE LABEL



RON OCTANE RATING - NOTICE LABEL



PRE-RIDE INSPECTION

Perform a pre-ride inspection before each ride to detect potential problems during operation. The pre-ride inspection can help you monitor wear and deterioration before they become a problem. Correct any problems that you discover to reduce the risk of an accident or a malfunction.

Before Starting the Engine

1. Remove snow and ice from body including lights, seat, footrests, controls and instruments.
2. Remove packed snow and ice from the rear suspension using the wrench tool stored on the drive belt guard.
3. Verify that air silencer prefilter is free of snow.
4. Verify that skis and steering operate freely. Check corresponding action of skis versus handlebar.
5. Check fuel and injection oil for levels and leaks. Replenish if necessary and in case of any leaks; you should seek service from an authorized BRP snowmobile dealer, repair shop, or person of your own choosing for maintenance, repair, or replacement.
6. All storage compartments must be properly latched and they must not contain any heavy or breakable objects. Hood and side panels must be also properly latched.
7. Activate the throttle control lever several times to check that it operates easily and smoothly. It must return to idle position when released.
8. Activate the brake lever and make sure the brake fully applies before the brake control lever touches the handlebar grip. It must fully return when released.
9. Apply parking brake and check if it operates properly. Leave parking brake applied.
10. Inspect drive belt condition and height. Refer to *drive belt* in *maintenance procedures*.

After Engine is Started

For proper engine starting procedure, refer to the appropriate *Engine Starting Procedure*.

1. Check headlights high beam and low beam, taillight, stop light and pilot lamps operation.

NOTE:
You may need to detach tether cord from your clothes to check lights. In such a case, attach cord as soon as you get back at the controls of the snowmobile.

2. Check the engine cut-off switch (by pulling tether cord cap) and emergency engine stop switch operation.
3. Release parking brake.
4. Refer to *Vehicle warm up* and follow instructions.

Pre-Ride Check List

ITEM	OPERATION	✓
BODY INCLUDING SEAT, FOOTRESTS, LIGHTS, AIR FILTER, CONTROLS AND INSTRUMENTS	Check condition and remove snow or ice.	
SKIS AND STEERING ACTION	Check for free movement and proper operation.	
SKI RUNNERS	Check for proper operation.	
FUEL	Check for proper level and no leaks.	
INJECTION OIL (IF APPLICABLE)	Check for proper level and no leaks.	
COOLANT	Check for proper level and no leaks.	
DRIVE BELT	Check for cracks, fraying or abnormal wear and proper height.	
THROTTLE LEVER	Check for proper operation.	
BRAKE LEVER	Check for proper operation.	
PARKING BRAKE, BRAKE	Check for proper operation.	
BRAKE FLUID	Check for proper level and no leaks.	
STORAGE COMPARTMENT	Check for proper latching and no heavy or breakable objects.	
TRACK	Check condition and remove snow or ice. For studded tracks, refer to *Traction Enhancing Products*.	
SLIDER SHOES	Check for proper operation.	
EMERGENCY ENGINE STOP SWITCH AND ENGINE CUT-OFF	Check for proper action. Tether cord must be attached to operator clothing eyelet.	

SWITCH (TETHER CORD CAP)		
LIGHTS	Check for proper operation.	
HORN BUTTON (IF EQUIPPED)	Check for proper operation.	

REPORTING SAFETY DEFECTS

In Canada, if you believe that your vehicle has a defect which could cause a crash or could cause injury or death, you should immediately inform Transport Canada in addition to notifying Bombardier Recreational Products Inc.

If Transport Canada receives similar complaints, it may open an investigation, and if it finds that a safety defect exists in a group of vehicles, it may order a recall and remedy campaign. However, Transport Canada cannot become involved in any individual problems between you, your dealer or Bombardier Recreational Products Inc.

To contact Transport canada:



819-994-3328 (Gatineau-Ottawa area or internationally)
Toll free : 1 800-333-0510 (in Canada)



Transport Canada - ASFAD
330 Sparks Street
Ottawa, ON
K1A 0N5



https://www.tc.gc.ca/recalls

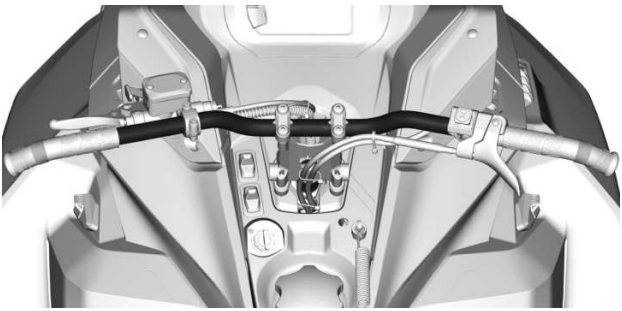
VEHICLE INFORMATION

PRIMARY CONTROLS

Handlebar

The handlebar controls the steering of the snowmobile. As the handlebar is rotated to right or left, the skis are turned right or left to steer the snowmobile.

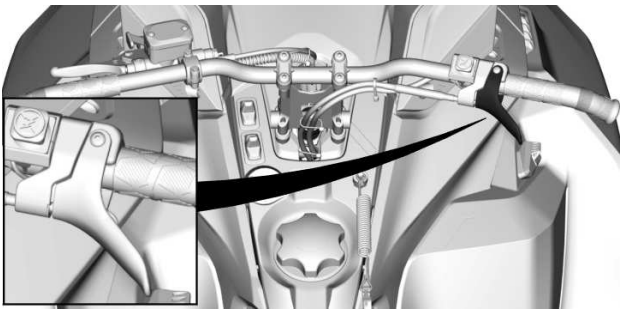
⚠ WARNING
Fast reverse while turning, could result in loss of stability and control.



TYPICAL

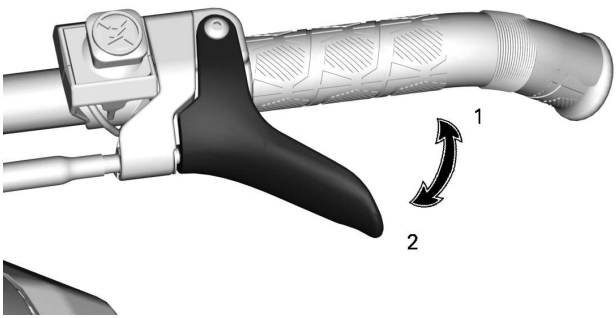
Throttle Lever

Throttle lever is located on the RH side of handlebar.



TYPICAL

Designed to be thumb activated. When squeezed, it increases the engine speed. When released, engine speed returns automatically to idle.



CABLE THROTTLE LEVER

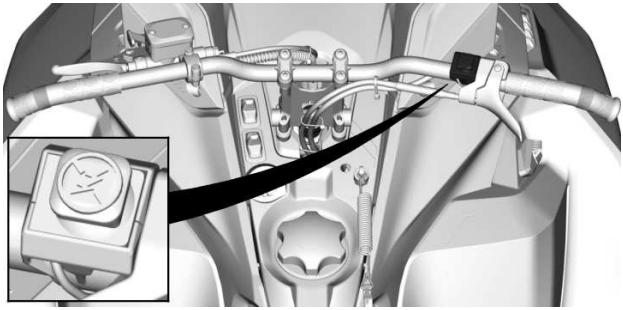
1. *To accelerate*
2. *To decelerate*

⚠ WARNING

Test the throttle lever operation each time before starting the engine. The lever must return to the rest position once released. Otherwise, do not start engine.

Emergency Engine Stop Switch

The emergency engine stop switch is located on the RH side of handlebar.



TYPICAL

To stop the engine in an emergency, push the switch down in OFF position and simultaneously apply the brake.



OFF POSITION

To allow engine starting, pull the switch up in ON position.



ON POSITION

All operators of the snowmobile should familiarize themselves with the function of the emergency engine stop switch by using it several times on first outing and whenever stopping the engine thereafter. This engine stopping procedure will become a reflex and will prepare operators for emergency situations requiring its use.

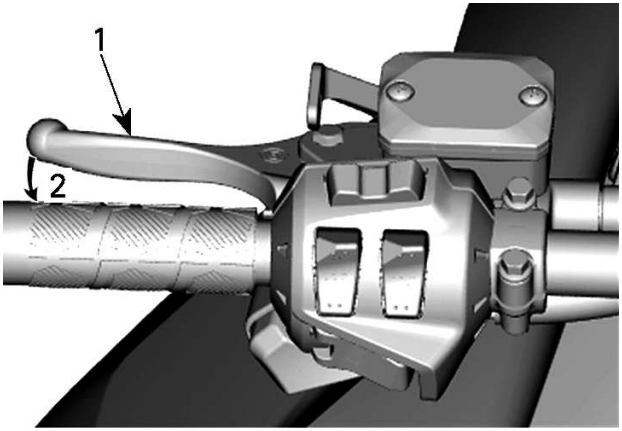
⚠ WARNING

If the switch has been used in an emergency caused by a suspected malfunction, the source of the malfunction should be determined and corrected before restarting engine. Visit an authorized BRP snowmobile dealer for servicing.

Brake Lever

Brake lever is located on the LH side of handlebar.

When squeezed, brake is applied. When released, it automatically returns to the rest. Braking effect is proportional to the pressure applied on the lever and to the type of terrain and its snow coverage.

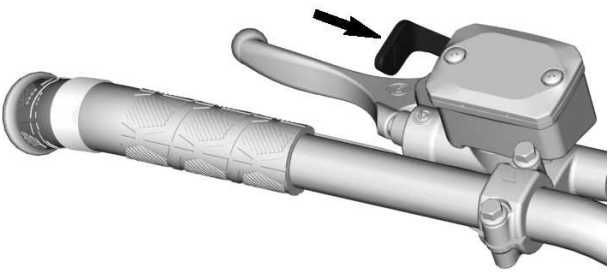


TYPICAL

1. *Brake lever*
2. *To apply brake*

Parking Brake Lever

Parking brake lever is located on the LH side of handlebar.



TYPICAL

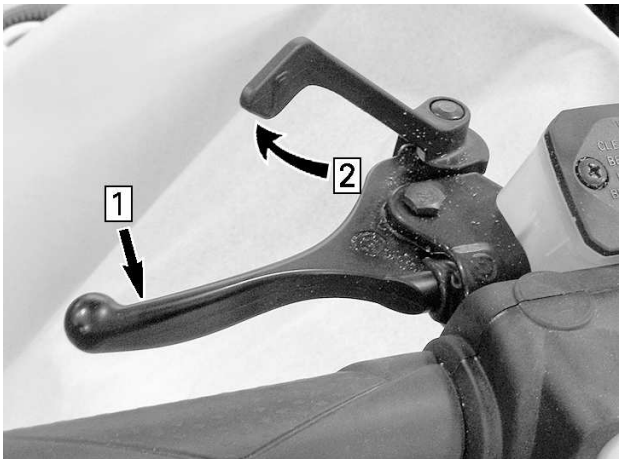
Parking brake should be used whenever snowmobile is parked.

⚠ WARNING

Make sure parking brake is fully disengaged before operating the snowmobile. When you ride the vehicle, brake pads that are caused to drag by a continuous pressure on the lever may cause damage to the brake system and cause loss of braking capacity and/or fire.

To Engage Parking Brake

Apply and hold brake, then lock brake lever using the parking brake lever as shown.



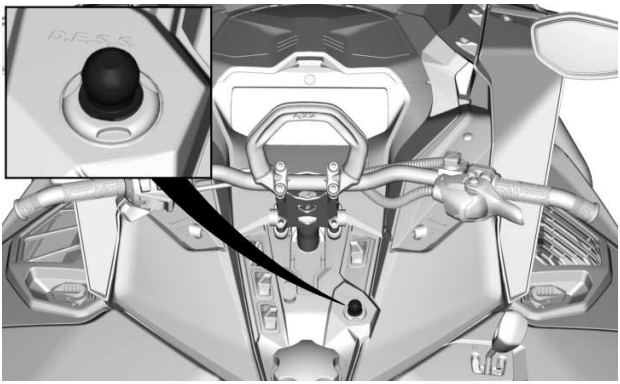
TYPICAL — ENGAGE MECHANISM

1. *Apply and hold brake*
2. *Lock brake lever using parking brake lever*

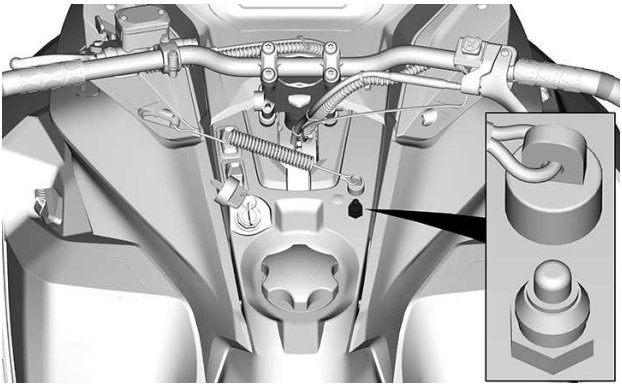
To Release Parking Brake

Squeeze brake lever. Parking brake lever will automatically return to its original position. Always release parking brake before riding.

Engine Cut-off Switch



D.E.S.S.



MECHANICAL SWITCH

The engine cut-off switch (tether cord) is located on the console.

The tether cord cap must be securely snapped on the engine cut-off switch to allow vehicle operation.

Pulling the tether cord cap from the switch shuts the engine off.

⚠ WARNING

Always attach the tether cord eyelet to clothing before starting the engine.

D.E.S.S. (Digitally Encoded Security System)

The tether cord cap has an integrated D.E.S.S. key to provide you and your snowmobile with the equivalent security of a conventional lock key.

The D.E.S.S. key contains an electronic chip which features a unique permanently memorized digital code.

Your authorized BRP snowmobile dealer has programed the D.E.S.S. of your snowmobile to recognize the D.E.S.S. key in the tether cord cap to allow vehicle operation.

If another tether cord is used without programming the D.E.S.S., the engine will start but will not reach drive pulley engagement speed to move vehicle.

Make sure the tether cord cap is free of dirt or snow.

D.E.S.S. Flexibility

The D.E.S.S. of your snowmobile can be programmed by your authorized BRP snowmobile dealer to accept up to 8 different keys.

We recommend the purchase of additional tether cords from your authorized BRP snowmobile dealer. If you have more than one D.E.S.S. equipped BRP snowmobile, each can be programmed by your authorized BRP snowmobile dealer to accept the other vehicles D.E.S.S. keys.

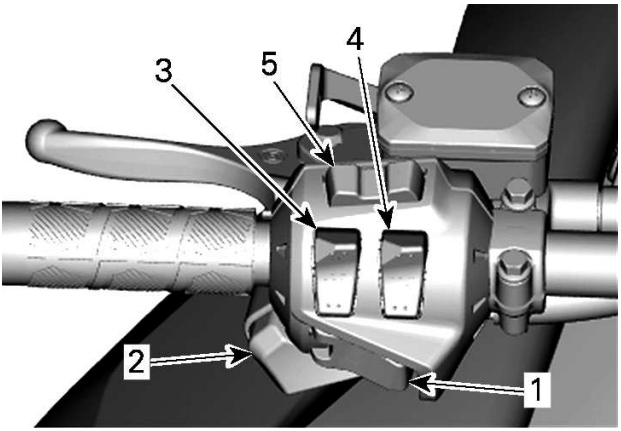
SECONDARY CONTROLS

Some features may not apply to your model or could be optional.

Vehicle safety labels are not shown on illustrations. For information on vehicle safety labels, refer to *Vehicle Safety Labels*.

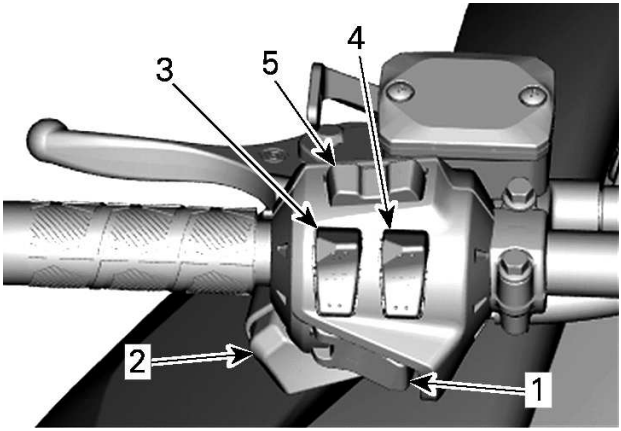
Handlebar Multifunction Switch

Multifunction switch is located on the LH side of handlebar.



TYPICAL - MODELS WITHOUT THE LARGE PANORAMIC 7.8" WIDE LCD DISPLAY

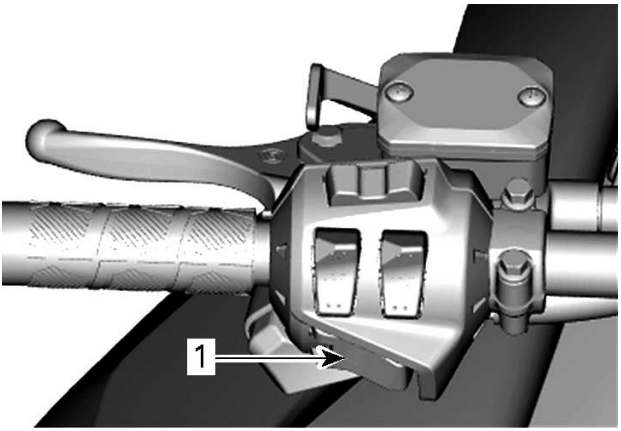
1. *Start/Electronic Reverse button*
2. *Headlights dimmer switch*
3. *Heated grips switch*
4. *Heated throttle lever switch*
5. *Mode/set button (If equipped)*



MODELS WITH THE LARGE PANORAMIC 7.8" WIDE LCD DISPLAY

1. *Start/Electronic Reverse button*
2. *Headlights dimmer switch*
3. *Heated grips switch*
4. *Heated throttle lever switch*
5. *Audio Control and Phone call control*

Start / Electronic Reverse Button



1. Start / RER button

Press to start engine. Refer to *Engine Starting Procedure* in *basic procedures*.

Once engine is started, press to engage the electronic reverse. Refer to *Shifting in Reverse* in *basic procedures* for procedure.

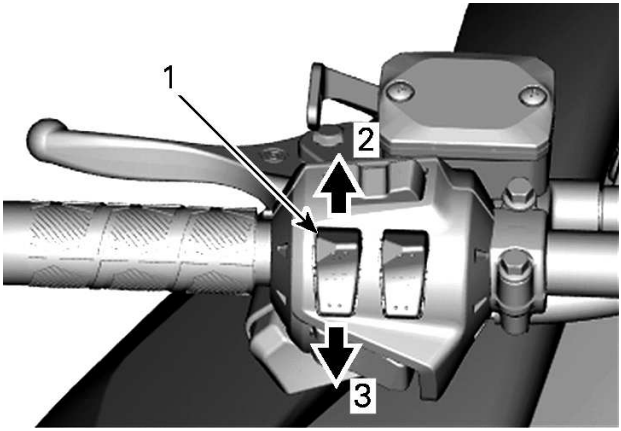
Headlights Dimmer Switch

Press to select HI or LOW beam. Lights are automatically ON when the engine is running.

Heated Grips Switch

NOTE:
Under 2000 RPM, heated grips will be limited at 50%.

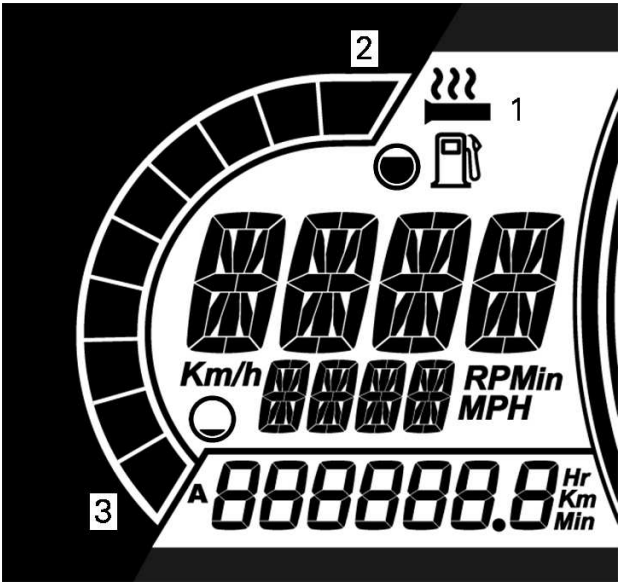
Depress switch as required to select heating intensity to keep your hands at a comfortable temperature.



VARIABLE INTENSITY

1. *Heated grip switch*
2. *Increase heat*
3. *Decrease heat*

The heating intensity is displayed via the digital display.



MODELS WITHOUT THE LARGE PANORAMIC 7.8" WIDE LCD DISPLAY SHOWN

1. *Heated grip icon*
2. *More heat*
3. *Less heat*

There are ten intensity settings. When released, display will return to fuel level.

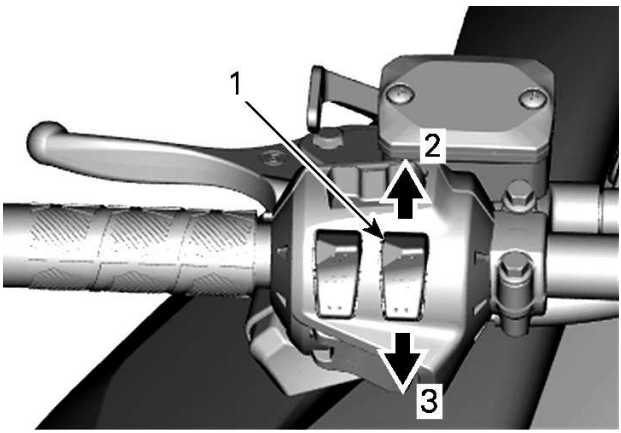
Heated grips will be in OFF position when there are no bars displayed on the gauge.

NOTE:
For models with the Large Panoramic 7.8" Wide LCD Display, refer to *Large Panoramic 7.8" Wide LCD Display* section.

Heated Throttle Lever Switch

NOTE:
Under 2000 RPM, heated throttle lever will be limited at 50%.

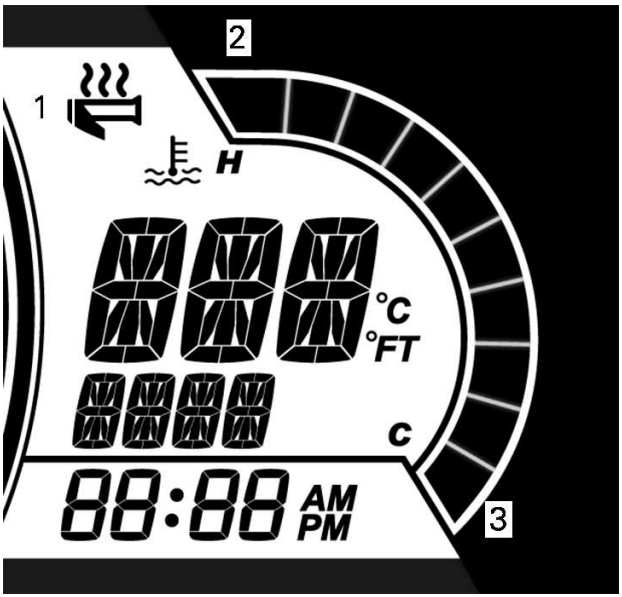
Depress switch as required to select heating intensity to keep your thumb at a comfortable temperature.



VARIABLE INTENSITY

1. *Heated throttle lever switch*
2. *Increase heat*
3. *Decrease heat*

NOTE:
There are ten intensity settings. When released, display will return to engine temperature.



MODELS WITHOUT THE LARGE PANORAMIC 7.8" WIDE LCD DISPLAY SHOWN

1. *Heated grip icon*
2. *More heat*
3. *Less heat*

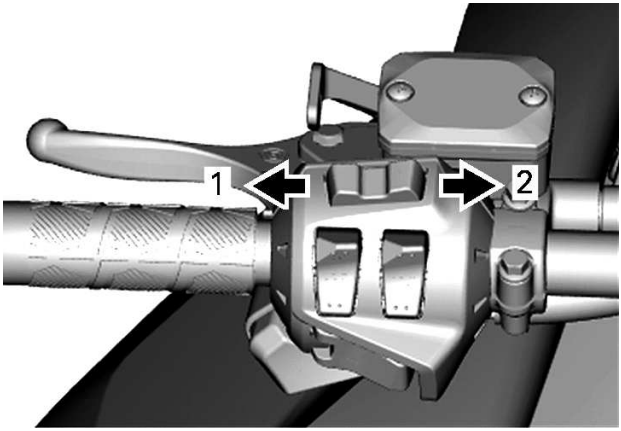
Heated throttle lever will be in OFF position when there are no bars displayed on the gauge.

NOTE:
For models with the Large Panoramic 7.8" Wide LCD Display, refer to *Large Panoramic 7.8" Wide LCD Display* section.

Menu/Set Button

Models without the Large Panoramic 7.8" Wide LCD Display

This button is used to manage the information displayed on the multi-function gauge.



MENU/SET BUTTON

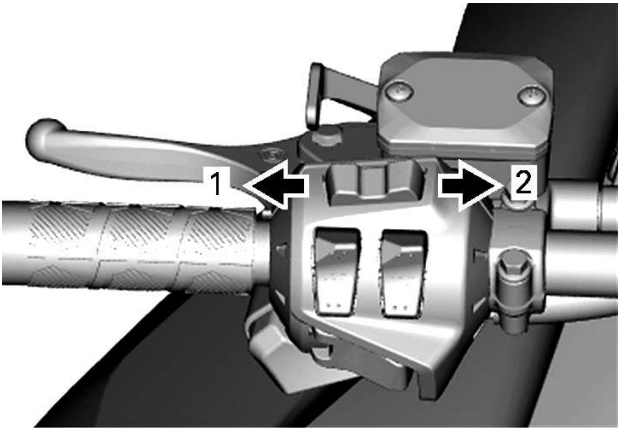
1. *Menu function*
2. *SET function*

Refer to *Gauge* for complete information.

Audio Volume Control (if equipped)

Models with the Large Panoramic 7.8" Wide LCD Display

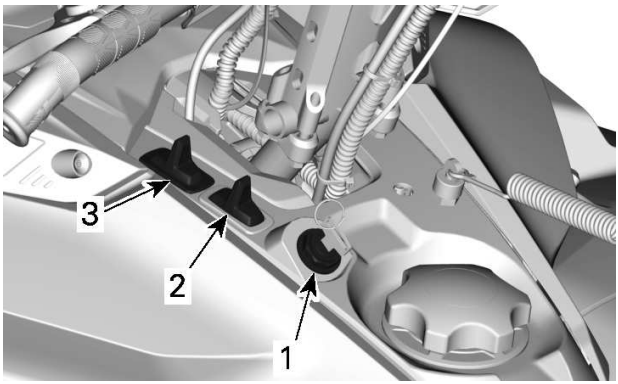
This button is used to manage the information displayed on the multi-function gauge or answer/cancel a phone call.



1. *Volume DOWN/Cancelling a call*
2. *Volume UP/Answering a call*

Refer to *Large Panoramic 7.8" Wide LCD Display* section for complete information.

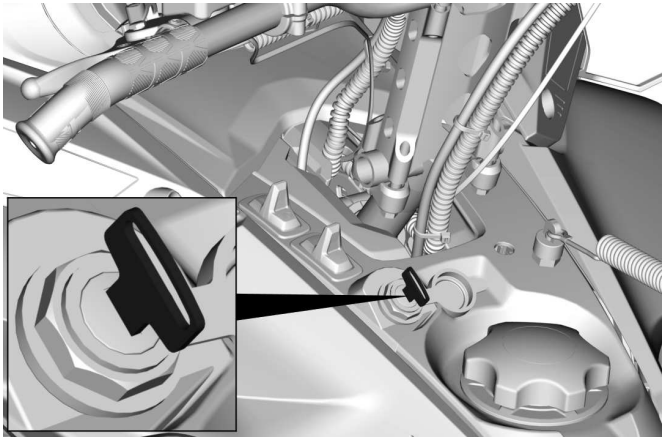
Console Switches (if equipped)



1. *Start/Electronic reverse switch*
2. *Heated grips switch*
3. *Headlights dimmer switch*

Start/ Electronic Reverse Switch

Models with 600 EFI Engines



Turn the ignition key to start the engine. Refer to *Engine Starting Procedure* in *basic procedures*.

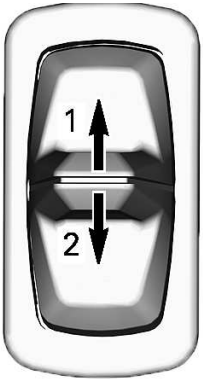
Once engine is started, turn the key to engage the electronic reverse. Refer to *Reverse (RER)* in *basic procedures*.

Heated Grips and Heated Throttle Lever Switch

NOTE:
Under 2000 RPM, heated grips will be limited at 50%.

The switch on console controls simultaneously the handlebar grips and throttle lever heat intensity. The balance between the temperature of the throttle lever and the grips can be adjusted. Contact an authorized BRP snowmobile dealer.

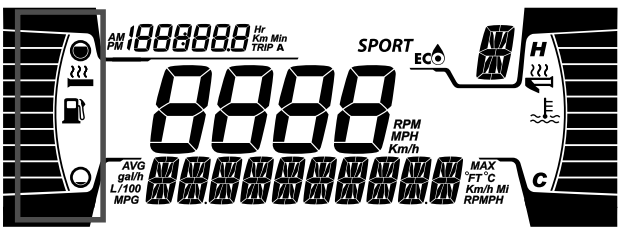
Depress switch as required to select heating intensity to keep your hands at a comfortable temperature.



SWITCH ON CONSOLE

1. *Increase heat*
2. *Decrease heat*

The heating intensity is displayed via the digital display.



HEATED GRIPS DISPLAY

Heated grips will be in OFF position when there are no bars displayed on the gauge.

When the switch is released, display will return to fuel level.



HEATED THROTTLE LEVER DISPLAY

Heated throttle lever will be in OFF position when there are no bars displayed on the gauge.

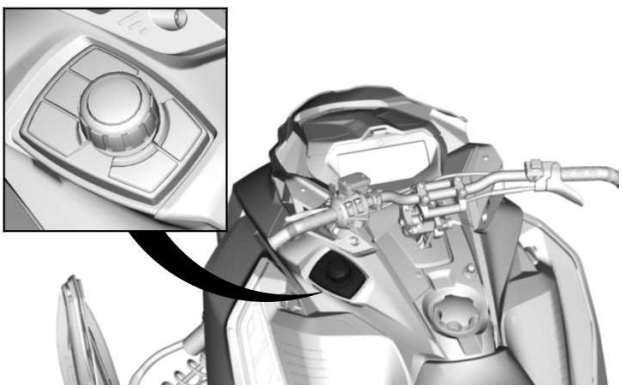
When the switch is released, display will return to fuel level.

Headlights Dimmer Switch

Press to select HI or LOW beam. Lights are automatically ON when the engine is running.

Rotary Control (if equipped)

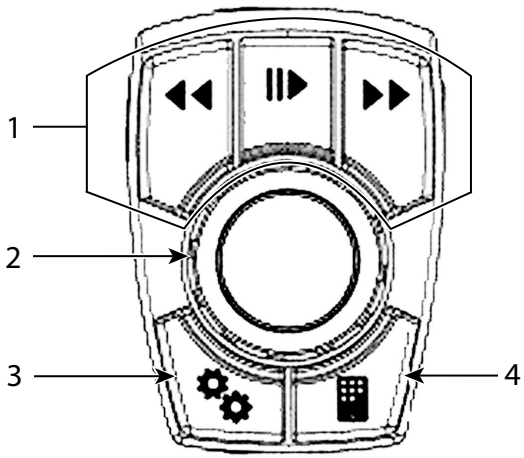
The rotary control is located on the left side of the console.



TYPICAL

It is used to navigate into the LCD display and control the audio system.

– Seek/Play/Pause buttons allow to control volume and music listened in the helmet audio system.
– The center knob can be used to navigate inside menu or select and set settings.
– Specific vehicle data button allow to see engine temperature, and battery voltage. It will also shown air suspension adjustment (if equipped)
– BRP Connect button: quick access to already downloaded APPS.



1. *Audio control*
2. *Center knob*
3. *Vehicle data button*
4. *BRP Connect*

When audio source is selected, the Preset/Seek buttons work as follow:

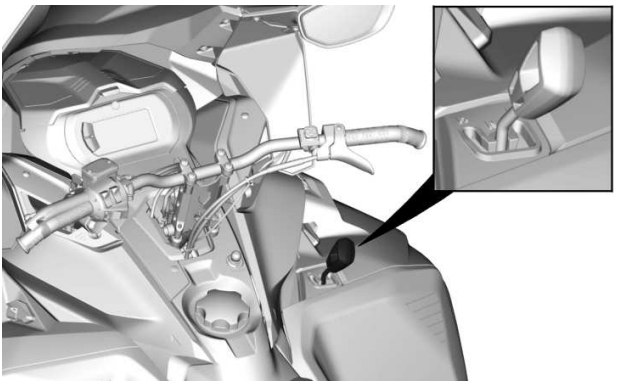
– Short press: Previous or Next Preset
– Long press: Seek - up or down

When Bluetooth audio source is selected, the Preset/Seek buttons work as follow:

– Left: Previous song
– Right: Next song

Gearshift Lever

Model equipped with Hi/Lo Gearbox



Use this lever to select gears. The gearbox has two forward gears and a neutral.

Shifting from one position to another is possible at speeds lower than 30 km/h (19 MPH)

⚠ CAUTION
Shifting at a speed faster than 30 km/h (19 MPH) may cause serious damage to the gearbox.

Neutral

The neutral position disengages the gearbox.

High Range (Forward)

This position selects the high speed range of the gearbox. It is the normal driving speed range. It allows the vehicle to reach its maximum speed.

Low Range (Forward)

This position selects the low speed range of the gearbox. It allows the vehicle to move slowly with maximum torque.

NOTICE

Use the low speed range to pull a cargo carrier, carry heavy cargo, go over obstacles or drive uphill and downhill.

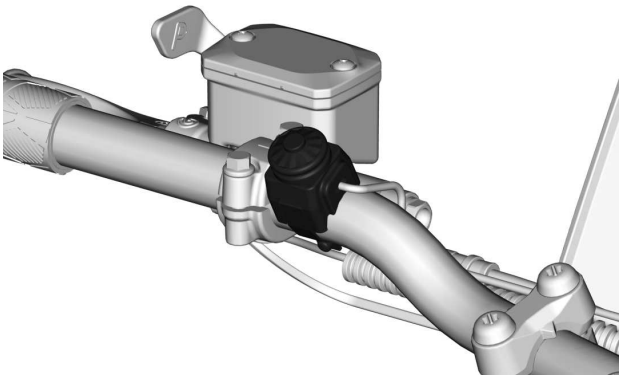
Reverse Lever (if equipped)

Refer to *Shifting in Reverse* in *Basic Procedures* for proper operation.

Horn Button (if equipped)

For vehicles sold in Finland

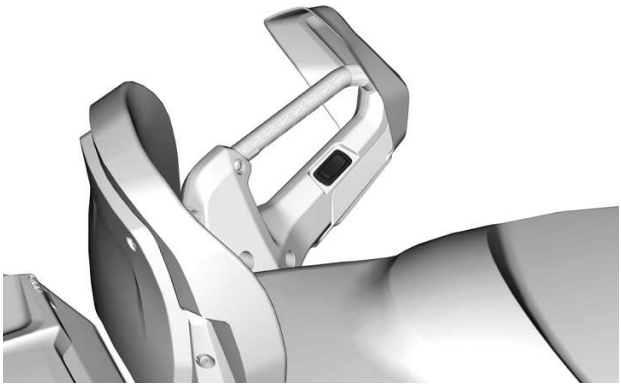
Press on the horn button to activate the horn.



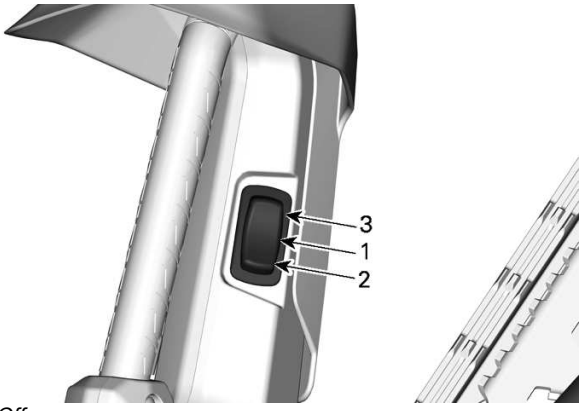
TYPICAL

Passenger Heated Grip Switch (if equipped)

The switch is located on the LH passenger handhold.



Adjust heating intensity as shown.



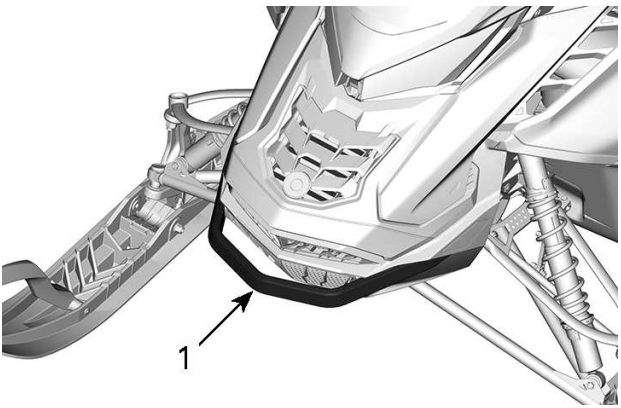
1. *Off*
2. *Warm*
3. *Hot*

BODY AND SEAT

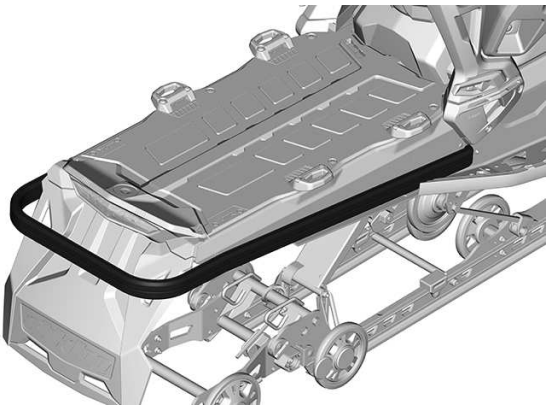
Front and Rear Bumpers

To be used whenever snowmobile requires manual lifting.

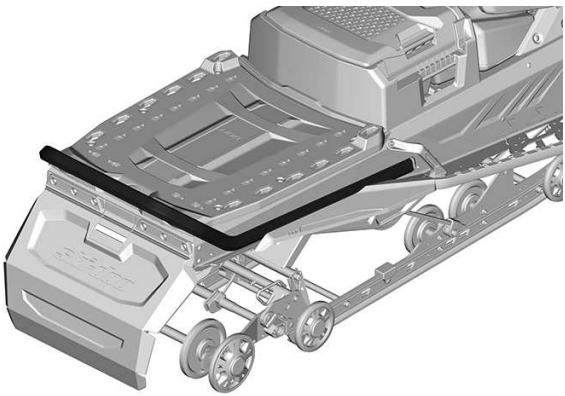
⚠ CAUTION
Beware of injuries by using proper lifting techniques, notably using your legs force. Do not attempt to lift the rear of vehicle if it is above your limits. Use appropriate lifting device or have assistance to share lifting stress if possible.



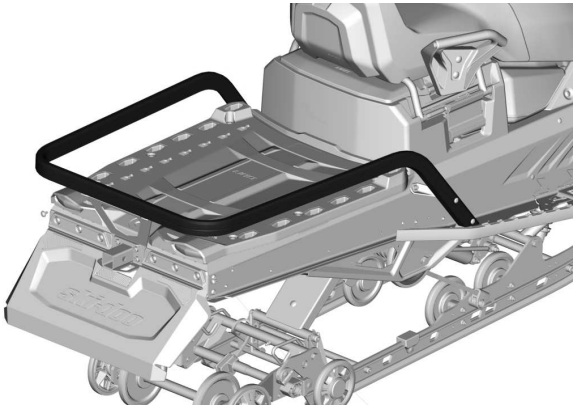
1. Front bumper



TYPICAL - STD BUMPER



STD BUMPER — 20 INCHES TUNNEL

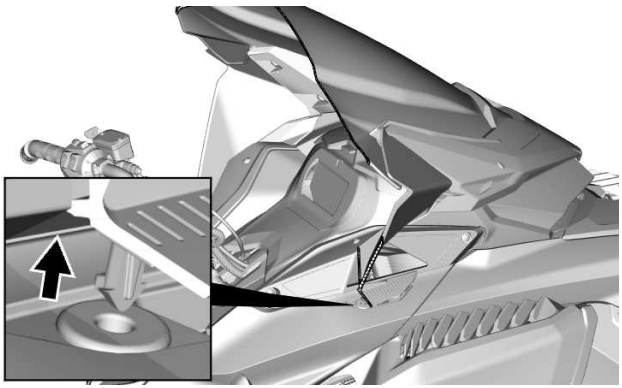


CARGO - HEAVY DUTY BUMPER — 20 AND 24 INCHES TUNNEL

Windshield

Removing the Windshield

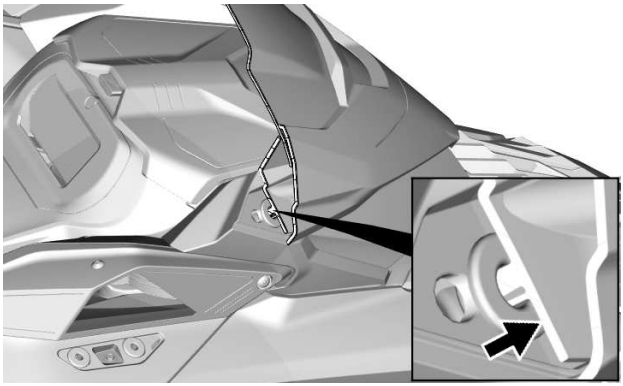
1. Pull off the deflector pins off the grommets, if applicable.



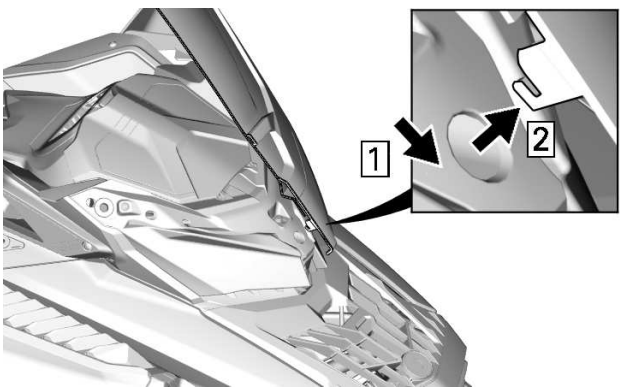
WITH SIDE DEFLECTORS

2. Place hands on each sides of the windshield.

3. Pull the windshield up until both side pins come out of there rubber grommets.



4. Disengage the center pin or tab, if applicable.



CENTER TAB - WITH SIDE DEFLECTORS

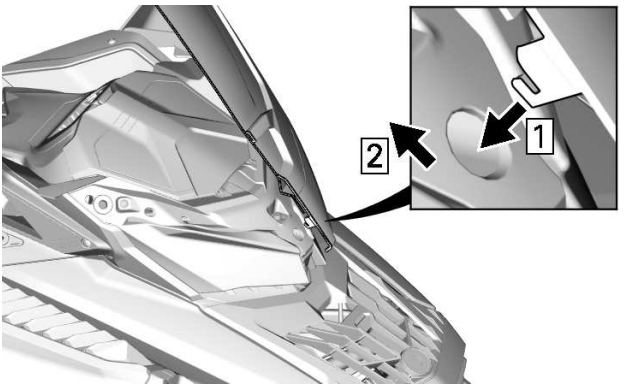
Installing the Windshield

1. Lubricate the grommets using soapsuds, if required.

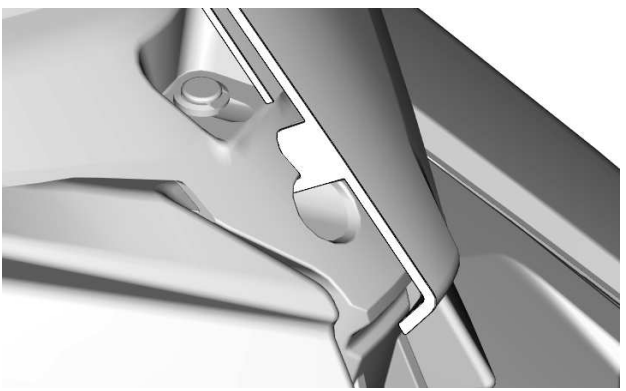
NOTICE

Do not lubricate grommets with any type of grease.

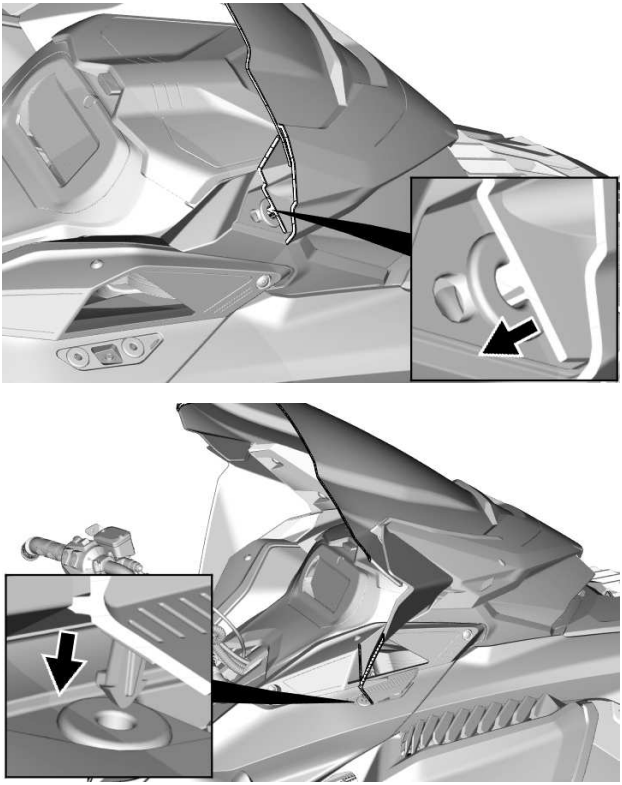
2. Insert center pin or tab in headlamp module hole.



CENTER TAB - WITH SIDE DEFLECTORS



3. Secure windshield by inserting the windshield pins into the grommets.



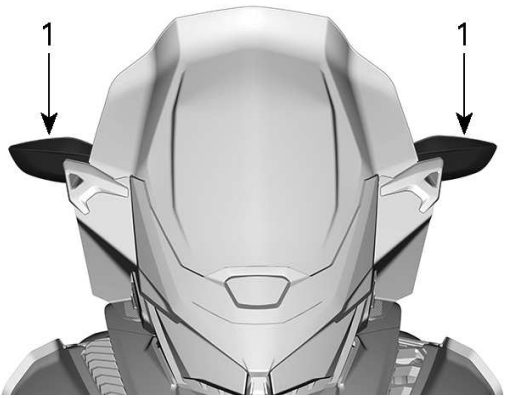
WITH SIDE DEFLECTORS

Adjustable Mirrors (if equipped)

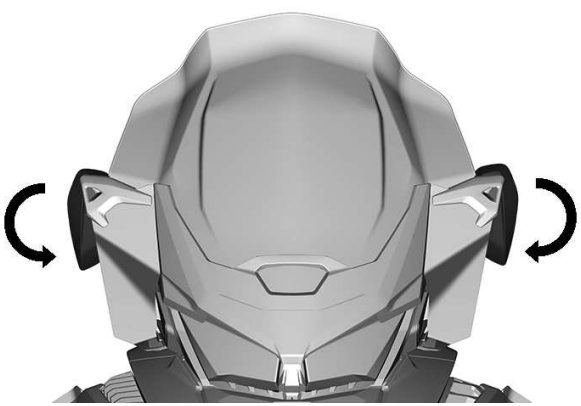
Each mirror can be adjusted to suit operator's preference.

⚠ WARNING
Adjust with vehicle at rest in a safe place.

When installing a cover, the mirrors can be tilted downward to ease installation.



1. Mirrors

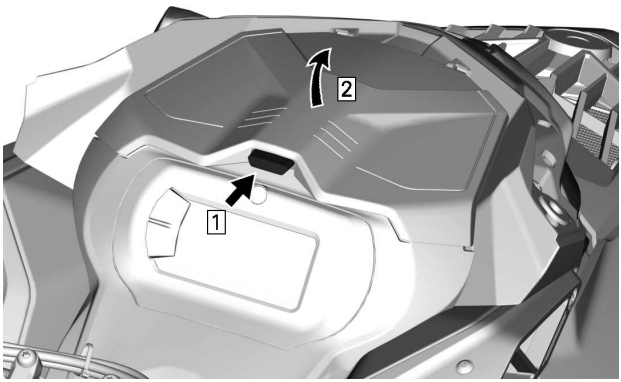


Front Storage Compartment

A storage compartment is located at the front of the vehicle, above the gauge.

The Operator's Guide and the emergency starter rope are in the front storage compartment.

To open, push the button and lift the cover.



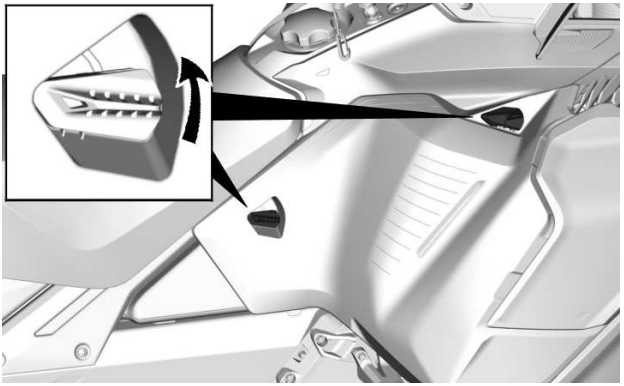
NOTE:
When closing, make sure cover is secured properly. You will hear a "clic".

Side Panels

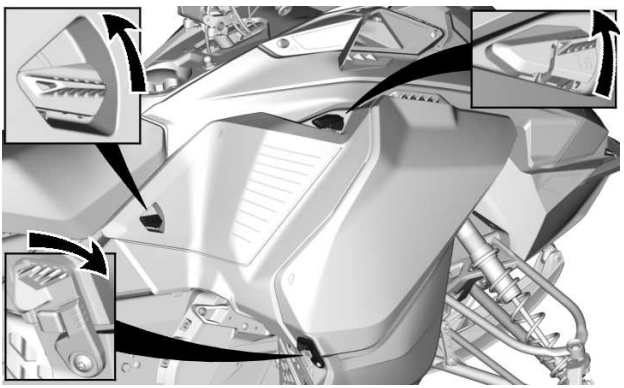
⚠ WARNING
Never operate engine with side panels opened or removed from vehicle.

Removing the Side Panels

1. Unlock all latches, then open panel.

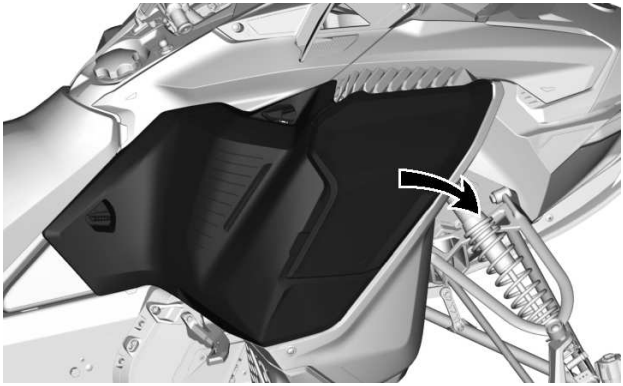


TYPICAL — 2 LATCHES

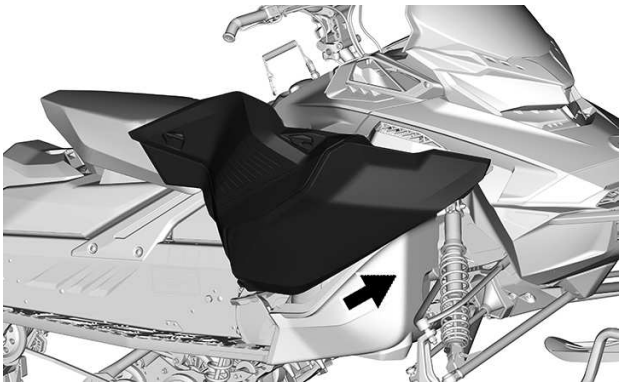


TYPICAL — 3 LATCHES

2. Pivot side panel around lower edge.



3. Slide the panel hinge off the bottom pan.



NOTICE
Make sure to place panel in a safe place to avoid scratching.

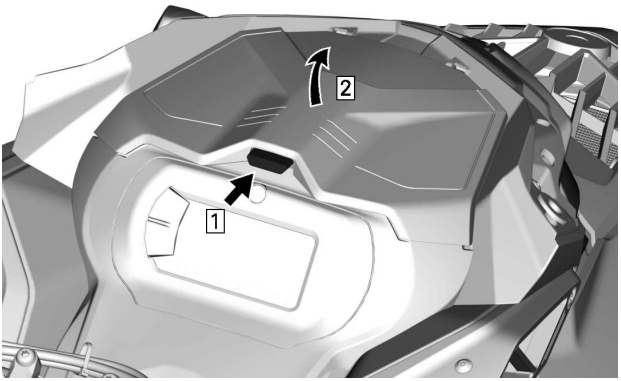
Installing the Side Panels

The installation is the reverse of the removal procedure.

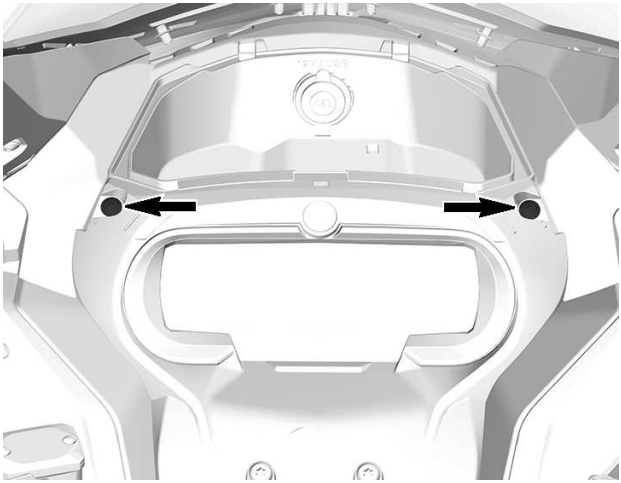
Upper Body Module

Removing the Upper Body Module

1. Remove the windshield.
2. Open the storage compartment.

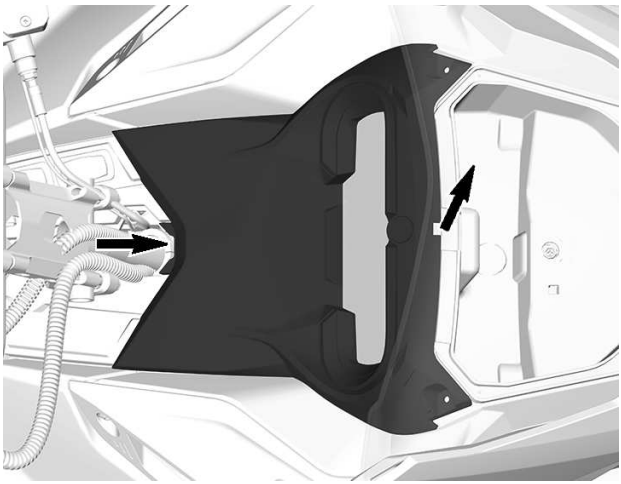


3. Remove the gauge support retaining screws.

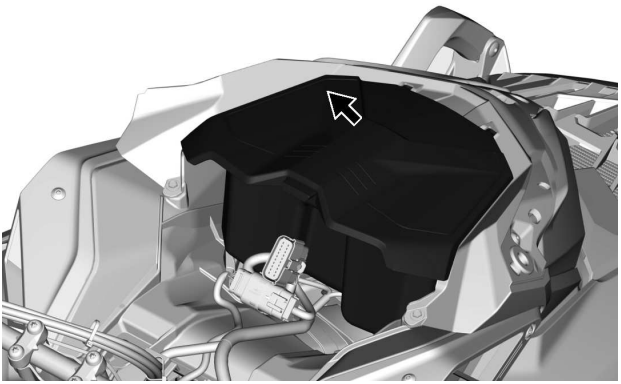


TYPICAL

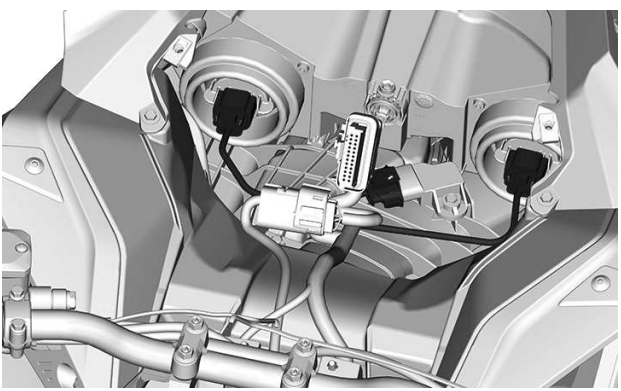
4. Lift the front of the gauge support, then slide it forward to remove it.



5. Disconnect the gauge connector and remove the support.
6. Lift the storage compartment and disconnect the 12V power outlet connectors, if equipped, before removing the storage compartment.



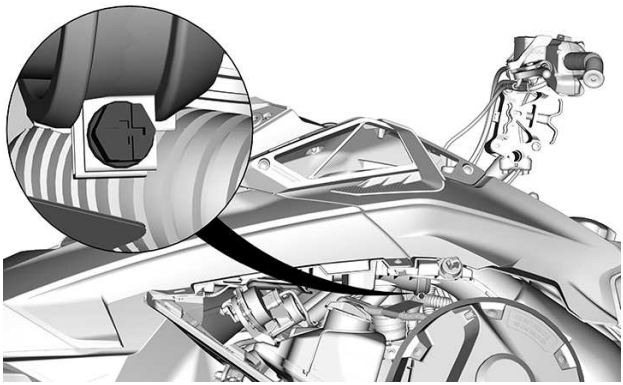
7. Disconnect the headlight and the MAPTS (2-stroke) connectors.



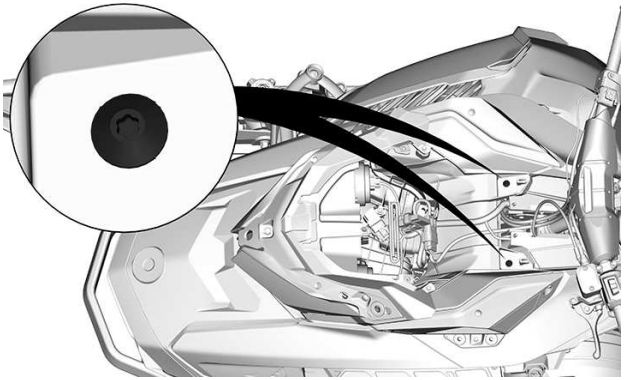
TYPICAL

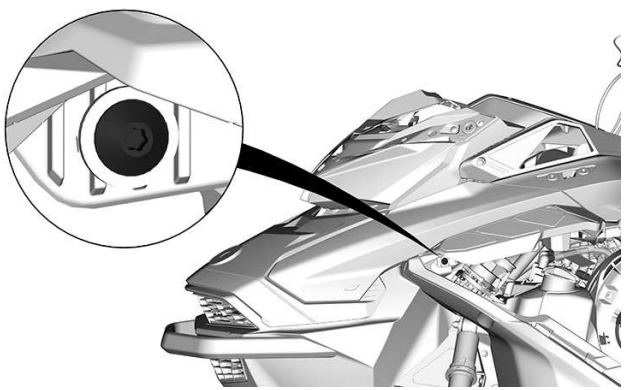
8. Remove both side panels. Refer to *Side Panels* in this section.

9. Loosen the air intake duct clamp.

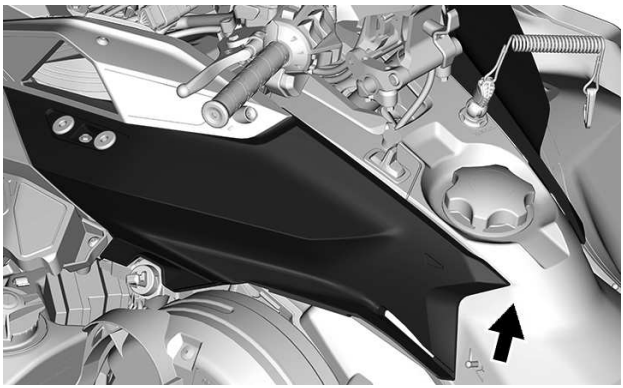


10. Remove the upper body module retaining screws on both sides.





11. Lift the rear end of both lateral hood until their tabs come out of the rear console.



12. Remove the upper body module.

    1. Grab the upper body module in the gauge support section.
    2. Pull the module forward.
    3. Remove the module from the vehicle.

Installing the Upper Body Module

1. At front, insert the upper body module tabs into the bottom pan openings.



2. Lower the rear end of the upper body module.
3. Insert the rear end hooks of the upper body module into the slots in the console.

NOTE:
Make sure the air intake duct is positioned properly connected.

4. Tighten air intake duct clamp.

TIGHTENING TORQUE	
Intake duct clamp	1.0 ± 0.2 Nm (9 ± 2 lbf-in)

5. On both sides, install the upper body module retaining screws.

TIGHTENING TORQUE	
Upper body screws	1.8 ± 0.2 Nm (16 ± 2 lbf-in)

6. Connect the manifold air pressure and temperature sensor (MAPTS) connector (2-stroke engine).
7. Connect the headlight connectors.
8. Install the storage compartment but leave the cover open.
9. Install gauge, secure with the screws.

TIGHTENING TORQUE	
Gauge support screws	2.3 ± 0.2 Nm (20 ± 2 lbf-in)

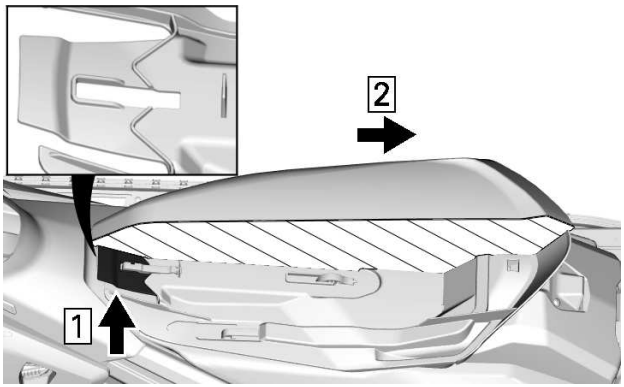
Seat

400 mm (16 in.) Tunnel Width

Removing the Seat (tab lock)

From between the fuel tank and the seat front end, pull the locking tab upwards.

Slide the seat backwards while holding the tab up.



CROSSCUT VIEW OF SEAT FOAM

1. *Pull upwards*
2. *Slide backwards*

Installing the Seat (tab lock)

NOTICE

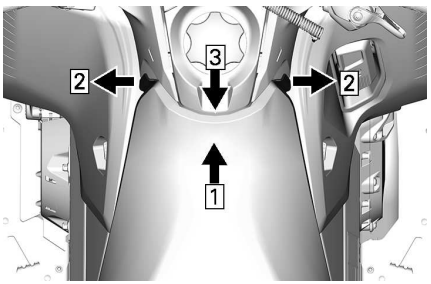
Riding the vehicle with any objects between the seat and the fuel tank could damage the fuel tank. NEVER place any objects between seat and fuel tank.

Place seat over the hooks, then slide it forward until the tab locks over the front hook.

⚠ WARNING
Make sure seat is securely latched before riding.

Removing the Seat (ball stud lock)

While pushing in the center of the seat towards front, pull on both sides. Insert hand between seat and body to lift up and backward to unlock.



1. *Push*
2. *Pull*
3. *Lift up and backward to unlock seat*

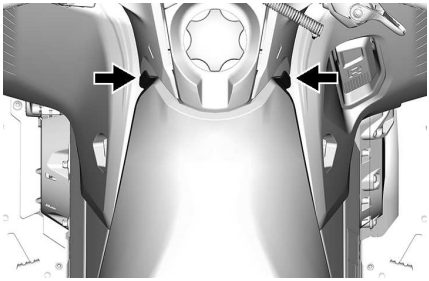
Slide seat rearwards to remove it.

Installing the Seat (ball stud lock)

NOTICE
Riding the vehicle with any objects between the seat and the fuel tank could damage the fuel tank. NEVER place any objects between seat and fuel tank.

Place seat over the hooks, then slide it forward.

Securely engage both ball studs at front.

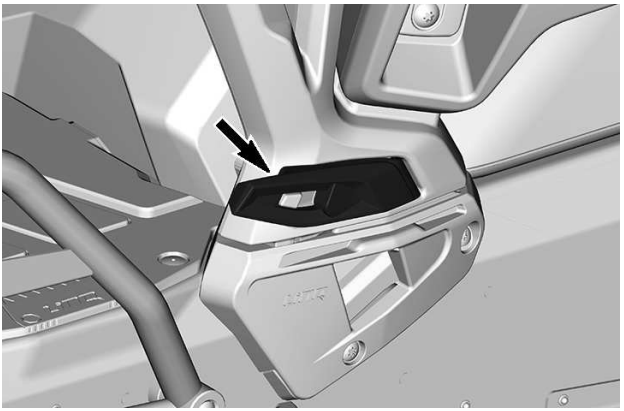


⚠ WARNING
Make sure seat is securely latched before riding.

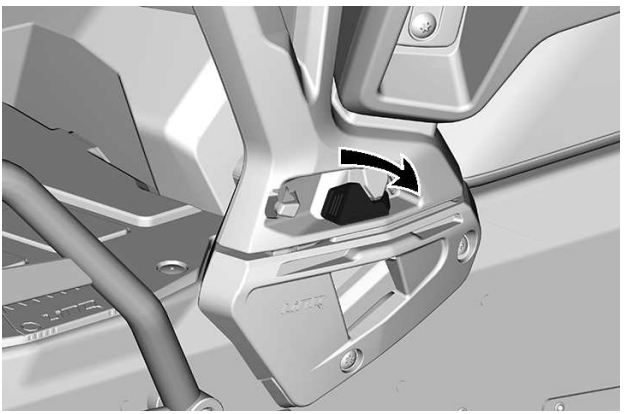
Backrest

Removing the Backrest

1. Disengage the LinQ lever cap on both sides.



2. Unlock the LinQ on both sides.



3. Pull the backrest upwards to remove..

Installing the Backrest

The installation is the reverse of the removal procedure.

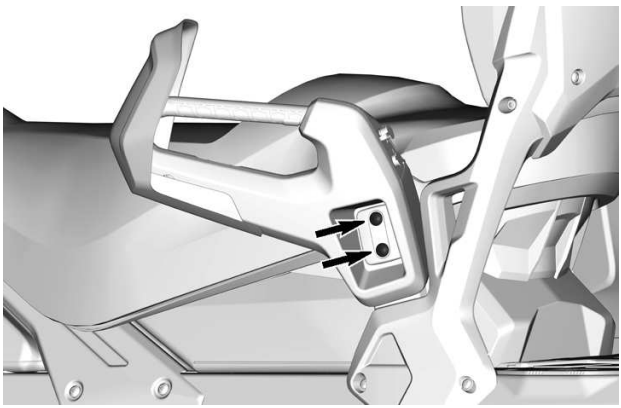
Passenger Handholds (if equipped)

The passenger handholds provide a strong holding point and comfort for the passenger on long rides.

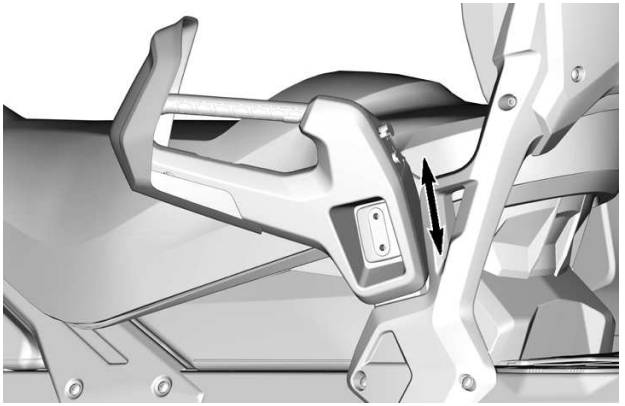
Adjusting the Passenger Handholds

To adjust the handhold height, proceed as follows:

1. Remove the screws.



2. Raise or lower the handhold to suit passenger's comfort.



3. Reinstall the screws. Tighten to specification.

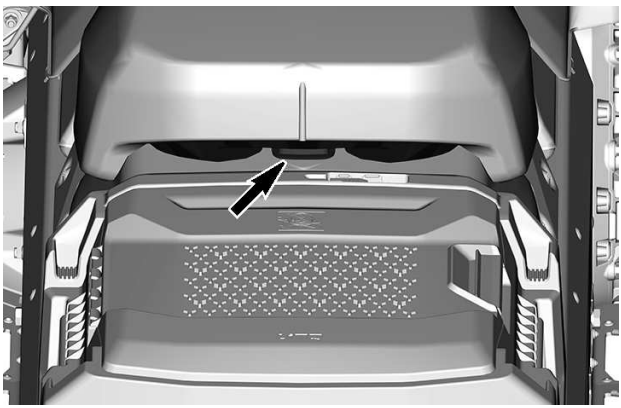
Tightening Torque	
Handhold screw	24.5 ± 3.5 Nm (18 ± 3 lbf-ft)

500 and 600 mm (20 and 24 in.) Tunnel Width

Operator's Seat

Removing the Seat

Release the latch at the back of the seat.



Slide seat rearwards to remove it.

Installing the Seat

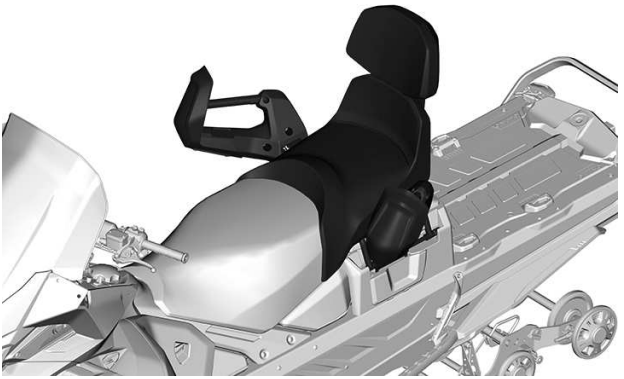
NOTICE
Riding the vehicle with any objects between the seat and the fuel tank could damage the fuel tank. NEVER place any objects between seat and fuel tank.

Place seat over the hooks, then slide it forward.

Securely engage the latch.

⚠ WARNING
Make sure seat is securely latched before riding.

Passenger's Seat



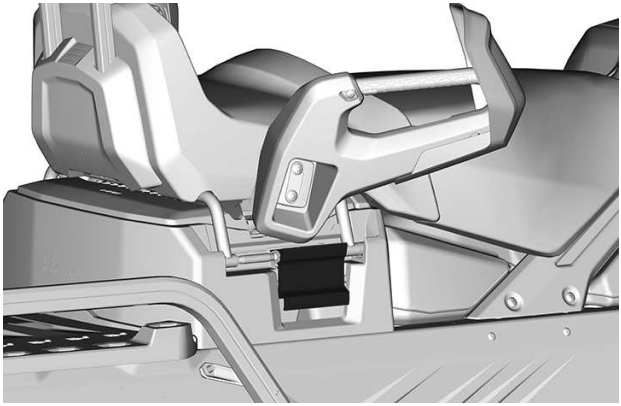
TYPICAL

⚠ WARNING

Any passenger must be able to firmly lay is feet on the footrests and keep his hands on the handholds at all times when seated. Respecting those physical criteria is important to ensures that the passenger is stable and to reduce the risks of ejection.

Removing the Passenger Seat

1. Unlock seat latch on both sides.



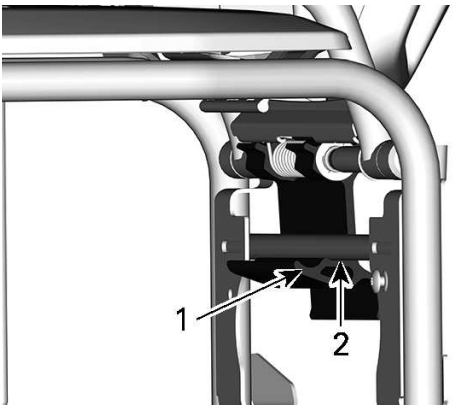
TYPICAL

2. Lift the seat to disconnect the electrical connector.
3. Remove passenger seat.

Installing the Passenger Seat

The installation is the reverse of removal procedure. However, pay attention to the following.

Ensure to reach the second step when latching.



1. First step
2. Second step

⚠ WARNING
Ensure the latch is on the second step before riding.

EQUIPMENT

Some features may not apply to your model or could be optional.

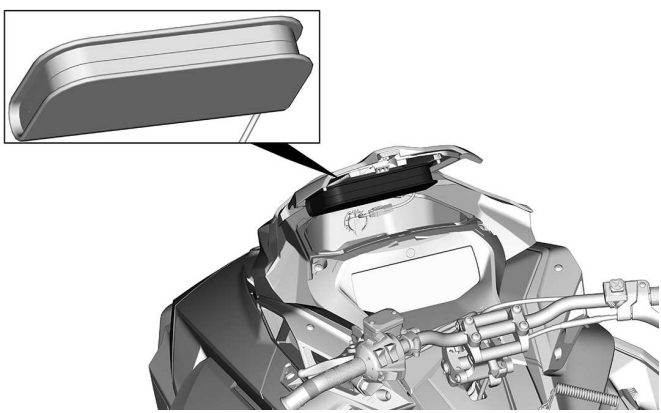
Operator's Guide

The Operator's Guide should be stored in the *Front Storage Compartment*.

Heated Cell Case (if equipped)

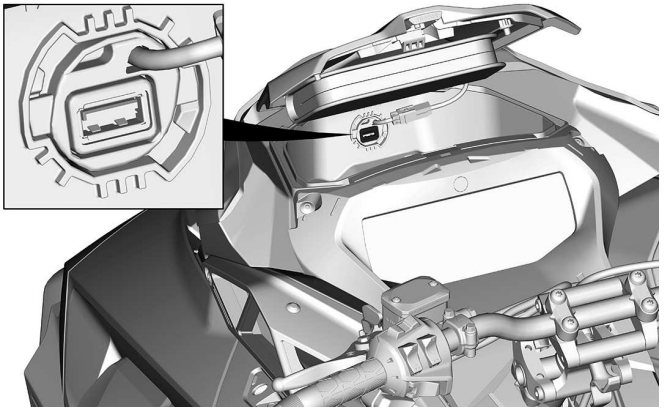
A heated cell case is mounted underneath the front storage compartment cover. It allows to keep your cell phone at a warm temperature while charging.

The temperature inside the case is kept between 5° C and 15° C (41° F and 59° F).



Power Outlet - USB (if equipped)

The USB power Outlet is located in the front storage compartment. It allows to charge your cell phone while stored in the heated cell case.

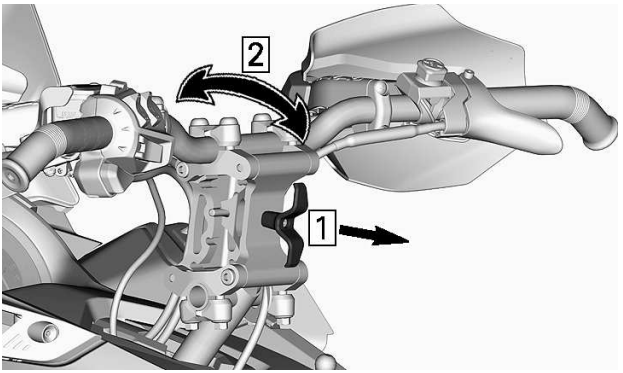


Adjustable Handlebar Riser (If Equipped)

⚠ WARNING
Always stop engine before adjusting handlebar.

The handlebar can be set in four different positions.

To change handlebar position, pull lever and position handlebar as desired.



Move the handlebar back and forth to make sure mechanism is securely engaged.

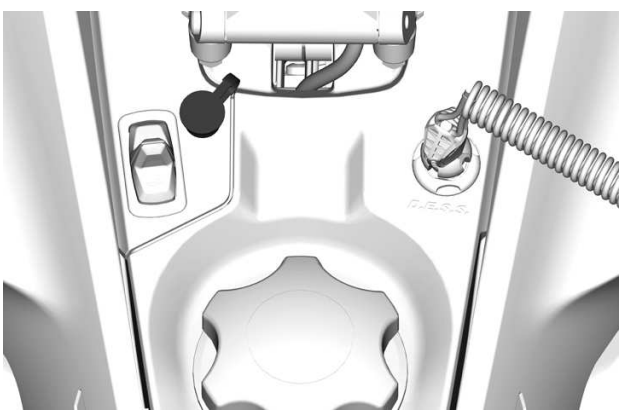
Mountain Strap

This handlebar strap shall be used only to provide additional pulling force when snowmobile is stuck in a slanted position. On an exceptional basis it can be used at very slow speed only, when standing on the right running board to bring the vehicle back on its desired path. When riding, both hands should remain on the handlebar grips to provide braking capability, as well proper steering and directional control. Do not use handlebar strap for towing, lifting or side hilling.

⚠ WARNING
Do not use while riding at speed. Steering control is highly reduced and brake control is not possible.

Electric Visor Jack Connector

An electric visor can be connected to the jack connector. A stress relief extension is supplied with the vehicle.



DRIVER - ELECTRIC VISOR JACK CONNECTOR LOCATION

Drive Belt Guard

Removing the Drive Belt Guard

⚠ WARNING

NEVER operate engine:

- **Without shields and belt guard securely installed.**
- **With hood and/or side panels opened or removed.**

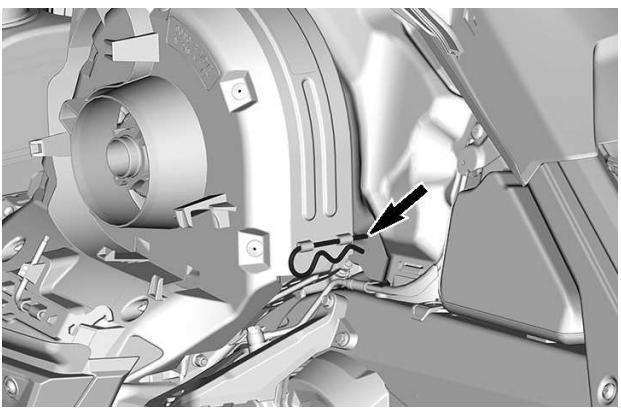
NEVER attempt to make adjustments to moving parts while engine is running.

NOTE:
Belt guard is purposely made slightly oversize to maintain tension on its pins and retainers preventing undue noise and vibration. It is important that this tension be maintained when reinstalling.

Remove tether cord cap from engine cut-off switch.

Open the LH side panel. See procedure in this section.

Remove retaining pin.

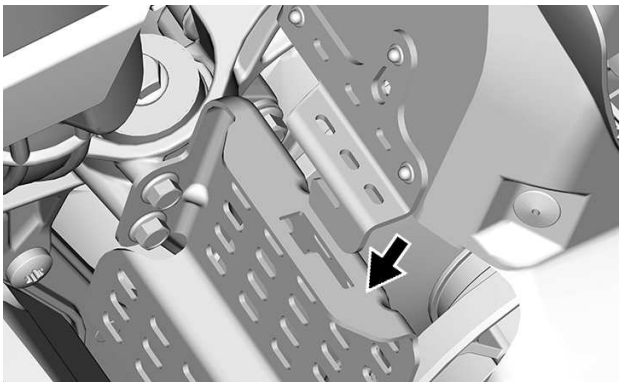


TYPICAL

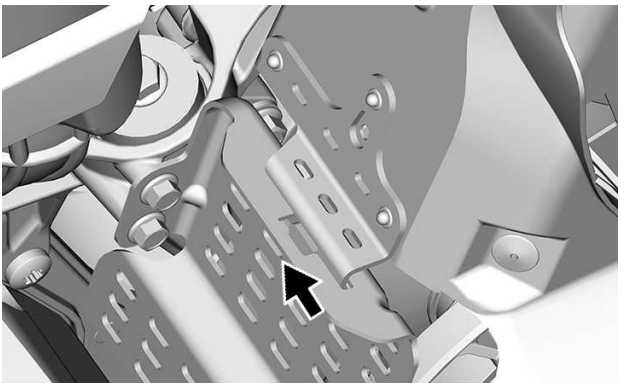
Lift rear portion of guard then release from front tab.

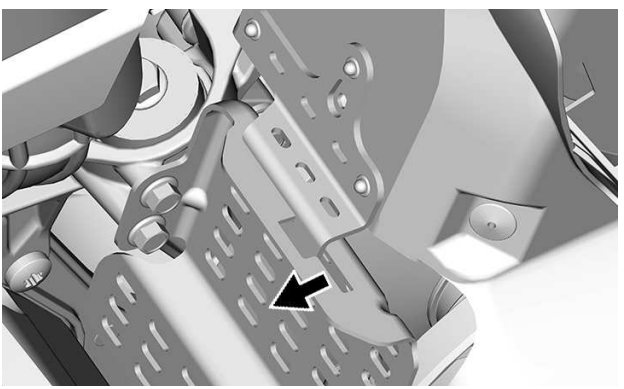
Installing the Drive Belt Guard

1. Insert belt guard tab in front support slot.

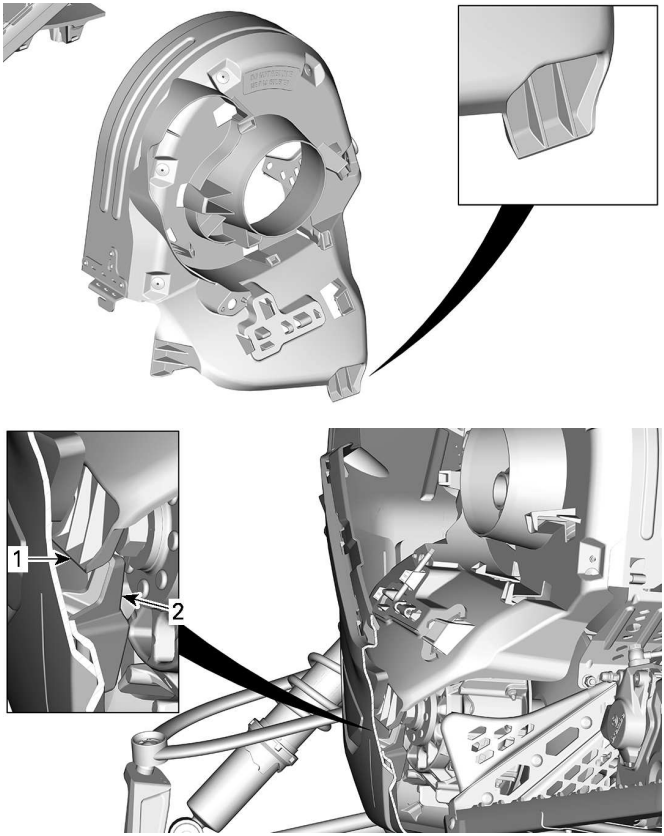


2. Push drive belt guard toward engine then toward front of vehicle.





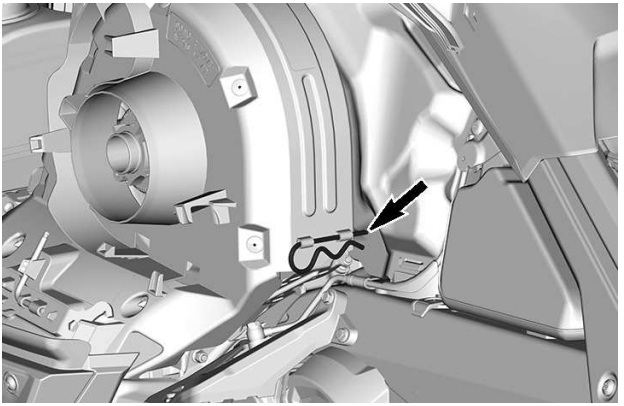
3. Insert belt guard tab between bottom pan and hook.



LH SIDE BOTTOM PAN - CROSSCUT VIEW

1. *Belt guard tab*
2. *Bottom pan hook*

4. Position the rear portion of the belt guard over the retainer and secure it using the retaining pin.

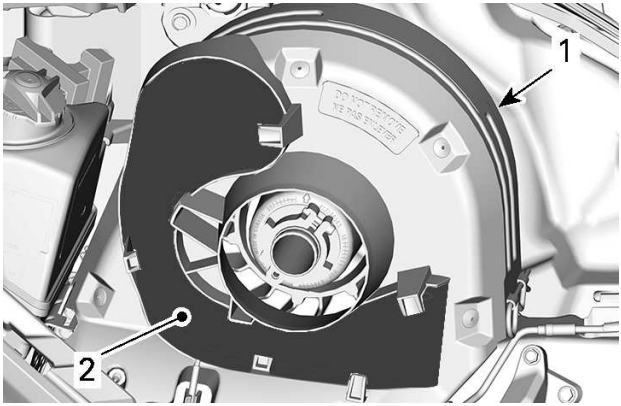


Spare Drive Belt Holder

A spare drive belt can be stored in a holder located on the drive belt guard.

NOTE:
The spare drive belt is not supplied with the snowmobile.

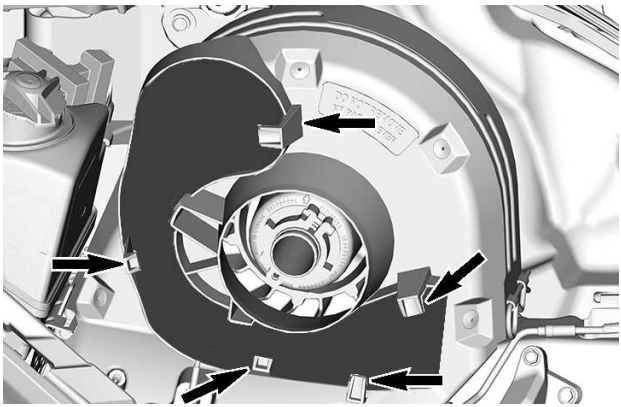
Position spare drive belt into drive belt guard slot.



TYPICAL

1. Drive belt guard
2. Slot

Secure in place by sliding it behind the tabs.

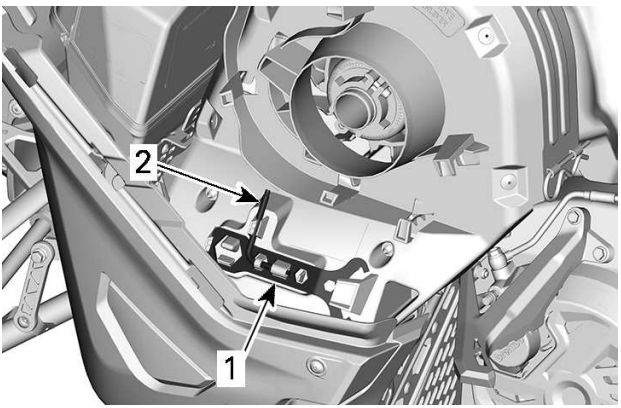


TYPICAL

Tools

A part of the drive belt guard is designed to hold the tools allowing for basic maintenance.

The tools are supplied with the vehicle. They should always be installed in their proper location and orientation.



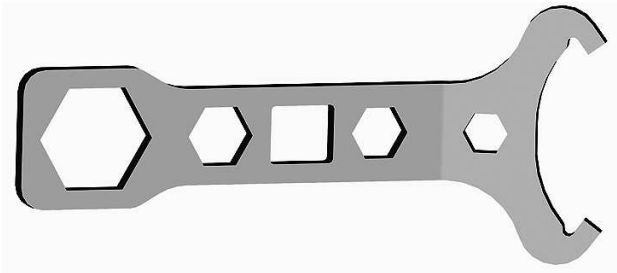
TYPICAL - DRIVE BELT GUARD TOOLS LOCATION

1. *Suspension adjustment tool*
2. *Pulley expander and headlight adjustment tool*

Install in the following sequence:

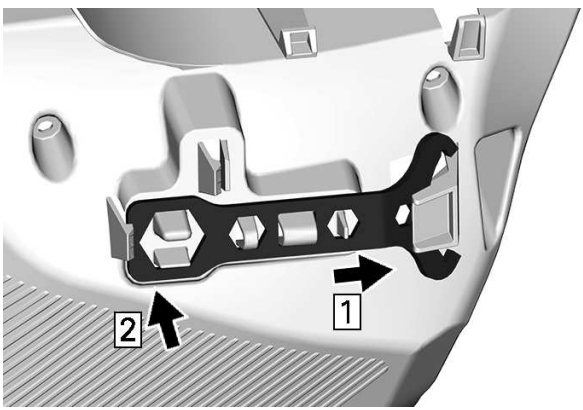
⚠ CAUTION
Make sure tools are secured properly. Tools may detach and cause damage to rotating parts.

1. Slide the suspension adjustment tool open end under retaining tab.

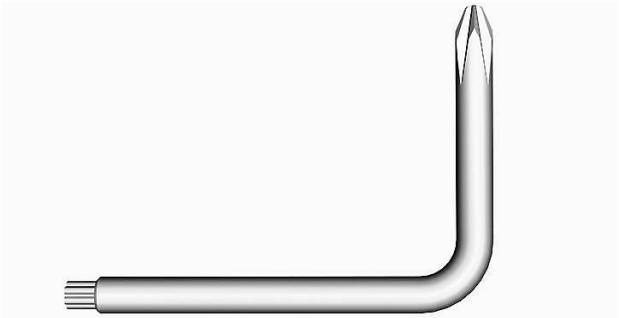


SUSPENSION ADJUSTMENT TOOL

2. Press the closed end on the retaining tabs.

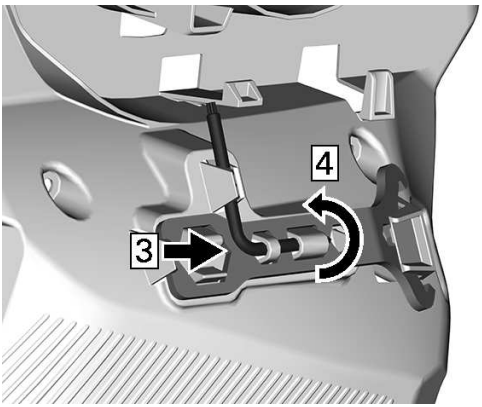


3. Slide the Pulley expander and headlight adjustment tool short end into hole.



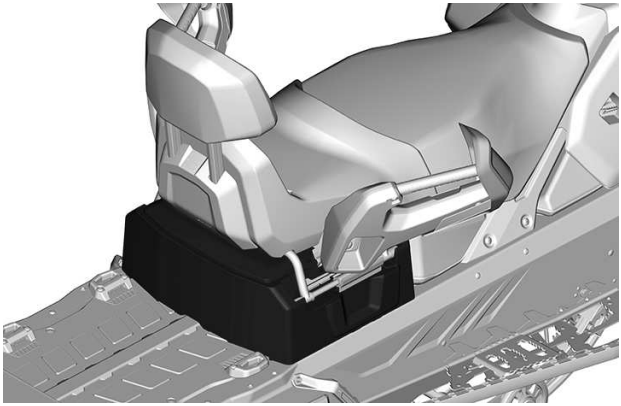
PULLEY EXPANDER AND HEADLIGHT ADJUSTMENT TOOL

4. Rotate and clip long end in place.

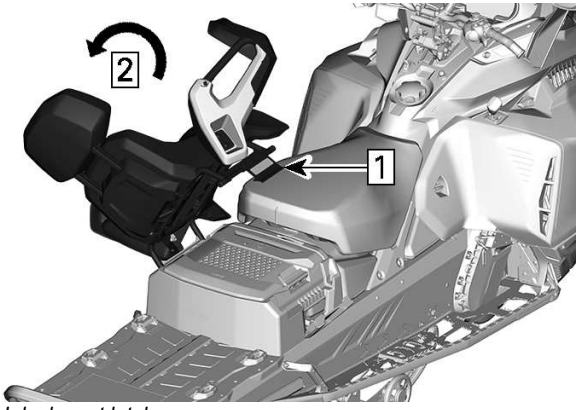


Rear Storage Compartment

A storage compartment is located at the rear of the seat, above the battery cover.

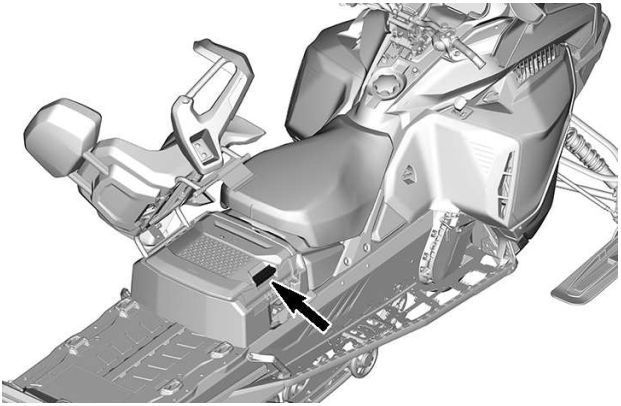


To open, tilt passenger seat.



1. *Unlock seat latch*
2. *Tilt passenger seat*

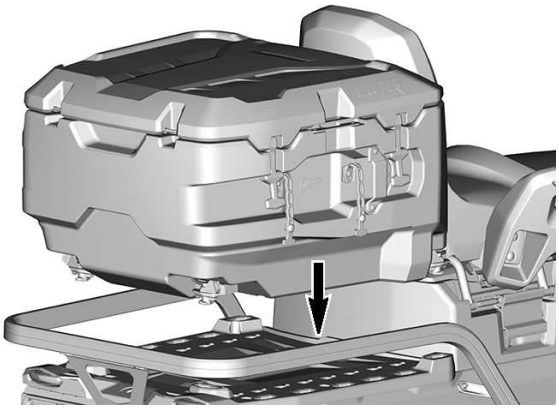
Lift handle.



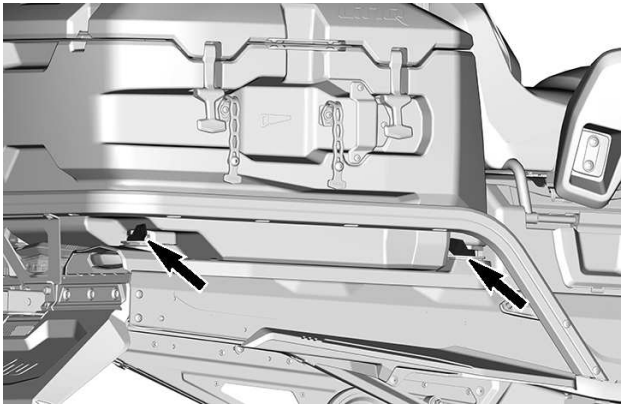
Cargo Box (if equipped)

The cargo box can contain up to 22 kg (44 lb) on the cover and a total of 48 kg (105 lb) (including weight on cover).

The cargo box is secured by LinQ attachment. To Install, lower box in cargo area.



Turn LinQ levers to lock.



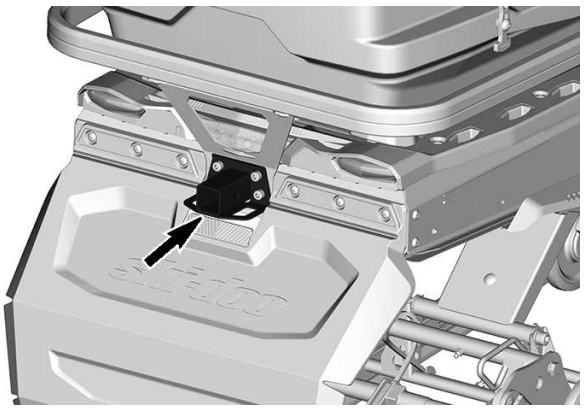
RH SIDE SHOWN - REPEAT ON LH SIDE

Hitch (if equipped)

NOTE:
Refer to decal on vehicle for towing weight capacities.

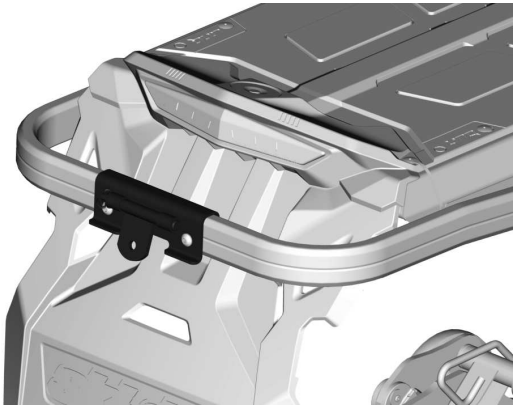
Hitch type availability depends on applicable models and regions.

Hitch receiver

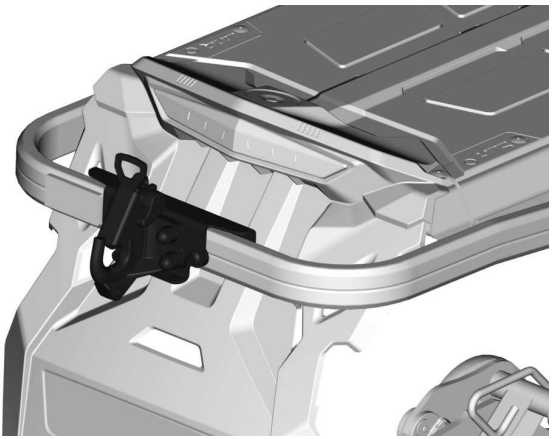


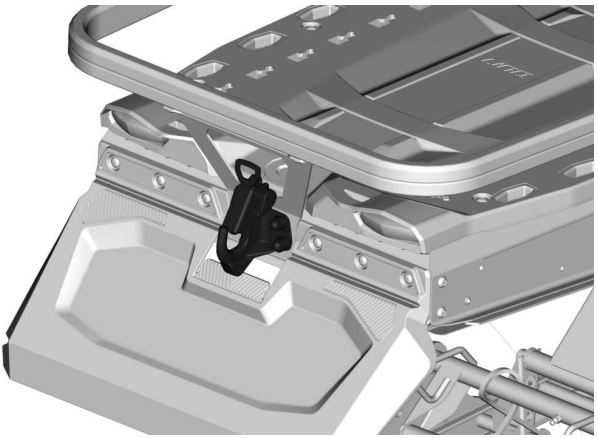
Use the hitch in conjunction with a tow bar to tow an accessory.

Tongue Hitch

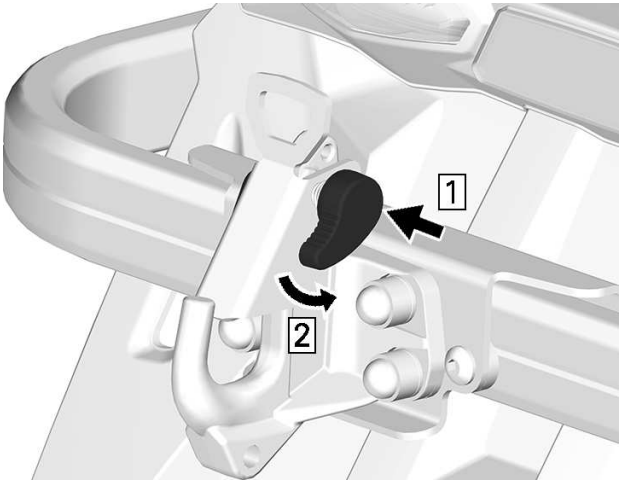


J-Hook Hitch





To open the hook, push and turn the handle to retract locking plate.



When attaching any accessory, always refer to the manufacturer's recommendations.

⚠ WARNING

Never tow an accessory with a rope. Always use a rigid tow bar. Using a rope would result in a collision between the object and the snowmobile and possibly in a tip over in case of a rapid deceleration or on a downward slope.

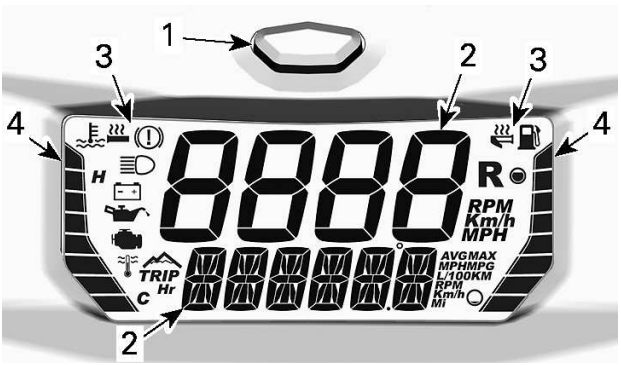
COMPACT DIGITAL DISPLAY

⚠ WARNING

Reading the digital display can distract from the operation of the vehicle, particularly from constantly scanning the environment.

NOTE:
The digital display is factory preset in Imperial units and in English. To change units or language, contact an authorized BRP snowmobile dealer.

Display Features



COMPACT DIGITAL DISPLAY

1. *Mode button*
2. *Digits*
3. *Icons*
4. *Bar gauges*

The digital display also has a built-in beeper.

Digital Display

⚠ WARNING

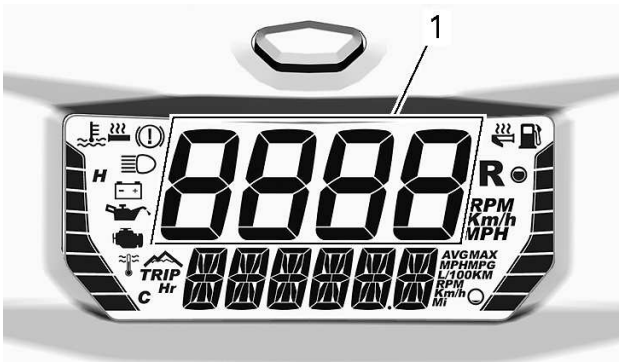
Never adjust or set functions on the digital display while riding the vehicle.

To set the displays to your preference, refer to *Display Combination Selection*.

Upper Display

The upper display is used to display:

– Vehicle speed.
– Engine speed (RPM).

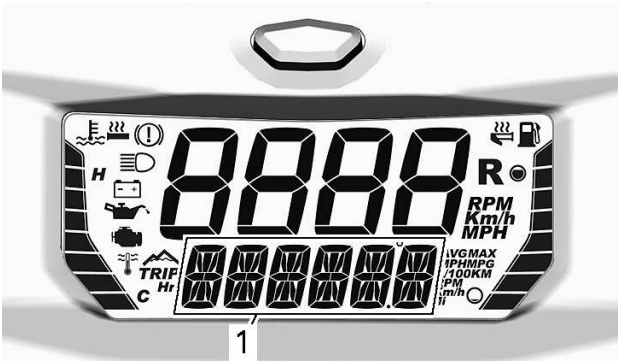


1. Upper Display

Lower Display

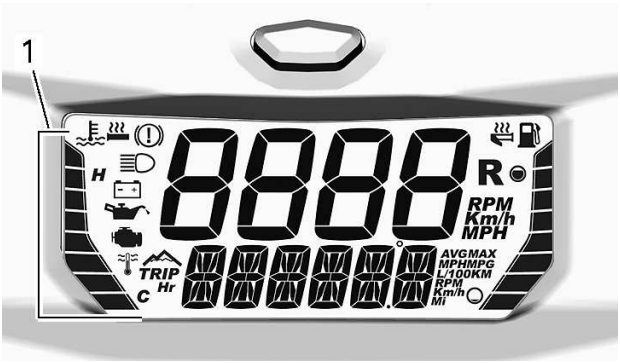
The lower display is used to display

– Various information (in combination with the upper display)
– Messages, refer to *Icons and Messages* and *Monitoring System* for details.
– Fault codes, refer to *Monitoring System* for details.



1. Lower display

LH side Bar Gauge



1. LH bar gauge

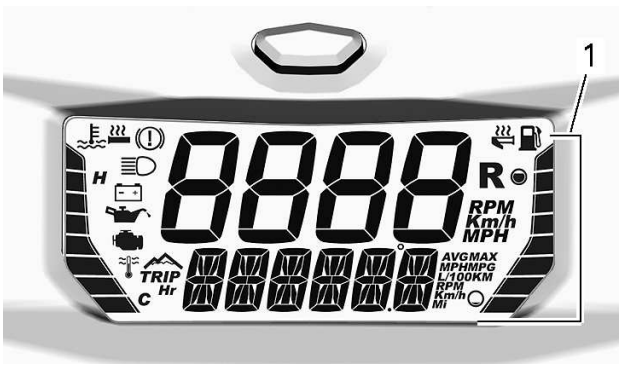
LH Bar Gauge Information
Engine coolant temperature
Heated grips level

The LH side bar gauge displays the engine coolant temperature except while adjusting the heating elements.

NOTICE
If engine overheats, stop vehicle in a safe place. Refer to TROUBLESHOOTING.

For details on heated grips operation, refer to *Heated Grips and Throttle Lever Switch* in *Secondary Controls*.

RH Side Bar Gauge



1. RH bar gauge

RH Bar Gauge Information
Fuel level
Heated throttle lever level

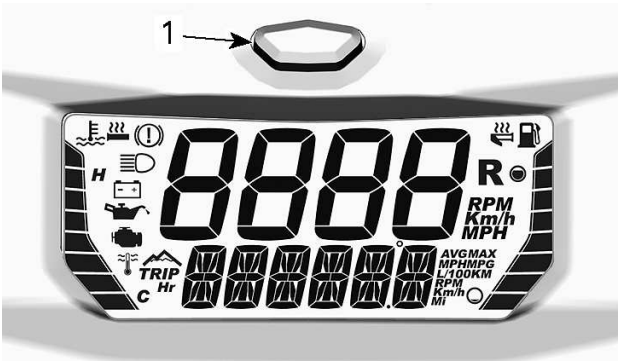
The RH side bar gauge displays the fuel level except while adjusting the heated throttle lever.

For details on heated throttle lever operation, refer to *Heated Grips and Throttle Lever Switch* in *Secondary Controls*.

Display Combination Selection

The upper and lower displays can be set as combination only. They cannot be set separately.

To scroll through the information options, press and release the mode button repeatedly until the desired information is displayed.



1. Gauge mode button

refer to the following table for available combinations.

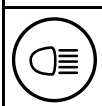
Available Display Combinations				
	Upper Display	Icon/ Specific information	Lower Display	Icon/ Specific information
1	Vehicle speed OR Engine RPM	**Km/h** or **MPH** OR **RPM**	Vehicle speed OR Engine speed	**Km/h** or **MPH** OR RPM
2	Vehicle speed	**Km/h** or **MPH**	Odometer	**Km** or **MI**
			Trip odometer A(1)	TRIP **Km** or **MI**
4			Trip odometer B (1) (2)	TRIP
5				**Km** or **MI**
6			Trip hour (1)	TRIP Hr
			Top speed (1)	MAX **Km/h** or **MPH**
7			Average speed (1)	AVG
8				**Km/h** or **MPH**

9	Vehicle speed	**Km/h** or **MPH**	Top RPM (1)	**MAX** **RPM**
10			Average fuel consumption	**AVG**
11				**L/100Km** or **MPG**
12			Engine coolant temperature	**E** and **C** or **F**
(1) Press and hold the mode button to reset (2) Resetting the trip odometer B also resets the average fuel consumption				

NOTE:
Make sure to display the vehicle speed whenever this information is necessary.

Icons and Messages

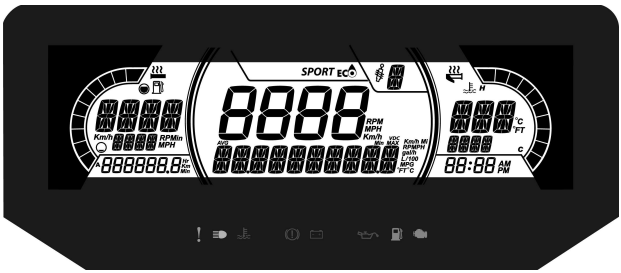
For details on malfunction pilot lamps and messages, refer to *Monitoring System*.

Icon	Beeper	Message Lower Display	Description
—	2 short beeps	GOOD KEY	At power up, with a good key. Vehicle ready for use.
—	—	BREAK-IN	Displayed during break-in period. Refer to *Break-in Period*
	4 short beeps every 5 minutes	LOW OIL	Engine oil pressure is low. Stop vehicle in a safe place then, check the engine oil level. If at level, the engine may need maintenance. Refer to your authorized BRP snowmobile dealer.
 (blinking)	—	—	Low fuel level. No bar left in fuel level display. Replenish fuel tank as soon as possible.
	Long beeps repeating slowly	REVERSE	Reverse is selected.
	3 short beeps	REV. FAIL	Reverse did not engage, try again.
	—	—	High beam headlights are selected.
—	—	SPORT	Driving Mode is set to Sport
—	—	SPORT OFF	Driving Mode is set back to Standard

Icon	Beeper	Message Lower Display	Description
—	—	ECO	Driving Mode is set to ECO
—	—	ECO OFF	Driving Mode is set back to Standard

7.2” DIGITAL DISPLAY

Multifunction Display



1. Select the upper or center display by using the MENU (M) button on the multifunction switch. Refer to *Secondary Controls* for Menu/ Set button location.
2. While the desired display is flashing, navigate through the display, by using the SET (S) button on the multifunction switch.

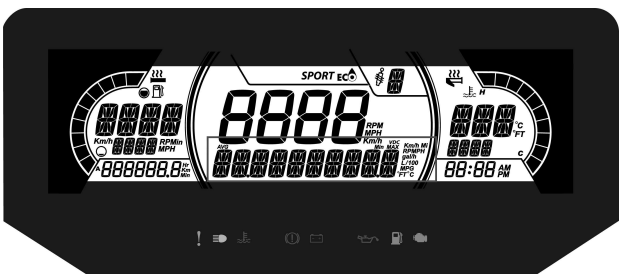
   Once the desired information is displayed, press the MENU (M) button or wait 5 seconds to confirm.

   To reset

   – Average speed
   – Top speed
   – Total fuel consumption

   Press and hold the SET (S) button while display is flashing.

Lower Display

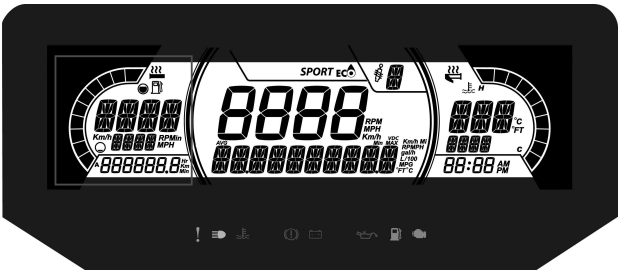


May display the following:

– Settings
– Messages

The SPEED display shows the Maximum and the averaged speed. Hold MENU button for 3 seconds to reset.

Left Lateral Display



The left lateral display includes:

- Fuel level indicator
- Heated Grip level
- Trip distance A and B (Km or mph)
- Cumulative hours
- Speed
- RPM
- Odometer

Right Lateral Display



The right lateral display includes:

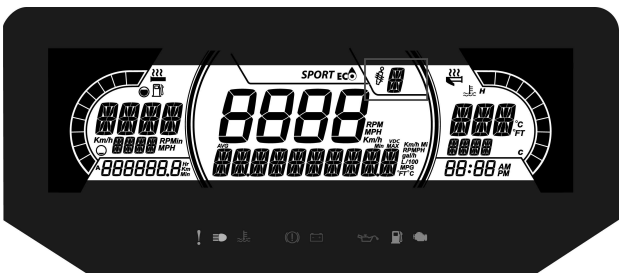
- Engine Temperature
- Heated throttle indicator
- Clock

Central Display



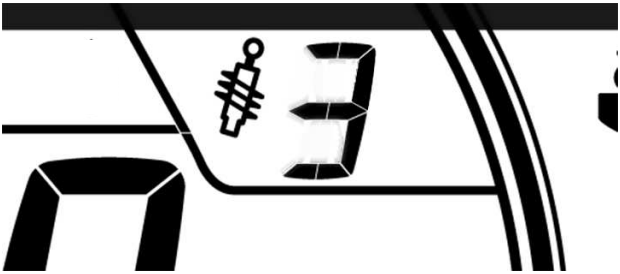
Display the vehicle speed in Km/h (or MPH) or the RPMs. Refer to *Settings*.

ACS Suspension Position Display (if equipped)



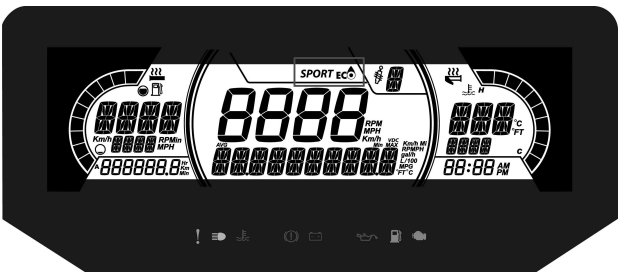
This display shows suspension setting.

The suspension is calibrated from 1 to 5, 1 being the softest setting.

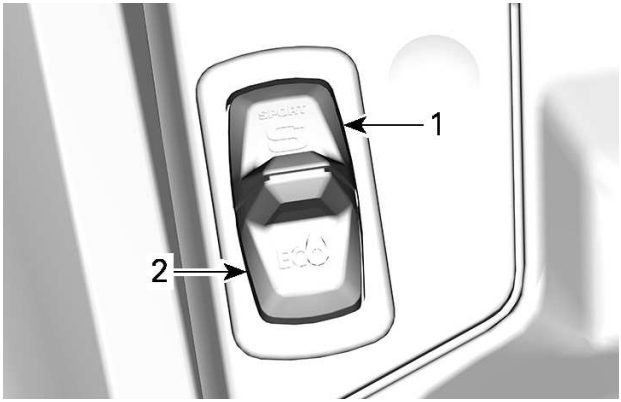


Refer to *TUNE YOUR RIDE* section for proper adjustment procedure.

Driving Mode Display



The driving mode display indicates the selected mode of operation:
– SPORT
– ECO
– STANDARD



NOTE:
When in STANDARD mode, no information is displayed.

A message of the selected mode will be displayed on the lower display at activation and deactivation as follow:

DRIVING MODE	MESSAGE AT ACTIVATION	MESSAGE AT DEACTIVATION
Sport	Sport	Sport OFF
Eco	Eco	Eco OFF

Warning Lamps and Indicators

The following indicator lamps will alert you to a vehicle condition that may become serious. Some lamps will illuminate when starting the vehicle to make sure they work. If any lamps remain on after starting the vehicle, refer to the respective system warning lamp for further information.

NOTE:
Some warning indicators appear in the display of the multifunction gauge and function the same as an indicator lamp but do not display when starting the vehicle.

Telltale Lights - Lower Bar



Lights	Description
	ORANGE - Vehicle malfunction
	BLUE - The high beam are selected
	RED - The engine temperature is too high.
	RED - Parking brake is engaged or malfunction of the brake system
	RED - The battery voltage too low or problem with the electrical system
	RED - Low engine oil pressure (if applicable)
	ORANGE - Low fuel level
	ORANGE **Turn on**: Malfunction of the vehicle emissions control system **Blink**: Engine problems, the limp home mode is activated. Have the vehicle serviced immediately.

Icons and Indicators - Multifunction Display

Icons and Indicators	
SPORT	Denotes SPORT mode is selected.
ECO	Denotes ECO mode is selected.

Settings

Setup

Using MENU button, select **SETTINGS** and hold to enter setting menu. Various options are available such as swapping the SPEED and RPM in the Central Display.

Unit Selection

This multifunction gauge is factory preset in metric units but it is possible to change it to imperial units.

Using MENU button, select **UNITS** and hold button to change units.

Setting Clock

Using MENU button, select **CLOCK** and hold to change units.

1. Press MENU button to select clock display.
2. Push and hold MENU button for 1 second.
3. Press MENU button to select 12:00 AM PM or 24:00 time base.
4. Push and hold MENU button or OK button to acknowledge selection.
5. Press MENU button to change hours (hours flash).
6. Push and hold MENU button or OK button to acknowledge hour selection
7. Push MENU button to switch to minutes (minutes flash).
8. Press MENU button to change minutes.

Setting Language

The gauge display language can be changed. Refer to an authorized BRP snowmobile dealer for language availability and to setup the gauge to your preference.

LARGE PANORAMIC 7.8” WIDE LCD DISPLAY

Basic Functions

LCD Display

Default Display



Multifunction Display



Left Lateral Display

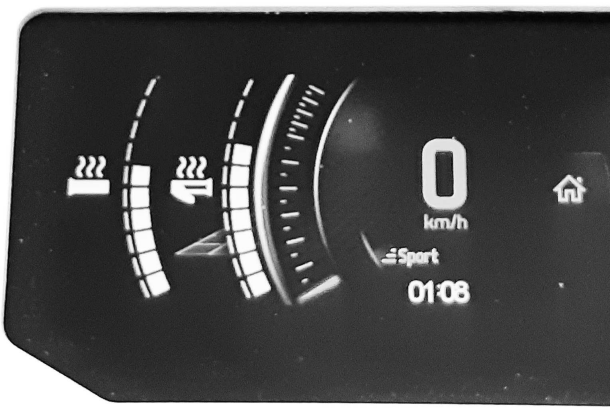
The left lateral display includes:

– Fuel level indicator
– Engine temperature
– Speedometer
– Tripmeter
– Rpm
– Clock
– Driving modes
– Warning pop-up



PRINCIPAL VIEW

– Heated grips
– Heated thumb



SECONDARY VIEW - HEATED ELEMENTS

To select the value to be displayed in the tripmeter;

1. Access the Stats/Trip screen
2. Select and activate the desired set of statistic to be shown (Trip A, Trip B or Total)

Right Lateral Display

The right lateral display includes:

- Tachometer
- Audio volume
- Audio output indicator
- Menu
  - BRP Connect
  - Phone
  - Statistics
  - Audio
  - Settings



STATS/TRIPS VIEW



SETTINGS VIEW

Navigating in the Digital Display

⚠ WARNING

Reading or tampering with the multifunction gauge can distract you from the operation of the vehicle, particularly from constantly scanning the environment. Always pay attention to road conditions, ensure your environment is clear and free from obstacles. Furthermore, when riding, only glance at the multifunction gauge briefly to maintain awareness of road conditions.

The multifunction gauge includes analog gauges (speedometer and tachometer), indicator lamps and an infotainment center with a digital screen.

We recommend you practice selecting some functions on the infotainment center before getting on the road. You will get used to them and they will be easier to use on the road.

Use the rotating control to control the display functions. Refer to *Rotary Control* in *Secondary Controls*.

Pressing the center knob will get the Menu selection in the right screen, in this order:

– BRP Connect
– Phone
– Statistics
– Audio
– Settings

When an icon is selected, its related screen will appear.



SETTINGS VIEW

When an item is selected, this sets the item to the current value.

Warning Lamps and Indicators

The following indicator lamps will alert you to a vehicle condition that may become serious. Some lamps will illuminate when starting the vehicle to make sure they work. If any lamps remain on after starting the vehicle, refer to the respective system warning lamp for further information.

NOTE:
Some warning indicators appear in the display of the multifunction gauge and function the same as an indicator lamp but do not display when starting the vehicle.

Telltale Lights - Lower Bar



Lights	Description
	ORANGE - Vehicle malfunction
	BLUE - The high beam are selected
	RED - The engine temperature is too high.
	RED - Parking brake is engaged or malfunction of the brake system
	RED - The battery voltage too low or problem with the electrical system
	RED - Low engine oil pressure (if applicable)
	ORANGE - Low fuel level
	ORANGE **Turn on**: Malfunction of the vehicle emissions control system **Blink**: Engine problems, the limp home mode is activated. Have the vehicle serviced immediately.

Icons and Indicators - Multifunction Display

Icon	Description
	Smartphone Network connection
	Bluetooth device
	Smartphone battery level indicator
	Helmet pairing indicator
	Fuel indicator
	Temperature indicator
	Helmet audio output

Settings

Menu

BRP Connect



Before using BRP Connect, the BRP GO! app must be downloaded to the phone. The app can be downloaded from the Apple App Store or Google Play Store via a simple search. Not all phones are compatible.

Visit our website for more details

www.brpconnecttutorial.com

NOTE:
The smartphone must be connected via Bluetooth **and** with a USB cable to the USB port located in the glove box.

User's personal data will be deleted from the cluster when phone pairing is deleted.

User agree that personal data (contact list and call history) be transferred to the cluster when smartphone is connected.

Contact list and call history are stored in cluster permanently. To delete these information you must un-pair your smartphone or overwrite using another smartphone.

NOTE:
The apps can also reach directly by pressing the APPS button located at the bottom of the rotary control.

Phone



The phone menu is to access:

– The phone history
– The phone contact list

NOTE:
To have access to the Phone menu, a phone and rider helmet must be paired. Refer to *Pair your Smartphone Via Bluetooth*.

Statistics



The Statistics menu is used to get :

– Trip distance information
– Trip elapsed time information
– Instant fuel consumption
– Average fuel consumption
– Maximum speed
– Average speed

3 sets of statistics are kept in memory. Each set of statistic can be re-set independently.

Press knob to enter into the stats/trip screen.

Move the knob left or right to select another trip.

Press the knob to exit this screen and validate your selection.

Audio

Allow to control volume and music listened in the helmet audio system.

Gives also song informations when available.

Settings



The Settings menu is to:

- Adjust clock
- Pair Bluetooth devices
  - Phone
  - Rider headset
  - Passenger headset
- Adjust the display (brightness and Mode (AUTO/DAY/NIGHT)
- Adjust the units (Imperial/Metric)
- Set the language
- Get information about firmware version and device regulatory compliance
- Show vehicle fault codes.

Pairing your Smartphone Via Bluetooth

On the Vehicle

1. Short press the **rotary control knob** to access menu.
2. Go to “Settings” and move the knob **RIGHT**.
3. Select “Bluetooth” and move the knob **RIGHT**.
4. Select “Phone” and move the knob **RIGHT**.
5. Select “Add Phone” and press the knob **RIGHT**.

Bluetooth is now visible.

On the Phone

1. Activate your phone's bluetooth function.

   Refer to your manufacturer's user guide for detailed procedure.
2. Choose "BRP Connect"
3. A confirmation number will appear on your phone screen and the vehicle gauge screen. Make sure these numbers match.
4. Press Pair on your phone and select the green check mark on the vehicle gauge
5. Allow Contacts and Favorite Sync on your phone

Pairing a Helmet

To pair a helmet, go to the "Settings" page and select "Add helmet".

BRP GO! App

Follow these steps to setup your smartphone with BRP Connect.

1) Download the BRP GO! Smartphone App

Download the BRP GO! app via the App Store for Apple™ or the Google™ Play Store for Android.

2) Download Apps Compatible With BRP Connect

Visit our website to know more about the compatible apps. These apps will improve your riding experience. Some apps may require additional purchase to be compatible with the system or may require additional devices to be used.

www.brpconnecttutorial.com

3) Connect your smartphone using your charging / data transfer cable

It is recommended to use an original charging cable from the smartphone OEM to optimize transfer between the phone and the vehicle. Use the front USB port.

1. Unlock your phone screen
2. Connect your phone charging cable
3. A checkmark will appear on your phone screen once the connection is done.

4) Access your Apps

Quick press the **JOYSTICK** to access Menu.

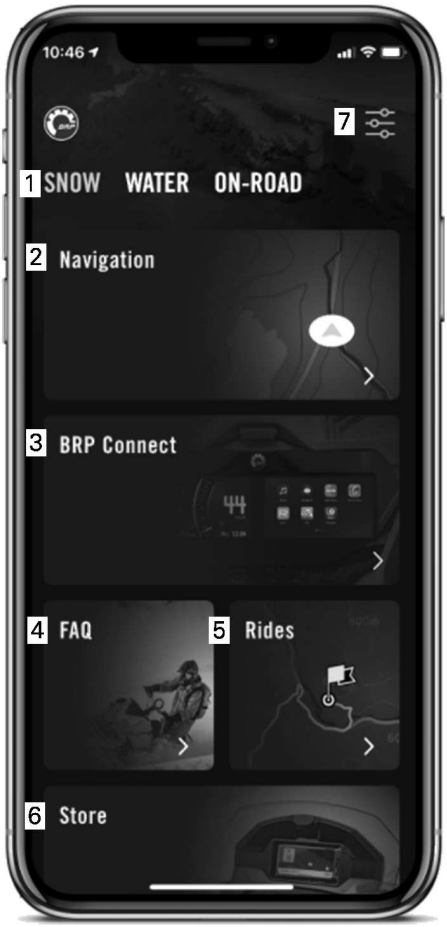
Push the joystick **UP** to select “Launch BRP Connect” and push the joystick **RIGHT**.

Select the app you would like to use and press the **JOYSTICK**.

– To leave the app, long press the **JOYSTICK**.
– To return to the Main Menu, press the BRP Connect Button.

NOTE:
The apps can also reach directly by pressing the APPS button located at the bottom of the rotary control.

Quick Tour of the BRP GO! App



1. Playground: Select your playground to see content related to your vehicle. For Ski-Doo snowmobiles, select the Snow playground.

2. Navigation: Access all the navigation features of the app such as route planning, turn-by-turn navigation, friends location, offline navigation, and more. You can access thousands of snowmobile trails across North America and Europe on the map.
3. BRP Connect: See the list of compatible apps that can be used on the vehicle's display. You can also access from there the Vehicle Connection Guide to help you connect your phone to your vehicle's display.
4. FAQ: This link takes you to answers of common questions asked by riders like you. An internet connection is required.
5. Rides: Easily access your planned and completed rides made with the Navigation features of the BRP GO! app.
6. Store: This link takes you to the online store of your vehicle. An internet connection is required.
7. Settings: Manage your profile and your account settings.

Messages in Multifunction Gauge

Important information about vehicle condition is displayed on the multifunction gauge. When starting the engine, always look at the gauge for any indicator lamps or special messages.

Icon	MESSAGE/ WARNING	CAUSE	WHAT TO DO
NA	BAD KEY	Defective key	Contact an authorized BRP snowmobile dealer.
	WRONG KEY	Wrong key	Use the right key for the vehicle or contact an authorized BRP snowmobile dealer.
	HIGH ENGINE TEMPERATURE	Engine is overheating	– Stop and wait for engine to cool off. – Check for leaks. – Check coolant level and adjust (see *Maintenance procedures*).
	LIMP HOME MODE	Important engine management component	* Have the vehicle transported to the nearest authorized BRP snowmobile dealer.

Icon	MESSAGE/ WARNING	CAUSE	WHAT TO DO
	⚠ LOW OIL - STOP ENGINE	Low oil pressure	– Check for oil leaks. – Check oil level and adjust (see *Maintenance procedures*.
A combination of two different warnings can occur.			
NA = Not applicable			

* BRP recommends having the vehicle transport when in LIMP HOME. If you operate the vehicle in LIMP HOME, avoid abrupt maneuvers and immediately go to the nearest authorized BRP snowmobile dealer to have your vehicle serviced before riding again. In LIMP HOME, the engine RPM is limited and therefore the vehicle speed.

Important information messages can also be displayed temporarily to assist indicator lamps.

When a digital warning appears, it will show the warning for 6 seconds and then the warning will disappear for 60 seconds. During the 60 seconds, the small digital indicator will flash. This sequence will be repeated three times and then will stop for 15 minutes. During the 15 minutes only the indicator lamps will be activated.

FUEL

Fuel Requirements

NOTICE

Always use fresh gasoline. Gasoline will oxidize; the result is loss of octane, volatile compounds, and the production of gum and varnish deposits which can damage the fuel system.

Alcohol fuel blending varies by country and region. Your vehicle has been designed to operate using the recommended fuels, however, be aware of the following:

- Use of fuel containing alcohol above the percentage specified by government regulations is not recommended and can result in the following problems in the fuel system components:
  - Starting and operating difficulties.
  - Deterioration of rubber or plastic parts.
  - Corrosion of metal parts.
  - Damage to internal engine parts.
- Inspect frequently for the presence of fuel leaks or other fuel system abnormalities if you suspect the presence of alcohol in gasoline exceeds the current government regulations.
- Alcohol blended fuels attract and hold moisture which may lead to fuel phase separation and can result in engine performance problems or engine damage.

Recommended Fuel

Use unleaded gasoline containing MAXIMUM 10% ethanol. The gasoline must have the following minimum octane requirements.

fuel type	engine	min. octane rating
Fuel with NO ethanol	600 EFI	87 Pump Posted AKI (RON+MON)/2) 92 RON
	850 E-TEC 600R E-TEC	91 AKI (RON+MON)/2 95 RON
Fuel which may contain up to 10% MAX ethanol	600 EFI 850 E-TEC 600R E-TEC	91 AKI (RON+MON)/2 95 RON 

NOTICE

Never experiment with other fuels. Engine or fuel system damages may occur with the use of an inadequate fuel.

NOTICE

Do NOT use fuel from fuel pumps labeled E85.

Use of fuel labeled E15 is prohibited by U.S. EPA Regulations.

Fueling Procedure

⚠ WARNING

Always stop engine before refueling.

⚠ WARNING

Fuel is flammable and explosive under certain conditions.
Never use an open flame to check fuel level.
Never smoke or allow flame or spark in vicinity.
Always work in a well-ventilated area.

NOTE:
Do not sit or lean on seat when fuel tank cap is not properly installed.

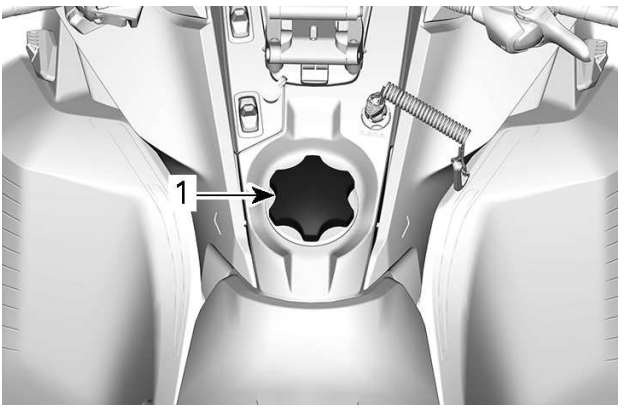
1. Stop engine.
2. Have operator and passenger get off vehicle.

⚠ WARNING

Do not allow anyone seated on the vehicle while fueling.

3. Unscrew slowly the fuel reservoir cap counterclockwise to stabilize pressure before removing it.

NOTE:
A short whistling sound is normal.



TYPICAL

1. Fuel tank cap

4. Insert the spout into the filler neck.
5. Pour fuel slowly so that air can escape from the tank and prevent fuel flow back. Be careful not to spill fuel.
6. Stop filling when the fuel reaches the bottom of filler neck. **Do not overfill.**

⚠ WARNING

Never top up the fuel tank before placing the vehicle in a warm area. As temperature increases, fuel expands and may overflow.

7. Fully tighten fuel reservoir cap clockwise.

⚠ WARNING

Always wipe off any small fuel spillage from the vehicle. If a major spillage occurs, remove side panels to remove fuel vapors from engine compartment before starting.

NOTE:
Do not sit or lean on seat when fuel tank cap is not properly installed.

INJECTION OIL

Recommended Injection Oil

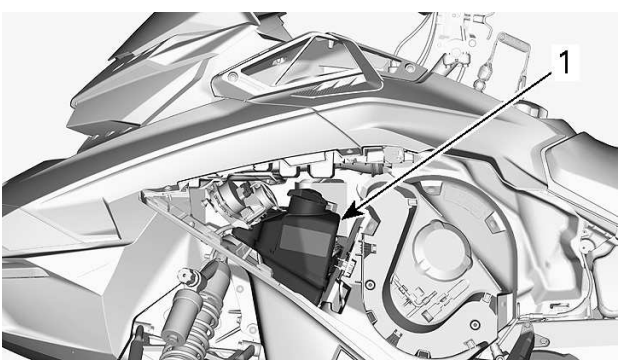
Rotax® engines were developed and validated using the XPS™ oil. BRP recommends the use of its XPS injection oil or an equivalent at all time. Damages caused by the use of an injection oil not suitable for this 2-stroke direct fuel injection engine may not be covered by the BRP Limited Warranty.

RECOMMENDED Injection Oil	
600 EFI	XPS 2T Synthetic Blend Oil (semi-synthetic)
600R E-TEC 850 E-TEC	XPS 2T E-TEC Synthetic Oil (full synthetic)
IF THE RECOMMENDED XPS ENGINE OIL IS NOT AVAILABLE	
Use a 2-stroke lubricant designed for snowmobiles meeting or exceeding the following lubricant industry specifications: – JASO FD (M345-2004) – SAE Grade 4 (F / M 4)	

Injection Oil Level Verification

The injection oil reservoir is located behind the LH side panel. Refer to *Equipment* for opening procedure.

Always maintain a sufficient amount of recommended injection oil in the injection oil reservoir.



1. Oil reservoir

Marks on the tank indicates "3/8" and "1/2" of the total amount of oil.

NOTICE
Check level and refill every time you refuel.

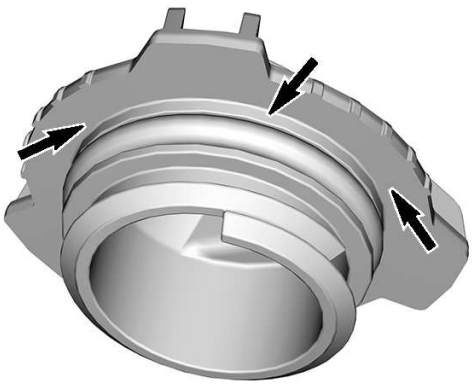
Adding Injection Oil

Remove injection oil reservoir cap.

Add injection oil.

NOTE:
Do not overfill.

Wipe the reservoir cap seal and flange area.



Reinstall cap.

NOTICE
Do not overtighten.

⚠ WARNING
Wipe off any oil spills. Oil is highly flammable when heated.

BREAK-IN PERIOD

Operation During Break-In

Engine

During the break-in period:

– Avoid prolonged full throttle operation.
– Avoid sustained accelerations.
– Avoid prolonged cruising speeds.
– Avoid engine overheating.

However, brief accelerations and speed variations contribute to a good break-in.

During a predetermined period, the engine management system controls some engine parameters.

The duration is based on fuel volume. It will take approximately two fuel tanks to complete the break-in.

During this period:

– The engine performance and behavior will not be optimal.
– The fuel and oil consumption will be higher.

Drive Belt

A new drive belt requires a break in period of 50 km (30 mi).

During the break-in period:

– Avoid strong acceleration and deceleration.
– Avoid pulling a load.
– Avoid high speed cruising.

If the vehicle creeps, lower the drive belt height from the preliminary setting. Refer to *Drive Belt* in *maintenance procedure*.

BASIC PROCEDURES

Engine Starting Procedure

Procedure

1. Apply parking brake.
2. Recheck throttle control lever operation.
3. Put your helmet on.
4. Ensure that the tether cord cap is installed on the engine cut-off switch and that the cord is attached to your clothing eyelet.
5. Ensure that the emergency engine stop switch is in the ON position (up).

⚠ WARNING
Never depress throttle while starting engine.

6. Release parking brake.

NOTE:
For an initial cold start, do not release parking brake. Perform the *vehicle warm-up* procedure as explained below.

Manual Start Models

Grab rewind starter handle, pull handle slowly until a resistance is felt, then hold handle firmly and pull vigorously to start engine.

NOTE:
The maximum torque that can be transmitted to the engine by the rewind starter is 80 Nm (59 lbf-ft). The maximum force that can be exerted on the on the rope is 2 200 N (494.6 lbf).

Electric Start Models

600 EFI Engine

Turn the ignition key clockwise to engage the electric starter and start the engine. Release the key immediately when engine has started.

E-TEC Engine

Depress the START/RER button to engage the electric starter and start the engine. Release button immediately when engine has started.

NOTICE
Do not engage electric starter for more than 10 seconds at a time. A rest period should be observed between the cranking cycles to allow electric starter to cool down.

Emergency Starting

Do not attempt any emergency starting procedure. Have the battery charged or replaced.

Vehicle Warm-Up

Before every ride, vehicle has to be warmed up as follows.

1. Start engine as explained in *Engine Starting Procedure* above.
2. Allow engine to warm up one or two minutes at idle speed.

NOTE:
Engine will shut down after approximately 12 minutes of idling.

3. Disengage parking brake.
4. Apply throttle until drive pulley engages. Drive at low speed the first two or three minutes.

NOTICE

If vehicle does not move when throttle is applied, stop engine, remove tether cord cap from the engine cut-off switch, then do the following.

- **Check if skis are stuck on the ground. Lift one ski at a time by the handle, then put it down.**
- **Check if track is stuck on the ground. Lift rear of snowmobile enough to clear track from the ground, then drop.**
- **Check rear suspension for hard snow or ice accumulation that could interfere with track rotation. Clean the area.**

⚠ CAUTION

Beware of injuries by using proper lifting techniques, notably using your legs force. Do not attempt to lift the rear of vehicle if it is above your limits.

⚠ WARNING

Make sure tether cord cap is removed before standing in front the vehicle, getting close to the track or rear suspension components.

NOTE:
Warm-up is electronically controlled. During this period (up to 10 minutes depending on ambient temperature), engine RPM is limited.

Shifting in High or Low range

This transmission is designed to accept shifting while moving. However, shifting while the engine is under heavy load is not recommended.

NOTICE

Shifting at a speed faster than 30 km/h (19 MPH) may cause serious damage to the gearbox.

High Range

This position selects the high speed range of the gearbox. It is the normal driving speed range. It allows the vehicle to reach its maximum speed.

Low Range

This position selects the low speed range of the gearbox. It allows the vehicle to move slowly with maximum engine torque.

Low range should be used whenever:

- Pulling a cargo carrier or accessory
- Hauling a load
- Crossing obstacles
- Climbing onto trailer
- Hill climbing

It is also recommended to use low range if driving for prolonged periods at speeds under 24 km/h (15 MPH).

NOTICE

Use the low speed range to pull a cargo carrier, carry heavy cargo, go over obstacles or drive uphill and downhill.

Reverse (RER)

When the engine is running, depressing the RER button will slow down engine RPM to almost a stop and advance the ignition timing to invert crankshaft rotation.

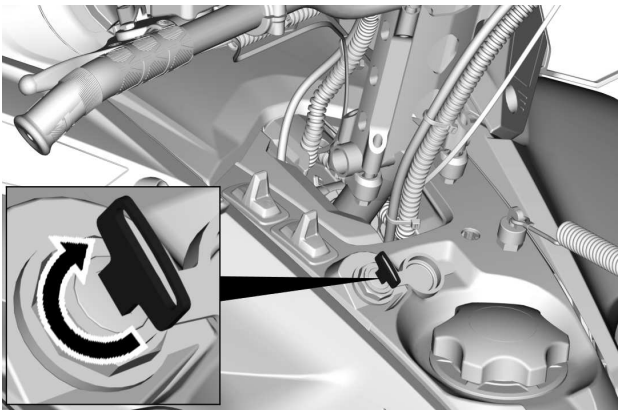
- Engine will automatically shift into forward when restarting after stopping or stalling.
- Shifting procedure will take place only when the engine is running.
- If engine is running at a speed above 4300 RPM, the function of the RER button is disabled.
- It is recommended to warm up the engine to its normal operating temperature before shifting.

Shifting in Reverse

1. Bring vehicle to a complete stop.
2. Apply and hold brake. Remain seated, refer to *Rider Position (Reverse Operation)* in *Riding the vehicle* for posture information.

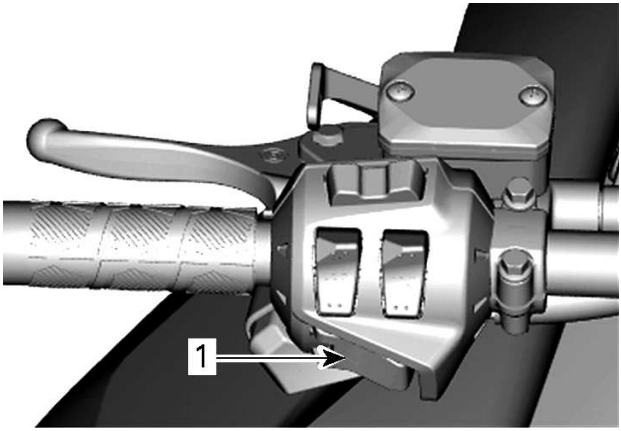
600 EFI Engine

3. With engine at idle speed, turn the ignition key clockwise and release.



E-TEC Engine

4. With engine at idle speed, press and release the Start / RER button.



1. Start / RER button

All Engines

5. Wait until reverse beeper sounds, then gently depress throttle lever.

⚠ WARNING

The reverse speed is not limited. Always proceed with caution as fast reverse could result in loss of vehicle stability. Come to complete stop before activating the reverse. Always remain seated and apply the brake before shifting. Ensure the path behind is clear of obstacles or bystanders before proceeding.

Shifting in Forward from Reverse

1. Bring vehicle to a complete stop.
2. Apply and hold brake.

600 EFI Engine

3. Turn the ignition key clockwise and release.

E-TEC Engine

4. Press and release the RER button.

All Engines

5. Apply throttle slowly and evenly. Allow drive pulley to engage then accelerate carefully.

Shutting Off the Engine

Release throttle lever and wait until engine has returned to idle speed.

Shut off the engine using either the emergency engine stop switch or by pulling off the tether cord cap from the engine cut-off switch.

The engine can also be shut off by turning the ignition key counter-clockwise in OFF position, if equipped.

⚠ WARNING

Always remove the tether cord cap from engine cut-off switch when vehicle is not in operation in order to prevent accidental engine starting or to avoid unauthorized use by children or others or theft.

RIDING CONDITIONS AND YOUR SNOWMOBILE

Altitude

At factory, your snowmobile was calibrated to be used within an altitude range (relative to sea level).

A new snowmobile has a tag attached to the handlebar indicating its calibration. Refer to *Safety Information on Vehicle*.

If for any reason you don't know your snowmobile calibration, contact an authorized BRP snowmobile dealer.

If your snowmobile is to be used at an altitude outside the specified range, have it calibrated accordingly by an authorized BRP snowmobile dealer.

NOTICE

An inappropriate altitude calibration would decrease performance and may cause serious damage to the snowmobile.

Temperature

The engine management of these engines provides the optimum air/fuel ratio for all temperatures.

Hard Packed Snow

All models covered in this guide which are equipped with a minimum track profile of 44 mm (1.75 in) are built for deep snow conditions and should never be used during a prolonged period of time in marginal or hard packed snow conditions.

In the event you have to ride in these types of conditions:

- Avoid exceeding a speed of 70 km/h (45 mph) in all conditions
- Avoid hard acceleration (over 75% of throttle)
- Ice scratchers should be applied
- Engine temperature should not exceed 75% on the temperature gauge.

NOTICE

Running these types of tracks at high speed on a trail, on hard packed surfaces or on ice puts more stress on the lugs, which tends to heat up as a result. It also could drastically reduce the life of specific wear parts. To avoid potential degradation, delamination or damages to the track and wear parts, reduce your speed and minimize the distance that is being ridden on these types of surfaces.

Vehicles Equipped with Ice Scratchers

Ice scratchers are equipped on the vehicle to increase engine cooling efficiency, to lubricate and to cool track clips and sliders. They must be used whenever on ice, hard packed snow, or any conditions that do not lift enough snow particles into the rear suspension and the tunnel.

NOTICE

Although it is not recommended to ride a snowmobile equipped with a high lug profile track on trails or hard packed snow conditions, it is highly suggested to combine idler wheels and ice scratchers on a vehicle used in these conditions.

IMPORTANT

Ridding in these trail conditions puts the reliability of the track and its warranty at risk

If equipped with the following track profile heights, never exceed the recommended sustained vehicle speeds listed.

Track Profile Height	Maximum Sustained Speed
57 mm (2.25 in) 60 mm (2.36 in)	110 km/h (70 MPH)
64 mm (2.52 in) 75 mm (3 in)	95 km/h (60 MPH)

TUNE YOUR RIDE

Snowmobile handling and comfort depend upon multiple adjustments.

⚠ WARNING

Suspension adjustment could affect vehicle handling. Always take time to familiarize yourself with the vehicle's behavior after any suspension adjustment have been made. Always adjust LH and RH suspension components to the same setting.

Choice of suspension adjustments vary with carrying load, operator's weight, personal preference, riding speed and field condition.

NOTE:
Some adjustments may not apply to your snowmobile.

⚠ WARNING

Before proceeding with any suspension adjustment, remember:

- **Park in a safe place.**
- **Remove the tether cord cap from the engine cut-off switch.**
- **Use appropriate lifting device or have assistance to share lifting stress. If a lifting device is not used, use proper lifting techniques, notably using your legs force.**
- **Do not attempt to lift the front or rear of vehicle if it is above your limits.**
- **Support front of vehicle off the ground with a suitable device before adjusting suspension.**
- **Support rear of vehicle off the ground with a wide-base snowmobile stand with a rear deflector panel.**
- **Make sure support device is stable and secure.**

The best way to set up the suspension is to customize each adjustment one at a time. Various adjustments are interrelated. It may be necessary to readjust center spring after adjusting front springs for instance. Test run the snowmobile under the same conditions; trail, speed, snow, operator riding position, etc. Proceed methodically until you are satisfied.

Following are guidelines to fine-tune suspension. Use suspension adjustment tool provided in the tool kit.

Front Suspension Adjustments

Front Springs

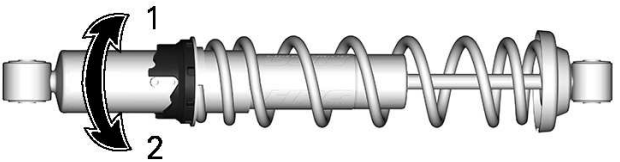
Front spring preload has an effect on front suspension firmness.

Front spring preload also has an effect on the steering behavior.

Action	Result
Increasing preload	Firmer front suspension
	Higher front end
	More precise steering
	More bump absorption capability
Decreasing preload	Softer front suspension
	Lower front end
	Lighter steering
	Less bump absorption capability

Cam Type Adjuster

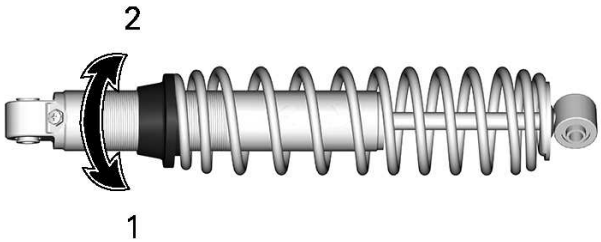
Using the suspension adjustment tool provided in the tool kit, turn the cam to increase or decrease the spring preload.



1. *Increase preload*
2. *Decrease preload*

Ring Type 1 Adjuster

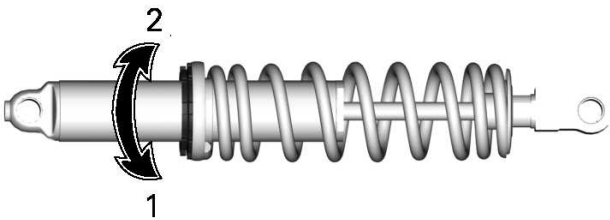
Grab and turn the ring and the spring to increase or decrease the spring preload.



1. *Increase preload*
2. *Decrease preload*

Ring Type 2 Adjuster

Grab and turn the ring and the spring to increase or decrease the spring preload.



1. *Increase preload*
2. *Decrease preload*

Front Shock Absorber Adjustments (KYB PRO Series Only)

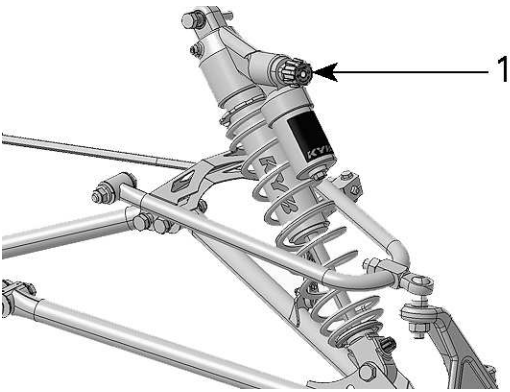
Front Shock Compression Damping (KYB PRO Series Only)

NOTE:
Both low and high speed compression damping are adjusted simultaneously.

Low speed compression damping controls how the shock absorber reacts to a low suspension velocity (slow compression strokes, in most cases when riding at lower speeds).

High speed compression damping controls how the shock absorber reacts to a high suspension velocity (quick compression strokes, in most cases when riding at higher speeds).

To adjust, turn the adjuster button located on the reservoir.



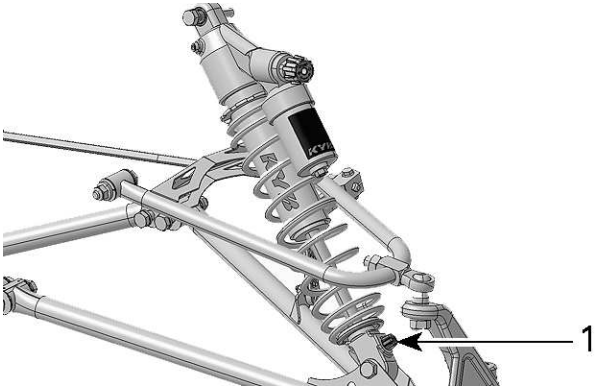
1. Compression damping adjuster button

Turning	Action	Result on big and small bumps
Clockwise	Increasing compression damping force	Firmer compression damping
Counter Clockwise	Decreasing compression damping force	Softer compression damping

Front Shock Rebound Damping (KYB PRO R Series Only)

Rebound damping controls how the shock absorber restrains the extension stroke.

To adjust, turn the adjuster button or slot located at the bottom of the shock absorber.

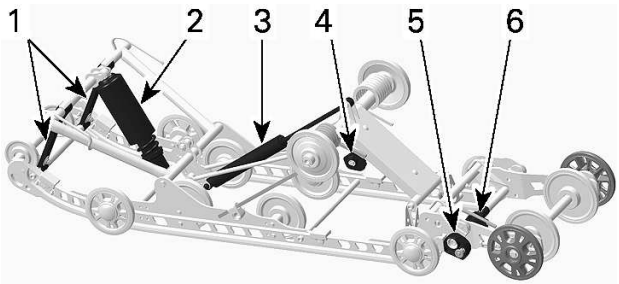


1. Rebound adjuster button

Turning	Action	Result on big and small bumps
Clockwise	Increasing rebound damping force	Firmer rebound damping (slower extension speed)
Counter Clockwise	Decreasing rebound damping force	Softer rebound damping (faster extension speed)

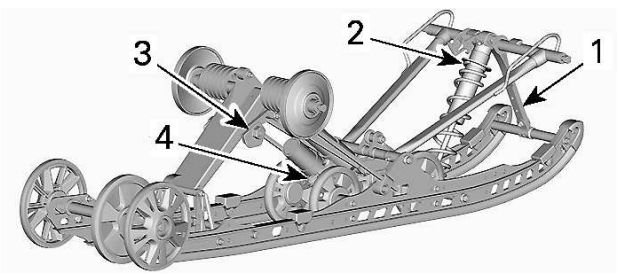
NOTE:
In repetitive short small bumps (ripple), it is recommended to use a lower rebound damping setting.

Rear Suspension Adjustments



SC-5U - ADJUSTABLE COMPONENTS

1. *Stopper straps*
2. *Center spring*
3. *Rear shock absorber*
4. *Rear springs*
5. *Extension stabilizer cam*
6. *Extension spring cam*



CMOTION

1. *Stopper strap*
2. *Center spring*
3. *Rear spring*
4. *Rear shock absorber*

NOTICE
Whenever adjusting rear suspension, check track tension and adjust if necessary.

Stopper Strap

Stopper strap length has an effect on the amount of weight the center spring has to carry especially during acceleration, therefore on the front end uplift.

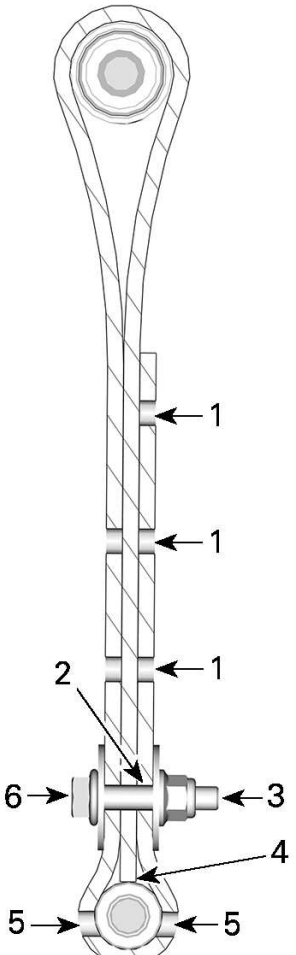
Stopper straps length also has an effect on center spring travel.

NOTICE
Whenever stopper strap length is changed, track tension must be checked.

Action	Result
Increasing stopper strap length	Lighter ski pressure under acceleration
	More center spring travel
	More bump absorption capability
Decreasing stopper strap length	Heavier ski pressure under acceleration
	Less center spring travel
	Less bump absorption capability

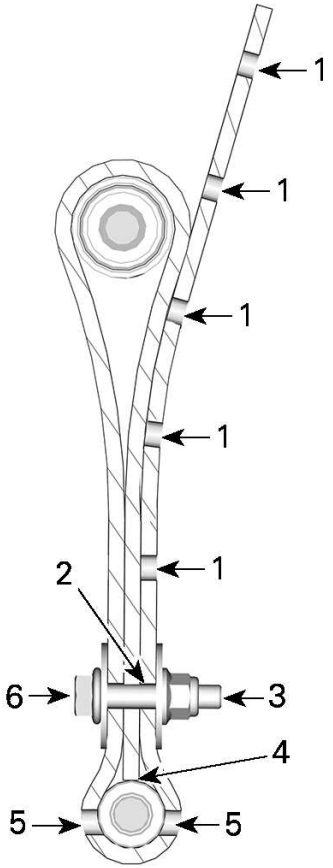
NOTE:
Stopper strap could be set to position 4, 5 and 6. Below are illustrations for position 4 and 6. Smaller numbers correspond to a longer strap setting.

NOTICE
Do NOT set to a position lower than 4. It could lead to center shock damage.



STOPPER STRAP POSITION 4 (4TH HOLE, FACTORY SETTINGS)

1. *Free holes*
2. *4th hole from end*
3. *Towards rear*
4. *Tip of strap touching strap axis*
5. *Two holes left open between screw head and nut*
6. *Towards front*



STOPPER STRAP POSITION 6 (6TH HOLE)

1. *Free holes*
2. *6th hole from end*
3. *Towards rear*
4. *Tip of strap touching strap axis*
5. *Two holes left open between screw head and nut*
6. *Towards front*

Always install the stopper strap bolt as close as possible to the lower shaft.

NOTE:
Decreasing the stopper strap length may reduce comfort.

When operating the snowmobile in deep snow, it may be necessary to vary stopper strap length and/or riding position, to change the angle at which the track rides on the snow. Operator's familiarity with the various adjustments as well as snow conditions will dictate the most efficient combination.

Generally, a longer stopper strap setting gives better performance in deep snow on a flat landscape.

Center Spring

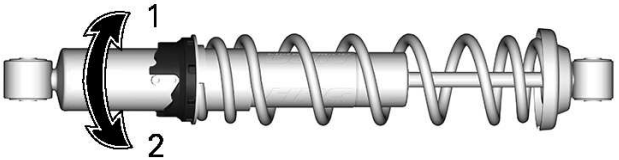
Center spring preload has an effect on steering effort, handling and bump absorption.

Also, since center spring preload adjustment puts more or less pressure on the front of the track, it has an effect on the performance in deep snow.

Action	Result
Increasing preload	Lighter steering
	More bump absorption capability
	Better deep snow starts
	Better deep snow performance and handling
Decreasing preload	Heavier steering
	Less bump absorption capability
	Better trail handling

Cam Type Adjuster

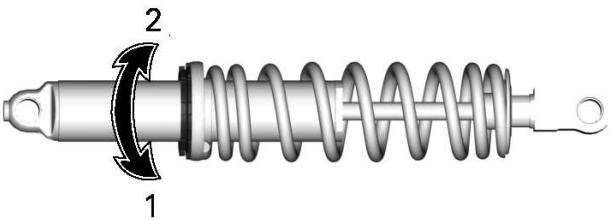
Using the suspension adjustment tool provided in the tool kit, turn the cam to increase or decrease the spring preload.



1. *Increase preload*
2. *Decrease preload*

Ring Type Adjuster

Grab and turn the ring and the spring to increase or decrease the spring preload.



1. *Increase preload*
2. *Decrease preload*

Rear Spring

Rear spring preload has an effect on comfort, ride height and load compensation.

Also, adjusting rear spring preload shifts more or less weight to the snowmobile front end. As a result, more or less weight is applied to the skis. This has an effect on performance in deep snow, steering effort and handling.

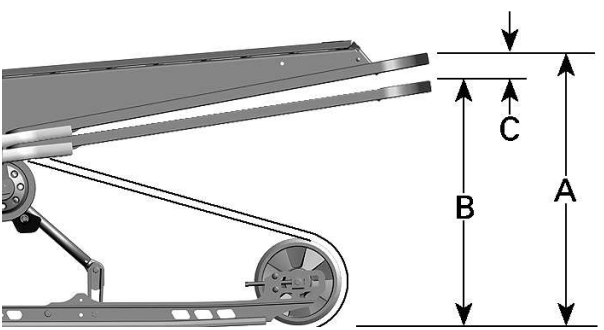
Slight suspension bottoming occurring under the worst riding conditions indicates a good choice of spring preload.

NOTE:
Ensure to adjust suspension when hauling cargo.

NOTE:
Remove cargo load to ease preload adjustment.

Action	Result
Increasing preload	Firmer rear suspension
	Higher rear end
	More bump absorption capability
	Heavier steering
Decreasing preload	Softer rear suspension
	Lower rear end
	Less bump absorption capability
	Lighter steering
	Better performance and handling in deep snow

Refer to the following to determine if preload is correct.



TYPICAL - PROPER ADJUSTMENT

- A = Suspension fully extended
- B = Suspension has collapsed with operator, passenger and load added
- C = Distance between dimension “A” and “B”, see table below

C	What to do
50 to 75 mm (2 to 3 in)	No adjustment required
More than 75 mm (3 in)	Adjusted too soft. Increase preload
Less than 50 mm (2 in)	Adjusted too firm. Decrease preload

NOTE:
If the specification is unattainable with the original springs, see an authorized BRP snowmobile dealer for other available springs.

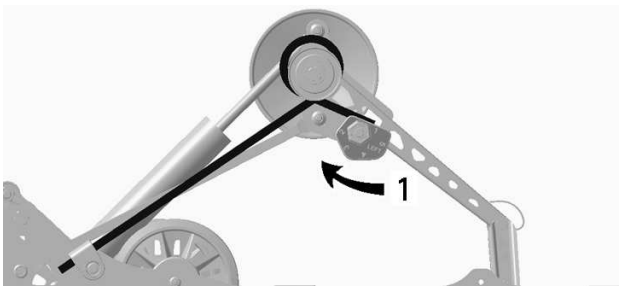
NOTICE

To increase spring preload, always turn the left side adjustment cam in a clockwise direction, and the right side cam in a counterclockwise direction.

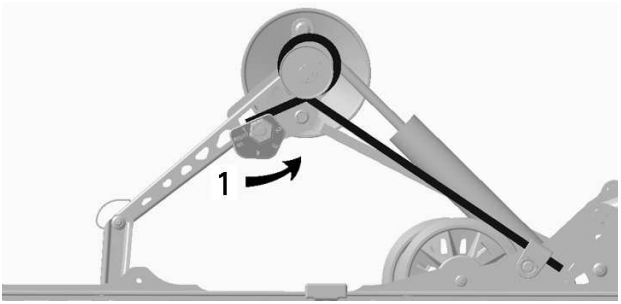
⚠ CAUTION

Never set preload cams directly from position 5 to 1 or directly from position 1 to 5.

The adjustment cams have 5 different settings, 1 being the softest.



TYPICAL — LH SIDE
1. Adjust spring preload



TYPICAL — RH SIDE
1. Adjust spring preload

Center Shock Absorber

Center Shock Compression Damping (If Equipped)

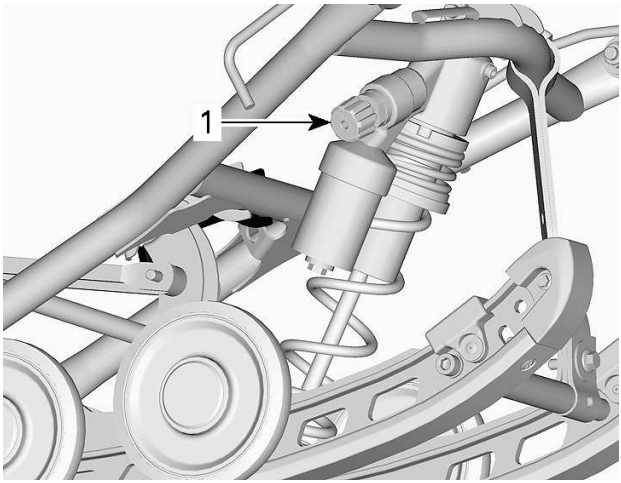
NOTE:
Both low and high speed compression damping are adjusted simultaneously.

Low speed compression damping controls how the shock absorber reacts to a low suspension velocity (slow compression strokes, in most cases when riding at lower speeds).

High speed compression damping controls how the shock absorber reacts to a high suspension velocity (quick compression strokes, in most cases when riding at higher speeds).

Action	Result on big and small bumps
Increasing compression damping force	Firmer compression damping
Decreasing compression damping force	Softer compression damping

To adjust, turn clockwise to increase damping force and counterclockwise to decrease damping force.



1. Center shock compression damping adjustment knob

Rear Shock Absorber

Rear Shock Compression Damping (If Equipped)

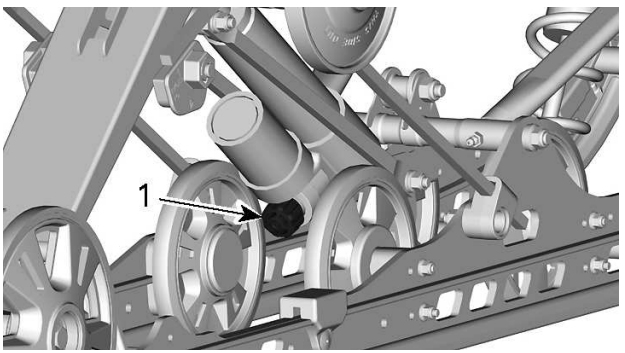
NOTE:
Both low and high speed compression damping are adjusted simultaneously.

Low speed compression damping controls how the shock absorber reacts to a low suspension velocity (slow compression strokes, in most cases when riding at lower speeds).

High speed compression damping controls how the shock absorber reacts to a high suspension velocity (quick compression strokes, in most cases when riding at higher speeds).

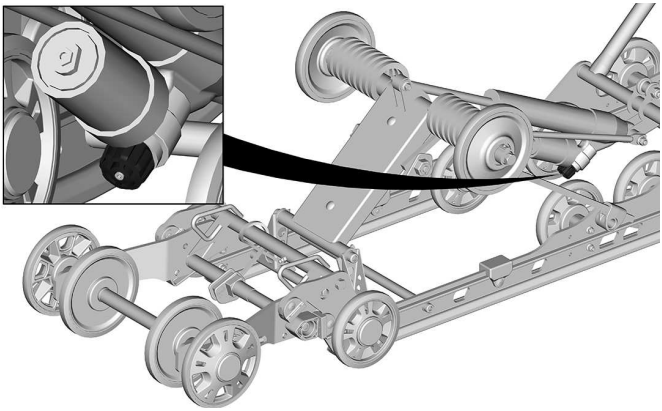
Turning	Action	Result on big and small bumps
Clockwise	Increasing compression damping force	Firmer compression damping
Counter Clockwise	Decreasing compression damping force	Softer compression damping

To adjust, turn the adjuster button located on the oil reservoir on shock clockwise to increase compression damping force and counterclockwise to decrease compression damping force.



CMOTION

1. Compression damping adjustment button



SC-5U

Rear Shock Absorber (ACS)

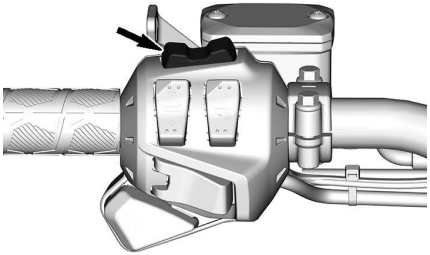
The operator can adjust the comfort and ride height by adjusting the air pressure inside the air shock absorber.

To adjust, proceed as follows:

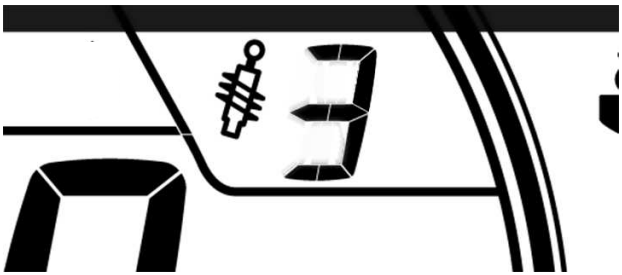
Model with 7.2“Digital Display

1. Start engine.
2. Press and hold MODE (M) button until requested setting starts flashing.

   When the air suspension mode is selected, AIR_SUSP is displayed. The display also shows the actual suspension setting (a number from 1 to 5, 1 being the softest setting).
3. Depress the heated throttle lever switch as shown to increase or decrease air pressure.



4. The desired set point appears on the display. To confirm, press the MENU (M) button or wait 5 seconds.

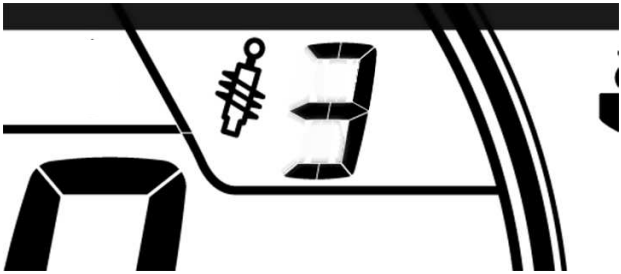


ACS SETTING 3

Model with the Large Panoramic 7.8” Wide LCD Display

1. Start engine.
2. Press the Vehicle Data button, to the bottom left of the rotary control.

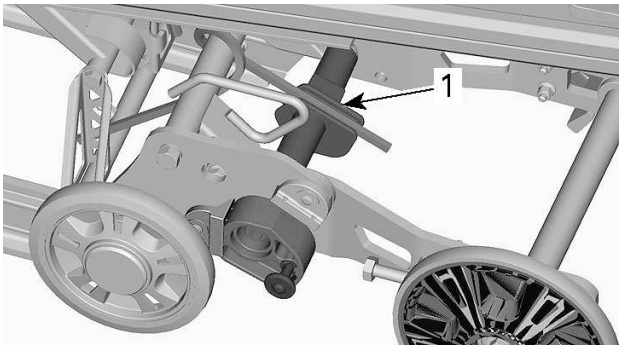
   When the air suspension mode is selected, AIR_SUSP is displayed. The display also shows the actual suspension setting (a number from 1 to 5, 1 being the softest setting).
3. Turn the knob modify the suspension setting.
4. The desired set point appears on the display. To confirm, press on the knob or wait 5 seconds.



ACS SETTING 3

Rear Suspension Extension Spring Preload (SC-5U)

Adjust by turning the preload cam.



1. Preload cam

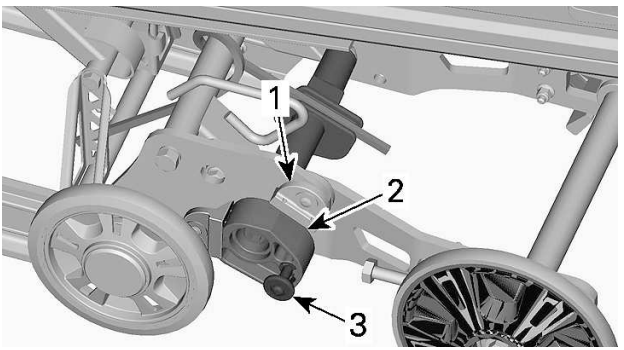
ACTION	RESULT
Increasing preload	More track surface on the ground
	Less extension lift
Decreasing preload	Better reverse capability especially in deep snow

	More extension lift

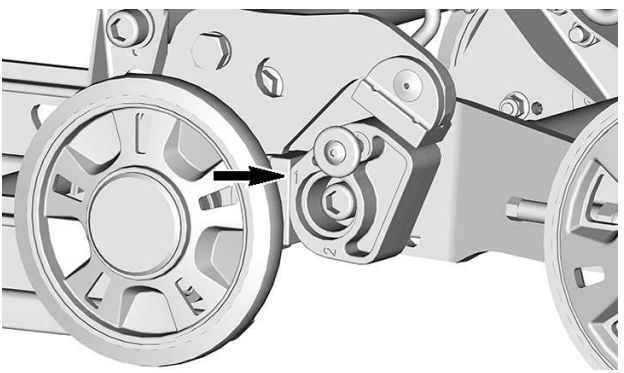
Rear Suspension Extension Stabilizer Cam

To change stabilizer cam setting, pull lock off, then turn cam.

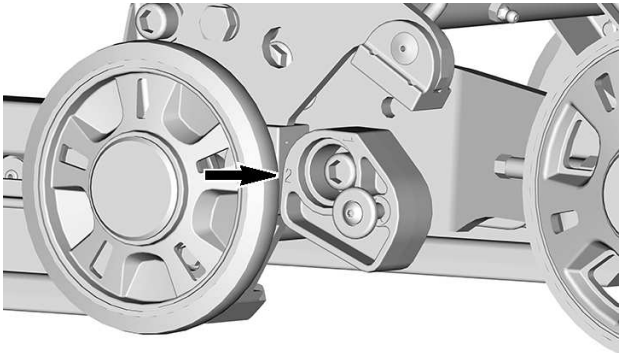
Ensure the lock if fully pushed-in when locked.



1. *Stop block*
2. *Stabilizer cam*
3. *Lock*



POSITION 1



POSITION 2

Cam setting	Result
Away from upper stop block (Position 2)	Allows free movement of the suspension extension on its entire stroke
	General use
	Good reverse capability
Leaning on both stop blocks (Position 1)	Locks the suspension extension in line with the suspension rails
	Better traction, full track contact surface
	Better towing capability

Adjustment Tips According to Vehicle Behavior

Problem	Corrective measures
Front suspension darting	Check ski alignment. – Reduce front suspension spring preload. – Increase center spring preload. – Reduce rear spring preload.
Steering feels too heavy at steady speeds	– Reduce front suspension spring preload. – Increase center spring preload.
Steering feels too heavy during acceleration	– Reduce rear spring preload. – Lengthen limiter strap.
Too much ski lift during cornering or acceleration	– Shorten limiter strap. – Increase rear spring preload.
Rear of snowmobile seems too stiff	– Reduce rear spring preload. – Reduce compression damping adjustment if equipped
Rear of snowmobile seems too soft	– Increase rear spring preload.
Rear suspension is frequently bottoming	– Increase compression damping adjustment if equipped. – Increase rear spring preload. – Increase center spring preload. – Lengthen limiter strap.
Snowmobile seems to pivot around its center	– Reduce center spring preload. – Increase rear spring preload. – Increase front suspension spring preload. – Shorten limiter strap.
Track spins too much at start	– Reduce rear spring preload. – Increase center spring preload. – Lengthen limiter strap.

MAINTENANCE

MAINTENANCE SCHEDULE

Maintenance is very important to keep your vehicle in safe operating condition. The vehicle should be serviced as per the maintenance schedule.

Proper maintenance is the owner's responsibility. A warranty claim may be denied if, among other things, the owner or operator caused the problem through improper maintenance or use.

Perform periodic checks and follow the maintenance schedule. **The maintenance schedule does not exempt the pre-ride inspection**.

⚠ WARNING

Failure to properly maintain the vehicle according to the maintenance schedule and procedures can make it unsafe to operate.

EPA Regulation - Canadian and USA Vehicles

A repair shop or person of the owner's choosing may maintain, replace, or repair emission control devices and systems. These instructions do not require components or service by BRP or authorized BRP snowmobile dealers.

Although an authorized BRP snowmobile dealer has an in-depth technical knowledge and tools to service your vehicle, the emission-related warranty is not conditioned on the use of an authorized BRP snowmobile dealer or any other establishment with which BRP has a commercial relationship.

Proper maintenance is the owner's responsibility. A warranty claim may be denied if, among other things, the owner or operator caused the problem through improper maintenance or use.

For emission-related warranty claims, BRP is limiting the diagnosis and repair of emission-related parts to the authorized BRP snowmobile dealers. For more information, please refer to the *US EPA Emissions PERFORMANCE WARRANTY* contained in the *warranty* section.

You must follow the instructions for fuel requirements in the fueling section of this manual. Even if gasoline containing greater than ten volume percent ethanol is readily available, the US EPA issued a prohibition against the use of gasoline containing greater than 10 vol% ethanol that applies to this vehicle. The use of gasoline containing greater than 10 vol% ethanol with this engine may harm the emission control system.

Deep Snow/ Trail/ Crossover/ Utility Usage

Whether your vehicle is a Deep Snow, Trail, Crossover, or Utility model, these types of usage require maintenance tasks to be performed between the regular yearly intervals. These are identified as A+ in the chart below.

If you regularly ride **deep snow and perform frequent hill climbs**, follow the A+ Deep Snow interval and perform the tasks outlined in the chart below.

If you regularly ride in **trails, explore the countryside, or work** with your snowmobile, follow the A+ Trail / Crossover / Utility interval and perform the tasks outlined in the chart below.

Maintenance Schedule

Make sure to perform proper maintenance at recommended intervals as indicated in the tables.

The maintenance chart indicates the items needing to be addressed based on 2 criteria, whichever happens first:

– Calendar time
– Odometer reading.

Your driving habits determines the factors you shall adhere too. For example:

– Someone who uses their vehicle every other weekend trail riding with friends would most likely follow the **odometer reading** to determine the frequency of his maintenance.
– Someone who uses their vehicle seldomly over the year or only on a few occasions would follow the **calendar time** to determine the frequency of his maintenance.

IMPORTANT: The following tables show the appropriate maintenance application for the first 3 years. For subsequent years, repeat the same pattern alternatively.

Maintenance Overview		
Calendar Time	Odometer	Deep Snow or Trail/ Cross Over/ Utility
Every Month	1500 km (1000 mi)	**A+**
1 Year	3000 km (2000 mi)	**A**
Every Month	4500 km (3000 mi)	**A+**
2 Years	6000 km (4000 mi)	**A** and **B**
Every Month	7500 km (5000 mi)	**A+**

600 EFI Engine

TRAIL / CROSSOVER / UTILITY	A+	A	B
A = Adjust **C = Clean** **I = Inspect** **L = Lubricate** **R = Replace** **T = Torque**	**Every month or 1500 km (1000 mi)**	**Every year or 3000 km (2000 mi)**	**Every 2 years or 6000 km (4000 mi)**
Air and Fuel Delivery			
Fuel components (fuel cap, hoses, clamps and tank fixation) and function*		**I**	
In-line fuel filter		**R** Every 5 years	
Body and Chassis			
Body panels and hardware		**I, T**	
Pivots, latches, hinges and key barrels		**L**	
Engine and Cooling			
Engine cooling components (coolant concentration, coolant level, hose condition, clamps, leaks)*		**I, A**	
Oil pump cable		**A**	
Engine rubber mounts			**I**
Rewind starter (manual start models)			**C, L**

TRAIL / CROSSOVER / UTILITY	A+	A	B
A = Adjust **C = Clean** **I = Inspect** **L = Lubricate** **R = Replace** **T = Torque**	**Every month or 1500 km (1000 mi)**	**Every year or 3000 km (2000 mi)**	**Every 2 years or 6000 km (4000 mi)**
Spark plugs			**R**
Oil injection pump strainer		**I, C** Every 3 years or 10 000 km (6000 mi)	
Engine coolant		**R** Every 5 years	
Exhaust and Emissions			
Exhaust components (gaskets, pipes, muffler condition, leaks)*		**I**	
Exhaust manifold		**T**	
Brake			
Brake components and function*		**I, L**	
Brake fluid			**R** Every 2 years
Drive			
Chaincase drive chain tension	**A**	**A**	

TRAIL / CROSSOVER / UTILITY	A+	A	B
A = Adjust **C = Clean** **I = Inspect** **L = Lubricate** **R = Replace** **T = Torque**	**Every month or 1500 km (1000 mi)**	**Every year or 3000 km (2000 mi)**	**Every 2 years or 6000 km (4000 mi)**
Gearbox / chaincase oil level	**I**	**I**	
Track alignment and tension	**A**	**A**	
Gearbox / chaincase oil			**R**
Continuously Variable Transmission (CVT)			
CVT components and function*		**I, C, L**	
CVT drive belt condition	**I**		
CVT drive belt tension	**A**	**A**	
Drive pulley retaining screw		**T**	
Electrical			
Battery connections and condition		**I**	
Electrical harness routing		**I**	
Headlight aim		**A**	
Modules and applicable software updates		**I**	
Operation of control switches and lighting		**I**	
Steering and Controls			
Ski runners	**I**	**I**	

TRAIL / CROSSOVER / UTILITY	A+	A	B
A = Adjust **C = Clean** **I = Inspect** **L = Lubricate** **R = Replace** **T = Torque**	**Every month or 1500 km (1000 mi)**	**Every year or 3000 km (2000 mi)**	**Every 2 years or 6000 km (4000 mi)**
Gearbox position lever operation		**I, A**	
Steering alignment		**I, A**	
Steering components and function*		**I**	
Throttle cable		**A**	
Throttle operation		**I**	
Suspension			
Suspension components and function*		**I, L**	

*For an extensive list of maintenance actions to be performed, refer to the Maintenance Checklist.

DEEP SNOW	A+	A	B
A = Adjust C = Clean I = Inspect L = Lubricate R = Replace T = Torque	**Every month or 1500 km (1000 mi)**	**Every year or 3000 km (2000 mi)**	**Every 2 years or 6000 km (4000 mi)**
Air and Fuel Delivery			
Fuel components (fuel cap, hoses, clamps and tank fixation) and function*		**I**	
In-line fuel filter		**R** Every 5 years	
Body and Chassis			
Body panels and hardware		**I, T**	
Pivots, latches, hinges and key barrels		**L**	
Engine and Cooling			
Engine cooling components (coolant concentration, coolant level, hose condition, clamps, leaks)*		**I, A**	
Oil pump cable		**A**	
Engine rubber mounts			**I**
Rewind starter (manual start models)			**C, L**
Spark plugs			**R**
Oil injection pump strainer		**I, C** Every 3 years or	

DEEP SNOW	A+	A	B
A = Adjust **C = Clean** **I = Inspect** **L = Lubricate** **R = Replace** **T = Torque**	**Every month or 1500 km (1000 mi)**	**Every year or 3000 km (2000 mi)**	**Every 2 years or 6000 km (4000 mi)**
		10 000 km (6000 mi)	
Engine coolant		**R** Every 5 years	
Exhaust and Emissions			
Exhaust components (gaskets, pipes, muffler condition, leaks)*		**I**	
Exhaust manifold		**T**	
Brake			
Brake components and function*		**I, L**	
Brake fluid			**R** Every 2 years
Drive			
Chaincase drive chain tension	**A** After the first 75 km (50 mi) then every 500 km (300 mi), up to then every	**A**	

DEEP SNOW	A+	A	B
A = Adjust **C = Clean** **I = Inspect** **L = Lubricate** **R = Replace** **T = Torque**	**Every month or 1500 km (1000 mi)**	**Every year or 3000 km (2000 mi)**	**Every 2 years or 6000 km (4000 mi)**
	1500 km (1000 mi)		
Gearbox / chaincase oil level		**I**	
Track alignment and tension	**A** After the first 75 km (50 mi) then every 500 km (300 mi), up to then every 1500 km (1000 mi)	**A**	
Gearbox / chaincase oil			**R**
Continuously Variable Transmission (CVT)			
CVT components and function*		**I, C, L**	
CVT drive belt condition	**I**		
CVT drive belt tension	**A**	**A**	
Drive pulley retaining screw		**T**	
Electrical			

DEEP SNOW	A+	A	B
A = Adjust C = Clean I = Inspect L = Lubricate R = Replace T = Torque	**Every month or 1500 km (1000 mi)**	**Every year or 3000 km (2000 mi)**	**Every 2 years or 6000 km (4000 mi)**
Battery connections and condition		**I**	
Electrical harness routing		**I**	
Headlight aim		**A**	
Modules and applicable software updates		**I**	
Operation of control switches and lighting		**I**	
Steering and Controls			
Ski runners		**I**	
Gearbox position lever operation		**I, A**	
Steering alignment		**I, A**	
Steering components and function*		**I**	
Throttle cable		**A**	
Throttle operation		**I**	
Suspension			
Suspension components and function*		**I, L**	

*For an extensive list of maintenance actions to be performed, refer to the Maintenance Checklist.

E-TEC Engine (except turbo)

TRAIL / CROSSOVER / UTILITY	A+	A	B
A = Adjust C = Clean I = Inspect L = Lubricate R = Replace T = Torque	**Every month or 1500 km (1000 mi)**	**Every year or 3000 km (2000 mi)**	**Every 2 years or 6000 km (4000 mi)**
Air and Fuel Delivery			
Fuel components (fuel cap, hoses, clamps and tank fixation) and function*		**I**	
In-line fuel filter		**R** Every 5 years	
Body and Chassis			
Body panels and hardware		**I, T**	
Pivots, latches, hinges and key barrels		**L**	
Engine and Cooling			
Engine cooling components (coolant concentration, coolant level, hose condition, clamps, leaks)*		**I, A**	
Engine rubber mounts			**I**
Rewind starter (manual start models)			**C, L**
Spark plugs			**R** Every 3 years

TRAIL / CROSSOVER / UTILITY	A+	A	B
A = Adjust **C = Clean** **I = Inspect** **L = Lubricate** **R = Replace** **T = Torque**	**Every month or 1500 km (1000 mi)**	**Every year or 3000 km (2000 mi)**	**Every 2 years or 6000 km (4000 mi)**
			or 10 000 km (6000 mi)
Oil injection pump strainer		**I, C** Every 3 years or 10 000 km (6000 mi)	
RAVE valves		**I, C** Every 3 years or 10 000 km (6000 mi)	
Engine coolant		**R** Every 5 years	
Exhaust and Emissions			
Exhaust components (gaskets, pipes, muffler condition, leaks)*		**I**	
Exhaust manifold		**T**	

TRAIL / CROSSOVER / UTILITY	A+	A	B
A = Adjust **C = Clean** **I = Inspect** **L = Lubricate** **R = Replace** **T = Torque**	**Every month or 1500 km (1000 mi)**	**Every year or 3000 km (2000 mi)**	**Every 2 years or 6000 km (4000 mi)**
Brake			
Brake components and function*		**I, L**	
Brake fluid			**R** Every 2 years
Drive			
Chaincase drive chain tension	**A**	**A**	
Gearbox / chaincase oil level	**I**	**I**	
Track alignment and tension	**A**	**I, A**	
Gearbox / chaincase oil			**R**
Continuously Variable Transmission (CVT)			
CVT components and function*		**I, C, L**	
CVT drive belt condition	**I**		
CVT drive belt tension	**A**	**A**	
Drive pulley retaining screw		**T**	
Electrical			
Battery connections and condition		**I**	

TRAIL / CROSSOVER / UTILITY	A+	A	B
A = Adjust **C = Clean** **I = Inspect** **L = Lubricate** **R = Replace** **T = Torque**	**Every month or 1500 km (1000 mi)**	**Every year or 3000 km (2000 mi)**	**Every 2 years or 6000 km (4000 mi)**
Electrical harness routing		**I**	
Headlight aim		**A**	
Modules and applicable software updates		**I**	
Operation of control switches and lighting		**I**	
Steering and Controls			
Ski runners	**I**	**I**	
Gearbox position lever operation		**I, A**	
Steering alignment		**I, A**	
Steering components and function*		**I**	
Throttle cable		**A**	
Throttle operation		**I**	
Suspension			
Suspension components and function*		**I, L**	

*For an extensive list of maintenance actions to be performed, refer to the Maintenance Checklist.

DEEP SNOW	A+	A	B
A = Adjust **C = Clean** **I = Inspect** **L = Lubricate** **R = Replace** **T = Torque**	**Every month or 1500 km (1000 mi)**	**Every year or 3000 km (2000 mi)**	**Every 2 years or 6000 km (4000 mi)**
Air and Fuel Delivery			
Fuel components (fuel cap, hoses, clamps and tank fixation) and function*		**I**	
In-line fuel filter		**R** Every 5 years	
Body and Chassis			
Body panels and hardware		**I, T**	
Pivots, latches, hinges and key barrels		**L**	
Engine and Cooling			
Engine cooling components (coolant concentration, coolant level, hose condition, clamps, leaks)*		**I, A**	
Engine rubber mounts			**I**
Rewind starter (manual start models)			**C, L**
Spark plugs		**R** Every 3 years or 10 000 km	

DEEP SNOW	A+	A	B
A = Adjust **C = Clean** **I = Inspect** **L = Lubricate** **R = Replace** **T = Torque**	**Every month or 1500 km (1000 mi)**	**Every year or 3000 km (2000 mi)**	**Every 2 years or 6000 km (4000 mi)**
		(6000 mi)	
Oil injection pump strainer		**I, C** Every 3 years or 10 000 km (6000 mi)	
RAVE valves		**I, C** Every 3 years or 10 000 km (6000 mi)	
Engine coolant		**R** Every 5 years	
Exhaust and Emissions			
Exhaust components (gaskets, pipes, muffler condition, leaks)*		**I**	
Exhaust manifold		**T**	
Brake			
Brake components and function*		**I, L**	
Brake fluid			**R**

DEEP SNOW	A+	A	B
A = Adjust **C = Clean** **I = Inspect** **L = Lubricate** **R = Replace** **T = Torque**	**Every month or 1500 km (1000 mi)**	**Every year or 3000 km (2000 mi)**	**Every 2 years or 6000 km (4000 mi)**
			Every 2 years
Drive			
Chaincase drive chain tension	**A** After the first 75 km (50 mi) then every 500 km (300 mi), up to then every 1500 km (1000 mi)	**A**	
Gearbox / chaincase oil level		**I**	
Track alignment and tension	**A** After the first 75 km (50 mi) then every 500 km (300 mi), up to then every 1500 km	**I, A**	

DEEP SNOW	A+	A	B
A = Adjust C = Clean I = Inspect L = Lubricate R = Replace T = Torque	**Every month or 1500 km (1000 mi)**	**Every year or 3000 km (2000 mi)**	**Every 2 years or 6000 km (4000 mi)**
	(1000 mi)		
Gearbox / chaincase oil			**R**
Continuously Variable Transmission (CVT)			
CVT components and function*		**I, C, L**	
CVT drive belt condition	**I**		
CVT drive belt tension	**A**	**A**	
Drive pulley retaining screw		**T**	
Electrical			
Battery connections and condition		**I**	
Electrical harness routing		**I**	
Headlight aim		**A**	
Modules and applicable software updates		**I**	
Operation of control switches and lighting		**I**	
Steering and Controls			
Ski runners		**I**	
Gearbox position lever operation		**I, A**	
Steering alignment		**I, A**	

DEEP SNOW	A+	A	B
A = Adjust C = Clean I = Inspect L = Lubricate R = Replace T = Torque	**Every month or 1500 km (1000 mi)**	**Every year or 3000 km (2000 mi)**	**Every 2 years or 6000 km (4000 mi)**
Steering components and function*		**I**	
Throttle cable		**A**	
Throttle operation		**I**	
Suspension			
Suspension components and function*		**I, L**	

*For an extensive list of maintenance actions to be performed, refer to the Maintenance Checklist.

MAINTENANCE PROCEDURES

This section includes instructions for basic maintenance procedures.

⚠ WARNING

Turn off the engine, remove tether cord cap and follow these maintenance procedures when performing maintenance. If you do not follow proper maintenance procedures you can be injured by hot parts, moving parts, electricity, chemicals or other hazards.

⚠ WARNING

Should removal of a locking device be required (e.g. lock tabs, self-locking fasteners, etc.) when undergoing disassembly/assembly, always replace with a new one.

Engine Coolant

⚠ WARNING

Never open coolant tank cap when engine is hot.

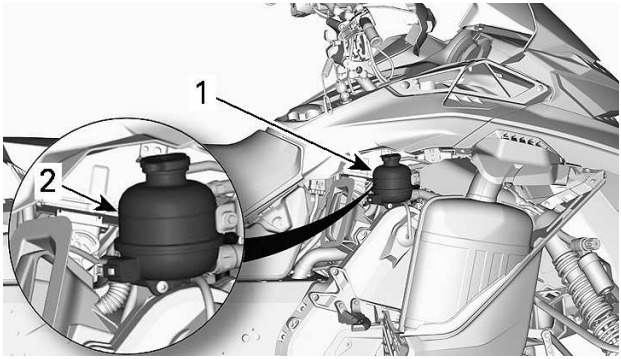
Engine Coolant Level Verification

Open the RH side panel, see *Body and Seat*.

Check coolant level at room temperature. Liquid should be at cold level line of coolant tank.

NOTE:
When checking level at low temperature it may be slightly lower then the mark.

If additional coolant is necessary or if entire system has to be refilled, refer to an authorized BRP snowmobile dealer, repair shop or person of your own choosing.



1. *Coolant reservoir*
2. *COLD line*

Recommended Engine Coolant

RECOMMENDED COOLANT
XPS Extended life pre-mixed coolant
IF THE RECOMMENDED XPS COOLANT IS NOT AVAILABLE
Distilled water and antifreeze solution (50% distilled water, 50% antifreeze)

NOTICE
Always use ethylene-glycol antifreeze containing corrosion inhibitors specifically for internal combustion aluminum engines.

Exhaust System

Exhaust System Verification

The muffler tail pipe should be centered with the exit hole in the bottom pan. Exhaust system must be free of rust or leaks. Make sure that all parts are securely in place.

Check retaining springs and heat shields condition and replace if necessary.

The exhaust system is designed to reduce noise and to improve the total performance of the engine. Modification may be in violation of local laws.

NOTICE

If any exhaust system component is removed, modified or damaged, severe engine damage may result.

Spark Plugs

Spark plugs inspection or replacement may be performed by an authorized BRP snowmobile dealer, repair shop, or person of your own choosing. Spark plugs inspection or replacement requires an in-depth technical knowledge. Though not required, it is recommended that an authorized BRP snowmobile dealer performs spark plugs inspection or replacement.

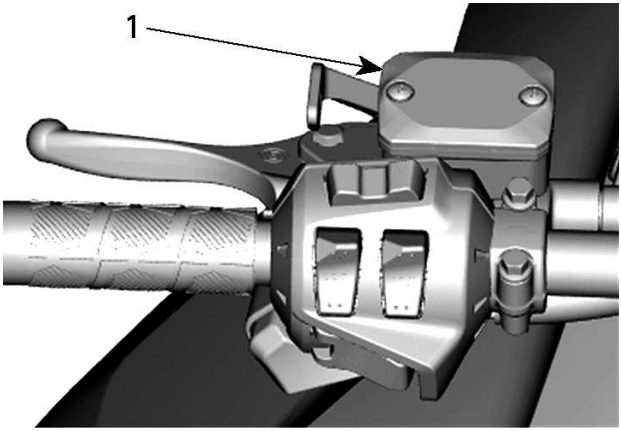
Brake Fluid

Brake Fluid Level Verification

NOTICE

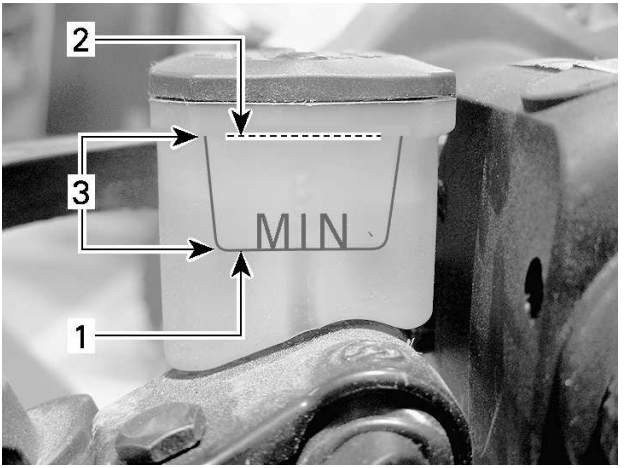
Vehicle must be on a level surface before checking any fluid levels.

Check brake fluid (DOT 4) in reservoir for proper level. Add fluid (DOT 4) as required.



TYPICAL

1. Brake fluid reservoir



TYPICAL

1. *Minimum*
2. *Maximum*
3. *Operating range*

⚠ CAUTION

Avoid getting brake fluid on skin or eyes - it may cause severe burns. In case of contact with the skin, wash thoroughly. In case of contact with the eyes, immediately rinse with plenty of water for at least 10 minutes and then consult a doctor immediately.

Recommended Fluid

Use only DOT 4 brake fluid from a sealed container. An opened container may be contaminated or may have absorbed moisture from the air.

⚠ WARNING

Use only DOT 4 brake fluid from a sealed container. To avoid serious damage to the braking system, do not use fluids other than the recommended one, nor mix different fluids for topping up.

NOTICE

Brake fluid can damage painted and plastic parts. Handle with care. Rinse thoroughly in case of spillage.

Chaincase Oil

Recommended Chaincase Oil

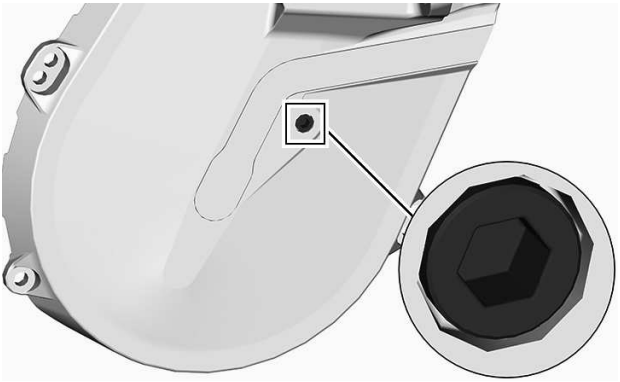
Recommended Chaincase Oil
XPS Synthetic chaincase oil
Alternative or if not available
75W140 gear oil that meets the API GL-5 specification

NOTICE

If the recommended XPS chaincase oil is not available, use a 75W140 gear oil that meets the API GL-5 specification. The chaincase of this snowmobile has been developed and validated using the XPS™ Synthetic chaincase oil. BRP strongly recommends the use of its XPS Synthetic chaincase oil at all times. Damages caused by oil which is not suitable for the chaincase will not be covered by the BRP limited warranty.

Chaincase Oil Level Verification

With the vehicle on a level surface, check the oil level by removing the check plug.



CHECK PLUG

Oil level must reach the threaded hole.

If level is correct, reinstall check plug and tighten to the specified torque.

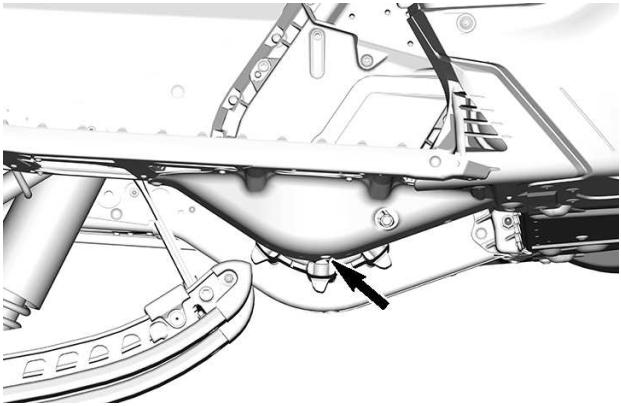
Tightening Torque	
Check plug	6 ± 1 Nm (53 ± 9 lbf-in)

If level is insufficient, refer to *Chaincase Filling Procedure*.

Chaincase Oil Replacement

Chaincase Oil Draining

1. Place the vehicle on a level surface.
2. Place a drain pan under the chaincase drain plug area.
3. Remove filler cap.
4. Remove the drain plug located at the bottom of the chaincase.

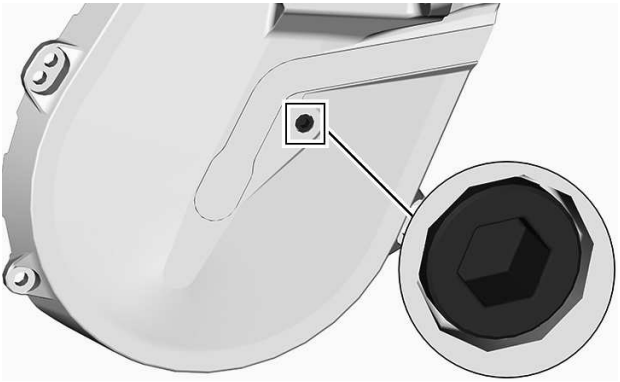


5. Wait a while to allow all oil to drain out of the chaincase.
6. Install drain plug and tighten to specification.

Tightening Torque	
Chaincase drain plug	6 ± 1 Nm (53 ± 9 lbf-in)

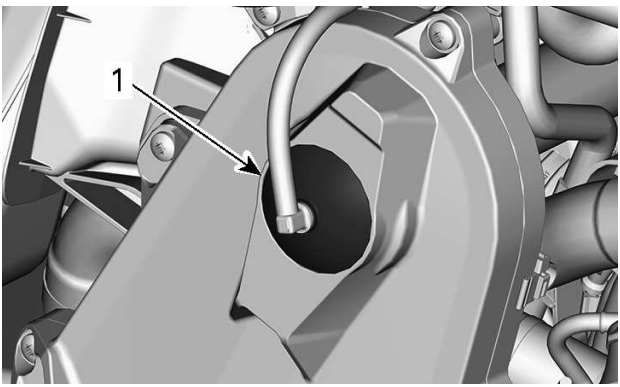
Chaincase Filling Procedure

1. Open the RH side panel. Refer to *Equipment*.
2. Remove the check plug.



CHECK PLUG

3. Remove the filler cap.



TYPICAL - TOP OF CHAINCASE

1. Filler cap

4. Pour recommended oil in the filler hole until oil comes out by the check plug hole.
5. Reinstall check plug and tighten to specification.

Tightening Torque	
Check plug	6 ± 1 Nm (53 ± 9 lbf-in)

Reinstall the filler cap.

Gearbox Oil

Recommended Gearbox Oil

XPS RECOMMENDED Chaincase Oil
XPS™ Synchromesh Transmission Synthetic Oil
IF THE RECOMMENDED XPS OIL IS NOT AVAILABLE
Use a 75W140 gear oil that meets the API GL-5 specification

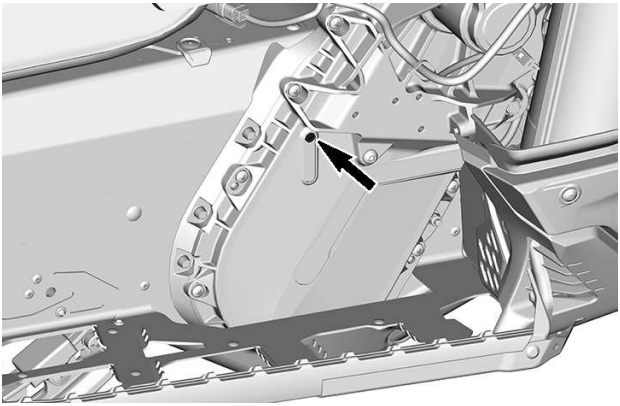
NOTICE

The gearbox of this snowmobile has been developed and validated using the XPS synchromesh transmission synthetic oil. BRP strongly recommends the use of its synchromesh transmission synthetic oil at all times. Damages caused by oil which is not suitable for the gearbox will not be covered by the BRP limited warranty.

Gearbox Oil Level

With the vehicle on a level surface, check the oil level by removing the check plug on the left side of gearbox.

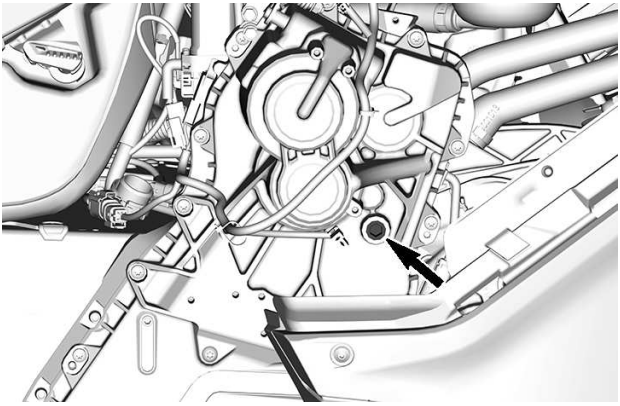
Oil level must reach the threaded hole's lower edge.



CHECK PLUG

To add oil, proceed as follows:

1. Remove the filler plug.



FILLER PLUG

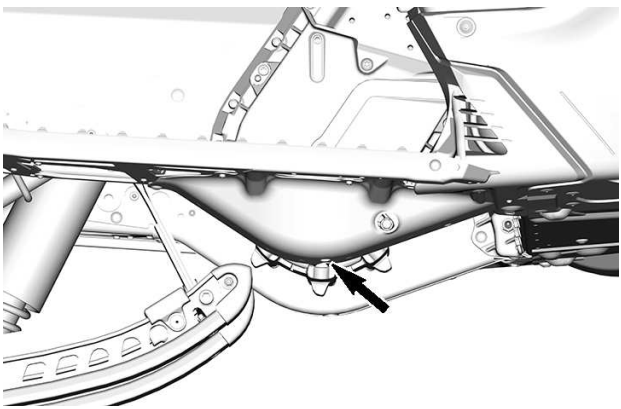
2. Pour recommended oil in gearbox by the filler hole until oil comes out by the check plug hole.
3. Reinstall check and filler plug and tighten to specifications.

TIGHTENING TORQUE	
Check plug	6 ± 1 Nm (53 ± 9 lbf-in)
Filler plug	8 ± 1 Nm (71 ± 9 lbf-in)

Replacing the Gearbox Oil

Gearbox Oil Draining

1. Place the vehicle on a level surface.
2. Place a drain pan under gearbox drain plug area.
3. Remove filler cap.
4. Remove the drain plug located at the bottom of gearbox.



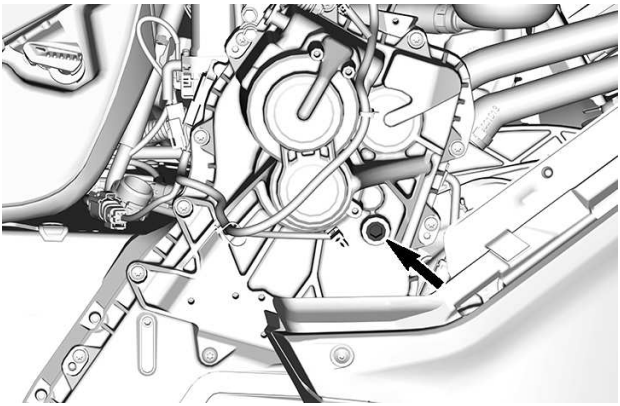
5. Wait a while to allow all oil to drain out of gearbox.
6. Install drain plug and tighten to specification.

Tightening Torque	
Gearbox drain plug	6 ± 1 Nm (53 ± 9 lbf-in)

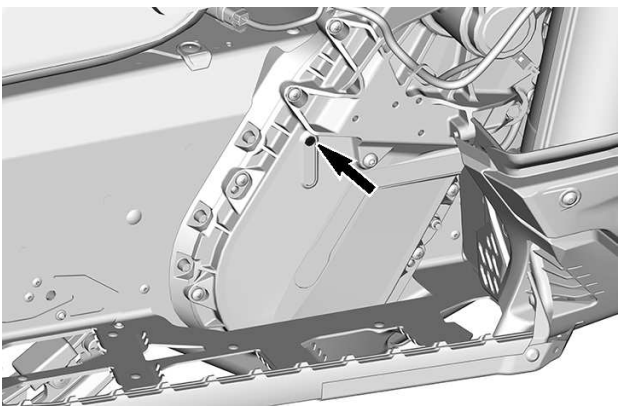
Gearbox Oil Filling

NOTE:
Vehicle must be on a level surface.

1. Remove the filler plug.
2. Remove oil level check plug.



FILLER PLUG



CHECK PLUG

3. Pour recommended oil into gearbox through the filler hole.

NOTE:
Oil level is correct when it just begins to come out of the check plug orifice.

4. Reinstall check plug and tighten to specification.

tightening torque	
Oil level check plug	6 ± 1 Nm (53 ± 9 lbf-in)

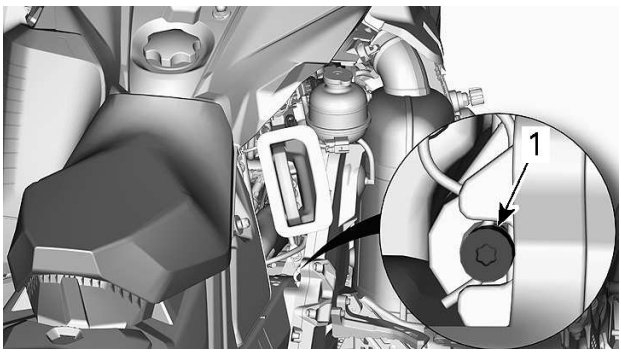
Drive Chain

Access to Chaincase

Open RH side panel, refer to *Equipment*.

Drive Chain Adjustment

Using the Torx end of the driven pulley expander, GENTLY turn tensioner clockwise to eliminate the play.



TYPICAL

Do not force the tensioner in.

NOTE:
Do not remove the hair cotter pin.

NOTICE

Overtightening the drive chain could result in severe damage to the chaincase components.

Drive Belt

Drive Belt Inspection

Remove the drive belt guard. Refer to the procedure in *Equipment*.

Inspect belt for cracks, fraying or abnormal wear (uneven wear, wear on one side, missing cogs, cracked fabric). If abnormal wear is noted, probable cause could be pulley misalignment, excessive RPM with frozen track, fast starts without warm-up period, burred or rusty sheave, oil on belt or distorted spare belt. Contact an authorized BRP snowmobile dealer.

Drive Belt Replacement

Removing the Drive Belt

1. Remove tether cord cap from engine cut-off switch.
2. Remove drive belt guard. Refer to *Equipment*.
3. Insert the driven pulley expander provided in the threaded hole on the adjuster hub as shown.



TYPICAL - PULLEY EXPANDER INSTALLED ON ADJUSTER HUB

4. Open the driven pulley by screwing the tool in.
5. Remove the drive belt by slipping it over the top of the driven pulley, then over the drive pulley.

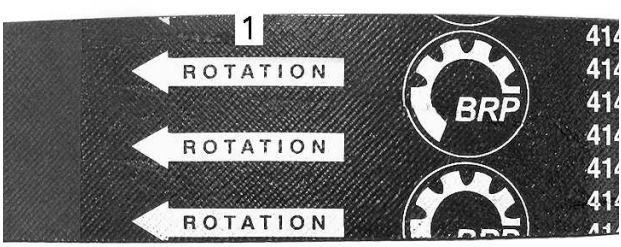
Installing the Drive Belt

1. If necessary, open the driven pulley. Refer to *Removing the Drive Belt* above.
2. Slip the belt over the drive pulley, then over the driven pulley.

NOTICE

Do not force or use tools to pry the belt into place, as this could cut or break the cords in the belt.

NOTE:
The maximum drive belt life span is obtained when belt is installed with arrows in the direction of rotation.



1. To be pointed in the direction of rotation

3. Unscrew and remove the driven pulley expander from the pulley.
4. Rotate the driven pulley several times to properly set the belt between the sheaves.
5. If a new belt was installed, an adjustment will be required for the proper belt height. Refer to *Adjusting the Drive Belt Height* below.
6. Install belt guard. Refer to *Equipment*.
7. Close side panel. Refer to *Body and Seat*.

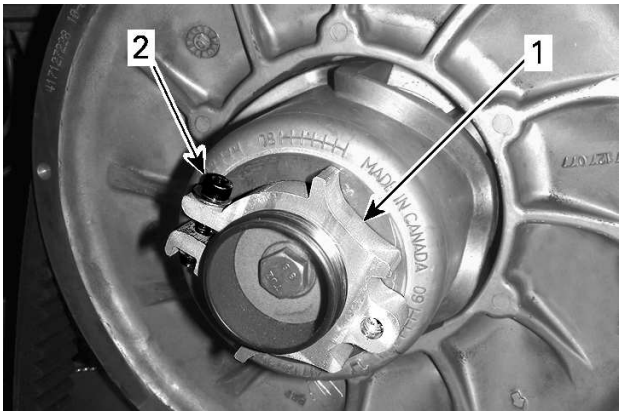
Adjusting the Drive Belt Height

The drive belt height must be checked every time a new drive belt is installed and as part of the pre-ride inspection.

To adjust the drive belt height, proceed as follows:

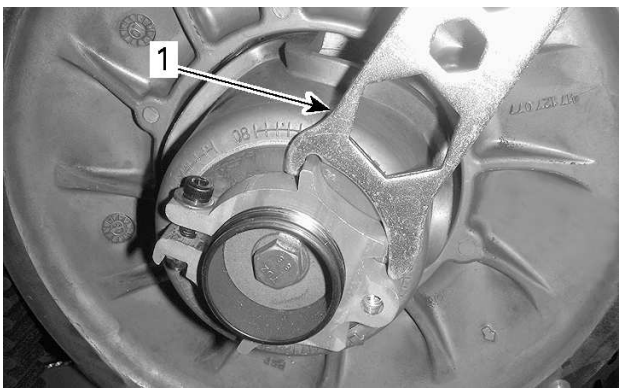
1. Remove tether cord cap from engine cut-off switch.

2. Remove drive belt guard.
3. Loosen the clamping bolt.



1. Adjuster hub
2. Clamping bolt

4. Using the suspension adjustment tool provided, turn the ring 1/4 turn at a time then rotate the driven pulley to properly set the drive belt between the pulley sheaves.



1. Suspension adjustment tool

NOTE:
The adjustment ring has left hand treads.

600 EFI

Repeat step 4 until the drive belt outer surface is even with the driven pulley edge.

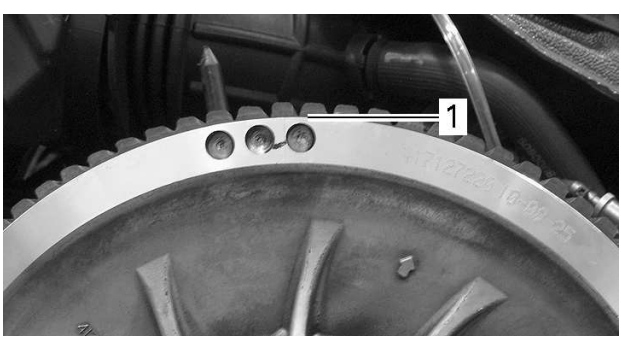


600 EFI - PRELIMINARY SETTING

1. Drive belt outer surface is even with the driven pulley edge

600R E-TEC

Repeat step 4 until the lowest portion of the cogs on the external surface of drive belt is even with the driven pulley edge.

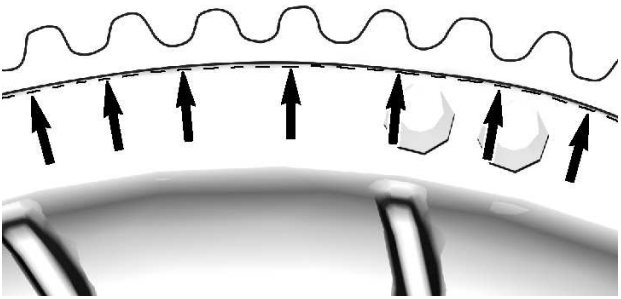


TYPICAL - PRELIMINARY SETTING

1. Lowest portion of cogs even with driven pulley external edge

850 E-TEC

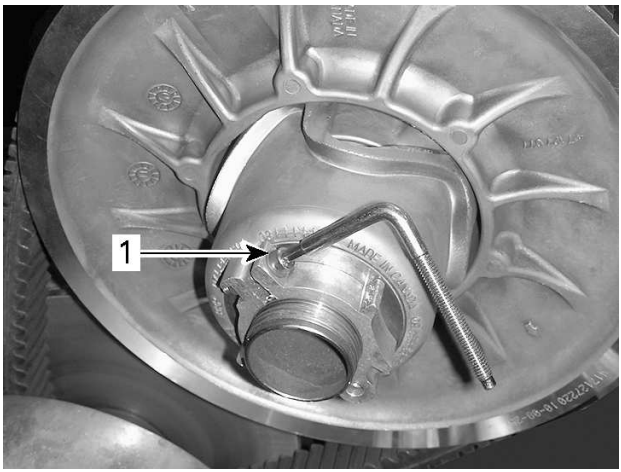
Repeat step 4 until the cord of drive belt is just hidden by the driven pulley edge.



NOTE:
Turning the ring counterclockwise lowers the drive belt in the pulley. Turning the ring clockwise raises the drive belt in the pulley.

5. Firmly tighten the clamping bolt. If possible, tighten to specification using a torque wrench.

TIGHTENING TORQUE	
Clamping bolt	5.5 ± 0.5 Nm (49 ± 4 lbf-in)



TYPICAL

1. Clamping bolt

6. Install drive belt guard.
7. Install side panel.

NOTE:
These settings are correct as a preliminary adjustment for most models. In some cases, when starting the engine, the vehicle could creep, indicating that the drive belt is too tight.

If the vehicle creeps, lower the drive belt height from the preliminary setting. Repeat procedure until creeping stops.

Reverse Activation

NOTE:
The reverse may not activate if the belt is positioned too high in the driven pulley. If reverse activation does not work properly, ensure the drive belt is properly adjusted. Adjust the drive belt lower in the driven pulley if needed.

Drive Pulley

Drive Pulley Adjustment

⚠ WARNING

Remove tether cord cap from engine cut-off switch before performing any adjustment. Vehicle must be parked in a safe place, away from the trail.

⚠ WARNING

NEVER disassemble or modify the drive pulley.
Improper assembly or modifications could cause the pulley to explode violently under the stress generated by the high rotational speed.
Visit your BRP snowmobile dealer to maintain or service the drive pulley. Improper servicing or maintenance may affect performance and reduce belt life. Always respect maintenance schedules.

The drive pulley is factory calibrated to transmit maximum engine power at a predefined RPM. Factors such as ambient temperature, altitude or surface condition may vary this critical engine RPM thus affecting snowmobile efficiency.

This adjustable drive pulley allows setting maximum engine RPM to maintain maximum power.

Ramp cams should be adjusted so that actual maximum engine RPM matches the maximum horsepower RPM. Refer to *Technical Specifications (Engine).*

NOTE:
Use a precision digital tachometer for engine RPM adjustment.

There are 5 positions in which the ramp cam can be set.

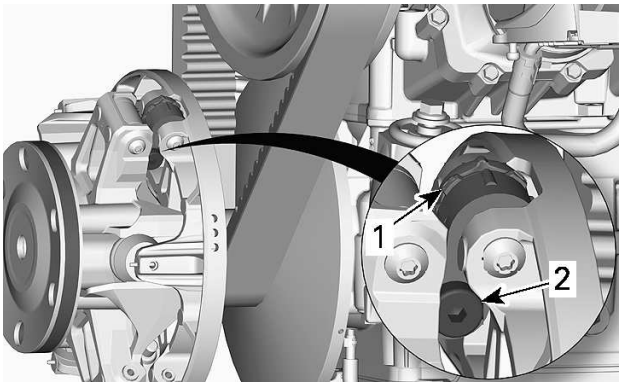
Each position modifies the maximum engine RPM by about 200 RPM.

Lower position numbers decrease engine RPM in steps of 200 RPM and higher position numbers increase it in steps of 200 RPM.

Procedure

1. Refer to *Body and Seat* in *Vehicle Information* and remove:
   – LH side panel
   – Drive pulley guard

2. Locate the cam and the pivot screw on the drive pulley.

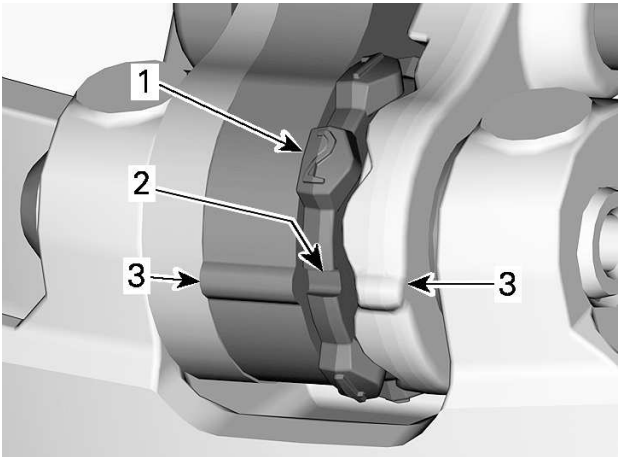


TYPICAL

1. Cam
2. Pivot screw

The cam position is identified as follows:

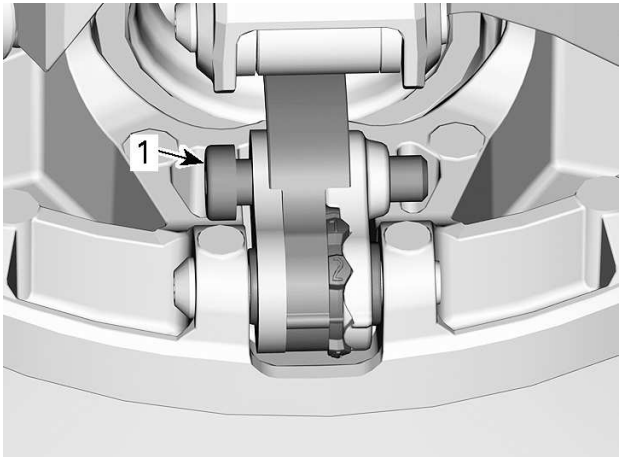
- Positions 1, 2, 4 and 5 are numbered.
- Position 3 (middle) is identified by a notch.
- There are notches on each side of the cam used as pointers.



1. Numbered position
2. Position 3 - Notch
3. Pointers

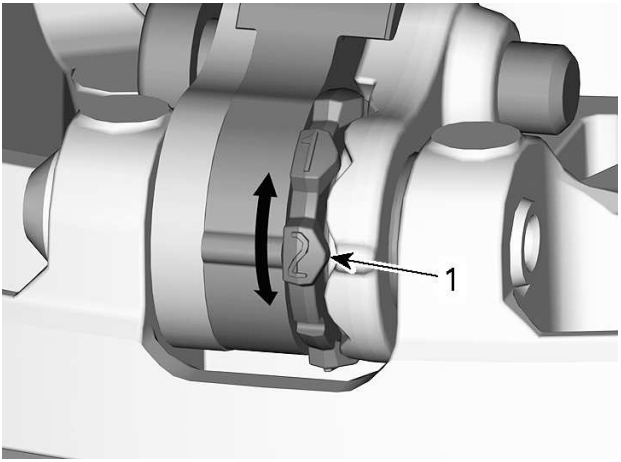
To adjust, proceed as follows for all 3 cams:

3. Using the Allen end of the driven pulley expander, loosen the pivot screw.



1. Pivot screw

4. Move the right lever aside to be able to turn the cam.
5. Turn cam to the desired position.



1. Desired cam position (here #2)

6. Tighten the pivot screw.

TIGHTENING TORQUE	
Pivot	8 ± 1 Nm (71 ± 9 lbf-in)

NOTICE

Always adjust all 3 cams to the same setting.

Track

Track Condition

⚠ WARNING

Remove tether cord cap from engine cut-off switch before performing any maintenance or adjustment, unless otherwise specified. Vehicle must be parked in a safe place, away from the trail.

Remove tether cord cap from engine cut-off switch.

Lift the rear of the snowmobile and support it with a wide-base snowmobile mechanical stand with a rear deflector panel. With the engine off, rotate the track by hand, and inspect condition. If worn or cut, or if track fibers are exposed, or if missing or defective inserts or guides are noted; contact an authorized BRP snowmobile dealer.

Snowmobiles Equipped with Traction Enhancing Products

If your snowmobile is equipped with a BRP approved studded track, PROCEED WITH A VISUAL INSPECTION OF YOUR TRACK BEFORE EACH USE.

Look for any defects, such as:

- Perforations in the track
- Tears in the track (particularly around traction holes on studded tracks)
- Lugs that are broken or torn off, exposing portions of rods
- Delamination of the rubber
- Broken rods
- Broken studs (studded tracks)
- Bent studs (studded tracks)
- Missing studs
- Studs that are torn off the track
- Missing track guide(s)
- Also, ensure that studs nut are tighten to the recommended torque.

On approved studded tracks, replace broken or damaged studs immediately. If your track shows signs of deterioration, it must be replaced immediately. When in doubt, ask your dealer.

⚠ WARNING
Riding with a damaged track or studs could lead to a loss of control.

For complete information on traction enhancing products, refer to *TRACTION ENHANCING PRODUCTS* in *SAFETY INFORMATION* at the beginning of this Operator's Guide.

Track Tension and Alignment

NOTE:
Track tension and alignment are interrelated. Do not adjust one without the other.

⚠ WARNING

To prevent serious injury to individuals near the snowmobile:

- **NEVER stand behind or near a moving track.**
- **Always use a wide-base snowmobile stand with a rear deflector panel if it is necessary to rotate track.**
- **When the track is raised off the ground, only run it at the lowest possible speed.**

Centrifugal force could cause debris, damaged or loose studs, pieces of torn track, or an entire severed track to be violently thrown backwards out of the tunnel with tremendous force, possibly resulting in the loss of a leg or other serious injury.

Verifying the Track Tension

NOTE:
Ride the snowmobile in snow about 15 to 20 minutes prior to adjusting track tension.

1. Remove tether cord cap from engine cut-off switch.
2. Lift rear of vehicle and support it off the ground.

⚠ CAUTION

Use proper lifting techniques, notably using your legs force. Do not attempt to lift the rear of vehicle if it is above your limits.

3. Allow rear suspension to fully extend.
4. Prepare the tensiometer.

Service tool	
Tensiometer (P/N 414348200)	

1. Set the bottom O-ring as per the *Track Deflection* from the applicable vehicle in the *Technical Specifications* table.



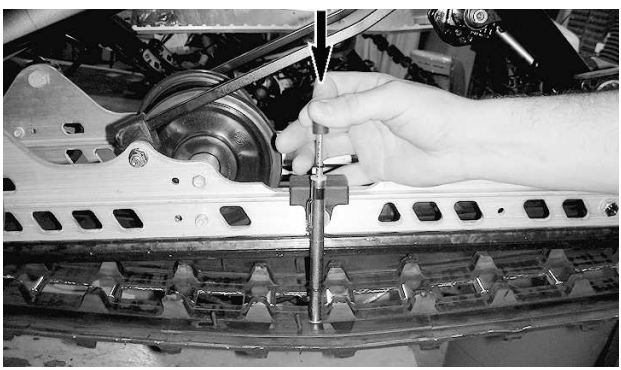
1. Bottom O-ring

2. Place the upper O-ring to 0 kgf (0 lbf).

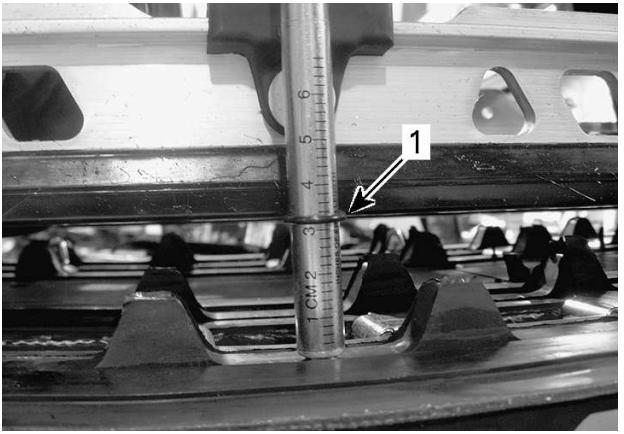


1. Upper O-ring

5. Position the tensiometer on track, halfway between front and rear idler wheels.
6. Push the tensiometer downwards until bottom O-ring (deflection set earlier) be aligned with the bottom of slider shoe.



TYPICAL



TYPICAL

1. Deflection O-ring aligned with slider shoe

7. Read load recorded by the upper O-ring on the tensiometer.



TYPICAL - LOAD READING

1. Upper O-ring

8. Load reading must be as per the track deflection in the *Technical Specifications*.
9. If load reading is not in accordance with the specification, adjust track tension. Refer to *Track Tension Adjustment*.

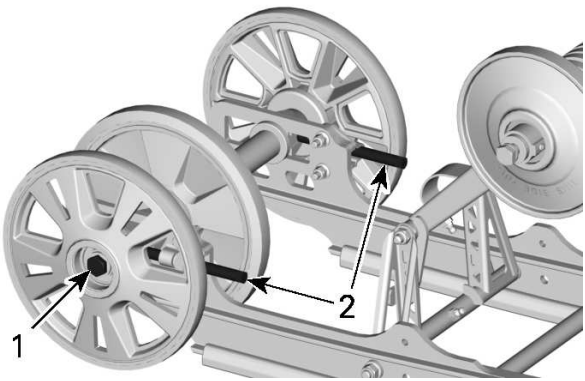
Adjusting the Track Tension

1. Remove tether cord cap from engine cut-off switch.

⚠ CAUTION

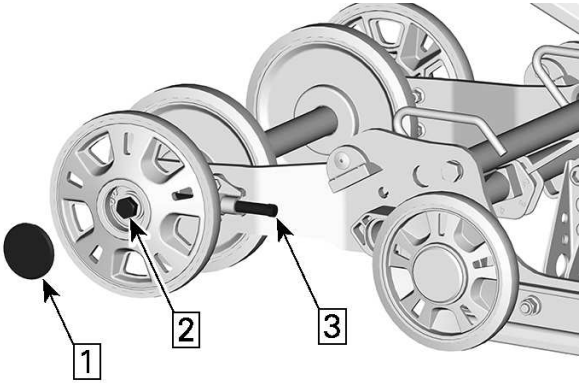
Use proper lifting techniques, notably using your legs force. Do not attempt to lift the rear of vehicle if it is above your limits.

2. Remove wheel caps.
3. Loosen the rear axle screws on both sides.
4. Tighten or loosen both adjustment screws (equally) to increase or decrease track tension.



CMOTION

1. Loosen the axle screw or nut
2. Tighten or loosen adjustment screws



SC-5U

1. *Remove cap*
2. *Loosen the axle screw or nut*
3. *Tighten or loosen adjustment screws*

5. If correct tension is unattainable, contact an authorized BRP snowmobile dealer.
6. Retighten the rear axle fasteners to specification.

TIGHTENING TORQUE	
Rear idler wheel retaining screws	48 ± 6 Nm (35 ± 4 lbf-ft)

7. Check track alignment as described below.

Aligning the Track

⚠ WARNING

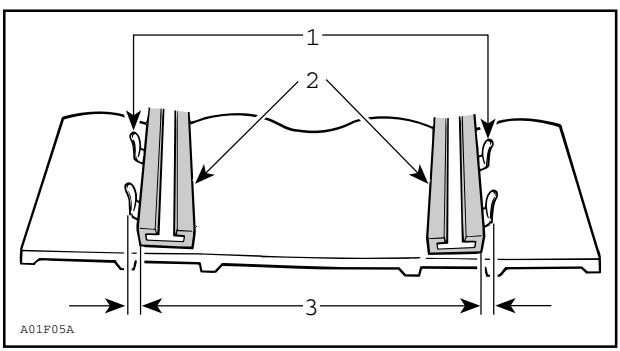
Before checking track alignment, ensure that the track is free of all particles which could be thrown out while track is rotating. Keep hands, tools, feet and clothing clear of track. Always lift the snowmobile on a wide-base stand with a rear deflector panel. Ensure no one is standing in close proximity to the snowmobile, especially at the rear of the track. Never rotate track at high speed.
Centrifugal force could cause debris, damaged or loose studs, pieces of torn track, or an entire severed track to be violently thrown backwards out of the tunnel with tremendous force.

1. Lift rear of vehicle and support it off the ground.

⚠ CAUTION

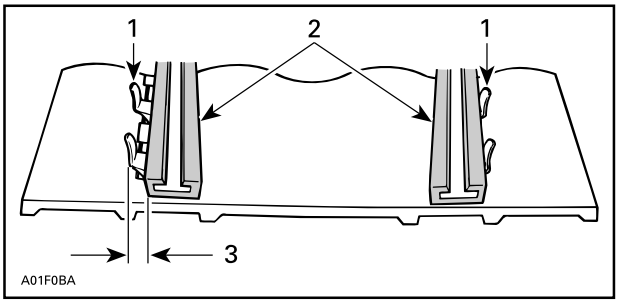
Use proper lifting techniques, notably by using the force of your legs . Do not attempt to lift the rear of vehicle if it is above your limits.

2. Start engine and accelerate slightly so that track slowly turns. This must be done in a short period of time (15 to 20 seconds).
3. Check that the track is well centered; equal distance on both sides between edges of track guides and slider shoes.



1. Guides
2. Slider shoes
3. Equal distance

4. To correct track alignment:



1. Guides
2. Slider shoes
3. Tighten on this side

1. Stop engine.
2. Remove tether cord cap from engine cut-off switch.

⚠ WARNING

Remove tether cord cap from engine cut-off switch before performing any maintenance or adjustment, unless otherwise specified. Vehicle must be parked in a safe place, away from the trail.

3. Loosen the rear axle nut.
4. Tighten adjustment screw on side where the slider shoe is the farthest from the track insert guides.

5. Tighten the rear axle nut.

⚠ WARNING

Properly tighten wheel retaining bolt, otherwise wheel may come off and cause track to "lock".

6. Restart engine and rotate track slowly to recheck alignment.
7. Tighten the rear axle nut to specified torque.

Tightening Torque	
Rear axle screw	48 ± 6 Nm (35 ± 4 lbf-ft)

8. Reposition snowmobile on the ground.

Suspension

Rear Suspension Condition

Visually inspect all suspension components including slider shoes, springs, wheels, etc.

NOTE:
During normal driving, snow will act as a lubricant and coolant for the slider shoes. Extensive riding on ice or sanded snow, will create excessive heat build-up and cause premature slider shoe wear.

Suspension Stopper Strap Condition

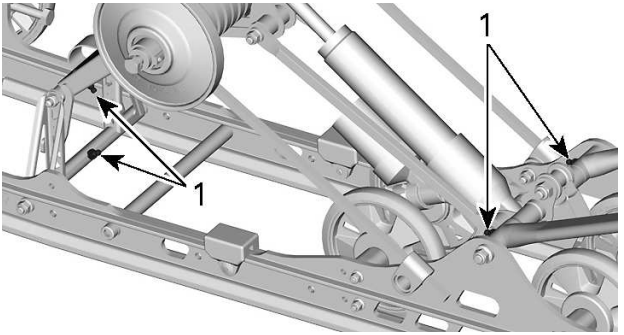
Inspect stopper straps for wear and cracks, bolt and nut for tightness. If loose inspect holes for deformation. Replace as required. Tighten nut to specification.

Tightening Torque	
Stopper strap nut	10 ± 1 Nm (89 ± 9 lbf-in)

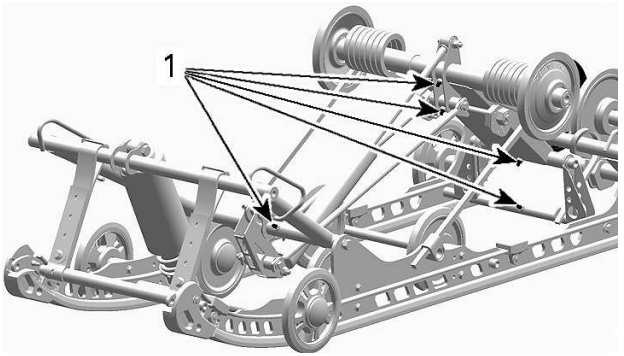
Suspension Lubrication

Lubricate the following suspension pivots at grease fittings. Refer to *Maintenance Schedule* for maintenance frequency.

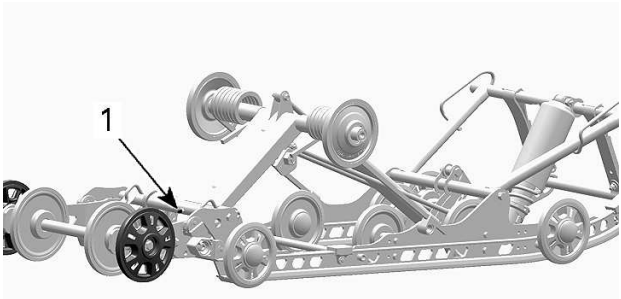
SERVICE PRODUCT
XPS Synthetic suspension grease



CMOTION
1. Grease fitting



SC-5U
1. Grease fittings



SC-5U

1. Grease fittings

Steering and Front Suspension Condition

Visually inspect steering and front suspension for tightness of components (steering arms, control arms and links, tie rods, ball joints, ski bolts, ski legs, etc.). If necessary, contact an authorized BRP snowmobile dealer.

Skis

Wear and Condition of Skis and Runners

Check the condition of the skis and ski runner carbides. If worn, contact an authorized BRP snowmobile dealer.

⚠ WARNING
Excessively worn skis and/or ski runners will adversely affect snowmobile control.

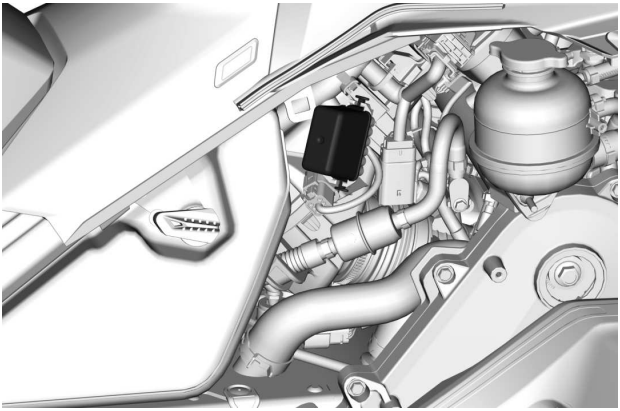
Fuses

Access to Fuse Block

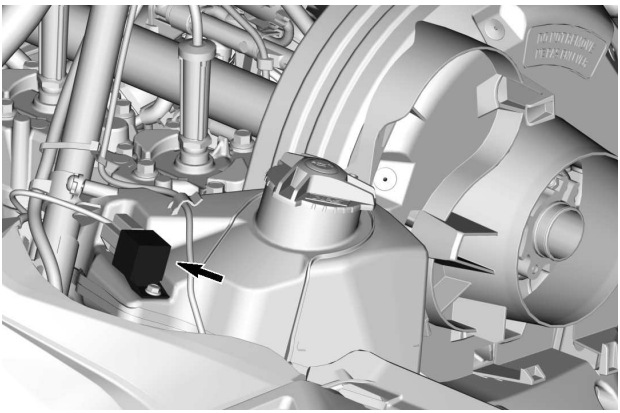
Open RH side panel, refer to *Body and Seat*.

Fuses Location

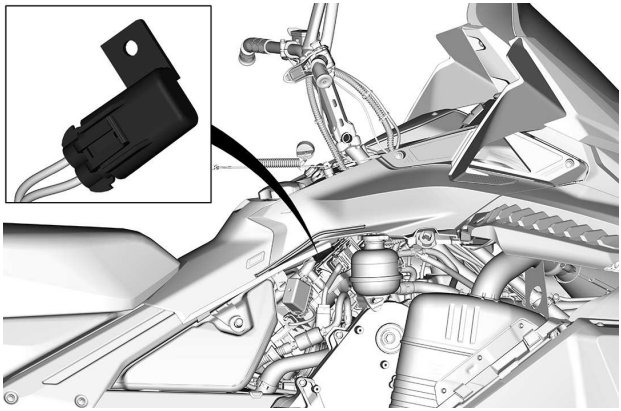
600 EFI Engine



FUSE BOX

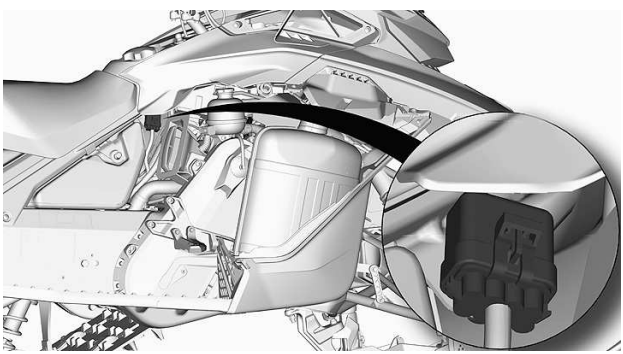


RADIATOR FAN RELAY



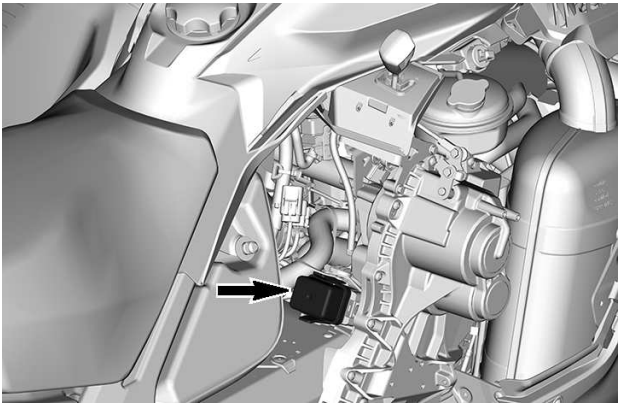
RADIATOR FAN FUSE

E-TEC Engine - 400 mm (16 in.) Tunnel Width



FUSE BOX

E-TEC Engine - 500 mm (20 in.) Tunnel Width



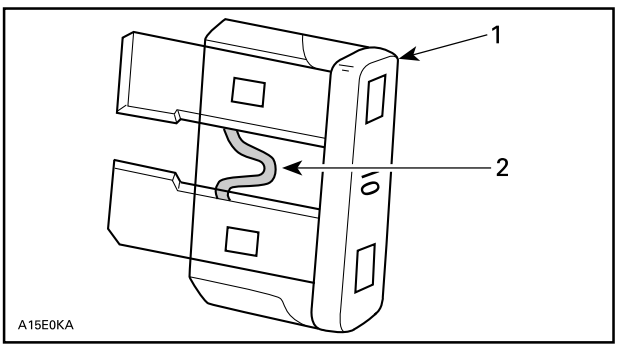
FUSE BOX

Refer to the *Technical Specifications* for fuse rate and configuration.

Fuse Inspection

Check fuse condition and replace it if necessary.

To remove fuse from holder, pull fuse out. Check if filament is melted.



1. Fuse
2. Check if melted

⚠ WARNING

Do not use a higher rated fuse.

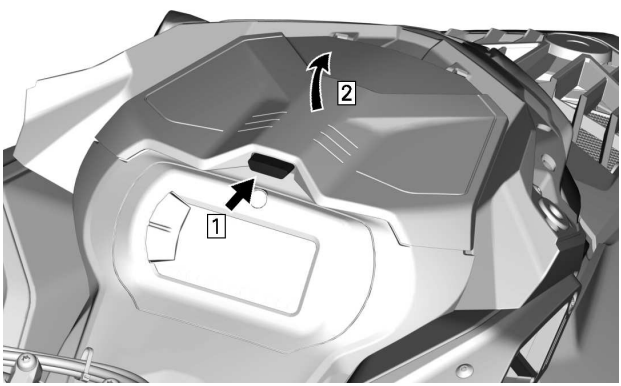
⚠ WARNING

If fuse has burnt out, source of malfunction should be determined and corrected before restarting. See an authorized BRP snowmobile dealer for servicing.

Headlights

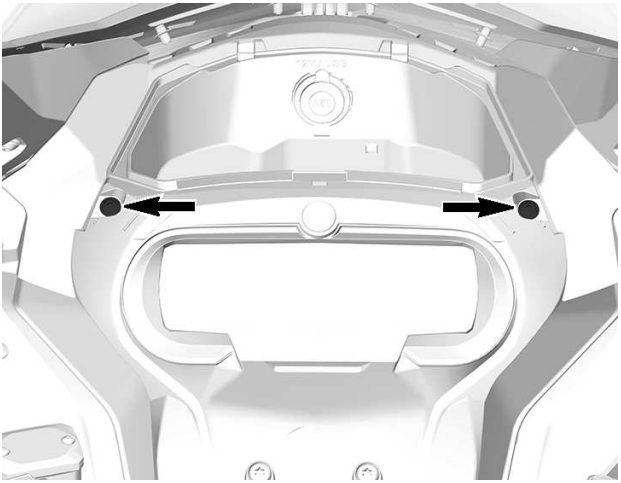
Headlights Bulb Replacement

1. Remove the windshield.
2. Open the storage compartment.

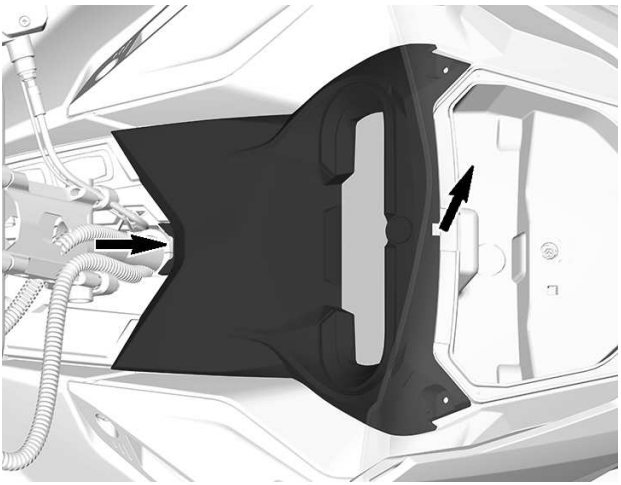


TYPICAL

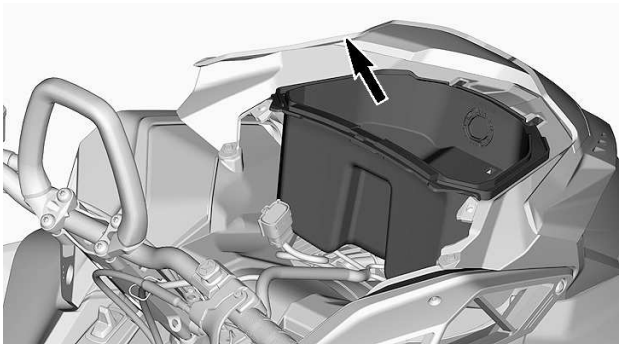
3. Remove the gauge support retaining screws.



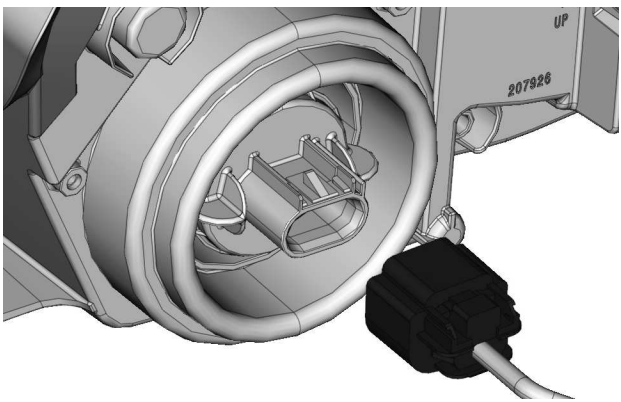
4. Lift the front of the gauge support, then slide it forward to remove it.



5. Set gauge support aside.
6. Remove the storage compartment.

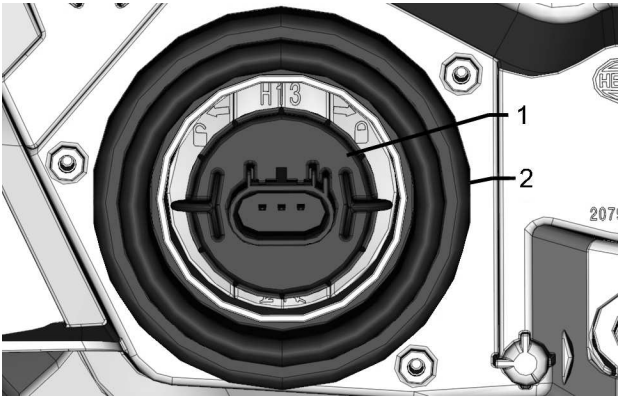


7. Disconnect 12V power outlet connectors to remove (if equipped).
8. Disconnect bulb connector.



9. Unlock bulb by turning it counterclockwise.
10. Pull bulb out.

NOTE:
Ensure bulb seal stays in place.



1. *Bulb*
2. *Bulb seal*

Install a new bulb using the reverse of the removal procedure.

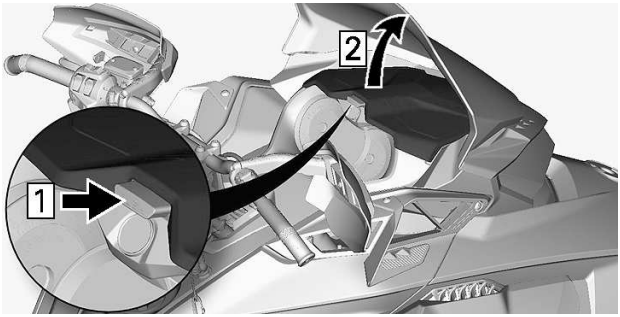
NOTICE

Never touch glass portion of an halogen bulb with bare fingers, it shortens its operating life. If glass is touched, clean it with isopropyl alcohol which will not leave a film on the bulb.

Check headlights operation.

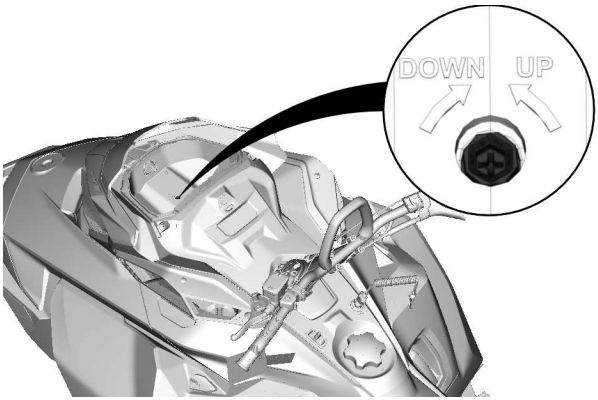
Headlights Beam Aiming

Open the storage compartment.



TYPICAL

Turn the adjustment screw to reach desired beam height.



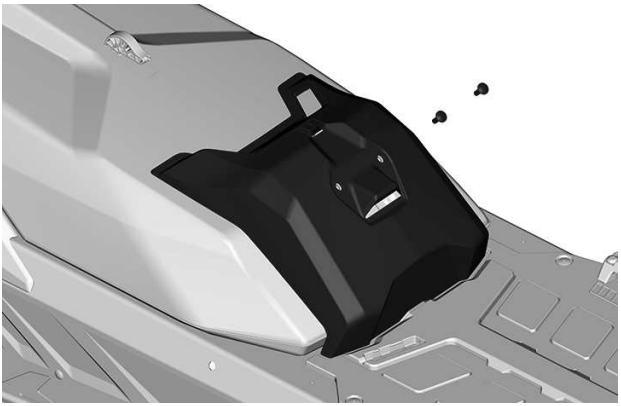
Battery

400 mm (16 in.) Tunnel Width

Removing the Battery

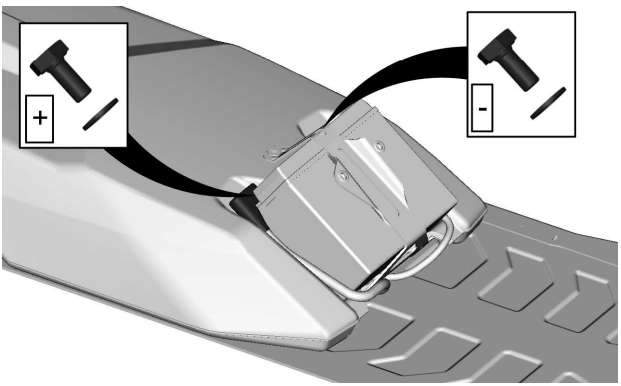
NOTICE
Battery BLACK (–) cable must always be disconnected first and connected last.

1. Remove the seat.
2. Remove the battery cover.

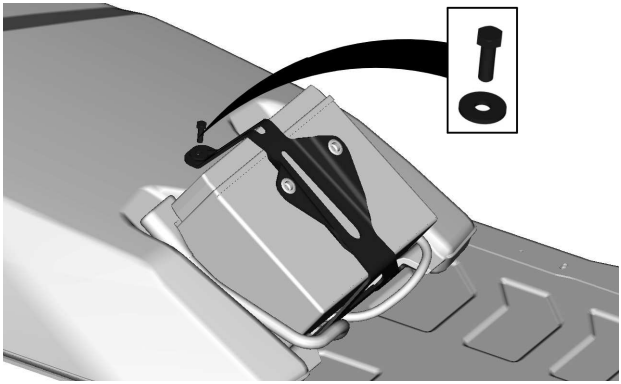


TYPICAL

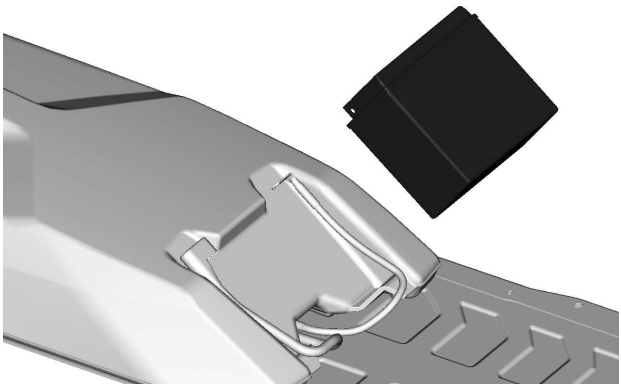
3. Disconnect the negative terminal first, then the positive terminal.



4. Remove the battery hold down bracket.



5. Remove the battery.



Installing the Battery

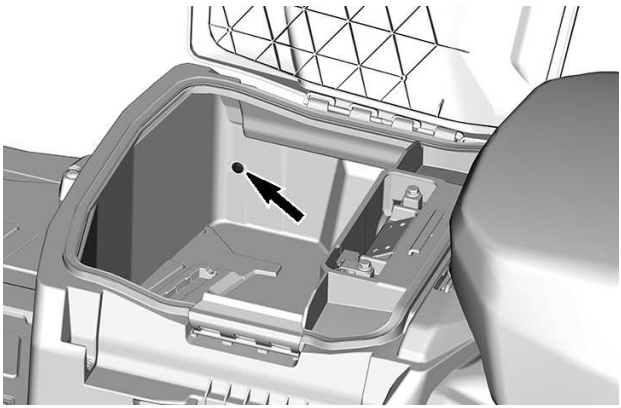
The installation is the reverse of the removal procedure. However, pay attention to the following details.

TIGHTENING TORQUE	
Battery terminals (positive and negative)	10 ± 2 Nm (89 ± 18 lbf-in)
Battery hold down bracket	5 ± 0.5 Nm (44 ± 4 lbf-in)
Battery cover retaining screws	1.5 ± 0.5 Nm (13 ± 4 lbf-in)

500 and 600 mm (20 and 24 in.) Tunnel Width

Removing the Battery

1. Remove the passenger seat and backrest, if equipped.
2. Open the cargo box, remove the battery cover and all mounting screws.

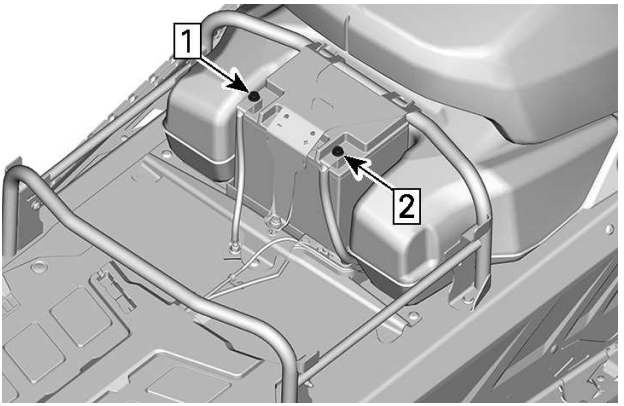


LH SIDE SCREW SHOWN

3. Remove the cargo box.

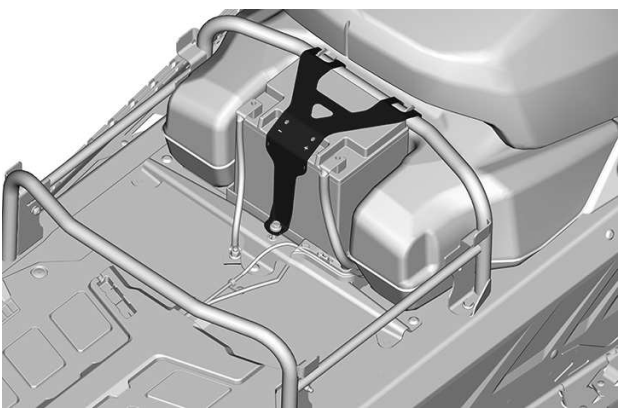


4. Disconnect the negative terminal first, then the positive terminal.

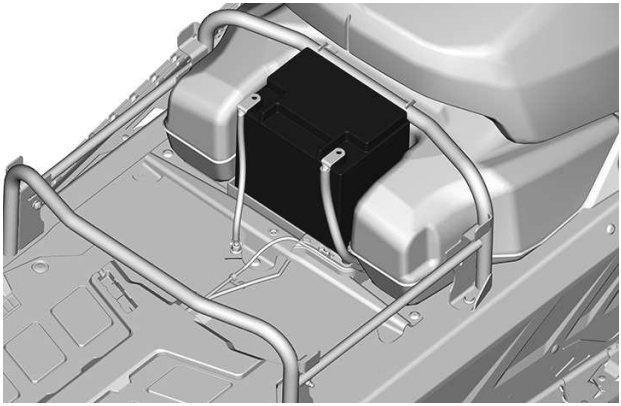


1. Disconnect negative
2. Disconnect positive

5. Remove the battery hold down bracket.



6. Remove the battery.



Installing the Battery

The installation is the reverse of the removal procedure. However, pay attention to the following details.

TIGHTENING TORQUE	
Battery terminals (positive and negative)	10 ± 2 Nm (89 ± 18 lbf-in)
Battery hold down bracket	5 ± 0.5 Nm (44 ± 4 lbf-in)
Battery cover retaining screws	5 ± 0.5 Nm (44 ± 4 lbf-in)

VEHICLE CARE

Post-Operation Care

Remove snow and ice from rear suspension, track, front suspension, steering mechanism and skis.

⚠ WARNING

Make sure D.E.S.S. key is removed from D.E.S.S. post before standing in front the vehicle, getting close to the track or rear suspension components.

Always cover your snowmobile when leaving it outside overnight or during extended periods of inactivity. This will protect it from frost and snow as well as help retain its appearance.

Vehicle Cleaning and Protection

Wash snowmobile with water mixed with a mild detergent. Use only microfiber cloths or an equivalent.

NOTICE

Never use a high pressure washer to clean the vehicle. USE LOW PRESSURE ONLY (EX: garden hose).

NOTICE

Never use XPS Brake and Parts Cleaner or any petroleum based cleaners on plastic parts.

Non Compatible Cleaning Products

material type	non-compatible cleaning Products
All plastics, vinyls, painted steel and aluminium.	BRAKE AND PARTS CLEANER OR ANY PETROLEUM BASE CLEANING PRODUCTS

Compatible Cleaning Products

material type	cleaning Product
All plastics, vinyls, painted steel and aluminium.	Soapy water XPS Spray Cleaner and Polish XPS All Purpose Cleaner

For more information and products, Visit the XPS Products website at www.xpslubricants.com

STORAGE

During summer, or when a snowmobile is not in use for more than three months, proper storage is necessary.

Storage
Clean the vehicle
Add fuel stabilizer to fuel following the product manufacturer recommendations. Run the engine after adding the product to the fuel
Lubricate engine. Refer to *Engine Storage Procedure* in this section.
Lubricate brake lever pivot
Lubricate rear suspension
Charge battery monthly to keep it fully charged during storage (if equipped)
Block muffler outlet with rags
Lift rear of vehicle until track is clear of the ground. Do not release track tension

⚠ CAUTION

Use appropriate lifting device or have assistance to share lifting stress. If a lifting device is not used, use proper lifting techniques, notably using your legs force. Do not attempt to lift the rear of vehicle if it is above your limits.

NOTICE

The snowmobile has to be stored in a cool and dry place and covered with an opaque but ventilated tarpaulin. This will prevent sun rays and grime from affecting plastic components and vehicle finish.

NOTICE

Fuel stabilizer should be added prior to engine lubrication to prevent the loss of the chemical properties of fuel and protect the fuel system against varnish deposits.

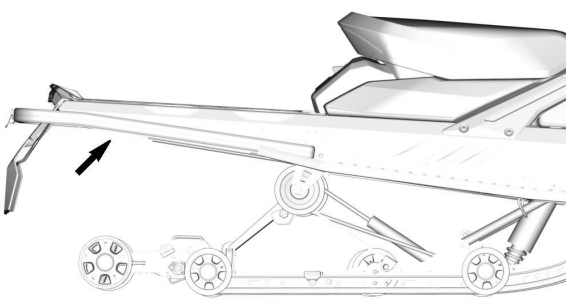
Engine Storage Procedure

The engine has to be properly lubricated at storage for internal parts protection.

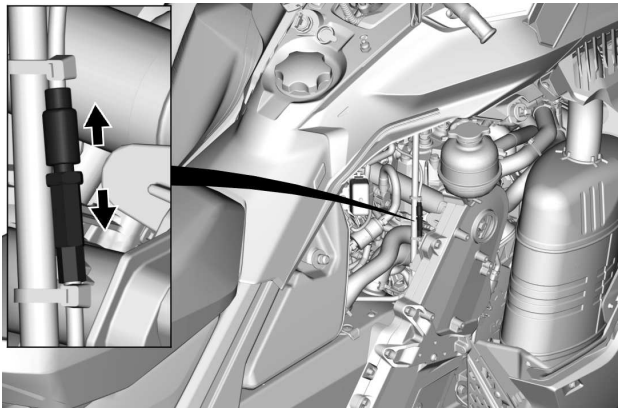
600 EFI Engine

1. Place the vehicle in a well ventilated area.
2. Open the RH side panel. Refer to *Controls, Instruments and Equipment*.
3. Add Fuel stabilizer to fuel thank. Follow the manufacturer's recommendations.
4. Start the engine and let idle until rear heat exchanger gets hot.

   The rear heat exchanger can be reached from under the rear end of the chassis.



5. Pull on the oil pump cable - at the adjustment - until the exhaust gas turns to darker smoke.



6. Remove the spark plugs and spray storage oil for 5 seconds in each cylinder.
7. Spin the drive pulley for three complete revolutions by hand to distribute the storage oil to coat the cylinder walls.
8. Reinstall the spark plugs and tighten to specification.

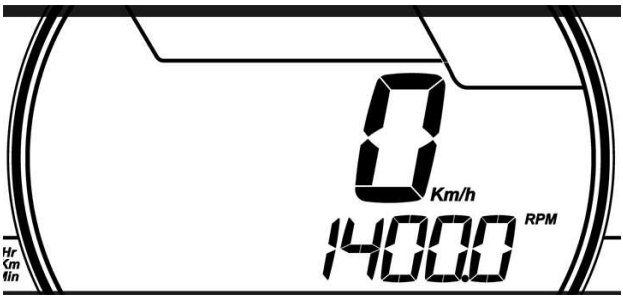
Tightening torque	
Spark plug	28 ± 2 Nm (21 ± 1 lbf-ft)

E-TEC Engine - 4.5" and 7.2" Digital Display

Follow these simple steps.

To engage the procedure, do the following:

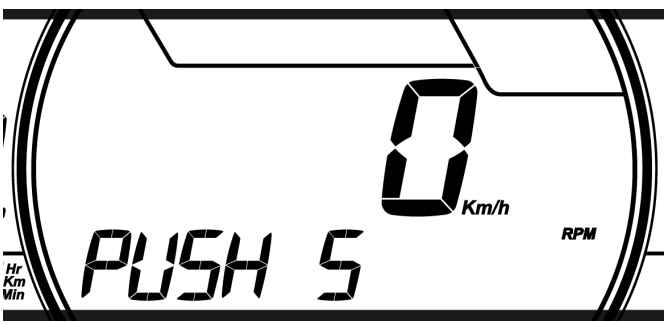
1. Place the vehicle in a well ventilated area.
2. Start the engine and let it run at idle speed until it reaches its operating temperature (watch the coolant temperature on the display or verify the rear heat exchanger becomes warm).
3. Push the SET (S) button to select odometer mode.



TYPICAL

NOTE:
The storage mode does not function in other modes (trip A, trip B and hr trip).

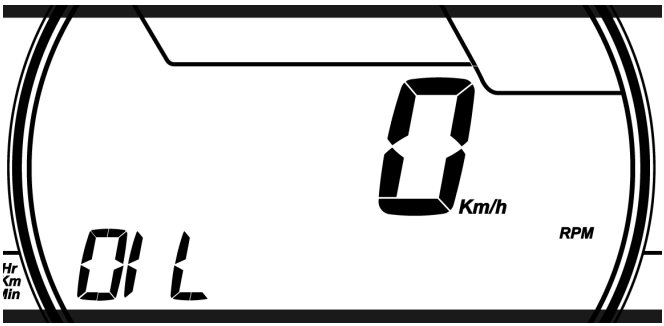
4. Repeatedly depress the HI/LOW beam switch rapidly, then, **while doing this**, press and hold the **SET button** until PUSH "S" appears on the display.



TYPICAL
5. Release all buttons when gauge displays **PUSH (S)** appears.
6. Again, press and hold the SET (S) button for 2 - 3 seconds.

NOTE:
The gauge will display OIL when the storage procedure is initiated.

7. When gauge displays **OIL**, release button and wait for the lubrication function to end.



TYPICAL

Do not touch anything during engine lubrication cycle.

The engine lubrication function takes approximately 1 minute. During this time the engine RPM will increase slightly to approximately 1600 RPM and the oil pump will "oil flood" the engine.

At the end of engine lubrication procedure, the ECM will turn the engine off.

Remove tether cord cap from engine cut-off switch.

NOTICE

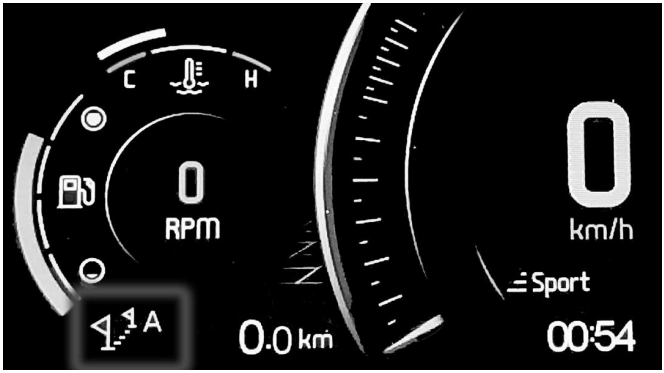
Do not start the engine during storage period.

E-TEC Engine - Large Panoramic 7.8" Wide LCD Display

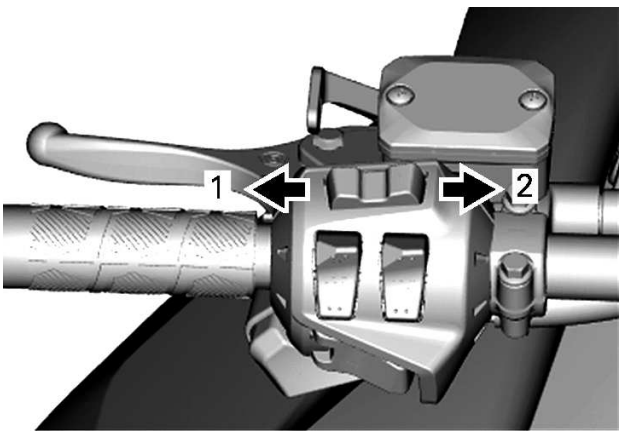
Follow these simple steps.

To engage the procedure, do the following:

1. Place the vehicle in a well ventilated area.
2. Start the engine and let it run at idle speed until it reaches its operating temperature (watch the coolant temperature on the display or verify the rear heat exchanger becomes warm).
3. Using the rotary control, select the trip display but stay in odometer mode.



4. Repeatedly depress the HI/LOW beam switch rapidly, then, **while doing this**, press and hold the **Volume Down/ Cancelling Call** button until the following message appears on the display.



1. *Volume DOWN/Cancelling a call*
2. *Volume UP/Answering a call*



5. Release all buttons when the gauge displays the message.
6. Again, press and hold the **Volume Down/ Cancelling Call** button for 2 - 3 seconds.

NOTE:
The gauge will display OIL when the storage procedure is initiated.

7. When gauge displays **OIL**, release button and wait for the lubrication function to end.



Do not touch anything during engine lubrication cycle.

The engine lubrication function takes approximately 1 minute. During this time the engine RPM will increase between 1500 and 2000 RPM and the oil pump will "oil flood" the engine.

At the end of engine lubrication procedure, the ECM will turn the engine off.

Remove tether cord cap from engine cut-off switch.

NOTICE

Do not start the engine during storage period.

MAINTENANCE RECORDS

Send photocopy of maintenance record to BRP if needed.

Pre-delivery	
Serial number:	Signature/Print:
Mileage / km:	
Hours:	
Date:	
Dealer no:	
Notes:	
Refer to vehicle Pre-Delivery Bulletin for detailed installation procedures	

First inspection	
Mileage / km:	Signature/Print:
Hours:	
Date:	
Dealer no:	
Notes:	
For maintenance schedule refer to Maintenance Information section of this operator's guide	

Service	
Mileage / km:	Signature/Print:
Hours:	
Date:	
Dealer no:	
Notes:	
For maintenance schedule refer to Maintenance Information section of this operator's guide	

Service	
Mileage / km:	Signature/Print:
Hours:	
Date:	
Dealer no:	
Notes:	
For maintenance schedule refer to Maintenance Information section of this operator's guide	

Service	
Mileage / km:	Signature/Print:
Hours:	
Date:	
Dealer no:	
Notes:	
For maintenance schedule refer to Maintenance Information section of this operator's guide	

Service	
Mileage / km: _____ Hours: _____ Date: _____ Dealer no: _____ Notes: _____	Signature/Print:
For maintenance schedule refer to Maintenance Information section of this operator's guide	

Service	
Mileage / km: _____ Hours: _____ Date: _____ Dealer no: _____ Notes: _____	Signature/Print:
For maintenance schedule refer to Maintenance Information section of this operator's guide	

Service	
Mileage / km: _____ Hours: _____ Date: _____ Dealer no: _____ Notes: _____	Signature/Print:
For maintenance schedule refer to Maintenance Information section of this operator's guide	

Service	
Mileage / km: _____ Hours: _____ Date: _____ Dealer no: _____ Notes: _____	Signature/Print:
For maintenance schedule refer to Maintenance Information section of this operator's guide	

Service	
Mileage / km: _____ Hours: _____ Date: _____ Dealer no: _____ Notes: _____	Signature/Print:
For maintenance schedule refer to Maintenance Information section of this operator's guide	

Service	
Mileage / km: _____ Hours: _____ Date: _____ Dealer no: _____ Notes: _____	Signature/Print:
For maintenance schedule refer to Maintenance Information section of this operator's guide	

Service	
Mileage / km:	Signature/Print:
Hours:	
Date:	
Dealer no:	
Notes:	
For maintenance schedule refer to Maintenance Information section of this operator's guide	

Service	
Mileage / km:	Signature/Print:
Hours:	
Date:	
Dealer no:	
Notes:	
For maintenance schedule refer to Maintenance Information section of this operator's guide	

Service	
Mileage / km: _____ Hours: _____ Date: _____ Dealer no: _____ Notes: _____	Signature/Print:
For maintenance schedule refer to Maintenance Information section of this operator's guide	

Service	
Mileage / km: _____ Hours: _____ Date: _____ Dealer no: _____ Notes: _____	Signature/Print:
For maintenance schedule refer to Maintenance Information section of this operator's guide	

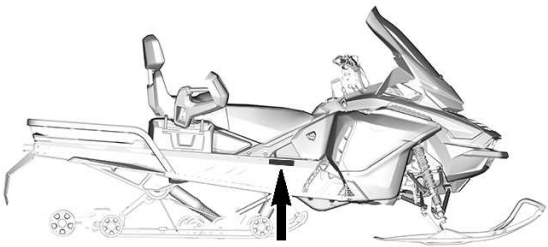
This page is intentionally blank

TECHNICAL INFORMATION

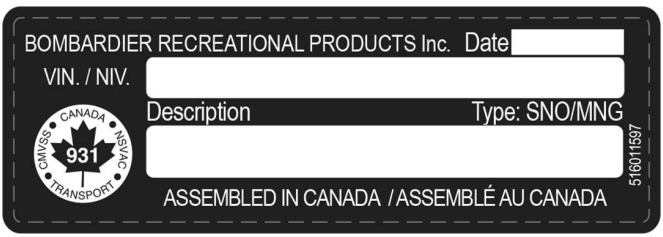
VEHICLE IDENTIFICATION

Vehicle Description Decal

Vehicle description decal is located on right hand side of tunnel.

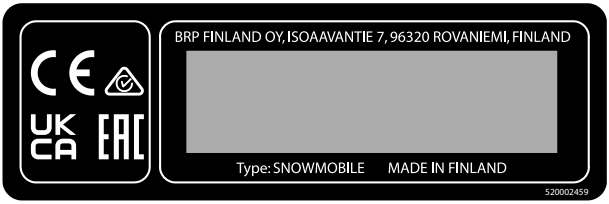


TYPICAL





FOR NORTH AMERICAN MARKET



FOR EUROPEAN MARKET

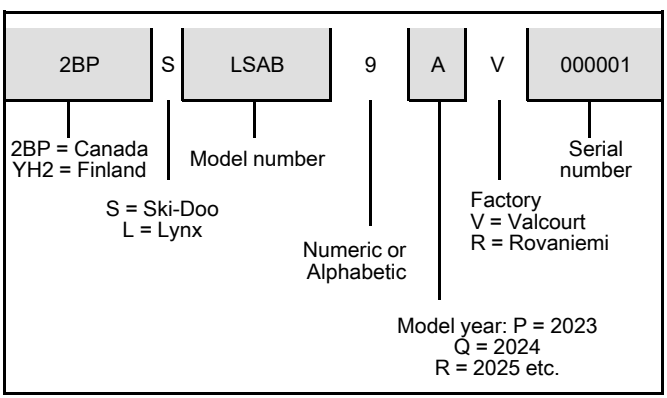
Identification Numbers

The main components of your snowmobile (engine and frame) are identified by different identification numbers. It may sometimes become necessary to locate these numbers for warranty purposes or to trace your snowmobile in the event of loss. These numbers are required by the authorized BRP snowmobile dealer to complete warranty claims properly. We strongly recommend that you take note of all the identification numbers on your snowmobile and supply them to your insurance company.

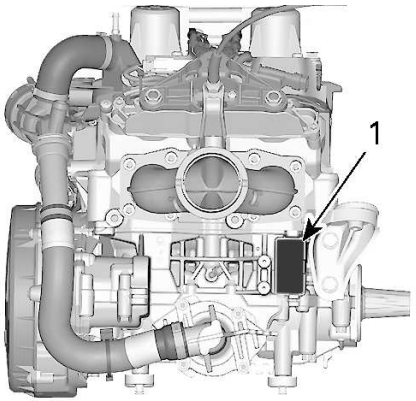
Vehicle Identification Number (VIN)

VIN is scribed on vehicle description decal. See above. It is also engraved on tunnel near vehicle description decal.

Model number and model year are part of the information found in the VIN. See illustration.



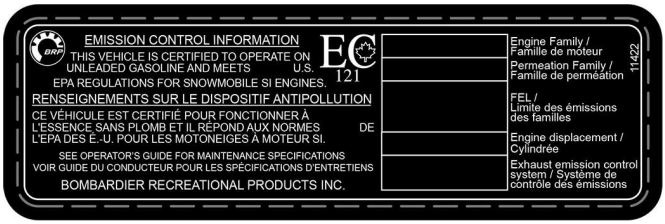
Engine Identification Number Location



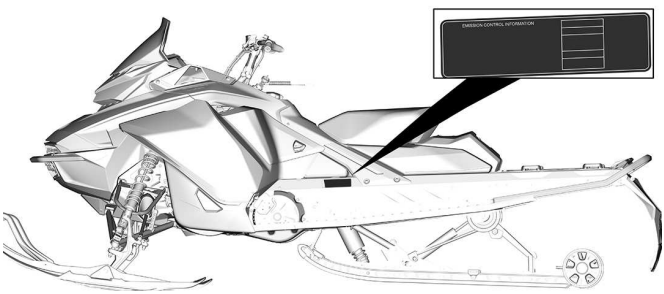
1. Engine identification number

COMPLIANCE LABELS

EPA Compliance Label



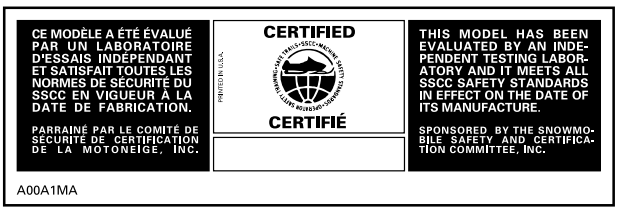
EPA COMPLIANCE LABEL



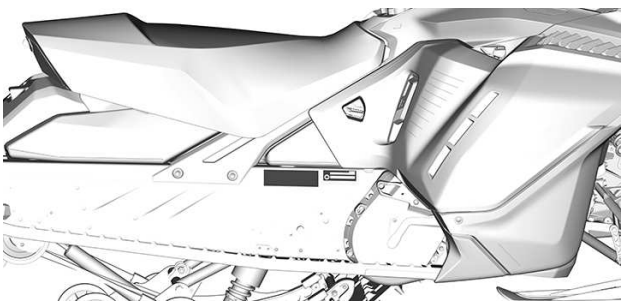
SSCC Label

Safety standards for snowmobiles have been adopted by the Snowmobile Safety and Certification Committee (SSCC) of which BRP is a proud participating member. Assurance that your snowmobile meets these standards is easily checked by locating the Certification Label on a right vertical portion of the vehicle.

The following label shows that an independent testing laboratory has verified compliance with the SSCC safety standards.

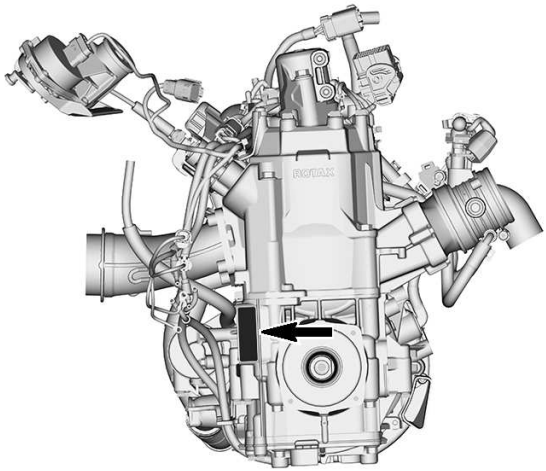


LABEL 2



Regulation (EU) 2016/1628 applicable for Non-Road Mobile Machineries

Vehicles who comply to Regulation (EU) 2016/1628 (NRMM) are identified on the engine.

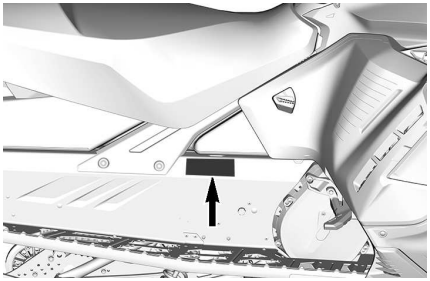


TYPICAL

Rotax NRSC H CO2 g/kWh: XXXX
MXXXXXXX
10559
Prod. date: MM-YYYY
Family type: XXXXXX
e13 SMB/P V-####

TYPICAL - NRMM IDENTIFICATION LABEL

Depending on your particular vehicle configuration, an additional NRMM identification label may be installed on the tunnel, near the chaincase.



TYPICAL - ON RH SIDE OF TUNNEL



NRMM IDENTIFICATION ON VEHICLE

NOISE EMISSION AND VIBRATION VALUES

MODEL		600 EFI	600R E-TEC	850 E-TEC
NOISE EMISSION AND VIBRATION VALUES[1]				
Noise	Sound power level (L_{WA})	101 dB (Uncertainty (K_{wa}) 3 dB)	98.3 dB (Uncertainty (K_{wa}) 3 dB)	100 dB (Uncertainty (K_{wa}) 3 dB)
	Sound pressure (L_{pA})	83 dB (Uncertainty (K_{pA}) 3 dB)	86.2 dB (Uncertainty (K_{pA}) 3 dB)	86 dB (Uncertainty (K_{pA}) 3 dB)
Vibration	Hand-arm system	<2.5 m/s^2	3.11 m/s^2	<2.5 m/s^2
	Whole body at seat	<0.5 m/s^2	<0.5 m/s^2	<0.5 m/s^2

[1]: Noise emission and Vibration values are measured in accordance with Annexes A and B of ISMA 1 regulation on a snow covered or grass surface in neutral or without belt.

EU DECLARATION OF CONFORMITY

565 de la Montagne Street
Valcourt (Québec) J0E 2L0
Canada

www.brp.com

ADVENTURE BY DESIGN

EU Declaration of Conformity

Authorized Representative: BRP Europe N.V., Skaldenstraat 125, Gent, Belgium, 9042

This declaration of conformity is issued under the sole responsibility of the manufacturer.

The undersigned, representing the manufacturer, hereby declares that model year **2023 Snowmobiles** marked with the CE mark and a 17-character vehicle identification number (VIN) structured as **2BPSxxxxxPVxxxxxx** or **YH2SxxxxxPRxxxxxx** under commercial name **Ski-Doo** comply with all the relevant provisions of the following Directives and Regulations:

Machinery Directive 2006/42/EC as amended up to and including Reg. 2019/1243/EU	ISO 12100:2010
Non-Road Mobile Machinery (NRMM) Regulation (EU) 2016/1628 on gaseous pollutants	Category SMB, Stage V emissions limits
Electromagnetic Compatibility (EMC) Directive 2014/30/EU as amended up to and including Reg. (EU) 2018/1139	CISPR 12:2007/A1:2009 & IEC 61000-6-1:2005 or UN R10.04 or later version
Battery Directive 2006/66/EC as amended up to and including Dir. (EU) 2018/849	EN 50342-7:2015
Radio Equipment (RED) Directive 2014/53/EU as amended up to and including Reg. 2018/1139 (If fitted with radio frequency (RF) D.E.S.S. key)	IEC 62368-1:2014 CISPR 25:2016 ISO 11452-2:2004 ETSI EN 300 330 V2.1.1:2017

Dominic Tessier
Dominic Tessier (2 Mar 2023 13:23 EST)

Dominic Tessier, Eng.
Director, Vehicle Engineering, Ski-Doo
Bombardier Recreational Products Inc.

Valcourt, QC, Canada

February 28th, 2022

ski-doo LYNX SEA-DOO EVINRUDE ROTAX can-am

UK DECLARATION OF CONFORMITY

BRP Finland Oy
PL 8040 (Isoaavantie 7)
FI-96101 Rovaniemi, Finland
T 358 40 800 7700
F 358 16 318 114
www.brp.com

ADVENTURE BY DESIGN

UK Declaration of Conformity

Authorized Representative: BRP Recreational Products UK Ltd., Castle Chambers, 43 Castle Street, Liverpool, L2 9SH

This declaration of conformity is issued under the sole responsibility of the manufacturer.

The undersigned, representing the manufacturer, hereby declares that model year **2023 Snowmobile** marked with the UK CA mark and a 17-character vehicle identification number (VIN) structured as **2BPSxxxxxPVxxxxxx** or **YH2SxxxxxPRxxxxxx** under commercial name **Ski-Doo** comply with all the relevant provisions of the following UK Statutory instrument and Regulations:

The Supply of Machinery (Safety) Regulations 2008, UK Statutory Instrument 2008/1597 as amended up to and including SI 2020/1112	ISO 12100:2010
Non-Road Mobile Machinery (Type-Approval and Emission of Gaseous and Particulate Pollutants) Regulation 2018, UK SI 2018/764 as amended up to and including SI 2020/1393	Category SMB, Stage V emissions limits
Electromagnetic Compatibility Regulations 2016, UK SI 2016/1091 as amended up to and including SI 2020/1112	CISPR 12:2007/A1:2009 & IEC 61000-6-1:2005 or UN R10.04 or later version
Batteries and Accumulators (Placing on the Market) Regulations 2008, UK SI 2008/2164 as amended up to and including UK SI 2020/904	EN 50342-7:2015
Radio Equipment Regulations 2017, UK SI 2017/1206 as amended up to and including SI 2020/1112	IEC 62368-1:2014 CISPR 25:2016 ISO 11452-2:2004 ETSI EN 300 330 V2.1.1:2017

Dominic Tessier
Dominic Tessier (2 Mar 2022 EST)

Dominic Tessier, Eng.
Director, Vehicle Engineering, Ski-Doo
Bombardier Recreational Products Inc.

Valcourt, QC, Canada

February 28th, 2022

ski-doo LYNX SEA-DOO EVINRUDE ROTAX can-am

Left blank for Eurasian Conformity mark where applicable

EPA CERTIFIED ENGINES

Engine Emissions Information

Manufacturer's Responsibility

Snowmobile manufacturers of snowmobile engines need to determine the exhaust emission levels for each engine horsepower family and certify these engines with the United States of America Environmental Protection Agency (EPA). An emissions control information label, showing emission levels and engine specifications, must be placed on each vehicle at the time of manufacture.

Dealer's Responsibility

When performing service on a certified BRP snowmobiles that carry an emissions control information label, adjustments must be kept within published factory specifications.

Replacement or repair of any emission related component must be executed in a manner that maintains emission levels within the prescribed certification standards.

Dealers are not to modify the engine in any manner that would alter the horsepower or allow emission levels to exceed their predetermined factory specifications.

Exceptions include manufacturer's prescribed changes, such as altitude adjustments for example.

Owner Responsibility

The owner / operator is required to have engine maintenance performed to maintain emission levels within prescribed certification standards.

The owner / operator is not to, and should not allow anyone to modify the engine in any manner that would alter the horsepower or allow emissions levels to exceed their predetermined factory specifications.

EPA Emission Regulations

All BRP snowmobiles manufactured by BRP are certified to the EPA as conforming to the requirements of the regulations for the control of air pollution from new snowmobile engines. This certification is contingent on certain adjustments being set to factory standards. For this reason, the factory procedure for servicing the product must be strictly followed and, whenever practicable, returned to the original intent of the design.

The responsibilities listed above are general and in no way a complete listing of the rules and regulations pertaining to the EPA requirements on exhaust emissions for snowmobile products. For more detailed information on this subject, you may contact the following locations:

MAIL:

U.S. Environmental Protection Agency
Certification Division
Gasoline Engine Compliance Center
2000 Traverwood Drive
Ann Arbor MI 48105
USA

INTERNET WEB SITE:

www.epa.gov/otaq/

RADIO FREQUENCY DIGITALLY ENCODED SECURITY SYSTEM (RF D.E.S.S. KEY)

This device complies with FCC Part 15 and Industry Canada license exempt RSS standard(s).

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

IC Registration Number: 12006A-1001002222

FCC ID: 2ACER–1001002222

We, the party responsible for compliance, declare under our sole responsibility that the device is in conformity with the provisions of the following Council Directive: 2014/53/EU. To which this declaration relates is in conformity with the essential requirements and other relevant requirements. The product is in conformity with the following directives, harmonized standards and regulations:

Radio Equipment Directive (RED) 2014/53/EU and Harmonized Standards:

IEC 62368-1:2014, CISPR 25:2016, ISO 11452-2:2004, ETSI EN 300 330 V2.1.1:2017

Radio Equipment Statutory Instrument 2017/1206 and Designated Standards:

IEC 62368-1:2014, CISPR 25:2016, ISO 11452-2:2004, ETSI EN 300 330 V2.1.1:2017

MULTIFUNCTION GAUGE REGULATORY INFORMATION

Technical Information

Transmitter:

– BT operating frequency range: 2402 - 2480 MHz
– BT version: 4.2 (no BTLE)
– BT output power: < 8.5 dBm

Receiver:

– FM operating range: 76 - 108 MHz

Manufacturer and Address

Manufacturer:

– Robert Bosch LLC

Address:

– 38000 Hills Tech Drive,
Farmington Hills, MI 48331,
USA

To display the regulatory information on the vehicle digital display: From the home screen, access the main menu and keep the joystick pressed down for more than 10 seconds.

USA and Canada

This device complies with FCC Part 15 and Industry Canada license exempt RSS standard (s). Operation is subject to the following two conditions:
(1) this device may not cause interference, and
(2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:
(1) l'appareil ne doit pas produire de brouillage, et
(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

IC: 22868 - VDIBRHS01

FCC ID: 2AMJS - VDIBRHS01

RF exposure:

- The equipment complies with FCC RF exposure limits set forth for an uncontrolled environment.
- This equipment must be installed and operated with a separation distance of at least 20 cm from all persons.
- The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Mexico

IFETEL

Marca: Robert Bosch LLC

Modelo(s): VIPHI2BT

Número: RCPBOVI18-0967

NOM-121-SCT1-2009

La operación de este equipo está sujeta a las siguientes dos condiciones: (1) es posible que este equipo o dispositivo no cause interferencia perjudicial y (2) este equipo o dispositivo debe aceptar cualquier interferencia, incluyendo la que pueda causar su operación no deseada.

Brazil

ANATEL

Agência Nacional de Telecomunicações

03473-18-04473

Este equipamento opera em caráter secundário, isto é, não tem direito a proteção contra interferência prejudicial, mesmo de estações do mesmo tipo, e não pode causar interferência a sistemas operando em caráter primário.

Japan

This device is granted pursuant to the Japanese Radio Law (電波法) and the Japanese Telecommunications Business Law (電気通信事業法). This device should not be modified (otherwise the granted designation number will become invalid).

Europe

Declaration of Conformity

Simplified EU Declaration of Conformity according Radio Equipment Directive 2014/53/EU.

CE

DE
Hiermit erklärt Robert Bosch LLC, dass der Funkanlagentyp VIPHI2BT der Richtlinie 2014/53/EU entspricht.
Der vollständige Text der EU-Konformitätserklärung ist unter der folgenden Internetadresse verfügbar: eu-doc.bosch.com
FR
Le soussigné, Robert Bosch LLC, déclare que l'équipement radioélectrique du type VIPHI2BT est conforme à la directive 2014/53/UE.
Le texte complet de la déclaration UE de conformité est disponible à l'adresse internet suivante:eu-doc.bosch.com
BG
С настоящото Robert Bosch LLC декларира, че този тип радиосъоръжение VIPHI2BT е в съответствие с Директива 2014/53/ЕС.
Цялостният текст на ЕС декларацията за съответствие може да се намери на следния интернет адрес: eu-doc.bosch.com
EL
Με την παρούσα ο/η Robert Bosch LLC, δηλώνει ότι ο ραδιοεξοπλισμός VIPHI2BT πληροί την οδηγία 2014/53/ΕΕ.
Το πλήρες κείμενο της δήλωσης συμμόρφωσης ΕΕ διατίθεται στην ακόλουθη ιστοσελίδα στο διαδίκτυο: eu-doc.bosch.com
CS
Tímto Robert Bosch LLC prohlašuje, že typ rádiového zařízení VIPHI2BT je v souladu se směrnicí 2014/53/EU.
Úplné znění EU prohlášení o shodě je k dispozici na této internetové adrese: eu-doc.bosch.com
DA
Hermed erklærer Robert Bosch LLC, at radioudstyrstypen VIPHI2BT er i overensstemmelse med direktiv 2014/53/EU.
EU-overensstemmelseserklæringens fulde tekst kan findes på følgende internetadresse: eu-doc.bosch.com
ET
Käesolevaga deklareerib Robert Bosch LLC, et käesolev raadioseadme tüüp VIPHI2BT vastab direktiivi 2014/53/EL nõuetele.
ELi vastavusdeklaratsiooni täielik tekst on kättesaadav järgmisel internetiaadressil: eu-doc.bosch.com
ES
Por la presente, Robert Bosch LLC declara que el tipo de equipo radioeléctrico VIPHI2BT es conforme con la Directiva 2014/53/UE.
El texto completo de la declaración UE de conformidad está disponible en la dirección Internet siguiente: eu-doc.bosch.com
FI
Robert Bosch LLC vakuuttaa, että radiolaitetyyppi VIPHI2BT on direktiivin 2014/53/EU mukainen.
EU-vaatimustenmukaisuusvakuutuksen täysimittainen teksti on saatavilla seuraavassa internetosoitteessa: eu-doc.bosch.com
EN
Hereby, Robert Bosch LLC declares that the radio equipment type VIPHI2BT is in compliance with Directive 2014/53/EU.
The full text of the EU declaration of conformity is available at the following internet address: eu-doc.bosch.com
HR
Robert Bosch LLC ovime izjavljuje da je radijska oprema tipa VIPHI2BT u skladu s Direktivom 2014/53/EU.
Cjeloviti tekst EU izjave o sukladnosti dostupan je na sljedećoj internetskoj adresi: eu-doc.bosch.com
HU
Robert Bosch LLC igazolja, hogy a VIPHI2BT típusú rádióberendezés megfelel a 2014/53/EU irányelvnek.
Az EU-megfelelőségi nyilatkozat teljes szövege elérhető a következő internetes címen: eu-doc.bosch.com
IT
Il fabbricante, Robert Bosch LLC, dichiara che il tipo di apparecchiatura radio VIPHI2BT è conforme alla direttiva 2014/53/UE.
Il testo completo della dichiarazione di conformità UE è disponibile al seguente indirizzo Internet: eu-doc.bosch.com

LT
Aš, Robert Bosch LLC, patvirtinu, kad radijo įrenginių tipas VIPHI2BT atitinka Direktyvą 2014/53/ES.
Visas ES atitikties deklaracijos tekstas prieinamas šiuo interneto adresu: eu-doc.bosch.com
LV
Ar šo Robert Bosch LLC deklarē, ka radioiekārta VIPHI2BT atbilst Direktīvai 2014/53/ES.
Pilns ES atbilstības deklarācijas teksts ir pieejams šādā interneta vietnē: eu-doc.bosch.com
MT
B'dan, Robert Bosch LLC, niddikjara li dan it-tip ta' tagħmir tar-radju VIPHI2BT huwa konformi mad-Direttiva 2014/53/UE.
It-test kollu tad-dikjarazzjoni ta' konformità tal-UE huwa disponibbli f'dan l-indirizz tal-Internet li ġej: eudoc.bosch.com
NL
Hierbij verklaar ik, Robert Bosch LLC, dat het type radioapparatuur VIPHI2BT conform is met Richtlijn 2014/53/EU.
De volledige tekst van de EU-conformiteitsverklaring kan worden geraadpleegd op het volgende internetadres: eudoc.bosch.com
PL
Robert Bosch LLC niniejszym oświadcza, że typ urządzenia radiowego VIPHI2BT jest zgodny z dyrektywą 2014/53/UE.
Pełny tekst deklaracji zgodności UE jest dostępny pod następującym adresem internetowym: eu-doc.bosch.com
PT
O(a) abaixo assinado(a) Robert Bosch LLC declara que o presente tipo de equipamento de rádio VIPHI2BT está em conformidade com a Diretiva 2014/53/UE.
O texto integral da declaração de conformidade está disponível no seguinte endereço de Internet: eudoc.bosch.com
RO
Prin prezenta, Robert Bosch LLC declară că tipul de echipamente radio VIPHI2BT este în conformitate cu Directiva 2014/53/UE.
Textul integral al declarației UE de conformitate este disponibil la următoarea adresă internet: eu-doc.bosch.com
SV
Härmed försäkrar Robert Bosch LLC att denna typ av radioutrustning VIPHI2BT överensstämmer med direktiv 2014/53/EU.
Den fullständiga texten till EU-försäkran om överensstämmelse finns på följande webbadress: eu-doc.bosch.com
SL
Robert Bosch LLC potrjuje, da je tip radijske opreme VIPHI2BT skladen z Direktivo 2014/53/EU.
Celotno besedilo izjave EU o skladnosti je na voljo na naslednjem spletnem naslovu: eu-doc.bosch.com
SK
Robert Bosch LLC týmto vyhlasuje, že rádiové zariadenie typu VIPHI2BT je v súlade so smernicou 2014/53/EÚ.
Úplné EÚ vyhlásenie o zhode je k dispozícii na tejto internetovej adrese: eu-doc.bosch.com
IS
Robert Bosch LLC lýsir því hér með yfir að þráðlausi fjarskiptabúnaðurinn VIPHI2BT er í samræmi við tilskipun 2014/53/ESB.
Óstyttan texta ESB-samræmisyfirlýsingarinnar er að finna á veffanginu: eu-doc.bosch.com
Liechtenstein
Hiermit erklärt Robert Bosch LLC, dass der Funkanlagentyp VIPHI2BT der Richtlinie 2014/53/EU entspricht.
Der vollständige Text der EU-Konformitätserklärung ist unter der folgenden Internetadresse verfügbar: eudoc.bosch.com
NO
Hermed erklærer Robert Bosch LLC at radioutstyrstypen VIPHI2BT er i samsvar med direktiv 2014/53/EU.
Hele teksten i EU-samsvarserklæringen finnes på følgende internettadresse: eu-doc.bosch.com

This page is intentionally blank

TECHNICAL SPECIFICATIONS

ENGINE

600 EFI

ENGINE	600 EFI
Engine type	Rotax 600 EFI liquid cooled with reed valves
Number of cylinder	2
Bore	72.3 mm (2.85 in)
Stroke	73 mm (2.87 in)
Displacement	599.4 cm³ (36.6 in³)
Maximum power engine speed	7500 ± 100 RPM

FUEL SYSTEM	
Fuel delivery	Throttle body injection
Idle speed (not adjustable)	1500 ± 200 RPM

ELECTRICAL SYSTEM		
Lighting system output		30 A @ 14.5 V 1340 W @ 6000 RPM
Spark plug	Type	BPR8ES
	Gap(1)	Not adjustable 0.6 to 0.7 mm (.024 to .028 in)

LUBRICATION SYSTEM			
Oil injection pump type			Mechanical oil injection pump
Injection oil	Type(2)	Recommended	XPS 2T Synthetic Blend oil (semi-synthetic)
	Quantity		3.4 l (3.6 qt(liq.,US))

600R E-TEC

ENGINE	600R E-TEC
Engine type	Rotax 600R E-TEC liquid cooled with reed valves and electronic RAVE
Number of cylinder	2
Bore	72.3 mm (2.846 in)
Stroke	73 mm (2.874 in)
Displacement	599.4 cm^3 (36.58 in^3)
Maximum power engine speed	8100 ± 100 RPM

FUEL SYSTEM	
Fuel delivery	E-TEC direct injection
Idle speed (not adjustable)	1200 ± 200 RPM

ELECTRICAL SYSTEM		
Lighting system output		30 A @ 14.5 V 1340 W @ 6000 RPM
Spark plug	Type	NGK ILKR8Q7 (engine and spark plug threads are indexed)
	Gap(1)	Not adjustable 0.6 to 0.7 mm (.024 to .028 in)

LUBRICATION SYSTEM			
Oil injection pump type			Electronic oil injection pump
Injection oil	Type(2)	Recommended	XPS 2T E-TEC synthetic oil
	Quantity		3.4 l (3.6 qt(liq.,US))

850 E-TEC

ENGINE	850 E-TEC
Engine type	Rotax 850 E-TEC liquid cooled with reed valves and electronic RAVE
Number of cylinder	2
Bore	82 mm (3.228 in)
Stroke	80.4 mm (3.165 in)
Displacement	849 cm³ (51.81 in³)
Maximum power engine speed	7900 ± 100 RPM

FUEL SYSTEM	
Fuel delivery	E-TEC direct injection with integrated auxiliary injection system
Idle speed (not adjustable)	1200 ± 200 RPM

ELECTRICAL SYSTEM		
Lighting system output		30 A @ 14.5 V 1340 W @ 6000 RPM
Spark plug	Type	NGK ILKR8Q7 (engine and spark plug threads are indexed)
	Gap(1)	Not adjustable 0.6 to 0.7 mm (.024 to .028 in)

LUBRICATION SYSTEM			
Oil injection pump type			Electronic oil injection pump
Injection oil	Type(2)	Recommended	XPS 2T E-TEC synthetic oil
	Quantity		3.4 l (3.6 qt(liq.,US))

VEHICLE

Backcountry

COOLING SYSTEM		
Coolant type	Recommended	XPS Extended life pre-mixed coolant
	Alternative, or if not available	Ethyl glycol and distilled water (50%/50%) or coolant specifically formulated for aluminum engines

FUEL SYSTEM			
Fuel pump			In-tank electrical
Fuel	600 EFI	Type	Regular unleaded gasoline
		Octane rating	87 Pump posted AKI (R+M)/2) 92 RON
	600R E-TEC, 850 E-TEC	Type	Premium unleaded gasoline
		Octane rating	91 Pump posted AKI (R+M)/2) 95 (RON)
Fuel tank capacity			36 l (9.5 gal (US))

ELECTRICAL SYSTEM – 600 EFI			
Battery			12 V, 18 A•h
Headlamp			2 x 60/55 W (H-13)
Taillight and stoplight			2.6 W / 139 mW LED
Fuses	F1	Battery	30 A

ELECTRICAL SYSTEM – 600 EFI			
	F2	ECM/Engine/ Fuel Pump/ Starter	20 A
	F3	Cluster	15 A
	F4	Lights/ Accessory	25 A
Relays	RY1	Main	–
	RY2	Lights/ Accessory	–

ELECTRICAL SYSTEM – E-TEC with Electric Start			
Battery			12 V, 18 A•h
Headlamp			2 x 60/55 W (H-13)
Taillight and stoplight			2.6 W / 139 mW LED
Fuses	F1	Battery	30 A
	F2	Main	10 A
	F3	Cluster	15 A
	F4	Accessory/ Loads	25 A
	F5	Start/RER	5 A
Relays	RY1	Main	–

ELECTRICAL SYSTEM – E-TEC with SHOT Start	
Battery	12 V, 18 A•h
Headlamp	2 x 60/55 W (H-13)

ELECTRICAL SYSTEM – E-TEC with SHOT Start			
Taillight and stoplight			2.6 W / 139 mW LED
Fuses	F1	Start/RER	5 A
	F2	Accessory/ Loads	25 A
	F4	Cluster	15 A

DRIVE SYSTEM - CHAINCASE			
Chaincase oil	Type	Recommended	XPS Synthetic chaincase oil
		Alternative, or if not available	75W140 gear oil that meets the API GL-5 specification
	Capacity		350 ml (12 fl oz (US))
Chain drive ratio		Backcountry 850 E-TEC, Backcountry X - 1.6 in profile track, Backcountry X-RS 146 in - 1.6 in profile track	21/45
Chain drive ratio		Backcountry X-RS 154 in - 2.5 in profile track	21/51

DRIVE SYSTEM - CHAINCASE		
	Backcountry Sport, Backcountry 600R E-TEC, Backcountry X - 2.0 in profile track, Backcountry X-RS 146 in/ 154 in - 2.0 in profile track	23/51

DRIVE SYSTEM - PULLEYS			
Drive pulley	Type	600 EFI	pDrive
		600R E-TEC 850 E-TEC	pDrive with clickers
	Engage-ment RPM	850 E-TEC	3300 ± 100 RPM
		600 EFI	3200 ± 100 RPM
		600R E-TEC	3400 ± 100 RPM
Driven pulley	Type		QRS

DRIVE SYSTEM - TRACK			
Drive sprocket number of teeth			8
Track	Width	All Models	38 cm (15 in) or 406 mm (16 in)
	Length	Backcountry Sport, Backcountry Backcountry X	370.8 cm (146 in)
		Backcountry X-RS	370.8 cm (146 in) or 391.2 cm (154 in)

DRIVE SYSTEM - TRACK			
	Profile height	Backcountry Sport	34.3 mm (1.35 in) or 50 mm (2 in)
		Backcountry, Backcountry X	40.6 mm (1.6 in) or 50 mm (2 in)
		Backcountry X-RS	40.6 mm (1.6 in) or 50 mm (2 in) or63.5 mm (2.5 in)
Track adjustment [3]		Deflection	32 mm (1.26 in)
		Force	6.0 to 8.5 kgf (13 to 19 lbf)

BRAKE SYSTEM		
Brake	Type	Single 200-mm cross-drilled carbon steel disc
Brake fluid	Type	DOT 4
	Quantity	65 ml (2.2 fl oz (US))
Caliper		Fixed twin pistons (2 x 40 mm)
Brake pad material		Organic
Minimum brake pad thickness (includes backing plate)		5.0 mm (.197 in)
Minimum brake disc thickness		4.5 mm (.177 in)
Maximum brake disc warpage		0.25 mm (.010 in)

FRONT SUSPENSION		
Suspension type	All Models	RAS X
Suspension maximum travel	All Models	220 mm (8.7 in)
Shock absorber type	Backcountry Sport	Motion Control
	Backcountry	HPG
	Backcountry X	HPG Plus
	Backcountry X-RS	KYB Pro 36 R EA

REAR SUSPENSION			
Suspension type		All Models	cMotion
Suspension maximum travel Measured at rear arm		All Models	239 mm (9.4 in)
Shock absorber type	Center	Backcountry Sport	Motion Control
		Backcountry	HPG
		Backcountry X	HPG Plus
		Backcountry X-RS	KYB Pro 40 EA
	Rear	Backcountry Sport Backcountry	HPG
		Backcountry X	KYB Pro 36 EA
		Backcountry X-RS	KYB Pro 40 EA

WEIGHT AND DIMENSIONS		
Mass (dry)	Backcountry Sport	202 kg (446 lb)
	Backcountry 600R E-TEC	212 kg (466 lb)
	Backcountry 850 E-TEC	219 kg (482 lb)
	Backcountry X	209 kg (462 lb)
	Backcountry X-RS (146 in)	214 kg (472 lb)
	Backcountry X-RS (154 in)	220 kg (485 lb)
Overall length	Backcountry Sport, Backcountry, Backcountry X, X-RS (146 in)	317.4 cm (125 in)
	Backcountry X-RS (154 in)	328.4 cm (129.3 in)
Overall width	All Models	114 cm (44.9 in) to 118 cm (46.5 in)
Overall height	All Models	128.3 cm (50.5 in)
Ski stance	All Models	99 cm (39 in) or

(1) NOTICE Do not attempt to adjust gap on this spark plug.

(2) Refer to *INJECTION OIL* for detailed information.

(3) Refer to *Track Tension Verification* in *Maintenance Procedures* for detailed procedure.

Expedition

COOLING SYSTEM		
Coolant type	Recommended	XPS Extended life pre-mixed coolant
	Alternative, or if not available	Ethyl glycol and distilled water (50%/50%) or coolant specifically formulated for aluminum engines

FUEL SYSTEM			
Fuel pump			In-tank electrical
Fuel	Octane rating	600 EFI	87 Pump Posted AKI (R+M)/2) 92 RON
		600R E-TEC 850 E-TEC	91 Pump Posted AKI (R+M)/2) 95 (RON)
Fuel tank capacity	Expedition Sport		36 l (9.5 gal(liq.,US))
	Expedition LE / SE / Extreme		42 l (11.1 gal(liq.,US))

ELECTRICAL SYSTEM — 600 EFI			
Battery	Expedition Sport		12 V, 18 A•h
Headlamp			2 x 60/55 W (H-13)
Taillight and stoplight			2.6 W / 139 mW LED
Fuses	F1	Battery	30 A

ELECTRICAL SYSTEM — 600 EFI			
	F2	ECM/ Egine/ Fuel Pump/ Starter	20 A
	F3	Cluster	15 A
	F4	Lights/ Accessory	25 A
Relays	RY1	Main	–
	RY2	Lights/ Accessory	–

ELECTRICAL SYSTEM — E-TEC			
Battery	Expedition Xtreme		12 V, 18 A•h
	Expedition LE/ SE		12 V, 30 A•h
Headlamp			2 x 60/55 W (H-13)
Taillight and stoplight			2.6 W / 139 mW LED
Fuses	F1	Clock/ Start/ Relays	5 A
	F2	Headlamps	20 A
	F3	Cluster	15 A
	F4	SD/ RFID	10 A
	F5	Accessory	15 A
	F6	Fan	15 A
	F7	ACS	15 A
	F8	Taillights	15 A
Relays	RY1	Accessory	–

ELECTRICAL SYSTEM — E-TEC			
	RY2	Fan	–

DRIVE SYSTEM - CHAINCASE			
Chaincase oil	Type	Recommended	XPS Synthetic Chaincase Oil or equivalent.
		Alternative, or if not available	75W140 gear oil that meets the API GL-5 specification
	Capacity		350 ml (12 fl oz(US))
Chain drive ratio		Expedition Sport	21/49

DRIVE SYSTEM - GEARBOX			
Gearbox oil (if equipped)		Type	Synchromesh Transmission Synthetic Oil or equivalent.
		Capacity	900 ml (30.4 fl oz(US))
Gearbox ratio	600R E-TEC	Low	3.87:1
		High	2.15:1
	850 E-TEC	Low	3.59:1
		High	2.0:1

DRIVE SYSTEM - PULLEYS AND TRACK			
Drive pulley	Type	600 EFI	pDrive LC

DRIVE SYSTEM - PULLEYS AND TRACK			
		600R E-TEC 850 E-TEC	pDrive with clickers
	Engagement RPM	600 EFI	2300 ± 100 RPM
		600R E-TEC	3400 ± 100 RPM
		850 E-TEC	3800 ± 100 RPM
Driven pulley	Type		QRS
Drive sprocket number of teeth			8
Track	Width	Expedition Sport	41 cm (16 in)
		Expedition LE 20” Expedition SE Expedition Xtreme	50 cm (20 in)
		Expedition LE 24”	61 cm (24 in)
	Length		392.3 cm (154 in)
	Profile height	Expedition Sport/ LE	38 mm (1.5 in)
		Expedition SE	38.1 mm (1.5 in) or 45.7 mm (1.8 in)
		Expedition Xtreme	45.7 mm (1.8 in)
Track adjustment		Deflection	45 mm (1.77 in)
		Force	7.3 kgf (16 lbf)

BRAKE SYSTEM		
Brake	Type	Single 200 mm cross drilled carbon steel disc
Brake fluid	Type	DOT 4
	Quantity	65 ml (2.2 fl oz(US))
Caliper		Fixed twin pistons (2 x 40mm)
Brake pad material		Organic
Minimum brake pad thickness (includes backing plate)		5 mm (.2 in)
Minimum brake disc thickness		4.5 mm (.177 in)
Maximum brake disc warpage		0.25 mm (.010 in)

FRONT SUSPENSION		
Suspension type		RAS X
Suspension maximum travel	Expedition Sport	210 mm (8.3 in)
	Expedition LE/ SE/ Xtreme	220 mm (8.7 in)
Shock absorber type	Expedition Sport	Motion Control
	Expedition LE/ SE	HPG
	Expedition Xtreme	HPG Plus

REAR SUSPENSION			
Suspension type			SC-5U
Suspension maximum travel Measured at rear arm			239 mm (9.4 in)
Shock absorber type	Center	Expedition Sport	Motion control
		Expedition LE/ SE	HPG
		Expedition Xtreme	HPG Plus
	Rear	Expedition Sport/ LE	HPG
		Expedition SE	ACS (Air Controlled Suspension)
		Expedition Xtreme	KYB Pro 36 Easy adjust

WEIGHT AND DIMENSIONS		
Mass (dry)	Expedition Sport	228 kg (502 lb)
	Expedition LE 20"	280 kg (616 lb)
	Expedition SE	290 kg (639 lb)
	Expedition LE 24"	285 kg (626 lb)
	Expedition Xtreme	271 kg (596 lb)
Overall length	Expedition Sport	330.9 cm (130.3 in)
	Expedition LE/ SE	325.6 cm (128.2 in)

WEIGHT AND DIMENSIONS		
	Expedition Xtreme	329.3 cm (129.6 in)
Overall width	Expedition Sport/ Xtreme	114 to 118 cm (44.9 to 46.5 in)
	Expedition LE/ SE	120 to 124 cm (47.7 to 48.8 in)
Overall height	Expedition Sport/ LE/ SE	151.3 cm (59.6 in)
	Expedition Xtreme	128 cm (50.4 in)
Ski stance		97.5 cm (38.4 in) to 102 cm (40.2 in)
Rear rack capacity (including tongue weight)	Expedition Sport	25 kg (55 lb)
	Expedition LE/ SE/ Extreme	57 kg (125 lb)
Rear under seat storage compartment loading capacity	Expedition LE/ SE/ Extreme	15 l (4 gal(liq.,US)) or 10 kg (22 lb)
Cargo Box capacity	Expedition SE	135 l (35.7 gal(liq.,US)) or 48 kg (105 lb)
Total vehicle load allowed (including occupant(s), all other loads and added accessories)	Expedition Sport	206 kg (454.2 lb)
	Expedition LE/ SE/ Extreme	238 kg (525 lb)

WEIGHT AND DIMENSIONS		
Towing capacity	Expedition Sport	260 kg (573 lb)
	Expedition LE/ SE/ Extreme	680 kg (1,500 lb)
Tongue capacity		16 kg (35 lb)

(1) NOTICE Do not attempt to adjust gap on this spark plug.

(2) Refer to *INJECTION OIL* for detailed information.

(3) Refer to *Track Tension Verification* in *Maintenance Procedures* for detailed procedure.

TROUBLESHOOTING

TROUBLESHOOTING GUIDELINES

ELECTRIC STARTER DOES NOT WORK

1. **Emergency engine stop switch in OFF position or tether cord cap not installed on engine cut-off switch.**
   – *Place the emergency engine stop switch in the ON position and install tether cord cap (on engine cut-off switch.*
2. **Throttle applied while attempting an engine start.**
   – *Release throttle while cranking.*

ENGINE IS CRANKING BUT FAILS TO START

1. **No fuel to the engine.**
   – *Check fuel tank level, add fuel if necessary.*
2. **System voltage too low.**
   – *Contact an authorized BRP snowmobile dealer.*

ENGINE RPM DOES NOT REACH CLUTCH ENGAGEMENT POINT

1. **D.E.S.S. did not read D.E.S.S. key code in the tether cord cap. D.E.S.S. pilot lamp blinks (slow short beeps/ repetitive).**
   – *Properly install tether cord cap.*
2. **D.E.S.S. has read a different code than the one programmed. D.E.S.S. pilot lamp blinks rapidly (fast short beeps/repetitive).**
   – *Install a tether cord cap for which this snowmobile was programmed.*
3. **ECM does not recognize the D.E.S.S. key.**
   – *Refer to an authorized BRP snowmobile dealer.*

ENGINE LACKS ACCELERATION OR POWER

1. **Engine warm-up in progress.**
   - *Drive vehicle at low speeds for a few minutes.*
2. **Engine break-in period not completed.**
   - *Complete break-in period.*
3. **Drive and driven pulleys require servicing.**
   - *Contact an authorized BRP snowmobile dealer.*
4. **Engine overheats.**
   - *Check coolant level, see Maintenance procedures.*
   - *Check heat exchangers cleanliness. Clean if necessary.*
5. **Drive belt worn too thin.**
   - *If the drive belt has lost more than 3 mm (1/8 in) of its original width, it will affect vehicle performance.*
   - *Replace drive belt.*
6. **Incorrect track adjustment.**
   - *See MAINTENANCE and/or an authorized Lynx dealer for proper alignment and tension adjustments.*
7. **R.A.V.E. valves problem.**
   - *Seek service from an authorized BRP snowmobile dealer, repair shop, or person of your own choosing for maintenance, repair, or replacement.*
8. **Fuel pressure too low.**
   - *Seek service from an authorized BRP snowmobile dealer, repair shop, or person of your own choosing for maintenance, repair, or replacement.*

ENGINE BACKFIRES

1. **Engine is running too hot.**
   - *See item 4 of ENGINE LACKS POWER.*
2. **Ignition timing is incorrect or there is an ignition system failure.**
   - *Seek service from an authorized BRP snowmobile dealer, repair shop, or person of your own choosing for maintenance, repair, or replacement.*
3. **Exhaust system leak.**
   - *Seek service from an authorized BRP snowmobile dealer, repair shop, or person of your own choosing for maintenance, repair, or replacement.*
4. **Fuel pressure too low.**
   - *Seek service from an authorized BRP snowmobile dealer, repair shop, or person of your own choosing for maintenance, repair, or replacement.*

ENGINE MISFIRES

1. **Water in fuel.**
   - *Drain fuel system and refill with fresh fuel.*
2. **RAVE valves malfunction.**
   - *Have RAVE valves system inspected. Seek service from an authorized BRP snowmobile dealer, repair shop, or person of your own choosing for maintenance, repair, or replacement.*

HEATED GRIPS/THUMB WARMERS ARE NOT WORKING

1. **Engine RPM is too low.**
   - *Make sure engine RPM is above 2000.*

ENGINE HAS SHUT DOWN

1. **The engine shuts down after long periods of idling.**
   - *Do not let engine idle too long. Refer to Vehicle warm-up in operating instruction.*

MONITORING SYSTEM

Pilot Lamps, Messages and Beeper Codes

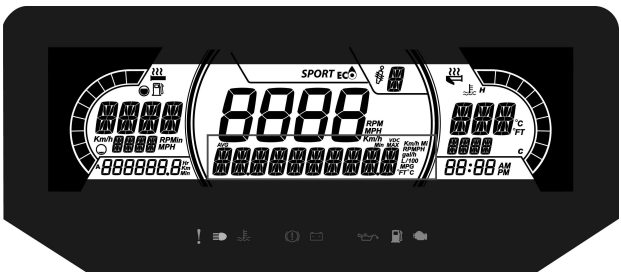
Gauge pilot lamp(s) will inform you if an anomaly occurs or to inform you of a particular condition.



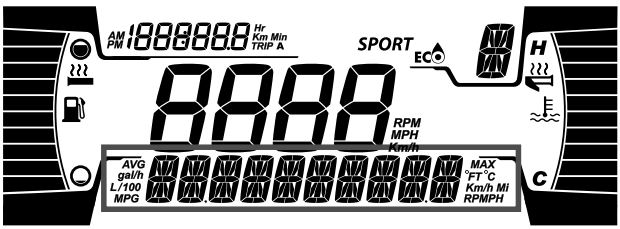
TYPICAL — PILOT LAMPS

Pilot lamp can flash alone or in combination with another lamp.

The lower display is used as a complement of the pilot lamps to give you a brief description if an anomaly occurs or to inform you of a particular condition.



7.2" DIGITAL LOWER DISPLAY



4.5" DIGITAL LOWER DISPLAY

Messages will be displayed with a beep code and pilot lamp(s).

Beeper codes will be heard and messages will be displayed to catch your attention.

See table below for details.

NOTE:
Some of the listed pilot lamps and messages do not apply to all models.

Pilot lamp ON	Beeper	Message display	Description
	1 Long beep repeating	HIGH ENGINE TEMPERATURE	Engine is overheating, reduce snowmobile speed and run in loose snow or stop engine immediately and let engine cool down. Check coolant level, refer to *Maintenance*. If coolant level is correct and overheating persists, contact an authorized BRP snowmobile dealer. Do not run the engine if condition persists.
		MUFFLER OVERHEAT	Reduce speed or stop engine. Let engine cool down and restart. If overheating persists, contact an authorized BRP snowmobile dealer. Do not run the engine if condition persists.
	1 Long beep repeating	HIGH ENGINE TEMPERATURE	Critical overheat. Stop engine immediately and let engine cool down. Check coolant level, refer to *Maintenance*. If coolant level is correct and overheating persists, contact an authorized BRP snowmobile dealer. Do

Pilot lamp ON	Beeper	Message display	Description
			not run the engine if condition persists.
		MUFFLER OVERHEAT	Critical overheat. Stop engine immediately and let engine cool down. If overheating persists, contact an authorized BRP snowmobile dealer. Do not run the engine if condition persists.
		ECM OVERHEAT	
	—	BATT VOLT	Indicate a low or high battery voltage condition. See an authorized BRP snowmobile dealer as soon as possible.
	1 Long beep repeating	CHECK ENGINE	Engine fault, see an authorized BRP snowmobile dealer, repair shop or person of your own choosing as soon as possible.
	—	—	Displayed when brake is applied for more than 15 seconds while throttle lever is squeezed and vehicle is moving at more than 5 km/h (3 MPH).
—	4 short beeps every 5 minutes	KNOCK	Engine detonation (RPM is limited when this condition occurs).

Pilot lamp ON	Beeper	Message display	Description
			– Ensure recommended fuel is used. – Check fuel quality, replace if necessary. – If fault still occurs, contact an authorized BRP snowmobile dealer, repair shop, or person of your own choosing.
—	4 short beeps every 5 minutes	REV LIMIT	Engine RPM limited for protection when certain faults occur.
—	—	OVER REV	Indicates that maximum engine RPM is reached. Check clutch calibration.
—	Short beeps repeating rapidly	SHUTDOWN	Shutdown procedure in force due to engine overheating or fuel pump problem.
DESS	—	—	Good key, vehicle ready to operate.
	—	WRONG KEY	Unable to read key (bad connection). Make sure the key is clean and correctly snapped on post.

Pilot lamp ON	Beeper	Message display	Description
	—	CHECK KEY	Invalid key or key not programmed. Use the proper key for the vehicle or have the programmed.
 (blinking)	—	—	Fuel level sensor problem.

Fault Codes

The fault codes can be displayed on the center display.

The fault codes are accessible in the setting menu.

Contact an authorized BRP snowmobile dealer for code signification.

This page is intentionally blank

WARRANTY

BRP LIMITED WARRANTY USA AND CANADA: 2023 SKI-DOO® SNOWMOBILES

SCOPE OF THE LIMITED WARRANTY

Bombardier Recreational Products Inc. (**"BRP"**) warrants its 2023 Ski-Doo snowmobiles sold by authorized BRP dealers (as defined below) in the United States of America ("USA") and in Canada from defects in material or workmanship for the period and under the conditions described below. This limited warranty will become null and void if: (1) the snowmobile was used for racing or any other competitive activity, at any point, even by a previous owner; or (2) the snowmobile has been altered or modified in such a way so as to adversely affect its operation, performance or durability, or has been altered or modified to change its intended use.

Non-factory installed parts and accessories are not covered under this limited warranty. Please refer to the applicable parts and accessories limited warranty text.

LIMITATIONS OF LIABILITY

THIS WARRANTY IS EXPRESSLY GIVEN AND ACCEPTED IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. TO THE EXTENT THAT THEY CANNOT BE DISCLAIMED, THE IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE LIFE OF THE EXPRESS WARRANTY. INCIDENTAL AND CONSEQUENTIAL DAMAGES ARE EXCLUDED FROM COVERAGE UNDER THIS WARRANTY. SOME STATES/PROVINCES DO NOT ALLOW FOR THE DISCLAIMERS, LIMITATIONS AND EXCLUSIONS IDENTIFIED ABOVE, AS A RESULT, THEY MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC RIGHTS, AND YOU MAY ALSO HAVE OTHER LEGAL RIGHTS WHICH MAY VARY FROM STATE TO STATE, OR PROVINCE TO PROVINCE.

Neither the distributor, any BRP dealer nor any other person has been authorized to make any affirmation, representation or warranty regarding the product, other than those contained in this limited warranty, and if made, shall not be enforceable against BRP. BRP reserves the right to modify this limited warranty at any time, being understood that such modification will not alter the warranty conditions applicable to the products sold while this warranty is in effect.

EXCLUSIONS – ARE NOT WARRANTED

The following are not warranted under any circumstances:

- Normal wear and tear;
- Routine maintenance items, tune ups, adjustments;

- Damage caused by failure to provide proper maintenance and/or storage, as described in the Operator's Guide;
- Damage resulting from removal of parts, improper repairs, service, maintenance, modifications or use of parts or accessories not manufactured or approved by BRP or resulting from repairs done by a person that is not an authorized servicing BRP dealer;
- Damage caused by abuse, abnormal use, neglect, use of the product on surfaces other than snow, or operation of the product in a manner inconsistent with the recommended operation described in the Operator's Guide;
- Damage resulting from accident, submersion, fire, theft, vandalism or any act of God;
- Operation with fuels, oils or lubricants which are not suitable for use with the product (see the Operator's Guide);
- Snow or water ingestion;
- Incidental or consequential damages, or damages of any kind including without limitation towing, storage, telephone, rental, taxi, inconvenience, insurance coverage, loan payments, loss of time, loss of income; and
- Damage resulting from studs installed on tracks if the installation does not conform to BRP's instructions.

WARRANTY COVERAGE PERIOD

This limited warranty will be in effect from the date of delivery to the first retail consumer or the date the product is first put into use, whichever occurs first and for the following period:

TWELVE (12) CONSECUTIVE MONTHS, for private or commercial use owners. However, the warranty coverage period on a snowmobile delivered between June 1st and December 1st of a given year will expire November 30th of the following year.

For emission-related components; please also refer to the *US EPA EMISSION-RELATED WARRANTY (PAGE 396) US EPA EMISSION-RELATED WARRANTY* contained herein.

The repair or replacement of parts or the performance of service under this warranty does not extend the life of this warranty beyond its original expiration date.

CONDITIONS REQUIRED FOR WARRANTY COVERAGE

This warranty coverage is available **only** if each of the following conditions has been fulfilled:

- The 2023 Ski-Doo snowmobile must be purchased as new and unused by its first owner from a BRP dealer authorized to distribute

Ski-Doo snowmobiles in the country in which the sale occurred (**"BRP dealer"**);
- The BRP specified pre-delivery inspection process must be completed and documented and signed by the purchaser;
- The 2023 Ski-Doo snowmobile must have undergone proper registration by an authorized BRP dealer;
- The 2023 Ski-Doo snowmobile must be purchased in the country in which the purchaser resides; and
- Routine maintenance outlined in the Operator's Guide must be timely performed in order to maintain warranty coverage. BRP reserves the right to make warranty coverage contingent upon proof of proper maintenance.

BRP will not honor this limited warranty to any private use owner or commercial use owner if one of the preceding conditions has not been met. Such limitations are necessary in order to allow BRP to preserve both the safety of its products, and also that of its consumers and the general public.

WHAT TO DO TO OBTAIN WARRANTY COVERAGE

The customer must cease using the snowmobile upon the appearance of an anomaly. The customer must notify a servicing BRP dealer within three (3) days of the appearance of a defect, and provide it with reasonable access to the product and reasonable opportunity to repair it. The customer must also present to the authorized BRP dealer, proof of purchase of the product and must sign the repair/work order prior to starting the repair in order to validate the warranty repair. All parts replaced under this limited warranty become the property of BRP.

WHAT BRP WILL DO

BRP's obligations under this warranty are limited to, at its sole discretion, repairing parts found defective under normal use, maintenance and service, or replacing such parts with new genuine Ski-Doo parts without charge for parts and labor , at any authorized BRP dealer during the warranty coverage period under the conditions described herein. No claim of breach of warranty shall be cause for cancellation or rescission of the sale of the snowmobile to the owner.

In the event that service is required outside of the country of original sale, the owner will bear responsibility for any additional charges due to local practices and conditions, such as, but not limited to, freight, insurance, taxes, license fees, import duties, and any and all other financial charges, including those levied by governments, states, territories and their respective agencies.

BRP reserves the right to improve or modify products from time to time without assuming any obligation to modify products previously manufactured.

TRANSFER

If the ownership of a product is transferred during the warranty coverage period, this limited warranty, subject to its terms and conditions, shall also be transferred and be valid for the remaining coverage period provided BRP or an authorized Ski-Doo Distributor/Dealer receives a proof that the former owner agreed to the transfer of ownership, in addition to the co-ordinates of the new owner.

CONSUMER ASSISTANCE

In the event of a controversy or a dispute in connection with this limited warranty, BRP suggests that you try to resolve the issue at the dealership level. We recommend discussing the issue with the authorized dealer's service manager or owner.

If the matter still remains unresolved, contact BRP by filling out the customer contact form at www.brp.com or contact BRP by mail at one of the addresses listed under the *CONTACT US* section of this guide.

US EPA EMISSION-RELATED WARRANTY

Bombardier Recreational Products Inc. (“BRP”) warrants to the ultimate purchaser and each subsequent purchaser that this new engine, including all parts of its exhaust emission-control system and its evaporative emission-control system, meets two conditions:

1. It is designed, built, and equipped so it conforms at the time of sale to the ultimate purchaser with the requirements of 40 CFR 1051 and 40 CFR 1060.
2. It is free from defects in materials and workmanship that may keep it from meeting the requirements of 40 CFR 1051 and 40 CFR 1060.

Where a warrantable condition exists, BRP will repair or replace, as it elects, any part or component with a defect in materials or workmanship that would increase the engine’s emissions of any regulated pollutant within the stated warranty period at no cost to the owner, including expenses related to diagnosing and repairing or replacing emission-related parts. All defective parts replaced under this warranty become the property of BRP.

For all emission-related warranty claims, BRP is limiting the diagnosis and repair of emission-related parts to the authorized Ski-Doo dealers, unless for emergency repairs as required by item 2 of the following list.

As a certifying manufacturer, BRP will not deny emission-related warranty claims based on any of the following:

1. Maintenance or other service BRP or BRP's authorized facilities performed.
2. Engine/equipment repair work that an operator performed to correct an unsafe, emergency condition attributable to BRP as long as the operator tries to restore the engine/equipment to its proper configuration as soon as possible.
3. Any action or inaction by the operator unrelated to the warranty claim.
4. Maintenance that was performed more frequently than BRP specify.
5. Anything that is BRP fault or responsibility.
6. The use of any fuel that is commonly available where the equipment operates unless BRP written maintenance instructions state that this fuel would harm the equipment’s emission control system and operators can readily find the proper fuel. See maintenance information section and fuel requirements of fueling section.

Emission-Related Warranty Period

The emission-related warranty is valid for the following period whichever comes first:

	hours	months	Kilo meters
Exhaust emission-related components	200	30	4000
Evaporative emission-related components	N/A	24	N/A

Components Covered

The emission-related warranty covers all components whose failure would increase an engine's emissions of any regulated pollutant, including the following listed components:

1. For exhaust emissions, emission-related components include any engine parts related to the following systems:
   - Air-induction system
   - Fuel system
   - Ignition system
   - Exhaust gas recirculation systems
2. The following parts are also considered emission-related components for exhaust emissions:
   - Aftertreatment devices
   - Crankcase ventilation valves
   - Sensors
   - Electronic control units
3. The following parts are considered emission-related components for evaporative emissions:
   - Fuel tank
   - Fuel cap
   - Fuel line
   - Fuel line fittings
   - Clamps*
   - Pressure relief valves*
   - Control valves*
   - Control solenoids*
   - Electronic controls*
   - Vacuum control diaphragms*
   - Control cables*
   - Control linkages*
   - Purge valves
   - Vapor hoses
   - Liquid/vapor separator
   - Carbon canister
   - Canister mounting brackets

– Carburetor purge port connector

NOTE:
*As related to the evaporative emission control system

4. Emission-related components also include any other part whose only purpose is to reduce emissions or whose failure will increase emissions without significantly degrading engine/equipment performance.

Limited Applicability

As a certifying manufacturer, BRP may deny emission-related warranty claims for failures that have been caused by the owner's or operator's improper maintenance or use, by accidents for which the manufacturer has no responsibility, or by acts of God. For example, an emission-related warranty claim need not be honored for failures that have been directly caused by the operator's abuse of the engine/equipment or the operator's use of the engine/equipment in a manner for which it was not designed and are not attributable to the manufacturer in anyway.

If you have any question regarding your warranty rights and responsibility or for the name and location of the nearest authorized BRP dealer, you should contact BRP by filling out the customer contact form at **www.brp.com** or contact BRP by mail at one of the addresses listed under the CONTACT US section of this guide, or call at 1-888-272-9222.

BRP INTERNATIONAL LIMITED WARRANTY: 2023 SKI-DOO® SNOWMOBILES

SCOPE OF THE LIMITED WARRANTY

Bombardier Recreational Products Inc. ("BRP") warrants its 2023 Ski-Doo snowmobiles sold by distributors or dealers authorized by BRP to distribute SKI-Doo snowmobiles (**"Ski-Doo Distributor/Dealer"**) outside of the fifty United States, Canada, members of the European Economic Area (which is comprised of the member states of the European Union plus the United Kingdom, Norway, Iceland and Liechtenstein) (**"EEA"**), members states of the Commonwealth of the Independent States (including Ukraine and Turkmenistan) (**"CIS"**) and Turkey, from defects in material or workmanship for the period and under the conditions described below.

Non-factory installed parts and accessories are not covered under this limited warranty. Please refer to the applicable parts and accessories limited warranty text.

This limited warranty will become null and void if: (1) the snowmobile was used for racing or any other competitive activity, at any point, even by a previous owner; or (2) the snowmobile has been altered or modified in such a way so as to adversely affect its operation, performance or durability, or has been altered or modified to change its intended use.

LIMITATIONS OF LIABILITY

TO THE EXTENT PERMITTED BY LAW, THIS WARRANTY IS EXPRESSLY GIVEN AND ACCEPTED IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. TO THE EXTENT THAT THEY CANNOT BE DISCLAIMED, THE IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE LIFE OF THE EXPRESS WARRANTY. INCIDENTAL AND CONSEQUENTIAL DAMAGES ARE EXCLUDED FROM COVERAGE UNDER THIS WARRANTY. SOME JURISDICTIONS DO NOT ALLOW FOR THE DISCLAIMERS, LIMITATIONS AND EXCLUSIONS IDENTIFIED ABOVE, AS A RESULT, THEY MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC RIGHTS, AND YOU MAY ALSO HAVE OTHER LEGAL RIGHTS WHICH MAY VARY FROM COUNTRY TO COUNTRY. (FOR PRODUCTS PURCHASED IN AUSTRALIA REFER TO "FOR PRODUCTS SOLD IN AUSTRALIA ONLY", BELOW).

Neither the Ski-Doo Distributor/Dealer nor any other person has been authorized to make any affirmation, representation or warranty regarding the product, other than those contained in this limited warranty, and if made, shall not be enforceable against BRP.

BRP reserves the right to modify this warranty at any time, being understood that such modification will not alter the warranty conditions applicable to the products sold while this warranty is in effect.

EXCLUSIONS – ARE NOT WARRANTED

The following are not warranted under this limited warranty under any circumstances:

- Normal wear and tear;
- Routine maintenance items, tune ups, adjustments;
- Damage caused by negligence or failure to provide proper maintenance and/or storage, as described in the operator's guide;
- Damage resulting from removal of parts, improper repairs, service, maintenance, modifications or use of parts or accessories not manufactured or approved by BRP which in its reasonable judgement are either incompatible with the product or adversely affect its operation, performance and durability, or resulting from repairs done by a person that is not an authorized servicing BRP snowmobile distributor/ dealer;
- Damage caused by abuse, abnormal use, neglect, racing or operation of the product on surfaces other than snow, or operation of the product in a manner inconsistent with the recommended operation described in the Operator's Guide;
- Damage resulting from accident, submersion, fire, snow or water ingestion, theft, vandalism or any act of God;
- Operation with fuels, oils or lubricants which are not suitable for use with the product (see the Operator's Guide);
- Damage resulting from rust, corrosion or exposure to the elements;
- Incidental or consequential damages, or damages of any kind including without limitation towing, storage, transportation expenses, telephone, rental, taxi, inconvenience, insurance coverage, loan payments, loss of time, loss of income; or time missed for downtime experience due to service work.
- And damage resulting from studs installed on tracks if the installation does not conform to BRP's instructions.

WARRANTY COVERAGE PERIOD

This warranty will be in effect from (1) the date of delivery to the first retail consumer or (2) the date the product is first put into use, whichever occurs first and for a period of:

TWELVE (12) CONSECUTIVE MONTHS, for private or commercial use owners. However, the warranty coverage period on a snowmobile delivered between June 1st and December 1st of a given year will expire November 30th of the following year.

The repair or replacement of parts or the performance of service under this warranty does not extend the life of this warranty beyond its original expiration date.

Note that the duration and any other modalities of the warranty coverage are subject to the applicable national or local legislation in the customer's country.

FOR PRODUCTS SOLD IN AUSTRALIA ONLY

Nothing in these Warranty terms and conditions should be taken to exclude, restrict or modify the application of any condition, warranty, guarantee, right or remedy conferred or implied under the Competition and Consumer Act 2010 (Cth), including the Australian Consumer Law or any other law, where to do so would contravene that law, or cause any part of these terms and conditions to be void. The benefits given to you under this limited warranty are in addition to other rights and remedies that you have under Australian law.

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

CONDITIONS TO HAVE WARRANTY COVERAGE

This warranty coverage is available **only** if each of the following conditions has been fulfilled:

- The 2023 Ski-Doo snowmobile must be purchased as new and unused by its first owner from a Ski-Doo Distributor/Dealer authorized to distribute Ski-Doo snowmobiles in the country in which the sale occurred;
- The BRP specified pre-delivery inspection process must be completed and documented;
- The product must have undergone proper registration by an authorized Ski-Doo Distributor/Dealer;
- The 2023 Ski-Doo snowmobile must be purchased in the country or union of countries in which the purchaser resides.
- Routine maintenance outlined in the Operator’s Guide must be timely performed in order to maintain warranty coverage. BRP reserves the right to make warranty coverage contingent upon proof of proper maintenance.

BRP will not honour this limited warranty to any private use owner or commercial use owner if one of the preceding conditions has not been met. Such limitations are necessary in order to allow BRP to preserve both the safety of its products, and also that of its consumers and the general public.

WHAT TO DO TO OBTAIN WARRANTY COVERAGE

The customer must cease using the snowmobile upon the appearance of an anomaly. The customer must notify a servicing BRP snowmobile distributor/ dealer within two (2) months of the appearance of a defect, and provide it with reasonable access to the product and reasonable opportunity to repair it. The customer must also present to the authorized BRP snowmobile distributor/ dealer, proof of purchase of the product and must sign the repair/work order prior to starting the repair in order to validate the warranty repair. All parts replaced under this limited warranty become the property of BRP.

Note that the notification period is subject to the applicable national or local legislation in customer's country.

WHAT BRP WILL DO

To the extent permitted by law, BRP's obligations under this warranty are limited to, at its sole discretion, repairing parts found defective under normal use, maintenance and service, or replacing such parts with new genuine Ski-Doo parts without charge for parts and labour, at any authorized Ski-Doo Distributor/Dealer during the warranty coverage period under the conditions described herein. BRP's responsibility is limited to making the required repairs or replacements of parts. No claim of breach of warranty shall be cause for cancellation or rescission of the sale of the snowmobile to the owner. You may have other legal rights which may vary from country to country.

In the event that service is required outside of the country of original sale, the owner will bear responsibility for any additional charges due to local practices and conditions, such as, but not limited to, freight, insurance, taxes, license fees, import duties, and any and all other financial charges, including those levied by governments, states, territories and their respective agencies.

BRP reserves the right to improve or modify products from time to time without assuming any obligation to modify products previously manufactured.

TRANSFER

If the ownership of a product is transferred during the warranty coverage period, this limited warranty, subject to its terms and conditions, shall also be transferred and be valid for the remaining coverage period provided BRP or an authorized Ski-Doo Distributor/Dealer receives a proof that the former owner agreed to the transfer of ownership, in addition to the co-ordinates of the new owner.

CONSUMER ASSISTANCE

In the event of a controversy or a dispute in connection with this limited warranty, BRP suggests that you try to resolve the issue at the Ski--Doo Distributor/Dealer level. We recommend discussing the issue with the authorized Ski-Doo Distributor/Dealer's service manager or owner.

If the matter still remains unresolved, contact BRP by filling out the customer contact form at www.brp.com or contact BRP by mail at one of the addresses listed under the *CONTACT US* section of this guide.

BRP LIMITED WARRANTY FOR THE EUROPEAN ECONOMIC AND THE COMMONWEALTH OF THE INDEPENDENT STATES (CIS) AREAS AND TURKEY: 2023 SKI-DOO® SNOWMOBILES

SCOPE OF THE LIMITED WARRANTY

Bombardier Recreational Products Inc. (**"BRP"**) warrants its 2023 Ski-Doo snowmobiles sold by distributors or dealers authorized by BRP to distribute Ski-Doo snowmobiles (**"Ski-Doo Distributor/Dealer"**) in member states of the European Economic Area (which is comprised of the member states of the European Union plus the United Kingdom, Norway, Iceland and Liechtenstein) (**"EEA"**), in member states of the Commonwealth of the Independent States (including Ukraine and Turkmenistan) (**"CIS"**) and Turkey from defects in material or workmanship for the period and under the conditions described below.

Non-factory installed parts and accessories are not covered under this limited warranty. Please refer to the applicable parts and accessories limited warranty text.

This limited warranty will become null and void if: (1) the snowmobile was used for racing or any other competitive activity, at any point, even by a previous owner; or (2) the snowmobile has been altered or modified in such a way so as to adversely affect its operation, performance or durability, or has been altered or modified to change its intended use.

LIMITATIONS OF LIABILITY

TO THE EXTENT PERMITTED BY LAW, THIS WARRANTY IS EXPRESSLY GIVEN AND ACCEPTED IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. TO THE EXTENT THAT THEY CANNOT BE DISCLAIMED, THE IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE LIFE OF THE EXPRESS WARRANTIES. INCIDENTAL AND CONSEQUENTIAL DAMAGES ARE EXCLUDED FROM COVERAGE UNDER THIS WARRANTY. SOME JURISDICTIONS DO NOT ALLOW FOR THE DISCLAIMERS, LIMITATIONS AND EXCLUSIONS IDENTIFIED ABOVE, AS A RESULT, THEY MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC RIGHTS, AND YOU MAY ALSO HAVE OTHER LEGAL RIGHTS WHICH MAY VARY FROM COUNTRY TO COUNTRY.

Neither the Ski-Doo Distributor/Dealer nor any other person has been authorized to make any affirmation, representation or warranty

regarding the product, other than those contained in this limited warranty, and if made, shall not be enforceable against BRP.

BRP reserves the right to modify this warranty at any time, being understood that such modification will not alter the warranty conditions applicable to the products sold while this warranty is in effect.

EXCLUSIONS – ARE NOT WARRANTED

The following are not warranted under this limited warranty under any circumstances:

- Normal wear and tear;
- Routine maintenance items, tune ups, adjustments;
- Damage caused by negligence or failure to provide proper maintenance and/or storage, as described in the operator's guide;
- Damage resulting from removal of parts, improper repairs, service, maintenance, modifications or use of parts or accessories not manufactured or approved by BRP which in its reasonable judgement are either incompatible with the product or adversely affect its operation, performance and durability, or resulting from repairs done by a person that is not an authorized servicing BRP snowmobile distributor/ dealer;
- Damage caused by abuse, abnormal use, neglect, racing or operation of the product on surfaces other than snow, or operation of the product in a manner inconsistent with the recommended operation described in the Operator's Guide;
- Damage resulting from accident, submersion, fire, snow or water ingestion, theft, vandalism or any act of God;
- Operation with fuels, oils or lubricants which are not suitable for use with the product (see the Operator's Guide);
- Damage resulting from rust, corrosion or exposure to the elements;
- Incidental or consequential damages, or damages of any kind including without limitation towing, storage, transportation expenses, telephone, rental, taxi, inconvenience, insurance coverage, loan payments, loss of time, loss of income; or time missed for downtime experience due to service work.
- And damage resulting from studs installed on tracks if the installation does not conform to BRP's instructions.

WARRANTY COVERAGE PERIOD

This warranty will be in effect from (1) the date of delivery to the first retail consumer or (2) the date the product is first put into use, whichever occurs first and for a period of:

TWENTY-FOUR (24) CONSECUTIVE MONTHS, for private use owners and TWELVE (12) CONSECUTIVE MONTHS for commercial use owners. However, the warranty coverage period on a snowmobile

delivered between June 1st and December 1st of a given year will expire November 30th of the applicable year. A snowmobile is used commercially when it is used in connection with generating income or any work or employment during any part of the warranty period. A snowmobile is also used commercially when, at any point during the warranty period, it has commercial tags or is licensed for commercial use.

The repair or replacement of parts or the performance of service under this warranty does not extend the life of this warranty beyond its original expiration date.

Note that the duration and any other modalities of the warranty coverage are subject to the applicable national or local legislation in the customer's country.

CONDITIONS TO HAVE WARRANTY COVERAGE

This warranty coverage is available **only** if each of the following conditions has been fulfilled:

- The 2023 Ski-Doo snowmobile must be purchased as new and unused by its first owner from a Ski-Doo Distributor/Dealer authorized to distribute Ski-Doo products in the country in which the sale occurred;
- The BRP specified pre-delivery inspection process must be completed and documented;
- The product must have undergone proper registration by an authorized Ski-Doo Distributor/Dealer;
- The 2023 Ski-Doo snowmobile must be purchased within the EEA by an EEA resident, in the CIS for residents of the countries comprised in such area and in Turkey for residents of Turkey; and
- Routine maintenance outlined in the Operator's Guide must be timely performed in order to maintain warranty coverage. BRP reserves the right to make warranty coverage contingent upon proof of proper maintenance.

BRP will not honour this limited warranty to any private use owner or commercial use owner if one of the preceding conditions has not been met. Such limitations are necessary in order to allow BRP to preserve both the safety of its products, and also that of its consumers and the general public.

WHAT TO DO TO OBTAIN WARRANTY COVERAGE

The customer must cease using the snowmobile upon the appearance of an anomaly. The customer must notify a servicing BRP snowmobile distributor/ dealer within two (2) months of the appearance of a defect, and provide it with reasonable access to the product and reasonable opportunity to repair it. The customer must also present to the

authorized BRP snowmobile distributor/ dealer, proof of purchase of the product and must sign the repair/work order prior to starting the repair in order to validate the warranty repair. All parts replaced under this limited warranty become the property of BRP.

Note that the notification period is subject to the applicable national or local legislation in customer's country.

WHAT BRP WILL DO

To the extent permitted by law, BRP's obligations under this warranty are limited to, at its sole discretion, repairing parts found defective under normal use, maintenance and service, or replacing such parts with new genuine Ski-Doo parts without charge for parts and labour, at any authorized Ski-Doo Distributor/Dealer during the warranty coverage period under the conditions described herein. BRP's responsibility is limited to making the required repairs or replacements of parts. No claim of breach of warranty shall be cause for cancellation or rescission of the sale of the snowmobile to the owner. You may have other legal rights which may vary from country to country.

In the event that service is required outside of the EEA, CIS or Turkey, the owner will bear responsibility for any additional charges due to local practices and conditions, such as, but not limited to, freight, insurance, taxes, license fees, import duties, and any and all other financial charges, including those levied by governments, states, territories and their respective agencies.

BRP reserves the right to improve or modify products from time to time without assuming any obligation to modify products previously manufactured.

TRANSFER

If the ownership of a product is transferred during the warranty coverage period, this limited warranty, subject to its terms and conditions, shall also be transferred and be valid for the remaining coverage period provided BRP or an authorized Ski-Doo Distributor/Dealer receives a proof that the former owner agreed to the transfer of ownership, in addition to the co-ordinates of the new owner.

CONSUMER ASSISTANCE

In the event of a controversy or a dispute in connection with this limited warranty, BRP suggests that you try to resolve the issue at the Ski--Doo Distributor/Dealer level. We recommend discussing the issue with the authorized Ski-Doo Distributor/Dealer's service manager or owner.

If the matter still remains unresolved, contact BRP by filling out the customer contact form at www.brp.com or contact BRP by mail at one of the addresses listed under the *CONTACT US* section of this guide.

ADDITIONAL TERMS AND CONDITIONS FOR FRANCE ONLY

The following terms and conditions are applicable to products sold in France only:

The seller shall deliver goods that are complying with the contract and shall be responsible for defects existing upon delivery. The seller shall also be responsible for defects resulting from packaging, assembling instructions or the installation when it is its responsibility per the contract or if accomplished under its responsibility. To be compliant with the contract, the good shall:

1. Be fit for normal use for goods similar thereto and, if applicable:
   - Correspond to the description provided by the seller and have the qualities presented to the buyer though sample or model;
   - Have the qualities that a buyer may legitimately expect considering the public declarations of the seller, the manufacturer of its representative, including in advertising or labeling; or
2. Have the characteristics mutually agreed upon as between the parties or be fit for the specific use intended by the buyer and brought to the attention of the seller and which accepted

The action for failure to comply is prescribed after two years after delivery of the goods. The seller is responsible for the warranty for hidden defects of the good sold if such hidden defects are rendering the good unfit for the intended use, or if they diminish its use in such a way that the buyer would not have acquired the good or would have given a lesser price, had he known. The action for such hidden defects shall be taken by the buyer within 2 years of the discovery of the defect.

CUSTOMER INFORMATION

DATA PRIVACY INFORMATION

Bombardier Recreational Products inc., its affiliates and subsidiaries ("BRP") is committed to protecting your privacy and support a general policy of openness about how we collect, use and disclose your personal information in the course of managing our relationship with you. **More details can be found by visiting BRP's Privacy Policy at: https://brp. com/en/privacy-policy. html or by scanning the QR Code below.**

Please be assured that we have appropriate security measures in place to ensure that your personal information is protected against loss and unauthorized access.

Your personal information that may be collected by BRP, directly from you or from authorized dealers or authorized third parties, includes:

- **Contact, Demographic & Registration Information** (e.g., name, full address, phone number, email, gender, ownership history, language of communication)
- **Vehicle Information** (e.g., serial number, purchase and delivery date, unit usage, vehicle location and movements)
- **Third Party Information** (e.g., information received from BRP partners, joint-marketing activities information, social media)
- **Technological Information** (e.g., IP address, type of device, operating system, browser type, webpages you view, cookies and similar technologies when you use BRP or dealers' websites or mobile application)
- **Interaction with BRP Information** (e.g., information collected when you call BRP's in-house sales representatives, buy items on a BRP web Site, sign up for BRP emails, participate in BRP-sponsored contests and sweepstakes or attend BRP-sponsored events)
- **Transactional Information** (e.g., information necessary to handle returns, payment information when you purchase our products or services through our websites or mobile applications and other issues related to your purchase of BRP products)

This information may be used and processed for the following purposes:

- Safety & Security
- Customer Support for Sales & After Sales (e.g., complete or follow up with you about your purchase or maintenance)
- Registration & Warranty
- Communication (e.g., sending you a BRP satisfaction survey)
- Online Behavioural Advertising, Profiling and Location-Based Services
  (e.g., offer customized experience)
- Compliance & Dispute Resolution
- Marketing & Advertising
- Assistance (e.g., help with any delivery issues, handle returns, and other issues related to your purchase of BRP products).

We also may use personal information to generate aggregated or statistical data that no longer identifies you personally.

Your personal information may be disclosed to the following: BRP, BRP's authorized dealerships, distributors, service providers, advertising & market research partners and other authorized third parties.

We may receive information about you from diverse sources, including third parties, such as BRP's authorized dealerships and partners, with whom we offer services or engage in joint-marketing activities. We may also receive information about you from social media platforms such as Facebook and Twitter, when you interact with us on those platforms.

Depending on the circumstances, your personal information may be communicated outside the region where you reside. Your personal information is retained only for as long as necessary for the purpose for which we obtained it and according to our retention policies.

To exercise your data privacy rights (e.g. right of access, right of rectification), to withdraw your consent in order to be removed from the address list for marketing purposes or for the satisfaction survey or for general data privacy questions, please contact BRP's Data Protection Officer at or by mail at **privacyofficer@brp.com** or by mail at:
BRP Legal Service, 726 St-Joseph, Valcourt, Quebec, Canada, J0E 2L0.

When BRP processes your personal information, they do so in compliance with its Privacy Policy available at: https://www.brp.com/en/privacy-policy.html or by using the following QR Code.

CHANGE OF ADDRESS/OWNERSHIP

If your address has changed or if you are the new owner of the snowmobile, be sure to notify BRP.

In case of change of ownership, please join a proof that the former owner agreed to the transfer.

Notifying BRP, even after the expiration of the limited warranty, is very important as it enables BRP to reach the snowmobile owner if necessary, like when safety recalls are initiated. It is the owner's responsibility to notify BRP.

STOLEN UNITS: If your personal snowmobile is stolen, you should notify BRP or an authorized BRP snowmobile dealer. We will ask you to provide your name, address, phone number, the vehicle identification number and the date it was stolen.

This page is
intentionally blank

CHANGE OF ADDRESS ❑ CHANGE OF OWNERSHIP ❑

VEHICLE IDENTIFICATION NUMBER

Model Number | Vehicle Identification Number (V.I.N.)

OLD ADDRESS OR PREVIOUS OWNER:

NAME

NO. STREET APT

CITY STATE/PROVINCE ZIP/POSTAL CODE

COUNTRY TELEPHONE

NEW ADDRESS OR NEW OWNER:

NAME

NO. STREET APT

CITY STATE/PROVINCE ZIP/POSTAL CODE

COUNTRY TELEPHONE

E-MAIL ADDRESS

This page is
intentionally blank

CHANGE OF ADDRESS ❑ CHANGE OF OWNERSHIP ❑

VEHICLE IDENTIFICATION NUMBER

Model Number | Vehicle Identification Number (V.I.N.)

OLD ADDRESS OR PREVIOUS OWNER:

NAME

NO. STREET APT

CITY STATE/PROVINCE ZIP/POSTAL CODE

COUNTRY TELEPHONE

NEW ADDRESS OR NEW OWNER:

NAME

NO. STREET APT

CITY STATE/PROVINCE ZIP/POSTAL CODE

COUNTRY TELEPHONE

E-MAIL ADDRESS

This page is
intentionally blank

CHANGE OF ADDRESS ❑ CHANGE OF OWNERSHIP ❑

VEHICLE IDENTIFICATION NUMBER

Model Number | Vehicle Identification Number (V.I.N.)

OLD ADDRESS OR PREVIOUS OWNER:

NAME

NO. STREET APT

CITY STATE/PROVINCE ZIP/POSTAL CODE

COUNTRY TELEPHONE

NEW ADDRESS OR NEW OWNER:

NAME

NO. STREET APT

CITY STATE/PROVINCE ZIP/POSTAL CODE

COUNTRY TELEPHONE

E-MAIL ADDRESS

This page is
intentionally blank

NOTES

NOTES

NOTES

NOTES

NOTES

NOTES

NOTES

NOTES

NOTES

Model No. _____

VEHICLE
IDENTIFICATION NUMBER (V.I.N.) _____

ENGINE
IDENTIFICATION NUMBER (E.I.N.) _____

Owner: _____
NAME

_____
No. STREET APT

_____
CITY STATE/PROVINCE ZIP/POSTAL CODE

Purchase Date _____ | _____ | _____ | _____ | _____
YEAR MONTH DAY

Warranty Expiry Date _____ | _____ | _____ | _____ | _____
YEAR MONTH DAY

To be completed by the dealer at the time of the sale.

DEALER IMPRINT AREA

⚠ WARNING

Disregarding any of the safety precautions and instructions contained in the Operators's Guide, SAFETY VIDEO and on product safety labels could cause injury including the possibility of death.

www.brp.com

520002955