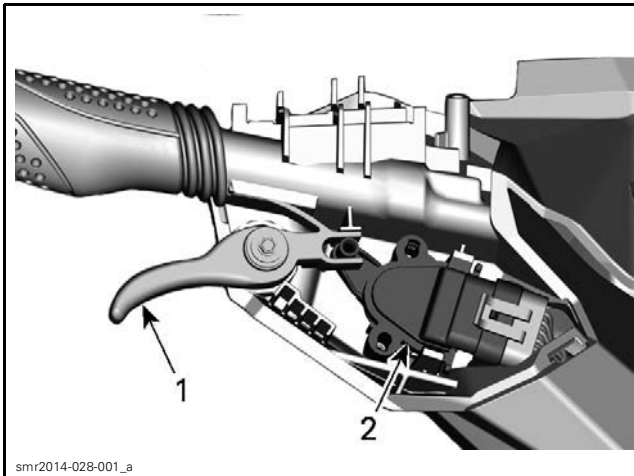


INTELLIGENT THROTTLE CONTROL (iTC)

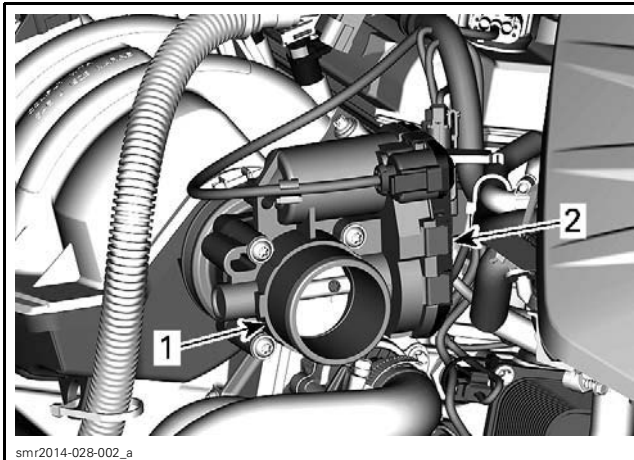
GENERAL

SYSTEM DESCRIPTION

The iTC is an electronic throttle control system that includes a cableless throttle control located on the RH side of the handlebar, an electric throttle actuator (ETA) located on the throttle body and the engine control module (ECM). The iTC is often referred to as a "throttle by wire" system.



1. Throttle lever
2. Throttle accelerator sensor (TAS)



1. Throttle body
2. Electric throttle actuator (ETA)

The throttle lever operates the throttle accelerator sensor (TAS). It is a double output hall effect sensor. The redundancy is used for security purposes.

The throttle actuator (ETA) is a DC motor on the throttle body that regulates the throttle plate position via a drive gear. The ETA must always displace the throttle plate against a spring load that tends to return the throttle plate to its rest position. Pulse width modulation (PWM) is used to control the motor.

In the throttle body, there is also a double throttle position sensor (TPS). The redundancy is used for security purposes. The TPS is a potentiometer that supplies the ECM the actual angular position of the throttle plate.

According to the torque demand from the TAS, the ECM powers the ETA motor to rotate towards open, or close, the throttle plate. When the ECM detects through the TPS that the throttle plate has reached the targeted position, the ECM commands the throttle actuator to hold the throttle plate at that position.

The iTC allows the throttle actuator to be moved irrespective of the accelerator sensor position since it is not directly linked by a throttle cable.

The use of the iTC also allows the following additional engine modes of operation.

Touring Mode

Touring mode provides for a smooth and progressive throttle response at certain engine speed.

Available engine power and acceleration is reduced when accelerating from a complete stop and when operating in the low engine power range under certain conditions.

When throttle is applied, the engine will progressively accelerate through its operating range whereby full power eventually becomes available. If the engine is throttled down sufficiently and for a long enough period of time, engine power and acceleration will again be reduced.

Sport Mode

Sport mode provides a crisper, more instantaneous throttle response.

Maximum engine power is available throughout the engine operational range.

NOTE: Touring/Sport mode selection is only available on the ACE 900 HO engine.

Section 04 FUEL SYSTEM
Subsection 01 (INTELLIGENT THROTTLE CONTROL (iTC))

O.T.A.S.™ System (Off-Throttle Assisted Steering)

The O.T.A.S. (Off-Throttle Assisted Steering) system provides additional maneuverability in off-throttle situations. The O.T.A.S. system is electronically activated and slightly increases engine speed under a pre-defined RPM when the driver initiates a full turn. When the handlebar is brought back to its center position, the throttle reverts to idle.

The throttle plate will open and close as necessary to assist the steering.

Limitations

The O.T.A.S. system cannot help maintaining control or prevent collisions in all situations.

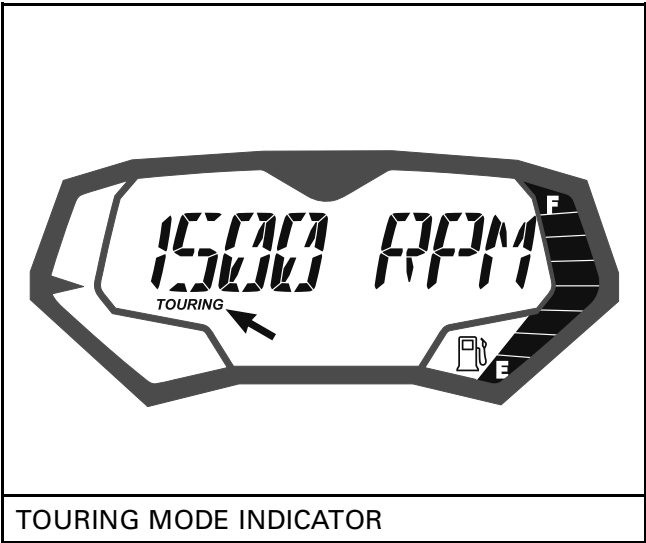
OPERATING MODES

NOTE: Touring/Sport mode selection is only available on the ACE 900 HO engine.

Touring Mode

By default, the watercraft is set to TOURING mode of operation when started.

A TOURING mode indicator is ON in the multifunction gauge to confirm the active mode of operation.



Sport Mode

When selected, SPORT MODE provides for instant throttle response and more rapid accelerations than TOURING MODE.

Once activated, SPORT MODE will remain active until it is deactivated by the operator, or the engine is shut down whereby it defaults back to TOURING MODE.

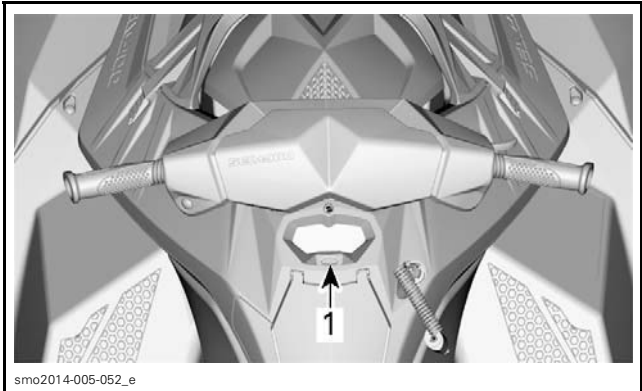
Activating Sport Mode

To activate sport mode, carry out the following:

**WARNING**

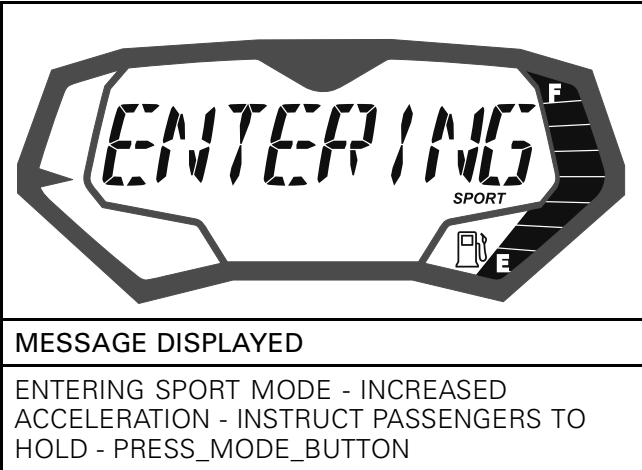
When activating sport mode, be sure to maintain situational awareness of other watercrafts, obstacles, or persons in the water.

1. Start engine.
2. Depress and hold the SET button for at least 1 second.



TYPICAL
1. SET button

Two beeps will be heard and the following message will be displayed in the multifunction gauge:

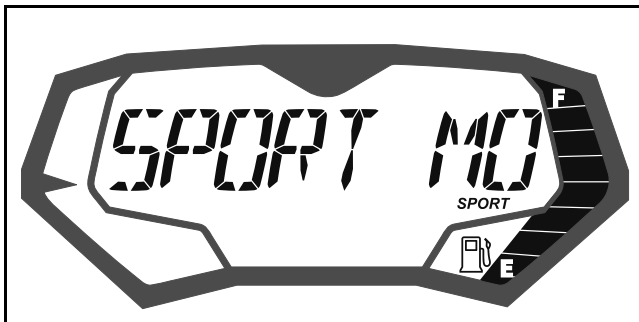


**WARNING**

Ensure passengers are advised that sport mode provides for increased accelerations and that they are to hold on tightly.

3. Press the SET button again to acknowledge the message and activate sport mode.

One beep will be heard and a scrolling SPORT MODE ACTIVATED message will momentarily confirm that sport mode has been activated.

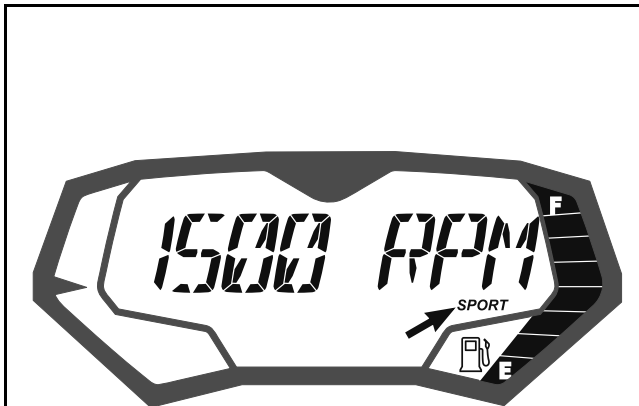


MESSAGE DISPLAYED

SPORT MODE ACTIVATED

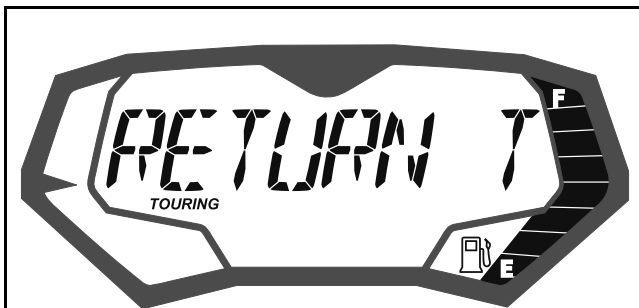
NOTE: After a few seconds, the gauge will revert to its normal display.

4. Ensure the SPORT mode indicator is turned on.



SPORT MODE INDICATOR

NOTE: The SPORT mode indicator will come on and stay on as long as sport mode is active. If the throttle is not fully released and the engine is not at idle, SPORT mode cannot be activated. The following message will then appear in the multifunction gauge.



MESSAGE DISPLAYED

SPORT MODE - RETURN TO IDLE TO ACTIVATE

Release the throttle. Once the engine has returned to idle, SPORT mode will be activated.

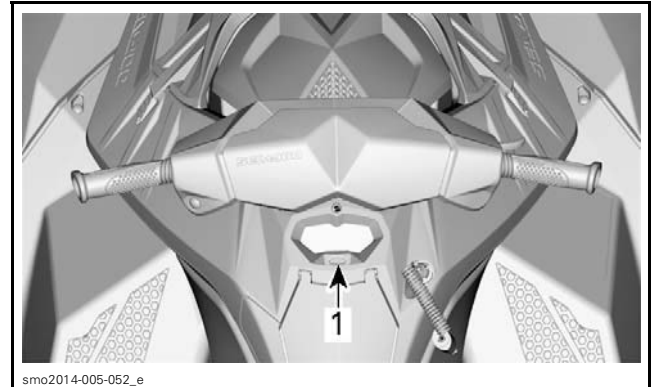
Deactivating Sport Mode

To deactivate sport mode, carry out the following:

⚠ WARNING

When deactivating sport mode, be sure to maintain situational awareness of other watercrafts, obstacles, or persons in the water.

1. Depress and hold the MODE button for at least 1 second.

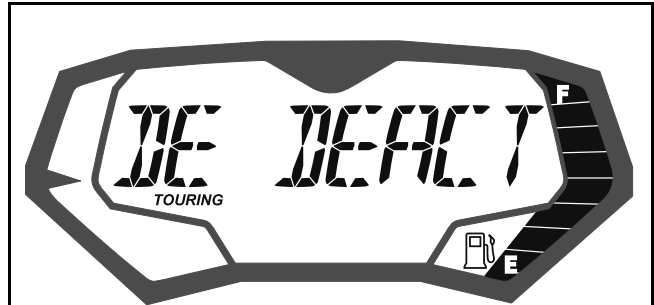


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TYPICAL

1. MODE button

NOTE: The following message will scroll in the multifunction display: SPORT MODE DEACTIVATED.



MESSAGE DISPLAYED

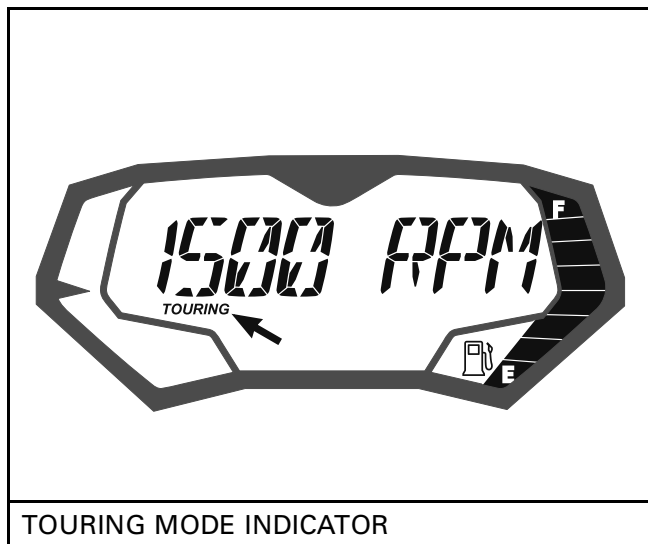
SPORT MODE DEACTIVATED

NOTE: After a few seconds, the gauge will revert to its normal display.

2. Ensure the TOURING mode indicator is on.

Section 04 FUEL SYSTEM

Subsection 01 (INTELLIGENT THROTTLE CONTROL (iTC))

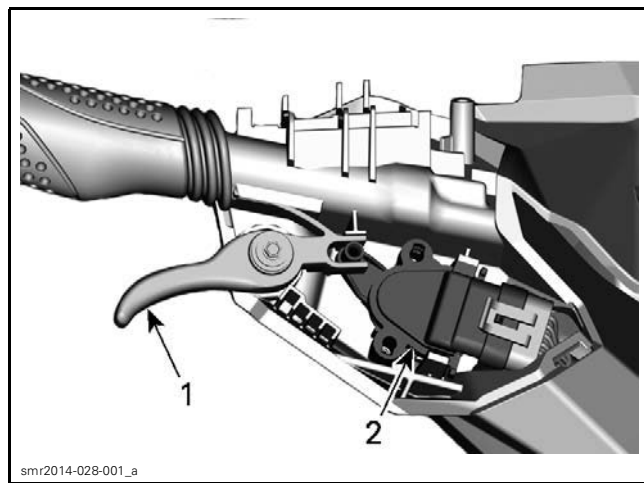


PROCEDURES

THROTTLE ACCELERATOR SENSOR (TAS)

General

The throttle accelerator sensor (TAS) is a double hall effect sensor that sends a signal to the ECM which is proportional to the throttle lever angle.



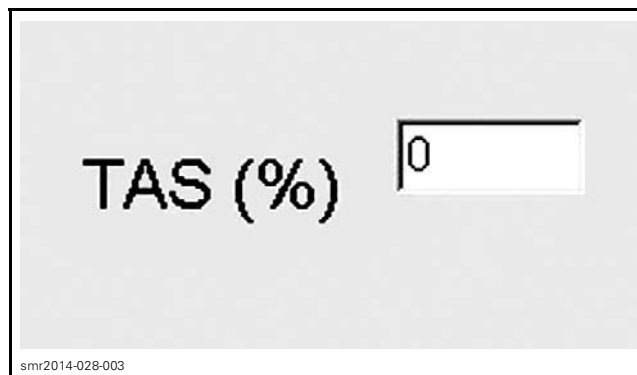
1. Throttle lever
2. Throttle accelerator sensor (TAS)

First ensure the throttle lever functions adequately. Pull the throttle lever fully in towards the handlebar, then release it. It must reach the wide open position and return to the idle position freely when released. Otherwise, refer to *STEERING SYSTEM* for an inspection.

TAS Test Using B.U.D.S.

1. Connect vehicle to B.U.D.S.. Refer to *COMMUNICATION TOOLS AND B.U.D.S.* subsection.
2. Press START button.
3. Install tether cord on engine cut-off switch.
4. In B.U.D.S., select the following:
 - Read Data button
 - Monitoring page tab
 - ECM page.
5. While slowly pulling in and letting out throttle lever, ensure the TAS % indication on the RH side of the monitoring page changes with throttle activation.

NOTE: The TAS % indication is not directly proportional to the percentage of the throttle lever travel.



If the TAS % indication changes with throttle activation, the TAS and the wiring harness are good.

If the TAS % indication does not change, look for a fault code in B.U.D.S. and carry out service actions. Refer to the wiring diagram to carry out the following continuity tests:

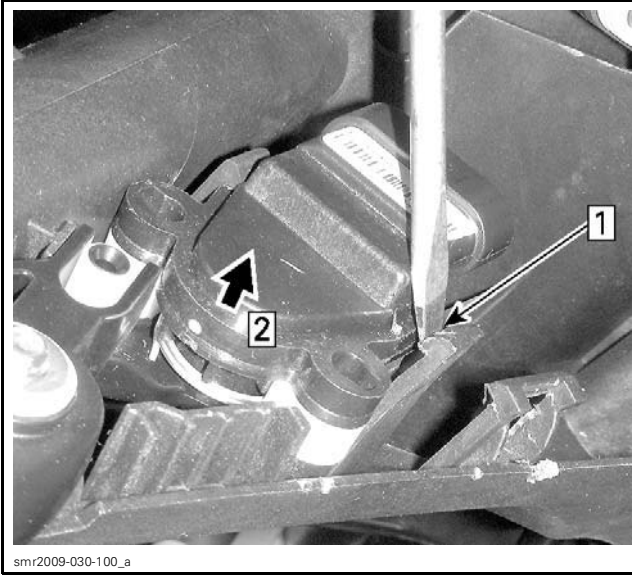
- Steering connector to TAS connector
- Steering connector to ECM-B connector.

If continuity is NOT good, repair or replace wiring and connectors.

If continuity is good, replace the TAS.

TAS Replacement

1. Remove RH steering cover. Refer to *STEERING SYSTEM*.
2. Pry out sensor locking tabs and pull out sensor.



*Step 1: Pry out
Step 2: Pull out sensor*

3. Pull up on the connector end of the TAS and gently pull it out of the throttle handle.
4. Remove connector from TAS sensor.
5. For installation, reverse the removal procedure.
Pay attention to the following.
6. Align sensor pins in their holes.



1. Align pin into hole

7. Press sensor into position until locking tabs engage. Ensure it is properly locked in place.
8. When installation is complete, ensure throttle lever functions properly.