2022 Ski-Doo MXZ 600R & 850 E-Tec Series

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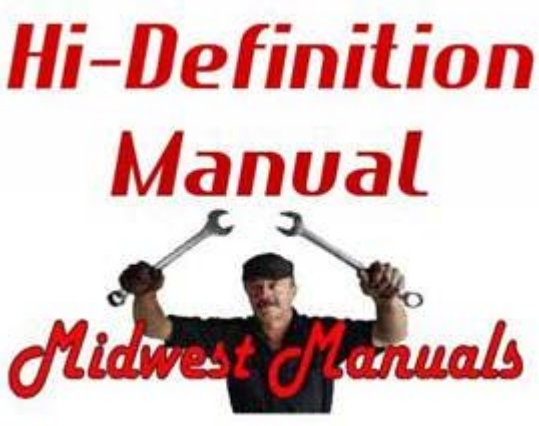

2022
Shop Manual

MXZ® Series

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Extras NOT Included In The Book Version

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

2022 Technical Presentation (Dealer Only)

Expanded Diagnostic & Fault Codes (Dealer Only)

2022 Operator's Guide/Owner's Manual

2022 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

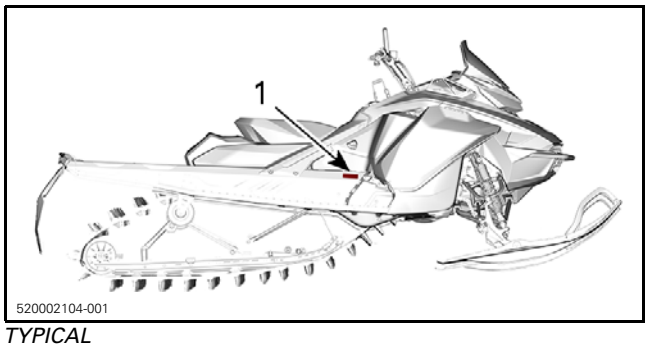
The information and component/system descriptions contained in this manual are correct at time of writing. BRP however, maintains a policy of continuous improvement of its products without imposing upon itself any obligation to install them on products previously manufactured.

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.

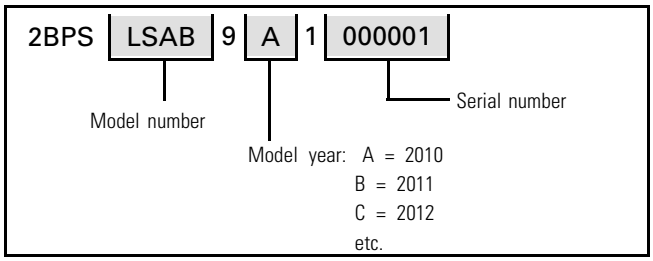
VEHICLE INFORMATION

VEHICLE IDENTIFICATION NUMBER (VIN)

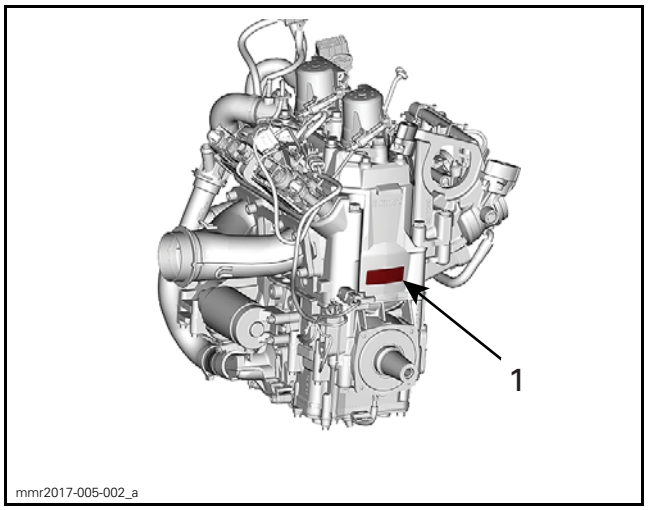


TYPICAL
1. Vehicle description decal

Identification Number Description



ENGINE IDENTIFICATION NUMBER (EIN)

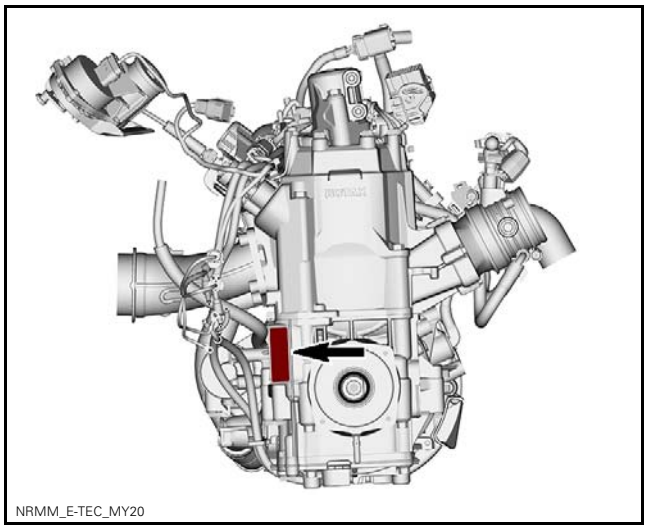


TYPICAL
1. Engine serial number

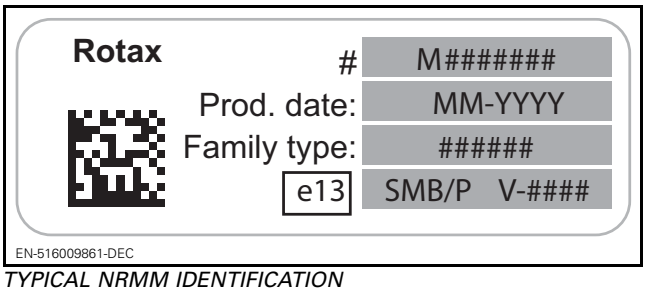
COMPLIANCE LABEL

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

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

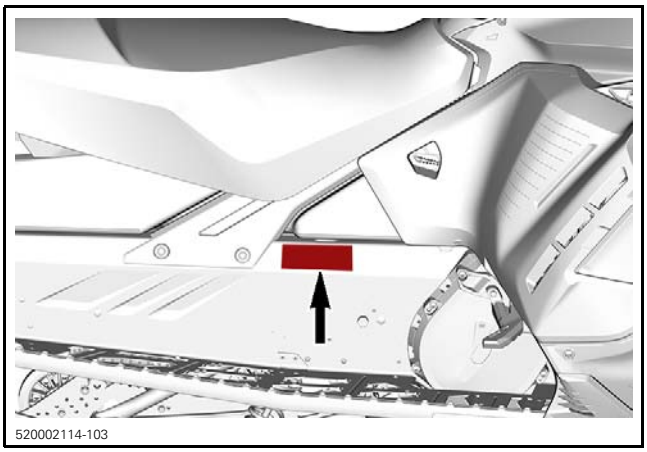


TYPICAL

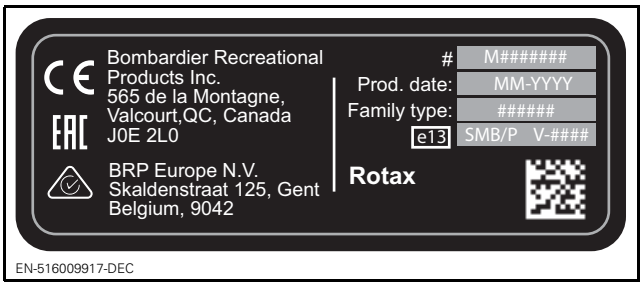


TYPICAL NRMM IDENTIFICATION

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



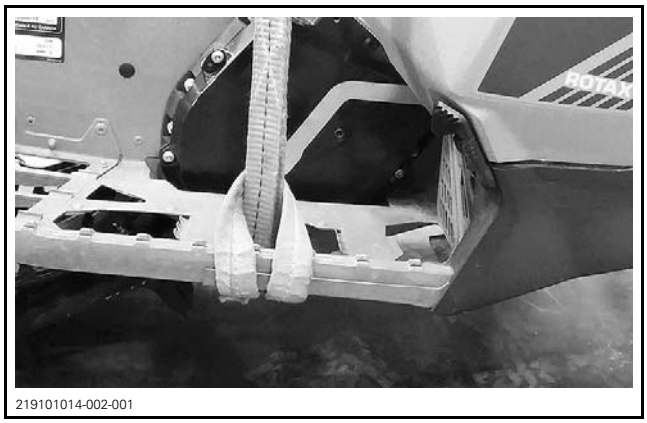
TYPICAL - ON RH SIDE OF TUNNEL



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

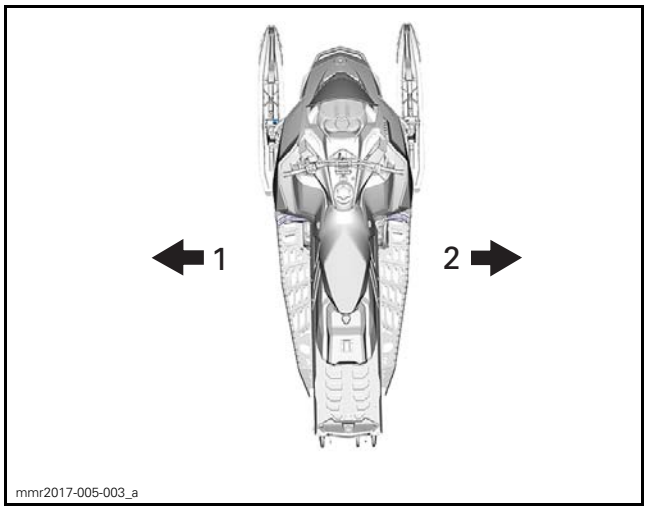
Many of the procedures in this manual are interrelated. Before undertaking any task, you should read and thoroughly understand the entire section or subsection in which the procedure is contained.

⚠ 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.**

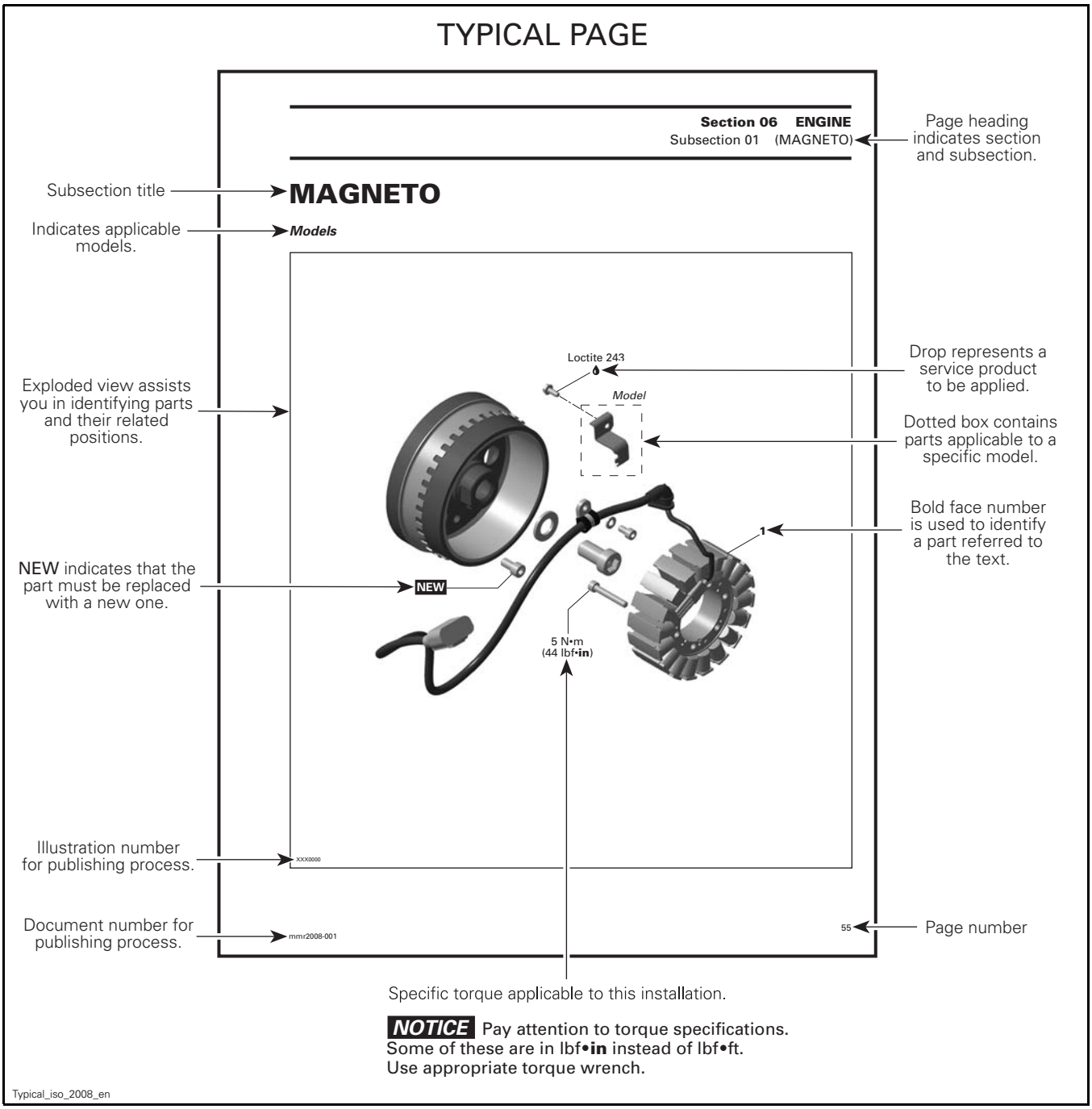
MANUAL LAYOUT

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.

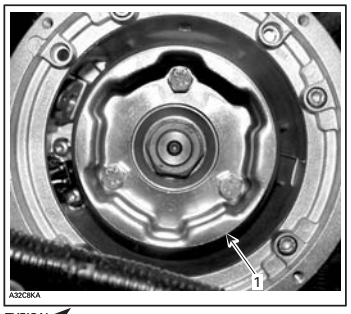
Magneto Flywheel Removal

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.

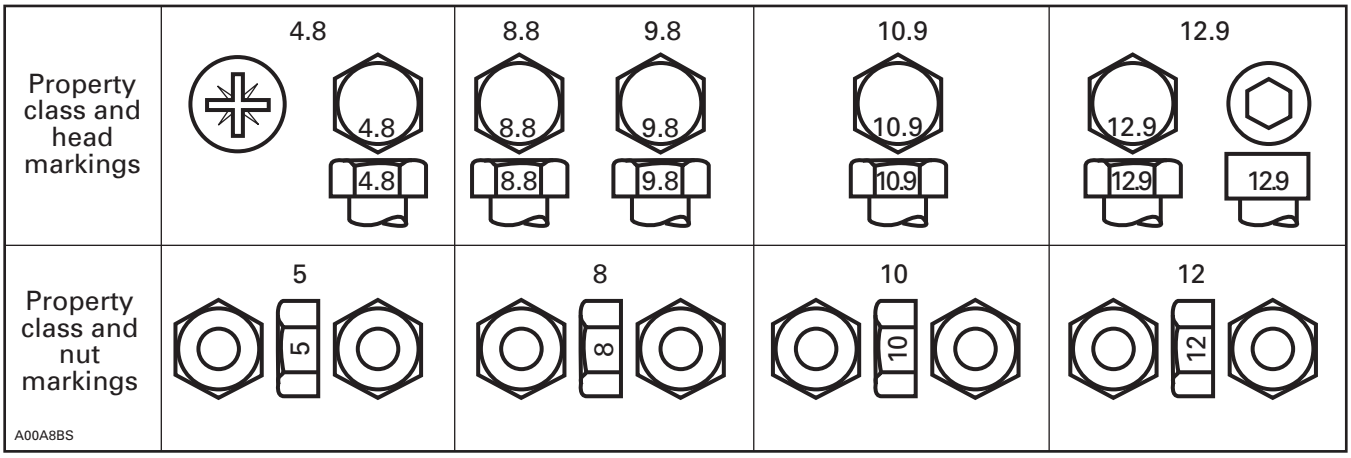
In order to avoid a poor assembly, tighten screws, bolts, or nuts in accordance with the following procedure:

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.

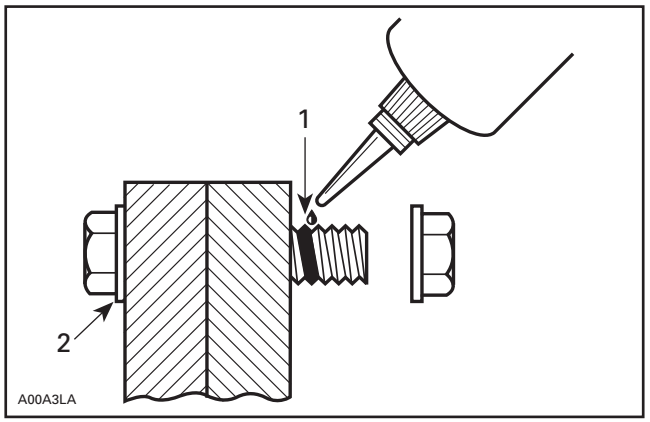
Use a metal brush or a tap to properly clean a threaded hole, then use a solvent. Allow the solvent time to act, approximately 30 minutes, then wipe off. Solvent utilization is to ensure proper adhesion of the product used for locking the fastener.

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.

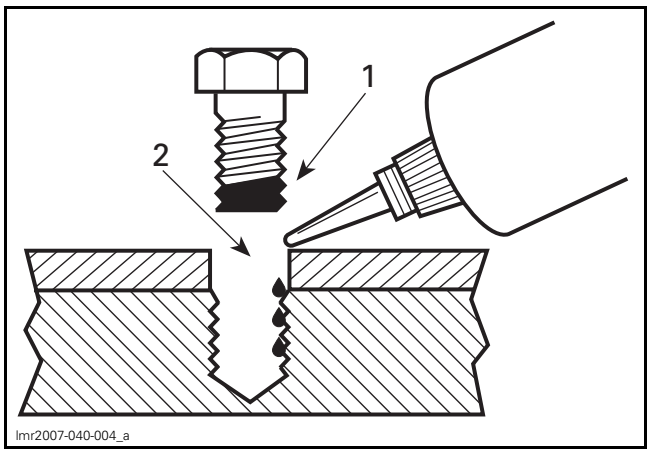
Threadlocker Application for Uncovered Holes (Bolts and Nuts)



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

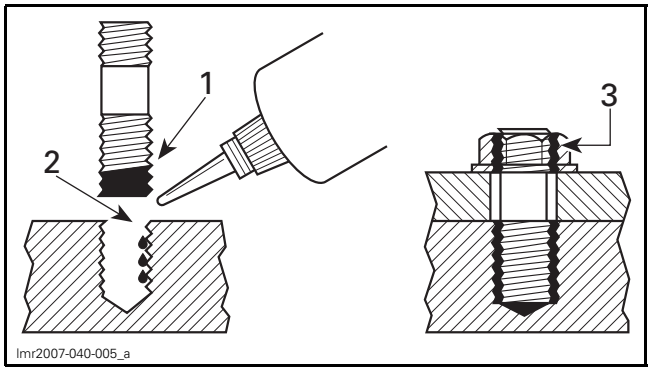


1. On fastener threads
2. On threads and at the bottom of hole

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



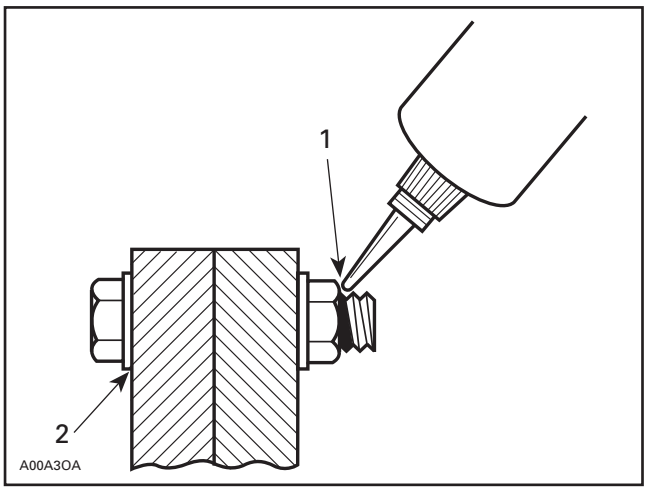
1. On stud threads
2. On threads and in the hole
3. On retaining nut threads

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

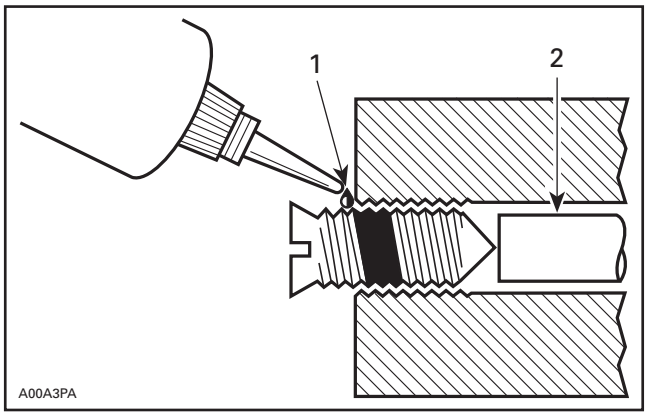


1. Apply here
2. Do not apply

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

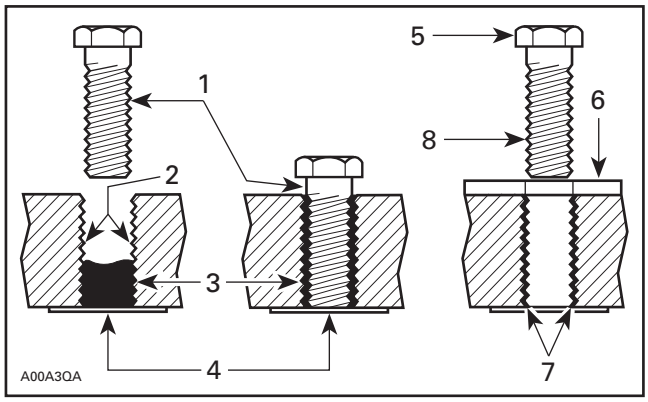


1. Apply here
2. Plunger

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

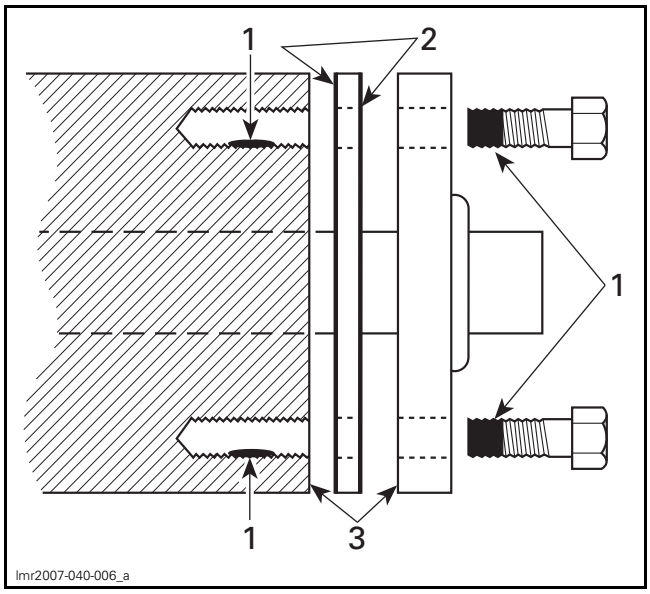
Option 1: Enlarge damaged hole, then follow *STANDARD THREAD REPAIR* procedure.

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.

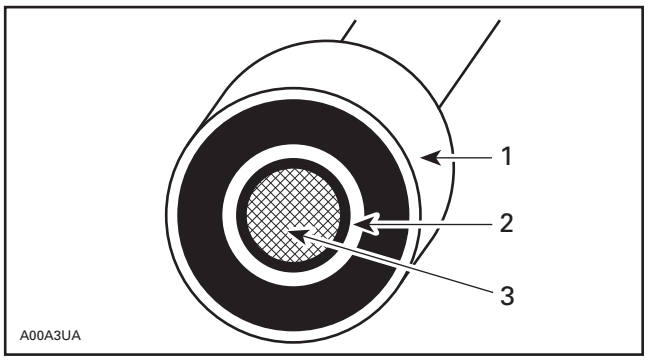
NOTE: If the cover is bolted to blind holes, apply proper strength Loctite in the hole and on threads. Tighten fastener.

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.

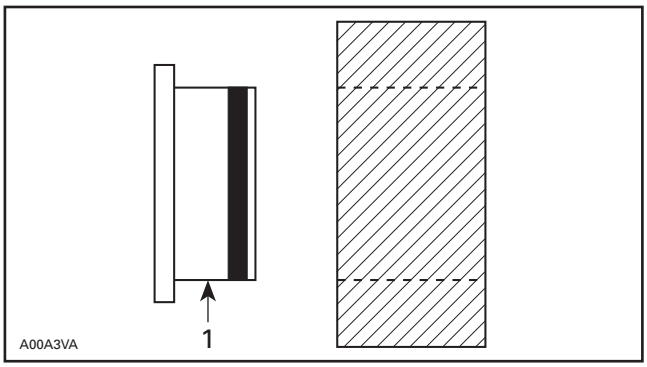
NOTE: Retaining compound is always forced out when applied on shaft.

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)

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BALL JOINT EXTRACTOR
(P/N 529 035 827)

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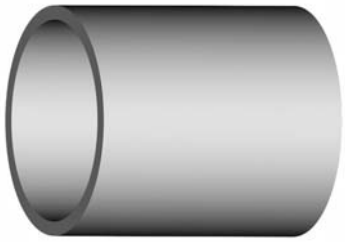
BALL JOINT INSTALLER SUPPORT
(P/N 529 036 398)



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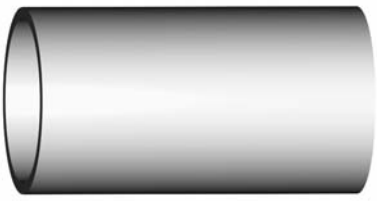
BALL JOINT INSTALLER
(P/N 529 036 399)



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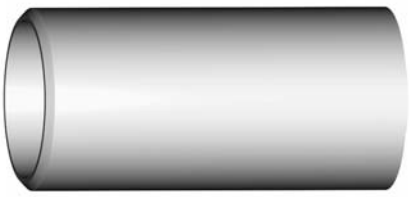
BALL JOINT REMOVER SUPPORT
(P/N 529 036 400)



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

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

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

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CLUTCH HOLDER
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COUNTERSHAFT ADAPTER
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COUNTERSHAFT BEARING
INSTALLER
(P/N 529 036 066)

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COUNTERSHAFT BEARING REMOVER
(P/N 529 036 065)

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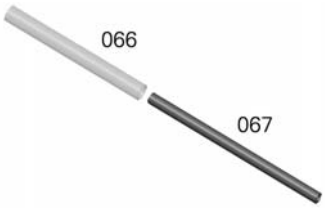
COUNTERSHAFT SUPPORT
(P/N 529 036 067)



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DIAGNOSTIC CABLE
(P/N 710 000 851)

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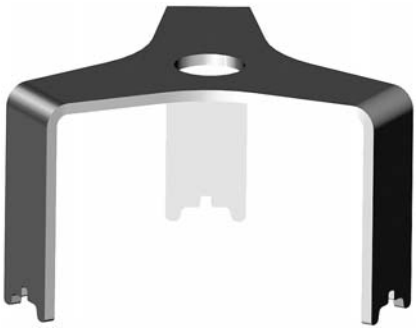
DRIVE PULLEY OPENING TOOL
(P/N 529 036 378)



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DRIVE PULLEY SUPPORT
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DRIVEN PULLEY SPRING COMPRESSOR
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ECM TERMINAL REMOVER 3.36
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ENGINE LIFTING HOOK
(P/N 529 035 829)

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ENGINE LIFTING TOOL
(P/N 529 036 402)

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FLUKE 115 MULTIMETER
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GREASE INJECTOR
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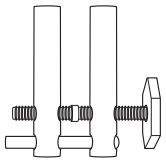
LARGE HOSE PINCHER
(P/N 529 032 500)



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LEAK TEST KIT
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MPI-2 INTERFACE CARD
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MPI-3 INTERFACE CARD
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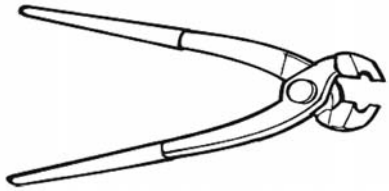
OETIKER PLIER
(P/N 295 000 070)



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PDRIVE PULLER
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PRESSURE GAUGE
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PROTECTIVE CAP
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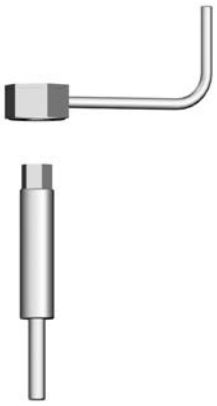
PULLEY SPRING COMPRESSOR TOOL
(P/N 529 036 373)



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RMOTION SUSPENSION TOOL
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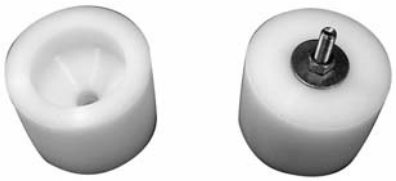
SHOCK ABSORBER SUPPORTS
(P/N 529 036 186)



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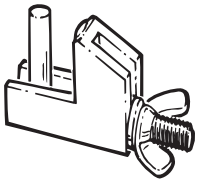
SMALL HOSE PINCHER
(P/N 295 000 076)



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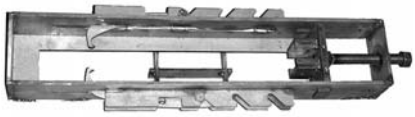
SPRING COMPRESSOR
(P/N 529 036 184)



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TRACK CLEAT INSTALLER
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UPPER GEAR RETAINING TOOL
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VACUUM/PRESSURE PUMP
(P/N 529 021 800)

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PERIODIC MAINTENANCE SCHEDULE

Procedures are detailed in appropriate subsections.

PRE RIDE INSPECTION	
Body including seat, footrests, lights, air filter, controls and instruments	Check condition and remove snow or ice
Skis and steering actions	Check for free movement and proper operation
Fuel and injection oil	Check for proper level and no leaks
Coolant	Check for proper level and no leaks
Brake fluid	Check for proper level and no leaks
Storage compartment	Check for proper latching and no heavy or breakable objects
Throttle lever	Check for proper action
Track	Check condition and remove snow or ice
Slider shoes	Check for proper operation
Brake lever	Check for proper operation
Parking brake, brake	Check for proper operation
Emergency engine stop switch and engine cut-off switch (tether cord cap)	Check for proper action. Tether cord must be attached to operator clothing eyelet
Lights	Check for proper operation
Skis and runners	Check for proper condition (and operation if adjustable)
Drive belt	Check condition for cracks, fraying or abnormal wear

Deep Snow Series Only

DURING THE FIRST 1 500 KM (1,000 MI)
Adjust drive chain **after the first 75 km (50 mi)**
Adjust drive chain **every 500 km (300 mi)**
Adjust and align track **after the first 75 km (50 mi)**
Verify track tension and alignment **every 500 km (300 mi)** adjust if required

Deep Snow Series Only

EVERY 1 500 KM (1,000 MI)
Adjust drive chain
Verify track tension and alignment. Adjust if required

All Models

FIRST INSPECTION AFTER THE FIRST 1 500 KM (1,000 MI)
Adjust drive chain
Check gearbox / chaincase oil level (whichever applicable)
Verify track tension. Adjust and align track if required

EVERY YEAR AT PRESEASON OR 3 000 KM (2,000 MI) (WHICHEVER COMES FIRST)
Perform pre-ride inspection
Check fault codes
Charge battery (if equipped)
Adjust drive chain
Verify track tension. Adjust and align if required
Inspect brake hose, pads and disk
Check coolant density
Inspect drive belt
Visually inspect and clean drive pulley
Inspect and clean driven pulley
Lubricate rear suspension. Lubricate whenever the vehicle is used in wet conditions (rain, puddles)
Inspect exhaust system and check for leaks
Tighten exhaust manifold screws to specified torque
Inspect fuel lines, oil lines and connections
Inspect front suspension
Inspect rear suspension (including stopper straps and slider shoes)
Inspect tie-rod ends and alignment
Adjust headlight beam aiming

EVERY 2 YEARS OR 6 000 KM (4,000 MI) (WHICHEVER COMES FIRST)
Replace spark plugs (600 EFI)
Replace brake fluid
Inspect throttle cable
Clean and lubricate rewind starter (manual start models)
Replace chaincase oil
Inspect engine rubber mounts

EVERY 3 YEARS OR 10 000 KM (6,000 MI) (WHICHEVER COMES FIRST)
Replace spark plugs (E-TEC)
Inspect oil injection pump strainer and clean if needed
Clean and inspect 3D RAVE valves. If oil is present in valve base, replace seal (E-TEC).

EVERY 5 YEARS
Replace engine coolant
Replace in-line fuel filter

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STORAGE PROCEDURE (EFI)

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.

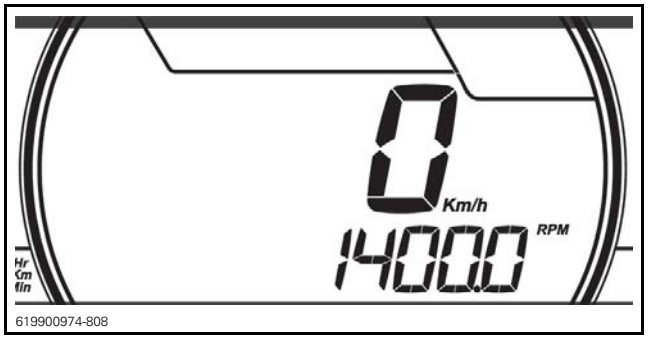
Select:
- **Functions** page
- **Vehicle** or **ECM** button
- **Routines** tab.

Click on the **Activate Storage** button.

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

To engage procedure, do the following:

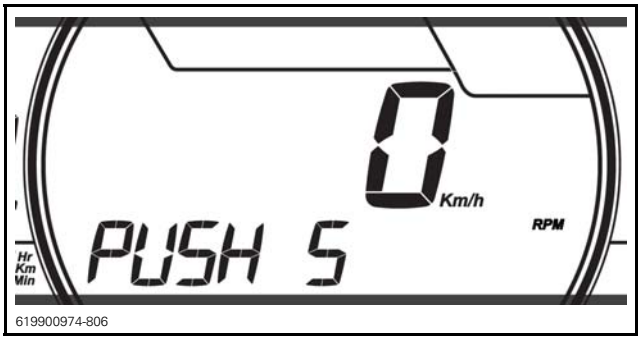
1. Place the vehicle in a well ventilated area.
2. Start the engine and let it run at idle speed until it reaches its operating temperature (watch the coolant temperature on the display or verify that the rear heat exchanger becomes warm).
3. Push the SET (S) button to select odometer mode.



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.

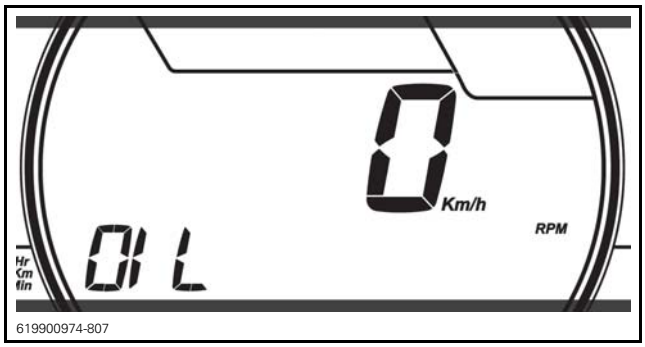


619900974-806

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

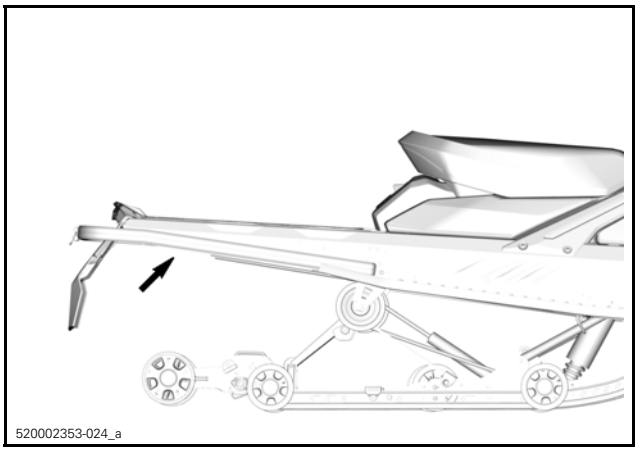
Follow these simple steps.

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.

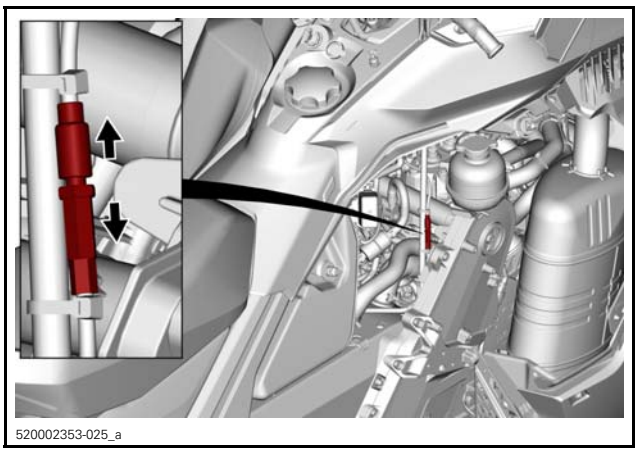
RECOMMENDED SERVICE PRODUCT
XPS fuel stabilizer

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)

STORAGE PROCEDURE (E-TEC)

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.

PROCEDURES

ENGINE LUBRICATION

Engine Storage Mode Using BUDS2

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.

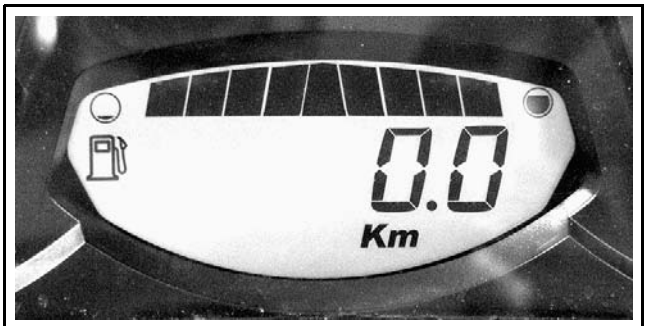
Click on the **Activate Storage** button.

Engine Storage Mode Using Multi-Function Gauge

Like other engines, the E-TEC has to be properly lubricated at storage for internal parts protection. The E-TEC system offers a built-in engine storage lubrication function (summerization) that can be initiated by the operator.

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.



mmr2009-004-002

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

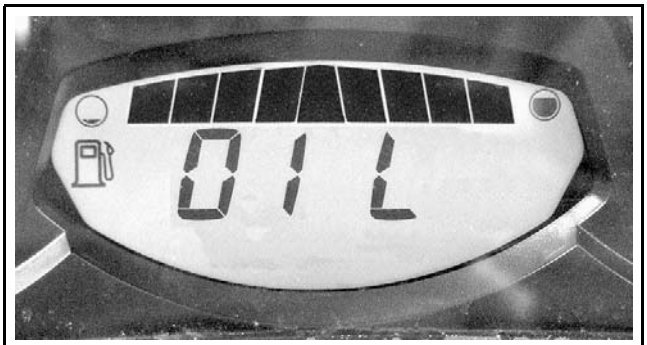
4. Repeatedly depress the HI/LOW beam switch rapidly, then, **while doing this**, press and hold the **SET button** until PUSH S appears on the display.

mmr2009-004-003

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.



mmr2009-004-004

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.**

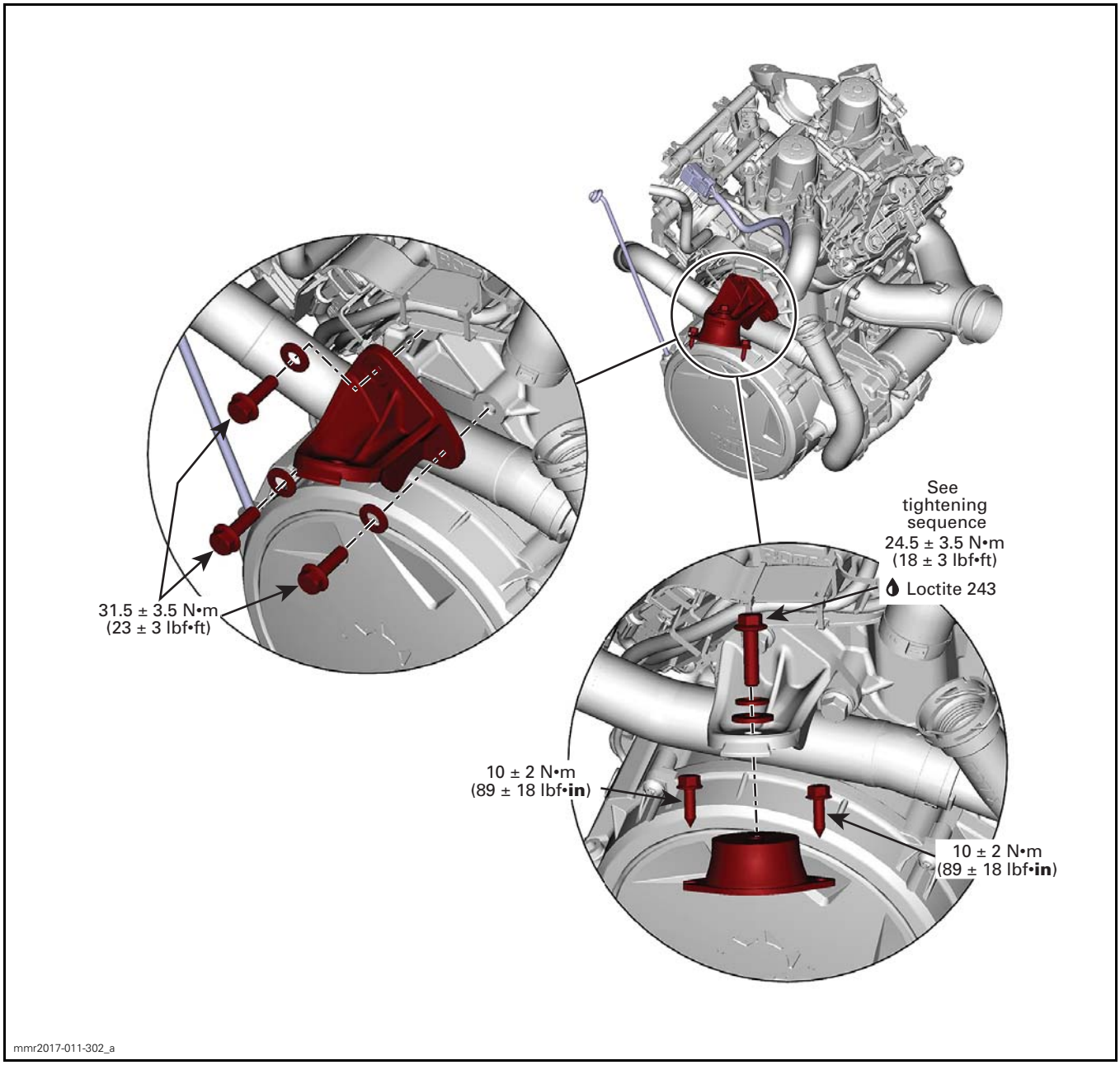
PRESEASON PREPARATION

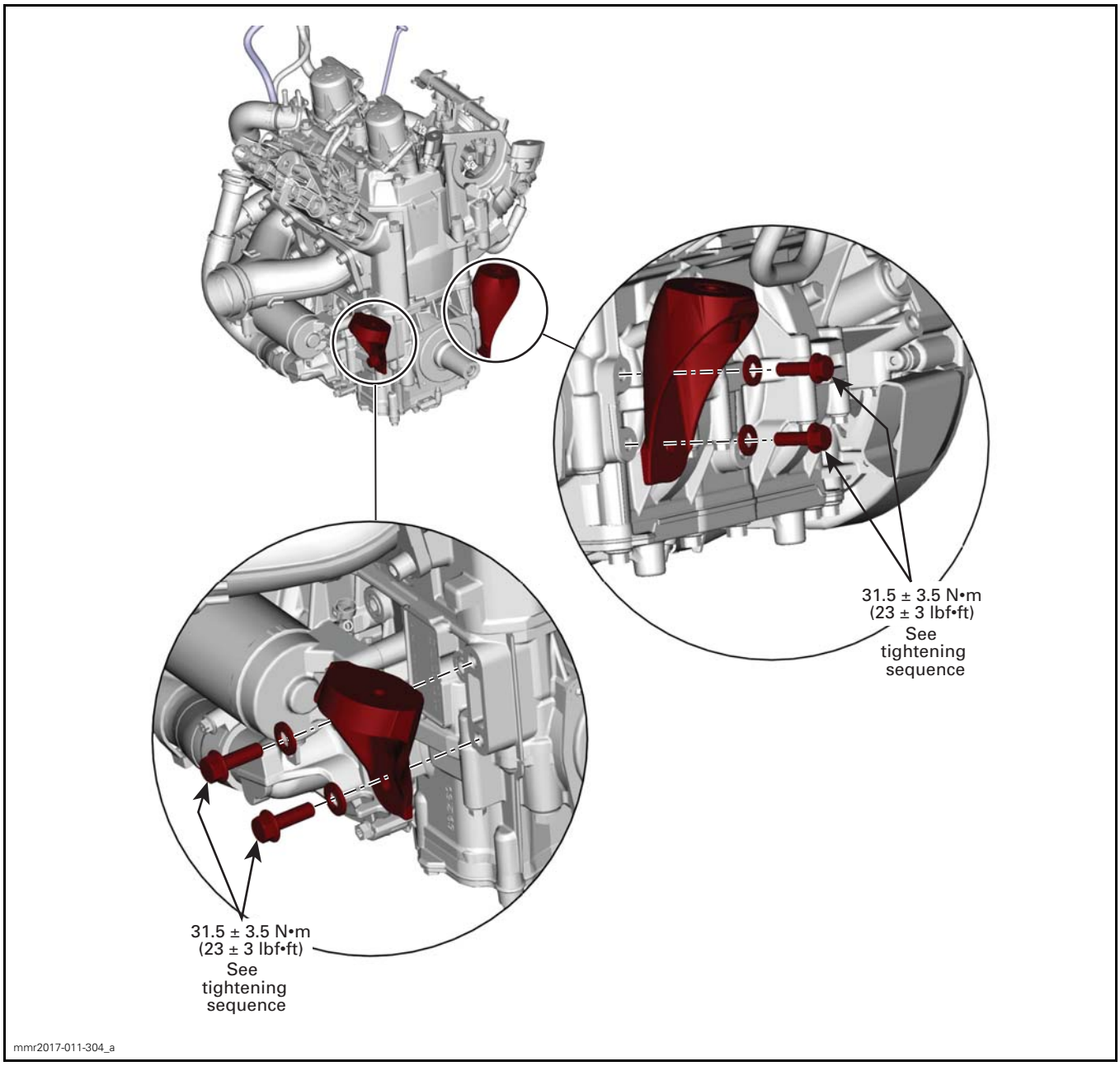
Proper vehicle preparation is necessary when a vehicle has not been used for more than three months. Using the *MAINTENANCE SCHEDULE*, perform the items titled *EVERY YEAR AT PRESEASON*.

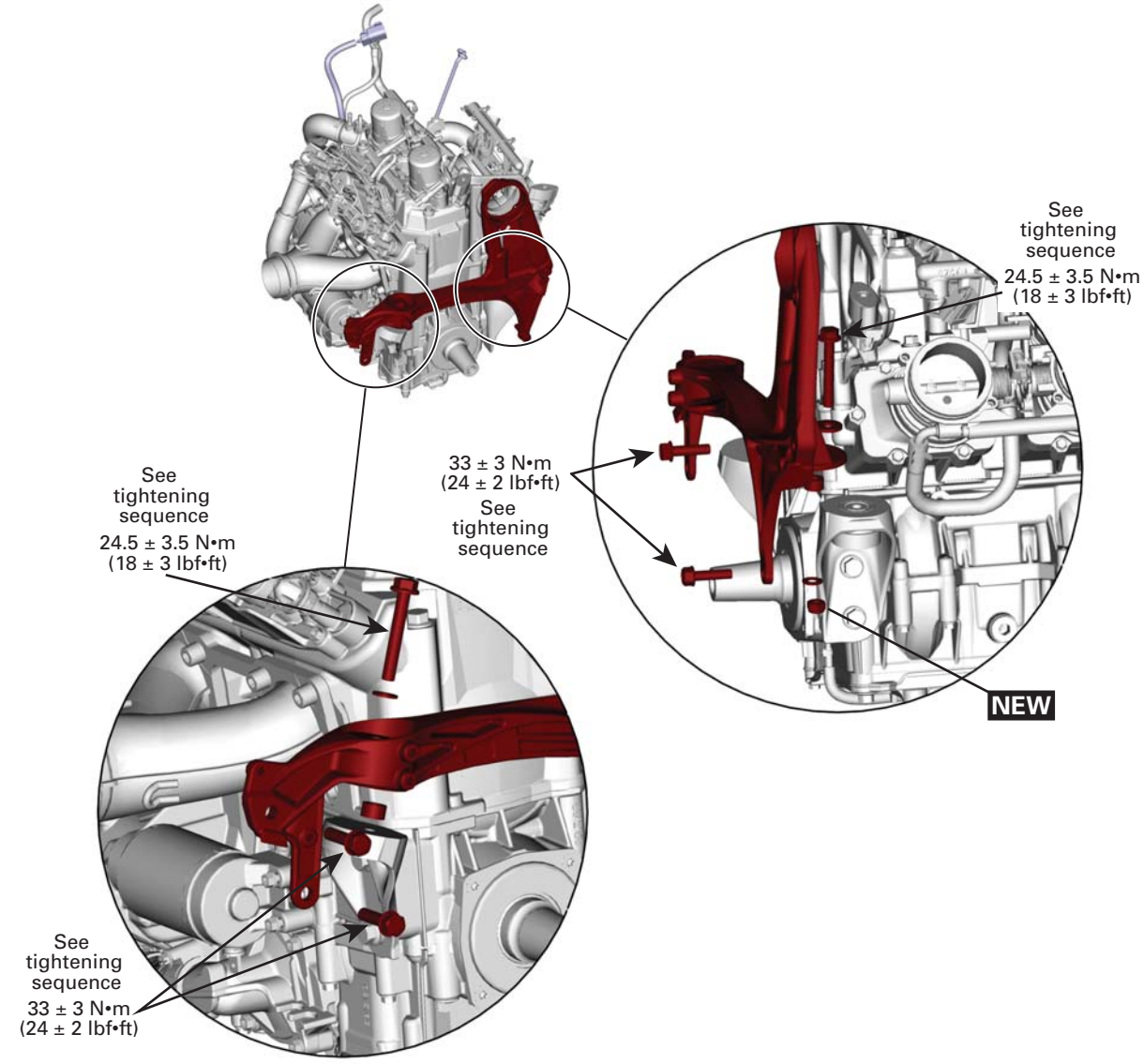
ENGINE REMOVAL AND INSTALLATION

SERVICE TOOLS

Description	Part Number	Page
ENGINE LIFTING HOOK	529 035 829	21
ENGINE LIFTING TOOL	529 036 402	21
UPPER GEAR RETAINING TOOL	529 036 110	19




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.

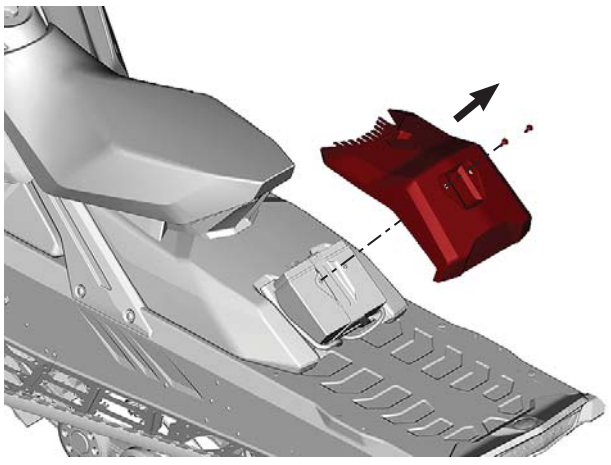
NOTICE **Hoses, cables and locking ties removed during a procedure must be reinstalled as per factory standards.**

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.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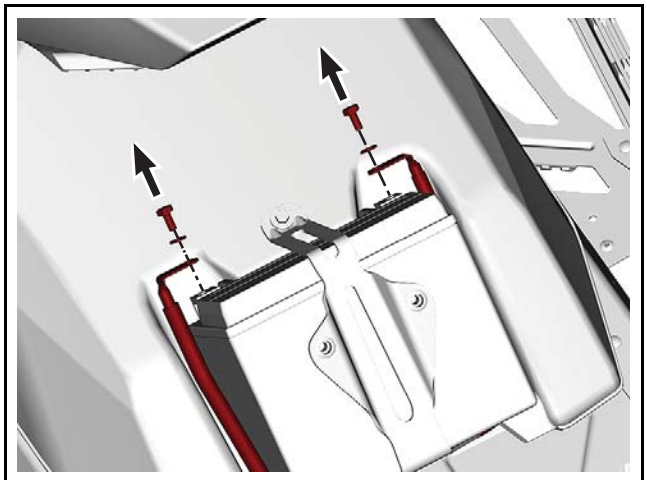
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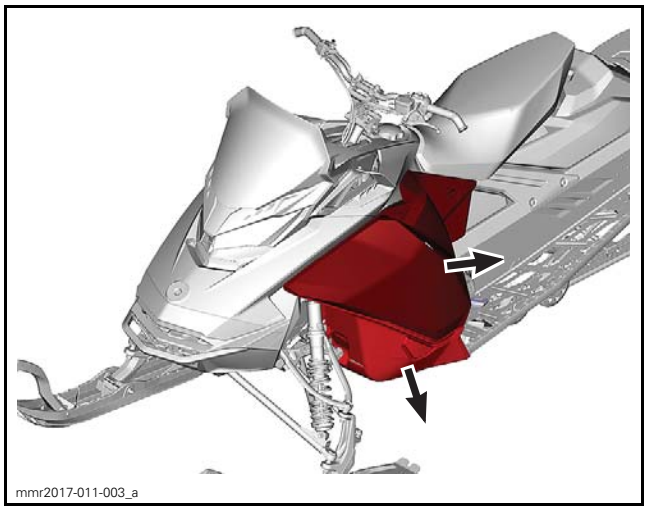
4. Remove the following parts. If required, refer to *BODY* subsection.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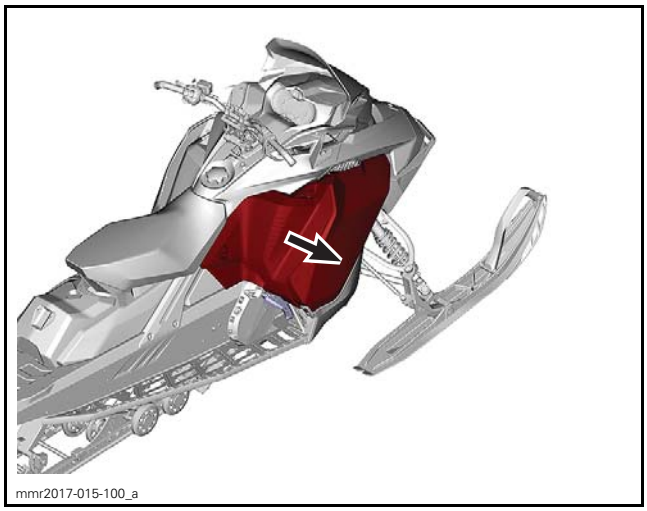
LH SIDE PANEL AND LH BOTTOM PAN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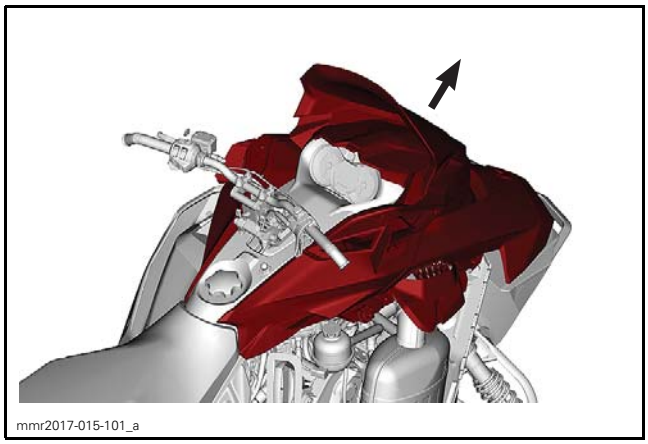
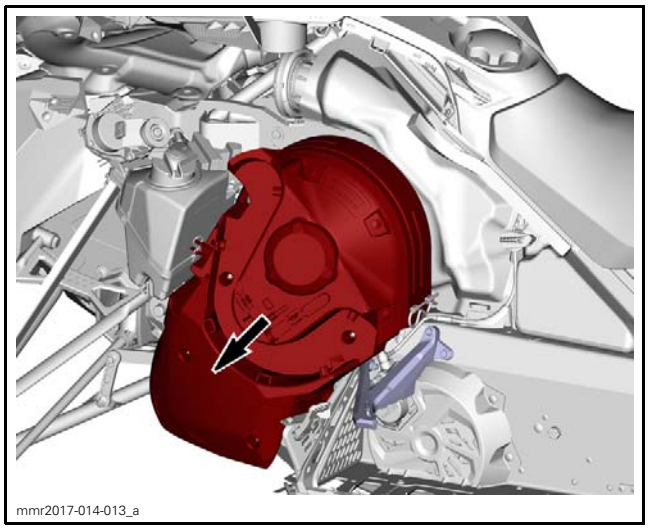
RH SIDE PANEL

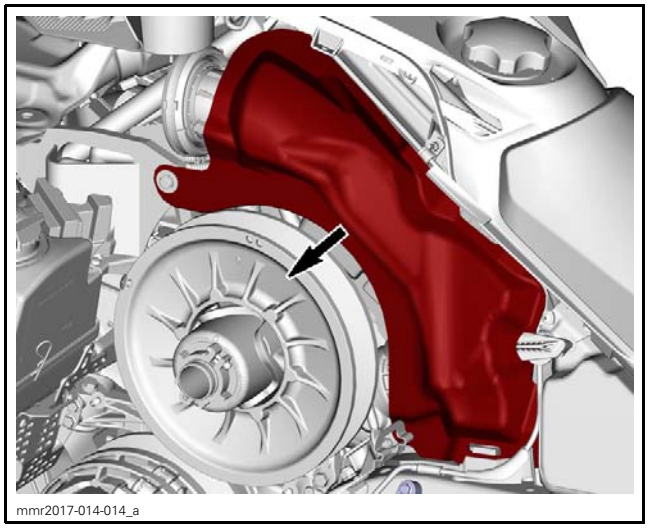


UPPER BODY MODULE

5. Remove the drive belt guard and acoustic panel.

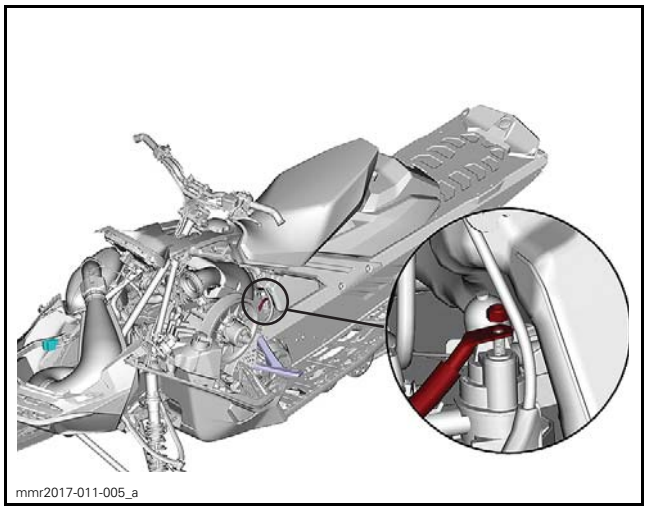


DRIVE BELT GUARD

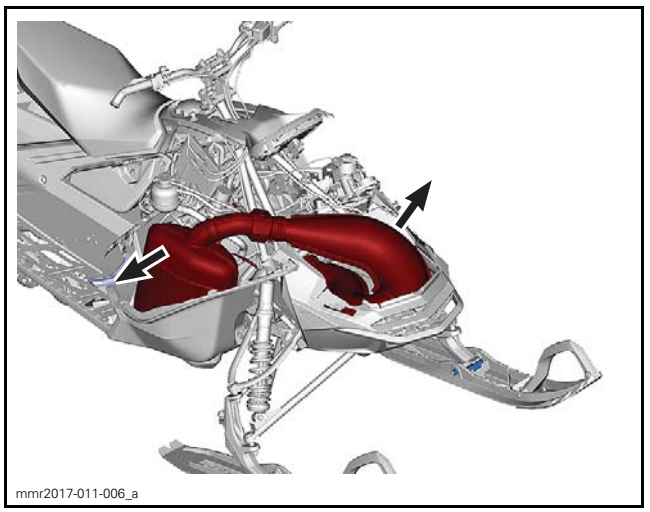


ACOUSTIC PANEL

6. Disconnect the BLACK wire from the starter solenoid.

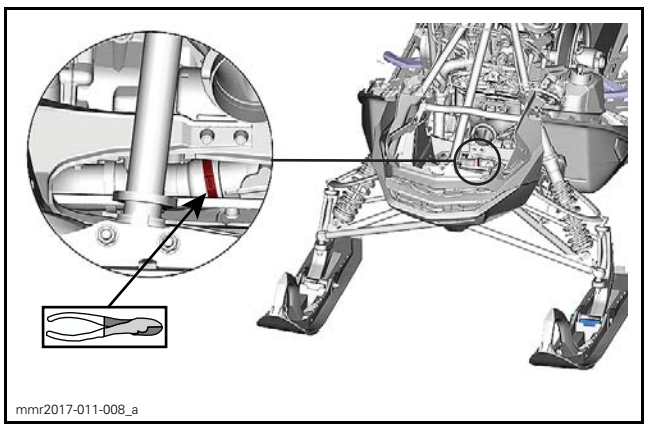


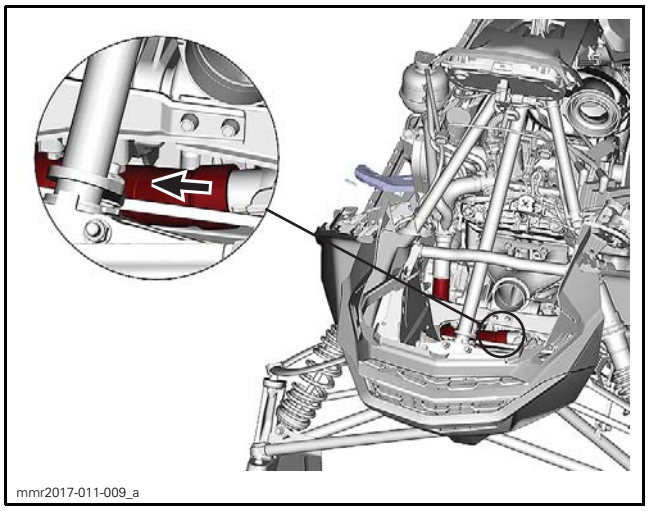
7. Remove the muffler and the tuned pipe. If required, refer to *EXHAUST SYSTEM* subsection.



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.

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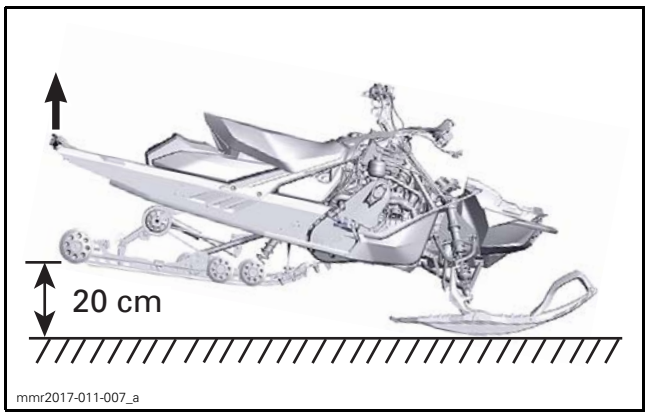

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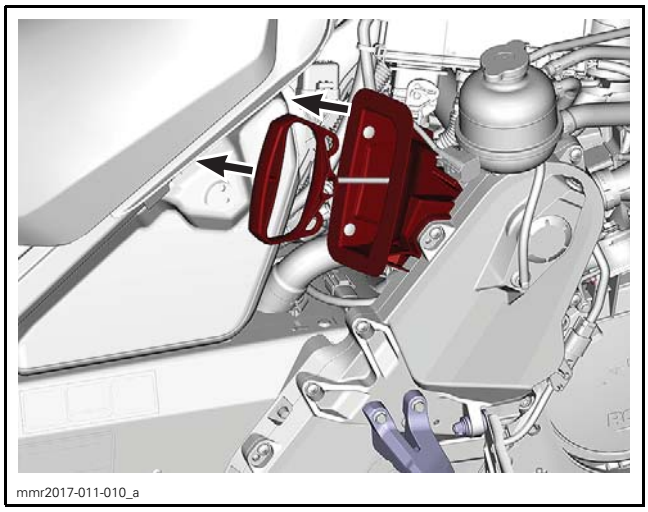
10. If equipped, remove the rewind starter handle and its housing.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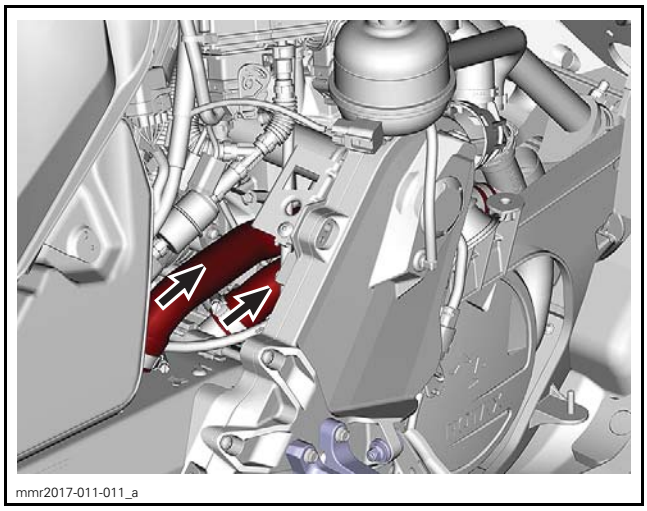
11. Unplug the inlet and outlet cooling hoses from the tunnel.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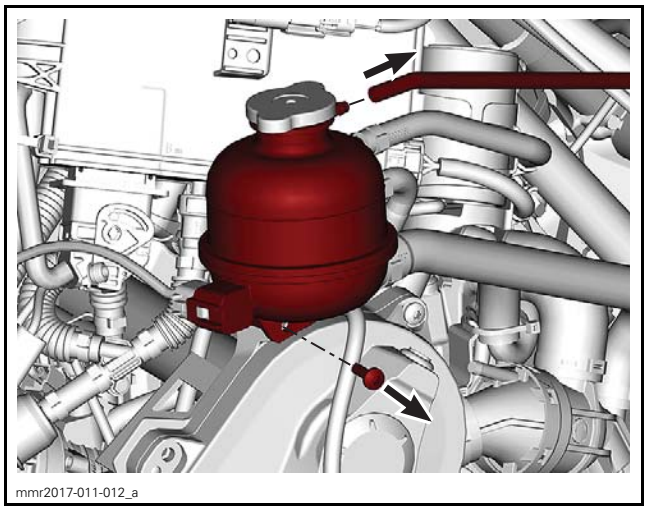
12. Detach the coolant tank from the top of the chaincase and unplug the vent hose from the tank.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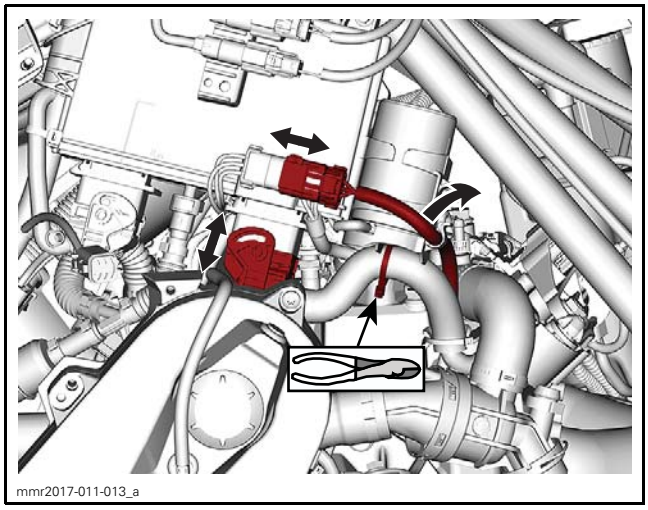
13. Disconnect the ECM connector A and the magneto connector.
14. Cut the locking tie retaining the engine harness to the capacitor support.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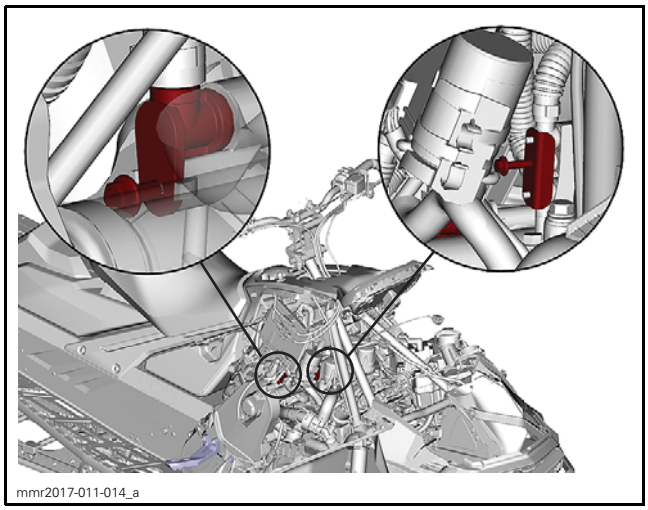
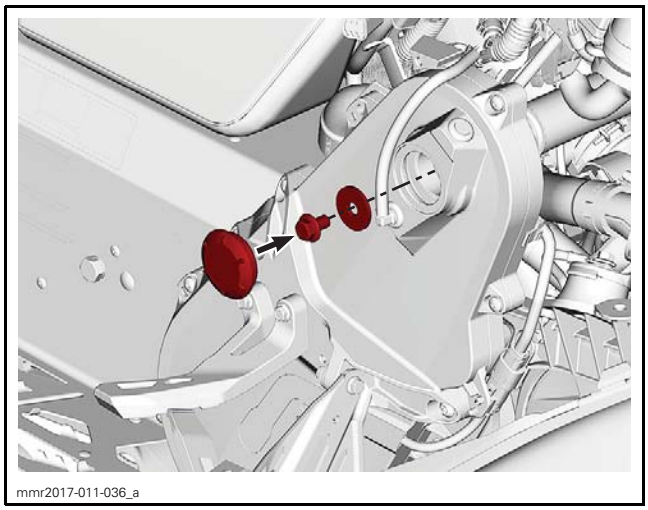
15. Unscrew fuel hoses from fuel rails.


mmr2017-011-014_a

16. Apply parking brake and remove the upper gear screw and the conical spring washer.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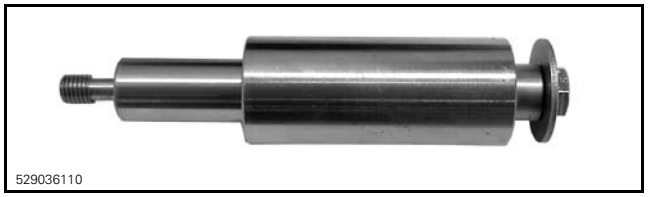
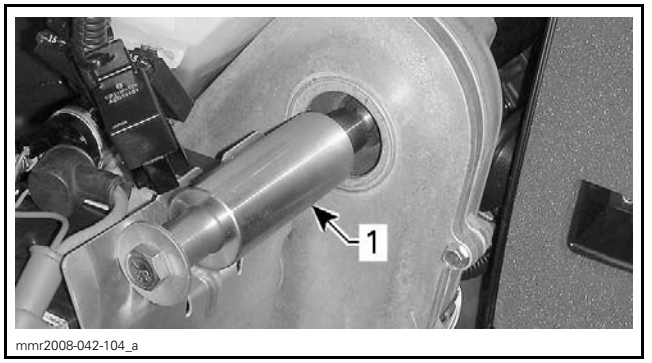
17. Install the UPPER GEAR RETAINING TOOL (P/N 529 036 110) on countershaft end.


529036110



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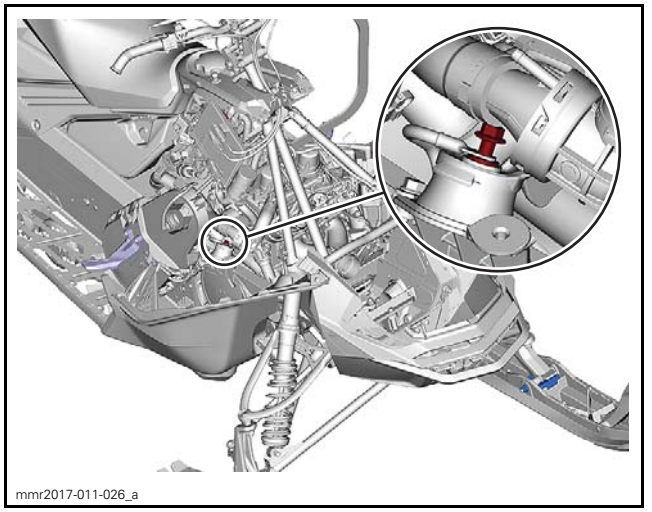
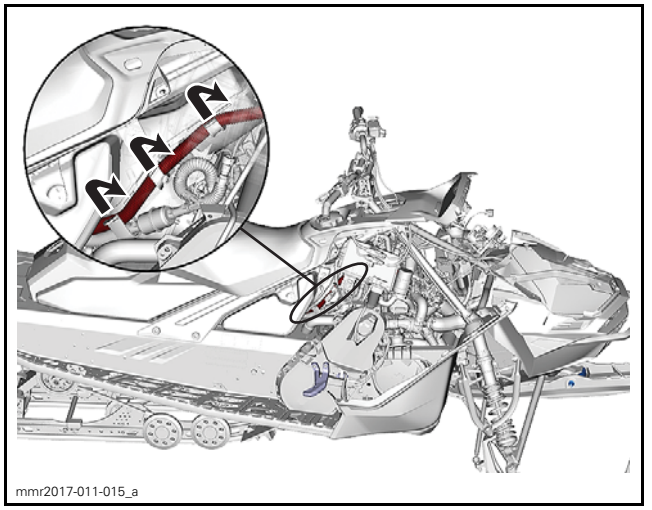
TYPICAL
1. Upper gear retaining tool

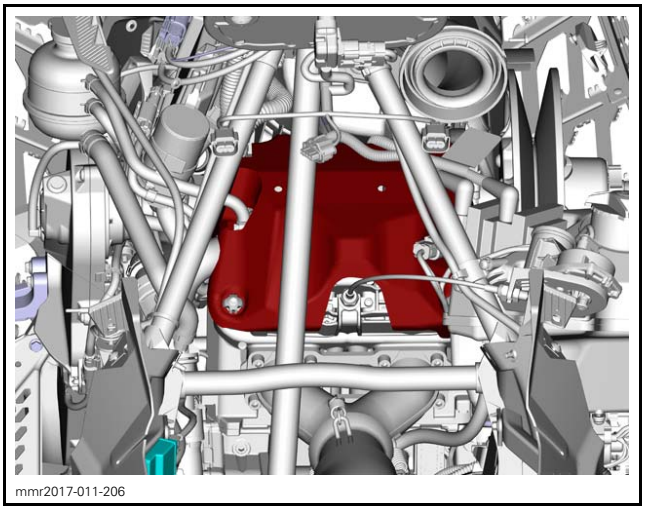
18. Remove the engine support screw.


mmr2017-011-026_a

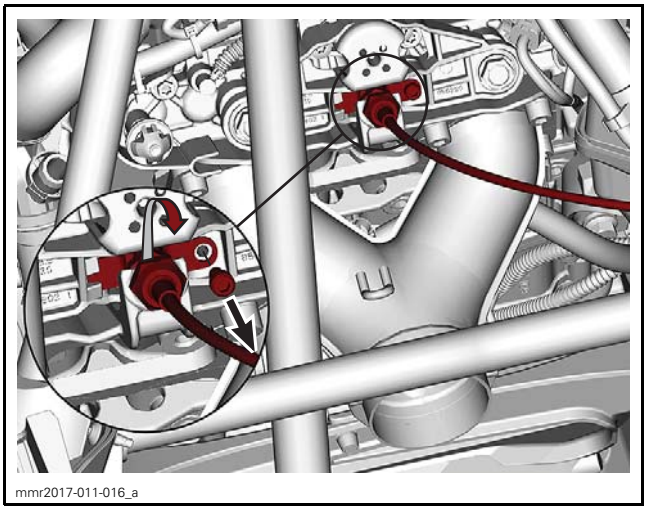
19. Unclip the fuel hose from the primary air silencer.


mmr2017-011-015_a

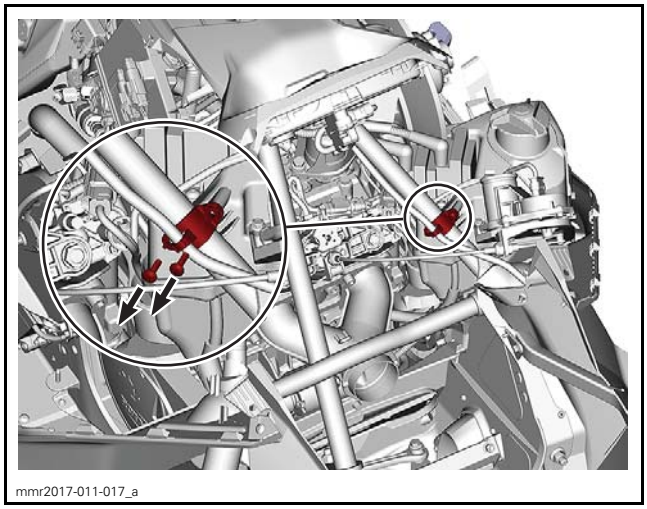
20. Remove engine cover.
    20.1 Remove the 3 screws.
    20.2 Pull on both halves of cover to remove.


mmr2017-011-206

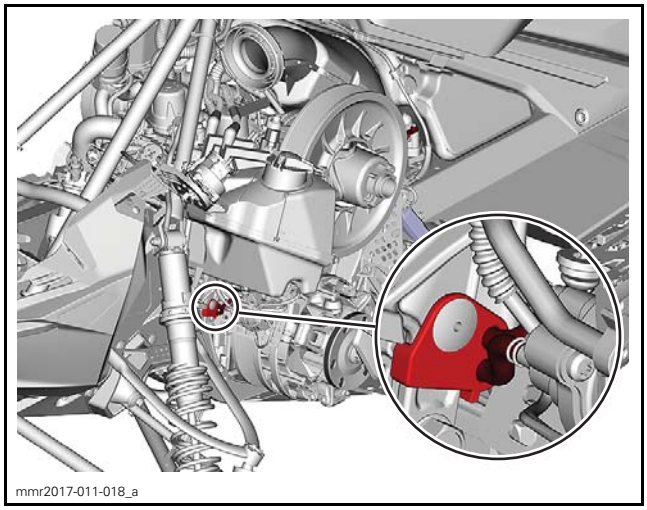
21. Detach the RAVE cable from the RAVE valve. Refer to *RAVE* subsection for proper procedure.


mmr2017-011-016_a

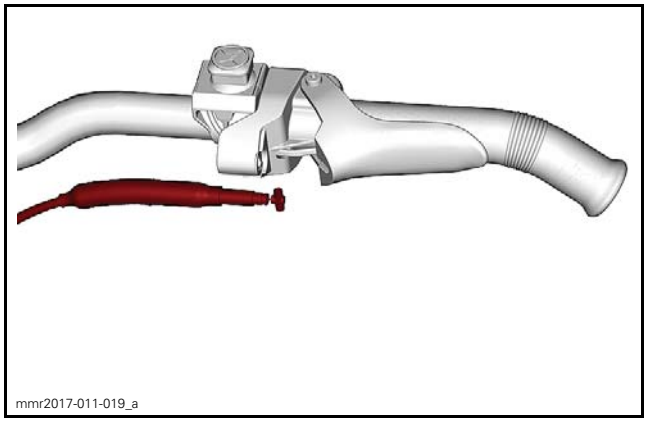
22. Unscrew the oil tank support.


mmr2017-011-017_a

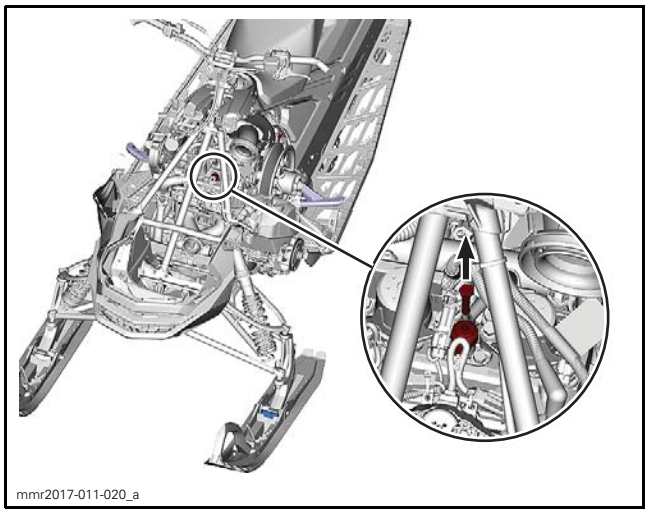
23. From underneath of the oil tank, detach both injection oil hoses from their support.


mmr2017-011-018_a

24. Detach the throttle cable from the throttle housing.

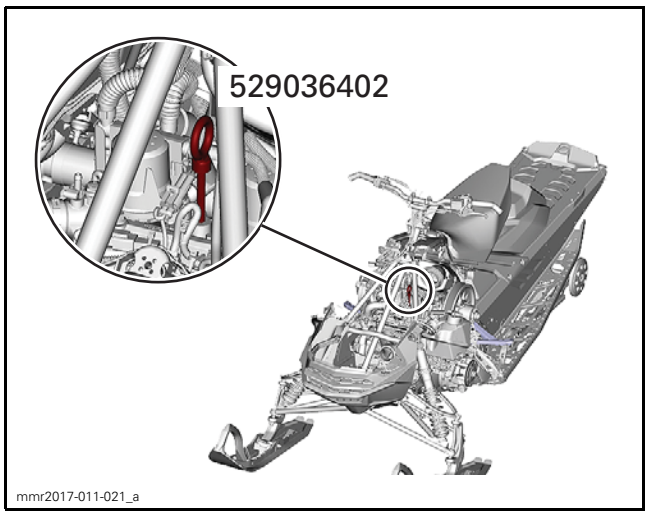

mmr2017-011-019_a

25. Remove the knock sensor from cylinder head cover.



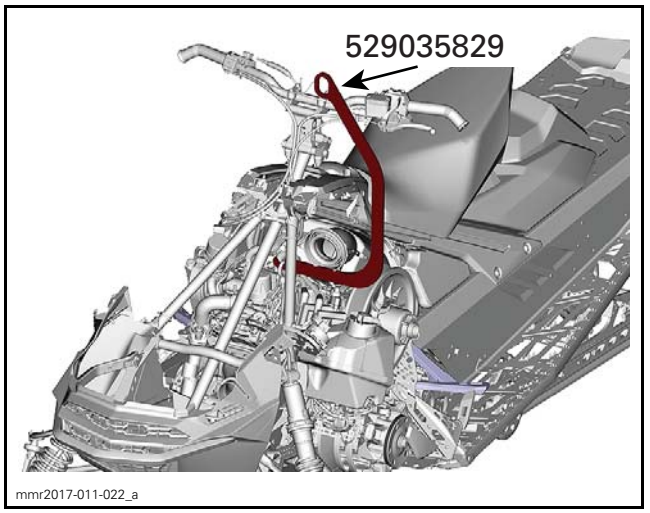
26. Install the engine lifting tool instead of knock sensor.

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



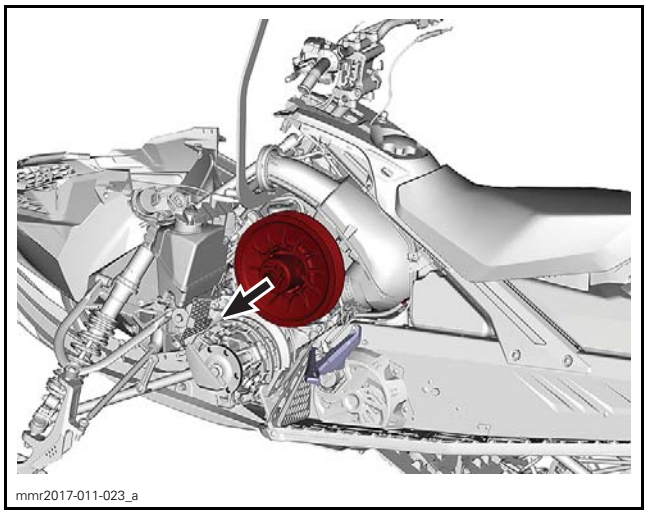
27. Install the engine lifting hook.

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



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

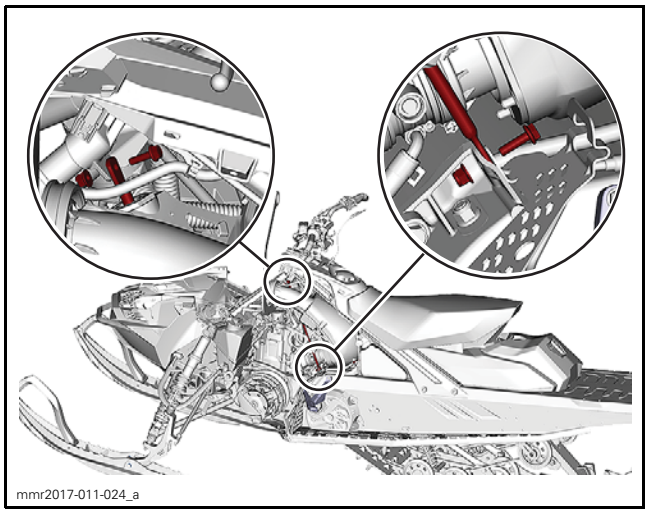
NOTE: If necessary, tap the upper gear retaining tool with a plastic hammer.



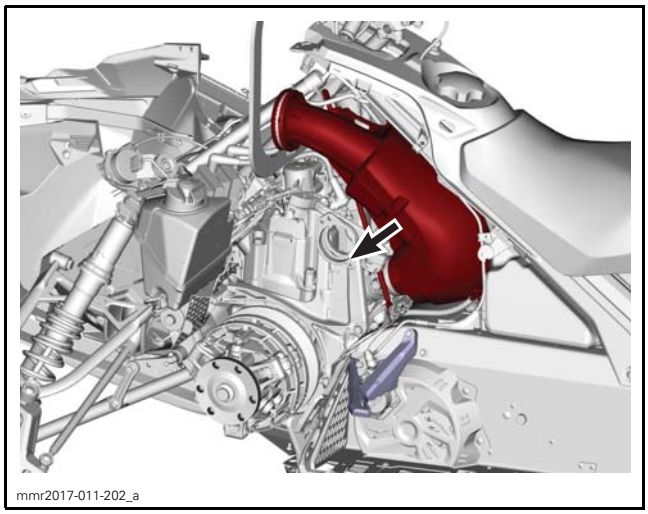
29. Unscrew countershaft from the upper gear retaining tool. **Do not** remove tool.

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

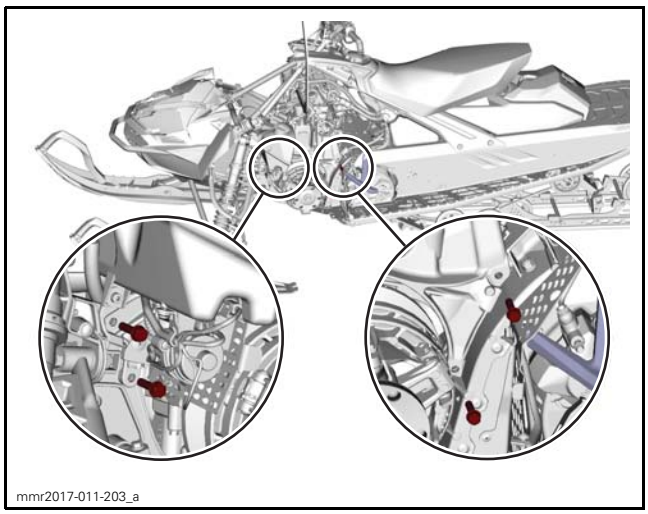
30. On LH side, remove the steering brace.



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

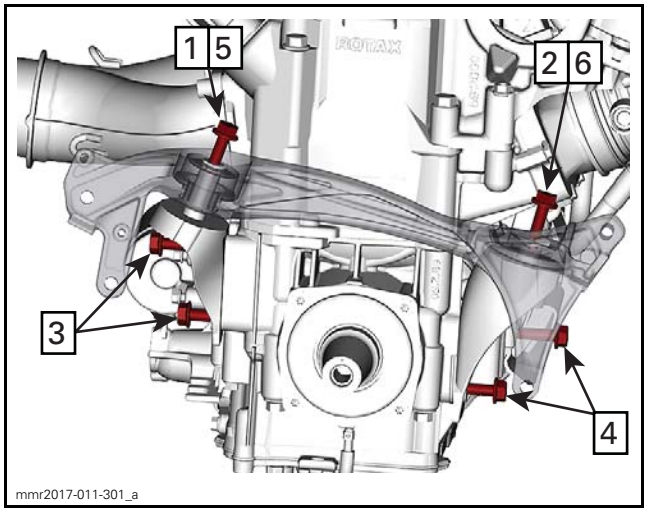
The installation is the reverse of the removal procedure. However, pay attention to the following details.

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.

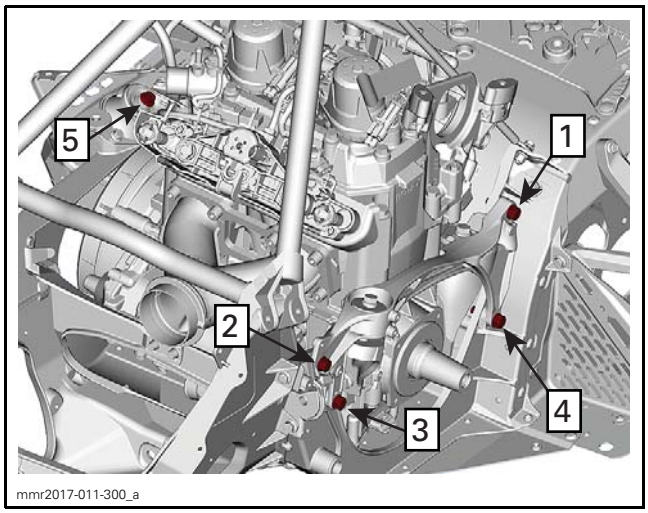
TIGHTENING TORQUE	
Step 1 and Step 2	Install the bolt loosely
Step 3 and Step 4	31.5 N•m ± 3.5 N•m (23 lbf•ft ± 3 lbf•ft)
Step 5 and Step 6	24.5 N•m ± 3.5 N•m (18 lbf•ft ± 3 lbf•ft)



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

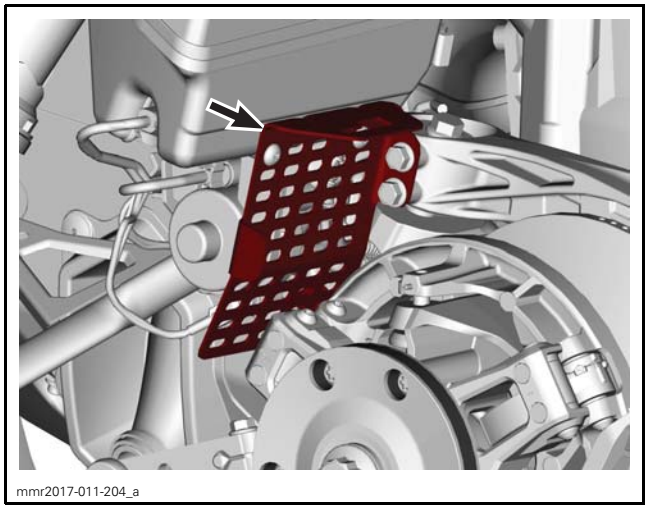
Check if engine supports are cracked, bent or damaged. Replace if necessary.

Replacing the PTO Side Engine Support

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

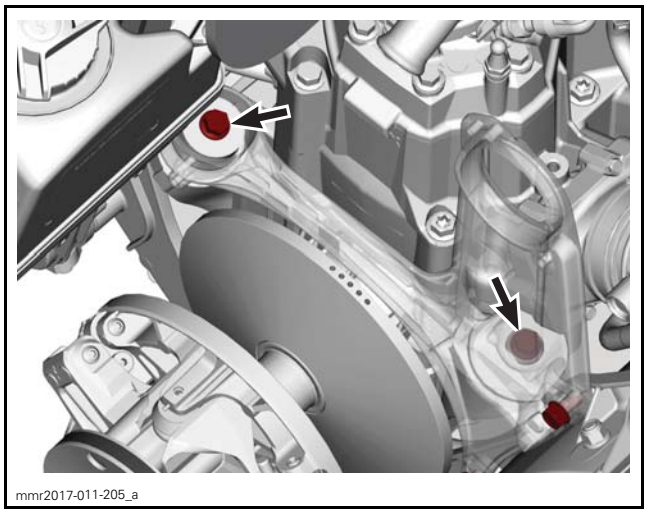
Remove driven pulley. Refer to appropriate *DRIVEN PULLEY AND COUNTERSHAFT* subsection.

Remove the injection oil tank support.

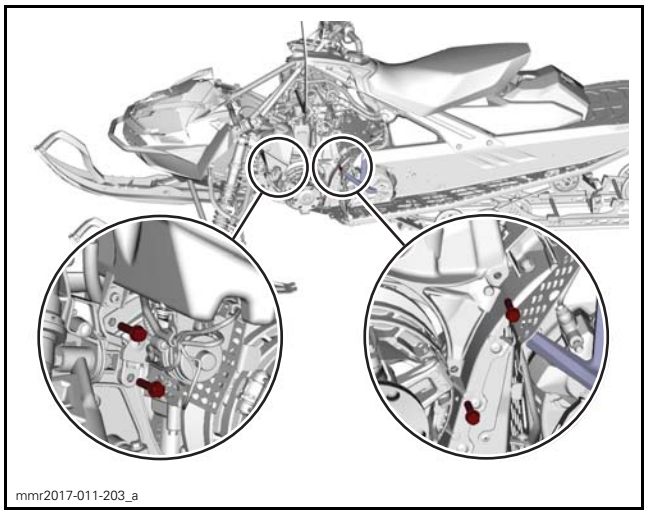

mmr2017-011-204_a

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.

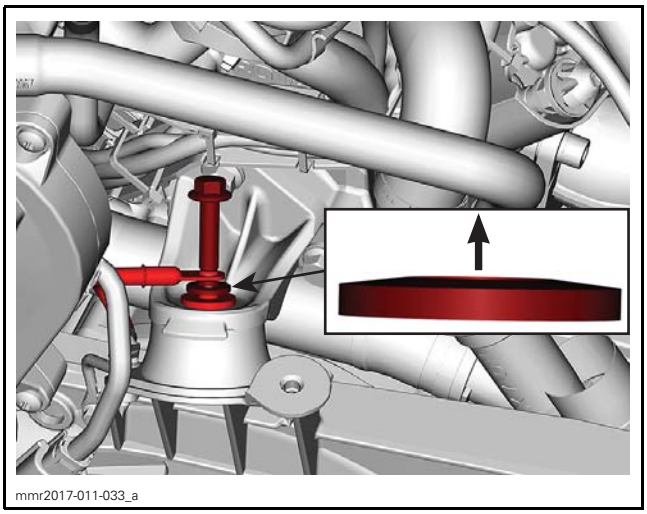
Remove screw securing engine support to rubber mount adapter.

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

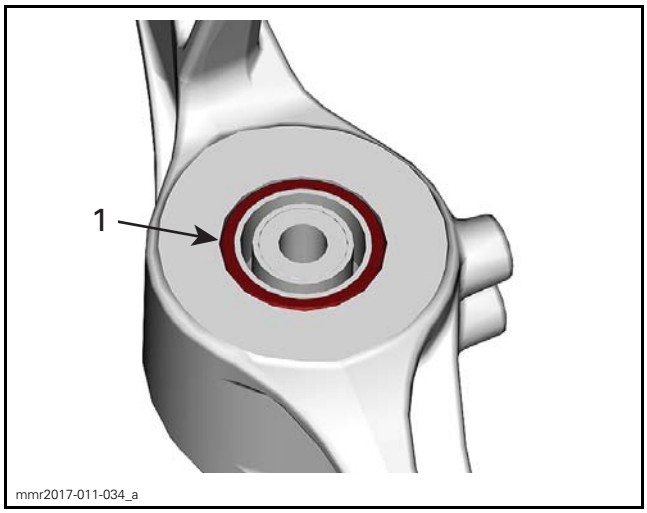
Inspecting the Engine Rubber Mount

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

Replacing the PTO Side Engine Rubber Mount

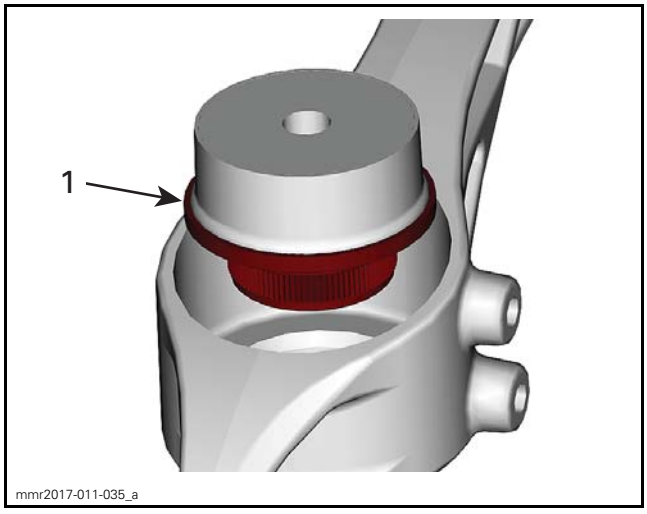
Remove the PTO side engine support. See procedure in this subsection.

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.

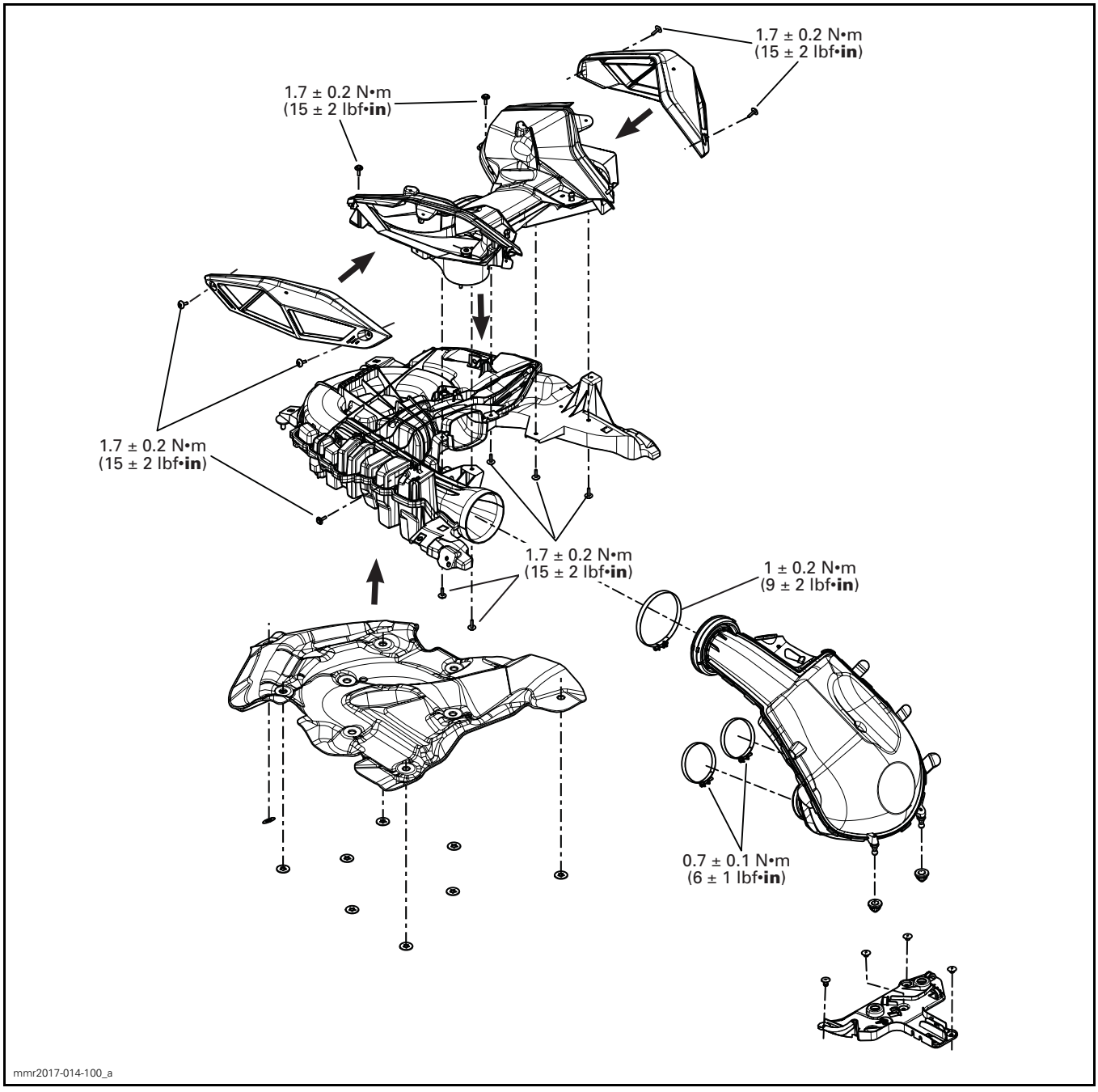
Remove screw retaining rubber mount adapter to frame.

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

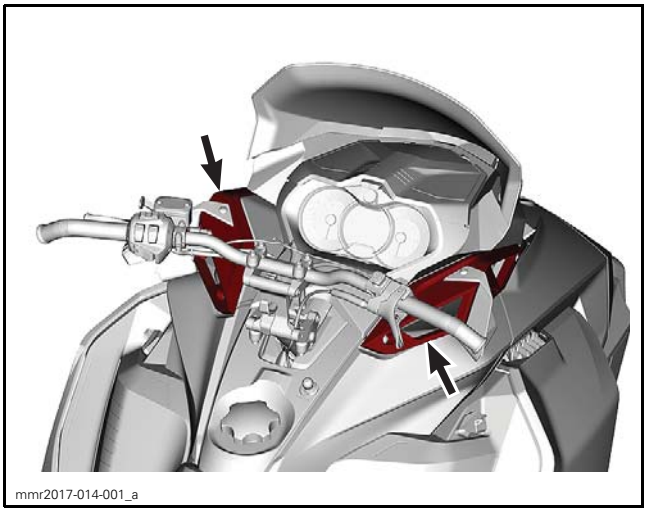
⚠ WARNING

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)

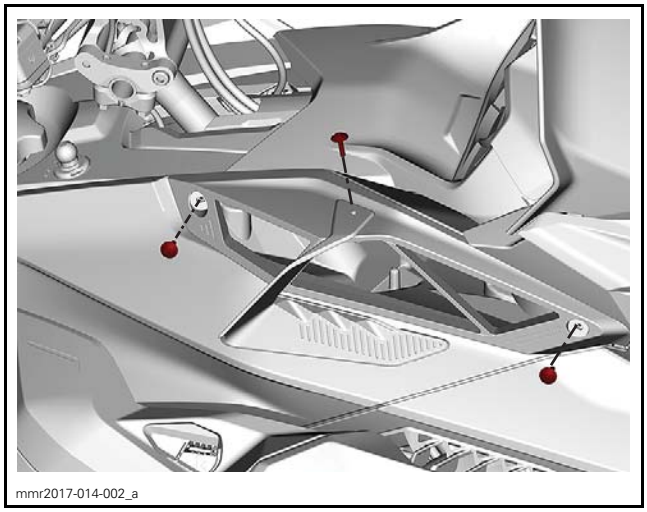


mmr2017-014-001_a

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

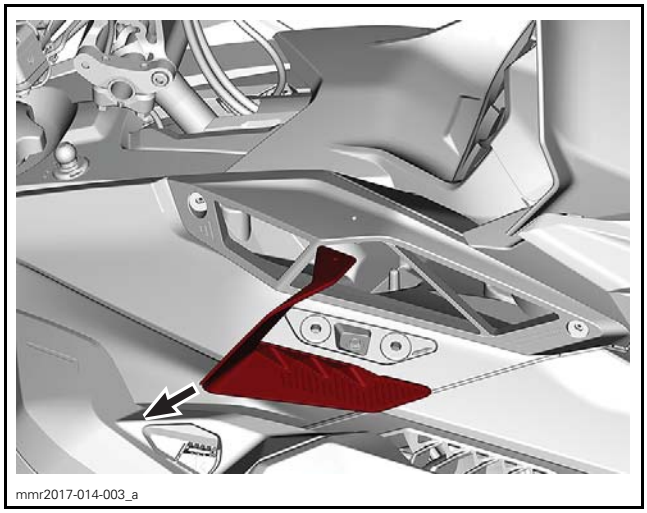
Removing the Air Filter

Remove screws from mesh filter housing.



mmr2017-014-002_a

On some models, remove the air deflector.



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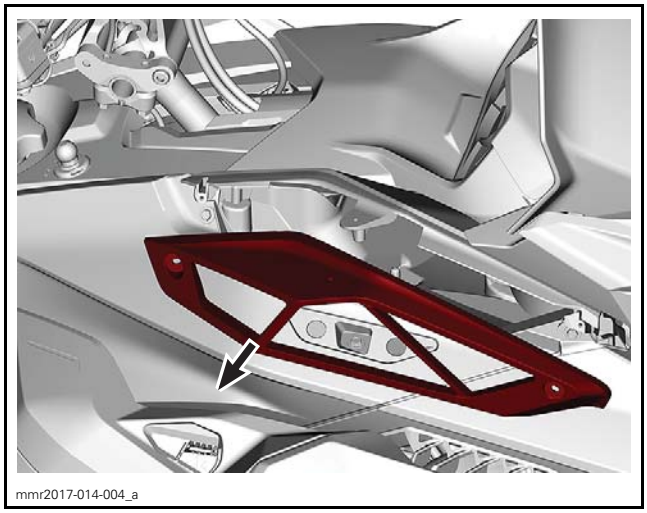
Remove the mesh filter housing from the upper body module.



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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.

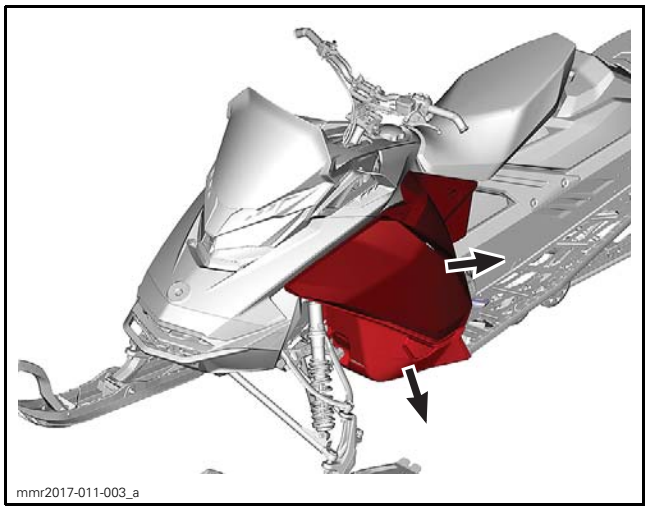
Installing the Air Filter

The installation is the reverse of the removal procedure.

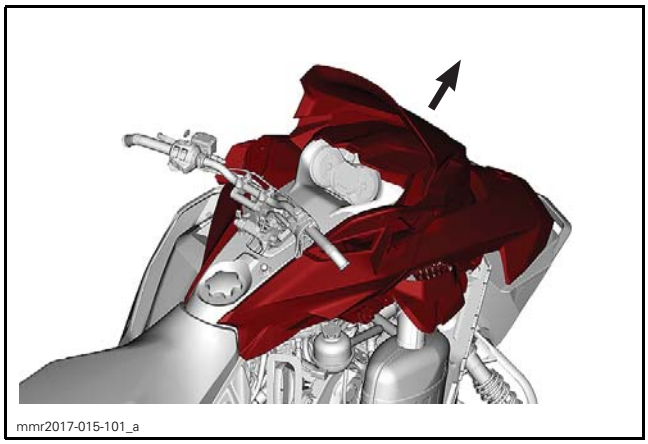
PRIMARY AIR INTAKE SILENCER

Removing the Primary Air Intake Silencer

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

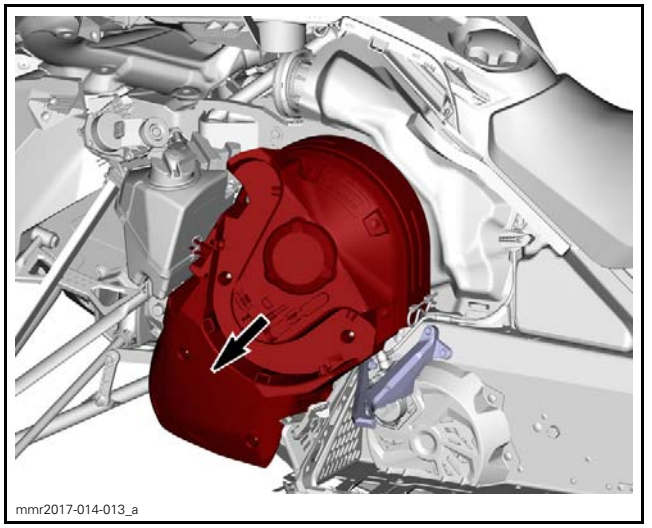


LH SIDE PANEL AND LH BOTTOM PAN

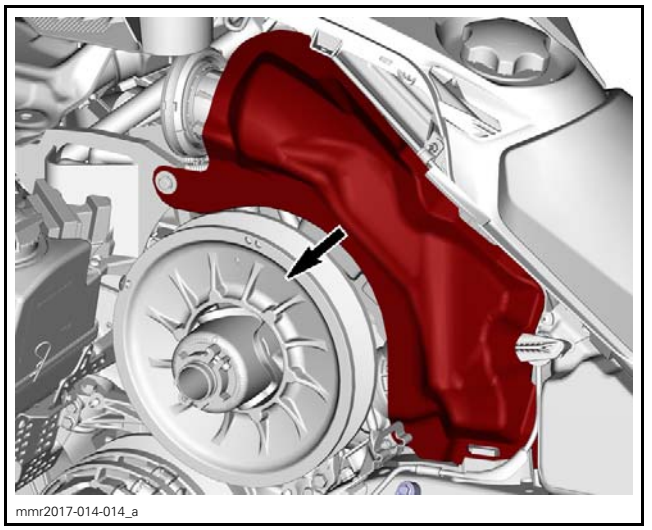


UPPER BODY MODULE

2. Remove the drive belt guard and acoustic panels.

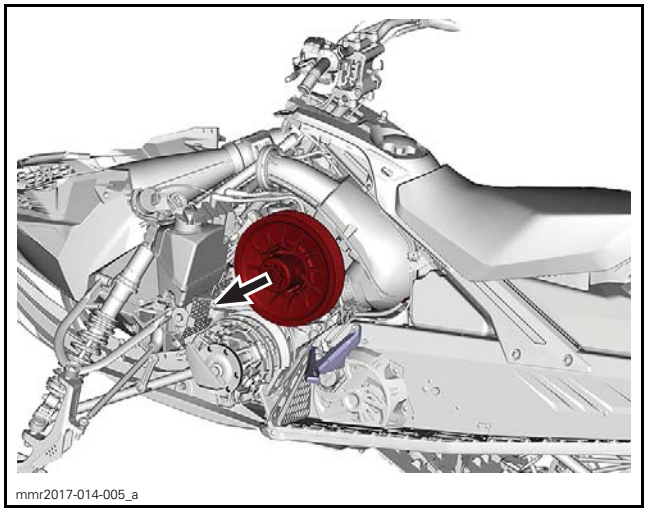


REMOVE DRIVE BELT GUARD

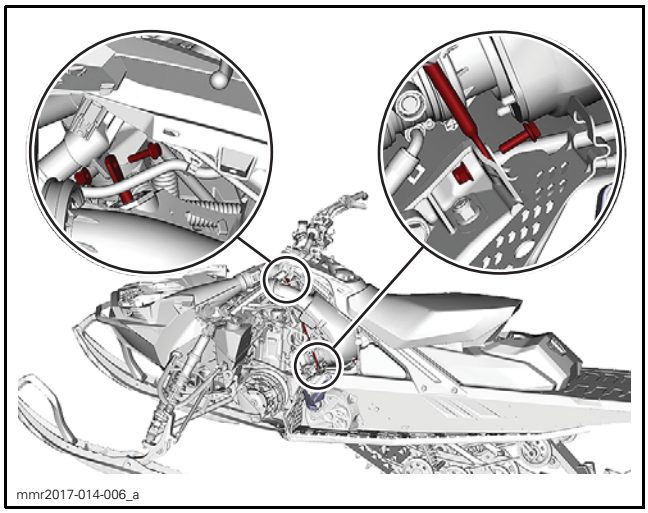


REMOVE ACOUSTIC PANEL

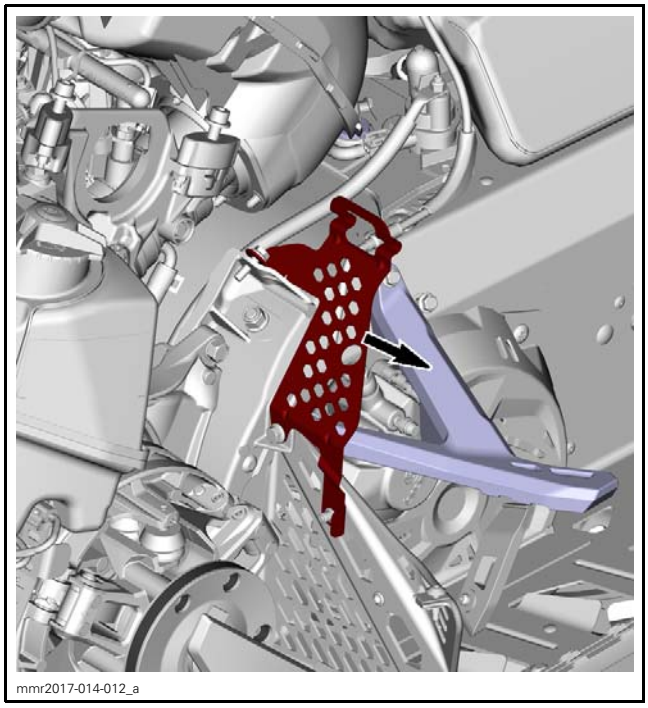
3. Remove the driven pulley. Refer to appropriate *DRIVEN PULLEY AND COUNTERSHAFT* subsection.



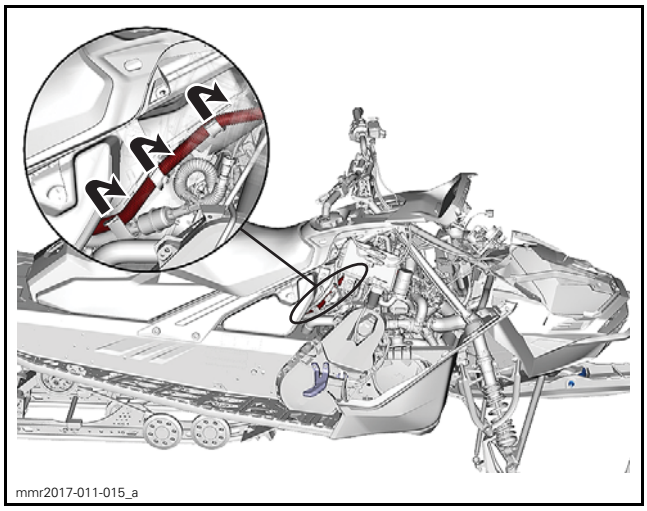
4. On LH side, remove the steering brace.


mmr2017-014-006_a

5. Remove the drive belt guard support.

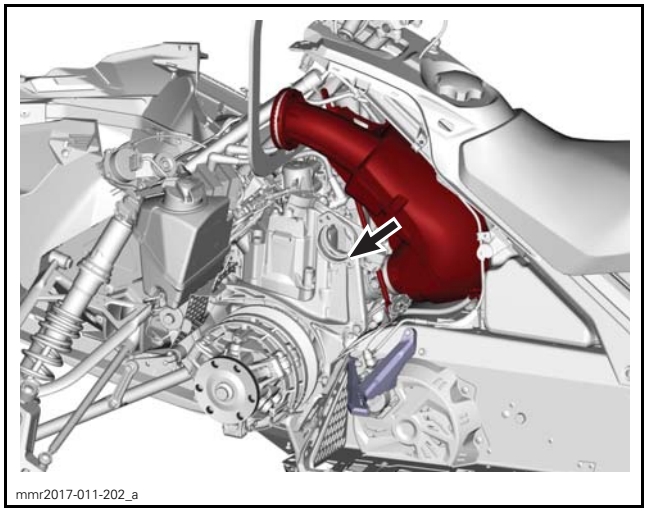

mmr2017-014-012_a

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 .

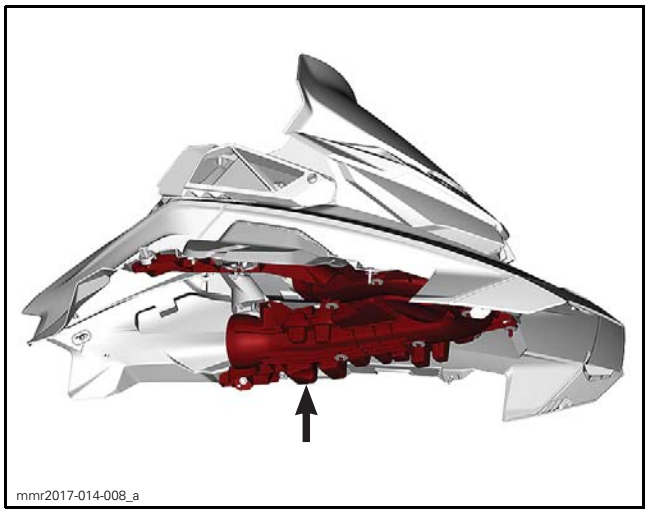

mmr2017-011-202_a

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.

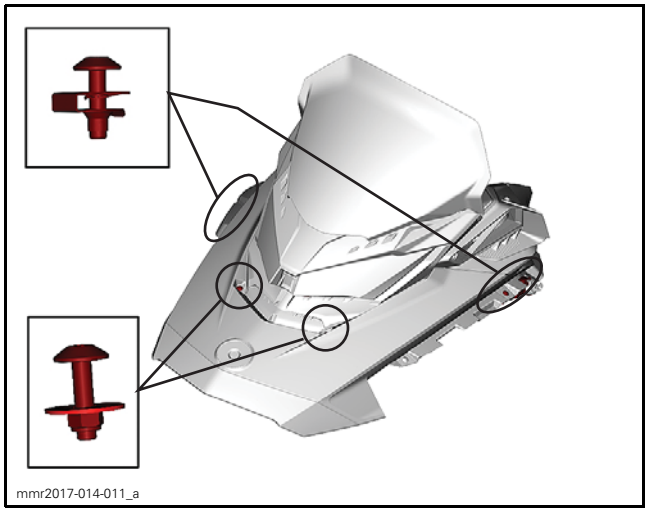
SECONDARY AIR INTAKE SILENCER


mmr2017-014-008_a

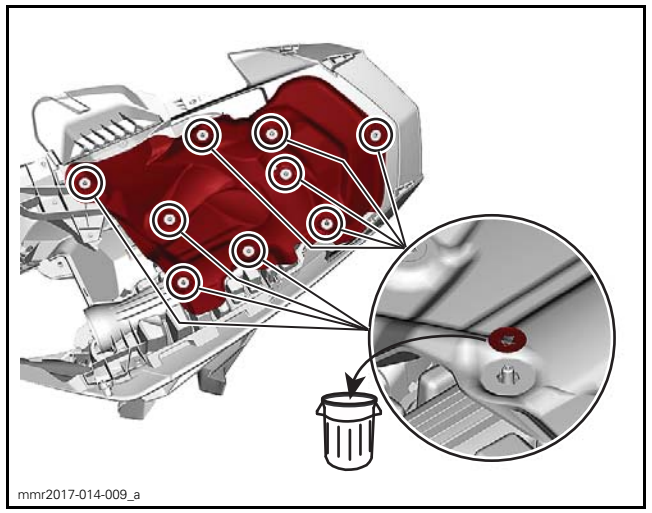
Removing the Secondary Air Intake Silencer

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

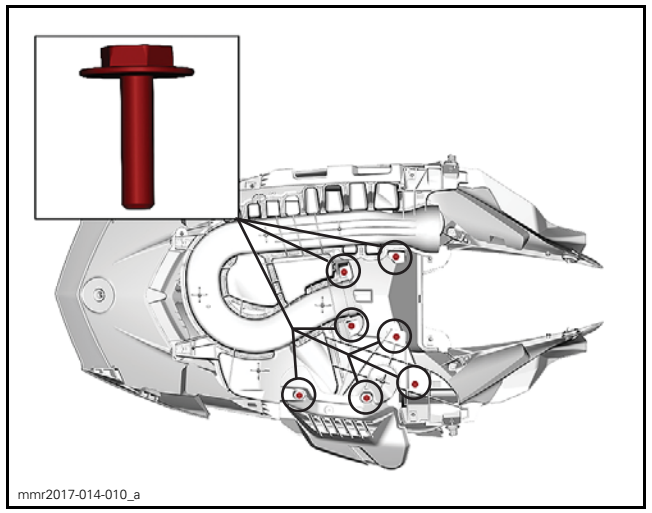
Remove the following screws.


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

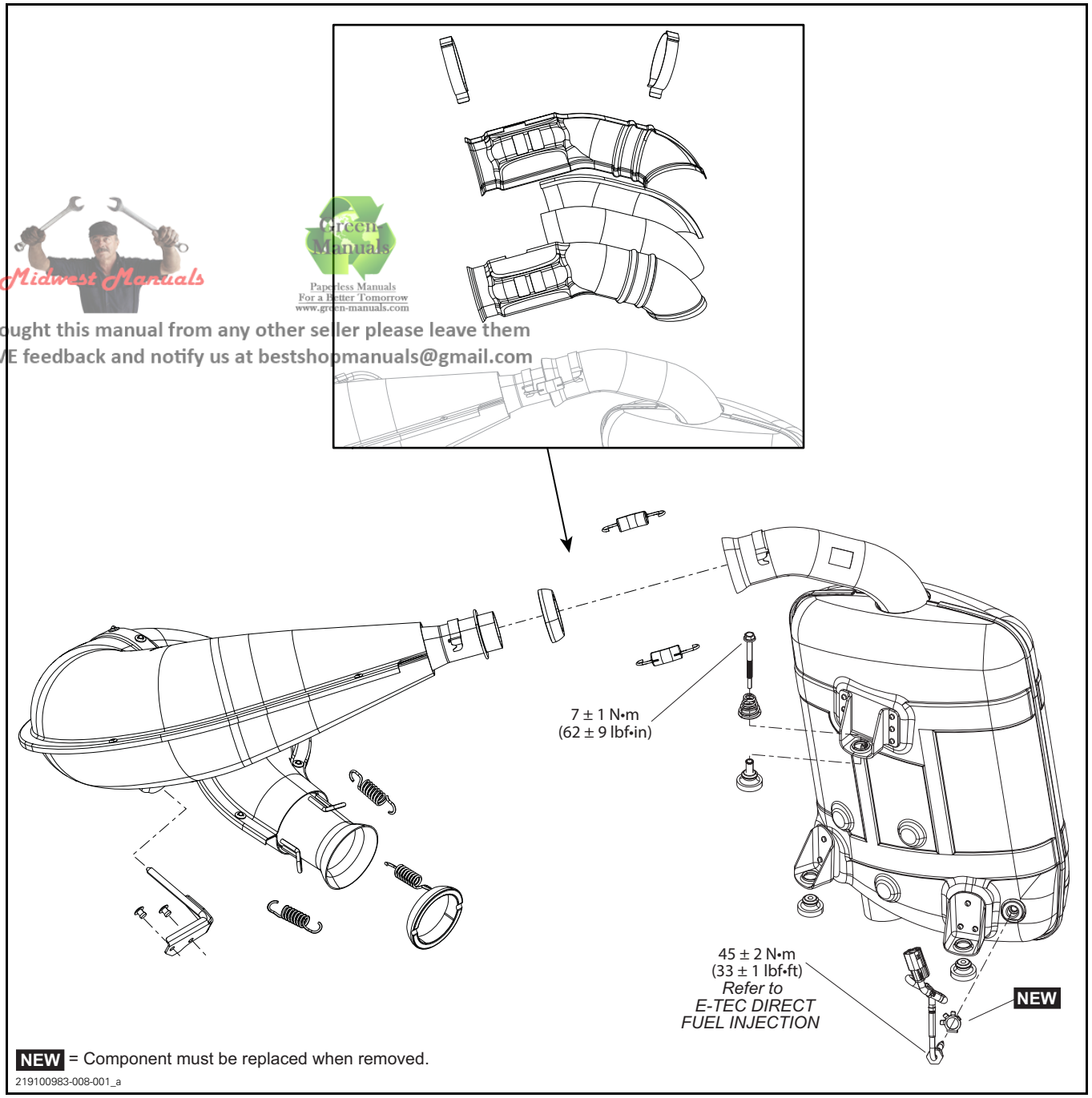
The installation is the reverse of the removal procedure.

EXHAUST SYSTEM

SERVICE TOOLS

Description	Part Number	Page
SPRING INSTALLER/REMOVER	529 035 983	33, 38

Models With One Exhaust Gas Temperature Sensor (EGTS)



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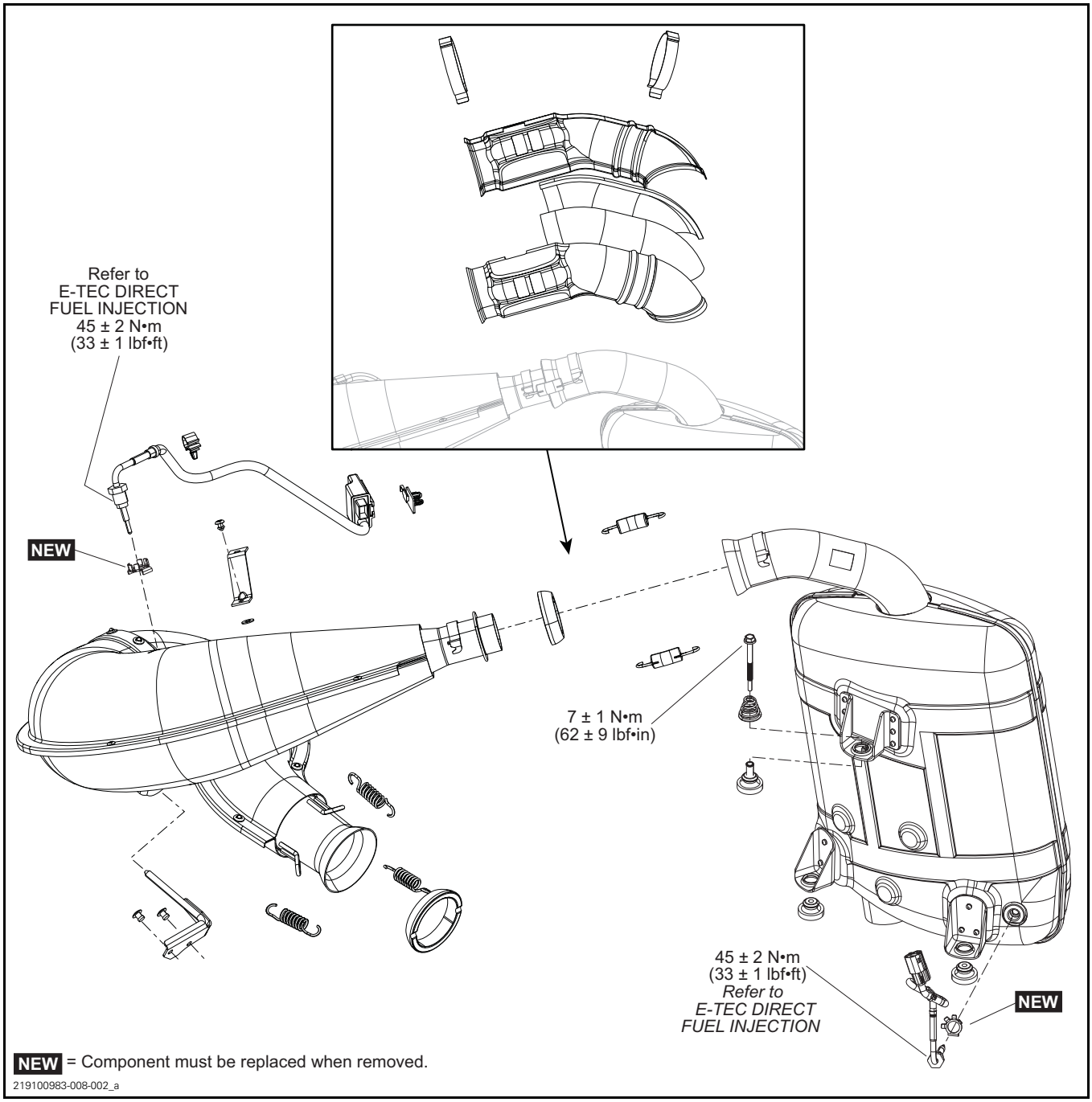
Models With Two Exhaust Gas Temperature Sensors (EGTS)



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

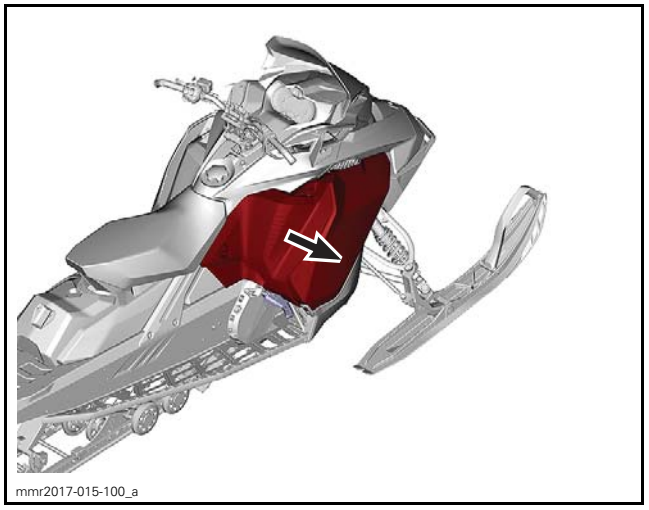
Check the following components for leaks, cracks, or other damages:
- Springs and retainers
- Exhaust system mounts
- Muffler
- Tuned pipe
- Donut gaskets
- Shields
- Manifold.

PROCEDURES

MUFFLER

Removing the Muffler

1. Refer to *BODY* subsection and remove the following parts.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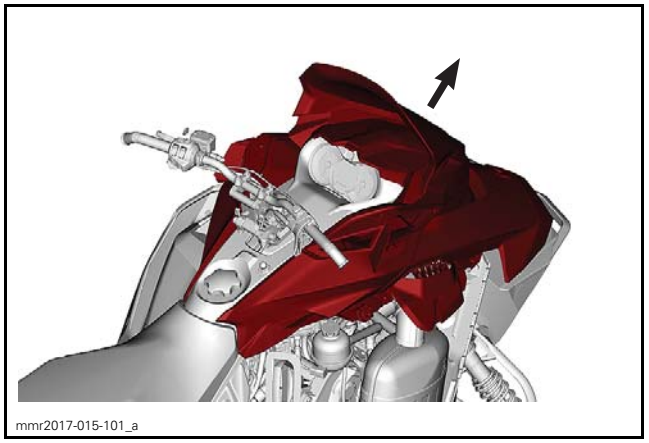
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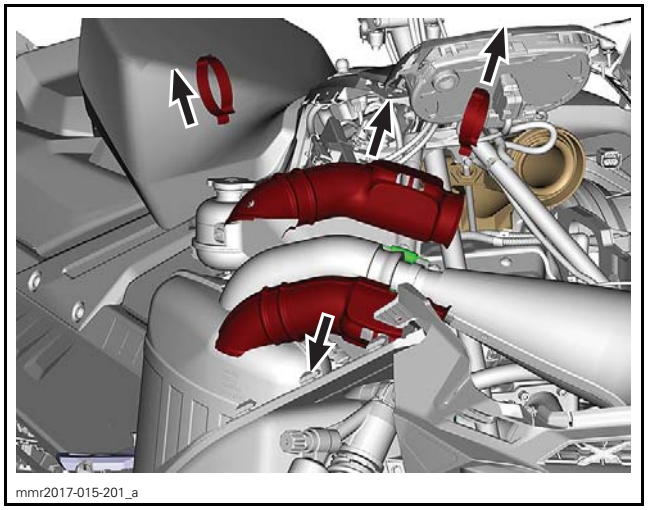
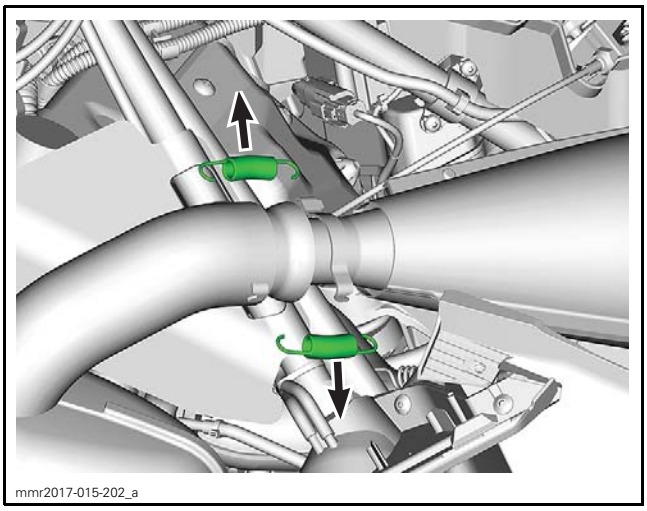
2. Remove heat shields from the muffler pipe.


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)	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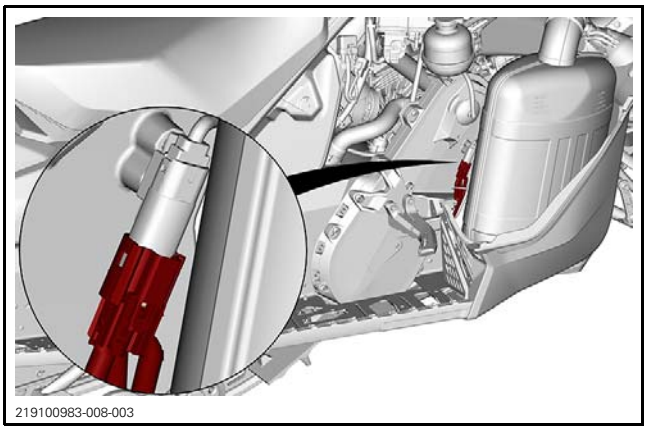
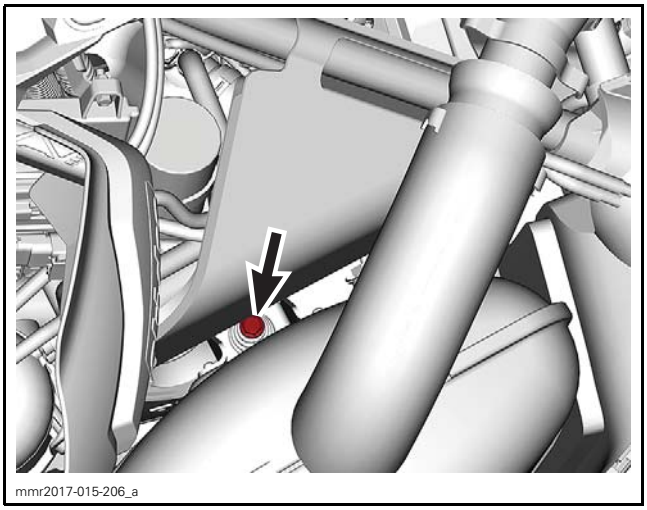
4. Disconnect the power harness from the muffler EGTS.


219100983-008-003

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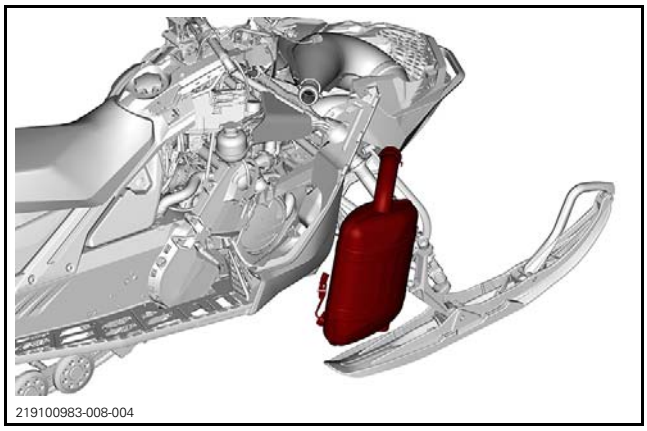
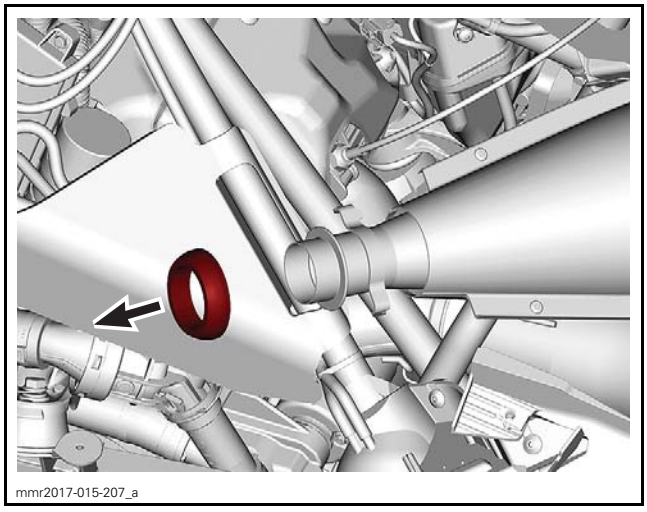
6. Remove the muffler.


219100983-008-004

7. Remove exhaust gasket.


mmr2017-015-207_a

Inspecting the Muffler

Check the muffler for cracks or other damages.

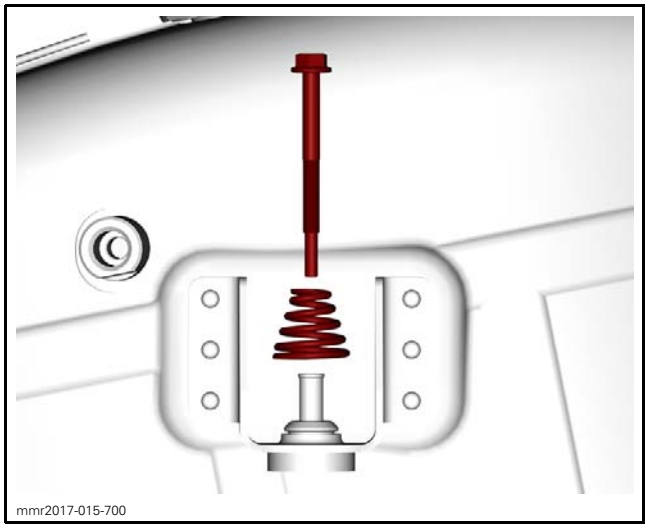
Check grommet condition.

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

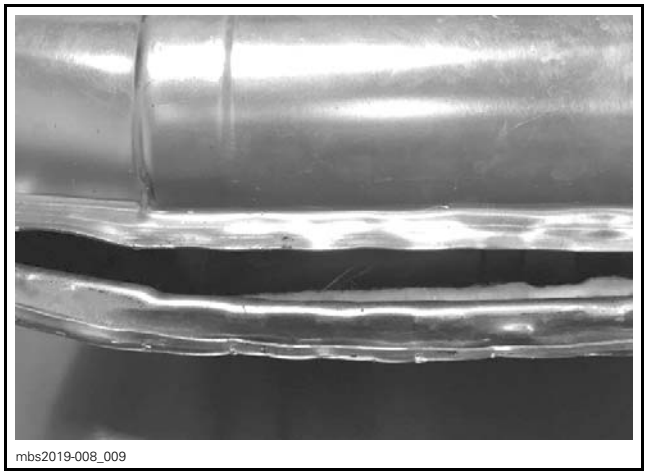

mmr2017-015-700

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

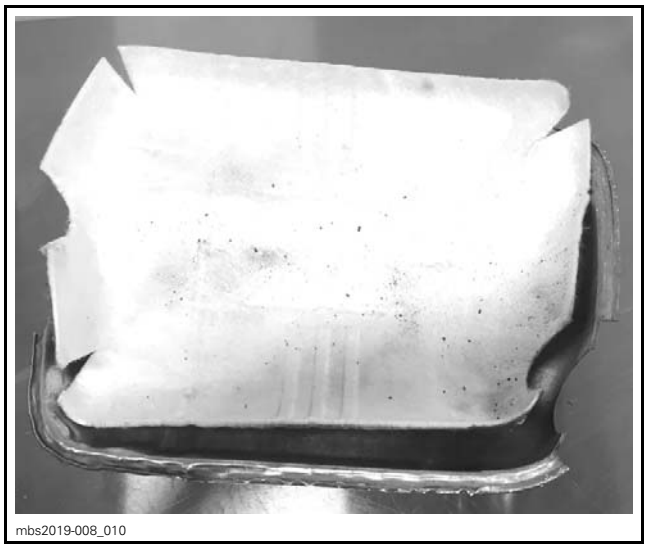
Replacing the Muffler Shell

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.

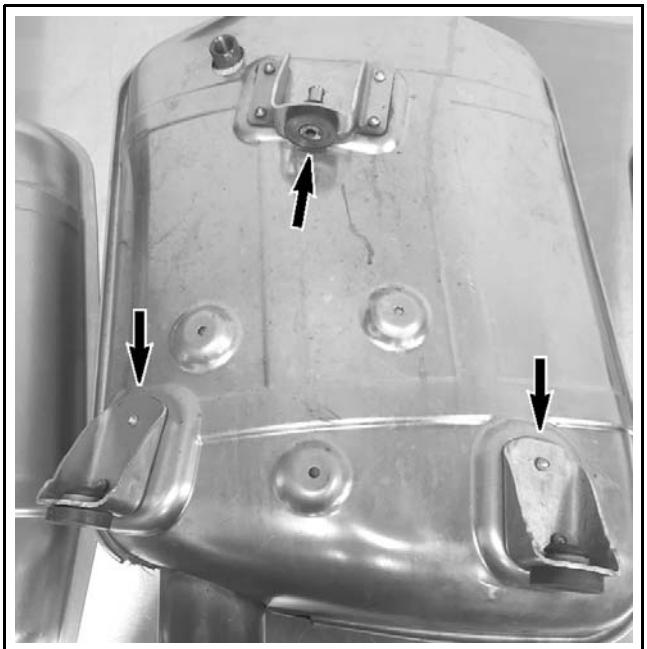
mbs2019-008_004


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.

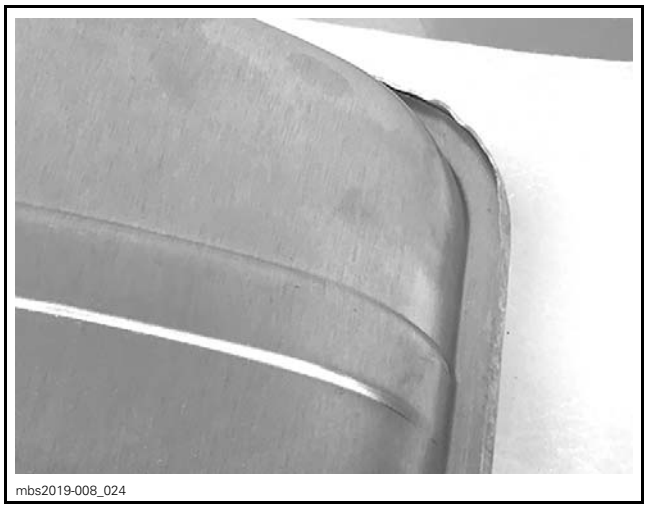
mbs2019-008_019

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

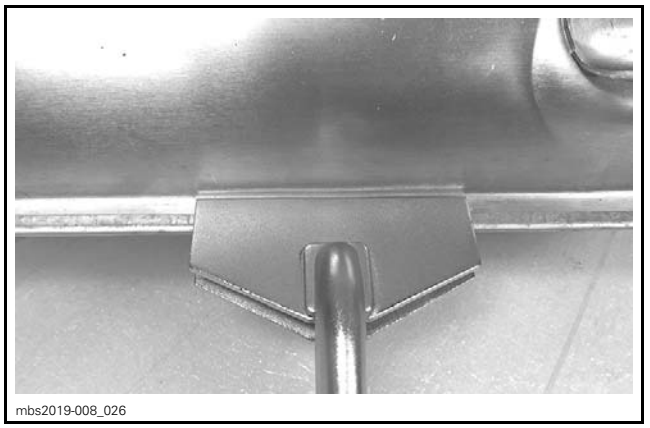
mbs2019-008_020

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.

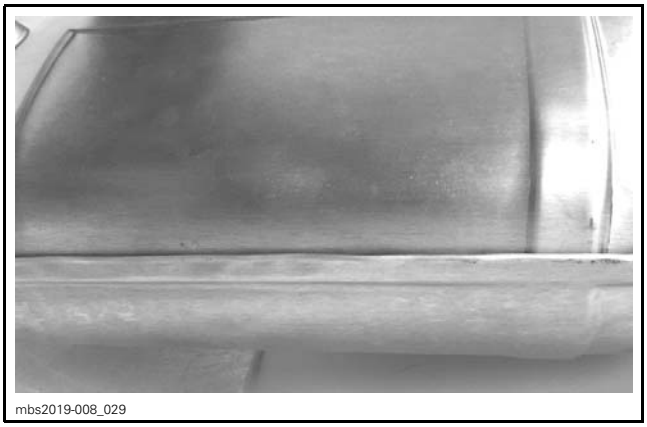

mbs2019-008_026

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

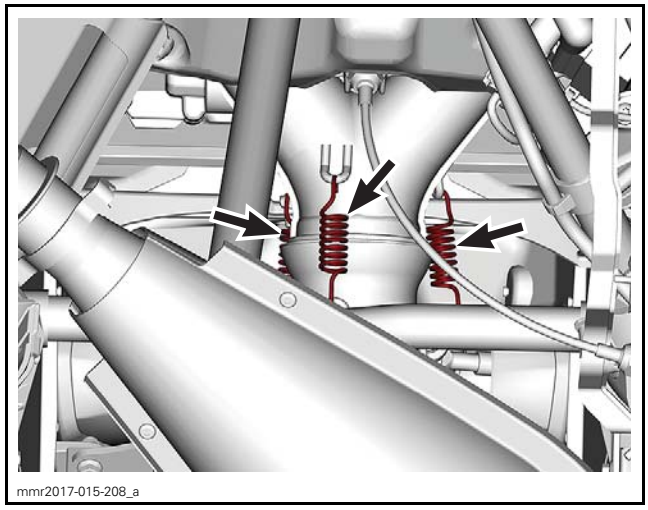
14. Reinstall muffler.

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)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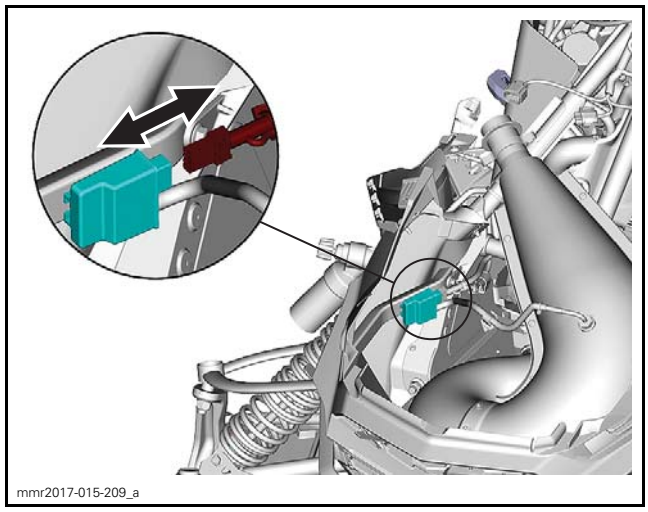
Models With 2 EGTS

3. Disconnect the THCM harness from the THCM module.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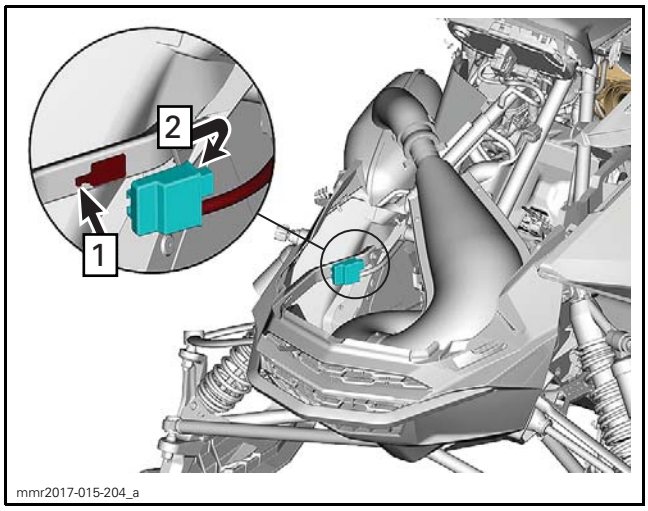
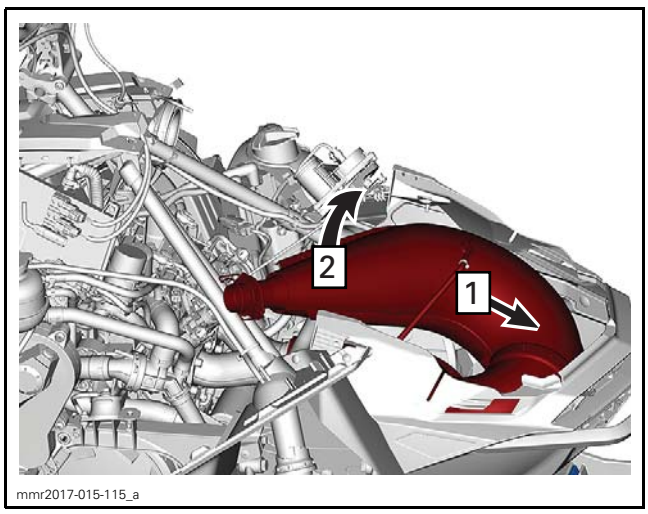
4. Detach the THCM from the vehicle side member.

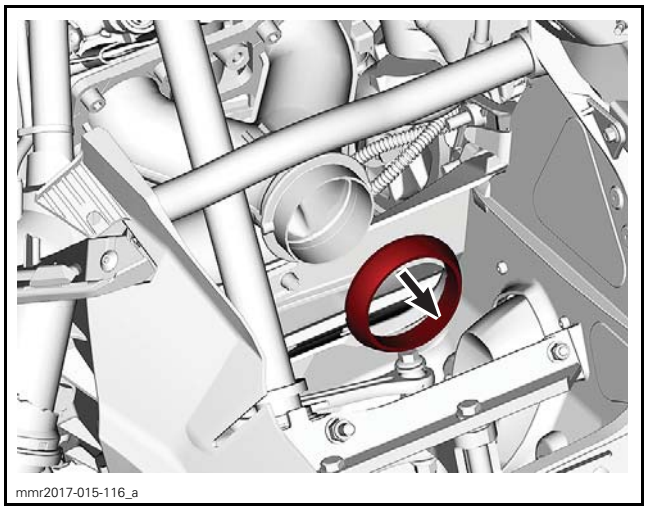


All Models

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.

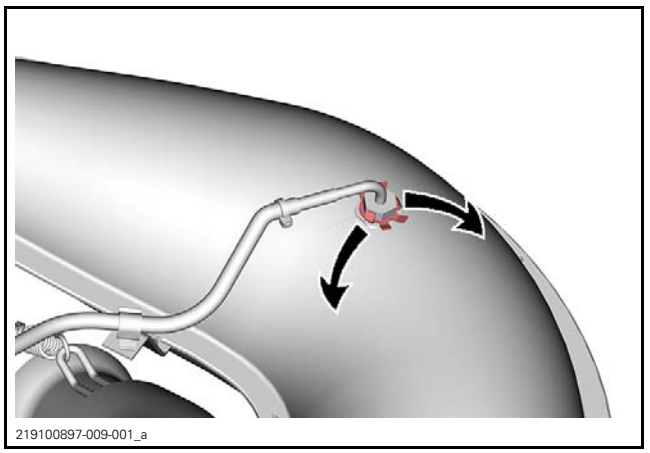
Installing the Tuned Pipe

The installation is the reverse of the removal procedure.

EXHAUST GAS TEMPERATURE SENSOR (EGTS)

Removing the EGTS

Unfold all tabs.



TYPICAL

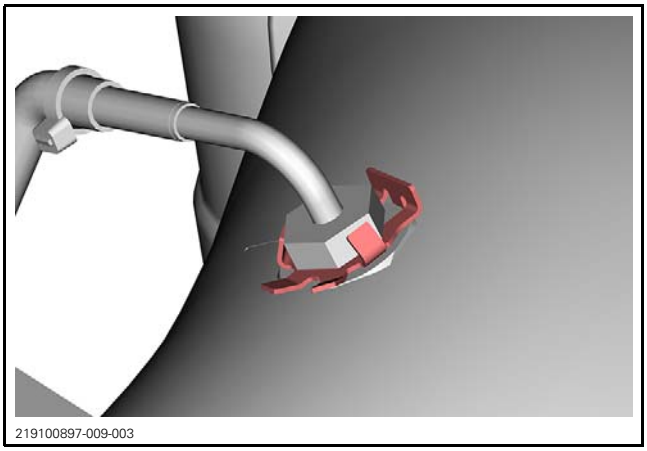
Remove sensor.

Installing the EGTS

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

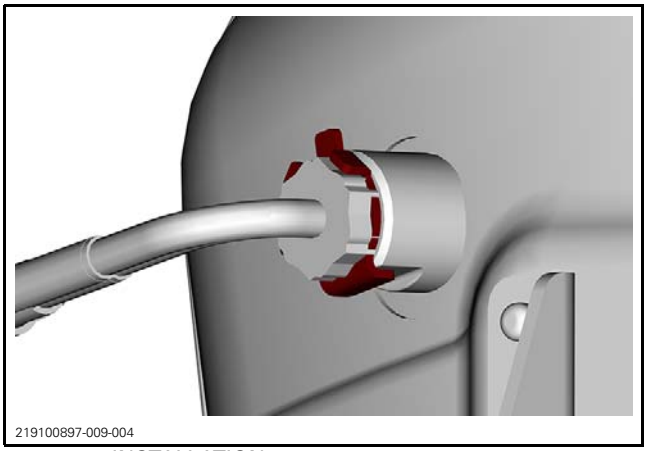
Install a new locking tab as shown and tighten sensor to specification.

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

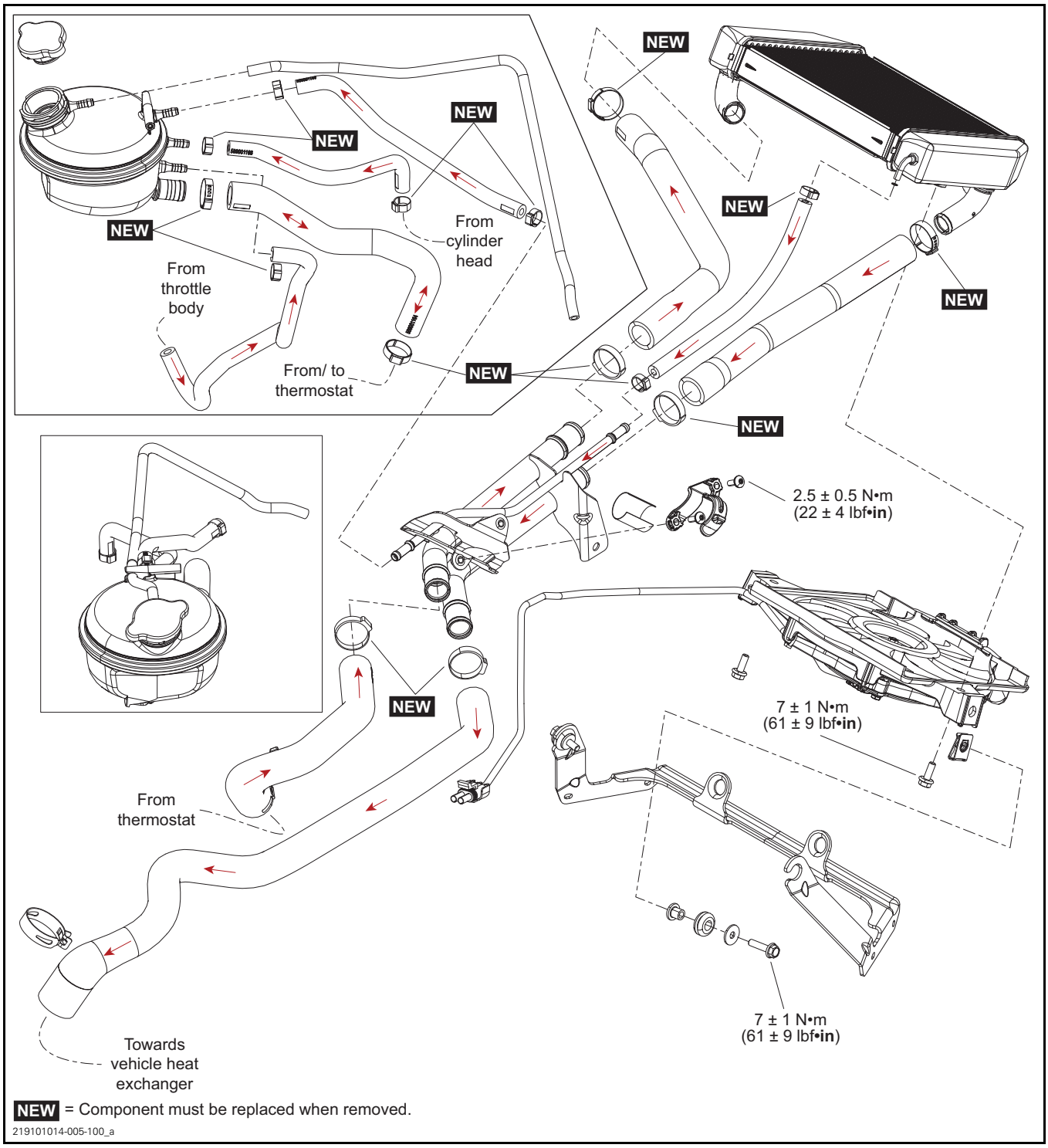
SERVICE TOOLS

Description	Part Number	Page
LARGE HOSE PINCHER	529 032 500	47
SMALL HOSE PINCHER	295 000 076	47
TEST CAP	529 035 991	46
VACUUM/PRESSURE PUMP	529 021 800	46

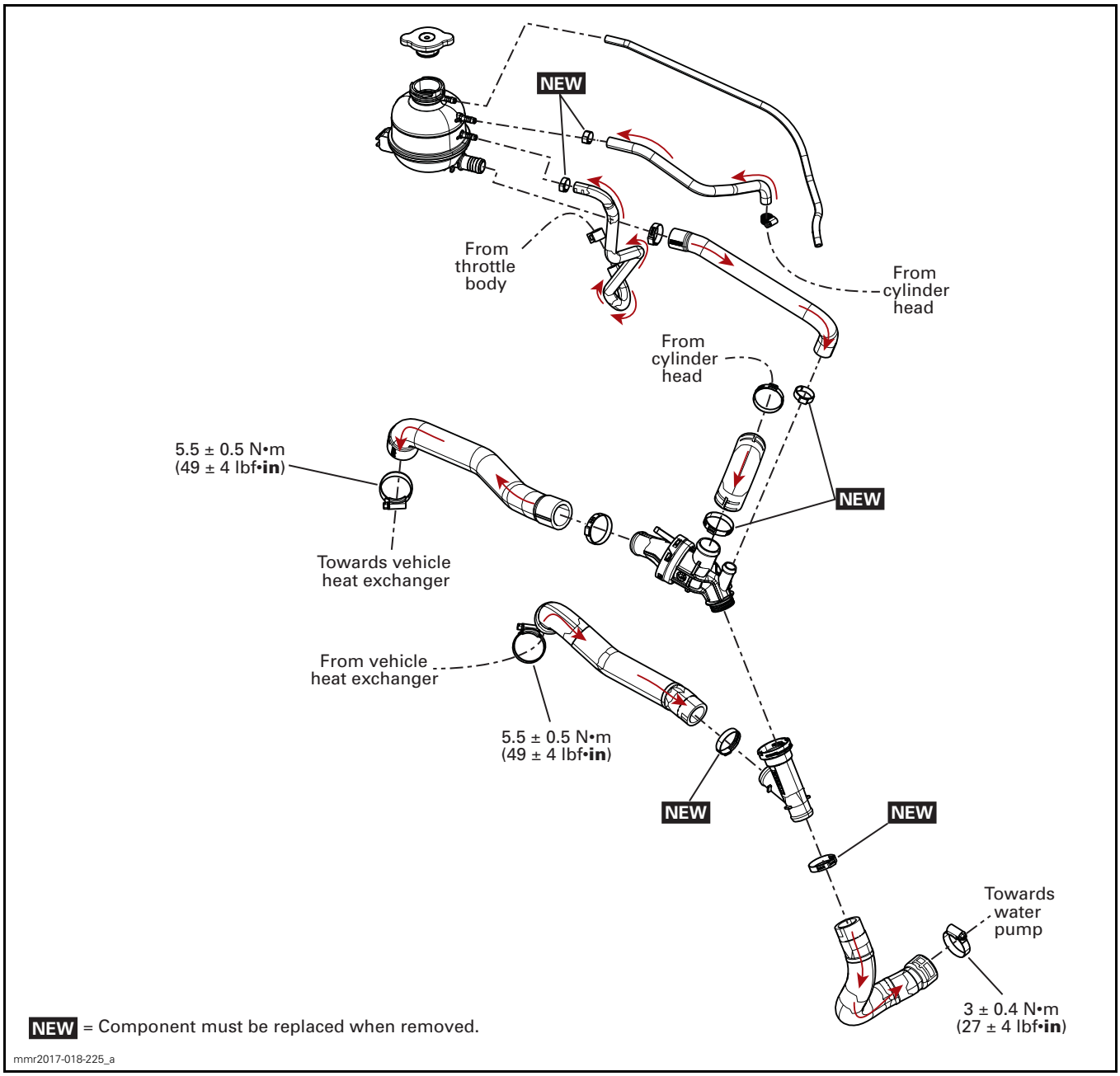
SERVICE PRODUCTS

Description	Part Number	Page
EXTENDED LIFE PRE-MIXED COOLANT (EUR)	779223	44
EXTENDED LIFE PRE-MIXED COOLANT	779150	44

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

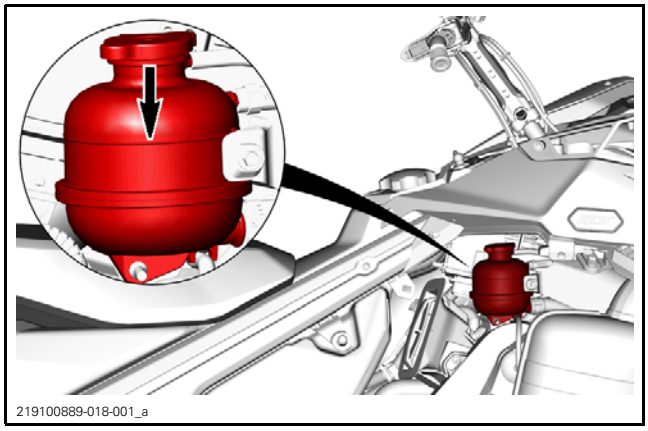
⚠ WARNING

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

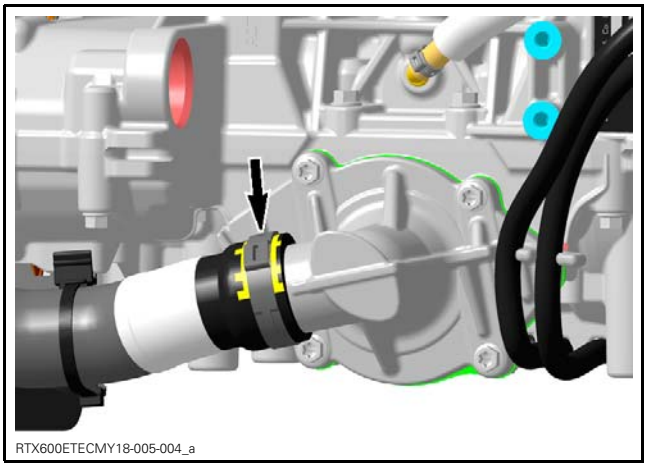
⚠ WARNING

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.

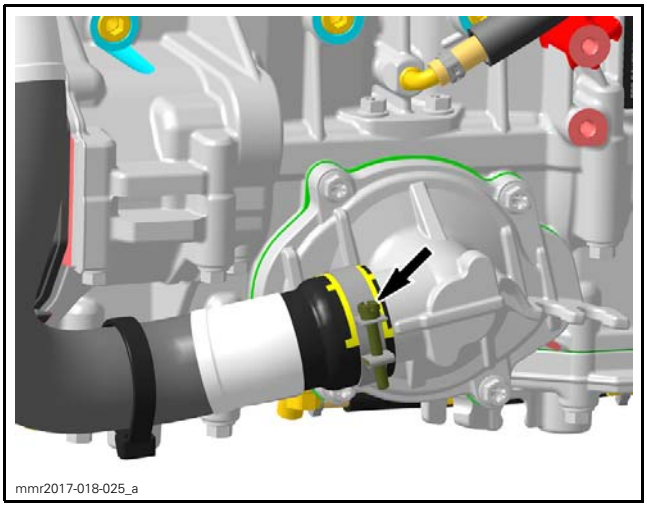


REMOVE CLAMP (DISCARD ORIGINAL INSTALLED 1–EAR CLAMP)

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.



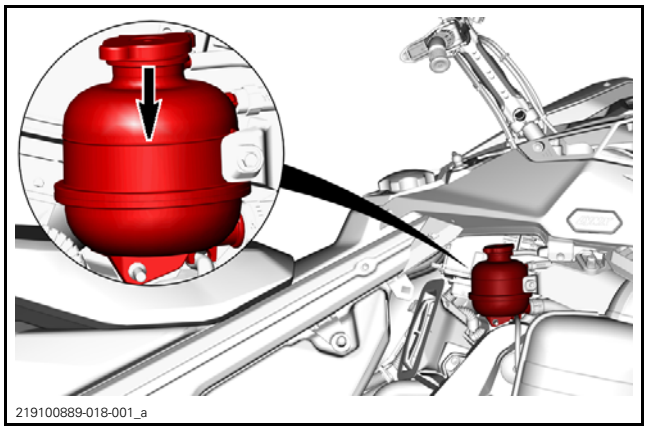
TIGHTENING TORQUE	
Coolant hose clamp	3 N•m ± 0.4 N•m (27 lbf•**in** ± 4 lbf•**in**)

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.

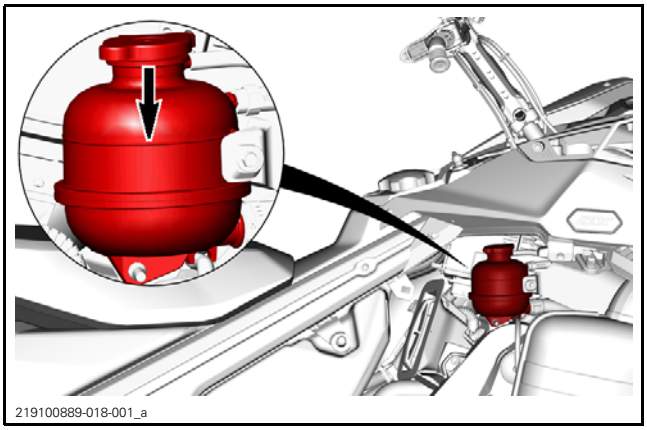
219100985-007-001

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.

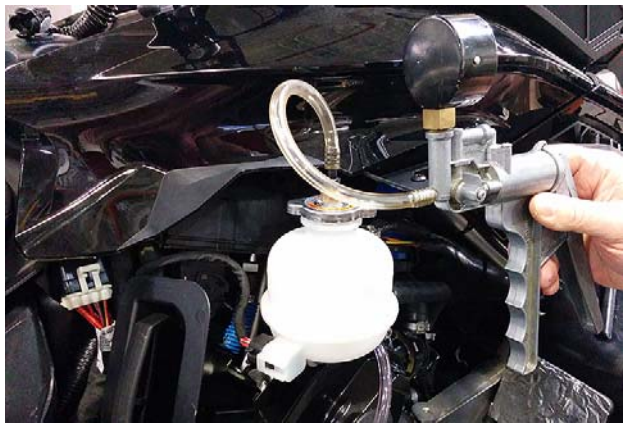
Remove the RH side panel.

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)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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)

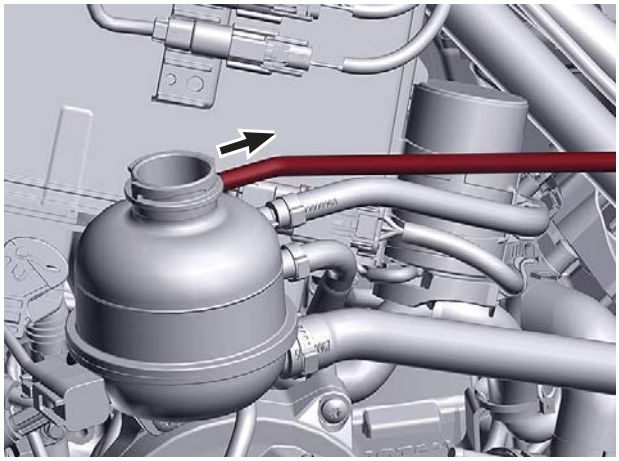
If the test failed, replace with a new cap with same specification.

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.



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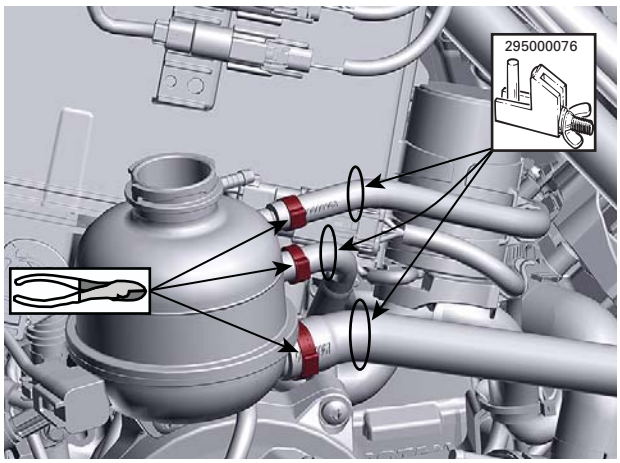
TYPICAL

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.



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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.

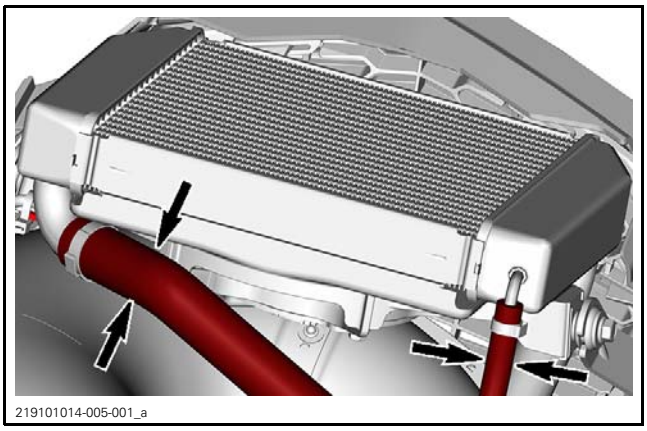
Properly refill cooling system. Refer to *REFILLING AND BLEEDING THE COOLING SYSTEM* in this subsection.

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)	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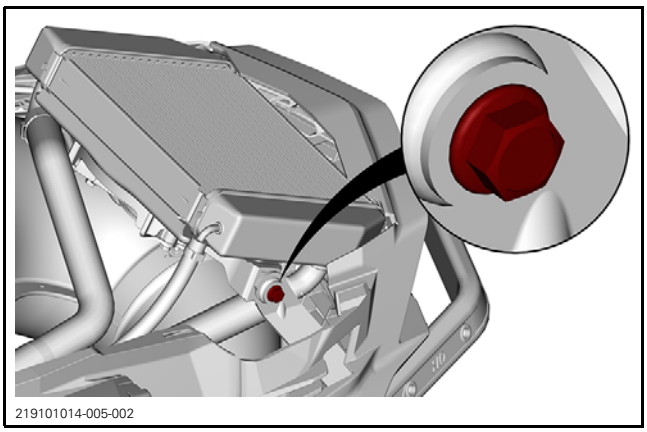
5. Remove radiator retaining screws.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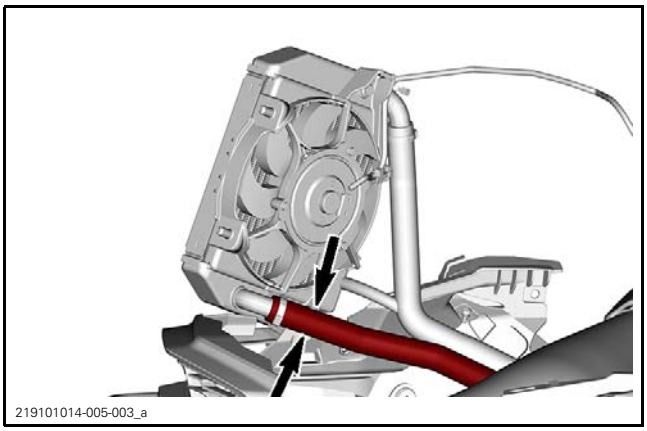
6. Pivot radiator on the RH side.
7. Install a hose pincher on the outlet hose.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8. Place a coolant pan under the radiator.
9. Remove and discard Oetiker clamps.
10. Disconnect coolant hoses from radiator.
11. When empty, remove radiator from vehicle.

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

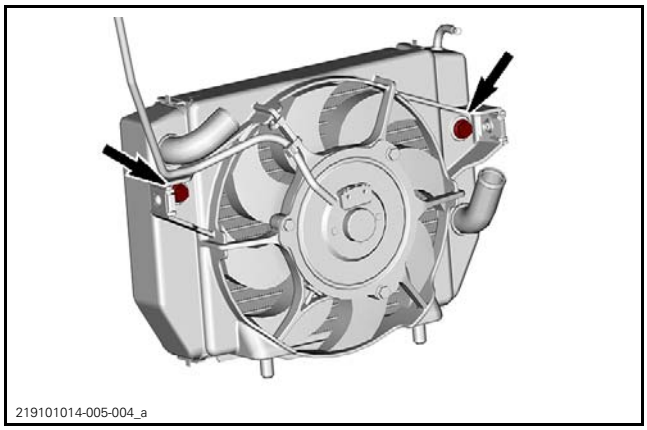
COOLING FAN MOTOR GROUND CIRCUIT CONTINUITY TEST		
FAN CONNECTOR PIN	BATTERY	SPECIFICATION
A	Negative (-) post	Close to 0 Ω

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

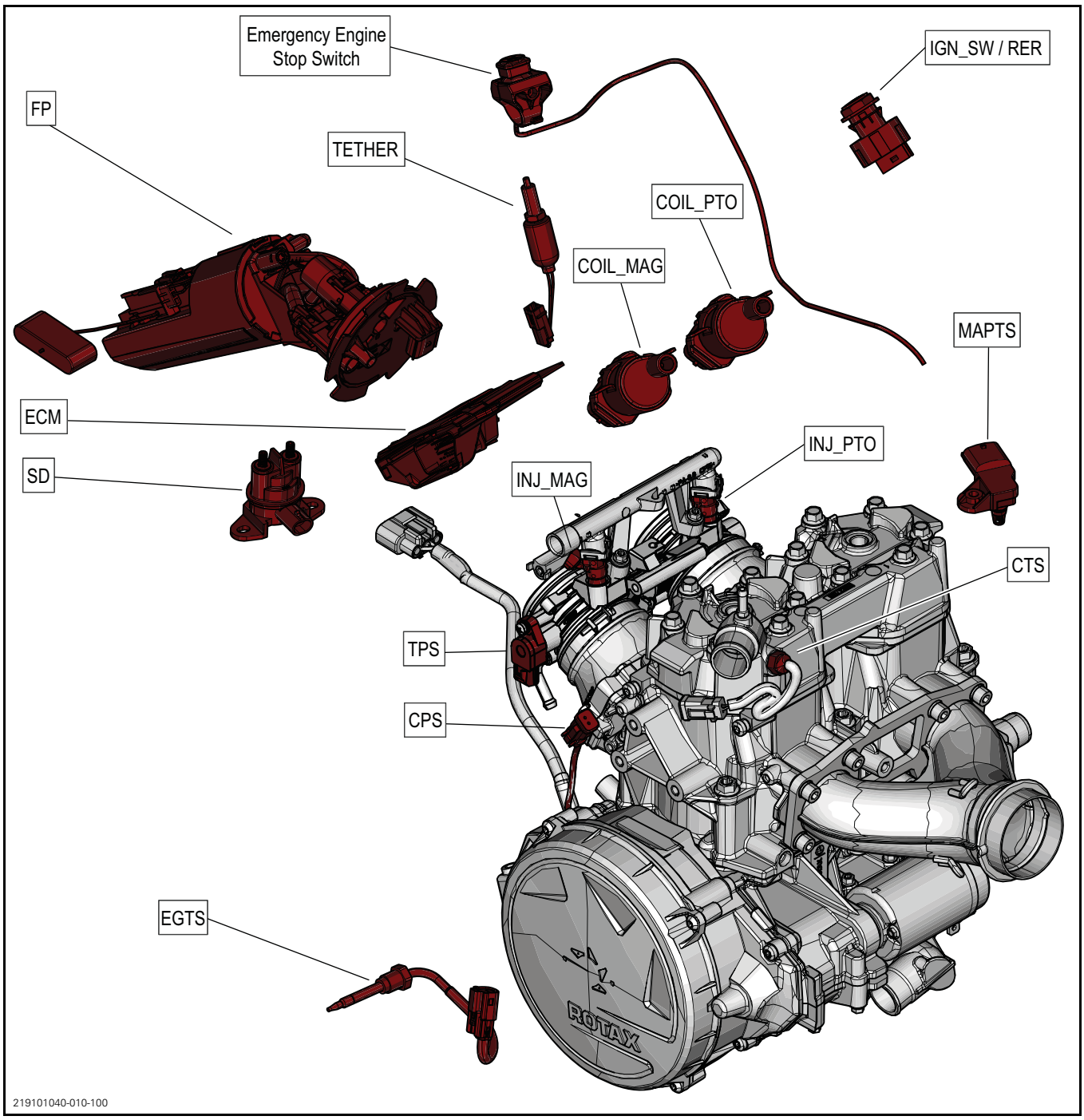
1. Remove the radiator.
2. Remove fan retaining screws.
3. Remove the radiator fan.



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:

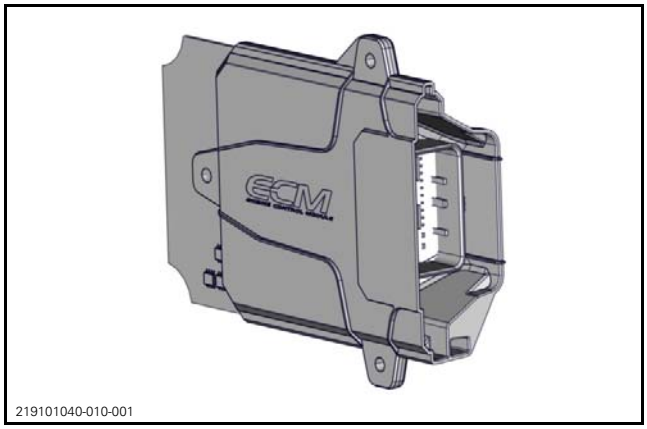
1. Fuel injection
2. Ignition system
3. Starting system
4. Rotax electronic reverse (RER)
5. Fuel pump
6. Electrical accessories.

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.

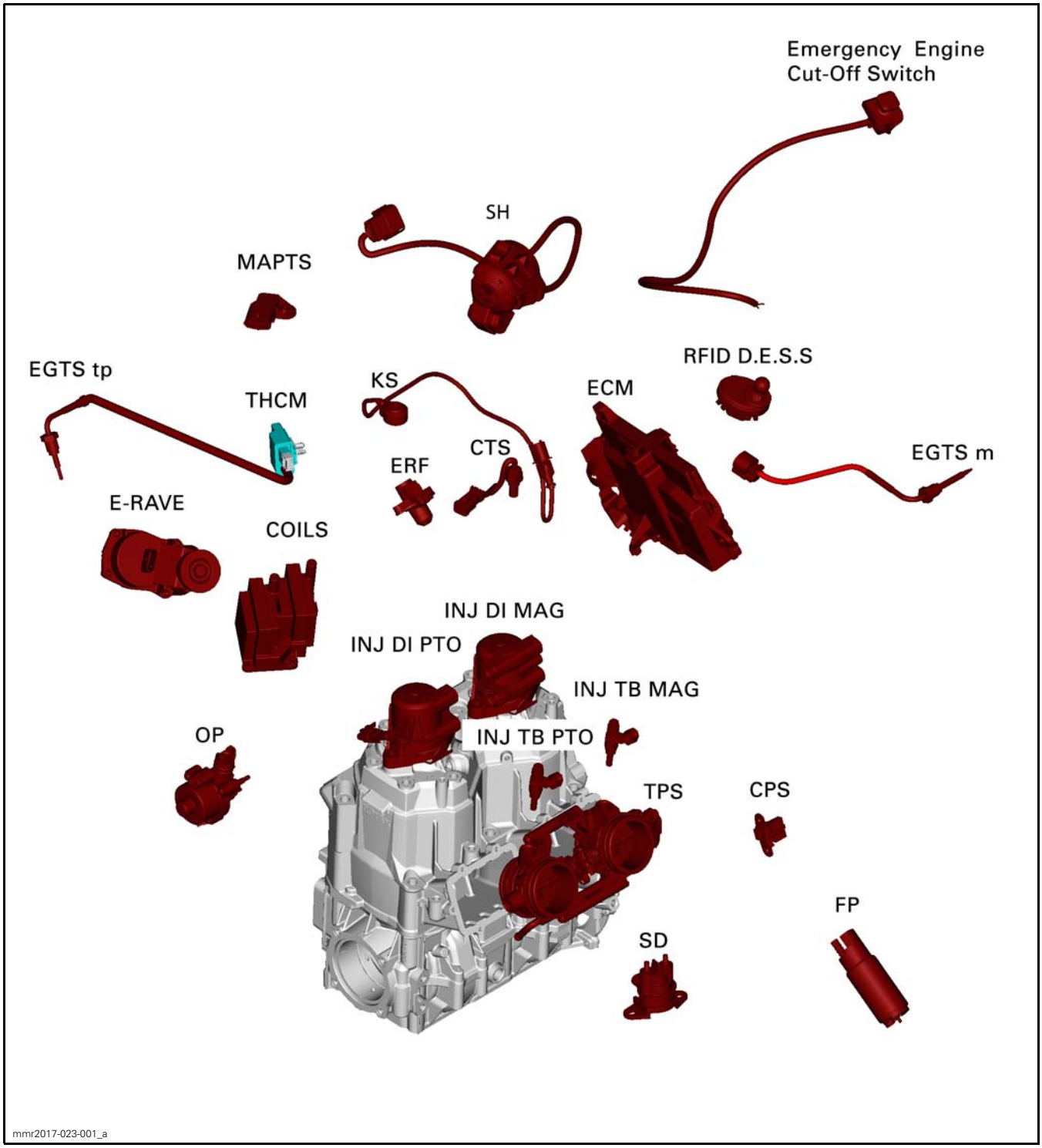
SYSTEM FEATURES

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



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:

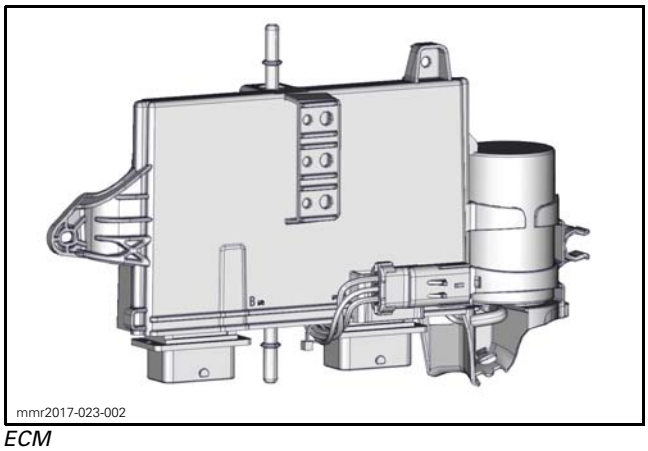
1. E-TEC Direct fuel injection
2. Throttle body injection
3. Ignition system
4. Starting system
5. Rotax electronic reverse (RER)
6. Digitally encoded security system (D.E.S.S.)
7. Lubrication system
8. 3D RAVE
9. Fuel pump
10. Electrical accessories.

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

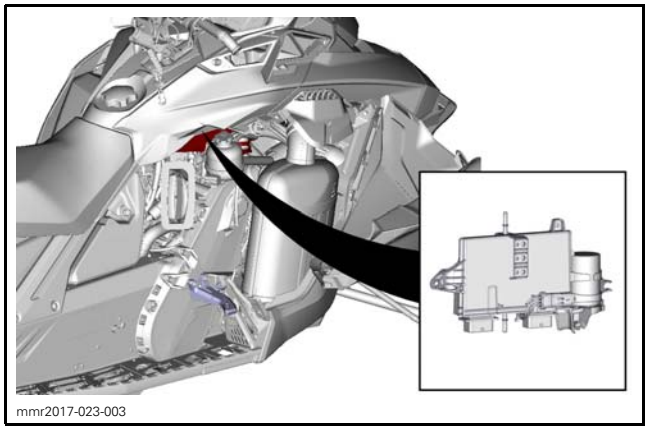
Electrical power distribution is also controlled by the ECM. Refer to *POWER DISTRIBUTION* subsection.

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

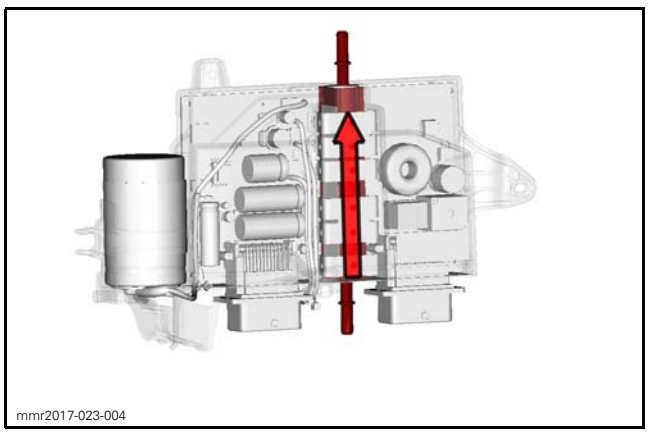


The ECM features a permanent memory that will store fault codes, customer information and other engine information when the engine is stopped.

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.

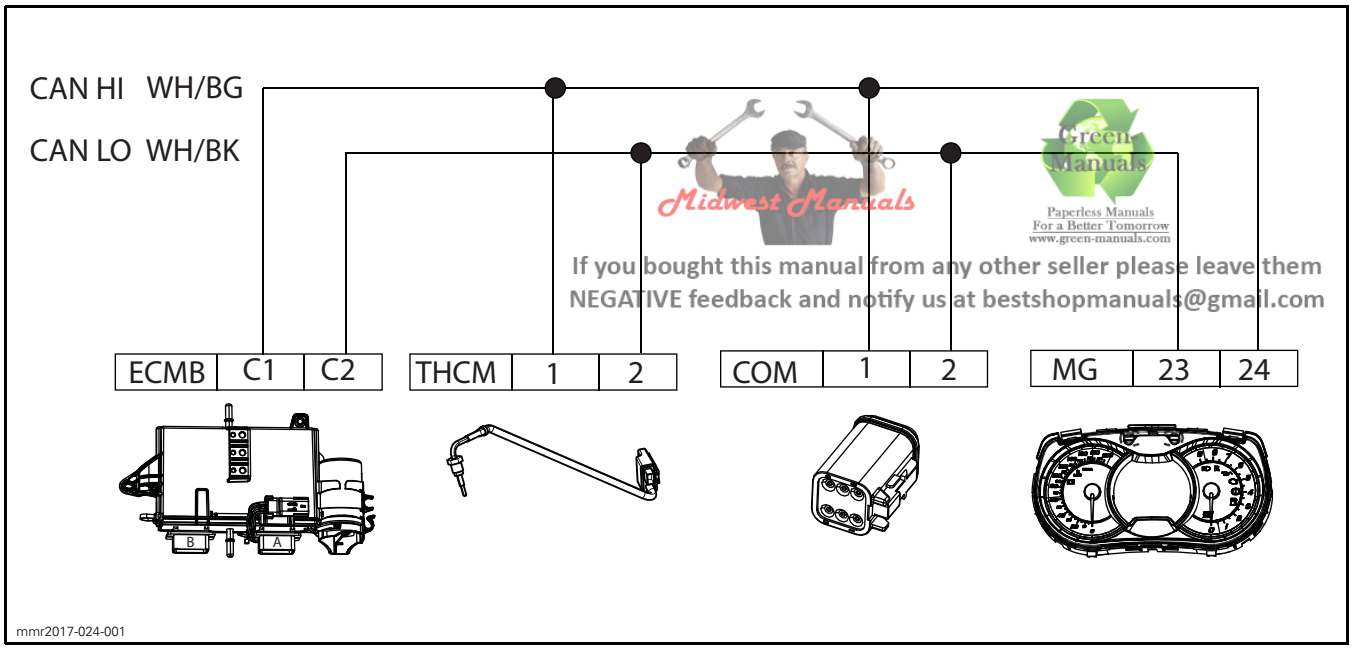
This function will limit engine speed to 5500 - 7500 RPM depending on detected oil viscosity.

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)



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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	59
DIAGNOSTIC CABLE	710 000 851	59
MPI-2 INTERFACE CARD	529 036 018	59
MPI-3 INTERFACE CARD	529 036 353	59
POWER INTERFACE	515 177 223	59

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.

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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

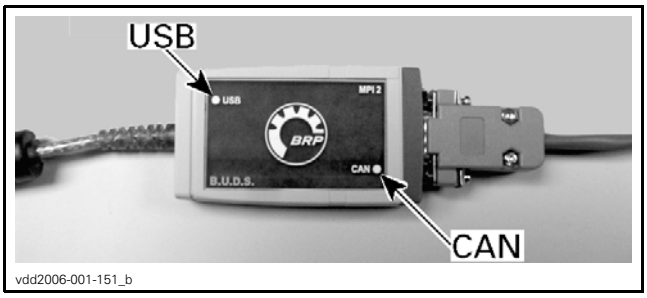
Refer to the BRP BUDS chart to ensure you are using the appropriate hardware and tools.

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.



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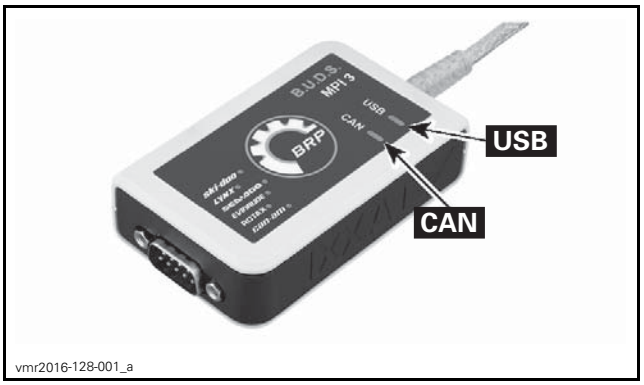
MPI-2 CARD



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MPI-3 CARD

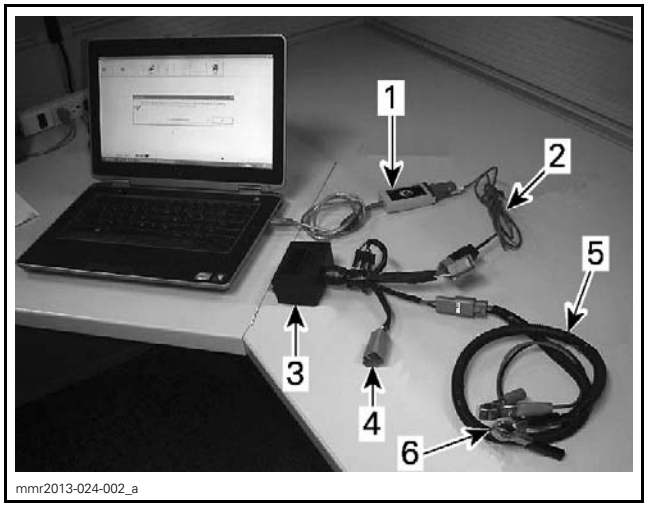
Prerequisite for USB Communication:

– 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.



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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*

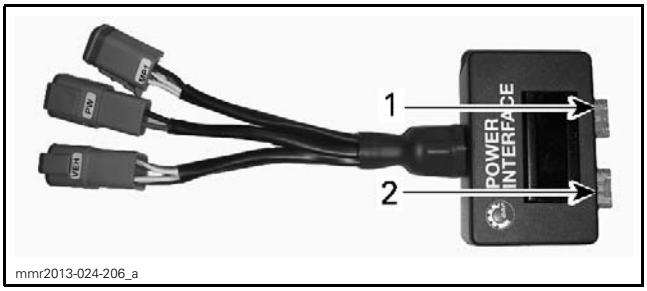
NOTE: The battery supply cable is only necessary on models without a battery.

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)

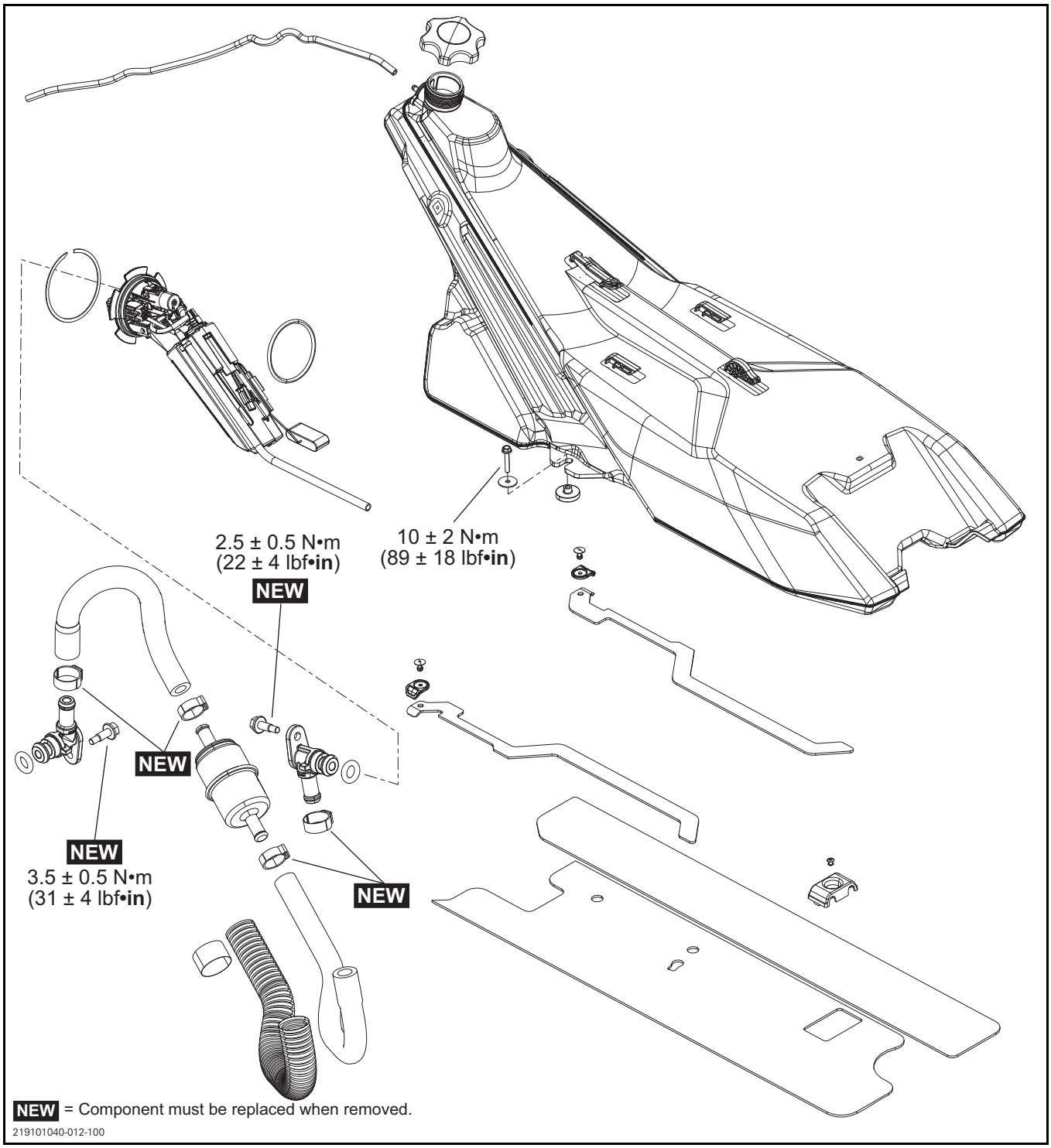
SERVICE TOOLS

Description	Part Number	Page
LEAK TEST KIT	529 033 100	74
OETIKER PLIER	295 000 070	73, 77
PRESSURE GAUGE	529 036 395	75
SMALL HOSE PINCHER	295 000 076	74
T FITTING FUEL PRESSURE	529 036 509	75
VACUUM/PRESSURE PUMP	529 021 800	74

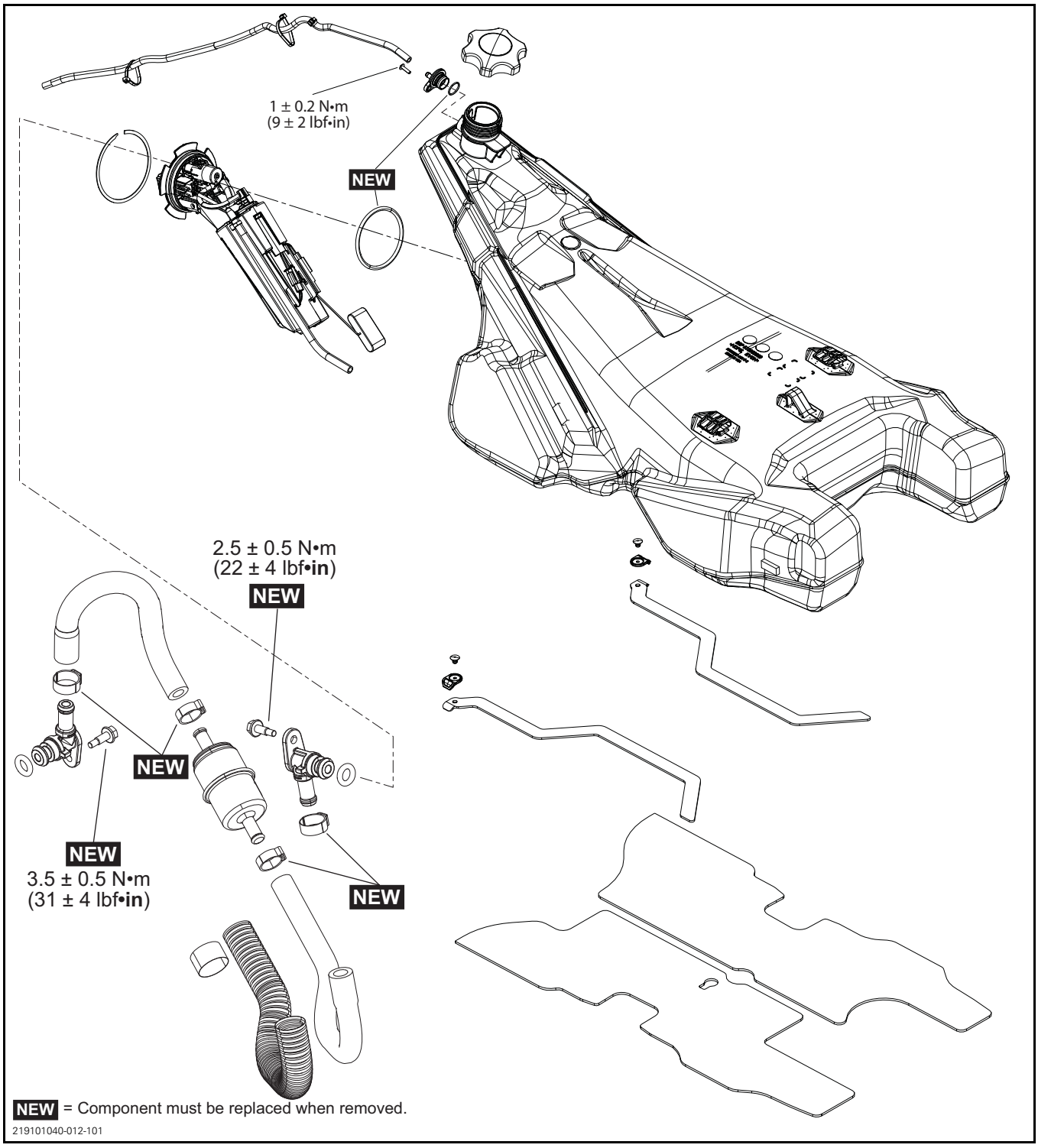
SERVICE PRODUCTS

Description	Part Number	Page
CLUTCH AND PULLEY FLANGE CLEANER PRO S1	779244	73

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

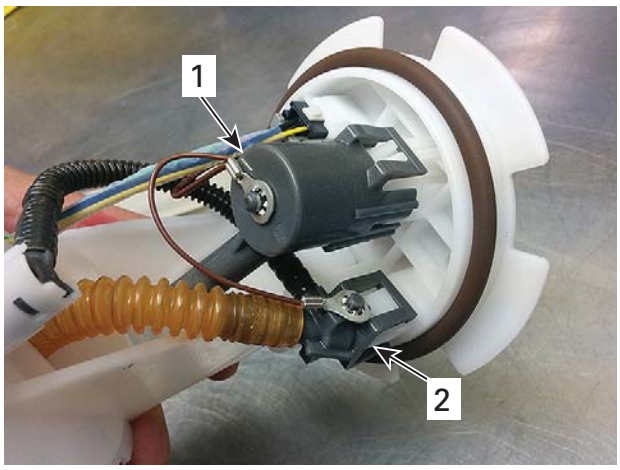
Do not allow fuel to spill on hot engine parts and/or on electrical connectors. Wipe off any fuel spillage in the engine compartment. Fuel is flammable and explosive under certain conditions.

⚠ 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.

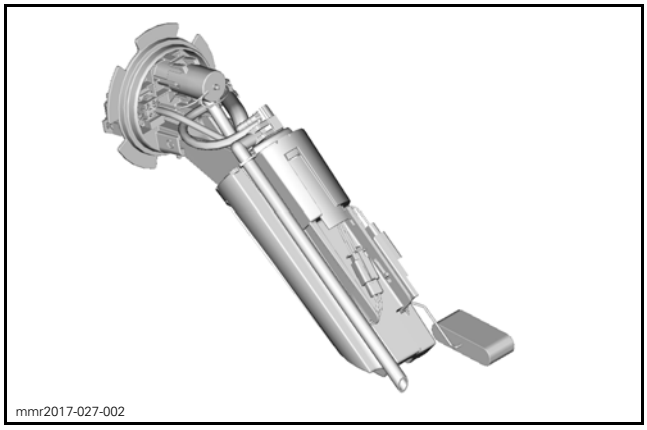


tmr2017-027-306_a

1. *Fuel pressure regulator*
2. *Fuel hose connector*

SYSTEM DESCRIPTION

Electric Fuel Pump


mmr2017-027-002

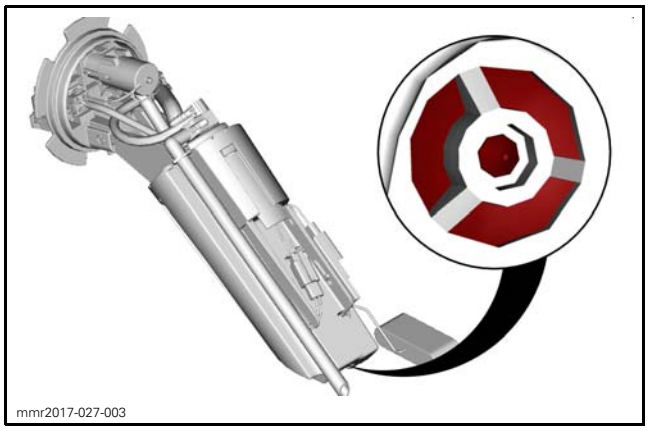
An electric fuel pump is mounted in the front center portion of the fuel tank.

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.

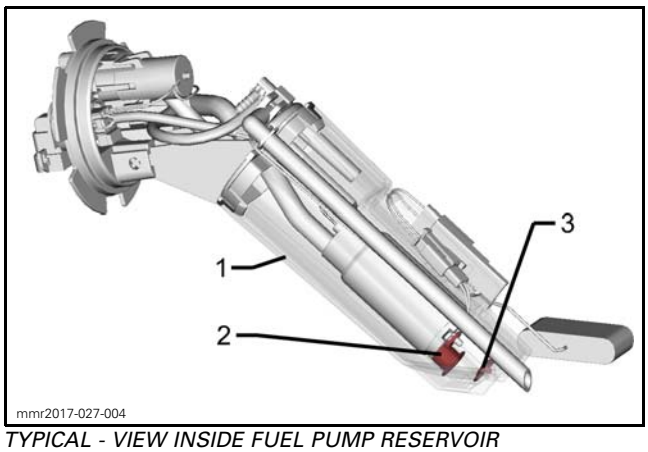
To ensure a constant delivery of fuel to the engine for all riding conditions when the fuel level is low, a rear pickup and a fuel pump reservoir is used.

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.



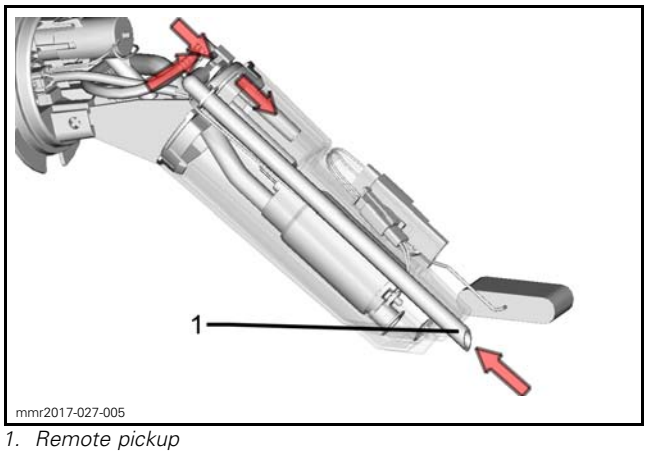
When the fuel pump runs, it draws the fuel from the fuel pump reservoir and feeds it to the injection system. This causes fuel in the tank to enter the fuel pump reservoir, by gravity, through its bottom inlet check valve.

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.

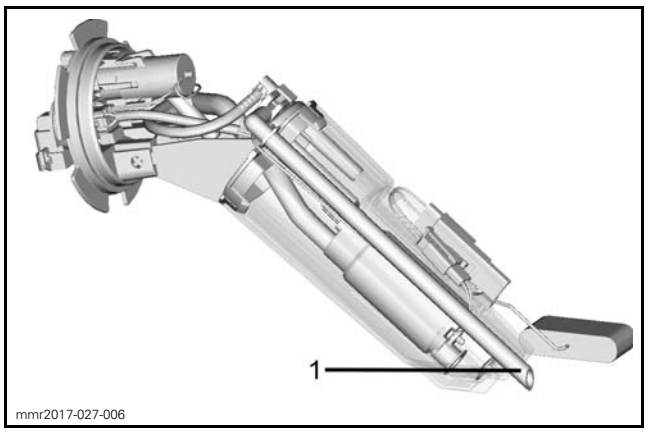
When riding downhill with a low amount of fuel in the tank, the fuel moves towards the front of fuel tank. The fuel enters the fuel pump reservoir through the check valve only as there is no fuel at the remote pickup.

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

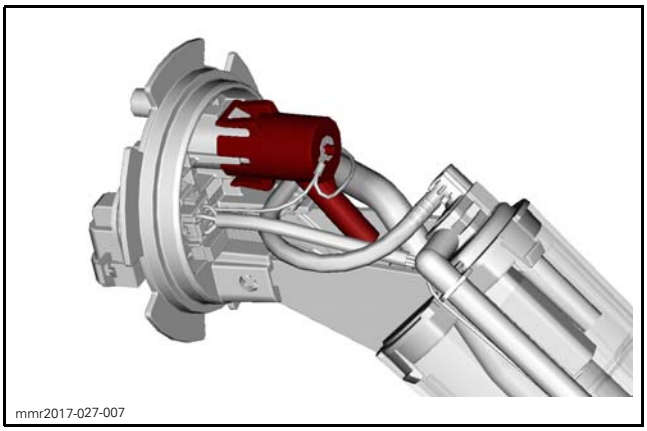
Fuel enters the fuel pump reservoir from either a check valve at the bottom of the fuel pump reservoir, or from a remote pickup in the rear portion of the fuel tank.



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.

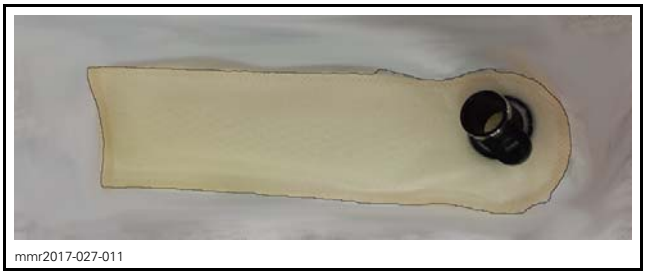
As fuel is consumed by the engine, a negative pressure would occur in the fuel tank. This could eventually prevent the fuel pump from drawing enough fuel. The **negative pressure relieve function** of the valve allows the higher outside air pressure in

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

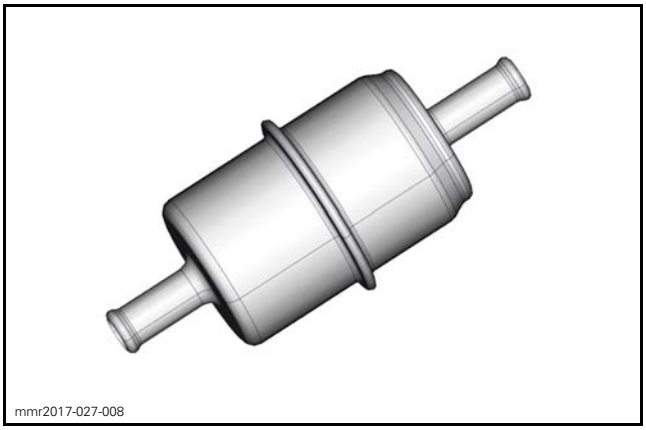
A fuel pump pre-filter is used at the electric fuel pump inlet. It is a replaceable nylon mesh filter located within the fuel pump module housing (fuel pump reservoir).



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

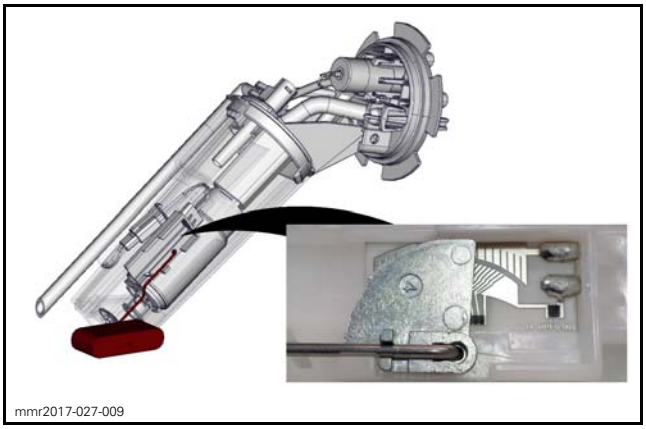


mmr2017-027-008

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

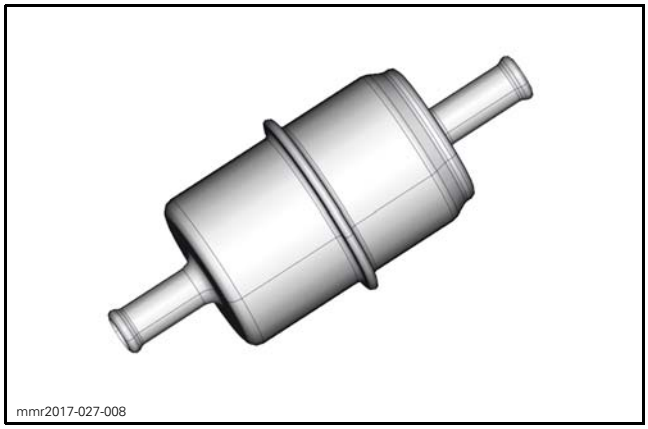
A float type fuel level sensor varies its resistance with fuel level thus providing a signal to the multifunction gauge for fuel level indication.

MAINTENANCE

INSPECTING THE FUEL LINES AND CONNECTIONS

Visually inspect fuel lines and connections for cracks or leaks.

REPLACING THE IN-LINE FUEL FILTER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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.

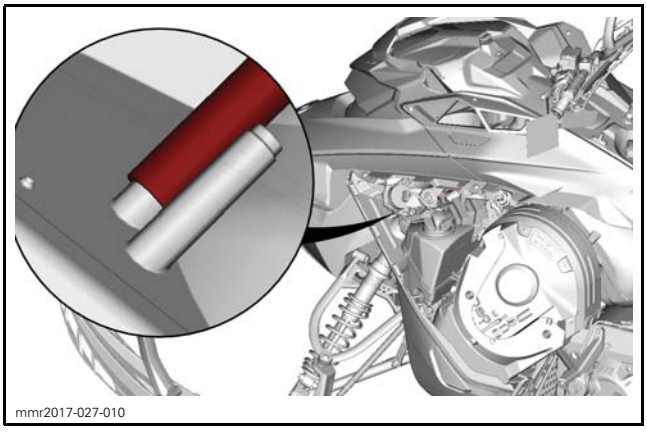
⚠ WARNING

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.



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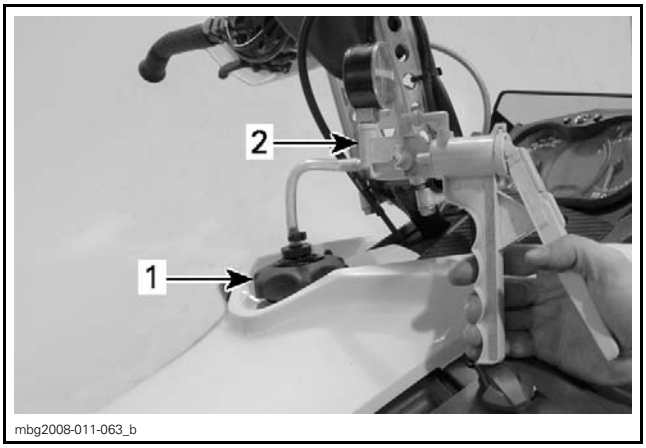
4. Install the appropriate test cap from the leak test kit on fuel tank inlet.
5. Install the vacuum/pressure pump on pressure test fuel cap.



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.

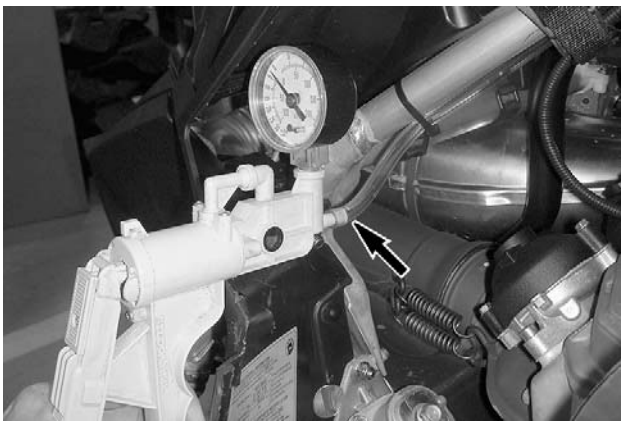
PRESSURE	TIME WITHOUT PRESSURE DROP
21 kPa (3 PSI)	3 minutes

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.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TYPICAL - VACUUM/PRESSURE PUMP ON VENT TUBE

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

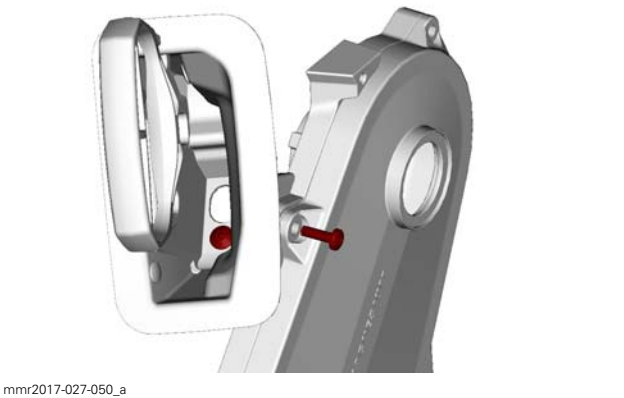
8. Remove vacuum/pressure pump.
9. Install vent tube on its fitting.
10. Install normal fuel tank cap.

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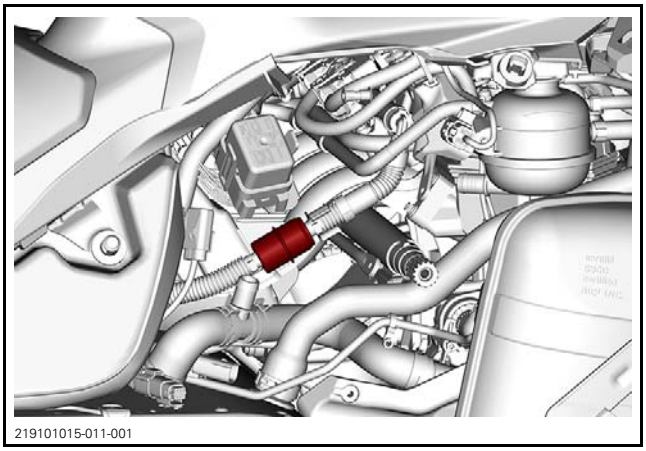
The pressure test provides an indication of the available fuel pressure at the fuel pump outlet. It validates the pressure regulator and the fuel pump.

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.

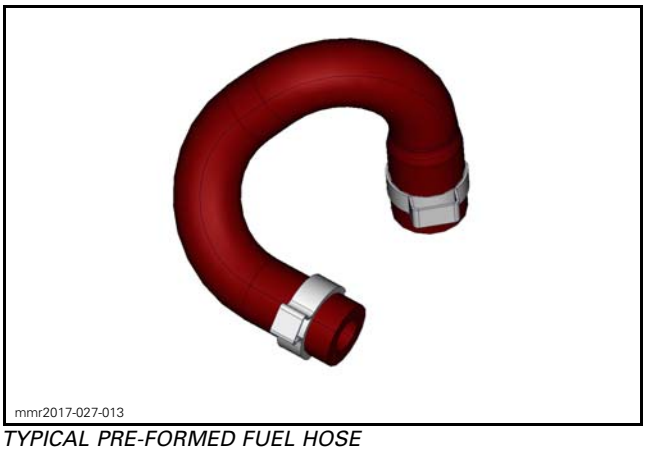
Fuel pressure should remain stable.

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.

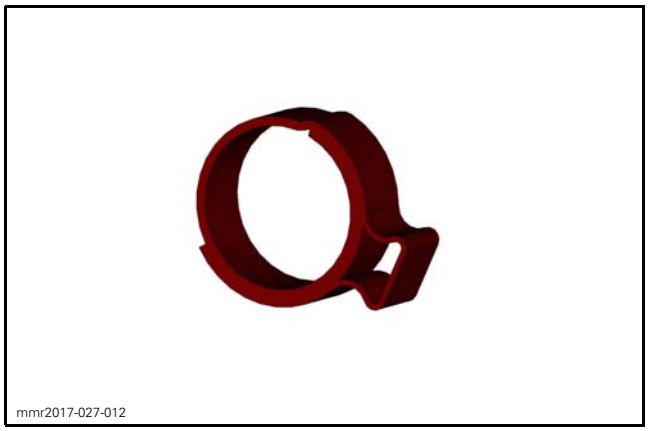
⚠ WARNING

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

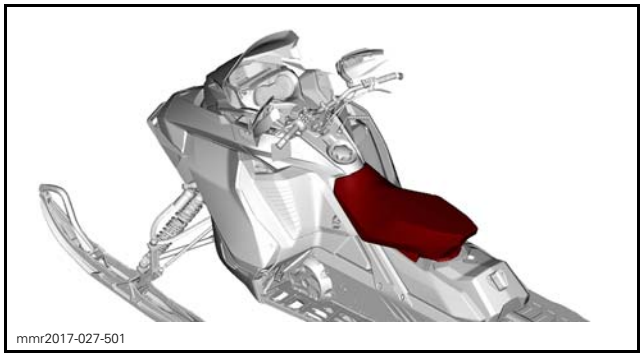
⚠ WARNING

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

FUEL TANK

Removing the Fuel Tank

1. Remove seat.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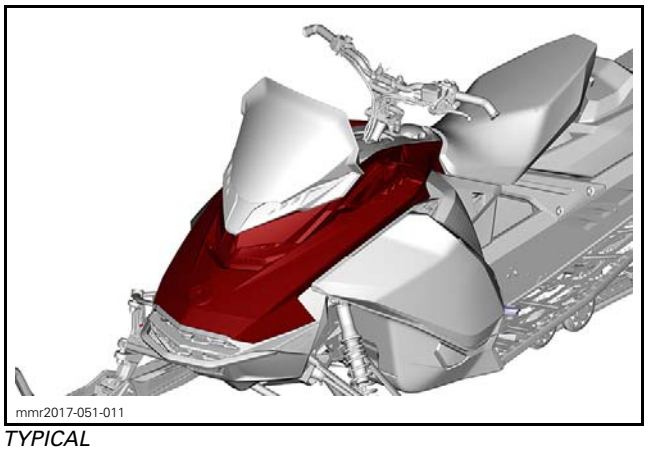
2. Remove upper body module. Refer to *BODY* subsection.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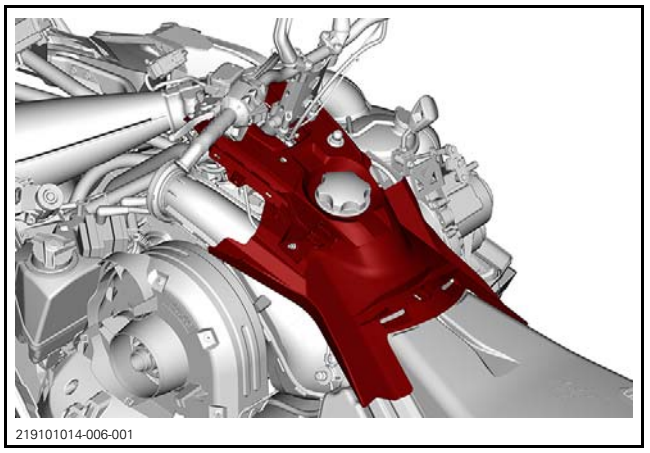
TYPICAL

3. Remove rear console. Refer to *BODY* subsection.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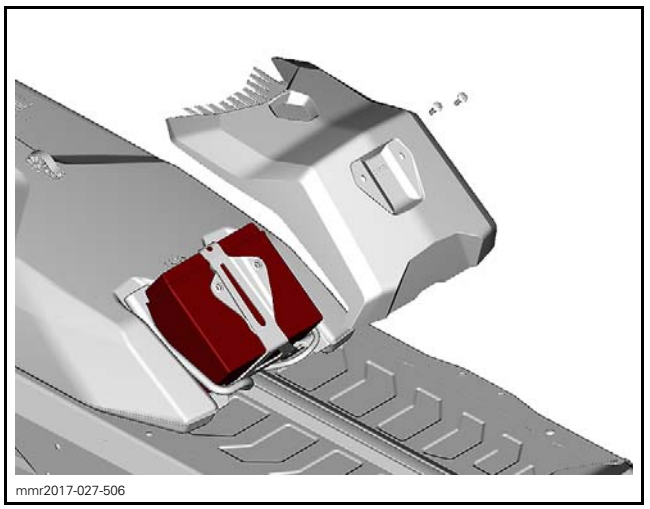
4. Remove the battery.

16 in Track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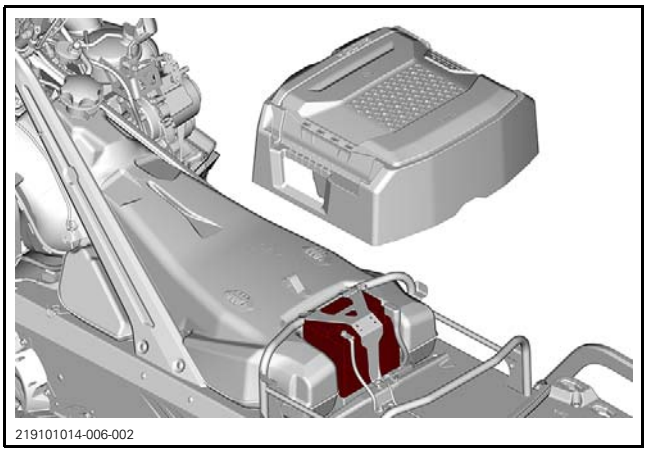
20 and 24 in Track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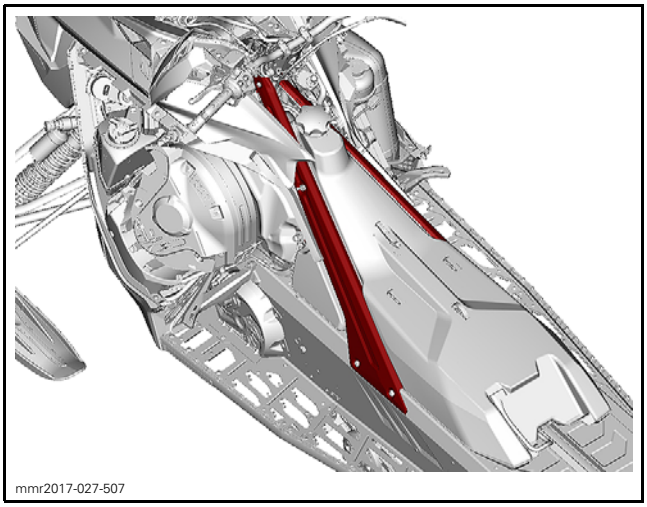
All Models

5. Remove rear frame members. Refer to *FRAME* subsection.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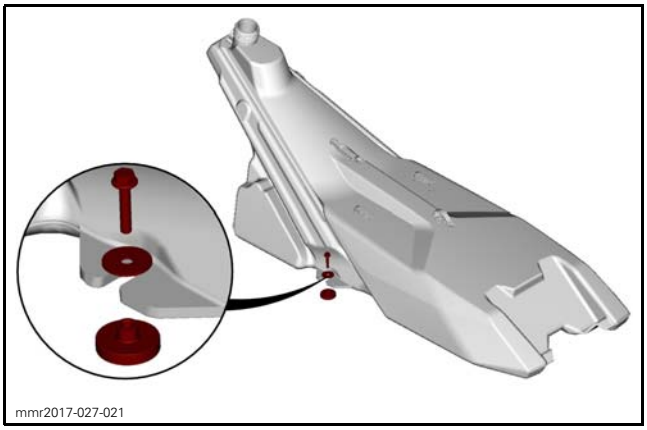
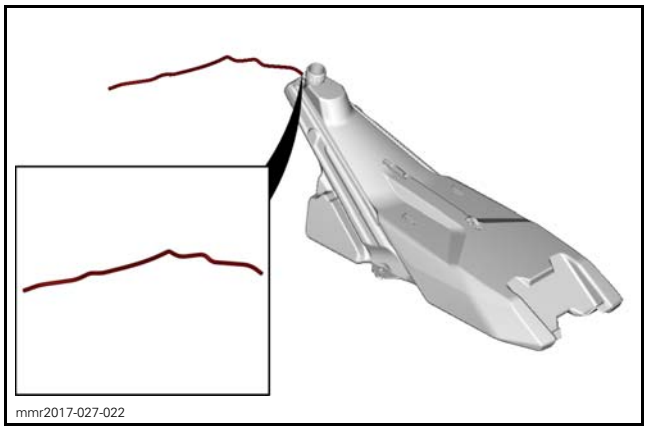
16 in Track

6. Remove and discard fuel tank retaining screws.

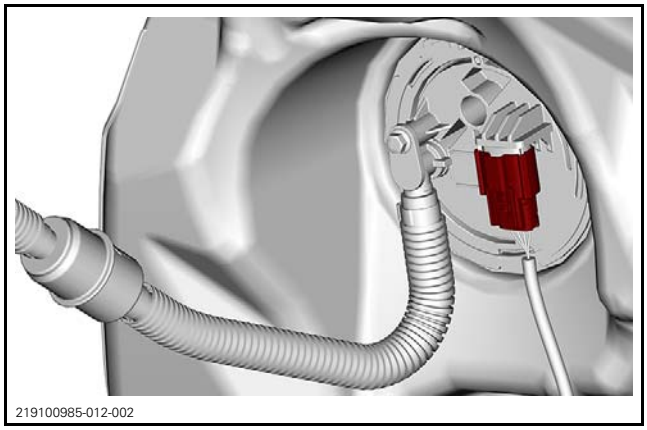

mmr2017-027-021

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.

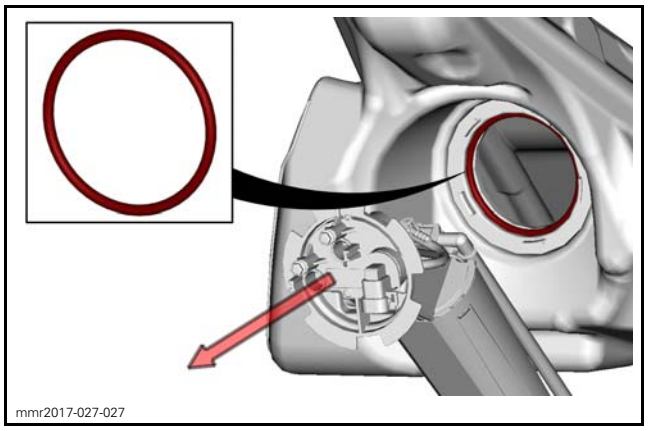
If the second fuel pump functions when connected to the vehicle harness, then replace the fuel pump installed in the vehicle.

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

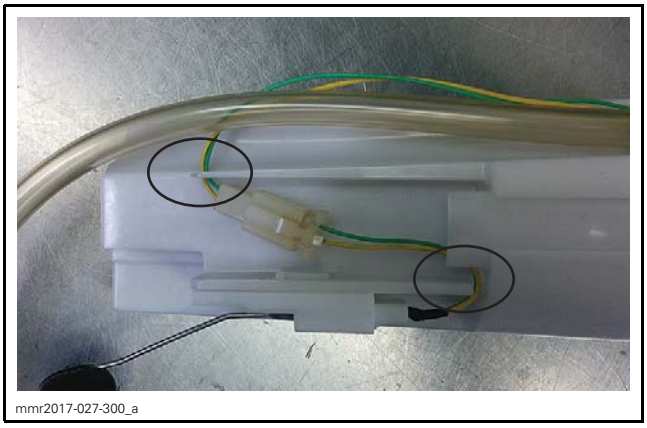
After working on the fuel system, carry out a fuel system pressurization test to check for leaks. Failure to carry out a fuel system leak test could result in severe injury or a life threatening situation should a leak occur.

FUEL PUMP INLET FILTER

Replacing the Fuel Pump Inlet Filter

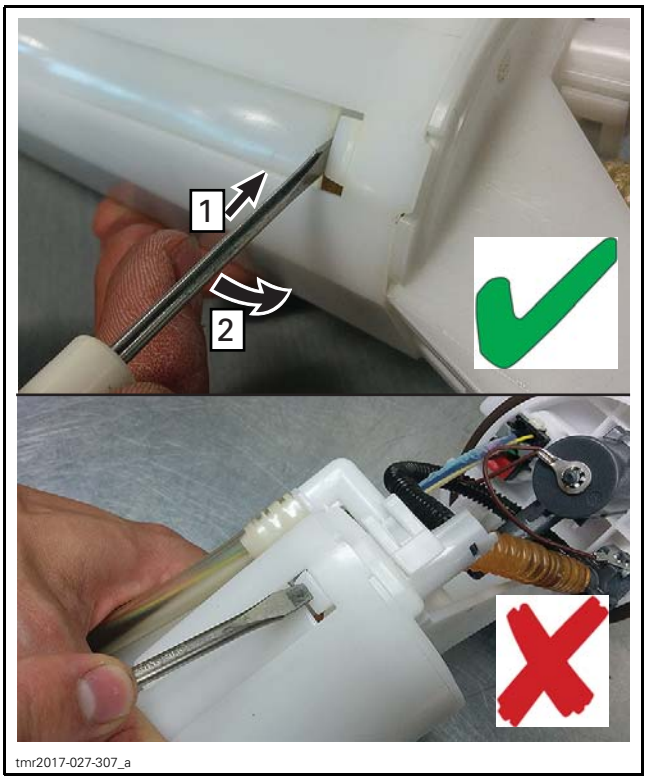
1. Remove fuel pump assembly from fuel tank. Refer to procedure in this subsection.
2. Free the wires of the fuel level sensor of the fuel pump reservoir.

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

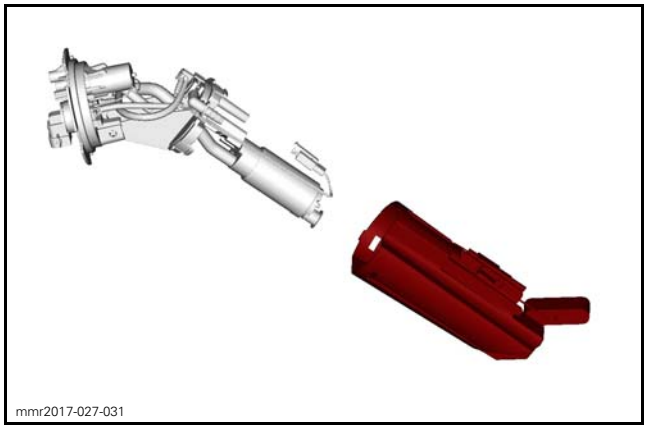
3. Unlock fuel pump reservoir by carefully inserting a small screwdriver between the tab and the fuel pump reservoir.

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

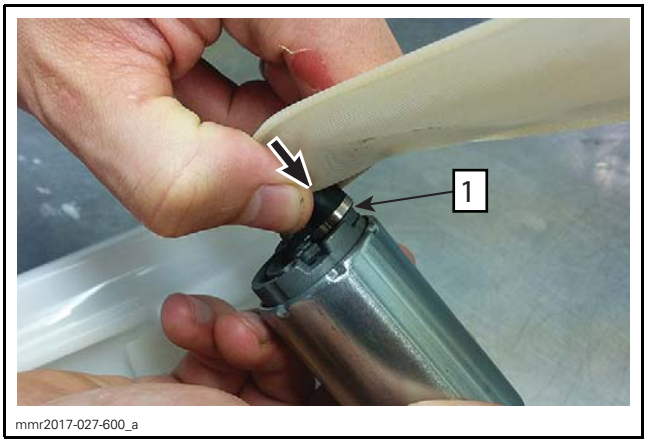
NOTICE To avoid damaging wires, Pull the reservoir carefully and do not let reservoir hang by wires.

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.

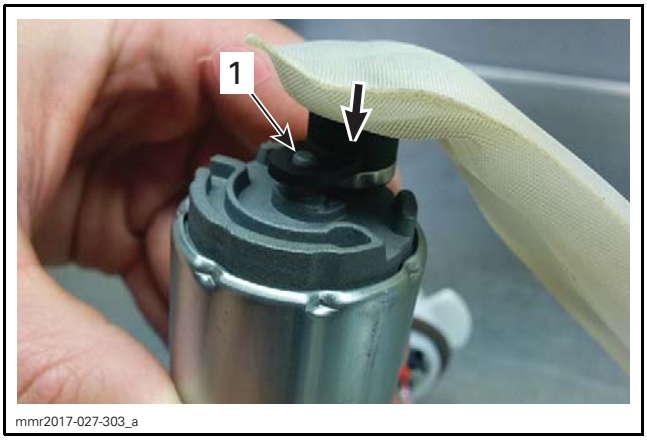
mmr2017-027-302_a

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.



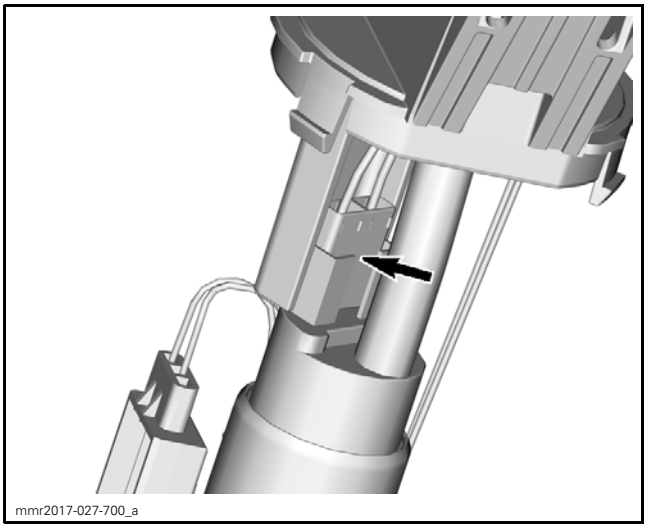
1. No gap here

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



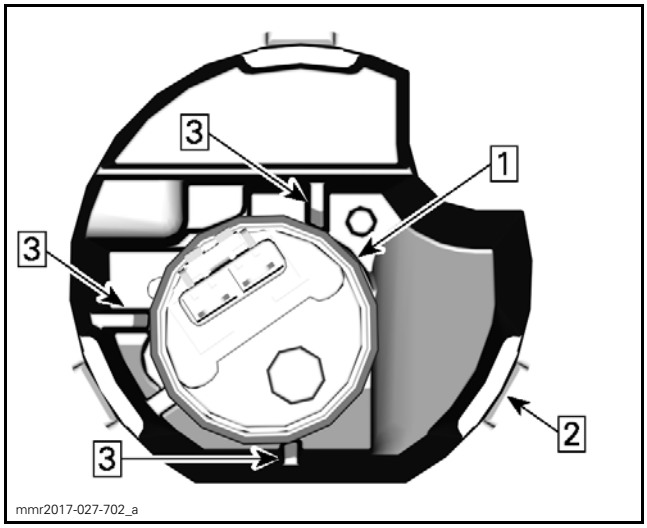
1. Pin

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

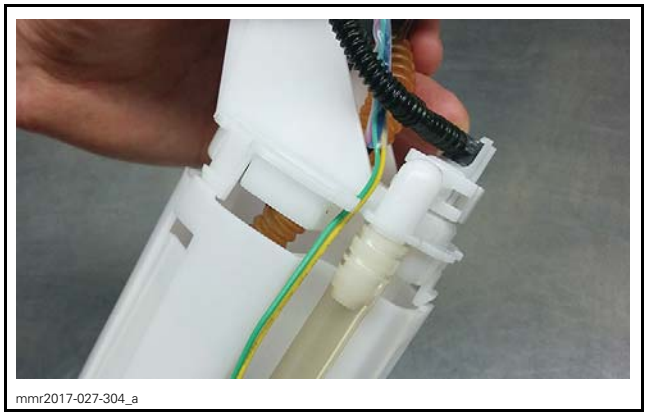


ELECTRICAL CONNECTOR MUST BE IN THIS POSITION

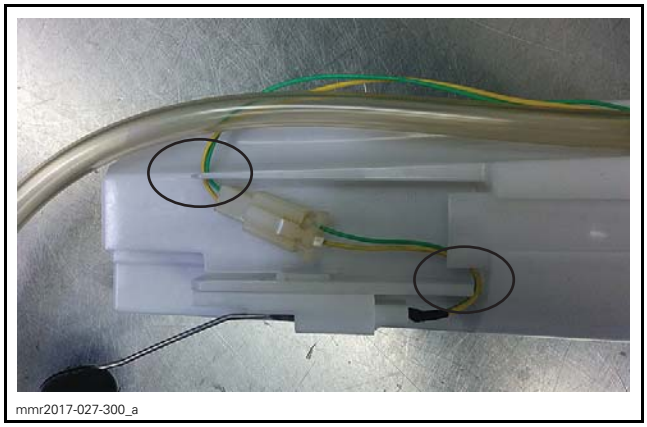
NOTE: Make sure the pump motor is positioned between the molded ribs in the reservoir.



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.

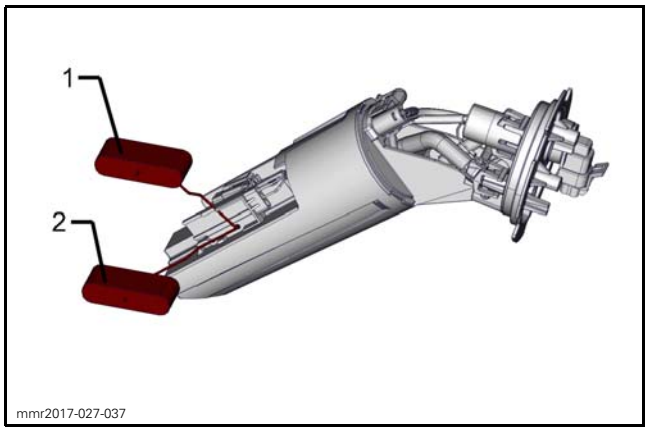
FUEL LEVEL SENSOR

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



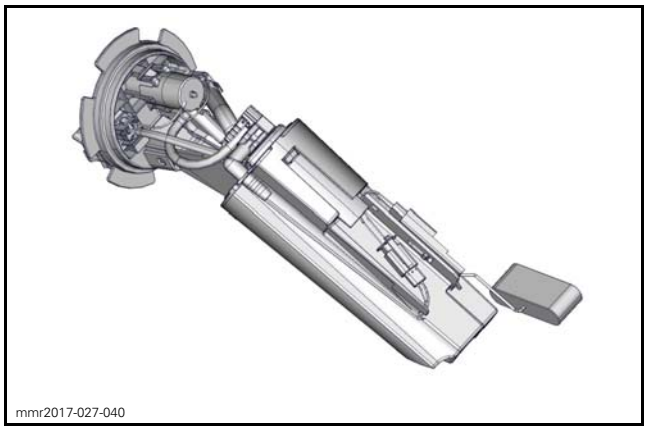
TYPICAL FUEL PUMP FLOAT
1. Full position
2. Empty position

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.

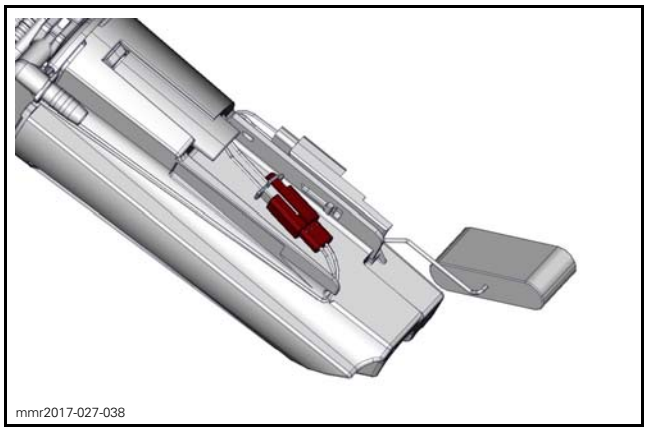
If fuel level sensor fails bench test, replace the fuel level sensor.

Replacing the Fuel Level Sensor

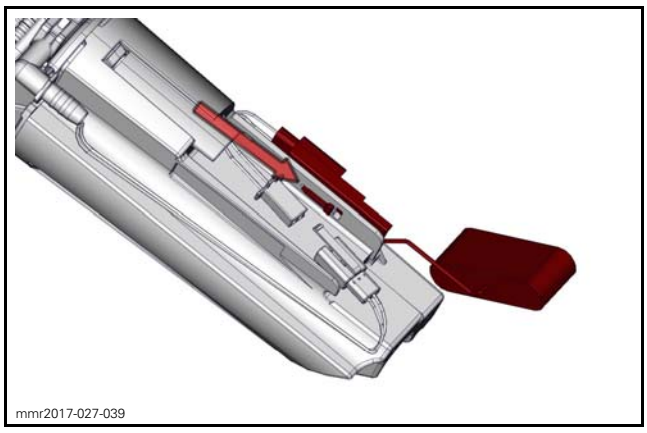
1. Remove the fuel pump.



2. Disconnect fuel level sensor connector.



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



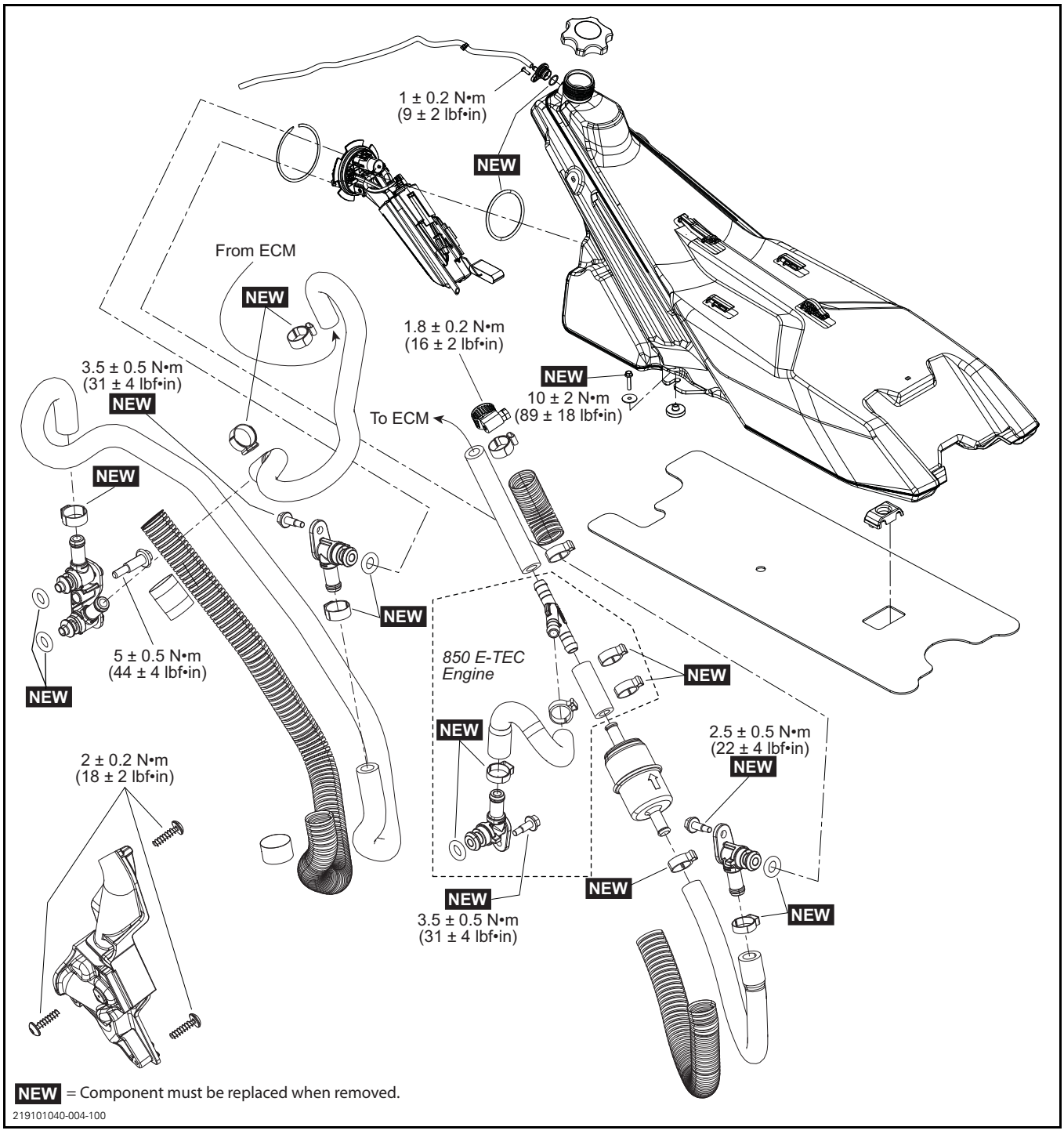
4. Remove fuel level sensor.
5. Replace the fuel level sensor with a new one and reverse steps.

FUEL TANK AND FUEL PUMP (E-TEC)

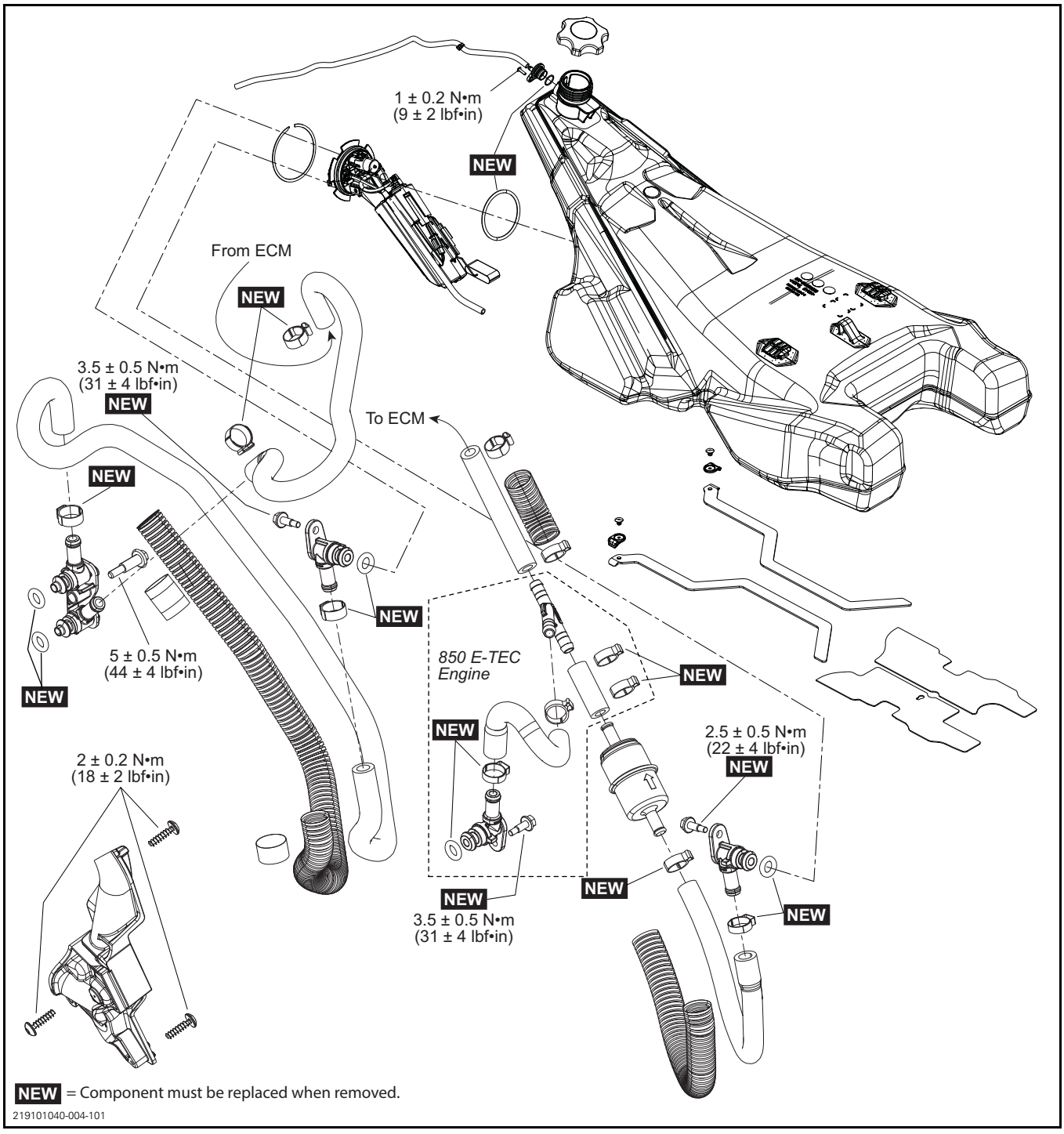
SERVICE TOOLS

Description	Part Number	Page
LEAK TEST KIT	529 033 100	89
OETIKER PLIER	295 000 070	92
PRESSURE GAUGE	529 036 395	90
SMALL HOSE PINCHER	295 000 076	89
T FITTING FUEL PRESSURE	529 036 509	90
VACUUM/PRESSURE PUMP	529 021 800	89

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



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

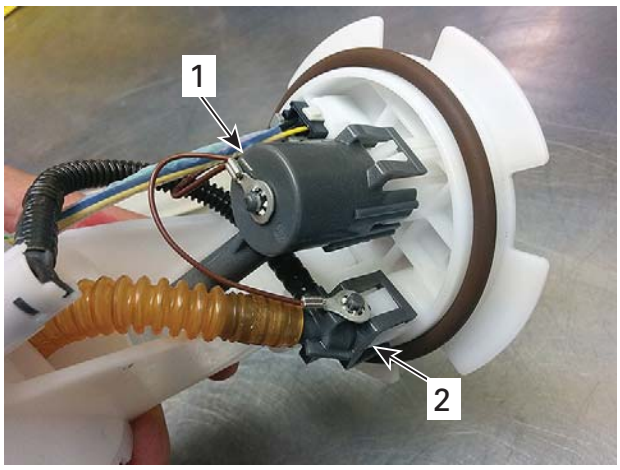
Do not allow fuel to spill on hot engine parts and/or on electrical connectors. Wipe off any fuel spillage in the engine compartment. Fuel is flammable and explosive under certain conditions.

⚠ 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.

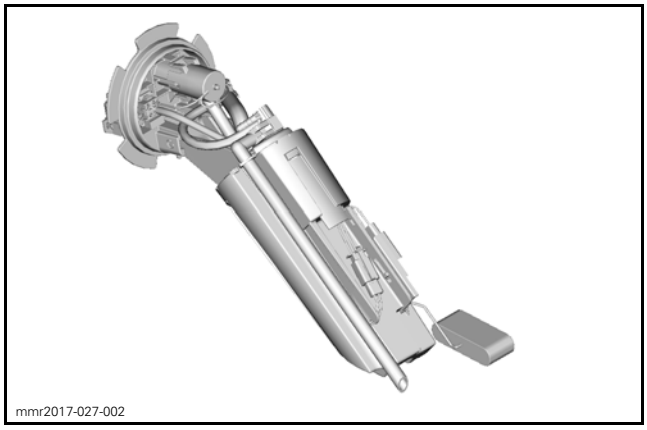


tmr2017-027-306_a

1. *Fuel pressure regulator*
2. *Fuel hose connector*

SYSTEM DESCRIPTION

Electric Fuel Pump


mmr2017-027-002

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

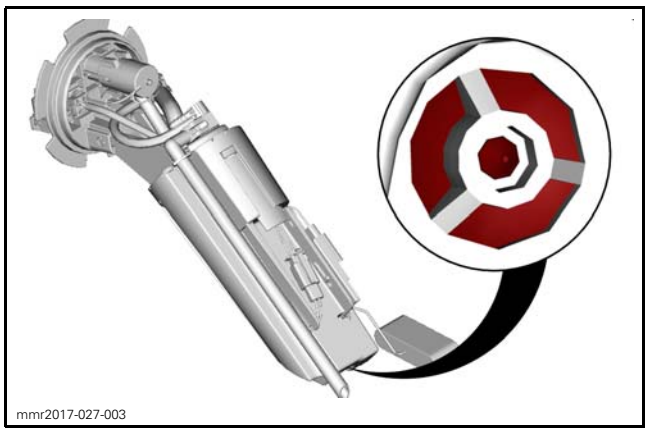
A 12 Vdc high pressure fuel pump with an integrated jet pump is used.

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.

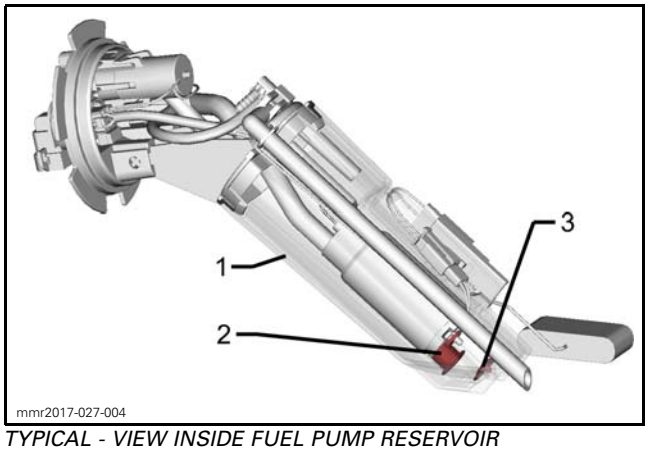
To ensure a constant delivery of fuel to the engine for all riding conditions when the fuel level is low, a rear pickup and a fuel pump reservoir is used.

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.



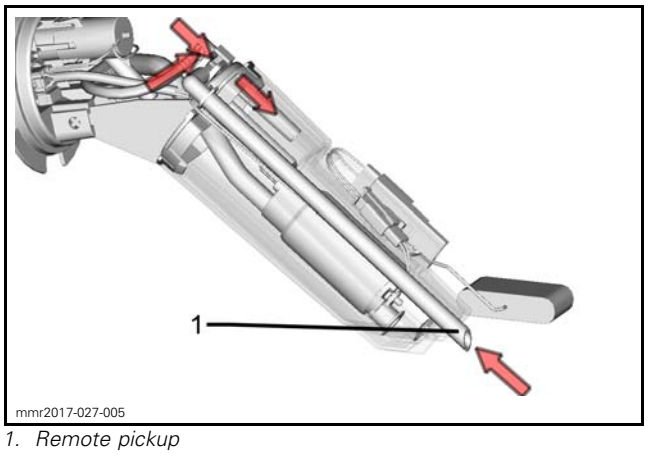
When the fuel pump runs, it draws the fuel from the fuel pump reservoir and feeds it to the injection system. This causes fuel in the tank to enter the fuel pump reservoir, by gravity, through its bottom inlet check valve.

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.



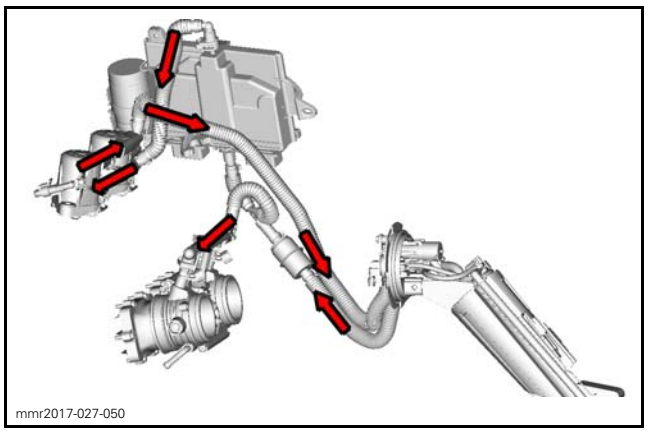
1. *Remote pickup*

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.

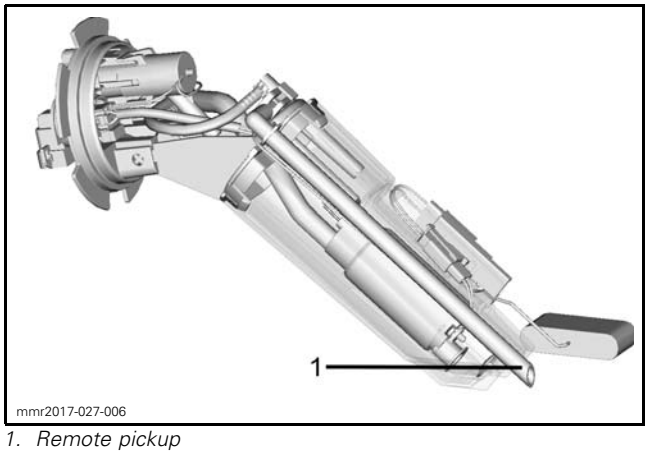
When riding uphill with a low amount of fuel in the tank, the fuel moves towards the rear of the fuel tank. The check valve closes and traps the fuel in the pump reservoir. The fuel pump continues to draw fuel from the fuel pump reservoir, which is now only fed by the jet pump using the remote pickup.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

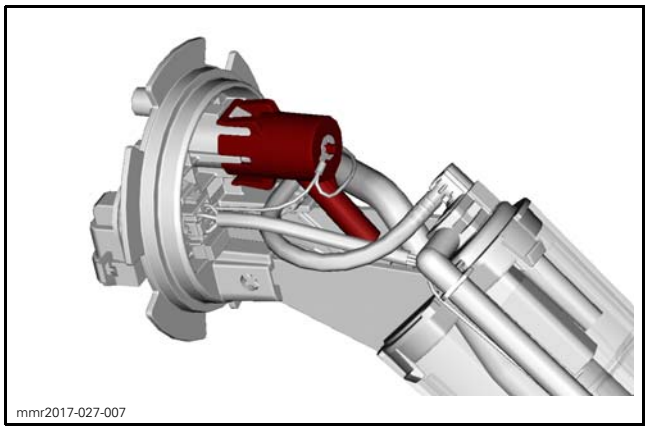
Fuel enters the fuel pump reservoir from either a check valve at the bottom of the fuel pump reservoir, or from a remote pickup in the rear portion of the fuel tank.



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.

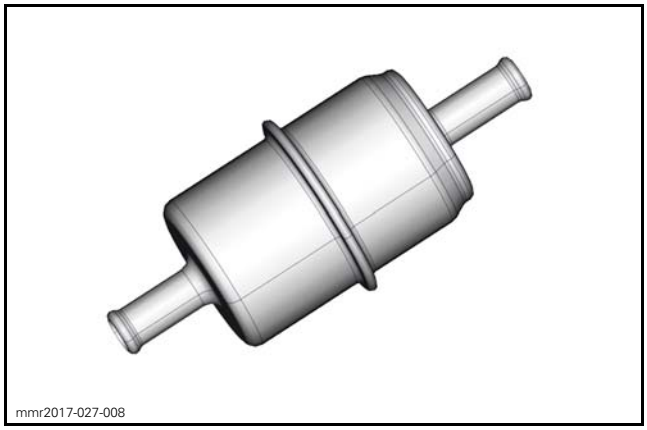
Fuel Filters

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.

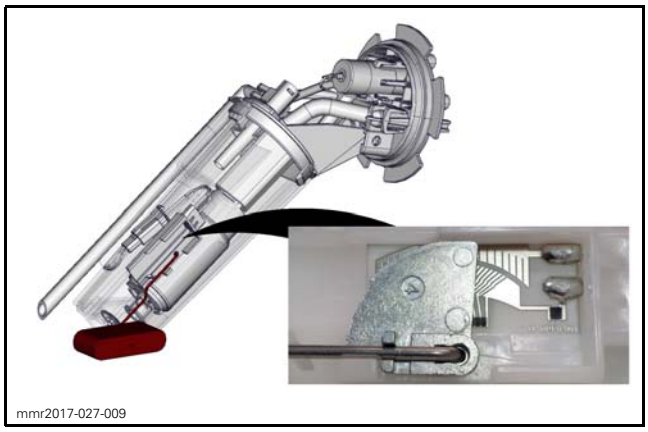
In-Line Fuel Filter



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.

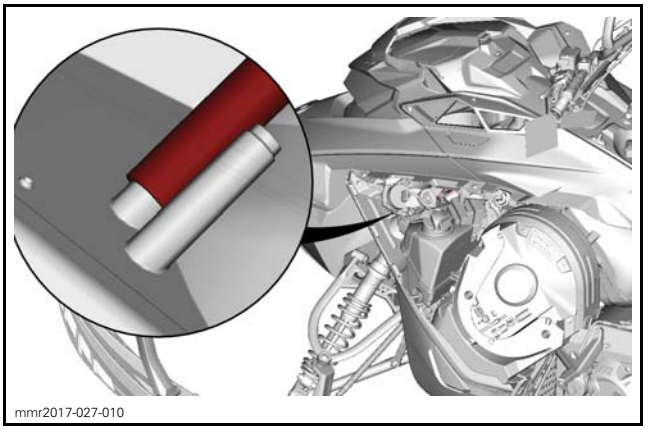
⚠ WARNING

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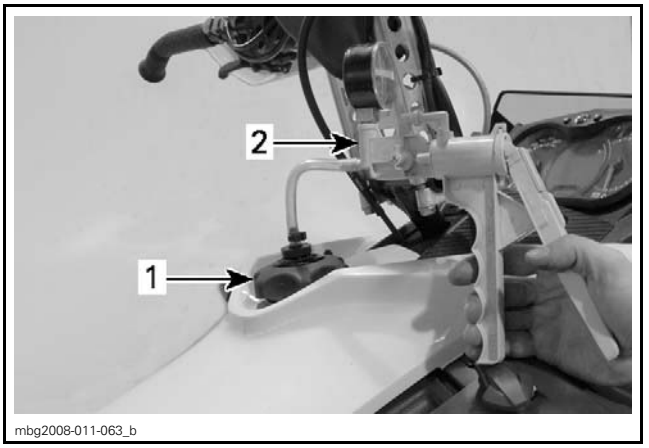
4. Install the appropriate test cap from the leak test kit on fuel tank inlet.
5. Install the pressure pump on pressure test fuel cap.



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

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

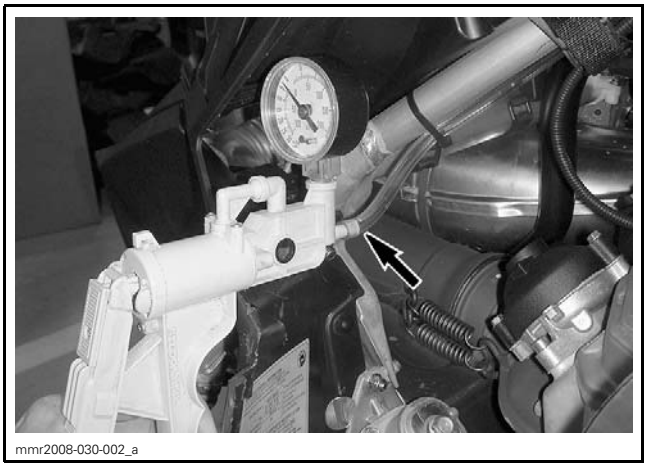
PRESSURE	TIME WITHOUT PRESSURE DROP
21 kPa (3 PSI)	3 minutes

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.

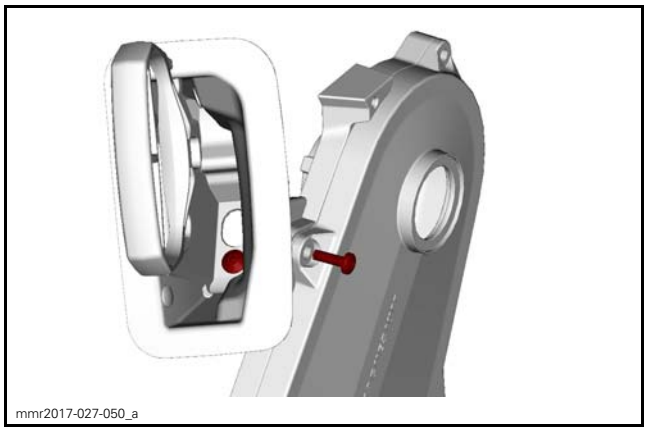
8. Remove vacuum/pressure pump.
9. Install vent tube on its fitting.
10. Install normal fuel tank cap.

TESTING THE FUEL PRESSURE

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

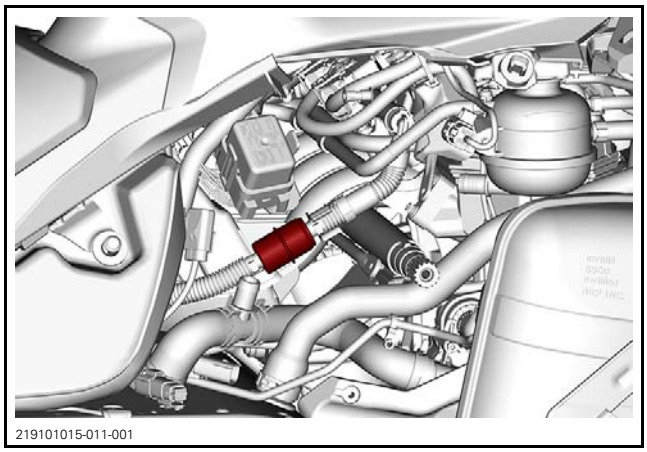
Open right hand side panel.

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

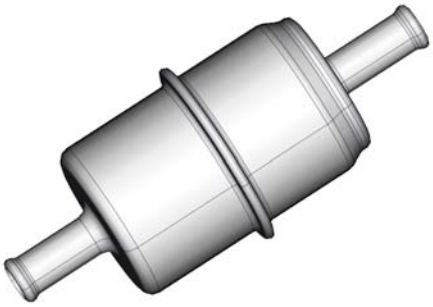
mmr2017-027-012

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

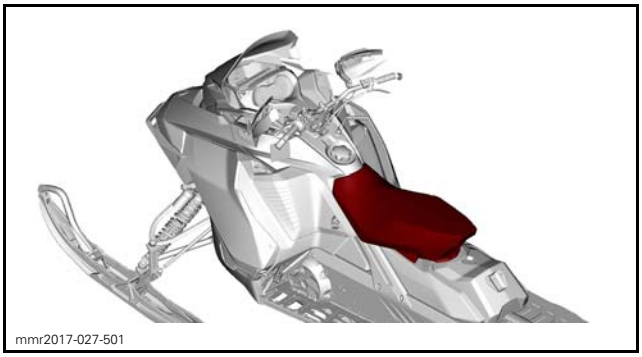
After working on the fuel system, carry out a fuel system pressurization test to check for leaks. Failure to carry out a fuel system leak test could result in severe injury or a life threatening situation should a leak occur.

Reinstall all removed parts.

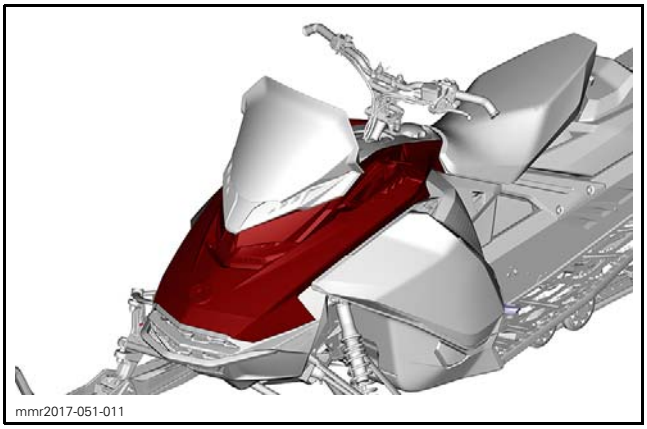
FUEL TANK

Removing the Fuel Tank

1. Remove seat.

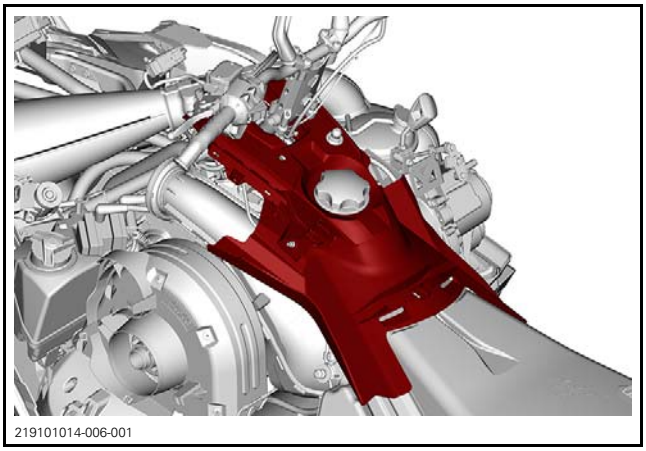


2. Remove upper body module. Refer to *BODY* subsection.



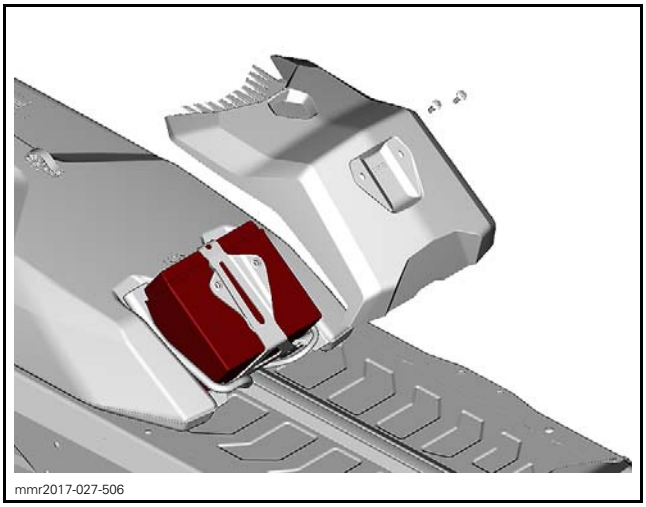
TYPICAL

3. Remove tank cover.

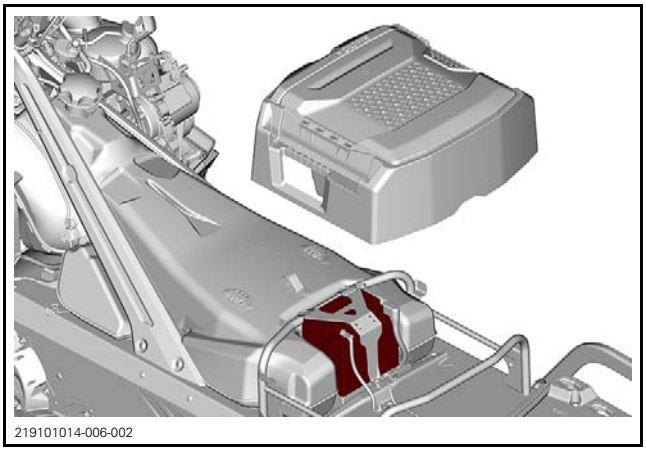


4. Remove the battery, if applicable.

16 in Track

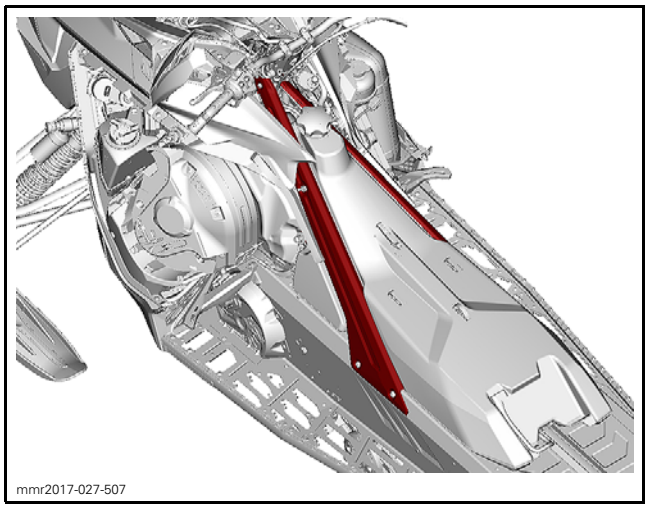


20 in Track



All Models

5. Remove rear frame members. Refer to *FRAME* subsection.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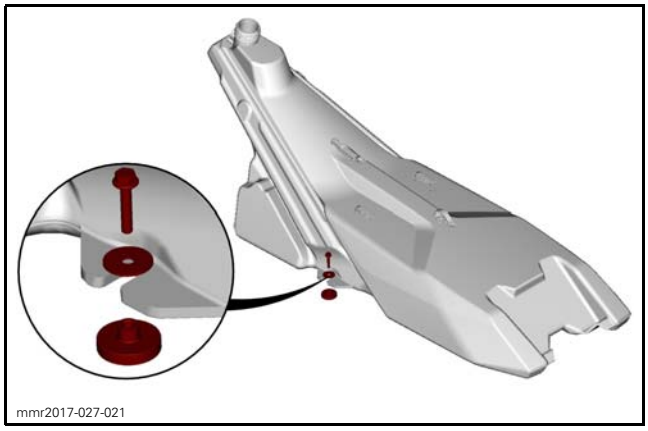
6. Remove and discard fuel tank retaining screws or rivets.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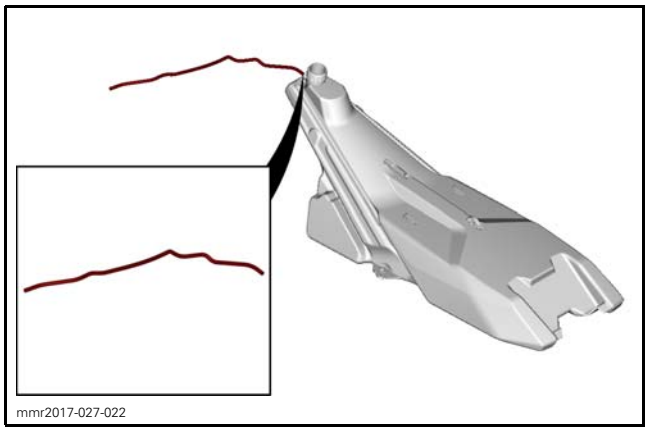
7. Remove fuel tank vent.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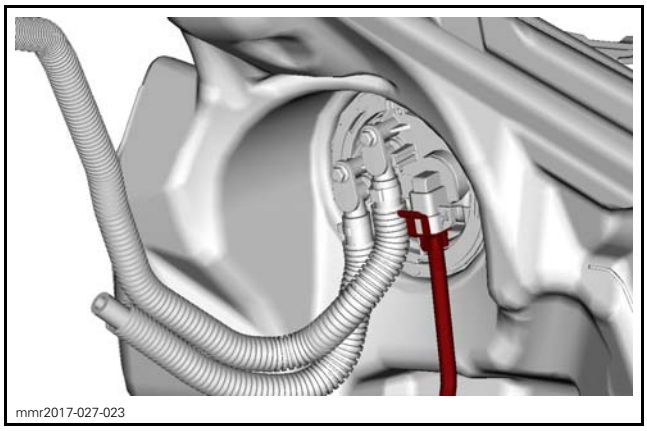
8. Remove fuel pump electrical connector.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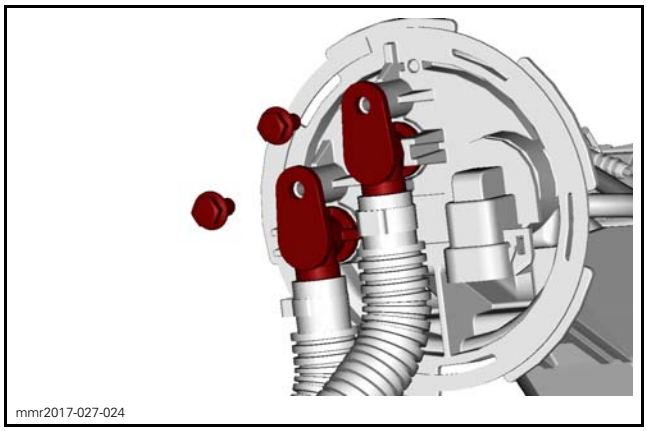
9. Remove fuel hoses from pump. Discard screws.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10. Remove fuel tank.

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.

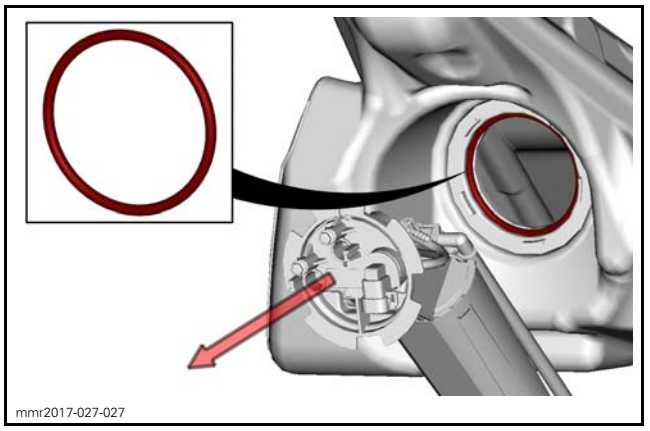
If the second fuel pump functions when connected to the vehicle harness, then replace the fuel pump installed in the vehicle.

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.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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

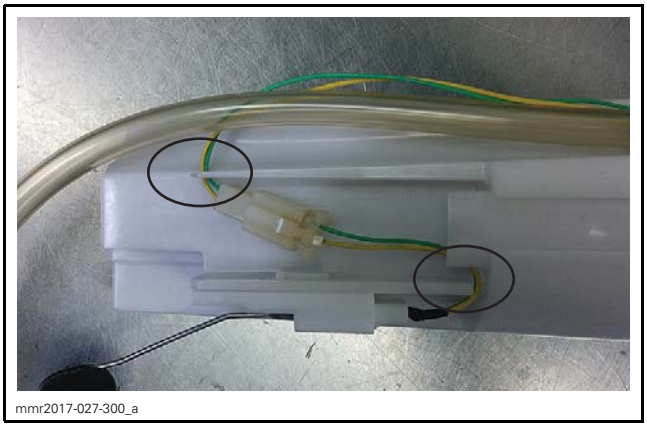
After working on the fuel system, carry out a fuel system pressurization test to check for leaks. Failure to carry out a fuel system leak test could result in severe injury or a life threatening situation should a leak occur.

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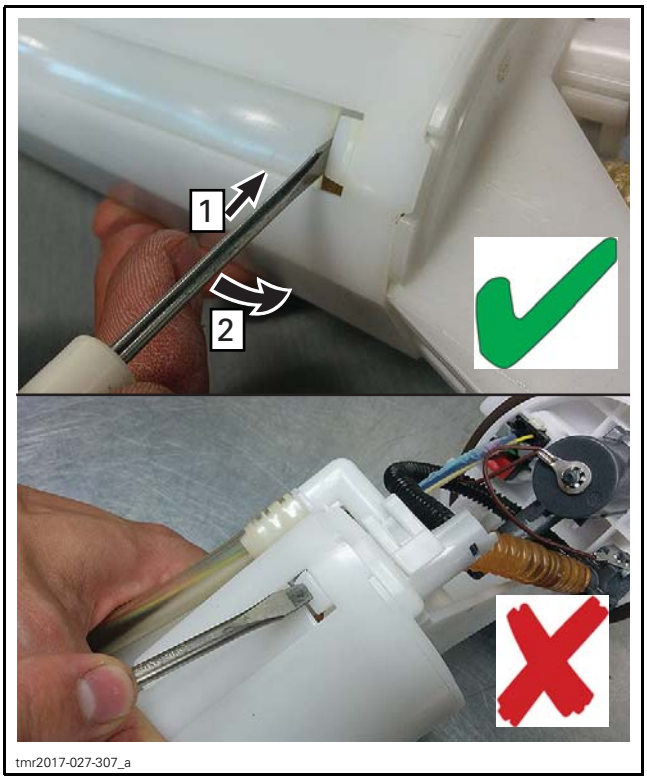
3. Unlock fuel pump reservoir by carefully inserting a small screwdriver between the tab and the fuel pump reservoir.

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



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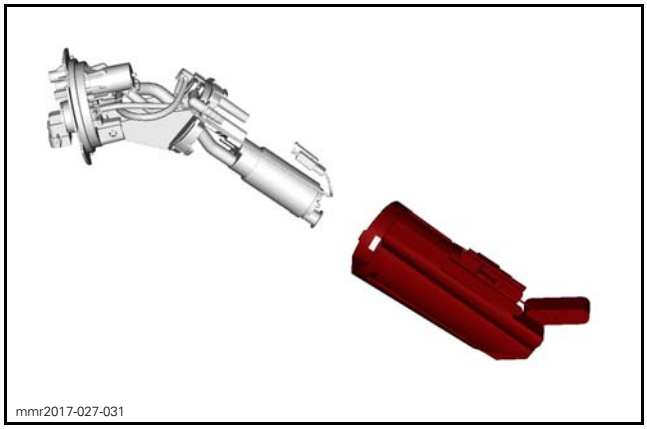
4. Completely remove fuel pump reservoir by pulling it carefully.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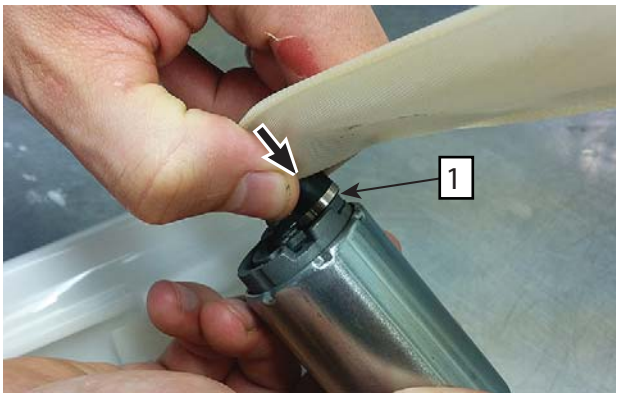
NOTICE To avoid damaging wires, Pull the reservoir carefully and do not let reservoir hang by wires.

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.

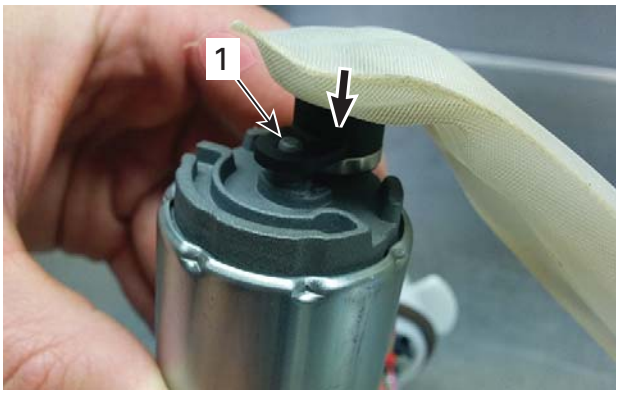
mmr2017-027-302_a

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.



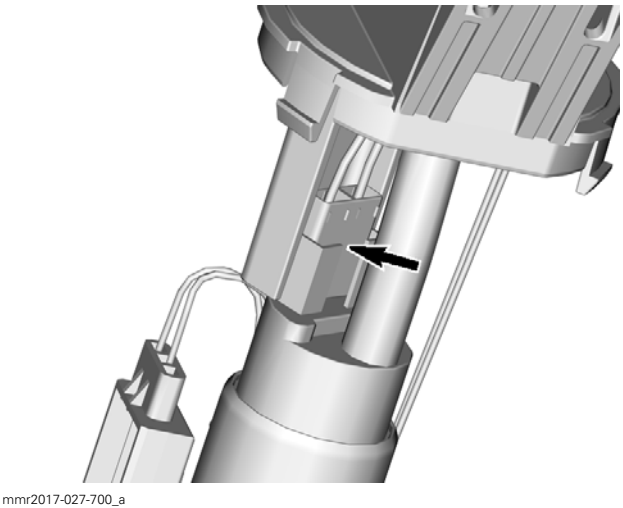
1. No gap here

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



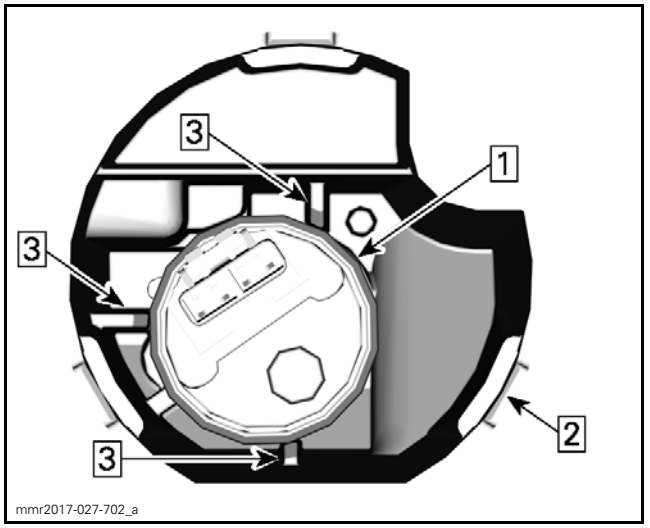
1. Pin

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

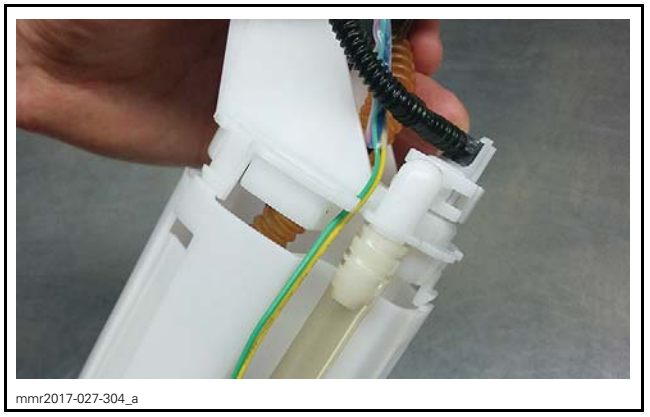


ELECTRICAL CONNECTOR MUST BE IN THIS POSITION

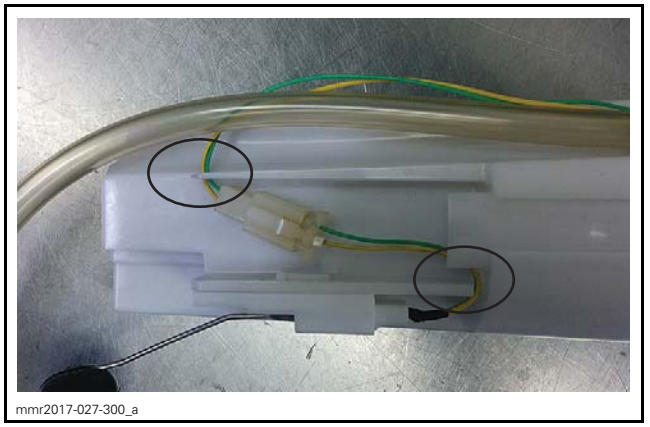
NOTE: Make sure the pump motor is positioned between the molded ribs in the reservoir.



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.

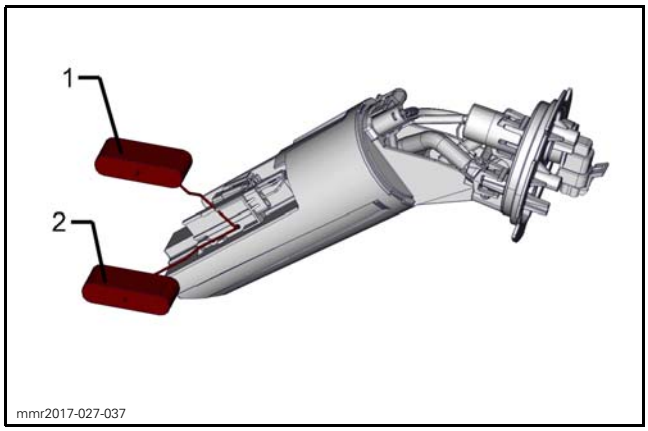
FUEL LEVEL SENSOR

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



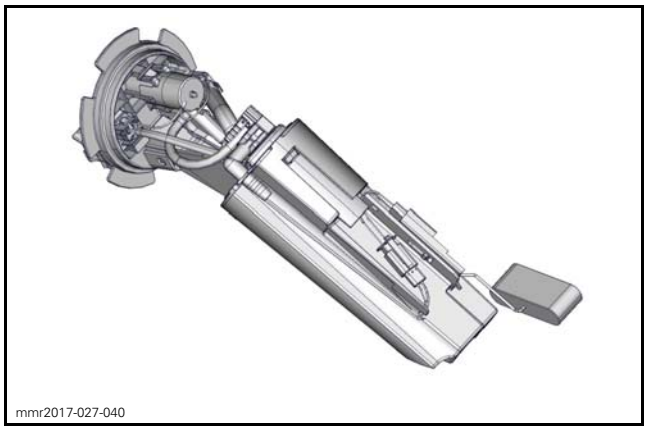
TYPICAL FUEL PUMP FLOAT
1. Full position
2. Empty position

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.

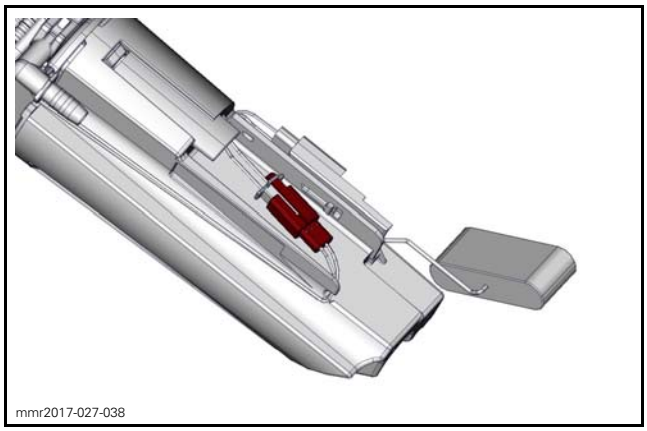
If fuel level sensor fails bench test, replace the fuel level sensor.

Replacing the Fuel Level Sensor

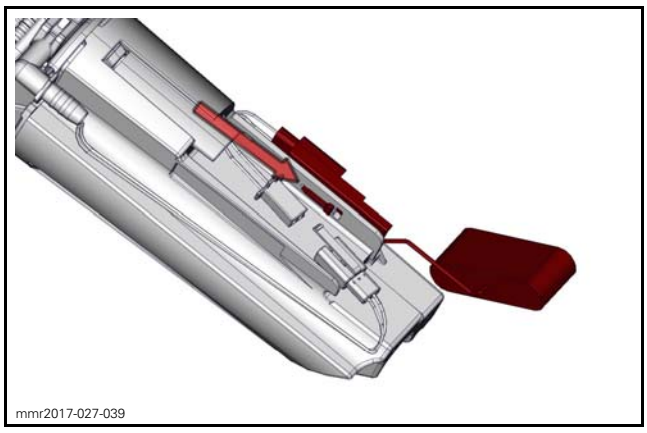
1. Remove the fuel pump.



2. Disconnect fuel level sensor connector.



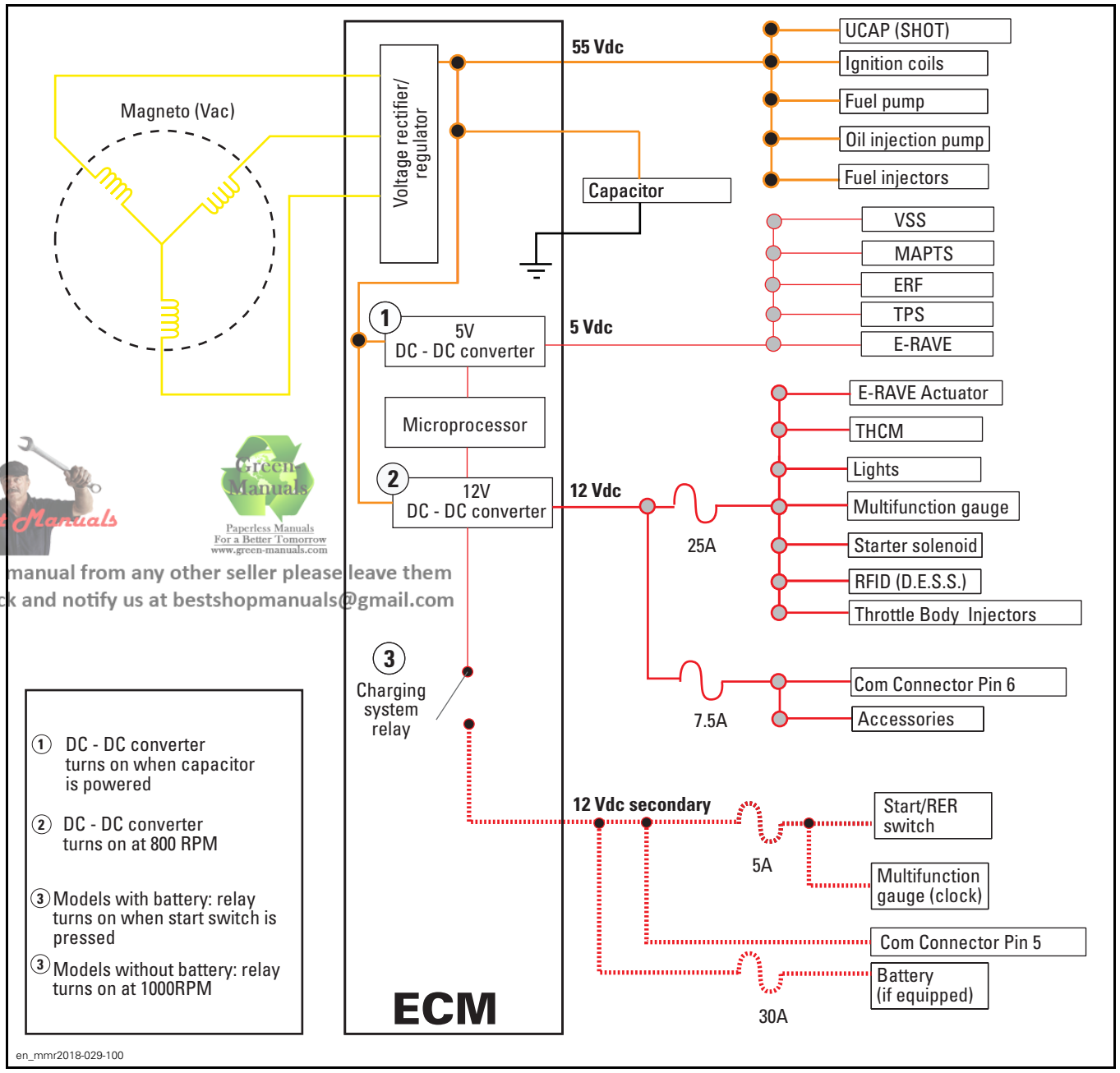
3. Slide the potentiometer out of the fuel pump reservoir.



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

POWER DISTRIBUTION

POWER DISTRIBUTION



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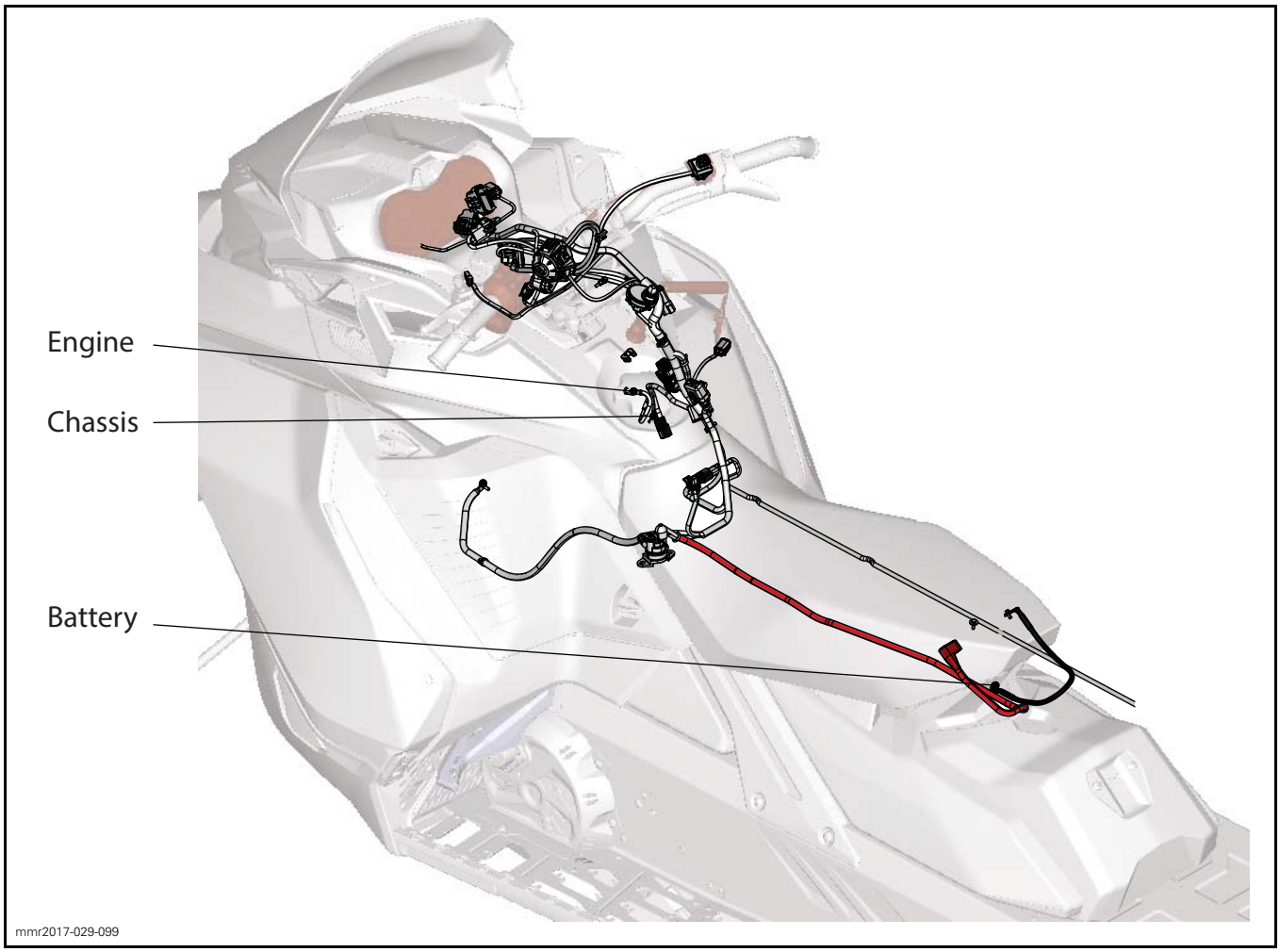


GENERAL

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.

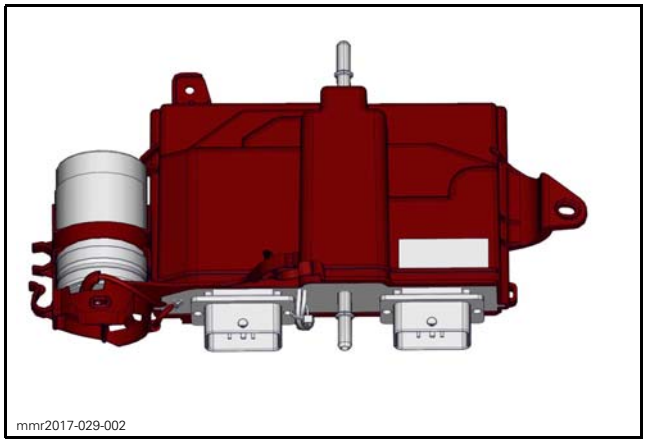
SYSTEM VOLTAGE (55 VDC)

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.



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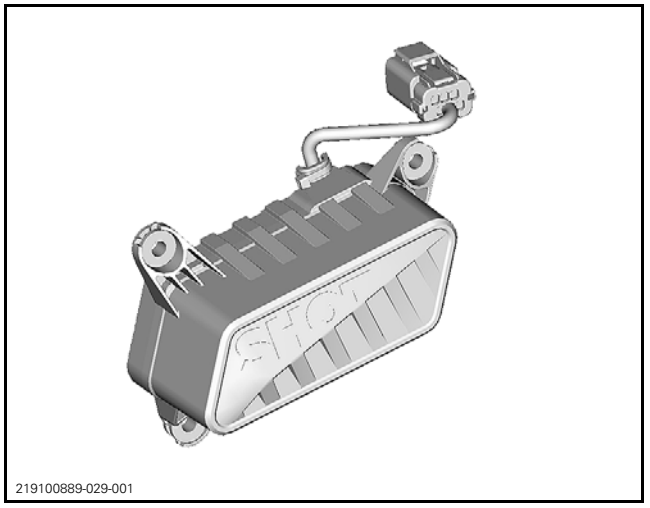
UCAP (SHOT System)

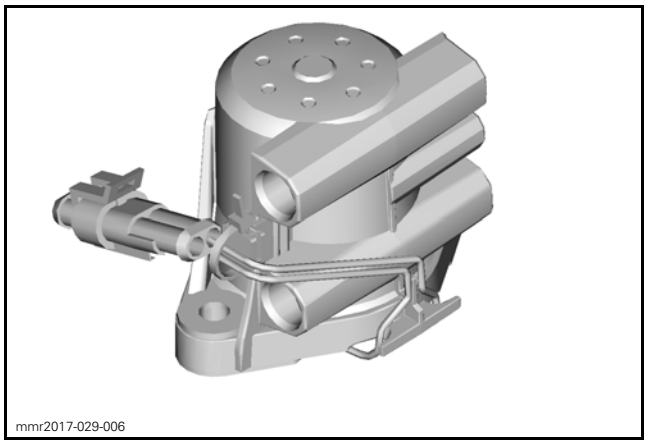
For information, refer to *SHOT SYSTEM* subsection.



219100889-029-001

Fuel Injector

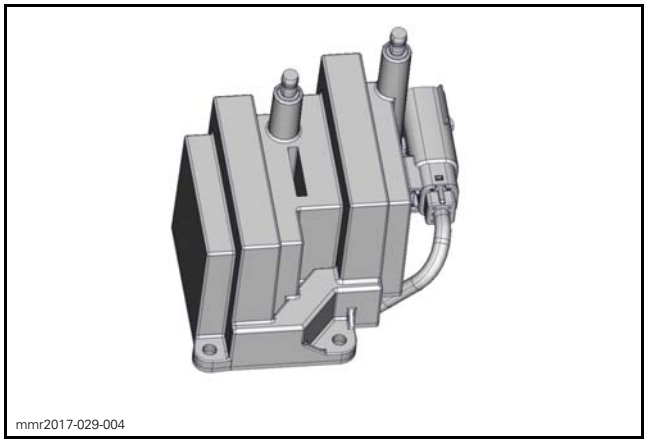
For more information, refer to *E-TEC DIRECT FUEL INJECTION* subsection.



mmr2017-029-006

Ignition Coil

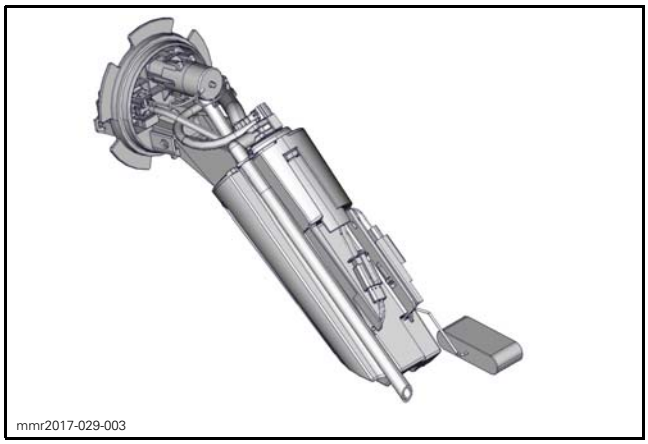
For more information, refer to *IGNITION SYSTEM* subsection.



mmr2017-029-004

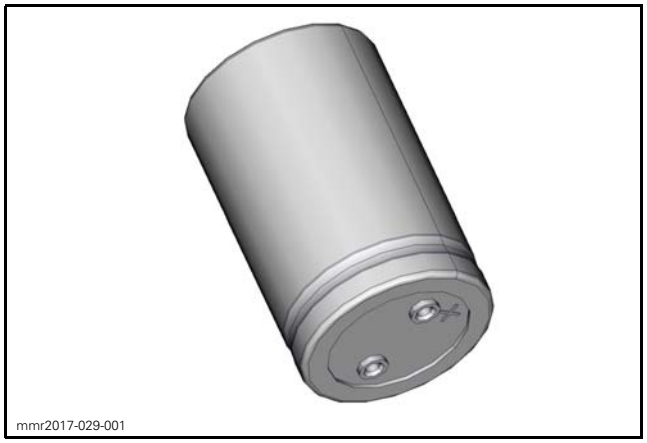
Fuel Pump

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.

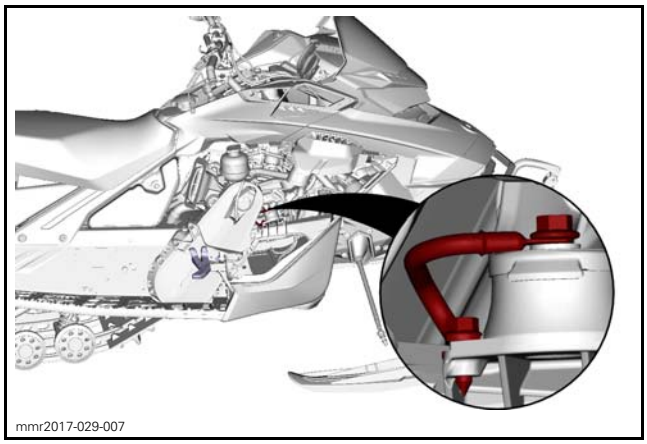
Below 2000 RPM, the total available current is limited to reduce the load on the system voltage.

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.

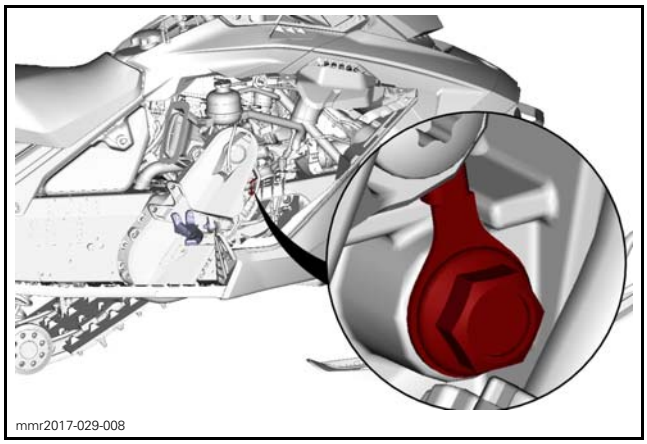
GROUNDS

Engine


mmr2017-029-007

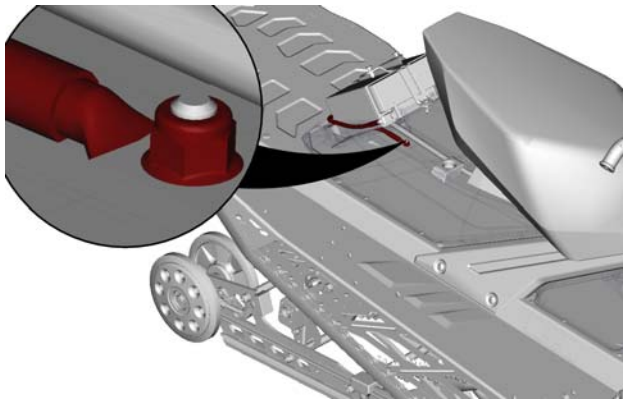
TIGHTENING TORQUE	
M6 screw on chassis	10 N•m ± 2 N•m (89 lbf•**in** ± 18 lbf•**in**)

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

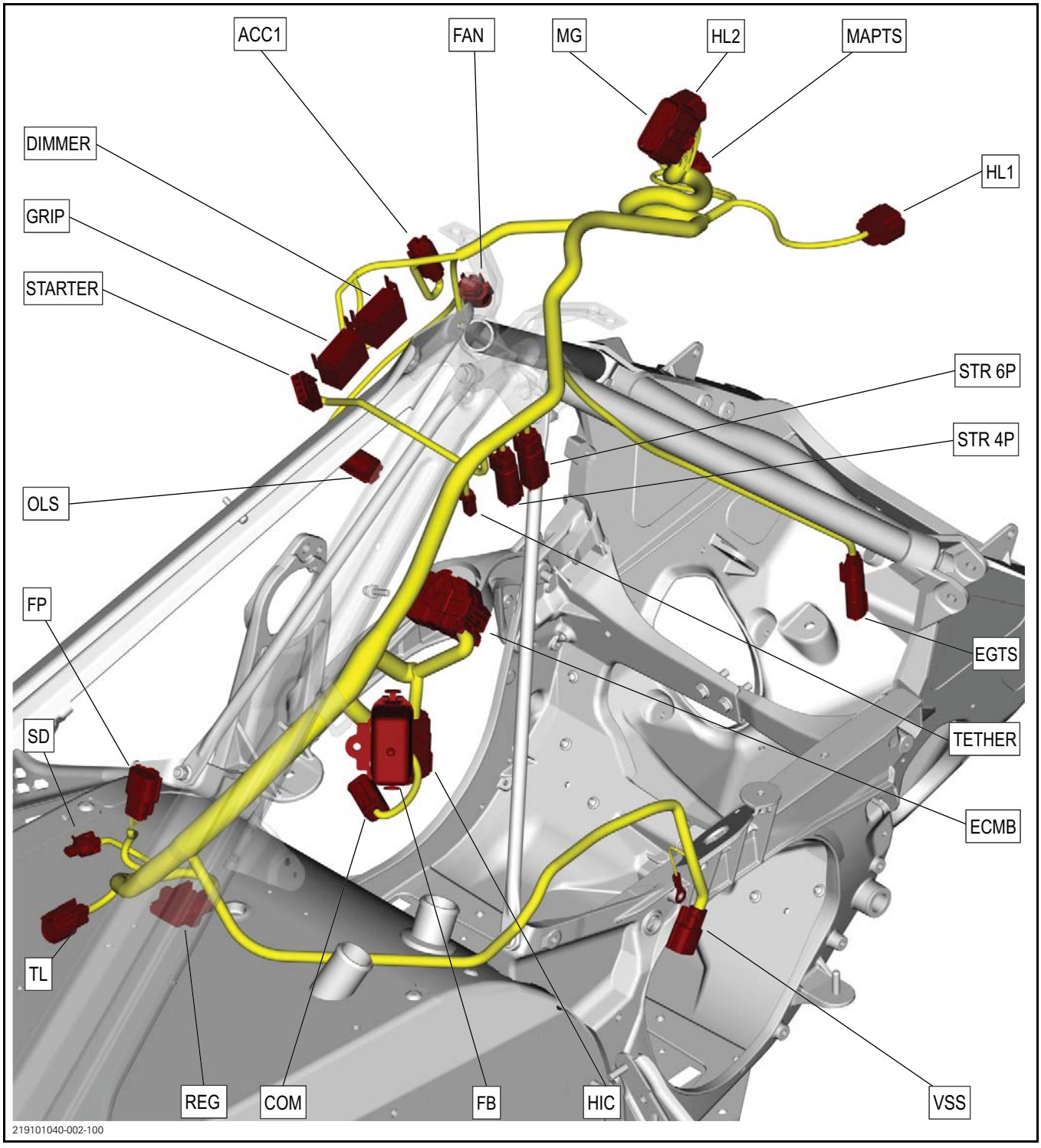
Description	Part Number	Page
ECM ADAPTER TOOL	529 036 166	111
ECM TERMINAL REMOVER 2.25	529 036 175	111
ECM TERMINAL REMOVER 3.36	529 036 174	112

SERVICE TOOLS – OTHER SUPPLIER

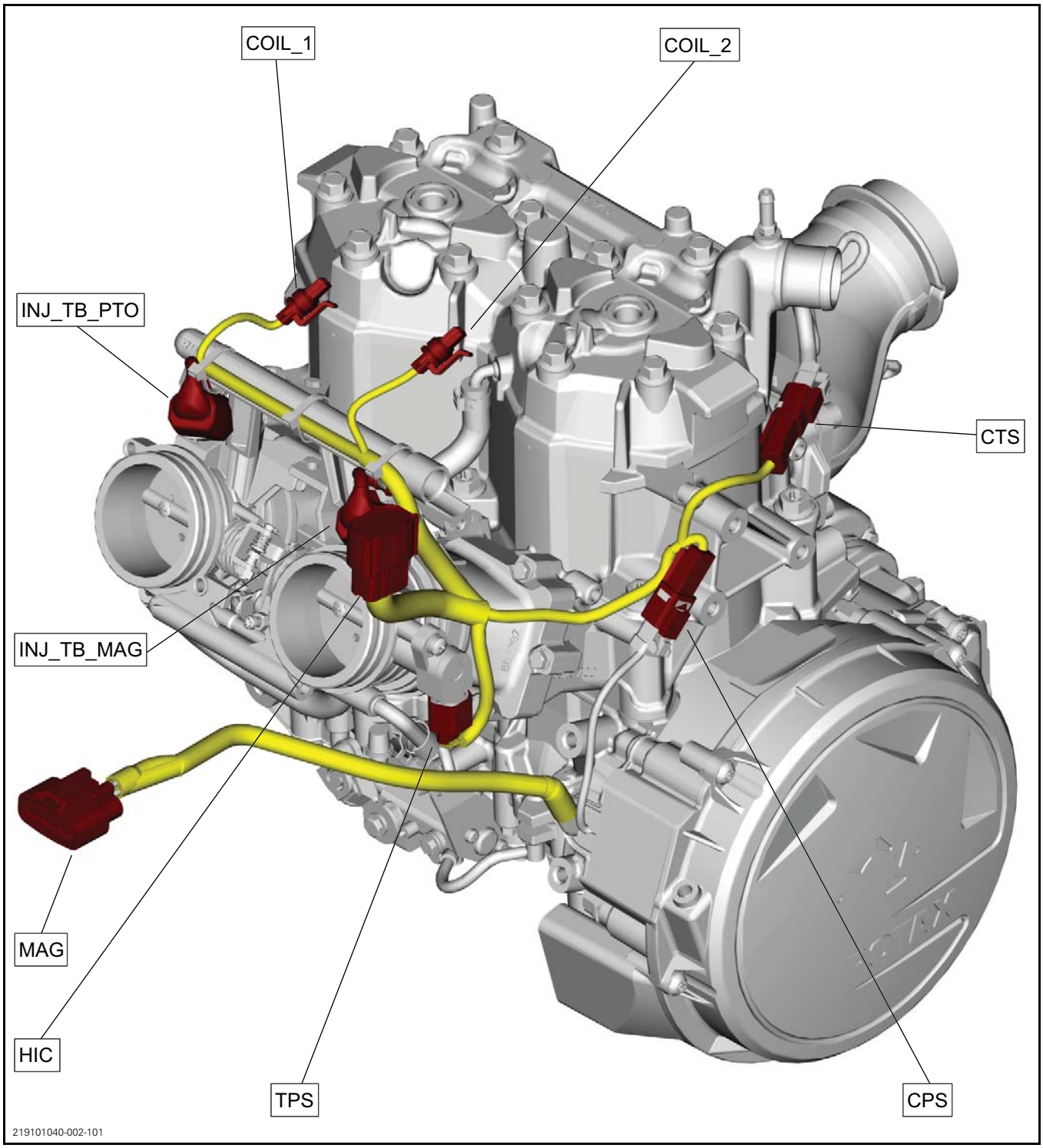
Description	Part Number	Page
DELPHI TERMINAL EXTRACTOR	12094429	114
FCI TERMINAL EXTRACTOR TOOL	54241678	113
MOLEX 150 TERMINAL EXTRACTOR TOOL	63813 - 1500	113

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

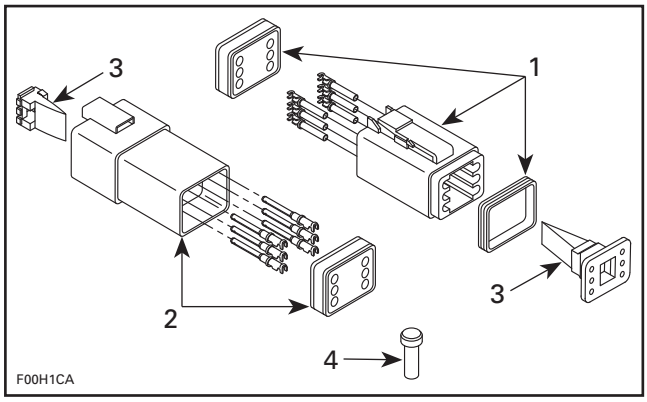
PROCEDURES

⚠ 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

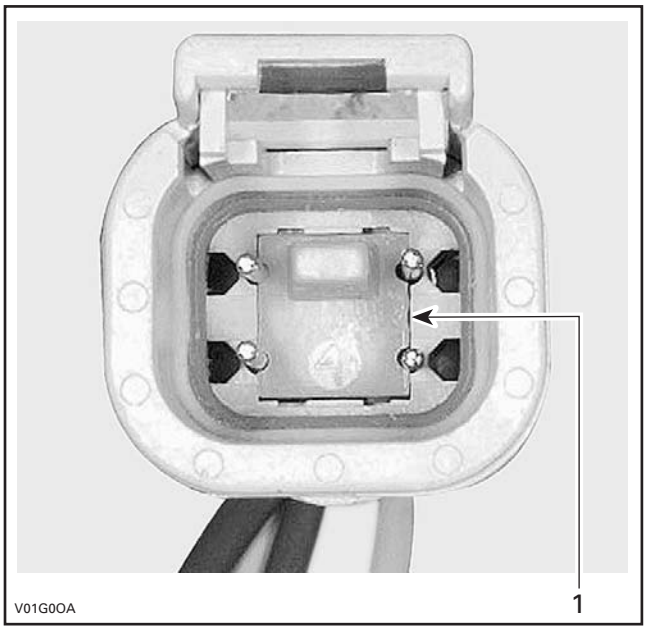


TYPICAL - DEUTSCH CONNECTOR
1. *Male connector*
2. *Female connector*
3. *Secondary lock*
4. *Sealing cap*

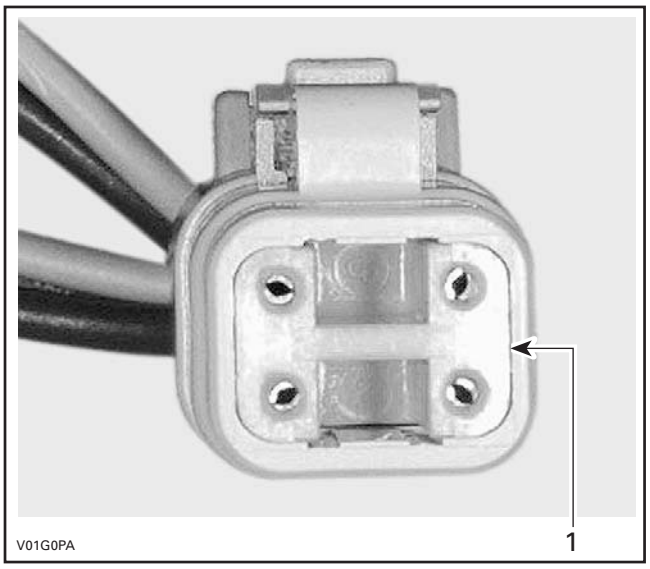
NOTICE Do not apply dielectric grease on terminal inside connector.

To remove terminals from connector, proceed as follows:

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



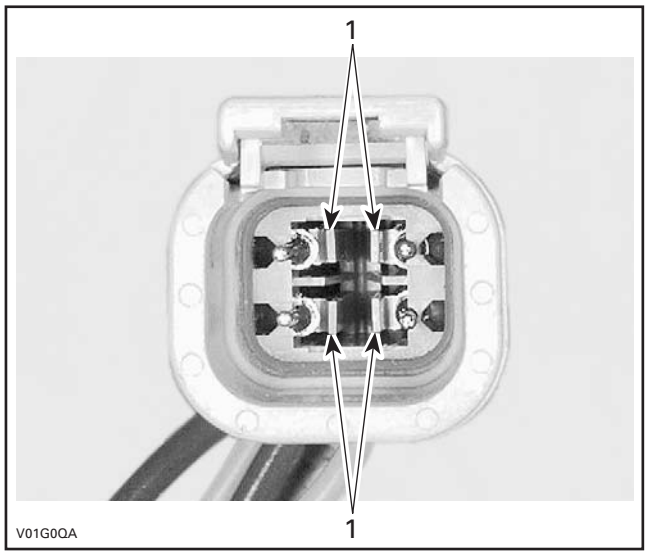
TYPICAL - FEMALE CONNECTOR
1. *Female lock*



TYPICAL - MALE CONNECTOR
1. *Male lock*

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

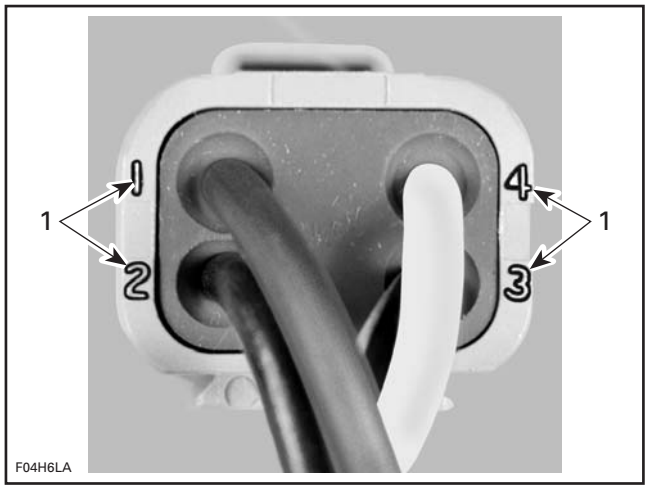
2. Insert a 4.8 mm (.189 in) wide screwdriver blade inside the front of the terminal cavity.
3. Pry the retaining tab away from the terminal while gently pulling the wire and terminal out of the back of the connector.



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

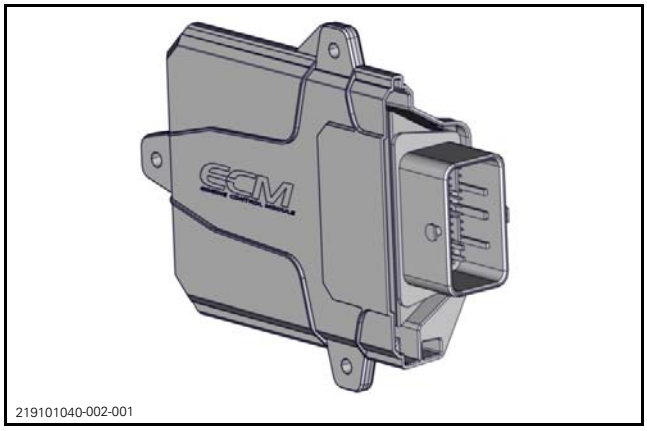
ECM CONNECTOR (MOLEX)

There is one connector on the ECM.

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

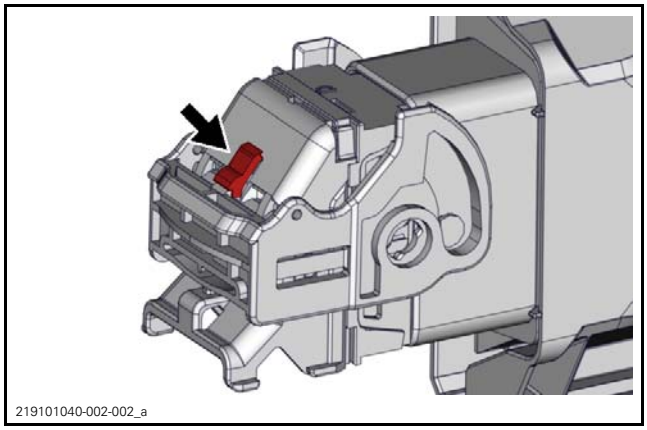
The engine wiring harness is connected to the vehicle harness through the HIC connector.

The ECM connector has 48 pins.

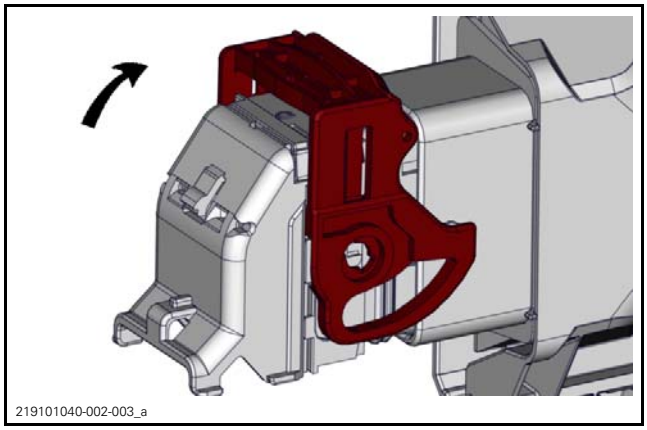


Removing the Connector

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.



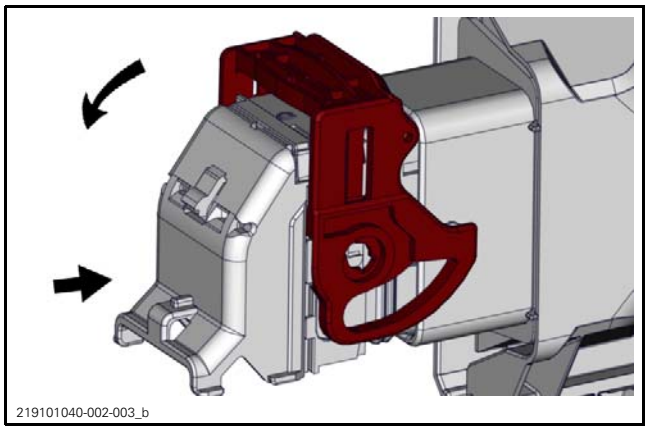
3. As you hold the locking tab, rotate the connector locking cam until it stops.



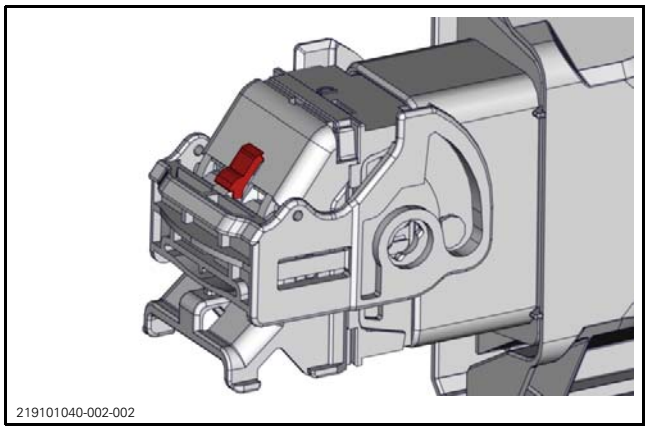
4. Pull connector off ECM.

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.

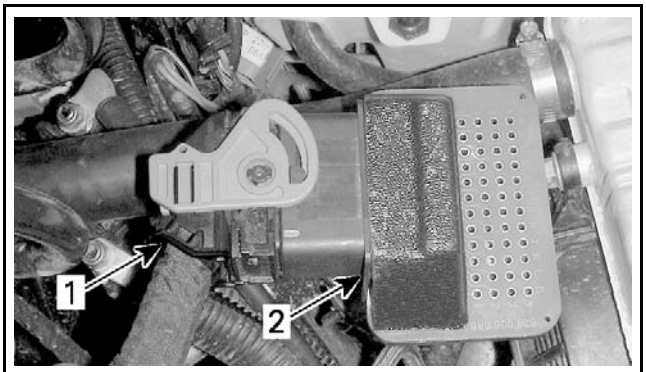
NOTICE Do not apply any lubricant product to the pins of the ECM connector.

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)

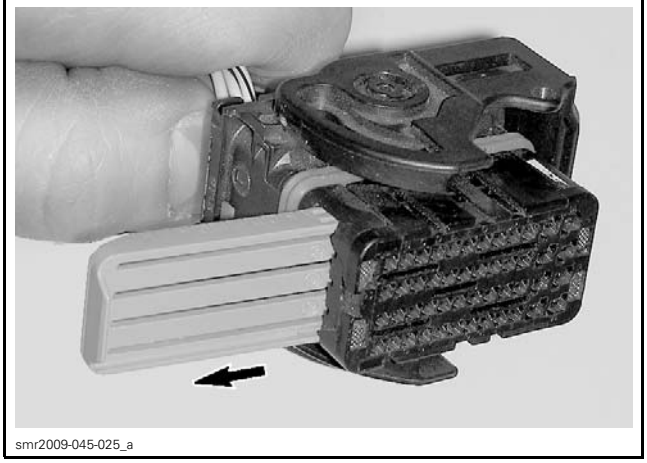
To remove a signal terminal from the ECM harness connector, use the ECM terminal remover 2.25.

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

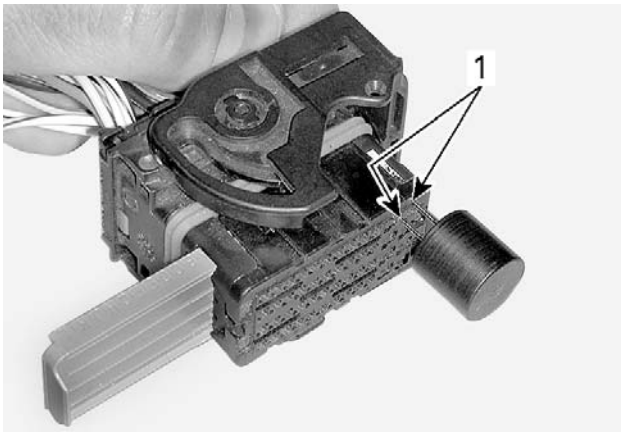
To remove a power terminal, use the ECM terminal remover 3.36.

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.



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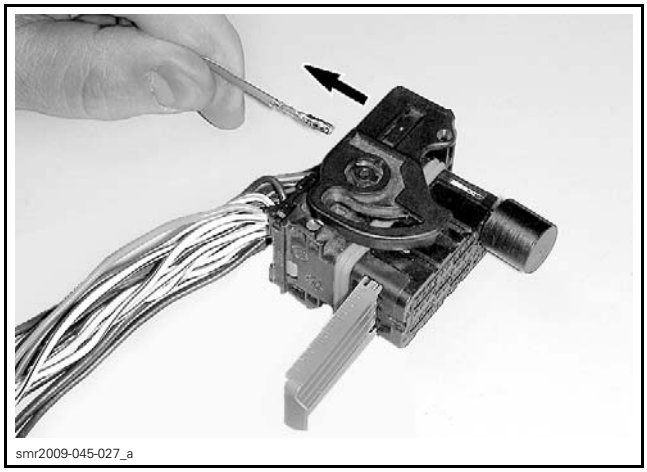
1. Unlock here

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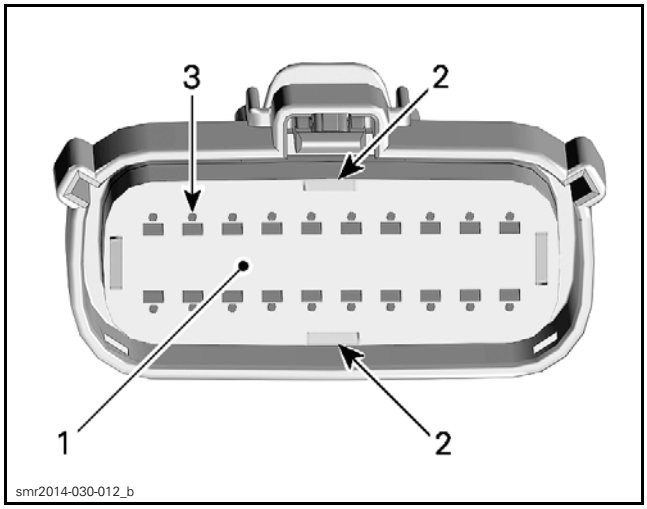
NOTICE Before installing wire terminals in the connector, ensure all terminals are properly crimped on wires. After installation of wire terminals in the connectors, ensure they are properly locked by gently pulling on them as if to extract them.

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)	

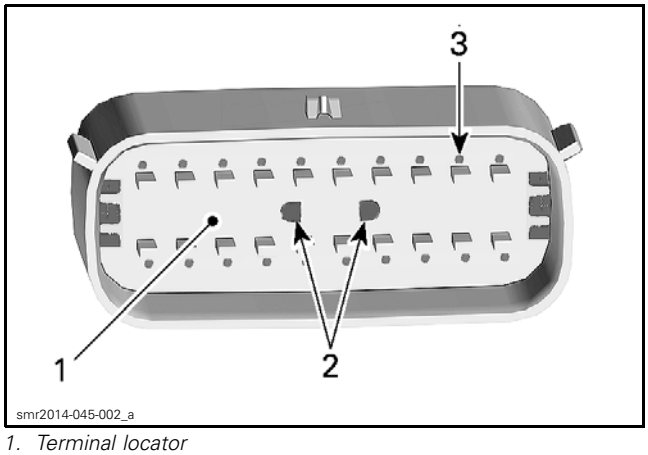
4. Gently pull on the wire to extract the terminal out the back of the connector.

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.

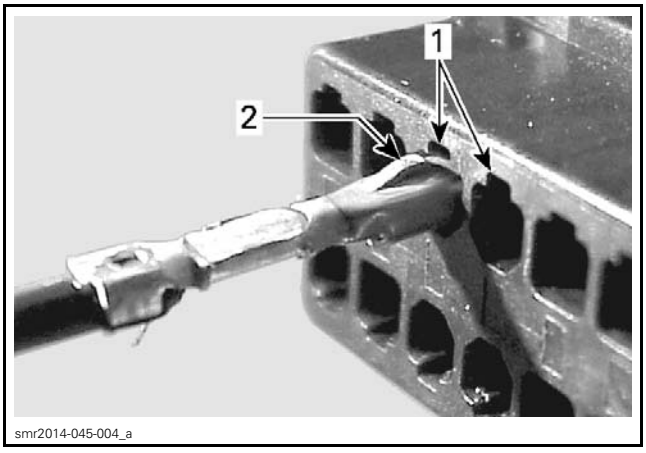
NOTE: Push the extractor tool in only as far as required to release the lock from the terminal. The tool should slide along the terminal and be inserted between the connector housing and the terminal lock.

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

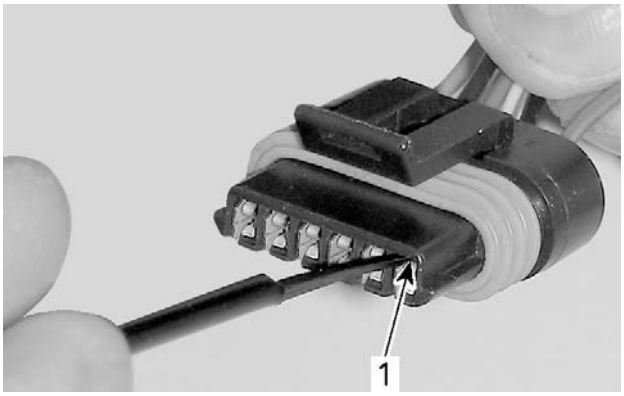
Removing the Connector Terminal

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)	

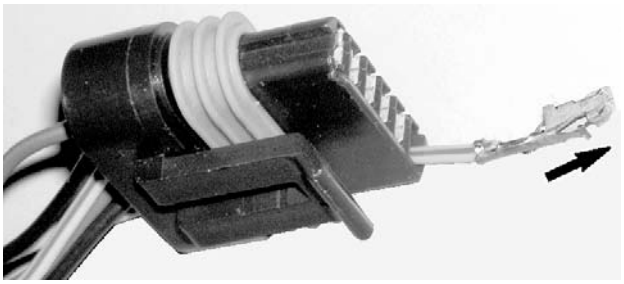
NOTE: Grinding the tool end to a taper is required.

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

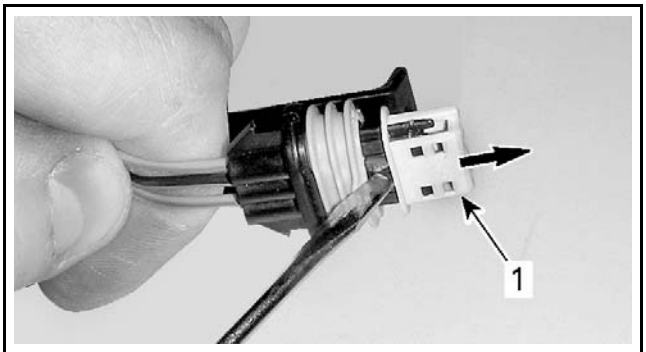

smr2009-045-015_a

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.

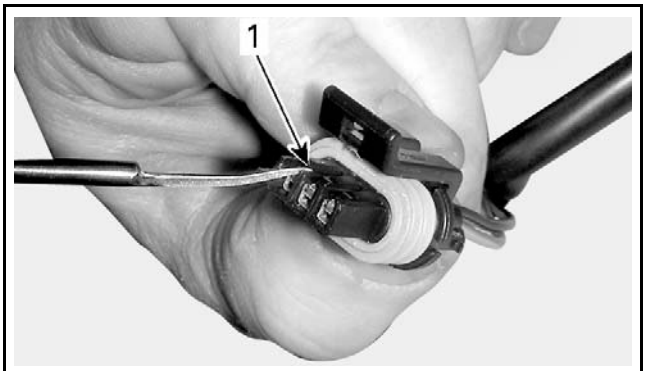


smr2009-045-023_a

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)	



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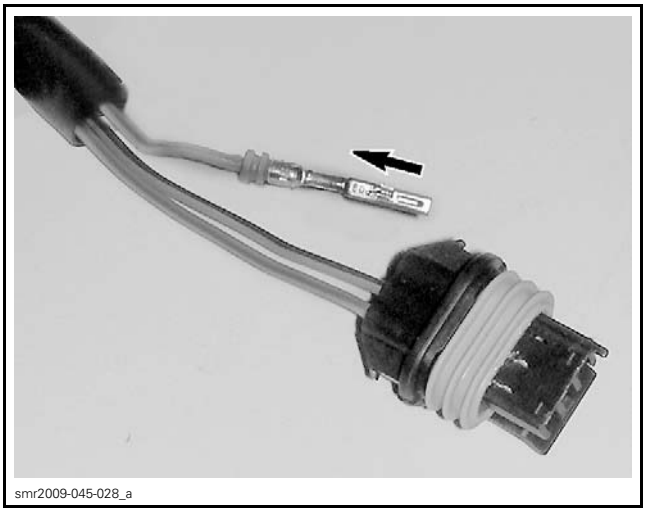
1. Unlock here

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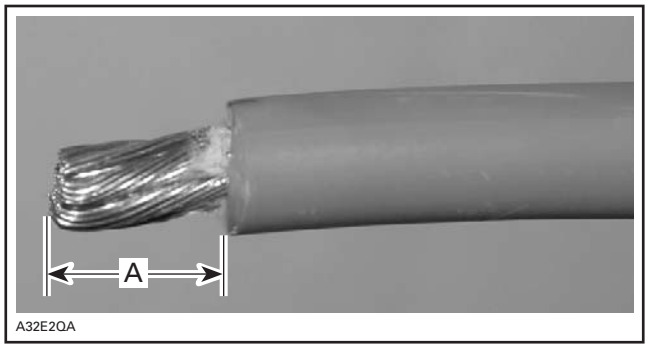
NOTICE Before installing terminals in the connectors, ensure all terminals are properly crimped on the wires. After installation of the wire terminals in the connectors, ensure they are properly locked by gently pushing on them as if to extract them.

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.

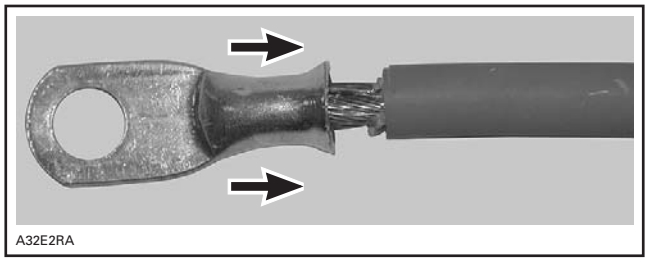


A32E2QA

A. 10 mm (3/8 in)

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

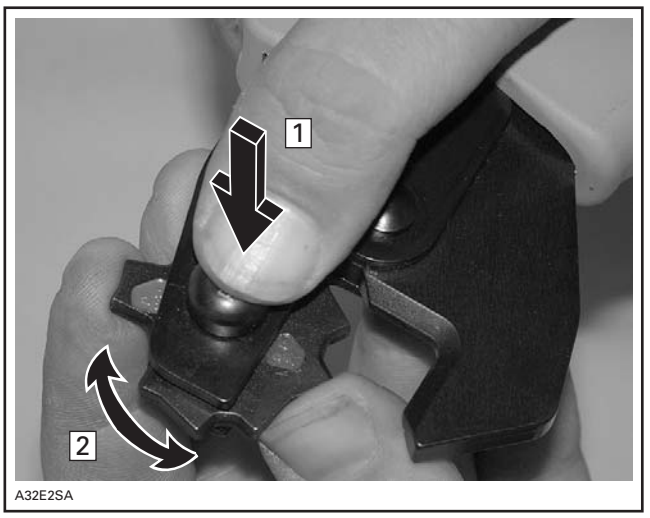
Install the appropriate terminal on the wire according to the requirement. Refer to appropriate *PARTS CATALOG*.


A32E2RA

INSTALLATION OF TERMINAL

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

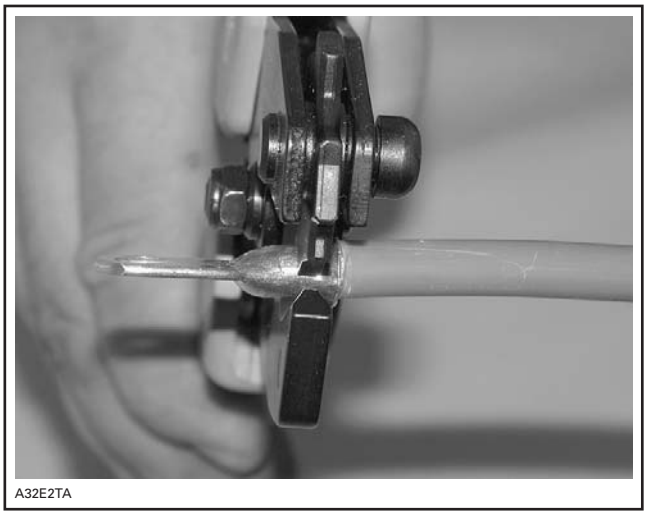
NOTE: Different wires require different crimping pliers settings, so make sure to follow the instruction supplied with the tool.



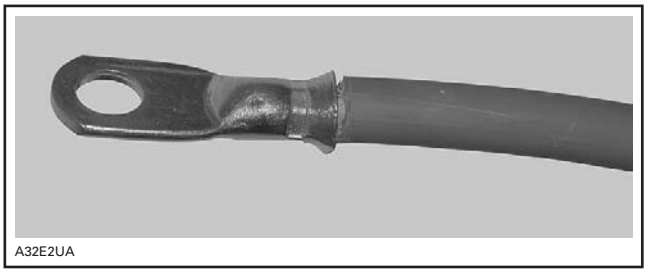
A32E2SA

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.

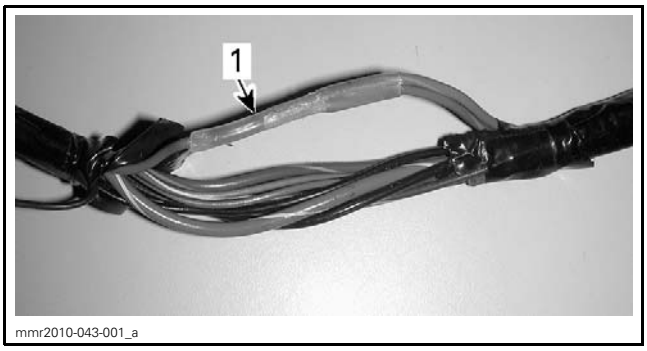
NOTICE Make sure that the protective heat shrink rubber tube has been properly installed and no part of wire is exposed.

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

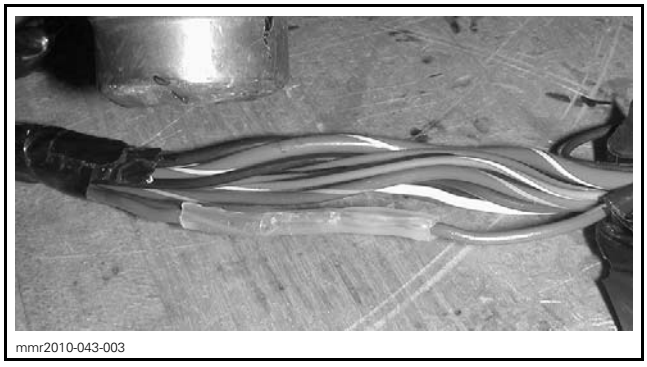
1. Shrink tube

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

mmr2010-043-002

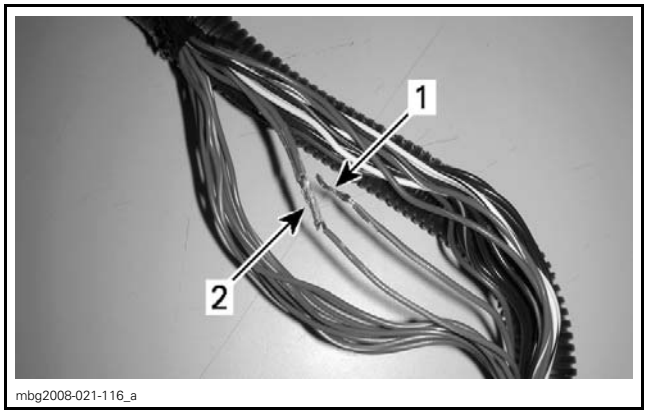
NOTICE Be careful with the blade to avoid cutting wires insulation.

   4.2 Slightly heat the shrink tube using a heat gun.


mmr2010-043-003

   4.3 Remove the shrink tube with long nose pliers.

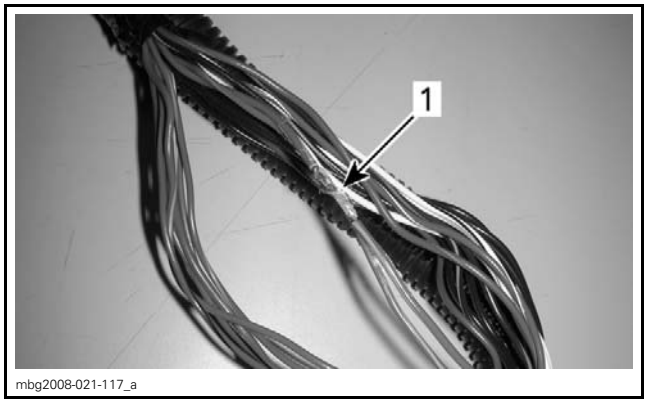
5. Locate detached wire from splice.



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.

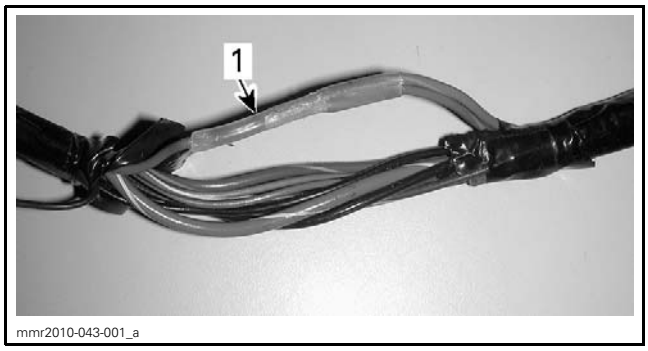
NOTE: Make sure tape overlaps on wire insulation, approximately 13 mm (1/2 in) each side.

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.



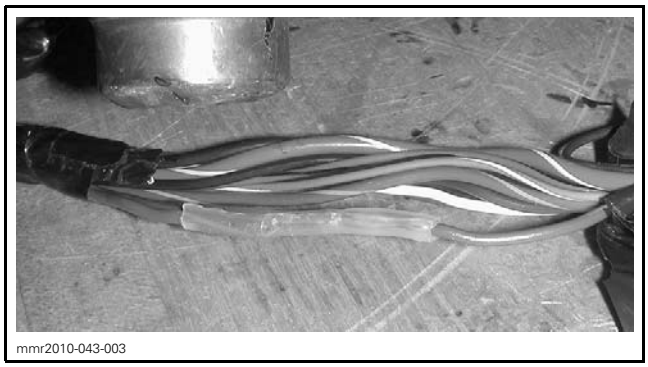
1. Shrink tube

4. Remove the shrink tube.

4.1 Using a blade, cut the shrink tube.

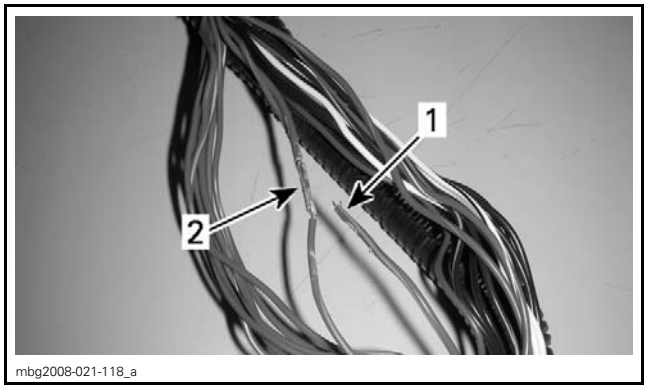
NOTICE Be careful with the blade to avoid cutting wires insulation.

4.2 Slightly heat the shrink tube using a heat gun.



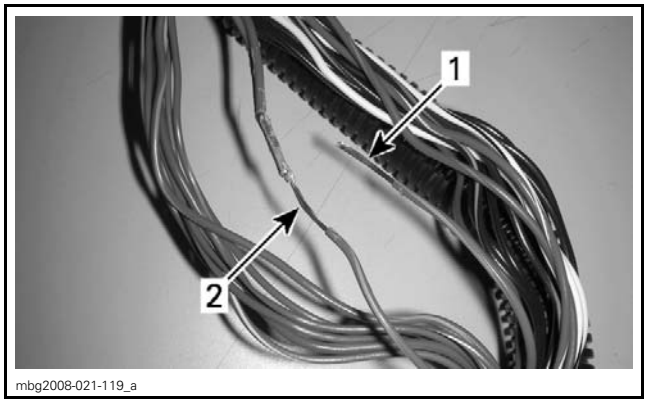
4.3 Remove the shrink tube with long nose pliers.

5. Locate broken wire from splice.



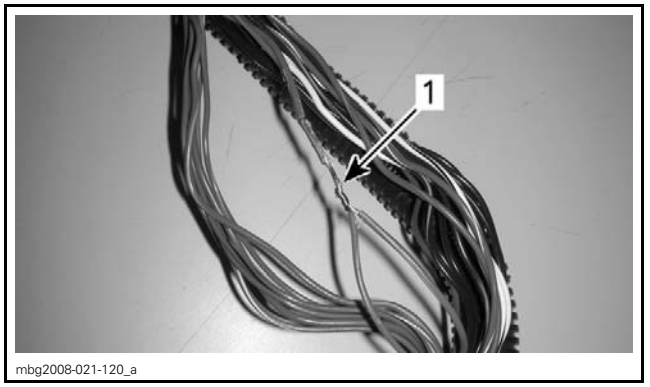
1. Broken wire
2. Splice

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).

WIRING HARNESS AND CONNECTORS (E-TEC)

SERVICE TOOLS

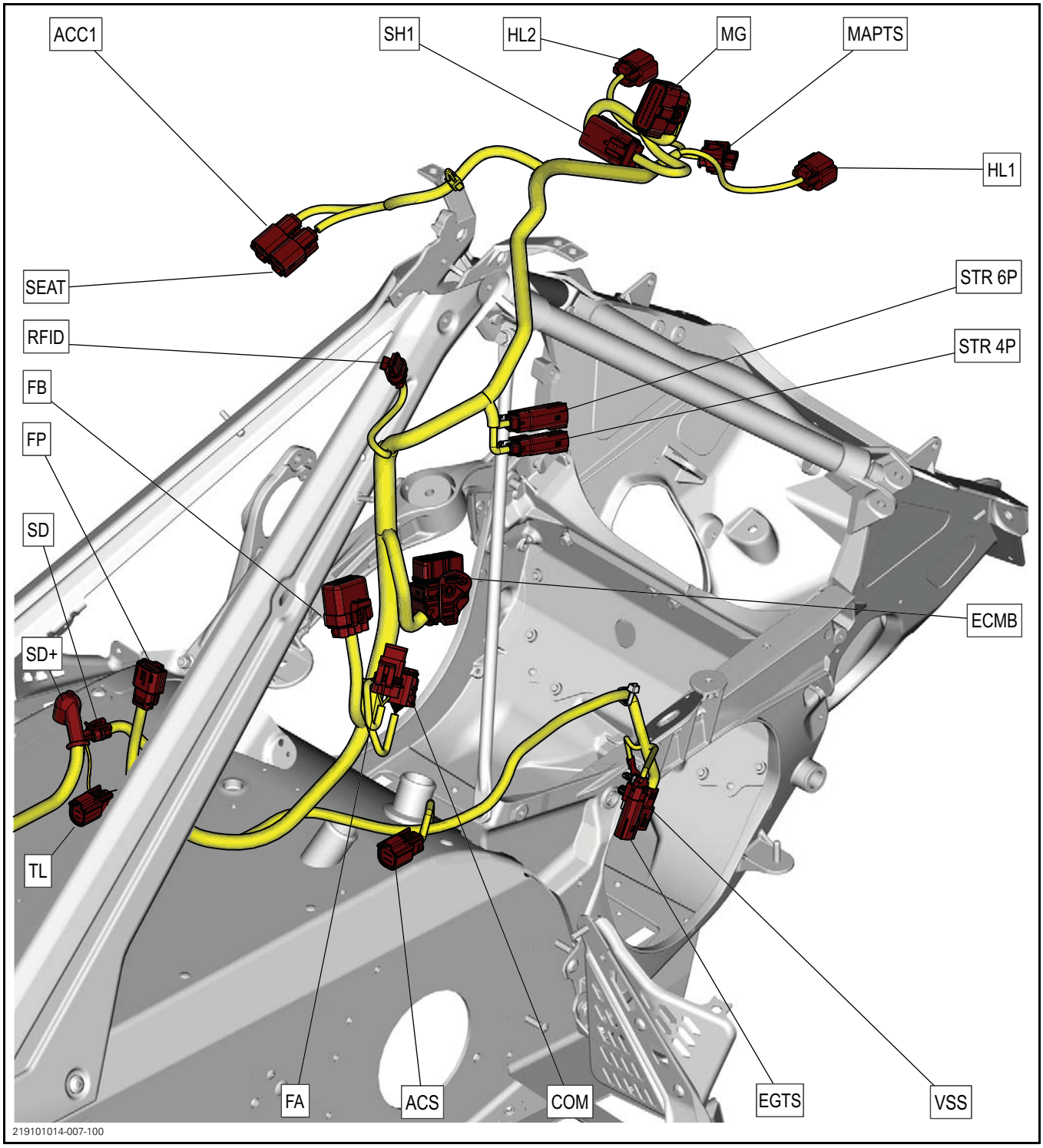
Description	Part Number	Page
ECM ADAPTER TOOL	529 036 166	128
ECM TERMINAL REMOVER 2.25	529 036 175	128
ECM TERMINAL REMOVER 3.36	529 036 174	128

SERVICE TOOLS – OTHER SUPPLIER

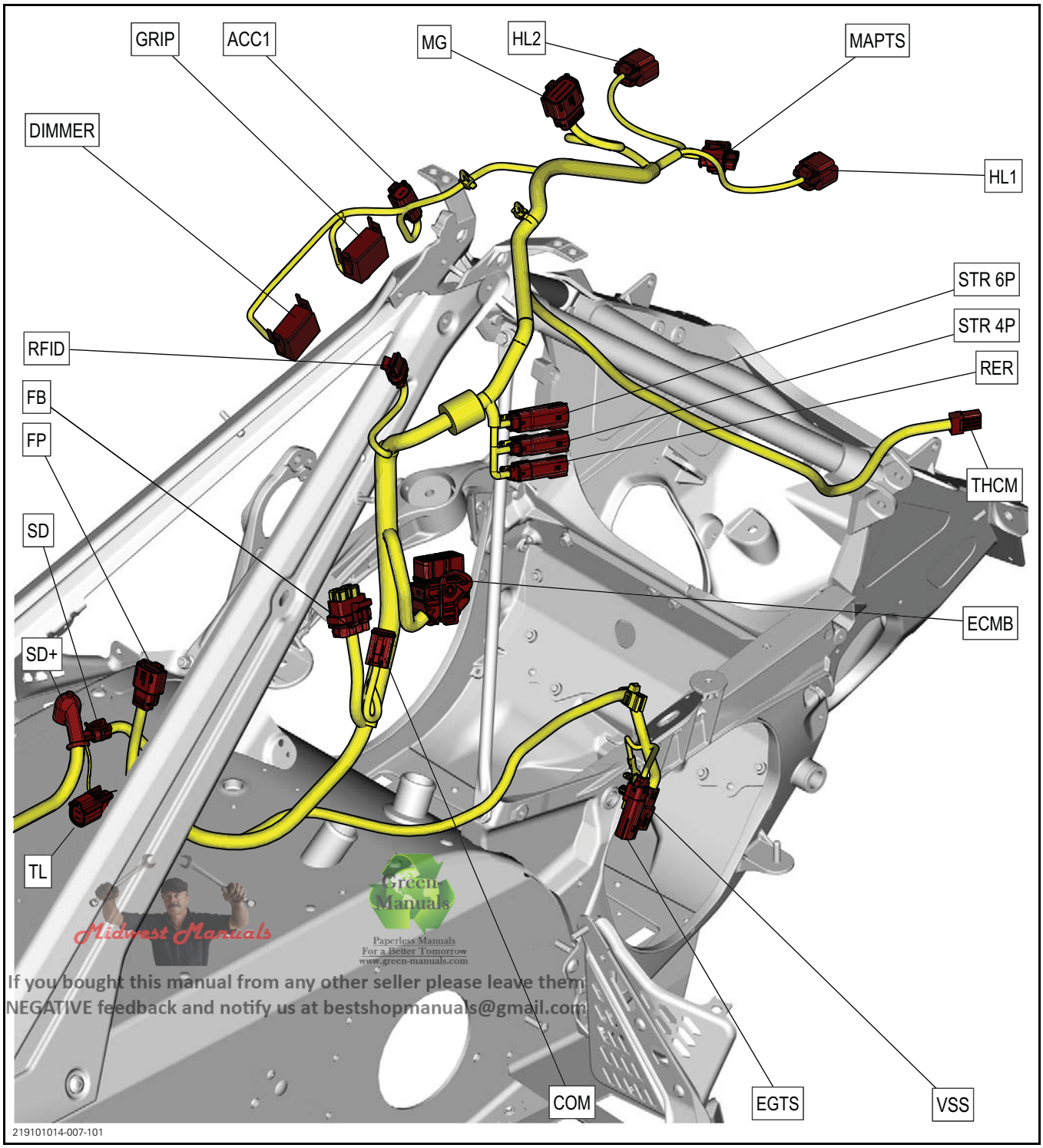
Description	Part Number	Page
DELPHI TERMINAL EXTRACTOR	12094429	130–131
FCI TERMINAL EXTRACTOR TOOL	54241678	129–130
MOLEX 150 TERMINAL EXTRACTOR TOOL	63813 - 1500	129–130

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

CHASSIS HARNESS - TRAIL AND CROSSOVER VEHICLES



CHASSIS HARNESS - DEEP SNOW VEHICLES



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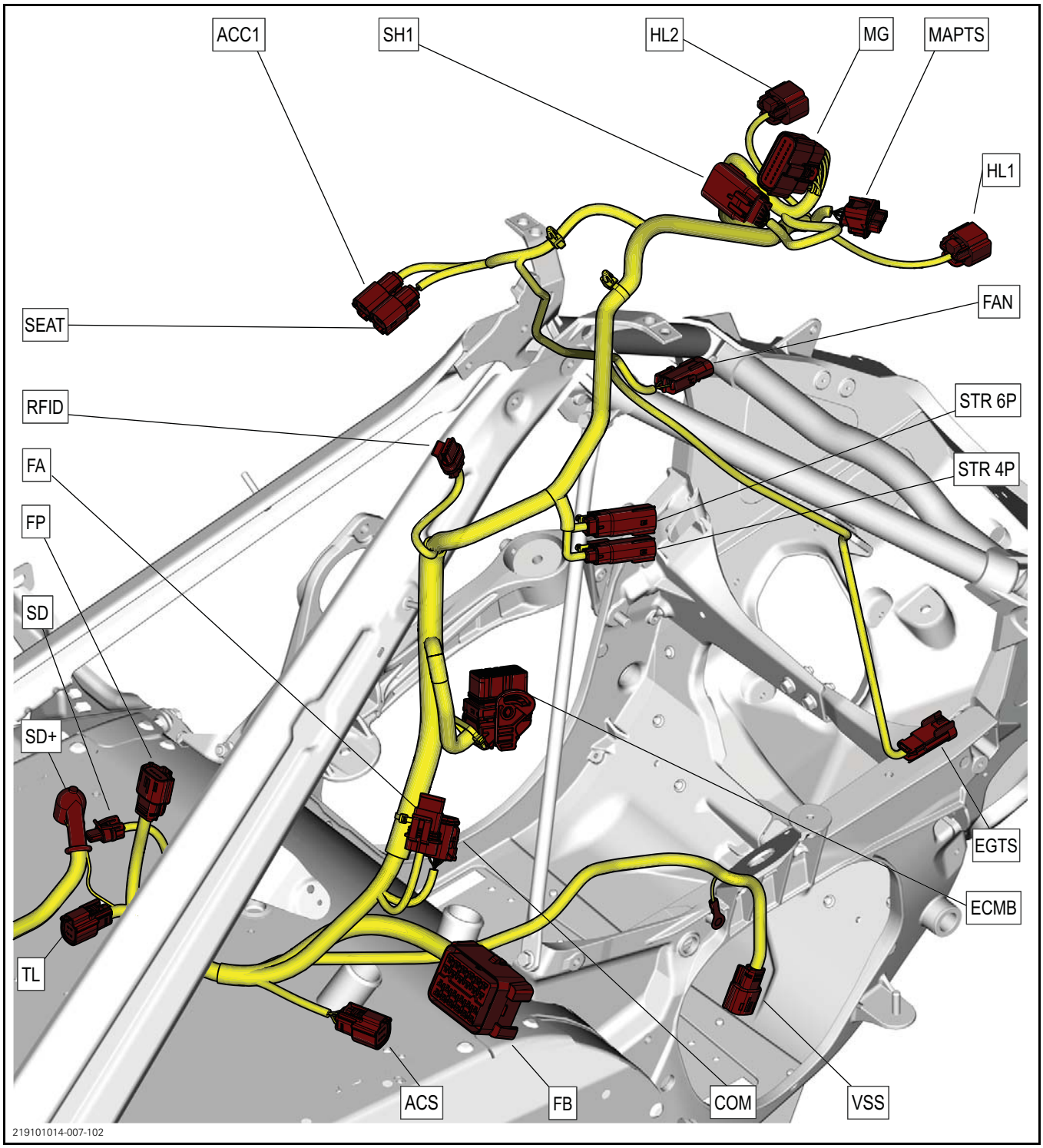
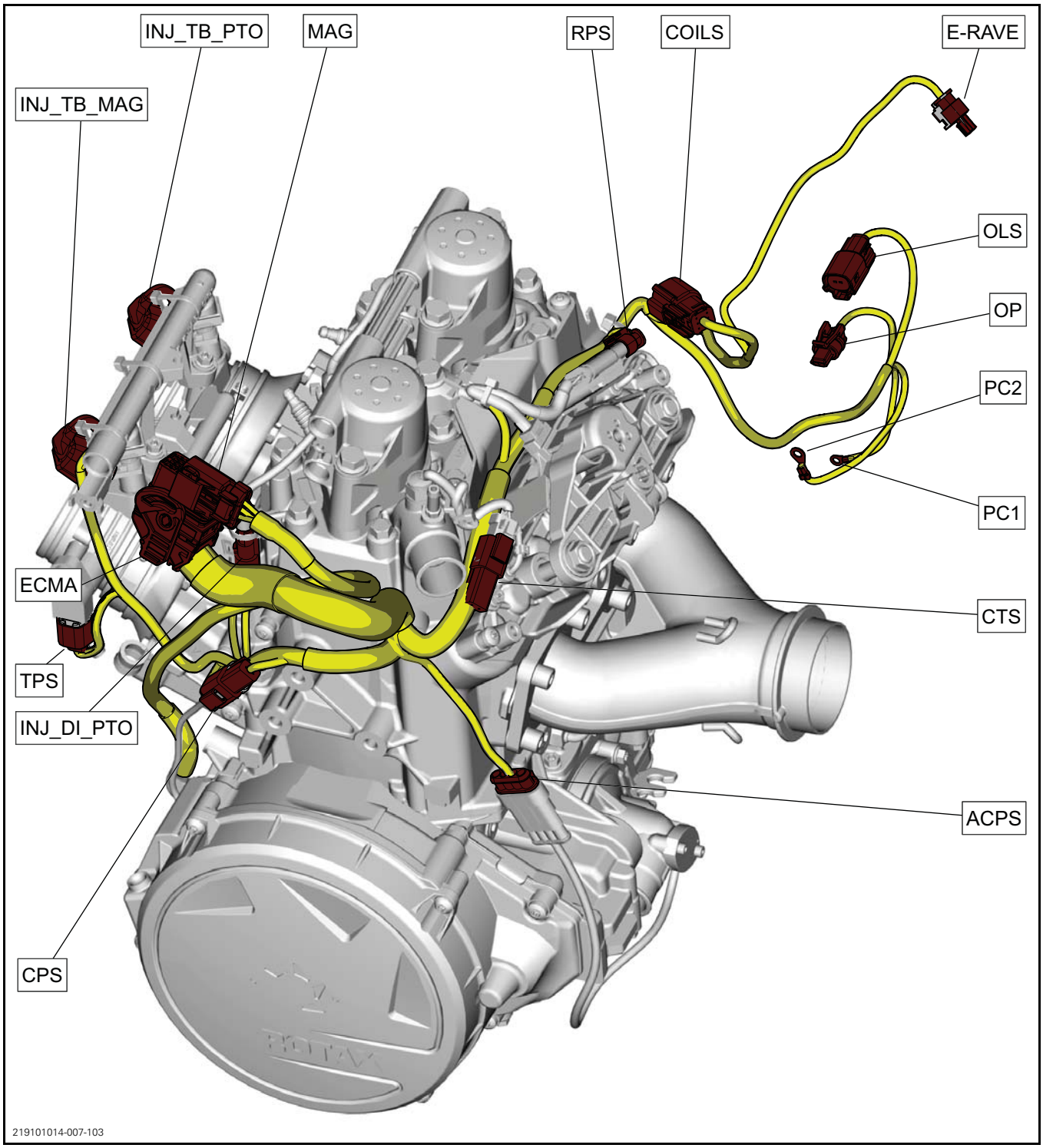
CHASSIS HARNESS - UTILITY VEHICLES



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	-	-

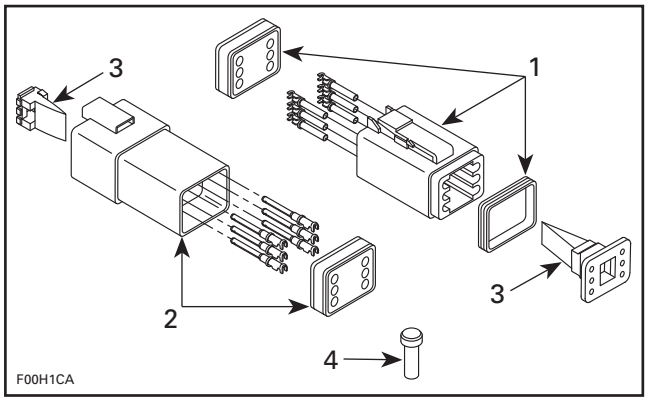
PROCEDURES

⚠ 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

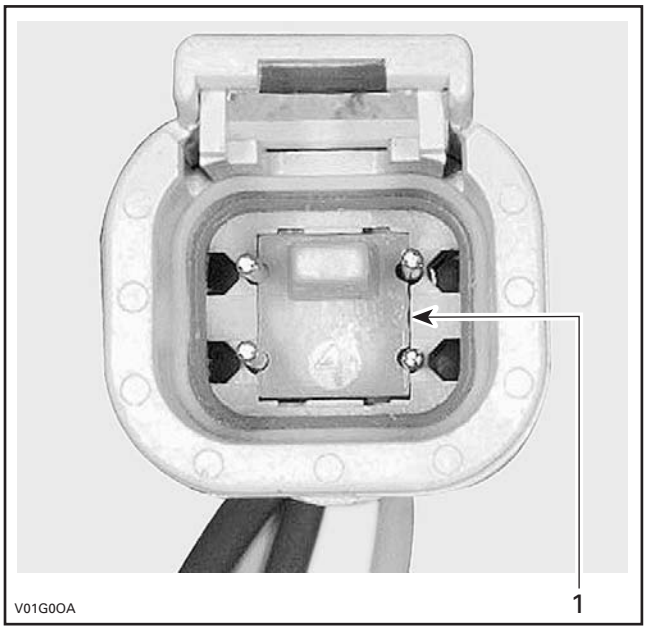


TYPICAL - DEUTSCH CONNECTOR
1. *Male connector*
2. *Female connector*
3. *Secondary lock*
4. *Sealing cap*

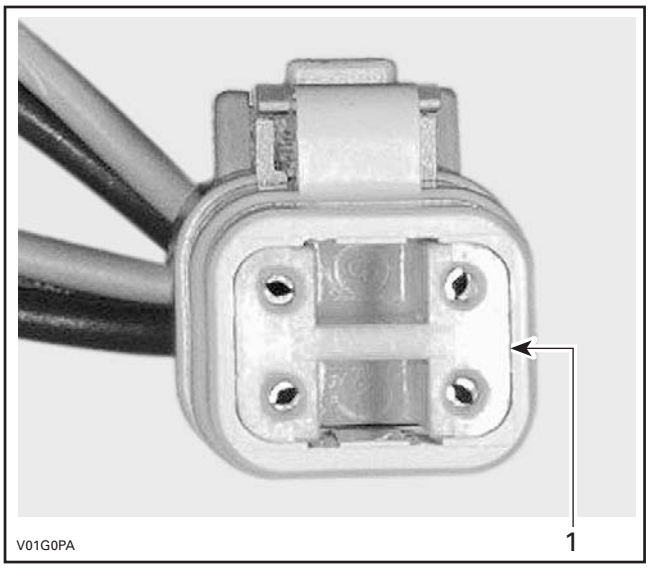
NOTICE Do not apply dielectric grease on terminal inside connector.

To remove terminals from connector, proceed as follows:

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



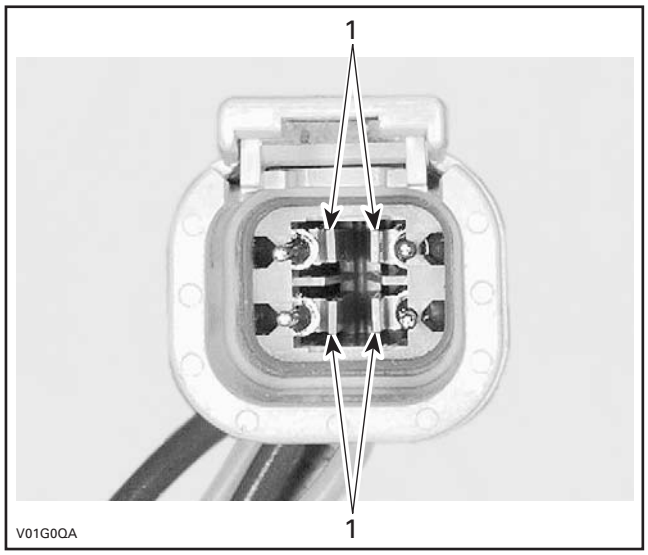
TYPICAL - FEMALE CONNECTOR
1. *Female lock*



TYPICAL - MALE CONNECTOR
1. *Male lock*

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

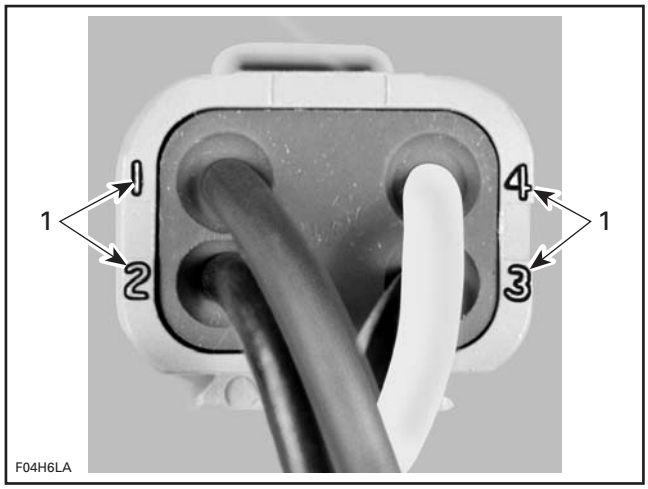
2. Insert a 4.8 mm (.189 in) wide screwdriver blade inside the front of the terminal cavity.
3. Pry the retaining tab away from the terminal while gently pulling the wire and terminal out of the back of the connector.



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

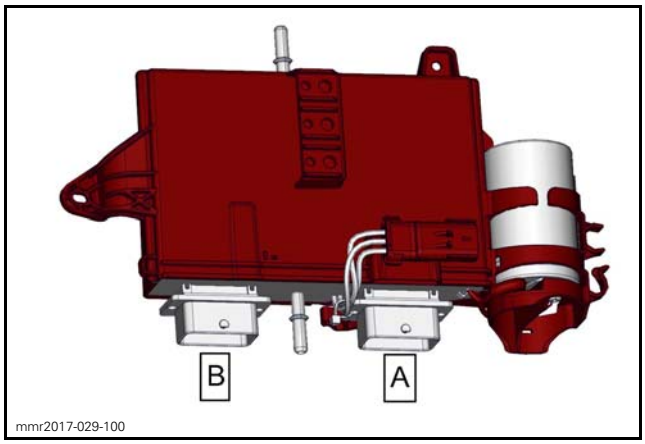
ECM CONNECTOR (MOLEX)

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.

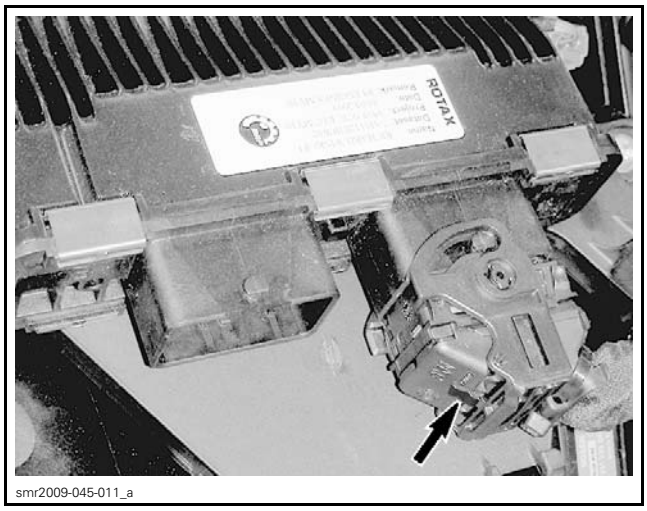
NOTE: If you need to remove the connector, be sure to not disconnect fuel quick-connector at ECM. If you need to remove the ECM or fuel quick connector, insure the ECM electrical connectors are securely in place and avoid fuel intrusion into connector/seal.



ECM CONNECTORS

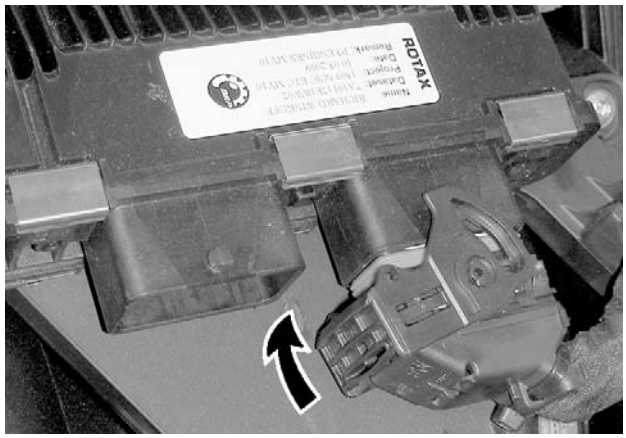
Removing the Connector

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

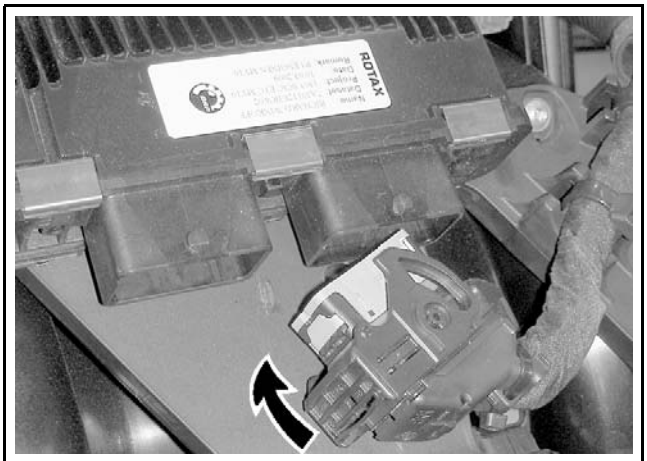
CONNECTOR LOCKING CAM ROTATION TO RELEASE

4. Pull connector off ECM.

smr2009-045-013_a

Installing the Connector

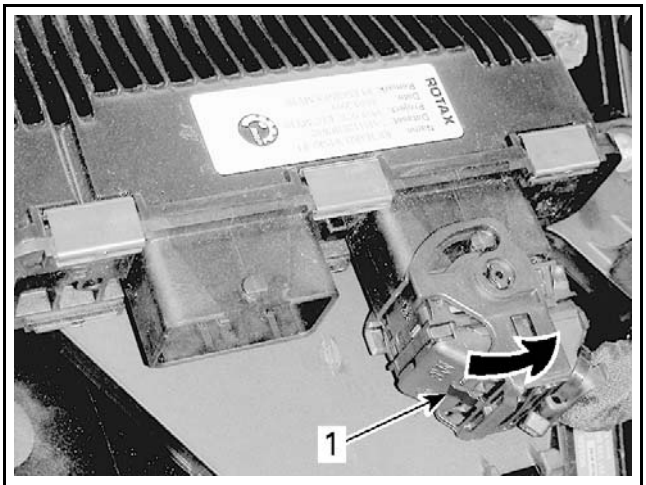
1. Fully open connector locking cam.



smr2009-045-013_b

CONNECTOR LOCKING CAM IN RELEASE POSITION

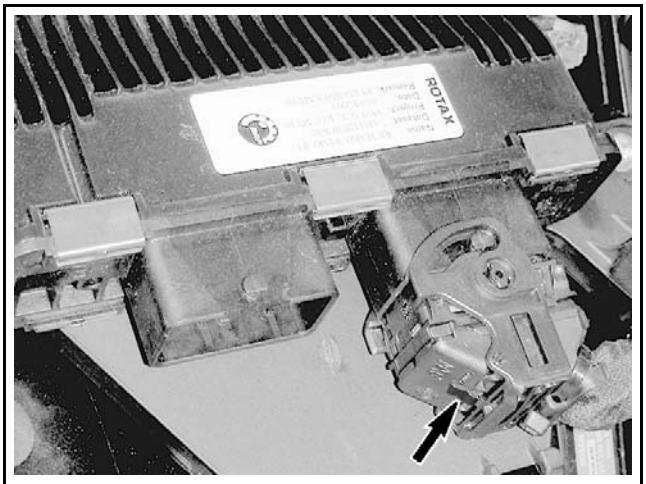
2. Insert connector on ECM.
3. As you push the connector onto the ECM, rotate the connector locking cam until it snaps locked.



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.

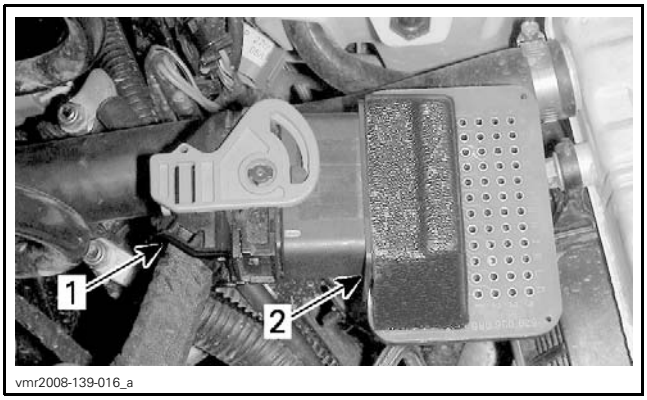
NOTICE Do not apply any lubricant product to the pins of the ECM connector.

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)

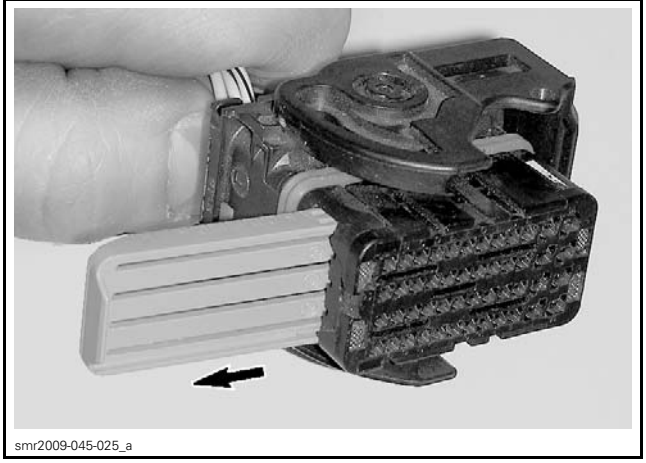
To remove a signal terminal from the ECM harness connector, use the ECM terminal remover 2.25.

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

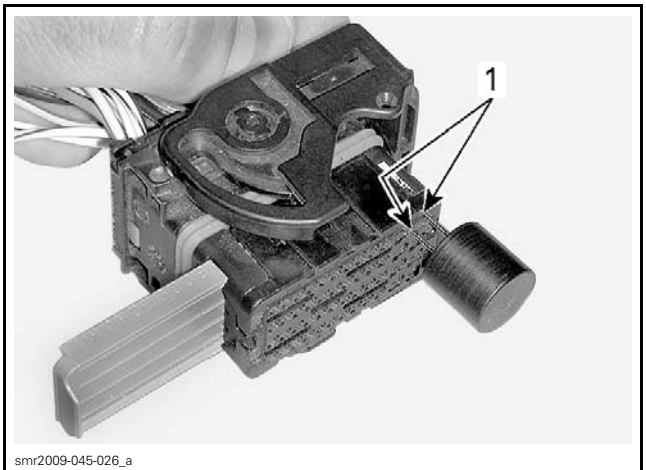
To remove a power terminal, use the ECM terminal remover 3.36.

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

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

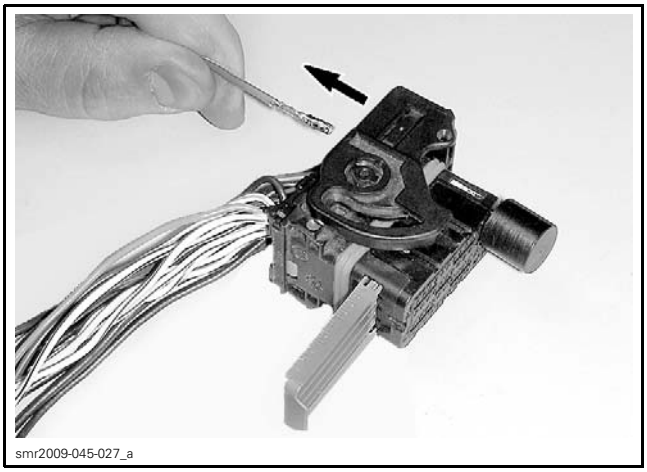


3. Insert tool to unlock terminal.



1. Unlock here

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


smr2009-045-027_a

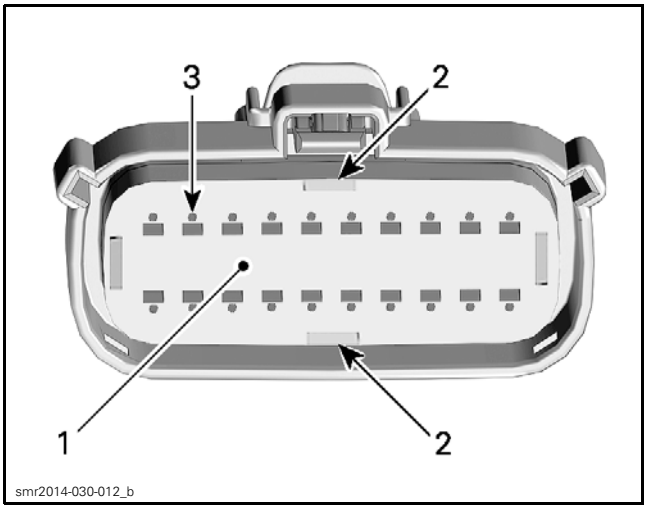
NOTICE Before installing wire terminals in the connector, ensure all terminals are properly crimped on wires. After installation of wire terminals in the connectors, ensure they are properly locked by gently pulling on them as if to extract them.

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)	

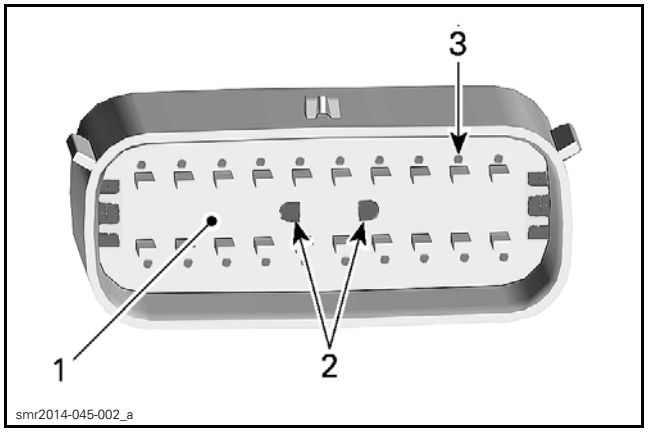
4. Gently pull on the wire to extract the terminal out the back of the connector.

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.

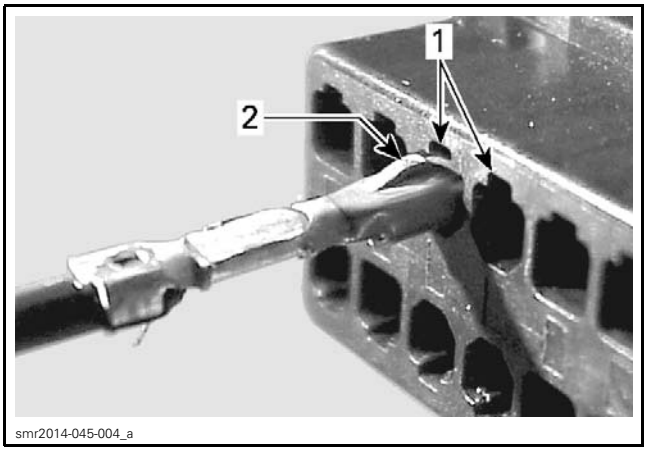
NOTE: Push the extractor tool in only as far as required to release the lock from the terminal. The tool should slide along the terminal and be inserted between the connector housing and the terminal lock.

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



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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

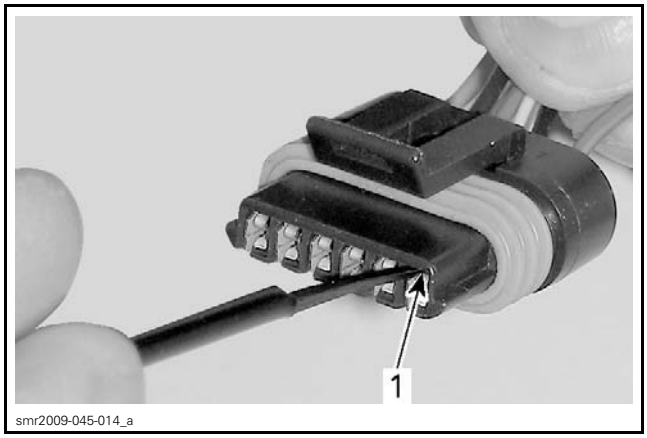
Removing the Connector Terminal

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)	

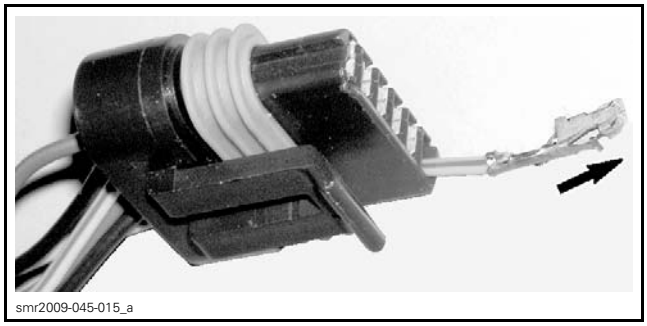
NOTE: Grinding the tool end to a taper is required.

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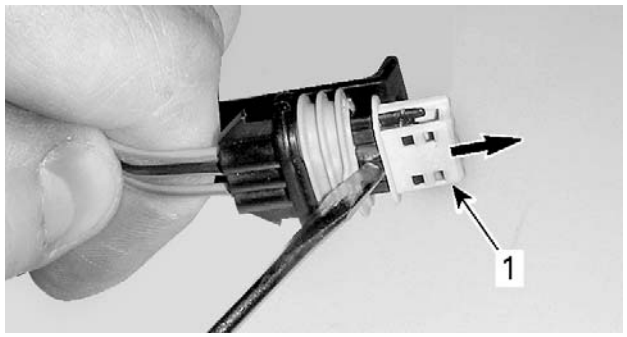
NOTICE **Before installing terminals in the connectors, ensure all terminals are properly crimped on the wires. After installation of the wire terminals in the connectors, ensure they are properly locked by gently pushing on them as if to extract them.**

DELPHI CONNECTORS

Removing the Terminal

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

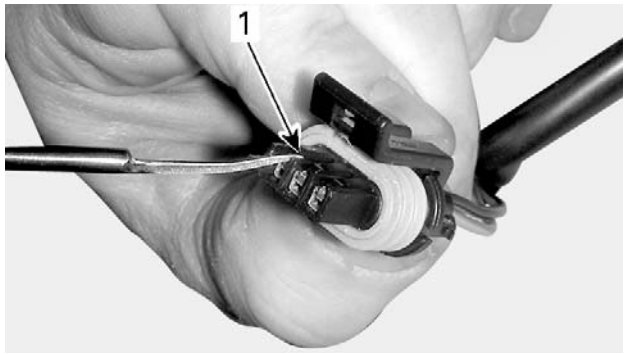


smr2009-045-023_a

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)	



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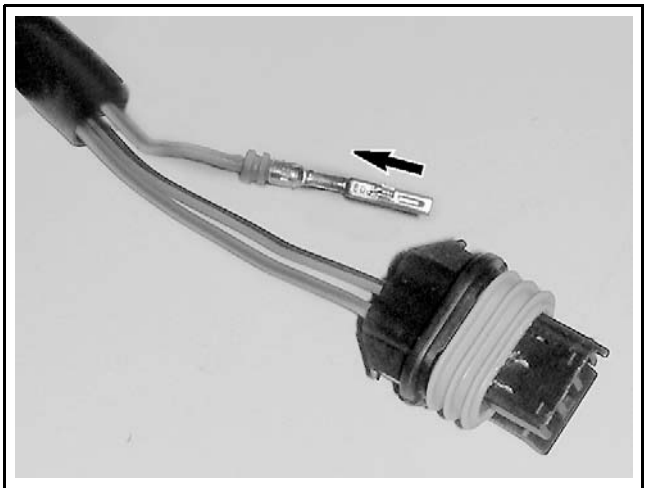
1. Unlock here

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

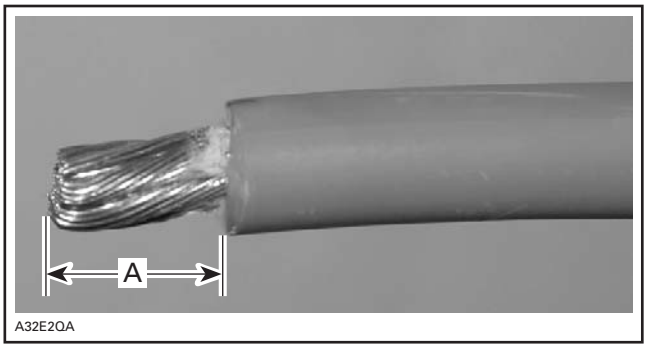

smr2009-045-028_a

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.

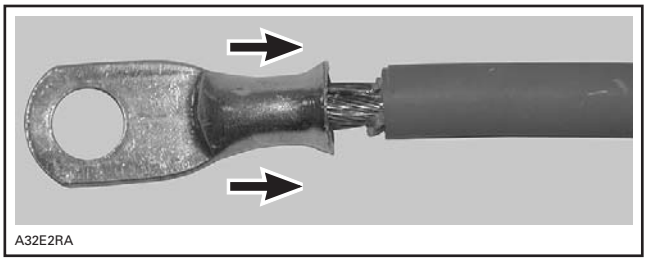


A32E2QA

A. 10 mm (3/8 in)

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

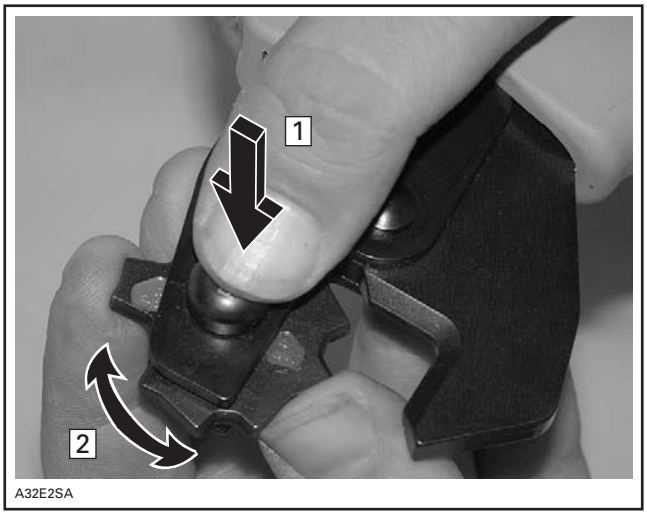
Install the appropriate terminal on the wire according to the requirement. Refer to appropriate *PARTS CATALOG*.


A32E2RA

INSTALLATION OF TERMINAL

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

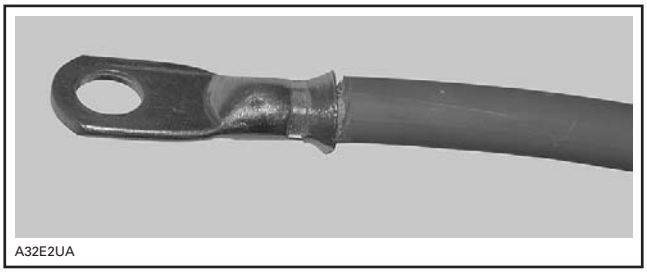
NOTE: Different wires require different crimping pliers settings, so make sure to follow the instruction supplied with the tool.



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.

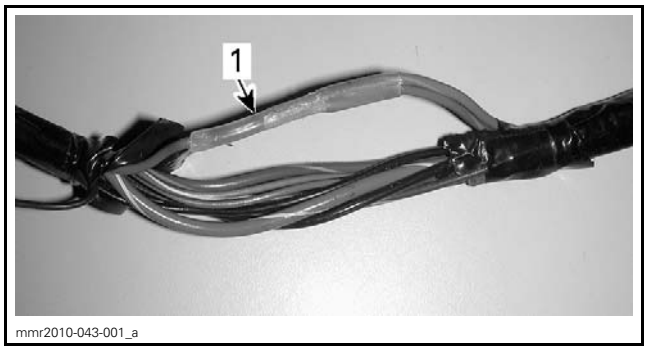
NOTICE Make sure that the protective heat shrink rubber tube has been properly installed and no part of wire is exposed.

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.

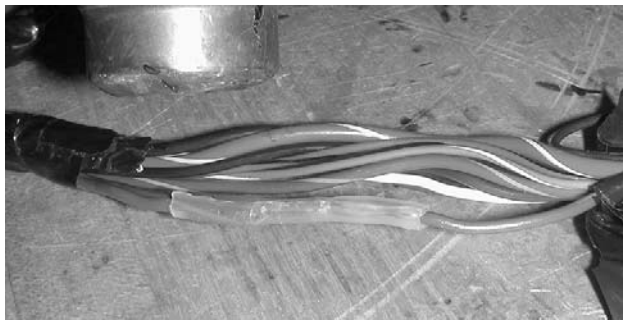


1. Shrink tube

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

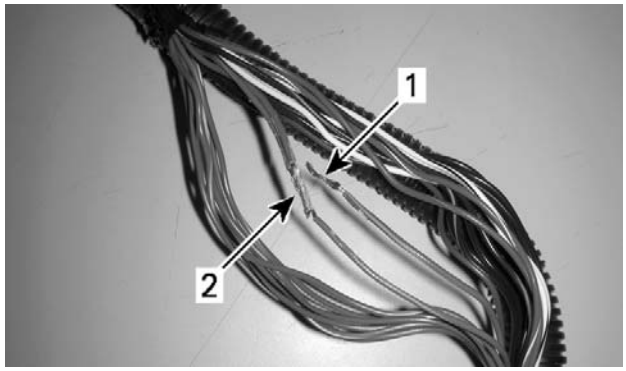
NOTICE Be careful with the blade to avoid cutting wires insulation.

   4.2 Slightly heat the shrink tube using a heat gun.


mmr2010-043-003

4.3 Remove the shrink tube with long nose pliers.

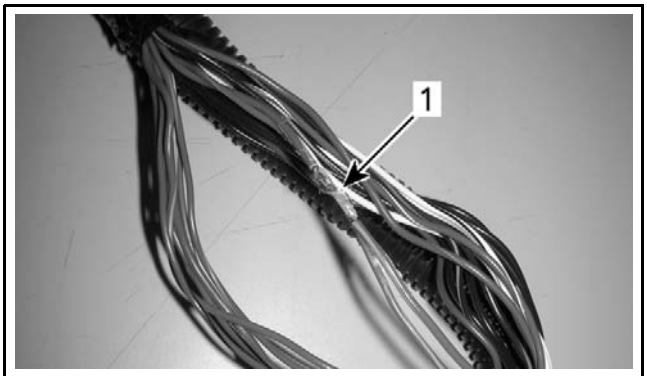
5. Locate detached wire from splice.



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.

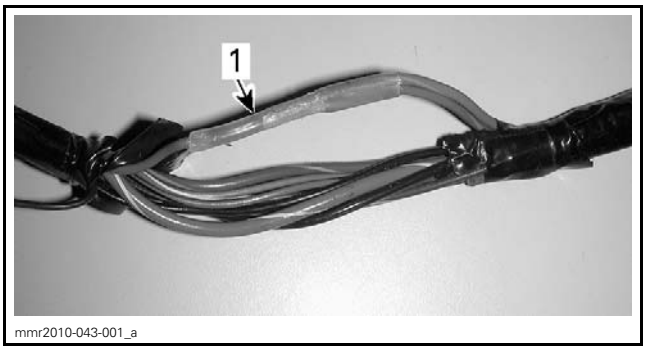
NOTE: Make sure tape overlaps on wire insulation, approximately 13 mm (1/2 in) each side.

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

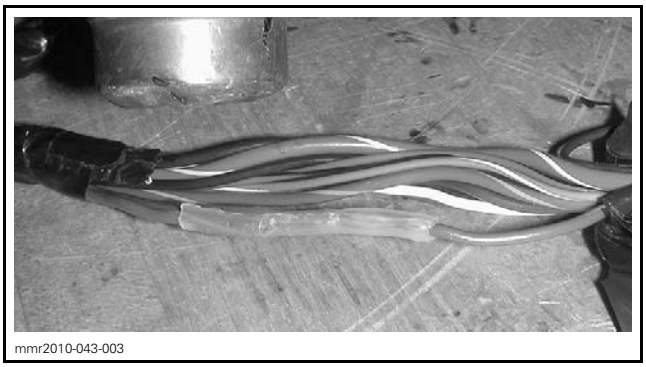
4. Remove the shrink tube.

4.1 Using a blade, cut the shrink tube.

mmr2010-043-002

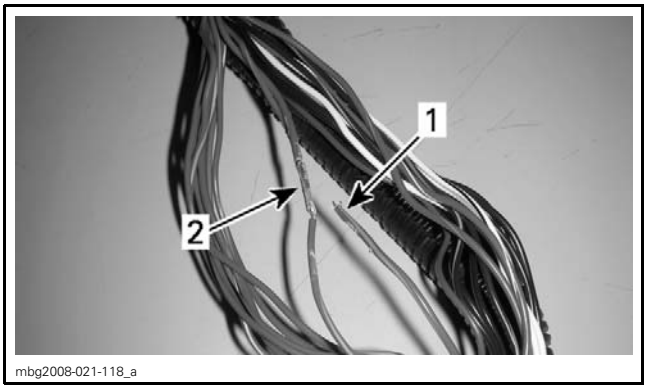
NOTICE Be careful with the blade to avoid cutting wires insulation.

4.2 Slightly heat the shrink tube using a heat gun.


mmr2010-043-003

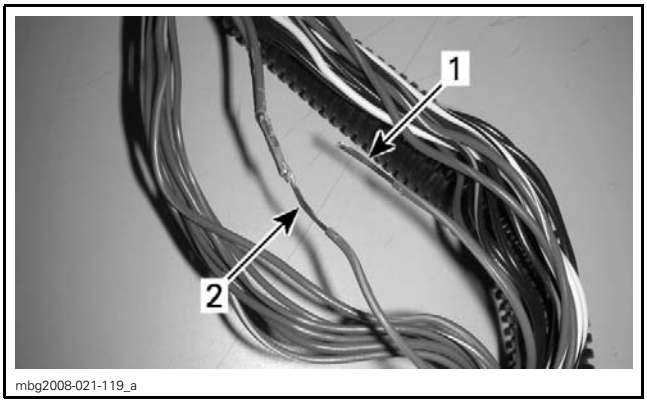
4.3 Remove the shrink tube with long nose pliers.

5. Locate broken wire from splice.



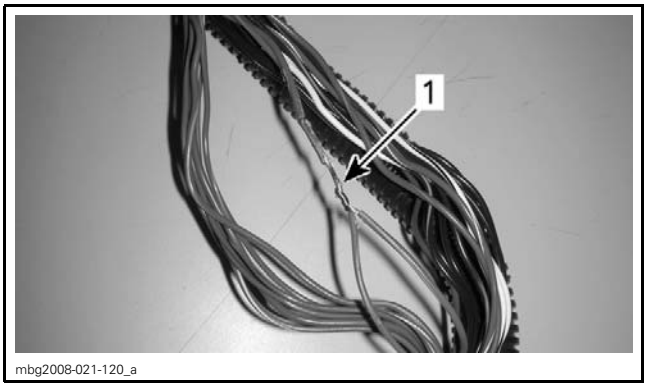
1. Broken wire
2. Splice

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).

CHARGING SYSTEM

SERVICE TOOLS

Description	Part Number	Page
12 V BATTERY SUPPLY CABLE	529 035 997	138
FLUKE 115 MULTIMETER	529 035 868	139, 141
POWER INTERFACE	515 177 223	138

SERVICE TOOLS – OTHER SUPPLIER

Description	Part Number	Page
NAPA ULTRA PRO BATTERY LOAD TESTER	95260	137

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.

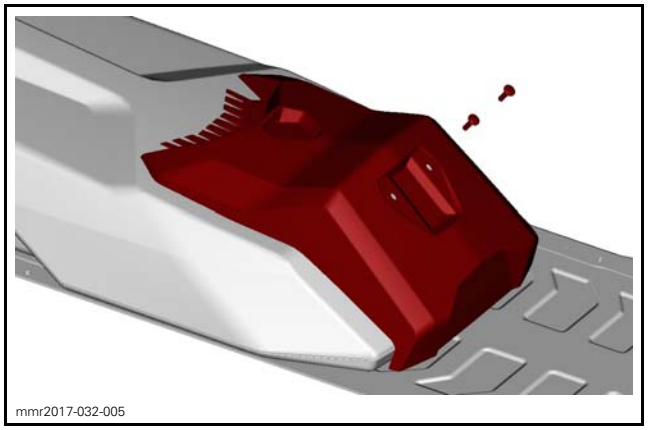
TEST CONDITIONS	
Initial battery voltage‡	Above 12.5 Vdc
Engine	OFF
Load	3 times the amp-hour (AH) rating
Time	15 seconds
‡ Required for accurate testing	

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.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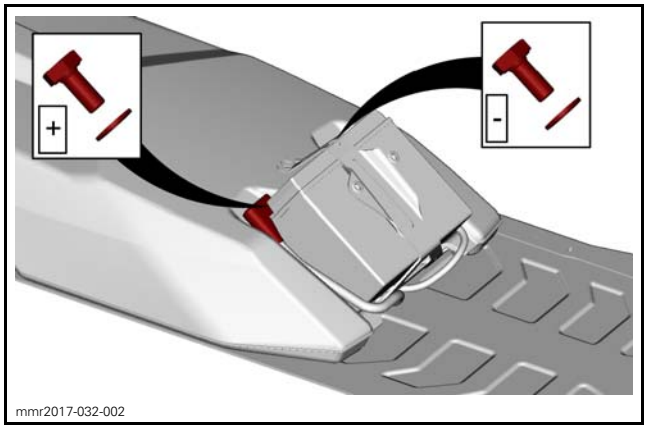
3. Disconnect negative before positive terminal.



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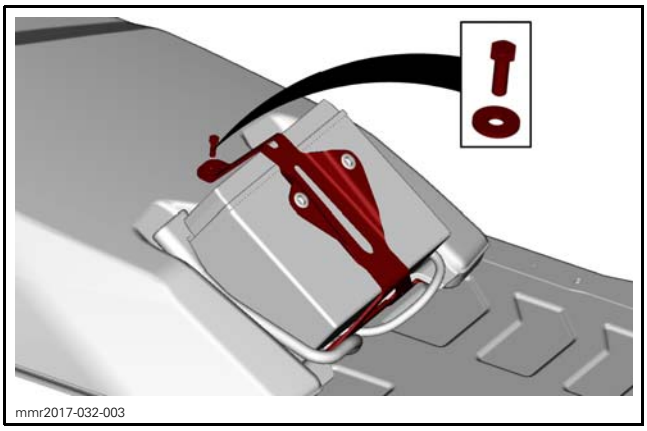
4. Remove battery hold down bracket.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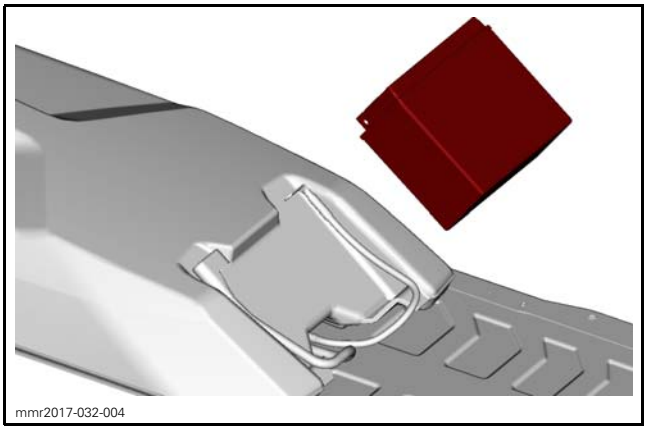
5. Remove battery.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Installing Battery

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

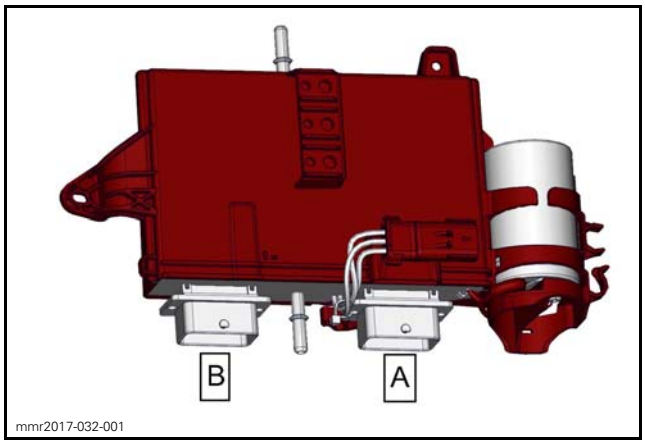
Description

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

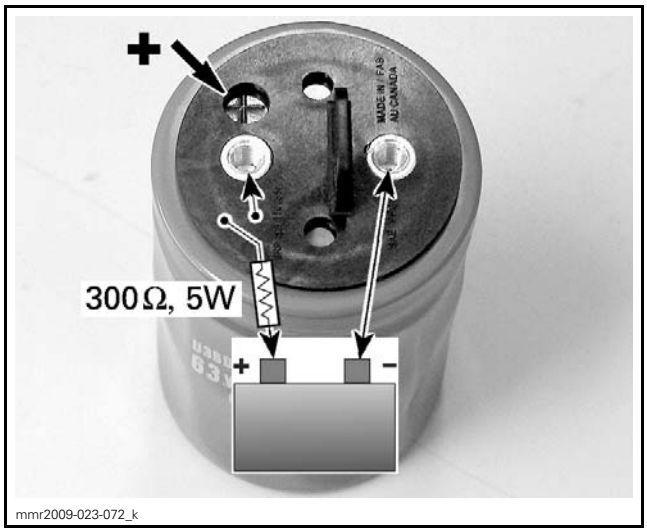
Procedure Setup

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

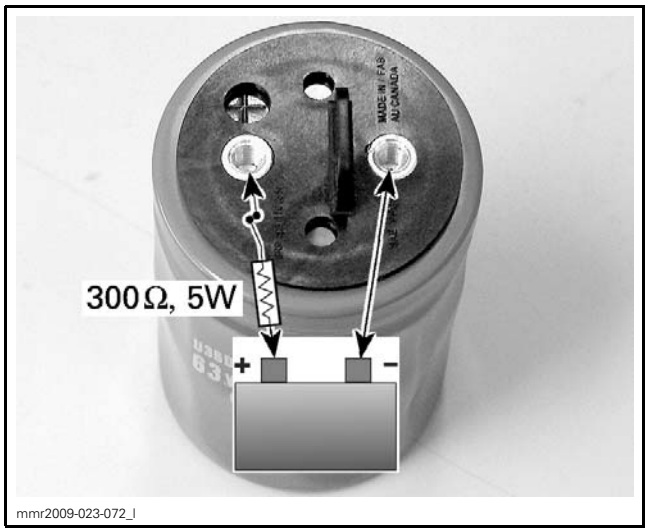
Connect the battery POSITIVE post to the capacitor POSITIVE terminal.



SWITCH AT OFF

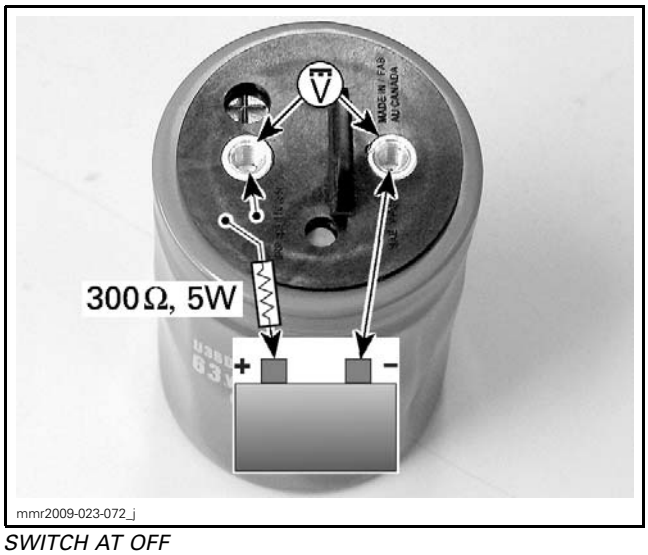
Test Procedure

1. Turn switch to **ON** and read capacitor voltage. Wait until voltage reaches 12 V.



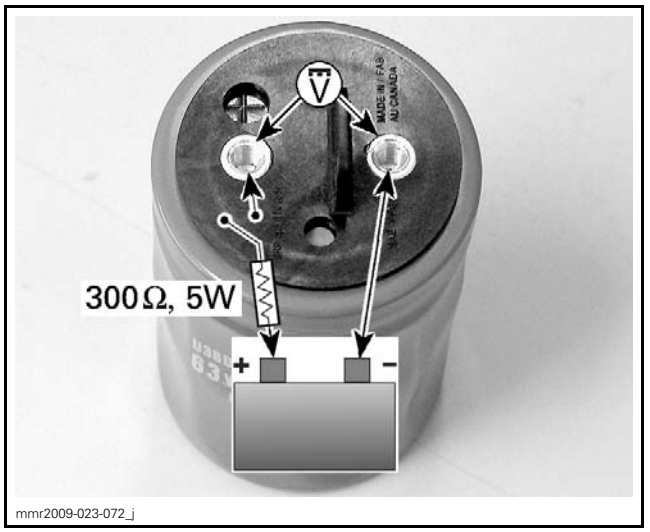
SWITCH AT ON

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.

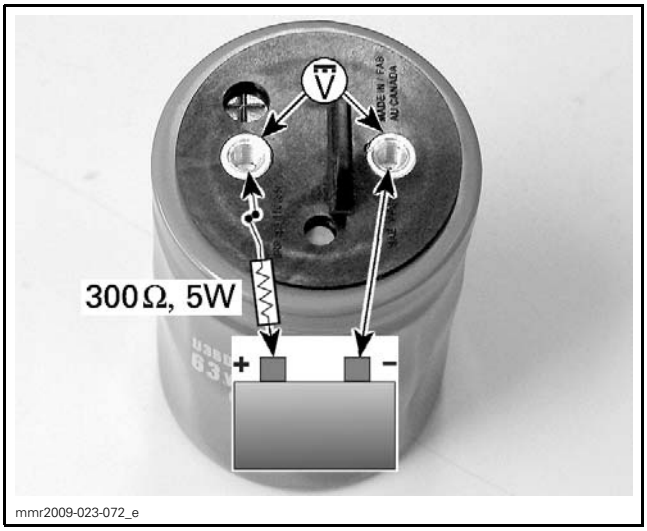
Testing Capacitor Residual Voltage

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.



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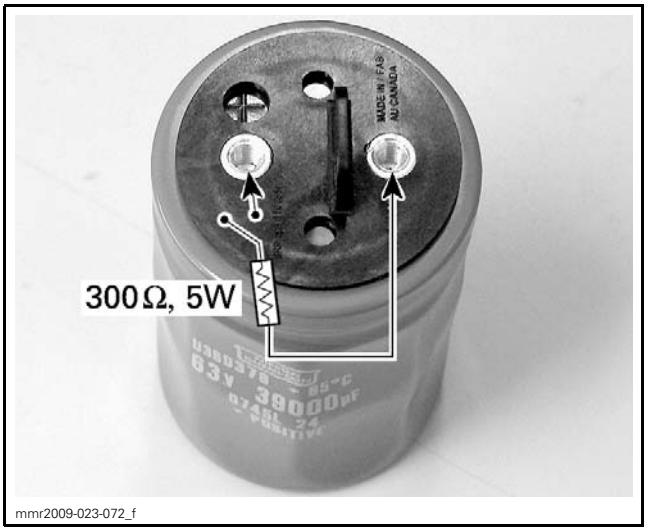
2. Turn test switch to OFF.

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.**



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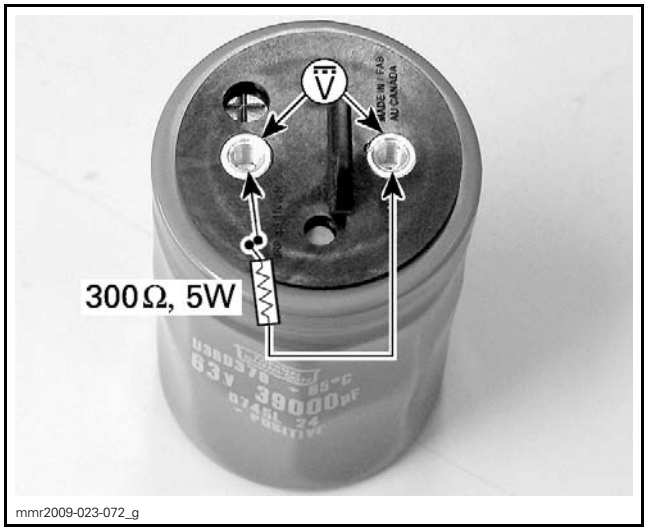
SWITCH AT OFF

4. Turn test switch to the ON position for 12 seconds ± 1 second to slowly discharge capacitor.
5. Read capacitor voltage.



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SWITCH AT ON

CAPACITOR RESIDUAL VOLTAGE
Must be above 2.6 Vdc

If voltage is out of specification, replace capacitor.

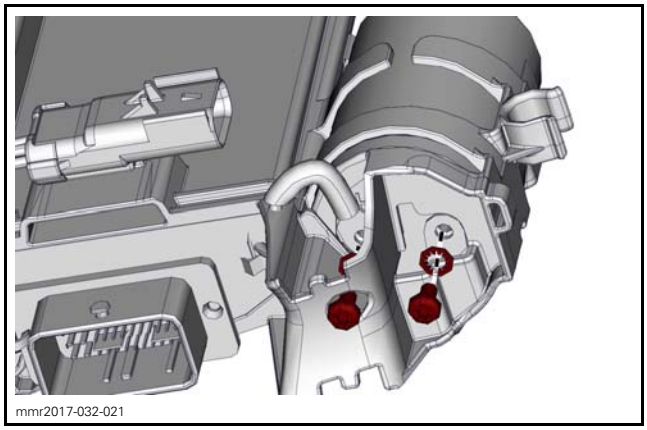
Removing Capacitor

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.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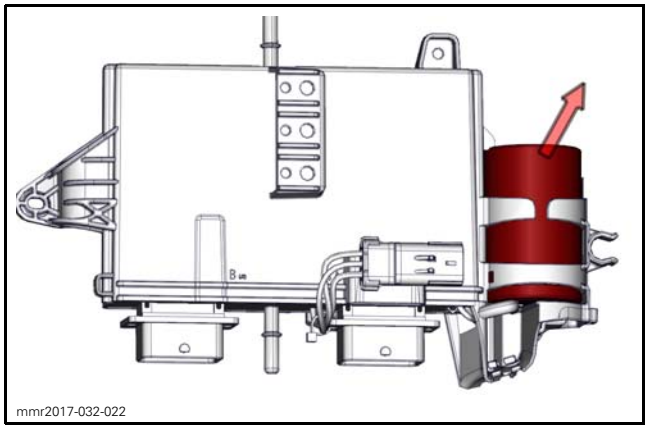
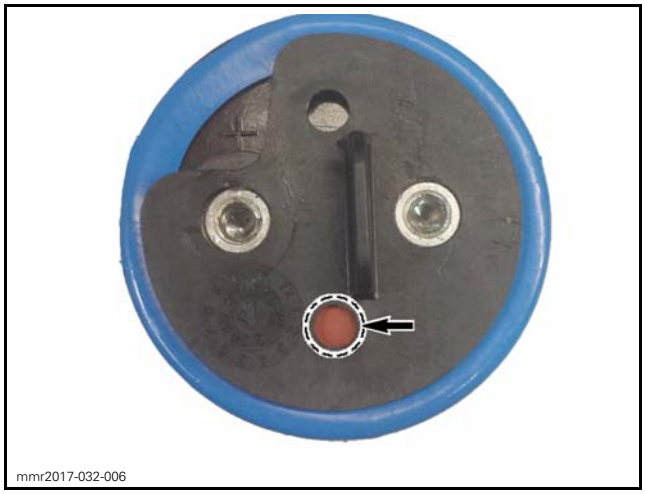
6. Remove capacitor from bracket.


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.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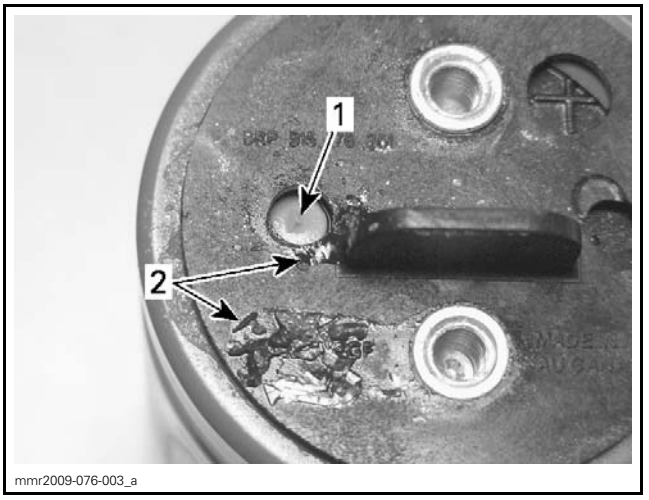
INSPECTION HOLE (SHIELD IS INTACT)

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.



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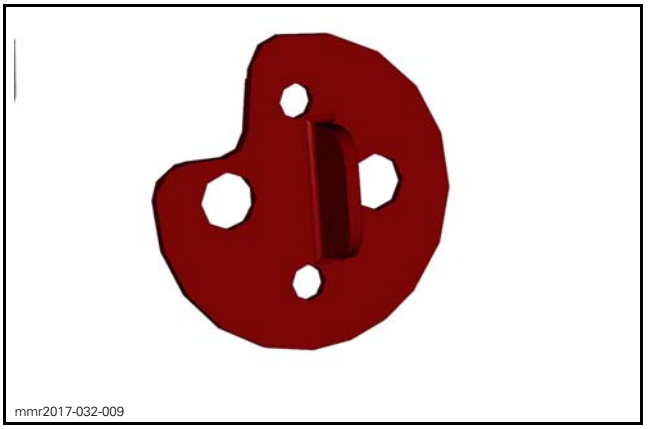
1. Perforated shield
2. Capacitor fluid leakage

Installing Capacitor

1. If capacitor was replaced, install a plastic protector cap on new capacitor.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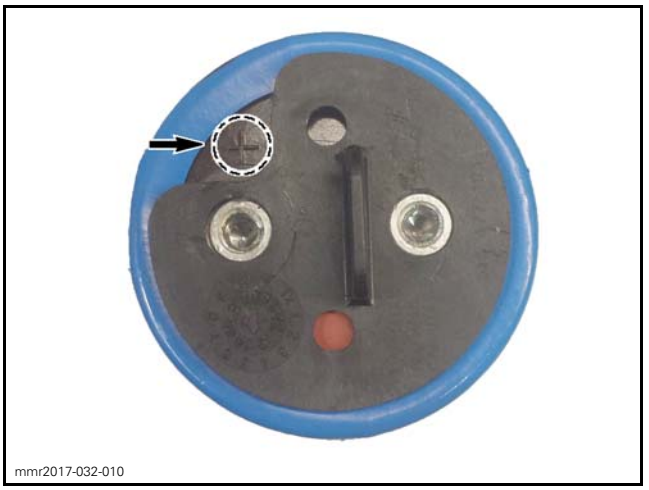
NOTE: When reinstalling plastic protector, ensure the **+** sign on top of capacitor is visible through the hole in protector.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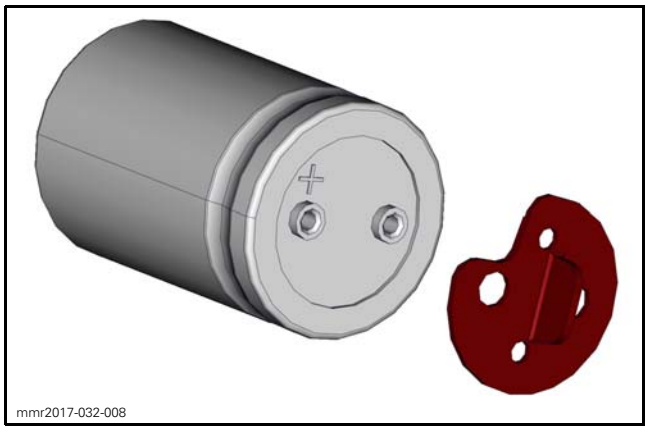
Otherwise, pull off protector, rotate it one half turn, then reinstall it.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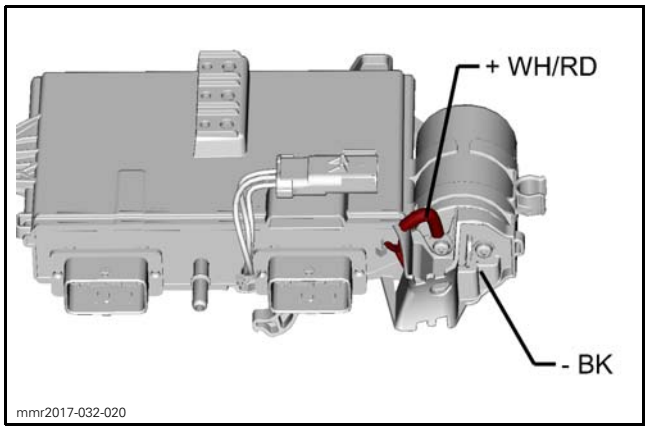
2. Route capacitor wires as per illustration and connect wire terminals to capacitor. Connect the WH/RD wire to the **+** terminal.

NOTICE Improper polarity could destroy the capacitor while in operation.



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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	147–148
FLUKE 115 MULTIMETER	529 035 868	147

SERVICE PRODUCTS

Description	Part Number	Page
DIELECTRIC GREASE	293 550 004	149

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.

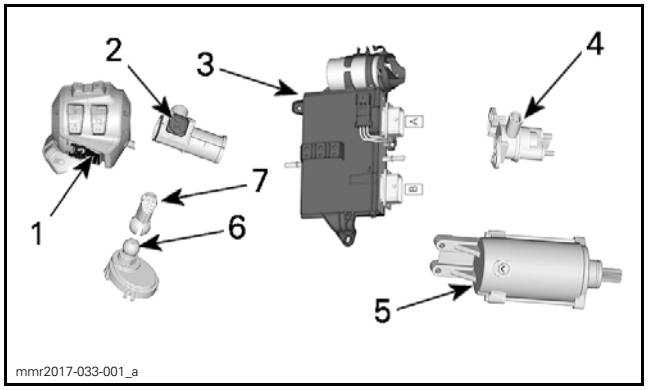
Starting System Operation

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

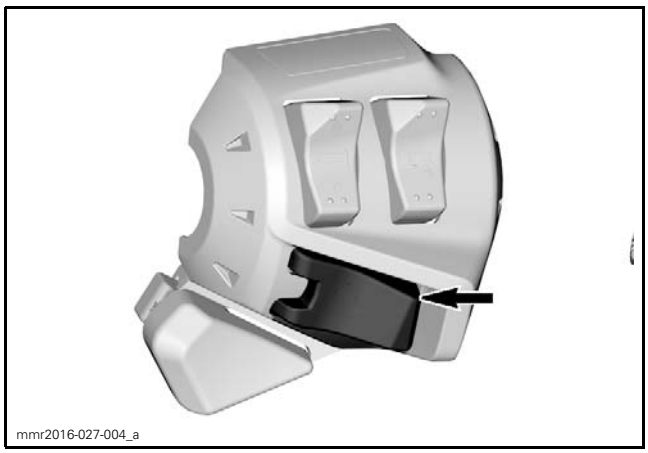
Ensure vehicle cannot move when performing starting system tests.

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.

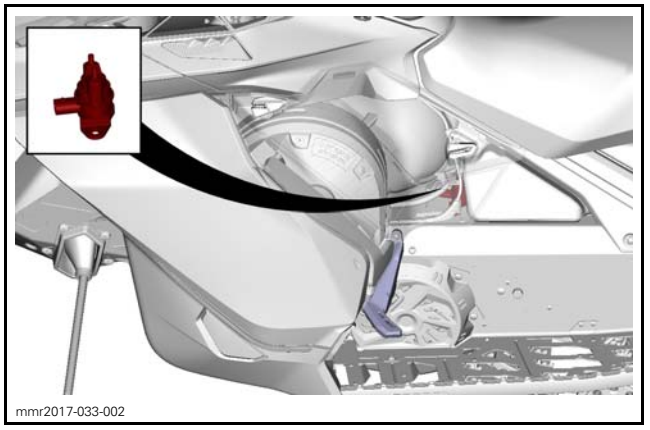
CONTINUITY TEST OF START/RER SWITCH CIRCUIT		
SWITCH POSITION	SH	RESISTANCE
Released	Pins 1 and 2	Close to 0 Ω
Pressed and held	Pins 2 and 8	Close to 0 Ω

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.

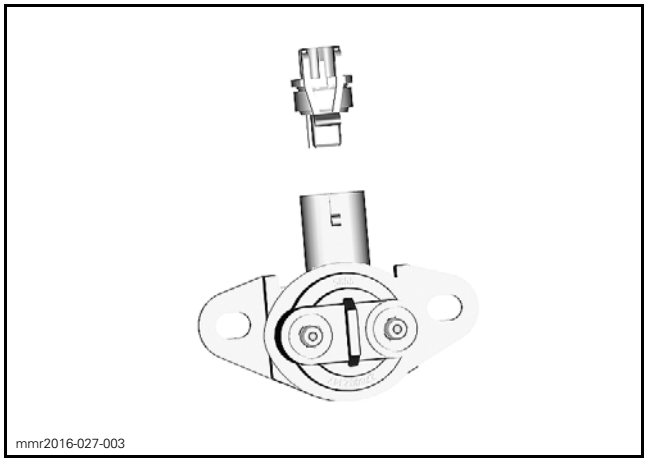
STARTER SOLENOID

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.

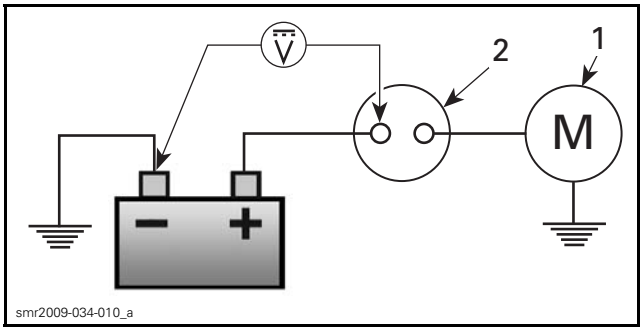
SOLENOID COIL RESISTANCE TEST		
SOLENOID CONNECTOR		RESISTANCE
Pin A	Pin B	4.5 to 5.5 Ω

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.

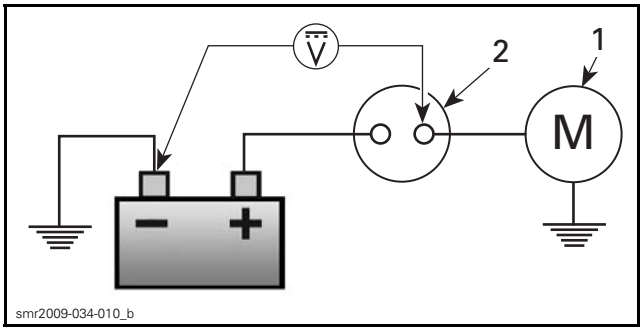
SOLENOID DYNAMIC TEST (ENGINE CRANKING)		
TEST PROBES		SPECIFICATION
Solenoid battery post	Battery ground	Battery voltage



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.

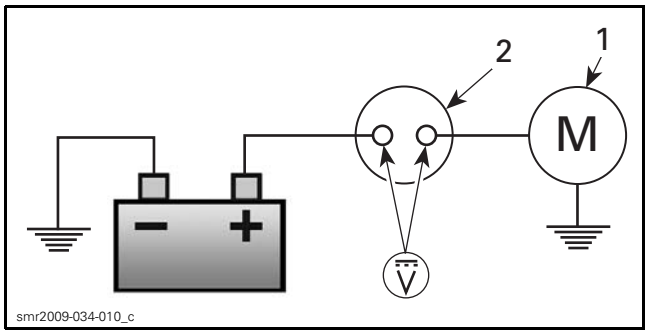
SOLENOID DYNAMIC TEST (ENGINE CRANKING)		
TEST PROBES		SPECIFICATION
Solenoid starter post	Battery ground	Battery voltage



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.

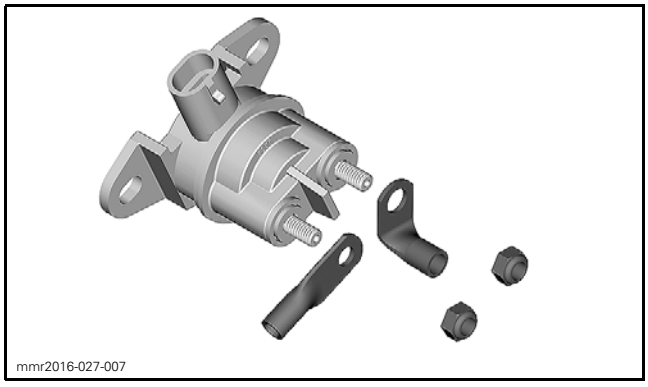
Removing Solenoid

1. Disconnect battery. Refer to *CHARGING SYSTEM* subsection.

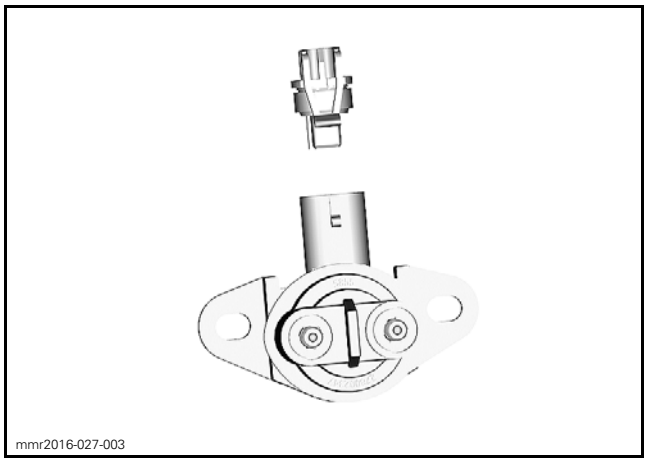
⚠ WARNING

Always disconnect the BLACK (-) battery cable first and reconnect last.

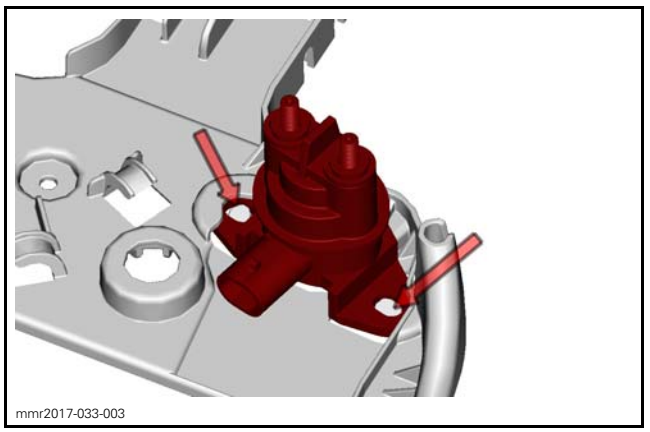
2. Disconnect solenoid cables.



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	152

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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*.

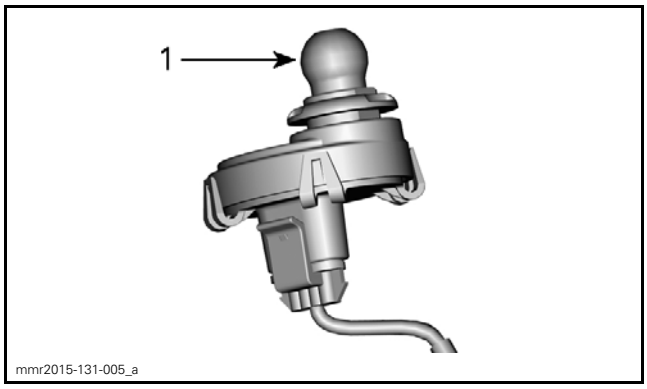
RFID CONNECTOR PIN	SPECIFICATIONS with POWER INTERFACE (P/N 515 177 223) installed
A	ECM ground
B	12 - 15 Vdc
C	5 Vdc
D	12 Vdc

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

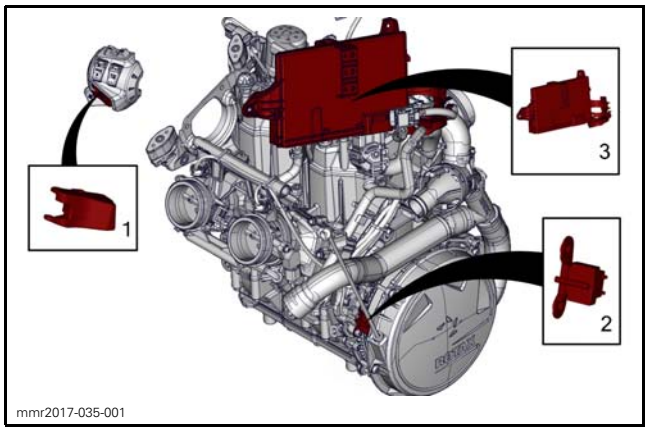
Description	Part Number	Page
12 V BATTERY SUPPLY CABLE	529 035 997	154
DIAGNOSTIC CABLE	710 000 851	154
ECM ADAPTER TOOL	529 036 166	154–155
FLUKE 115 MULTIMETER	529 035 868	154
MPI-2 INTERFACE CARD	529 036 018	154
MPI-3 INTERFACE CARD	529 036 353	154
POWER INTERFACE	515 177 223	154

SERVICE TOOLS – OTHER SUPPLIER

Description	Part Number	Page
OPTIONAL MALE-FEMALE EXTENSION SERIAL CABLE	(DB9)	154

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	157
POWER INTERFACE	515 177 223	157

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.

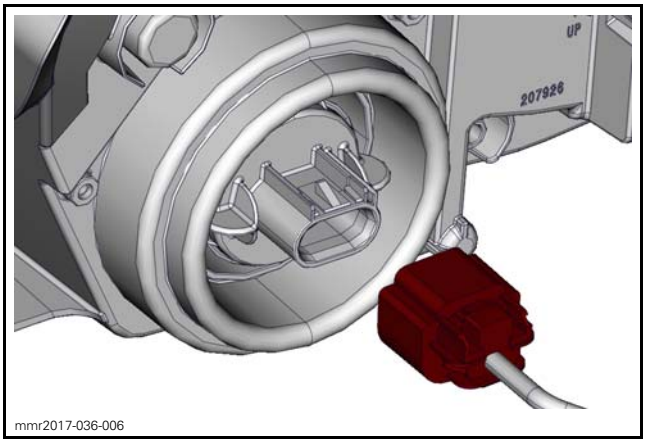
REQUIRED TOOLS
– POWER INTERFACE (P/N 515 177 223) – 12 V BATTERY SUPPLY CABLE (P/N 529 035 997) – 12-volt battery

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.



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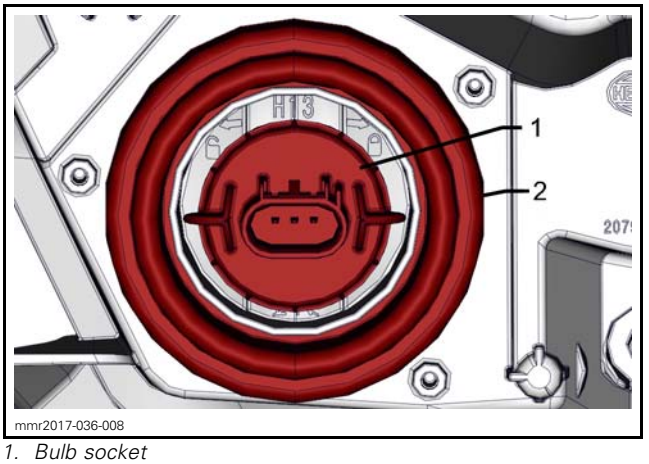
4. Turn bulb socket to unlock and remove bulb.

NOTE: Ensure bulb seal stays in place.



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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.

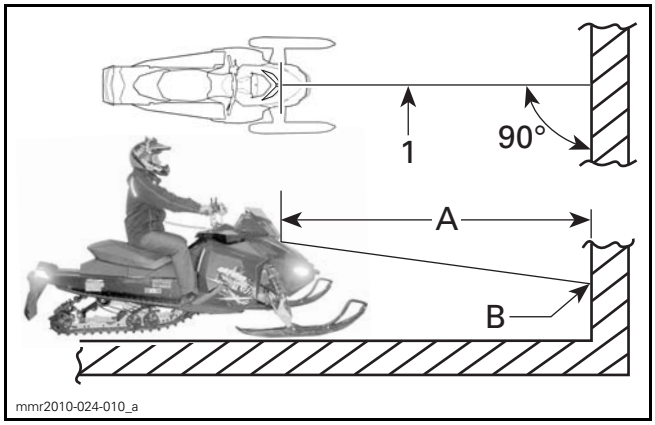
If any test failed, check wiring and connections going to switch.

If test of wiring and connections was good, replace switch.

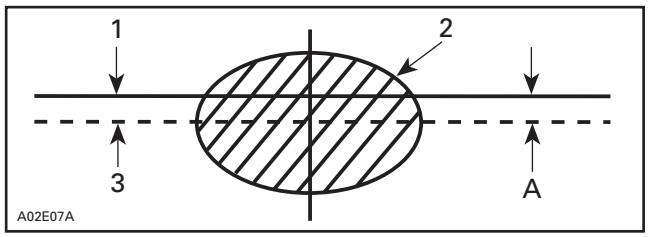
Aiming Headlight Beam

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



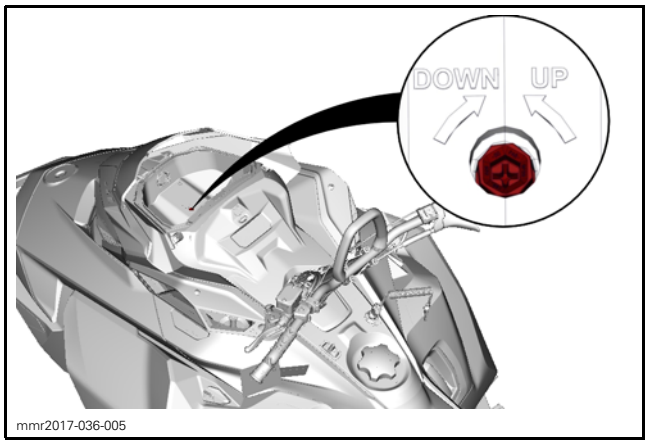
1. Headlight horizontal
2. Light beam (high beam) (projected on the wall)
3. Light beam center
A. 25 mm (1 in)

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.



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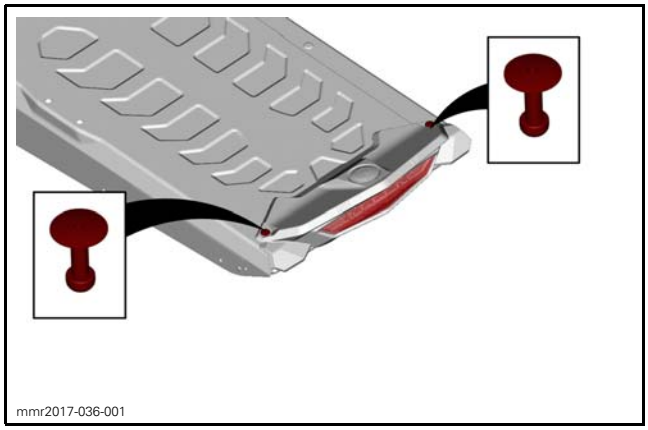
TAILLIGHT / BRAKE LIGHT

Replacing Taillight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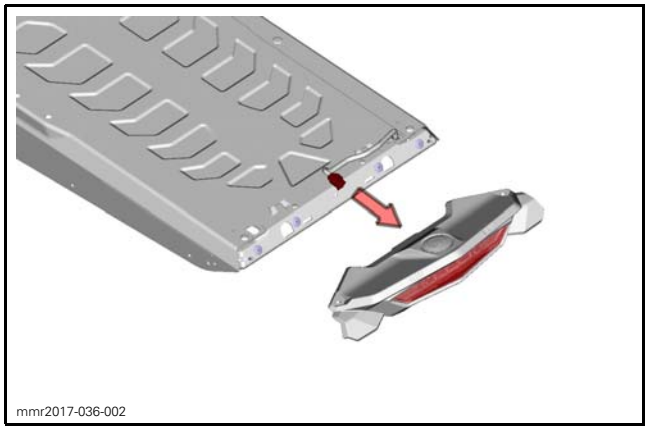
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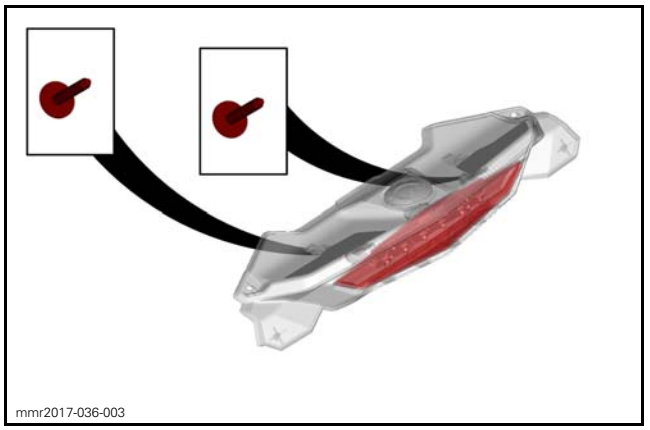
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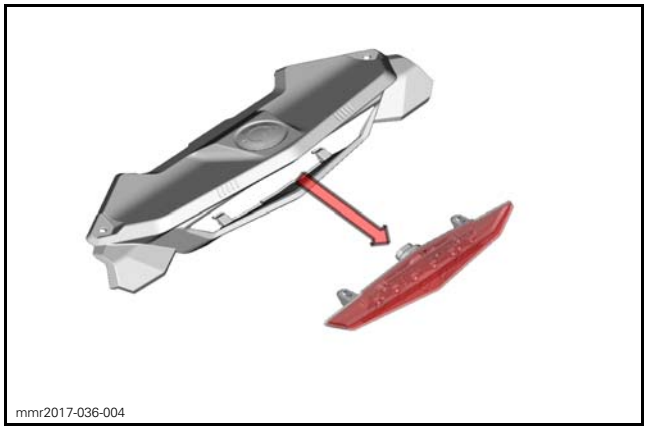
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Replace taillight.

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 4.5" DIGITAL DISPLAY

SERVICE TOOLS

Description	Part Number	Page
FLUKE 115 MULTIMETER	529 035 868	161

GENERAL

Most of the electrical tests require the following tool.

REQUIRED TOOL	
FLUKE 115 MULTIMETER (P/N 529 035 868)	

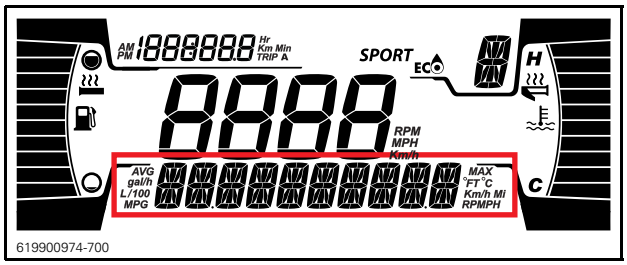
Refer to *WIRING DIAGRAM INFORMATION* subsection for diagnostic tips on troubleshooting electrical problems.

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.



LOWER DISPLAY

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 shuts 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

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**.

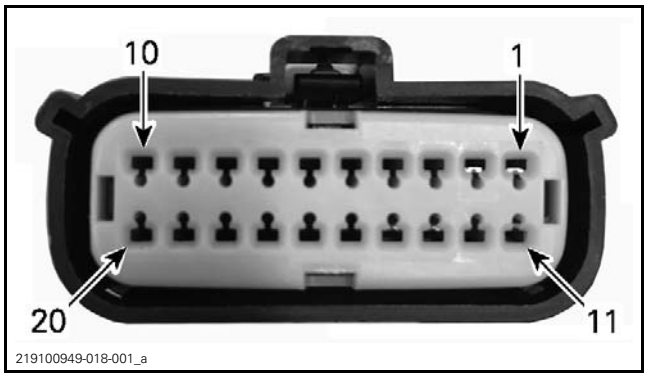
All indications will come and stay ON so that you can verify each indication.

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.



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 front service cover 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.

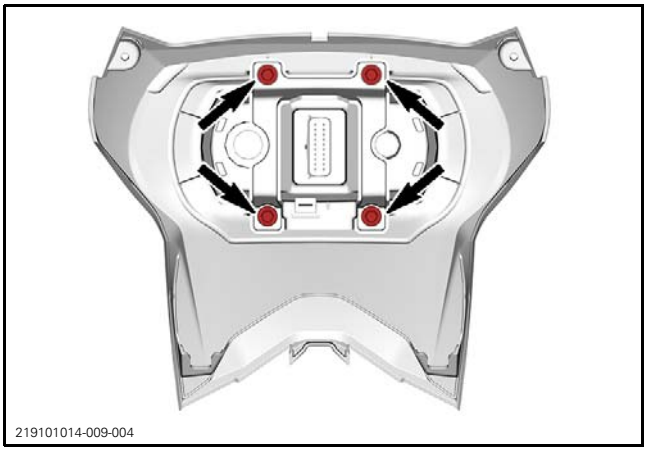
If the multifunction gauge functions, however there is a suspected communication problem with another component, perform this test between the multifunction gauge and that component.

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.



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. Connect the vehicle to the BRP diagnostic software (BUDS2), refer to the *COMMUNICATION TOOLS* subsection.
2. In BUDS2, go to:
   – SETTINGS page
   – CLUSTER button
   – SETTINGS tab
   – CONFIGURE LANGUAGE AND UNITS.

GAUGE 7.2" DIGITAL DISPLAY

SERVICE TOOLS

Description	Part Number	Page
FLUKE 115 MULTIMETER	529 035 868	165

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.

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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

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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**.

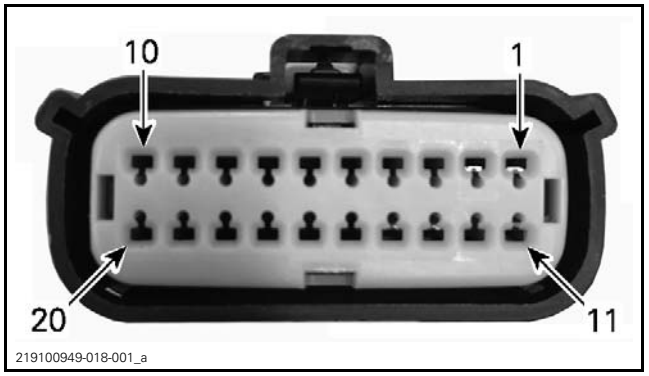
All indications will come and stay ON so that you can verify each indication.

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.



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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.

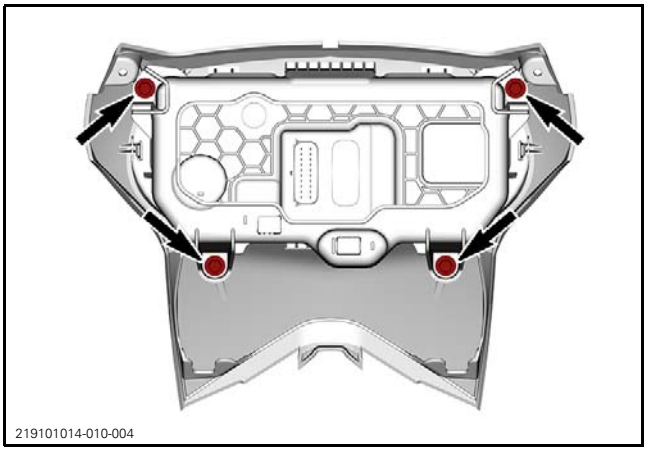
If the multifunction gauge functions, however there is a suspected communication problem with another component, perform this test between the multifunction gauge and that component.

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	169
FLUKE 115 MULTIMETER	529 035 868	174
POWER INTERFACE	515 177 223	169

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)

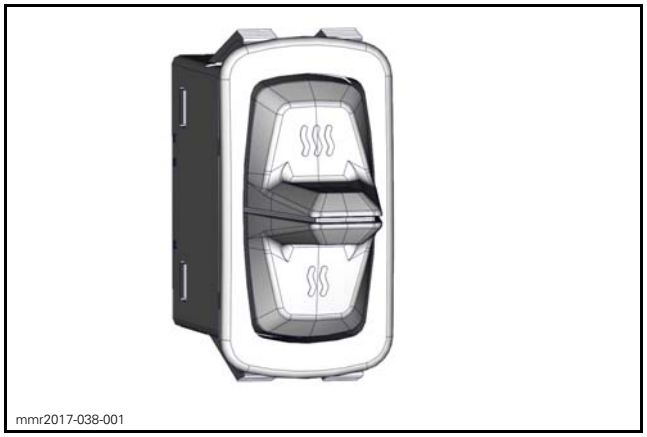
Power to the heated throttle lever is controlled through the gauge.

A three position switch allows the selection various heat levels, which are displayed in the gauge.

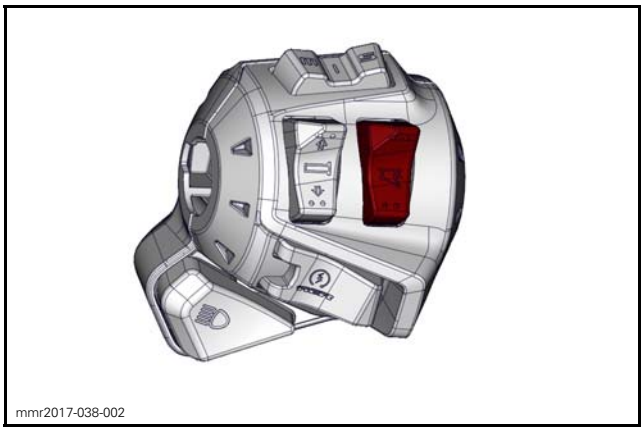
NOTE: The heated handlebar grips and the heated throttle lever are controlled by the same 3 position switch when used with the console switch. Refer to *SETTING THE HEATED THROTTLE LEVER RATIO*.

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



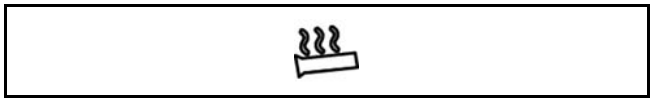
HEATER SWITCH - MODELS WITH MULTIFUNCTION SWITCH

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.

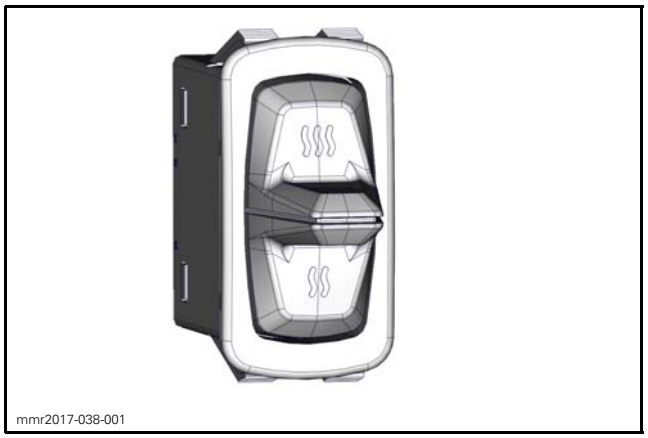
SYSTEM DESCRIPTION (HEATED HANDLEBAR GRIPS)



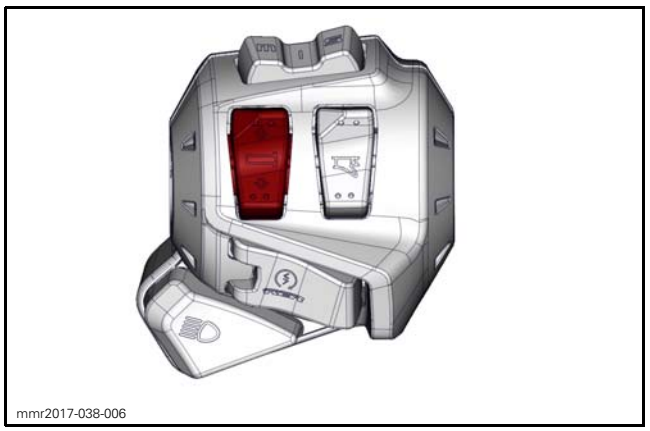
The grip heat is controlled through the gauge.

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.

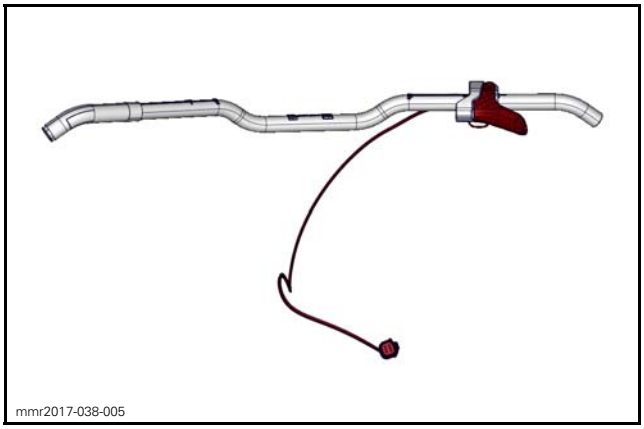
A higher ratio will increase the heated throttle temperature compared to the heated grips.

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.

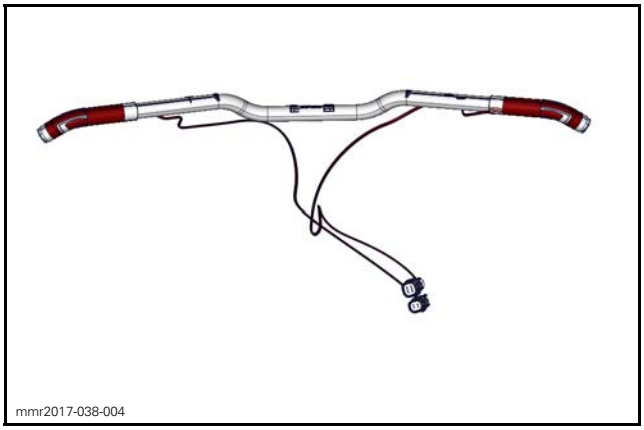
Testing Throttle Lever Heating Element

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.

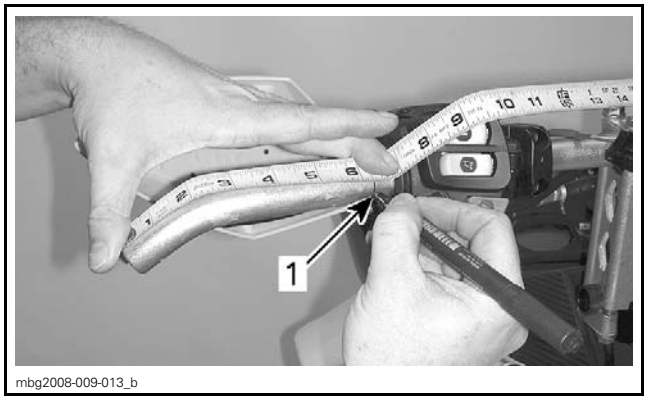
1. Disconnect the connector, Refer to *WIRING DIAGRAM AND CONNECTORS* subsection for connector location.
   1.1 STR 4P for left hand handlebar heater
   1.2 STR 6P for right hand handlebar heater

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.

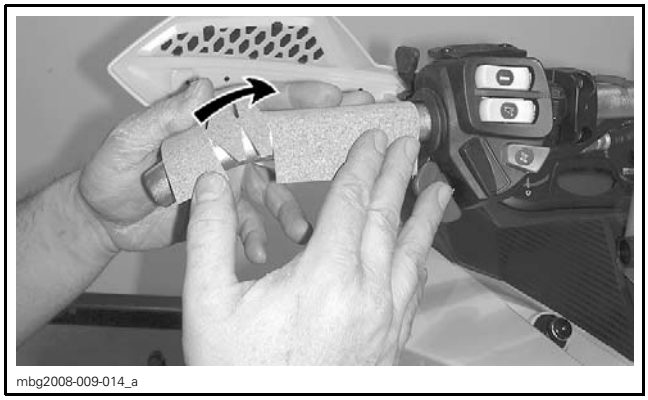
Installing Heated Grips Heater Element

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.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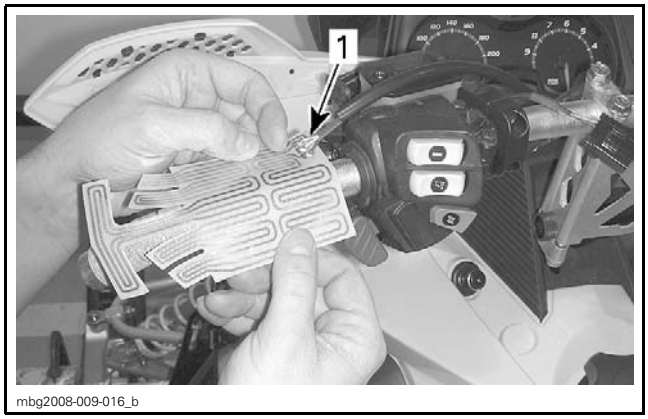
TYPICAL — CORK INSULATOR ALIGNMENT

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.



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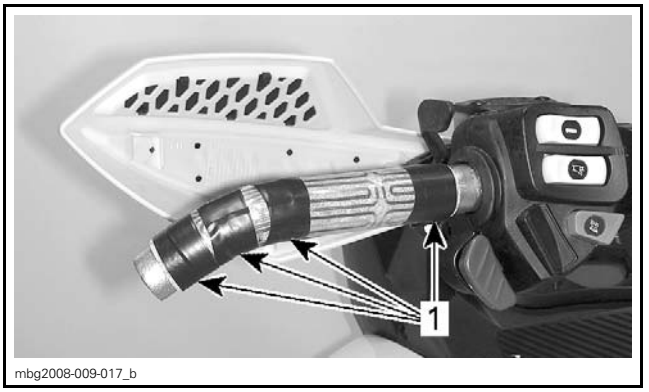
TYPICAL — HEATER ALIGNMENT
1. Heater wire position (LH front, RH rear)

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.



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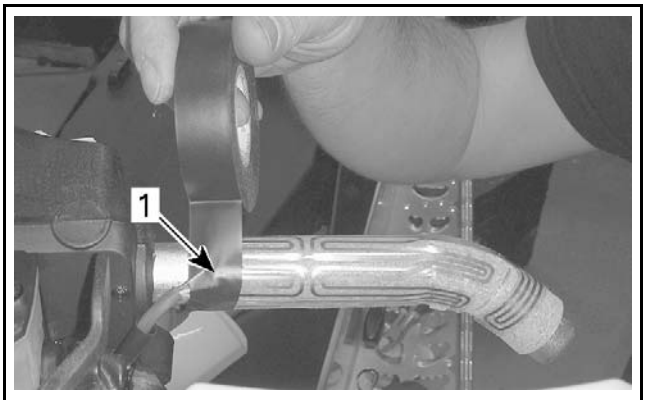
TYPICAL
1. Electrical tape application (4x)

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.



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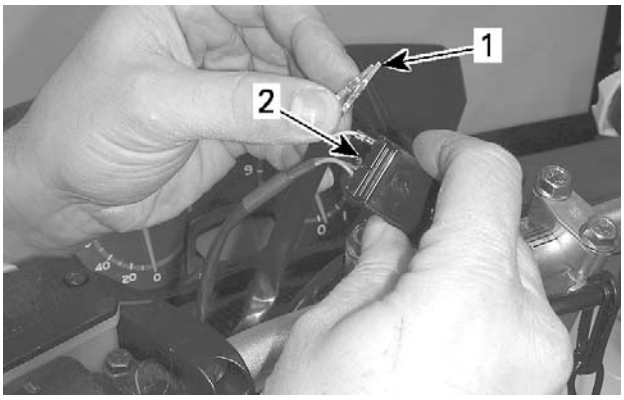
TYPICAL — IMPORTANT
1. Tape application over wire connections

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.

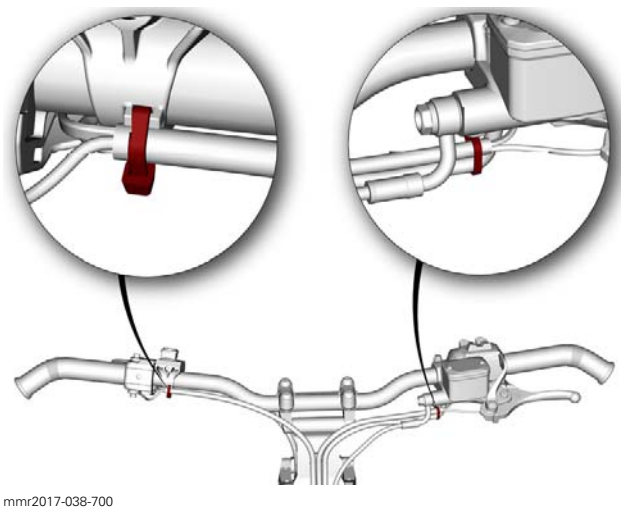


TYPICAL
1. *Heater wire terminals*
2. *Insertion through back of connector*

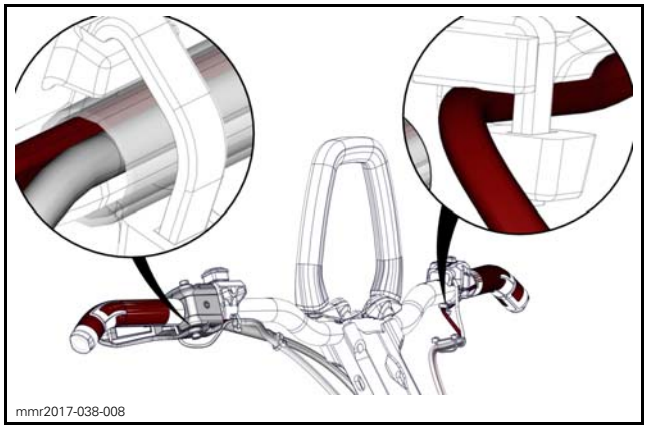
10. Install locking ties to secure the heater wire as it was routed originally..

⚠ 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.**

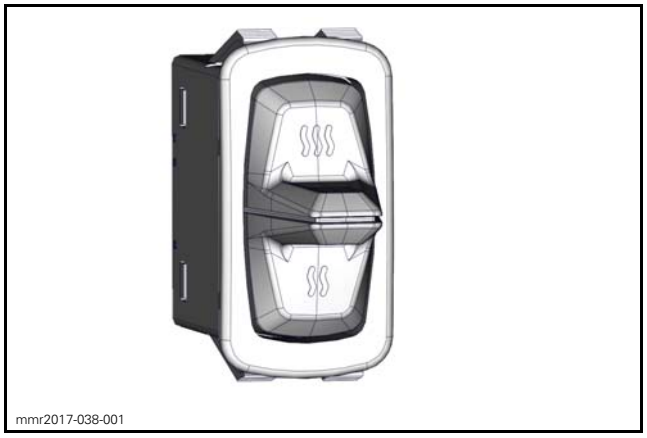
11. Provide electrical power to the heaters for testing.
12. Using the hand grip heat switch, turn on the hand grip heaters and ensure they are functioning correctly.

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.

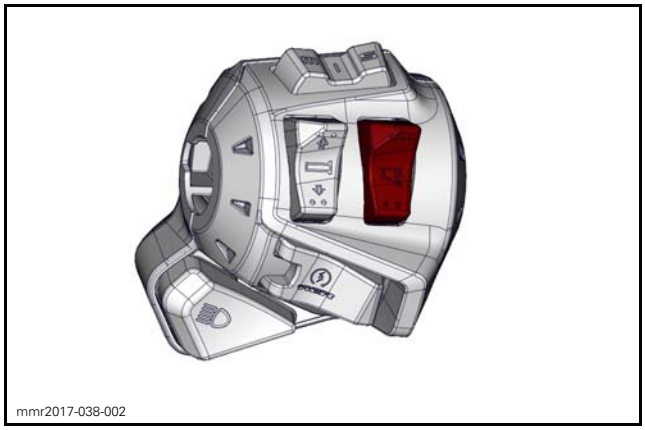
1. Using the FLUKE 115 MULTIMETER (P/N 529 035 868), select the Ω position.
2. Test throttle lever heat switch and circuits as per table.

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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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.

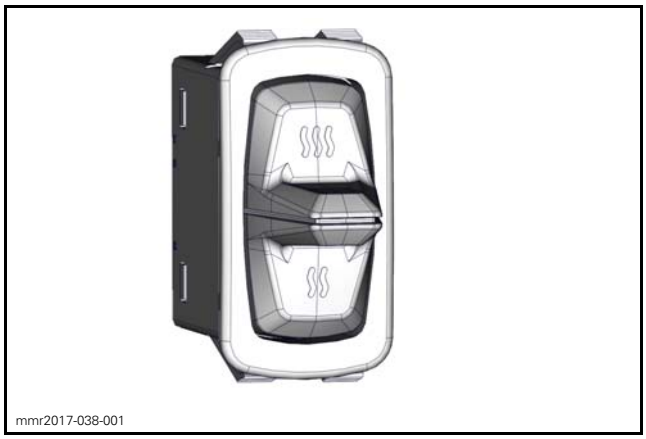
If continuity test is out of specification, check switch circuit as per wiring diagram. If good, replace switch.

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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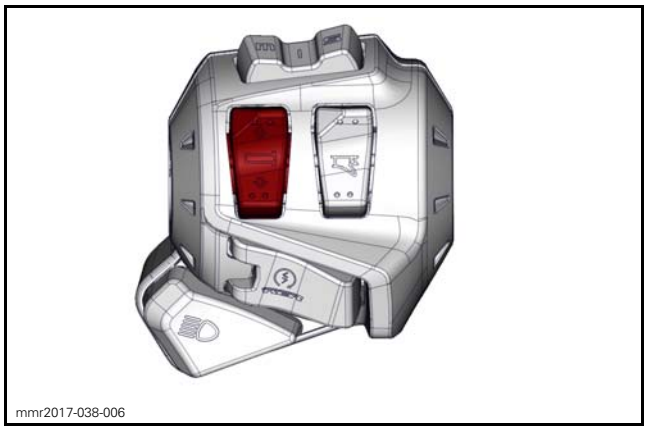
HEATED GRIP HEAT SWITCH TEST			
SWITCH SELECTION	TERMINAL		RESISTANCE
UP	GRIP-6	GRIP-8	Close to 0 Ω
	GRIP-6	GRIP-5	Infinite (OL)
DOWN	GRIP-6	GRIP-8	Infinite (OL)
	GRIP-6	GRIP-5	Close to 0 Ω

Models with multifunction switches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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.

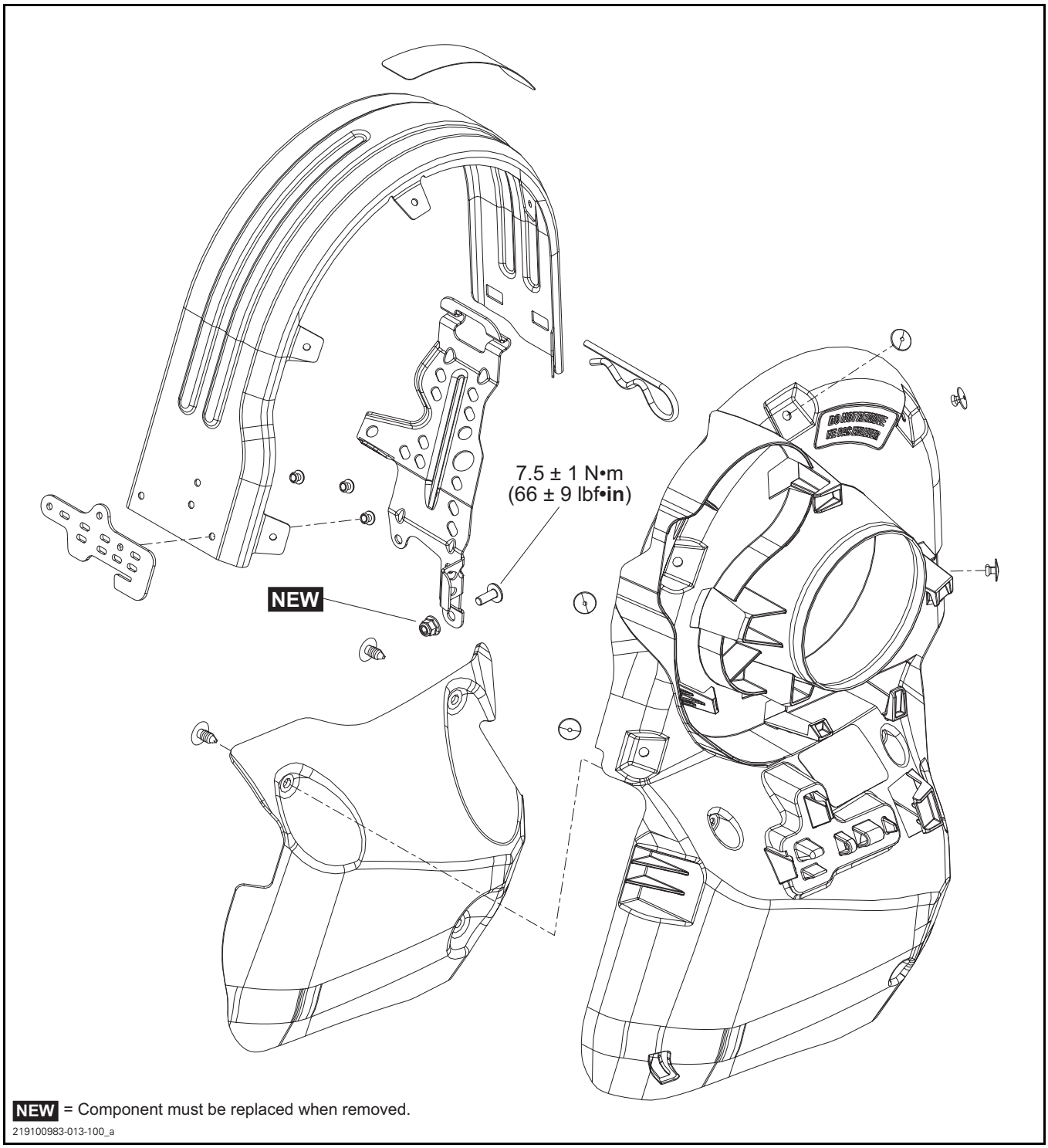
SWITCH POSITION	PROBE		VOLTAGE (APPROXIMATELY)
Any	Pin 6	Chassis ground	12Vdc

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	183



NEW = Component must be replaced when removed.

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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.*

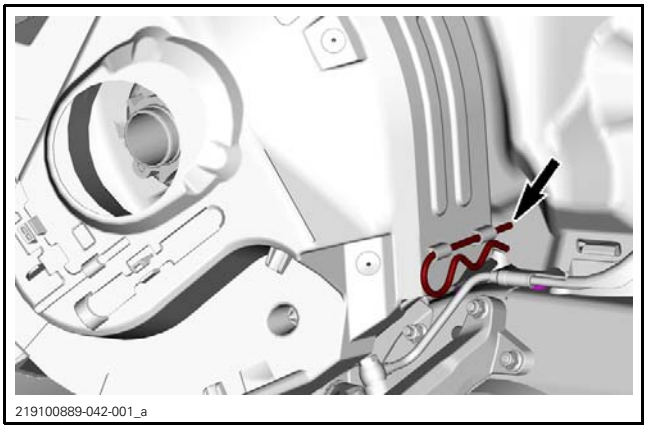
PROCEDURES

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.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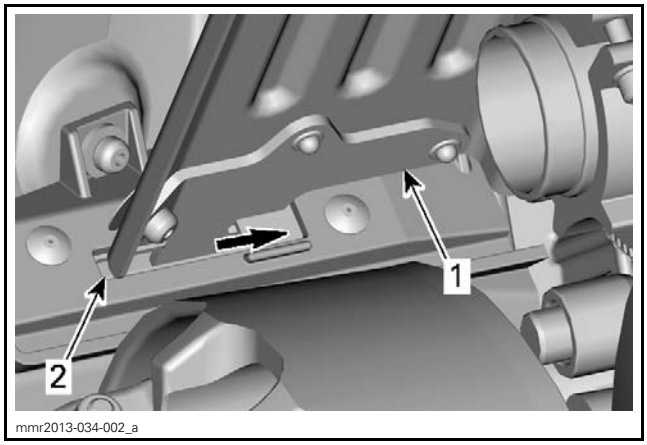
3. Lift rear portion of guard then release from front tabs.

Installing the Drive Belt Guard

1. Insert belt guard tab in front support slot.



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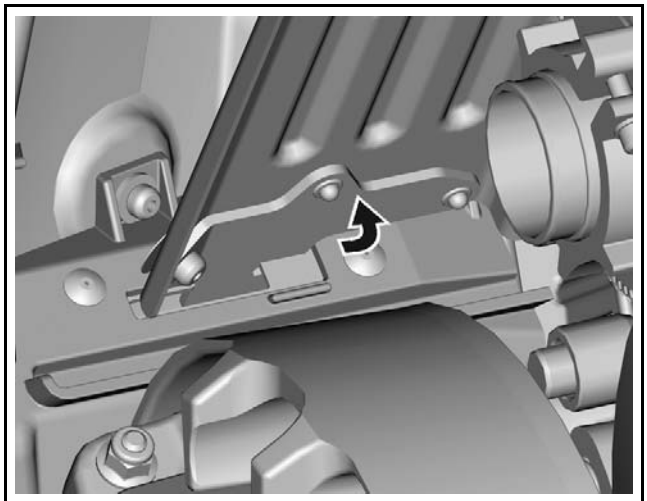
1. Belt guard tab
2. Front support slot

2. Push drive belt guard toward engine then toward front of vehicle.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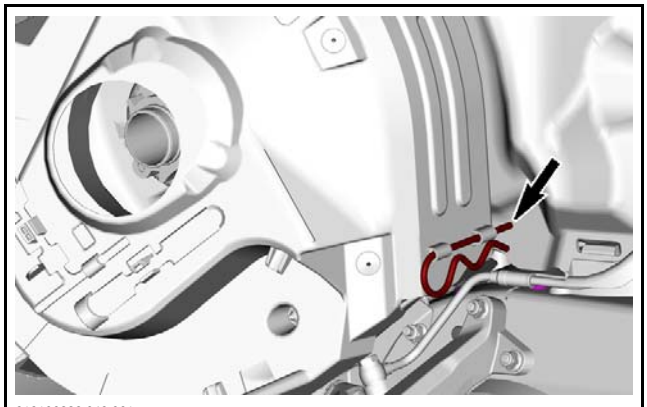
3. Position rear portion of the drive belt guard over the retainer and secure it using the retaining pin.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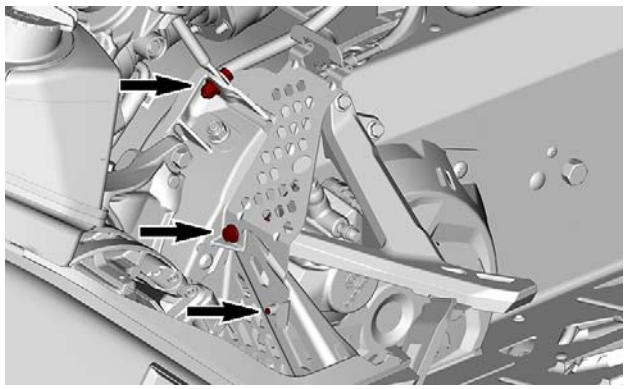
DRIVE BELT GUARD SUPPORT

Removing the Drive Belt Guard Support

1. Remove the drive belt guard.
2. Remove screws securing the support to vehicle.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Installing the Drive Belt Guard Support

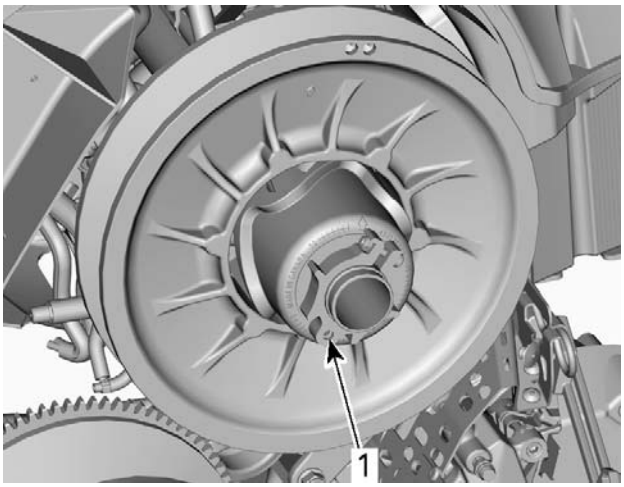
The installation is the reverse of the removal procedure. However pay attention to the following.

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.



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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.

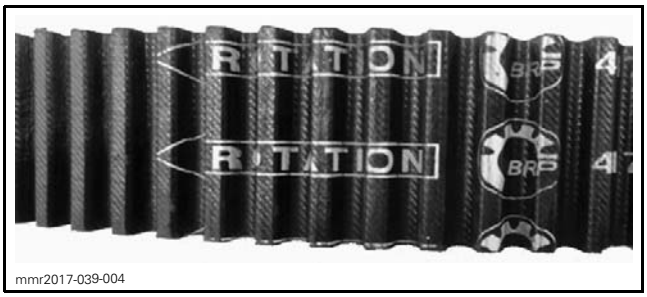
DRIVE BELT WIDTH	
NEW	WEAR LIMIT
38.3 mm (1.508 in)	35.9 mm (1.413 in)

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.



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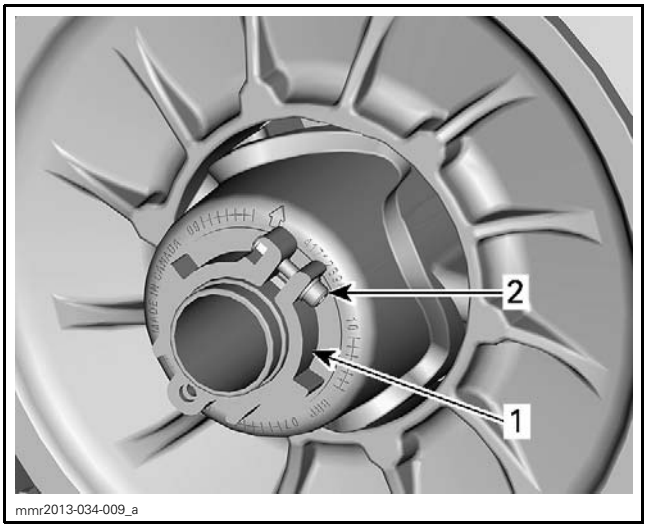
3. Unscrew and remove the driven pulley expander from the driven pulley.
4. Rotate the driven pulley several times to properly set the belt between the sheaves.
5. Adjust drive belt height. Refer to *ADJUSTING THE DRIVE BELT HEIGHT* procedure.
6. Install drive belt guard, refer to *INSTALLING THE DRIVE 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.



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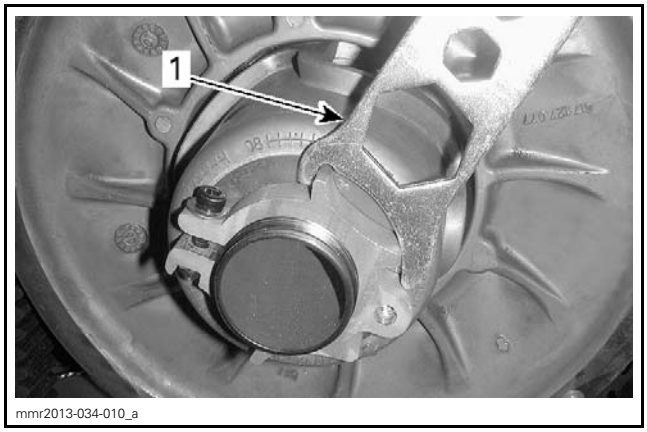
1. Adjustment ring
2. Clamping screw

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.



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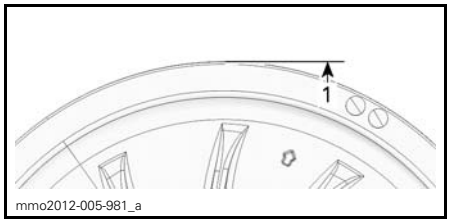
1. Suspension adjustment tool

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.



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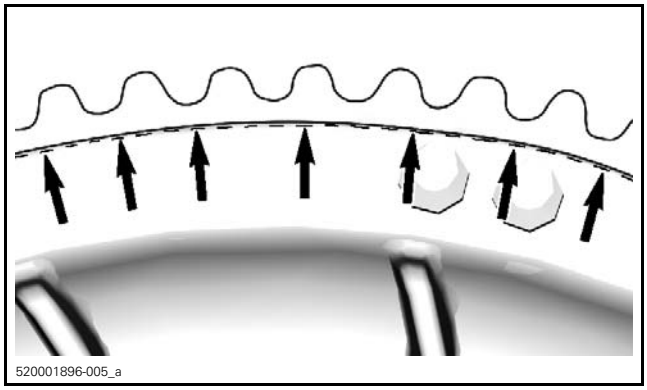
600 EFI - PRELIMINARY SETTING
1. Drive belt outer surface is even with the driven pulley edge

850 E-TEC

Repeat step 5 until the cord of drive belt is just hidden by the driven pulley edge.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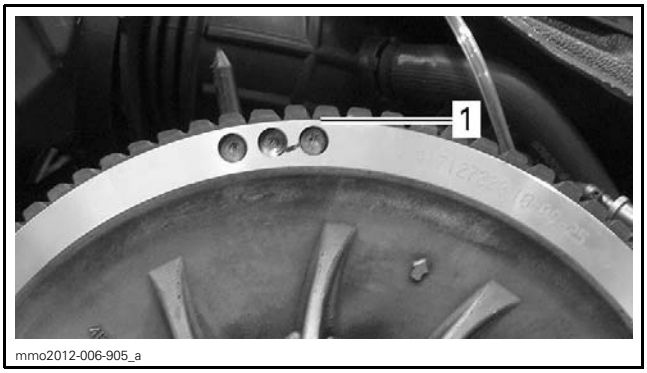
850 E-TEC - PRELIMINARY SETTING

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.



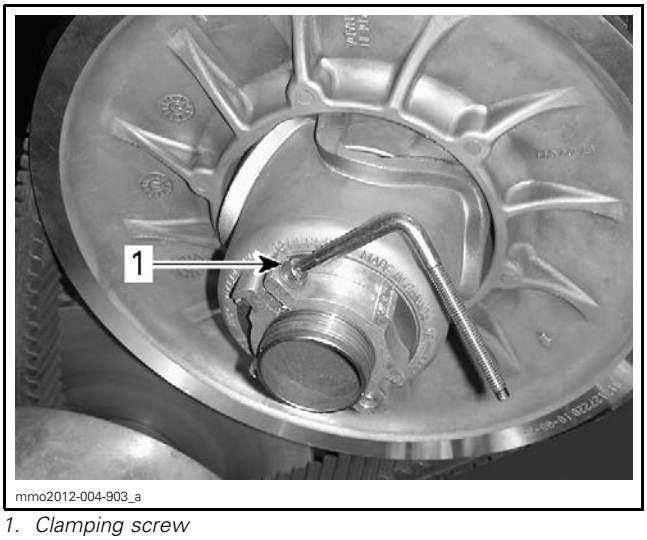
600R E-TEC - PRELIMINARY SETTING
1. Lowest portion of cogs even with external surface of drive belt

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.

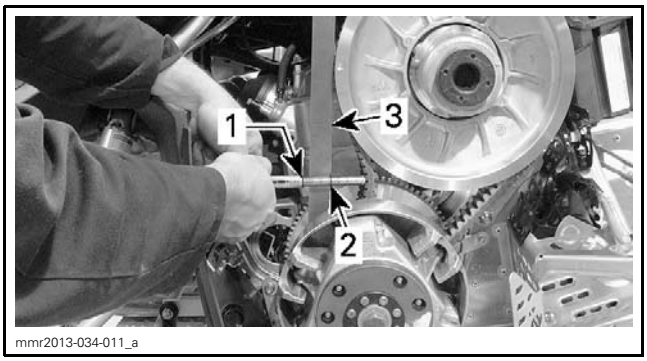
DRIVE BELT DEFLECTION	
DRIVE BELT DEFLECTION SETTING	32 mm ± 5 mm (1.26 in ± .2 in)

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	187
CLUTCH HOLDER	529 036 369	186, 196
DRIVE PULLEY OPENING TOOL	529 036 378	187
DRIVE PULLEY SUPPORT	529 036 371	187
GREASE INJECTOR	529 036 376	193
PDRIVE PULLER	529 036 370	186–187
PULLEY SPRING COMPRESSOR TOOL	529 036 373	187
REMOVING AXLE TOOL	529 036 372	187

SERVICE PRODUCTS

Description	Part Number	Page
CLUTCH AND PULLEY FLANGE CLEANER PRO S1	779244	192
ISOFLEX GREASE TOPAS NB 52	293 550 021	193

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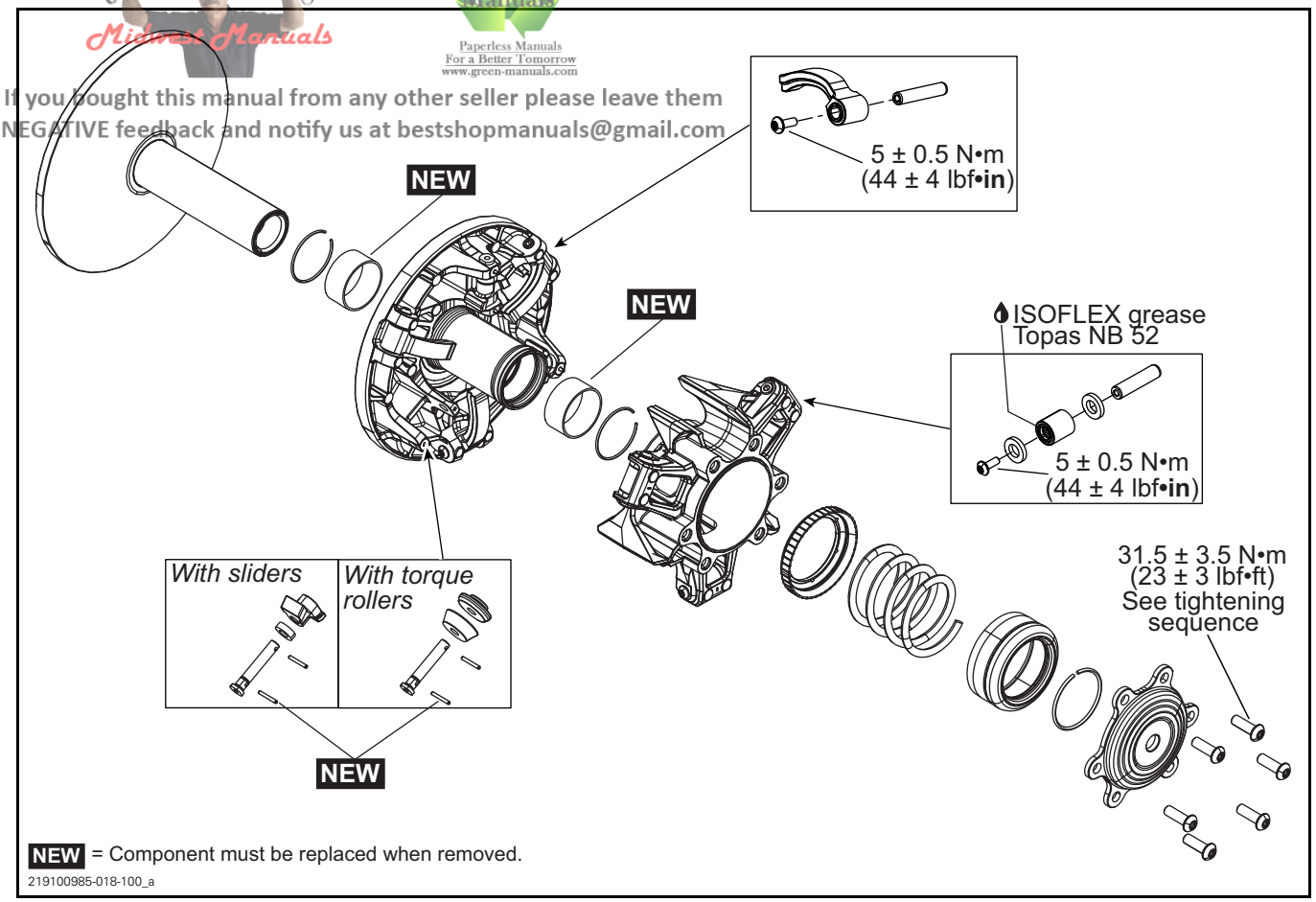


GENERAL

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.).

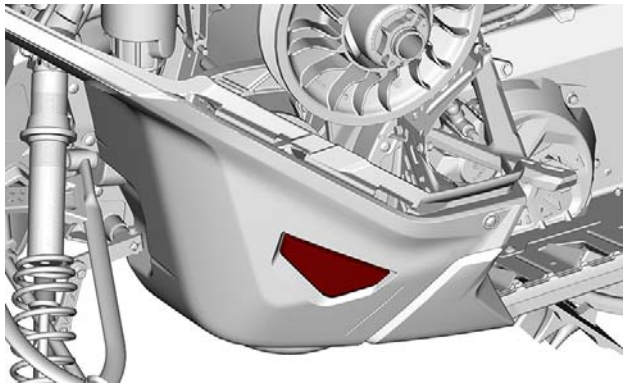
PROCEDURES

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.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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

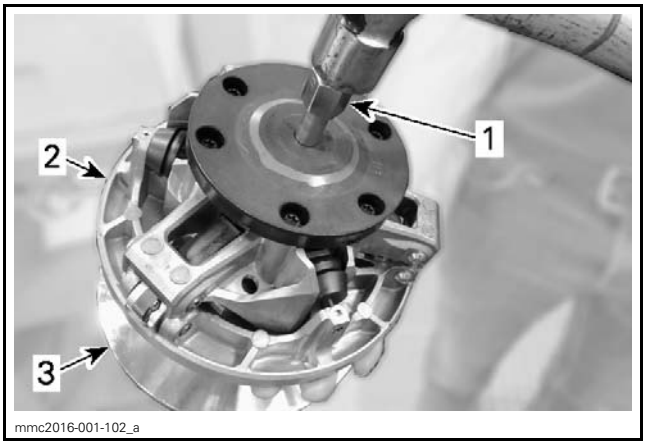
REQUIRED TOOLS	
PDRIVE PULLER (P/N 529 036 370)	
DRIVE PULLEY SUPPORT (P/N 529 036 371)	
PULLEY SPRING COMPRESSOR TOOL (P/N 529 036 373)	
CIRCLIP INSTALLER/REMOVER (P/N 529 036 375)	
REMOVING AXLE TOOL (P/N 529 036 372)	
DRIVE PULLEY OPENING TOOL (P/N 529 036 378)	

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.



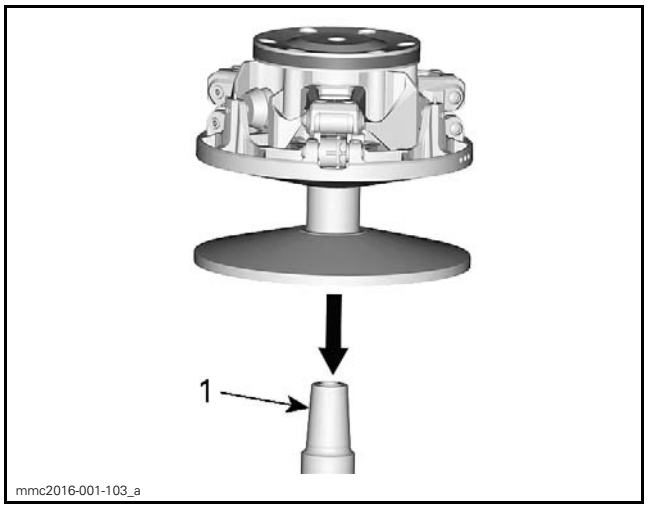
1. Puller screwed 13 mm (1/2 in) in fixed sheave
2. Sliding sheave
3. Fixed sheave

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.

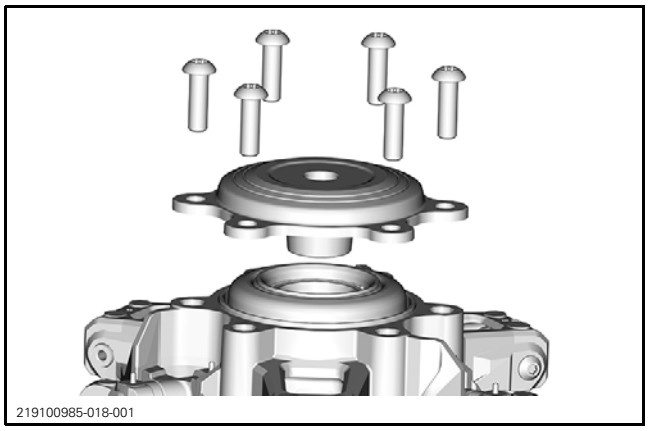
Removing the Damper

1. Secure the drive pulley support in a vice.
2. Install the drive pulley over the support.

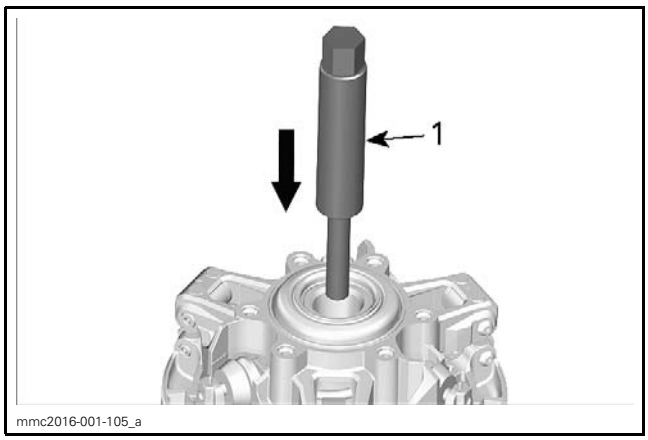


1. Drive pulley support

3. Remove the damper.

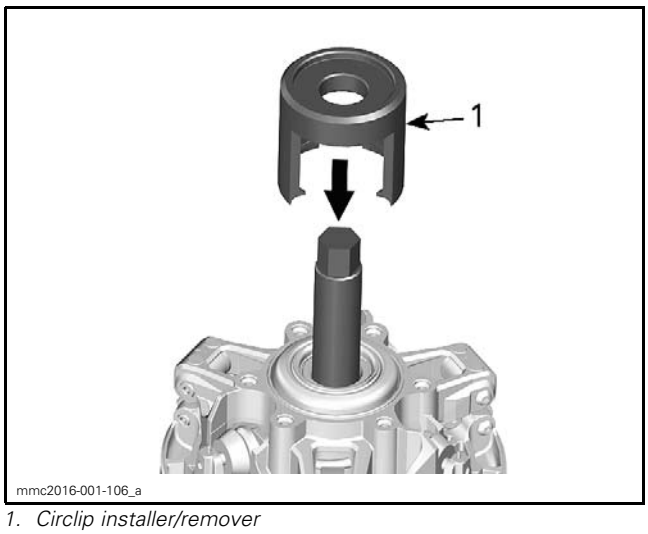

219100985-018-001

Removing the Spring



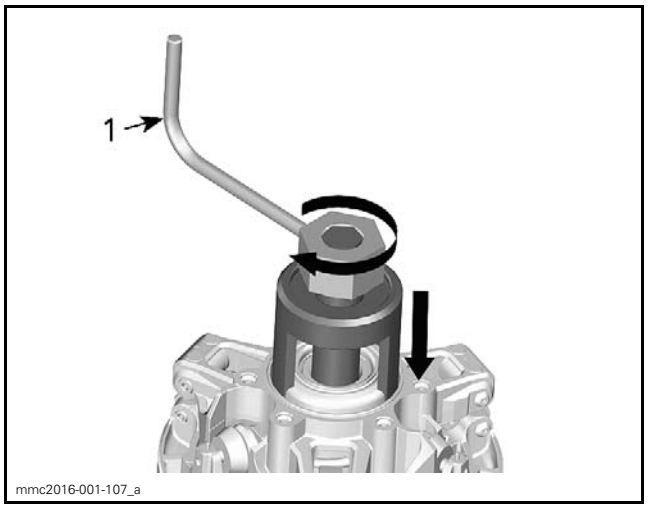
mmc2016-001-105_a

1. Threaded shaft of the pulley spring compressor



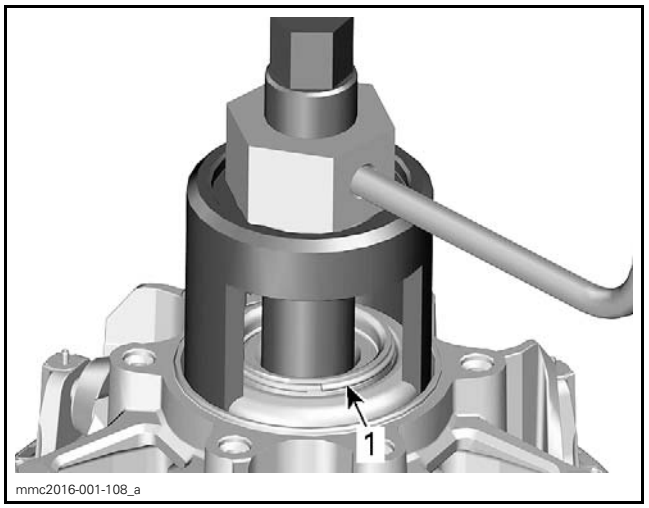
mmc2016-001-106_a

1. Circlip installer/remover



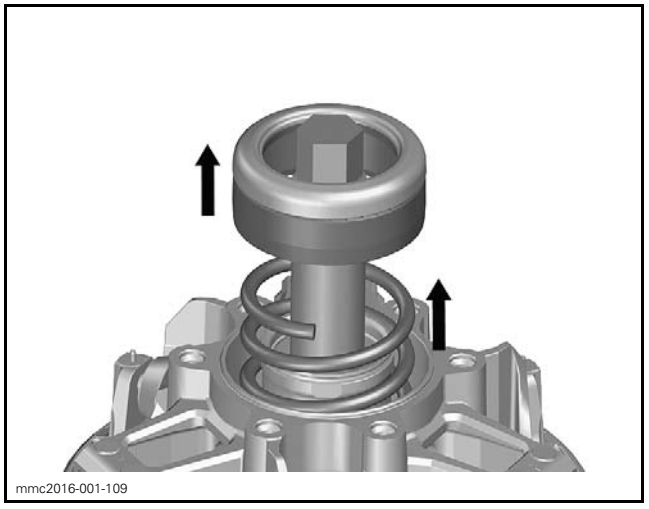
mmc2016-001-107_a

1. Handle of the pulley spring compressor



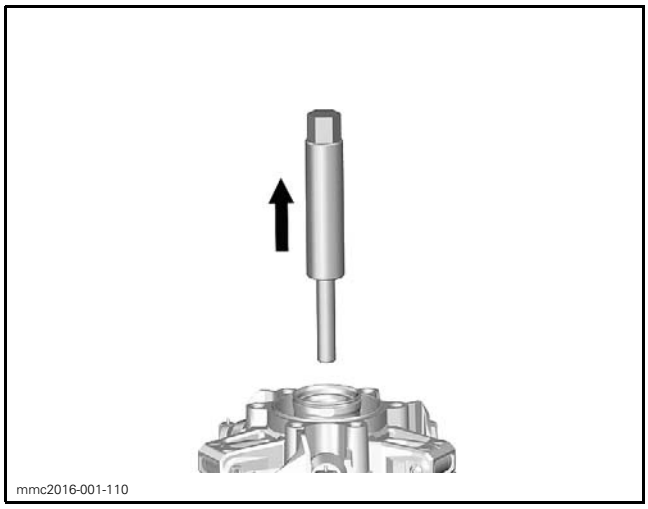
mmc2016-001-108_a

1. Remove the circlip


mmc2016-001-109

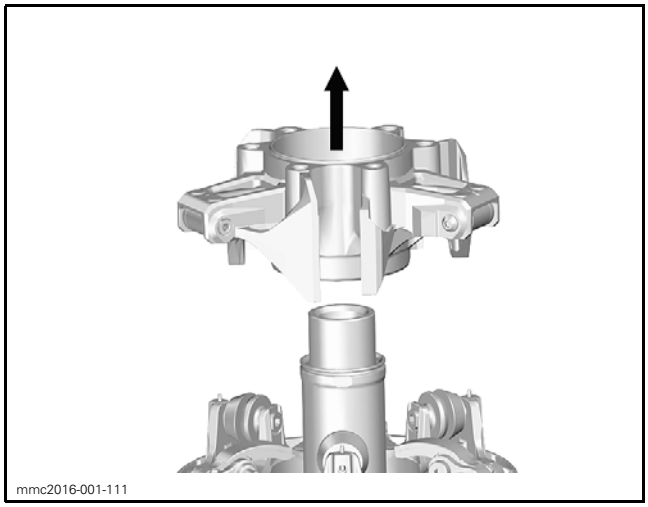
Removing the Spider

1. Remove the threaded shaft.


mmc2016-001-110

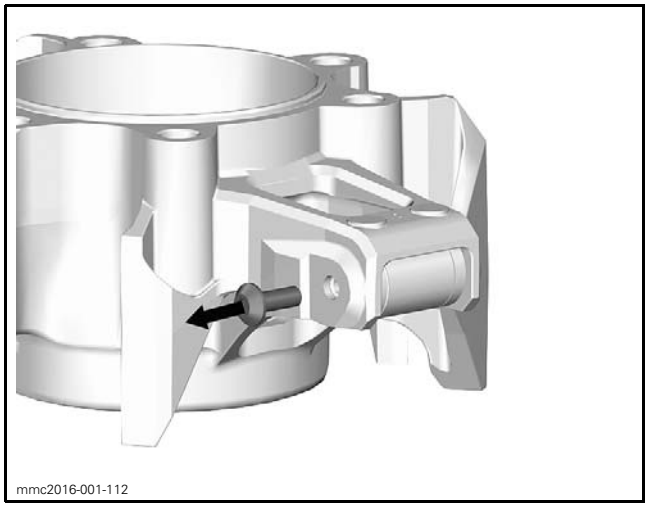
NOTICE Remove the threaded shaft to avoid damaging the bushings inside the spider.

2. Remove the spider.

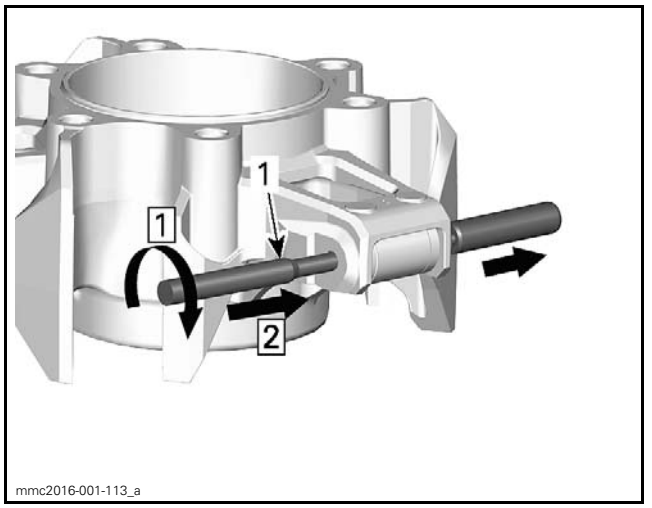

mmc2016-001-111

Removing the Roller

1. Remove axle retaining screw.


mmc2016-001-112

2. Remove the axle.

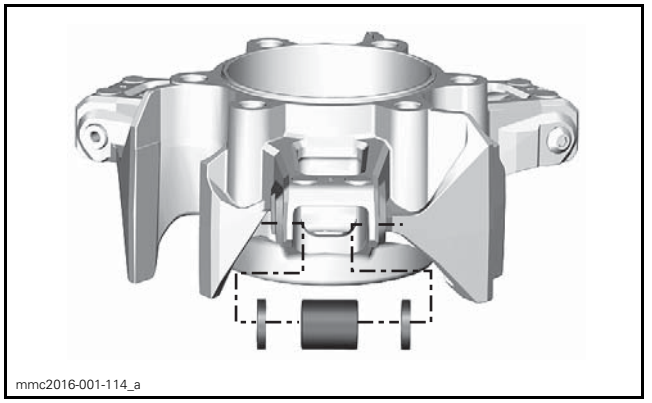


mmc2016-001-113_a

1. Removing axle tool

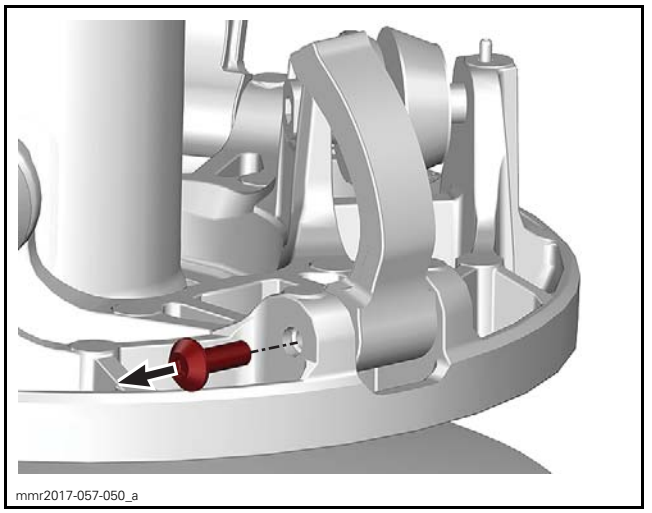
Step 1: Screw the tool into the axle
Step 2: Push axle to the right side

3. Remove the roller and its thrust washers.

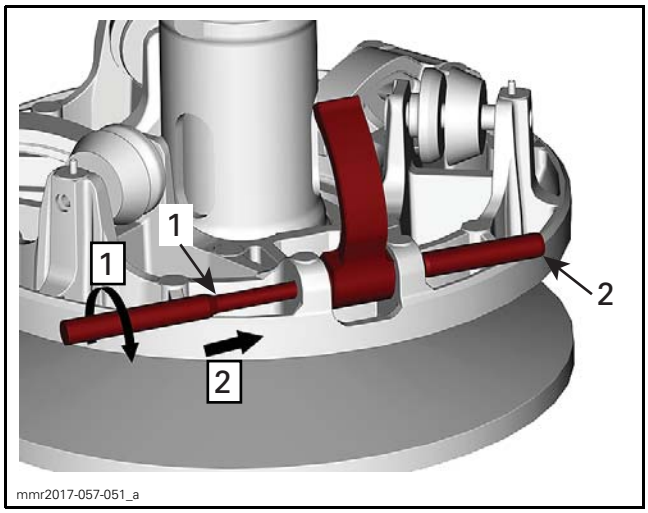

mmc2016-001-114_a

Removing the Ramp (without Spider)

1. Remove axle retaining screw.


mmr2017-057-050_a

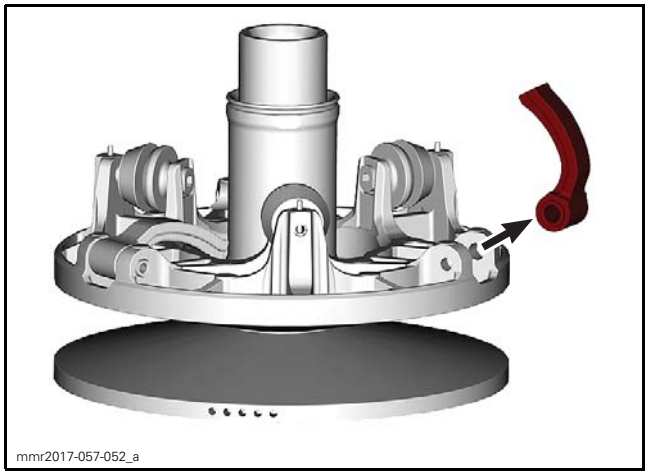
2. Remove the axle.



1. Removing axle tool
2. Axle

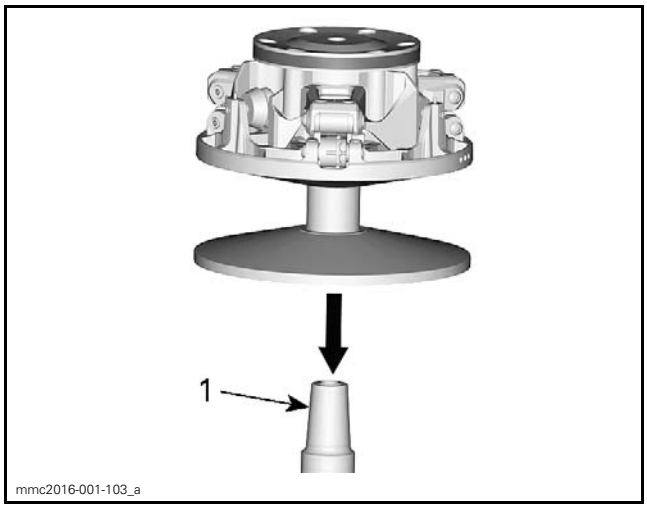
Step 1: Screw the tool into the axle
Step 2: Push axle to the right side

3. Remove ramp assembly.

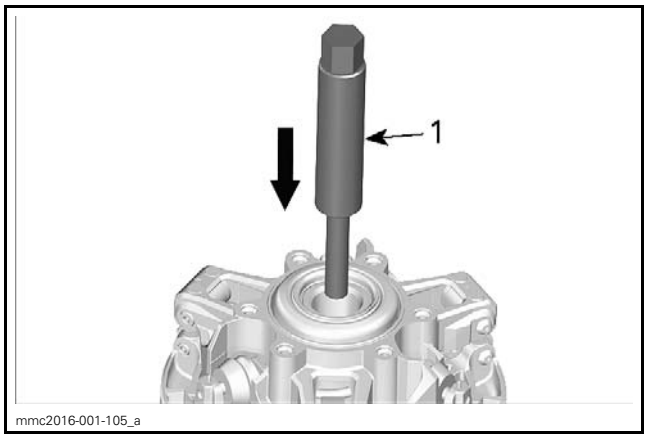


Removing the Ramp (Spider Installed)

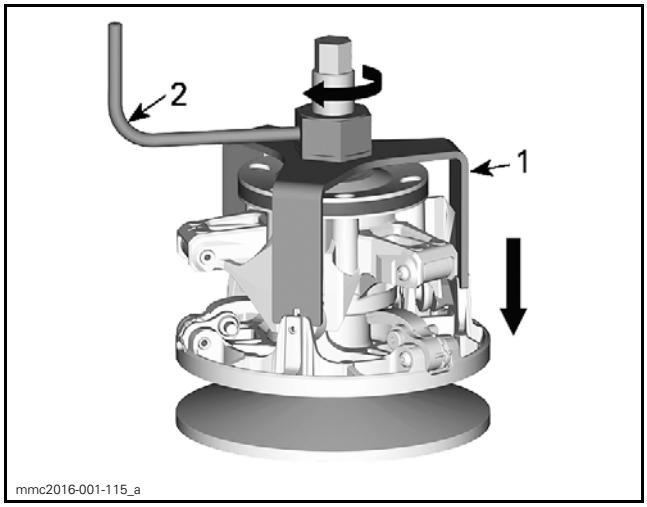
1. Lower the sliding sheave.
   1.1 Secure the drive pulley support in a vice.
   1.2 Install the drive pulley over the support.
   1.3 Install the drive pulley opening tool.



1. Drive pulley support

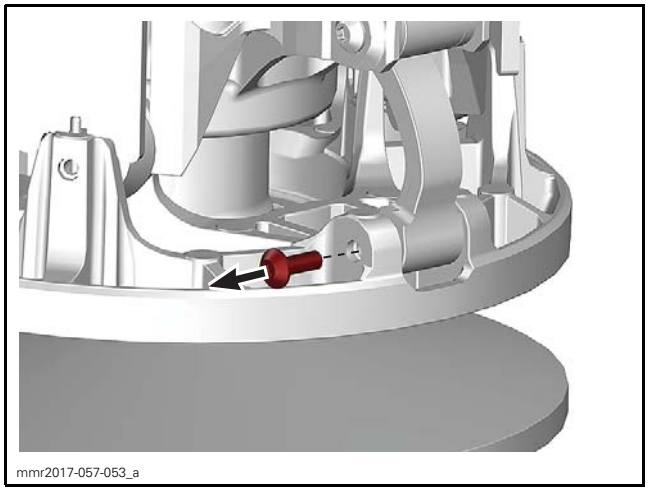


1. Threaded shaft of the pulley spring compressor

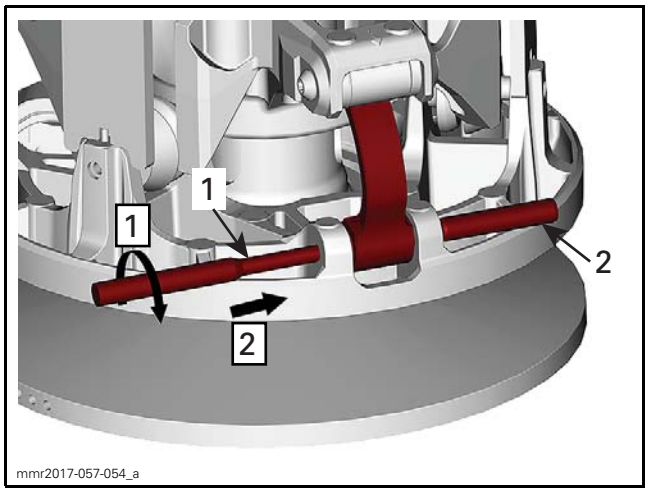


1. Drive pulley opening tool
2. Handle of the pulley spring compressor

2. Remove axle retaining screw.


mmr2017-057-053_a

3. Remove the axle.

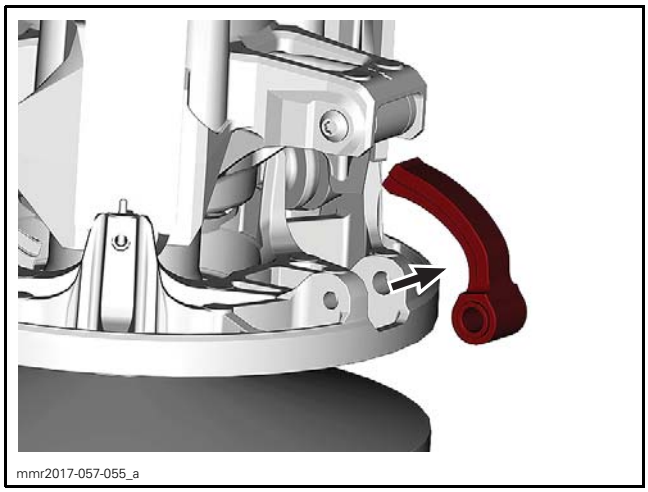


mmr2017-057-054_a

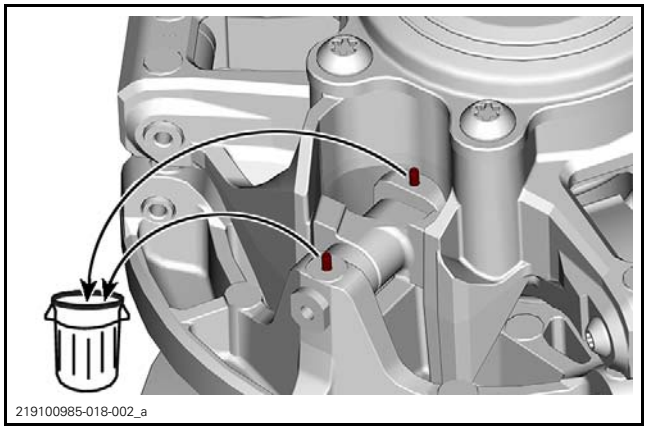
1. Removing axle tool
2. Axle

Step 1: Screw the tool into the axle
Step 2: Push axle to the right side

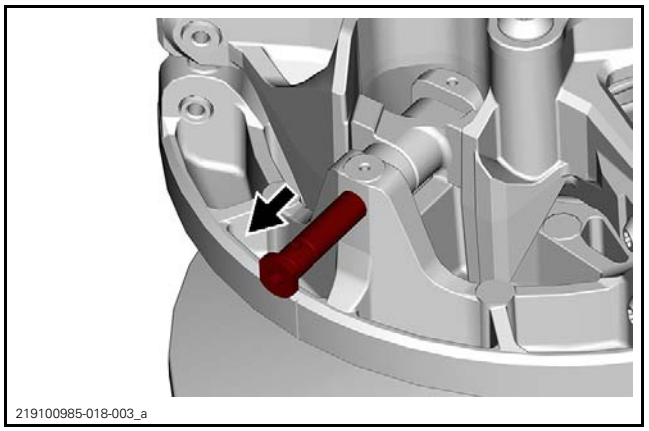
4. Remove ramp assembly.


mmr2017-057-055_a

Removing the Torque Sliders (if equipped)


219100985-018-002_a

REQUIRED TOOL
Blind hole puller
M5 x 0.8 adaptor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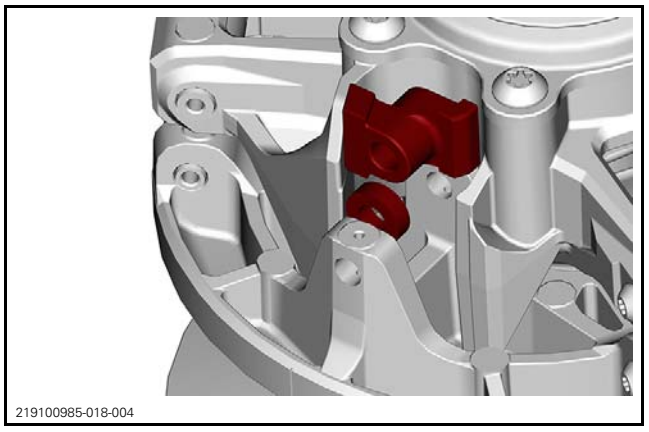

219100985-018-004

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.

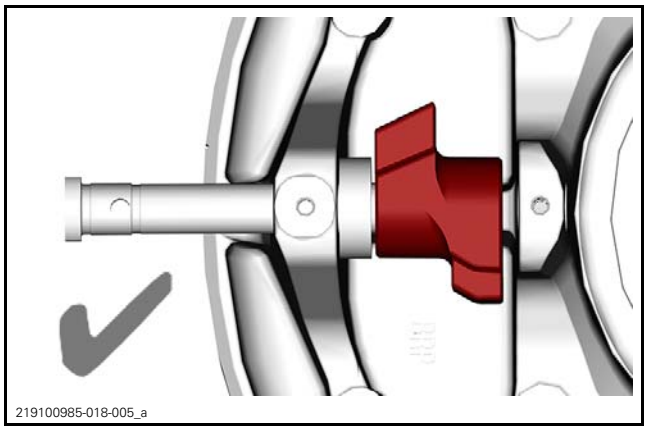
Wipe off the mounting surfaces with a clean, dry paper towel.

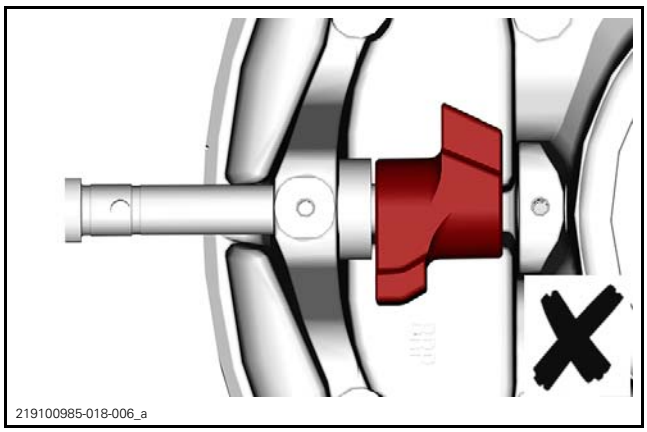
NOTICE Mounting surfaces must be free of any oil, cleaner or towel residue.

Assembling the Drive Pulley

Sliders

Position sliders as illustrated.

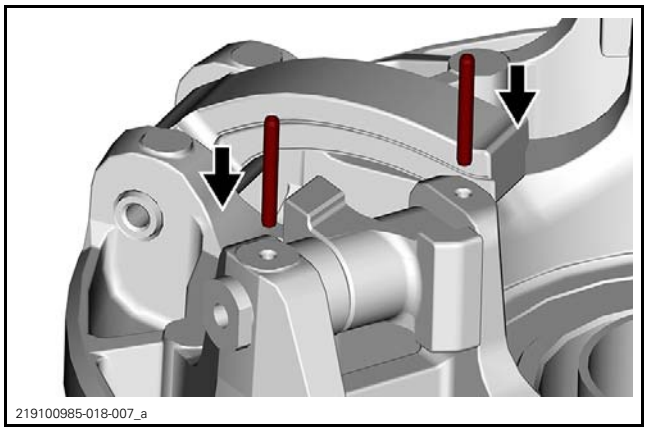




Position the flat sides of the axle head vertically.

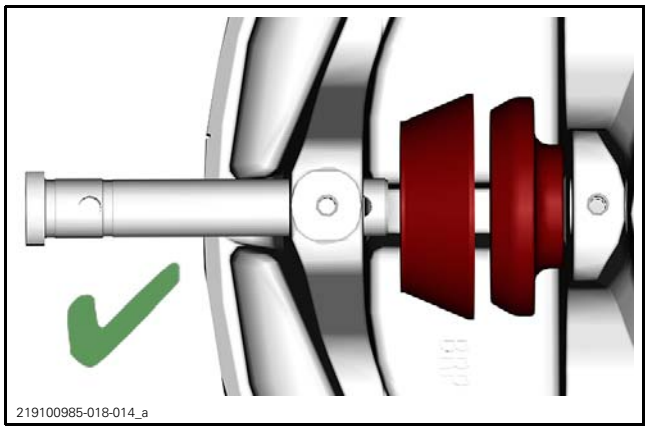
Use a C vise clamp to push the axle back in place.

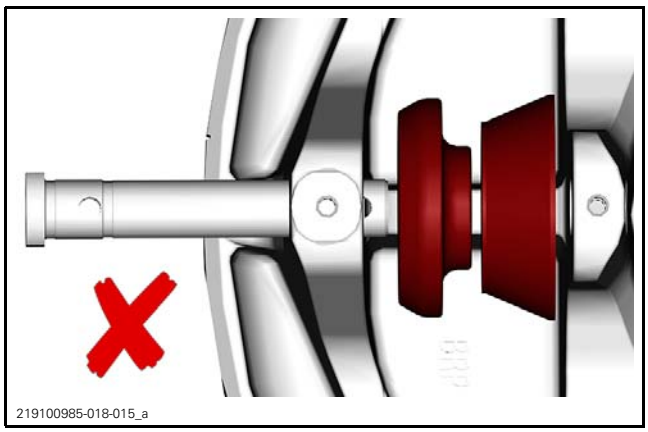
Install a new spring pin.



Torque Rollers

Position sliders as illustrated.

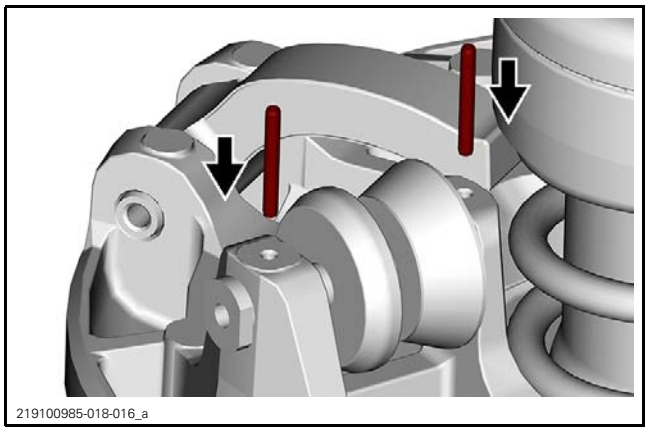




Position the flat sides of the axle head vertically.

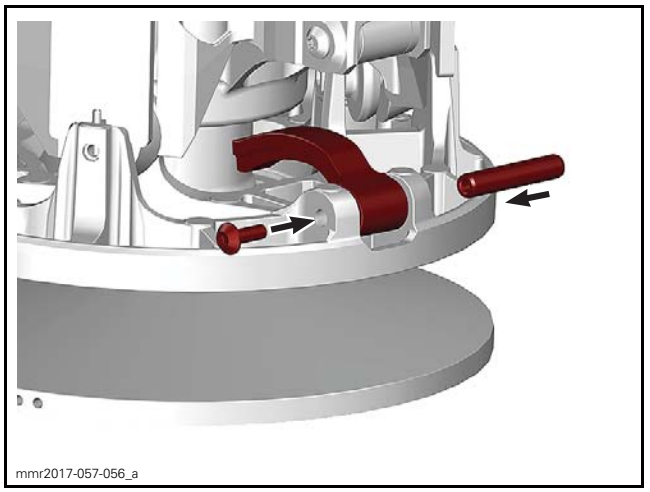
Use a C vise clamp to push the axle back in place.

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**)

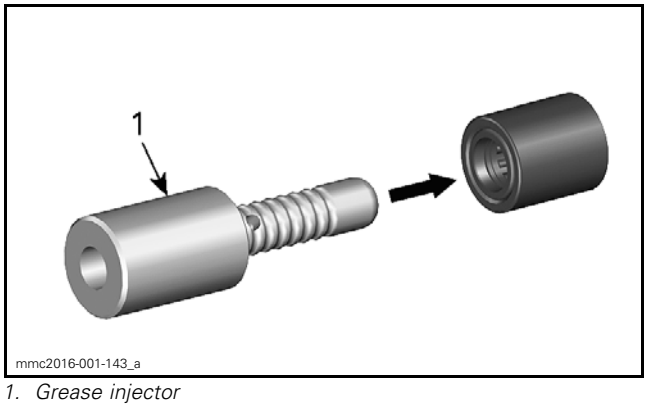
Roller

Lubricate the roller bearing.

REQUIRED SERVICE PRODUCT
ISOFLEX GREASE TOPAS NB 52 (P/N 293 550 021)

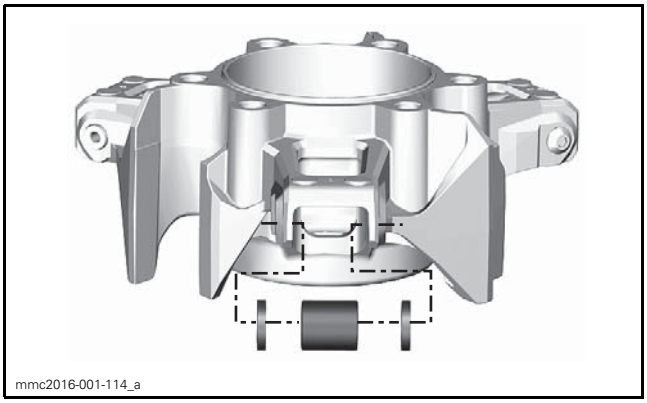
REQUIRED TOOL	
GREASE INJECTOR (P/N 529 036 376)	

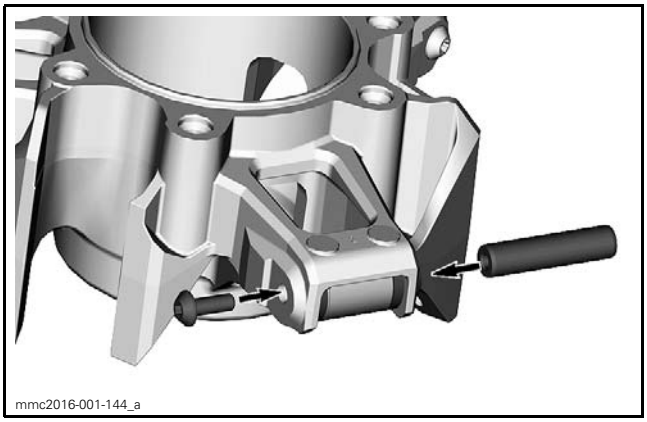
NOTE: A threaded end is required on the grease gun for using the grease injector.



1. Grease injector

Install roller.


mmc2016-001-114_a

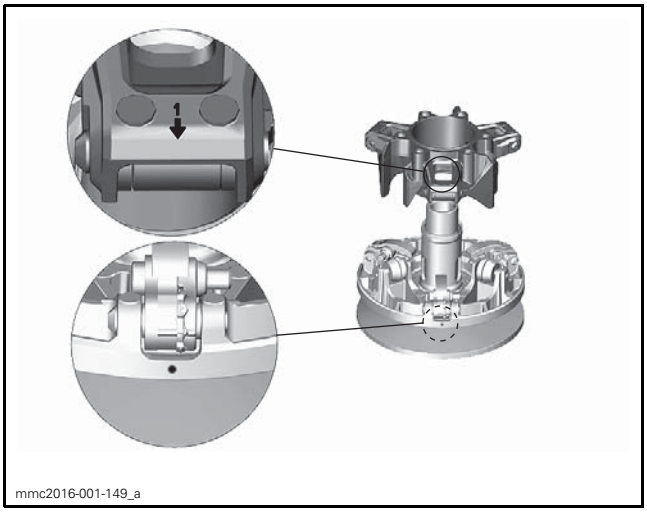

mmc2016-001-144_a

TIGHTENING TORQUE	
Roller axle screw	5 N•m ± 0.5 N•m (44 lbf•**in** ± 4 lbf•**in**)

Spider

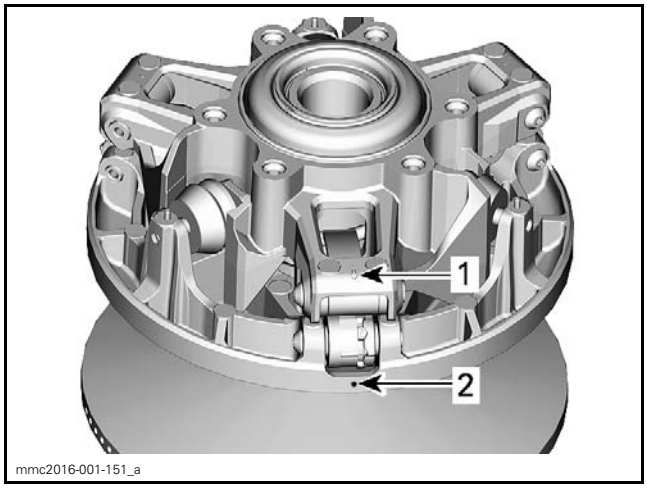
Install the spider on the sliding sheave by aligning the indexing marks.

– 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

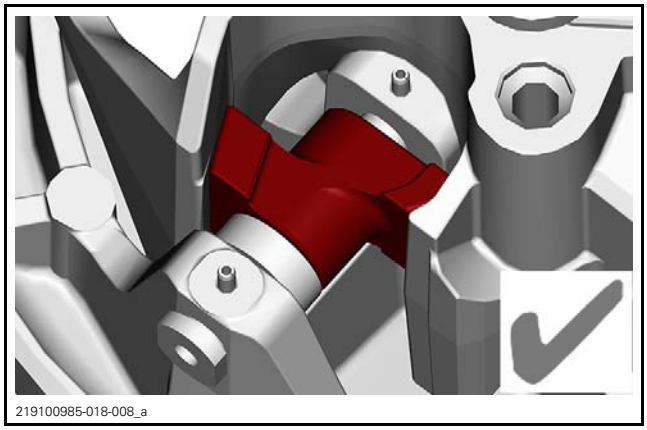


mmc2016-001-151_a

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.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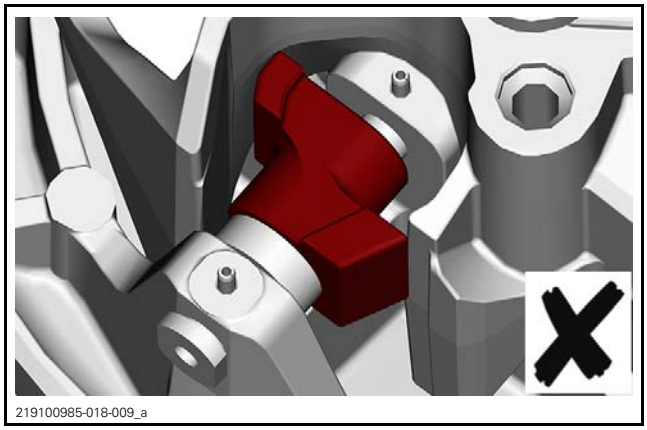
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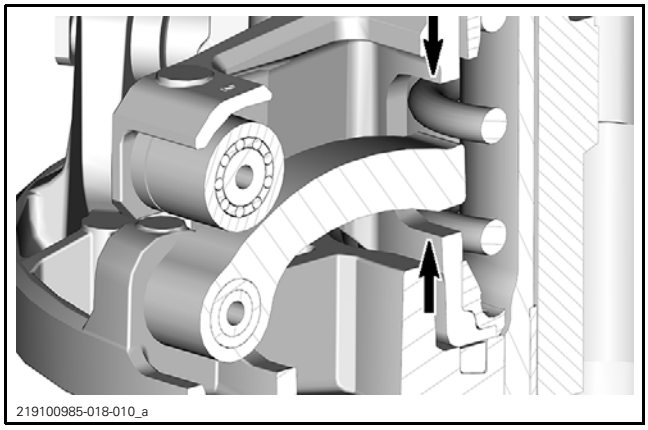
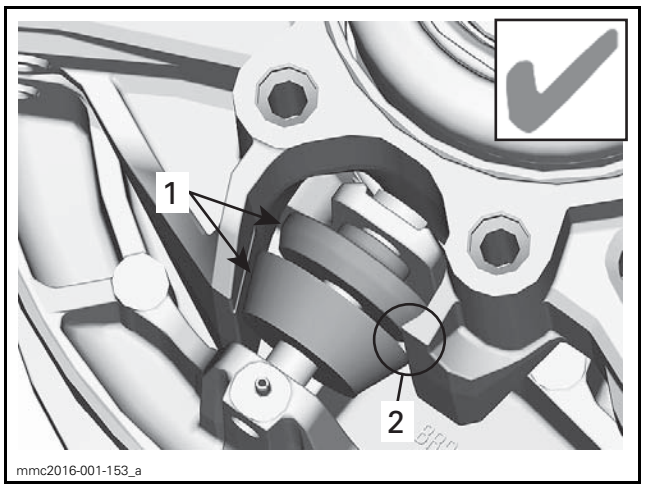


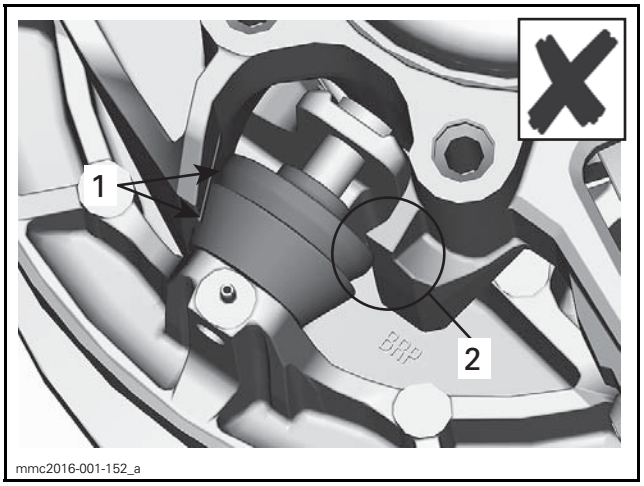
RAMP POSITIONING

With Torque Rollers

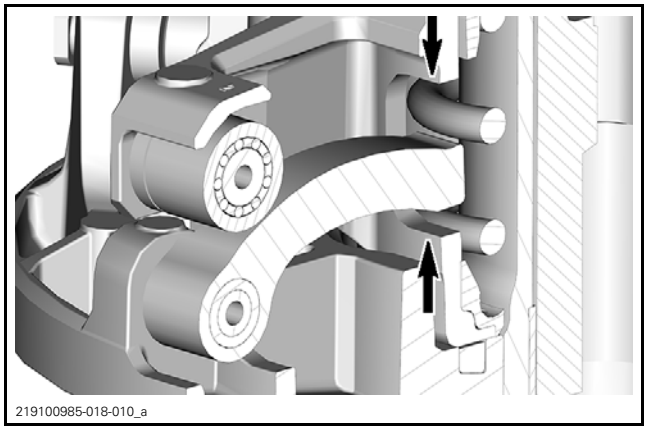
NOTICE During installation of the spider, make sure to position the three spurs of spider legs between torque rollers and ensure that ramps are positioned inside the openings of the spider.



ROLLER - GOOD INSTALLATION
1. *Torque rollers*
2. *Spur of the spider leg*



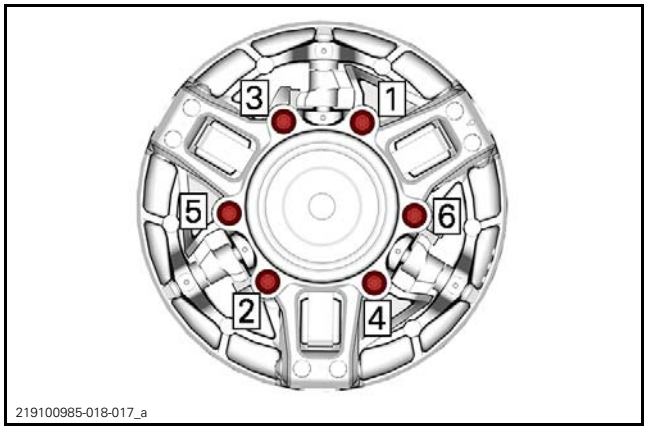
ROLLER - WRONG INSTALLATION
1. *Torque rollers*
2. *Spur of the spider leg*



RAMP POSITIONING

Damper

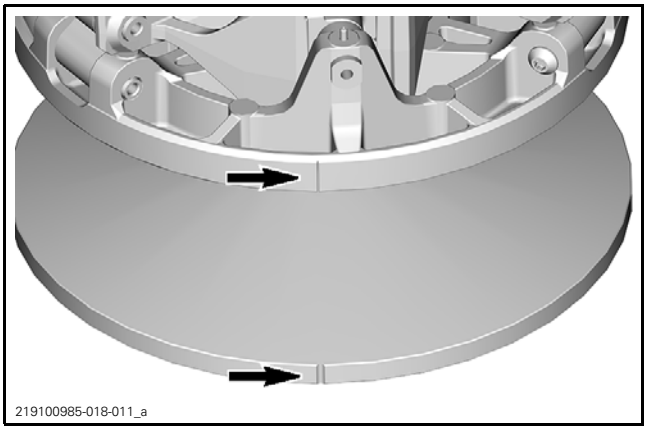
Install the damper using the following sequence.



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)

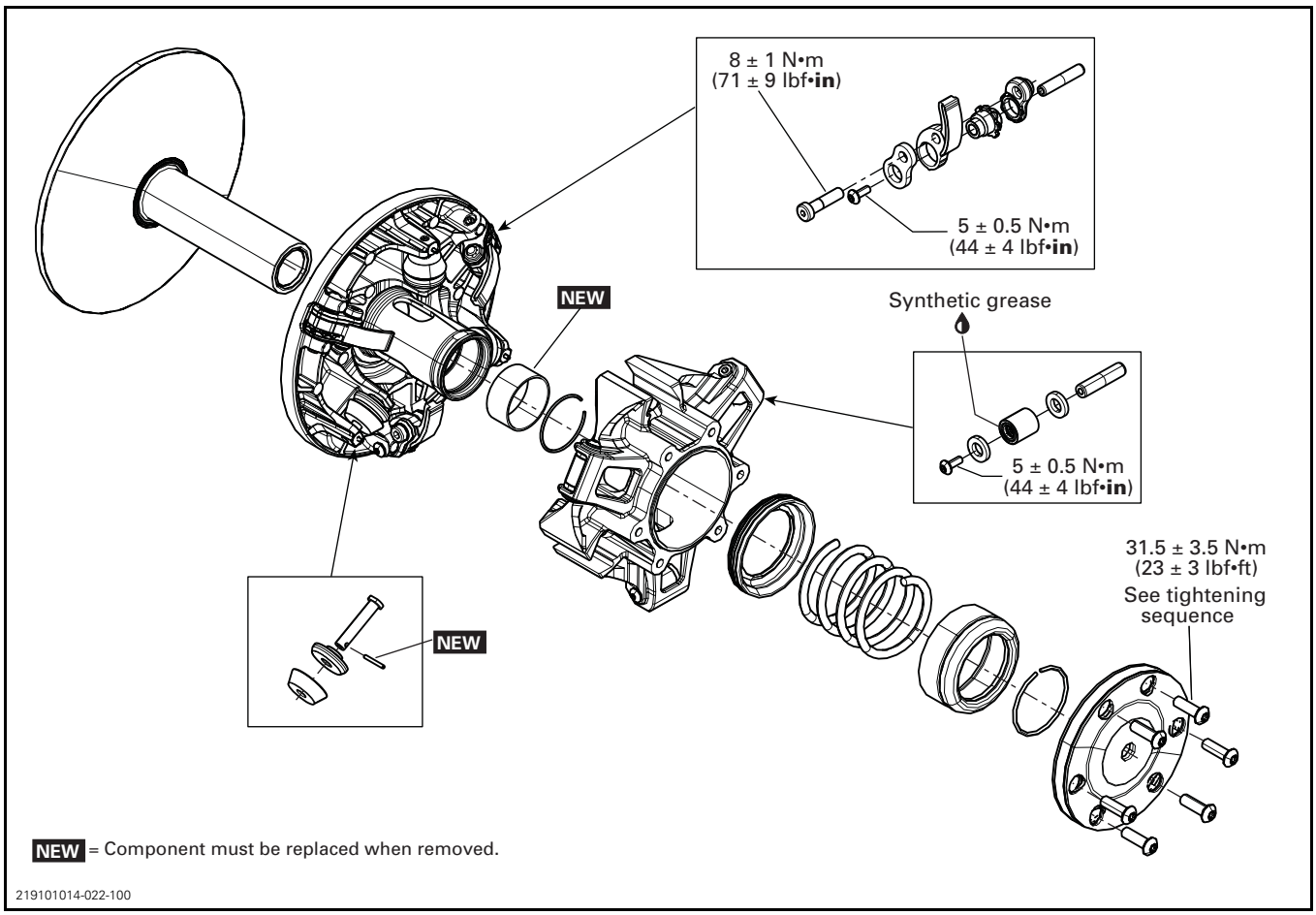
SERVICE TOOLS

Description	Part Number	Page
CIRCLIP INSTALLER/REMOVER	529 036 375	200–201
CLUTCH HOLDER	529 036 369	199, 208
DRIVE PULLEY OPENING TOOL	529 036 378	200, 204
DRIVE PULLEY SUPPORT	529 036 371	200–201, 203
GREASE INJECTOR	529 036 376	206
PDRIVE PULLER	529 036 370	199–200
PULLEY SPRING COMPRESSOR TOOL	529 036 373	200–201, 203–204
REMOVING AXLE TOOL	529 036 372	200, 202–204

SERVICE PRODUCTS

Description	Part Number	Page
CLUTCH AND PULLEY FLANGE CLEANER PRO S1	779244	205
ISOFLEX GREASE TOPAS NB 52	293 550 021	206

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

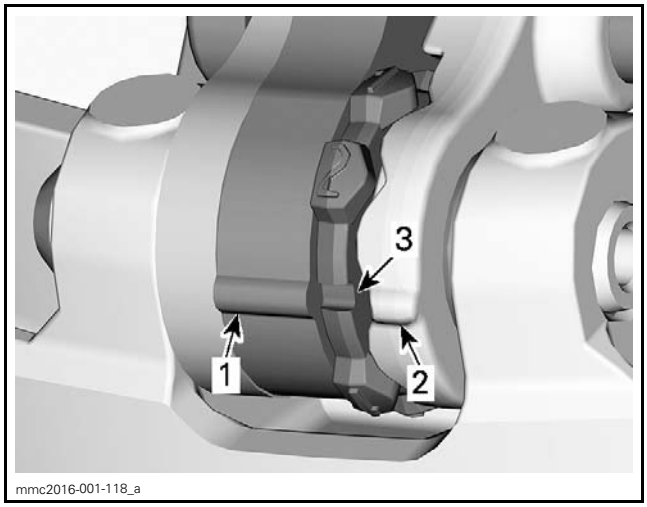
The drive pulley is factory calibrated to transmit maximum engine power at a predefined RPM. Factors such as ambient temperature, altitude or surface condition may vary this critical engine RPM thus affecting snowmobile efficiency.

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.



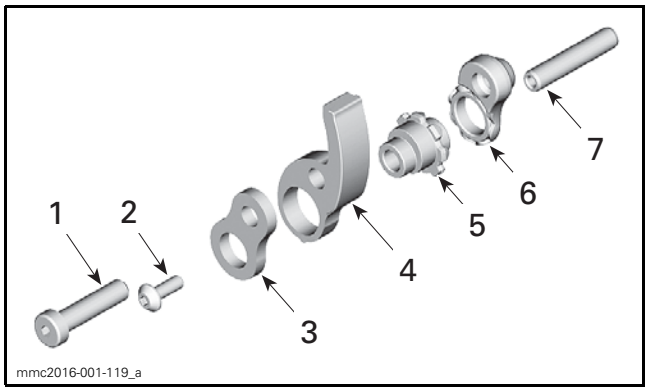
1. *Ramp notch*
2. *Right lever notch*
3. *Cam position (here #3)*

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.

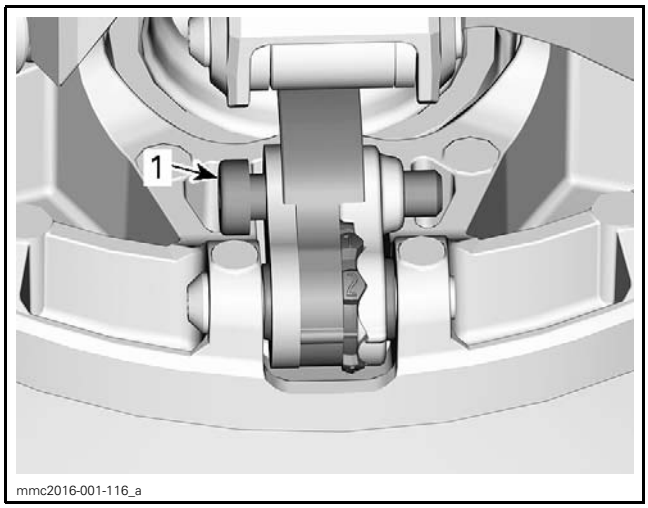
For example: If ramp cam is set at position 3 and is changed to position 5, the maximum engine RPM is increased by about 400 RPM.

MODIFYING THE RAMP CAM SETTING



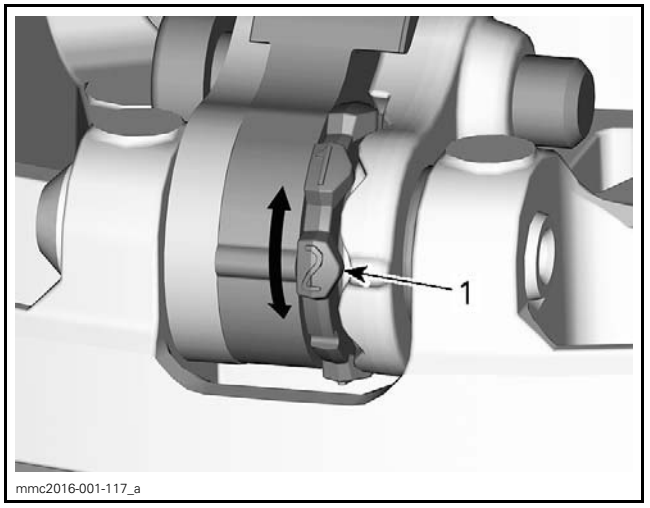
1. *Pivot*
2. *Axle retaining screw*
3. *Left lever*
4. *Ramp*
5. *Cam*
6. *Right lever*
7. *Axle*

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.

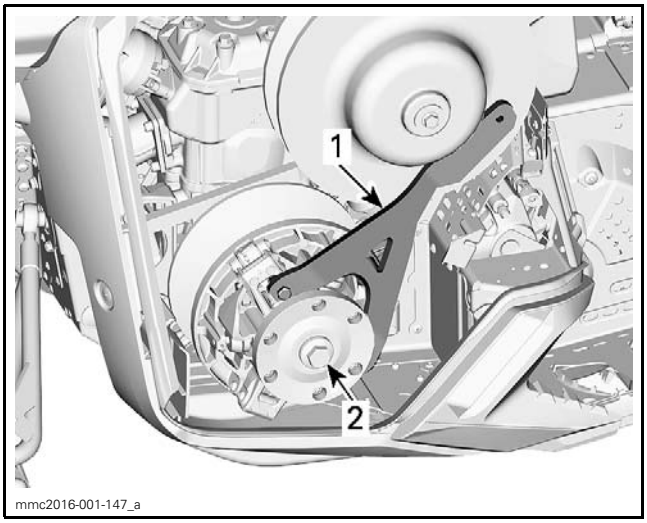
PROCEDURES

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)	

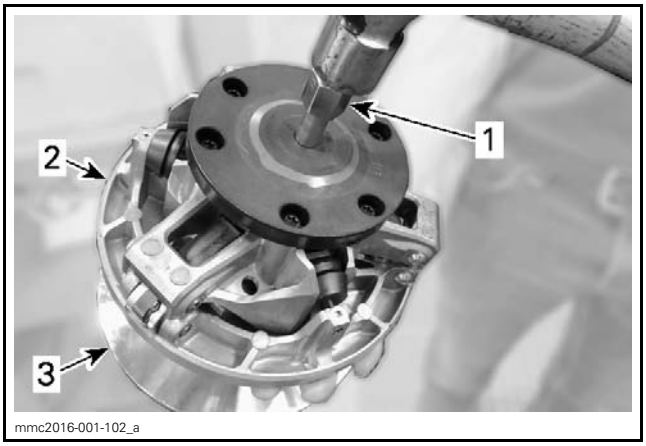
REQUIRED TOOLS	
CIRCLIP INSTALLER/REMOVER (P/N 529 036 375)	
REMOVING AXLE TOOL (P/N 529 036 372)	
DRIVE PULLEY OPENING TOOL (P/N 529 036 378)	

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.



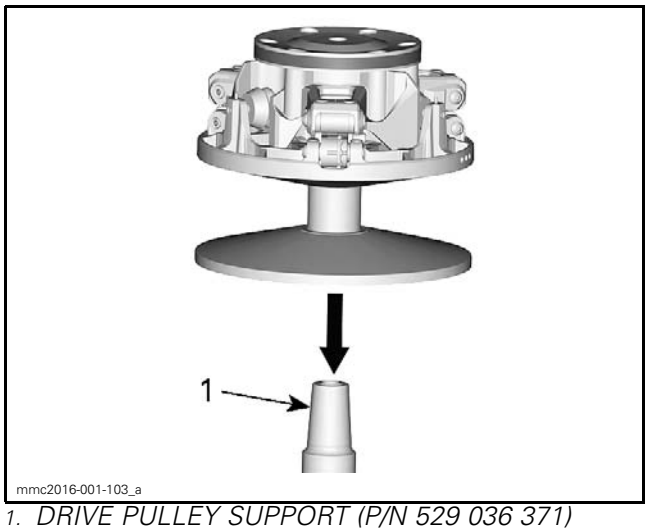
1. Puller screwed 13 mm (1/2 in) in fixed sheave
2. Sliding sheave
3. Fixed sheave

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.

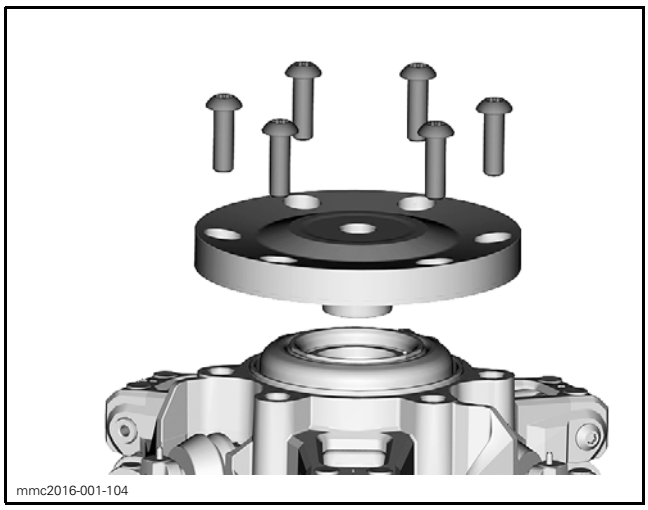
Removing the Damper

1. Secure the drive pulley support in a vice.
2. Install the drive pulley on the support.

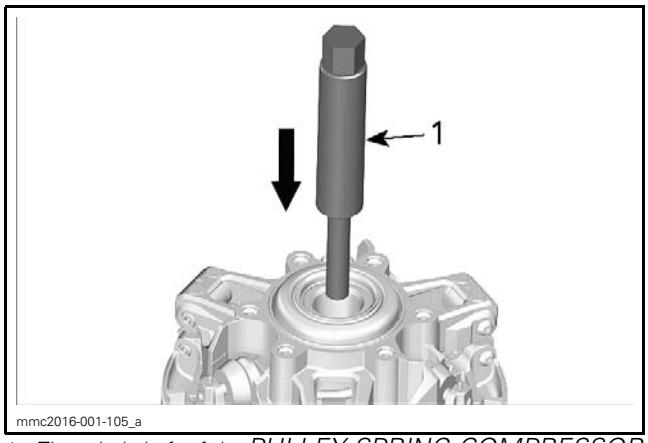


1. DRIVE PULLEY SUPPORT (P/N 529 036 371)

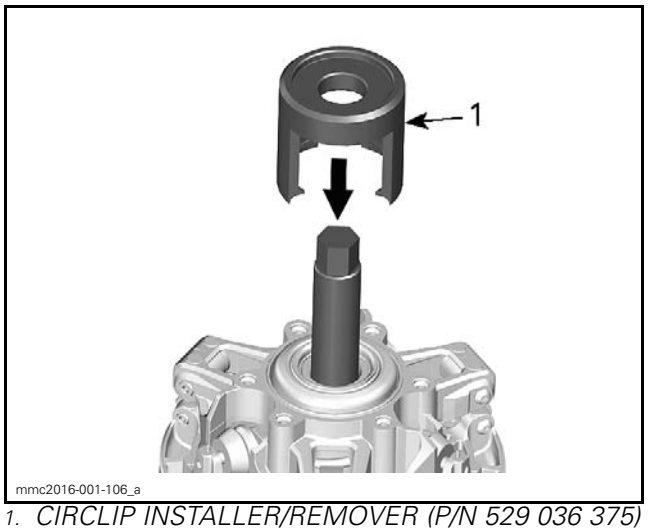
3. Loosen the damper screws.
4. Separate fixed and sliding sheaves. Refer to procedure above.
5. Remove the damper.



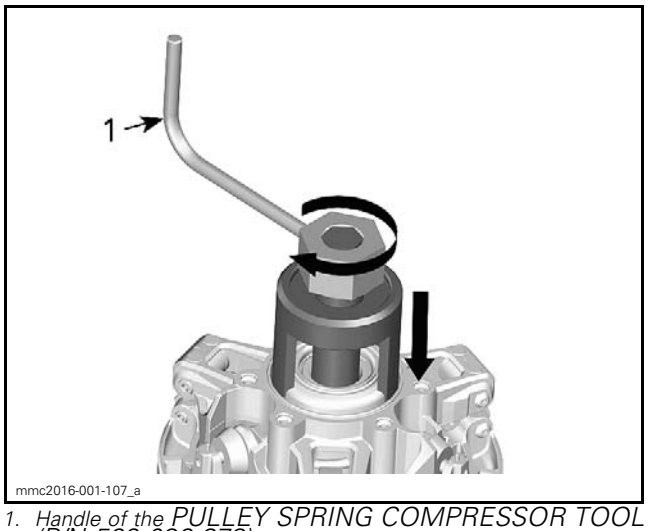
Removing the Spring



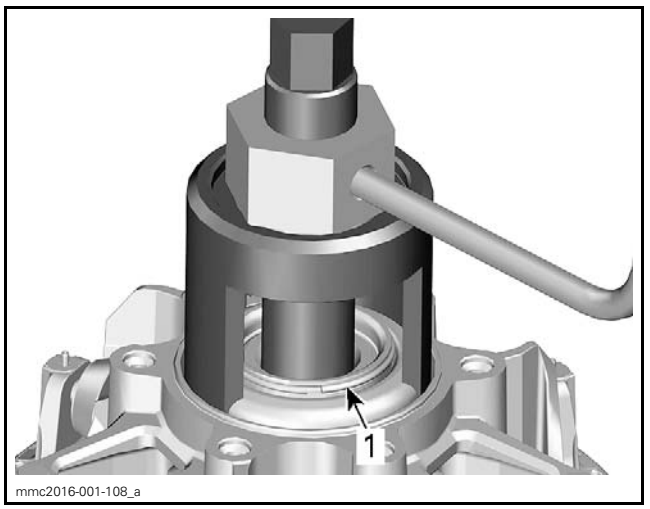
1. Threaded shaft of the PULLEY SPRING COMPRESSOR TOOL (P/N 529 036 373)



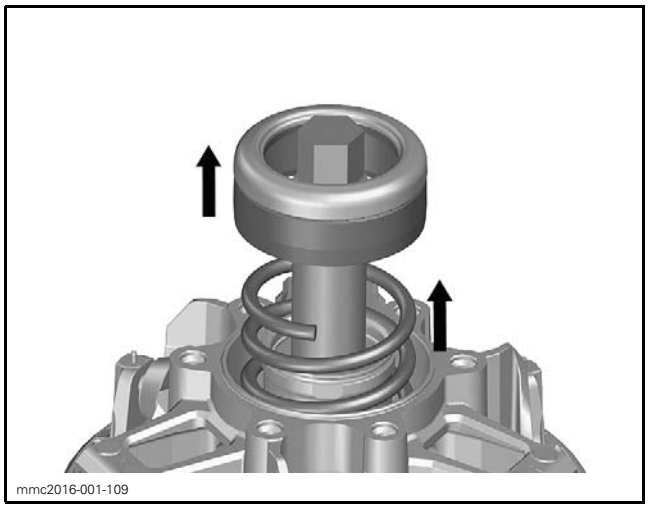
1. CIRCLIP INSTALLER/REMOVER (P/N 529 036 375)



1. Handle of the PULLEY SPRING COMPRESSOR TOOL (P/N 529 036 373)



1. Remove the circlip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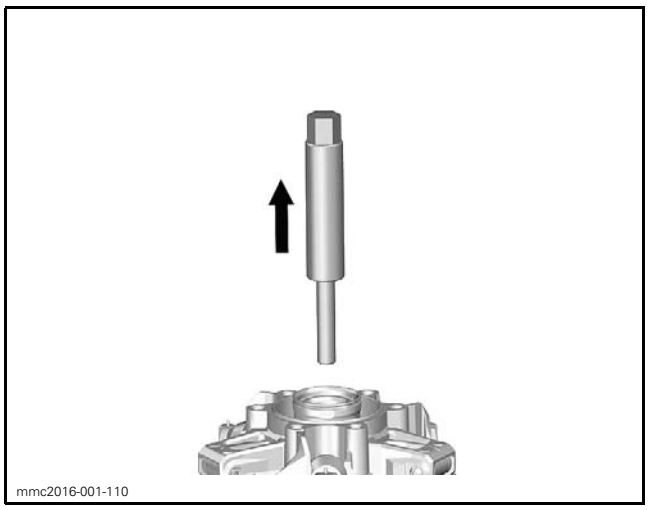
Removing the Spider

1. Remove the threaded shaft.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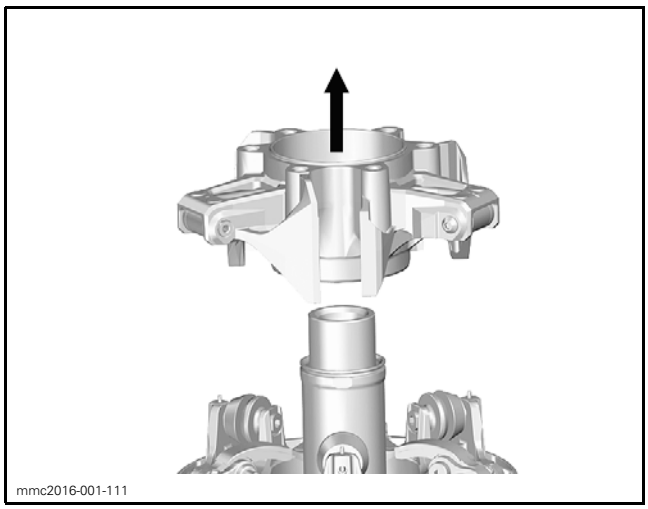
NOTICE Remove the threaded shaft to avoid damaging the bushings inside the spider.

2. Remove the spider.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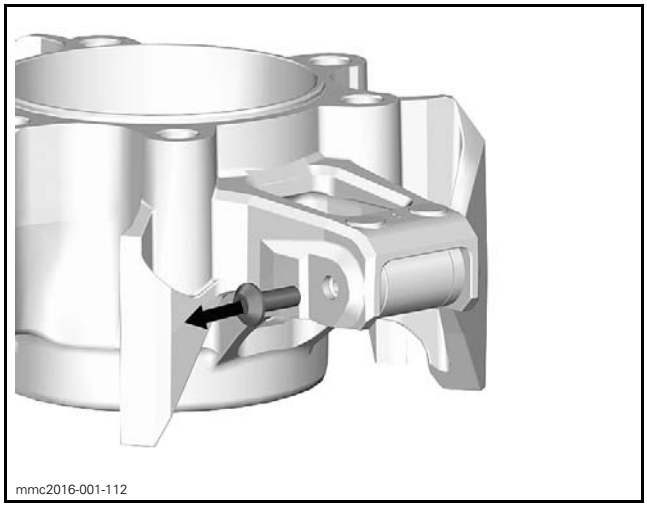
Removing the Roller

1. Remove axle retaining screw.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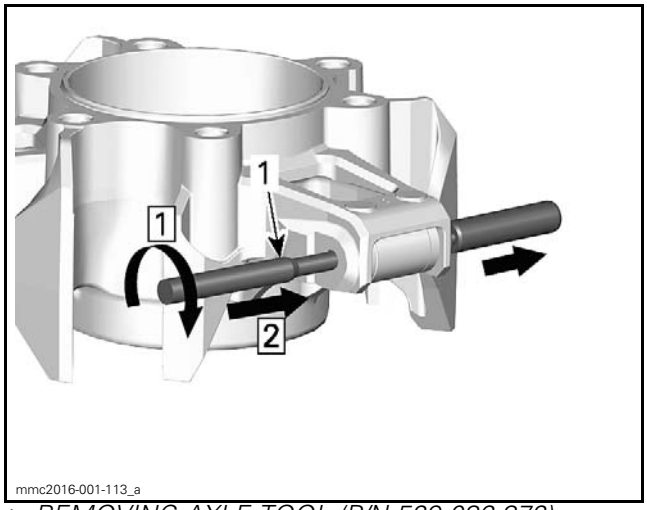
2. Remove the axle.



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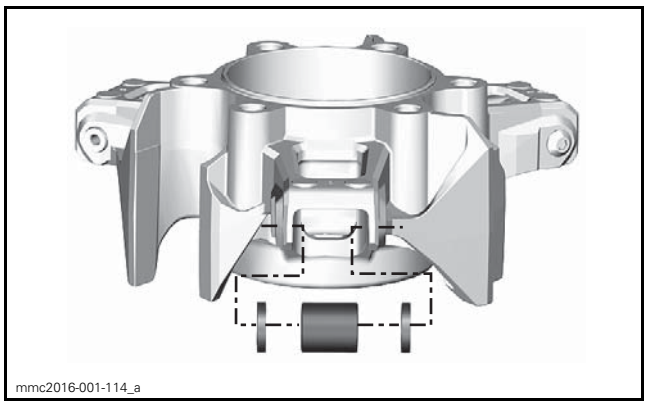
1. REMOVING AXLE TOOL (P/N 529 036 372)

Step 1: Screw the tool into the axle
Step 2: Push axle to the right side

3. Remove the roller and its thrust washers.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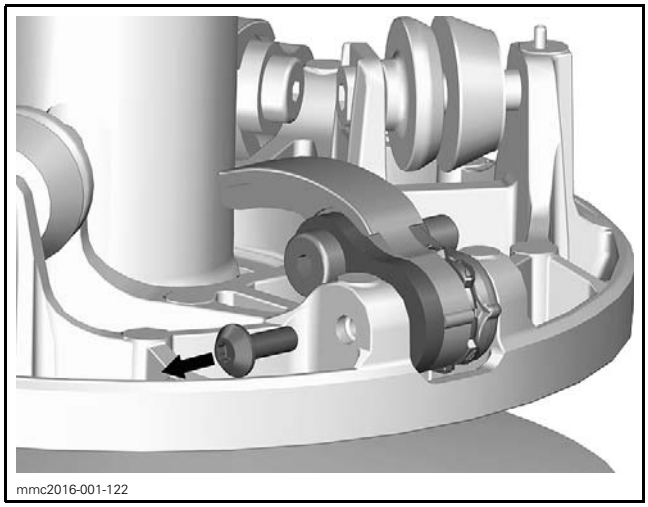
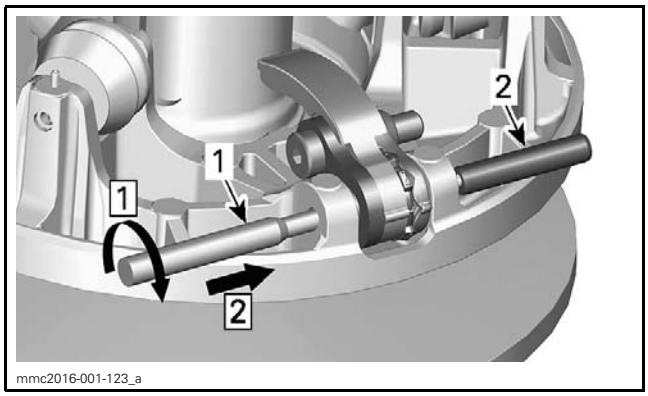
Removing the Ramp (without Spider)

1. Remove axle retaining screw.



TYPICAL

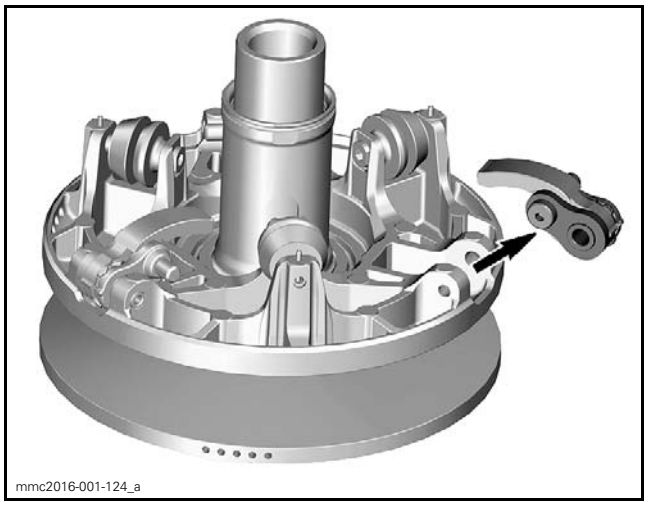
2. Remove the axle.



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

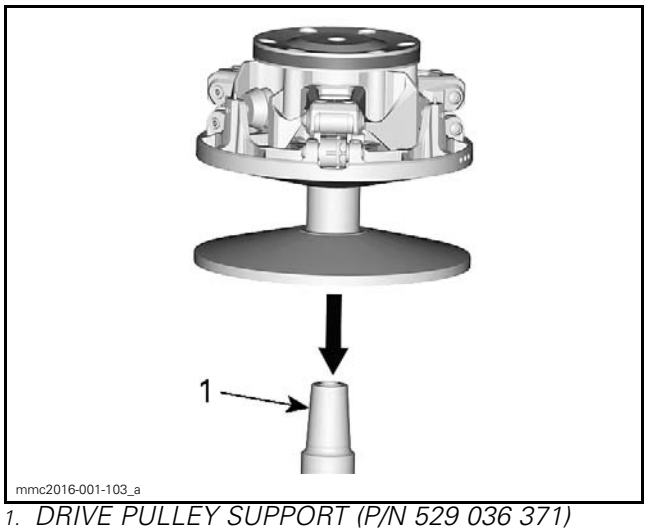
3. Remove ramp assembly.



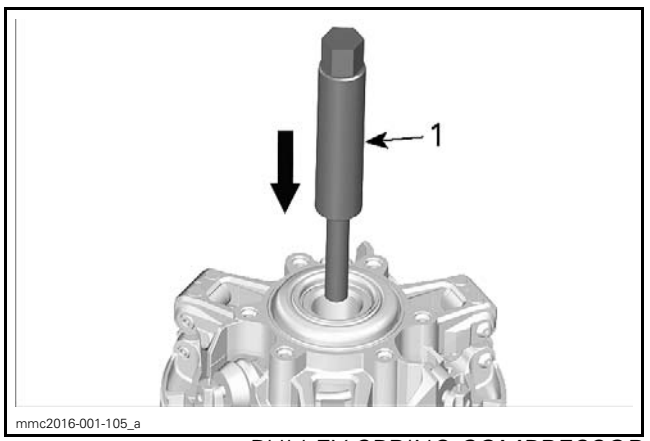
TYPICAL

Removing the Ramp (Spider Installed)

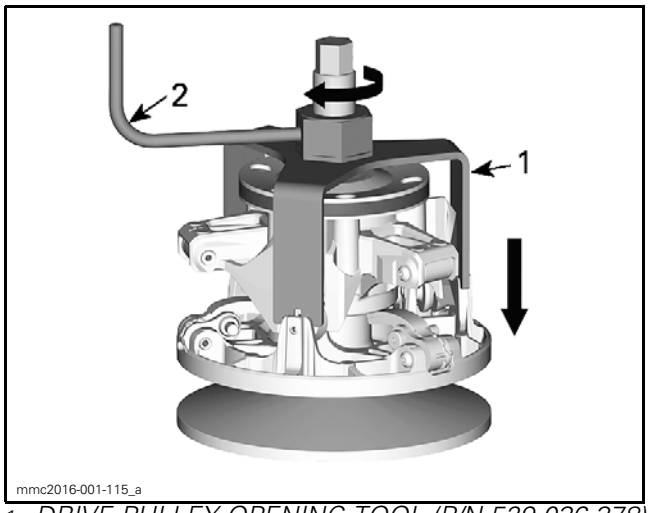
1. Lower the sliding sheave.
   1.1 Secure the drive pulley support in a vice.
   1.2 Install the drive pulley over the support.
   1.3 Install the drive pulley opening tool.



1. DRIVE PULLEY SUPPORT (P/N 529 036 371)

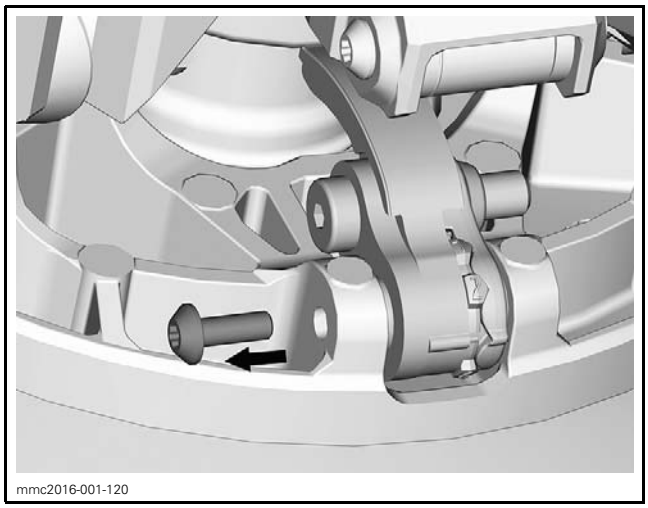


1. Threaded shaft of the PULLEY SPRING COMPRESSOR TOOL (P/N 529 036 373)

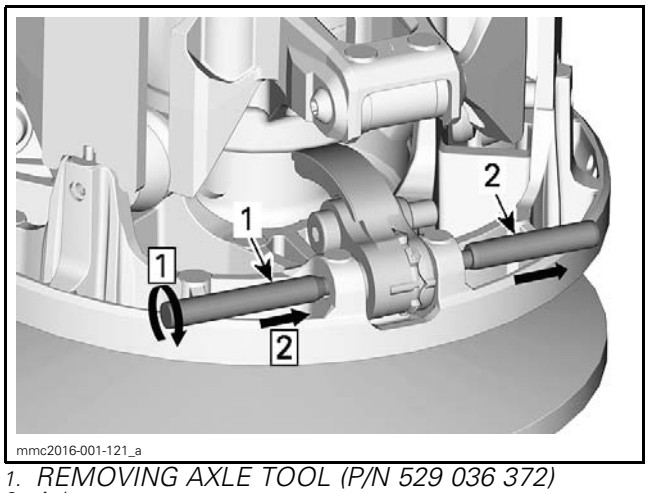


1. *DRIVE PULLEY OPENING TOOL (P/N 529 036 378)*
2. *Handle of the PULLEY SPRING COMPRESSOR TOOL (P/N 529 036 373)*

2. Remove axle retaining screw.



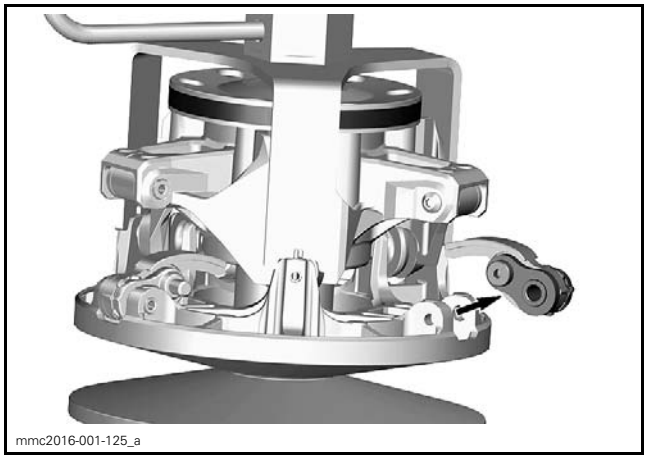
3. Remove the axle.



1. *REMOVING AXLE TOOL (P/N 529 036 372)*
2. *Axle*

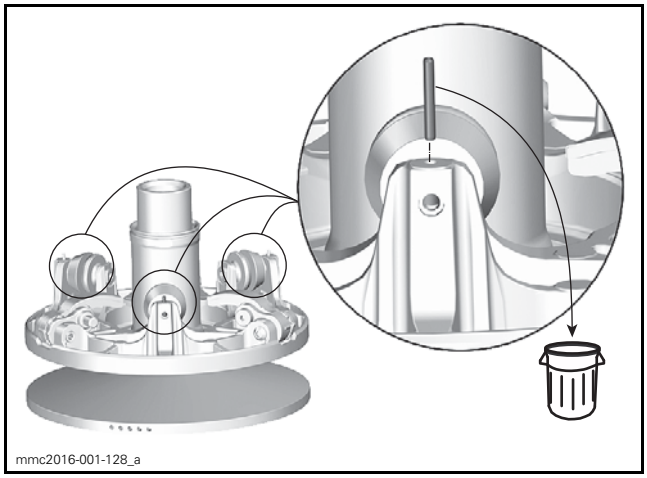
Step 1: Screw the tool into the axle
Step 2: Push axle to the right side

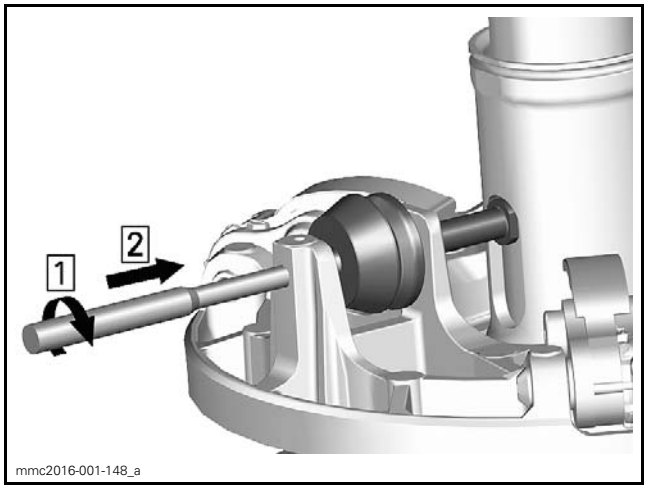
4. Remove ramp assembly.



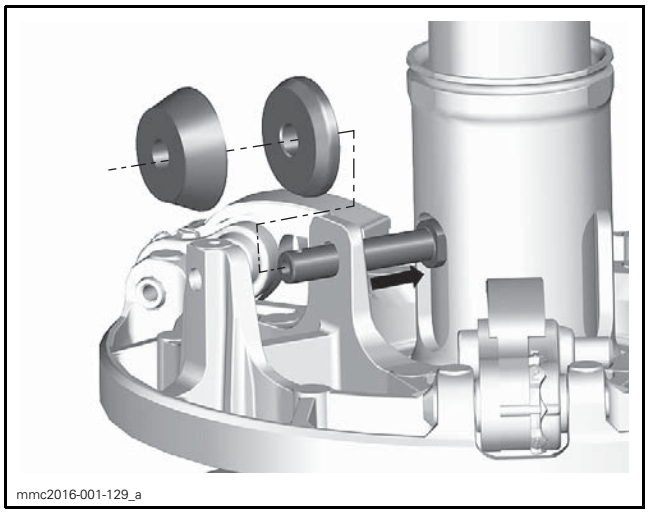
TYPICAL

Removing the Torque Rollers





Step 1: Screw the tool into the axle
Step 2: Push axle towards the center of the pulley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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.

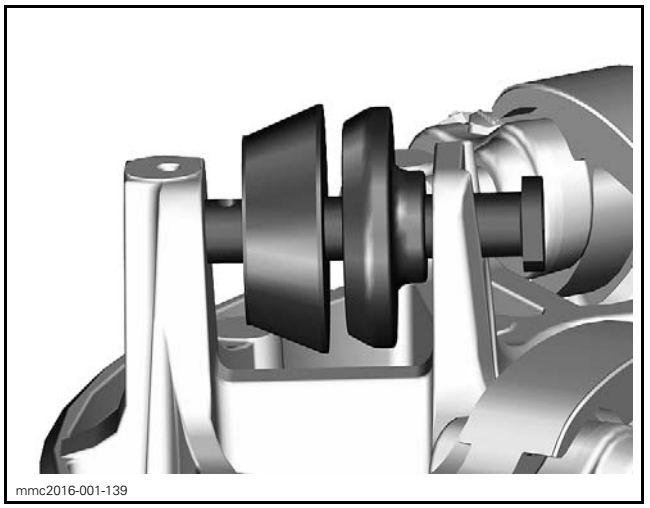
Wipe off the mounting surfaces with a clean, dry paper towel.

NOTICE Mounting surfaces must be free of any oil, cleaner or towel residue.

Assembling the Drive Pulley

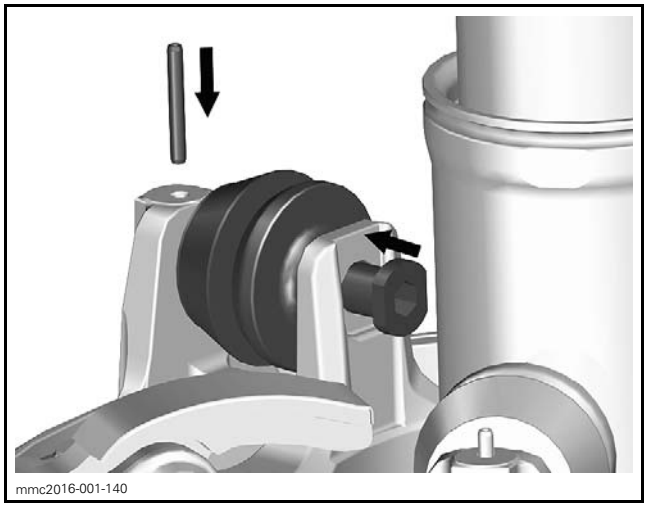
Torque Rollers

Position torque rollers as illustrated.


mmc2016-001-139

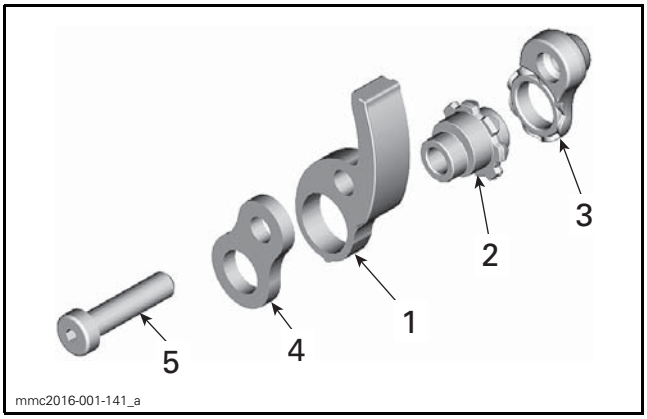
Position the flat sides of the axle head inside the slot of the mounting lug.

Install a new spring pin.


mmc2016-001-140

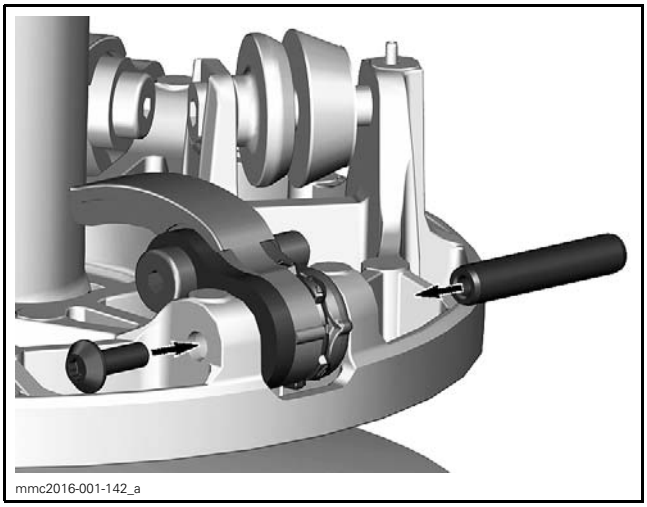
Ramp

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**)

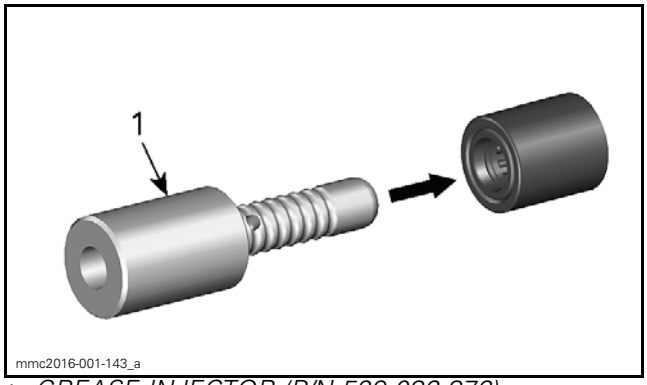
Roller

Lubricate the roller bearing.

SERVICE PRODUCT
ISOFLEX GREASE TOPAS NB 52 (P/N 293 550 021)

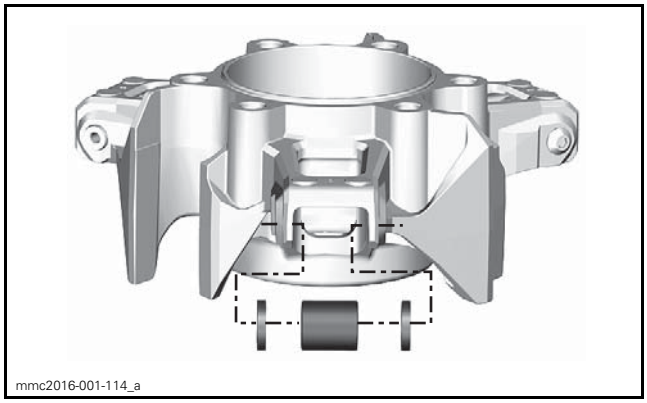
REQUIRED TOOL	
GREASE INJECTOR (P/N 529 036 376)	

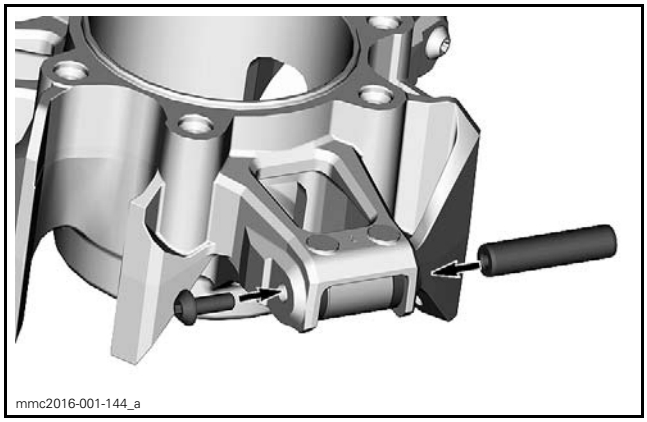
NOTE: A threaded end is required on the grease gun for using the grease injector.



1. *GREASE INJECTOR (P/N 529 036 376)*

Install roller.



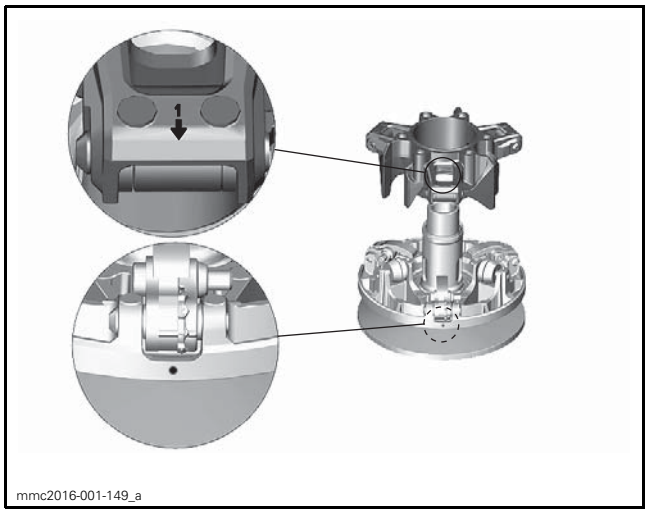


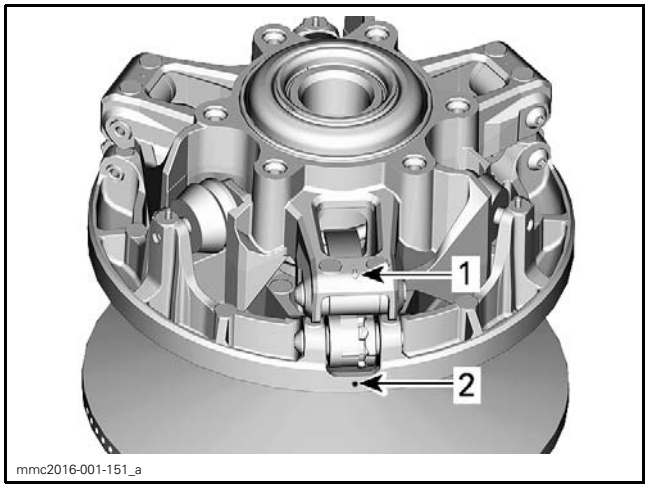
TIGHTENING TORQUE	
Roller axle screw	5 N•m ± 0.5 N•m (44 lbf•**in** ± 4 lbf•**in**)

Spider

Install the spider on the sliding sheave by aligning the indexing marks.

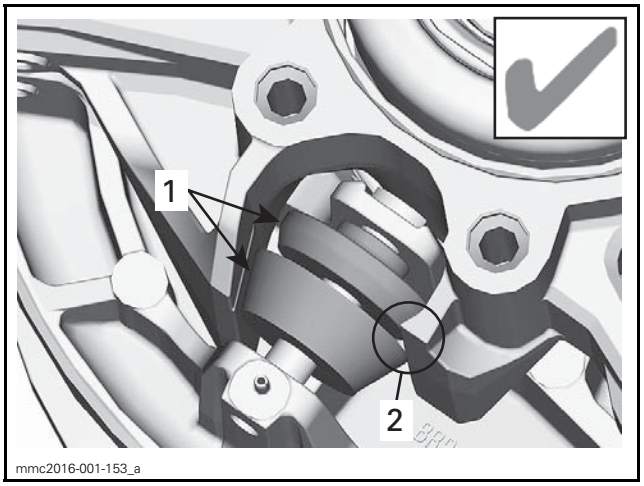
– Spider - the arrow on the arms #1, just above the roller.
– Sliding sheave - the dot on the external side of the sheave.



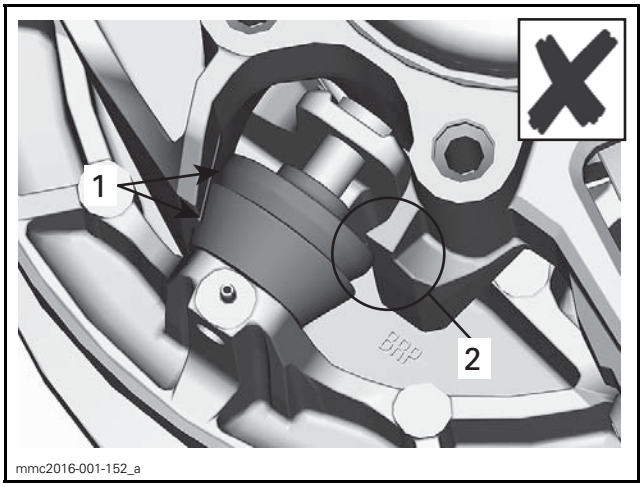


FINAL POSITION
1. *Arrow - spider arm*
2. *Dot - sliding sheave*

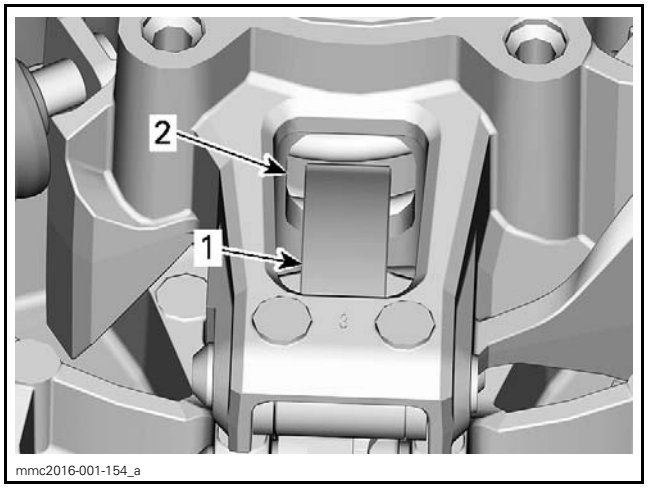
NOTICE During installation of the spider, make sure to position the three spurs of spider legs between torque rollers and ensure that ramps are positioned inside the openings of the spider.



ROLLER - GOOD INSTALLATION
1. *Torque rollers*
2. *Spur of the spider leg*



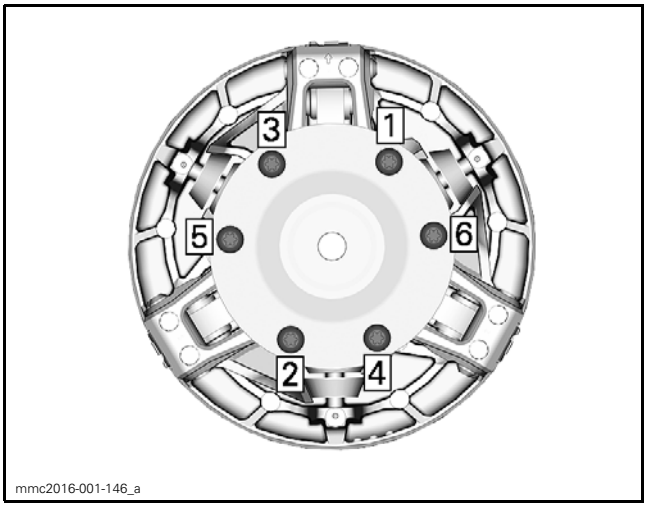
ROLLER - WRONG INSTALLATION
1. *Torque rollers*
2. *Spur of the spider leg*



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.

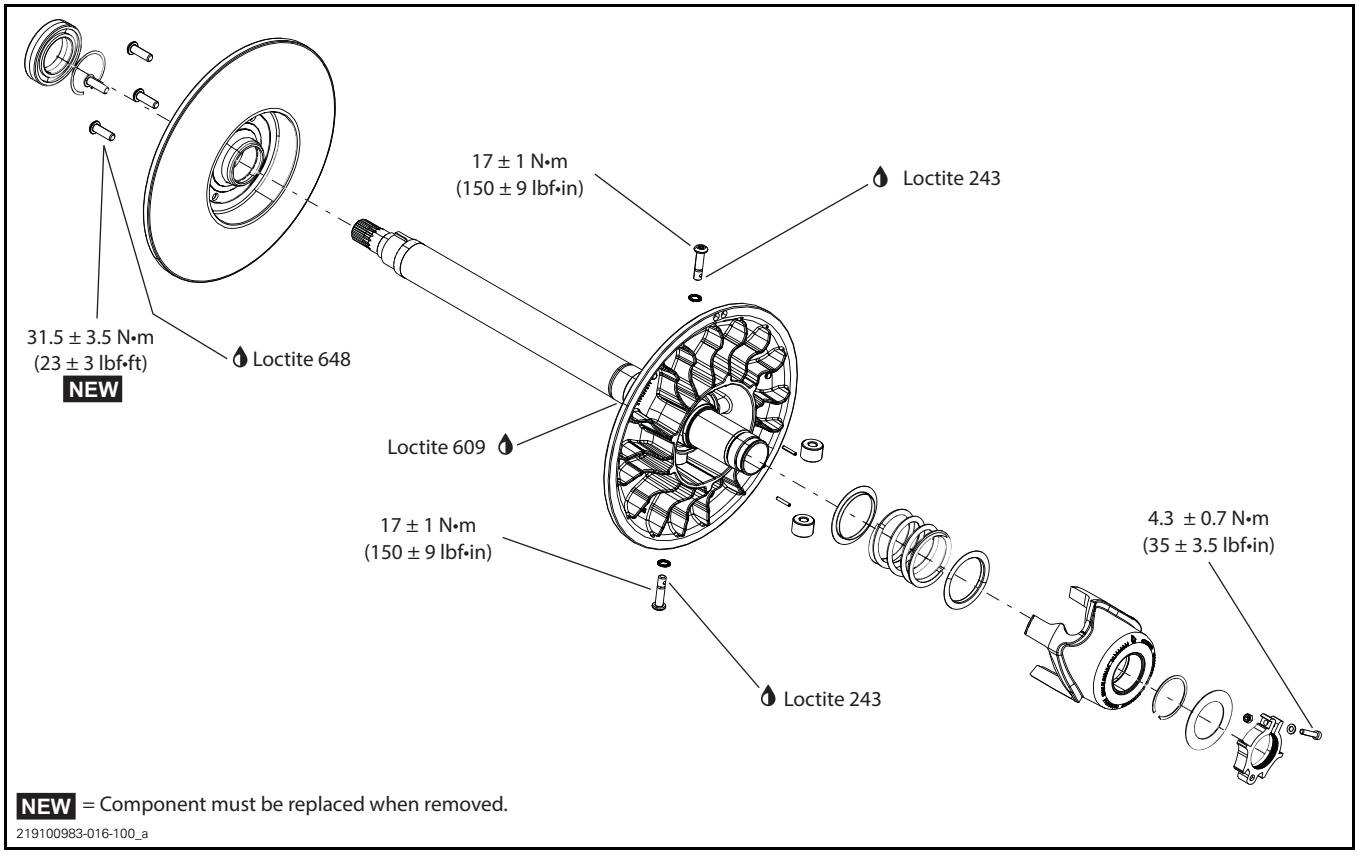
DRIVEN PULLEY AND COUNTERSHAFT

SERVICE TOOLS

Description	Part Number	Page
BEARING PULLER DRIVEN SUPPORT	529 036 485	211
COUNTERSHAFT ADAPTER	529 036 424	217
COUNTERSHAFT BEARING INSTALLER	529 036 066	218
COUNTERSHAFT BEARING REMOVER	529 036 065	217
COUNTERSHAFT SUPPORT	529 036 067	217
DRIVEN PULLEY SPRING COMPRESSOR	529 036 182	211
UPPER GEAR RETAINING TOOL	529 036 110	210

SERVICE PRODUCTS

Description	Part Number	Page
CLUTCH AND PULLEY FLANGE CLEANER PRO S1	779244	215, 218
LOCTITE 243 (BLUE)	293 800 060	215
LOCTITE 609	413 703 100	218
LOCTITE 648 (GREEN)	413 711 400	216
LOCTITE 7649 (F)	619 600 100	218
LOCTITE 7649 (PRIMER)	293 800 041	218
LOCTITE 767 (ANTI-SEIZE LUBRICANT)	293 800 070	217
PULLEY FLANGE CLEANER (F)	619 600 022	215, 218



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.

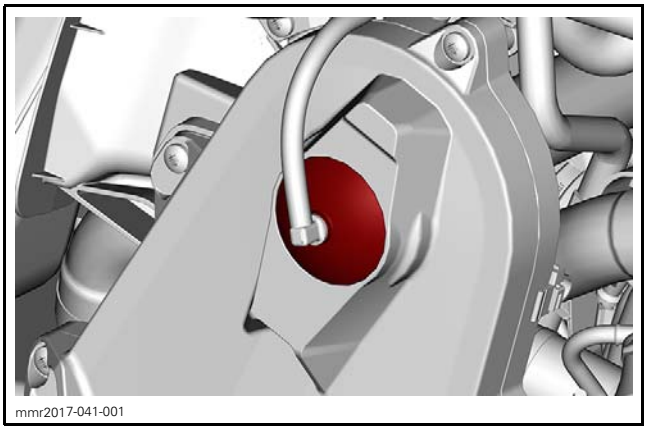
PROCEDURES

DRIVEN PULLEY

Removing the Driven Pulley

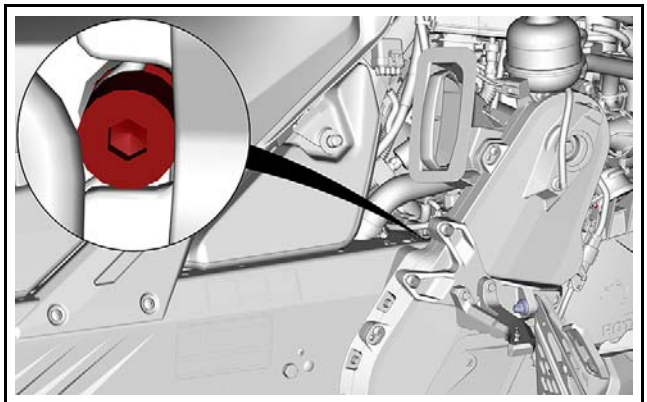
NOTE: The driven pulley is removed with the countershaft.

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.



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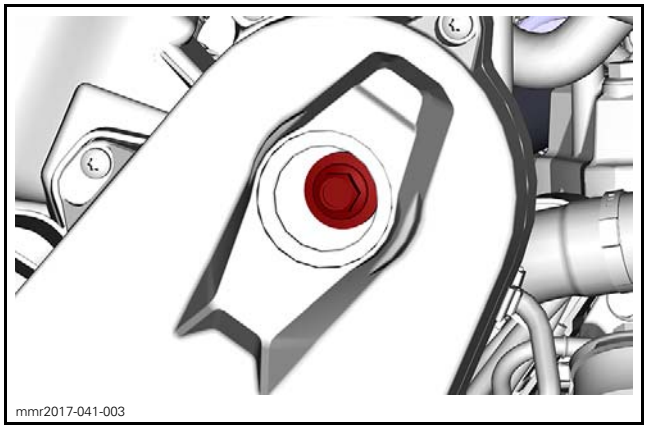
4. Remove the upper gear screw and the conical spring washer.

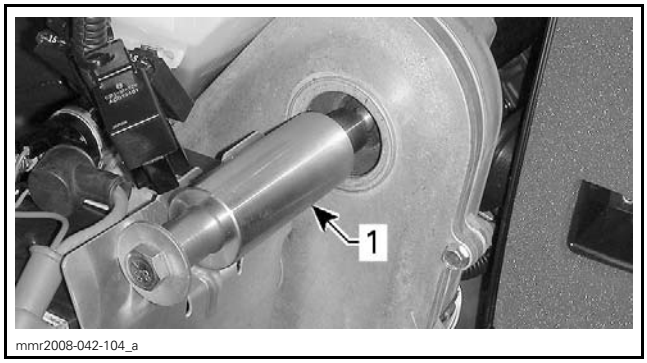
NOTE: Slightly tilt the bolt to avoid dropping washer inside chaincase.



mmr2017-041-003

5. Install the gear retaining tool on countershaft end.

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

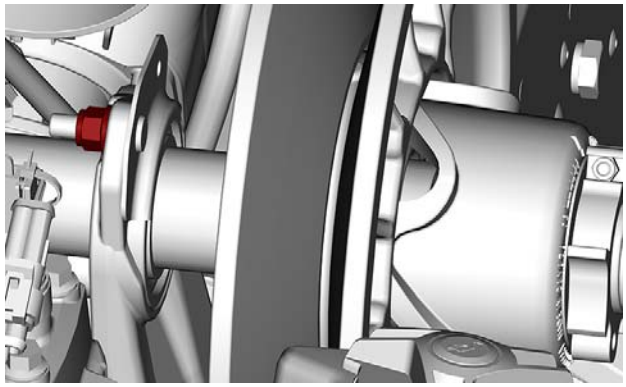


mmr2008-042-104_a

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.

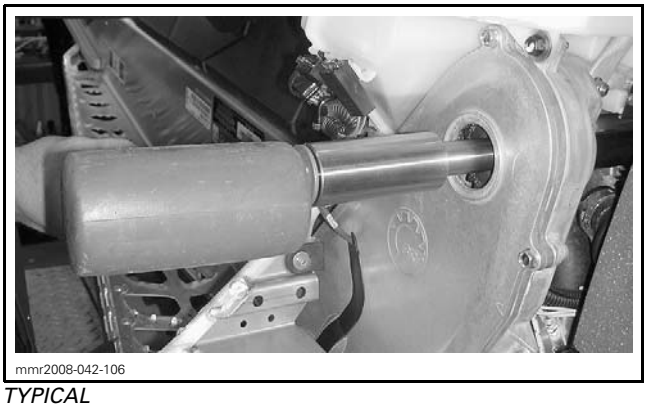

mmr2017-041-004

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

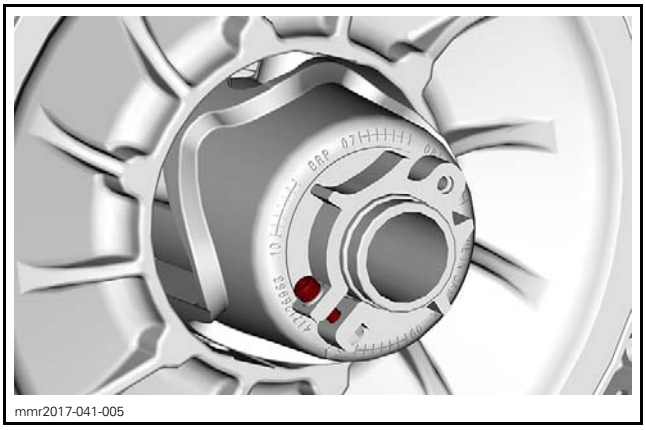
11. Unscrew countershaft from the upper gear retaining tool. **Do not** remove tool.

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.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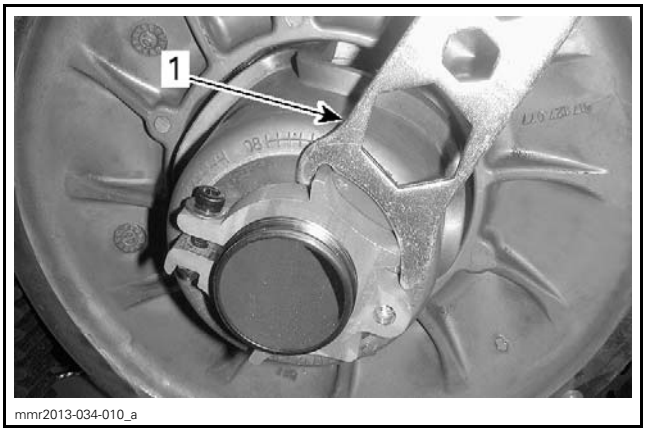
2. Unscrew the adjuster hub **clockwise** using the suspension adjustment tool provided in the vehicle tool kit.

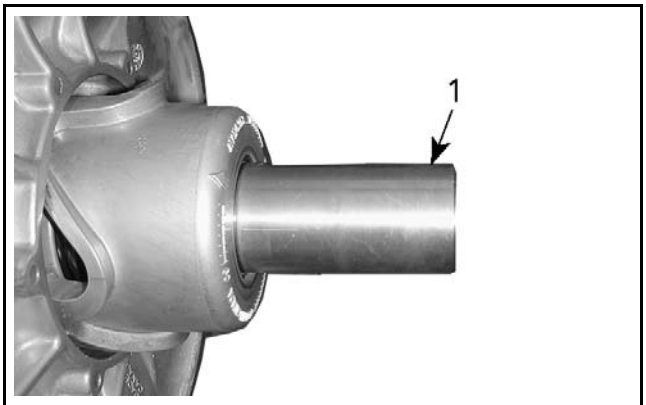
NOTE: The adjuster hub has LH treads.



mmr2013-034-010_a
1. Suspension adjustment tool shown

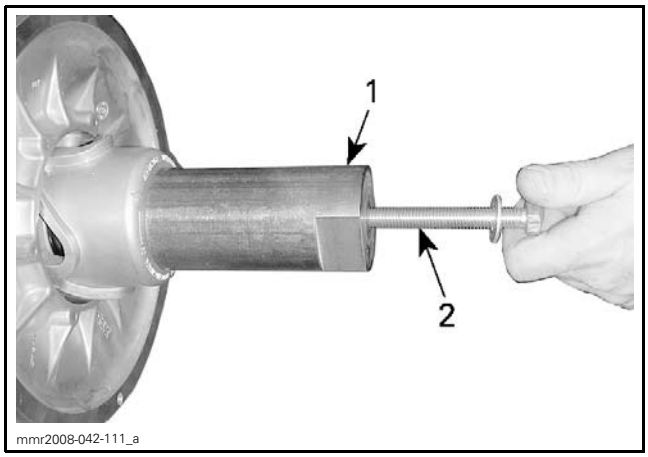
REQUIRED TOOL	
DRIVEN PULLEY SPRING COMPRESSOR (P/N 529 036 182)	

3. Install the threaded adapter of the spring compressor on the countershaft.



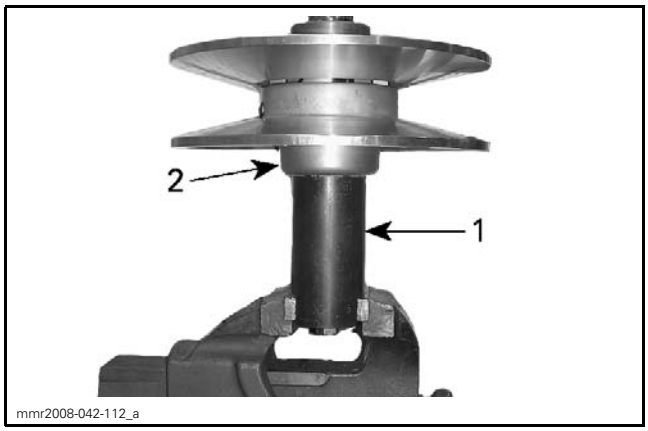
mmr2008-042-110_a
1. Threaded adapter

4. Install the external sleeve over the threaded adapter and secure sleeve with the tool screw.



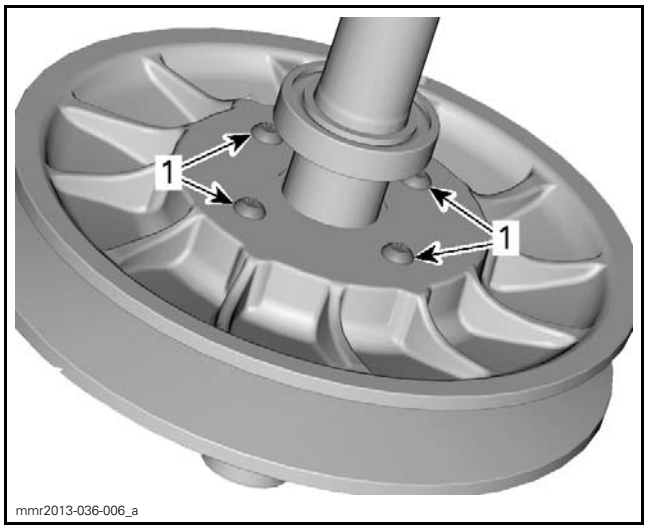
1. External sleeve
2. Driven pulley spring compressor screw

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.

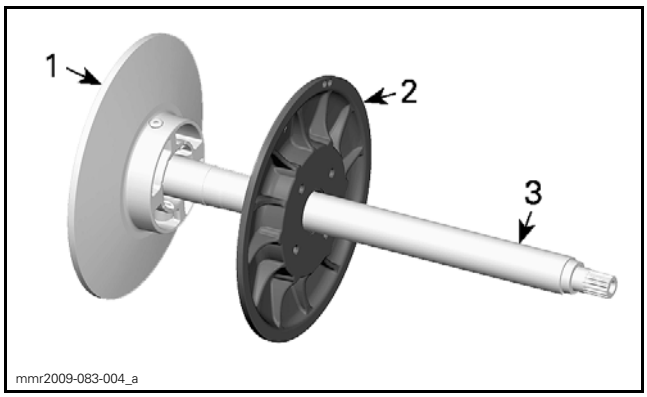


1. Heat cam screws

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

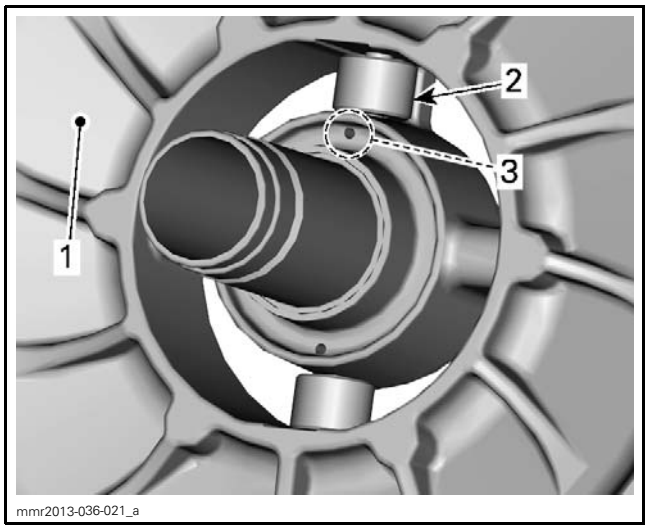
Removing the Fixed Sheave

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.



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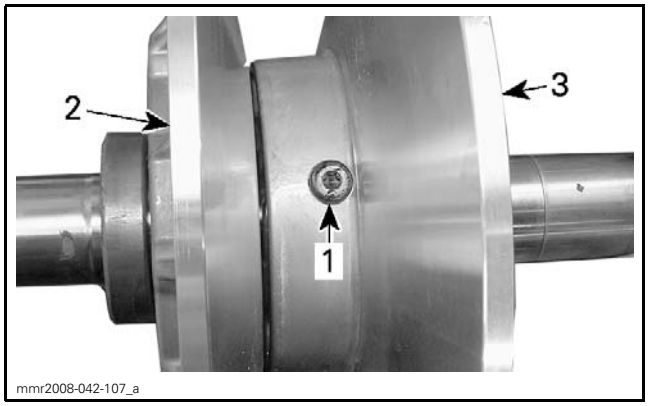
1. Fixed sheave outer face
2. Roller
3. Spring pin location

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.



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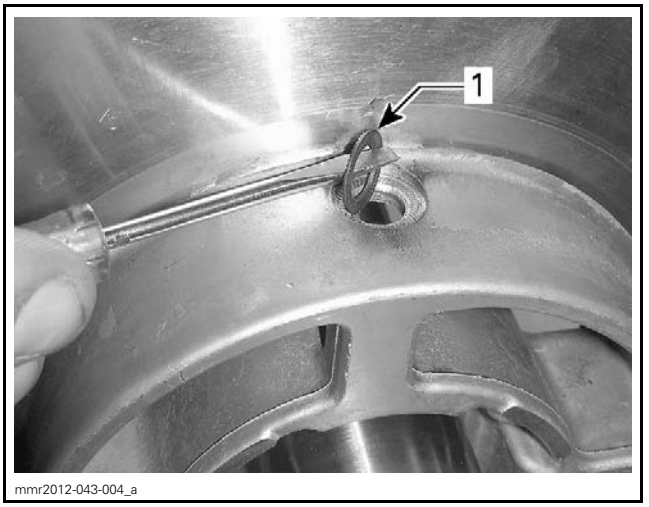
1. Pivot screw
2. Sliding sheave
3. Fixed sheave

mmr2012-043-003

PIVOT SCREW REMOVAL



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1. Ribbed lock washer

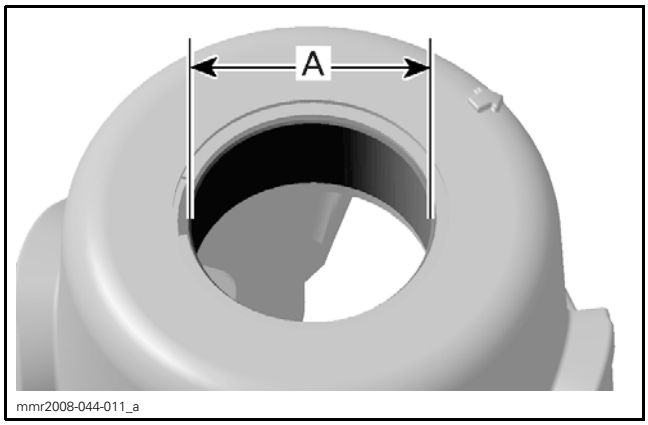
5. Remove roller.
6. Proceed with removal of other roller.

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.



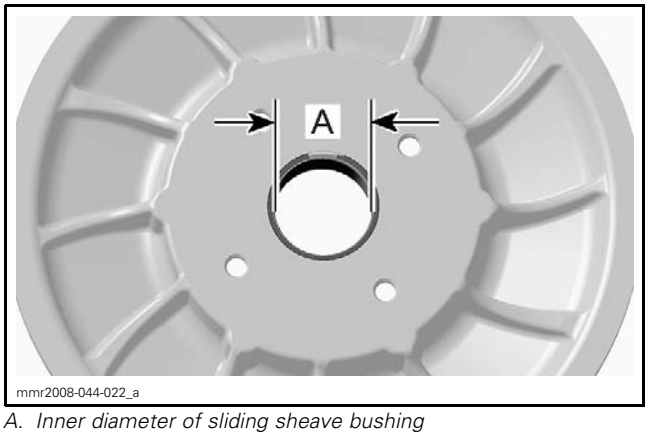
A. Inner diameter of cam bushing

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.

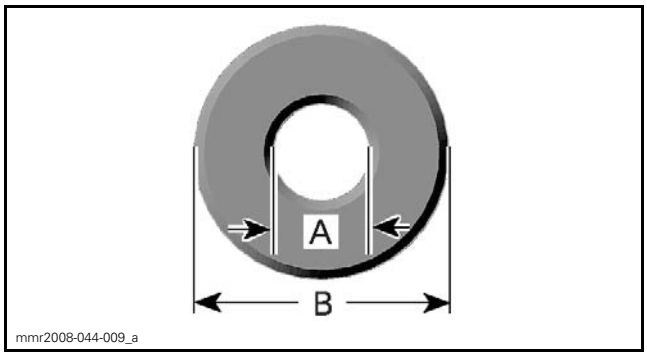
Inspecting the Fixed Sheave

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

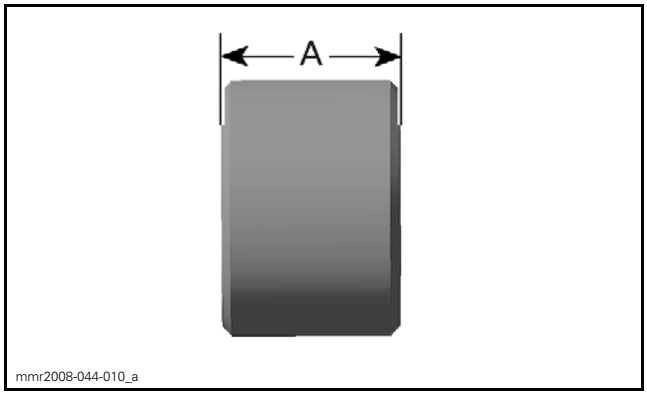
1. Check the rollers for flat spots, cracks or other visible damages. Replace if necessary (as a set).
2. Measure inner and outer diameter of rollers.



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.

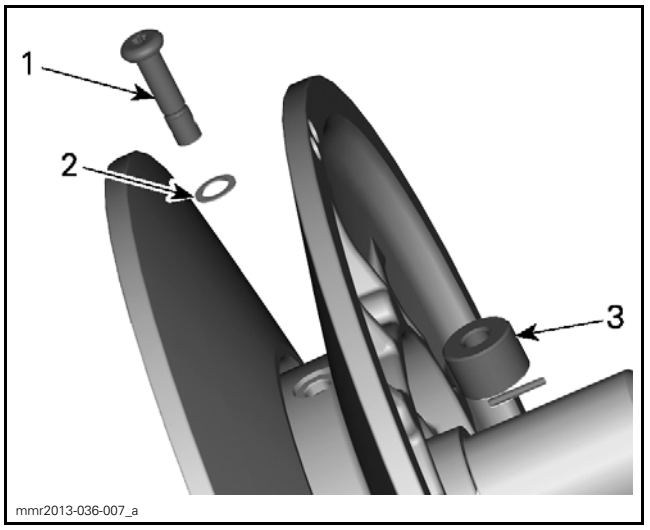
NOTE: Pivot screw and ribbed lock washer must be reused if in good condition. If damaged, replace fixed sheave assembly.

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

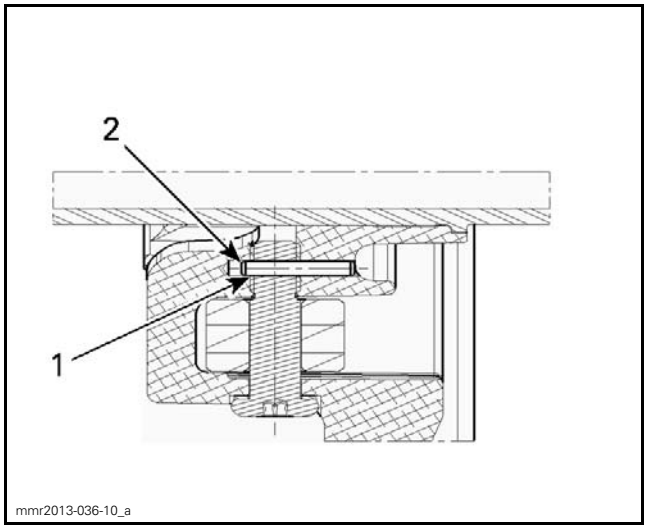
IMPORTANT: For proper fit, each pivot screw must be reinstalled where originally mounted in the fixed sheave.

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.**

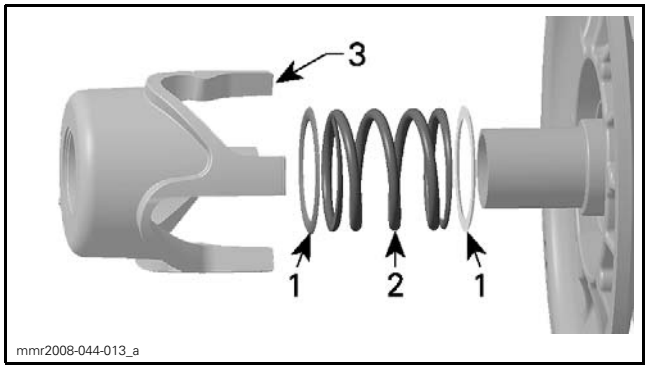


1. Hole in pivot screw
2. Spring pin

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.

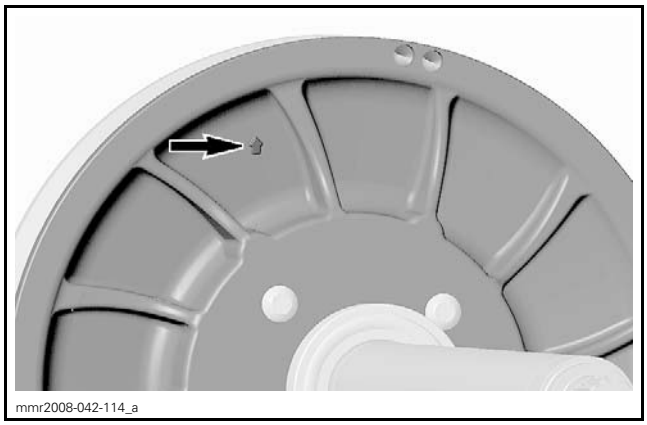
TIGHTENING TORQUE	
Cam screw	31.5 N•m ± 3.5 N•m (23 lbf•ft ± 3 lbf•ft) + LOCTITE 648 (GREEN) (P/N 413 711 400)

7. Remove the tool.

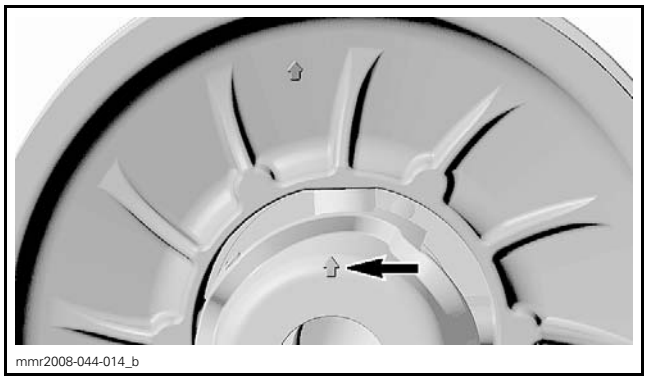
Installing the Sliding Sheave

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.



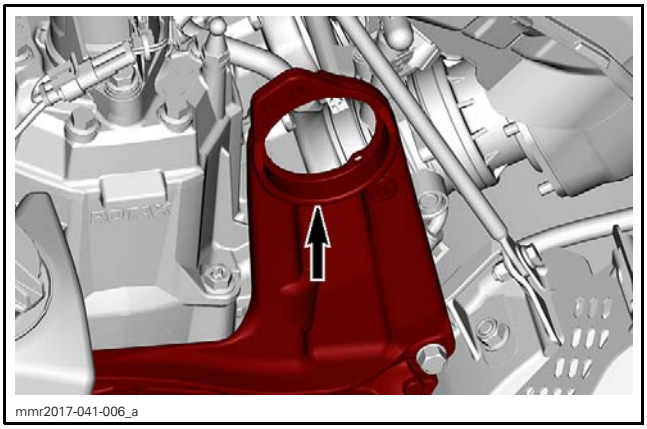
SLIDING SHEAVE ARROW



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.



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.

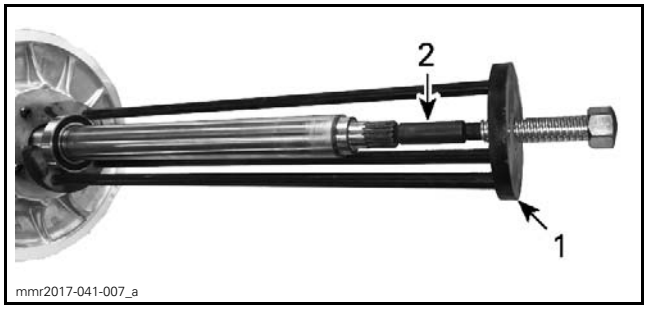
COUNTERSHAFT BEARING

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)	



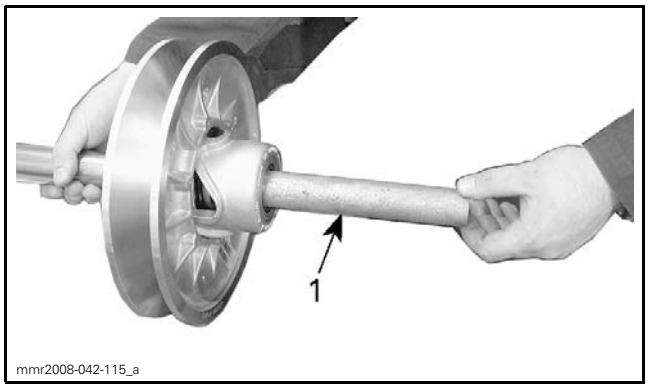
1. *Countershaft adapter*
2. *Countershaft bearing remover*

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.

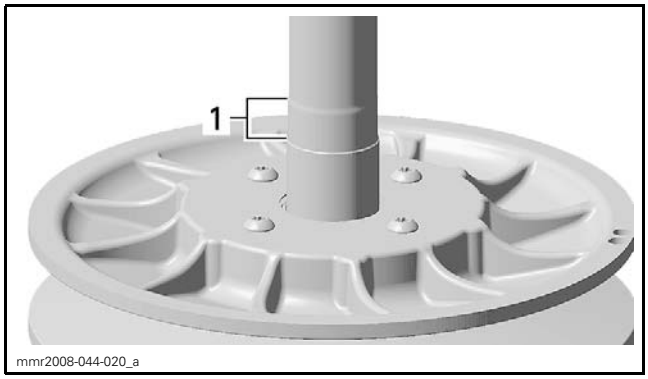
SERVICE PRODUCT	
Scandinavia	PULLEY FLANGE CLEANER (F) (P/N 619 600 022)
Other Countries	CLUTCH AND PULLEY FLANGE CLEANER PRO S1 (P/N 779244)

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.

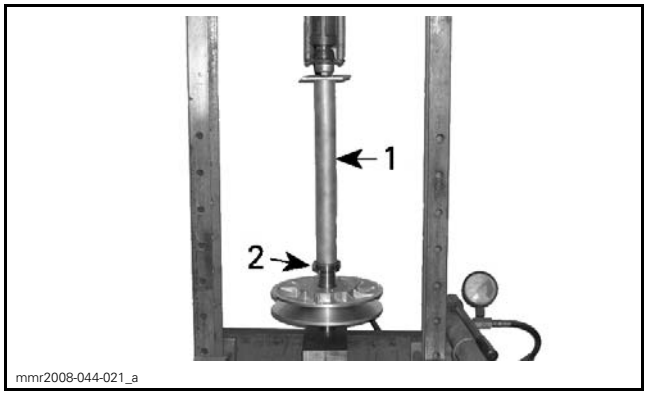
SERVICE PRODUCT
LOCTITE 609 (P/N 413 703 100)



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*.

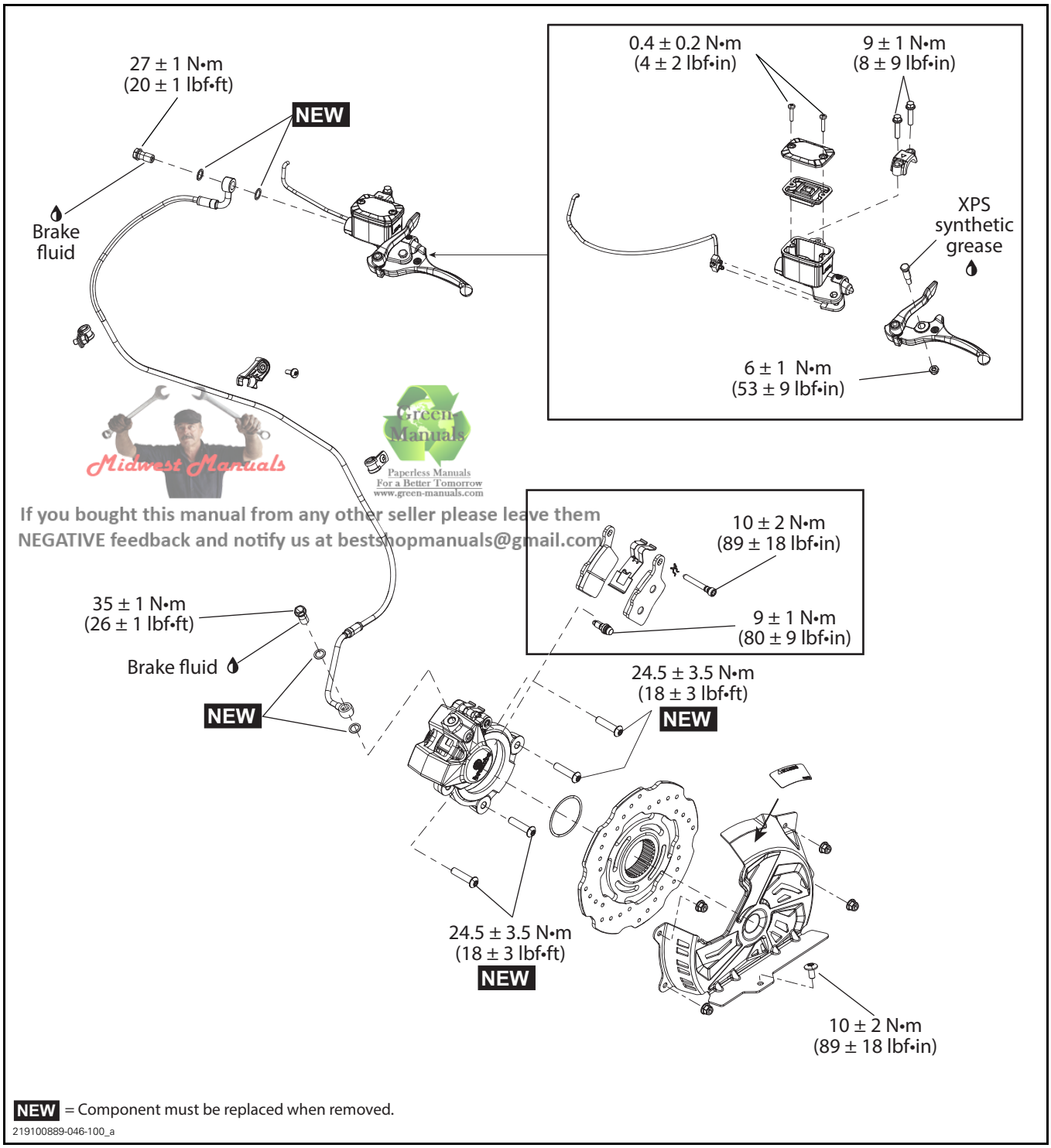
BRAKE

SERVICE TOOLS

Description	Part Number	Page
CALIPER PULLER	529 036 145	225
PROTECTIVE CAP	529 036 150	225

SERVICE PRODUCTS

Description	Part Number	Page
BRAKE FLUID DOT 4	779151	221
LOCTITE 767 (ANTI-SEIZE LUBRICANT)	293 800 070	226
SYNTHETIC GREASE	779162	223



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NEW = Component must be replaced when removed.

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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

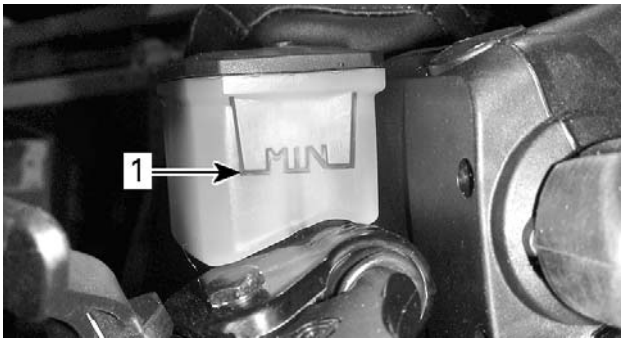
Always use brake fluid meeting the DOT 4 specification.

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

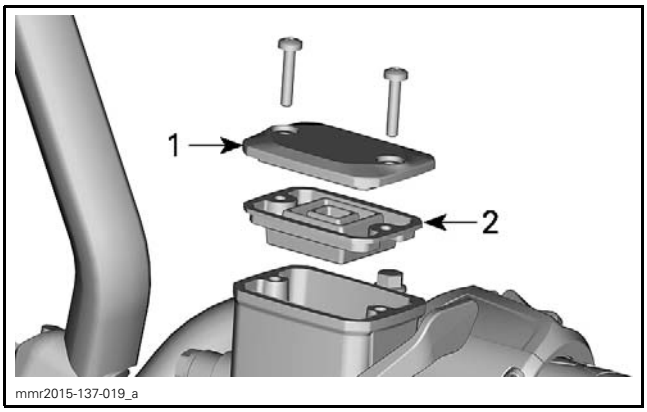
Add fluid as required. Do not overfill.

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.



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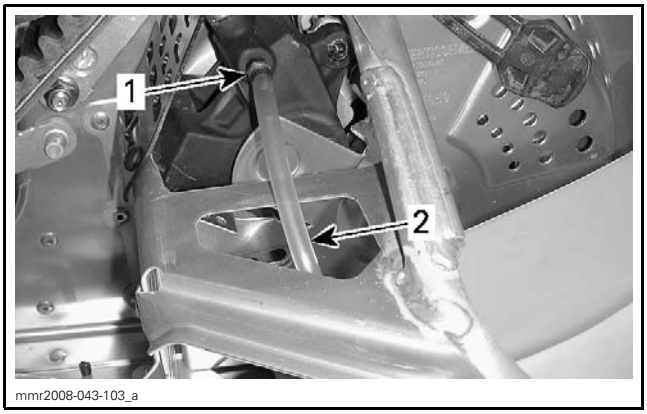
1. Reservoir cover
2. Diaphragm

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.



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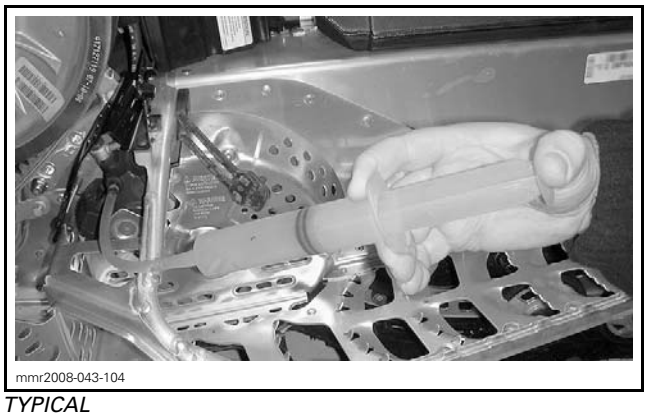
TYPICAL
1. Bleeder
2. Clear hose to catch used brake fluid

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.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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

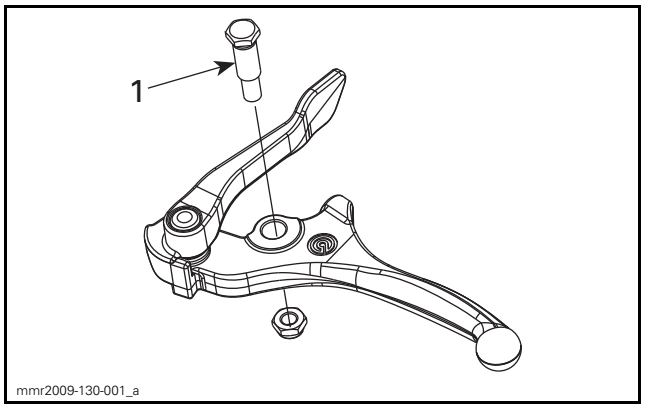
Visually inspect the brake hose for leaks or any damage.

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

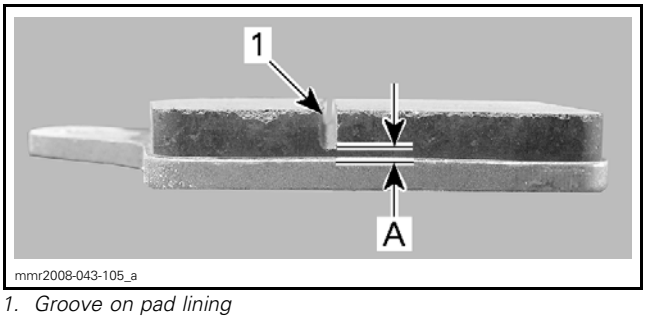
BRAKE PADS

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.



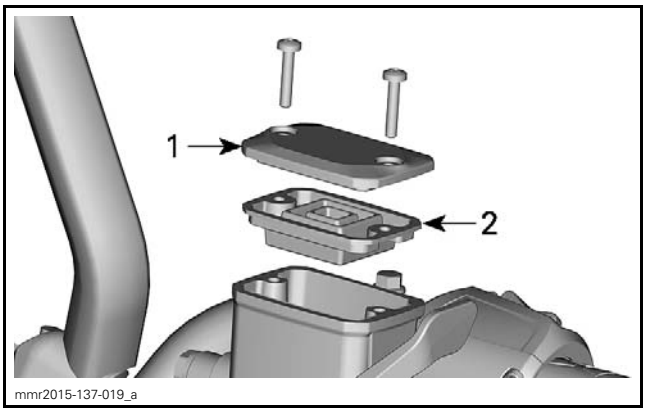
1. Groove on pad lining

2. Also inspect the brake disc, refer to *INSPECTING THE BRAKE DISC* in this subsection.

Replacing the Brake Pads

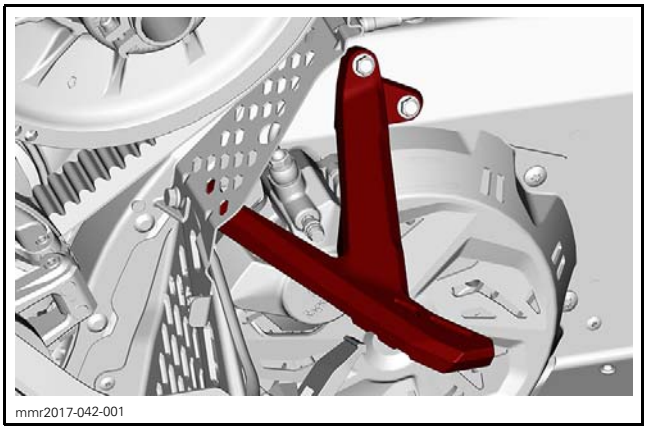
Removing the Brake Pads

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).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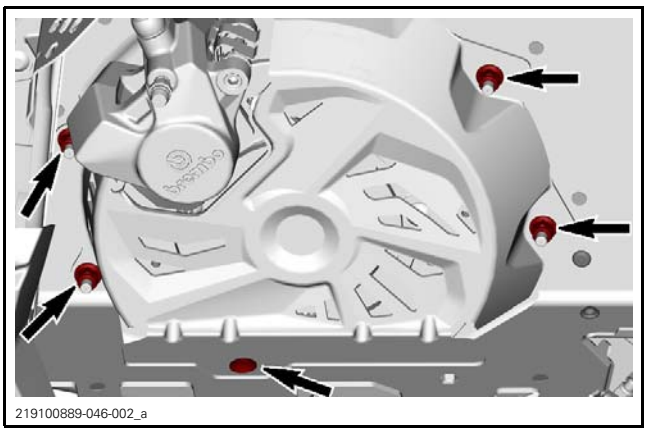
6. Remove the disc brake protective cover.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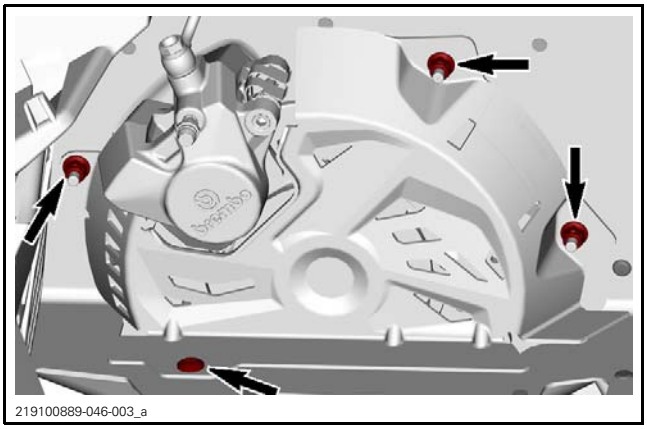
5 HOLES MOUNT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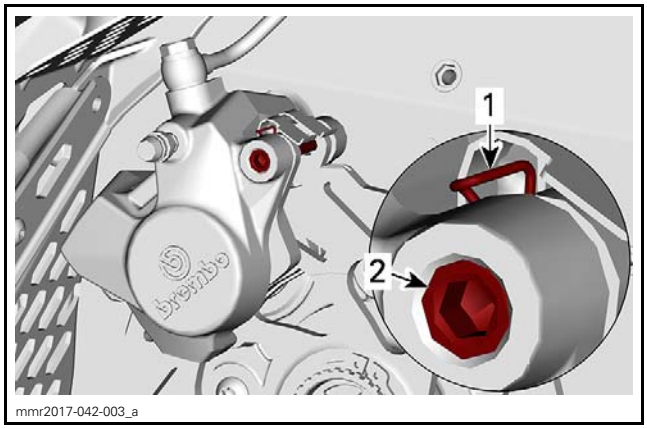
4 HOLES MOUNT

7. Remove the clip securing brake pad pin.
8. Unscrew and remove the brake pad pin.



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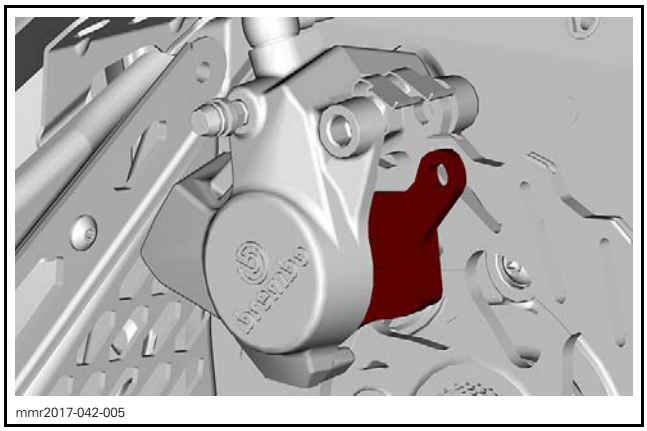
1. Clip
2. Brake pad pin

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.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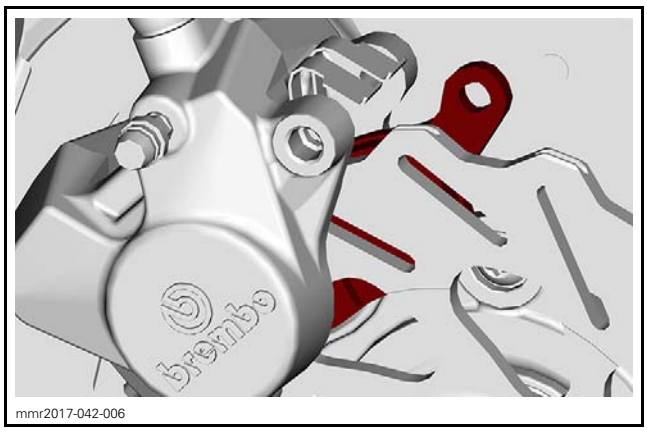
    10.2 Pull the brake disc outward and remove the internal pad.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Installing the Brake Pads

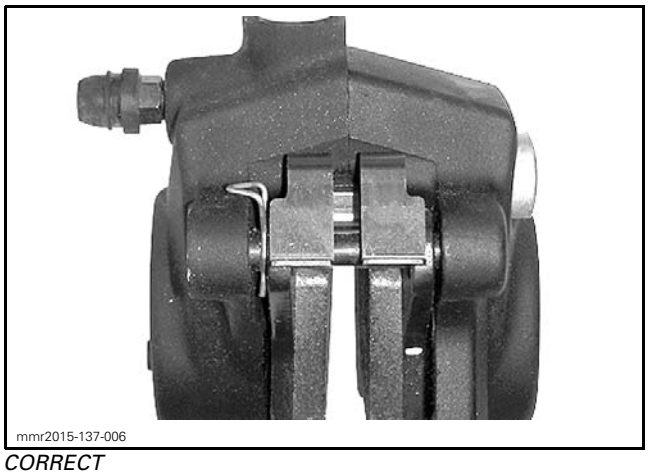
The installation is the reverse of the removal. However, pay attention to the following.

1. Install new brake pads with tabs facing upward.
2. Install brake pad pin and tighten to specification.

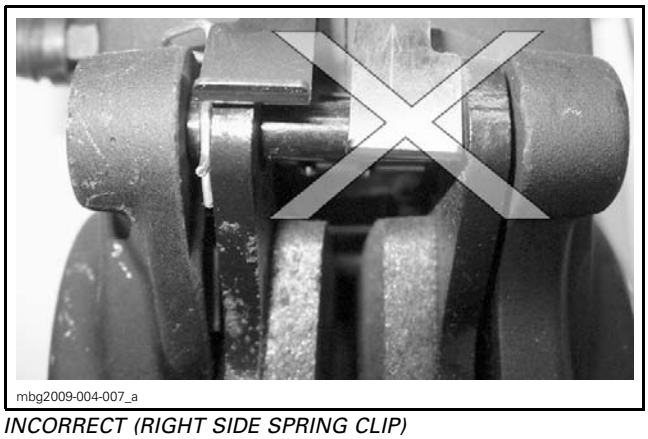
TIGHTENING TORQUE	
Brake pad pin	10 N•m ± 2 N•m (89 lbf•**in** ± 18 lbf•**in**)

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.



CORRECT



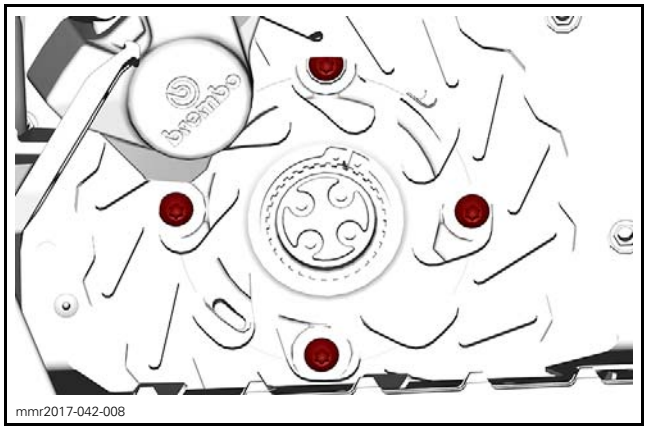
INCORRECT (RIGHT SIDE SPRING CLIP)

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.



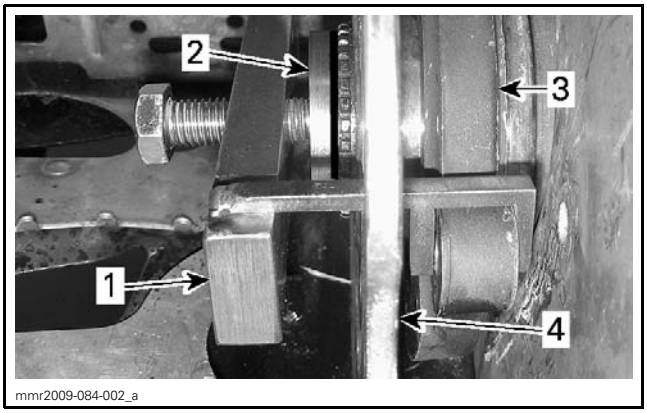
9. Unlock the caliper retaining plate from inside the tunnel.

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.

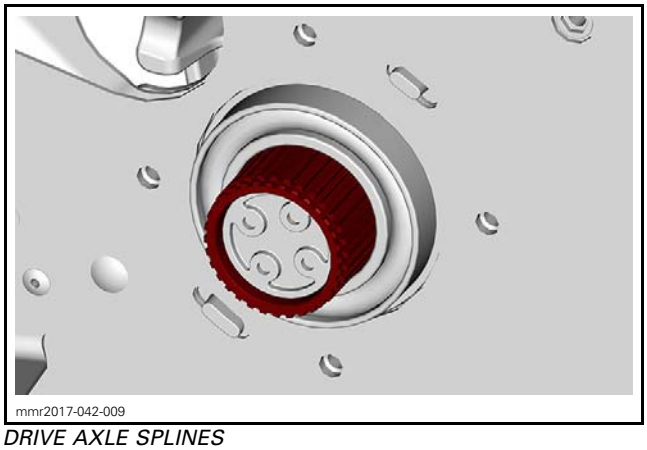
Inspecting the Caliper

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.

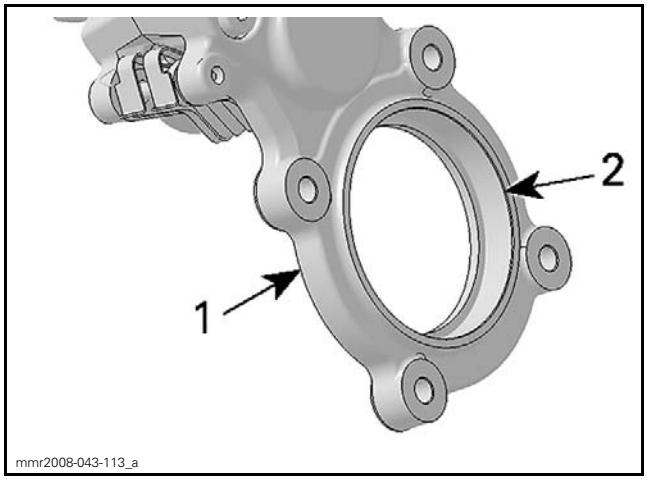
Installing the Caliper

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)

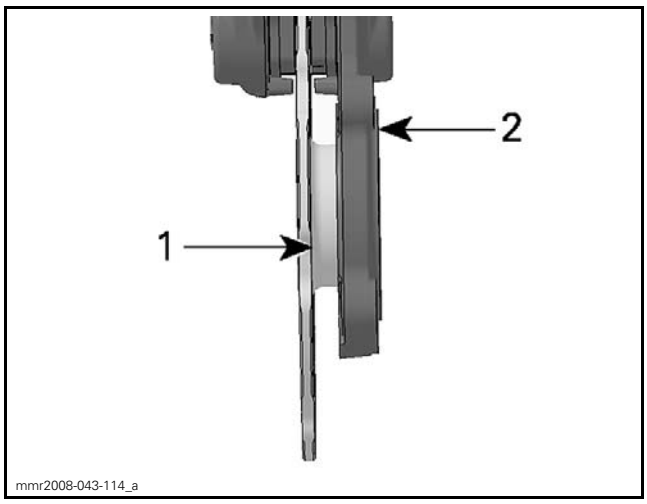


DRIVE AXLE SPLINES



1. *Caliper bracket*
2. *Bearing shoulder*

4. Insert brake disc in the caliper. The brake disc collar must be inserted in the caliper bracket.

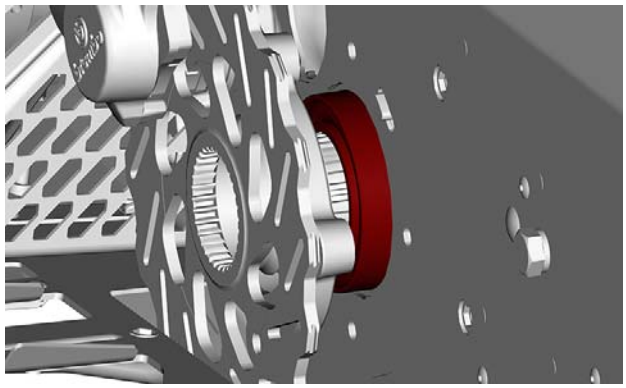


1. *Brake disc collar*
2. *Caliper bracket*

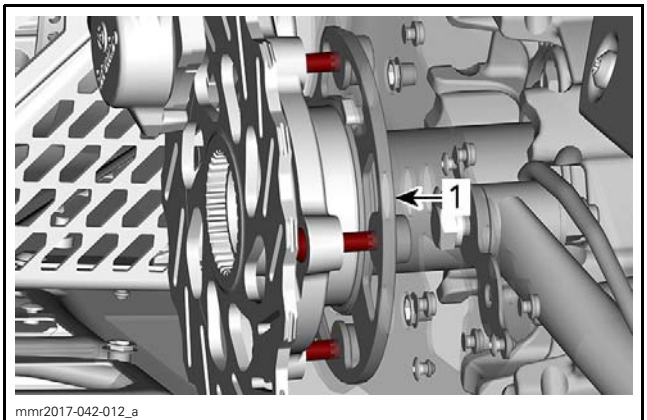
5. Ensure bearing flange is properly locked in the frame. Tabs must be properly inserted in frame slots.

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

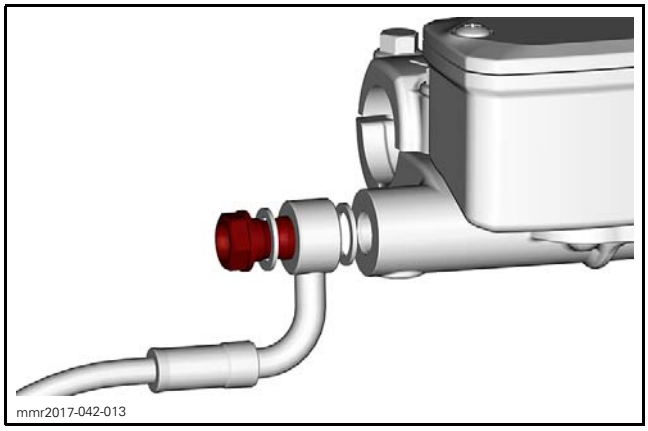
Follow procedures for caliper removal and installation.

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.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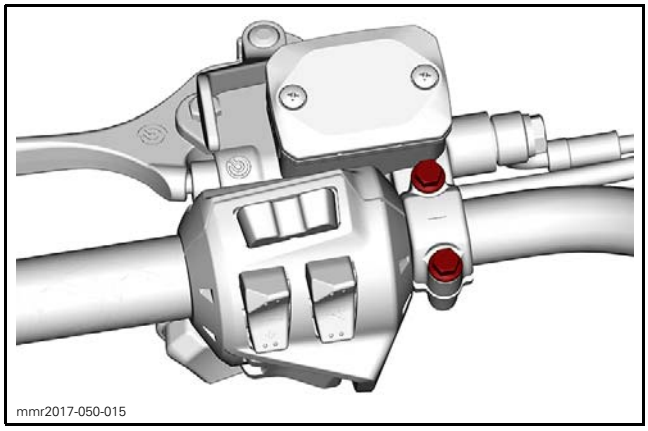
3. Remove screws and clamp securing master cylinder to handlebar.


mmr2017-050-015

4. Remove master cylinder.

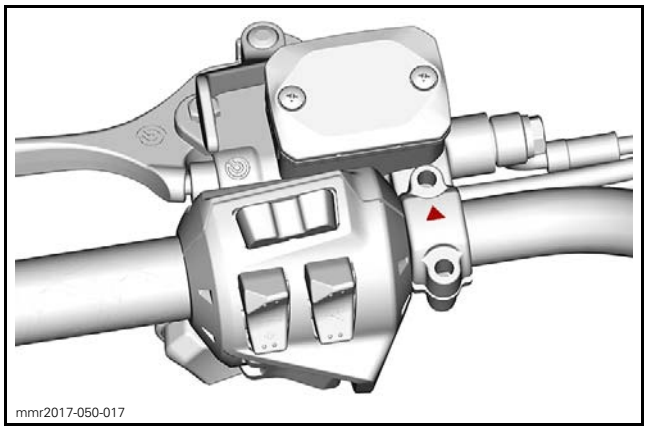
NOTICE Do not let master cylinder hang by the hose and do not stretch or twist the hose.

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.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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.

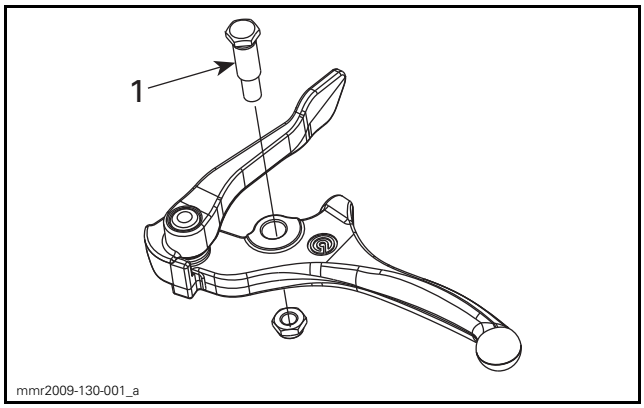
TIGHTENING TORQUE	
Banjo fitting	27 N•m ± 1 N•m (20 lbf•ft ± 1 lbf•ft)

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

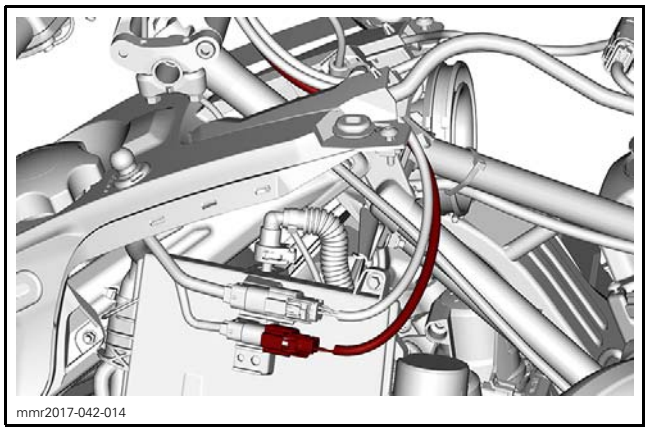
Tighten the pivot nut of brake lever to specification.

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.

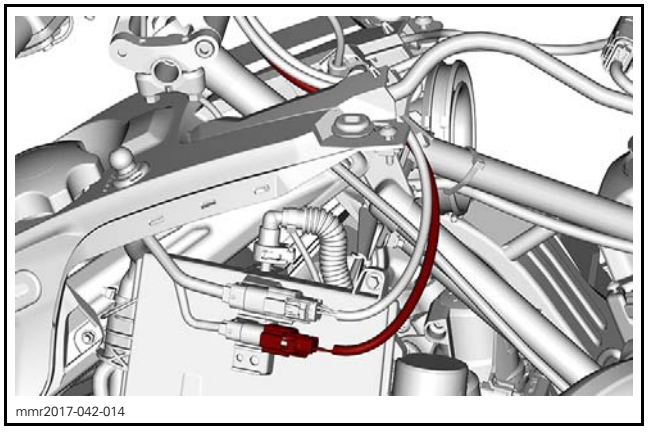
LH HANDLEBAR CONNECTOR (4-PIN)		
SWITCH	WIRE	RESISTANCE
Released	Pin 2 and pin 4	Infinite (OL)
Squeezed and held		Close to 0 Ω

If readings do not correspond to the above specifications, replace switch.

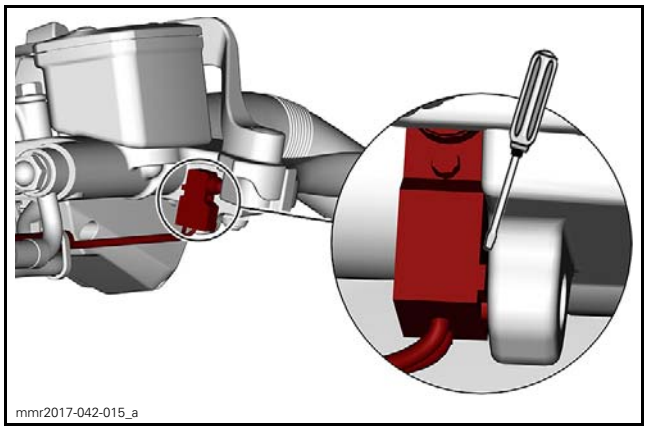
If readings correspond to the above specifications, check fuse, wiring and connectors going to switch. Repair or replace defective part(s).

Removing the Brake Light Switch

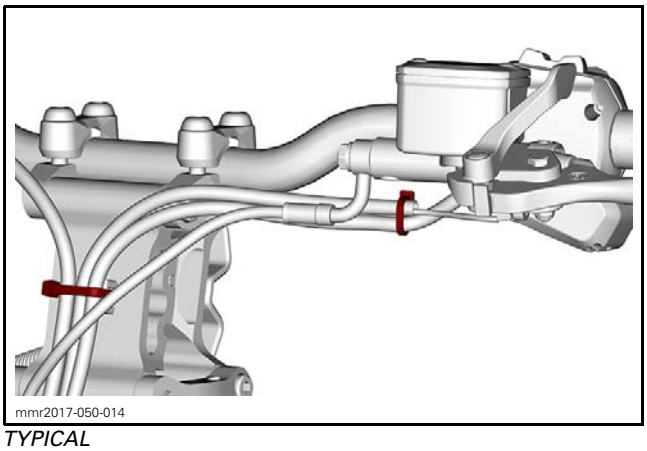
1. Remove the upper body module. Refer to *BODY* subsection.
2. Disconnect the brake light switch connector located on the ECM.



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)

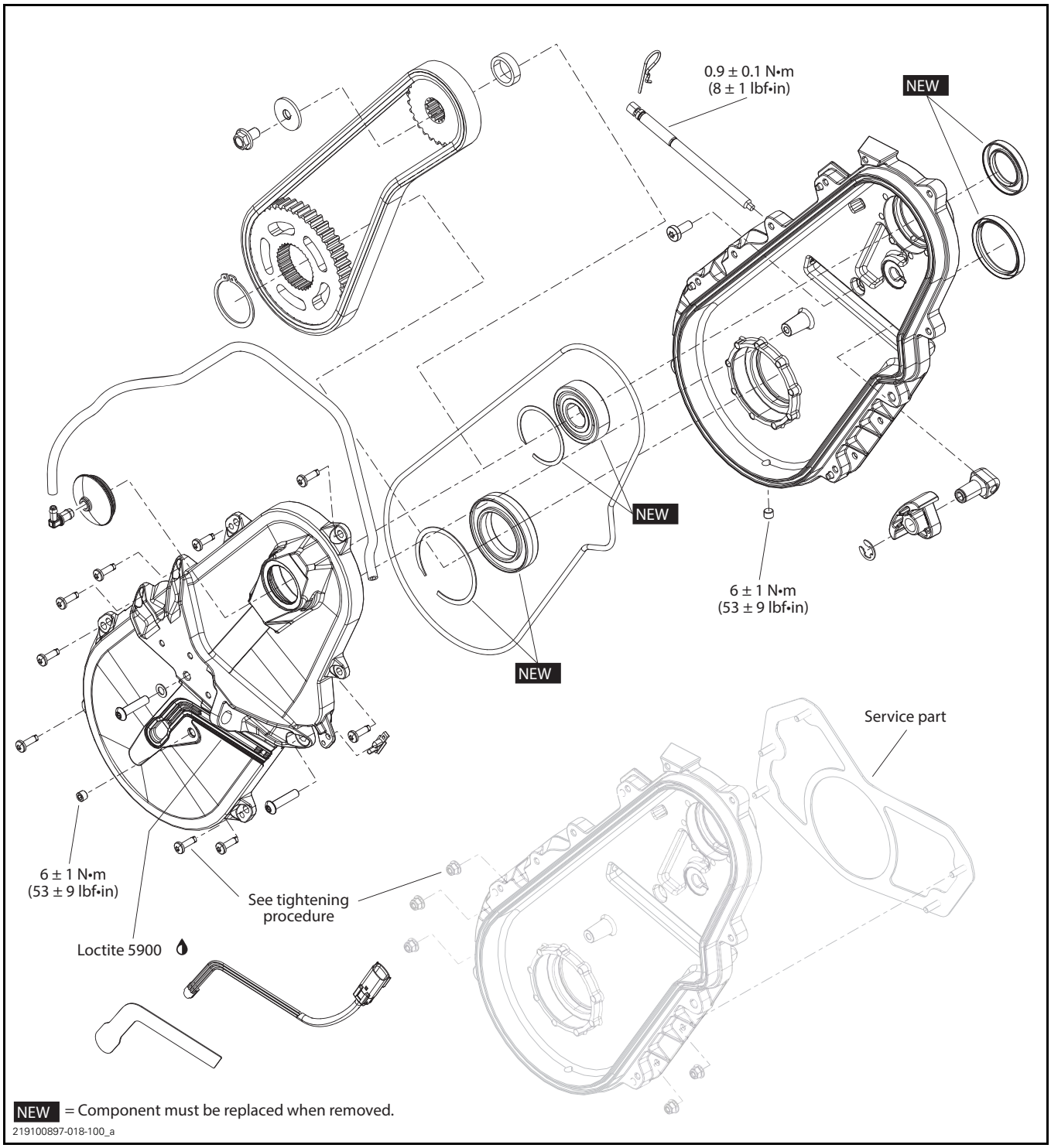
CHAINCASE

SERVICE TOOLS

Description	Part Number	Page
BEARING PULLER/PUSHER	529 036 111	236
BEARING PULLER/PUSHER	529 036 112	236

SERVICE PRODUCTS

Description	Part Number	Page
LOCTITE 5900	293 800 066	242
SYNTHETIC CHAINCASE OIL	779156	233


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

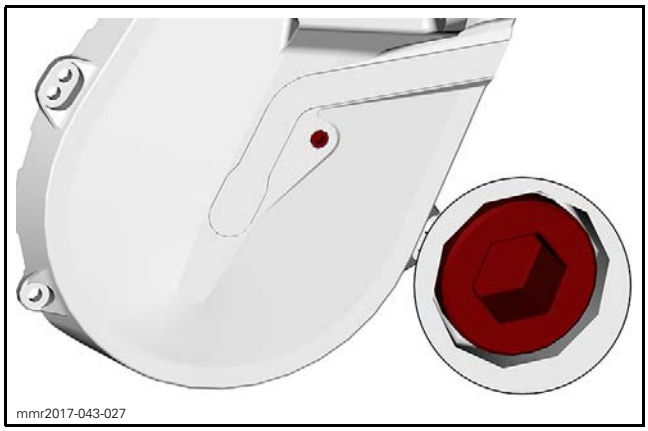
Recommended Chaincase Oil

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.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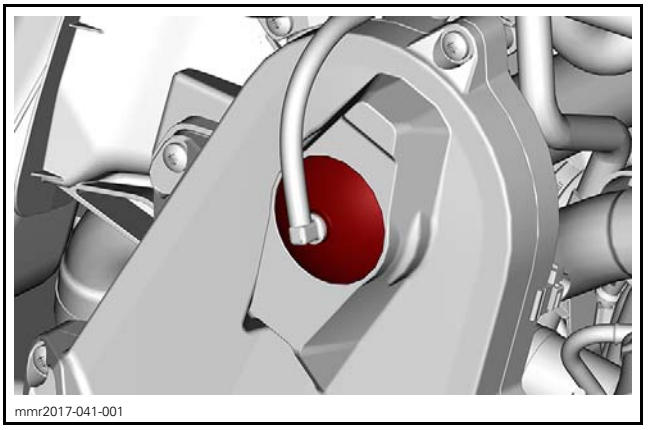
3. Remove metal particles from magnetic check plug.

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.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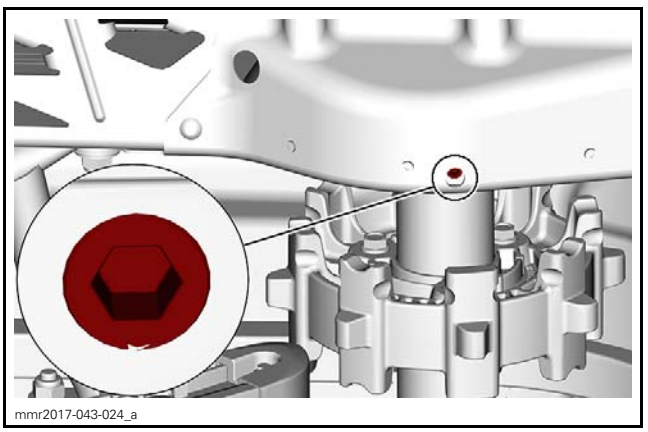
5. Pour recommended oil in chaincase by the filler hole until oil comes out by the magnetic check plug hole.
6. Reinstall magnetic check plug and torque to specification.

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.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4. Reinstall the drain plug.

TIGHTENING TORQUE	
Drain plug	6 N•m ± 1 N•m (53 lbf•**in** ± 9 lbf•**in**)

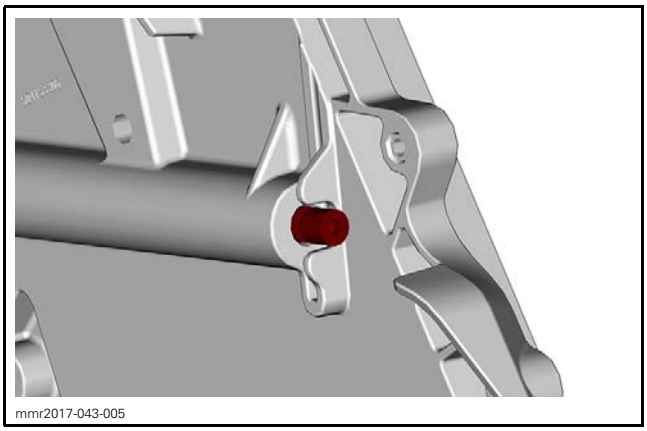
5. Remove the magnetic check plug
6. Pour approximately 350 ml (12 U.S. oz) of recommended oil in chaincase through the filler hole until oil comes out by the magnetic check plug hole.
7. Clean the magnetic check plug. Refer to *CHAINCASE OIL LEVEL VERIFICATION*, see procedure in this subsection.

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

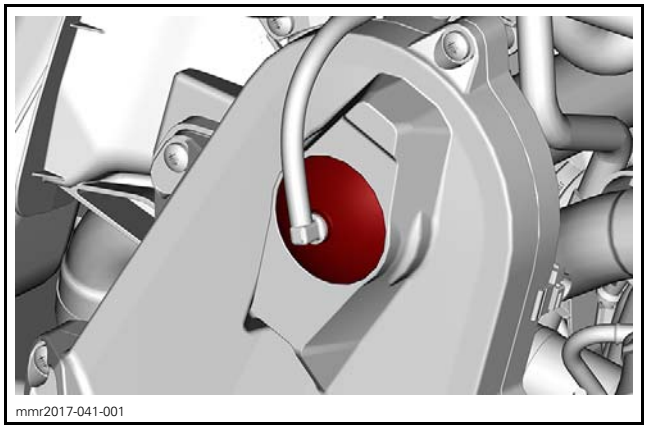
PROCEDURES

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.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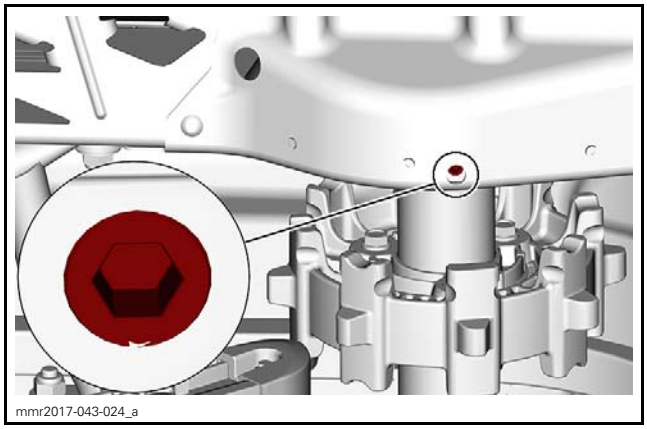
4. Place a container under vehicle in line with chaincase to catch chaincase oil.
5. Remove the drain plug on the bottom of the chaincase.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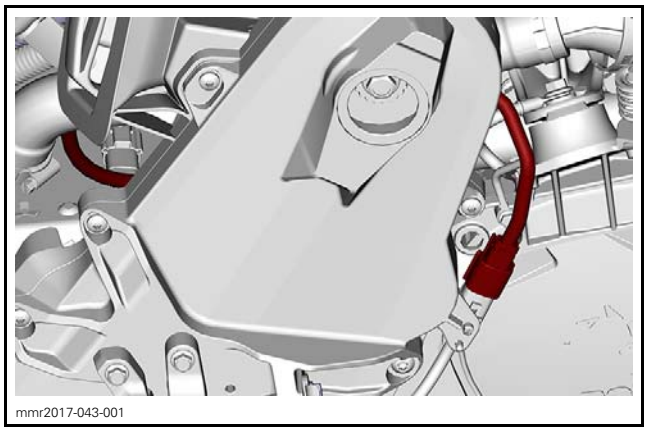
6. Disconnect speed sensor connector.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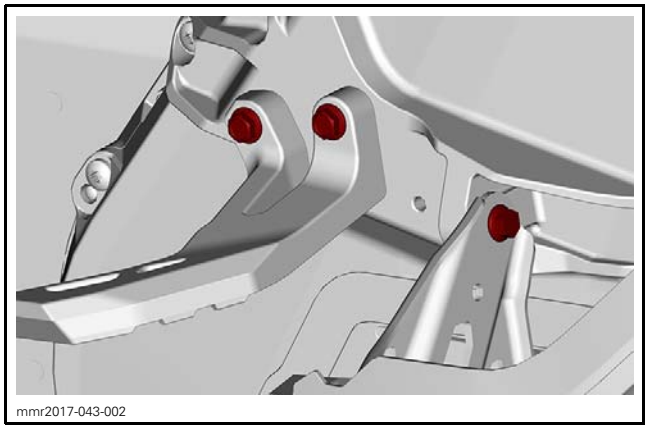
7. Remove the RH side toe hook and the screw securing the cover to the footrest.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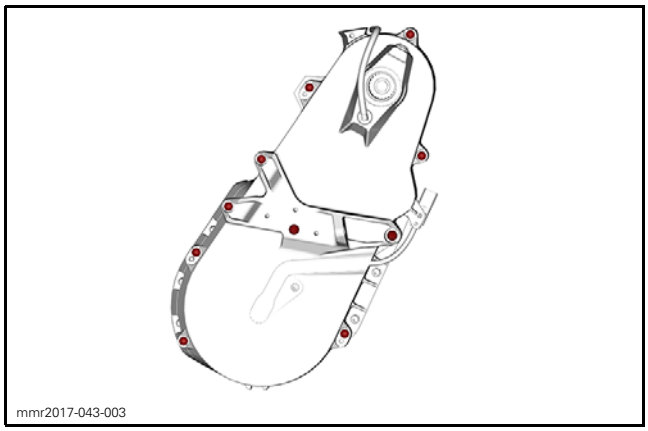
8. Remove chaincase cover screws.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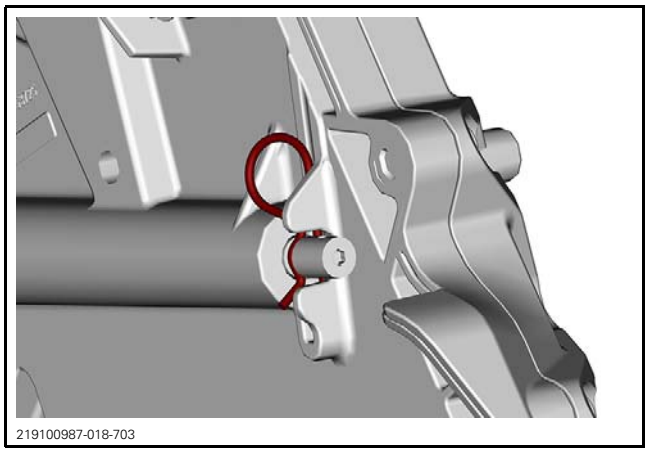
TYPICAL

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.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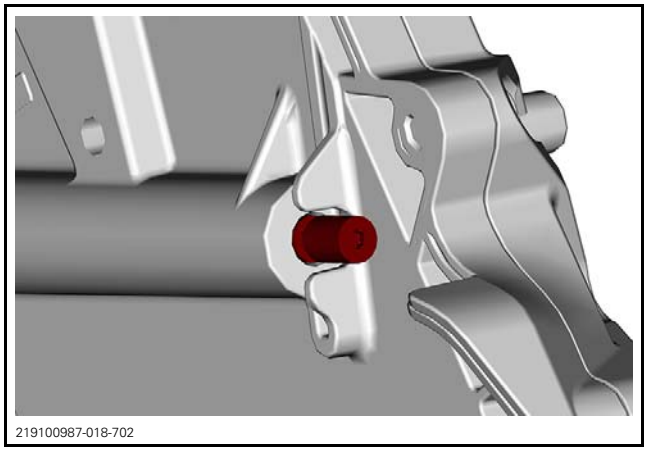
2. Remove the tensioner adjustment screw.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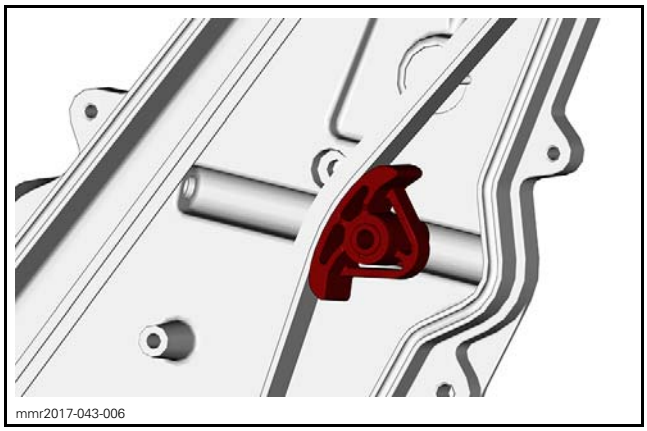
3. Remove tensioner.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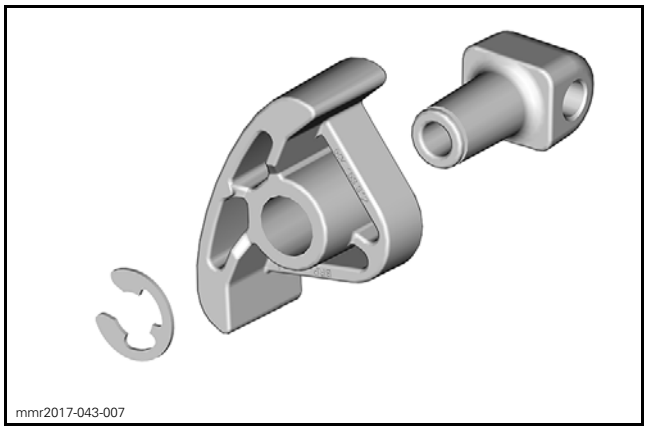
NOTE: The following steps are required only if the tensioner or the slider is defective.

4. Remove the circlip securing the slider to tensioner.

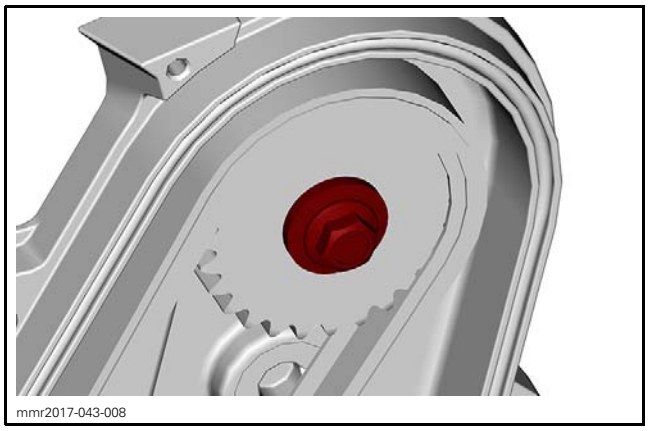

mmr2017-043-007

1. *Circlip*
2. *Tensioner*
3. *Slider*

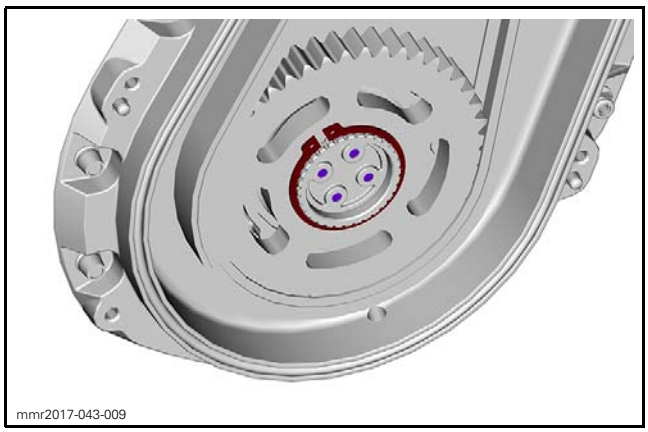
Removing the Drive Chain and Sprocket

NOTE: Prior to removing the drive chain, check the drive chain deflection.

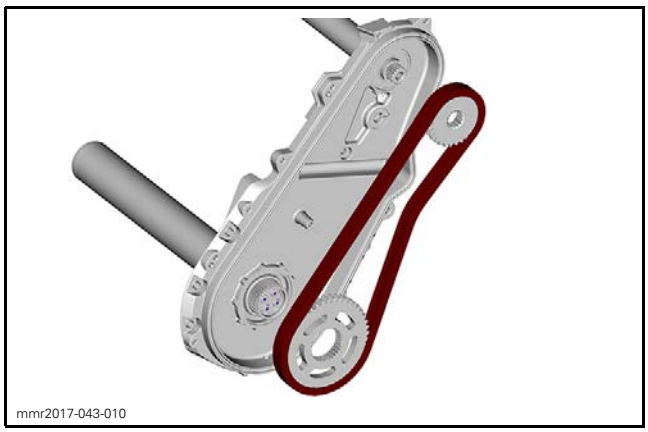
1. Remove the upper sprocket screw and its conical spring washer.


mmr2017-043-008

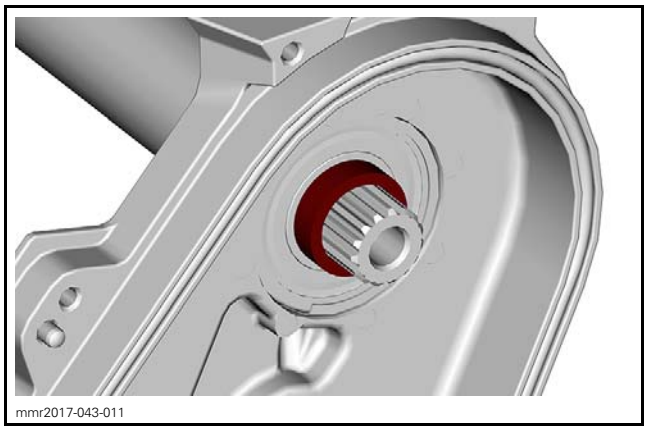
2. Remove the lower sprocket circlip.


mmr2017-043-009

3. Remove the upper sprocket, lower sprocket and drive chain simultaneously.


mmr2017-043-010

4. Remove the countershaft spacer.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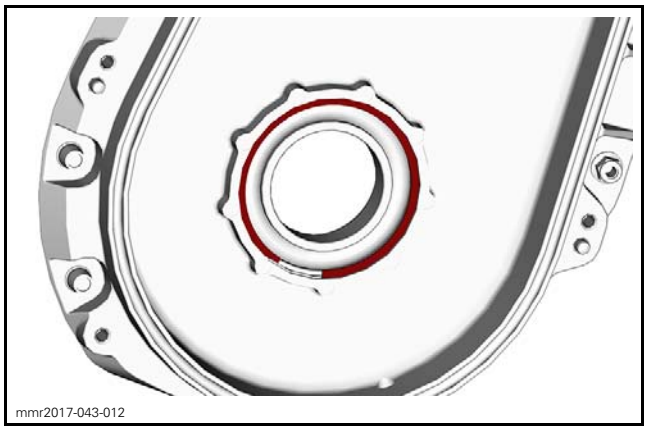
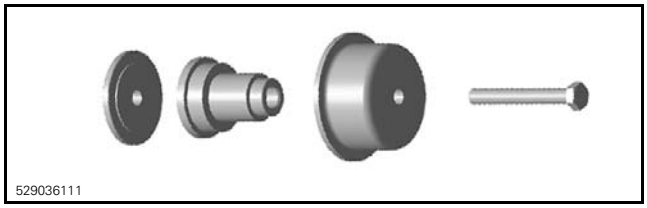
Removing the Chaincase Bearing

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.

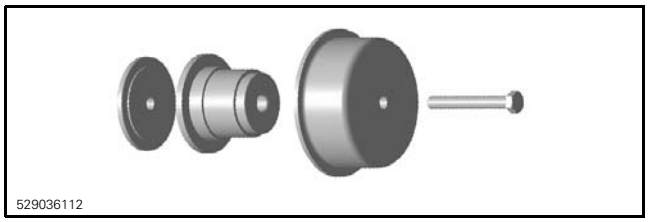

mmr2017-043-012

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)

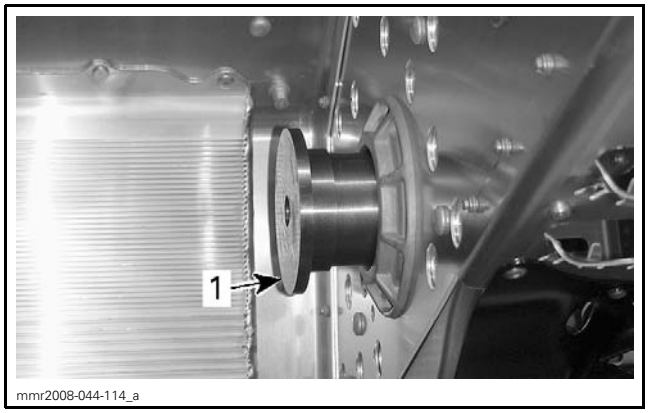

529036111

COUNTERSHAFT



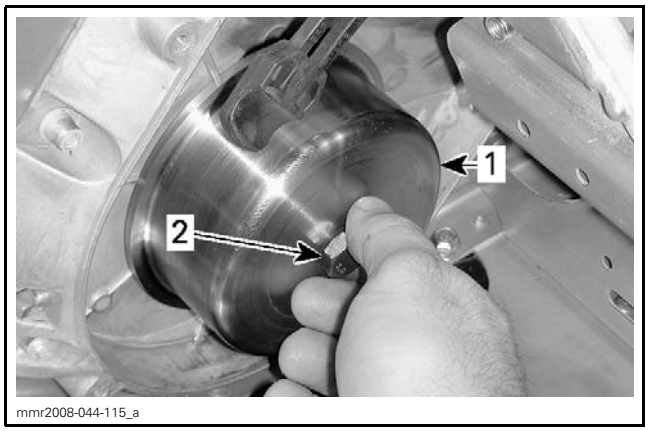
DRIVE AXLE

4. Install the extractor/installer tool behind the bearing.



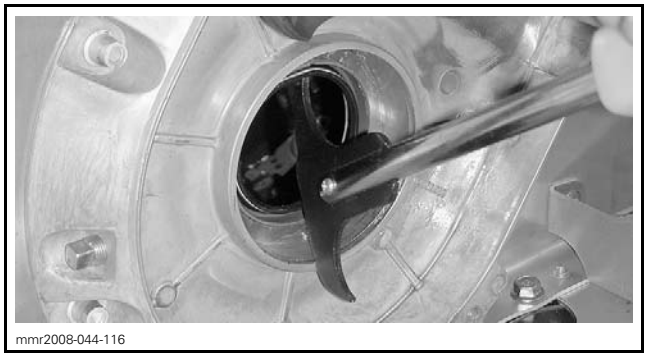
TYPICAL
1. Extractor/installer tool

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.

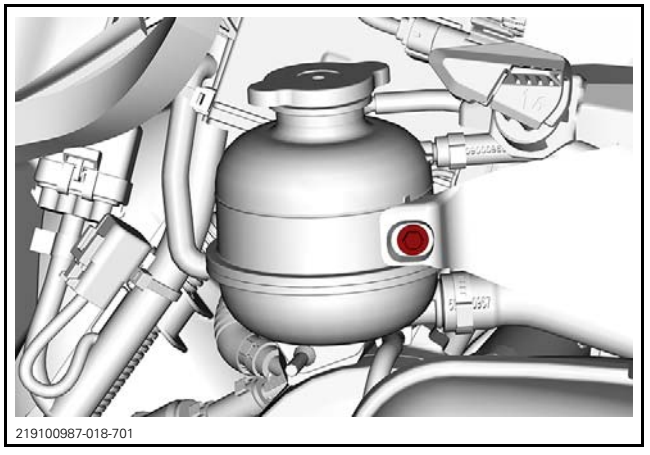


TYPICAL

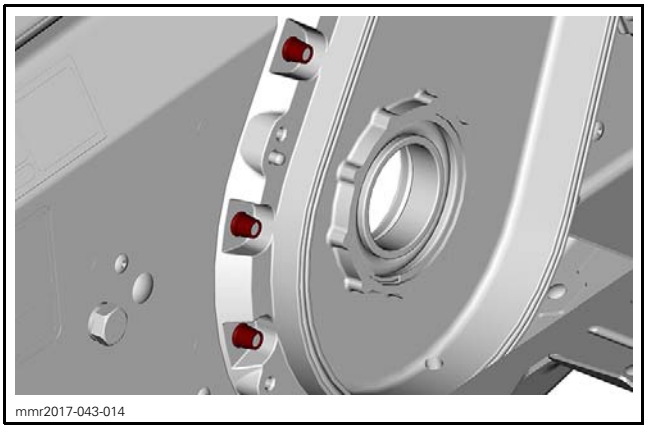
Removing the Chaincase Housing

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.

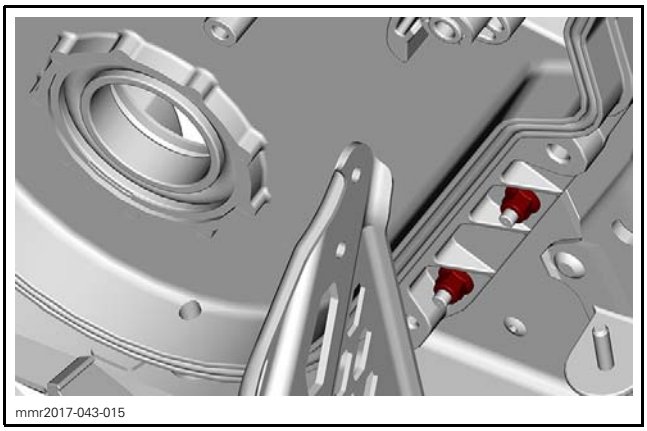
1. Remove the drive axle. Refer to *DRIVE AXLE* subsection.
2. Remove the countershaft. Refer to *DRIVEN PULLEY AND COUNTERSHAFT* subsection.
3. Remove the screw securing the coolant reservoir.



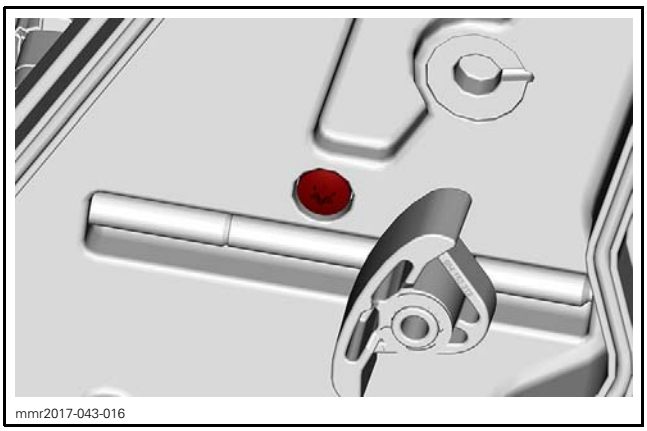
4. Remove the Huck rivets. Refer to *FRAME* subsection for proper removal procedure.


mmr2017-043-014

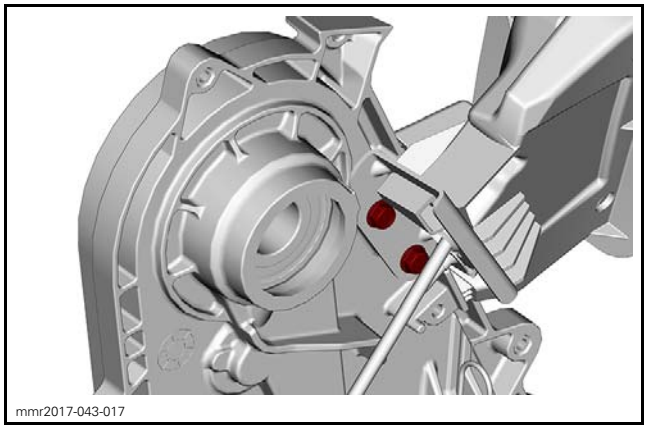
5. Remove nuts beside the footrest.


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.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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

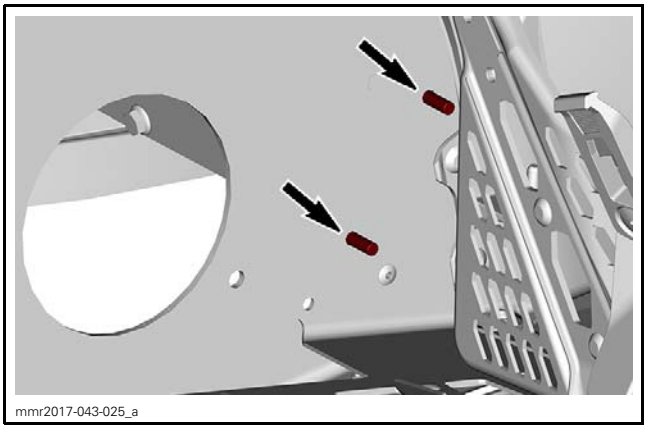
Check for worn or defective bearings.

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.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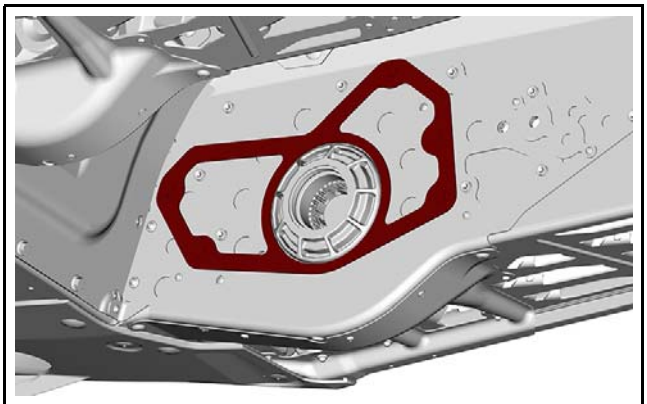
Use a suitable box to support the frame around the stud head and hit the stud from the outside with a hammer.

Install the new mounting plate underneath the frame.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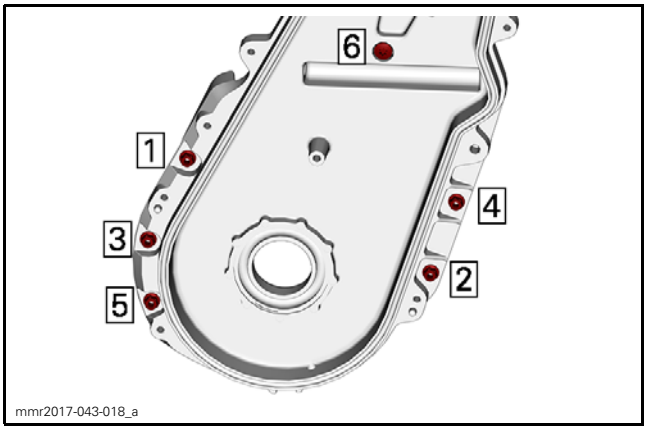
UNDERNEATH FRAME

Install 5 elastic flanged nuts to secure chaincase on mounting plate.

Tighten fasteners as per the following sequence.



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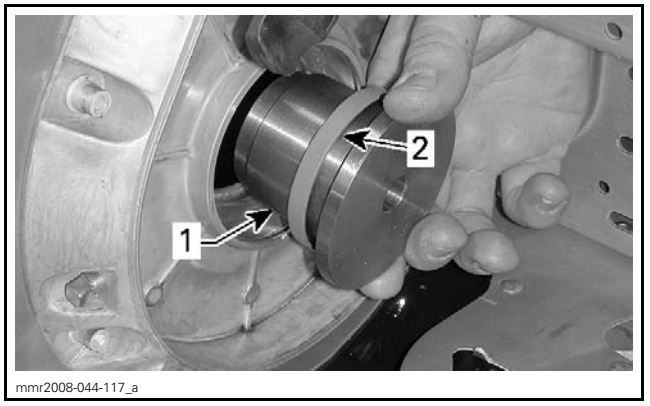
Proceed with drive chain adjustment. Refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.

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.

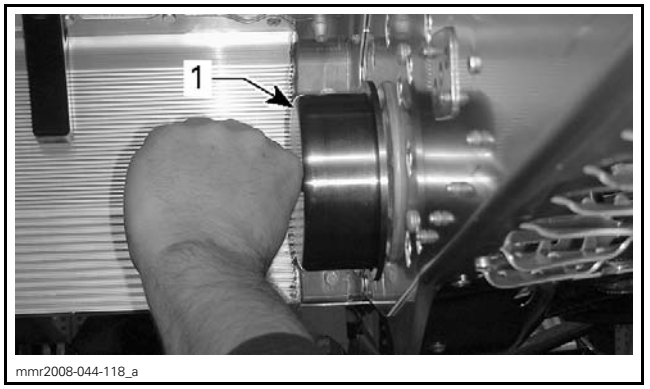
Install the new oil seal on the extractor/installer tool. Position the lips toward bearing.



mmr2008-044-117_a

TYPICAL
1. *Extractor/installer tool*
2. *Oil seal lips on this side*

Install the extractor cup inside frame.

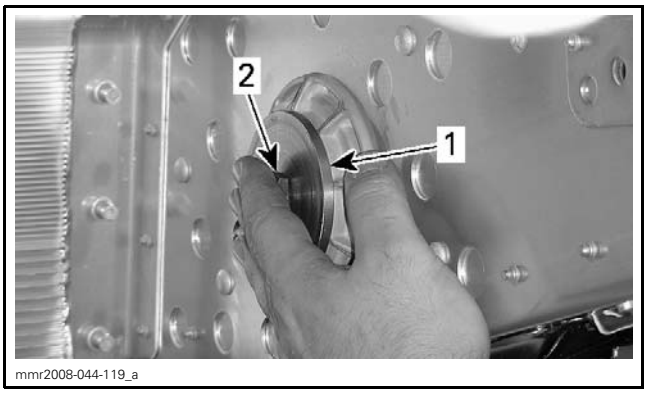


mmr2008-044-118_a

TYPICAL
1. *Extractor cup*

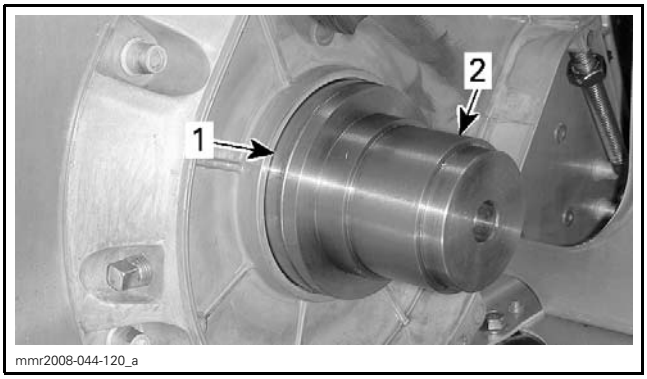
Tighten the extractor/installer tool screw to install the oil seal.

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

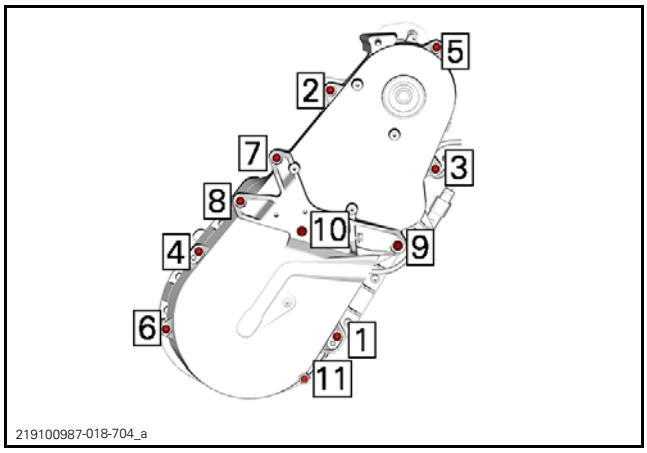
The installation is the reverse of the removal procedure. However, pay attention to the following.

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

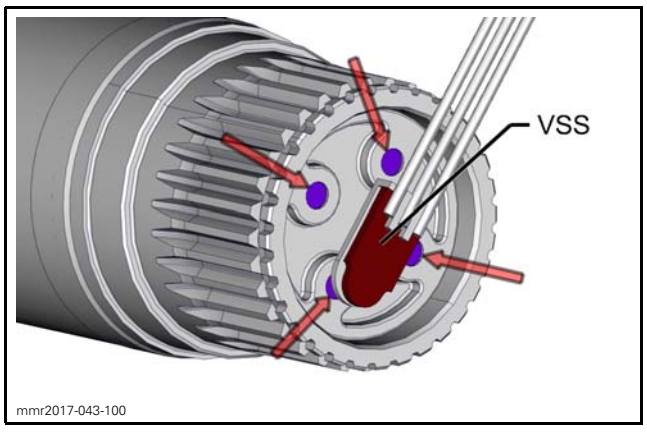
If test failed, check wiring harness going to ECM.

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.

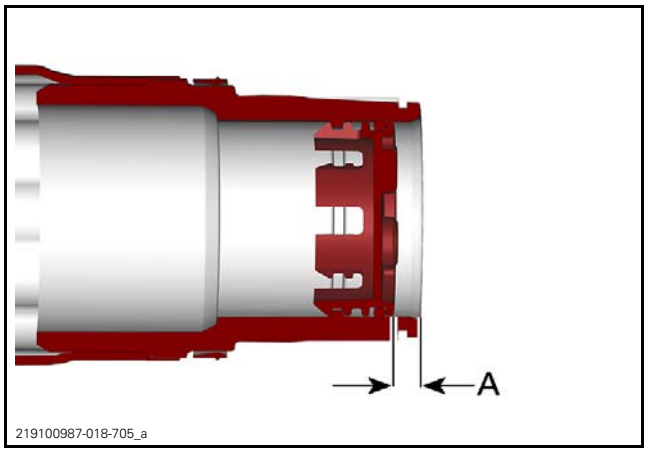
SPEED SENSOR SIGNAL TEST			
ROTATE DRIVEN PULLEY	SPEED SENSOR CONNECTOR (SENSOR SIDE)		VOLTAGE
	Pin 1	Pin 2	Alternate 7 Vdc and 0 Vdc

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)

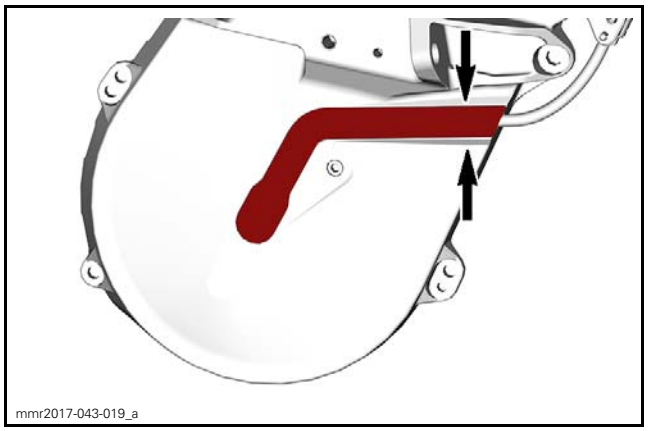
Replacing the Speed Sensor

The sensor can be replaced with the chaincase cover as an assembly. In such a case, refer to *CHAINCASE* subsection.

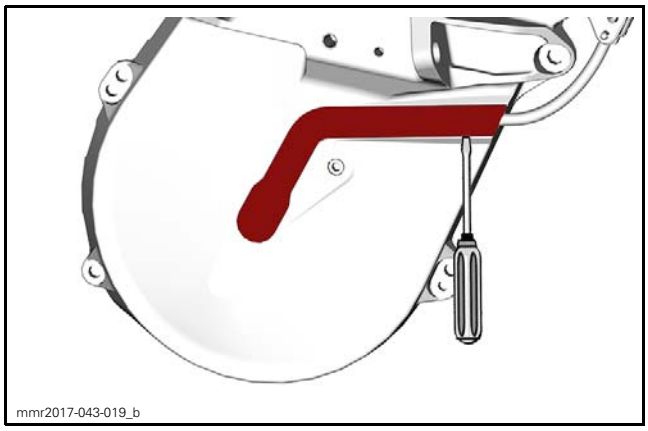
To replace sensor only, proceed as follows.

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.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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.

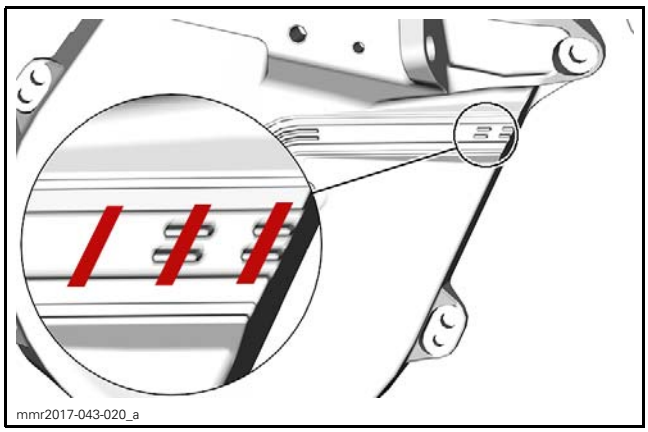
Installing the Speed Sensor

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.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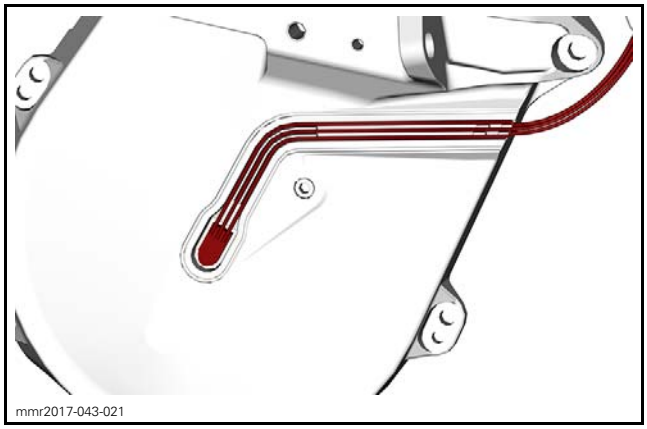
2. Install the speed sensor in the chaincase cover.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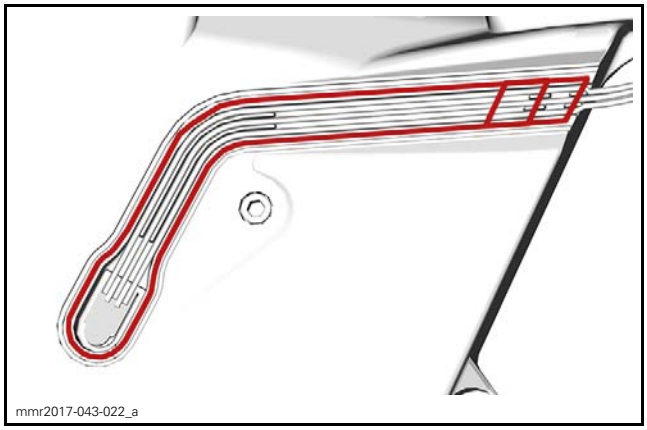
3. Apply sealant all around the protective plate bed on the chaincase cover.

Follow the pattern shown on the next picture.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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.

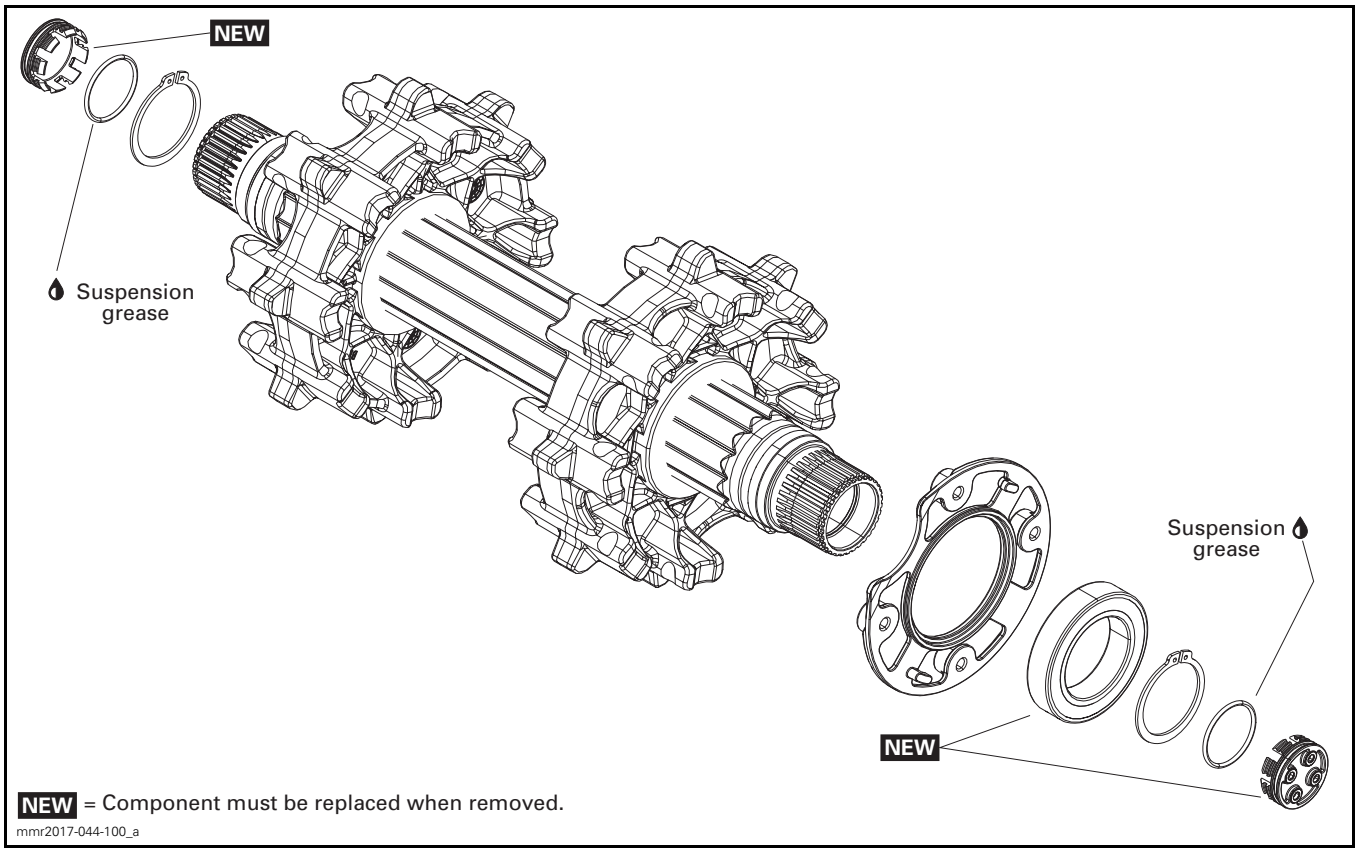
NOTE: Wait for at least 1 hour before exposing vehicle to cold temperature.

8. Reinstall chaincase cover. Refer to procedure in this subsection.

DRIVE AXLE

SERVICE PRODUCTS

Description	Part Number	Page
SYNTHETIC SUSPENSION GREASE	779163	245



NEW = Component must be replaced when removed.

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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

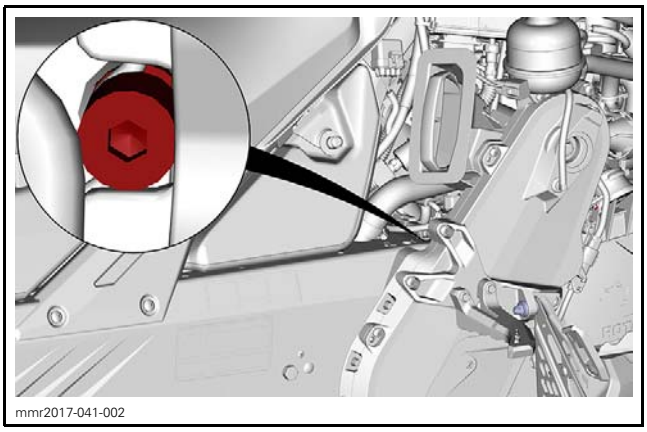
Torque wrench tightening specifications must be strictly adhered to.
Locking devices must be replaced with new ones when removed (e.g.: locking tabs, elastic stop nuts, cotter pins, etc.).

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.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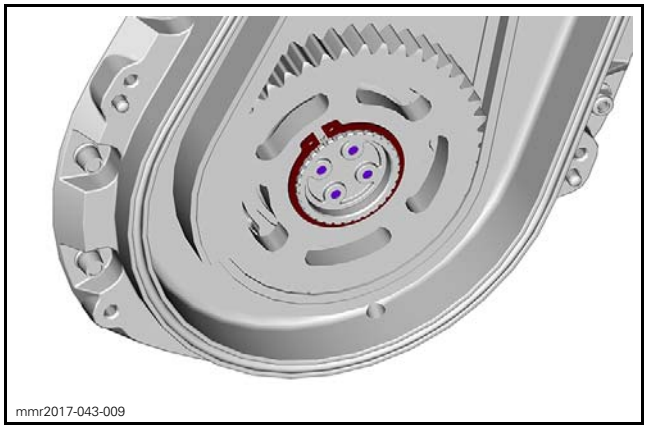
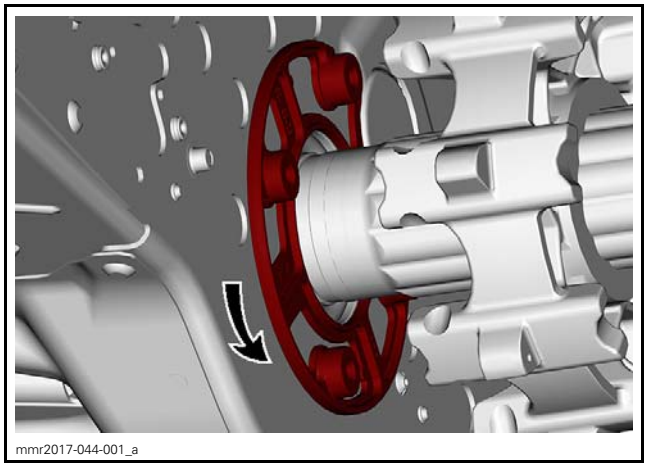
4. Remove the lower sprocket circlip.


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.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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.

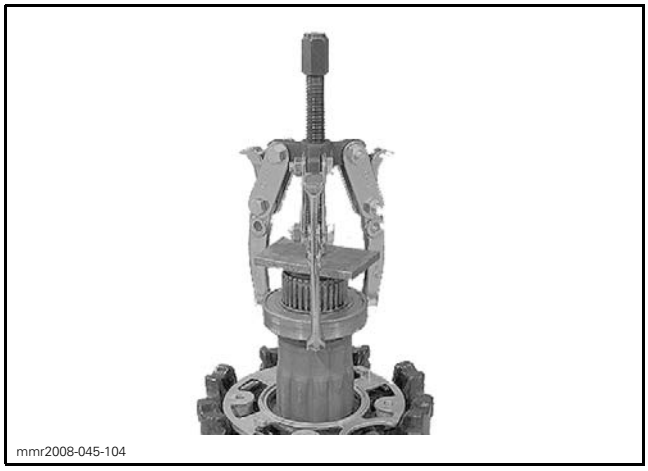
Replace drive axle if one of the following situations is detected:

– 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.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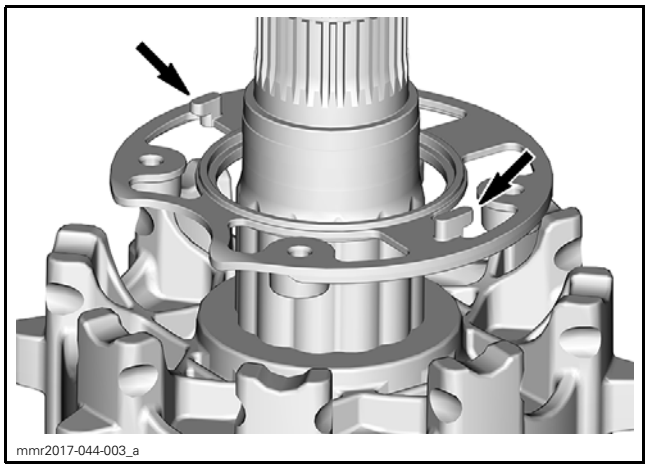
2. Remove the bearing flange.

Installing the Drive Axle Bearing

1. Install bearing flange on drive axle with locking tabs outwards.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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.

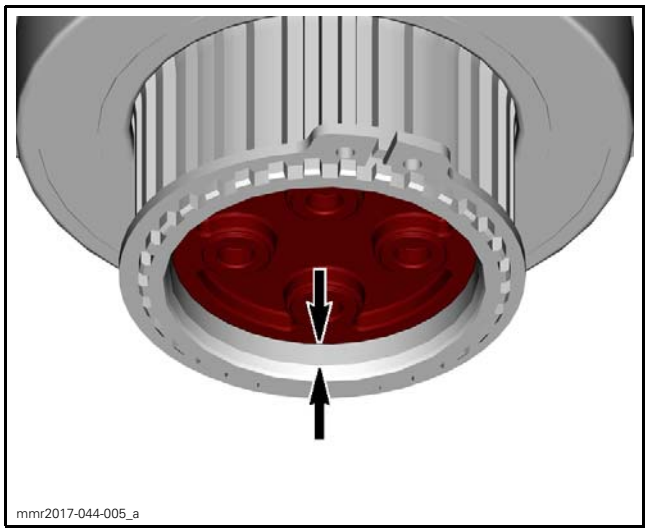
Installing the Magnetic Cap

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

3. Install all other removed parts.

TRACK

SERVICE TOOLS

Description	Part Number	Page
TENSIOMETER	414 348 200	247
TRACK CLEAT INSTALLER	529 036 044	249

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

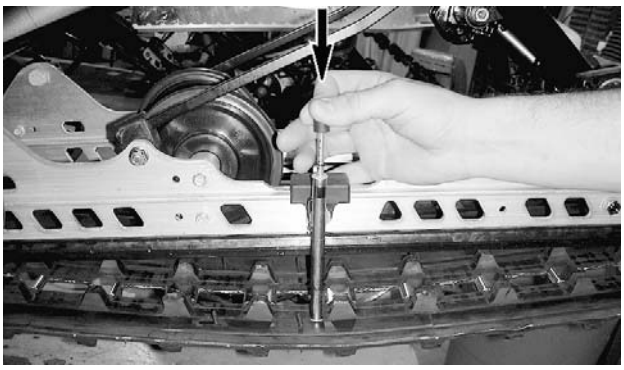
1. Lift rear of vehicle and support it off the ground.
2. Allow rear suspension to fully extend.
3. Use a tensiometer.

REQUIRED TOOL
TENSIOMETER (P/N 414 348 200)

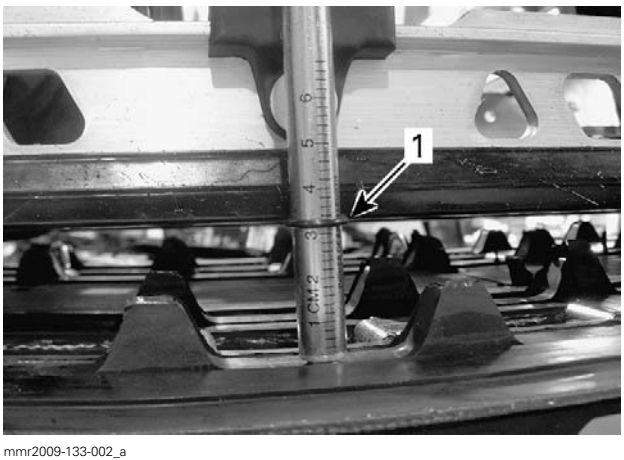
4. Set deflection to 3.2 cm (1.26 in) using bottom O-ring.

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.



TYPICAL



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.

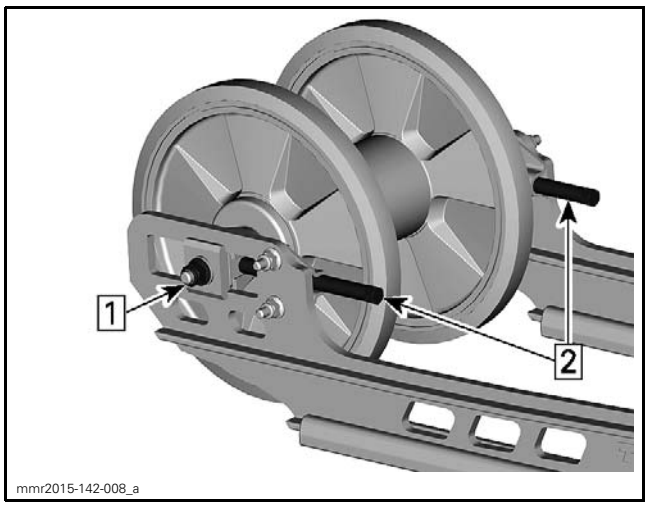
TRACK ADJUSTMENT SPECIFICATION	
Track deflection setting	3.2 cm (1.26 in)
Track load reading	6.0 kgf to 8.5 kgf (13 lbf to 19 lbf)

9. If load reading is not in accordance with the specification, adjust track tension. Refer to *ADJUSTING THE TRACK TENSION*.

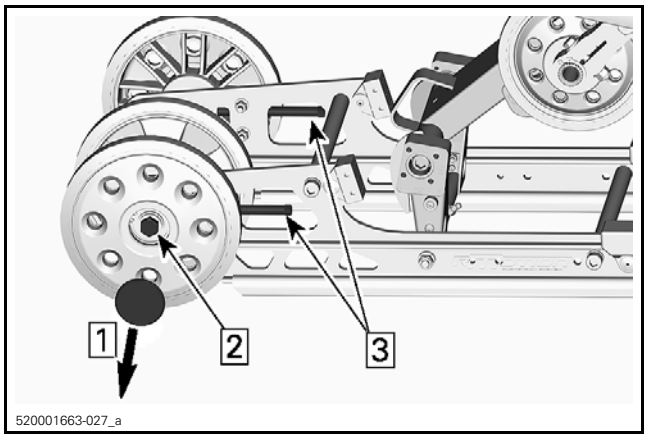
NOTICE Too much tension will result in power loss and excessive stresses on suspension components.

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

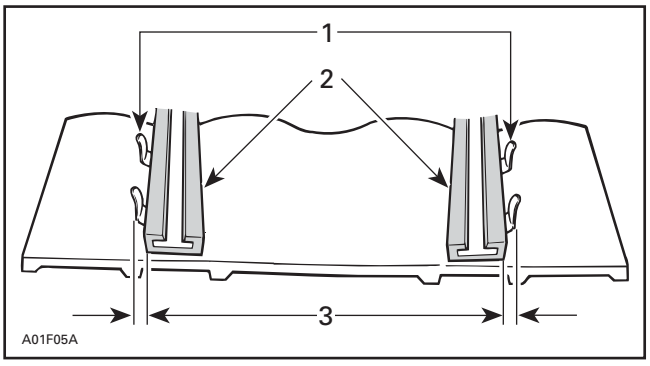
4. Verify track tension, refer to *VERIFYING THE TRACK TENSION*.
5. Ensure track is properly aligned, refer to *ALIGNING THE TRACK*.

Aligning the Track

⚠ WARNING

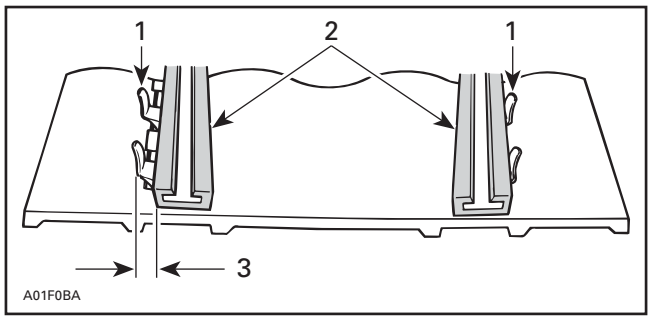
Before checking track alignment, ensure that the track is free of all particles which could be thrown out while track is rotating. Keep hands, tools, feet and clothing clear of track. Ensure no one is standing in close proximity to the vehicle. Never rotate at high speed.

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

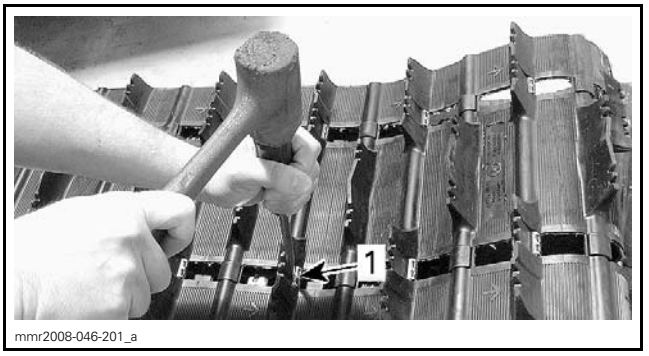
Replacing a Track Cleat

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.



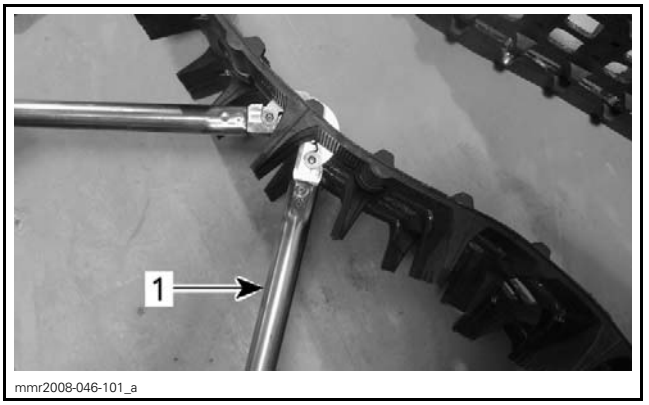
TYPICAL
1. Cleat

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*.

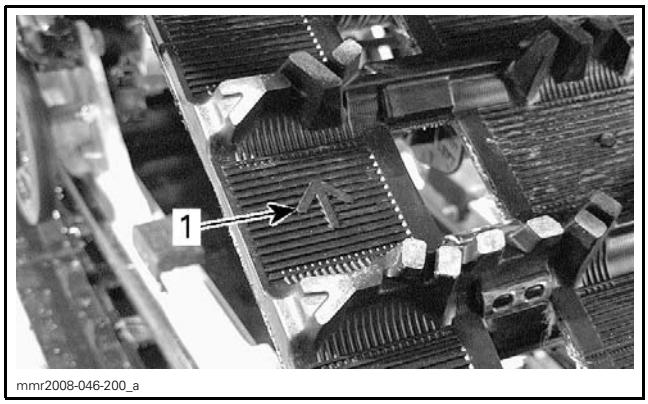
Remove drive axle. Refer to *DRIVE AXLE* subsection.

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.

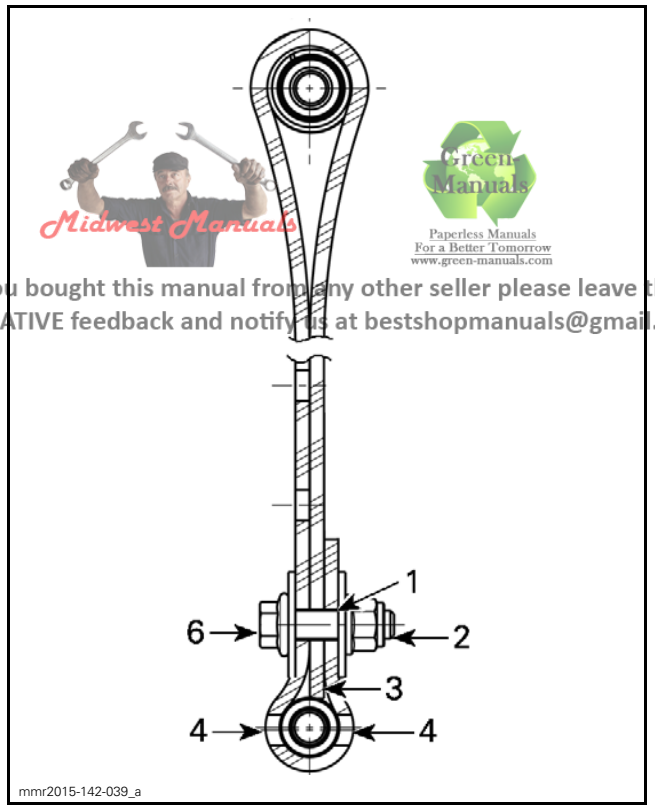
The best way to set up the suspension, is to start from factory settings, then customize each adjustment one at a time.

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.

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



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*

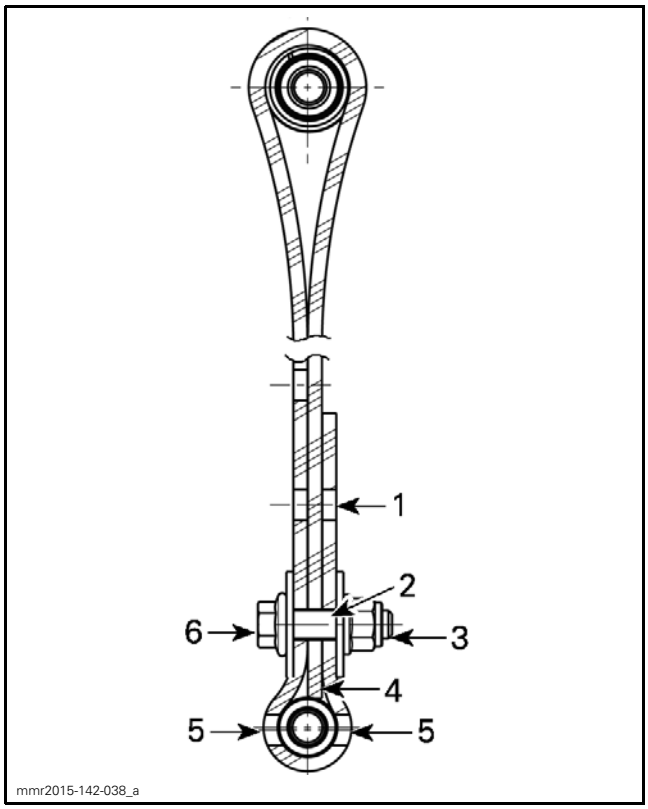
STOPPER STRAP

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.

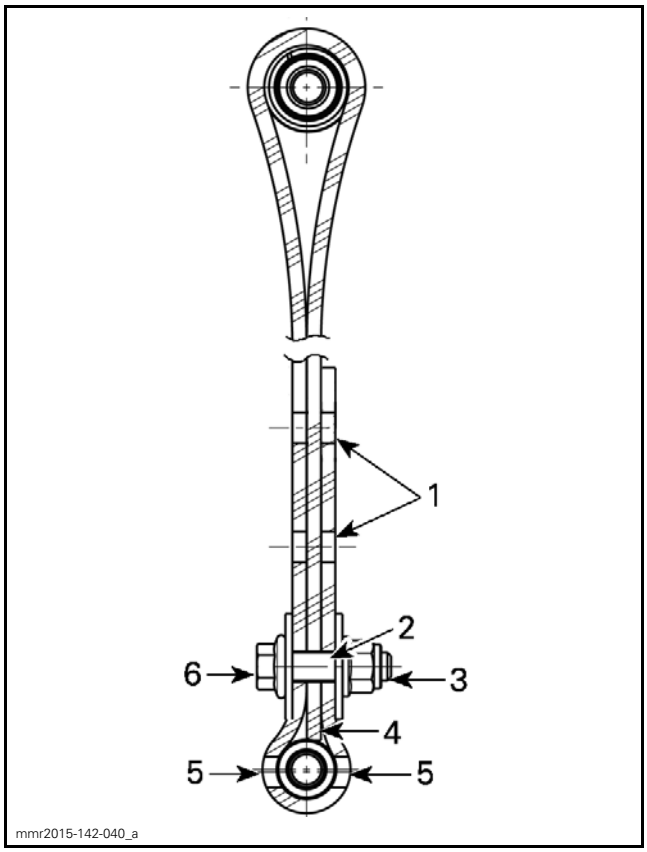
Stopper strap length also has an effect on center spring travel.

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 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.

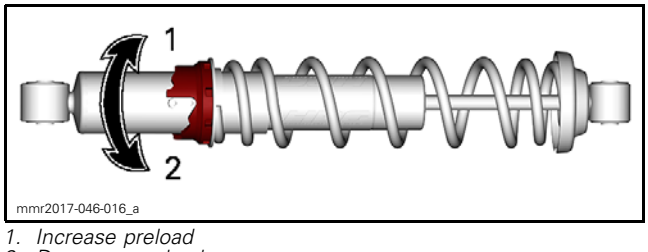
ACTION	RESULT
Increasing preload	Firmer front suspension
	Higher front end
	More precise steering
	More bump absorption capability
Decreasing preload	Softer front suspension
	Lower front end
	Lighter steering
	Less bump absorption capability

⚠ 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

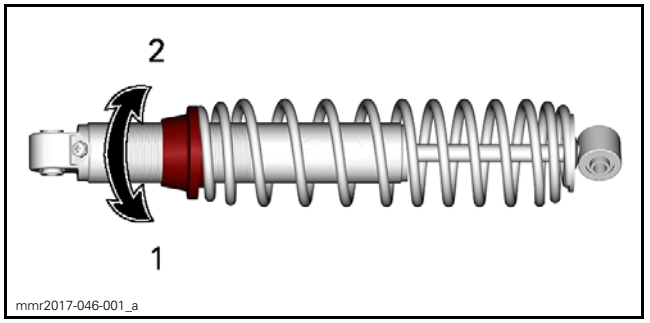
Using the suspension adjustment tool (included in the vehicle tool kit), turn the cam to increase or decrease spring preload.



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

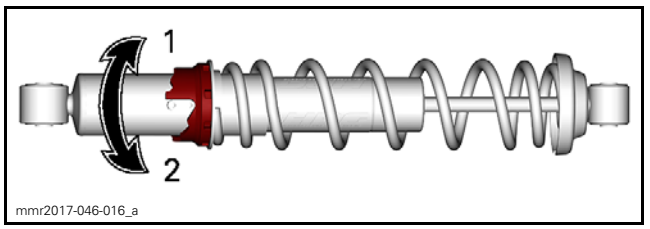
Center spring preload has an effect on steering effort, handling and bump absorption.

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

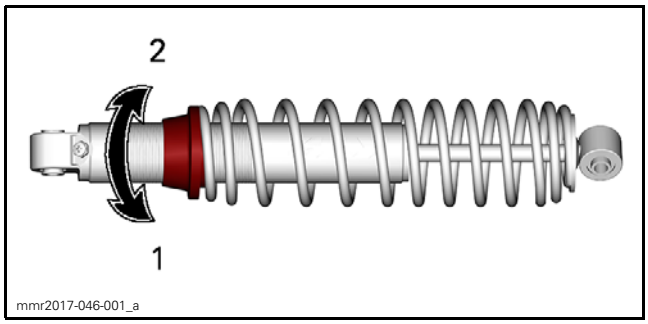
Using the suspension adjustment tool (included in the vehicle tool kit), turn the cam to increase or decrease spring preload.



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

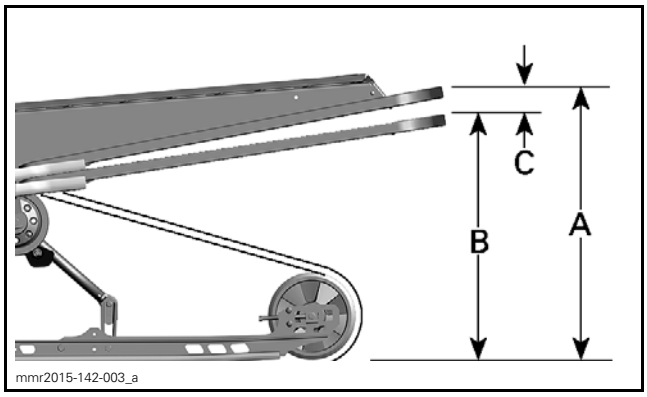
Rear spring preload has an effect on comfort, ride height and load compensation.

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

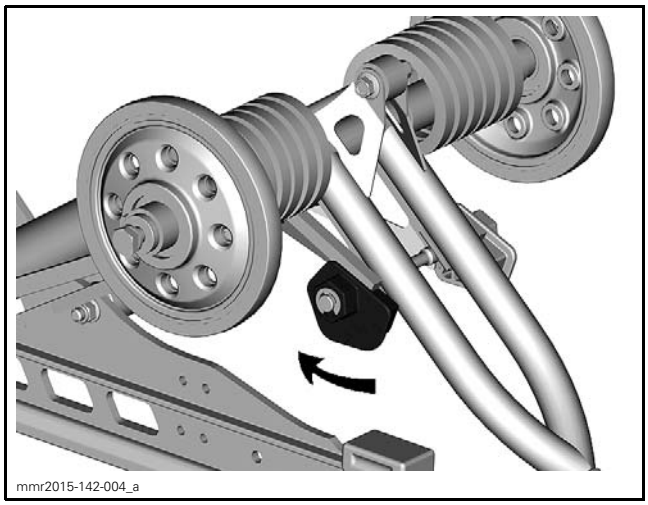
SC-5U / cMOTION / tMOTION	
"C"	WHAT TO DO
65 mm to 100 mm (2.5 in to 4 in)	No adjustment required
More than 100 mm (4 in)	Adjusted too soft. Increase preload
Less than 65 mm (2.5 in)	Adjusted too firm. Decrease preload

If the specification is unattainable with the original springs, refer to the applicable *SPRING CHART* bulletin for other available springs.

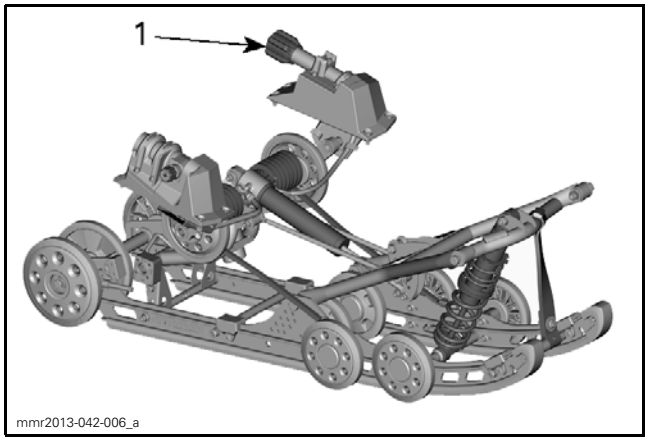
NOTICE **To increase spring preload, always turn the left side adjustment cam in a clockwise direction, and the right side cam in a counterclockwise direction.**

⚠ 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)

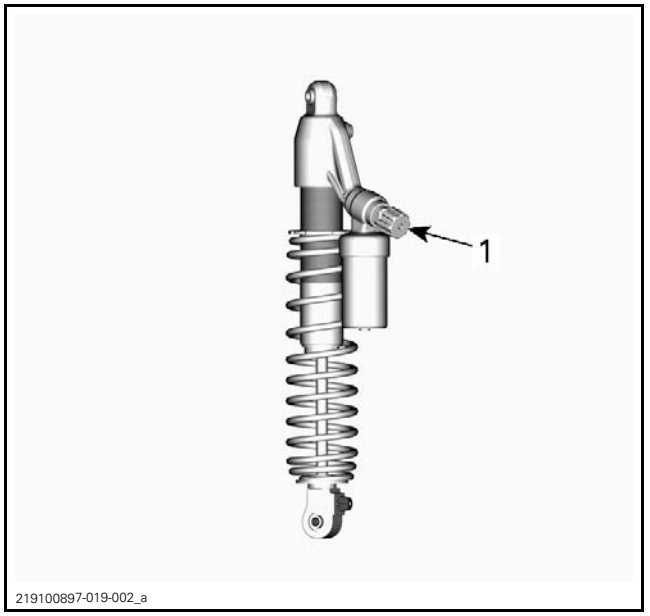
NOTE: Both low and high speed compression damping are adjusted simultaneously.

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).

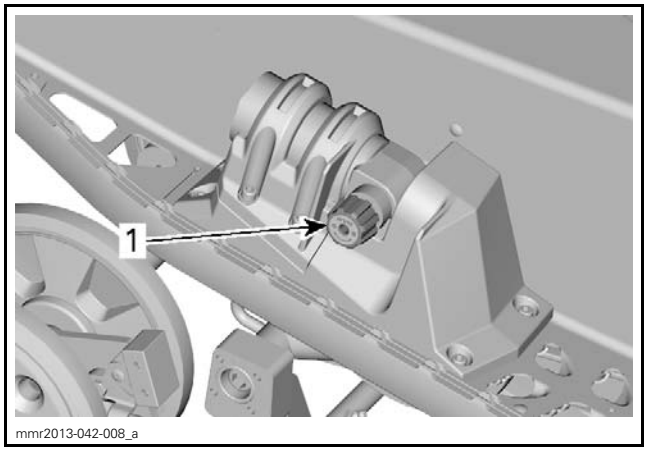
High speed compression damping controls how the shock absorber reacts to a high suspension velocity (quick compression strokes, in most cases when riding at higher speeds).

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

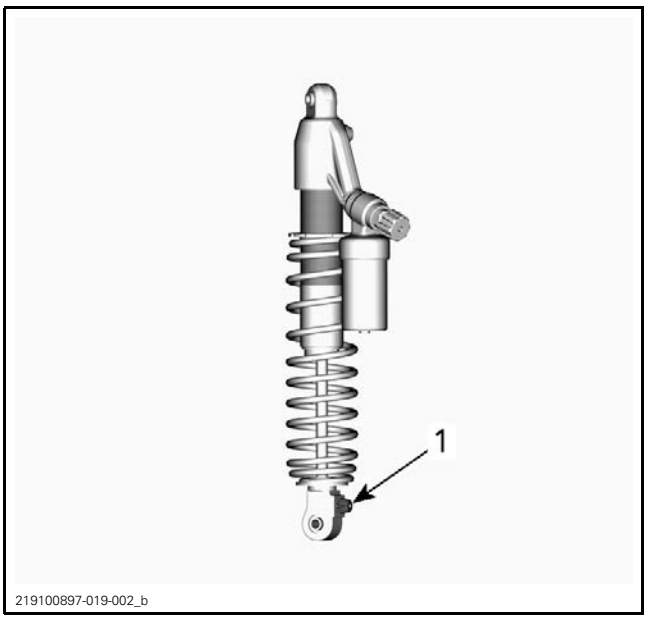
Rebound Damping (KYB PRO Series)

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.

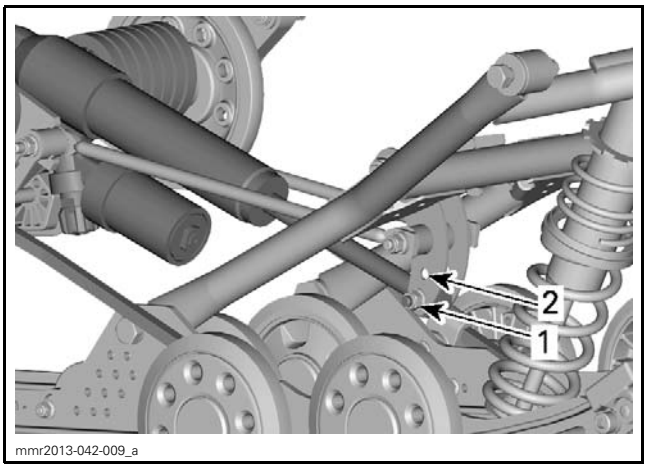


TYPICAL - EXCEPT QUICK ADJUST SYSTEM
1. *Rebound damping adjustment knob*

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

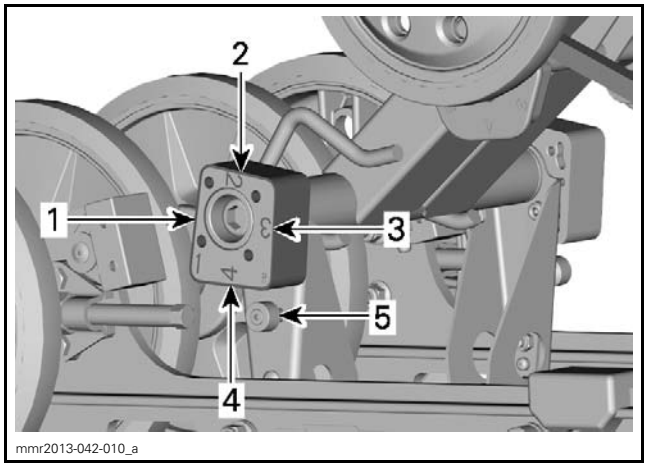
Coupling blocks adjustment has an effect on vehicle handling during acceleration only.

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*

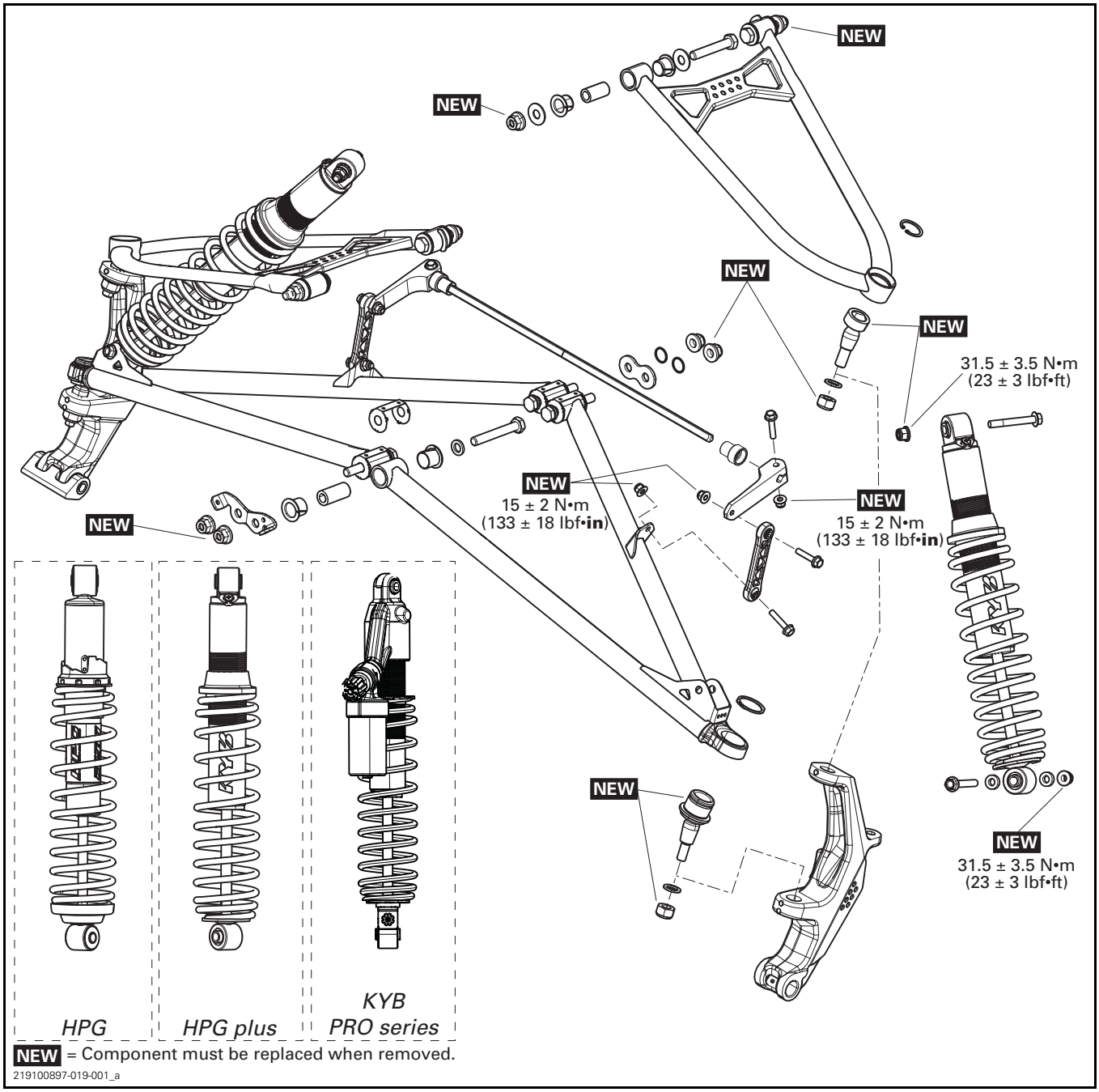
Coupling Blocks Setting

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	261
BALL JOINT INSTALLER SUPPORT	529 036 398	264
BALL JOINT INSTALLER	529 036 399	264
BALL JOINT REMOVER SUPPORT	529 036 400	264
SPRING COMPRESSOR	529 036 184	260
SUSPENSION ARM SUPPORT	529 035 637	262



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

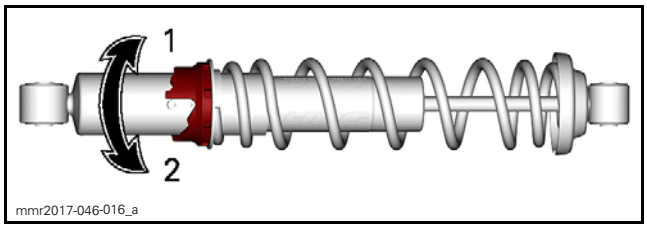
⚠ WARNING

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

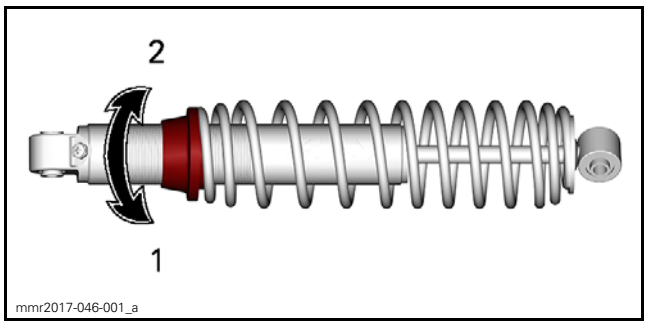
Using the suspension adjustment tool (included in the vehicle tool kit), turn the cam to increase or decrease spring preload.



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)

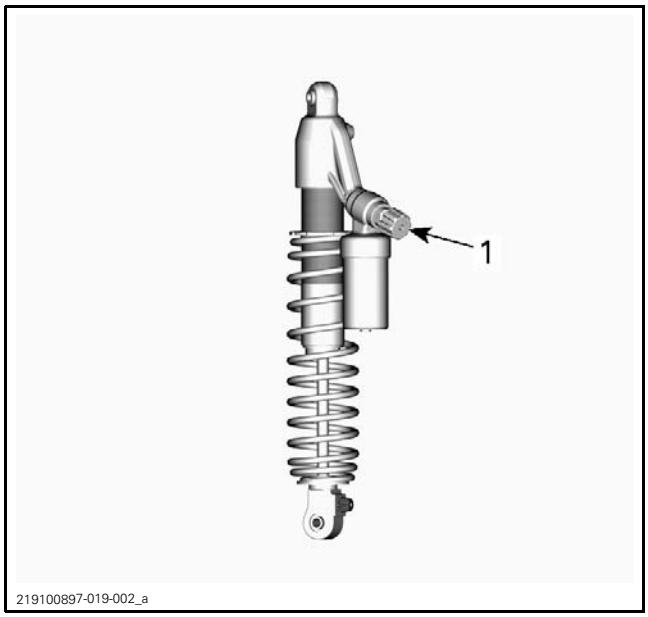
NOTE: Both low and high speed compression damping are adjusted simultaneously.

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

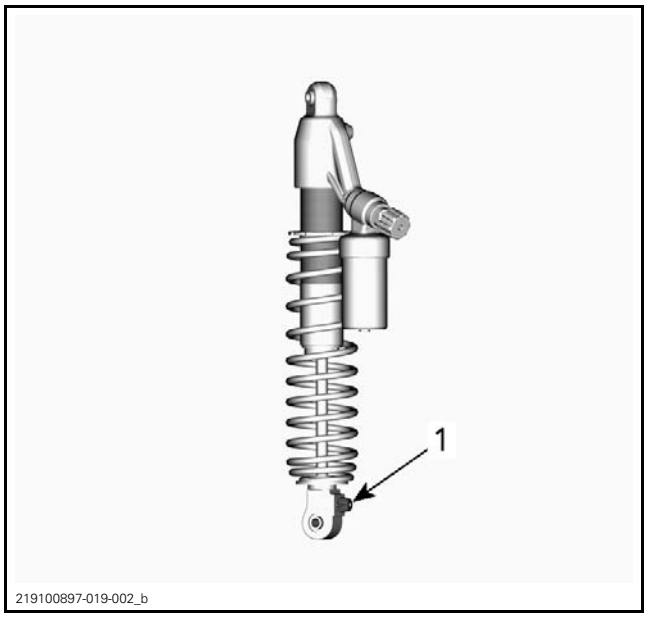
Rebound Damping (KYB PRO Series)

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.



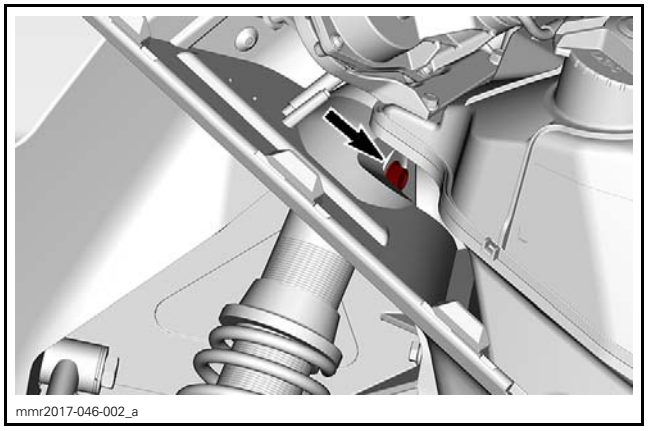
1. Rebound damping adjustment knob

PROCEDURES

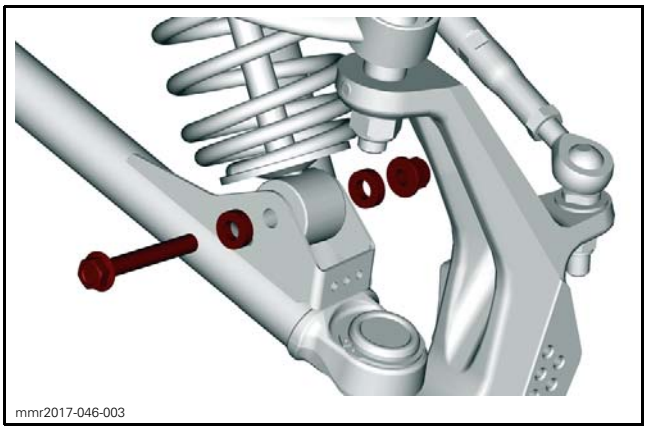
SHOCK ABSORBER

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.

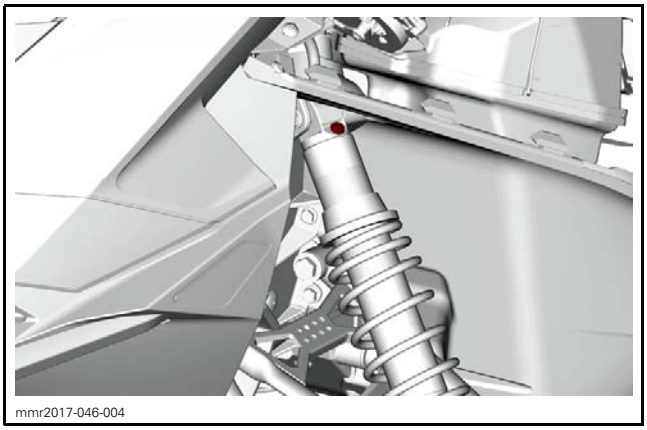
Installing the Shock Absorber

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.

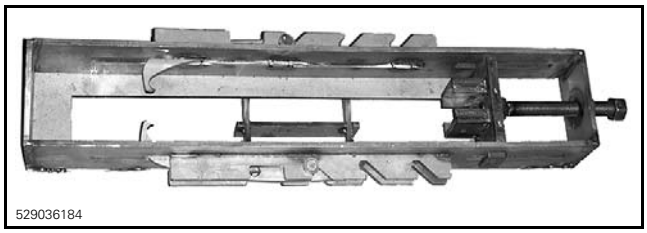

mmr2017-046-004

TIGHTENING TORQUE	
Front shock absorber retaining nuts	31.5 N•m ± 3.5 N•m (23 lbf•ft ± 3 lbf•ft)

SPRING

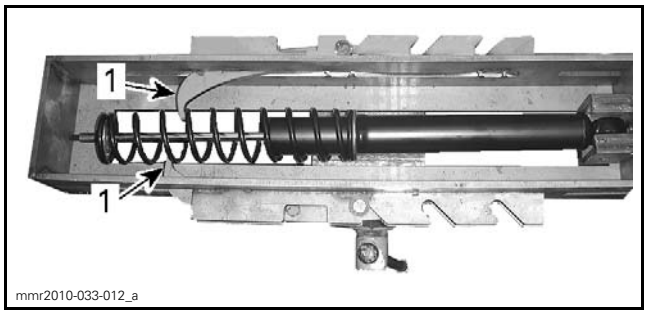
Removing the Spring

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

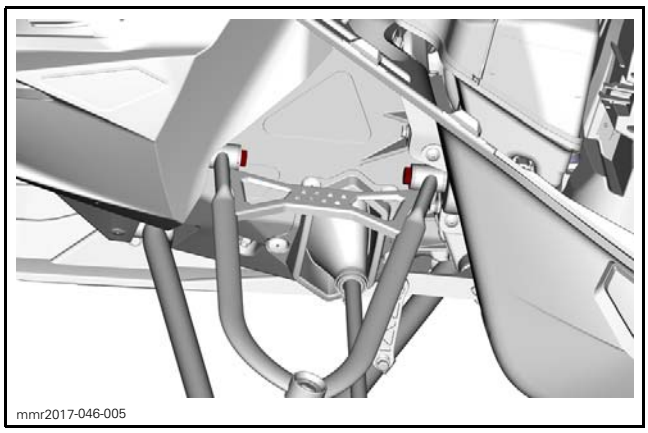
1. Check suspension arm for distortion or damage. Replace if necessary.
2. Lift the front of vehicle until skis are off the ground.
3. Move suspension arm from side to side.
4. Lower vehicle to the ground.
5. Move suspension up and down.
6. There should be no noticeable looseness. Replace bushings and/or sleeves if necessary.

NOTE: A play of 2 mm (.079 in) is acceptable when the suspension arm is moved forward and backward.

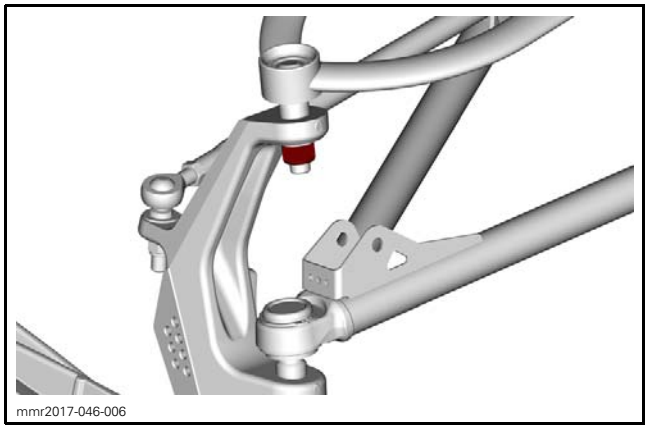
7. Check sleeves inside suspension arm attachments for wear or damage.

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.

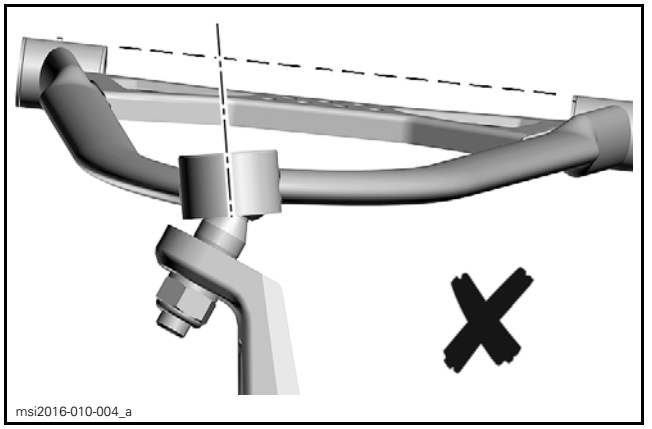
REQUIRED TOOL	
BALL JOINT EXTRACTOR (P/N 529 035 827)	

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.**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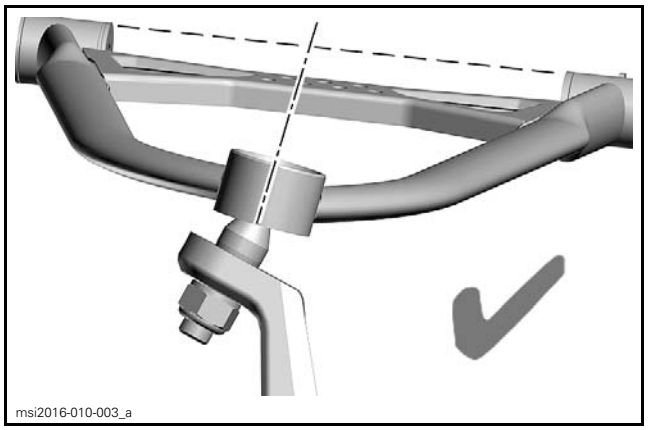
RH UPPER ARM INSTALLED ON LH SIDE


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.

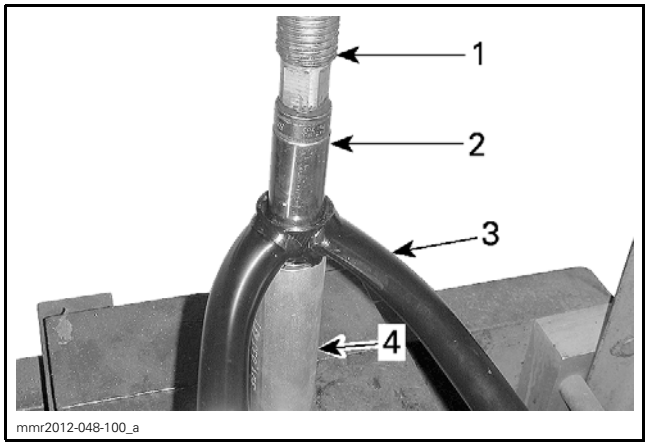
Removing the Upper Ball Joint

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

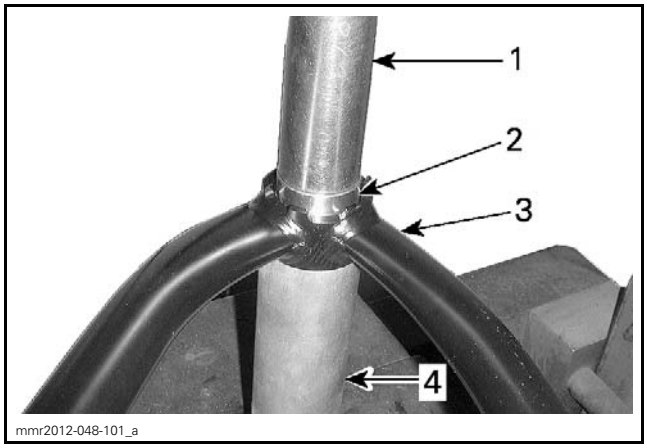
TYPICAL
1. *Press rod*
2. *Socket*
3. *Suspension arm*
4. *Suspension arm support*

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.

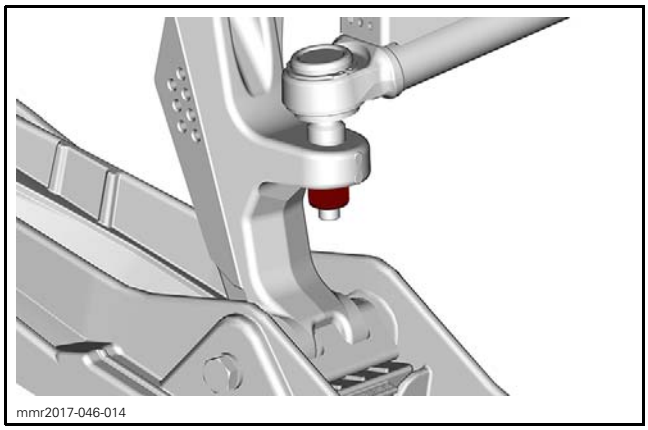
NOTE: A play of 2 mm (.079 in) is acceptable when the suspension arm is moved forward and backward.

8. Check sleeves inside suspension arm attachments for wear or damage.

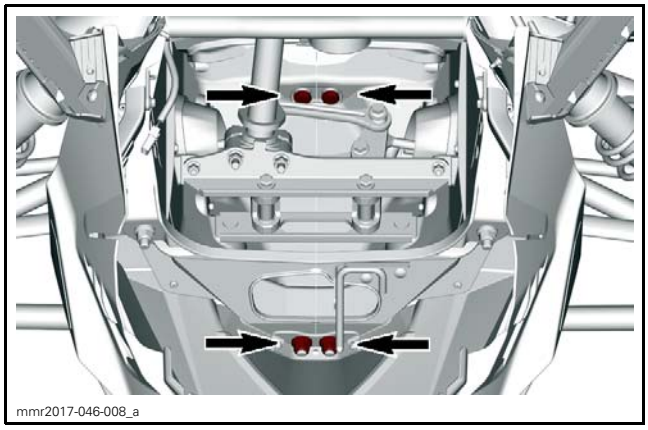
Removing the Lower Suspension Arm

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.

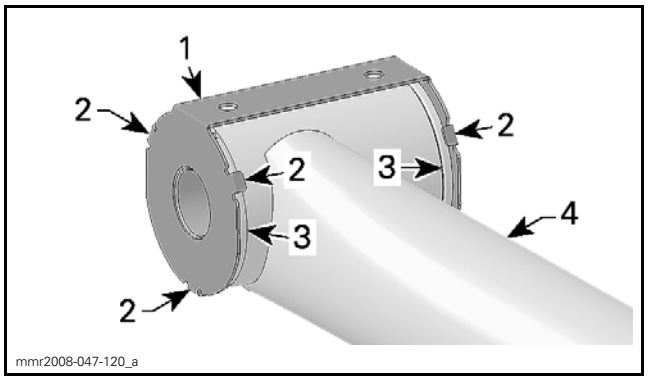

mmr2017-046-008_a

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

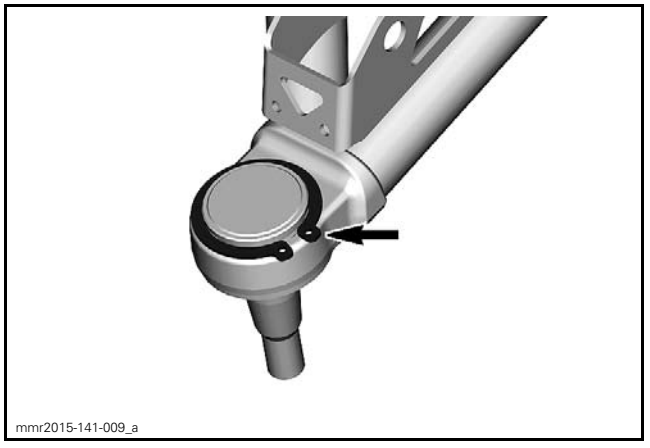
NOTE: The MX Z / Renegade lower ball joint is different from the Summit / Freeride lower ball joint.

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.

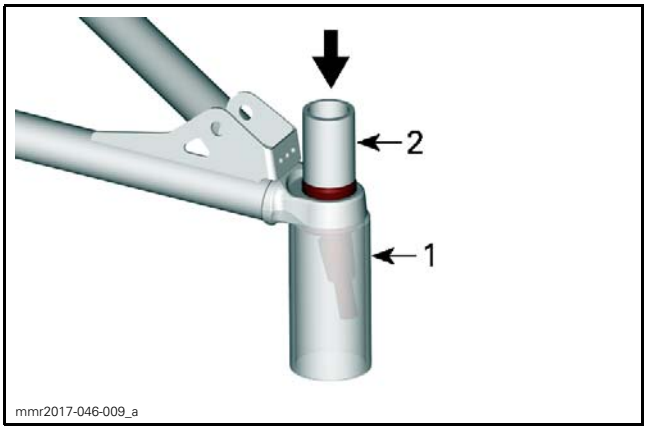
Removing the Lower Ball Joint

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	

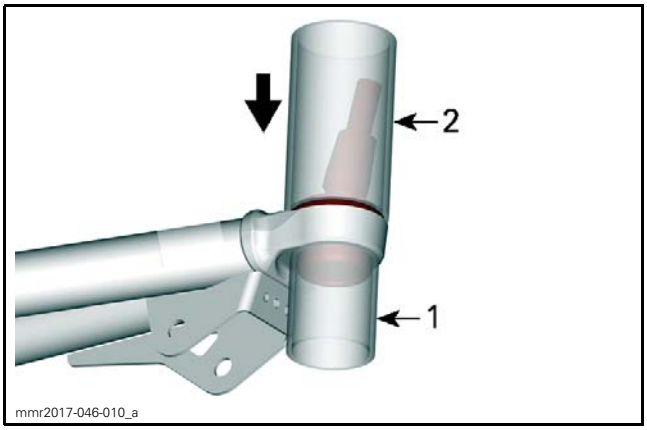


1. *Ball joint remover support*
2. *Suitable box*

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)	



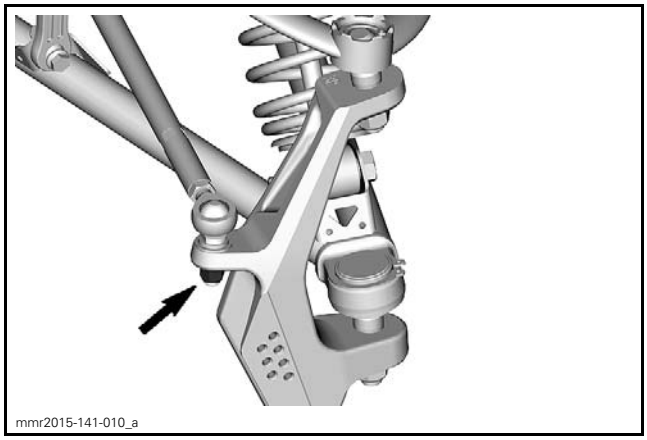
1. *Ball joint installer support*
2. *Ball joint installer*

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.

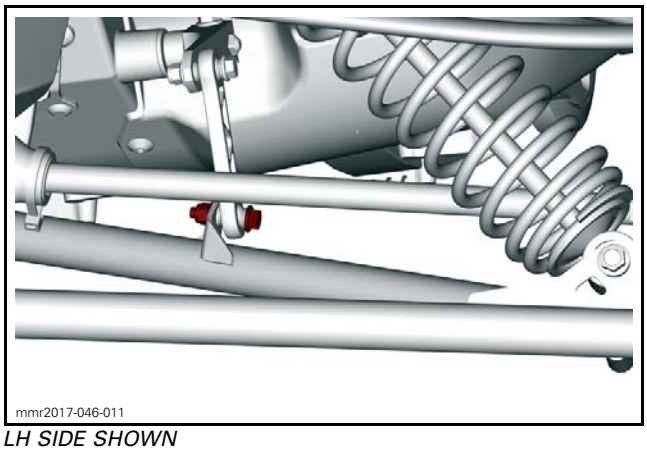
Installing the Ski Leg

The installation is the reverse of the removal procedure.

STABILIZER BAR

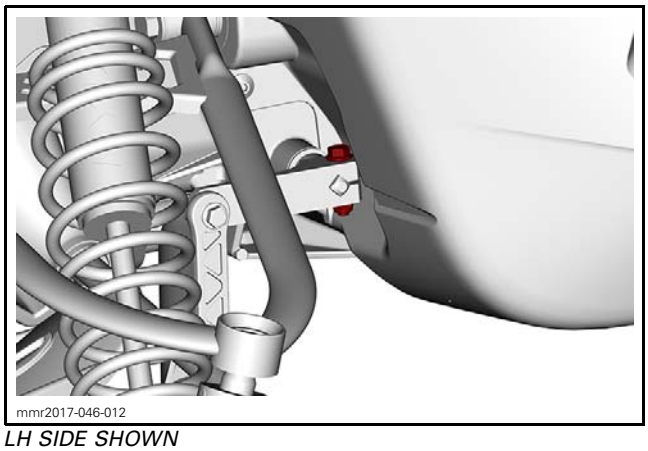
Removing the Stabilizer Bar

1. Remove bolts and nuts securing stabilizer links to lower suspension arms.

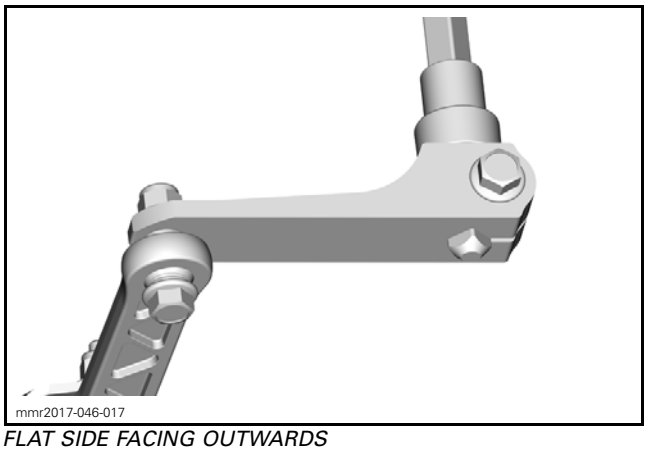


LH SIDE SHOWN

2. Remove stabilizer lever bolts and nuts.

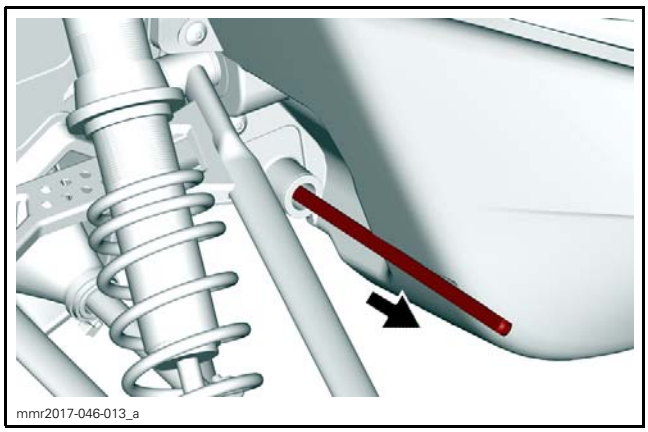


LH SIDE SHOWN



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.



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.

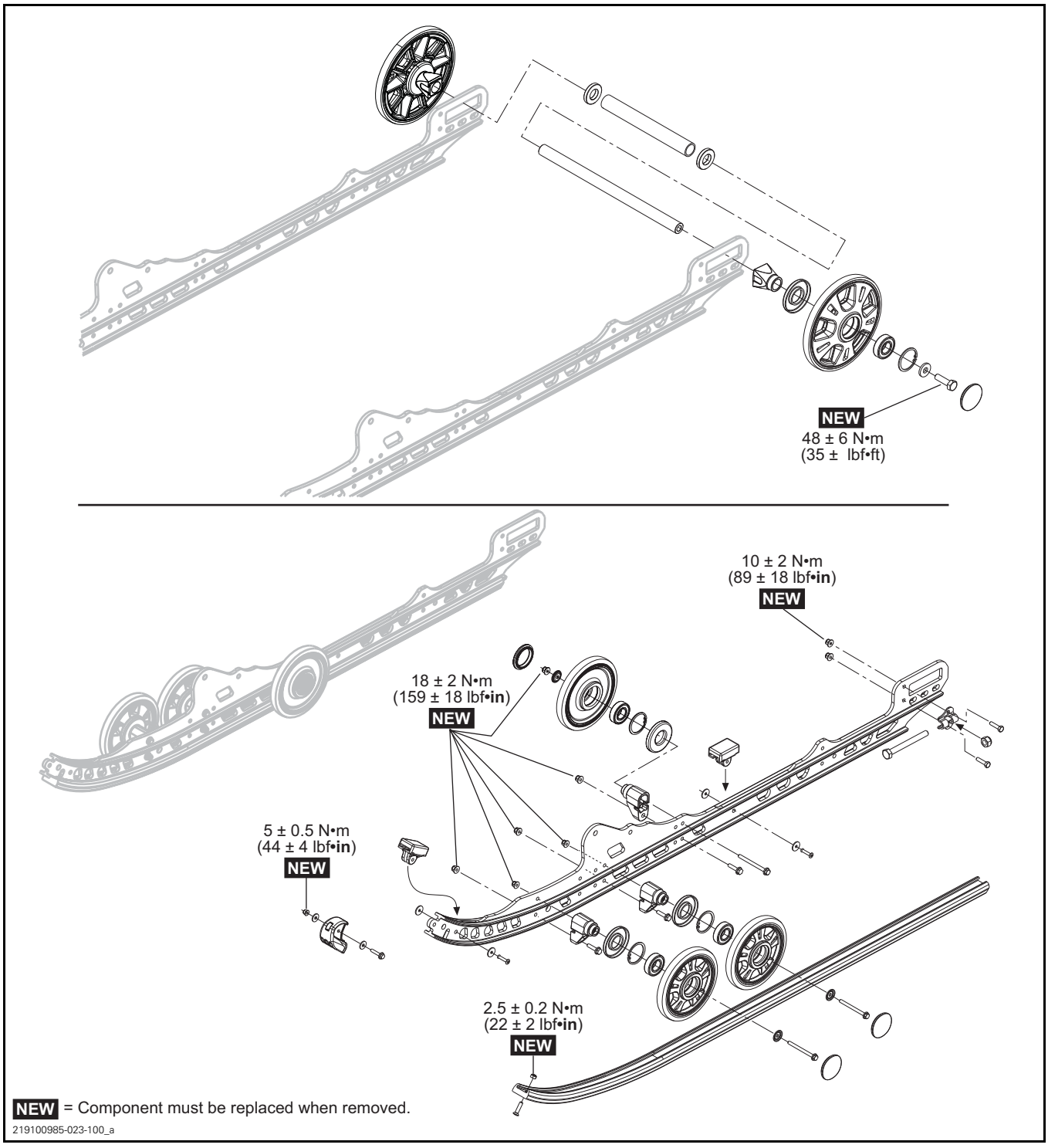
TIGHTENING TORQUE	
Stabilizer bar link nut	19 N•m ± 2 N•m (168 lbf•**in** ± 18 lbf•**in**)

REAR SUSPENSION (SC-5M)

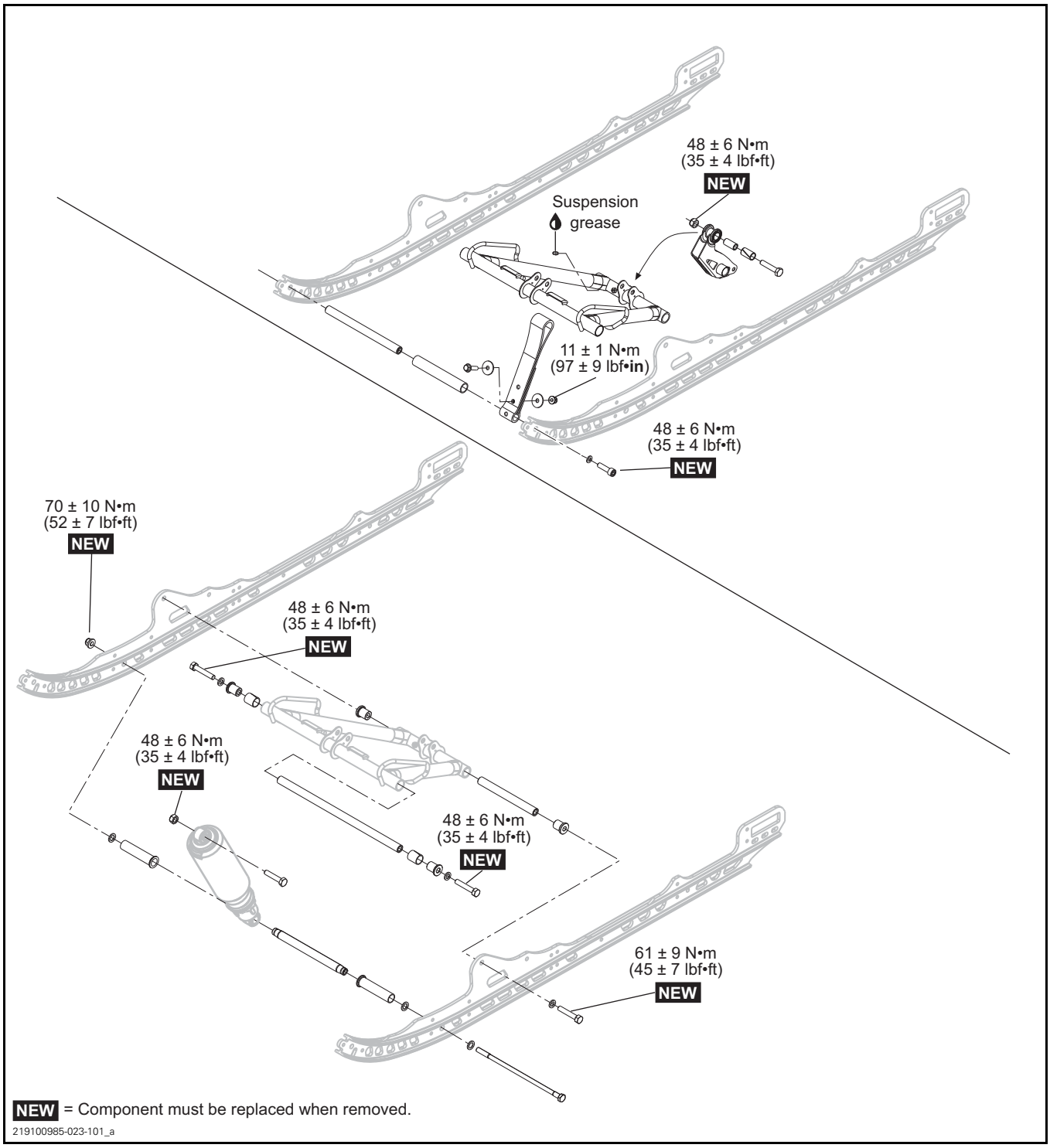
SERVICE PRODUCTS

Description	Part Number	Page
LOCTITE 243 (BLUE)	293 800 060	277
SYNTHETIC SUSPENSION GREASE	779163	272

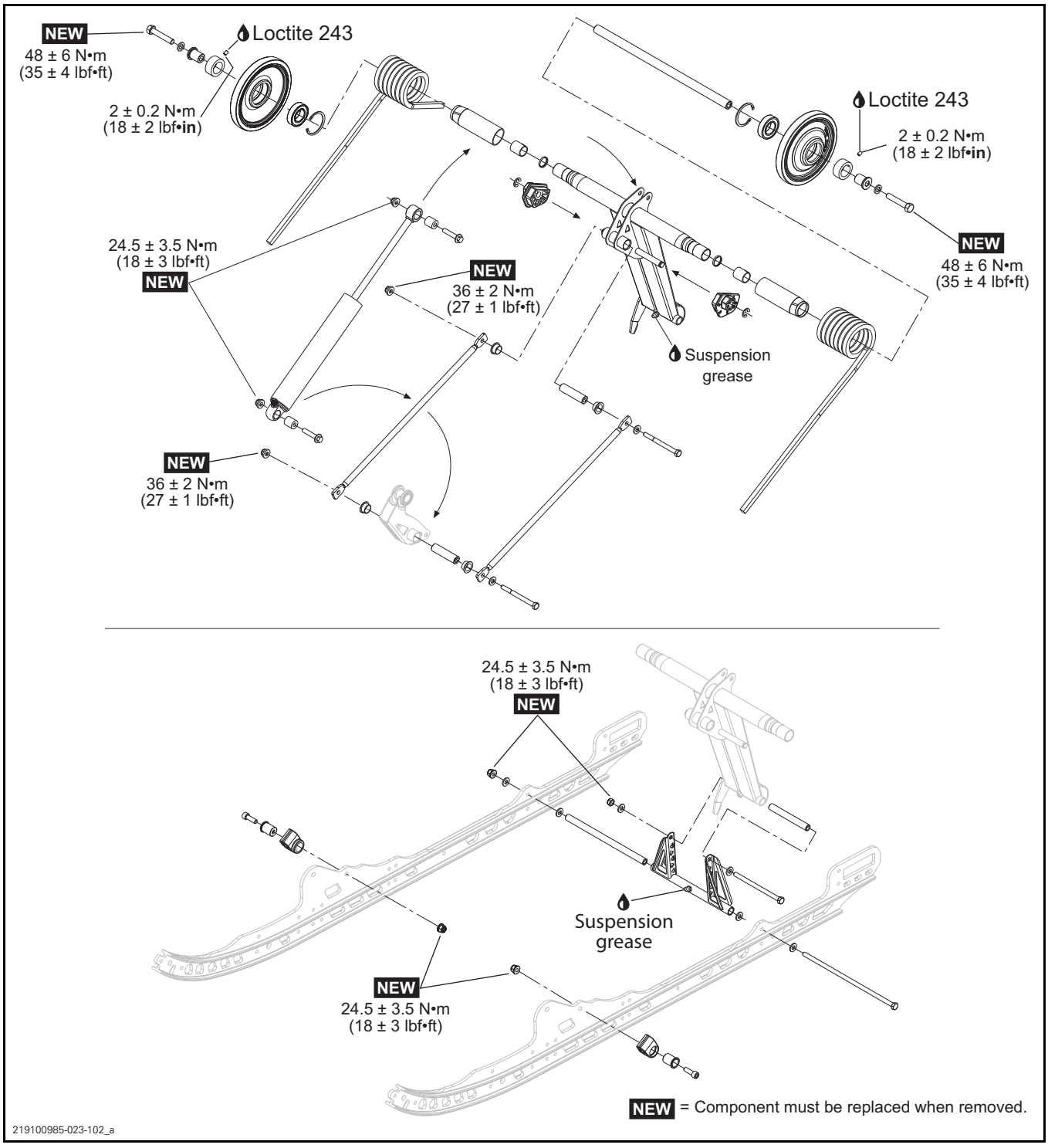
RAILS AND IDLERS WHEELS



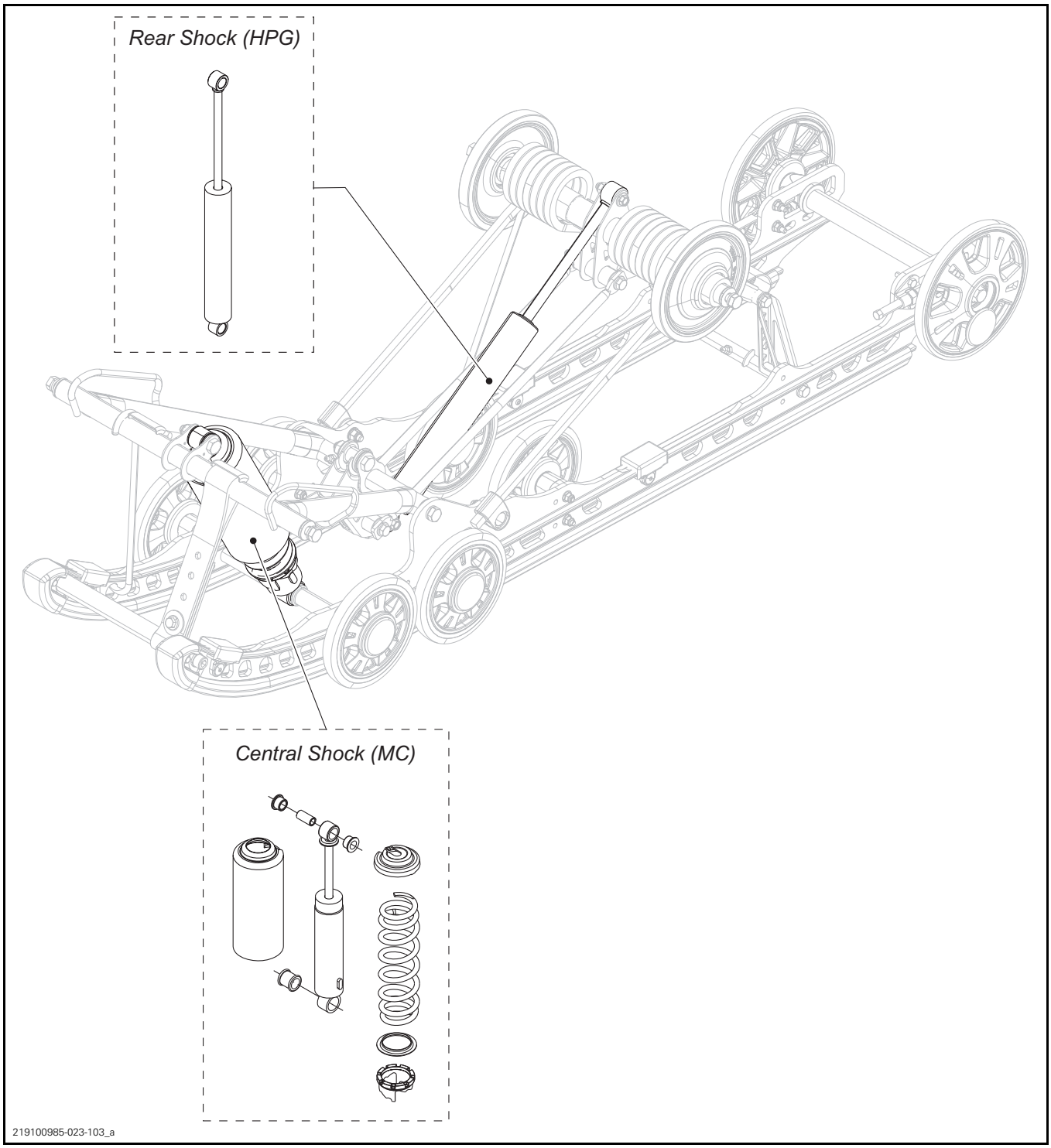
FRONT ARM


48 ± 6 N•m
(35 ± 4 lbf•ft)
NEW
Suspension
grease
11 ± 1 N•m
(97 ± 9 lbf•in)
48 ± 6 N•m
(35 ± 4 lbf•ft)
NEW
70 ± 10 N•m
(52 ± 7 lbf•ft)
NEW
48 ± 6 N•m
(35 ± 4 lbf•ft)
NEW
48 ± 6 N•m
(35 ± 4 lbf•ft)
NEW
48 ± 6 N•m
(35 ± 4 lbf•ft)
NEW
61 ± 9 N•m
(45 ± 7 lbf•ft)
NEW
NEW = Component must be replaced when removed.
219100985-023-101_a

REAR ARM


NEW
48 ± 6 N•m
(35 ± 4 lbf•ft)
Loctite 243
2 ± 0.2 N•m
(18 ± 2 lbf•in)
Loctite 243
2 ± 0.2 N•m
(18 ± 2 lbf•in)
NEW
48 ± 6 N•m
(35 ± 4 lbf•ft)
24.5 ± 3.5 N•m
(18 ± 3 lbf•ft)
NEW
NEW
36 ± 2 N•m
(27 ± 1 lbf•ft)
Suspension
grease
NEW
36 ± 2 N•m
(27 ± 1 lbf•ft)
24.5 ± 3.5 N•m
(18 ± 3 lbf•ft)
NEW
Suspension
grease
NEW
24.5 ± 3.5 N•m
(18 ± 3 lbf•ft)
NEW = Component must be replaced when removed.
219100985-023-102_a

SHOCK ABSORBERS



GENERAL

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.

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

ADJUSTMENT

For suspension adjustment, refer to *SUSPENSION ADJUSTMENT* subsection.

MAINTENANCE

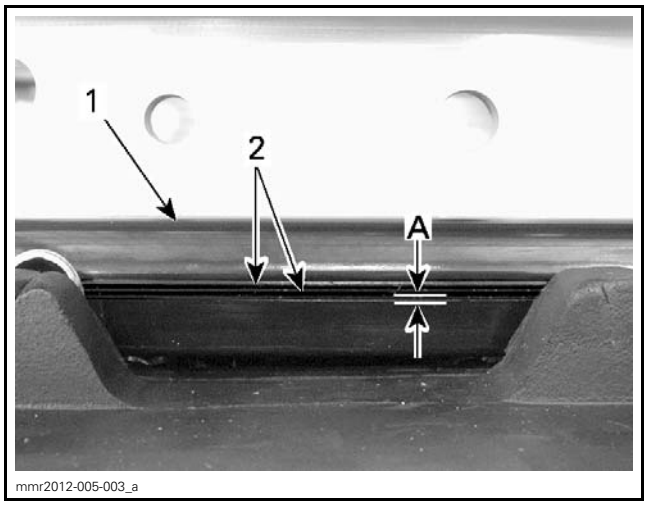
INSPECTING THE REAR SUSPENSION MECHANISM AND STOPPER STRAP

1. Inspect rear suspension components for wear, deterioration or damage, replace defective parts if necessary.
2. Inspect stopper strap(s) for wear or cracks.
3. Check bolt and nut securing strap(s) for tightness. If loose, inspect strap holes for deformation. Replace strap if necessary.

INSPECTING THE SLIDER SHOES

Slider shoes are worn out and must be replaced when remaining material exceeding the 2 molding lines is as specified.

MINIMUM SLIDER SHOE THICKNESS
1 mm (.04 in) material remaining exceeding the 2 molding lines



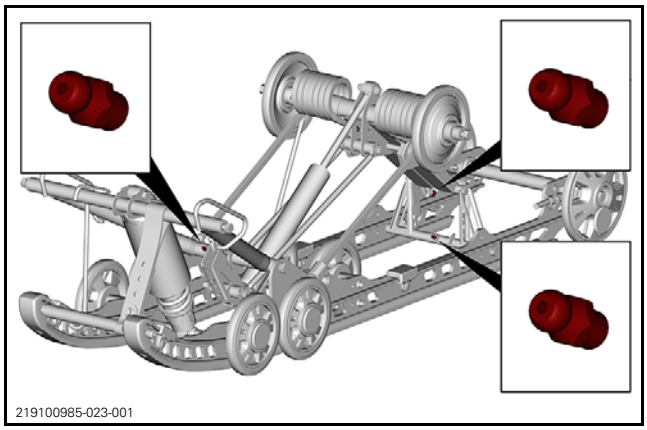
1. Slider shoe
2. Molding lines
A. Minimum thickness: 1 mm (.04 in)

NOTICE **Slider shoes must always be replaced in pairs.**

LUBRICATING THE REAR SUSPENSION

Lubricate the following suspension pivots at grease fittings.

SERVICE PRODUCT
SYNTHETIC SUSPENSION GREASE (P/N 779163)



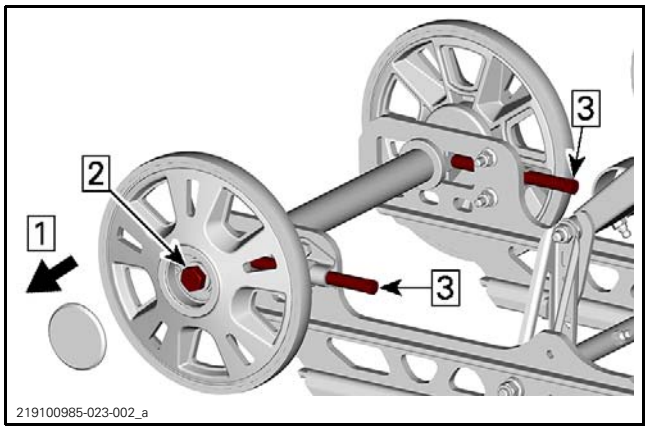
PROCEDURES

NOTE: Parts can be replaced without removing the rear suspension, unless otherwise specified.

SUSPENSION ASSEMBLY

Removing Suspension Assembly

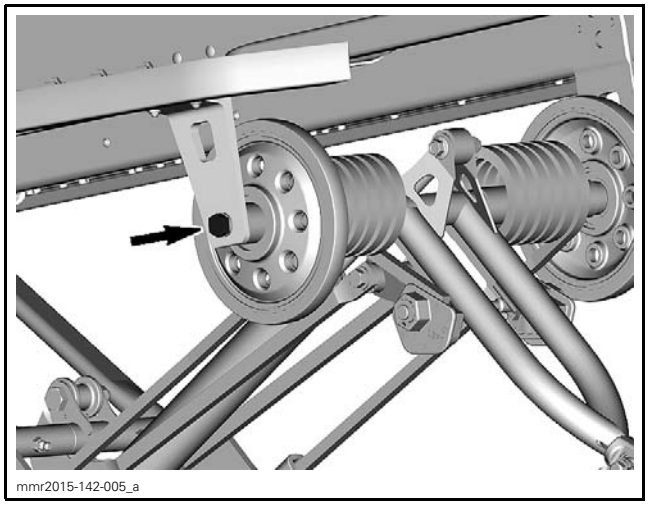
1. Lift rear of vehicle and support it off the ground.
2. Completely loosen track tension.



Step 1: Remove caps
Step 2: Loosen one of the axle screws
Step 3: Loosen adjustment screws

3. Remove and discard rear arm bolts from chassis. Use the following procedure to remove bolts easily.

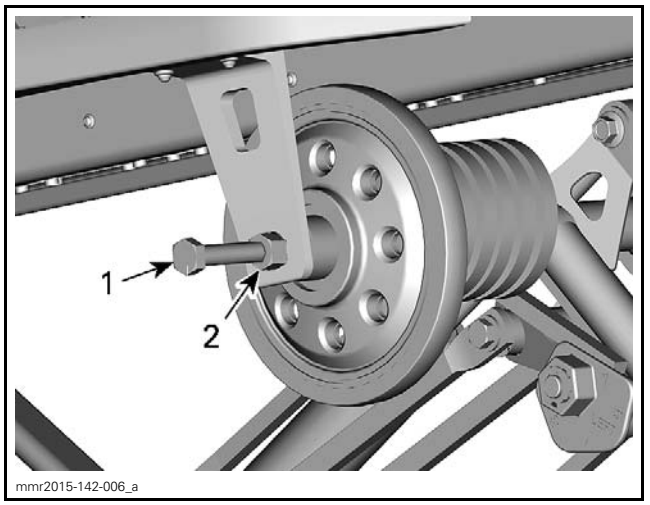
   3.1 Remove one of the bolts securing the rear arm to frame.



   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.

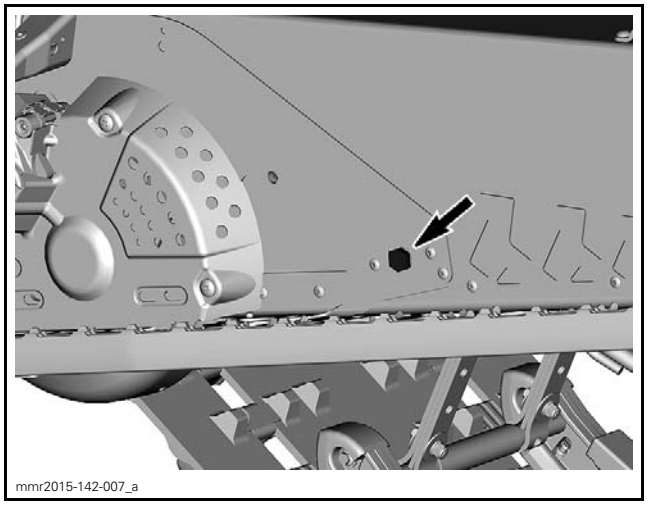


1. Long bolt
2. Locking nut

   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 as 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 *TRACK* subsection.

Install suspension into track with front end first.

Install new front and rear arm bolts.

Tighten bolts to specification.

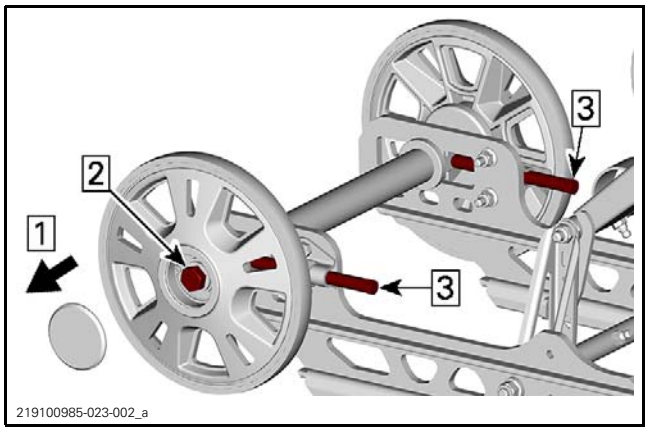
TIGHTENING TORQUE	
Front and rear arm upper bolts	48 N•m ± 6 N•m (35 lbf•ft ± 4 lbf•ft)

Adjust track tension, refer to *TRACK* subsection.

REAR AXLE

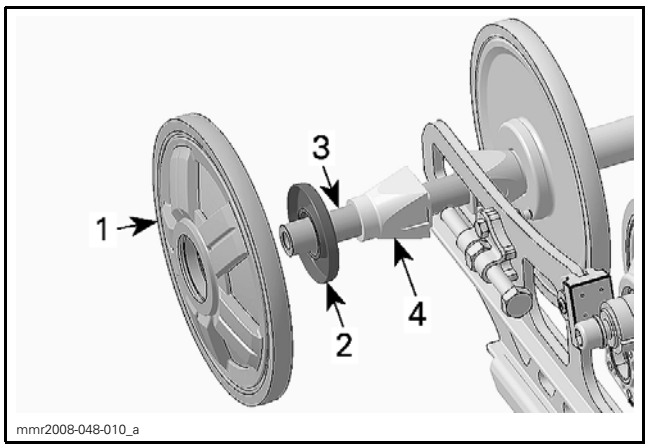
Removing the Rear Axle

1. Lift rear of vehicle and support it off the ground.
2. Completely loosen track tension.



Step 1: Remove caps
Step 2: Loosen one of the axle screws
Step 3: Loosen adjustment screws

3. Remove both rear axle screws.
4. Remove rear idler wheels, seals and wheel spacers.



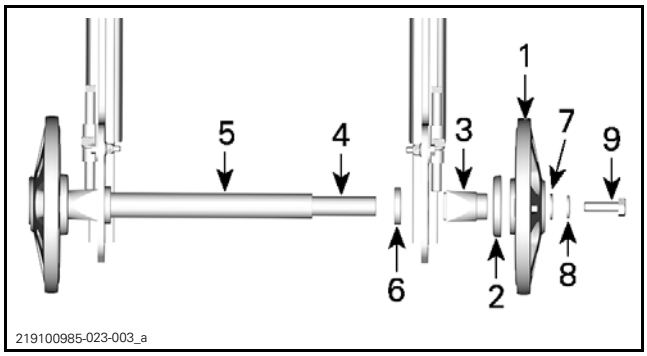
TYPICAL - RH SIDE SHOWN
1. Rear idler wheel
2. Seal
3. Rear axle
4. Wheel spacer

5. Pull out the rear axle.
6. Remove spacer and washers.

Installing the Rear Axle

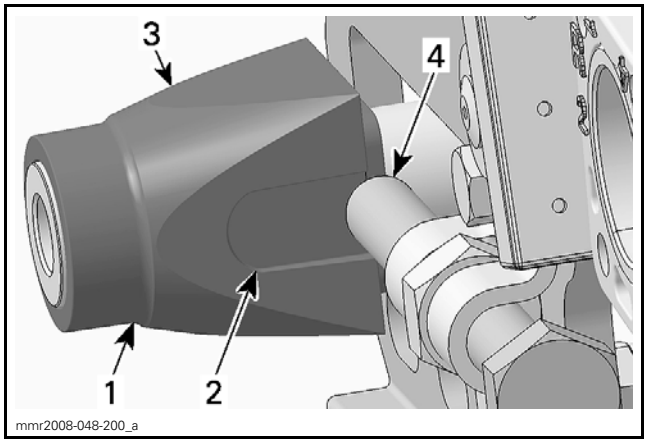
The installation is the reverse of the removal procedure. However, pay attention to the following.

Make sure to position all parts correctly.



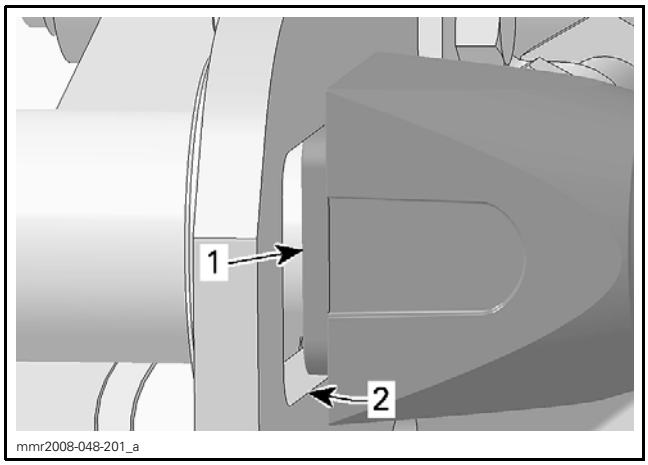
1. Idler wheels
2. Seals
3. Wheel spacers
4. Rear axle
5. Rear axle spacer
6. Washer
7. Washer
8. Conical washer
9. Screw

Position wheel spacers with a flat side up and a groove in front of tensioner screw.



1. Wheel spacer
2. Groove
3. Flat side
4. Tensioner screw

When tightening rear axle, make sure each wheel spacer protuberance is engaged into runner slot.



1. Wheel spacer protuberance
2. Runner slot

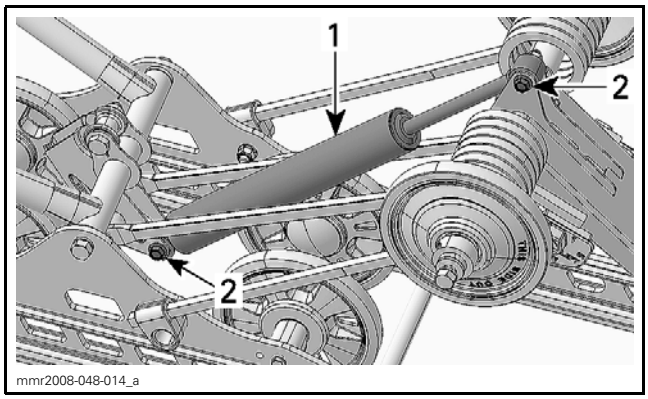
Adjust track tension. Refer to *TRACK* subsection.

SHOCK ABSORBERS

Removing the Rear Shock Absorber

NOTE: If necessary, to ease shock removal, unfasten stopper strap to release shock pressure.

1. Lift rear of vehicle and support it off the ground.
2. Remove bolts and nuts from shock.

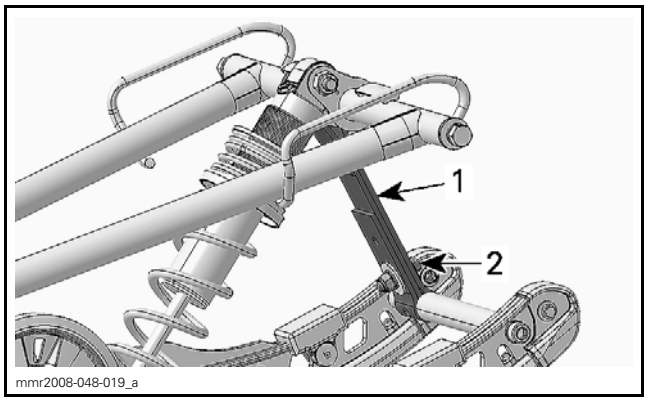


TYPICAL
1. Rear shock absorber
2. Remove bolts and nuts

3. Remove rear shock absorber from vehicle.

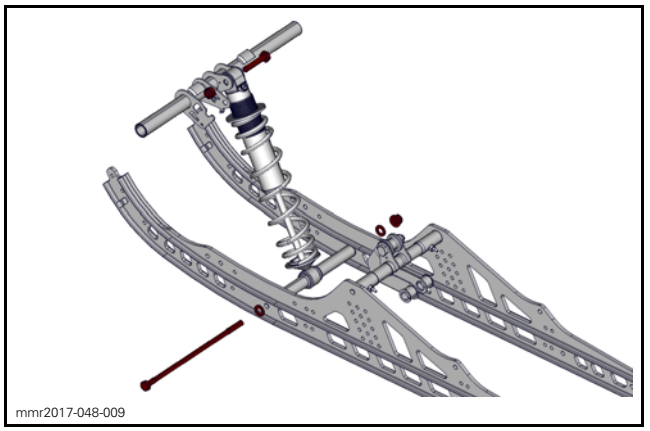
Removing the Center Shock Absorber

1. Lift the rear of vehicle and support it off the ground.
2. Unfasten stopper strap.



TYPICAL
1. Stopper strap
2. Stopper strap bolt

3. Remove upper and lower shock absorber bolts and nuts.



4. Remove center shock absorber from vehicle.
5. Remove bushings and shock shaft from shock absorber.

Shock Absorber Inspection

Refer to *REAR SUSPENSION (rMOTION)* subsection for complete procedures.

Installing the Rear Shock Absorber

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

Make sure upper and lower shock absorber bushings are properly installed.

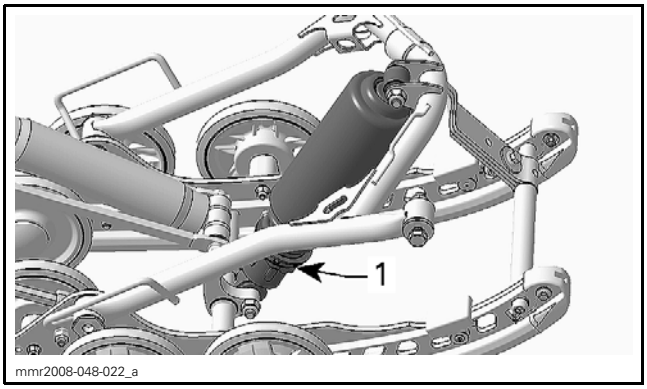
Install **NEW** shock absorber retaining nuts and tighten to specification.

TIGHTENING TORQUE	
Rear shock absorber nuts and bolts	24.5 N•m ± 3.5 N•m (18 lbf•ft ± 3 lbf•ft)

Installating the Center Shock Absorber

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

Position the adjustment cam downwards.

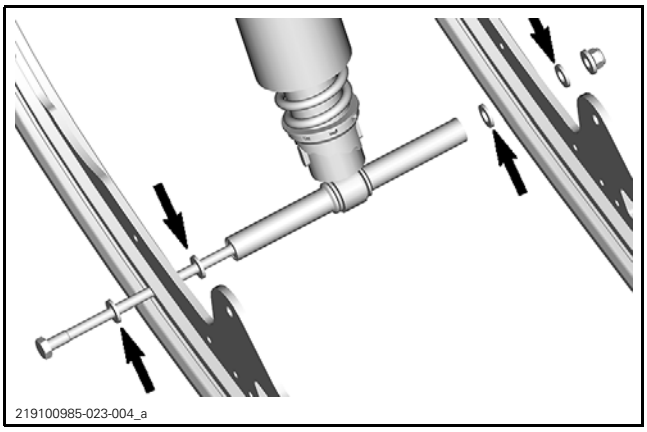


1. Adjustment cam

Install shock absorber upper nut and bolt and tighten to specification.

TIGHTENING TORQUE	
Center shock absorber upper nut and bolt	48 N•m ± 6 N•m (35 lbf•ft ± 4 lbf•ft)

Position washers in proper position.

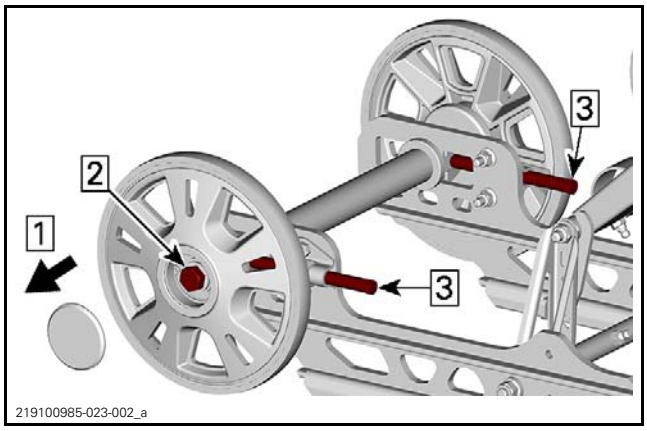


TIGHTENING TORQUE	
Center shock absorber lower nut and bolt	70 N•m ± 10 N•m (52 lbf•ft ± 7 lbf•ft)

REAR SPRINGS

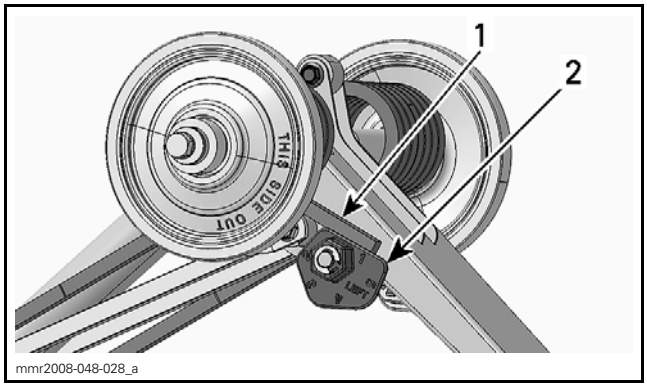
Removing the Rear Spring

1. Lift rear of vehicle and support it off the ground.
2. Completely loosen track tension.



Step 1: Remove caps
Step 2: Loosen one of the axle screws
Step 3: Loosen adjustment screws

3. Decrease springs preload by turning cams accordingly.

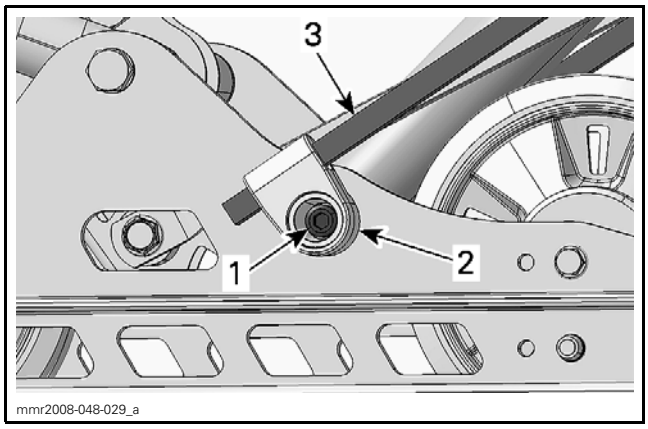


LH SIDE SHOWN
1. Rear spring
2. Cam

4. Firmly hold the spring support and unscrew its retaining bolt (one on each side).

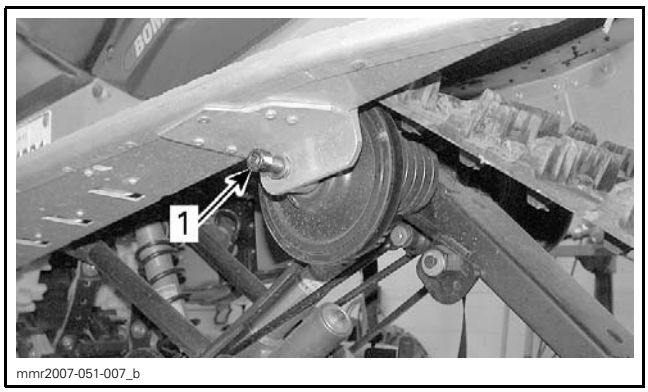
⚠ WARNING

Firmly hold the spring support, they are spring loaded.



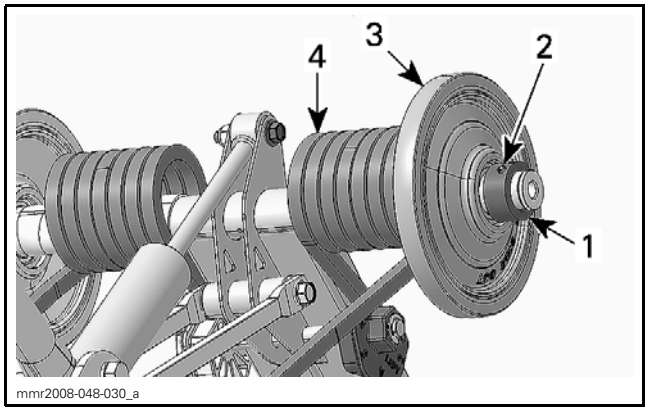
1. *Spring support bolt*
2. *Spring support*
3. *Spring*

5. Remove screws and washers from rear arm top axle. Refer to *REMOVING SUSPENSION ASSEMBLY* for procedure to remove the bolts.



TYPICAL
1. *Screw*

6. Loosen set screw from locking rings.
7. Remove locking rings.
8. Remove upper idler wheels.
9. Remove springs.



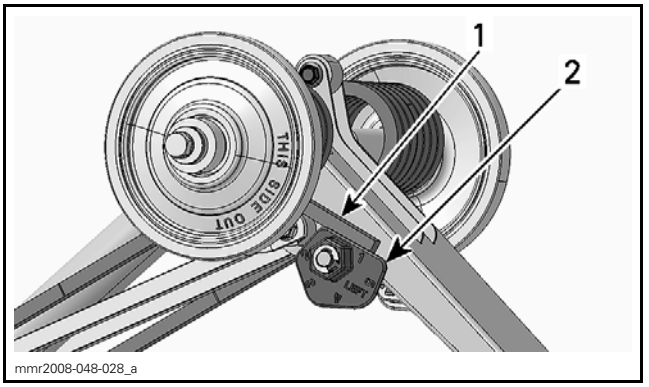
LH SIDE SHOWN
1. *Locking ring*
2. *Set screw*
3. *Upper idler wheel*
4. *Rear spring*

Installing the Rear Spring

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

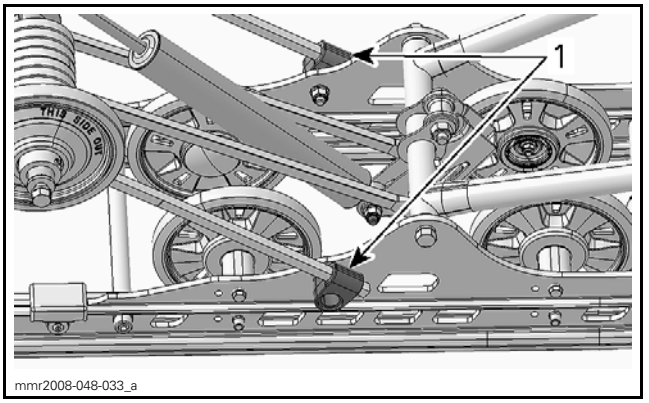
Respect THIS SIDE OUT inscription on top idler wheels.

Make sure that spring end is in cam adjuster.



LH SIDE SHOWN
1. *Spring end*
2. *Cam*

Install spring supports upwards.



TYPICAL - RH SIDE SHOWN
1. *Spring supports upwards*

Apply threadlocker on set screw of the locking rings.

SERVICE PRODUCT
LOCTITE 243 (BLUE) (P/N 293 800 060)

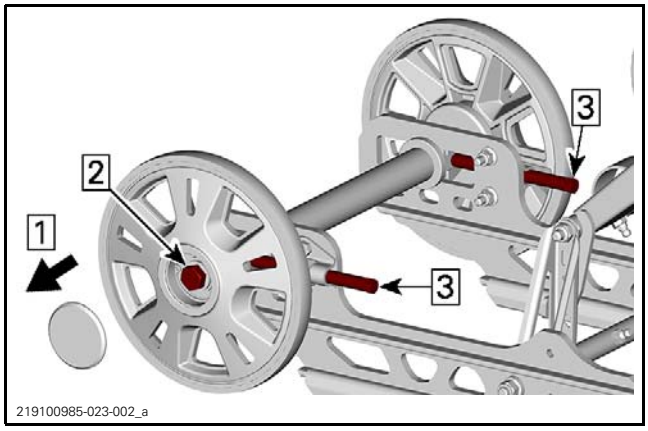
Tighten screws on rear arm top axle to specification.

TIGHTENING TORQUE	
Rear arm top axle screws	48 N•m ± 6 N•m (35 lbf•ft ± 4 lbf•ft)

SLIDER SHOES

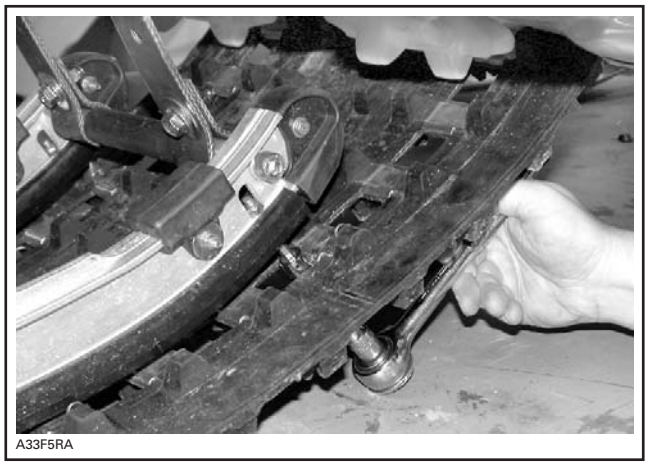
Removing the Slider Shoe

1. Lift rear of vehicle and support it off the ground.
2. Completely loosen track tension.



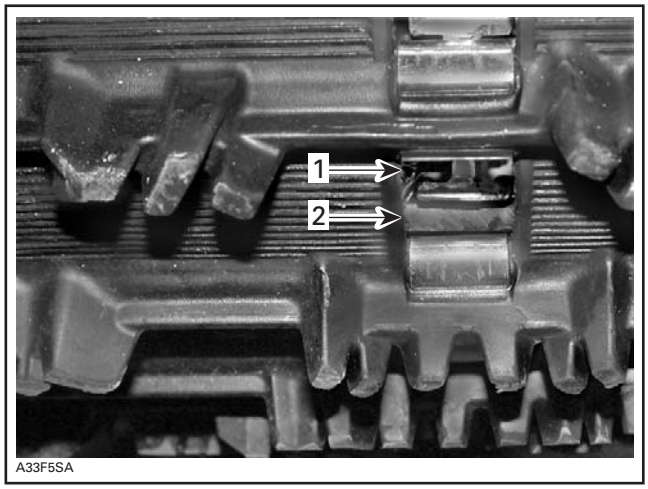
Step 1: Remove caps
Step 2: Loosen one of the axle screws
Step 3: Loosen adjustment screws

3. Remove nut and screw of each runner.



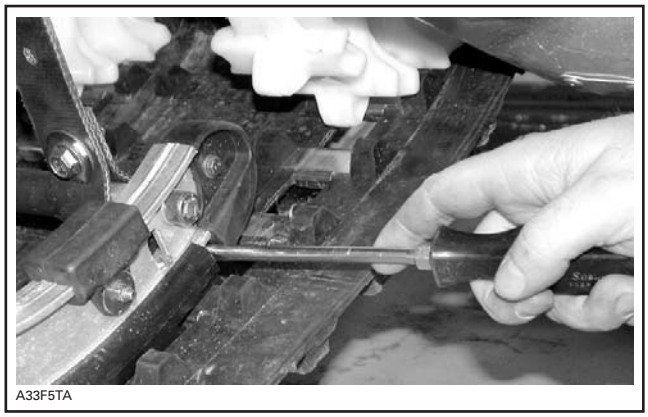
REMOVE NUT AND SCREW OF EACH RUNNER

4. At the rear of vehicle, align a track window with slider shoe.



TYPICAL
1. Track window
2. Slider shoe

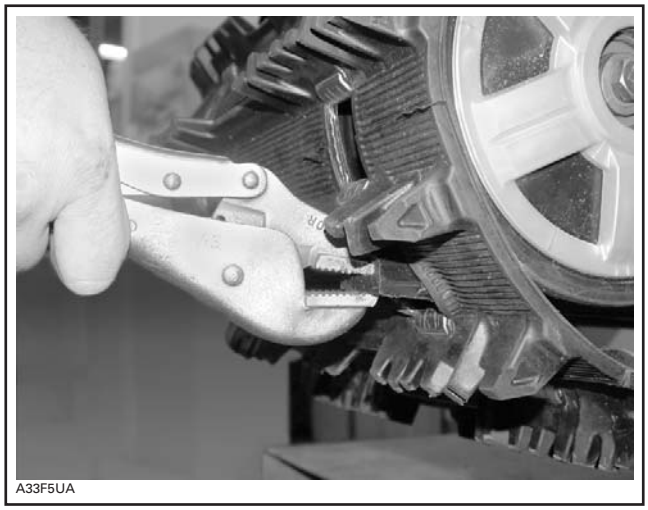
5. Using a pry bar or a screwdriver, push slider shoe rearward until it comes in contact with track.



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.



PULL ON SLIDER SHOE TO REMOVE

Installing the Slider Shoe

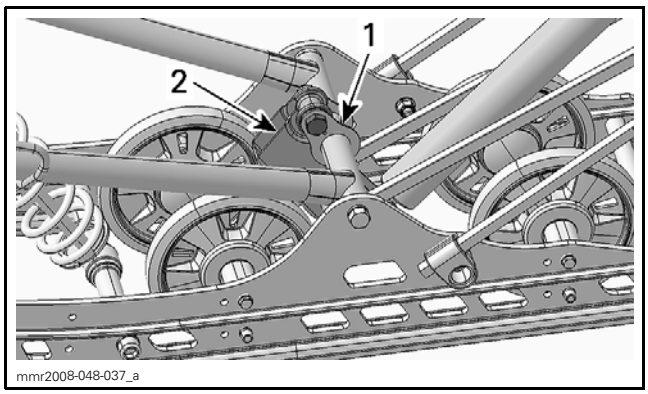
The installation is the reverse of the removal procedure. However, pay attention to the following.

Make sure to insert slider shoe end with hole first.

FRONT ARM

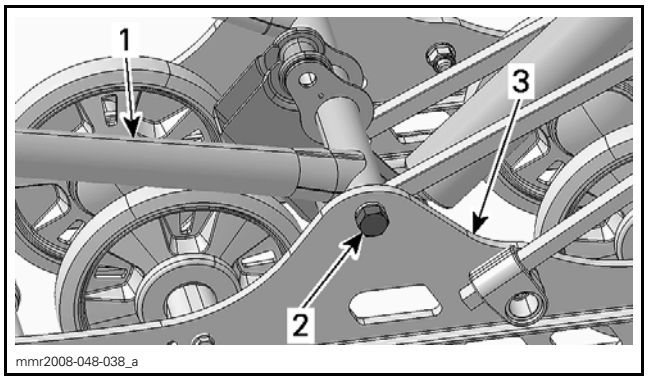
Removing the Front Arm

1. Proceed with *REMOVING THE SUSPENSION ASSEMBLY*. Refer to procedure in this subsection.
2. Remove the bolt securing rocker to front arm.



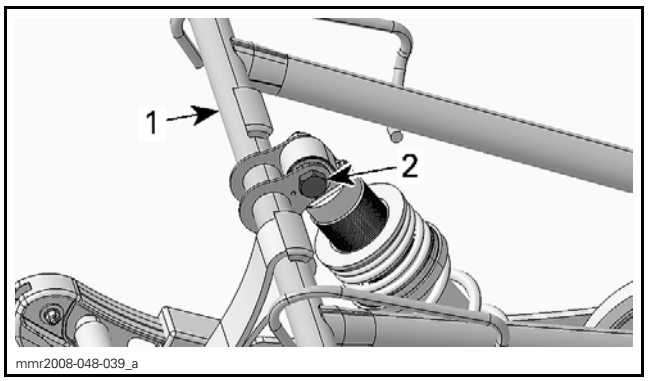
1. *Front arm*
2. *Rocker*

3. Unscrew and remove the front arm lower bolts and washers.



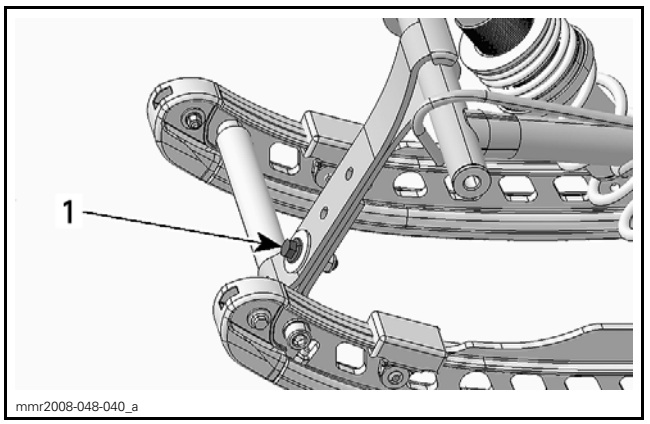
1. *Front arm*
2. *Lower bolt*
3. *LH runner*

4. Remove the shock absorber upper bolt.



1. *Front arm*
2. *Shock absorber upper bolt*

5. Unfasten stopper strap.



1. *Stopper strap bolt*

6. Remove front arm from suspension assembly.

Installing the Front Arm

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

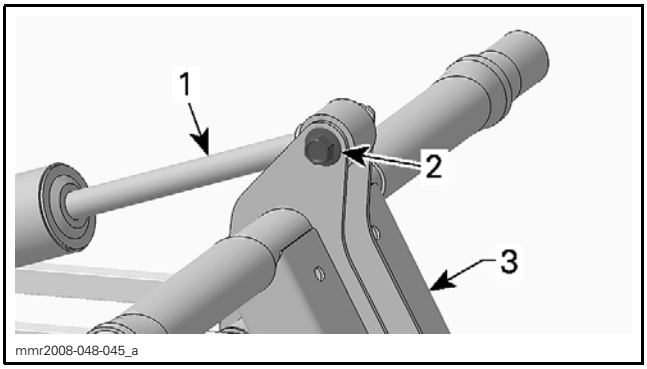
Refer to exploded view for new fasteners to install and tightening torques.

Lubricate front arm pivot. Refer to *MAINTENANCE*.

REAR ARM

Removing the Rear Arm

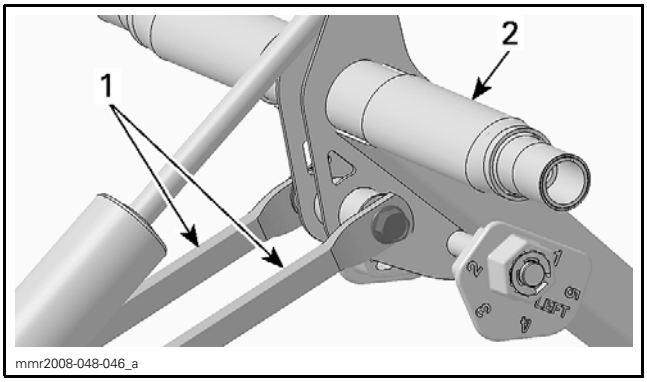
1. Lift rear of vehicle and support it off the ground.
2. Proceed with *REAR SPRING REMOVAL*. Refer to procedure in this subsection.
3. Remove the rear shock absorber upper bolt and nut.



mmr2008-048-045_a

1. Rear shock absorber
2. Shock absorber bolt
3. Rear arm

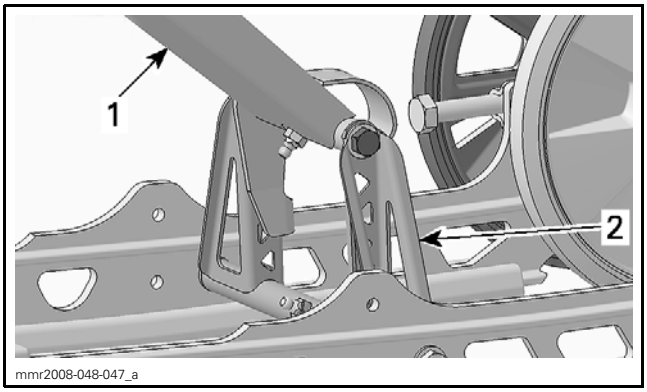
4. Remove throttle rods from rear arm.



mmr2008-048-046_a

1. Throttle rods
2. Rear arm

5. Remove bolt, washers and nut holding rear arm to pivot arm.



mmr2008-048-047_a

1. Rear arm
2. Pivot arm

6. Remove rear arm from vehicle.
7. Remove adjustment cams from rear arm.

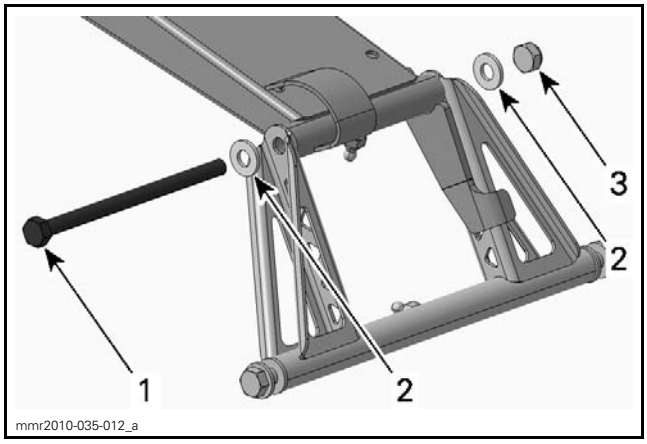
Installing the Rear Arm

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

Place rear arm grease fitting towards the front of the vehicle.

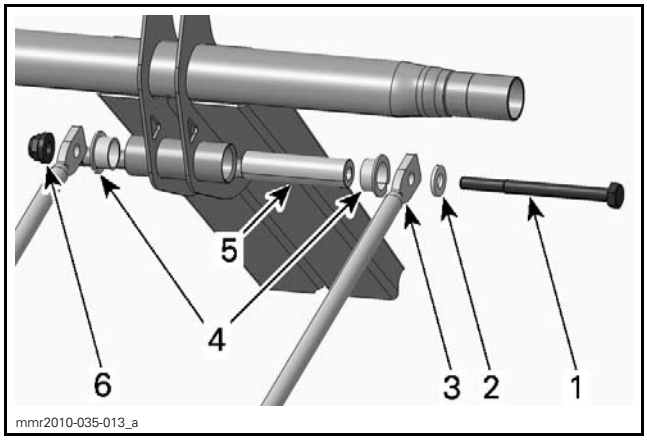
Make sure rear arm stroke limiter is placed at rear.

Assemble rear arm fasteners as per following illustrations.



mmr2010-035-012_a

SOME PARTS REMOVED FOR CLARITY PURPOSE
1. Rear arm lower bolt
2. Washers
3. Rear arm lower nut



mmr2010-035-013_a

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

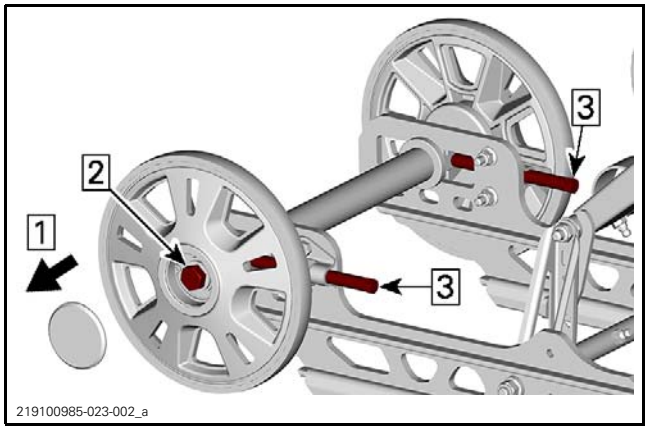
Refer to exploded view for new fasteners to install and tightening torques.

Lubricate rear arm pivot. Refer to *MAINTENANCE*.

PIVOT ARM

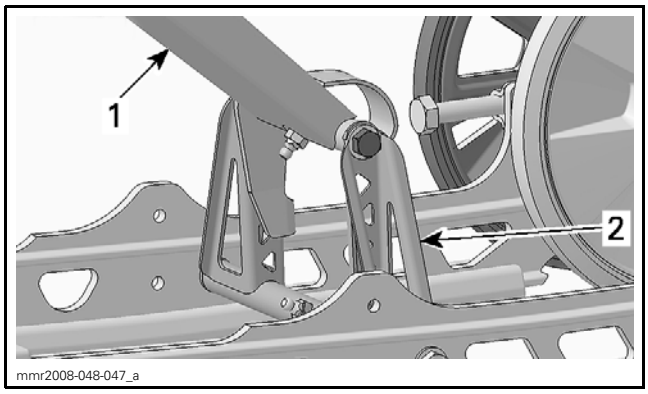
Removing the Pivot Arm

1. Lift rear of vehicle and support it off the ground.
2. Completely loosen track tension.



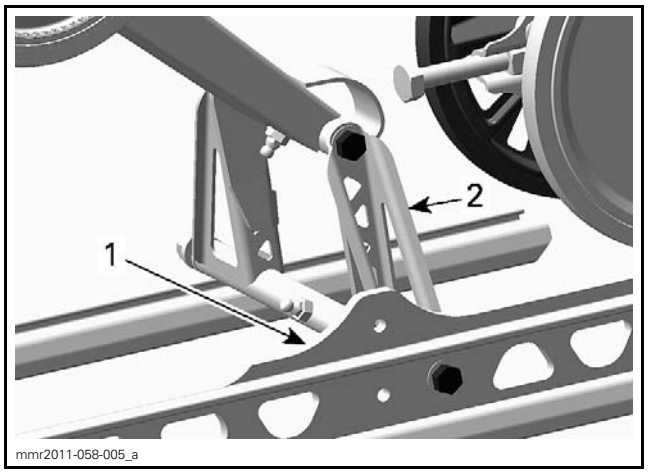
Step 1: Remove caps
Step 2: Loosen one of the axle screws
Step 3: Loosen adjustment screws

3. Remove bolt and washers retaining rear arm to pivot arm.



1. Rear arm
2. Pivot arm

4. Remove bolt and washers retaining pivot arm to runners.



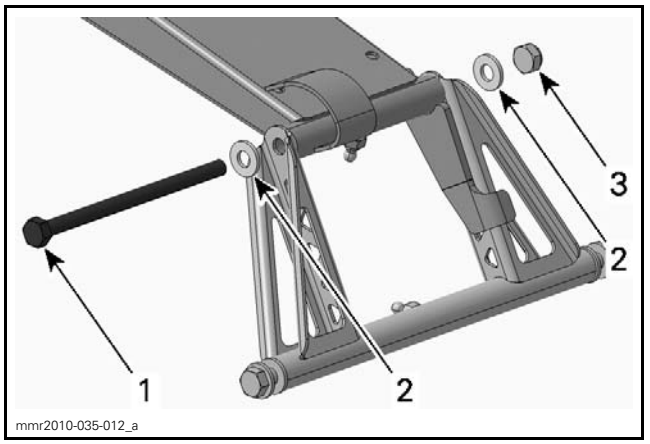
1. Runner
2. Pivot arm

5. Carefully remove pivot arm from rear arm.

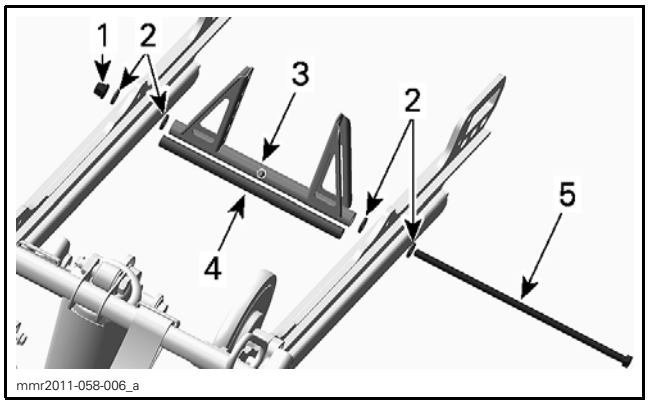
Installing the Pivot Arm

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

Assemble pivot arm fastener as per following illustrations.



SOME PARTS REMOVED FOR CLARITY PURPOSE
1. Rear arm lower bolt
2. Washers
3. Rear arm lower nut



PARTS REMOVED FOR CLARITY PURPOSE
1. *Pivot arm lower nut*
2. *Washers*
3. *Pivot arm*
4. *Axle*
5. *Pivot arm lower screw*

Refer to exploded view for new fasteners to install and tightening torques.

Lubricate pivot arm. Refer to *MAINTENANCE*.

IDLER WHEELS AND SUPPORTS

Idler Wheels Removal and Installation

Refer to the exploded views at the beginning of this subsection for parts layout and fasteners tightening torque.

STOPPER STRAP

Refer to the exploded views at the beginning of this subsection for parts layout and fasteners tightening torque.

REAR SUSPENSION (rMOTION)

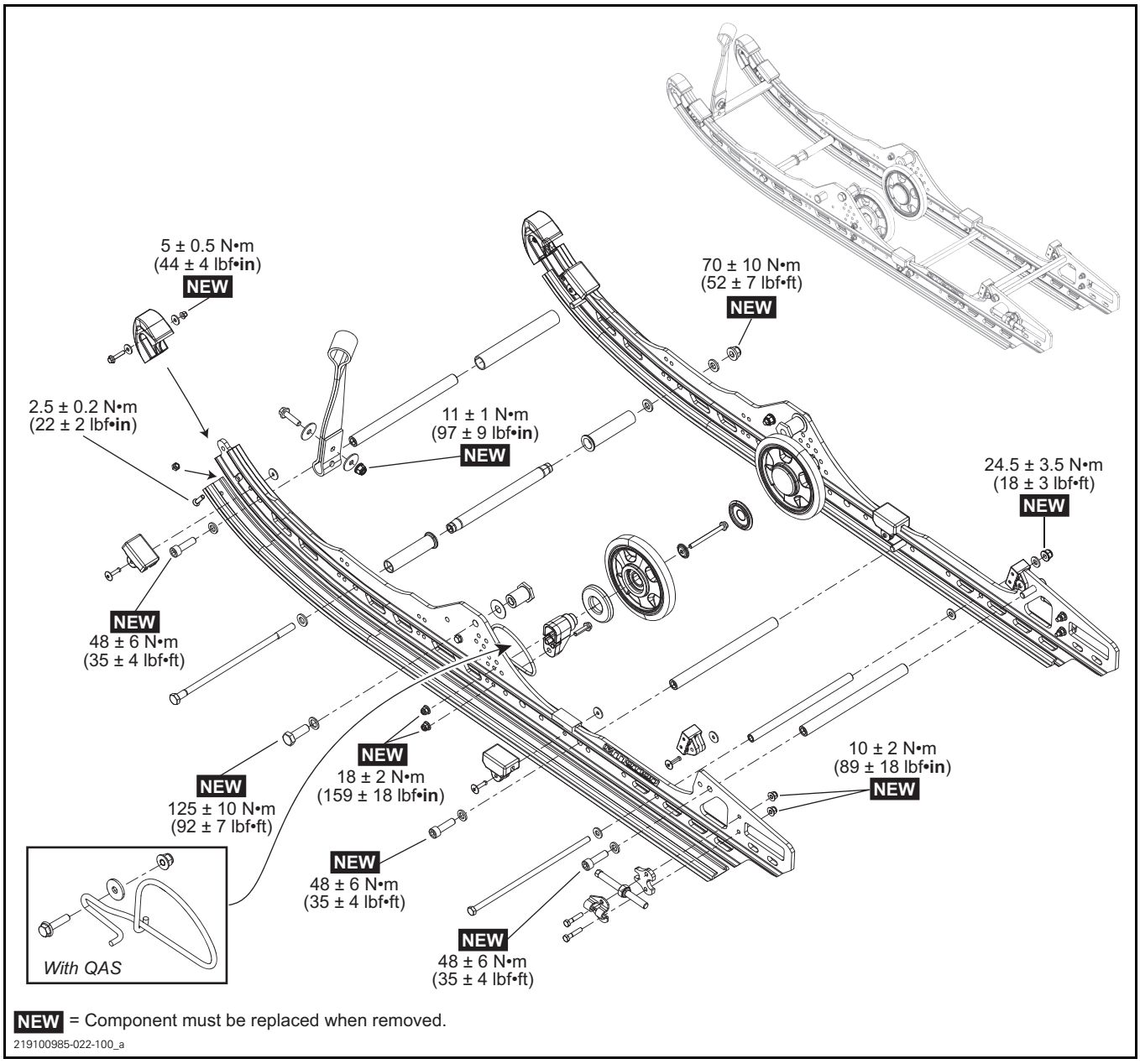
SERVICE TOOLS

Description	Part Number	Page
RMOTION MASTER CYLINDER KEY	529 036 254	295–296
RMOTION SOCKET	529 036 255	296
RMOTION SUSPENSION TOOL	529 036 234	290, 304
SHOCK ABSORBER SUPPORTS	529 036 186	302

SERVICE PRODUCTS

Description	Part Number	Page
LOCTITE 243 (BLUE)	293 800 060	294
SYNTHETIC SUSPENSION GREASE	779163	289

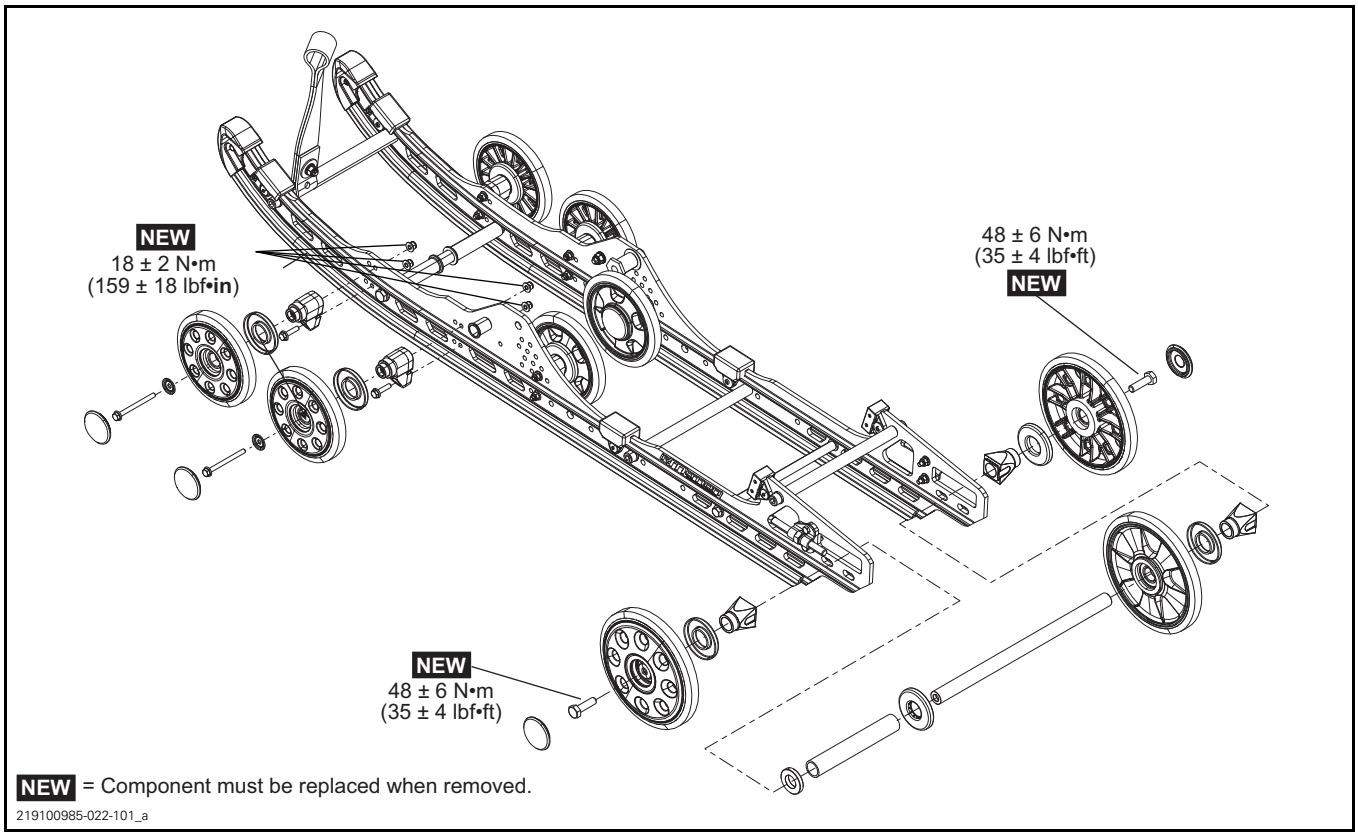
RAILS



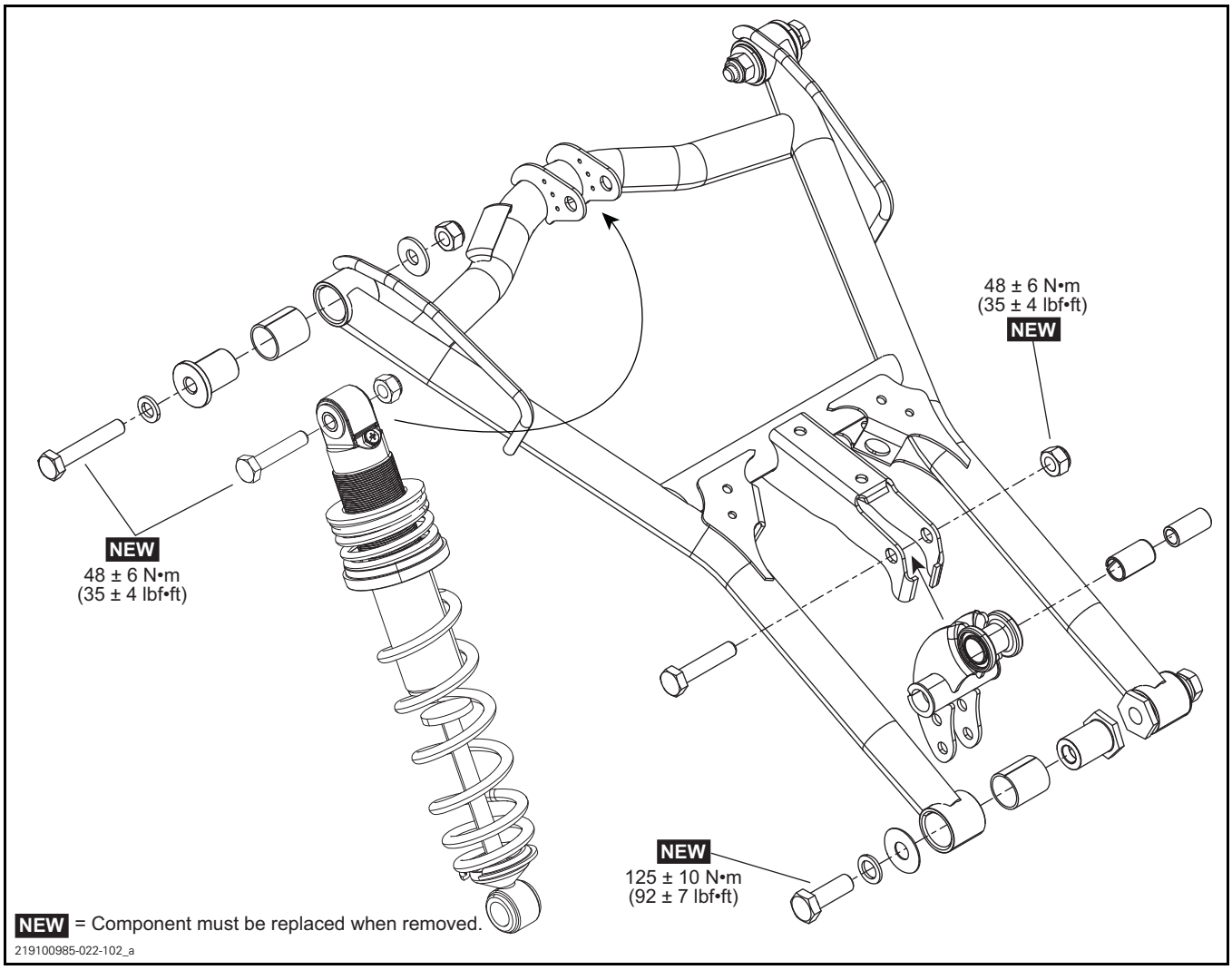
NEW = Component must be replaced when removed.

219100985-022-100_a

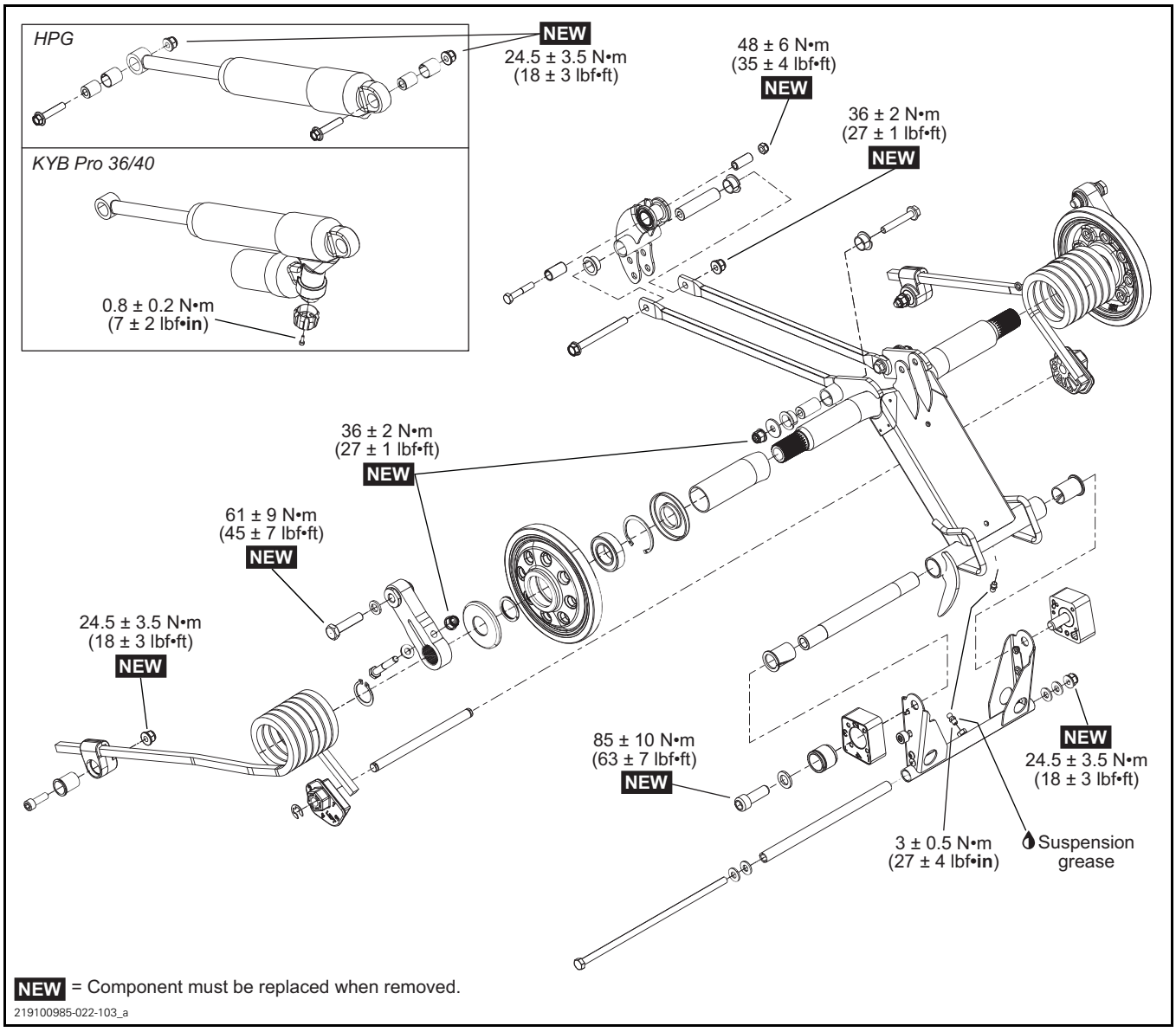
WHEELS (3 IDLER WHEELS LAYOUT)



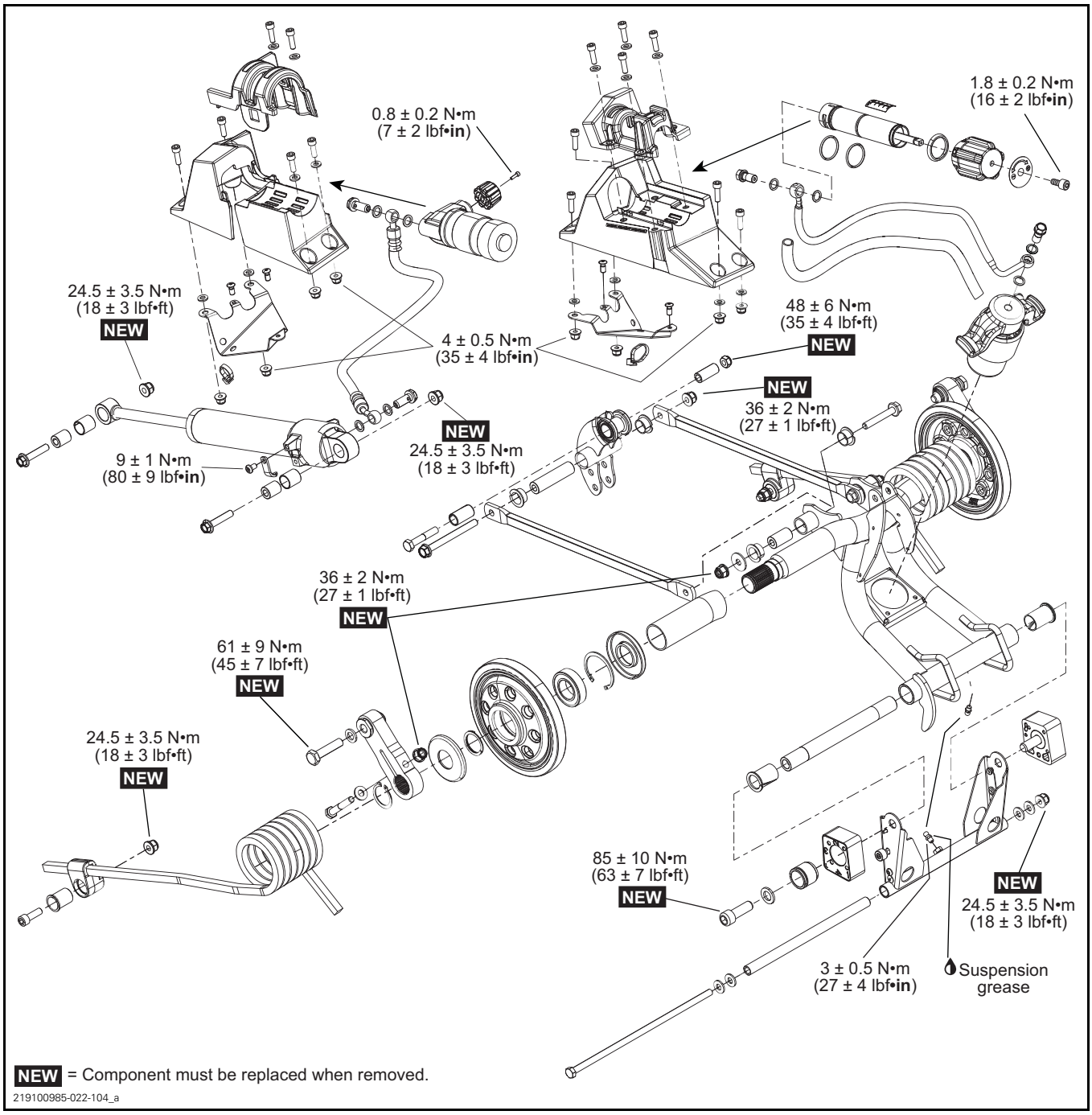
FRONT ARM


48 ± 6 N•m
(35 ± 4 lbf•ft)
NEW
NEW
48 ± 6 N•m
(35 ± 4 lbf•ft)
NEW
125 ± 10 N•m
(92 ± 7 lbf•ft)
NEW = Component must be replaced when removed.
219100985-022-102_a

REAR ARM (MODELS WITHOUT ADJUSTABLE REAR SHOCK)



REAR ARM (MODELS WITH QUICK ADJUST SYSTEM)



GENERAL

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 be replaced.

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

ADJUSTMENT

For suspension adjustment, refer to *SUSPENSION ADJUSTMENT* subsection.

MAINTENANCE

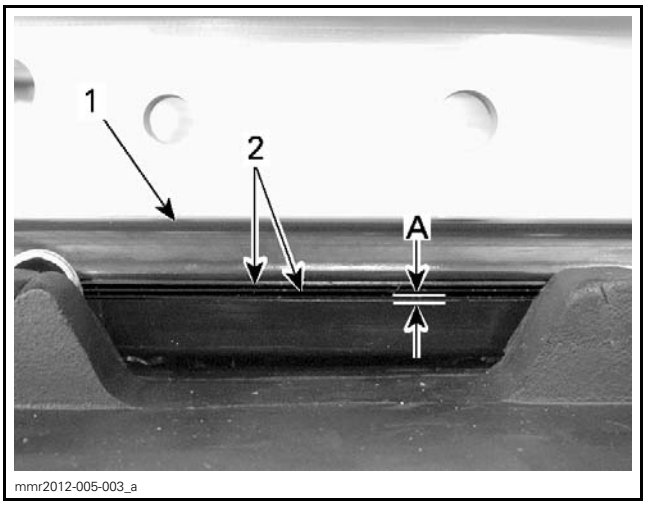
INSPECTING THE REAR SUSPENSION MECHANISM AND STOPPER STRAP

1. Inspect rear suspension components for wear, deterioration or damage, replace defective parts if necessary.
2. Inspect stopper strap(s) for wear or cracks.
3. Check bolt and nut securing strap(s) for tightness. If loose, inspect strap holes for deformation. Replace strap if necessary.

INSPECTING THE SLIDER SHOES

Slider shoes are worn out and must be replaced when remaining material exceeding the 2 molding lines is as specified.

MINIMUM SLIDER SHOE THICKNESS
1 mm (.04 in) material remaining exceeding the 2 molding lines



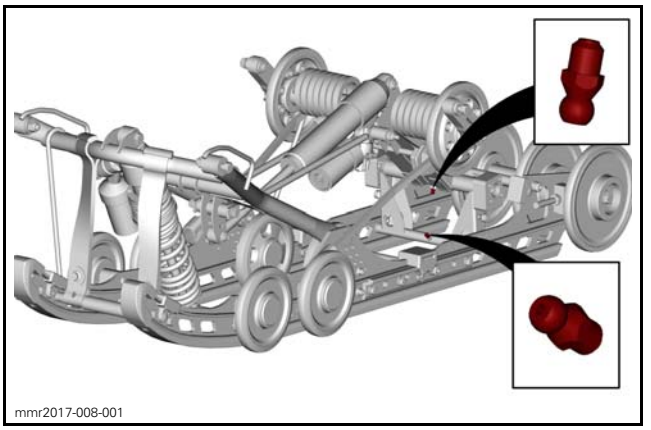
1. Slider shoe
2. Molding lines
A. Minimum thickness: 1 mm (.04 in)

NOTICE **Slider shoes must always be replaced in pairs.**

LUBRICATING THE REAR SUSPENSION

Lubricate the following suspension pivots at grease fittings.

SERVICE PRODUCT
SYNTHETIC SUSPENSION GREASE (P/N 779163)

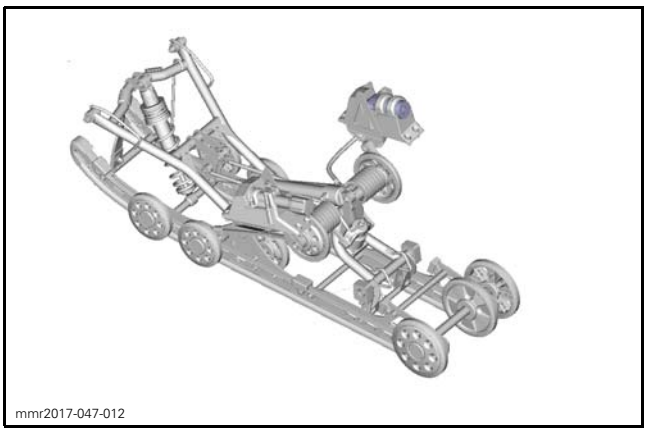


TYPICAL

PROCEDURES

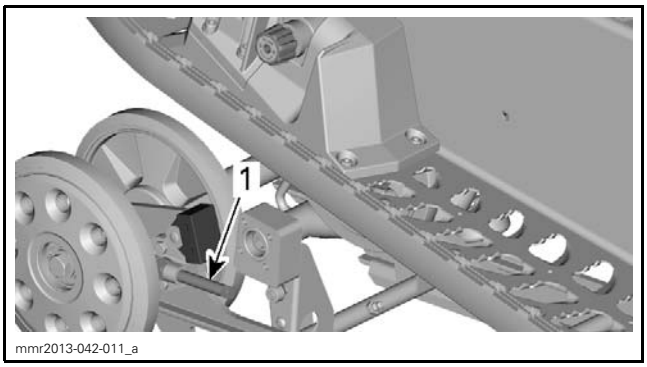
NOTE: Parts can be replaced without suspension removal, unless otherwise noted.

SUSPENSION ASSEMBLY


mmr2017-047-012

Removing Suspension Assembly

1. Lift rear of vehicle and support it off the ground.
2. Completely loosen track tension by unscrewing both adjustment screws.



mmr2013-042-011_a

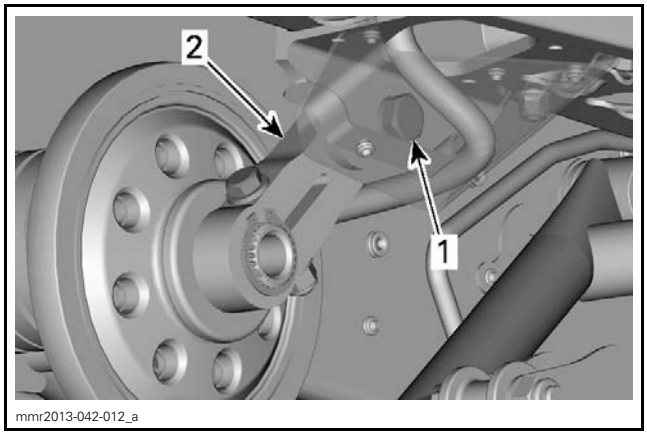
1. Adjustment screw

rMotion with Quick Adjust System

3. Remove quick adjuster control modules, refer to:
   - *SHOCK DAMPING QUICK ADJUSTER SYSTEM*
   - *SPRING PRELOAD QUICK ADJUSTER SYSTEM*.

All Models

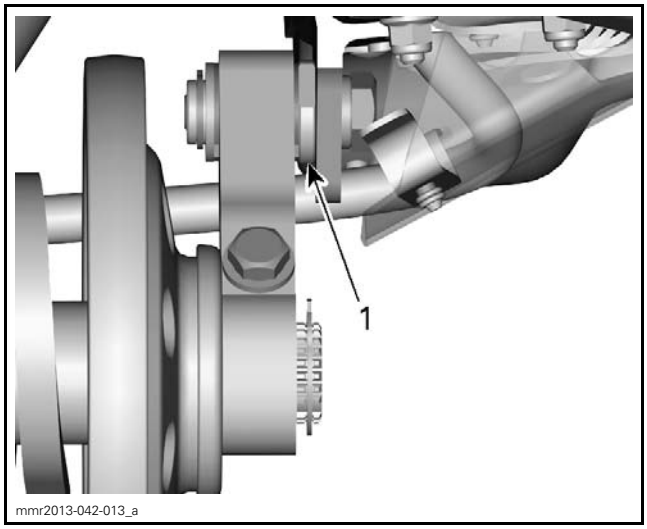
4. Lower the rear of vehicle just enough to support suspension.
5. Remove rear arm connecting rods retaining screws.



mmr2013-042-012_a

1. Retaining screw
2. Connecting rod

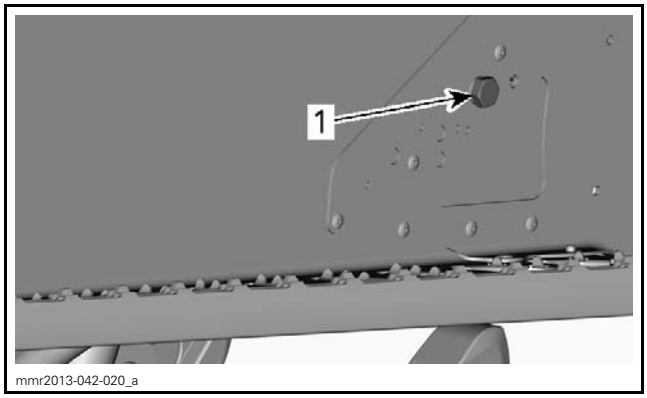
REQUIRED TOOL	
RMOTION SUSPENSION TOOL (P/N 529 036 234)	



mmr2013-042-013_a

1. rMotion suspension tool to be installed here

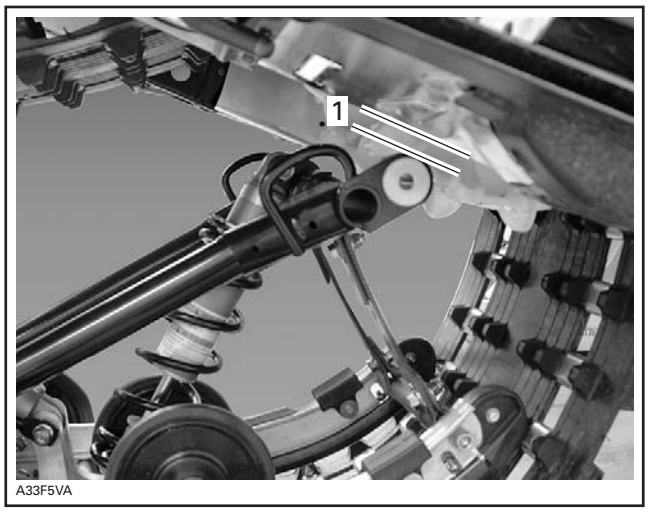
6. Remove front arm retaining bolts.



mmr2013-042-020_a

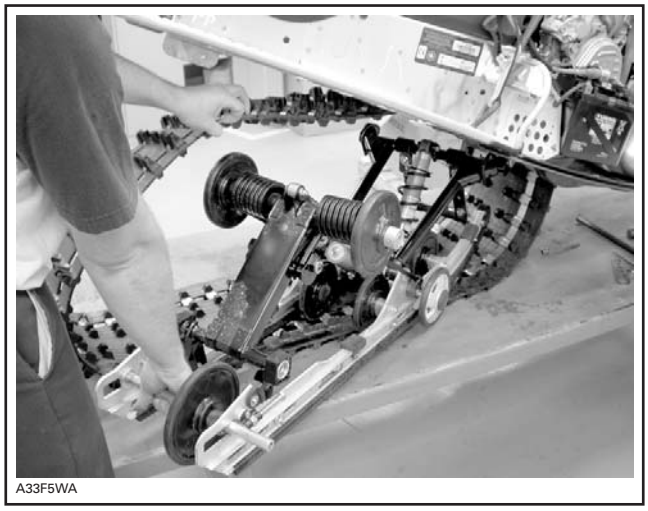
TYPICAL
1. Front arm bolt
2. Chaincase

7. Lift rear of vehicle until front arm as enough clearance to pass underneath tunnel.



TYPICAL
1. Enough clearance

8. Remove suspension assembly from vehicle.



TYPICAL — REMOVE SUSPENSION

Installing Suspension Assembly

Installation is the reverse of removal procedure. Pay attention to the following.

Install suspension into track with front portion first.

Tighten new screws to specification.

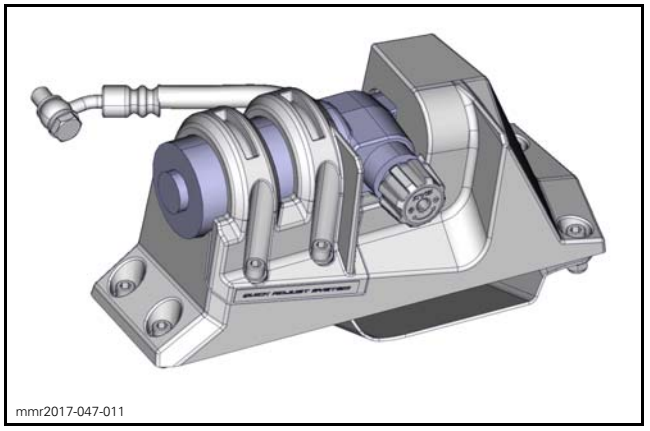
UPPER SUSPENSION ARM FASTENERS TIGHTENING TORQUE	
Front arm bolts	48 N•m ± 6 N•m (35 lbf•ft ± 4 lbf•ft)
Rear arm connecting rod screws	61 N•m ± 9 N•m (45 lbf•ft ± 7 lbf•ft)

Adjust track tension. Refer to *TRACK* subsection.

rMotion with Quick Adjust System

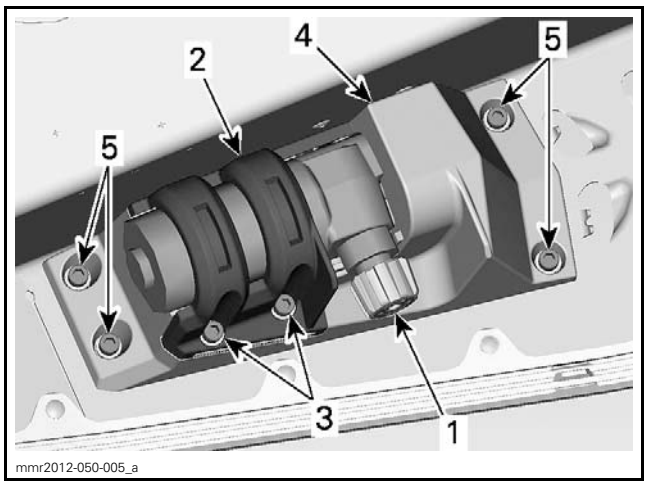
Install quick adjuster control modules, refer to:
- *SHOCK DAMPING QUICK ADJUSTER SYSTEM*
- *SPRING PRELOAD QUICK ADJUSTER SYSTEM*.

SHOCK DAMPING QUICK ADJUSTER SYSTEM



Removing Shock Damping Quick Adjuster Control Module

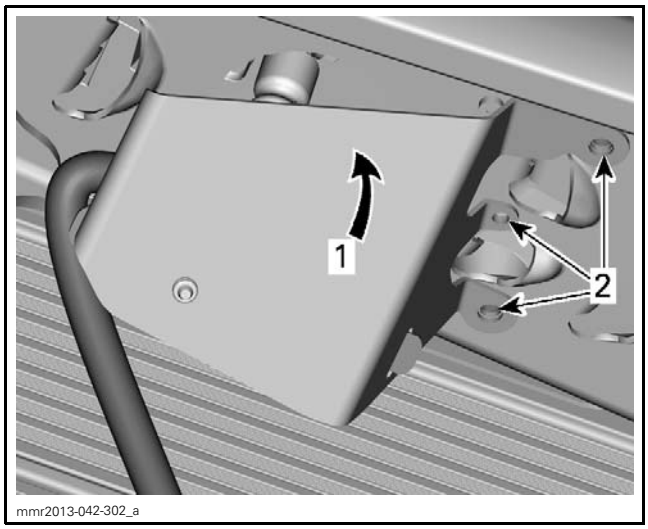
1. Remove the following parts:
   - Knob
   - Retaining clamp
   - Support.



CONTROL MODULE
1. Knob screw
2. Clamp
3. Clamp screws
4. Support
5. Support screws

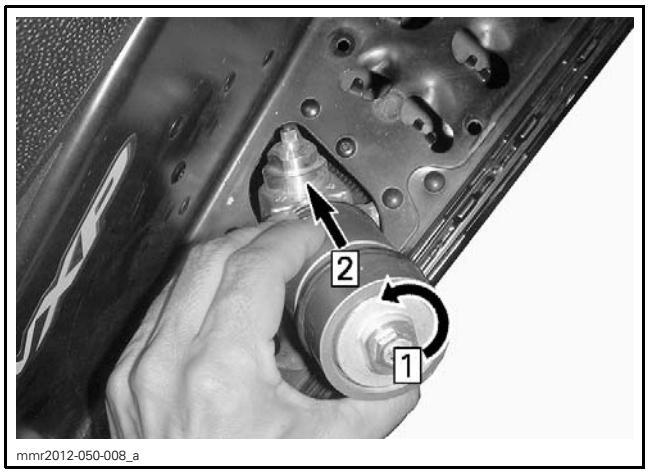
2. Remove front fasteners from hose guard.

3. Remove hose from its retainer tab and rotate hose guard outwards around rear rivet.



1. Pivot outwards
2. Front fasteners

4. Remove shock remote reservoir as follows:
   – Rotate.
   – Pass through tunnel opening.



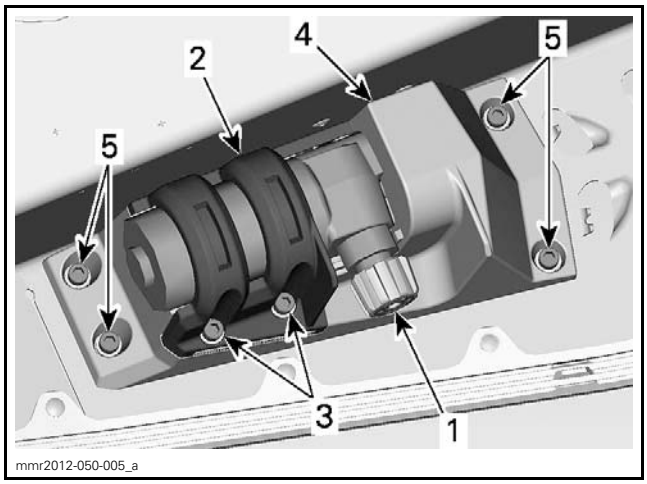
Step 1: Rotate
Step 2: Pass through tunnel opening

Installing Shock Damping Quick Adjuster Control Module

1. Align the hose guard front holes with the support front holes.

NOTE: No rivet needed at front of hose guard.

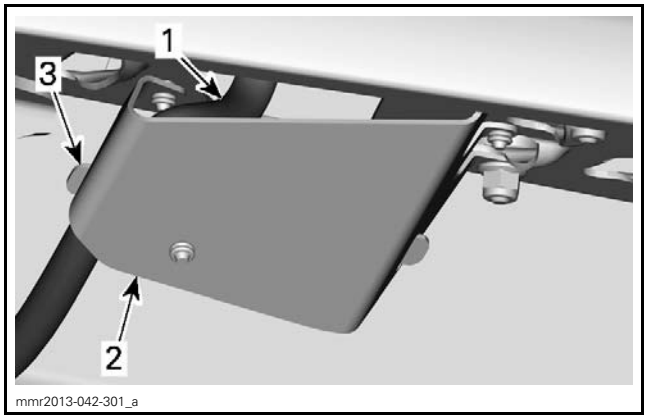
2. Install parts as follows:



CONTROL MODULE
1. Knob screw
2. Clamp
3. Clamp screws
4. Support
5. Support screws

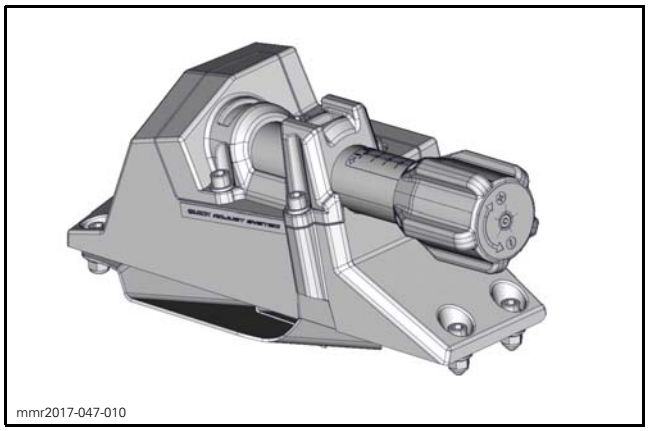
TIGHTENING TORQUE	
Support screws	5 N•m ± 1 N•m (44 lbf•**in** ± 9 lbf•**in**)
Clamp screws	2.5 N•m ± 0.5 N•m (22 lbf•**in** ± 4 lbf•**in**)
Knob screw	0.4 N•m ± 0.1 N•m (4 lbf•**in** ± 1 lbf•**in**)

3. Secure rear shock hose to hose guard bracket.



1. Hose
2. Hose guard
3. Hose guard bracket

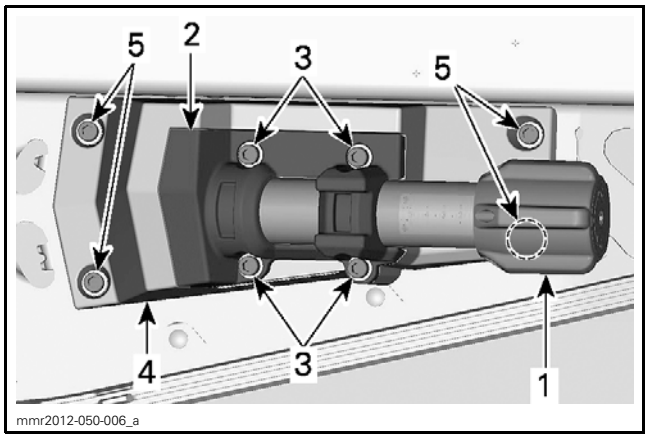
SPRING PRELOAD QUICK ADJUSTER SYSTEM


mmr2017-047-010

Removing Spring Preload Quick Adjuster Control Module

This procedure removes only the control module from the tunnel, without disconnecting the hose and will not necessitate bleeding the system.

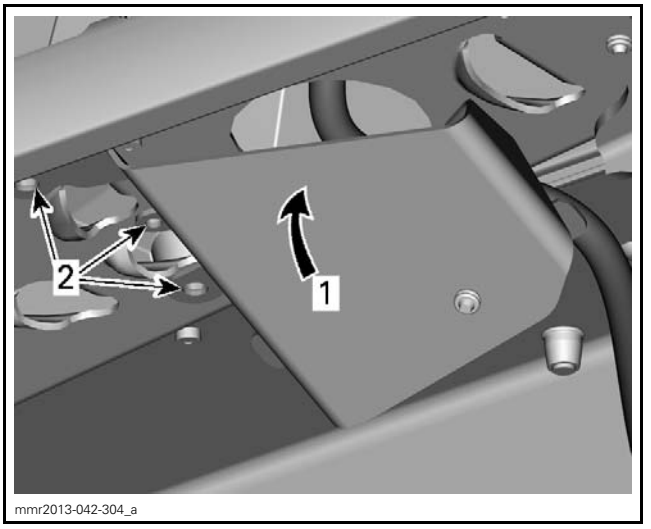
1. Remove the following parts:
   - Knob
   - Retaining clamp
   - Support.



mmr2012-050-006_a

SPRING PRELOAD QUICK ADJUSTER CONTROL MODULE
1. *Knob*
2. *Clamp*
3. *Clamp screws*
4. *Support*
5. *Support screws*

2. Remove front fasteners from hose guard.
3. Remove hose from its retainer tab and rotate hose guard outwards around rear rivet.



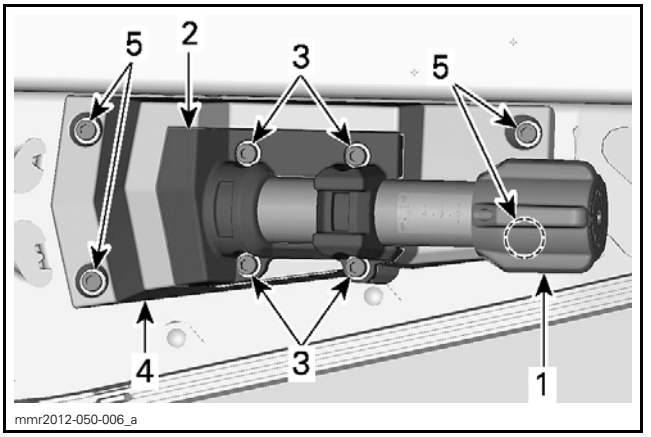
mmr2013-042-304_a

1. *Pivot outwards*
2. *Front fasteners*

4. Pass control cylinder through the opening in the tunnel.

Installing Spring Preload Quick Adjuster Control Module

1. Align the hose guard front holes with the support front holes.
2. Install parts as follows:

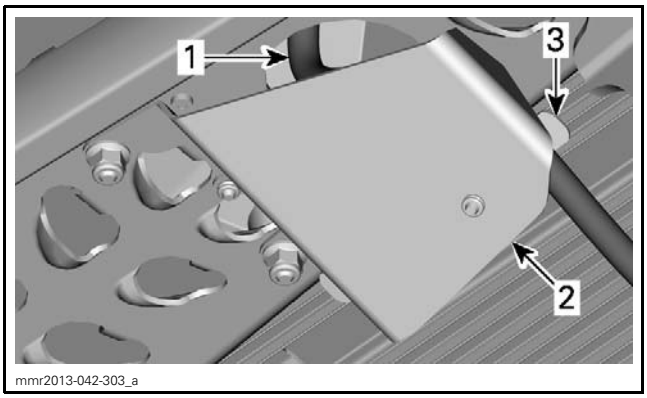


mmr2012-050-006_a

SPRING PRELOAD QUICK ADJUSTER CONTROL MODULE
1. *Knob*
2. *Clamp*
3. *Clamp screws*
4. *Support*
5. *Support screws*

TIGHTENING TORQUE	
Support screws	5 N•m ± 1 N•m (44 lbf•**in** ± 9 lbf•**in**)
Clamp screws	2.5 N•m ± 0.5 N•m (22 lbf•**in** ± 4 lbf•**in**)
Knob screw	1.5 N•m ± 0.5 N•m (13 lbf•**in** ± 4 lbf•**in**) + LOCTITE 243 (BLUE) (P/N 293 800 060)

3. Secure rear shock hose to hose guard bracket.



mmr2013-042-303_a

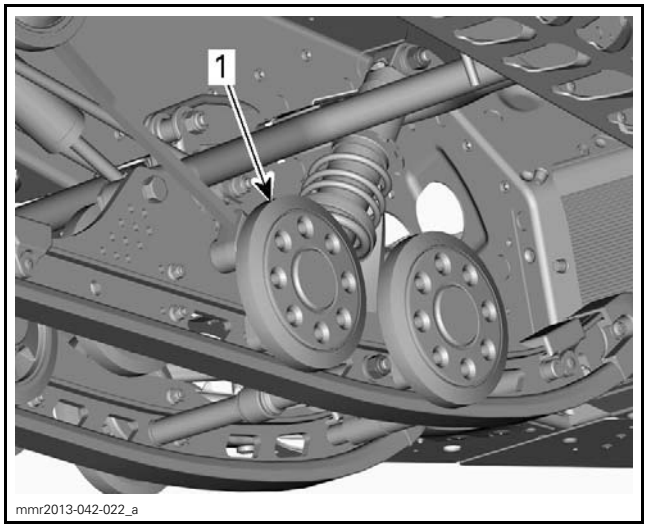
1. Hose
2. Hose guard
3. Hose guard bracket

Removing Spring Preload Quick Adjuster System

This procedure removes the following parts as an assembly and does not necessitate bleeding the system:

– Control module
– Hose
– Actuator.

1. Support the rear of vehicle just enough to remove load on the rear suspension.
2. Remove control module, refer to *SPRING PRELOAD QUICK ADJUSTER SYSTEM*.
3. Remove idler wheels to access spring support screws.



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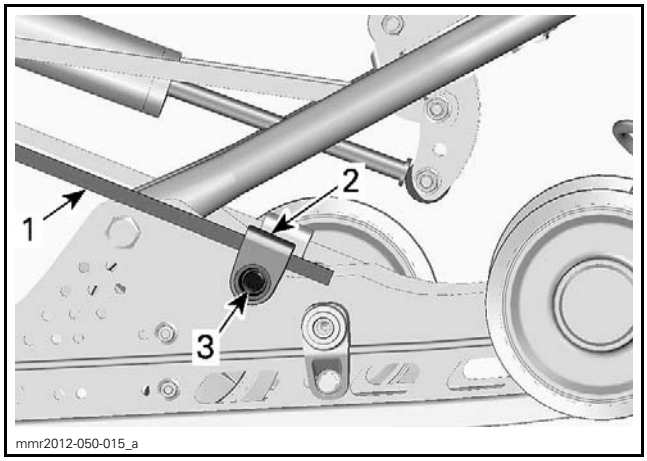
1. Idler wheel to be removed (on each side)

4. Firmly hold the spring supports and remove spring support bolts.

⚠ CAUTION Spring support are spring loaded.



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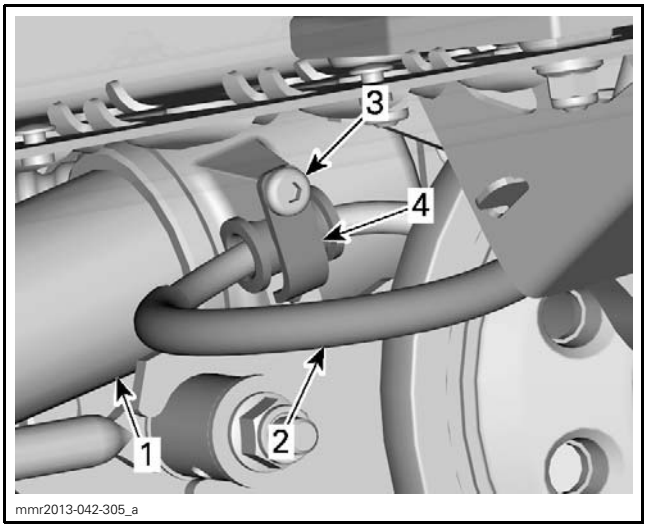
1. Spring
2. Spring support
3. Spring support bolt

5. Move spring supports with spring ends over the idler wheel supports and let them sit on the track.

NOTE: If the springs are still loaded, completely loosen track tension in order to make room to unload springs.

6. Move the other end of the springs off the spring adjuster actuator.
7. Remove hose retainer from shock assembly.



1. *Shock*
2. *Hose*
3. *Retaining screw*
4. *Hose retainer*

8. Remove actuator from rear arm.
9. Remove spring adjuster assembly.

Disassembling Spring Preload Quick Adjuster System

NOTE: System bleeding is required whenever the hose is disconnected.

NOTICE Thoroughly clean parts before disassembly. Work on a clean surface.

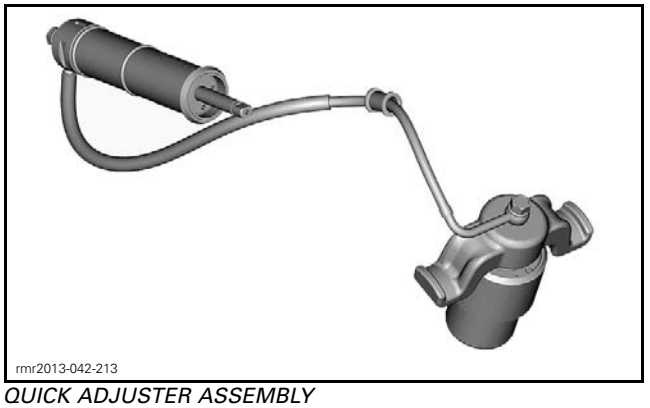
1. Set controller to the minimum preload.
2. Remove the banjo bolt(s) retaining the hose.
3. Drain fluid.

Replacing Spring Preload Quick Adjuster System Seals

NOTE: System bleeding is required whenever the hose is disconnected.

NOTICE Thoroughly clean parts before disassembly. Work on a clean surface.

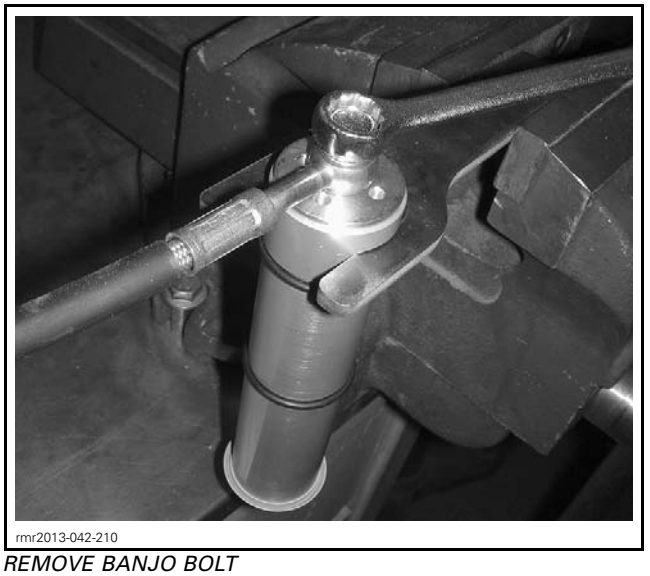
1. Remove quick adjuster assembly from vehicle. Refer to *REMOVING THE SPRING PRELOAD QUICK ADJUSTER CONTROL MODULE*.



QUICK ADJUSTER ASSEMBLY

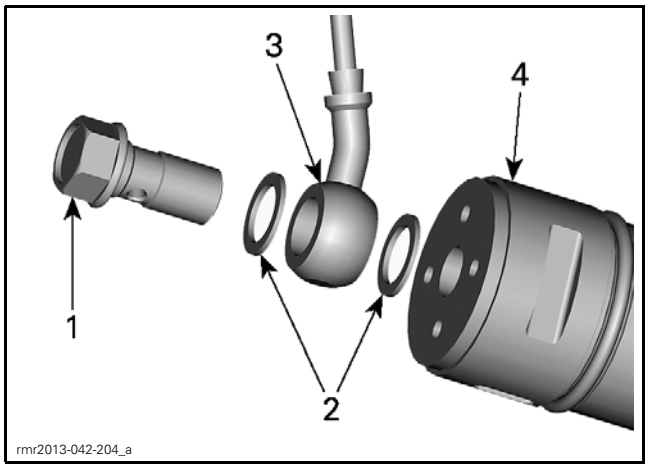
REQUIRED TOOL	
RMOTION MASTER CYLINDER KEY (P/N 529 036 254)	

2. Use retainer tool to hold cylinder while removing banjo bolt.



REMOVE BANJO BOLT

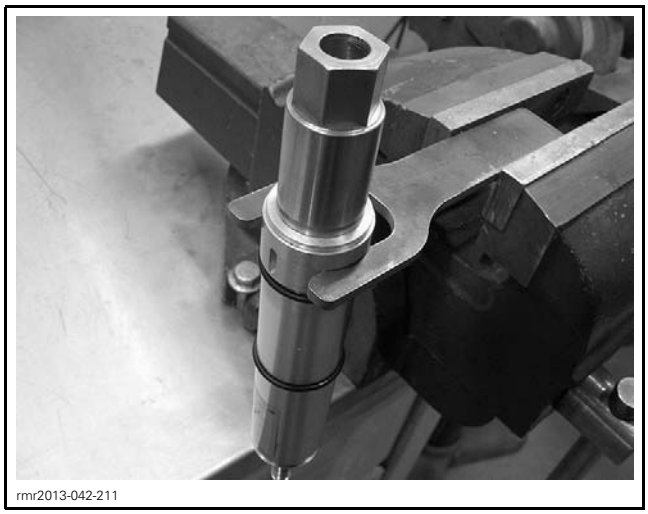
3. Remove banjo bolt, washers and hose from cylinder.



1. *Banjo bolt*
2. *Washer*
3. *Hose fitting*
4. *Cylinder body*

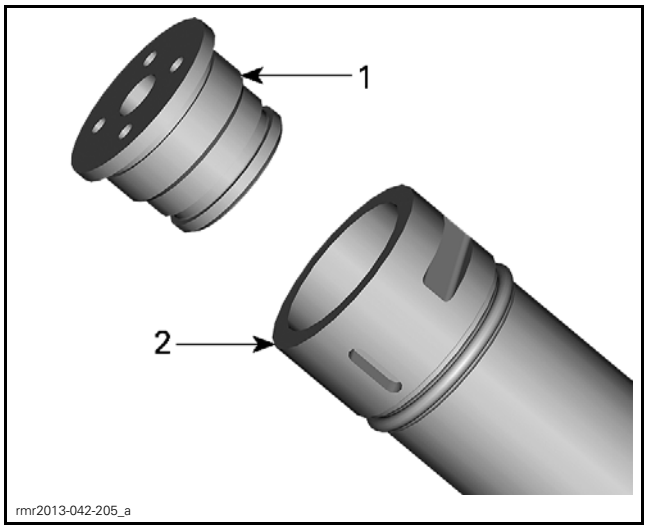
REQUIRED TOOL	
RMOTION MASTER CYLINDER KEY (P/N 529 036 254)	
RMOTION SOCKET (P/N 529 036 255)	

4. Hold cylinder body with tool and unscrew end cap using the rMotion socket.



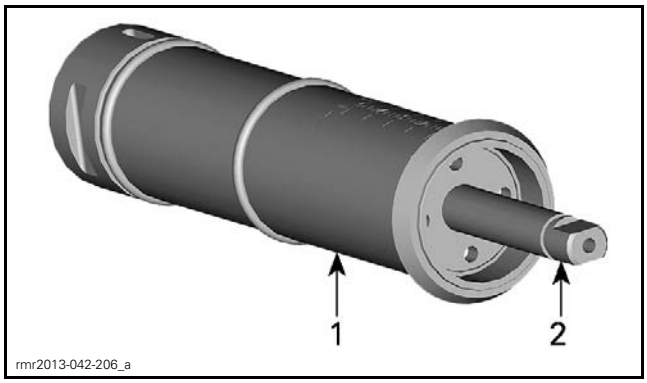
REMOVE END CAP

5. Remove end cap.



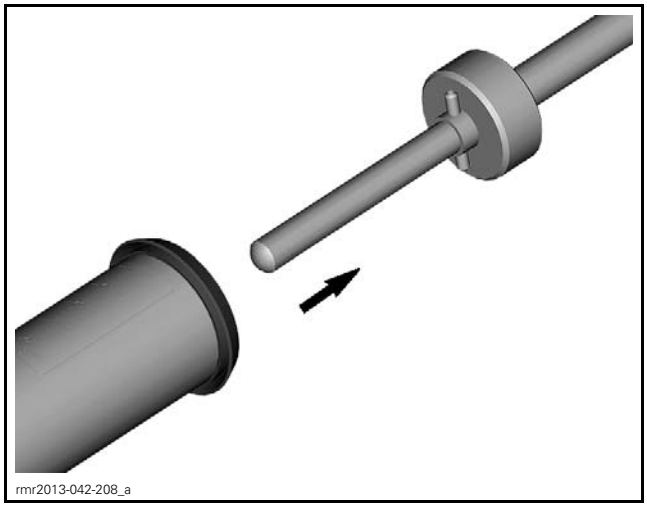
1. *End cap*
2. *Cylinder body*

6. At other end of cylinder, unscrew piston rod using same tools.



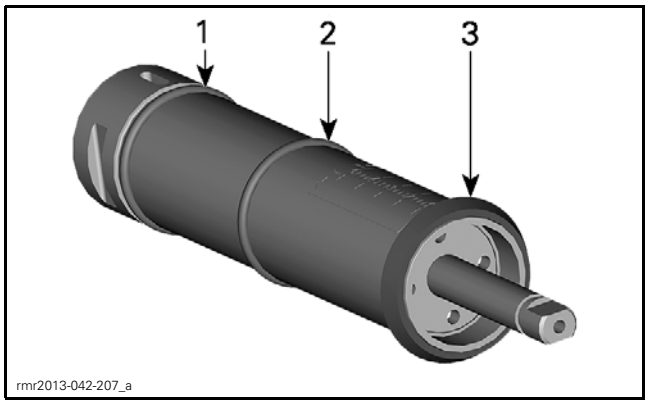
1. *Cylinder body*
2. *Piston rod*

7. Remove piston rod.



REMOVE PISTON ROD

8. Replace external seals if worn out or damaged.



1. Cylinder Body front seal
2. Cylinder body rear seal
3. Knob seal

9. Installation is the reverse of removal.

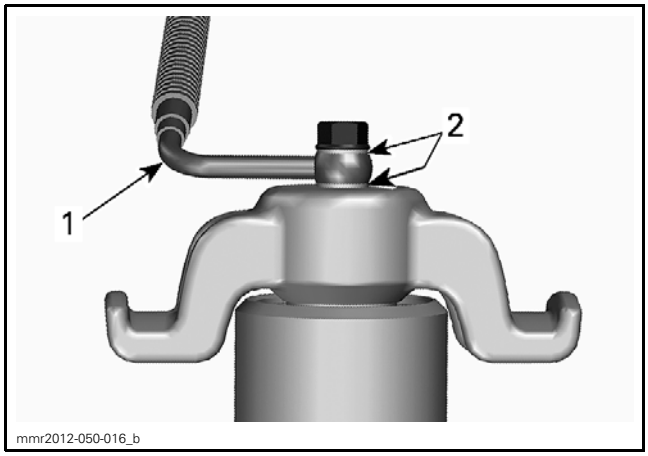
Bleeding and Reassembling Spring Preload Quick Adjuster System

NOTE: Actuator, control module and hose have to be separated from each other before carrying out bleeding procedure.

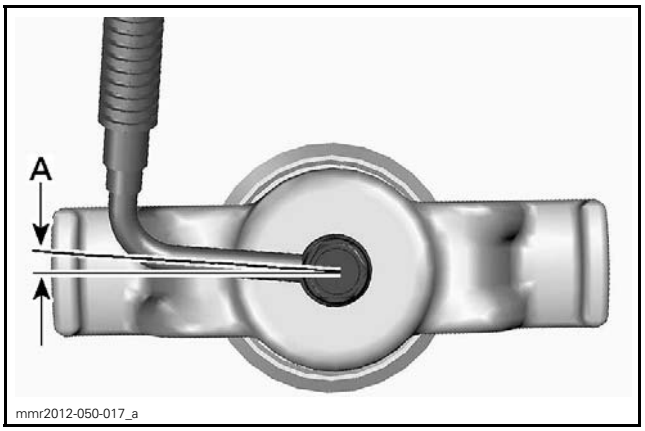
1. Fully extend the actuator by hand.
2. Add fluid in the actuator, see table.

ACTUATOR FILLING	
FLUID TYPE	QUANTITY
ATF Dexron III	Approximately 40 ml (1.35 U.S. oz)

3. Maintain actuator with threaded hole upwards and:
   - 3.1 Compress the actuator by precisely 15 mm (19/32 in).
   - 3.2 Fill until fluid reaches the top of the threads.
   - 3.3 Install hose with new sealing washers as shown.



1. Hose
2. Sealing washers



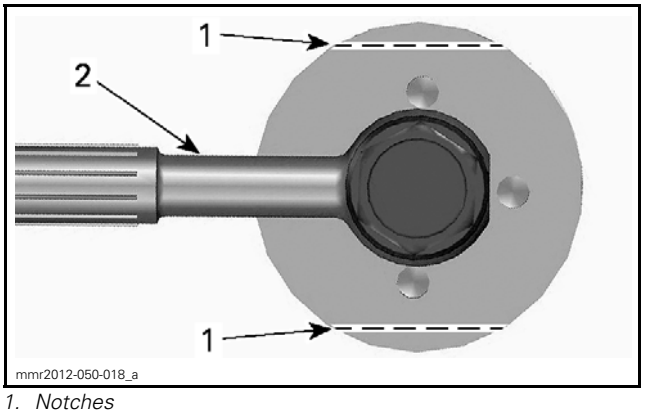
A. 5°

TIGHTENING TORQUE	
Banjo bolt	24.5 N•m ± 3.5 N•m (18 lbf•ft ± 3 lbf•ft)

4. With the hose open end up, compress the actuator by precisely 8 mm (5/16 in).

NOTE: Fluid should reach the open end of the hose.

5. Unscrew the control cylinder adjustment rod until it stops.
6. Using a small diameter punch through the M10 threaded hole, push the control cylinder piston all the way back.
7. With the threaded hole up, fill control cylinder until fluid reaches the top of the threads.
8. Install the hose on the control cylinder as shown.



1. Notches
2. Hose

NOTE: The hose must on be the opposite side of the decal on the control cylinder.

TIGHTENING TORQUE	
Banjo bolt	24.5 N•m ± 3.5 N•m (18 lbf•ft ± 3 lbf•ft)

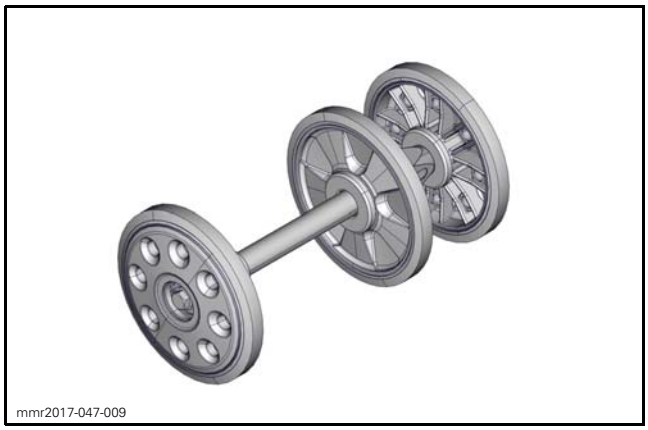
9. Verify system operation. The actuator full stroke should be 22 mm (7/8 in).

Installing Spring Preload Quick Adjuster System

Installation is the reverse of removal procedure, however, pay attention to the following:

Set the preload to the minimum using the control cylinder adjustment rod first.

REAR AXLE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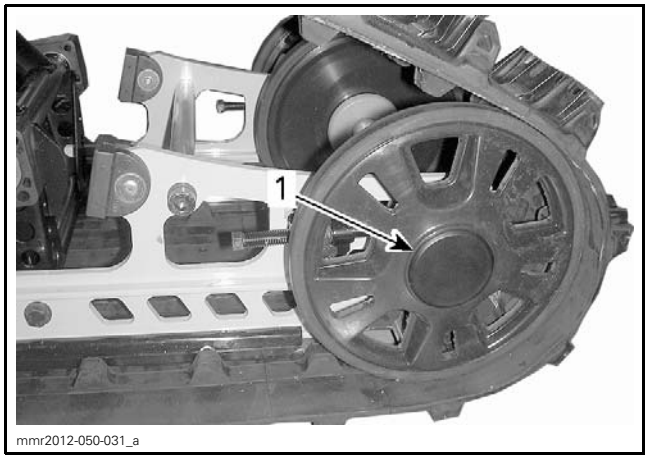
Removing Rear Axle

1. Lift rear of vehicle and support it off the ground.
2. Remove rear idler wheel caps.



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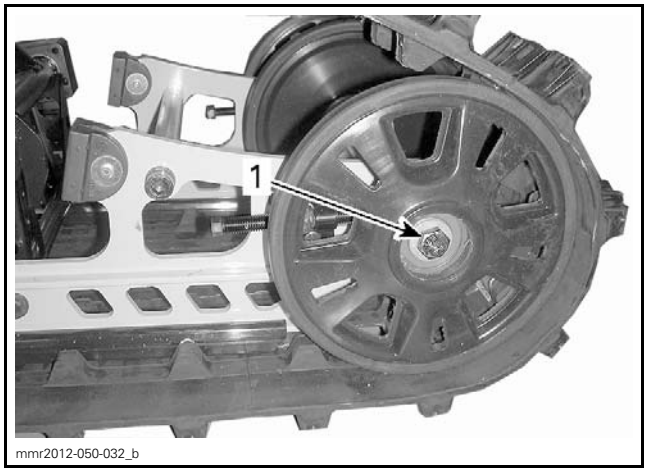
1. RH rear idler wheel cap

3. Loosen rear axle screws (one each side).



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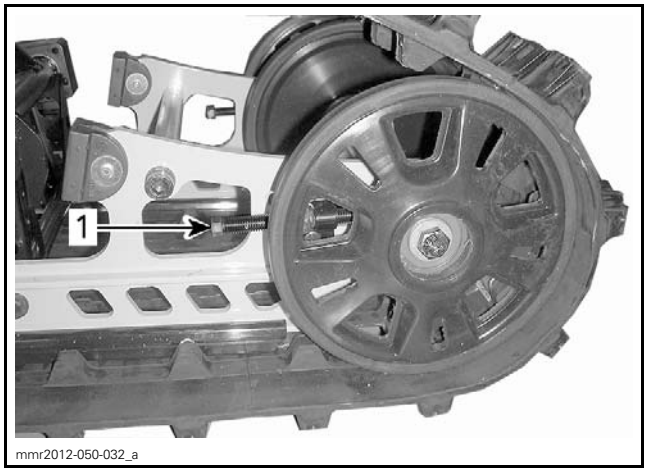
1. RH rear axle screw

4. Completely loosen track tension by unscrewing both adjustment screws.



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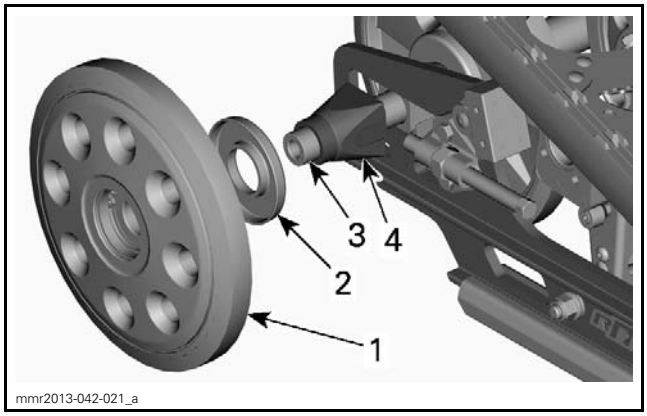
1. RH adjustment screw

5. Remove both rear axle screws.
6. Remove rear idler wheels, seals and wheel spacers.



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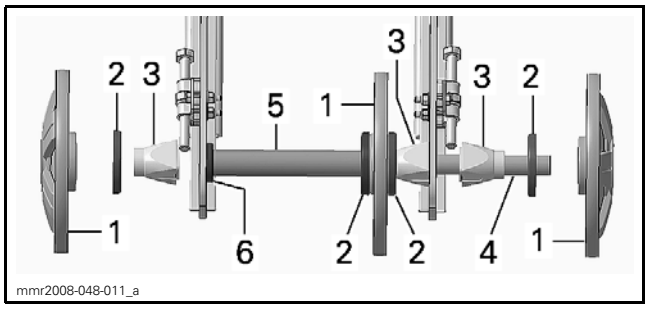
TYPICAL - RH SIDE SHOWN
1. Rear idler wheel
2. Seal
3. Rear axle
4. Wheel spacer

7. Pull out the rear axle.

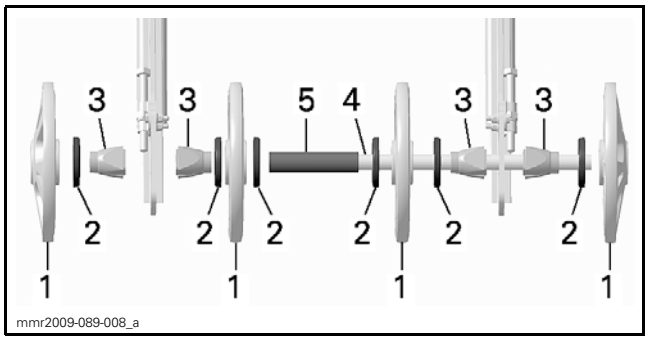
Installing Rear Axle

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

Make sure to position all parts correctly.

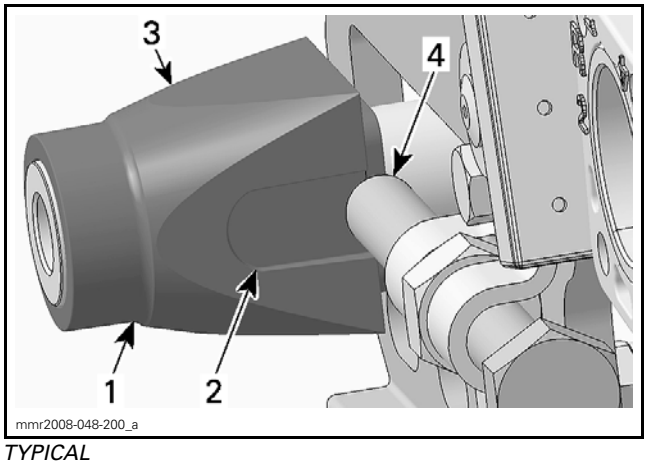


TYPICAL - 3 IDLER WHEELS LAYOUT
1. *Idler wheels*
2. *Seals*
3. *Wheel spacers*
4. *Rear axle*
5. *Rear axle spacer*
6. *Washer*



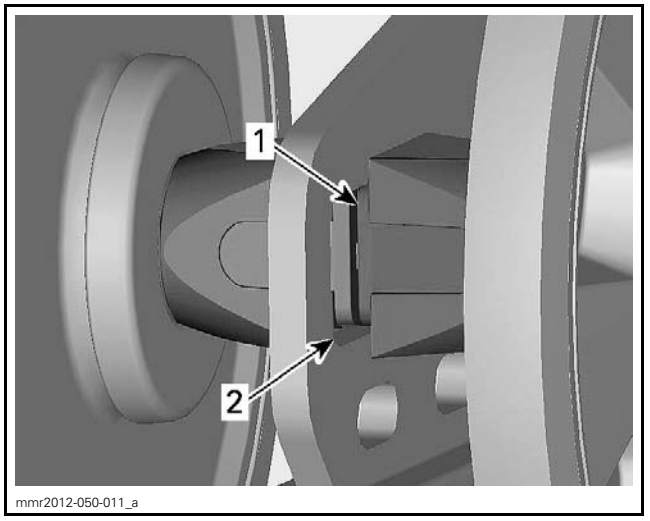
TYPICAL - 4 IDLER WHEELS LAYOUT
1. *Idler wheels*
2. *Seals*
3. *Wheel spacers*
4. *Rear axle*
5. *Rear axle spacer*

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*

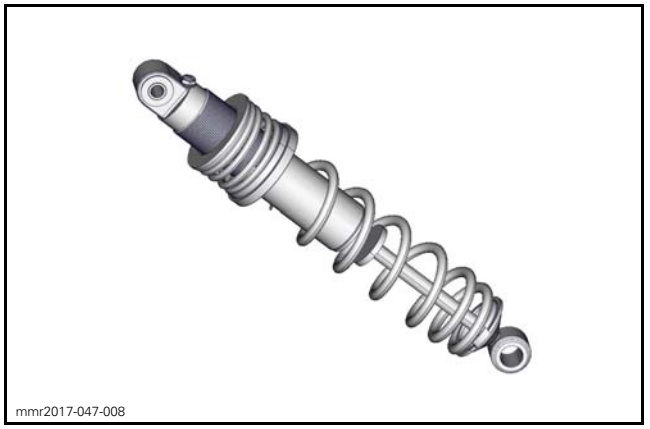
When tightening rear axle, make sure each wheel spacer protuberance is engaged into rail slot.



1. *Wheel spacer protuberance*
2. *Rail slot*

Adjust track tension. Refer to *TRACK* subsection.

SHOCK ABSORBERS



Removing Rear Shock Absorber

1. Lift rear of vehicle and support it off the ground.

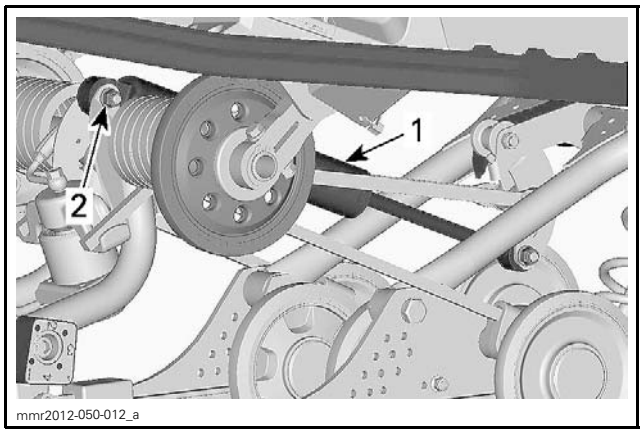
rMotion with Quick Adjust System

2. Carry out *REMOVING THE SHOCK DAMPING QUICK ADJUSTER CONTROL MODULE*, Refer to procedure in this subsection.

All Models

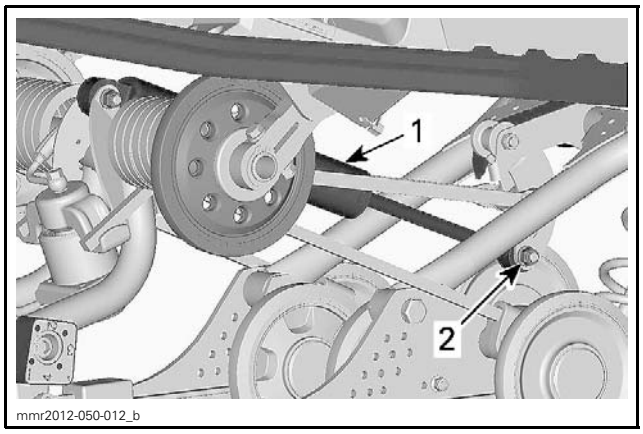
3. Remove the upper bolt.

NOTE: It may be necessary to lower the vehicle and slightly compress suspension to remove load.



TYPICAL
1. *Rear shock absorber*
2. *Upper bolt*

4. Remove the lower bolt.



TYPICAL
1. *Rear shock absorber*
2. *Lower bolt*

5. Remove rear shock absorber from the vehicle.

Installing Rear Shock Absorber

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

REAR SHOCK ABSORBER POSITIONING	
rMotion quick with adjust system	Body up hose on RH side
rMotion quick without adjust system	Body up reservoir downwards

Install new shock absorber retaining nuts and tighten to specified torque.

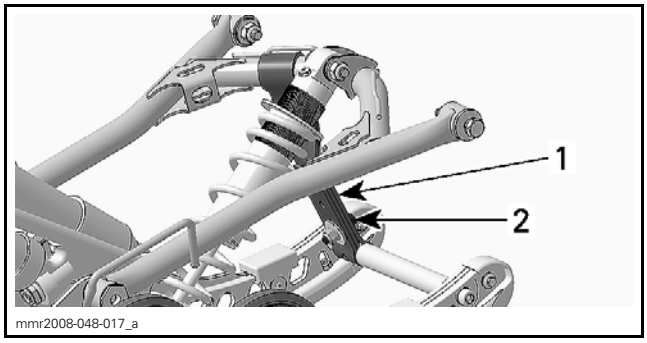
TIGHTENING TORQUE	
Shock absorber retaining bolts	24.5 N•m ± 3.5 N•m (18 lbf•ft ± 3 lbf•ft)

rMotion with Quick Adjust System

Carry out *INSTALLING THE SHOCK DAMPING QUICK ADJUSTER CONTROL MODULE*.

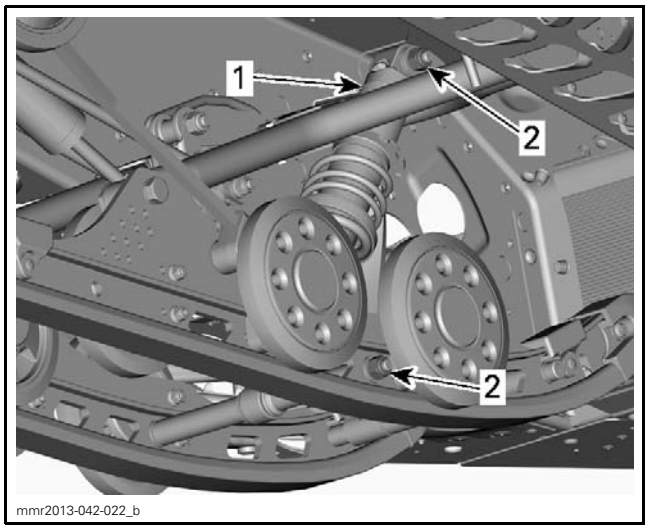
Removing Center Shock Absorber

1. Lift the rear of vehicle and support it off the ground.
2. Unfasten stopper strap.



TYPICAL
1. *Stopper strap*
2. *Stopper strap bolt*

3. Remove idler wheels to access lower retaining bolt.
4. Remove shock retaining bolts.



TYPICAL
1. *Center shock absorber*
2. *Retaining bolts*

5. Remove shock absorber from vehicle.

Inspecting Shock Absorber

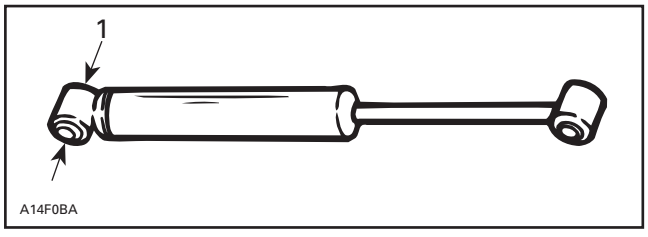
NOTE: All types of shock absorbers are covered in this topic, refer to *TECHNICAL SPECIFICATIONS* to identify the shock absorber relating to the vehicle model.

NOTE: Unless otherwise noted, shock absorber must be at normal room temperature (21°C ± 2°C (70°F ± 36°F)) during inspection.

MC Hydraulic Shock

1. Perform a visual inspection of the shock:
   - The shock must be exempt of any dent or scratch, especially on the rod.
   - Small dent on the shock body may not affect any performance or reliability of this shock.
   - Any defect on the rod, as small as it is, can lead to seal failure and oil leak.
   - If such defect (on rod) is detected, the shock must be replaced, and this will not be cover under warranty.
2. Secure the shock body end in a vise, clamping on eyelet, with its rod upward.

NOTICE **Do not clamp directly on shock body.**



1. Shock body eyelet

3. Examine shock for leaks. Extend and compress the piston at least 5 complete strokes with its rod upward.
4. Check that shock moves smoothly and with uniform resistance over its entire stroke.

NOTE: For the first 5 complete strokes, it could be normal to note uneven resistance.

5. Check the following conditions that will denote a defective shock:
   - A skip or a hang back when reversing stroke at mid travel.
   - Seizing or binding condition except at extreme end of either stroke.
   - Oil leakage.
   - A gurgling noise, after completing one full compression and extension strokes.
6. If suspecting a shock is freezing, place shock in a freezer (temperature below 0°C (32°F)) for 4 hours.
7. Push down on rod and note its resistance. If shock is frozen it will be much more difficult to compress than one in normal condition.
8. If any faults are present, replace shock.

All HPG™ Shock (Including KYB PRO Series)

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)

NOTE: For the **HPG Variable Rate Shock**, it should be stiff for approximately the first 25 mm (1 in), then softer for about 50 mm (2 in), and stiffer again. This stiff/soft/stiff phenomenon shows the normal operation of VR shock.

3. Release shock from completely collapsed position and check result as per table.

HPG SHOCK EXCEPT VARIABLE RATE
– The shock should extend unassisted. – The rod must come out at a steady speed.

HPG VARIABLE RATE SHOCK
– The shock should extend unassisted. – Rod must come out slowly first, than faster and finally slow again for the last 25 mm (1 in).

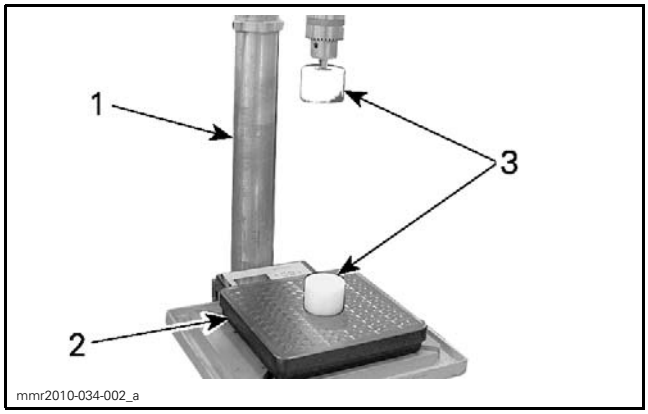
4. Proceed with *TESTING SHOCK ABSORBER COMPRESSION*. See procedure in this subsection.
5. If any faults are present, replace shock.

Testing Shock Absorber Compression

1. Ensure shock absorber is at normal room temperature (21°C ± 2°C (69.8°F ± 35.6°F).
2. Remove spring from shock absorber (if applicable).
3. Place a bench cale on a suitable drill press.

REQUIRED TOOL	
SHOCK ABSORBER SUPPORTS (P/N 529 036 186)	

4. Install the shock absorber support onto drill press.
5. Set bench scale units to **kg**.



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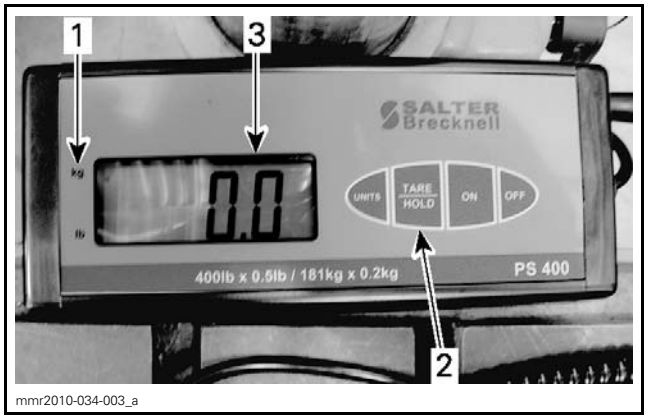
1. Drill press
2. Bench scale
3. Shock absorber supports

6. Press **TARE** to reset digits (must indicate zero).



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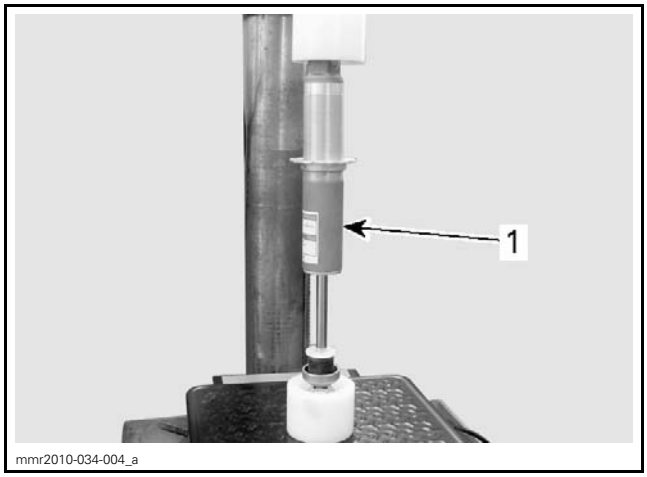
1. Units indicator lamp
2. TARE button
3. Digits

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.



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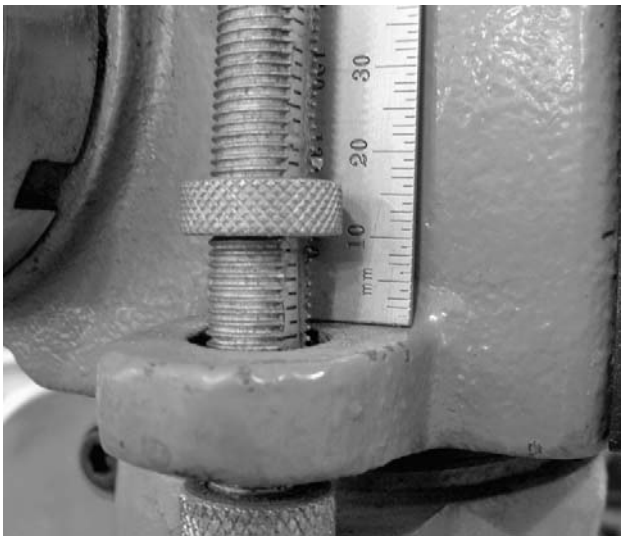
1. Shock body upwards

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

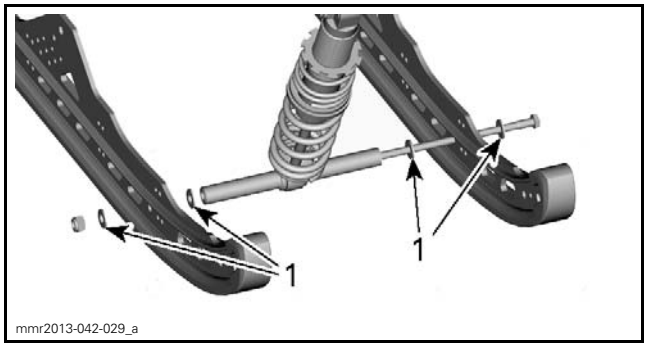
13. Load reading must be as per the following table.

MODEL	ROD DIAMETER	SERVICE RANGE
Every HPG (Plus/Plus R)	12.5 mm (1/2 in)	24 kgf ± 4 kgf (53 lbf ± 9 lbf)
All KYB PRO Series	16 mm (5/8 in)	39 kgf ± 5 kgf (86 lbf ± 11 lbf)

Installing Center Shock Absorbers

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

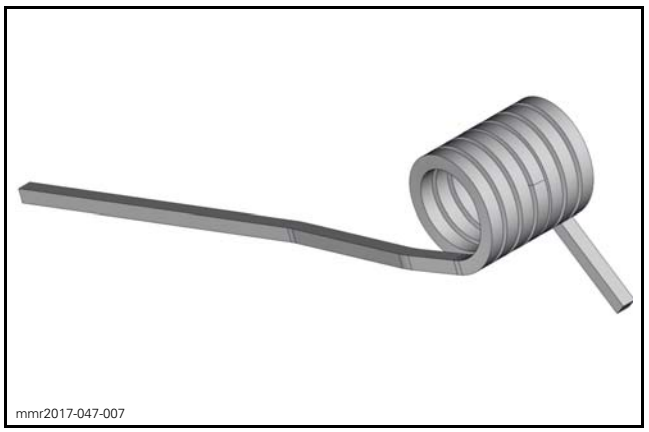
CENTER SHOCK ABSORBER POSITIONING	
HPG Plus	Body up Valve upwards
KYB PRO	Body up Reservoir on the RH side



mmr2013-042-029_a

BOTTOM OF SHOCK ABSORBER
1. Washers location

REAR SPRINGS


mmr2017-047-007

Removing Rear Springs

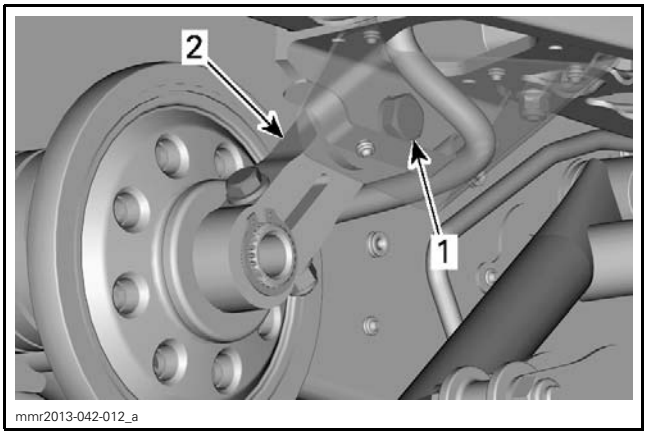
1. Support the rear of vehicle just enough to remove load on the rear suspension.
2. Set rear spring preload to the minimum.

rMotion with Quick Adjust System

3. Remove quick adjuster control modules, refer to:
   – *SHOCK DAMPING QUICK ADJUSTER SYSTEM*
   – *SPRING PRELOAD QUICK ADJUSTER SYSTEM*.

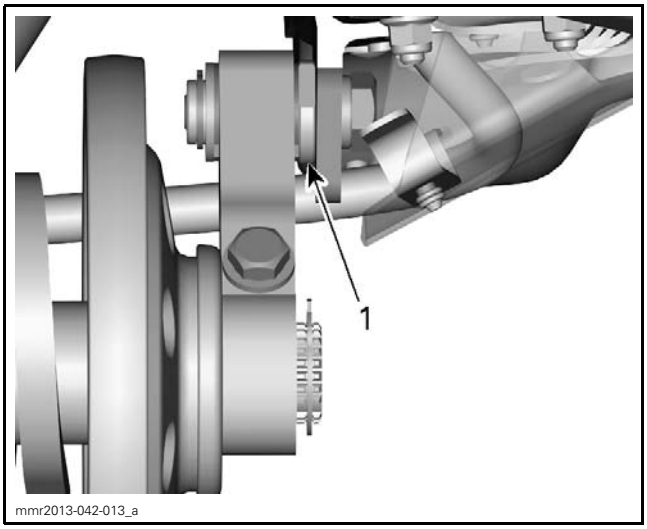
All Models

4. Remove rear arm connecting rod retaining screws.



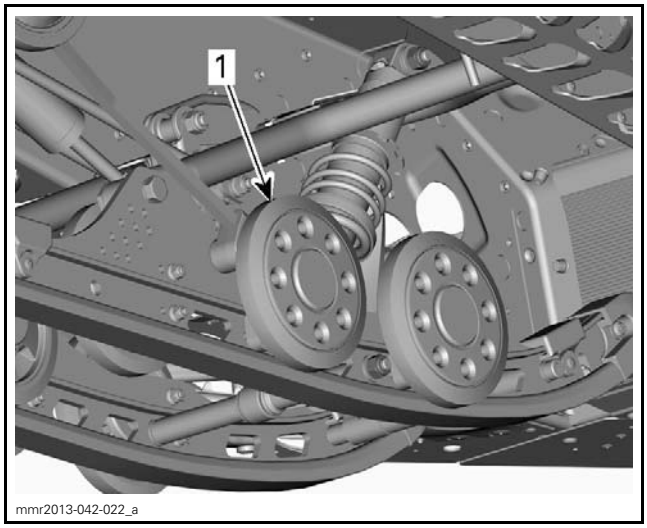
1. *Connecting rod retaining screw*
2. *Connecting rod*

REQUIRED TOOL	
RMOTION SUSPENSION TOOL (P/N 529 036 234)	



1. *rMotion suspension tool to be installed here*

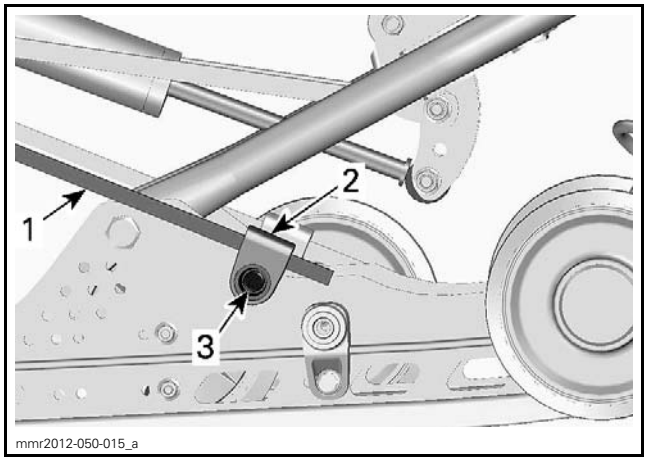
5. Remove idler wheels to have access to spring support screws.



1. *Idler wheel to be removed (on each side)*

6. Firmly hold the spring supports and remove spring support bolts.

⚠ CAUTION Spring support are spring loaded.



1. *Spring*
2. *Spring support*
3. *Spring support bolt*

7. Move spring supports with spring ends over the idler wheel supports and let them sits on the track.

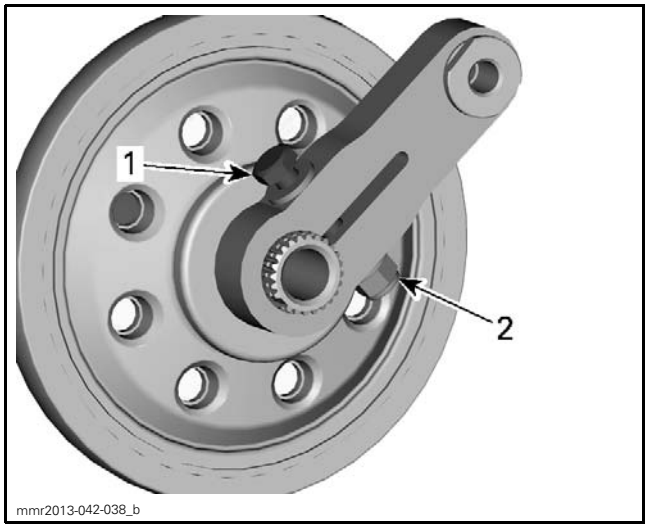
NOTE: If the springs are still loaded, completely loosen track tension in order to make room to unload springs.

8. Raise and support the rear of vehicle just enough to clear the rear arm connecting rods.

NOTICE rMotion with Quick Adjust system: Avoid stretching the hoses.

9. Remove connecting rods from the rear arm.
   9.1 Loosen bolt.
   9.2 Remove circlip.

9.3 Pull connecting rod off the rear arm.



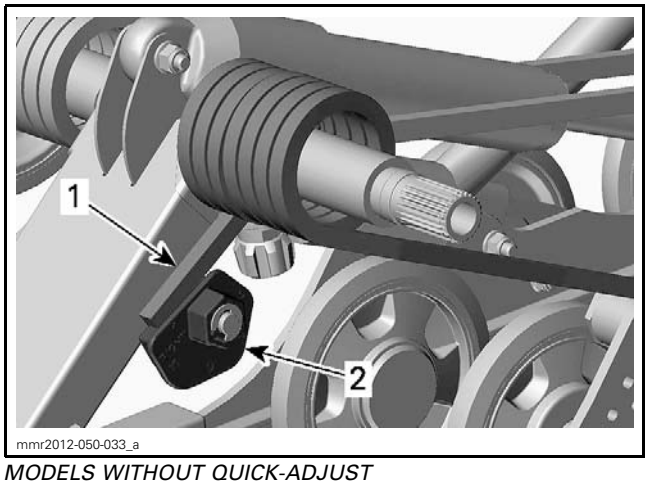
1. *Retaining screw*
2. *Bolt*

10. Remove upper idler wheels and hardware.
11. Remove rear spring from suspension.

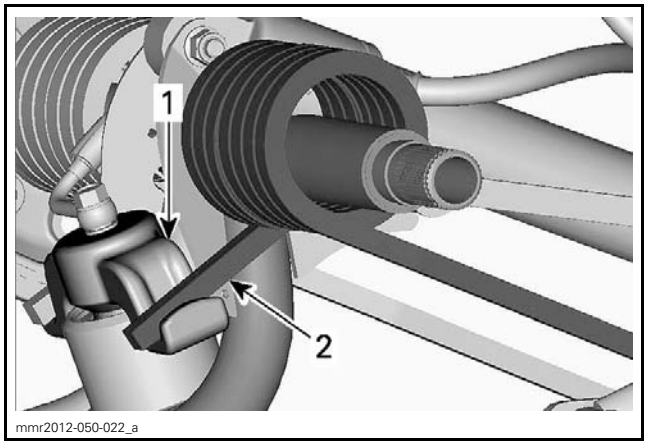
Installing Rear Springs

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

Make sure that spring end is in cam adjuster or actuator spring support.

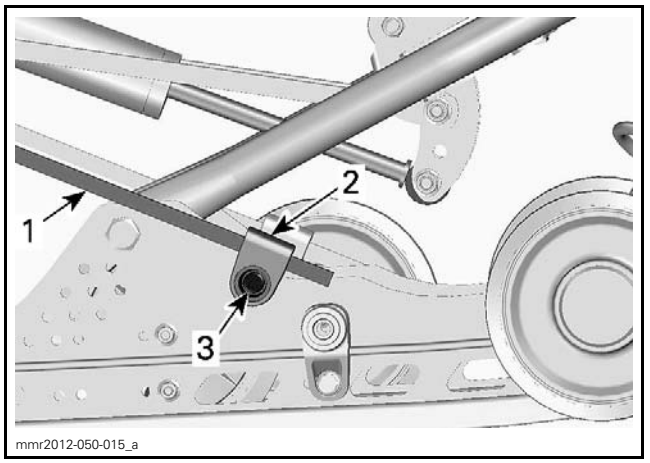


MODELS WITHOUT QUICK-ADJUST
1. *Rear spring*
2. *Cams*



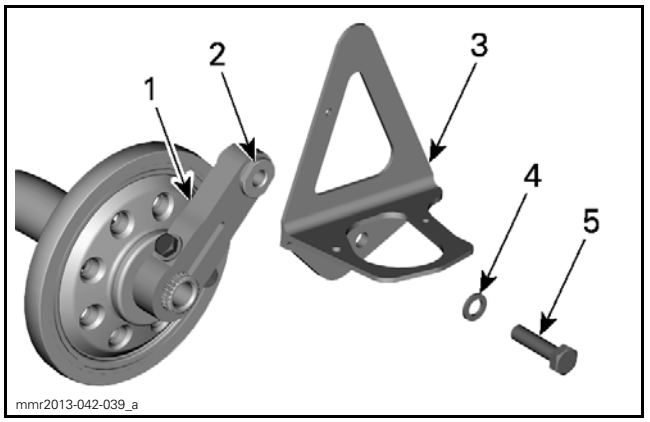
QUICK-ADJUST MODELS
1. *Actuator spring support*
2. *Rear spring*

Install spring supports upwards.



1. *Spring*
2. *Spring support*
3. *Spring support bolt*

Install rear arm connecting rod inserts with the shoulder outwards.

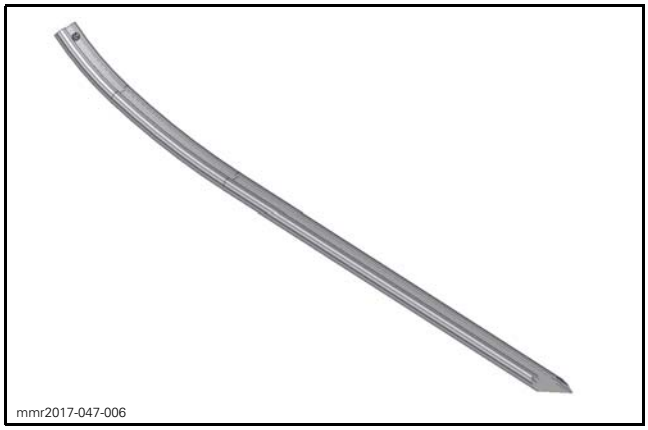


1. *Connecting rod*
2. *Insert with the shoulder outwards*
3. *Support*
4. *Washer*
5. *Retaining screw*

rMotion with Quick Adjust System

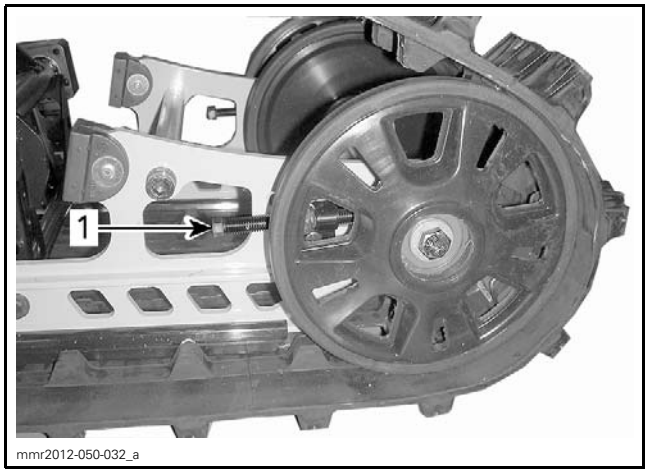
Install quick adjuster control modules, refer to:
- *SHOCK DAMPING QUICK ADJUSTER SYSTEM*
- *SPRING PRELOAD QUICK ADJUSTER SYSTEM*.

SLIDER SHOES


mmr2017-047-006

Removing Slider Shoes

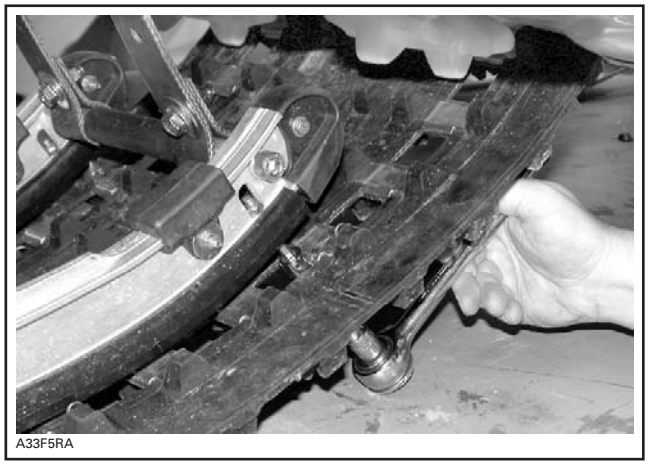
1. Lift rear of vehicle and support it off the ground.
2. Completely loosen track tension by unscrewing both adjustment screws.



mmr2012-050-032_a

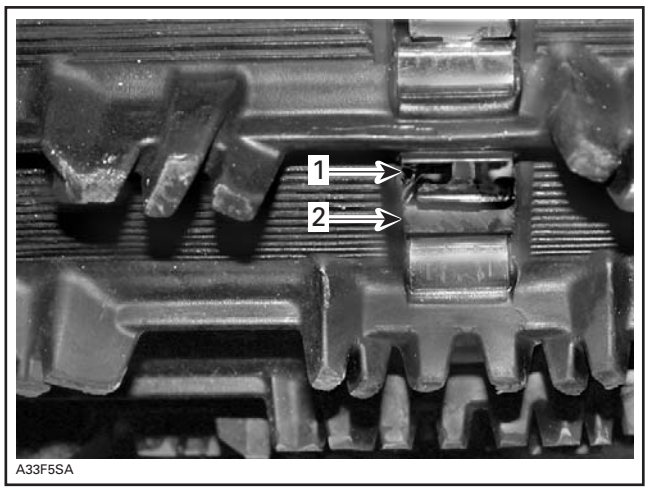
1. RH adjustment screw

3. Remove nut and screw of each runner.


A33F5RA

TYPICAL - REMOVE NUT AND SCREW OF EACH RUNNER

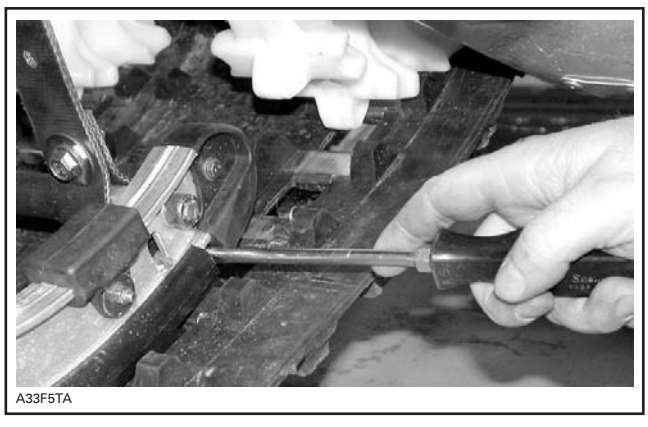
4. At the rear of vehicle, align a track window with slider shoe.



A33F5SA

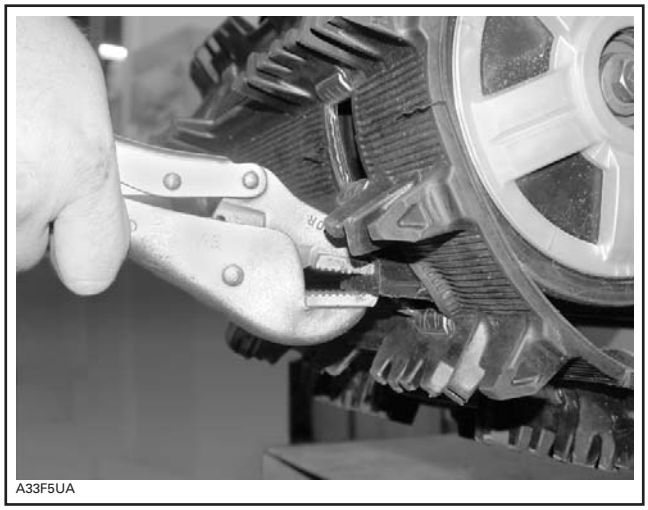
TYPICAL
1. Track window
2. Slider shoe

5. Lubricate widow edges.
6. Using a pry bar or a screwdriver, push slider shoe rearward until it comes in contact with track.


A33F5TA

TYPICAL - PUSH ON SLIDER SHOE

7. Using locking pliers, pull slider shoe through track window to remove.



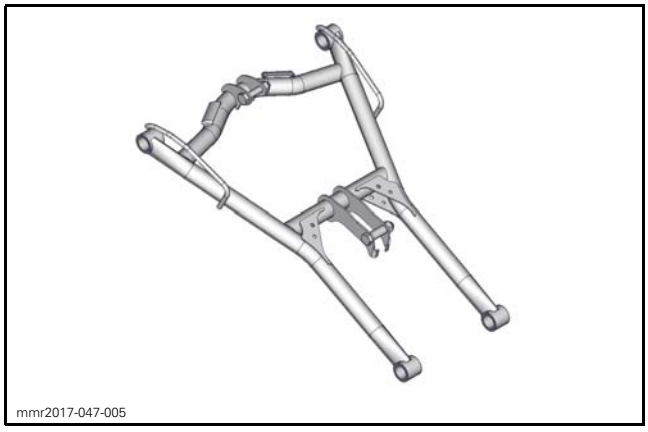
TYPICAL - PULL ON SLIDER SHOE TO REMOVE

Installing Slider Shoes

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

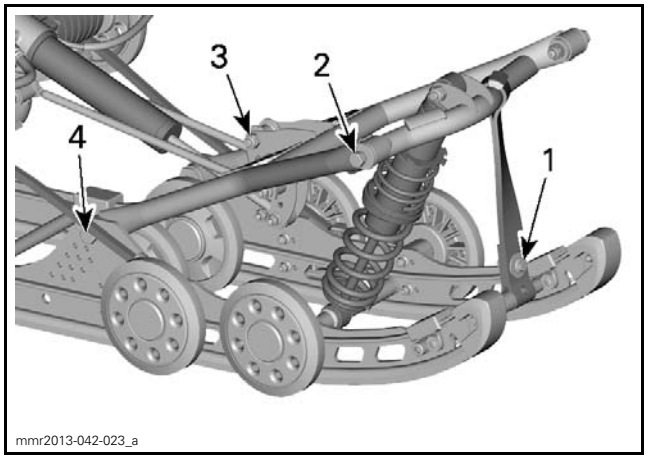
Make sure to insert slider shoe end with hole first.

FRONT ARM



Removing Front Arm

1. Proceed with *REMOVING THE SUSPENSION ASSEMBLY*. Refer to procedure in this subsection.
2. Unfasten stopper strap.
3. Remove the following fasteners:
   - Center shock to front arm
   - Front arm to rocker
   - Front arm to rail.



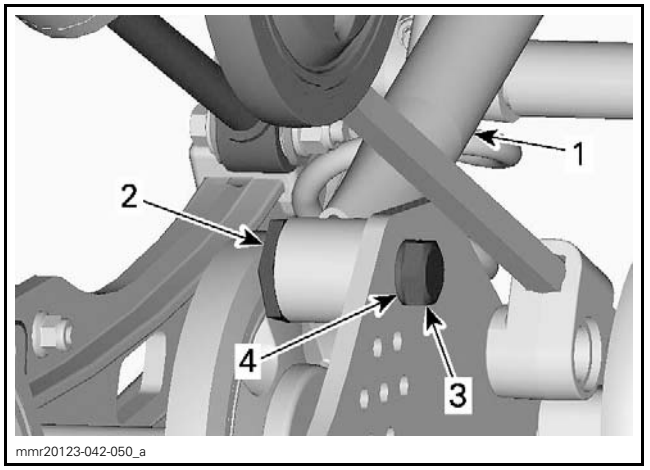
TYPICAL
1. *Stopper strap bolt*
2. *Center shock to front arm bolt*
3. *Front arm to rocker bolt*
4. *Front arm to rail screw*

4. Remove front arm from suspension assembly.

Installing Front Arm

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

Install front arm to rail fasteners as shown.

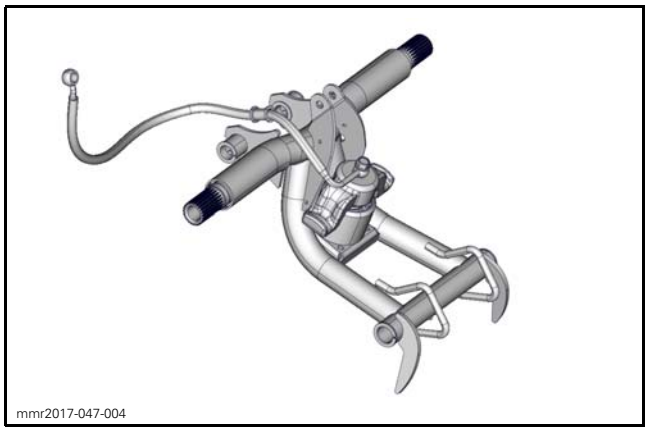


1. *Front arm*
2. *Insert (shoulder inward)*
3. *Front arm to rail screw*
4. *Washer*

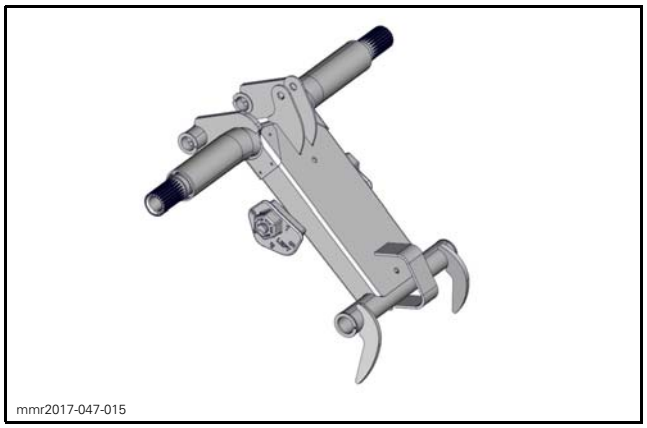
Install stopper strap on the LH side of the vehicle.

NOTICE **Incorrect stopper strap installation would cause suspension parts interference.**

REAR ARM



WITH QAS



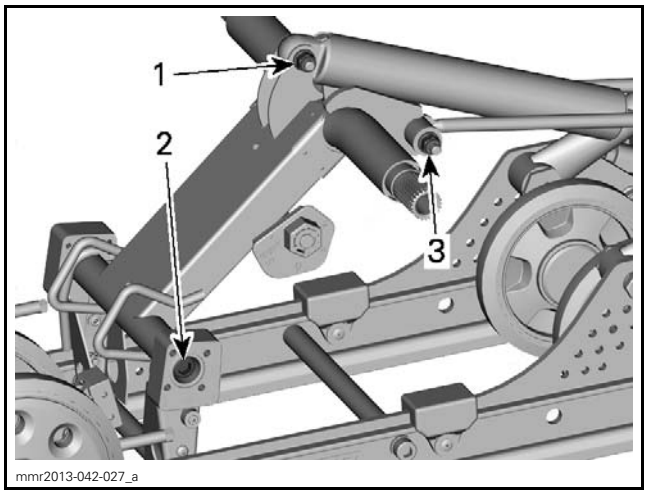
WITHOUT QAS

Removing Rear Arm

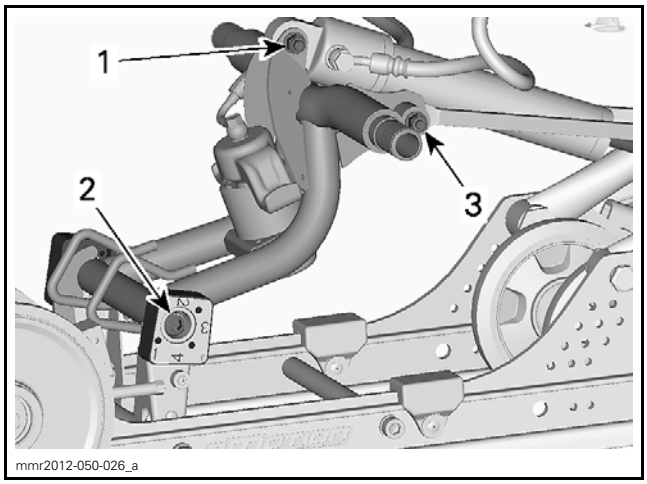
1. Remove rear springs, refer to *REMOVING REAR SPRINGS* in this subsection.

NOTE: On Quick Adjust models, set the spring preload actuator aside.

2. Remove the following fasteners:
   - Rear shock to rear arm
   - Rear arm to throttle rods
   - Coupling blocks retaining screws.



MODELS WITHOUT QUICK ADJUST SYSTEM
1. Rear shock to rear arm bolt
2. Coupling blocks retaining screw
3. Rear arm to throttle rods bolt



QUICK ADJUST SYSTEM
1. Rear shock to rear arm bolt
2. Coupling blocks retaining screw
3. Rear arm to throttle rods bolt

3. Remove rear arm from the vehicle.

Installing Rear Arm

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

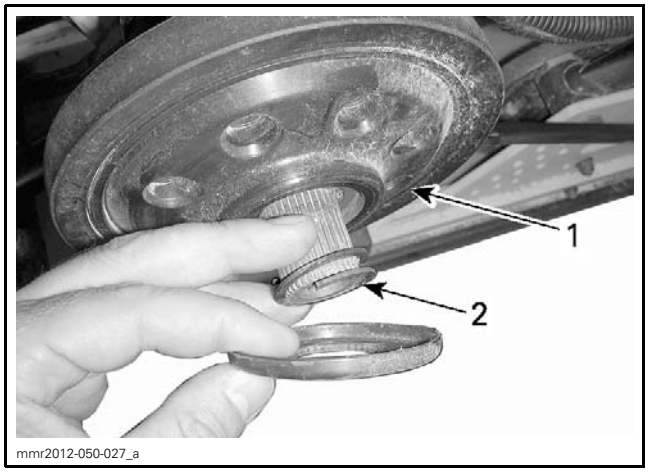
rMotion Without Quick Adjust System

Place rear arm grease fitting towards the front of the vehicle.

All Models

Install coupling block with new socket screws.

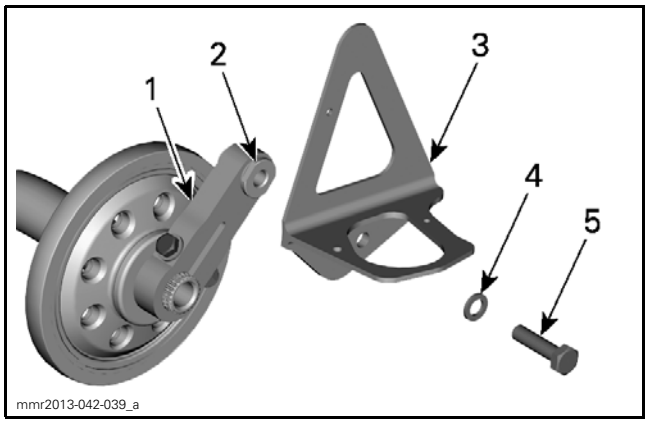
Install upper idler wheels as shown.



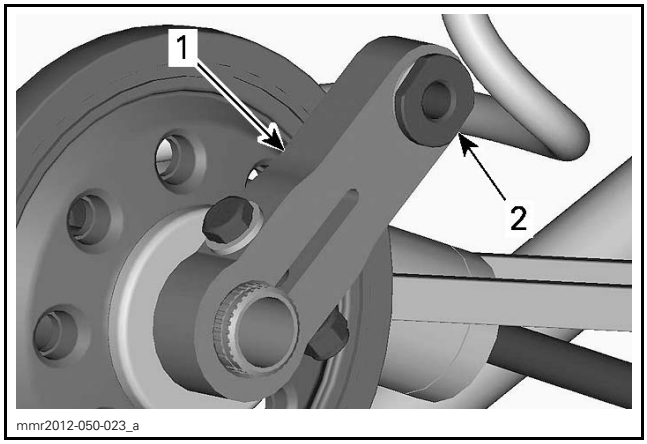
1. *Convex side out*
2. *Spring between wheel and plastic cover*

Install rear arm connecting rod inserts with the shoulder outwards.

Install circlip.



1. *Connecting rod*
2. *Shoulder outwards*
3. *Support*
4. *Washer*
5. *Retaining screw*

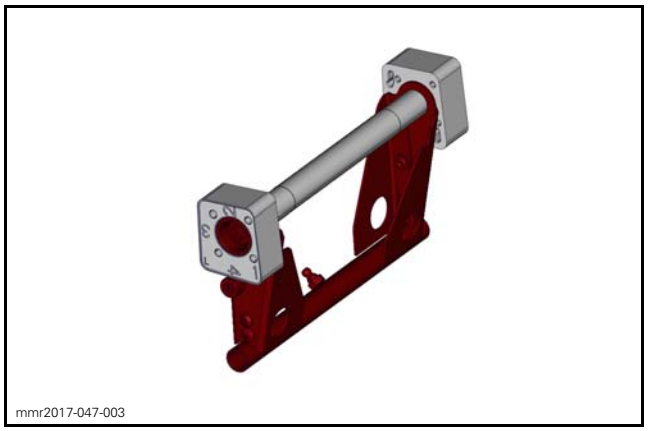


1. *Connecting rod*
2. *Shoulder outwards*

Install new connecting rod retaining screws.

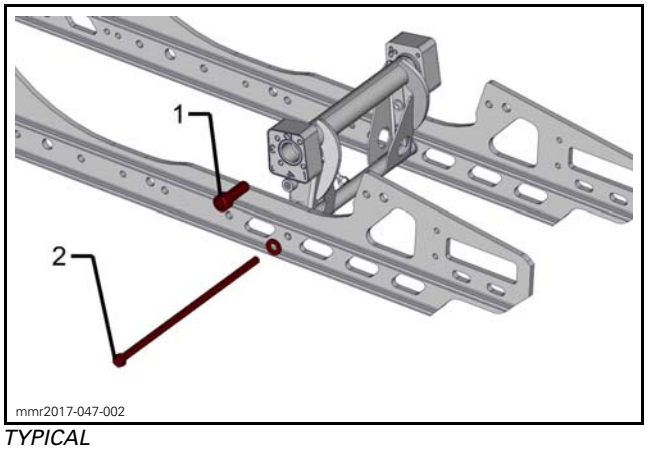
Lubricate rear arm pivot. Refer to *MAINTENANCE* in this subsection.

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. Set the rear springs preload to the minimum.
4. Remove rear spring supports.
5. Remove the following fasteners:
   - Coupling blocks retaining screws
   - Pivot arm to rails bolt.



TYPICAL
1. *Coupling block screw*
2. *Pivot arm to rails bolt*

6. Carefully remove pivot arm from rear arm.

Installing Pivot Arm

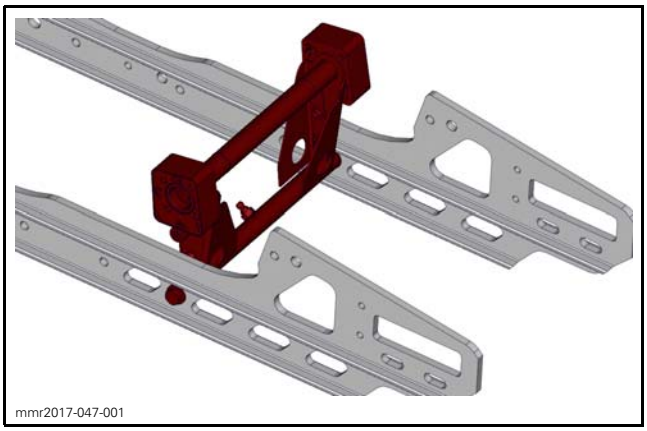
The installation is the reverse of the removal procedure. However, pay attention to the following.

Install new coupling block screws.

Install pivot arm with the grease fitting towards front of the vehicle.

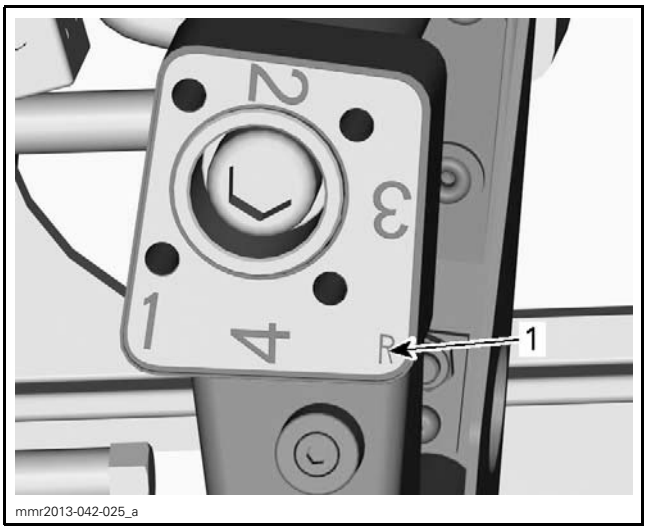
Lubricate pivot arm. Refer to *MAINTENANCE* in this subsection.

COUPLING BLOCKS


mmr2017-047-001

Replacing Coupling Blocks

LH and RH coupling blocks are different. There is a molded "R" (RH side) or "L" (LH side) on the back face of the coupling blocks.



mmr2013-042-025_a

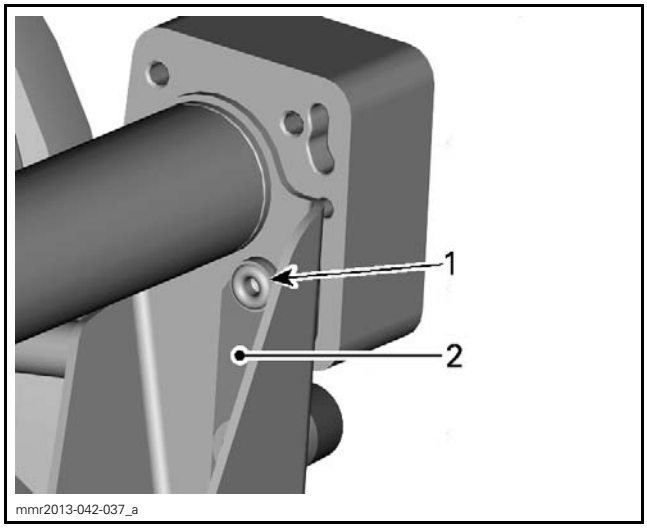
1. Side identification

Install new coupling block screws.

Set the coupling blocks to the same position on both sides.

MODELS	FACTORY BLOCK POSITION
All models	1

Fit riveted pin through coupling block.



mmr2013-042-037_a

TYPICAL
1. Riveted pin
2. Spring pin

IDLER WHEELS AND SUPPORTS

Replacing Idler Wheels

Refer to the exploded views at the beginning of this subsection for parts layout and fasteners tightening torque.

STOPPER STRAP

Refer to the exploded views at the beginning of this subsection for parts layout and fasteners tightening torque.

NOTICE **Incorrect stopper strap installation would cause suspension parts interference.**

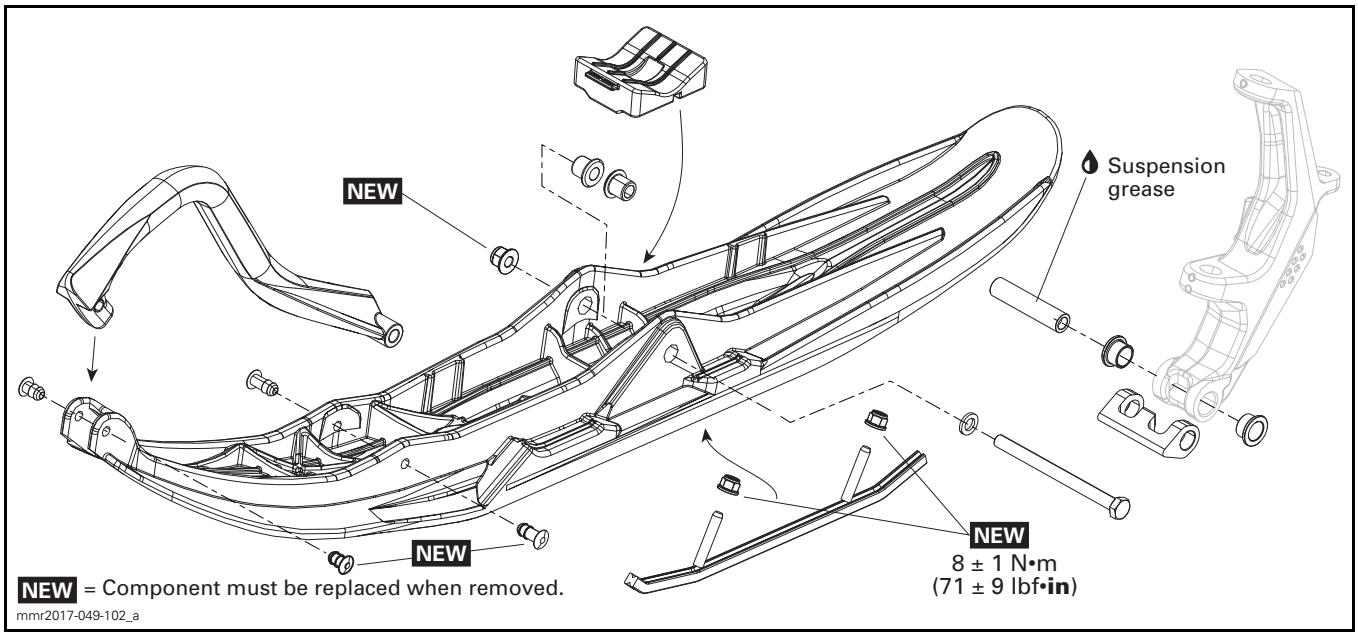
STEERING SYSTEM

SERVICE PRODUCTS

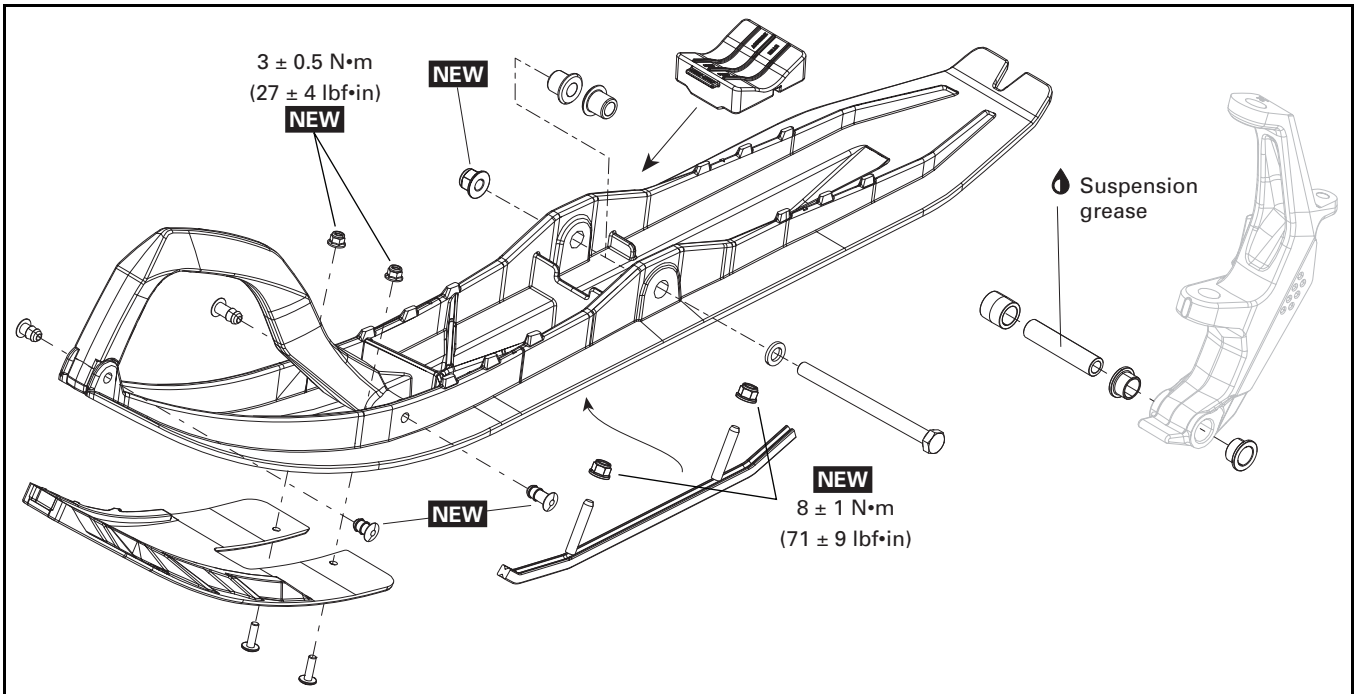
Description	Part Number	Page
SYNTHETIC GREASE	779162	323
SYNTHETIC SUSPENSION GREASE	779163	319, 336
XPS BRAKES AND PARTS CLEANER (USA)	219 701 705	322
XPS BRAKES AND PARTS CLEANER	219 701 776	322

SKIS (WITHOUT ADJUSTABLE RUNNER)

Trail and Crossover Models



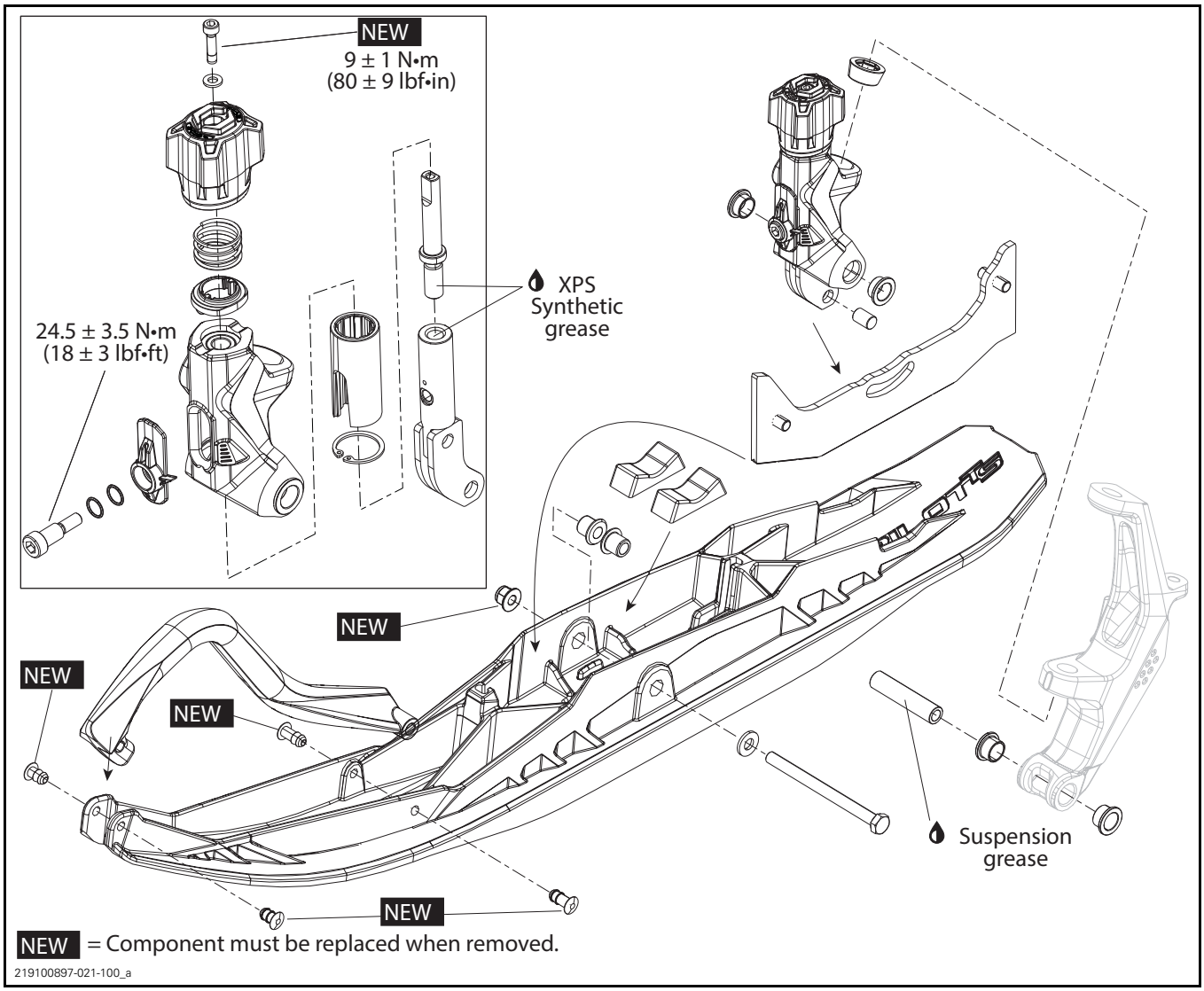
Mountain Models



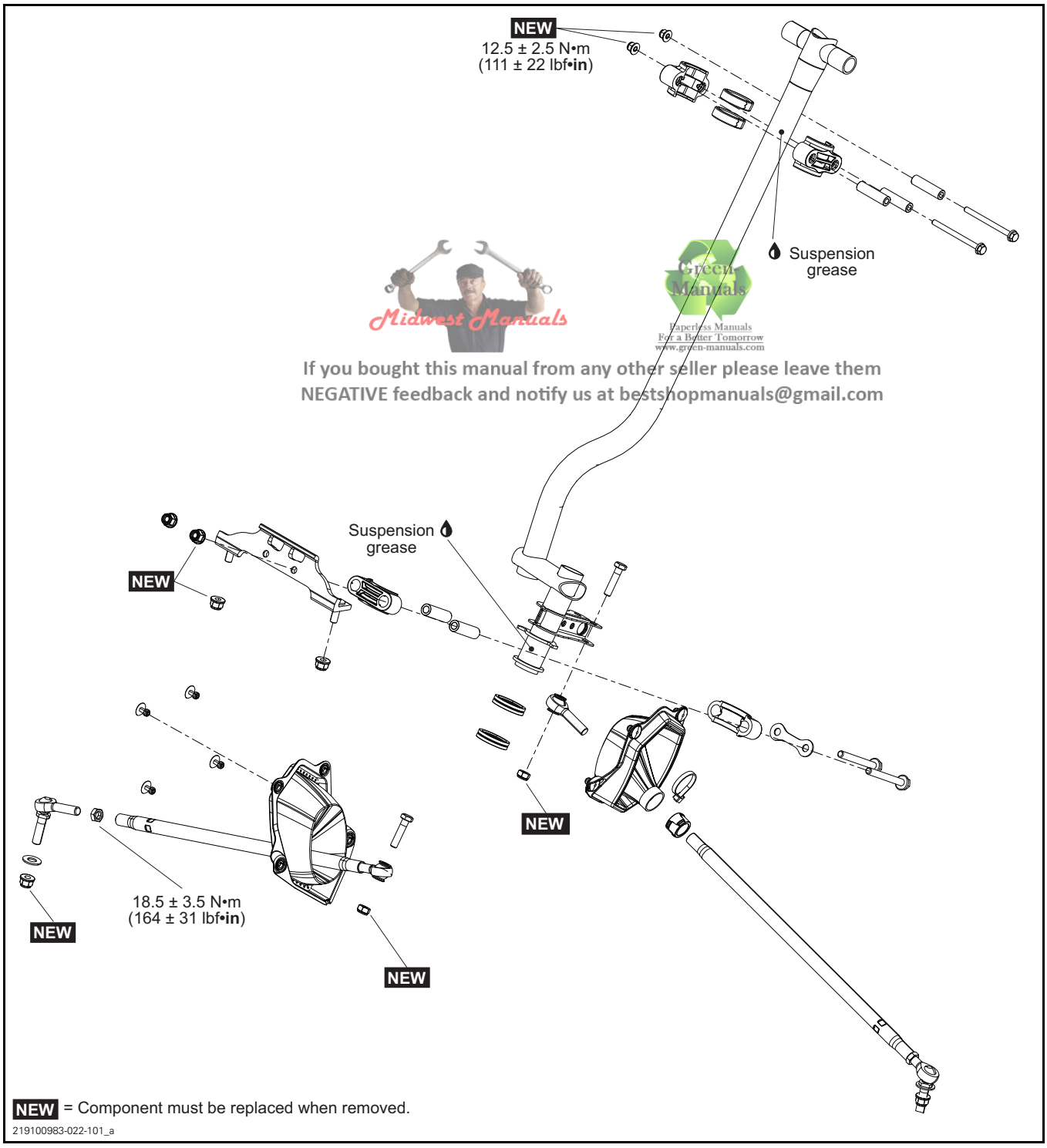
NEW = Component must be replaced when removed.

mmr2017-049-103_a

SKIS (WITH ADJUSTABLE RUNNER)



STEERING COLUMN AND TIE-RODS - PITMAN ARM



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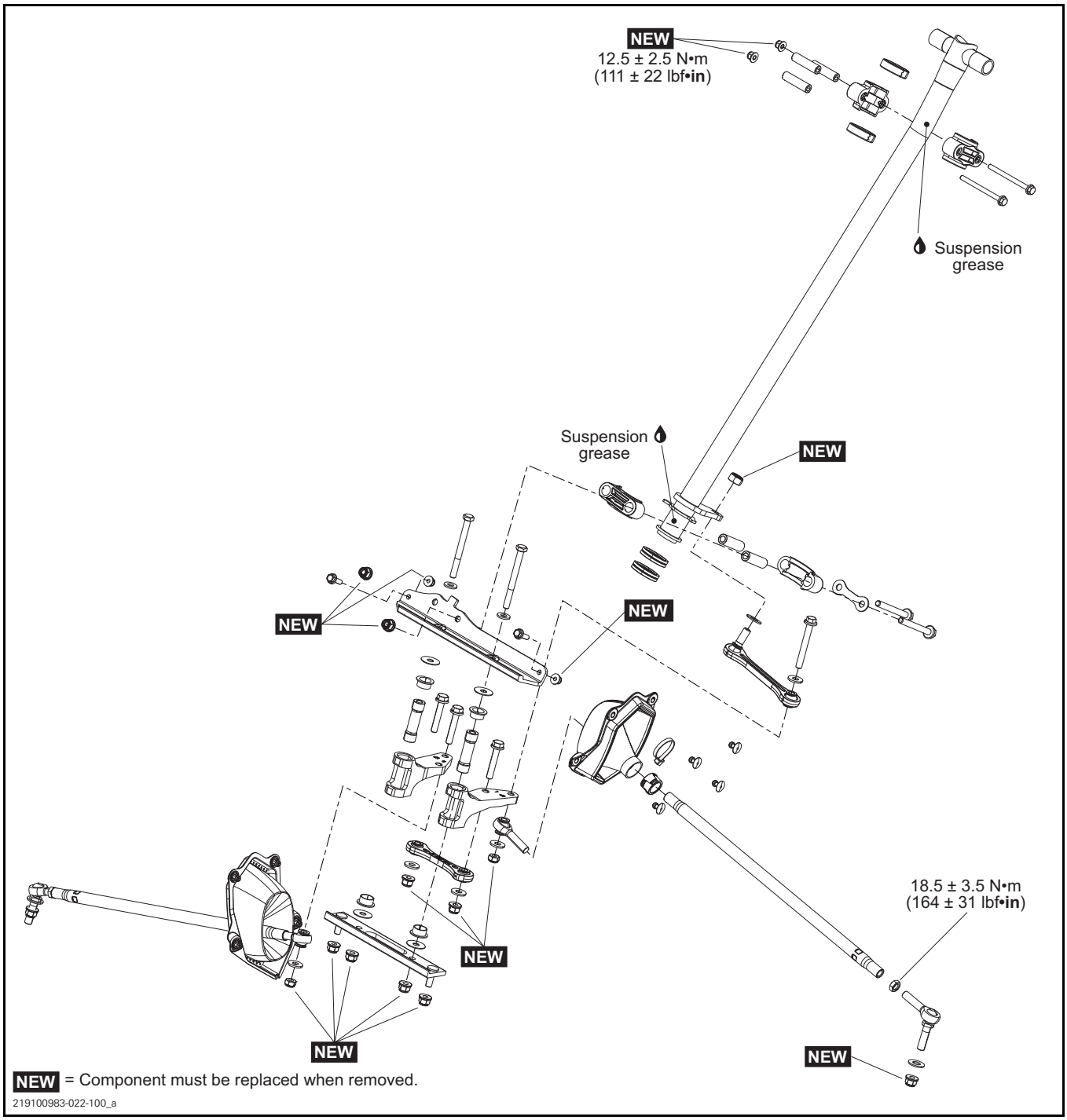
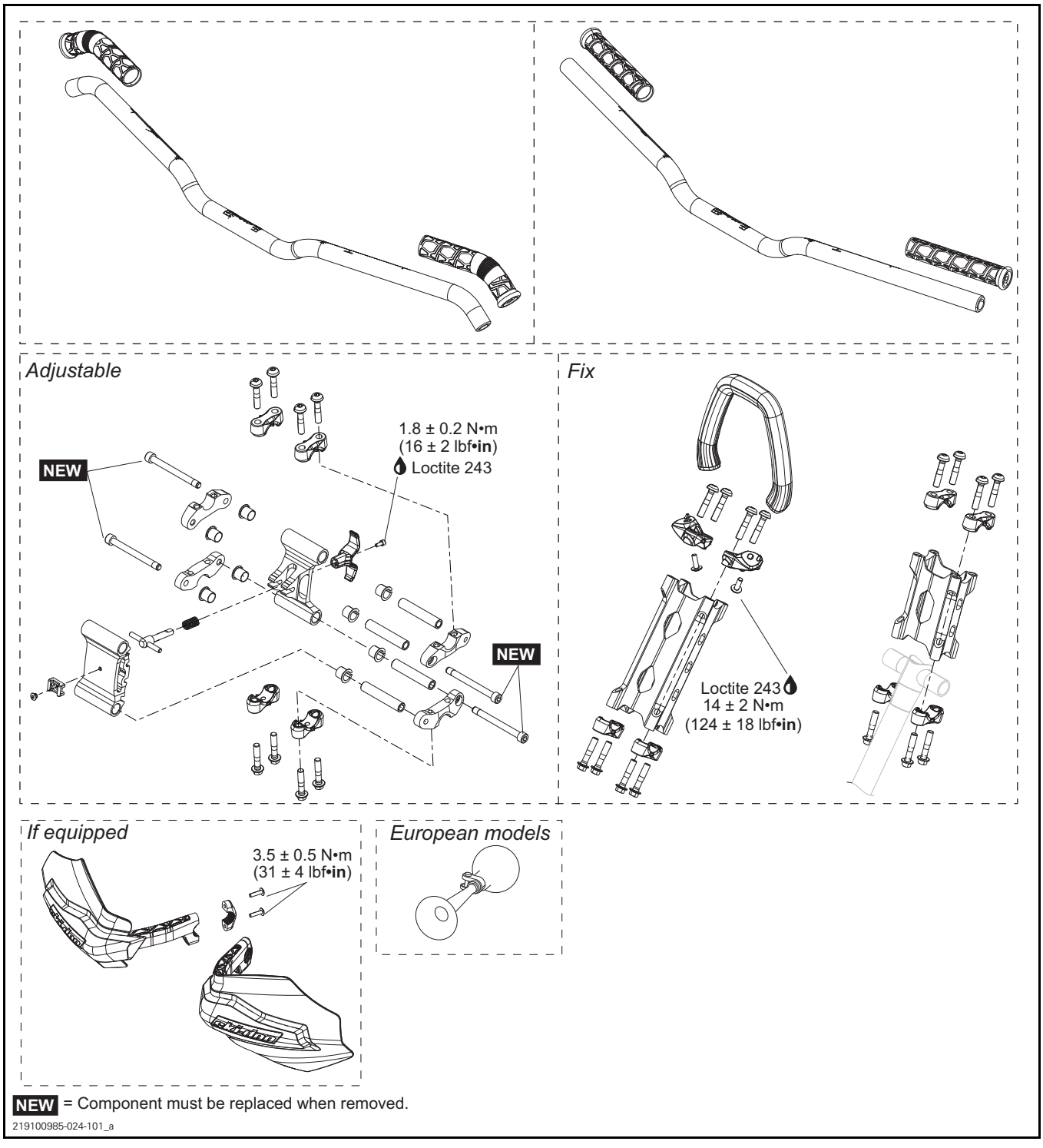
STEERING COLUMN AND TIE-RODS - RACK



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.

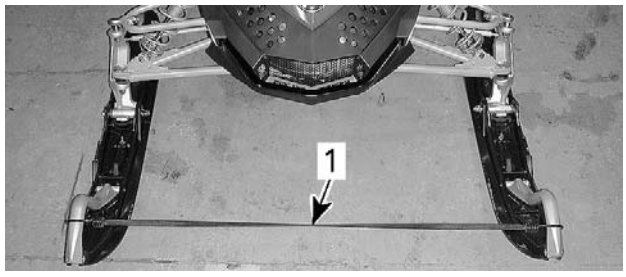
NOTICE **Hoses, cables and locking ties removed during a procedure must be reinstalled at the same location.**

ADJUSTMENT

ALIGNING THE STEERING

Ski alignment is performed by adjusting the length of left and right tie-rods.

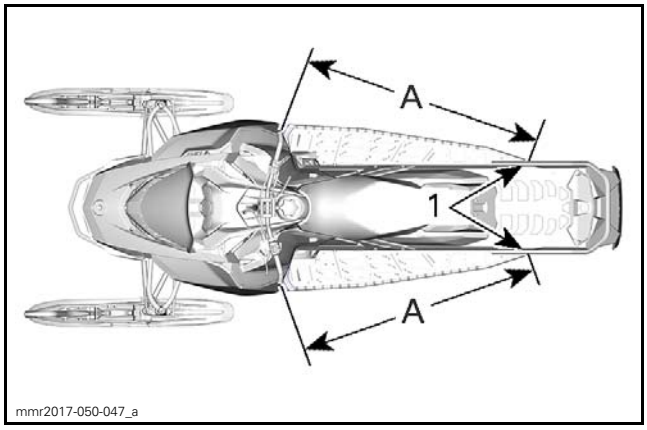
1. Leave the vehicle on the ground on its own weight.
2. Attach ski handles together with a bungee cord.



TYPICAL
1. Bungee cord

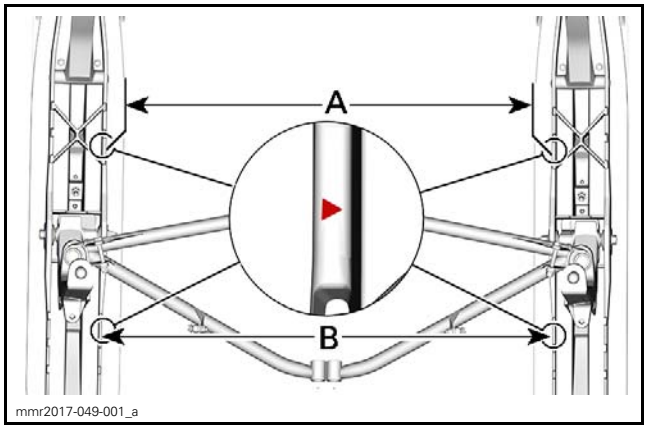
3. Position handlebar so that it is straight ahead position by measuring from the extremities of the grips to the rear most edge of the tunnel, as shown.

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.



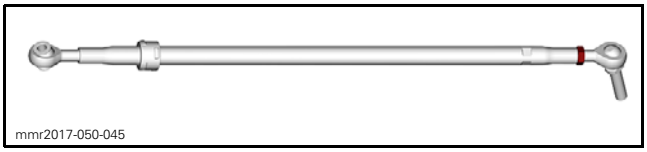
STEERING ALIGNMENT	
Toe-out	A – B = 5 mm (.197 in)

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.

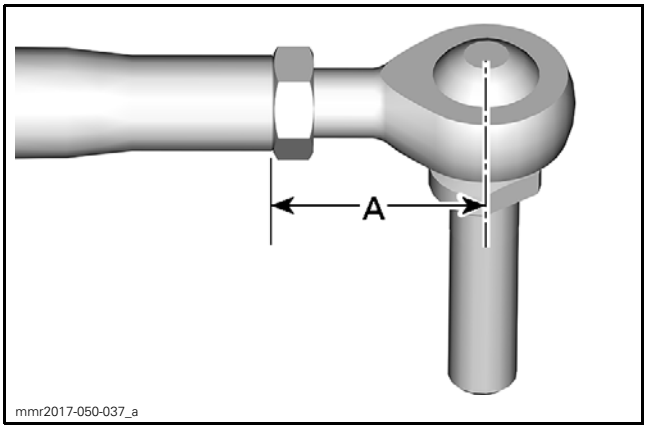
10. Tighten jam nuts to specification.

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).



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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

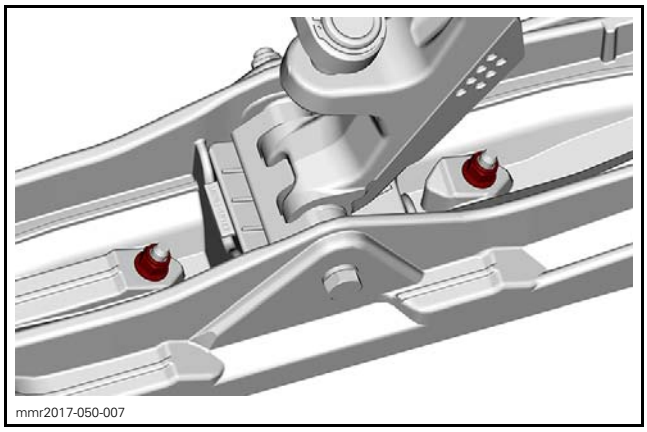
Inspecting the Ski Runner

Refer to *INSPECTION*.

Removing the Ski Runner

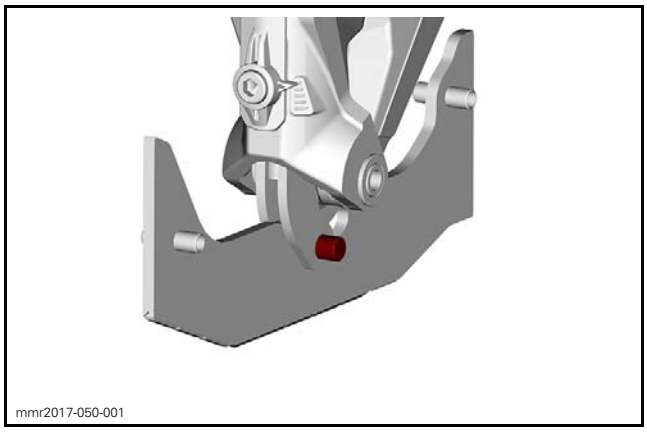
Ski Without Adjustable Runner

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

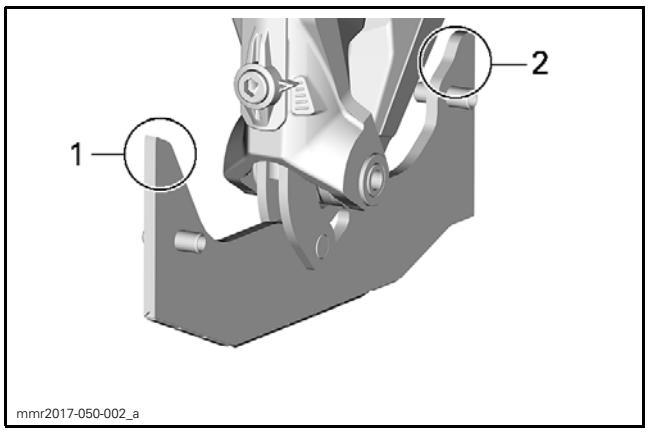
The installation is the reverse of the removal procedure. Pay attention to the following.

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

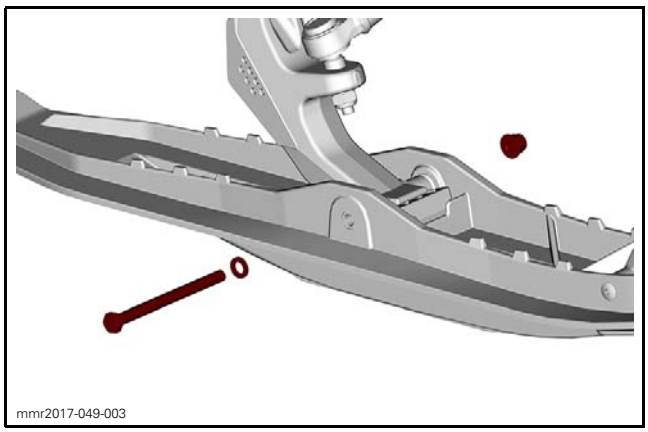
SKIS

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.

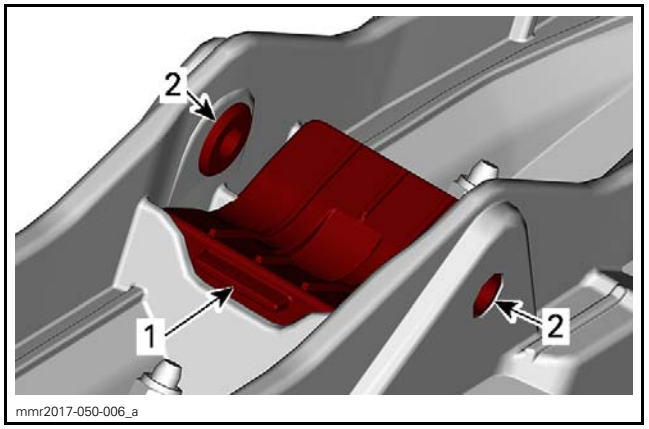


3. Remove ski from vehicle.

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.

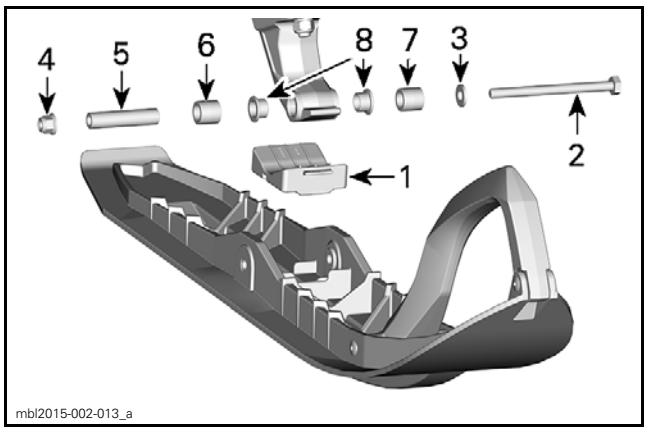


1. Ski stopper
2. Bushings

Apply grease on the ski axle.

SERVICE PRODUCT
SYNTHETIC SUSPENSION GREASE (P/N 779163)

Mountain Models

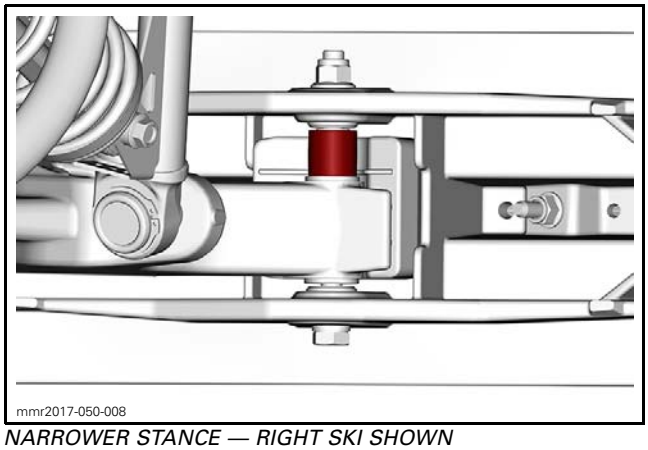


LH SIDE SHOWN
1. Ski stopper
2. M10 x 130 screw
3. M10 flat washer
4. M10 flanged nut
5. Ski axel
6. Narrow adjustment
7. Wide adjustment

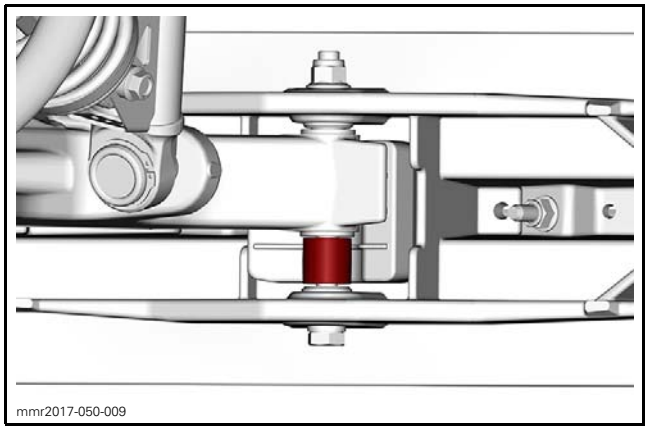
Install the spacer inside for the narrower stance and outside for the wider stance.

⚠ WARNING

Proceed to the same setting for both skis.



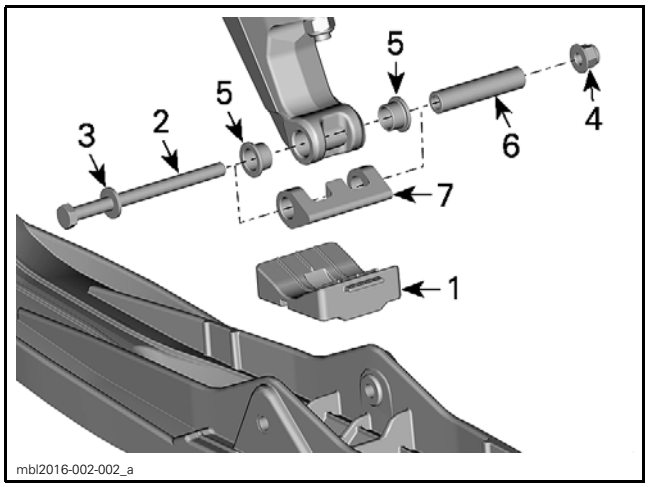
NARROWER STANCE — RIGHT SKI SHOWN



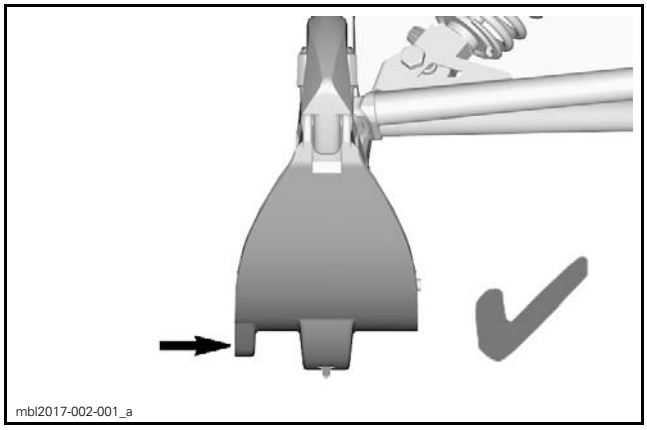
WIDER STANCE — RIGHT SKI SHOWN

Trail and Crossover Models

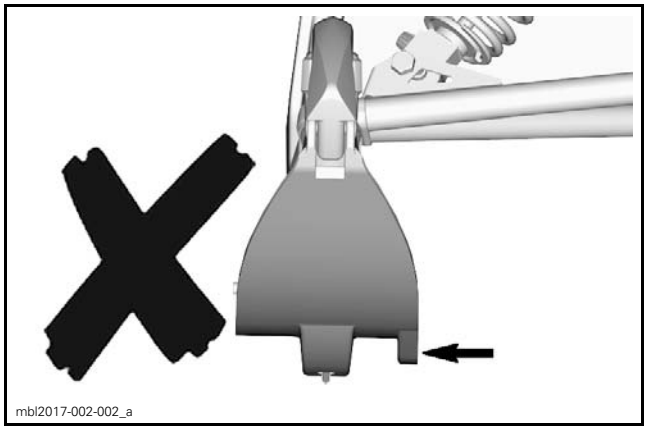
Install ski on ski leg as per the following illustrations.



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

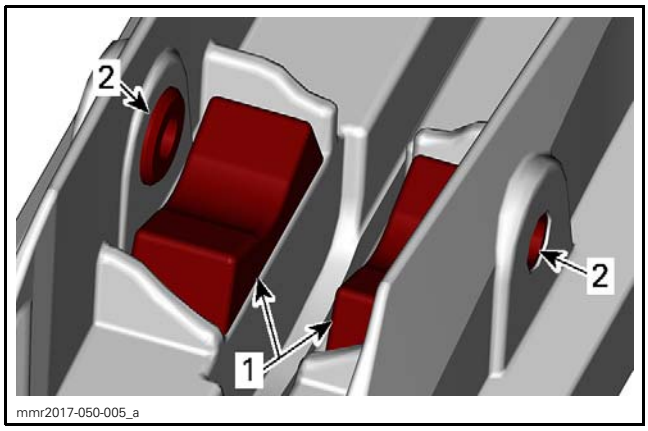
All Models

TIGHTENING TORQUE	
Ski nut	48 N•m ± 6 N•m (35 lbf•ft ± 4 lbf•ft)

Installing the Ski With Adjustable Runner

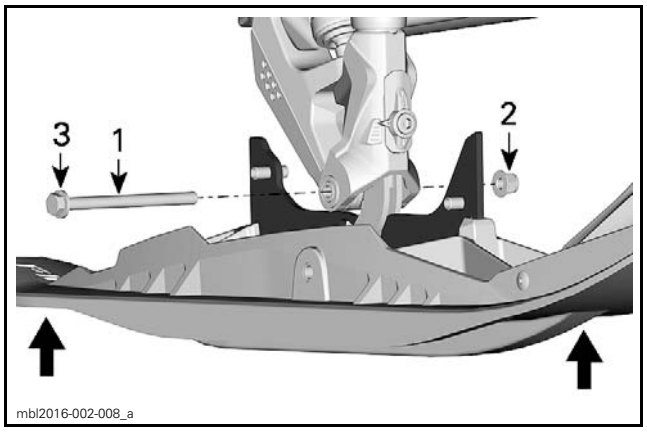
Make sure bushings are installed in ski holes.

Install the ski stopper.

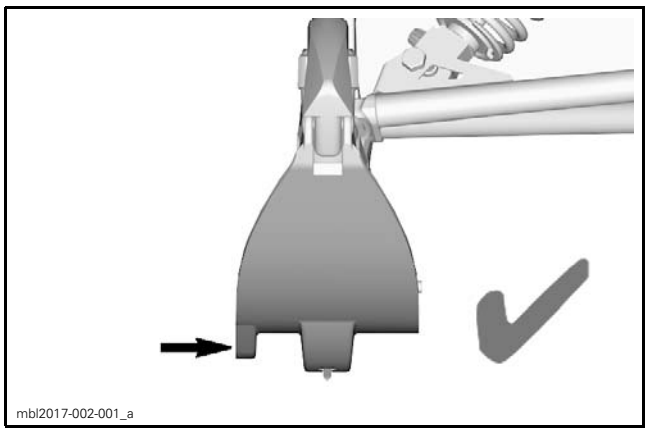


1. *Ski stopper*
2. *Bushings*

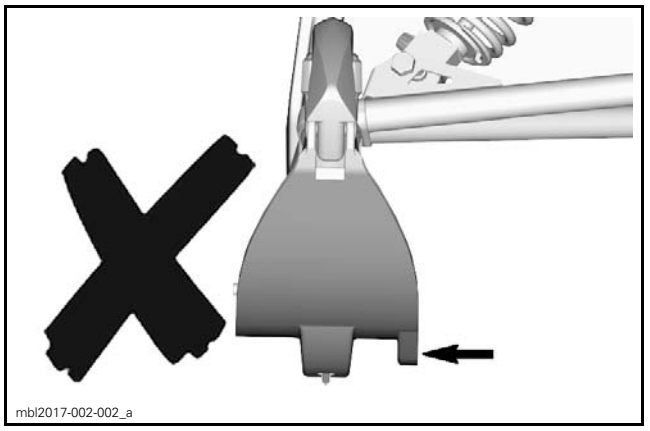
Install ski on ski leg as per the following illustrations.



1. *Ski screw*
2. *Nut*
3. *Washer*



LATERAL SKI KEEL TOWARDS OUTSIDE (IF EQUIPPED) - CORRECT



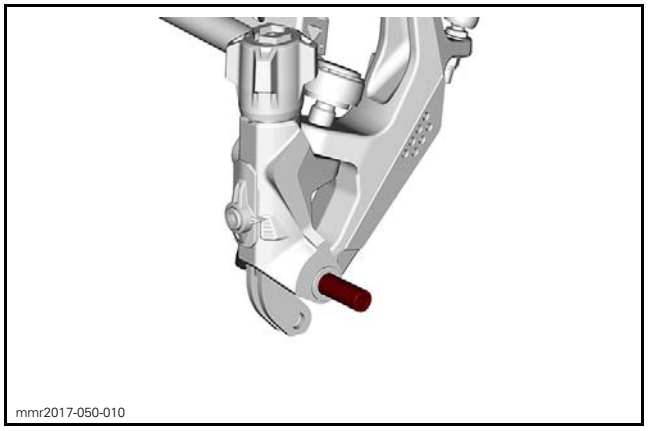
LATERAL SKI KEEL TOWARDS INSIDE (IF EQUIPPED) - NOT CORRECT

TIGHTENING TORQUE	
Ski nut	48 N•m ± 6 N•m (35 lbf•ft ± 4 lbf•ft)

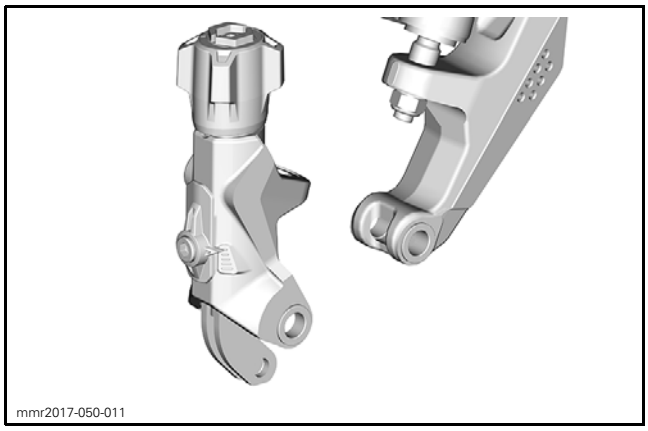
ADJUSTABLE RUNNER MECHANISM

Removing the Adjustable Runner Mechanism

1. Remove the ski and the runner.
2. Slide the sleeve out of the ski leg.



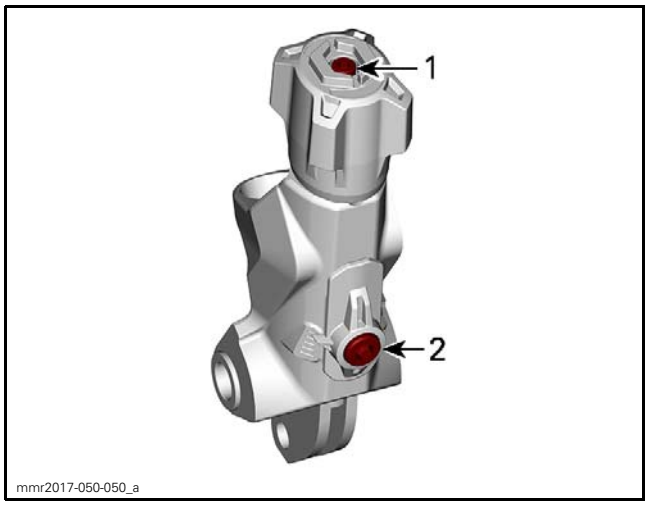
3. Remove the mechanism from the ski leg.



Disassembling the Adjustable Runner Mechanism

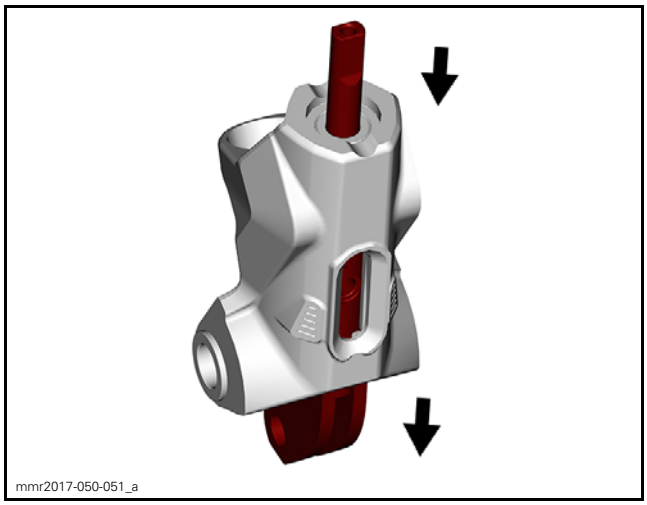
1. Remove the adjusting knob and the indicator screws.

NOTE: There are two O-rings on the indicator screw.

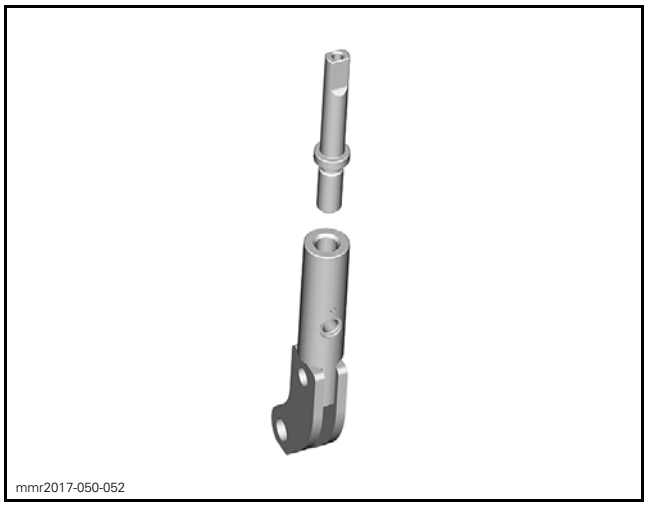


1. Adjusting knob screw
2. Indicator screw

2. Slide the adjusting screw and the adjusting shaft out of the body.

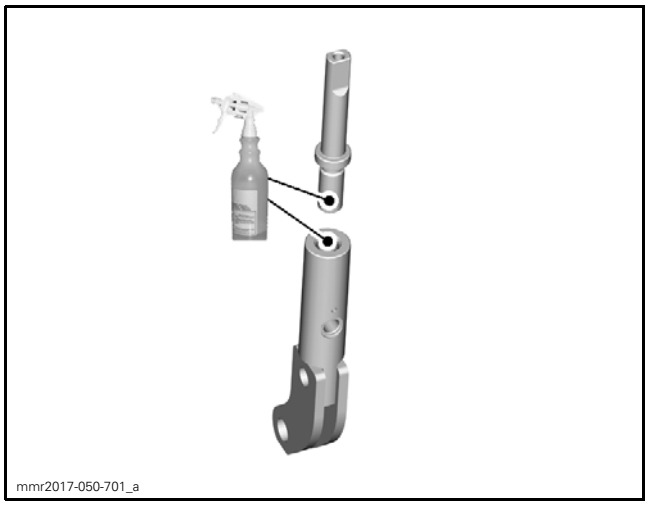


3. Remove the screw from the shaft.



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)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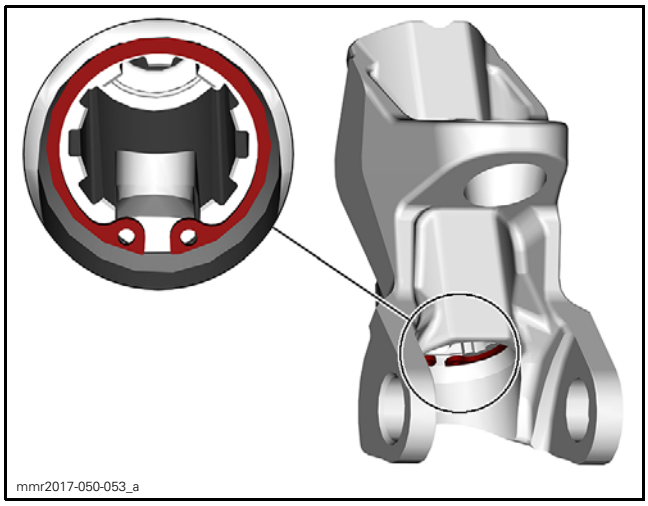
5. Remove the snap ring.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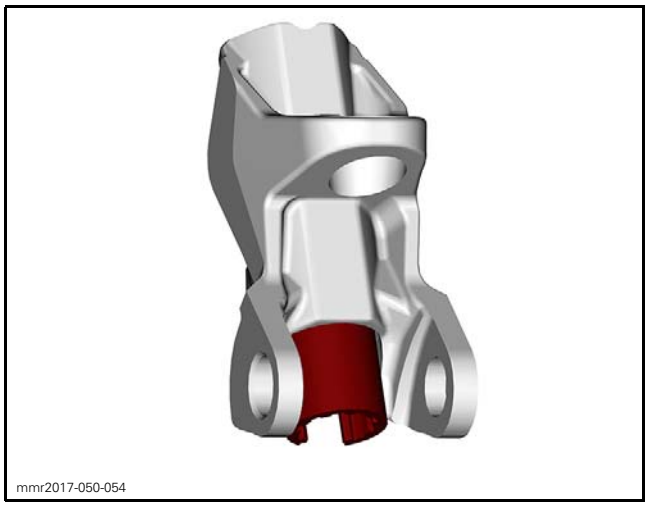
6. Slide the sleeve out of the body.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Inspecting the Adjustable Runner Mechanism

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.

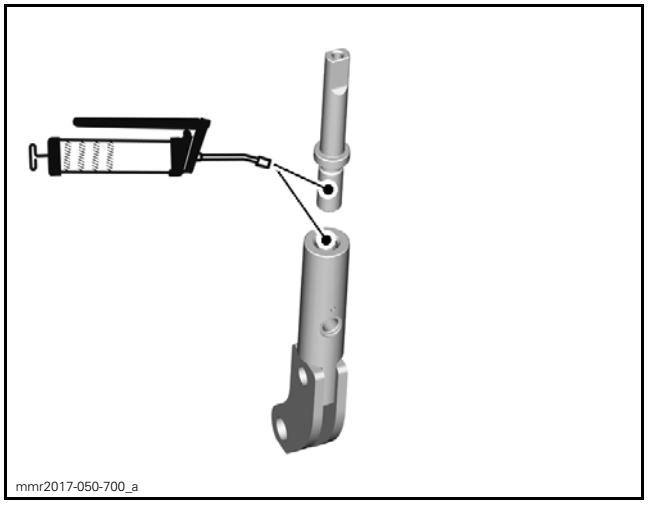
Inspect the ball bearing. It should turn freely and smoothly. If bearing needs to be replaced, replace the mechanism assembly.

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)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Install a new knob screw.

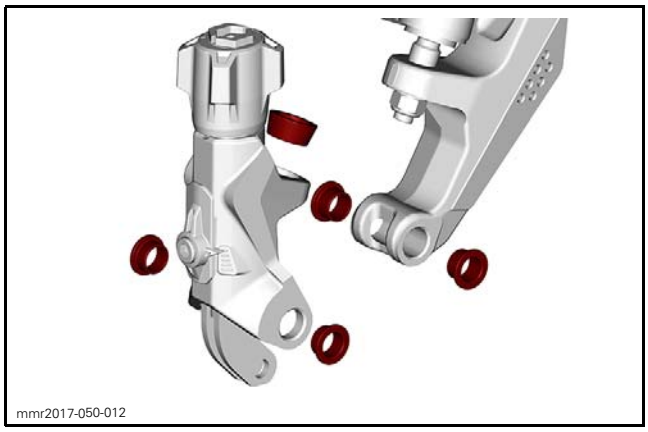
TIGHTENING TORQUE	
Adjusting knob screw	9 N•m ± 1 N•m (80 lbf•**in** ± 9 lbf•**in**)
Indicator screw	24.5 N•m ± 3.5 N•m (18 lbf•ft ± 3 lbf•ft)

Installing the Adjustable Runner Mechanism

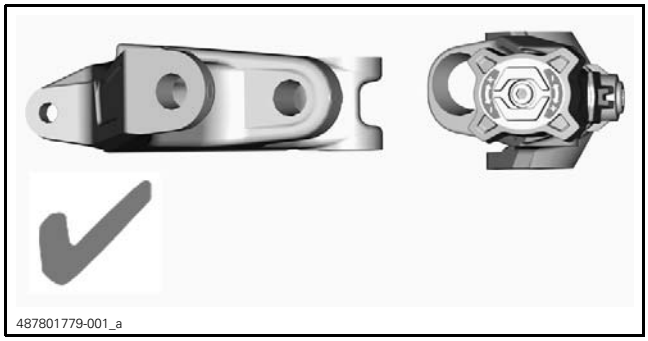
The installation is the reverse of the removing procedure. However, pay attention to the following.

Install rubber grommet on nut first. Align flat against flat.

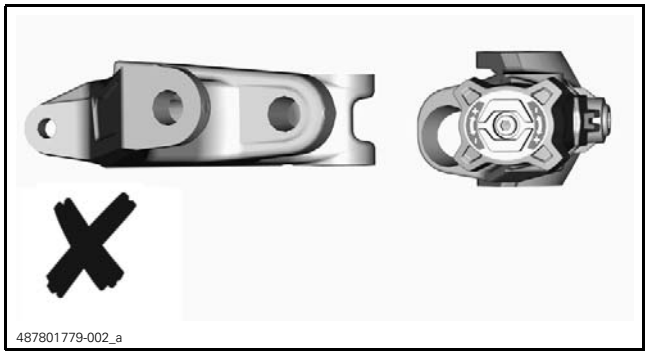
Ensure all bushings, and the grommet are in place and fully seated.



The mechanism is offset and has to be installed on the correct side.



RH SIDE SHOWN



RH SIDE SHOWN

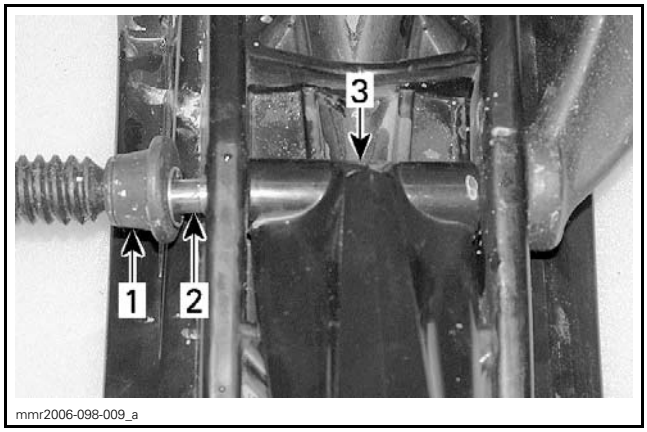
SKI HANDLES

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.

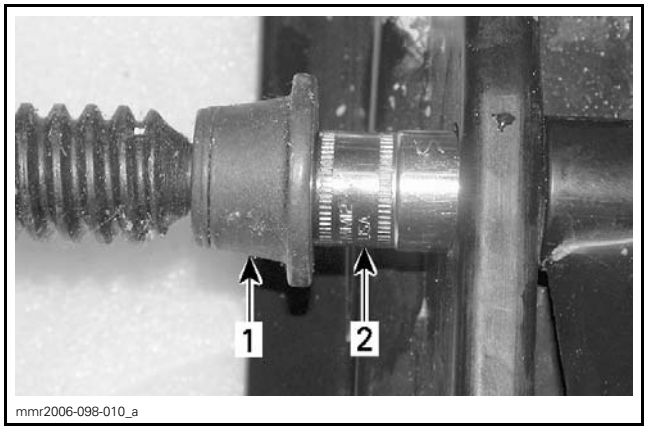
Installing the Ski Handle

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

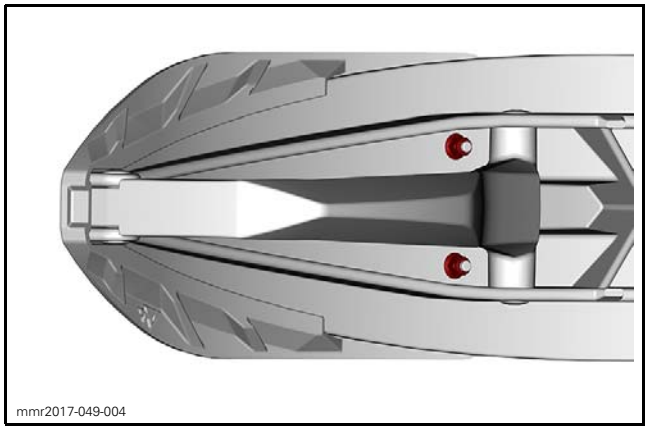
The key to the adjustable nose is to reduce the tip-hop that can slow down the vehicle.

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.

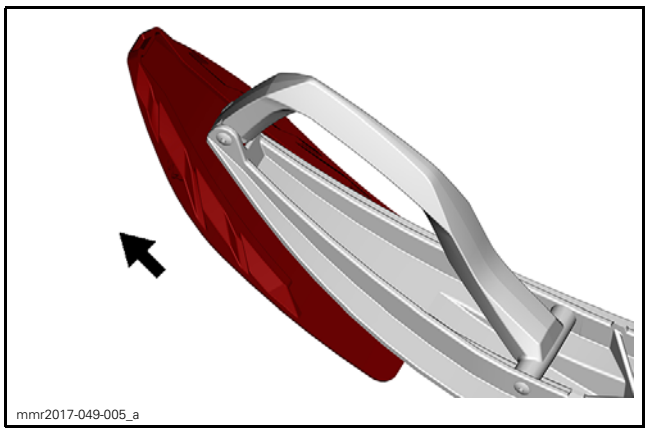
In snow conditions with more than 41 cm (16 in) of fresh powder, the wider tip configuration is desirable, as it increases flotation and will bring the nose of the snowmobile up.

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

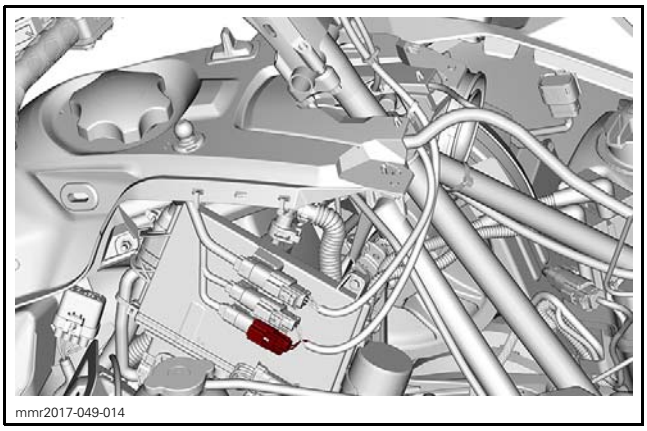
Installing the Handlebar Grip

Insert the handlebar grip on handlebar while blowing compressed air to inflate or loosen the fit between grip and handlebar.

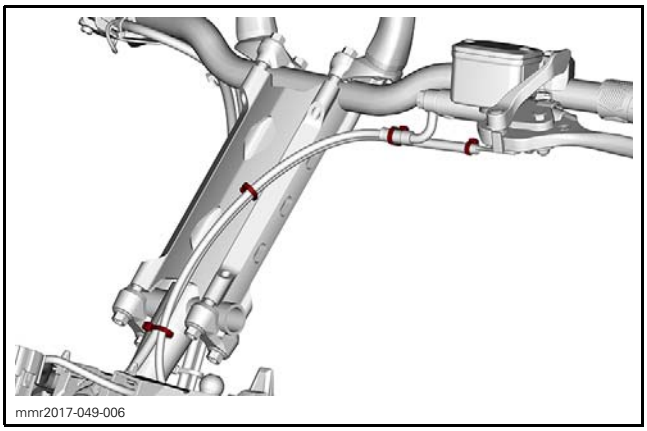
MULTIFUNCTION SWITCH

Removing the Multifunction Switch (Mountain models)

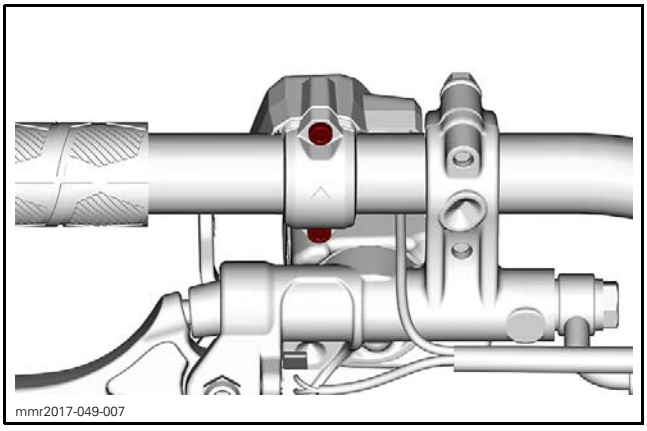
1. Remove the upper body module. Refer to *BODY* subsection.
2. Disconnect the multifunction switch connector (2-pin connector).


mmr2017-049-014

3. Cut locking ties securing multifunction switch harness.


mmr2017-049-006

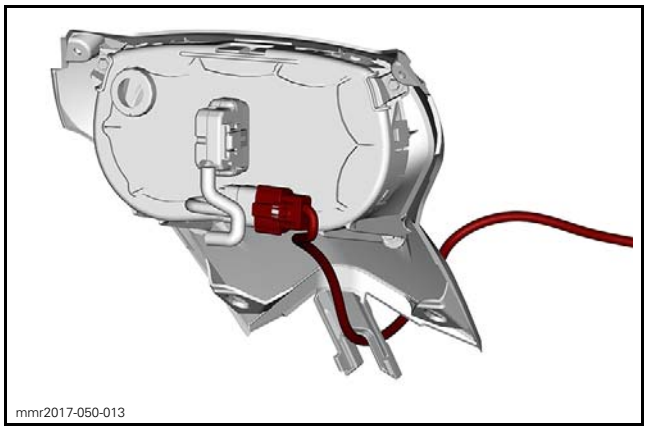
4. Remove multifunction switch screws.


mmr2017-049-007

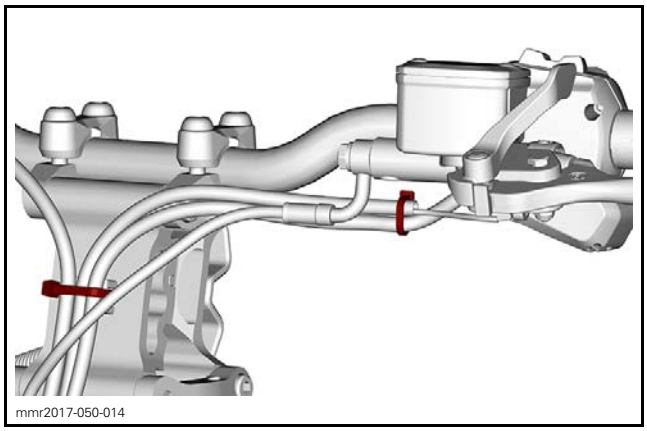
5. Remove multifunction switch from vehicle.

Removing the Multifunction Switch (Trail and Crossover models)

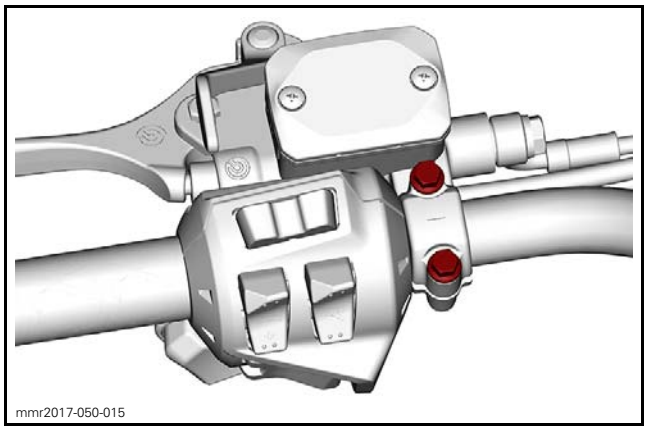
1. Remove the gauge support. Refer to *BODY* subsection.
2. Disconnect the multifunction switch connector.


mmr2017-050-013

3. Cut locking ties securing multifunction switch harness.


mmr2017-050-014

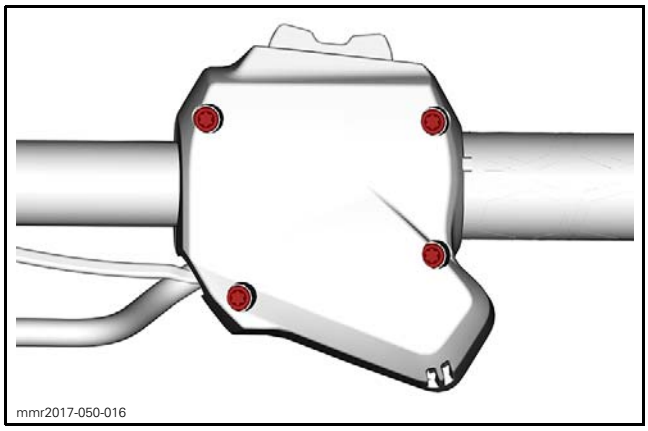
4. Unscrew master cylinder from handlebar.


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.

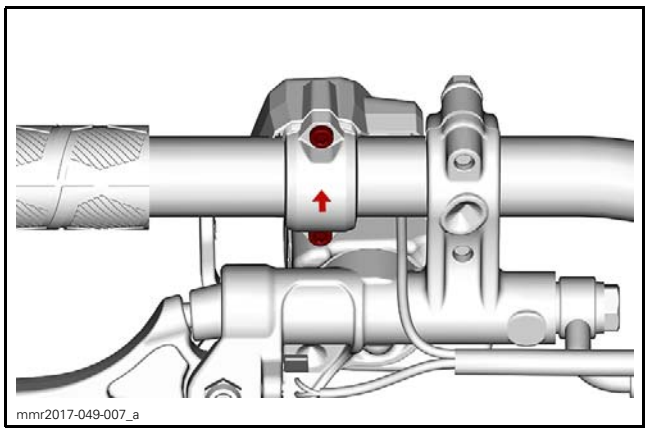
Installing the Multifunction Switch (Mountain models)

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**)



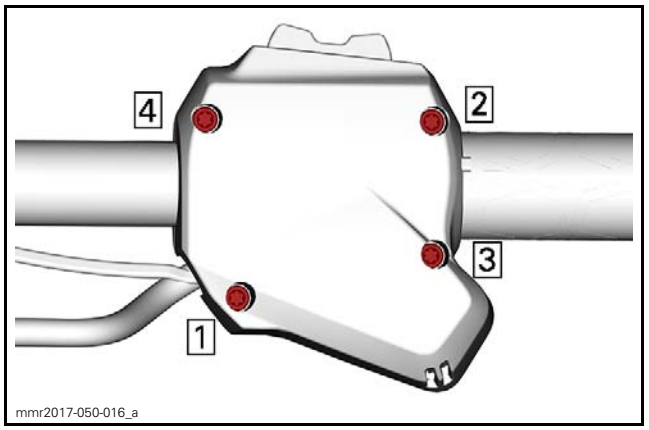
Turn handlebar completely from side to side making sure it does not exert unwanted tension on handlebar wires.

Installing the Multifunction Switch (Trail and Crossover Models)

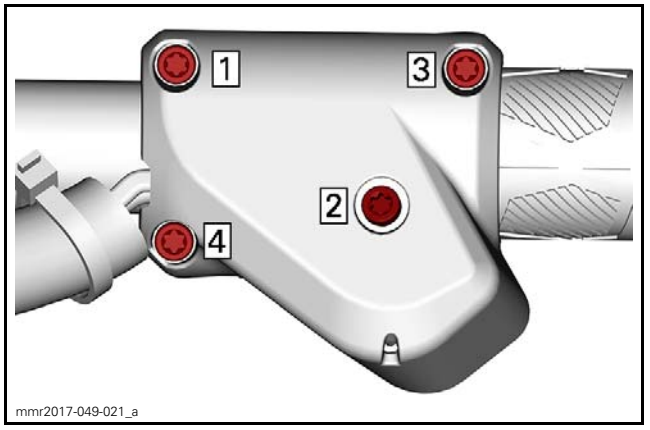
The installation is the reverse of the removal procedure. However, pay attention to the following.

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**)



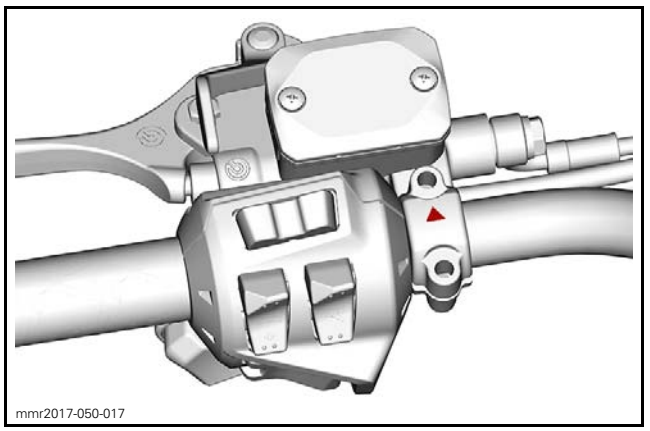
TRAIL AND CROSSOVER MODELS



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.

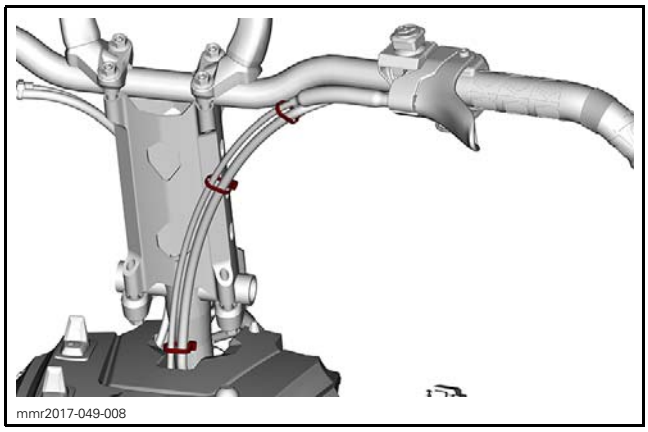
TIGHTENING TORQUE	
Master cylinder clamp screws	9 N•m ± 1 N•m (80 lbf•**in** ± 9 lbf•**in**)

Turn handlebar completely from side to side making sure it does not exert unwanted tension on handlebar wires.

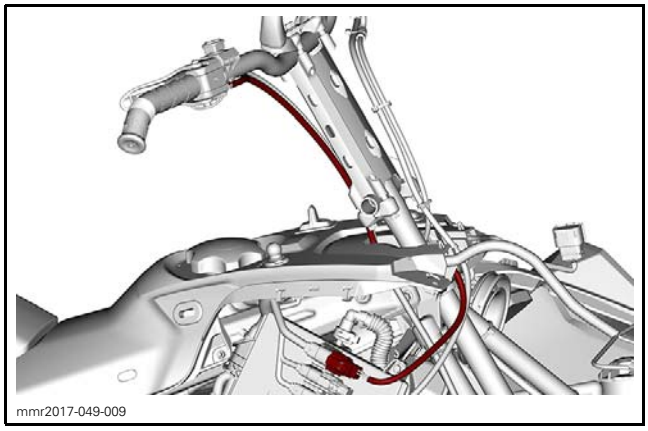
THROTTLE LEVER HOUSING

Removing the Throttle Lever Housing

1. Remove the upper body module. Refer to *BODY* subsection.
2. Cut the harness locking ties.


mmr2017-049-008

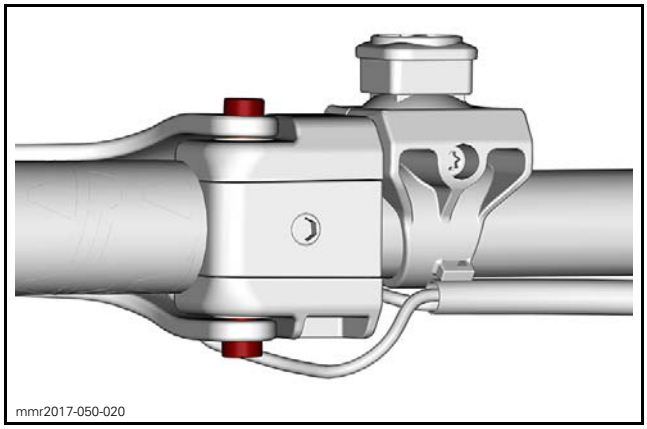
3. Disconnect the LH heater element connector (6-pin connector).


mmr2017-049-009

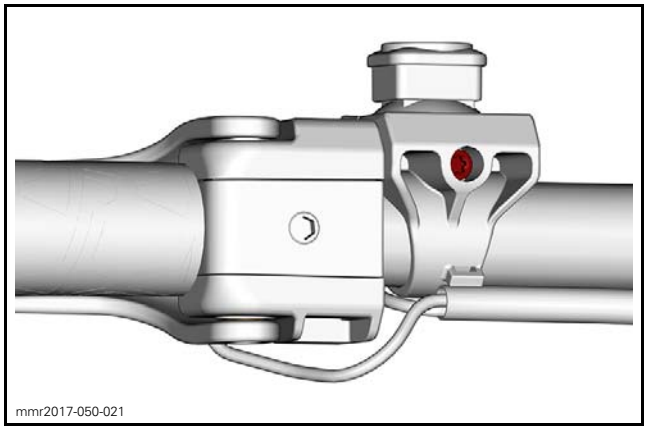
4. Remove the heater element wire terminals from connector. Refer to *WIRING HARNESS AND CONNECTORS* subsection.

NOTICE **Take note of exact positioning of multifunction wire before removing it from the connector.**

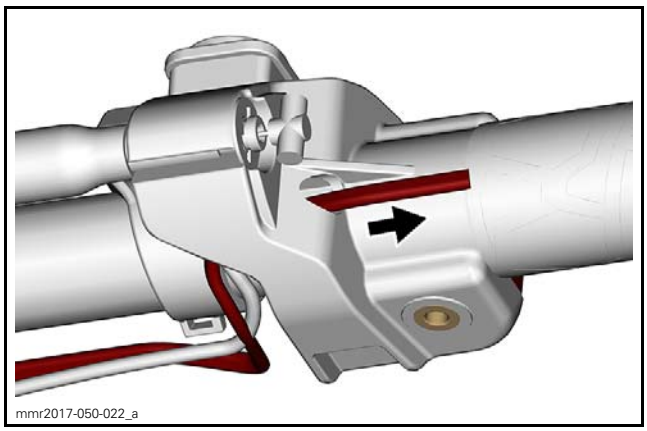
5. Disconnect throttle cable from throttle lever.
6. Remove both throttle lever pivot screws.


mmr2017-050-020

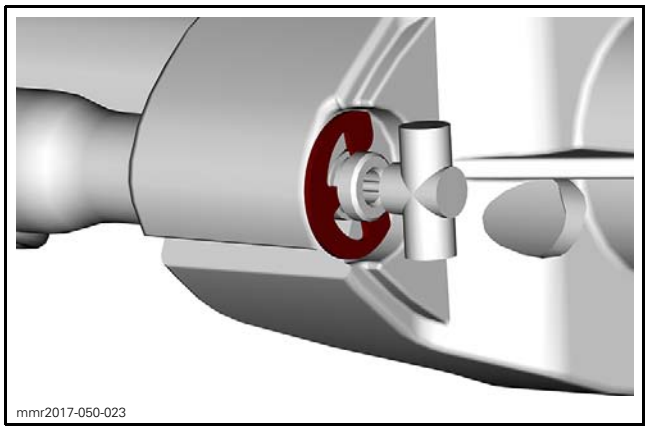
7. Loosen the emergency stop switch screw and slide the switch towards center of handlebar.


mmr2017-050-021

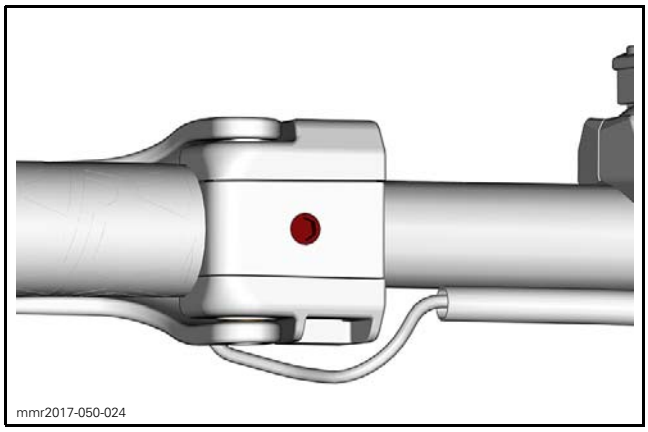
8. Pull the heater element wire out of the throttle lever housing.


mmr2017-050-022_a

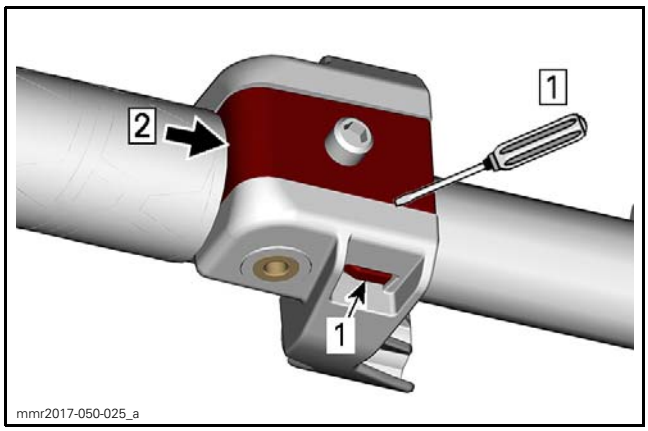
9. Remove throttle cable circlip.



10. Remove the throttle cable from the housing.
11. Loosen throttle lever housing retaining screw.

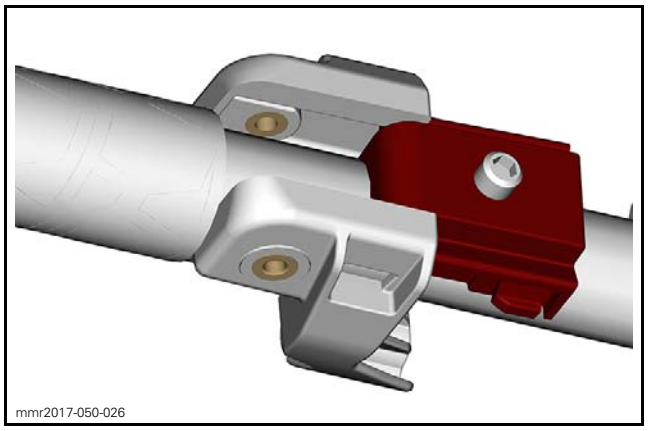


12. Insert a flat screwdriver between the housing and the clamp to release the tab.

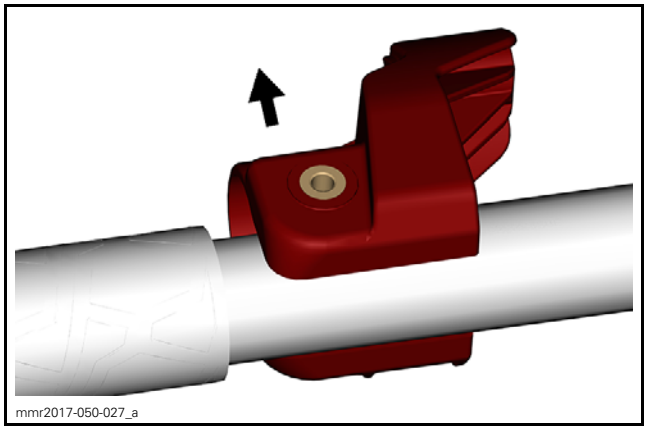


1. Tab

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.

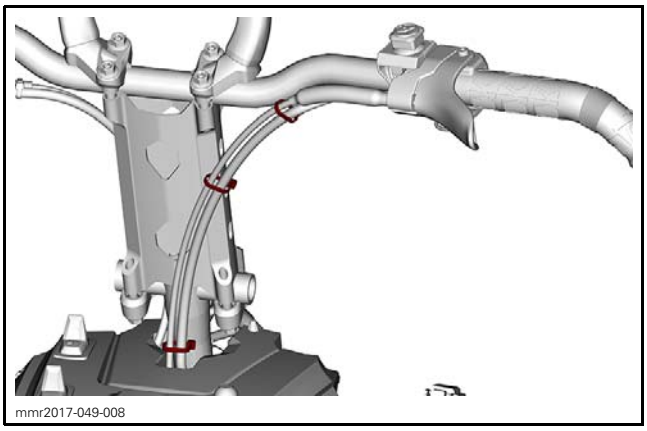
TIGHTENING TORQUE	
Throttle lever retaining screws	1.5 N•m ± 0.2 N•m (13 lbf•**in** ± 2 lbf•**in**)

Turn handlebar completely from side to side making sure it does not exert unwanted tension on handlebar wires.

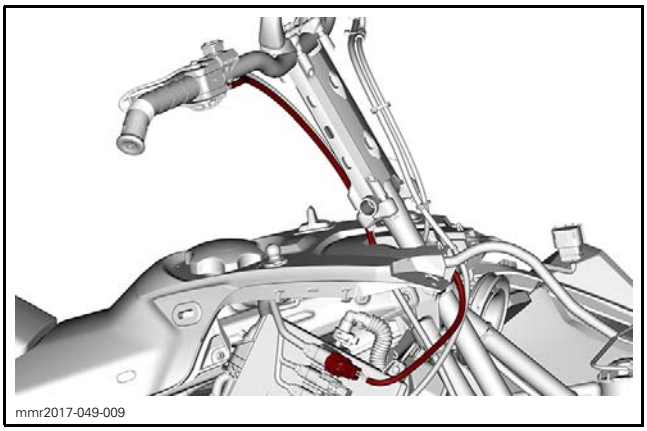
THROTTLE LEVER

Removing the Throttle Lever

1. Remove the upper body module. Refer to *BODY* subsection.
2. Cut the harness locking ties.


mmr2017-049-008

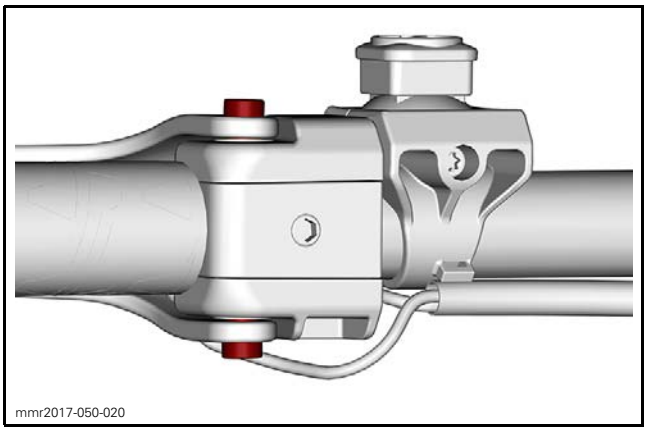
3. Disconnect the LH heater element connector.


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**)

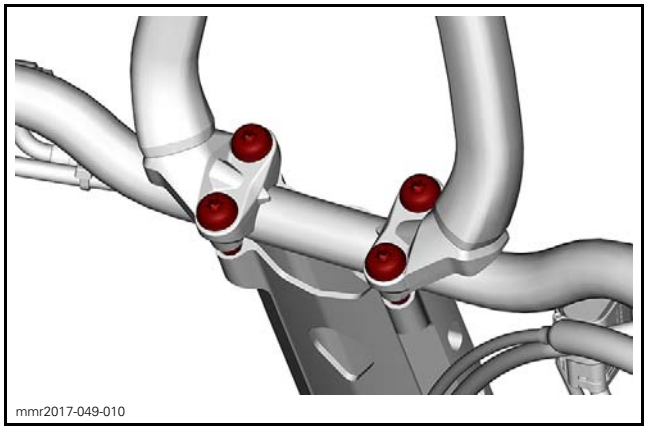
Turn handlebar completely from side to side making sure it does not exert unwanted tension on handlebar wires.

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.

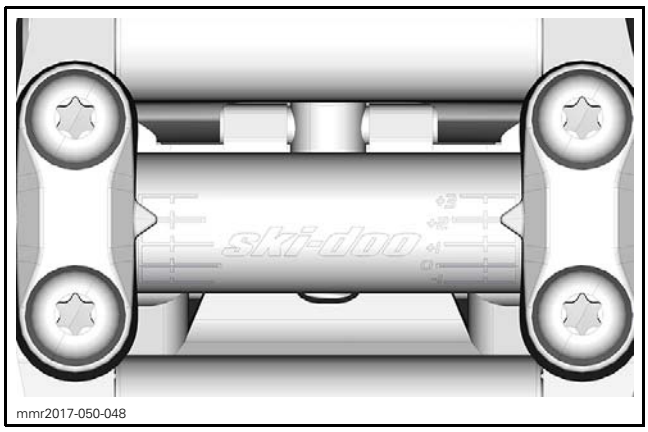
3. Check handlebar clamps for cracks or distortion, replace if necessary.

Installing the Handlebar

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

With Adjustable Handlebar

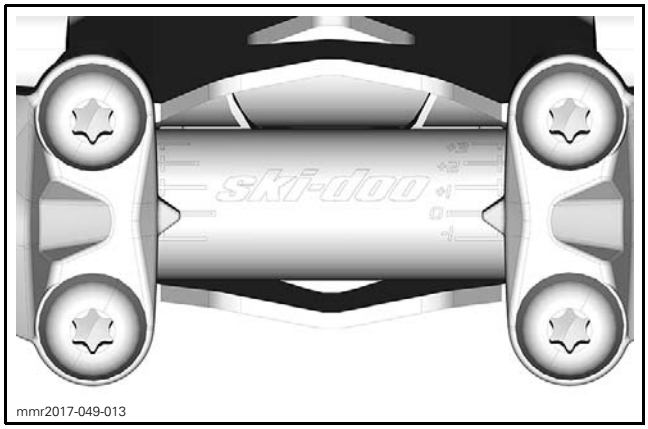
Position the handlebar at +2 with clamps.



Without Adjustable Handlebar

Position the handlebar with clamps, as per the following table.

MODEL	HANDLEBAR POSITION
Mountain	0
Trail and crossover	+1

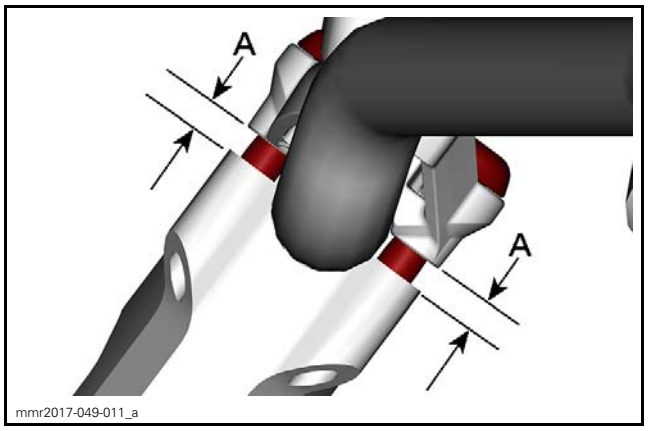


HANDLEBAR POSITION - MOUNTAIN MODEL SHOWN

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.



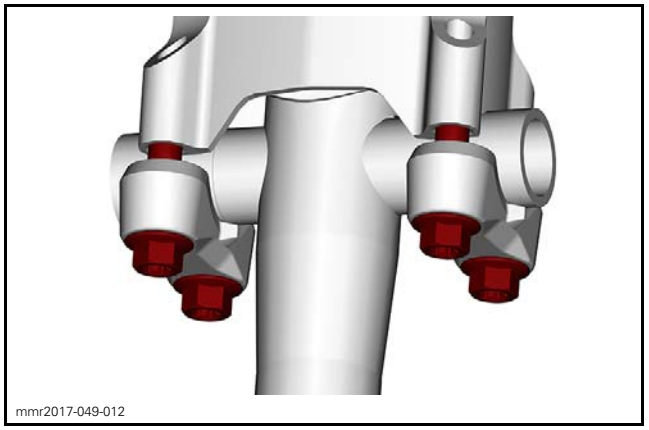
A. Must be equal on each side

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

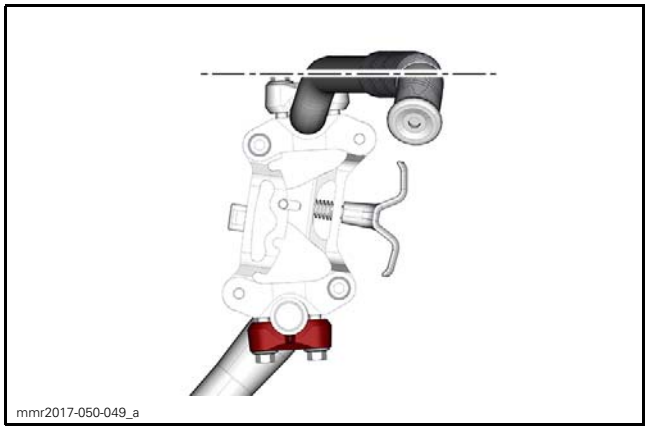
Do not try to repair a defective handlebar extension.

Installing the Handlebar Extension

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

With Adjustable Handlebar

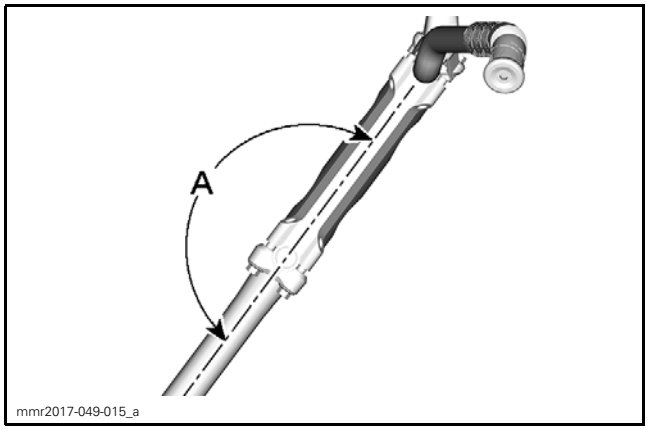
Position the extension in order to have the handlebar horizontal.



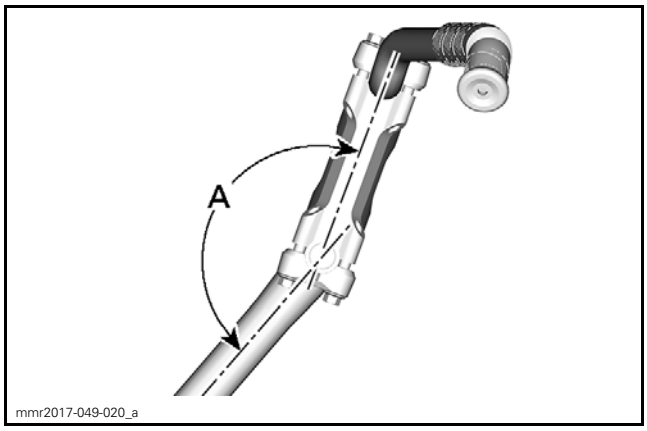
Without Adjustable Handlebar

Position the extension with the steering column, as per the following table.

MODEL	HANDLEBAR EXTENSION POSITION ANGLE
Mountain	180°
Trail and crossover	159°

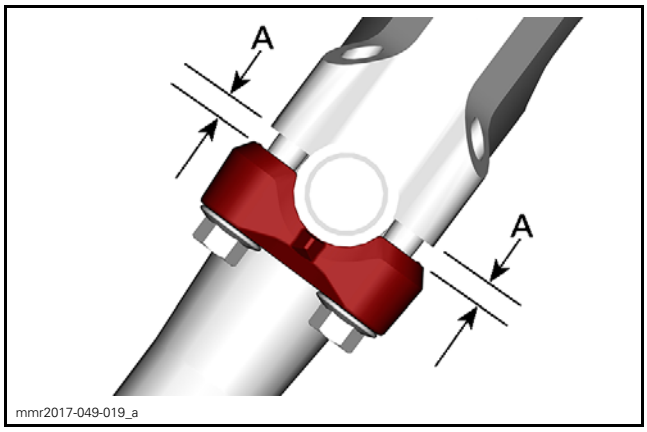


MOUNTAIN MODELS



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.

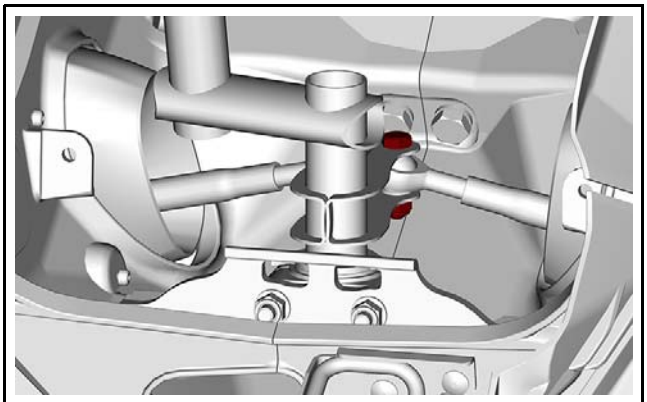
Inspecting the Tie-Rod

Check tie-rod ends for looseness. If play is excessive, replace tie-rod.

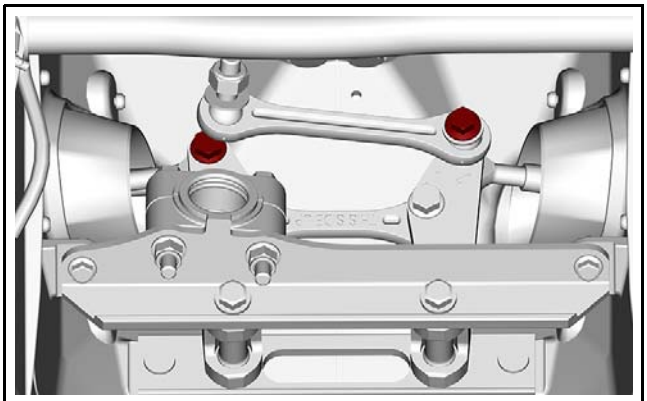
Check if the tie-rod is bent, cracked or otherwise damaged. Replace if necessary.

Removing the Tie-Rod

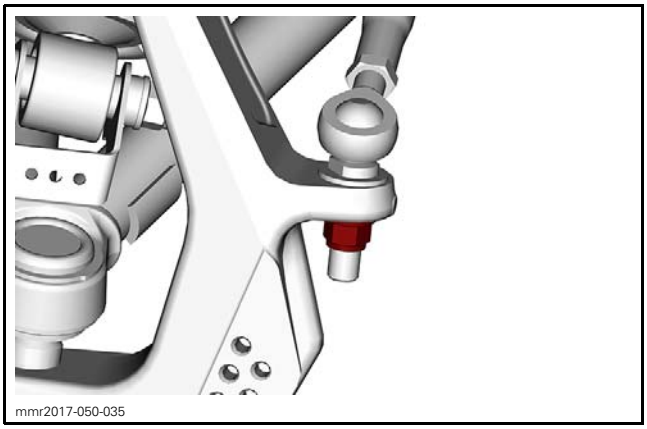
1. Remove the tuned pipe. Refer to *EXHAUST SYSTEM* subsection.
2. Remove the tie-rod end nuts and screws from the steering column and ski leg.


mmr2017-049-016

STEERING COLUMN WITH PITMAN ARM

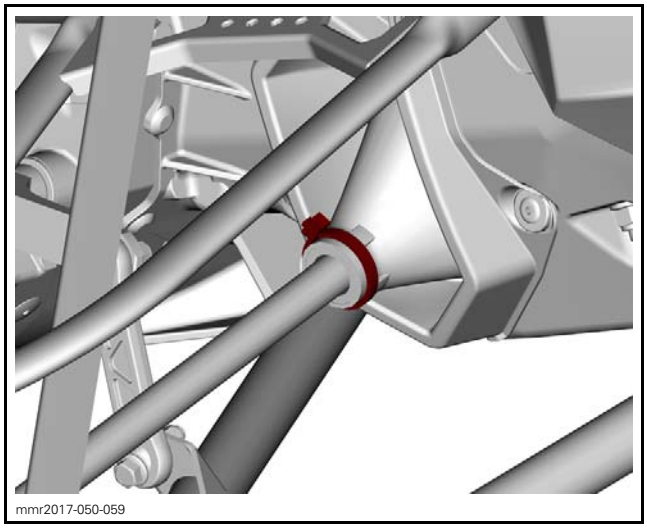

mmr2017-050-033

STEERING RACK - STEERING COLUMN REMOVED FOR CLARITY

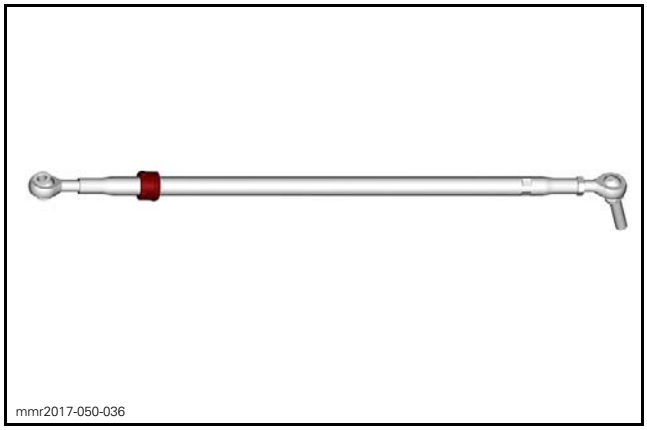

mmr2017-050-035

SKI LEG

3. Cut the locking tie on the steering boot.


mmr2017-050-059

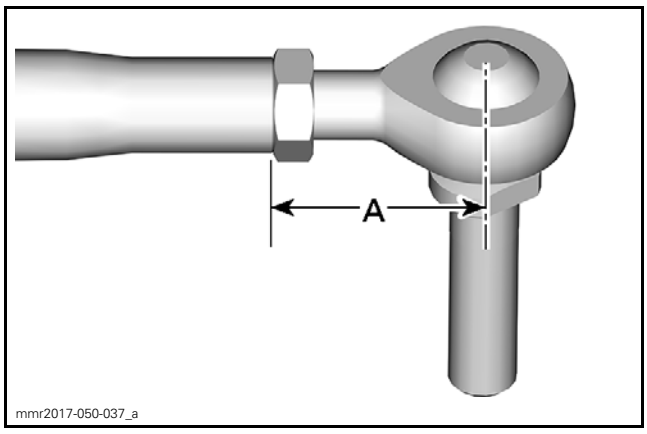
4. Remove tie-rod with ring from vehicle.


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.



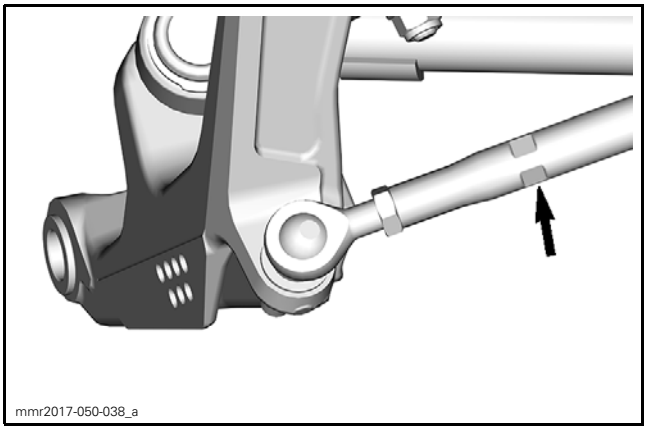
mmr2017-050-037_a

TIE-ROD LENGTH (A)
30 mm (1.181 in)

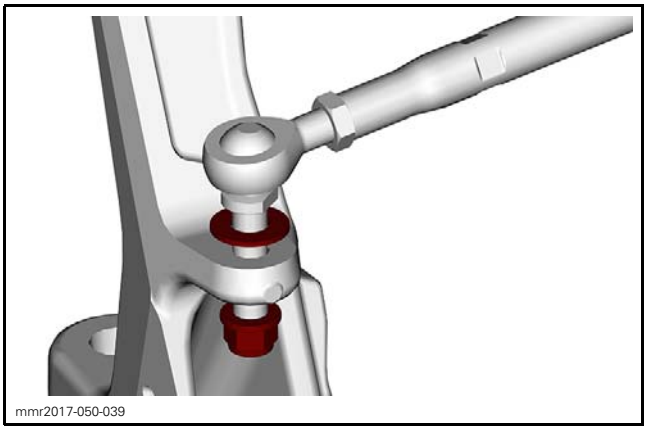
⚠ WARNING

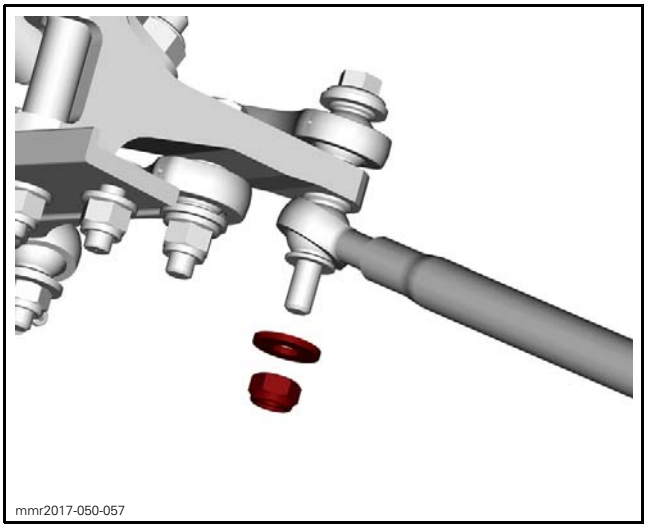
The maximum tie-rod end length (A) not engaged in the tie rod must not exceed 34 mm (1.339 in).

Install tie-rod with the groove on ski leg side.


mmr2017-050-038_a

Install the washer and the nut, and tighten to specification.

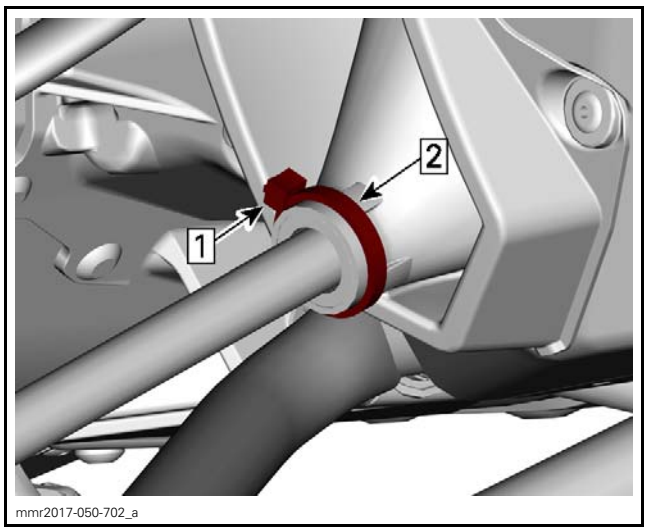

mmr2017-050-039


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

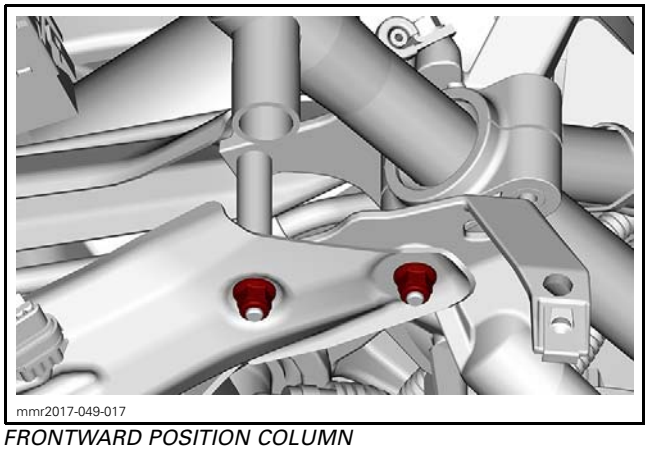
1. *Head up*
2. *Fully seated*

Perform the steering alignment, refer to *ALIGNING THE STEERING* in this section.

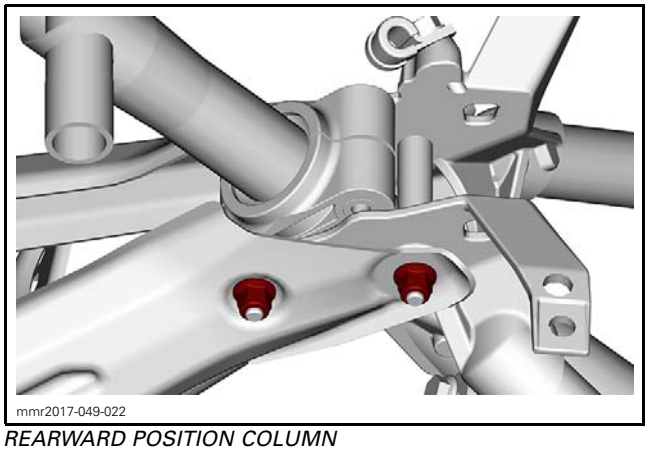
STEERING COLUMN

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.

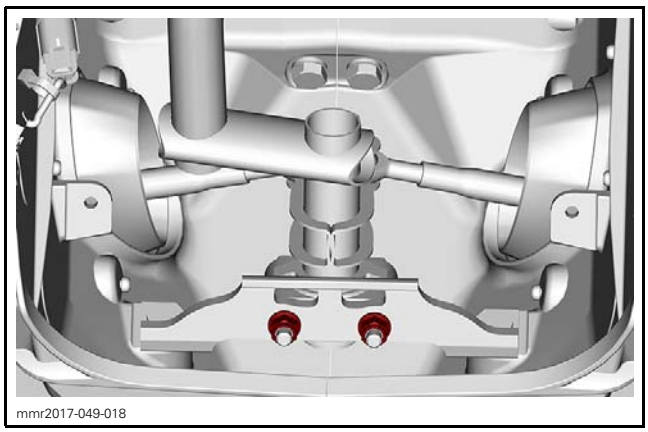

mmr2017-049-017

FRONTWARD POSITION COLUMN


mmr2017-049-022

REARWARD POSITION COLUMN

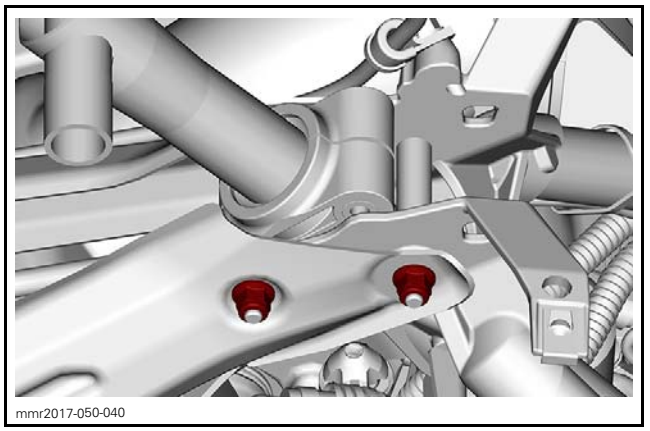
6. Remove nuts and screws securing the steering column lower support.


mmr2017-049-018

7. Pull steering column from top.

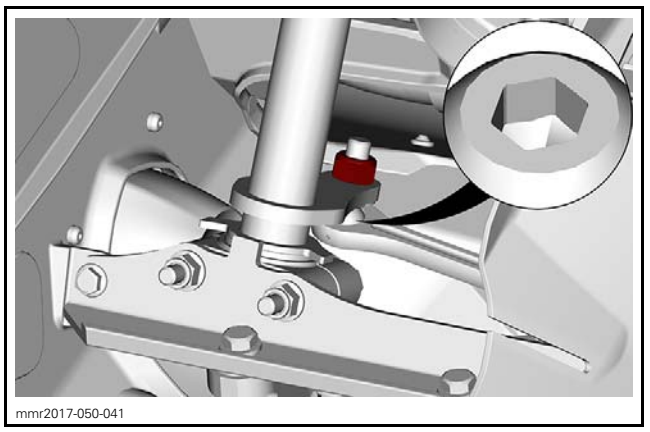
Removing the Steering Column - With Steering Rack

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.

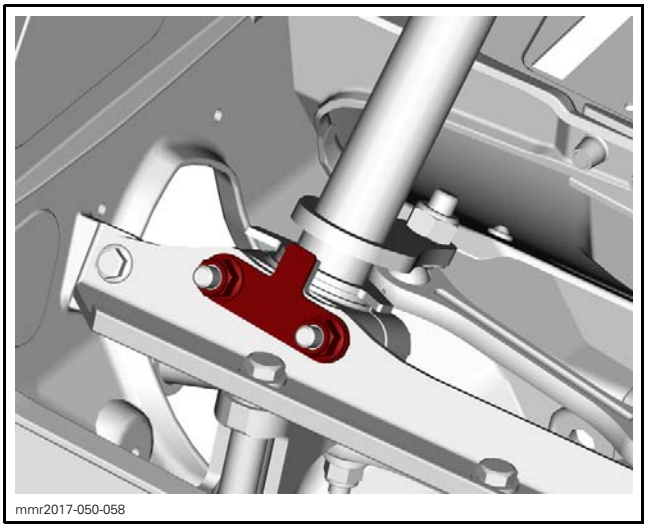

mmr2017-050-040

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.

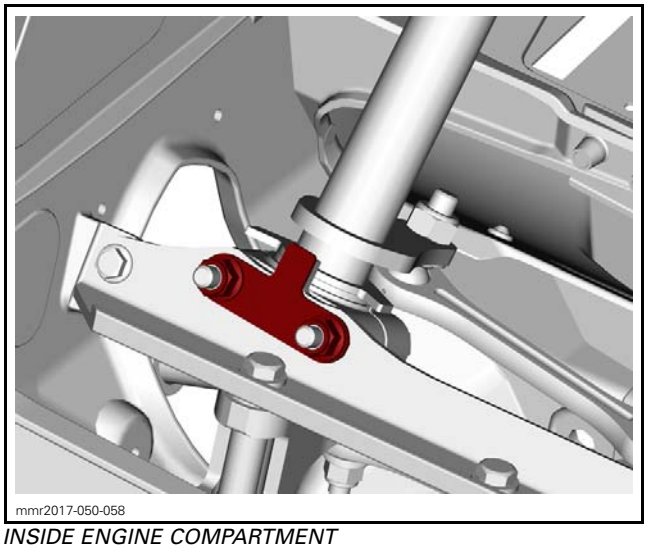
Check steering rack for looseness.

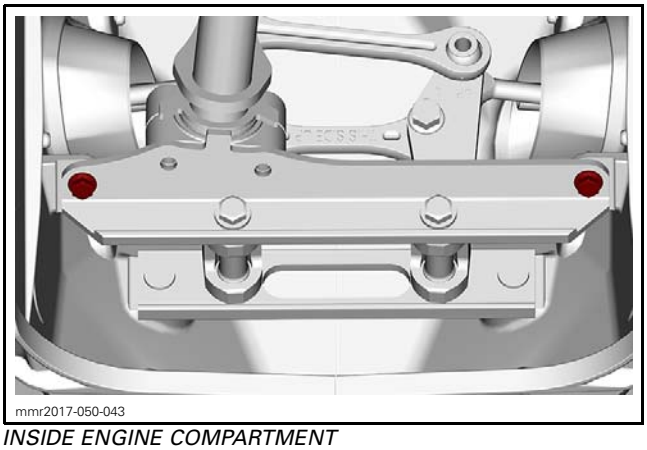
Check if stopper plate is deformed or otherwise damaged.

Replace component if necessary.

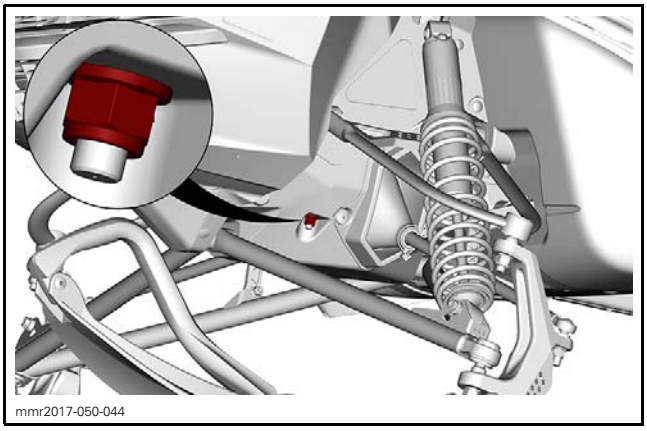
Removing the Steering Rack

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

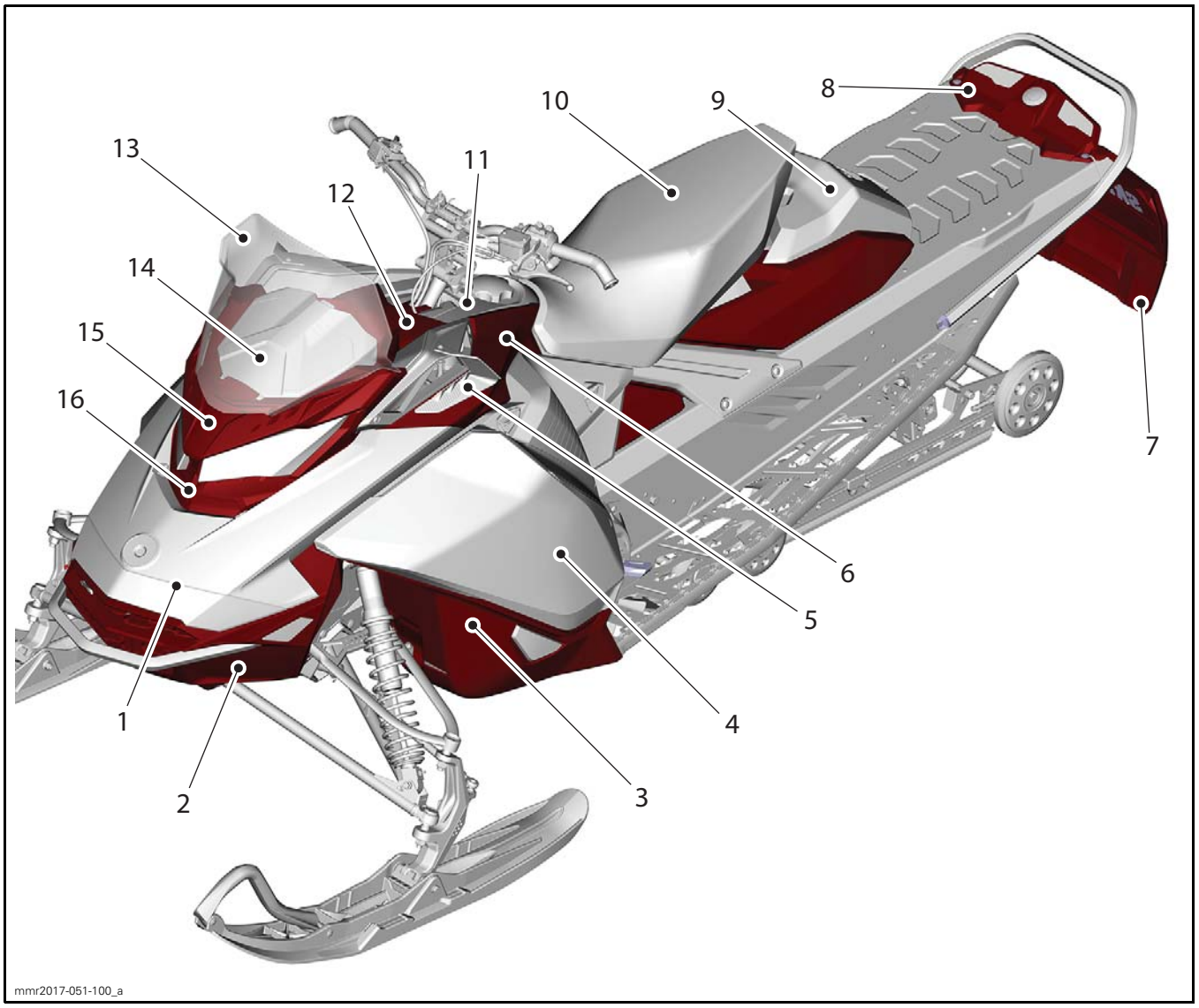
Installing the Steering Rack

The installation is the reverse of the removal procedure.

BODY

SERVICE TOOLS

Description	Part Number	Page
SUPERTANIUM DRILL BIT 3/16"	529 031 800	347



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.

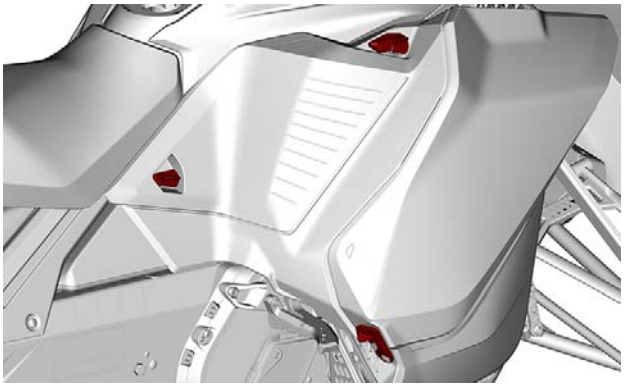
NOTICE Do not remove the pre-mask yet.

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.

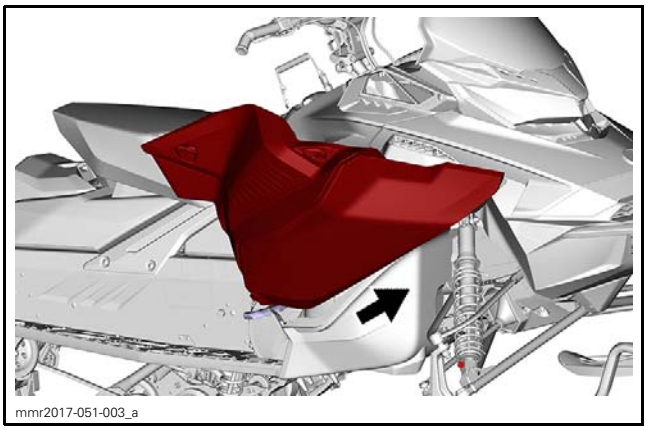
SIDE PANEL

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.

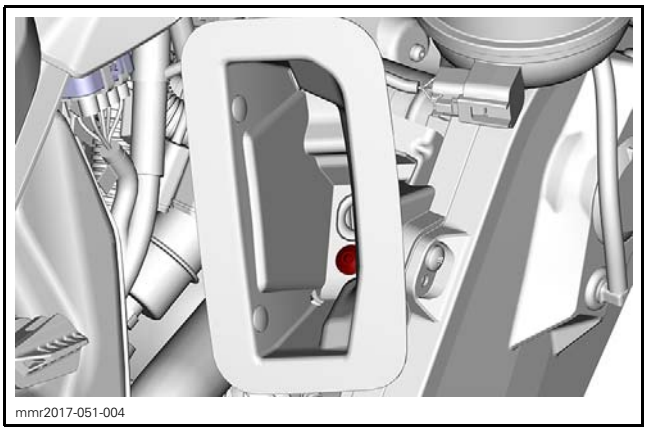
Installing the Side Panel

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

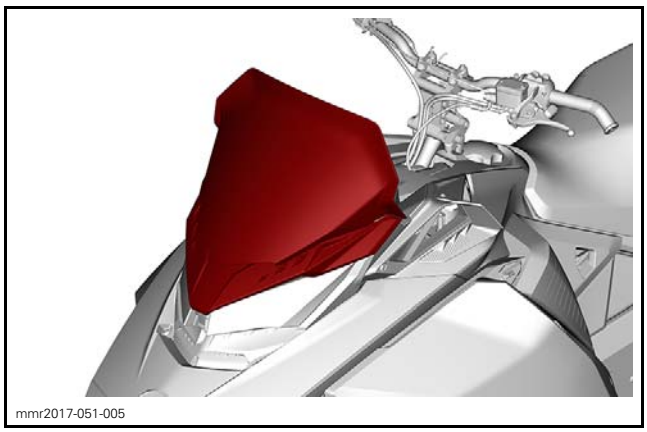
3. Remove rewind starter handle. Refer to *REWIND STARTER* subsection.

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

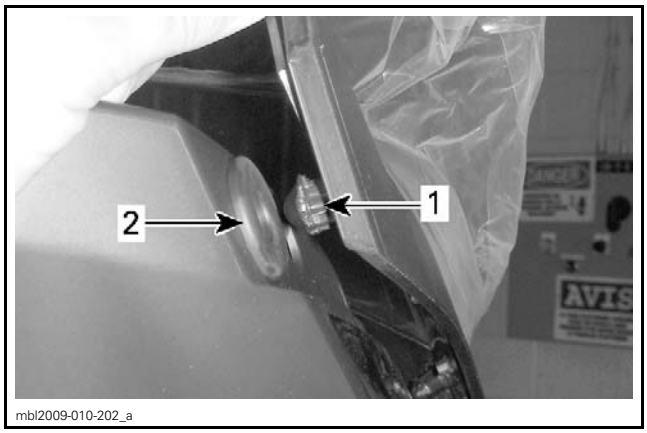
The installation is the reverse of removal procedure.

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.



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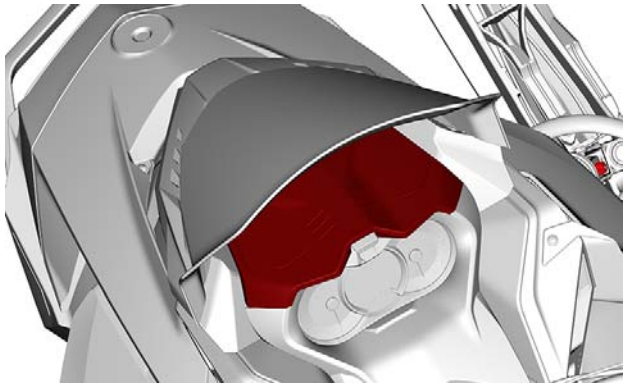
TYPICAL
1. Windshield tab
2. Gauge support front grommet

⚠ 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



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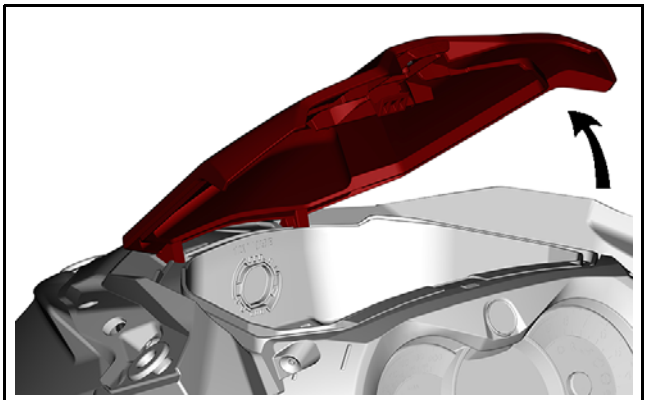
Removing the Storage Compartment Cover

1. Remove windshield.
2. Open storage cover until it is almost vertical.



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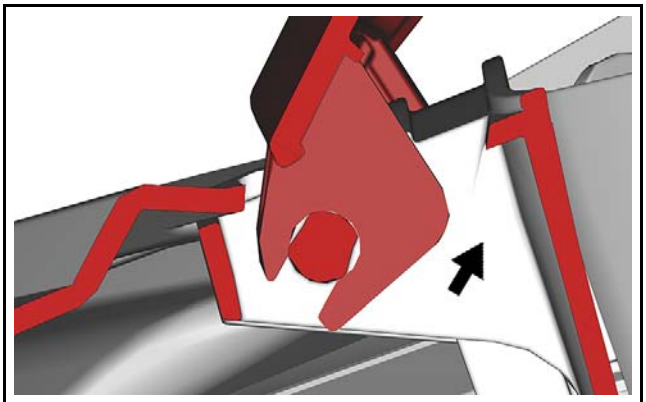
3. Pull out storage cover.



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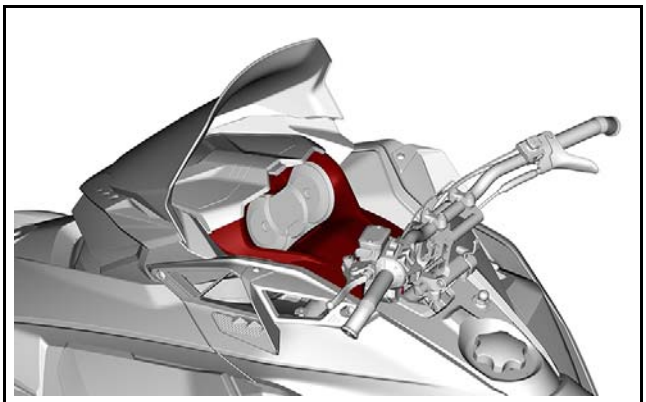
Installing the Storage Compartment Cover

The installation is the reverse of the removal procedure.

NOTICE Ensure windshield is NOT installed. Otherwise, the storage cover could be damaged during installation.

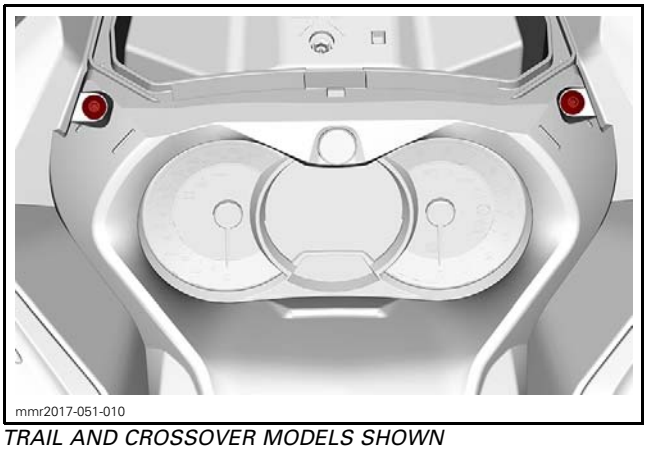
GAUGE SUPPORT



mmr2017-051-009

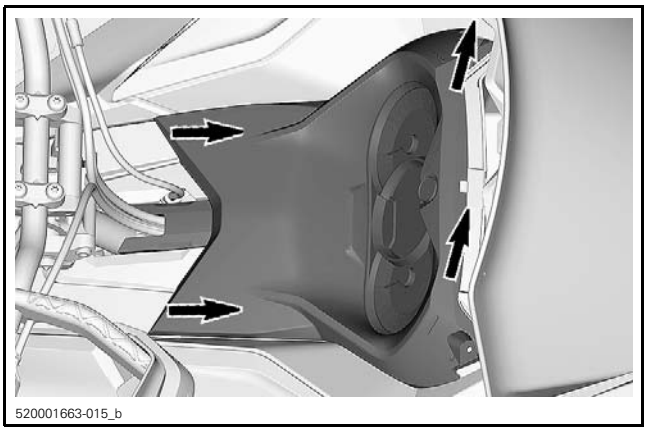
Removing the Gauge Support

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.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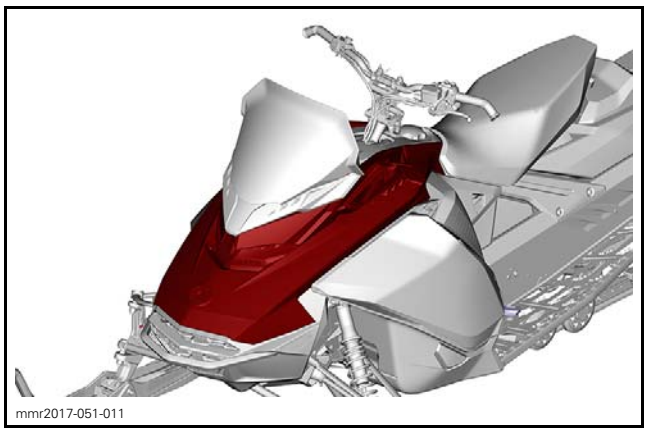
5. Remove the multifunction gauge from support. Refer to *GAUGE* subsection.

Installing the Gauge Support

The installation is the reverse of removal procedure.

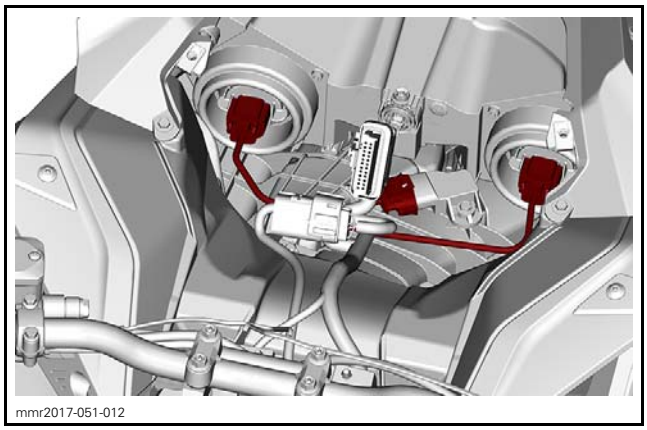
TIGHTENING TORQUE	
Gauge support screw	2.3 N•m ± 0.2 N•m (20 lbf•**in** ± 2 lbf•**in**)

UPPER BODY MODULE

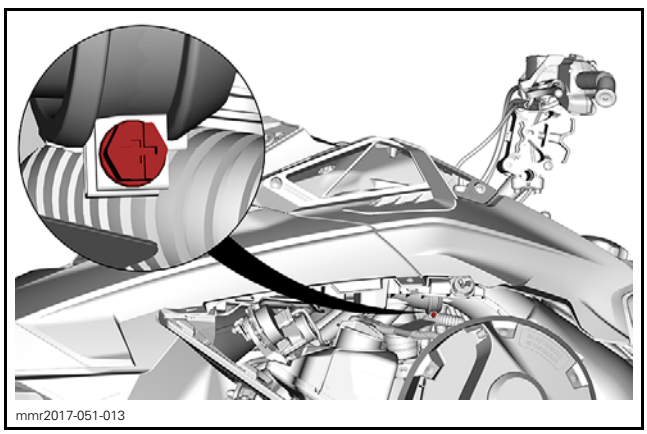

mmr2017-051-011

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.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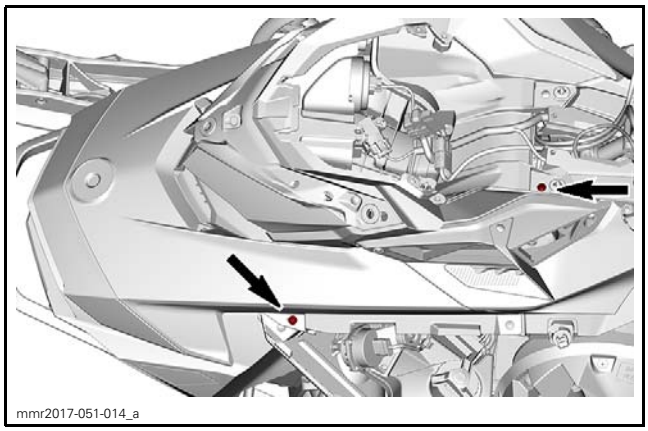
4. Remove the upper body module retaining screws.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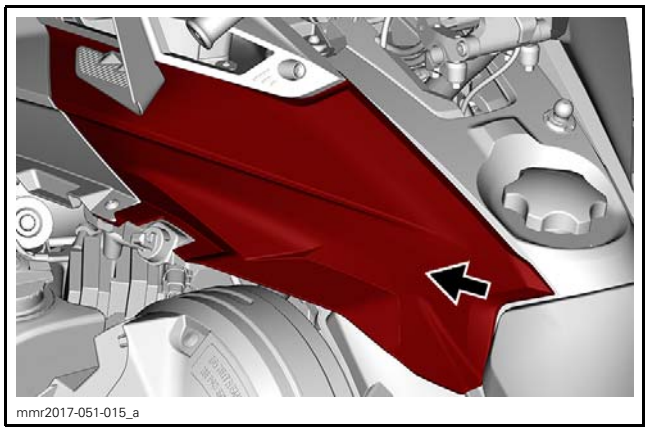
5. Pull on the rear end of both lateral hood until their tabs come out of the rear console.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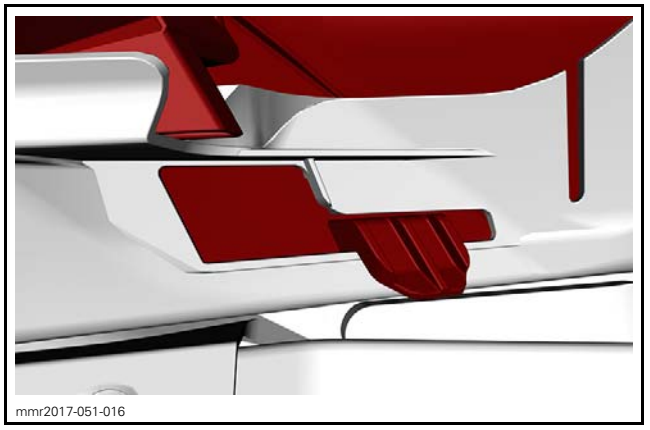
6. Remove the upper body module.
   6.1 Grab the upper body module in the gauge support section.
   6.2 Pull the module forward.
   6.3 Remove the module from the vehicle.

Installing the Upper Body Module

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

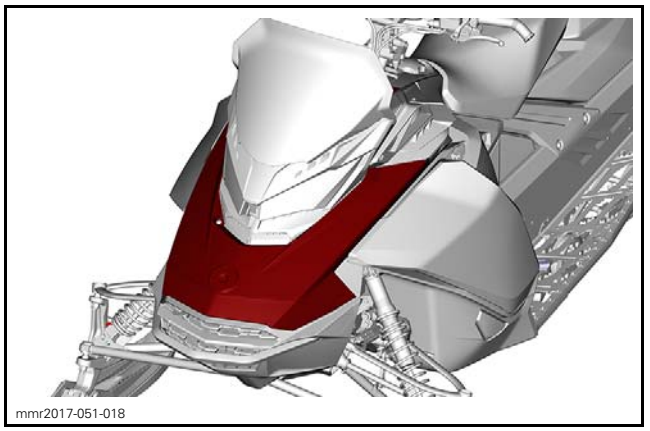
Ensure to engage rear hood tabs in rear console.


mmr2017-051-016

Ensure to connect the air intake hose.

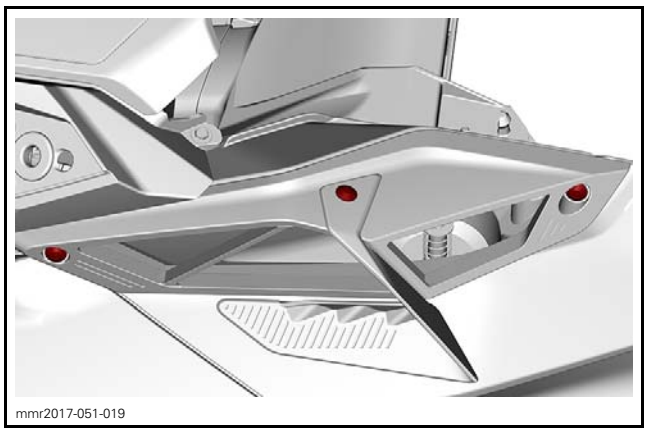
TIGHTENING TORQUE	
Upper body module screw	2.3 N•m ± 0.2 N•m (20 lbf•**in** ± 2 lbf•**in**)

HOOD

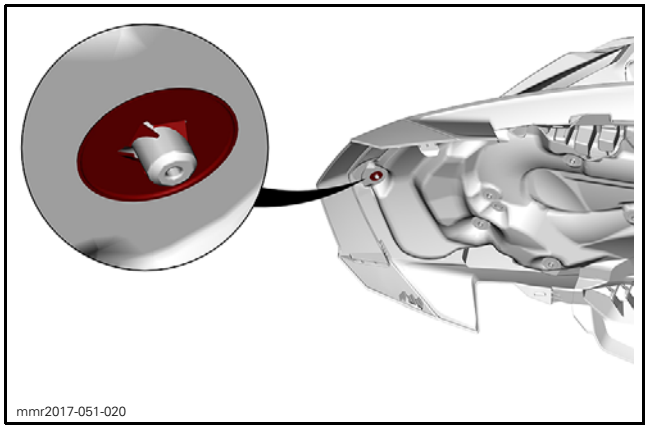

mmr2017-051-018

Removing the Hood

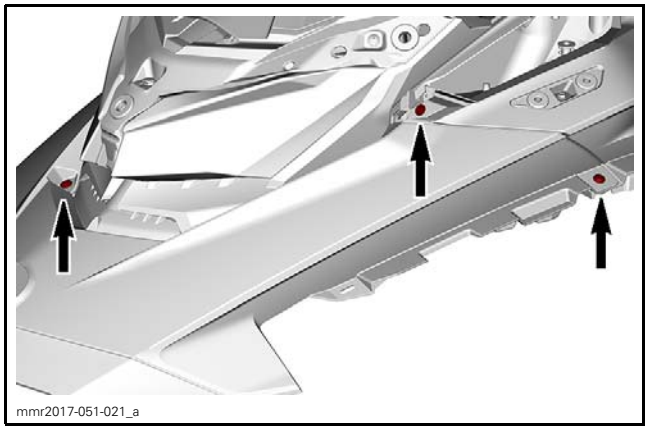
1. Remove the upper body module. Refer to procedure in this subsection.
2. Remove both sides air deflector and air intake filter.


mmr2017-051-019

3. Remove the front push nut under the hood.



4. Remove hood screws.



5. Pull out hood.

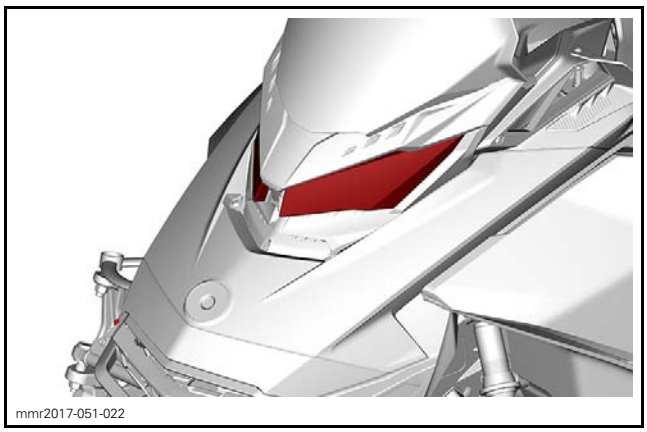
Installing the Hood

The installation is the reverse of removal procedure.

Install a new push nut.

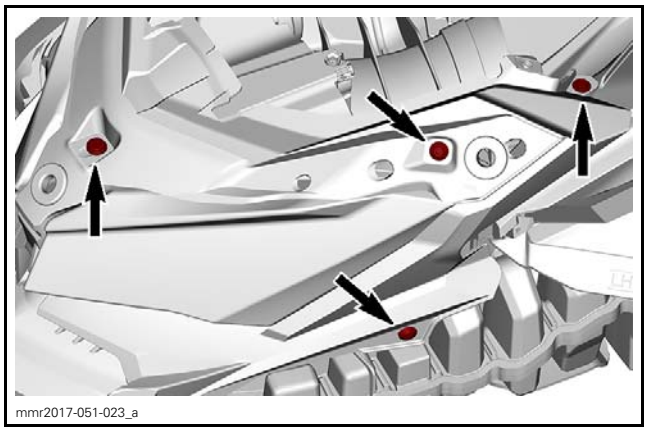
TIGHTENING TORQUE	
Hood hexagonal screw	1.8 N•m ± 0.2 N•m (16 lbf•**in** ± 2 lbf•**in**)
Hood Torx screw	2.3 N•m ± 0.2 N•m (20 lbf•**in** ± 2 lbf•**in**)

HEADLIGHT MODULE



Removing the Headlight Module

1. Remove the hood. Refer to procedure in this subsection.
2. Remove the headlight trim fasteners.



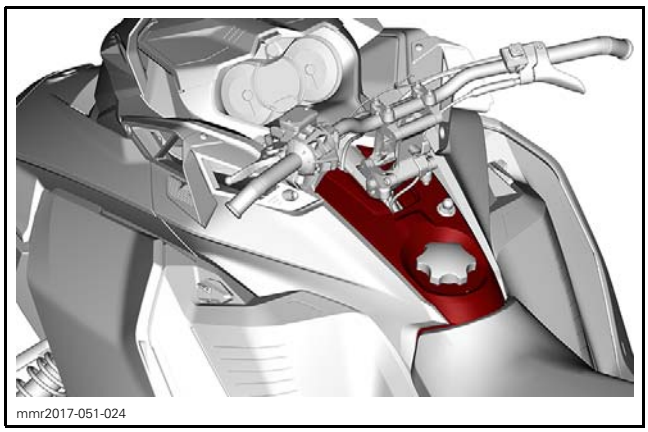
3. Pull out headlight housing and trim.

Installing the Headlight Module

The installation is the reverse of removal procedure.

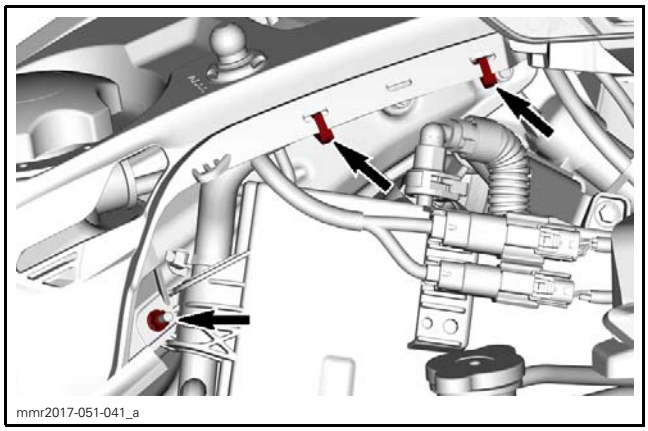
TIGHTENING TORQUE	
Headlight hexagonal screw	1.8 N•m ± 0.2 N•m (16 lbf•**in** ± 2 lbf•**in**)
Headlight Torx screw	2.3 N•m ± 0.2 N•m (20 lbf•**in** ± 2 lbf•**in**)

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.

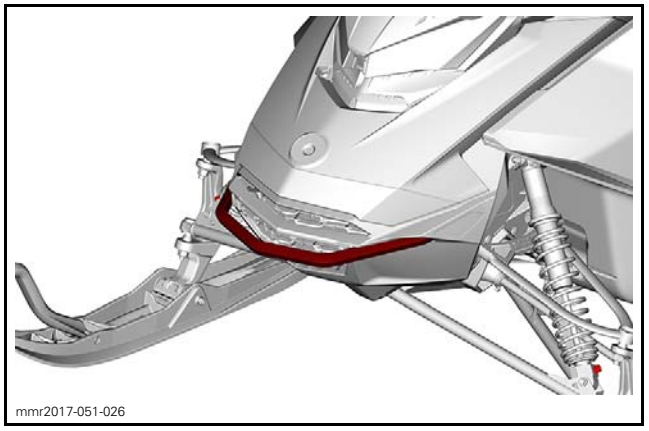
Installing the Console

The installation is the reverse of the removal procedure.

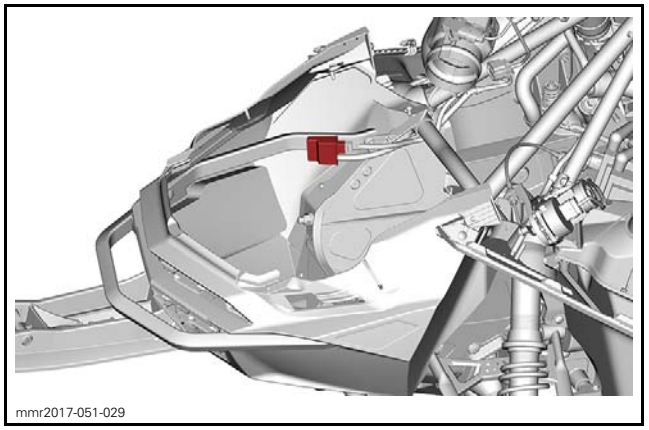
TIGHTENING TORQUE	
Console nut	2.3 N•m ± 0.2 N•m (20 lbf•**in** ± 2 lbf•**in**)

FRONT BUMPER

Removing the Front Bumper


mmr2017-051-026

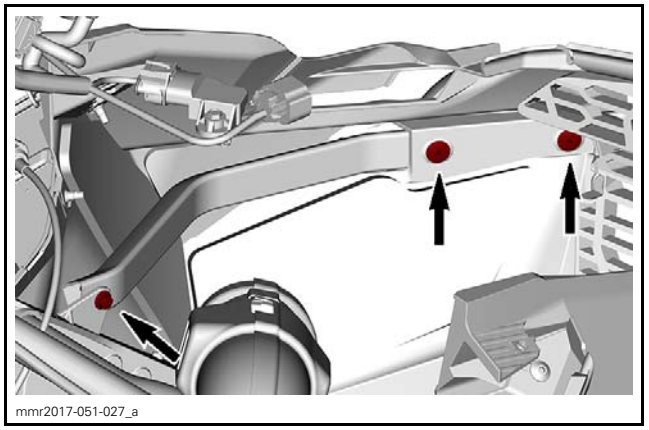
1. Remove tuned pipe. Refer to *EXHAUST SYSTEM* subsection.
2. Detach TCM from bumper.


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.

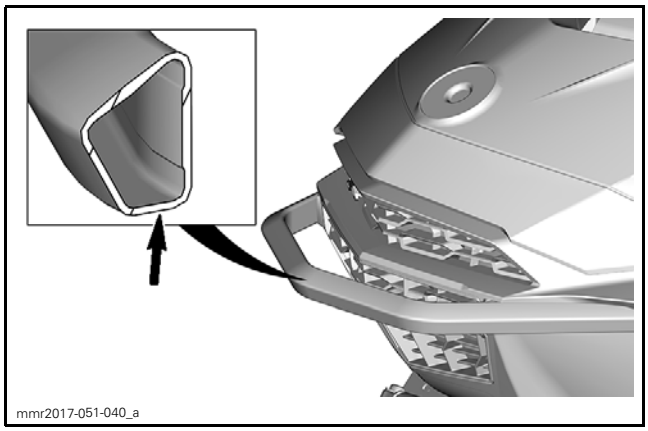

mmr2017-051-027_a

5. Pull out bumper towards front.

Installing the Front Bumper

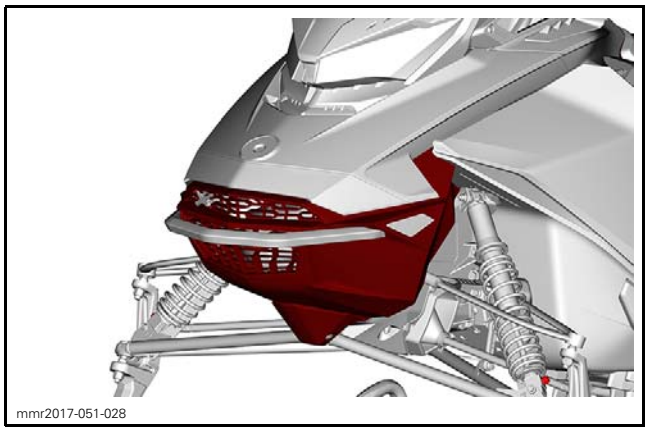
The installation is the reverse of the removal procedure.

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**)

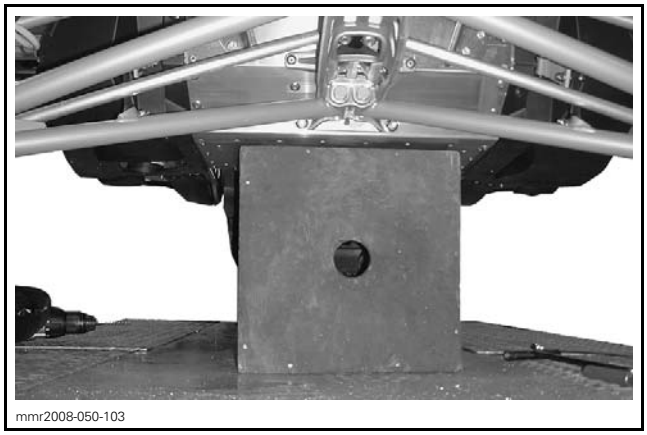
FRONT BOTTOM PAN


mmr2017-051-028

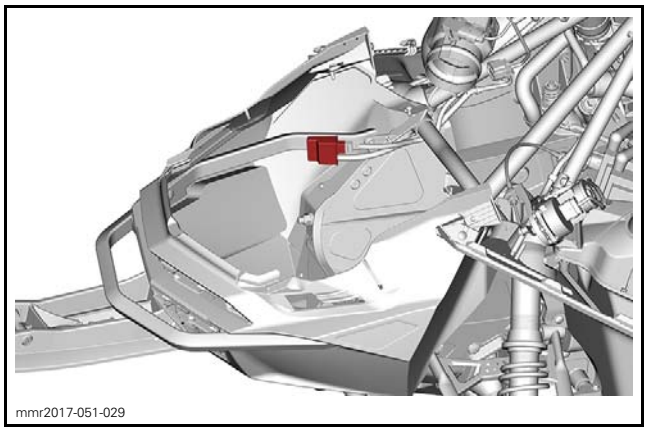
TYPICAL

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

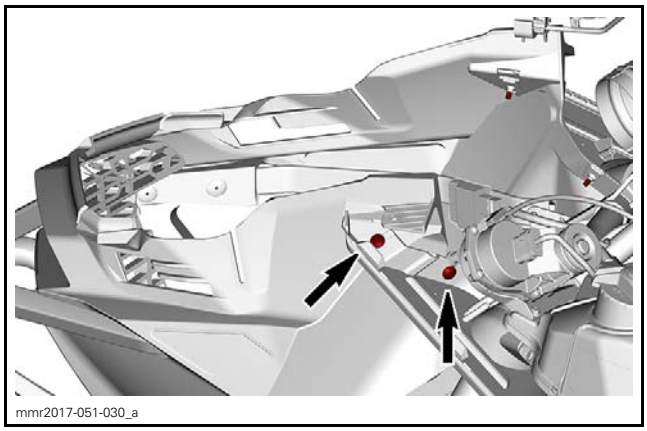
3. Remove the upper body module. Refer to procedure in this subsection.
4. Remove tuned pipe. Refer to *EXHAUST SYSTEM* subsection.
5. Detach TCM from bumper.


mmr2017-051-029

6. Remove *FRONT BUMPER*. See procedure in this subsection.

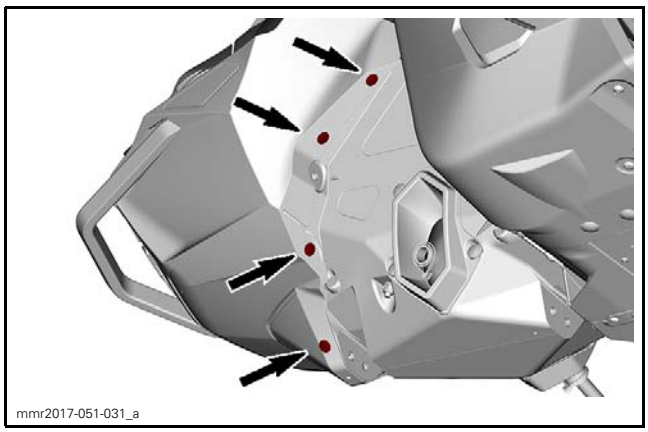
If the front bottom pan does not need to be replaced, the bumper may remain attached to bottom pan.

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

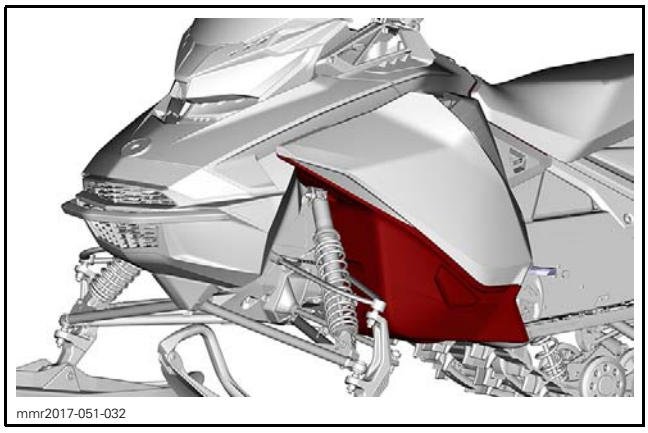
10. Remove bottom pan.

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**)

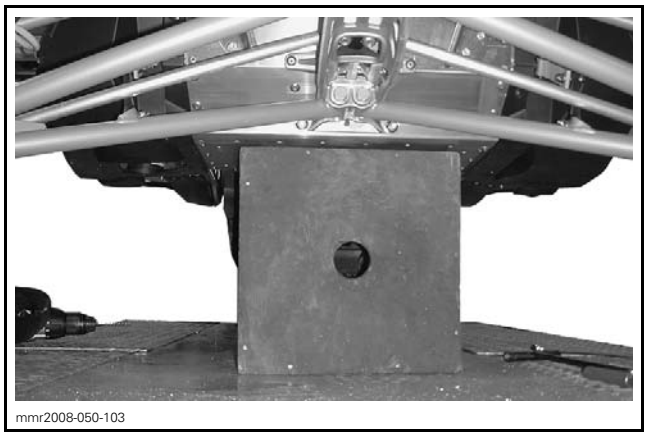
SIDE BOTTOM PAN


mmr2017-051-032

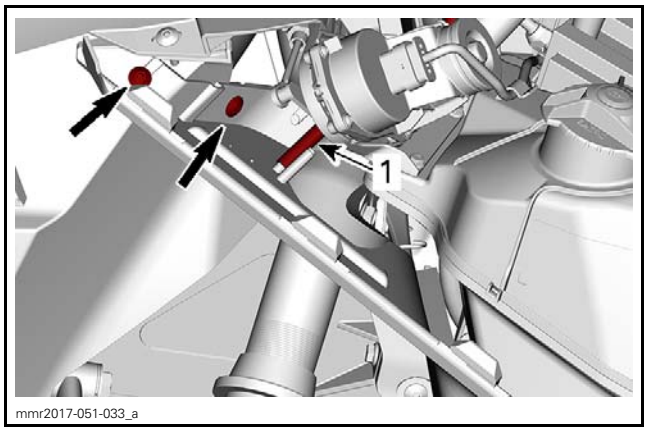
Removing the Side Bottom Pan

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.



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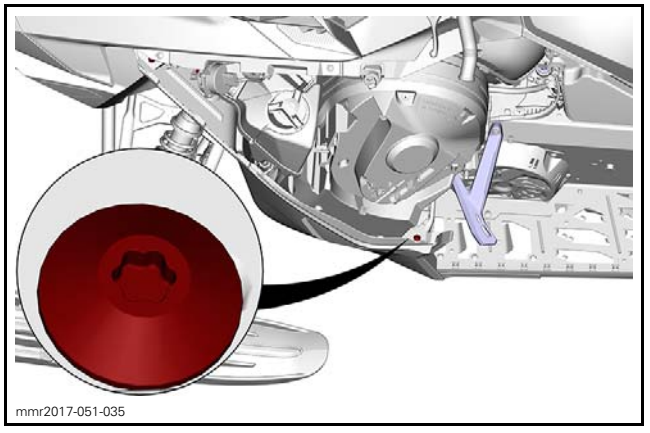
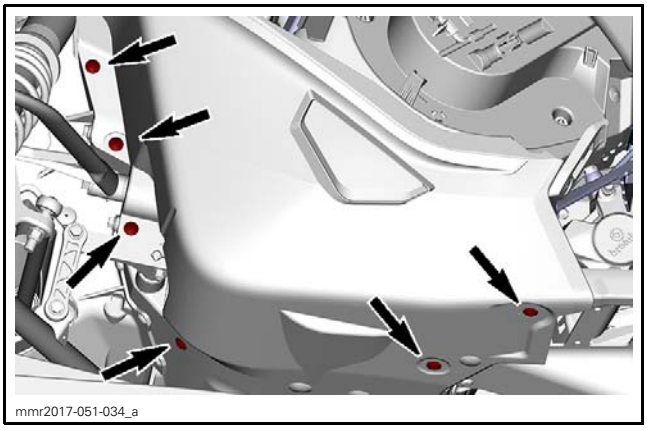
1. Vent tube


mmr2017-051-035

5. To remove the LH side bottom pan, remove the screws and washers.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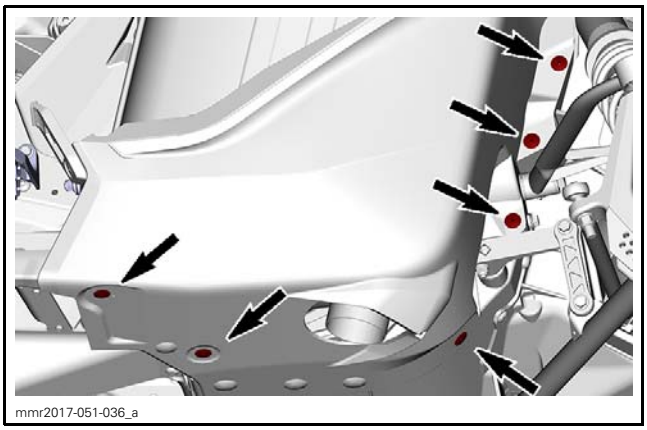
6. To remove the RH side bottom pan, drill out all rivets

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.

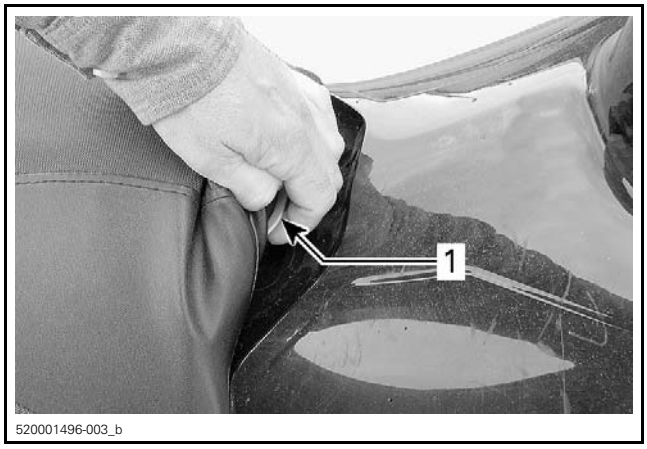
TIGHTENING TORQUE	
Side bottom pan screw	2.8 N•m ± 0.2 N•m (25 lbf•**in** ± 2 lbf•**in**)

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.

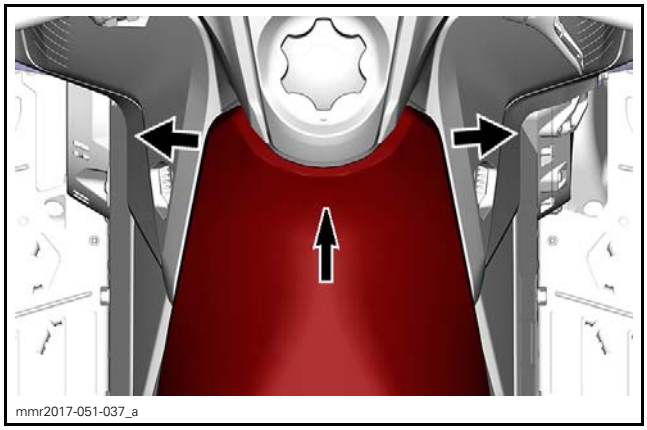
Securely engage latch.

⚠ 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.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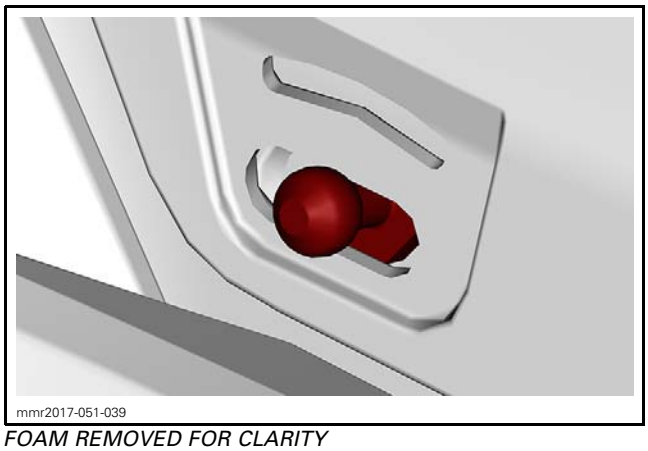
The Installation is the reverse of the removal procedure.

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.

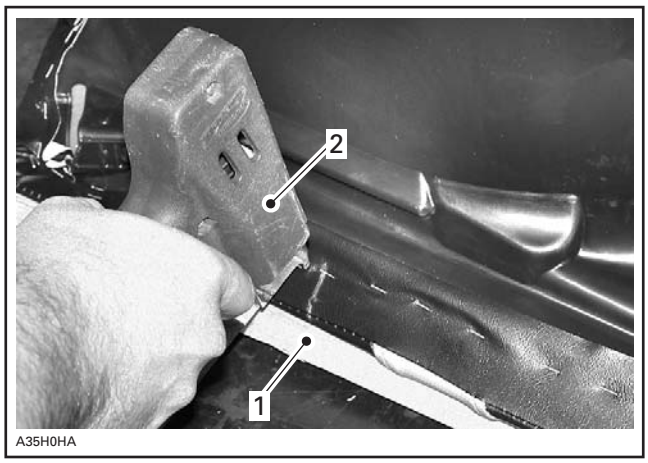
Remove the old seat cover. Check the foam and replace it if necessary.

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.

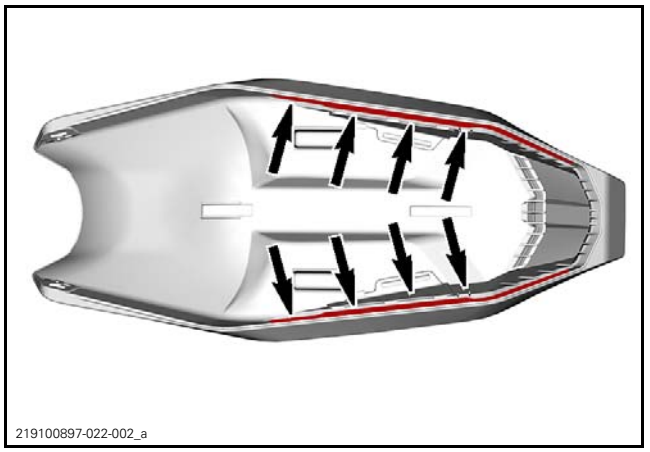
Ensure that the seat rest firmly against a hard surface such as a piece of wood. This is done to get the staples completely pushed in place.



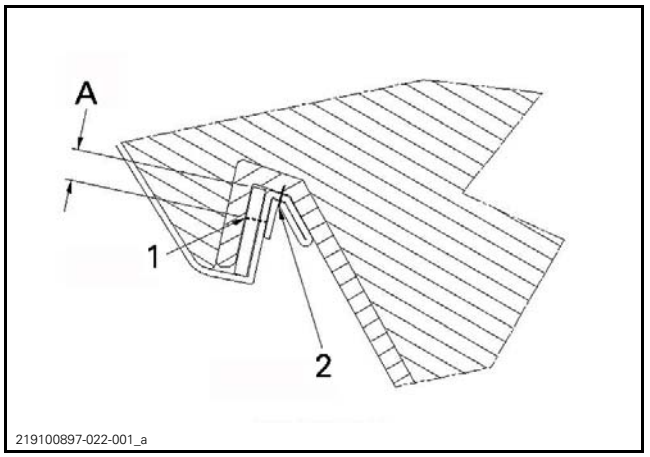
TYPICAL
1. *Piece of wood*
2. *Tacker*

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.

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

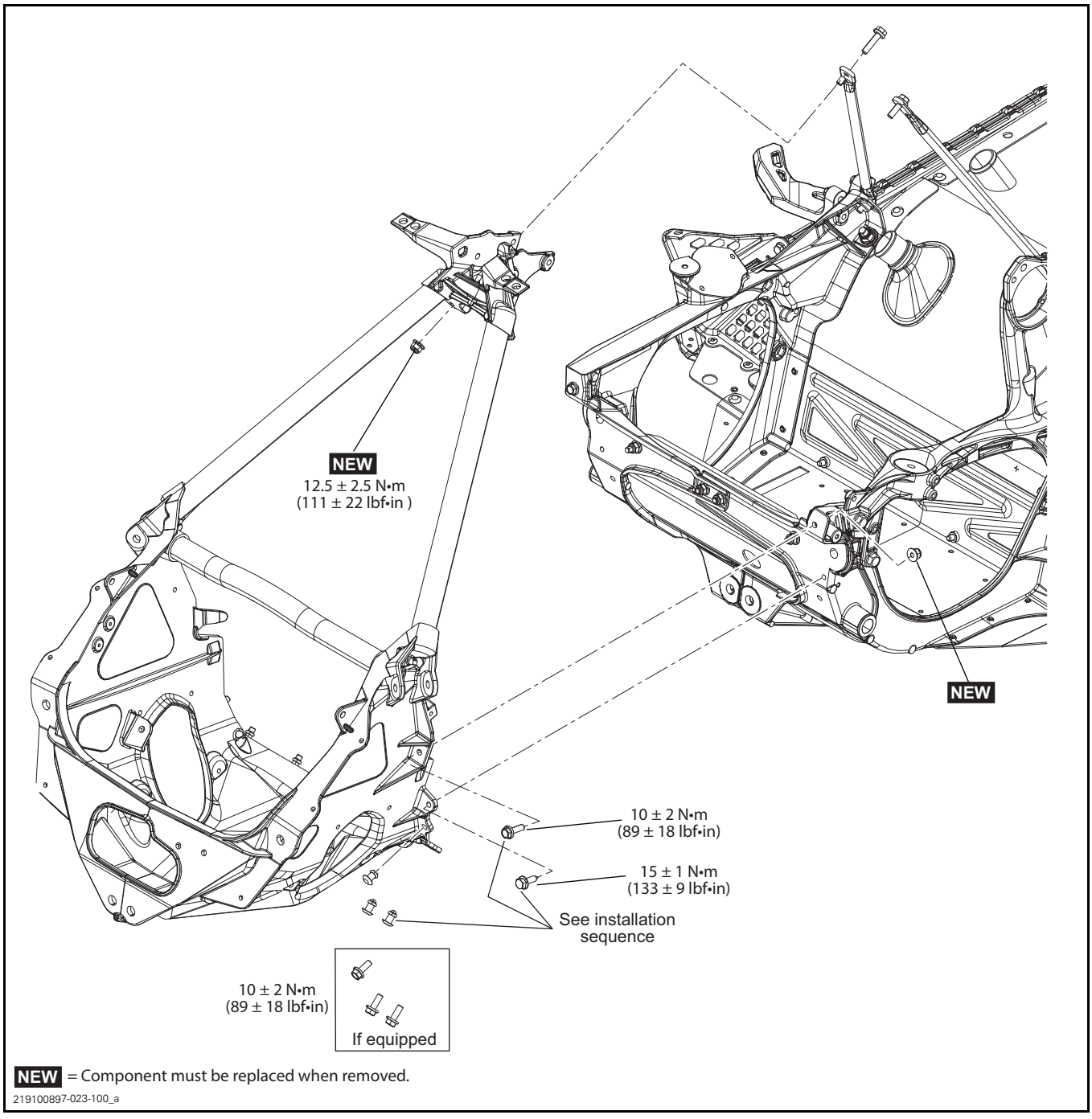
Pull housing towards rear.

FRAME

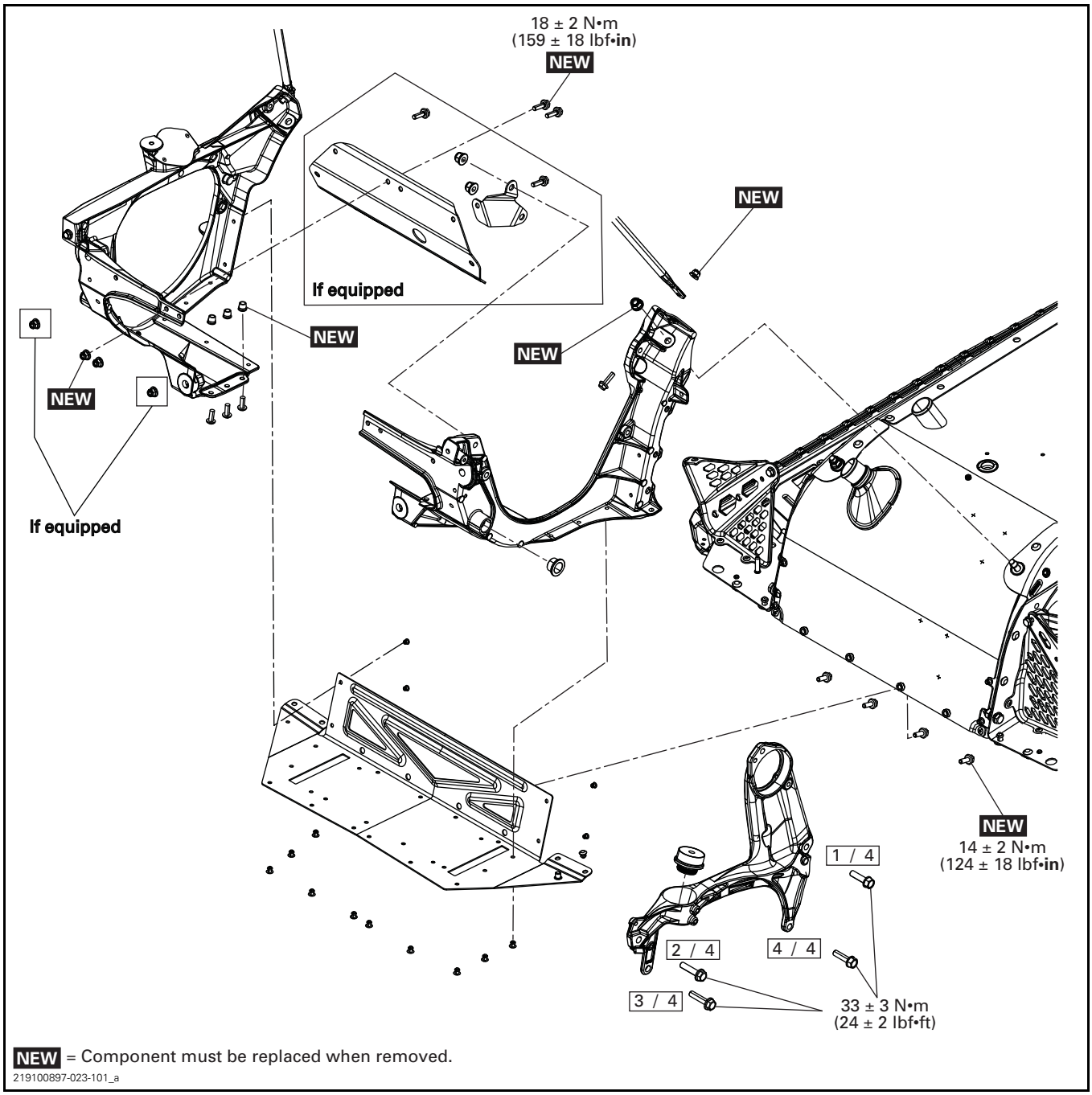
SERVICE TOOLS

Description	Part Number	Page
RADIATOR INSTALLATION GAUGES	529 036 422	365
SUPERTANIUM DRILL BIT 3/16"	529 031 800	356

SUSPENSION MODULE



ENGINE MODULE



NEW = Component must be replaced when removed.

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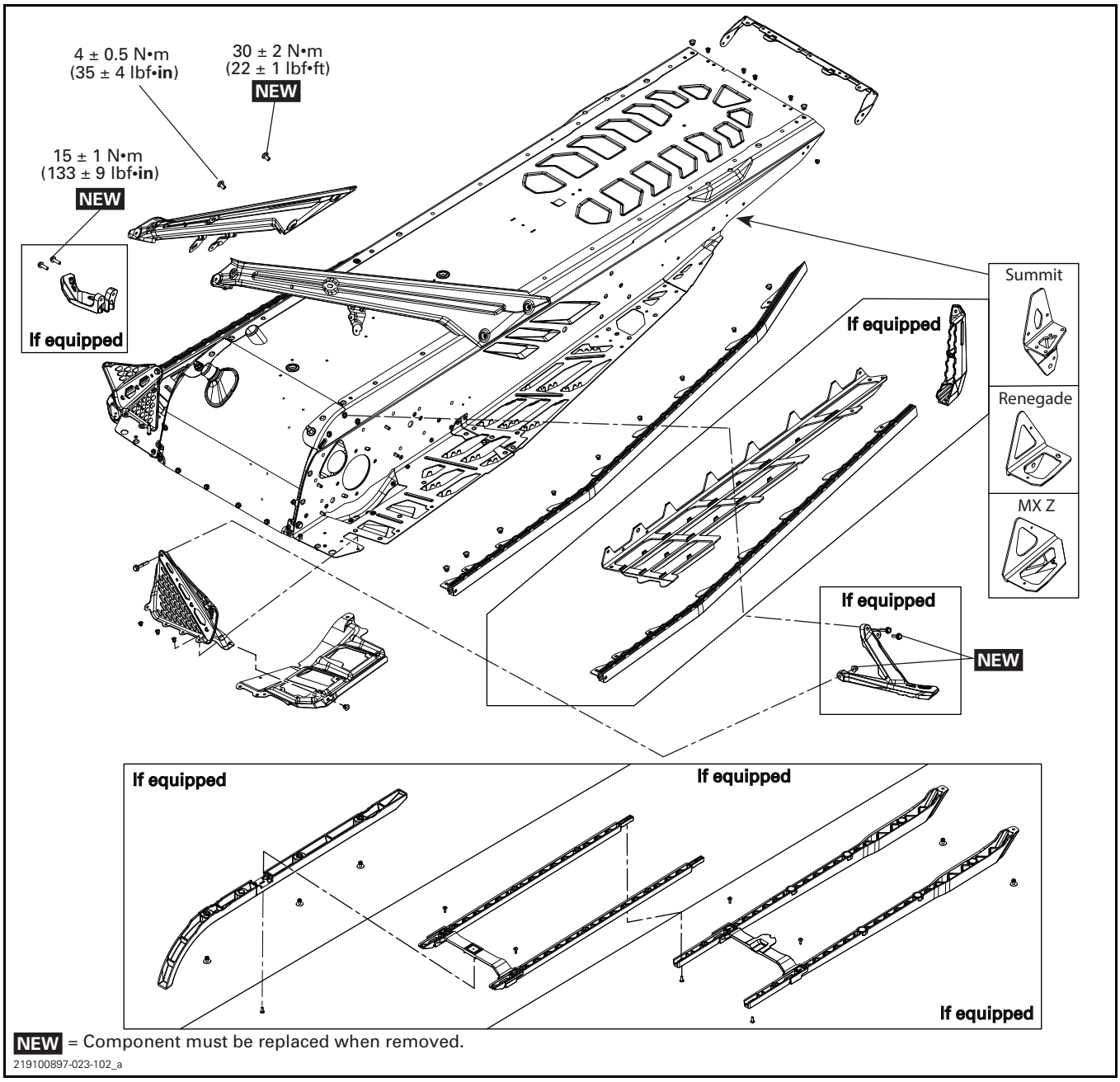
TUNNEL MODULE



NEW = Component must be replaced when removed.

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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

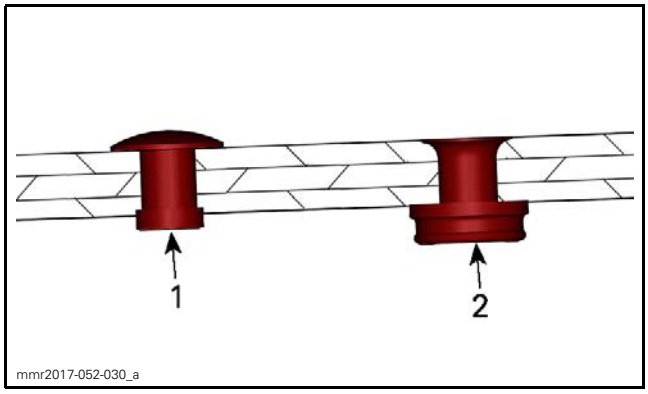
For proper drilling instructions and to prevent premature wear, follow the procedures as detailed.

NOTICE **When removing rivets, do not enlarge or deform the rivet holes in the frame.**

Removing a Self-Percing Rivet

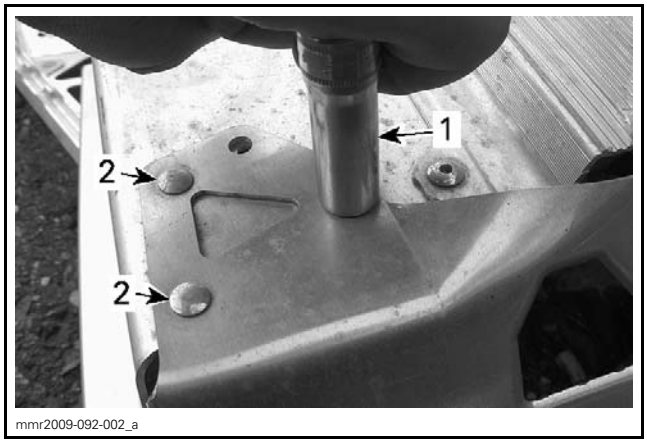
Henrob and Thomson rivets are self-piercing rivets. They are installed with specific robotized equipment.

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.

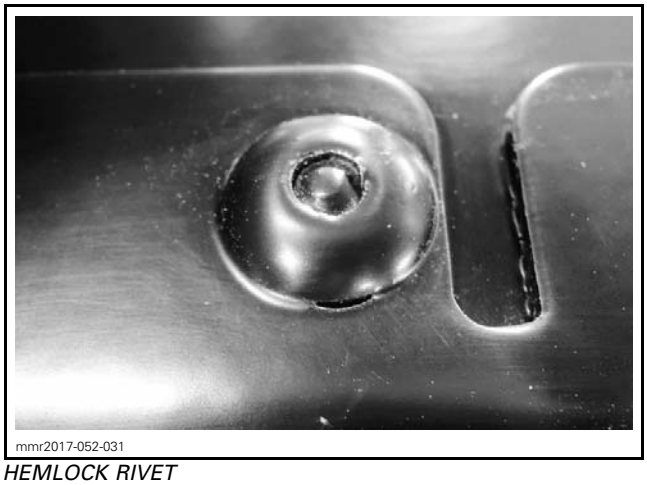
Removing a Pop Rivet

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)

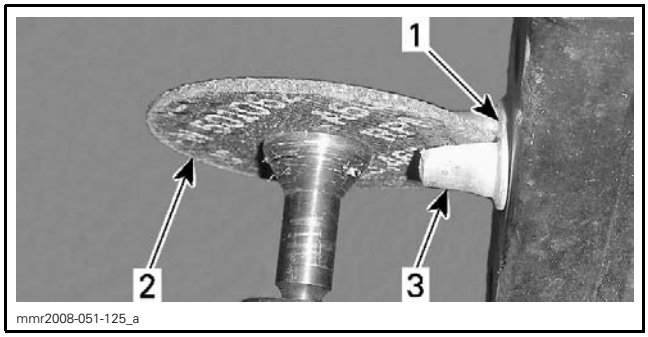
NOTICE **Drill only sufficiently to cut rivet head. Do not drill into frame material, or part secured using the rivet. When rivet is used to secure a plastic part, use pliers to avoid rotation of rivet with drill bit and heating or melting of the plastic part.**

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.

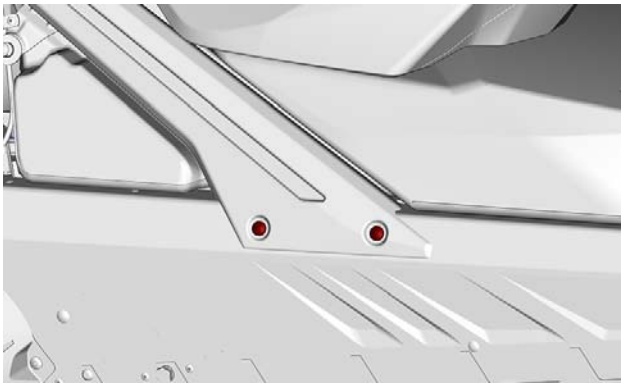
REAR BUMPER

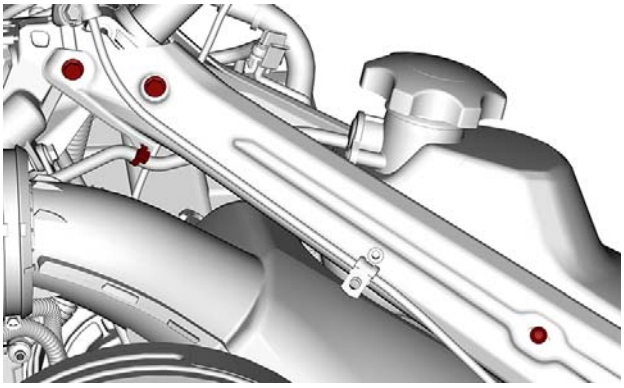
Refer to *BODY* subsection for rear bumper removal and installation procedure.

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.

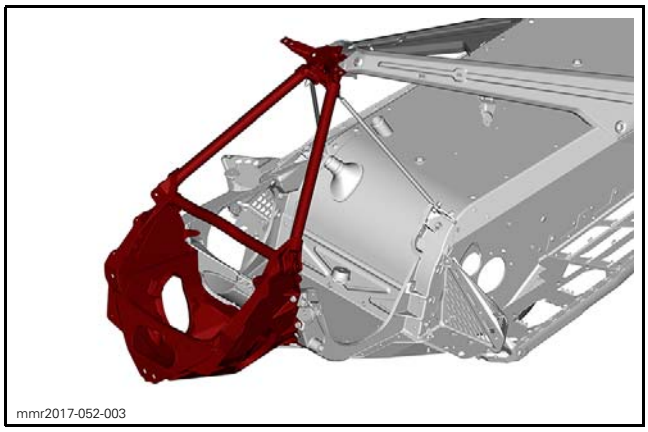
Installing the Rear Frame Member

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

NOTE: Install all screws and nuts before tightening them.

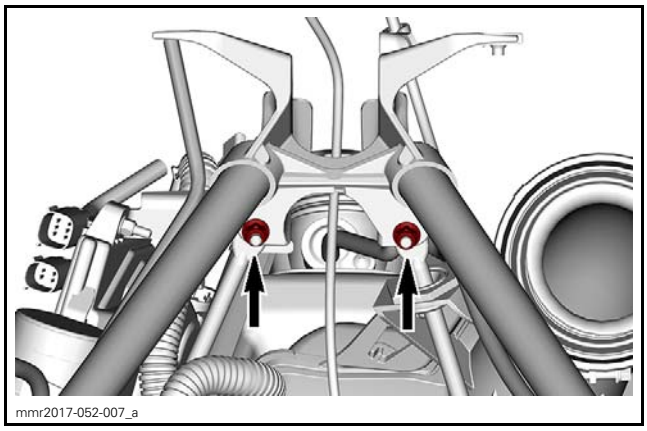
Refer to exploded view for proper tightening torque.

FRONT SUSPENSION MODULE

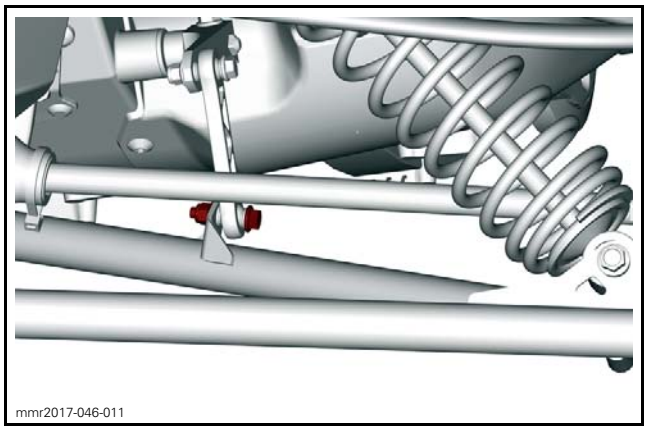

mmr2017-052-003

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

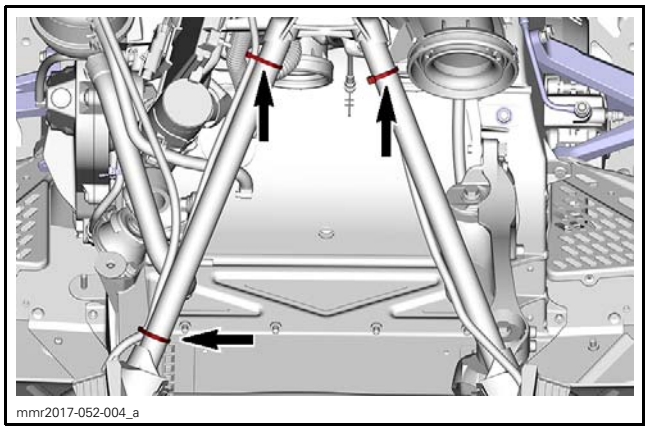
6. Remove the front suspension assembly in the following manner:
   6.1 Detach tie-rod ends from steering column.
   6.2 Remove upper shock absorber screws.
   6.3 Remove screw that secures stabilizer link to lower arm.


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.

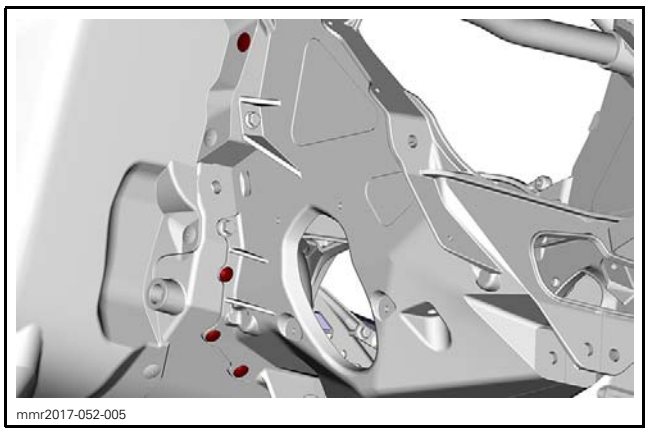
9. Cut locking ties that secure vents and electrical harness to module tubes.


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.

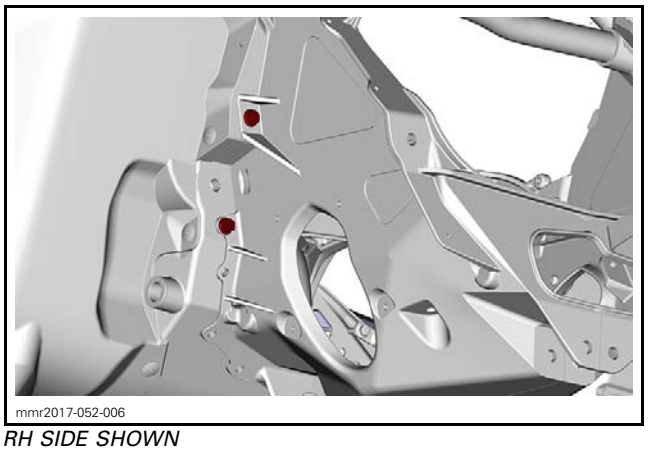
For riveted models, refer to *REMOVING A POP RIVET* at the beginning of this subsection for procedure.

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

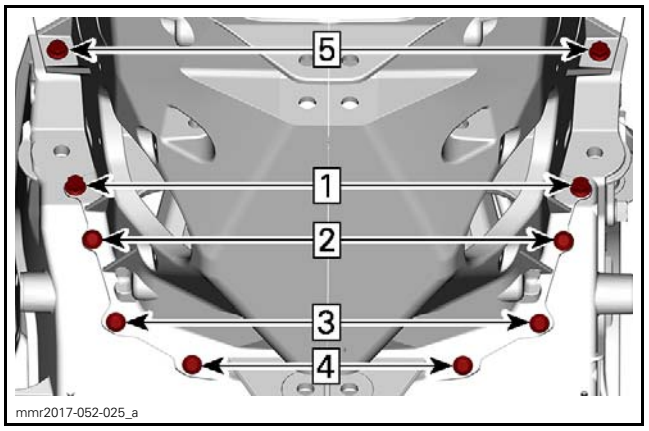
13. Remove the front suspension module.

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.



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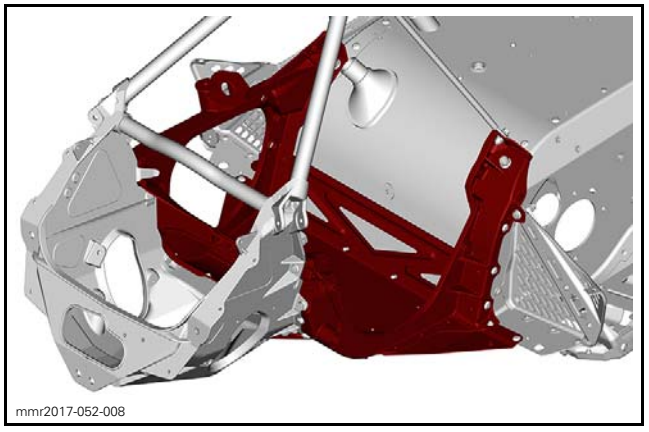
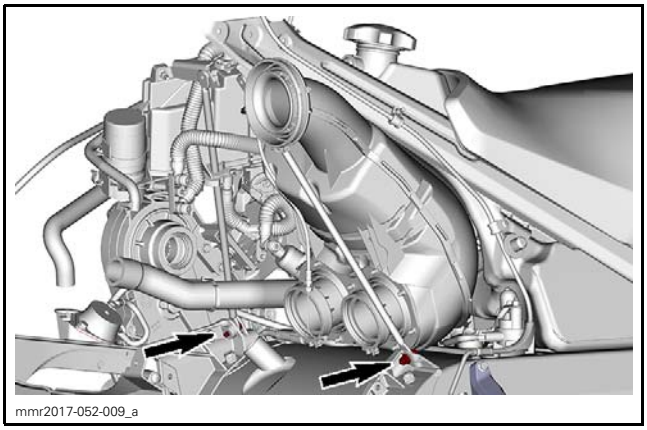
ENGINE MODULE

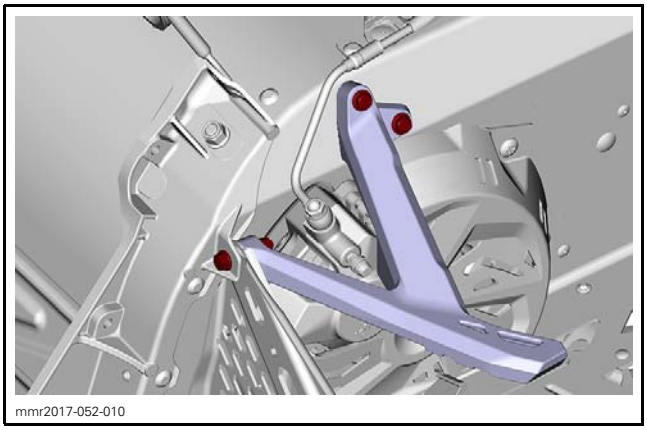

mmr2017-052-008

Removing the Engine Module

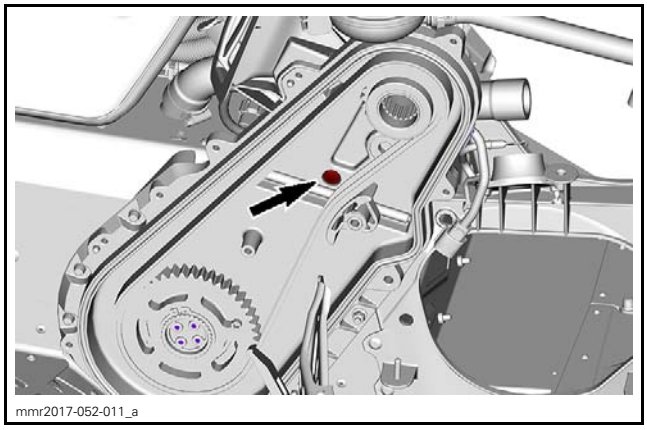
1. Remove the *FRONT SUSPENSION MODULE*, see procedure in this subsection.
2. Remove RH side bottom pan. Refer to *BODY* subsection.
3. Remove the RH side engine rubber mount. Refer to *ENGINE*.subsection.
4. Detach side frame members from engine module.


mmr2017-052-009_a

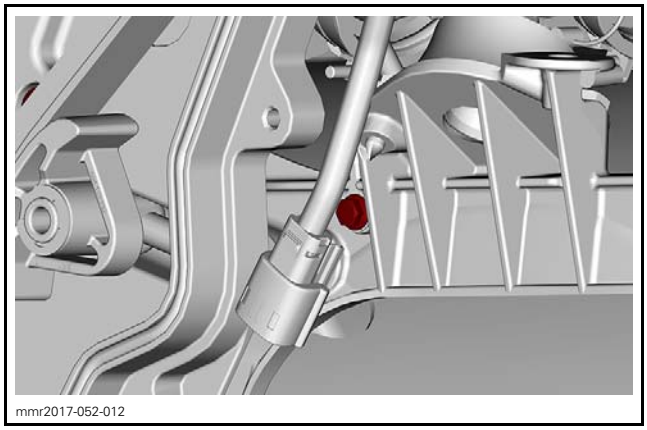
5. Remove toe hook fasteners, if equipped.


mmr2017-052-010

6. Remove the chaincase cover. Refer to *CHAINCASE* subsection.
7. Remove the screw that secure the chaincase to the engine module.

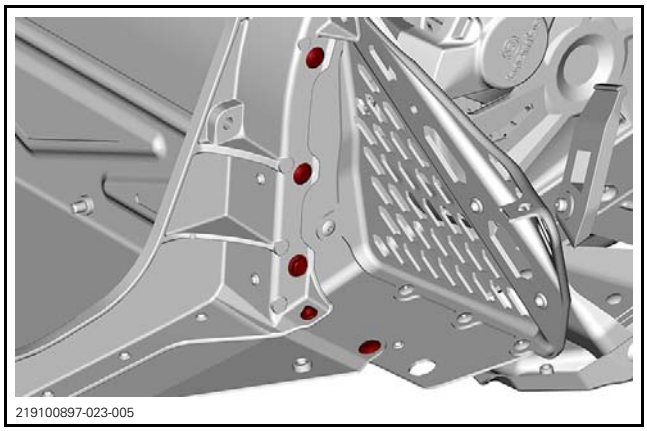

mmr2017-052-011_a

8. Remove the electrical ground screw located between the chaincase and the engine mount.

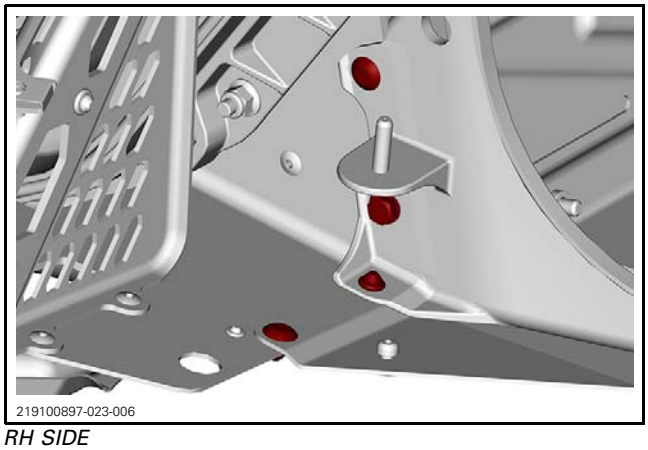

mmr2017-052-012

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.**

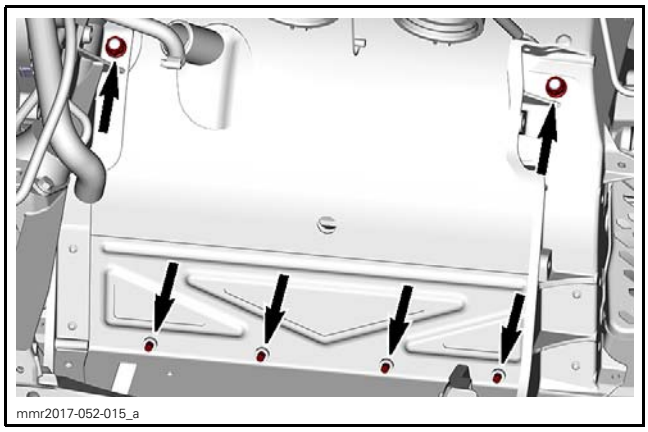

219100897-023-005

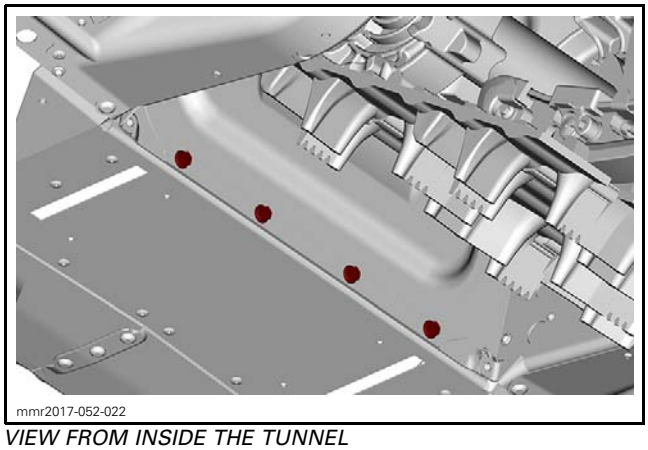
LH SIDE



RH SIDE

10. Remove nuts and screws securing the engine module to the tunnel.





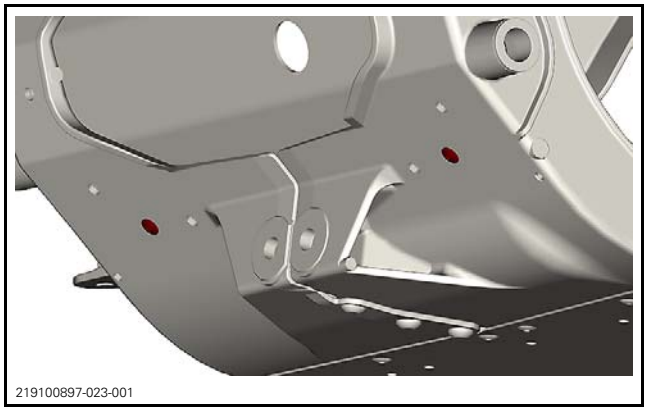
VIEW FROM INSIDE THE TUNNEL

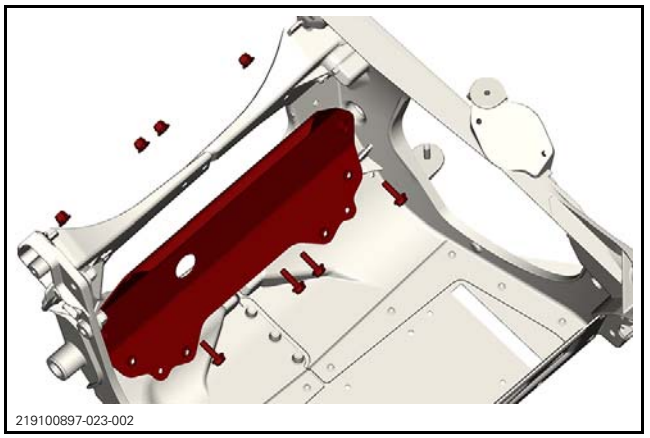
11. Remove the engine module.

If only one of the two side members is replaced:

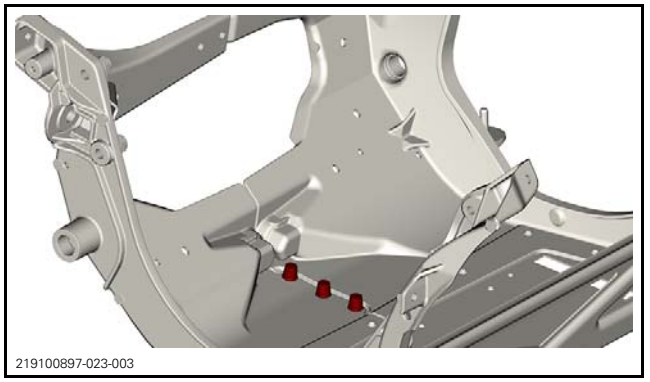
Models with Reinforcement Plate

Remove the rivets and bolts retaining the reinforcement plate.



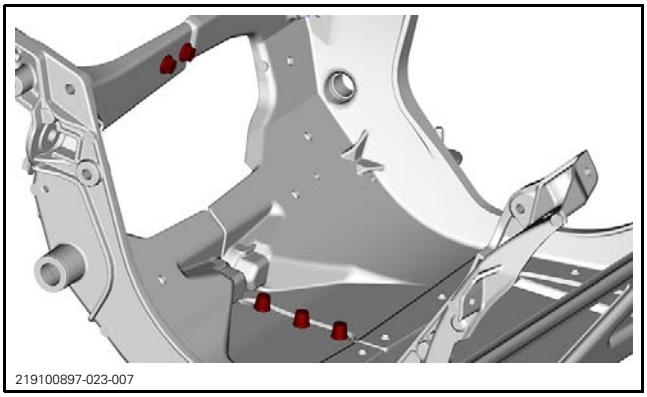


Remove HUCK rivets as per the procedure in this subsection.



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.

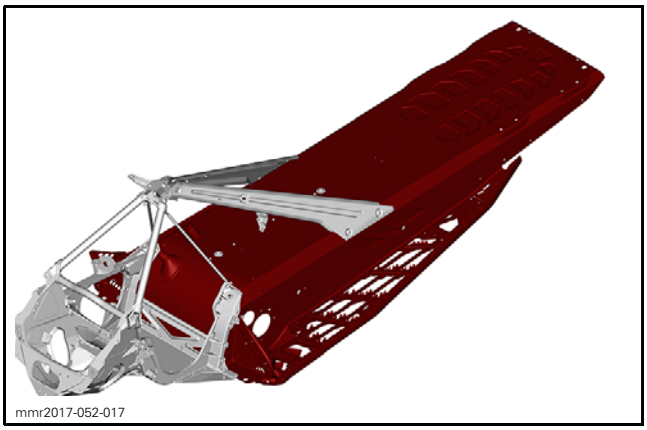
NEW FASTENERS	
Torx screw M6 x 20	(P/N 250000712)
Hexagonal flanged elastic stop nut M6	(P/N 233261414)

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.

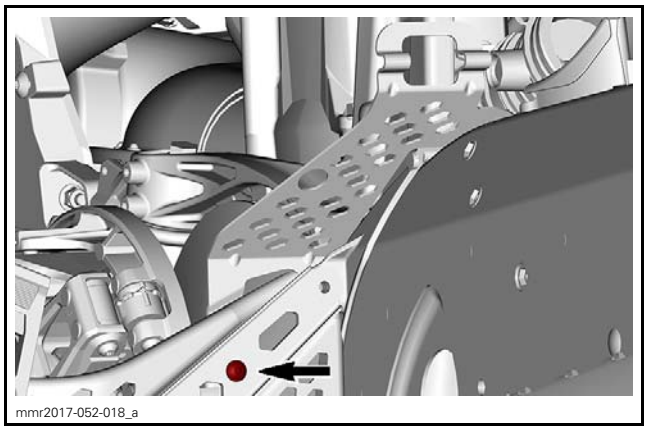
Refer to exploded view for proper tightening torque. Use standard tightening torque when not specified.

TUNNEL MODULE

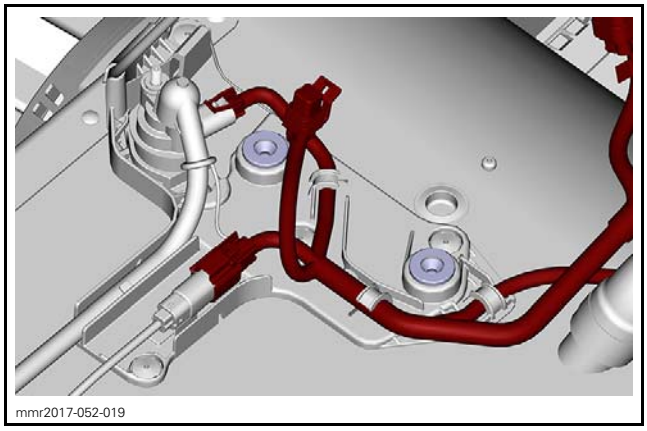

mmr2017-052-017

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.

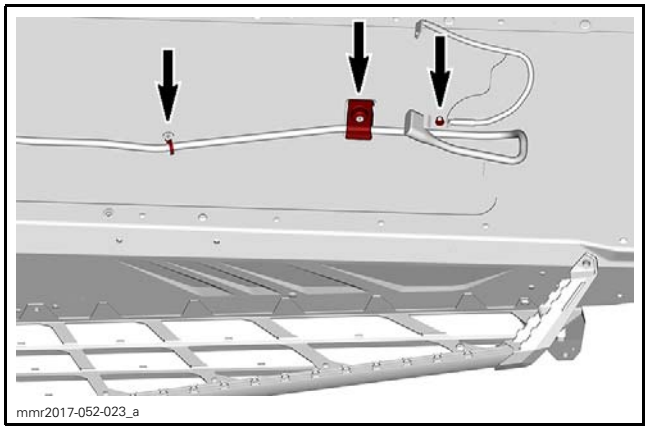

mmr2017-052-018_a

5. Disconnect the starter cable from the solenoid, if equipped.
6. Disconnect and remove the electric harness from the plastic bracket.

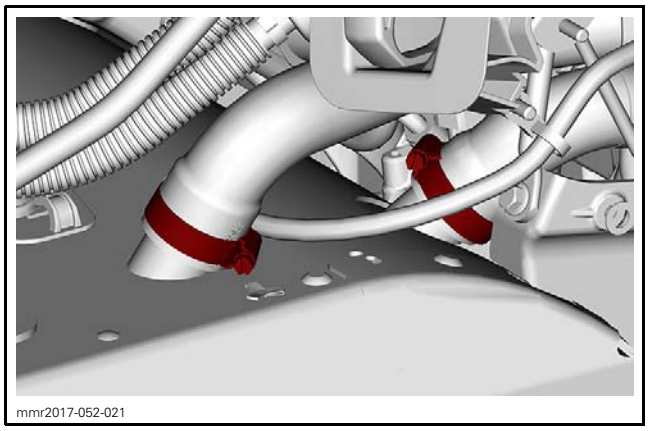

mmr2017-052-019

7. If the tunnel is replaced, remove:
   - Chaincase
   - The plastic bracket
   - Devices that retain the battery cable, if equipped

– Rear bumper
– Taillight
– Snowguard.

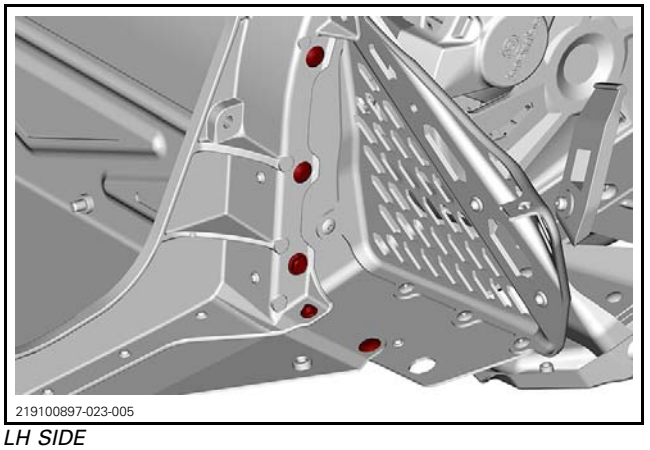

mmr2017-052-023_a

8. Move the plastic bracket, electrical harness, and fuel hoses aside to clear the tunnel.
9. Loosen the coolant hose clamps and disconnect hoses.

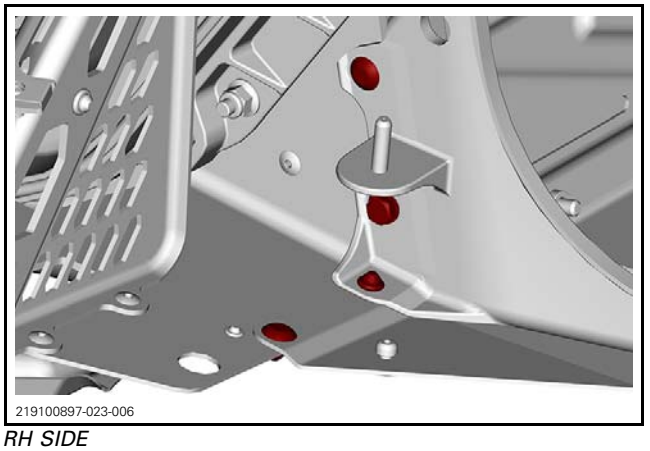

mmr2017-052-021

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.**

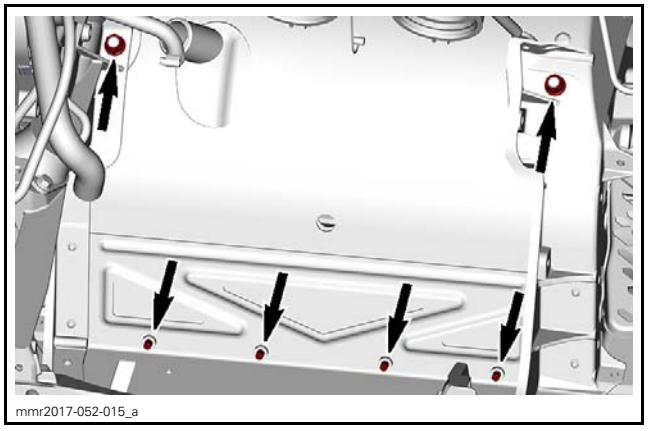

219100897-023-005

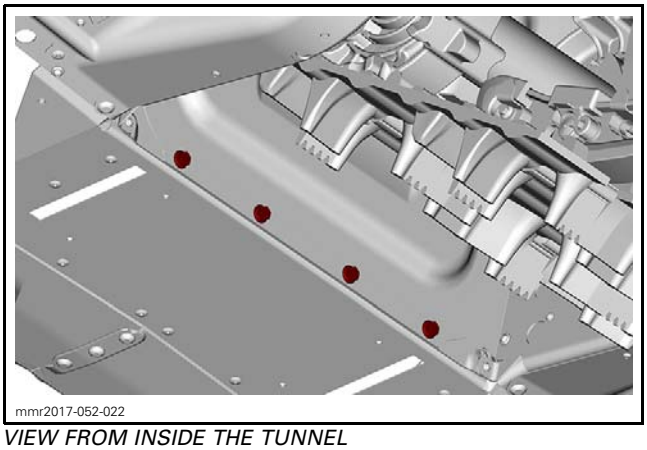
LH SIDE


219100897-023-006

RH SIDE

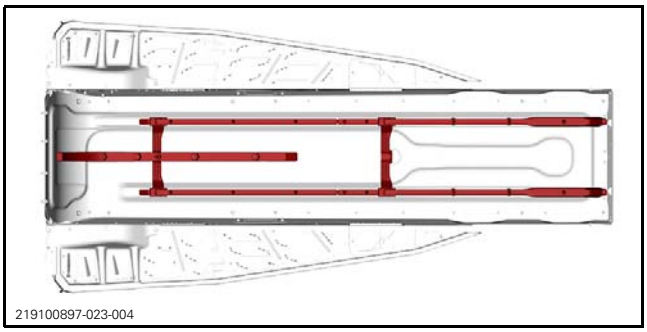
11. Remove nuts and screws securing the engine module to the tunnel.


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

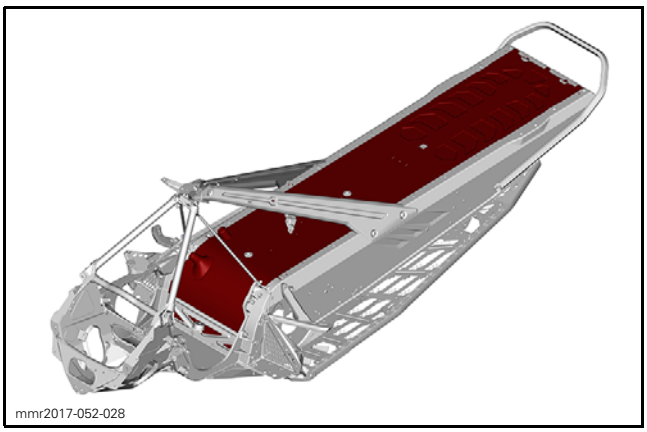
Installing the Tunnel Module

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

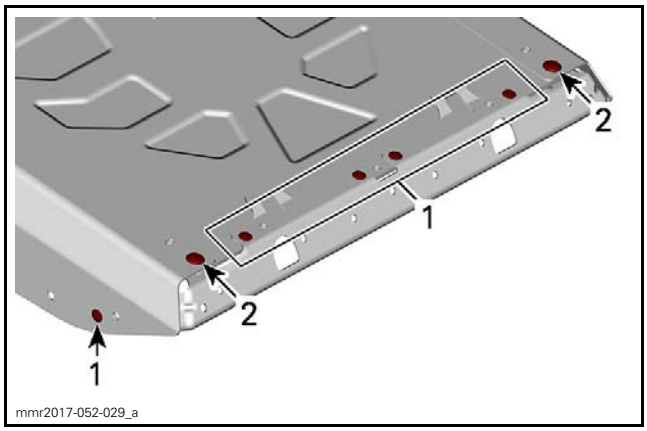
Replacing the Heat Exchanger

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.**



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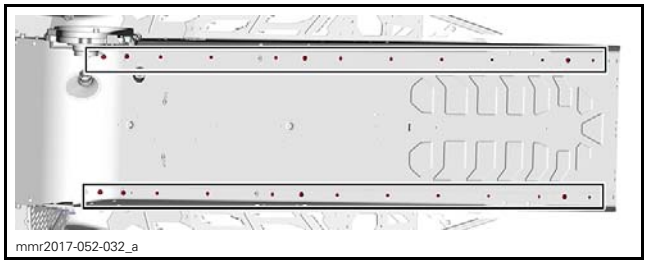
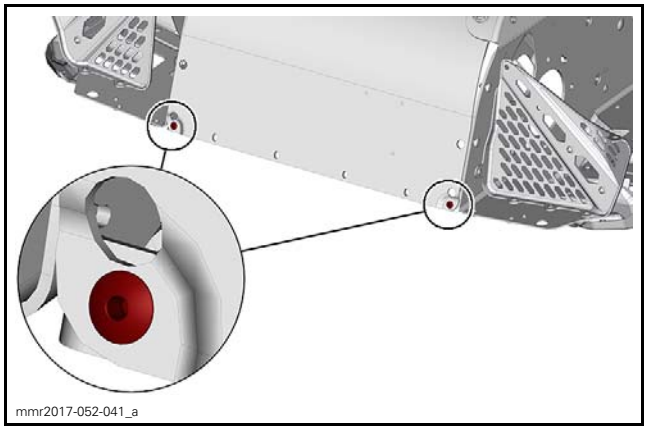
1. *Avibulb rivets (pop rivets)*
2. *Hemlock rivets (pop rivets)*

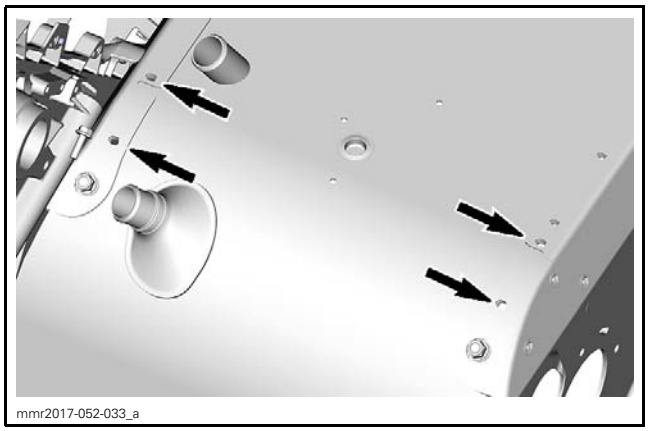
3. Remove the following rivets.


mmr2017-052-032_a

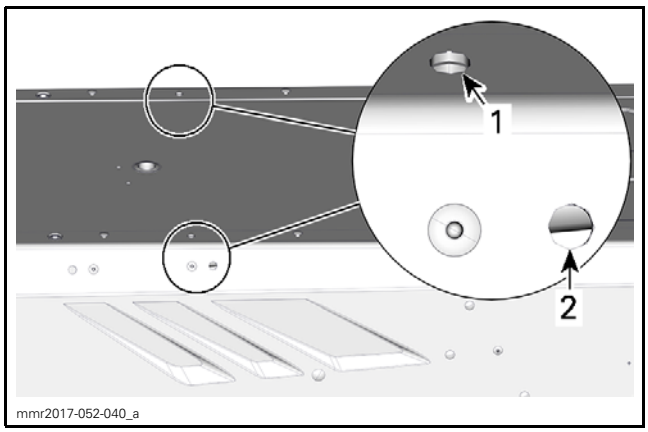

mmr2017-052-041_a

4. Position the new heat exchanger.
5. Install M6 screws and nuts loosely in the Hemlock rivet holes.

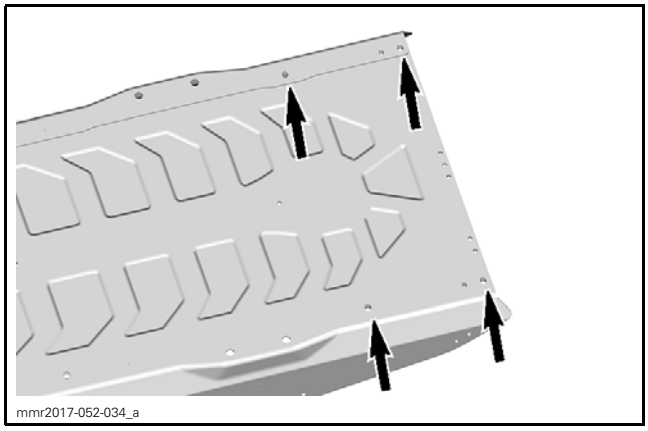
NOTE: M6 screws will not fit in self-piercing rivet holes.



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

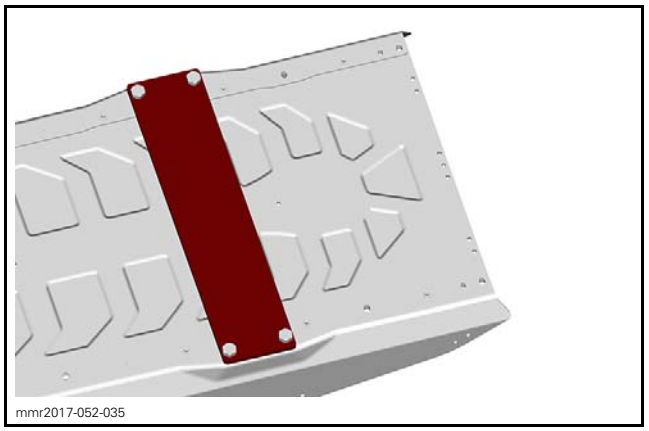
6. Install the gauge kit loosely with the appropriate screws, as per the following illustrations.

NOTICE It is imperative to use the gauge kit and to follow each steps of this procedure to avoid drive axle misalignment.

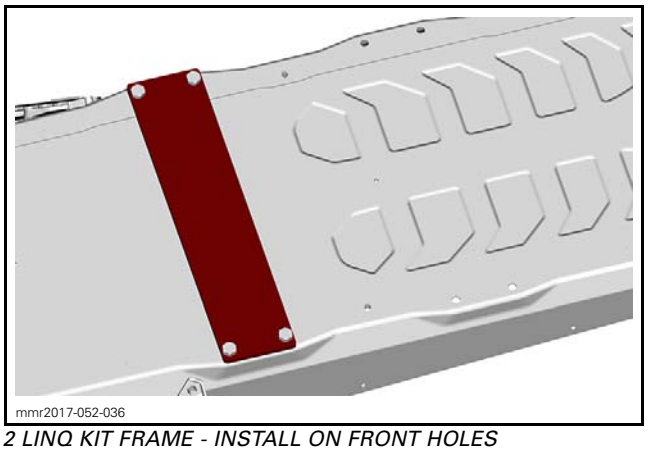
REQUIRED TOOL	
RADIATOR INSTALLATION GAUGES (P/N 529 036 422)	

CYLINDRICAL GAUGES LENGHT	
Rear suspension hole gauges	419.2 mm (16-1/2 in)
Tail gauge	426.4 mm (16-25/32 in)

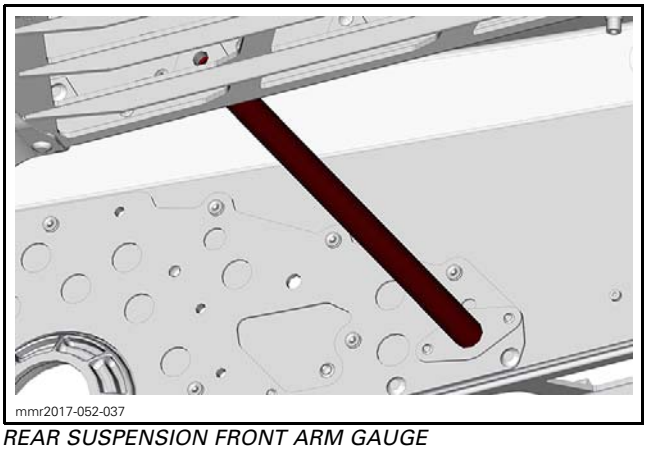
The gauge kit fits all tunnel sizes.



1 LINQ KIT FRAME



2 LINQ KIT FRAME - INSTALL ON FRONT HOLES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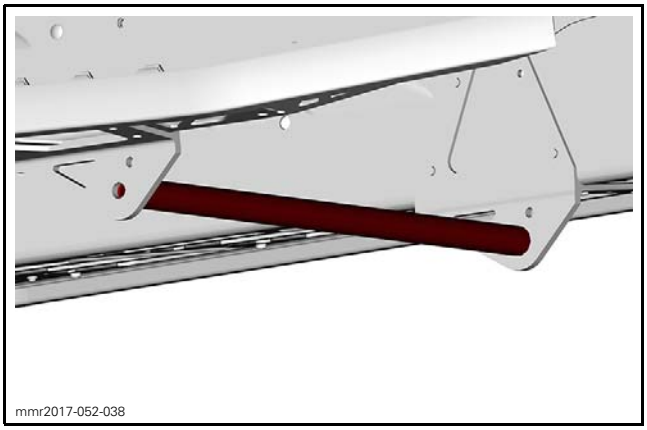
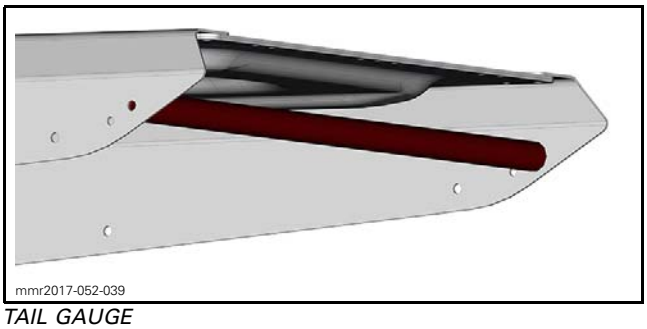
REAR SUSPENSION FRONT ARM GAUGE


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.

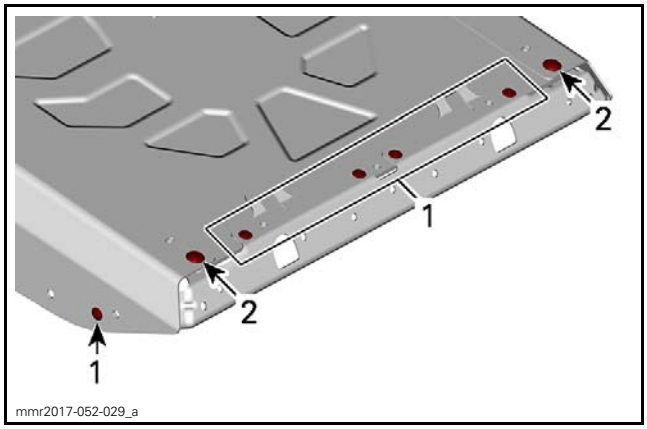
8. Tighten gauges and M6 screws with standard torque.
9. Enlarge self-piercing rivet holes.

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

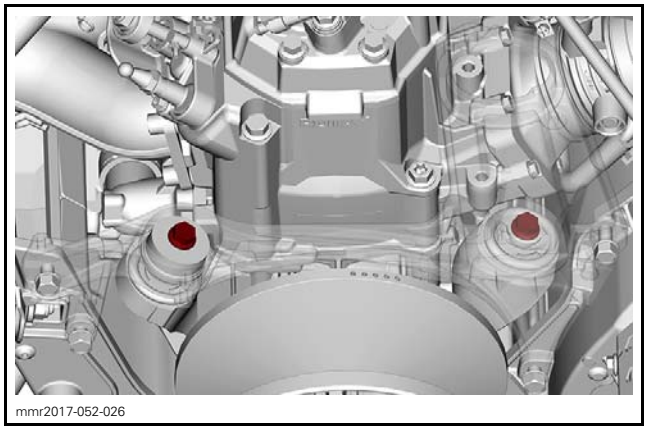
1. Avibulb 4.76 mm (3/16 in) rivets
2. Hemlock 6.4 mm (1/4 in) rivets

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.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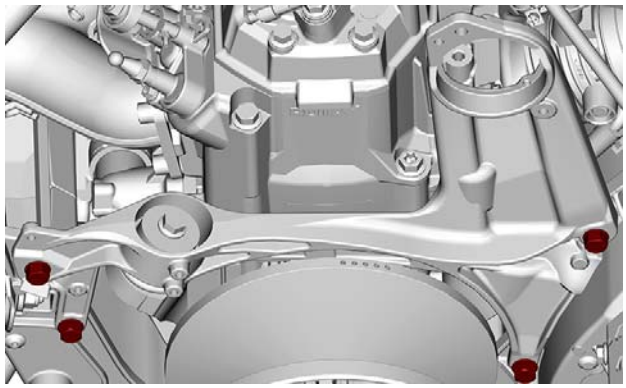
FRAME MEMBER IS TRANSPARENT FOR CLARITY

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.)

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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)
	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

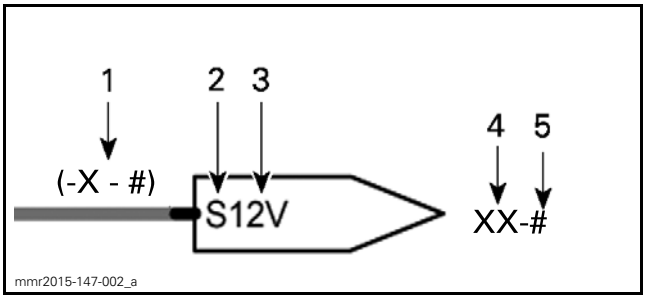
NOTE: To find the color of the wire on the vehicle skip to *WIRE COLORS AND SIZES* in this subsection.

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

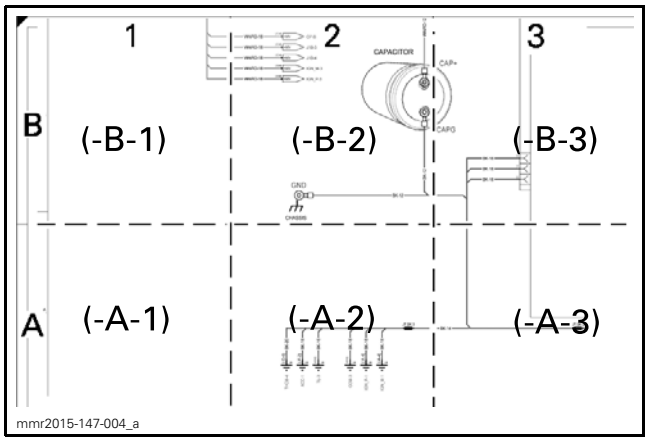
The wiring diagrams use the following codes.



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.

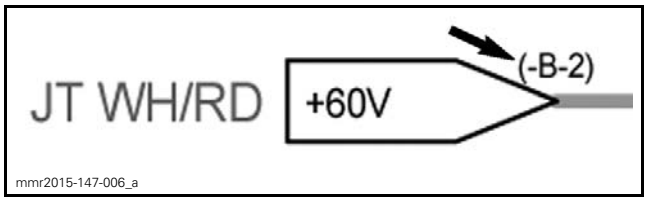
NOTE: Could be identified by either a number or by a letter depending on the type of connector used.

FOLLOWING A CIRCUIT

To follow a circuit, search the in section of the wiring diagram shown in the wiring diagram index.

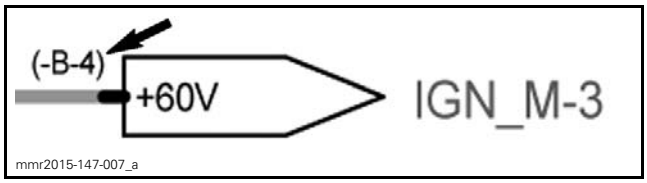
In this example, the 60V comes **from** JT WH/RD in section (-B-2).

NOTE: The arrow indicates the direction of the power in the circuit.



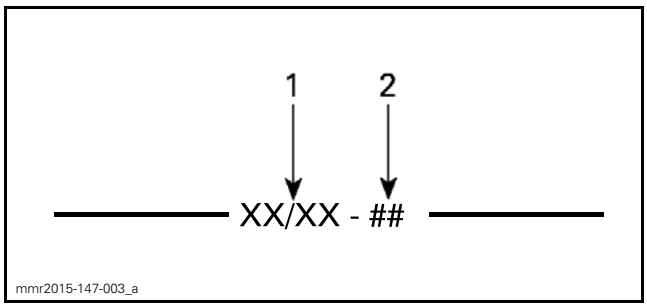
FROM JT WH/RD (-B-2)

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.

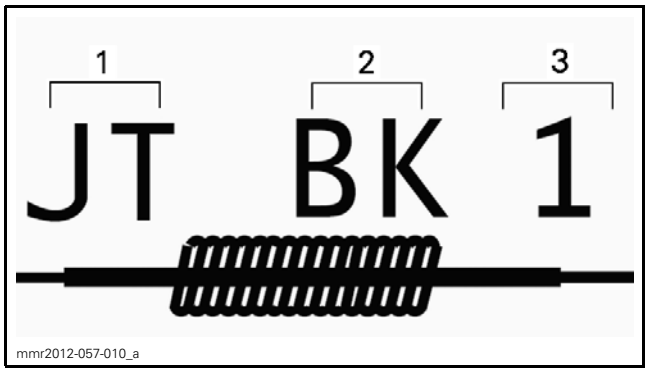
Example: YE/BK is a YELLOW wire with a BLACK stripe.

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.

Smart-Shox Suspension

01

GENERAL INFORMATION

01 General Information

General

The following tools are required to test most of the electrical components.

Fluke 115 Multimeter (P/N 529035868)	
SDCU Adapter Tool Gen 2 (P/N 529036513)	
Smart-Shox Sensor Adaptor (P/N 529036530)	

01

System Description (Features)

The Smart-Shox suspension is an electronic-controlled compression and rebound damping system integrated in front and rear shock absorbers.

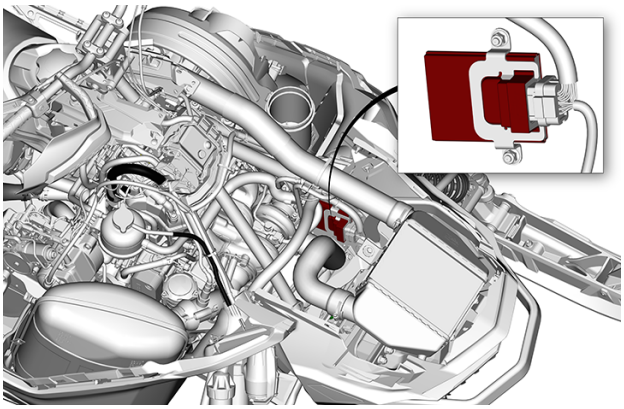
It is possible to choose between three modes of damping. These modes set the level of damping to match the rider's preferences.

The following Smart-Shox modes are preset in the vehicle.

SMART-SHOX MODE	
COMFORT	This mode provides maximum comfort. The suspension moves freely while controlling body movement to avoid regular bottoming out.
SPORT	This mode enhances handling and provides comfort in straight line. The suspension minimizes body movement during cornering, acceleration and braking while offering optimal calibration to face bumpy trails.
SPORT+	This mode is all about performance, forget comfort. In full stiffness all the time and ready to tackle the most extreme situations.

Suspension Dampening Control Unit (SDCU)

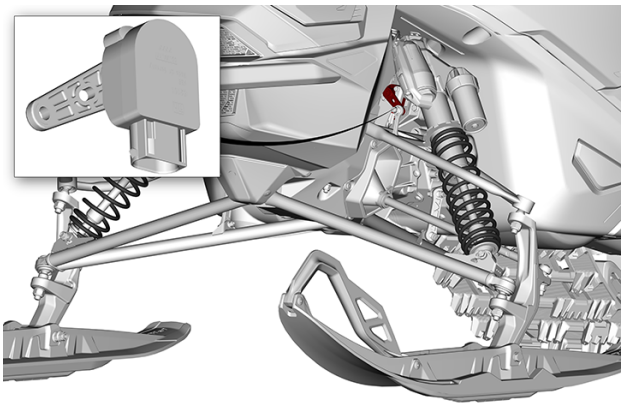
The Suspension Damping Control Unit (SDCU) is the heart of the Smart-Shox system.



The SDCU receives inputs from several sensors and controls the bypass valve opening in each front and rear shock absorbers to adjust the compression and rebound damping.

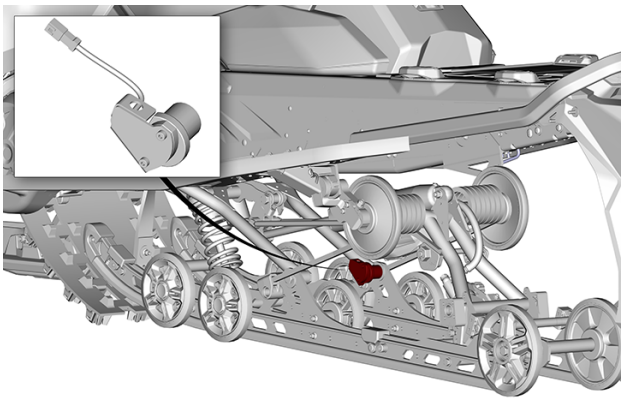
Sensors

Figure 1. Front position



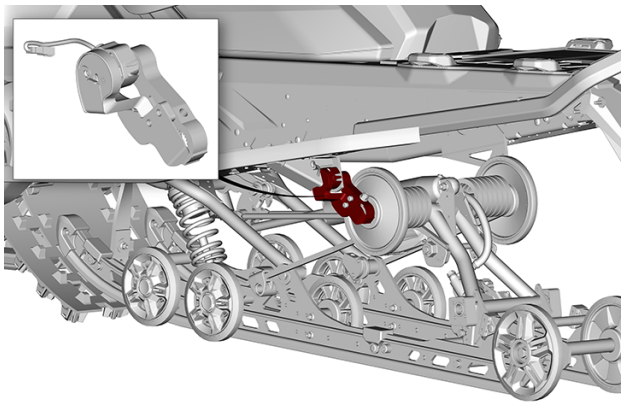
FRONT POSITION

Figure 2. Mid position



MID POSITION

Figure 3. Rear position



REAR POSITION

SENSOR ACRONYM	DESCRIPTION	FUNCTION
SPS_FL	Front left suspension position sensor	Determines the position of the LH front suspension
SPS_FR	Front right suspension position sensor	Determines the position of the RH front suspension
SPS_Mid	Middle suspension arm position sensor	Determines the position of the middle suspension arm
SPS_Rear	Rear suspension arm position sensor	Determines the position of the rear suspension arm

SDCU INPUTS/OUTPUTS		
INPUT	**USAGE**	**OUTPUT**
SPS (4)	These sensor signals (or parameters) are used by the SDCU to perform computations and to then act by providing the proper output to the shock absorbers.	Modulate shock bypass valve opening of proper shock absorber.
ECM		
SAS		
Mode switch		

Suspension Position Sensor (SPS)

There are 4 suspension position sensors on the vehicle.

They are mounted on the frame and linked to the suspension arm.

The suspension position sensors send a digital signal to the SDCU.

As the suspension moves, the sensor lever link moves accordingly and the output signal tells the SDCU if the suspension is compressing or rebounding.

Steering Angle Sensor (SAS)

The SAS informs the SDCU of the handlebar position in relation to the chassis.

Calibrating the SDCU

When replacing or removing the following parts, the SDCU must be calibrated.

– Suspension Position Sensor (SPS) bracket
– Suspension Position Sensor Link
– Suspension Position Sensor (SPS)
– Suspension Damping Control Unit (SDCU)
– Shock absorber
– Stabilizer bar
– Suspension arm.
– Rear suspension
– Track

1. Connect the vehicle to the BRP diagnostic software (BUDS2). Refer to *COMMUNICATION TOOLS*.
2. Properly lift and support the rear of the vehicle.

NOTE: Make sure the limiter strap is in position #1.

3. In BUDS2, go to:
   – **Settings** page,
   – Select **SDCU** button from ECU tree
   – **Learn suspension setting**.
4. When the learning is done, lower rear of vehicle.
5. Properly lift and support the front of the vehicle.
6. Ensure the handlebar is perfectly centered.
7. In BUDS2, go to:
   – **Settings** page,
   – Select **SDCU** button from ECU tree
   – **Learn suspension setting**.

Refer to *POWER DISTRIBUTION AND GROUNDS* for fuses and relays information.

Always refer to the *WIRING DIAGRAM* when troubleshooting an electrical circuit.

Install a battery charger on battery terminals for any tests that involve a prolonged "key ON" period.

It is recommended to turn off the headlights using the switch by pressing down 2 seconds.

NOTICE
Never force a multimeter probe into an electrical terminal.

Troubleshooting Tips

When a fault is detected due to a malfunction of the Smart-Shox system, depending of the defective component, front shocks, rear shocks or all shocks will become full stiff, even firmer than SPORT+.

Start troubleshooting by checking fault codes using BUDS2. Make sure fuses FB1-F5 and PB1-F4 on ACE engine vehicles and F5 and F4 for E-Tec engine vehicles are in good condition; follow the service actions of the fault in BUDS2.

Carry out the tests in this subsection according to the fault codes service actions. Refer to *DIAGNOSTIC AND FAULT CODES* subsection.

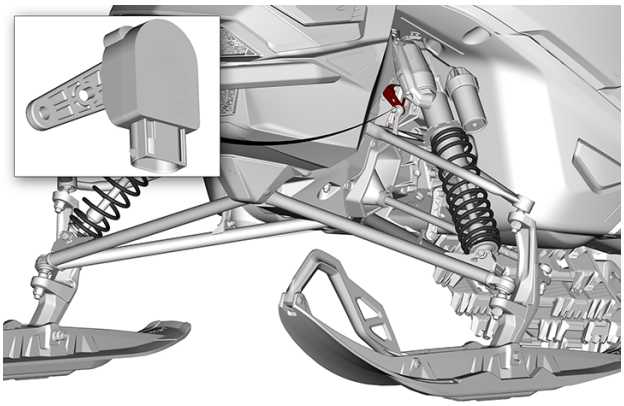
Suspension Position Sensor (SPS)

Before testing the SPS make sure that:

– Suspension position sensors and links are correctly fastened and undamaged.
– Sensor brackets are not bent, cracked or loose.

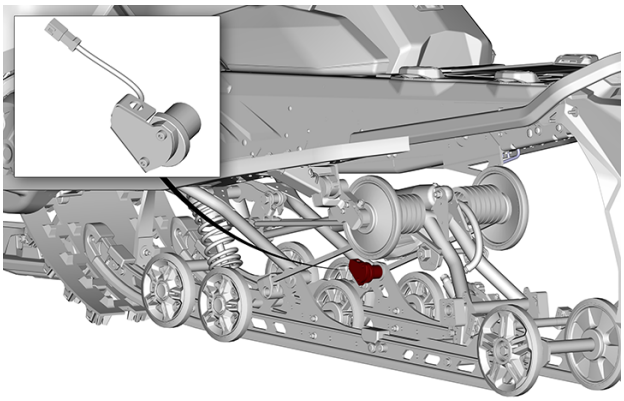
SPS Location

Figure 4. Front position



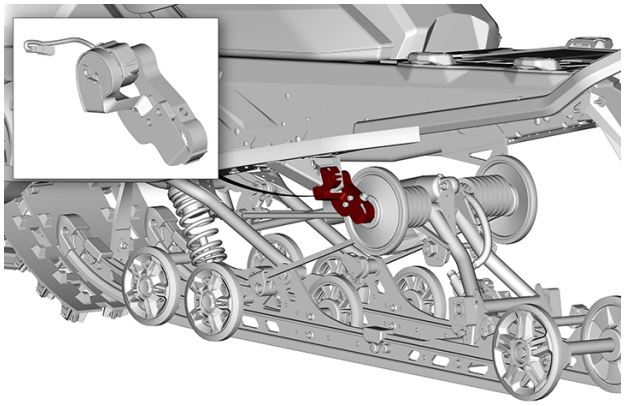
FRONT POSITION

Figure 5. Mid position



MID POSITION

Figure 6. Rear position



REAR POSITION

Testing the SPS with BUDS2

1. Connect vehicle to BUDS2.
2. In BUDS2, select the following:
   - **Scan** button
   - **Measurements** page
3. Rock the vehicle from right to left.
4. Look in BUDS2 to see if the corresponding sensor value changes.

   If one of the sensor gauges does not respond to suspension movement, refer to *TESTING SPS WIRING CONTINUITY*.

Testing SPS Wiring Continuity

1. Disconnect the SPS connector to be tested and install the sensor adaptor.
2. Disconnect SDCU connector and connect it to the SDCU adapter tool.
3. Set multimeter to Ω.
4. Measure wiring resistance as follows.

To avoid damaging the connector, probe only the terminal tip.

SPS WIRING CONTINUITY TEST			
SPS	SENSOR ADAPTER PIN	SDCU ADAPTER PIN	SPECIFICATION

Front LH	1	11	Close to 0 Ω (continuity)
	2	12	
	3	20	
Front RH	1	7	
	2	8	
	3	16	
Mid Arm	6	15	
	7	23	
	8	31	
Rear Arm	6	14	
	7	22	
	8	31	

If continuity test failed, repair wiring or connectors.

If continuity test succeeded, try a new SPS.

If problem persists, try a new SDCU.

Replacing the SPS

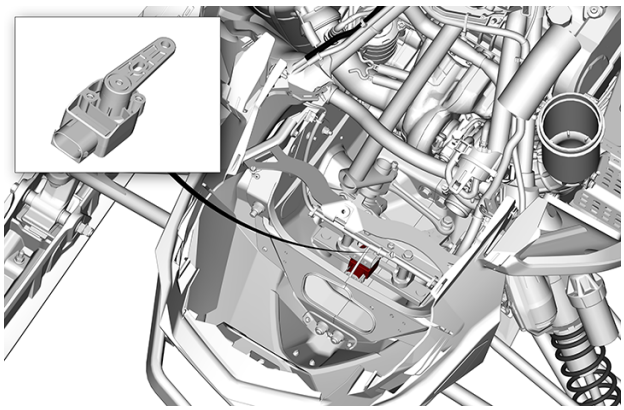
When replacing a SPS, a SDCU calibration is required. Refer to *Calibrating the SDCU* in this subsection.

TIGHTENING TORQUE	
Link screw and nut (front position)	5± 1 Nm (44 ± 9 lbf-in)
SPS screw (front and rear position)	5± 1 Nm (44 ± 9 lbf-in)
SPS screw (mid position)	2.5± 0.5Nm (22 ± 4 lbf-in)

Steering Angle Sensor (SAS)

The SAS informs the SDCU of the handlebar position in relation to the chassis.

SAS Access



Testing SAS Wiring Continuity

1. Disconnect the SAS connector to be tested and install the connector adapter.
2. Disconnect SDCU connector and connect it to the adapter tool. Refer to *SDCU CONNECTOR ACCESS* in this subsection.
3. Set multimeter to Ω.
4. Measure wiring resistance as follows.

NOTICE
To avoid damaging the connector, probe only the terminal tip.

VAS WIRING CONTINUITY TEST		
SENSOR CONNECT.	SDCU CONNECT.PIN	SPECIFICATION
1	13	Close to 0 Ω (continuity)
2	21	
3	30	

If continuity test failed, repair wiring or connectors.

If continuity test succeeded, try a new SAS.

If problem persists, try a new SDCU.

Replacing the SAS

When replacing the SAS, a SDCU calibration is required. Refer to *Calibrating the SDCU* in this subsection.

Tightening Torque	
SAS screw	5 ± 1 Nm (44 ± 8.5lbf-in)

Suspension Damping Control Unit (SDCU)

SDCU Troubleshooting

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

A SDCU failure is not likely to occur. These modules have proven to be very reliable. Prior to replacing a suspected SDCU, take the following into account.

The problem can be related to a sensor malfunction. Check the following:

– Sensor correctly fastened,
– Sensor brackets are in good condition,
– SPS link are in good condition.

The problem can be related to an electric function, check the following:

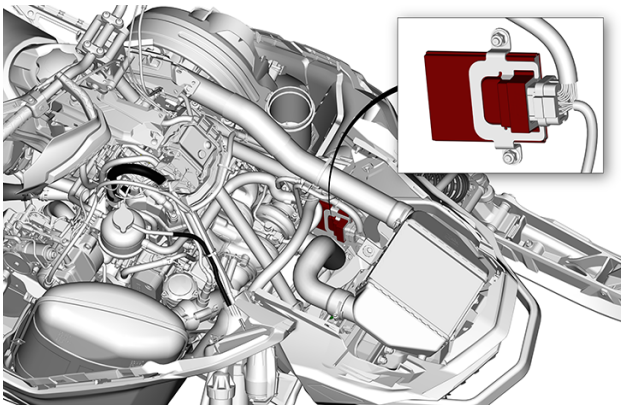
– Fault codes,
– Sensors and SDCU electrical connector,
– Wiring harness condition.

If pins or terminals are not clean, check SDCU harness connector seal condition and ensure connector mechanism properly locks connector seal against SDCU.

Try disconnecting and reconnecting the SDCU connector to see if it “cures” the problem.

As a final test, try a new SDCU.

SDCU Location



Testing the SDCU Input Voltage

1. Disconnect SDCU connector and connect it to the SDCU adaptor tool.
2. Start engine.
3. Test for input voltage as follows:

SDCU INPUT VOLTAGE TEST		
SDCU ADAPTER PIN	BATTERY	SPECIFICATION
2	Negative post	Battery voltage

If voltage is not good, check fuse, relay, wiring and connectors from battery to SDCU harness connector. Refer to WIRING DIAGRAM.

If voltage is good, test for input voltage as follows:

Ignition switch can be either ON or OFF.

SDCU INPUT VOLTAGE TEST		
SDCU ADAPTER PIN	BATTERY	SPECIFICATION
3	Negative post	Battery voltage

If voltage is not good, check the fuse, wiring and connectors from battery to SDCU harness connector. Refer to WIRING DIAGRAM.

If voltage is good, carry out the TESTING THE SDCU GROUND CIRCUIT in this subsection.

Testing the SDCU Ground Circuit

1. Check the ground circuit as per the following

SDCU GROUND CIRCUIT		
SDCU ADAPTOR PIN	BATTERY	SPECIFICATION
1	Positive (+) Post	Battery voltage

If ground circuits are not good, check wiring from SDCU harness connector to chassis ground located on the RH rear part of the frame. Refer to *POWER DISTRIBUTION AND GROUNDS*.

Testing the SDCU CAN Line Continuity

1. Check wiring resistance between diagnostic link connector and SDCU as per the following table.

SDCU CAN Line Continuity Test			
CAN*	SDCU ADAPTOR PIN	COM	SPECIFICATION
High	19	Pin 1	Close to 0 Ω (continuity)
Low	27	Pin 2	
*CAN: Controller Area Network			

If continuity is not good, check wiring and connectors from diagnostic link connector (COM) to SDCU connector. Refer to applicable *WIRING DIAGRAM*.

If everything tested good and SDCU does not work, try a new SDCU.

Removing the SDCU

1. Remove upper body module.
2. Remove the SDCU retaining screws.
3. Disconnect SDCU connector.
4. Remove SDCU from the vehicle.

Installing the SDCU

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

TIGHTENING TORQUE	
SDCU screw	5 ± 1 Nm (44 ± 9 lbf-in)

1. Perform a calibration procedure. Refer to *RESETTING THE SDCU CALIBRATION* in this subsection.
2. Clear all SDCU fault codes generated by this procedure.

Smart-Shox Absorbers

Testing the Smart-Shox Absorber Resistance (from the SDCU connector)

1. Disconnect SDCU connector and connect it to the SDCU adaptor tool.
2. Turn ignition switch ON.
3. Test for resistance as follows.

SMART-SHOX ABSORBER RESISTANCE TEST (from the SDCU connector)			
SHOCK POSITION	SDCU ADAPTOR PIN		SPECIFICATION
Front left	17	5	Close to 0 Ω (continuity)
	9	6	
Front right	1	5	
	10	6	
Rear	18	5	
	26	6	

If resistance is not to specification, carry out a *TESTING THE SMART-SHOX ABSORBER CIRCUIT CONTINUITY*.

If resistance is to specification, replace the SDCU.

Testing the Smart-Shox Absorber Circuit Continuity

1. Disconnect SDCU connector and connect it to the SDCU adaptor tool.
2. Disconnect the Smart-Shox harness extension from the main harness.
3. Connect the Smart-Shox sensor adaptor to the main harness Smart-Shox connector.
4. Test for resistance as follows.

SMART-SHOX ABSORBER RESISTANCE TEST (from the SDCU connector)			
SHOCK POSITION	ECM ADAPTOR PIN	SENSOR ADAPTER CONNECT. PIN	SPECIFICATION

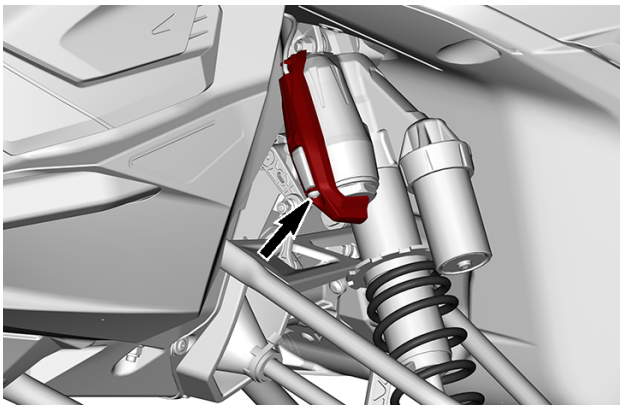
Front left	17	5	Close to 0 Ω (continuity)
	9	6	
Front right	1	5	
	10	6	
Rear	18	5	
	26	6	

If continuity is not to specification, check for wire or connector damage, and repair. If continuity is to specification, carry out a *SMART-SHOX ABSORBER RESISTANCE TEST (FROM THE SMART-SHOX)*

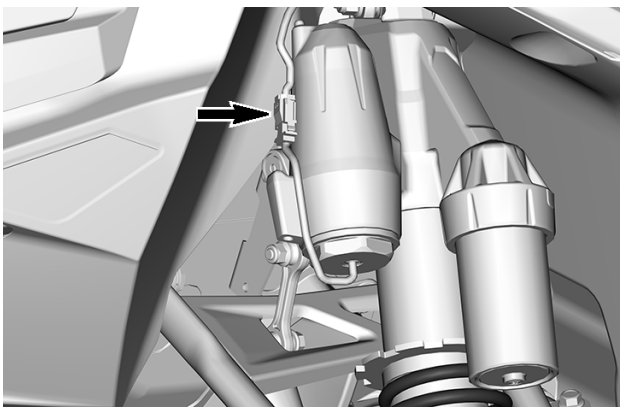
If everything tested good and SDCU does not work, try a new SDCU.

Testing the Smart-Shox Absorber Resistance (from the Smart-Shox absorber)

1. Remove the smart-Shox cover by removing the retaining screw.



2. Disconnect the Smart-Shox harness extension from the Smart-Shox absorber.



3. Test for resistance as follows.

SMART-SHOX ABSORBER RESISTANCE TEST (FROM THE SMART-SHOX ABSORBER)		
SMART-SHOX PIN		SPECIFICATION
1	2	4.3 Ω

If resistance is not to specification, replace the Smart-Shox.

If resistance is to specification, replace the Smart-Shox harness extension.

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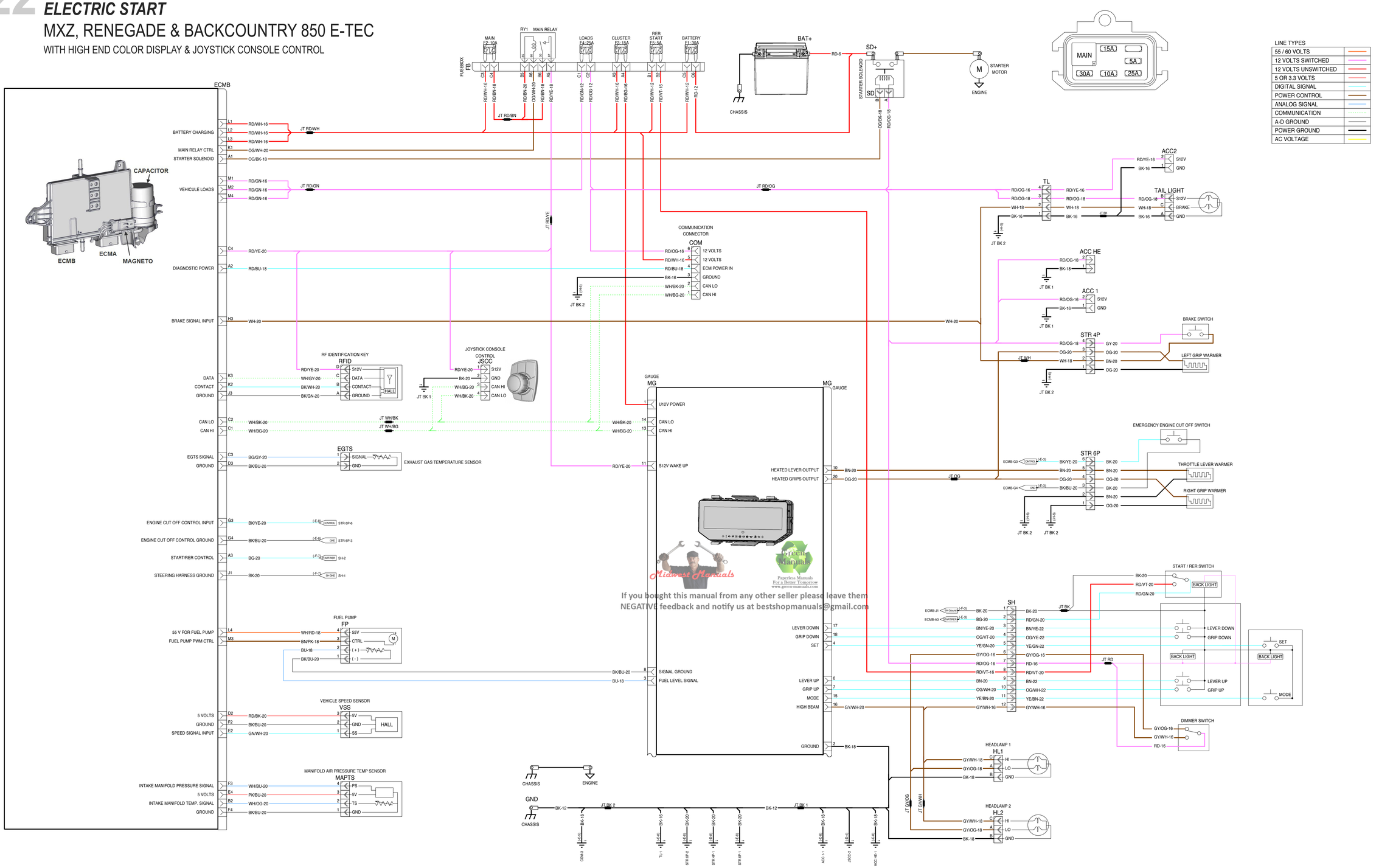
MXZ, RENEGADE & BACKCOUNTRY 850 E-TEC

WITH HIGH END COLOR DISPLAY & JOYSTICK CONSOLE CONTROL



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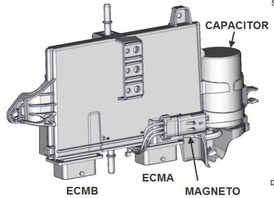
2022 MXZ X-RS, RENEGADE X-RS 850 E-TEC

WITH HIGH END COLOR DISPLAY & SMART-SHOX SEMI-ACTIVE SUSPENSION

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	



ECMB

BATTERY CHARGING — L1 RD/WH-16, L2 RD/WH-16, L3 RD/WH-16 — JT RD/WH
MAIN RELAY CTRL — K1 OG/WH-20
STARTER SOLENOID — A1 OG/BK-18
VEHICLE LOADS — M1 RD/GN-16, M2 RD/GN-16, M4 RD/GN-16 — JT RD/GN
EGTS SIGNAL — C3 BG/GY-20
GROUND — D3 BK/BU-20
EXHAUST GAS TEMPERATURE SENSOR — EGTS — 1 SIGNAL, 2 GND
DIAGNOSTIC POWER — C4 RD/YE-20, A2 RD/BU-18
RF IDENTIFICATION KEY — RFID — D RD/YE-20, C DATA WH/GY-20, B CONTACT BK/WH-20, A GROUND BK/GN-20 — S12V, HALL
DATA — K3
CONTACT — K2
GROUND — J3
BRAKE SIGNAL INPUT — H3 — WH-20
CAN LO — C2 WH/BK-20
CAN HI — C1 WH/BG-20
ENGINE CUT OFF CONTROL INPUT — G3 BK/YE-20 — (-D-5) CONTROL — STR 6P-6
ENGINE CUT OFF CONTROL GROUND — G4 BK/BU-20 — (-E-4) GND — STR 6P-3
START/RER CONTROL — A3 BG-20 — (-E-6) S/RTRTN — SH-2
STEERING HARNESS GROUND — J1 BK-20 — (-E-5) SH GND — SH-1
VEHICLE SPEED SENSOR — VSS
5 VOLTS — D2 RD/BK-20
GROUND — F2 BK/BU-20
SPEED SIGNAL INPUT — E2 GN/WH-20
— 3 5V, 2 GND, 1 SS — HALL
MANIFOLD AIR PRESSURE TEMP SENSOR — MAPTS
INTAKE MANIFOLD PRESSURE SIGNAL — F3 WH/BU-20 — 4 PS
5 VOLTS — E4 PK/BU-20 — 3 5V
INTAKE MANIFOLD TEMP. SIGNAL — B2 WH/OG-20 — 2 TS
GROUND — F4 BK/BU-20 — 1 GND
FUEL PUMP PWM CTRL — M3 BN/PK-18
55 V FOR FUEL PUMP — L4 WH/RD-18
FUEL PUMP — FP — BK/BU-20 (-), BU-18 (+), BN/PK-18 CTRL, WH/RD-18 55V — M

SAS F9: 15A — RD/BU-16 — A2
MAIN F2: 10A — RD/WH-16 — C3
RY1 MAIN RELAY — 30, 85, 86, 87 — RD/BN-18 — C4
LOADS F4: 25A — RD/BN-20 — B5
CLUSTER F3: 15A — RD/BN-18 — A6
RER START F5: 5A — RD/YE-18 — B6
BATTERY F1: 30A — RD/YE-18 — A5
FUSEBOX FB — RD/GN-12 — C1
RD/OG-12 — C2
RD/WH-16 — A3
RD/BG-16 — A4
RD/WH-12 — B1
RD/VT-16 — B2
RD/WH-12 — C5
RD-12 — C6

BAT+ — RD-6 — CHASSIS
SD+ — STARTER SOLENOID — SD — OG/BK-18 — RD/OG-18 — STARTER MOTOR — ENGINE

MAIN — 15A, 15A, 5A, 30A, 10A, 25A

JT RD/BN
JT RD/YE
JT RD/OG

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

JSCC — S12V, GND, CAN HI, CAN LO
RD/YE-20, BK-20, WH/BG-20, WH/BK-20
JT BK 1

GAUGE CL
RD/BG-16 — U12V POWER
RD/YE-20 — S12V WAKE UP
WH/BK-20 — CAN LO
WH/BG-20 — CAN HI
JT WH/BK
JT WH/BG

SDCU — SDCU Module Semi-Active Suspension
SW — SPORT+, SPORT, COMFORT
WH/BG-20, WH/BK-20
VT/PK-20, BG/GY-20, BK/BG-20
HIC_MAIN
WH/BK-20, WH/BG-20
PK/GN-22, GY/YE-22
RD/YE-18, RD/BU-16
VT/WH-18
PK/OG-20, WH/OG-20, BK/OG-20
BK/OG-22
JT BK/OG
POS_MID — MID SUSPENSION ANGLE POSITION SENSOR — 5V, SIGNAL, GND — RD-20, WH-20, BK-20
HIC_MID
POS_REAR — REAR SUSP ANGLE POSITION SENSOR — 5V, SIGNAL, GND — RD-20, WH-20, BK-20
HIC_REAR
VLV_REAR — REAR SUSPENSION VALVE — YE-20, BU-20
YE-22, BU/YE-22, BK-16
JT BK 2

SAS — STEERING ANGLE SENSOR — 5V, SIGNAL, GND — VT/PK-20, GN/YE-20, BK/BN-20
JT VT/PK
VLV_FR — FRONT RIGHT SUSPENSION VALVE — WH-20, BK-20
POS_FR — FRONT RIGHT SUSPENSION ANGLE POSITION SENSOR — 5V, SIGNAL, GND — RD-20, WH-20, BK-20
VLV_FL — FRONT LEFT SUSPENSION VALVE — WH-20, BK-20
POS_FL — FRONT LEFT SUSPENSION ANGLE POSITION SENSOR — 5V, SIGNAL, GND — RD-20, WH-20, BK-20

FUEL LEVEL SIGNAL — BU-18
SIGNAL GROUND — BK/BU-20

CHASSIS — ENGINE — GND — CHASSIS — BK-12
JT BK 2 — COM-3 BK-18; HIC_SAS-1 BK-18; TL-1 BK-18; STR/P-2 BK-20; STR/P-1 BK-20; STR/P-1 BK-20
JT BK 1 — ACC-1-1 BK-18; JSCC-2 BK-20; ACC/HE-1 BK-18

HEATED LEVER OUTPUT — 10 BN-20
HEATED GRIPS OUTPUT — 20 OG-20
LEVER DOWN — 17
GRIP DOWN — 18
SET — 4
LEVER UP — 6
GRIP UP — 7
MODE — 15
HIGH BEAM — 16 GY/WH-20
GROUND — 2 BK-18

ACC2 — RD/YE-16, BK-16 — S12V, GND
TL — RD/OG-16, RD/OG-18, WH-18, BK-16
TAIL LIGHT — RD/OG-18, WH-18, BK-16 — S12V, BRAKE, GND
JT BK 2
ACC HE — RD/OG-18, BK-18
JT BK 1
ACC 1 — RD/OG-16, BK-16 — S12V, GND
JT BK 1

BRAKE SWITCH
STR 4P — RD/OG-18, OG-20, WH-18, BK-20 — GY-20, OG-20, BN-20, OG-20
JT WH
JT BK 2
LEFT GRIP WARMER

EMERGENCY ENGINE CUT OFF SWITCH
STR 6P — ECMB-G3 CONTROL (-D-3) BK/YE-20, BN-20, OG-20 — BK-20, BN-20, OG-20
ECMB-G4 GND (-D-3) BK/BU-20, BK-20, BK-20 — BK-20, BN-20, OG-20
THROTTLE LEVER WARMER
RIGHT GRIP WARMER
JT BK 2
JT BK 2

SH — ECMB-J1 SH Ground (-E-3) BK-20; ECMB-A5 S/RTRTN (-D-3) BG-20, BN/YE-20, OG/VT-20, YE/GN-20, GY/OG-16, RD/OG-16, RD/VT-16, BN-20, OG/WH-20, YE/BN-20, GY/WH-16
JT BK
START / RER SWITCH — BACK LIGHT — BK-20, RD/VT-20, RD/GN-20
LEVER DOWN — GRIP DOWN — BACK LIGHT
SET — BACK LIGHT — MODE
LEVER UP — GRIP UP
JT RD
DIMMER SWITCH — GY/OG-16, GY/WH-16, RD-16

HEADLAMP 1 — HL1 — GY/WH-18 HI, GY/OG-18 LO, BK-18 GND
HEADLAMP 2 — HL2 — GY/WH-18 HI, GY/OG-18 LO, BK-18 GND
JT GW/OG
JT GY/WH

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2022 ENGINE HARNESS
600R E-TEC

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

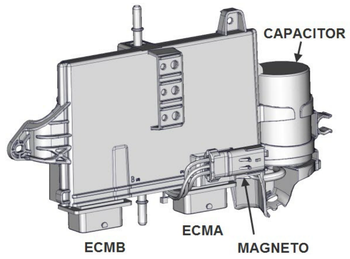
OIL LEVEL SENSOR
OLS
SIGNAL — 1 — LT BU-18 — F2
GROUND — 2 — BK/BU-18 — G3

MAGNETO
MAG
YE-12
YE-12
YE-12

CAPACITOR
WH/RD-12
BK-12

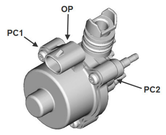
ECMA

ECMA



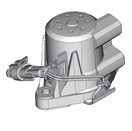
RAVE ACTUATOR
E-RAVE
E4 — PK/BG-18 — 1 — SENSOR 5 VOLTS
F4 — BK/BG-18 — 2 — SENSOR GROUND
D4 — WH/BG-18 — 3 — SENSOR SIGNAL
G4 — BG/RD-18 — JT BG/RD — BG/RD-18 — 4 — ACTUATOR (+/-)
H4 — BG/RD-18 — JT BG/BN — BG/BN-18 — 5 — ACTUATOR (-/+)
J4 — BG/BN-18
K4 — BG/BN-18

OIL PUMP FEEDBACK SWITCH
E1 — BK/WH-18 — PC1
F1 — BG/BK-18 — PC2

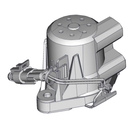


OIL PUMP
OP
B4 — GN/YE-18 — 1 — CONTROL
WH/RD-18 — 2 — 55 VOLTS

DIRECT INJECTOR MAG.
INJ DI MAG
L1 — WH/RD-14 — JT WH/RD
M1 — BU-16 — 2 — CONTROL
WH/RD-16 — 1 — 55 VOLTS



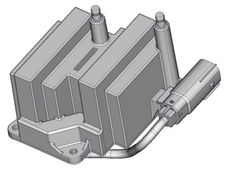
DIRECT INJECTOR PTO
INJ DI PTO
M2 — GN-16 — 2 — CONTROL
WH/RD-16 — 1 — 55 VOLTS



IGNITION COILS
COILS
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
L4 — BK-16
M4 — BK-16

BK-16
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	

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REF 864 449 REV 1

2022 *ENGINE HARNESS*
850 E-TEC

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

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

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

ECMB — ECMA — CAPACITOR — MAGNETO

ECMA

RAVE ACTUATOR
E-RAVE
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

THROTTLE BODY INJECTOR MAG
INJ TB MAG
A3 — BN/BU-18 — 1 — CONTROL
A4 — VT/BU-18 — 2 — 12 VOLTS

THROTTLE BODY INJECTOR PTO
INJ TB PTO
A2 — BN/GN-18 — 1 — CONTROL
A1 — VT/GN-18 — 2 — 12 VOLTS

OIL PUMP FEEDBACK SWITCH
E1 — BK/WH-18 — PC1
F1 — BG/BK-18 — PC2

OIL PUMP
OP
B4 — GN/YE-18 — 1 — CONTROL
WH/RD-18 — 2 — 55 VOLTS

DIRECT INJECTOR MAG.
INJ DI MAG
L1 — WH/RD-14 — JT WH/RD
M1 — BU-16 — 2 — CONTROL
WH/RD-16 — 1 — 55 VOLTS

DIRECT INJECTOR PTO
INJ DI PTO
M2 — GN-16 — 2 — CONTROL
WH/RD-16 — 1 — 55 VOLTS

IGNITION COILS
COILS
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

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

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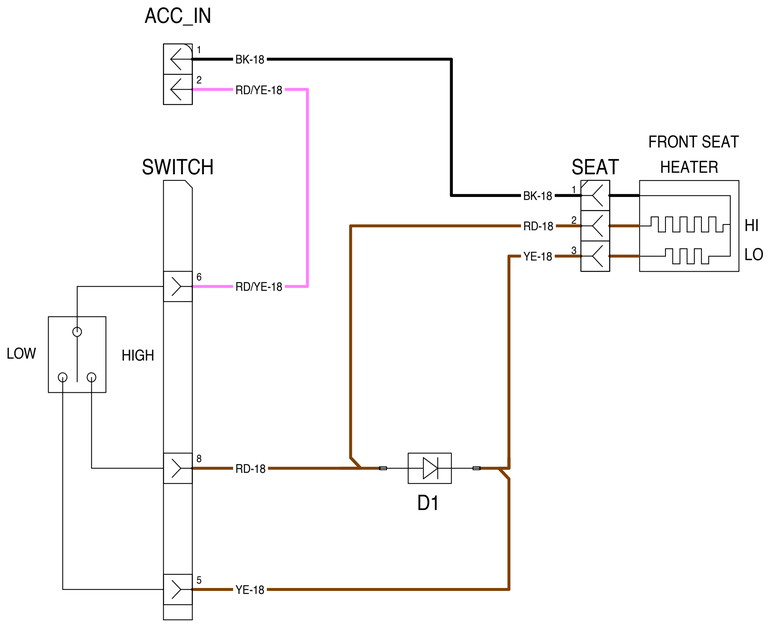
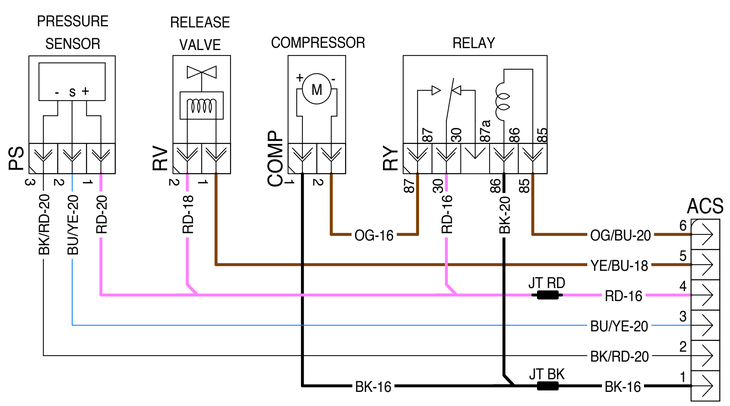
2022 *SECONDARY HARNESS* (EXPEDITION LE & SE)
CELLPHONE HARNESS (HEATER AND USB CONNECTION)

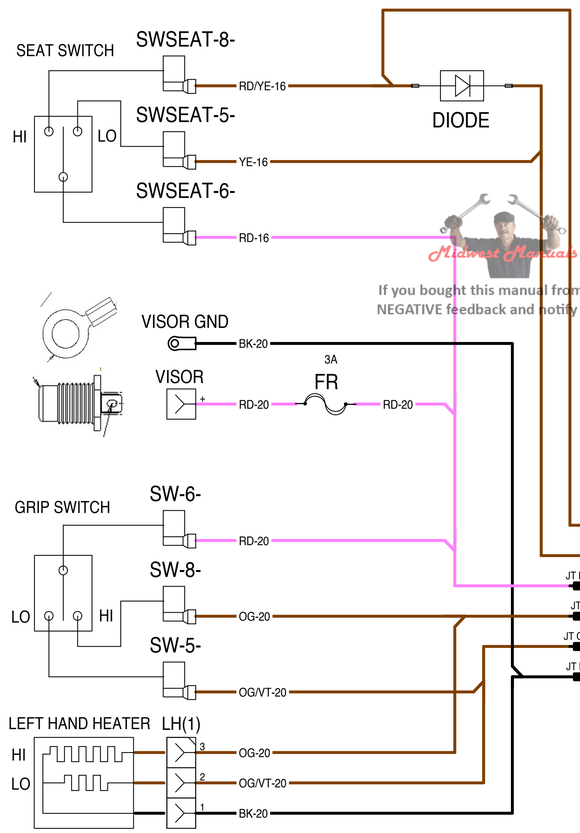
(IF OPTION IS INSTALLED ON VEHICULE)

FRONT HEATED SEAT HARNESS

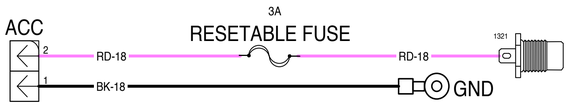


AIR CONTROLLED SUSPENSION HARNESS

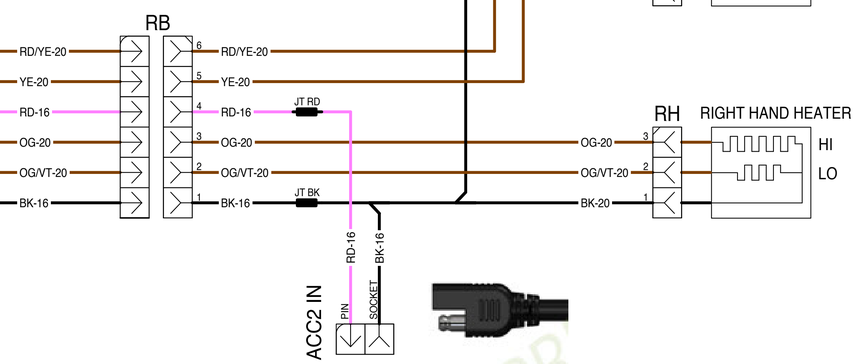




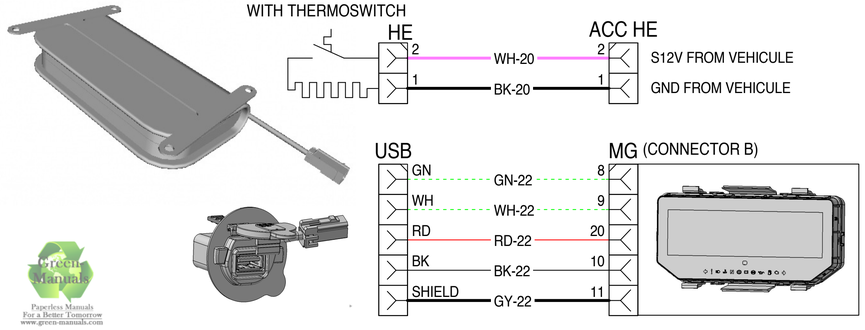
FRONT HEATED VISOR HARNESS

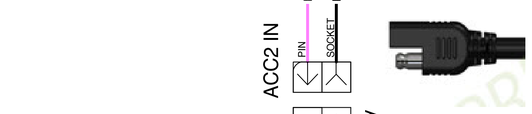


REAR SEAT HARNESS (HEATED GRIPS & SEAT)

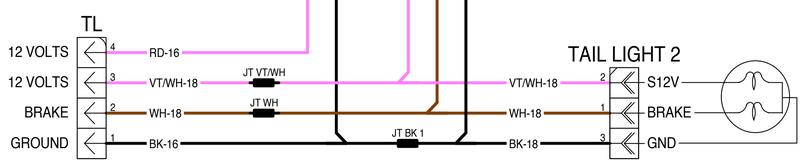


CELLPHONE HARNESS





DOUBLE TAIL LIGHT HARNESS WITH ACCESSORY PLUG



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REF | REV 2

2022 Engine Shop Manual

600R E-TEC/850 E-TEC Engines

ROTAX®

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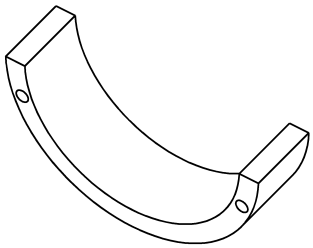
(P/N 529 036 453)



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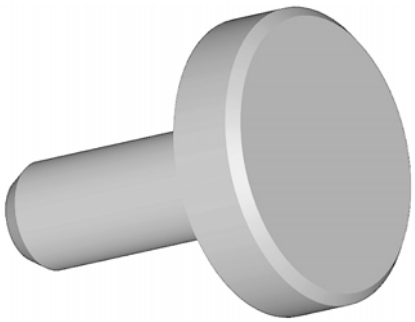
(P/N 529 036 434)



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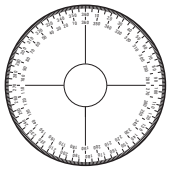
(P/N 529 035 607)



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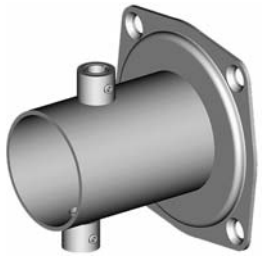
(P/N 529 036 443)



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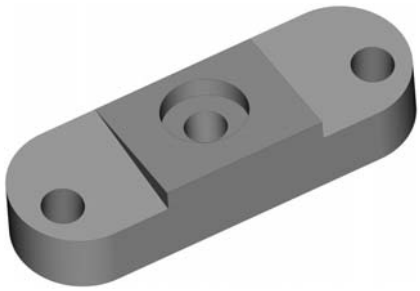

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(P/N 529 036 412)

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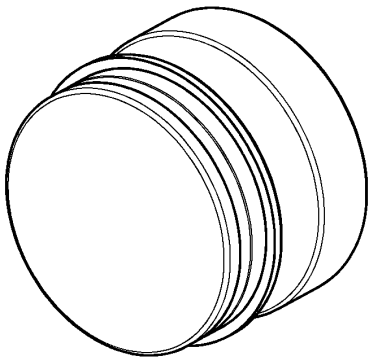
(P/N 529 036 421)



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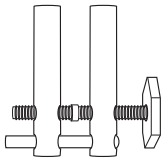
LARGE HOSE PINCHER
(P/N 529 032 500)



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(P/N 529 033 100)

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MAGNETO HOLDER
(P/N 529 036 404)

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MAGNETO PULLER
(P/N 529 036 403)

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MANIFOLD PLUG 63 MM (2-1/2")
(P/N 529 035 961)

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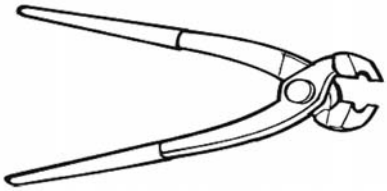
OETIKER PLIER
(P/N 295 000 070)



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OIL SEAL PUSHER
(P/N 529 035 757)

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PISTON CIRCLIP INSTALLER 21MM
(P/N 529 036 138)

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(P/N 529 035 686)

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(P/N 529 036 215)

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POWER INTERFACE
(P/N 515 177 223)

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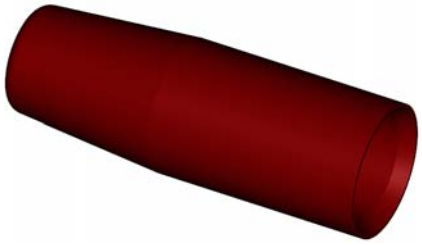
PROTECTOR SLEEVE (PUMP)
(P/N 529 036 406)



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(P/N 529 036 488)

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PULLER RING
(P/N 420 977 490)

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RAVE NUT WRENCH
(P/N 529 036 439)

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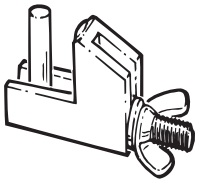
SMALL HOSE PINCHER
(P/N 295 000 076)



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STARTER DRIVE NEEDLE INSTALLER
(P/N 529 035 934)

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SUPPORT PLATE
(P/N 529 035 976)

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TDC DIAL INDICATOR
(P/N 295 000 143)

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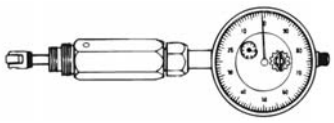
TDC DIAL INDICATOR
(P/N 414 104 700)



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TEMPERATURE INDICATOR STICK
(P/N 529 035 970)

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TEST CAP
(P/N 529 035 991)

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

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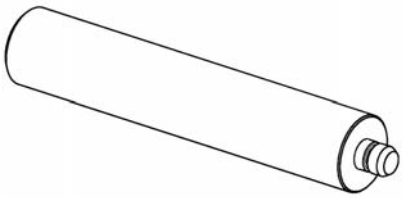
WATER PUMP BEARING PUNCH
(P/N 529 036 417)



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WATER PUMP IMPELLER TOOL
(P/N 529 036 444)

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WATER PUMP IMPELLER TOOL
(P/N 529 036 446)

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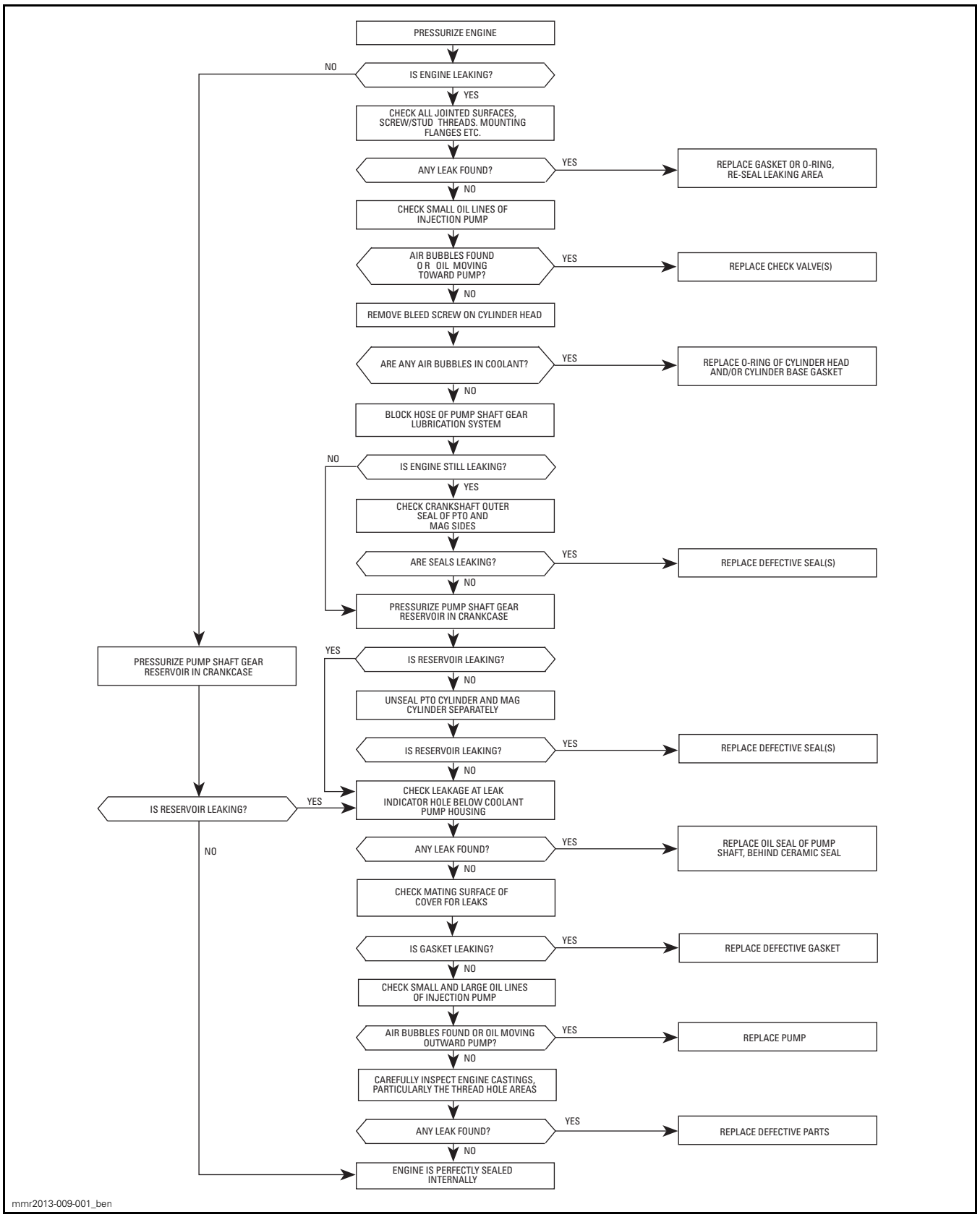
ENGINE LEAK TEST (600R E-TEC)

SERVICE TOOLS

Description	Part Number	Page
INTAKE PLUGS	529 036 421	7
MANIFOLD PLUG 63 MM (2-1/2")	529 035 961	7
SMALL HOSE PINCHER	295 000 076	7
VACUUM/PRESSURE PUMP	529 021 800	8

TROUBLESHOOTING

This flow chart must be used as a visual reference during the engine leak test procedure.



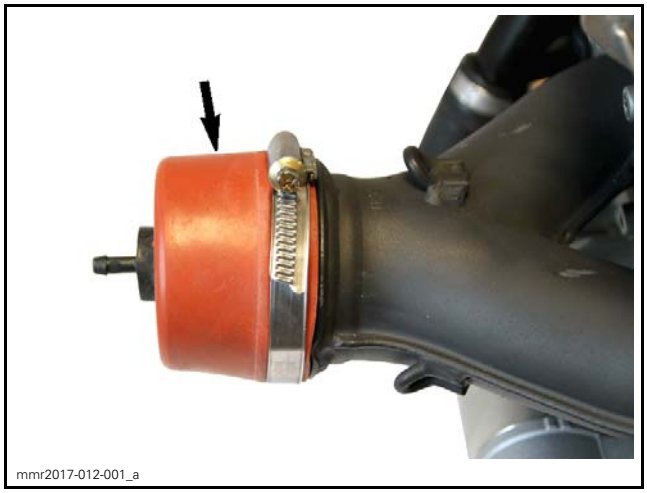
PROCEDURES

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.

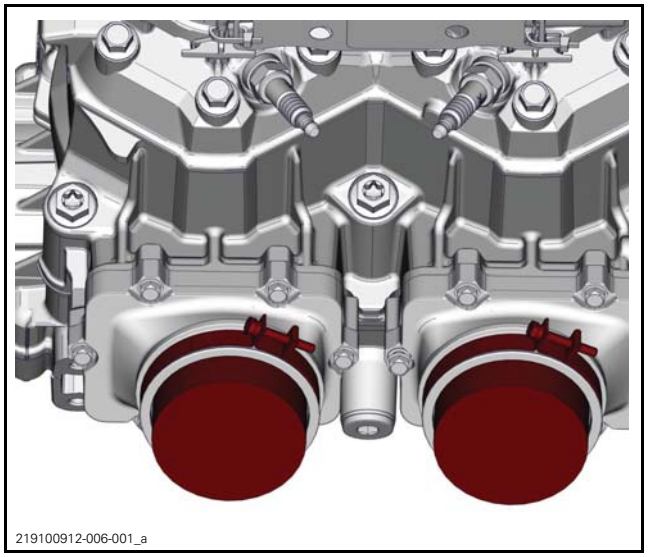
REQUIRED TOOL	
MANIFOLD PLUG 63 MM (2-1/2") (P/N 529 035 961)	



4. Insert an intake plug in each intake adapters.

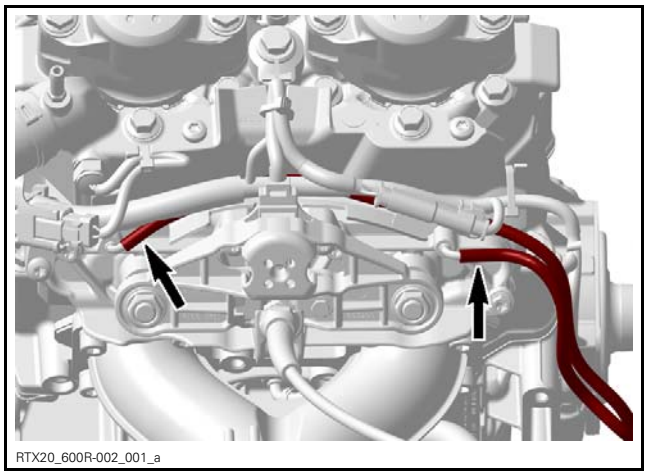
REQUIRED TOOL	
INTAKE PLUGS (P/N 529 036 421)	

5. Tighten with existing clamps.

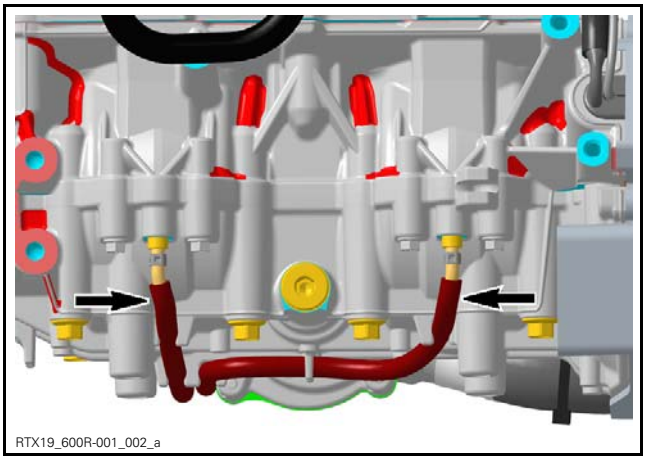


6. Block oil hoses connected to the oil pump:
   6.1 Install hose pincher right after check valve.

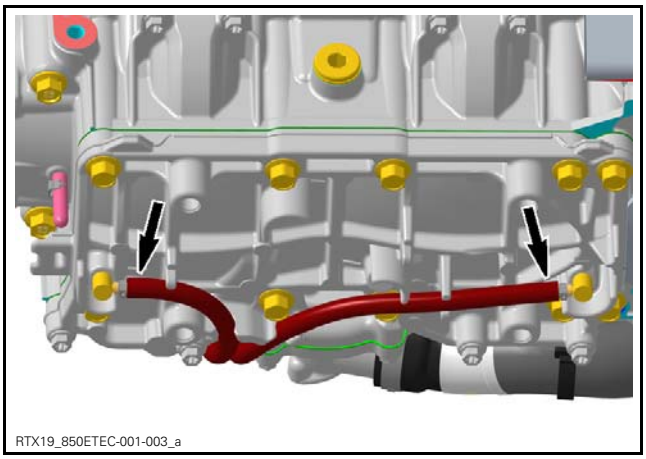
REQUIRED TOOL	
SMALL HOSE PINCHER (P/N 295 000 076)	



EXHAUST SIDE SHOWN



INTAKE SIDE SHOWN - 600R E-TEC ENGINE

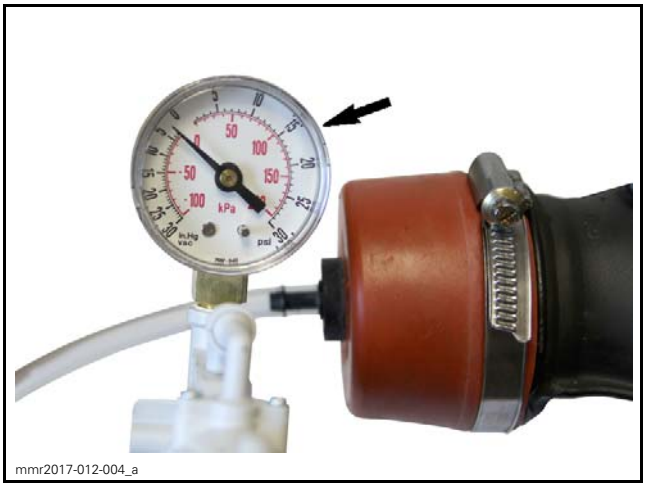


INTAKE SIDE SHOWN - 850 E-TEC ENGINE

NOTICE Pay attention not to squeeze hose nipples.

7. Pressurize engine.

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



ENGINE LEAK TEST	
PRESSURE	TIME (WITHOUT PRESSURE DROP)
30 kPa (4.35 PSI)	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).
   8.1 If tester kit (manifold and intake plugs, hoses and pump) is leaking, bubbles will indicate where leak comes from.
   8.2 If tester kit is not leaking, check engine, see *ENGINE COMPONENTS TO BE VERIFIED*.

Engine Components to be Verified

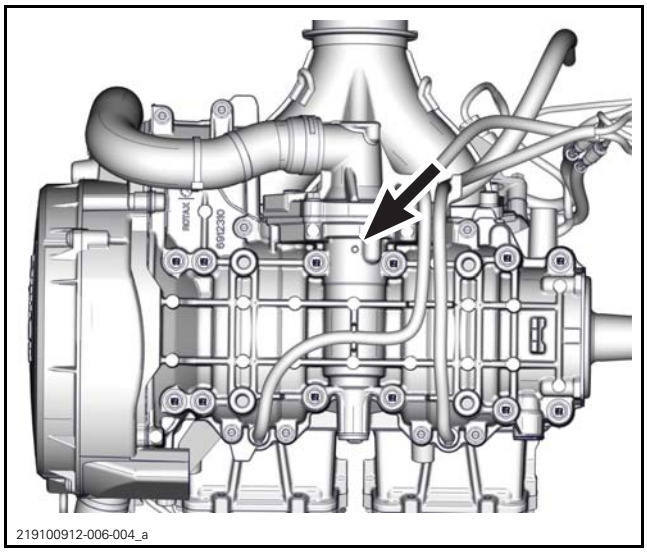
If air is escaping from engine check all jointed surfaces and screw or stud threads of engine:

- 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:

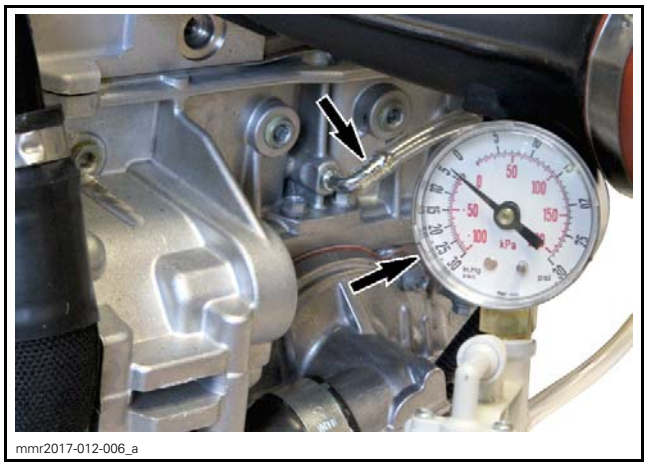
– A defective oil seal (behind ceramic seal)
– Defective O-ring on bearing carrier, see *COOLING SYSTEM* subsection.

PUMP SHAFT OIL GEAR RESERVOIR LEAK TEST

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 PSI)	3 minutes

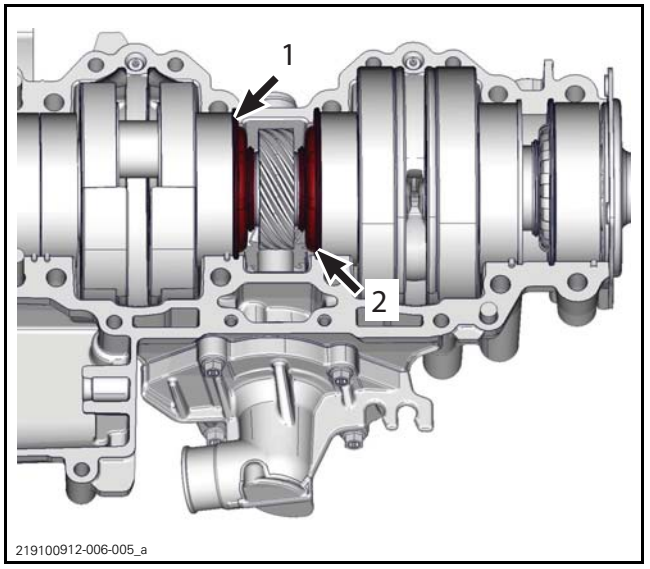
NOTICE Do not exceed the specified pressure.



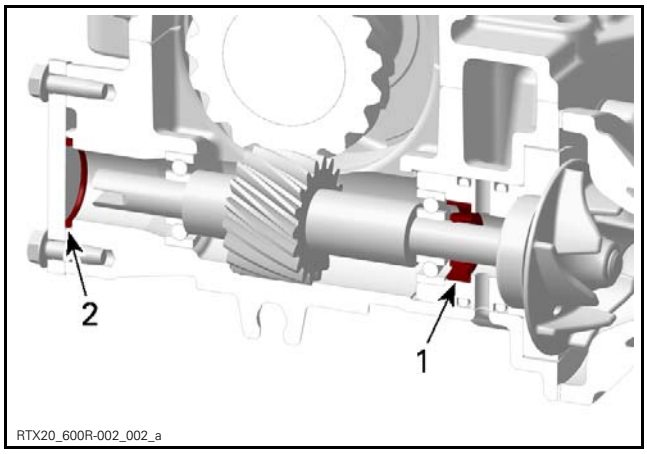
TYPICAL

If pressure drops check for:

– Leaking plug screw gasket
– Defective O-ring on bearing carrier (see *COOLING SYSTEM* subsection)
– Defective oil seal on water pump side
– 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)

ENGINE LEAK TEST (850 E-TEC)

SERVICE TOOLS

Description	Part Number	Page
INTAKE PLUGS	529 036 421	13
MANIFOLD PLUG 63 MM (2-1/2")	529 035 961	13
SMALL HOSE PINCHER	295 000 076	13
VACUUM/PRESSURE PUMP	529 021 800	14

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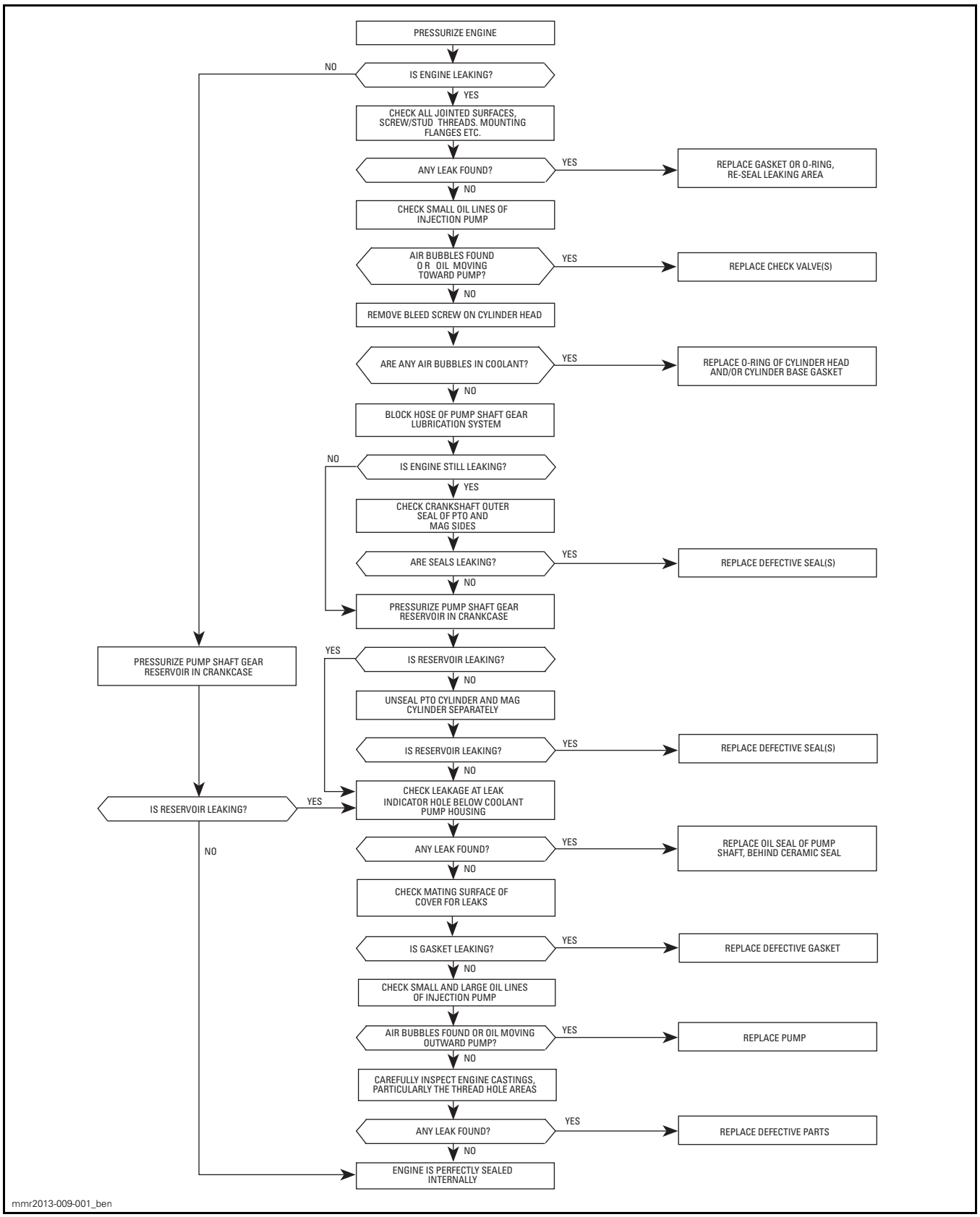
PROCEDURES

NOTE: This flow chart must be used as a visual reference during the engine leak test procedure.

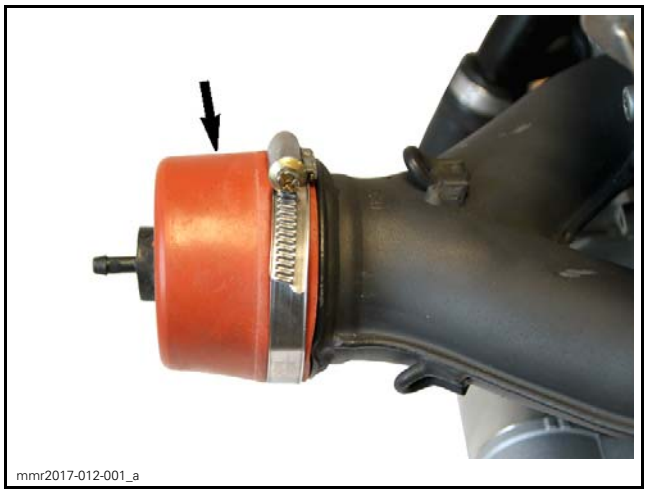


ENGINE LEAK TEST

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.

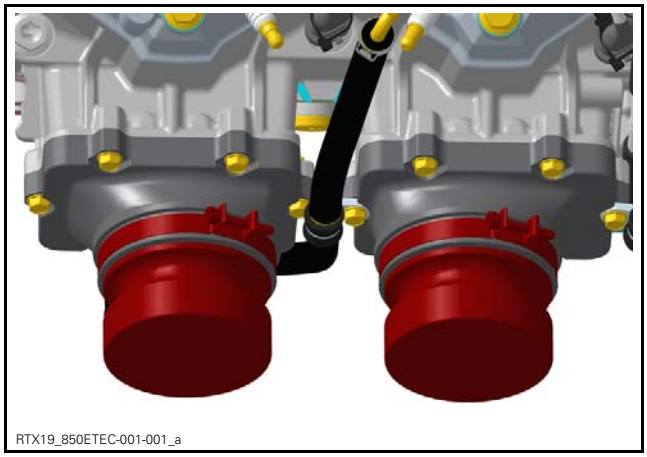
REQUIRED TOOL	
MANIFOLD PLUG 63 MM (2-1/2") (P/N 529 035 961)	


mmr2017-012-001_a

4. Insert an intake plug in each intake adapters.

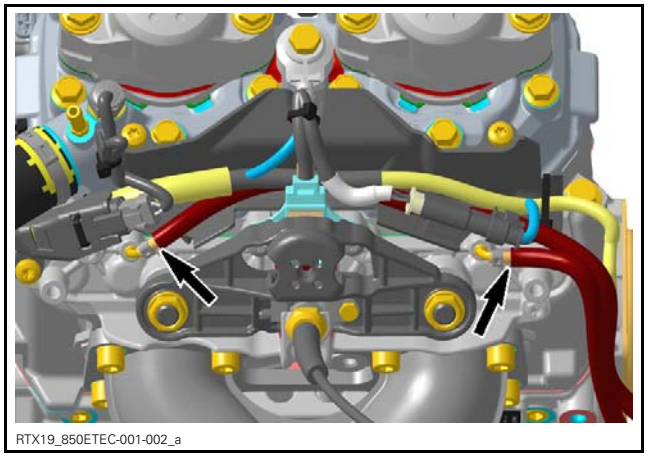
REQUIRED TOOL	
INTAKE PLUGS (P/N 529 036 421)	

5. Tighten with existing clamps.


RTX19_850ETEC-001-001_a

6. Block oil hoses connected to the oil pump:
   - 6.1 Partially remove corrugated tube from oil hoses.
   - 6.2 Install hose pincher right after check valve.

REQUIRED TOOL	
SMALL HOSE PINCHER (P/N 295 000 076)	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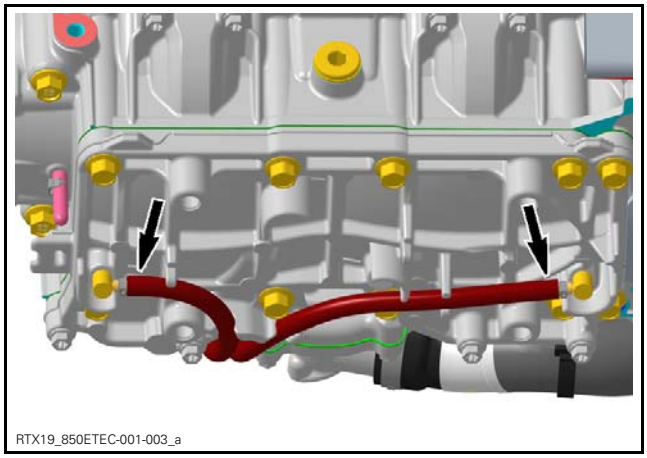
BLOCK OIL HOSES HERE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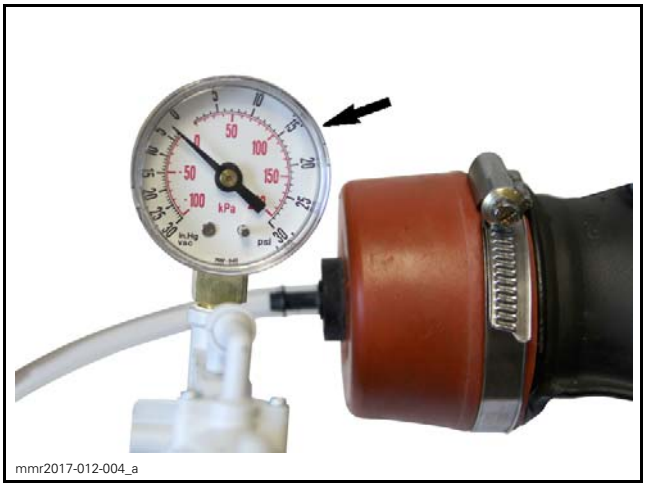
BLOCK OIL HOSES HERE

NOTICE Pay attention not to squeeze hose nipples.

7. Pressurize engine.

REQUIRED TOOL	
VACUUM/PRESSURE PUMP (P/N 529 021 800)	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ENGINE LEAK TEST	
PRESSURE	TIME (WITHOUT PRESSURE DROP)
30 kPa (4.35 PSI)	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).
   8.1 If tester kit (manifold and intake plugs, hoses and pump) is leaking, bubbles will indicate where leak comes from.
   8.2 If tester kit is not leaking, check engine, see *ENGINE COMPONENTS TO BE VERIFIED*.

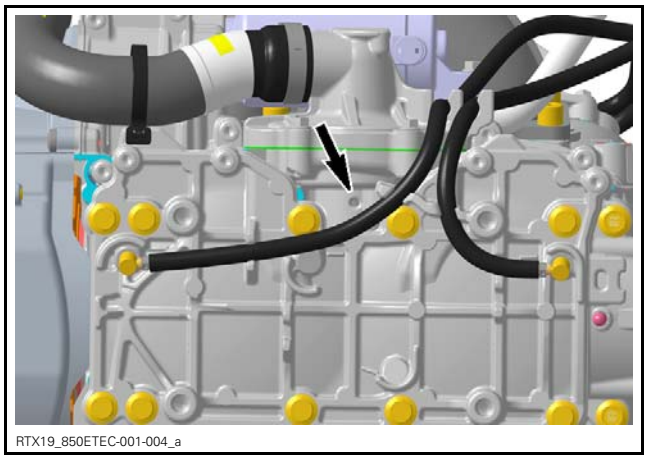
Engine Components to be Verified

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.

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.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Leaking coolant indicates:
- A defective ceramic seal (on water pump side)
- Defective O-ring on bearing carrier, see *COOLING SYSTEM* subsection.

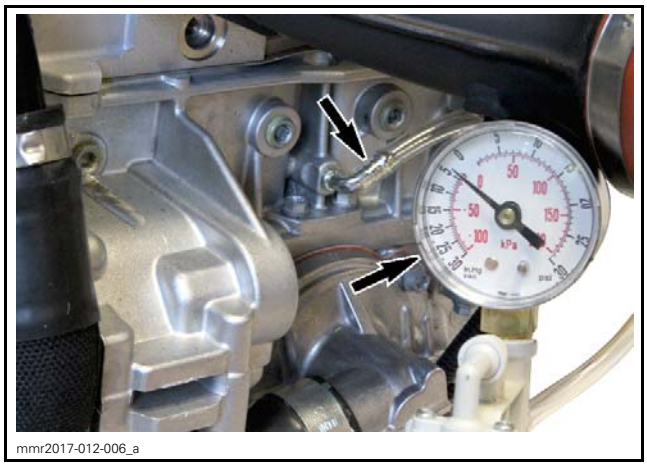
Leaking oil indicates:
- A defective oil seal (behind ceramic seal)
- Defective O-ring on bearing carrier, see *COOLING SYSTEM* subsection.

PUMP SHAFT OIL GEAR RESERVOIR LEAK TEST

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 PSI)	3 minutes

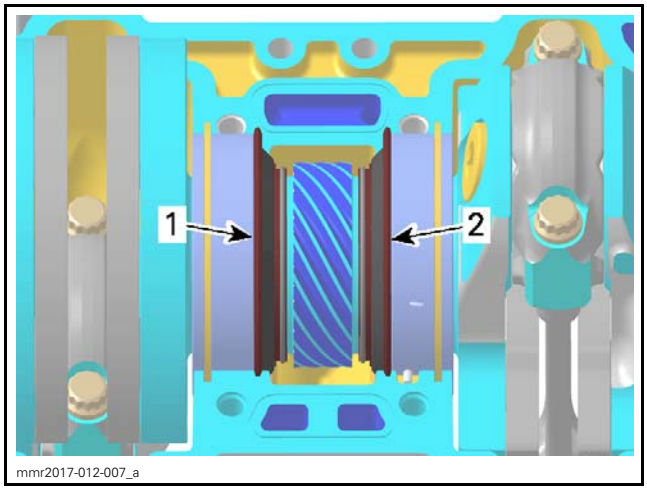
NOTICE Do not exceed the specified pressure.



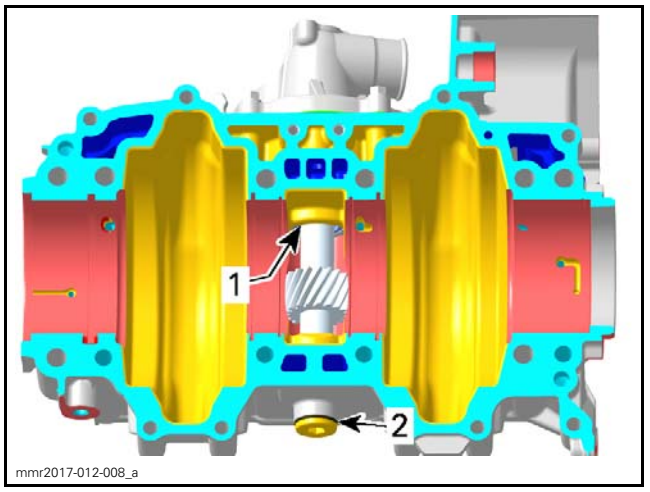
TYPICAL

If pressure drops check for:

– Leaking plug screw gasket
– Defective O-ring on bearing carrier (see *COOLING SYSTEM* subsection)
– Defective oil seal on water pump side
– Defective crankshaft inner seal.



CRANKCASE INSIDE VIEW
1. *Leakage through inner seal on MAG side*
2. *Leakage through inner seal on PTO side*

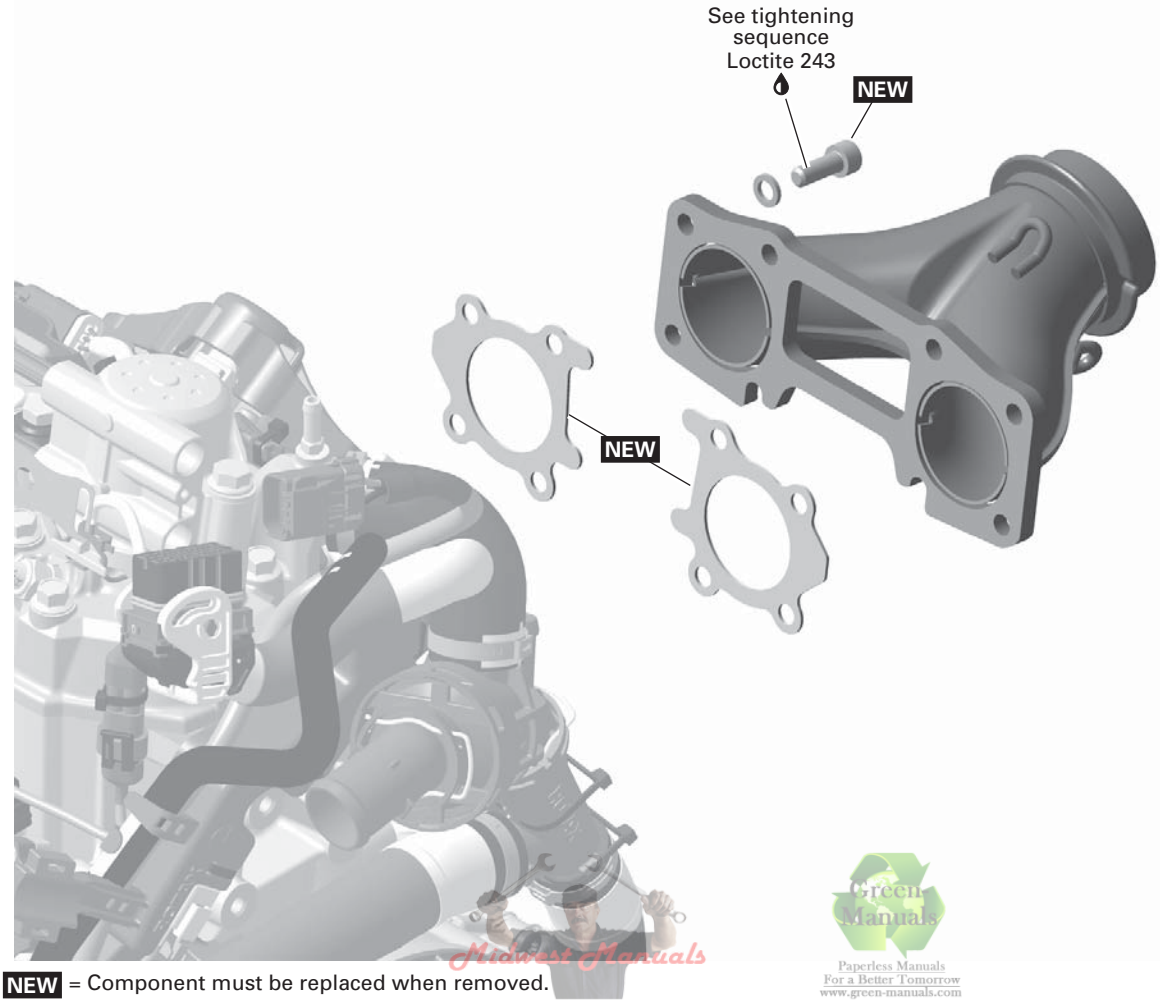


TYPICAL - CRANKCASE INSIDE VIEW
1. *Leakage through water pump oil seal (reservoir side)*
2. *Leakage on plug screw side (gasket)*

EXHAUST MANIFOLD (600R E-TEC)

SERVICE PRODUCTS

Description	Part Number	Page
LOCTITE 243 (BLUE)	293 800 060	18



NEW = Component must be replaced when removed.

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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.

PROCEDURES

EXHAUST MANIFOLD

Removing the Exhaust Manifold

1. Remove tuned pipe. Refer to *EXHAUST SYSTEM* subsection in the appropriate shop manual.
2. Remove and discard the exhaust manifold screws. Keep washers for reinstallation.

REQUIRED TOOL	
Allen spherical socket	

3. Remove the exhaust manifold and discard gaskets.

Inspecting the Exhaust Manifold

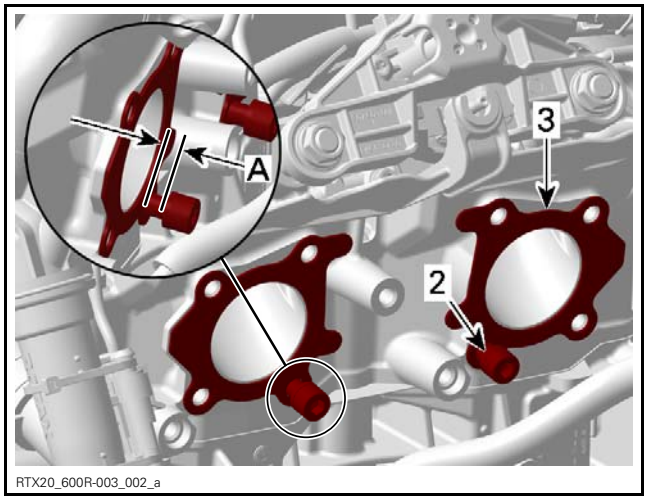
Check if manifold is cracked or damaged. Replace if necessary.

Installing the Exhaust Manifold

1. Apply a drop of threadlocker on threads of two (2) new screws.

SERVICE PRODUCT
LOCTITE 243 (BLUE) (P/N 293 800 060)

2. Install both screws with previously removed washers and new gasket as shown.

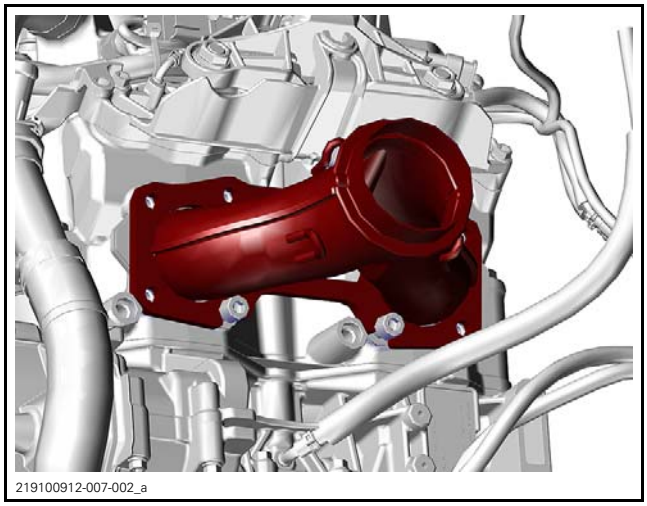


RTX20_600R-003_002_a

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.



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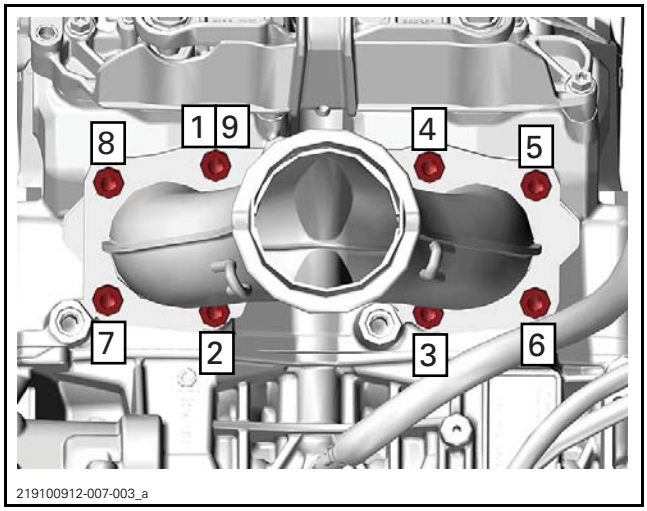
4. Apply a drop of threadlocker on threads of all remaining new screws.

SERVICE PRODUCT
LOCTITE 243 (BLUE) (P/N 293 800 060)

5. Install the screws with remaining washers and tighten them to specification as per the following tightening sequence and procedure.

NOTICE Do not use an impact wrench to tighten exhaust manifold screws.



TIGHTENING SEQUENCE

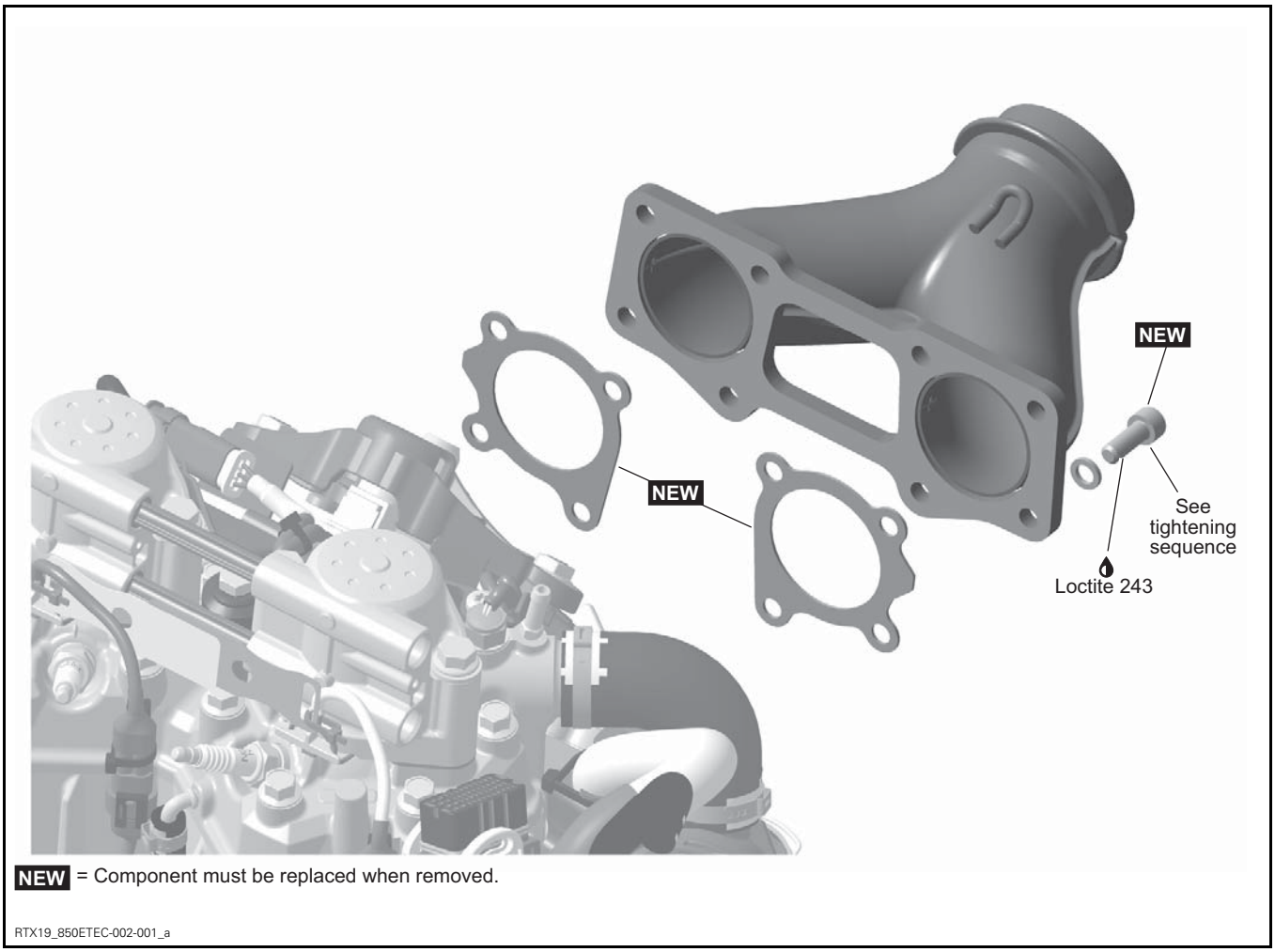
TIGHTENING TORQUE	
Exhaust manifold screws	34 N•m ± 4 N•m (25 lbf•ft ± 3 lbf•ft)

6. Install tuned pipe. Refer to *EXHAUST SYSTEM* subsection in the appropriate shop manual.

EXHAUST MANIFOLD (850 E-TEC)

SERVICE PRODUCTS

Description	Part Number	Page
LOCTITE 243 (BLUE)	293 800 060	22



NEW = Component must be replaced when removed.

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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.

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.

REQUIRED TOOL	
Allen spherical socket	

3. Remove the exhaust manifold and discard gaskets.

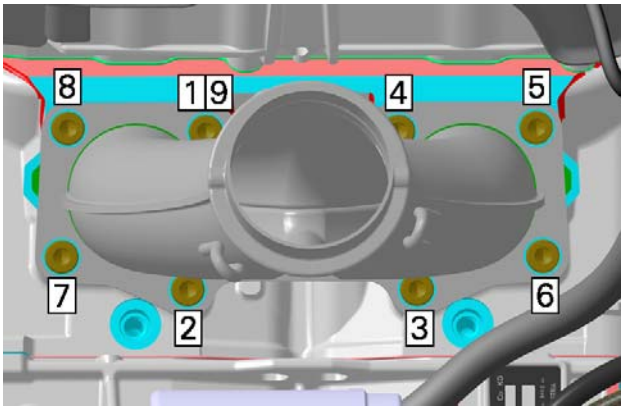
Inspecting the Exhaust Manifold

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 LOCTITE 243 (BLUE) (P/N 293 800 060) on threads of each screw.
3. Install new exhaust manifold screws with washers and tighten them to specification as per the following tightening sequence and procedure.

NOTICE Do not use an impact wrench to tighten exhaust manifold screws.



TIGHTENING SEQUENCE

TIGHTENING TORQUE	
Exhaust manifold screws	34 N•m ± 4 N•m (25 lbf•ft ± 3 lbf•ft) + LOCTITE 243 (BLUE) (P/N 293 800 060)

4. Install tuned pipe. Refer to *EXHAUST SYSTEM* subsection.

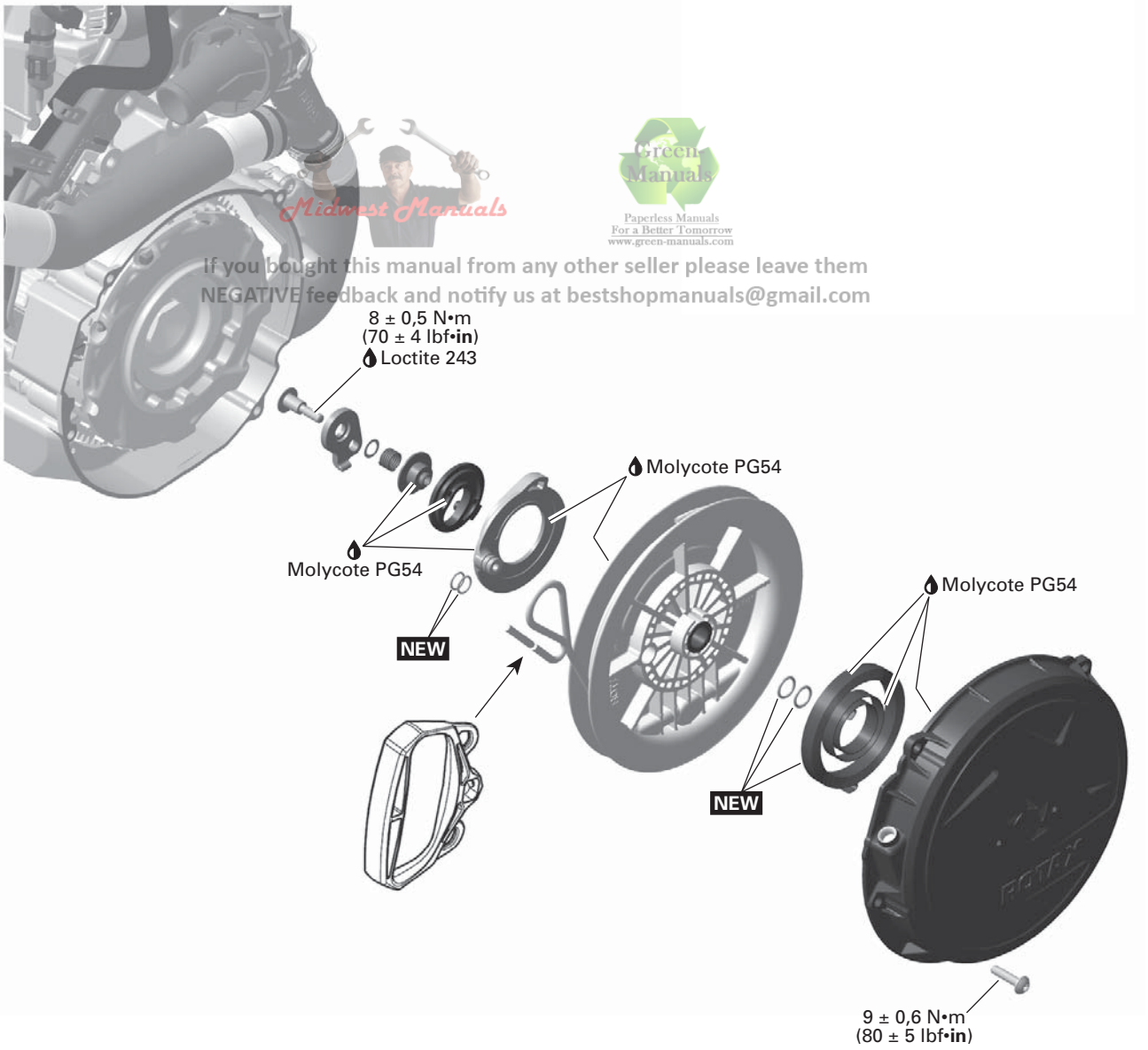
REWIND STARTER

SERVICE TOOLS

Description	Part Number	Page
SMALL HOSE PINCHER	295 000 076	25, 31

SERVICE PRODUCTS

Description	Part Number	Page
LOCTITE 243 (BLUE)	293 800 060	30
MOLYKOTE PG 54	420 899 763	25, 28



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NEW = Component must be replaced when removed.

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MAINTENANCE

CLEANING AND LUBRICATING THE REWIND STARTER

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.

RECOMMENDED SERVICE PRODUCT
MOLYKOTE PG 54 (P/N 420 899 763)

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.

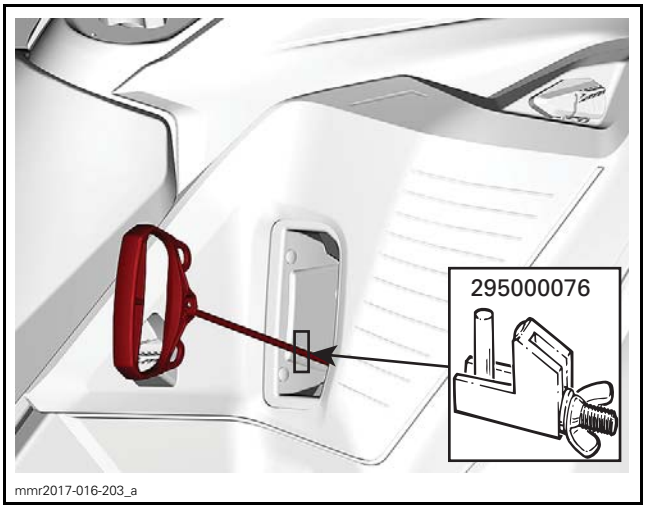
PROCEDURES

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.

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



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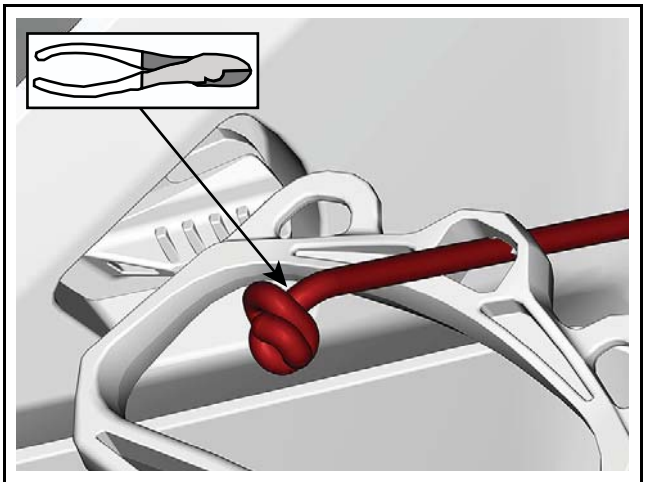
2. Using a small screwdriver, extract rope knot from stater handle.
3. Cut rope close to knot.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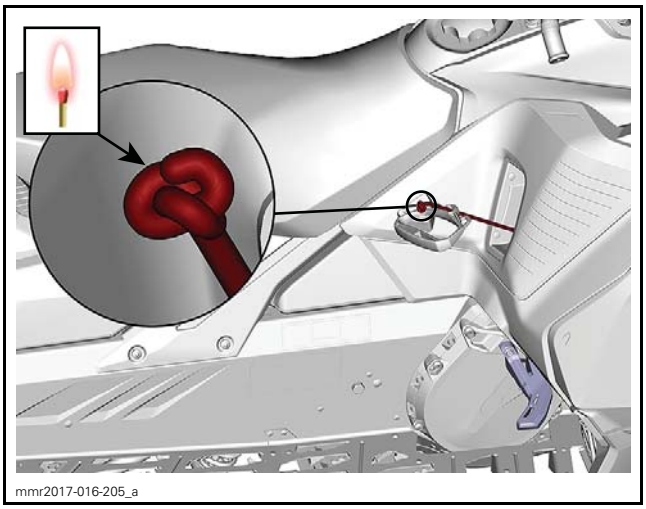
Installing the Rewind Starter Handle

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.

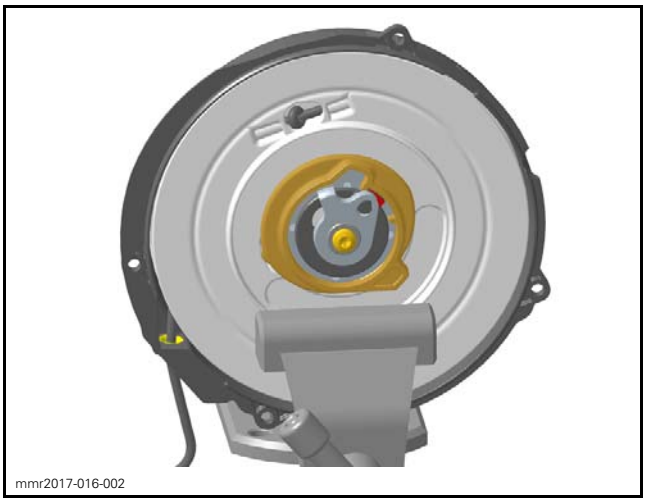
Fuse the knot with a lit match then insert rope end down and pull the starter handle over the knot.


mmr2017-016-205_a

REWIND STARTER ROPE

Rewind Starter Rope Replacement

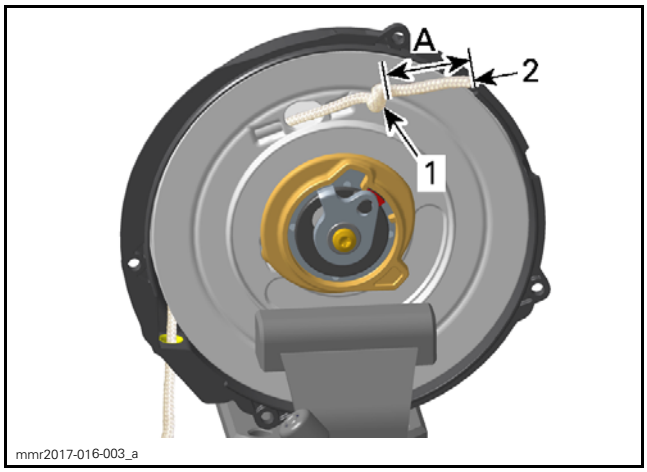
1. Remove rewind starter, refer to *REWIND STARTER* in this subsection.
2. Completely pull out rope. Hold rewind starter in a vise.


mmr2017-016-002

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 mm to 35 mm (1.2 in to 1.4 in) in length.
6. Fuse rope end with a lit match



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A. 30 mm to 35 mm (1.2 in to 1.4 in)
1. Knot
2. Fused rope end

7. Insert rope end into rope sheave.

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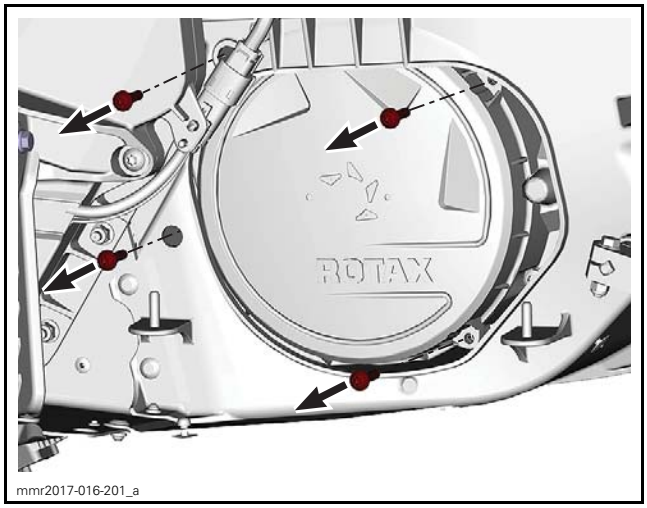
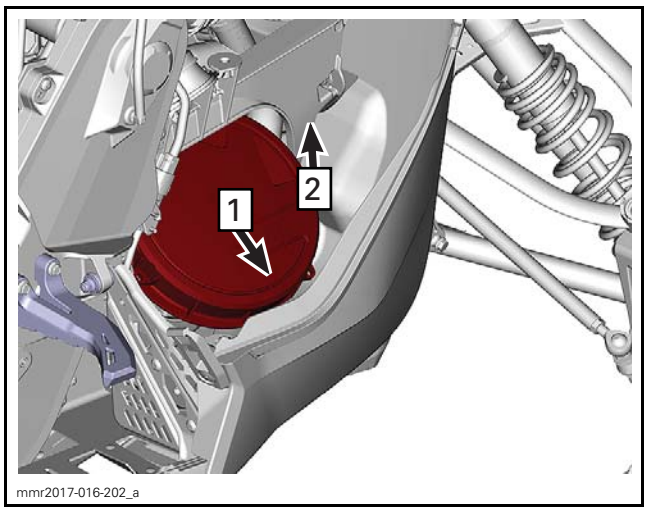
REWIND STARTER

Removing the Rewind Starter

1. Remove starter handle.
2. Remove the rewind starter.

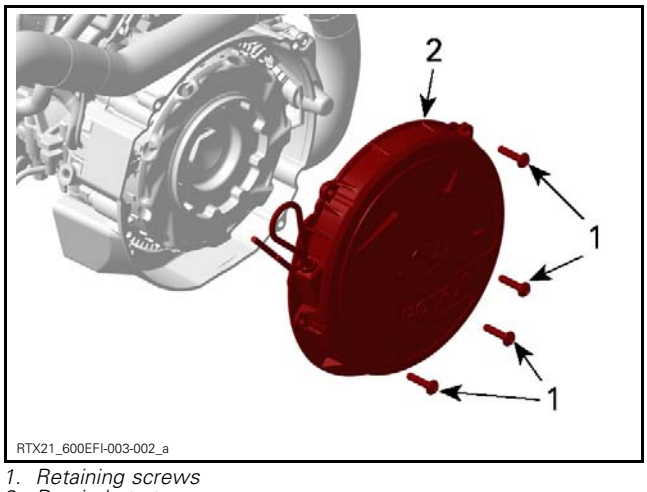
Engine Inside the Vehicle





Step 1: Slide the bottom of the rewind starter out of frame
Step 2: Remove rewind starter from engine

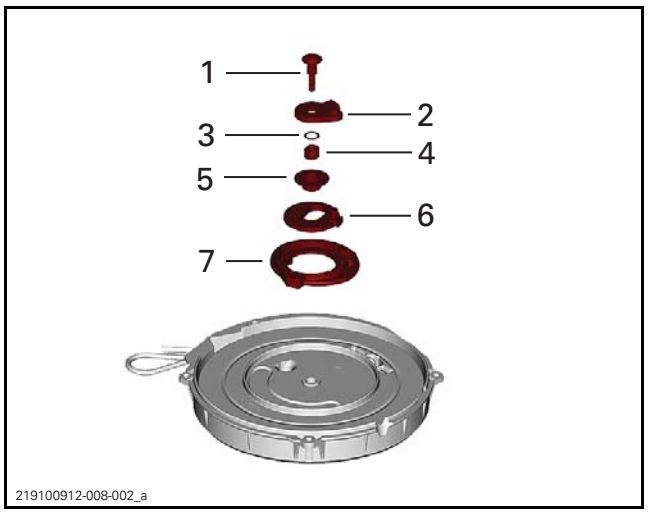
Engine Out of the Vehicle



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.

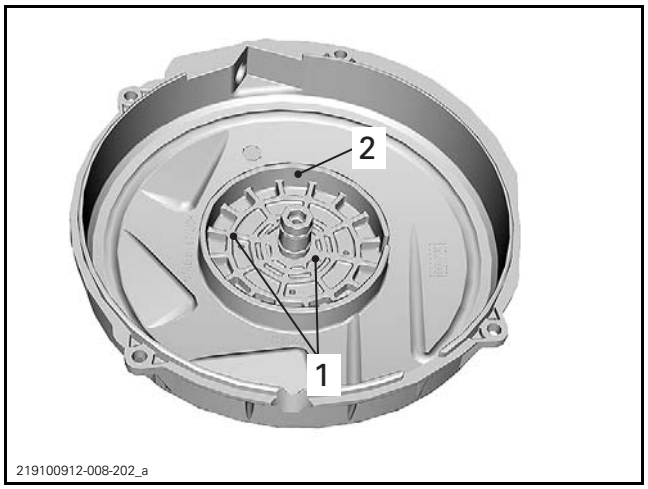
⚠ WARNING

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:



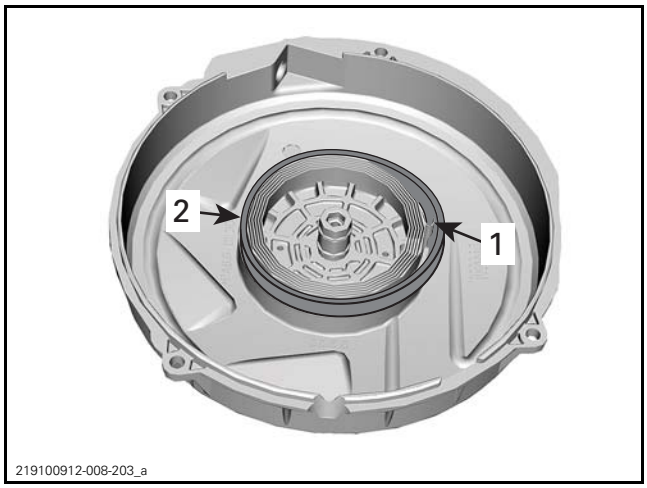
1. Spring contact area
2. Spring guide inside housing

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.**

SERVICE PRODUCT
MOLYKOTE PG 54 (P/N 420 899 763)

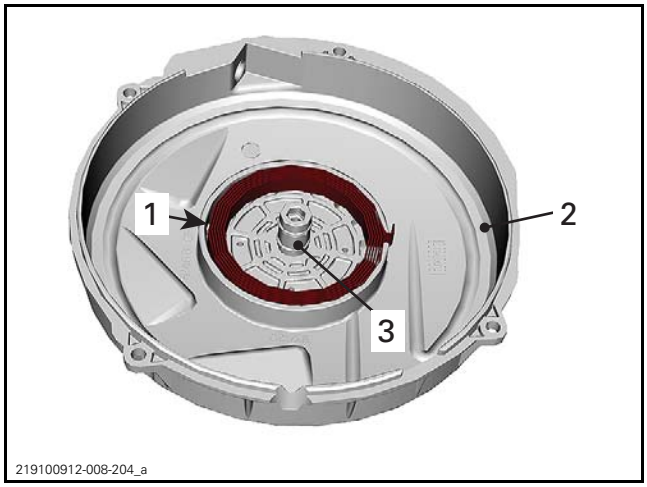
3. Install the new spring.
   - 3.1 Position the cardboard carrier and the spring, over the spring guide wall.
   - 3.2 Align the spring outer end in the spring guide notch. The spring end must pointed counterclockwise.
   - 3.3 Using your both thumbs, and carefully press the spring evenly in its location.
   - 3.4 Discard the cardboard carrier.

⚠ CAUTION **Since the spring is tightly wound inside the guide it may jump out when rewind is handled. Always handle with care.**



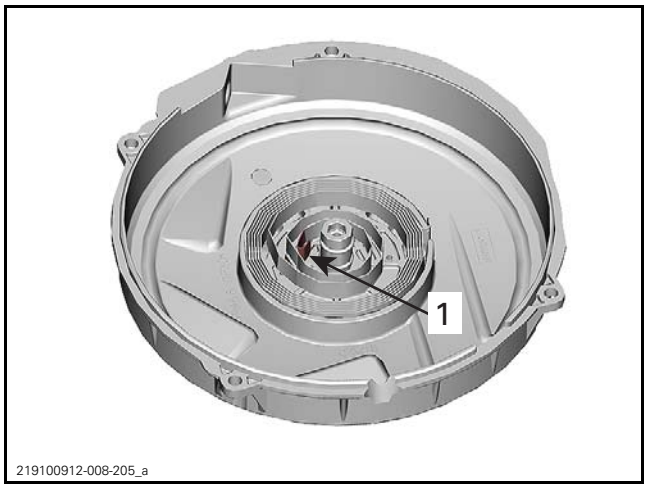
1. Outer spring end
2. Cardboard carrier (discard it)

4. Apply the lubricant at these locations:



1. Spring
2. 1 cm (1/2 in) wide on bottom of housing
3. Housing post

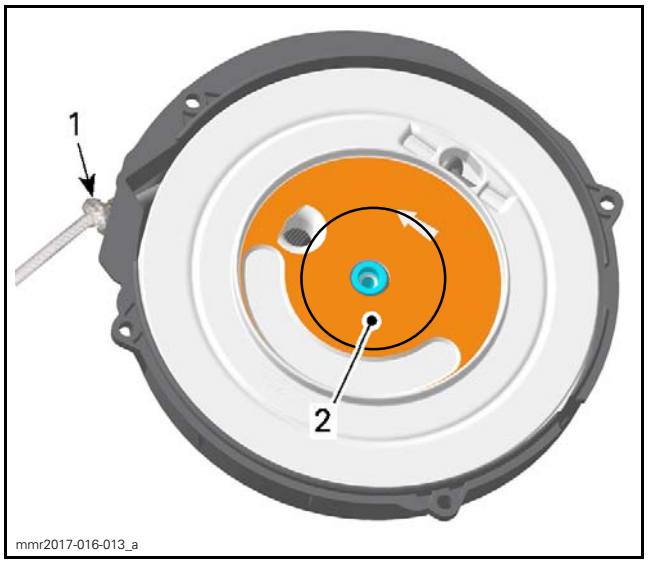
5. Wind rope on rope sheave
6. Place rope sheave in starter housing making sure the sheave hub notch engages in the rewind spring hook.



1. Rewind spring hook

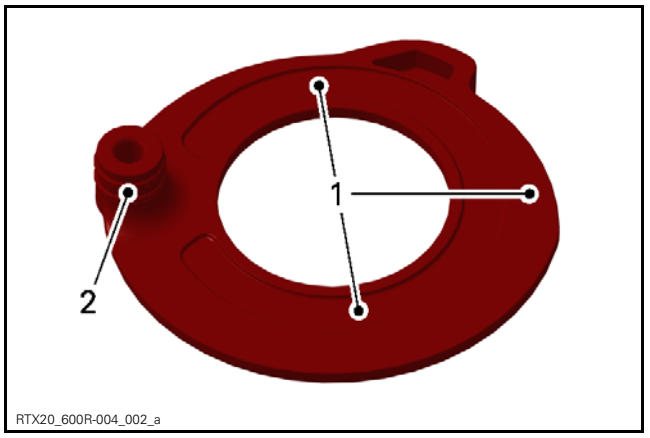
SHEAVE HUB NOTCH

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.



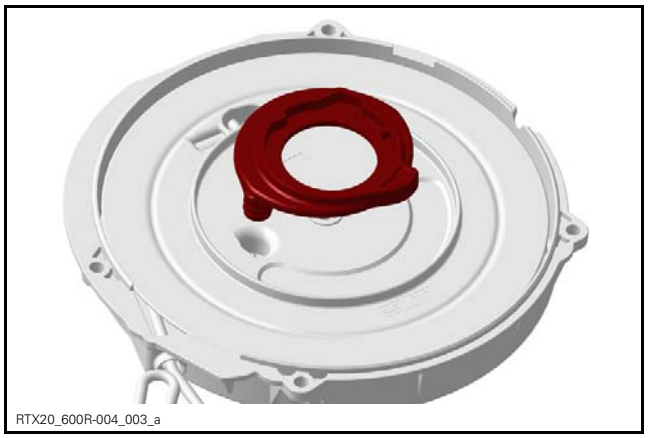
1. Knot
2. Lubricate contact surface of the pawl

12. Lubricate pawl at the contact surface and emboss.

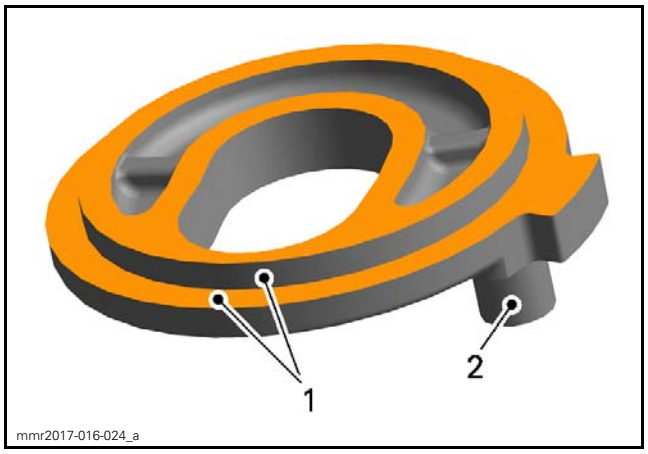


1. Contact surface
2. Emboss

13. Install pawl on rope sheave.



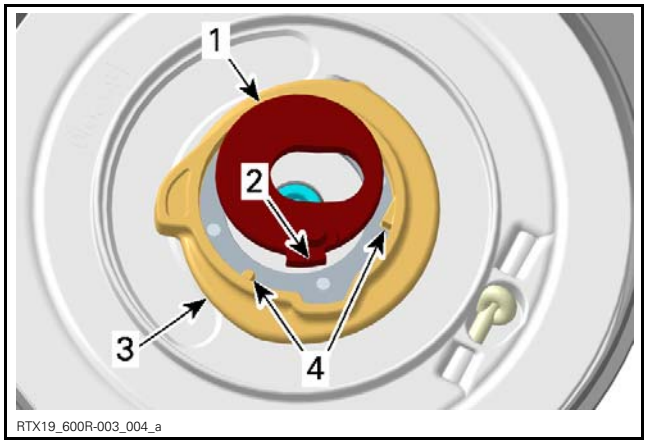
14. Lubricate pawl lock at the contact surfaces and emboss.



1. Contact surfaces
2. Emboss

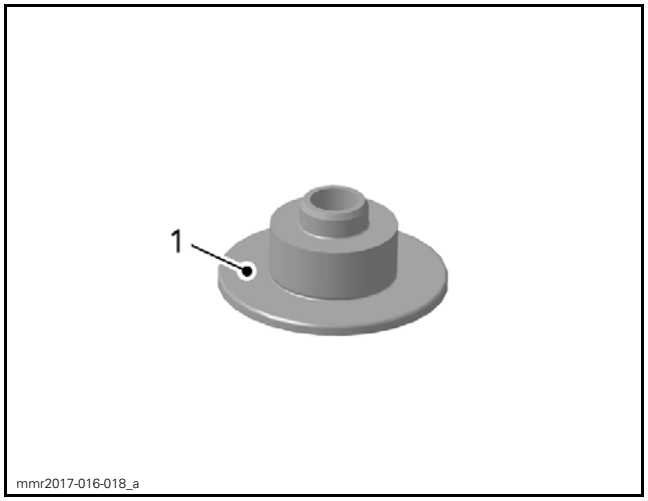
15. Install pawl lock on pawl.

NOTE: Pawl lock nose must engage between the pawl lock stoppers.



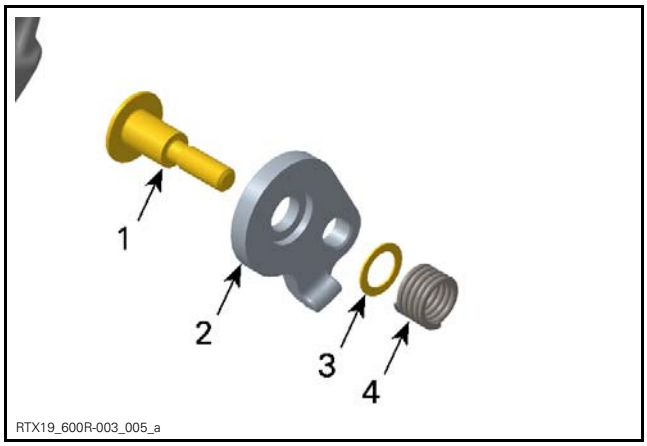
1. Pawl lock
2. Pawl lock nose
3. Pawl
4. Pawl lock stoppers

16. Lubricate step collar and install it on pawl lock.



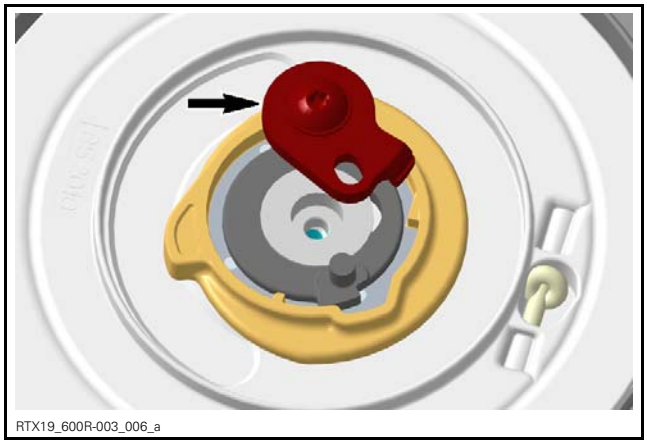
1. Contact surface

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.

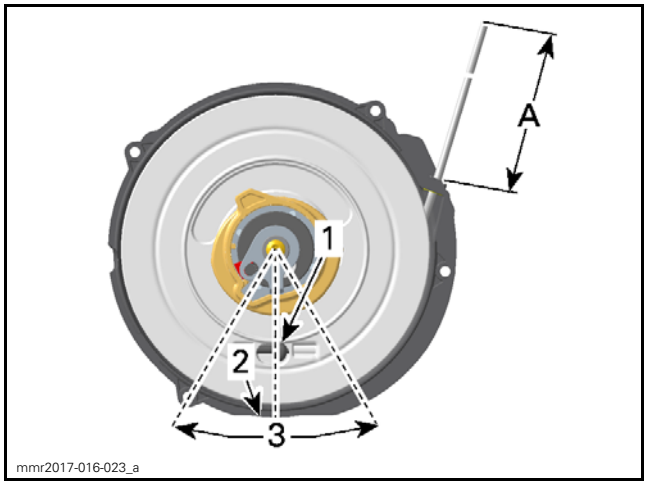
TIGHTENING TORQUE	
Bearing screw	8 N•m ± 0.5 N•m (71 lbf•**in** ± 4 lbf•**in**) + LOCTITE 243 (BLUE) (P/N 293 800 060)

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:
   - 2.1 Pull out rope until recess for knot in the rope sheave is within the specified range.
   - 2.2 Measure rope length.

MINIMUM ROPE LENGTH
275 mm (10.8 in)

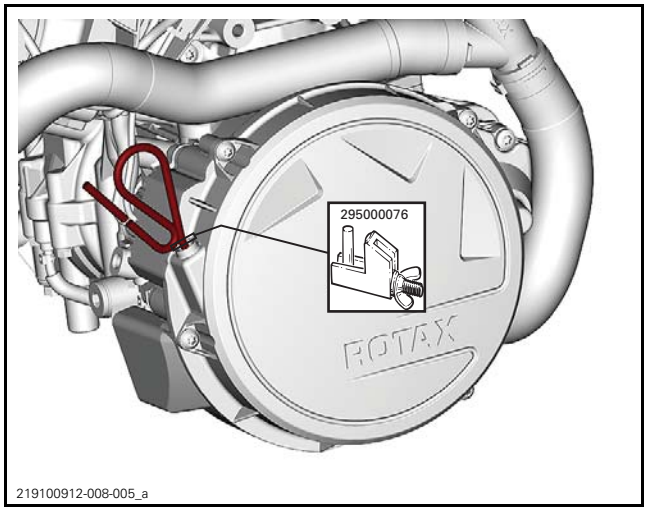


1. *Knot*
2. *Bottom side of rewind starter*
3. *Range of ± 30°*

If rope is too short replace rope, refer to *REWIND STARTER ROPE REPLACEMENT* in this subsection.

3. Lock rope near rewind starter housing.

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



TYPICAL

4. Reinstall rewind starter assembly on engine.

TIGHTENING TORQUE	
Rewind starter retaining screws	9 N•m ± 0.6 N•m (80 lbf•**in** ± 5 lbf•**in**)

5. Thread starter rope through console.

6. Install handle, refer to *INSTALLING THE STARTER HANDLE* in this subsection.

LUBRICATION SYSTEM

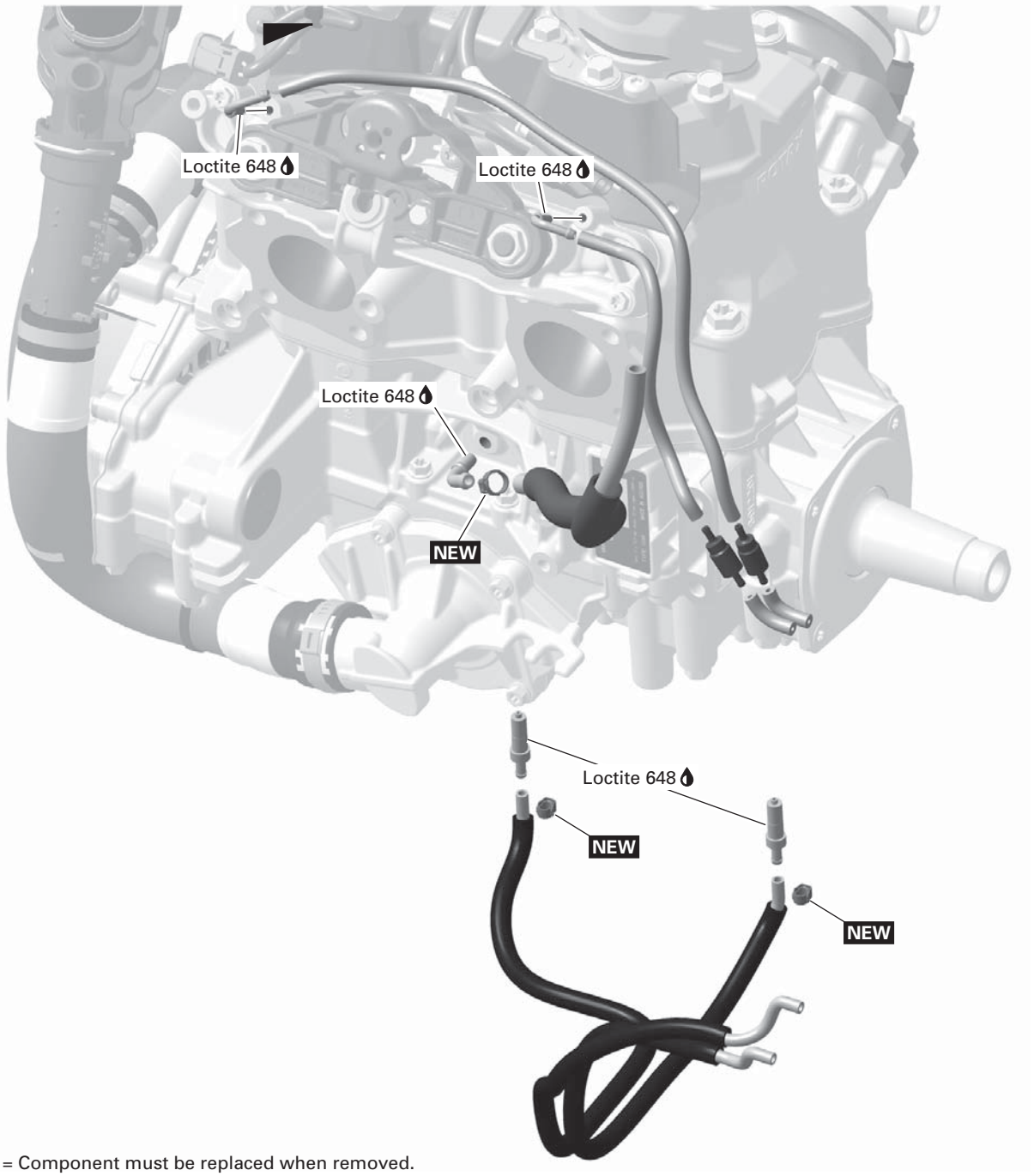
SERVICE TOOLS

Description	Part Number	Page
FLUKE 115 MULTIMETER	529 035 868	46
IMPULSE FITTING PUNCH (BIG)	529 036 412	50
IMPULSE FITTING PUNCH (SMALL)	529 036 413	50
LEAK TEST KIT	529 033 100	41
VACUUM/PRESSURE PUMP	529 021 800	41, 47, 50

SERVICE PRODUCTS

Description	Part Number	Page
2T E-TEC SYNTHETIC OIL (EUR)	779281	40
2T E-TEC SYNTHETIC OIL	779126	40
BRAKE AND PARTS CLEANER PRO S2	779245	49
LOCTITE 648 (GREEN) (F)	619 600 012	49
LOCTITE 648 (GREEN)	413 711 400	49
PULLEY FLANGE CLEANER (F)	619 600 022	49

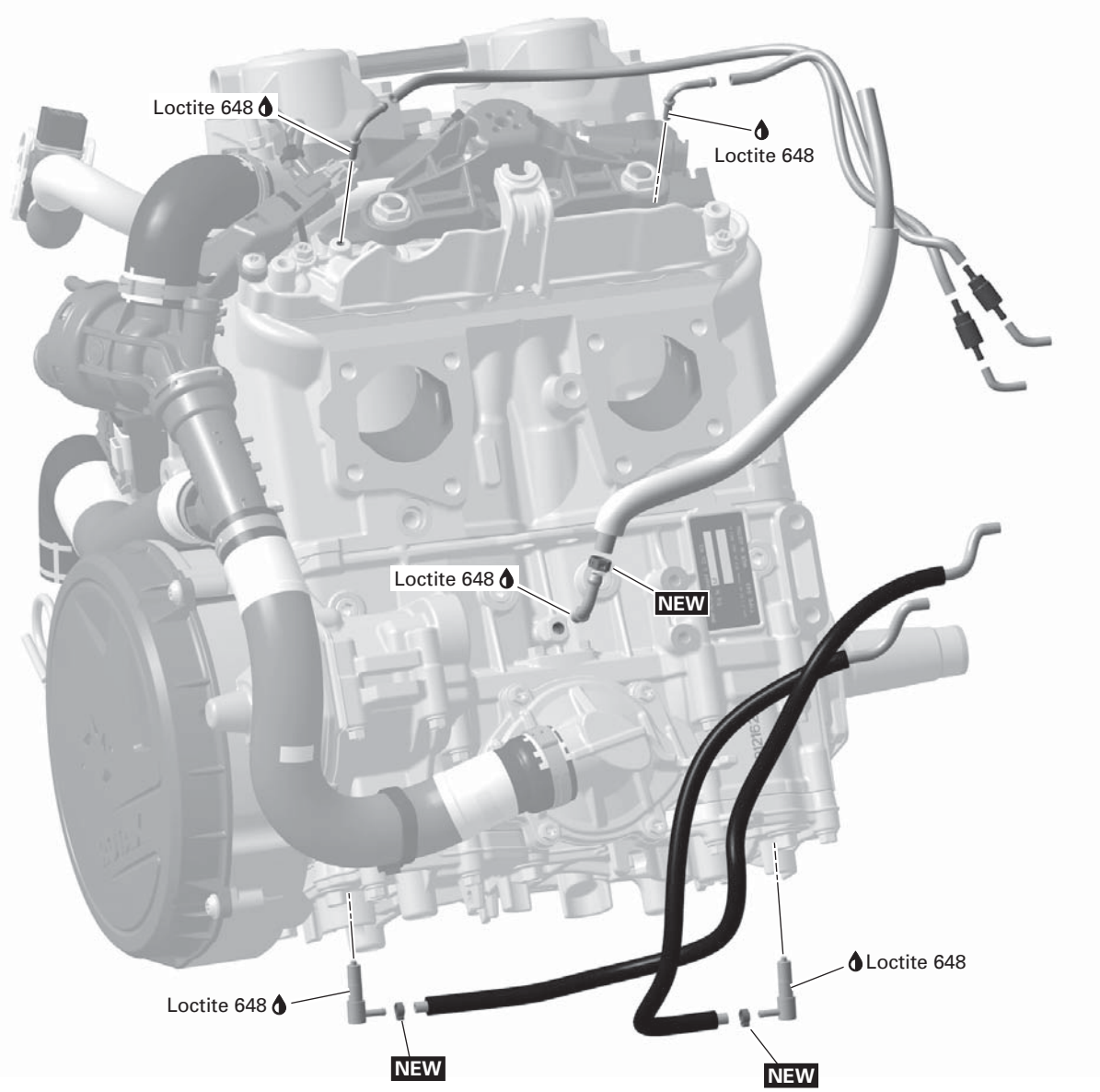
600R E-TEC ENGINE



NEW = Component must be replaced when removed.

RTX20_600R-005-001_a

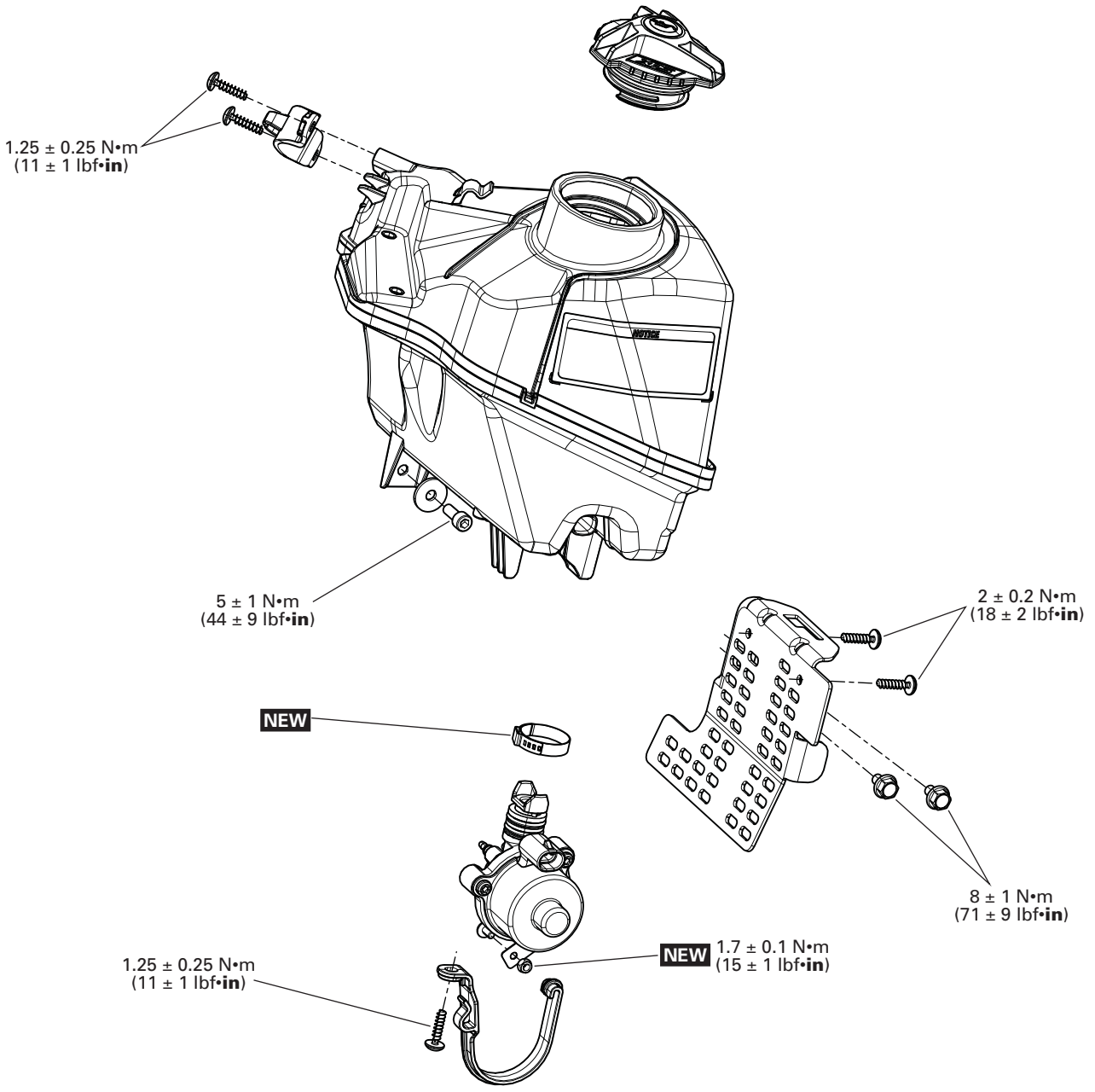
850 E-TEC ENGINE



NEW = Component must be replaced when removed.

RTX20_600R-005-008_a

OIL INJECTION TANK AND OIL INJECTION PUMP



NEW = Component must be replaced when removed.

RTX600ETECMY18-004-100

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.

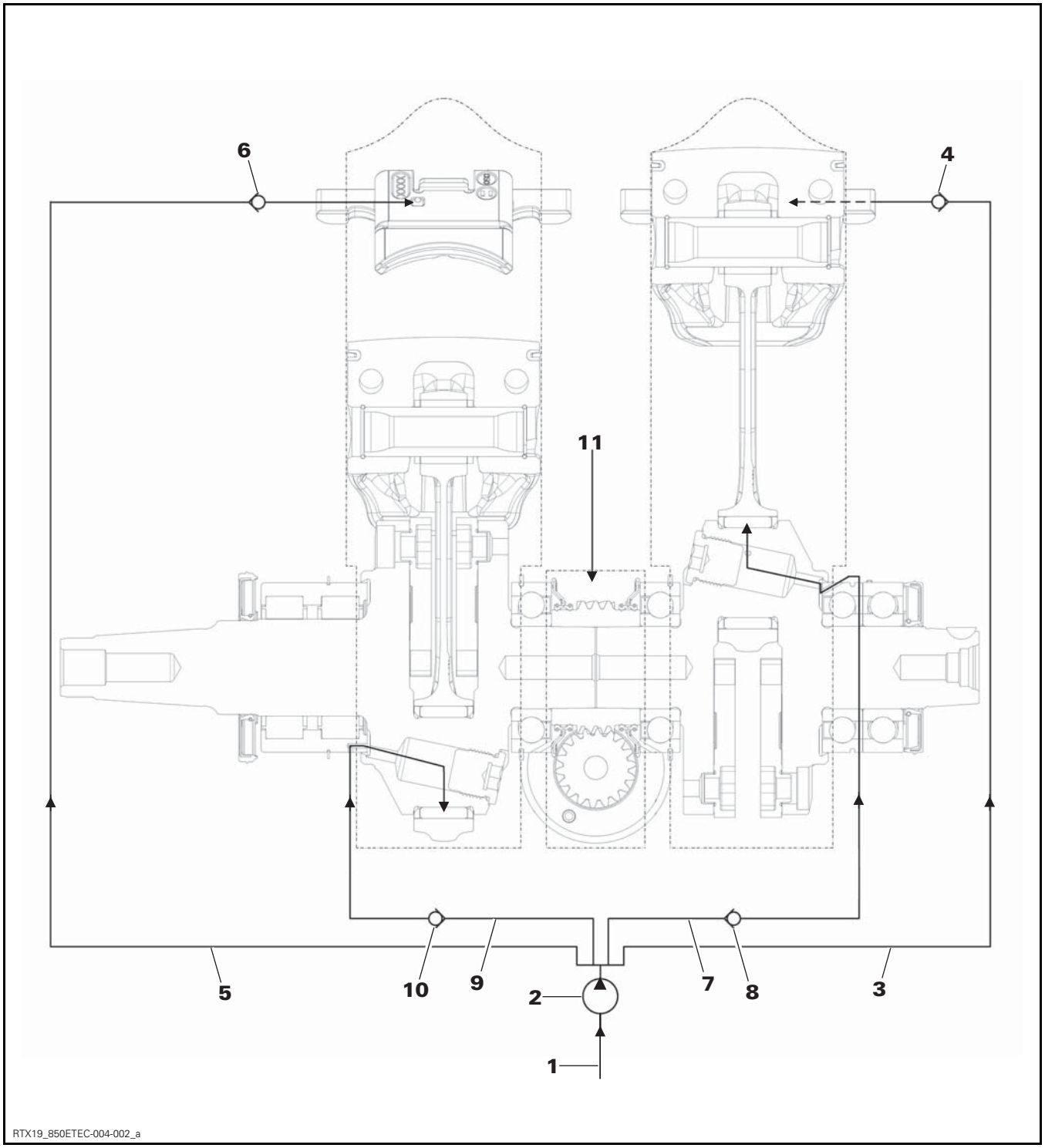
NOTICE Do not use a hose pincher on outlet hose. This would damage the spring inside hose.

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.

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*

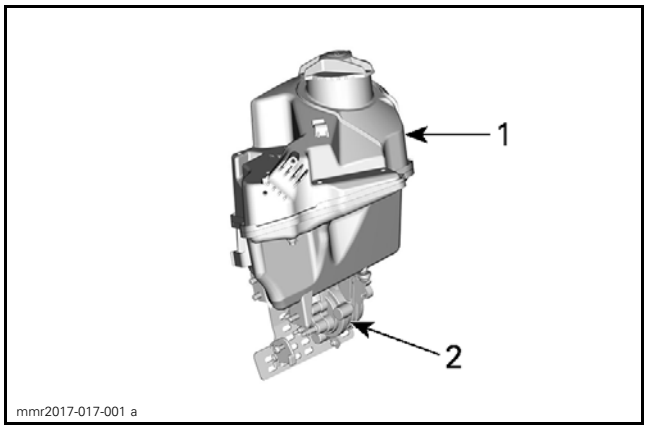
The engine oil supplied by the oil pump is going through check valves to the outer main bearings. Through oil collecting grooves in the outer crank webs, the oil is going through the crank webs and by centrifugal force, the oil is directly transferred to the crank pins to lubricate the big end bearings. 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.

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.

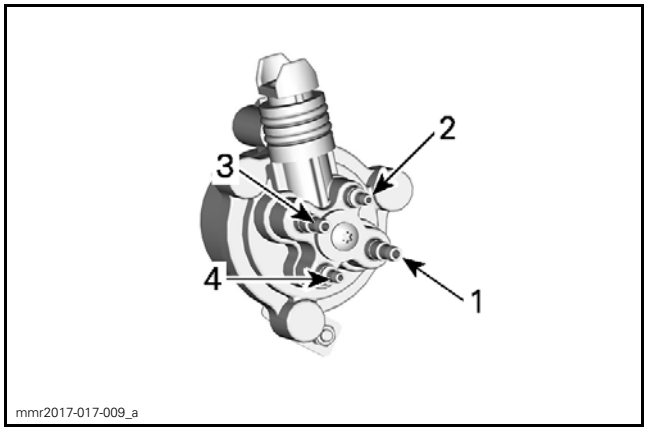
The electronic oil injection pump is directly attached under the oil injection tank.



1. Oil injection tank
2. Electronic oil injection pump

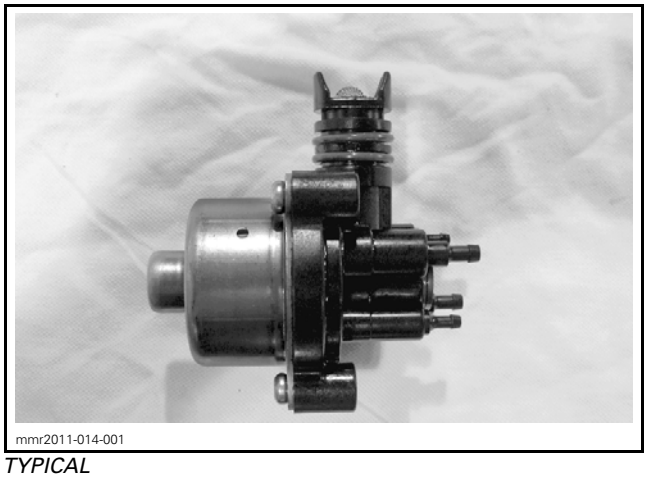
The E-TEC pump features a total of 4 outlets:

– 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 approximately 8 and 11 minutes	Within approximately 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	
Scandinavia	2T E-TEC SYNTHETIC OIL (EUR) (P/N 779281)
Other Countries	2T E-TEC SYNTHETIC OIL (P/N 779126)
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)

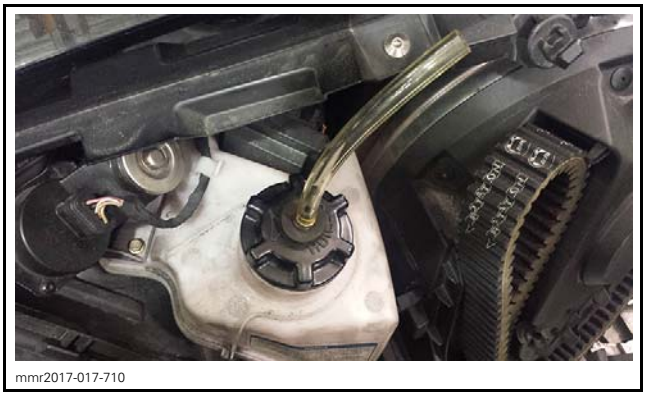
Refer to *STORAGE PROCEDURE* subsection.

INSPECTION

OIL SYSTEM LEAK TEST

1. Install the test cap on oil tank.

REQUIRED TOOL	
LEAK TEST KIT (P/N 529 033 100)	



TYPICAL
1. Test cap on tank

2. Connect the pressure pump to test cap.

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

3. Pressurize oil system as follows.

PRESSURE	TIME TO HOLD PRESSURE
18 kPa (2.6 PSI)	3 minutes

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

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.

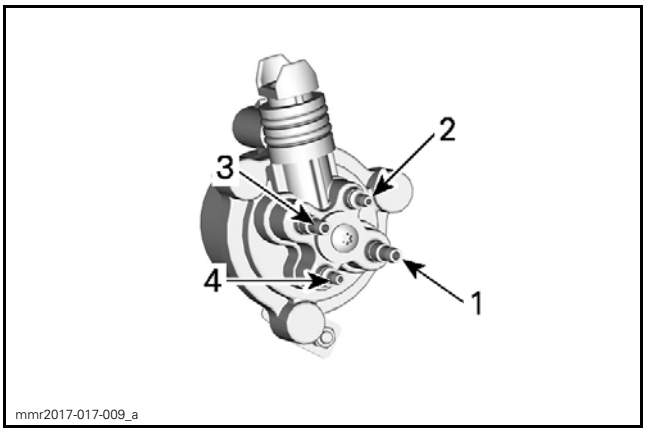
When a pump is replaced, the compensation number must be entered in the BRP diagnostic software (BUDS2). so that the ECM properly controls the pump according to its optimized characteristics.

The compensation number is located on a label on the pump as shown.

mmr2009-014-034_a

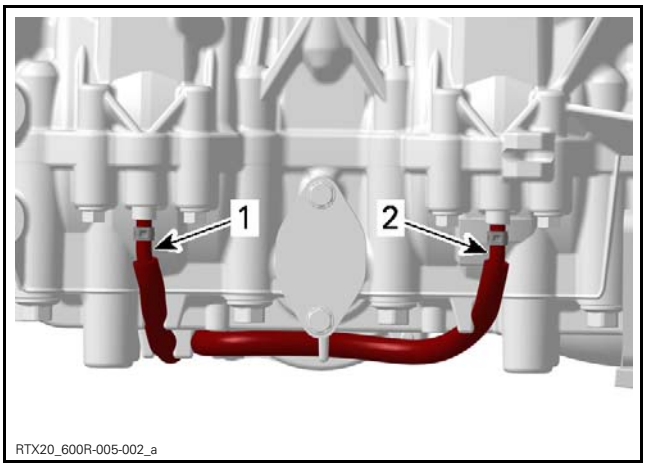
Oil injection pump bleeding is done with BUDS2. Refer to *BLEEDING OIL INJECTION PUMP* in this subsection.

Oil Injection Pump Hoses Connection



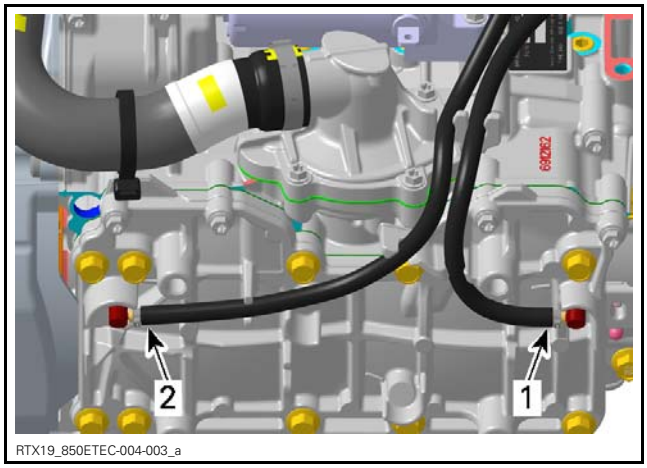
mmr2017-017-009_a

1. *To engine PTO side*
2. *To 3D RAVE valve PTO side*
3. *To engine MAG side*
4. *To 3D RAVE valve MAG side*



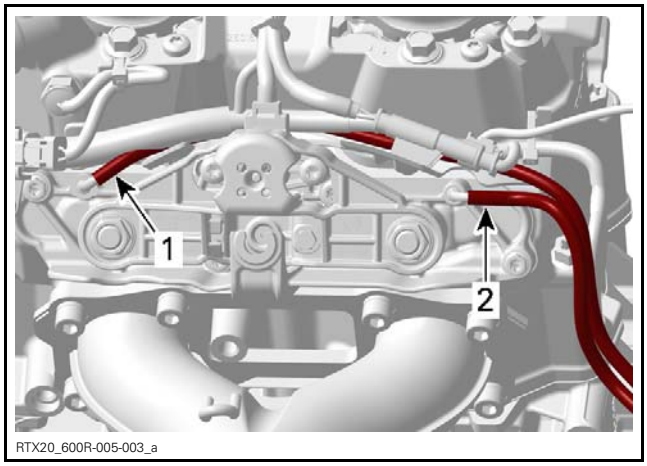
RTX20_600R-005-002_a

600R E.TEC ENGINE
1. *Oil hose PTO side*
2. *Oil hose MAG side*



RTX19_850ETEC-004-003_a

850 E-TEC ENGINE
1. *Oil hose PTO side*
2. *Oil hose MAG side*



RTX20_600R-005-003_a

TYPICAL
1. *Oil hose 3D RAVE valve MAG side*
2. *Oil hose 3D RAVE valve PTO side*

Testing Oil Injection Pump with BUDS2

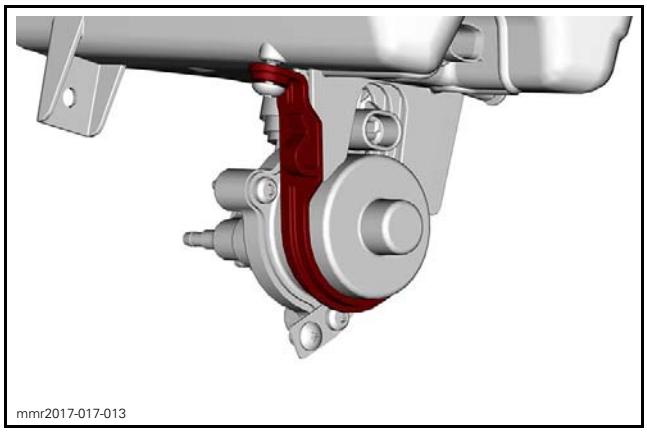
1. Connect the vehicle to the BRP diagnostic software (BUDS2).
2. In BUDS2, go to:
   – **Functions** page
   – **Vehicle** or **ECM** button.
3. Start engine.
4. Select **Routine _ Activate Storage** and follow information displayed.
5. Listen if oil injection pump is activated.

NOTE: Touching the oil injection pump may help to feel if pump is activated.

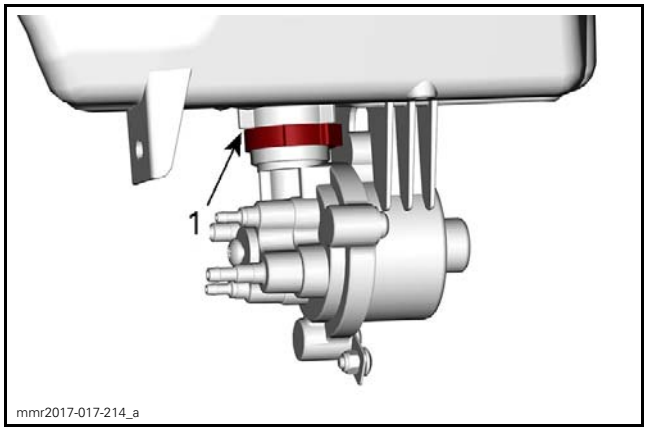
If test fails, check wires and connector.

Removing the Oil Injection Pump

1. Detach the oil injection pump hoses.
2. Unplug electrical connectors.
3. Remove the pump bracket.

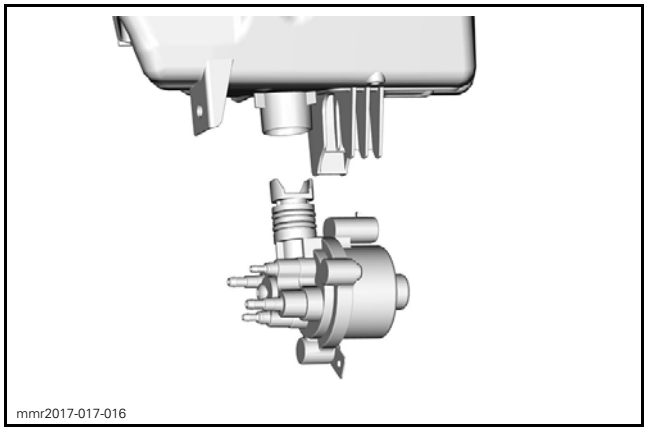


4. Remove and discard Oetiker clamp securing oil injection pump to oil tank.



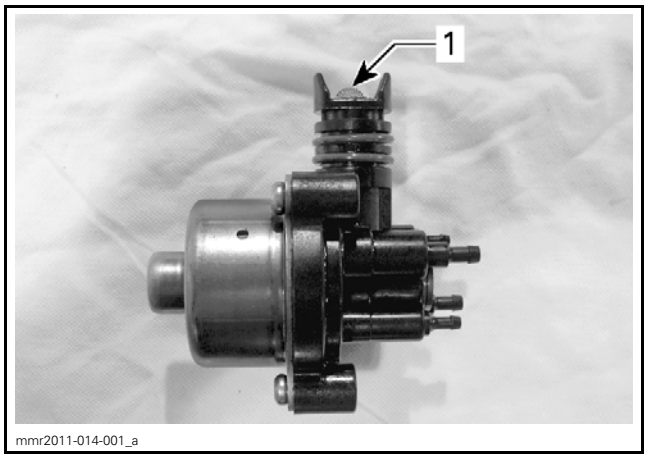
1. Oetiker clamp

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

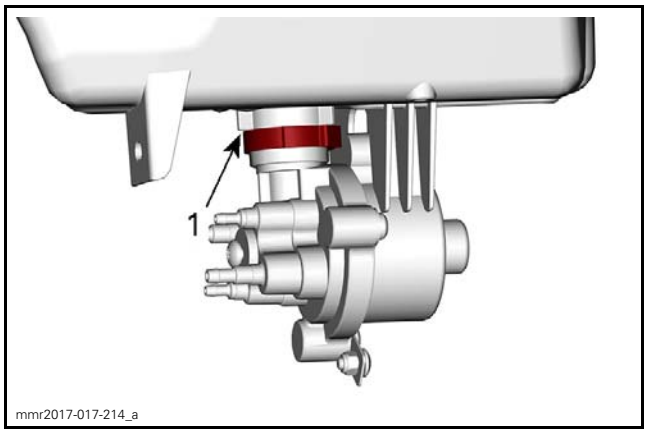
NOTE: Do not replace oil injection pump needlessly. If strainer is slightly dented, oil injection pump is still functional.

Installing the Oil Injection Pump

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

Install **NEW** Oetiker clamp to secure oil injection pump.

Ensure Oetiker clamp makes contact with oil tank ribs.



1. Oil tank rib

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 AND B.U.D.S.* 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.

mmr2009-014-020_a

BACK OF OIL INJECTION PUMP
1. Oil injection pump code (0 to 9)

4. Correct oil injection pump code if required.

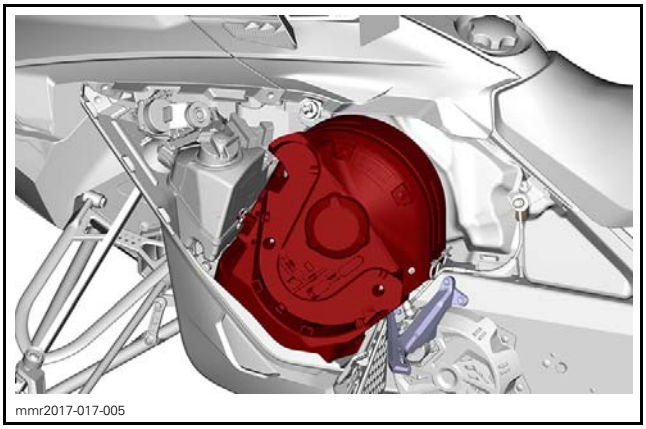
Write any changes.

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.

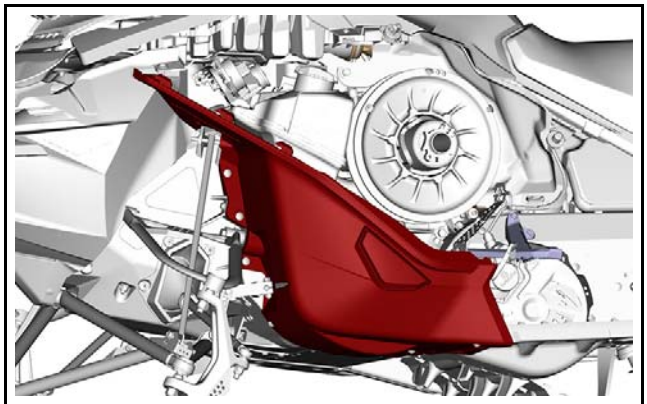
OIL INJECTION TANK

Removing the Oil Injection Tank

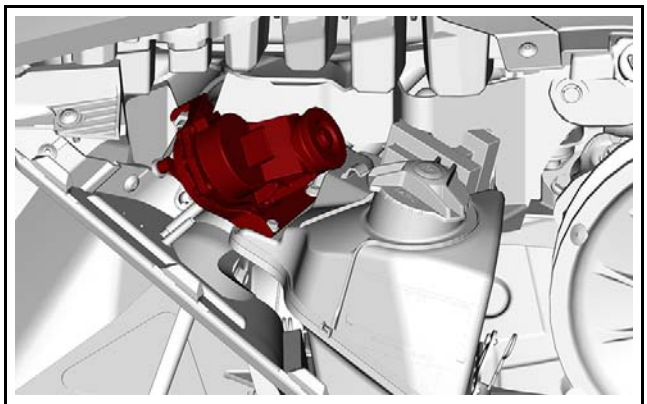
1. Remove upper body module. Refer to *BODY* subsection.
2. Remove side panel.
3. Empty oil injection tank completely by siphoning injection oil.
4. Remove belt guard.


mmr2017-017-005

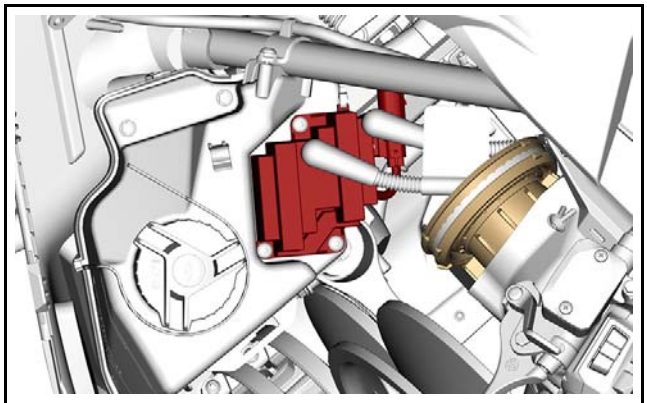
5. Remove bottom pan.


mmr2017-017-010

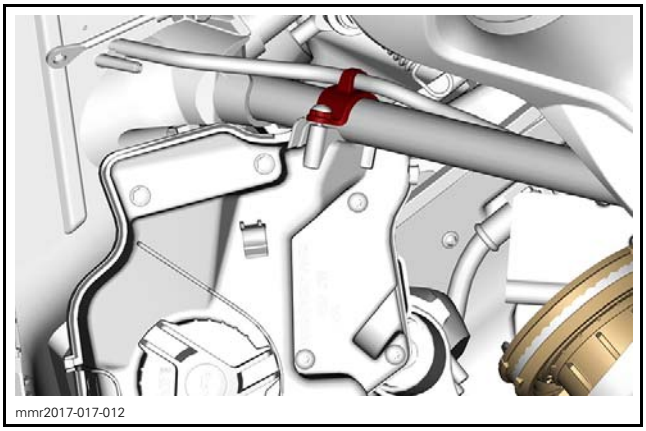
6. Unbolt Rave Valve actuator and set aside.


mmr2017-017-006

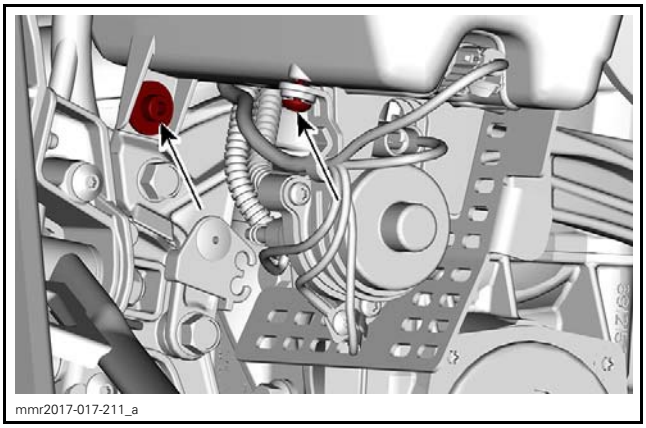
7. Remove the ignition coil.


mmr2017-017-008

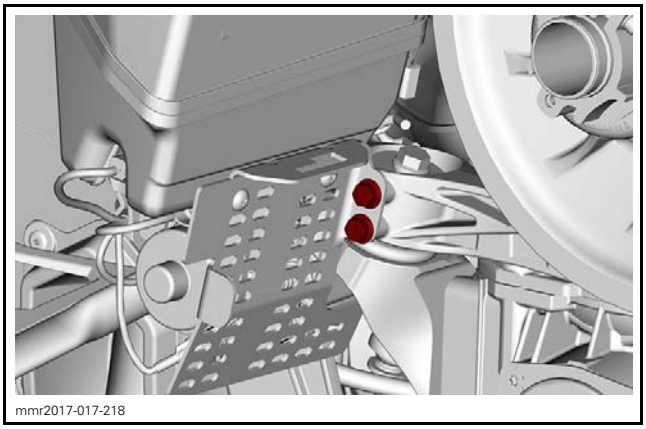
8. Remove bracket.


mmr2017-017-012

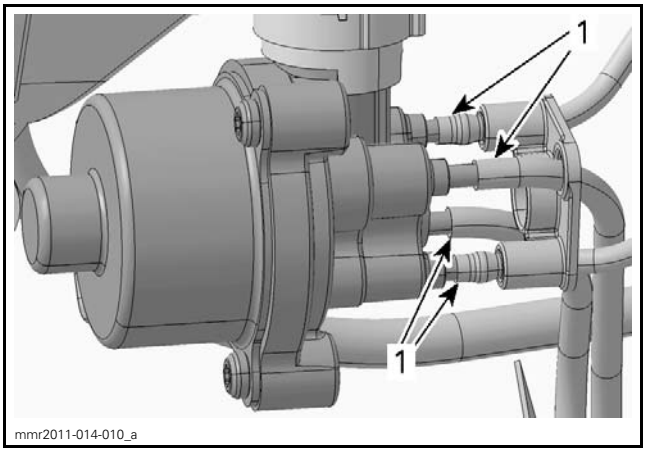
9. Remove screws.


mmr2017-017-211_a

10. Remove oil tank support screws.


mmr2017-017-218

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.



mmr2011-014-010_a

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.**

Position oil injection tank on vehicle.

Tighten oil injection tank screws to specification. Refer to exploded view.

Reinstall all remaining components as the reverse of removal procedure.

Fill up oil injection tank using recommended oil. See *RECOMMENDED INJECTION OIL* in this subsection.

Bleed oil injection system. Refer to *BLEEDING OIL INJECTION PUMP* in this subsection.

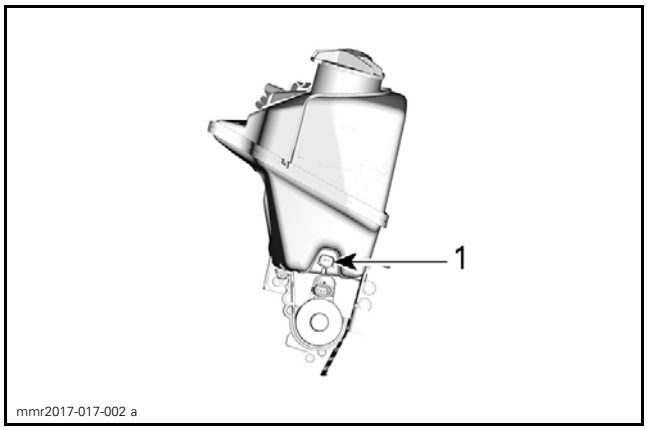
OIL LEVEL SENSOR

Testing the Oil Level Sensor

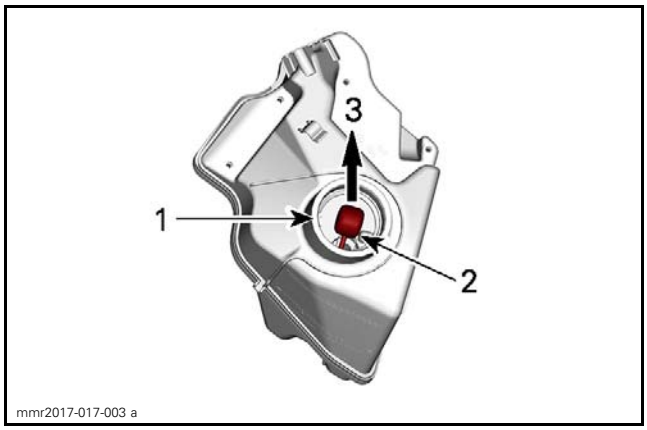
1. Measure resistance by probing sensor connector.

REQUIRED TOOL
FLUKE 115 MULTIMETER (P/N 529 035 868)

SENSOR TEST CONDITION		RESISTANCE
Empty oil tank	LOW float position	Closed circuit (close to 0 Ω)
	HIGH float position	Open circuit infinite (OL)



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

If test fails, replace oil tank.

If test succeeds check float condition in oil tank.

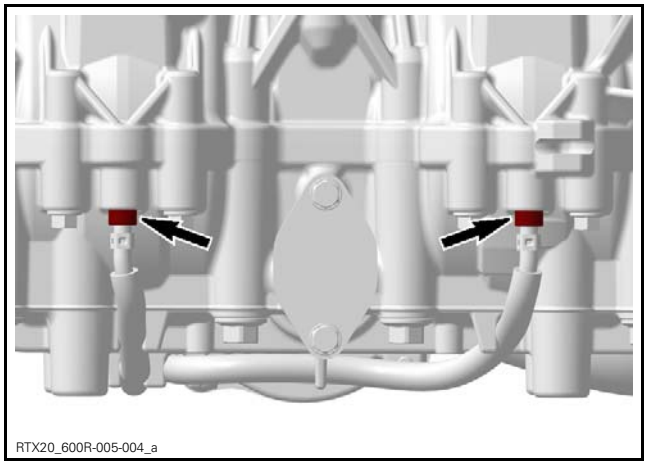
Removing the Oil Level Sensor

Oil level sensor is part of the oil tank and is not removable.

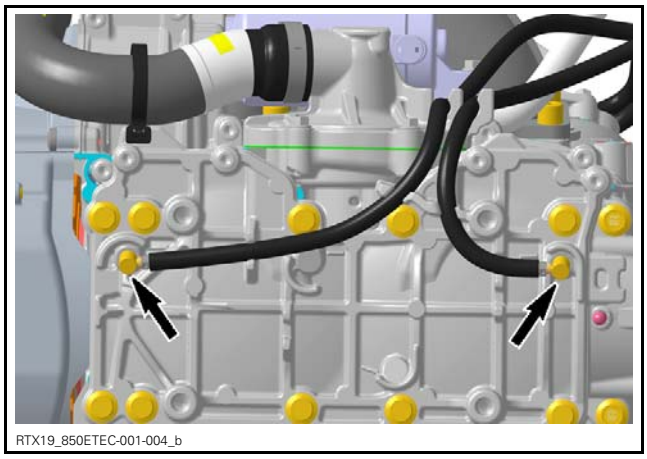
CHECK VALVES AND FITTINGS

Check Valves and Fittings Location

Check Valves and Fittings (Engine)

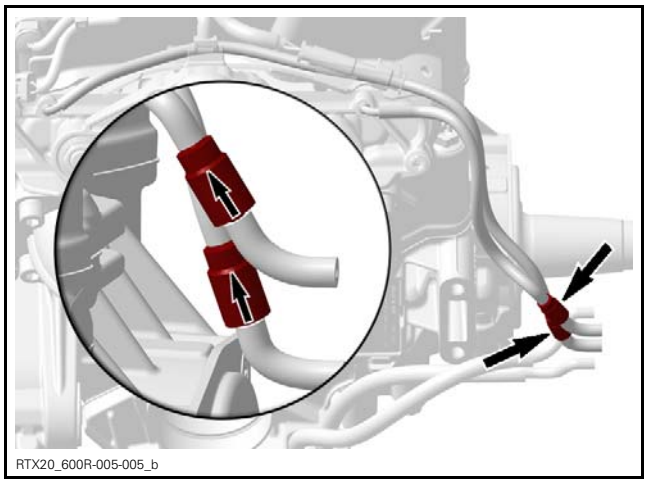


600R E-TEC ENGINE



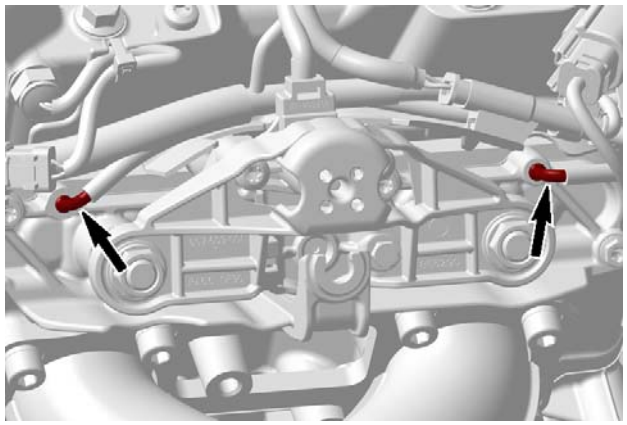
850 E-TEC ENGINE

Check Valves and Fittings (RAVE)



TYPICAL - RAVE CHECK VALVES

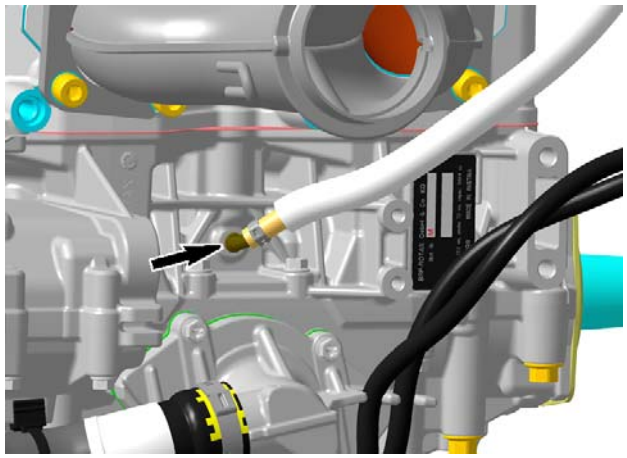
NOTE: Always take care that the arrows on the check valves are pointing towards the engine.


RTX20_600R-005-006_a

TYPICAL - RAVE FITTINGS

Fitting (Water Pump Drive)

Remove starter, refer to *MAGNETO AND STARTER* subsection.


RTX600ETECMY18-004-005_a

TYPICAL

Inspecting the Check Valves

Pressurize check valves at inlet side.

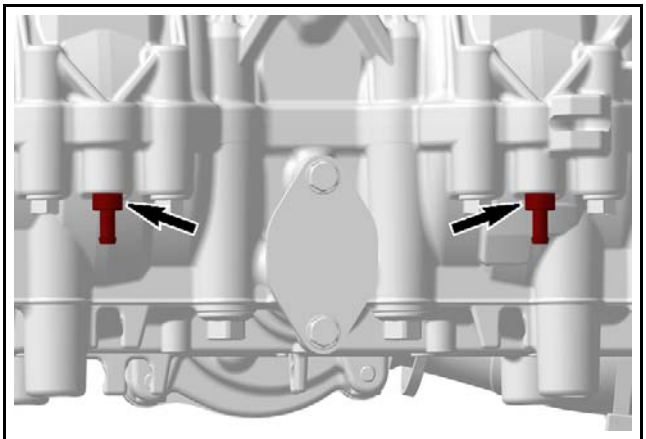
REQUIRED TOOL	
VACUUM/PRESSURE PUMP (P/N 529 021 800)	

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 PSI)
ACTION	**Success:** Perform next test	**Success:** Check valve is good
	Failed: Replace check valve	**Failed:** Replace check valve

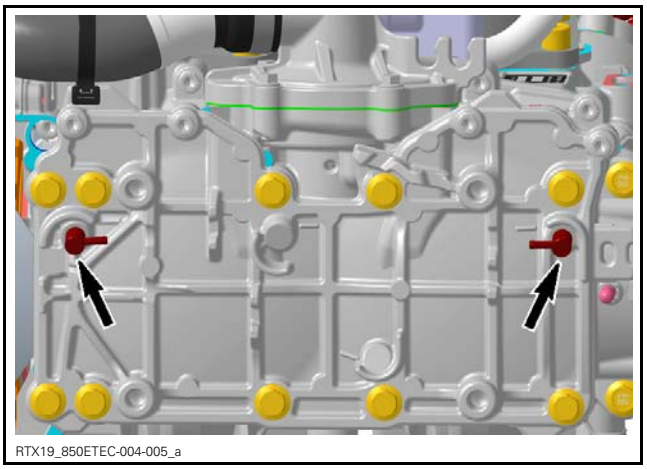
Removing the Check Valves and Fittings

NOTICE Do not remove check valve needlessly. It is likely to be damaged.

Check Valves (Engine)


RTX20_600R-005-007_a

600R E-TEC ENGINE

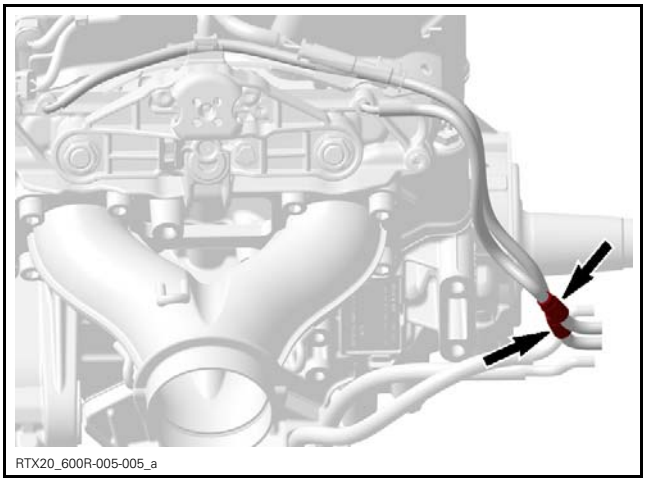

RTX19_850ETEC-004-005_a

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.

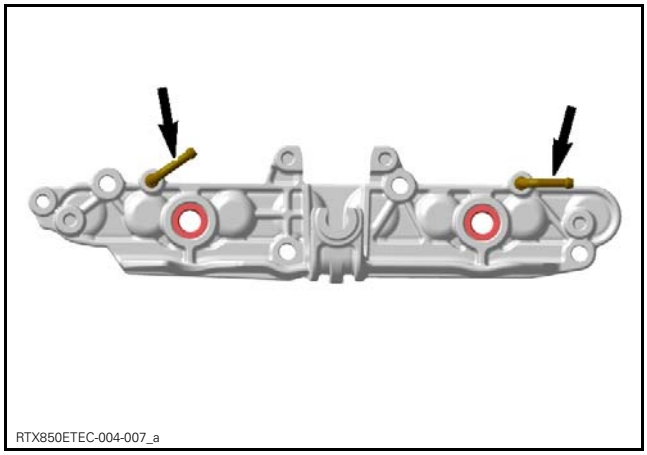
Check Valves (RAVE)

1. Remove oil hoses from check valve.


RTX20_600R-005-005_a

TYPICAL

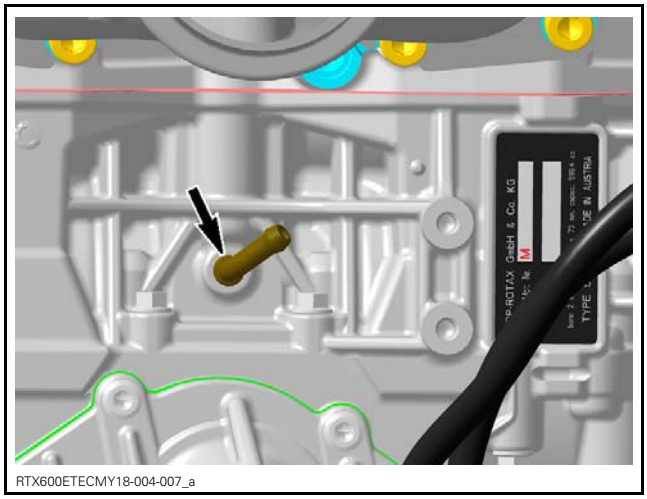
Fittings (RAVE)


RTX850ETEC-004-007_a

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)


RTX600ETECMY18-004-007_a

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

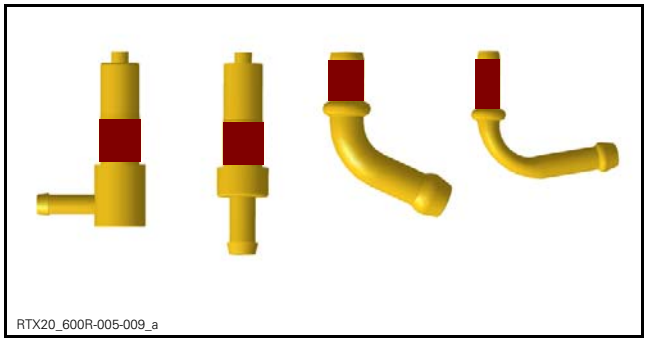
The installation is the reverse of the removal procedure. However, pay attention to the following.

1. Ensure check valve bodies and fittings are clean from dirt or oil and dry.

SERVICE PRODUCT	
Scandinavia	PULLEY FLANGE CLEANER (F) (P/N 619 600 022)
Other countries	BRAKE AND PARTS CLEANER PRO S2 (P/N 779245)

2. Apply sealant on the outer diameter of the check valve (machined section) or fitting. Apply sealant ONLY in the specified area.

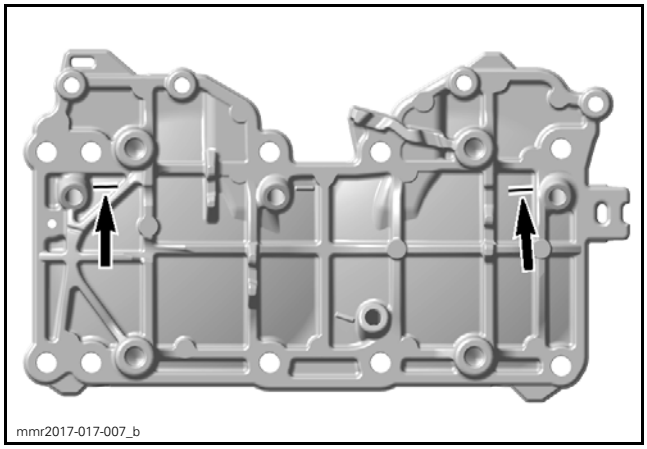
SERVICE PRODUCT	
Scandinavia	LOCTITE 648 (GREEN) (F) (P/N 619 600 012)
Other countries	LOCTITE 648 (GREEN) (P/N 413 711 400)



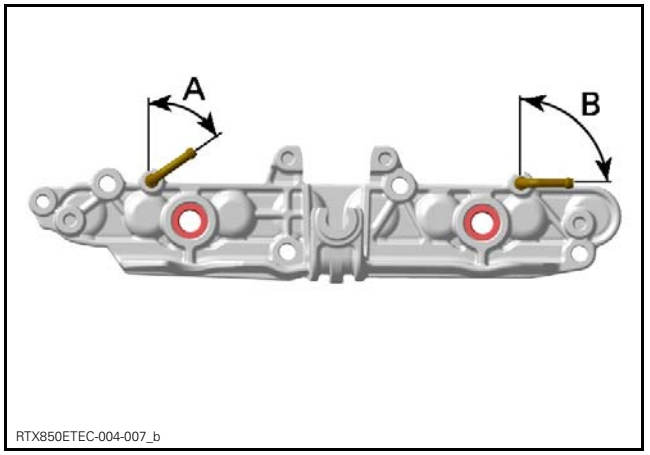
TYPICAL - APPLY SEALANT ON INDICATED AREA ONLY

3. Punch in the check valves and fittings carefully with a plastic hammer by using a suitable punch.

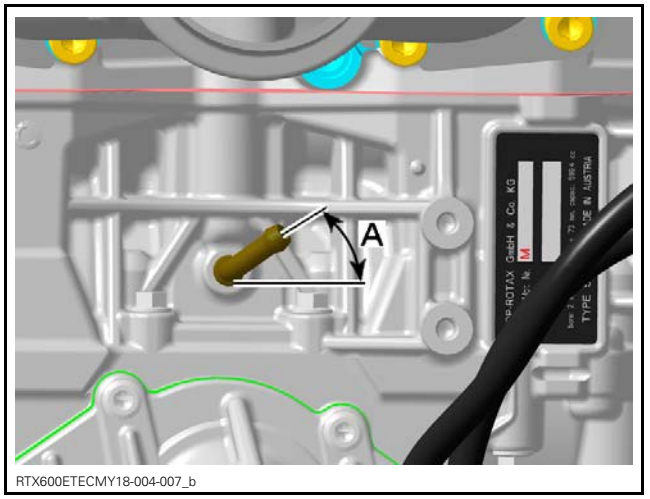
For correct orientation of the fittings refer to the next illustrations.



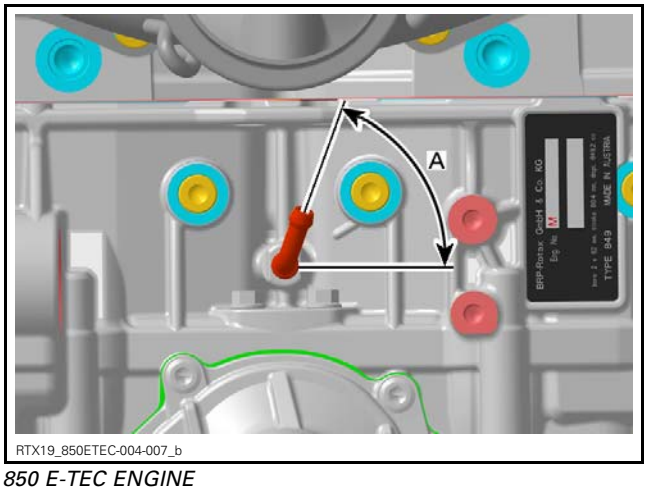
850 E-TEC ENGINE - CAST MARKS FOR CHECK VALVES AND FITTING ORIENTATION



A. 55°
B. 90



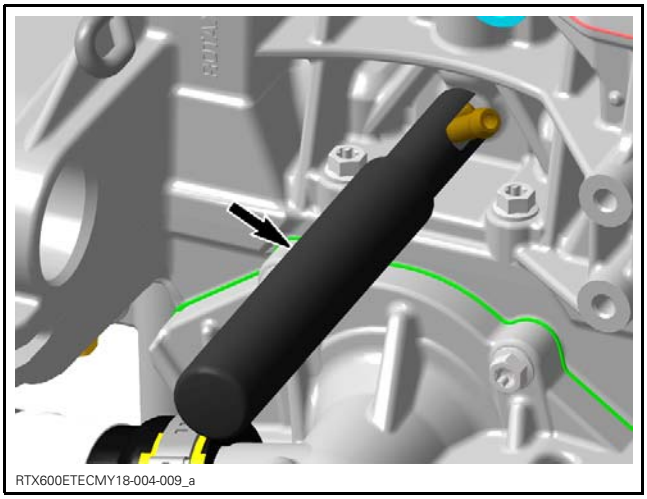
600R E-TEC ENGINE
A. 37°



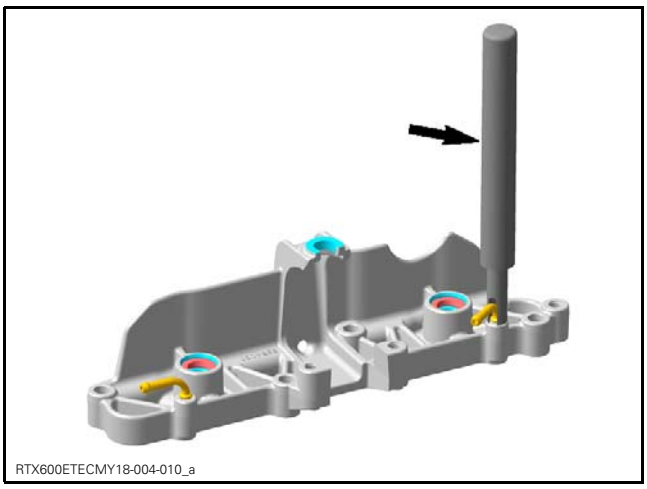
850 E-TEC ENGINE
A. 70°

For bent fitting use following service tool for installation:

REQUIRED TOOL	
IMPULSE FITTING PUNCH (BIG) (P/N 529 036 412)	
IMPULSE FITTING PUNCH (SMALL) (P/N 529 036 413)	



TYPICAL - FITTING (WATER PUMP DRIVE) - IMPULSE FITTING PUNCH (BIG) (P/N 529 036 412)



FITTING (ENGINE) - IMPULSE FITTING PUNCH (SMALL) (P/N 529 036 413)

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.

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

COOLING SYSTEM - ENGINE COMPONENTS

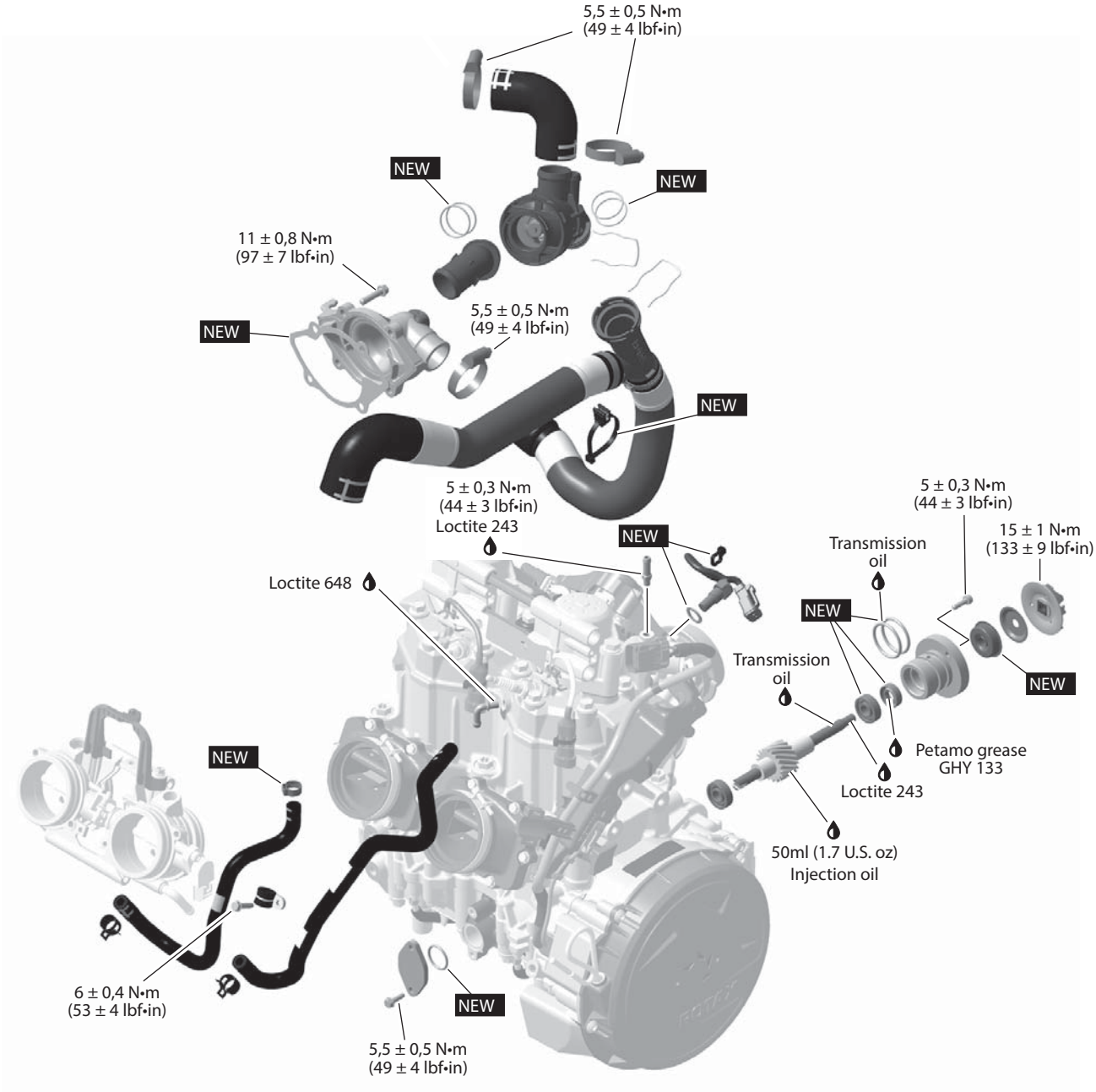
SERVICE TOOLS

Description	Part Number	Page
CERAMIC SEAL INSTALLER	529 036 014	62–63
HANDLE	420 877 650	62
IMPULSE FITTING PUNCH (BIG)	529 036 412	57
LARGE HOSE PINCHER	529 032 500	54–55
OIL SEAL PUSHER	529 035 757	62
PROTECTOR SLEEVE (PUMP)	529 036 406	63
SMALL HOSE PINCHER	295 000 076	55
TEST CAP	529 035 991	54
VACUUM/PRESSURE PUMP	529 021 800	54–55
WATER PUMP IMPELLER TOOL	529 036 444	58
WATER PUMP IMPELLER TOOL	529 036 446	58

SERVICE PRODUCTS

Description	Part Number	Page
BRAKE AND PARTS CLEANER PRO S2	779245	57–58, 63
LOCTITE 243 (BLUE)	293 800 060	59
LOCTITE 648 (GREEN) (F)	619 600 012	57
LOCTITE 648 (GREEN)	413 711 400	57
PETAMO GREASE GHY 133N	420 899 271	62
PULLEY FLANGE CLEANER (F)	619 600 022	57–58, 63

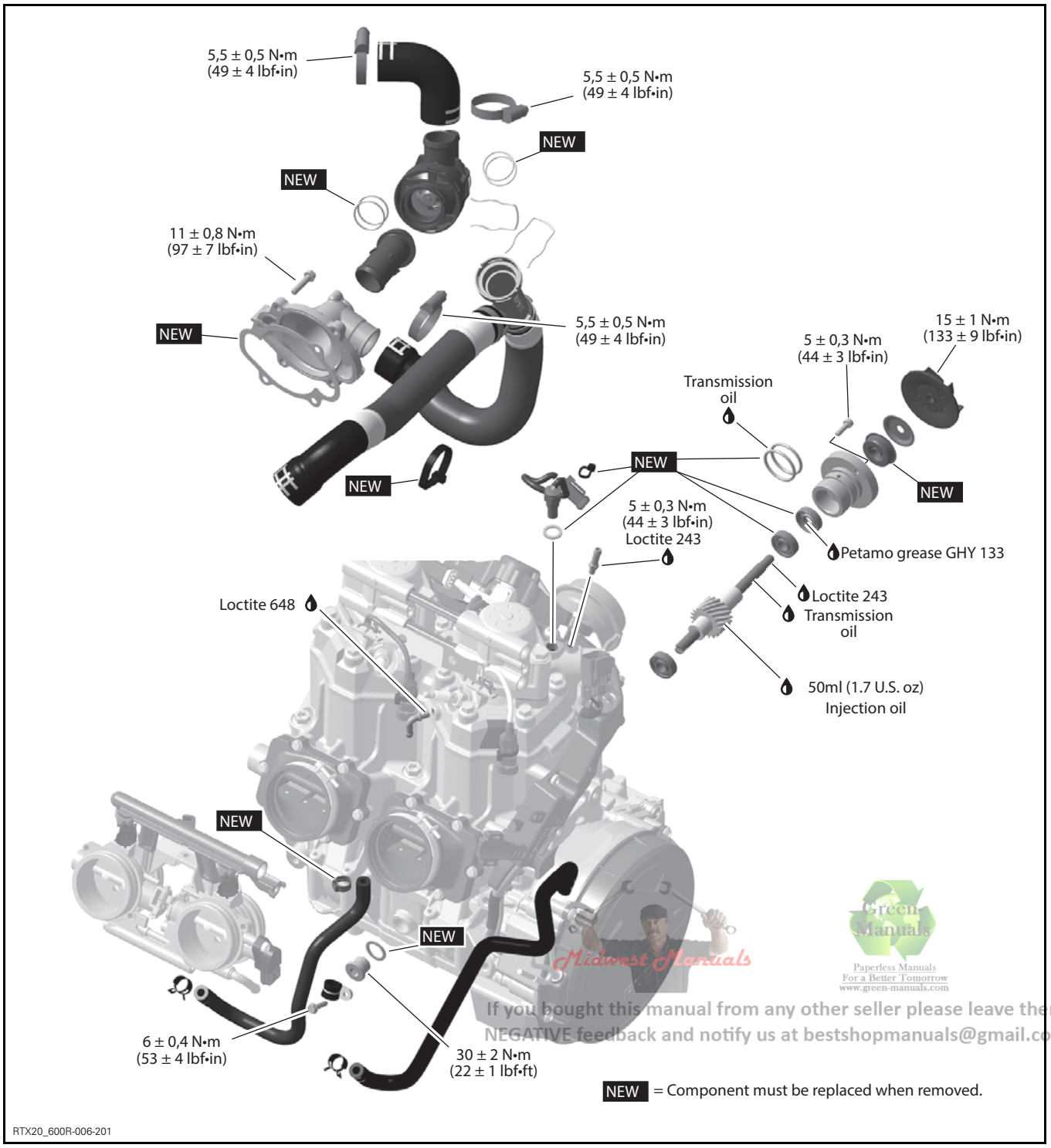
600R E-TEC



NEW = Component must be replaced when removed.

RTX20_600R-006-200

850 E-TEC



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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.

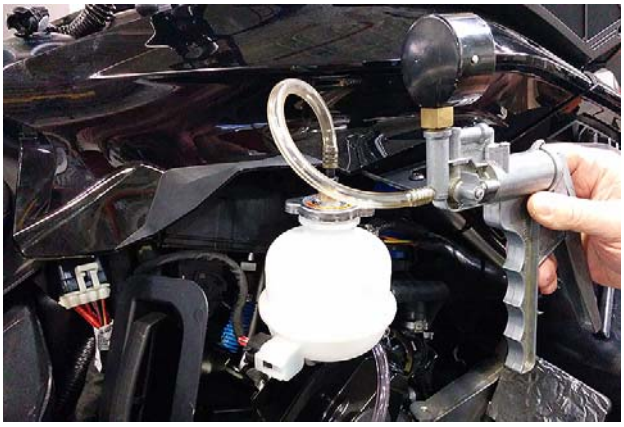
Remove the RH side panel.

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/water solution and look for air bubbles.

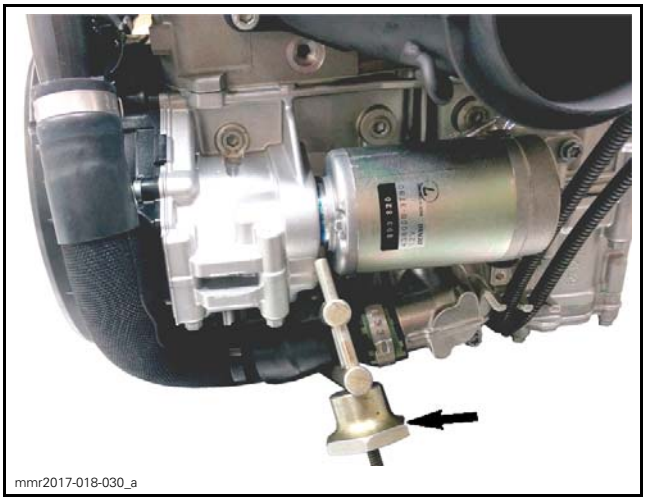
If no external leak is found and pressure drops, carry out the *ENGINE COOLING CIRCUIT LEAK TEST* to find a potential engine internal leak.

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.

Install a suitable hose on the water pump cover and block it.

REQUIRED TOOL	
LARGE HOSE PINCHER (P/N 529 032 500)	



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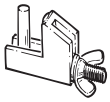
TYPICAL

Install a suitable hose on the cylinder head and block it.

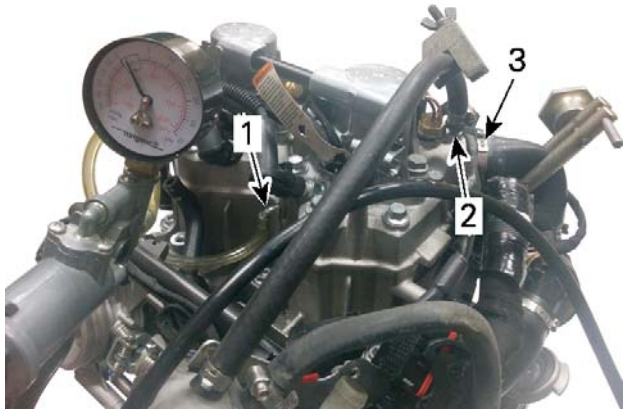
REQUIRED TOOL	
LARGE HOSE PINCHER (P/N 529 032 500)	

Install a suitable hose on the bleeder nipple and block it.

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

Install the pressure pump on the bent fitting for throttle body heating.

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



TYPICAL
1. *Bent fitting for throttle body heating*
2. *Bleeder nipple*
3. *Cylinder head hose*

Pressurize the engine.

TEST PRESSURE
100 kPa (15 PSI)

If pressure drops, spray a soap/water solution onto engine jointed surfaces and look for air bubbles.

PROCEDURES

COOLANT TEMPERATURE SENSOR (CTS)

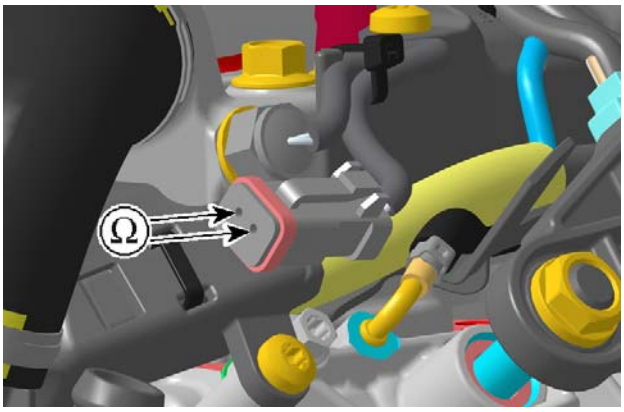
Testing the CTS with BUDS2

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

CTS SENSOR TEMPERATURE TABLE	
TEMPERATURE	**SPECIFICATION**
38°C (100°F)	1284 - 1514 Ω
104°C (219°F)	156 - 174 Ω
121°C (250°F)	103 - 115 Ω

If resistance is out of specifications, replace CTS.

If resistance tests good, carry out the following steps.

4. Reconnect the CTS.
5. Disconnect the ECM-A connector from ECM and connect to the ECM adapter tool.
6. Measure CTS circuit resistance as follows.

CTS RESISTANCE TEST		
ECM ADAPTRER PIN		SPECIFICATION
A-B1	A-C1	Refer to *CTS SENSOR TEMPERATURE TABLE (E-TEC)*

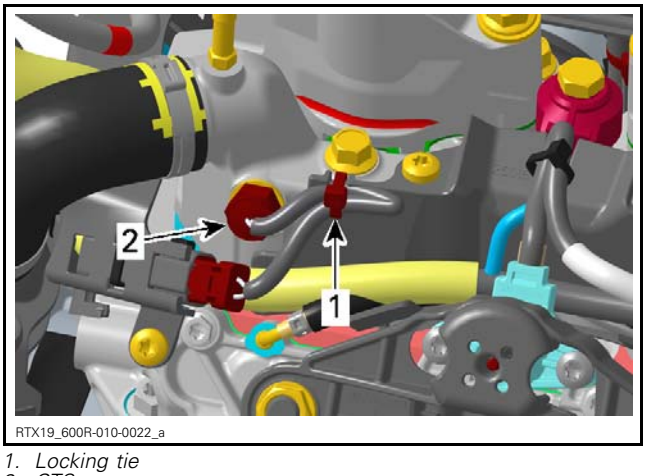
If resistance value is correct, sensor, wiring and connectors are good.

If resistance value is incorrect, repair or replace wiring and connectors between ECM and CTS.

Replacing the CTS

1. Cut locking tie(s) and disconnect CTS connector.
2. Remove CTS.

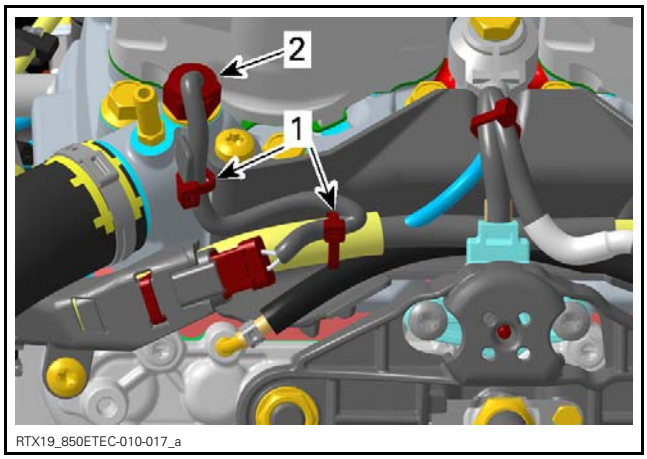
600R E-TEC



RTX19_600R-010-0022_a

1. Locking tie
2. CTS

850 E-TEC



RTX19_850ETEC-010-017_a

1. Locking ties
2. CTS

3. Install new CTS.

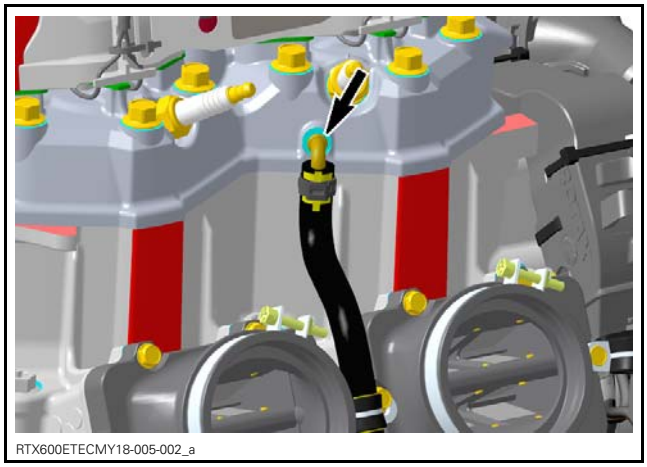
TIGHTENING TORQUE	
CTS	16 N•m ± 1 N•m (142 lbf•**in** ± 9 lbf•**in**)

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.


RTX600ETECMY18-005-002_a

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.

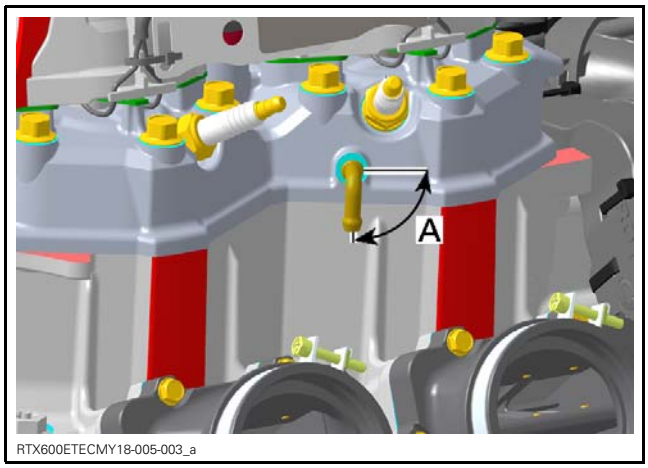
SERVICE PRODUCT	
Scandinavia	PULLEY FLANGE CLEANER (F) (P/N 619 600 022)
Other countries	BRAKE AND PARTS CLEANER PRO S2 (P/N 779245)

5. Apply sealant on the outer diameter of fitting.

SERVICE PRODUCT	
Scandinavia	LOCTITE 648 (GREEN) (F) (P/N 619 600 012)
Other countries	LOCTITE 648 (GREEN) (P/N 413 711 400)

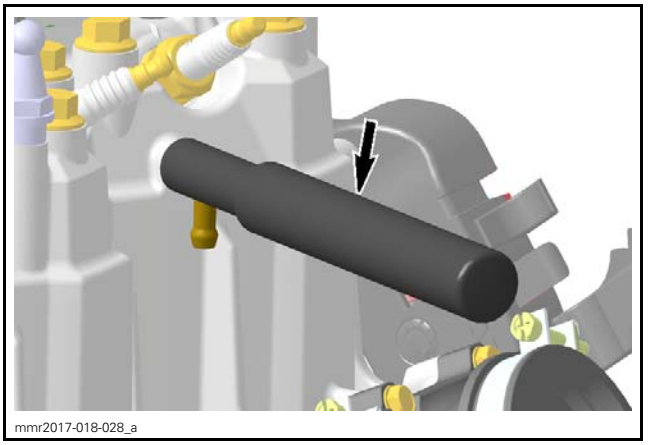
6. Punch in fitting

For correct orientation of the fitting refer to the next illustration.



TYPICAL
A. 90°

REQUIRED TOOL	
IMPULSE FITTING PUNCH (BIG) (P/N 529 036 412)	



TYPICAL - IMPULSE FITTING PUNCH (BIG) (P/N 529 036 412)

WATER PUMP

Water Pump Location

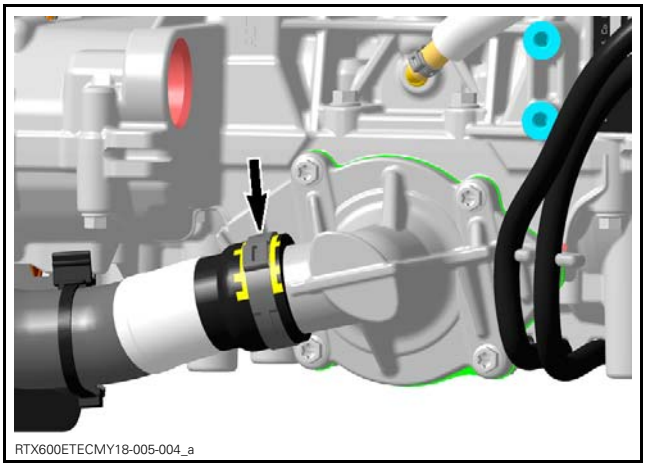
The water pump is located on the front of the engine, below the intake manifold.

Removing the Water Pump

Drain cooling system, refer to *COOLING SYSTEM - VEHICLE* subsection.

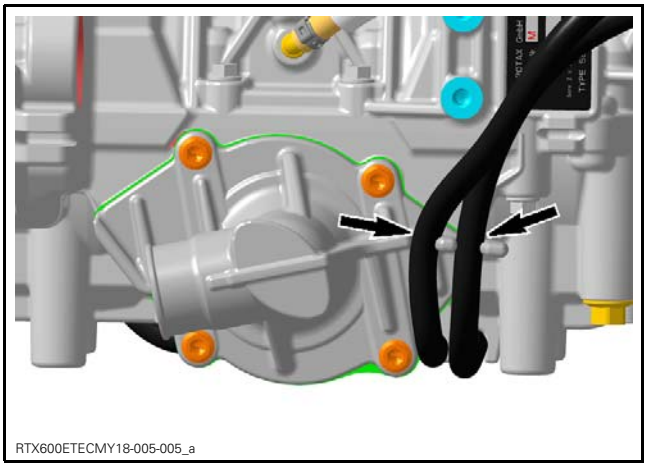
Remove starter (if applicable), refer to *MAGNETO AND STARTER* subsection.

Remove coolant hose (only if necessary).



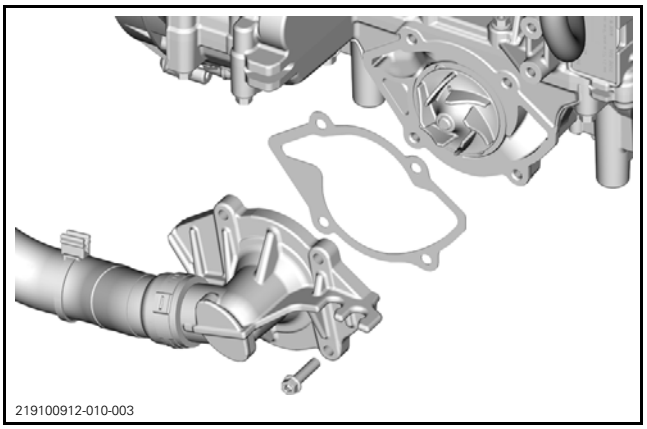
TYPICAL

Remove oil lines.



TYPICAL

Remove water pump cover. Discard gasket.



TYPICAL

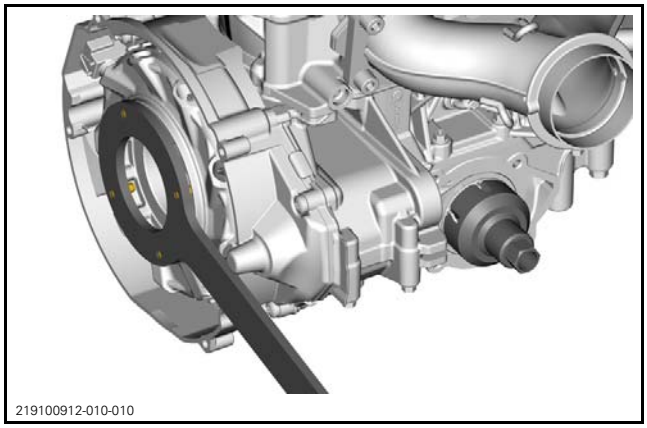
Block engine:

– **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.

Unscrew impeller counterclockwise.

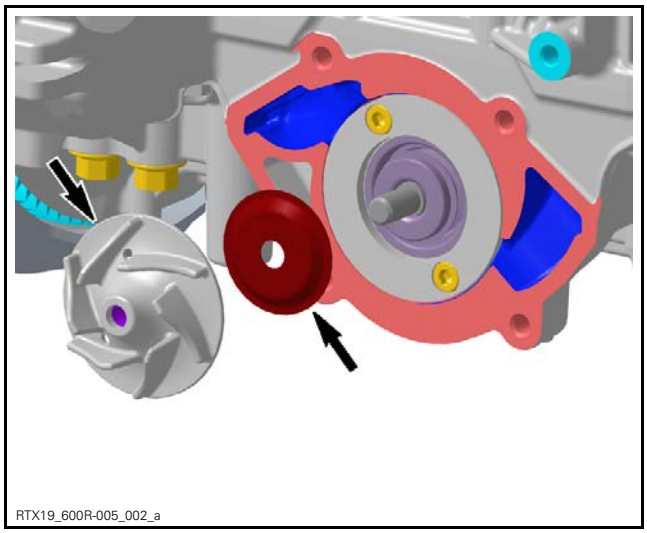
NOTICE **Be careful not to damage impeller fins.**

ENGINE	REQUIRED TOOL
600R E-TEC	WATER PUMP IMPELLER TOOL (P/N 529 036 446)
850 E-TEC	WATER PUMP IMPELLER TOOL (P/N 529 036 444)



Remove:

– Impeller
– Cover washer.



TYPICAL

Clean gasket surfaces of water pump cover and crankcase.

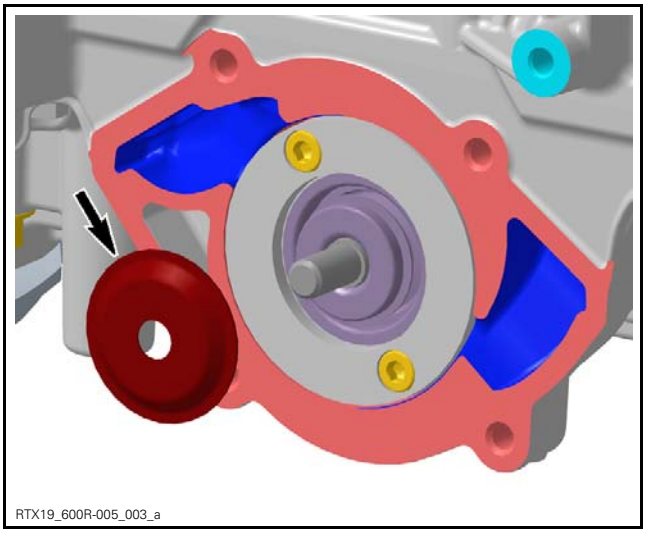
Installing the Water Pump

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

Clean water pump shaft thread using a part cleaner and compressed air.

SERVICE PRODUCT	
Scandinavia	PULLEY FLANGE CLEANER (F) (P/N 619 600 022)
Other countries	BRAKE AND PARTS CLEANER PRO S2 (P/N 779245)

Install cover washer with convex side facing to the impeller.

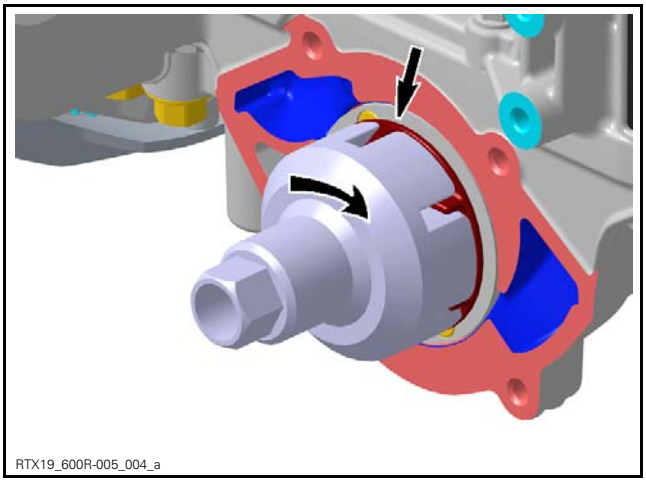

RTX19_600R-005_003_a

TYPICAL

Apply thread locker on water pump shaft thread.

SERVICE PRODUCT
LOCTITE 243 (BLUE) (P/N 293 800 060)

Tighten impeller to specification.


RTX19_600R-005_004_a

TYPICAL

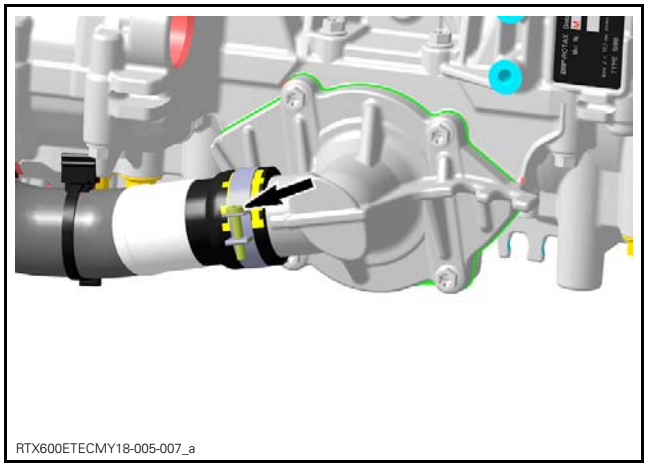
TIGHTENING TORQUE	
Impeller	15 N•m ± 1 N•m (133 lbf•**in** ± 9 lbf•**in**)

Install a NEW water pump cover gasket.

Tighten screws of water pump cover to specification in a crisscross sequence.

TIGHTENING TORQUE	
Water pump cover screws	11 N•m ± 0.8 N•m (97 lbf•**in** ± 7 lbf•**in**)

Install and tighten coolant hose clamp on water pump.


RTX600ETECMY18-005-007_a

TYPICAL

TIGHTENING TORQUE	
Coolant hose clamp	5.5 N•m ± 0.5 N•m (49 lbf•**in** ± 4 lbf•**in**)

Properly refill and bleed cooling system, refer to *COOLING SYSTEM - VEHICLE* subsection.

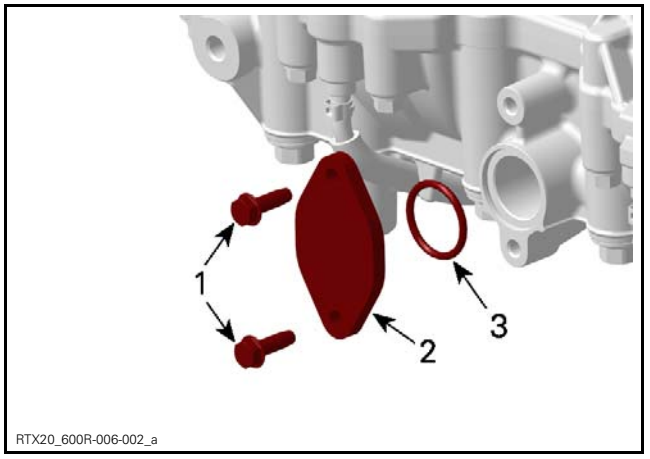
BEARING CARRIER AND PUMP SHAFT

Removing the Bearing Carrier and Pump Shaft

600R E-TEC

Place a bin underneath the cover plate to catch spilling injection oil.

Remove cover plate and discard o-ring.



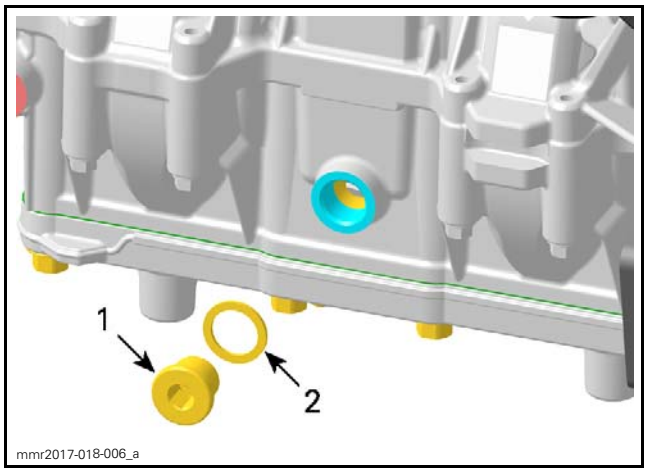
RTX20_600R-006-002_a

1. *Taptite screws*
2. *Cover plate*
3. *O-ring*

850 E-TEC

Place a bin underneath the plug screw to catch spilling injection oil.

Remove plug screw and discard sealing ring.

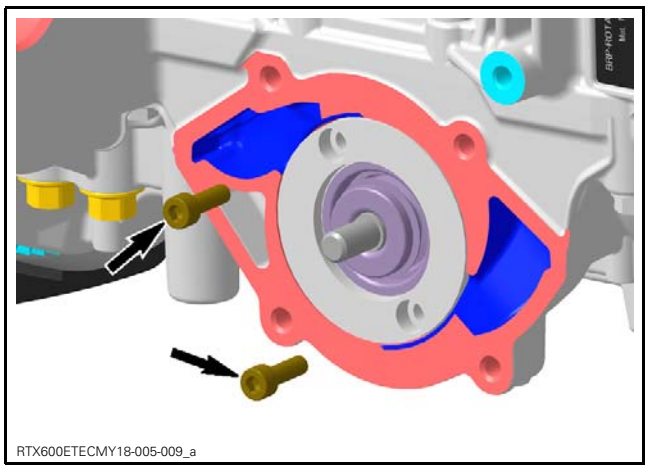


1. Plug screw
2. Sealing ring

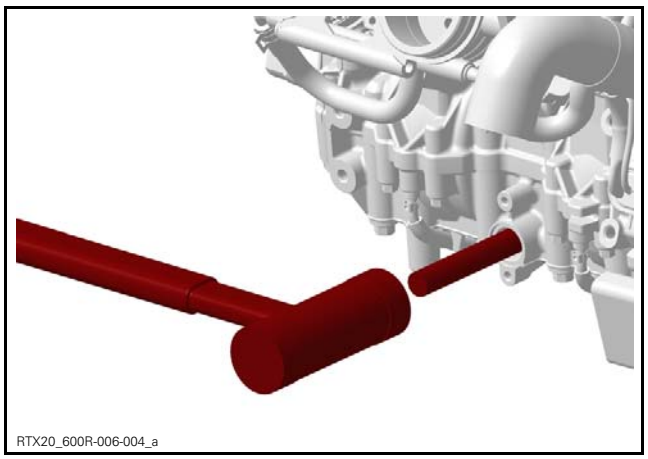
All Models

Remove *WATER PUMP*. See procedure in this subsection.

Remove bearing carrier retaining screws.

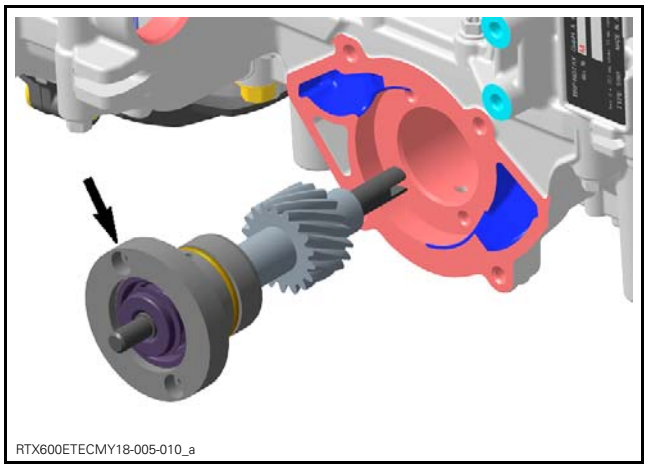


Push pump shaft out with a suitable drift punch and a hammer.



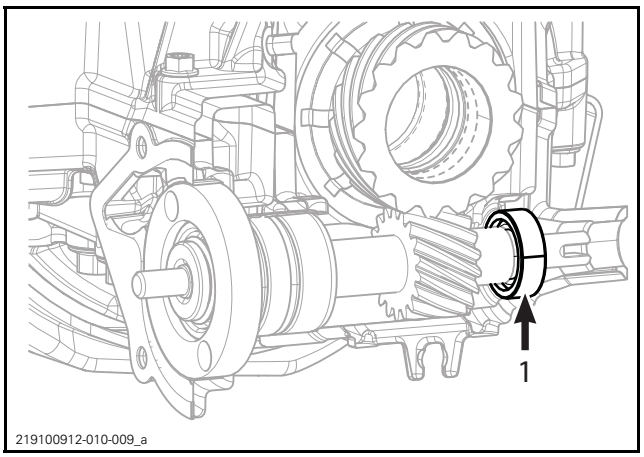
TYPICAL

Extract bearing carrier and pump shaft.



TYPICAL

For water pump shaft ball bearing replacement refer to *BOTTOM END* subsection.



TYPICAL
1. Ball Bearing

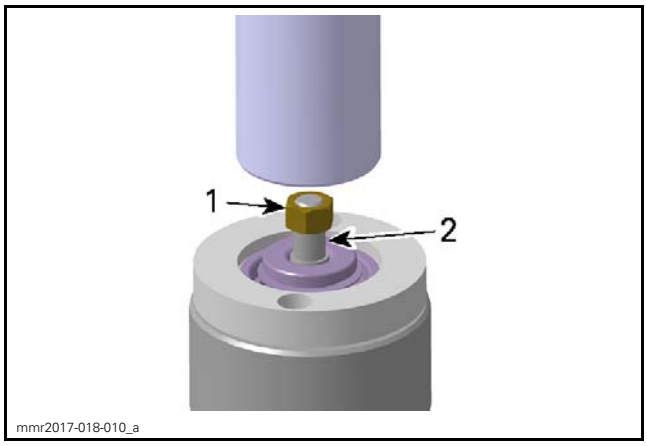
Disassembling the Bearing Carrier and Pump Shaft

NOTE: The pump shaft cannot be disassembled without damaging the ceramic seal and oil seal.

Protect the threads of shaft with a suitable M8 nut.

Properly support bearing carrier.

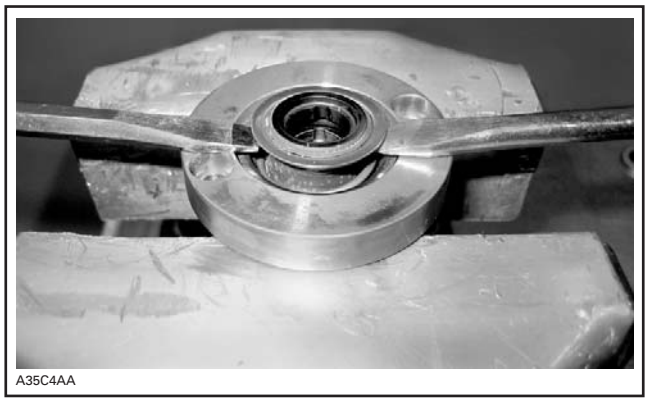
Push pump shaft out using a press.



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.

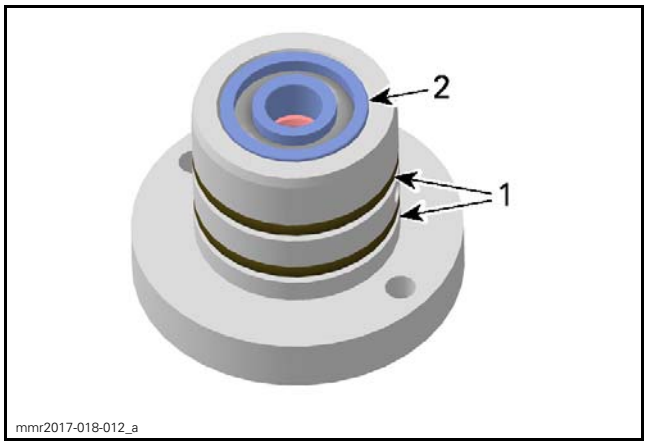
Pry inner part of ceramic seal out.



Remove O-rings and discard them.

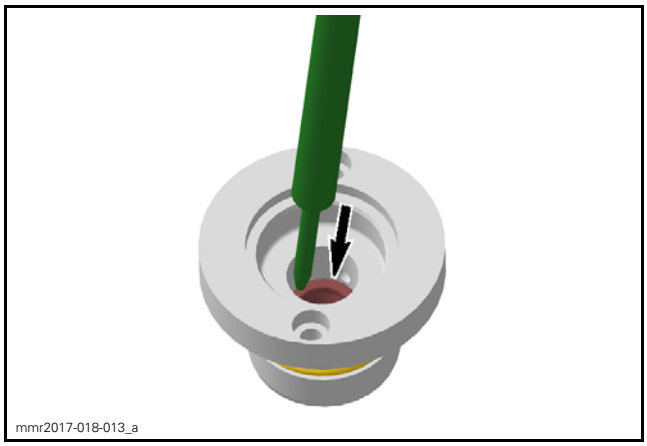
Remove bearing.

REQUIRED TOOL
Blind hole bearing puller



1. *O-rings*
2. *Ball bearing*

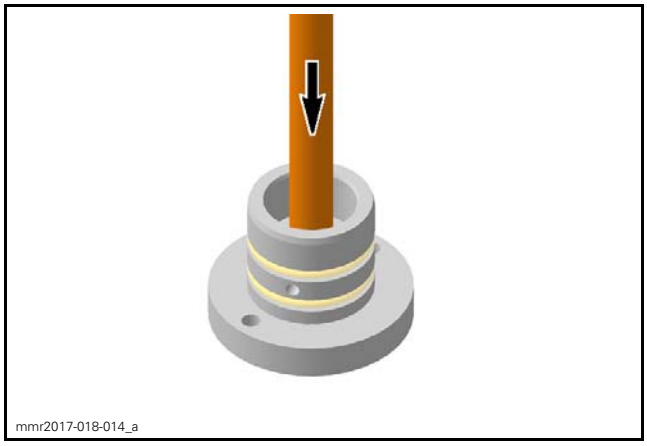
Remove oil seal using as appropriate punch.

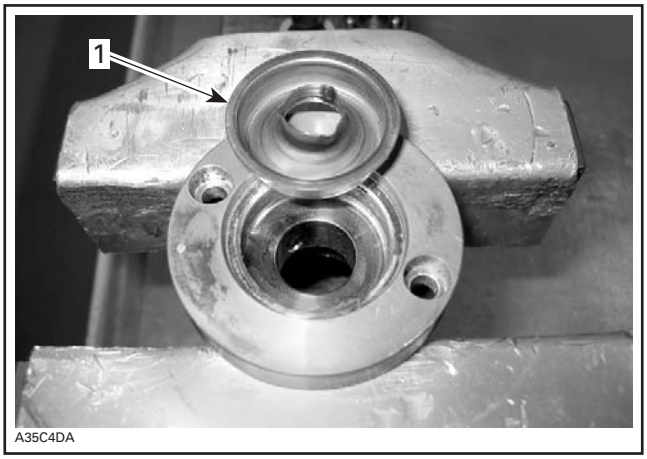


FOR CLARITY OUTER PART OF CERAMIC SEAL REMOVED

Carefully press the outer part of ceramic seal out.

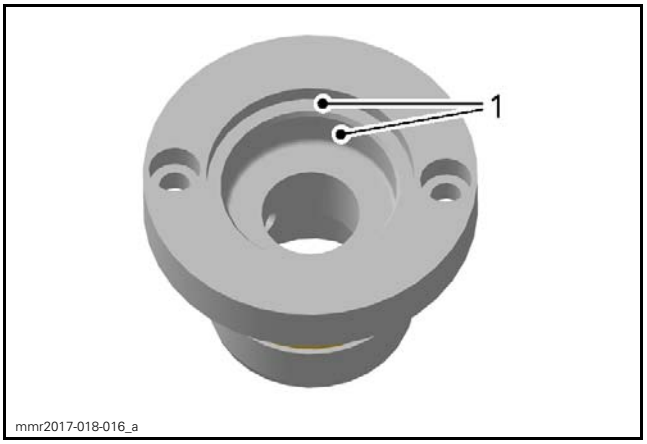
NOTE: Use a mandrel with a diameter of approximately 16 mm (.63 in).





1. Outer part of ceramic seal

Remove sealant from bearing carrier with sand paper no. 180.



1. Remove sealant

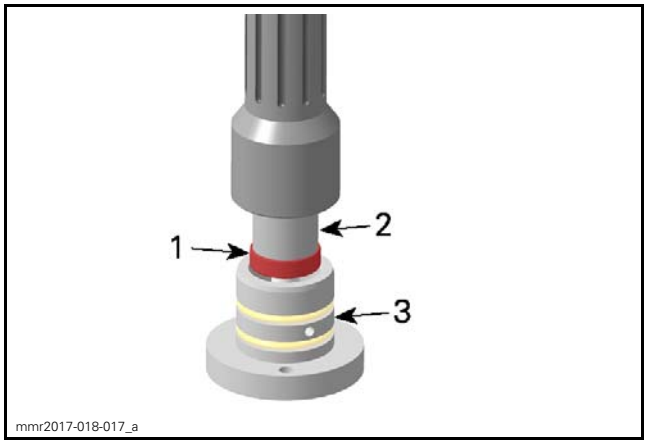
Reassembling the Bearing Carrier and Pump Shaft

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.

Push the NEW oil seal in bearing carrier with the sealing lip facing to the ball bearing.

REQUIRED TOOL	
HANDLE (P/N 420 877 650)	
OIL SEAL PUSHER (P/N 529 035 757)	

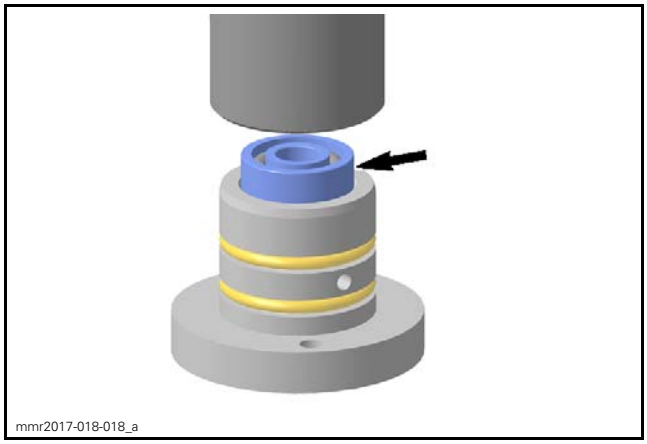


1. Oil seal
2. Oil seal pusher
3. Bearing carrier

Lubricate sealing lip of the oil seal.

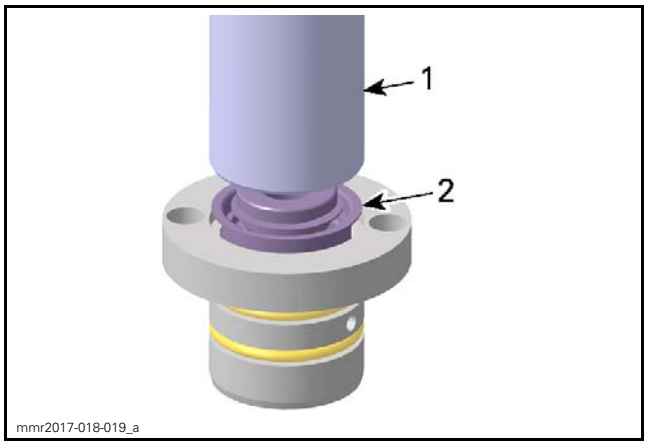
SERVICE PRODUCT
PETAMO GREASE GHY 133N (P/N 420 899 271)

Press bearing into bearing carrier.



Push the NEW ceramic seal in bearing carrier.

REQUIRED TOOL	
CERAMIC SEAL INSTALLER (P/N 529 036 014)	

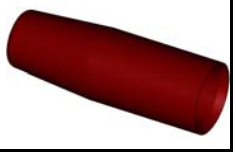


1. Ceramic seal installer
2. Ceramic seal

NOTICE Never use a hammer for the ceramic seal installation. Only use a press to avoid damaging the ceramic component.

Install protector sleeve on pump shaft.

NOTE: Apply some grease inside the protector sleeve to prevent the protector sleeve fall off the pump shaft during installation.

REQUIRED TOOL	
PROTECTOR SLEEVE (PUMP) (P/N 529 036 406)	

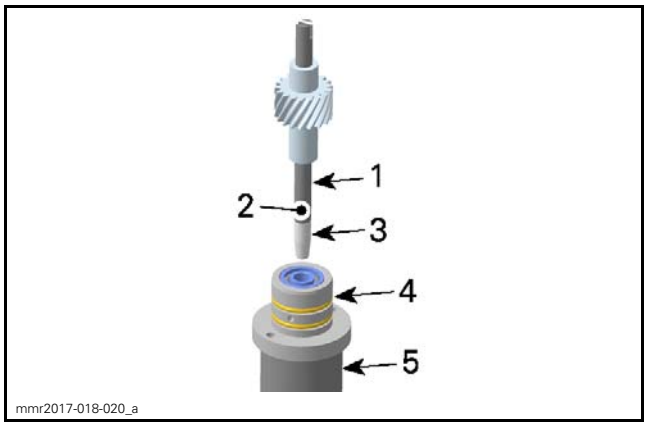
Apply injection oil on pump shaft.

Press pump shaft into the bearing carrier with the appropriate force.

NOTICE Inadequate force will damage the oil seal and bearing.

NOTE: During installation support the ceramic seal as shown on the following illustration.

REQUIRED TOOL	
CERAMIC SEAL INSTALLER (P/N 529 036 014)	



1. Pump shaft
2. Apply injection oil
3. Protector sleeve
4. Bearing carrier
5. Ceramic seal installer

Remove oil seal guide from pump shaft.

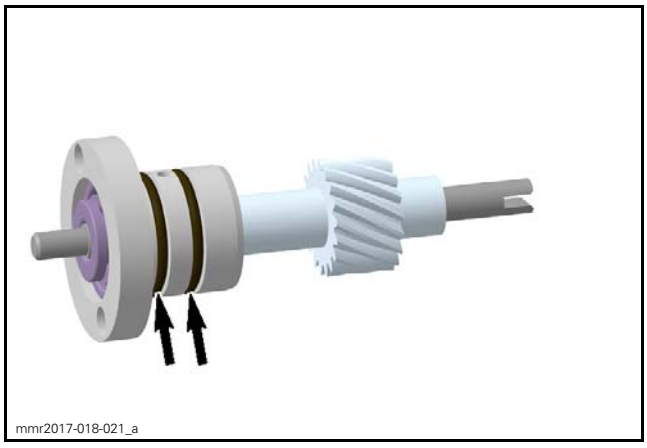
Clean water pump shaft thread using a part cleaner and compressed air.

SERVICE PRODUCT	
Scandinavia	PULLEY FLANGE CLEANER (F) (P/N 619 600 022)
Other countries	BRAKE AND PARTS CLEANER PRO S2 (P/N 779245)

Installing the Bearing Carrier and Pump Shaft

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

Install NEW O-rings on bearing carrier and apply injection oil.



Install pump shaft and bearing carrier in crankcase while turning shaft to mesh gears.

Tighten bearing carrier retaining screws to specification.

TIGHTENING TORQUE	
Bearing carrier screws	5 N•m ± 0.3 N•m (44 lbf•**in** ± 3 lbf•**in**)

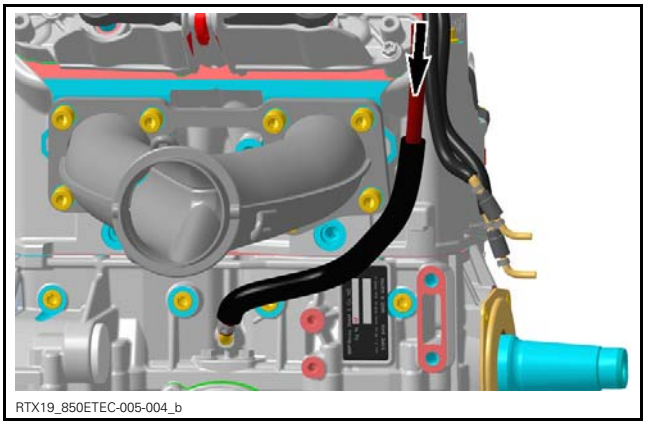
Install **NEW** sealing ring and tighten plug screw to specification.

TIGHTENING TORQUE	
Plug screw	30 N•m ± 2 N•m (22 lbf•ft ± 1 lbf•ft)

Fill injection oil in the water pump drive chamber.

SERVICE PRODUCT
Injection oil (50 ml (1.7 U.S. oz))

REQUIRED TOOL
Syringe

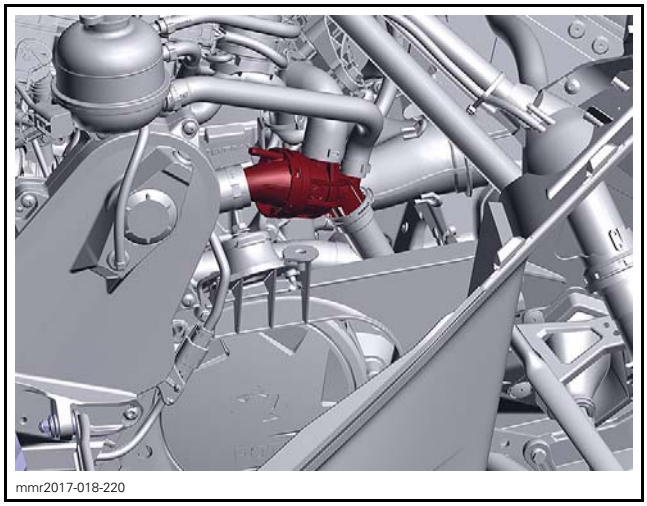

RTX19_850ETEC-005-004_b

TYPICAL

THERMOSTAT

Thermostat Location

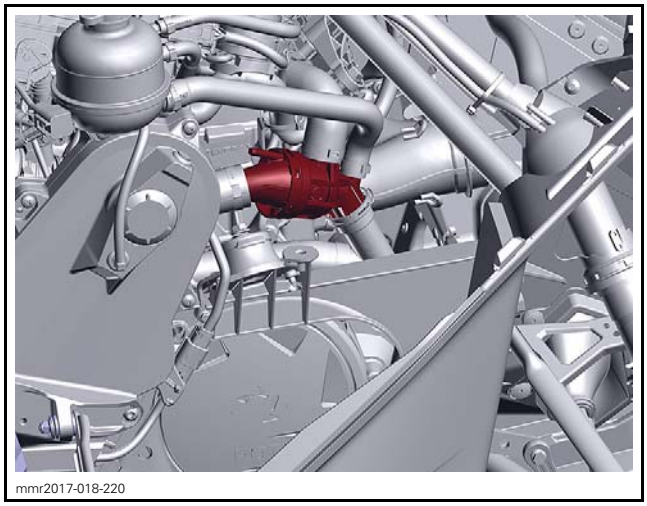
The thermostat is located on the RH side of the engine (PTO side), behind the muffler.


mmr2017-018-220

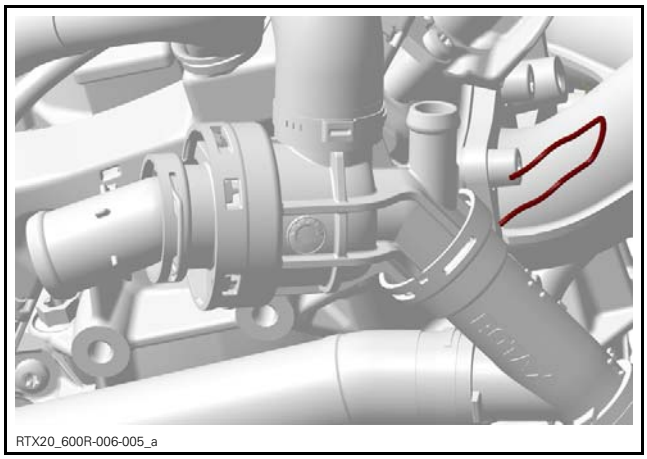
Removing the Thermostat

To remove thermostat:

– Block all four thermostat hoses with hose pinchers **or**
– Drain cooling system.

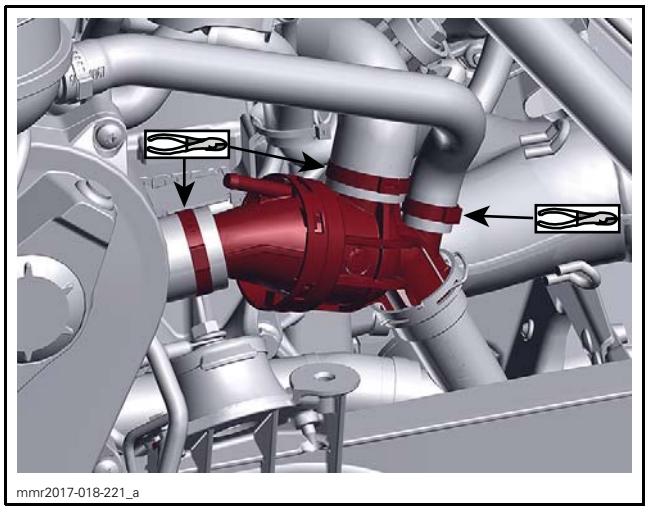

mmr2017-018-220

Remove spring clip from thermostat housing.


RTX20_600R-006-005_a

Cut Oetiker clamps (3x) then unplug hoses.

Remove thermostat housing from molded hose assembly.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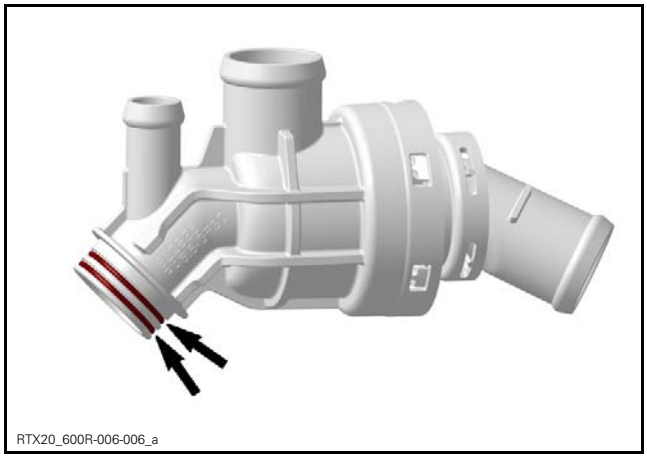
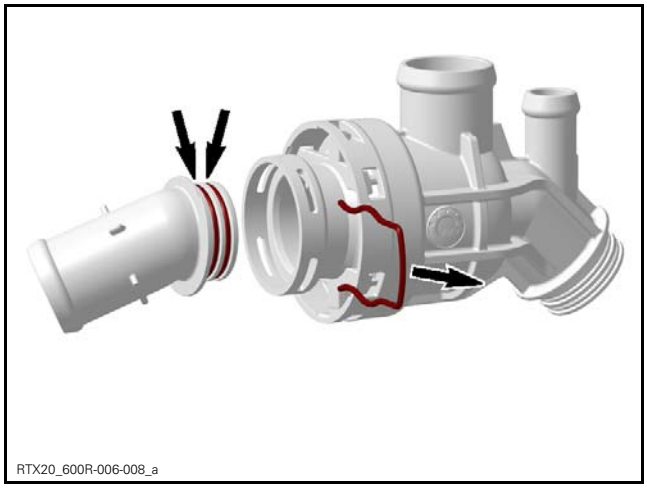
TYPICAL

Remove O-rings and discard them.


RTX20_600R-006-006_a

If required remove spring clip and O-rings and discard them.


RTX20_600R-006-008_a

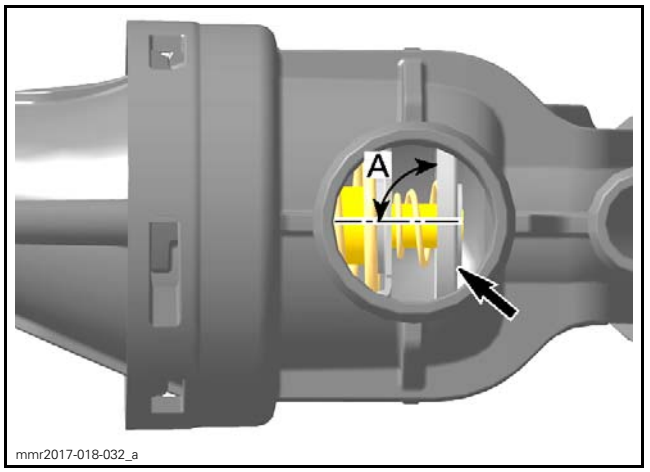
Testing the Thermostat

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.



mmr2017-018-032_a

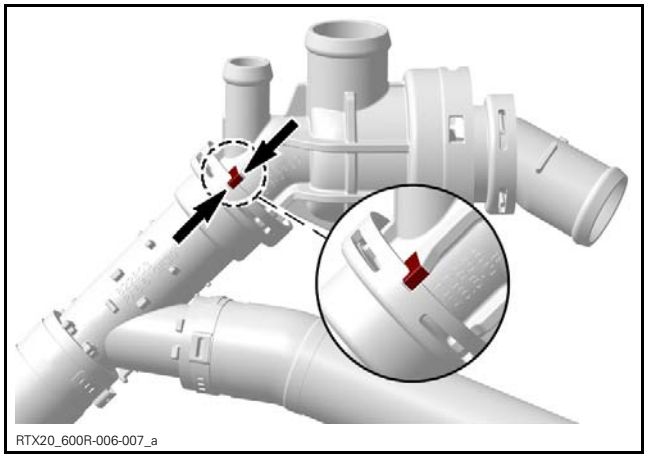
TYPICAL
A. 90°

Installing the Thermostat

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

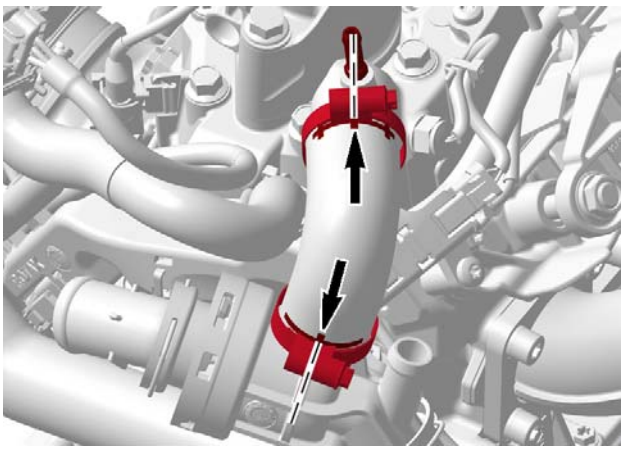
Install **NEW** O-rings and apply coolant.

Take care that the nose of the thermostat housing is properly positioned in the recess of the molded hose assembly.


RTX20_600R-006-007_a

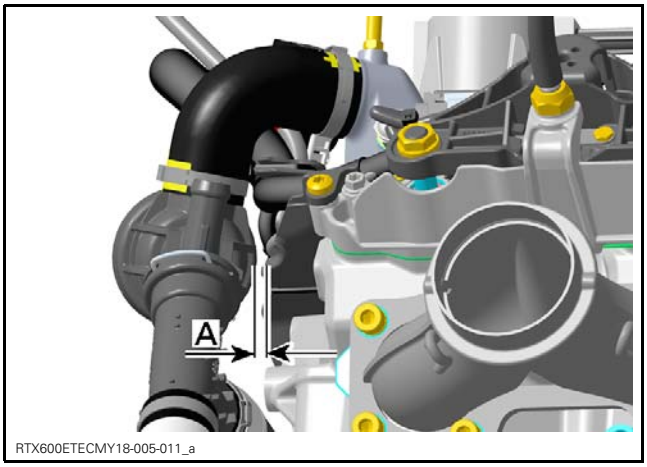
Install and tighten coolant hose clamps.

NOTE: Take care of the correct coolant hose orientation.


RTX20_600R-006-003_a

TIGHTENING TORQUE	
Coolant hose clamp	5.5 N•m ± 0.5 N•m (49 lbf•**in** ± 4 lbf•**in**)

After installation ensure proper distance of thermostat housing to the cylinder block and exhaust manifold.



RTX600ETECMY18-005-011_a

TYPICAL
A. 5 mm ± 2 mm (.2 in ± .08 in)

Properly refill cooling system. Refer to *COOLING SYSTEM REFILL AND BLEEDING* in *COOLING SYSTEM - VEHICLE* subsection.

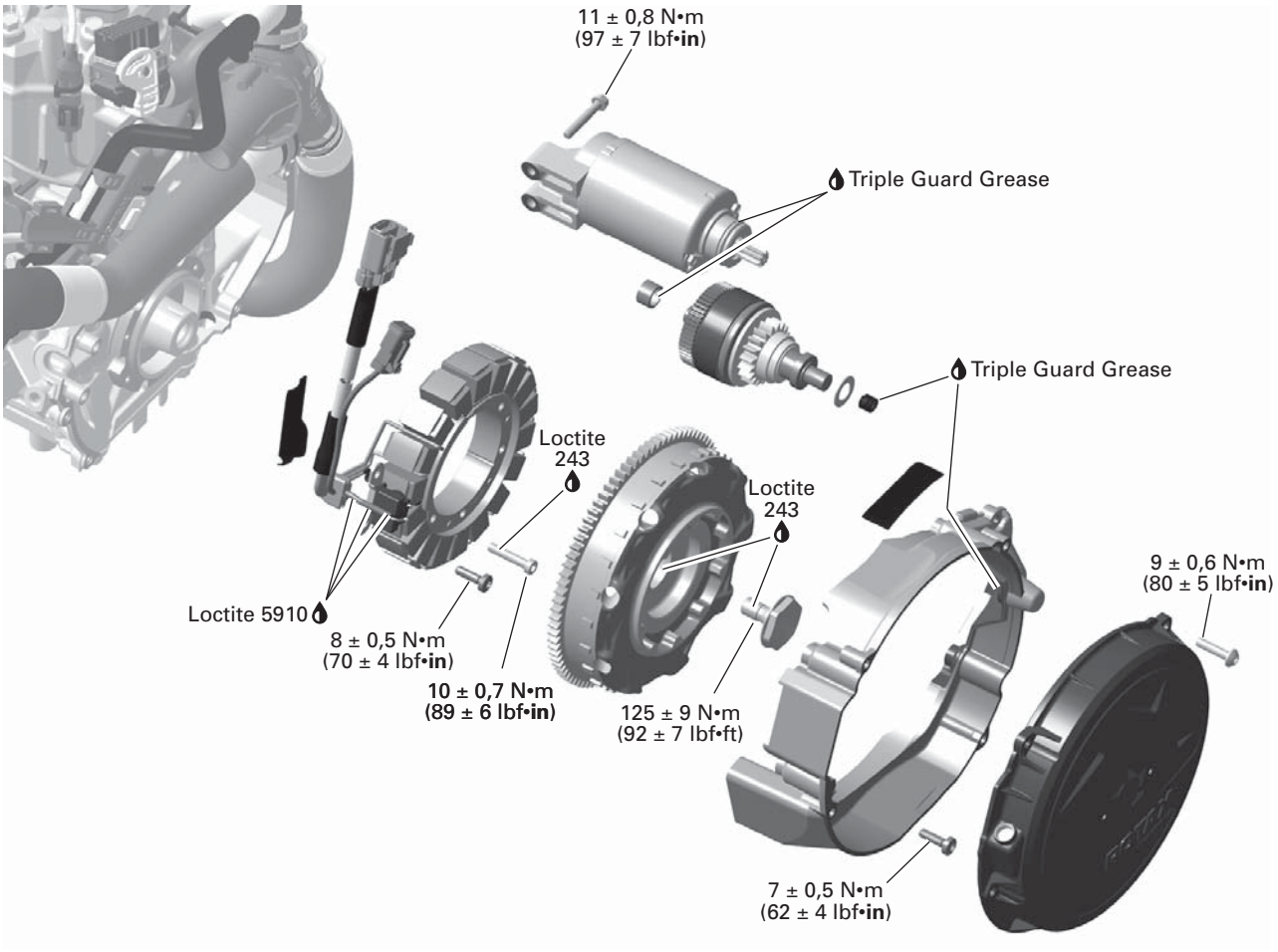
MAGNETO AND STARTER

SERVICE TOOLS

Description	Part Number	Page
ACG ADAPTER	529 036 410	77
CLUTCH HOLDER	529 036 369	71, 74
CRANKSHAFT PROTECTOR	529 036 434	72
FLUKE 115 MULTIMETER	529 035 868	77
HANDLE	420 877 650	82
MAGNETO HOLDER	529 036 404	71–72, 74
MAGNETO PULLER	529 036 403	72–73
STARTER DRIVE NEEDLE INSTALLER	529 035 934	82

SERVICE PRODUCTS

Description	Part Number	Page
BLACK NEOPRENE PAINT	909570	80
BRAKE AND PARTS CLEANER PRO S2	779245	73
LOCTITE 243 (BLUE)	293 800 060	73–74, 78
LOCTITE 5910	293 800 081	70
PULLEY FLANGE CLEANER (F)	619 600 022	73
TRIPLE-GUARD GREASE	508298	80, 82



NEW = Component must be replaced when removed.

RTX20_600R-007_001_a

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

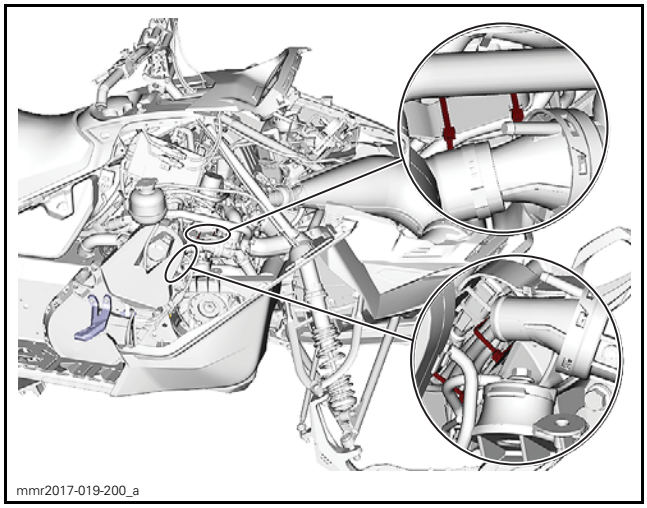
Torque wrench tightening specifications must be strictly adhered to.
Locking devices must be replaced with new ones when removed (e.g.: locking tabs, elastic stop nuts, self-locking fasteners, etc.).

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.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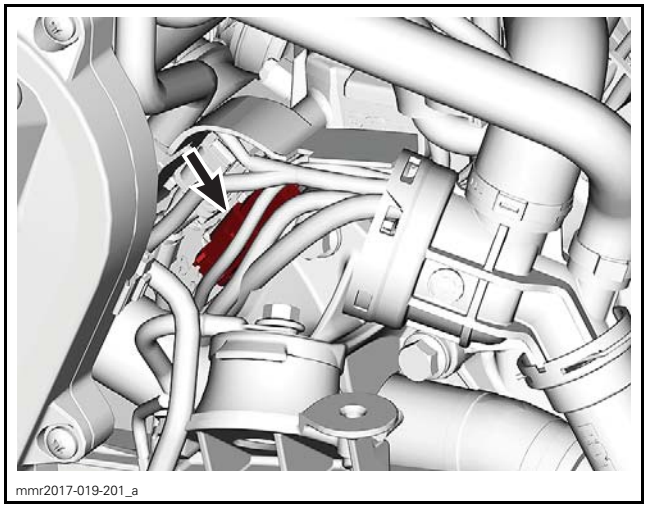
3. Move wirings aside and disconnect the CPS connector.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Testing the CPS with BUDS2

1. Connect the vehicle to the BRP diagnostic software (BUDS2). Refer to *COMMUNICATION TOOLS AND B.U.D.S.* subsection.
2. In BUDS2, navigate to the Measurements page
3. Monitor the Engine Speed (RPM) indicator while cranking engine.

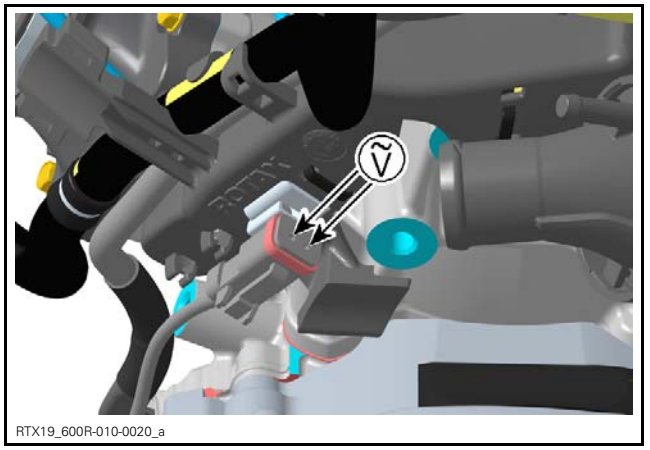
The value should move proportionally to the cranking RPM. If no value movement is observed, test the *CPS OUTPUT VOLTAGE*.

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.


RTX19_600R-010-0020_a

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.

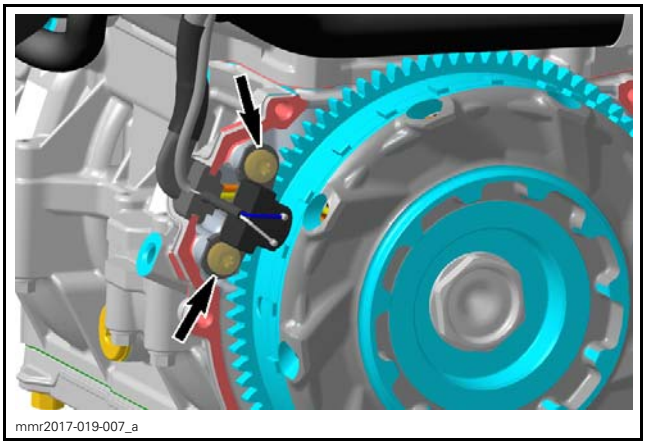
CPS RESISTANCE TEST		
ECM ADAPTER PIN	BATERRY	SPECIFICATION @ 20°C (68°F)
A-K1	Negative (-) post	Open circuit (OL)
A-K2		

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.


mmr2017-019-007_a

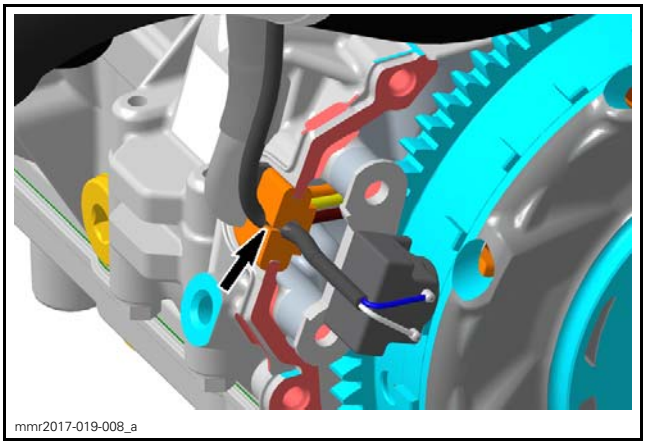
3. Disconnect CPS connector, refer to *CPS CONNECTOR ACCESS* in this subsection.
4. Remove CPS.
5. Remove the old silicon at CPS sensor location

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.

Insert CPS cable into stator cable grommet.


mmr2017-019-008_a

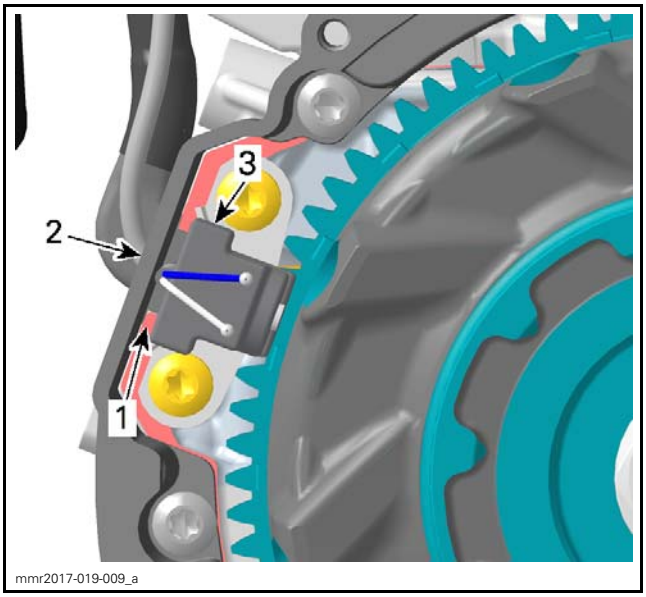
Tighten CPS retaining screws to specification.

TIGHTENING TORQUE	
CPS retaining screws	8 N•m ± 0.5 N•m (71 lbf•**in** ± 4 lbf•**in**)

NOTE: It is important to remove the old silicon at CPS location.

Fill up the gap between CPS and magneto housing with silicon.

SERVICE TOOL
LOCTITE 5910 (P/N 293 800 081)



1. *Fill up with silicon.*
2. *Magneto housing*
3. *CPS*

MAGNETO FLYWHEEL

Magneto Flywheel Access

Remove the rewind starter, refer to *REWIND STARTER* subsection.

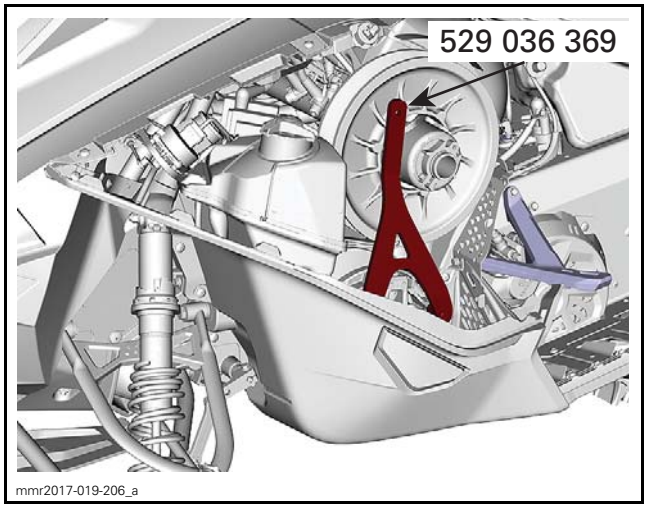
Removing the Magneto Flywheel

⚠ 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.

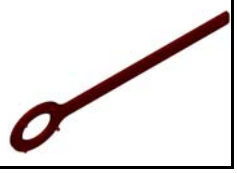
REQUIRED TOOL	
CLUTCH HOLDER (P/N 529 036 369)	

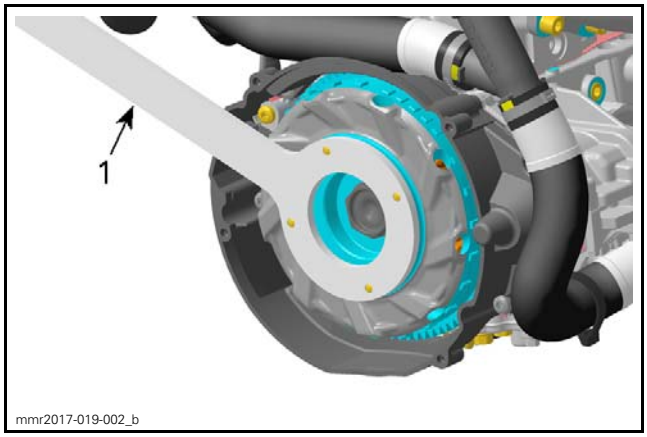


TYPICAL

Engine Out of the Vehicle

2. Install the magneto holder.

REQUIRED TOOL	
MAGNETO HOLDER (P/N 529 036 404)	



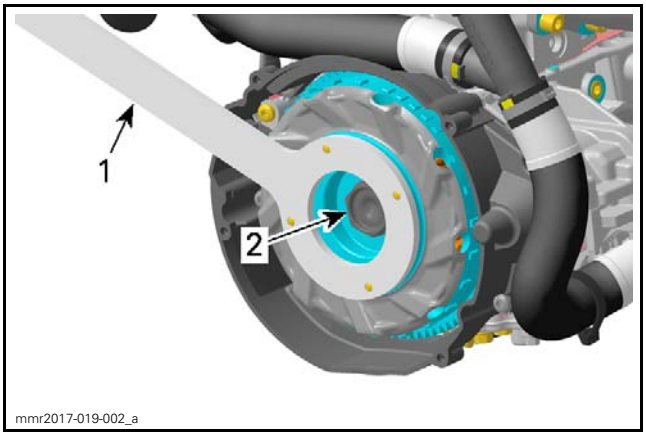
1. *Magneto holder*

Engine In or Out of the Vehicle

3. Remove magneto flywheel retaining screw.

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.

REQUIRED TOOLS	
MAGNETO HOLDER (P/N 529 036 404)	
32 mm socket	



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

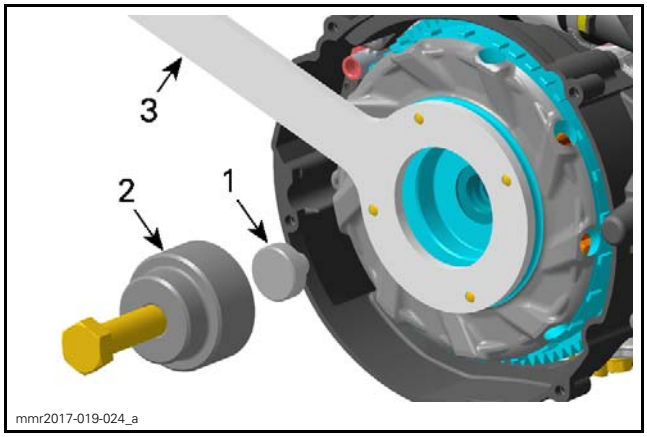
5. Unscrew crankshaft position sensor (CPS). Refer to procedure in this subsection.
6. Slightly pull crank position sensor and cut silicone sealer between crank position sensor and crankcase.
7. Move CPS aside.

Engine In or Out of the Vehicle

8. Remove magneto flywheel.

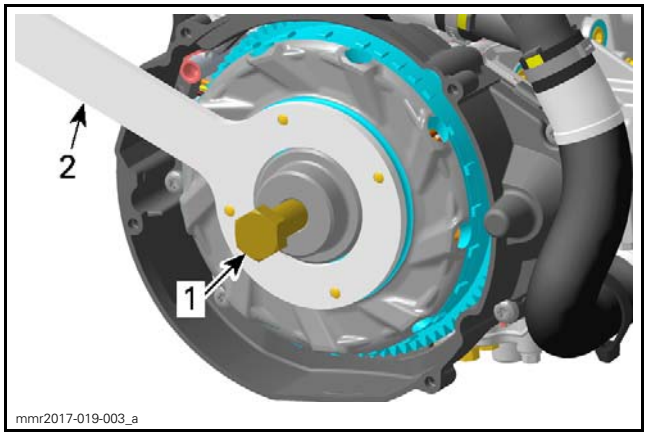
REQUIRED TOOLS	
CRANKSHAFT PROTECTOR (P/N 529 036 434)	
MAGNETO PULLER (P/N 529 036 403)	
MAGNETO HOLDER (P/N 529 036 404)	
24mm socket	

Install service tools on engine.



1. *Crankshaft protector*
2. *Magneto puller*
3. *Magneto holder (engine out of vehicle)*

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

Clean magneto flywheel using only a clean cloth.

Inspect magneto flywheel for abnormal coloration (brown or blue) that would indicate overheating condition.

If overheating condition is suspected, carry out the following:

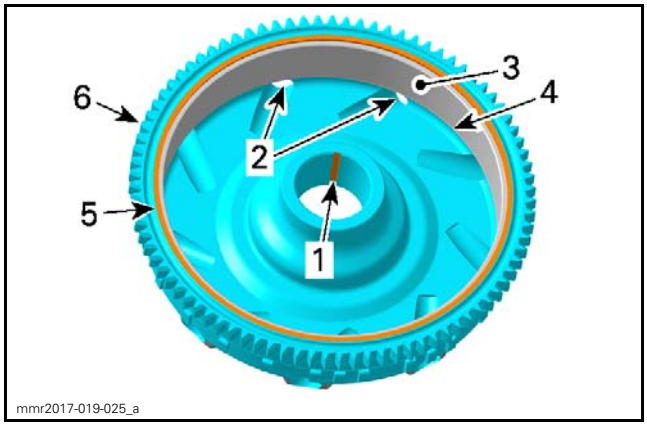
- Check flywheel magnetic field using a piece of metal. If magnetic field is not felt or weak, replace flywheel.
- Inspect flywheel for cracks, pay particular attention to the inside circumference (magnets), and the tapered center portion.
- Check if magneto flywheel ventilation holes are clean.
- Check if magneto housing ventilation holes are clean.
- Check stator for signs of overheating.
- Test stator, see procedures in this subsection.

Check INOX sheet metal ring on inside of magneto flywheel for proper position and fixation.

Check if bead of silicone is not damaged.

Check starter gear teeth for wear or any other damage.

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

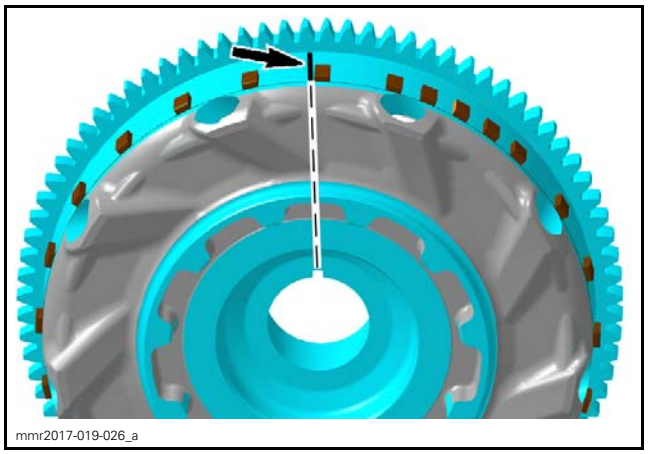
1. Clean:
   - Crankshaft taper
   - Thread in crankshaft
   - Magneto flywheel taper
   - Magneto flywheel retaining screw threads.

SERVICE PRODUCT	
Scandinavia	PULLEY FLANGE CLEANER (F) (P/N 619 600 022)
Other countries	BRAKE AND PARTS CLEANER PRO S2 (P/N 779245)

2. Apply threadlocker on magneto flywheel taper.

SERVICE PRODUCT
LOCTITE 243 (BLUE) (P/N 293 800 060)

3. Install woodruff key on crankshaft.
4. Turn crankshaft to position woodruff key in top position.
5. Mark keyway position on magneto flywheel.



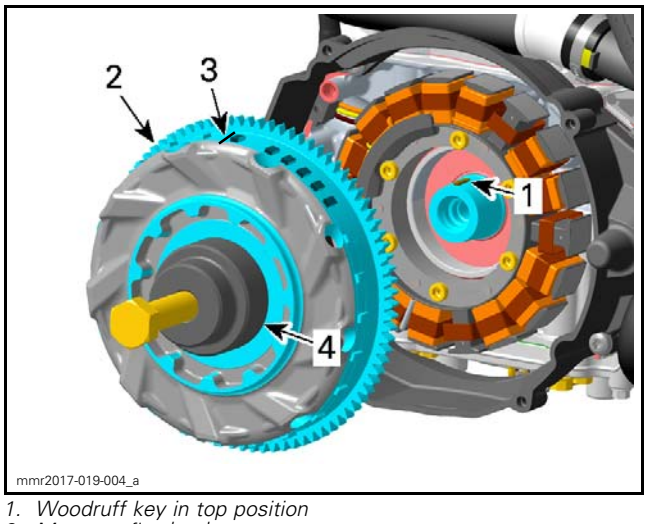
MARK KEYWAY POSITION

6. Install magneto flywheel.

⚠ CAUTION For installation use magneto puller to avoid injuries due to the high magnetic pull of the magneto flywheel.

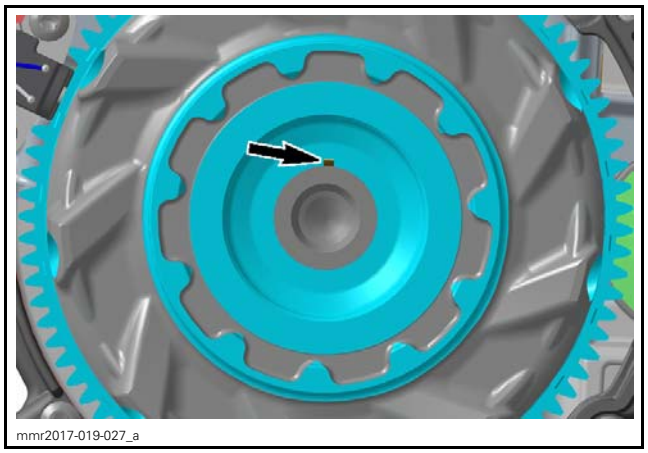
REQUIRED TOOL	
MAGNETO PULLER (P/N 529 036 403)	

Hold magneto flywheel with mark in top position.



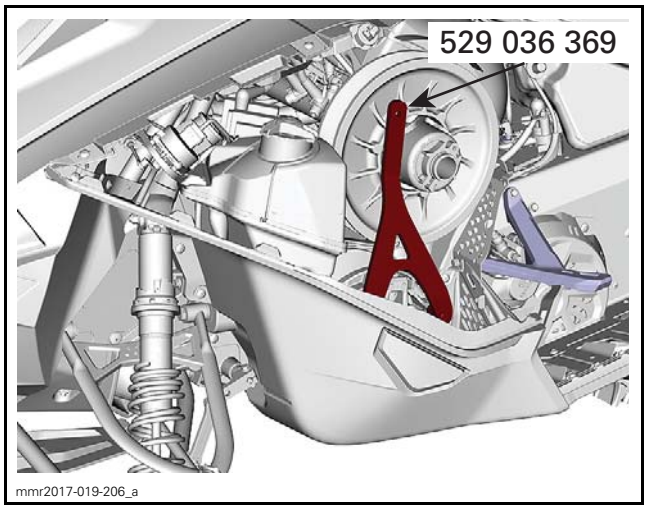
1. *Woodruff key in top position*
2. *Magneto flywheel*
3. *Mark on magneto flywheel*
4. *Magneto puller*

7. Check if woodruff key is in proper position.

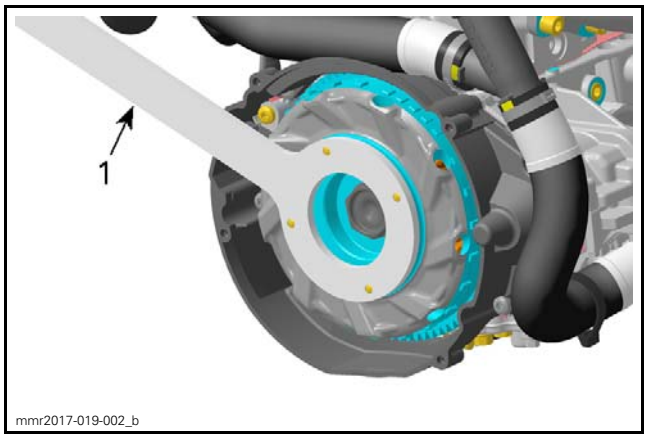


8. Block the drive pulley or the magneto flywheel using the appropriate tool.

REQUIRED TOOLS	
CLUTCH HOLDER (P/N 529 036 369)	
MAGNETO HOLDER (P/N 529 036 404)	



TYPICAL - IN VEHICLE

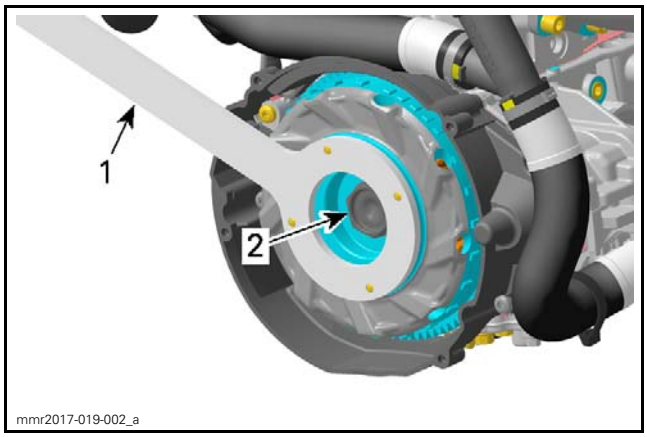


OUTSIDE VEHICLE
1. *Magneto holder*
2. *Magneto flywheel screw*

9. Install magneto flywheel retaining screw and tighten to specification.

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 N•m ± 9 N•m (92 lbf•ft ± 7 lbf•ft) + LOCTITE 243 (BLUE) (P/N 293 800 060)



1. *Magneto holder*
2. *Magneto flywheel retaining screw*

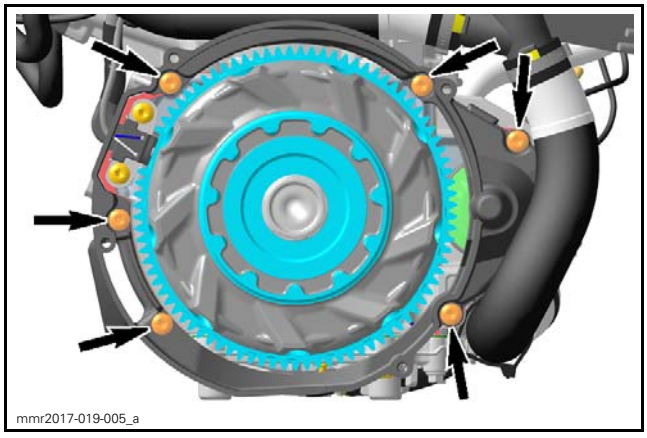
MAGNETO HOUSING

Inspecting the Magneto Housing

Inspect housing for cracks or other apparent damage. Replace if necessary.

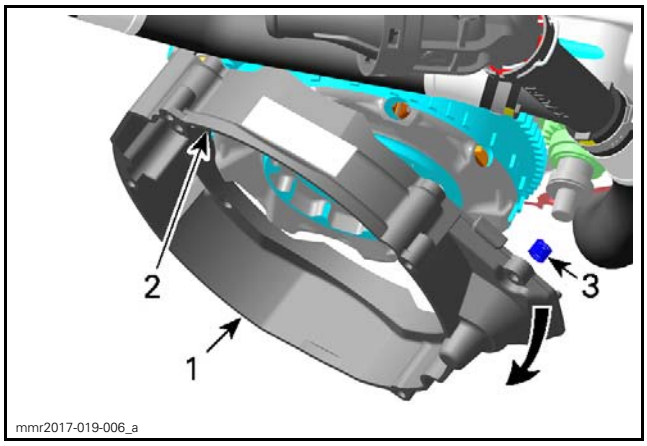
Removing the Magneto Housing

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

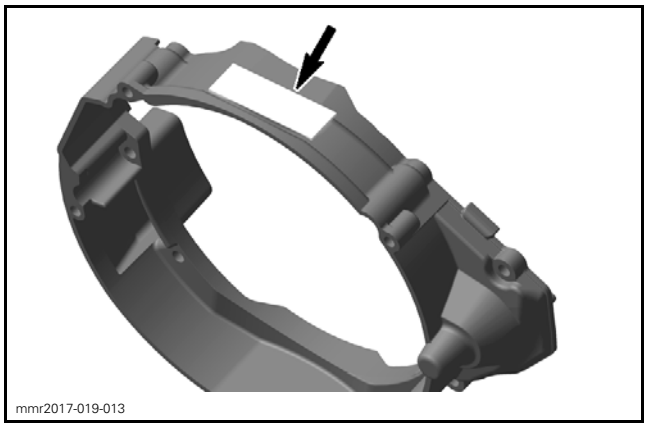
The installation is the reverse of the removal procedure. However, pay attention to the following.

Remove the old silicon at CPS.

Tighten magneto housing screws to specification.

TIGHTENING TORQUE	
Magneto housing screws	7 N•m ± 0.5 N•m (62 lbf•**in** ± 4 lbf•**in**)

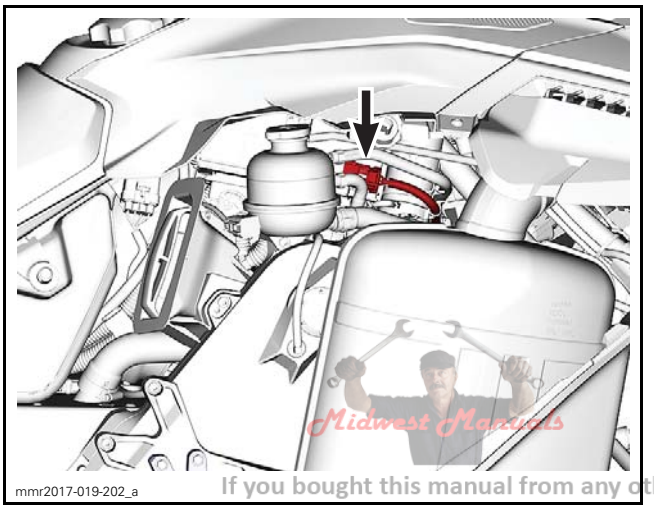
On a new magneto cover install adhesive pad.



STATOR

Stator Connector Access

1. Remove the RH side panel.
2. Disconnect stator connector (3-pin connector).



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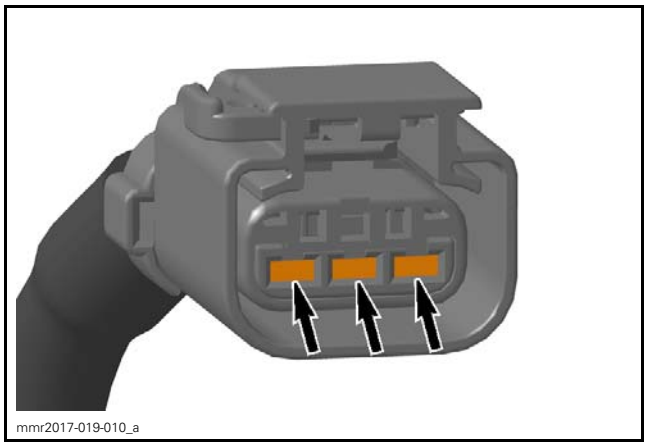
Testing the Stator Continuity

1. Disconnect stator connector.
2. Set multimeter to Ω.

REQUIRED TOOL	
FLUKE 115 MULTIMETER (P/N 529 035 868)	

3. Measure resistance of each stator coil as follows.

STATOR CONTINUITY TEST		
TEST PROBES		RESISTANCE @ 20°C (68°F)
Pin 1	Pin 2	0.63 ± 0.03 Ω
Pin 1	Pin 3	
Pin 2	Pin 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.

If resistance is out of specification, replace stator.

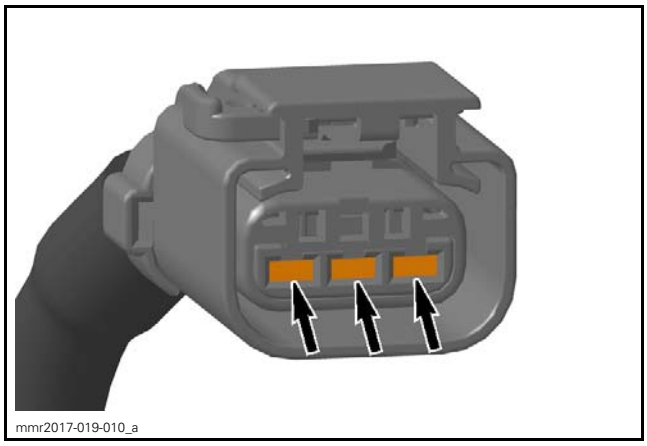
Testing the Stator Insulation

1. Disconnect stator connector.
2. Set multimeter to Ω.

REQUIRED TOOL	
FLUKE 115 MULTIMETER (P/N 529 035 868)	

3. Measure resistance as follows.

STATOR INSULATION TEST		
TEST PROBES		RESISTANCE @ 20°C (68°F)
Pin 1	Engine ground	OL (open circuit)
Pin 2		
Pin 3		



STATOR CONNECTOR PIN-OUT

If results are out of specification, the stator and/or the wiring need to be repaired or replaced.

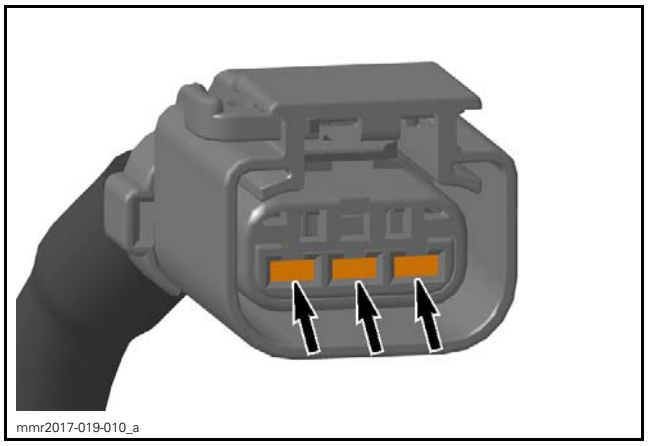
Testing the Stator Voltage Output

1. Disconnect stator connector.
2. Set multimeter to Vac and **manually set a scale** capable of reading at least 20 Vac.

REQUIRED TOOL	
FLUKE 115 MULTIMETER (P/N 529 035 868)	
ACG ADAPTER (P/N 529 036 410)	

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		
TEST PROBES		VOLTAGE
Pin 1	Pin 2	Approximately 15 - 20 Vac
Pin 1	Pin 3	
Pin 2	Pin 3	

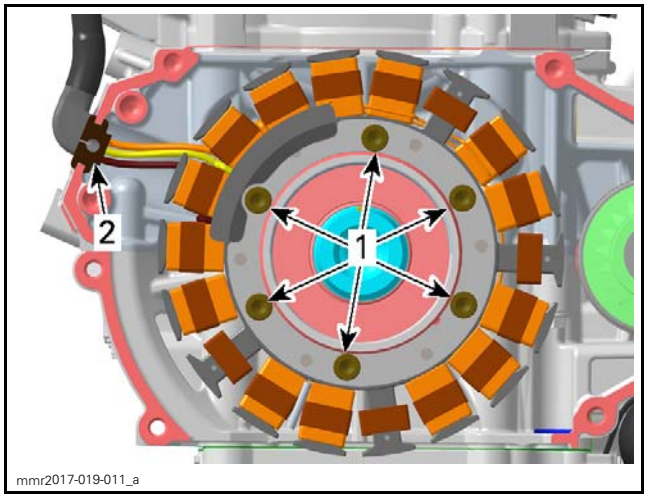


STATOR CONNECTOR PIN-OUT

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.

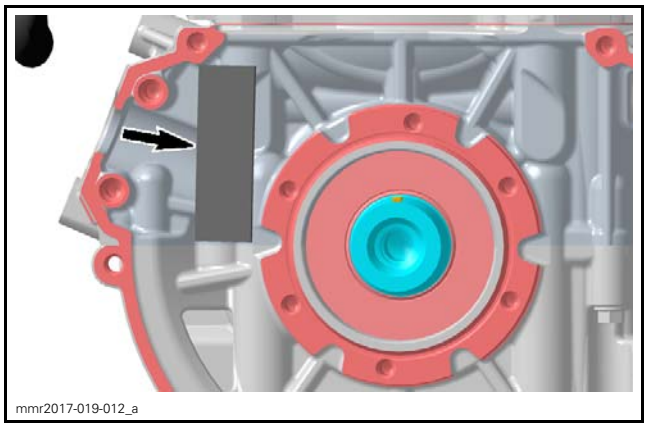
Inspecting the Stator

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.



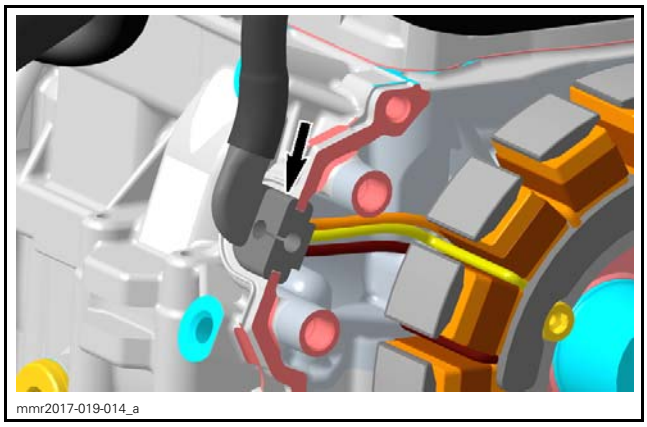
2. Install stator into crankcase.

NOTE: During installation, ensure stator harness is located on the left side.

3. Tighten stator retaining screws to specification.

TIGHTENING TORQUE	
Stator retaining screws	10 N•m ± 0.7 N•m (89 lbf•**in** ± 6 lbf•**in**) + LOCTITE 243 (BLUE) (P/N 293 800 060)

4. Position grommet into crankcase recess.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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

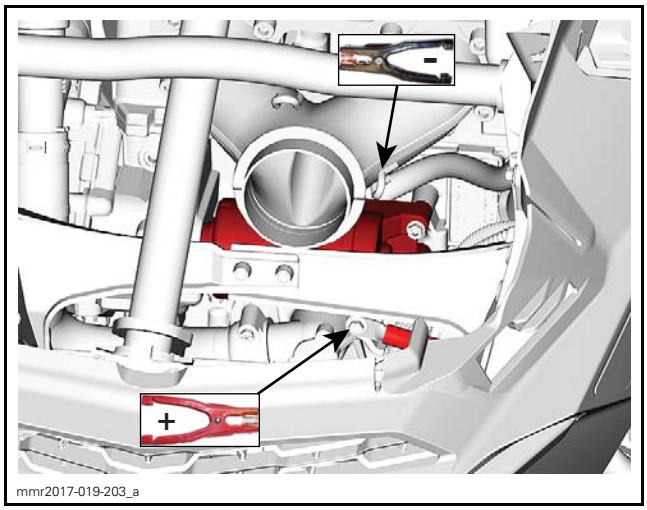
Starter Location

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.



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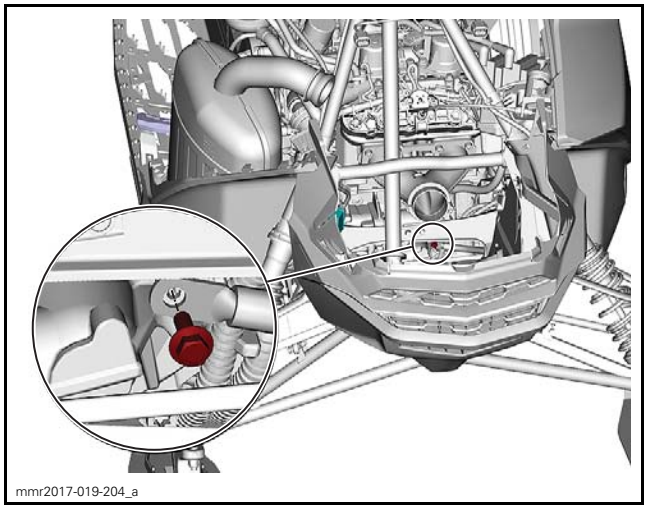
If the starter turns, test other starting system components. Refer to *STARTING SYSTEM* subsection.

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.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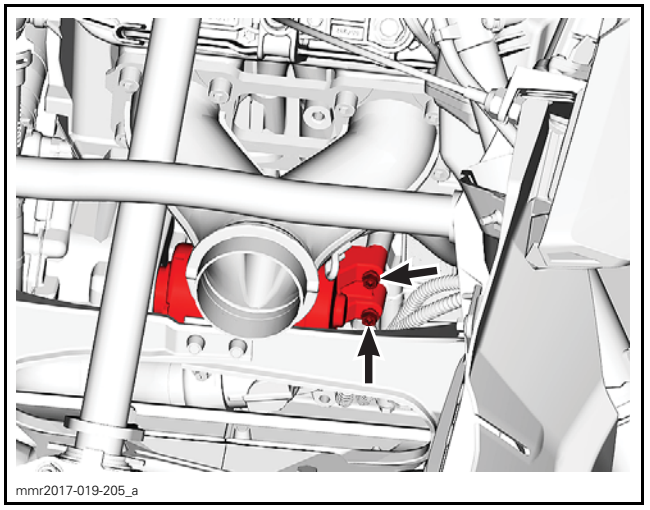
4. Clean starter and surrounding area.
5. Remove starter mounting screws.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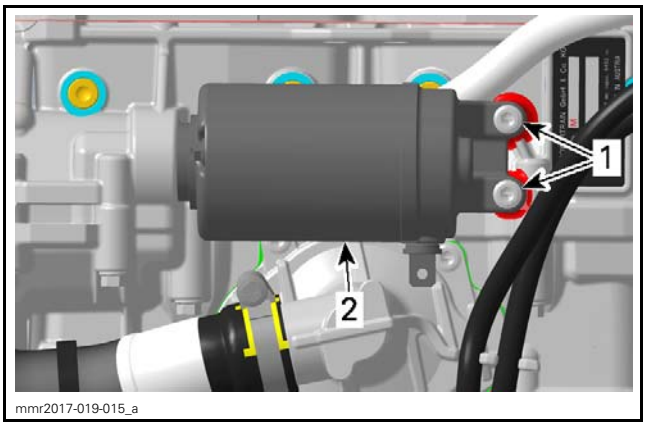


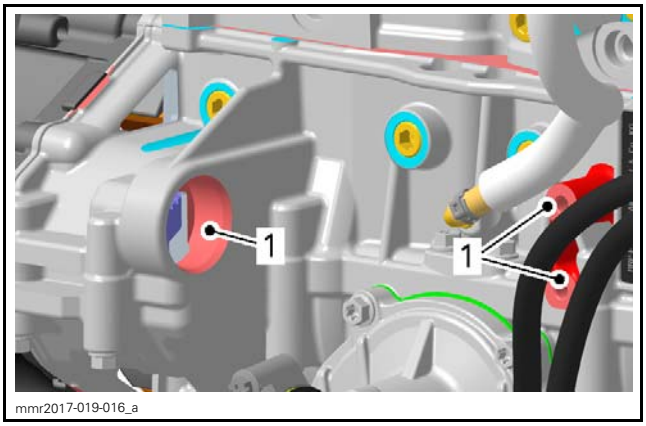
1. *Starter mounting screws*
2. *Starter*

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.

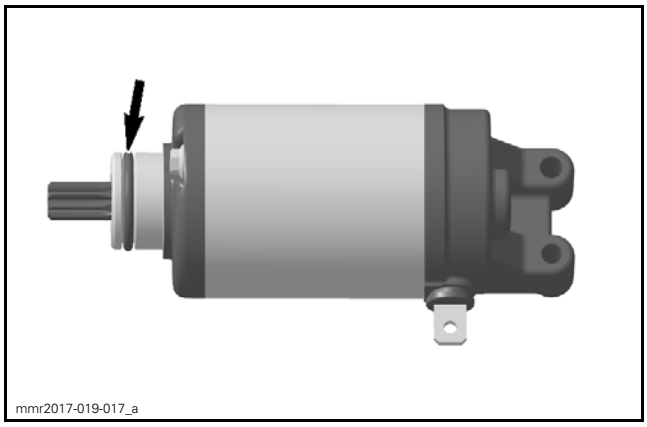
Make sure the starter and engine mating surfaces are free of debris. Serious problems may arise if the starter is not properly aligned.



1. *Clean starter mating surfaces*

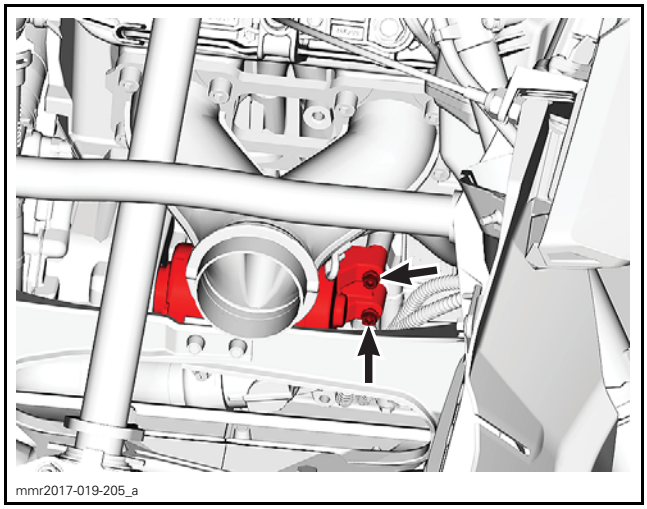
Lubricate starter O-ring.

SERVICE PRODUCT
TRIPLE-GUARD GREASE (P/N 508298)



Install starter and tighten mounting screws to specification

TIGHTENING TORQUE	
Starter mounting screws	11 N•m ± 0.8 N•m (97 lbf•**in** ± 7 lbf•**in**)



Connect the RED (+) cable to the starter and tighten screw to specification.

TIGHTENING TORQUE	
RED (+) power cable screw	2.7 N•m ± 0.7 N•m (24 lbf•**in** ± 6 lbf•**in**)

Apply neoprene paint on RED (+) power cable screw.

SERVICE PRODUCT
BLACK NEOPRENE PAINT (P/N 909570)

NOTE: If the neoprene paint is not available, use dielectric grease.

Connect the BLACK (-) battery cable last.

Test starter operation.

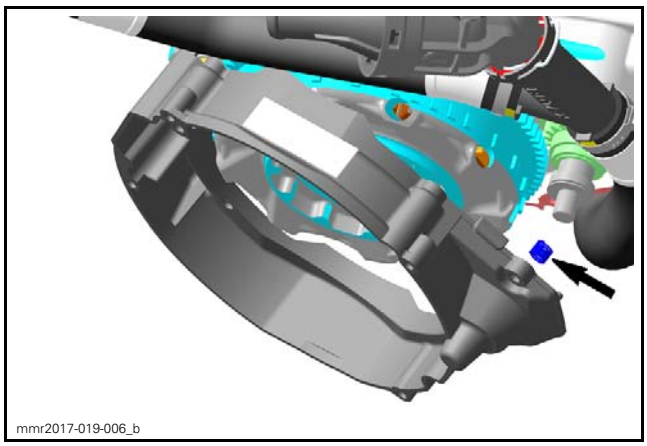
STARTER DRIVE

Removing the Starter Drive

Remove the magneto flywheel. Refer to *REMOVING THE MAGNETO FLYWHEEL* in this subsection.

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.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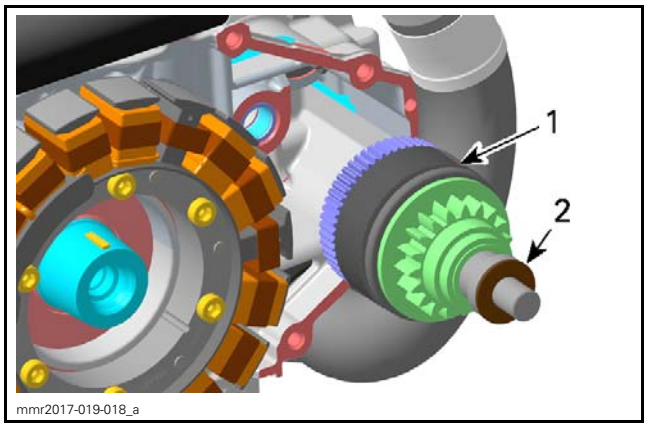
Pull out starter drive.

NOTE: Do not lose washer of starter drive gear during removal.



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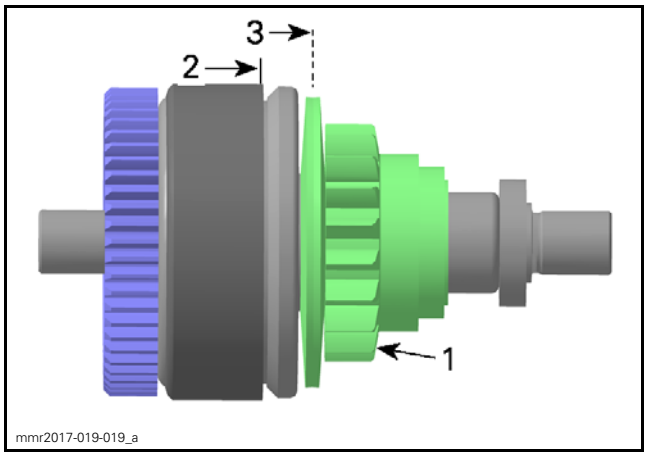
1. *Starter drive*
2. *Washer*

Inspecting the Starter Drive

Check if starter drive pinion is free of movement.

Ensure proper operation of the starter drive sprag clutch.

NOTE: Centrifugal weights avoid disengaging of the pinion while starting the engine.



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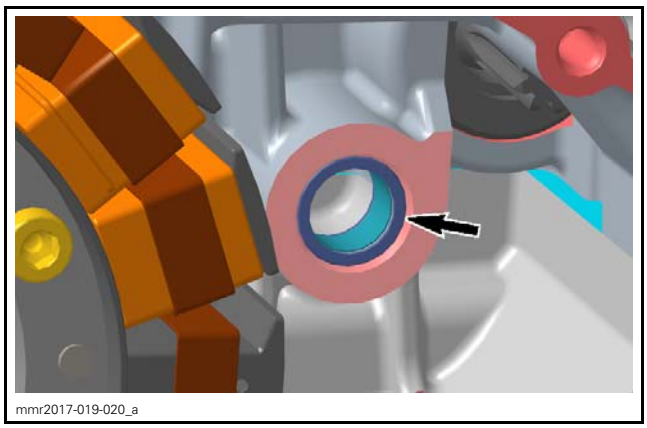
1. *Starter drive pinion*
2. *Starting position (spring released)*
3. *Gear is engaged drive pulley fixed half (spring loaded)*

Check needle bearing excessive play and smooth operation. If damaged see *STARTER DRIVE NEEDLE BEARING REPLACEMENT* in this subsection.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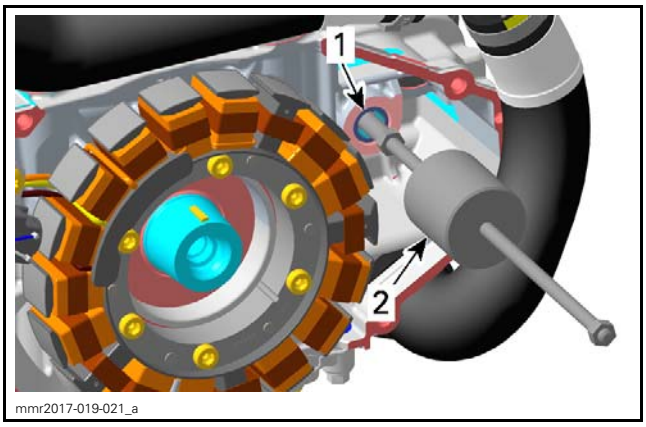
1. *Starter drive needle bearing*

Check magneto housing:
- for cracks at the starter drive bore location
- if starter drive bore is worn or otherwise damaged.

Replace magneto housing if necessary.

Starter Drive Needle Bearing Replacement

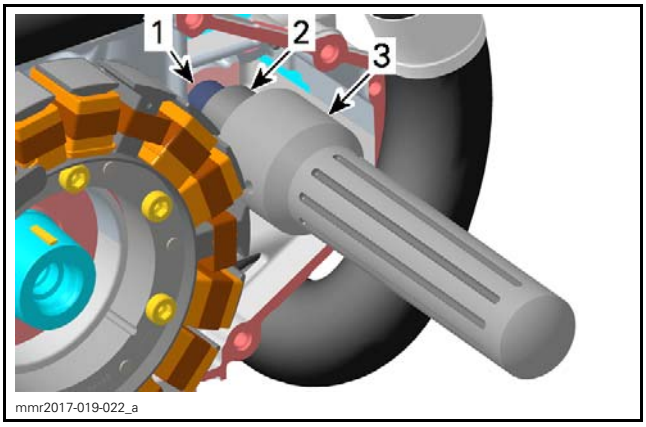
Remove needle bearing using a blind hole bearing puller.



1. *Needle bearing*
2. *Blind hole bearing puller*

Install needle bearing.

REQUIRED TOOLS	
STARTER DRIVE NEEDLE INSTALLER (P/N 529 035 934)	
HANDLE (P/N 420 877 650)	



1. *Needle bearing*
2. *Starter drive needle bearing installer*
3. *Handle*

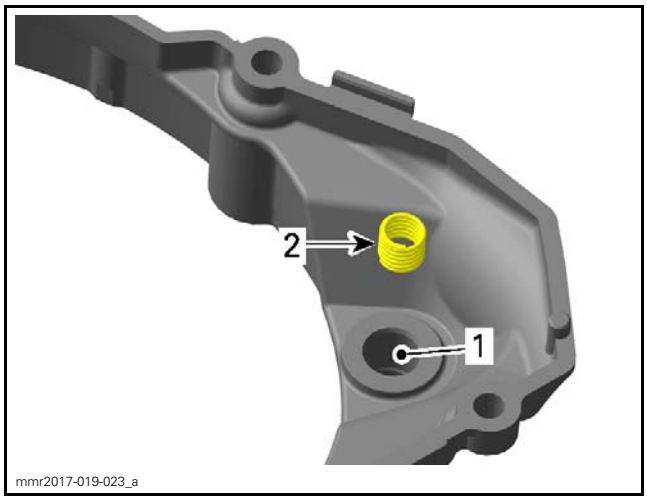
Installing the Starter Drive

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

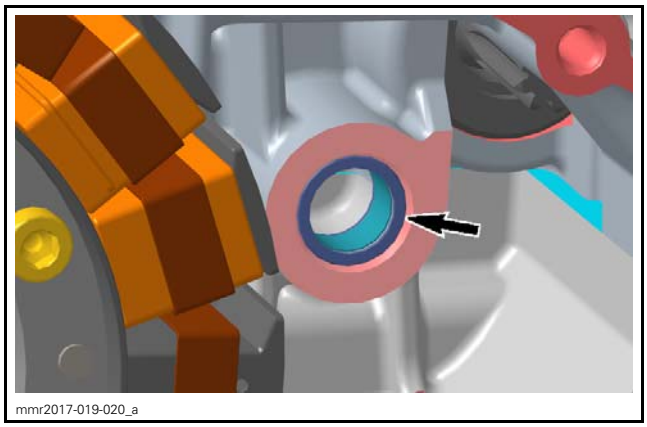
Clean out all residues of grease from:
- Needle bearing in the crankcase
- Starter drive journals
- Starter drive bore in magneto housing
- Spring.

Lubricate:
- Needle bearing in crankcase
- Starter drive bore in magneto housing
- Spring.

SERVICE PRODUCT
TRIPLE-GUARD GREASE (P/N 508298)

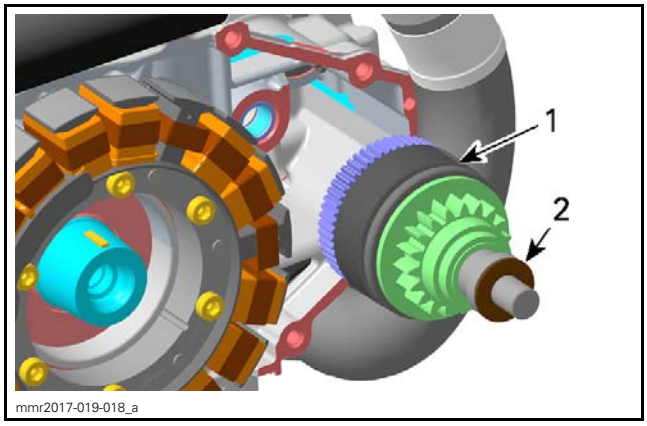


LUBRICATE
1. *Starter drive bore*
2. *Spring*



LUBRICATE NEEDLE BEARING IN CRANKCASE

Install starter drive with washer.



1. *Starter drive*
2. *Washer*

RAVE

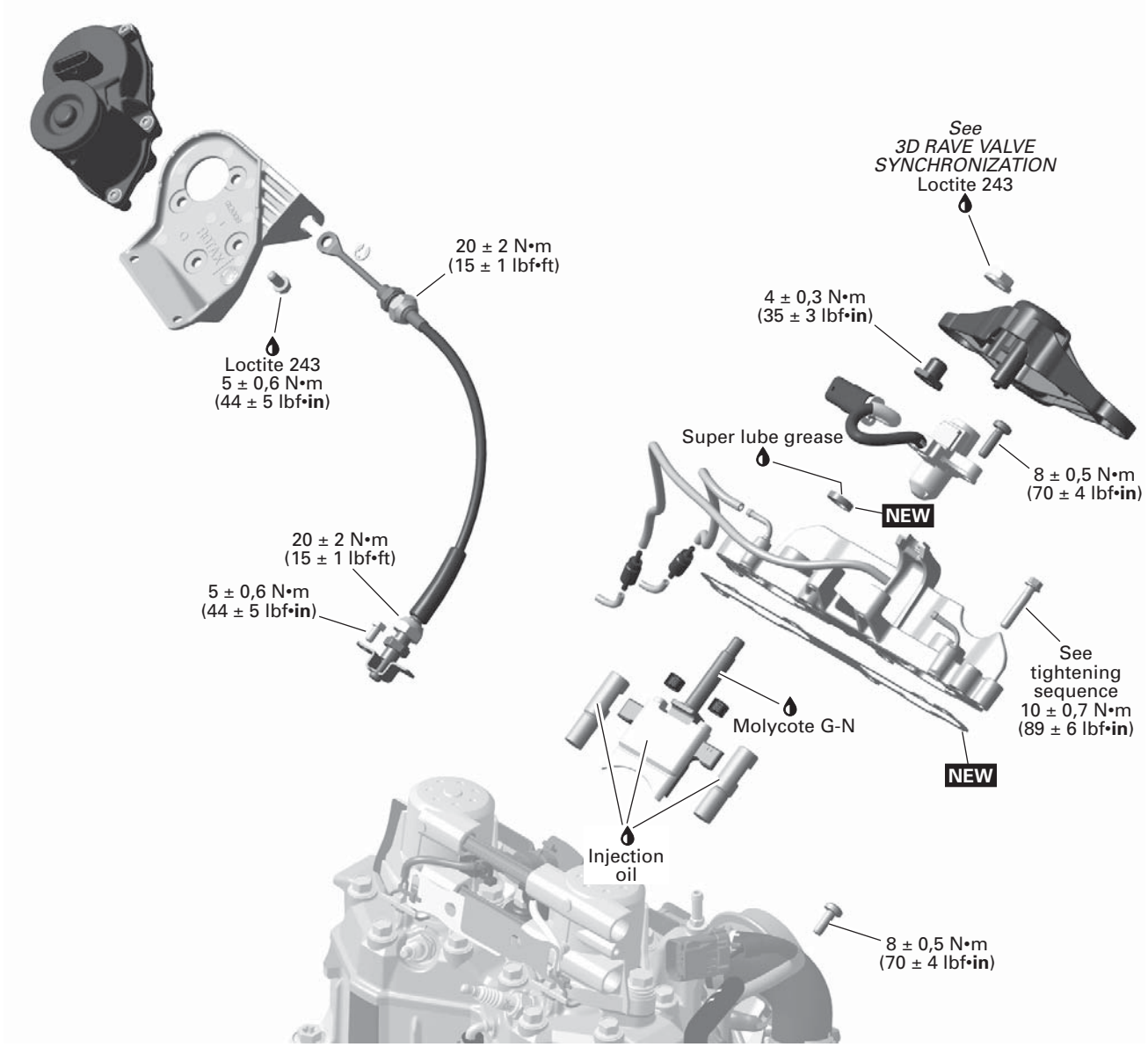
SERVICE TOOLS

Description	Part Number	Page
12 V BATTERY SUPPLY CABLE	529 035 997	90
ECM ADAPTER TOOL	529 036 166	85, 100
FLUKE 115 MULTIMETER	529 035 868	85
POWER INTERFACE	515 177 223	90
PROTECTOR SLEEVE (RAVE)	529 036 488	97
RAVE NUT WRENCH	529 036 439	92, 94

SERVICE PRODUCTS

Description	Part Number	Page
BRAKE AND PARTS CLEANER PRO S2	779245	95
LOCTITE 243 (BLUE)	293 800 060	93, 101
MOLYKOTE G-N	420 297 433	97
SUPER LUBE GREASE	293 550 030	96

RAVE VALVE



NEW = Component must be replaced when removed.

RTX20_600R-008-001_a

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.**

The following tools are required to test most of the electrical parts.

REQUIRED TOOLS	
FLUKE 115 MULTIMETER (P/N 529 035 868)	
ECM ADAPTER TOOL (P/N 529 036 166)	

SYSTEM DESCRIPTION

3D RAVE Basic Operation

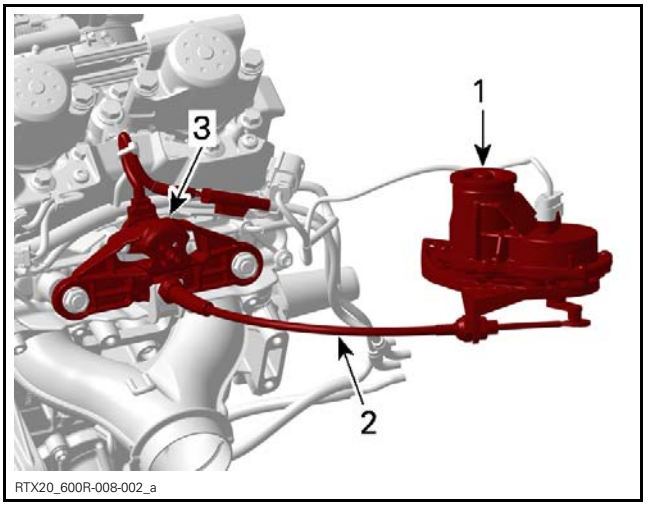
3-step RAVE valves are used. Their positions vary according to engine operating condition.

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.

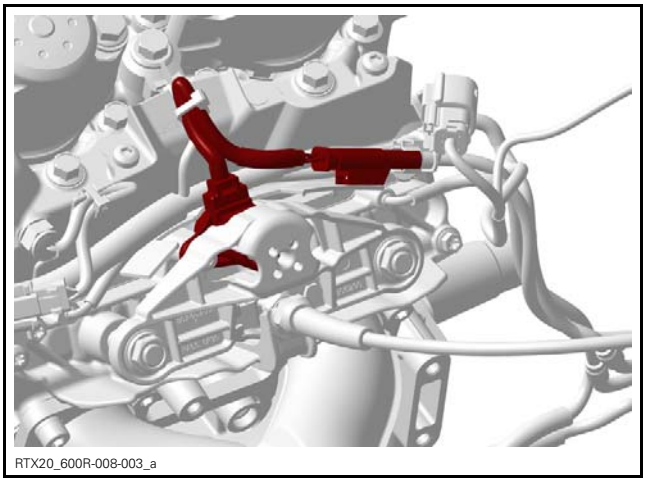
NOTE: 3D RAVE valves may go through all 3 positions or skip the partially opened position and go directly to either the fully opened or closed positions depending on present engine load and how quickly the throttle is depressed.



RTX20_600R-008-002_a

1. *Servomotor*
2. *RAVE cable*
3. *3D RAVE valve*

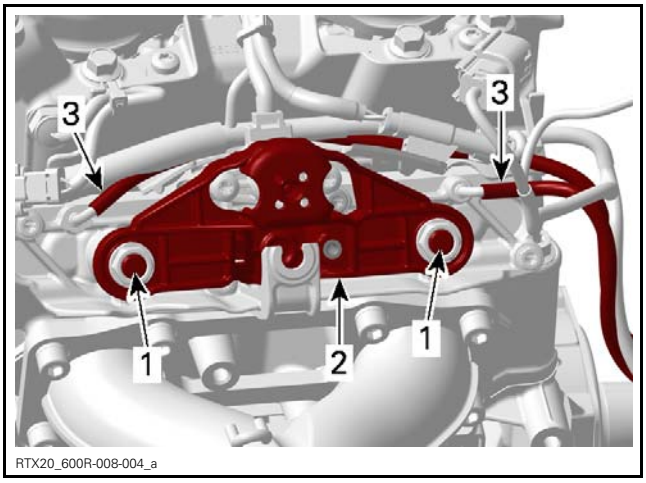
A hall-effect position sensor (RPS: RAVE position sensor) is used to provide RAVE valve position feedback to the ECM.


RTX20_600R-008-003_a

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.

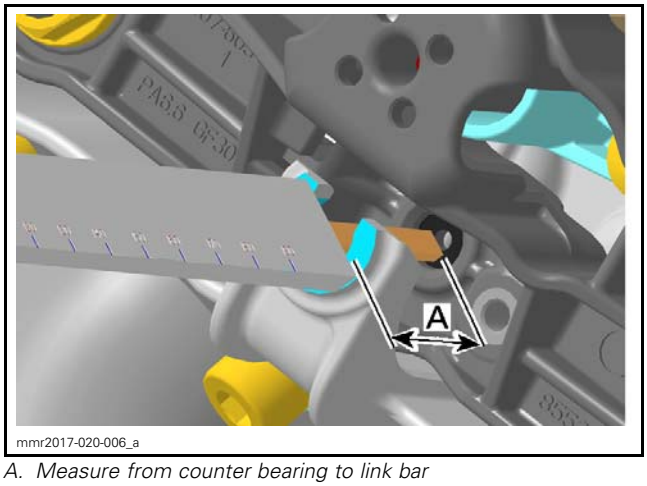


RTX20_600R-008-004_a

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



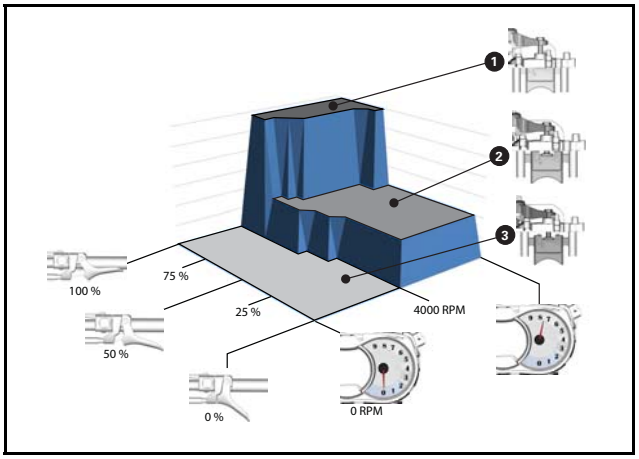
mmr2017-020-006_a

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		
Engine type	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: Approximately 7.2 mm (9/32 in) from 0 mm (0 in) (fully closed position)	A: Approximately 6 mm (15/64 in) from 0 mm (0 in) (fully closed position)
Fully opened	A: Approximately16 mm (5/8 in) from 0 mm (0 in) (fully closed position)	A: Approximately 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

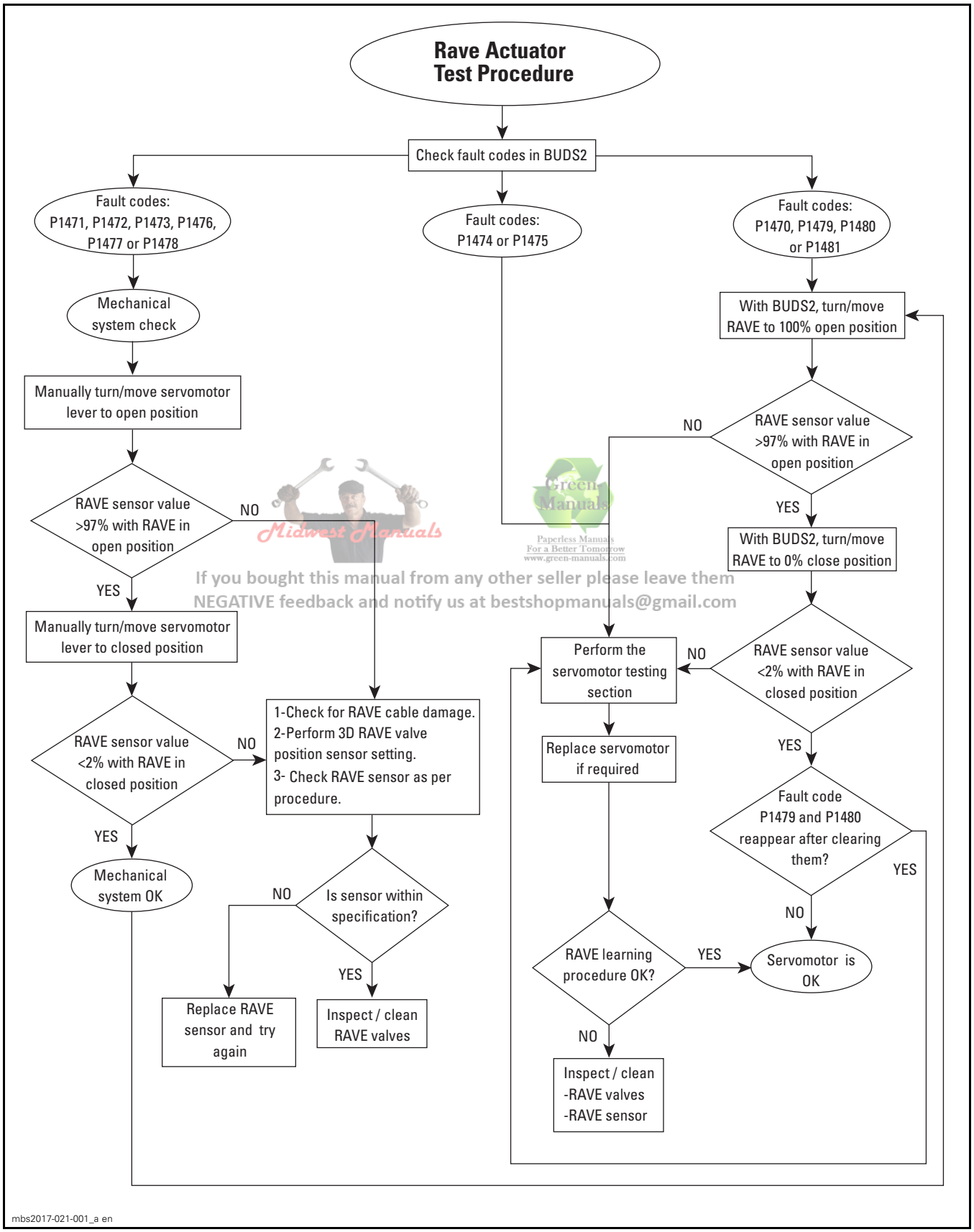
DIAGNOSTIC TIPS

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.



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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:

DEFECTIVE POSITION SENSOR

1. Test position sensor operation, perform *3D RAVE VALVES POSITION VALIDATION*, see procedure in this subsection.
2. Check position sensor wiring, perform *INSPECTING THE 3D RAVE VALVES POSITION SENSOR*, see procedures in this subsection.
3. Check movement of the RAVE manually.

EXCESSIVE CARBON BUILD-UP IN RAVE VALVES

1. Use the recommended oil quality, refer to *LUBRICATION SYSTEM* subsection.
2. Check oil lines (installed incorrectly, air bubbles).
3. 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

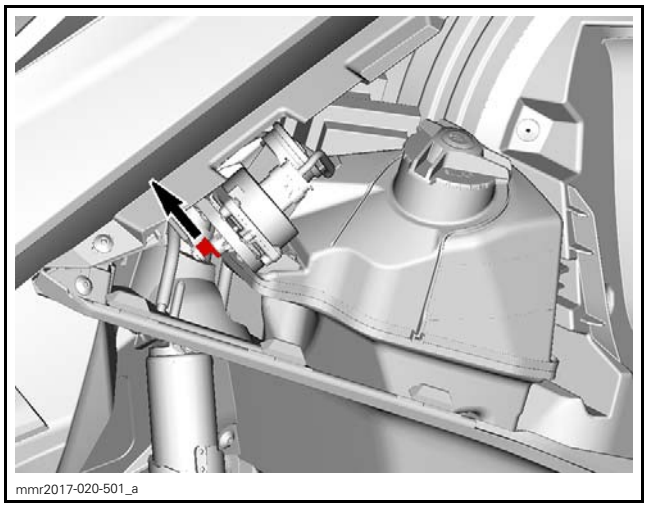
3D RAVE VALVES POSITION SENSOR

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 AND B.U.D.S.* subsection.
3. In BUDS2, go to:
   - **Settings** page
   - **ECM** button
   - **Settings** tab
   - **Initialization - RAVE Setting**.
4. Perform setting at **fully closed** position:
   - 4.1 Select "**RAVE Closed Position Setting**" in the list.
   - 4.2 **Push** the servomotor lever in **fully closed** position and **hold** it.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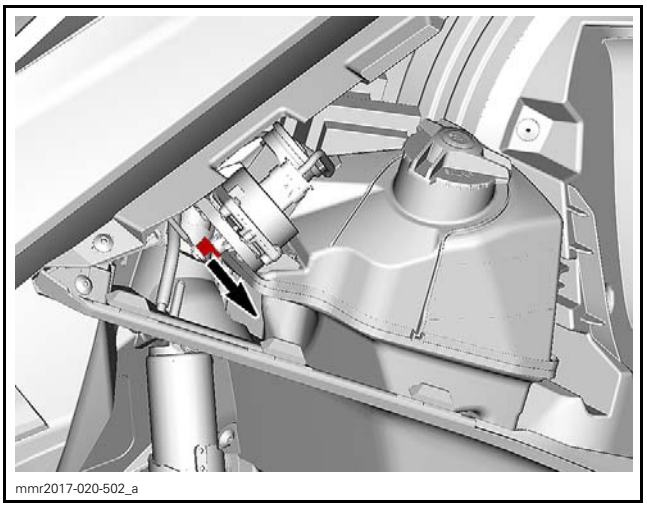
   - 4.3 Confirm that the *SAVED VALUE* is within specification. Refer to *3D RAVE VALVES POSITION VALIDATION*.
   - 4.4 Save the value by pressing the **SET** button.
5. Perform setting at **fully opened** position:
   - 5.1 Select "**RAVE Fully Position Setting**" in the list.
   - 5.2 **Pull** the servomotor lever in **fully opened** position and **hold** it.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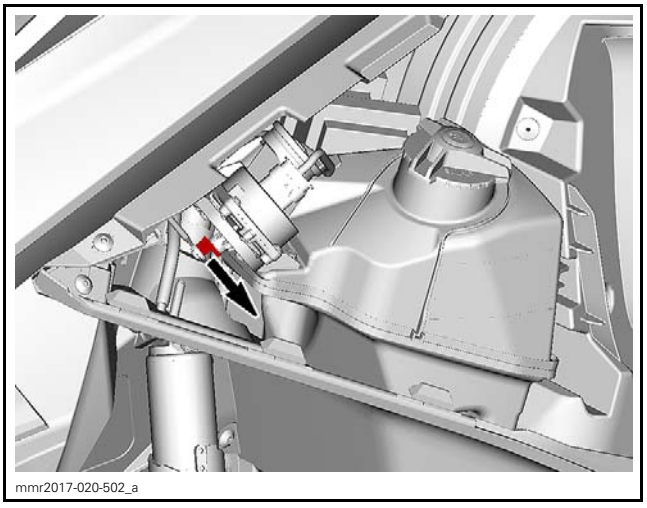
5.3 Confirm that the *SAVED VALUE* is within specification. Refer to *3D RAVE VALVES POSITION VALIDATION*.

5.4 Save the value by pressing the **SET** button.

6. Perform setting at **middle** position:

6.1 Select "**RAVE Middle Position Setting**" in the list.

6.2 **Pull** the servomotor lever in **fully opened** position and **release** it.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6.3 Confirm that the *SAVED VALUE* is within specification. Refer to *3D RAVE VALVES POSITION VALIDATION*.

6.4 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.

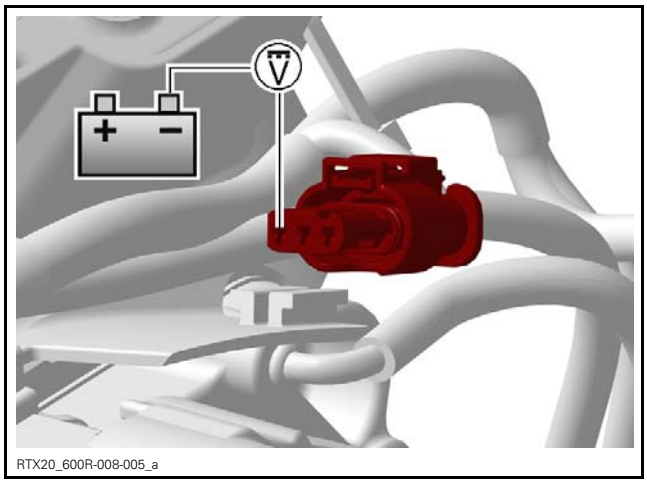
On vehicle without electric starting, connect the vehicle to a booster battery.

REQUIRED TOOLS	
POWER INTERFACE (P/N 515 177 223)	
12 V BATTERY SUPPLY CABLE (P/N 529 035 997)	

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.

3D RAVE VALVES POSITION SENSOR INPUT VOLTAGE		
Position Sensor Connector (harness side)	Battery ground	Measurement
Pin 3		5 ± 0.25 Vdc



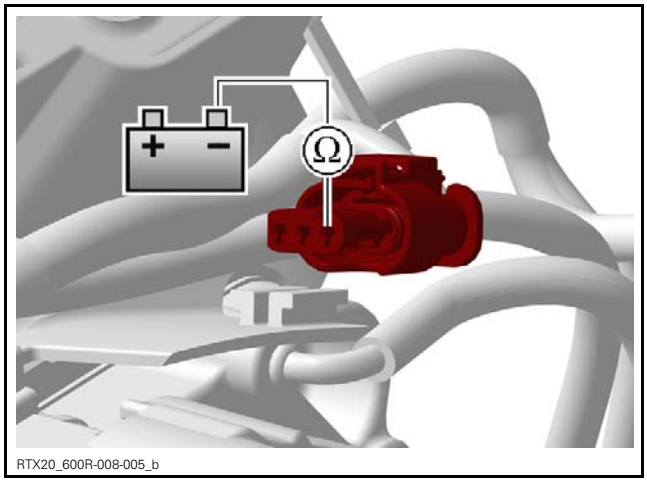
RTX20_600R-008-005_a

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.

3D RAVE VALVES POSITION SENSOR RESISTANCE		
Position Sensor Connector (harness side)	Battery ground	Resistance @ 20°C (68°F)
Pin 1		Close to 0 Ω



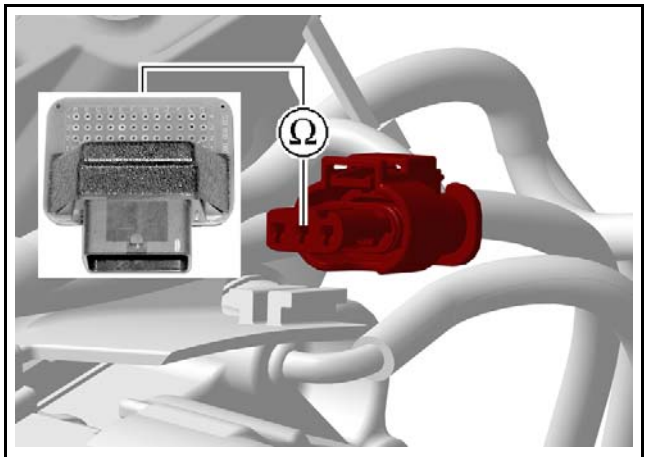
RTX20_600R-008-005_b

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 connector
   – Position sensor connector.
2. Connect ECM connector to ECM adapter tool.
3. Set multimeter to Ω and probe terminals as per following table.

3D RAVE VALVES POSITION SENSOR RESISTANCE		
Position Sensor Connector (harness side)	ECM-A	Resistance @ 20°C (68°F)
Pin 1	E2	Close to 0 Ω
Pin 2	E3	
Pin 3	F3	

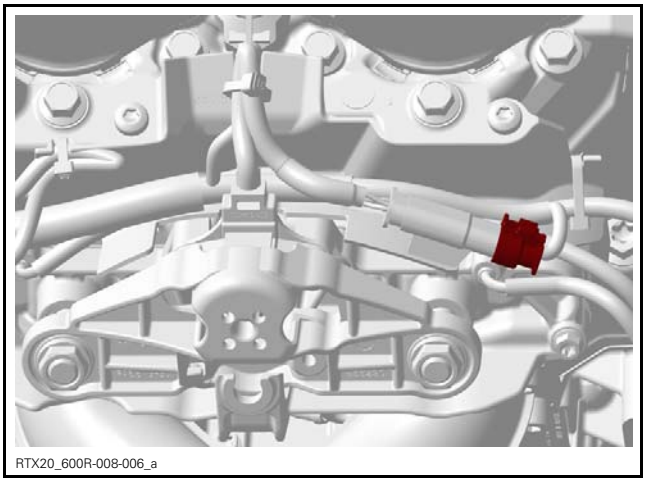


RTX20_600R-008-005_c

If resistance is not within specification, repair or replace the wiring harness.

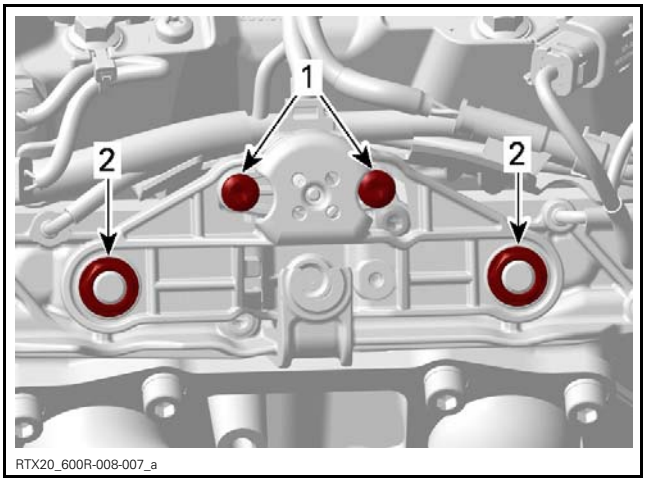
Removing the 3D Rave Valves Position Sensor

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.


RTX20_600R-008-006_a

4. Unscrew:
   – RAVE valves position sensor retaining screws
   – Link bar retaining nuts.

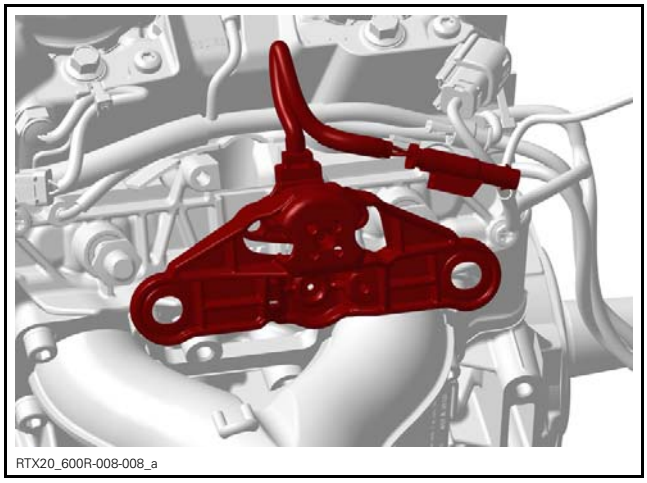
REQUIRED TOOL	
RAVE NUT WRENCH (P/N 529 036 439) (to hold the plastic collar nuts)	



RTX20_600R-008-007_a

1. RAVE valves position sensor retaining screws
2. Link bar collar nuts

5. Remove link bar with RAVE valves position sensor.


RTX20_600R-008-008_a

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 N•m ± 0.5 N•m (71 lbf•**in** ± 4 lbf•**in**)

5. Install connector.

3D RAVE VALVES

3D RAVE Valve Synchronization

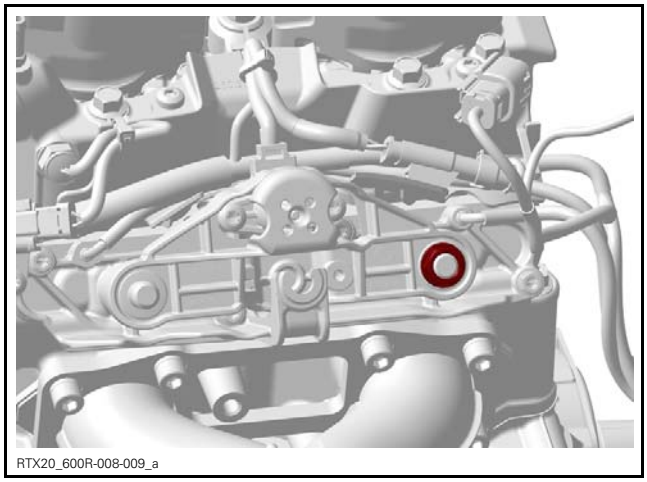
Synchronization Adjustment Procedure

1. Remove link bar retaining nuts and clean threads.

REQUIRED TOOL	
RAVE NUT WRENCH (P/N 529 036 439) (to hold the plastic collar nuts)	

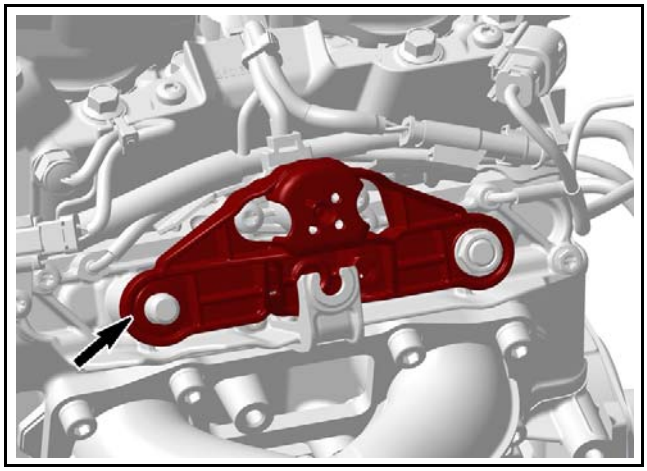
2. Install PTO link bar retaining nut and tighten by hand.

SERVICE PRODUCT
LOCTITE 243 (BLUE) (P/N 293 800 060)


RTX20_600R-008-009_a

3. Check if the link bar rests flat on the retaining nut.

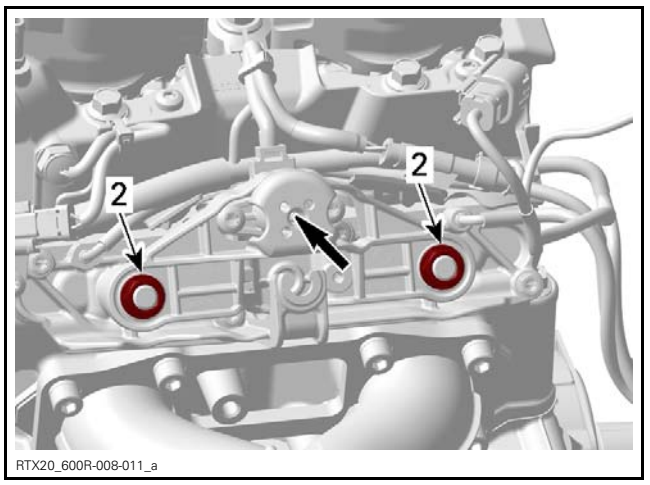
Tip on link bar at MAG side an listen if link bar rests on retaining nut.



4. If the link bar does not rest flat:
   - 4.1 Unscrew PTO nut then slightly move link bar.
   - 4.2 Tighten PTO nut by hand and recheck position.
   - 4.3 Repeat above sequence until the link bar rests flat.
5. Install MAG link bar retaining nut and tighten by hand.

SERVICE PRODUCT
LOCTITE 243 (BLUE) (P/N 293 800 060)

6. Push the center of link bar downwards in order to seat both RAVE valves on their fully closed position.
7. Firmly hold link bar downwards.
8. Tighten both retaining nuts.



RTX20_600R-008-011_a

Step 1: Push link bar
Step 2: Tighten retaining nuts

TIGHTENING TORQUE	
Link bar retaining nuts	4 N•m ± 0.3 N•m (35 lbf•**in** ± 3 lbf•**in**)

9. Adjust position sensor using BUDS2. Refer to *3D RAVE VALVES POSITION SENSOR SETTING*.
10. Push link bar down to fully closed position.
11. 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.
   - 1.1 Ensure that only **one** step is felt at mid position.
   - 1.2 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 AND B.U.D.S.* subsection.
4. In BUDS2, go to:
   - **Settings** page

– **ECM** button
– **Settings** tab
– **Initialization - RAVE Setting**

5. Select the appropriate RAVE position in the list.

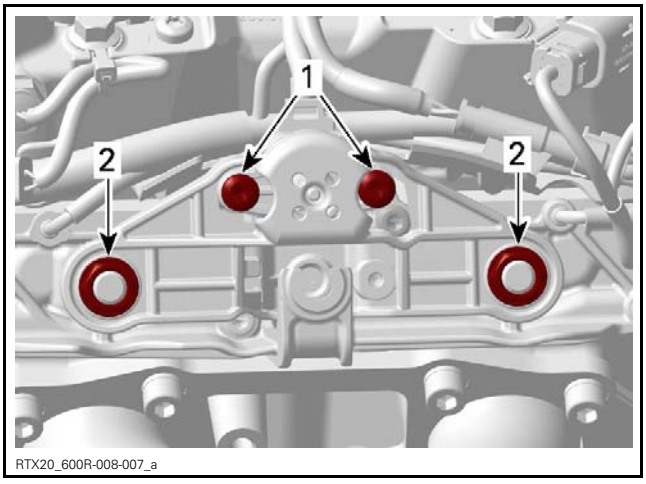
RAVE ACTUAL POSITION SPECIFICATION	
Closed	0.25 V - 1.25 V
Middle	1.00 V - 3.00 V
Opened	3.00 V - 4.50 V

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. Unscrew:
   – RAVE valves position sensor retaining screws
   – Link bar retaining nuts.

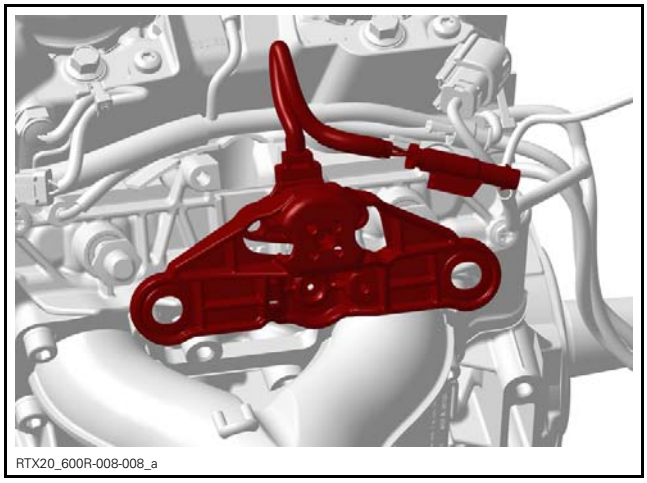
REQUIRED TOOL	
RAVE NUT WRENCH (P/N 529 036 439) (to hold the plastic collar nuts)	



RTX20_600R-008-007_a

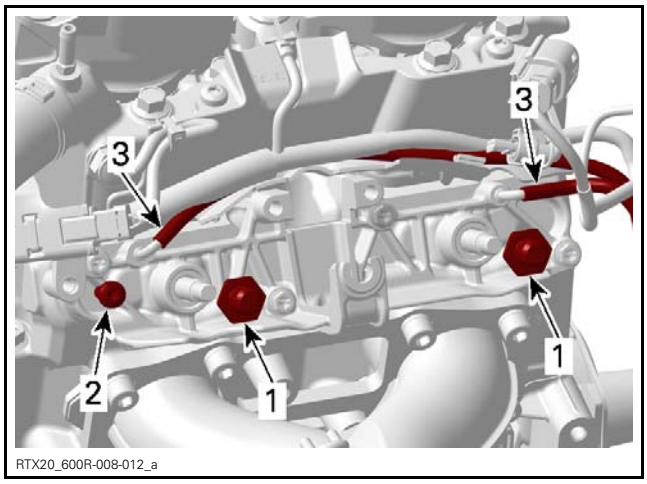
1. RAVE valves position sensor retaining screws
2. Link bar retaining nuts

5. Remove link bar with RAVE valves position sensor.


RTX20_600R-008-008_a

1. Link bar
2. RAVE valves position sensor

6. Remove collar nuts.
7. Remove screw from harness support.
8. Disconnect lubrication hose.



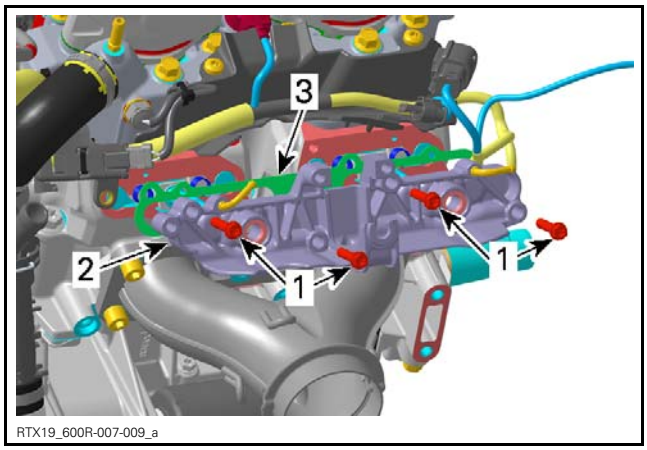
RTX20_600R-008-012_a

1. Collar nuts
2. Harness support screw
3. Lubrication hoses

9. Remove the RAVE valve housing.

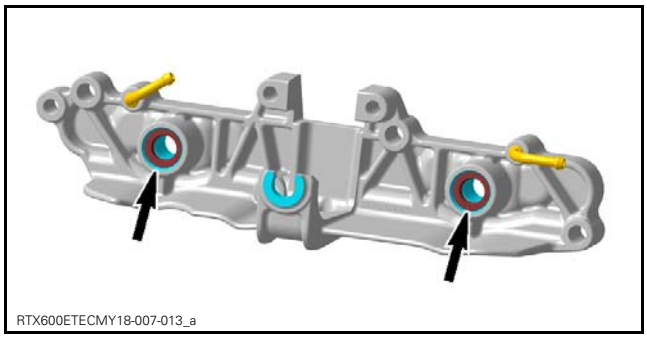
NOTE: Be careful not to loose springs underneath housing.

NOTICE **If signs of oil are found outside the housing, replace seals.**

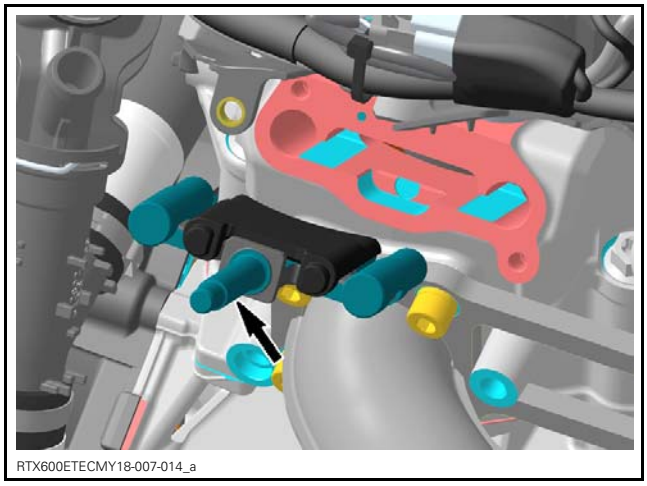


1. *Retaining screws*
2. *RAVE valve housing*
3. *Gasket (discard it)*

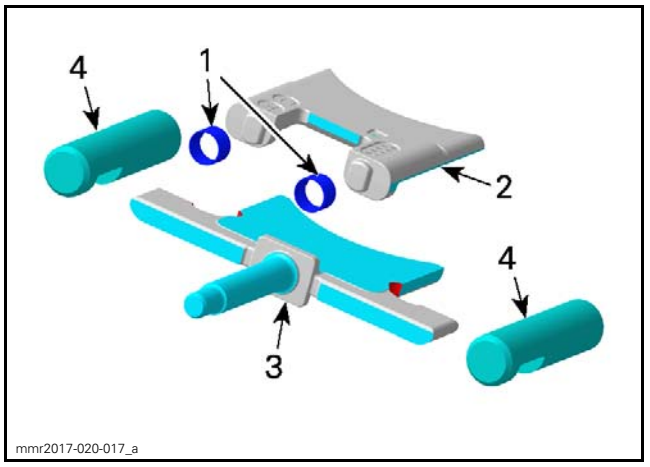
10. Take note of seals orientation and carefully pry them out using a screwdriver.



11. Pull RAVE valve assembly out.



12. 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

Thoroughly clean all RAVE VALVES components and cylinder slots.

SERVICE PRODUCT
BRAKE AND PARTS CLEANER PRO S2 (P/N 779245)

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

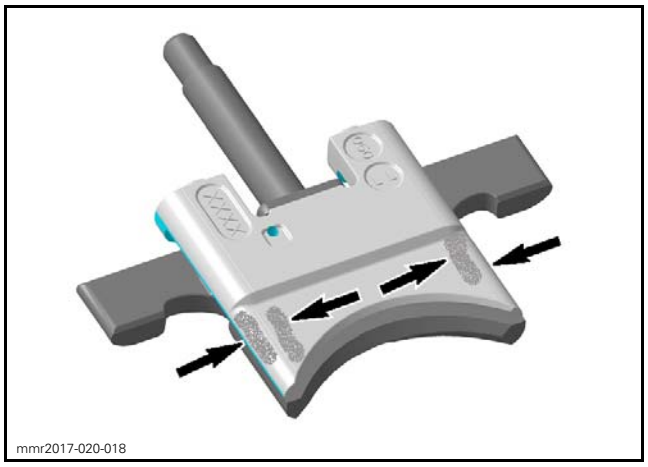
If the valves are getting gummed more frequently than usual, do the following:

- Check if the recommended injection oil is used.
- Check lubrication hoses for restriction.
- Check lubrication hoses for presence of air. Bleed system if needed.
- Check lubrication hose check valves as explained in this subsection.

Inspecting the 3D RAVE Valve

Check valves for:

- wear at sliding points
- straightness
- breakage.



SIGNS OF WEAR

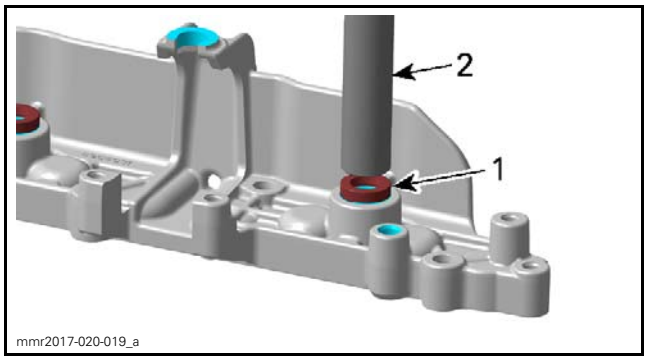
Check spring condition and straightness.

NOTE: Make sure hoses are not leaking, kinked or damaged.

Installing the 3D RAVE Valve

1. Use an appropriate pusher to reinstall seals.
2. Lubricate outer oil seal diameter.

SERVICE PRODUCT
Injection oil

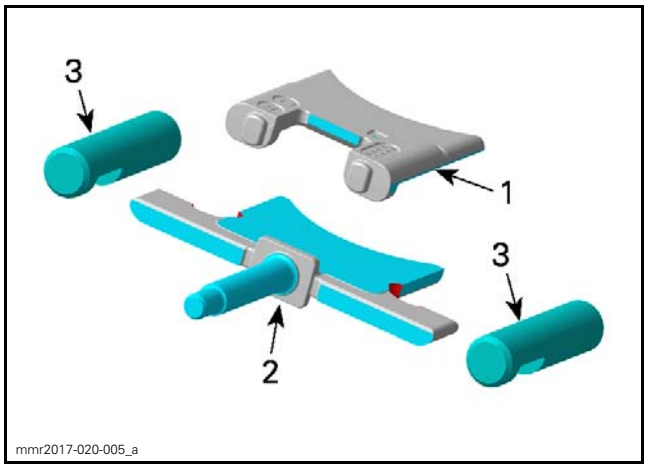


1. Oil seal
2. Pusher

3. Lubricate sealing lips of oil seals.

SERVICE PRODUCT
SUPER LUBE GREASE (P/N 293 550 030)

4. Preassemble the main and side valves.

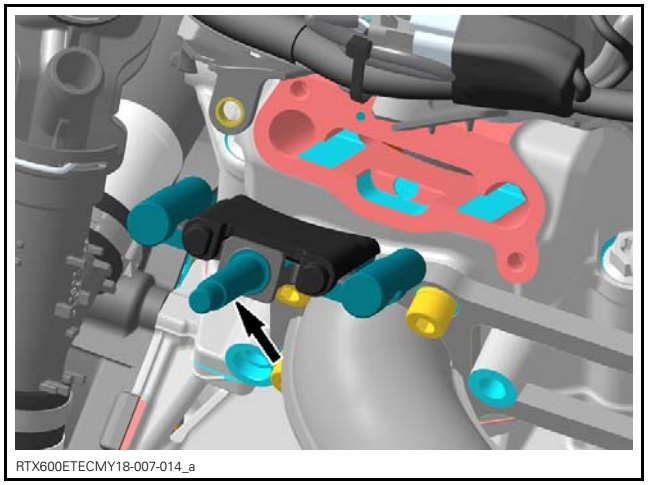


1. Main valve upper part
2. Main valve lower part
3. Side valves

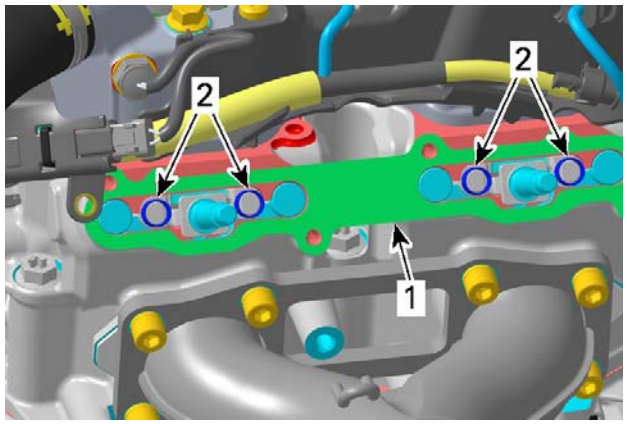
5. Lubricate:
   – RAVE chamber in cylinder block, main and side valves
   – Sliding surfaces of RAVE valves.

SERVICE PRODUCT
Injection oil

6. Insert RAVE valves in cylinder.



7. Install NEW gasket.
8. Install springs on stud ends of valves.



RTX19_600R-007-010_a

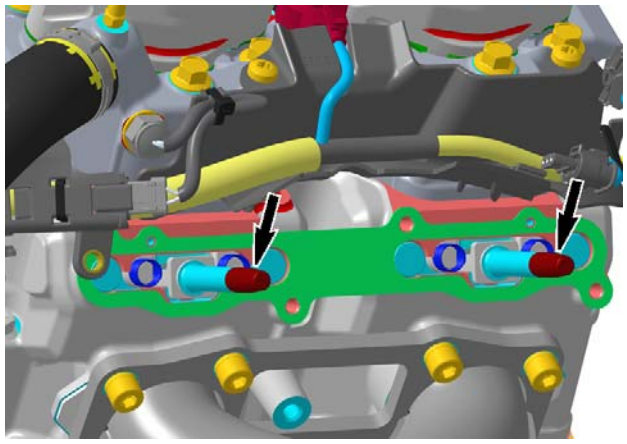
1. *Gasket*
2. *Springs*

9. Lubricate valve shaft.

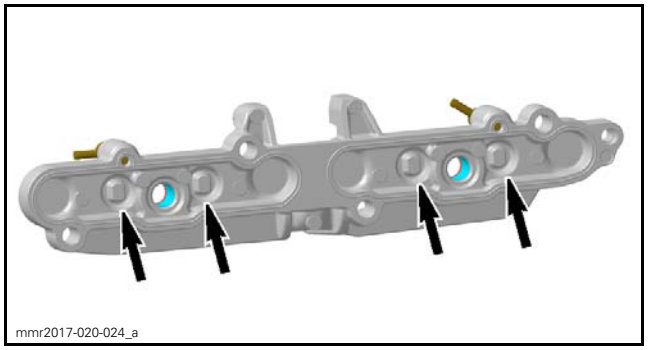
SERVICE PRODUCT
MOLYKOTE G-N (P/N 420 297 433)

10. Place protector sleeves on RAVE valve threads.

REQUIRED TOOL	
PROTECTOR SLEEVE (RAVE) (P/N 529 036 488)	


RTX19_600R-007-011_a

11. Install RAVE valve housing and carefully align springs in recess of RAVE valve housing.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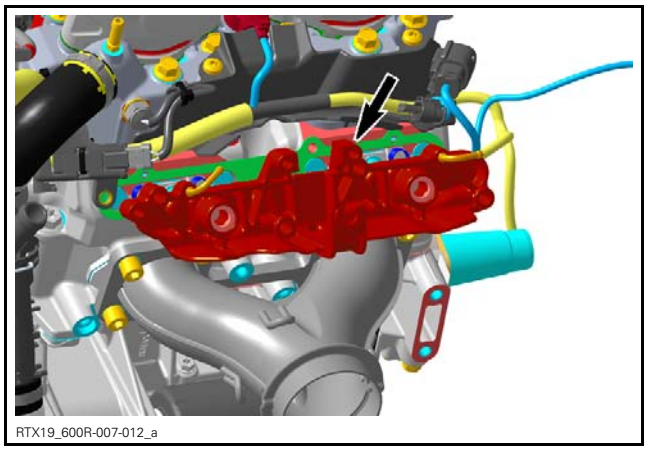
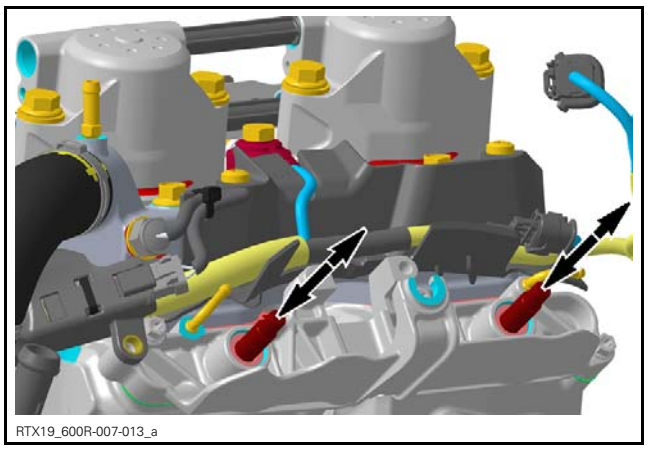
RECESS FOR RAVE SPRINGS


RTX19_600R-007-012_a

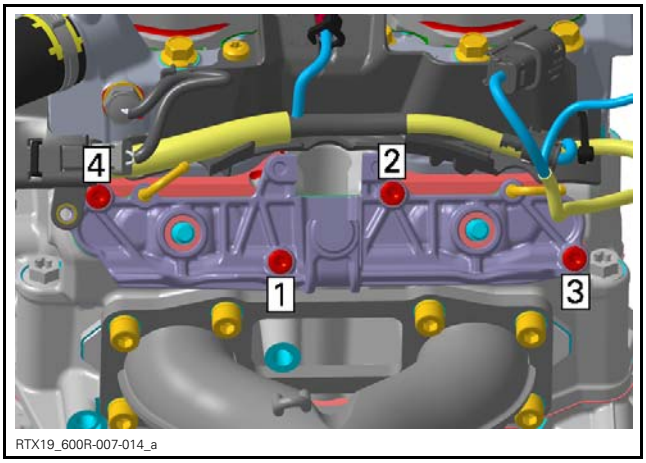
12. Remove protector sleeves.
13. Install and **hand tighten** screws.

Push and pull main valve stems to make sure they move freely.


RTX19_600R-007-013_a

14. 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 N•m ± 0.7 N•m (89 lbf•**in** ± 6 lbf•**in**)

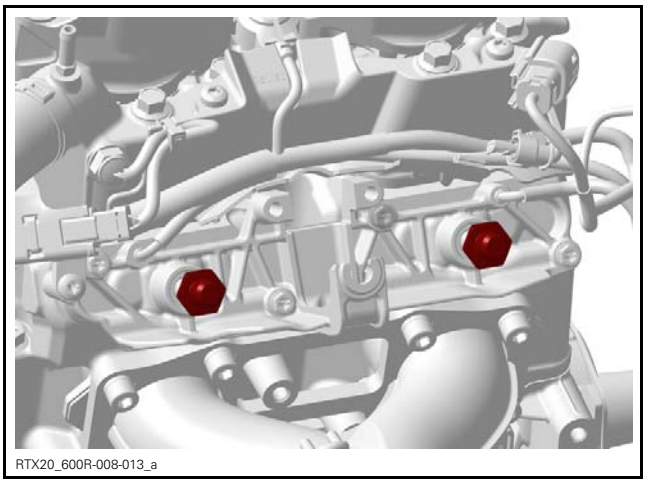


RTX19_600R-007-014_a

TIGHTENING SEQUENCE

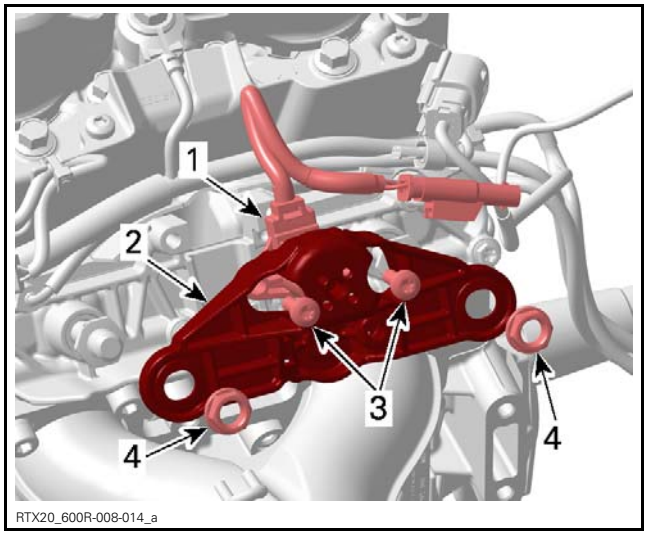
15. Repeat the process until a free movement is obtained.
16. Install lubrication hoses.
17. Tighten collar nuts to specification.

TIGHTENING TORQUE	
Collar nuts	4 N•m ± 0.3 N•m (35 lbf•**in** ± 3 lbf•**in**)


RTX20_600R-008-013_a

18. Position RAVE valves position sensor with link bar on RAVE valve housing.
19. 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.

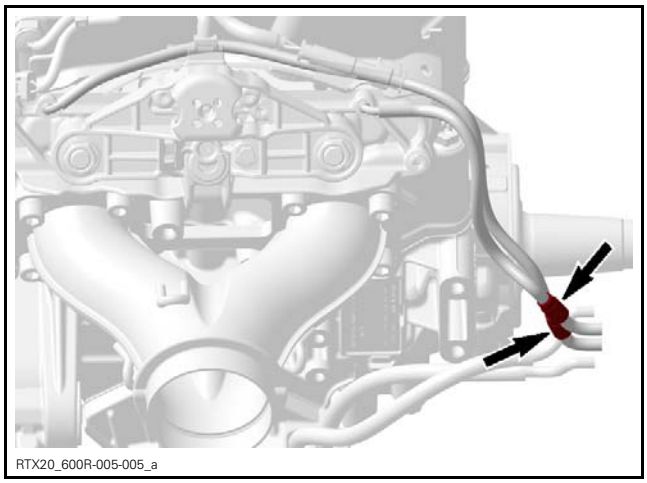


RTX20_600R-008-014_a

1. *RAVE valves position sensor*
2. *Link bar*
3. *Position sensor retaining screws*
4. *Link bar retaining nuts*

20. Connect the RAVE valves position sensor.
21. Install RAVE cable. Refer to *INSTALLING THE RAVE CABLE* in this subsection
22. Bleed oil lines. Refer to *OIL INJECTION PUMP* in the *LUBRICATION SYSTEM* subsection.

CHECK VALVES


RTX20_600R-005-005_a

For testing and replacement refer to the *LUBRICATION SYSTEM* subsection.

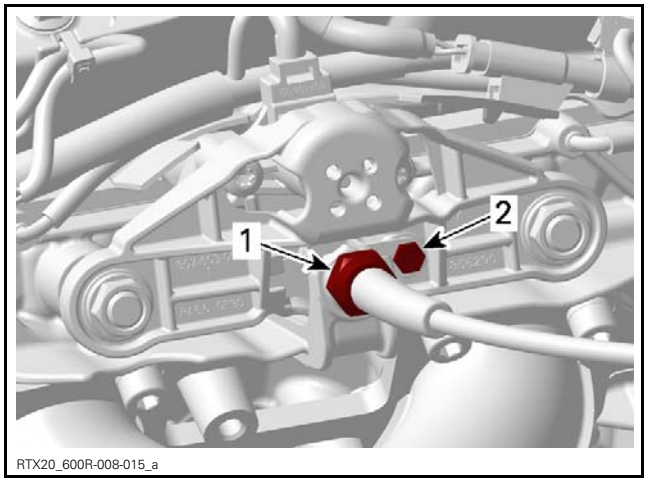
RAVE CABLE

Removing the Rave Cable

NOTICE To avoid twisting the RAVE cable, start by removing it from the link bar.

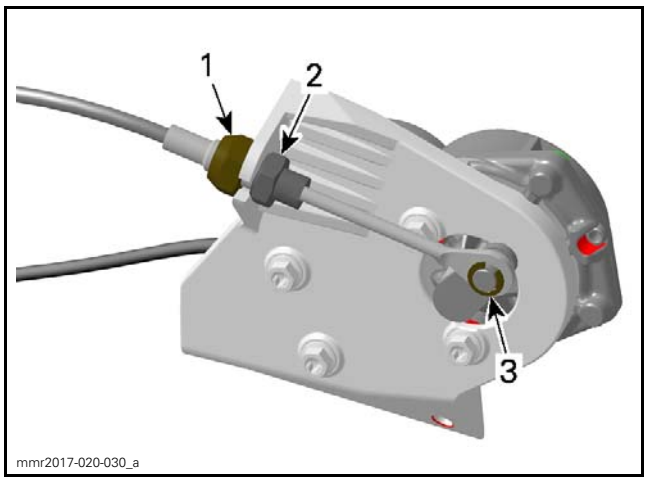
1. Push RAVE valves to closed position.

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.

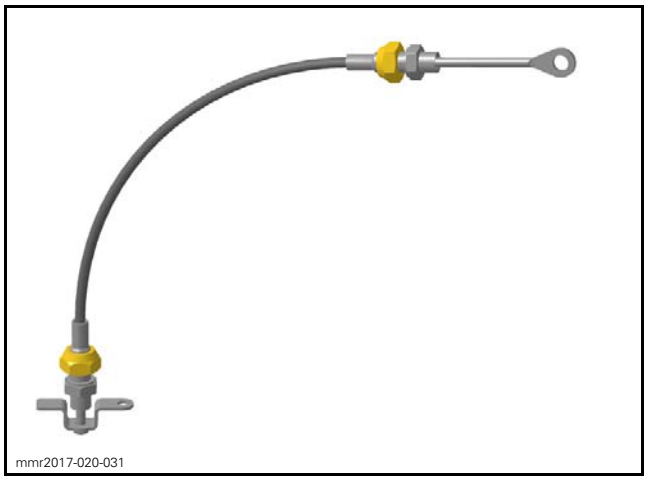


1. Rave cable lock nut
2. Counter nut
3. Snap ring

7. Remove RAVE cable.

Inspecting the RAVE Cable

Check RAVE cable and retaining plate for wear or any other damage.



Check if cable moves freely.

If not, lubricate both ends of the RAVE cable sleeve and check if the RAVE cable is sliding without any resistance. Replace if necessary.

SERVICE PRODUCT
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 N•m ± 2 N•m (15 lbf•ft ± 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 N•m ± 2 N•m (15 lbf•ft ± 1 lbf•ft)

7. Tighten retaining plate screw.

TIGHTENING TORQUE	
Retaining plate screw	5 N•m ± 0.6 N•m (44 lbf•**in** ± 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.

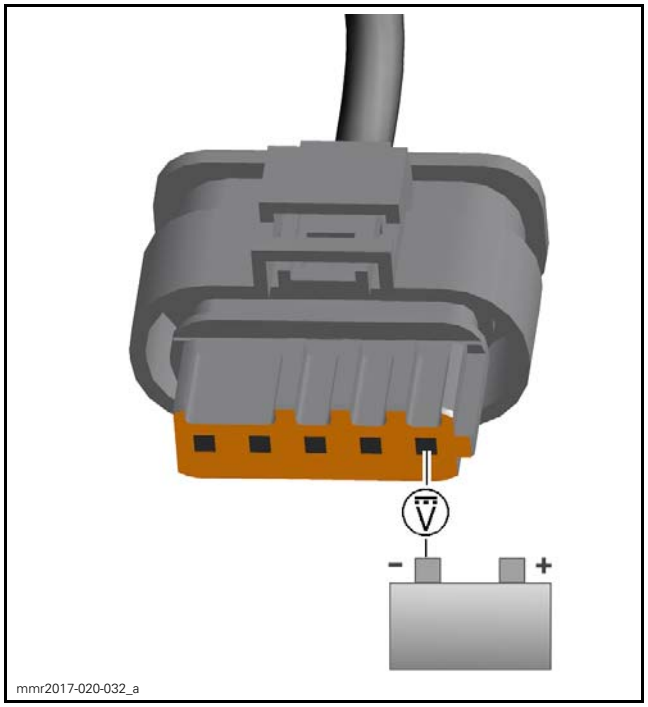
Testing the Servomotor

As a first troubleshooting step, always connect vehicle to the BRP diagnostic software (BUDS2) to check for applicable fault codes. Refer to *COMMUNICATION TOOLS AND B.U.D.S.* 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.

SENSOR INPUT VOLTAGE		
Servomotor connector (wiring harness side)	Battery ground	MEASUREMENT
Pin 1		5 ± 0.25 Vdc

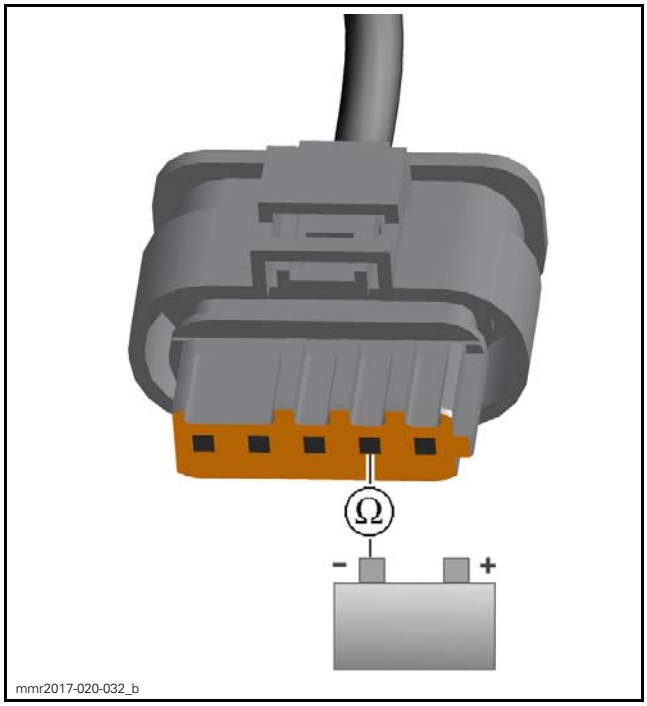


If voltage is exceeding the range check ECM power supply (Fuses F1 and F3) and servomotor wiring.

Testing the Sensor Ground

1. Disconnect the servomotor connector.
2. Set multimeter to Ω and probe terminals as per following table.

SENSOR GROUND		
Servomotor connector (wiring harness side)	Battery ground	MEASUREMENT
Pin 2		Close to 0 Ω



If resistance is incorrect check ECM grounding and servomotor wiring.

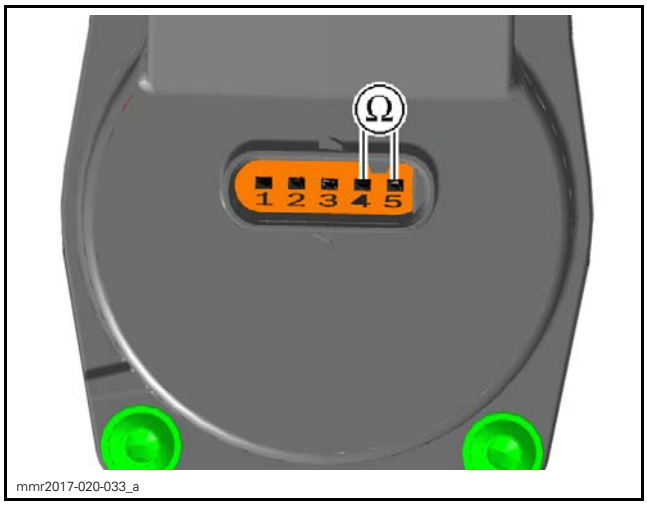
Testing the Servomotor Wiring

1. Disconnect ECM connector.
2. Connect ECM connector to the ECM ADAPTER TOOL (P/N 529 036 166).
3. Disconnect the servomotor connector.
4. Set multimeter to Ω and probe terminals as per following table.

ECM ADAPTER	SERVOMOTOR CONNECTOR (WIRING HARNESS SIDE)	RESISTANCE
E4	1	Close to 0 Ω
F4	2	
D4	3	
H4	4	
G4	4	
J4	5	
K4	5	

Testing the Servomotor Resistance

1. Disconnect the servomotor connector.
2. Set multimeter to Ω and probe the servomotor terminals as per following table.



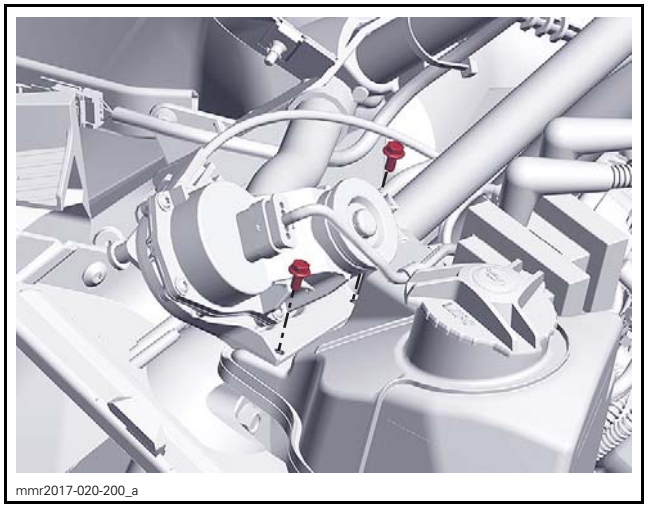
SERVOMOTOR TERMINALS

SERVOMOTOR RESISTANCE		
PIN		RESISTANCE @ 20°C (68°F)
4	5	Close to 0 Ω

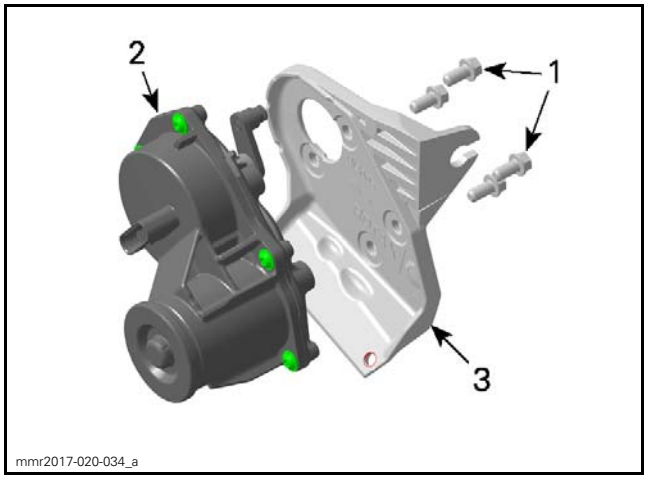
Removing the Servomotor

Remove RAVE cable. Refer to *REMOVING THE RAVE CABLE* in this subsection.

Remove servomotor from the oil tank.



Separate servomotor from its bracket.



1. *Retaining screws*
2. *Servomotor*
3. *Servomotor bracket*

Inspecting the Servomotor

Check ease of movement of the servomotor lever.

Check mechanical end stop of servomotor lever.

If necessary replace servomotor.

Installing the Servomotor

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

TIGHTENING TORQUE	
Bracket retaining screws	11 N•m ± 0.8 N•m (97 lbf•**in** ± 7 lbf•**in**) + LOCTITE 243 (BLUE) (P/N 293 800 060)
Servomotor retaining screws	4 N•m ± 1 N•m (35 lbf•**in** ± 9 lbf•**in**)

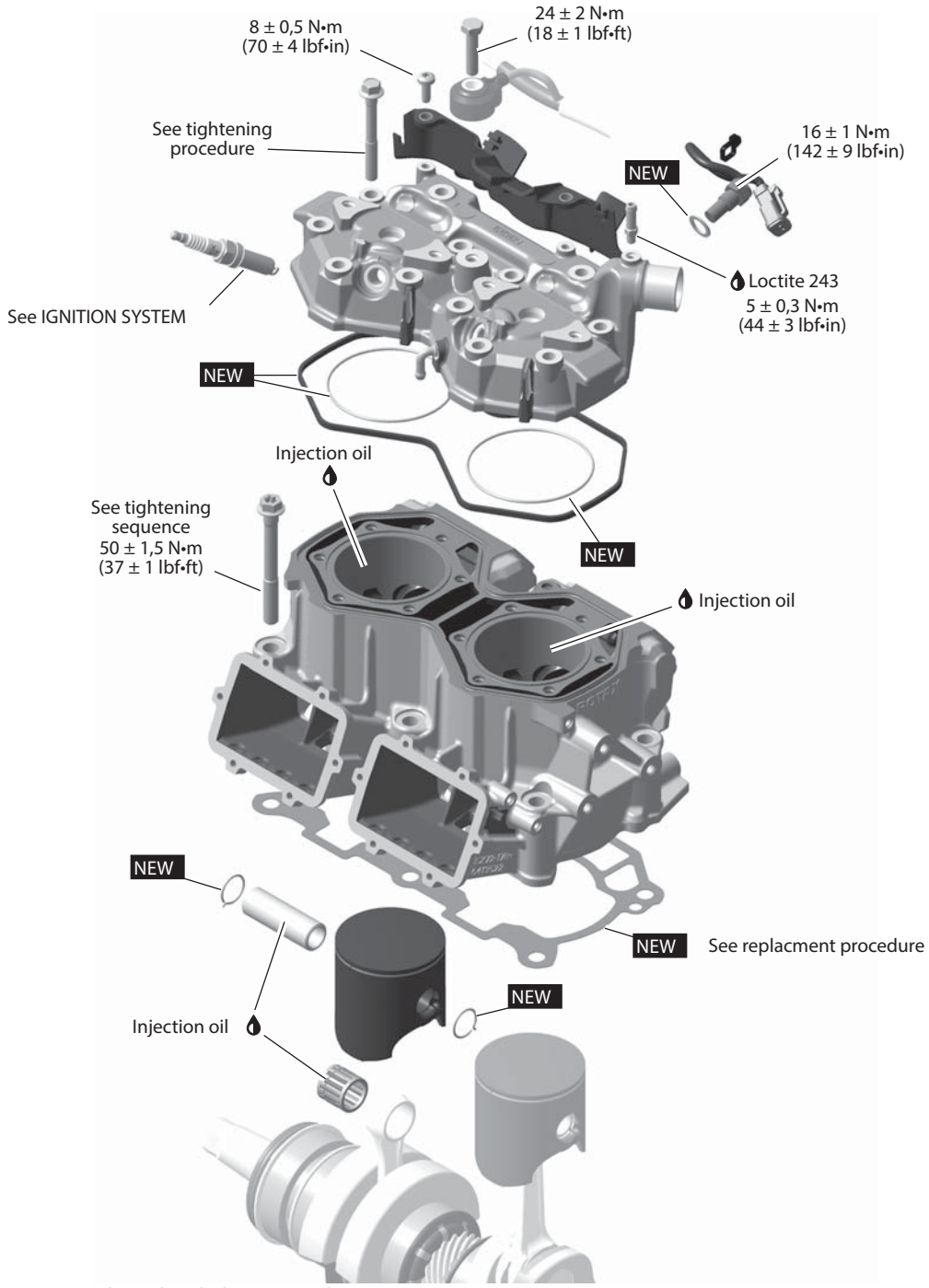
TOP END (600R E-TEC)

SERVICE TOOLS

Description	Part Number	Page
PISTON CIRCLIP INSTALLER	529 035 686	118
PISTON PROJECTION	529 036 215	114
TDC DIAL INDICATOR	295 000 143	114

SERVICE PRODUCTS

Description	Part Number	Page
LOCTITE CHISEL (GASKET REMOVER)	413 708 500	109, 112



NEW = Component must be replaced when removed.

RTX21_E-TEC-001-201

GENERAL

Before completely disassembling the engine, check airtightness. Refer to *ENGINE LEAK TEST* subsection.

During assembly or 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.

Check if engine compression is according to specification.

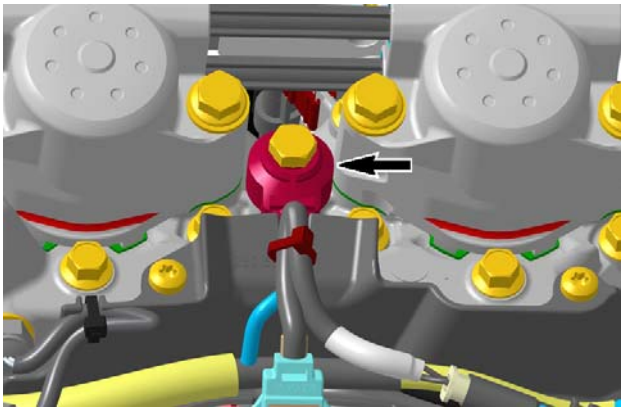
ENGINE COMPRESSION SPECIFICATION	
Service limit	7.5 bar (110 PSI)

PROCEDURES

KNOCK SENSOR (KS)

Knock Sensor Location

The knock sensor is located on top of the cylinder head, between the fuel injectors.



RTX19_600R-010-0023_a

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

Disconnect the ECM-A connector from the ECM and install it on the ECM adapter tool.

Using the multimeter, measure the knock sensor circuit resistance as per following table.

KS RESISTANCE TEST		
ECM ADAPTRER 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.

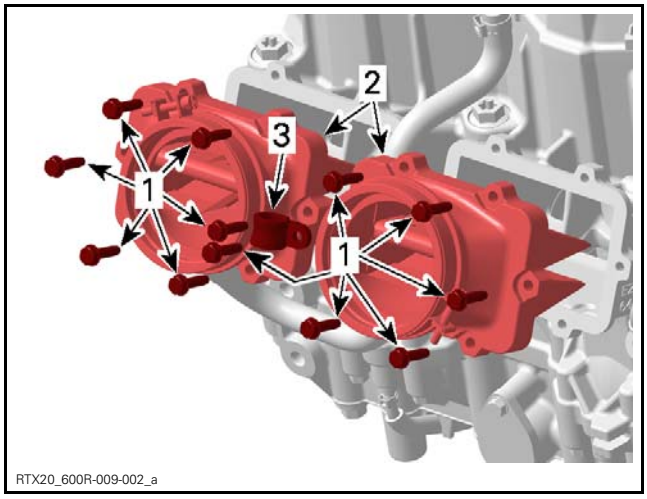
Replacing the KS

Replace engine wiring harness. Refer to *ENGINE HARNESS* subsection.

REED VALVES

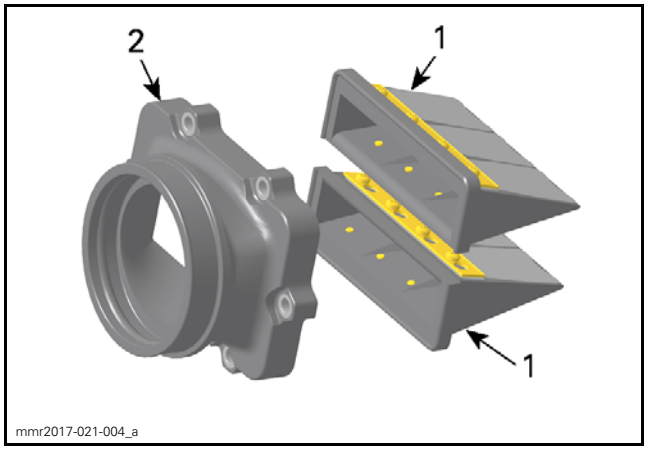
Removing the Reed Valve

1. Remove throttle body, refer to *E-TEC DIRECT FUEL INJECTION* subsection.
2. Remove the following parts:



1. Retaining screws (12x)
2. Intake adapters with reed valves
3. Clamp

3. Remove reed valves from intake adapter.



1. Reed valves
2. Intake adapter

Inspecting the Reed Valve

Check reed valve for proper tightness.

Check blades for breakouts at their end tips. In case of breakouts replace it.

There must not be any free play between blade and valve body when exerting a finger pressure on blade at blade stopper location.

In case of a free play, turn blade upside down and recheck.

TIGHTENING TORQUE	
Reed valve blade screws	1.5 N•m ± 0.3 N•m (13 lbf•**in** ± 3 lbf•**in**)

If there is still a free play, replace blade and/or reed valve assembly.

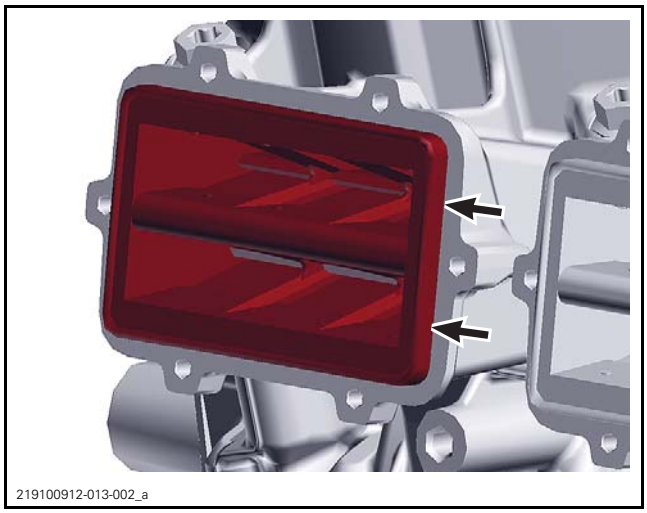
Installing the Reed Valve

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

Blades have a curved shape. Install with their curve facing reed block.

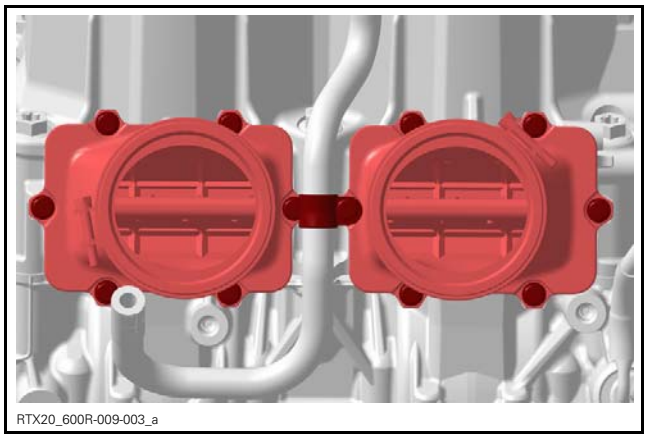
TIGHTENING TORQUE	
Reed valve blade screws	1.5 N•m ± 0.3 N•m (13 lbf•**in** ± 3 lbf•**in**)

Ensure to position reed valves so that they rest flat in intake opening.



219100912-013-002_a

Ensure to position intake adapter as shown.



RTX20_600R-009-003_a

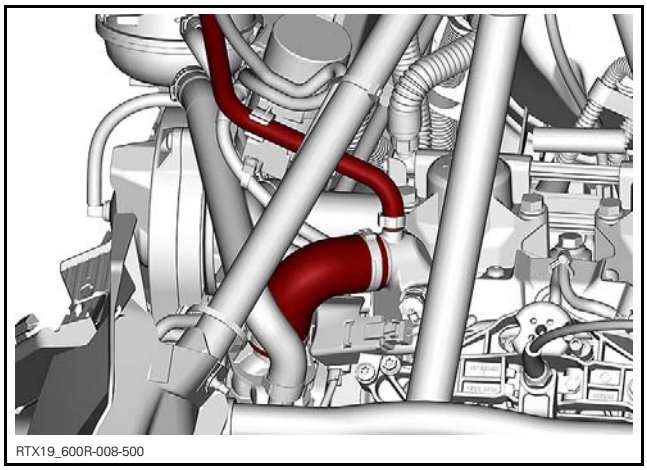
Tighten intake adapter retaining screws to specification.

TIGHTENING TORQUE	
Intake adapter retaining screws	6 N•m ± 0.4 N•m (53 lbf•**in** ± 4 lbf•**in**)

CYLINDER HEAD

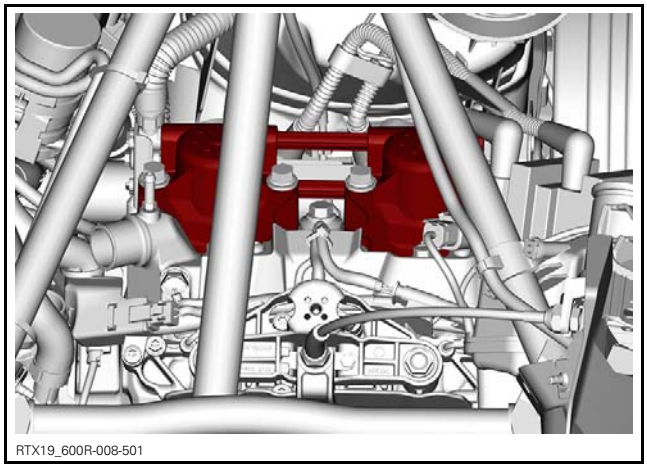
Removing the Cylinder Head

1. Drain coolant. Refer to *COOLING SYSTEM* subsection.
2. Disconnect the coolant hose and the bleeding hose from the cylinder head.



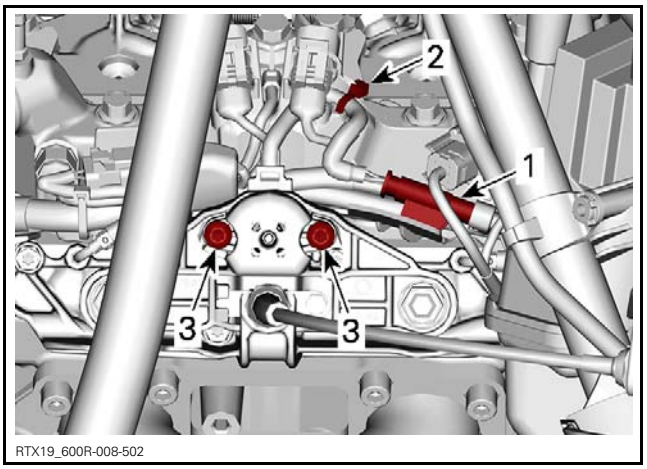
RTX19_600R-008-500

3. Remove the E-TEC direct fuel injectors from the cylinder head. Refer to *E-TEC DIRECT FUEL INJECTION* subsection.



RTX19_600R-008-501

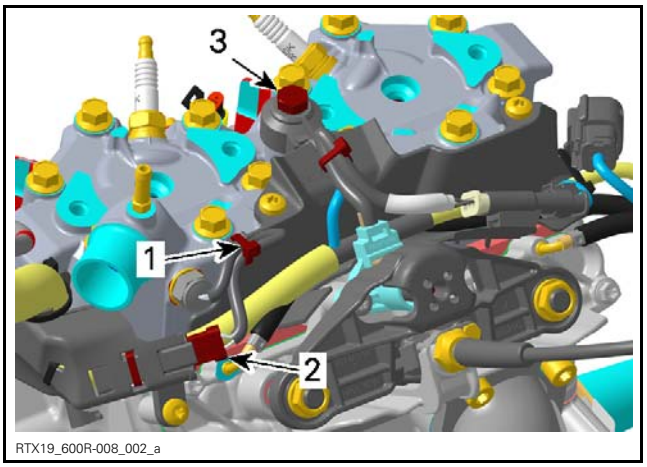
4. Disconnect the RAVE valve connector.
5. Detach the RAVE valve connector housing from the harness support.
6. Cut the locking tie securing the RAVE valve sensor harness to the knock sensor harness.
7. Loosen RAVE position sensor screws.



RTX19_600R-008-502

1. RAVE valve connector housing
2. Locking tie to be cut
3. RAVE position sensor screws

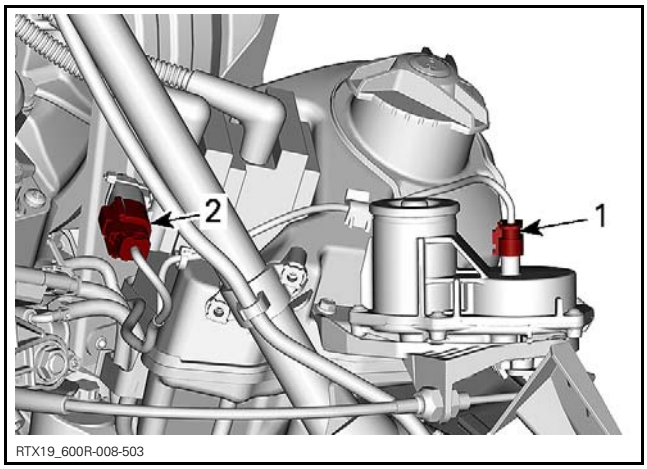
8. Cut the locking tie securing the CTS harness.
9. Disconnect the CTS connector.
10. Remove knock sensor retaining screw and move knock sensor aside.



RTX19_600R-008_002_a

TYPICAL
1. Locking tie securing the CTS harness
2. CTS connector
3. Knock sensor screw

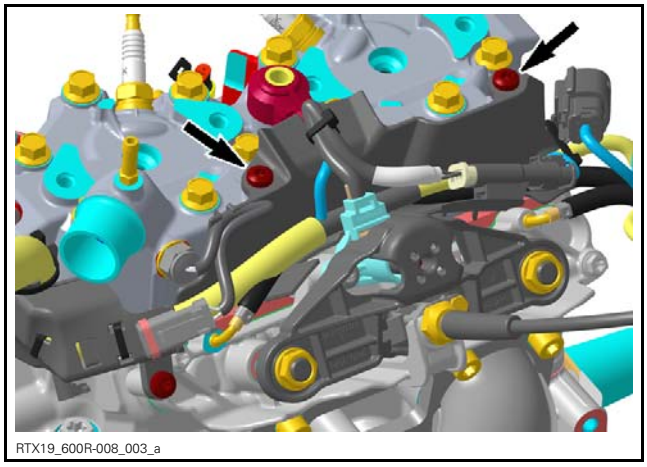
11. Disconnect the following connectors.



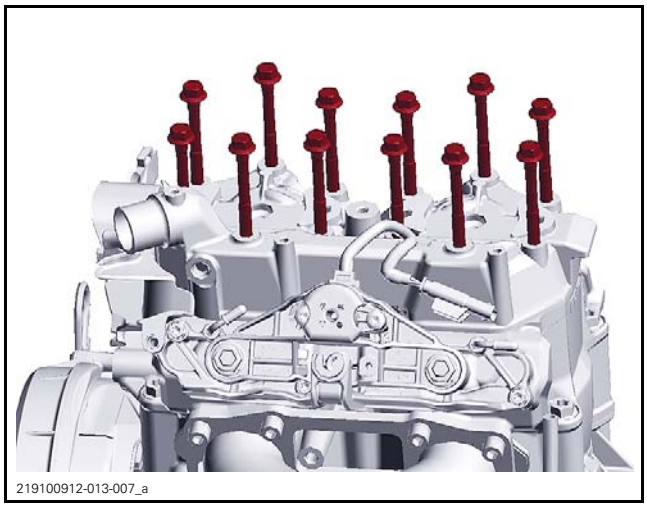
RTX19_600R-008-503

1. Ignition coil connector
2. RAVE servomotor connector

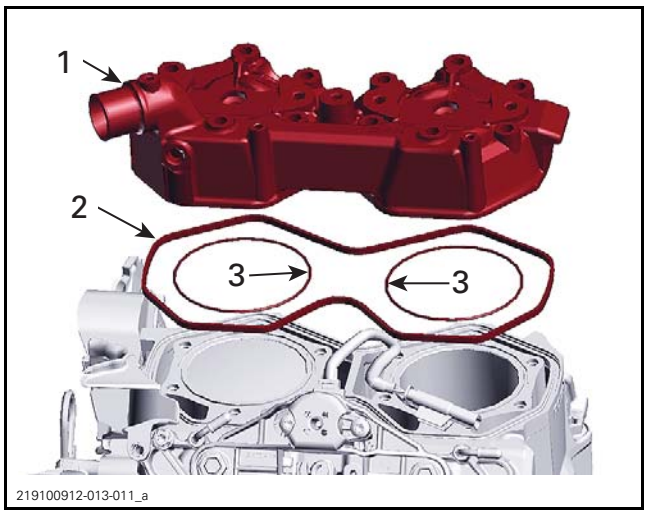
12. Remove screws securing the front harness support.


RTX19_600R-008_003_a

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.
    16.1 Remove cylinder head screws.



16.2 Remove the cylinder head and discard the cylinder rubber ring and O-rings.



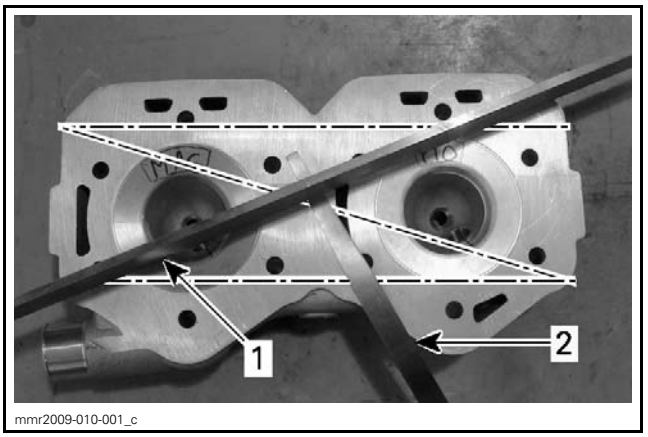
1. Cylinder head
2. Cylinder rubber ring
3. O-rings

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

Scrape off any carbon deposits from cylinder head.

SERVICE PRODUCT
LOCTITE CHISEL (GASKET REMOVER) (P/N 413 708 500)

Installing the Cylinder Head

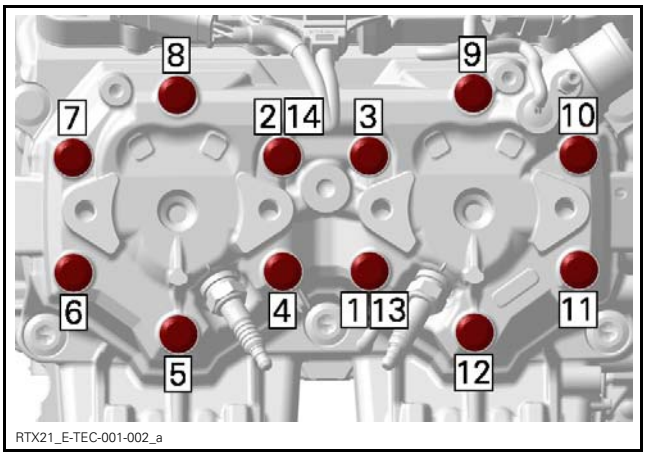
The installation is the reverse of removal procedure. However, pay attention to the following.

Install **NEW** rubber ring and round O-rings on cylinder block.

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 N•m ± 0.2 N•m (62 lbf•**in** ± 2 lbf•**in**)

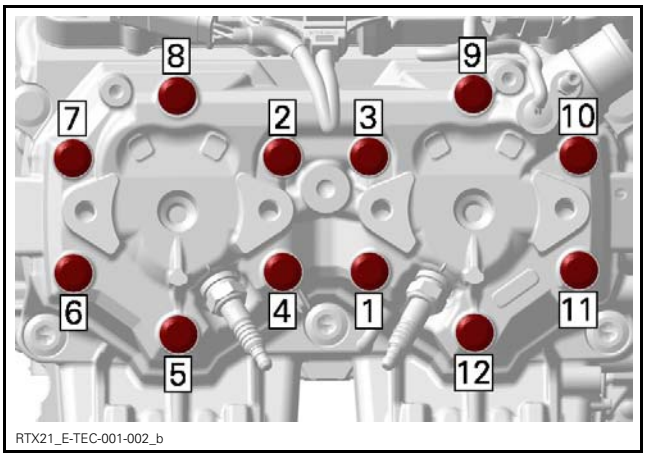


RTX21_E-TEC-001-002_a

TYPICAL

Use a torque angle gauge to carry out Step B.

TORQUE ANGLE		
Cylinder head screws	Step B	Additional 60°



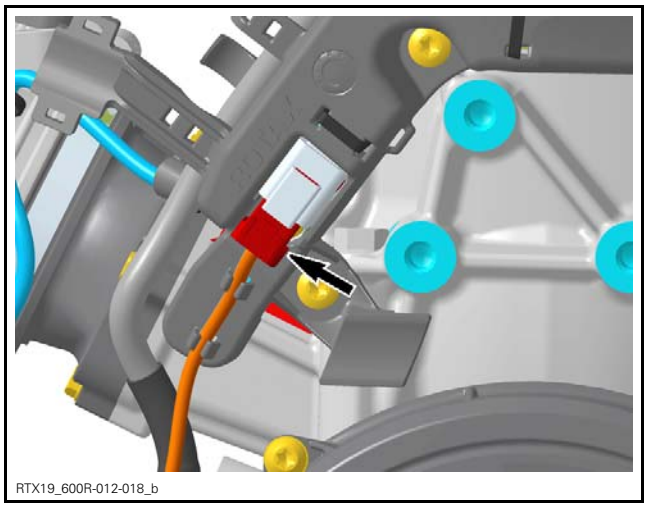
RTX21_E-TEC-001-002_b

TYPICAL

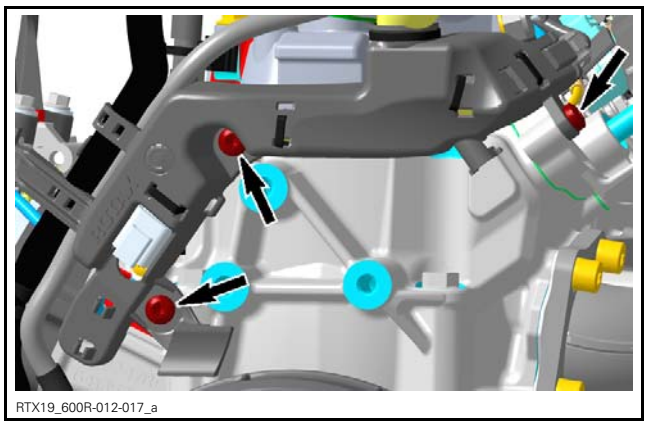
CYLINDER BLOCK

Removing the Cylinder Block

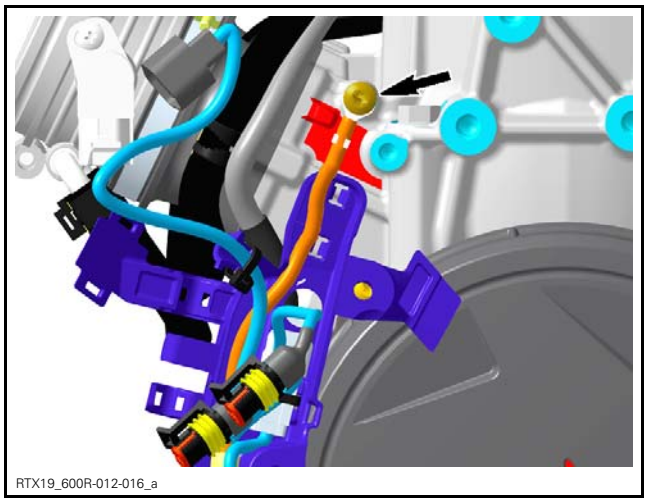
1. Drain coolant. Refer to *COOLING SYSTEM* subsection.
2. Remove hose for throttle body heating. Refer to *COOLING SYSTEM* subsection.
3. Remove *CYLINDER HEAD*, see procedure in this subsection.
4. Remove the throttle body. Refer to *E-TEC DIRECT FUEL INJECTION* subsection.
5. Detach the RAVE cable from the 3D RAVE link bar. Refer to *RAVE* subsection.
6. Disconnect CPS.


RTX19_600R-012-018_b

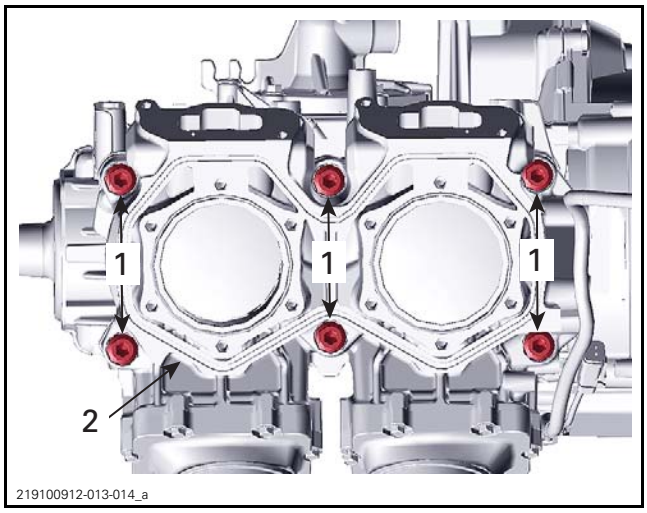
7. Remove screws from harness support.


RTX19_600R-012-017_a

8. Put wiring harness with support aside and remove screw from ground cable.


RTX19_600R-012-016_a

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

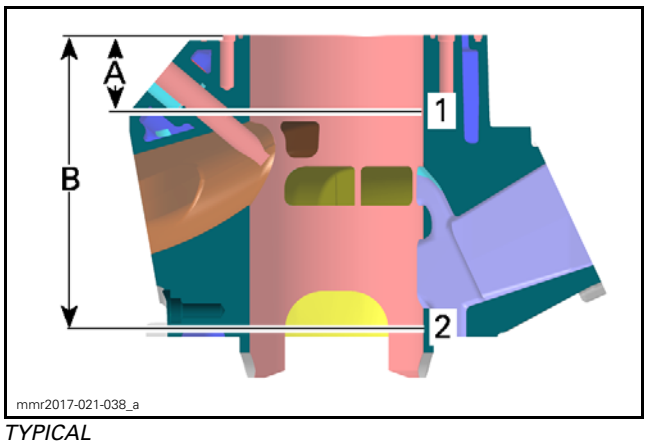
Remove RAVE valves, refer to *RAVE* subsection.

Remove reed valves, refer to *REMOVING THE REED VALVES* in this subsection.

Check cylinder bores for cracks and scoring on the top and bottom of cylinders. Replace if necessary.

Cylinder Taper

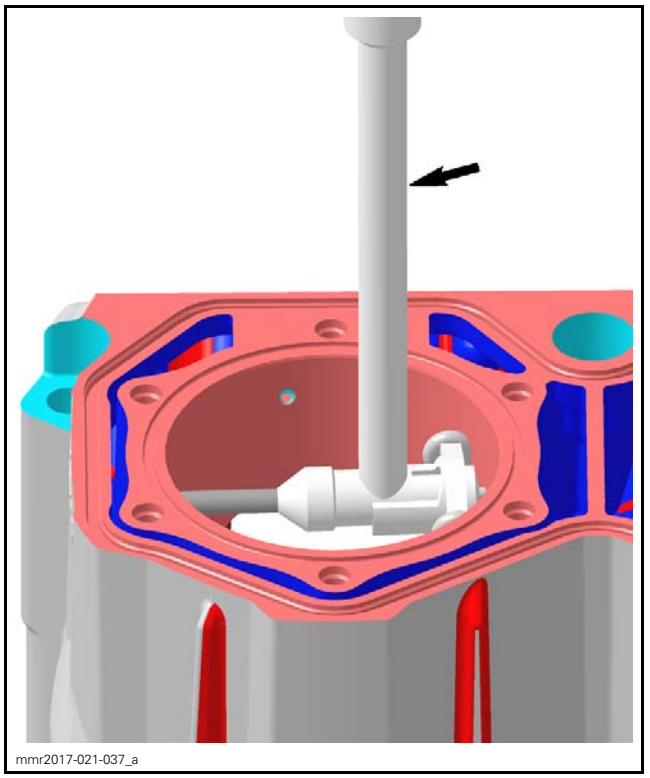
1. Measure cylinder diameter at the following positions:
   - Above exhaust port
   - Below intake port.



TYPICAL

CYLINDER TAPER MEASUREMENTS		
POSITION	MEASUREMENT	FROM TOP OF CYLINDER BLOCK
1	A	23 mm (.91 in)
2	B	130 mm (5.12 in)

REQUIRED TOOL
Cylinder bore gauge



TYPICAL

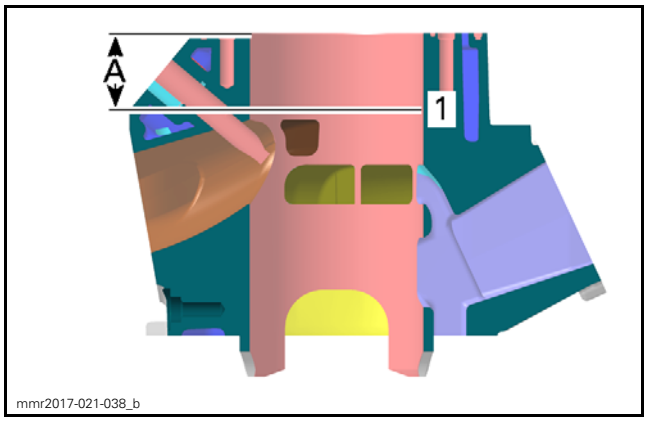
2. Compare cylinder diameters.
3. If the difference exceeds the specified dimension, replace the cylinder block.

CYLINDER BORE TAPER	
Service limit	0.10 mm (.0039 in)

Cylinder out of Round

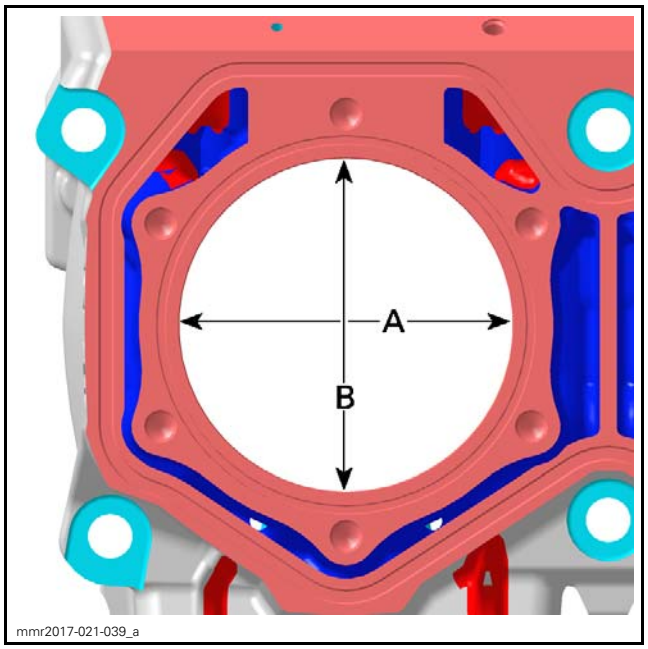
1. Check if the cylinder out of round is more than the specified dimension.

Measure above exhaust port:
- in piston pin axis
- perpendicular to piston pin axis.



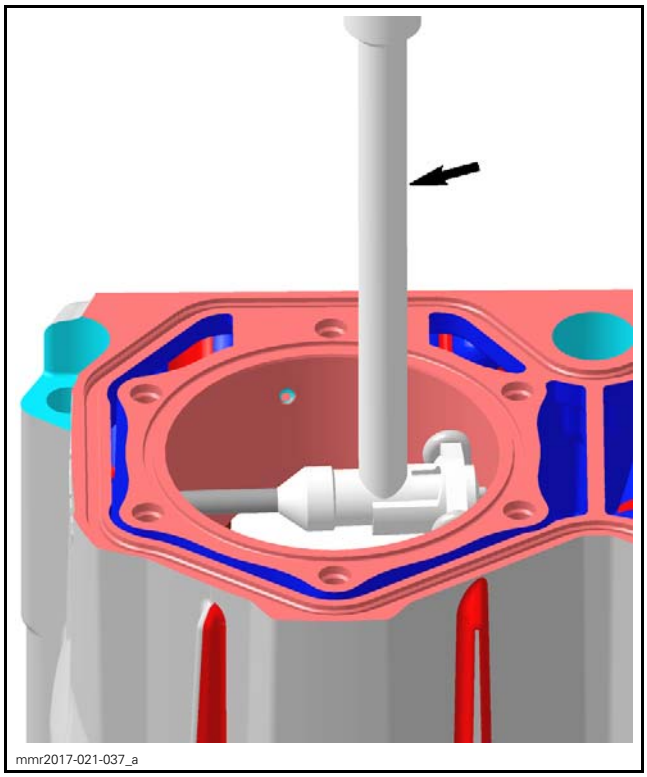
TYPICAL

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

REQUIRED TOOL
Cylinder bore gauge



TYPICAL

2. If the measurement exceeds the specifications, replace the cylinder block.

CYLINDER BORE OUT OF ROUND	
Service limit	0.02 mm (.0008 in)

Cleaning the Cylinder Block

Scrape off any carbon deposits from exhaust ports.

Carefully clean cylinder block screws, specifically under screw head.

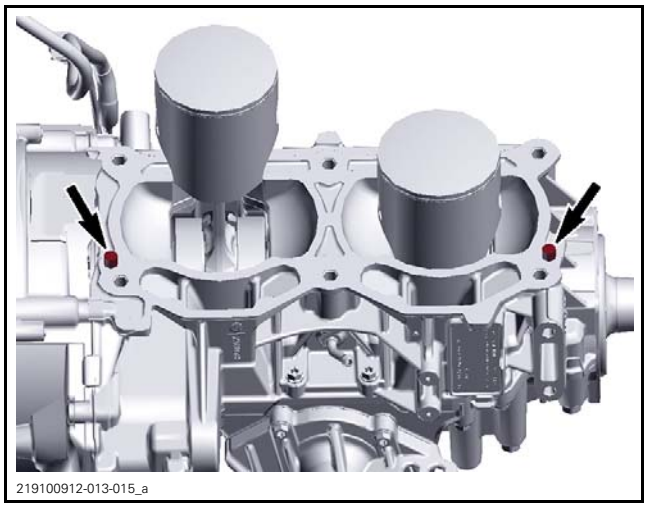
SERVICE PRODUCT
LOCTITE CHISEL (GASKET REMOVER) (P/N 413 708 500)

Installing the Cylinder Block

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

Ensure top surface of crankcase is clean.

Check if dowel pins are in crankcase holes.



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.

Lubricate cylinder bores.

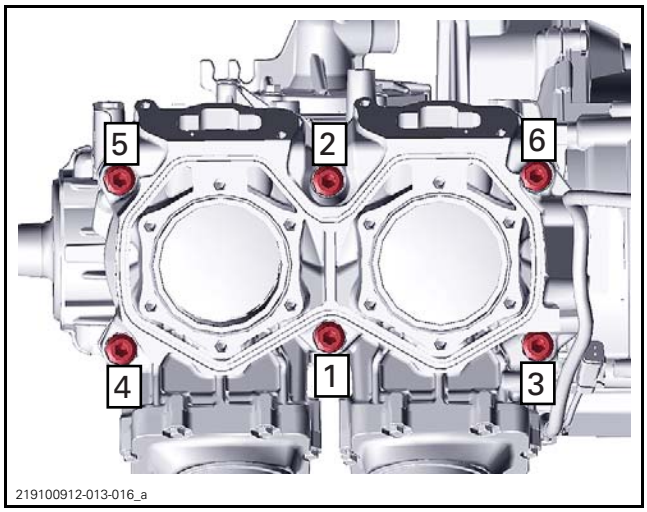
SERVICE PRODUCT
Injection oil

Carefully slide cylinder block down while squeezing piston rings to allow cylinder insertion.

Proceed one piston at a time, the help of an assistant may be required.

Tighten cylinder block screws to specification as per the following sequence.

TIGHTENING SEQUENCE	
Cylinder block screws	50 N•m ± 1.5 N•m (37 lbf•ft ± 1 lbf•ft)



TIGHTENING SEQUENCE

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.

Install the 3D RAVE valve. Refer to *INSTALLING THE 3D RAVE VALVE* in the *RAVE* subsection.

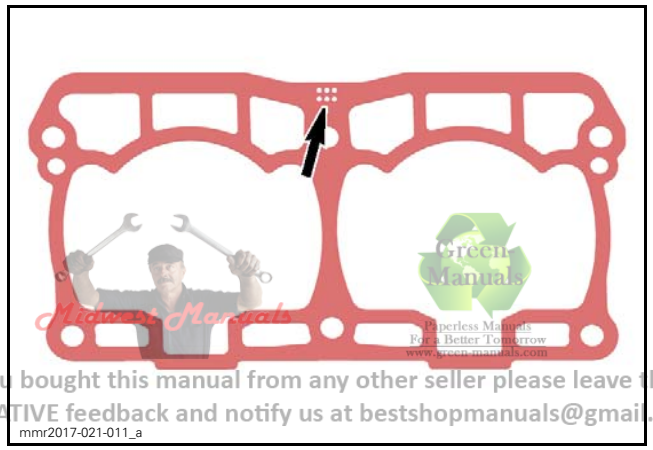
PISTON PROJECTION MEASUREMENT

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

If you bought this manual from any other seller please leave them NEGATIVE feedback and notify us at bestshopmanuals@gmail.com

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

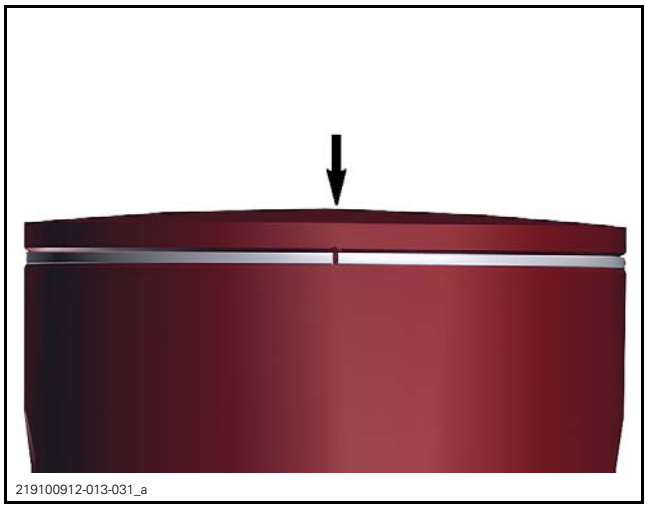
1. Bring PTO piston to TDC.

REQUIRED TOOL	
TDC DIAL INDICATOR (P/N 295 000 143)	

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.

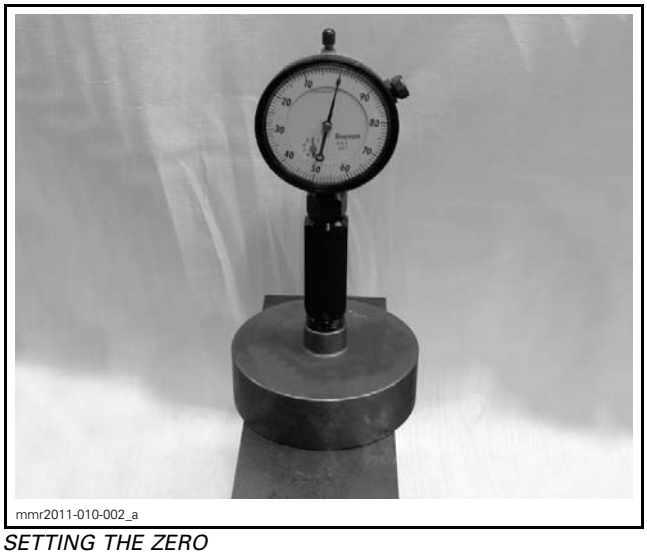


CONVEX SHAPE OF THE PISTON DOME

1. Place piston projection tool on a flat steel surface.

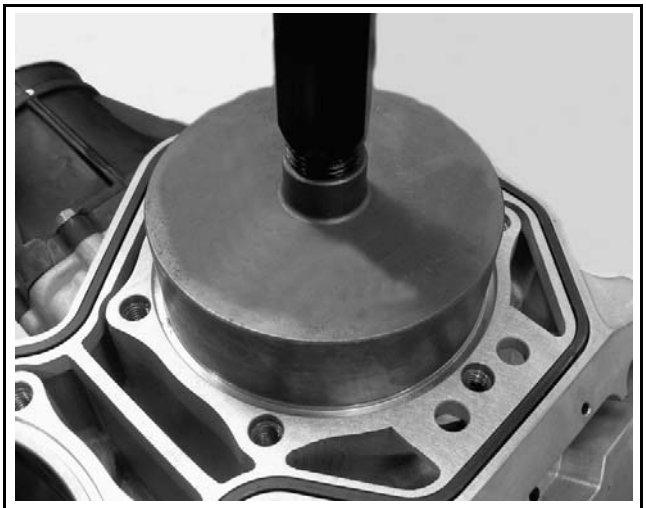
REQUIRED TOOL	
PISTON PROJECTION (P/N 529 036 215)	
TDC DIAL INDICATOR (P/N 295 000 143)	

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.


mmr2011-010-003

TYPICAL - TOOL PROPERLY CENTERED

5. Ensure that PTO piston is set to TDC.
6. Read dial indicator then note measurement.

mmr2011-010-004

TYPICAL

NOTE: Convert dial indicator measurement to millimeter.

PISTON PROJECTION MEASUREMENT
1.10 mm to 1.20 mm (.043 in 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.

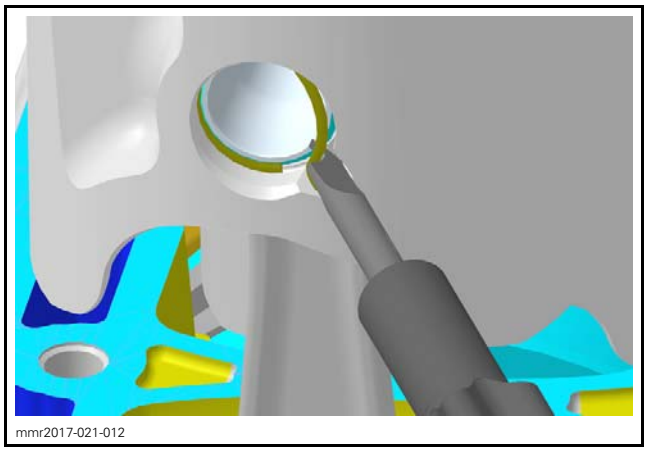
CYLINDER BLOCK BASE GASKET SELECTION GUIDELINE	
MEASURED PISTON PROJECTION	GASKET TO INSTALL
Below specification	Thinner
Above specification	Thicker

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.


mmr2017-021-012

TYPICAL

4. Push piston pin out of piston.
5. Remove piston.
6. Remove bearing.
7. Discard circlips.

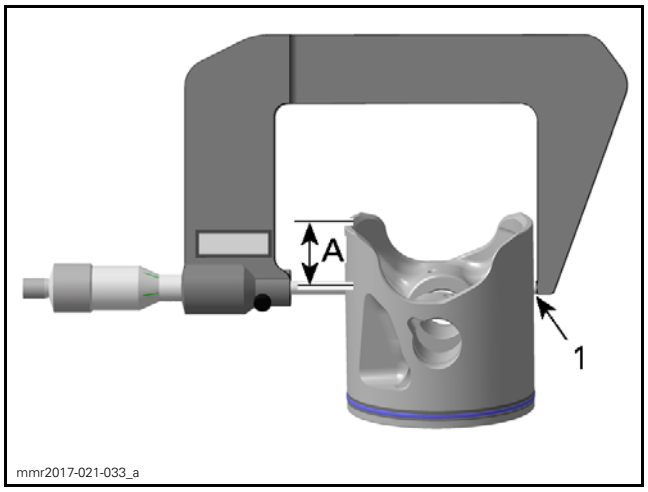
Inspecting the Piston

Inspect piston for scoring, cracking or other damage.

Cylinder/Piston Clearance

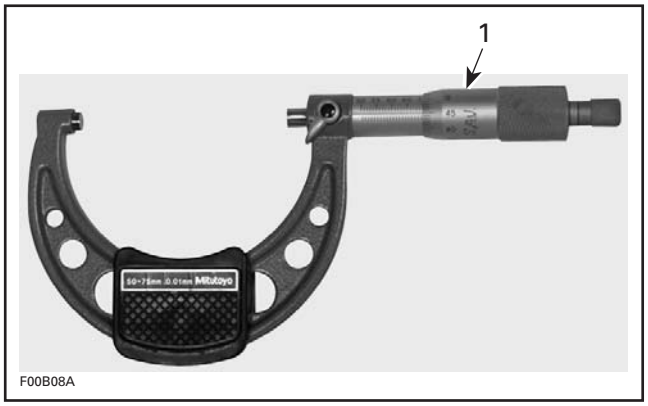
1. Measure piston diameter at "A" perpendicularly (90°) to piston pin.

REQUIRED TOOL
Micrometer



1. Measuring diameter perpendicularly (90°) to piston pin axis
A. 29 mm (1.142 in)

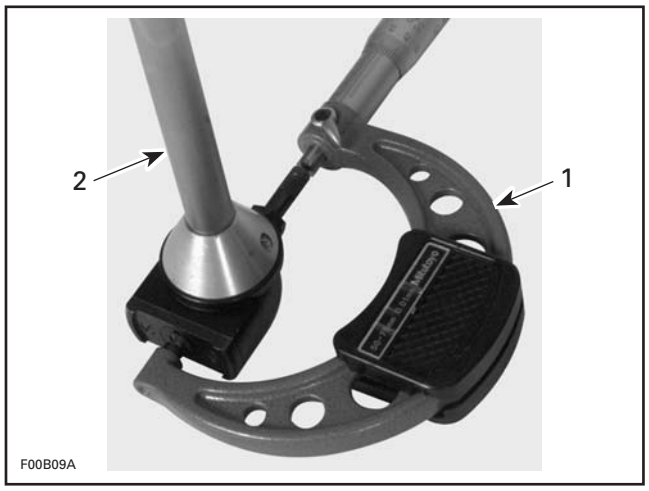
2. Adjust and **lock** a micrometer to the piston diameter.



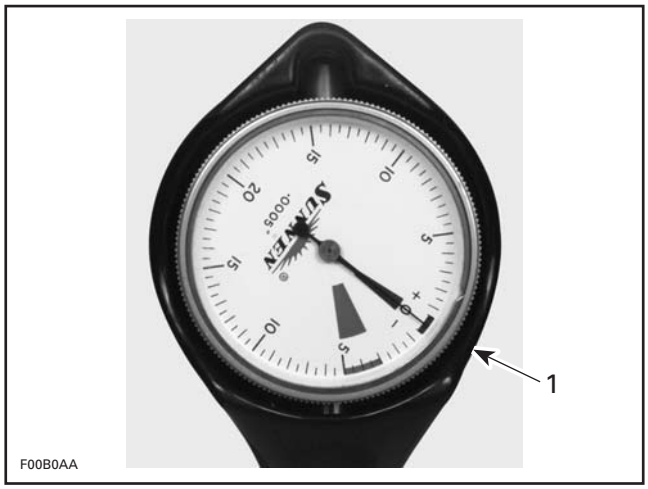
1. Micrometer set to the piston diameter

3. Adjust a cylinder bore gauge to the locked micrometer and set the indicator to 0.

REQUIRED TOOL
Cylinder bore gauge



1. Use the micrometer to set the cylinder bore gauge
2. Dial bore gauge

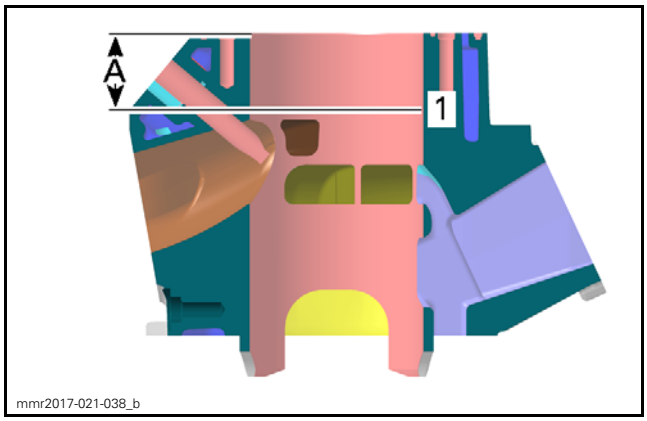


1. Indicator set to 0 (zero)

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.

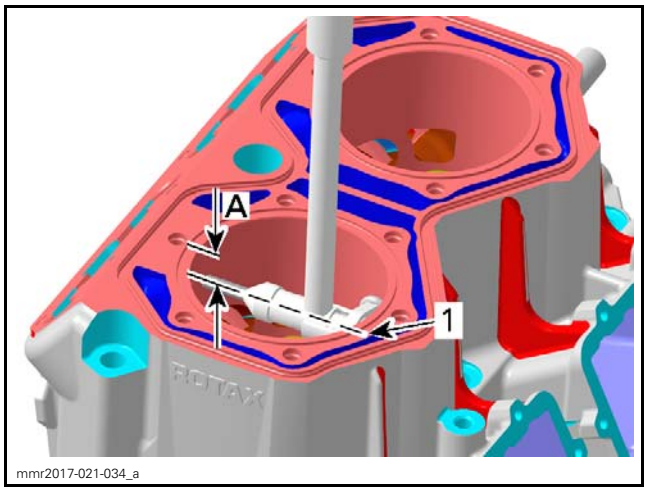
4. Position the dial bore gauge above the exhaust port.

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)

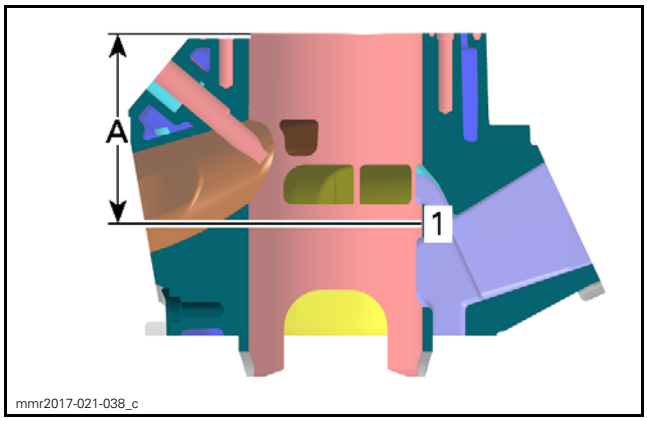
5. Read the measurement on the cylinder bore gauge. The result is the exact piston/cylinder wall clearance.

CYLINDER/PISTON CLEARANCE	
NEW	0.098 mm to 0.146 mm (.004 in 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.



TYPICAL

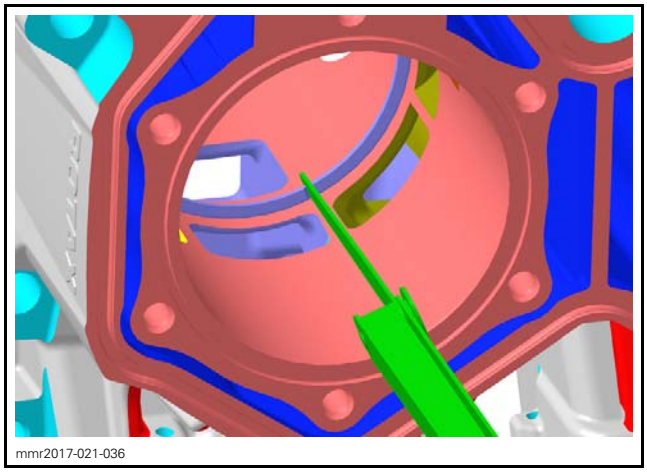
RING END GAP MEASUREMENT		
POSITION	MEASUREMENT	FROM TOP OF CYLINDER BLOCK
1	A	80 mm (3.15 in)

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.

REQUIRED TOOL
Feeler gauge

RING END GAP	
NEW	0.400 mm to 0.600 mm (.0157 in to .0236 in)
SERVICE LIMIT	0.800 mm (.0315 in)

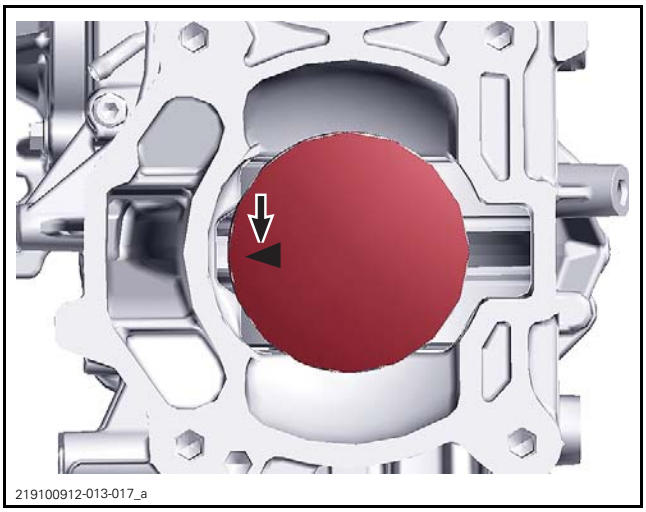


TYPICAL

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

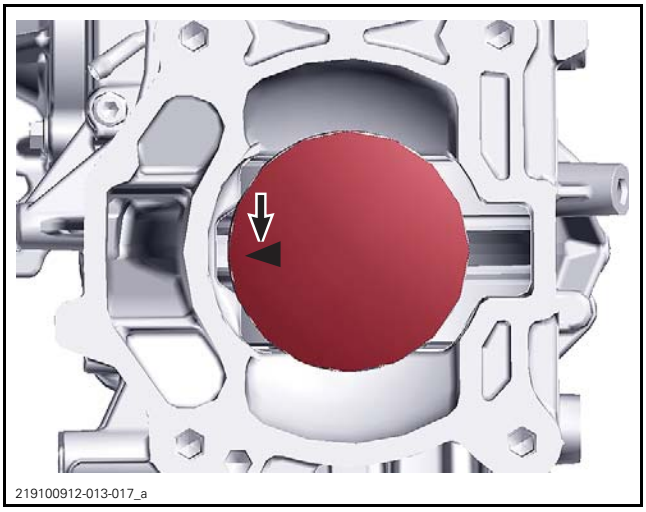
2. Clean the piston ring groove with a groove cleaner tool or with a piece of broken ring.

Installing the Piston

1. Lubricate needle bearing.

SERVICE PRODUCT
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.



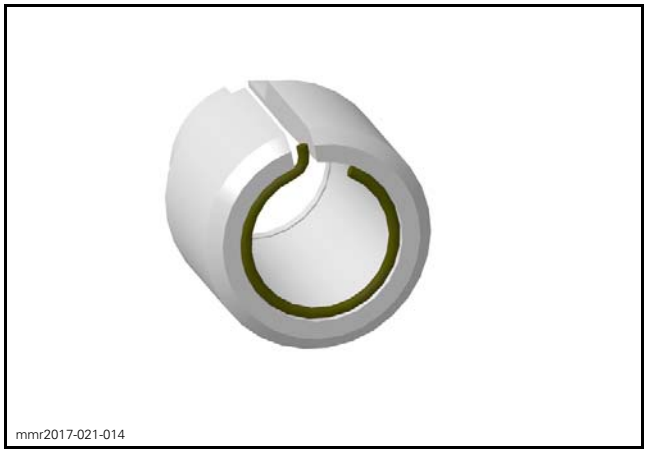
EXHAUST DIRECTION INDICATION

4. Install piston pin in piston.
5. Install NEW circlips.

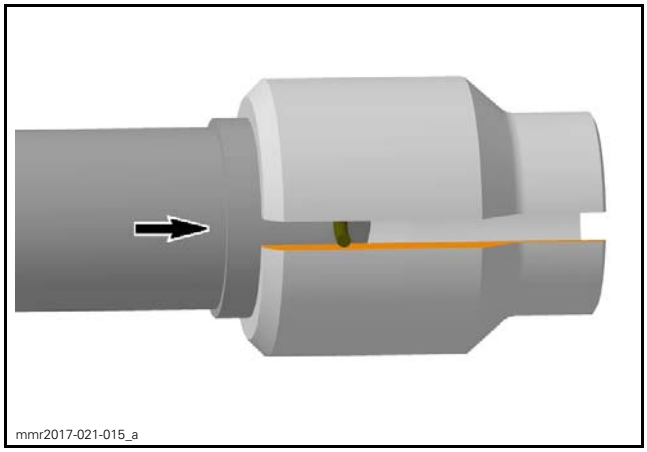
REQUIRED TOOL
PISTON CIRCLIP INSTALLER (P/N 529 035 686)

NOTICE Always install NEW mono-hook circlips. If circlip installation fails at the first attempt, always retry with a new one.

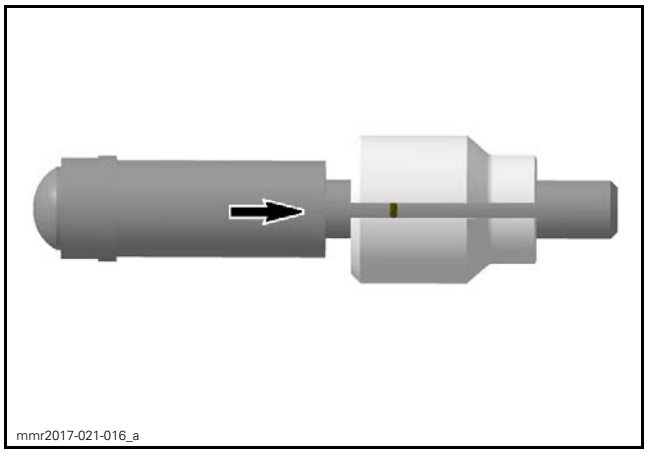
6. Use the following procedure to properly install circlip.
   6.1 Insert circlip into support so that, when installed in piston groove, the gap will be below the tab.

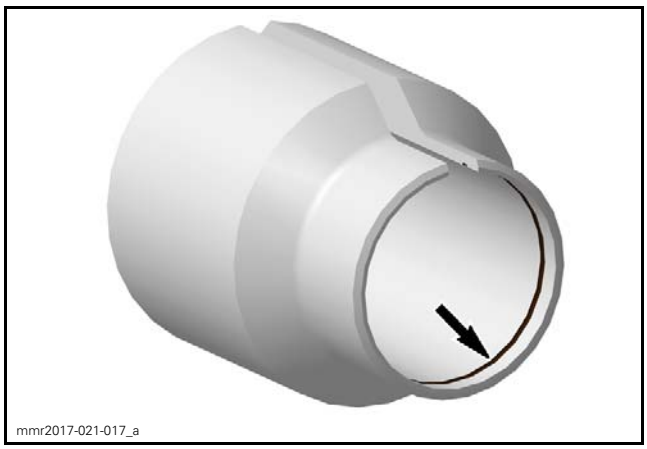


   6.2 With round end of pusher, position circlip perpendicularly to the support axis.

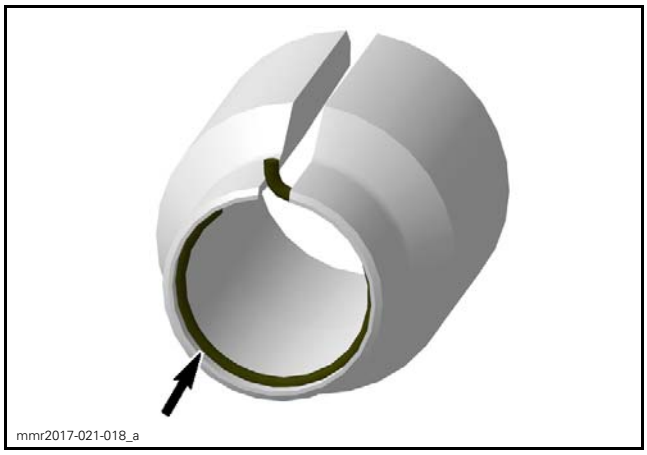


   6.3 With the other end of the pusher, push circlip into the support groove.

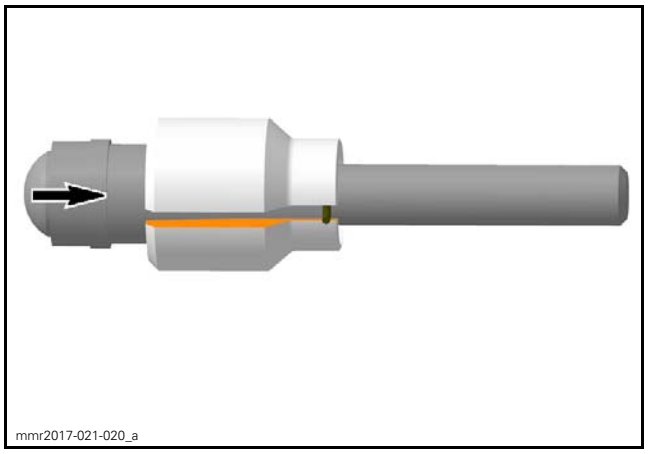




GROOVE

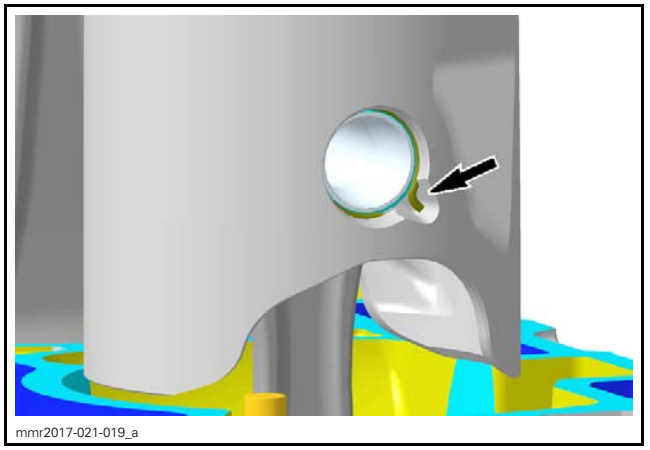


CIRCLIP READY TO BE INSTALLED ON PISTON



6.4 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.

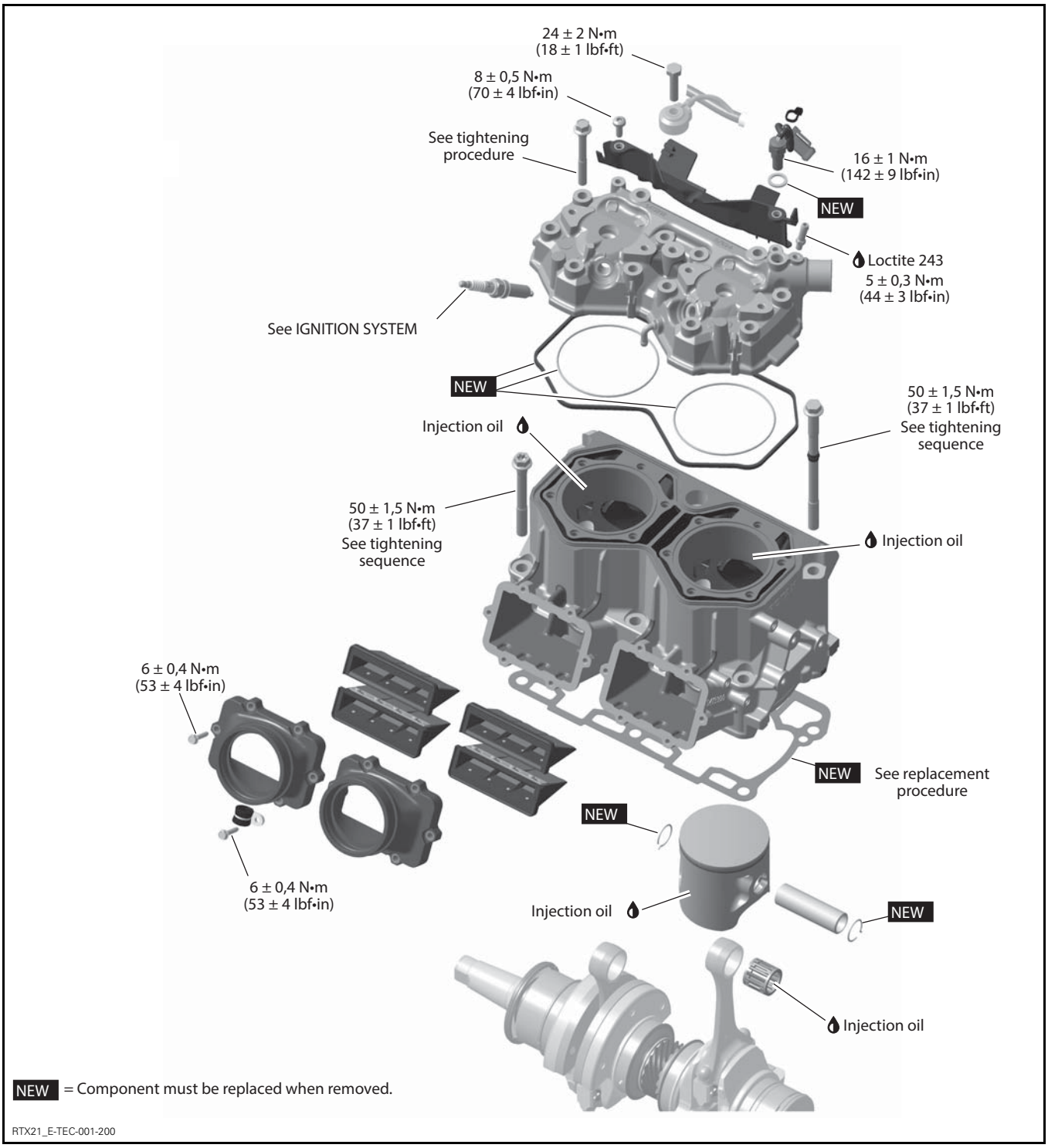
TOP END (850 E-TEC)

SERVICE TOOLS

Description	Part Number	Page
PISTON CIRCLIP INSTALLER 21MM	529 036 138	136
PISTON PROJECTION	529 036 215	132
TDC DIAL INDICATOR	295 000 143	132

SERVICE PRODUCTS

Description	Part Number	Page
LOCTITE CHISEL (GASKET REMOVER)	413 708 500	127, 130



RTX21_E-TEC-001-200

GENERAL

Before completely disassembling the engine, check airtightness. Refer to *ENGINE LEAK TEST* subsection.

During assembly or 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 BUDS2 software.

Go to:

– Settings page
– 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.

Check if engine compression is according to specification.

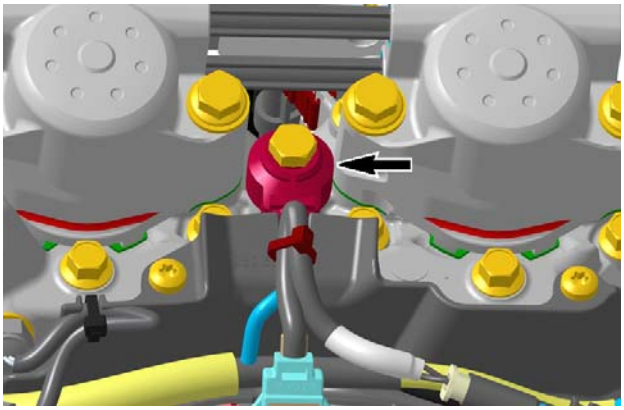
SERVICE LIMIT	
ENGINE COMPRESSION SPECIFICATION	7.5 bar (110 PSI)

PROCEDURES

KNOCK SENSOR (KS)

Knock Sensor Location

The knock sensor is located on top of the cylinder head, between the fuel injectors.



RTX19_600R-010-0023_a

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

Disconnect the ECM-A connector from the ECM and install it on the ECM adapter tool.

Using the multimeter, measure the knock sensor circuit resistance as per following table.

KS RESISTANCE TEST		
ECM ADAPTRER 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.

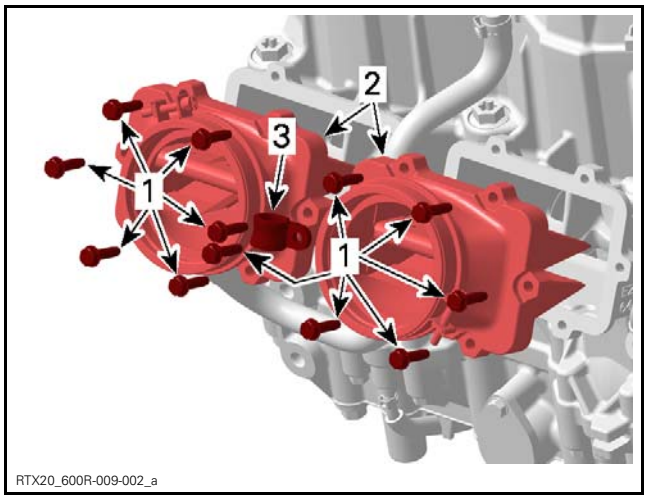
Replacing the KS

Replace engine wiring harness. Refer to *ENGINE HARNESS* subsection.

REED VALVES

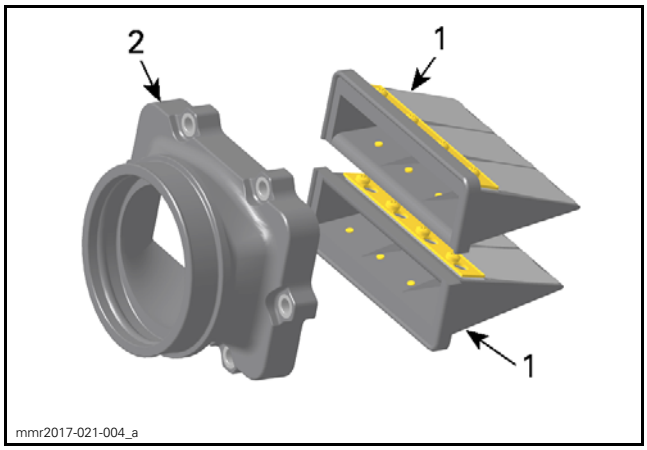
Removing the Reed Valve

1. Remove throttle body, refer to *E-TEC DIRECT FUEL INJECTION* subsection.
2. Remove the following parts.



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

Check reed valve for proper tightness.

Check blades for breakouts at their end tips. In case of breakouts replace it.

There must not be any free play between blade and valve body when exerting a finger pressure on blade at blade stopper location.

In case of a free play, turn blade upside down and recheck.

TIGHTENING TORQUE	
Reed valve blade screws	1.5 N•m ± 0.3 N•m (13 lbf•**in** ± 3 lbf•**in**)

If there is still a free play, replace blade and/or reed valve assembly.

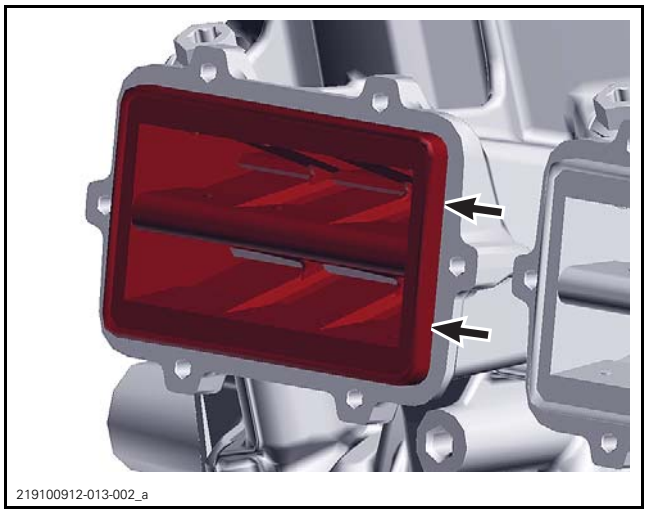
Installing the Reed Valve

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

Blades have a curved shape. Install with their curve facing reed block.

TIGHTENING TORQUE	
Reed valve blade screws	1.5 N•m ± 0.3 N•m (13 lbf•**in** ± 3 lbf•**in**)

Ensure to position reed valves so that they rest flat in intake opening.



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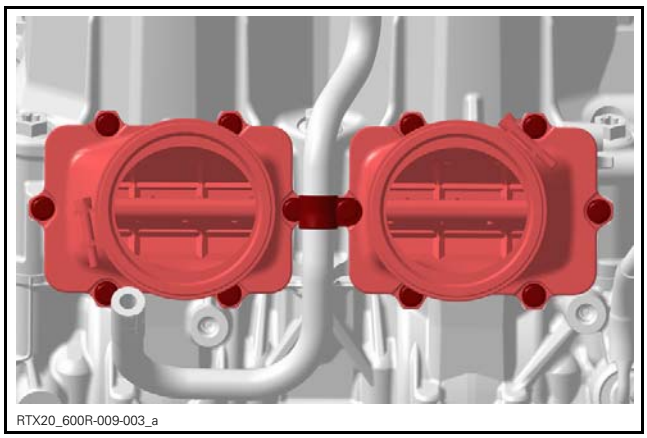
Ensure to position intake adapter as shown.

Install clamps as shown in the illustration.



RTX20_600R-009-003_a

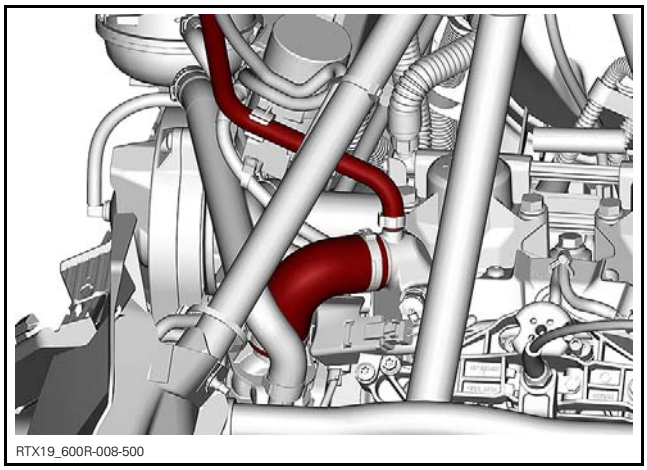
Tighten intake adapter retaining screws to specification.

TIGHTENING TORQUE	
Intake adapter retaining screws	6 N•m ± 0.4 N•m (53 lbf•**in** ± 4 lbf•**in**)

CYLINDER HEAD

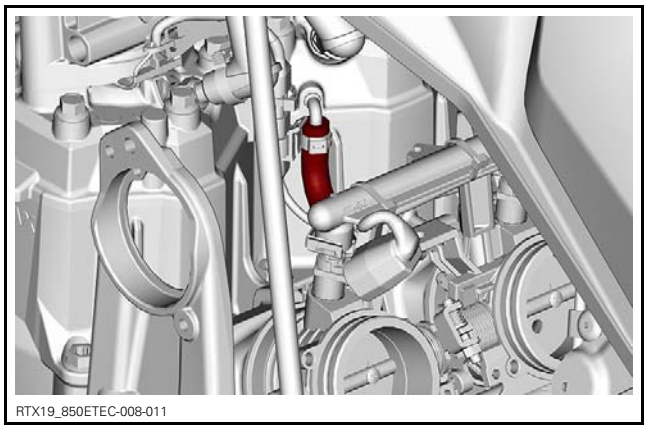
Removing the Cylinder Head

1. Drain coolant. Refer to *COOLING SYSTEM* subsection.
2. Disconnect the coolant hose and the bleeding hose from the cylinder head.



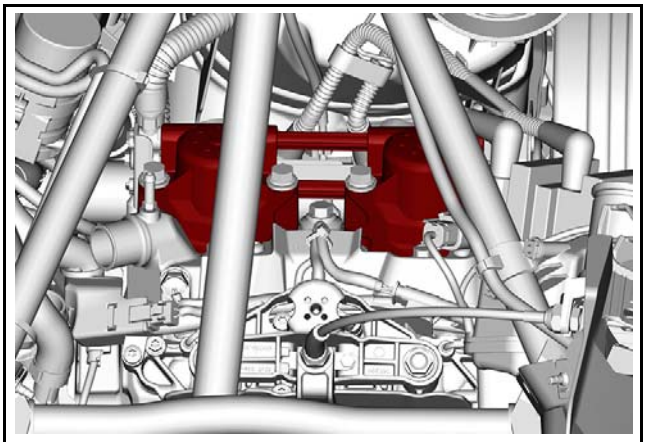
RTX19_600R-008-500

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.

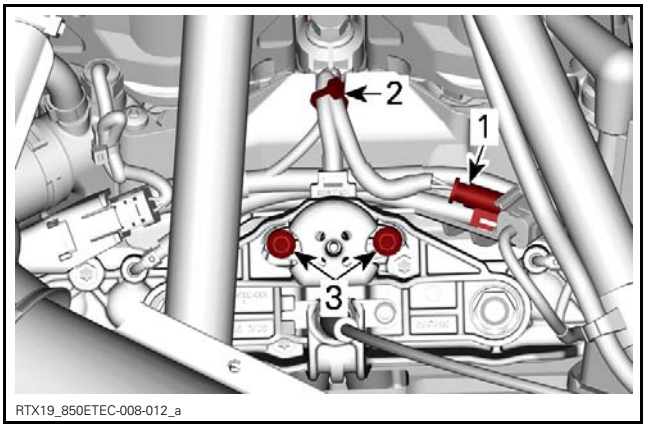


RTX19_850ETEC-008-011

5. Remove the E-TEC direct fuel injectors from the cylinder head. Refer to *E-TEC DIRECT FUEL INJECTION* subsection.


RTX19_600R-008-501

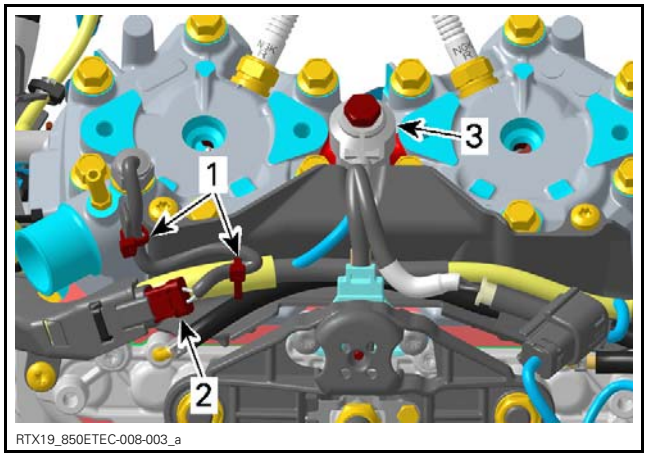
6. Disconnect the RAVE valve connector.
7. Detach the RAVE valve connector housing from the harness support.
8. Cut the locking tie securing the RAVE valve sensor harness to the knock sensor harness.
9. Loosen RAVE position sensor screws.



RTX19_850ETEC-008-012_a

1. RAVE valve connector housing
2. Locking tie to be cut
3. RAVE position sensor screws

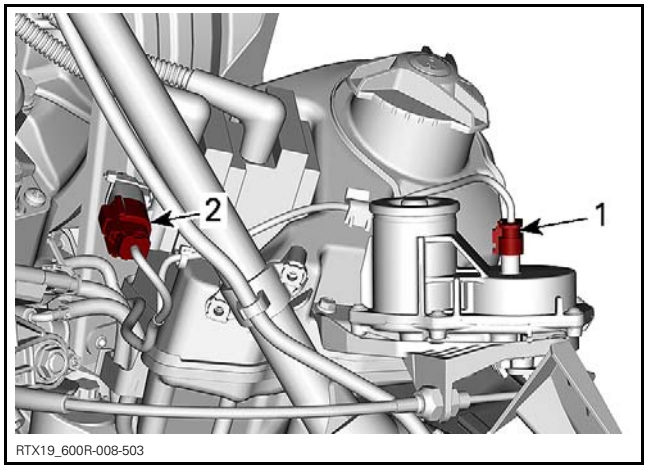
10. Cut locking ties securing the CTS harness.
11. Disconnect the CTS connector.
12. Remove knock sensor retaining screw and move knock sensor aside.



RTX19_850ETEC-008-003_a

1. Locking ties securing the CTS harness
2. CTS connector
3. Knock sensor screw

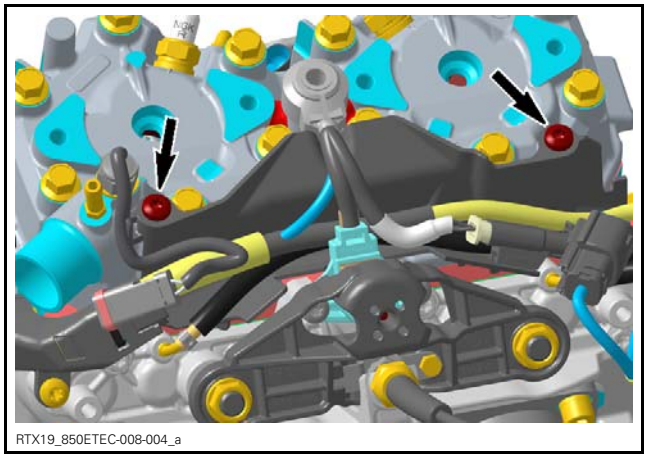
13. Disconnect the following connectors.



RTX19_600R-008-503

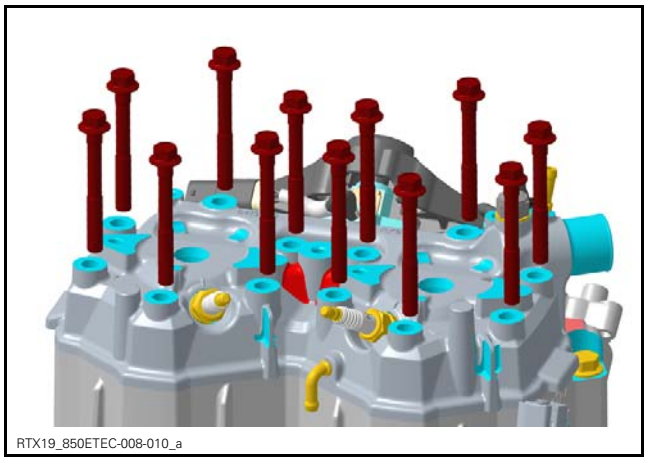
1. Ignition coil connector
2. RAVE servomotor connector

14. Remove screws securing the front harness support.

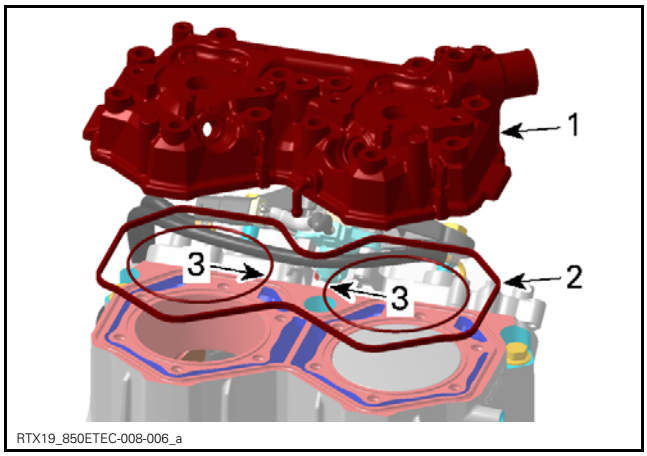

RTX19_850ETEC-008-004_a

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.
    18.1 Remove cylinder head screws.


RTX19_850ETEC-008-010_a

18.2 Remove the cylinder head and discard the cylinder rubber ring and O-rings.



RTX19_850ETEC-008-006_a

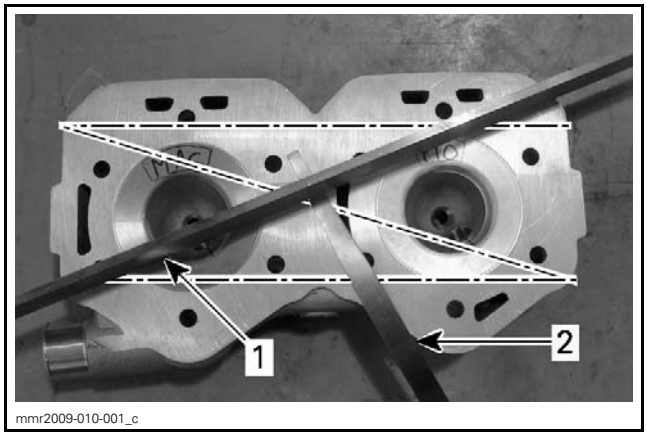
1. *Cylinder head*
2. *Cylinder rubber ring*
3. *O-rings*

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.



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TYPICAL
1. *Straight edge*
2. *Feeler gauge*

SERVICE LIMIT	
CYLINDER HEAD WARPAGE	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

Scrape off any carbon deposits from cylinder head.

SERVICE PRODUCT
LOCTITE CHISEL (GASKET REMOVER) (P/N 413 708 500)

Installing the Cylinder Head

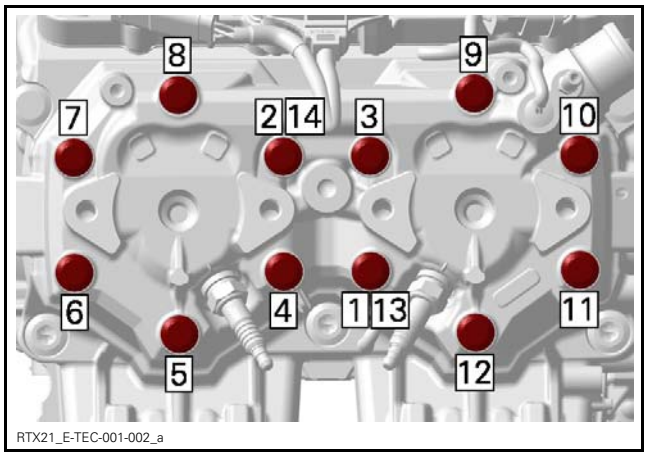
The installation is the reverse of removal procedure, however pay attention to the following.

Install **NEW** rubber ring and round O-rings on cylinder block.

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 N•m ± 0.2 N•m (62 lbf•**in** ± 2 lbf•**in**)



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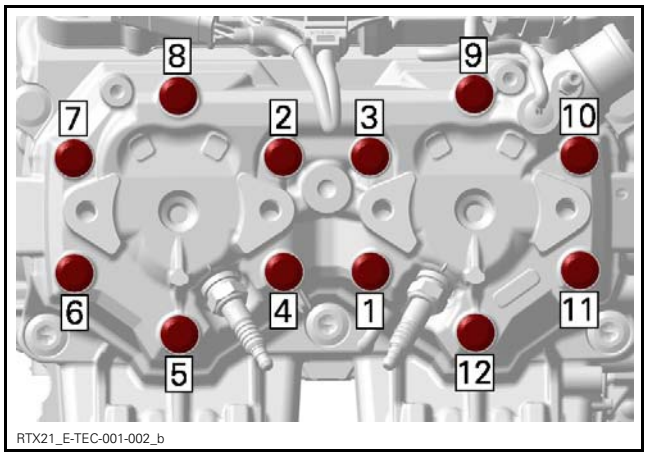
Use a torque angle gauge to carry out Step B.

TORQUE ANGLE		
Cylinder head screws	Step B	Additional 60°

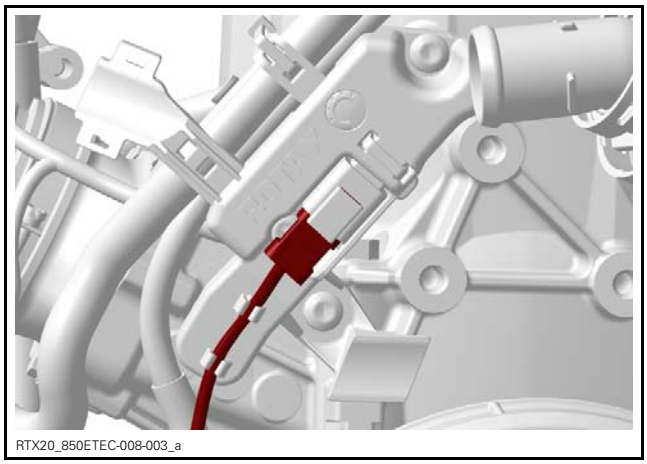


RTX21_E-TEC-001-002_b

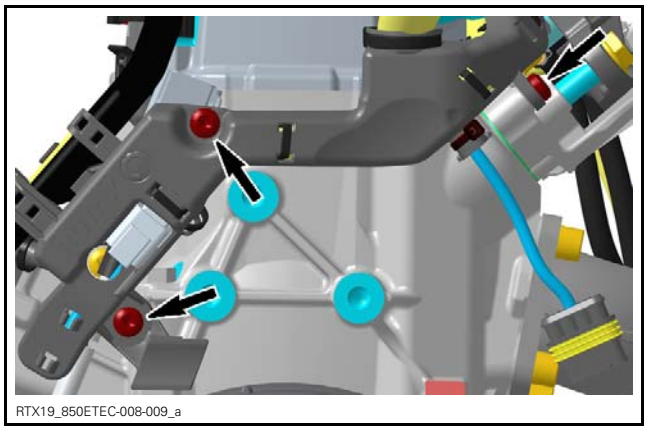
CYLINDER BLOCK

Removing the Cylinder Block

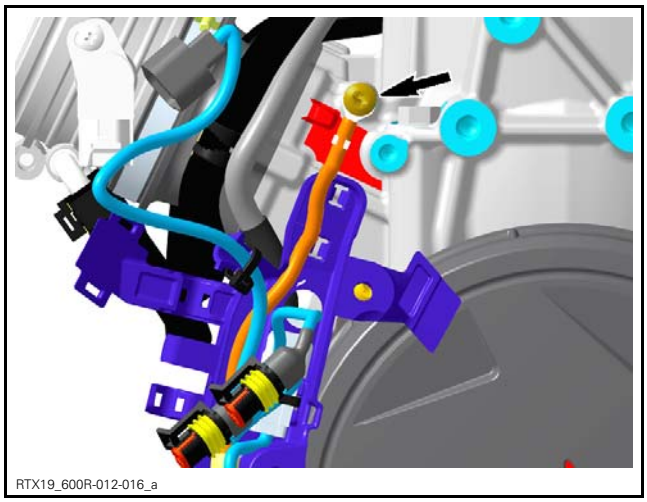
1. Drain coolant. Refer to *COOLING SYSTEM* subsection.
2. Remove hoses for throttle body heating. Refer to *COOLING SYSTEM* subsection.
3. Remove *CYLINDER HEAD*, see procedure in this subsection.
4. Remove the throttle body. Refer to *E-TEC DIRECT FUEL INJECTION* subsection.
5. Detach the RAVE cable form the 3D RAVE link bar. Refer to *RAVE* subsection.
6. Disconnect CPS.


RTX20_850ETEC-008-003_a

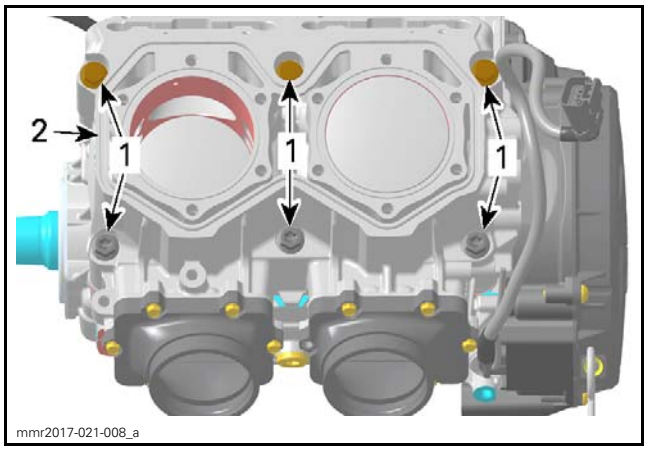
7. Remove screws from harness support.


RTX19_850ETEC-008-009_a

8. Put wiring harness with support aside and remove screw from ground cable.


RTX19_600R-012-016_a

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

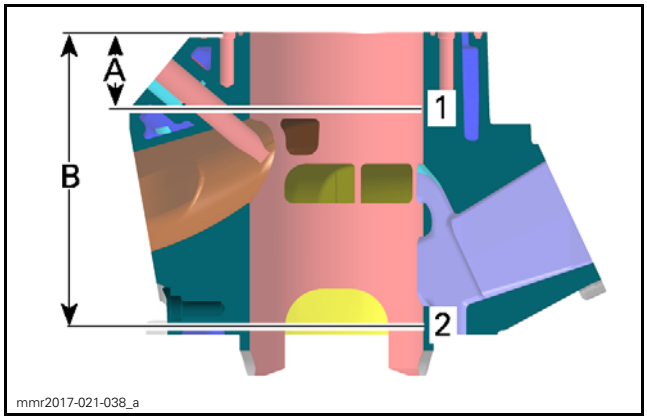
Remove RAVE valves, refer to *RAVE* subsection.

Remove reed valves, refer to *REMOVING THE REED VALVES* in this subsection.

Check cylinder bores for cracks and scoring on the top and bottom of cylinders. Replace if necessary.

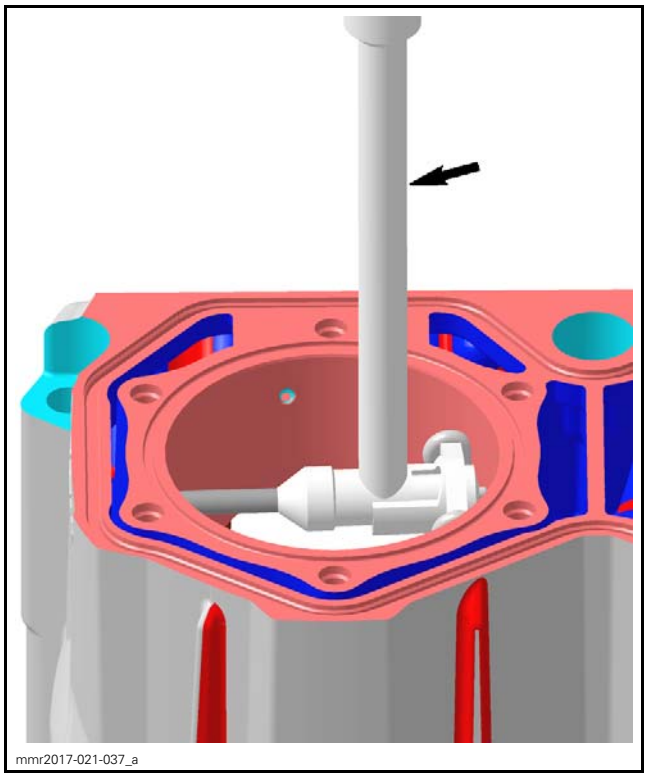
Cylinder Taper

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)

REQUIRED TOOL
Cylinder bore gauge



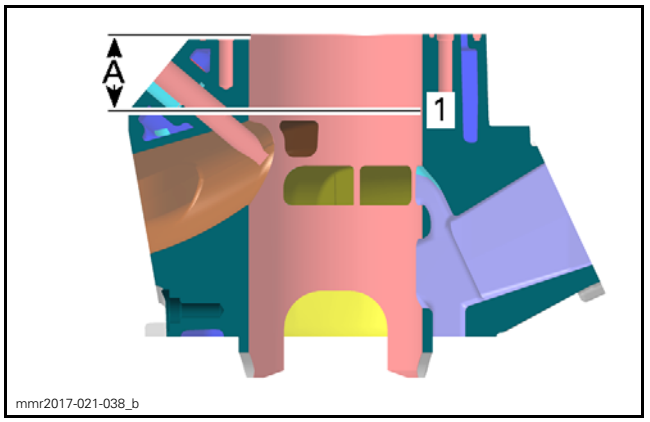
2. Compare cylinder diameters.
3. If the difference exceeds the specified dimension, replace the cylinder block.

CYLINDER BORE TAPER	
SERVICE LIMIT	0.10 mm (.0039 in)

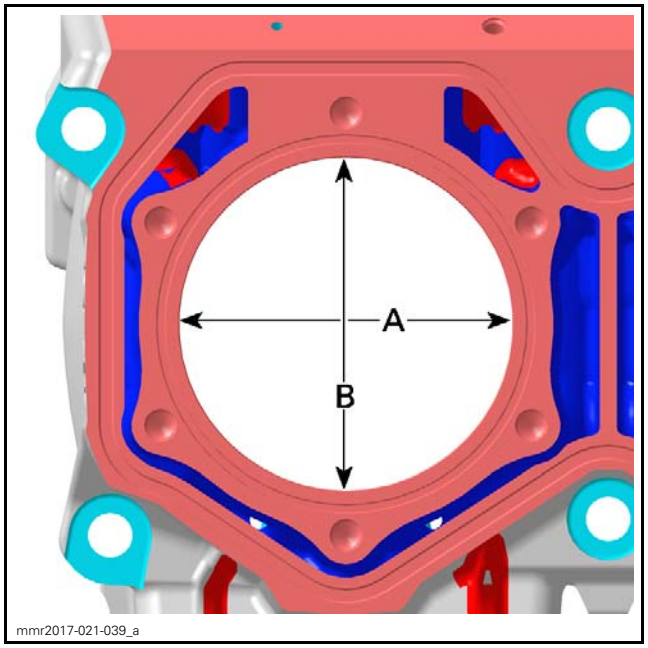
Cylinder out of Round

1. Check if the cylinder out of round is more than the specified dimension.

Measure above exhaust port:
– in piston pin axis
– perpendicular to piston pin axis.

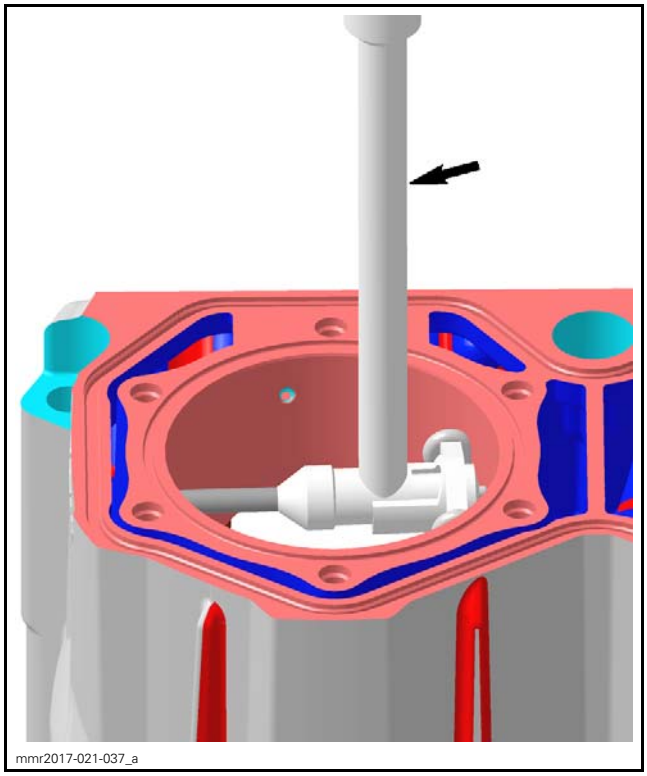


CYLINDER OUT OF ROUND MEASUREMENT		
POSITION	MEASUREMENT	FROM TOP OF CYLINDER BLOCK
1	A	30 mm (1.18 in)



A. Measure in piston pin axis
B. Measure perpendicular to piston pin axis

REQUIRED TOOL
Cylinder bore gauge



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

Scrape off any carbon deposits from exhaust ports.

Carefully clean cylinder block screws, specifically under screw head.

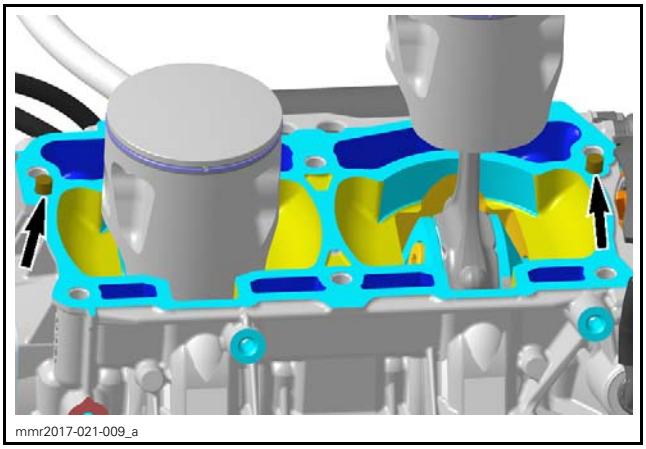
SERVICE PRODUCT
LOCTITE CHISEL (GASKET REMOVER) (P/N 413 708 500)

Installing the Cylinder Block

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

Ensure top surface of crankcase is clean.

Check if dowel pins are in crankcase holes.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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.

Lubricate cylinder bores.

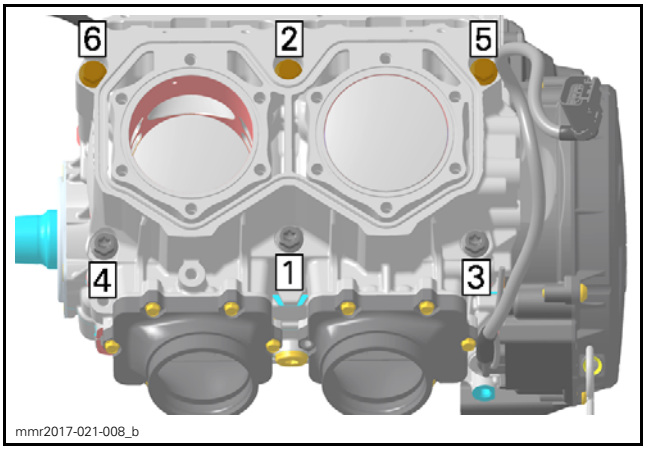
SERVICE PRODUCT
Injection oil

Carefully slide cylinder block down while squeezing piston rings to allow cylinder insertion.

Proceed one piston at a time, the help of an assistant may be required.

Tighten cylinder block screws to specification as per the following sequence.

TIGHTENING SEQUENCE	
Cylinder block screws	50 N•m ± 1.5 N•m (37 lbf•ft ± 1 lbf•ft)



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TIGHTENING SEQUENCE

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.**

Install the 3D RAVE valve. Refer to *INSTALLING THE 3D RAVE VALVE* in the *RAVE* subsection.

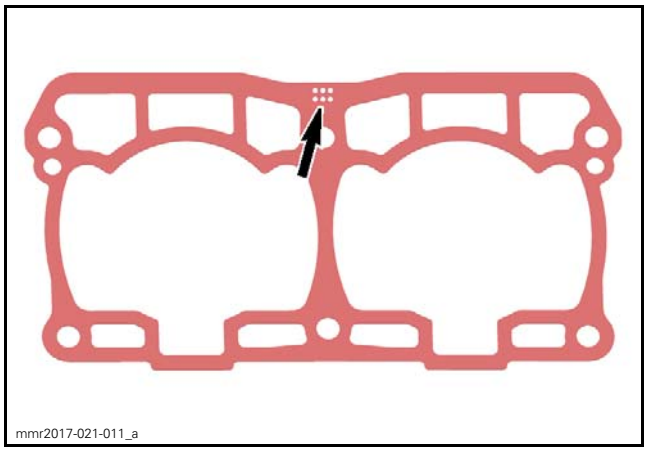
PISTON PROJECTION MEASUREMENT

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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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

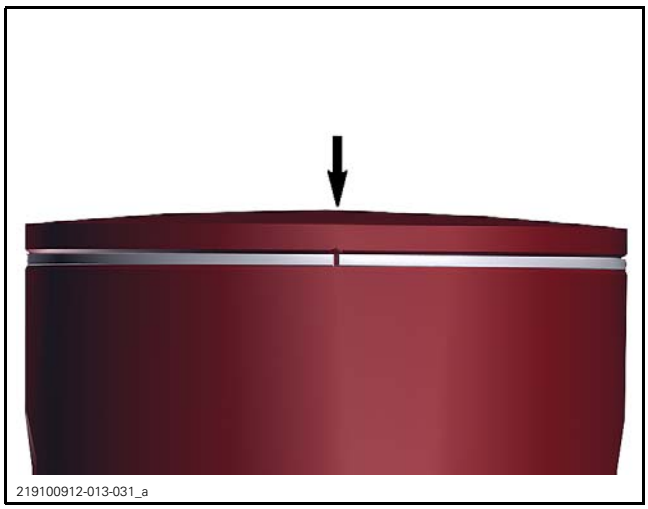
1. Bring PTO piston to TDC.

REQUIRED TOOL	
TDC DIAL INDICATOR (P/N 295 000 143)	

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.**



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CONVEX SHAPE OF THE PISTON DOME

1. Place piston projection tool on a flat steel surface.

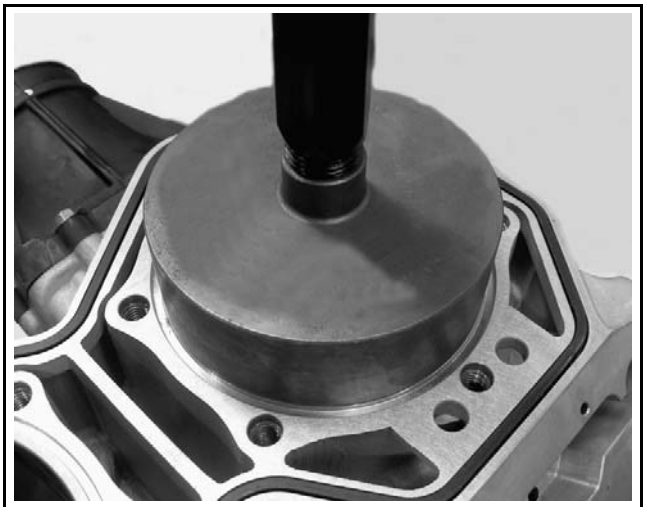
REQUIRED TOOL	
PISTON PROJECTION (P/N 529 036 215)	
TDC DIAL INDICATOR (P/N 295 000 143)	

2. Rotate dial indicator face to position the **0** in line with needle.

mmr2011-010-002_a

SETTING THE ZERO

3. Install tool on PTO cylinder.
4. Center tool with cylinder to ensure that dial indicator reads piston dome.



mmr2011-010-003

TYPICAL - TOOL PROPERLY CENTERED

5. Ensure that PTO piston is set to TDC.
6. Read dial indicator then note measurement.

mmr2011-010-004

TYPICAL

NOTE: Convert dial indicator measurement to millimeter.

PISTON PROJECTION MEASUREMENT
1.75 mm to 1.82 mm (.069 in 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.

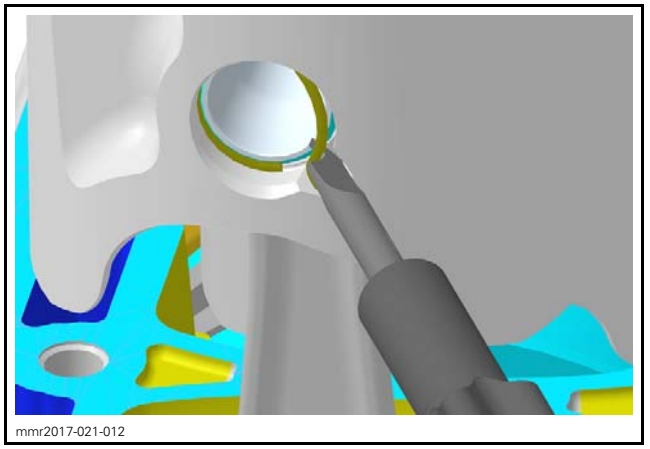
CYLINDER BLOCK BASE GASKET SELECTION GUIDELINE	
MEASURED PISTON PROJECTION	GASKET TO INSTALL
Below specification	Thinner
Above specification	Thicker

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.


mmr2017-021-012

4. Push piston pin out of piston.
5. Remove piston.
6. Remove bearing.
7. Discard circlips.

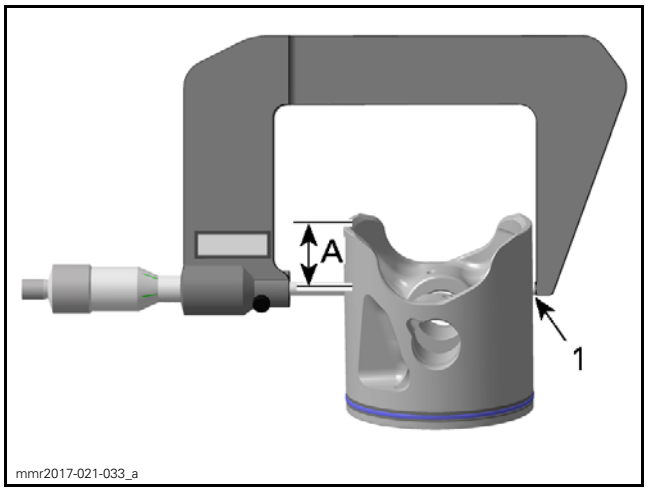
Inspecting the Piston

Inspect piston for scoring, cracking or other damage.

Cylinder/Piston Clearance

1. Measure piston diameter at "A" perpendicularly (90°) to piston pin.

REQUIRED TOOL
Micrometer



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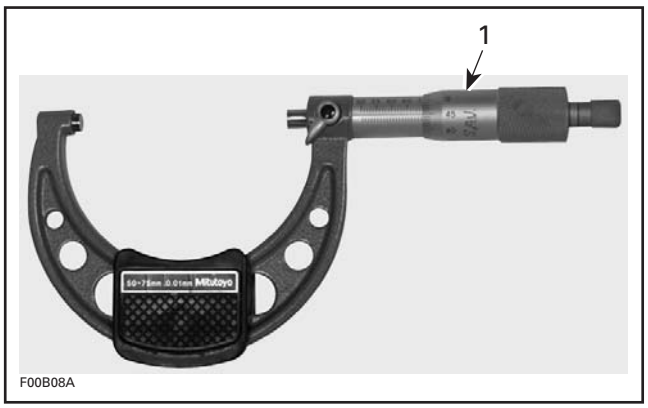
1. Measuring diameter perpendicularly (90°) to piston pin axis
A. 30 mm (1.181 in)

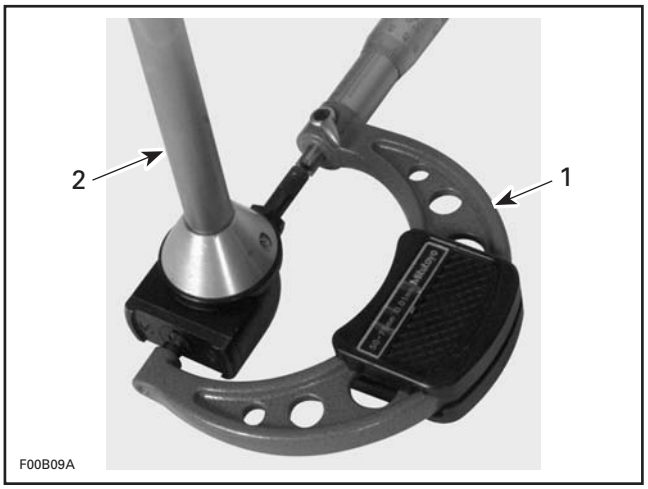
2. Adjust and lock a micrometer to the piston diameter.



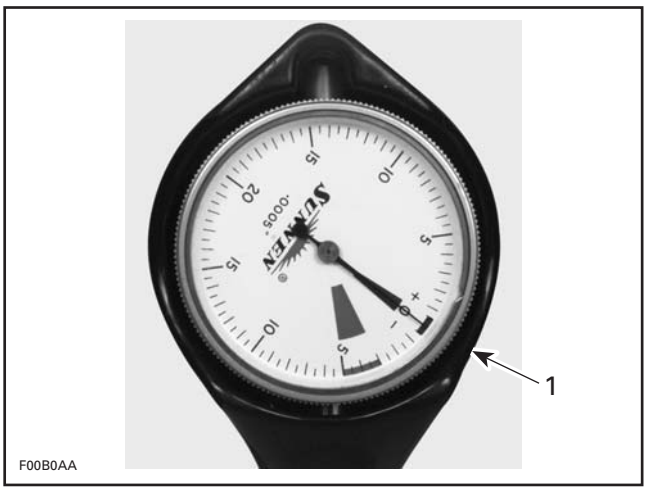
1. Micrometer set to the piston diameter

3. Adjust a cylinder bore gauge to the locked micrometer and set the indicator to 0.

REQUIRED TOOL
Cylinder bore gauge



1. Use the micrometer to set the cylinder bore gauge
2. Dial bore gauge

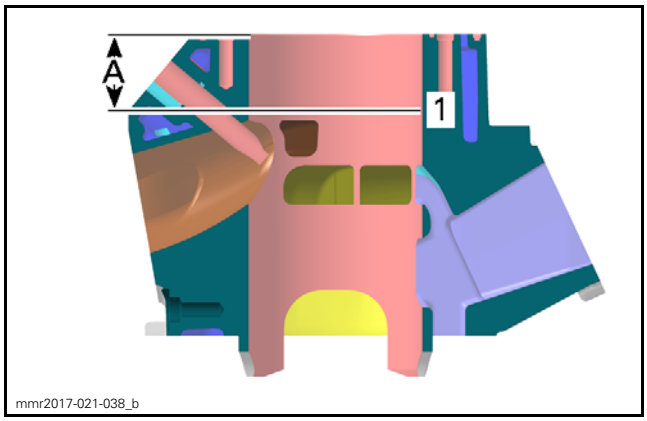


1. Indicator set to 0 (zero)

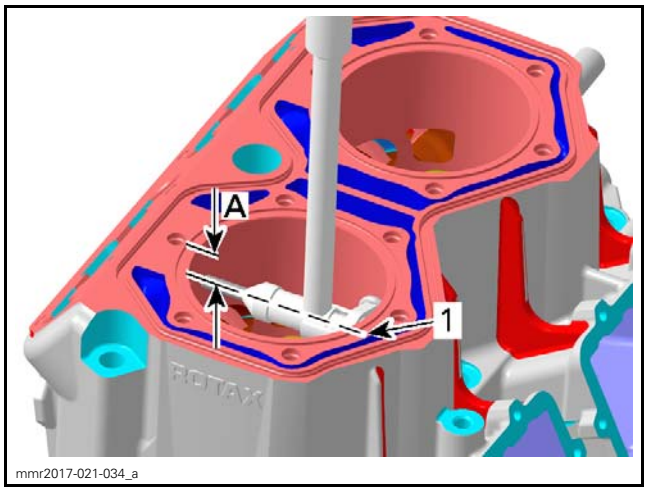
NOTE: Make sure the cylinder bore gauge indicator is set exactly at the same position as with the micrometer, otherwise the reading will be false.

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)

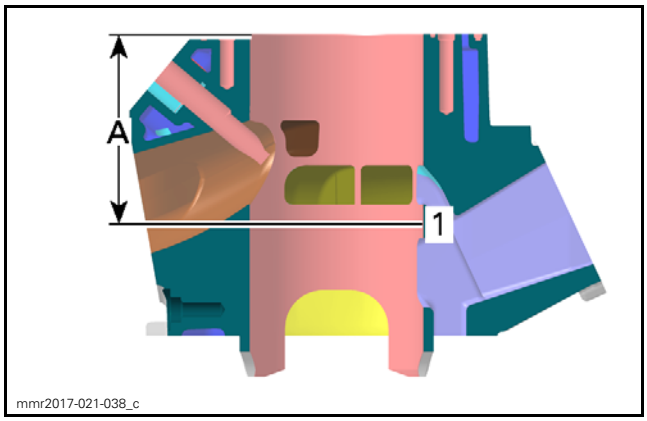
5. Read the measurement on the cylinder bore gauge. The result is the exact piston/cylinder wall clearance.

CYLINDER/PISTON CLEARANCE	
NEW	0.135 mm to 0.161 mm (.005 in 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.



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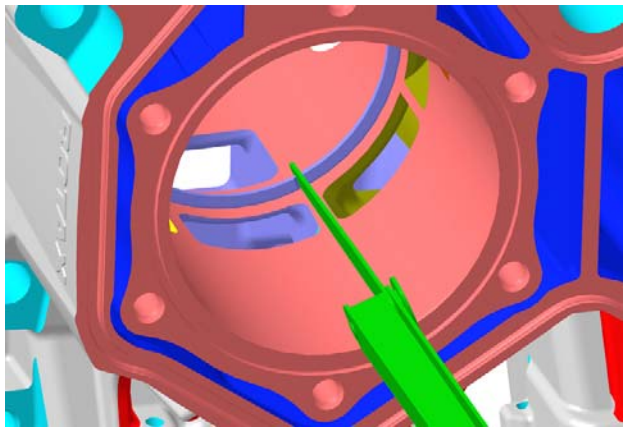
RING END GAP MEASUREMENT		
POSITION	MEASUREMENT	FROM TOP OF CYLINDER BLOCK
1	A	89 mm (3.5 in)

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.

REQUIRED TOOL
Feeler gauge

RING END GAP	
NEW	0.400 mm to 0.600 mm (.0157 in to .0236 in)
SERVICE LIMIT	1.000 mm (.0394 in)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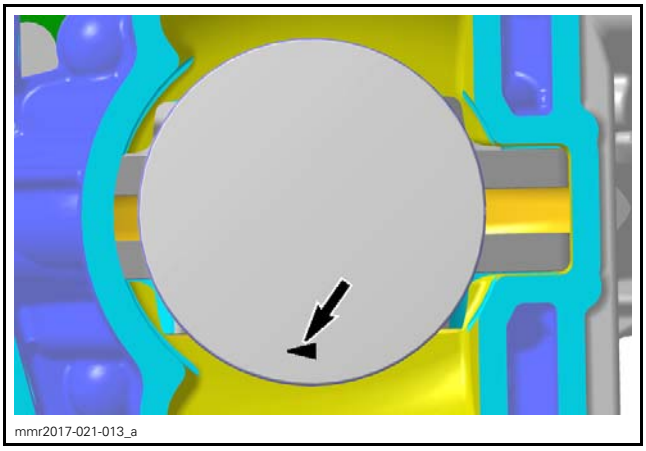
Cleaning the Piston

1. Scrape off any carbon deposits from piston dome.

NOTE: The arrow on the piston dome must be visible after cleaning.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EXHAUST DIRECTION INDICATION

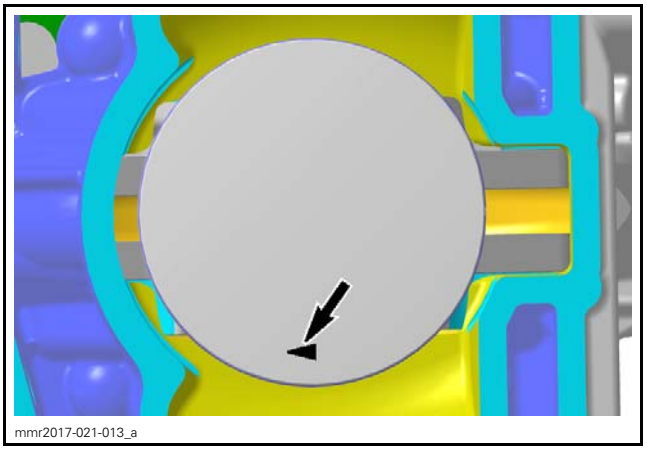
2. Clean the piston ring groove with a groove cleaner tool or with a piece of broken ring.

Installing the Piston

1. Lubricate needle bearing.

SERVICE PRODUCT
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.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EXHAUST DIRECTION INDICATION

4. Install piston pin in piston.
5. Install NEW circlips.

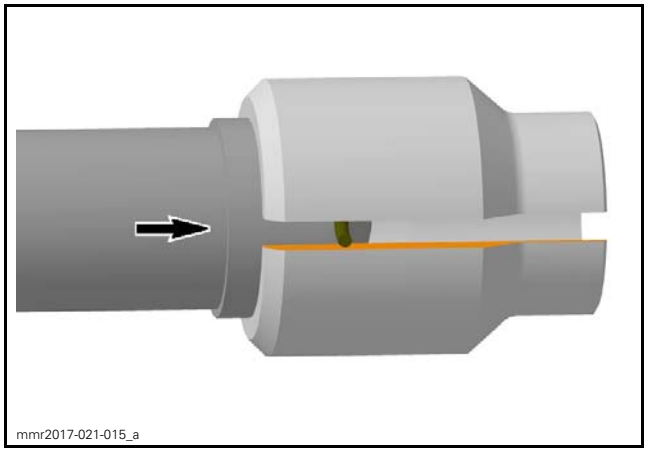
REQUIRED TOOL	
PISTON CIRCLIP INSTALLER 21MM (P/N 529 036 138)	

NOTICE Always install NEW mono-hook circlips. If circlip installation fails at the first attempt, always retry with a new one.

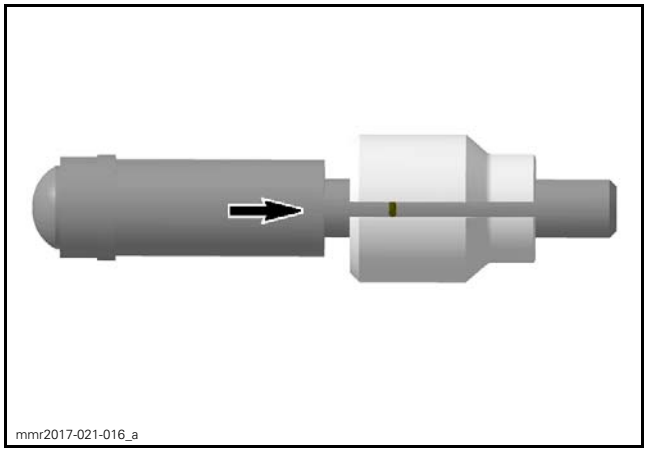
6. Use the following procedure to properly install circlip.

6.1 Insert circlip into support so that, when installed in piston groove, the gap will be below the tab.

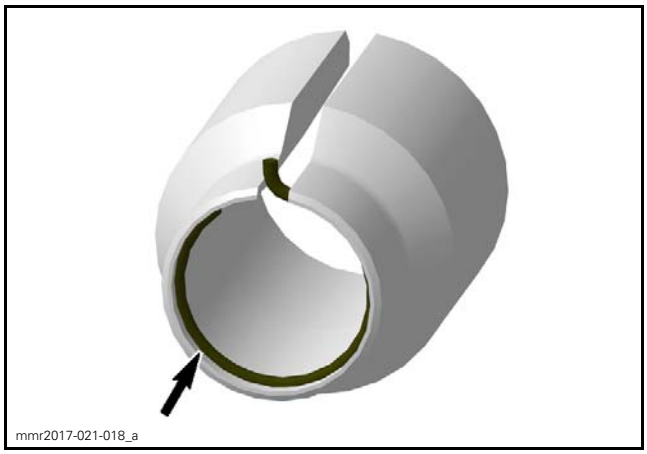
6.2 With round end of pusher, position circlip perpendicularly to the support axis.



6.3 With the other end of the pusher, push circlip into the support groove.

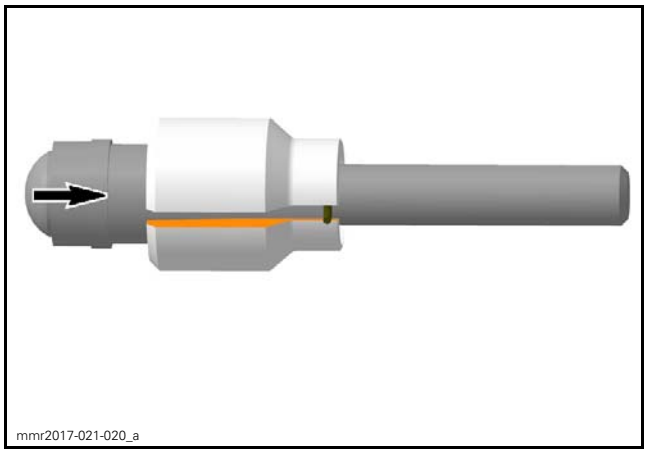


GROOVE



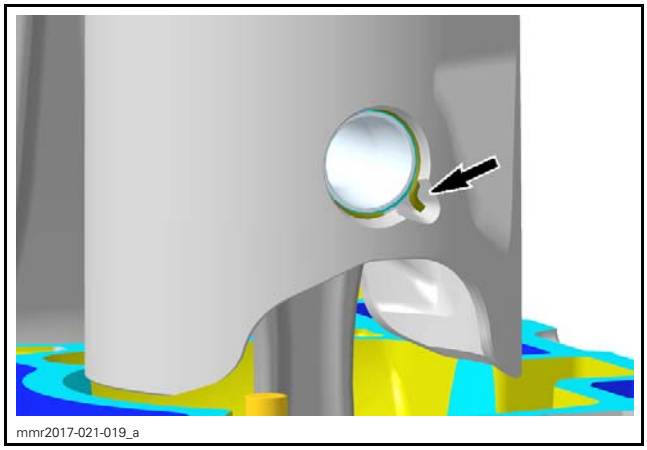
CIRCLIP READY TO BE INSTALLED ON PISTON

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



6.4 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.

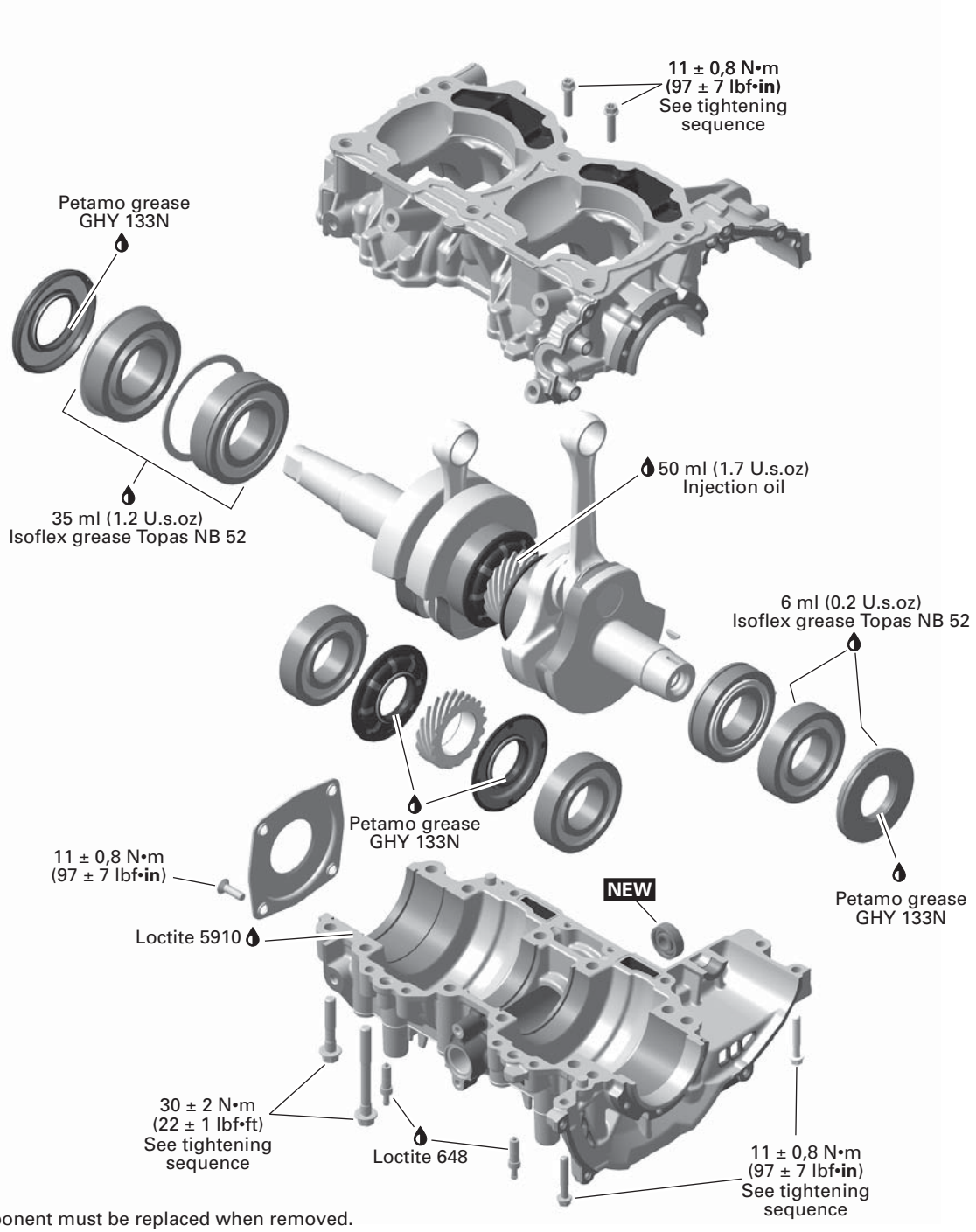
BOTTOM END (600R E-TEC)

SERVICE TOOLS

Description	Part Number	Page
BEARING HEATER	529 035 969	148
CRANKSHAFT BEARING PULLER	529 036 004	147
CRANKSHAFT DISTANCE GAUGE	529 036 453	150
CRANKSHAFT PROTECTOR	529 036 434	147–148
DEGREE WHEEL	529 035 607	146
DIAL GAUGE ADAPTER	529 036 443	144
HALF-RINGS	420 977 475	147
HALF-RINGS	420 977 479	148
PULLER RING	420 977 490	147–148
SUPPORT PLATE	529 035 976	150
TEMPERATURE INDICATOR STICK	529 035 970	149
WATER PUMP BEARING PUNCH	529 036 417	143

SERVICE PRODUCTS

Description	Part Number	Page
CLUTCH AND PULLEY FLANGE CLEANER PRO S1	779244	148
ISOFLEX GREASE TOPAS NB 52	293 550 021	149, 151
LOCTITE 5910	293 800 081	143
LOCTITE CHISEL (GASKET REMOVER)	413 708 500	142
LUBRICANT AND ANTI-CORROSIVE (EUR)	779224	148
LUBRICANT AND ANTI-CORROSIVE	779168	148
PETAMO GREASE GHY 133N	420 899 271	149, 151
PULLEY FLANGE CLEANER (F)	619 600 022	148



NEW = Component must be replaced when removed.

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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 assembly or 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

Remove engine from vehicle. Refer to *ENGINE REMOVAL AND INSTALLATION* subsection.

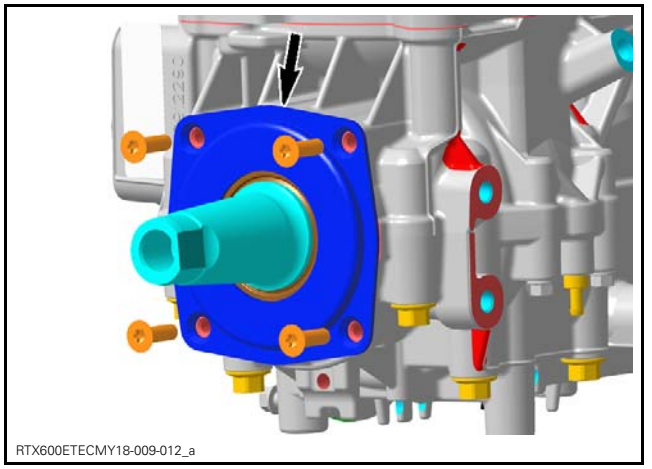
Refer to *TOP END* subsection to remove:
- Cylinder head
- Cylinder block
- Pistons.

Refer to *MAGNETO AND STARTER* subsection to remove:
- Stator
- Magneto housing
- Magneto flywheel.

.

Remove drive pulley. Refer to *DRIVE PULLEY* subsection.

Remove PTO oil seal cover.



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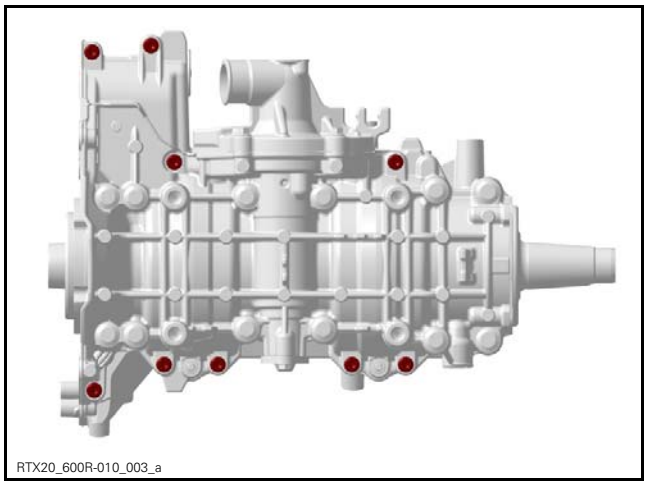
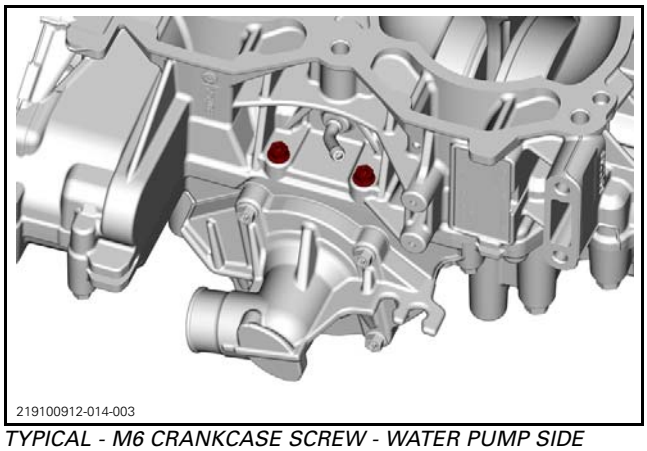
Remove engine front supports.

Remove M6 crankcase screws.

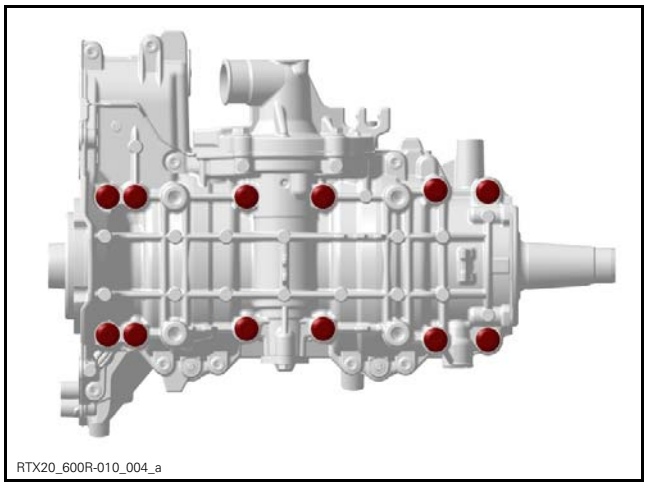


TYPICAL - M6 CRANKCASE SCREWS - BOTTOM SIDE



TYPICAL - M6 CRANKCASE SCREW - WATER PUMP SIDE

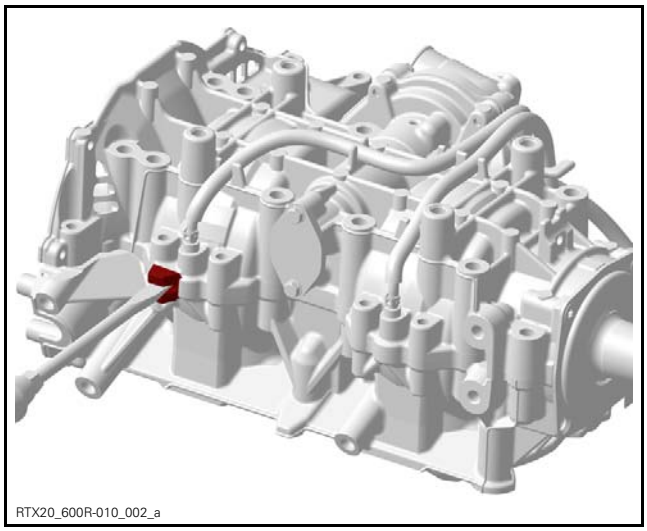
Remove M8 crankcase screws.



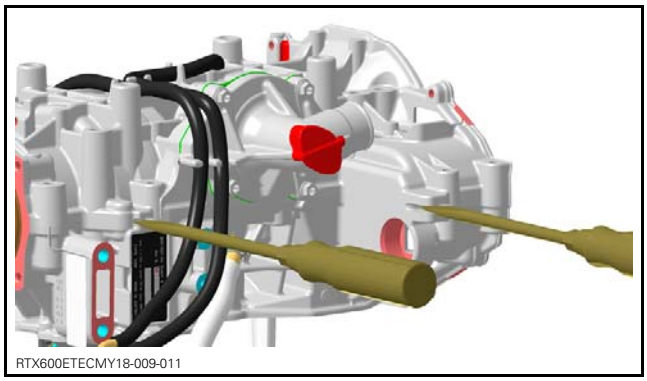
TYPICAL

Split crankcase.

NOTE: To prevent damage to crankcase mating surfaces, use prying lugs to "unstick" crankcase.



PRYING LUGS



PRYING LUGS

Remove crankshaft assembly.

Cleaning the Crankcase

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

SERVICE PRODUCT
LOCTITE CHISEL (GASKET REMOVER) (P/N 413 708 500)

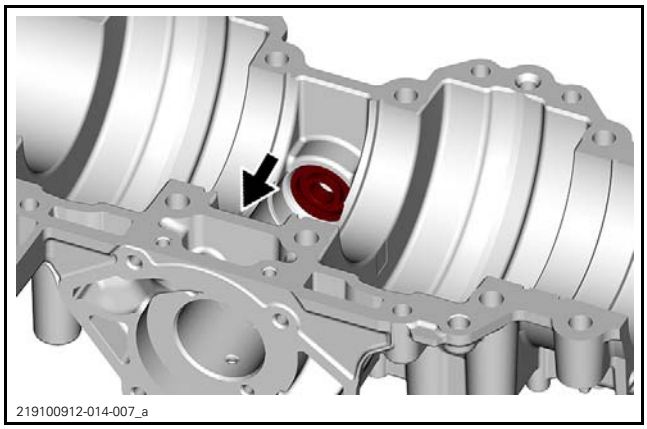
NOTICE **Never use a sharp object to remove sealant as score marks incurred are harmful to crankcase sealing.**

Inspecting the Crankcase

Check crankcase for cracks or other damages. Replace if necessary.

Water Pump Bearing Replacement

Use a suitable punch to push ball bearing out of crankcase.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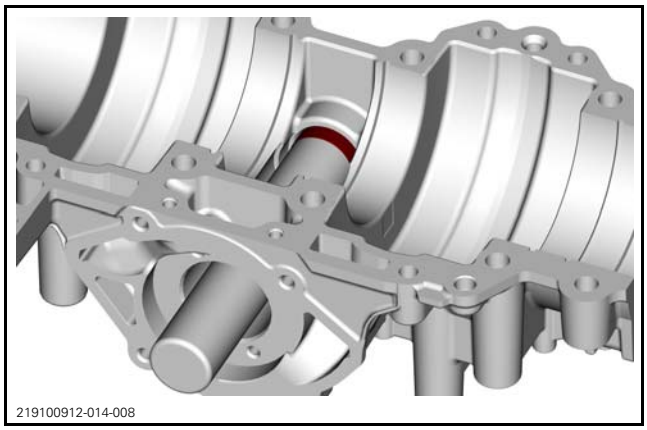
Install **NEW** ball bearing.

REQUIRED TOOL	
WATER PUMP BEARING PUNCH (P/N 529 036 417)	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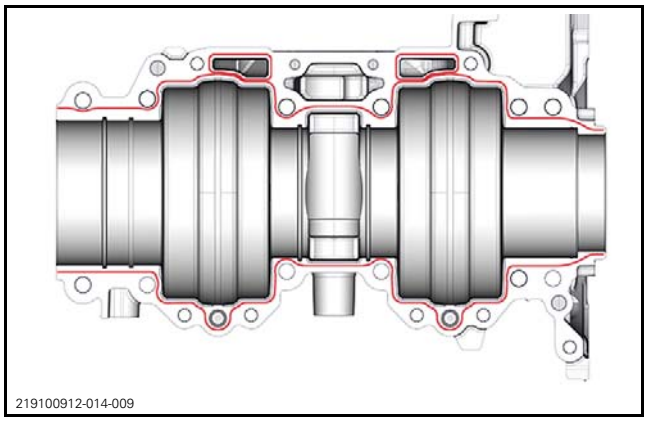
Assembling the Crankcase

Install crankshaft in upper crankcase. See *CRANKSHAFT* for procedure.

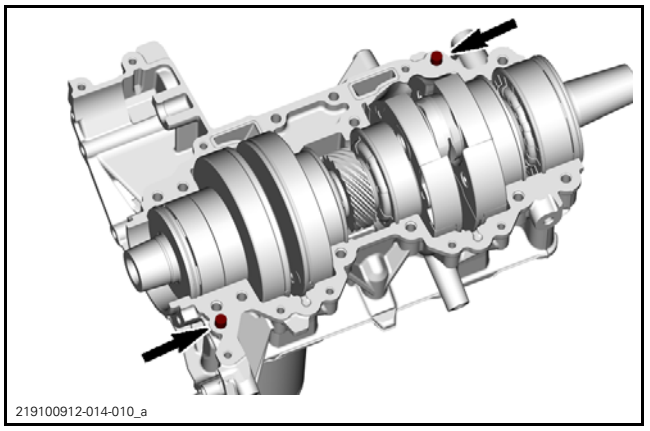
Apply sealant on lower crankcase as per following procedure.

SERVICE PRODUCT
LOCTITE 5910 (P/N 293 800 081)

NOTE: The total assembly sequence, including sealing compound application and crankcase torquing, must be performed within 10 minutes.


219100912-014-009

Ensure dowel pins are in their holes.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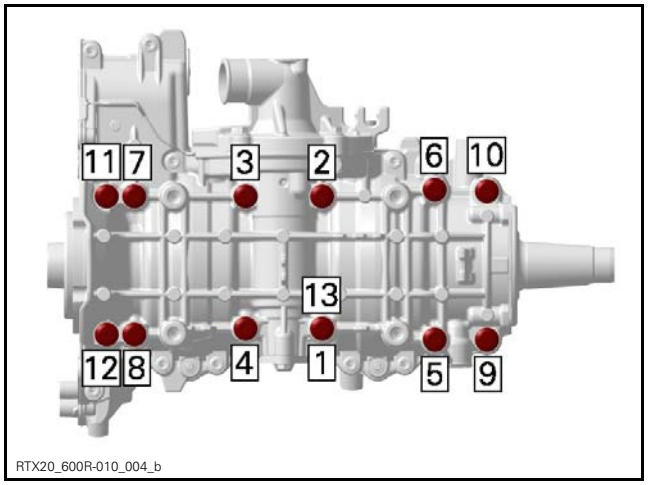
Assemble crankcase lower half.

Install crankcase screws.

Tighten crankcase screws to specification as per illustrated sequence.

TIGHTENING TORQUE	
M8 Crankcase screws	30 N•m ± 2 N•m (22 lbf•ft ± 1 lbf•ft)



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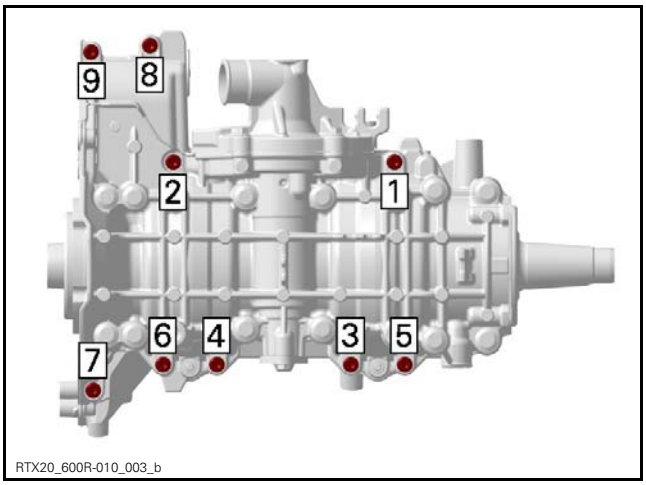
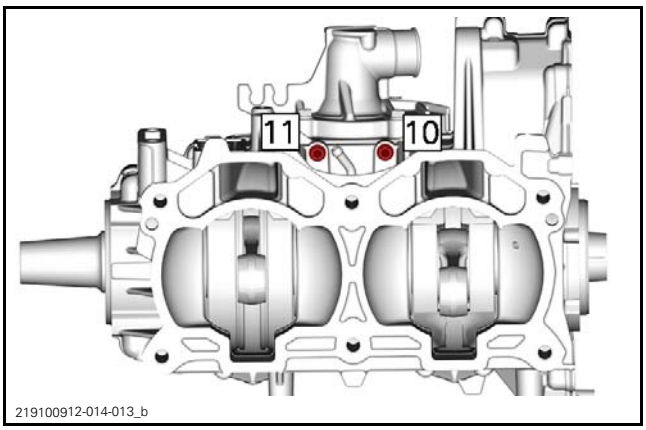
TYPICAL - TIGHTENING SEQUENCE - M8 CRANKCASE SCREWS

TIGHTENING TORQUE	
M6 Crankcase screws	11 N•m ± 0.8 N•m (97 lbf•**in** ± 7 lbf•**in**)



TYPICAL - TIGHTENING SEQUENCE - BOTTOM VIEW



TYPICAL - TIGHTENING SEQUENCE- M6 CRANKCASE SCREWS - TOP VIEW

Install PTO oil seal cover.

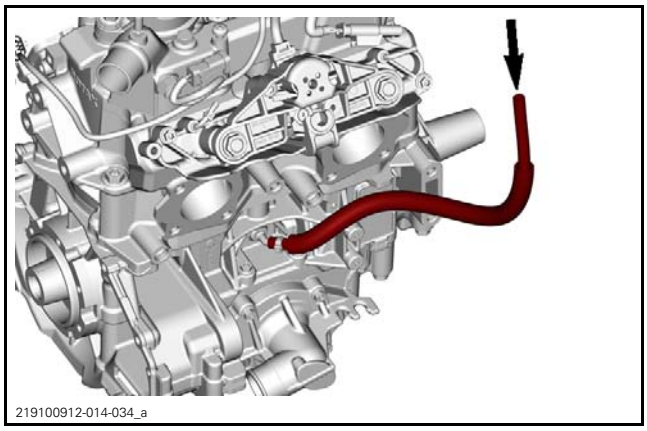
Tighten oil seal cover to specification.

TIGHTENING TORQUE	
Oil seal cover screws	11 N•m ± 0.8 N•m (97 lbf•**in** ± 7 lbf•**in**)

NOTE: It is recommended to test engine cooling system for leaks after engine assembly, before installation in vehicle. Refer to *ENGINE COOLING SYSTEM* subsection.

Using a syringe, fill the water pump gear chamber.

SERVICE PRODUCT
Injection oil (50 ml (1.7 U.S. oz))



TYPICAL

CRANKSHAFT

Removing the Crankshaft

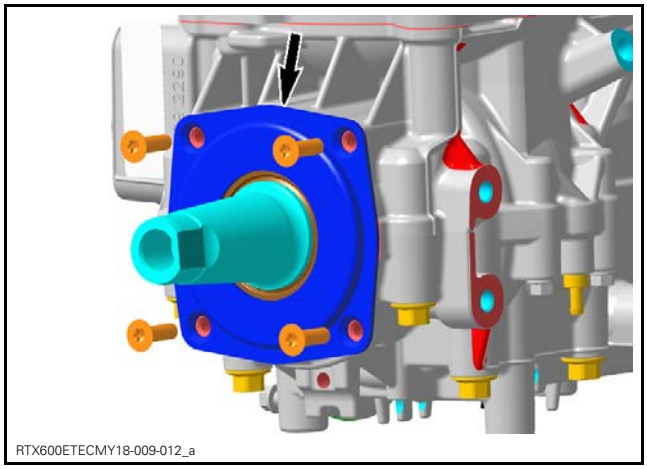
To remove crankshaft, use crankcase disassembly procedure.

Inspecting the Crankshaft

For crankshaft specifications refer to *TECHNICAL SPECIFICATIONS* subsection.

Crankshaft Deflection PTO side (Measuring in Crankcase)

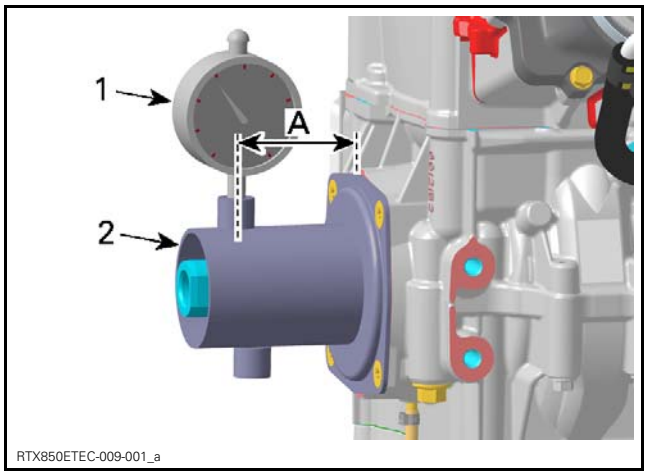
1. Remove the PTO oil seal cover.



2. Install the dial gauge adapter.

NOTE: Ensure that the dial gauge tip is compressed at least for 2 mm (.079 in) (2 full rotations of the dial gauge needle).

REQUIRED TOOL	
DIAL GAUGE ADAPTER (P/N 529 036 443)	
Dial gauge	



1. *Dial gauge*
2. *Dial gauge adapter*

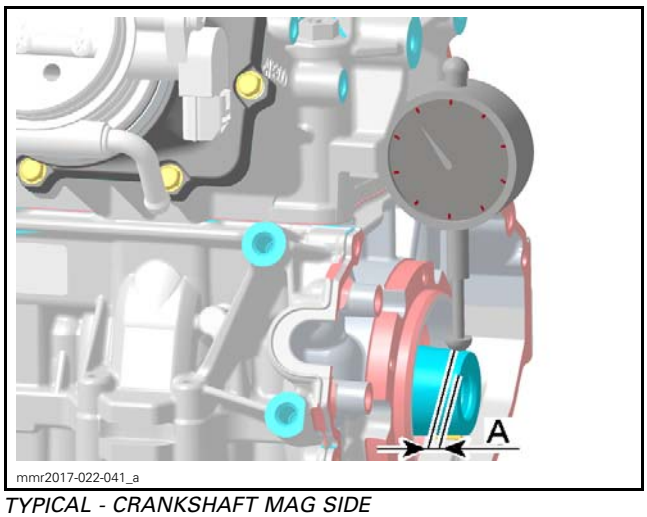
A. *56 mm (2.2 in)*

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)*.

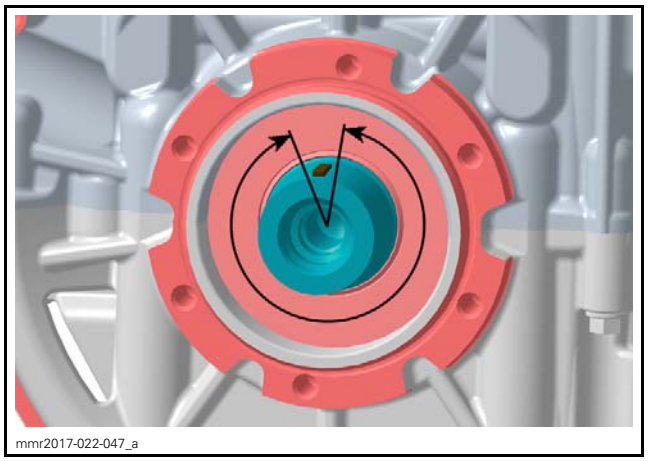
Crankshaft Deflection MAG side (Measuring in Crankcase)

REQUIRED TOOL
Magnetic-base dial gauge holder
Dial gauge



TYPICAL - CRANKSHAFT MAG SIDE
A. *3 mm (.12 in)*

1. Measure deflection circumferential excluding the woodruff key.



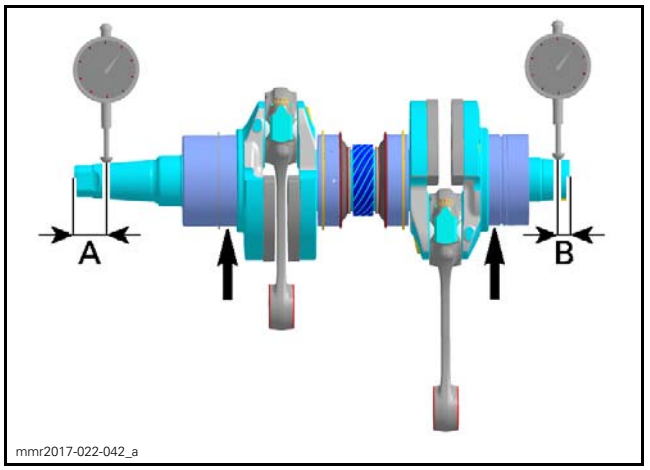
TYPICAL

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)

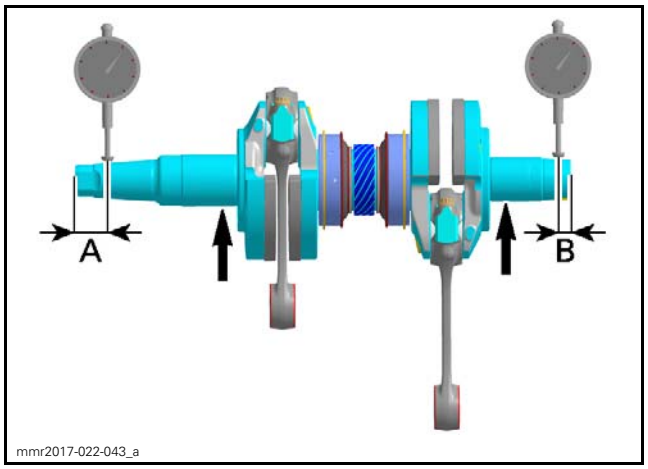
1. Once engine is disassembled, check crankshaft deflection on V-shaped blocks.



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).



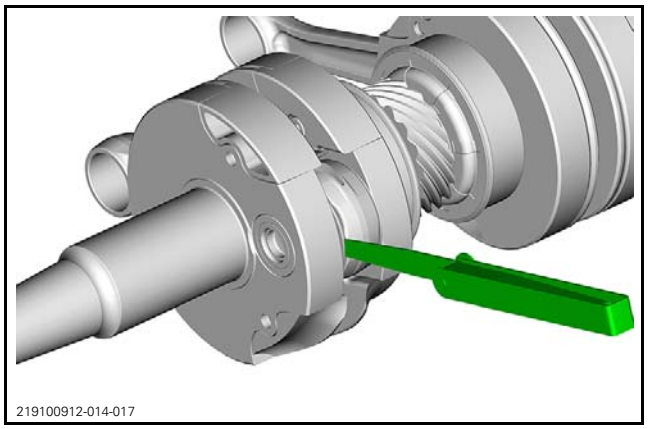
TYPICAL — V-SHAPED BLOCKS POSITION WITHOUT BEARINGS
A. 3 mm (.12 in)
B. 3 mm (.12 in)

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.

REQUIRED TOOL
Feeler gauge



TYPICAL

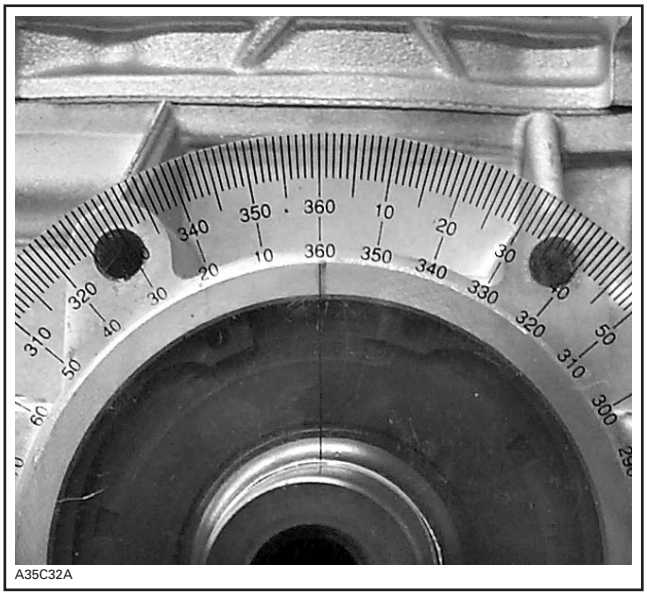
CONNECTING ROD BIG END AXIAL PLAY	
New	0.280 mm to 0.680 mm (.011 in to .0268 in)

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.

REQUIRED TOOL	
DEGREE WHEEL (P/N 529 035 607)	



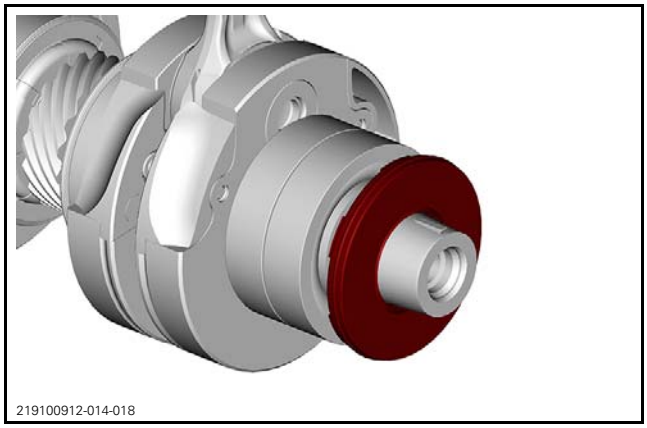
5. Remove dial indicator and install it in spark plug hole on PTO side.
6. Bring PTO piston to top dead center. Degree wheel must rotate with crankshaft.
7. Interval between cylinders must be 180° ± 0.5.
8. Any other reading indicates a misaligned (twisted) crankshaft.

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.

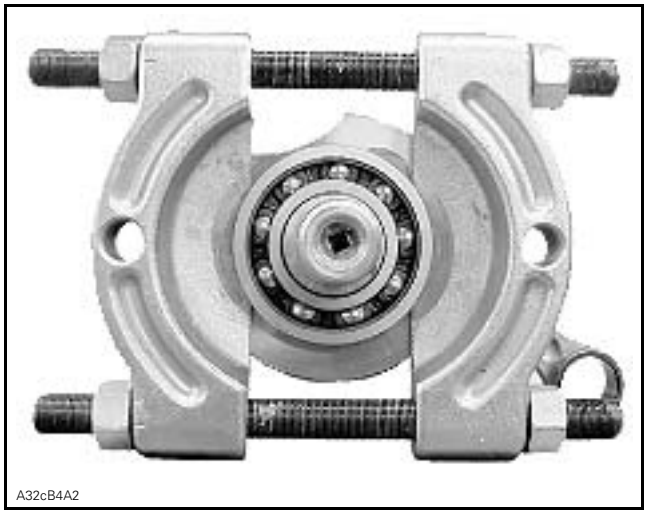
MAG Side

Remove and discard oil seal.



TYPICAL

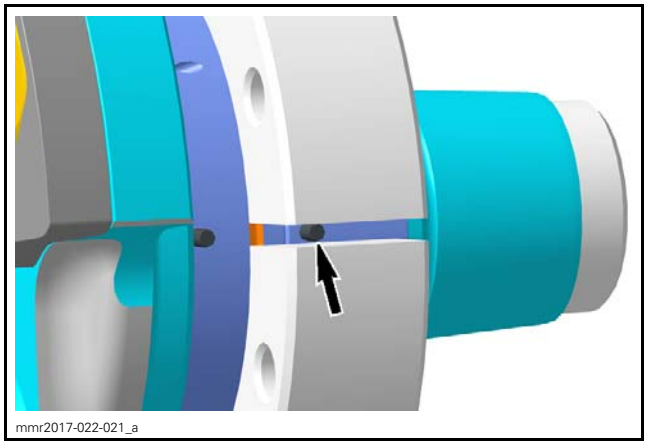
NOTE: In case of a damaged bearing or reduced clearance between crankshaft counterbalance and bearing, or on MAG side bearing, use a bearing separator to facilitate removal.



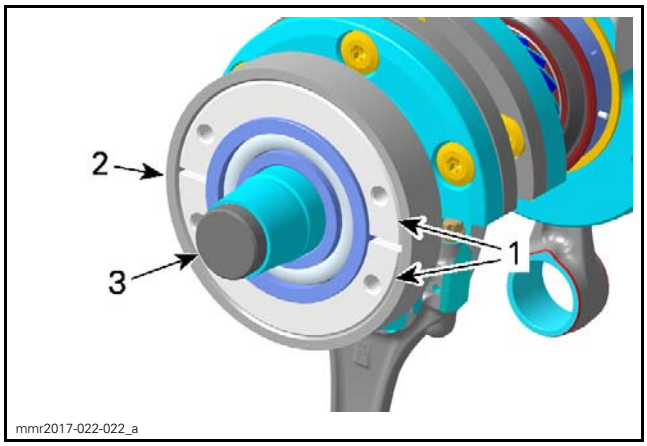
Install half rings and puller ring on the outer bearing race.

REQUIRED TOOLS	
HALF-RINGS (P/N 420 977 475)	
PULLER RING (P/N 420 977 490)	
CRANKSHAFT PROTECTOR (P/N 529 036 434)	

Ensure to position bearing pin between half ring gap.



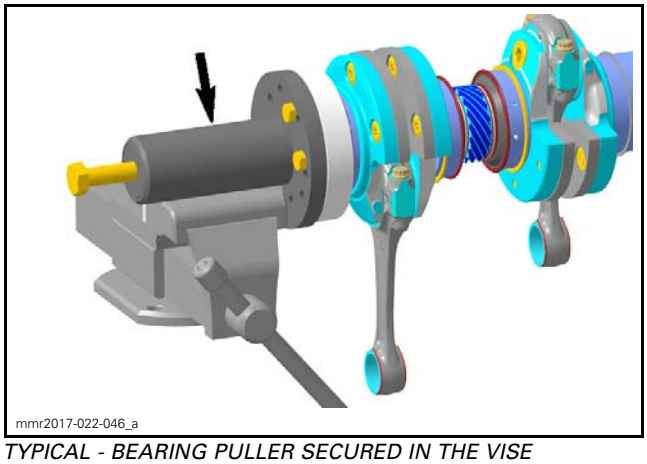
TYPICAL - MAG SIDE



TYPICAL - MAG SIDE
1. *Half rings*
2. *Puller ring*
3. *Crankshaft protector*

REQUIRED TOOL	
CRANKSHAFT BEARING PULLER (P/N 529 036 004)	

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.

SERVICE PRODUCT	
Scandinavia	LUBRICANT AND ANTI-CORROSIVE (EUR) (P/N 779224)
All other countries	LUBRICANT AND ANTI-CORROSIVE (P/N 779168)

Screw in the puller bolt until the bearings come out.

Repeat same procedure to remove inner bearing.

Discard ball bearings.

PTO Side

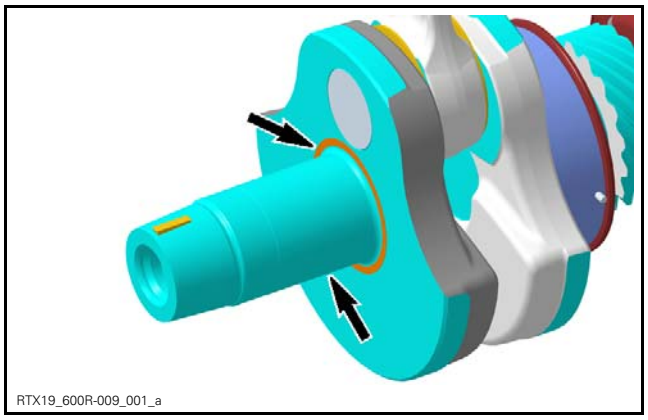
Repeat steps for PTO bearings. Pay attention to the following.

REQUIRED TOOLS	
HALF-RINGS (P/N 420 977 479)	
PULLER RING (P/N 420 977 490)	
CRANKSHAFT PROTECTOR (P/N 529 036 434)	

Installing the Crankshaft Bearings

Inspect crankshaft ends for damage.

Clean crankshaft ends with sand paper no. 400 to remove possible seal marks and debris.



Remove all residue.

SERVICE PRODUCT	
Scandinavia	PULLEY FLANGE CLEANER (F) (P/N 619 600 022)
All other countries	CLUTCH AND PULLEY FLANGE CLEANER PRO S1 (P/N 779244)

Heating the Bearing

Heat up the bearing(s) to ease installation.

If required put a suitable plate or shim between integrated seal and the heating surface to avoid direct contact.

REQUIRED TOOL	
BEARING HEATER (P/N 529 035 969)	

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.

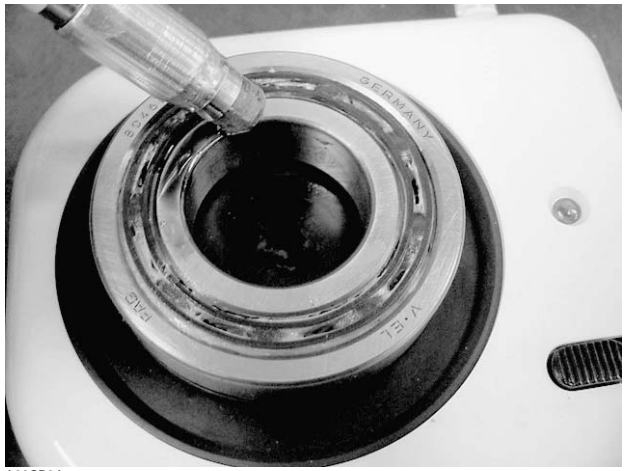
For even heat distribution, turn bearing several times during heating process.

NOTE: Two bearings can be heated at the same time on one bearing heater.

1. Bearings

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.

REQUIRED TOOL	
TEMPERATURE INDICATOR STICK (P/N 529 035 970)	



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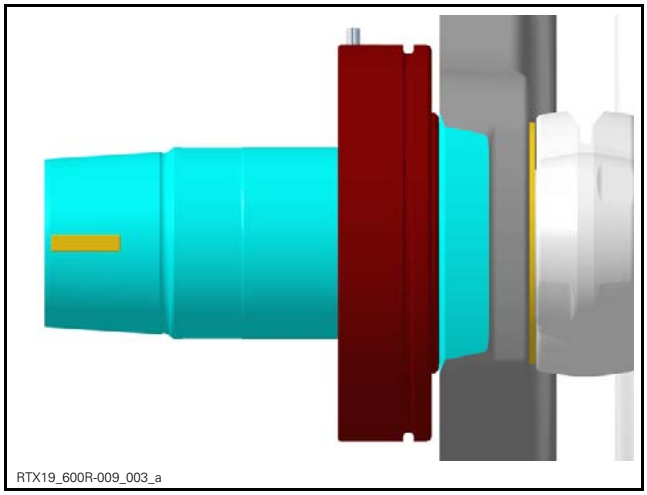
NOTICE Never reinstall a bearing that has been removed.

MAG Side Bearings

Slide the inner MAG bearing on crankshaft until it bottoms on crank web.

NOTE: The locating pin has to be positioned outwards.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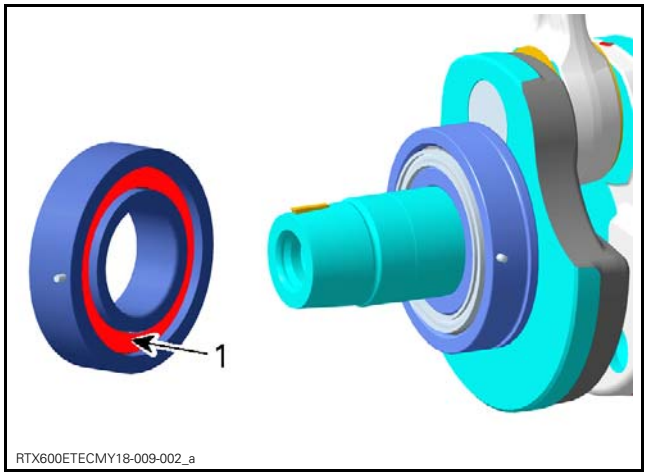
NOTE: Heated bearing should slide easily onto the crankshaft. If required, push with a steel tube on the inner race of the bearing.

With a syringe, fill inner side of outer ball bearing with 6 ml (.2 U.S. oz) of grease.

SERVICE PRODUCT
ISOFLEX GREASE TOPAS NB 52 (P/N 293 550 021)



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1. Apply grease here

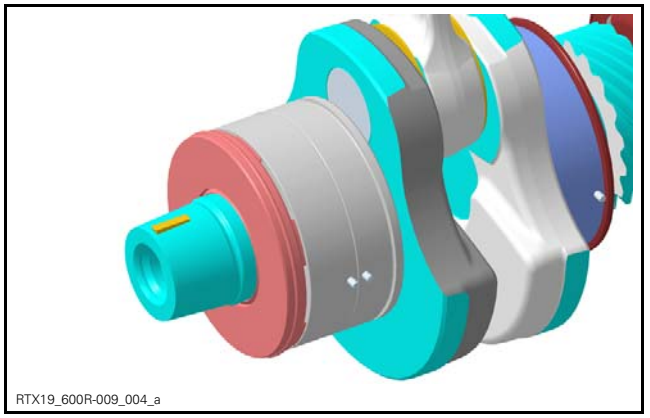
NOTICE Use only the recommended service product. Do not exceed the recommended amount of grease.

Slide the outer bearing on crankshaft until it sits on inner bearing.

NOTE: The locating pin has to be positioned inbound.

Lubricate oil seal sealing lip and slide it on crankshaft until it sits on outer bearing.

SERVICE PRODUCT
PETAMO GREASE GHY 133N (P/N 420 899 271)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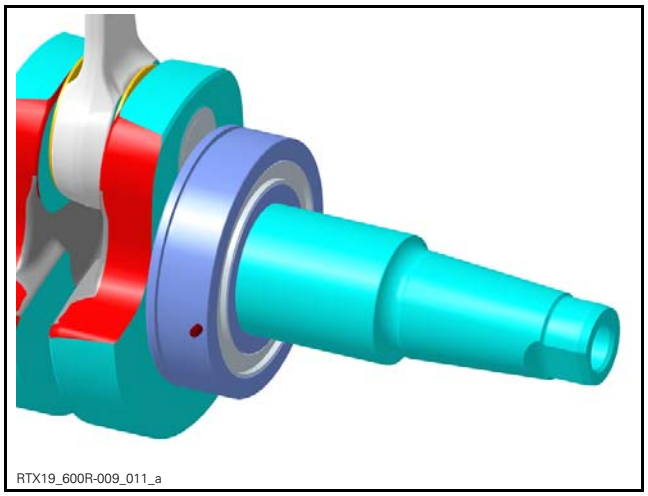
MAG SIDE

PTO Side Bearings

Slide the inner PTO bearing on crankshaft until it bottoms on crank web.

NOTE: The locating pin has to be positioned outwards.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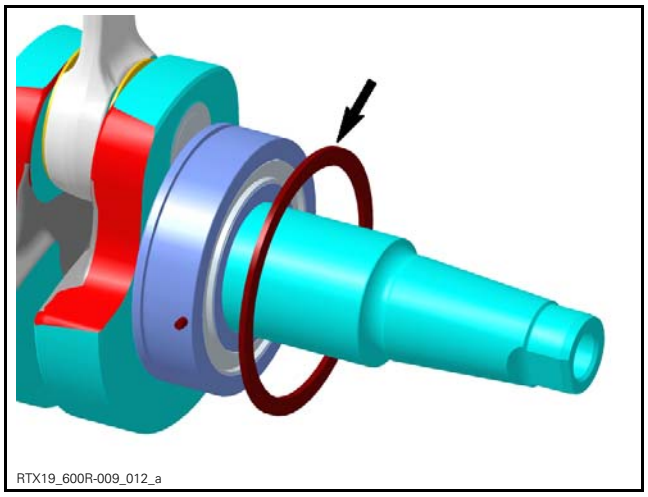
NOTE: Heated bearing should slide easily onto the crankshaft. If required, push with a steel tube on the inner race of the bearing.

Install the retaining disc.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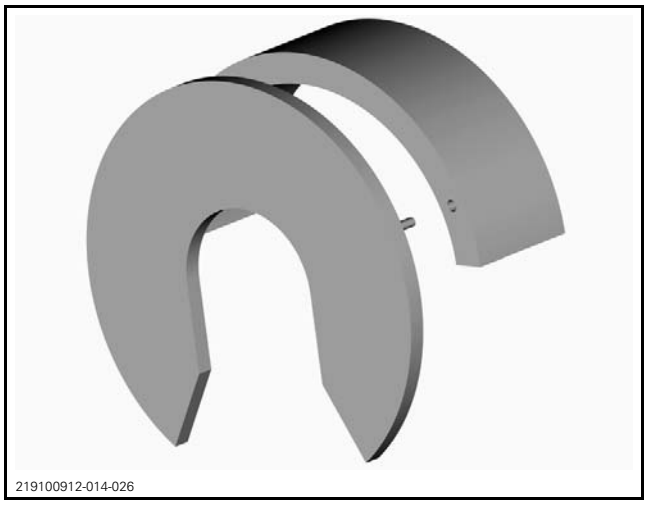
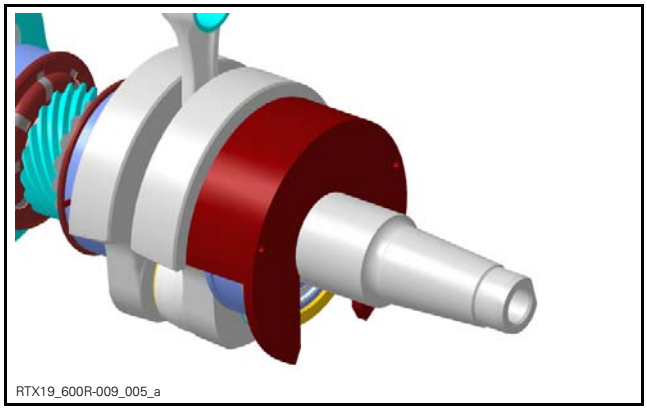
Install support plate with distance gauge.

REQUIRED TOOLS	
SUPPORT PLATE (P/N 529 035 976)	
CRANKSHAFT DISTANCE GAUGE (P/N 529 036 453)	


219100912-014-026

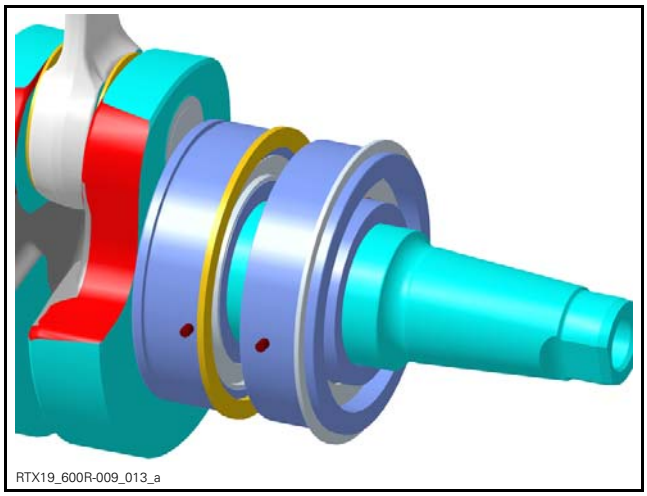
Install bearing locator.


RTX19_600R-009_005_a

Slide heated outer PTO bearing on crankshaft until it sits on distance gauge.

NOTE: The locating pin has to be positioned inbound.

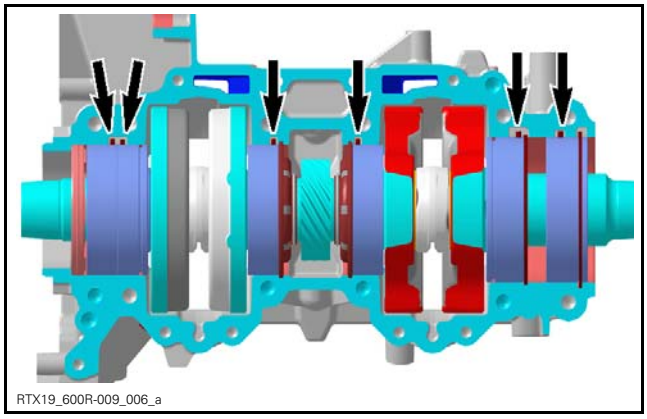
Remove bearing locator tool.


RTX19_600R-009_013_a

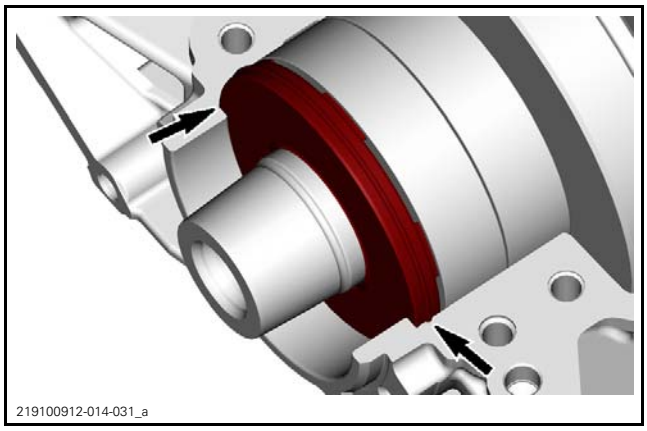
PTO SIDE

Installing the Crankshaft

1. Position locating pins in their recess as illustrated.


RTX19_600R-009_006_a

2. Pay attention to properly locate oil seals and retaining disc in their designated groove.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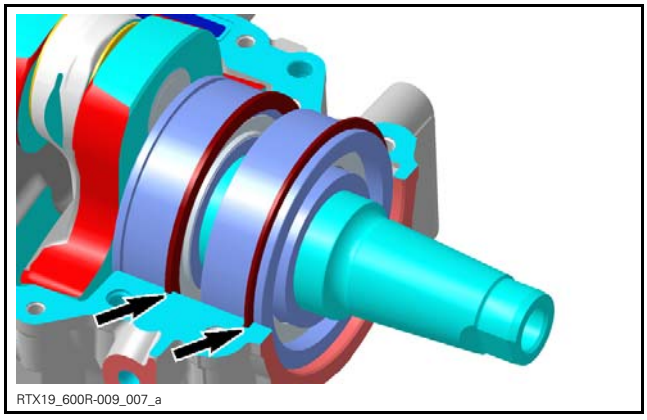
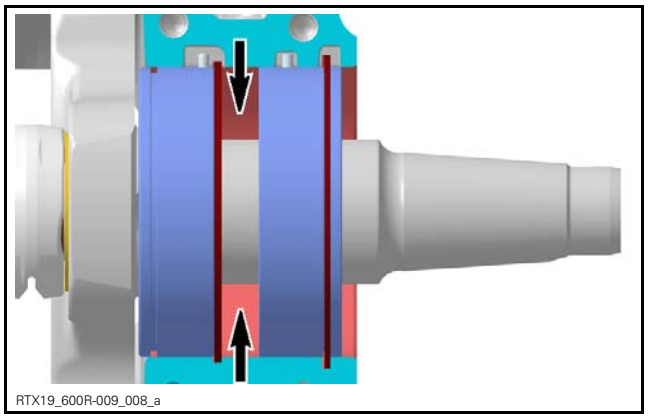
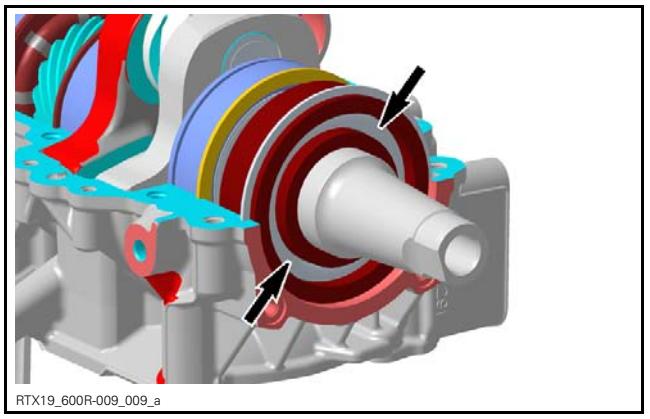

RTX19_600R-009_007_a

With a syringe, fill room between inner and outer ball bearing and outer side of outer ball bearing with 35 ml (1.2 U.S. oz) of grease.

SERVICE PRODUCT
ISOFLEX GREASE TOPAS NB 52 (P/N 293 550 021)


RTX19_600R-009_008_a

FILL WITH 30ML

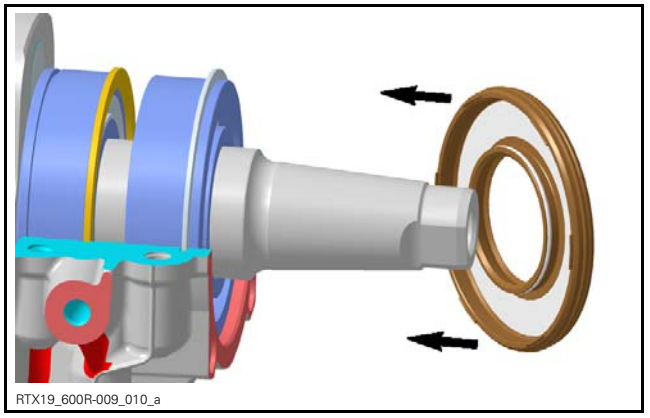

RTX19_600R-009_009_a

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.

SERVICE PRODUCT
PETAMO GREASE GHY 133N (P/N 420 899 271)


RTX19_600R-009_010_a

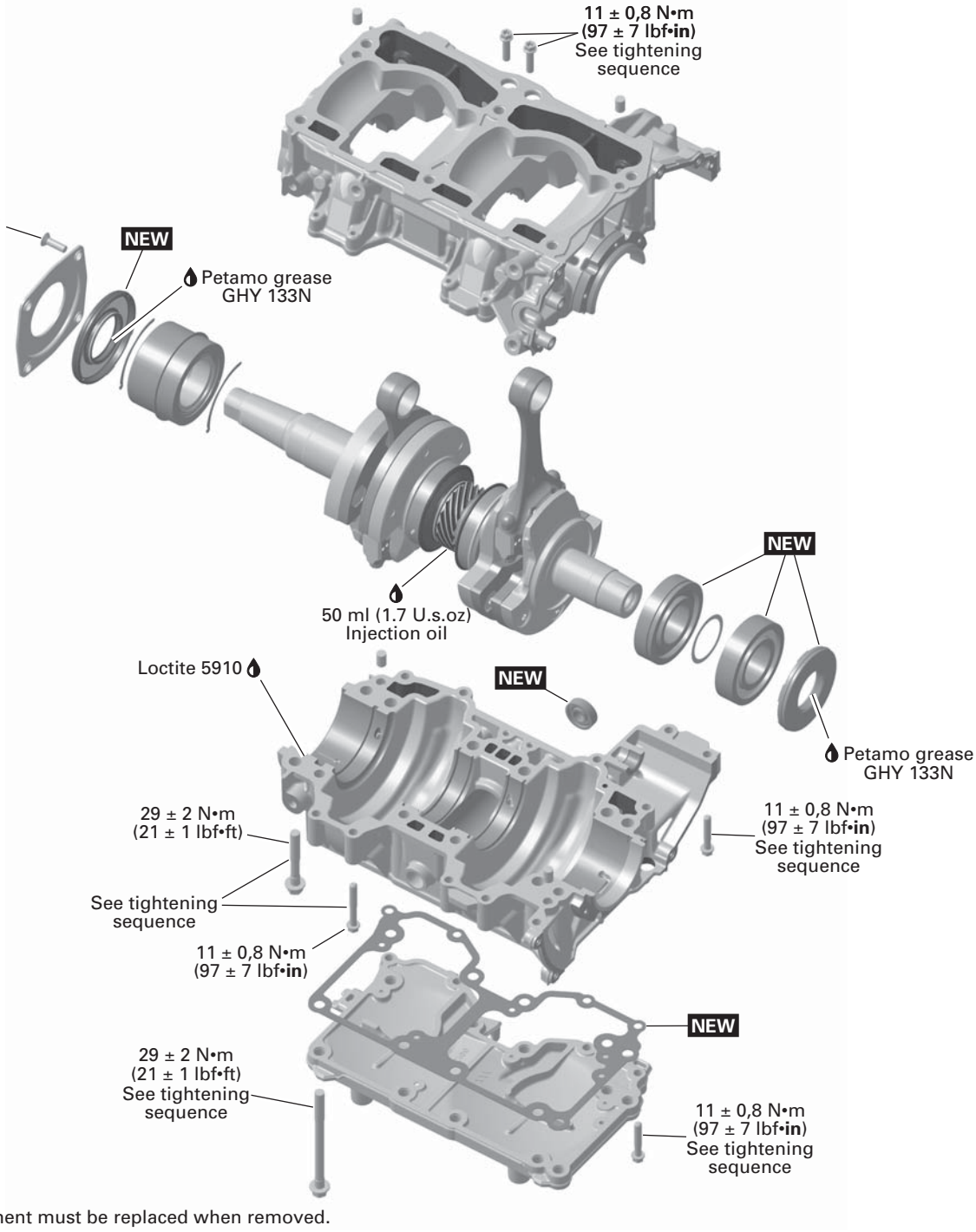
BOTTOM END (850 E-TEC)

SERVICE TOOLS

Description	Part Number	Page
BEARING HEATER	529 035 969	163
CRANKSHAFT BEARING PULLER	529 036 004	162
CRANKSHAFT PROTECTOR	529 036 434	162
DEGREE WHEEL	529 035 607	161
DIAL GAUGE ADAPTER	529 036 443	160
DISTANCE GAUGE	529 036 415	165
HALF-RING	529 036 414	162
PULLER RING	420 977 490	162
TEMPERATURE INDICATOR STICK	529 035 970	163
WATER PUMP BEARING PUNCH	529 036 417	158

SERVICE PRODUCTS

Description	Part Number	Page
CLUTCH AND PULLEY FLANGE CLEANER PRO S1	779244	163
LOCTITE 5910	293 800 081	158
LOCTITE CHISEL (GASKET REMOVER)	413 708 500	157
LUBRICANT AND ANTI-CORROSIVE	779168	162
PETAMO GREASE GHY 133N	420 899 271	164, 167



NEW = Component must be replaced when removed.

mmr2017-022-001_b

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 assembly or 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).

Go to:

– **Settings** page
– **Initialization - Restart Break-In**.

PROCEDURES

CRANKCASE

Disassembling the Crankcase

Remove engine from vehicle. Refer to *ENGINE REMOVAL AND INSTALLATION* subsection.

Refer to *TOP END* subsection to remove:

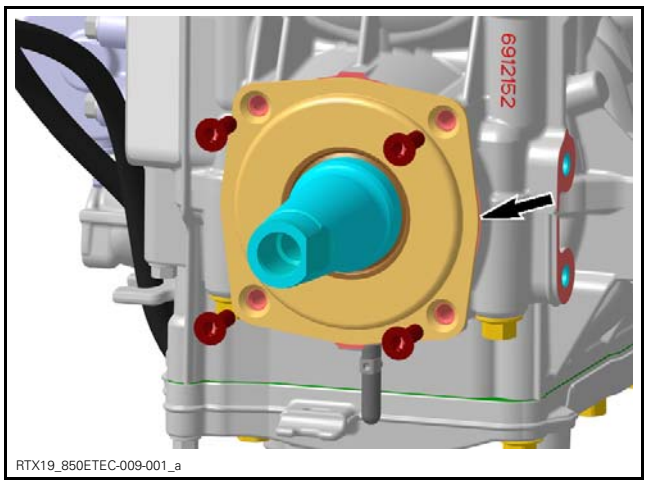
– Cylinder head
– Cylinder block
– Pistons.

Refer to *MAGNETO AND STARTER* subsection to remove:

– Stator
– Magneto housing
– Starter drive
– Starter.

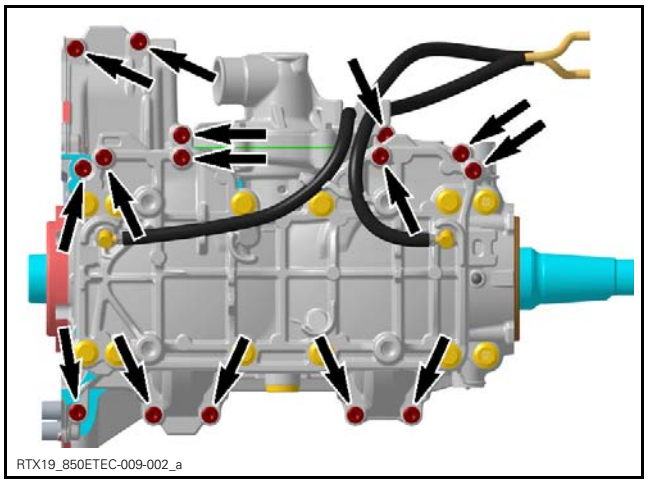
Remove drive pulley. Refer to *DRIVE PULLEY* subsection.

Remove PTO oil seal cover.

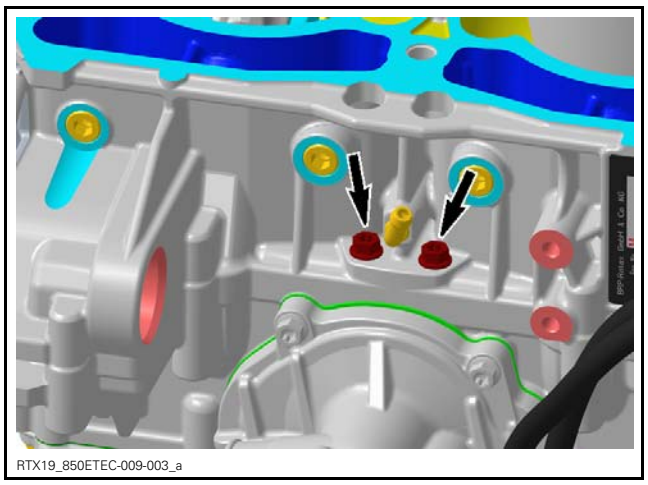


Remove engine front supports.

Remove M6 crankcase screws.

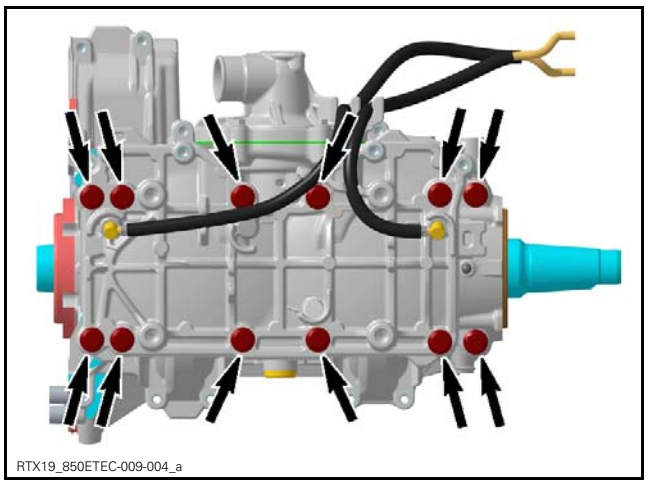


TYPICAL - M6 CRANKCASE SCREWS - BOTTOM SIDE



M6 CRANKCASE SCREW - WATER PUMP SIDE

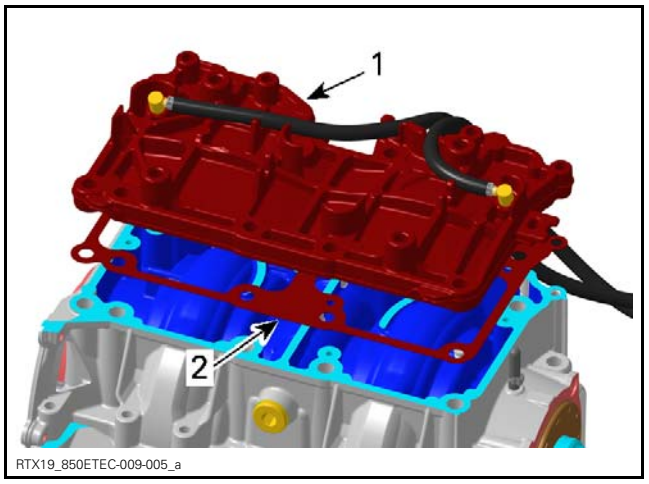
Remove M8 crankcase screws.



TYPICAL - BASE PLATE RETAINING SCREWS

Remove base plate and discard gasket.

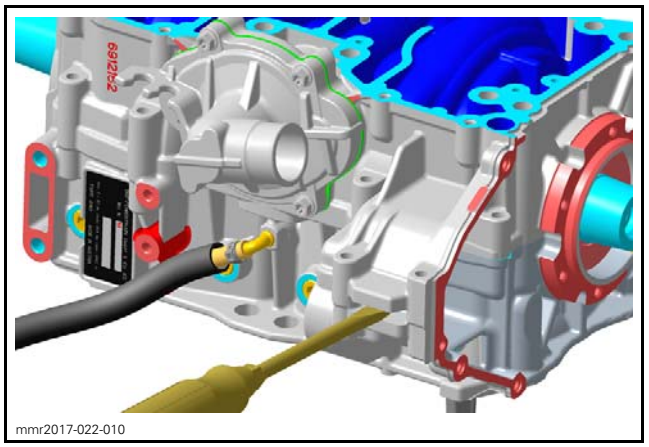
NOTICE **Whenever base plate is removed, crankcase must be opened, cleaned, and re-sealed.**



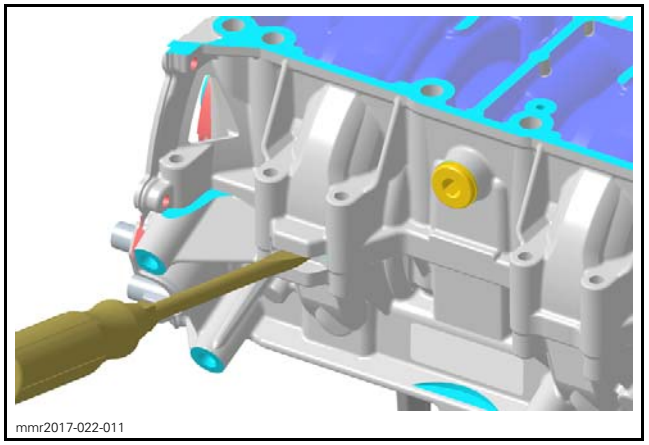
1. Base plate
2. Gasket (discard it)

Split crankcase.

NOTE: To prevent damage to crankcase mating surfaces, use prying lugs to "unstick" crankcase.

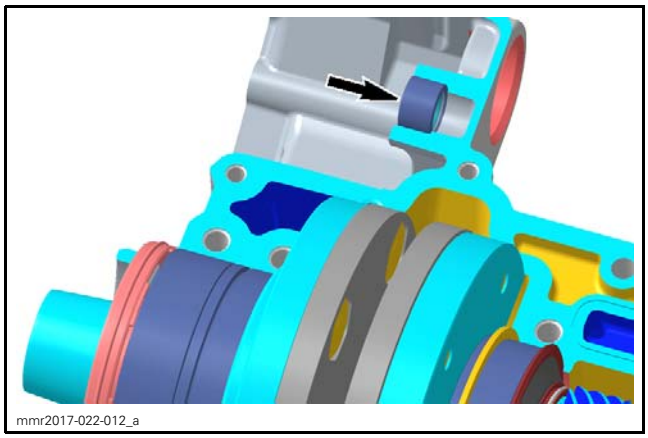


TYPICAL - PRYING LUGS

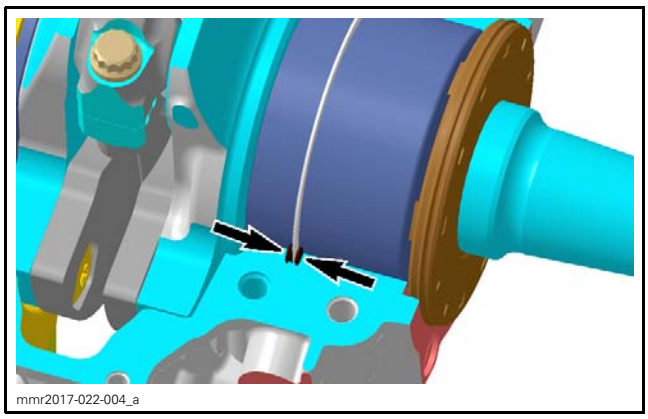


PRYING LUGS

Remove:
– Starter drive needle bearing
– Crankshaft assembly
– Shims.



STARTER DRIVE NEEDLE BEARING



SHIMS

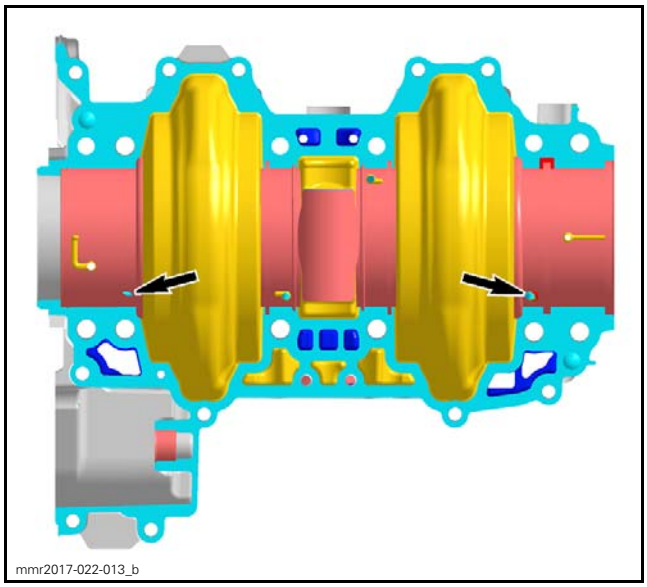
Cleaning the Crankcase and Base Plate

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

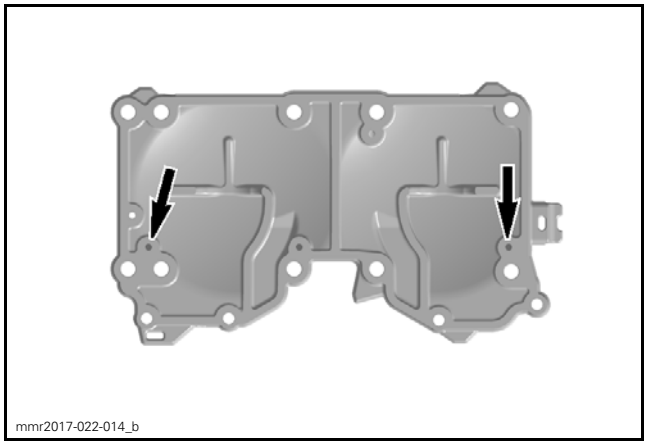
CRANKCASE CLEANING	
Service product	LOCTITE CHISEL (GASKET REMOVER) (P/N 413 708 500)

NOTICE **Never use a sharp object to remove sealant as score marks incurred are harmful to crankcase sealing.**

Blow out the oil orifices using compressed air and make sure they are not clogged.



OIL BORES IN CRANKCASE LOWER PART



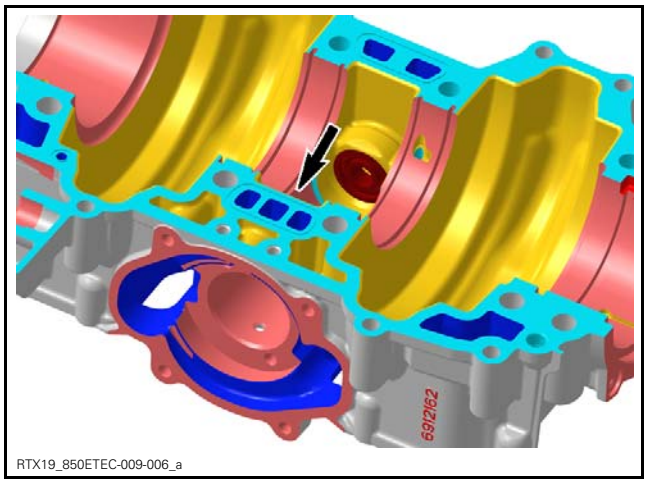
OIL BORES IN BASE PLATE

Inspecting the Crankcase and Base Plate

Check crankcase and base plate for cracks or other damages. Replace if necessary.

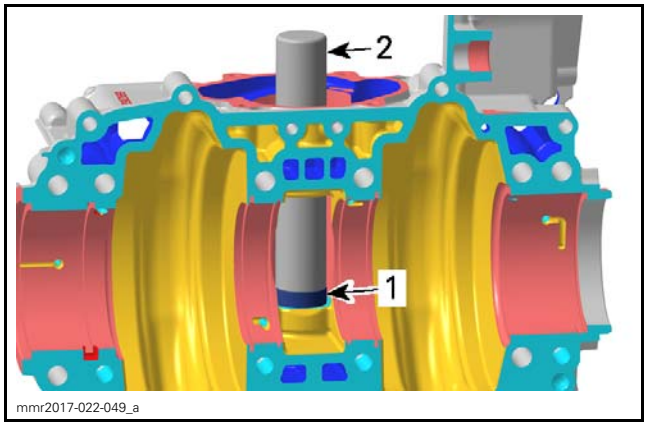
Water Pump Bearing Replacement

Use a suitable punch to push ball bearing out of crankcase.



Install **NEW** ball bearing.

REQUIRED TOOL	
WATER PUMP BEARING PUNCH (P/N 529 036 417)	



1. *Ball bearing*
2. *Water pump bearing punch*

Assembling the Crankcase

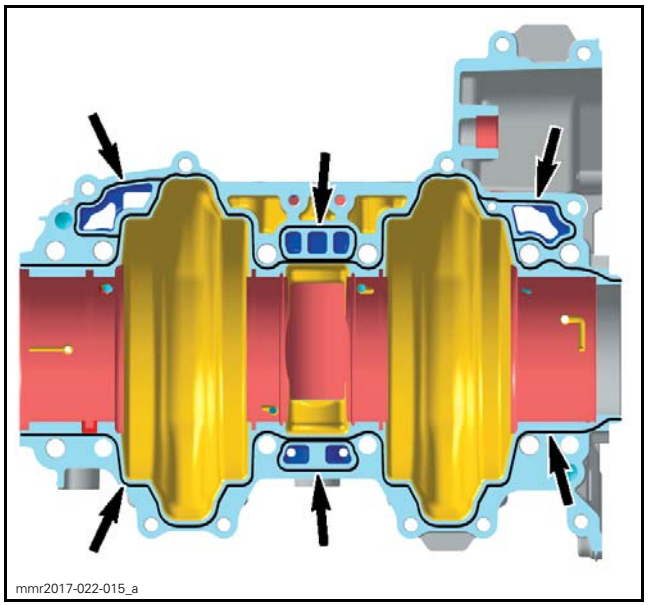
Install crankshaft in upper crankcase. See *CRANKSHAFT* for procedure.

Install needle bushing in crankcase upper with the writing showing to the outside.

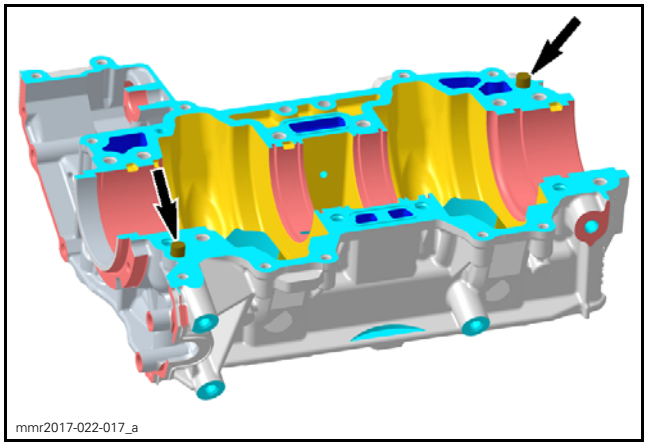
Apply sealant on lower crankcase as per following procedure.

CRANKCASE SEALANT	
Service product	LOCTITE 5910 (P/N 293 800 081)

NOTE: The total assembly sequence, including sealing compound application and crankcase torquing, must be performed within 10 minutes.



Ensure dowel pins are in their holes.



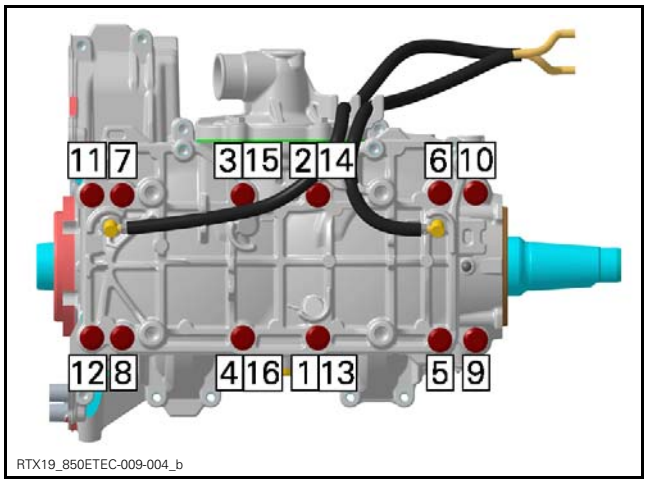
Assemble crankcase lower half.

Install base plate with **NEW** gasket.

Install crankcase screws.

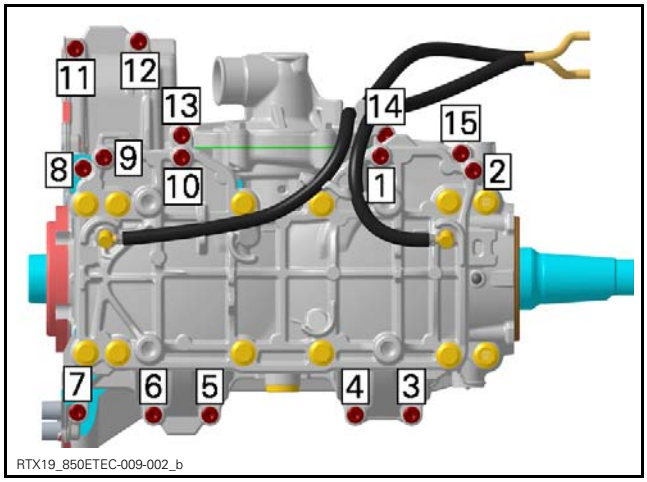
Tighten crankcase screws to specification as per illustrated sequence.

TIGHTENING TORQUE	
M8 Crankcase screws	29 N•m ± 2 N•m (21 lbf•ft ± 1 lbf•ft)

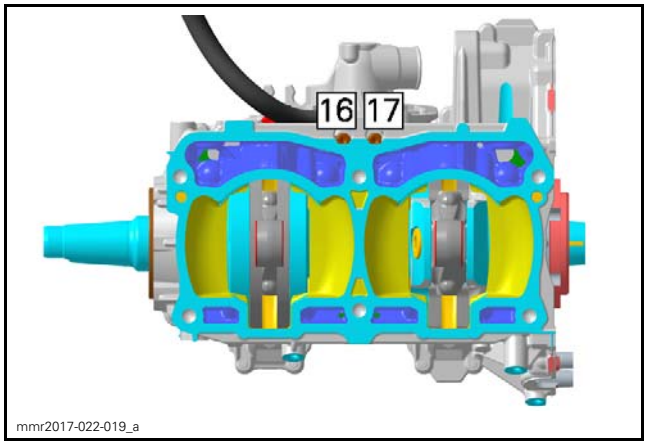


TYPICAL - TIGHTENING SEQUENCE - M8 CRANKCASE SCREWS

TIGHTENING TORQUE	
M6 Crankcase screws	11 N•m ± 0.8 N•m (97 lbf•**in** ± 7 lbf•**in**)



TYPICAL - TIGHTENING SEQUENCE - BOTTOM VIEW



TYPICAL - TIGHTENING SEQUENCE- M6 CRANKCASE SCREWS - TOP VIEW

Install PTO oil seal cover.

Tighten oil seal cover to specification.

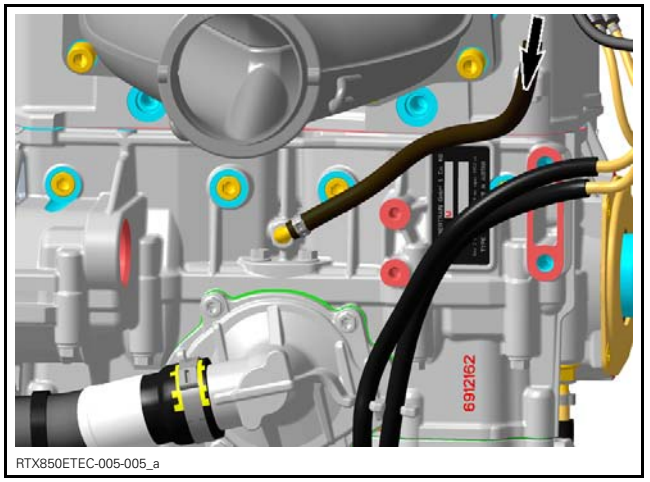
TIGHTENING TORQUE	
Oil seal cover screws	11 N•m ± 0.8 N•m (97 lbf•**in** ± 7 lbf•**in**)

NOTE: It is recommended to test engine cooling system for leaks after engine assembly, before installation in vehicle. Refer to *COOLING SYSTEM* 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.

Using a syringe, fill the water pump gear chamber with injection oil.

CRANKSHAFT WORM GEAR LUBRICATION	
Service product	Injection oil
Quantity	50 ml (1.7 U.S. oz)



TYPICAL

CRANKSHAFT

Removing the Crankshaft

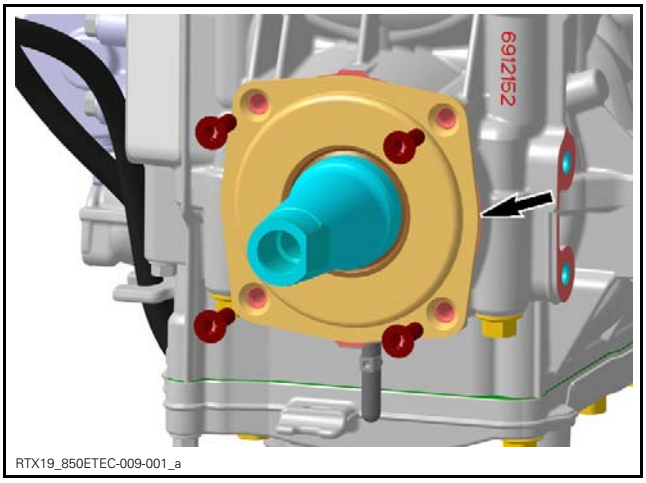
To remove crankshaft, use crankcase disassembly procedure.

Inspecting the Crankshaft

For crankshaft specifications refer to *TECHNICAL SPECIFICATIONS* subsection.

Crankshaft Deflection PTO side (Measuring in Crankcase)

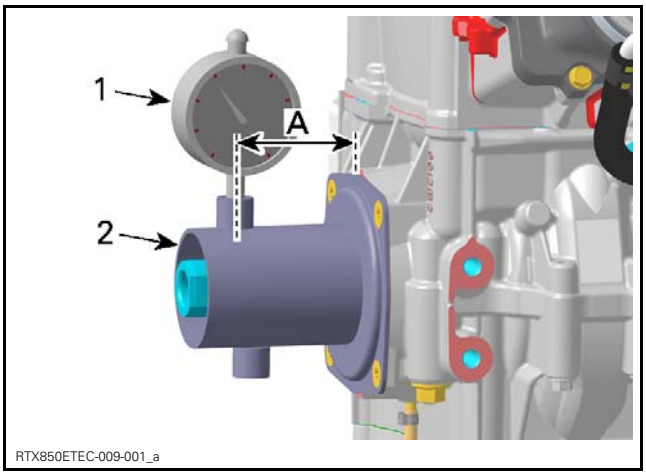
1. Remove PTO oil seal cover.



2. Install the dial gauge adapter.

NOTE: Ensure that the dial gauge tip is compressed at least for 2 mm (.079 in) (2 full rotations of the dial gauge needle).

REQUIRED TOOL
DIAL GAUGE ADAPTER (P/N 529 036 443)
Dial gauge



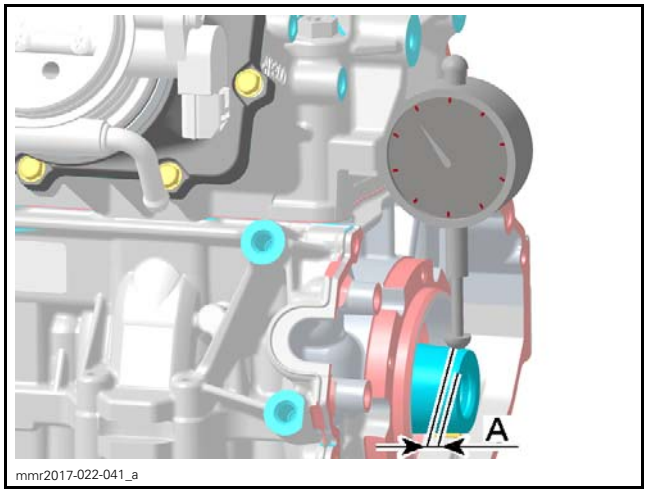
1. Dial gauge
2. Dial gauge adapter
A. 56 mm (2.2 in)

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)*.

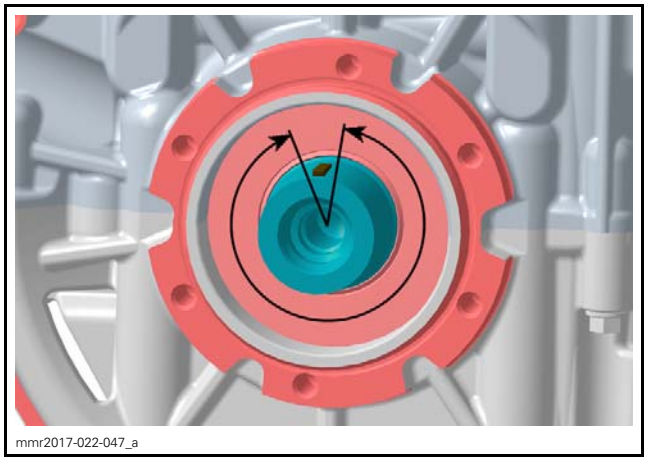
Crankshaft Deflection MAG side (Measuring in Crankcase)

REQUIRED TOOL
Magnetic-base dial gauge holder
Dial gauge



CRANKSHAFT MAG SIDE
A. 3 mm (.12 in)

1. Measure deflection circumferential excluding the woodruff key.

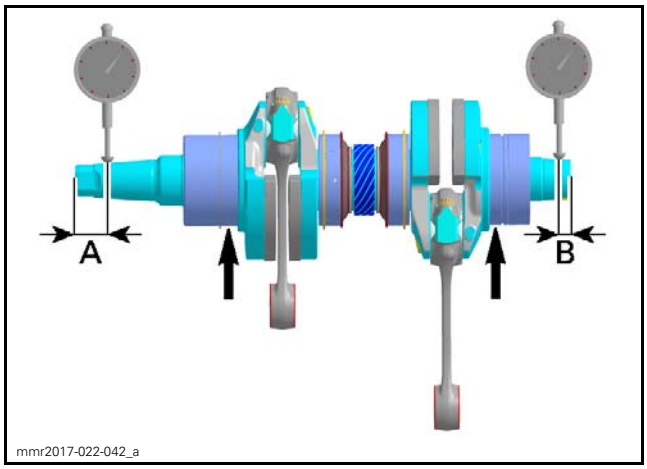


CRANKSHAFT DEFLECTION MAG SIDE	
SERVICE LIMIT	0.050 mm (.002 in)

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)

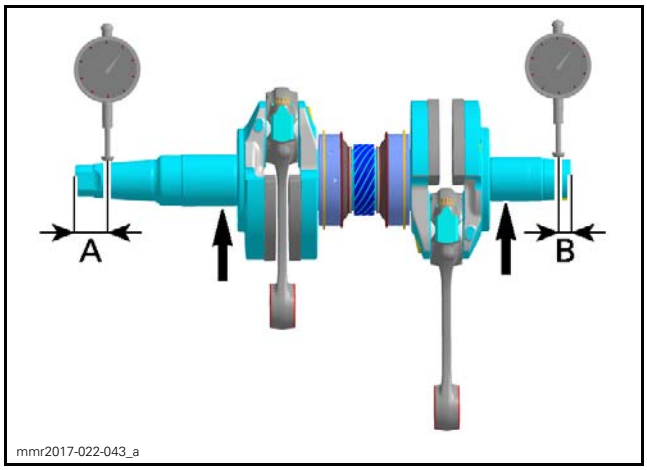
1. Once engine is disassembled, check crankshaft deflection on V-shaped blocks.



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).



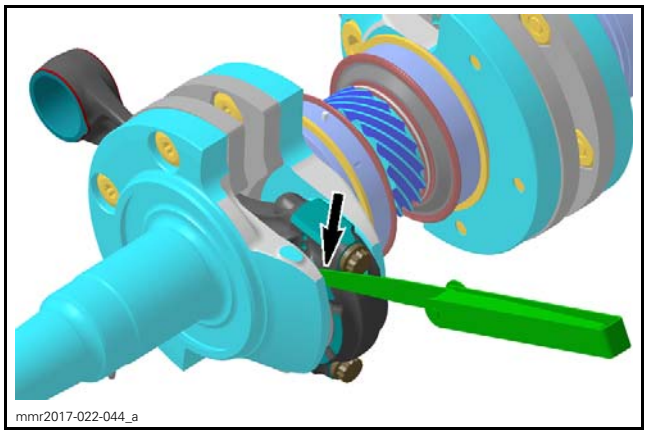
TYPICAL — V-SHAPED BLOCKS POSITION WITHOUT BEARINGS
A. 17 mm (.67 in)
B. 3 mm (.12 in)

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.

REQUIRED TOOL
Feeler gauge



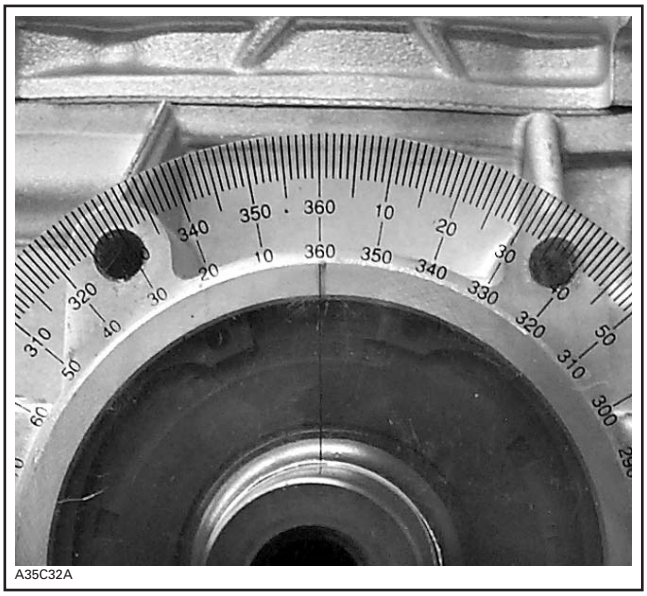
CONNECTING ROD BIG END AXIAL PLAY	
New	0.152 mm to 0.352 mm (.006 in to .0139 in)

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.

REQUIRED TOOL
DEGREE WHEEL (P/N 529 035 607)



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.

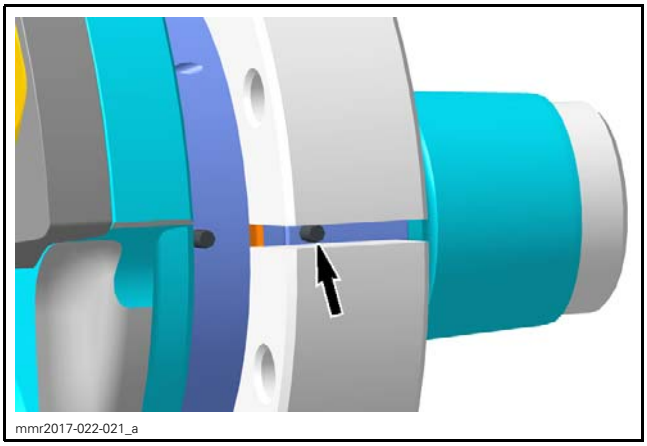
To remove MAG side bearings from crankshaft, install proper half rings and puller ring on the outer bearing race.

The roller bearing on PTO side has a sliding seat and can be removed without a tool.

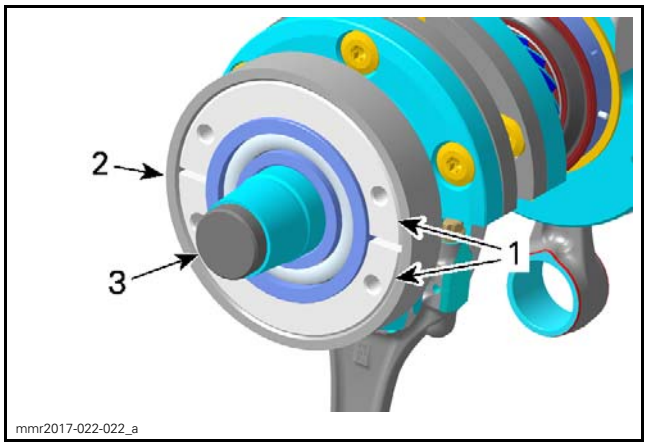
NOTE: Position tools in the groove of the inner bearing and pull out both bearings together.

REQUIRED TOOL	
HALF-RING (P/N 529 036 414)	
PULLER RING (P/N 420 977 490)	
CRANKSHAFT PROTECTOR (P/N 529 036 434)	

Ensure to position bearing pin between half ring gap.



MAG SIDE

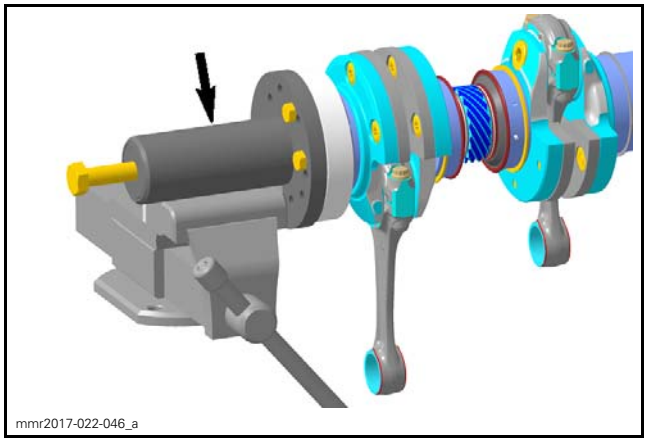


MAG SIDE
1. *Half rings*
2. *Puller ring*
3. *Crankshaft protector*

Install bearing puller on the half rings.

REQUIRED TOOL	
CRANKSHAFT BEARING PULLER (P/N 529 036 004)	

Secure the bearing puller in a vise at its rib.



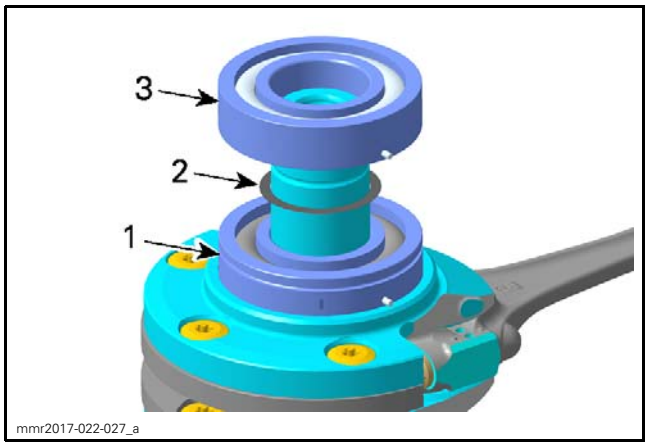
TYPICAL - BEARING PULLER SECURED IN THE VISE

NOTICE Never use any air impact tool for tightening the puller bolt. Lubricate the bolt with LUBRICANT AND ANTI-CORROSIVE (P/N 779168) to avoid damaging the threads.

Screw in the puller bolt until the bearings come out.

During bearing removal take care not to lose the distance shim installed between inner and outer bearing.

Discard ball bearings.

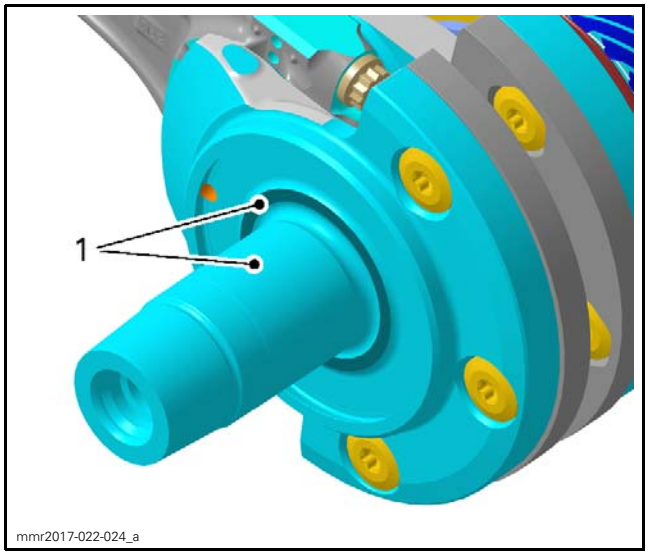


MAG SIDE
1. *Inner bearing*
2. *Distance shim*
3. *Outer bearing*

Installing the Crankshaft Bearing

Inspect crankshaft ends for damage.

Clean crankshaft ends with sand paper no. 400 to remove possible seal marks and debris.



Remove all residue.

CRANKSHAFT ENDS CLEANING	
Service product	CLUTCH AND PULLEY FLANGE CLEANER PRO S1 (P/N 779244)

Heating the Bearing

Heat up the bearing(s) to ease installation.

REQUIRED TOOL	
BEARING HEATER (P/N 529 035 969)	

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.**

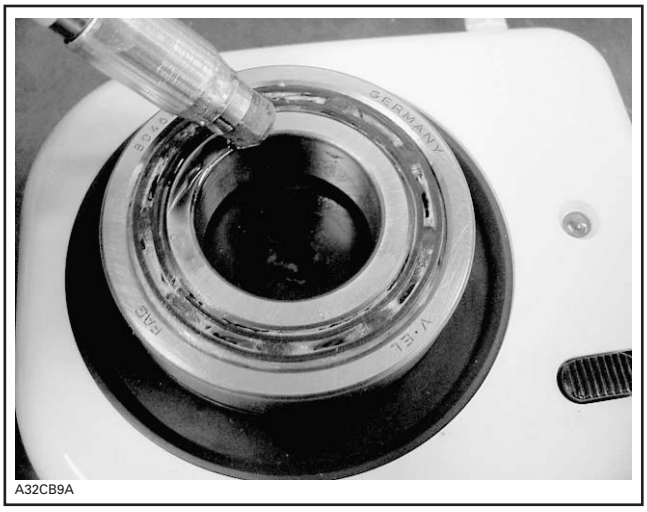
For even heat distribution, turn bearing several times during heating process.

NOTE: Two bearings can be heated at the same time on one bearing heater.

1. Bearings

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.

REQUIRED TOOL	
TEMPERATURE INDICATOR STICK (P/N 529 035 970)	



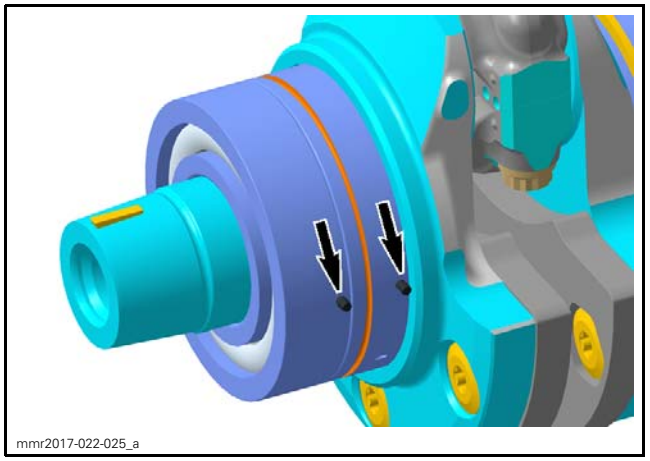
⚠ WARNING

Do not touch heated bearing with bare hands. Always wear heat resisting gloves before handling the heated bearing(s).

NOTICE Never reinstall a bearing that has been removed.

MAG Side Bearings

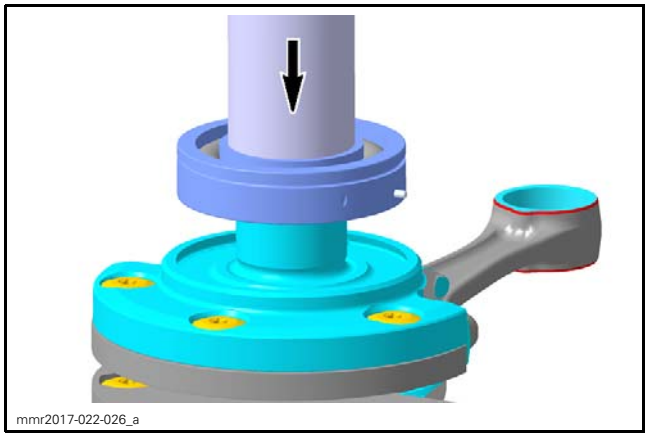
Install MAG bearings on crankshaft so that locating pins will be positioned as shown.



MAG SIDE

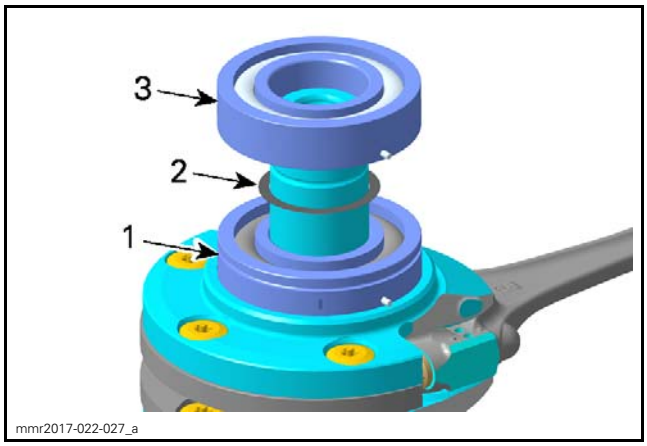
Slide the inner MAG bearing until it bottoms on crankshaft shoulder.

NOTE: Heated bearing should slide easily onto the crankshaft. If required, push with a steel tube on the inner race of the bearing.



Put distance shim on inner MAG bearing.

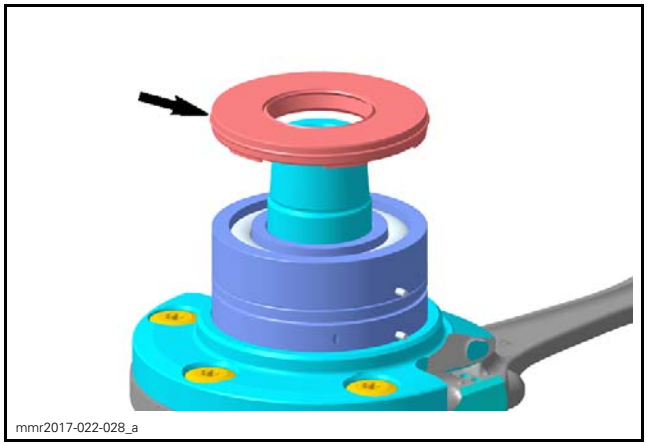
Slide the outer bearing until it sits on distance shim.



MAG SIDE
1. *Inner bearing*
2. *Distance shim*
3. *Outer bearing*

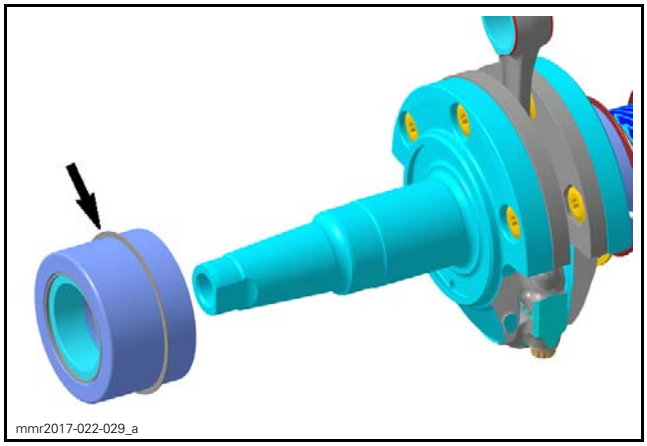
Lubricate oil seal sealing lip and slide it on crankshaft until it sits on outer bearing.

SEALING LIP LUBRICATION	
Service product	PETAMO GREASE GHY 133N (P/N 420 899 271)

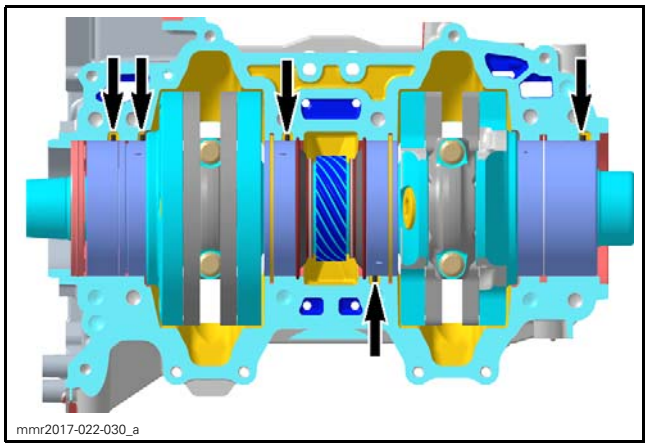


Installing the Crankshaft

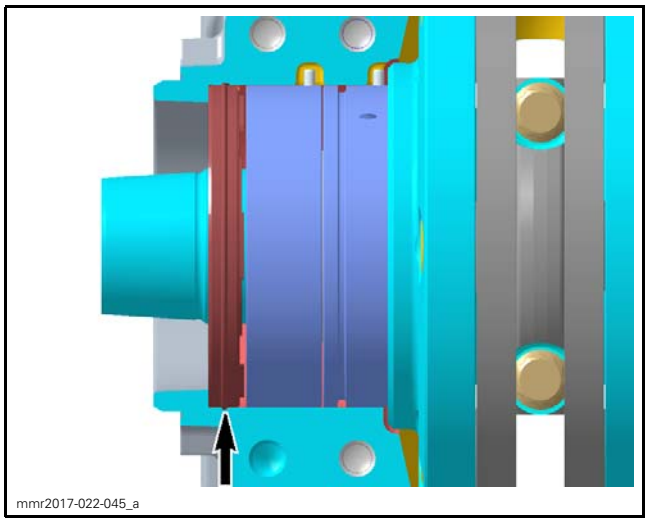
1. Slide cylinder roller bearing on crankshaft journal PTO side.



2. Position locating pins in their recess as illustrated.


mmr2017-022-030_a

3. Pay attention to properly locate MAG seal in its groove.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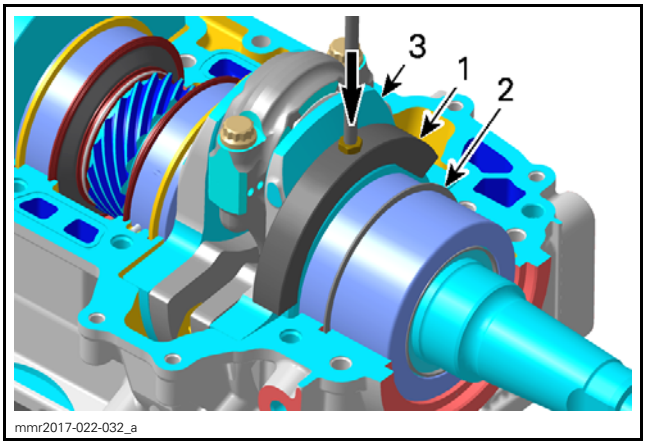
4. Place distance gauge between distance ring and crank web PTO.

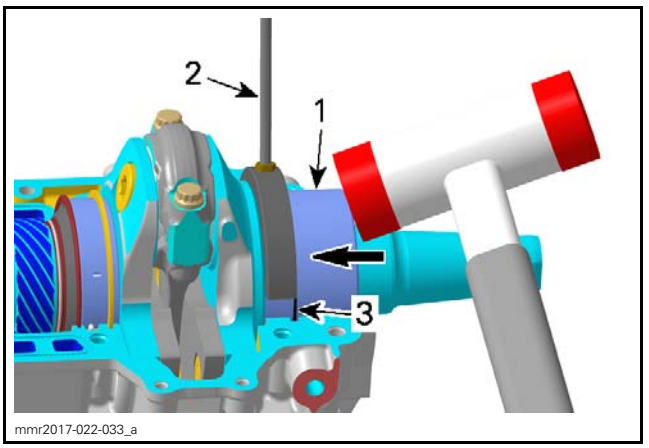
REQUIRED TOOL	
DISTANCE GAUGE (P/N 529 036 415)	



mmr2017-022-032_a

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.



mmr2017-022-033_a

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.

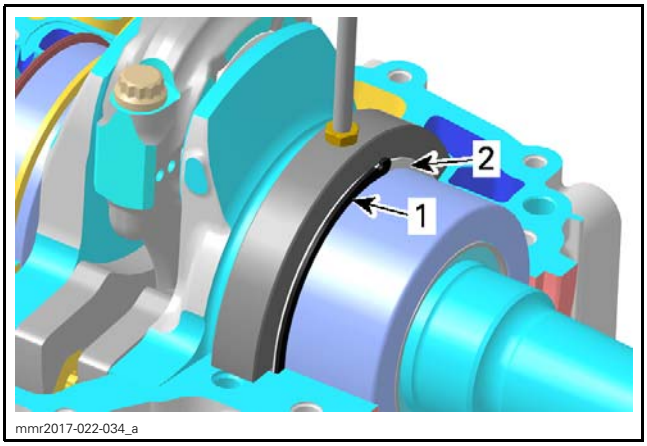
AVAILABLE SHIMS	
SHIM NUMBER	SHIM THICKNESS
50	0.50 mm (.02 in)
75	0.75 mm (.03 in)

AVAILABLE SHIMS	
SHIM NUMBER	SHIM THICKNESS
100	1.00 mm (.039 in)
125	1.25 mm (.049 in)
150	1.50 mm (.059 in)

6.1 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 THE DISTANCE RING	LEFT HAND SIDE OF THE 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



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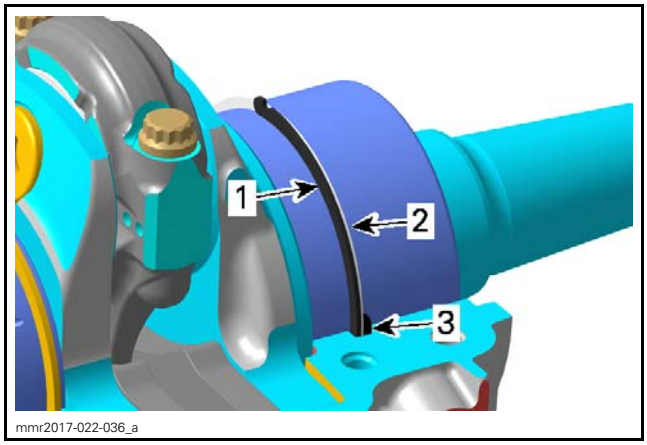
1. Shimming (right hand)
2. Distance ring

6.2 Remove the distance gauge carefully.

6.3 Install the proper shimming at left hand side of the distance ring.



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1. Shimming (left hand)
2. Distance ring
3. Shimming (right hand)

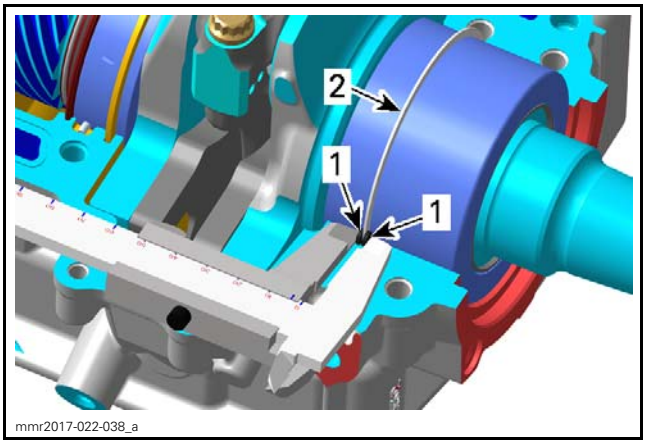
EXAMPLE:

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 THE DISTANCE RING	LEFT HAND SIDE OF THE 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

7. Measure the width of the complete package (shims + distance ring).

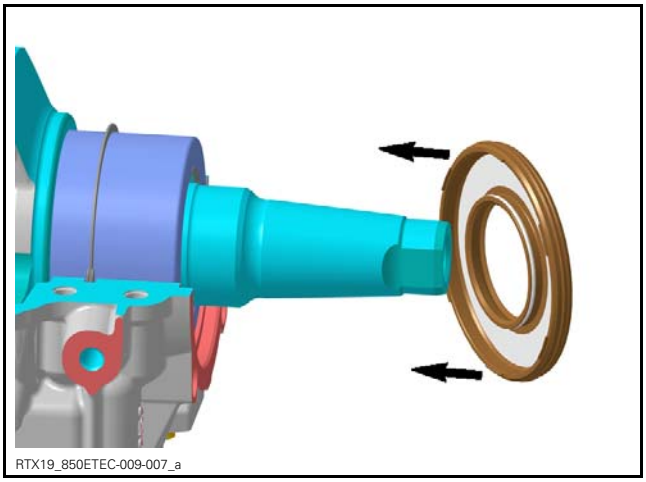
MINIMUM WIDTH OF THE PACKAGE (SHIMS + DISTANCE RING)
3.60 mm to 3.94 mm (.14 in to .16 in)



1. *Shims*
2. *Distance ring*

8. Lubricate oil seal sealing lip and slide it on crankshaft until it sits on outer bearing.

SEALING LIP LUBRICATION	
Service product	PETAMO GREASE GHY 133N (P/N 420 899 271)



E-TEC DIRECT FUEL INJECTION

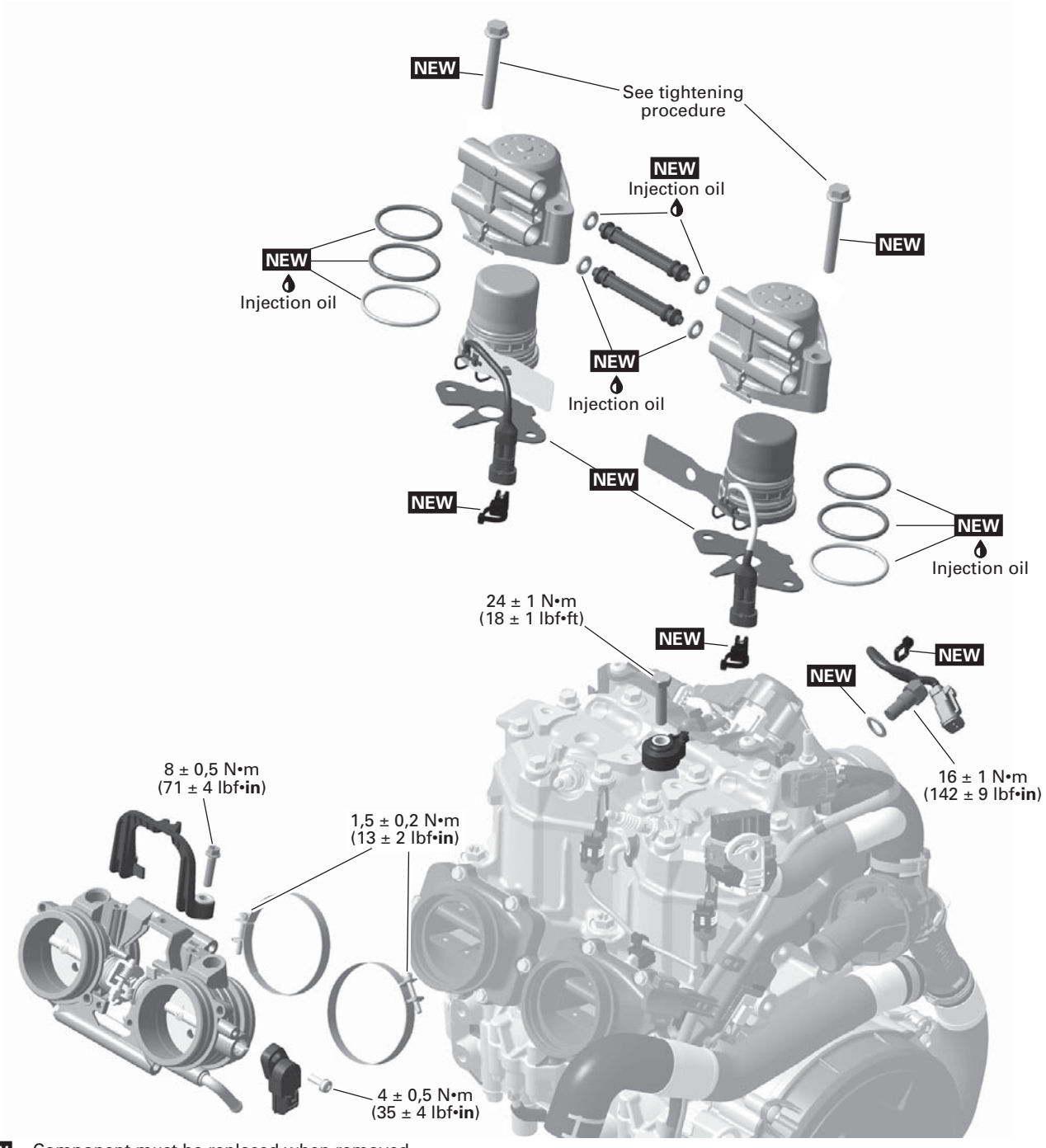
SERVICE TOOLS

Description	Part Number	Page
ECM ADAPTER TOOL	529 036 166	172
EXTRACTOR ADAPTOR	529 036 136	186
FLUKE 115 MULTIMETER	529 035 868	172
OETIKER PLIER	295 000 070	176
SMALL HOSE PINCHER	295 000 076	197

SERVICE PRODUCTS

Description	Part Number	Page
BRAKE AND PARTS CLEANER PRO S2	779245	198
CLUTCH AND PULLEY FLANGE CLEANER PRO S1	779244	175
DIELECTRIC GREASE	293 550 004	190–191
PULLEY FLANGE CLEANER (F)	619 600 022	175

600R E-TEC



NEW = Component must be replaced when removed.

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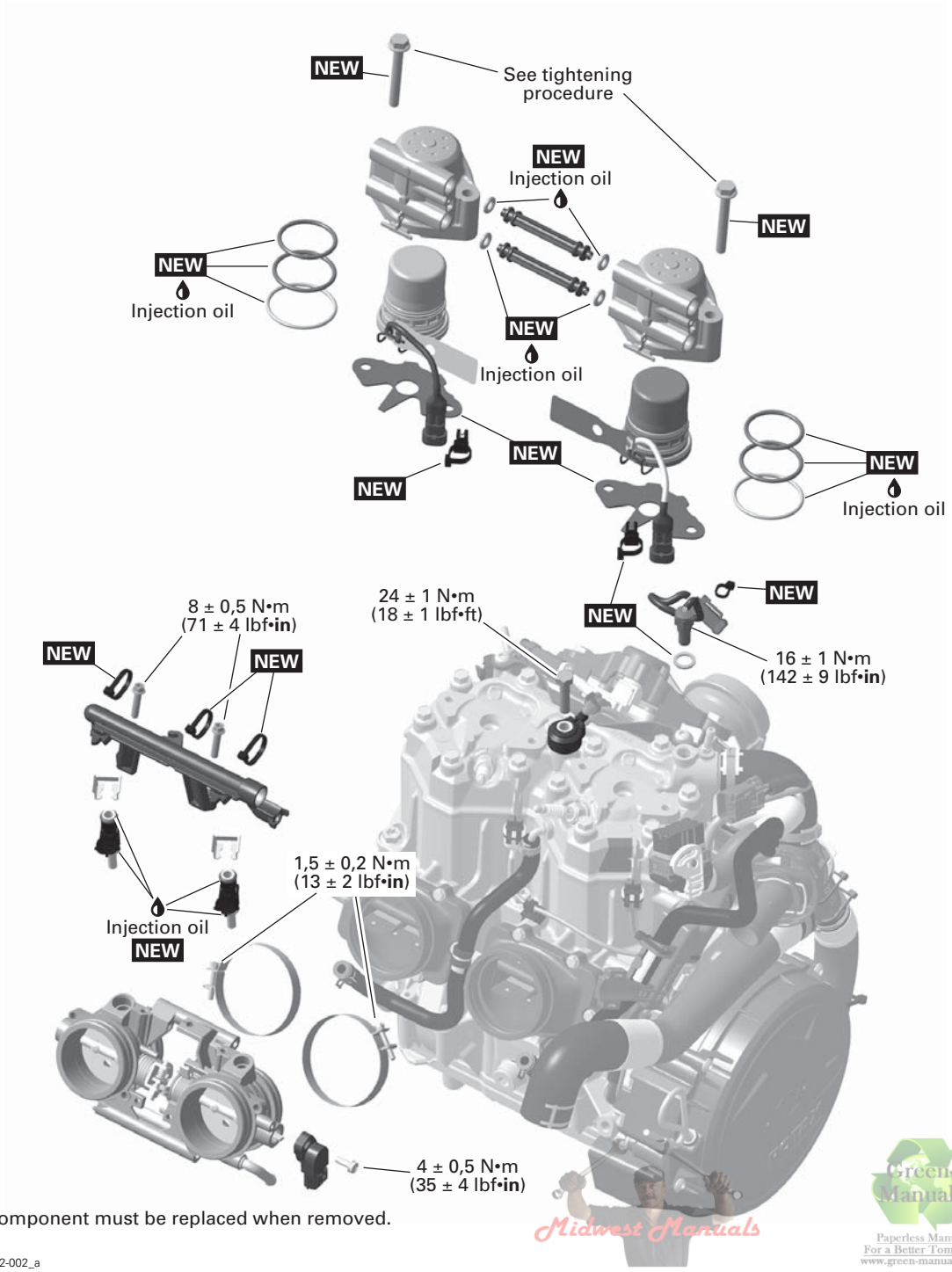
850 E-TEC



NEW = Component must be replaced when removed.

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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.

The following tools are required to test most of the electrical parts.

REQUIRED TOOL	
FLUKE 115 MULTIMETER (P/N 529 035 868)	
ECM ADAPTER TOOL (P/N 529 036 166)	

⚠ 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.

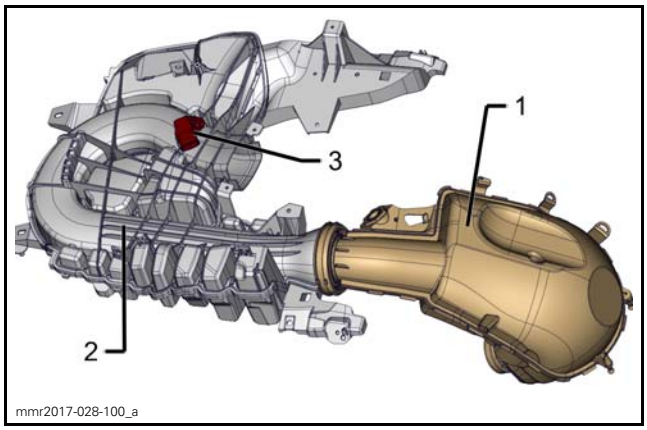
⚠ WARNING

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).

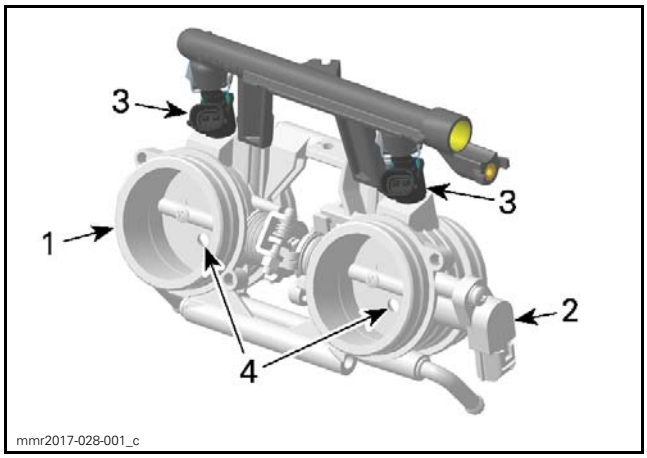
Air then flows through the primary air intake silencer.

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.

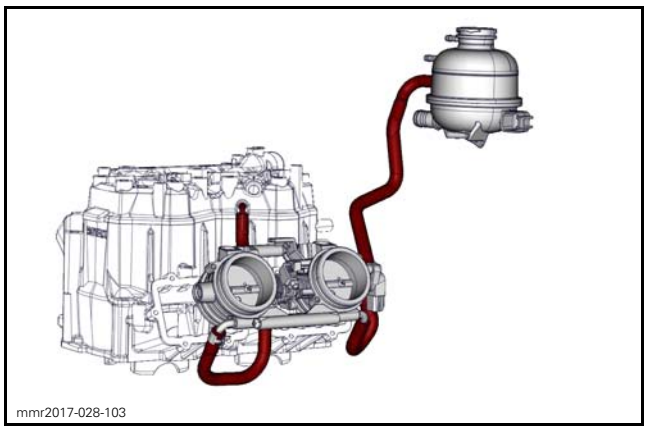


TYPICAL
1. *Throttle body*
2. *TPS (Throttle Position Sensor)*
3. *Throttle body injectors (850 E-TEC only)*
4. *Idle ports*

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.

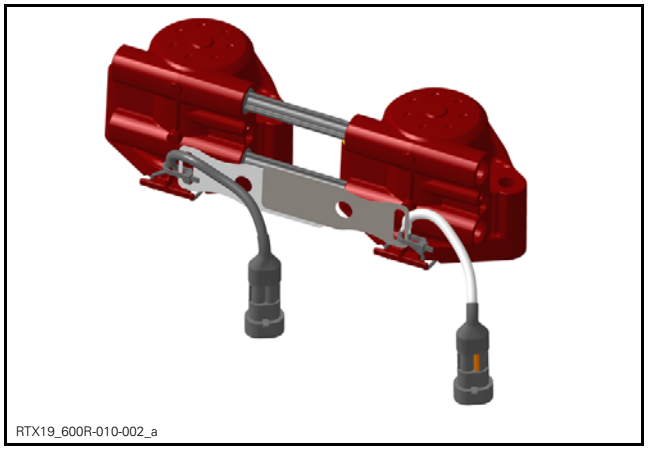


The air then continues through the reed valves into the cylinder base then into the crankcase.

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

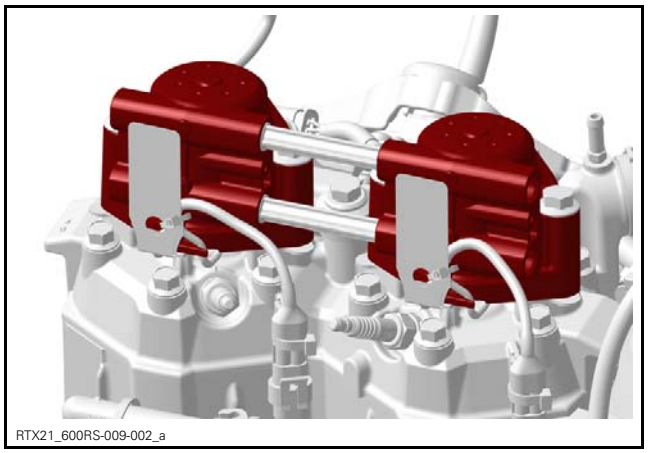


DIRECT INJECTORS

The fuel injectors are powered from the 55 Vdc system.

One fuel injector per cylinder is used.

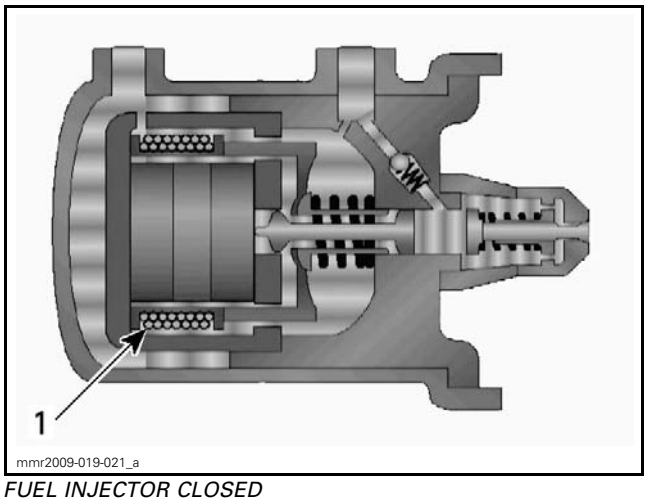
The E-TEC fuel injector is mounted directly on top of the cylinder head.



TYPICAL

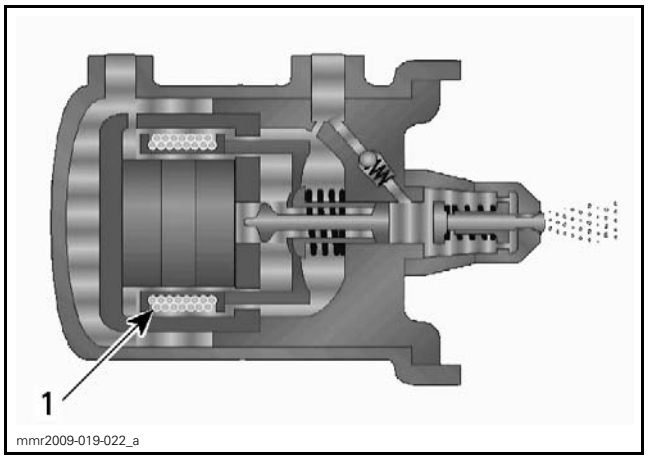
The fuel injector achieves a direct injection right into the combustion chamber. This keeps the piston cooler with less fuel.

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 PSI), the injector needle spring is overcome and the needle opens. Fuel injection then takes place while the pressure peaks at 3 792 kPa (550 PSI).



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.

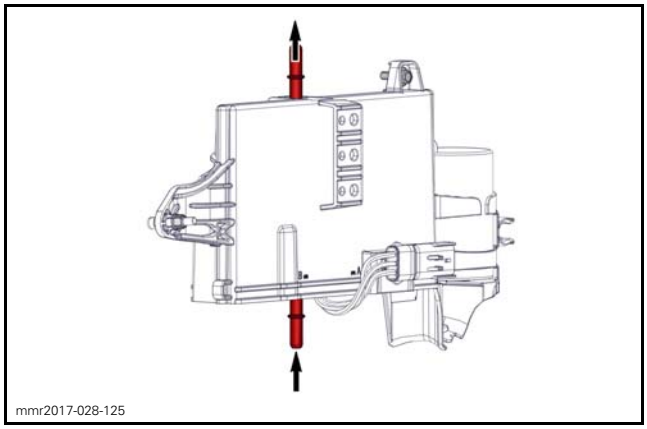
The fuel injectors provide a stratified fuel charge to the combustion chamber at idle speed only. Beyond this RPM, the fuel charge becomes homogeneous.

The stratified fuel charge provides a cleaner combustion, better idling and less smoke.

Fuel is used to maintain proper fuel injector operating temperature.

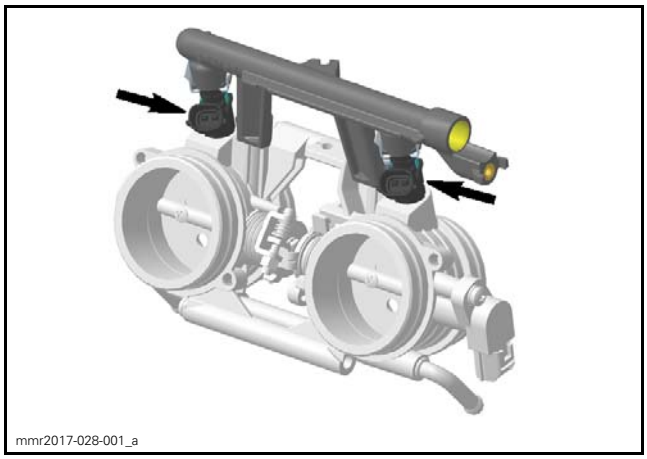
The flow starts from the fuel pump, through the ECM, then around the voice coil inside the fuel injector housings to cool down the fuel injector components.

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 only)

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.

ADJUSTMENT

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 AND B.U.D.S.* 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.

THROTTLE OPENING SPECIFICATION	TEMPERATURE
(0 % ± 0.2)	Above 5°C (41°F)

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).

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.

If the TPS cannot be reset, check the following.

– Fault codes related to TPS
– Throttle cable adjustment
– TPS properly installed
– TPS connector and terminal condition.

Troubleshooting Actual TPS Voltage Out of Range

If the Actual TPS Voltage is out of specification, check the following.

– Fault codes related to TPS
– Throttle cable adjustment
– TPS properly installed
– TPS connector and terminal condition.

INSPECTION

INSPECTING AND CLEANING THE THROTTLE BODY

Clean throttle plates and throttle body bores.

RECOMMENDED SERVICE PRODUCT	
Scandinavia	PULLEY FLANGE CLEANER (F) (P/N 619 600 022)
Other countries	CLUTCH AND PULLEY FLANGE CLEANER PRO S1 (P/N 779244)

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

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

Always use a shop rag when disconnecting a fuel hose.

⚠ CAUTION **Fuel system is under high pressure.**

⚠ WARNING

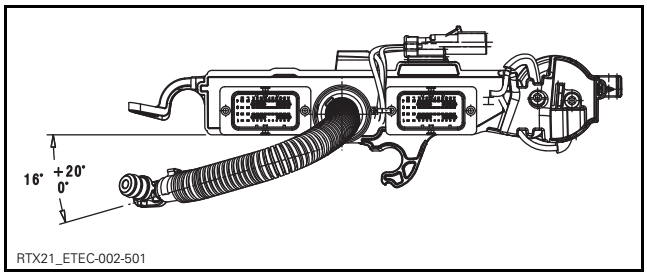
- Never use a hose pincher on high pressure hoses.
- Never change the routing of a fuel hose.
- Always reinstall the corrugated protective tubing on fuel hoses.
- Secure fuel hoses using the appropriate locking tie or fastener to prevent contact with sharp edges or hot, rotating and moving parts.
- After 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.

Installing the Inlet Fuel Hose

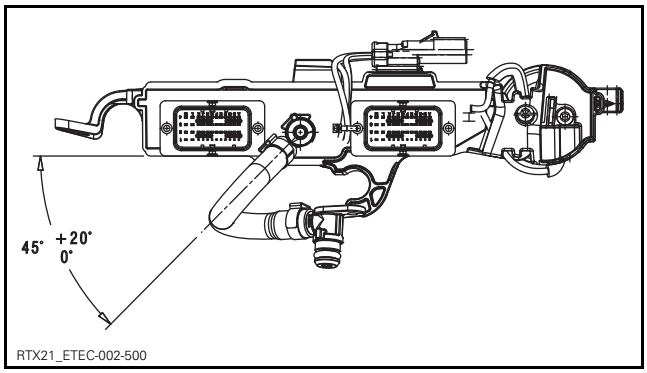
1. Position the inlet fuel hose as per the following illustrations.

600R Engines



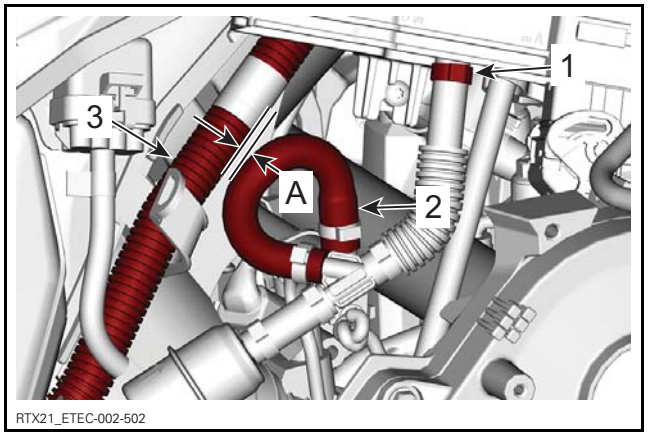
RTX21_ETEC-002-501

850 and 850 Turbo Engines



RTX21_ETEC-002-500

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.



RTX21_ETEC-002-502

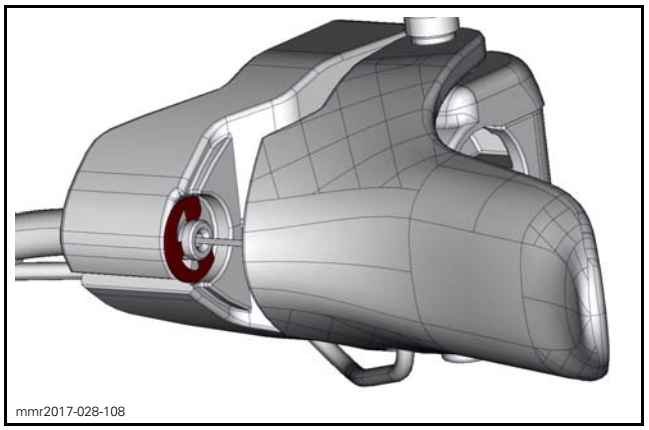
1. Oetiker clamp
2. Fuel inlet hose
3. Fuel outlet hose

A. Required minimum distance: 5 mm (7/32 in)

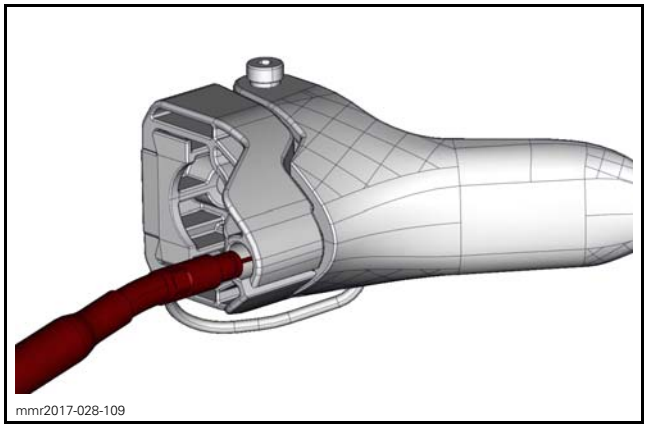
THROTTLE CABLE

Removing the Throttle Cable

1. Depress and hold throttle lever.
2. Pull out circlip using long nose pliers. Keep circlip for re-use.


mmr2017-028-108

3. Pull throttle cable out of the throttle lever housing.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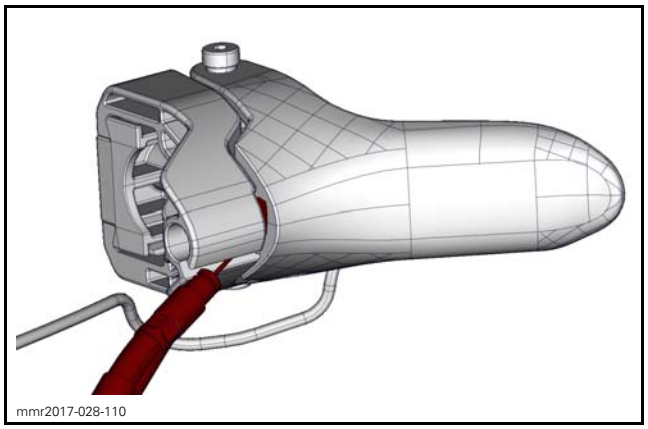
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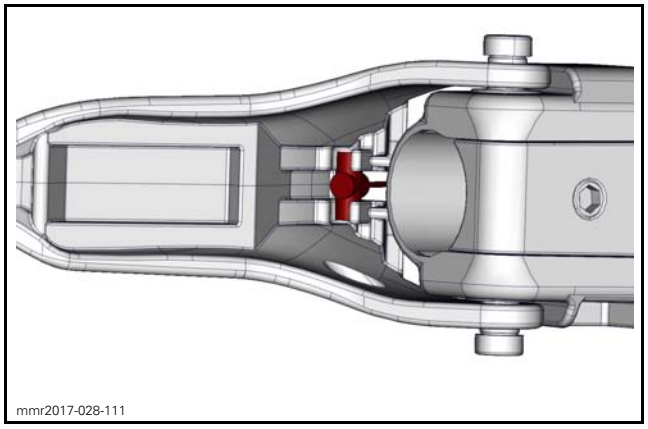
4. Unhook cable end barrel from throttle lever and remove cable.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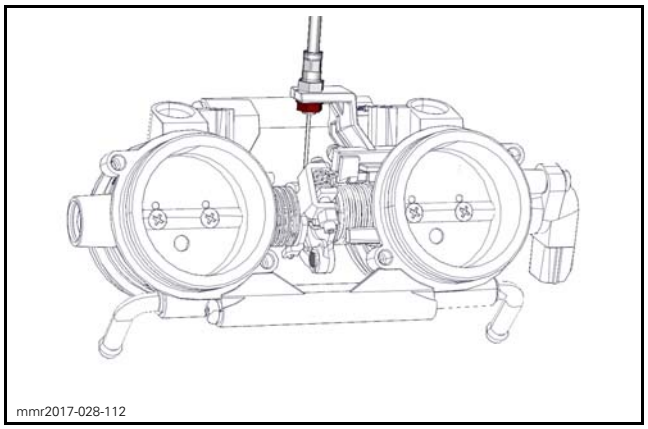
NOTE: Take note of cable routing before removal.

5. At throttle body, fully unscrew cable lock nut.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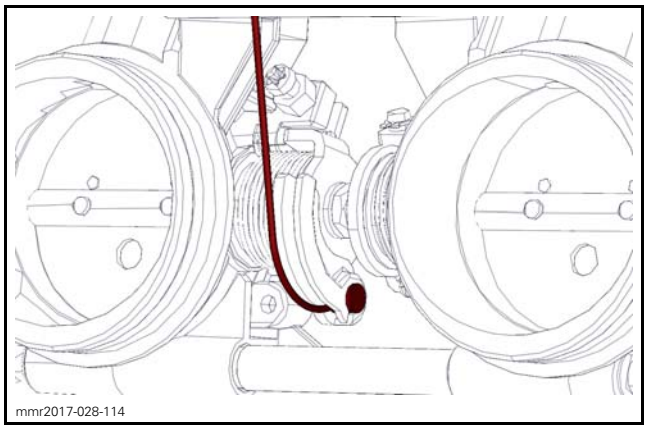
THROTTLE CABLE LOCK NUT

6. Unhook throttle cable end.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7. Remove throttle cable.

Inspecting the Throttle Cable

Visually inspect cable sheath for kinks, wear or other damage.

Visually inspect cable at throttle body and at throttle lever for fraying or other damage.

Make sure the throttle cable operates smoothly.

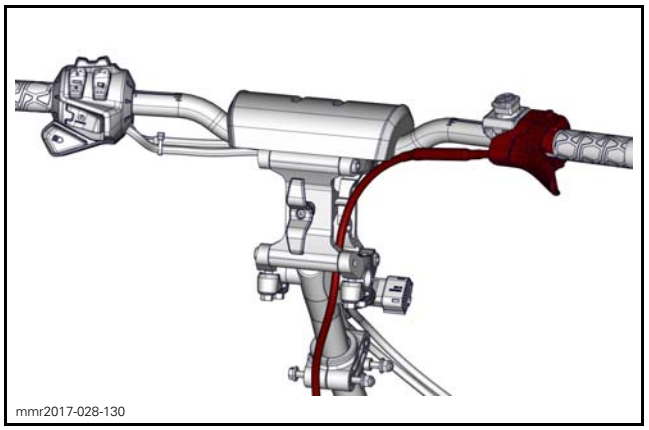
Installing the Throttle Cable

Reverse removal procedure however, pay attention to the following.

Route cable as noted prior to removal.

⚠ WARNING

Ensure proper routing of throttle cable as per following illustration.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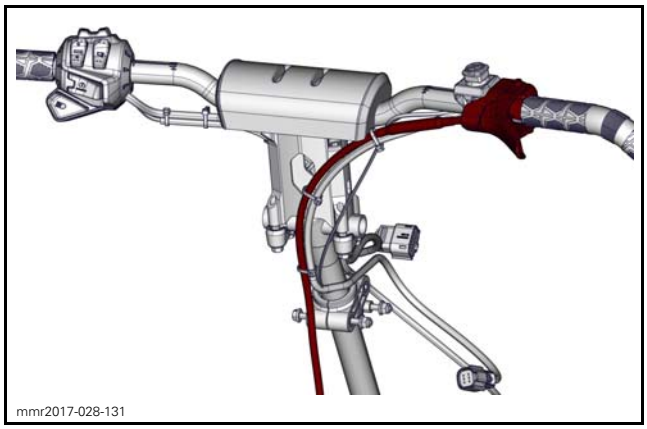
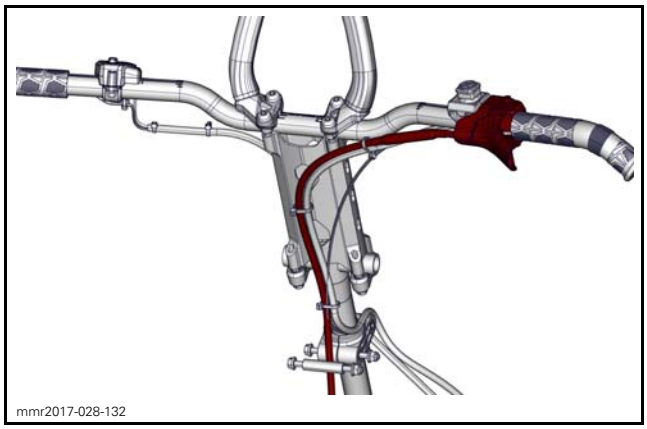
TRAIL MODEL WITH ADJUSTABLE RISER



TRAIL MODEL WITH FIXED RISER



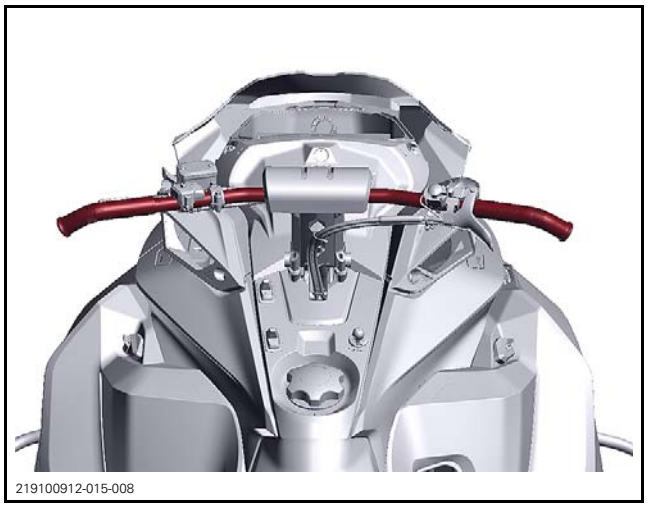
MOUNTAIN MODEL

Ensure that cable ends are properly secured in their levers.

Proceed with throttle cable adjustment.

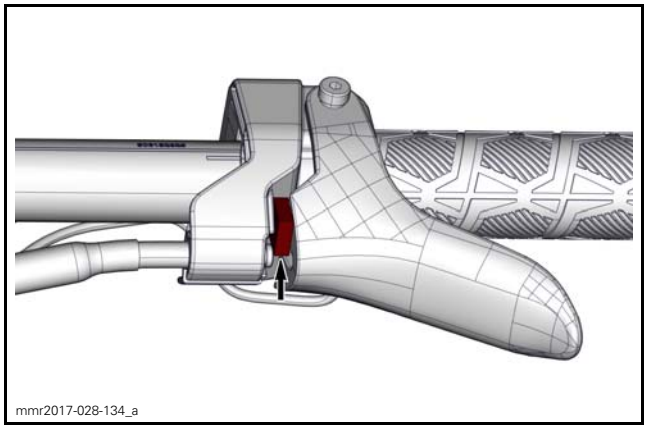
Adjusting the Throttle Cable

1. Connect the vehicle to the BRP diagnostic software (BUDS2). Refer to *COMMUNICATION TOOLS AND BUDS* subsection.
2. In BUDS2, go to:
   - **Measurements** page
   - **ECM** button
   - **Presets** / **ECM-Basic** tabs
   - **Throttle opening %**.
3. Position handlebar straight and level.

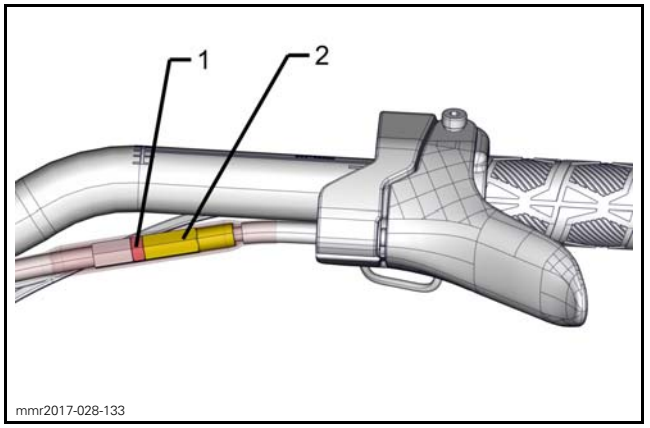


TYPICAL - HANDLEBAR IN STRAIGHT AHEAD POSITION

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.



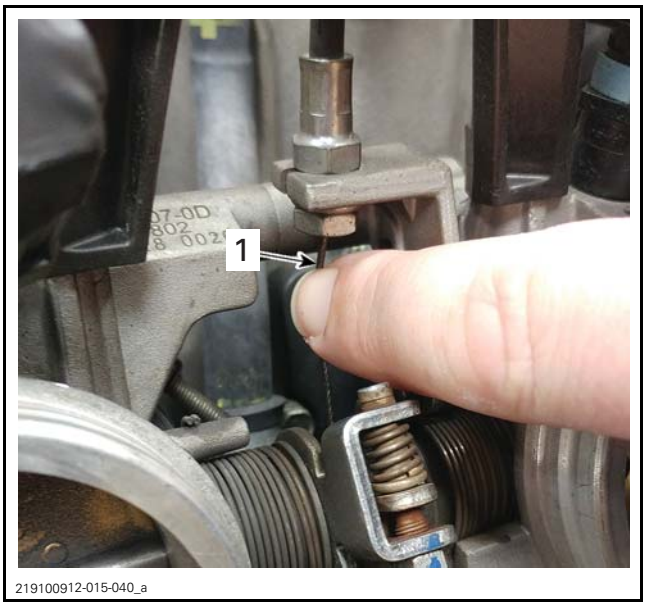
1. *Throttle cable adjuster lock nut*
2. *Throttle cable adjuster*

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.

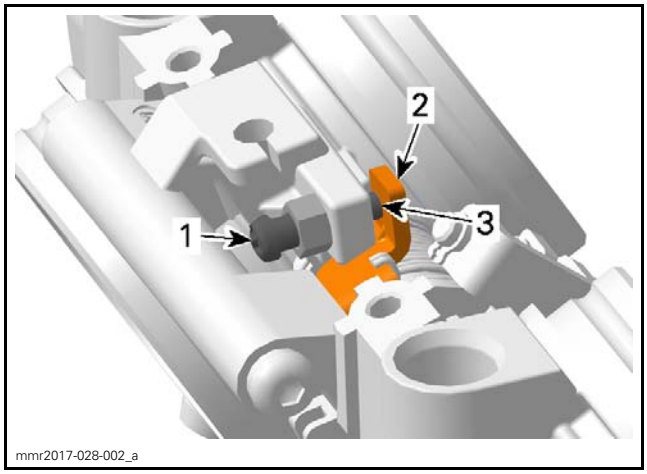
NOTE: To ensure cable free play, lightly press on throttle cable as in following illustration.



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

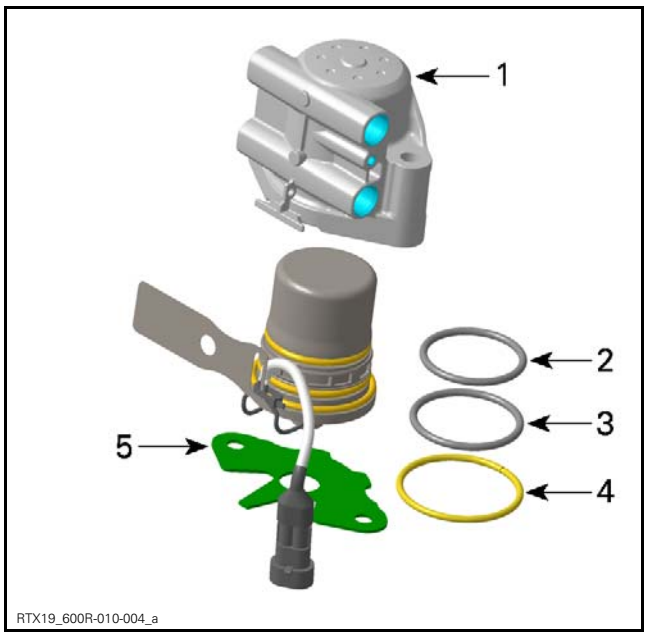
1. In BUDS2, go to:
   - **Measurements** page
   - **ECM** button
   - **Presets** / **ECM-Basic** tabs
   - **Throttle opening %**.
2. Fully depress throttle lever and hold.
   2.1 Confirm throttle opening is within specification.

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

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.

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.

Ensure the correct E-TEC direct injector is installed on the proper cylinder. Refer to *E-TEC DIRECT INJECTOR POSITION VALIDATION*.

If one injector is thought to be faulty, proceed with the injector tests.

Inspecting E-TEC Direct Injectors Area Visually

If a fuel leak is noticed in the hoses area, inspect hoses and connections.

If a fuel leak is noticed in fuel injector base area, it indicates a leak of the lower O-ring of fuel injector.

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

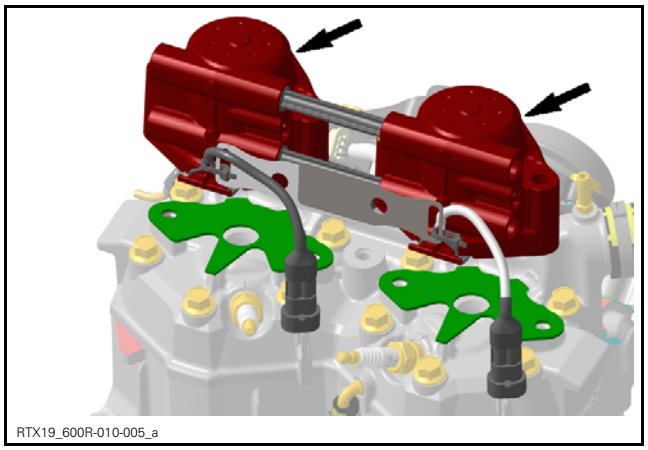
NOTICE **If the fuel pressure is not released, the pressure will push the fuel injector out of its housing when removing the fuel injector from the engine. This could damage the fuel injector and lead to an important fuel spill.**

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 PSI) during the test, re-activate fuel pump as necessary.

FUEL INJECTOR LEAKAGE	
TEST DURATION	SPECIFICATION
2 minutes	2 drops per minute maximum

If test is not within specification, find the problematic component and repair or replace it.

14. Properly reinstall E-TEC direct injectors on the engine. Refer to *INSTALLING E-TEC DIRECT INJECTORS* in this subsection.
15. Reinstall remaining removed components.
16. 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 AND B.U.D.S.* 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 AND B.U.D.S.* 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 PSI)

If pressure drop of any fuel injector is greater than the specification, replace that injector then repeat the test.

9. 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 AND B.U.D.S.* 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.

55V/60V SYSTEM CIRCUIT VALUE
30 Vdc minimun

4. Measure voltage at E-TEC direct injector connector with a multimeter.

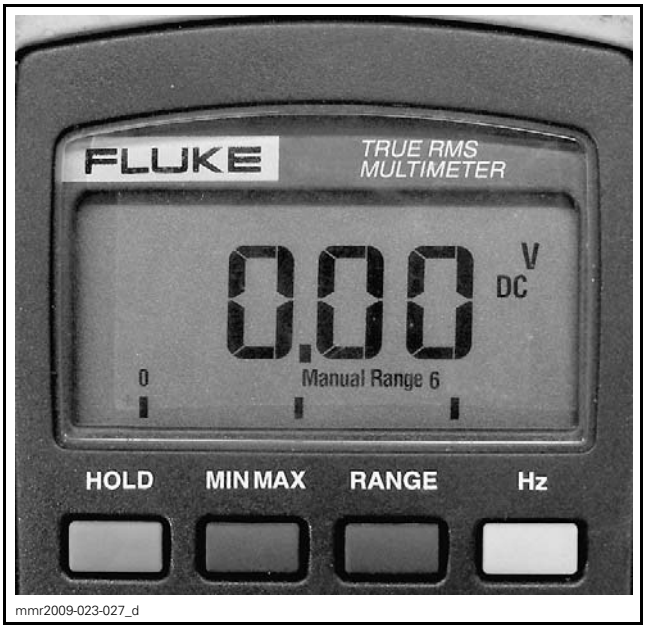
E-TEC DIRECT INJECTOR INPUT VOLTAGE TEST			
INJ	INJ DI CONNECTOR PIN	BATTERY	SPECIFICATION
MAG and PTO	1	Negative (-) post	30 Vdc minimun

If voltage test is as per specification, carry out *TESTING THE E-TEC DIRECT INJECTOR CONTROL CIRCUIT SIGNAL*.

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 AND B.U.D.S.* 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.



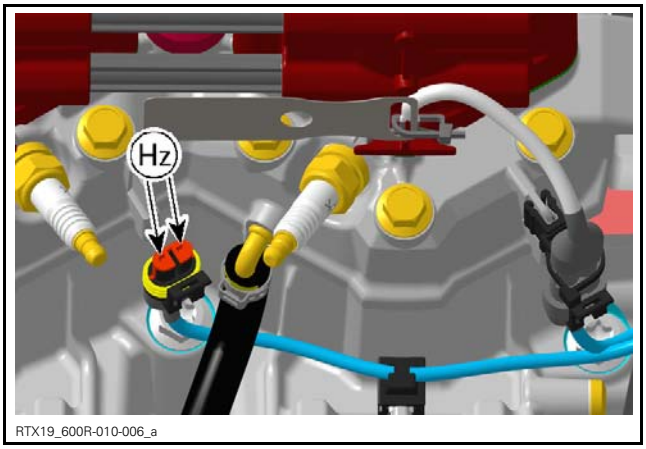
mmr2009-023-027_d

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	Approximately 2 Hz



RTX19_600R-010-006_a

FUEL INJECTOR WIRING HARNESS CONNECTOR

If there is no reading, check continuity of wiring between ECM and fuel injector connector.

If you hear the injector click, control circuit is good.

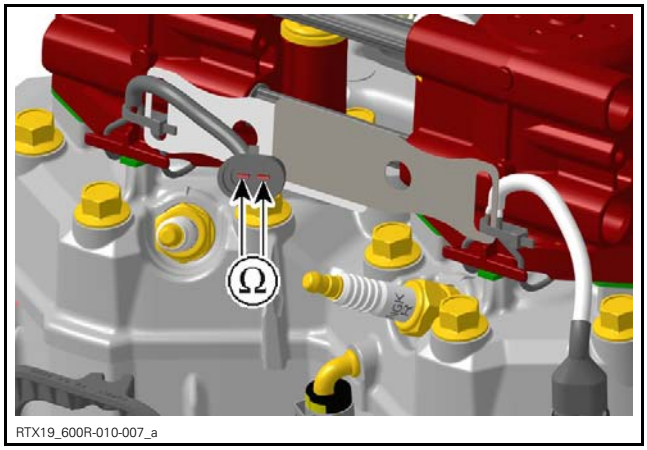
If reading is good, the control circuit is functional.

Testinging 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



RTX19_600R-010-007_a

TYPICAL - FUEL INJECTOR CONNECTOR

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		

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.

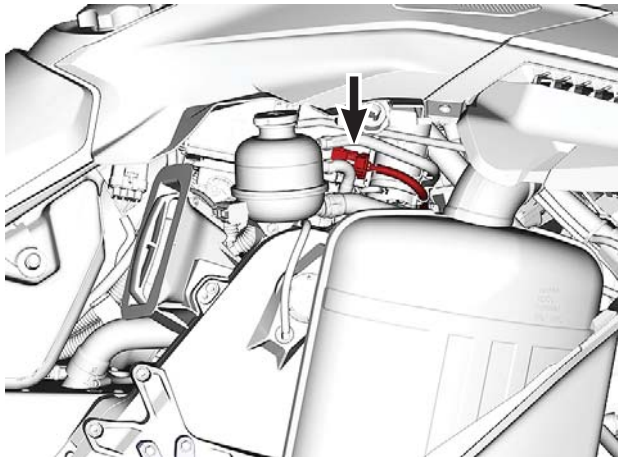
1. Release the fuel pressure in the system. Refer to *FUEL TANK AND FUEL PUMP* subsection.

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).

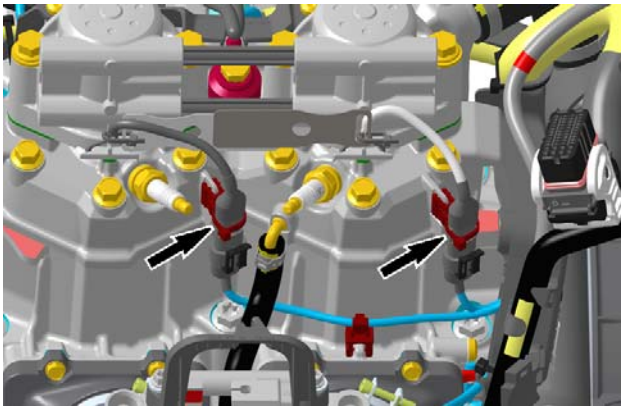
⚠ WARNING

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.



mmr2017-019-202_a

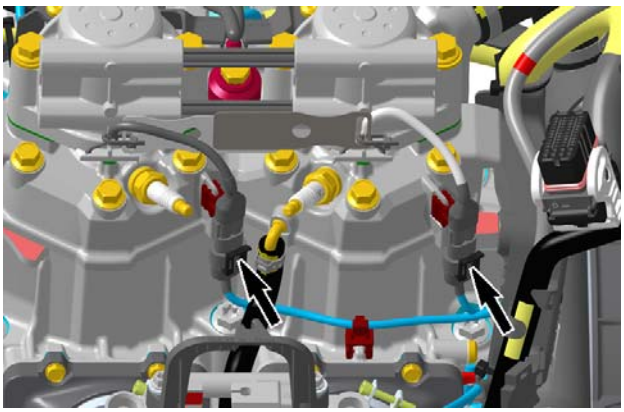
3. Remove upper body module.
4. Clean fuel injector area.
5. Cut locking ties.



RTX19_600R-010-008_b

TYPICAL

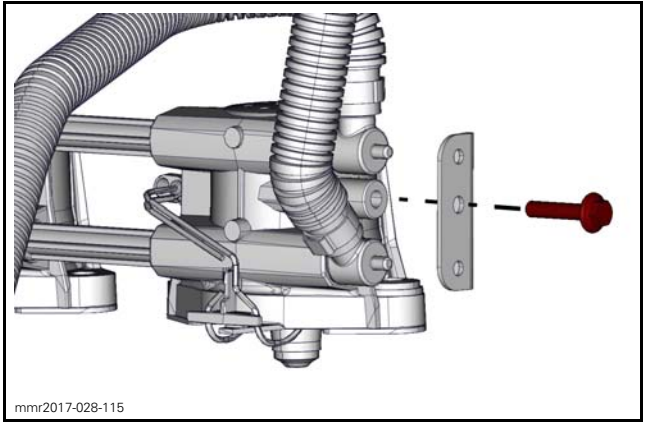
6. Disconnect fuel injector connectors.



RTX19_600R-010-009_a

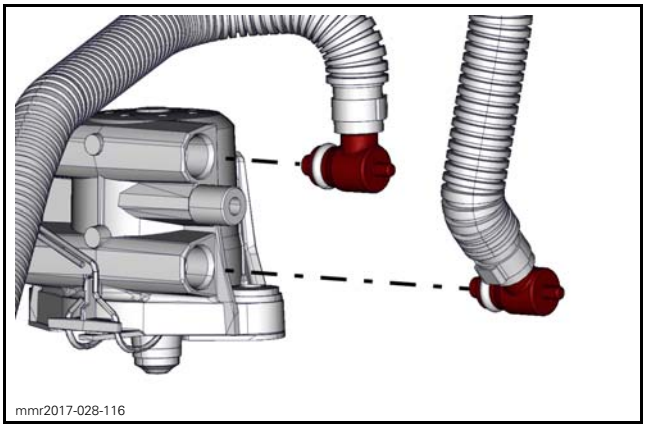
TYPICAL

7. Install a rag under the hose ends to catch fuel spillage.
8. Remove fuel hose retainer screw and retainer. Discard screw.



mmr2017-028-115

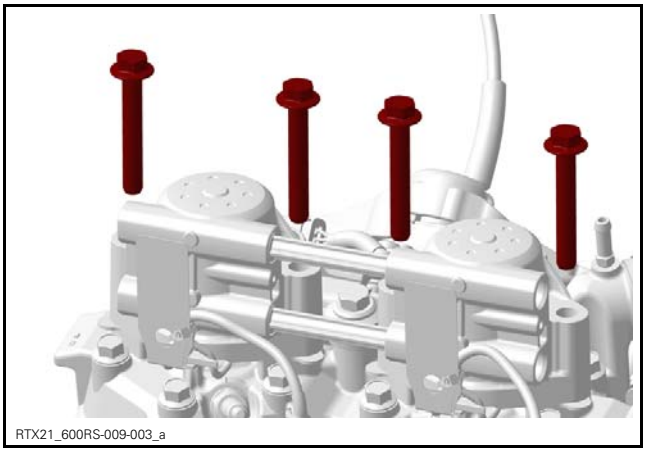
9. Disconnect fuel hoses from fuel injector.


mmr2017-028-116

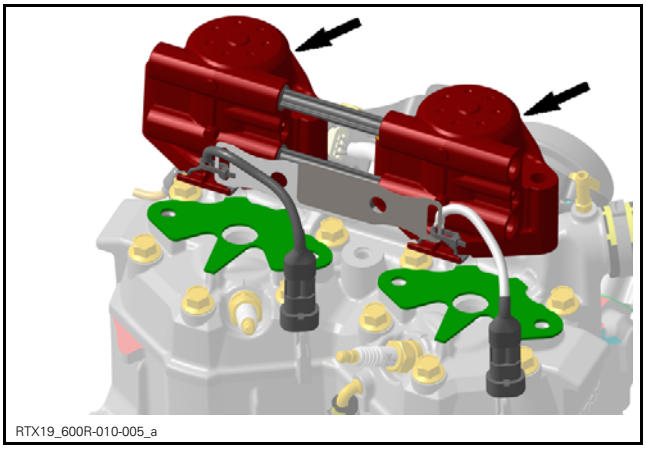
⚠ WARNING

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.


RTX21_600RS-009-003_a

11. Gently pull up on the fuel injectors to remove them.

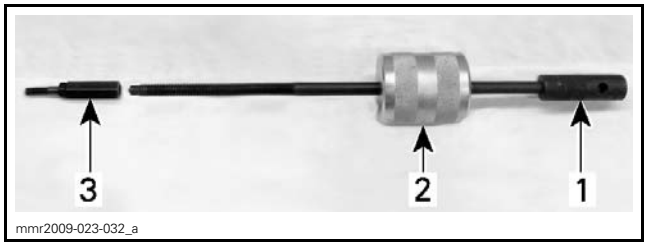

RTX19_600R-010-005_a

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

To remove fuel injector from its housing, the following tools will be required.

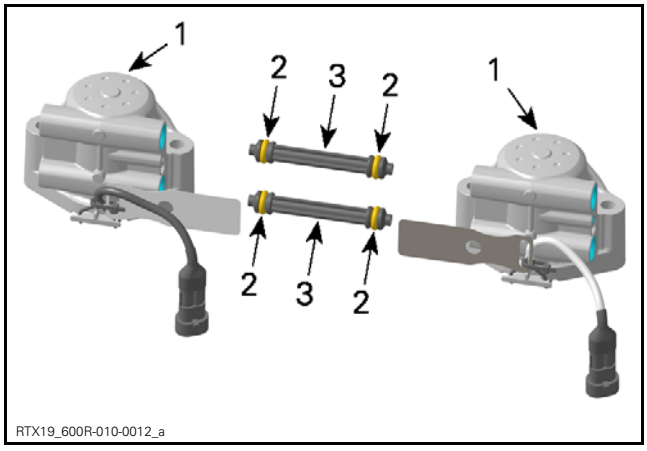
REQUIRED TOOLS
Slide hammer shaft
Slide hammer weight
EXTRACTOR ADAPTOR (P/N 529 036 136)



mmr2009-023-032_a

1. *Slide hammer shaft*
2. *Slide hammer weight*
3. *Extractor adapter*

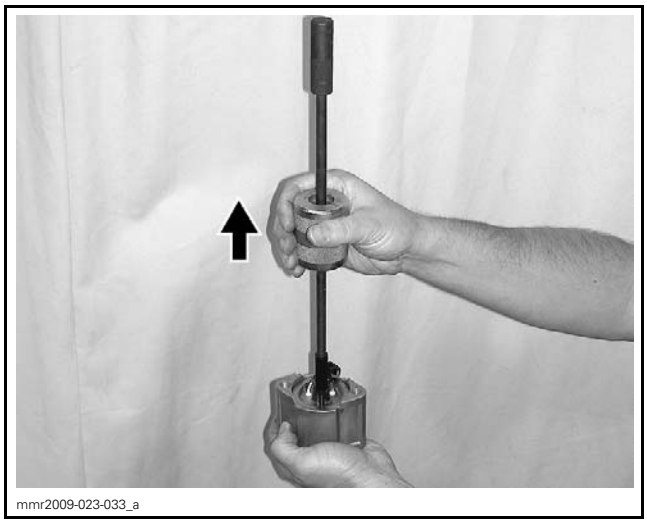
1. Separate fuel injectors and connecting tubes.
2. Remove and discard O-rings.



RTX19_600R-010-0012_a

1. *Fuel injectors*
2. *O-rings*
3. *Connecting tubes*

3. Thread the extractor adapter into the fuel injector.
4. Securely hold the fuel injector housing upside down to avoid dropping it.
5. Work slide hammer to pull the fuel injector out.

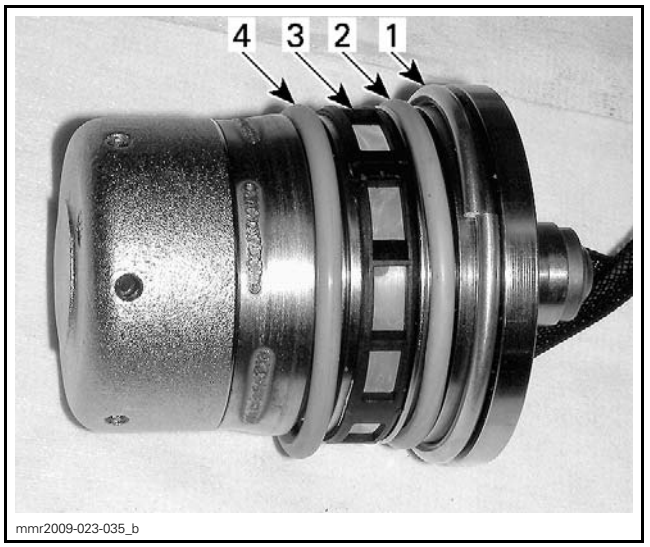

mmr2009-023-033_a

TYPICAL

mmr2009-023-034

TYPICAL

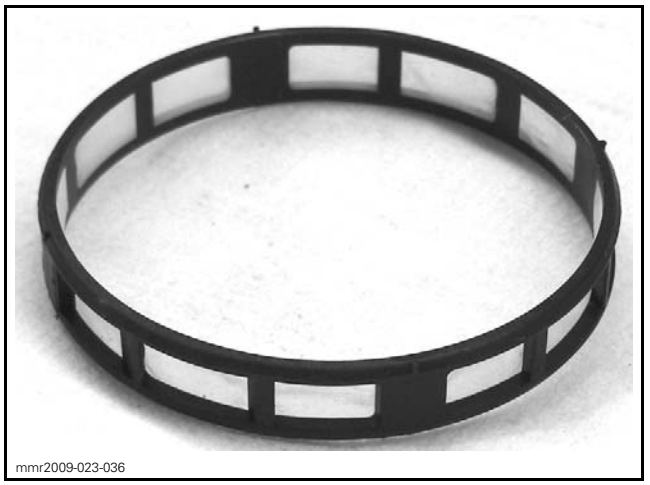
6. Remove the extractor adaptor from the fuel injector.
7. Remove O-rings, crush ring and filter from the fuel injector.



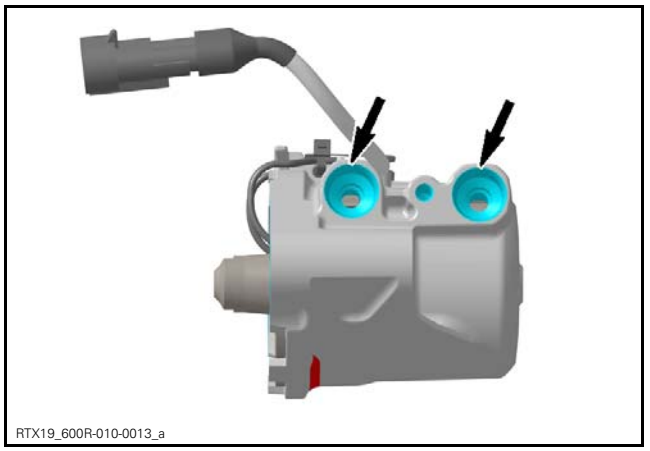
mmr2009-023-035_b

1. *Crush ring (discard)*
2. *ORANGE O-ring (discard)*
3. *Filter*
4. *BLUE O-ring (discard)*

8. Inspect and clean fuel injector filter.


mmr2009-023-036

9. Clean connecting tube bores in injector housing.


RTX19_600R-010-0013_a

Assembling the E-TEC Direct Injector

The assembly procedure is the reverse of disassembly. However, pay attention to the following:

Lubricate O-rings.

SERVICE PRODUCT
Injection oil

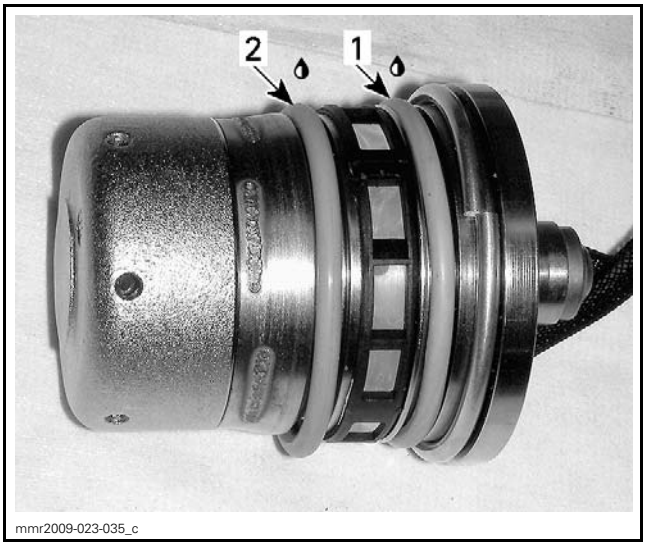
Install a NEW crush ring.

Install a NEW ORANGE O-ring next to the crush ring (bottom).

NOTICE **Always use the O-rings specifically designed for these fuel injectors.**

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.

Install a NEW BLUE O-ring above the filter (top).

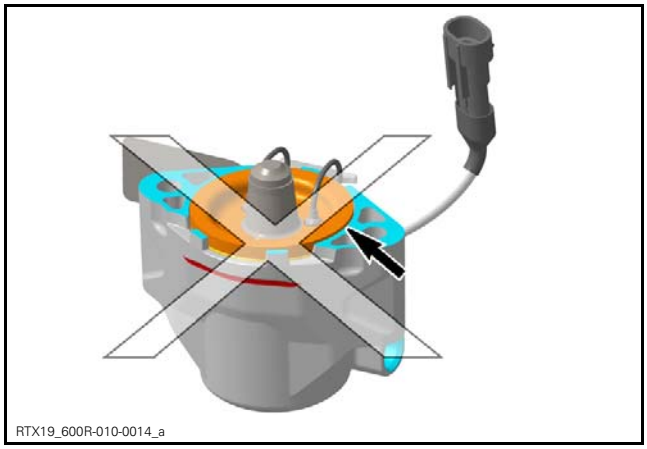


mmr2009-023-035_c

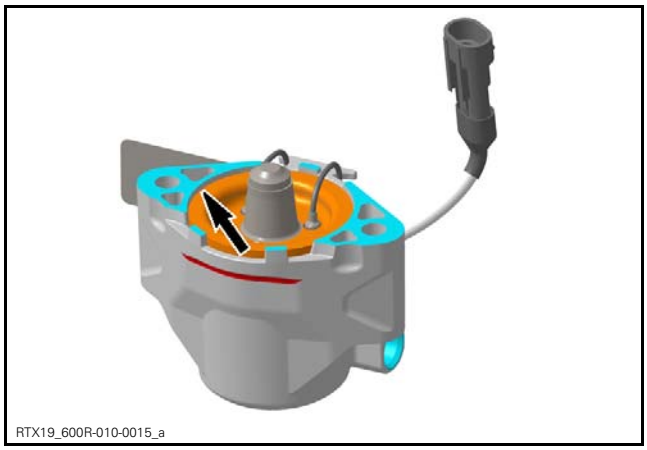
OIL INJECTION ON O-RINGS
1. ORANGE
2. BLUE

Fully insert the fuel injector in its housing as shown on following illustrations.

NOTICE **Never press or tap the fuel injector tip.**


RTX19_600R-010-0014_a

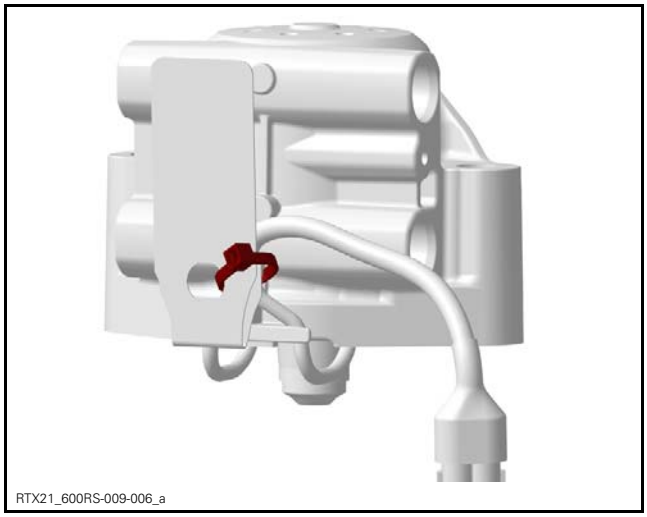
WRONG INSTALLATION


RTX19_600R-010-0015_a

CORRECT INSTALLATION

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*.

Reinstall locking tie securing wires and tag.


RTX21_600RS-009-006_a

Installing the E-TEC Direct Injector

The following items and their mating surfaces must be cleaned and inspected prior to assembly:

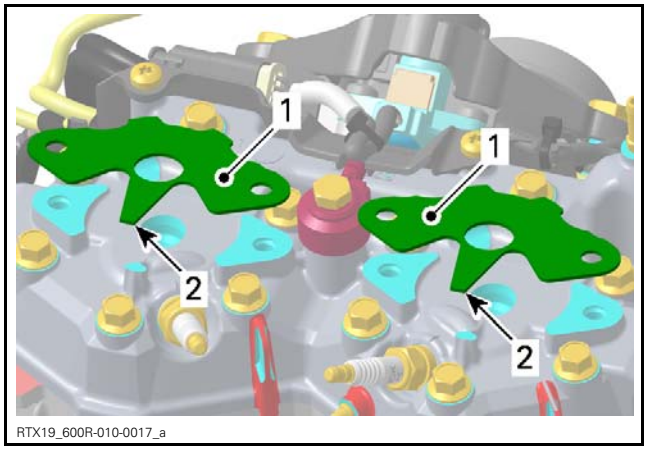
– Fuel Injector
– Cylinder head: fuel injector housing and fuel injector tip contact surfaces
– Fuel injector screw threads and cylinder head threads (must be dry).

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.

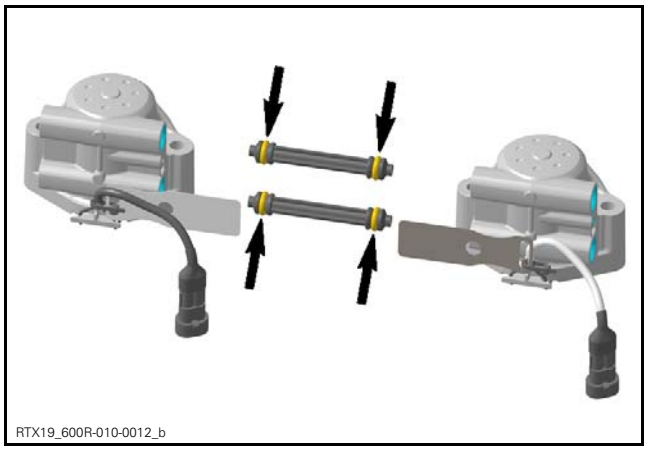
NOTICE Smooth surface of gasket must face toward injector housing.



1. Smooth surface of gasket
2. Tab facing towards intake side

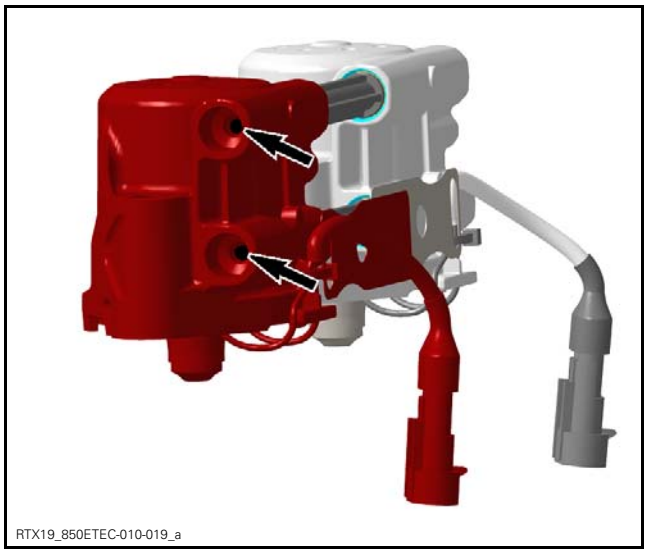
2. Install NEW O-rings on connecting tubes.
3. Lubricate O-rings and pre-assemble fuel injectors and connecting tubes.

SERVICE PRODUCT
Injection oil



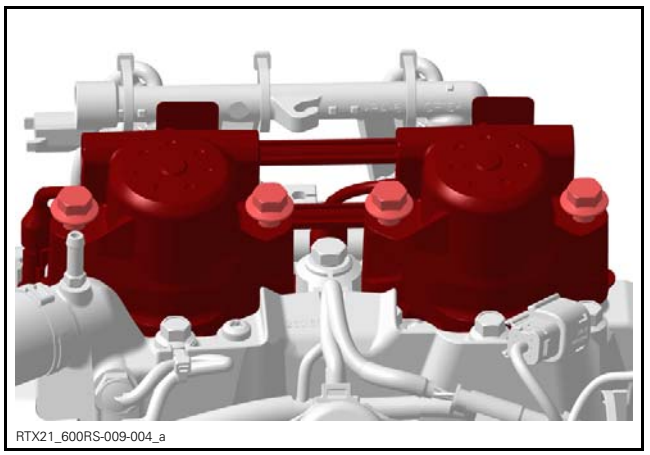
LUBRICATE O-RINGS

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.

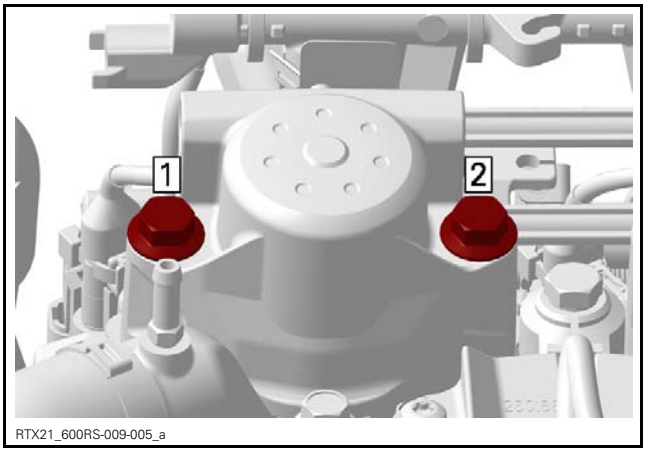


TYPICAL

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 N•m ± 0.5 N•m (62 lbf•**in** ± 4 lbf•**in**)	
Step B		50 N•m ± 1.5 N•m (37 lbf•ft ± 1 lbf•ft)
Step C	50 N•m ± 1.5 N•m (37 lbf•ft ± 1 lbf•ft)	



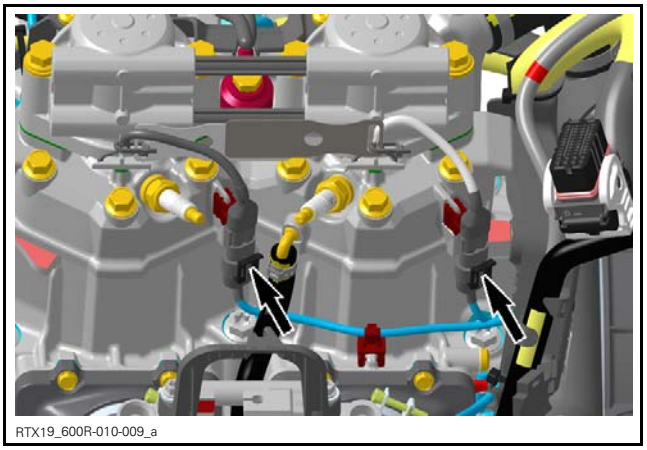
RTX21_600RS-009-005_a

TYPICAL

6. Grease fuel injector connector.

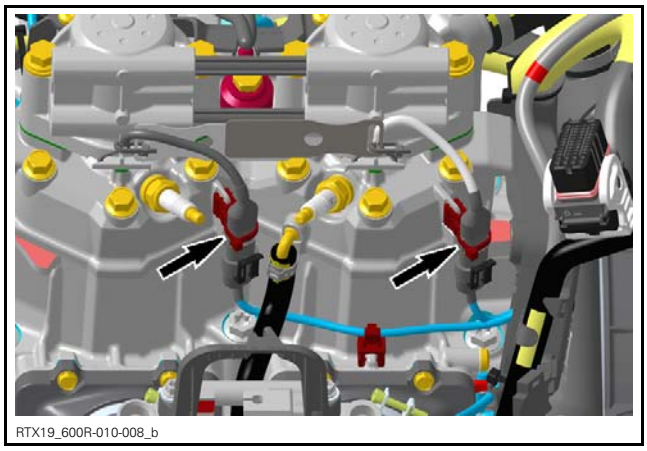
SERVICE PRODUCT
DIELECTRIC GREASE (P/N 293 550 004)

7. Connect both fuel injector connectors.


RTX19_600R-010-009_a

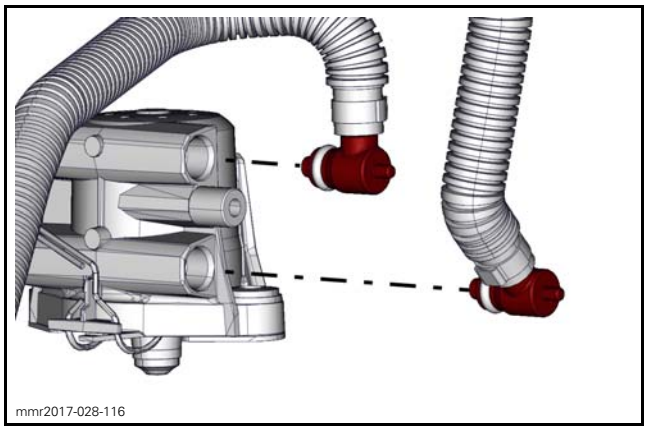
TYPICAL

8. Secure E-TEC direct fuel injector cables with locking ties.


RTX19_600R-010-008_b

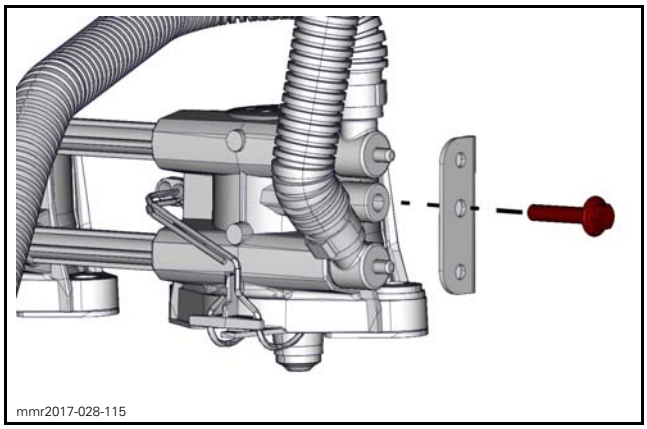
TYPICAL
1. E-TEC direct fuel injector connector
2. Locking ties

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.


mmr2017-028-116

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.


mmr2017-028-115

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 N•m (44 lbf•**in**)

14. Secure fuel injector wiring. Refer to *ENGINE HARNESS* subsection.
15. Grease fuel injector connector.

SERVICE PRODUCT
DIELECTRIC GREASE (P/N 293 550 004)

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.

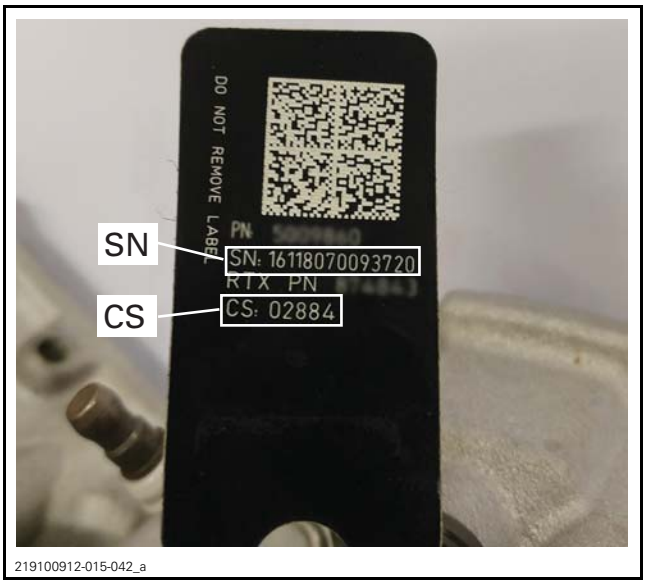
Validating the E-TEC Direct Injector Position

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 tag.
2. Note the fuel injector serial number (SN) on the tag of the fuel injector you want to validate.



219100912-015-042_a

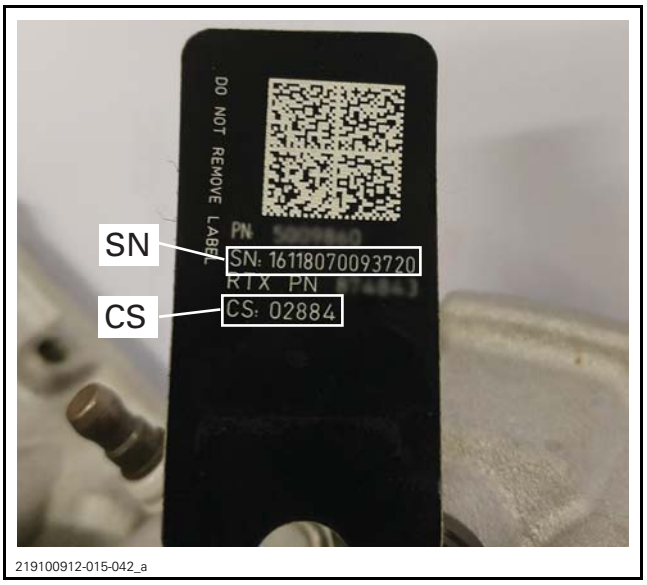
SN: Serial number
CS: Checksum number

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.



SN: Serial number
CS: Checksum number

2. Download the E-TEC injector coefficient file.
   2.1 Login to BOSSWeb.
   2.2 Under the Com Center tab, click on E-TEC injector coefficient link.
   2.3 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 ONLY)

Testing the Fuel Injector Operation Using BUDS2 (Dynamic)

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

If the engine RPM drops momentarily when clicking on a cylinder, the injector on this cylinder is functioning normally.

If the engine RPM does not drop momentarily when clicking on a cylinder, 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.

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 AND B.U.D.S.* 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 **no. 1**.
7. Record the fuel pressure drop for injector **no. 1**.
8. In BUDS2, activate fuel pump.

9. Repeat the procedure for fuel injector **no. 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 PSI)

If pressure drop of any fuel injector is greater than the specification, replace that injector then repeat the test.

11. Using the valve on the fuel pressure gauge, release the pressure in the system (if so equipped).
12. 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

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

On the **Functions** page of BUDS2, energize the fuel injector to be tested.

You should hear or feel the injector functioning.

This will validate the injector mechanical and electrical operation.

If the injector does not function, carry out the *TESTING THE FUEL INJECTOR RESISTANCE*.

Testing the Fuel Injector Resistance

Disconnect ECM-A connector from the ECM and connect it to ECM adapter tool. Refer to *WIRING HARNESS AND CONNECTORS*

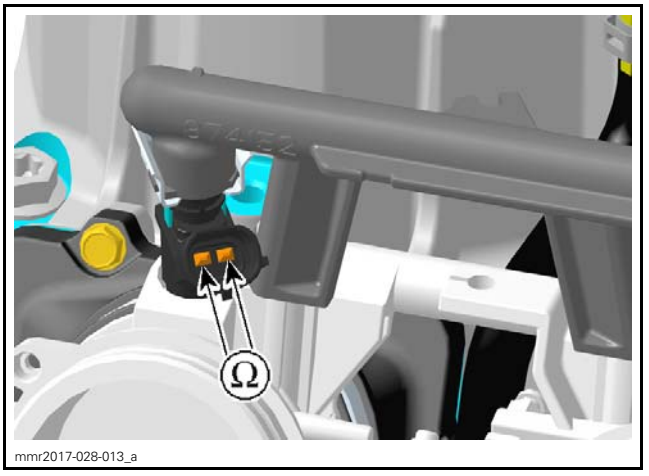
Check resistance value between terminals as follows.

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	

If resistance value is as specified, the injector and its circuits are good. Refer to *TESTING FOR FUEL INJECTOR INPUT VOLTAGE* in this subsection.

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



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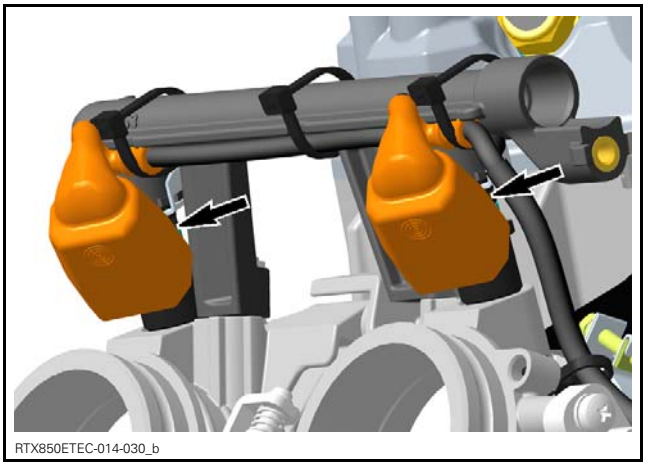
If readings are out of specifications, replace injector.

If readings are good, carry out *TESTING THE FUEL INJECTOR CIRCUIT RESISTANCE*.

Testing the Fuel Injector Input Voltage

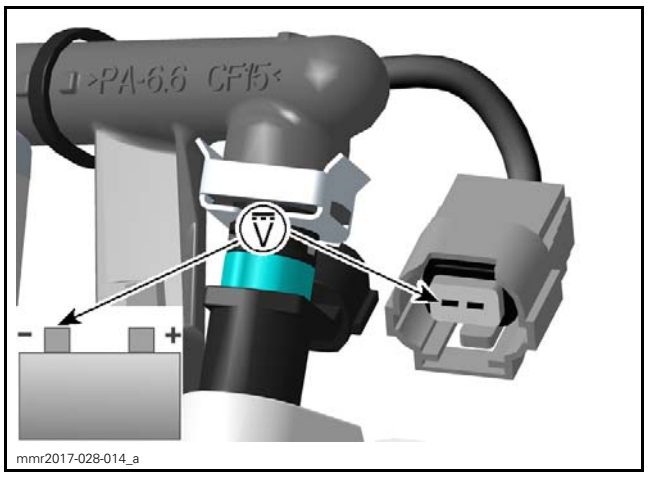
Disconnect the fuel injector connector.


RTX850ETEC-014-030_b

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.

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



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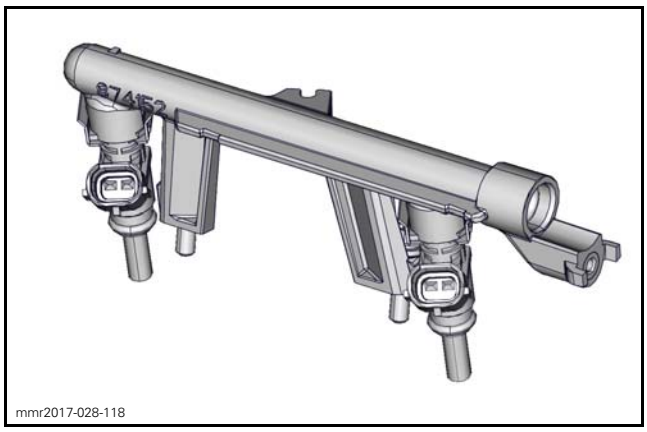
TYPICAL

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*.

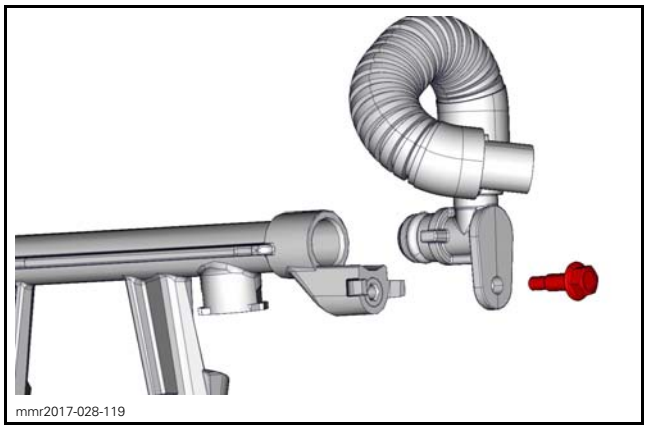
Removing the Fuel Rail with Throttle Body Injectors


mmr2017-028-118

Release fuel pressure from fuel system, refer to *FUEL TANK AND FUEL PUMP* subsection.

Place an absorbent shop rag around the fuel supply hose fitting at the fuel rail to catch any fuel leakage.

Disconnect fuel hose from fuel rail.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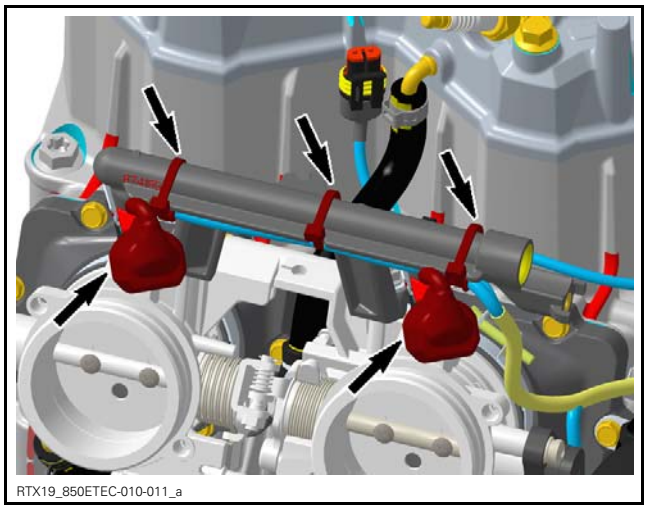
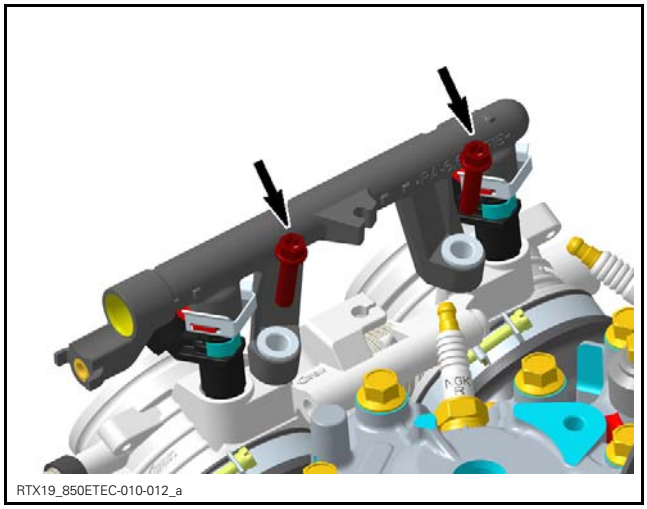
Cut locking ties securing engine harness to fuel rail.

Disconnect fuel injector connectors.


RTX19_850ETEC-010-011_a

Remove fuel rail retaining screws .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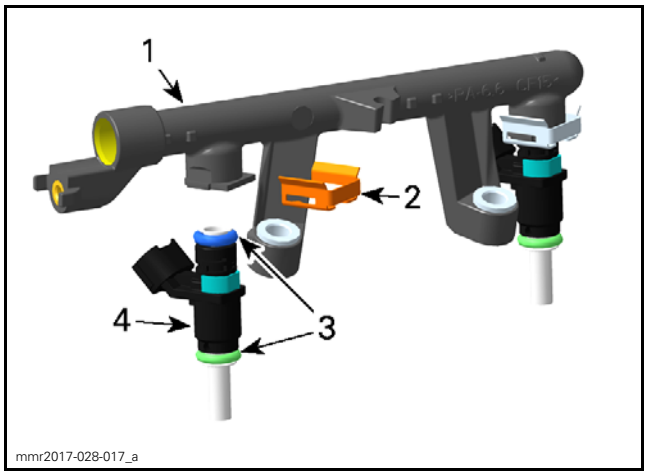
Gently wiggle fuel rail side to side as you pull the fuel rail out with fuel injectors.

Remove the injector retaining clip.

Pull the fuel injector out of the fuel rail and discard the O-rings.



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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.

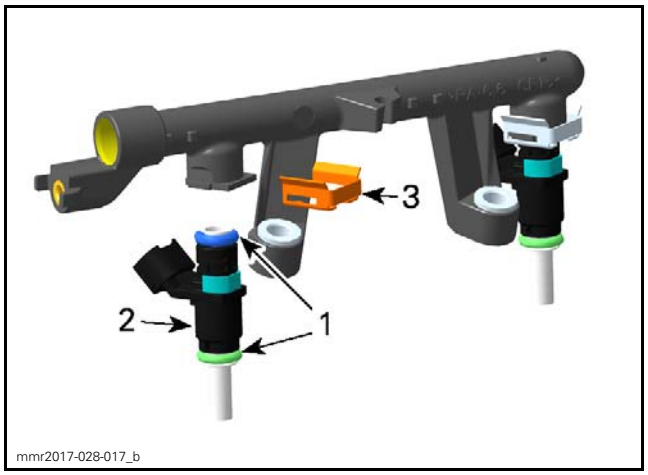
Lubricate new O-rings to ease insertion in rail.

SERVICE PRODUCT
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.

Install fuel injector with your hand. Do not use any tool.

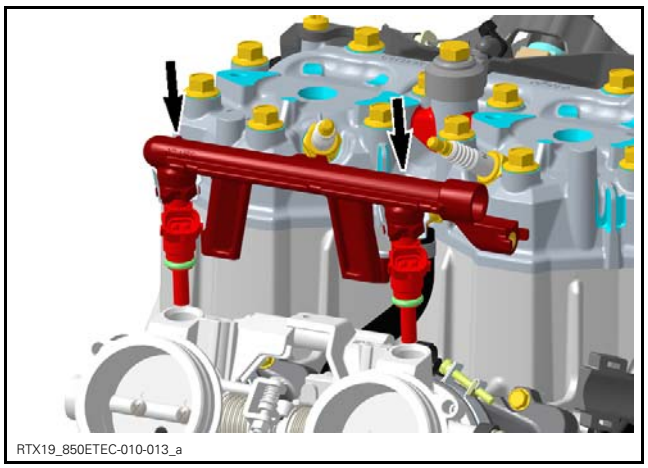
Carefully insert fuel injectors in fuel rail and install injector retaining clips.



1. O-rings
2. Fuel injector
3. Retaining clip

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.



Tighten fuel rail retaining screws.

TIGHTENING TORQUE	
Fuel rail retaining screws	8 N•m ± 0.5 N•m (71 lbf•**in** ± 4 lbf•**in**)

Connect fuel pressure hose to fuel rail.

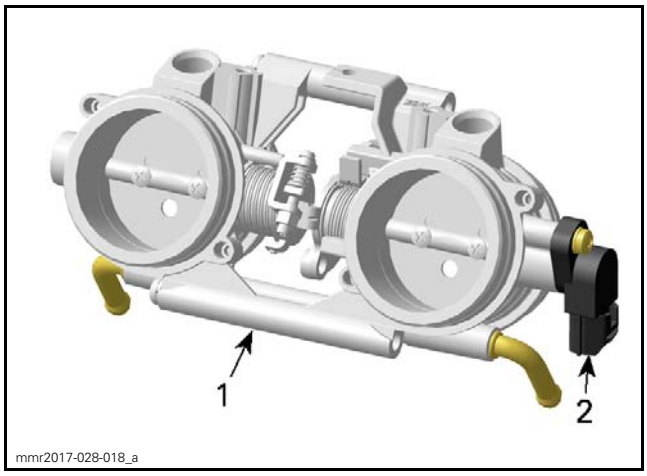
Pressurize the fuel system and check for fuel leaks. Refer to *FUEL TANK AND FUEL PUMP* subsection.

⚠ 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.

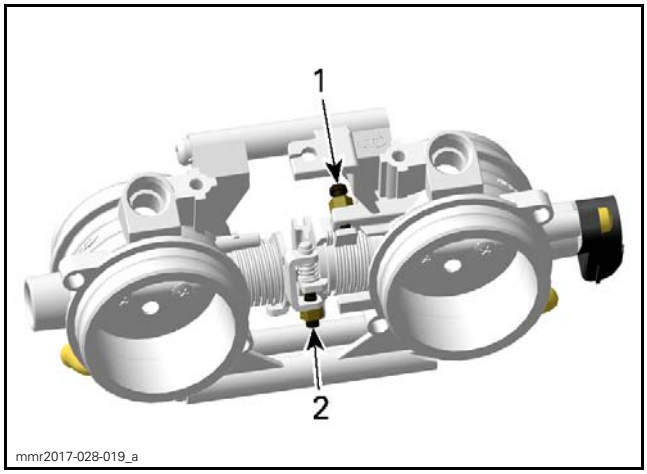
Reinstall all remaining removed parts.

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

Ensure throttle plates move freely and smoothly when depressing throttle lever.

Ensure throttle body master zero position screw is NOT loose. If so, replace throttle body.

Ensure that the master zero position screw stops the throttle plate.

Ensure TPS is NOT loose.

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.

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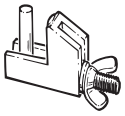
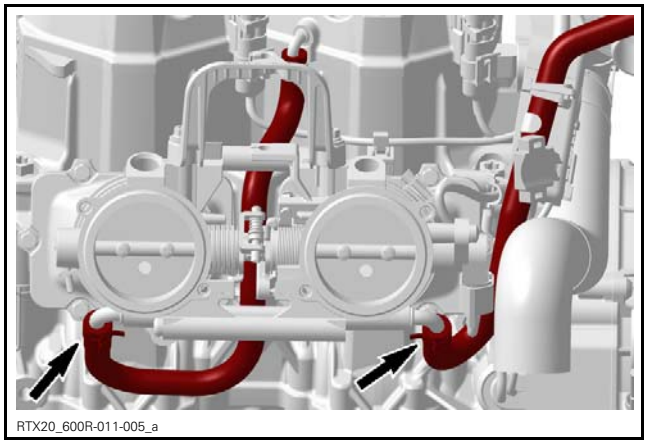
3. Remove fuel rail with fuel injectors and put it aside, refer to *FUEL RAIL AND THROTTLE BODY INJECTORS* in this subsection.

All Models

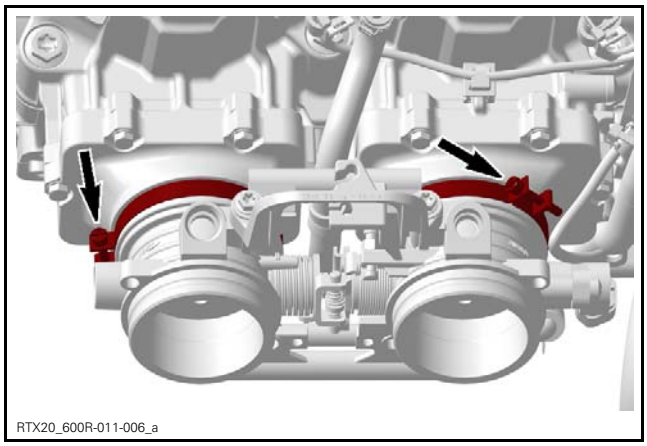
4. Block coolant hoses of throttle body heating.

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

5. Remove coolant hoses from throttle body.


RTX20_600R-011-005_a

6. Loosen clamps retaining throttle body.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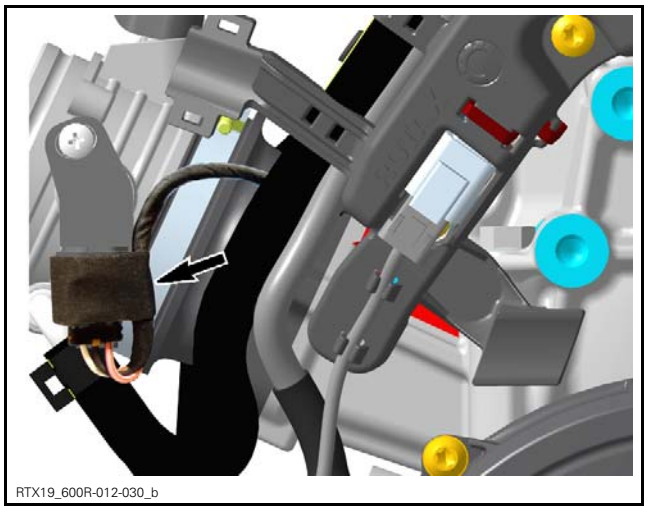
7. Disconnect TPS connector.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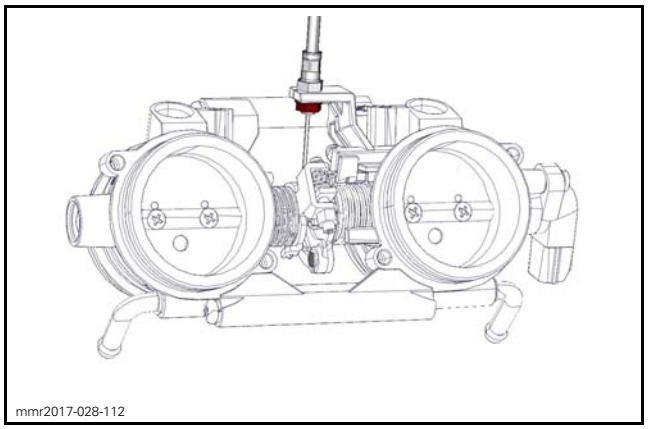
NOTICE **The TPS connector can be disconnected without cutting the tape.**

8. Disconnect throttle cable.
9. At throttle body, fully unscrew cable lock nut.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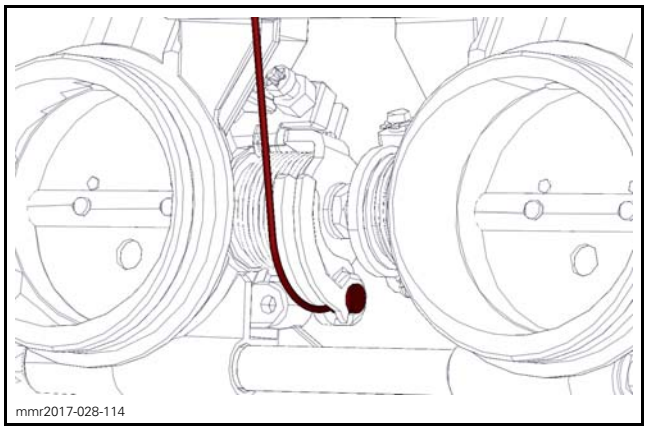
THROTTLE CABLE LOCK NUT

10. Unhook throttle cable end.


mmr2017-028-114

11. Remove throttle cable.
12. Remove throttle body from vehicle.

Installing the Throttle Body

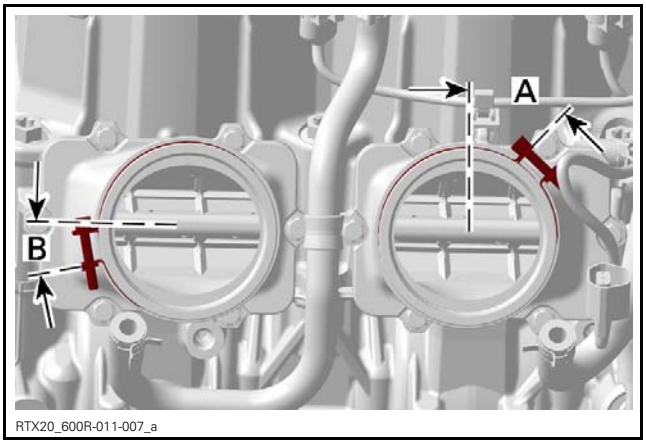
1. If installing the removed throttle body, clean throttle plates and bores before installation.

SERVICE PRODUCT
BRAKE AND PARTS CLEANER PRO S2 (P/N 779245)

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.



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A. 25° +/- 5°
B. 4° +/- 5°

TIGHTENING TORQUE	
Throttle body clamps	1.5 N•m ± 0.2 N•m (13 lbf•**in** ± 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 N•m ± 0.1 N•m (6 lbf•**in** ± 1 lbf•**in**)

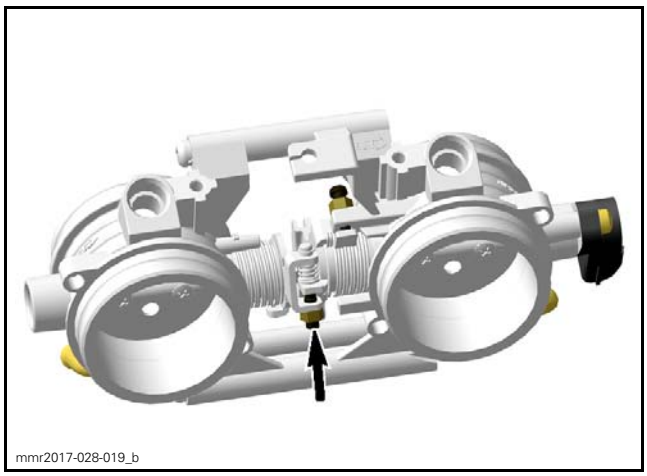
13. Install primary air intake silencer, refer to *AIR INTAKE SYSTEM* subsection.
14. Install all remaining removed parts.

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.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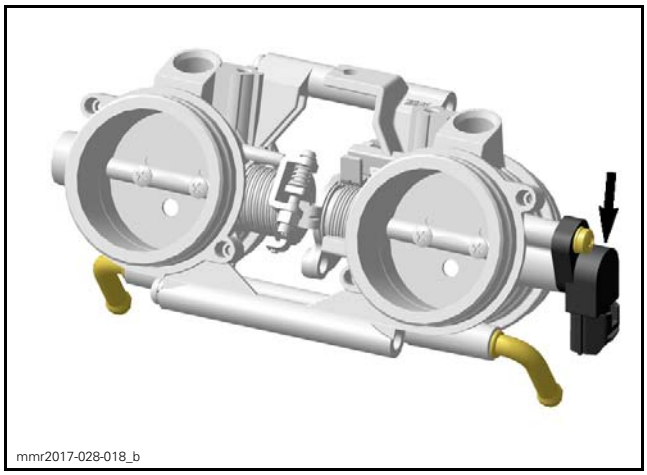
TPS (THROTTLE POSITION SENSOR)

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.

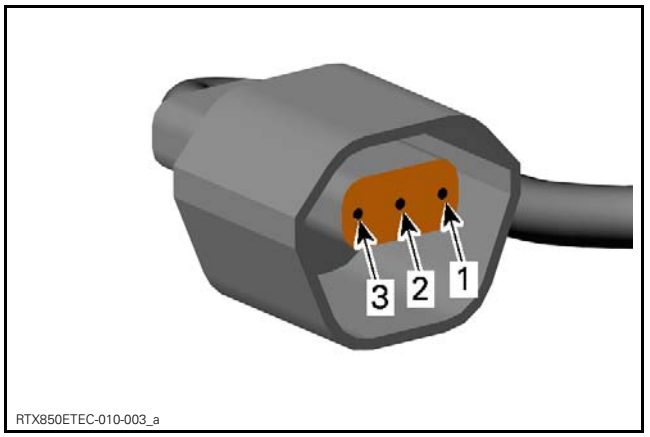
Testing the TPS Wear

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

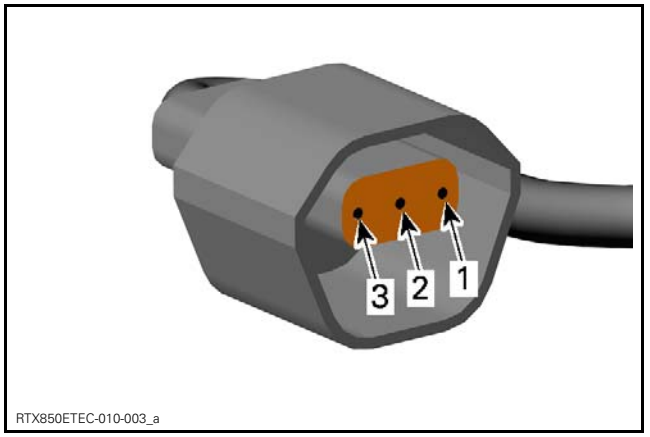
If voltage is good, carry out *TESTING THE TPS RESISTANCE*.

If test result is out of specification, carry out *TESTING THE TPS CIRCUIT CONTINUITY*.

Testing the TPS Circuit Continuity

Disconnect ECM-A connector from ECM and connect it to ECM adapter tool.

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	

If tests are good, replace the TPS.

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.

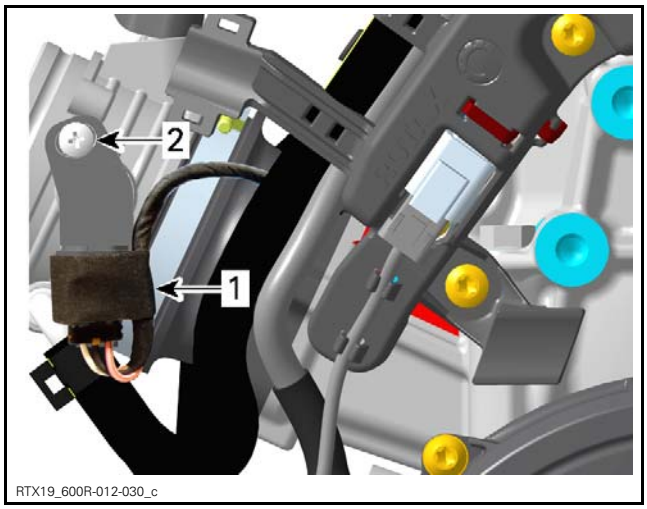
If resistive values are correct, try a new ECM. Refer to *ENGINE CONTROL MODULE (ECM)* subsection.

If resistive values are incorrect:

– Repair or replace wiring or connectors.
– 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

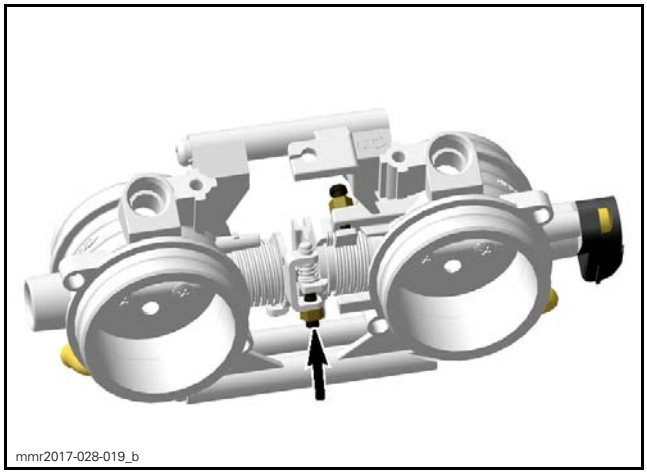
4. Remove TPS.
5. Install new TPS.

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 N•m ± 0.5 N•m (35 lbf•**in** ± 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.

IGNITION COILS AND SPARK PLUGS

SERVICE TOOLS

Description	Part Number	Page
DIAL INDICATOR ADAPTER	529 036 132	204
DIAL INDICATOR ADAPTER	529 036 418	204
TDC DIAL INDICATOR	295 000 143	204
TDC DIAL INDICATOR	414 104 700	204

GENERAL

⚠ WARNING

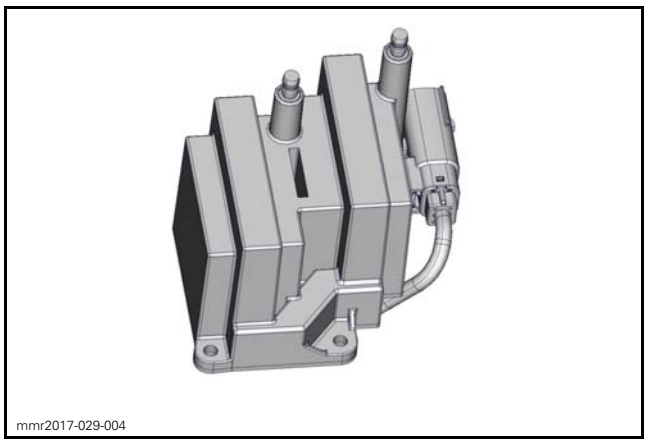
Always electrically disconnect both fuel injectors prior to testing for ignition spark. Otherwise, fuel vapors may ignite in presence of a spark creating a fire hazard.

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.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The ignition coils receive power from the 55 Vdc system. Their operating voltage varies from 20 to 55 Vdc.

Ignition System Basic Operation

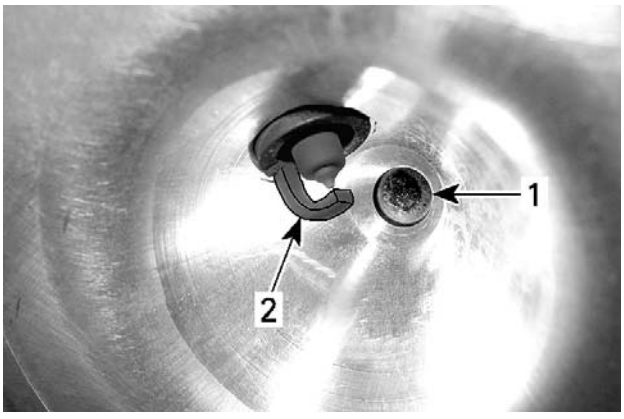
Each ignition coil uses an active circuitry to energize the primary winding when it receive a pulse from the ECM. The pulse has an amplitude of approximately 10 volts. At the end of the dwell time, the power is released from the primary winding which induces a current that produces a high voltage in 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.



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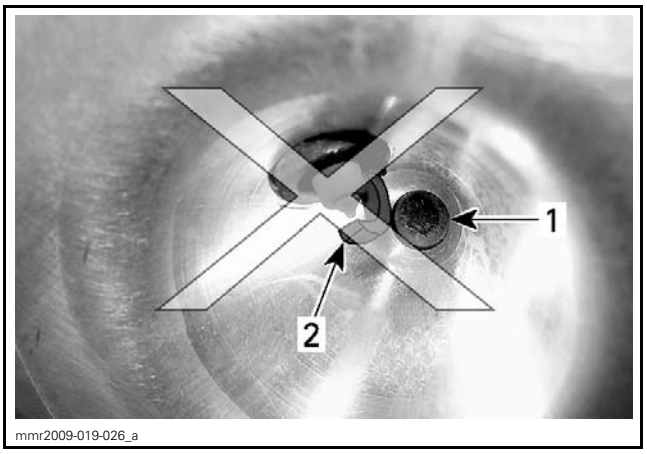
CORRECTLY INDEXED
1. *Injector nozzle*
2. *Ground electrode*

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.

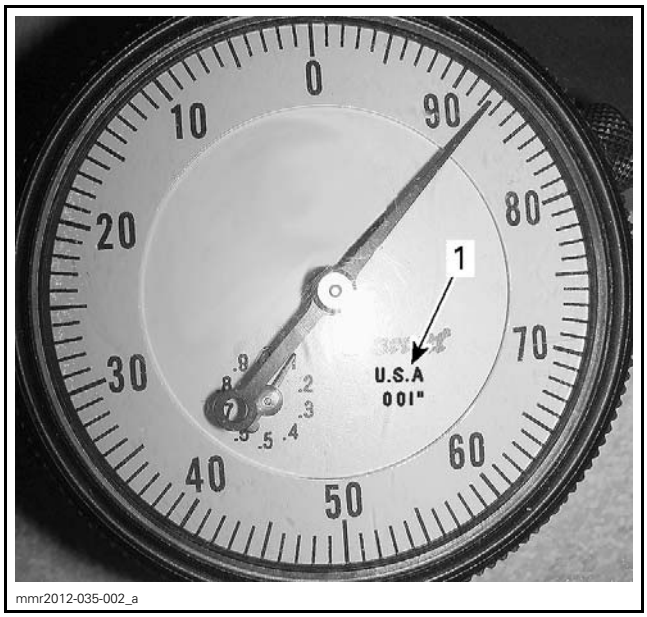
If detonation occurs, the ECMs retards the ignition and increases the fuel injected temporarily (it goes into a specific operating mode) until detonation stops.

ADJUSTMENT

UNDERSTANDING THE TDC GAUGE

Dial gauges can be either in imperial or metric units. It is crucial to identify gauge units and graduation.

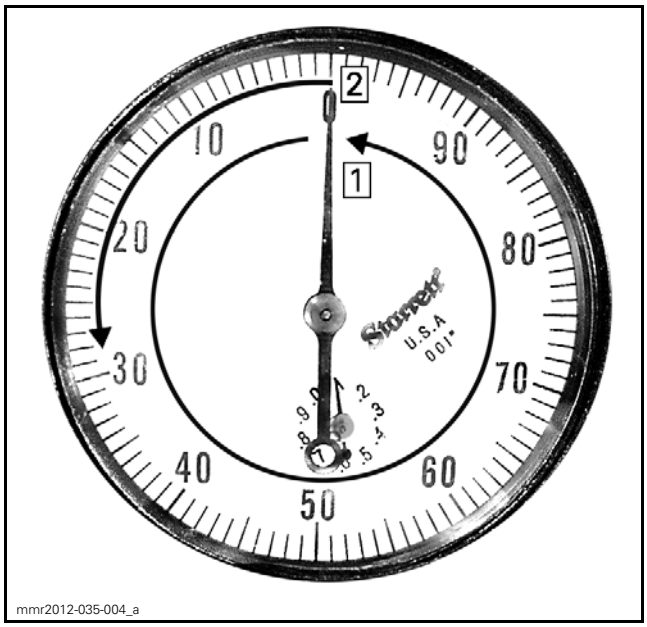
Imperial Dial Gauge



IMPERIAL GAUGE EXAMPLE
1. *001 inch means it is graduated each 1/1000 inch*

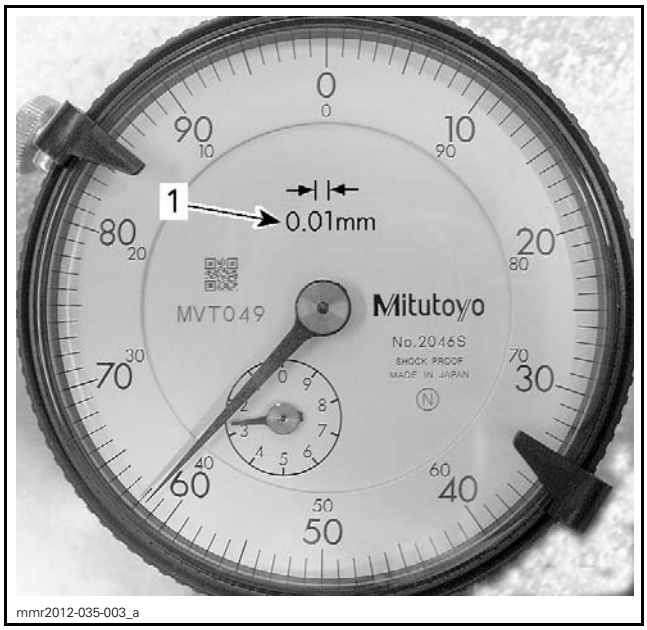
TYPICAL IMPERIAL DIAL GAUGE		
GRADUATION	MEASURE PER NEEDLE TURN	MEASURE EXAMPLE: .128 INCH
1/1000 inch (.001) per graduation line	1 turn = .100 inch	1 complete turn + 28 graduation lines

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

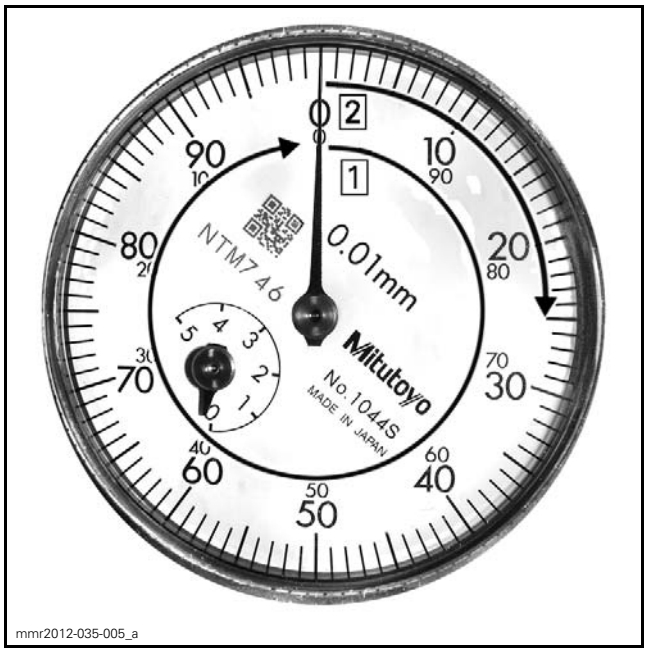
Metric Dial Gauge



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.

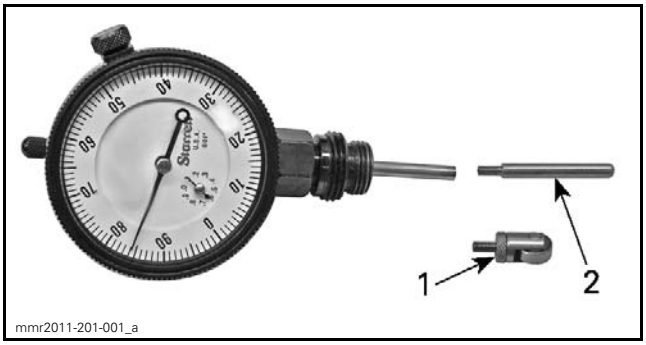
Two TDC gauges can be used:

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.



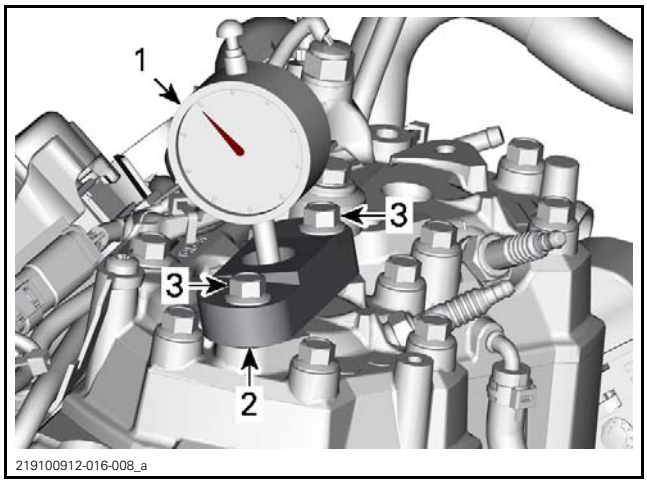
1. Roller tip removed
2. Rounded tip to install

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.

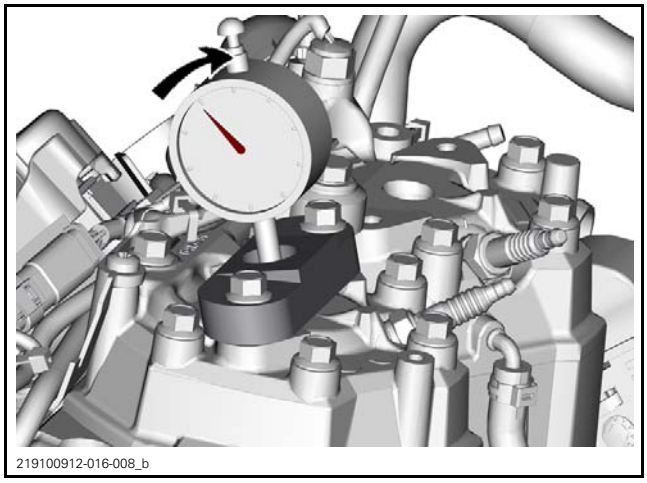
5. Again, slowly rotate the drive pulley back and forth across TDC and confirm the needle always stops exactly at "0" before changing direction. "0" now indicates exact TDC.
6. Lock the dial face with the dial lock screw.

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

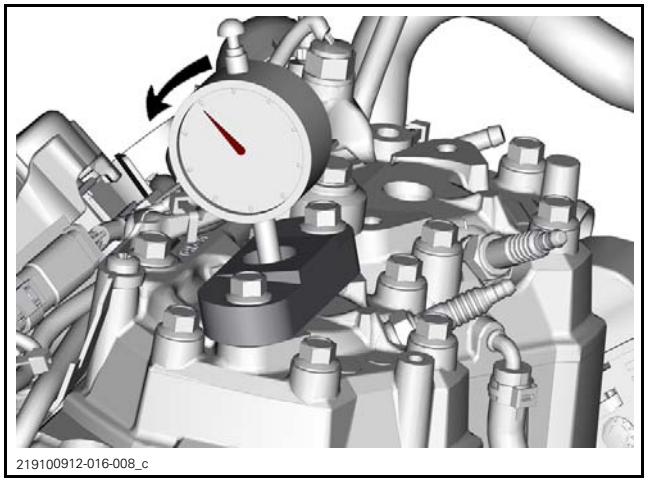
IMPORTANT: Make sure to understand the TDC gauge functioning. Refer to *UNDERSTANDING THE TDC GAUGE* in this subsection.

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.

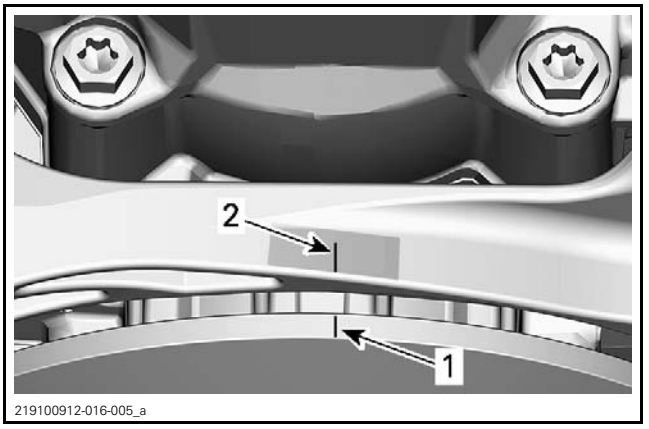


TYPICAL - BRING DIAL NEEDLE TO THE BTDC SPECIFICATION

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.

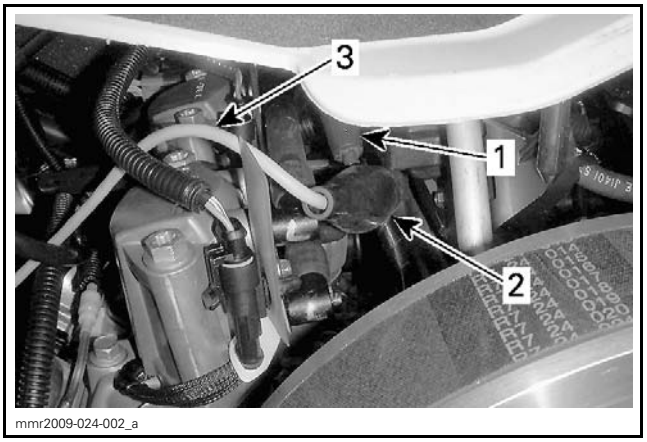
To check the ignition timing proceed as follows:

⚠ 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.



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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**

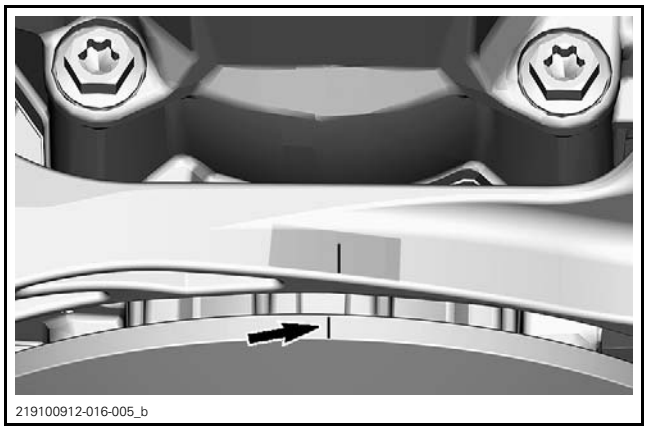
NOTE: Timing will be frozen on the PTO cylinder only for RPM stability. RPM will be limited to 4000 RPM.

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.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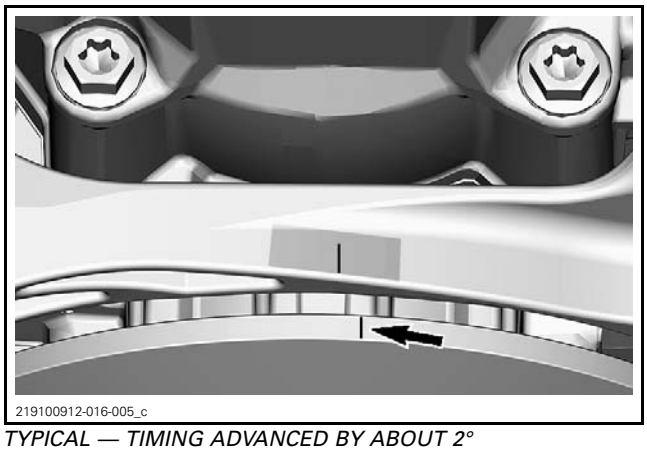
TYPICAL — TIMING RETARDED BY ABOUT 1°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TYPICAL — TIMING ADVANCED BY ABOUT 2°

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.

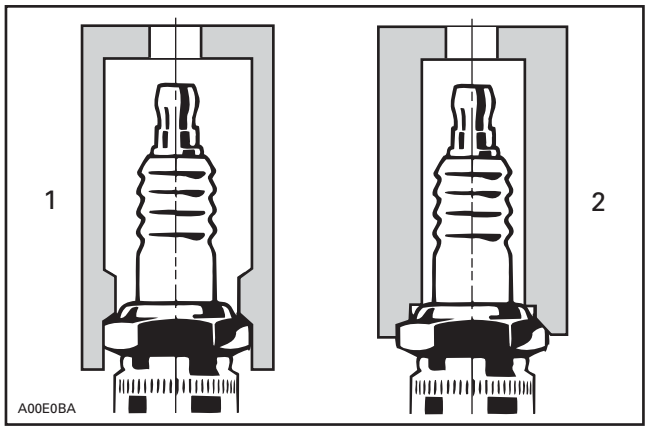
PROCEDURES

SPARK PLUGS

For spark plug type, refer to *TECHNICAL SPECIFICATIONS* subsection.

Replacing the Spark Plug

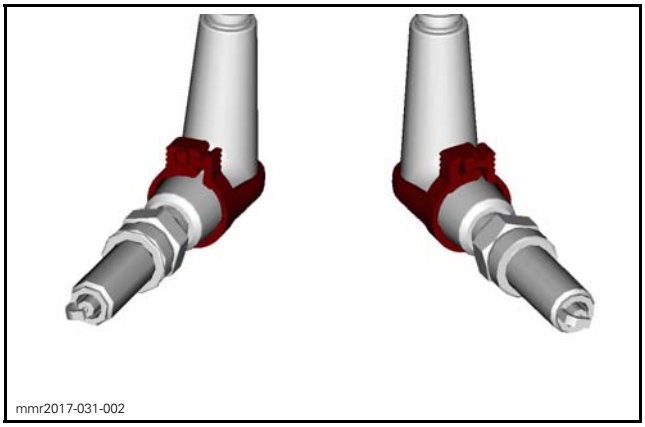
NOTE: Use only an approved spark plug socket for removal and installation. Extra care should be taken to avoid side stresses which could result in a broken spark plug.



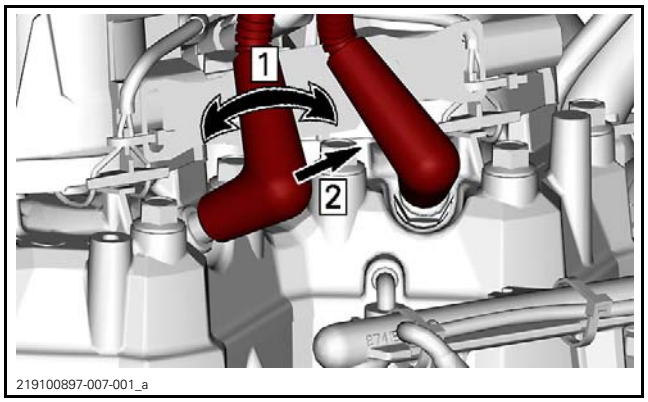
TYPICAL
1. Approved socket
2. Improper socket

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.

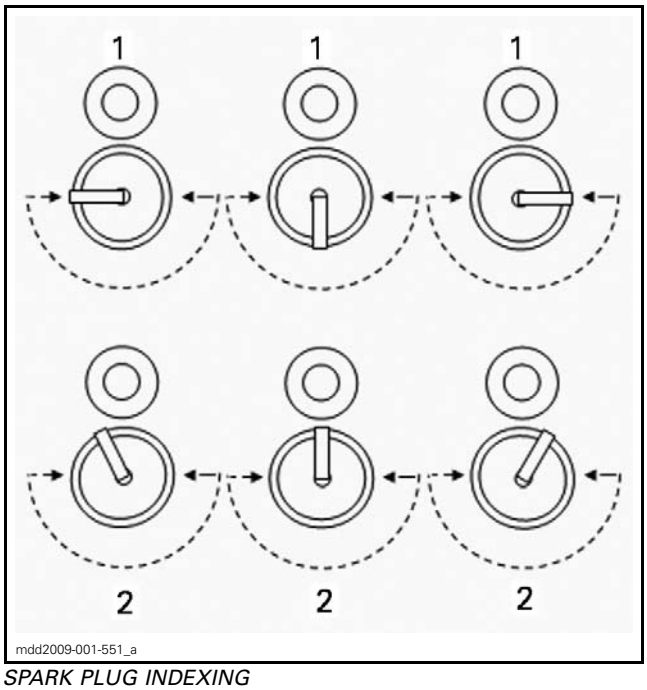
TIGHTENING TORQUE	
Spark plug	17.5 N•m ± 1 N•m (155 lbf•**in** ± 9 lbf•**in**)

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. Install and torque the spark plug, refer to previous table for specific torque.
4. 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.

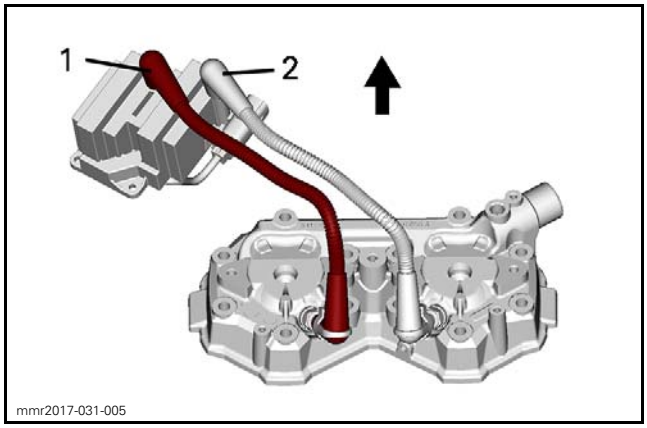


SPARK PLUG INDEXING
1. Acceptable installation
2. Unacceptable installation

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.



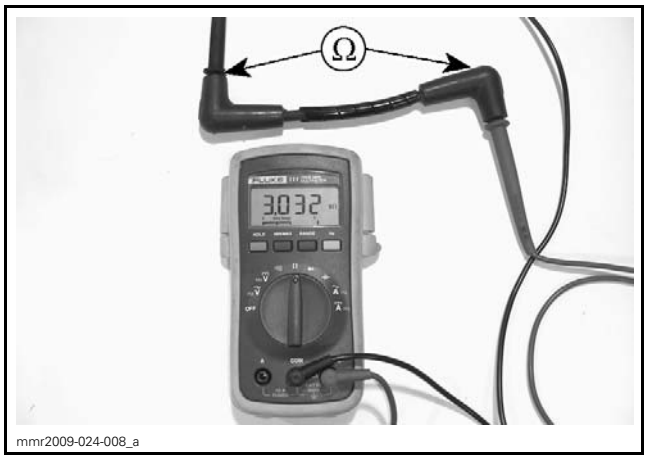
ARROW POINTS TO FRONT OF VEHICLE
1. *PTO side*
2. *MAG side*

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

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

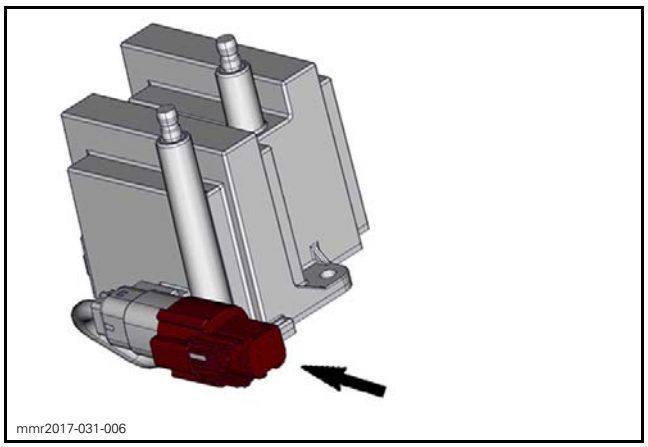
Always electrically disconnect both fuel injectors prior to testing for ignition spark. Otherwise, fuel vapors may ignite in presence of a spark, creating a fire hazard.

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

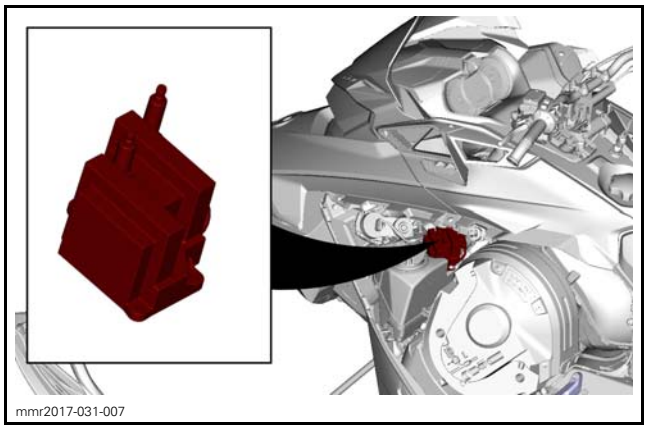
3. Use BUDS2 to activate ignition coil and measure the control signal.

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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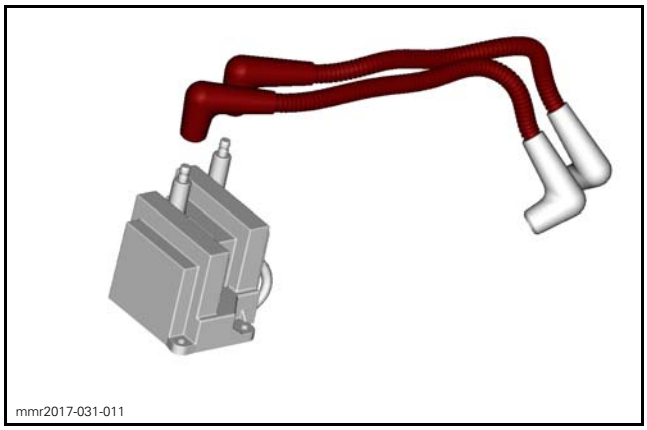
TYPICAL

1. Remove the left hand side panel.
2. Note position of spark plug cables and remove them from the spark plugs.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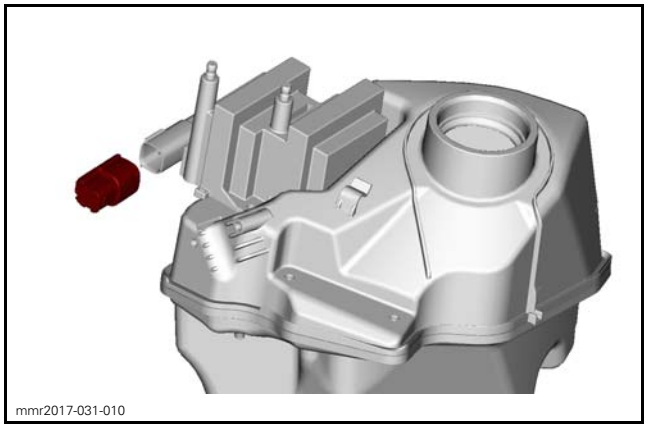
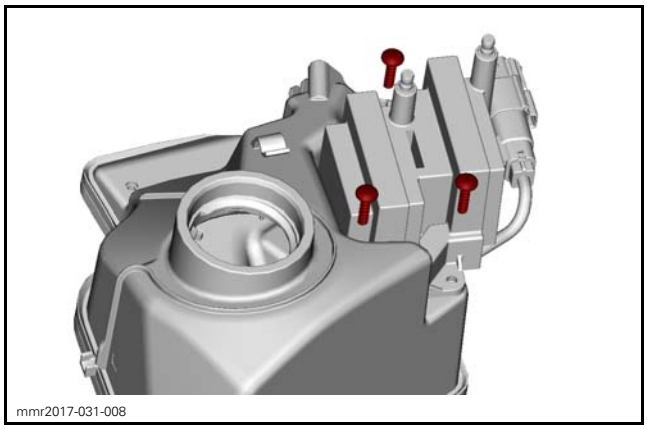
3. Unplug ignition coil connector.


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**)

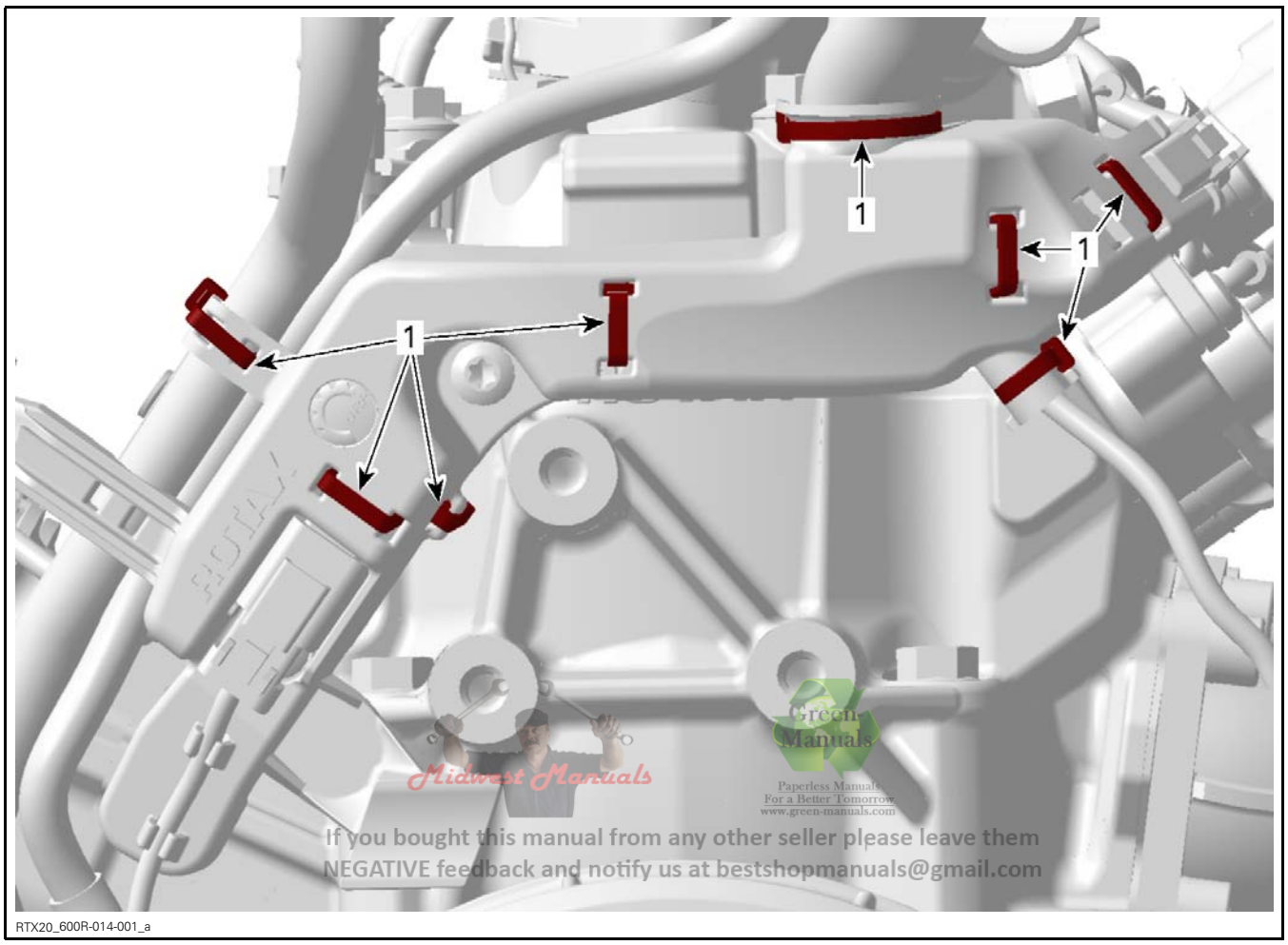
ENGINE HARNESS (600R E-TEC)

GENERAL

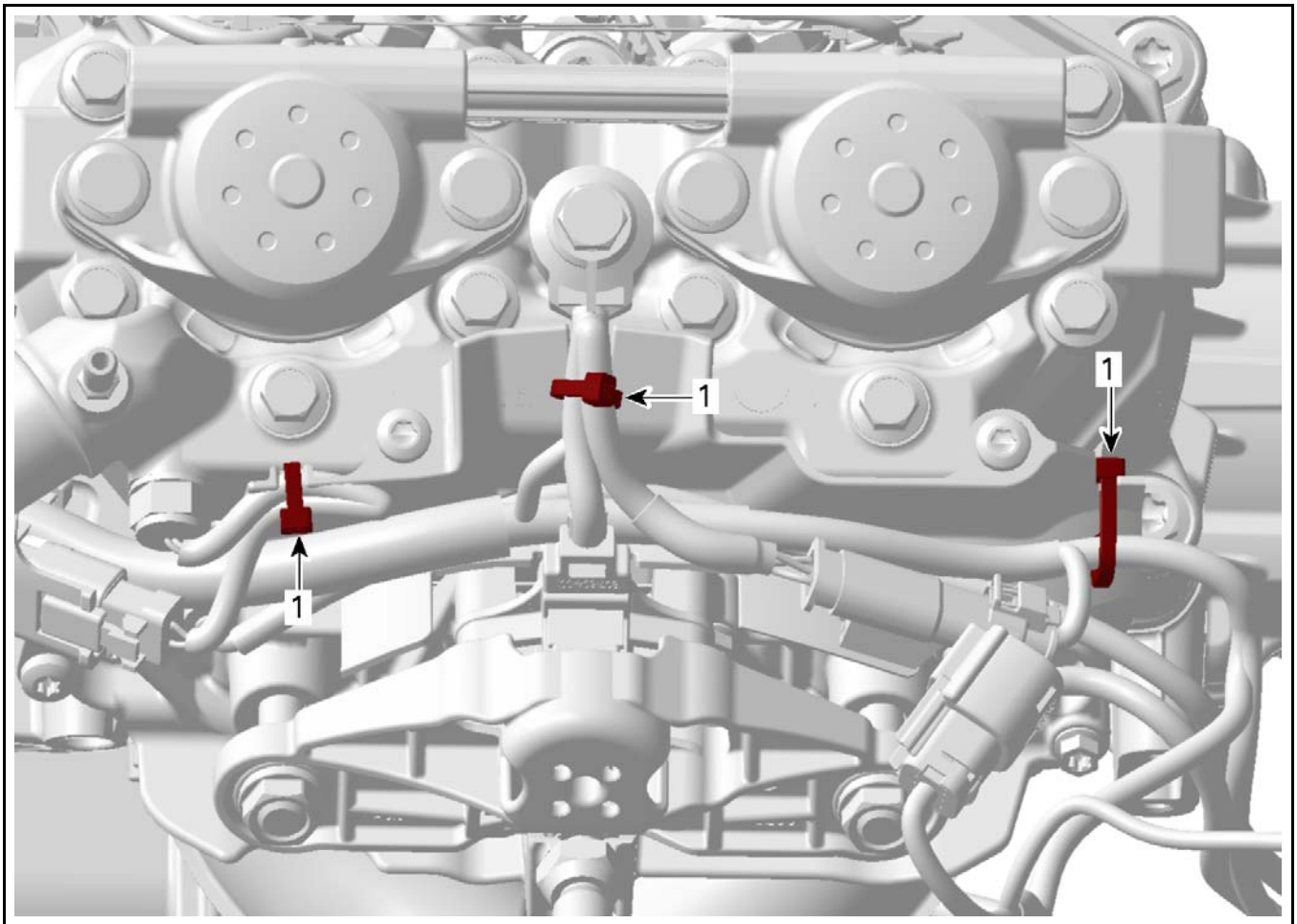
For connector replacement or wire repair procedures refer to *WIRING HARNESS AND CONNECTORS* subsection.

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.

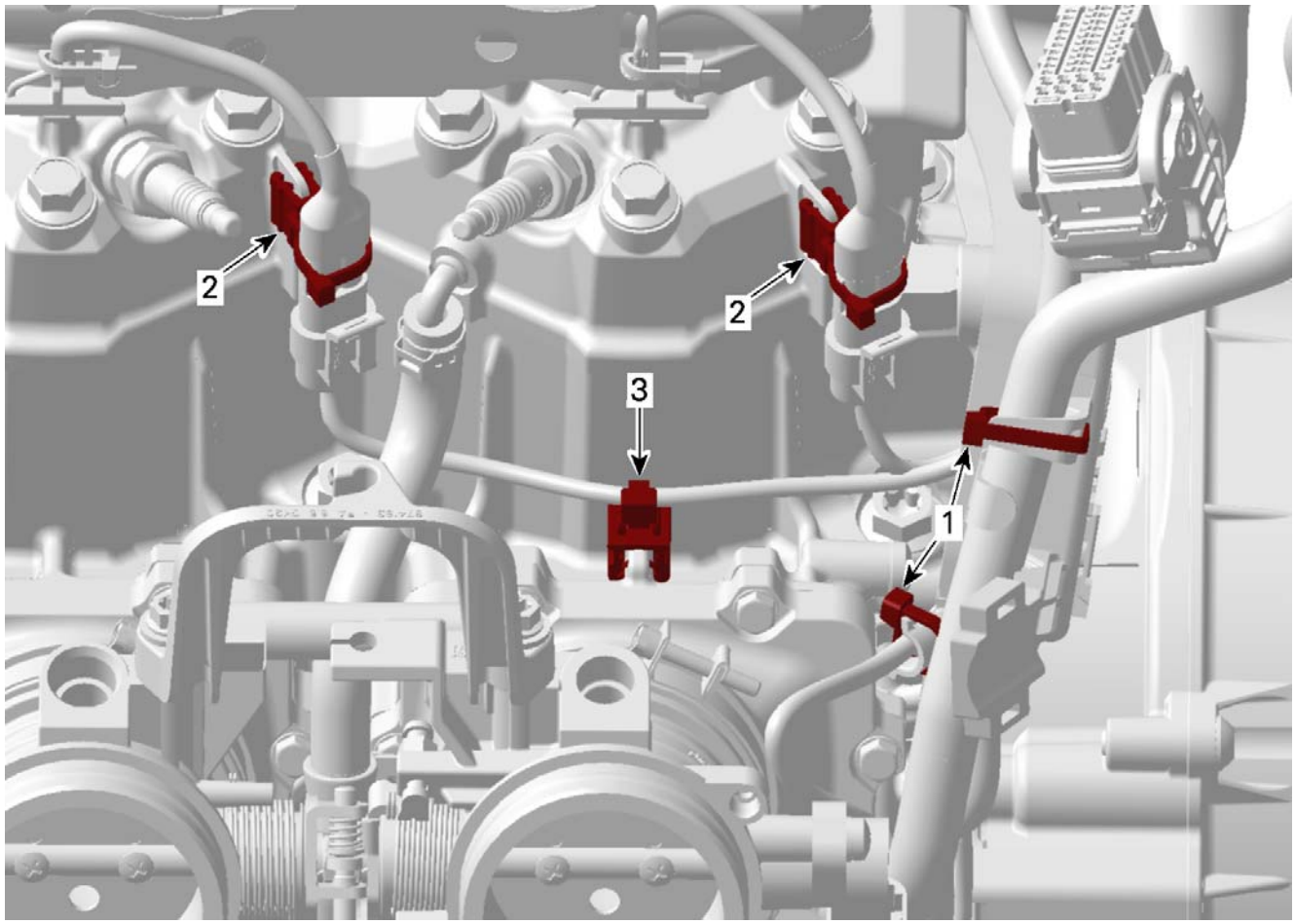
To install the engine harness properly, the following parts are required:



RTX20_600R-014-001_a



RTX20_600R-014-002_a



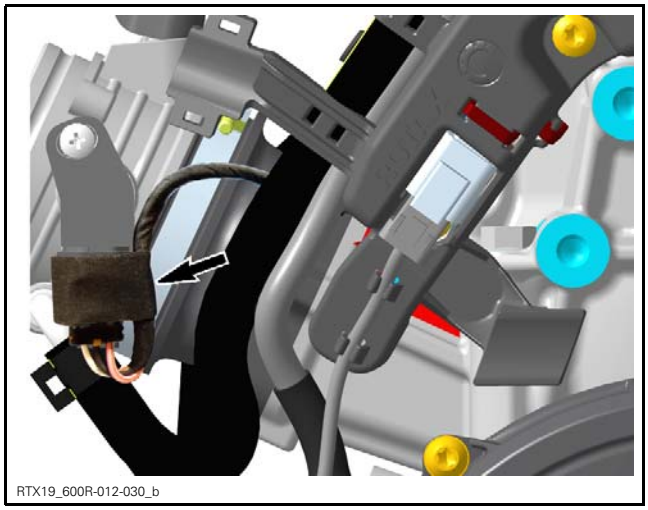
RTX20_600R-014-003_a

ITEM	DESCRIPTION
1	Locking tie 175 mm (6-29/32 in) x 4 mm (5/32 in)
2	Locking tie with mount 150 mm (6 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

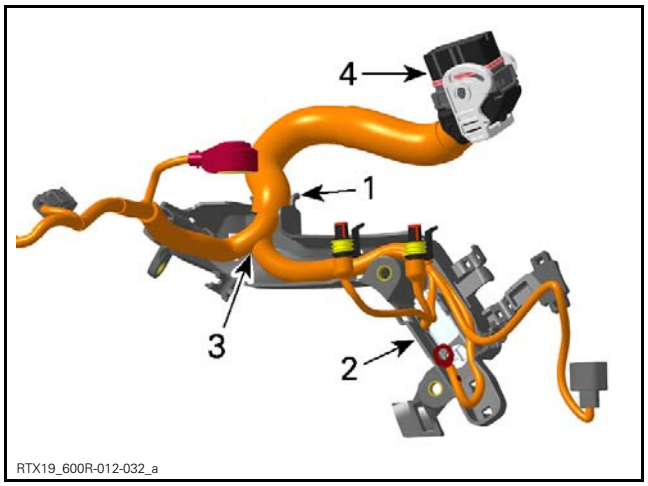
REMOVING THE ENGINE WIRING HARNESS

NOTICE The TPS connector can be disconnected without cutting the tape.


RTX19_600R-012-030_b

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.



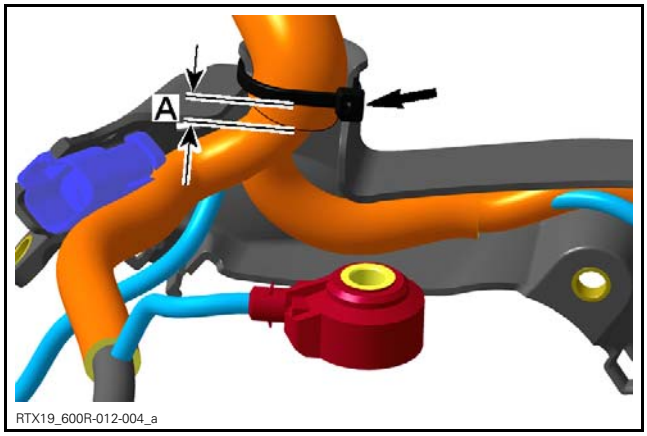
RTX19_600R-012-032_a

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.

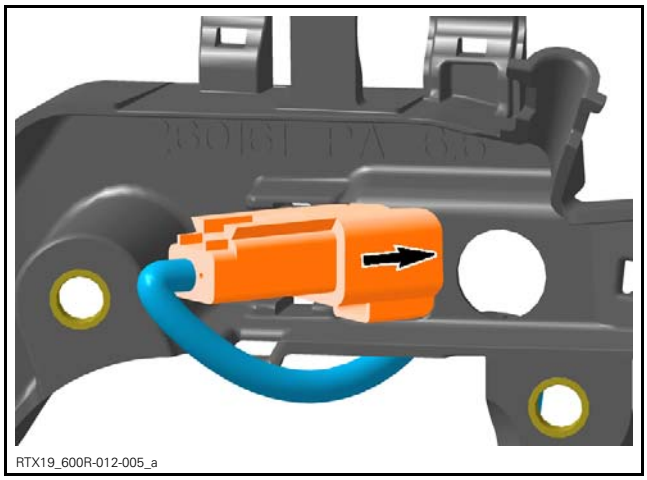
NOTICE Make sure head of the locking tie is correctly positioned and in the proper direction.



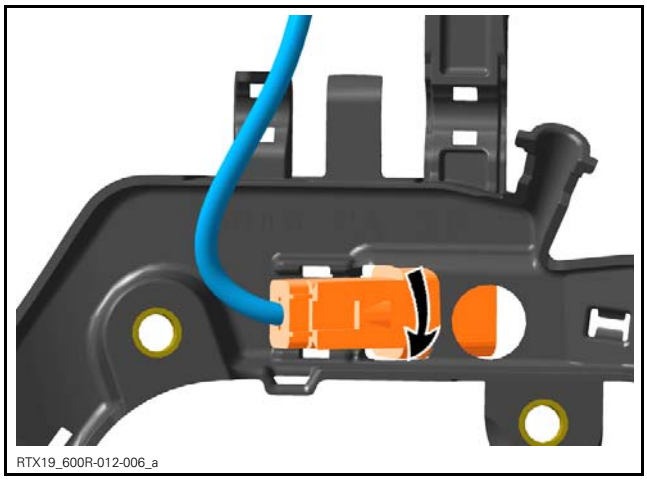
RTX19_600R-012-004_a

A. 5 mm (.2 in)

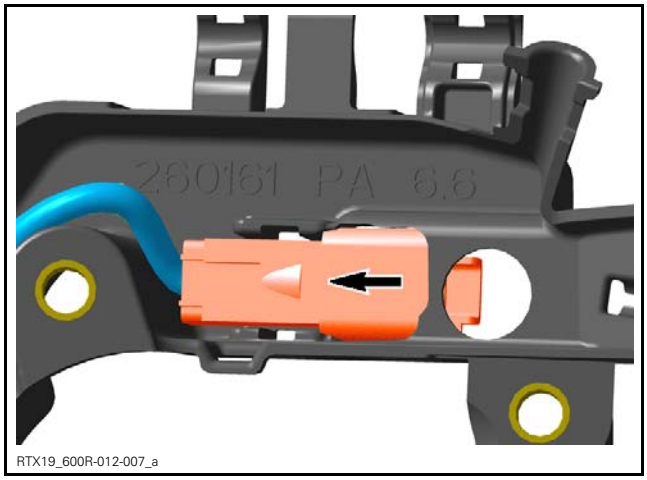
3. Engage CPS connector to the harness support:
   3.1 Lead connector through harness support.


RTX19_600R-012-005_a

   3.2 Turn connector

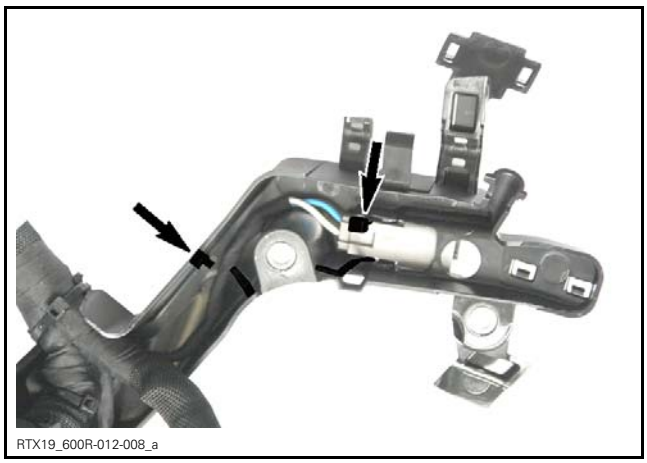

RTX19_600R-012-006_a

3.3 Move connector backwards to engage it proper in the harness support.



RTX19_600R-012-007_a

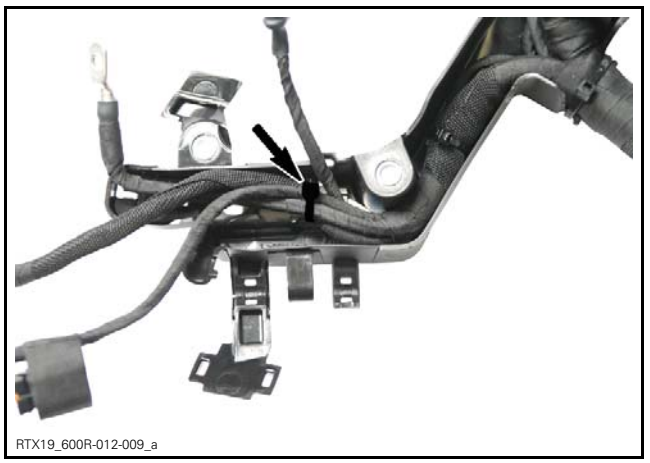
4. Install locking ties in harness support but do not lock yet.


RTX19_600R-012-008_a

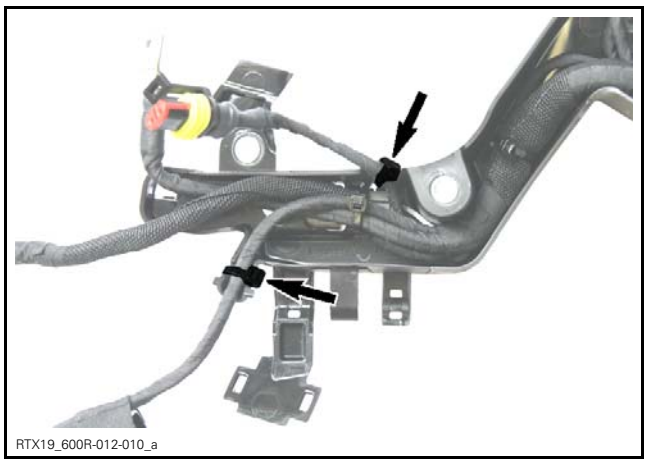
5. Route the rear side portion of the harness into the harness support and secure it.

Secure following:
– GND cable
– E-TEC direct fuel injector cable (PTO injector)
– TPS cable.

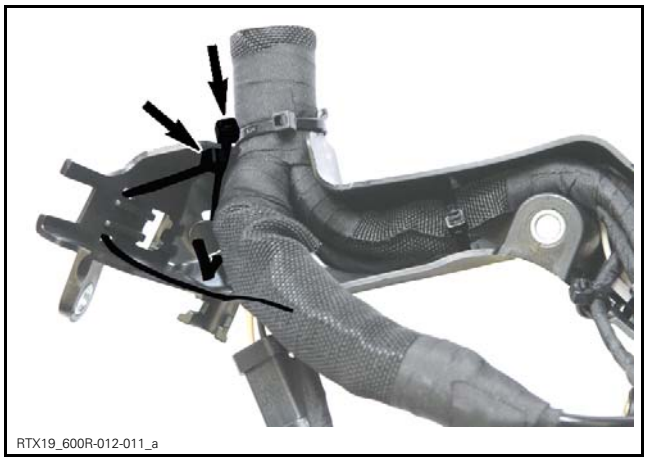
NOTICE **E-TEC direct fuel injector cable (MAG injector) is not secured by the locking tie.**


RTX19_600R-012-009_a

6. Using a locking tie to secure:
   – TPS cable
   – E-TEC direct fuel injector cable (MAG injector).

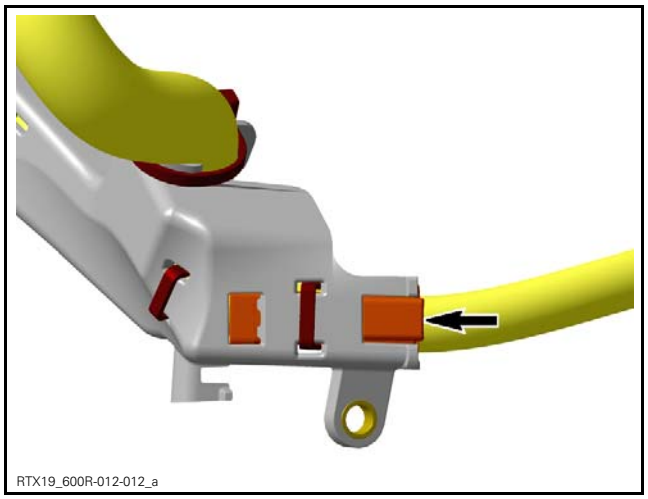

RTX19_600R-012-010_a

7. Place locking ties in harness support.

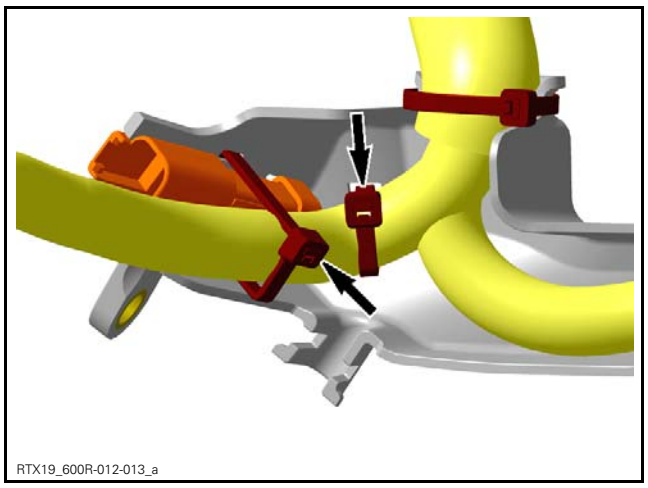

RTX19_600R-012-011_a

8. Engage CTS connector in harness support.

NOTICE Ensure connector is properly locked.

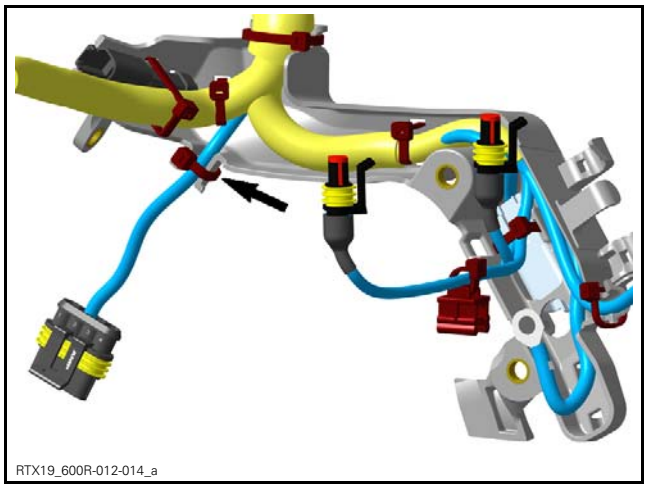

RTX19_600R-012-012_a

9. Secure CTS connector and wiring harness to harness support


RTX19_600R-012-013_a

SHOT models

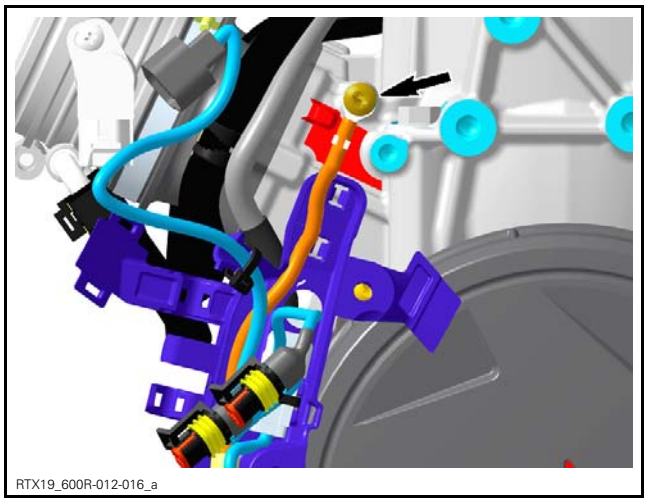
10. Secure Absolute CPS cable to harness support.


RTX19_600R-012-014_a

INSTALLING THE ENGINE WIRING HARNESS

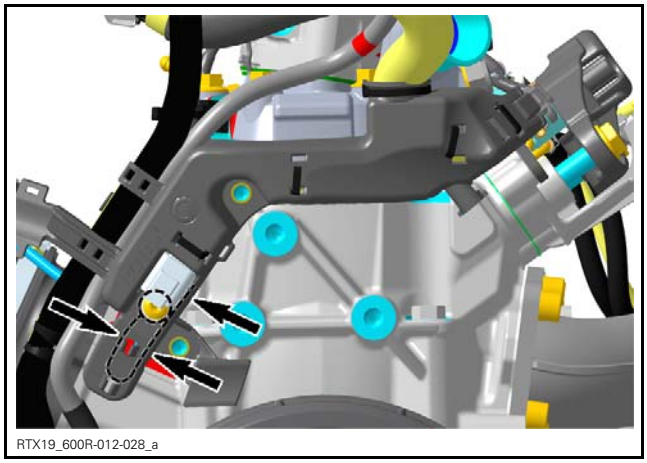
1. Install the ground cable.
2. Tighten the ground cable screw to specification.

TIGHTENING TORQUE	
Ground cable screw	8 N•m ± 0.5 N•m (71 lbf•**in** ± 4 lbf•**in**)

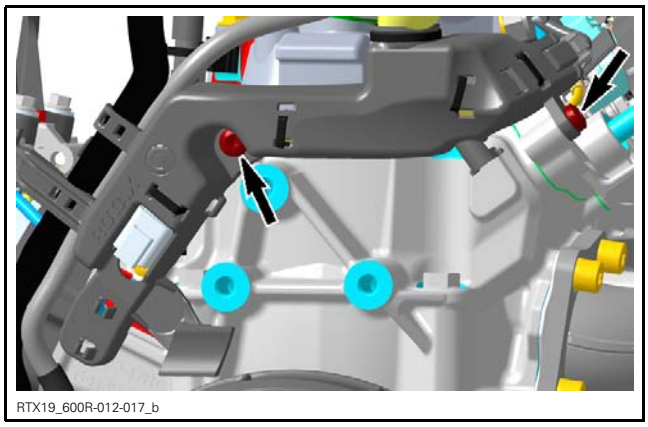

RTX19_600R-012-016_a

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.

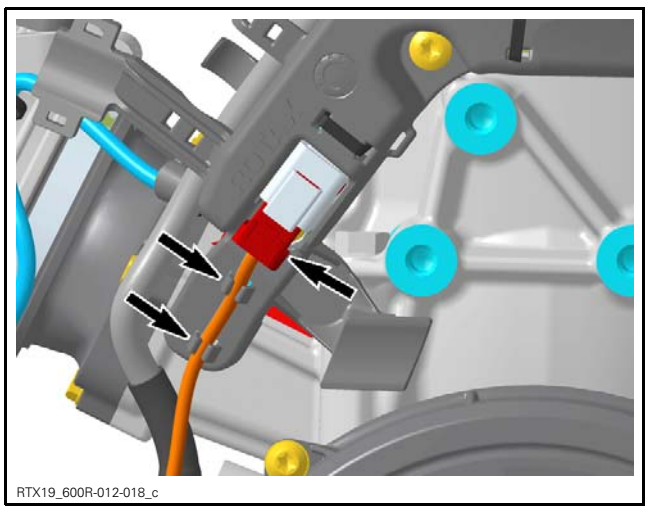

RTX19_600R-012-028_a

4. Tighten the harness support retaining screws to specification.

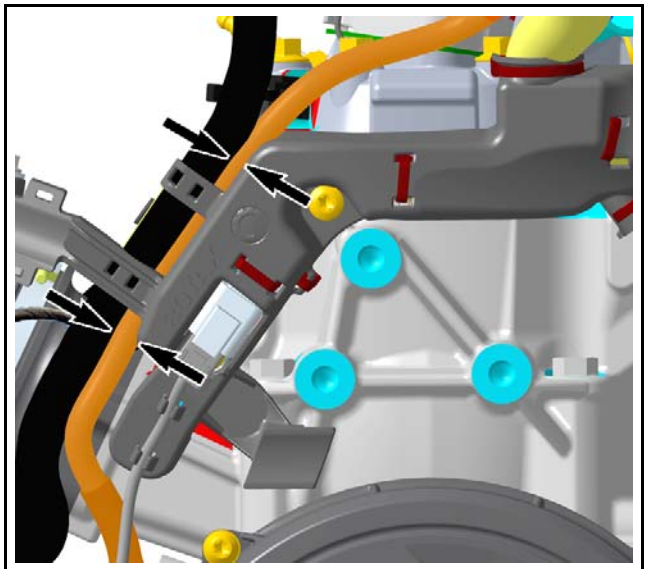

RTX19_600R-012-017_b

TIGHTENING TORQUE	
Harness support retaining screws	8 N•m ± 0.5 N•m (71 lbf•**in** ± 4 lbf•**in**)

5. Connect the CPS connector.
6. Engage CPS cable in harness support.

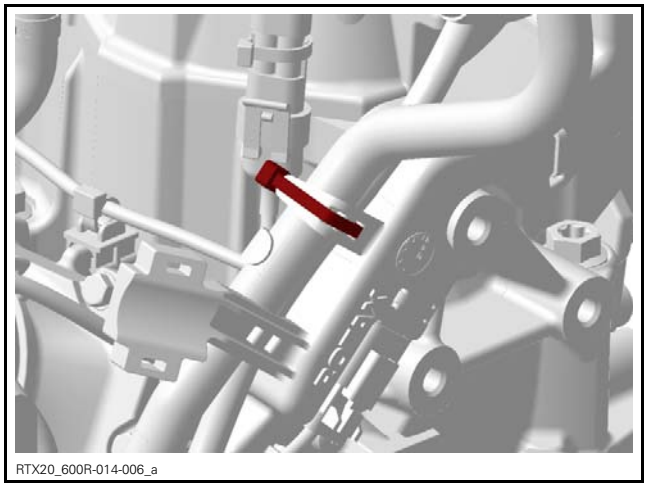

RTX19_600R-012-018_c

7. Route stator wire in the cable harness support.

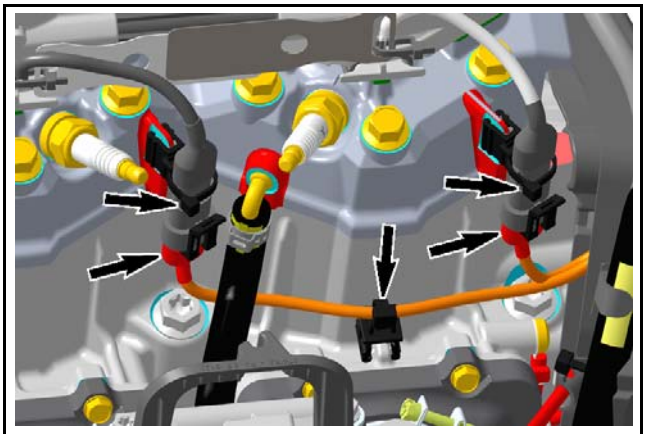

RTX19_600R-012-031_b

NOTICE **The stator wire is routed underneath the throttle body heating hose.**

8. Secure throttle body heating hose to cable harness support.

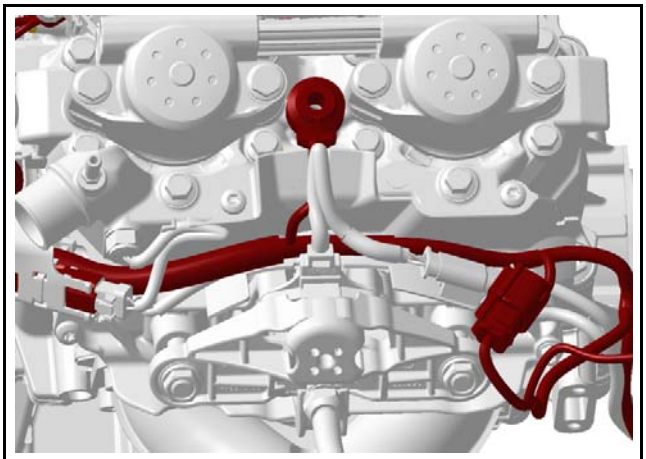

RTX20_600R-014-006_a

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.


RTX19_600R-012-020_a

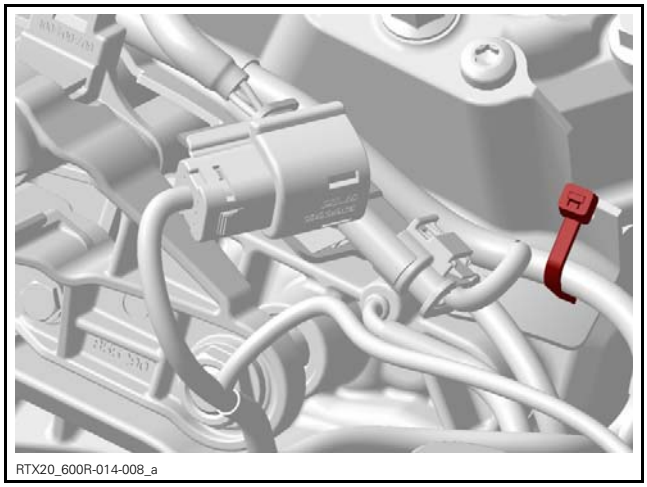
14. Clean contact surface of knock sensor (KS) on cylinder head
15. Place the engine harness into the front harness support.

NOTICE Engine harness must not cross the RAVE oil line after harness installation.


RTX20_600R-014-007_a

16. Secure engine wiring harness using a locking tie.

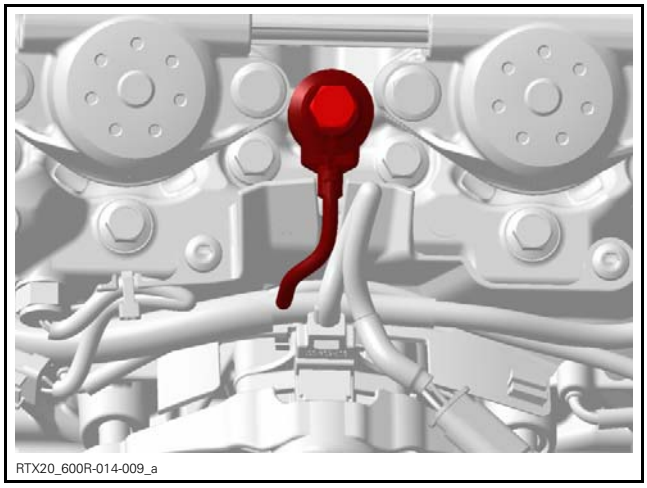
NOTICE Make sure head of the locking tie is correctly positioned and in the proper direction.


RTX20_600R-014-008_a

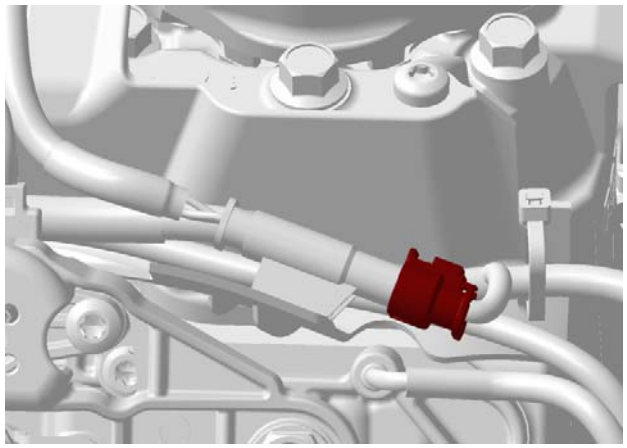
17. Put KS in place and tighten KS screw to specification.

TIGHTENING TORQUE	
Knock sensor screw	24 N•m ± 1 N•m (18 lbf•ft ± 1 lbf•ft)

NOTICE Improper torque may prevent sensor from functioning properly possibly leading to severe internal engine component damage.

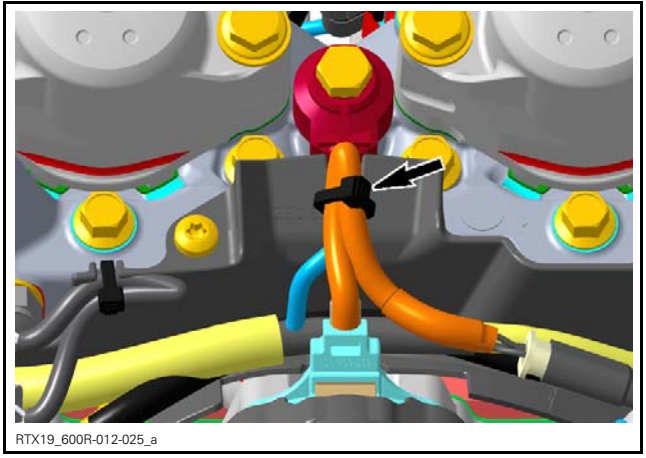

RTX20_600R-014-009_a

18. Connect wiring harness connector to 3D Rave Valve Position Sensor and engage connector on harness support.


RTX20_600R-014-010_a

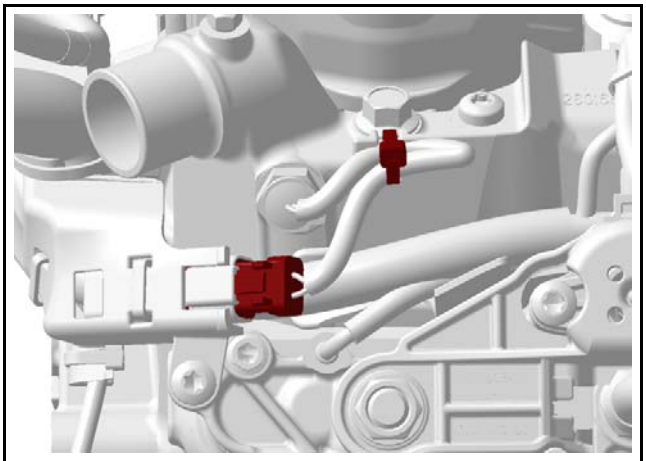
19. Route the 3D Rave Valve Position Sensor wire and secure it to the KS wire.
20. Position locking tie behind protection tape and make sure head of the locking tie is correctly positioned.

NOTICE Ensure to route 3D Rave Valve Position Sensor wire free from tension.


RTX19_600R-012-025_a

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.


RTX20_600R-014-011_a

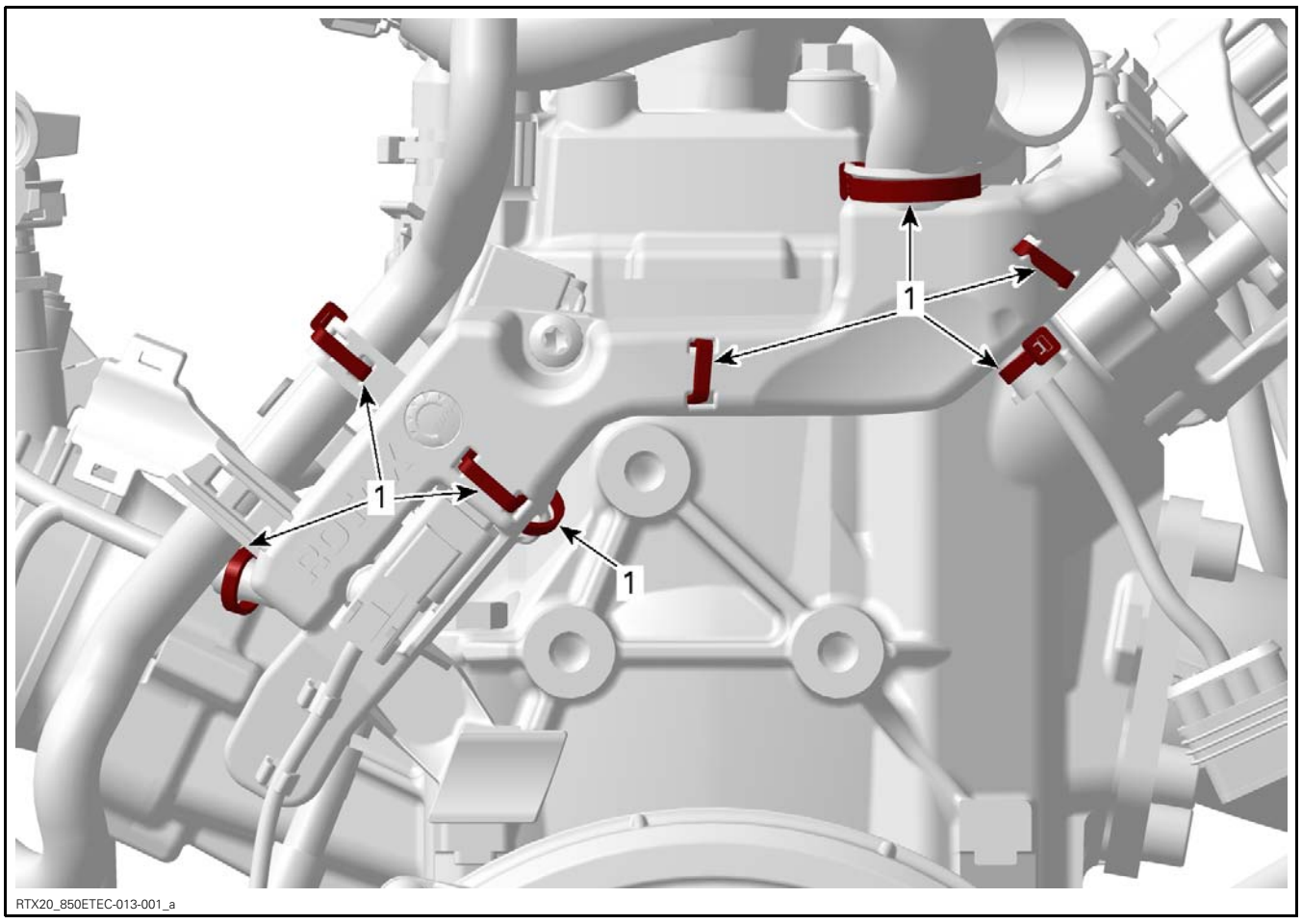
ENGINE HARNESS (850 E-TEC)

GENERAL

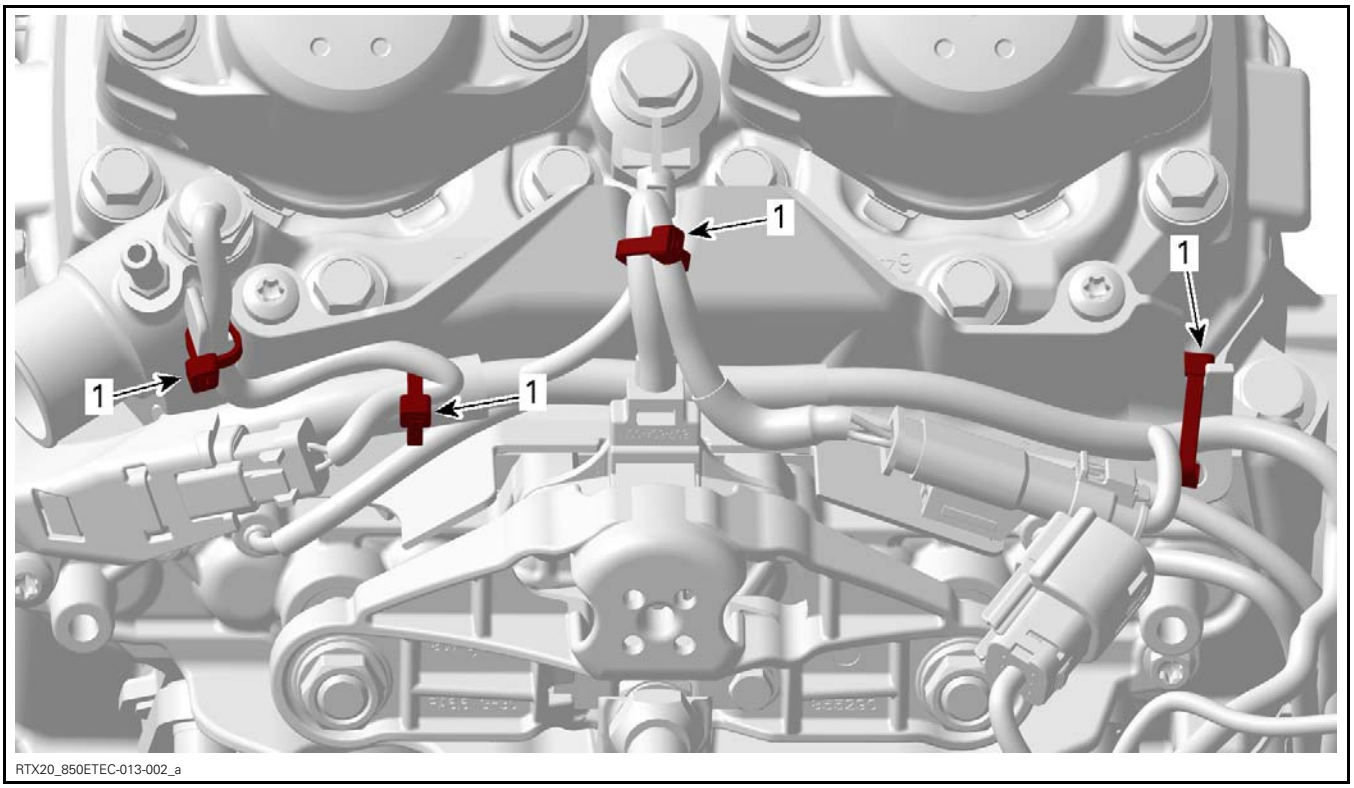
For connector replacement or wire repair procedures refer to *WIRING HARNESS AND CONNECTORS* subsection.

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.

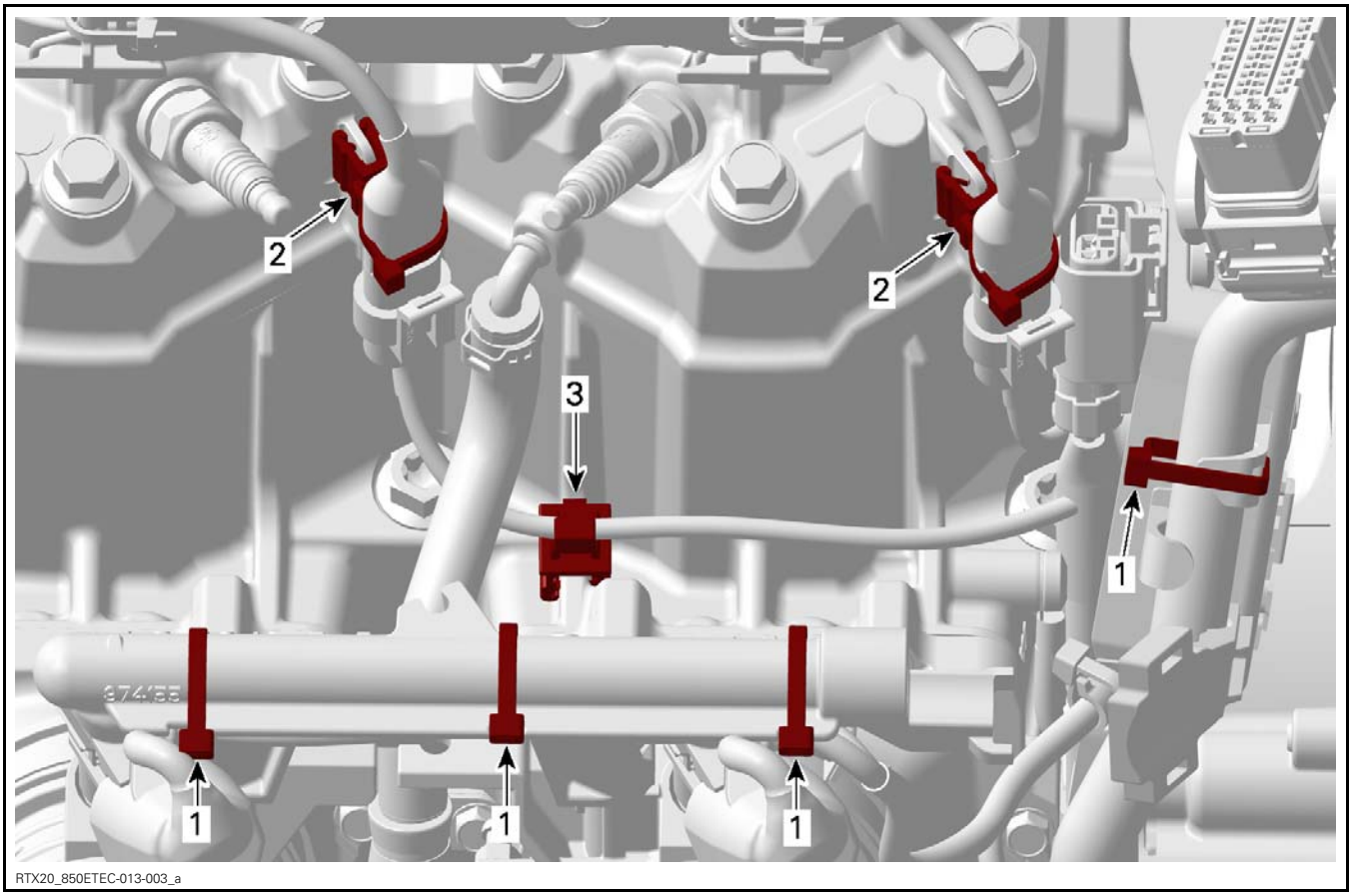
To install the engine harness properly, the following parts are required:



RTX20_850ETEC-013-001_a



RTX20_850ETEC-013-002_a



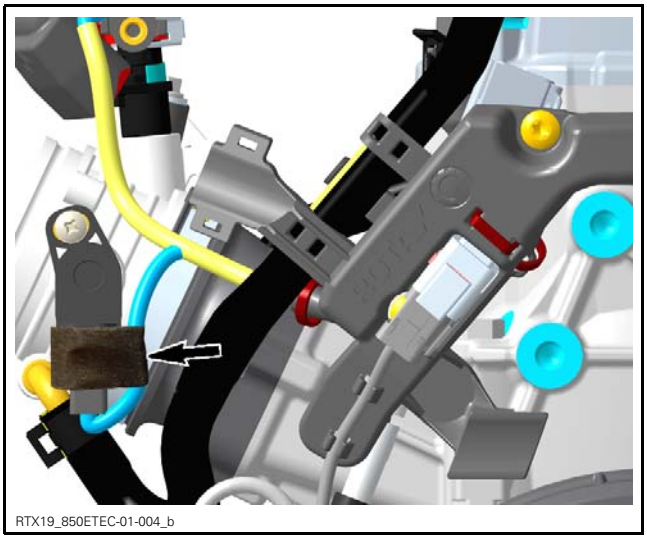
RTX20_850ETEC-013-003_a

ITEM	DESCRIPTION
1	Locking tie 175 mm (6-29/32 in) x 4 mm (5/32 in)
2	Locking tie with mount 150 mm (6 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

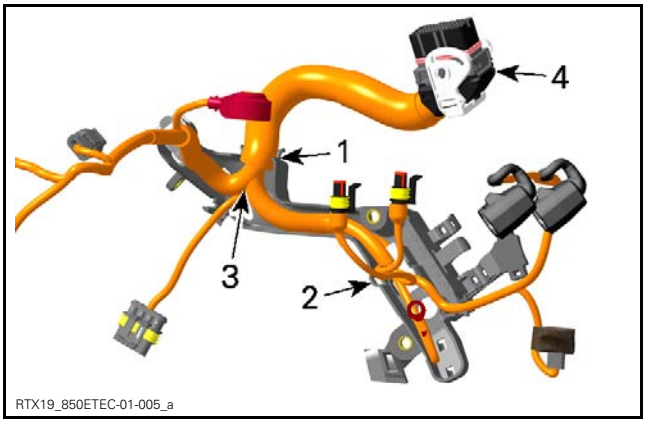
REMOVING THE ENGINE WIRING HARNESS

NOTICE The TPS connector can be disconnected without cutting the tape.


RTX19_850ETEC-01-004_b

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.



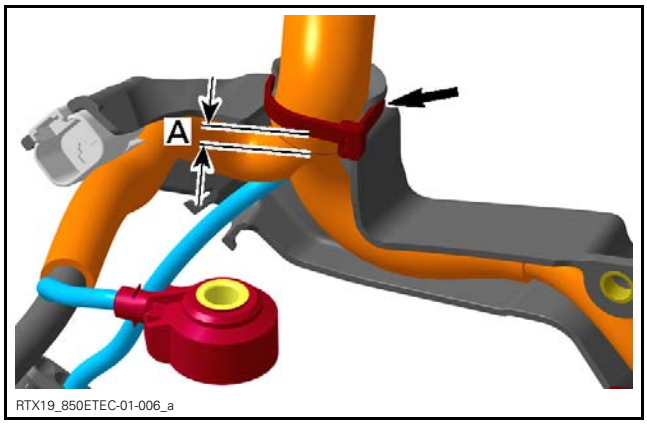
RTX19_850ETEC-01-005_a

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.

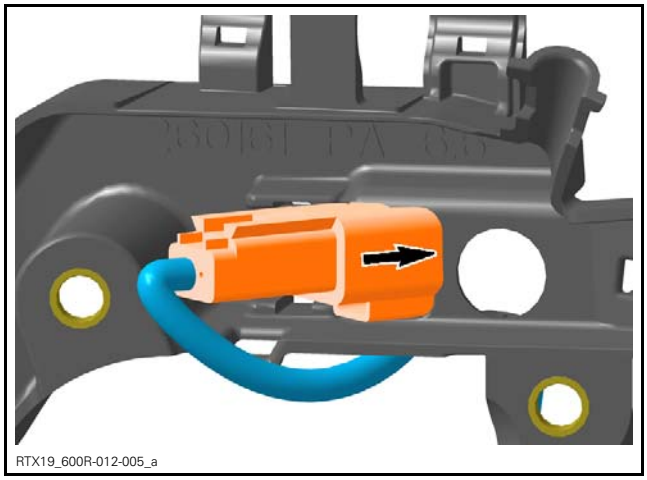
NOTICE Make sure head of the locking tie is correctly positioned and in the proper direction.



RTX19_850ETEC-01-006_a

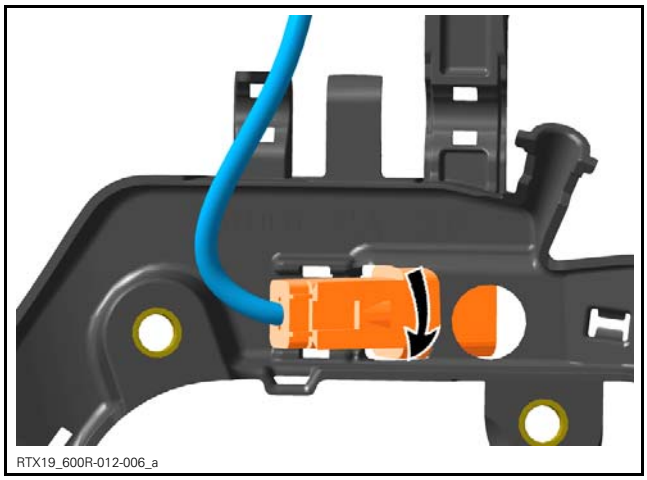
A. 5 mm (.2 in)

3. Engage CPS connector to the harness support:
   3.1 Lead connector through harness support.


RTX19_600R-012-005_a

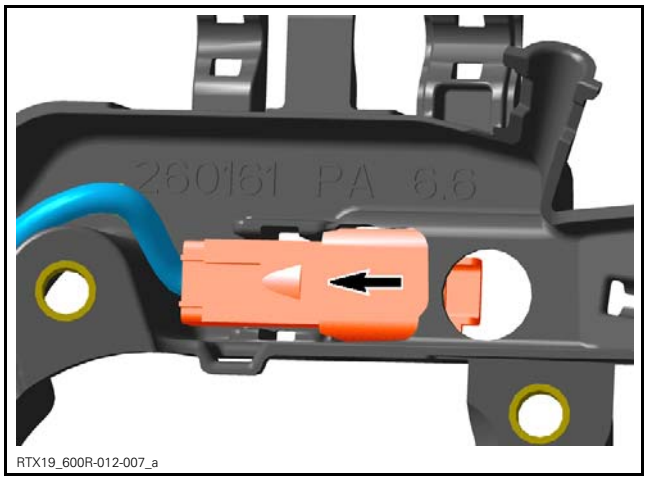
TYPICAL

   3.2 Turn connector


RTX19_600R-012-006_a

TYPICAL

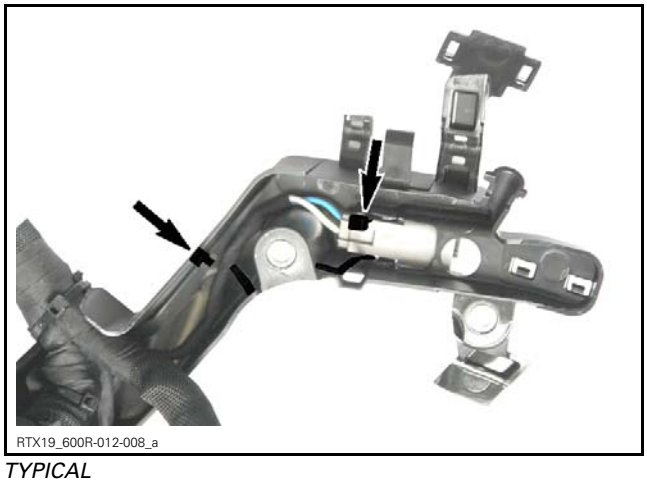
3.3 Move connector backwards to engage it proper in the harness support.



RTX19_600R-012-007_a

TYPICAL

4. Install locking ties in harness support but do not lock yet.

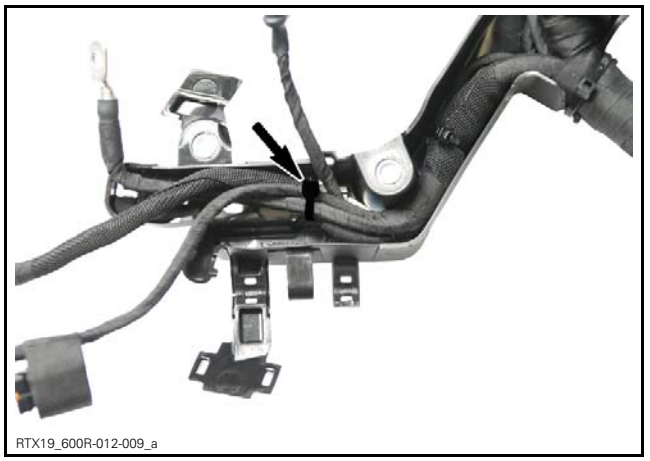

RTX19_600R-012-008_a

TYPICAL

5. Route the rear side portion of the harness into the harness support and secure it.

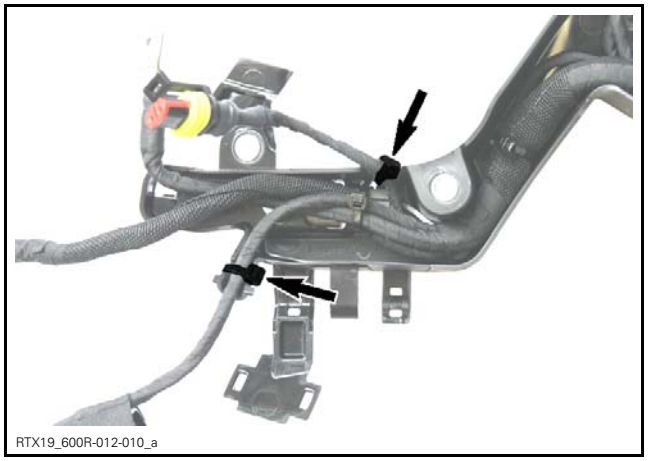
Secure following:
- GND cable
- E-TEC direct fuel injector cable (PTO injector)
- TPS/Throttle body injector cable.

NOTICE **E-TEC direct fuel injector cable (MAG injector) is not secured by the locking tie.**


RTX19_600R-012-009_a

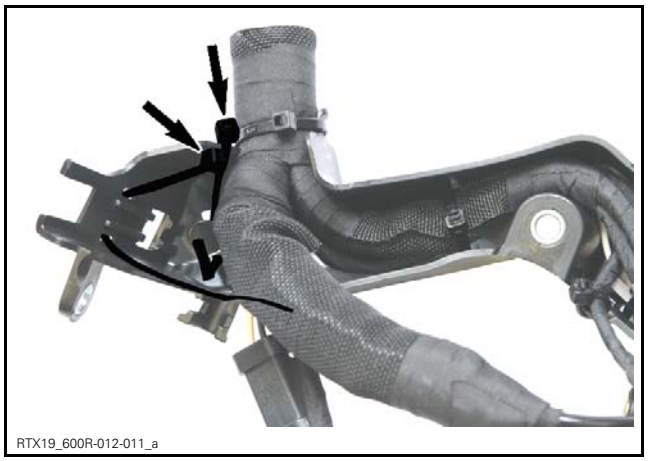
TYPICAL

6. Using a locking tie to secure:
   - TPS/Throttle body injector cable
   - E-TEC direct fuel injector cable (MAG injector).


RTX19_600R-012-010_a

TYPICAL

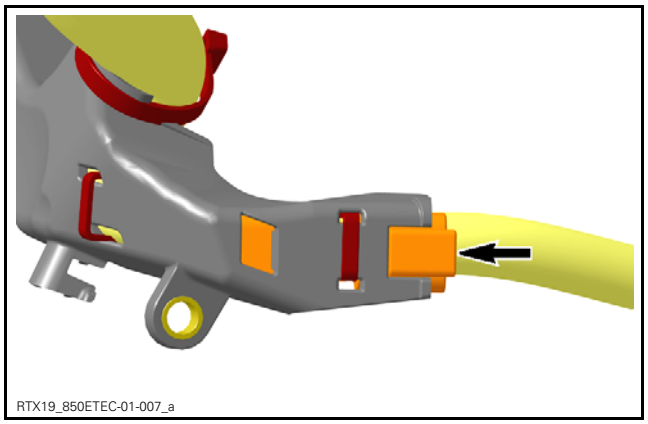
7. Place locking ties in harness support.


RTX19_600R-012-011_a

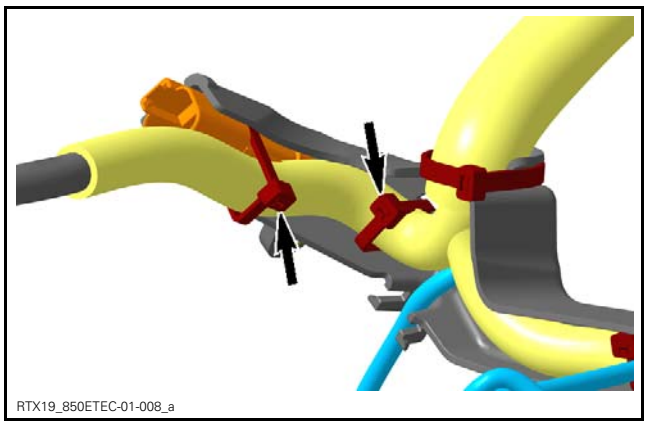
TYPICAL

8. Engage CTS connector in harness support.

NOTICE **Ensure connector is properly locked.**

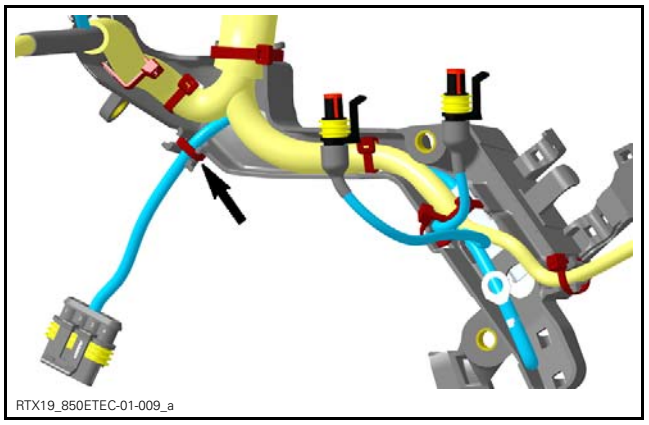

RTX19_850ETEC-01-007_a

9. Secure CTS connector and wiring harness to harness support


RTX19_850ETEC-01-008_a

SHOT models

10. Secure Absolute CPS cable to harness support.

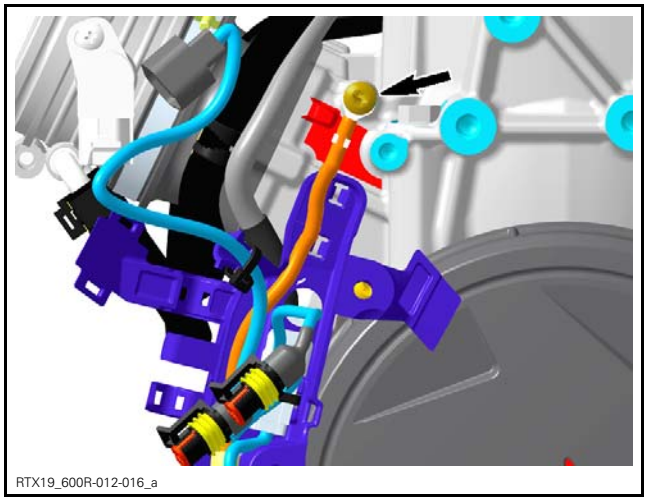

RTX19_850ETEC-01-009_a

INSTALLING THE ENGINE WIRING HARNESS

1. Install the ground cable.

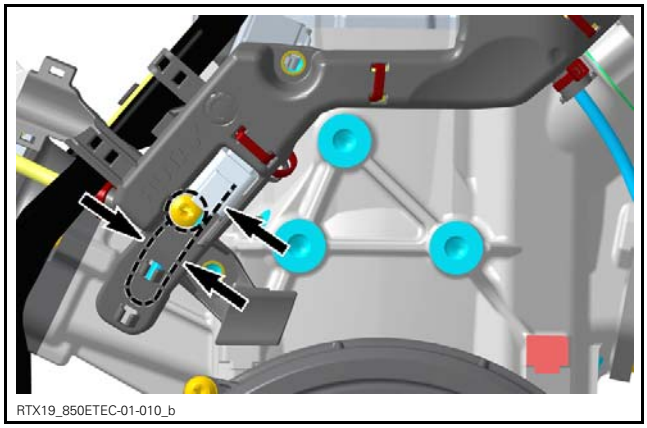
Tighten the ground cable screw to specification.

TIGHTENING TORQUE	
Ground cable screw	8 N•m ± 0.5 N•m (71 lbf•**in** ± 4 lbf•**in**)

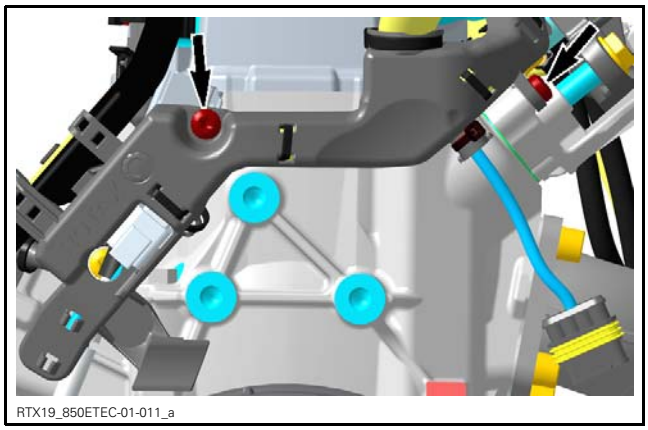

RTX19_600R-012-016_a

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.**


RTX19_850ETEC-01-010_b

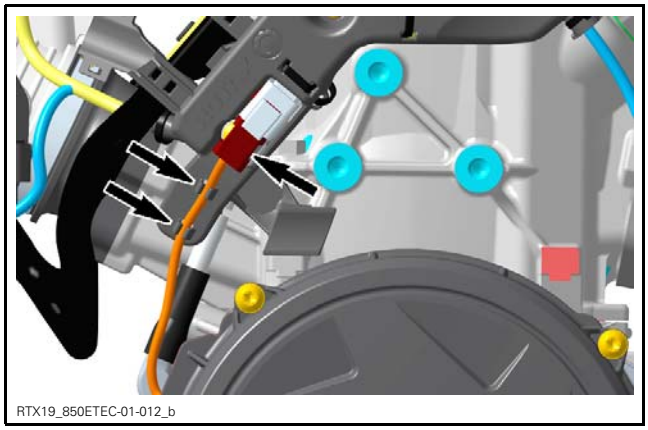
3. Tighten the harness support retaining screws to specification.


RTX19_850ETEC-01-011_a

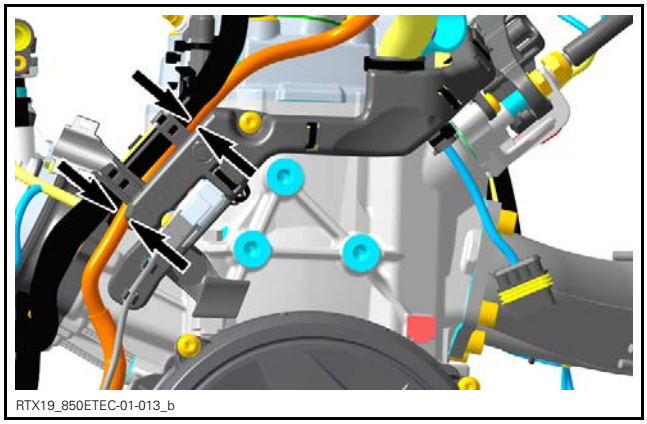
TIGHTENING TORQUE	
Harness support retaining screws	8 N•m ± 0.5 N•m (71 lbf•**in** ± 4 lbf•**in**)

4. Connect the CPS connector.

Engage CPS cable in harness support.

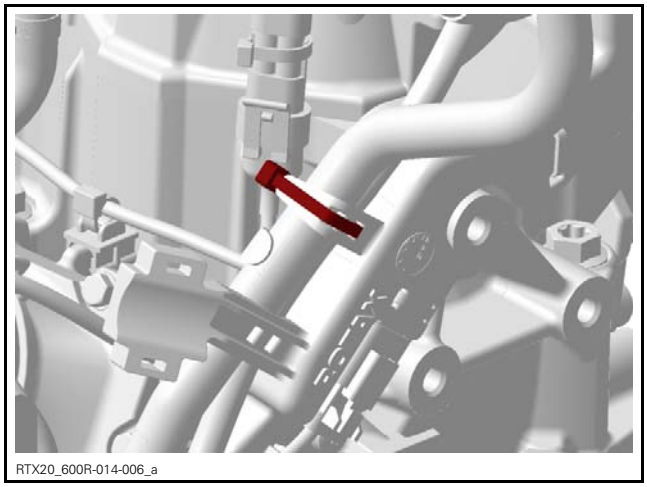

RTX19_850ETEC-01-012_b

5. Route stator wire in the cable harness support.

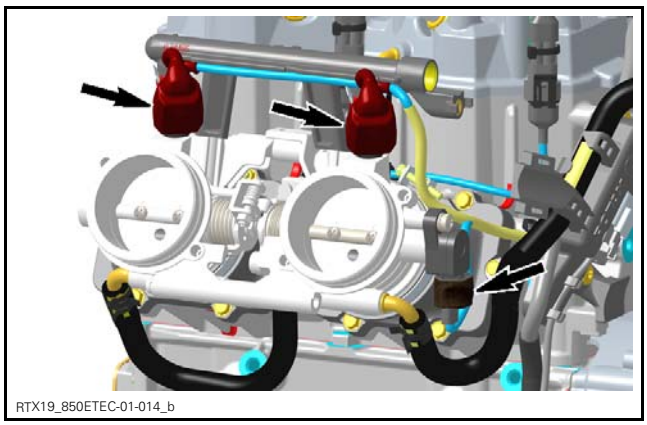

RTX19_850ETEC-01-013_b

NOTICE **The stator wire is routed underneath the throttle body heating hose.**

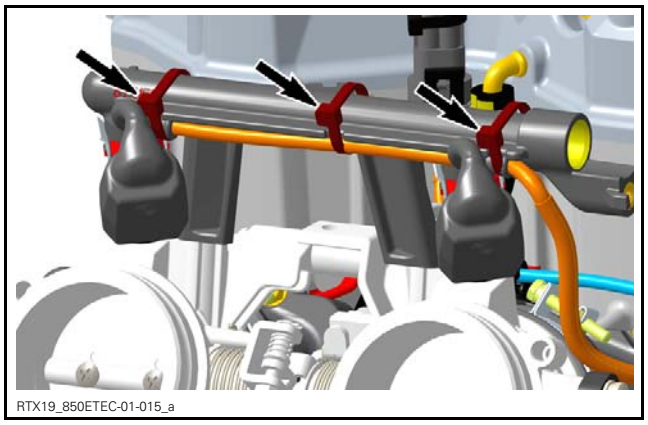
6. Secure throttle body heating hose to harness support.


RTX20_600R-014-006_a

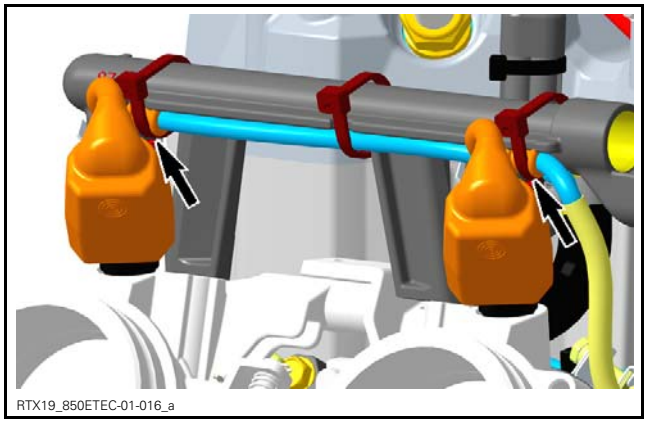
7. Route TPS wire behind the throttle body heating hose.
8. Connect wiring harness connectors to
   - TPS
   - Throttle body injectors.


RTX19_850ETEC-01-014_b

9. Secure the engine wiring harness to the fuel rail.

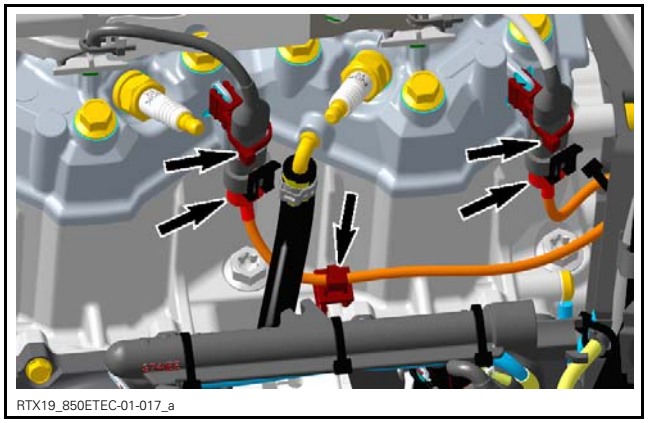

RTX19_850ETEC-01-015_a

NOTICE Ensure to install the locking ties in the grooves of the injector connector protecting covers.


RTX19_850ETEC-01-016_a

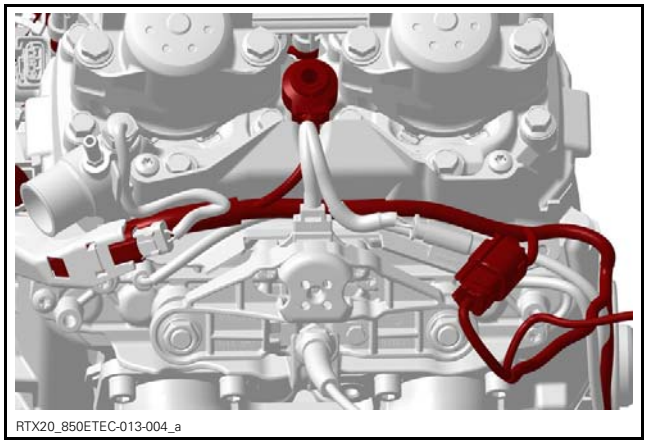
10. Connect E-TEC direct fuel injector connectors.
11. Secure both E-TEC direct fuel injector cables.

Route fuel injector cable (PTO injector) underneath the throttle body heating hose.


RTX19_850ETEC-01-017_a

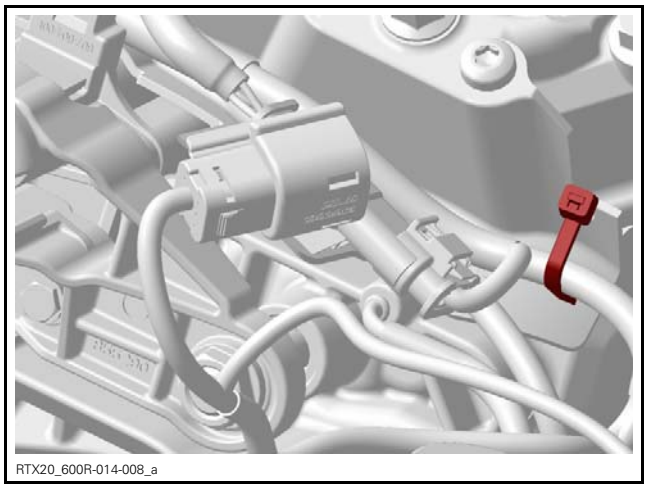
12. Clean contact surface of knock sensor (KS) on cylinder head
13. Place the engine harness into the front harness support.

NOTICE Engine harness must not cross the RAVE oil line after harness installation.


RTX20_850ETEC-013-004_a

14. Secure engine wiring harness using a locking tie.

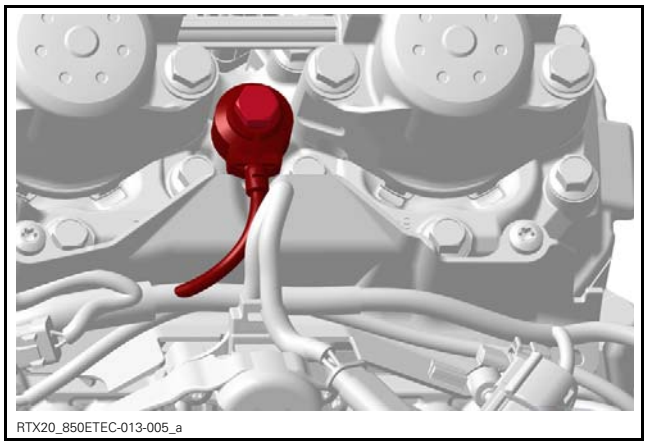
NOTICE Make sure head of the locking tie is correctly positioned and in the proper direction.


RTX20_600R-014-008_a

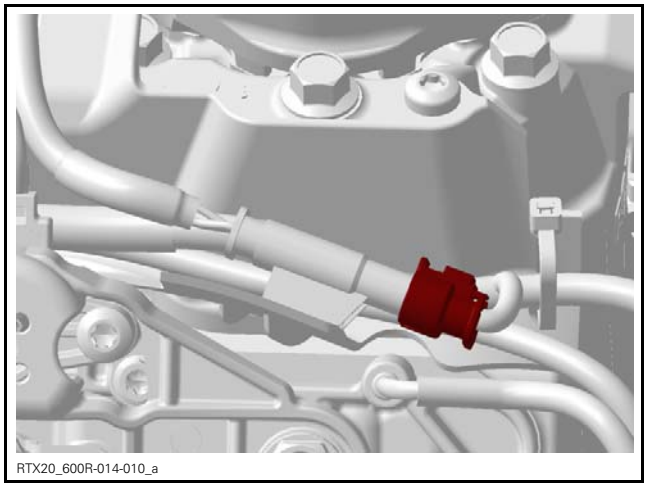
15. Put KS in place and tighten KS screw to specification.

TIGHTENING TORQUE	
Knock sensor screw	24 N•m ± 1 N•m (18 lbf•ft ± 1 lbf•ft)

NOTICE Improper torque may prevent sensor from functioning properly possibly leading to severe internal engine component damage.


RTX20_850ETEC-013-005_a

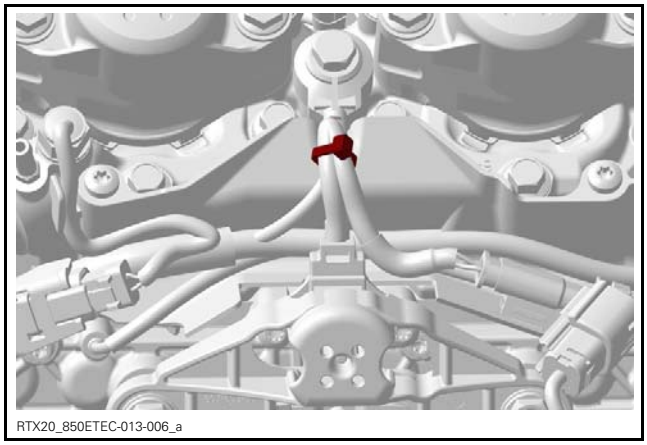
16. Connect wiring harness connector to 3D Rave Valve Position Sensor and engage connector on harness support.


RTX20_600R-014-010_a

17. 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.

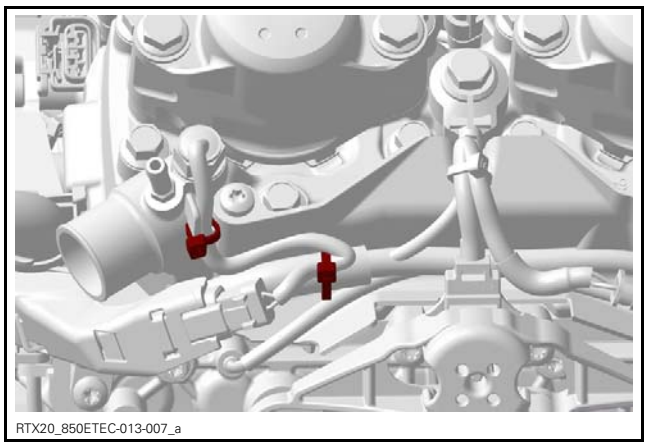

RTX20_850ETEC-013-006_a

18. Connect CTS connector to the wiring harness.
19. Secure the CTS wire to the engine wiring harness.

NOTICE Ensure not to tie in RAVE oil line.

20. Secure the CTS wire to the harness support.

NOTICE Ensure to route CTS wire free from tension.


RTX20_850ETEC-013-007_a

ENGINE (600R E-TEC)

ENGINE		
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		73.0 mm (2.874 in)
Displacement		599.4 cm³ (36.58 in³)
Compression ratio		12.40 ± 0,3
Combustion chamber volume		26.25 cc ± 0.93
Maximum power engine speed		8100 ± 100 RPM
Piston ring type		Semi-trapezoidal
Ring end gap	New	0.4 mm to 0.6 mm (.016 in to .024 in)
	Service limit	0.8 mm (.031 in)
Engine compression specification	Service limit	751.5 kPa (109 PSI)
Piston/cylinder wall clearance	New	0.098 mm to 0.146 mm (.004 in to .006 in)
	Service limit	0.200 mm (.0079 in)
Piston projection		1.10 mm to 1.20 mm (.043 in to .047 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	Service limit	0.02 mm (.0008 in)
Crankshaft deflection	Max.	MAG: 0.06 mm (.002 in) PTO: 0.06 mm (.002 in)
Connecting rod big end axial play	New	0.28 mm to 0.68 mm (.011 in to .027 in)

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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 PSI)

LUBRICATION SYSTEM		
Oil injection pump type		Electronic oil injection pump
Injection oil	Type	XPS synthetic 2-stroke oil
	Quantity	3 L (101.4 U.S. oz)

FUEL SYSTEM	
Fuel delivery	E-TEC direct injection
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	NGK ILKR8Q7 (engine and spark plug threads are indexed)
	Gap	Not adjustable 0.6 mm to 0.7 mm (.024 in to .028 in)
Ignition timing BTDC @ 3500 RPM		28°
		5.39 mm (.212 in)

ENGINE (850 E-TEC)

ENGINE			
Engine type			Rotax 850 E-TEC
Number of cylinder			2
Bore			82 mm (3.228 in)
Stroke			80.4 mm (3.165 in)
Displacement			849 cm^3 (51.81 in^3)
Compression ratio			12.50 ± 0.3
Combustion chamber volume			37.00 cc ± 0.93
Maximum power engine speed			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
Ring end gap		New	0.4 mm to 0.6 mm (.016 in to .024 in)
		Service limit	1 mm (.039 in)
Engine compression specification		Service limit	7.5 bar (109 PSI)
Piston/cylinder wall clearance		New	0.135 mm to 0.161 mm (.005 in to .006 in)
		Service limit	0.200 mm (.0079 in)
Piston projection			1.75 mm to 1.82 mm (.069 in to .072 in)
Cylinder head warpage		Service limit	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.	MAG: 0.05 mm (.002 in) PTO: 0.08 mm (.0031 in)
Connecting rod big end axial play		New	0.152 mm to 0.352 mm (.006 in 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 PSI)

LUBRICATION SYSTEM		
Oil injection pump type		Electronic oil injection pump
Injection oil	Type	XPS synthetic 2-stroke oil
	Quantity	3 L (101.4 U.S. oz)

FUEL SYSTEM	
Fuel delivery	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 (Non-Turbo models)	Make and type	NGK ILKR8Q7 (engine and spark plug threads are indexed)
	Gap	Not adjustable 0.6 mm to 0.7 mm (.024 in to .028 in)
Spark plug (Turbo models)	Make and type	NGK ILKR9Q7G (engine and spark plug threads are indexed)
	Gap	Not adjustable 0.6 mm to 0.7 mm (.024 in to .028 in)
Ignition timing BTDC @ 3500 RPM		28°
		5.98 mm (.235 in)

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ski-doo
MY22
PRESEASON TECHNICAL PRESENTATION

ski-doo
Body/Frame
MY22

600 EFI

MY21
Narrow Body

MY22
Wide body

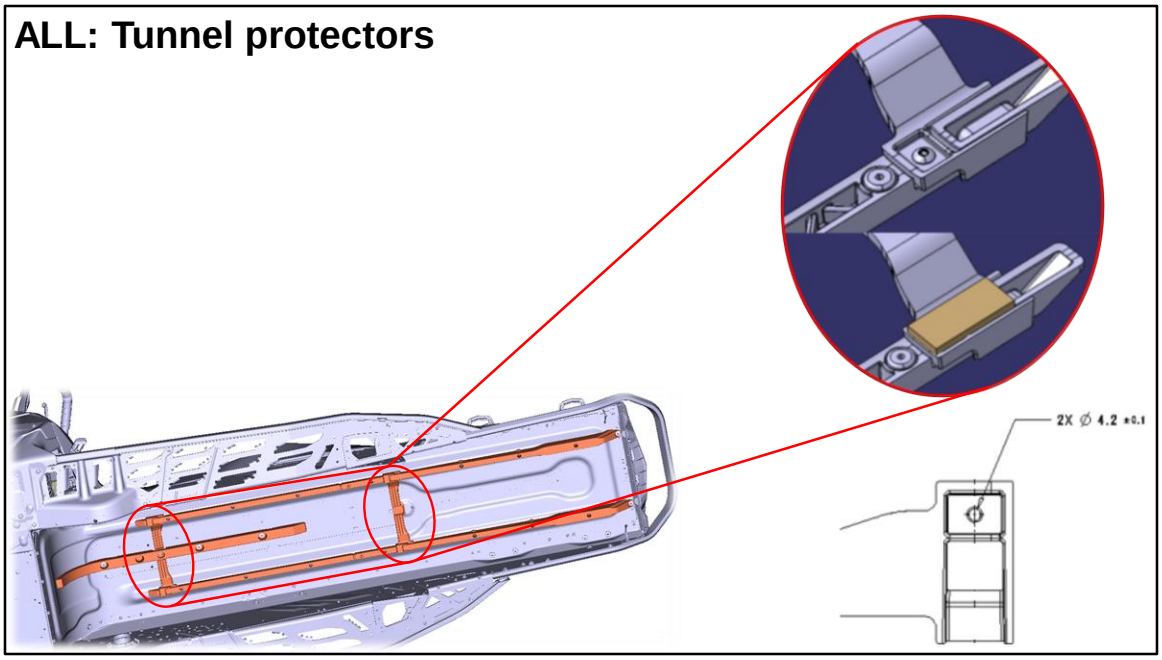
600 EFI Expedition Sport moves to the Wide body platform to allow the installation of a front radiator

600 EFI

Added heat protection to the exhaust grill

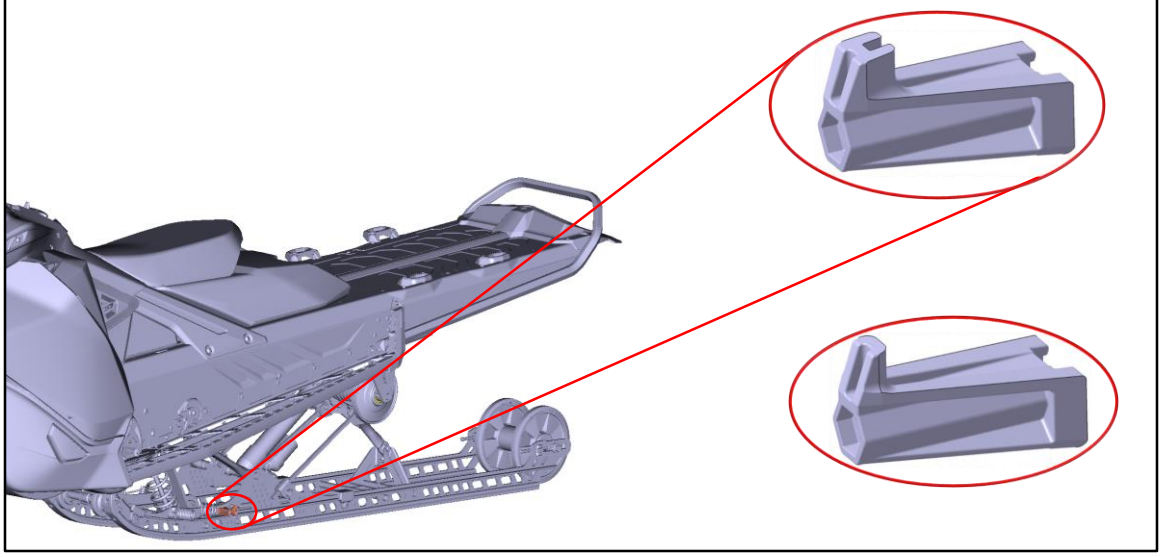
New calibration file to reduce high heat to the muffler

ALL: Tunnel protectors



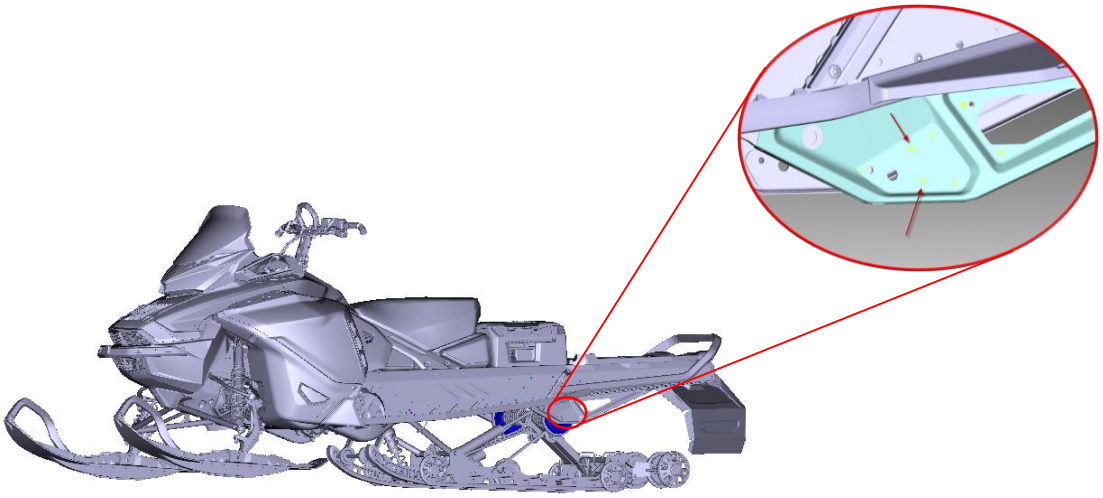
Hole modification and a foam pad have been added to tunnel protector's P/N 518333935/518333936 to improve the reliability, they can be mixed matched with prior years (MY)

Ice scratchers

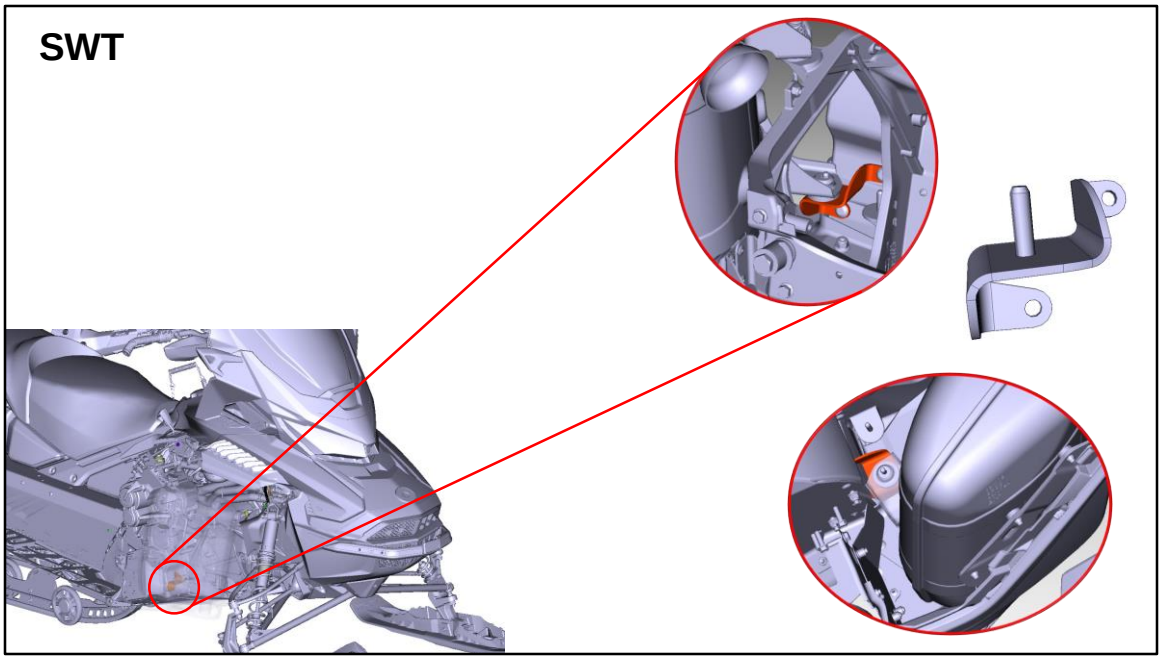


Product improvement for the scratcher support hooks material have been reinforced to 30% instead of 10% in the previous years (MY)

20"/24" Widebody



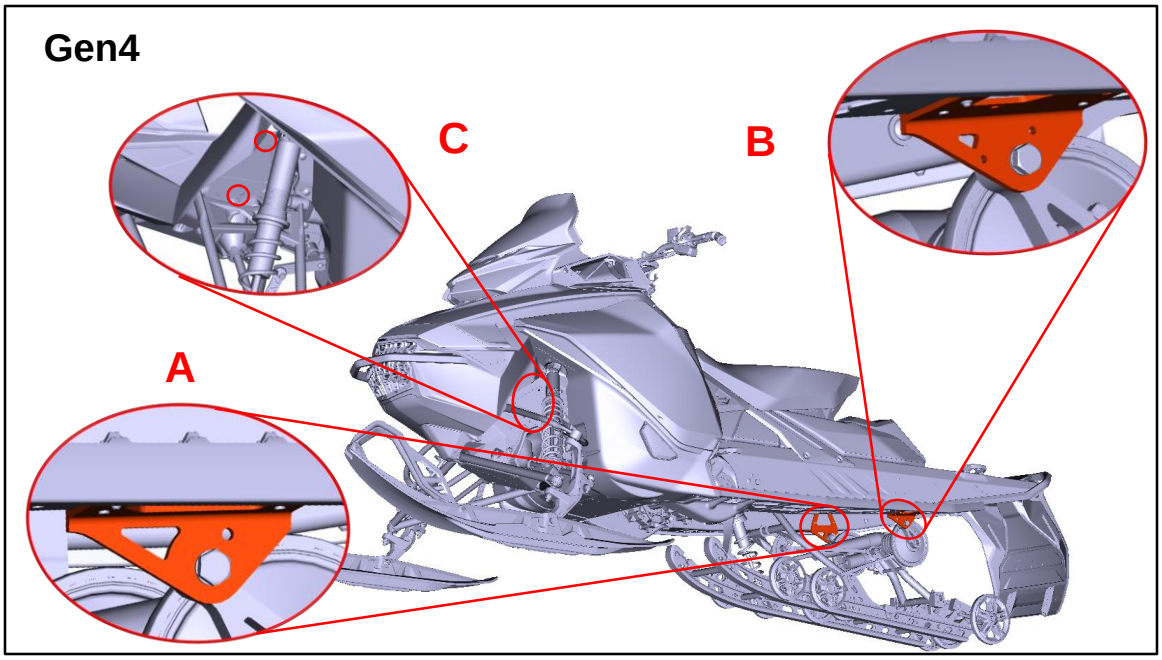
Product improvement of 2 more spots welds have been added to center of the Rear Suspension Support with a bigger M12 suspension bolt washer (#503196491) to spread the load



Product improvement for the after-muffler support bracket

In previous years (MY) the support bracket was made from aluminum as a running change for MY22 the support bracket P/N 518334031 will be made of steel with a welded stud, this improvement increases the strength of the component

Will retrofit

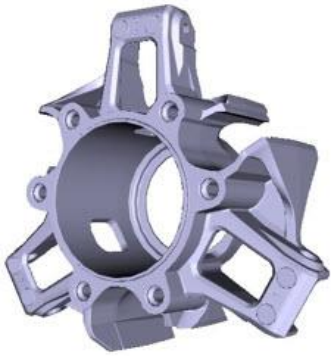


The RH Suspension Bracket (A) and LH Suspension Bracket (B) are different for standardization on trail models for the purpose of attaching the Semi-Active Suspension (SAS) sensor on the LH bracket

All Gen4 S modules have pre-drilled holes for standardization these holes are to mount the front Semi-Active Suspension (SAS) sensors that have the SAS feature

ski-doo
MY22
Powertrain/CVT

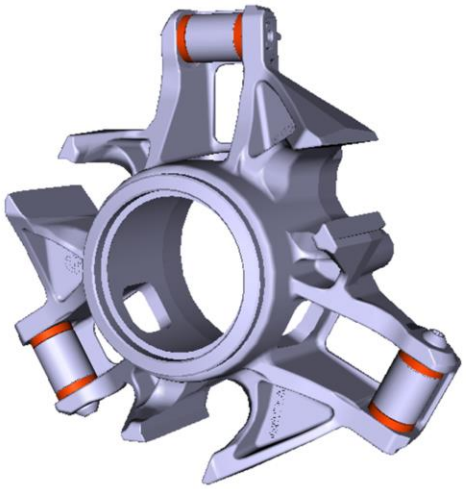
900 TurboR



New governor cup in Silafont

Will retrofit

900 TurboR

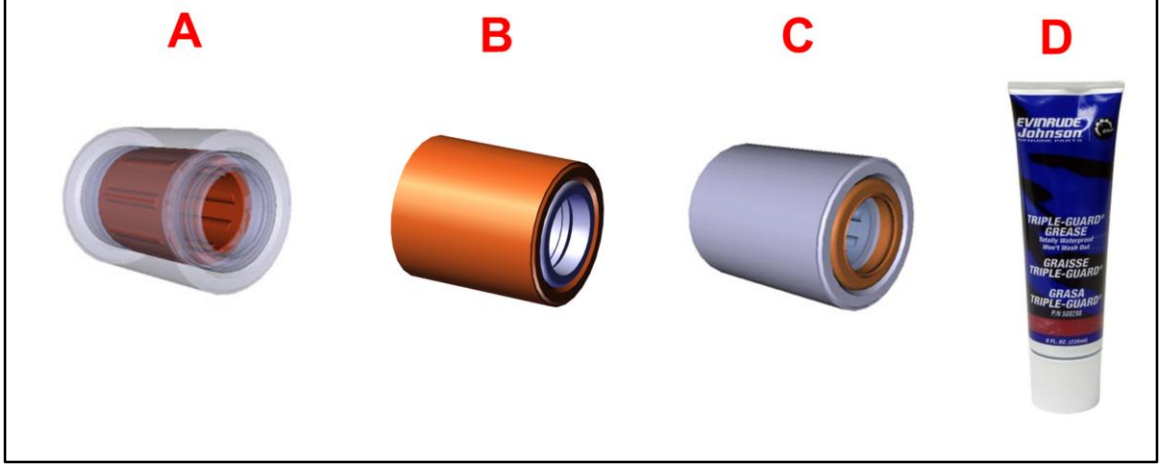


Improved Nylon Washers

P/N 417224868

Will retrofit

900 TurboR



A - Needle bearings with a steel cage
Previous year use a plastic cage

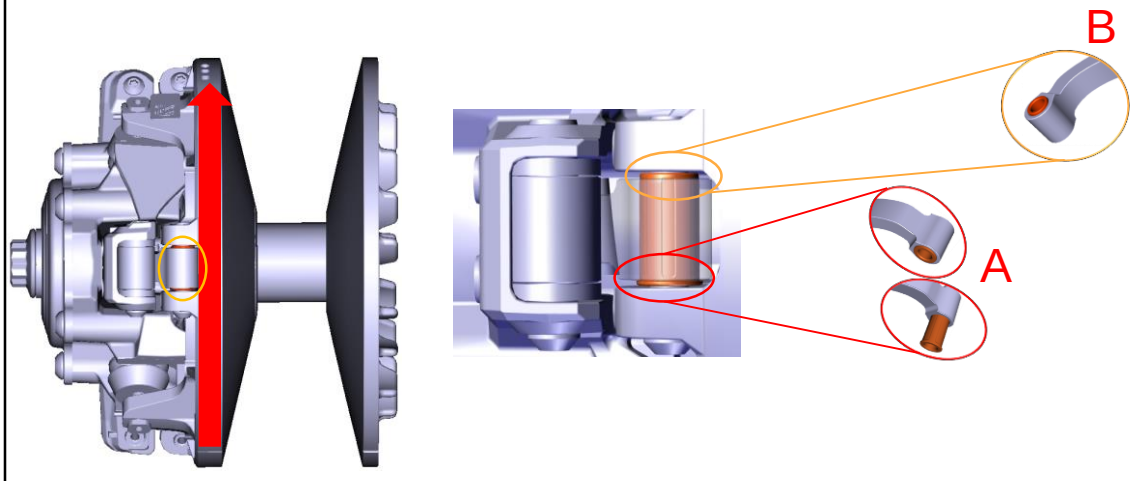
B - New improved stronger steel roller(s)
Previous years used a power metal

C - New double lip

D - Belray grease (~~Evinrude P/N 508298~~ – BRP P/N 296000329) will be used to lubricated the bearings

Will retrofit

All 4 strokes & 600 EFI



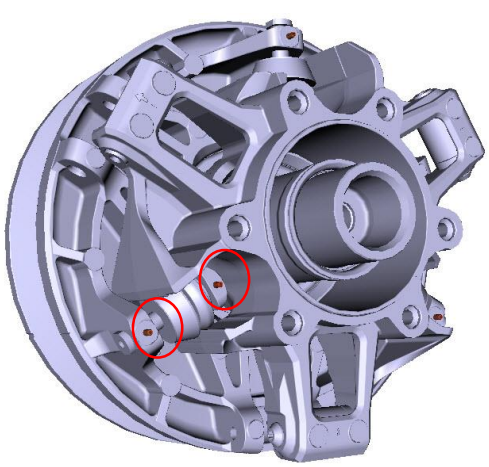
Improved ramp bushing P/N 417224833 with a shoulder (A) this will prevent the ramp(s) from leaning to one side

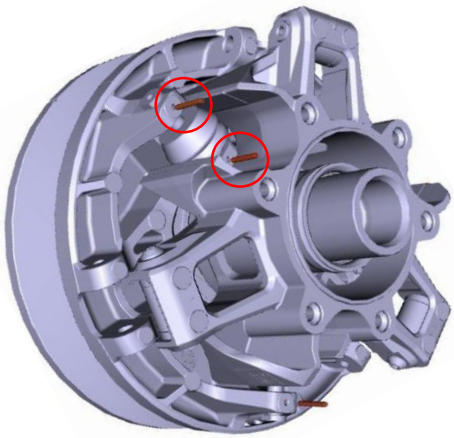
The other side of the bushing (B) has no shoulder

The new bushing will come already installed in the ramp

Will retrofit

All Pdrive clutches

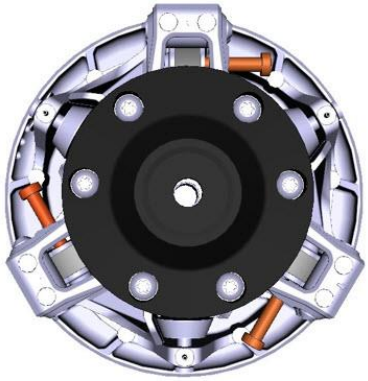


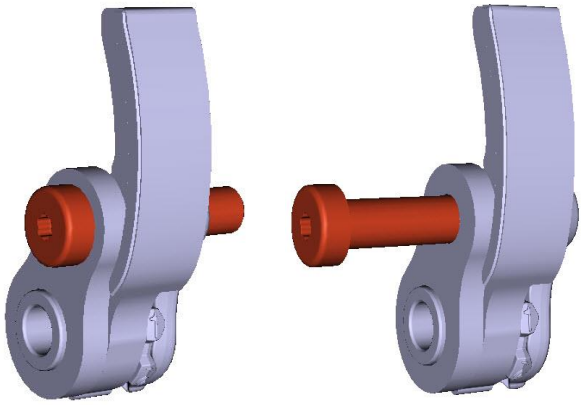


The Pdrive will have longer spring pins to ease the removal of the roller axles or sliders

Will retrofit

Pdrive clutch





New service 38 mm black pivot bolt P/N 417224806 with a weight of 19.8g instead of a weight of 16.7g.

This provides additional option/adjustment to increase weight on the ramps

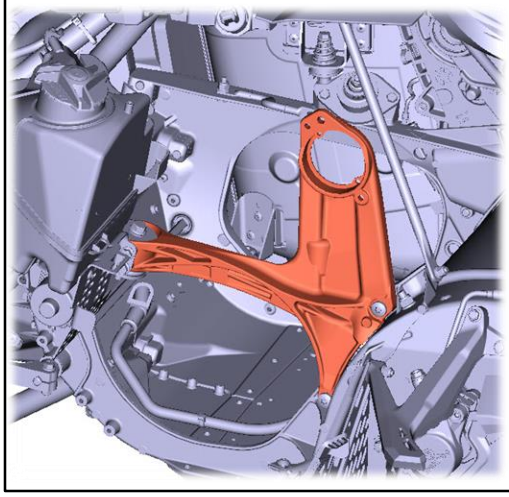
600EFI

MY21
P/N 417300197

MY22
P/N 417300586

New belt for standardization

850 E-TEC Xtreme



New crossmember bearing fitment for an easier assembly

Identification dot has been machined in the new execution crossmember P/N 518333784

Will retrofit

Feature changes

Why there's a track change?

- Track shortage caused by high demand and maximum capacity of our supplier.
- Changes were necessary to maintain full delivery of vehicles.

Why the RipSaw 1.25"?

- Higher capacity of the supplier on this track to fulfill the requested volume.

Pros of the RipSaw 1.25":

- Benchmark model for high-performance trail track.
- Excellent and proven durability and traction on groomed or hard-pack snow.

Models impacted by the track change

RENEGADE

ENDURO

From
ICE RIPPER XT 1.25”

To
RIPSAW 1.25”

+10 SKUs
5 engines x 2 colors

SPORT

From
COBRA 1.35”

To
RIPSAW 1.25”

+2 SKUs
2 engines

GRAND TOURING

LIMITED W/ LUXURY PKG

From
ICE SILENT TRACK II 1.25”
w/ SILENT DRIVE SYSTEM

To
RIPSAW 1.25”
w/o SILENT DRIVE SYSTEM

+3 SKUs
3 engines

LIMITED

From
SILENT TRACK II 1.25”
w/ SILENT DRIVE SYSTEM

To
RIPSAW 1.25”
w/o SILENT DRIVE SYSTEM

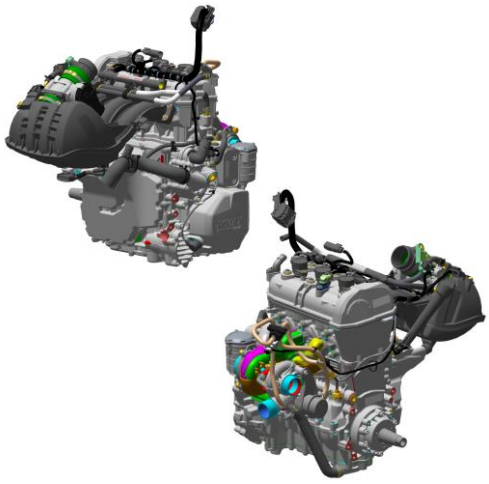
+3 SKUs
3 engines

SPORT

+1 SKUs
600 ACE only

ski-doo
Rotax
MY22

900 ACE TurboR / Turbo



Reminder of 2 NEW engine variants

2 NEW Turbo-charged engine variants („GEN2“):

- **130 hp (w/o intercooler)**
- **180 hp (with intercooler)**

NEW electronic control module „XCU“

- XCU offers additional functionalities

NEW fuel injectors

- **required due to increased performance**

NEW ignition coils

- shorter to fit longer spark plugs

NEW engine wiring harness

- different connectors and grounding

2 NEW turbos

- **required due to increased performance**

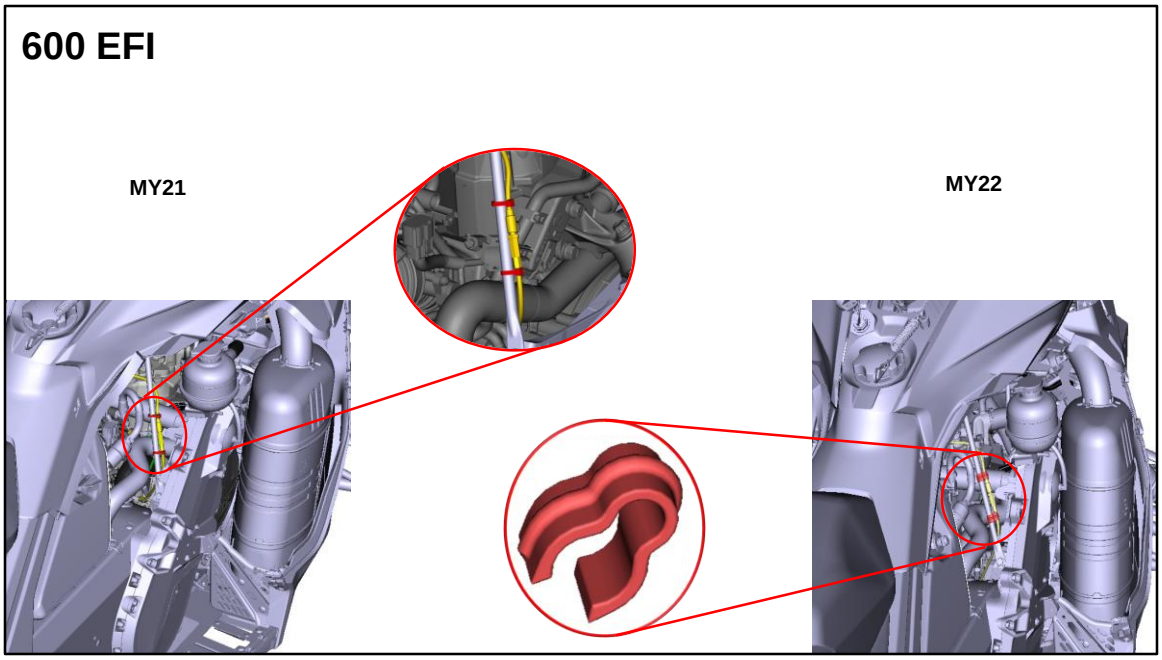
NEW boost pressure sensor

- required due to higher boost pressure

NEW manifold air pressure and temperature sensor

- required due to higher boost pressure

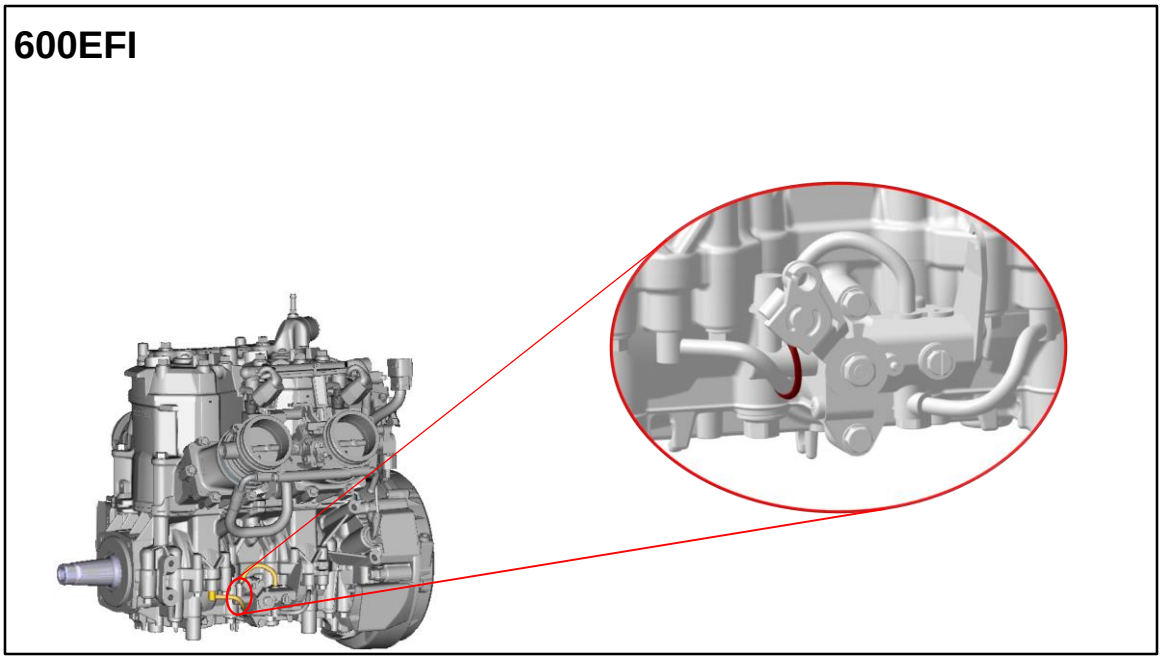
600 EFI



Since the start of the July 30th 2021 production, the oil pump cable tie-wraps have been replaced with a plastic re-usable clip, this change is for a better assembly and cleaner fit and finish

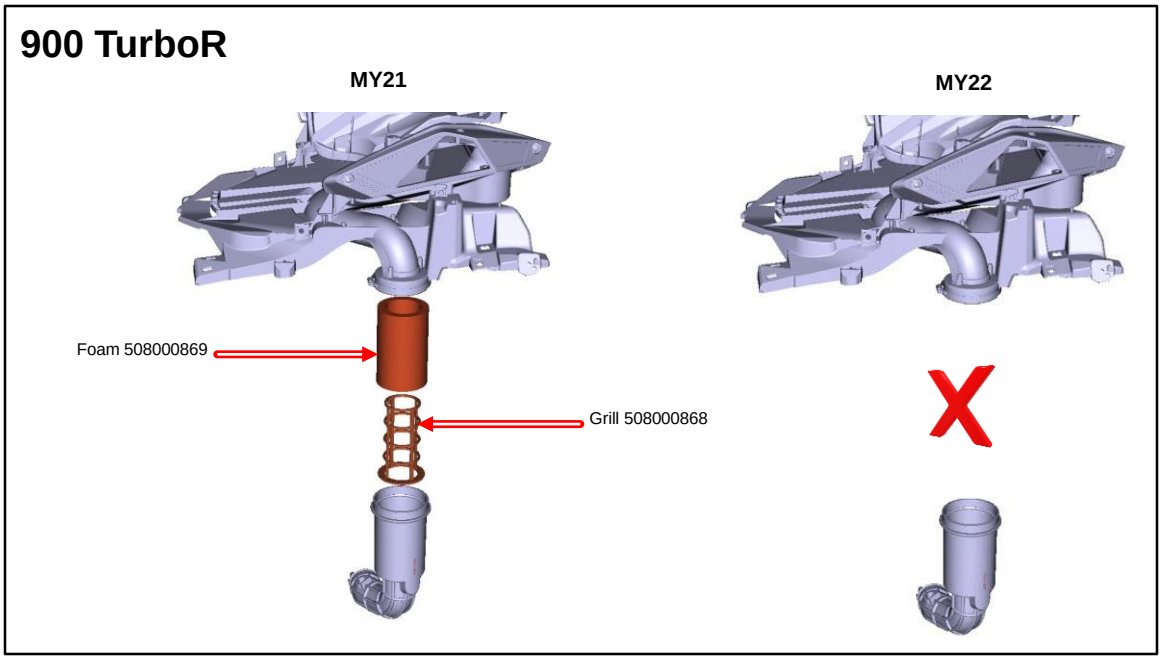
Will retrofit

600EFI



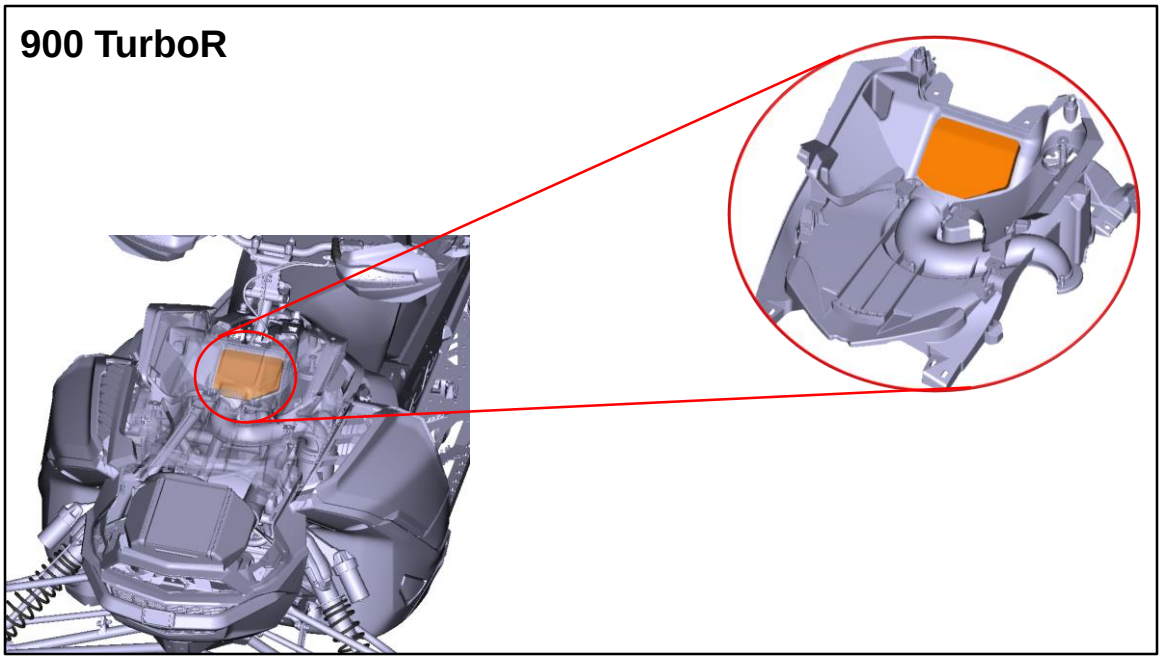
Additional O-ring to keep the PTO oil line in place on the oil pump

900 TurboR



Do to the power and response increase on MY22 every pressure loss was saved to achieve 180HP with as little boost as possible (less heat to dissipate)

In this case, the foam and grill in the intake silencer has been removed, with a new one installed in the secondary airbox.



The foam relocation gave the opportunity to reduce intake noise without creating any pressure loss.

In conjunction to this, different calibration strategies limit surge noise upon a fast throttle release. Instead of a ''turkey'' intake noise, a more severe, sound is generated in the exhaust.

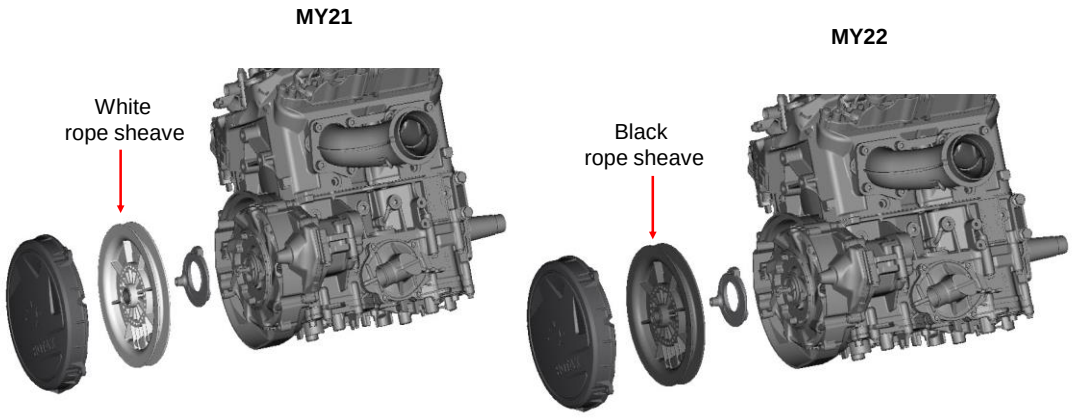
XCU module equipped models (130HP and 180HP), the engine mode has more effect on throttle response than previous years.

Close to none in ECO an STD mode, and ''muscle'' sound in SPORT mode to optimize to the maximum throttle response and engine break.

On previous generation (150HP), there is an increase in intake sound while not providing any power gain (torque-controlled engine).

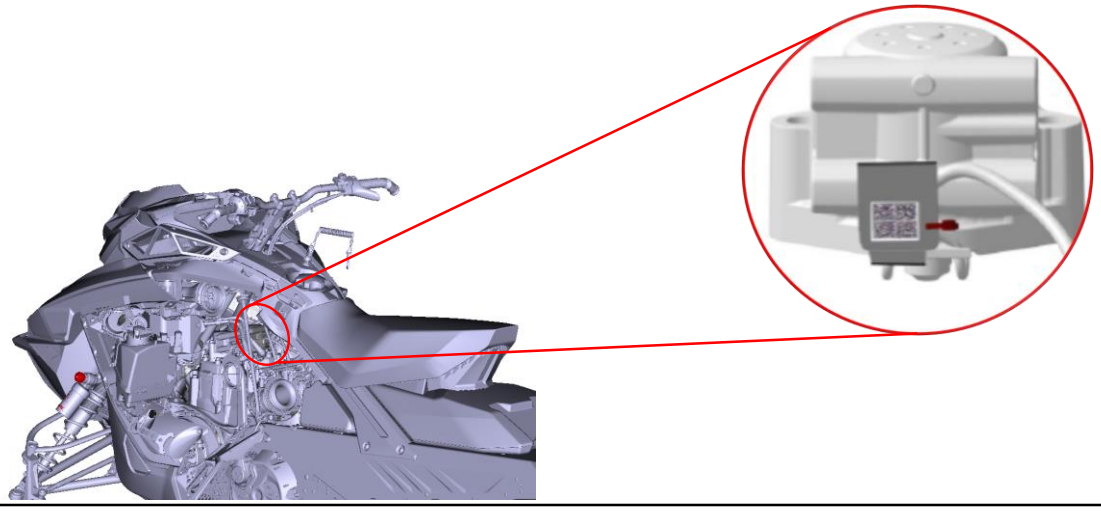
Since there is no strategy to reduce intake noise, a loud ''turkey'' noise is heard upon a fast throttle release. Some may like, some may not.

850 / 600 E-TEC



A supplier issue with material availability has changed the rope sheave resin from white in color to a black color it has the same characteristics as previous Model Year (MY) rope sheave.

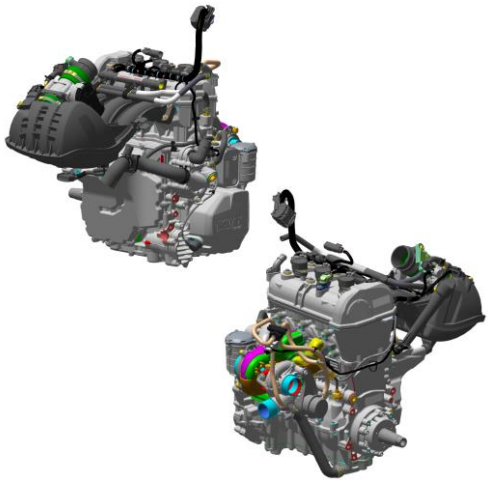
600R E-TEC / 850 E-TEC all / 600 RS E-TEC



The MAG fuel injector has a new injector label orientation to prevent wear

ski-doo
Electrical
MY22

900 ACE TurboR / Turbo



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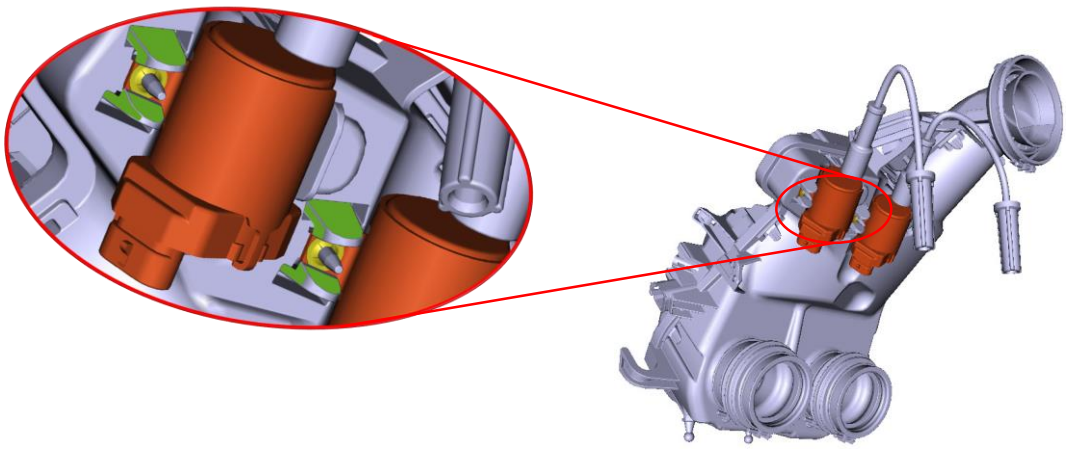
600 EFI

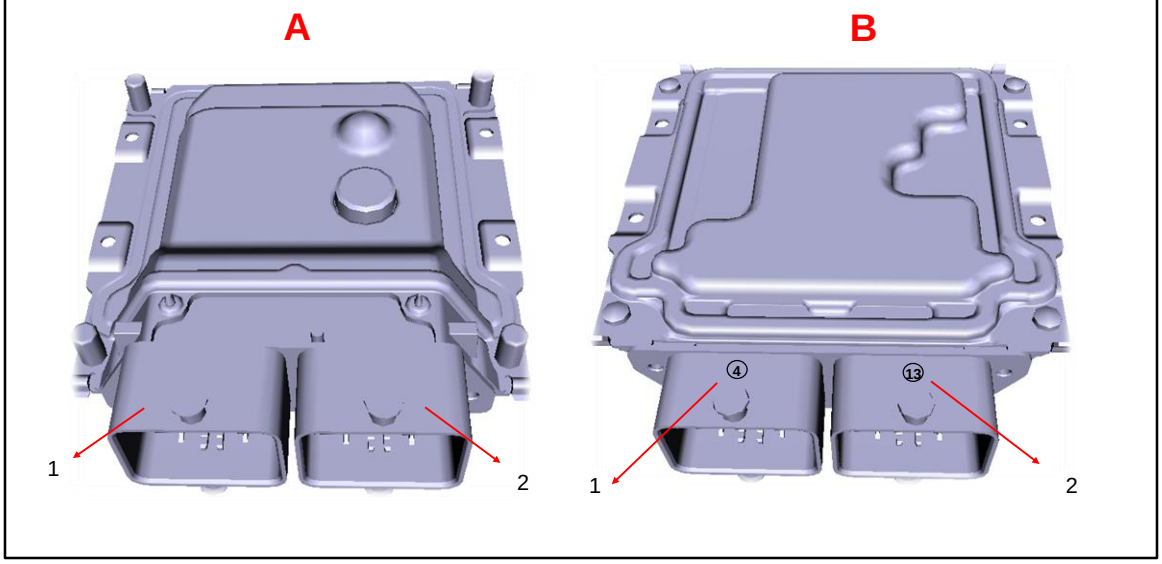


Product improvement for the clips (Green) and push nuts (Yellow) to allow better retention of the ignition coils

No P/N change

Will retrofit

900 Turbo/Turbo R



NEW electronic control module ‘‘XCU“ first introduced on MY21 Maverick Turbo RR

A
ECM connector identification front view
1. Connector 13 (engine harness)
2. Connector 4 (vehicle control harness)

B
ECM connector identification backside view
1. Connector 13 (engine harness)
2. Connector 4 (vehicle control harness)

Note:

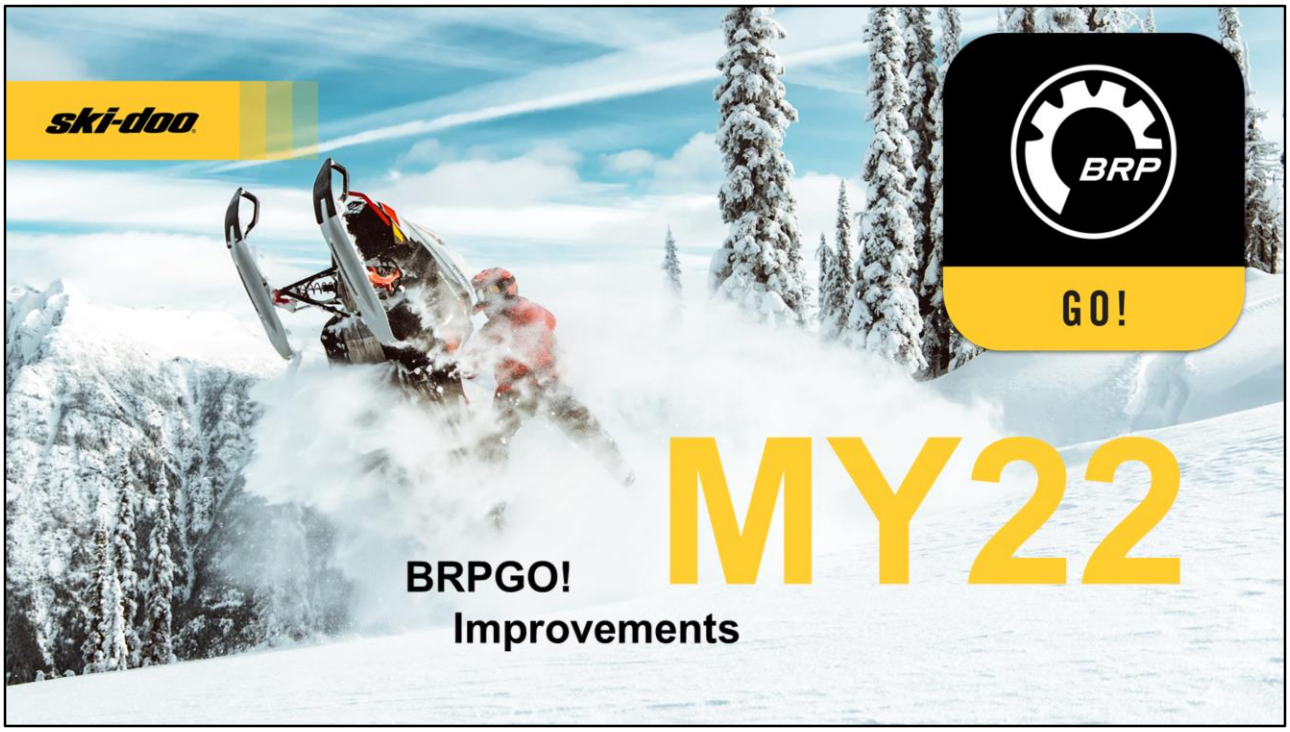
Each connector has 56 pins

900 Turbo/Turbo R

On the previous model year (MY) the battery light would only come on at 11.0 V or lower.

For MY22 that has the XCU module, the light will turn on to signify that the accessories have been unloaded (visor plug, heated grip are not functioning).

On MY22 vehicles the ECM will shut off if it drops to a low voltage, there is no need to worry about seeing this light.


ski-doo
BRP
GO!
MY22
BRPGO!
Improvements

New homepage

Customized content per playground (Snow / Water / On-Road)

- Direct access to BRP Connect, My Rides, the FAQ and Ski-Doo e-commerce website

BRP Connect integration in BRP GO!

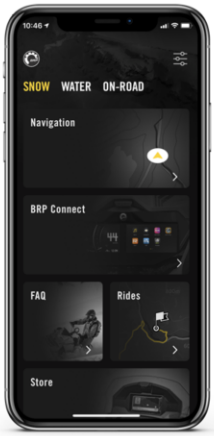
- Users will now use the BRP GO! app to use BRP Connect screen mirroring technology on their Ski-Doo 7.8” LCD display

New features for Snow navigation

- A new version will contain specific improvements for Snow navigation, including new regions supported

New languages supported

- Swedish, Finnish, Norwegian, Spanish, Portuguese, Japanese, Chinese, Russian, German, Italian

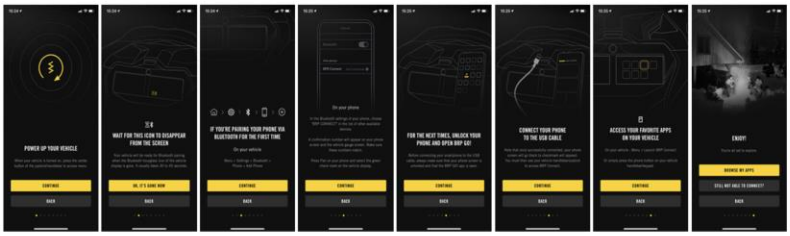


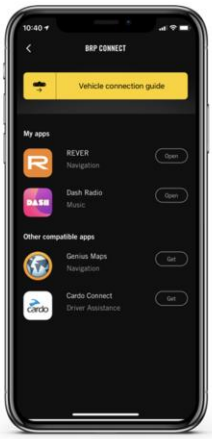
BRP Connect integration in BRP GO! app

Only one app (BRP GO!) is needed to connect to the display
- BRP Connect app is no longer available

Easy access all available 3rd-party apps

Easy to follow Vehicle connection guide
- Users have direct access to all the details for a successful connection





Snow Navigation - Main Improvements

These improvements will be part of a new version released in early December

Landscape mode fully supported
- For a better experience when used on the Glovebox Extension accessory

See trail status (opened/closed)

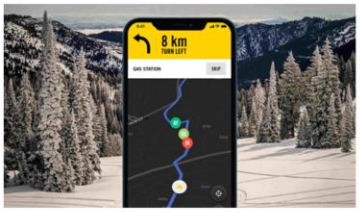
Improved reroute logic

Pause & resume a ride

Download a whole region for offline use

More trails & new regions supported
- Targeted regions TBC

Bug fixes & performance improvements



ski-doo
MY22
PAC Accessories

LinQ anchors for utility

860202482 vs 860201812

New P/N include the plastic base + the hardware required to mount it on the multi LinQ plate.

Only the hardware if the customer have already plastic base.

NEW LinQ CARGO BASE KIT	REV Gen4 (Wide) 20" & 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" & 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 acc without anchors (MY22)

List of the new SKU that not include the LinQ anchors

LinQ ADVENTURE CARGO BOX - 90 L without anchors (replace 860201739)	860202448
LinQ ADVENTURE TUNNEL BAG - 40 L without anchors (replace 860201272)	860202444
LinQ Cargo Box - 40 L without anchors (replace 860201196)	860202442
LinQ CARGO BOX - 62 L without anchors (replace 860201634)	860202446
LinQ DEEP SNOW PRO BAG without anchors (replace 860201985)	860202456
LinQ DRY BAG without anchors (replace 715002875)	715008110
LinQ Jerry can - 11litre epa with FMD	860202247
LinQ Jerry can - 14 litre epa with FMD	860202246
LinQ OIL CADDY - 1 GALLON without anchors (replace 860201621)	860202445
LinQ SLIM WATERPROOF TUNNEL BAG without anchors (replace 860202058)	860202451
LinQ SPORT BAG - 17 L without anchors (replace 860201678)	860202447
LinQ SR21 TUNNEL BAG without anchors (replace 860201740)	860202449
LinQ TOOL BOX without anchors (replace 715004301)	715008111
SLIM TUNNEL BAG WITH SOFT STRAP - 15 L without anchors (replace 860200935)	860202440

Glovebox for one-piece hood

Fit change

CHANGE OF FIT :
860202193 - REV Gen4 Summit and Freeride (2020-2021)with one-piece lightweight hood

860202572 - REV Gen4 Summit and Freeride (2022) with one-piece lightweight hood

860202572

860202193

NEW GLOVEBOX FOR ONE-PIECE LIGHTWEIGHT HOOD	REV Gen4 Summit and Freeride with one-piece lightweight hood	860202193

- Adds storage to one-piece lightweight hoods.
- Provides an additionnal 4.6 liter (1.2 gallon, 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.

Ice scratcher

Fit change

NEW TUNNEL ICE SCRATCHERS WITH REPLACEABLE TIPS

REV Gen 4 16" (129") and Grand Touring LTD	860202267*	$119.99
REV Gen4 16" (137" and up) and Summit XM	860202387	$119.99
REV Gen4 20" & 24"	860202388	$134.99

- 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 MXZ 129" with quick-adjusters.*
**Not compatible with 129" & 137" Sport models with SC-5M suspension.*
**Bracket (860201503) required for MXZ 129" with quick-adjusters.*

New fit for the ice scratchers.
Not compatible with SAS suspensions

LinQ Snowboard/Ski rack

New product

NEW LinQ SNOWBOARD/SKI RACK | REV Gen4 16", 146" and longer Fits short tunnel | **860202191**

- Newly redesigned—simpler, quicker and easier way to attach skis or snowboards.
- Fits 1 snowboard 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.
- Requires LinQ Cargo Base Kit (860201806) for installation on REV Gen4 16" tunnels for 2021 and prior models.

Now compatible with short tunnels.
More options to install it, with the reinforcement kit, it could be installed with the stock bumpers.
Compatible with the 1+1 seat but not compatible with the backrest.

NEW LinQ SNOWBOARD/SKI RACK REINFORCEMENT KIT | Fits with LinQ Snowboard/Ski Rack (860202191) except 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.

LinQ Lock

New product

Retrofit on almost all LinQ accessories

NEW LinQ LOCK	**860201968** • Pack of 1 **860202478** • Pack of 2

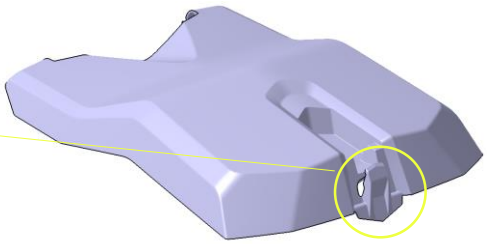
- Simple way to lock most LinQ accessories in place.
- Retrofits most LinQ accessories.
- Lock cover prevents snow and ice build-up.
- Not compatible with Tool Holder or Working Light.
- Comes with two keys.

LinQ Lock

SEAT STORAGE BOX – 6 L

860202028 replace by 860202532

New improve design for the lid to reinforce the latch area



Have a great riding season

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.

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Green Manuals
Paperless Manuals
For a Better Tomorrow
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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

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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

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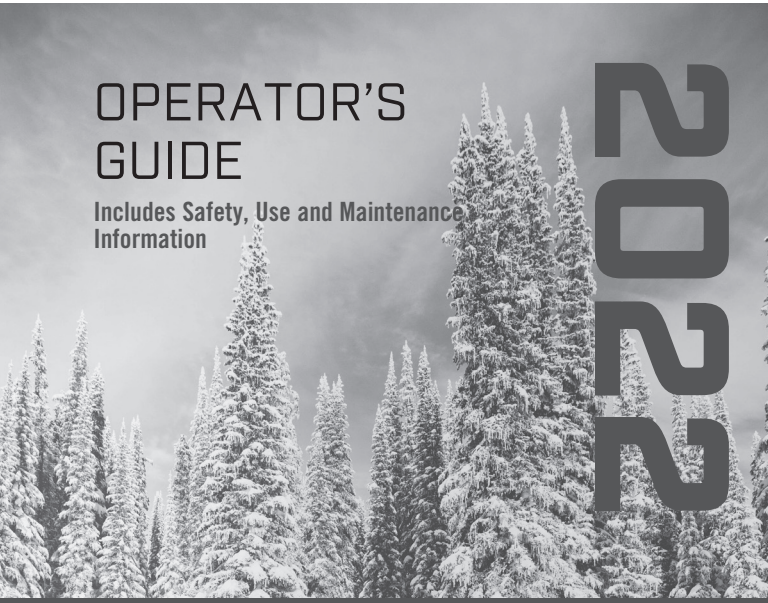

OPERATOR'S GUIDE

Includes Safety, Use and Maintenance Information

2020

⚠ 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.

520002607

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.

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Model	Package	Engine
Backcountry	Sport	600 EFI
	STD	600R E-TEC
		850 E-TEC
	X	850 E-TEC
	X-RS	
MXZ	Sport	600 EFI
	TNT	600R E-TEC
		850 E-TEC
	X	600R E-TEC
		850 E-TEC
	X-RS	600R E-TEC
		850 E-TEC
Renegade	Sport	600 EFI
	Adrenaline	600R E-TEC
		850 E-TEC
	Enduro	600R E-TEC
		850 E-TEC
	X	600R E-TEC
		850 E-TEC
	X-RS Competition	600R E-TEC
	X-RS	850 E-TEC

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GENERAL INFORMATION

GENERAL INFORMATION

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!

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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

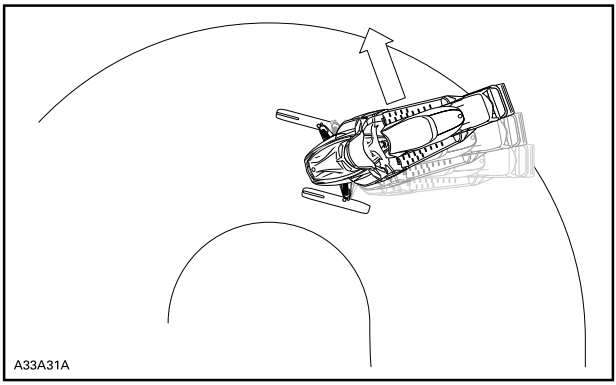
Using traction enhancing products such as, more aggressive ski carbide runners and/or studs makes the snowmobile grip the ground better at both the front and at the rear. The use of carbide runners is therefore required to give the skis a better grip, so that the front and rear of the snowmobile are 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

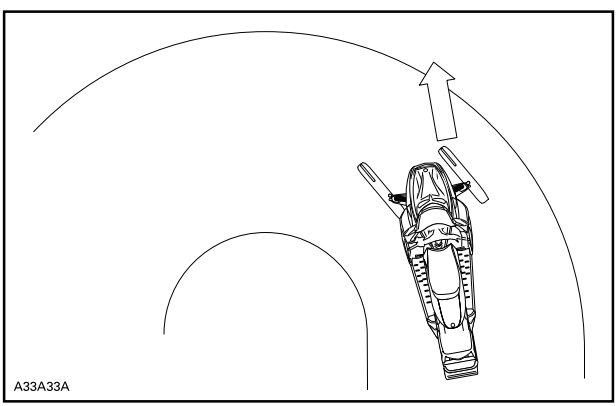
In certain conditions, using more aggressive ski carbide runners without studs on the rear track could make the snowmobile prone to oversteering, see illustration.



OVERSTEERING

Understeering

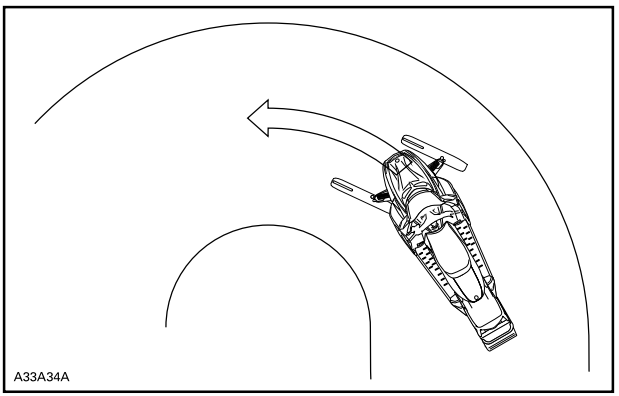
In certain conditions, the use of studs on the track could make the snowmobile prone to understeering if the skis are not equipped with more aggressive ski carbide runners, see illustration.



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.

INJECTION OIL

Injection Oil is flammable when heated.

- Never use an open flame to check oil level.
- Never smoke or allow flame or spark in vicinity.
- Always proceed in a well-ventilated area.

Refer to *Injection Oil* in *Vehicle Information* to add oil.

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.

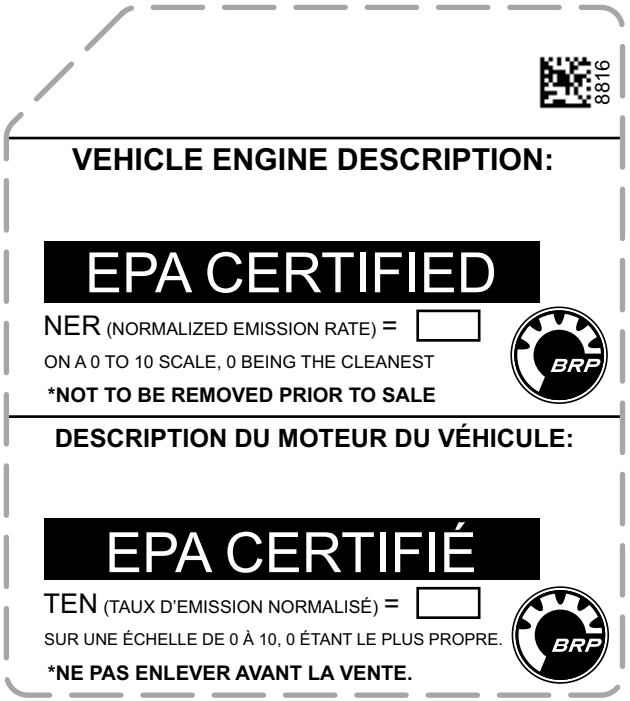
Be certain your trailer meets state or provincial requirements. Ensure the hitch and safety chains are secure and the brake, turn indicators and clearance lights all function.

⚠ 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.

SAFETY INFORMATION ON THE VEHICLE

Hang Tag(s)



TYPICAL

NOTICE

This snowmobile is calibrated for operating at SEA-LEVEL. Operating above 2000 ft requires calibration parts and adjustment. For more details, REFER to your Operator's Guide that came with your snowmobile or see your authorized Ski-Doo dealer. INCORRECT ADJUSTMENTS MAY CAUSE PARTS DAMAGE

SEA LEVEL CALIBRATION

4598B

AVIS

Cette motoneige est calibrée en fonction d'une utilisation au NIVEAU DE LA MER. Si on utilise cette motoneige au-delà de 600 mètres il est nécessaire de la recalibrer et d'installer certaines pièces. Pour plus de détails, se référer au Guide du conducteur ou consulter un concessionnaire autorisé de motoneiges Ski-Doo. SANS CETTE RECALIBRATION, CERTAINES PIÈCES PEUVENT ÊTRE ENDOMMAGÉES.

CALIBRATION NIVEAU DE LA MER.

⚠ **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

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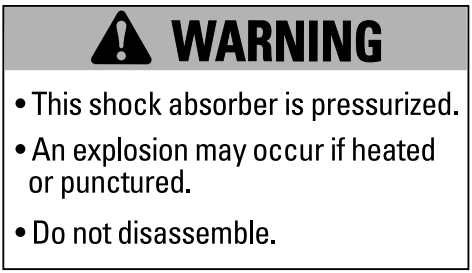
Vehicle Safety Labels

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.

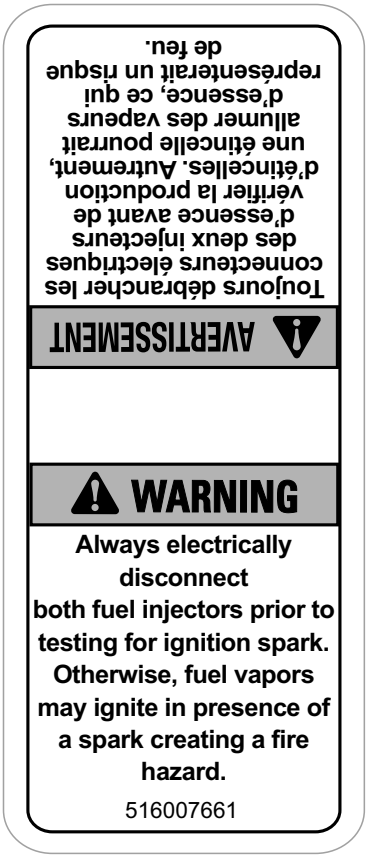
NOTE:
In the event of any discrepancy between this guide and the vehicle, the safety labels on the vehicle have precedence over the labels in this guide.

Shock Absorber - Warning Label

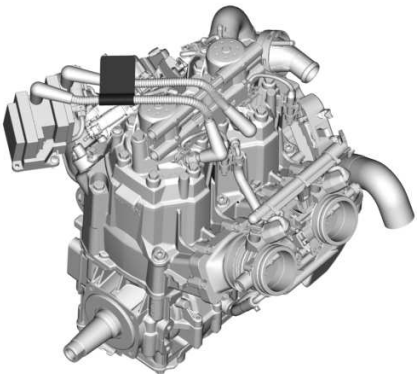


SHOCK ABSORBERS - WARNING LABEL

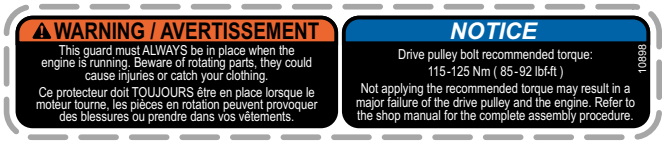
Disconnect fuel injectors - Warning Label



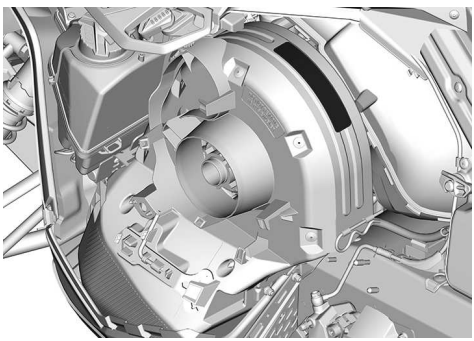
DISCONNECT FUEL INJECTORS - WARNING LABEL



Pulley Guard and Drive Pulley Tightening Torque - Warning and Notice Label

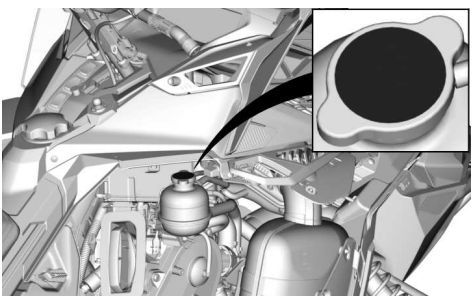


PULLEY GUARD AND DRIVE PULLEY TIGHTENING TORQUE – WARNING AND NOTICE LABEL

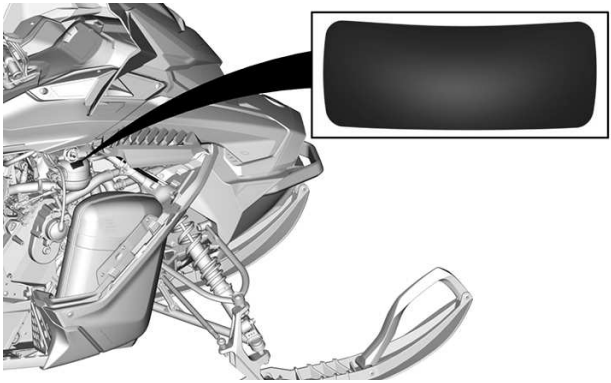


Do Not Open When Hot - Warning Label

DO NOT OPEN WHEN HOT - WARNING LABEL



DO NOT OPEN WHEN HOT – WARNING LABEL



RH SIDE SHOWN

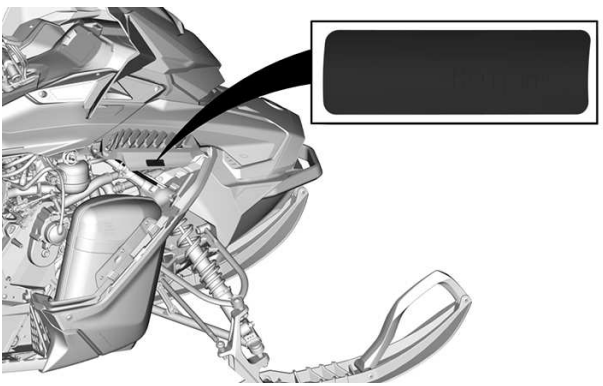
Hot Parts - Caution Label

⚠ CAUTION

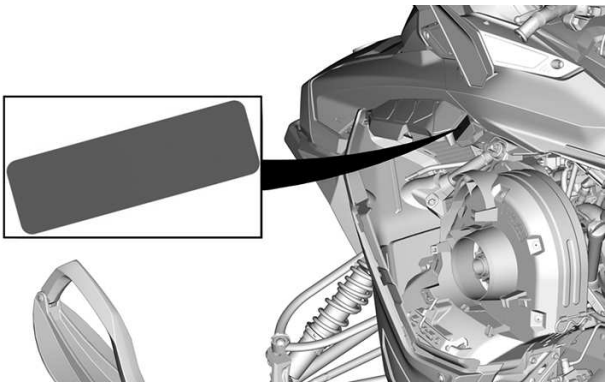
Beware of **HOT**parts!

516005280

HOT PARTS – CAUTION LABEL



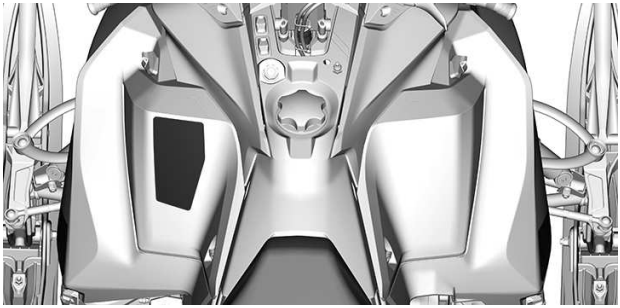
RH SIDE SHOWN



LH SIDE SHOWN

Starting Procedure - Warning Label

STARTING PROCEDURE – WARNING LABEL

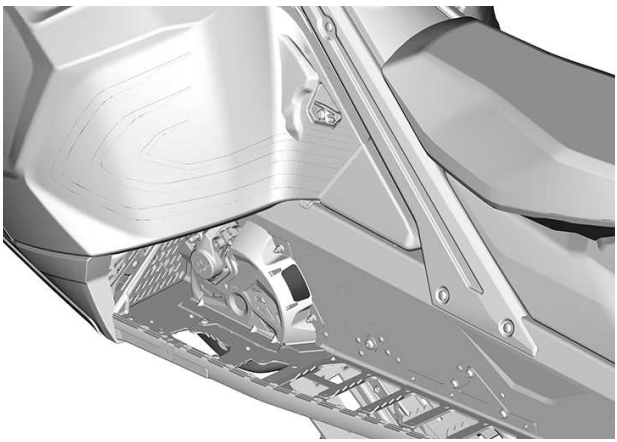


Passenger Safety - Warning Label

PASSENGER SAFETY - WARNING LABEL

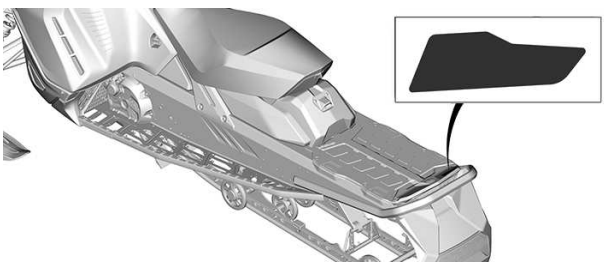
Disk Guard - Warning Label

DISK GUARD – WARNING LABEL



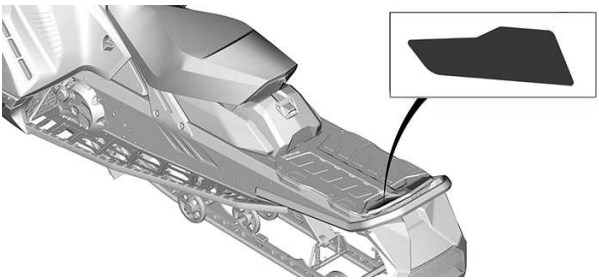
Cargo Area - Warning Label

CARGO AREA – WARNING LABEL



Rotating Track - Warning Label

ROTATING TRACK– WARNING LABEL

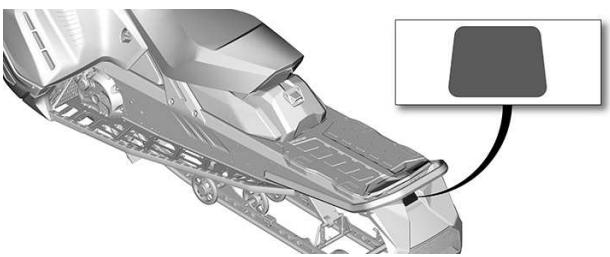


Track Studding (129" and 137" models) - Warning Label

⚠ WARNING

Before studding this track, consult the Operator`s Guide included with this vehicle for all details pertaining to track studding.
If this track can be studded, use special BRP approved studs ONLY. Studding this track with conventional studs may cause studs to tear off of track and separate from vehicle posing a potential risk of severe injury or death.

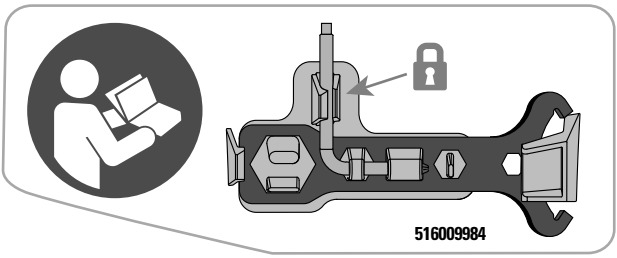
TRACK STUDDING – WARNING LABEL



Technical Information Labels

Adjustment Tools

– 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*.



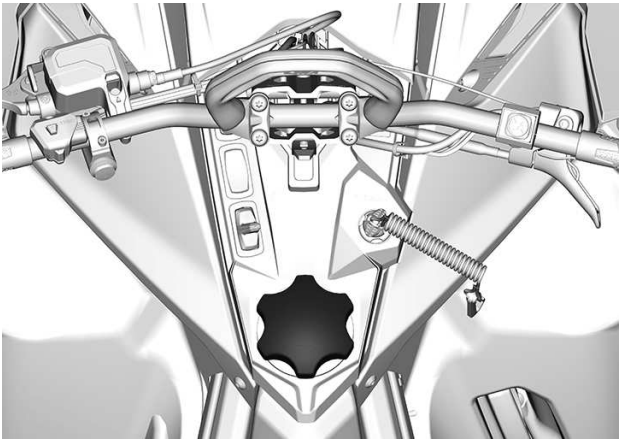
ADJUSTMENT TOOLS

Recommended Fuel - Notice Label

Refer to the *Technical Specifications* for appropriate fuel type for your vehicle engine.

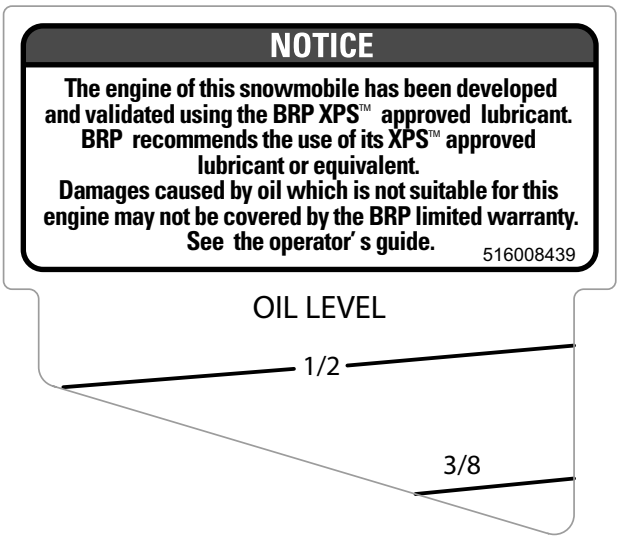
AKI (RON+MON)/2 OCTANE RATING - NOTICE LABEL

RON OCTANE RATING - NOTICE LABEL

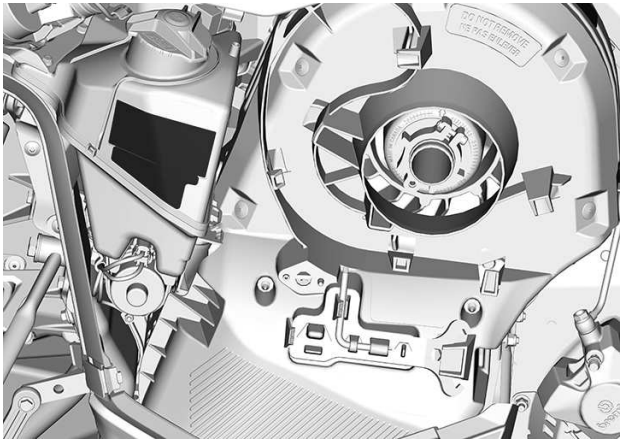


Recommended Oil - Notice Label

Refer to the *Technical Specifications* for appropriate injection oil type for your vehicle engine.



RECOMMENDED OIL - 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

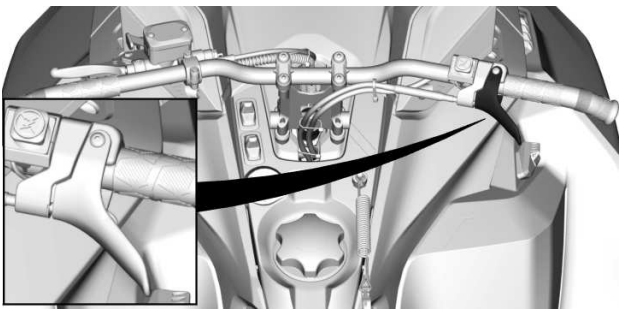
The handlebar controls the steering of the snowmobile. As the handlebar is rotated to right or left, the skis are turned right or left to steer the snowmobile.

⚠ WARNING
Fast reverse while turning, could result in loss of stability and control.

TYPICAL

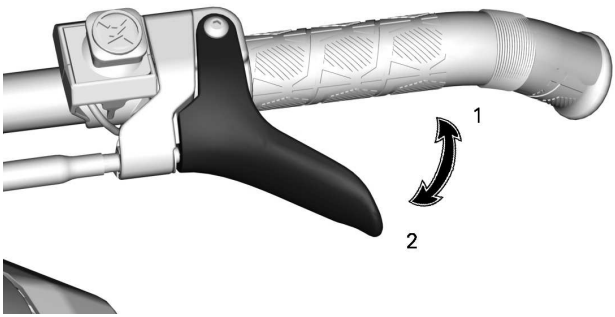
Throttle Lever

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

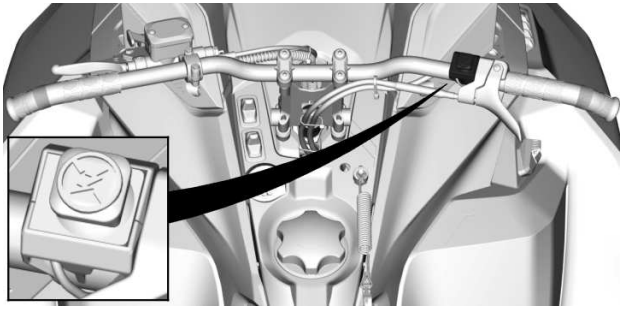
1. *To accelerate*
2. *To decelerate*

⚠ 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.

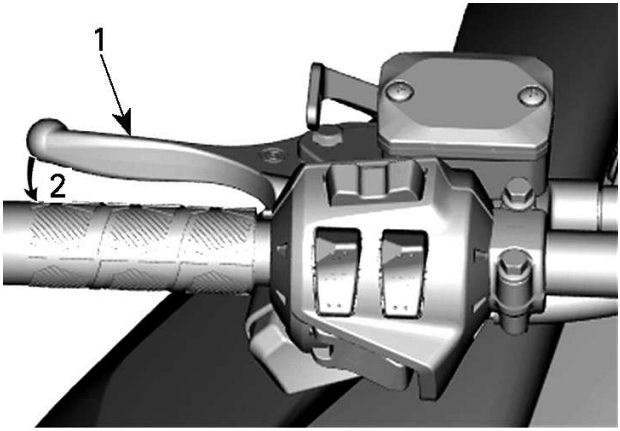
⚠ WARNING

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.

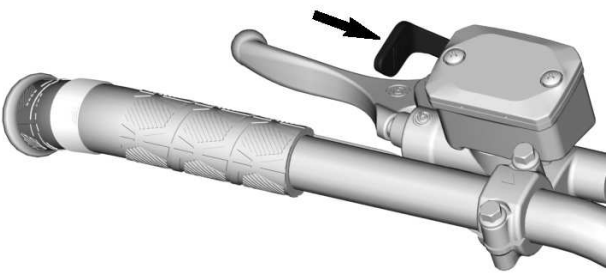


TYPICAL

1. *Brake lever*
2. *To apply brake*

Parking Brake Lever

Parking brake lever is located on the LH side of handlebar.



TYPICAL

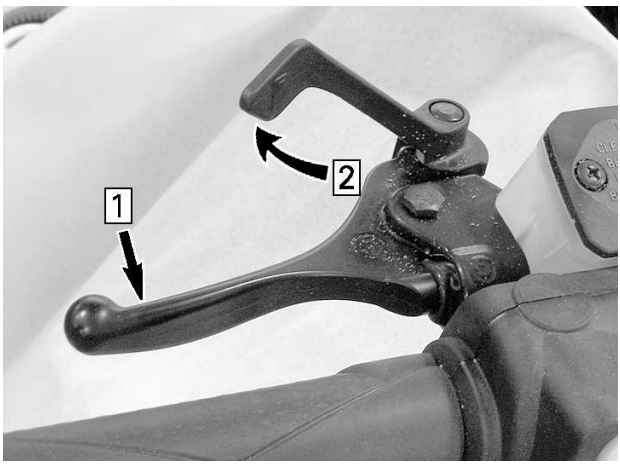
Parking brake should be used whenever snowmobile is parked.

⚠ 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.



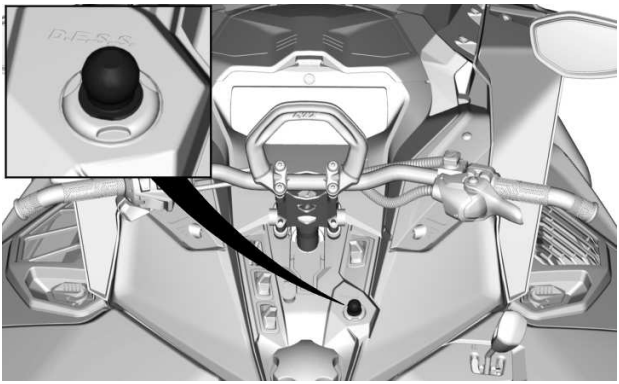
TYPICAL — ENGAGE MECHANISM

1. *Apply and hold brake*
2. *Lock brake lever using parking brake lever*

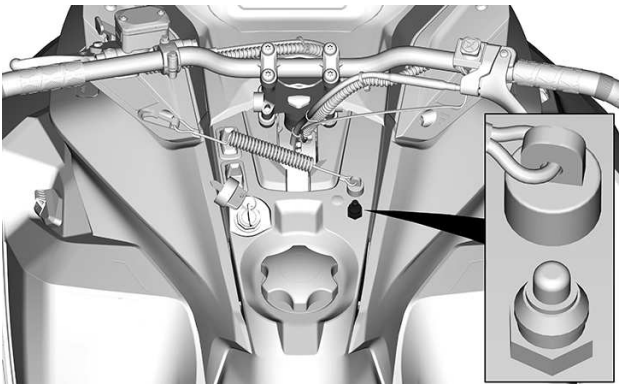
To Release Parking Brake

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.

After engine starting, 2 short beeps should be heard if a programmed D.E.S.S. key (tether cord cap) is correctly snapped on engine cut-off switch. If another beep code is heard, refer to *Monitoring system* for D.E.S.S. malfunction codes information.

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.

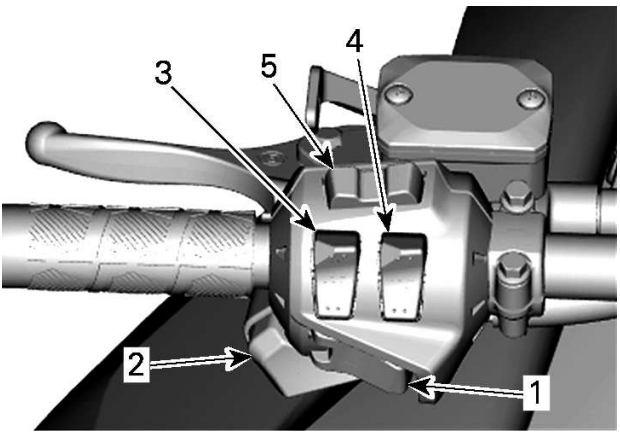
SECONDARY CONTROLS

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*.

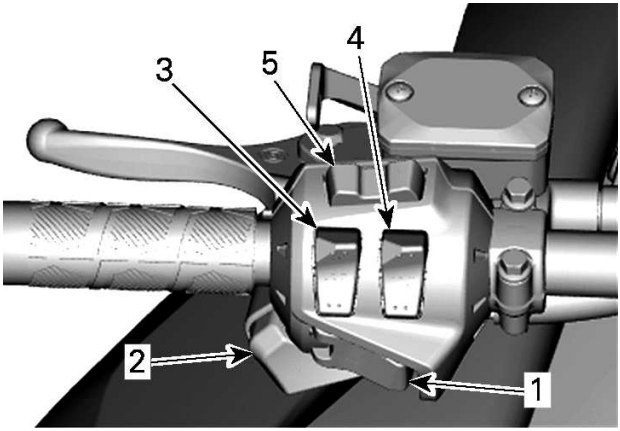
Handlebar Multifunction Switch

Multifunction switch is located on the LH side of handlebar.



TYPICAL - MODELS WITHOUT THE LARGE PANORAMIC 7.8" WIDE LCD DISPLAY

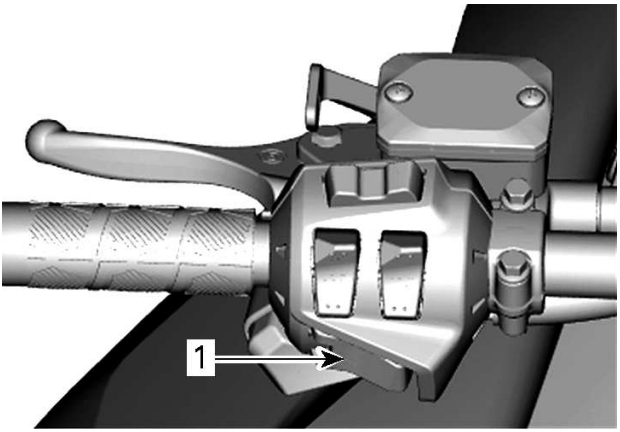
1. *Start/Electronic Reverse button*
2. *Headlights dimmer switch*
3. *Heated grips switch*
4. *Heated throttle lever switch*
5. *Mode/set button (If equipped)*



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.

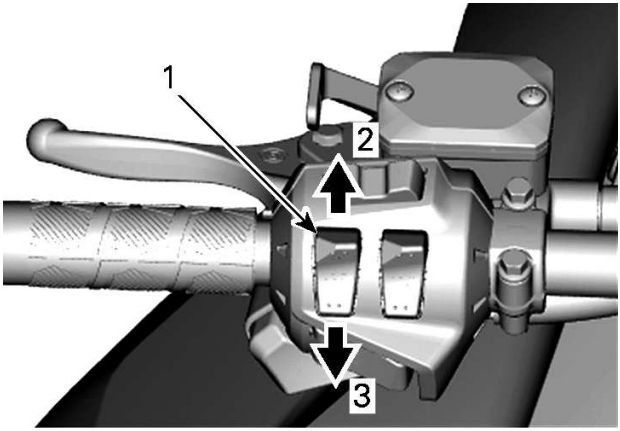
Headlights Dimmer Switch

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%.

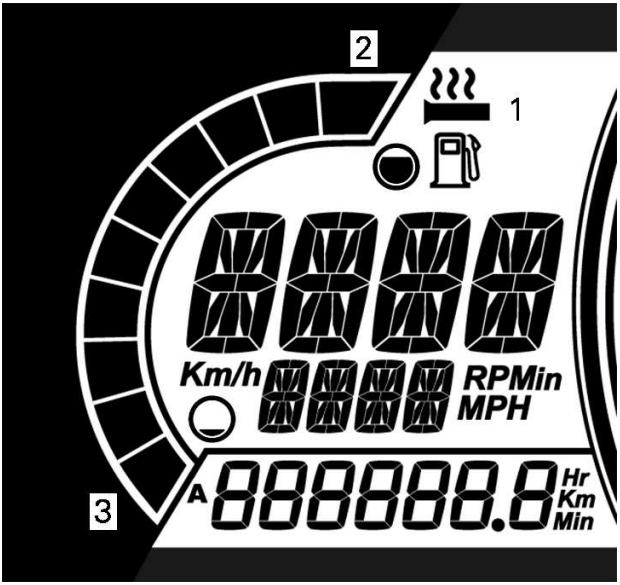
Depress switch as required to select heating intensity to keep your hands at a comfortable temperature.



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.

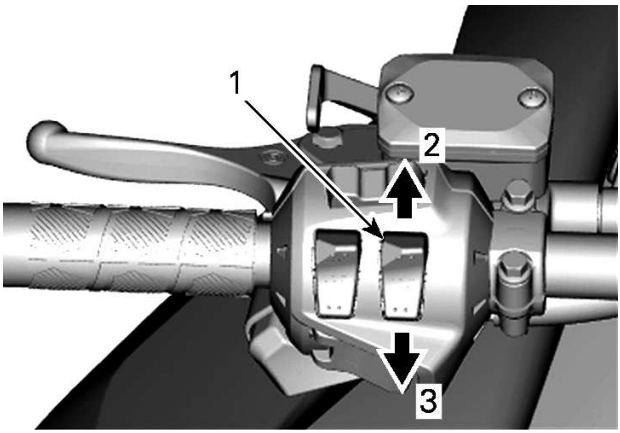
Heated grips will be in OFF position when there are no bars displayed on the gauge.

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%.

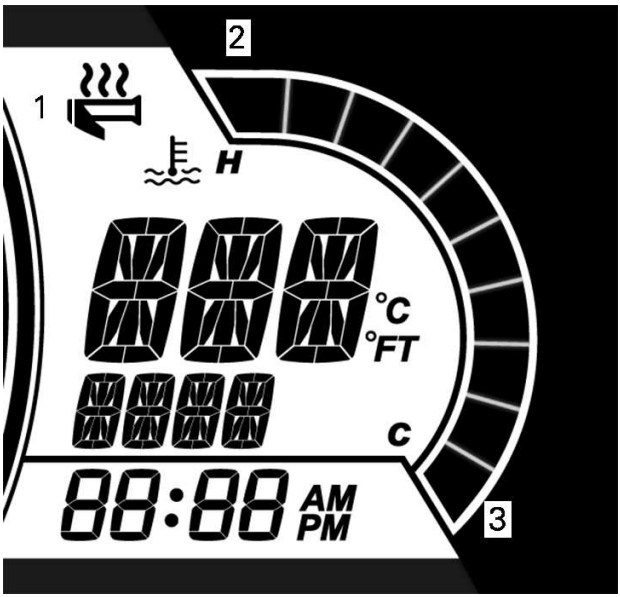
Depress switch as required to select heating intensity to keep your thumb at a comfortable temperature.



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*

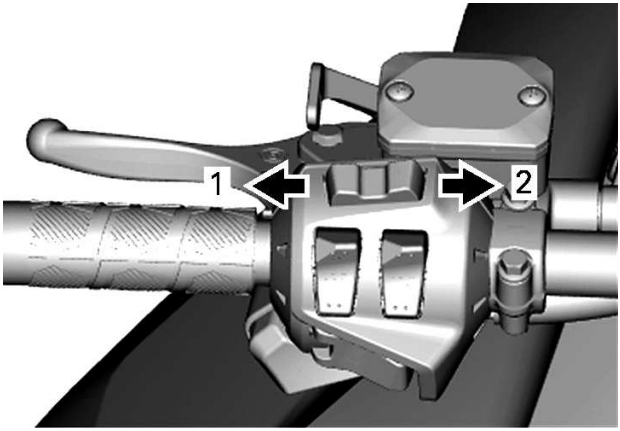
Heated throttle lever will be in OFF position when there are no bars displayed on the gauge.

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

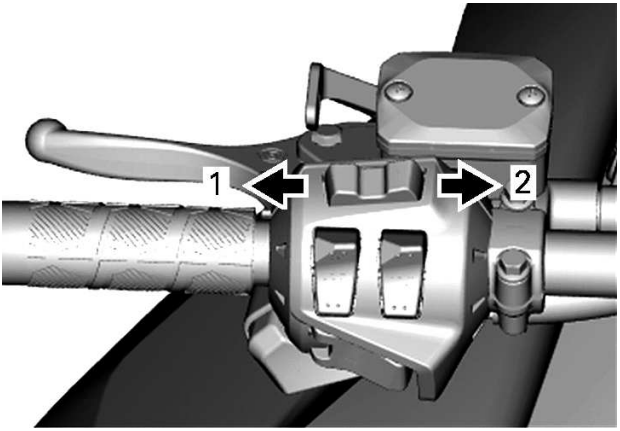
1. Menu function
2. SET function

Refer to *Gauge* for complete information.

Audio Volume Control (if equipped)

Models with the Large Panoramic 7.8" Wide LCD Display

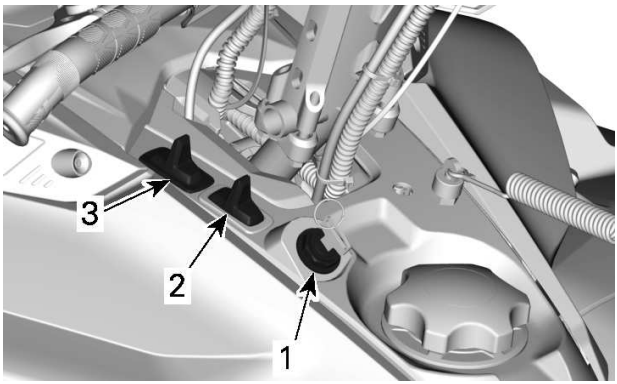
This button is used to manage the information displayed on the multi-function gauge or answer/cancel a phone call.



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.

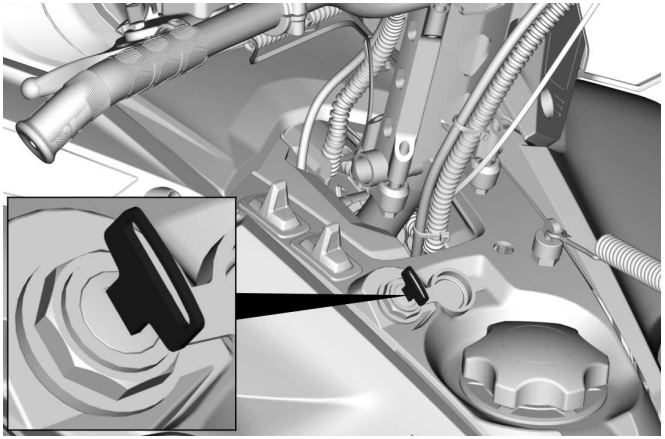
Console Switches (if equipped)



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*.

Headlights Dimmer Switch

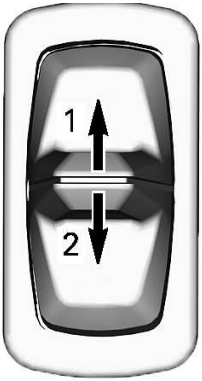
Press to select HI or LOW beam. Lights are automatically ON when the engine is running.

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.

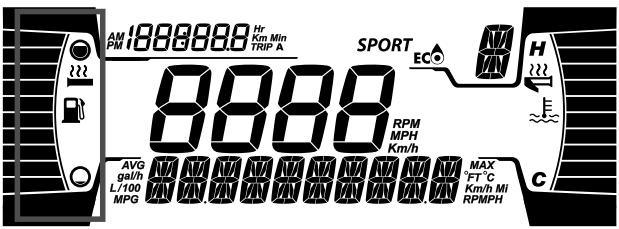
Depress switch as required to select heating intensity to keep your hands at a comfortable temperature.



SWITCH ON CONSOLE

1. *Increase heat*
2. *Decrease heat*

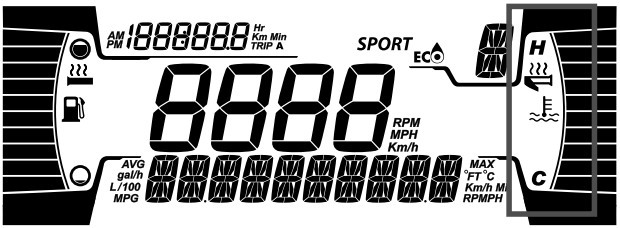
The heating intensity is displayed via the digital display.



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.



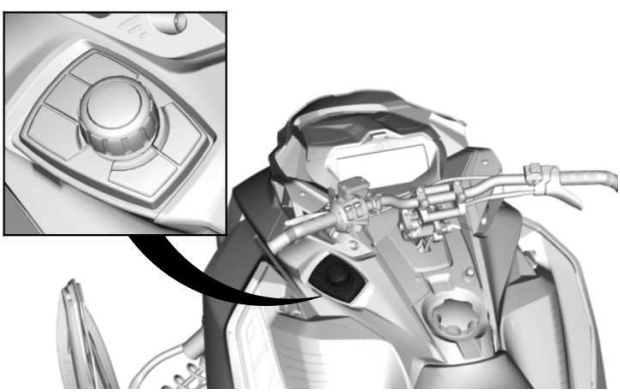
HEATED THROTTLE LEVER DISPLAY

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.

Rotary Control (if equipped)

The rotary control is located on the left side of the console.

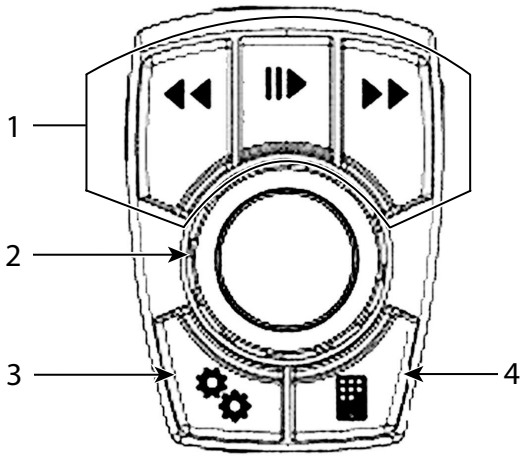


TYPICAL

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:

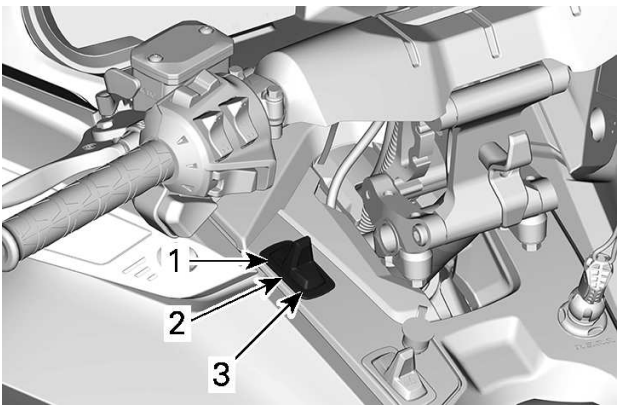
– Short press: Previous or Next Preset
– Long press: Seek - up or down

When Bluetooth audio source is selected, the Preset/Seek buttons work as follow:

– Left: Previous song
– Right: Next song

Heated Seat Switch (if equipped)

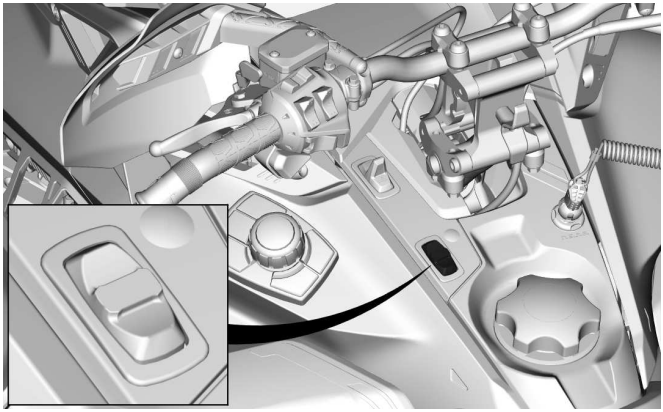
The heated seat switch is located on the console to the left of the steering column.



1. *Driver and passenger seat*
2. *OFF*
3. *Passenger seat*

Smart-Shox Suspension Mode Switch (on applicable models)

The Smart-Shox switch is located on the left side of the console.



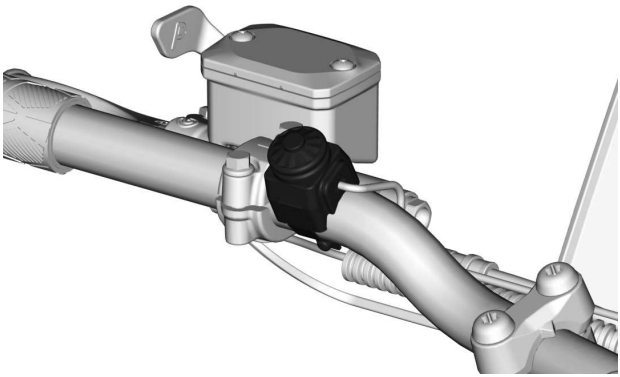
There is 3 suspension modes: Sport, Sport+, and Comfort.

Refer to *Tune Your Ride* for more information.

Horn Button (if equipped)

For vehicles sold in Finland

Press on the horn button to activate the horn.



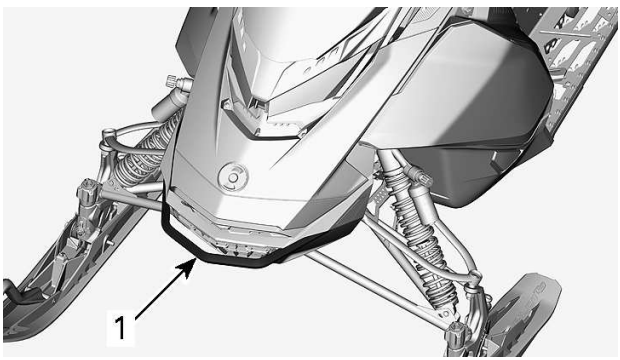
TYPICAL

BODY AND SEAT

Front and Rear Bumpers

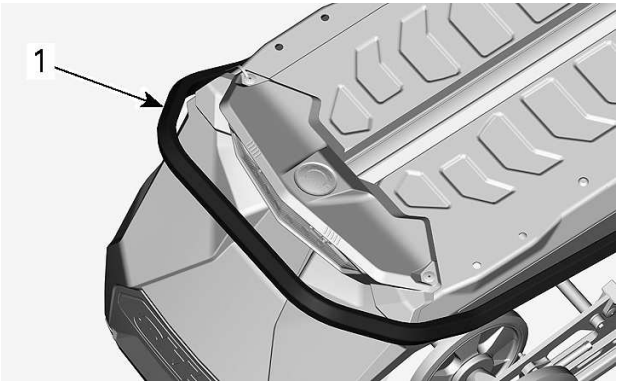
To be used whenever snowmobile requires manual lifting.

⚠ 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.



TYPICAL

1. Front bumper



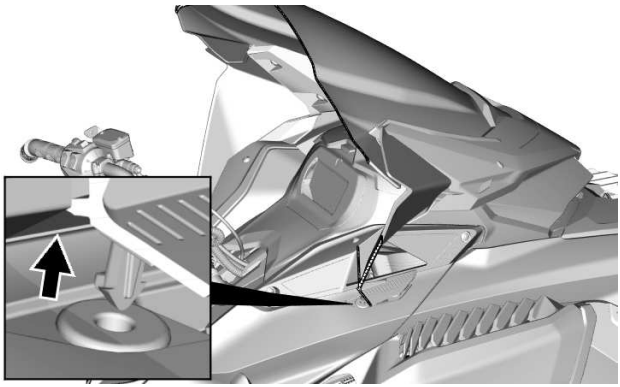
TYPICAL
1. Rear bumper

NOTICE
Do not use skis to pull or lift snowmobile.

Windshield

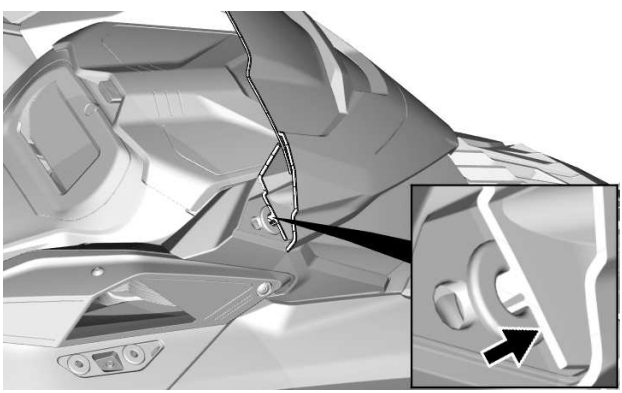
Removing the Windshield

1. Pull off the deflector pins off the grommets, if applicable.

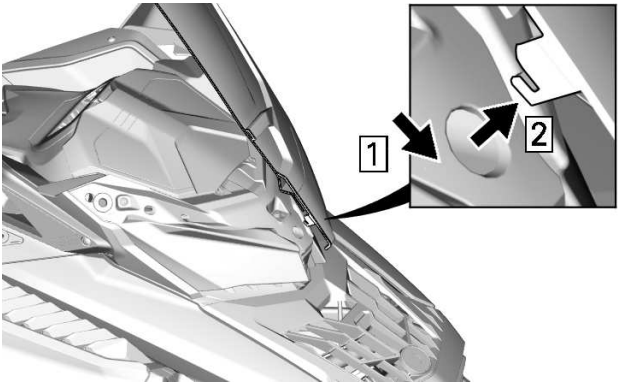


WITH SIDE DEFLECTORS

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.



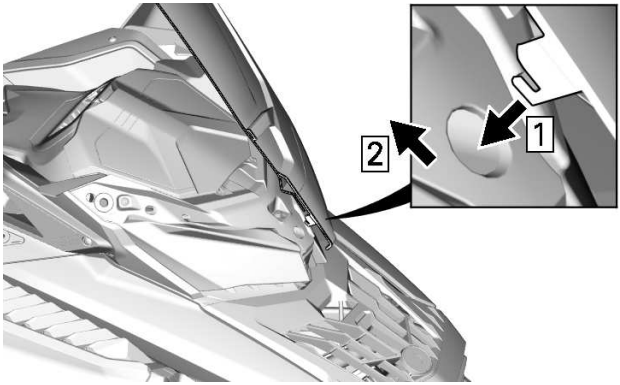
CENTER TAB - WITH SIDE DEFLECTORS

Installing the Windshield

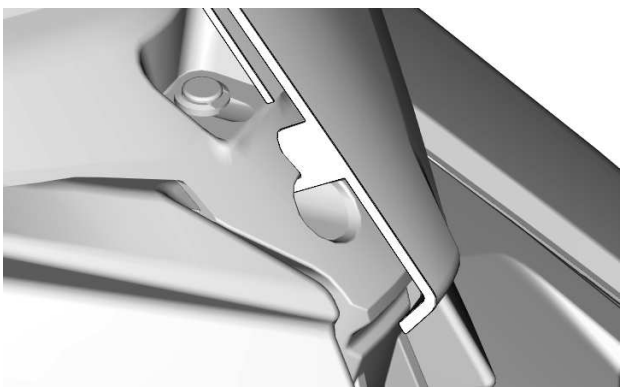
1. Lubricate the grommets using soapsuds, if required.

NOTICE
Do not lubricate grommets with any type of grease.

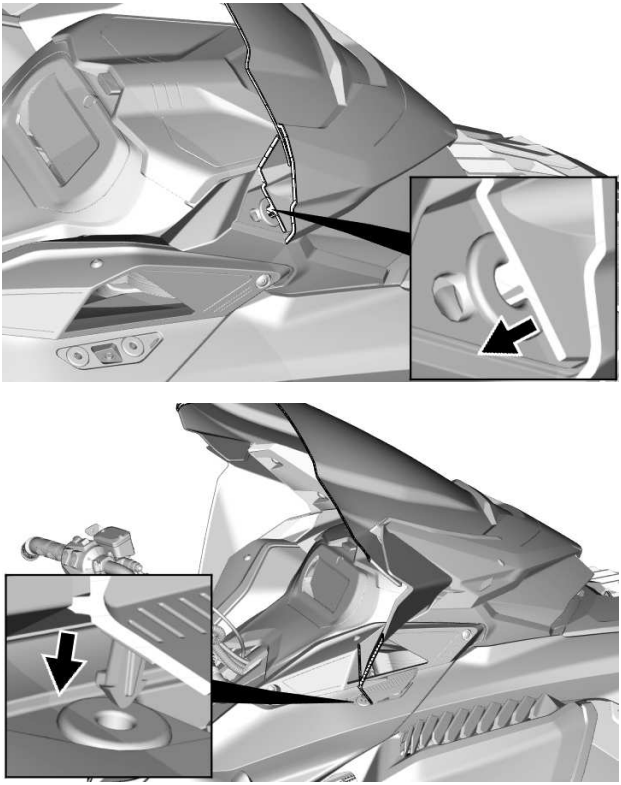
2. Insert center pin or tab in headlamp module hole.



CENTER TAB - WITH SIDE DEFLECTORS



3. Secure windshield by inserting the windshield pins into the grommets.



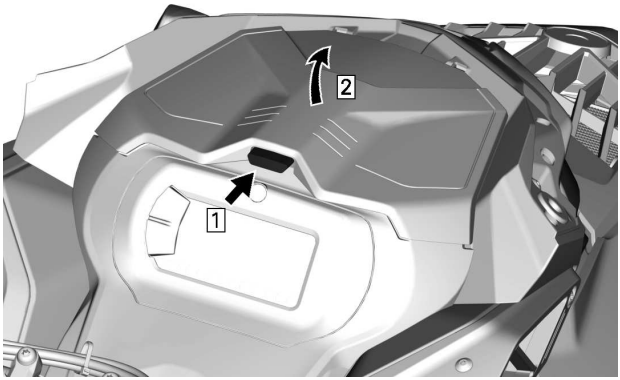
WITH SIDE DEFLECTORS

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.

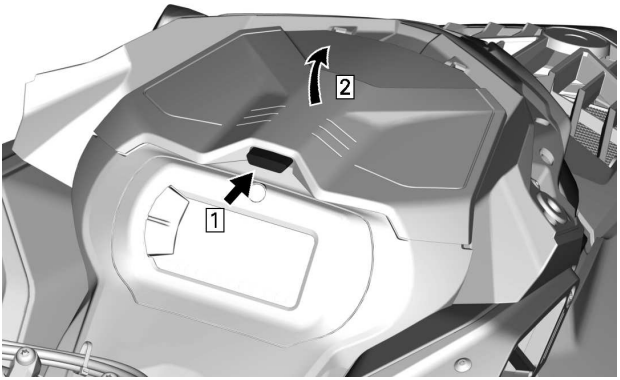


NOTE:
When closing, make sure cover is secured properly. You will hear a "clic".

Upper Body Module

Removing the Upper Body Module

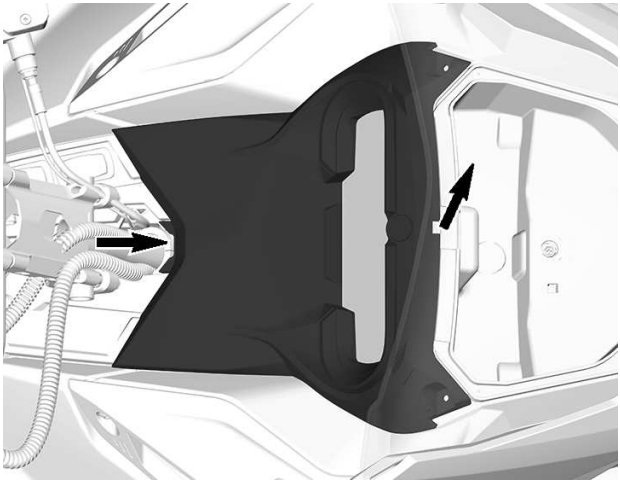
1. Remove the windshield.
2. Open the storage compartment.



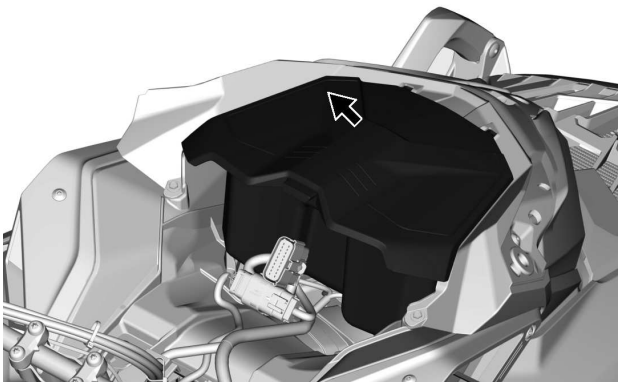
3. Remove the gauge support retaining screws.

TYPICAL

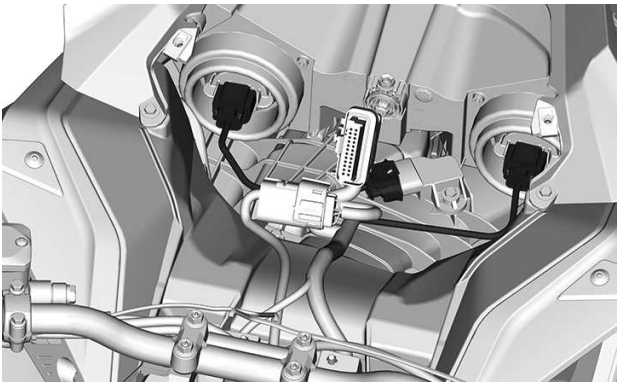
4. Lift the front of the gauge support, then slide it forward to remove it.



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.

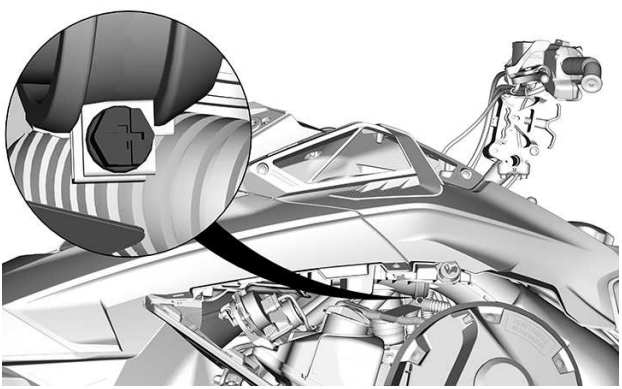


7. Disconnect the headlight and the MAPTS (2-stroke) connectors.

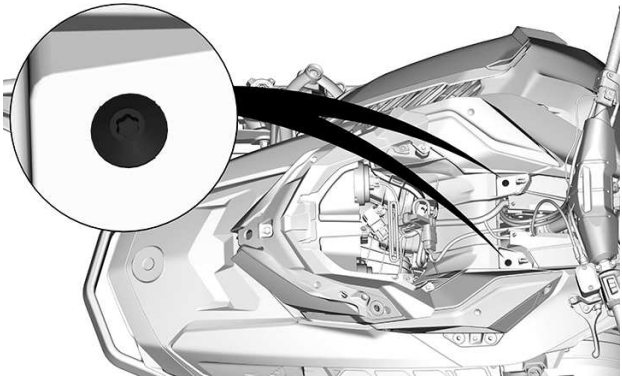


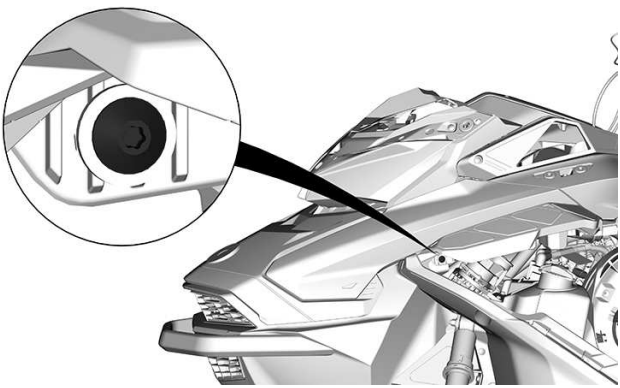
TYPICAL

8. Remove both side panels. Refer to *Side Panels* in this section.
9. Loosen the air intake duct clamp.

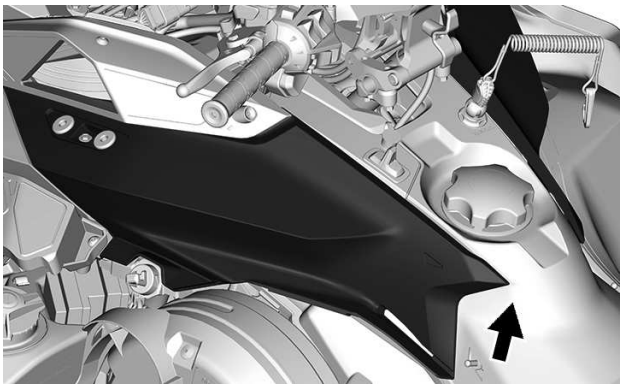


10. Remove the upper body module retaining screws on both sides.





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)

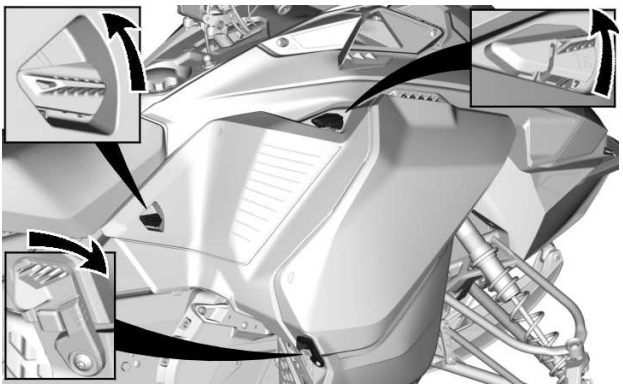
Side Panels

⚠ WARNING

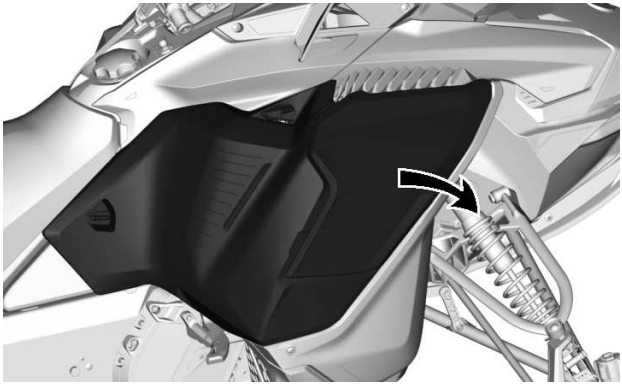
Never operate engine with side panels opened or removed from vehicle.

Removing the Side Panels

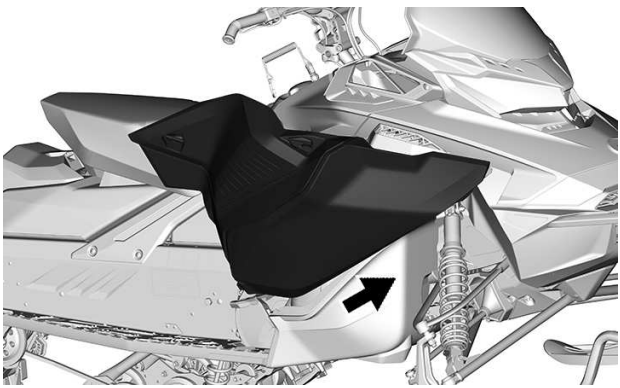
1. Unlock all latches, then open panel.



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.

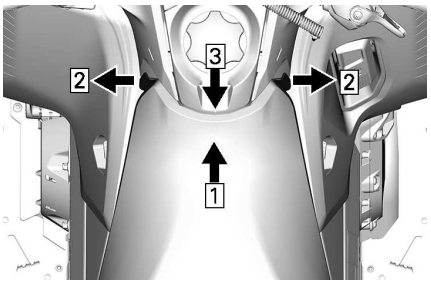
Installing the Side Panels

The installation is the reverse of the removal procedure.

Seat

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*

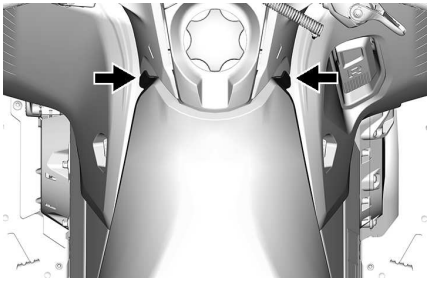
Slide seat rearwards to remove it.

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.

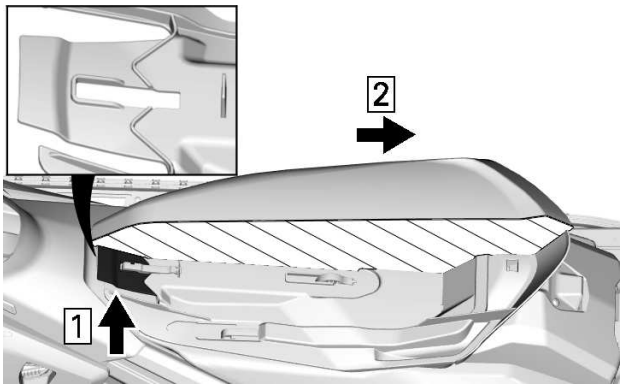


⚠ WARNING
Make sure seat is securely latched before riding.

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.

EQUIPMENT

Some features may not apply to your model or could be optional.

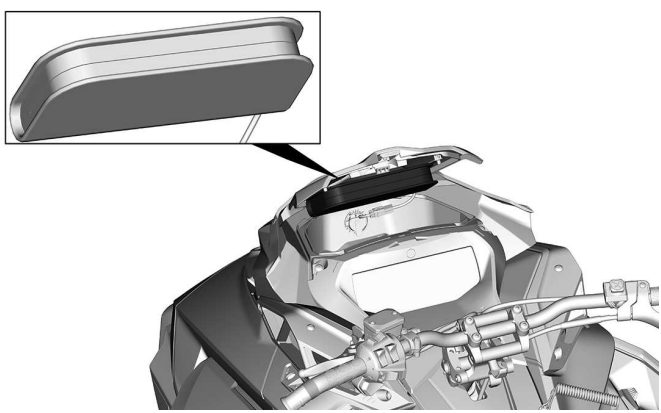
Operator's Guide

The Operator's Guide should be stored in the *Front Storage Compartment*.

Heated Cell Case (if equipped)

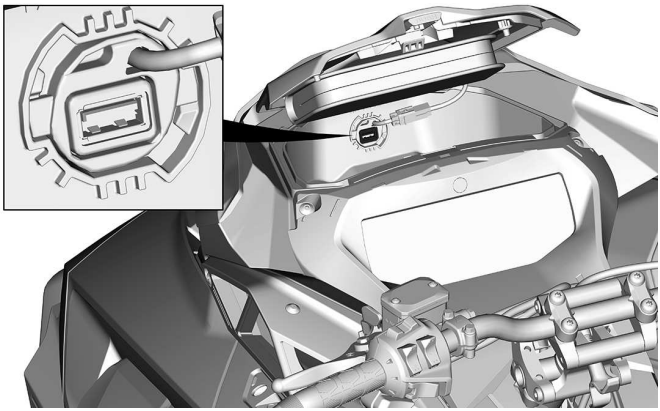
A heated cell case is mounted underneath the front storage compartment cover. It allows to keep your cell phone at a warm temperature while charging.

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.

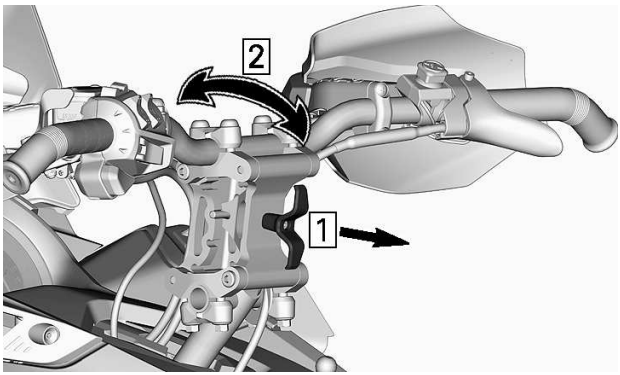


Adjustable Handlebar Riser (If Equipped)

⚠ WARNING
Always stop engine before adjusting handlebar.

The handlebar can be set in four different positions.

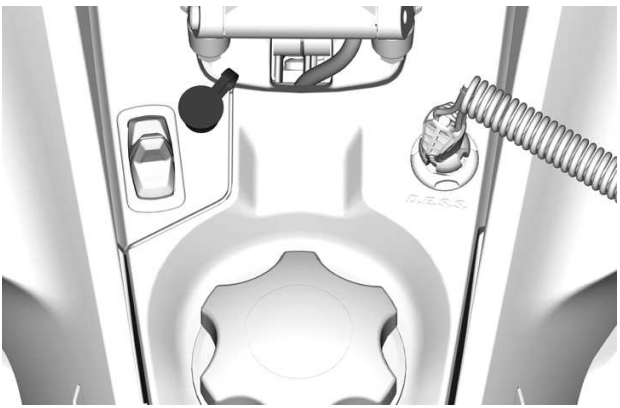
To change handlebar position, pull lever and position handlebar as desired.



Move the handlebar back and forth to make sure mechanism is securely engaged.

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.**

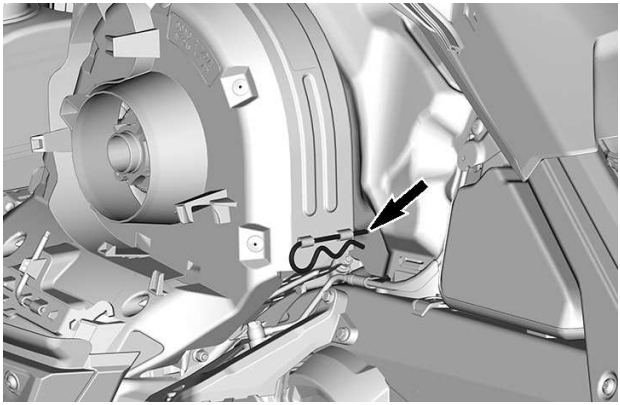
NEVER attempt to make adjustments to moving parts while engine is running.

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.

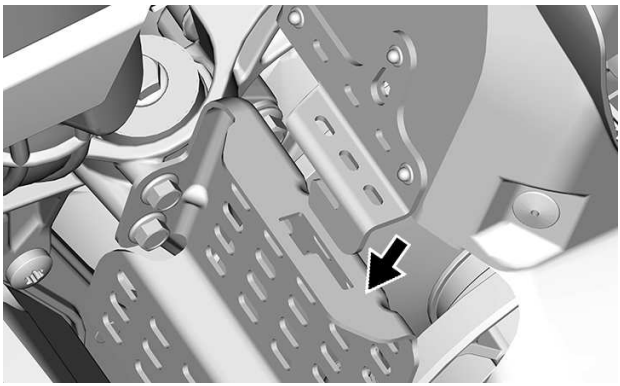


TYPICAL

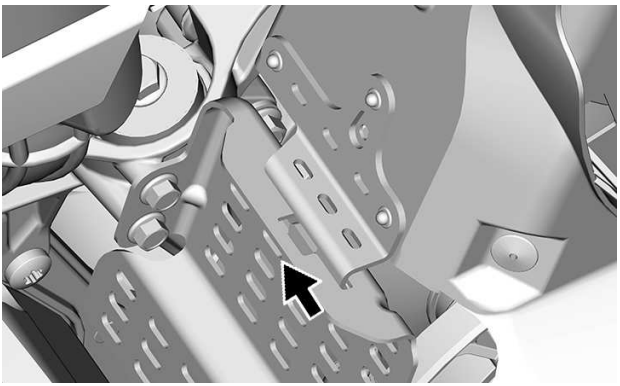
Lift rear portion of guard then release from front tab.

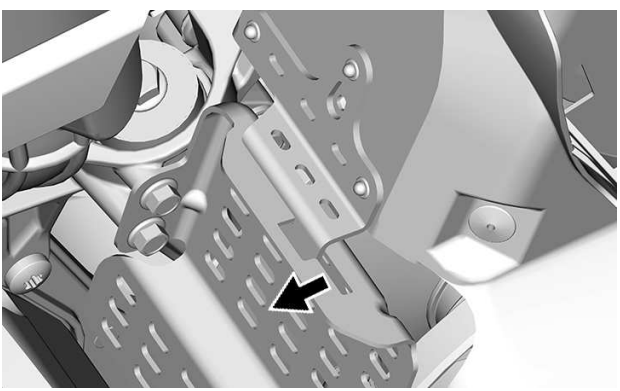
Installing the Drive Belt Guard

Insert belt guard tab in front support slot.

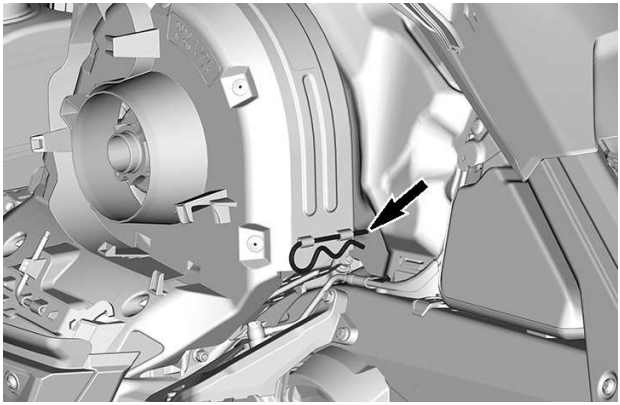


Push drive belt guard toward engine then toward front of vehicle.





Position the rear portion of the belt guard over the retainer and secure it using the retaining pin.

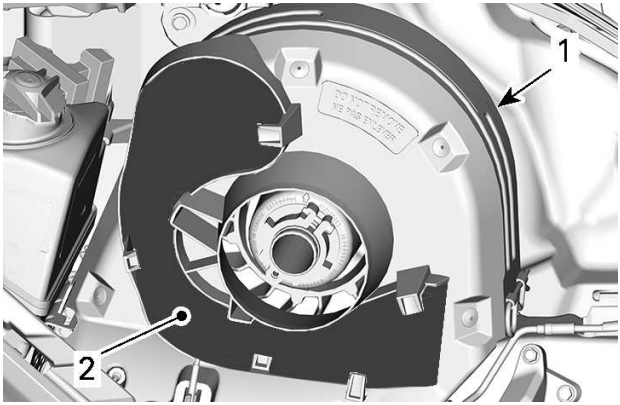


Spare Drive Belt Holder

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.

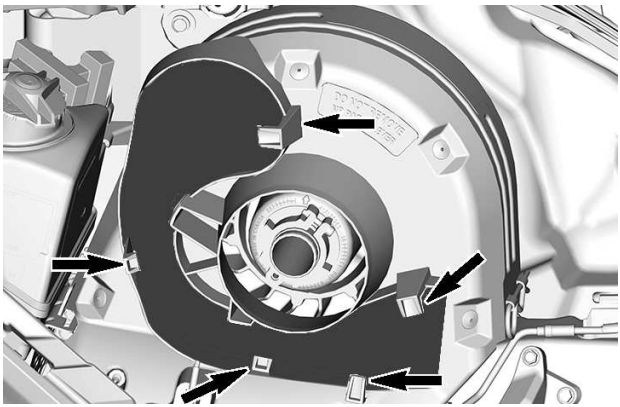
Position spare drive belt into drive belt guard slot.



TYPICAL

1. Drive belt guard
2. Slot

Secure in place by sliding it behind the tabs.

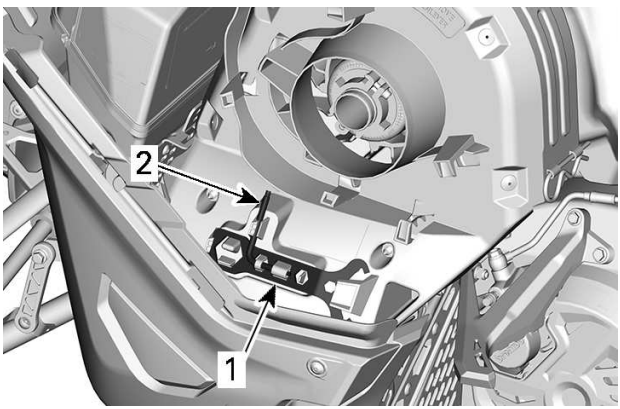


TYPICAL

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.



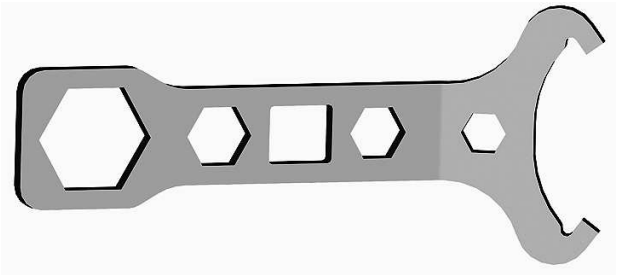
TYPICAL - DRIVE BELT GUARD TOOLS LOCATION

1. *Suspension adjustment tool*
2. *Pulley expander and headlight adjustment tool*

Install in the following sequence:

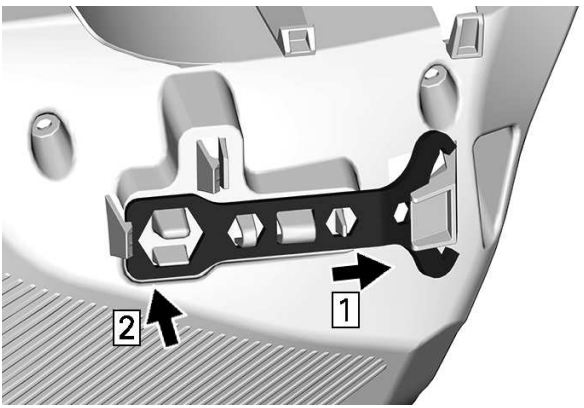
⚠ CAUTION
Make sure tools are secured properly. Tools may detach and cause damage to rotating parts.

1. Slide the suspension adjustment tool open end under retaining tab.

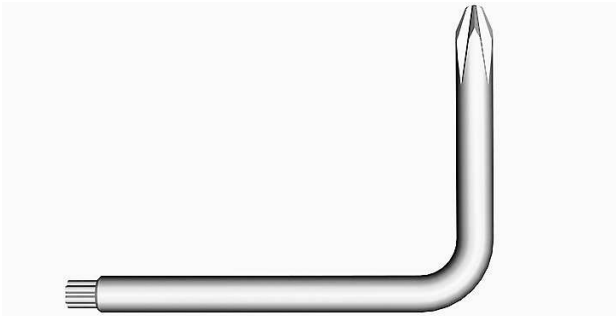


SUSPENSION ADJUSTMENT TOOL

2. Press the closed end on the retaining tabs.

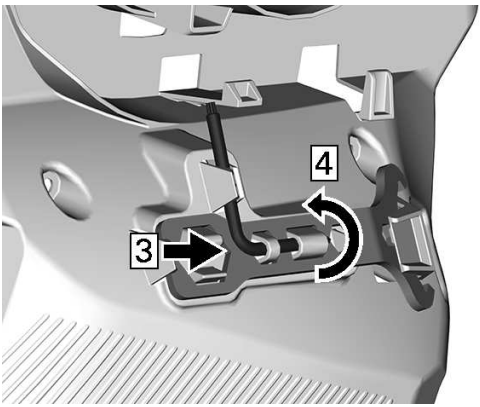


3. Slide the Pulley expander and headlight adjustment tool short end into hole.



PULLEY EXPANDER AND HEADLIGHT ADJUSTMENT TOOL

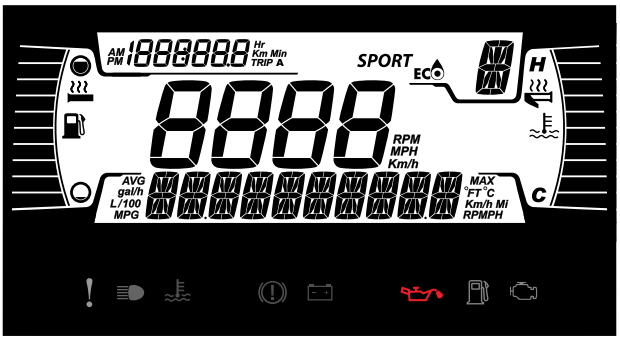
4. Rotate and clip long end in place.

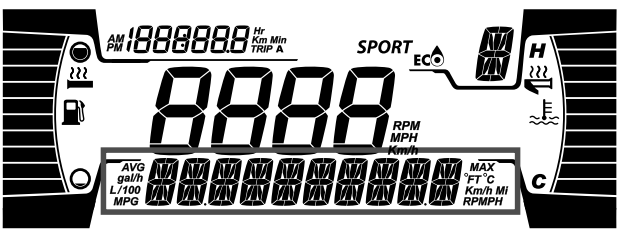


4.5” DIGITAL DISPLAY

Multifunction Display

Lower Display





May display the following:

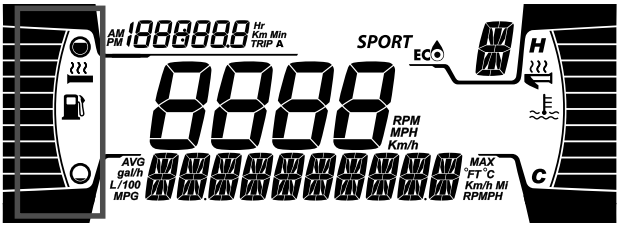
- RPM
- Speed
- Engine Temperature
- Fuel Statistics
- Settings
- Messages
- Outside temperature (if equipped)

Use LOWER button to change the displayed information.

The SPEED STAT display shows the maximum and the averaged speed. Hold LOWER button for 3 seconds to reset.

When the SPEED display is chosen, the RPM is shown in the TRIP display.

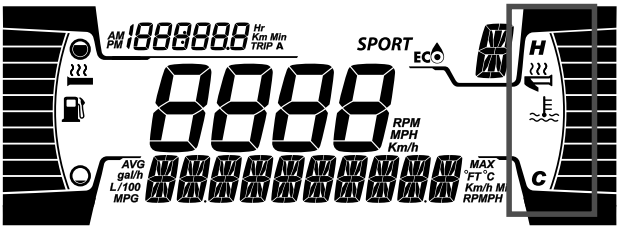
Left Lateral Display



The left lateral display includes:

– Fuel level indicator
– Heated Grip level

Right Lateral Display



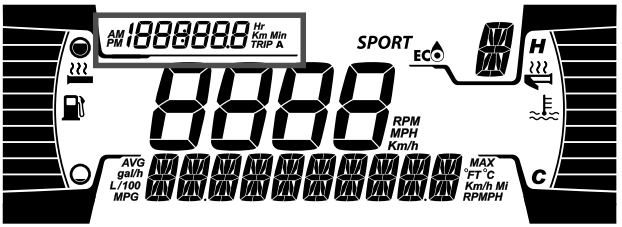
The right lateral display includes:

– Engine Temperature
– Heated throttle indicator

Central Display

Display the RPM of the engine or the vehicle speed in Km/h or MPH.

Trip Display



This display shows trip informations:

– Cumulative distance odometer
– Trip A hours
– Trip A distance (Km or mph)
– Vehicle hour meter
– Clock (If battery equipped)

Use UPPER button to change the displayed information.

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.

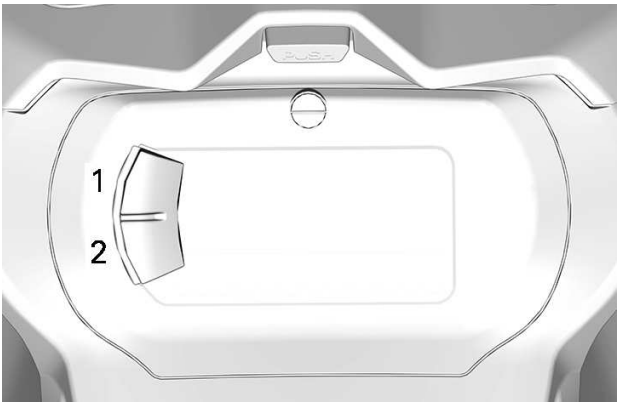
Telltale Lights - Lower Bar

Lights	Description
!	ORANGE - Vehicle malfunction
	BLUE - The high beam are selected

Lights	Description
	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 injection oil level
	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.

Settings

Setup



1. *Upper button (S)*
2. *Lower button (M)*

Using LOWER button, select **SETTINGS** and hold to enter setting menu.

Reset Stats

Using LOWER button, select **RESET STAT** and hold to reset.

Unit Selection

This multifunction gauge is factory preset in Imperial units but it is possible to change it to Metric units.

Using LOWER button, select **UNITS** and hold button to change units.

Setting Clock

Using LOWER button, select **CLOCK** to change the clock.

1. Press LOWER button to select clock display.
2. Push and hold LOWER button for 1 second.
3. Press LOWER button to select 12:00 AM PM or 24:00 time base.
4. Push and hold LOWER button to acknowledge selection.
5. Press LOWER button to change hours (hours flash).

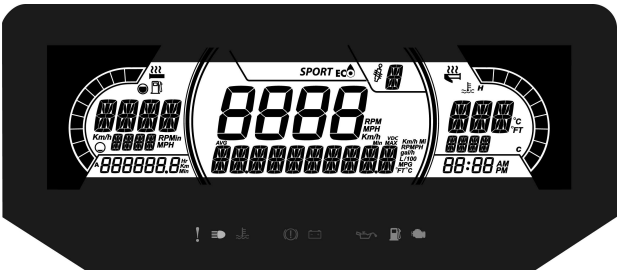
6. Push and hold LOWER button to acknowledge hour selection.
7. Press LOWER button to switch to minutes (minutes flash).
8. Push and hold LOWER button to acknowledge minutes selection.

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.

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.

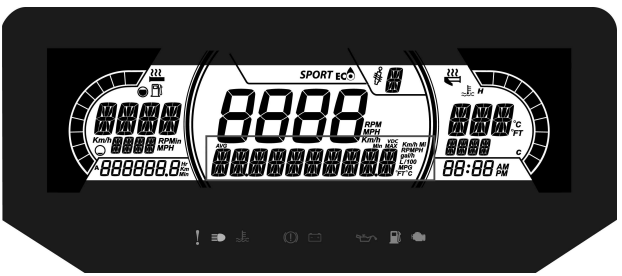
   Once the desired information is displayed, press the MENU (M) button or wait 5 seconds to confirm.

   To reset

   – Average speed
   – Top speed
   – Total fuel consumption

   Press and hold the SET (S) button while display is flashing.

Lower Display

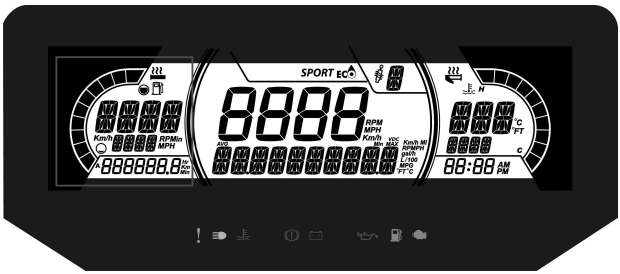


May display the following:

– Settings
– Messages

The SPEED display shows the Maximum and the averaged speed. Hold MENU button for 3 seconds to reset.

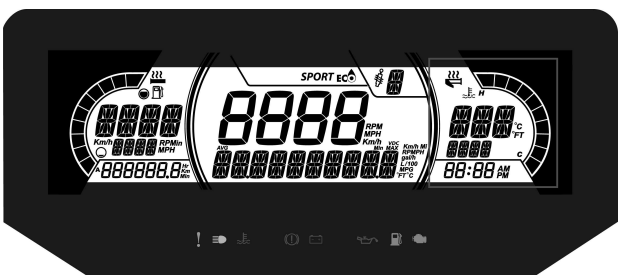
Left Lateral Display



The left lateral display includes:

– Fuel level indicator
– Heated Grip level
– Trip distance A and B (Km or mph)
– Cumulative hours
– Speed
– RPM
– Odometer

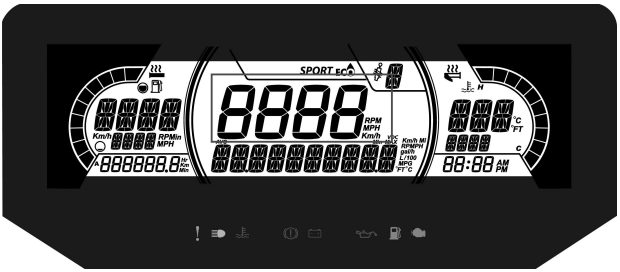
Right Lateral Display



The right lateral display includes:

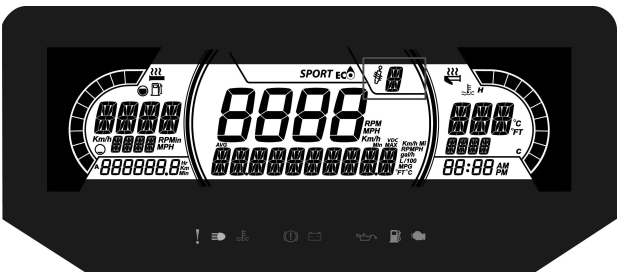
– Engine Temperature
– Heated throttle indicator
– Clock

Central Display



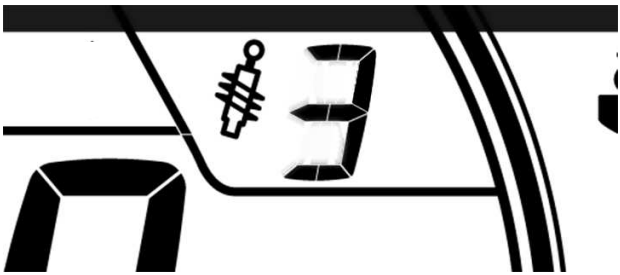
Display the vehicle speed in Km/h (or MPH) or the RPMs. Refer to *Settings*.

ACS Suspension Position Display (if equipped)



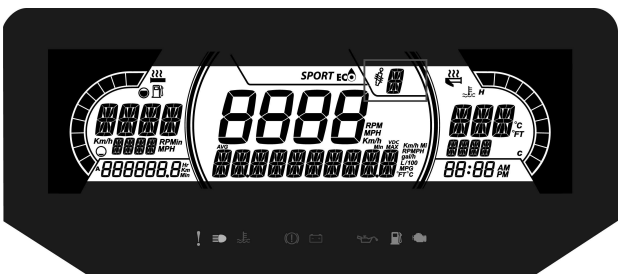
This display shows suspension setting.

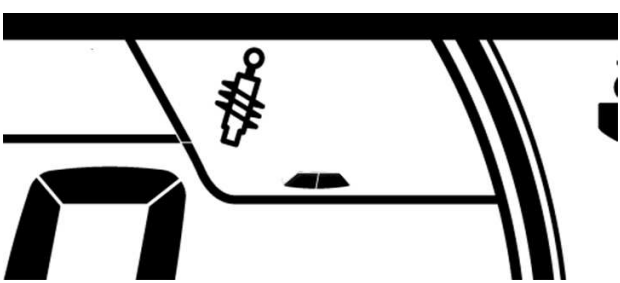
The suspension is calibrated from 1 to 5, 1 being the softest setting.



Refer to *TUNE YOUR RIDE* section for proper adjustment procedure.

Smart-Shox Suspension Display (if equipped)





This icon appears and blinks when entering suspension mode selection or when suspension fault occurs.

Refer to *TUNE YOUR RIDE* section for selection procedure.

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 injection oil level

Lights	Description
	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.

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 Imperial units but it is possible to change it to Metric 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.

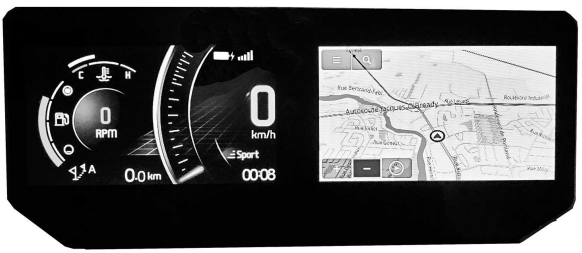
LARGE PANORAMIC 7.8” WIDE LCD DISPLAY

Basic Functions

LCD Display

Default Display

Multifunction Display



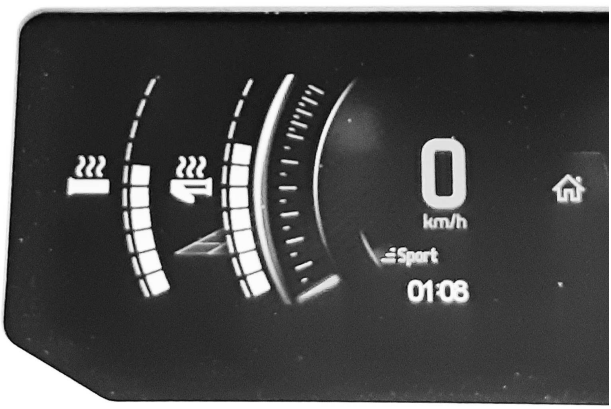
Left Lateral Display

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 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 personnal data will be deleted from the cluster when phone pairing is deleted.

User agree that personnal 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 Connect App

Follow these steps to setup your smartphone with BRP Connect.

1) Download the BRP Connect Smartphone App

Download the BRP Connect 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.

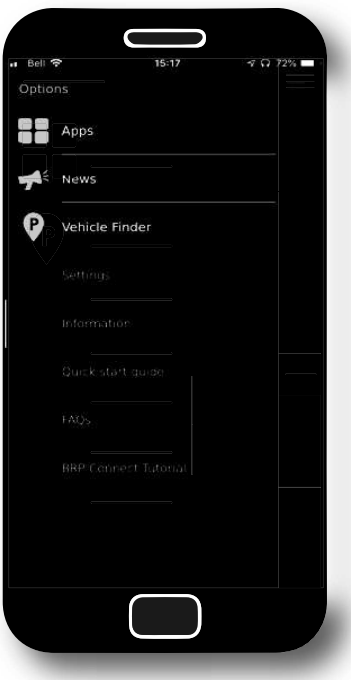
Push the joystick **UP** to select “Launch BRP Connect” and push the joystick **RIGHT**.

Select the app you would like to use and press the **JOYSTICK**.

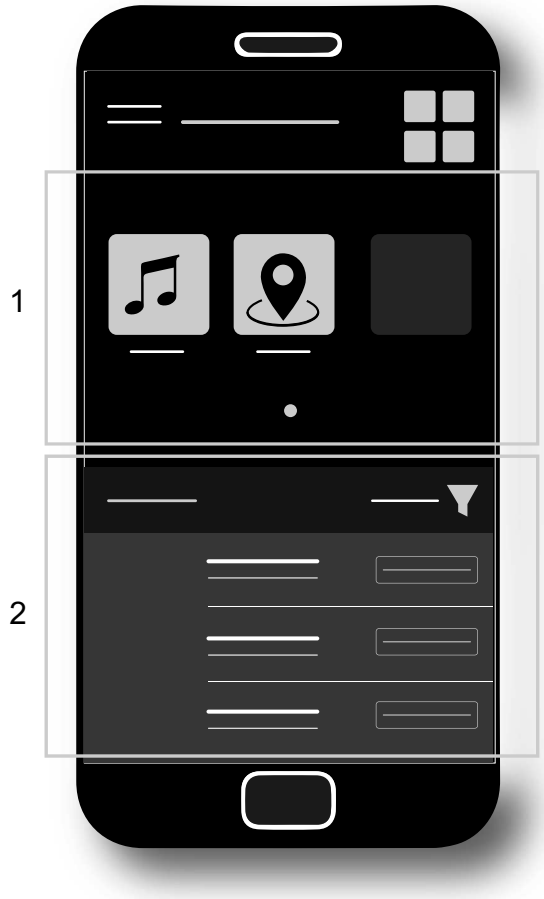
– To leave the app, long press the **JOYSTICK**.
– To return to the Main Menu, press the BRP Connect Button.

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 Connect App



1. News: Communications may occasionally be issued through the BRP Connect app and can be found through this menu.
2. Vehicle Finder: Allows you to store the location of your vehicle (or any other location you wish to remember). The feature is relatively rich as it also allows you to take a picture of the location you left your vehicle at, take notes (e.g. number of the parking spot) and also navigate back to your stored location. Only one location can be saved at a time.
3. Settings: Set BRP connect to your choosing. In which country do you intend to use the BRP Connect App? What should be worth your attention? Note: Elementary settings of the BRP Connect app change be changed from within this menu.
4. Information: General information about the BRP Connect app. States the current version and all legal information.
5. Quick Start Guide: Want to learn how to use this app? Here is how it works.
6. FAQ: This link takes you to answers of common questions asked by riders like you. An internet connection is required.
7. BRP Connect Tutorial: Need to know more? This link takes you to detailed instructions videos. An internet connection is required.



1. *Currently Installed Apps*
2. *Available Apps*

Messages in Multifunction Gauge

Important information about vehicle condition is displayed on the multi-function 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.
	⚠ 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.

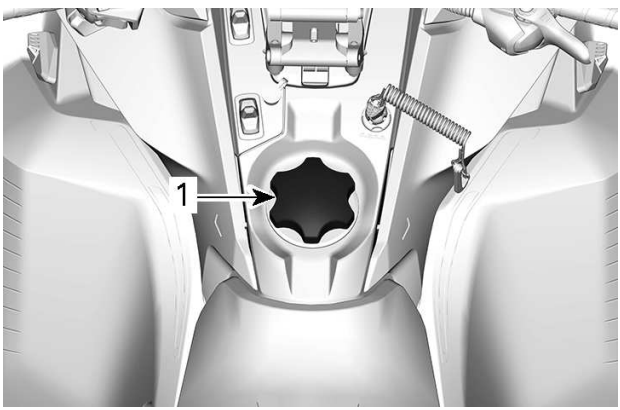
1. Stop engine.
2. Have operator and passenger get off vehicle.

⚠ 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

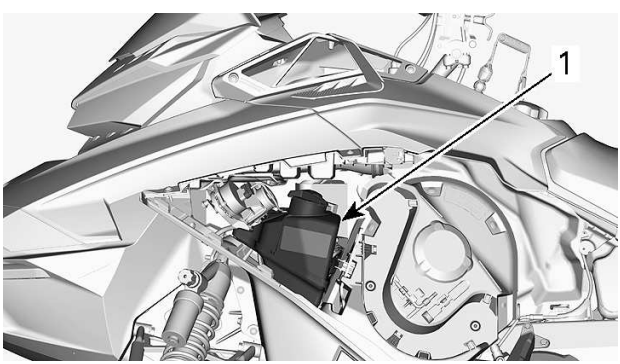
Rotax® engines were developed and validated using the XPS™ oil. BRP recommends the use of its XPS injection oil or an equivalent at all time. Damages caused by the use of an injection oil not suitable for this 2-stroke direct fuel injection engine may not be covered by the BRP Limited Warranty.

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.

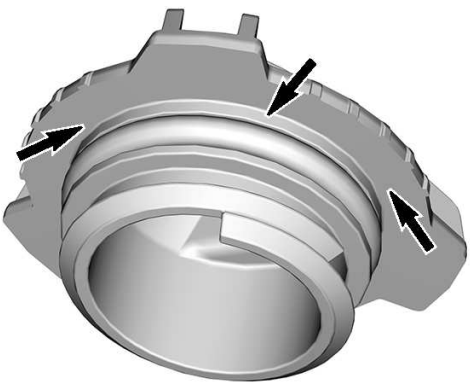
Adding Injection Oil

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.

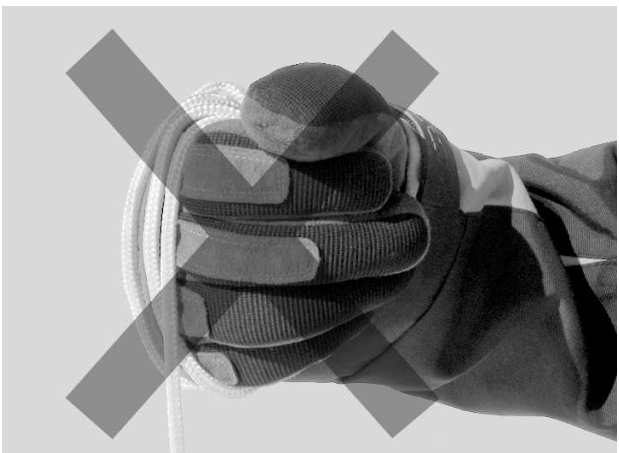
Emergency Starting

The engine can be started with the emergency starter rope supplied in the storage compartment. Refer to *Body and Seat*.

Remove the drive belt guard. Refer to *Body and Seat*.

⚠ WARNING

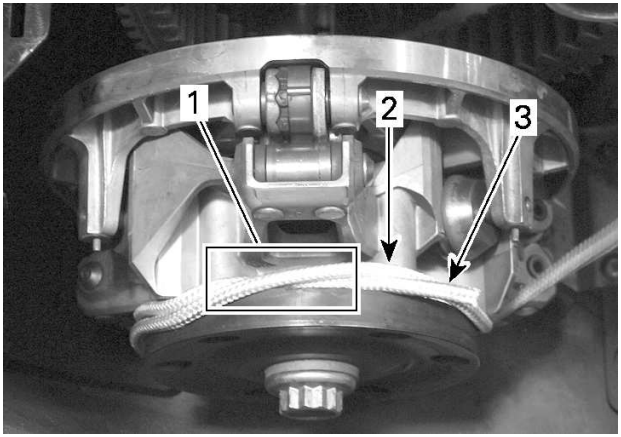
Do not wind starting rope around your hand. Hold rope by the handle only. Do not start the engine by the drive pulley unless it is a true emergency situation. Have the snowmobile repaired as soon as possible.



Attach one end of emergency rope to the rewind handle.

NOTE:
The suspension adjustment tool can be used as an emergency handle.

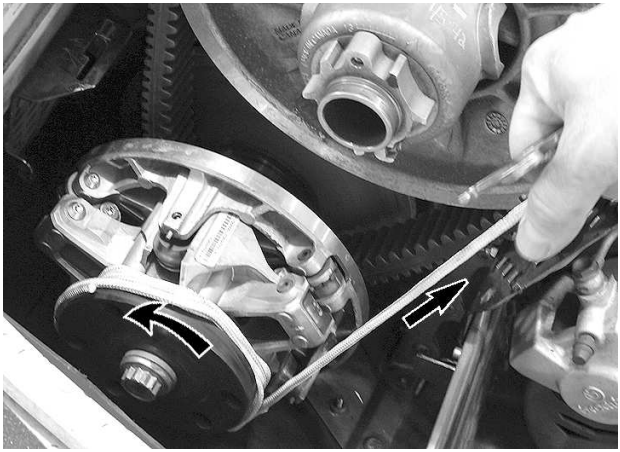
Cross the rope on the first turn as shown.



1. *Rope crossed*
2. *Rope to be winded*
3. *Rope end*

Wind rope two turns counterclockwise tightly around the drive pulley where shown.

Pull the rope using a sharp, crisp pull so the rope comes free of the drive pulley.



Start engine as per usual manual starting.

⚠ WARNING
When starting the snowmobile in an emergency situation, using drive pulley, do not reinstall the belt guard and return slowly to have snowmobile repaired.

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.

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.

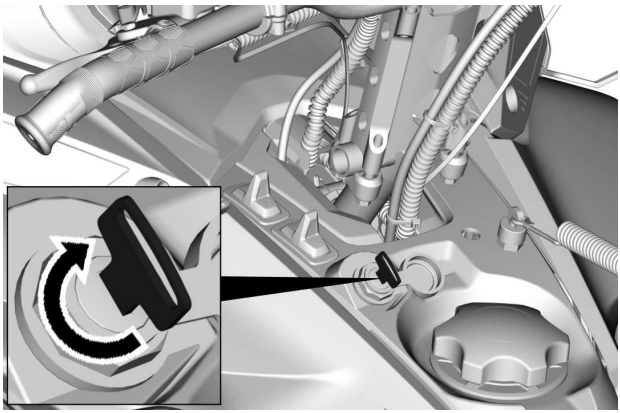
- Engine will automatically shift into forward when restarting after stopping or stalling.
- Shifting procedure will take place only when the engine is running.
- If engine is running at a speed above 4300 RPM, the function of the RER button is disabled.
- It is recommended to warm up the engine to its 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.

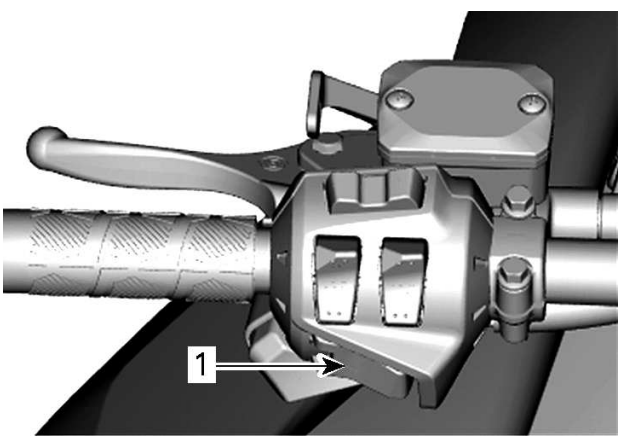
600 EFI Engine

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 counterclockwise 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.

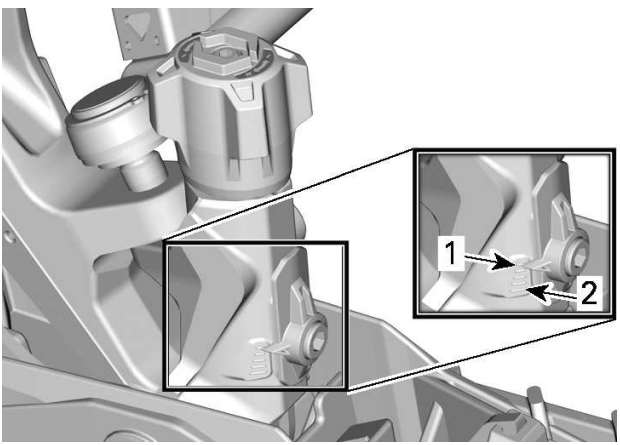
Ski Runner Depth Setting (Pilot TX Skis)

Pilot TX skis enables the rider to dial in the amount of ski bite for conditions and riding style.

A knob adjacent to the ski leg raises or lowers the ski runner.

Ski behavior depends largely on trail conditions but also on ski runner adjustment. Same as drivers behavior adapts to trail condition change.

Ski runner bottom face conditions must be regularly checked especially if the snow condition is marginal such as a lack of snow, presence of rocks or sand. Snowmobile must be driven slowly when on paved surfaces in order to prevent overheating of the ski runner bottoms and as such, damage to carbide inserts. Ski runners must be replaced as soon as any of the carbide inserts are worn out or missing. Worn out runner usage may lead to damage of ski sole.



RUNNER DEPTH ADJUSTMENT KNOB

1. *Position 1*
2. *Position 5*

Pilot TX Ski Adjustability				
Position	Lateral grip	Handling	Possible understeering	Possible oversteering
1	*	*	***	
2	**	**	**	
3	***	***	*	*
4	****	****		**
5	*****	*****		***

Front Suspension Adjustments

Ski Stance (if equipped)

Ski stance can be set to different width.

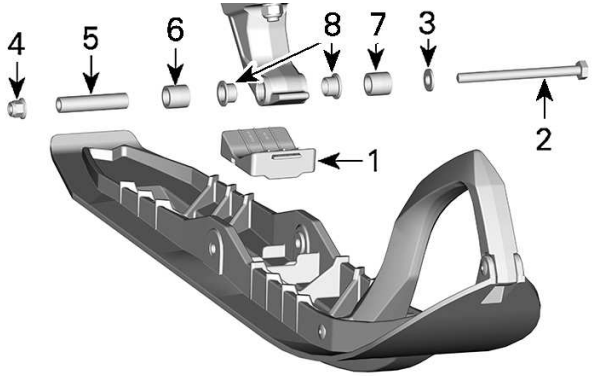
Proceed as follows to change the stance setting:

1. Lift the front of vehicle.
2. Remove the ski bolt.
3. Place the spacer according to the desired stance. Refer to the following tables and illustrations,

⚠ WARNING
Proceed to the same setting for both skis.

Models with Single Spacer

Ski stance settings - single spacer		
Narrow	Place the spacer on the inside of the ski leg	Improve handling in deep snow
Wide	Place the spacer on the outside of the ski leg	Improve stability on trail



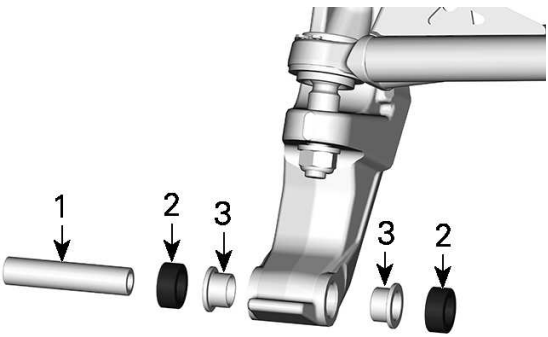
LH SIDE SHOWN

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

Models with Double Spacers

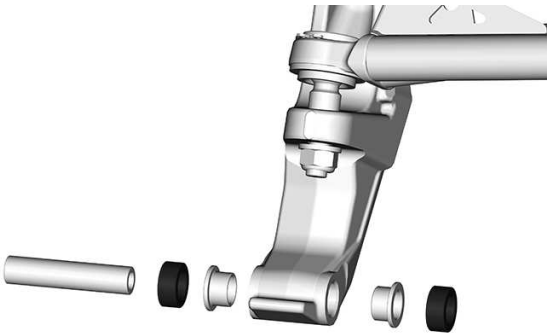
Ski stance settings - double spacers		
Narrow	Place both spacers on the inside of the ski leg	Allow snowmobile to fit in narrow spaces
Middle	Place one spacer on each side of the ski leg	Best handling on icy surfaces

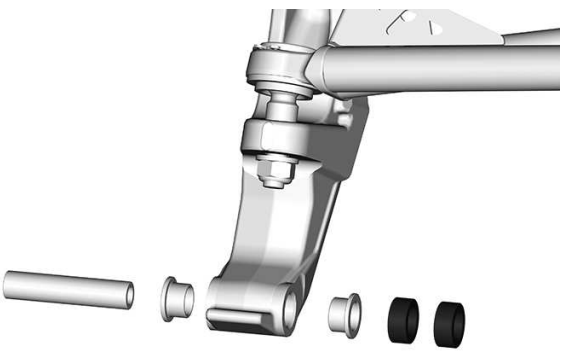
Ski stance settings - double spacers		
Wide*	Place both spacers on the outside of the ski leg	Best overall handling on trail
* Make sure the overall width complies with your local regulations.		

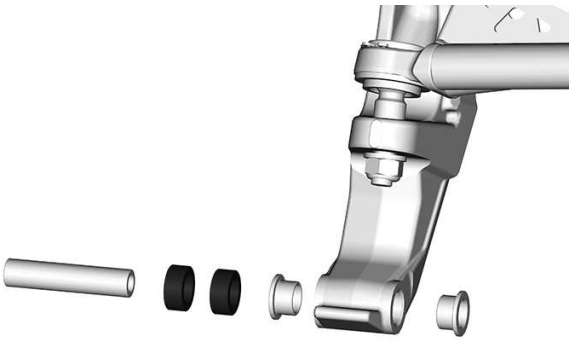


LH SIDE SHOWN

1. *Ski axle*
2. *Spacers*
3. *Sli leg bushings*







4. Tighten nut to the specified torque.

tightening torque	
Ski nut	48 ± 6 Nm (35 ± 4 lbf-ft)

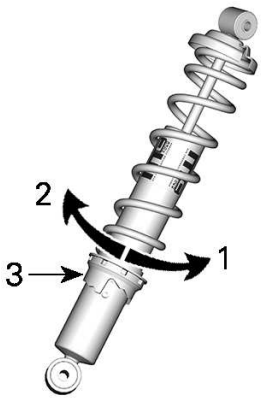
Front Springs

Front spring preload has an effect on front suspension firmness.

Front spring preload also has an effect on the steering behavior.

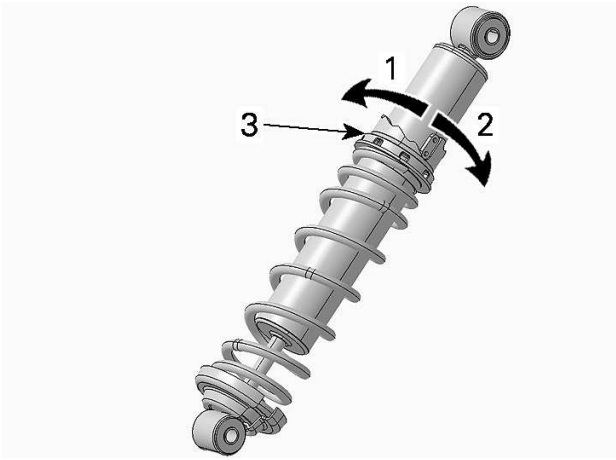
Action	Result
Increasing preload	Firmer front suspension
	Higher front end
	More precise steering
	More bump absorption capability
Decreasing preload	Softer front suspension
	Lower front end
	Lighter steering

Action	Result
	Less bump absorption capability



CAM TYPE - MOTION CONTROL SHOCK ABSORBER

1. *Decrease preload*
2. *Increase preload*
3. *Spring preload adjustment cam*



CAM TYPE - HPG SHOCK ABSORBER

1. *Decrease preload*
2. *Increase preload*
3. *Spring preload adjustment cam*

Front Shock Absorber Adjustments (KYB PRO Series Only)

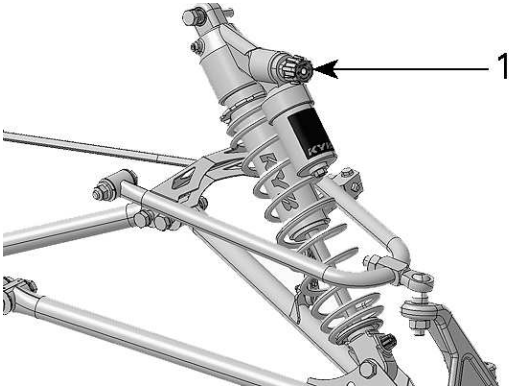
Front Shock Compression Damping (KYB PRO Series Only)

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.



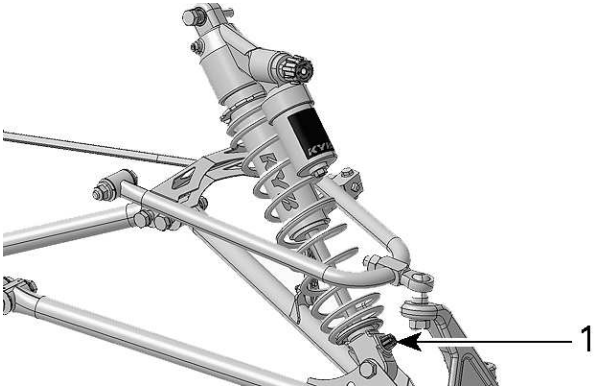
1. Compression damping adjuster button

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.

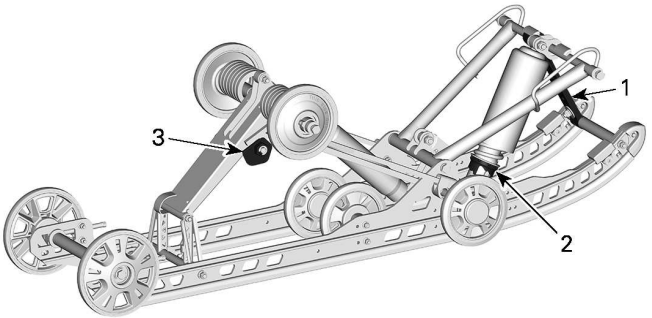


1. Rebound adjuster button

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)

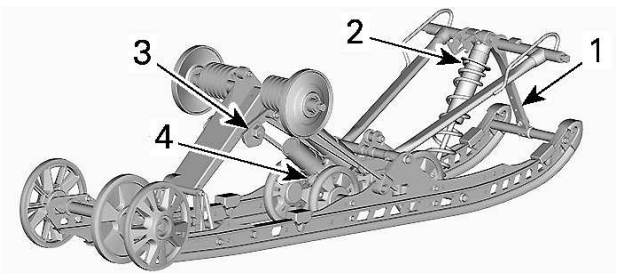
NOTE:
In repetitive short small bumps (ripple), it is recommended to use a lower rebound damping setting.

Rear Suspension Adjustments



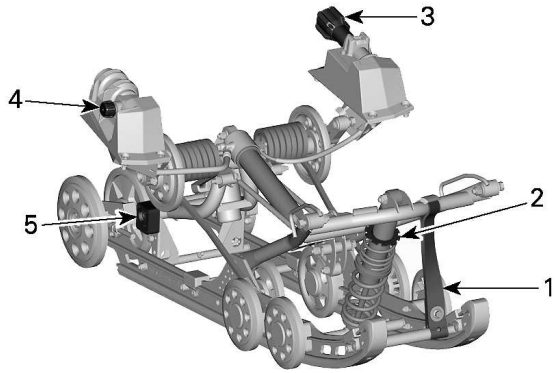
SC-5M

1. *Stopper strap*
2. *Center spring*
3. *Rear spring*



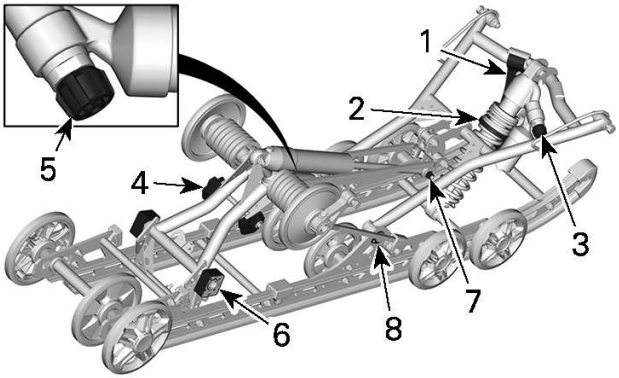
CMOTION

1. *Stopper strap*
2. *Center spring*
3. *Rear spring*
4. *Rear shock absorber*



RMOTION WITH QUICK ADJUST- ADJUSTABLE COMPONENTS

1. *Stopper strap*
2. *Center spring*
3. *Rear spring*
4. *Rear shock absorber*
5. *Coupling blocks (RH side shown)*



RMOTION WITHOUT QUICK ADJUST- ADJUSTABLE COMPONENTS

1. *Stopper strap*
2. *Center spring*
3. *Center shock absorber*
4. *Rear spring*
5. *Rear shock absorber*
6. *Coupling blocks (RH side shown)*
7. *Rear shock lower pivot (rMotion and rMotion-X)*
8. *Front arm (rMotion-X)*

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.

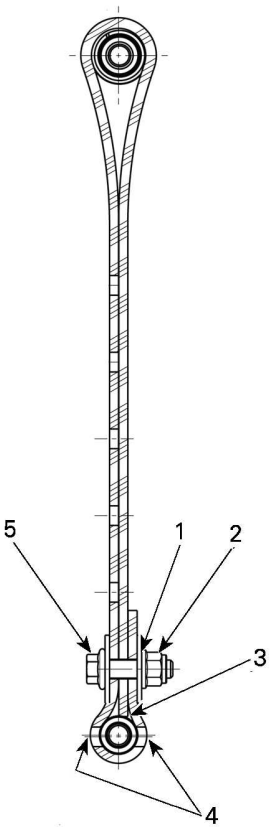
Stopper straps length also has an effect on center spring travel.

NOTICE

Whenever stopper strap length is changed, track tension must be checked.

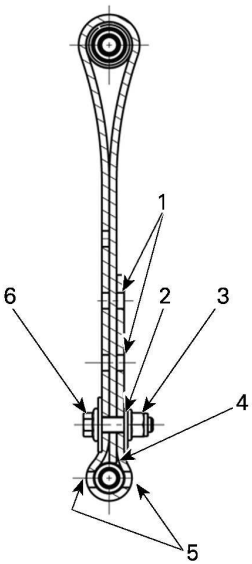
Action	Result
Increasing stopper strap length	Lighter ski pressure under acceleration
	More center spring travel
	More bump absorption capability
Decreasing stopper strap length	Heavier ski pressure under acceleration
	Less center spring travel
	Less bump absorption capability

NOTE:
Stopper strap could be set to position 1, 2, 3, 4 and 5. Below are illustrations for position 1 and 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 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:
Decreasing the stopper strap length may reduce comfort. If too much weight transfer is felt, try to correct it by adjusting the coupling blocks first. Always install stopper strap bolt as close as possible to the lower shaft.

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

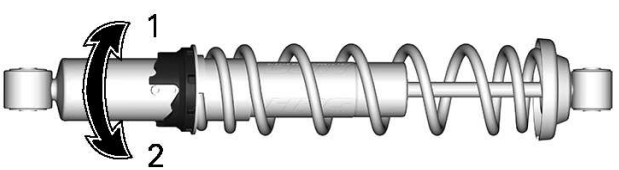
Center spring preload has an effect on steering effort, handling and bump absorption.

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.

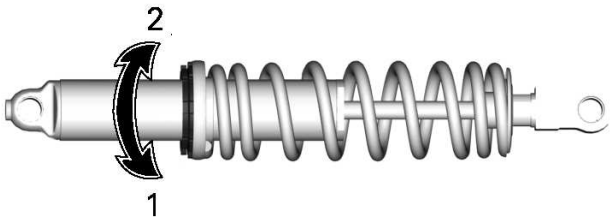


1. *Increase preload*
2. *Decrease preload*

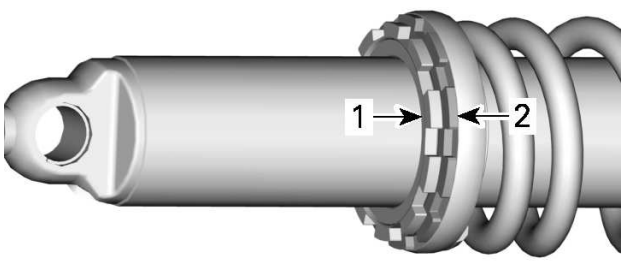
Ring Type Adjuster

Using the suspension adjustment tool provided in the tool kit, unscrew the lock ring and turn the adjustment ring to increase or decrease the spring preload.

Tighten the lock ring when the adjustment is done.



1. *Increase preload*
2. *Decrease preload*



1. *Locking ring*
2. *Adjustment ring*

Rear Spring

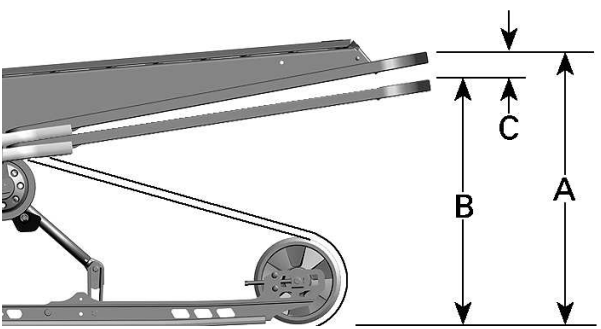
Rear spring preload has an effect on comfort, ride height and load compensation.

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.

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 Ski-Doo dealer for other available springs.

rMotion - without Quick Adjust

To increase spring preload using tool, always turn the left side adjustment cam in a clockwise direction, and the right side cam in a counterclockwise direction.

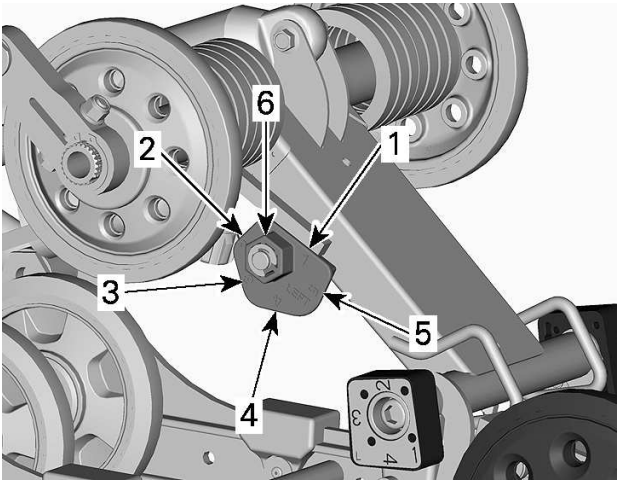
⚠ CAUTION

Never set preload cams directly from position 5 to 1 or directly from position 1 to 5.

⚠ WARNING

Both rear spring preload must be set at the same position. Otherwise vehicle behavior may be unpredictable, and suspension may become warped.

The adjustment cams have 5 different settings, 1 being the softest.

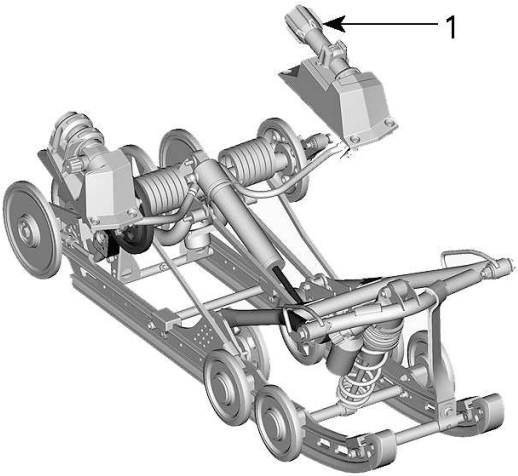


RMOTION WITHOUT QUICK ADJUST - LH SIDE SHOWN

1. *Position 1*
2. *Position 2*
3. *Position 3*
4. *Position 4*
5. *Position 5*
6. *Adjustment nut*

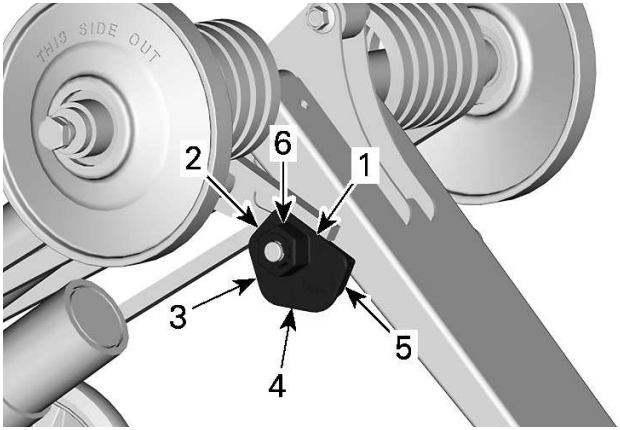
rMotion - with Quick Adjust

Turn the left side knob to adjust the spring preload.



RMOTION WITH QUICK ADJUST

1. LH side knob to adjust spring preload



CMOTION - LH SIDE SHOWN

1. *Position 1*
2. *Position 2*
3. *Position 3*
4. *Position 4*
5. *Position 5*
6. *Adjustment nut*

Front arm Adjustments (rMotion-X)

The lower pivot of the front arm can be set to2 different positions.

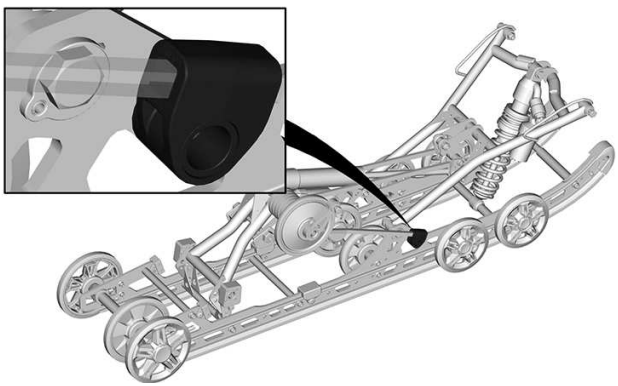
The lower pivot adjustment has an effect on the vehicle handling during acceleration.

Front arm lower pivot position	
Upper	Factory setting. Best for cornering under acceleration.
Lower	Does not keep as much pressure on skis while engine is pulling. Best for bumpy trail under acceleration.

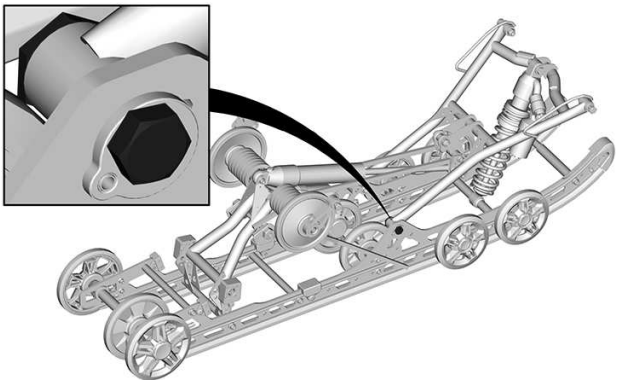
To change the front arm pivot position, process as follows:

1. Lift rear of the vehicle and support it off the ground.
2. Release the track tension. Refer to *Track tension adjustment* in *Maintenance procedures*.
3. Set rear spring preload to minimum. Refer to *rear spring*.
4. Firmly hold the spring support and remove the spring support screw.

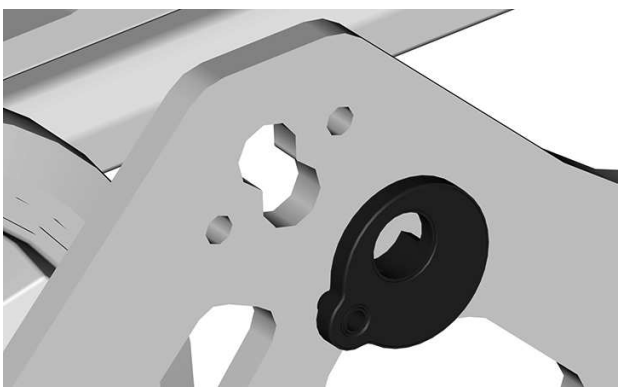
⚠ CAUTION
Spring supports are spring loaded.

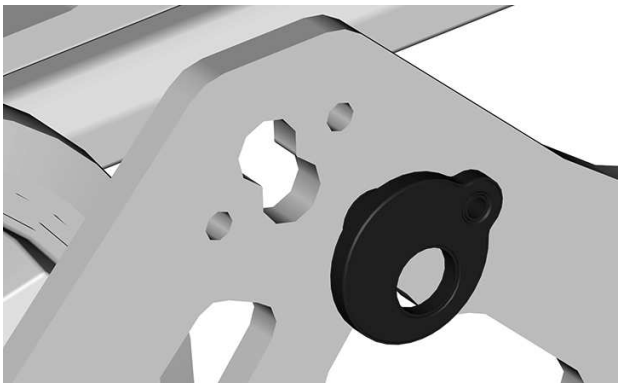


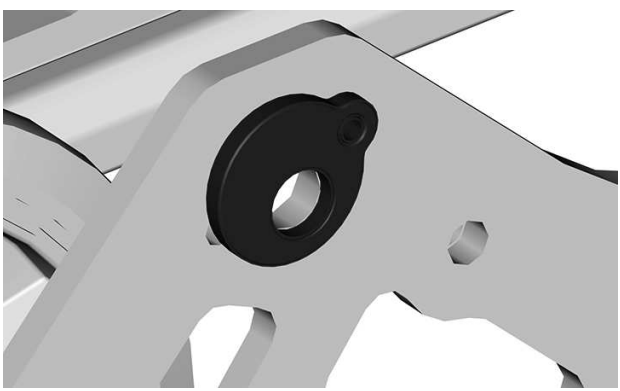
5. Remove the front arm lower screw.



6. Remove the cam, pivot 180°, reinstall in the rail.







7. Reinstall the arm with a new screw and tighten to specification.
8. Reinstall the spring support with a new nut and tighten to specification.

TIGHTENING TORQUE	
Arm pivot screw	125 ± 10 Nm (92 ± 7 lbf-ft)
Rear spring support nut	24.5 ± 3.5 Nm (18 ± 3 lbf-ft)

9. Repeat the steps for the other side.
10. Adjust the rear spring settings.
11. Adjust the track tension.

Center Shock Absorber

Center Shock Compression Damping (If Equipped)

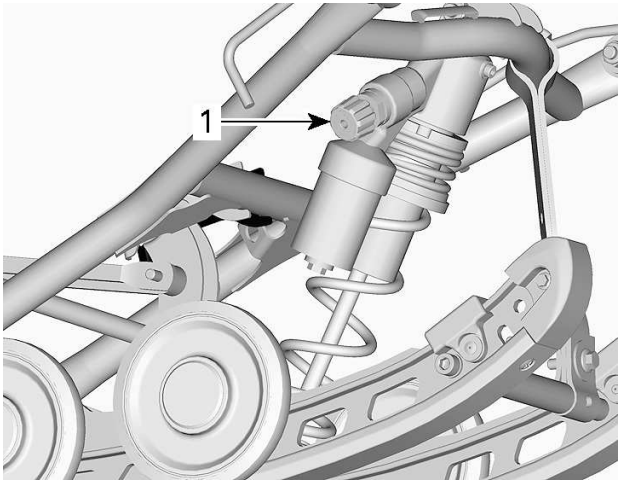
NOTE:
Both low and high speed compression damping are adjusted simultaneously.

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

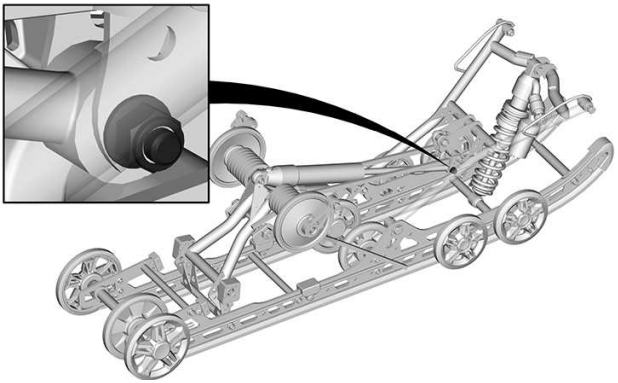
Rear Shock Position (rMotion and rMotion-X)

The lower pivot of the rear shock can be set to 2 different positions.

Rear shock lower pivot position	
Upper	Softer absorption
Lower (from factory)	Reference absorption

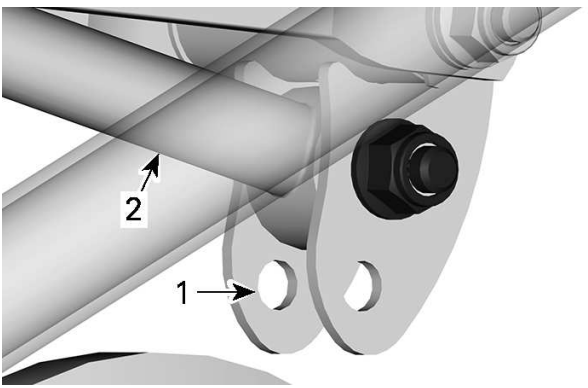
To change the shock lower pivot position, process as follows:

1. Lift rear of the vehicle and support it off the ground.
2. Remove stopper strap screw to release tension.
3. Remove the shock lower screw and nut.



NOTE:
It may be necessary to lower the vehicle and slightly compress the suspension to remove the load.

4. Align shock with the upper hole.
5. Install the screw with a new nut and tighten to specification.



1. *Lower position (from factory)*
2. *Shock absorber rod in upper position*

6. Reinstall stopper strap screw with a new nut.

TIGHTENING TORQUE	
Rear shock lower nut	24.5 ± 3.5 Nm (18 ± 3 lbf-ft)
Stopper strap nut	10 ± 2 Nm (89 ± 18 lbf-in)

7. Verify track tension and adjust if required.

Rear Shock Compression Damping (If Equipped)

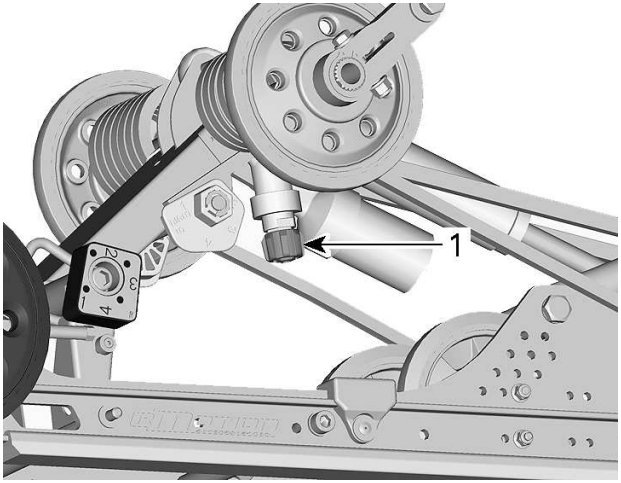
NOTE:
Both low and high speed compression damping are adjusted simultaneously.

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.

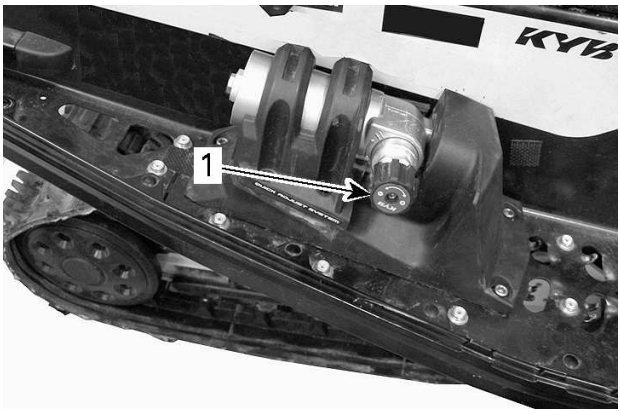


TYPICAL - RMOTION WITHOUT QUICK ADJUST

1. Compression damping adjustment button

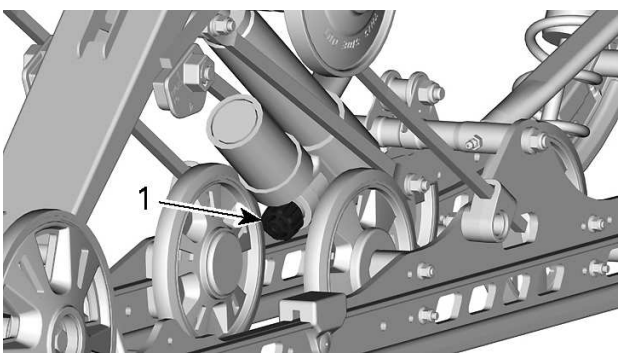
rMotion With Quick Adjust

Turn the right side knob to adjust the shock compression speed.



TYPICAL - RMOTION WITH QUICK ADJUST - RH SIDE

1. Knob to adjust low/high speed compression damping



TYPICAL - CMOTION

1. Compression damping adjustment button

Rear Shock Absorber (ACS)

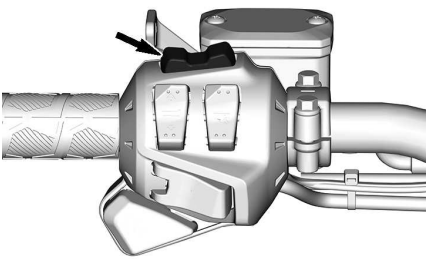
The operator can adjust the comfort and ride height by adjusting the air pressure inside the air shock absorber.

To adjust, proceed as follows:

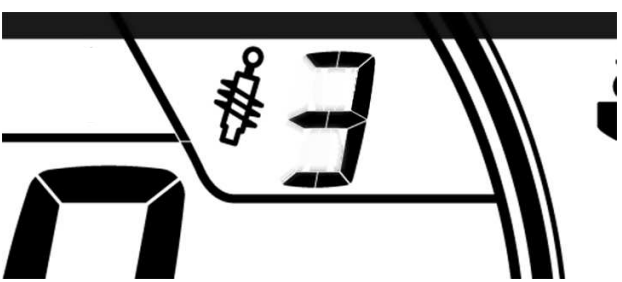
Model with 7.2“Digital Display

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.

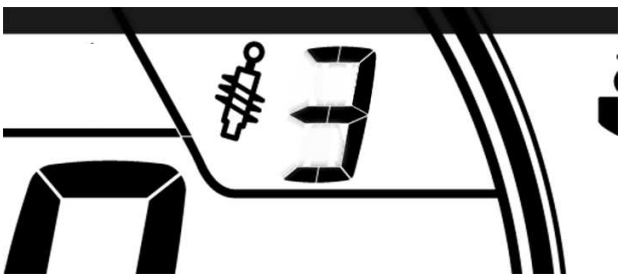


ACS SETTING 3

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

Coupling Blocks (rMotion)

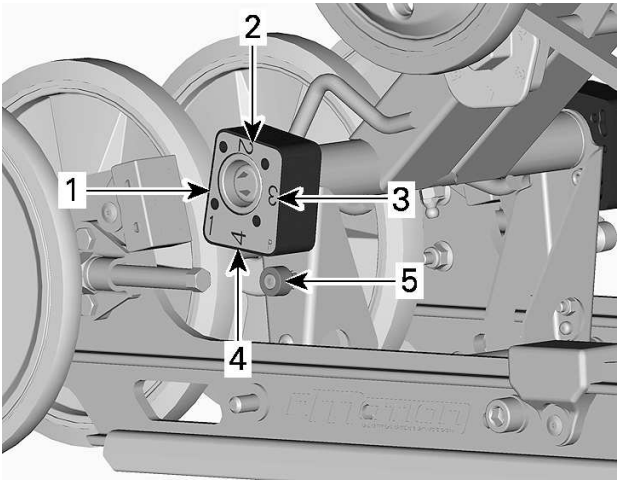
The adjustment of the coupling blocks has an effect on vehicle handling during acceleration only.

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.

Place the desired setting number towards rubber stopper. No tools required.

⚠ 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

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	– Set coupling blocks to a lower position. – Reduce rear spring preload. – Lengthen limiter strap.
Too much ski lift during cornering or acceleration	– Set coupling blocks to a higher position. – 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. – Increase compression damping adjustment if equipped.
Snowmobile seems to pivot around its center	– Reduce center spring preload. – Increase rear spring preload.

Problem	Corrective measures
	– Increase front suspension spring preload. – Shorten limiter strap.
Track spins too much at start	– Set coupling blocks to a lower position. – Lengthen limiter strap.
Ski diving in deep snow	– Install ski tip enlarger.

Smart-Shox Suspension Mode

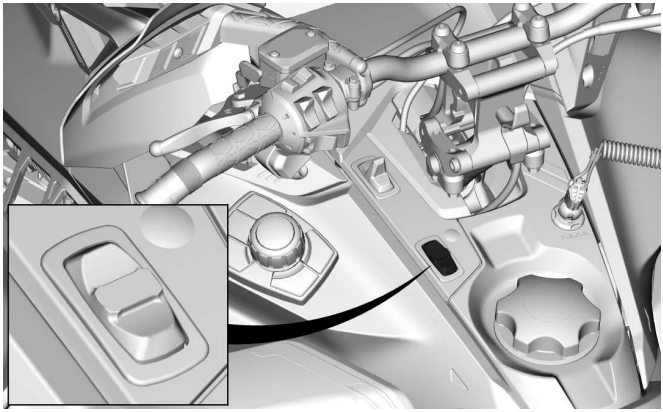
The Smart-Shox suspension is an electronic controlled compression and rebound damping system integrated in each shock absorbers.

It is possible to choose between three modes of damping. These modes set the level of damping to match the rider's preferences.

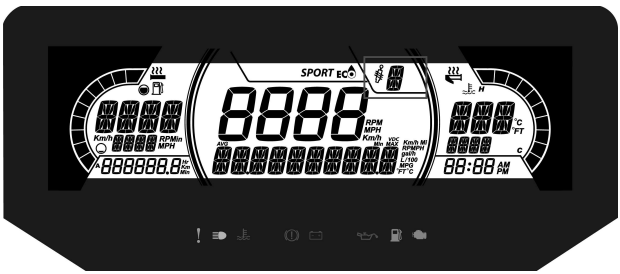
The following Smart-Shox modes are preset in the vehicle.

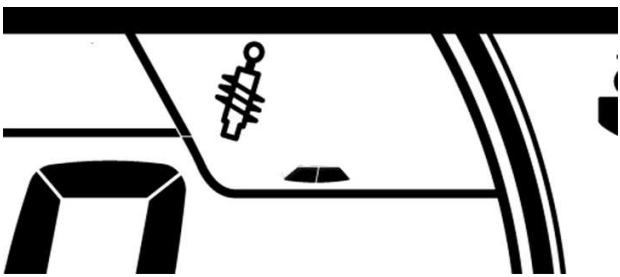
Smart-Shox Mode	
Comfort	This mode provides maximum comfort. The suspension moves freely while controlling body movement to avoid bottoming out and enhance cornering and acceleration.
Sport	This mode enhance handling and provides comfort in straight line. The suspension minimizes body movement in cornering, accelerating and braking while offering optimal calibration to face bumpy trails.
Sport+	This mode is all about performance, forget comfort. In full stiffness all the time and ready to tackle the most extreme situations.

To select the Smart-Shox mode, press top or bottom end of switch until the desired mode appears in the display.



The shock icon is blinking when changing the mode.





Check the multifunction gauge to confirm the active Smart-Shox mode.

SPORT+ MODE - 7.2" DIGITAL DISPLAY

SPORT+ MODE - LARGE PANORAMIC 7.8" DIGITAL DISPLAY

MAINTENANCE

MAINTENANCE SCHEDULE

Maintenance is very important for keeping your vehicle in safe operating condition.

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 Emission-related 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.

First inspection after the first 1 500 km (1,000 mi)
Adjust drive chain
Check chaincase oil level (if equipped)

First inspection after the first 1 500 km (1,000 mi)
Check gearbox oil level (if equipped)
Adjust and align track

Every Year at preseason or 3 000 km (2,000 mi) (Whichever Comes First)
Perform pre-ride inspection
Check fault codes
Charge battery
Adjust drive chain
Inspect track tension, adjust and align (if necessary)
Inspect brake hose, pads and disk
Check coolant density
Inspect drive belt
Inspect and clean drive pulley
Tighten drive pulley retaining screw to specified torque
Inspect and clean driven pulley
Inspect engine seals and gaskets for leaks
Lubricate rear suspension. Lubricate whenever the vehicle is used in wet conditions (rain, puddles)
Inspect exhaust system and check for leaks
Tighten exhaust manifold screws to specified torque
Inspect fuel lines and connections
Inspect front suspension

Every Year at preseason or 3 000 km (2,000 mi) (Whichever Comes First)
Inspect rear suspension (including stopper straps and slider shoes)
Inspect tie-rod ends and ski alignment
Adjust headlight beam aiming

Every 6 000 km (4,000 mi) or at pre-season (Whichever Comes First)
Change engine oil and filter

Every 2 Years or 6 000 km (4,000 mi) (Whichever Comes First)
Replace brake fluid
Replace chaincase oil (if equipped)
Replace gearbox oil (if equipped)

Every 3 Years Or 10 000 km (6,000 mi) (Whichever Comes First)
Replace spark plugs
Replace turbo exhaust gasket (on applicable models)

Every 5 Years
Replace engine coolant
Replace fuel pump outlet filter

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.

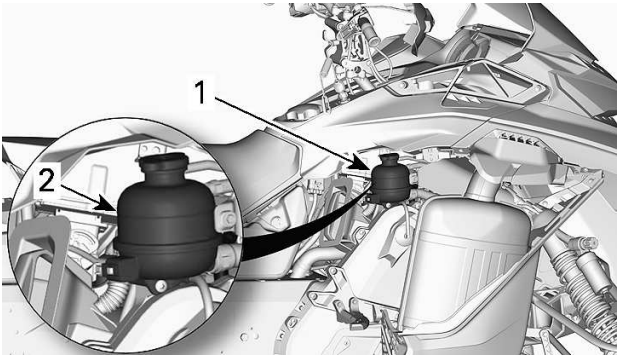
Engine Coolant Level Verification

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.

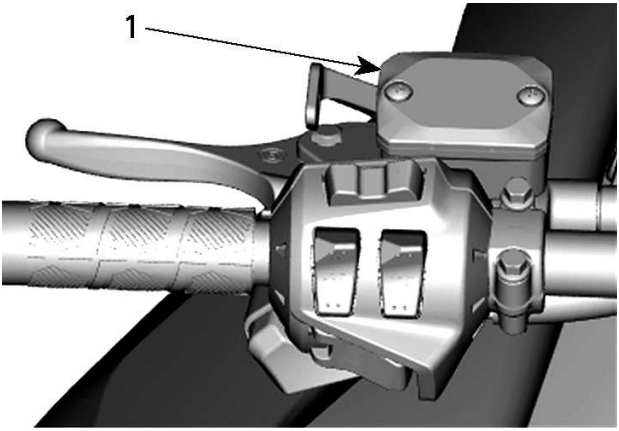
Brake Fluid

Brake Fluid Level Verification

NOTICE

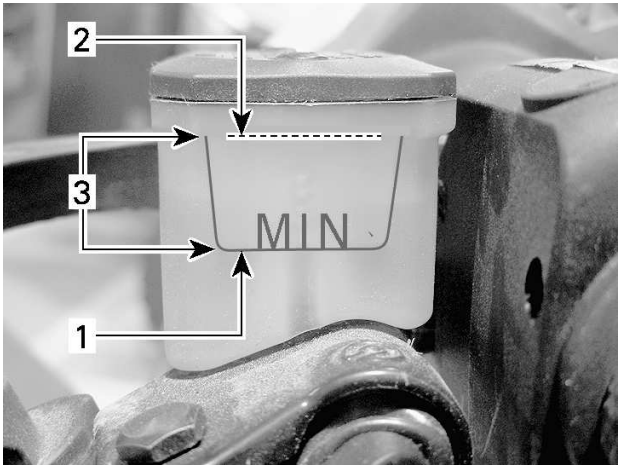
Vehicle must be on a level surface before checking any fluid levels.

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

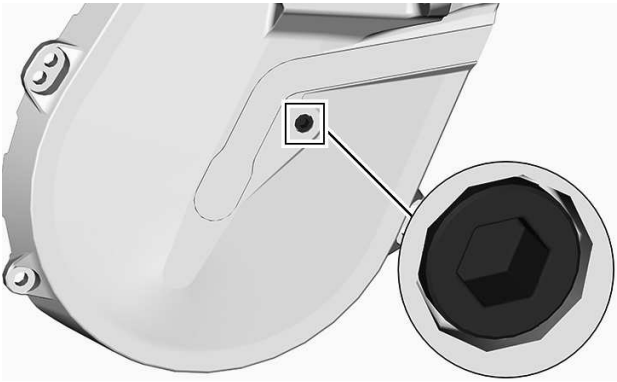
Recommended Chaincase Oil
XPS Synthetic chaincase oil
Alternative or if not available
75W140 gear oil that meets the API GL-5 specification

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.

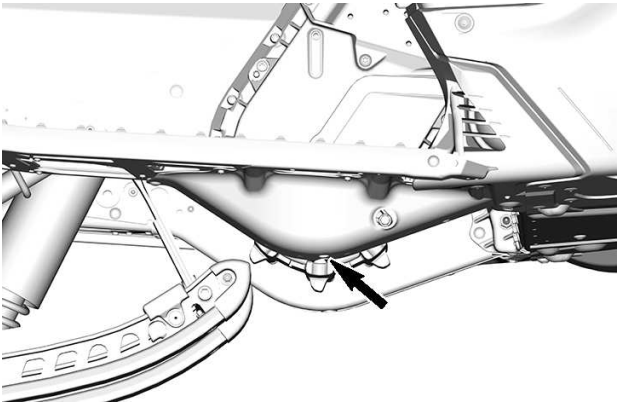
Tightening Torque	
Check plug	6 ± 1 Nm (53 ± 9 lbf-in)

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.

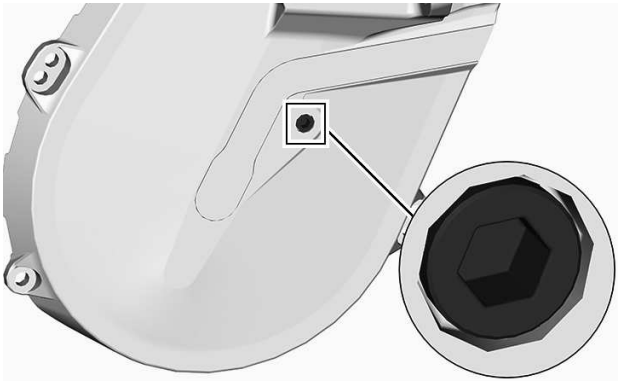


5. Wait a while to allow all oil to drain out of the chaincase.
6. Install drain plug and tighten to specification.

Tightening Torque	
Chaincase drain plug	6 ± 1 Nm (53 ± 9 lbf-in)

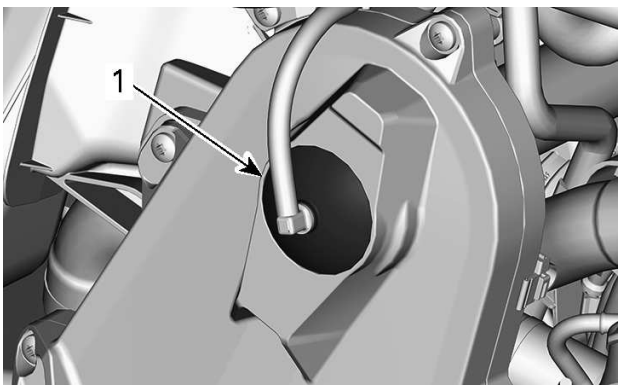
Chaincase Filling Procedure

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.

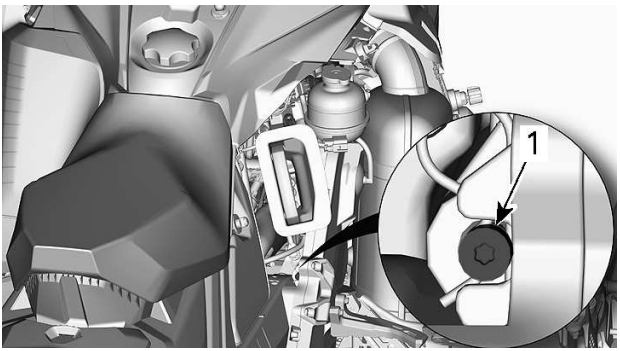
Drive Chain

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

Drive Belt Removal

1. Remove tether cord cap from engine cut-off switch.
2. Remove drive belt guard, refer to *Controls, Instruments and 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.

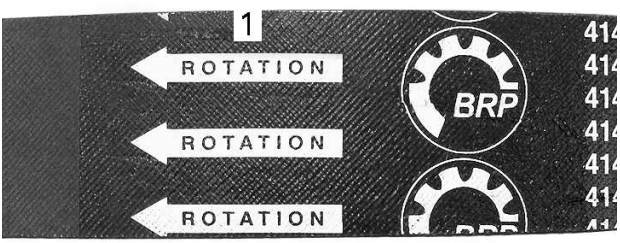
Drive Belt Installation

1. If necessary, open the driven pulley, refer to *Drive Belt Removal* 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.



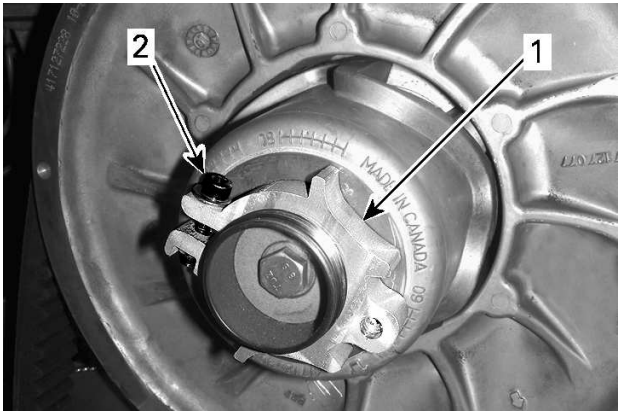
1. *To be pointed in the direction of rotation*
3. Unscrew and remove the driven pulley expander from the pulley.
4. Rotate the driven pulley several times to properly set the belt between the sheaves.
5. If a new belt was installed, an adjustment will be required for the proper belt height. Refer to *drive belt height adjustment* below.
6. Install belt guard, refer to *Controls, Instruments and Equipment.*
7. Close side panel, refer to *Controls, Instruments and Equipment.*

Drive Belt Height Adjustment

The drive belt height must be checked every time a new drive belt is installed and as part of the pre-ride inspection.

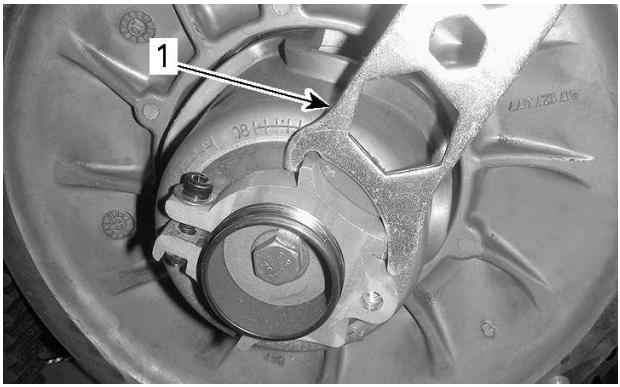
To adjust the drive belt height, proceed as follows:

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

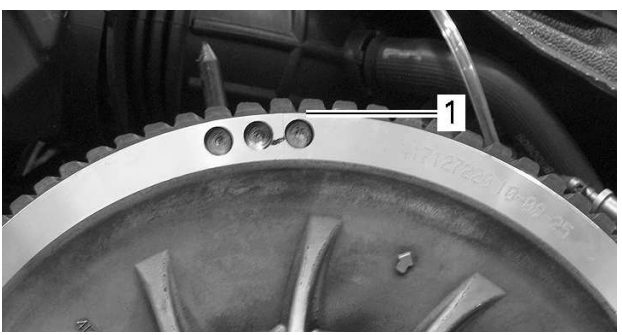
Repeat step 4 until the drive belt outer surface is even with the driven pulley edge.

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.

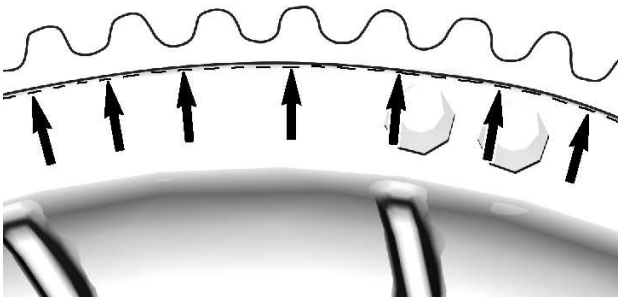


TYPICAL - PRELIMINARY SETTING

1. Lowest portion of cogs even with driven pulley external edge

850 E-TEC

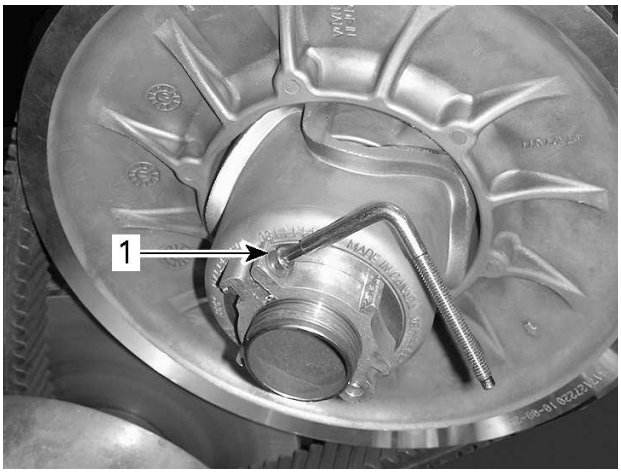
Repeat step 4 until the cord of drive belt is just hidden by the driven pulley edge.



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 (If Equipped)

⚠ 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.

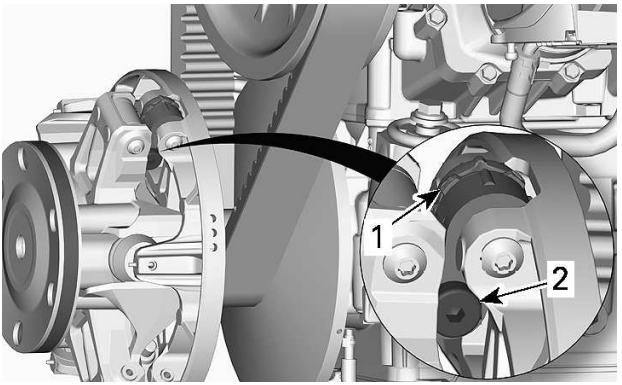
Each position modifies the maximum engine RPM by about 200 RPM.

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.

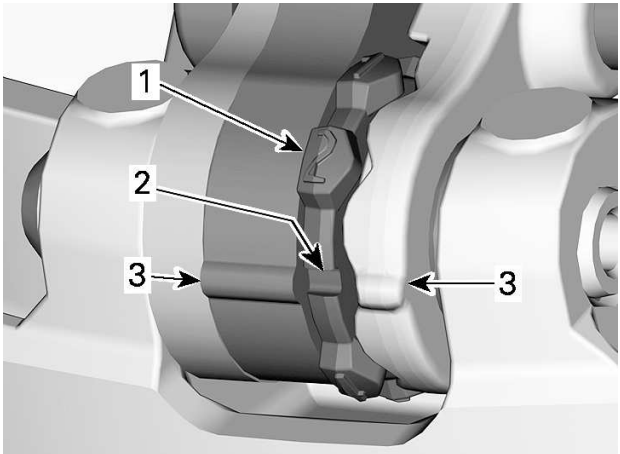


TYPICAL

1. Cam
2. Pivot screw

The cam position is identified as follows:

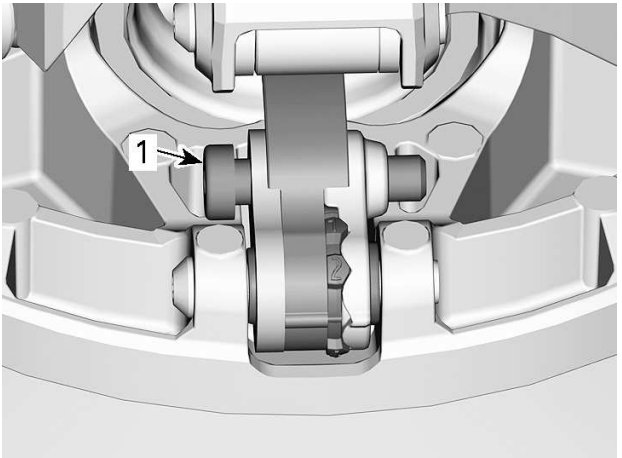
– Positions 1, 2, 4 and 5 are numbered.
– Position 3 (middle) is identified by a notch.
– There are notches on each side of the cam used as pointers.



1. *Numbered position*
2. *Position 3 - Notch*
3. *Pointers*

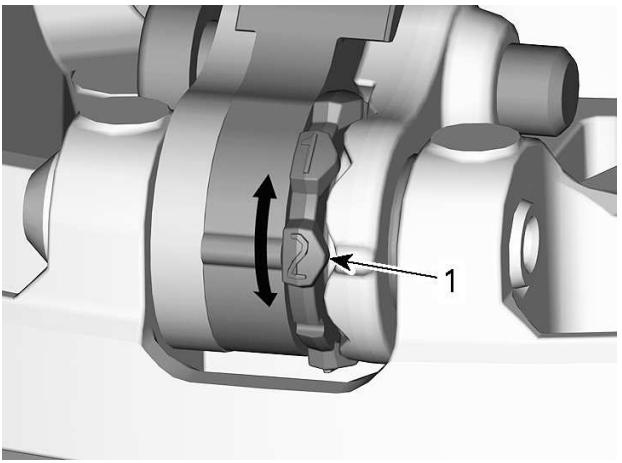
To adjust, proceed as follows for all 3 cams:

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.



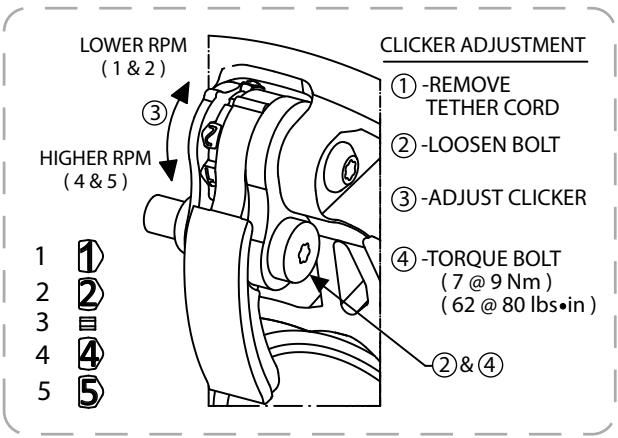
1. Desired cam position (here #2)

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.

Track Tension Verification

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)	

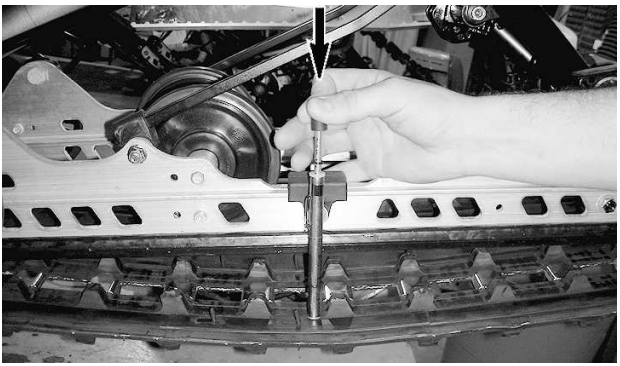
1. Set the bottom O-ring as per the *Track Deflection* from the applicable vehicle in the *Technical Specifications* table.

1. Bottom O-ring

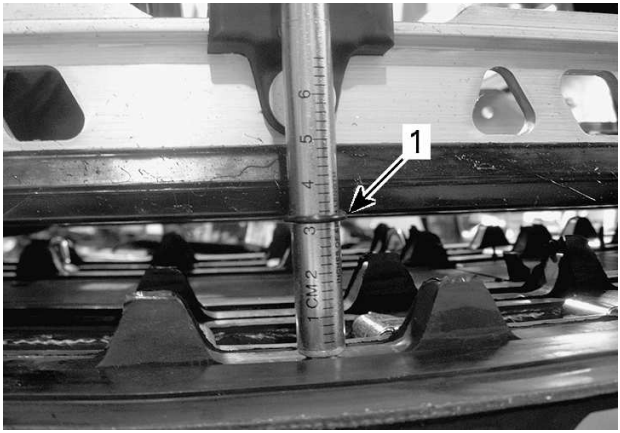
2. Place the upper O-ring to 0 kgf (0 lbf).

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

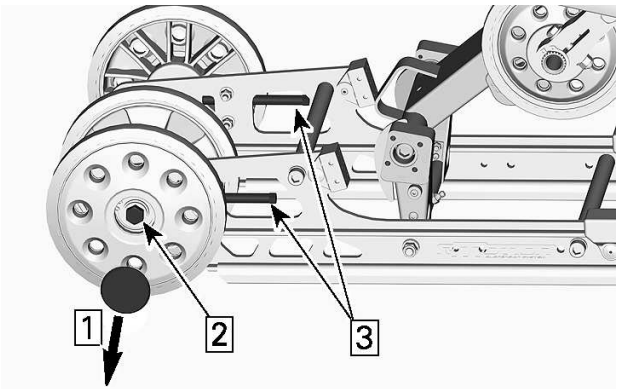
8. Load reading must be as per the track deflection in the *Technical Specifications*.
9. If load reading is not in accordance with the specification, adjust track tension. Refer to *Track Tension Adjustment*.

Track Tension Adjustment

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 screw or, on 2 idler wheel models, the rear axle nut.
4. Tighten or loosen both adjustment screws (equally) to increase or decrease track tension.



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.

Track Alignment

⚠ WARNING

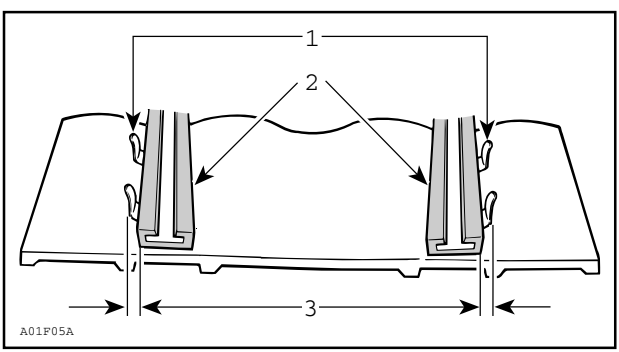
Before checking track alignment, ensure that the track is free of all particles which could be thrown out while track is rotating. Keep hands, tools, feet and clothing clear of track. Always lift the snowmobile on a wide-base stand with a rear deflector panel. Ensure no one is standing in close proximity 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

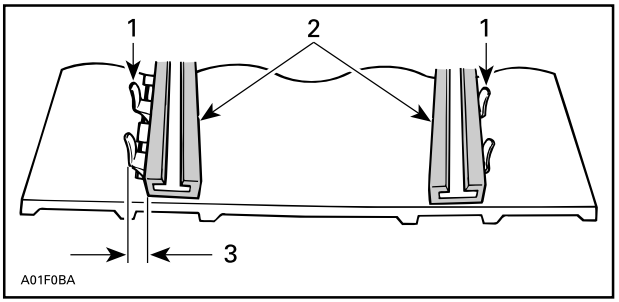
Use proper lifting techniques, notably using your legs force. Do not attempt to lift the rear of vehicle if it is above your limits.

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 idler wheel screws (M8)	24.5 ± 3.5 Nm (18 ± 3 lbf-ft)
Rear idler wheel screws (M10)	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

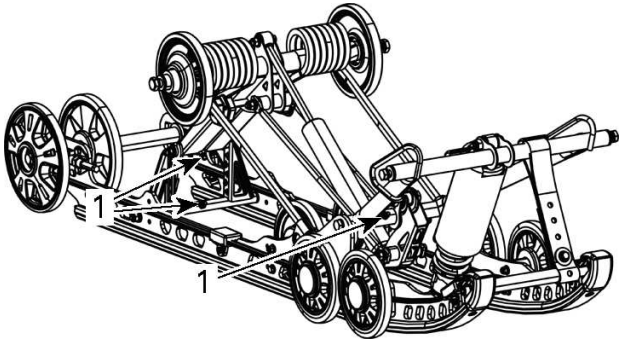
Inspect stopper straps for wear and cracks, bolt and nut for tightness. If loose inspect holes for deformation. Replace as required. Tighten nut to specification.

Tightening Torque	
Stopper strap nut	10 ± 1 Nm (89 ± 9 lbf-in)

Suspension Lubrication

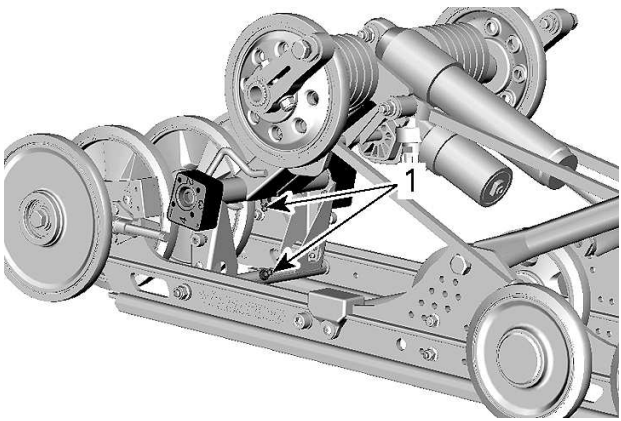
Lubricate the following suspension pivots at grease fittings. Refer to *Maintenance Schedule* for maintenance frequency.

SERVICE PRODUCT
XPS Synthetic grease suspension



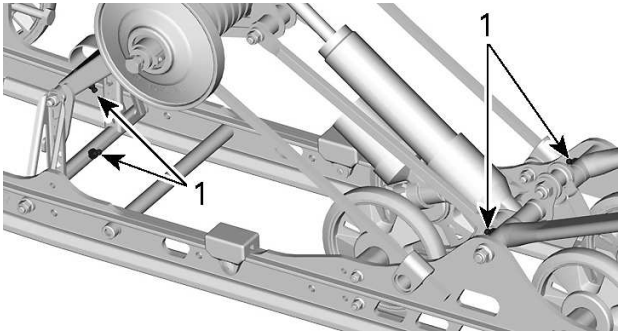
SC-5M

1. Grease fittings



RMOTION

1. Grease fitting



CMOTION

1. Grease fitting

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.

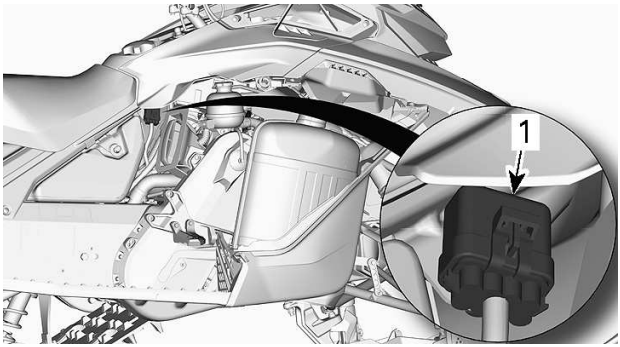
⚠ WARNING
Excessively worn skis and/or ski runners will adversely affect snowmobile control.

Fuses

Access to Fuse Block

Open RH side panel, refer to *Body and Seat*.

Fuses Location



TYPICAL

1. Fuse block

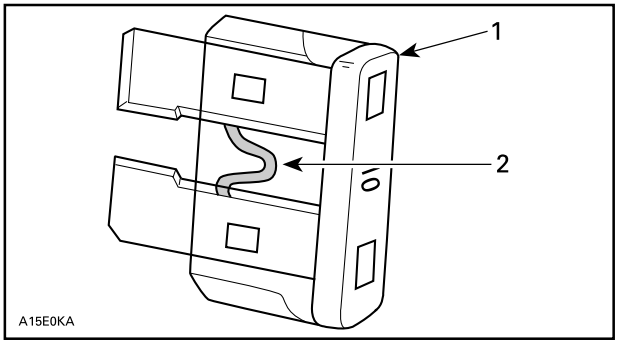
Unlock fuse block from its cover.

Refer to *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.

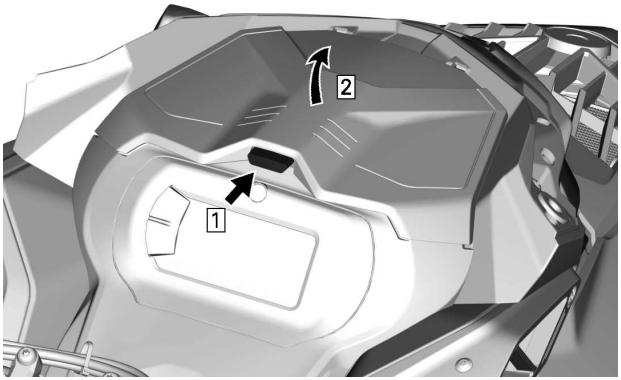
⚠ WARNING

If fuse has burnt out, source of malfunction should be determined and corrected before restarting. See an authorized BRP snowmobile dealer for servicing.

Headlights

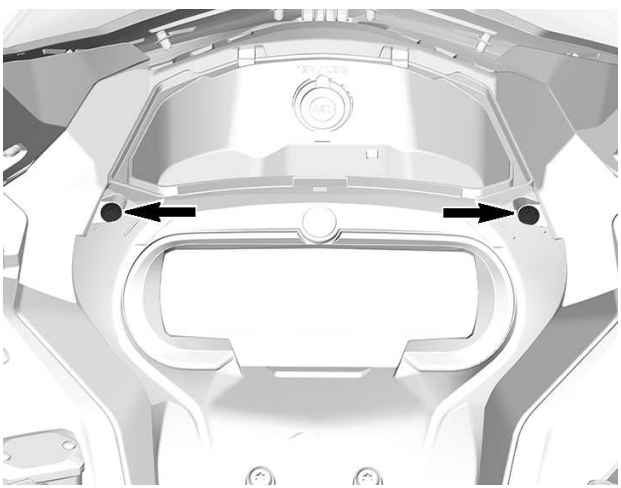
Headlights Bulb Replacement

1. Remove the windshield.
2. Open the storage compartment.

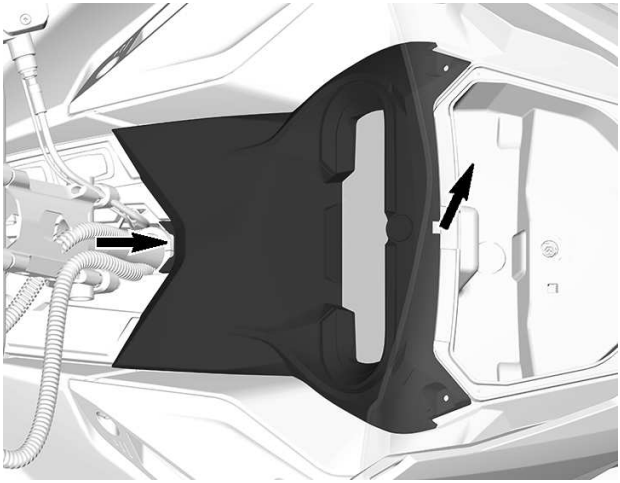


TYPICAL

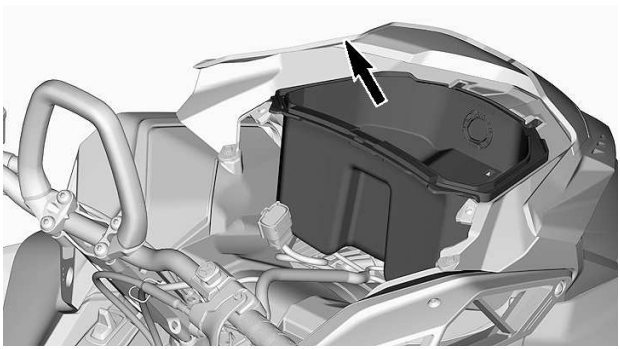
3. Remove the gauge support retaining screws.



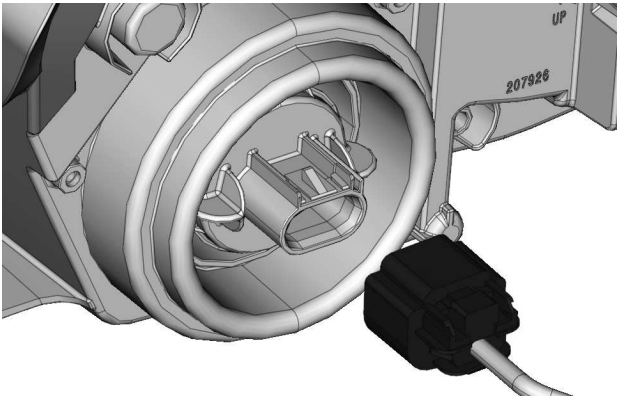
4. Lift the front of the gauge support, then slide it forward to remove it.



5. Set gauge support aside.
6. Remove the storage compartment.

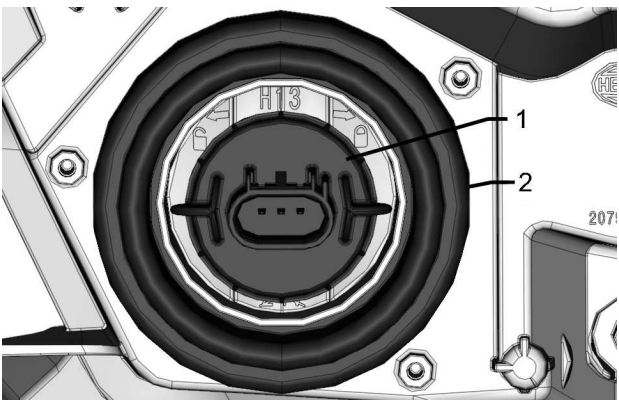


7. Disconnect 12V power outlet connectors to remove (if equipped).
8. Disconnect bulb connector.



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.

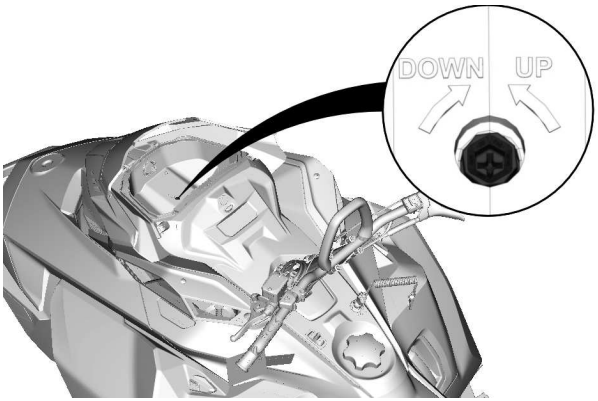
Check headlights operation.

Headlights Beam Aiming

Open the storage compartment.

TYPICAL

Turn the adjustment screw to reach desired beam height.



Battery

⚠ WARNING

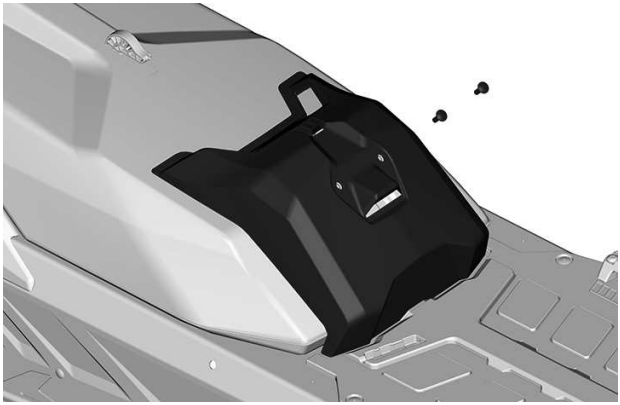
Never charge or boost the battery while it is installed on the vehicle.

Removing the Battery

NOTICE

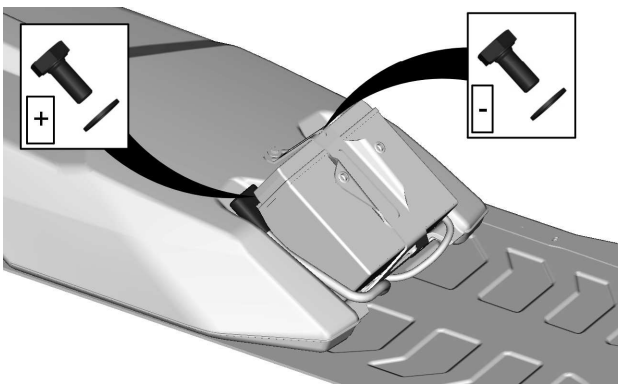
Battery BLACK (–) cable must always be disconnected first and connected last.

1. Remove the seat.
2. Remove the battery cover.

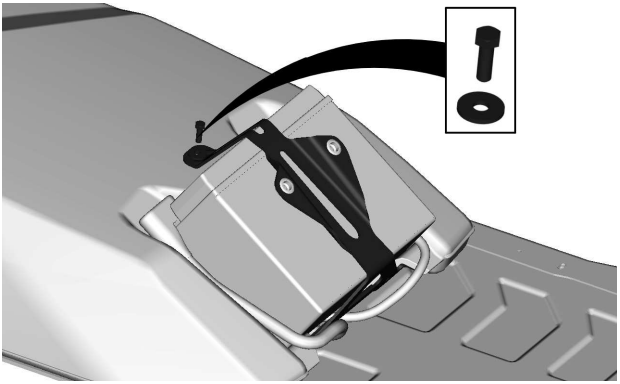


TYPICAL

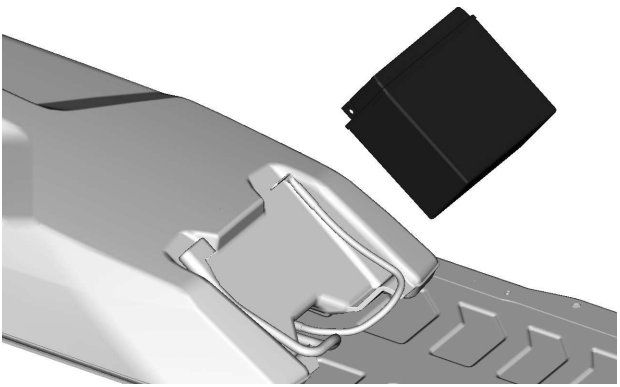
3. Disconnect the negative terminal first, then the positive terminal.



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)

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.

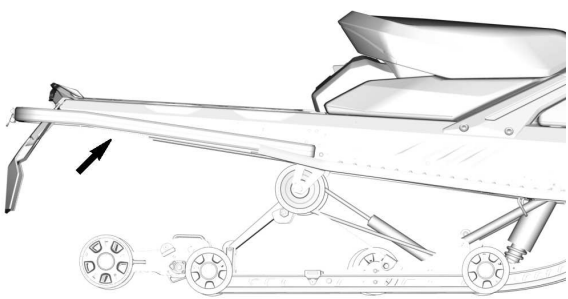
Engine Storage Procedure

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

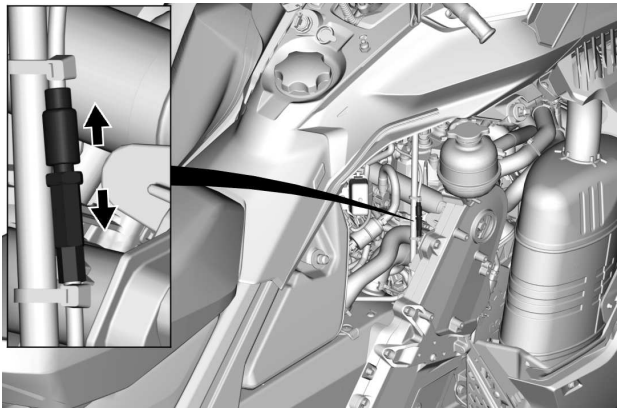
600 EFI Engine

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.

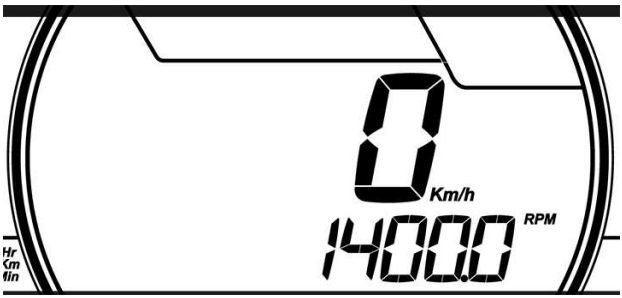
Tightening torque	
Spark plug	28 ± 2 Nm (21 ± 1 lbf-ft)

E-TEC Engine - 4.5" and 7.2" Digital Display

Follow these simple steps.

To engage the procedure, do the following:

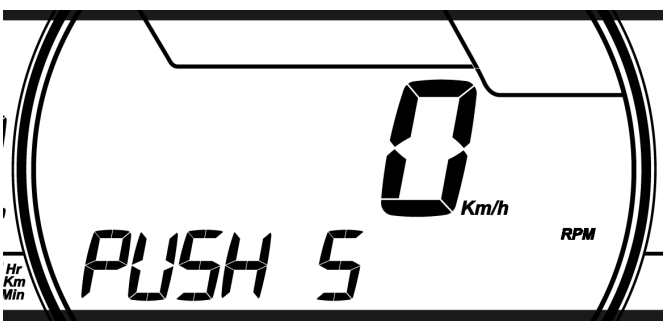
1. Place the vehicle in a well ventilated area.
2. Start the engine and let it run at idle speed until it reaches its operating temperature (watch the coolant temperature on the display or verify the rear heat exchanger becomes warm).
3. Push the SET (S) button to select odometer mode.



TYPICAL

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

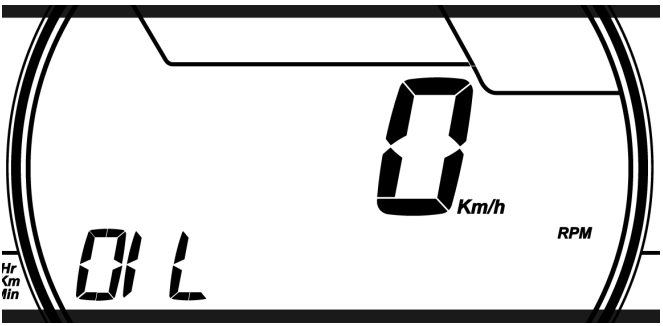
4. Repeatedly depress the HI/LOW beam switch rapidly, then, **while doing this**, press and hold the **SET button** until PUSH "S" appears on the display.



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

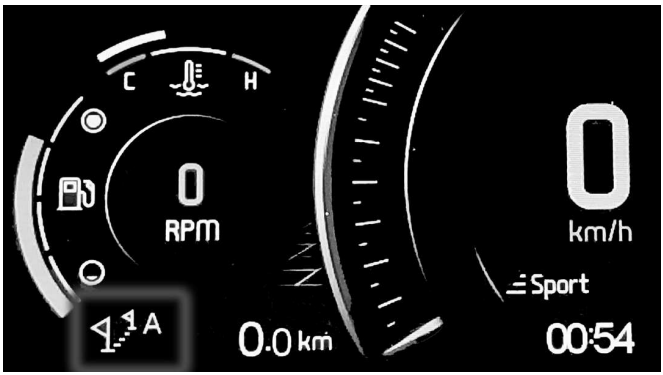
Do not start the engine during storage period.

E-TEC Engine - Large Panoramic 7.8" Wide LCD Display

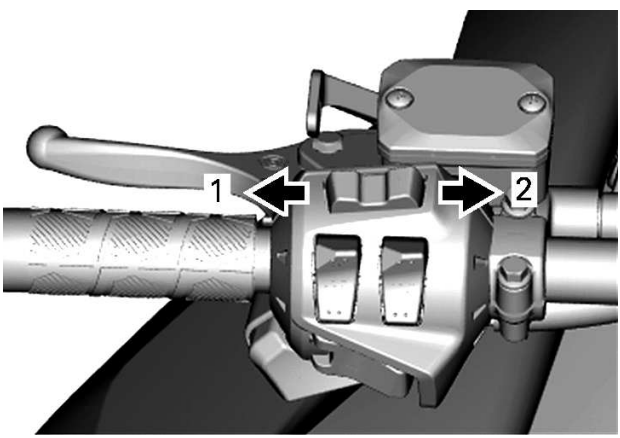
Follow these simple steps.

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.

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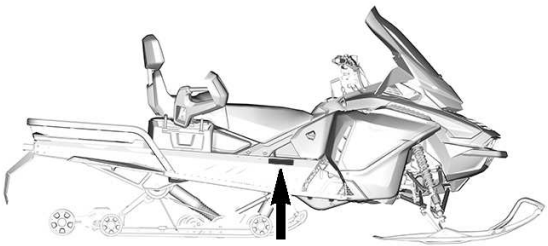
TECHNICAL INFORMATION

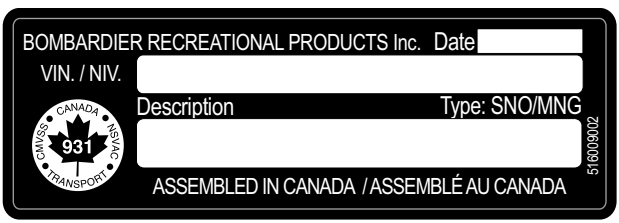
VEHICLE IDENTIFICATION

Vehicle Description Decal

Vehicle description decal is located on right hand side of tunnel.



TYPICAL



VEHICLE ASSEMBLED IN CANADA

VEHICLE ASSEMBLED IN FINLAND

Identification Numbers

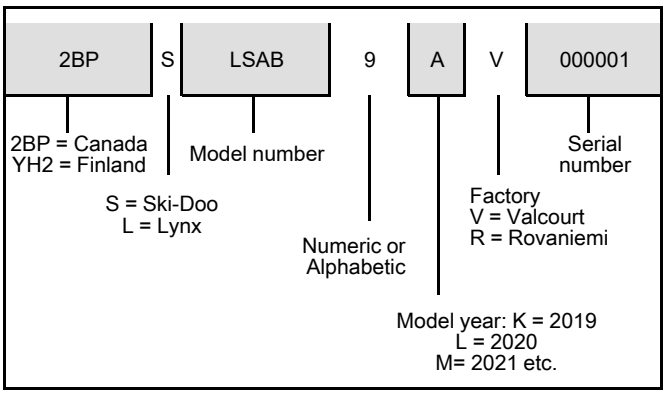
The main components of your snowmobile (engine and frame) are identified by different identification numbers. It may sometimes become necessary to locate these numbers for warranty purposes or to trace your snowmobile in the event of loss. These numbers are required by the authorized BRP snowmobile dealer 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.

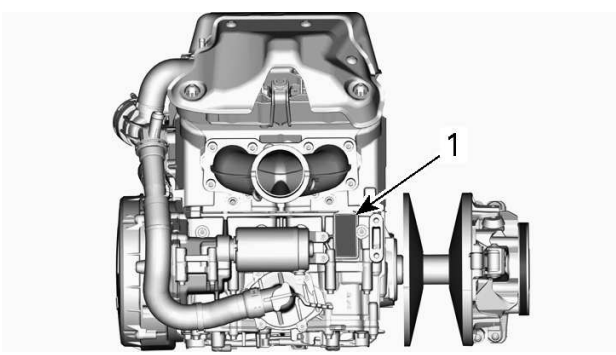
Vehicle Identification Number (VIN)

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.



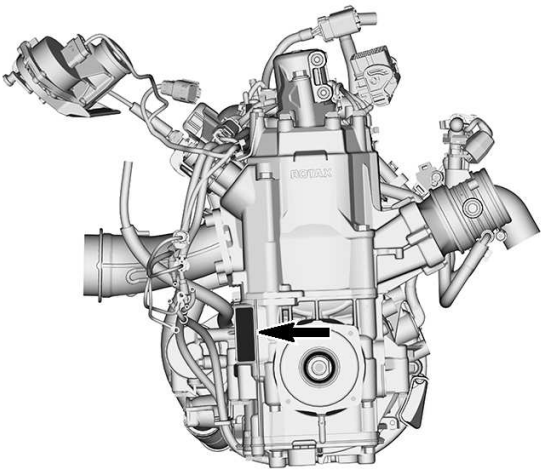
Engine Identification Number Location



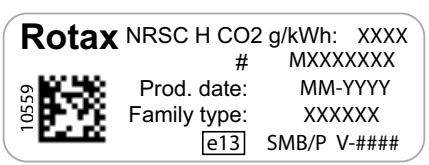
1. Engine identification number

REGULATION (EU) 2016/1628 APPLICABLE FOR NON-ROAD MOBILE MACHINERIES

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

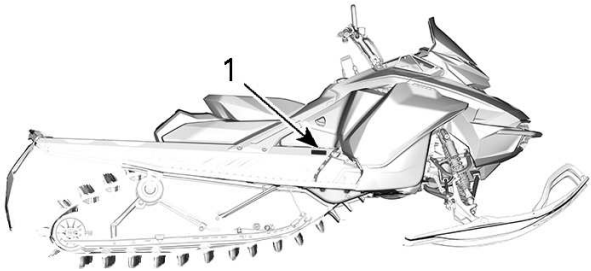


TYPICAL



TYPICAL - NRMM IDENTIFICATION LABEL

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



TYPICAL

1. NRMM label

NRMM IDENTIFICATION ON VEHICLE

COMPLIANCE LABELS

EPA Compliance Label

EMISSION CONTROL INFORMATION

THIS VEHICLE IS CERTIFIED TO OPERATE ON UNLEADED GASOLINE AND MEETS XXXX U.S. EPA REGULATIONS FOR SNOWMOBILE SI ENGINES.

EC 121

ENGINE FAMILY	XXXXXXXXXXXX	FAMILLE DE MOTEUR
PERMEATION FAMILY	XXXXXXXXXXXX	FAMILLE DE PERMÉATION
FEL	XX g/kW-hr HC XXX g/kW-hr CO X.X g/ m2 / day	LIMITE DES ÉMISSIONS DES FAMILLES
ENGINE DISPLACEMENT	XXX cm^3	CYLINDRÉE
EXHAUST EMISSION CONTROL SYSTEM	XXXX	SYSTÈME DE CONTRÔLE DES ÉMISSIONS

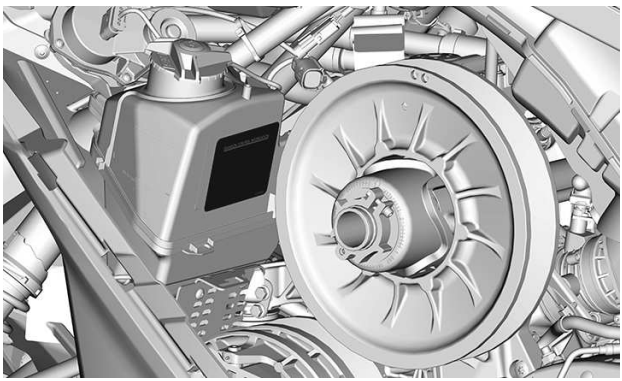
RENSEIGNEMENTS SUR LE DISPOSITIF ANTIPOLLUTION

CE VÉHICULE EST CERTIFIÉ POUR FONCTIONNER À L'ESSENCE SANS PLOMB ET IL RÉPOND AUX NORMES XXXX DE L'EPA DES É.-U. POUR LES MOTONEIGES À MOTEUR SI.

SEE OPERATOR'S GUIDE FOR MAINTENANCE SPECIFICATIONS
VOIR GUIDE DU CONDUCTEUR POUR LES SPÉCIFICATIONS D'ENTRETIENS

BOMBARDIER RECREATIONAL PRODUCTS INC. 6865

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.

CE MODÈLE A ÉTÉ ÉVALUÉ PAR UN LABORATOIRE D'ESSAIS INDÉPENDANT ET SATISFAIT TOUTES LES NORMES DE SÉCURITÉ DU SSCC EN VIGUEUR À LA DATE DE FABRICATION.

PARRAINÉ PAR LE COMITÉ DE SÉCURITÉ DE CERTIFICATION DE LA MOTONEIGE, INC.

CERTIFIED

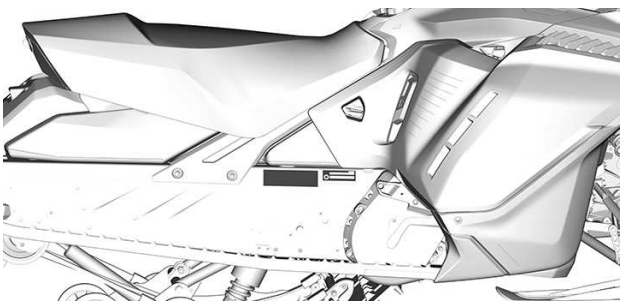
CERTIFIÉ

THIS MODEL HAS BEEN EVALUATED BY AN INDEPENDENT TESTING LABORATORY AND IT MEETS ALL SSCC SAFETY STANDARDS IN EFFECT ON THE DATE OF ITS MANUFACTURE.

SPONSORED BY THE SNOWMOBILE SAFETY AND CERTIFICATION COMMITTEE, INC.

A00A1MA

LABEL 2



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 **2022 Snowmobiles** marked with the CE mark and a 17-character vehicle identification number (VIN) structured as **2BPSxxxxxNVxxxxxx** or **YH2SxxxxxNRxxxxxx** 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 (Mar 22, 2021 09:27 EDT)

Mar 26, 2021

Dominic Tessier, Eng.
Director, Vehicle Engineering, Ski-Doo
Bombardier Recreational Products Inc.

Valcourt, QC, Canada

March 22nd, 2021

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 **2022 Snowmobile** marked with the UK CA mark and a 17-character vehicle identification number (VIN) structured as **2BPSxxxxxNVxxxxxx** or **YH2SxxxxxNRxxxxxx** 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 (Mar 26, 2021 08:07 EDT)

Mar 26, 2021

Dominic Tessier, Eng.
Director, Vehicle Engineering, Ski-Doo
Bombardier Recreational Products Inc.

Valcourt, QC, Canada

February 26th, 2021

ski-doo LYNX SEA-DOO EVINRUDE ROTAX can-am

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mark where applicable

EPA CERTIFIED ENGINES

Engine Emissions Information

Manufacturer's Responsibility

Beginning with **2007 model year engines**, 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

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

TECHNICAL SPECIFICATIONS

Engine

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 cm^3 (51.81 in^3)
Maximum power engine speed	7900 ± 100 RPM

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 (2.85 in)
Stroke	73 mm (2.87 in)
Displacement	599.4 cm^3 (36.6 in^3)
Maximum power engine speed	8100 ± 100 RPM

ENGINE	600 EFI
Engine type	Rotax 600 EFI liquid cooled with reed valves
Number of cylinder	2
Bore	72.3 mm (2.85 in)

ENGINE	600 EFI
Stroke	73 mm (2.87 in)
Displacement	599.4 cm³ (36.6 in³)
Maximum power engine speed	7500 ± 100 RPM

FUEL SYSTEM		
Fuel delivery	850 E-TEC	E-TEC direct injection with integrated auxiliary injection system
	600R E-TEC	E-TEC direct injection
	600 EFI	Throttle body injection
Idle speed (not adjustable)	600 EFI	1500 ± 200 RPM
	600R E-TEC 850 E-TEC	1200 ± 200 RPM

ELECTRICAL SYSTEM			
Lighting system output			30 A @ 14.5 V 1340 W @ 6000 RPM
Spark plug	Type	600 EFI	BPR8ES
		600R E-TEC 850 E-TEC	NGK ILKR8Q7 (engine and spark plug threads are indexed)
	Qty		2
	Gap[1]		Not adjustable 0.6 to 0.7 mm (.024 to .028 in)

LUBRICATION SYSTEM			
Oil injection pump type		600 EFI	Mechanical oil injection pump
		600R E-TEC 850 E-TEC	Electronic oil injection pump
Injection oil	Type(2)	600 EFI	2T Synthetic Blend oil (semi-synthetic)
		600R E-TEC 850 E-TEC	2T E-TEC Synthetic oil (full synthetic)
	Quantity		3.4 l (3.6 qt(liq.,US))

Vehicle

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(liq.,US))

ELECTRICAL SYSTEM – Models with 600 EFI Egine	
Battery	12 V, 18 A•h
Headlamp	2 x 60/55 W (H-13)
Taillight and stoplight	2.6 W / 139 mW LED

ELECTRICAL SYSTEM – Models with 600 EFI Egine			
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	–

ELECTRICAL SYSTEM – Renegade Enduro			
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
	F6	ACS	15 A
Relays	RY1	Main	–

ELECTRICAL SYSTEM – Models with Smart-Shox			
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
	F6	ACS	15 A
Relays	RY1	Main	–

ELECTRICAL SYSTEM – Models with Electric Start Except Smart-Shox, Renegade Enduro and 600 EFI Engine			
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 – Backcountry X 850 E-TEC and X-RS 850 E-TEC with SHOT 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	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		Renegade X 600R E-TEC, Backcountry 850 E-TEC, Backcountry X - 1.6" profile track, Backcountry X-RS 146" - 1.6" profile track	21/45
		MXZ Sport, MXZ TNT 600R E-TEC,	23/45

DRIVE SYSTEM - CHAINCASE		
	MXZ X 600R E-TEC - 1.25" profile track, MXZ X-RS 600R E-TEC - 1.25" profile track, Renegade Sport 600 EFI, Renegade Adrenaline 600R E-TEC, Renegade Enduro 600R E-TEC, Renegade X 600R E-TEC - 1.25" profile track, Renegade X-RS 850 E-TEC - EUR	
Chain drive ratio	MXZ X 850 E-TEC - 1.5" profile track, MXZ X-RS 850 E-TEC, Renegade Adrenaline 850 E-TEC, Renegade Enduro 850 E-TEC, Renegade X 850 E-TEC, Renegade X-RS 850 E-TEC - CAN/ USA	25/45
	MXZ TNT 850 E-TEC, MXZ X 850 E-TEC - 1.25" profile track	27/45

DRIVE SYSTEM - CHAINCASE		
	Backcountry X-RS 154" - 2.5" profile track, Renegade Sport 600R E-TEC	21/51
	Backcountry Sport, Backcountry 600R E-TEC, Backcountry X - 2.0" profile track, Backcountry X-RS 146"/154" - 2.0" profile track	23/51
	MXZ X 600R E-TEC - 1.5" profile track, MXZ X-RS 600R E-TEC - 1.5" profile track Renegade X-RS COMP 600R E-TEC - EUR	25/51
	Renegade X-RS COMP 600R E-TEC - CAN/USA	25/49

DRIVE SYSTEM - PULLEYS			
Drive pulley	Type	600 EFI	pDrive LC
		600R E-TEC 850 E-TEC	pDrive with clickers
	Engage-ment RPM	Backcountry 850 E-TEC	3300 ± 100 RPM

DRIVE SYSTEM - PULLEYS			
		All other 850 E-TEC, 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	MXZ Series, Renegade Series, Backcountry	38 cm (15 in)
		Backcountry Sport 600 EFI, Backcountry X Backcountry X-RS	38 cm (15 in) or 406 mm (16 in)
	Length	MXZ Series	326.9 cm (129 in)
		Renegade Series	348.7 cm (137 in)
		Backcountry Sport, Backcountry, Backcountry X	370.8 cm (146 in)
		Backcountry X-RS	370.8 cm (146 in) or 391.2 cm (154 in)
	Profile height	MXZ X, MXZ X-RS, Renegade X Renegade X RS	31.8 mm (1.25 in) or 38 mm (1.5 in)
		MXZ Sport, MXZ TNT,	31.8 mm (1.25 in)

DRIVE SYSTEM - TRACK			
		Renegade Adrenaline, Renegade Enduro, Renegade Sport	
		Backcountry Sport	34.3 mm (1.35 in) or 50 mm (2 in)
		Backcountry	40.6 mm (1.6 in)
		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		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 40mm)
Brake pad material		Organic
Minimum brake pad thickness (includes backing plate)		5.0 mm (.197 in)

BRAKE SYSTEM	
Minimum brake disc thickness	4.5 mm (.177 in)
Maximum brake disc warpage	0.25 mm (.010 in)

FRONT SUSPENSION		
Suspension type	MXZ TNT, MXZ X, MXZ X-RS, Renegade Adrenaline, Renegade Enduro, Renegade X, Renegade X-RS	RAS X
	All others	RAS 3
Suspension maximum travel	MXZ Sport, Renegade Sport, Backcountry Series	220 mm (8.7 in)
	MXZ TNT, Renegade Enduro,	235 mm (9.3 in)
	MXZ X, Renegade Adrenaline, Renegade X	243 mm (9.6 in)
	MXZ X-RS, Renegade X-RS	265 mm (10.4 in)
Shock absorber type	MXZ Sport, Renegade Sport, Backcountry Sport	Motion Control

FRONT SUSPENSION		
	Backcountry X-RS	KYB Pro 36 R EA
	MXZ X-RS, Renegade X-RS 850 E-TEC	KYB Pro 36 EA or Smart-Shox
	Renegade X-RS Competition 600R E-TEC	KYB Pro 40 R EA
	All others	HPG Plus

REAR SUSPENSION		
Suspension type	MXZ Sport, Renegade Sport	SC-5M
	MXZ TNT, MXZ X, MXZ X-RS, Renegade Adrenaline Renegade Enduro Renegade X, Renegade X-RS	rMotion-X
	Backcountry Series	cMotion
Suspension maximum travel Measured at rear arm	MXZ Sport Renegade Sport	245 mm (9.6 in)
	Renegade Enduro	276 mm (10.9 in)
	MXZ TNT,	272 mm (10.7 in)

REAR SUSPENSION		
	MXZ X, MXZ X-RS, Renegade Adrenaline, Renegade X, Renegade X-RS	292 mm (11.5 in)
	Backcountry Series	239 mm (9.4 in)
Shock absorber type (Center)	MXZ Sport, Renegade Sport, Backcountry Sport	Motion Control
	MXZ TNT, Renegade Adrenaline, Renegade Enduro, Backcountry	HPG
	MXZ X, Renegade X, Backcountry X	HPG Plus
	MXZ X-RS Renegade X-RS, Backcountry X-RS	KYB PRO 40 EA
Shock absorber type (Rear)	MXZ Sport	Motion Control
	MXZ TNT, Renegade Sport, Renegade Adrenaline, Backcountry Sport, Backcountry	HPG

REAR SUSPENSION		
	MXZ X, Renegade X, Backcountry X	KYB PRO 36 EA
	Backcountry X-RS	KYB PRO 40 EA
	MXZ X-RS, Renegade X-RS,	KYB PRO 40 EA or Smart-Shox
	Renegade Enduro	ACS (Air Controlled Suspension)
ACS pneumatic pressure range	Renegade Enduro	0.35 to 6.9 bar (5 to 100 lbf/in²)

WEIGHT AND DIMENSIONS		
Mass (dry)	MXZ Sport	198 kg (437 lb)
	MXZ X 600R E-TEC	210 kg (462 lb)
	MXZ TNT 600R E-TEC	209 kg (460 lb)
	MXZ X 850 E-TEC	216 kg (476 lb)
	MXZ TNT 850 E-TEC	216 kg (475 lb)
	MXZ X-RS 600R E-TEC	216 kg (476 lb)
	MXZ X-RS 850 E-TEC	222 kg (490 lb)
	Backcountry Sport	202 kg (446 lb)
	Backcountry X 850 E-TEC	209 kg (462 lb)

WEIGHT AND DIMENSIONS		
	Backcountry 600R E-TEC	212 kg (466 lb)
	Backcountry X-RS (146 in)	214 kg (472 lb)
	Backcountry 850 E-TEC	219 kg (483 lb)
	Backcountry X-RS (154 in)	220 kg (485 lb)
Mass (dry) (cont'd)	Renegade Sport	200 kg (442 lb)
	Renegade X 600R E-TEC Renegade Adrenaline 600R E-TEC	214 kg (470 lb)
	Renegade X 850 E-TEC Renegade Adrenaline 850 E-TEC	221 kg (486 lb)
	Renegade X-RS 850 E-TEC	225 kg (495 lb)
	Renegade X-RS 850 E-TEC Competition Pkg	213 kg (468 lb)
	Renegade Enduro 600R E-TEC	229 kg (504 lb)
	Renegade Enduro 850 E-TEC	236 kg (519 lb)

WEIGHT AND DIMENSIONS		
Overall length	MXZ Series	292.5 cm (115.2 in)
	Renegade Series	303.8 cm (119.6 in)
	Backcountry Sport, Backcountry, Backcountry X, Backcountry X-RS (146 in)	317.4 cm (125 in)
	Backcountry X-RS (154 in)	328.4 cm (129.3 in)
Overall width	MXZ Sport, MXZ TNT, Renegade Sport, Renegade Adrenaline, Renegade Enduro	121.7 cm (47.9 in)
	MXZ X, MXZ X-RS, Renegade X, Renegade X-RS	120.9 cm (47.6 in) to 125.5 cm (49.4 in)
	Backcountry Series	114 cm (44.9 in) to 118 cm (46.5 in)
Overall height	MXZ Series Renegade Sport, Renegade Adrenaline, Renegade X Renegade X-RS	126.7 cm (49.9 in)
	Backcountry Series	128.3 cm (50.5 in)

WEIGHT AND DIMENSIONS		
	Renegade Enduro	133.1 cm (52.4 in)
Ski stance	MXZ Sport, MXZ TNT, Renegade Adrenaline, Renegade Enduro Renegade Sport	107.7 cm (42.4 in)
	MXZ X, MXZ X-RS Renegade X Renegade X-RS	106.9 cm (42.1 in) or 1092 cm (43 in) or 111.5 cm (43.9 in)
	Backcountry Series	97.5 cm (38.4 in) or 102 cm (40.2 in)

(1) NOTICE Do not attempt to adjust gap on this spark plug.

(2) Refer to *Engine Oil* for detailed information.

(3) Measure gap between slider shoe and bottom inside track when exerting a downward pull to the track.

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

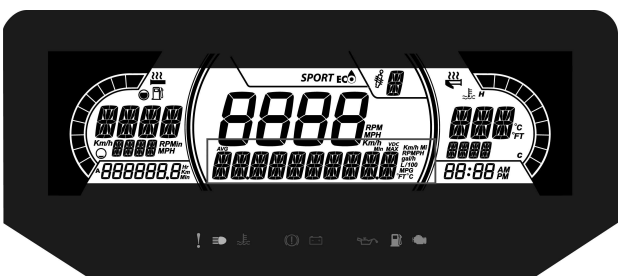
Pilot Lamps, Messages and Beeper Codes

Gauge pilot lamp(s) will inform you if an anomaly occurs or to inform you of a particular condition.

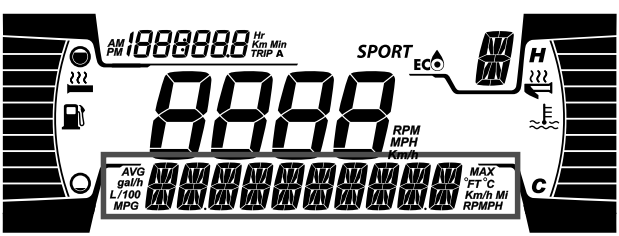
TYPICAL — PILOT LAMPS

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.

To read any active fault code, press and hold MODE (M) Button and simultaneously depress the HI/LOW beam switch repeatedly several times.

If two or more codes are registered, use SET (S) or MODE (M) to scroll.

To exit the fault codes mode, press and hold MODE (M) button.

Contact an authorized BRP snowmobile dealer for code signification.

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WARRANTY

BRP LIMITED WARRANTY USA AND CANADA: 2022 SKI-DOO® SNOWMOBILES

SCOPE OF THE LIMITED WARRANTY

Bombardier Recreational Products Inc. (**"BRP"**) warrants its 2022 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 324) 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 2022 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 2022 Ski-Doo snowmobile must have undergone proper registration by an authorized BRP dealer;
- The 2022 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: 2022 SKI-DOO® SNOWMOBILES

SCOPE OF THE LIMITED WARRANTY

Bombardier Recreational Products Inc. ("BRP") warrants its 2022 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 SEE CLAUSE 4 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 Ski-Doo 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 2022 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 2022 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 Ski-Doo Distributor/Dealer within two (2) 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 Ski-Doo 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: 2022 SKI-DOO® SNOWMOBILES

SCOPE OF THE LIMITED WARRANTY

Bombardier Recreational Products Inc. (**"BRP"**) warrants its 2022 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 Ski-Doo 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, transportation expenses, storage, 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 2022 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 2022 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 Ski-Doo 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

Ski-Doo 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.

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: _____ 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	

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:	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	

CUSTOMER INFORMATION

PRIVACY INFORMATION

BRP wishes to inform you that your coordinates will be used for safety and warranty related purposes. Furthermore, BRP and its affiliates may use its customer list to distribute marketing and promotional information about BRP and related products.

To exercise your right to consult or correct your data, or to be removed from the addressee-list for direct marketing, please contact BRP.

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.

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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

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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

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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

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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.

520002607

ski-doo

SPEC BOOK

VEHICLES • ACCESSORIES • PARTS • MAINTENANCE
APPAREL • BRANDED MERCHANDISE

2022

PRODUCT SPEC BOOK
2022

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THAT ski-doo FEELING

VEHICLE SPECIFICATIONS

// VEHICLE SPECIFICATIONS

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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 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

850 E-TEC TURBO
- 165 hp up to 8,000 ft[1]
- World's first 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 engines 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.

NEW 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]

NEW 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

STARTING AT ***$15,249***

The ultimate deep-snow sled with features sharpened for technical terrain riding.

SUMMIT® X® WITH EXPERT PACKAGE
165 850 E-TEC® TURBO SHOWN

// WHAT'S NEW

- Narrower 34 in. ski stance

// PACKAGE HIGHLIGHTS

- Two *ULTIMATE* color options with panel wrap: supreme look and finish, maximum protection
- Rotax® 850 E-TEC® or 850 E-TEC Turbo engines available
- Premium shock package with stiffer calibration
- Short tunnel with lightweight snowflap
- RAS™ 3 front suspension with lightweight ski spindle and revised ski stopper
- tMotion™ rear suspension with ice scratchers and adjustable limiter strap
- E-TEC® SHOT™ starter standard
- Full-length extruded-profile running boards with large openings
- One-piece lightweight hood on all models
- Flexible handguards
- Short riser block (120 mm/4.7 in.)
- Sea-level calibration available on select configurations
- 4.5 in. digital display
- Smaller-diameter handlebar ends and handgrips
- Ultra-compact and lightweight deep-snow seat
- DS 3 skis
- Belt monitoring system

ROTAX® ENGINE	850 E-TEC® TURBO	850 E-TEC®
Engine details	Liquid-cooled, two-stroke, turbocharged, eRAVE™	Liquid-cooled, two-stroke, eRAVE™
Horsepower	165 up to 8,000 ft.	165
Cylinders – Displacement	2 – 849 cc	2 – 849 cc
Bore – Stroke	82 mm – 80.4 mm	82 mm – 80.4 mm
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	36 L/9.5 US gal	36 L/9.5 US gal
Oil tank capacity	3.4 L/3.6 qt	3.4 L/3.6 qt

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	208 kg/458 lb (154 in.) 212 kg/468 lb (165 in.) 215 kg/474 lb (175 in.)	198 kg/437 lb (154 in.) 202 kg/446 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.
Track (Length x Width x Profile)	PowderMax† Light 154 x 16 x 2.5 in. 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 only

COLOR
ULTIMATE Liquid Titanium / Carbon Black
ULTIMATE Triple Black

SUSPENSION	
Front suspension	RAS™ 3
Front shock	HPG™ Plus with lightweight springs
Front suspension travel	215 mm/8.5 in.
Rear suspension	tMotion™ with adjustable limiter strap
Center shock	HPG™ Plus with lightweight spring
Rear shock	KYB† PRO 36 Easy-Adjust
Rear suspension travel	239 mm/9.4 in. (154, 165 in.) 242 mm/9.5 in. (175 in.)

FEATURES	
Frame	REV® Gen4
Bodywork	Narrow design
Skis	Pilot™ DS 3
Seating	Deep-snow ultra-compact and lightweight
Handlebar	Tapered U-shaped aluminum with J-hooks/Low grab handle/Flexible handguards
Riser block height	120 mm/4.7 in.
Starter	SHOT
Reverse	RER™
Brake system	Brembo racing brake with stainless-steel braided brake line
Heated throttle lever/grips	Standard
Gauge type	4.5 in. digital display
Windshield	Optional
Runner – Carbide	Square 3/8 – 4 in.
Bumpers (front/rear)	Std/Std

// FEATURE HIGHLIGHTS

1 Rotax 850 E-TEC® Turbo 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 ft of elevation. Sophisticated design integrates flawlessly with the REV Gen4 platform for maximum agility. Factory installation ensures peace of mind.

(See website for image)

2 Specialized ergonomics

Input from our team of backcountry experts resulted in a purpose-built sled for a better deep-snow experience with lower seat height, shorter riser, smaller-diameter handlebars and low handlebar strap for the ultimate advantage in the most technical terrains.

3 tMotion™ with adjustable limiter strap

Quickly and easily change the limiter strap length for the desired ski lift without crawling under the sled.

SUMMIT® X® WITH EXPERT PACKAGE
154 850 E-TEC® TURBO SHOWN

4 Narrower 34 in. ski stance

Makes it easier to initiate rollup, lowers the center of gravity requiring less effort to balance the sled and provides a larger window for the ideal balance point. Also improves traction at the balance point.

(See website for image)

5 Lightweight features

Weight savings from the one-piece lightweight hood, ski spindle, stopper, springs, seat and more make technical maneuvers easier than ever.

6 E-TEC® SHOT™ starter

Push-button starting with almost no added weight. Uses energy stored in the lightweight ultracapacitor to turn the magneto and with E-TEC® technology, starts the engine.

SUMMIT® X®

STARTING AT **$13,999**

Longer climbs, tighter tree lines and deeper powder.

SUMMIT® X®
165 850 E-TEC® TURBO SHOWN

// WHAT'S NEW

- HPG Plus shock package with lightweight springs
- 850 E-TEC Turbo available with two color choices
- One-piece lightweight hood on all models
- Standard with two sets of LinQ attachment points

// PACKAGE HIGHLIGHTS

- Rotax® 850 E-TEC® or 850 E-TEC Turbo engines available
- Short tunnel with lightweight snowflap
- RAS™ 3 front suspension with lightweight ski spindle and revised ski stopper
- tMotion™ rear suspension with ice scratchers
- E-TEC® SHOT™ starter standard
- Full-length extruded-profile running boards with large openings
- *ULTIMATE* color option with panel wrap: supreme look and finish, maximum protection
- Low handlebar strap
- Sea-level calibration available on select configurations
- 4.5 in. digital display
- Smaller-diameter handlebar ends and handgrips
- Compact and lightweight deep-snow seat
- DS 3 skis
- Belt monitoring system

ROTAX® ENGINE	850 E-TEC® TURBO	850 E-TEC®
Engine details	Liquid-cooled, two-stroke, turbocharged, eRAVE™	Liquid-cooled, two-stroke, eRAVE™
Horsepower	165 up to 8,000 ft.	165
Cylinders – Displacement	2 – 849 cc	2 – 849 cc
Bore – Stroke	82 mm – 80.4 mm	82 mm – 80.4 mm
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	36 L/9.5 US gal	36 L/9.5 US gal
Oil tank capacity	3.4 L/3.6 qt	3.4 L/3.6 qt

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	207 kg/456 lb (154 in.) 211 kg/466 lb (165 in.)	198 kg/435 lb (154 in.) 201 kg/442 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	910 or 950 mm/35.8 or 37.4 in.
Track (Length x Width x Profile)	PowderMax† Light with FlexEdge™: 154 x 16 x 2.5 in. 154 x 16 x 3.0 in. opt. 165 x 16 x 2.5 in. sea-level opt. only 165 x 16 x 3.0 in.

COLOR

ULTIMATE Scandinavian Blue / Orange Crush

Triple Black

SUSPENSION	
Front suspension	RAS™ 3
Front shock	HPG™ Plus with lightweight springs
Front suspension travel	215 mm/8.5 in.
Rear suspension	tMotion™
Center shock	HPG™ Plus with lightweight spring
Rear shock	HPG™ Plus
Rear suspension travel	239 mm/9.4 in.

FEATURES	
Frame	REV® Gen4
Bodywork	Narrow design
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, Electric (opt. select models), Manual (opt. select models)
Reverse	RER™
Brake system	Brembo racing brake with stainless-steel braided brake line
Heated throttle lever/grips	Standard
Gauge type	4.5 in. digital display
Windshield	Optional
Runner – Carbide	Square 3/8 – 4 in.
Bumpers (front/rear)	Std/Std

// FEATURE HIGHLIGHTS

1 Rotax 850 E-TEC® Turbo 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 ft of elevation. Sophisticated design integrates flawlessly with the REV Gen4 platform for maximum agility. Factory installation ensures peace of mind.

2 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.

3 One-piece lightweight hood

One-piece polypropylene construction instantly drops 6.2 lb of weight. Optimized ventilation for heat dispesion and noise reduction.

SUMMIT® X®
165 850 E-TEC® TURBO SHOWN

4 HPG Plus shock package

Highest-quality KYB lightweight high-pressure front and rear gas shocks. Rebuildable and revalvable.

5 Profile running boards

Front-to-back extruded grid-style board allowing snow to pass easily through, preventing washout and trenching, plus clears footrests for grip. Flatter foot position for comfort and control.

6 E-TEC® SHOT™ starter

Push-button starting with almost no added weight. Uses energy stored in the lightweight ultracapacitor to turn the magneto and with E-TEC® technology, starts the engine.

SUMMIT® EDGE®

STARTING AT ***$14,149***

New high-end in-season package loaded with proven technical features.

SUMMIT® EDGE®
165 850 E-TEC® SHOWN

// WHAT'S NEW

- Short tunnel with lightweight snowflap
- E-TEC® SHOT™ starter standard
- Two *ULTIMATE* color options with panel wrap: supreme look and finish, maximum protection
- Standard with two sets of LinQ attachment points
- Compact and lightweight deep-snow seat

// PACKAGE HIGHLIGHTS

- Rotax® 850 E-TEC® engine
- High-quality HPG shock package
- RAS™ 3 front suspension with lightweight ski spindle and revised ski stopper
- tMotion™ rear suspension with ice scratchers
- Deep-snow running boards with large openings
- 4.5 in. digital display
- Smaller-diameter handlebar ends and handgrips
- 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	82 mm – 80.4 mm
Carburation	E-TEC® direct injection with additional booster injectors
Fuel type – Octane	Premium unleaded – 91
Fuel tank	36 L/9.5 US gal
Oil tank capacity	3.4 L/3.6 qt

POWERTRAIN	
Drive clutch Driven clutch	pDrive™ with clickers QRS Vent Plus
Drive sprocket pitch	89 mm/3.5 in.

DRY WEIGHT	
Dry weight	207 kg/458 lb (154 in.) 210 kg/463 lb (165 in.) 214 kg/470 lb (175 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	910 or 950 mm/35.8 or 37.4 in.
Track (Length x Width x Profile)	PowderMax† Light with FlexEdge™: 154 x 16 x 2.5 in. 154 x 16 x 3.0 in. opt. 165 x 16 x 3.0 in. 175 x 15 x 3.0 in.

COLOR
ULTIMATE Catalyst Grey / Octane Blue
ULTIMATE Black

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	239 mm/9.4 in. 242 mm/9.5 in. (175 in.)

FEATURES	
Frame	REV® Gen4
Bodywork	Narrow design
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 racing brake with stainless-steel braided brake line
Heated throttle lever/grips	Standard
Gauge type	4.5 in. digital display
Windshield	Optional
Runner – Carbide	Square 3/8 – 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.

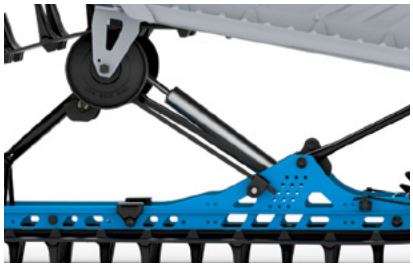
2 Short tunnel

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.

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® EDGE®
165 850 E-TEC® SHOWN



4 High-quality HPG shock package

Extremely capable high-pressure gas shocks by KYB.

5 tMotion™ rear suspension

A swiveling rear arm and split front arm allow the skid to flex laterally for more predictable carving. More rising-rate motion ratio adds capacity and comfort.

6 E-TEC® SHOT™ starter

Push-button starting with almost no added weight. Uses energy stored in the lightweight ultracapacitor to turn the magneto and with E-TEC® technology, starts the engine.

SUMMIT® SP®

STARTING AT ***$11,499***

An excellent deep-snow machine for any rider.

SUMMIT® SP®
165 850 E-TEC® SHOWN

// PACKAGE HIGHLIGHTS

- Rotax® 850 E-TEC® and 600R E-TEC® engines
- High-quality HPG shock package
- RAS™ 3 front suspension with lightweight ski spindle and revised ski stopper
- tMotion™ rear suspension with ice scratchers
- E-TEC® SHOT™ starter available
- Deep-snow running boards with large openings
- Glove box with 4 L/1 gal of storage
- Low handlebar strap
- NEW standard with two sets of LinQ attachment points
- 4.5 in. digital display
- Smaller-diameter handlebar ends and handgrips
- DS 3 skis
- 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	82 mm – 80.4 mm	72.3 mm – 73 mm
Carburation	E-TEC® direct injection with additional booster injectors	E-TEC® direct injection
Fuel type – Octane	Premium unleaded – 91	Premium unleaded – 91
Fuel tank	36 L/9.5 US gal	36 L/9.5 US gal
Oil tank capacity	3.4 L/3.6 qt	3.4 L/3.6 qt

POWERTRAIN		
Drive clutch Driven clutch	pDrive™ with clickers QRS Vent Plus	pDrive™ with clickers QRS Vent
Drive sprocket pitch	73 mm/2.86 in. (146 in.) 89 mm/3.5 in. (154 – 165 in.)	73 mm/2.86 in. (146 in.) 89 mm/3.5 in. (154 in.)

DRY WEIGHT		
Dry weight	208 kg/459 lb (146 in.) 206 kg/454 lb (154 in.) 209 kg/460 lb (165 in.)	204 kg/449 lb (146 in.) 202 kg/445 lb (154 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.) (850 E-TEC® only)
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	910 or 950 mm/35.8 or 37.4 in.
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. 154 x 16 x 3.0 in. opt. 165 x 16 x 2.5 in. 165 x 16 x 3.0 in. opt.

COLOR

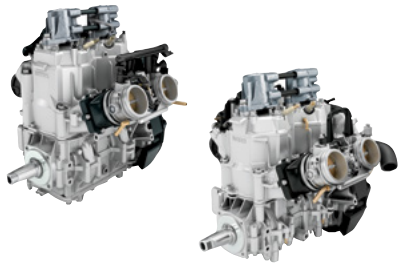
Black / Orange Crush

Black

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	239 mm/9.4 in.

FEATURES	
Frame	REV® Gen4
Bodywork	Narrow design
Skis	Pilot™ DS 3
Seating	Deep-snow
Handlebar	Tapered U-shaped aluminum with J-hooks/Low grab handle
Riser block height	165 mm/6.5 in.
Starter	Electric, SHOT (opt.), Manual (opt. select models)
Reverse	RER™
Brake system	Brembo racing brake with stainless-steel braided brake line
Heated throttle lever/grips	Standard
Gauge type	4.5 in. digital display
Windshield	Optional
Runner – Carbide	Square 3/8 – 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 RAS™ 3 front suspension

Stable and precise front suspension design and geometry, optimized for the REV Gen4 platform.

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™ rear suspension

A swiveling rear arm and split front arm allow the skid to flex laterally for more predictable carving. More rising-rate motion ratio adds capacity and comfort.

6 E-TEC® SHOT™ starter

Push-button starting with almost no added weight. Uses energy stored in the lightweight ultracapacitor to turn the magneto and with E-TEC® technology, starts the engine.

FREERIDE™

STARTING AT ***$15,349***

Live large, live free and go big.

FREERIDE®
165 850 E-TEC® TURBO SHOWN

// PACKAGE HIGHLIGHTS

- Rotax® 850 E-TEC® or 850 E-TEC Turbo engines available
- High-performance KYB PRO shock package with lightweight springs
- Short tunnel with lightweight snowflap
- RAS™ 3 front suspension with lightweight ski spindle and revised ski stopper
- tMotion™ rear suspension with reinforced rails and ice scratchers
- E-TEC® SHOT™ starter standard
- Full-length extruded-profile running boards with large openings
- One-piece lightweight hood on all configurations
- Sway bar quick-disconnect
- Low handlebar strap
- NEW standard with two sets of LinQ attachment points
- Sea-level calibration available on select configurations
- 4.5 in. digital display
- Smaller-diameter handlebar ends and handgrips
- Compact and lightweight deep-snow seat
- DS 3 skis
- Belt monitoring system

ROTAX® ENGINE	850 E-TEC® TURBO	850 E-TEC®
Engine details	Liquid-cooled, two-stroke, turbocharged, eRAVE™	Liquid-cooled, two-stroke, eRAVE™
Horsepower	165 up to 8,000 ft.	165
Cylinders – Displacement	2 – 849 cc	2 – 849 cc
Bore – Stroke	82 mm – 80.4 mm	72.3 mm – 73 mm
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	36 L/9.5 US gal	36 L/9.5 US gal
Oil tank capacity	3.4 L/3.6 qt	3.4 L/3.6 qt

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	214 kg/471 lb (154 po) 206 kg/454 lb (165 po)	206 kg/453 lb (146 po) 205 kg/450 lb (154 po) 206 kg/453 lb (165 po)

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	910 or 950 mm/35.8 or 37.4 in.
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. 154 x 16 x 3.0 in. opt. 165 x 16 x 2.5 in. sea-level opt. only 165 x 16 x 3.0 in.

COLOR
Arctic Desert

SUSPENSION	
Front suspension	RAS™ 3
Front shock	KYB† PRO 36 R Easy-Adjust
Front suspension travel	215 mm/8.5 in.
Rear suspension	tMotion™
Center shock	KYB† PRO 40 Easy-Adjust
Rear shock	KYB† PRO 40 Easy-Adjust
Rear suspension travel	239 mm/9.4 in.

FEATURES	
Frame	REV® Gen4
Bodywork	Narrow design
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: SHOT
Reverse	RER™
Brake system	Brembo racing brake with stainless-steel braided brake line
Heated throttle lever/grips	Standard
Gauge type	4.5 in. digital display
Windshield	Optional
Runner – Carbide	Square 3/8 – 4 in.
Bumpers (front/rear)	Std/Std

// FEATURE HIGHLIGHTS

1 Rotax 850 E-TEC® Turbo 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 ft of elevation. Sophisticated design integrates flawlessly with the REV Gen4 platform for maximum agility. Factory installation ensures peace of mind.

2 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.

3 tMotion™ rear suspension with reinforced rails

A swiveling rear arm and split front arm allow the skid to flex laterally for more predictable carving. More rising-rate motion ratio adds capacity and comfort. Reinforcement ensures strength on hard landings.

SUMMIT® SP®
165 850 E-TEC® 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 Lightweight features

Weight savings from the one-piece lightweight hood, ski spindle, stopper, springs, seat and more make technical maneuvers easier than ever.

6 E-TEC® SHOT™ starter

Push-button starting 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®

STARTING AT ***$14,999***

The most aggressive crossover vehicle with snocross attitude and go-anywhere capability.

BACKCOUNTRY™ X-RS®
154 850 E-TEC® SHOWN

// WHAT'S NEW

- Two *ULTIMATE* color options with panel wrap: supreme look and finish, maximum protection
- Standard with two sets of LinQ attachment points

// PACKAGE HIGHLIGHTS

- Rotax® 850 E-TEC® engine
- High-performance KYB PRO shock package
- 7.8 in. wide LCD display with BRP Connect available
- RAS™ 3 front suspension
- cMotion™ rear suspension
- E-TEC® SHOT™ starter available
- RS running boards
- Glove box with 4 L/1 gal of storage
- Backlit multifunction handlebar controls
- pDrive™ clutch with clickers
- Transparent handguards
- Open toe-hold
- 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	82 mm – 80.4 mm
Carburation	E-TEC® direct injection with additional booster injectors
Fuel type – Octane	Premium unleaded – 91
Fuel tank	36 L/9.5 US gal
Oil tank capacity	3.4 L/3.6 qt

POWERTRAIN	
Drive clutch Driven clutch	pDrive™ with clickers QRS Vent Plus
Drive sprocket pitch	73 mm/2.86 in.

DRY WEIGHT	
Dry weight	214 kg/472 lb (146 in.) 220 kg/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	975 or 1,020 mm/38.4 or 40.2 in.
Track (Length x Width x Profile)	Cobra: 146 x 15 x 1.6 in. Ice Cobra: 146 x 15 x 1.6 in. opt. PowderMax†: 146 x 16 x 2.0 in. opt. 154 x 16 x 2.0 in. 154 x 16 x 2.5 in. opt.

COLOR
ULTIMATE Liquid Titanium / Carbon Black
ULTIMATE Black

SUSPENSION	
Front suspension	RAS™ 3
Front shock	KYB† PRO 36 R Easy-Adjust
Front suspension travel	220 mm/8.7 in.
Rear suspension	cMotion™
Center shock	KYB† PRO 40 Easy-Adjust
Rear shock	KYB† PRO 40 Easy-Adjust
Rear suspension travel	239 mm/9.4 in. (154, 165 in.)

FEATURES	
Frame	REV® Gen4
Bodywork	Narrow design
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 racing brake with stainless-steel braided brake line
Heated throttle lever/grips	Standard
Gauge type	7.2 in. wide digital display 7.8 in. wide LCD color display (opt.)
Windshield	Optional
Runner – Carbide	Round 7/16 – 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 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 starting 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®

STARTING AT ***$13,899***

A 50-50 sled with the most advanced technology, plus off-trail capability and rough-trail performance.

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™ 3 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
- NEW standard with two sets of LinQ attachment points
- 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	82 mm – 80.4 mm
Carburation	E-TEC® direct injection with additional booster injectors
Fuel type – Octane	Premium unleaded – 91
Fuel tank	36 L/9.5 US gal
Oil tank capacity	3.4 L/3.6 qt

POWERTRAIN	
Drive clutch Driven clutch	pDrive™ with clickers QRS Vent Plus
Drive sprocket pitch	73 mm/2.86 in.

DRY WEIGHT	
Dry weight	209 kg/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	975 or 1,020 mm/38.4 or 40.2 in.
Track (Length x Width x Profile)	Cobra: 146 x 15 x 1.6 in. Ice Cobra: 146 x 15 x 1.6 in. opt. PowderMax‡: 146 x 16 x 2.0 in. opt.

COLOR

Scandinavian Blue / Orange Crush

Black

SUSPENSION	
Front suspension	RAS™ 3
Front shock	HPG™ Plus
Front suspension travel	220 mm/8.7 in.
Rear suspension	cMotion™
Center shock	HPG™ Plus
Rear shock	KYB‡ PRO 36 Easy-Adjust
Rear suspension travel	239 mm/9.4 in.

FEATURES	
Frame	REV® Gen4
Bodywork	Narrow design
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 racing brake with stainless-steel braided brake line
Heated throttle lever/grips	Standard
Gauge type	7.2 in. wide digital display 7.8 in. wide LCD color display (opt.)
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 EA rear shock featuring compression adjustment with easy-adjust knob. 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 starting 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™

STARTING AT ***$12,099***

Loaded with crossover-specific features for spending equal time riding on- or off-trail.

BACKCOUNTRY™ 146 850 E-TEC® SHOWN

// PACKAGE HIGHLIGHTS

- Rotax® 850 E-TEC® and 600R E-TEC engines available
- High-quality HPG shock package
- 4.5 in. digital display
- RAS™ 3 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
- NEW standard with two sets of LinQ attachment points
- 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	82 mm – 80.4 mm	72.3 mm – 73 mm
Carburation	E-TEC® direct injection with additional booster injectors	E-TEC® direct injection
Fuel type – Octane	Premium unleaded – 91	Premium unleaded – 91
Fuel tank	36 L/9.5 US gal	36 L/9.5 US gal
Oil tank capacity	3.4 L/3.6 qt	3.4 L/3.6 qt

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	219 kg/483 lb	212 kg/466 lb

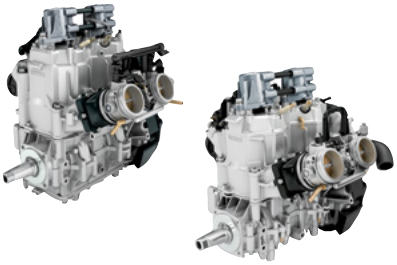
DIMENSIONS	
Overall vehicle length	3,174 mm/125 in.
Overall vehicle width	1,140 to 1,180 mm/44.9 to 46.5 in.
Overall vehicle height	1,283 mm/50.5 in.
Ski stance	975 or 1,020 mm/38.4 or 40.2 in.
Track (Length x Width x Profile)	Cobra: 146 x 15 x 1.6 in.

COLOR
Catalyst Grey / Octane Blue
Black

SUSPENSION	
Front suspension	RAS™ 3
Front shock	HPG™ Plus
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	
Frame	REV® Gen4
Bodywork	Narrow design
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 brake with stainless-steel braided brake line
Heated throttle lever/grips	Standard
Gauge type	4.5 in. digital display
Windshield	360 mm/14 in.
Runner – Carbide	Square 3/8 – 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.

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™ 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 pDrive™ clutch with clickers

Clicker ramps allow easy adjustment for top RPM. Ultra-responsive shifting, impressive RMP consistency, lightweight and maintenance-free.

BACKCOUNTRY™ SPORT

STARTING AT ***$9,049***

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™ 3 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
- pDrive™ clutch
- Brembo brake with braided stainless-steel brake line
- NEW standard with two sets of LinQ attachment points
- 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	72.3 mm – 73 mm
Carburation	EFI
Fuel type – Octane	Regular unleaded – 87
Fuel tank	36 L/9.5 US gal
Oil tank capacity	3.4 L/3.6 qt

POWERTRAIN	
Drive clutch Driven clutch	pDrive™ QRS
Drive sprocket pitch	73 mm/2.86 in.

DRY WEIGHT	
Dry weight	202 kg/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	975 or 1,020 mm/38.4 or 40.2 in.
Track (Length x Width x Profile)	Cobra: 146 x 15 x 1.35 in. PowderMax†: 146 x 16 x 2.0 in. opt.

COLOR

Catalyst Grey / Black

SUSPENSION	
Front suspension	RAS™ 3
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	
Frame	REV® Gen4
Bodywork	Narrow design
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 brake with stainless-steel braided brake line
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

600 cc-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™ 3 front suspension

Similar geometry and steering to the RAS 3 mountain front end for capability and light steering feel on- and off-trail. Optimized for crossover usage, two ski stance positions dial in handling: 40.2 in. (102 cm) or 38.4 in. (97.5 cm).

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 three natural positions for different cornering styles, including a new, extreme-forward position.

MACH Z™

STARTING AT ***$19,599***

The return of a legend.
For one year only.

// WHAT'S NEW

- Rotax® 900 ACE™ Turbo R with cable throttle housing and launch control
- Smart-Shox semi-active suspension with high-performance KYB PRO shock package
- Lowered RAS™ X front suspension
- Lowered rMotion™ X rear suspension
- Rack steering system
- Exclusive coloration, dark smoke windshield and handguards and reflective decals.
- Standard with two sets of LinQ attachment points
- Two track options

// PACKAGE HIGHLIGHTS

- 7.8 in. wide LCD display with BRP Connect standard
- Electric starter
- RS running boards
- Low windshield with deflectors
- Forward adjustable riser
- Transparent handguards
- Pilot X skis
- Backlit multifunction handlebar controls

ROTAX® ENGINE	900 ACE™ TURBO R
Engine details	Liquid-cooled, four-stroke D.O.H.C., dry sump, turbocharged
Horsepower	180
Cylinders – Displacement	3 – 899 cc
Bore – Stroke	73 mm – 69.7 mm
Carburation	EFI
Fuel type – Octane	Premium unleaded – 91
Fuel tank	36 L/9.5 US gal
Oil tank capacity	3.3 L/3.5 qt

POWERTRAIN	
Drive clutch	pDrive™
Driven clutch	QRS Vent
Drive sprocket pitch	73 mm/2.86 in.

DRY WEIGHT	
Dry weight	249 kg/548 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	1,069 – 1,092 – 1,115 mm/42.1 – 43 – 43.9 in.
Track (Length x Width x Profile)	2-Ply Ripsaw: 137 x 15 x 1.25 in. Ice Ripper XT: 137 x 15 x 1.25 in.

COLOR	
Carbon Black / Liquid Titanium	

SUSPENSION	
Front suspension	RAS™ X
Front shock	KYB† PRO Smart-Shox
Front suspension travel	235 mm/9.3 in.
Rear suspension	rMotion™ X
Center shock	KYB† PRO 40
Rear shock	KYB† PRO Smart-Shox
Rear suspension travel	292 mm/11.5 in.

FEATURES	
Frame	REV® Gen4
Bodywork	Wide design
Skis	Pilot™ X
Seating	Trail with storage
Handlebar	U-shaped aluminum with J-hooks/ Dark smoke handguards
Riser block height	Adjustable-120 mm/4.7 in.
Starter	Electric
Reverse	Electro-mechanic
Brake system	Brembo racing brake with stainless-steel braided brake line
Heated throttle lever/grips	Standard
Gauge type	7.8 in. wide LCD color display
Windshield	360 mm/14 in.
Runner – Carbide	Round 7/16 – 4 in.
Bumpers (front/rear)	Std/Std

// FEATURE HIGHLIGHTS

1 Rotax® 900 ACE™ Turbo R with cable throttle housing and Launch Control

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 four driving modes including exclusive Launch Control.

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 Lowered suspension

1.5 in. lower ride height for improved aerodynamics, lower center of gravity, more traction due to a better attack angle of the track and an aggressive look.

MACH Z™ 900 ACE™ TURBO R SHOWN

4 Large panoramic 7.8 in. wide LCD color display

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 Two track options

Choose the two-ply Ripsaw, pre-marked for studding, or the Ice Ripper XT with studded lugs direct from the factory.

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® WITH COMPETITION PACKAGE

STARTING AT ***$13,799***

Powerful, lightweight and highly capable race-ready features.

// WHAT'S NEW

- Rotax® 600R E-TEC® engine
- Racing KYB† PRO 40 shock package
- Two-ply Ripsaw II Track
- Low profile 90mm riser bloc
- Standard with 2 sets of LinQ attachment points

// PACKAGE HIGHLIGHTS

- 7.2 in. digital display
- RAS™ X front suspension
- rMotion™ X rear suspension
- Manual starter
- RS running boards
- pDrive™ clutch
- Low windshield with deflectors
- Forward steering post position
- Transparent handguards
- Reinforced rails
- Open toe-hold
- Pilot X skis
- 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	72.3 mm – 73 mm
Carburation	E-TEC® direct injection
Fuel type – Octane	Premium unleaded – 91
Fuel tank	36 L/9.5 US gal
Oil tank capacity	3.4 L/3.6 qt

POWERTRAIN	
Drive clutch Driven clutch	pDrive™ with clickers QRS
Drive sprocket pitch	73 mm/2.86 in.

DRY WEIGHT	
Dry weight	213 kg/468 lb

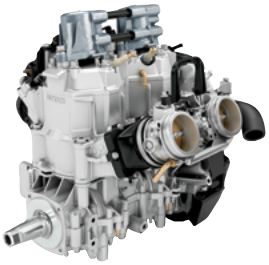
DIMENSIONS	
Overall vehicle length	3,038 mm/119.6 in.
Overall vehicle width	1,209 – 1,232 – 1,255 mm/47.6 – 48.5 – 49.4 in.
Overall vehicle height	1,267 mm/49.9 in.
Ski stance	1,069 – 1,092 – 1,115 mm/42.1 – 43 – 43.9 in.
Track (Length x Width x Profile)	2-Ply Ripsaw II: 137 x 15 x 1.25 in.

COLOR
Black

SUSPENSION	
Front suspension	RAS™ X
Front shock	KYB PRO 40 R Easy-Adjust
Front suspension travel	265 mm/10.4 in.
Rear suspension	rMotion™ X
Center shock	KYB† PRO 40 Easy-Adjust (double-rate springs)
Rear shock	KYB† 40 Easy-Adjust
Rear suspension travel	292 mm/11.5 in.

FEATURES	
Frame	REV® Gen4
Bodywork	Narrow design
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 racing brake with stainless-steel braided brake line
Heated throttle lever/grips	Standard
Gauge type	7.2 in. wide 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 II racing track

Two-ply for extra durability. Excellent traction in all conditions. Pre-marked for studding.

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®

STARTING AT **$15,149**

A hard-charging, race-inspired machine with the most advanced features and technology.

RENEGADE® X-RS® 850 E-TEC® SHOWN

RENEGADE® X-RS® 900 ACE® TURBO R SHOWN

// WHAT'S NEW

- Smart-Shox semi-active suspension available
- Rotax® 900 ACE™ Turbo R with cable throttle housing and electro-mechanical reverse

// PACKAGE HIGHLIGHTS

- Rotax® 850 E-TEC® available
- High-performance KYB† PRO shock package
- 7.8 in. wide LCD display with BRP Connect available
- 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
- Ski choices: Pilot™ X or Pilot™ TX (available with QAS)
- Backlit multifunction handlebar controls
- Optional adjustment package: rMotion™ X Quick Adjust™ system and Pilot™ TX skis
- NEW standard with two sets of LinQ attachment points

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	82 mm – 80.4 mm	73 mm – 69.7 mm
Carburation	E-TEC® direct injection with additional booster injectors	EFI
Fuel type – Octane	Premium unleaded – 91	Premium unleaded – 91
Fuel tank	36 L/9.5 US gal	36 L/9.5 US gal
Oil tank capacity	3.4 L/3.6 qt	3.4 L/3.6 qt

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	225 kg/495 lb	241 kg/531 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	1,069 – 1,092 – 1,115 mm/42.1 – 43 – 43.9 in.
Track (Length x Width x Profile)	RipSaw†: 137 x 15 x 1.25 in. Ice Ripper XT: 137 x 15 x 1.25 in. opt. 137 x 15 x 1.5 in. opt.

COLOR

Sunburst Yellow / Black

Black

SUSPENSION	
Front suspension	RAS™ X
Front shock	KYB† PRO 36 Easy-Adjust KYB† PRO Smart-Shox w/ opt. SAS
Front suspension travel	265 mm/10.4 in.
Rear suspension	rMotion™ X with QAS (optional)
Center shock	KYB† PRO 40 Easy-Adjust
Rear shock	KYB† PRO 40 Easy-Adjust KYB† PRO Smart-Shox w/ opt. SAS
Rear suspension travel	292 mm/11.5 in.

FEATURES	
Frame	REV® Gen4
Bodywork	Narrow design (2-stroke engines) Wide design (4-stroke engines)
Skis	Pilot™ X Pilot™ TX (optional)
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®) Mechanical (900 ACE™ Turbo R)
Brake system	Brembo racing brake with stainless-steel braided brake line
Heated throttle lever/grips	Standard
Gauge type	7.2 in. wide digital display 7.8 in. wide LCD color display (opt.)
Windshield	Optional
Runner – Carbide	Round 1/2 – 4 in.
Bumpers (front/rear)	Std/Std

// FEATURE HIGHLIGHTS

1 Rotax® 850 E-TEC® and 900 ACE™ Turbo R engines

The most powerful 2-stroke and 4-stroke options in the lineup, offering top performance for the most demanding riders.

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.

3 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.

RENEGADE® 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 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 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®

STARTING AT **$12,699**

High-performance and high-tech features for the most demanding rider.

RENEGADE® X® 850 E-TEC® SHOWN

RENEGADE® X® 900 ACE® TURBO R SHOWN

// WHAT'S NEW

- Rotax® 900 ACE™ Turbo R with cable throttle housing and electro-mechanical reverse
- Standard with two sets of LinQ attachment points

// PACKAGE HIGHLIGHTS

- Rotax® 850 E-TEC® and 600R E-TEC® engines
- High-performance shock package
- 7.8 in. wide LCD display with BRP Connect available (850 E-TEC and 900 ACE Turbo R only)
- RAS™ X front suspension
- rMotion™ X rear suspension
- Electric starter
- pDrive™ clutch
- Forward adjustable riser
- Transparent handguards
- Open toe-hold
- Ski choices: Pilot™ X or Pilot™ TX (available with QAS on 850 E-TEC and 900 ACE Turbo R)
- Backlit multifunction handlebar controls
- Optional adjustment package: rMotion™ X Quick Adjust™ system and Pilot™ TX skis (850 E-TEC and 900 ACE Turbo R)

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	82 mm – 80.4 mm	72.3 mm – 73 mm	73 mm – 69.7 mm
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	36 L/9.5 US gal	36 L/9.5 US gal	36 L/9.5 US gal
Oil tank capacity	3.4 L/3.6 qt	3.4 L/3.6 qt	3.3 L/35 qt
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	221 kg/486 lb	214 kg/470 lb	238 kg/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	1,069 – 1,092 – 1,115 mm/42.1 – 43 – 43.9 in.		
Track (Length x Width x Profile)	RipSaw†: 137 x 15 x 1.25 in. Ice Ripper XT: 137 x 15 x 1.25 in. opt. 137 x 15 x 1.5 in. opt.		

COLOR

Sunburst Yellow / Black

Black

SUSPENSION	
Front suspension	RAS™ X
Front shock	HPG™ Plus
Front suspension travel	243 mm/9.6 in.
Rear suspension	rMotion™ X with QAS (optional)
Center shock	HPG™ Plus
Rear shock	KYB† PRO 36 Easy-Adjust
Rear suspension travel	292 mm/11.5 in.

FEATURES	
Frame	REV® Gen4
Bodywork	Narrow design (2-stroke engines) Wide design (4-stroke engines)
Skis	Pilot™ X Pilot™ TX (optional)
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™ (2-stroke engines) Electro-mechanic (4-stroke engines)
Brake system	Brembo racing brake with stainless-steel braided brake line
Heated throttle lever/grips	Standard
Gauge type	7.2 in. wide digital display 7.8 in. wide LCD color display (opt.)
Windshield	360 mm/14 in.
Runner – Carbide	Round 7/16 – 4 in.
Bumpers (front/rear)	Std/Std

// FEATURE HIGHLIGHTS

1 Rotax® 850 E-TEC® and 900 ACE™ Turbo R engines

The most powerful 2-stroke and 4-stroke options in the lineup, offering top performance for the most demanding riders.

2 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.

3 Adjustment package

Totally transforms the handling characteristics of the sled according to riding style or conditions with unmatched ease. Includes rMotion X Quick Adjust System and Pilot TX skis.

RENEGADE® X-RS® 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 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.

(See website for image)

6 Three track choices

Superior performance assured with your choice of factory-installed Ripsaw or studded Ice Ripper tracks.

RENEGADE® ENDURO™

STARTING AT **$13,949**

Adventure-ready with top-tier technology, comfort and performance.

RENEGADE® ENDURO™ 900 ACE™ TURBO R SHOWN

RENEGADE® ENDURO™ 850 E-TEC® SHOWN

// WHAT'S NEW

- Rotax® 900 ACE™ Turbo R with cable throttle housing and electro-mechanical reverse
- 900 ACE Turbo – 130 engine available
- 7.8 in. wide LCD display with BRP Connect standard
- rMotion™ X rear suspension with Air Control Suspension (ACS) rear shock
- RAS™ X front suspension
- Visor plug standard
- Pilot TX skis
- Standard with two sets of LinQ attachment points

// PACKAGE HIGHLIGHTS

- Rotax® 850 E-TEC®, 600R E-TEC® and 900 ACE™ engines available
- 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

ROTAX® ENGINE	850 E-TEC®	600R E-TEC®	900 ACE™ TURBO R	900 ACE™ TURBO – 130	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	82 mm – 80.4 mm	72.3 mm – 73 mm	73 mm – 69.7 mm	73 mm – 69.7 mm	73 mm – 69.7 mm
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	36 L/9.5 US gal	36 L/9.5 US gal	36 L/9.5 US gal	36 L/9.5 US gal	36 L/9.5 US gal
Oil tank capacity	3.4 L/3.6 qt	3.4 L/3.6 qt	3.3 L/3.5 qt	3.3 L/3.5 qt	3.3 L/3.5 qt

POWERTRAIN					
Drive clutch Driven clutch	pDrive™ with clickers QRS Vent	pDrive™ with clickers QRS	pDrive™ QRS Vent	pDrive™ QRS Vent	pDrive™ with slider shoes – 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	236 kg/519 lb	229 kg/504 lb	253 kg/558 lb	251 kg/552 lb	241 kg/529 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	1,077 mm/42.4 in.
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

Scandinavian Blue/Manta Green

Black

FEATURES

Frame	REV® Gen4
Bodywork	Wide design
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™ (2-stroke engines) Electro-mechanic (4-stroke engines)
Air radiator	
Brake system	Brembo brake with stainless-steel braided brake line
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

The most powerful 2-stroke and 4-stroke options in the lineup, offering top performance for the most demanding riders.

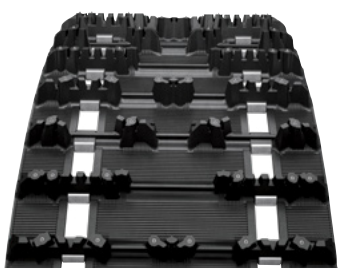
2 rMotion™ X rear suspension with Air Control Shock (ACS)

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 R SHOWN



4 Standard studded track

1.25 in. Ice Ripper XT direct from the factory with carbide studs for added grip.

5 Large panoramic 7.8 in. wide LCD color display

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®

STARTING AT **$11,599**

Tight cornering, big-bumps, high speed and rough trails—this sled conquers it all.

RENEGADE® ADRENALINE® 850 E-TEC® SHOWN

RENEGADE® ADRENALINE® 900 ACE™ TURBO R SHOWN

// WHAT'S NEW

- Rotax® 900 ACE™ Turbo R with cable throttle housing and electro-mechanical reverse
- 900 ACE Turbo – 130 engine available
- rMotion™ X rear suspension
- RAS™ X front suspension w/ wider ski stance
- Pilot X skis
- Standard with 2 sets of LinQ attachment points

// PACKAGE HIGHLIGHTS

- Rotax® 850 E-TEC®, 600R E-TEC® and 900 ACE™ engines available
- High-quality HPG shock package
- pDrive™ clutch
- 4.5 in. digital display
- Electric starter
- Glove box with 4 L/1 gal of storage
- Transparent handguards
- Low windshield (14 in.) with air deflectors

ROTAX® ENGINE	850 E-TEC®	600R E-TEC®	900 ACE™ TURBO R	900 ACE™ TURBO – 130	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	82 mm – 80.4 mm	72.3 mm – 73 mm	73 mm – 69.7 mm	73 mm – 69.7 mm	73 mm – 69.7 mm
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	36 L/9.5 US gal	36 L/9.5 US gal	36 L/9.5 US gal	36 L/9.5 US gal	36 L/9.5 US gal
Oil tank capacity	3.4 L/3.6 qt	3.4 L/3.6 qt	3.3 L/3.5 qt	3.3 L/3.5 qt	3.3 L/3.5 qt

POWERTRAIN					
Drive clutch Driven clutch	pDrive™ with clickers QRS Vent	pDrive™ with clickers QRS	pDrive™ QRS Vent	pDrive™ QRS Vent	pDrive™ with slider shoes – 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	221 kg/486 lb	214 kg/470 lb	238 kg/524 lb	236 kg/518 lb	226 kg/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	1,077 mm/42.4 in.
Track (Length x Width x Profile)	RipSaw†: 137 x 15 x 1.25 in.

SUSPENSION	
Front suspension	RAS™ X
Front shock	HPG™
Front suspension travel	243 mm/9.6 in.
Rear suspension	rMotion™ X
Center shock	HPG™
Rear shock	HPG™
Rear suspension travel	292 mm/11.5 in.

COLOR

Sunburst Yellow / Black

Black

FEATURES

Frame	REV® Gen4
Bodywork	Narrow design (2-stroke engines) Wide design (4-stroke engines)
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™ (2-stroke engines) Electro-mechanic (4-stroke engines)
Brake system	Brembo brake with stainless-steel braided brake line
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 900 ACE™ Turbo R engines

The most powerful 2-stroke and 4-stroke options in the lineup, offering top performance for the most demanding riders.

2 Rotax® 900 ACE™ Turbo – 130 engine

Powerful, lightweight and efficient, delivering instant acceleration at the punch of the throttle. Reliable, powerful performance with revised calibration of the drive-by-wire intelligent Throttle Control (iTC) for more linear and predictable response with three driving modes (Sport, Standard, ECO) and finger throttle.

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® 900 ACE™ TURBO R 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 +10 mm of suspension stroke maximize stability, capability and comfort.

5 High-quality HPG shock package

Extremely capable high-pressure gas shocks by KYB.

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

STARTING AT ***$8,899***

Value-oriented with exceptional handling, bump capability and light off-trail riding.

RENEGADE® SPORT
600 EFI SHOWN

RENEGADE® SPORT
600 ACE™ SHOWN

// PACKAGE HIGHLIGHTS

- Rotax® 600 ACE™ with 420W magneto and 600 EFI engines available
- HPG™ rear shock
- 4.5 in. digital display
- RAS™ 3 front suspension
- 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 with braided stainless-steel brake line
- Ergo-step side panels
- U-shaped aluminum handlebar with integrated J-hooks
- Pilot 5.7 skis
- NEW standard with two sets of LinQ attachment points

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	72.3 mm – 73 mm	74 mm – 69.7 mm
Carburation	EFI	EFI
Fuel type – Octane	Regular unleaded – 87	Regular unleaded – 87
Fuel tank	36 L/9.5 US gal	36 L/9.5 US gal
Oil tank capacity	3.4 L/3.6 qt	2.1 L/2.2 qt

POWERTRAIN		
Drive clutch Driven clutch	pDrive™ with slider shoes QRS	eDrive™ II QRS
Drive sprocket pitch	73 mm/2.86 in.	73 mm/2.86 in.

DRY WEIGHT		
Dry weight	200 kg/442 lb	213 kg/469 lb

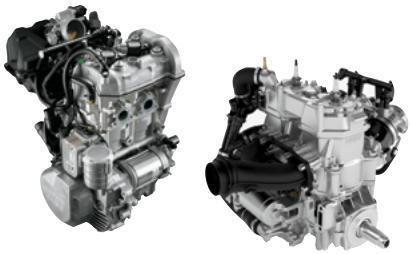
DIMENSIONS	
Overall vehicle length	3,038 mm/119.6 in.
Overall vehicle width	1,217 mm/47.9 in.
Overall vehicle height	1,267 mm/49.9 in.
Ski stance	1,077 mm/42.4 in.
Track (Length x Width x Profile)	Cobra: 137 x 15 x 1.25 in.

COLOR
Sunburst Yellow / Black

SUSPENSION	
Front suspension	RAS™ 3
Front shock	Motion Control
Front suspension travel	220 mm/8.7 in.
Rear suspension	SC™-5M
Center shock	Motion Control
Rear shock	HPG™
Rear suspension travel	245 mm/9.6 in.

FEATURES	
Frame	REV® Gen4
Bodywork	Narrow design (2-stroke engines) Wide design (4-stroke engines)
Skis	Pilot™ 5.7
Seating	Trail performance (2-stroke engines) Trail with storage (4-stroke engines)
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 brake with stainless-steel braided brake line
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. 60 hp* (600 ACE) or 85 hp* (600 EFI) versions ensure great performance and an incredible value.
*Observed HP metric based on internal dyno test in optimal conditions.

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™ 3 front suspension

Stable and precise front suspension design and geometry, optimized for the REV Gen4 platform.

6 Pilot™ 5.7 skis

Deliver outstanding grip and bite in corners with virtually no darting.

MXZ® X-RS®

STARTING AT ***$13,549***

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

- Smart-Shox semi-active suspension available (850 E-TEC only)
- Standard with two sets of LinQ attachment points

// PACKAGE HIGHLIGHTS

- Rotax® 850 E-TEC® and 600R E-TEC® engines
- High-performance KYB PRO shock package
- 7.8 in. wide LCD display with BRP Connect available
- RAS™ X front suspension
- rMotion™ X rear suspension
- Electric starter
- RS running boards
- pDrive™ clutch
- Forward steering post position
- Backlit multifunction handlebar controls
- Rack steering system
- Forward adjustable riser
- Transparent handguards
- Open toe-hold
- Ski choices: Pilot™ X or Pilot™ TX (available with opt. QAS)
- Optional adjustment package: rMotion™ X Quick Adjust™ system and Pilot™ TX skis (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	82 mm – 80.4 mm	72.3 mm – 73 mm
Carburation	E-TEC® direct injection with additional booster injectors	E-TEC® direct injection
Fuel type – Octane	Premium unleaded – 91	Premium unleaded – 91
Fuel tank	36 L/9.5 US gal	36 L/9.5 US gal
Oil tank capacity	3.4 L/3.6 qt	3.4 L/3.6 qt

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	222 kg/490 lb	216 kg/476 lb

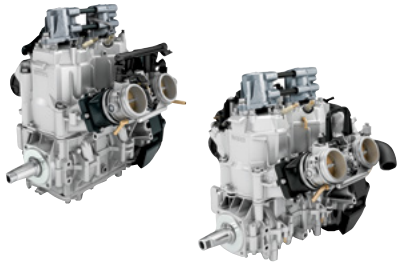
DIMENSIONS	
Overall vehicle length	2,925 mm/115.2 in.
Overall vehicle width	1,209 – 1,232 – 1,255 mm/47.6 – 48.5 – 49.4 in.
Overall vehicle height	1,267 mm/49.9 in.
Ski stance	1,069 – 1,092 – 1,115 mm/42.1 – 43 – 43.9 in.
Track (Length x Width x Profile)	RipSaw†: 129 x 15 x 1.25 in. Ice Ripper XT: 129 x 15 x 1.25 in. opt. 129 x 15 x 1.5 in. opt.

COLOR
Hyper Silver / Carbon Black
Black

SUSPENSION	
Front suspension	RAS™ X
Front shock	KYB† PRO 36 Easy-Adjust KYB† PRO Smart-Shox (opt.)
Front suspension travel	265 mm/10.4 in.
Rear suspension	rMotion™ X with QAS (optional)
Center shock	KYB† PRO 40 Easy-Adjust
Rear shock	KYB† PRO 40 Easy-Adjust KYB† PRO Smart-Shox (opt.)
Rear suspension travel	292 mm/11.5 in.

FEATURES	
Frame	REV® Gen4
Bodywork	Narrow design
Skis	Pilot™ X Pilot™ TX (optional)
Seating	Trail performance
Handlebar	U-shaped aluminum with J-hooks/ Transparent handguards
Riser block height	Adjustable-120 mm/4.7 in.
Starter	Electric
Reverse	RER™
Brake system	Brembo racing brake with stainless-steel braided brake line
Heated throttle lever/grips	Standard
Gauge type	7.2 in. wide digital display 7.8 in. wide LCD color display (opt.)
Windshield	Optional
Runner – Carbide	Round 1/2 – 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-performance KYB PRO shock package

Extreme-capability, extreme-durability shocks for control in the toughest conditions. Easy adjust-equipped for dialed-in compression.

3 Smart-Shox

Industry-first, innovative semi-active KYB shock technology provides the ultimate suspension performance available in snowmobiles. The system constantly reads engine parameters and chassis inputs, including steering, to adjust damping of shocks as needed to deliver anti-bottoming, lateral stability and forward and aft pitch control. Comfort, Sport and Sport + modes make it easy to fine-tune on the fly.

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 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 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® X®

STARTING AT **$12,499**

High-tech features and racing DNA for hard-core trail riders.

MXZ® X-RS® 850 E-TEC® SHOWN

// PACKAGE HIGHLIGHTS

- Rotax® 850 E-TEC® and 600R E-TEC® engines
- High-performance shock package
- 7.8 in. wide LCD display with BRP Connect available
- RAS™ X front suspension
- rMotion™ X rear suspension
- Electric starter
- pDrive™ clutch
- Backlit multifunction handlebar controls
- Low windshield (14 in.) with air deflectors
- Forward adjustable riser
- Transparent handguards
- Open toe-hold
- Ski choices: Pilot™ X or Pilot™ TX (available with opt. QAS)
- Optional adjustment package: rMotion™ X Quick Adjust™ system and Pilot™ TX skis (850 E-TEC only)
- NEW standard with two sets of LinQ attachment points

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	82 mm – 80.4 mm	72.3 mm – 73 mm
Carburation	E-TEC® direct injection with additional booster injectors	E-TEC® direct injection
Fuel type – Octane	Premium unleaded – 91	Premium unleaded – 91
Fuel tank	36 L/9.5 US gal	36 L/9.5 US gal
Oil tank capacity	3.4 L/3.6 qt	3.4 L/3.6 qt

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	216 kg/476 lb	210 kg/462 lb

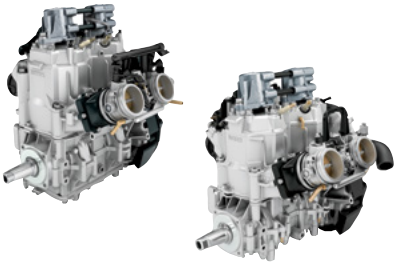
DIMENSIONS	
Overall vehicle length	2,925 mm/115.2 in.
Overall vehicle width	1,209 – 1,232 – 1,255 mm/47.6 – 48.5 – 49.4 in.
Overall vehicle height	1,267 mm/49.9 in.
Ski stance	1,069 – 1,092 – 1,115 mm/42.1 – 43 – 43.9 in.
Track (Length x Width x Profile)	RipSaw†: 129 x 15 x 1.25 in. Ice Ripper XT: 129 x 15 x 1.25 in. opt. 129 x 15 x 1.5 in. opt.

COLOR
Catalyst Grey / Black
Black

SUSPENSION	
Front suspension	RAS™ X
Front shock	HPG™ Plus
Front suspension travel	243 mm/9.6 in.
Rear suspension	rMotion™ X with QAS (optional)
Center shock	HPG™ Plus
Rear shock	KYB† PRO 36 Easy-Adjust
Rear suspension travel	292 mm/11.5 in.

FEATURES	
Frame	REV® Gen4
Bodywork	Narrow design
Skis	Pilot™ X Pilot™ TX (optional)
Seating	Trail performance
Handlebar	U-shaped aluminum with J-hooks/ Transparent handguards
Riser block height	Adjustable–120 mm/4.7 in.
Starter	Electric
Reverse	RER™
Brake system	Brembo racing brake with stainless-steel braided brake line
Heated throttle lever/grips	Standard
Gauge type	7.2 in. wide digital display 7.8 in. wide LCD color display (opt.)
Windshield	360 mm/14 in.
Runner – Carbide	Round 7/16 – 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 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.

3 Adjustment package

Totally transforms the handling characteristics of the sled according to riding style or conditions with unmatched ease. Includes rMotion X Quick Adjust System and Pilot TX skis.

MXZ® 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 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.

(See website for image)

6 Three track choices

Superior performance assured with your choice of factory-installed Ripsaw or studded Ice Ripper tracks.

MXZ® TNT®

STARTING AT ***$11,749***

Advancing its legacy as a favorite of agressive trail riders.

MXZ® TNT®
850 E-TEC® SHOWN

// WHAT'S NEW

- RAS™ X front suspension w/ wider ski stance
- rMotion™ X rear suspension
- Pilot X skis
- Standard with two sets of LinQ attachment points

// PACKAGE HIGHLIGHTS

- Rotax® 850 E-TEC® and 600R E-TEC® engines
- High-quality HPG shock package
- 4.5 in. digital display
- Electric starter
- pDrive™ clutch
- Low windshield (14 in.) with air deflectors
- Transparent handguards
- Open toe-hold
- Ergo-step side panels
- RER™ electronic reverse
- RF D.E.S.S.™ key

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	82 mm – 80.4 mm	72.3 mm – 73 mm
Carburation	E-TEC® direct injection with additional booster injectors	E-TEC® direct injection
Fuel type – Octane	Premium unleaded – 91	Premium unleaded – 91
Fuel tank	36 L/9.5 US gal	36 L/9.5 US gal
Oil tank capacity	3.4 L/3.6 qt	3.4 L/3.6 qt

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	216 kg/475 lb	209 kg/460 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	1,077 mm/42.4 in.
Track (Length x Width x Profile)	RipSaw†: 129 x 15 x 1.25 in. Ice Ripper XT: 129 x 15 x 1.25 in. opt.

COLOR

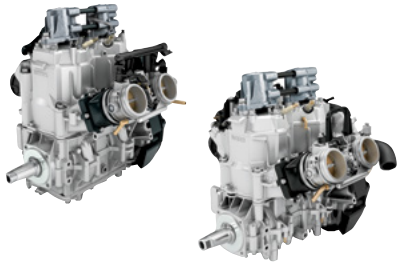
Catalyst Grey / Black

Black

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	272 mm/10.7 in.

FEATURES	
Frame	REV® Gen4
Bodywork	Narrow design
Skis	Pilot™ X
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 brake with stainless-steel braided brake line
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 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.

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.

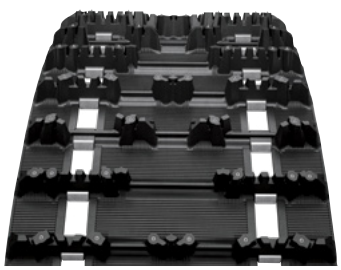
MXZ® TNT®
850 E-TEC® SHOWN

4 High-quality HPG shock package

Extremely capable high-pressure gas shocks by KYB.

5 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.



6 Ice Ripper track option

1.25 in. Ice Ripper XT direct from the factory with carbide studs for added grip.

MXZ® SPORT

STARTING AT ***$8,699***

Dynamic trail performance and value-oriented features.

MXZ® SPORT 600 EFI SHOWN

// PACKAGE HIGHLIGHTS

- Rotax® 600 EFI engine
- 4.5 in. digital display
- RAS™ 3 front suspension
- SC™-5M rear suspension
- Electric starter standard
- Low windshield (14 in.)
- Brembo brake with braided stainless-steel brake line
- U-shaped aluminum handlebar with integrated J-hooks
- Ergo-step side panels
- NEW standard with set of LinQ attachment points

ROTAX® ENGINE	600 EFI
Engine details	Liquid-cooled, two-stroke
Horsepower	85
Cylinders – Displacement	2 - 599.4 cc
Bore – Stroke	72.3.7 mm – 73 mm
Carburation	EFI
Fuel type – Octane	Regular unleaded - 87
Fuel tank	36 L/9.5 US gal
Oil tank capacity	3.4 L/3.6 qt

POWERTRAIN	
Drive clutch Driven clutch	pDrive™ QRS
Drive sprocket pitch	73 mm/2.86 in.

DRY WEIGHT	
Dry weight	198 kg/437 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	1,077 mm/42.4 in.
Track (Length x Width x Profile)	RipSaw†: 129 x 15 x 1.25 in.

COLOR

Catalyst Grey / Black

SUSPENSION	
Front suspension	RAS™ 3
Front shock	Motion Control
Front suspension travel	220 mm/8.7 in.
Rear suspension	SC™-5M
Center shock	Motion Control
Rear shock	Motion Control
Rear suspension travel	245 mm/9.6 in.

FEATURES	
Frame	REV® Gen4
Bodywork	Narrow design
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	Brembo brake with stainless-steel braided brake line
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

600 cc-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™ 3 front suspension

Stable and precise front suspension design and geometry, optimized for the REV Gen4 platform.

5 Pilot™ 5.7 skis

Deliver 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.

GRAND TOURING LIMITED

STARTING AT **$13,449**

The ultimate in 2-up trail comfort and technology with dynamic engine options.

GRAND TOURING LIMITED
900 ACE™ TURBO R SHOWN

GRAND TOURING LIMITED
900 ACE™ TURBO R W/ LIMITED PACKAGE SHOWN

// WHAT'S NEW

- Rotax® 900 ACE™ Turbo R with cable throttle housing and electro-mechanical reverse
- 900 ACE Turbo – 130 engine available
- Luxury Package available: Includes 7.8 in. wide LCD display with BRP Connect, premium Liquid Titanium color and studded track
- RAS™ X front suspension w/ wider ski stance
- rMotion™ X rear suspension with Air Control Suspension (ACS) rear shock

// PACKAGE HIGHLIGHTS

- 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
- Glove box with 4 L/1 gal of storage
- Heated boot plug
- Heated visor outlets for driver and passenger
- pDrive™ clutch
- Electro-mechanical reverse
- Ergo-step side panels
- SilentDrive™ system with 15 x 137 x 1.25 in. Silent Track II
- Forward adjustable riser
- Heavy-duty rear bumper
- Backlit multifunction handlebar controls
- Pivoting mirrors
- RF D.E.S.S.™ key

ROTAX® ENGINE	900 ACE™ TURBO R	900 ACE™ TURBO – 130	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	73 mm – 69.7 mm	73 mm – 69.7 mm	73 mm – 69.7 mm
Carburation	EFI	EFI	EFI
Fuel type – Octane	Premium unleaded – 91	Premium unleaded – 91	Regular unleaded – 87
Fuel tank	36 L/9.5 US gal	36 L/9.5 US gal	36 L/9.5 US gal
Oil tank capacity	3.3 L/3.5 qt	3.3 L/3.5 qt	3.3 L/3.5 qt
POWERTRAIN			
Drive clutch Driven clutch	pDrive™ QRS Vent	pDrive™ QRS Vent	pDrive™ with slider shoes QSR
Drive sprocket pitch	36 mm/1.43 in.	36 mm/1.43 in.	36 mm/1.43 in.
DRY WEIGHT			
Dry weight	268 kg/590 lb	266 kg/586 lb	254 kg/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		1,077 mm/42.4 in.	
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 only	

COLOR	
Liquid Titanium (w/ Luxury Package only)	
Black	

SUSPENSION	
Front suspension	RAS™ X
Front shock	HPG™
Front suspension travel	225 mm/8.9 in.
Rear suspension	rMotion™
Center shock	HPG™
Rear shock	ACS (Air Control Suspension)
Rear suspension travel	276 mm/10.9 in.

FEATURES	
Frame	REV® Gen4
Bodywork	Wide design
Skis	Pilot™ 5.7 SL
Seating	2-up heated
Handlebar	U-shaped aluminum
Riser block height	Adjustable–120 mm/4.7 in.
Starter	Electric
Reverse	Electro-mechanic
Air radiator	Fan (Turbo engines only)
Brake system	Brembo brake with stainless-steel braided brake line
Heated throttle lever/grips	Standard (driver and passenger)
Gauge type	7.2 in. wide digital display 7.8 in. wide LCD color display (w/ 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 with cable throttle housing

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® 900 ACE™ Turbo – 130 engine

Powerful, lightweight and efficient, delivering instant acceleration at the punch of the throttle. Reliable, powerful performance with revised calibration of the drive-by-wire intelligent Throttle Control (iTC) for more linear and predictable response with three driving modes (Sport, Standard, ECO) and finger throttle.

3 Luxury Package

Three premium features consisting of a distinctive Liquid Titanium coloration, 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

STARTING AT ***$11,199***

Trail comfort and 2-up features with precision handling and savvy style.

GRAND TOURING SPORT 900 ACE™ SHOWN

// 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
- 4.5 in. digital display
- RAS™ 3 front suspension
- SC™-5M rear suspension
- Heated driver's visor power outlet
- pDrive™ clutch (900 ACE™)
- Pivoting mirrors
- Reversible throttle lever (thumb or finger activated)
- Brembo brake with braided stainless-steel brake line
- iTC™ Engine mapping modes (Standard, Sport or ECO®)
- Pilot™ 5.7 SL skis
- Mechanical reverse
- SilentDrive™ system with 15 x 137 x 1.25 in. Silent Track II
- NEW standard with two sets of LinQ attachment points

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	73 mm – 69.7 mm	74 mm – 69.7 mm
Carburation	EFI	EFI
Fuel type – Octane	Regular unleaded – 87	Regular unleaded – 87
Fuel tank	36 L/9.5 US gal	36 L/9.5 US gal
Oil tank capacity	3.3 L/3.5 qt	2.1 L/2.2 qt

POWERTRAIN		
Drive clutch Driven clutch	pDrive™ with slider shoes QRS	eDrive™ 2 QRS
Drive sprocket pitch	36 mm/1.43 in.	36 mm/1.43 in.

DRY WEIGHT		
Dry weight	241 kg/530 lb	231 kg/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	1,077 mm/42.4 in.
Track (Length x Width x Profile)	Silent Track II: 137 x 15 x 1.25 in.

COLOR
Catalyst Grey / Black

SUSPENSION	
Front suspension	RAS™ 3
Front shock	Motion Control
Front suspension travel	245 mm/8.9 in.
Rear suspension	SC™-5M
Center shock	Motion Control
Rear shock	HPG™
Rear suspension travel	245 mm/9.6 in.

FEATURES	
Frame	REV® Gen4
Bodywork	Wide design
Skis	Pilot™ 5.7 SL
Seating	2-up
Handlebar	U-shaped aluminum
Riser block height	120 mm/4.7 in.
Starter	Electric
Reverse	Mechanical
Brake system	Brembo brake with stainless-steel braided brake line
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 60 hp* 600 ACE is the industry's fuel-economy leader, and the 95 hp* 900 ACE ensures lively performance at an incredible value.
*Observed HP metric based on internal dyno test in optimal conditions.

2 RAS™ 3 front suspension

Stable and precise front suspension design and geometry, optimized for the REV Gen4 platform.

3 HPG™ rear shock

High-quality KYB high-pressure gas shock for excellent performance and reliability.

GRAND TOURING SPORT
900 ACE™ SHOWN

(See website for image)

4 SilentDrive™ system

Clearly noticeable track drivers, interior track design and suspension geometry designed to reduce sound for the rider 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 Modular 2-up seat

2-up seat with passenger handholds and air deflectors

EXPEDITION® XTREME™

STARTING AT ***$14,799***

The high-performance sport-utility sled with capability to go just about anywhere.

EXPEDITION® XTREME™ 850 E-TEC® SHOWN

// PACKAGE HIGHLIGHTS

- Rotax® 850 E-TEC® engine
- KYB† PRO 36 aluminum piggyback rear shock with compression adjusters
- HPG™ Plus front shocks
- 4.5 in. digital display
- RAS™ 3 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
- Easy-shift transmission (H-L-N) with RER™ electronic reverse
- Pilot™ DS 3 skis
- Adjustable ski stance
- RF D.E.S.S.™ key
- NEW two color options

ROTAX® ENGINE	850 E-TEC®
Engine details	Liquid-cooled, two-stroke, eRAVE™
Horsepower	165
Cylinders – Displacement	2 – 849 cc
Bore – Stroke	82 mm – 80.4 mm
Carburation	E-TEC® direct injection with additional booster injectors
Fuel type – Octane	Premium unleaded – 91
Fuel tank	42 L/11.1 US gal
Oil tank capacity	3.4 L/3.6 qt

POWERTRAIN	
Drive clutch	pDrive™ with clickers
Driven clutch	QRS
Drive sprocket pitch	73 mm/2.86 in.

DRY WEIGHT	
Dry weight	271 kg/596 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	975 or 1,020 mm/38.4 or 40.2 in.
Track (Length x Width x Profile)	Cobra WT: 154 x 20 x 1.8 in.

COLOR

Arctic Desert / Black

Black

SUSPENSION	
Front suspension	RAS™ 3
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	
Frame	REV® Gen4
Bodywork	Wide design
Skis	Pilot™ DS 3
Seating	1-up modular with rear seat storage
Handlebar	U-shaped aluminum with J-hooks/ Low grab handle/Flexible handguards
Riser block height	145 mm/5.7 in.
Starter	Electric
Reverse	RER™
Air radiator	Fan
Brake system	Brembo brake with stainless-steel braided brake line
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 Like a Summit® with a 20 in. wide track

The REV® Gen4 platform paired with the hybrid RAS 3 front suspension allows effortless maneuvers in deep-snow, while the 20 x 154 x 1.8 in. Cobra track provides incredible flotation and traction.

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 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.

EXPEDITION® XTREME™
850 E-TEC® SHOWN

4 HPG™ Plus front shocks

Highest-quality KYB lightweight rebuildable high-pressure gas shocks. Rebuildable and 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

STARTING AT ***$13,999***

The utmost touring sport-utility vehicle with an incredible list of work and luxury features.

EXPEDITION® SE 900 ACE™ TURBO SHOWN

// WHAT'S NEW

- Two color options

// PACKAGE HIGHLIGHTS

- Rotax® 600R E-TEC®, 900 ACE™ Turbo - 150 and 900 ACE™ engines
- Air Control Suspension (ACS) rear shock
- 7.8 in. wide LCD display with BRP Connect available (ACE engines only)
- RAS™ 3 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
- 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
- RF D.E.S.S.™ key
- Backlit multifunction handlebar controls

ROTAX® ENGINE	600R E-TEC®	900 ACE™ TURBO - 150	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
Horsepower	125	150	95
Cylinders – Displacement	2 - 599.4 cc	3 – 899 cc	3 – 899 cc
Bore – Stroke	72.3 mm – 73 mm	73 mm – 69.7 mm	73 mm – 69.7 mm
Carburation	E-TEC® direct injection	EFI	EFI
Fuel type – Octane	Premium unleaded – 91	Premium unleaded – 91	Regular unleaded – 87
Fuel tank	42 L/11.1 US gal	42 L/11.1 US gal	42 L/11.1 US gal
Oil tank capacity	3.4 L/3.6 qt	3.3 L/3.5 qt	3.3 L/3.5 qt
POWERTRAIN			
Drive clutch Driven clutch	pDrive™ with clickers QRS	pDrive™ QRS Vent	pDrive™ with slider shoes QRS
Drive sprocket pitch	73 mm/2.86 in.	73 mm/2.86 in.	73 mm/2.86 in.
DRY WEIGHT			
Dry weight	290 kg/639 lb	315 kg/694 lb	303 kg/666 lbs.
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	975 or 1,020 mm/38.4 or 40.2 in.		
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. Cobra WT: 154 x 20 x 1.8 in. opt.		

COLOR	
Liquid Titanium / Black	
Black	
SUSPENSION	
Front suspension	RAS™ 3
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.
FEATURES	
Frame	REV® Gen4
Bodywork	Wide design
Skis	Pilot™ 7.4
Seating	2-up modular with underseat storage
Handlebar	U-shaped aluminum with J-hooks/Low grab handle
Riser block height	Adjustable-120 mm/4.7 in.
Starter	Electric
Reverse	RER™ (2-stroke) Electro-mechanic (4-stroke)
Air radiator	High-efficiency w/ fan (4-stroke) Fan (2-stroke)
Brake system	Brembo brake with stainless-steel braided brake line
Heated throttle lever/grips	Standard (driver and passenger)
Gauge type	7.2 in. wide digital display 7.8 in. wide LCD color display (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 - 150 engine

With a Rotax-built turbocharger specifically designed for the 900 ACE engine, riders get the technology they love with the reliable, powerful performance they demand in one advanced engine package.

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 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 900 ACE™ TURBO 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.

(See website for image)

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® SWT

STARTING AT **$13,599**

A supreme deep-snow sport-utility vehicle with unrivaled flotation and an exemplary list of utility features.

EXPEDITION® SWT
900 ACE™ TURBO SHOWN

// WHAT'S NEW

- High-quality HPG shock package
- Two color options

// PACKAGE HIGHLIGHTS

- Rotax® 600R E-TEC®, 900 ACE™ Turbo - 150 and 900 ACE™ engines
- 24 in. wide Multi-LinQ plate with 125 lb/56.7 kg cargo capacity
- 4.5-in. digital display
- RAS™ 3 front suspension
- SC™-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
- High passenger backrest
- 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
- RF D.E.S.S.™ key

ROTAX® ENGINE	600R E-TEC®	900 ACE™ TURBO – 150	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
Horsepower	125	150	95
Cylinders – Displacement	2 – 599.4 cc	3 – 899 cc	3 – 899 cc
Bore – Stroke	72.3 mm – 73 mm	73 mm – 69.7 mm	73 mm – 69.7 mm
Carburation	E-TEC® direct injection	EFI	EFI
Fuel type – Octane	Premium unleaded – 91	Premium unleaded – 91	Regular unleaded – 87
Fuel tank	42 L/11.1 US gal	42 L/11.1 US gal	42 L/11.1 US gal
Oil tank capacity	3.3 L/3.5 qt	3.3 L/3.5 qt	3.3 L/3.5 qt
POWERTRAIN			
Drive clutch Driven clutch	pDrive™ with clickers QRS	pDrive™ QRS Vent	pDrive™ with slider shoes QRS
Drive sprocket pitch	73 mm/2.86 in.	73 mm/2.86 in.	73 mm/2.86 in.
DRY WEIGHT			
Dry weight	285 kg/626 lb	309 kg/681 lb	296 kg/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	975 or 1,020 mm/38.4 or 40.2 in.		
Track (Length x Width x Profile)	Silent Cobra WT: 154 x 24 x 1.5 in.		

COLOR

Lava Red / Black

Black

SUSPENSION	
Front suspension	RAS™ 3
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.

FEATURES	
Frame	REV® Gen4
Bodywork	Wide design
Skis	Pilot™ 7.4
Seating	2-up modular with underseat storage
Handlebar	U-shaped aluminum with J-hooks/ Low grab handle
Riser block height	145 mm/5.7 in.
Starter	Electric
Reverse	RER™ (2-stroke) Electro-mechanic (4-stroke)
Air radiator	High-efficiency w/ fan (4-stroke) Fan (2-stroke)
Brake system	Brembo brake with stainless-steel braided brake line
Heated throttle lever/grips	Standard (driver and passenger)
Gauge type	4.5 in. digital display
Windshield	585 mm/23 in.
Runner – Carbide	Square 3/8 in. – 4 in.
Bumpers (front/rear)	Heavy Duty/Hitch receiver

// FEATURE HIGHLIGHTS

1 Rotax® 900 ACE™ Turbo – 150 engine

With a Rotax-built turbocharger specifically designed for the 900 ACE engine, riders get the technology they love with the reliable, powerful performance they demand in one advanced engine package.

2 Utility 2-up utility 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® SWT
900 ACE™ TURBO SHOWN

4 RAS™ 3 front suspension

Similar geometry and steering to the RAS 3 mountain front end for capability and light steering feel on- and off-trail. Optimized for crossover usage, two ski stance positions dial in handling: 40.2 in. (102 cm) or 38.4 in. (97.5 cm).

5 24 in. Super Wide Track (SWT)

The industry's largest footprint provides unmatched traction and helps achieve the lowest ground pressure in snowmobiling.

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® LE

STARTING AT **$12,999**

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

- High-quality HPG shock package
- Two color options

// PACKAGE HIGHLIGHTS

- Rotax® 600R E-TEC®, 900 ACE™ Turbo – 150 and 900 ACE™ engines
- 20 in. wide Multi-LinQ plate with 125 lb/56.7 kg cargo capacity
- 4.5 in. digital display
- RAS™ 3 front suspension
- SC™-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
- RF D.E.S.S.™ key

ROTAX® ENGINE	600R E-TEC®	900 ACE™ TURBO – 150	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
Horsepower	125	150	95
Cylinders – Displacement	2 – 599.4 cc	3 – 899 cc	3 – 899 cc
Bore – Stroke	72.3 mm – 73 mm	73 mm – 69.7 mm	73 mm – 69.7 mm
Carburation	E-TEC® direct injection	EFI	EFI
Fuel type – Octane	Premium unleaded – 91	Premium unleaded – 91	Regular unleaded – 87
Fuel tank	42 L/11.1 US gal	42 L/11.1 US gal	42 L/11.1 US gal
Oil tank capacity	3.3 L/3.5 qt	3.3 L/3.5 qt	3.3 L/3.5 qt
POWERTRAIN			
Drive clutch Driven clutch	pDrive™ with clickers QRS	pDrive™ QRS Vent	pDrive™ with slider shoes QRS
Drive sprocket pitch	73 mm/2.86 in.	73 mm/2.86 in.	73 mm/2.86 in.
DRY WEIGHT			
Dry weight	280 kg/616 lb	304 kg/669 lb	290 kg/639 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	975 or 1,020 mm/38.4 or 40.2 in.		
Track (Length x Width x Profile)	Silent Cobra WT: 154 x 20 x 1.5 in.		

COLOR

Neo Yellow / Black

Black

SUSPENSION	
Front suspension	RAS™ 3
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.

FEATURES	
Frame	REV® Gen4
Bodywork	Wide design
Skis	Pilot™ 7.4
Seating	2-up modular with underseat storage
Handlebar	U-shaped aluminum with J-hooks/ Low grab handle
Riser block height	145 mm/5.7 in.
Starter	Electric
Reverse	RER™ (2-stroke) Electro-mechanic (4-stroke)
Air radiator	High-efficiency w/ fan (4-stroke) Fan (2-stroke)
Brake system	Brembo brake with stainless-steel braided brake line
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 – 4 in.
Bumpers (front/rear)	Heavy-duty/Hitch receiver

// FEATURE HIGHLIGHTS

1 Rotax® 900 ACE™ Turbo – 150 engine

With a Rotax-built turbocharger specifically designed for the 900 ACE engine, riders get the technology they love with the reliable, powerful performance they demand in one advanced engine package.

2 Utility 2-up utility 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.

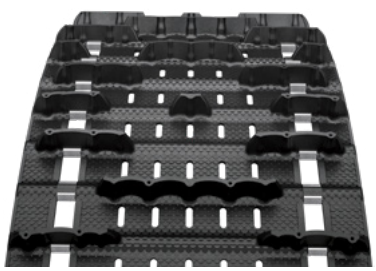
3 SC™-5U articulating rear suspension

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™ 3 front suspension

Similar geometry and steering to the RAS 3 mountain front end for capability and light steering feel on- and off-trail. Optimized for crossover usage, two ski stance positions dial in handling: 40.2 in. (102 cm) or 38.4 in. (97.5 cm).



5 20" wide track

Superb flotation and towing capability.

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

STARTING AT ***$9,299***

Ultra-responsive chassis for on- or off-trail rides and extensive array of sport-utility and 2-up features.

EXPEDITION® SPORT 900 ACE™ SHOWN

// PACKAGE HIGHLIGHTS

- Rotax® 600 EFI, 900 ACE™ and 600 ACE™ engines with 420W magneto available
- pDrive™ clutch (600 EFI and 900 ACE™)
- 4.5-in. digital display
- RAS™ 3 front suspension
- SC™-5U articulating rear suspension with locking mechanism (no tool required)
- Brembo brake with braided stainless-steel brake line
- 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
- NEW 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	72.3 mm – 73 mm	73 mm – 69.7 mm	74 mm – 69.7 mm
Carburation	EFI	EFI	EFI
Fuel type – Octane	Regular unleaded – 87	Regular unleaded – 87	Regular unleaded – 87
Fuel tank	36 L/9.5 US gal	36 L/9.5 US gal	36 L/9.5 US gal
Oil tank capacity	3.4 L/3.6 qt	3.3 L/3.5 qt	2.1 L/2.2 qt

POWERTRAIN			
Drive clutch Driven clutch	pDrive™ with slider shoes QRS	pDrive™ with slider shoes 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	228 kg/502 lb	251 kg/552 lb	241 kg/531 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	975 or 1,020 mm/38.4 or 40.2 in.
Track (Length x Width x Profile)	Charger: 154 x 16 x 1.5 in.

COLOR
White / Black

SUSPENSION	
Front suspension	RAS™ 3
Front shock	Motion Control
Front suspension travel	210 mm/8.3 in.
Rear suspension	SC™-5U
Center shock	Motion Control
Rear shock	HPG™
Rear suspension travel	239 mm/9.4 in.

FEATURES	
Frame	REV® Gen4
Bodywork	Wide design
Skis	Pilot™ DS 2
Seating	2-up
Handlebar	U-shaped aluminum 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 brake with stainless-steel braided brake line
Heated throttle lever/grips	Standard (driver only)
Gauge type	4.5 in. digital display
Windshield	585 mm/23 in.
Runner – Carbide	Square 3/8 – 4 in.
Bumpers (front/rear)	Std/Heavy Duty with tongue-type hitch

// FEATURE HIGHLIGHTS

(See website for image)

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™ 3 front suspension

Stable and precise front suspension design and geometry, optimized for the REV Gen4 platform.

EXPEDITION® SPORT 900 ACE™ SHOWN

4 Air radiator with fan (ACE™ engines only)

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

STARTING AT ***$8,849***

Great off-trail and deep-snow performance with light-utility capability.

TUNDRA™ LT
600 ACE™ SHOWN

// PACKAGE HIGHLIGHTS

- Rotax® 600 EFI and 600 ACE™ engine with 650W magneto available
- HPG™ rear shock
- 4.5 in. digital display
- LTS telescopic front suspension
- SC™-5U articulating rear suspension with locking mechanism (no tool required)
- Brembo brake with braided stainless-steel brake line
- 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	72.3 mm – 73 mm	73 mm – 69.7 mm
Carburation	EFI	EFI
Fuel type – Octane	Regular unleaded – 87	Regular unleaded – 87
Fuel tank	36 L/9.5 US gal	36 L/9.5 US gal
Oil tank capacity	3.4 L/3.6 qt	2.1 L/2.2 qt

POWERTRAIN		
Drive clutch Driven clutch	pDrive™ with slider shoes QRS	eDrive™ 2 QRS
Drive sprocket pitch	73 mm/2.86 in.	73 mm/2.86 in.

DRY WEIGHT		
Dry weight	223 kg/491 lb	234 kg/515 lb

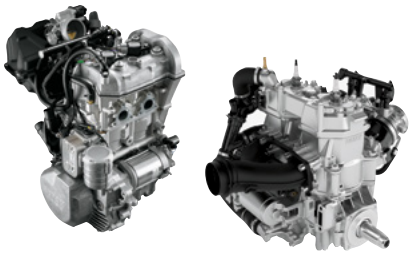
DIMENSIONS	
Overall vehicle length	3,259 mm/129.3 in.
Overall vehicle width	994 mm/39.1 in.
Overall vehicle height	1,513 mm/59.6 in.
Ski stance	813 mm/32 in.
Track (Length x Width x Profile)	Charger: 154 x 16 x 1.5 in.

COLOR
Neo Yellow / 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	
Frame	REV® Gen4
Bodywork	Wide design
Skis	Pilot™ DS 2
Seating	Short 2-up
Handlebar	U-shaped aluminum with J-hooks/ Low 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 brake with stainless-steel braided brake line
Heated throttle lever/grips	Standard
Gauge type	4.5 in. digital display
Windshield	430 mm/17 in.
Runner – Carbide	Square 3/8 – 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. 60 hp* (600 ACE) or 85 hp* (600 EFI) versions ensure great performance and an incredible value.
*Observed HP metric based on internal dyno test in optimal conditions.

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 EFI 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

STARTING AT ***$8,249***

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
- 4.5 in. digital display
- LTS telescopic front suspension
- cMotion™ rear suspension
- Brembo brake with braided stainless-steel brake line
- Heavy-duty rear bumper
- Air radiator with fan (600 ACE only)
- Standard electric start
- Deep-snow running boards with large openings
- NEW 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	72.3 mm – 73 mm	73 mm – 69.7 mm
Carburation	EFI	EFI
Fuel type – Octane	Regular unleaded – 87	Regular unleaded – 87
Fuel tank	36 L/9.5 US gal	36 L/9.5 US gal
Oil tank capacity	3.4 L/3.6 qt	2.1 L/2.2 qt

POWERTRAIN		
Drive clutch Driven clutch	pDrive™ with slider shoes QRS	eDrive™ 2 QRS
Drive sprocket pitch	73 mm/2.86 in.	73 mm/2.86 in.

DRY WEIGHT		
Dry weight	212 kg/466 lb	221 kg/486 lb

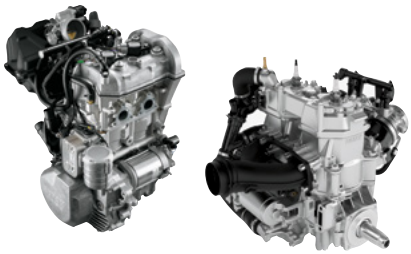
DIMENSIONS	
Overall vehicle length	3,110 mm/122.4 in.
Overall vehicle width	994 mm/39.1 in.
Overall vehicle height	1,369 mm/53.9 in.
Ski stance	813 mm/32 in.
Track (Length x Width x Profile)	Cobra: 146 x 16 x 1.6 in.

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	
Frame	REV® Gen4
Bodywork	Wide design
Skis	Pilot™ DS 2
Seating	Short 2-up
Handlebar	U-shaped aluminum with J-hooks
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 brake with stainless-steel braided brake line
Heated throttle lever/grips	Standard
Gauge type	4.5 in. digital display
Windshield	430 mm/17 in.
Runner – Carbide	Square 3/8 – 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. 60 hp* (600 ACE) or 85 hp* (600 EFI) versions ensure great performance and an incredible value.
*Observed HP metric based on internal dyno test in optimal conditions.

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® SWT

STARTING AT ***$13,549***

Optimal off-trail traction and flotation with the widest track in the industry.

SKANDIC® SWT
900 ACE™ SHOWN

// PACKAGE HIGHLIGHTS

- Rotax® 600R E-TEC® engine or 900 ACE™ engine with 650W magneto available
- HPG™ rear shock
- 24 in. wide Multi-LinQ plate with 125 lb/56.7 kg cargo capacity
- 4.5 in. digital display
- LTS telescopic front suspension
- SC™-5U articulating rear suspension with locking mechanism (no tool required)
- NEW two color options
- 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®	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	72.3 mm – 73 mm	73 mm – 69.7 mm
Carburation	E-TEC® direct injection	EFI
Fuel type – Octane	Premium unleaded – 91	Regular unleaded – 87
Fuel tank	42 L/11.1 US gal	42 L/11.1 US gal
Oil tank capacity	3.4 L/3.6 qt	3.3 L/3.5 qt

POWERTRAIN		
Drive clutch Driven clutch	pDrive™ with clickers QRS	pDrive™ with slider shoes QRS
Drive sprocket pitch	73 mm/2.86 in.	73 mm/2.86 in.

DRY WEIGHT		
Dry weight	287 kg/633 lb	298 kg/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 SWT: 154 x 24 x 1.5 in.

COLOR
Lava Red / Black
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	
Frame	REV® Gen4
Bodywork	Wide design
Skis	Pilot™ 7.4
Seating	2-up modular with underseat storage
Handlebar	U-shaped aluminum with J-hooks/ Low grab handle
Riser block height	145 mm/5.7 in.
Starter	Electric
Reverse	RER™ (2-stroke) Electro-mechanic (4-stroke)
Air radiator	High-efficiency w/ fan (4-stroke) Fan (2-stroke)
Brake system	Brembo brake with stainless-steel braided brake line
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 – 4 in.
Bumpers (front/rear)	Std/Heavy-duty with tongue-type hitch

// 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 Utility 2-up utility 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 LTS front suspension

Industry-exclusive telescopic front suspension enables a large, flat belly pan for exceptional deep-snow flotation.

SKANDIC® SWT
900 ACE™ 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 24 in. super wide track (SWT)

The industry's largest footprint provides unmatched traction and helps achieve the lowest ground pressure in snowmobiling.

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® WT

STARTING AT **$10,249**

Hardworking off-trail performance and towing capacity.

SKANDIC® WT
900 ACE™ SHOWN

// PACKAGE HIGHLIGHTS

- Rotax® 600 R E-TEC and 600 EFI, 2-stroke or 900 ACE™ and 600 ACE™ engines with 650W magneto available
- HPG™ rear shock
- 20 in. wide Multi-LinQ plate with 125 lb/56.7 kg cargo capacity
- 4.5 in. digital display
- 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
- NEW two color options

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	3 600 cc
Bore – Stroke	72.3 mm – 73 mm	72.3 mm – 73 mm	73 mm – 69.7 mm	74 mm – 69.7 mm
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	42 L/11.1 US gal	42 L/11.1 US gal	42 L/11.1 US gal	42 L/11.1 US gal
Oil tank capacity	3.4 L/3.6 qt	3.4 L/3.6 qt	3.3 L/3.5 qt	2.1 L/2.2 qt

POWERTRAIN				
Drive clutch Driven clutch	pDrive™ with clicker QRS	pDrive™ with slider shoes QRS	pDrive™ with slider shoes 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	271 kg/596 lb	261 kg/575 lb	282 kg/620 lb	272 kg/598 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)	Cobra WT: 154 x 20 x 1.5 in.

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

Lava Red / Black

Black

FEATURES

Frame	REV® Gen4
Bodywork	Wide design
Skis	Pilot™ 7.4
Seating	2-up modular with underseat storage
Handlebar	U-shaped aluminum with J-hooks/ Low grab handle
Riser block height	145 mm/5.7 in.
Starter	Electric
Reverse	RER™ (2-stroke) Electro-mechanic (4-stroke)
Air radiator	High-efficiency w/ fan (4-stroke) Fan (2-stroke)
Brake system	Brembo brake with stainless-steel braided brake line
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)	Std/Heavy-duty with tongue-type hitch

// 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 Utility 2-up utility 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 LTS front suspension

Industry-exclusive telescopic front suspension enables a large, flat belly pan for exceptional deep-snow flotation.

SKANDIC® WT
900 ACE™ SHOWN

(See website for image)

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" 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.

SKANDIC® SPORT

STARTING AT ***$9,349***

The best 20 in. utility value in snowmobiling.

SKANDIC® SPORT
600 EFI SHOWN

// PACKAGE HIGHLIGHTS

- Rotax® 600 EFI engine
- HPG™ rear shock
- 4.5 in. digital display
- 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

ROTAX® ENGINE	600 EFI
Engine details	Liquid-cooled, two-stroke
Horsepower	85
Cylinders – Displacement	2 - 599.4 cc
Bore – Stroke	72.3 mm – 73 mm
Carburation	EFI
Fuel type – Octane	Regular unleaded - 87
Fuel tank	42 L/11.1 US gal
Oil tank capacity	3.4 L/3.6 qt

POWERTRAIN	
Drive clutch	pDrive™ with slider shoes
Driven clutch	QRS
Drive sprocket pitch	73 mm/2.86 in.

DRY WEIGHT	
Dry weight	236 kg/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	
Catalyst Grey / 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	
Frame	REV® Gen4
Bodywork	Wide design
Skis	Pilot™ 7.4
Seating	1-up modular with rear seat storage
Handlebar	U-shaped aluminum with J-hooks
Riser block height	145 mm/5.7 in.
Starter	Electric
Reverse	RER™
Brake system	Brembo brake with stainless-steel braided brake line
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

600 cc-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.

(See website for image)

5 20" 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						
		SUMMIT				FREERIDE	BACKCOUNTRY	
				NEW				
		X WITH EXPERT PACKAGE	X	EDGE	SP	FREERIDE	X-RS	X
COLOR		*ULTIMATE* Liquid Titanium / Carbon Black *ULTIMATE* Triple Black	*ULTIMATE* Scandinavian Blue / Orange Crush Triple Black	*ULTIMATE* Catalyst Grey / Octane Blue *ULTIMATE* Black	Black / Orange Crush Black	Arctic Desert	*ULTIMATE* Liquid Titanium / Carbon Black *ULTIMATE* Black	Scandinavian Blue / Orange Crush Black
FEATURES	Skis	Pilot DS 3	Pilot DS 3	Pilot DS 3	Pilot DS 3	Pilot DS 3	Pilot DS 2	Pilot DS 2
	Seat	Deep-snow ultra compact and lightweight	Deep-snow compact and lightweight	Deep-snow compact and lightweight	Deep-snow	Deep-snow compact and lightweight	Trail performance	Trail performance
	Handlebar	Tapered U-shaped aluminum with J-hooks / Low grab handle / Flexible handguards	Tapered U-shaped aluminum with J-hooks / Low grab handle	Tapered U-shaped aluminum with J-hooks / Low grab handle	Tapered U-shaped aluminum with J-hooks / Low grab handle	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
	Starter	SHOT	SHOT, Electric (opt. select models), Manual (opt. select models)	SHOT	Electric, SHOT (opt.), Manual (opt. select models)	850 E-TEC: SHOT, Electric (opt. Select models) 850 E-TEC Turbo: SHOT	Electric, SHOT (opt. select configurations)	Electric, SHOT (opt. select configurations)
	Reverse	RER	RER	RER	RER	RER	RER	RER
	Windshield height (in.)	Optional	Optional	Optional	Optional	Optional	Optional	14
GAUGE	Type	4.5 in. digital display	4.5 in. digital display	4.5 in. digital display	4.5 in. digital display	4.5 in. digital display	7.2 in. wide digital display 7.8 in. wide LCD color display (opt.)	7.2 in. wide digital display 7.8 in. wide LCD color display (opt.)
SUSPENSION	Front suspension	RAS 3	RAS 3	RAS 3	RAS 3	RAS 3	RAS 3	RAS 3
	Front shock	HPG Plus with lightweight springs	HPG Plus with lightweight springs	HPG	HPG	KYB PRO 36 R Easy-Adjust	KYB PRO 36 R Easy-Adjust	HPG Plus
	Rear suspension	tMotion with adjustable limiter strap	tMotion	tMotion	tMotion	tMotion	cMotion	cMotion
	Center shock	HPG Plus with lightweight spring	HPG Plus with lightweight spring	HPG	HPG	KYB PRO 40 Easy-Adjust	KYB PRO 40 Easy-Adjust	HPG Plus
	Rear shock	KYB PRO 36 Easy-Adjust	HPG Plus	HPG	HPG	KYB PRO 40 Easy-Adjust	KYB PRO 40 Easy-Adjust	KYB PRO 36 Easy-Adjust
ROTAX ENGINE	Engine	850 E-TEC Turbo 850 E-TEC	850 E-TEC Turbo 850 E-TEC	850 E-TEC	850 E-TEC 600R E-TEC	850 E-TEC Turbo 850 E-TEC	850 E-TEC	850 E-TEC
	Fuel tank (liters / US gallons)	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 Light 154 x 16 x 2.5 in. 154 x 16 x 3.0 in. 165 x 16 x 3.0 in. 850 E-TEC Turbo only 175 x 16 x 3.0 in.	PowderMax Light with FlexEdge: 154 x 16 x 2.5 in. 154 x 16 x 3.0 in. opt. 165 x 16 x 2.5 in. sea-level opt. only 165 x 16 x 3.0 in.	PowderMax Light with FlexEdge: 154 x 16 x 2.5 154 x 16 x 3.0 (opt.) 165 x 16 x 3.0 175 x 15 x 3.0	PowderMax II with FlexEdge: 146 x 16 x 2.5 PowderMax Light with FlexEdge: 154 x 16 x 2.5 154 x 16 x 3.0 (opt.) 165 x 16 x 2.5 165 x 16 x 3.0 (opt.)	PowderMax II with FlexEdge: 146 x 16 x 2.5 PowderMax Light with FlexEdge: 154 x 16 x 2.5 154 x 16 x 3.0 (opt.) 165 x 16 x 2.5 (sea-level opt. only) 165 x 16 x 3.0	Cobra: 146 x 15 x 1.6 Ice Cobra: 146 x 15 x 1.6 (opt.) PowderMax: 146 x 16 x 2.0 (opt.) 154 x 16 x 2.0 154 x 16 x 2.5 (opt.)	Cobra: 146 x 15 x 1.6 Ice Cobra: 146 x 15 x 1.6 (opt.) PowderMax: 146 x 16 x 2.0 (opt.)
OVERALL DIMENSIONS	Ski stance (in.)	34	35.8 or 37.4	35.8 or 37.4	35.8 or 37.4	35.8 or 37.4	38.4 or 40.2	38.4 or 40.2
	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.)	122.4 (146 in.) 130.6 (154 in.) 850 E-TEC® only 135.9 (165 in.)	120.4 (146 in.) 125.5 (154 in.) 129.9 (165 in.)	125 (146 in.) 129.3 (154 in.)	125
	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	44.9 to 46.5	44.9 to 46.5
	Height (in.)	51.4	54.9	54.9	54.9	54.9	50.5	50.5
ESTIMATED DRY WEIGHT	By engine (kg / lb)	850 E-TEC Turbo: 208 / 458 (154 in.) 212 / 468 (165 in.) 215 / 474 (175 in.) 850 E-TEC: 198 / 437 (154 in.) 202 / 446 (165 in.)	850 E-TEC Turbo: 207 / 456 (154 in.) 211 / 466 (165 in.) 850 E-TEC: 198 / 435 (154 in.) 201 / 442 (165 in.)	207 / 458 (154 in.) 212 / 468 (165 in.) 214 / 470 (175 in.)	850 E-TEC: 208 / 459 (146 in.) 206 / 454 (154 in.) 209 / 460 (165 in.) 600R E-TEC: 204 / 449 (146 in.) 202 / 445 (154 in.)	850 E-TEC Turbo: 214 / 471 (154 in.) 206 / 454 (165 in.) 850 E-TEC: 206 / 453 (146 in.) 205 / 450 (154 in.) 206 / 453 (165 in.)	214 / 472 (146 in.) 220 / 485 (154 in.)	209 / 462

CROSSOVER									
BACKCOUNTRY		MACH	RENEGADE						
		NEW	NEW						
BACKCOUNTRY	SPORT	Z	X-RS WITH COMPETITION PACKAGE	X-RS	X	ENDURO	ADRENALINE	SPORT	
Catalyst Grey / Octane Blue Black	Catalyst Grey / Black	Carbon Black / Liquid Titanium	Black	Sunburst Yellow / Black Black	Sunburst Yellow / Black Black	Scandinavian Blue / Manta Green Black	Sunburst Yellow / Black Black	Sunburst Yellow / Black	
Pilot DS 2	Pilot DS 2	Pilot X	Pilot X	Pilot X Pilot TX (optional)	Pilot X Pilot TX (optional)	Pilot TX	Pilot X	Pilot 5.7	
Trail performance	Trail compact	Trail with storage	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 performance (2-stroke engines) Trail with storage (4-stroke engines)	
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 / Transparent handguards	U-shaped aluminum with J-hooks	U-shaped aluminum with J-hooks / Transparent handguards	U-shaped aluminum with J-hooks	
Electric	Electric	Electric	Manual	Electric	Electric	Electric	Electric	Electric	
RER	RER	Electro-mechanic	RER	RER (850 E-TEC) Mechanical (900 ACE Turbo R)	RER (2-stroke) Electro-mechanic (4-stroke)	RER (2-stroke) Electro-mechanic (4-stroke)	RER (2-stroke) Electro-mechanic (4-stroke)	RER (600 EFI) Mechanical (600 ACE)	
14	14	14	14	Optional	14	17	14	14	
4.5 in. digital display	4.5 in. digital display	7.8 in. wide LCD color display	7.2 in. wide digital display	7.2 in. wide digital display 7.8 in. wide LCD color display (opt.)	7.2 in. wide digital display 7.8 in. wide LCD color display (opt.)	7.8 in. wide LCD color display	4.5 in. digital display	4.5 in. digital display	
RAS 3	RAS 3	RAS X	RAS X	RAS X	RAS X	RAS X	RAS X	RAS 3	
HPG Plus	Motion Control	KYB PRO Smart-Shox	KYB PRO 40 R Easy-Adjust	KYB PRO 36 Easy-Adjust KYB PRO Smart-Shox w/ opt. SAS	HPG Plus	HPG	HPG	Motion Control	
cMotion	cMotion	rMotion X	rMotion X	rMotion X with QAS (optional)	rMotion X with QAS (optional)	rMotion X	rMotion X	SC-5M	
HPG	Motion Control	KYB PRO 40	KYB PRO 40 Easy-Adjust (double-rate springs)	KYB PRO 40 Easy-Adjust	HPG Plus	HPG	HPG	Motion Control	
HPG	HPG	KYB PRO Smart-Shox	KYB PRO 40 Easy-Adjust	KYB PRO 40 Easy-Adjust KYB PRO Smart-Shox w/ opt. SAS	KYB PRO 36 Easy-Adjust	ACS (Air Control Suspension)	HPG	HPG	
850 E-TEC 600R E-TEC	600 EFI	900 ACE Turbo R	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 – 130 900 ACE	850 E-TEC 600R E-TEC 900 ACE Turbo R 900 ACE Turbo – 130 900 ACE	600 EFI 600 ACE	
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	
Cobra: 146 x 15 x 1.6	Cobra: 146 x 15 x 1.35 PowderMax: 146 x 16 x 2.0 (opt.)	Ripsaw 2-Ply: 137 x 15 x 1.25	Ripsaw 2-Ply: 137 x 15 x 1.25	RipSaw: 137 x 15 x 1.25 Ice Ripper XT: 137 x 15 x 1.25 (opt.) 137 x 15 x 1.5 (opt.)	RipSaw: 137 x 15 x 1.25 Ice Ripper XT: 137 x 15 x 1.25 (opt.) 137 x 15 x 1.5 (opt.)	Ice Ripper XT: 137 x 15 x 1.25	RipSaw: 137 x 15 x 1.25	Cobra: 137 x 15 x 1.35	
38.4 or 40.2	38.4 or 40.2	42.1 or 43.0 or 43.9	42.1 or 43.0 or 43.9	42.1 or 43.0 or 43.9	42.1 or 43.0 or 43.9	42.4	42.4	42.4	
125	125	119.6	119.6	119.6	119.6	119.6	119.6	119.6	
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	47.6 - 48.5 - 49.4	47.9	47.9	47.9	
50.5	50.5	49.9	49.9	49.9	49.9	52.4	49.9	49.9	
850 E-TEC: 219 / 483 600R E-TEC: 212 / 466	202 / 446	249 / 548	213 / 468	850 E-TEC: 225 / 495 900 ACE Turbo R: 241 / 531	850 E-TEC: 221 / 486 600R E-TEC: 214 / 470 900 ACE Turbo R: 238 / 524	850 E-TEC: 236 / 519 600R E-TEC: 229 / 504 900 ACE Turbo R: 253 / 558 900 ACE Turbo: 251 / 552 900 ACE: 241 / 529	850 E-TEC: 221 / 486 600R E-TEC: 214 / 470 900 ACE Turbo R: 238 / 524 900 ACE Turbo: 236 / 518 900 ACE: 226 / 497	600 EFI: 200 / 442 600 ACE: 213 / 469	

SPECIFICATIONS		TRAIL					
		MXZ				GRAND TOURING	
		X-RS	X	TNT	SPORT	LIMITED	SPORT
COLOR		Hyper Silver / Carbon Black Black	Catalyst Grey / Black Black	Catalyst Grey / Black Black	Catalyst Grey / Black	Liquid Titanium (w/ Luxury Package only) Black	Catalyst Grey / Black
FEATURES	Skis	Pilot X Pilot TX (optional)	Pilot X Pilot TX (optional)	Pilot X	Pilot 5.7	Pilot 5.7 SL	Pilot 5.7 SL
	Seat	Trail performance	Trail performance	Trail performance	Trail compact	2-up heated	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 / Transparent handguards	U-shaped aluminum with J-hooks	U-shaped aluminum	U-shaped aluminum
	Starter	Electric	Electric	Electric	Electric	Electric	Electric
	Reverse	RER	RER	RER	RER	Electro-mechanic	Mechanical
	Windshield height (in.)	Optional	14	14	14	23 with mirrors	23 with mirrors
GAUGE	Type	7.2 in. wide digital display 7.8 in. wide LCD color display (opt.)	7.2 in. wide digital display 7.8 in. wide LCD color display (opt.)	4.5 in. digital display	4.5 in. digital display	7.2 in. wide digital display 7.8 in. wide LCD color display (w/ Luxury Package)	4.5 in. digital display
SUSPENSION	Front suspension	RAS X	RAS X	RAS X	RAS 3	RAS X	RAS 3
	Front shock	KYB PRO 36 Easy-Adjust KYB PRO Smart-Shox (opt.)	HPG Plus	HPG	Motion Control	HPG	Motion Control
	Rear suspension	rMotion X with QAS (optional)	rMotion X with QAS (optional)	rMotion	SC-5M	rMotion	SC-5M
	Center shock	KYB PRO 40 Easy-Adjust	HPG Plus	HPG	Motion Control	HPG	Motion Control
	Rear shock	KYB PRO 40 Easy-Adjust KYB PRO Smart-Shox (opt.)	KYB PRO 36 Easy-Adjust	HPG	Motion Control	ACS (Air Control Suspension)	HPG
ROTAX ENGINE	Engine	850 E-TEC 600R E-TEC	850 E-TEC 600R E-TEC	850 E-TEC 600R E-TEC	600 EFI	900 ACE Turbo R 900 ACE Turbo – 130 900 ACE	900 ACE 600 ACE
	Fuel tank (liters / US gallons)	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.)	RipSaw: 129 x 15 x 1.25 Ice Ripper XT: 129 x 15 x 1.25 (opt.) 129 x 15 x 1.5 (opt.)	RipSaw: 129 x 15 x 1.25 Ice Ripper XT: 129 x 15 x 1.25 (opt.) 129 x 15 x 1.5 (opt.)	RipSaw: 129 x 15 x 1.25 Ice Ripper XT: 129 x 15 x 1.25 (opt.)	RipSaw: 129 x 15 x 1.25	Silent Track II: 137 x 15 x 1.25 in. Studded Silent Track II: 137 x 15 x 1.25 in. Luxury Package only	Silent Track II: 137 x 15 x 1.25
OVERALL DIMENSIONS	Ski stance (in.)	42.1 or 43.0 or 43.9	42.1 or 43.0 or 43.9	42.4	42.4	42.4	42.4
	Length (in.)	115.2	115.2	115.2	115.2	123.1	123.1
	Width (in.)	47.6 - 48.5 - 49.4	47.6 - 48.5 - 49.4	47.9	47.9	47.9	47.9
	Height (in.)	49.9	49.9	49.9	49.9	59.6	59.6
ESTIMATED DRY WEIGHT	By engine (kg / lb)	850 E-TEC: 222 / 490 600R E-TEC: 216 / 476	850 E-TEC: 216 / 476 600R E-TEC: 210 / 462	850 E-TEC: 216 / 477 600R E-TEC: 209 / 462	198 / 437lb	900 ACE Turbo R: 268 / 590 900 ACE Turbo: 266 / 586 900 ACE: 254 / 559	900 ACE: 241 / 530 600 ACE: 231 / 509

	SPORT-UTILITY				
	EXPEDITION				
	XTREME	SE	SWT	LE	SPORT
	Arctic Desert / Black Black	Liquid Titanium / Black Black	Lava Red / Black Black	Neo Yellow / Black Black	White / Black
	Pilot DS 3	Pilot 7.4	Pilot 7.4	Pilot 7.4	Pilot DS 2
	1-up modular with rear seat storage	2-up modular with underseat storage	2-up modular with underseat storage	2-up modular with underseat storage	2-up
	U-shaped aluminum with J-hooks / Low grab handle / Flexible handguards	U-shaped aluminum with J-hooks / Low grab handle	U-shaped aluminum with J-hooks / Low grab handle	U-shaped aluminum with J-hooks / Low grab handle	U-shaped aluminum with J-hooks
	Electric	Electric	Electric	Electric	Electric
	RER	RER (2-stroke) Electro-mechanic (4-stroke)	RER (2-stroke) Electro-mechanic (4-stroke)	RER (2-stroke) Electro-mechanic (4-stroke)	RER (600 EFI) Mechanical (ACE engines)
	14	23 with mirrors	23	23 with mirrors	23
	4.5 in. digital display	7.2 in. wide digital display 7.8 in. wide LCD color display (opt. on ACE engines)	4.5 in. digital display	4.5 in. digital display	4.5 in. digital display
	RAS 3	RAS 3	RAS 3	RAS 3	RAS 3
	HPG Plus	HPG	HPG	HPG	Motion Control
	SC-5U	SC-5U	SC-5U	SC-5U	SC-5U
	HPG Plus	HPG	HPG	HPG	Motion Control
	KYB PRO 36	ACS (Air Control Suspension)	HPG	HPG	HPG
	850 E-TEC	600R E-TEC 900 ACE Turbo – 150 900 ACE	600R E-TEC 900 ACE Turbo – 150 900 ACE	600R E-TEC 900 ACE Turbo – 150 900 ACE	600 EFI 900 ACE 600 ACE
	42 / 11.1	42 / 11.1	42 / 11.1	42 / 11.1	36 / 9.5
	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.) Cobra WT: 154 x 20 x 1.8 (opt.)	Silent Cobra SWT: 154 x 20 x 1.5	Silent Cobra WT: 154 x 20 x 1.5	Charger: 154 x 16 x 1.5
	38.4 or 40.2	38.4 or 40.2	38.4 or 40.2	38.4 or 40.2	38.4 or 40.2
	129.6	128.2	128.2	128.2	130.3
	44.9 to 46.5	47.7 to 48.8	47.7 to 48.8	47.7 to 48.8	44.9 to 46.5
	50.4	59.6	59.6	59.6	59.6
	271 / 596	600R E-TEC: 290 / 639 900 ACE Turbo: 315 / 694 900 ACE: 303 / 666	600R E-TEC: 285 / 626 900 ACE Turbo: 309 / 681 900 ACE: 296 / 650	600R E-TEC: 280 / 616 900 ACE Turbo: 304 / 669 900 ACE: 290 / 639	600 EFI: 228 / 502 900 ACE: 251 / 552 600 ACE: 241 / 531

SPECIFICATIONS		SPORT-UTILITY				
		TUNDRA		SKANDIC		
		LT	SPORT	SWT	WT	SPORT
COLOR		Neo Yellow / Black	Neo Yellow / Black	Lava Red / Black Black	Lava Red / Black Black	Catalyst Grey / Black
FEATURES	Skis	Pilot DS 2	Pilot DS 2	Pilot 7.4	Pilot 7.4	Pilot 7.4
	Seat	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	U-shaped aluminum with J-hooks / Low grab handle	U-shaped aluminum with J-hooks	U-shaped aluminum with J-hooks/ Low grab handle	U-shaped aluminum with J-hooks/ Low grab handle	U-shaped aluminum 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 (4-stroke)	RER (2-stroke) Electro-mechanic (4-stroke)	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	4.5 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	Motion Control	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 (liters / US gallons)	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 SWT: 154 x 24 x 1.5	Silent Cobra WT: 154 x 20 x 1.5	Utility WT: 154 x 20 x 1.25 in.
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 (kg / lb)	600 EFI: 223 / 491 600 ACE: 234 / 515	600 EFI: 212 / 466 600 ACE: 221 / 486	600R E-TEC 287 / 633 900 ACE 298 kg / 657	600R E-TEC 271 / 596 600 EFI 261 / 575 900 ACE 282 / 620 600 ACE 272 / 598	236 / 520

ACCESSORIES

// ACCESSORIES

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SKI-DOO ACCESSORIES LIMITED WARRANTY*

// 1-YEAR ON BRP ACCESSORIES

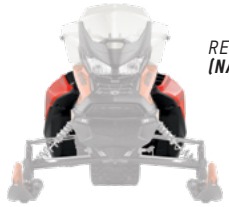
*Purchased at an authorized BRP dealership/distributor or on a BRP-authorized online store. Other exclusions may apply, see complete limited warranty or contact your Ski-Doo authorized dealer. Unless otherwise stipulated or required by law. This limited warranty does not apply to factory-installed accessories.

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 (WIDE)



REV GEN4 (NARROW)

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 Edge 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"**

2021

MODEL	ENGINE	PLATFORM
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 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	900 ACE 600 ACE	**REV Gen4 (Wide)**
Sport	600 EFI	**REV Gen4 (Narrow)**
LE SE Xtreme	All	**REV Gen4 (Wide) 20"**
SWT	All	**REV Gen4 (Wide) 24"**
TUNDRA		
LT Sport	All	**REV Gen4 (Wide)**
SKANDIC		
WT Sport	All	**REV Gen4 (Wide) 20"**
SWT	All	**REV Gen4 (Wide) 24"**

2020

MODEL	ENGINE	PLATFORM
MXZ		
X-RS® X® TNT™	850 E-TEC 600R E-TEC	**REV Gen4 (Narrow)**
Sport	600	**REV-XP**
BACKCOUNTRY™		
X-RS® X® Backcountry™	850 E-TEC 600R E-TEC	**REV Gen4 (Narrow)**
RENEGADE®		
X-RS® X® Adrenaline	850 E-TEC 600R E-TEC	**REV Gen4 (Narrow)**
X-RS® X® Adrenaline	900 ACE 900 ACE Turbo	**REV Gen4 (Wide)**
Enduro	850 E-TEC 600R E-TEC 900 ACE 900 ACE Turbo	**REV Gen4 (Wide)**
Sport	600 ACE	**REV Gen4 (Wide)**
Sport	600	**REV-XP**
GRAND TOURING		
Limited Sport	600R E-TEC 900 ACE 900 ACE Turbo 600 ACE	**REV Gen4 (Wide)**
SUMMIT		
X® SP 175 SP 165 SP 154 SP 146	850 E-TEC 600R E-TEC	**REV Gen4 (Narrow)**
Sport	600	**REV-XP**
FREERIDE		
	850 E-TEC	**REV Gen4 (Narrow)**
EXPEDITION		
Sport	900 ACE 600 ACE	**REV Gen4 (Wide)**
Sport	550 Fan	**REV-XP**
LE SE Xtreme	All	**REV Gen4 (Wide) 20"**
TUNDRA		
	All	**REV-XU**
SKANDIC		
	All	**REV-XU**

// YOU CAN ALSO VISIT THE SKI-DOO OWNERS CENTER: ***HTTPS://WWW.SKI-DOO.COM/OWNERS/PREVIOUS-MODEL-YEARS.HTML***

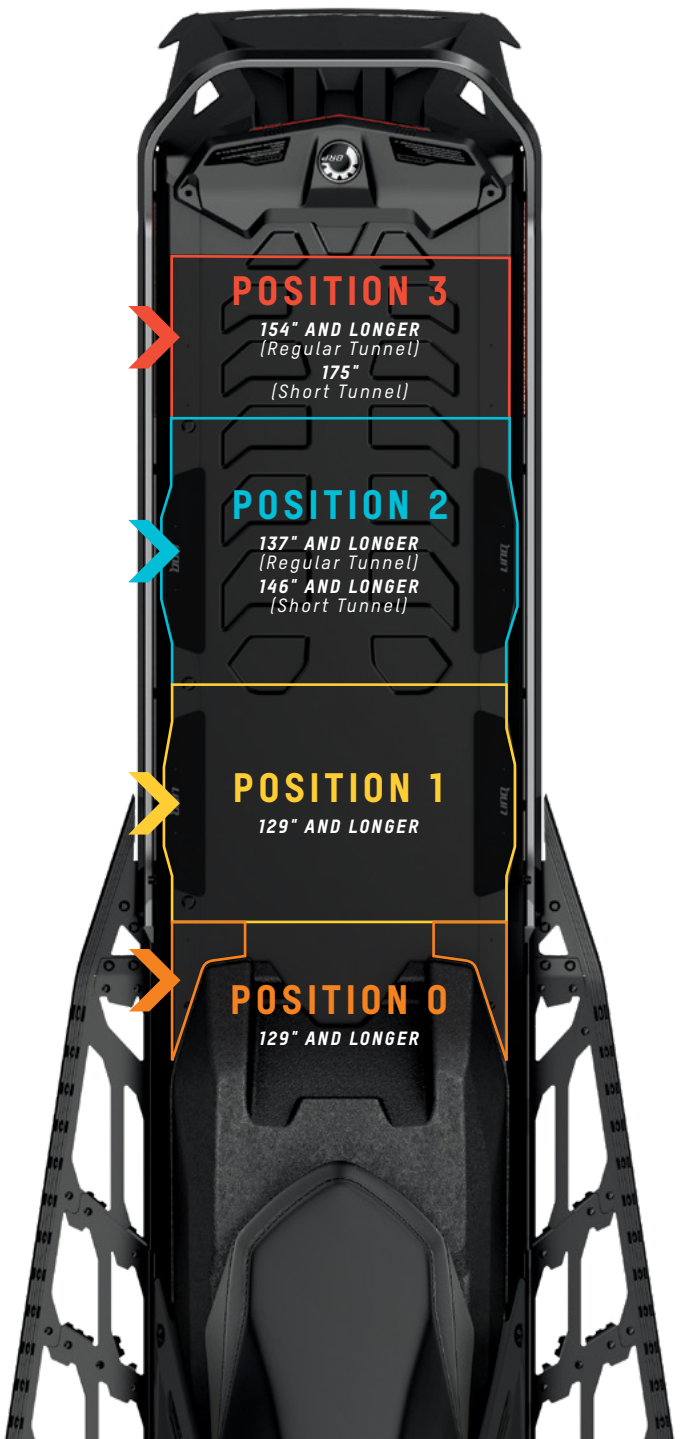
LinQ ACCESSORIES

// 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.

LinQ FUEL CADDY
860201775

LinQ OIL CADDY
860202445

LinQ STACKABLE FUEL CADDY
860202246

LinQ FUEL CADDY
860202247

LinQ DEEP SNOW PRO BAG
860202456

LinQ TRAIL PRO BAG
860201986

LinQ SLIM WATERPROOF TUNNEL BAG
860202451

LinQ SNOWBOARD/SKI RACK
860202191

LinQ DRY BAG
715008110

LinQ ADVENTURE TUNNEL BAG
860202444

LinQ MODULAR CARGO BOX – 10 L
715005494

LinQ THERMAL BOX
219400964

LinQ ADVENTURE CARGO BOX
860202448

LinQ CARGO BOX – 62 L
860202446

LinQ CARGO BOX – 40 L
860202442

LinQ SR21 TUNNEL BAG
860202449

LinQ SPORT BAG
860202447

LinQ TOOL BOX
715008111

LinQ SADDLEBAGS
860200624

UNIVERSAL LinQ RACK
860202208

LinQ REMOVABLE SNOW FLAP
860201914

REV GEN4 VEHICLES MULTIPLE TUNNEL CONFIGURATIONS

POSITION 1 *129" AND LONGER*		POSITION 2 *137" AND LONGER (Regular Tunnel)* *146" AND LONGER (Short Tunnel)*		POSITION 3 *154" AND LONGER (Regular Tunnel)* *175" (Short Tunnel)*	FITS ON *REV-XM* *REV-XS* *REV-XP* *REV-XU*
ON THE TUNNEL	ON TOP OF LinQ STACKABLE FUEL CADDY	ON THE TUNNEL	BEHIND THE FUEL CADDY	ON THE TUNNEL	
YES	YES	YES except 146" (Short Tunnel)	YES except 146" (Short Tunnel)	NO	YES
YES	YES	YES	YES	NO	YES
YES	NO	NO too heavy for this position	NO	NO	YES with Shim Kit 860201432
YES	NO	NO too heavy for this position	NO	NO	YES
YES	YES	YES except 146" (Short Tunnel)	YES except 146" (Short Tunnel)	NO	YES with Shim Kit 860201432
YES	YES	YES except 146" (Short Tunnel)	YES except 146" (Short Tunnel)	NO	YES with Shim Kit 860201432
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	NO
NO	NO	YES position #0 and #2 required	YES position #0 and #2 required	NO	NO
YES	YES	YES on 146" and up	NO	NO	YES with Shim Kit 860201432
YES position #1 and #2 required	NO	YES position #1 and #2 required	NO	NO	NO
YES	NO	YES except 146" (Short Tunnel)	YES except 146" (Short Tunnel)	NO	YES with Shim Kit 860201432
YES except when LinQ 1 + 1 Backrest is installed	NO	NO too heavy for this position	NO	NO	YES with Shim Kit 860201432
NO	NO	YES position #1 and #2 required on 146" and up		NO	YES on 146" and up
YES position #1 and #2 required	NO	YES position #1 and #2 required	NO	NO	NO
YES position #1 and #2 required	NO	YES position #1 and #2 required	NO	NO	YES
YES except when LinQ 1 + 1 Backrest and 1 + 1 Seat are installed		YES	NO	NO	YES with Shim Kit 860201432
YES	YES	YES	YES	NO	YES
YES except with 1 + 1 Seat	NO	NO too heavy for this position	NO	NO	YES with Shim Kit 860201432
YES	NO	NO	NO	NO	YES
YES	NO	YES	YES	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	NO

LinQ ACCESSORIES REQUIREMENTS CHART

	COMPATIBILITY / REQUIREMENTS				
	REV GEN4 16"		REV GEN4 20" – 24"*	REV-XM REV-XS REV-XP REV-XU	RADIAN LYNX
	2022	2021 AND PRIOR	2022 AND PRIOR		2022
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 watercraft 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)*	Shim Kit **860201432** and LinQ Cargo Base Kit **860201806** *(for installation on tunnel)*	LinQ Cargo Base Kit **860201806** *(for installation on LinQ Stackable Fuel Caddy or on stackable LinQ accessories)*
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 FUEL CADDY – 3 GAL **860202247**					
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 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)*	Not compatible	No further requirements
SLIM TUNNEL BAG WITH SOFT STRAPS – 15 L **860202440**				LinQ Cargo Base Kit 2 X **860201806** *(for installation on tunnel)*	
LinQ SNOWBOARD/SKI RACK **860202191**		LinQ Cargo Base Kit **860201806** *(for installation on tunnel)*	Not compatible		
LinQ DRY 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)*	Shim Kit **860201432** and LinQ Cargo Base Kit **860201806** *(for installation on tunnel)*	LinQ Cargo Base Kit **860201806** *(for installation on LinQ Stackable Fuel Caddy or on stackable LinQ accessories)*
TUNNEL BACKPACK WITH LinQ SOFT STRAP – 28 L **860200939**	No further requirements	LinQ Cargo Base Kit 2 X **860201806** *(for installation on tunnel)*	LinQ Cargo Base Kit 2x **860202482** *(for installation on tunnel)*	LinQ Cargo Base Kit 2 X **860201806** *(for installation on tunnel)*	No further requirements
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)*	Shim Kit **860201432** and LinQ Cargo Base Kit **860201806** *(for installation on tunnel)*	
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)*	LinQ Cargo Base Kit 2 X **860201806** *(for installation on tunnel)*	
LinQ CARGO BOX – 62 L **860202446**				Not compatible	
LinQ CARGO BOX – 40 L **860202442**				LinQ Cargo Base Kit 2 X **860201806** *(for installation on tunnel)*	
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)*	Shim Kit **860201432** and LinQ Cargo Base Kit **860201806** *(for installation on tunnel)*	LinQ Cargo Base Kit **860201806** *(for installation on LinQ Stackable Fuel Caddy or on stackable LinQ accessories)*
LinQ SPORT BAG – 17 L **860202447**				LinQ Cargo Base Kit **860201806** *(for installation on tunnel or on stackable LinQ accessories)*	
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)*	Shim Kit **860201432** and LinQ Cargo Base Kit **860201806** *(for installation on tunnel)*	No further requirements
LinQ MODULAR CARGO BOX **715005494** • [10 L]	LinQ Cargo Base Kit **860201806** *(for installation 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 stackable LinQ accessories)*
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)*	Shim Kit **860201432** and LinQ Cargo Base Kit **860201806** *(for installation on tunnel)*	No further requirements
LinQ TOOL HOLDER **715003059**				LinQ Cargo Base Kit **860201806** *(for installation on tunnel)*	

**Skandic Sport 2022 and 2021 may have specific requirements. Please refer to product descriptions.*

FUEL & OIL CADDIES

LinQ FUEL CADDY – 1 GALLON	REV Gen4, XS, XM, XR, XP, XU with LinQ Adaptor Plate (860200945)	**860201775***

- 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 Gen4, XS, XM, XR, XP, XU with LinQ Adaptor Plate (860200945)	**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.
- Requires LinQ Cargo Base Kit (860201806) for installation on REV Gen4 16" tunnels (2021 and prior), 2021 Skandic Sport and stackable LinQ accessories.
- Requires LinQ Cargo Base Kit (860202482) for installation on REV Gen4 20" & 24" tunnels (2022 and prior), except Skandic Sport.

LinQ STACKABLE FUEL CADDY – 4 GALLONS	REV Gen4, XU Expedition & Skandic with Adaptor Plate 860200945, (XS, XM, XR, XU Tundra) with Shim Kit 860201432	**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).
- Requires LinQ Cargo Base Kit (860201806) for installation on REV Gen4 16" tunnels (2021 and prior) and 2021 Skandic Sport.
- Requires LinQ Cargo Base Kit (860202482) for installation on REV Gen4 20" & 24" tunnels (2022 and prior), except Skandic Sport.

LinQ FUEL CADDY – 3 GALLONS	REV Gen4, XS, XM, XR, XP, XU with LinQ Adaptor Plate (860200945)	**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).
- Requires LinQ Cargo Base Kit (860201806) for installation on REV Gen4 16" tunnels (2021 and prior) and 2021 Skandic Sport.
- Requires LinQ Cargo Base Kit (860202482) for installation on REV Gen4 20" & 24" tunnels (2022 and prior), except Skandic Sport.

STORAGE

LinQ DEEP SNOW PRO BAG – 30 L	REV Gen4, XU Expedition & Skandic with Adaptor Plate 860200945, (XS, XM, XR, XU Tundra) with Shim Kit 860201432	**860202456**

- Watertight (with TiZip)—our highest level of waterproofing.
- Lightweight—uses one set of LinQ fasteners.
- Fits position 1, 2 and on top of LinQ Stackable Fuel Caddy.
- Expandable 9 to 30 liter (2—6 US gallon, 550–1,831 cu in) capacity.
- Improved Shovel Holder System.
- Requires LinQ Cargo Base Kit (860201806) for installation on REV Gen4 16" tunnels (2021 and prior), 2021 Skandic Sport and stackable LinQ accessories.
- Requires LinQ Cargo Base Kit (860202482) for installation on REV Gen4 20" & 24" tunnels (2022 and prior), except Skandic Sport.

NEW 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.

STORAGE

SEAT STORAGE BOX – 6 L

REV Gen4 (Narrow)

860202028

- 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 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 liter (4.2 to 6.9 US gallon, 976 to 1,587 cu in) capacity.
- Fit on the tunnel in positions 1 & 2 and 2 & 3.
- Requires LinQ Cargo Base Kits (2x) (860201806) for installation on REV Gen4 16" tunnels (2021 and prior) and 2021 Skandic Sport.
- Requires LinQ Cargo Base Kit (1x) (860201806) for installation on 2022 Skandic Sport.
- Requires LinQ Cargo Base Kits (2x) (860202482) for installation on REV Gen4 20" & 24" tunnels (2022 and prior), except Skandic Sport.

SLIM TUNNEL BAG WITH SOFT STRAPS – 15 L

137" and longer with 1-up or 2-up seats

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 liter (4 US gallon, 915 cu in) capacity.
- Requires LinQ Cargo Base Kits (2x) (860201806) for installation on REV Gen4 16" tunnels (2021 and prior) and 2021 Skandic Sport.
- Requires LinQ Cargo Base Kit (1x) (860201806) for installation on 2022 Skandic Sport.
- Requires LinQ Cargo Base Kits (2x) (860202482) for installation on REV Gen4 20" & 24" tunnels (2022 and prior), except Skandic Sport.

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).

NEW 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.

LinQ DEEP SNOW SEAT BAG – 5 L

REV Gen4 Summit & Freeride (without battery) — **860201274**

- 5 liter (1.3 US gallon, 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 liter (1.2 US gallon, 305 cu in) capacity.
- Inner zipper to access underseat compartment.

NEW LinQ SNOWBOARD/SKI RACK

REV Gen4 16", 146" and longer
Fits short tunnel — **860202191**

- Newly redesigned—simpler, quicker and easier way to attach skis or snowboards.
- Fits 1 snowboard 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.
- Requires LinQ Cargo Base Kit (860201806) for installation on REV Gen4 16" tunnels for 2021 and prior models.

NEW LinQ SNOWBOARD/SKI RACK REINFORCEMENT KIT

Fits with LinQ Snowboard/Ski Rack (860202191) except 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 Gen4 with 235 mm riser, XP Summit, XU Tundra, Skandic, XM (for risers 175 mm and up) — **860201564** • Long

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).

STORAGE

GOGGLE DRYING BAG

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.

NEW LinQ MODULAR CARGO BOX

REV Gen4 — **715005494** • 10 liters (2.6 gallons)

- Modular LinQ cargo box with 10 liter (2.6 US gallon) capacity.
- Single LinQ tunnel bag stacks on top for more storage.
- Heavy duty construction for durability.
- Weather resistant sealed lid.
- Requires LinQ Cargo Base Kit (860201806) for installation on REV Gen4 16" tunnels (2021 and prior), 2021 Skandic Sport and stackable LinQ accessories.
- Requires LinQ Cargo Base Kit (860202482) for installation on REV Gen4 20" & 24" tunnels (2022 and prior), except Skandic Sport.

COMBO BAG – 30 L

REV Gen4 (Wide) Renegade (except Renegade Sport) — **860201821**

- Works with Comfort Seat (REV Gen4 (Wide)).
- 30 liter (6 US gallon, 1,831 cu in) capacity.
- Provides additional storage while not using any tunnel space.
- LinQ tunnel accessories compatible.
- 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" & 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 liter (11 US gallon, 3,052 cu in) capacity.
- Works with the 135-liter LinQ Utility Cargo Bag (860201781).

COMBO BAG – 31 L

REV Gen4 (Narrow) (MXZ, Backcountry and Renegade) — **860201475**

- 31 liter (8.2 US gallon, 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 DRY BAG – 40 L

REV Gen4, XU with LinQ Adaptor Plate (860200945) — **715008110**

- Fully waterproof roll-top design secures gear tightly.
- 40 liter (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.
- Requires LinQ Cargo Base Kit (860201806) for installation on REV Gen4 16" tunnels (2021 and prior), 2021 Skandic Sport and stackable LinQ accessories.
- Requires LinQ Cargo Base Kit (860202482) for installation on REV Gen4 20" & 24" tunnels (2022 and prior), except Skandic Sport.

TUNNEL BACKPACK WITH LinQ SOFT STRAP – 28 L

137" and longer — **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 liter (7.4 US gallon, 1709 cu in) capacity.
- Requires LinQ Cargo Base Kits (2x) (860201806) for installation on REV Gen4 16" tunnels (2021 and prior) and 2021 Skandic Sport.
- Requires LinQ Cargo Base Kit (1x) (860201806) for installation on 2022 Skandic Sport.
- Requires LinQ Cargo Base Kits (2x) (860202482) for installation on REV Gen4 20" & 24" tunnels (2022 and prior), except Skandic Sport.

LinQ ADVENTURE TUNNEL BAG – 40 L

REV Gen4 137" and longer

860202444

- 40 liter (10.6 US gallon, 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.

- Requires LinQ Cargo Base Kits (2x) (860201806) for installation on REV Gen4 16" tunnels (2021 and prior) and 2021 Skandic Sport.
- Requires LinQ Cargo Base Kit (1x) (860201806) for installation on 2022 Skandic Sport.
- Requires LinQ Cargo Base Kits (2x) (860202482) for installation on REV Gen4 20" & 24" tunnels (2022 and prior), except Skandic Sport.

LinQ THERMAL BOX – 16 L

REV Gen4 (except Grand Touring)

219400964

- Rotomolded design with 16 liter (4.2 US gallon, 976 cu in) capacity.
- High quality foam insulation for optimal performance hot or cold.
- Does not fit with 1+1 backrest.

- Requires LinQ Cargo Base Kit (860201806) for installation on REV Gen4 16" tunnels (2021 and prior) and 2021 Skandic Sport.
- Requires LinQ Cargo Base Kit (860202482) for installation on REV Gen4 20" & 24" tunnels (2022 and prior), except Skandic Sport.

LinQ ADVENTURE CARGO BOX – 90 L

REV Gen4, XM, 146" and up

860202448

- Extra large 90 liter (24 US gallon, 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.

- Requires LinQ Cargo Base Kits (2x) (860201806) for installation on REV Gen4 16" tunnels (2021 and prior) and 2021 Skandic Sport.
- Requires LinQ Cargo Base Kit (1x) (860201806) for installation on 2022 Skandic Sport.
- Requires LinQ Cargo Base Kits (2x) (860202482) for installation on REV Gen4 20" & 24" tunnels (2022 and prior), except Skandic Sport.

LinQ CARGO BOX – 62 L

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 liter (16.3 gallon, 3,765 cu in) capacity.

- Requires LinQ Cargo Base Kits (2x) (860201806) for installation on REV Gen4 16" tunnels (2021 and prior) and 2021 Skandic Sport.
- Requires LinQ Cargo Base Kit (1x) (860201806) for installation on 2022 Skandic Sport.
- Requires LinQ Cargo Base Kits (2x) (860202482) for installation on REV Gen4 20" & 24" tunnels (2022 and prior), except Skandic Sport.

LinQ CARGO BOX BAG – 62 L

Fits with LinQ Cargo Box (860202446)

860201635

- Easy to take everything with you on arrival.
- 62 liter (16.3 gallon, 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 XU Tundra (Sport and LT)

860202442

- Rigid molded plastic construction with integrated design.
- Provides dry, safe storage.
- 40 liter (11 US gallon, 2,441 cu in) capacity.

- Requires LinQ Cargo Base Kits (2x) (860201806) for installation on REV Gen4 16" tunnels (2021 and prior) and 2021 Skandic Sport.
- Requires LinQ Cargo Base Kit (1x) (860201806) for installation on 2022 Skandic Sport.
- Requires LinQ Cargo Base Kits (2x) (860202482) for installation on REV Gen4 20" & 24" tunnels (2022 and prior), except Skandic Sport.

CARGO BAG – 80 L

REV Gen4, XM, XP, XU, Backcountry, Freeride, Renegade, Summit, Tundra, 137" and up

860200801

- Rugged all-purpose utility design.
- Sealed PVC construction.
- 80 liter (21 US gallon, 4,882 cu in) capacity.
- Integrated attachment system.
- Includes rain cover for added resistance to the elements.
- Can also double as travel/duffle bag.

STORAGE

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.

NEW LinQ TRAIL PRO BAG – 30 L

REV Gen4, XU Expedition & Skandic with Adaptor Plate (860200945), (XS, XM, XR, XU Tundra) with Shim Kit (860201432)

860201986

- Premium bag with our highest level of waterproofing.
- Watertight zipper (TiZip).
- Map holder & 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.
- Expandable 9 to 30 L (2–6 US gallon, 550–1,831 cu in) capacity.
- Requires LinQ Cargo Base Kit (860201806) for installation on REV Gen4 16" tunnels (2021 and prior), 2021 Skandic Sport and stackable LinQ accessories.
- Requires LinQ Cargo Base Kit (860202482) for installation on REV Gen4 20" & 24" tunnels (2022 and prior), except Skandic Sport.

NEW 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 & 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 Gen4

860202449

- Semi-rigid expandable LinQ tunnel bag.
- 21 liter (5.5 US gallon, 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.
- Requires LinQ Cargo Base Kit (860201806) for installation on REV Gen4 16" tunnels (2021 and prior), 2021 Skandic Sport and stackable LinQ accessories.
- Requires LinQ Cargo Base Kit (860202482) for installation on REV Gen4 20" & 24" tunnels (2022 and prior), except Skandic Sport

LinQ SPORT BAG – 17 L

REV Gen4, XM, XS, XP, XR (except GTX, Grand Touring)

860202447

- 17 liter (4.5 US gallon, 1,037 cu in) capacity.
- Rigid bottom, semi-rigid top.
- Does not fit on REV-XU Tundra with a rack.
- Requires LinQ Cargo Base Kit (860201806) for installation on REV Gen4 16" tunnels (2021 and prior), 2021 Skandic Sport and stackable LinQ accessories.
- Requires LinQ Cargo Base Kit (860202482) for installation on REV Gen4 20" & 24" tunnels (2022 and prior), except Skandic Sport.

LinQ TRAIL SEAT BAG – 11 L

REV Gen4 (Narrow) MXZ, Backcountry & Renegade

860201275

- 11 liter (2.9 US gallon, 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 liter (1 US gallon, 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.

HANDLEBAR BAG – 2 L

REV Gen4 without mountain strap

860201565

- 2.3 liter (0.6 US gallon, 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 Gen4, XU Xtreme, XU Expedition and XU Skandic with LinQ Adaptor Plate (860200945).

715008111

- 19 liter (5 US gallon, 1,160 cu in) capacity.
- Weather-resistant design features a sealed cover.
- Requires LinQ Cargo Base Kit (860201806) for installation on REV Gen4 16" tunnels (2021 and prior) and 2021 Skandic Sport.
- Requires LinQ Cargo Base Kit (860202482) for installation on REV Gen4 20" & 24" tunnels (2022 and prior), except Skandic Sport.

LinQ SADDLEBAGS – 26 L

REV Gen4 16", XP, XR, XM, XS (except Grand Touring, GTX & 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 liter (6.9 US gallon, 1,587 cu in) capacity, (2 x 13 L (2 x 3.45 US gallons)).
- LinQ Cargo Base Kit not included (860201806).
- LinQ Fastener included (715001707).

COMBO BAG – 45 L

REV-XP, XR, XS

860200623

- Uses easy on/off clip system.
- No need to remove seat.
- Multiple pockets.
- 45 liter (11.9 US gallon, 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 liter (10.6 US gallon, 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 liter (6.6 US gallon, 1,526 cu in) capacity.

MODULAR TUNNEL BAG EXTENSION – 38 L

REV-XR GTX & 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 liter (10 US gallon, 2,319 cu in) capacity.

LinQ UTILITY CARGO BOX – 135 L

REV Gen4 20" & 24"

860201781

- Massive 135 liter (36 US gallon, 8,238 cu in) capacity.
- 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 liter (40 US gallon, 9,154 cu in) capacity bag shaped to fit utility model racks.
- Weather-resistant polyester, includes compartment organizer.

STORAGE

CARGO BOX – 75 L

REV-XU Skandic WT, SWT, Expedition SE, LE, Xtreme MY19 and prior

860200395

- 75 liter (19.8 US gallon, 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 liter (5.28 US gallon, 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

TANK BAG – 5 L

REV-XM, XS

860200974

- Low profile bag.
- Easy-to-view map pocket.
- Access fuel cap without removal.
- Ready for 3W Heater for Bags (515176786) (not included).
- 5 liter (1.32 US gallon, 305 cu in) capacity.

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 liter (0.6 US gallon, 122 cu in) capacity.
- Includes RCA adaptor plug kit.
- Requires Heated Visor Kit (860201234) (not included but required for installation).

3W HEATER FOR BAGS

515176786

- Replacement or additional heater for heated bags.

DASHBOARD BAG – 2 L

REV-XR, XU	**860201177**
REV-XP	**860201176**

- Easy-access bag designed to provide extra storage.
- 2 liter (0.5 US gallon, 116 cu in) capacity.

BATTERY COVER

REV Gen4 16" without battery[1]	**860201720**
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 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.

NEW GLOVEBOX FOR ONE-PIECE LIGHTWEIGHT HOOD

REV Gen4 Summit and Freeride with one-piece lightweight hood	**860202193**

- Adds storage to one-piece lightweight hoods.
- Provides an additionnal 4.6 liter (1.2 gallon, 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.

GLOVEBOX EXTENSION / CELL PHONE HOLDER

REV Gen4	**860202072**

- Doubles the storage with additional 3.5 liter (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 12V Outlet (860201261). For screen size up to 6.4" (16.26 cm) x 3.3" (8.38 cm).
- Fits all cell phones with a screen of 6.4" and smaller.
- Works with capacitive and resistive touch screen technology.
- Not compatible with Lightweight Hood.
- Does not include cell phone.

GLOVEBOX EXTENSION / GPS SUPPORT

REV Gen4	**860201249**

- Doubles the storage with additional 4 liter (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 Lightweight Hood.

STORAGE ACCESSORIES

GLOVEBOX REPLACEMENT DOOR / CELL PHONE HOLDER
(Not illustrated)

Fits with Glovebox Extension (860201249)

860202169

- Replacement door to update Glovebox Extension with a cell phone holder.
- Door allows for perfect positioning and mounting of a cell phone.
- Cell phone heater included.
- Requires 12V Outlet Plug (860201261).
- For screen size up to 6.4" (16.26 cm) x 3.3" (8.38 cm).
- Works with capacitive and resistive touch screen technology.

GLOVEBOX EXTENSION

REV-XM, XS

860200707

- Increases storage capacity by 50%.
- Replaces stock storage compartment cover.
- Face door allows for perfect positioning and mounting of GPS.
- GPS sold separately.
- 2 liter (0.5 US gallon, 122 cu in) capacity.

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

REV Gen4

860201270

- Thermoformed liner has a soft finish interior.
- Features one pocket to separate items.
- Not compatible with One-Piece G4 Lightweight Hood (860202087).

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.

NEW LinQ LOCK

860201968 • Pack of 1

860202478 • Pack of 2

- Simple way to lock most LinQ accessories in place.
- Retrofits most LinQ accessories.
- Lock cover prevents snow and ice build-up.
- Not compatible with Tool Holder or Working Light.
- Comes with two keys.

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.

NEW LinQ CARGO BASE KIT	REV Gen4 (Wide) 20" & 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" & 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 Gen4	**516007627**	

- Durable Lexan† 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.

LINQ ACCESSORIES AND REPLACEMENT PARTS FOR LINQ STORAGE ACCESSORIES

SHIMS FOR LinQ ACCESSORIES

REV-XS, XM, XP, XU Tundra | **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 Expedition, XU Skandic | **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 | **860201938**

- 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 Gen4 | **860202208**

- This Universal Rack can make generic accessories LinQ compatible.
- Allows a multitude of products and configurations on LinQ tunnels.
- Requires LinQ Cargo Base Kit (860201806) for installation on REV Gen4 16" tunnels (2021 and prior) and 2021 Skandic Sport.
- Requires LinQ Cargo Base Kit (860202482) for installation on REV Gen4 20" & 24" tunnels (2022 and prior), except Skandic Sport.

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" & 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.

NEW CARGO RACK KIT	REV Gen4 146" Backcountry (except Backcountry X-RS) , Summit SP, Tundra, Expedition Sport	**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 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" & 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 & Skandic Sport.
- Not compatible with LinQ Adventure Cargo Box (860202448).

LinQ ICE AUGER HOLDER	REV Gen4 (Wide) 20" & 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)

HOLDERS

LinQ GUN BOOT HOLDER

REV Gen4 (Wide) 20" & 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 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.
- Requires LinQ Cargo Base Kit (860201806) for installation on REV Gen4 16" tunnels (2021 and prior) and Skandic Sport.
- Requires LinQ Cargo Base Kit (860202482) for installation on REV Gen4 20" & 24" tunnels (2022 and prior), except Skandic Sport.

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.

SEATS & BACKRESTS

SEATS

HEATED SEAT

REV Gen4 (Wide) 20" & 24" | **860202032**

- Adds warmth in the coldest conditions.
- Multiple High/Low/OFF settings.

PASSENGER HEATED SEAT

REV Gen4 (Wide) 20" & 24" (Expedition Xtreme & 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

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 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 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 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.

NEW LOW PROFILE SEAT

REV Gen4 16" Summit & Freeride

860202344

- Compact design for freedom of movement.
- Great support for deep snow.
- Easy tool-less installation.
- 155 mm (6") height.

NEW LIGHTWEIGHT PERFORMANCE SEAT

REV Gen4 16" Summit & Freeride

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 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 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.

SEATS

1 + 1 SEAT

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.

LinQ 1 + 1 SEAT HEATED GRIPS

REV Gen4 16" with 1 + 1 seat and passenger seat with handles, REV Gen4 (Wide) 20" & 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" & 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).

NEW COMPACT PASSENGER SEAT

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 REV Gen4 (Narrow) with battery.

PASSENGER SEAT

REV Gen4 20" & 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" & 24"	860202036	

- Passenger backrest to complement the Passenger Seat (860202037) for added back comfort.
- Passenger Seat (860202037) 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**	

- Muffs fit snugly around the passenger handles and provide total warmth even on the coldest days.
- Easy to install and remove.

**Fits seat with handles and handguards.*
***Fits seat with handles only.*

PASSENGER MUFFS FOR 1 + 1 SEAT	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.

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 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 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**	

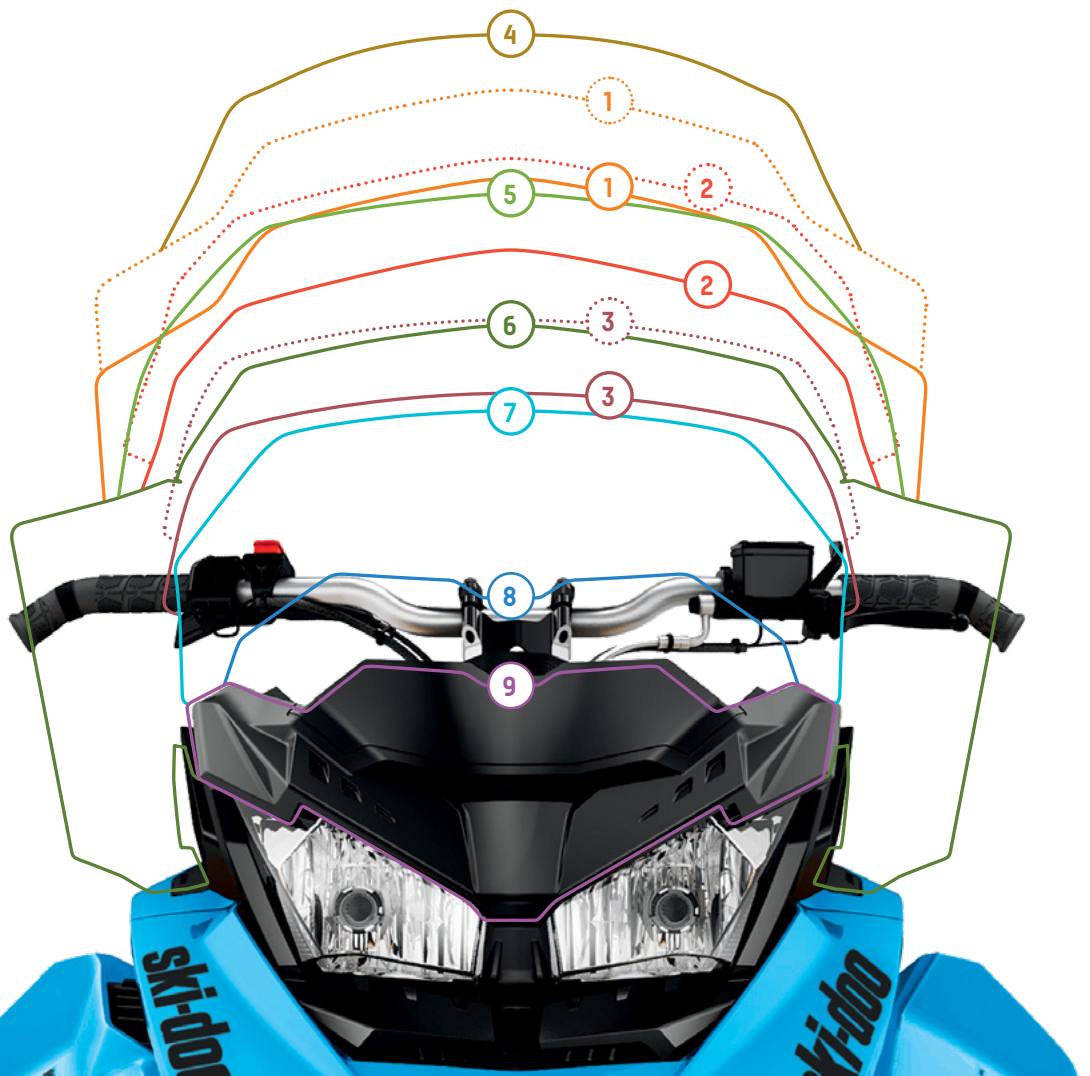
- Enhances the comfort level of your seat by adding this backrest option.

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	17" (43 cm)
7 LOW	860201448 / 860202472	14" (36 cm)
8 ULTRA LOW	860201259	8" (20 cm)
9 CENTRAL DEFLECTOR	517305875	For REV Gen4 platform



REV GEN4

ADJUSTABLE WINDSHIELD LOW TO MEDIUM

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.

ADJUSTABLE WINDSHIELD MEDIUM TO HIGH

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

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

REV Gen4

860201259 • Smoke

- 8" (20 cm) in length.
- Sporty and aggressive look.
- Windshield support not included.

LOW WINDSHIELD

REV Gen4

860201448 • Smoke

- 14" (36 cm) in length.
- High quality, best durability.
- Includes low windshield support.

NEW LOW WINDSHIELD

REV Gen4

860202472 • Dark Smoke

- 14" (36 cm) in length.
- High quality, best durability.
- Includes low windshield support.

MEDIUM WINDSHIELD KIT

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 (860201285).
- Complete kit includes windshield, side deflectors, windshield support & hardware.
- Not compatible with One-Piece Lightweight Hood.

REV GEN4

HIGH WINDSHIELD

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 (860201285).
- Not compatible with One-Piece Lightweight Hood.

ULTRA HIGH WINDSHIELD

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 (860201285).
- Not compatible with One-Piece G4 Lightweight Hood (860202087).

WINDSHIELD SIDE DEFLECTOR KIT

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 G4 lightweight Hood (860202087).

NEW WINDSHIELD SIDE DEFLECTOR KIT

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 G4 Lightweight Hood (860202087).

WINDSHIELD SIDE DEFLECTOR KIT

REV Gen4 – For medium and higher windshields

860201256 • Smoke

- Increased wind deflection for windshields.
- Compatible with Windshield-Mount Mirrors (860201285).

SIDE PANEL DEFLECTOR KIT

REV Gen4 (Wide)

860201879 • Smoke

- Added wind protection.
- Standard on the Grand Touring Limited.

WINDSHIELD SUPPORT

REV Gen4 – For ultra low and low windshields

517305749 • Black
517306380 • Manta Green

517306375 • Sunburst Yellow

WINDSHIELD SUPPORT

REV Gen4 – For ultra low and low windshields

517306183 • Black

517306456 • Sunburst Yellow

- Not compatible with One-Piece G4 Lightweight Hood (860202087).

CENTRAL DEFLECTOR	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.

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.
• Ready to receive Windshield-Mount Mirrors (860200103).

REV-XS & REV-XM

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.

WINDSHIELD BASE

REV-XM, XS – For ultra low, low and one-piece windshields	**517305403** • Grey	**$28.99**	**517305948** • Lava Red	
	517305617 • Manta Green	**$28.99**	**517305952** • White	
	517305808 • Sunburst Yellow	**$28.99**	**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.

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.

REV-XR & REV-XU

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.

ULTRA HIGH WINDSHIELD

REV-XR, XU, except MXZ and Renegade with J-hooks

860200227 • Clear with fading

- 27.5" (70 cm) in length.

WINDSHIELD SIDE DEFLECTOR KIT

REV-XR, XU

860200234 • Smoke*

860200235 • Smoke**

- Increased wind deflection for windshields.

**Fits medium and high windshields using base kit (860200229).*

***Fits extra high and ultra high windshields using base kit (860200230).*

WINDSHIELD BASE KIT

REV-XR, XU

860200228 • Black

- For low windshields REV-XR, XU.
- Black plastic trim.

WINDSHIELD BASE KIT

REV-XR, XU

860200229 • Black

- For medium and high windshields.
- Black plastic trim.

WINDSHIELD BASE KIT

REV-XR, XU

860200230 • Black

- For extra high and ultra high windshields.
- Black plastic trim.

HANDGUARDS & HANDLEBAR

HANDGUARDS

FLEXIBLE HANDGUARDS

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 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.

NEW TRANSPARENT HANDGUARDS

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 Gen4 — **860201975**

- Provides more freedom of movement in active riding.
- Standard on 2020 Summit X with Expert package and 2021 Summit and Freeride models.
- Not compatible with Handlebar Bag (860201565).

GRAB HANDLE

REV Gen4 — **860202035**

- Molded rubber grab handle used for side-hilling maneuvers.
- Not compatible with Handlebar Bag (860201565).

PERFORMANCE SMALL DIAMETER HANDLEBAR

REV Gen4 — **860201974**

- Narrow design used for more agile precise maneuvers found in mountain applications or in 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 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.

BRAKE RESERVOIR GUARD

REV Gen4 Summit & Freeride — **860201936**

- 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.

TRAIL PERFORMANCE GRIPS

REV Gen4 (except Summit & Freeride 2021, Summit X with Expert Package 2020), 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 Gen4 with medium and higher windshields	**860201285**	

- Mirror shape creates well 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.

MIRROR KIT	REV-XS, XM (with ultra high windshield)	**860200103**	

- Windshield mount design.
- Sold in pairs.

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.

// EXTENSION KIT

- Handlebar extension kit to fit all riding styles.

REV GEN4 MODELS		ADJUSTABLE RISERS 860201834 (125-165)	860201549 (150-210)	860201276 (175-235)
	Adjustment range (mm) >			
SUMMIT	(X and SP) with 165 mm riser (2018 and up)	YES**	YES	
	(X and SP) with 190 mm riser (2017)	YES**	YES	YES
	(X package EXPERT) with 120 mm riser	YES		
FREERIDE	137-146" with 145 mm riser (2020 and prior)	YES**	YES	
	146-154-165" with 165 mm riser	YES**	YES	
EXPEDITION	(SE) with 120 mm Forward Adjustable riser	YES		
	(Sport, LE, Xtreme, SWT) with 145 mm riser	YES**	YES	
SKANDIC	(WT, SWT and Sport) with 145 mm riser	YES**	YES	
TUNDRA	(LT and Sport) with 145 mm riser	YES**	YES	
BACKCOUNTRY	(Backcountry, X, X-RS, Sport) 146" with 120 mm riser	YES*		
RENEGADE	(Adrenaline, Enduro and Sport) 137" with 120 mm riser	YES*		
	(X and X-RS) 137" with 120 mm Forward Adjustable riser	YES*		
MXZ	(TNT, Blizzard and Sport) with 120 mm riser	YES*		
	(X and X-RS) with 120 mm Forward Adjustable riser	YES*		
GRAND TOURING	(Sport) with 120 mm riser	YES		
	(LE) with 120 mm Forward Adjustable riser	YES		

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.

** Cable 860201880 required for 2017-2018 2-strokes vehicles. **Cable 860201880 required for 2-strokes vehicles ***Fit only with 860201320.*

	EXTENSION KITS							FORWARD ADJUSTABLE RISER	
	860201944	860201427	860201718	860201632	860201428	860201560	860201392	860201836	860201320
	(95)	(120)	(145)	(165)	(190)	(210)	(235)	(45) (extension)	(120) (riser)
	YES**	YES**	YES	STOCK	YES	YES			
	YES**	YES**		YES	STOCK	YES	YES		
	YES	STOCK	YES	YES					
	YES**	YES**	STOCK	YES	YES	YES			
	YES**	YES**	YES	STOCK	YES	YES			
	YES	YES	YES	YES				YES	STOCK
	YES**	YES**	STOCK	YES	YES	YES		YES***	YES
	YES**	YES**	STOCK	YES	YES	YES		YES***	YES
	YES**	YES**	STOCK	YES	YES	YES		YES***	YES
	YES	STOCK	YES*	YES*				YES*/***	YES
	YES	STOCK	YES*	YES*				YES*/***	YES
	YES	YES	YES*	YES*				YES*	STOCK
	YES	STOCK	YES*	YES*				YES*/***	YES
	YES	YES	YES*	YES*				YES*	STOCK
	YES	STOCK	YES	YES				YES***	YES
	YES	YES	YES	YES				YES	STOCK

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

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***
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

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.

SIGNATURE LED LIGHTS FOR HANDGUARDS

REV-XM, XS with Transparent or Flexible Handguards	**860200981***
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.
- *Can be installed on REV-XP, XR, XU with Adaptor for Signature LED Light for Handguards (860201114).

ADAPTOR FOR SIGNATURE LED LIGHT FOR HANDGUARDS

REV-XP, XR, XU (except fan-cooled engines)	**860201114**

FRONT BUMPER LED WORKING LIGHTS

REV Gen4 (Wide) except Tundra & 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

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" & 24" and 12V outlet (860202069) for REV Gen4 (Narrow) 16".

BUMPERS, HITCHES & WINCHES

BUMPERS

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.

FRONT BUMPER

REV Gen4 (Narrow)		**860201445** • White **502007460** • Black	

- Easy-install bumper changes the appearance of your sled in minutes.

XC CAST FRONT BUMPER

REV Gen4 (Narrow)		**860201228**	

- Add extra protection and attitude with this bumper.
- Perfect integration with or without a skid plate.
- Lightweight cast aluminum heat-treated construction.

FRONT BUMPER

REV-XM, XS	**860201174** • Race Orange	**$89.99**	**860201167** • Black		
	860201175 • Sunburst Yellow	**$90.99**	**860201172** • Fusion Red		
	860201168 • Orange Crush	**$90.99**	**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.*

BUMPERS

NEW 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, 860201933, 860201934).*

SIDE PANEL PROTECTORS

REV Gen4 (Wide) 16", REV Gen4 Expedition 20"	**860201677**

- Attaches to Full Wrap-Around Front Bumper (860201822 or 860201676).
- Lightweight aluminum construction.
- Provides protection to side panels and hood.
- Swings out-of-the-way for easy access.
- Rugged look.

LIGHTWEIGHT Y-SHAPED ALUMINUM BUMPER

REV Gen4 (Wide) (except Skandic and Tundra)	**860201881**

- Aluminum construction.
- Offers great protection from frontal impacts of 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 & 860202027).
- Standard on REV Gen4 (Wide) Renegade Enduro, Expedition LE and Expedition SE.

1¼" TRAILMAKER FRONT BUMPER RECEIVER

REV Gen4 (Wide) 20" & 24" (except Skandic)	**860201825**

- Receiver for use with Full Wrap-Around Front Bumper (860201822 & 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.

ADVENTURE REAR BUMPER 16"	REV Gen4 – 129"		**860201507** • White / Black* **860201598** • Green / Black* **860202352** • Black / Lava Red **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

ADVENTURE REAR BUMPER 16"	REV Gen4 137" regular tunnel & 146" short tunnel		**860202149** • Black / Black **860202137** • Yellow / Black	

- Matches the Adventure front bumper.
- Stunning style and construction.
- Made of lightweight stacked aluminum plates.

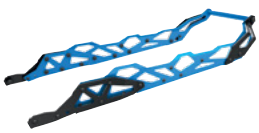
ADVENTURE REAR BUMPER 16"	REV Gen4 146" & 154" with short tunnel	**860202150** • Black / Black	**860202157** • Black / Lava Red **860202156** • Octane Blue / Black	

- Matches the Adventure front bumper.
- Stunning style and construction.
- Made of lightweight stacked aluminum plates.

ADVENTURE REAR BUMPER 16"	REV Gen4 154" & 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" & 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.

**While supplies last.*

BUMPERS

ADVENTURE REAR BUMPER 16"

REV Gen4 (Narrow) 175"	**860202153** • Black / Black	

- Matches the Adventure front bumper.
- Stunning style and construction.
- Made of lightweight stacked aluminum plates.
- Does not fit with Summit X with Expert package and LinQ Snowboard/Ski Rack.

HEAVY-DUTY REAR BUMPER

REV Gen4 16"–146"	**860201610** • Black	
REV Gen4 16"–154"	**860201726** • Black	
REV Gen4 16"–165"	**860201727** • Black	
REV Gen4 16"–175"	**860201467** • Black	

- Premium finish heavy-duty aluminum bumper for REV Gen4 platform.
- Does not detract from deep snow performance.
- Required for LinQ Snowboard/Ski Rack (860201255).
- Cannot be used on vehicles with short tunnel.

REAR BUMPER

REV Gen4 (Narrow) 129"	**518328745** • Black	**$96.99**	**518329151** • White	
REV Gen4 (Narrow) 137"	**518328746** • Black	**$99.99**	**518329479** • White	
REV Gen4 (Narrow) 146"	**518329553** • Black	**$119.99**		
REV Gen4 (Narrow) 154"	**518328501** • Black	**$114.99**	**518329152** • White	
REV Gen4 (Narrow) 165"	**518328697** • Black	**$114.99**	**518329153** • White	
REV Gen4 (Narrow) 175"	**518328834** • Black	**$104.99**		
REV Gen4 (Wide) – Tundra 137"	**518330033** • Black	**$96.99**		

- 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" & 137")	**518325481** • Black	
	518328678 • Sunburst Yellow	

- Easy-install bumper changes the appearance of your sled in minutes.

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 Gen4 16"–129"	**860201433** • Black	
REV Gen4 16"–137"	**860201471** • Black	
REV Gen4 16"–146"	**860201612** • Black	
REV Gen4 16"–154"	**860201250** • Black	
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 LinQ Snowboard/Ski Rack (860202191).
- Does not fit with vehicles with short tunnel

NEW HITCH REAR BUMPER FOR SHORT TUNNEL

REV Gen4 short tunnel Summit & Freeride 146"	**860202213**	
REV Gen4 short tunnel Summit & Freeride 154"	**860202214**	
REV Gen4 short tunnel Summit & Freeride 165"	**860202215**	
REV Gen4 short tunnel Summit 175"	**860202216**	

- Required for hitch use and towing.
- Easy mounting with no cutting.
- Also reinforces the tunnel.
- Can be used with the LinQ 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" & 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" & 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.

HITCHES

C-TYPE HITCH

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 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 (Wide) 20" & 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" & 24" (860201795, 860201942)
- Fits on Multi-Mount Drawbar (860201804, 860201117)

HITCH TONGUE		**511000521**	

- Easily transforms the C-Type Hitch (860200829) into a tongue-type hitch.

1¼" TRAILER HITCH	REV Gen4 Expedition Xtreme & Skandic Sport	**860202062**	

- Allowing quick switching of towing hook-ups or winch use.
- Stock on REV Gen4 Expedition LE, SE.

1¼" MULTI-MOUNT DRAWBAR	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" & 24"	**860201142**	

- Fits on Heavy-Duty Rear Bumper 20" & 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

HAWSE GUIDE

860201143

- Replaces Roller Fairlead for longer cable life.
- For use with synthetic cable only.
- Replaces Roller Fairlead when Synthetic Cable (715000539) is installed.

PROTECTION & REINFORCEMENT

REV GEN4

FULL BODY SKID PLATE

REV Gen4 (Narrow)

860201583 • Octane Blue
860201618 • Manta Green
860201227 • Black
860201441 • Sunburst Yellow

860201442 • Orange Crush
860201443 • White
860201809 • Lava Red

- 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.

FULL BODY SKID PLATE

REV Gen4 (Wide) 16" Tundra — **860202044** • Black
REV Gen4 (Wide) 20" Skandic WT and Sport — **860202045** • Black
REV Gen4 (Wide) 24" Skandic SWT — **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" & 20"

NEW **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 and Skandic 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

REV Gen4 (Narrow)

NEW **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.

REV GEN4

RACING SKID PLATE

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 Gen4 16"–137" (except short tunnel)	**860201830**	
REV Gen4 16"–146" (except short tunnel)	**860201831**	
REV Gen4 16"–154" (except short tunnel)	**860201832**	
REV Gen4 16"–165" (except short tunnel)	**860201833**	

- Great protection for the tunnel.
- Keeps your tunnel free of scratches to maintain tunnel aesthetics.
- Does not fit with LinQ Snowboard/Ski Rack (860201255).
- Stock on REV Gen4 (Wide) 16" platform.

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	**$144.99**	**860201034** • Lava Red	
	860200739 • Yellow	**$149.99**	**860201035** • White	
	860200740 • Orange Crush	**$144.99**	**860201147** • Manta Green	
			860201148 • Sunburst Yellow	

- 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.

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 WT 2015 and prior	**860200702**
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.

REINFORCEMENT

TUNNEL REINFORCEMENT

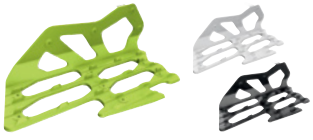
REV Gen4 Summit X with Expert package, Summit X & Freeride 154"–165" with tMotion Adjustable Limiter Strap (860201861) — **860201995**

- 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

REV Gen4 MXZ & Renegade (except Renegade Backcountry, Backcountry X & X-RS and MXZ X-RS)

860201584 • White
860201465 • Black
860201585 • Manta Green



- 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

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).

REINFORCEMENT

CHASSIS REINFORCEMENT KIT

REV-XS

860200521 • Viper Red	$74.99			
860200813 • Aluminum	$64.99	**860201030** • Lava Red		
860200814 • Black	$74.99	**860201031** • Orange Crush		
860200815 • Yellow	$74.99	**860201150** • Fusion Red		
860200816 • White	$74.99	**860201151** • Sunburst Yellow		

- Provides additional reinforcement to your tunnel along with improved grip.
- Easy installation.
- Except Renegade Backcountry & Backcountry X, XP, XR, XU Tundra (except 2015 and up)

RAIL REINFORCEMENT

REV Gen4 146" to 165" with tMotion and cMotion rear suspensions — **860201005**

- Increases rail strength and longevity.

RAIL REINFORCEMENT

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.

TOE-HOLDS, FOOTRESTS & KNEE PADS

TOE-HOLDS

REWIND COVER

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 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 to 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

REV Gen4 MXZ, Renegade and Grand Touring — **860201305**

- Adjustable solid toe-holds (non-folding).
- Provides 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 Gen4 Summit, Freeride and Backcountry	**860201510**	$860200164

- Fixed toe-holds for control and leverage when boondocking.

SHIM KIT FOR TOE-HOLDS	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 & 900 ACE)	**860200743** • Aluminum

- Kit provides easy adjustment to the toe-holds to match your riding style.

TUNNEL GRIP PLATES	Fit all models	**860200164**

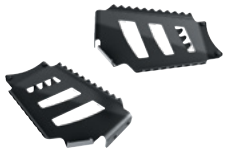
- Lightweight plastic grip plates for extra side boot grip in rough riding conditions.
- Developed for the 600 Race sled.
- Sold in pairs with complete hardware.

FOOTRESTS

DRIVER FOOTREST	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	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.

REAR FOOTREST	REV Gen4 Summit SP	**860201504**

- Additional boot grip on rear tunnel.
- Integrated design, looks and functions great.

FOOTRESTS

PASSENGER FOOTREST KIT

REV-XS 137", XR and XP 137"–154"

860200810 • Aluminum

- Does not fit with rMotion adjusters.

REAR FOOTREST KIT

REV-XM

860200889

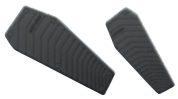
- Provides additional boot grip at the rear of the tunnel when climbing.

KNEE PADS

KNEE PADS

REV Gen4 without manual reverse

860201917



- Designed for a perfect fit on REV Gen4 (Narrow).
- Provide comfort, impact absorption and extra knee grip.
- Injected 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.
- Injected 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.

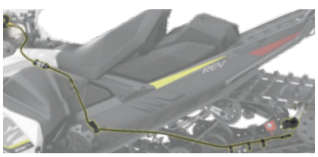
SUSPENSION & FOX† SHOCK KITS

SUSPENSION

REMOTE COUPLER BLOCK ADJUSTER

REV Gen4 129" & 137" with rMotion rear suspension

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 Gen4 (Narrow) with tMotion and cMotion rear suspensions (except Freeride 146" 2020 and prior & 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**	

CURVED A-ARMS	REV Gen4 (with 36" ski stance)	**860201679**	

- Redesigned to be more effective.
- Provides more clearance for less drag in deep snow.
- Reduces damage from objects hidden below the snow.
- Quick-disconnect sway bar kit, double ball joint link and anti-roll bar link included.

FRONT SUSPENSION WIDENING KIT	REV Gen4 Summit & 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).

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.

FRONT SUSPENSION KIT (42" WITHOUT SHOCKS)	REV-XS, XP, XR with 42" front suspension	**860201241**	

- To update your sled to the RAS 2 configuration.
- Ideal for converting older vehicle to new adjustable TS ski.
- For vehicles with 42" (107 cm) front suspension, reuse your stock shocks.
- Updates sleds to latest REV-XS trail front end.
- Better straightline tracking on big bumps.
- Lighter weight.
- Great styling.
- Includes spindle compatible with Pilot TS ski.

SWAY BAR QUICK-DISCONNECT LINK KIT	REV Gen4 Summit & Freeride, XM & XP Summit 2013 to 2020 REV-XP Summit 2012 and prior	**860200811** **860200667**	

- Kit allows you to utilize the benefits of a sway bar on rough trails and quickly disconnect it for sidehilling.
- Sold individually.

KYB SHOCKS

NEW 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

NEW FRONT SHOCKS – LIGHTWEIGHT FLOAT 3 EVOL QS

REV Gen4 Summit & Freeride

860202277

- Two separate air chambers replace coil springs and offer multiple tuning options. The QS3 adjustments offer 3 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: 36".

NEW REAR TRACK SHOCKS – LIGHTWEIGHT FLOAT 3 QS3 (CENTER) / 1.5 ZERO QSR WITH LOCK-OUT (REAR)

REV Gen4 Summit & 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, 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

NEW FRONT SHOCKS – LIGHTWEIGHT 1.5 ZERO QS3-R

REV Gen4 Summit & Freeride

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, easy compression and rebound adjustments and fit S-36 front suspensions.

- FEATURES:
  - Optimized lightweight spring & 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: 36".

NEW REAR TRACK SHOCKS – LIGHTWEIGHT 1.5 ZERO QS3-R (CENTER) / LIGHTWEIGHT 1.5 ZERO QSR WITH LOCKOUT (REAR)

REV Gen4 Summit & 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, easy compression and rebound adjustments, the rear features QS3 compression adjustment plus a lockout feature.

- FEATURES:
  - Optimized lightweight spring & 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	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	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	REV Gen4	**860201399**	

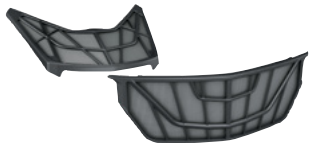
- Filters prevent water intrusion and snow buildup.
- Reinforced intake filters, preventing damage in heavy use.
- Replacement for stock filters.
- Not compatible with One-Piece Lightweight Hood

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.

COOLING & LUBRICATION

NEW SUMMIT EXPERT SNOWFLAP	REV Gen4 with short tunnel	**860202393**

- Removable snowflap extension that helps engine cooling in hardpack, low & icy snow conditions when installed.
- Stows on the tunnel when not in use.
- Installs on the stock lightweight snowflap of Summit & Freeride models with short tunnel.
- Compatible with stock and hitch bumpers.

LinQ REMOVABLE SNOW FLAP	REV Gen4 Freeride & Summit 154" and longer 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 and up	**860200106** • Black / Yellow **860200467** • Black / Grey

- Customize your sled.
- Hardware included.

NEW TUNNEL ICE SCRATCHERS WITH REPLACEABLE TIPS	REV Gen 4 16" (129") and Grand Touring LTD	**860202267***
	REV Gen4 16" (137" and up) and Summit XM	**860202387**
	REV Gen4 20" & 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 MXZ 129" with quick-adjusters.
Not compatible with 129" & 137" Sport models with SC-5M suspension.
Bracket (860201503) required for MXZ 129" with quick-adjusters.

ICE SCRATCHERS TIPS	Fits with Tunnel Ice Scratchers with replaceable tips	**860201446** • Delta shape	

• Ice scratcher replaceable carbide tips.

RAIL ICE SCRATCHERS	REV Gen4, XM, XP Summit & 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.

AIR RADIATOR KIT	REV-XS & XR with 600 & 900 ACE (2014 and prior and 2016 and up, 2015 models require kit 860201341)	**860201350**	
	REV-XS 1200 4-TEC (2016 and up)	**860201401**	
	REV Gen4 (Wide) with 600 ACE, 900 ACE and 900 ACE Turbo	**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

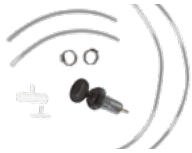
ENGINE HEATER KIT	600 ACE, 900 ACE (2018 and prior)	**860201315**	

• 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.

ELECTRICAL

ELECTRIC STARTER KIT

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	
REV Gen4 (Narrow)	860201282	

- Start your sled with the simple push of a button.
- Kit components may vary per model.

REWIND STARTER KIT

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.
- Rewind handle locates behind panel; instant handle access requires different side panel.

USB POWER OUTLET KIT

REV Gen4	860201261	

- Provides clean, stable power to recharge your electronics while riding.
- Dual USB ports.
- Plug-and-play installation.
- Includes wiring harness.

12-VOLT POWER OUTLET KITS
(Not illustrated)

REV-XP, XR, XU Tundra (except standard 2011–2012)	860200196	
REV-XM, XS	860200632	
REV Gen4	860201423	

- Power up all your electronics with these easy-to-mount 12V plugs.
- Install inside storage compartment.
- Wiring harness included.

12-VOLT POWER OUTLET REPLACEMENT KIT

	861507200	

- Wiring harness is not included.

12-VOLT PLUG FOR LinQ MULTI-MOUNT PLATE

REV Gen4 (Wide) 20" & 24"	860201888	
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 & Expedition without E-TEC engine	860200979	

- Mounts inside rear seat storage compartment.
- Wiring harness included.

HEATED VISOR KIT
(Not illustrated)

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).

1+1 SEAT ELECTRICAL VISOR/ HEATED BOOTS WIRE HARNESS — 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 Y-ADAPTOR
(Not illustrated)
REV-XP, XR, XU — **860201141**

- Harness enables use of more than one plug-and-play accessory.
- Required when using more than one of either of these accessories: Signature LED Light for Handguards, GPS, Ambient Air & Engine Temperature Module.

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 Gen4 (except Summit, Freeride & 600 EFI) — **860201719**

- Combines both DESS™ cord and heated visor cord into one.
- Same type of magnetic connector as used on OXYGEN helmet.
- Easily converts standard DESS cord into a powered cord.
- Eliminates chance of a broken connector.
- Increases freedom of movement, no longer requiring you to manage an additional cord.
- Easy and quick connection that self-locates..
- Works with any electric helmet and 12V heated visor.
- Maintains power connection 100% of the time.

E LinQ RF DESS KEY — REV Gen4 — **515178582**

- Sold as replacement part for the E LinQ vehicle connector.

DESS CORD HOLDER — 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.

ELECTRONICS

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 riders with easy and quick starts 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 the differentiation between the programmed keys.
- Programmable RF D.E.S.S.™ Key can also be programmed to limit the speed of the snowmobile and the 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.

PROGRAMMABLE D.E.S.S.™ KEY

515178284 • Black
860200907 • Green

- Anti-theft technology, Digitally Encoded Security System (D.E.S.S) key easily snaps onto the vehicle and provides riders with easy and quick starts 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 the 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 Gen4

860201263*

- 5" (12.7 cm) sunlight readable, glove-friendly screen.
- Bluetooth† technology can pair with cell phones.
- US 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 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 AND SUPPORT KIT

REV-XM, XS, XU, XR

860201417

- One of the best GPS systems available, designed to fit your sled perfectly with plug-and-play hook-up.
- Glovebox Extension required (860200707) for REV-XS, XM.
- Universal GPS Support Kit (860201018) required for REV-XU, XR.

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).

**While supplies last.*

RH-5R RUGGED RADIO

860201966

- 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 & ENGINE TEMPERATURE MODULE

2015 and up for all platforms	860201021*
REV Gen4	860201362

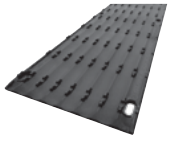
- Get both outside air and engine temps on your cluster.
- Fits both analog and digital multifunction gauge.
- Plug-and-play in vehicle harness.

**Except fan-cooled engines and 2015 P-TEK.*

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).

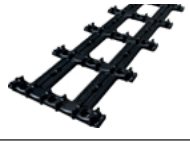
SUPERGLIDE EDGE RAIL TRIM

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.
- Pad lock 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

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 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

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 Gen4 (Narrow) & (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 & STOCK MODELS		EQUIVALENT CONFIGURATION AND POSSIBLE OPTIONS																							SKU	PRICE
		1-UP SEAT	SHORT 2-UP SEAT (TUNDRA)	1 + 1 SEAT	2-UP SEAT	BACKREST	PASSENGER HANDGRIPS	PASSENGER WIND DEFLECTORS	NO WINDSHIELD	ULTRA LOW WINDSHIELD	LOW WINDSHIELD	MEDIUM WINDSHIELD	HIGH WINDSHIELD	EXTRA HIGH WINDSHIELD	ULTRA HIGH WINDSHIELD	MIRRORS ON WINDSHIELD SIDE DEFLECTORS	HANDLEBAR AIR DEFLECTORS	MIRRORS ON HANDLEBAR AIR DEFLECTORS	MIRRORS ON SIDE PANEL	MXZ HI-RISER KIT	SUMMIT HI-RISER KIT	EXTRA FRONT BUMPER	LUGGAGE BOX	WRAP-AROUND BUMPER	CARGO BOX		
RIDE-ON-COVER SYSTEM WITH RAP-CLIP																										
REV GEN4 16"	Summit, Freeride	•							•	•	•					•	•				•	•			860201884	
	Summit or Freeride with Medium or High Windshield	•										•	•			•					•	•			860201885	
	MXZ, Renegade Sport, Renegade Adrenaline, Renegade X, Renegade X-RS, Backcountry, Mach Z	•							•	•	•						•	•		•		•			860201842	
	Renegade Enduro	•										•				•				•		•			860201886	
	MXZ, Renegade, Backcountry with High or Ultra High Windshield	•											•		•	•				•		•			860201841	
	MXZ, Renegade, Backcountry, Grand Touring Sport, Expedition Sport			•	•	•	•	•				•	•		•	•				•		•			860201843	
REV GEN4 (WIDE) 16"	Grand Touring LTD			•	•	•	•	•				•	•		•	•				•		•	•		860201887	
	G4 Wide 1-Up with Wrap-Around Bumper	•										•	•		•	•				•		•		•	860201908	
	G4 Wide 2-Up with Wrap-Around Bumper			•	•	•	•	•				•	•		•	•				•		•		•	860201909	
	Tundra		•	•							•	•	•		•	•					•			•	860202173	
REV GEN4 (WIDE) 20" & 24"	Expedition LE, Expedition SE				•	•	•	•				•	•		•	•					•	•		•	•	860201972	
	Expedition Xtreme	•							•	•	•	•									•	•		•	•	860201973	
	Skandic & Expedition SWT				•	•	•	•				•	•		•	•					•	•		•	•	860202200	
INTENSE RAP-CLIP COVER																										
REV-XM	Summit SP	•								•	•		•		•	•					•	•			860201375	
	Renegade Backcountry	•										•	•			•				•		•			860201374	
	REV-XM with Medium-High Windshield	•										•	•			•					•	•			860201376	
REV-XS	MXZ X, Renegade X	•								•	•						•	•		•		•			860201373	
	MXZ Sport, MXZ TNT, MXZ Blizzard, Renegade Sport, Renegade Adrenaline, Renegade 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, Tundra LT, Tundra Xtreme	•			•						•	•	•			•					•	•			280000650	
	Tundra with Extra High Windshield	•			•									•		•						•			280000673	
	Expedition LE, Expedition SE, Expedition SWT, Skandic WT, Skandic 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 (860202028).
- 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.

SKI SAVER

860201882

- Transport your snowmobile on any surface without scratching or damaging your skis.
- Very easy to use; roll under the skis, push down and hook it.
- Works on every snowmobile with easy adjustments.

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

860200447 • Black / Grey

- 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 S hooks.
- Pack of 2.

HEAVY-DUTY RATCHET TIE-DOWNS

715006227

- 1,000 lb (454 kg) safe working load.
- 1.5" x 6' (38 mm x 1,8 m) strap with BRP brands.
- Deluxe ratchet with rubber handle.
- Black-coated clip hooks.
- 18" (460 mm) webbing included.
- 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

137 TRACTION & CONTROL
148 PROPULSION
150 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

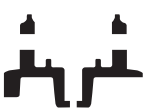
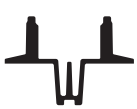
Pilot 7.4 skis — **860202115** • Black

- 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

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.
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.
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.
			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.
			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.
			**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.
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.
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.
			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.
			**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.

***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.

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
505072443		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A	
505074736		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A	
505072854	505072855	505073028	505073029	505073575	505073576	505073030	505073031	505073032	505073033	505073026	505073027	N/A		505074071	505074072	505073645	505073646	505074239	505074240
505074829	505074830	N/A		505073851	505073852	N/A		N/A		N/A		N/A		505074067	505074068	N/A		505074235	505074236
505074926	505074927	N/A		505075024	505075025	N/A		N/A		N/A		N/A		N/A		N/A		N/A	
505074776	505074777	N/A		505075026	505075027	N/A		N/A		N/A		N/A		N/A		N/A		N/A	
505074670		N/A		505074690		N/A		N/A		N/A		N/A		N/A		N/A		N/A	
505073100		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A	
505073227		505073277		505073658		N/A		505073279		N/A		505073510		505073511		505073654		505073354	
505073568		N/A		505073627		N/A		N/A		N/A		N/A		505074023		N/A		505073990	
505074746		N/A		505074756‡		N/A		N/A		505074747		N/A		505074757		N/A		505074755	

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	**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	**505074778** • Black	

• High-density colored polyethylene loops.

SKI-DOO PILOT* SKIS AND CARBIDES TO SUIT ALL RIDING STYLES

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	**860200443** • Preformed 4" 60°
Pilot X, Pilot 5.7 SL, Pilot 5.7, Pilot DS, Pilot DS-2, Pilot DS-3 skis	**860200513** • Preformed 6" 60°
Pilot X, Pilot 5.7 SL, Pilot 5.7, Pilot DS, Pilot DS-2, Pilot DS-3 skis	**860200514** • 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°
Pilot X, Pilot 5.7 SL, Pilot 5.7, Pilot 7.4, Pilot DS, Pilot DS-2, Pilot DS-3 skis	**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.

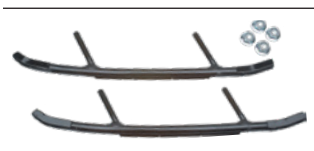
EXTENDER TRAIL III† CARBIDES

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.

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.

** While supplies last.*

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	PRICE
	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**	
3.5"	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**	
	154"	16"	3.00"	Powder Max 3 / FlexEdge	1 clip every 2 profiles	**504153349**	
3.00"	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**	
	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**	
2.86"	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

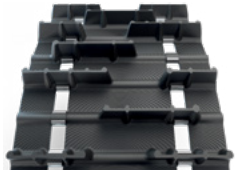
PITCH	LENGTH	WIDTH	LUG HEIGHT	PROFILE	CLIP	SKU	PRICE
	137"	16"	1.25"	Cobra	1 clip every 2 profiles	**504152907**	
	137"	16"	1.75"	Powder Max	1 clip every 2 profiles	**504152803**	
	137"	16"	1.75"	Powder Max / FlexEdge	Full clip	**504153294**	
	137"	16"	2.25"	Powder Max	Full clip	**504153103**	
	137"	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**	
2.86"	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	PRICE
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	

*Not compatible with REV Gen4.

TRACTION ACCESSORIES

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

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	
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

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	PRICE
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°	**$119.99**	**417126975** • 44°-33°	
		417127372 • 42°	**$124.99**	**417127426** • 46°-42°	
		417127367 • 44°	**$124.99**	**417127326** • 40°	
		417127325 • 44°-42°	**$124.99**	**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.

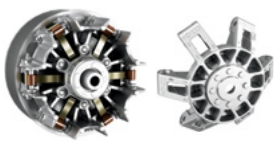
FLOATING QRS SHORT SHAFT CONVERSION KIT

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 CLUCTH

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† 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† 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 3 amp 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 6 or 12 volt 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: 3 amp 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† SMART SHOT AUTOMATIC BATTERY CHARGER

Automatic 1 amp (1000 MA) 3-stage charge cycle

529036481

- The Yuasa Smart Shot Automatic Battery Charger is available in 1 amp 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

153 OILS & MAINTENANCE PRODUCTS

156 CARE PRODUCTS

OILS & MAINTENANCE PRODUCTS

ENGINE OILS

XPS 2T E-TEC SYNTHETIC OIL

779126 • 1 qt / 946 ml
779127 • 1 US gal / 3.785 L
779128 • 2.5 US gal / 9.46 L

779129 • 5 US gal / 18.92 L
779130 • 55 US gal / 205 L

779131 • 265 US gal / 1,003 L
779132 • 330 US gal / 1,249 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

779180 • 1 qt / 946 ml

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

779447 • 1 qt / 946 ml
779448 • 1 US gal / 3.785 L

779449 • 2.5 US gal / 9.46 L

- Designed for all oil injection or pre-mix 2-stroke snowmobiles with electronic fuel injection or carbureted 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

779119 • 1 qt / 946 ml
779120 • 1 US gal / 3.785 L
779121 • 2.5 US gal / 9.46 L

779122 • 5 US gal / 18.92 L
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

779145 • 1 qt / 946 ml
779146 • 1 US gal / 3.785 L

779147 • 5 US gal / 18.92 L
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

779139 • 1 qt / 946 ml
779140 • 1 US gal / 3.785 L

779141 • 5 US gal / 18.92 L
779142 • 55 US gal / 205 L

779143 • 265 US gal / 1,003 L
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 temperature.

XPS 4T 0W-40 SYNTHETIC OIL CHANGE KIT

779253 • 600 ACE
779254 • 900 ACE

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.

MAINTENANCE PRODUCTS

OIL FILTER

420956124 | **$17.49**

- 900 ACE, 900 ACE Turbo, 600 ACE and 1203 engines.

UNIVERSAL PRE-MIXED COOLANT

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

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

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 system.

RACING BRAKE FLUID RS600

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.

HIGH PERFORMANCE SUSPENSION FLUID (FOR FOX† SHOCKS)

779153 • 1 qt / 946 ml

- A synthetic, fade-free formula for servicing FOX® shocks.
- Specially formulated for high-demand or racing application.
- Ultra high VI shock oil.
- Engineered viscosity for optimized performance with FOX® shocks valving.

WINTER HIGH PERFORMANCE SUSPENSION FLUID (FOR KYB† SHOCKS)

779154 • 1 qt / 946 ml

- A synthetic, fade-free formula for servicing Kayaba Shocks†.
- Ultra high VI shock oil.
- Engineered viscosity for optimized performance in cold weather conditions.

PREMIUM MINERAL CHAINCASE OIL

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.

SYNTHETIC CHAINCASE OIL

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

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

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

779166 • 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.

CARBON-FREE FUEL TREATMENT

779169 • 12 fl. oz. / 355 ml

- Combination of a fuel treatment and a fuel system cleaner that can be used periodically to restore lost starting or throttle performance, as well as maintain fuel system integrity and keep internal engine parts clean.
- It treats fuel for storage and addresses the moisture problems inherent in today's ethanol-blended fuels, keeping ferrous and soft metal parts clean and free of corrosion.
- Uses patented, state-of-the-art additives.
- Cleans valves, sticky rings and combustion chamber.

FUEL STABILIZER

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.

FUEL TREATMENT CARBURETOR CLEANER

779172 • 12 fl. oz. / 355 ml

- Complete fuel treatment specially formulated to prevent small engine problems caused by ethanol-blended fuels.
- It removes fuel system gum and varnish that may have accumulated during storage, stabilizes fuel against breakdown for 12 months or more, and adds corrosion protection from moisture for short- and long-term storage.
- It also helps restore throttle response and easy starting.
- It can be used periodically to maintain fuel system integrity, keep carburetor jets clean, and also combat moisture problems caused by ethanol-blended fuels to keep ferrous and soft metal parts clean and free of corrosion.

STORAGE OIL

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.

CARE PRODUCTS

ALL-PURPOSE CLEANER AND DEGREASER

779328 • 22 fl. oz. / 650 ml
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

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

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

779335 • 7.6 fl. oz. / 225 ml

- Restores plastic, rubber and vinyl.
- Long-lasting formula.
- Protects against UV rays.

QUICK DETAILER GLOSS ENHANCING

779332 • 4 fl. oz. / 118 ml
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

779337 • 16 fl. oz. / 473 ml
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

779340 • 33 fl. oz. / 946 ml
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

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TECHNOLOGY GUIDE

// SPECIAL EDITION OXYGEN HELMET

> See complete details on page 164.

HEATED CHAMBER TO KEEP THE SUN VISOR FOG FREE

UNOBSTRUCTED PANORAMIC FIELD OF VISION FOR INCREDIBLE MASK-LESS RIDING EXPERIENCE

AMBER SUN VISOR

NCS SYSTEM: REDUCES OUTSIDE NOISE

HEATED VISOR WITH REMOTE CONTROL OPERATION AND HEAT LEVEL INDICATOR LIGHTS

NEW
ADDED PREMIUM COMFORT EXCLUSIVE MATERIAL LINING

NEW
CHIN CURTAIN WITH VENTILATION FOR VERSATILE PROTECTION

BATTERY-LESS REAR LED LIGHT

E LinQ REAR MAGNET CONNECTOR

NEW
REMOVABLE BACK CURTAIN FOR REDUCED AIR INTRUSION

LIGHTWEIGHT M-FORGE® COMPOSITE SHELL BETTER IMPACT PROTECTION IN COLD CONDITIONS THAN CARBON FIBER

1,800 g ± 50 g for smaller shell (XS-L)
1,900 g ± 50 g for larger shell (XL-3XL)

// THE ABSOLUTE 0 JACKET TECHNOLOGIES

DESIGNED FOR THE HARSHEST COLDEST RIDING CONDITIONS

The new and improved Absolute 0 jacket is the warmest jacket in our lineup, meant for the harshest of conditions. This weatherproof jacket, will ensure absolute comfort and warmth no matter the weather at hand.

> See complete details on pages 174.

REMOVABLE AND ADJUSTABLE COLLAR
To seal air entry.

PRIMALOFT®
The highest performance insulation, ultimate warmth to weight.

SYMPATEX® MEMBRANE
100% waterproof windproof, and highly breathable.

RADIANT CORE
Thermal reflective technology, for added heat conversion.

100% SEAMS AND LOGOS SEALED

WATER-RESISTANT YKK ZIPPERS AT POCKETS

CENTER FRONT QUADRUPLE INSULATED FLAPS
For heat retention and wind protection

E LinQ CONNECTOR SYSTEM
To connect to your heated visor shield and tucks in nicely when disconnected.

AVAILABLE COLORS

Black with graphics

Black

Heather Grey

// THE HELIUM JACKET TECHNOLOGIES

DESIGNED TO ADAPT TO NATURE'S TOUGHEST CHALLENGES SO YOU CAN HAVE THE MOST COMFORTABLE RIDE

The Helium jacket is specially designed for our rider's toughest challenges. The helium jacket and layering system is conceptualized to adapt to the rider and weathers toughest challenges.

> See complete details on pages 169-170.

ADJUSTABLE NON REMOVABLE HOOD

SYMPATEX® MEMBRANE

Two layer membrane; for ultimate comfort, performance and better mobility. 100% waterproof windproof, and highly breathable.

OFFSET FRONT ZIPPER

For optimal comfort at chin.

TWO SIDE POCKETS PLACED HIGH

For avalanche backpack strap.

100% SEAMS AND LOGOS SEALED

LIGHTWEIGHT,

while still providing protection to the elements.

WATER-RESISTANT YKK ZIPPERS

AVAILABLE COLORS

Army Green

Blue Teal

Orange

Coral

Sustainability meets Performance SympaTex®

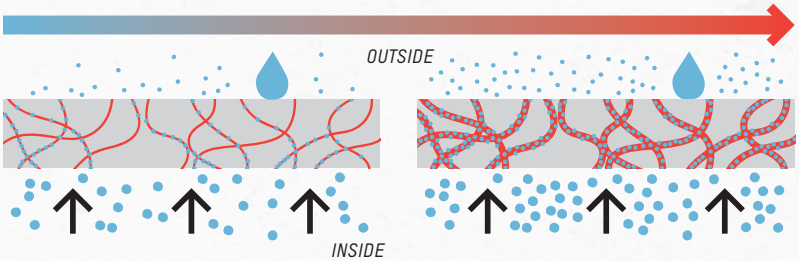
SYMPATEX® MEMBRANE

Discover the performance of Sympatex membrane.

In addition to being windproof and having superior waterproof performance, Sympatex adjusts to your body's temperature by letting more moisture pass through as needed—dynamic breathability—something a porous PTFE membrane cannot do. Sympatex also doesn't clog, or stretch out like PTFE. It's time to move it up a level with Sympatex.

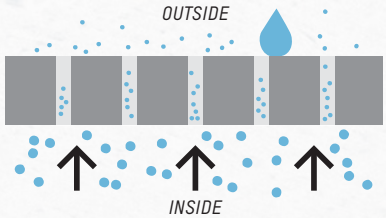
COMPACT SYMPATEX MEMBRANE

FUNCTION DURING INCREASING PHYSICAL ACTIVITY / SWEATING



MICROPOROUS MEMBRANE (PTFE)

PHYSICAL PRINCIPAL



Water droplets · Water vapour molecules · Hydrophilic polyether · Hydrophobic polyester · Pore · Including PTFE

M-FORGE COMPOSITE

M-FORGE® COMPOSITE TECHNOLOGY

Delivers helmets with superior performance and lightweight.

UP TO 40% LIGHTER THAN OTHER EQUIVALENT MATERIALS
Less strain on the rider's neck for a more comfortable riding experience.

EXCELLENT IMPACT PERFORMANCE

BEST-IN-CLASS LOW ENERGY REPEAT IMPACT RESISTANCE

ABSORBS MORE ENERGY
than comparable materials resulting in an outstanding reduction of rebound speed after impact.

WEATHERABILITY

ECO-FRIENDLY

M-FORGE® COMPOSITE is a patented technology and registered trademark of MAT GROUP™.

LEARN MORE AT WWW.M-FORGE.COM

#MForgeCompositeRevolution

HELMETS

OXYGEN HELMETS

NEW OXYGEN SE HELMET

M-FORGE · DOT

929027 • XS, S, M, L, XL, 2XL, 3XL

Army Green (**77**), Lava Red (**17**)

- 4-year limited warranty.
- Special Edition.
- Lightweight M-FORGE® Composite for better impact resistance in extreme conditions – 20% lighter than the BV2S helmet and 16% lighter than the Modular helmet.
- Sun visor heated chamber.
- Amplified heated visor with pivot contact system.
- Offered with retractable amber sun visor for best vision in snow conditions.
- 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 up to 2 times more than the BV2S helmet and up to 3 times more than the Modular helmet.
- Robust detents allow precise opening adjustments for airflow.
- Optional front LED utility light.
- Lightweight battery-less rear LED light for added rider safety.
- E LinQ rear magnet connector.
- Unique remote control with visor heat indicators.
- 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.
- New chin curtain with ventilation for versatile protection.
- New removable back curtain for reduced air intrusion.
- Added premium comfort exclusive material lining.
- 1850 g ± for large shell.
- D.O.T. approved.

OXYGEN HELMET

M-FORGE · DOT

929019 •XS, S, M, L, XL, 2XL, 3XL

White (**01**), Black (**90**), Matte Black (**93**)

- 4-year limited warranty.
- Now available in XS and Matte Black color.
- Lightweight M-FORGE® Composite shell for better impact resistance in extreme conditions – 20% lighter than the BV2S helmet and 16% lighter than the Modular helmet.
- Sun visor heated chamber.
- Amplified heated visor with pivot contact system.
- Offered with retractable amber sun visor for best vision in snow conditions.
- 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 up to 2 times more than the BV2S helmet and up to 3 times more than the Modular helmet.
- Robust detents allow precise opening adjustments for airflow.
- Optional front LED utility light.
- Lightweight battery-less rear LED light for added rider safety.
- E LinQ rear magnet connector.
- Unique remote control with visor heat indicators.
- 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.
- 1850 g ± for large shell.
- D.O.T. approved.

LED UTILITY LIGHT

(Not illustrated)

929006 • One size

Black (**90**)

- Optional part.

OXYGEN NCS REMOVAL PADS

(Not illustrated)

929023 • One size

Black (**90**)

- OXYGEN helmet noise cancelling system (NCS) replacement pads.

OXYGEN HEAD LINER (MY21+)

(Not illustrated)

929024 • XS

Black (**90**)

OXYGEN CHEEK PADS SET (MY21+)

(Not illustrated)

929025 • XS

Black (**90**)

OXYGEN CHEEK PADS EPS

(Not illustrated)

929026 • S (Fits XS/S)

Black (**90**)

NEW HELMET SERVICE PAD

448695 • One size

Black (**90**)

- 100% Plastic.

NEW OXYGEN SE HEADLINER | **929032** • XS, S, M, L, XL, 2XL, 3XL | Charcoal Grey (**07**)

- 50% Foam, 40% Fabric, 10% Plastic.
- Replacement Headliner for OXYGEN SE helmet.

NEW OXYGEN SE CHIN CURTAIN | **929029** • L (Fits XS/S/M/L), 2XL (Fits XL/2XL/3XL) | Black (**90**)

- 75% Foam, 25% Plastic.
- Replacement chin curtain for OXYGEN SE helmet.

NEW OXYGEN SE CHEEK PADS SET | **929031** • XS, S, M, L, XL, 2XL, 3XL | Charcoal Grey (**07**)

- 50% Foam, 40% Fabric, 10% Plastic.
- Replacement Cheek Pad set for OXYGEN SE helmet.

NEW OXYGEN SE CUSTOMIZATION KIT
DEALERS ONLY (Not illustrated) | **929033** • One size | Charcoal Grey (**07**)

- 50% Foam, 40% Fabric, 10% Plastic.
- Dealer Customization kit for OXYGEN SE helmet.
- Kit includes: 4 set of NCS removal pads, 3 sets of cheek pads, 2 x XS (44mm), 2 x L (38mm) 2 x 3XL (32mm).

NEW OXYGEN INTERNAL CHIN COVER | **929034** • One size | Black (**90**)

- 99% Plastic, 1% Metal
- Replacement Chin curtain for OXYGEN helmet

NEW OXYGEN DEALER CUSTOMIZATION KIT
DEALERS ONLY (Not illustrated) | **929030** • One size | Clear (**00**)

- 50% Foam, 40% Fabric, 10% Plastic.
- Dealer Customization kit for OXYGEN helmet.
- Kit includes: 4 set of NCS removal pads, 3 sets of cheek pads, 2 x XS (44mm), 2 x L (38mm) 2 x 3XL (32mm).

MODULAR 3 HELMETS

MODULAR 3 SKI-DOO HELMET DOT | **448628** • S, M, L, XL, 2XL, 3XL | Black with graphics (**94**)

- 4-year limited warranty.
- Built-in Clear Vision Technology with optically-correct dual lens visor.
- Ready to receive communication system.
- Adjustable sunshield lowers or raises at the touch of a button.
- Front push-button release integrated into jaw section.
- Breath Evac fog-resistant mask system.
- Quick-release chin strap.
- Spacious design allows room for eyeglasses.
- D.O.T. approved.

MODULAR 3 HELMET DOT | **447963** • S, M, L, XL, 2XL, 3XL | White (**01**), Black (**90**)

- 4-year limited warranty.
- Built-in Clear Vision Technology with optically-correct dual lens visor.
- Ready to receive communication system.
- Adjustable sunshield lowers or raises at the touch of a button.
- Front push-button release integrated into jaw section.
- Breath Evac fog-resistant mask system.
- Quick-release chin strap.
- Spacious design allows room for eyeglasses.
- D.O.T. approved.

MODULAR 3 ELECTRIC SE HELMET DOT | **447964** • S, M, L, XL, 2XL, 3XL | Black (**90**)

- 4-year limited warranty.
- Built-in Clear Vision Technology with optically-correct dual lens visor.
- Ready to receive communication system.
- Adjustable sunshield lowers or raises at the touch of a button.
- Front push-button release integrated into jaw section.
- Breath Evac fog-resistant mask system.
- Quick-release chin strap.
- Spacious design allows room for eyeglasses.
- D.O.T. approved.

BV2S HELMET

BV2S HELMET

DOT

447404 • S, M, L, XL, 2XL, 3XL

Black (**90**)

- 4-year limited warranty.
- Dual lens visor featuring Clear Vision Technology with 180° peripheral vision.
- Lever-activated sunshield.
- BV2S fog-resistant mask system with soft surgical rubber seal and easy adjust knob.
- Front push-button release for jaw piece.
- Removable and washable inner liner.
- Integrated backlight (batteries included).
- Quick-release chin strap.
- Shell: Polycarbonate Composite.
- D.O.T. approved

EX-2 MOTION, XC-4, XP-X AND CROSS HELMETS

SKI-DOO EX-2 MOTION ELECTRIC HELMET

DOT

448629 • XS, S, M, L, XL, 2XL

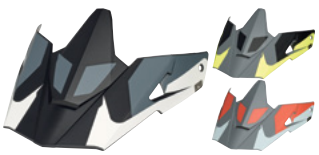
Red (**30**)

- 4-year limited warranty.
- Removable aerodynamic peak.
- Lockable, multi-position and fog-free heated shield.
- Interchangeable retractable sun visor.
- Ultra-comfortable and washable lining.
- Advanced plastic composite shell.
- Oversized chin deflector for cold weather protection.
- Adjustable air vents and exhausts.
- D.O.T. approved.

NEW SKI-DOO XC-4 ELEVATION HELMET RPM PEAK

448691 • One size

Charcoal Grey (**07**), Hi-Vis Yellow (**26**), Light Blue (**81**),

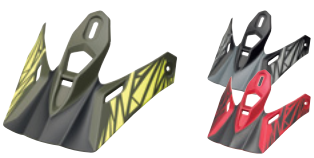


- 100% Plastic.
- Replacement Visor for XC-4 helmet (2022).

NEW XP-X HELMET RPM PEAK

448692 • One size

Army Green (**77**), Charcoal Grey (**07**), Lava Red (**17**)



- 100% Plastic.
- Replacement Peak for XP-X Helmet.

NEW XP-X PEAK HELMET

M-FORGE DOT ECE22.05

448767 • XS, S, M, L, XL, 2XL

Army Green (**77**), Charcoal Grey (**07**), Lava Red (**17**)

- 4-year limited warranty.
- M-Forge Composite.
- AEGIS[1] antimicrobial treatment prevents odor and bacteria.
- Aerodynamic visor.
- Removable and washable premium high comfort liner.
- 8 vents provide improved airflow.
- Micrometric chin strap attachment - Easy one-hand opening, even with gloves (not approved for racing applications).
- D.O.T. and E.C.E. certified.
- 1210 g ± 50 g for small shell (Sizes: XS, S & M).
- 1265 g ± 50 g for large shell (Sizes: L, XL & 2XL).

NEW SKI-DOO XC-4 ELEVATION HELMET

DOT ECE22.05

448632 • XS, S, M, L, XL, 2XL

Charcoal Grey (**07**), Hi-Vis Yellow (**26**), Light Blue (**81**)

- 80% Polycarbonate, 20% ABS.
- 4-year limited warranty.
- Weight: ±1420 g for size Large.
- Shell construction is super light polycarbonate with impact absorbing liner.
- Fully adjustable visor system.
- Front and rear hi-max air vent system to maximize cooling effect.
- Removable, washable and replaceable moisture-wicking liner.
- Winter breath deflector.
- Might weight double-D chin strap.
- D.O.T. and E.C.E. certified.

NEW MAGNETIC FACE SHIELD

447819 • One size

Black (**90**), Hi-Vis Yellow (**26**)

- 95% Nylon, 5% TPU.
- Works with XP-X or XC4.

*// PLEASE REFER TO **THE SKI-DOO 2022 YELLOW BOOK** FOR THE COMPLETE LIST OF HELMET REPLACEMENT PARTS.*

GOGGLES

TRENCH GOGGLES

NEW SKI-DOO TRENCH GOGGLES

448689 • One size

Black (**90**), Charcoal Grey (**07**), Coral (**13**), Red (**30**)

The Ski-Doo Trench goggle features a distortion free double lens that's anti-scratch and anti-fog.

- 60% Plastic, 25% Fabric, 15% Foam .
- Thermo-formed 3 layer face foam for great comfort and fit.
- No-slip silicone strap keeps goggles in place.
- Injection-molded cylindrical lens provides distortion free vision and enhanced impact resistance.
- Vibrant lens tint with light silver mirror that increases visual acuity in extremely flat and low light conditions.
- Removable nose guard for protection against cold and debris.

NEW TRENCH GOGGLES RPM SINGLE LENS (UV)

(Not illustrated)

448697 • One size

Clear (**00**)

- 100% Plastic.
- Clear single pane replacement lens for Ski-Doo Trench Goggles.

NEW TRENCH GOGGLES RPM DUAL LENS (UV)

(Not illustrated)

448702 • One size

Pink (**36**)

- 100% Plastic.
- Pink tinted dual pane replacement lens for Ski-Doo Trench Goggles.

NEW TRENCH GOGGLES RPM NOSE GUARD

448708 • One size

Black (**90**)

- 100% Plastic.
- Replacement Nose Guard for Ski-Doo Trench Goggles.

EDGE GOGGLES

NEW SKI-DOO EDGE GOGGLES

448699 • One size

Charcoal Grey (**07**), Hi-Vis Yellow (**26**), Lava Red (**17**)

- 60% Plastic, 25% Fabric, 15% Foam.
- The Ski-Doo Edge goggle features Injection-molded PC cylindrical lens.
- Anti-scratch, 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.
- Hi-Vis Yellow and Charcoal Grey: Grey based lens tint with mirror coating designed to reduce overall brightness while preserving 100 percent normal colour recognition.
- Lava Red: Amber based lens tint with mirror coating designed to filters out blue light for enhanced shadow contrast in moderately flat light conditions.

NEW SKI-DOO EDGE GOGGLES RPM NOSE GUARD

448703 • One size

Black (**90**)

- 100% Plastic.
- Replacement Nose Guard for Ski-Doo 2022 Edge Goggles.

NEW SKI-DOO EDGE GOGGLES CHROMED RPM LENS (UV)

(Not illustrated)

448672 • One size

Blue (**80**), Chrome (**99**), Gold (**11**), Hi-Vis Yellow (**26**), Lava Red (**17**), Red (**30**)

- 100% Plastic.
- Replacement lens for Ski-Doo Edge Goggles.
- Chrome finish.
- Dual pane anti-fog lens also treated to repel water.
- Storage pouch that doubles as a cleaning cloth.

NEW SKI-DOO EDGE GOGGLES RPM LENS (UV)

(Not illustrated)

448688 • One size

Pink (**36**)

- 90% Plastic, 5% Super Tacky Foam, 5% Magnet
- Replacement lens for Ski-Doo Edge Goggles.
- Tinted finish.
- Dual pane anti-fog lens also treated to repel water.
- Storage pouch that doubles as a cleaning cloth.

RIDING GEAR

DEEP SNOW

MEN'S

NEW HELIUM JACKET

SympaTex®

440919 • XS, S, M, L, XL, 2XL, 3XL
442448 • MT, LT, XLT, 2XLT

Army Green (**77**), Blue Teal (**19**), Orange (**12**)

- Sympatex 2-Ply Laminated Polyester.
- Lifetime warranty with the Sympatex membrane.
- 100% sealed seams and logos.
- 100% windproof, waterproof and highly breathable Sympatex membrane.
- Water-resistant YKK zippers.

- Powder skirt.
- Adjustable non removeable hood.
- Offset front zipper for optimal comfort at chin.
- Backpack friendly underarm venting.
- Reflective details for optimized visibility.
- Two side pockets placed high for avalanche backpack strap
- Inner wrist gaiters with thumb hole

WARMTH ●○○○○
WATERPROOFNESS/WINDPROOFNESS ●●●●●
BREATHABILITY ●●●●●

NEW HELIUM HIGHPANTS

SympaTex®

441667 • S, M, L, XL, 2XL, 3XL
442449 • LT, XLT, 2XLT

Black (**90**), Charcoal Grey (**07**)
Black (**90**)

- Outershell: 100% Sympatex 2-Ply laminated Polyester.
- Reinforcement: 100% Nylon Cordura.
- Lifetime warranty with the Sympatex membrane.
- 100% seams and logos sealed.
- 100% windproof, waterproof and highly breathable Sympatex membrane.
- Stretch fabric at waist.
- 2 thigh pockets and 1 bib pocket.

- Mesh at back bib panel.
- Fleece at seat.
- Shaped, reinforced and padded knees and shins.
- Extra long removable knee pads.
- Storm gaiters with boot to lace snap connector.
- Reinforcement at inner legs for abrasion resistance.
- 2-way full-length water-resistant side zippers.
- Reflective details.

WARMTH ●○○○○
WATERPROOFNESS/WINDPROOFNESS ●●●●●
BREATHABILITY ●●●●●

NEW REVY ONE-PIECE SUIT

440913 • XS, S, M, L, XL, 2XL, 3XL

Army Green (**77**), Blue Teal (**19**)

- 100% waterproof, breathable and windproof.
- 100% seams and logos sealed.
- 360° reflective details for maximum visibility.
- Reinforced fabric at knees, inner legs and back seat.
- Adjustable collar, wrists, waist and inner suspender system.

- Detachable hood.
- 1 deep chest pocket, 1 cargo size pocket at thigh and 2 hand pockets.
- Underarm venting.
- Water-resistant YKK zippers
- Side leg opening.
- Inner wrist gaiters with thumb hole.
- Leg storm gaiter.

WARMTH ●○○○○
WATERPROOFNESS/WINDPROOFNESS ●●●●○
BREATHABILITY ●●●●○

DEEP SNOW

LADIES'

NEW HELIUM JACKET

SympaTex®

440892 • XS, S, M, L, XL, 2XL, 3XL

Coral (**13**)

- Sympatex 2-Ply laminated Polyester.
- Lifetime warranty with the Sympatex membrane.
- 100% sealed seams and logos.
- 100% windproof, waterproof and highly breathable Sympatex membrane.
- Water-resistant YKK zippers.
- Powder skirt.
- Adjustable non removable hood.
- Offset front zipper for optimal comfort at chin.
- Backpack friendly underarm venting.
- Reflective details for optimized visibility.
- Two side pockets placed high for avalanche backpack strap.
- Inner wrist gaiters with thumb hole.

WARMTH ●○○○○
WATERPROOFNESS/WINDPROOFNESS ●●●●●
BREATHABILITY ●●●●●

NEW HELIUM HIGHPANTS

SympaTex®

441668 • XS, S, M, L, XL, 2XL

Black (**90**)

- Outershell 100% Sympatex 2-Ply laminated Polyester.
- Reinforcement 100% Nylon Cordura.
- Lifetime warranty with the Sympatex membrane.
- 100% seams and logos sealed.
- 100% windproof, waterproof and highly breathable Sympatex membrane.
- Stretch fabric at waist.
- 2 thigh pockets.
- Mesh at back bib panel.
- Fleece at seat.
- Shaped, reinforced and padded knees and shins.
- Extra long removable knee pads.
- Storm gaiters with boot to lace snap connector.
- Reinforcement at inner legs for abrasion resistance.
- 2-way full-length water-resistant side zippers.
- Reflective details.
- Drop seat design.

WARMTH ●○○○○
WATERPROOFNESS/WINDPROOFNESS ●●●●●
BREATHABILITY ●●●●●

CROSSOVER

MEN'S

NEW MCODE JACKET WITH INSULATION

440897 • S, M, L, XL, 2XL, 3XL

Army Green (**77**), Black (**90**), Blue Teal (**19**)

- 3-in-1 construction that combines a shell and a zipped-in puffy jacket with 200g of Thermal Loft insulation.
- 100% waterproof, breathable and windproof.
- 100% seams and logos sealed.
- 360° reflective details for maximum visibility.
- 2-way zipper to improve comfort in sitting position.
- E LinQ connect: Inner wiring and D-ring attach for helmet cable.
- Zipper puller on Army Green version: Red.
- Zipper puller on Blue Teal version: Orange.
- Zipper puller on Black version: Yellow.

WARMTH ●●●◐○
WATERPROOFNESS/WINDPROOFNESS ●●●●○
BREATHABILITY ●●●●○

NEW REVY INSULATED ONE PIECE SUIT

440914 • XS, S, M, L, XL, 2XL, 3XL

Heather Grey (**27**)

- Nylon, Polyester.
- 100% waterproof, breathable and windproof.
- 100g of Thermal Loft insulation all over.
- 100% seams and logos sealed.
- 360° reflective details for maximum visibility.
- Reinforced fabric at knees and inner legs.
- Removable and adjustable suspenders.
- Polar fleece at back seat.
- 1 deep chest pocket, 1 cargo size pocket at thigh and 2 hand pockets.
- Inner wrist gaiters with thumb hole.
- Adjustable waistband.
- Leg storm gaiter.
- Underarm venting.
- Drop seat design.

WARMTH ●○○○○
WATERPROOFNESS/WINDPROOFNESS ●●●●○
BREATHABILITY ●●●●○

LADIES'

NEW MCODE JACKET WITH INSULATION

- 3-in-1 construction that combines a shell and a zipped-in puffy jacket with 200g of Thermal Loft insulation.
- 100% waterproof, breathable and windproof.
- 100% seams and logos sealed
- 360° reflective details for maximum visibility.

440915 • XS, S, M, L, XL, 2XL

- 2-way zipper to improve comfort in sitting position.
- E LinQ connect: Inner wiring and D-ring attach for helmet cable.
- Zipper puller on Blue Teal version: Coral.
- Zipper puller on Army Green version: Dark plum.

Army Green (**77**), Blue Teal (**19**)

WARMTH ●●●◐○
WATERPROOFNESS/WINDPROOFNESS ●●●●○
BREATHABILITY ●●●●○

NEW REVY INSULATED ONE PIECE SUIT

- Nylon, Polyester.
- 100% waterproof, breathable and windproof.
- 100g of Thermal Loft insulation all over.
- 100% seams and logos sealed.
- 360° reflective details for maximum visibility.
- Reinforced fabric at knees and inner legs.
- Removable and adjustable suspenders.

440912 • XS, S, M, L, XL

- Polar fleece at back seat.
- 1 deep chest pocket, 1 cargo size pocket at thigh and 2 hand pockets.
- Inner wrist gaiters with thumb hole.
- Adjustable waistband.
- Leg storm gaiter.
- Underarm venting.
- Drop seat design.

Light Blue (**81**)

WARMTH ●●●○○
WATERPROOFNESS/WINDPROOFNESS ●●●●○
BREATHABILITY ●●●●○

TRAIL PERFORMANCE

MEN'S

NEW X-TEAM JACKET

- Nylon, Polyester.
- 100% waterproof, breathable and windproof.
- Insulation: 200g PrimaLoft Black.
- Radiant Core technology to keep you warm.
- 100% seams and logos sealed.
- Double center front flap insulated for heat retention and wind protection.
- Polar fleece at front body and top arms for added warmth
- Reflective Ski-Doo logos for maximum visibility.

440894 • XS, S, M, MT, L, LT, XL, XLT, 2XL

440900 • 2XLT, 3XL, 3XLT, 4XL, 5XL

- E LinQ connect: Inner wiring and D-ring attach for helmet cable.
- Additional removable collar to seal air entry.
- Customizable zipper puller: choices of two options by jacket.
- Powder skirt.
- Shaped sleeves.
- Reflective details on sleeves and at back.
- Inner wrist gaiter with thumb hole.
- Water-resistant YKK zippers.

Black (**90**), Heather Grey (**27**), Hi-Vis Yellow (**26**), Red (**30**)

Black (**90**), Heather Grey (**27**), Hi-Vis Yellow (**26**)

WARMTH ●●●◐○
WATERPROOFNESS/WINDPROOFNESS ●●●●○
BREATHABILITY ●●●●○

NEW X-TEAM HIGHPANTS

- Nylon, Polyester.
- Insulation: 200g PrimaLoft Black.
- Highly windproof, waterproof and breathable.
- 100% seams and logos sealed.
- Articulated, padded and shaped knees.
- Adjustable waist.

441660 • XS, SS, S, MS, M, LS, L, XLS, XL, 2XL

441661 • MT, LT, XLT, 2XLT, 3XL, 3XLT, 4XL, 4XLT, 5XL

- Full-length side zippers.
- Reinforced seat, knees and inner legs.
- Water-resistant YKK zippers at pockets.
- Storm gaiters.
- Polar fleece-lined seat for added warmth.

Black (**90**), Heather Grey (**27**)

Black (**90**)

WARMTH ●●●◐○
WATERPROOFNESS/WINDPROOFNESS ●●●●○
BREATHABILITY ●●●●○

WARM-UP COAT

- Insulated pre-race overcoat.
- Nylon.
- Insulation: 200g Thermal Loft.
- 100% windproof and waterproof.

440880 • One size

- Hood fits over a Ski-Doo snocross helmet.
- Large handwarmer pockets with fleece lining.

Black (**90**)

WARMTH ●●●○○
WATERPROOFNESS/WINDPROOFNESS ●●●●○
BREATHABILITY ●●●◐○

TRAIL PERFORMANCE

MEN'S

NEW SKI-DOO RACING JACKET

440898 • XS, S, M, L, XL, 2XL, 3XL

Orange (**12**)

- Softshell-like fabric with windproof, water repellent and breathability properties.
- 2 large pockets at front.
- Watertight YKK zippers throughout.
- Two front and one rear zippered vent.
- Room at upper back for identification.
- Longer back hem.
- Adjustable hem and sleeve hem.

WARMTH ●○○○○
WATERPROOFNESS/WINDPROOFNESS ●●○○○
BREATHABILITY ●●○○○

NEW SKI-DOO RACING PANTS

441655 • XS, S, M, L, XL, 2XL, 3XL

Autumn Red (**14**)

- Polyester, Nylon and Kevlar.
- Water-repellent, windproof, flexible and optimally breathable fabric.
- Reinforcement fabric at inseam and high wear areas.
- Higher back and lower front shape for optimal comfort.
- Pre-shaped knees.
- Extra grip stripes added to seating area.
- Key loop at crotch and at waist.

WARMTH ●○○○○
WATERPROOFNESS/WINDPROOFNESS ●●○○○
BREATHABILITY ●●○○○

LADIES'

NEW X-TEAM JACKET

440895 • XS, S, M, L, XL, 2XL, 3XL

Black (**90**), Coral (**13**), Heather Grey (**27**), Light Blue (**81**)

- Nylon, Polyester.
- 100% waterproof, breathable and windproof.
- Insulation: 200g PrimaLoft Black.
- Radiant Core technology to keep you warm.
- 100% seams and logos sealed.
- Double center front flap insulated for heat retention and wind protection.
- Polar fleece at front body and top arms for added warmth
- Reflective Ski-Doo logos for maximum visibility.
- E LinQ connect: Inner wiring and D-ring attach for helmet cable.
- Additional removable collar to seal air entry.
- Customizable zipper puller: choices of two options by jacket.
- Powder skirt.
- Shaped sleeves.
- Reflective details on sleeves and at back.
- Inner wrist gaiter with thumb hole.
- Water-resistant YKK zippers.

WARMTH ●●●◐○
WATERPROOFNESS/WINDPROOFNESS ●●●●○
BREATHABILITY ●●●●○

NEW X-TEAM HIGHPANTS

441659 • XS, SS, S, MS, M, LS, L, XLS, XL, 2XL, 3XL

Black (**90**)

- Nylon, Polyester.
- Insulation: 200g PrimaLoft Black.
- Highly windproof, waterproof and breathable.
- 100% seams and logos sealed.
- Articulated, padded and shaped knees.
- Adjustable waist.
- Full-length side zippers.
- Reinforced seat, knees and inner legs.
- Water-resistant YKK zippers at pockets.
- Storm gaiters.
- Polar fleece-lined seat for added warmth.
- Drop seat design.

WARMTH ●●●◐○
WATERPROOFNESS/WINDPROOFNESS ●●●●○
BREATHABILITY ●●●●○

TRAIL

MEN'S

NEW LEGACY JACKET

440896 • S, M, L, XL, 2XL, 3XL

Army Green (**77**), Black (**90**)

- Nylon, Polyester.
- 100% waterproof, breathable and windproof.
- Insulation: 200g Primaloft Black + 100g PrimaLoft Silver in removable liner.
- 100% seams and logos sealed.
- Triple center front insulated flaps for heat retention and wind protection.
- 360° reflective details for maximum visibility.
- Radiant core technology to keep you warm.
- Additional removable collar to seal air entry.
- 2-way front zipper.
- E LinQ connect: Inner wiring and D-ring attach for helmet cable.
- Powder skirt.
- Water-resistant YKK zippers.
- Shaped sleeves.
- Fleece at collar.

WARMTH ●●●●◐
WATERPROOFNESS/WINDPROOFNESS ●●●●○
BREATHABILITY ●●●●○

MEN'S

NEW HOLESHOT JACKET

440899 • S, M, MT, L, LT, XL, XLT, 2XL, 3XL

Black (**90**), Black with graphics (**94**), Heather Grey (**27**)

- Nylon, Polyester.
- 100% windproof, waterproof and breathable.
- Insulation: 200g Thermal Loft.
- Radiant core technology to keep you warm.
- Polar fleece at front body and top arms.
- Critical seams and logos sealed.
- Reflective details on back and sleeves for optimized visibility.

- E LinQ connect: Inner wiring and D-ring attach for helmet cable.
- Durable YKK zippers.
- Micro fleece inner cuffs.
- Zipper puller on Black with graphics version: Red.
- Zipper puller on Black version: Black.
- Zipper puller on Heather grey version: Yellow.
- Replacement zipper puller: Black.

WARMTH ●●●○○
WATERPROOFNESS/WINDPROOFNESS ●●●◐○
BREATHABILITY ●●●●○

VOYAGER HIGHPANTS

441666 • S, M, L, XL, 2XL, 3XL

Black (**90**)

- 200g Primaloft Silver insulation.
- Highly windproof, waterproof and breathable.
- 100% seams and logos sealed.
- Preshaped and padded knees.
- Polar fleece at seat and crotch for extra warmth.

- Side zipper with double flaps.
- Elastic at back.
- Storm gaiter.
- Reinforcement at inner legs, seat and knees for abrasion resistance.
- Reflective details.

WARMTH ●●●●○
WATERPROOFNESS/WINDPROOFNESS ●●●●○
BREATHABILITY ●●●●○

NEW TRAIL PANTS

441670 • XS, S, M, MT, L, LT, XL, XLT, 2XL, 3XL

Black (**90**), Black with graphics (**94**)

- Nylon, Polyester.
- 100% waterproof, breathable and windproof.
- Insulation: 200g Thermal Loft.
- Critical seams and logos sealed.
- Reinforcement at seat and inner leg.
- Pre-shaped knees and seat.

- Storm gaiters with boot to lace snap connector.
- 2-way ¾ length side zippers with flap.
- 2 zippered hip pockets.
- Elastic waist at back.
- Adjustable suspenders.

WARMTH ●●●○○
WATERPROOFNESS/WINDPROOFNESS ●●●◐○
BREATHABILITY ●●●●○

LADIES'

NEW HOLESHOT JACKET

440893 • XS, S, M, L, XL, 2XL, 3XL

Black (**90**), Coral (**13**), Light Blue (**81**)

- Nylon, Polyester.
- 100% windproof, waterproof and breathable.
- Insulation: 200g Thermal Loft.
- Radiant core technology to keep you warm.
- Polar fleece at front body and top arms.
- Critical seams and logos sealed.
- Reflective details on back and sleeves for optimized visibility.

- E LinQ connect: Inner wiring and D-ring attach for helmet cable.
- Durable YKK zippers.
- Micro fleece inner cuffs.
- Zipper puller on Black version: Black.
- Zipper puller on Coral version: Coral.
- Zipper puller on Light Blue version: Blue.

WARMTH ●●●○○
WATERPROOFNESS/WINDPROOFNESS ●●●◐○
BREATHABILITY ●●●●○

VOYAGER HIGHPANTS

441665 • XS, S, M, L, XL, 2XL, 3XL

Black (**90**)

- 200g Primaloft Silver insulation.
- Highly windproof, waterproof and breathable.
- 100% seams and logos sealed.
- Preshaped and padded knees.
- Polar fleece at seat and crotch for extra warmth.

- Side zipper with double flaps.
- Elastic at back.
- Storm gaiter.
- Reinforcement at inner legs, seat and knees for abrasion resistance.
- Reflective details.
- Drop seat design.

WARMTH ●●●●◐
WATERPROOFNESS/WINDPROOFNESS ●●●●○
BREATHABILITY ●●●●○

NEW TRAIL PANTS

441669 • XS, S, M, L, XL, 2XL, 3XL

Black (**90**), Heather Grey (**27**),

- Nylon, Polyester.
- 100% waterproof, breathable and windproof.
- Insulation: 200g Thermal Loft.
- Critical seams and logos sealed.
- Reinforcement at seat and inner leg.
- Pre-shaped knees and seat.

- Storm gaiters with boot to lace snap connector.
- 2-way ¾ length side zippers with flap.
- 2 zippered hip pockets.
- Elastic waist at back.
- Adjustable suspenders.

WARMTH ●●●○○
WATERPROOFNESS/WINDPROOFNESS ●●●◐○
BREATHABILITY ●●●●○

TOURING

MEN'S

NEW ABSOLUTE O TEAM EDITION JACKET

SympaTex®

440901 • S, M, L, XL, 2XL, 3XL

Black with graphics (**94**)

- Sympatex 2-Ply Laminated Polyester.
- Primaloft Gold insulation: Body 200g + removable liner 100g.
- Lifetime warranty with the Sympatex membrane.
- 100% windproof, waterproof and highly breathable membrane.
- 100% seams and logos sealed.
- Center front quadruple insulated flaps for heat retention and wind protection.
- Removable and adjustable collar to seal air entry.
- Underarm venting.
- Shaped sleeves.
- Powder skirt.
- Water-resistant YKK zippers at pockets.
- Reflective details on arms and back.
- E LinQ connect: Inner wiring and D-ring attach for helmet cable.
- Collar, hem and wrists adjustment.
- Removable hood.
- Customizable zipper puller: Choice of red or black.
- Radiant Core technology to keep you warm.
- Inner wrist gaiters with thumb hole.

WARMTH ●●●●●

WATERPROOFNESS/WINDPROOFNESS ●●●●●

BREATHABILITY ●●●●●

NEW ABSOLUTE O JACKET

SympaTex®

440890 • S, M, L, XL, 2XL, 3XL

Black (**90**), Heather Grey (**27**)

- Sympatex 2-Ply Laminated Polyester.
- Primaloft Gold insulation: Body 200g + removable liner 100g.
- Lifetime warranty with the Sympatex membrane.
- 100% windproof, waterproof and highly breathable membrane.
- 100% seams and logos sealed.
- Center front quadruple insulated flaps for heat retention and wind protection.
- Removable and adjustable collar to seal air entry.
- Underarm venting.
- Shaped sleeves.
- Powder skirt.
- Water-resistant YKK zippers at pockets.
- Reflective details on arms and back.
- E LinQ connect: Inner wiring and D-ring attach for helmet cable.
- Collar, hem and wrists adjustment.
- Removable hood.
- Customizable zipper puller: Choice of red or black.
- Radiant Core technology to keep you warm.
- Inner wrist gaiters with thumb hole.

WARMTH ●●●●●

WATERPROOFNESS/WINDPROOFNESS ●●●●●

BREATHABILITY ●●●●●

NEW ABSOLUTE O HIGHPANTS

SympaTex®

441664 • SS, S, MS, M, LS, L, XLS, XL, 2XL, 3XL

Black (**90**), Heather Grey (**27**)

- Sympatex 2-Ply Laminated Polyester.
- Primaloft Gold insulation: 200g.
- Lifetime warranty with the Sympatex membrane.
- 100% windproof, waterproof and highly breathable Sympatex membrane.
- 100% seams and logos sealed.
- 2-way full-length side zippers with double flaps.
- Polar fleece-lined seat for added warmth.
- Adjustable waist.
- Preshaped and padded knees.
- Reinforced crotch and seat.
- Storm gaiters.

WARMTH ●●●●●

WATERPROOFNESS/WINDPROOFNESS ●●●●●

BREATHABILITY ●●●●●

LADIES'

NEW ABSOLUTE O TEAM EDITION JACKET

SympaTex®

440923 • XS, S, M, L, XL, 2XL, 3XL

Black with graphics (**94**)

- Sympatex 2-Ply Laminated Polyester.
- Primaloft Gold insulation: Body 200g + removable liner 100g.
- Lifetime warranty with the Sympatex membrane.
- 100% windproof, waterproof and highly breathable membrane.
- 100% seams and logos sealed.
- Center front quadruple insulated flaps for heat retention and wind protection.
- Removable and adjustable collar to seal air entry.
- Underarm venting.
- Shaped sleeves.
- Powder skirt.
- Water-resistant YKK zippers at pockets.
- Reflective details on arms and back.
- E LinQ connect: Inner wiring and D-ring attach for helmet cable.
- Collar, hem and wrists adjustment.
- Removable hood.
- Customizable zipper puller: Choice of red or black.
- Radiant Core technology to keep you warm.
- Inner wrist gaiters with thumb hole.

WARMTH ●●●●●

WATERPROOFNESS/WINDPROOFNESS ●●●●●

BREATHABILITY ●●●●●

LADIES'

NEW ABSOLUTE 0 JACKET

SympaTex®

440902 • XS, S, M, L, XL, 2XL, 3XL

Black (**90**), Heather Grey (**27**)

- Sympatex 2-Ply Laminated Polyester.
- Primaloft Gold insulation: Body 200g + removable liner 100g.
- Lifetime warranty with the Sympatex membrane.
- 100% windproof, waterproof and highly breathable membrane.
- 100% seams and logos sealed.
- Center front quadruple insulated flaps for heat retention and wind protection.
- Removable and adjustable collar to seal air entry.
- Underarm venting.
- Shaped sleeves.
- Powder skirt.
- Water-resistant YKK zippers at pockets.
- Reflective details on arms and back.
- E LinQ connect: Inner wiring and D-ring attach for helmet cable.
- Collar, hem and wrists adjustment.
- Removable hood.
- Customizable zipper puller: Choice of red or black.
- Radiant Core technology to keep you warm.
- Inner wrist gaiters with thumb hole.
- Customizable zipper pullers: Choice of black or blue on the black colorway and coral or black on the heather grey version.

WARMTH ●●●●●

WATERPROOFNESS/WINDPROOFNESS ●●●●●

BREATHABILITY ●●●●●

NEW ABSOLUTE 0 HIGHPANTS

SympaTex®

441663 • XS, SS, S, MS, M, LS, L, XLS, XL, 2XL, 3XL

Black (**90**)

- Sympatex 2-Ply Laminated Polyester.
- Primaloft Gold insulation: 200g.
- Lifetime warranty with the Sympatex membrane.
- 100% windproof, waterproof and highly breathable Sympatex membrane.
- 100% seams and logos sealed.
- 2-way full-length side zippers with double flaps.
- Polar fleece-lined seat for added warmth.
- Adjustable waist.
- Preshaped and padded knees.
- Reinforced crotch and seat.
- Storm gaiters.

WARMTH ●●●●●

WATERPROOFNESS/WINDPROOFNESS ●●●●●

BREATHABILITY ●●●●●

MITTS & GLOVES

MEN'S

NEW ABSOLUTE 0 GLOVES

446317 • XS, S, M, L, XL, 2XL, 3XL

Black (**90**)

- Nylon, Leather.
- Top hand: 200 g PrimaLoft Gold, Palm: 133g PrimaLoft grip control.
- Ethical goose down insulation.
- Waterproof, windproof and breathable glove insert.
- Naturally moisture-wicking and antimicrobial wool blend lining.
- Box fingertips to avoid air infiltration.
- Leather palm and fingers with grip reinforcement.
- Touch screen index finger.
- Built-in wipe on thumb.
- Long gauntlet.
- Reflective details.

WARMTH ●●●●○

DEXTERITY ●●●○○

NEW ABSOLUTE 0 MITTS

446318 • XS, S, M, L, XL, 2XL

Black (**90**)

- Nylon, Leather.
- Top hand: 200 g PrimaLoft Gold, Palm: 133g PrimaLoft grip control.
- Ethical goose down insulation.
- Waterproof, windproof and breathable mitt insert.
- Naturally moisture-wicking and antimicrobial wool blend lining.
- Leather palm and fingers with grip reinforcement.
- Long gauntlet.
- Reflective details.

WARMTH ●●●●●

DEXTERITY ●○○○○

MITTS & GLOVES

MEN'S

NEW X-TEAM NYLON GLOVES

446322 • XS, S, M, L, XL, 2XL, 3XL

Black (**90**), Charcoal Grey (**07**)

- Top hand: 200 g PrimaLoft Gold Palm: 133 g PrimaLoft grip control.
- Waterproof, windproof and breathable glove insert.
- New moisture-wicking and antimicrobial wool blend lining.
- Wider and longer cuff.
- Box fingertips to avoid air infiltration.
- Grip control technology for a better grip in palm.
- Touch screen index finger.
- Improved visor/goggle wiper.

WARMTH ●●●○○

DEXTERITY ●●●●○

NEW X-TEAM LEATHER GLOVES

446328 • S, M, L, XL, 2XL, 3XL

Black (**90**), Red (**30**)

- Top hand: 200 g PrimaLoft Gold, Palm: 133g PrimaLoft grip control.
- Waterproof, windproof and breathable glove insert.
- Naturally moisture-wicking and antimicrobial wool blend lining.
- Box fingertips to avoid air infiltration.
- Grip control technology for a better grip in palm.
- Touch screen index finger.
- Improved visor/goggle wiper.

WARMTH ●●●◐○

DEXTERITY ●●●●○

MOUNTAIN GLOVES

446222 • S, M, L, XL, 2XL, 3XL

Black (**90**)

- Nylon, Leather.
- mcFIT technology for a better grip.
- Mild-weather glove with lining.
- Waterproof, windproof and breathable glove insert.

WARMTH ●○○○○

DEXTERITY ●●●●●

GRIP GLOVES

446234 • S, M, L, XL, 2XL, 3XL

Black (**90**)

- Leather, Nylon, Chloroprene Rubber, Polyester.
- Insulation: 100g PrimaLoft Gold top hand.
- mcFIT[†] technology for a better grip and added tactility and dexterity.
- Box fingertips to avoid air infiltration.
- Leather palm with grip reinforcement.
- Visor wiper.
- Waterproof, windproof and breathable glove insert.
- Antibacterial, stay-dry moisture management lining.
- Reflective details.

WARMTH ●●○○○

DEXTERITY ●●●●●

X-TEAM CREW GLOVES

446297 • S, M, L, XL, 2XL, 3XL

Black (**90**)

- Nylon, Polyester, Polyurethane and Spandex.
- Soft, durable, flexible and breathable.
- Stretch wrist for easy in and out.

WARMTH ●○○○○

DEXTERITY ●●●●●

UNISEX

NEW WOOLLY GLOVES

446327 • XS, S, M, L, XL, 2XL

Army Green (**77**), Black (**90**), Coral (**13**)

- Nylon, Leather.
- 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.
- Improved visor/goggle wiper.

WARMTH ●●●○○

DEXTERITY ●●●○○

BOOTS & SOCKS

BOOTS

UNISEX

NEW TEC+ BOOTS — **444253** • 5, 6, 7, 8, 9, 10, 11, 12, 13 — Black (**90**)

- Improved comfort and flex.
- Removable insole.
- Unisex, smaller sizes added for ladies.
- Kevlar reinforced laces.
- Moisture-wicking inner liner material.
- 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.

WARMTH ●●●○○
RIGIDITY ●●●○○

MEN'S

TEC+ REC BOOTS — **444240** • 5, 6, 7, 8, 9, 10, 11, 12, 13 — Black (**90**)

- Tough abrasion resistant leather outer.
- 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.

WARMTH ●●●●○
RIGIDITY ●●○○○

LADIES'

TEC+ REC BOOTS — **444241** • 6, 7, 8, 9, 10 — Black (**90**)

- Tough abrasion resistant leather outer.
- 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.

WARMTH ●●●●○
RIGIDITY ●●○○○

SOCKS

UNISEX

ACTIVE/RACE SOCKS — **444229** • S, M, L — Blue (**80**), Black (**90**), Sunburst Yellow (**96**)

- Nylon, Merino Wool, Polypropylene, Elastane.
- Engineer-knitted with Isolfil† yarn designed to keep skin dry, with built-in polypropylene fibers that trap warm air and slow the dispersion of body heat.
- Reinforced toe and heel, plus added protection above the boot line.
- Special padding for pressure reduction and buffered protection.

THERMAL SOCKS — **444230** • S, M, L — Raspberry (**39**), Black (**90**), Sunburst Yellow (**96**)

- Polyester Thermocool†, Nylon, Polypropylene, Wool.
- Same thickness as competing thermal socks, but lighter, warmer and better moisture-wicking performance.
- Thermolite† hollow-core fibers deliver new generation of warmth-comfort fusion.

HEADWEAR & BALACLAVAS

MEN'S

NEW SUBLIMATED BALACLAVA — **448679** • One size — Hi-Vis Yellow (**26**), Red (**30**)

- 91% Polyester, 9% Spandex.
- Stretch, antibacterial fabric with brushed inner surface.
- Moisture-wicking anti-odor treatment.
- Flatlocked seams prevent skin chafing.

LADIES'

NEW SUBLIMATED BALACLAVA — **448701** • One size — Blue (**80**)

- 91% Polyester, 9% Spandex.
- Stretch, antibacterial fabric with brushed inner surface.
- Moisture-wicking anti-odor treatment.
- Flatlocked seams prevent skin chafing.

UNISEX

TECHNICAL BALACLAVA — **445950** • One size — Black (**90**)

- Microfleece: 92% Polyester, 8% Spandex.
- Strategically placed mesh for breathability.
- Windproof neck bib.
- Lower at back of neck for increased motion range.
- Flatlocked seams prevent skin chafing.

BASIC BALACLAVA — **447449** • One size — Black (**90**)

- 80% Nylon, 20% Spandex.
- Flatlocked seams prevent skin chafing.

MICROFLEECE BALACLAVA — **447565** • One size — Black (**90**)

- Microfleece: 100% Polyester.
- Stretch, antibacterial warming fleece fabric with brushed inner surface.
- Flatlocked seams prevent skin chafing.

ULTIMATE TRAIL BALACLAVA — **447736** • S/M, L/XL — Black (**90**)

- 60% Polyester, 30% Nylon, 10% Spandex.
- Perfect when used with the OXYGEN, BV2S or Modular 3 helmets.
- Keeps you warm while providing breathable and windproof performance.
- Waterproof, windproof and breathable fabric at neck.
- Moisture-wicking fabric.
- Elastic channel at sides for contoured fit.

MOUNTAIN BALACLAVA — **448234** • One size — Black (**90**)

- 65% Nylon, 20% Polyester, 10% Spandex, 5% Synthetic Rubber.
- Stretch, quick-dry fabric with brushed inner surface.
- Neoprene face guard for effective moisture exchange to promote breathing in extreme cold with removable rubber part in pocket.
- Flatlocked seams prevent skin chafing.
- Good fit with open face helmets.

UNISEX

NEW NECK GAITOR

447841 • One size

Black (**90**)

- 100% polyester.
- Spandex binding and elastic at back for a better fit.
- Anti-pilling fleece.

TECHNICAL NECK GAITOR

447636 • One size

Black (**90**)

- 89% Polyester, 8% Spandex, 3% Synthetic Rubber.
- Keeps you warm while providing breathable, windproof and waterproof performance.
- Moisture-wicking fabric.
- Laser-cut breather holes.
- Ergonomic patterning with microfleece at side and back panel for more stretchability.
- Elastic adjustment at back.

LADIES'

HEADBAND

447703 • One size

Black (**90**), Heather Grey (**27**)

- 100% Acrylic.
- Headband with fleece lining.

MUSKOKA HAT

447645 • One size

Black (**90**), Coral (**13**), Grey (**09**)

- 100% Acrylic.
- Micro-fleece lining.
- Knit pompom.

UNISEX

NEW SKI-DOO SHORT BEANIE

447869 • One size

Army Green (**77**), Black (**90**), Heather Grey (**27**), Red (**30**)

- 100% Acrylic.
- Short beanie with rollover cuff.
- Fisherman look.

NEW REVERSIBLE BEANIE

448677 • One size

Black (**90**), Coral (**13**), Heather Grey (**27**), Light Blue (**81**), Orange (**12**), Red (**30**), Sunburst Yellow (**96**)

- 95% Acrylic, 4% Nylon, 1% Spandex.
- 2 in 1 reversible hat with knit in logos.

COMPACT THIN BEANIE

447704 • One size

Black (**90**)

- 100% stretch polyester.
- Light beanie.

SKI-DOO X HAT

447777 • One size

Black (**90**), Heather Grey (**27**)

- 100% Acrylic.
- Beanie with knit in X logo and Ski-Doo patch.

HEADWEAR & BALACLAVAS

UNISEX

LANDING HAT

454298 • One size

Black (**90**), Coral (**13**), Heather Grey (**27**), Orange (**12**)

- 95% Acrylic, 4% Nylon, 1% Spandex.
- Beanie with the Ski-Doo logo.

MEN'S

NEW FLEX FIT X-TEAM CAP

448698 • S/M, L/XL, 2XL

Black (**90**), Heather Grey (**27**)

- 97% Cotton, 3% Spandex (Black), 100% Cotton (Heather Grey).
- Fitted Cap.
- Ski-Doo signature embroidered on peak.
- X logo patch at front.

NEW FREESTYLE CAP

448681 • One size

Black (**90**), Heather Charcoal (**29**), Navy (**89**)

- 60% Polyester, 40% Cotton (Black, Navy), 50% Polyester, 50% Cotton (Heather Charcoal).
- Plastic adjustment at back.
- Flat peak.
- Ski-Doo embroidery at front.

NEW SIGNATURE CAP

448682 • One size

Black (**90**), Coral (**13**), Heather Charcoal (**29**), Heather Grey (**27**), Sunburst Yellow (**96**), White (**01**)

- 100% Cotton (All colors except Heather Charcoal), 60% Cotton, 40% Polyester (Heather Charcoal).
- Plastic adjustment at back.
- Ski-Doo embroidery logo at front.

NEW X-TEAM CAP

448685 • One size

Black (**90**), Navy (**89**), Red (**30**),

- 100% Cotton.
- Plastic adjustment at back.
- Ski-Doo signature embroidered.
- X logo patch at front.

BASE LAYERS

THERMAL BASE LAYERS

MEN'S

NEW THERMAL BASE LAYER (TOP)

454376 • S, M, L, XL, 2XL, 3XL

Black (**90**), Charcoal Grey (**07**)

- 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.

MEN'S

NEW THERMAL BASE LAYER (BOTTOM) | **454374** • S, M, L, XL, 2XL, 3XL | Black (**90**)

- 95% Polyester, 5% Spandex (Brushed)
- Made of high-filament polyester enhanced by slight brushing to provide softness and warmth.
- Antimicrobial.

LADIES'

NEW THERMAL BASE LAYER (TOP) | **454375** • XS, S, M, L, XL, 2XL, 3XL | Black (**90**), Charcoal Grey (**07**)

- 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.

NEW THERMAL BASE LAYER (BOTTOM) | **454373** • XS, S, M, L, XL, 2XL, 3XL | Black (**90**)

- 95% Polyester, 5% Spandex
- Made of high-filament polyester enhanced by slight brushing to provide softness and warmth.
- Antimicrobial.

MERINO BASE LAYERS

MEN'S

NEW MERINO BLEND BASE LAYER (TOP) | **454377** • S, M, L, XL, 2XL, 3XL | Black (**90**)

- 70% Merino Wool, 30% Nylon
- Permanent anti-odor performance.
- Moisture wicking.
- Body temperature regulator.

NEW MERINO BLEND BASE LAYER (BOTTOM) | **454378** • S, M, L, XL, 2XL, 3XL | Black (**90**)

- 70% Merino Wool, 30% Nylon
- Permanent anti-odor performance.
- Moisture wicking.
- Body temperature regulator.
- Elastic waist band.

LADIES'

NEW MERINO BASE LAYER (TOP) | **454379** • XS, S, M, L, XL, 2XL, 3XL | Black (**90**)

- 70% Merino Wool, 30% Nylon
- Permanent anti-odor performance.
- Moisture wicking.
- Body temperature regulator.

NEW MERINO BASE LAYER (BOTTOM) | **454380** • XS, S, M, L, XL, 2XL, 3XL | Black (**90**)

- 70% Merino Wool, 30% Nylon
- Permanent anti-odor performance.
- Moisture wicking.
- Body temperature regulator.
- Elastic waist band.

MID LAYERS

TECH+

MEN'S

NEW SKI-DOO WINDPROOF JACKET | **454492** • S, M, L, XL, 2XL, 3XL | Black (**90**)

- Polyester and Spandex
- Lightweight, windproof, water-resistant and quick-dry jacket.
- Brushed fabric interior for exceptional comfort.
- 2 exterior hand pockets.
- Reflective logos on front and back.

NEW PACKABLE JACKET | **440916** • S, M, L, XL, 2XL, 3XL | Army Green (**77**), Black (**90**), Red (**30**), Silver (**08**)

- Lining: 100% Nylon.
- Insulation: 100% 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.

NEW MID-LAYER FLEECE | **454387** • S, M, L, XL, 2XL, 3XL | Blue Teal (**19**), Heather Grey (**27**)

- 96% Polyester, 4% Spandex
- Heavyweight fleece for maximum warmth.
- Zippered hip and chest pockets.

TECH MID LAYER FLEECE | **454188** • S, M, L, XL, 2XL | Black (**90**), Blue (**80**), Heather Grey (**27**)

- 100% Polyester with antimicrobial.
- Heavyweight fleece for maximum warmth.
- Zippered hips and chest pockets.

LADIES'

NEW PACKABLE JACKET | **440917** • XS, S, M, L, XL, 2XL, 3XL | Black (**90**), Blue Teal (**19**), Red (**30**), Silver (**08**)

- Lining: 100% Nylon.
- Insulation: 100% 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.

MID-LAYERS

MEN'S

NEW X-TEAM MICRO-FLEECE | **454389** • S, M, L, XL, 2XL, 3XL | Black (**90**), Charcoal Grey (**07**), Red (**30**)

- 100% Polyester micro polar
- Mid weight microfleece excellent for warmth as a second layer.
- Moisture-wicking fabric.
- Zippered hand pockets.

MEN'S

NEW SNO-X FLEECE ZIP-UP	**454403** • S, M, L, XL, 2XL, 3XL	Army Green (**77**), Black (**90**), Blue Teal (**19**), Heather Grey (**27**)

- 96% Polyester, 4% Spandex
- Heavyweight fleece for maximum warmth.

LADIES'

NEW X-TEAM MICRO-FLEECE	**454388** • XS, S, M, L, XL, 2XL, 3XL	Black (**90**), Heather Grey (**27**)

- 100% Polyester micro polar
- Midweight microfleece excellent for warmth as a second layer.
- Moisture-wicking fabric.
- Zippered hand pockets.

NEW SNO-X FLEECE ZIP-UP	**454405** • XS, S, M, L, XL, 2XL, 3XL	Army Green (**77**), Black (**90**), Blue Teal (**19**), Heather Grey (**27**)

- 96% Polyester, 4% Spandex
- Heavyweight fleece for maximum warmth.

WINDPROOF ZIP-UP	**454285** • XS, S, M, L, XL, 2XL, 3XL	Black (**90**)

- 96% Polyester, 4% Spandex
- Windproof, water-resistant membrane.
- 2 zippered hip pockets.
- Cuff feature thumb holes.
- Logo on shoulder.
- Reflective details on back.

MEN'S SPORTSWEAR

NEW SOFTSHELL JACKET	**454412** • S, M, L, XL, 2XL, 3XL	Black with graphics (**94**), Dark Navy (**16**)

- 100% Polyester.
- Lightweight softshell construction.
- Windproof, water-resistant membrane.
- Breathable wicking technology for all outdoor activities.
- Backed by micro-fleece for a soft feel.
- Insulation: 340 gsm micro polar fleece.
- Two hand pockets and two chest pockets.
- Sleeve hem velcro adjustment.

NEW CABIN OVERSHIRT	**454385** • S, M, L, XL, 2XL, 3XL	Blue (**80**)

- 100% Cotton.
- Plaid flannel overshirt.
- Front opening with snap buttons.
- Two chest pockets and two hand pockets.
- Pencil insert.
- Sherpa lining.

MEN'S SPORTSWEAR

NEW PULLOVER HOODIE SKI-DOO

454386 • S, M, L, XL, 2XL, 3XL

Black (**90**), Blue Teal (**19**), Heather Grey (**27**)

- 60% Cotton, 40% Polyester.
- One side brushed fleece.
- Handwarmer kangaroo pocket.

NEW SKI-DOO ZIP-UP HOODIE

454390 • S, M, L, XL, 2XL, 3XL

Army Green (**77**), Black (**90**), Heather Grey (**27**)

- 60% Cotton, 40% Polyester.
- Semi-fitted hooded sweatshirt.
- Handwarmer kangaroo pockets.
- Ski-Doo print at center chest.

NEW SIGNATURE SWEATSHIRT

454396 • S, M, L, XL, 2XL, 3XL

Army Green (**77**), Black (**90**), Heather Grey (**27**)

- 60% Cotton, 40% Polyester.
- Relaxed fit.
- Dropped, set-in sleeves.
- Rib on collar, cuffs and hem.
- Printed logo at center chest

NEW CLUB HOUSE SWEATER

454383 • S, M, L, XL, 2XL

Heather Grey (**27**)

- 40% Acrylic, 55% Polyester, 5% Wool.
- An heritage look and a rich blend of wool and synthetic materials are all your need to be cozy on the trails.
- ¼ zipper.

NEW HERITAGE SWEATER

454517 • S, M, L, XL, 2XL

Navy (**89**)

- 67% Polyester, 19% Viscose, 14% Wool.
- Heritage look and a rich blend of wool and synthetic materials.
- ¼ opening with buttons.
- Jacquard design at back.

NEW SKI-DOO TURTLENECK

454381 • S, M, L, XL, 2XL, 3XL

Black (**90**), Heather Grey (**27**)

- 90% Polyester, 10% Spandex.
- Stretch fabric.
- Moisture wicking, anti-microbial treatment and anti-pilling.

NEW SKI-DOO FLANNEL SHIRT

454395 • S, M, L, XL, 2XL, 3XL

Black (**90**)

- 100% Cotton.
- Two pockets at chest.
- Pencil insert.

NEW SKI-DOO BOX LOGO T-SHIRT

454407 • S, M, L, XL, 2XL, 3XL

Black (**90**), Blue (**80**), Heather Grey (**27**)

- 100% Cotton.
- Crew neck t-shirt.
- Short sleeves.

NEW SKI-DOO SIGNATURE T-SHIRT

454421 • S, M, L, XL, 2XL, 3XL

Army Green (**77**), Black (**90**), Heather Grey (**27**), Navy (**89**), Red (**30**), White (**01**)

- 100% Cotton (All colors, except Heather Grey), 60% Cotton/40% Polyester (Heather Grey).
- Crew neck t-shirt.
- Short sleeves.

NEW SKI-DOO BASEBALL TEE

454449 • S, M, L, XL, 2XL, 3XL

Black (**90**), Navy (**89**)

- 60% Cotton, 40% Polyester.
- Vintage sporty style, baseball look.
- Long contrasting raglan sleeves and collar.

NEW GRAPHIC SKI-DOO T-SHIRT

454450 • S, M, L, XL, 2XL, 3XL

Heather Grey (**27**), White (**01**)

- 100% Cotton (White), 60% Cotton/40% Polyester (Heather Grey).
- Crew neck t-shirt.
- Short sleeves.

NEW SUMMIT LONG SLEEVE TEE

454401 • S, M, L, XL, 2XL, 3XL

Black (**90**), White (**01**)

- 100% Cotton.
- Print at front.
- Long sleeves.

NEW X-TEAM T-SHIRT

454399 • **454399** •

Black (**90**), Navy (**89**), Sunburst Yellow (**96**)

- 100% Cotton.
- Print at front with sponsors.
- Crew neck.
- Short Sleeves.

MEN'S SPORTSWEAR

NEW ONE TRACK MIND T-SHIRT

454400 • S, M, L, XL, 2XL, 3XL

Black (**90**), Blue (**80**)

- 100% Cotton.
- Print at front.
- Short sleeves.
- Crew neck t-shirt.

SKI-DOO PIT SHIRT

454281 • S, M, L, XL, 2XL, 3XL

Black (**90**)

- 60% Cotton, 40% Polyester.
- Short sleeves.
- Chest pocket.
- Back pleats for ease of movement.
- Back loop to hang shirt.
- Ski-Doo X logo on chest.
- Sponsors logos on chest.
- X Logo on back.

NEW X-RACE JERSEY

454393 • S, M, L, XL, 2XL

Black (**90**), Orange (**12**)

- 100% Polyester.
- V-neck jersey.
- Antibacterial, moisture-wicking fabric.
- Underarm mesh.
- Sublimated print.

NEW HIGHMARK JERSEY

454394 • S, M, L, XL, 2XL

Army Green (**77**), Red (**30**)

- 100% Polyester.
- V-neck jersey.
- Antibacterial, moisture-wicking fabric.
- Underarm mesh.
- Sublimated print.

LADIES' SPORTSWEAR

NEW LADIES' POLAR FLEECE

454446 • XS, S, M, L, XL, 2XL, 3XL

Black (**90**), Heather Grey (**27**), Light Blue (**81**)

- 100% Polyester
- Polar fleece fabric.
- Brushed on the inside for a super-soft feel.
- Embossed binding at bottom hem.
- Quarter-zip with zipper guard.

NEW LADIES' CABIN OVERSHIRT

454382 • XS, S, M, L, XL, 2XL

Burgundy (**35**)

- 100% Cotton.
- Plaid flannel overshirt.
- Front opening with press buttons.
- Two chest pockets.
- Sherpa lining.
- Pencil insert.

NEW LADIES' PULLOVER HOODIE

454414 • XS, S, M, L, XL, 2XL, 3XL

Blue (**80**), Coral (**13**), Heather Grey (**27**)

- 60% Cotton, 40% Polyester.
- Semi-fitted hooded sweatshirt.
- Hood with drawcord.
- Kangaroo hand pocket.
- Rib on cuffs and hem.
- Logo center chest.

NEW LADIES' SKI-DOO ZIP-UP HOODIE

454404 • XS, S, M, L, XL, 2XL, 3XL

Black (**90**), Blue (**80**), Heather Grey (**27**)

- 60% Cotton, 40% Polyester.
- Semi-fitted hooded sweatshirt with drawcord.
- Full zip.
- Split, inset kangaroo hand pocket.
- Rib on cuffs and hem.

NEW LADIES' SKI-DOO TURTLENECK

454472 • XS, S, M, L, XL, 2XL, 3XL

Black (**90**), Heather Grey (**27**)

- 90% Polyester, 10% Spandex.
- Stretch fabric.
- Moisture wicking, anti-microbial treatment and anti-pilling.

MUSKOKA SUPER SOFT SHIRT

454320 • XS, S, M, L, XL, 2XL

Black (**90**), Heather Grey (**27**)

- 80% Polyester, 20% Spandex.
- Feminine-fit.
- Heavyweight super soft fabric for maximum heat.

NEW LADIES' SKI-DOO SIGNATURE T-SHIRT

454422 • XS, S, M, L, XL, 2XL, 3XL

Black (**90**), Coral (**13**), Heather Grey (**27**), White (**01**)

- 95% Cotton, 5% Spandex jersey.
- Short sleeves.
- V-neck t-shirt.

NEW LADIES' LONG SLEEVES SIGNATURE TEE

454420 • XS, S, M, L, XL, 2XL

Black (**90**), Blue Teal (**19**), Heather Grey (**27**)

- 95% Cotton, 5% Spandex jersey.
- V-neck t-shirt.

NEW LADIES' BASEBALL TEE

454397 • XS, S, M, L, XL, 2XL, 3XL

Black (**90**), Blue Teal (**19**)

- 60% Cotton, 35% Polyester, 5% Spandex.
- Vintage sporty style, baseball look.
- Long contrasting raglan sleeves and collar.

NEW LADIES' HIGHLAND T-SHIRT

454398 • XS, S, M, L, XL, 2XL

Heather Grey (**27**), White (**01**)

- 60% Cotton, 35% Polyester, 5% spandex jersey.
- Crew neck.
- Short sleeves.
- Graphic at front.

LADIES'S SPORTSWEAR

NEW LADIES' X-RACE JERSEY

454392 • S, M, L, XL, 2XL

Blue (**80**), Heather Grey (**27**)

- 100% Polyester.
- Semi-fitted V-neck jersey.
- Antibacterial, moisture-wicking fabric.
- Sublimated print.

KIDS & TEEN WEAR

TEEN

NEW TEENS' X-TEAM JACKET

440891 • 7, 8, 10, 12, 14, 16

Black with graphics (**94**), Coral (**13**), Heather Grey (**27**)

- Nylon, Polyester.
- 100% waterproof, breathable and windproof.
- Insulation: 200g PrimaLoft Black.
- Radiant Core technology to keep you warm.
- 100% seams and logos sealed.
- Double center front flap insulated for heat retention and wind protection.
- Polar fleece at front body and top arms for added warmth.
- Reflective Ski-Doo logos for maximum visibility.
- Additional removable collar to seal air entry.
- Zipper puller on Coral version: Charcoal Grey.
- Zipper puller on Black with graphics version: Black.
- Zipper puller on Heather Grey version: Charcoal Grey.

WARMTH ●●●◐○

WATERPROOFNESS/WINDPROOFNESS ●●●●○

BREATHABILITY ●●●●○

TEENS' X-TEAM HIGHPANTS

441605 • 7, 8, 10, 12, 14, 16

Black (**90**)

- Highly windproof, waterproof and breathable.
- Thermal Loft 200 g insulation.
- 100% seams and logos 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.
- Reinforced seat, knees and inner legs.
- Water-resistant YKK zippers at pockets.
- Storm gaiters.
- Polar fleece-lined seat for added warmth.

WARMTH ●●●○○

WATERPROOFNESS/WINDPROOFNESS ●●●◐○

BREATHABILITY ●●●●○

TEENS' X-TEAM FLEECE

454258 • 7-8, 10-12, 14-16

Charcoal Grey (**07**)

- 100% Polyester .
- Midweight polar fleece.
- Handwarmer pockets.
- X-Team logo print on chest.
- Ski-Doo print on sleeve.

NEW YOUTH X-TEAM JERSEY

454406 • 3-4, 5-6, 7-8, 10-12, 14-16

Blue (**80**)

- 100% Polyester
- V-neck jersey.
- Antibacterial, moisture-wicking fabric.
- Underarm mesh.
- Sublimated print.

TEEN

NEW TEENS' SKI-DOO T-SHIRT

454415 • 7-8, 10-12, 14-16

Heather Grey (**27**), Navy (**89**)

- 100% Cotton (Navy), 60% Cotton/40% Polyester (Heather Grey).
- Printed Logo front chest.
- Crewneck t-shirt.
- Short sleeves.

KIDS'

NEW KIDS' X-TEAM JACKET

440920 • 7, 8, 10, 12, 14, 16

Black with graphics (**94**), Coral (**13**), Heather Grey (**27**)

- Nylon, Polyester.
- 100% waterproof, breathable and windproof.
- Insulation: 200g PrimaLoft Black.
- Radiant Core technology to keep you warm.
- 100% seams and logos sealed.
- Double center front flap insulated for heat retention and wind protection.
- Polar fleece at front body and top arms for added warmth.
- Reflective Ski-Doo logos for maximum visibility.
- Additional removable collar to seal air entry.
- Zipper puller on Coral version: Charcoal Grey.
- Zipper puller on Black with graphics version: Black.
- Zipper puller on Heather Grey version: Charcoal Grey.

WARMTH ●●●◐○

WATERPROOFNESS/WINDPROOFNESS ●●●●○

BREATHABILITY ●●●●○

KIDS' X-TEAM HIGHPANTS

441580 • 2, 3, 4, 5, 6

Black (**90**)

- Highly windproof, waterproof and breathable.
- Thermal Loft 200 g insulation.
- 100% seams and logos 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.
- Velcro[1] adjustable suspender system and waist.
- Fleece-lined full front and back bib.
- Reinforced seat, knees and inner legs.
- Water-resistant YKK zippers at pockets.
- Storm gaiters.
- Polar fleece-lined seat for added warmth.

WARMTH ●●●○○

WATERPROOFNESS/WINDPROOFNESS ●●●◐○

BREATHABILITY ●●●●○

KIDS' X-TEAM FLEECE

454284 • 3-4, 5-6

Charcoal Grey (**07**)

- 100% Polyester .
- Midweight polar fleece.
- Handwarmer pockets.
- X-Team logo print on chest.
- Ski-Doo print on sleeve.

NEW KIDS' SKI-DOO T-SHIRT

454419 • 3-4, 5-6

Black (**90**), Navy (**89**)

- 100% Cotton
- Printed logo at front chest.
- Crewneck t-shirt.
- Short sleeves.

TEEN

X-TEAM GLOVES

446289 • 6-8, 10-12, 14-16

Black (**90**)

- Nylon, Polyurethane, Polyester
- Top hand: 240 g Thermal Loft Palm: 100 g Thermal Loft insulation.
- Waterproof and breathable membrane.
- 4-way stretch fleece cuff.
- Drawstring closure.
- Adjustable hook and loop web strap.
- Brushed polyester lining with Microban[1] anti-microbial product protection.
- Reflective details.

WARMTH ●●◐○○

DEXTERITY ●●●○○

TEENS' X-TEAM MITTS

446303 • 6-8, 10-12, 14-16

Black (**90**)

- Nylon, Polyurethane, Stretch Polyester
- Insulation: Top hand: 240g Thermal Loft, Palm: 140g Thermal Loft.
- Waterproof and breathable membrane.
- Drawstring closure.
- Adjustable hook and loop web strap with slip keep. Micropolyester lining with Microban anti-microbial product protection.
- Heat pack pocket built into inner mitt lining.
- Reflective details.

WARMTH ●●●◐○

DEXTERITY ●○○○○

KIDS'

KIDS' X-TEAM MITTS

446302 • 2, 4, 6

Black (**90**)

- Nylon, Polyurethane
- Insulation: Top hand: 233g (100g Thermal Loft + 133g PrimaLoft), Palm: 100g Thermal Loft.
- Waterproof and breathable membrane.
- Micropolyester lining with Microban[1] anti-microbial product protection.
- Heat pack pocket built into inner mitt lining.
- Gusset protector to avoid snow entry at zipper.
- Reflective details.

WARMTH

DEXTERITY

KIDS' THERMAL SOCKS

444151 • S/M, L/XL

Charcoal Grey (**07**), Yellow (**10**)

- 35% Merino Wool, 35% Acrylic, 28% Polyamide Nylon, 2% Elastane.
- Dependable comfort sourced from the durability of Polyamide Nylon and the warmth of Merino Wool.
- Itch-free and shrink treated to retain their size and shape for years.

JUNIOR

BASIC BALACLAVA

445685 • S/M, L/XL

Black (**90**)

- 80% Nylon, 20% Spandex
- Designed for warmth, dryness and comfort.
- Flatlocked seams to prevent skin chafing.

TEEN

NEW STORM HAT

448678 • One size

Black (**90**), Coral (**13**)

- 100% Acrylic
- Knitted hat with micro fleece lining.

KIDS'

NEW KIDS' STORM HAT

448686 • One size

Black (**90**), Coral (**13**)

- 100% Acrylic
- Knitted hat with micro fleece lining.

NEW YOUTH SKI-DOO CAP

447809 • One size

Heather Charcoal (**29**)

- 60% Cotton, 40% Polyester
- Plastic adjustment at back.
- Flat peak.
- Ski-Doo 3D embroidery at front.

TEKVEST

UNISEX

SKI-DOO TRAILMASTER TEKVEST	**469308** • XS, S, M, L, XL **469309** • 2XL, 3XL	Grey (**09**)	

- XS (100-130 lbs / 45-60 kg) , S (130-150 lbs / 60-70 kg), M (150-185 lbs / 70-85 kg), L (185-210 lbs / 85-95 kg), XL (210-240 lbs / 95-110 kg), 2XL (240-270 lbs / 110-125 kg), 3XL (270-300 lbs / 125-140 kg)
- Polyester, Polyethylene, Vinyl Acetate laminated, Polypropylene, Nylon
- 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

NEW **SKI-DOO STAND-UP ROLLER GEAR BAG**	**469319** • One size	Black (**90**)	

- Your ultimate gear bag.
- 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.
- 140-liter capacity.
- Heavy duty 900D polyester material.

NEW **SKI-DOO 90 L GEAR BAG**	**469321** • One size	Black (**90**)	

- 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.
- 90-liter capacity.
- 900 D polyester.

NEW **SKI-DOO DUFFLE BACKPACK**	**469322** • One size	Black (**90**)	

- Duffle bag with shoulder strap, can transform into a backpack.
- Adjustable shoulder and chest straps.
- Handy bottle holder.
- Foam padding on straps for comfort.
- 45-liter capacity.
- 900 D polyester.

NEW **SKI-DOO LAPTOP BACKPACK**	**469323** • One size	Black (**90**)	

- 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.
- Easy grab zipper pulls.
- Carry-on slider.
- Water bottle side pouch.
- 900 D polyester.

LIFESTYLE & GIFTS

WINTER FUN

NEW 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: 250 lb.

NEW MINI SNOW SLED

B106800000

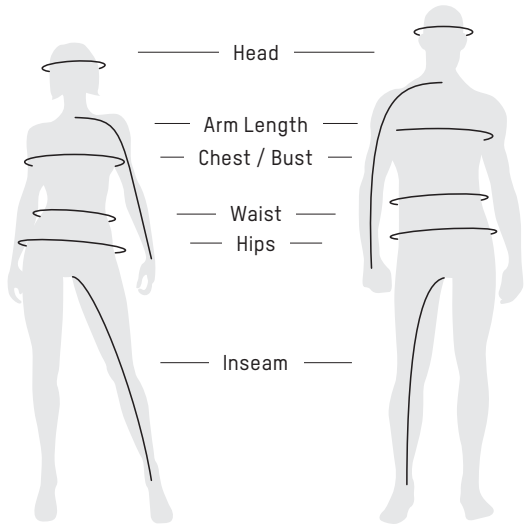
- Mini Ski-Doo Snow Sled for single rider.
- High-density durable plastic construction.
- Compact, lightweight and easy to carry uphill.
- Centered handle for enhanced steering and control.
- Textured seat for extra grip.
- Safe feet-first design to easily slow down or stop using feet.
- For ages 6 and up.
- Dimensions: 22" L x 13 ½" W x 15" H.
- Weight: 3.5 lb.
- Maximum weight capacity: 165 lb.

NEW 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.

SIZING CHART
HOW TO MEASURE



- **For best results, have someone else take 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: 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 lenght 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 4402270690

SIZE	CODE
One Size	00
XS	02
S	04
M	06
MT	07
L	09
LT	10

SIZE	CODE
XL	12
XLT	13
2XL	14
2XLT	15
3XL	16
3XLT	17
4XL	18

SIZE	CODE
4XLT	19
5XL	88
1	20
2	21
3	22
4	23
5	24

SIZE	CODE
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

SIZE	CODE
7-8	54
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
38-41	41-45	45-49	49-53	53-57	57-61
32-35	35-39	39-43	43-48	48-52	52-57
38-41	41-45	45-49	49-53	53-57	57-61
33½	34½	35½	36½	36½	37½
34	34	34	34	34	34

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
36-39	39-42	42-46
30-33	33-36	36-40
39-42	42-45	45-49
32	32½	33
32	32	32

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

	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	9⅜	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
8⅜	9	9⅜	9⅝	10
22	23	24	24.5	25.5

KIDS'

1	2	3	4	5	6
32	33	34	35.5	37	38
7⅝	8	8⅜	8⅝	9	9⅜
19.5	20.5	21.5	22	23	24

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	21⅛–22	22⅜–22¾	23⅛–23⅜	24–24⅜	24¾–25⅛	25½–25⅞
Head (cm)	53–54	55–56	57–58	59–60	61–62	63–64	65–66

JUNIOR

S	M	L
19¼–19¾	20–20½	20⅞–21¼
49–50	51–52	53–54

SOCKS

	S	M	L
Men's	—	6–9½	10–13
Ladies'	4–8	8½–12	—

	S/M	L/XL
Kids	9½–12½	13–3

// NOTES

// NOTES

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