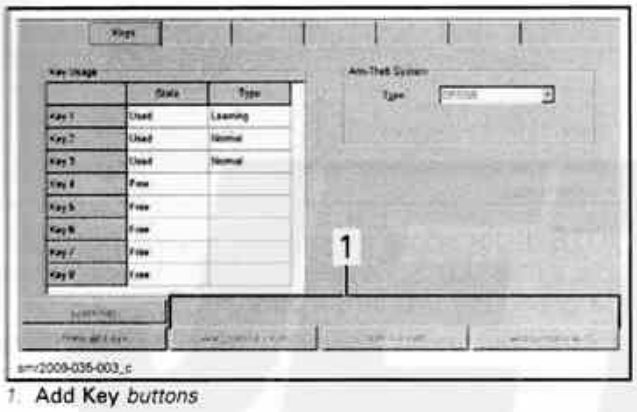
Adding a Key

1. Click on the **Add Key** button at the bottom of the screen according to the key type you want to program.

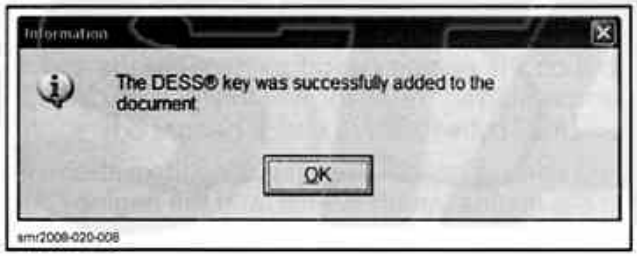
⚠ WARNING

If programming a Learning or Rental key, be sure to use the proper key type (color) to avoid possible confusion.



1. Add Key *buttons*

2. After approximately 10 seconds, the following window will pop up confirming the new key has been saved **in the PC computer**.



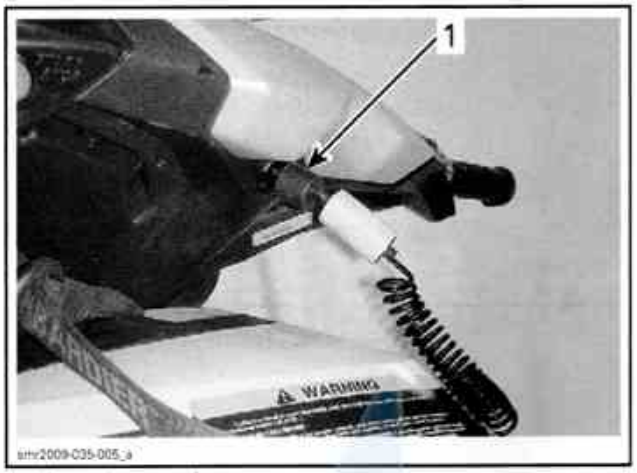
3. If programming is complete, write the changes to the ECM. Refer to *WRITING CHANGES TO ECM* in this subsection.

Adding Another Key

1. Remove the tether cord from the engine cut-off switch.
2. Install the next tether cord on the engine cut-off switch.
3. Click on the **Add Key** button.
4. If programming is complete, write the changes to the ECM. Refer to *WRITING CHANGES TO ECM* in this subsection.

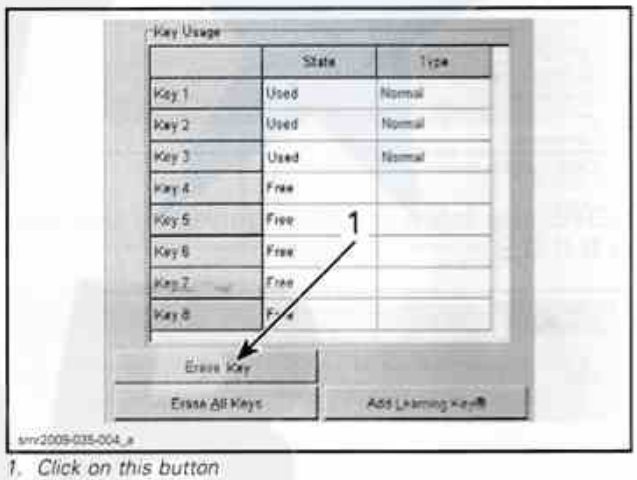
Erasing a Key

1. Install the tether cord on the engine cut-off switch.



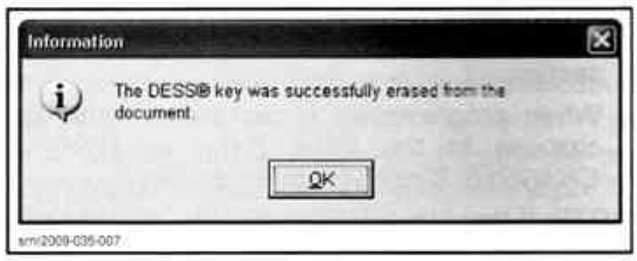
1. *Key to be erased*

2. Click on **Erase Key** button at bottom of B.U.D.S. screen.



1. *Click on this button*

After approximately 10 seconds the following message will appear.



The key is now erased **in the PC computer**.

3. If programming is complete, write the changes to the ECM. Refer to *WRITING CHANGES TO ECM* in this subsection.

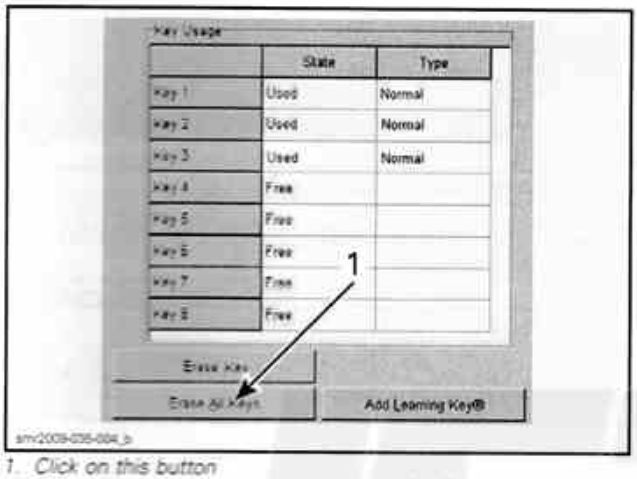
Erasing Another Key

1. Remove the tether cord from the engine cut-off switch.
2. Install the next tether cord to be erased on the engine cut-off switch.

3. Click on **Erase Key** button.
4. If programming is complete, write the changes to the ECM. Refer to *WRITING CHANGES TO ECM* in this subsection.

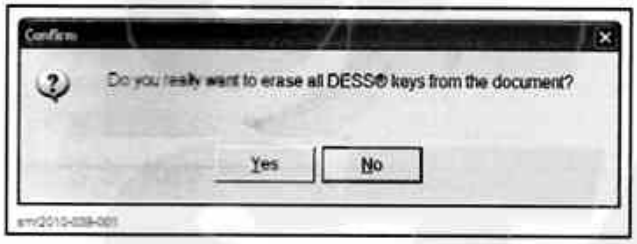
Erasing All Keys

1. Click on **Erase All Keys** button at bottom of screen.



1. Click on this button

NOTE: The following message will be displayed in B.U.D.S.



2. Click **Yes** to proceed with erasing all keys.
3. When done, program at least one new key to the vehicle. Refer to *ADDING A KEY* in this subsection.
4. When programming is complete, write the changes to the ECM. Refer to *WRITING CHANGES TO ECM* in this subsection.

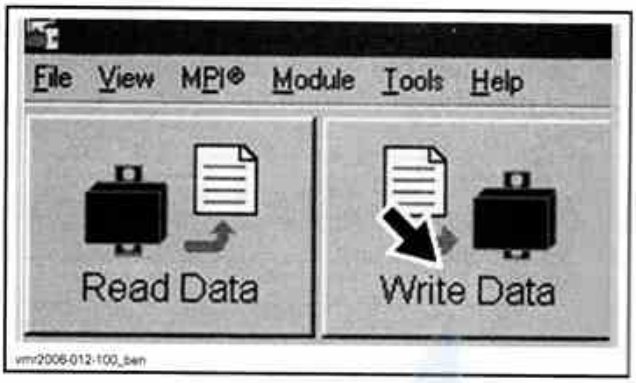
NOTE: If there isn't at least one key programmed to the watercraft, B.U.D.S. will not allow you to write the changes to the ECM and will prompt you to add a key.

Writing Changes to ECM

Save the changes made in B.U.D.S. **into the ECM** as follows.

NOTE: On 215 and 260 models, **Briefly** press the START/STOP button to prevent ECM communication interruption. **Do not hold START/STOP button to avoid engine cranking.**

1. Click the **Write Data** button.



NOTE: If for some reason the writing operation fails, exit B.U.D.S. Restart B.U.D.S. and reenter all the previously lost information.

2. After the write operation, remove key from D.E.S.S. post.
3. Try the key(s) on the watercraft.

BEEPER

Beeper Troubleshooting

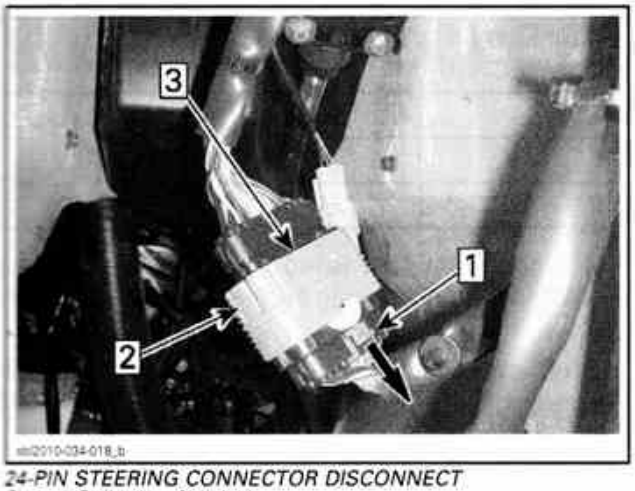
If no beep is heard when installing the tether cord on the engine cut-off switch, but the engine can be started, refer to *INFORMATION CENTER (GAUGE)* subsection to check beeper operation.

If no beep is heard when installing the tether cord on the engine cut-off switch, and the engine CANNOT be started, refer to *ELECTRONIC FUEL INJECTION (EFI)* subsection.

ENGINE CUT-OFF SWITCH

Continuity Test of Engine Cut-Off Switch

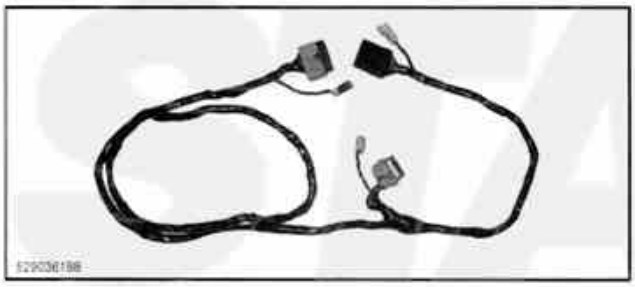
1. Disconnect the 24-pin steering connector from the vehicle harness. Refer to *START/STOP SWITCH* in the *STARTING SYSTEM* subsection for details.



24-PIN STEERING CONNECTOR DISCONNECT
Step 1: Pull out safety lock
Step 2: Press in on release tab
Step 3: Pull locking collar down

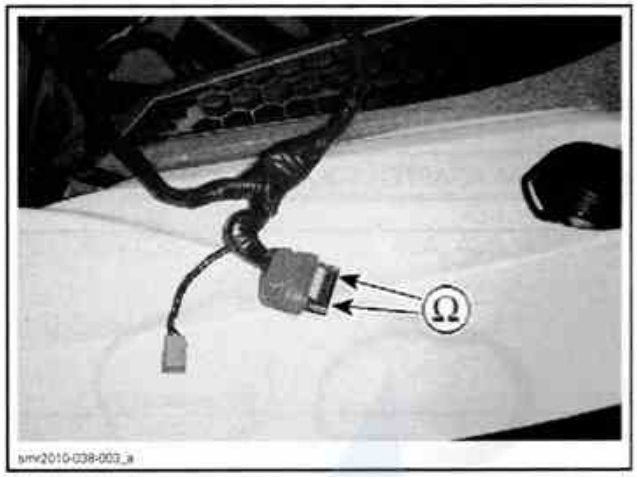
2. IMPORTANT: Connect the DIAGNOSTIC HARNESS (P/N 529 036 188) to the 24-pin steering connector only, **NOT** to the vehicle harness connector.

REQUIRED TOOLS
DIAGNOSTIC HARNESS (P/N 529 036 188)
FLUKE 115 MULTIMETER (P/N 529 035 868)

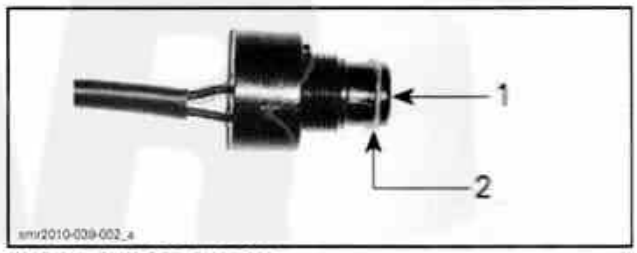


NOTICE Do not attempt to probe the 24-pin connector on the watercraft. Use the test connector on the diagnostic harness.

3. Set multimeter to Ω.
4. Probe test connector on diagnostic harness to check continuity as follows.



D.E.S.S. KEY	24-PIN TEST CONNECTOR		ENGINE CUT-OFF SWITCH	READING @ 20°C (68°F)
Removed	Pin 13	Pin 11	–	Open circuit
	Pin 14	–	Center contact	Close to 0 Ω
	Pin 13	–	Ring contact	
Installed	Pin 13	Pin 11	–	



ENGINE CUT-OFF SWITCH
1. Center contact
2. Ring contact

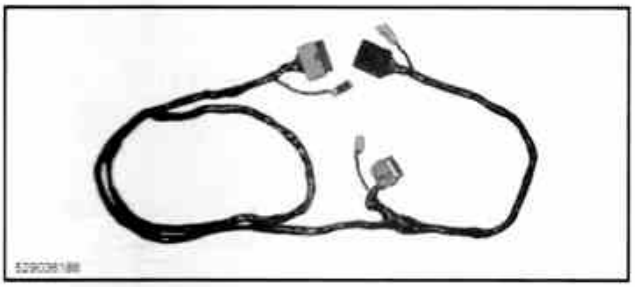
If any continuity test fails, replace engine cut-off switch.

If all readings were as specified, carry out the *CONTINUITY TEST OF VEHICLE HARNESS TO ENGINE CUT-OFF SWITCH.*

Continuity Test of Vehicle Harness to Engine Cut-Off Switch

1. Disconnect the 24-pin steering connector. Refer to *START/STOP SWITCH* in the *STARTING SYSTEM* subsection for details.

REQUIRED TOOLS
DIAGNOSTIC HARNESS (P/N 529 036 188)
FLUKE 115 MULTIMETER (P/N 529 035 868)
ECM ADAPTER TOOL (P/N 529 036 166)



2. Connect the DIAGNOSTIC HARNESS (P/N 529 036 188) to the 24-pin vehicle harness connector only, **NOT** to the steering harness connector.
3. Disconnect connector "B" from ECM. Refer to *WIRING HARNESS AND CONNECTOR* subsection.
4. Install the ECM ADAPTER TOOL (P/N 529 036 166) on ECM connector "B".
5. Probe test connector as follows.

24-PIN TEST CONNECTOR	ECM ADAPTER TOOL	READING
11	B-E4	Close to 0 Ω
14	B-B2	
13	B-F2	

If any continuity test failed, check wiring harness between 24-pin steering connector and ECM connector.

If problem persists and all tests have been performed, try a new ECM. Refer to *ELECTRONIC FUEL INJECTION (EFI)* subsection.

6. Reconnect 24-pin steering harness connector.
7. Reinstall removed components.

INFORMATION CENTER (GAUGE)

SERVICE TOOLS

Description	Part Number	Page
DIAGNOSTIC HARNESS	529 036 188	433, 436–437
FLUKE 115 MULTIMETER	529 035 868	432, 434, 436, 438, 443

SERVICE PRODUCTS

Description	Part Number	Page
DIELECTRIC GREASE	293 550 004	427, 440, 445

GENERAL

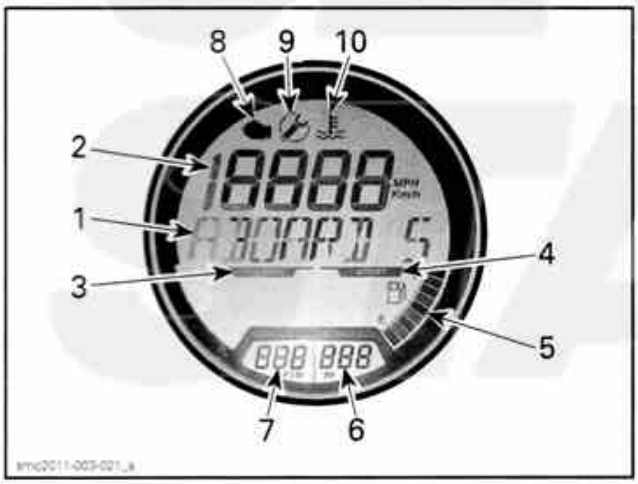
INFORMATION CENTER (GTS MODELS)

⚠ WARNING

Do not adjust the display while riding, you could lose control.

TYPICAL - INFORMATION CENTER
1. Multifunction gauge

Multifunction Gauge Description



1) Multifunction Display

The multifunction display is used to:
- Display the WELCOME message on power up
- Display the KEY recognition message
- Display the engine RPM
- Display fault messages.

NOTE: RPM is the default indication when the engine is running.

2) Numerical Display

The numerical display provides an indication of estimated watercraft speed. Watercraft speed is based on various engine parameters received from the ECM.

3) Touring Mode Indicator

When the TOURING mode indicator is ON, the default TOURING mode is active.

Refer to *INTELLIGENT THROTTLE CONTROL (iTC)* subsection for details.

4) Sport Mode Indicator

When the SPORT mode indicator is ON, sport mode has been selected and is active.

NOTE: Sport mode is not the default riding mode. To be active, it must be selected on after each engine start.

5) Fuel Level Indication

A bar gauge located in the bottom RH side of the multifunction display continuously indicates the amount of fuel in the fuel tank while riding.

When the fuel tank is full, 8 segments (bars) of the indicator are turned on. The top segment is not used.

Low Fuel Warning

When there is only 2 segments of fuel indicated (approximately 25% fuel tank capacity or 14 L (3.7 U.S. gal.), the following indications will come ON to advise you that a low fuel condition exists.

LOW FUEL LEVEL INDICATIONS	
Last 2 fuel gauge segments	Flashing
Fuel tank symbol	
Audible advisory (one long beep)	Periodically
Scrolling LOW FUEL advisory message	

6) Hour Meter Display

Continuously displays the accumulated engine hours as transmitted by the ECM.

Engine hours are calculated and stored by the ECM.

7) Water Depth Display

The water depth display provides an indication of the lake water depth.

The system is capable of indicating water depth under the hull in single increments up to 50 m (164 ft).

NOTE: Under certain conditions, the display may stop indicating. The display's ability to provide an indication of the waters's depth depends on the conditions of use.

NOTE: The water depth indication is only available when a depth sounder is installed and detected.

⚠ WARNING

Never use the depth sounder as a warning device to ride in shallow water.

8) Check Engine Light

The check engine light comes ON when a fault is detected by the engine management system.

The check engine light may be accompanied by the applicable scrolling fault message in the multifunction display.

The signal to turn on the check engine light and scrolling fault message comes from the ECM.

9) Maintenance Reminder Indicator

The maintenance reminder indicator comes ON when required maintenance is due.

The signal to turn on the maintenance reminder and scrolling maintenance message comes from the ECM.

10) High Temperature Indicator

The high temperature indicator comes ON when a high engine temperature or a high exhaust system temperature is detected.

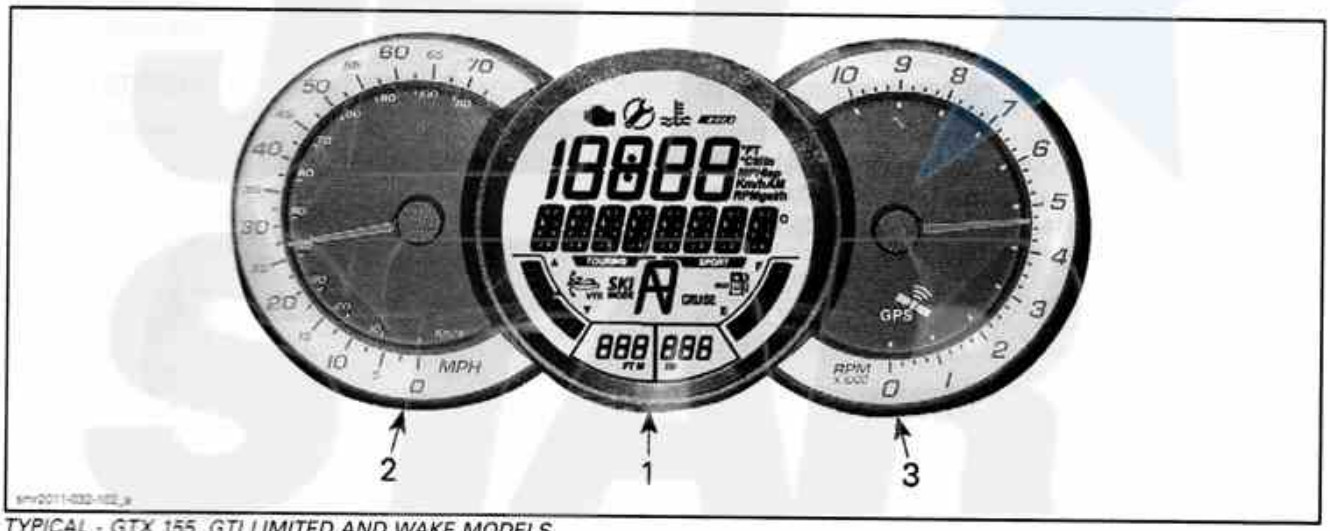
The signal to turn on the high temperature indicator and scrolling HIGH TEMPERATURE or HIGH EXHAUST TEMPERATURE message comes from the ECM.

INFORMATION CENTER (GTX 155, GTI SERIES AND WAKE MODELS)

⚠ WARNING

Do not adjust the display while riding, you could lose control.

TYPICAL - GTI AND GTI SE MODELS
1. Multifunction gauge



TYPICAL - GTX 155, GTI LIMITED AND WAKE MODELS
1. Multifunction gauge
2. Analog speedometer
3. Analog tachometer

Analog Speedometer Description

The speedometer, located in the LH side of the information center, provides an analog indication of the speed of the watercraft in miles per hour (MPH) and kilometers per hour (km/h).

The speed indication is based on a GPS (Global Positioning System) incorporated within the information center.

If for some reason the GPS signal is lost, a default mode is used whereby, the speed is calculated using information received from other systems to provide an estimated watercraft speed.

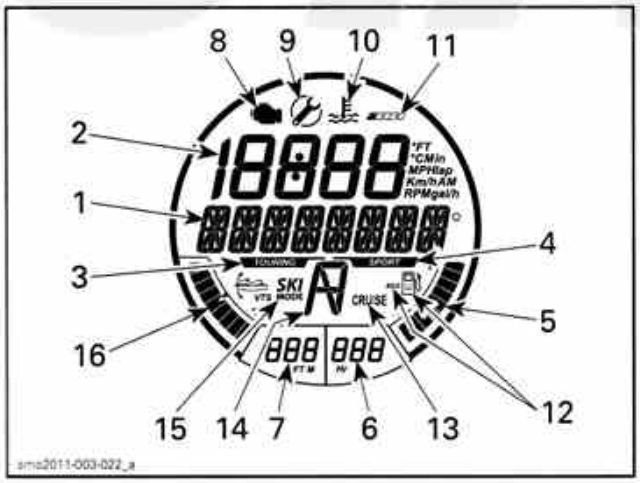
Analog Tachometer Description

The tachometer provides an analog indication of the revolutions per minute (RPM) of the engine. Multiply the indicated number by 1000 to obtain the actual engine RPM.

Multifunction Gauge Features

	GTI	GTI SE	GTI LIMITED	WAKE	GTX 155
1) Multifunction display	X	X	X	X	X
2) Numerical display	X	X	X	X	X
3) Touring mode indicator	X	X	X	X	X
4) Sport mode indicator	X	X	X	X	X
5) Fuel level indication	X	X	X	X	X
6) Hour meter display	X	X	X	X	X
7) Water depth indication	Opt	Opt	Opt	Opt	Opt
8) CHECK ENGINE light	X	X	X	X	X
9) MAINTENANCE REQUIRED indicator	X	X	X	X	X
11) iBR fault indicator	X	X	X	X	X
12) ECO mode indicator	Opt	X	X	X	X
13) CRUISE mode indicator	Opt	Opt	X	X	X
14) iBR position indicator	X	X	X	X	X
15) SKI mode indicator	Opt	Opt	Opt	X	Opt
16) VTS position indication	Opt	X	X	X	X
X = Indicates a **standard** feature Opt = Indicates a feature available as an **option**					

Multifunction Gauge Description



1) Multifunction Display

The multifunction display is used to:

- Display the WELCOME message on power up
- Display the KEY recognition message
- Provide various indications as selected by the operator
- Activating or changing various functions or modes of operation
- Display scrolling messages of function activation or system faults
- Display fault codes.

MULTIFUNCTION DISPLAY

NOTE: The default indication in the multifunction display is the compass direction.

2) Numerical Display

The numerical display is used to provide a variety of indications as selected by the operator using the DISPLAY function in the multifunction display.

NUMERICAL DISPLAY

1. Numerical display indication
2. Unit of measurement of indication

AVAILABLE INDICATIONS IN NUMERICAL DISPLAY					
	GTI	GTI SE	GTI LIMITED	WAKE	GTX 155
Watercraft speed	Indication by default				
Engine RPM	X	X	X	X	X
Engine temperature	Opt	Opt	Opt	Opt	Opt
Clock	N.A.	X	X	X	X
Learning and rental key settings	X	X	X	X	X
CRUISE SPEED setting (from idle RPM)	Opt	Opt	X	X	X
SLOW SPEED MODE setting	Opt	Opt	X	X	X
Full VTS (with LH VTS switch)	Opt	Opt	X	Opt	Opt
VTS preset	Opt	Opt	X	Opt	Opt
VTS settings (through gauge, no switch)	Opt	X	N.A.	X	X
SKI MODE settings	Opt	Opt	Opt	X	Opt
Fuel consumption (instant and average)	Opt	X	X	X	X
Fuel autonomy (distance and time to empty)	Opt	Opt	X	Opt	Opt
Lap timer	Opt	Opt	Opt	Opt	Opt
Top speed/RPM, average speed/RPM	Opt	Opt	Opt	Opt	Opt
Altitude	N.A.	N.A.	X	N.A.	N.A.

X = An X indicates a standard feature
Opt = Feature available as an option
N.A. = Not Available

When the information center is first powered up, the numerical display defaults to the last selected indication.

3) Touring Mode Indicator

When the TOURING mode indicator is ON, the default TOURING mode of operation is active.

TOURING MODE INDICATOR

4) Sport Mode Indicator

When the SPORT mode indicator is ON, sport mode has been selected and is active.

SPORT MODE INDICATOR

NOTE: Sport mode is not the default riding mode. To be active, it must be selected ON after each engine start.

5) Fuel Level Indication

A bar gauge located in the bottom RH side of the multifunction display continuously indicates the amount of fuel in the fuel tank while riding.

FUEL LEVEL INDICATION

When the fuel tank is full, 8 segments (bars) of the indicator are turned on. The top segment is not used.

Low Fuel Level Warning

When there is only 2 segments of fuel indicated (approximately 25% fuel tank capacity or 14 L (3.7 U.S. gal.), the following warnings will be ON.

LOW FUEL LEVEL WARNING	
Last 2 fuel gauge segments	Flashing
Fuel tank symbol	
Audible warning (one long beep)	Periodically
Scrolling LOW FUEL WARNING message	

6) Hour Meter Display (HR)

Continuously displays the accumulated engine hours as transmitted by the ECM.

HOUR METER DISPLAY

NOTE: Engine hours are calculated and stored in the ECM.

7) Water Depth Display

The water depth display provides an indication of the lake water depth.

The system is capable of indicating water depth under the hull in single increments up to 50 m (164 ft).

NOTE: Under certain conditions, the display may stop indicating. The display's ability to provide and indication of the water's depth depends on the conditions of use.

WATER DEPTH DISPLAY

NOTE: The water depth indication is only available when a depth sounder is installed and detected.

⚠ WARNING

Never use the depth sounder as a warning device to ride in shallow water.

8) Check Engine Light

The check engine light comes ON when a fault is detected by the engine management system.

CHECK ENGINE LIGHT

The signal to turn on the check engine light and scrolling fault message comes from the ECM.

9) Maintenance Reminder Indicator

The maintenance reminder indicator comes ON when required maintenance is due.

MAINTENANCE REMINDER INDICATOR

NOTE: The signal to turn on the maintenance reminder and to display the MAINTENANCE DUE message in the multifunction display comes from the ECM.

10) High Temperature Indicator

The high temperature indicator comes ON when a high engine temperature or a high exhaust system temperature is detected.

HIGH TEMPERATURE INDICATOR

NOTE: The signal to turn on the high temperature indicator and the scrolling HIGH TEMPERATURE or HIGH EXHAUST TEMPERATURE message in the multifunction display comes from the ECM.

11) iBR Fault Indicator

The iBR fault indicator comes ON when a fault in the iBR system has been detected.

iBR FAULT INDICATOR

The signal to turn on the iBR fault indicator and scrolling fault message comes from the ECM or iBR.

12) ECO Indicator

The ECO indicator and a smile in the fuel tank symbol comes ON when **FUEL ECONOMY MODE** is activated.

ECO MODE INDICATOR
(Fuel Economy Mode)

13) CRUISE Mode Indicator

The cruise mode indicator comes ON when:
- CRUISE MODE has been activated.
- SLOW SPEED MODE has been activated.

CRUISE MODE INDICATOR

14) iBR Position Indicator

Provides an indication of the iBR gate position.
- N (neutral)
- F (forward)
- R (reverse).

iBR POSITION INDICATOR

15) SKI MODE Indicator

The ski mode indicator is ON when SKI MODE is active.

SKI MODE INDICATOR

16) VTS Position Indication

The VTS position indication provides an indication of the of the pump nozzle position.

A single segment of a bar gauge type indicator is turned on to indicate the relative position of the watercraft bow.

VTS POSITION INDICATION

Navigating the Multifunction Display

⚠ WARNING

Do not adjust display while riding, you could lose control.

Selecting Functions

When operating at speed, the multifunction display provides an indication of the compass direction and azimuth of the watercraft is traveling by default.

1. To select the various functions available through the multifunction display, press the MODE button repeatedly until the desired function is visible:

FUNCTION SUBMENU DISPLAYED IN SEQUENCE WHEN MODE BUTTON PRESSED REPEATEDLY

2. Then press the SET button to enter that function.

NOTE: The available functions and the order in which they appear depends on the watercraft model. The fault code function is only available when there is an active fault. The settings function is only available when the engine is shut off.

FUNCTIONS AVAILABLE THROUGH MULTIFUNCTION DISPLAY	
COMPASS (default function)	DRIVING MODE
LAP TIMER	DISPLAY
SKI MODE	FAULT CODES
FUEL ECONOMY MODE	KEY MODE
FUEL CONSUMPTION	SETTINGS
VTS MODE	-

Description of Functions Available Through Multifunction Display

Compass

A GPS incorporated in the information center provides the indication in the multifunction display.

The cardinal points, intermediate cardinal points, as well as the azimuth the watercraft is travelling are displayed by default in the multifunction display when the watercraft is moving.

For a compass indication to be displayed, the GPS must have a good uplink with at least three navigation satellites.

COMPASS DIRECTION DISPLAYED HERE

NOTE: The compass indication is only available above 5 km/h (3 MPH).

⚠ WARNING

Use the compass as a guide only. Not to be used for precision navigation purposes.

Lap Timer

The lap timer can be used to record up to 50 individual lap times.

Ski Mode

Ski mode is used for repeated controlled launches when towing a skier or wakeboarder.

Fuel Economy Mode

Fuel economy mode is a function by which engine fuel consumption is reduced.

Fuel Consumption

The FUEL CONSUMPTION function is used to display the watercraft fuel consumption four different ways:

- Instant fuel flow per hour (gal/h or L/h)
- Average fuel flow per hour (gal/h or L/h)
- Distance to empty (Mi or Km)
- Time to empty (h or min).

VTS Mode

The VTS MODE function is used to manually set the VTS or change VTS PRESET settings.

Driving Mode

The DRIVING MODE function can be used for activating or deactivating SPORT mode.

Display

The DISPLAY function is used to change the indication in the numerical display.

Fault Codes

The FAULT CODES function can only be used to display active fault codes.

Key Mode

The KEY MODE function is used for changing LEARNING or RENTAL key settings.

Settings

The SETTINGS function is used for:

- Changing the clock setting
- Activating the iBR override function.

Activating Functions Through the Multifunction Display

To activate the following operating modes, refer to *INTELLIGENT THROTTLE CONTROL (ITC)* subsection:

- SPORT mode
- TOURING mode
- SKI mode
- FUEL ECONOMY mode
- KEY mode.

For VTS mode, refer to *iBR AND VTS* subsection.

For DISPLAY modes, refer to *CHANGING NUMERICAL DISPLAY INDICATION* in this subsection.

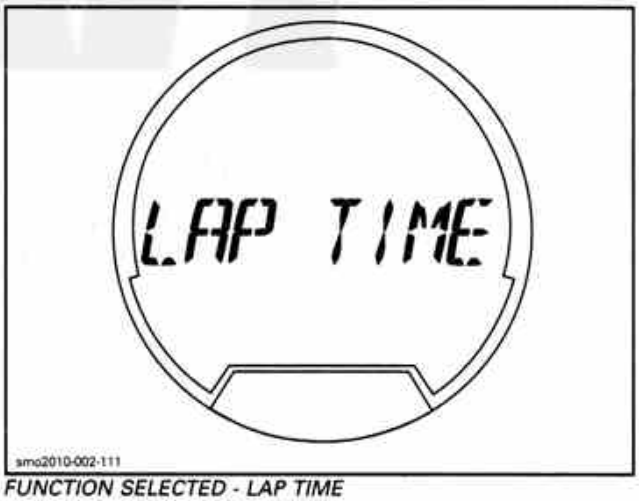
For FAULT CODES display function, refer to *DIAGNOSTIC AND FAULT CODES* subsection.

For the SETTINGS function:

- To change clock setting, refer to *MULTIFUNCTION GAUGE SETUP* in this subsection.
- For the iBR override function, refer to *iBR AND VTS* subsection.

Lap Timer

1. Press the MODE button repeatedly until LAP TIME is visible in the multifunction display.



FUNCTION SELECTED - LAP TIME

2. Press the SET button to enter the function, the lap timer will be activated and visible in the display.

LAP TIMER FUNCTION

1. 00'00'00 lap time displayed here
2. Lap number "0" displayed here

3. **To start the timer**, press the SET button.

NOTE: The timer starts immediately when pressing the SET button.

4. **To record each lap time**, press the SET button at the start of each lap.

NOTE: The lap time will be recorded, the lap counter in the numerical display will count the number of laps recorded, and the timer will continue to run.

LAP TIMER FUNCTION EXAMPLE

1. 01'02'34 lap time displayed here
2. Lap number "1" displayed here

5. **To save the last lap** and stop the timer, press the MODE button.

LAP TIMER FUNCTION EXAMPLE

1. 01'21'03 lap time displayed here
2. Lap number "2" displayed here

To view each lap time, use the UP/DOWN arrow button. The lap counter will indicate which lap is indicated.

To view the cumulative lap time of all laps recorded, use the UP/DOWN arrow button until ALL is visible in the lap counter.

LAP TIMER FUNCTION EXAMPLE

1. Total lap times 02'23'37 displayed here
2. Lap count "ALL" displayed here

To reset the lap timer and lap counter, press and hold the SET button until the timer and counter are reset to 0 (zero).

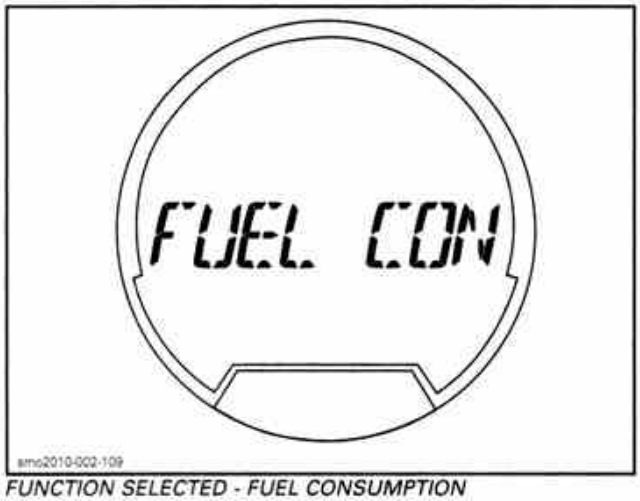
Fuel Consumption Display

NOTE: The fuel consumption functions are **not** continuously active and therefore **do not** record in the background. The desired fuel consumption function becomes active **only** when selected as the indication in the numerical display.

When the LOW FUEL indications come on in the multifunction gauge, the "TIME TO EMPTY" and "DISTANCE TO EMPTY" functions will indicate "0" (zero) if they are the selected indication.

To display the watercraft fuel consumption, carry out the following:

1. Press the MODE button repeatedly until FUEL CONSUMPTION is visible in the multifunction display.



FUNCTION SELECTED - FUEL CONSUMPTION

2. Press the UP/DOWN arrow button to toggle to the desired fuel consumption display mode.

FUEL CONSUMPTION DISPLAY MODE - INSTANT FUEL FLOW

3. Press the SET button to save the setting and return to the main display.

NOTE: The fuel consumption value selected will be displayed in the numerical display. Double click the SET button to reset the average fuel consumption indication. The display will momentarily indicate zero (0).

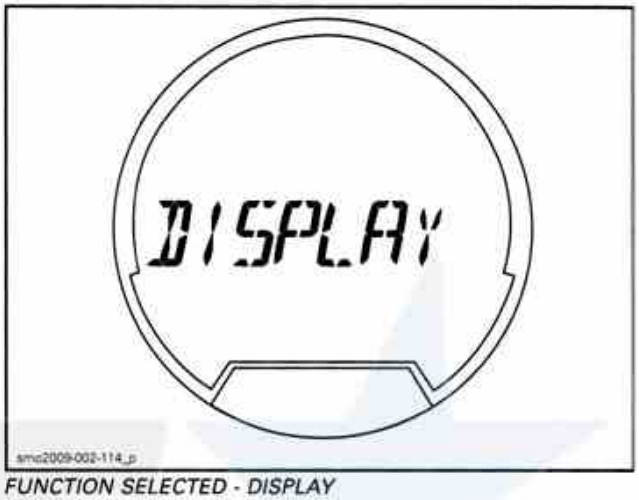
Multifunction Display Messages

For a list of usual messages that may be displayed in the multifunction display, refer to *MULTIFUNCTION DISPLAY MESSAGES* in *INFORMATION CENTER (RXT,GTX (EXCEPT 155) AND WAKE PRO SERIES).*

Changing Numerical Display Indication

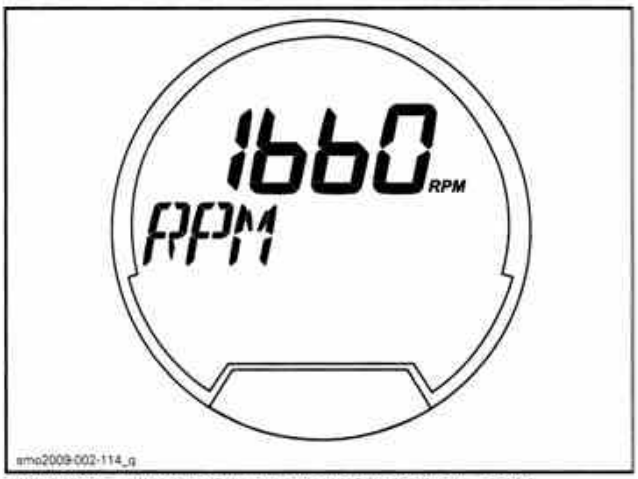
To change the indication in the numerical display, carry out the following:

1. Press the MODE button on the RH handlebar repeatedly until DISPLAY is visible in the multifunction display.



FUNCTION SELECTED - DISPLAY

2. Press the SET button to enter the DISPLAY function.
3. Press the UP/DOWN arrow button until the preferred indication is visible in the multifunction display.
   - RPM
   - SPEED
   - CLOCK
   - ENGINE TEMP
   - ALTITUDE.
   - TOP SPEED (RXT-X)
   - AVG SPEED (RXT-X)
   - TOP RPM (RXT-X)
   - AVG RPM (RXT-X).



EXAMPLE - NUMERICAL DISPLAY SELECTION - RPM

4. Press the SET button to select and save the preferred indication, or wait for the display function to time out. The last indication visible will be automatically saved.

Resetting Numerical Display Indication

The following numerical display indications can be reset when selected:

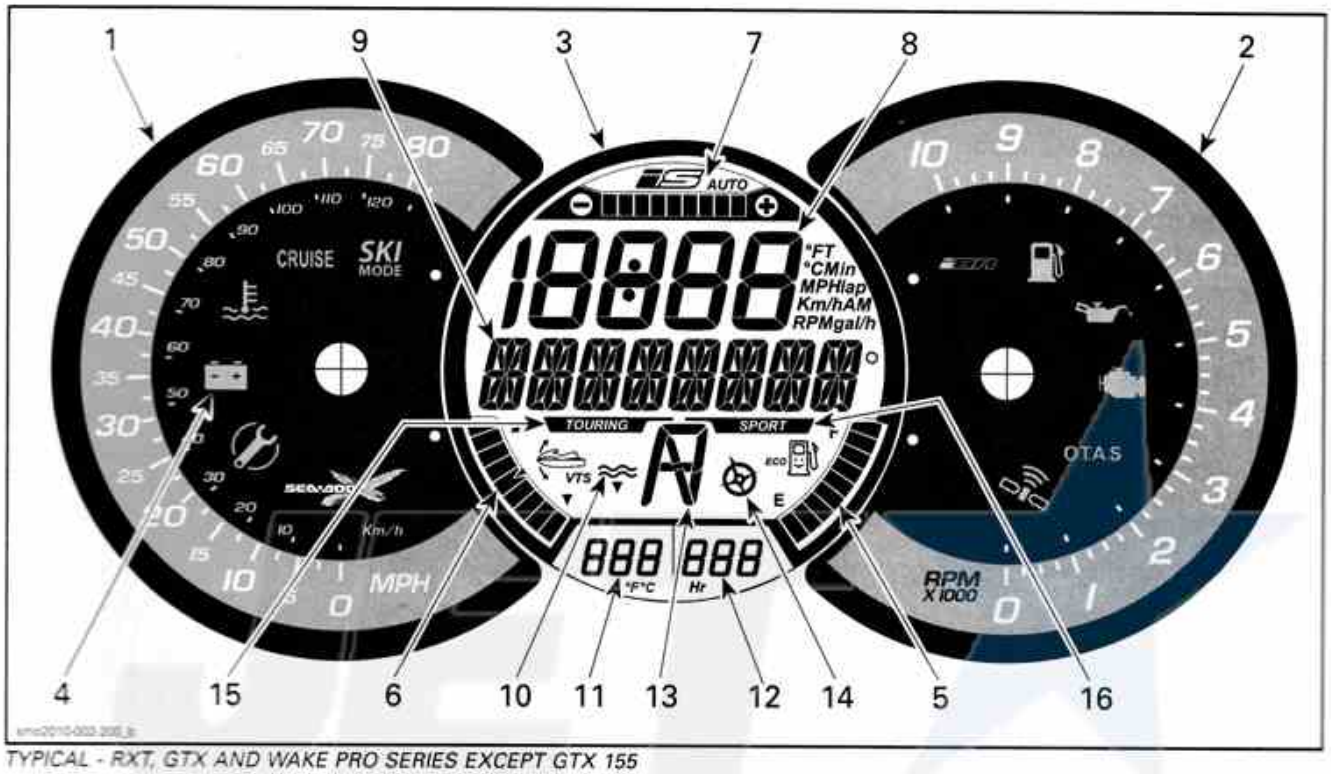
- Average fuel consumption
- Top speed
- Average speed
- Top RPM
- Average RPM.

To reset the indication. double click the SET button. The numerical display will momentarily indicate zero (0).

NOTE: Each of these functions become active ONLY when selected as the numerical display indication, they **do not** record in the background.

INFORMATION CENTER (RXT,GTX (EXCEPT 155) AND WAKE PRO SERIES)

Information Center Description



TYPICAL - RXT, GTX AND WAKE PRO SERIES EXCEPT GTX 155

1) Speedometer

The speedometer, located in the LH side of the information center, provides an analog indication of the speed of the watercraft in miles per hour (MPH) and kilometers per hour (km/h).

The speed indication is based on a GPS (Global Positioning System) incorporated within the information center.

An indicator light seen in the tachometer lights up when the GPS has a good uplink with at least three satellites.

GPS INDICATOR LIGHT

If for some reason the GPS signal is lost, a default mode is used whereby, the speed is calculated using information received from other systems to provide an estimated watercraft speed.

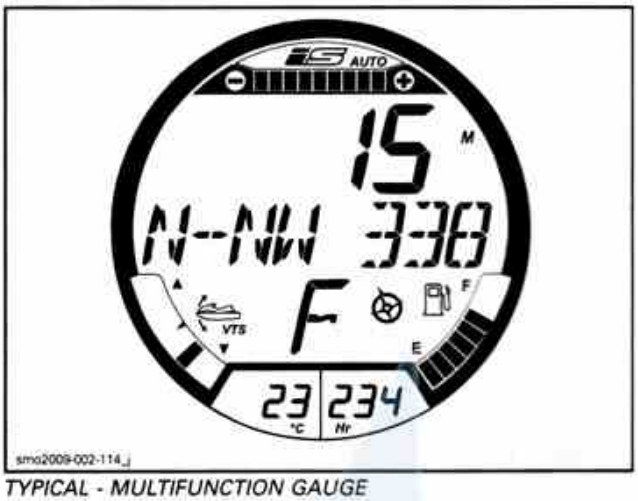
2) Tachometer

The tachometer provides an analog indication of the revolutions per minute (RPM) of the engine. Multiply the indicated number by 1000 to obtain the actual engine RPM.

3) Multifunction Gauge

The multifunction gauge, located in the center of the information center, is capable of providing many indications simultaneously.

The numerical and multifunction displays in the multifunction gauge can be used to display various indications, or for selecting modes of operation and changing settings as explained in their respective subsections.



TYPICAL - MULTIFUNCTION GAUGE

MULTIFUNCTION GAUGE FEATURES	GTX LTD iS	GTX iS, RXT iS	RXT-X aS, RXT-X	WAKE PRO	GTX 215	RXT
Multifunction display	X	X	X	X	X	X
Numerical display	X	X	X	X	X	X
TOURING mode indicator	X	X	X	X	X	X
SPORT mode indicator	X	X	X	X	X	X
Fuel level indication	X	X	X	X	X	X
Hour meter display	X	X	X	X	X	X
Water depth indication	X	Opt	Opt	Opt	Opt	Opt
CHECK ENGINE indicator	X	X	X	X	X	X
MAINTENANCE REQUIRED indicator	X	X	X	X	X	X
iBR fault indicator	X	X	X	X	X	X
CRUISE mode indicator	X	X	Opt	X	X	X
iBR position indicator	X	X	X	X	X	X
SKI mode indicator	Opt	Opt	Opt	X	Opt	Opt
VTS position indication	X	X	X	X	X	X

X = An X indicates a standard feature
Opt = Feature available as an option

4) Indicator Lights

Indicator lights (pilot lamps), located in the speedometer and tachometer indicator, inform you of a selected function, or a system anomaly.

An indicator light may be accompanied by a scrolling message in the multifunction display.

See the following table for information on the usual pilot lamps. Refer to *DIAGNOSTIC AND FAULT CODES* subsection for details on malfunction pilot lamps.

PILOT LAMPS (ON)	MESSAGE DISPLAY	DESCRIPTION
	MAINTENANCE REMINDER	Maintenance required
	LOW or HIGH BATTERY VOLTAGE	Low/high battery voltage
	LOW-FUEL	Low fuel level, approx. 25% tank capacity, 14 L (3.7 U.S. gal.) or fuel level sensor disconnected
	HIGH TEMPERATURE	Engine or exhaust system overheating
	CHECK ENGINE or LIMP HOME MODE	Check engine (minor fault req. maint.) or LIMP HOME MODE (major eng. fault)
	LOW OIL PRESSURE	Low oil pressure
CRUISE	Scrolling SLOW SPEED MODE message	CRUISE mode or SLOW SPEED mode engaged
	–	iBR system fault
O.T.A.S.	–	O.T.A.S. system fault
	–	Good GPS uplink
SKI MODE	Scrolling SKI MODE messages	SKI mode activated

5) Fuel Level Indication

A bar gauge located in the bottom RH side of the multifunction display continuously indicates the amount of fuel in the fuel tank while riding.

FUEL LEVEL INDICATION

When the fuel tank is full, 8 segments (bars) of the indicator are turned on. The top segment is not used.

Low Fuel Warning

When there is only 2 segments of fuel indicated (approximately 25% fuel tank capacity or 14 L (3.7 U.S. gal.), the following warnings will be ON.

LOW FUEL LEVEL WARNING	
Last 2 fuel gauge segments	ON
Fuel tank symbol (LED)	
Audible warning (one long beep)	Periodically
Scrolling LOW FUEL WARNING message	

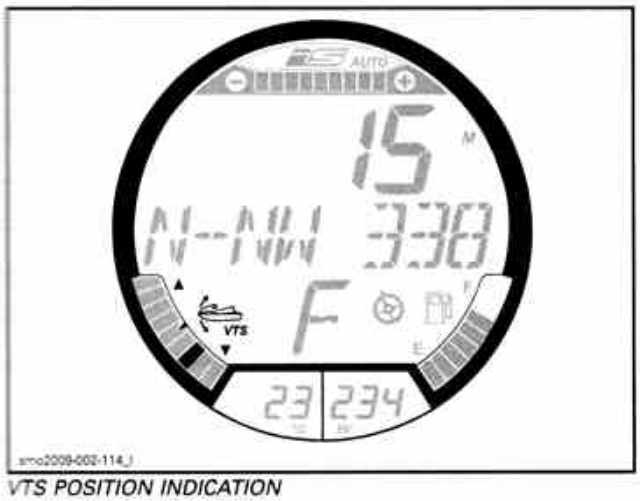
The audible warning (one long beep) will be heard periodically as long as the low fuel condition exists.

NOTE: The watercraft fuel consumption may be displayed in the numerical display. Refer to *NUMERICAL DISPLAY* in this subsection.

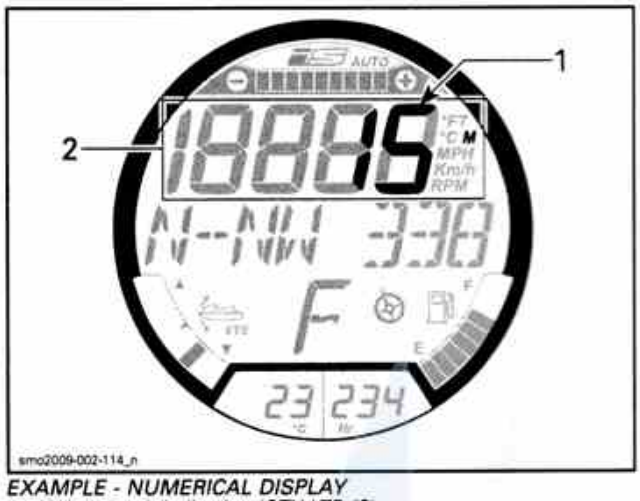
6) VTS Position Indication

The VTS position indication located in the bottom LH side of the multifunction display indicates the riding attitude of the watercraft.

A single segment of a bar gauge type indicator is turned on to indicate the relative position of the watercraft bow.



VTS POSITION INDICATION

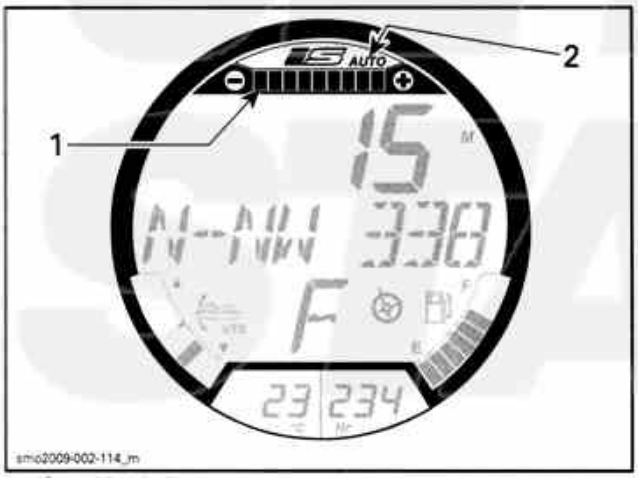


EXAMPLE - NUMERICAL DISPLAY
1. *Water depth indication (GTX LTD iS)*
2. *Numerical display*

7) iS Position Indication

The iS position display (intelligent Suspension) provides a visual indication of the relative height of the suspension.

It also indicates if the suspension is in AUTO mode of operation.



1. *iS position indicator*
2. *iS AUTO mode indicator*

When the suspension system is operating in AUTO mode, the AUTO indicator and all bar segments of the position indicator will be on.

When the suspension height is adjusted using the iS button, the system switches to MANUAL mode of operation. The AUTO indication disappears and only one segment of the bar gauge is turned on to indicate the position of the suspension.

Refer to *SUSPENSION (iS)* subsection for details.

8) Numerical Display

The numerical display is used to provide a variety of indications as selected by the operator using the DISPLAY function in the multifunction display.

AVAILABLE INDICATIONS IN NUMERICAL DISPLAY	GTX LTD iS	GTX iS, RXT iS	RXT-X aS, RXT-X	WAKE PRO	GTX 215	RXT
1) Watercraft speed	Indication by default					
2) Engine RPM	X	X	X	X	X	X
3) Engine temperature	Opt	Opt	X	Opt	Opt	Opt
4) Lake water temperature	X	X	X	X	X	X
5) Clock	X	X	X	X	X	X
6) Learning and rental key settings	X	X	X	X	X	X
7) CRUISE button (on handlebar)	X	X	Opt	X	X	X
8) CRUISE SPEED setting	X	X	Opt	X	X	X
9) SLOW SPEED MODE setting	X	X	Opt	X	X	X
10) Full VTS (with LH VTS switch)	X	X	X	X	Opt	X
11) VTS preset	X	X	X	X	Opt	X
12) VTS settings (through gauge)	N.A.	N.A.	N.A.	N.A.	X	N.A.
13) SKI MODE settings	Opt	Opt	Opt	X	Opt	Opt
14) Fuel consumption (instant and average)	X	X	X	X	X	X
15) Fuel autonomy (distance and time to empty)	X	Opt	X	Opt	Opt	Opt
16) Lap timer	Opt	Opt	X	Opt	Opt	Opt
17) Top speed/RPM, average speed/RPM	Opt	Opt	X	Opt	Opt	Opt
18) Altitude	X	N.A.	N.A.	N.A.	N.A.	N.A.
X = An X indicates a standard feature Opt = Feature available as an option N.A. - Not Available						

When the information center is first powered up, the numerical display defaults to the last selected indication.

9) Multifunction Display

The multifunction display is used to:

- Display the WELCOME message on power up.
- Display the KEY recognition message.
- Provide various indications as selected by the operator.
- Activating and setting various functions and modes of operation.
- Display scrolling messages of function activation or system faults.
- Display fault codes.

NOTE: The default indication in the multifunction display is the compass direction.

10) Water Depth Display

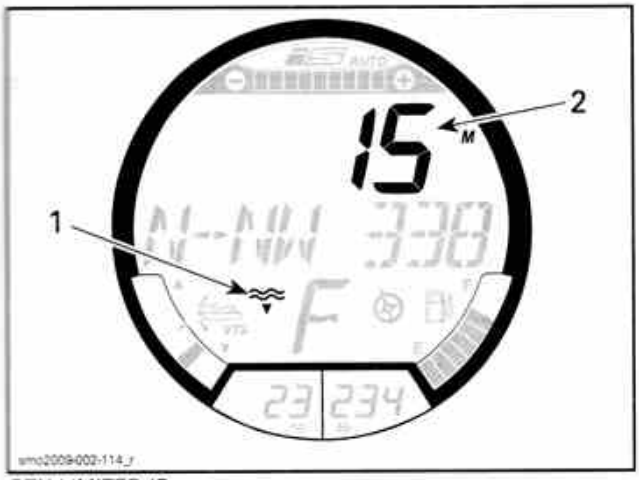
GTX Limited iS Model

The *NUMERICAL DISPLAY* can be selected to provide an indication of the lake water depth.

The system is capable of indicating water depth under the hull in single increments up to 50 m (164 ft).

NOTE: Under certain conditions, the digital screen may stop displaying. The digital screen's ability to display the depth depends on the conditions of use.

To activate the water depth indication, refer to *CHANGING NUMERICAL DISPLAY INDICATION* in this subsection.



GTX LIMITED iS
1. *Depth sounder indicator*
2. *Water depth indication*

NOTE: The water depth indication is only available when a depth sounder is installed and detected.

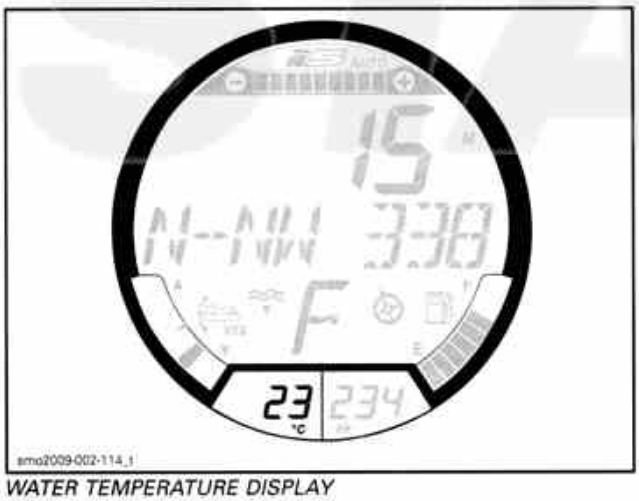
⚠ WARNING

Never use the depth gauge as a warning device to ride in shallow water.

11) Water Temperature Display

All Models Except GTX 155

Continuously displays surface water temperature in degrees Celsius (°C) or Fahrenheit (°F).



WATER TEMPERATURE DISPLAY

The signal used to display water temperature comes from the iBR module.

The numerical display may also be selected to display water temp. See *CHANGING NUMERICAL DISPLAY INDICATION* in this subsection.

To change the unit of measurement (°C or °F), refer to *MULTIFUNCTION GAUGE SETUP* in this subsection.

12) Hour Meter Display (HR)

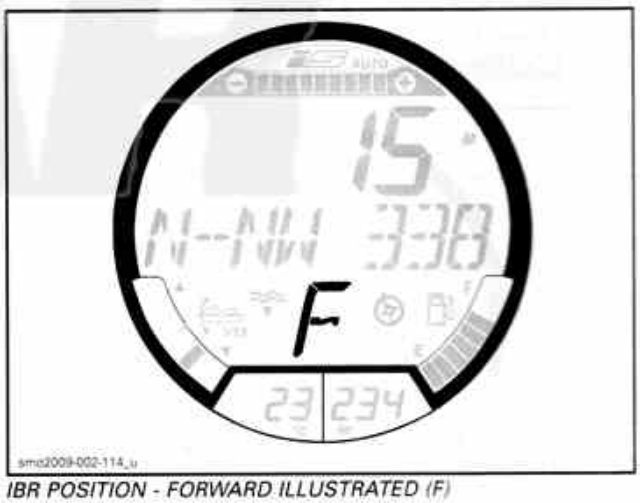
Continuously displays the accumulated engine hours as transmitted by the ECM.

HOUR METER DISPLAY

The engine hours are calculated and stored in the ECM.

13) iBR Position

Provides an indication of the iBR gate position.
- N (neutral)
- F (forward)
- R (reverse).



IBR POSITION - FORWARD ILLUSTRATED (F)

14) Compass

A GPS incorporated in the information center provides the indication in the multifunction display.

The cardinal points, intermediate cardinal points, as well as the azimuth the watercraft is travelling are displayed in the multifunction display by default when the watercraft is moving.

For a compass indication to be displayed, the GPS must first have a good uplink with at least three navigation satellites.

NOTE: The compass indication is only available above 5 km/h (3 MPH).

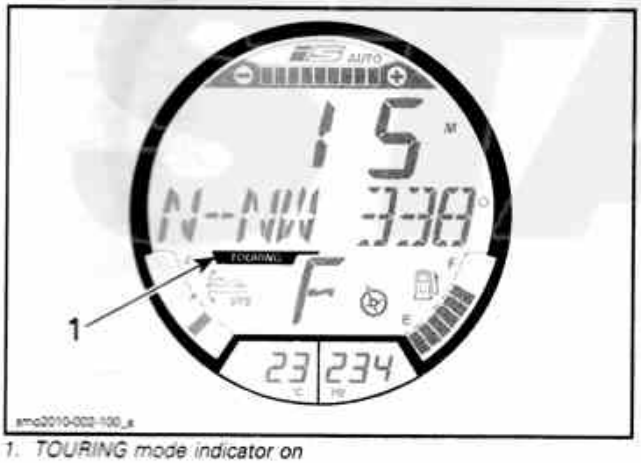
⚠ WARNING

Use the compass as a guide only. Not to be used for precision navigation purposes.

TYPICAL
1. *Compass indication*
2. *Compass active indicator*

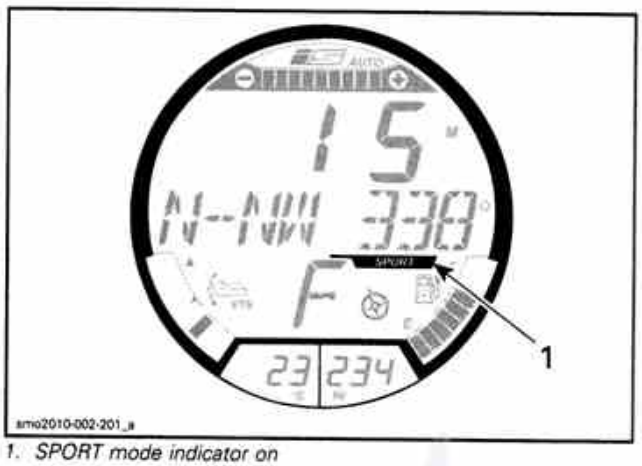
15) Touring Mode Indicator

When the TOURING mode indicator is on, the default TOURING mode is active.



1. *TOURING mode indicator on*

16) Sport Mode Indicator



1. *SPORT mode indicator on*

When the SPORT mode indicator is ON, sport mode has been selected and is active.

NOTE: Sport mode is not the default riding mode. To be active, it must be selected ON after each engine start.

Navigating the Multifunction Display

⚠ WARNING

Do not adjust display while riding, you could lose control.

Selecting Functions

When operating at speed, the multifunction display normally provides an indication of the compass direction and azimuth the watercraft is traveling.

1. To select the various functions available through the multifunction display, press the MODE button repeatedly until the desired function is visible:
2. Press the SET button to enter that function.

NOTE: The available functions and the order in which they appear depends on the watercraft model. The fault code function is only available when there is an active fault. The settings function is only available when the engine is shut off.

FUNCTIONS AVAILABLE THROUGH MULTIFUNCTION DISPLAY	
COMPASS (default function)	DRIVING
LAP TIMER	DISPLAY
SKI MODE	FAULT CODES

FUNCTIONS AVAILABLE THROUGH MULTIFUNCTION DISPLAY	
FUEL ECONOMY MODE	KEY MODE
FUEL CONSUMPTION	SETTINGS
VTS MODE	-

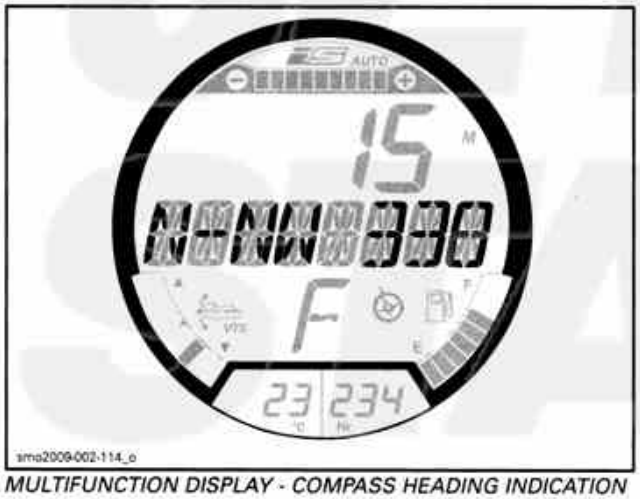
Description of Functions Available Through Multifunction Display

Compass

A GPS incorporated in the information center provides the indication in the multifunction display.

The cardinal points, intermediate cardinal points, as well as the azimuth the watercraft is travelling are displayed in the multifunction display by default when the watercraft is moving.

For a compass indication to be displayed, the GPS must have a good uplink with at least three navigation satellites.



MULTIFUNCTION DISPLAY - COMPASS HEADING INDICATION

NOTE: The compass indication is only available above 5 km/h (3 MPH).

⚠ WARNING

Use the compass as a guide only. Not to be used for precision navigation purposes.

Lap Timer

The lap timer can be used to record up to 50 individual lap times and total lap times.

SKI Mode

SKI mode is used for repeated controlled launches and accurately maintained maximum speed when towing a skier or wakeboarder.

VTS Mode

The VTS mode function is used to change VTS PRESET settings.

DRIVING Mode

The DRIVING mode function is used for activating or deactivating SPORT mode of throttle control.

Display

The DISPLAY function is used to change the indication in the numerical display of the information center.

Fault Codes

The FAULT CODES function can only be used to display **active** fault codes.

KEY Mode

The KEY mode function is used for changing LEARNING or RENTAL key settings.

Settings

The SETTINGS function is used for:
- Changing clock setting
- DOCK mode function setting
- Activating the iBR override function.

NOTE: The settings function is only available when the engine is shut off.

Fuel Consumption

The approximate watercraft fuel consumption may be displayed in the numerical display 4 different ways:
- Instant fuel flow per hour (gal/h or l/h)
- Average fuel flow per hour (gal/h or l/h)
- Distance to empty (Mi or Km)
- Time to empty (h or min).

Activating Functions Through the Multifunction Display

To activate the following operating modes, refer to *INTELLIGENT THROTTLE CONTROL (ITC)* subsection:
- SPORT mode
- TOURING mode
- SKI mode
- FUEL ECONOMY mode
- KEY mode.

For VTS mode, refer to *iBR AND VTS* subsection.

For DISPLAY modes, refer to *CHANGING NUMERICAL DISPLAY INDICATION* in this subsection.

For FAULT CODES display function, refer to *DIAGNOSTIC AND FAULT CODES* subsection.

For the SETTINGS function:

- To change clock setting, refer to *MULTIFUNCTION GAUGE SETUP* in this subsection.
- To access the iBR override function, refer to *iBR AND VTS* subsection.
- To access the DOCK mode function setting, refer to *SUSPENSION (iS).*

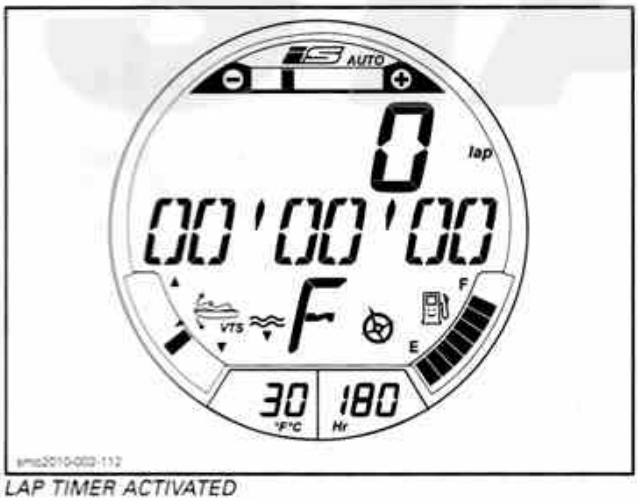
Lap Timer

To activate and use the lap timer, carry out the following:

1. Press the MODE button repeatedly until LAP TIME is visible in the multifunction display.

FUNCTION SELECTED: LAP TIME

2. Press the SET button to enter the function, the lap timer will be activated and visible in the display.



LAP TIMER ACTIVATED

3. **To start the timer**, press the SET button.

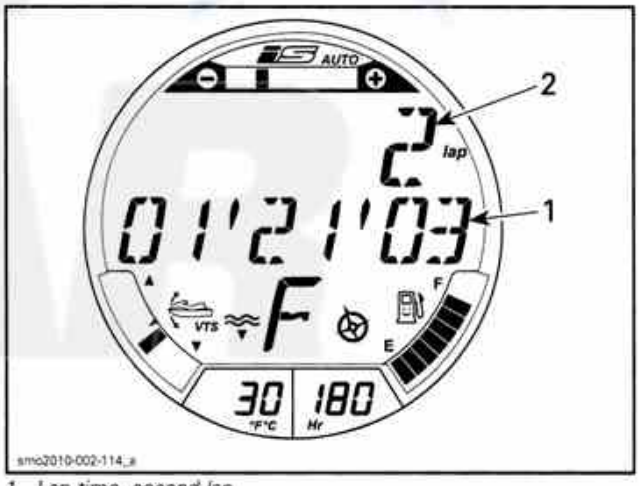
NOTE: The timer starts immediately when pressing the SET button.

4. **To record each lap time**, press the SET button at the start of each lap.

NOTE: The lap time will be recorded, the lap counter in the numerical display will count the number of laps recorded, and the timer will continue to run.

1. *Lap time, first lap*
2. *Lap count 1*

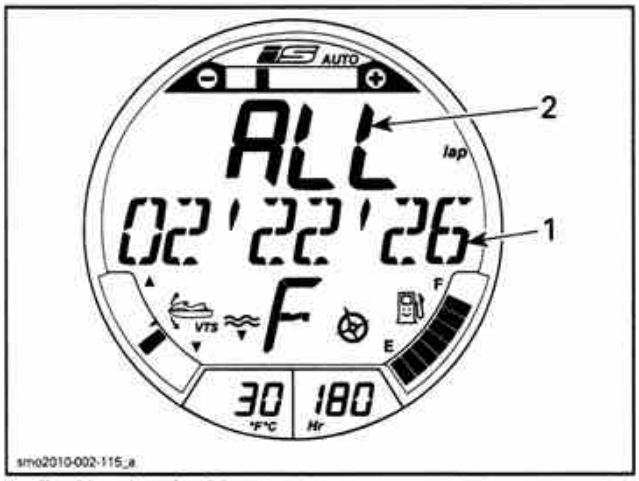
5. **To save the last lap** and stop the timer, press the MODE button.



1. *Lap time, second lap*
2. *Lap count 2*

To view each lap time, use the UP or DOWN arrow button. The lap counter will indicate which lap is indicated.

To view the cumulative lap time of all laps recorded, use the UP or DOWN arrow button until ALL is visible in the lap counter.



1. *Total lap time for 2 laps*
2. *Lap count, ALL laps*

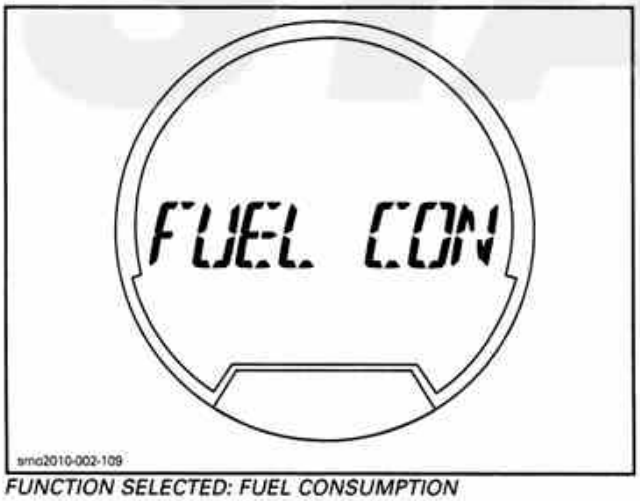
To reset the lap timer and lap counter, press and hold the SET button until the timer and counter are reset to 0 (zero).

Fuel Consumption Display

NOTE: The fuel consumption functions **are not** continuously active. They **do not** record in the background. The desired fuel consumption function becomes active **only** when selected as the indication in the numerical display.

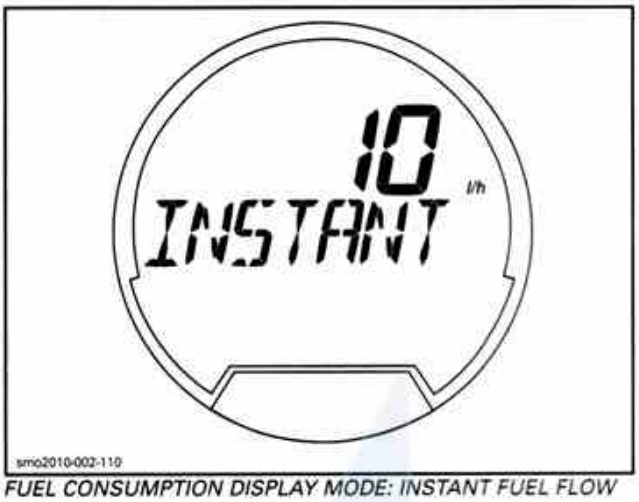
To view the watercraft fuel consumption, carry out the following:

1. Press the MODE button repeatedly until the FUEL CONSUMPTION is visible in the multifunction display.



FUNCTION SELECTED: FUEL CONSUMPTION

2. Press the UP or DOWN arrow button to select the desired fuel consumption display mode.



FUEL CONSUMPTION DISPLAY MODE: INSTANT FUEL FLOW

3. Press the SET button to save the setting and return to the main display.

NOTE: The fuel consumption value will be displayed in the numerical display. Double click the SET button to reset the average fuel consumption indication. The display will momentarily indicate zero (0).

Multifunction Display Messages

The following is a list of usual messages that may be displayed in the multifunction display. Displayed messages are subject to the functions as applicable to watercraft model.

USUAL MESSAGES	
WELCOME ABOARD SEA-DOO	Power up display
NORMAL KEY	Normal key detected
LEARNING KEY	Learning key detected
RENTAL KEY	Rental key detected
DISPLAY	Display menu for numerical display indication
DEPTH	Water depth indication selection
RPM	RPM indication selection
SPEED	Watercraft speed indication selection
ENGINE TEMP	Engine temp selection
LAKE TEMPERATURE	Lake temperature indication selection
ALTITUDE	Altitude selection (from GPS)
TOP SPEED	Top speed selection

USUAL MESSAGES	
AVG SPEED	Average speed selection
TOP RPM	Maximum RPM selection
AVG RPM	Average RPM selection
FUNCTION CANNOT BE ENGAGED	Message when system cannot enter a specific function
CLOCK	Clock function
CHANGE CLOCK OFFSET	Clock setting function
FUEL CONSUMPTION	Menu for selecting fuel consumption display
INSTANT FUEL FLOW	Used to display instantaneous fuel consumption
AVERAGE FUEL FLOW	Used to display average fuel consumption since last reset
DISTANCE TO EMPTY	Display distance available based on fuel remaining in tank and instant fuel consumption
TIME TO EMPTY	Display time to empty based on fuel remaining in tank and instant fuel consumption
VTS MODE	VTS preset menu
PRESET 1	For changing PRESET 1
PRESET 2	For changing PRESET 2
FAULT CODE	Fault code menu for viewing codes
KEY MODE	KEY mode menu
L-KEY	For changing learning key setting
R-KEY	For changing rental key setting
SETTINGS	For accessing DOCK mode, iBR-OVR, and CLOCK settings
DOCK MODE	DOCK mode function menu
DOCK MODE OFF	DOCK mode disable
DOCK MODE AUTO	DOCK mode enable
DOCK MODE ON	Suspension moving to DOCK position
iBR-OVR	iBR mode function menu

USUAL MESSAGES	
OVR OFF	iBR-OVR function disable
OVR ON	iBR-OVR function enable
SLOW SPEED MODE ACTIVE	Slow speed mode acknowledgement
AUTOMATIC SUSPENSION	Automatic suspension acknowledgement
MANUAL SUSPENSION	Manual suspension acknowledgement
DRIVING MODE	Menu for selecting between TOURING mode and SPORT mode
ENTERING SPORT MODE - INCREASED ACCELERATION - INSTRUCT PASSENGERS TO HOLD ON - PRESS SET BUTTON	Message when SPORT mode is selected
SPORT MODE ACTIVATED	Message when SPORT mode is activated
SPORT MODE - RETURN TO IDLE TO ACTIVATE	Message when SPORT mode cannot be activated, engine not at idle
SPORT MODE ACTIVE - PRESS SET TO DISENGAGE	Message when driver requests returning to TOURING mode
SPORT MODE ACTIVE - RETURN TO IDLE TO CANCEL	Message when SPORT mode is in use
SPORT MODE DEACTIVATED	Message when user first returns to TOURING mode
SKI MODE	WAKE and SKI function
PLEASE EXIT SKI MODE FIRST	Message when a rider attempts to enter CRUISE mode when already in SKI mode
PLEASE EXIT SLOW SPEED MODE FIRST	Message when a rider attempts to enter SKI mode when already in SLOW SPEED mode
RAMP	Ramp curve or level of acceleration from 1 to 5
TARGET SPEED	Speed requested for SKI mode
SKI MODE - PRESS SET TO START OR MODE TO EXIT	SKI mode is unarmed but ready, the PWC is at idle

USUAL MESSAGES	
SKI MODE ARMED - RETURN TO IDLE OR PRESS MODE TO CANCEL	SKI mode is ready but the PWC is not at idle, the system is at standby
SKI MODE ACTIVE - PRESS MODE AND RETURN TO IDLE TO CANCEL	Message scrolling when SKI mode is active
SKI MODE - SPEED ADJUSTING	Message scrolling when adjusting SKI mode speed setting
SKI MODE ACTIVE - RETURN TO IDLE TO CANCEL	Message scrolling when the user pressed MODE to disengage but didn't return to idle
LAP TIME	Lap timer function
FUEL ECONOMY MODE	Menu option for selecting FUEL ECONOMY MODE
FUEL ECONOMY MODE - HOLD SET TO ACTIVATE OR MODE TO EXIT	FUEL ECONOMY MODE is selected, scrolling instruction for activation
FUEL ECONOMY MODE - HOLD SET TO DEACTIVATE OR MODE TO EXIT	FUEL ECONOMY MODE is active, scrolling instruction for deactivation
SLOW SPEED MODE ACTIVE	Message when SLOW SPEED mode is in operation
SLOW SPEED MODE ACTIVATED	Message when SLOW SPEED mode is selected
SLOW SPEED MODE - SPEED ADJUSTING	Message scrolling when adjusting slow speed TARGET speed setting
PLEASE EXIT SLOW SPEED MODE FIRST	Message scrolling if SLOW SPEED mode is still active when trying to engage CRUISE mode
CRUISE MODE ACTIVE	Message when CRUISE mode is in operation
CRUISE MODE ACTIVATED	Message when CRUISE mode is selected

USUAL MESSAGES	
CRUISE - SPEED ADJUSTING	Message scrolling when adjusting cruise TARGET speed setting
PLEASE EXIT CRUISE MODE FIRST	Message scrolling if CRUISE mode still active when trying to engage SLOW SPEED mode
LOW FUEL	Message when approximately 25% fuel remaining

The following is a list of messages related to a malfunction that may be displayed in the multi-function gauge. Displayed messages are subject to functions as applicable to watercraft model.

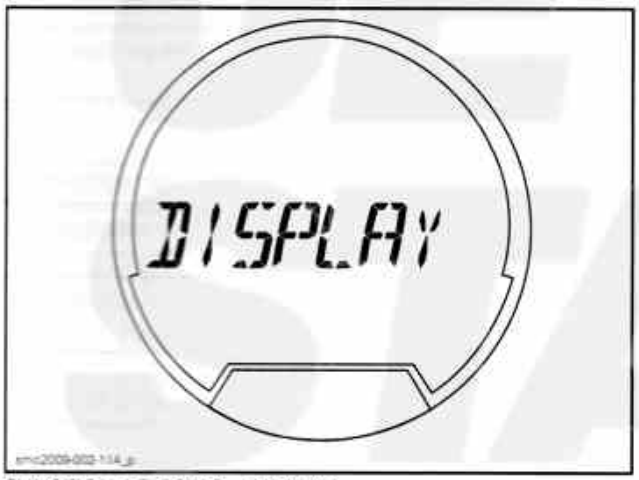
FAULT MESSAGES	
RIGHT KEYPAD ERROR	MODE/SET, UP/DOWN arrow button malfunction
LOW OIL PRESSURE	Engine low oil pressure detected
HIGH EXHAUST TEMPERATURE	High exhaust temperature detected
HIGH TEMPERATURE	High engine temperature detected
CHECK ENGINE	Engine system malfunction or maintenance required
HIGH BATTERY VOLTAGE	High battery voltage detected
LOW BATTERY VOLTAGE	Low battery voltage detected
LIMP HOME MODE	Major fault detected, engine power limited
FUEL SENSOR DEFECTIVE	Fuel level sensor fault
WATER TEMP SENSOR DEFECTIVE	Problem in iBR, not sending water temperature info.
CALIBRATION CHECKSUM ERROR	Cluster programming corrupted, need to be re-flashed using B.U.D.S.
MAINTENANCE REQUIRED	Watercraft maintenance required
SUPERCHARGER MAINTENANCE REQUIRED	Maintenance on supercharger required

FAULT MESSAGES	
DEPTH SOUNDER MODULE COMMUNICATION PROBLEM	Error message if depth sounder is disconnected while riding
iS MODULE COMMUNICATION PROBLEM	Error message if communication with the suspension module is lost while riding
iBR MODULE ERROR	Error message if communication with the iBR module is lost while riding
FUNCTION CANNOT BE ACTIVATED	Message when a function is not or cannot be properly activated

Changing Numerical Display Indication

To change the indication in the numerical display, carry out the following:

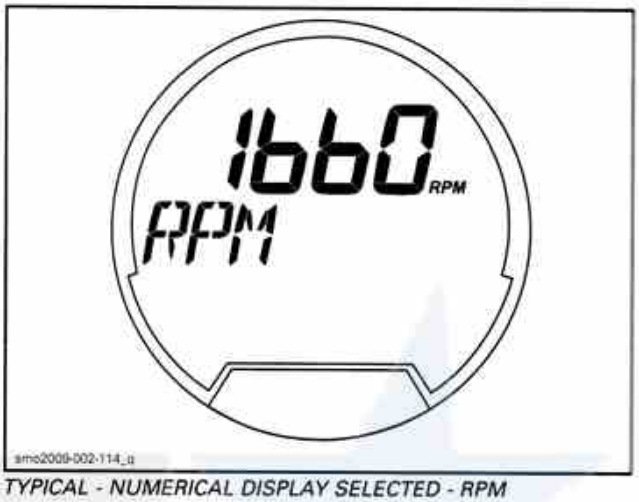
1. Press the MODE button on the RH handlebar repeatedly until DISPLAY is visible in the multi-function display.



FUNCTION SELECTED - DISPLAY

2. Press the SET button to enter the DISPLAY function.
3. Press the UP or DOWN arrow button until the preferred indication appears.
   - RPM
   - SPEED
   - LAKE TEMPERATURE
   - DEPTH
   - ENGINE TEMP (RXT-X)
   - ALTITUDE (GTX LTD iS)
   - TOP SPEED (RXT-X)
   - AVG SPEED (RXT-X)
   - TOP RPM (RXT-X)
   - AVG RPM (RXT-X)
   - CLOCK.

NOTE: The DEPTH selection is only available if a depth sounder is installed.



TYPICAL - NUMERICAL DISPLAY SELECTED - RPM

4. Press the SET button to select and save the preferred indication, or wait for the display function to time out. The last indication visible will be automatically saved.

The following abbreviations are used in the numerical display:

- FT or M
- RPM
- MPH or Km/h
- °F or °C
- AM or PM
- Gal/h or l/h.

Resetting Numerical Display Indication

The following numerical display indications can be reset:

- Average fuel consumption
- Top speed
- Average speed
- Top RPM
- Average RPM.

To reset indications, double click the SET button. The numerical display will momentarily indicate zero (0).

NOTE: Each of these functions become active **ONLY** when selected as the numerical display indication. They **do not** record in the background.

TROUBLESHOOTING

DIAGNOSTIC TIPS

NOTE: It is a good practice to check for fault codes using B.U.D.S. software as a first troubleshooting step. Refer to *COMMUNICATION TOOLS AND B.U.D.S.* subsection.

IMPORTANT: When troubleshooting an electrical system fault, check battery condition, cables and connections first.

Electrical System Activation

1. Press the START/STOP button.

NOTE: Pressing the START/STOP button without the tether cord (D.E.S.S. key) installed on the engine cut-off switch will turn on electrical power without starting the engine; the information center will cycle through a self-test function and shut off its display after a few seconds. However, the electrical system will stay powered up for approximately three minutes after the START button was pressed.

2. Install the tether cord on the engine cut-off switch to activate ECM and Information Center when testing procedures require a component or system to be supplied with electrical power.

IMPORTANT: When B.U.D.S. is being used, the ECM will stop communicating with B.U.D.S. approximately 3 minutes after the START button is pressed. Therefore, operations with B.U.D.S. will be interrupted. To reestablish communication, briefly press the START button. **Do not hold** the START button to avoid engine starting.

Circuit Testing

Check the related-circuit fuse condition with a fuse tester or ohmmeter (a visual inspection could lead to a wrong conclusion).

Electrical Connection Inspection

When replacing an electric or electronic component, always check electrical connections. Make sure they are tight, make good contact, and are corrosion-free. Dirty, loose or corroded contacts are poor conductors and are often the source of a system or component malfunction.

Pay particular attention to ensure that pins are not bent or pushed out of their connectors.

Ensure all wire terminals are properly crimped on wires, and connector housings are properly fastened.

Check for signs of moisture, corrosion or dullness. Clean pins properly and coat them with DIELECTRIC GREASE (P/N 293 550 004) or other appropriate lubricant when reassembling them, except if otherwise specified such as for the ECM connectors.

Pay attention to ground wires.

TROUBLESHOOTING GUIDELINES

Press the START/STOP button and install the tether cord on the engine cut-off switch.

NOTE: Information center should come on, cycle through its self test function, and stay on for approximately 3 minutes after which all electrical power will turn off.

Briefly press the START/STOP button every 3 minutes to reenergize the electrical system. Do not hold the START/STOP button to avoid engine starting.

NOTE: When troubleshooting using the following guidelines, it is important to remember that some indications, functions and features described may not apply to every PWC model, or may be available as an option.

Information Center "Does Not Turn ON"

If the information center does not turn ON when the START/STOP button is pressed, the power circuit or ground circuit to the information center is probably open.

iS Models

Double click the iS button to move the suspension to the up position. If the suspension does not move to the up position, the problem is related to the electrical power system. Refer to *POWER DISTRIBUTION AND GROUNDS* subsection.

If the suspension moves to the up position, the electrical power system is functioning normally.

All Models

Test the 3 A GAUGE/OTAS/CAPS fuse (fuse 12) in fuse box 1 (FB1).

If the fuse tests good, carry out an *INFORMATION CENTER INPUT VOLTAGE TEST.*

If the information center input voltage test is good, test for continuity of the gauge ground circuit (gauge connector pin 11 (BLACK wire) to the ground bus-bar (pin H7) in FB1.

Refer to *WIRING DIAGRAM* for circuit details.

Information Center Turns ON with Some Indications Missing

1. Connect to the latest applicable B.U.D.S. version, refer to *COMMUNICATION TOOLS AND B.U.D.S.* subsection.
2. Read the fault codes, refer to *DIAGNOSTIC AND FAULT CODES* subsection.

If a fault code is related to a communication problem, carry out a continuity test of the CAN bus wires between the applicable module and the CAN bus-bars in FB1. Refer to *WIRING DIAGRAM* and *CONTROLLER AREA NETWORK (CAN)* subsections.

NOTE: The information center, ECM, iS module, iBR module, and the diagnostic connector are linked together through CAN bus-bars in fuse box 1. If one wire of the two wire CAN bus system is open, communication will be slower than normal. Multiple fault codes may be generated and the ECM will put the watercraft in LIMP HOME mode.

If one module cannot be seen in B.U.D.S., the fault may be the wires that link the module to the CAN bus bars, or a problem internal to that module. Test the CAN bus wires from the faulty module to the CAN bus-bars in FB1 for continuity before assuming the problem is the module.

Information Center Goes Blank except for:

- GPS indicator ON
- Compass ON (if watercraft moving)
- Fuel level ON
- iBR fault indicator light ON
- Indicated speed
- No other indications visible.

NOTE: GPS, compass and iBR indications are not applicable to GTS models.

There is no communication between the information center and all other modules (ECM, iS, iBR).

Carry out a continuity check of the CAN bus wires from the CAN bus-bars in FB1 to the information center (pins 2 and 3). Refer to the *WIRING DIAGRAM* and *CONTROLLER AREA NETWORK (CAN)* subsections for details.

If an open circuit is detected, carry out same test from the pin steering connector (pins 8 and 20).

All Indications ON Except for:

All Models Except GTS

- LAKE WATER TEMP indication
- VTS indication
- iBR position indication
- CHECK ENGINE light is on.

NOTE: The lake water temperature indication is not available for the GTI Series and WAKE models.

The iBR CAN bus circuit is open or the iBR module is at fault.

NOTE: The ECM will generate several fault codes and engage LIMP HOME mode.

Carry out a continuity check of the CAN bus wires from the CAN bus-bars in FB1 to the iBR module (pins 2 and 3). Refer to the *WIRING DIAGRAM* and *CONTROLLER AREA NETWORK (CAN)* subsections for details.

NO RPM Indication and NO Engine Hour Display

If there is NO RPM indication and NO engine hour display, and the watercraft is in LIMP HOME mode, the CAN bus to the ECM is open.

Carry out a continuity check of the CAN bus wires from the CAN bus-bars in FB1 to the ECM module, connector "B" pins C1 and C2 (B-C1 and B-C2). Refer to the *WIRING DIAGRAM* and *CONTROLLER AREA NETWORK (CAN)* subsections for details.

NO iS Position Display

If there is no iS position display (suspension position), the iS module is at fault, or its CAN bus circuit is open.

Carry out a continuity check of the CAN bus wires from the CAN bus-bars in FB1 to the iS module (pins 2 and 3). Refer to the *WIRING DIAGRAM* for details.

NOTE: If communication with the iS module cannot be established when electrical power is first applied, the monitoring system assumes this is a normal situation (PWC not equipped with iS) and will not display an error message.

NO Fuel Level Indication

If there is no fuel level indication, test the fuel level sensor and its wiring circuit to the information center. Refer to *FUEL TANK AND FUEL PUMP* subsection.

NO Depth Gauge Indication

If there is no depth gauge indication available and the depth sounder active indicator is not on, refer to *DEPTH GAUGE* in this subsection.

NOTE: If communication with the depth sounder cannot be established when electrical power is first applied, the monitoring system assumes this is a normal situation (PWC not equipped with depth finder) and will not display an error message.

NO Speed or Compass Indication

All Models Except GTS

To obtain a speed or compass reading and to turn on the GPS indicator, the GPS requires a good uplink to at least three navigation satellites.

If there is no speed or compass indication, look for the GPS indicator icon. If the GPS indicator is off, either the GPS cannot uplink with the satellites, or the GPS system in the information center is at fault.

If another watercraft nearby displays a good GPS uplink (GPS indicator light on in cluster), the information center may need to be replaced.

NOTE: If the GPS uplink is lost while navigating at speed, the speedometer will provide an estimated speed indication based on other parameters. The compass indication will not be available until a good satellite uplink is reestablished.

Speed and Compass Indication Slow to Come ON

All Models Except GTS

When initially powering up the watercraft and driving away, the speed and compass indications may be slow to come on. This is normal as the GPS requires time to establish an uplink with the navigation satellites (cold start).

If the watercraft was run long enough to display the compass and speed indications, shut down for a short period of time and then restarted (hot start), the speed and compass indications should not take more than 30 seconds to come on.

If the speed and compass indications take more than 30 seconds to come on, test for the following:

- GPS fuse 4 in FB1
- Battery voltage at pin 1 of the information center
- Continuity of wire between information center (pin 1) and contact A5 of FB1.

NOTE: This circuit provides 12 Vdc to the GPS in the information center so that it memorizes the satellites it was linked to for a period of two hours. This allows the indications to be available within a few seconds of restarting the watercraft (hot start). After a two hour period, the GPS will have to reestablish new satellite links.

Beeper Does Not Function

The beeper is incorporated within the information center.

If no beep code is heard when installing the tether cord, first ensure ECM is powered. Refer to *ELECTRONIC FUEL INJECTION (EFI)* subsection.

In B.U.D.S., carry out the following:

- **Cluster Buzzer Test** on the cluster activation page
- Check for fault codes. Carry out service actions as applicable.

If the **Cluster Buzzer Test** failed, the ECM is powered, and the ECM and information center are communicating properly through the CAN bus, replace the information center.

PROCEDURES

INFORMATION CENTER

Information Center Self Test Function

When the START/STOP button is pressed momentarily and the vehicle powers up, all LCD segments and indicator lights in the information center will turn **ON for 3 seconds** (self test function). This self test function allows the driver time to ensure that all indications are functioning properly.

It also validates the information centers internal circuits, however, this does not validate proper operation of the individual external circuits and sensors that provide inputs to the information center.

If a system fault is detected by the ECM, the applicable message and/or indicator light will be displayed, and a beep code may be heard.

If the tether cord is not installed, the indications in the information center will shut off a few seconds after the self test function, but the electrical system power stays on for approximately 3 minutes. Installing the tether cord on the engine cut-off switch will turn the indications back on.

NOTE: If the START/STOP button is pressed and held without the tether cord installed, the information center will stay on as long as the START button is held.

Multifunction Gauge Setup

Clock Setting

All Models Except GTS

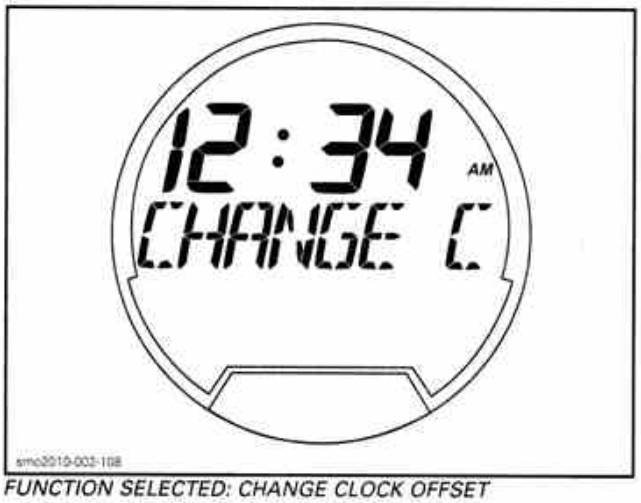
1. Press the MODE button repeatedly until SETTINGS is visible in the multifunction display.

FUNCTION SELECTED: SETTINGS

2. Press the UP or DOWN arrow button repeatedly until CLOCK is visible.

FUNCTION SELECTED: CLOCK

3. Press the SET button to enter the function. CHANGE CLOCK OFFSET message will be displayed.



FUNCTION SELECTED: CHANGE CLOCK OFFSET

4. Press the UP or DOWN arrow button to adjust the clock to the correct local time.
5. Press the SET button to save the setting and return to the main display.

NOTE: The clock uses the GPS signal to maintain the appropriate time referenced to Greenwich Mean Time (GMT). When setting the clock, only the hour digits may be changed. For the clock to function, the GPS requires a good satellite uplink.

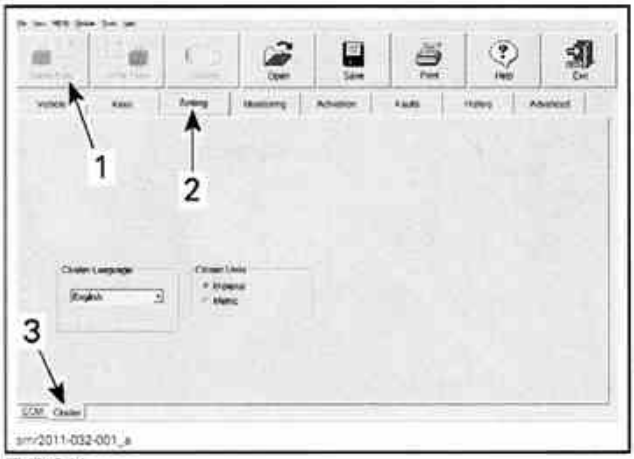
Units of Measurement and Language Setting

1. Connect vehicle to the latest applicable B.U.D.S. version, refer to the *COMMUNICATION TOOLS AND B.U.D.S.* subsection.
2. Press the START/STOP button to energize the electrical system.

NOTE: You will need to press the START button every three minutes or the electrical system will shut off.

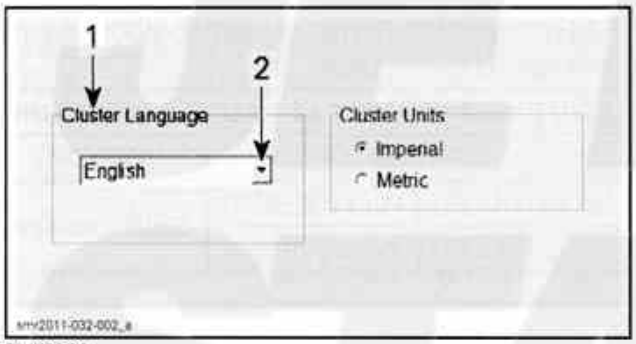
3. Select the **Read Data** button.
4. Choose the **Setting** tab at the top of the page.

At the bottom LH side of the setting page, select the **Cluster** tab.



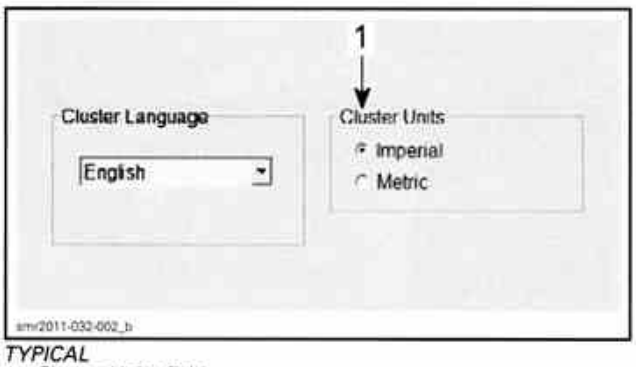
TYPICAL
1. *Read Data*
2. *Setting tab*
3. *Cluster tab*

In the **Cluster Language** field, choose the desired unit of language.



TYPICAL
1. *Cluster Language field*
2. *Click on this arrow to expand list of available languages*

In the **Cluster Units** field, choose the desired unit of measurement, **Imperial** or **Metric**.



TYPICAL
1. *Cluster Units field*

Clearing the Maintenance Reminder Indicators

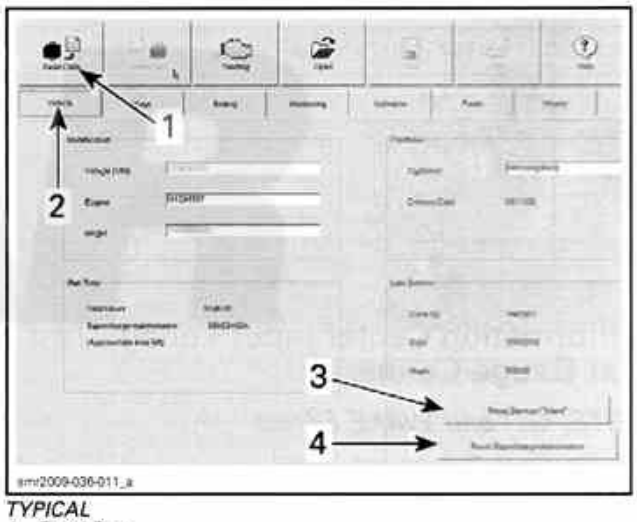
When the watercraft, engine or supercharger are due for maintenance, the maintenance reminder indicator will come on, and a scrolling **MAINTENANCE REQUIRED** or **SUPERCHARGER MAINTENANCE REQUIRED** message will scroll in the digital screen. These maintenance reminders must be cleared using B.U.D.S.

1. Connect vehicle to the latest applicable B.U.D.S. version, refer to the *COMMUNICATION TOOLS AND B.U.D.S.* subsection.
2. Press the START/STOP button to energize the electrical system.

NOTE: You will need to press the START button every three minutes or the electrical system will shut off.

3. Select the **Read Data** button.
4. Choose the **Vehicle** tab at the top of the page.
5. At the bottom RH side of the vehicle page in the **Last Service** field, choose **Reset Service/"Maint"** or **Reset Supercharger Maintenance** button as applicable.

NOTE: If the supercharger maintenance was carried out before the reminder appeared in the information center, the supercharger maintenance reminder must be reset in order to reset the supercharger maintenance hour counter and prevent the reminder from appearing prematurely.



TYPICAL
1. *Read Data*
2. *Vehicle tab*
3. *Reset Service/"Maint" button*
4. *Reset Supercharger Maintenance button*

Information Center Pin-Out

NOTE: Depending on watercraft model and installed accessories, some multifunction gauge connector pins may not be used.

INFORMATION CENTER PIN-OUT	
PIN NO.	FUNCTION
1	GPS back-up power
2	CAN HI
3	CAN LOW
4	Spare (buzzer external GND)
5	Spare (buzzer external GND)
6	Not used
7	Cruise switch signal Vdc (SET switch for GTS models)
8	Spare (digital input)
9	Not used
10	Cruise switch ground (SET switch for GTS models)
11	Gauge GND
12	Gauge input Vdc power
13	VTS switch signal (UP or DOWN)
14	iS switch signal (UP or DOWN)
15	VTS and iS switch common
16	UP or DOWN arrow switch signal
17	MODE and SET switch signal
18	MODE/SET, UP/DOWN arrow switch common
19	Fuel level sensor VDC signal
20	Fuel level sensor GND

Information Center Input Voltage Test (at Gauge Connector)

GTS, GTI and WAKE Series

1. Remove the gauge bezel, refer to *BODY* subsection.

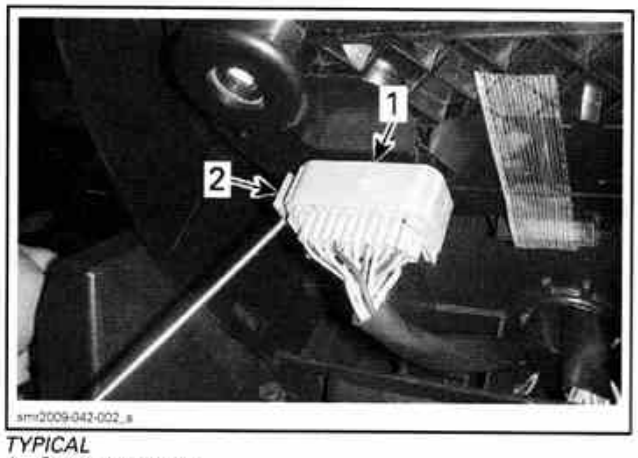
RXT, GTX and WAKE Pro Series

2. Remove the gauge support cover, refer to *INFORMATION CENTER REMOVAL* in this subsection.

All Models

3. Disconnect the gauge connector.

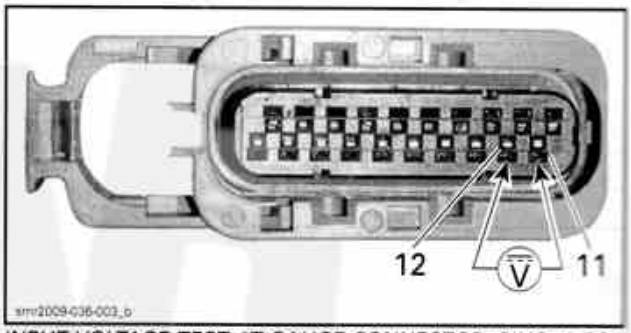
NOTICE Pull on connector with your hand as you pull the connector lock out with the screwdriver. Do not twist the screwdriver.



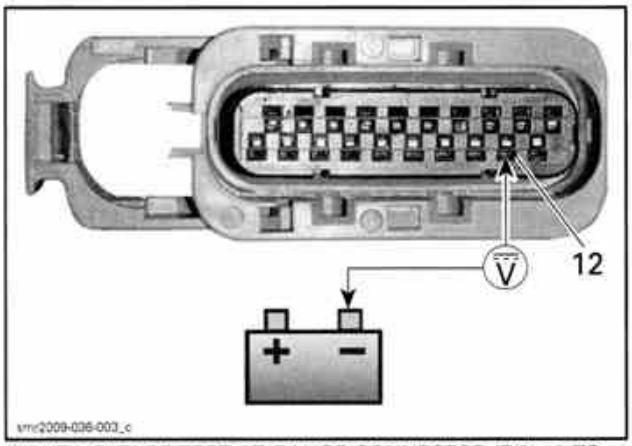
TYPICAL
1. *Gauge connector*
2. *Pull out to unlock connector*

4. Set the FLUKE 115 MULTIMETER (P/N 529 035 868) to Vdc.
5. Press the START button and install the tether cord on the engine cut-off switch.
6. Measure the information center input voltage as per following table.

INPUT VOLTAGE TEST AT GAUGE CONNECTOR		
PROBE		VOLTAGE
Pin 12 (VIOLET)	Pin 11 (BLACK)	Battery voltage
Pin 12 (VIOLET)	Battery ground	



INPUT VOLTAGE TEST AT GAUGE CONNECTOR (PINS 12 TO 11)



INPUT VOLTAGE TEST AT GAUGE CONNECTOR (PIN 12 TO BATTERY GROUND)

If battery voltage is measured as specified, replace the information center.

If battery voltage is measured to battery ground but not to pin 11, carry out a *CONTINUITY TEST OF GAUGE GROUND WIRE* circuit from the gauge connector to the ground bus-bar contact in FB1 as described further in this subsection.

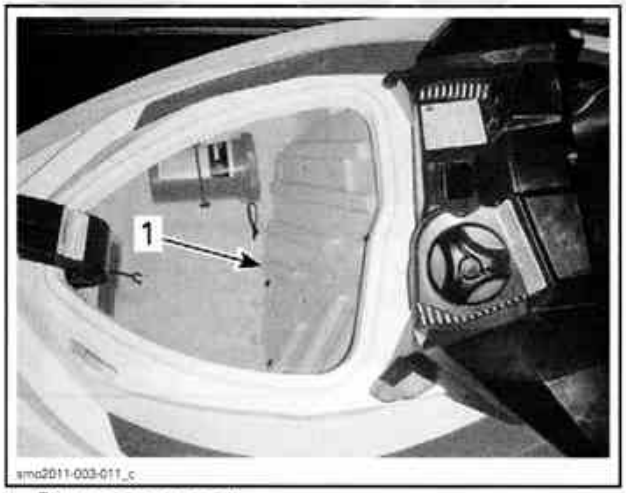
7. If battery voltage is not measured at the gauge connector, carry out a *INFORMATION CENTER INPUT VOLTAGE TEST (AT STEERING CONNECTOR).*

Information Center Input Voltage Test (at Steering Connector)

1. Open front storage compartment cover.

GTS, GTI Series and Wake

2. Remove battery access panels.



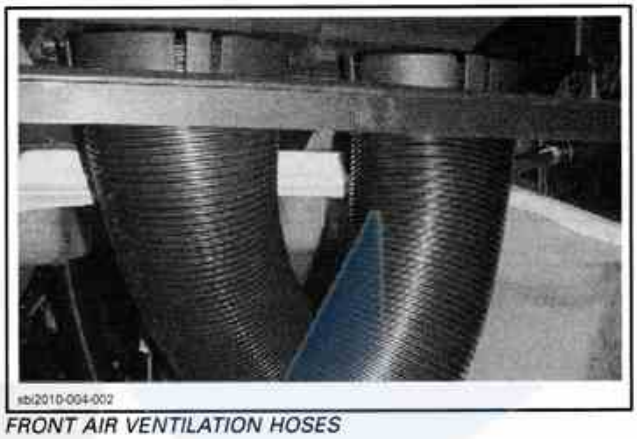
1. Battery access panels

RXT, GTX and WAKE Pro Series

3. Remove front storage bin.

RXT and GTX Models Without iS or aS

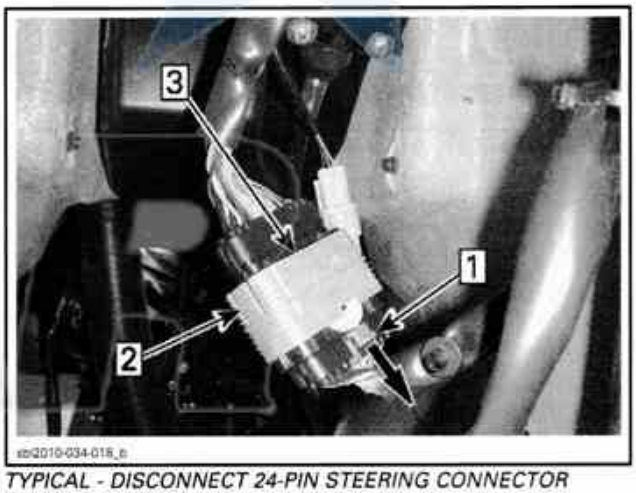
4. Reach into the front storage compartment and remove the front air ventilation hoses.



FRONT AIR VENTILATION HOSES

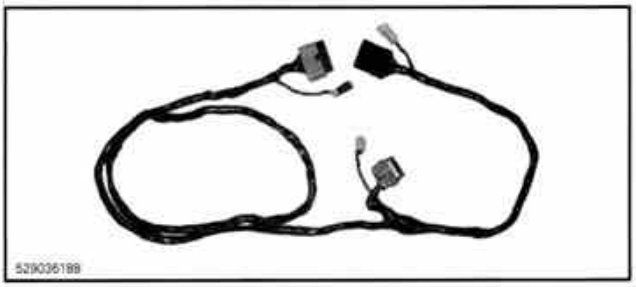
All Models

5. From under the steering support area, disconnect the 24-pin steering connector.



TYPICAL - DISCONNECT 24-PIN STEERING CONNECTOR
Step 1: Pull out safety lock
Step 2: Press in on release tab
Step 3: Pull locking collar down

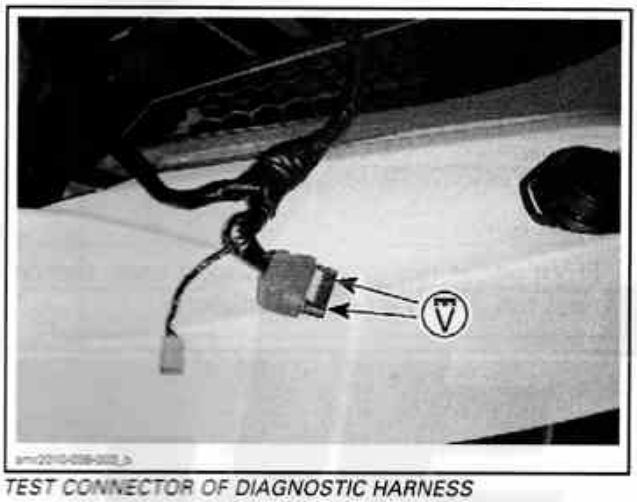
6. Connect the DIAGNOSTIC HARNESS (P/N 529 036 188) to make an in-line connection between the disconnected connectors.



7. Press the START/STOP switch and install the tether cord on the engine cut-off switch.

8. Carry out an input voltage test at the steering connector (vehicle harness side) as per following table.

INFORMATION CENTER INPUT VOLTAGE TEST (STEERING CONNECTOR)		
TEST CONNECTOR ON DIAGNOSTIC HARNESS		VOLTAGE
Pin 24 (VIOLET)	Pin 1 (BLACK)	Battery voltage
Pin 24 (VIOLET)	Battery ground	



TEST CONNECTOR OF DIAGNOSTIC HARNESS

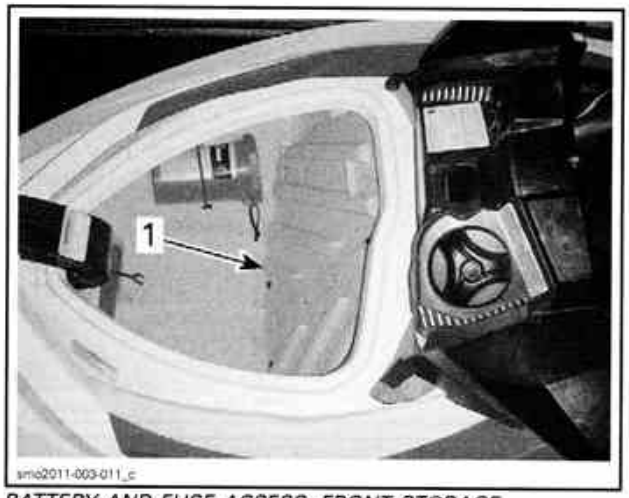
If battery voltage is read at steering connector (vehicle harness side) as specified in previous table, but was not measured to pin 11 at the gauge connector (gauge ground wire), repair or replace the BLACK ground wire between the gauge connector and the steering connector.

If battery voltage is measured to battery ground but not to pin 1, carry out a *CONTINUITY TEST OF GAUGE GROUND WIRE* described further in this subsection.

If no voltage is measured, carry out the following steps.

GTS, GTI and WAKE Models

9. Remove the battery access panel at the back of the storage compartment.



BATTERY AND FUSE ACCESS, FRONT STORAGE COMPARTMENT
1. Battery access panel

iS and aS Models

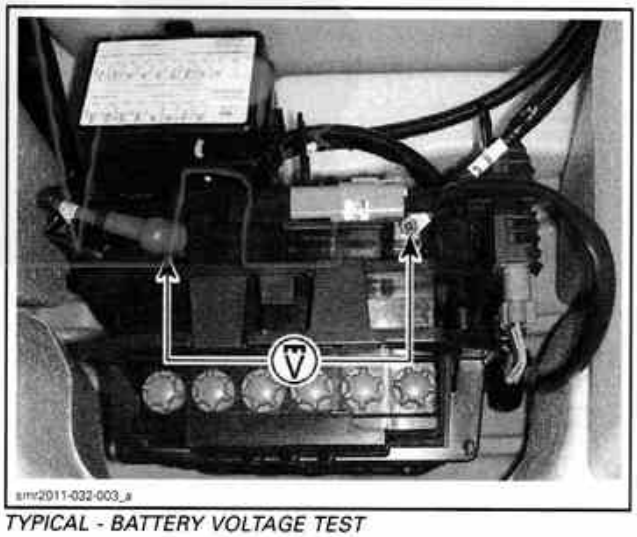
10. Open the boarding platform and remove the RH storage bin.

RXT, GTX and Wake Pro Models Without iS or aS

11. Remove the RH access panel on the boarding platform.

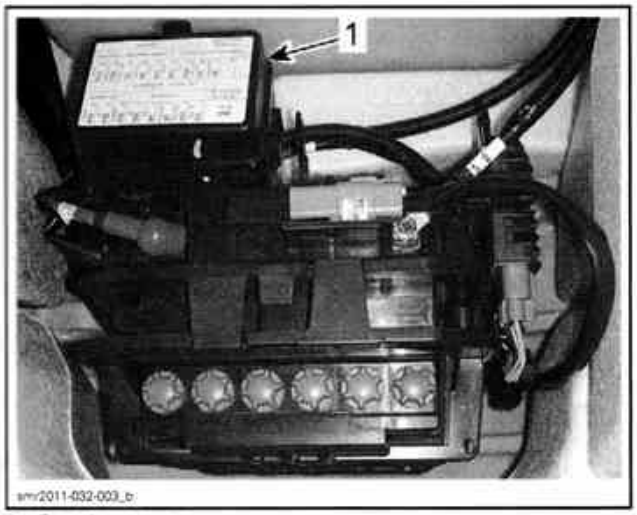
All Models

12. Using the FLUKE 115 MULTIMETER (P/N 529 035 868) set to Vdc, measure battery voltage at the battery terminals.



TYPICAL - BATTERY VOLTAGE TEST

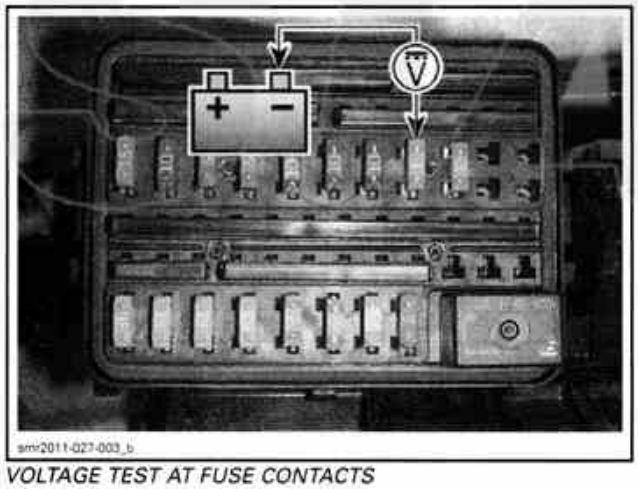
13. Remove fuse box cover.



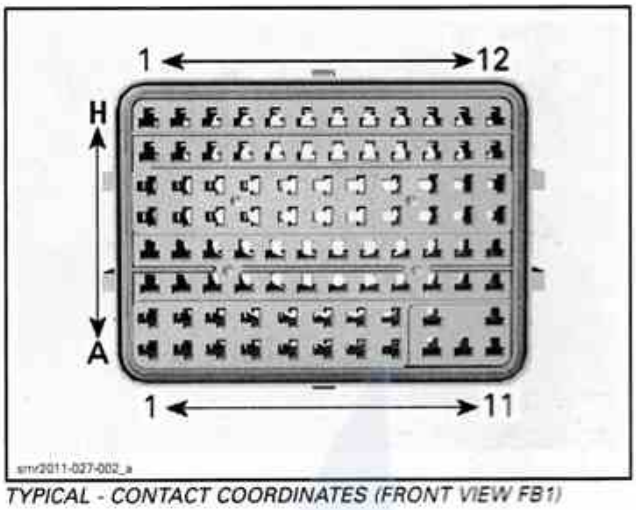
1. *Fuse box cover*

14. Press the START/STOP button to energize electrical system and install the tether cord.
15. Test for battery voltage between each of the terminals atop the GAUGE/OTAS/CAPS fuse (12) and battery ground as per following table.

VOLTAGE TEST AT FB1			
GAUGE FUSE	TEST PROBES		READING
Fuse pin numbers	E8	Battery (-) post	Battery Vdc
	F8		



VOLTAGE TEST AT FUSE CONTACTS



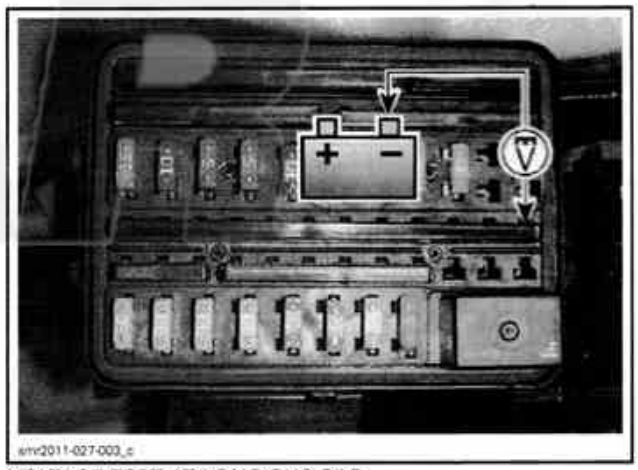
TYPICAL - CONTACT COORDINATES (FRONT VIEW FB1)

If battery voltage is measured at E8 but not at F8 (with fuse installed), replace the fuse.

If battery voltage is measured at fuse contact E8, refer to *CONTINUITY TEST OF GAUGE POWER WIRE* in this subsection.

If no voltage is measured at fuse contact E8, slightly lift one corner of the long bus-bar (12 contacts long).

16. Measure for battery Vdc between the bus-bar and battery ground.



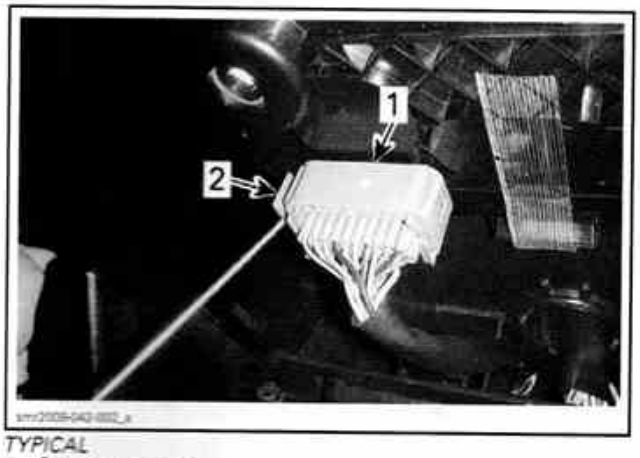
VOLTAGE TEST AT LONG BUS-BAR

If battery voltage is measured at the long bus-bar, repair or replace the wire jumper D8 to E8 (behind fuse box).

Continuity Test of Gauge Power Wire

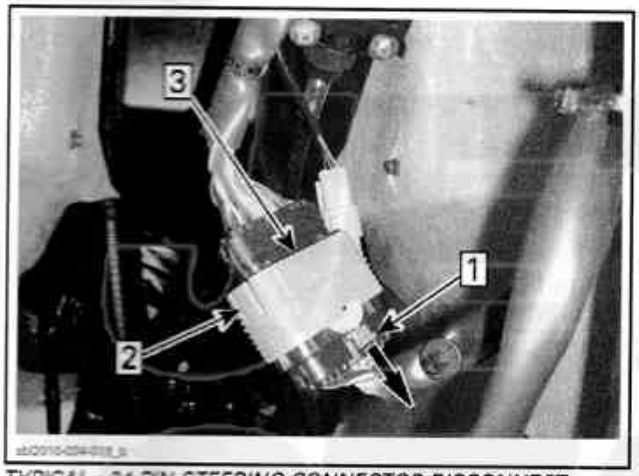
1. Remove tether cord from engine cut-off switch.
2. Disconnect gauge connector.

NOTICE Pull connector lock out sideways. Do not twist the screwdriver.



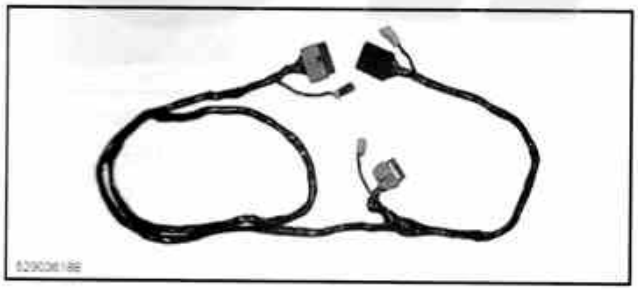
TYPICAL
1. *Gauge connector*
2. *Pull out to unlock connector*

3. Disconnect 24-pin steering connector.

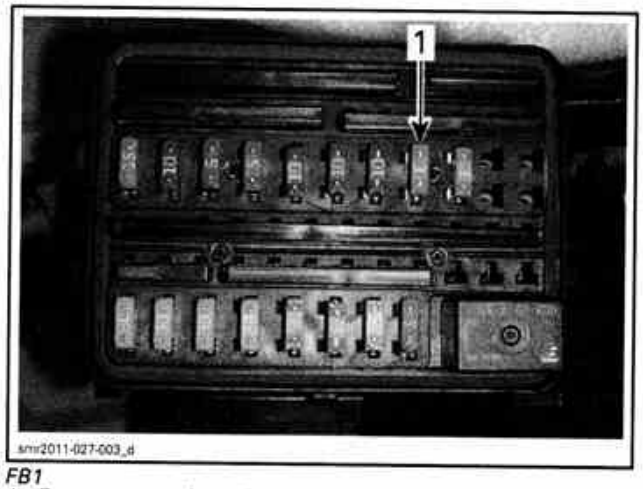


TYPICAL - 24-PIN STEERING CONNECTOR DISCONNECT
Step 1: Pull out safety lock
Step 2: Press in on release tab
Step 3: Pull locking collar down

4. Connect the DIAGNOSTIC HARNESS (P/N 529 036 188) to make an in-line connection between the disconnected connectors.



5. Remove the gauge fuse in FB1.

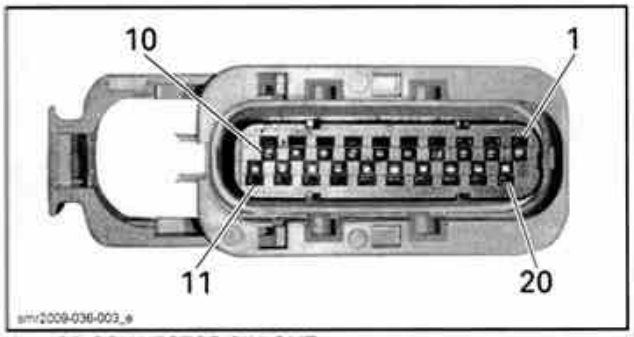


FB1
1. *Remove gauge fuse (F1)*

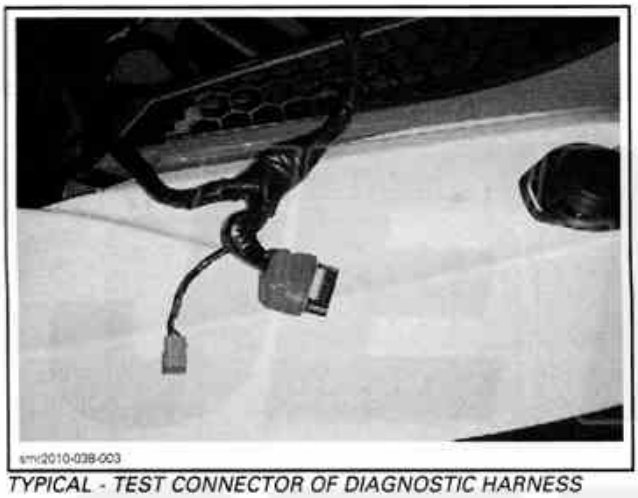
6. Set FLUKE 115 MULTIMETER (P/N 529 035 868) to Ω setting.

7. Test the information center power wire continuity as per following table.

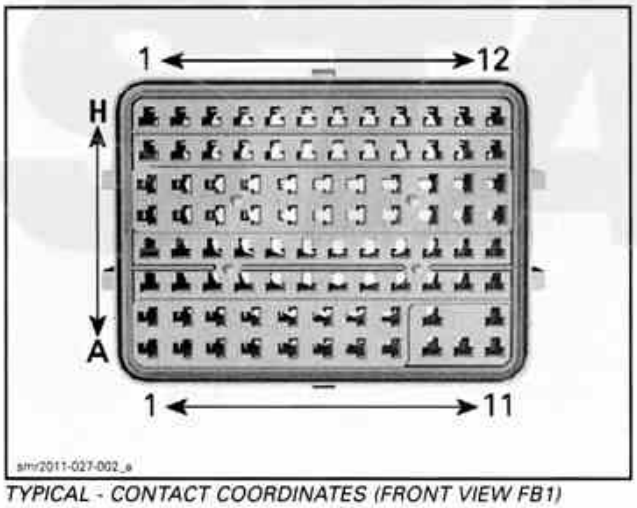
CONTINUITY TEST OF GAUGE POWER WIRE			
GAUGE CONNECTOR	TEST CONNECTOR ON DIAGNOSTIC HARNESS	FUSE BOX 1	READING
Pin 12 (VIOLET)	Pin 24 (VIOLET)	–	Close to 0 Ω
Pin 12 (VIOLET)	–	F8	
–	Pin 24 (VIOLET)	F8	



GAUGE CONNECTOR PIN-OUT



TYPICAL - TEST CONNECTOR OF DIAGNOSTIC HARNESS



TYPICAL - CONTACT COORDINATES (FRONT VIEW FB1)

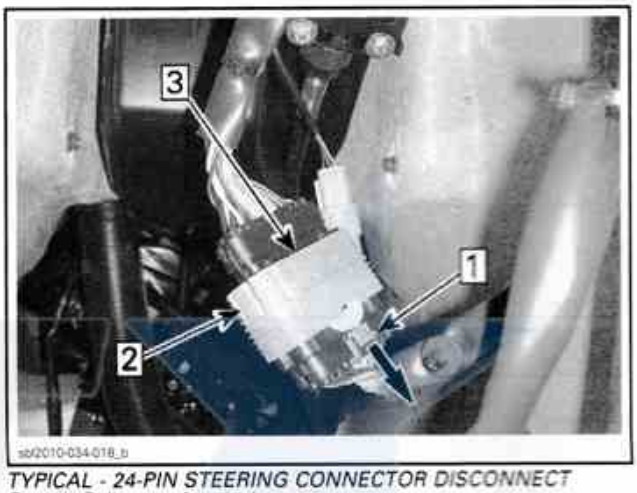
8. If an open circuit is measured, test the following:

CONTINUITY TEST OF GAUGE POWER WIRE		
FUSE BOX 1	TEST CONNECTOR ON DIAGNOSTIC HARNESS	READING
F8 to H9	–	Close to 0 Ω
H9 to H11	–	
H11	Pin 24 (VIOLET)	

9. Repair or replace wiring/connectors as required.

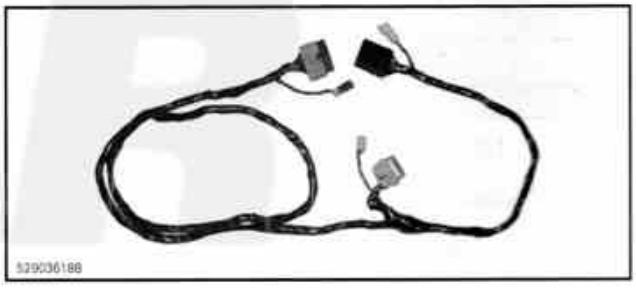
Continuity Test of Gauge Ground Wire

1. Disconnect the 24-pin steering connector.

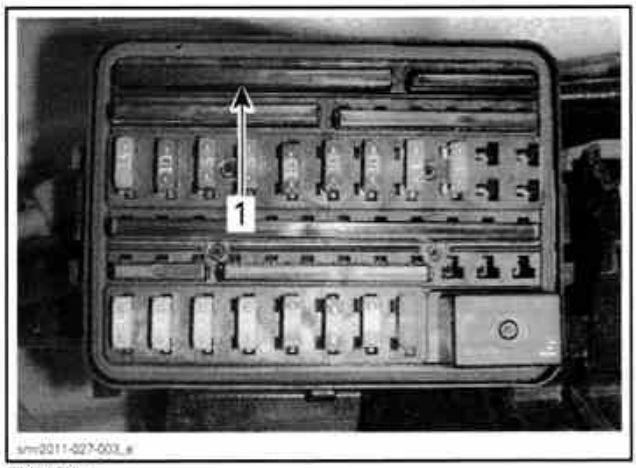


TYPICAL - 24-PIN STEERING CONNECTOR DISCONNECT
Step 1: Pull out safety lock
Step 2: Press in on release tab
Step 3: Pull locking collar down

2. Connect the DIAGNOSTIC HARNESS (P/N 529 036 188) to make an in-line connection between the disconnected connectors.



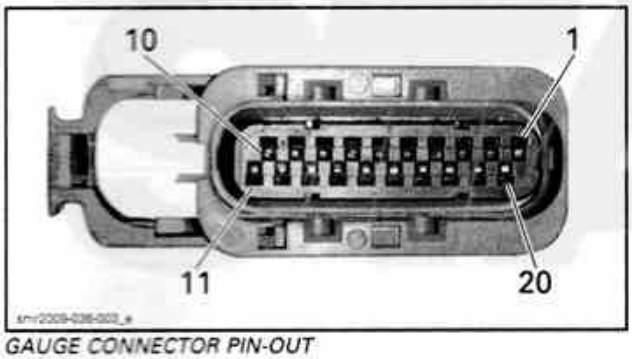
3. Remove the ground bus-bar in the fuse box.



TYPICAL
1. Ground bus bar

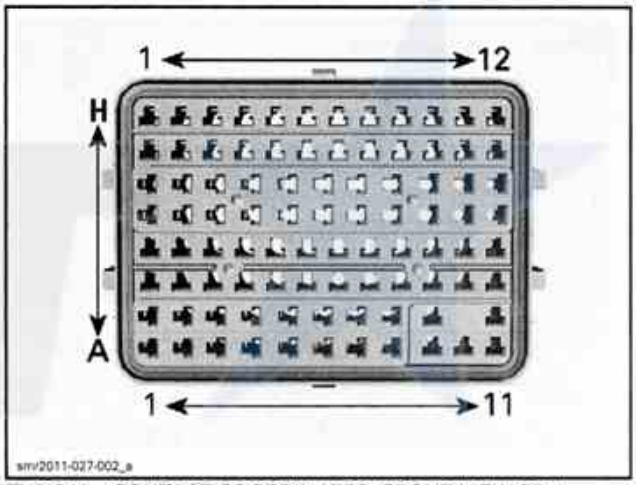
4. Set FLUKE 115 MULTIMETER (P/N 529 035 868) to Ω selection and carry out a continuity test as per following table. Refer to the *WIRING DIAGRAM* for circuit details.

CONTINUITY TEST OF GAUGE GROUND WIRE			
MULTIMETER PROBES			READING
GAUGE CONNECTOR	TEST CONNECTOR ON DIAGNOSTIC HARNESS	FUSE BOX	
Pin 11 (BLACK)	–	H7	Close to 0 Ω
Pin 11 (BLACK)	Pin 1 (BLACK)	–	
–	Pin 1 (BLACK)	H7	



GAUGE CONNECTOR PIN-OUT

TEST CONNECTOR OF DIAGNOSTIC HARNESS



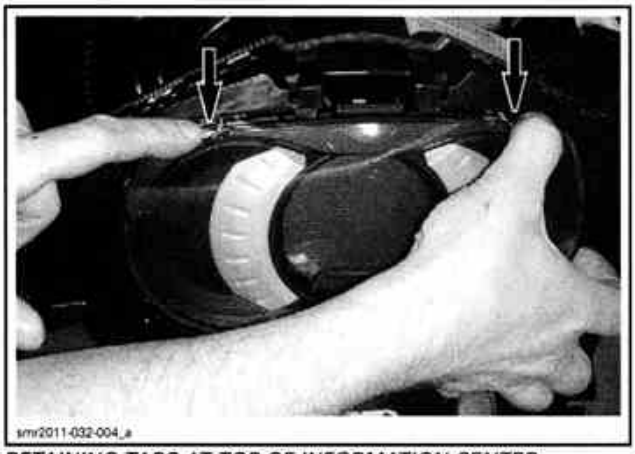
TYPICAL - CONTACT COORDINATES (FRONT VIEW FB1)

5. Repair wiring and connectors as required.

Information Center Removal

GTS, GTI and WAKE Series

1. Remove the bezel that covers the information center and mirrors, refer to *BODY* subsection.
2. Press in on the two retaining tabs at the top of the information center.

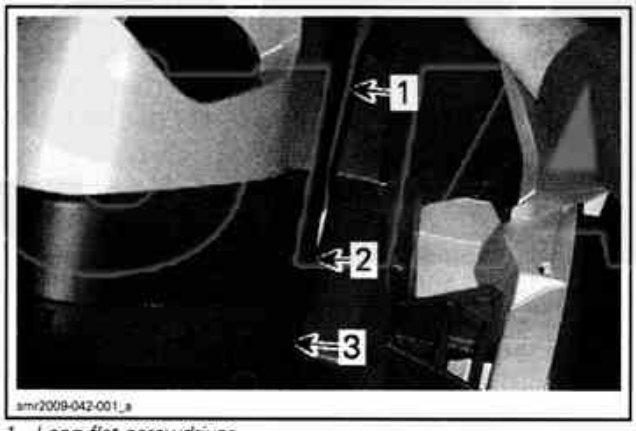


RETAINING TABS AT TOP OF INFORMATION CENTER

3. Pull information center out of console.

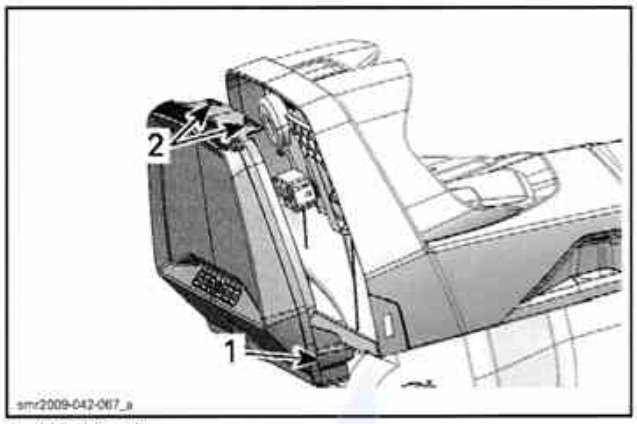
GTX, RTX and Wake Pro Series

1. Open the front storage compartment cover.
2. Move the steering to its highest position, refer to *BODY* subsection.
3. Using a long flat screwdriver, insert the blade between the lower locking tabs (one each side) of the gauge support cover, and carefully pry the tabs outwards to release them from the gauge support.



1. *Long flat screwdriver*
2. *Locking tab*
3. *Gauge support cover*

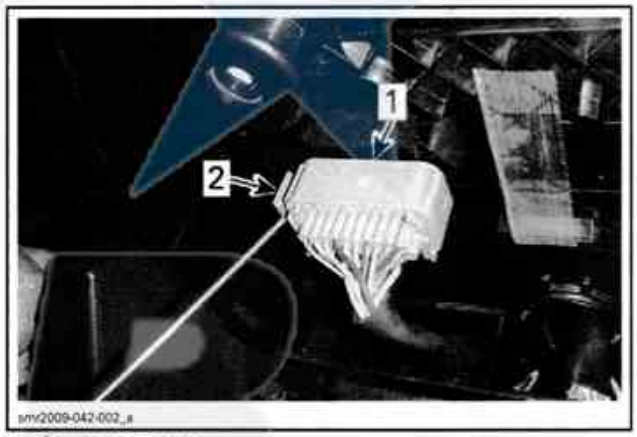
4. Pull the bottom of the panel outwards to remove it from the gauge support.



1. *LH side tab*
2. *Upper retaining tabs*

5. Disconnect the gauge connector.

NOTICE Pull connector lock out sideways. Do not twist the screwdriver.



1. *Gauge connector*
2. *Pull out to unlock*

6. Insert a flat screwdriver between the upper gauge locking tab and gauge support.

GAUGE REMOVAL
1. *Insert screwdriver here*

7. Hold back of the gauge with one hand and carefully compress the retaining tab to release the information center from the gauge support.

Information Center Installation

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

1. Apply a small amount of DIELECTRIC GREASE (P/N 293 550 004) to the gauge connector pins.
2. Reconnect gauge connector and ensure proper operation of gauge.
3. Insert and align the bottom of the gauge into the support first, then push the top into the support and ensure it properly locks into the retaining tab.

GTX, RTX and Wake Pro Series

4. When reinstalling the gauge support cover, first insert the top of the cover into the support. Then align the bottom of the cover with the locking tabs on the outside of the gauge support and push it in until it snaps back in place.

All Models

NOTE: If you are installing a replacement information center, refer to *INFORMATION CENTER REPLACEMENT* in this subsection.

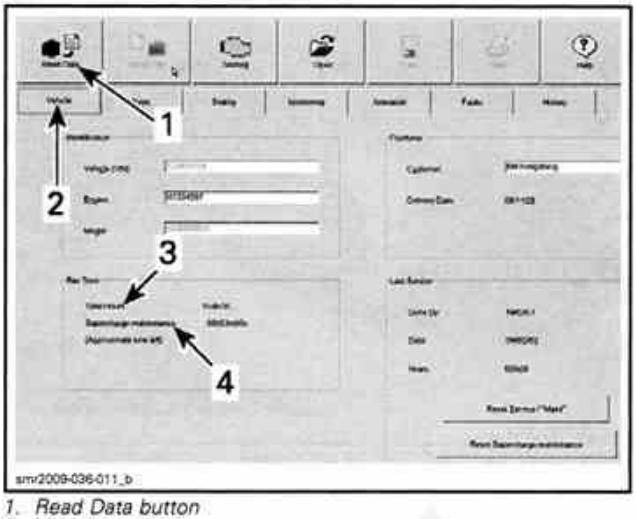
Information Center Replacement

Models With a Supercharger

NOTICE **Before replacing the information center, it is very important to retrieve the "approximate time left to Supercharger maintenance" in B.U.D.S. (on the Vehicle page), and to advise the customer when the watercraft needs to be brought in for supercharger maintenance.**

The new information center will start counting the "supercharger time to maintenance due hours" from zero (0) as the hours are calculated and stored in the gauge cluster (old cluster), not in the ECM. The SUPERCHARGER MAINTENANCE REQUIRED indicators will then come on past the real maintenance due hours. Indicated engine hours in new gauge will be correct as they are calculated in the ECM.

1. Connect watercraft to the latest B.U.D.S. software, refer to *COMMUNICATION TOOLS AND B.U.D.S.* subsection.
2. Select the **Read Data** button.
3. In the **Run Time** field of the vehicle page, note the accumulated **Total Hours** and the **Supercharger maintenance** (Approximate time left) hours.



1. *Read Data button*
2. *Vehicle page tab*
3. *Total Hours*
4. *Supercharger maintenance hours (approximate time left)*

4. Add the approximate time left to supercharger maintenance hours to the total hours to calculate the hours at which the next supercharger maintenance is due.

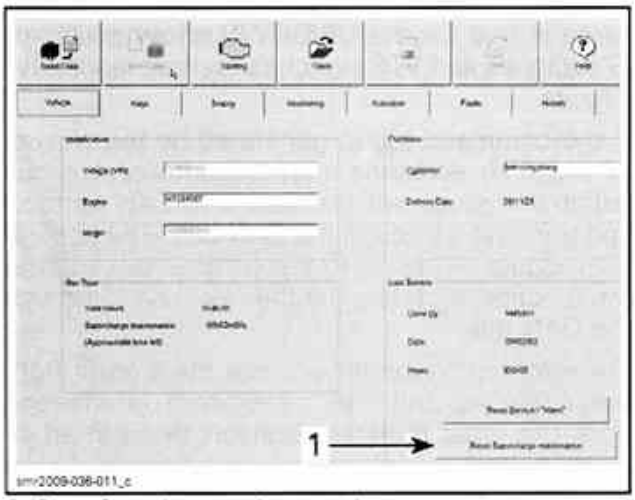
Example: 104.08 + 95.52 = 200

The next supercharger maintenance will be due at 200 hours (Total Hours in B.U.D.S. or hours indicated in the information center hour meter).

5. Advise customer to bring the watercraft in for supercharger maintenance at the calculated "Total Hours" even if the supercharger maintenance advisory message did not come on in the information center.

If the "approximate time left to Supercharger maintenance" hours cannot be retrieved in B.U.D.S. (because old cluster cannot be read by B.U.D.S.), and the engine hours (Total Hours) at which the last supercharger maintenance was carried out are known, then add 100 to the last known Total Hours at which the last supercharger maintenance was carried out.

Once the supercharger maintenance has been carried out, the time left to supercharger maintenance must be reset using the **Reset Supercharger Maintenance** function in B.U.D.S. This ensures the following supercharger maintenance advisory message comes on as per normal intervals. Refer to *CLEARING MAINTENANCE REMINDER INDICATORS* in this subsection.



1. Reset Supercharger maintenance button

All Models

NOTE: Replacement information centers are delivered already programmed.

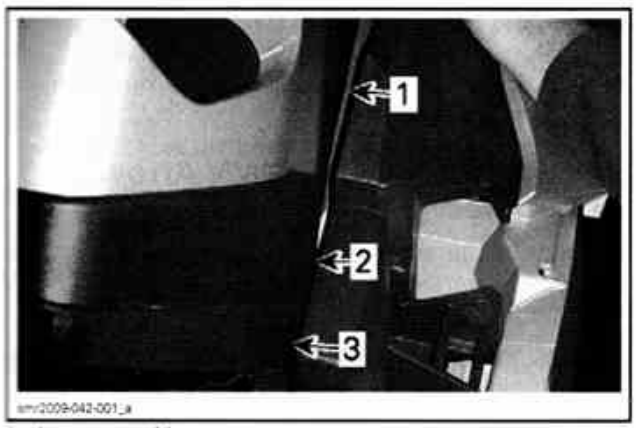
After the information center has been replaced, connect the watercraft to the latest applicable B.U.D.S. version and carry out any updates (if required). Refer to *COMMUNICATION TOOLS AND B.U.D.S.* subsection.

Once the information center has been updated (if required), select the applicable settings as described in *SETTING LANGUAGE AND UNITS OF MEASUREMENT* in this subsection.

GAUGE SUPPORT (RXT, GTX AND WAKE PRO SERIES)

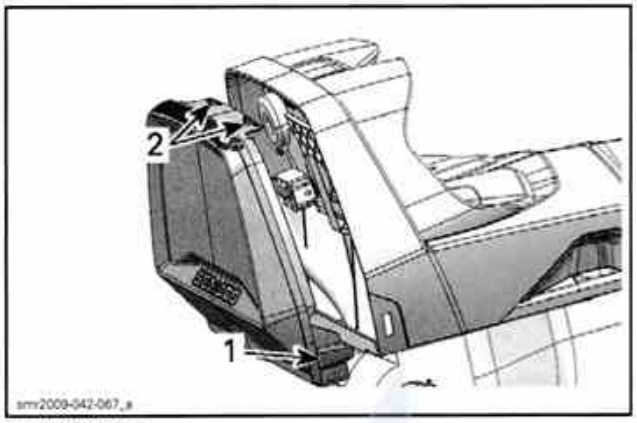
Gauge Support Removal

1. Move steering to its upper most position.
2. Using a long flat screwdriver, unlatch both sides of gauge support cover.



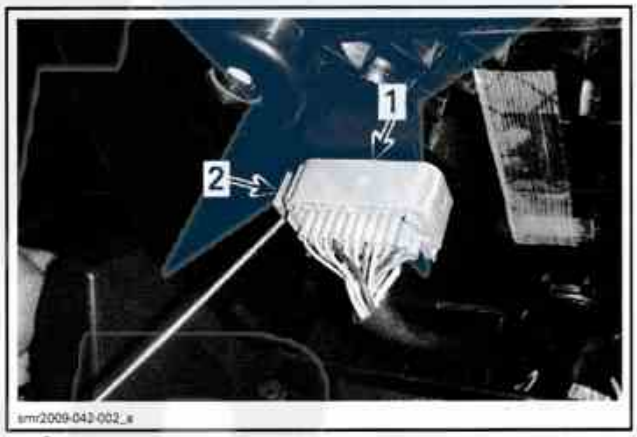
1. Long screwdriver
2. Locking tab
3. Gauge support cover

3. Remove the cover.



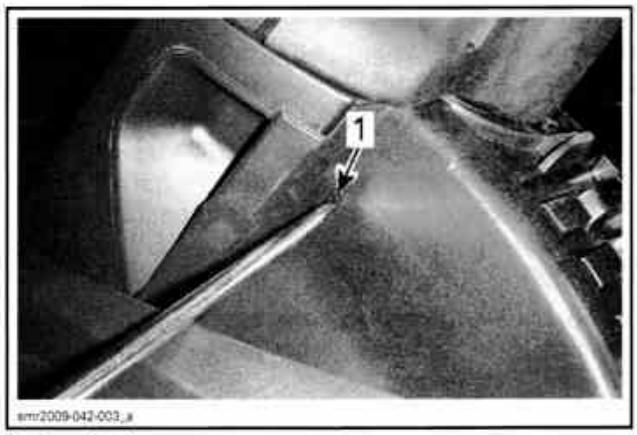
1. LH side tab
2. Upper retaining latches

4. Disconnect the gauge connector.



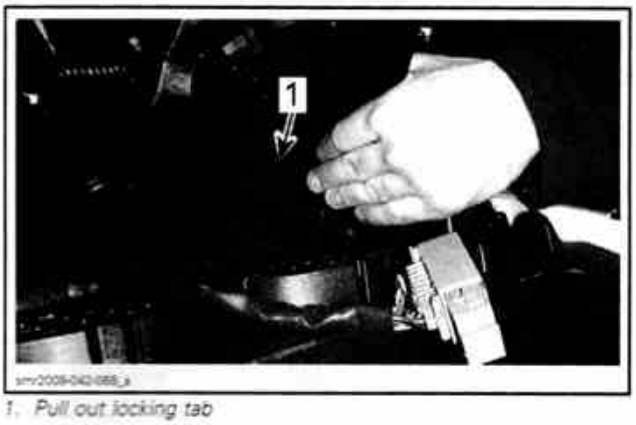
1. Gauge connector
2. Slide out gauge connector tab to unlock

5. Using a small screwdriver, unlock back end of gauge support by pushing on tabs on each side of the steering column.



1. Inner latches

6. Remove gauge support by pulling out its forward tabs (one on each side), then pulling up on the support.



1. Pull out locking tab

Gauge Support Installation

1. Reverse the removal procedure.
2. Ensure proper operation of gauge once reconnected.

MODE/SET AND UP/DOWN ARROW BUTTONS

Overview

The MODE/SET and UP/DOWN arrow buttons assembly contains a series of 4 diodes for the MODE and SET switches, and another 4 diodes for the UP/DOWN arrow switches. Refer to *WIRING DIAGRAM* for simplified diagram of switches.

The center wire to the switches (pin C), is common to both sides of the switch assembly (somewhat like a ground wire). The other two wires (pins A and B), act as signal wires to the information center for each set of switches. They actually each form one branch of an electronic circuit within the information center.

Each diode (in circuit) drops a nominal 0.6 Vdc when conducting electricity. If the circuit current passes through all four diodes (say MODE and SET switches open), a drop of 2.4 Vdc would be measured across the 4 the diodes (pin B to pin C). This voltage drop of 2.4 Vdc measured at pin B tells the gauge the MODE and SET switches are open.

If the MODE switch is pressed, 2 diodes are bypassed. The remaining two diodes in the circuit drop 1.2 Vdc (at pin B).

If the SET switch is pressed, 1 diode is bypassed. The remaining three diodes in the circuit drop 1.8 Vdc (at pin B).

The gauge senses these voltages through pin 17 of the gauge connector, and interprets them as signals that tell it which switch is activated. The same is true for the UP/DOWN arrow switches, iS switches and VTS switches on their respective circuits.

If the command signal generated by the closure of a switch concerns another module, a circuit within the gauge will translate it to CAN protocol and transmit it through the CAN bus. The applicable module will react to the command, carry out the function, and transmit the result back through the CAN bus.

The information center will use the signals from the switches and the transmitted information from the other modules, convert them to an indication, and cancel the command signal it sent out once the function has been carried out.

Command signals from the MODE and SET switches are used by the information center only.

VTS and iS switch commands are translate and sent to the modules.

The UP/DOWN arrow switch commands are used by the gauge for certain functions and settings. They will also be translated and sent out through the CAN bus to be used by the ECM for the CRUISE, SKI mode and SLOW SPEED functions for increasing or decreasing speed when the functions are active, and by the iBR for iBR gate positioning in SLOW SPEED mode of operation.

The UP/DOWN switches are also used for VTS trim on RXT 215, GTX 155, GTI SE 130 and 155, and WAKE models.

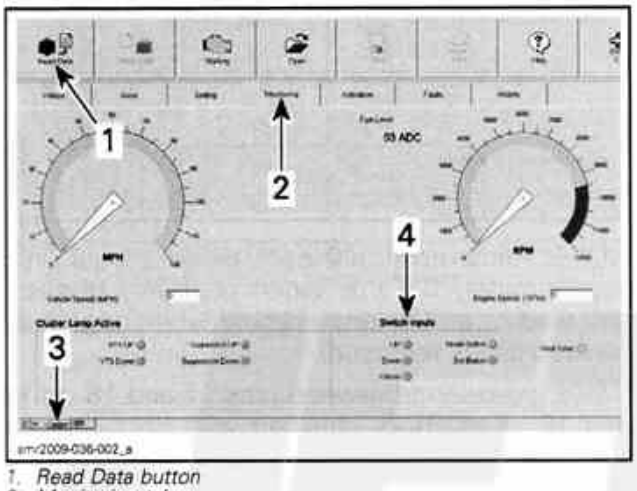
NOTE: The voltages stated previously vary slightly depending on the actual voltage applied to the circuit and the current flow through the diodes. When using a Fluke 115 multimeter for testing in diode test mode, the voltage and current applied by the multimeter are lower than in circuit. The quality of probe contact, the actual probes and leads, and the precision of the meter calibration will all affect the results, which will most likely be slightly lower than nominal values stated.

MODE/SET and UP/DOWN Arrow Buttons Test Using B.U.D.S.

1. Connect the watercraft to the latest applicable B.U.D.S. version. Refer to *COMMUNICATION TOOLS AND B.U.D.S.*
2. Press the START/STOP button to energize the electrical system.

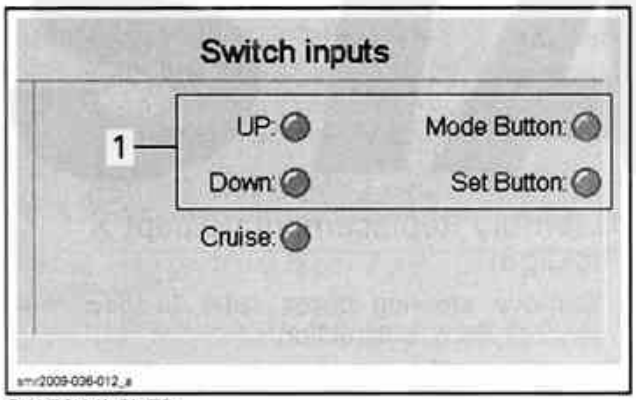
NOTE: You will need to press the START button every three minutes or the electrical system will shut off.

3. Select the **Read Data** button.
4. Choose the **Monitoring** tab at the top of the page.
5. At the bottom LH side of the monitoring page, select the **Cluster** tab.



1. *Read Data button*
2. *Monitoring tab*
3. *Cluster tab*
4. *Switch inputs field*

6. Press each of the MODE/SET and UP/DOWN arrow buttons and look for the applicable indicator light to come on in the **Switch inputs** field on lower RH side of the cluster page (Mode, Set, Up or Down).



SWITCH INPUTS
1. *MODE/SET and UP/DOWN arrow button indicator lights*

If each of the gauge button indicator lights come on when the applicable switch is pressed, the problem may be related to the information center.

If one or all of the indicator lights does not come on, refer to *MODE/SET AND UP/DOWN ARROW SWITCH TEST USING A MULTIMETER.*

MODE/SET and UP/DOWN Switch Test Using a Multimeter

GTI and WAKE Series

1. Remove the information center from the console, refer to *INFORMATION CENTER REMOVAL (GTI AND WAKE SERIES)* in this subsection.

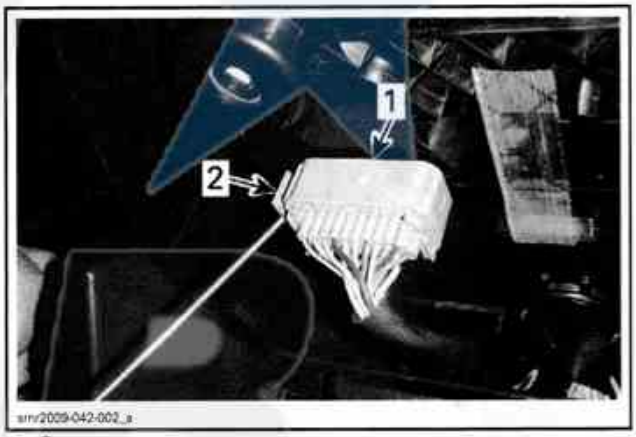
RXT, GTX and WAKE PRO Series

2. Remove the gauge support cover, refer to *INFORMATION CENTER REMOVAL (RXT, GTX AND WAKE PRO SERIES)* in this subsection.

All Models

3. Disconnect the gauge connector.

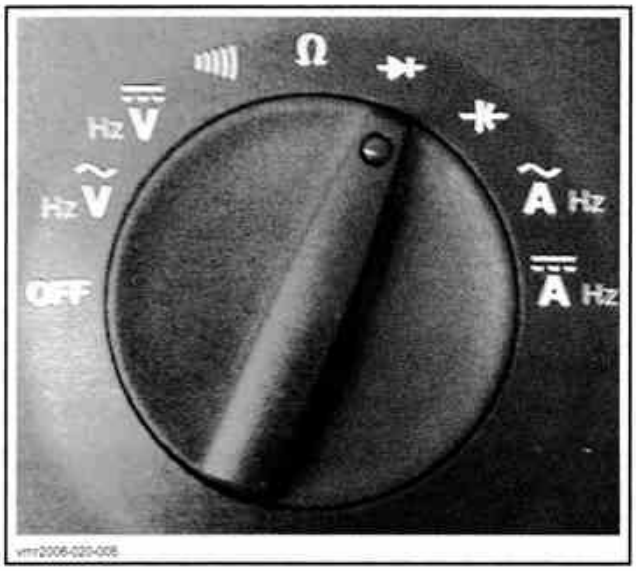
NOTICE **Pull connector lock out. Do not twist the screwdriver.**



1. *Gauge connector*
2. *Pull out to unlock connector*

4. Set the FLUKE 115 MULTIMETER (P/N 529 035 868) to the diode test function.

NOTE: It is important to set the multimeter to the diode check function when testing the MODE/SET and UP/DOWN arrow switches as it contain diodes.



5. Test the MODE/SET and UP/DOWN arrow switches as per following tables.

MODE/SET SWITCH TEST			
SWITCH POSITION	FLUKE 115	GAUGE CONNECTOR	VOLTAGE
Switch released	Red lead Black lead	Pin 17 Pin 18	Approx. 2 Vdc
	Black lead Red lead	Pin 17 Pin 18	OL
MODE depressed	Red lead Black lead	Pin 17 Pin 18	Approx. 1.1 Vdc
	Black lead Red lead	Pin 17 Pin 18	OL
SET depressed	Black lead Red lead	Pin 17 Pin 18	Approx. 1.6 Vdc
	Black lead Red lead	Pin 17 Pin 18	OL

UP/DOWN ARROW SWITCH TEST			
SWITCH POSITION	FLUKE 115	GAUGE CONNECTOR	VOLTAGE
Switch released	Red lead Black lead	Pin 16 Pin 18	Approx. 2 Vdc
	Black lead Red lead	Pin 16 Pin 18	OL

UP/DOWN ARROW SWITCH TEST			
SWITCH POSITION	FLUKE 115	GAUGE CONNECTOR	VOLTAGE
UP depressed	Red lead Black lead	Pin 16 Pin 18	Approx. 1.1 Vdc
	Black lead Red lead	Pin 16 Pin 18	OL
DOWN depressed	Red lead Black lead	Pin 16 Pin 18	Approx. 1.6 Vdc
	Black lead Red lead	Pin 16 Pin 18	OL

NOTE: Remember that each diode should drop approximately 0.6 Vdc when positively biassed, and read as an OL (open circuit) when negatively biassed (leads reversed).

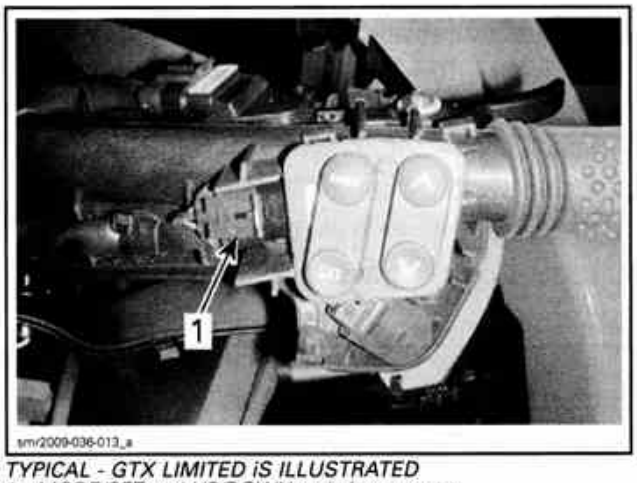
When measuring between pins 17 and 18, or 16 and 18, if an OL is obtained with both positive and negative diode biassing, test the continuity of each wire between the gauge and switch assembly. If continuity is good, replace the switch assembly.

If any reading is significantly different than specified, carry out the same test at the switch connector, refer to the wiring diagram. If you obtain the same results, replace the switch assembly.

If voltages measured on every switch are as specified (or very close to it), the switches and the wiring harness are good. The fault may be within the gauge. Replace the gauge and carry out a new *MODE/SET AND UP/DOWN TEST USING B.U.D.S.* to ensure the problem is solved.

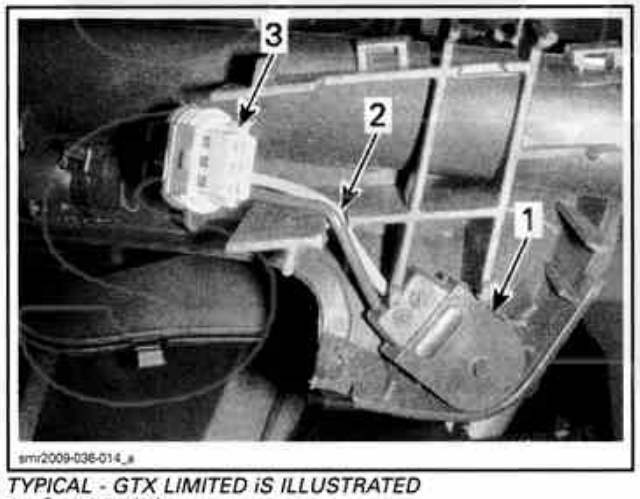
MODE/SET and UP/DOWN Switch Assembly Replacement (Except X Package)

1. Remove steering cover, refer to *STEERING AND O.T.A.S.* subsection.
2. Disconnect connector from switch assembly.



TYPICAL - GTX LIMITED iS ILLUSTRATED
1. MODE/SET and UP/DOWN switch connector

3. Remove switch assembly from support by lifting it off the support.
4. As applicable, ensure wiring from cruise switch is properly inserted in slot provided before installing MODE/SET and UP/DOWN arrow switch assembly.



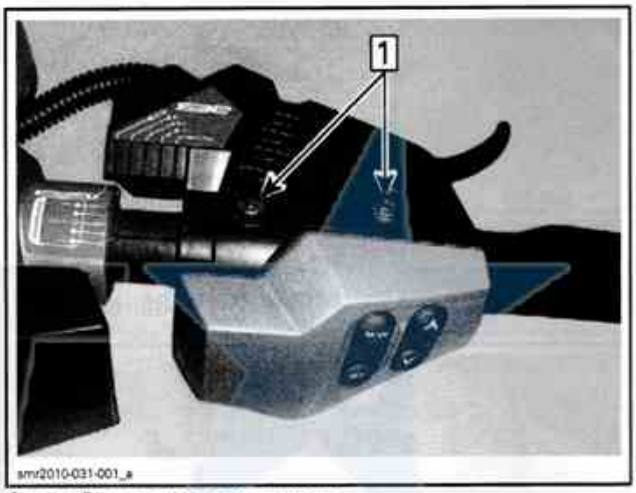
TYPICAL - GTX LIMITED iS ILLUSTRATED
1. Cruise switch
2. Wiring in slot provided in support
3. MODE/SET and UP/DOWN arrow switch connector

5. Apply a small amount of DIELECTRIC GREASE (P/N 293 550 004) on switch contact pins.
6. Install connector on new switch assembly.
7. Insert switch assembly in switch support.
8. Install steering cover, refer to *STEERING AND O.T.A.S.*

MODE/SET and UP/DOWN Switch Assembly Replacement (X Package only)

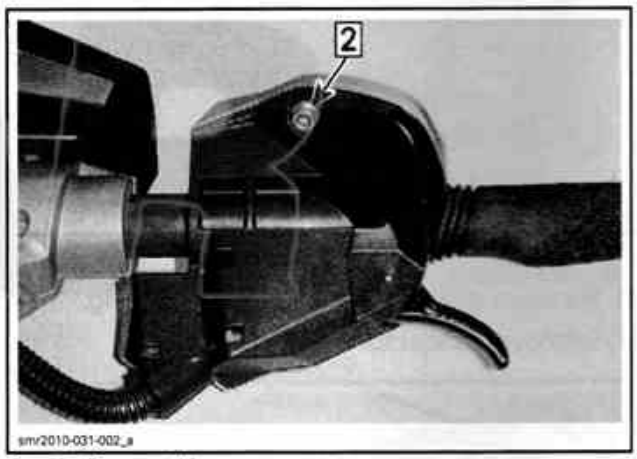
Switch Removal

1. Remove the 2 screws in the front of the upper handlebar housing.



Step 1: Remove these two screws

2. Remove the screw at back of the handlebar.

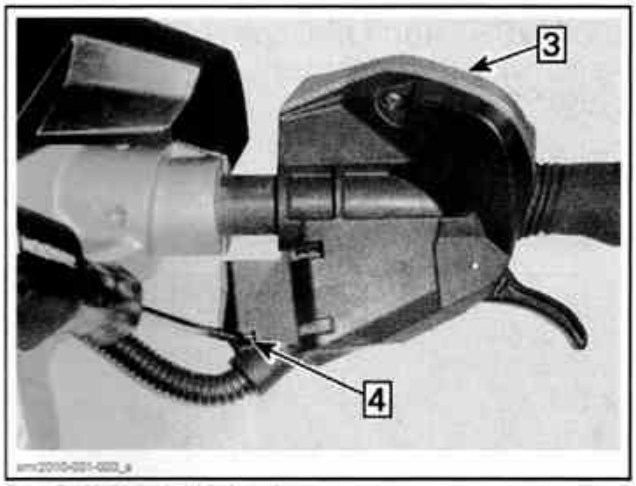


Step 2: Remove this screw

NOTICE **Do not try to pull the cover off the housing at this time or damage to the cover will occur.**

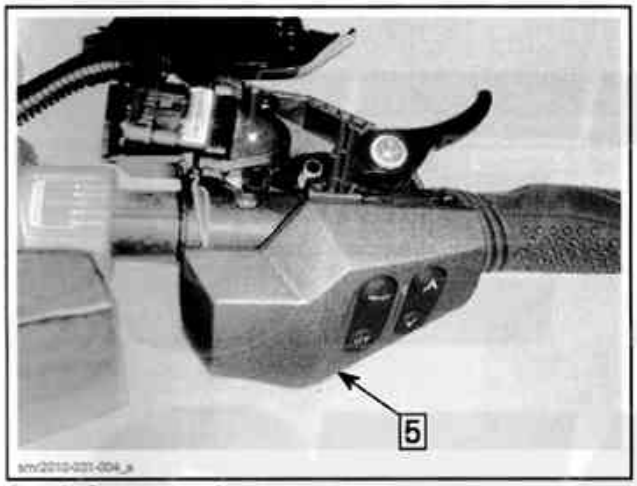
3. Take hold of the housing cover to prevent it from falling off the handlebar when unlocking the upper housing in the following step.
4. Using a small screwdriver, unlock the tab that retains the upper housing and pull the upper housing off.

NOTICE **As you remove the upper housing, hold on to the housing cover to prevent it from falling off the handlebar.**



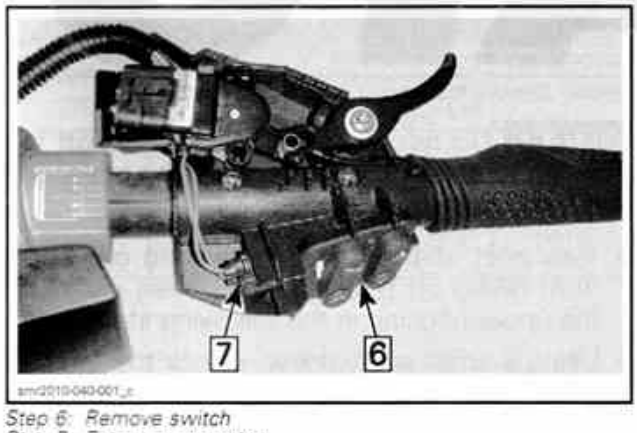
Step 3: Hold on to this housing cover
Step 4: Unlock this tab

5. Remove the housing cover from the handlebar.



Step 5: Remove housing cover

6. Remove switch from handlebar housing.
7. Remove connector from switch.

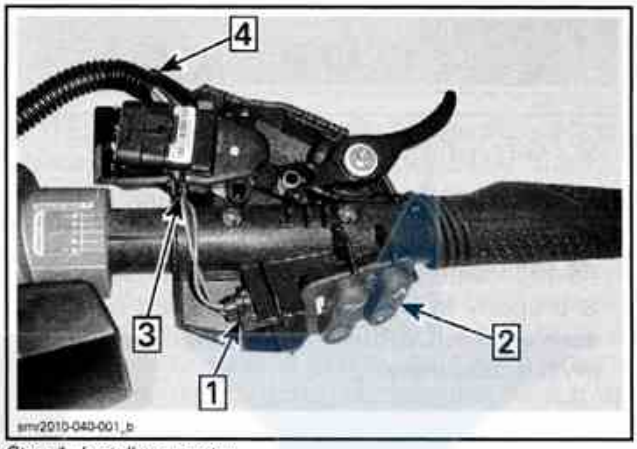


Step 6: Remove switch
Step 7: Remove connector

Switch Installation

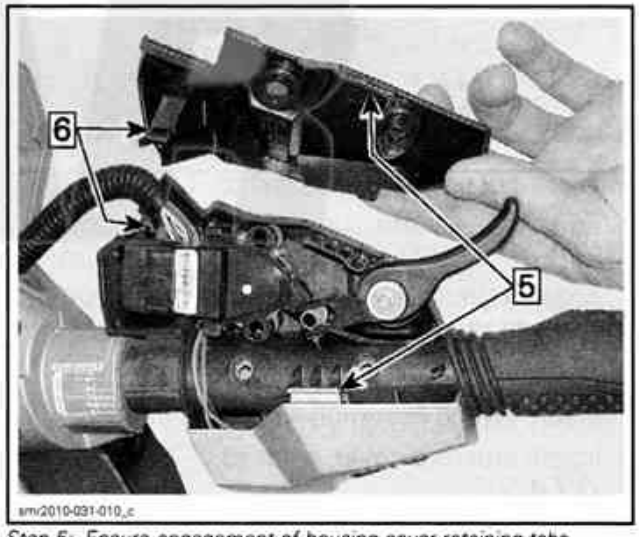
Installation is the reverse of the removal procedure however, pay attention to the following.

1. Install connector on switch assembly.
2. Insert switch assembly in handlebar housing.
3. Ensure proper wire routing.
4. Ensure proper positioning of corrugated conduit.



Step 1: Install connector
Step 2: Insert switch in handlebar housing
Step 3: Ensure proper wire routing
Step 4: Ensure proper positioning of corrugated conduit

5. Ensure engagement of housing cover retaining tabs.
6. Ensure engagement of upper housing locking tabs.



Step 5: Ensure engagement of housing cover retaining tabs
Step 6: Ensure engagement of upper housing locking tabs

7. Position the upper housing on the handlebar housing.
8. Ensure proper engagement of the upper housing and cover tabs.

9. Install the three retaining screws for the upper housing and tighten them as specified.

UPPER SWITCH HOUSING SCREW TORQUE
2 N•m (18 lbf•**in**)

10. Connect watercraft to the latest applicable B.U.D.S. version, refer to *COMMUNICATION TOOLS AND B.U.D.S.* subsection.
11. Ensure there are no fault codes, refer to *DIAGNOSTIC AND FAULT CODES* subsection.
12. Ensure proper operation of throttle lever and switch assembly.

WATER TEMPERATURE SENSOR

The water temperature sensor is located within the iBR module that is part of the iBR actuator. It cannot be tested or replaced separately.

Water from the jet pump passes through the iBR actuator where the sensor measures its temperature, generating a signal that is interpreted by the iBR module. The iBR module then sends the information through the can-bus to the information center that translates it into a temperature indication.

If the temperature sensor is defective, the temperature indication will not be displayed and a WATER TEMP SENSOR DEFECTIVE message will scroll in the multifunction display.

A lake water temperature sensor fault code should be generated if the sensor is defective. Refer to *DIAGNOSTIC AND FAULT CODES*.

If the lake water temp sensor is defective, replace the iBR actuator.

DEPTH SOUNDER

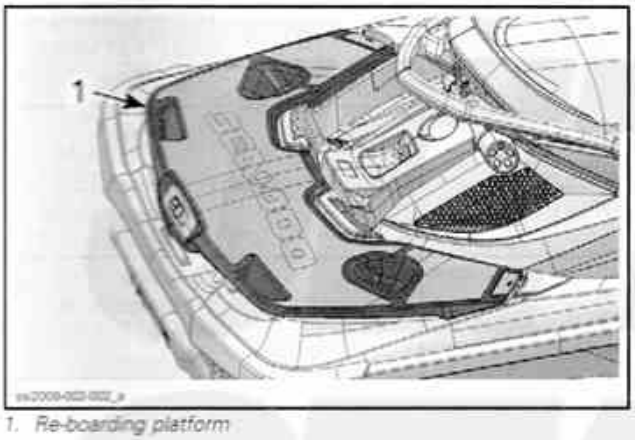
Depth Sounder Troubleshooting

DEPTH SOUNDER TROUBLESHOOTING		
SYMPTOM	**POSSIBLE CAUSE**	**REMEDY**
Nothing is displayed in the information center	Depth sounder not connected.	Properly connect depth sounder.
	Depth sounder not properly installed.	Make sure depth sounder is properly installed in battery holder base. There must be no air gap between hull and silicone pad(s).
	12 Vdc wire or ground wire to depth sounder open.	Check fuse 3 in FB1 and wiring harnesses.
	Problem with communication link wires.	Check WHITE/BLACK and WHITE/RED wires to CAN bus-bars in FB1.
- - - - (ft or m) is displayed	Watercraft is not in water.	Launch watercraft in water and recheck.
	There is air between silicone pad and depth sounder or between depth sounder and battery holder base.	Remove depth sounder. Replace silicone pad.
	Depth sounder is defective.	Try a new depth sounder.

1. *Depth sounder 3A fuse (FB1)*

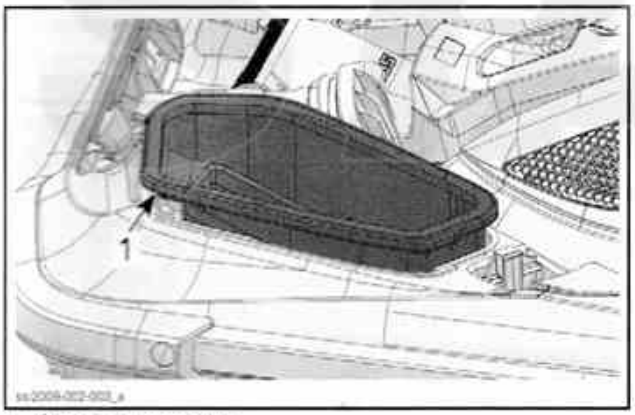
Depth Sounder Removal

1. Open the boarding platform.



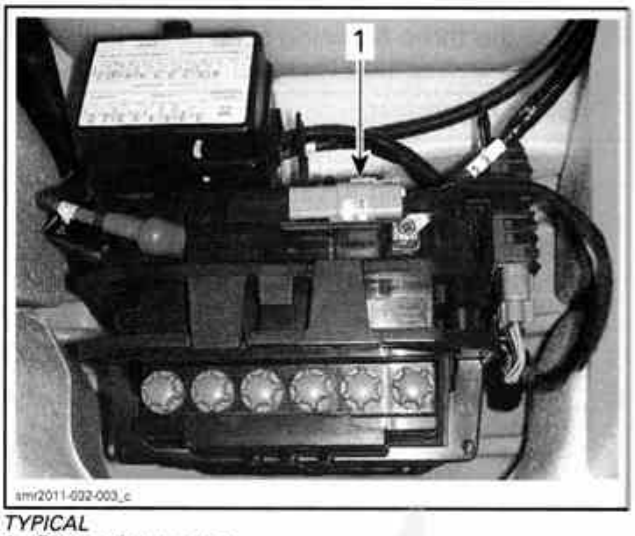
1. *Re-boarding platform*

2. Remove the starboard (RH) storage bin.



1. *Starboard storage bin*

3. Disconnect the diagnostic connector from its holder.



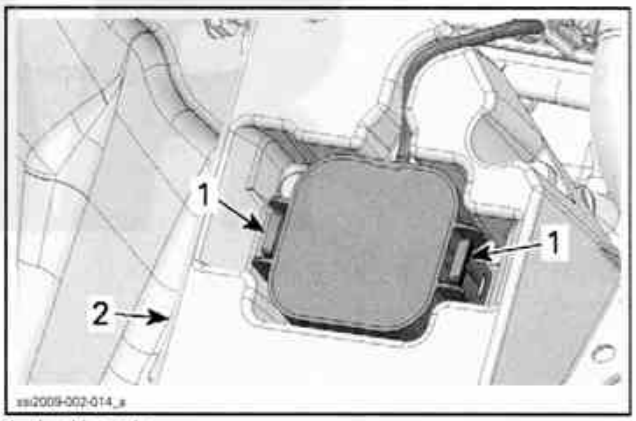
TYPICAL
1. *Diagnostic connector*

4. Remove the electrical component support from the battery holder, refer to *CHARGING SYSTEM*.
5. Remove the battery (with holder) from the watercraft, refer to *CHARGING SYSTEM*.

⚠ WARNING

Always disconnect the battery cables exactly in the specified order, BLACK (-) battery cable first then the RED (+) cable last.

6. Unlock the depth sounder clocking tabs from the battery holder base and pull the depth sounder out from the base.



1. *Locking tabs*
2. *Battery holder base*

7. Disconnect the depth sounder connector from the wiring harness.

Depth Sounder Inspection

Ensure the silicone pad is in good condition.

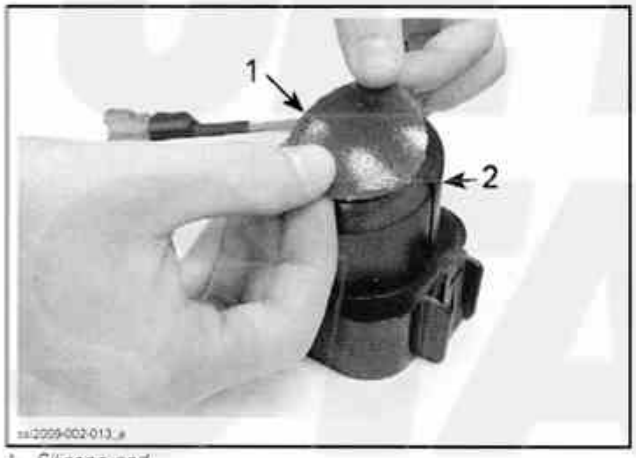
NOTE: There must not be any air trapped between the bottom of the depth sounder and the bilge. Otherwise, the sounder will not function correctly.

If the silicone pad is damaged, replace it.

Depth Sounder Silicone Pad Replacement

1. Place the flat side of the depth sounder on a level surface.
2. Remove the old silicone pad from the bottom of the depth sounder.
3. Clean the concave surface of depth sounder.
4. Remove both protectors from the silicone pad.
5. Apply silicone pad on depth sounder.

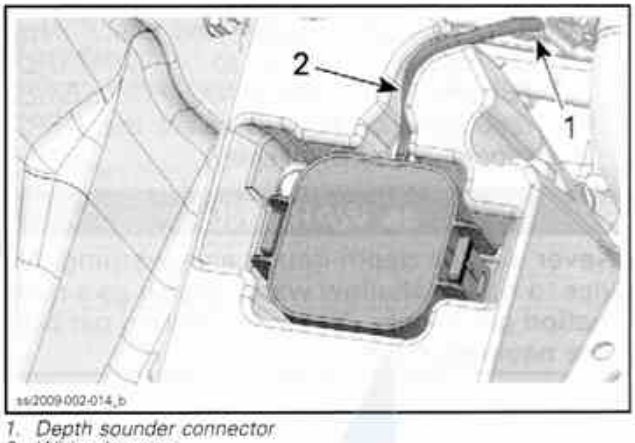
NOTICE **Make sure do not trap air between silicone pad and depth sounder. Otherwise, the device will not work.**



1. *Silicone pad*
2. *Depth sounder*

Depth Sounder Installation

1. Insert the depth sounder in the battery holder base while paying attention to the position of the wiring on the sounder with the groove in the battery holder base.
2. Press firmly on the depth sounder until both locking tabs are locked into the base.
3. Connect the sounder connector to the wiring harness and route the wiring in the groove provided in the battery holder base.



1. *Depth sounder connector*
2. *Wiring harness*

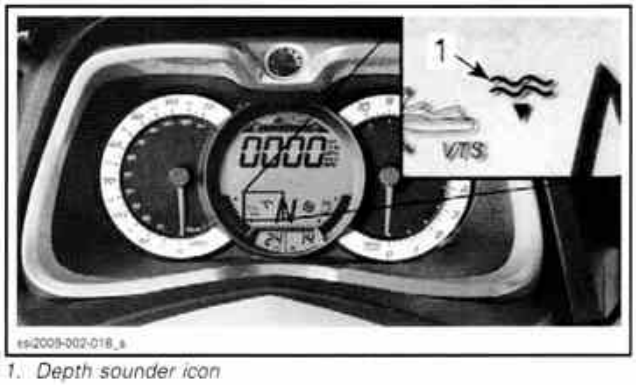
4. After installation:
   - 4.1 Try pulling the sounder out to ensure it is properly locked in the battery support base.
   - 4.2 Try pushing on depth sounder. You must feel a resistance (no air gap).

NOTE: An air gap can be eliminated by adding an additional silicone pad.

5. Install the battery and electrical component support in the reverse order of removal, refer to *CHARGING SYSTEM*.
6. Install the diagnostic connector in its holder.
7. Carry out the following procedure: *TESTING DEPTH SOUNDER OPERATION*.

Testing Depth Sounder Operation

1. Press START/STOP button.
2. Install the tether cord on the engine cut-off switch.
3. Check information center to confirm depth sounder operation. The depth sounder icon is visible in the information center when the depth sounder is detected.



1. *Depth sounder icon*

4. Reinstall all other removed parts.

5. Launch watercraft in water and check depth sounder operation. Refer to *INFORMATION CENTER (RXT, GTX AND WAKE PRO SERIES)* for instructions on how to select the *DEPTH* indication in numerical display.

⚠ WARNING

Never use the depth gauge as a warning device to ride in shallow water. Use it as a navigation guide only. Not to be used to get precise navigation data.

STEERING AND O.T.A.S.

SERVICE TOOLS

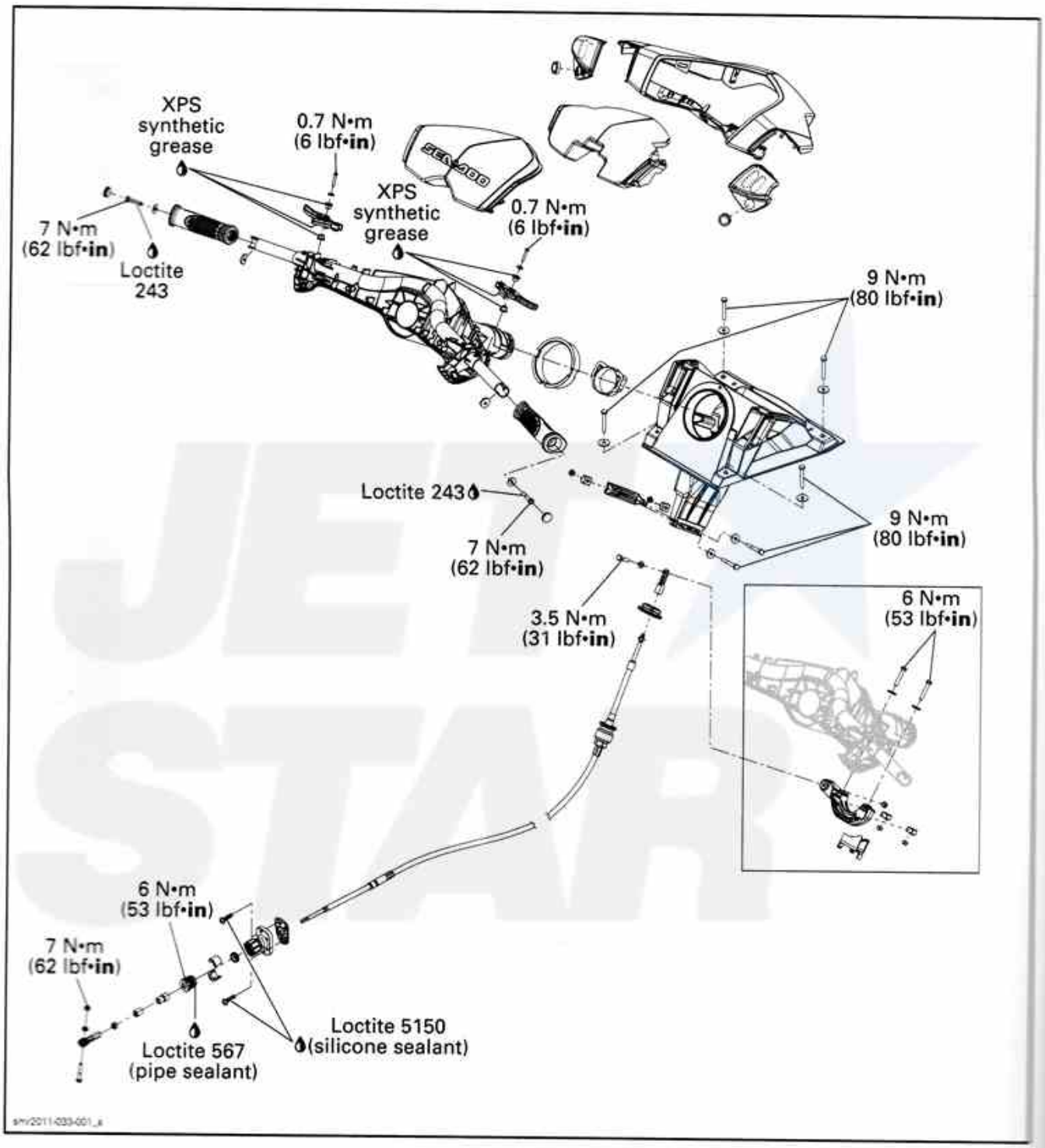
Description	Part Number	Page
D.E.S.S. POST REMOVER	529 035 943	461
DIAGNOSTIC HARNESS	529 036 188	470
FLUKE 115 MULTIMETER	529 035 868	470
STEERING CABLE TOOL	295 000 145	465

SERVICE PRODUCTS

Description	Part Number	Page
LOCTITE 243 (BLUE)	293 800 060	459
LOCTITE 567 (PIPE SEALANT)	293 800 013	465
XPS SYNTHETIC GREASE	293 550 010	463

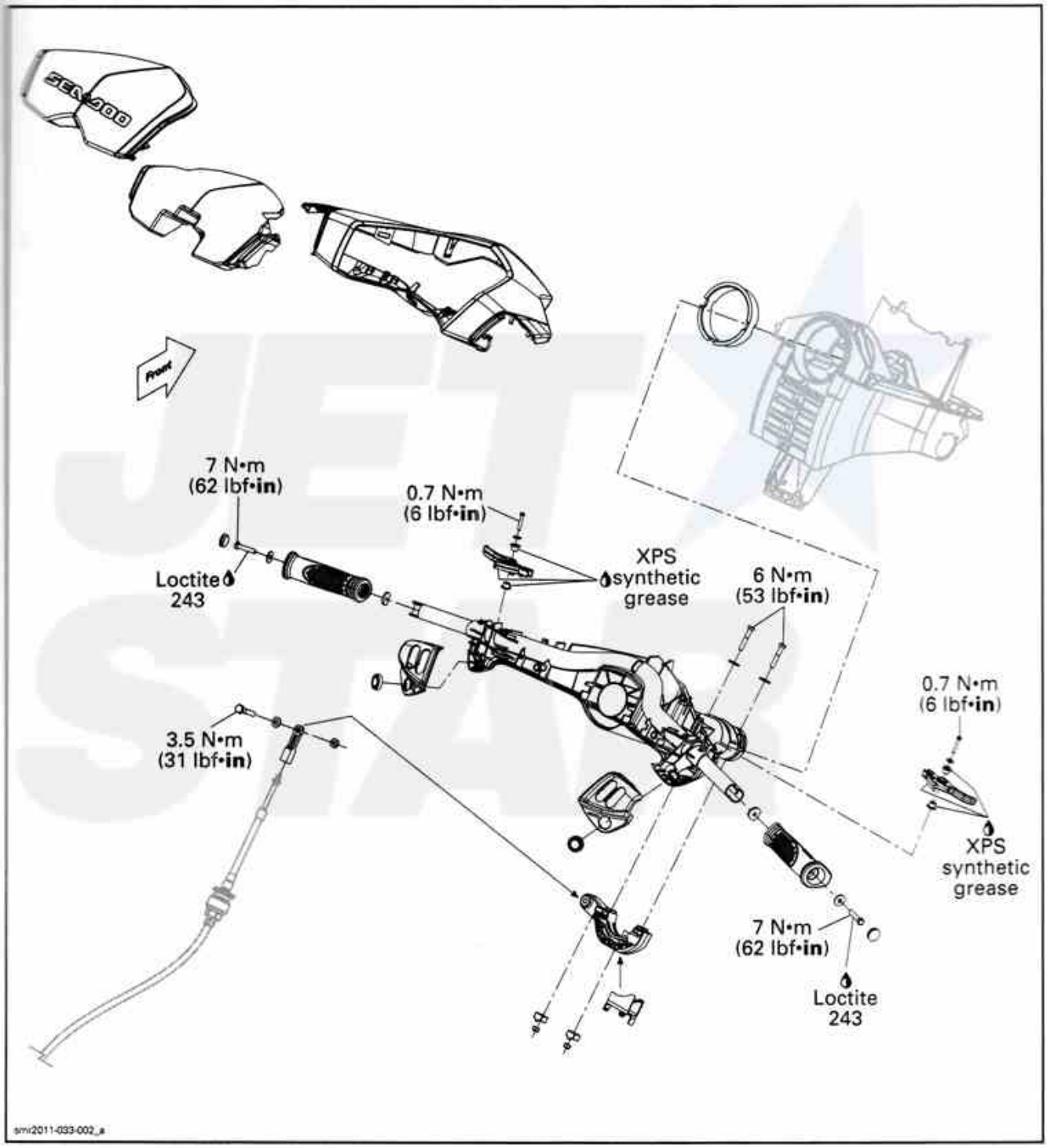
STEERING COLUMN AND CABLE

GTS, GTI and WAKE 155



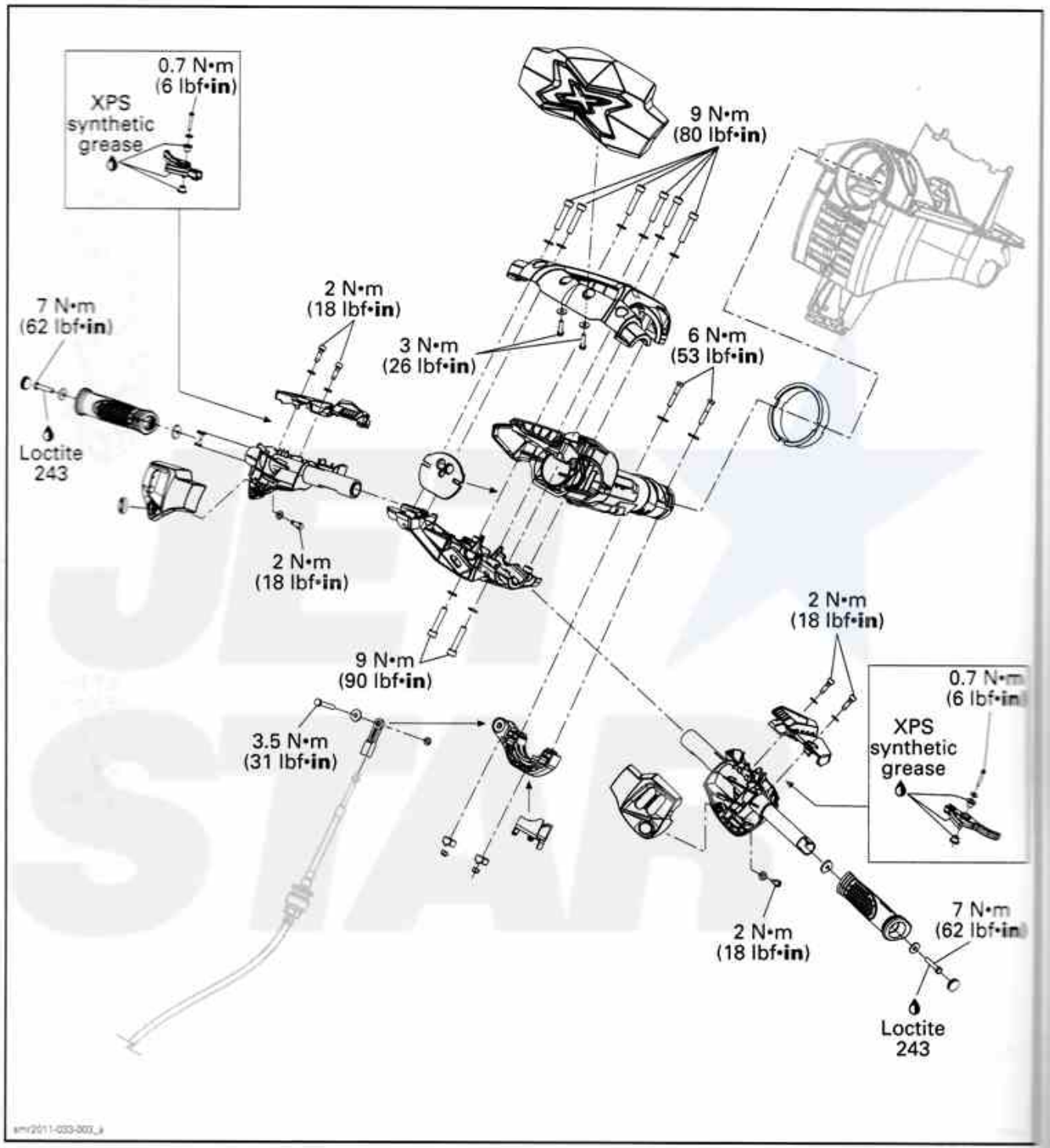
STEERING COLUMN

GTX, GTX iS RXT, RXT iS and Wake Pro



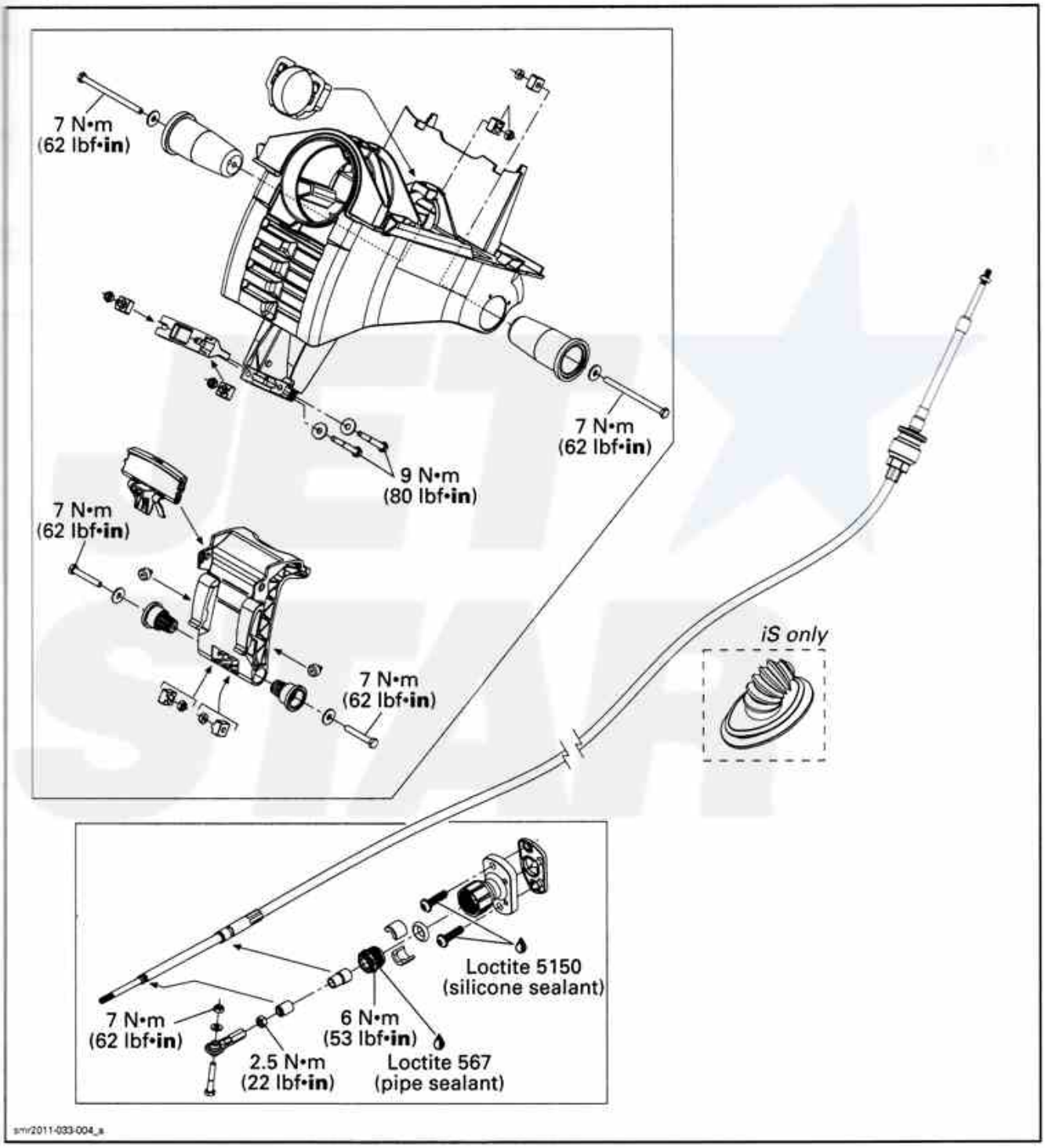
STEERING COLUMN

RXT-X, RXT-X aS



STEERING COLUMN SUPPORT AND CABLE

GTX, RXT and Wake Pro Series



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 (e.g.: locking tabs, elastic stop nuts, self-locking fasteners, cotter pins, etc.) must be replaced with new ones.

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

SYSTEM DESCRIPTION (O.T.A.S.)

The O.T.A.S. (Off-Throttle Assisted Steering) provides additional maneuverability in off-throttle situations.

The system uses a pair of magnets attached to the steering column and a Hall effect switch attached to the steering column support.

When activated by a magnet, the O.T.A.S. switch sends a signal to the ECM.

The ECM activates a pre-programmed RPM setting when the driver initiates a full turn after releasing throttle lever. The engine RPM is controlled by the Intelligent Throttle Control (iTC).

The O.T.A.S. system is activated in the following conditions:

- The engine speed must be above 4000 RPM for at least 1.5 second (approximately).
- The throttle lever must be released completely.
- The steering must be fully turned within approximately 4 seconds after throttle release.

The O.T.A.S. will stay activated for a random period of time as long as the O.T.A.S. switch is closed.

O.T.A.S. will be deactivated if:

- The throttle is reapplied, or
- The steering is turned sufficiently to open the O.T.A.S. switch for more than one second.

ADJUSTMENT

STEERING ALIGNMENT

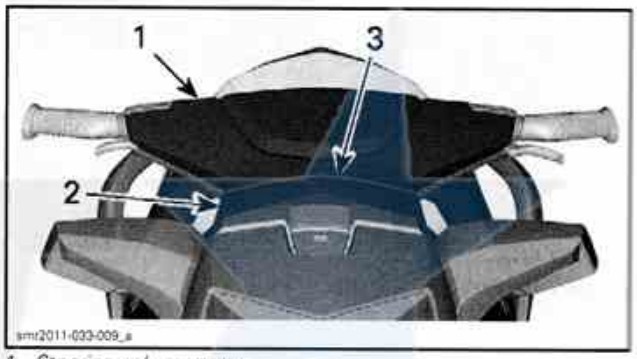
Install two bungee cords to maintain handlebar in position during the procedure.

Models with iBR

Raise the iBR gate by activating the iBR override function. Refer to *iBR AND VTS* subsection.

All Models Except RXT-X

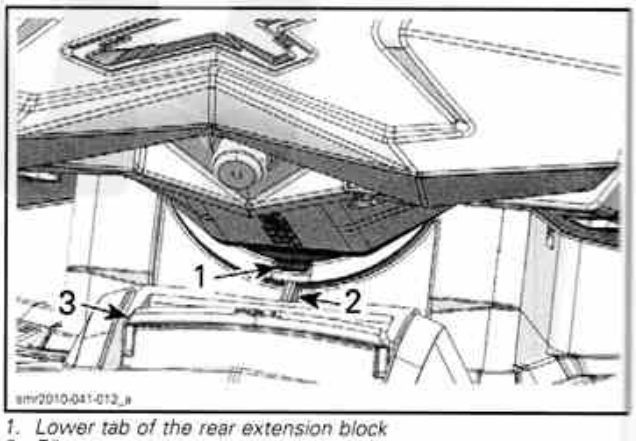
Position steering so that the edge of the steering column cover and the edge of the gauge support (or console) are flush.



1. *Steering column cover*
2. *Console or gauge support*
3. *Flush edges*

RXT-X Models

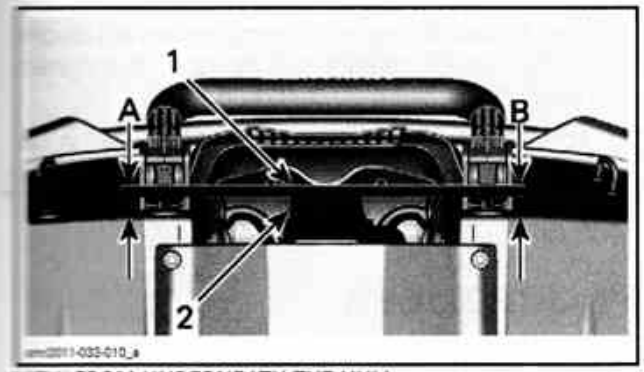
Align the center of the rear extension block lower tab with the center of the rib located in front of the steering tilt release handle.



1. *Lower tab of the rear extension block*
2. *Rib*
3. *Steering tilt release handle*

All Models

Check jet pump nozzle alignment by placing a straight edge on the nozzle outer end. Measure the distance on each side of the straight edge.



VIEW FROM UNDERNEATH THE HULL
1. *Straight edge*
2. *Nozzle*

A. *Port measure*
B. *Starboard measure*

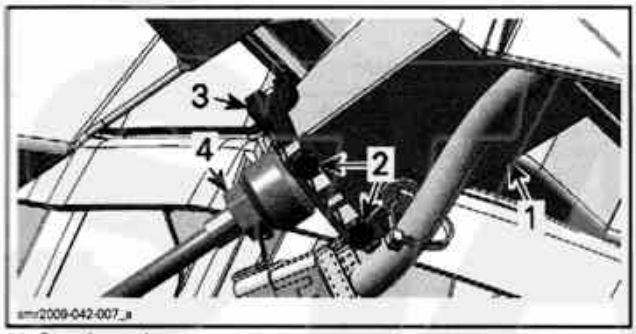
When properly aligned, measures A and B are equal.

If necessary, adjust cable at steering column as follows:

Open storage compartment cover and remove basket or access cover as applicable.

Loosen steering cable clamp bolts.

Turn adjusting nut as required.



1. *Steering column support*
2. *Steering cable clamp bolts*
3. *Steering cable clamp*
4. *Steering cable adjusting nut*

Tighten steering cable clamp bolts to 9 N•m (80 lbf•**in**).

NOTICE **Verify when the handlebar is turned completely to the left or right side, that there is no interference with jet pump or reverse parts.**

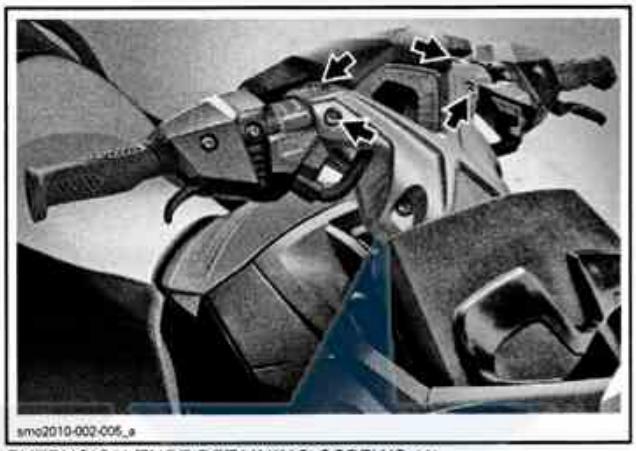
ERGONOMIC ADJUSTMENTS

RXT-X Models

The handlebar width and angular position of the controls may be adjusted to driver preference by extending and rotating the handlebar extension tubes.

To adjust, carry out the following steps:

1. Loosen the screws (2 each side) that secure the handlebar extension tubes.



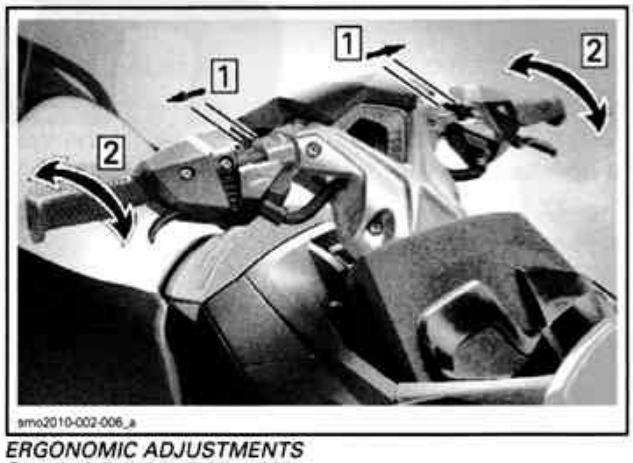
EXTENSION TUBE RETAINING SCREWS (4)

2. Pull out on the handlebar grips to adjust handlebar width.

NOTE: The handlebar width factory set position is fully closed. The handlebar width may be increased by 2.5 cm (1 in) each side.

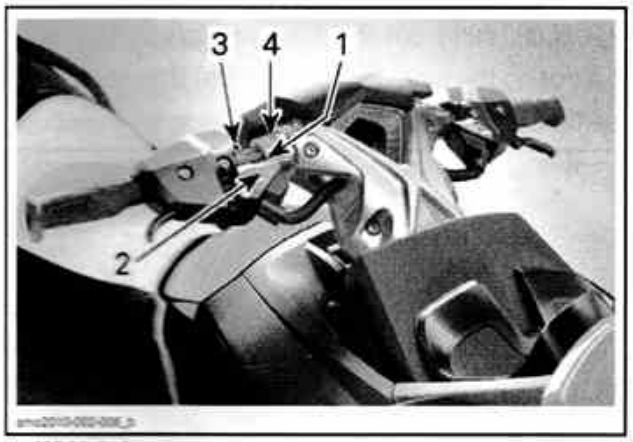
3. Rotate the handlebar grips to the desired position of the controls.

NOTE: Rotating the handlebar grips rotates the handlebar extension tubes and controls. The extension tubes may be rotated plus or minus 18° from the factory set position.



ERGONOMIC ADJUSTMENTS
Step 1: Adjust handlebar width
Step 2: Adjust angular position of controls

4. Using the index marks and scales on each side of the handlebar, ensure identical width and angular position of both handlebar extension tubes.



1. Width index
2. Width scale
3. Angular position index
4. Angular position scale

5. Torque handlebar retaining screws to 9 N•m (80 lbf•**in**).

INSPECTION

O.T.A.S. OPERATION

This test is to be performed with the watercraft in the water (test tank or on a trailer).

NOTICE **If the test is performed on a trailer, ensure no debris or rocks can damage the jet pump.**

Start engine.

Raise engine speed higher than 4000 RPM for more than 1 second.

Release throttle while steering is in the straight ahead position.

Within 1 to 3 seconds, turn handlebar all the way to one side.

The O.T.A.S. should come on by keeping or increasing engine speed to approximately 3000 RPM.

Then, engine speed will gradually decrease to idle speed within approximately 5 seconds.

Repeat test for the other side.

If the engine does not behave as described, carry out the *O.T.A.S. SWITCH TEST WITH B.U.D.S.*

TROUBLESHOOTING

DIAGNOSTIC TIPS

Check fault codes as a first troubleshooting step.

If O.T.A.S. works when handlebar is turned on one side only, check magnets condition, if magnets and switch are securely installed.

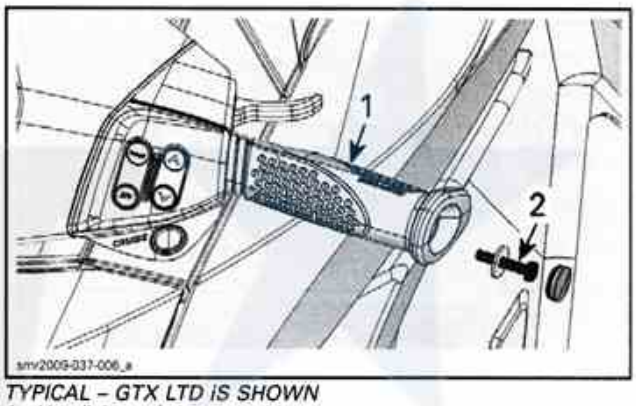
To confirm is O.T.A.S. is functional, carry out *O.T.A.S. OPERATION* in this subsection. If it is not possible, carry out *O.T.A.S. SWITCH TEST WITH B.U.D.S.*

PROCEDURES

HANDLEBAR GRIP

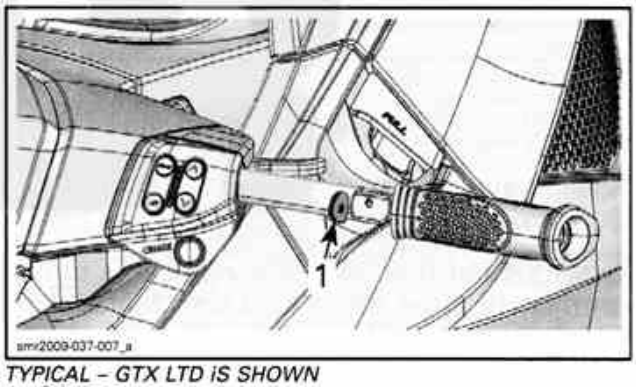
Handlebar Grip Removal

To remove handlebar grip, remove the cap, then the retaining screw.



TYPICAL - GTX LTD iS SHOWN
1. Handlebar grip
2. Handlebar grip screw

Pull out handlebar grip and remove grip insert from handlebar.

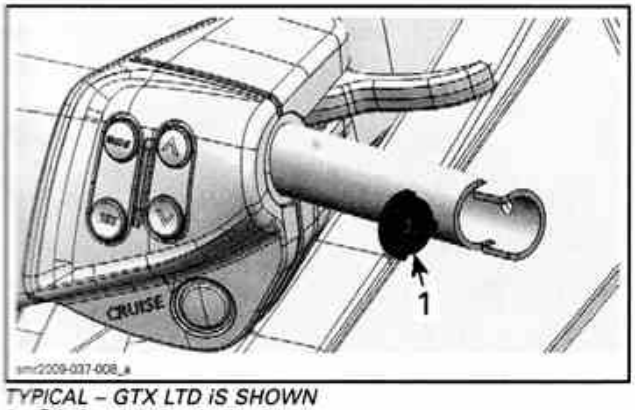


TYPICAL - GTX LTD iS SHOWN
1. Grip insert

NOTE: Verify grip insert for damage.

Handlebar Grip Installation

When installing the grip insert in the handlebar, ensure that it is properly inserted in the slot at the end of the handlebar tubing.



TYPICAL – GTX LTD iS SHOWN
1. *Grip insert*

Install handlebar grip on handlebar matching it to the notch in the handlebar.

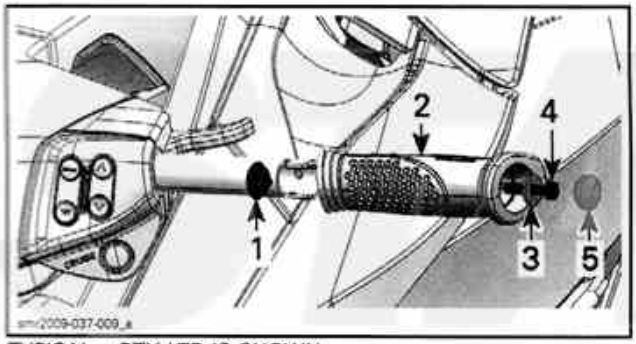
Apply LOCTITE 243 (BLUE) (P/N 293 800 060) on screw threads (or use new self-locking screws).

Install flat washer and handlebar grip screw.

NOTICE **Ensure to install flat washer otherwise screw will damage the grip end.**

Torque handlebar grip screw to 7 N•m (62 lbf•**in**).

Install cap.



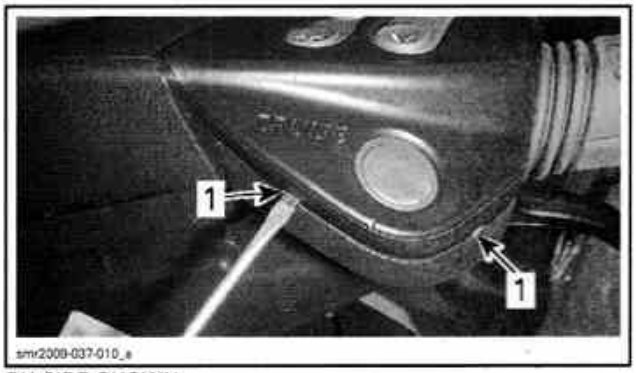
TYPICAL – GTX LTD iS SHOWN
1. *Grip insert*
2. *Grip*
3. *Flat washer*
4. *Screw*
5. *Cap*

HANDLEBAR SWITCH COVER (LH OR RH)

Handlebar Switch Cover Removal (LH or RH)

All Models Except RXT-X

1. Insert the end of a small screwdriver in one of cover slots.

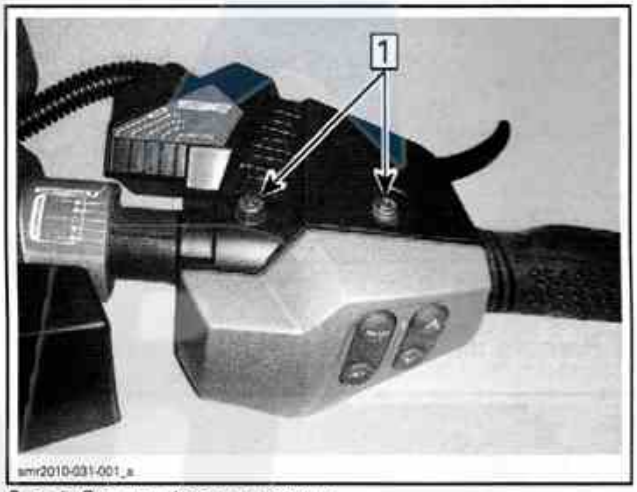


RH SIDE SHOWN
1. *Cover slots*

2. Twist screwdriver to open cover.
3. Remove the switch cover.

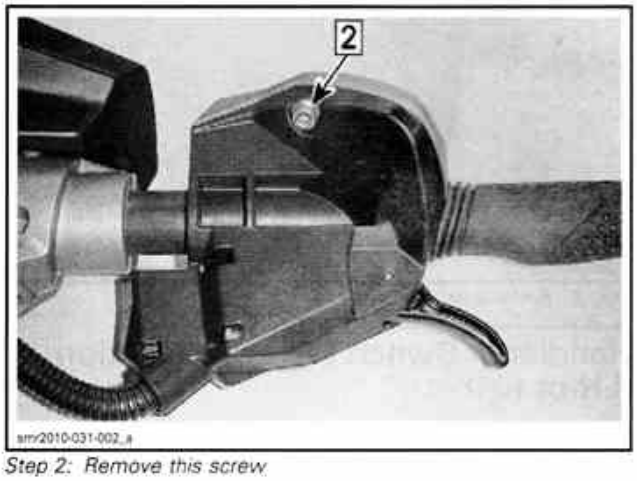
RXT-X Models

1. Remove the 2 screws at front of the upper handlebar housing.



Step 1: Remove these two screws

2. Remove the screw at rear of the handlebar.

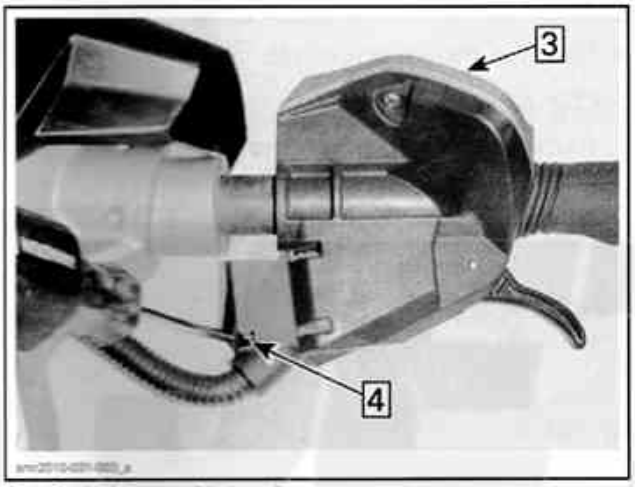


Step 2: Remove this screw

NOTICE Do not try to pull the cover off the housing at this time.

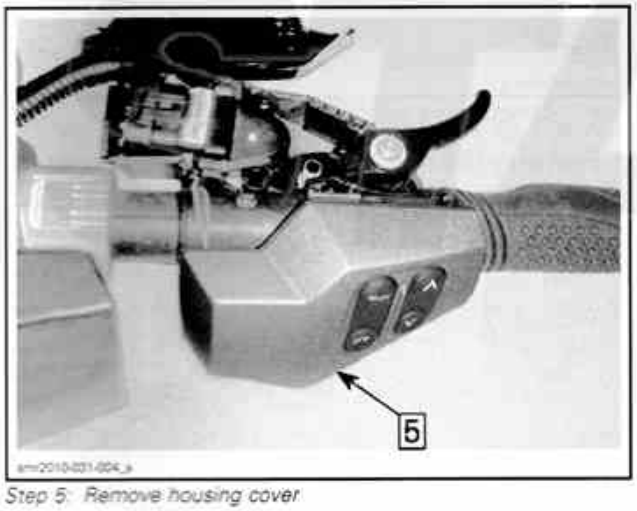
3. Hold the housing cover to prevent it from falling off the handlebar when unlocking the upper housing in the following step.
4. Using a small screwdriver, unlock the tab retaining the upper housing and pull the upper housing off.

NOTICE As you remove the upper housing, hold the housing cover to prevent it from falling off the handlebar.



Step 3: Hold on to this housing cover
Step 4: Unlock this tab

5. Remove the housing cover from the handlebar.

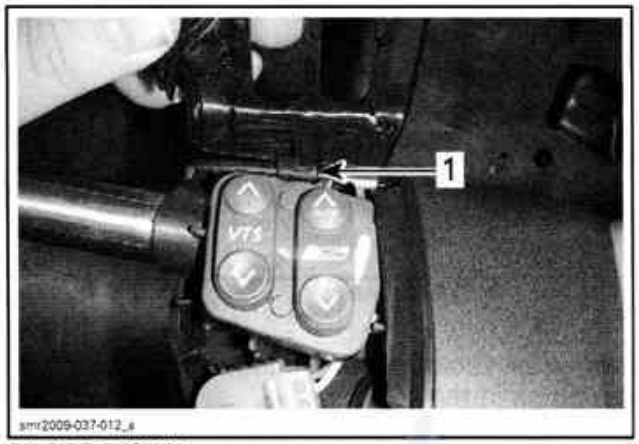


Step 5: Remove housing cover

Handlebar Switch Cover Installation (LH or RH)

All Models Except RXT-X

1. Install the round rubber button in the cover.
2. Insert the front tab and tilt the cover over the switches (applicable models).



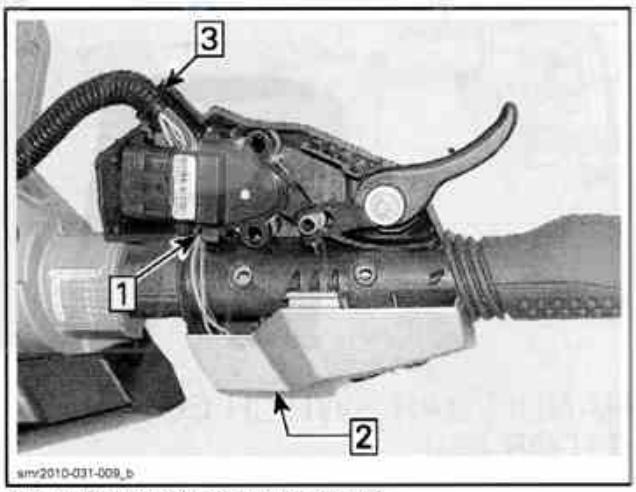
RH SIDE SHOWN
1. Front tab

3. Press on the cover to lock it.

RXT-X Models

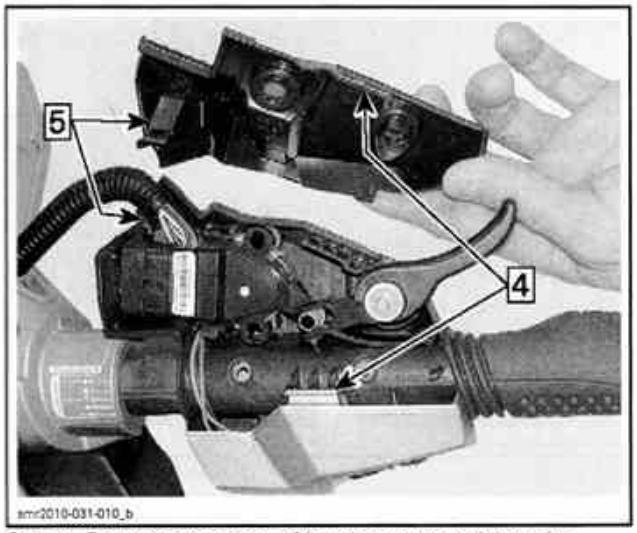
Installation is the reverse of the removal procedure however, pay attention to the following.

1. Route wires to avoid pinching them.
2. Position the housing cover onto the handlebar housing.
3. Ensure positioning of corrugated conduit



Step 1: Ensure wiring is properly routed
Step 2: Install housing cover
Step 3: Ensure proper corrugated conduit positioning

4. Position the upper housing on the handlebar housing.
5. Ensure proper engagement of the upper housing and cover tabs.



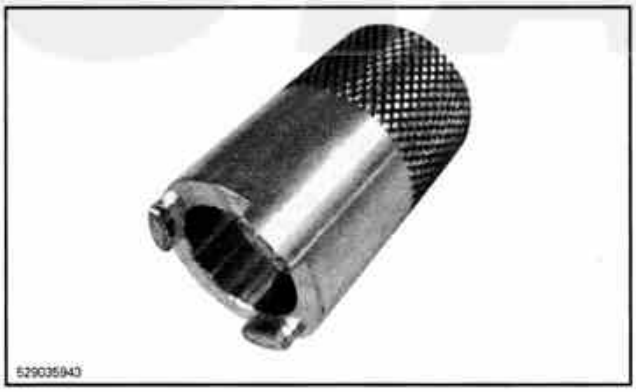
Step 4: Ensure engagement of housing cover retaining tabs
Step 5: Ensure engagement of upper housing locking tabs

6. Install the three retaining screws for the upper housing and torque them to 2 N•m (18 lbf•**in**).
7. Ensure proper operation of throttle lever.

EXTENSION BLOCKS (RXT-X MODELS)

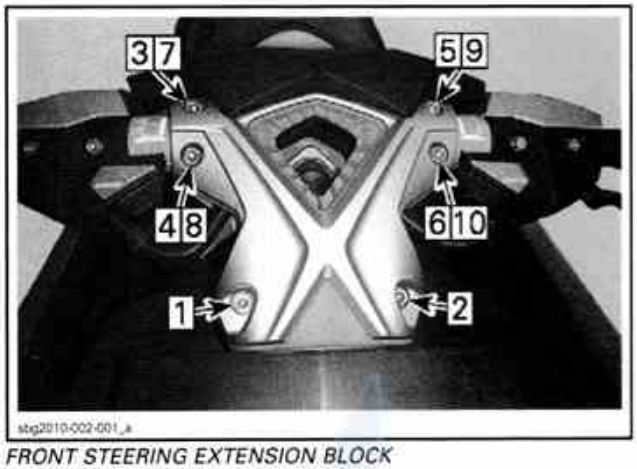
Extension Block Removal

1. Remove all socket screws (8x) that retain the front and the rear extension blocks.
2. Separate both extension blocks.
3. Using the D.E.S.S. POST REMOVER (P/N 529 035 943), remove the engine cut-off switch (D.E.S.S. post) retaining nut.

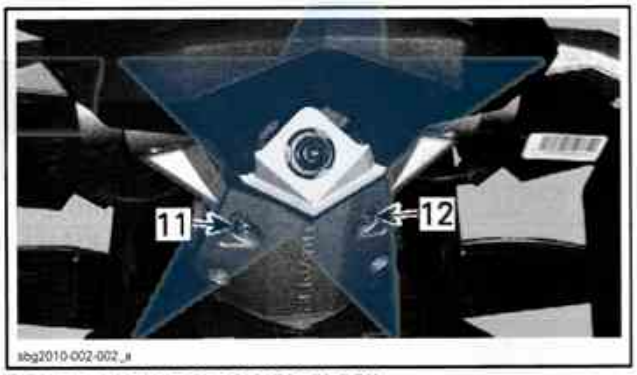


Extension Block Installation

Tighten screws to 9 N•m (80 lbf•**in**) using the following sequence.



FRONT STEERING EXTENSION BLOCK



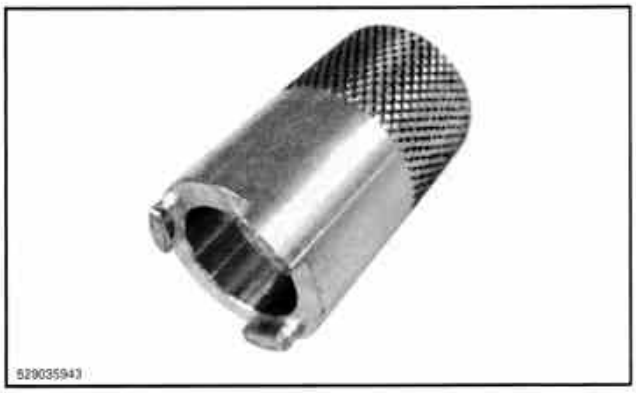
REAR STEERING EXTENSION BLOCK

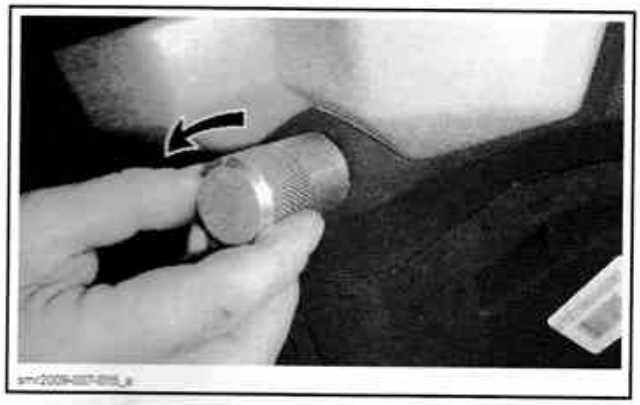
STEERING COVER

Steering Cover Removal

All Models Except RXT-X

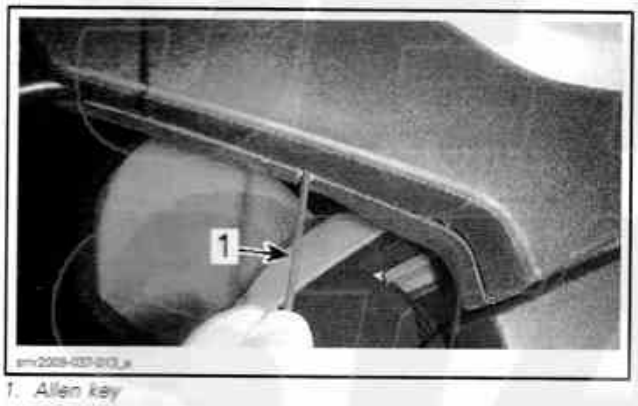
1. Using the D.E.S.S. POST REMOVER (P/N 529 035 943), remove the engine cut-off switch (D.E.S.S. post) retaining nut.





2. Remove both handlebar switch covers. See procedure in this subsection.
3. Unlock steering cover from steering.
   3.1 Insert a small tool, such as an Allen key, into a steering cover hole. Press the tool against the retaining tab to unlock it. Repeat for the other side.

NOTICE **The tool must be inserted perfectly straight to avoid breaking the tab holder.**

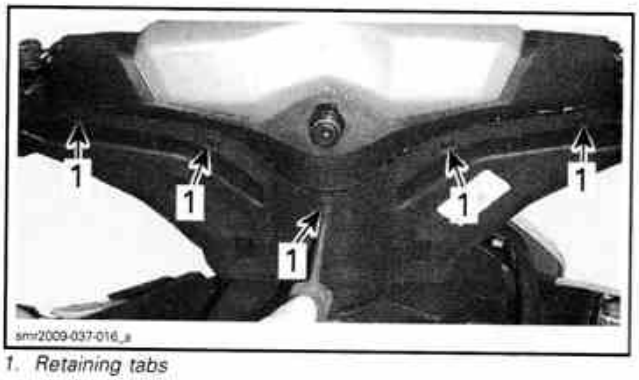


1. Allen key

   3.2 In both cavities at the back of steering cover, release both inner retaining tabs using a long screwdriver.

1. Rear cavity

   3.3 Release the five retaining tabs at the rear of steering cover.



1. Retaining tabs

   3.4 Remove the foam inside the steering cover.
   3.5 Remove the engine cut-off switch from the steering cover.

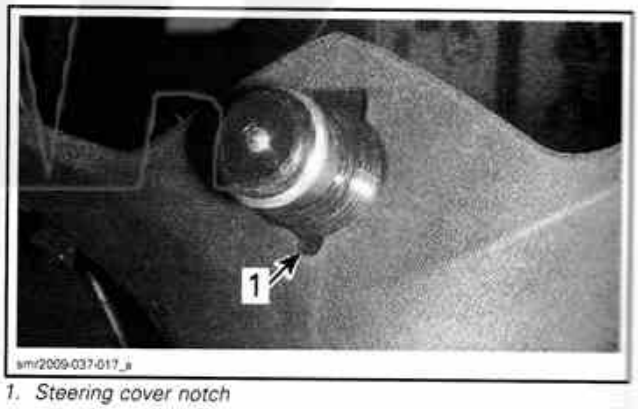
RXT-X Models

1. Separate the extension blocks. See procedure in this subsection.
2. Remove screws securing the steering cover to the front extension block.

Steering Cover Installation

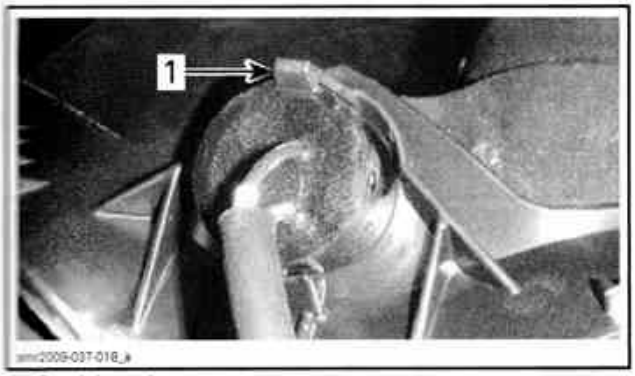
All Models Except RXT-X

1. Install the engine cut-off switch.
   1.1 Index the alignment pin of the engine cut-off switch with the notch of steering cover.



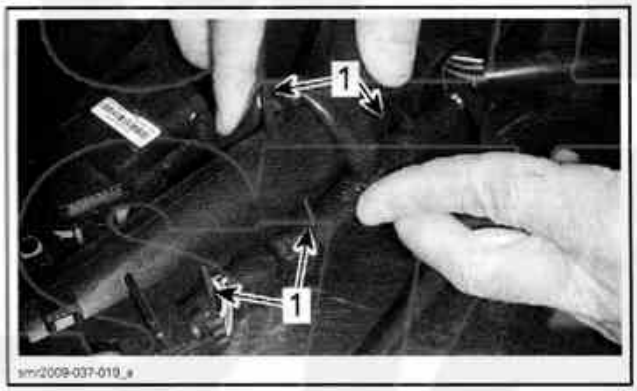
1. Steering cover notch

   1.2 Press the engine cut-off switch until retaining tab is positioned correctly.



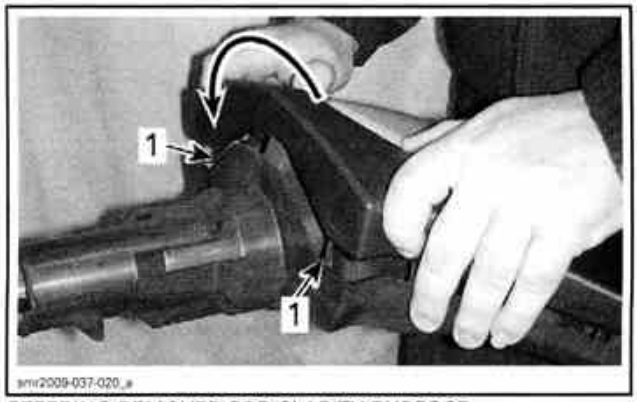
1. Retaining tab

2. Install the engine cut-off switch nut and tighten it to 2 N•m (18 lbf•**in**).
3. Install the foam.
4. Place the engine cut-off switch harness in foam slot.
5. Install the steering cover.
   5.1 Check if all harnesses are route properly. All harness must be inserted in its slot.



1. Harness slots

   5.2 Clip the top of the cover.
   5.3 Stretch the bottom of the steering cover until the cover edge passes over the inner ribs.



STEERING REMOVED FOR CLARITY PURPOSE
1. Inner ribs

   5.4 Push both side of the cover to lock it with the steering column.
   5.5 Install switch covers.

RXT-X Models

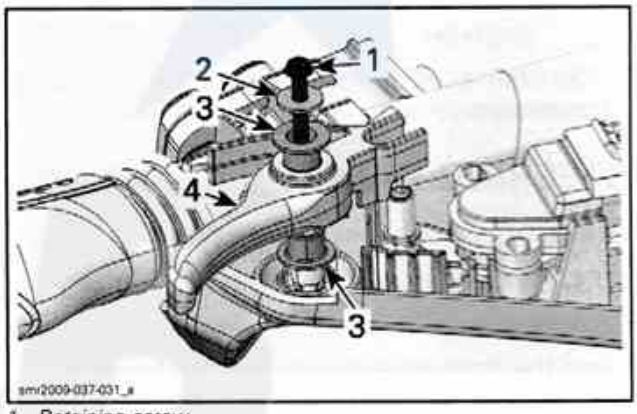
The installation is the reverse of the removal procedure.

THROTTLE AND iBR LEVERS

NOTE: The following procedure demonstrates the replacement of the throttle lever but the same procedure will be used for the iBR lever.

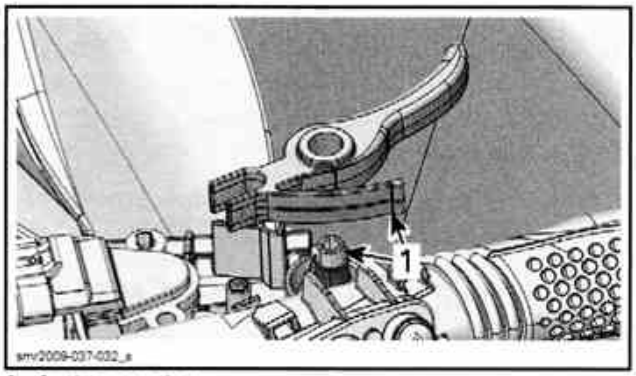
Lever Replacement

1. Remove *HANDLEBAR SWITCH COVER*, see procedure in this subsection.
2. Remove the screw and washer securing throttle lever.
3. Remove throttle lever and its bushings.



1. Retaining screw
2. Washer
3. Bushings
4. Throttle lever

4. Clean throttle lever area from dust or any deposits.
5. Apply XPS SYNTHETIC GREASE (P/N 293 550 010) on bushings and on the outer surface of the return tab.



1. Apply grease here

6. Install the lever.
   6.1 Install both bushings in lever hole.
   6.2 Insert sensor lever end into throttle lever fork.
   6.3 Position the return tab against the handlebar.
   6.4 Secure the lever with washer and screw.
   6.5 Tighten the lever screw to 0.7 N•m (6 lbf•**in**).
7. Reinstall all removed parts using appropriate procedures.

STEERING CABLE

Steering Cable Replacement

GTS, GTI and Wake 155

Remove seat.

Open the front storage compartment cover.

Remove access cover.

Remove the gauge trim. Refer to *BODY* subsection.

RXT GTX and Wake Pro

Open the seat and the front storage compartment cover.

Remove the storage basket.

Remove the gauge support. Refer to *GAUGE* subsection.

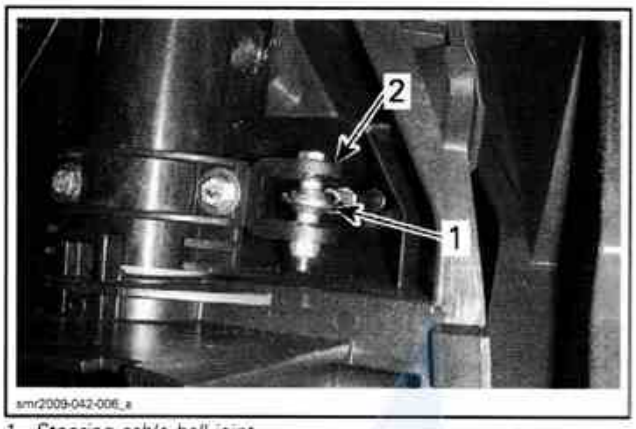
RXT aS, RXT iS and GTX iS

Remove the moving deck. Refer to *BODY* subsection.

Remove the adjusting nut from steering cable end.

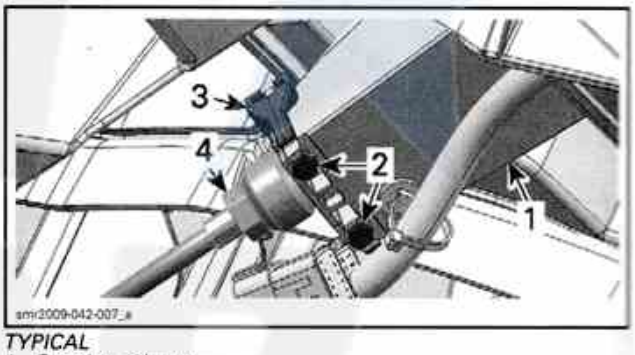
All Models

1. Detach steering cable from steering column.
   1.1 Remove the bolt securing the ball joint to the steering column arm.



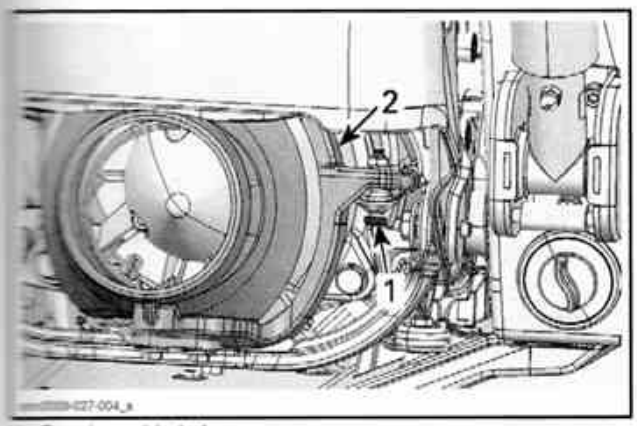
1. Steering cable ball joint
2. Steering column arm

   1.2 Remove the steering cable clamp bolts.
   1.3 Unhook steering cable clamp.



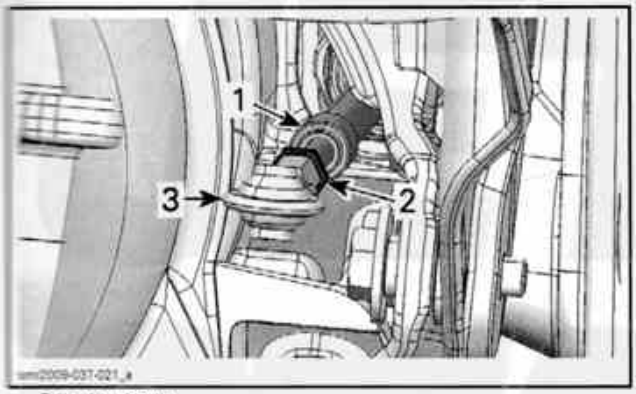
TYPICAL
1. Steering column
2. Steering column clamp bolts
3. Steering column clamp
4. Steering cable adjusting nut

   1.4 Place steering in its lower position (models with tilt steering).
   1.5 Free steering cable from the clamp.
1. At rear of the watercraft, disconnect ball joint from jet pump nozzle arm.



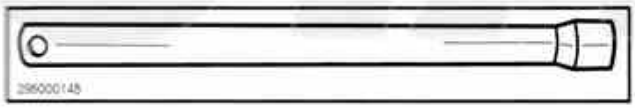
1. *Steering cable bolt*
2. *Nozzle arm*

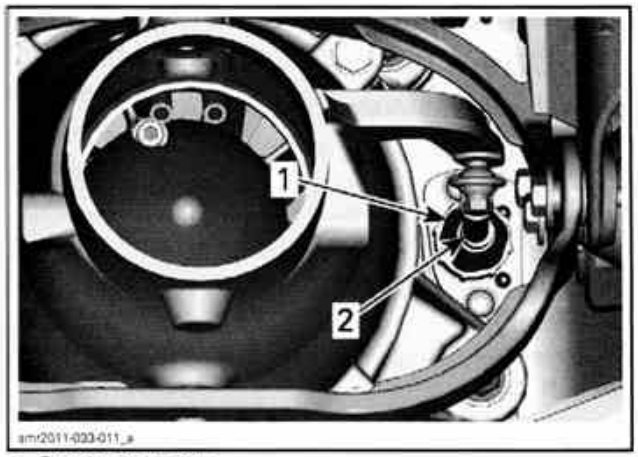
2. Remove ball joint and jam nut from cable.



1. *Steering cable*
2. *Jam nut*
3. *Ball joint*

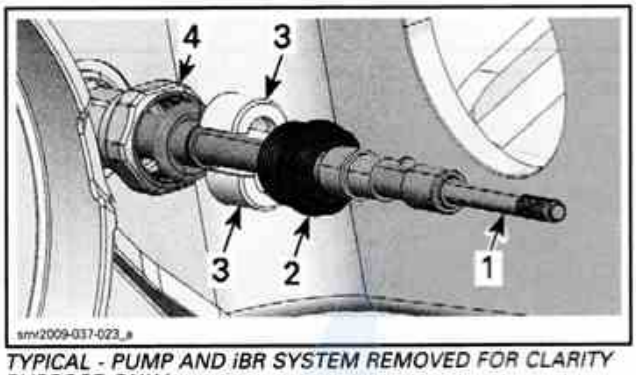
3. Using the STEERING CABLE TOOL (P/N 295 000 145), loosen steering cable nut.





1. *Steering cable nut*
2. *Steering cable*

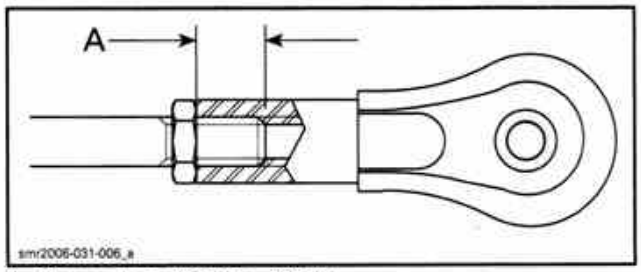
4. Remove steering cable nut, half rings and O-ring.



TYPICAL - PUMP AND iBR SYSTEM REMOVED FOR CLARITY PURPOSE ONLY

1. *Steering cable*
2. *Steering cable nut*
3. *Half rings*
4. *O-ring*

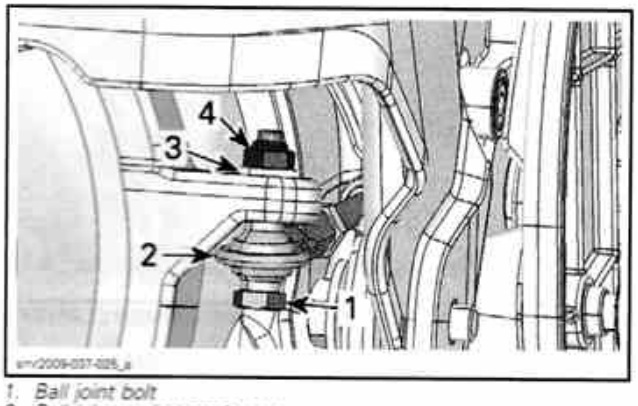
5. Remove the adjusting nut from the new steering cable.
6. From inside the hull, pull the aft end of the cable through the hull fitting.
7. Using a piece of hose, attach one end of the new cable to the opposite end old cable together.
8. Route the new cable in the hull by slowly pulling the old one, then separate cable ends.
9. From inside of the hull, pass the aft end of the cable through the hull fitting.
10. Secure the steering cable to the hull fitting.
    - 10.1 Install O-ring and half rings.
    - 10.2 Apply LOCTITE 567 (PIPE SEALANT) (P/N 293 800 013) on nut threads.
    - 10.3 Secure steering cable with the steering cable nut.
    - 10.4 Tighten nut to 6 N•m (53 lbf•**in**).
11. Install the ball joint on the end of the steering cable.
    - 11.1 The threaded portion of steering cable inserts into ball joint should have between 9 mm ± 1 mm (.354 in ± .039 in).



A. 9 mm ± 1 mm (.354 in ± .039 in)

11.2 Tighten jam nut to 2.5 N•m (22 lbf•**in**).

11.3 Position the steering cable ball joint to the nozzle as per following illustration.

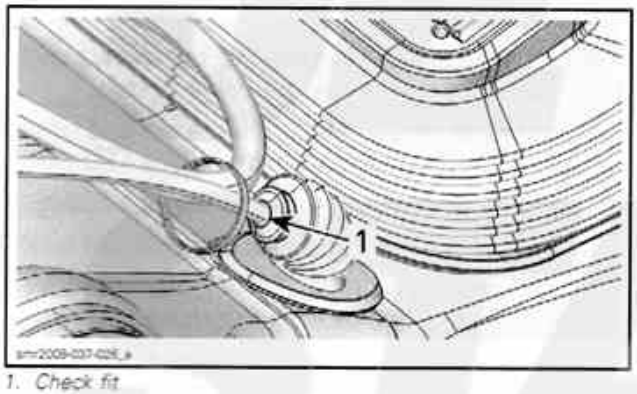


1. *Ball joint bolt*
2. *Ball joint under nozzle arm*
3. *Washer*
4. *Nut*

11.4 Tighten ball joint nut to 7 N•m (62 lbf•**in**).

RXT iS and GTX iS

1. Check if the cable bellows is properly positioned all around steering cable.

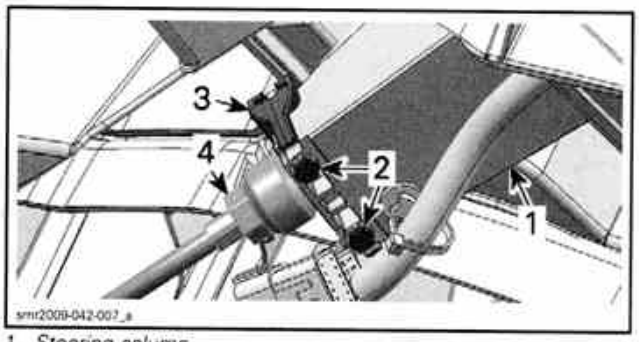


1. *Check fit*

2. Reinstall the moving deck. Refer to *BODY* subsection for complete procedure.

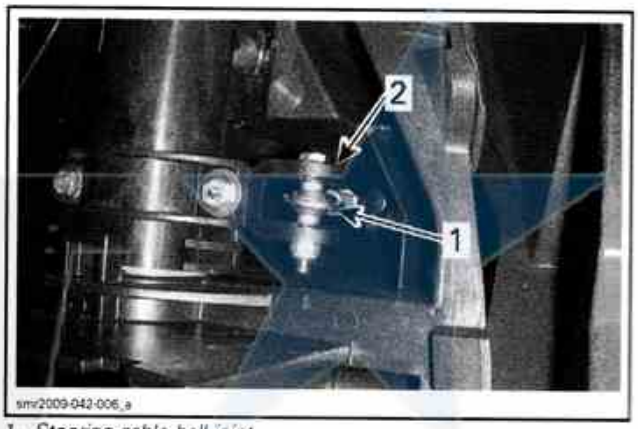
All Models

1. Insert the steering cable through the bottom end of the steering column.
2. Install steering cable clamp and its bolts. Do not tighten bolts yet.



1. *Steering column*
2. *Steering column clamp bolts*
3. *Steering column clamp*
4. *Steering cable adjusting nut*

3. Attach steering cable to steering column arm.



1. *Steering cable ball joint*
2. *Steering column arm*

4. Tighten retaining bolt to 5 N•m (44 lbf•**in**).
5. Carry out *STEERING ALIGNMENT*. See procedure in this subsection.
6. Install other removed parts.

STEERING COLUMN

Steering Column Removal

GTS, GTI and Wake 155

Open the front storage cover.

Remove the access cover.

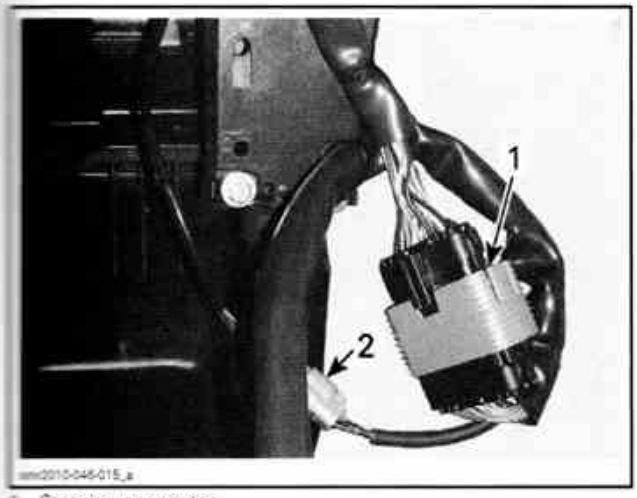
Remove gauge trim, refer to *BODY* subsection.

GTX, RXT and Wake Pro

Open the front storage cover and remove the storage basket.

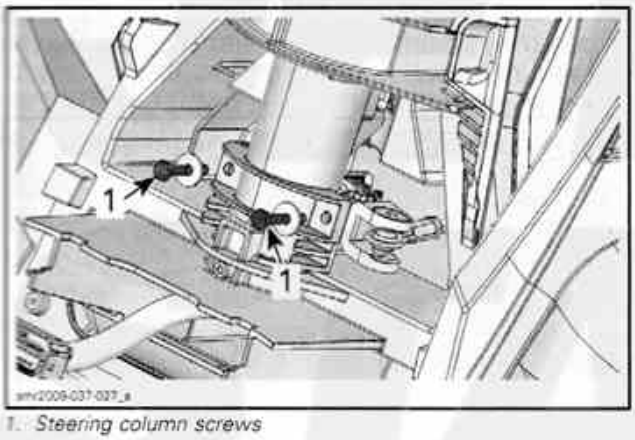
Remove the gauge support. Refer to *GAUGE* subsection.

1. Disconnect both connectors under the steering column.



1. *Steering connector*
2. *O.T.A.S. connector*

2. Remove both screws securing the steering column.



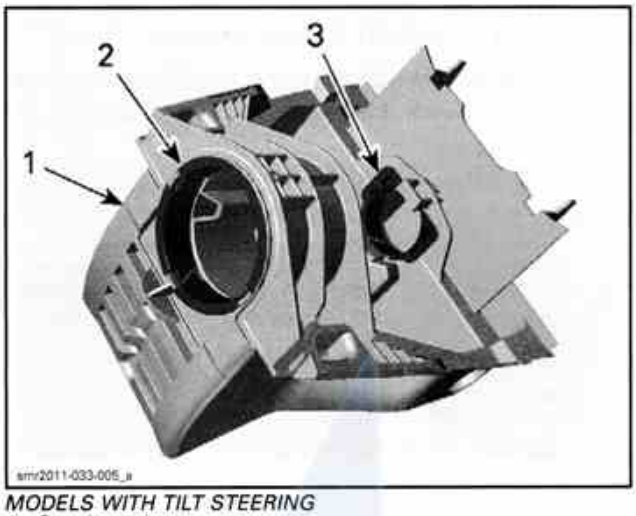
1. *Steering column screws*

3. Pull steering column out of its support. Ensure to not damage wiring harness connectors and O.T.A.S. magnets.

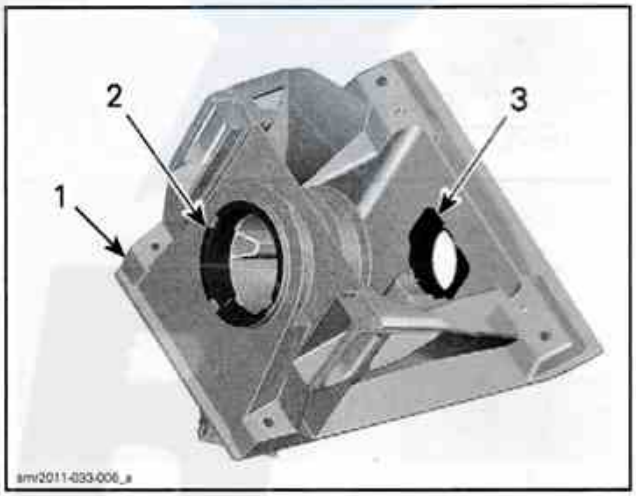
Steering Column Inspection

Check steering column for:
- Cracks
- Stress marks
- Sings of wear.

Check steering column support bushings.

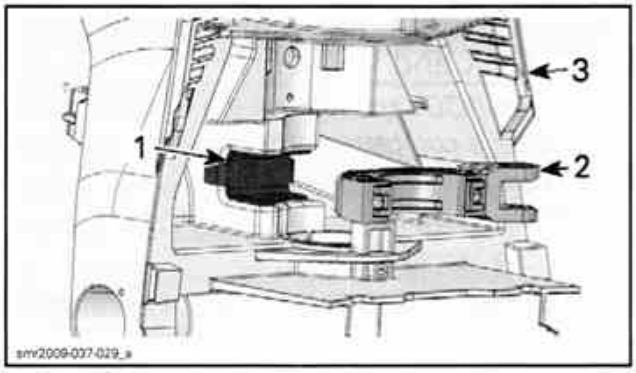


MODELS WITH TILT STEERING
1. *Steering column support*
2. *Upper bushing*
3. *Lower bushing*



MODELS WITHOUT TILT STEERING
1. *Steering column support*
2. *Upper bushing*
3. *Lower bushing*

Check wear sleeve behind the steering column arm.



1. *Wear sleeve*
2. *Steering column arm*
3. *Steering column support*

Replace any damaged or worn parts.

Steering Column Installation

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

Carefully, drive steering column through steering column support. Ensure not to hit the O.T.A.S. magnet during steering column installation.

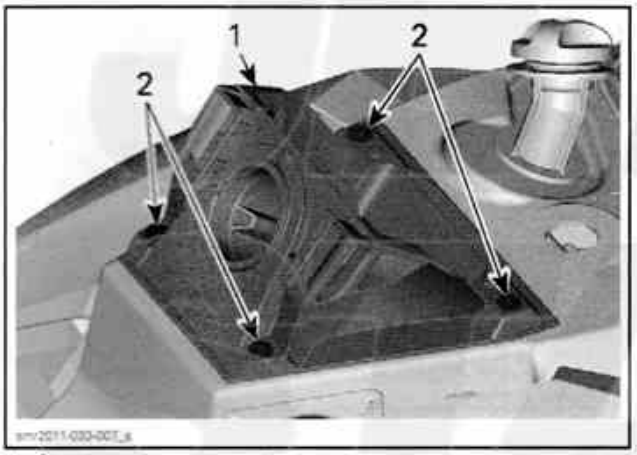
Tighten steering column screws to 6 N•m (53 lbf•**in**).

Reinstall all removed parts using appropriate procedure.

STEERING COLUMN SUPPORT

Steering Column Support Removal (GTS, GTI and Wake 155)

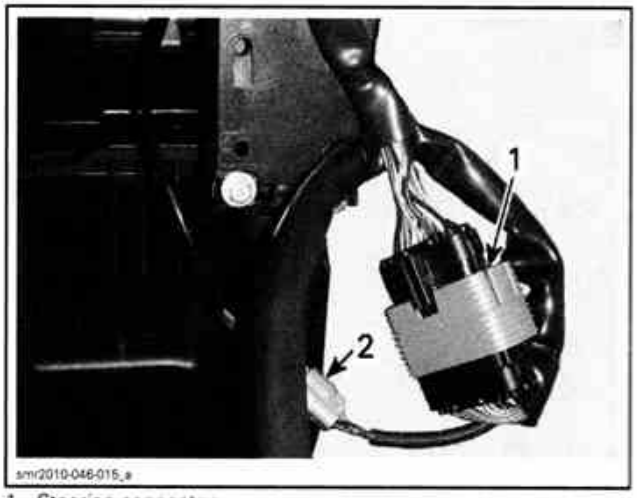
1. Remove steering column, see procedure in this subsection.
2. Remove console, refer to *BODY* subsection.
3. Remove steering column support retaining screws.



1. Steering column support
2. Retaining screws

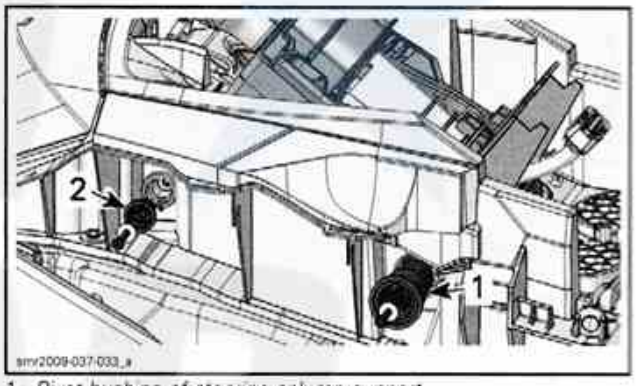
Steering Column Support Removal (RXT, GTX and Wake Pro)

1. Refer to *BODY* and remove the following parts:
   - Storage compartment cover
   - Front grille (**iS models**)
   - Body covers.
2. Remove storage basket.
3. Disconnect both connectors under the steering column.



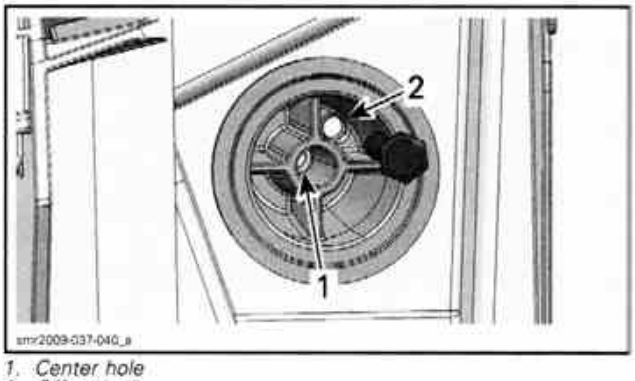
1. Steering connector
2. O.T.A.S. connector

4. Remove the gauge support. Refer to *GAUGE* subsection.
5. On both sides, remove both pivot bushings (steering column support and steering adjustment handle).



1. Pivot bushing of steering column support
2. Pivot bushing of steering adjustment handle

NOTE: If pivot bushings retaining steering column are hard to remove, remove the retaining screw from the center hole and tighten it into the offset hole. Tighten screw until the pivot bushing comes out of steering column support.



1. Center hole
2. Offset hole

6. Remove steering column support and steering adjustment handle from vehicle.
7. Remove *STEERING COLUMN* from its support. See the procedure in this subsection.

Steering Column Support Installation

Installation is the reverse of the removal procedure.

STEERING TILT RELEASE HANDLE

Steering Tilt Release Handle Replacement

Use the same procedure as for *STEERING COLUMN SUPPORT.*

O.T.A.S. SWITCH

O.T.A.S. Switch Test with B.U.D.S.

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

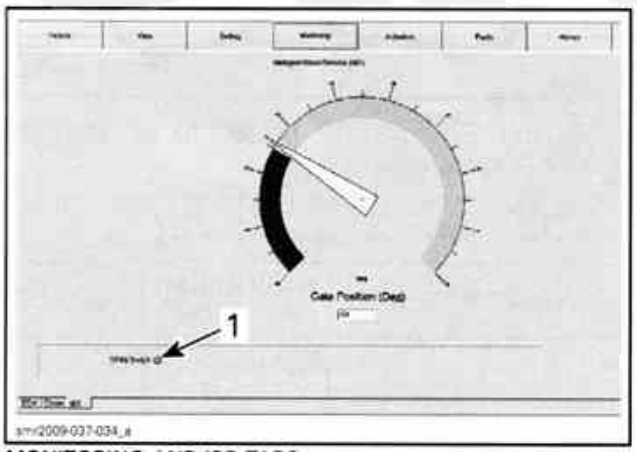
Select the **Monitoring** and **iBR** tabs.

Briefly press the START/STOP button to wake up the ECM.

Install the tether cord on the engine cut-off switch.

While monitoring the O.T.A.S. indicator in B.U.D.S., completely turn steering in one direction and keep it in this position.

The O.T.A.S. indicator should turn on when handlebar reaches the stopper.



MONITORING AND iBR TABS
1. O.T.A.S. indicator

Repeat test for the other side.

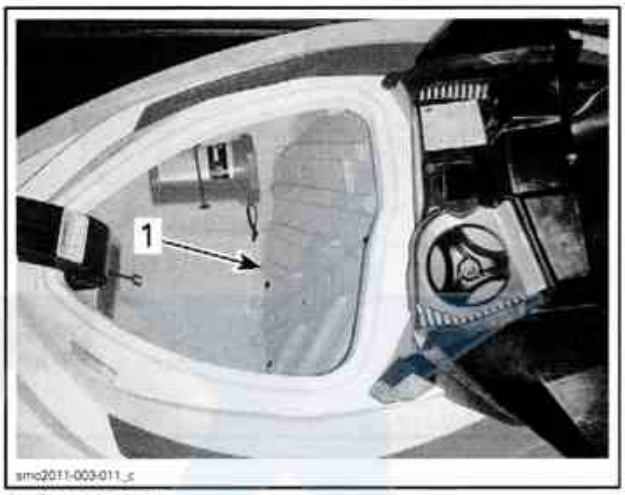
If O.T.A.S. indicator does not turn on, carry out the *O.T.A.S. SWITCH INPUT VOLTAGE TEST.*

O.T.A.S. Switch Input Voltage Test

Access the O.T.A.S. connector as follows:

GTI, GTS and Wake 155

Open the front storage cover an remove the access panel.



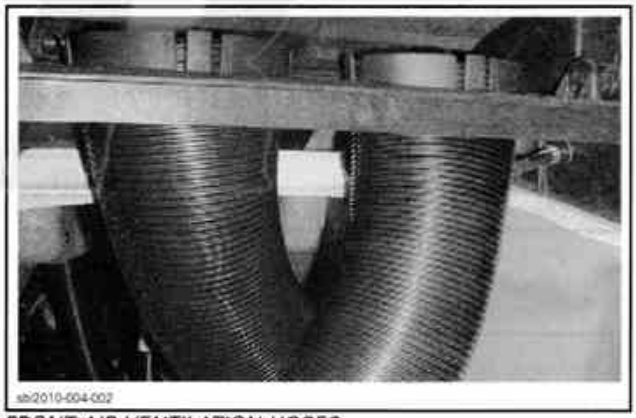
1. Access panel

RXT, GTX and Wake Pro

Open front storage compartment cover.

Remove front storage bin.

Disconnect the top air ventilation hoses.



FRONT AIR VENTILATION HOSES

RXT iS, RXT aS and GTX iS

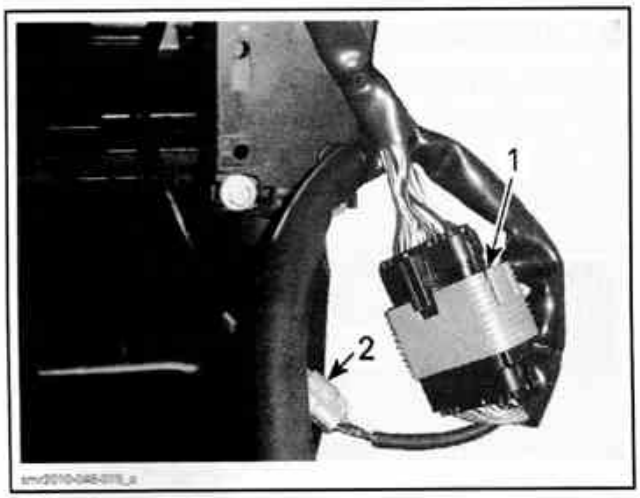
Open front storage compartment cover.

Remove front storage bin.

For easier access, rise the moving deck using the iS "up" button.

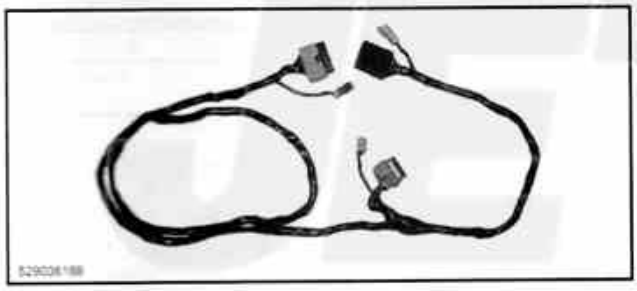
All Models

Disconnect the O.T.A.S. connector (keep the 24-pin steering harness connected.



1. *Steering connector*
2. *O.T.A.S. connector*

Connect the DIAGNOSTIC HARNESS (P/N 529 036 188) in-line between the disconnected O.T.A.S. connectors.



Press the START/STOP button to activate the electrical system.

Using the FLUKE 115 MULTIMETER (P/N 529 035 868), measure voltage as follows.

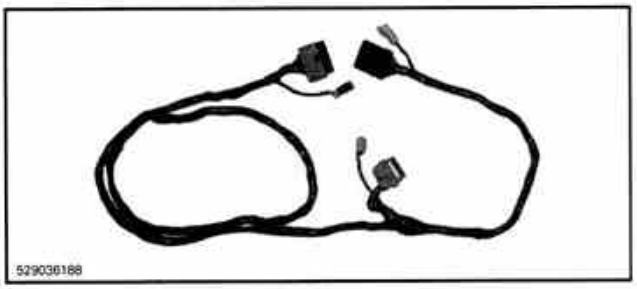
TEST PROBES		VOLTAGE (VDC)
PIN A (3-pin connector)	Battery negative post	Battery voltage

If voltage is not as specified, check wiring and connectors.

If voltage is as specified, carry out the *O.T.A.S. SWITCH GROUND TEST.*

O.T.A.S. Switch Ground Test

Install the DIAGNOSTIC HARNESS (P/N 529 036 188) as described in the *O.T.A.S. SWITCH INPUT VOLTAGE TEST.*



Press the START/STOP button to activate the electrical system.

Using the FLUKE 115 MULTIMETER (P/N 529 035 868), check ground circuit as follows.

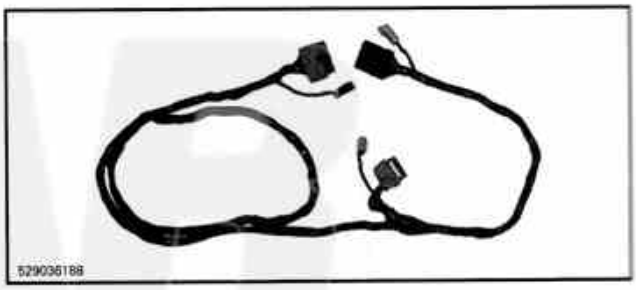
TEST PROBES		VOLTAGE (VDC)
PIN A (3-pin connector)	PIN B (3-pin connector)	Battery voltage

If voltage is not as specified, check wiring and connectors.

If voltage is as specified, carry out the *O.T.A.S. SWITCH SIGNAL TEST.*

O.T.A.S. Switch Signal Test

Install the DIAGNOSTIC HARNESS (P/N 529 036 188) as described in the *O.T.A.S. SWITCH INPUT VOLTAGE TEST.*



Press the START/STOP button to activate the electrical system.

Using the FLUKE 115 MULTIMETER (P/N 529 035 868), check switch signal as follows.

TEST PROBES		HANDLEBAR POSITION	VOLTAGE
PIN C (3-pin connector)	PIN B (3-pin connector)	Straight ahead	0.6 to 0.8 Vdc
		Turned completely to the right	2.0 to 2.5 Vdc
		Turned completely to the left	

If voltage is not as specified, replace the switch.

NOTE: To avoid useless switch replacement, make sure magnets are in good condition. Also, make sure magnets and switch are securely clipped.

O.T.A.S. Switch Replacement

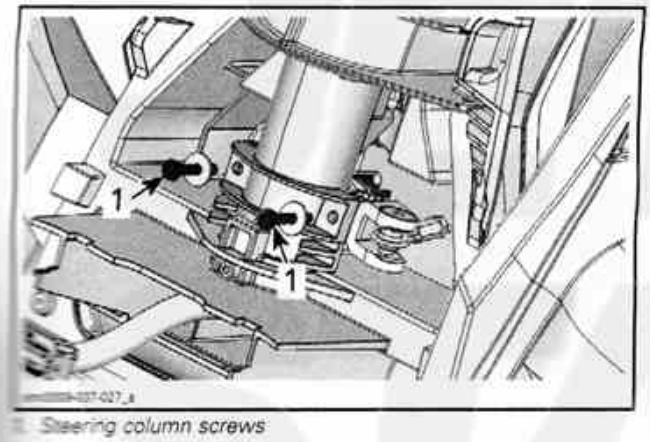
Models Without Tilt Steering

Remove steering column, see procedure in this subsection.

Models with Tilt Steering

Remove *STEERING COLUMN SUPPORT*, see procedure in this subsection.

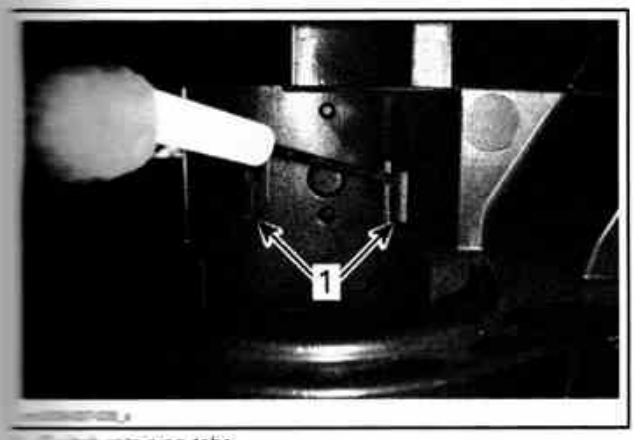
Remove steering column from its support by removing both retaining screws.



1. *Steering column screws*

All Models

1. Using a small screwdriver, unhook the switch from steering support.



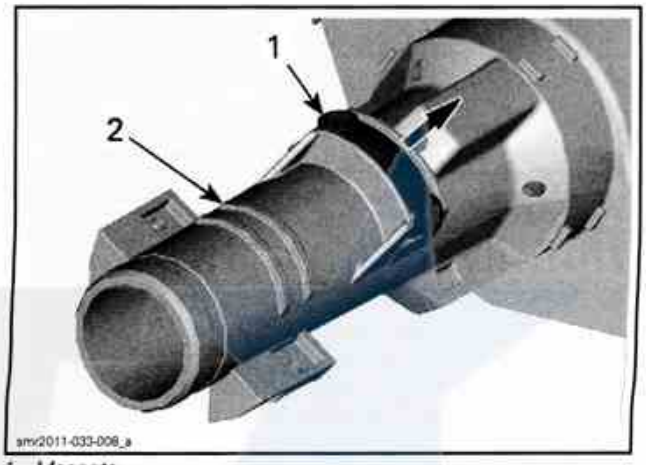
1. *Switch retaining tabs*

Reverse removal procedure to reinstall the O.T.A.S. switch.

O.T.A.S. MAGNETS

Magnets Replacement

1. Remove *STEERING COLUMN*, see procedure in this subsection.
2. Pull magnets off the steering column.



1. *Magnets*
2. *Steering column*

Reverse removal procedure to reinstall the magnets.

iBR AND VTS

SERVICE TOOLS

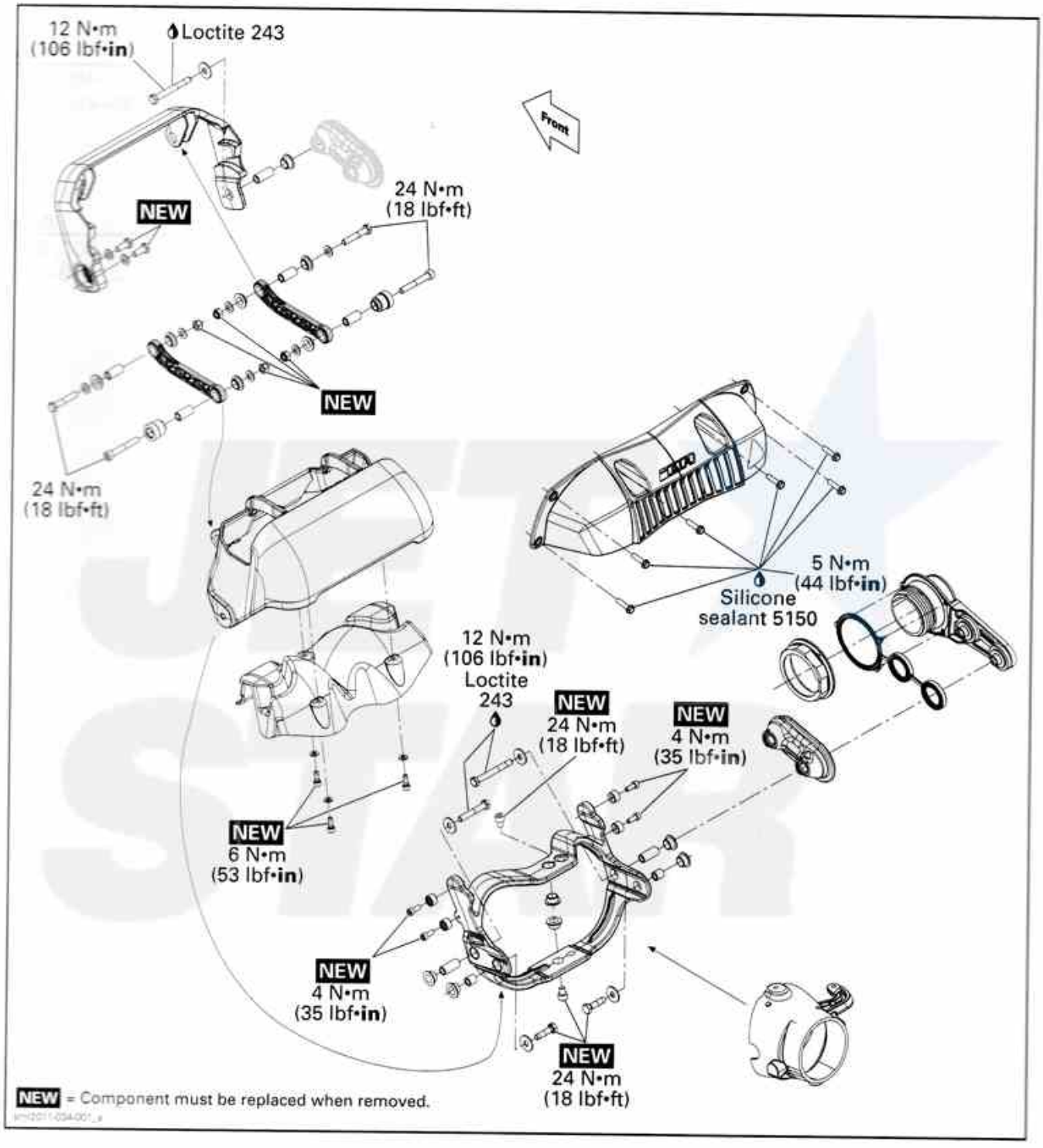
Description	Part Number	Page
DIAGNOSTIC HARNESS	529 036 188	489–491
FLUKE 115 MULTIMETER	529 035 868	489, 494–495, 513

SERVICE PRODUCTS

Description	Part Number	Page
DIELECTRIC GREASE	293 550 004	500, 514
LOCTITE 243 (BLUE)	293 800 060	499–500

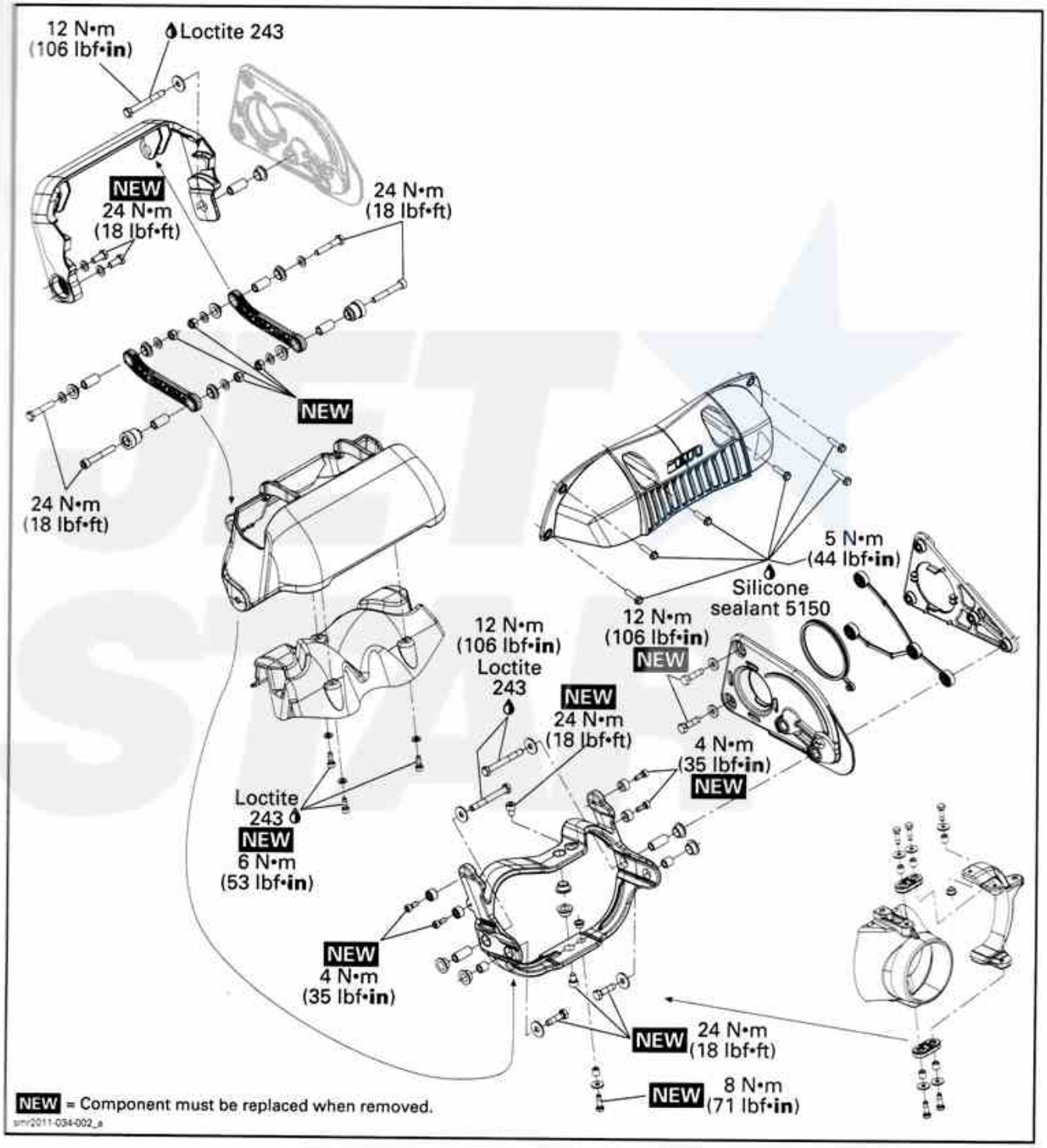
iBR GATE COMPONENTS

GTI and Wake Models



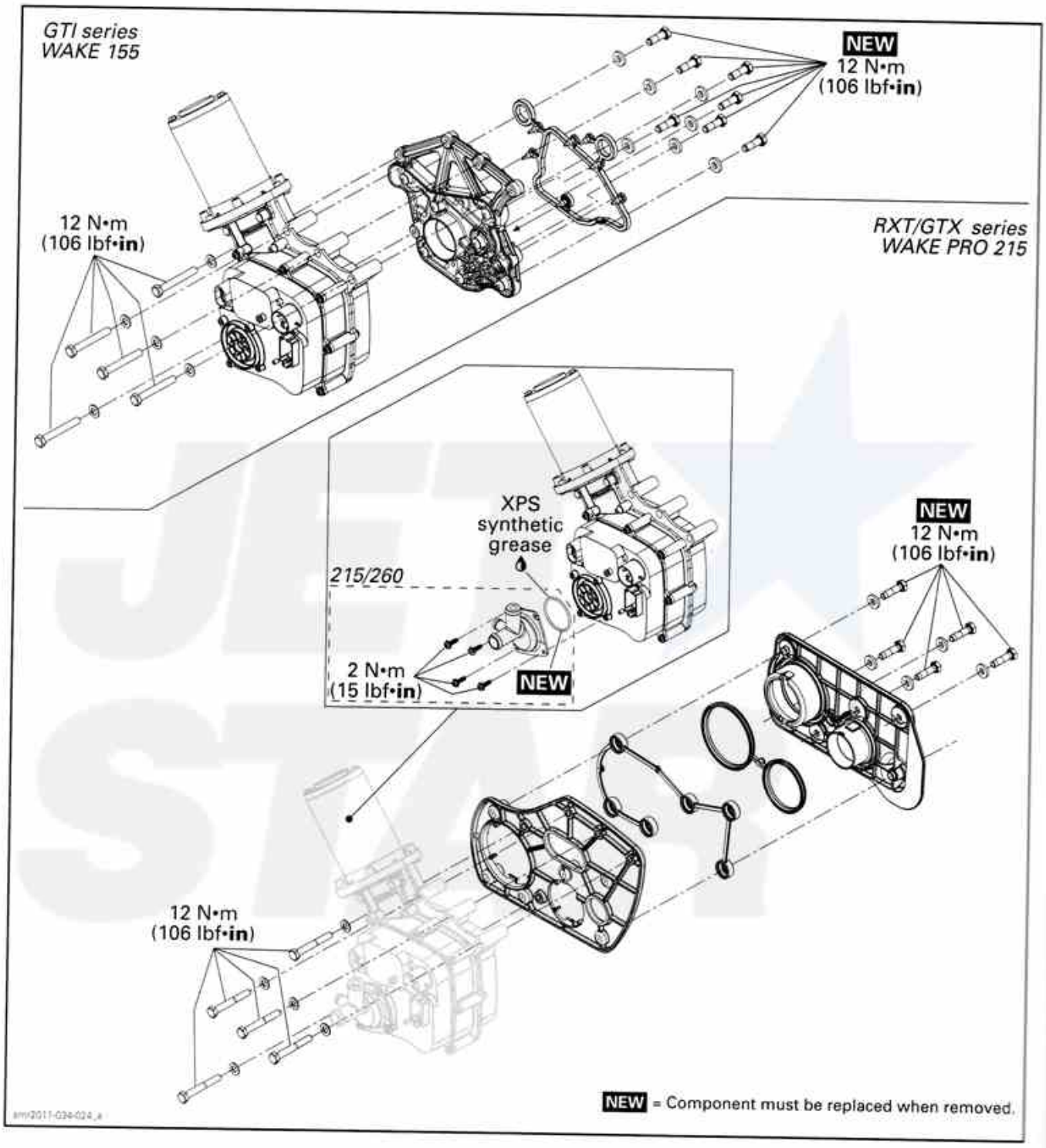
iBR GATE COMPONENTS

GTX, RXT and Wake Pro Models



iBR ACTUATOR

All Models



GENERAL

During assembly/installation, use torque values and service products as indicated 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, self-locking fasteners, cotter pins, etc.) must be replaced with new ones.

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

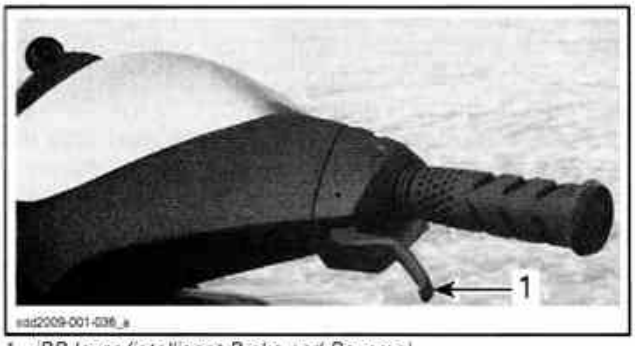
SYSTEM DESCRIPTION (iBR)

The iBR (intelligent Brake and Reverse) is an electronically controlled braking and reverse system.

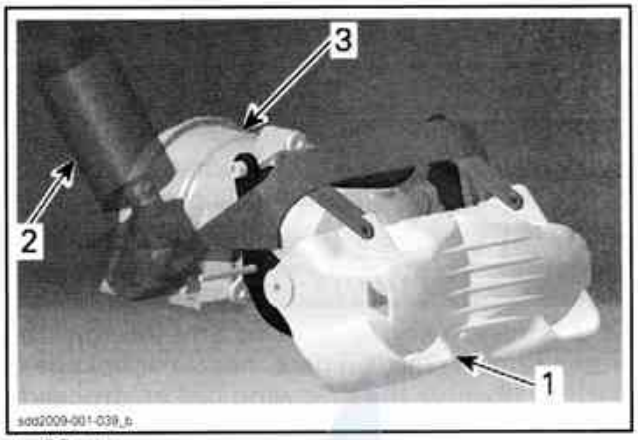
The iBR module controls the position of the iBR gate to provide forward thrust, reverse thrust, braking thrust, and neutral.

The operator commands the position of the iBR gate using either the throttle lever for forward thrust, or the iBR lever for neutral, reverse, and for the braking function.

The iBR lever is located on the LH side of the handlebar.

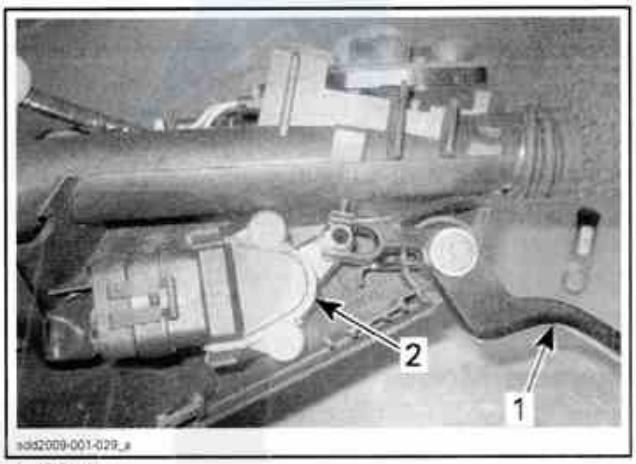


1. iBR lever (intelligent Brake and Reverse)



1. iBR gate
2. iBR module and motor
3. Jet pump

When the iBR lever is pulled in, it operates the brake and reverse lever sensor (BRLS). It is a double output hall effect sensor. The redundancy is used for security purposes.



1. iBR lever
2. BRLS sensor

The BRLS sends the signals to the iBR module. The iBR module controls an electric motor that in turn raises or lowers the iBR gate through a mechanical drive unit.

NOTE: The iBR gate will move when commanded by the iBR lever only if the engine is running. For maintenance purposes, the iBR OVERRIDE function available through the gauge can be used to electrically move the gate to the desired position.

The iBR module is programmed with various parameters that it compares to the input signals and information it obtains through the CAN bus from the other electronic modules.

Depending on vehicle speed and how far the iBR lever is pulled in, the iBR module will automatically adjust the iBR gate movement speed and stroke.

NOTE: The iBR lever must be pulled in at least 25% of its travel (approximately) before the iBR gate starts to move. The first 25% of iBR lever travel has no effect on the iBR gate.

Every time the iBR gate moves when commanded by the iBR lever, engine RPM is momentarily reduced to idle speed as the gate moves.

⚠ WARNING

If it is necessary to remove any foreign object caught in the iBR gate, nozzle or linkages, strictly observe the following before proceeding:

- **Remove tether cord from engine cut-off switch.**
- **Wait at least 5 minutes or remove iBR fuses.**
- **Do not press on START/STOP button. If START/STOP button is pressed, wait another 5 minutes.**

Forward Mode

To engage forward:

- Start engine
- Pull in the throttle lever.

The iBR gate will automatically move to the forward position (full up).

NOTE: The full up position of the iBR gate is dependent on the selected VTS trim position.

Reverse Mode

If the watercraft speed is below 8 km/h (5 MPH) when the iBR lever is pulled in, reverse mode is engaged.

When the iBR lever is pulled in to engage reverse, the following occurs:

- Engine RPM is reduced to idle.
- The iBR gate moves to the reverse position.
- Engine RPM ramps up to the engine power commanded by the throttle lever.

When operating in reverse mode, the iBR lever controls the iBR gate position and the engine RPM is controlled by the throttle lever.

The iBR gate position can be modulated anywhere between the neutral and full reverse positions depending on the position of the iBR lever. If the iBR lever position is varied during reverse operation, engine RPM is reduced to idle every time the iBR gate moves. It is therefore recommended to maintain the iBR lever completely pulled in.

Maximum engine RPM in reverse is 5000 RPM.

Braking Mode

If the watercraft speed is 8 km/h (5 MPH) per hour and above when the iBR lever is pulled in, braking mode is engaged.

When the iBR lever is pulled in to engage braking, the following occurs:

- Engine RPM is reduced to idle.
- The iBR gate moves to the maximum down position.
- Engine RPM ramps up to the engine power commanded by the iBR lever.

When operating in braking mode, the iBR gate always moves to the maximum down position. The throttle lever signal is overridden and engine RPM is now dependent on watercraft speed and how far the iBR lever is pulled in.

If watercraft speed is high when braking is applied, engine power will be initially low and then ramp up to the power commanded by the iBR lever position. The engine RPM may be increased, as necessary, to apply a stronger braking effect with the jet pump thrust when the conditions dictate.

As the watercraft slows to less than 8 km/h (5 MPH), the following occurs:

- Braking mode ceases.
- Reverse mode takes over if the iBR lever is not released.
- Throttle control reverts back to the throttle lever.

Neutral Mode

Every time the iBR lever is pulled in and released, the iBR gate will default to the **neutral** position, except if the throttle lever is still pulled in when the iBR lever is released. If the throttle lever is still pulled, the iBR gate will move to the forward position when the iBR lever is released and the watercraft will accelerate forward.

iBR Override Function

To permit easy access to the jet pump, nozzle, iBR gate, and various linkages for inspection, maintenance, cleaning or removal of debris, the iBR system provides for an iBR override function that is accessible through the information center.

When iBR override is activated, it allows the user to electrically move the iBR gate and nozzle through its full range of motion.

NOTICE An object or tool caught in the iBR gate, nozzle or linkages when using the iBR override function may cause damage to these components. Remove any foreign object that may obstruct the iBR gate travel.

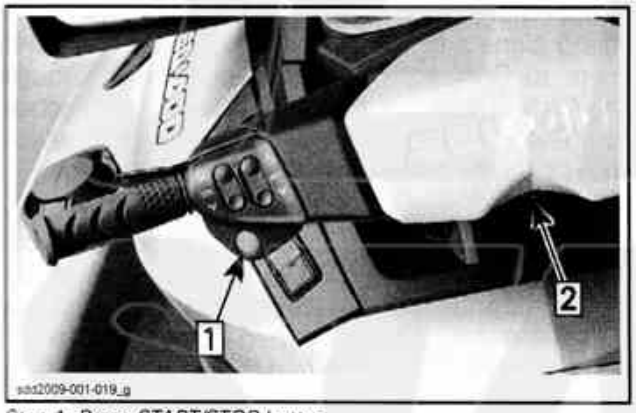
Activating iBR Override Function

⚠ WARNING

When using the iBR override function, ensure nobody stands near the rear of the watercraft. Movement of the iBR gate may squeeze fingers.

To use the iBR override function, carry out the following step.

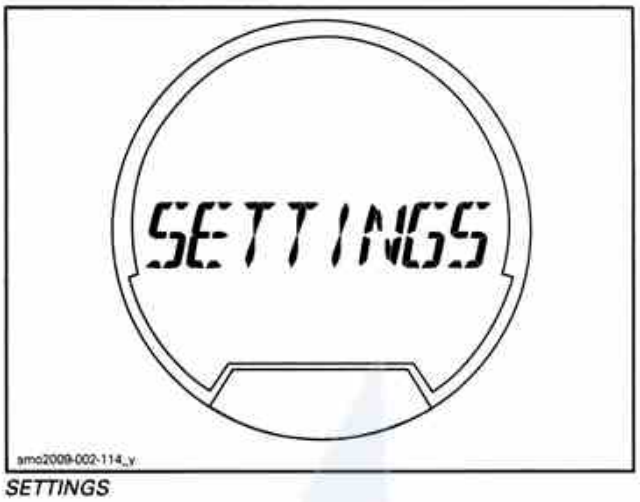
1. Press the START/STOP button.
2. Install the tether cord.



Step 1: Press START/STOP button
Step 2: Install tether cord

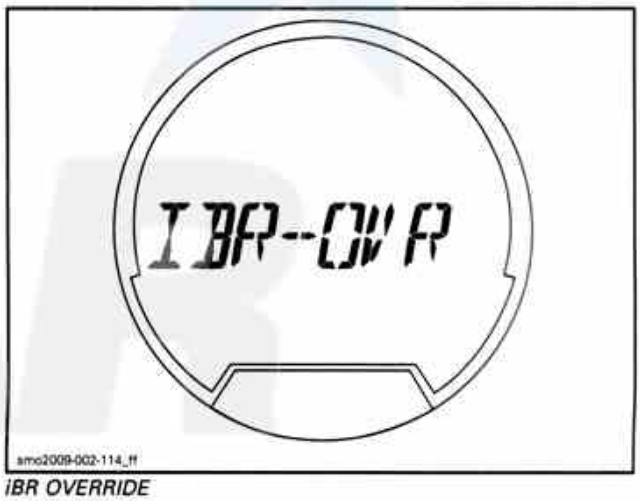
NOTE: Do not start the engine. The tether cord must be installed to ensure the information center will not shut off all indications after its self test function. Briefly press the START/STOP button to reactivate the electrical system when required.

3. Press the **Mode** button on the RH handlebar repeatedly until SETTINGS is visible in the digital display of the information center.



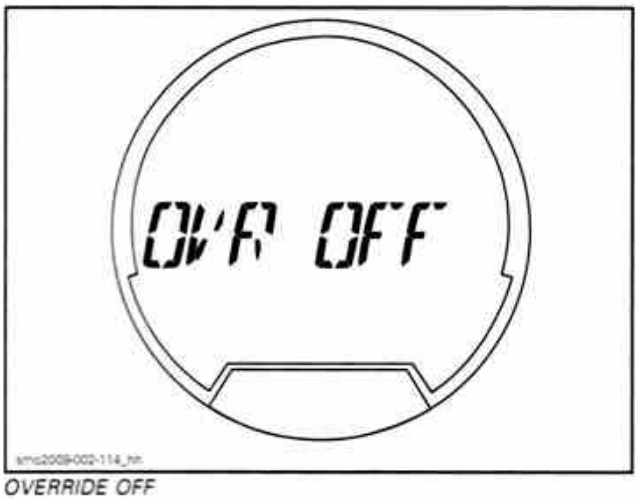
SETTINGS

4. Press the SET button (RH handlebar) to enter the **Settings** function.
5. If iBR OVR is not the following function displayed, press the UP/DOWN arrow button until iBR OVR is displayed.



iBR OVERRIDE

6. Press the SET button to enter iBR OVR function and display OVR OFF.



OVERRIDE OFF

7. Press the UP/DOWN arrow button (RH handlebar) to display OVR ON.

OVERRIDE ON

8. Press the SET button to select the OVR ON function. The gauge will return to its normal display.

Models with a VTS Switch

9. Press the VTS UP or DOWN button (LH handlebar) to move the iBR gate.

Models Without a VTS Switch

10. Press the UP/DOWN arrow button (RH handlebar) to move the iBR gate.

Deactivating iBR Override Function

To deactivate the iBR override function, carry out one of the following:

1. Repeat previous steps and press the SET button when OVR OFF is visible.
2. Remove tether cord and wait for the electrical power to shut off (approximately 3 minutes).
3. Start the engine.

NOTE: When the engine is started, the iBR OVR function is deactivated and the iBR gate will move to the neutral position.

⚠ WARNING

When moving the iBR gate using the iBR override function, ensure nobody stands near the rear of the watercraft. Movement of the gate may squeeze fingers.

SYSTEM DESCRIPTION (VTS)

The VTS system is actually part of the iBR system.

It provides watercraft pitch trim adjustments by adjusting the horizontal position of the jet nozzle.

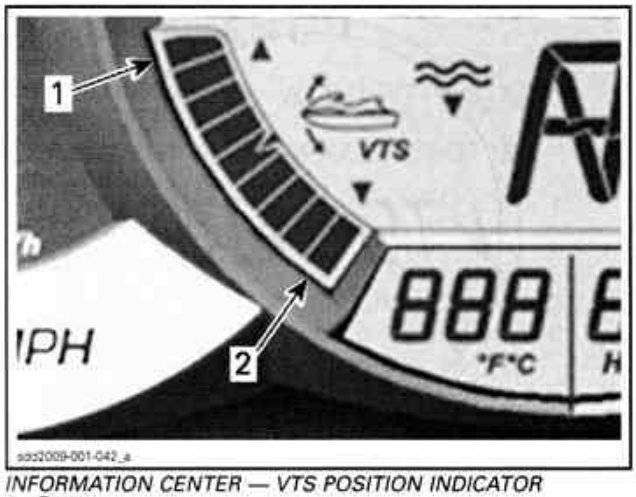
The VTS can be electrically trimmed to the desired attitude within the VTS range, or to one of 2 preset trim positions.

The VTS switch (or Up/Down switch) sends command signals to the gauge. The gauge converts them to CAN protocol and sends them through the CAN bus to the iBR module on the iBR actuator. The actuator then moves the iBR gate which moves the nozzle to the desired trim position.

NOTE: The nozzle and iBR gate move together in the VTS trim range up to the maximum nozzle down position. If NEUTRAL, BRAKING or REVERSE is engaged, the iBR gate moves past the VTS full down position. When FORWARD thrust is reengaged, the nozzle and iBR gate move up to the last selected VTS trim position.

The nozzle trim position can be seen on the VTS position indicator in the information center.

NOTE: Changing the VTS trim position without the engine running in forward thrust mode only changes the indication. The nozzle will move to the selected VTS trim position when forward thrust is engaged.



INFORMATION CENTER — VTS POSITION INDICATOR
1. *Bow up*
2. *Bow down*

NOTE: Only the segment indicating the relative position of the VTS will be on. The illustration shows all segments on as can be seen during the self test function.

The VTS system provides the following features according to models
- Nozzle trimming
- Selection of 2 preset trim positions
- Recording of 2 preset trim positions.

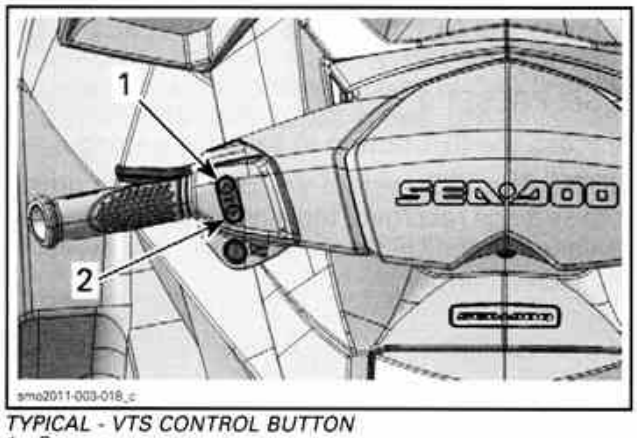
Nozzle Trimming

Watercraft must be operating in forward position.

Depending on the model, 5 or 9 trim positions are available.

Using the VTS Button (LH side of Handlebar)

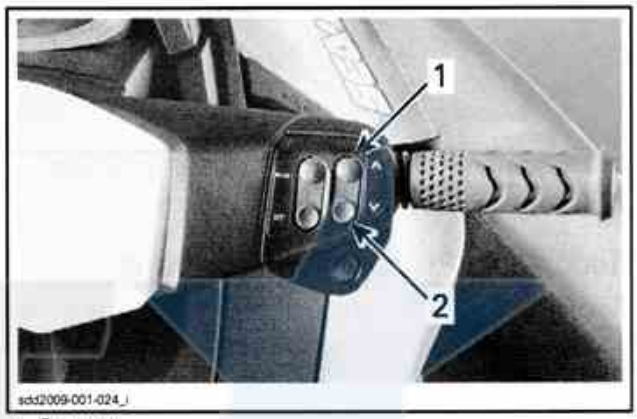
Press the UP or DOWN arrow button to change the VTS setting.



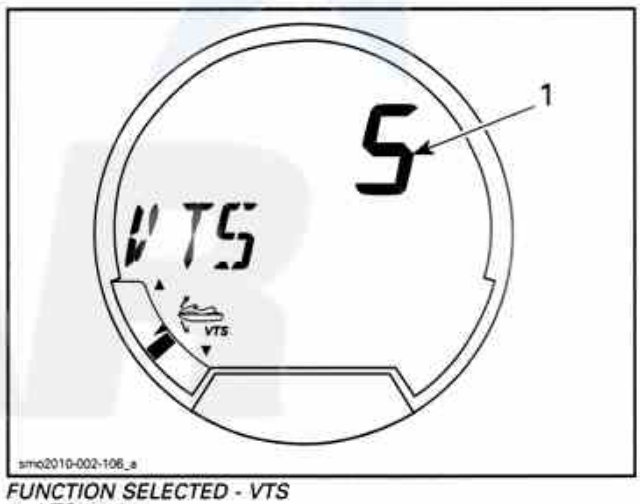
TYPICAL - VTS CONTROL BUTTON
1. *Bow up*
2. *Bow down*

Using the Up/Down Button (RH side of Handlebar)

1. Press the MODE button to display the VTS function in the gauge.
2. Press the UP or DOWN arrow button to change the VTS setting.



1. *Bow up*
2. *Bow down*



FUNCTION SELECTED - VTS
1. *VTS setting*

3. Press the SET button to save the desired setting.

Using Preset Trim Positions

Two preset trim positions can be selected.

To select the **highest** trim position recorded, double-click on the VTS UP arrow button (bow up).

To select the **lowest** trim position recorded, double-click on the VTS DOWN arrow button (bow down).

ADJUSTMENT

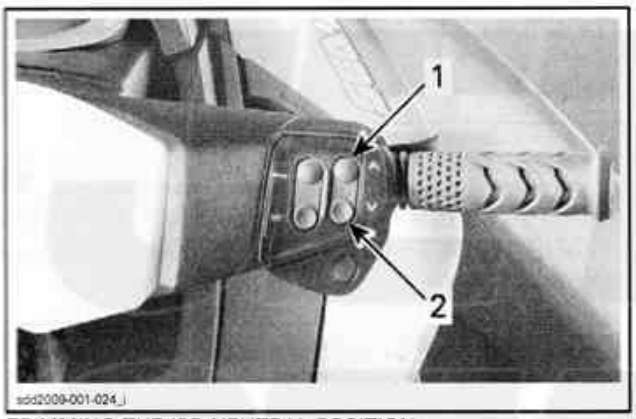
iBR NEUTRAL ADJUSTMENT

GTI 130/155, GTX 155 AND WAKE 155

When in NEUTRAL, if the watercraft creeps forward or backward, the iBR system may be trimmed.

If the watercraft is moving forwards, momentarily press the DOWN arrow button on RH side of handlebar.

If the watercraft is moving backwards, momentarily press the UP arrow button on RH side of handlebar.



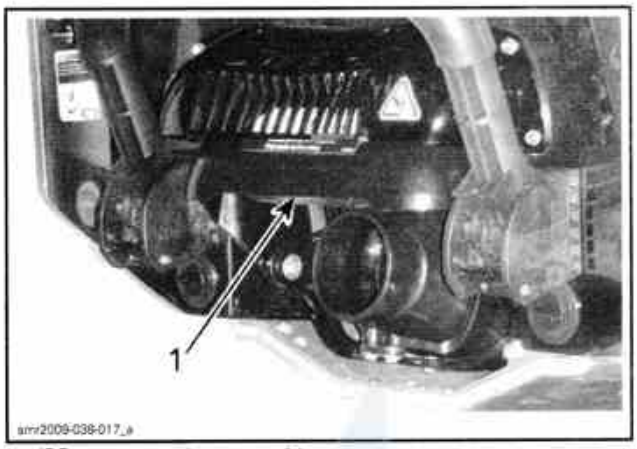
TRIMMING THE iBR NEUTRAL POSITION
1. *UP arrow button (to stop rearward movement)*
2. *DOWN arrow button (to stop forward movement)*

NOTE: Press the UP/DOWN arrow button repeatedly until proper adjustment of the neutral position is attained and the watercraft stops moving.

MAINTENANCE

iBR GATE BACKLASH CHECK

1. Using the iBR override function, move the iBR gate to the up position. Refer to *SYSTEM DESCRIPTION (iBR)* in this subsection.



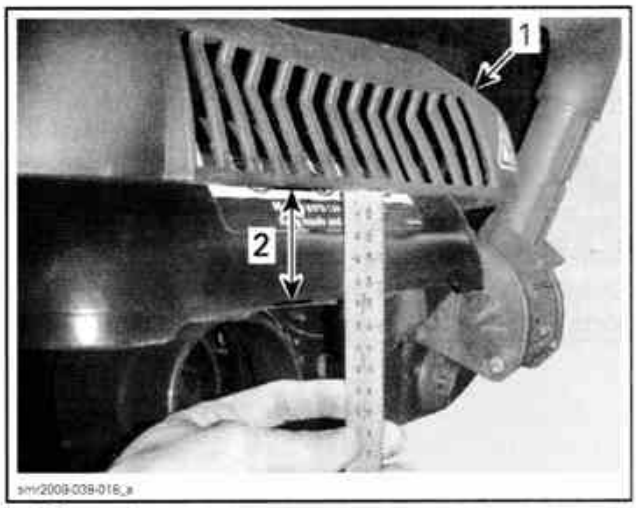
1. iBR gate moved to up position

2. Take hold of the lower edge of the iBR gate and pull down on it slightly, then release it.

PULL DOWN SLIGHTLY ON iBR GATE

Distance "A" Measurement

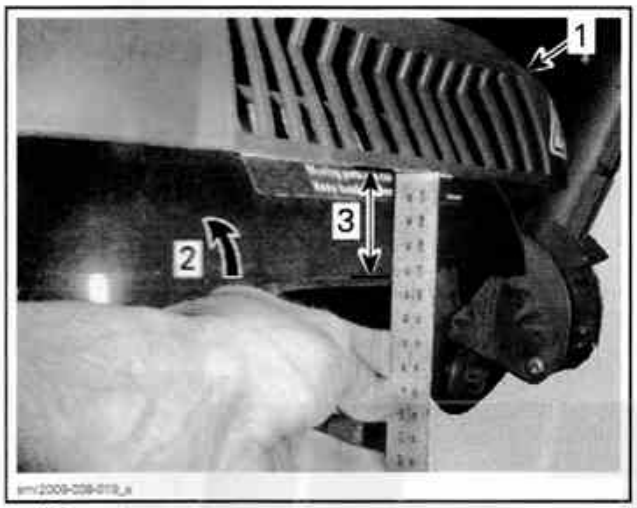
Using a machinists ruler, measure the distance between the bottom of the guard and the trailing edge of the iBR gate. Note as measurement "A".



1. *iBR guard*
2. *Measurement "A"*

Distance "B" Measurement

Without using excessive force, push up on the trailing edge of the iBR gate to pick up the backlash in the gate mechanism. As you hold the gate up, measure the distance between the trailing edge of the guard and the trailing edge of the iBR gate again. Note as measurement "B".



1. *iBR guard*
2. *Lift up on iBR gate*
3. *Measurement "B"*

iBR Gate Backlash Calculation

Subtract measurement "B" from "A" to obtain the iBR gate backlash.

iBR GATE BACKLASH (A - B)	
MAXIMUM	25 mm (.98 in)

Backlash Measurement Result

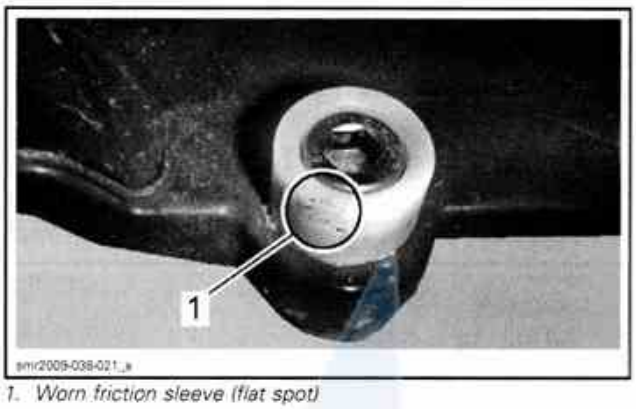
If backlash is excessive, inspect and replace iBR gate parts as required in the following order:

1. Tightening of screws retaining the U-arm to the actuator shaft
2. Splines on actuator shaft end and in U-arm
3. Friction sleeves
4. Bushings
5. Contact points (VTS trim ring, U-arm, iBR gate)
6. iBR actuator.

Check iBR gate backlash and gate operation after parts replacement and reassembly.

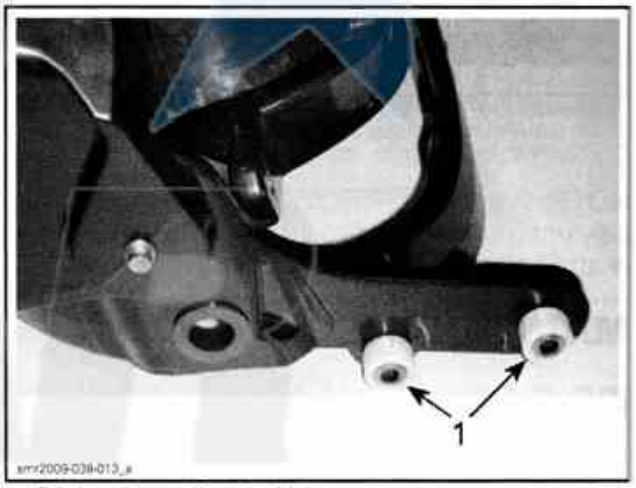
FRICTION SLEEVE REPLACEMENT

The 4 friction sleeves on the VTS trim ring should be replaced if they show signs of advanced wear (flat spots), or every 100 hours as per the maintenance schedule.



1. *Worn friction sleeve (flat spot)*

1. To replace the friction sleeves, remove the iBR gate and VTS ring as an assembly, refer to *iBR GATE AND VTS RING REMOVAL* in this subsection.



1. *Friction sleeves (2 each side)*

2. Remove the worn friction sleeves from the VTS ring and install new ones.
3. Apply service products, torques, and install new screws with threadlocker as specified in the exploded view.

INSPECTION

IBR SYSTEM FUNCTIONAL TEST

Test on Dry Land

NOTE: This test requires two persons. One person to start engine and operate controls, and one person to observe iBR gate movement.

1. Provide adequate ventilation of exhaust gases or move watercraft outside.

NOTICE **Do not install an exhaust ventilation hose in the iBR gate area or damage may occur when the iBR gate moves downward during operation.**

2. Connect a water hose to the watercraft to provide exhaust system cooling when operating engine. Refer to *EXHAUST SYSTEM* subsection for procedure.

NOTICE

- **Ensure there are no tools or other object that may interfere with the iBR gate movement.**
- **Do not run engine for more than 2 minutes out of water or damage may occur to drive shaft seal carrier.**

⚠ WARNING

The person observing the iBR gate movement must stand to the side of the stern well clear of the iBR gate and pump nozzle in full view of the operator.

3. Start engine and let idle.

NOTE: If iBR gate was not in the neutral position, it will move to the neutral position on engine start up.

4. Depress the throttle lever slightly and visually confirm the iBR gate moves to the forward position (up to the VTS trim position), then release throttle. The iBR gate must remain in the forward position.
5. Depress the iBR lever fully and confirm the iBR gate moves to the full down position.
6. Release the iBR lever completely and confirm the iBR gate moves to the neutral position.
7. Disconnect water hose then shut engine off.

Test with Watercraft on a Waterway

1. Start engine and let idle.

NOTE: If iBR gate is not in the neutral position before the engine start, it will move to the neutral position on engine start up.

2. Depress the throttle lever slightly, then release it. Forward movement of the watercraft confirms the iBR gate has moved to the forward position.
3. Depress the iBR lever fully. Rearward movement of the watercraft confirms the iBR gate has moved to the reverse position.
4. Release the iBR lever completely. Reverse thrust should cease and the watercraft should continue to drift rearward on momentum.
5. Apply a small amount of forward thrust to stop rearward velocity, then tap the iBR lever to return the iBR gate to neutral.
6. Shut engine off.

VTS FUNCTIONAL TEST

NOTE: This test requires two persons. One person to start engine and operate controls, and one person to observe nozzle and iBR gate movement.

1. Provide adequate ventilation of exhaust gases or move watercraft outside.

NOTICE **Do not install an exhaust ventilation hose in the iBR gate area or damage may occur when the iBR gate moves downward during operation.**

2. Connect a water hose to the watercraft to provide exhaust system cooling when operating engine. Refer to *EXHAUST SYSTEM* subsection for procedure.

NOTICE

- **Ensure there are no tools or other object that may interfere with the iBR gate movement.**
- **Do not run watercraft for more than 2 minutes out of water or damage may occur.**

⚠ WARNING

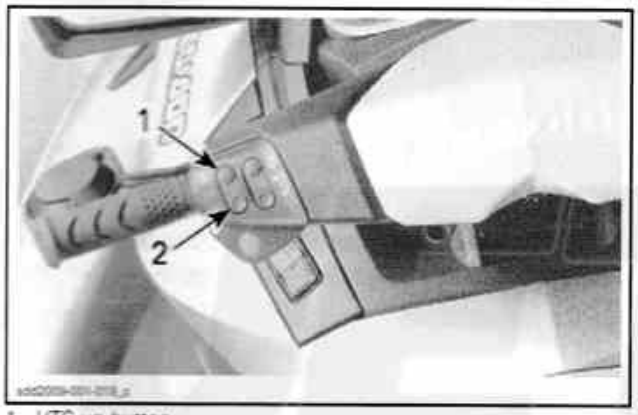
The person observing the iBR gate movement must stand to the side of the stern well clear of the iBR gate and pump nozzle in full view of the operator.

NOTE: The VTS system cannot be tested without the engine operating in forward thrust. If the engine is not running in forward thrust, only the VTS indication will change when the VTS control button is pressed; the nozzle will not change position until forward thrust is engaged by pulling the throttle lever.

3. Start engine.
4. Pull in and release the throttle lever to engage forward thrust, allow engine to run at idle RPM.

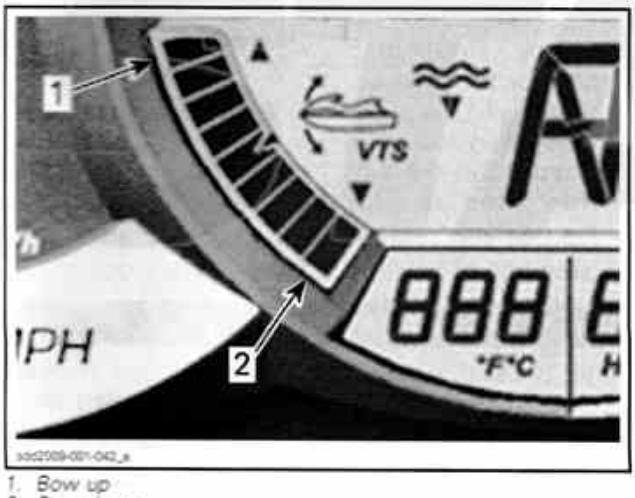
Models with a VTS Switch

5. Push the VTS UP and DOWN button alternately to check VTS operation.



1. *VTS up button*
2. *VTS down button*

6. Confirm nozzle movement and VTS position indication change in the information center.



1. *Bow up*
2. *Bow down*

NOTE: Only the segment indicating the relative position of the VTS will be on. The illustration shows all segments on as visible during the gauge self test function.

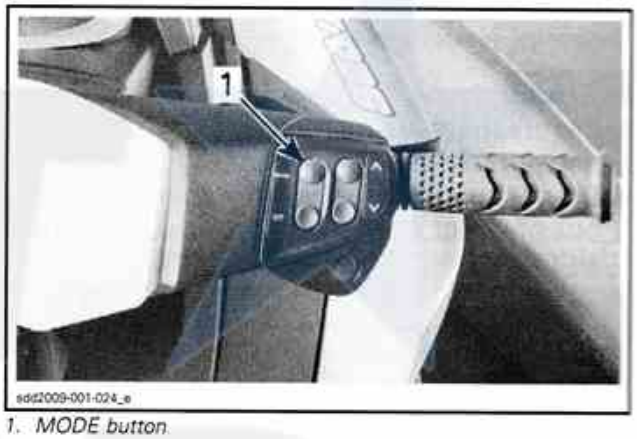
7. Double click the VTS UP and DOWN button alternately to test the VTS preset trim positions.

If double clicking the VTS UP or DOWN button does not cause the nozzle position or indication to change, navigate to the VTS MODE function in the gauge and check for recorded PRESET 1 and PRESET 2 settings. If no presets are recorded, record PRESET 1 bow up and PRESET 2 bow down, exit the function and carry out a new test.

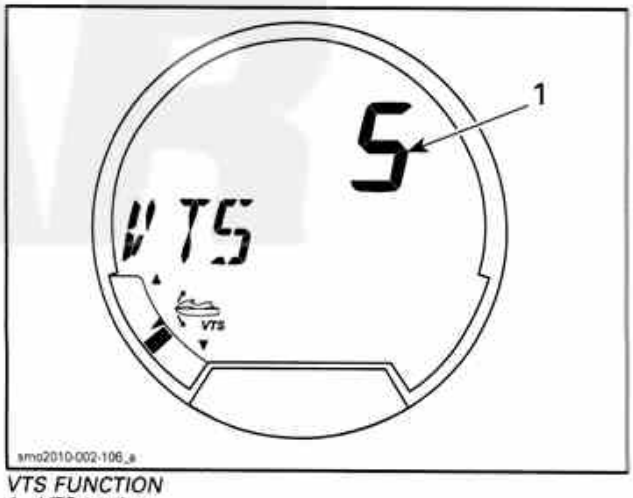
If both PRESET 1 and PRESET 2 have the same setting, note the operator's setting and change one PRESET, exit the function and carry out a new test. Return the PRESET to the operator's preference after testing is complete.

Models Without a VTS Switch

8. Press the MODE button to display VTS.

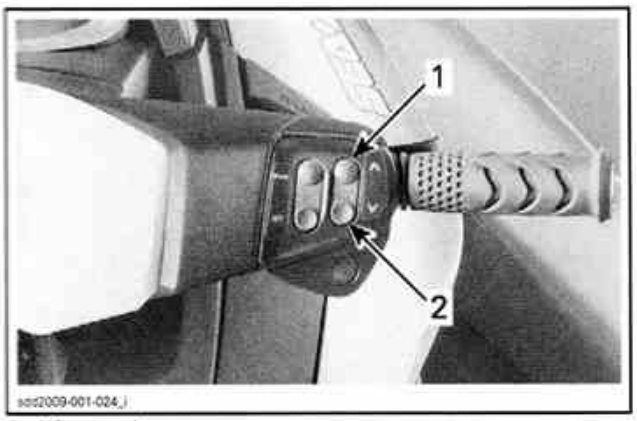


1. *MODE button*



VTS FUNCTION
1. *VTS setting*

9. Press the UP/DOWN arrow button (RH handlebar) to change the VTS angle.



1. *UP arrow button*
2. *DOWN arrow button*

10. Ensure the VTS setting in the gauge moves with the VTS.

TROUBLESHOOTING

The iBR system is self monitoring. If a fault occurs in the iBR system, it will raise a fault code and communicate it to the information center through the CAN bus. The information center will turn on the iBR indicator light to advise the operator of the iBR system fault. If the fault remains active, it may be displayed in the gauge. If it is no longer active, B.U.D.S. must be used to read the fault.

TESTING SEQUENCE

To troubleshoot the iBR system, carry out the following in this order:

- Ensure the iBR gate movement is not obstructed in any way.
- Ensure the iBR gate mechanisms (gate, VTS ring, U-arm and linkages) are all in good condition and do not show signs of excessive wear or friction.
- Cycle the iBR gate up and down using the *iBR OVERRIDE* function as described in this subsection.
- Check the iBR power fuse (F5) and the iBR control fuse (F17) in fuse box if the gate did not move using the iBR OVERRIDE function.
- Connect the watercraft to B.U.D.S. to check for iBR system or CAN bus related fault codes. Carry out service actions as indicated in B.U.D.S.
- If a CAN bus communication fault with the iBR module is indicated, or the iBR module is not visible in B.U.D.S., carry out a continuity test of the CAN bus wires between the iBR module and the CAN bus-bars in fuse box. Refer to *CONTROLLER AREA NETWORK (CAN)* subsection.
- Try moving the iBR using the iBR UP and iBR DOWN buttons on the iBR activation page in B.U.D.S.
- Carry out an *iBR SYSTEM FUNCTIONAL TEST* to check for proper gate and actuator movement.
- Visually inspect system connectors for moisture ingress, corrosion, and proper contact.
- Check for excessive backlash in the gate mechanism.
- Remove the screws retaining the U-arm to the actuator shaft. Move the gate up and down by hand to check for freedom of movement.

PROCEDURES

iBR LEVER SENSOR (BRLS)

BRLS Test Using B.U.D.S.

NOTE: The BRLS is composed of a twin hall effect sensor. A resistance test of the sensor cannot be carried out.

1. Connect watercraft to the latest B.U.D.S. software, refer to *COMMUNICATION TOOLS AND B.U.D.S.*
2. Check for an applicable fault code, refer to *DIAGNOSTIC AND FAULT CODES.*
3. If a fault is indicated, follow service actions as indicated in B.U.D.S.

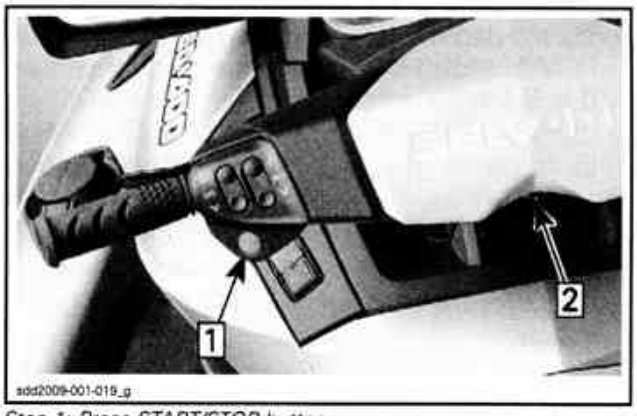
BRLS Voltage Test

Test for BRLS input voltage as well as BRLS signal voltages as per following steps.

iS Models

1. Press the START/STOP button.
2. Install the tether cord on the engine cut-off switch to energize the electrical system.

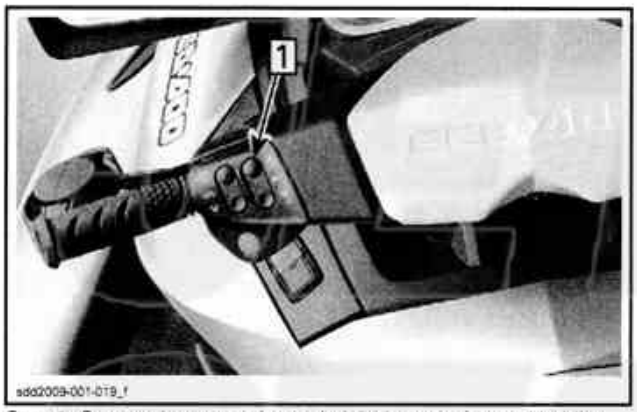
NOTE: DO NOT start the engine.



Step 1: Press START/STOP button
Step 2: Install tether cord

NOTE: Briefly press the START/STOP button to reactivate the electrical system when required.

3. Set the suspension to its maximum height by double clicking the iS UP button. This will provide better access to the steering connectors.



Step 1: Suspension to maximum height by pressing and holding the iS UP

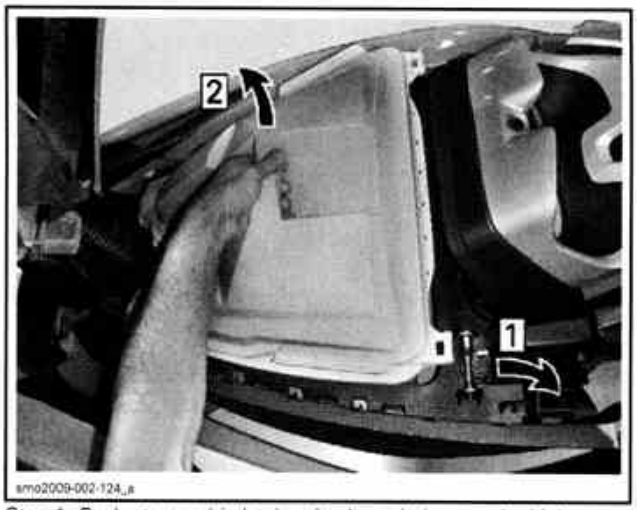
NOTE: If more height is required or if the iS system cannot be used, manually lift the suspension using a hoist and the anchor points close to handlebars. Then safety lock it in the up position.

NOTICE Do not lift the watercraft using the anchor points.

4. Remove the tether cord and wait approximately 3 minutes for the electrical system power to shut off.

All Models

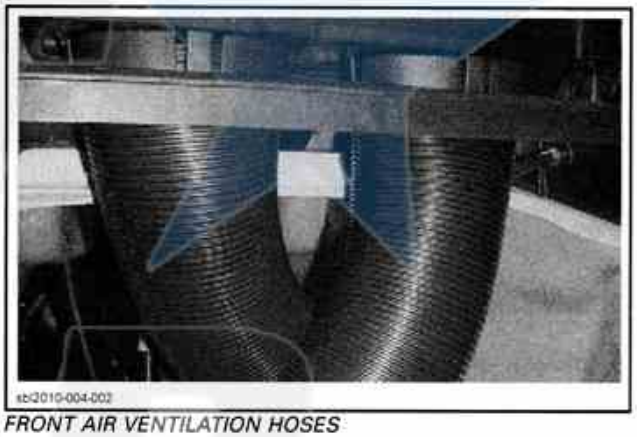
5. Open the front storage compartment cover and remove the storage bin.



Step 1: Push storage bin latches backwards (one each side)
Step 2: Lift and tilt forward to remove storage bin

Models Without iS

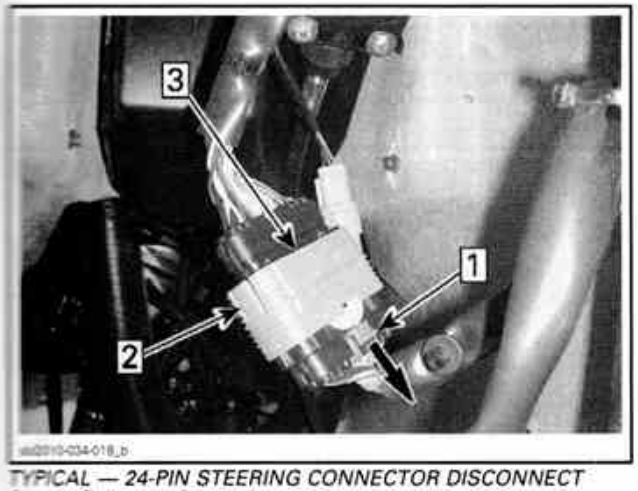
6. Disconnect the top of the two front air ventilation hoses, refer to *BODY* subsection.



FRONT AIR VENTILATION HOSES

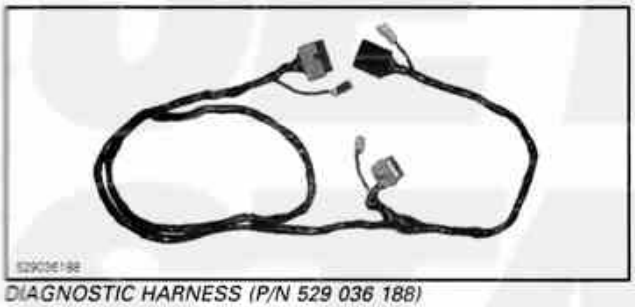
All Models

7. Reach in through the storage bin opening under the steering area and disconnect the 24-pin steering connector.



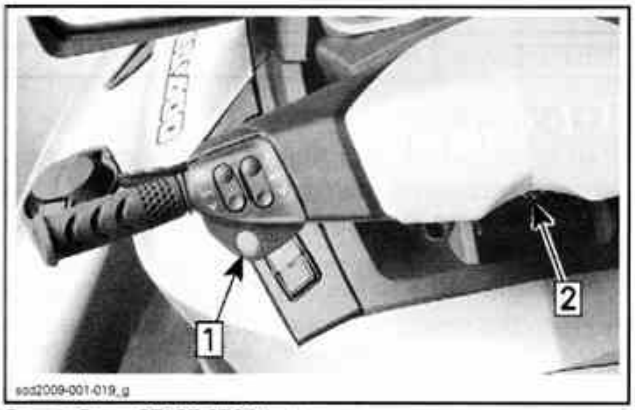
TYPICAL — 24-PIN STEERING CONNECTOR DISCONNECT
Step 1: Pull out safety lock
Step 2: Press in on release tab
Step 3: Pull locking collar down

8. Connect the DIAGNOSTIC HARNESS (P/N 529 036 188) in series between the disconnected steering connectors.



DIAGNOSTIC HARNESS (P/N 529 036 188)

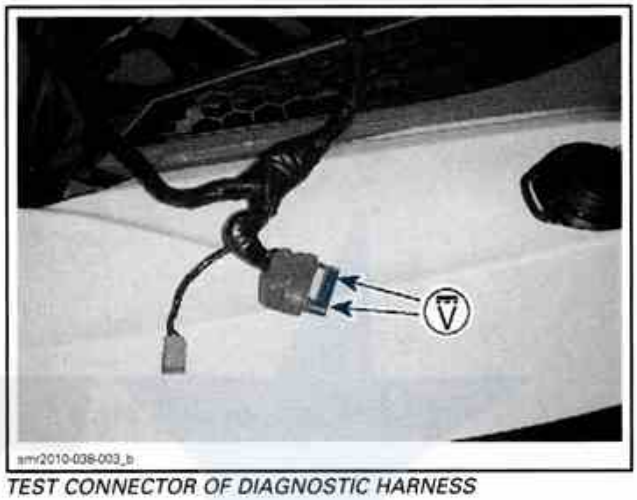
9. Press the START/STOP button to wake up the electrical system.
10. Install the tether cord on the engine cut-off switch.



Step 1: Press START/STOP button
Step 2: Install tether cord

NOTE: Briefly press the START/STOP button to reactivate the electrical system when required.

11. Using a FLUKE 115 MULTIMETER (P/N 529 035 868) set to Vdc, measure the BRLS voltages from the test connector of the diagnostic harness as per following tables.



TEST CONNECTOR OF DIAGNOSTIC HARNESS

TEST CONNECTOR OF DIAGNOSTIC HARNESS		iBR LEVER RELEASED	iBR LEVER PULLED IN
PINS		VOLTAGE (Vdc)	
21	15	4.9 - 5.1	
22	16		
15	18	0.15 - 0.35	1.4 - 1.6
19	16	0.4 - 0.6	2.9 - 3.1

12. If voltage measured is as specified, the BRLS sensor is functioning properly.

NOTE: When moving iBR lever, BRLS voltage change should increase or decrease in a steady linear fashion.

13. If voltage is out of specification, carry out a continuity test of the wiring between the iBR module and the BRLS sensor, refer to *CONTINUITY TEST OF BRLS WIRING HARNESS*.

Continuity Test of BRLS Wiring Harness

1. Ensure the 24-pin steering connector pins are clean, make good contact, and properly connected.

Models Without the X Package

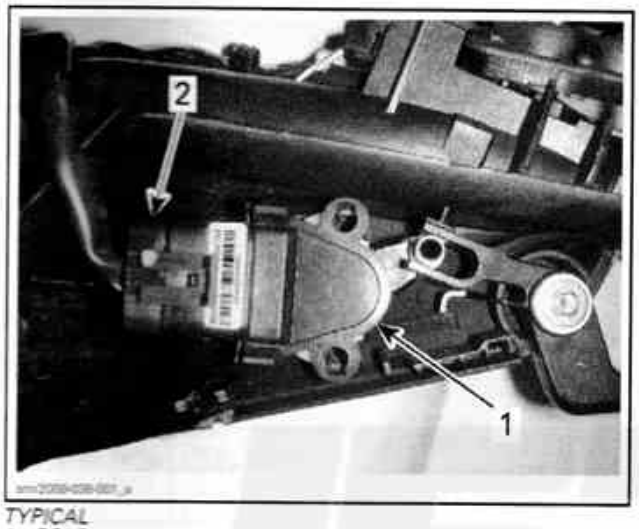
2. Remove the steering cover, refer to *STEERING AND O.T.A.S.* subsection.

Models with the X Package

3. Remove the upper housing and housing cover from the LH handlebar housing, refer to *STEERING AND O.T.A.S.* subsection.

All Models

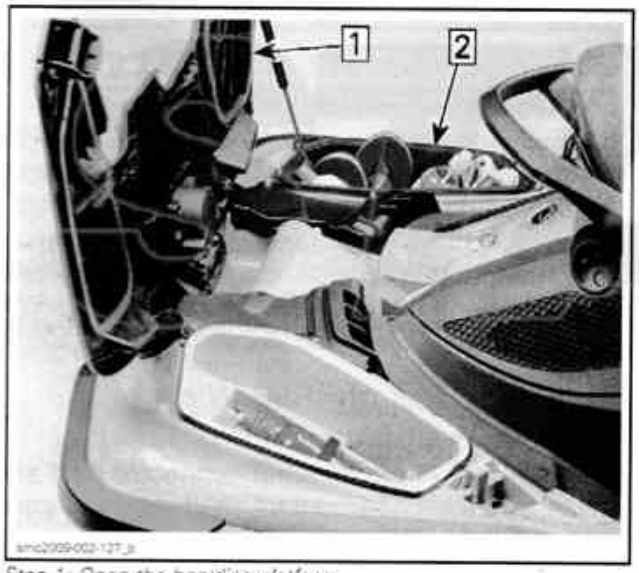
4. Disconnect the BRLS connector.



TYPICAL
1. BRLS
2. BRLS connector

iS Models

5. Open the boarding platform and remove the LH storage bin.



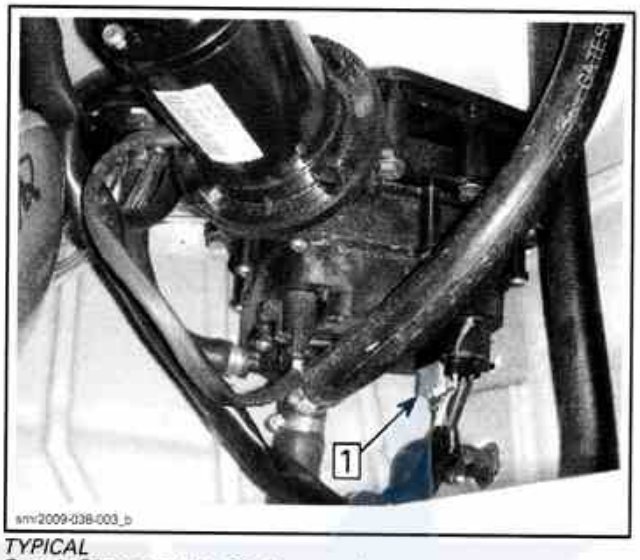
Step 1: Open the boarding platform
Step 2: Remove the LH storage bin

Models Without iS

6. Remove the LH access panel on the boarding platform or remove seat.

All Models

7. Disconnect the 12-pin connector from the iBR actuator.



TYPICAL
Step 1: Disconnect the 12-pin connector

8. Measure for continuity from the BRLS connector to the 12-pin iBR actuator connector as per following table.

CONTINUITY TEST OF BRLS WIRING HARNESS		
BRLS CONNECTOR	12 PIN iBR CONNECTOR	RESISTANCE
Pin A (VI/YL)	Pin 4 (VI/YL)	Close to 0 Ω (continuity)
Pin B (BK)	Pin 6 (BK)	
Pin C (YL/BK)	Pin 8 (YL/BK)	
Pin D (VI/YL)	Pin 7 (VI/YL)	
Pin E (BK)	Pin 9 (BK)	
Pin F (YL/WH)	Pin 5 (YL/WH)	

If continuity is good, replace BRLS.

If an open circuit or a higher than normal resistance is measured, carry out the continuity tests in the following tables to find the problem wire or connection:

- From the BRLS to the 24-pin steering connector
- From the steering connectors to the iBR actuator 12 pin connector.

9. Connect the DIAGNOSTIC HARNESS (P/N 529 036 188) to the steering connector **(steering side only)**.

NOTE: Resistance readings may be slightly higher than normal (maximum .5 Ω) when measuring from the test connector on the diagnostic harness.

CONTINUITY TEST BRLS TO 24-PIN STEERING CONNECTOR		
BRLS	TEST CONNECTOR	RESISTANCE
Pin A (VI/YL)	Pin 21 (VI/YL)	Close to 0 Ω (continuity)
Pin B (BK)	Pin 15 (BK)	
Pin C (YL/BK)	Pin 18 (YL/BK)	
Pin D (VI/YL)	Pin 22 (VI/YL)	
Pin E (BK)	Pin 16 (BK)	
Pin F (YL/WH)	Pin 19 (YL/WH)	

10. Connect the DIAGNOSTIC HARNESS (P/N 529 036 188) to the steering connector **(vehicle side only)**.

CONTINUITY TEST STEERING CONNECTORS TO iBR CONNECTOR		
TEST CONNECTOR	12 PIN iBR	RESISTANCE
Pin 22 (VI/YL)	Pin 7 (VI/YL)	Close to 0 Ω (continuity)
Pin 16 (BK)	Pin 9 (BK)	
Pin 19 (YL/WH)	Pin 5 (YL/WH)	
Pin 21 (VI/YL)	Pin 4 (VI/YL)	
Pin 15 (BK)	Pin 6 (BK)	
Pin 18 (YL/BK)	Pin 8 (YL/BK)	

11. Repair or replace wiring/connector as required.

BRLS Removal

Models Without the X Package

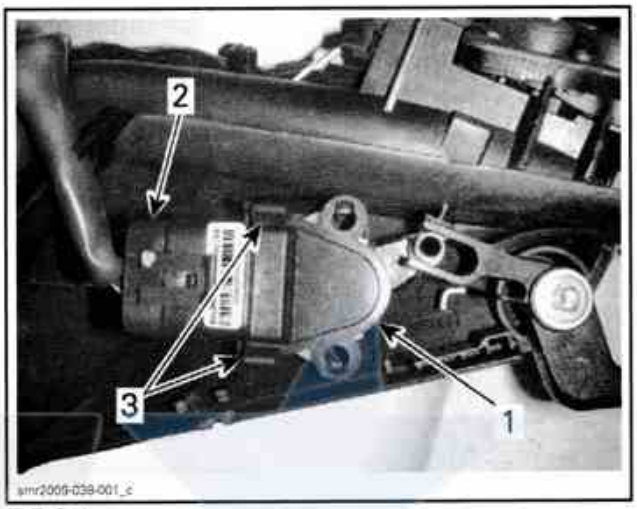
1. Remove steering cover, refer to *STEERING AND O.T.A.S.* subsection.

Models with the X Package

2. Remove the upper housing and housing cover from the LH handlebar housing, refer to *STEERING AND O.T.A.S.* subsection.

All Models

3. Open the sensor retaining tabs.
4. Pull up on the connector end of the BRLS.
5. Gently pull the sensor from its support and the iBR lever. Depress the lever as required to ease sensor removal.



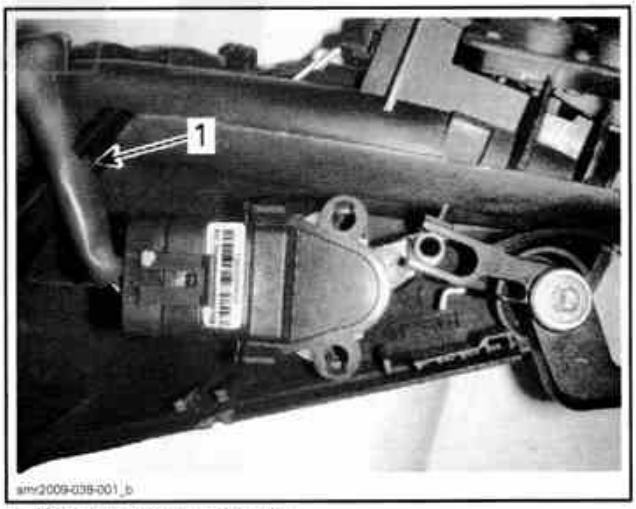
TYPICAL
1. *BRLS*
2. *BRLS connector*
3. *Sensor retaining tabs*

6. Remove connector from the BRLS.

BRLS Installation

Models Without the X Package

1. Install BRLS sensor in the reverse order of removal.
2. Ensure wiring harness is properly routed through slot provided in sensor support before installing steering cover.



1. *Wire harness routed in slot*

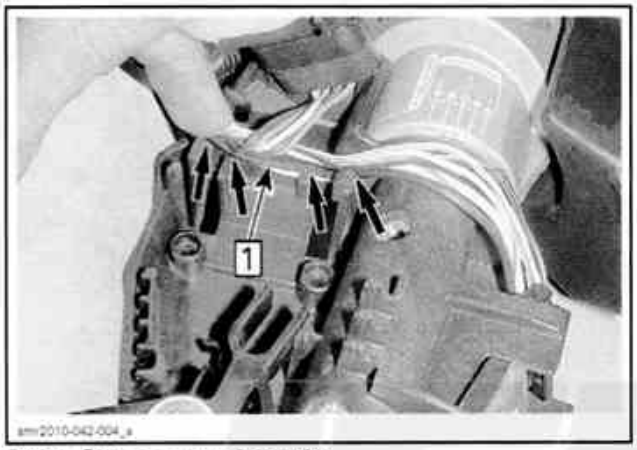
3. Ensure there are no fault codes. Connect watercraft to the latest B.U.D.S. software, refer to *DIAGNOSTIC AND FAULT CODES.*

4. Carry out an *iBR SYSTEM FUNCTIONAL TEST* using the iBR lever (engine must be running).

Models with the X Package

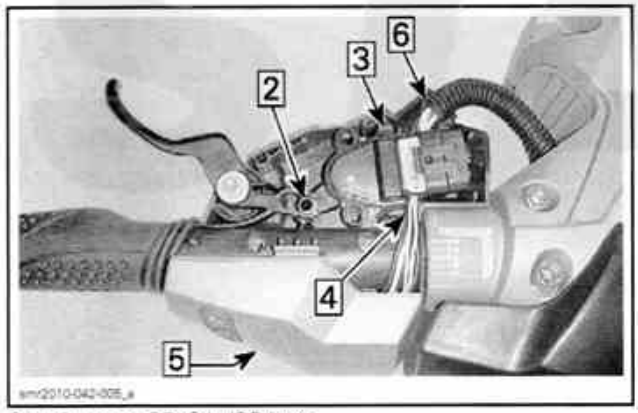
Install BRLS sensor in the reverse order of removal. However, pay attention to the following:

1. Install connector on BRLS and ensure wiring is properly positioned in handlebar housing.



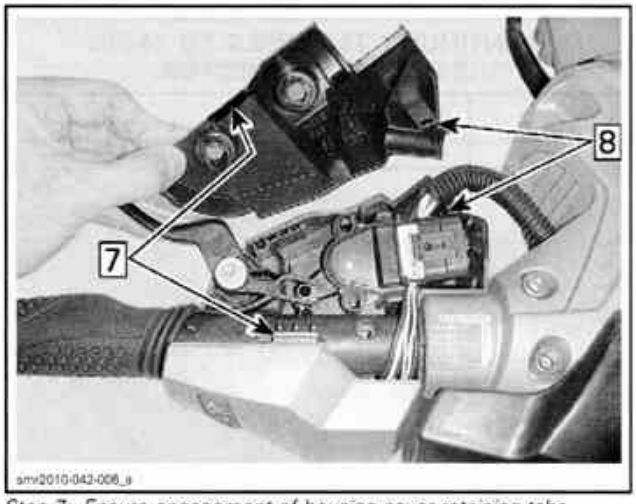
Step 1: Ensure proper wire routing

2. Insert the BRLS in the iBR lever.
3. Align the BRLS in the housing, then press it into the housing until both locking tabs engage. Ensure it is properly locked in place.
4. Ensure wiring is not pinched.
5. Position the housing cover onto the handlebar housing.
6. Ensure positioning of corrugated conduit



Step 2: Insert BRLS in iBR lever
Step 3: Ensure locking tab engagement
Step 4: Ensure wiring is not pinched
Step 5: Install housing cover
Step 6: Ensure proper corrugated conduit positioning

7. Position the upper housing onto the handlebar.
8. Ensure proper engagement of the housing and cover tabs.



Step 7: Ensure engagement of housing cover retaining tabs
Step 8: Ensure engagement of upper housing locking tabs

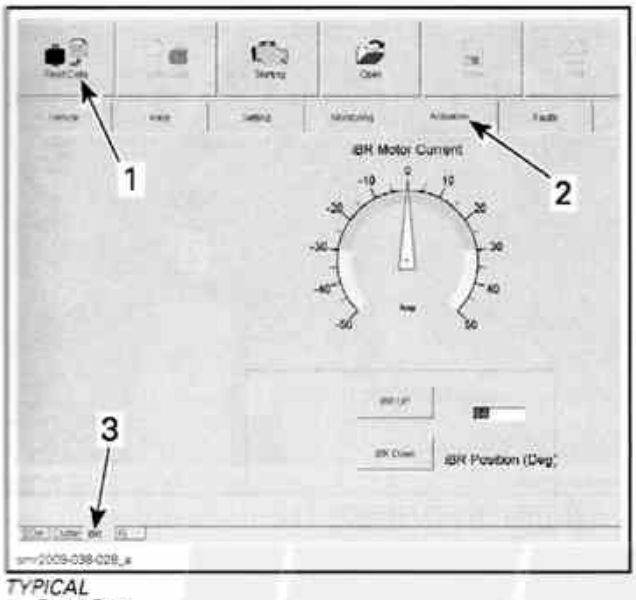
9. Install the three retaining screws for the upper housing and torque them to 2 N•m (18 lbf•**in**).
10. Ensure there are no fault codes. Connect watercraft to the latest B.U.D.S. software, refer to *DIAGNOSTIC AND FAULT CODES*.
11. Carry out an *iBR SYSTEM FUNCTIONAL TEST* using the iBR lever (engine must be running).

iBR ACTUATOR

NOTICE **The iBR actuator motor must never be tested by applying 12 Vdc directly to it's connector. Doing so may cause a lock-up and damage internal actuator components, necessitating replacement of the iBR actuator assembly.**

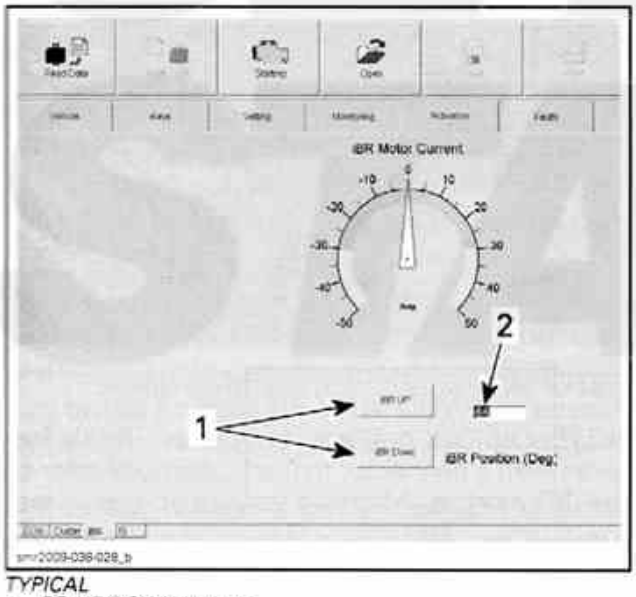
iBR Actuator Operation Test Using B.U.D.S.

1. Connect watercraft to the latest B.U.D.S. software, refer to *COMMUNICATION TOOLS AND B.U.D.S.*
2. Click the **Read Data** button.
3. Check for applicable fault codes on the **Faults** page.
4. Click the **Activation** tab.
5. In the lower LH corner, click the **iBR** tab.



TYPICAL
1. *Read Data*
2. *Activation tab*
3. *iBR tab*

6. In B.U.D.S., click **iBR UP** and **iBR DOWN** buttons alternately and look for a change in **iBR Position (Deg)**.



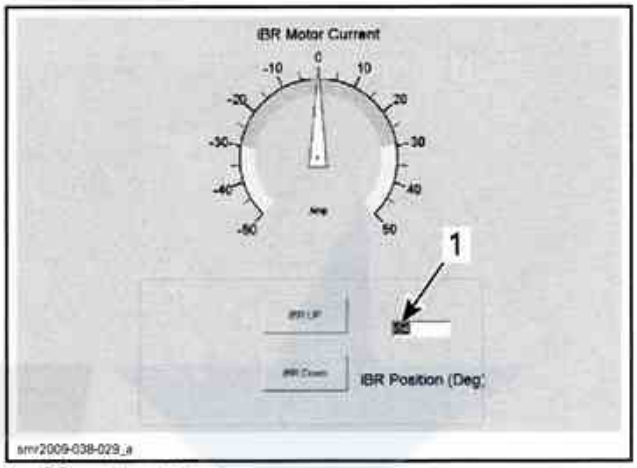
TYPICAL
1. *iBR UP/DOWN buttons*
2. *iBR position indication*

If the iBR moves using these buttons but does not move using the iBR lever, refer to *BRLS VOLTAGE TEST* in this subsection.

If the iBR does not move, check the iBR fuses (F5 and F17) in fuse box. If fuse are good, refer to *iBR ACTUATOR INPUT VOLTAGE TEST* in this subsection.

iBR Actuator Motor Current Test Using B.U.D.S.

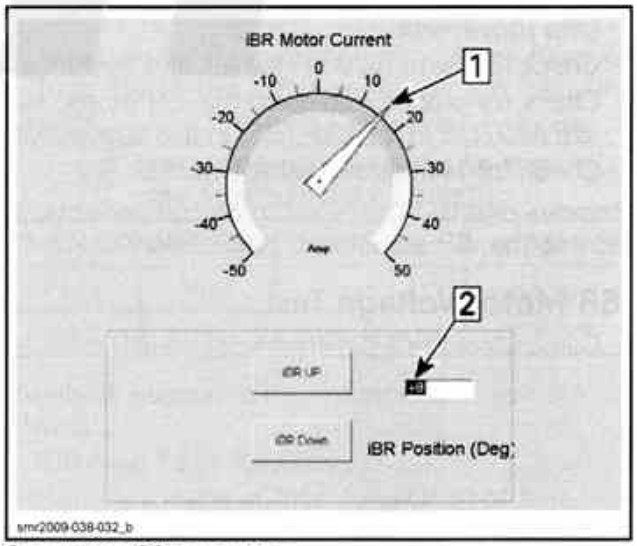
1. On the iBR activation page in B.U.D.S., note the **iBR Position (Deg)** indication.



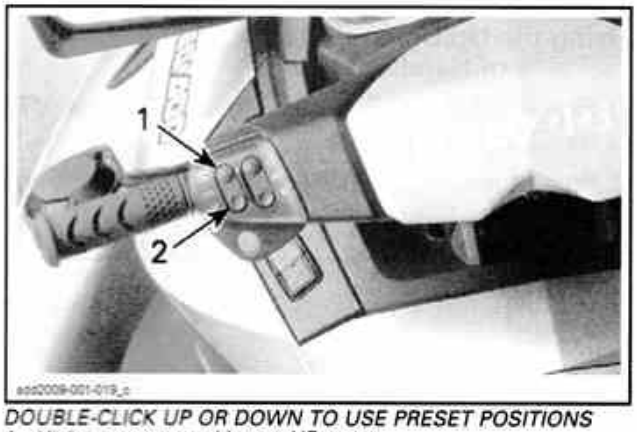
1. *iBR position indication*

2. Activate the iBR override function, refer to *iBR OVERRIDE FUNCTION* in the beginning of this subsection.
3. Press and hold the VTS UP button on the LH handlebar to position the iBR to the full up position and look for the **iBR Motor Current** indication in B.U.D.S. Also look for a change of **iBR Position (Deg)** indication.

NOTE: Current draw indication will not be stable. High and low peaks will be observed. Look for the maximum average current draw.



Step 1: Note iBR current draw
Step 2: Note iBR position indication change



DOUBLE-CLICK UP OR DOWN TO USE PRESET POSITIONS
1. *Highest preset position on UP arrow*
2. *Lowest preset position on DOWN arrow*

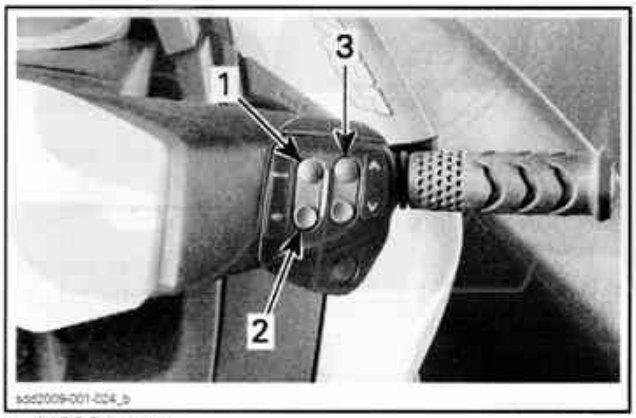
Recording Preset Trim Positions

Two different VTS trim positions may be recorded for quickly selecting the preferred watercraft trim attitude.

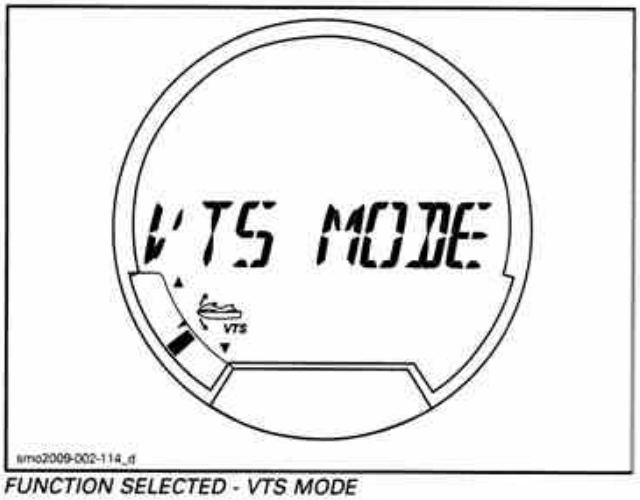
When the VTS PRESET trim positions are changed, the new settings will remain recorded in memory.

To record VTS preset trim positions:

1. Press the START/STOP button.
2. Install the tether cord on the engine cut-off switch.
3. Press the MODE button repeatedly until VTS MODE is displayed.

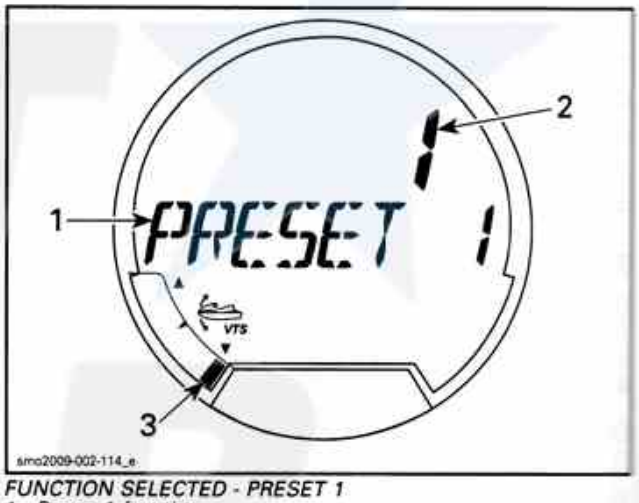


1. *MODE button*
2. *SET button*
3. *UP/DOWN arrow button*



FUNCTION SELECTED - VTS MODE

4. Press the SET button to display PRESET 1.
5. Press the VTS UP/DOWN button to change the PRESET 1 VTS position.

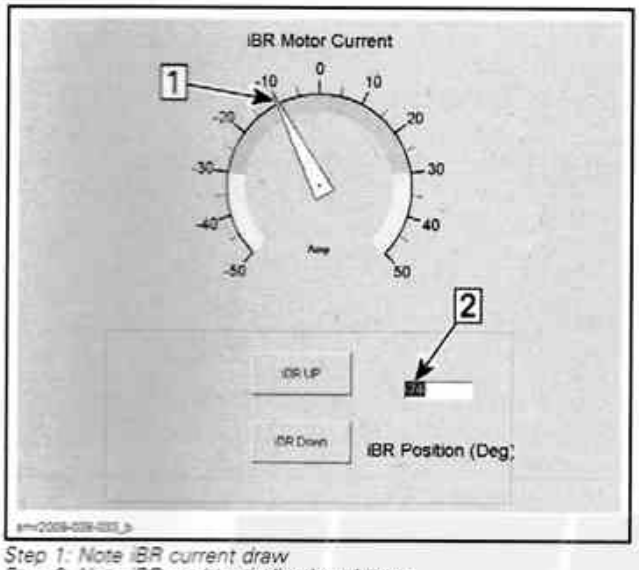


FUNCTION SELECTED - PRESET 1
1. *Preset 1 function*
2. *VTS setting selected to 1*
3. *VTS position indicator at setting 1 (bow down)*

6. Press the SET button to save PRESET 1 and display PRESET 2.
7. Set PRESET 2
8. Press the SET button to save the settings.

NOTE: The VTS system will compare the preset trim settings recorded, the highest position will be assigned to the UP arrow (bow up), the lowest to the DOWN arrow.

4. Press and hold the VTS DOWN button and look for the **iBR Motor Current** draw indication. Also look for a change of **iBR Position (Deg)** indication.



Step 1: Note iBR current draw
Step 2: Note iBR position indication change

iBR ACTUATOR CURRENT DRAW	
DOWN SELECTION	-5 to -15 A
UP SELECTION	+10 to +20 A

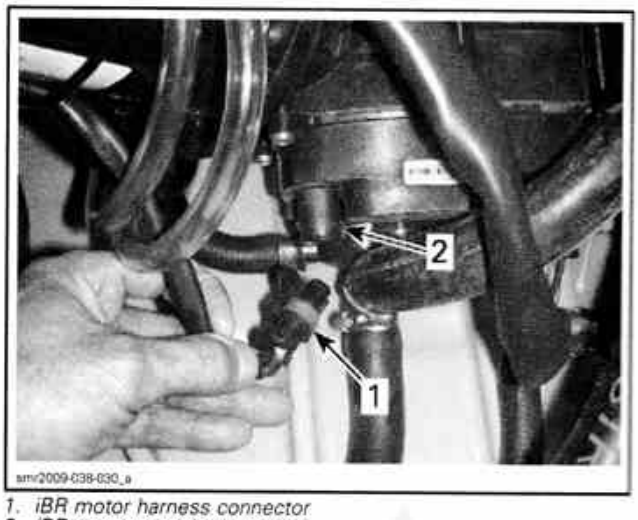
If current draw is abnormally high (between 20 and 30 A), check the following:

- Ensure iBR gate is free of debris.
- Remove the screws retaining the U-arm to the actuator shaft. Check for excessive friction in gate movement.
- Check iBR gate friction sleeves and bushings.
- Check for proper voltage to the iBR motor, see *iBR MOTOR VOLTAGE TEST* in this subsection.
- Check for fault codes using B.U.D.S.

Remove debris, replace iBR gate components, or replace the iBR actuator as applicable.

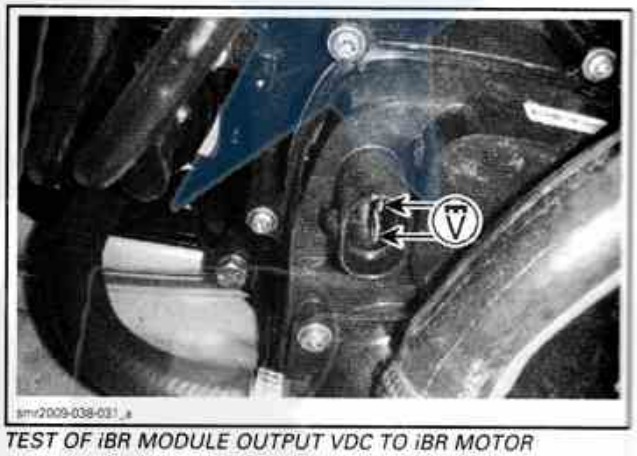
iBR Motor Voltage Test

1. Disconnect the 2-pin connector on iBR module.



1. iBR motor harness connector
2. iBR motor module connector

2. Set the FLUKE 115 MULTIMETER (P/N 529 035 868) to Vdc selection.
3. Install insulated clips on the multimeter leads and clip leads to pins in the motor connector on the iBR module.

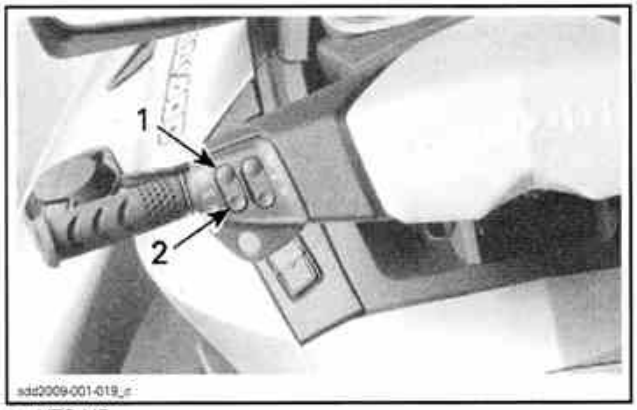


TEST OF iBR MODULE OUTPUT VDC TO iBR MOTOR

NOTE: On GTI models, temporary install test wires with a connector to the motor connector on the iBR module. Measure voltage on test wires.

4. Using the iBR override function (see *SYSTEM DESCRIPTION (iBR* in this subsection), press the VTS UP button and read the iBR module motor output voltage.

NOTE: The iBR UP button on the iBR Activation page in B.U.D.S. may be used instead of the iBR override function.



1. *VTS UP*
2. *VTS DOWN*

NOTE: Briefly press the START/STOP button to reactivate the electrical system when required.

5. Press the VTS DOWN button and read the iBR module motor output voltage.

NOTE: The iBR DOWN button on the iBR Activation page in B.U.D.S. may be used instead of the iBR override function.

iBR MOTOR VOLTAGE TEST
Battery voltage (over 12 Vdc)

NOTE: Voltage measured should be battery voltage in both UP or DOWN directions. Voltage polarity should reverse as UP or DOWN button is pressed alternately.

- If battery voltage **is not measured**, refer to *iBR ACTUATOR INPUT VOLTAGE TEST* in this subsection.
- If battery voltage **is measured** in both directions, refer to *iBR POWER TEST USING A TEST LIGHT* in this subsection.
- If battery voltage **is measured** and the test light is **bright** for both iBR UP or DOWN selections, the iBR motor is at fault and the iBR actuator must be replaced.
- If battery voltage **is low** or test light is **dim in both** directions, refer to *iBR ACTUATOR INPUT VOLTAGE TEST* in this subsection.
- If battery voltage **is measured** and test light is **dim in one** direction, replace the iBR actuator.

iBR Power Test Using a Test Light

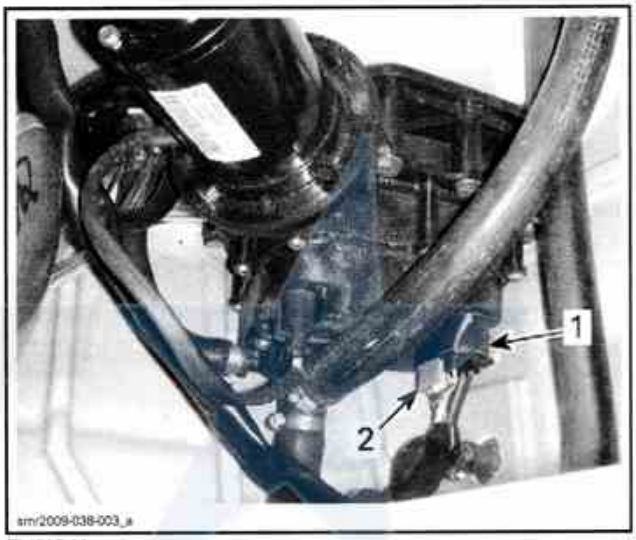
1. Connect the clip of a 12 Vdc test light to the battery ground (or engine ground).
2. Touch the test light probe to each pin of the motor output connector on the iBR module as you select the iBR UP and DOWN alternately.

The test light should come on bright for one pin only in each direction.

NOTE: The 12 Vdc and ground will alternate between pins with a change of iBR direction.

iBR Actuator Input Voltage Test

1. Disconnect the 3-pin and 12-pin connectors from the iBR module.



TYPICAL
1. *3-pin connector*
2. *12-pin connector*

NOTE: The 3-pin connector provides battery power directly to the iBR module for the actuator motor through the fuse F5. The 12 pin connector provides BRLS signals, CAN bus, and a switched 12 Vdc power to the iBR module through the fuse F17. Refer to *WIRING DIAGRAM*.

2. Set the FLUKE 115 MULTIMETER (P/N 529 035 868) to Vdc selection.
3. Measure for the battery input voltage (through fuse F5) to the iBR actuator as per following table.

iBR ACTUATOR INPUT VOLTAGE TEST (30 AMP BATTERY POWER)			
3 PIN CONNECTOR		BATTERY	READING
Pin 2	Pin 1	–	Battery voltage
Pin 2	–	Neg. (-) post	

If battery voltage is not measured, check the following:

- iBR fuse F5 in fuse box
- Battery voltage at fuse contact B4 of fuse box
- Wire continuity from pin 2 of iBR 3-pin connector to A4 of fuse box
- Jumper continuity fuse contact B4 to C3 of 12 Vdc bus-bar in fuse box.

If voltage is good to the negative battery post but not to pin 1 of the connector (ground wire to engine), check for an open or bad ground wire (loose, corroded, or pitted terminals, wire continuity, etc.)

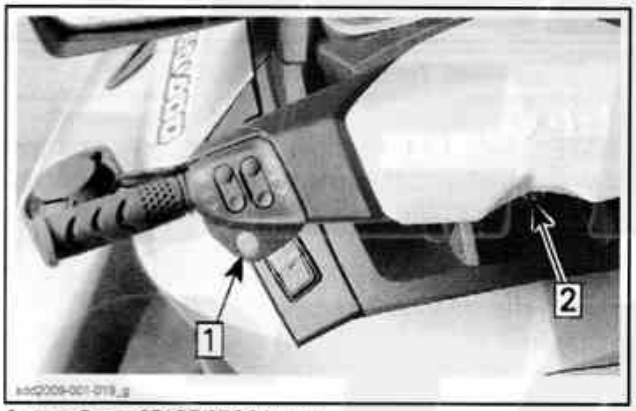
If battery voltage measured is as specified, carry out same test using a 12 Vdc test light. Test light should be bright.

If test light is not bright to pin 1 only, look for a bad contact on the ground circuit (loose, corroded, pitted, etc.).

If test light is not bright to the negative battery post, first check voltage at battery terminals to ensure battery is not discharged. If battery voltage is good, look for a bad contact in the 30 amp 12 V iBR power circuit (loose, corroded, pitted, etc.).

If the 30 amp 12 Vdc power to the iBR actuator is good, test for the switched 5 amp 12 Vdc as per following steps.

4. Briefly press the START/STOP button to wake the electrical system.



Step 1: Press START/STOP button
Step 2: Install D.E.S.S. key

5. Measure for the switched input voltage to the iBR actuator as per following table.

iBR ACTUATOR INPUT VOLTAGE TEST (5 AMP SWITCHED)			
iBR CONNECTORS		BATTERY	READING
12 PIN	3 PIN		
Pin 1	Pin 1	-	Battery voltage
Pin 1	-	Neg. (-) post	

NOTE: The 5 A switched power to the iBR actuator is for the iBR electronic module and BRLS.

If battery voltage is not measured at all, check the following:

- iBR control (CRTL) fuse F17 in fuse box
- Battery voltage at fuse contact E3 of fuse box
- Wire continuity from pin 1 of iBR 12-pin connector to F3 of fuse box
- Jumper continuity fuse contact E3 to D3 of 12 Vdc accessory bus-bar in fuse box.

If voltage is good to the negative battery post but not to pin 1 of the connector (ground wire to engine), check for an open or bad ground wire (loose, corroded, or pitted terminals, wire continuity, etc.).

If battery voltage measured is as specified, carry out same test using a 12 Vdc test light. Test light should be bright.

If test light is not bright to pin 1 of the 3 pin connector, look for a bad contact on the ground circuit (loose, corroded, pitted, etc.).

If test light is not bright to battery negative terminal, first check voltage at battery terminals to ensure battery is not discharged. If battery voltage is good, look for a bad contact in the 12 V iBR switched power circuit (loose, corroded, pitted, etc.).

If the iBR actuator input voltages and ground circuit are good, and there is no CAN bus or BRLS fault, replace the iBR actuator.

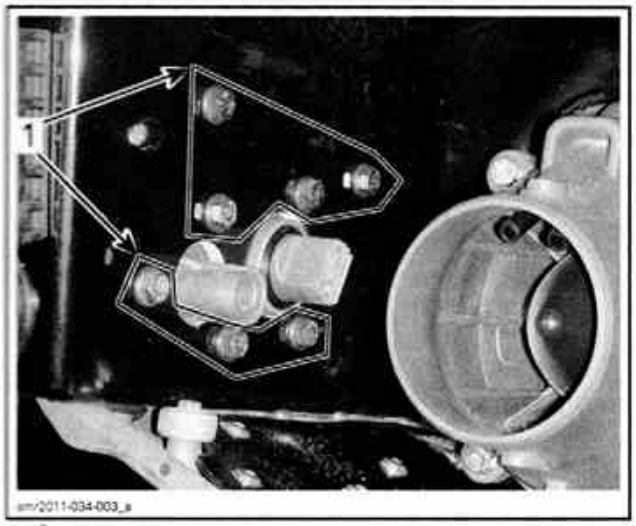
iBR Actuator Removal

GTI and Wake Models

⚠ CAUTION Remove iBR fuse before working in the iBR gate area. Refer to *POWER DISTRIBUTION*.

NOTICE Do not try to move the iBR gate when all components are installed.

1. Remove iBR Gate ass'y. Refer to *IBR GATE* in this subsection.
2. Remove iBR actuator retaining screws.

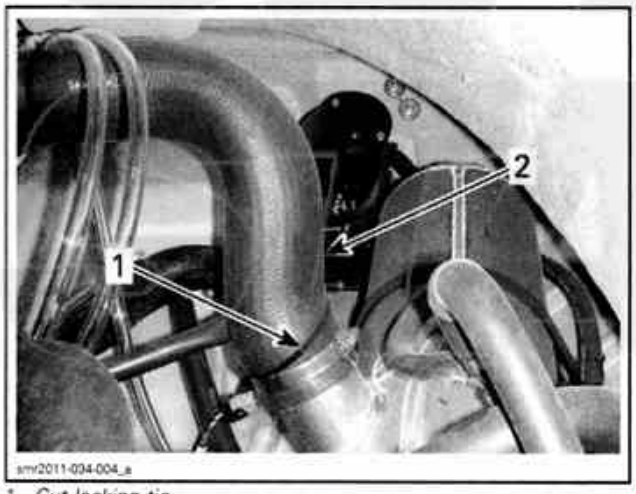


1. Remove screws

3. Remove seat.

From Inside Bilge

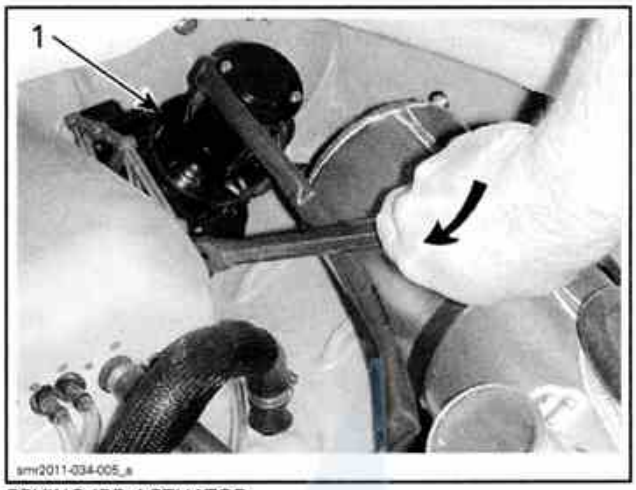
4. Cut locking tie.
5. Disconnect hose from muffler.
6. Move hose end away.



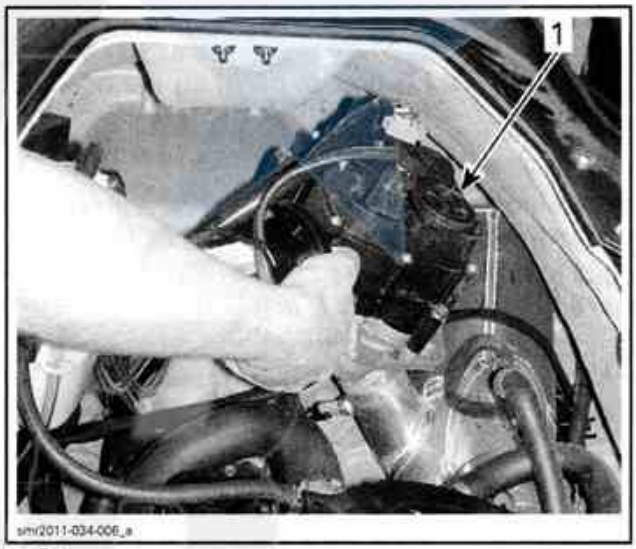
1. Cut locking tie
2. Disconnect hose

7. Pull out iBR actuator.

NOTE: It may be necessary to pry out iBR actuator.

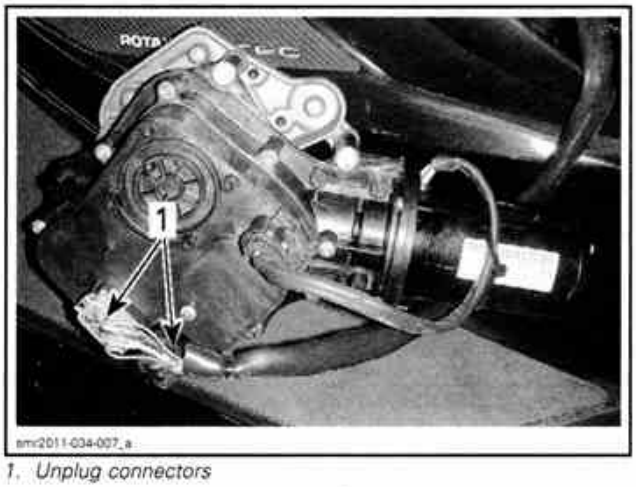


PRYING iBR ACTUATOR
iBR actuator



1. Pull out

8. Cut locking tie.
9. Disconnect the indicated connectors.



1. Unplug connectors

GTX, RXT and Wake Pro Models

1. Move the iBR gate to the forward position (full up) using the *iBR OVERRIDE* function. Refer to *SYSTEM DESCRIPTION (iBR)* in this subsection.

NOTICE Do not try to move the iBR gate when all components are installed.

⚠ CAUTION Wait at least 5 minutes for watercraft electrical power system to shut down or remove iBR fuses before working in the iBR gate area.

iS Models

2. Open the boarding platform and remove the LH storage bin.

Models Without iS

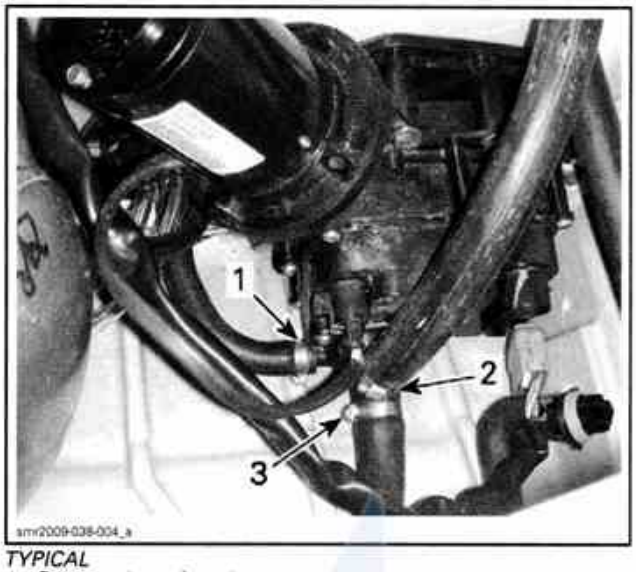
3. Remove the LH access panel on the boarding platform.

All Models

4. Disconnect the two aft electrical connectors from the iBR actuator. The forward electrical connector (iBR motor power) does not need to be removed.

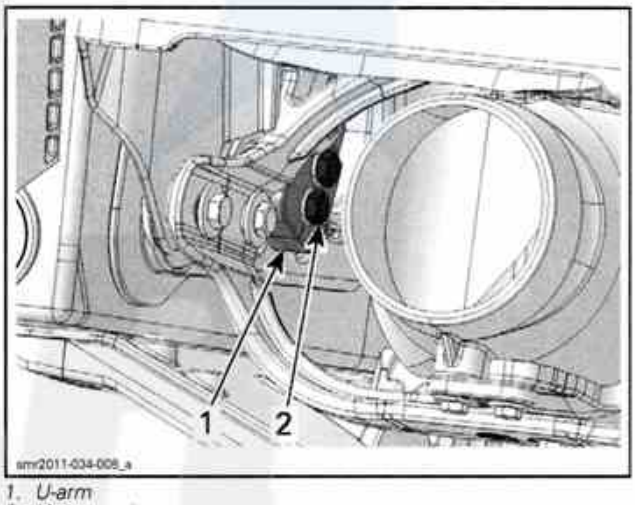
TYPICAL
1. *iBR actuator 3 pin connector*
2. *iBR actuator 12 pin connector*

5. Disconnect the three water pressure hoses indicated in the following illustration from the iBR actuator.



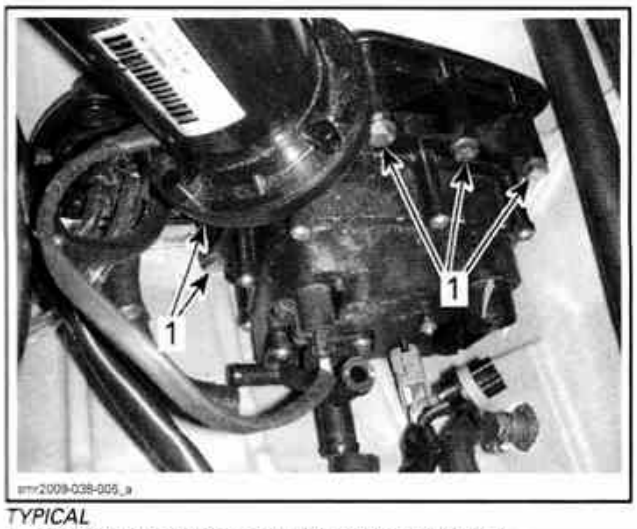
TYPICAL
1. *Pressure hose from jet pump*
2. *Pressure hose to intercooler (260 hp models)*
3. *Pressure hose to exhaust manifold*

6. From jet pump area, remove and discard the two hexagonal screws securing the U-arm to the iBR actuator shaft.



1. *U-arm*
2. *Hexagonal screws*

7. From bilge, remove the five hexagonal screws securing the iBR actuator to the LH support plate.



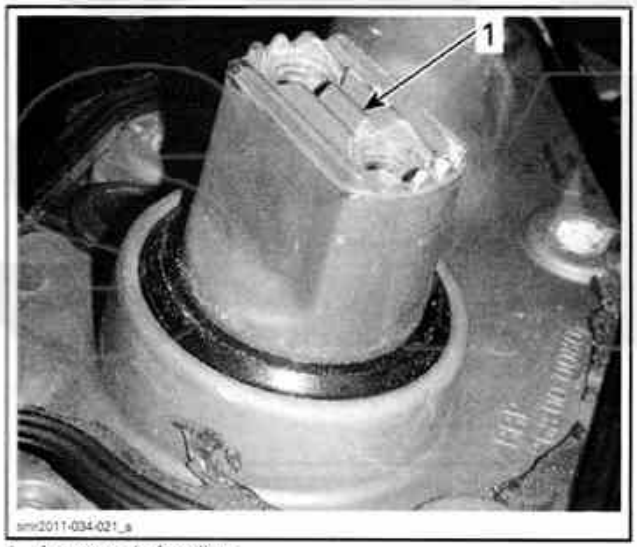
TYPICAL
1. Hexagonal screws to remove (1 screw not visible)

8. Pull the iBR actuator from the support plate.

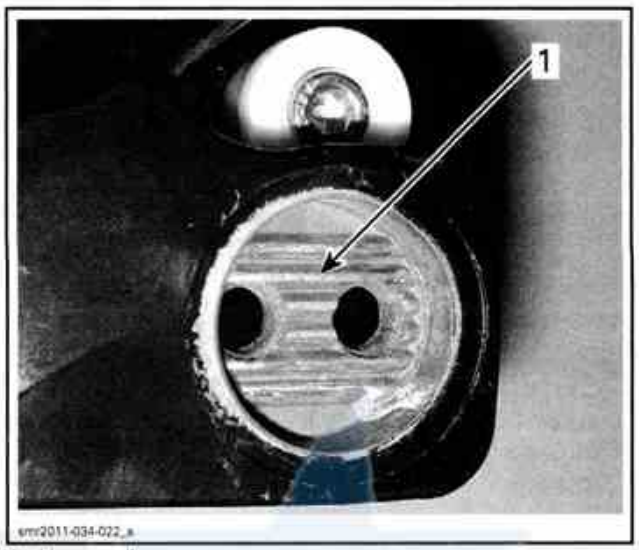
iBR Actuator Inspection

Check condition of iBR actuator gasket.

Check condition of splines on actuator shaft end and in U-arm.



1. Actuator shaft splines



1. U-arm splines

Replace parts as necessary.

iBR Actuator Installation

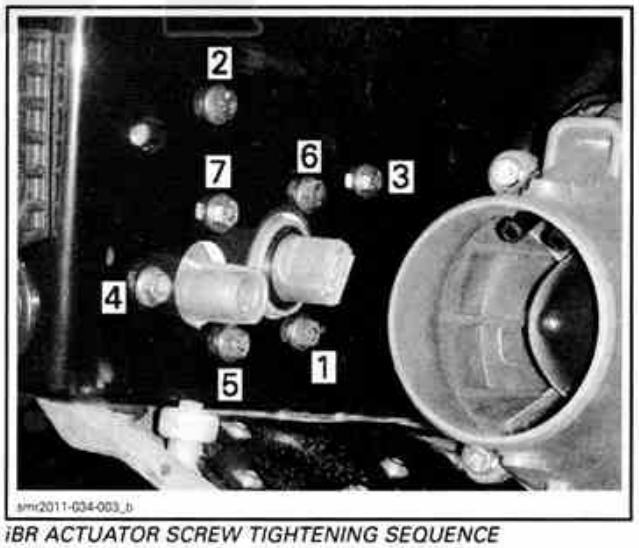
GTI and Wake Models

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

Clean actuator mounting screw threads and apply LOCTITE 243 (BLUE) (P/N 293 800 060) on threads (or install new screws with threadlocker).

Tighten actuator mounting screw to specification as per following sequence.

TIGHTENING TORQUE
12 N•m (106 lbf•**in**)



iBR ACTUATOR SCREW TIGHTENING SEQUENCE

Clean iBR shaft screw threads and apply LOCTITE 243 (BLUE) (P/N 293 800 060) on threads (or install new screws with threadlocker).

Secure U-arm to iBR shaft.

Apply a small amount of DIELECTRIC GREASE (P/N 293 550 004) to the connector pins before plugging the connectors to the iBR actuator.

Reinstall iBR fuse.

Check watercraft in water for water tightness.

GTX, RXT and Wake Pro Models

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

- Clean all actuator mounting screw threads and apply LOCTITE 243 (BLUE) (P/N 293 800 060) on threads (or install new screws with threadlocker).
- Install the U-arm on iBR shaft using new hexagonal screw with threadlocker.
- Torque hexagonal screws securing iBR actuator
- Torque gear clamps securing water pressure hoses to 2 N•m (18 lbf•**in**).
- Apply a small amount of DIELECTRIC GREASE (P/N 293 550 004) to the connector pins before installing the connectors on the iBR actuator.
- Check watercraft in water for water tightness.

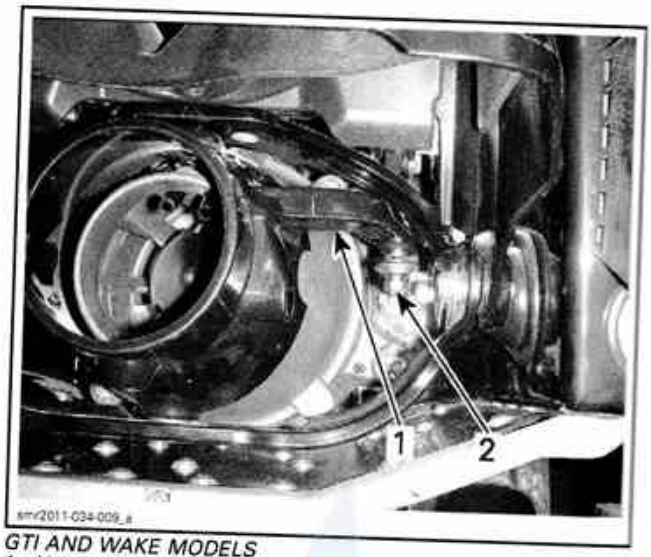
iBR GATE

iBR Gate Removal (with VTS Trim Ring and Steering Nozzle)

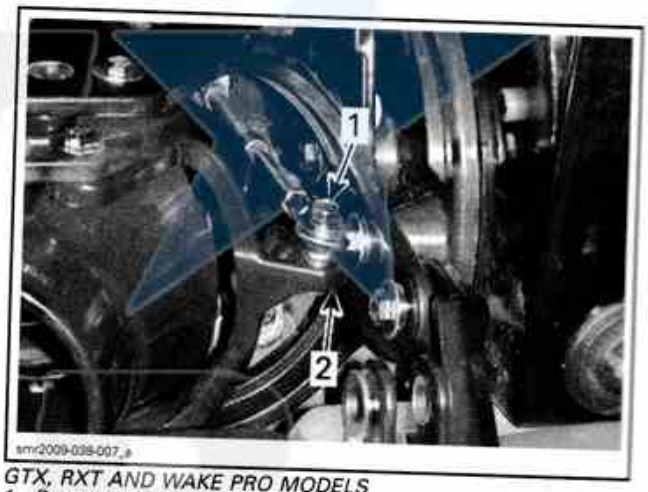
⚠ CAUTION Remove iBR fuse before working in the iBR gate area. Refer to *POWER DISTRIBUTION*.

NOTICE Do not try to move the iBR gate when all components are installed.

1. Disconnect the steering cable from the steering nozzle arm.

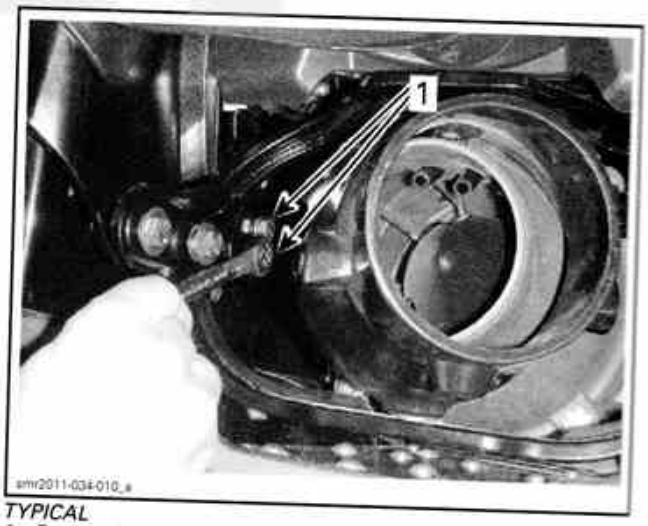


GTI AND WAKE MODELS
1. *Nozzle arm*
2. *Remove screw*



GTX, RXT AND WAKE PRO MODELS
1. *Remove screw*
2. *Nozzle lever*

2. Remove screws retaining U-arm to iBR actuator shaft.

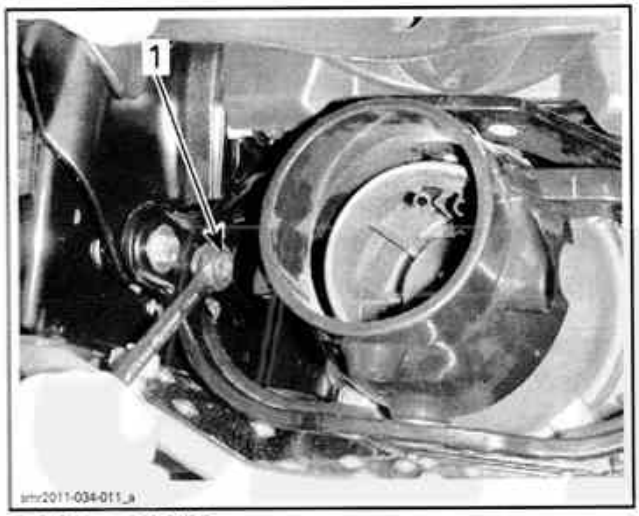


TYPICAL
1. *Remove screws*

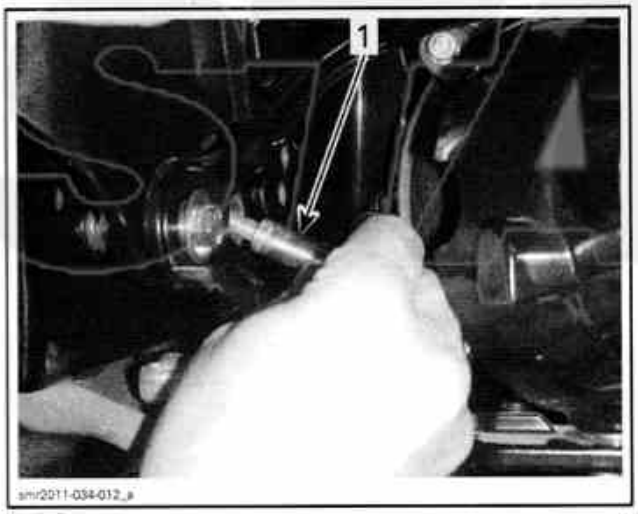
⚠ CAUTION From now on, retain iBR gate to prevent it to fall. Pay attention not to caught your fingers.

3. Raise iBR gate to its upper position. Hold in position.
4. Remove screw from iBR gate LH pivot point.

NOTE: Pull out bushing along with the screw.



TYPICAL — LH SIDE
1. Remove screw and bushing

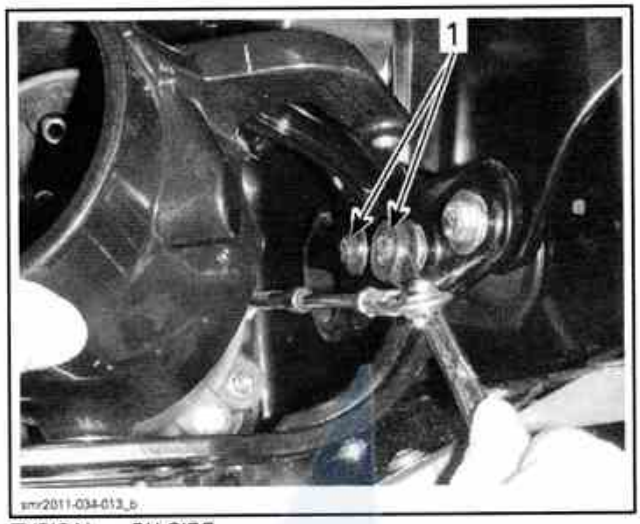


TYPICAL
1. Bushing

5. Remove screw from iBR gate RH pivot point.

NOTE: Pull out bushing along with the screw.

6. Remove screw from U-arm pivot point



TYPICAL — RH SIDE
1. Remove screws

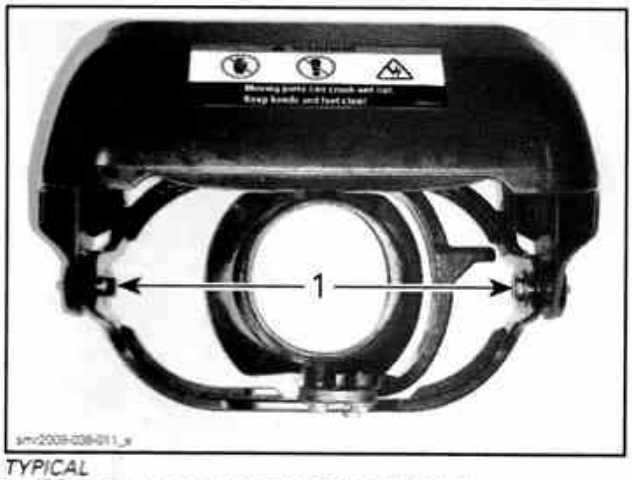
Pull out iBR gate ass'y with U-arm.

TYPICAL

iBR Gate and VTS Trim Ring Disassembly

VTS Trim Ring Removal

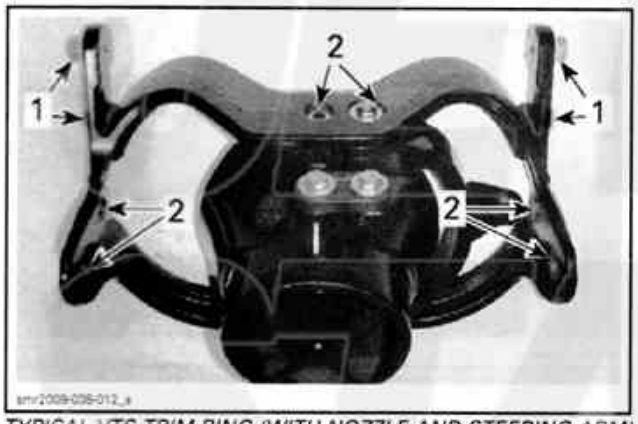
Remove the two hexagonal screws securing the iBR gate to the VTS trim ring.



TYPICAL
1. iBR gate retaining hexagonal screws to remove

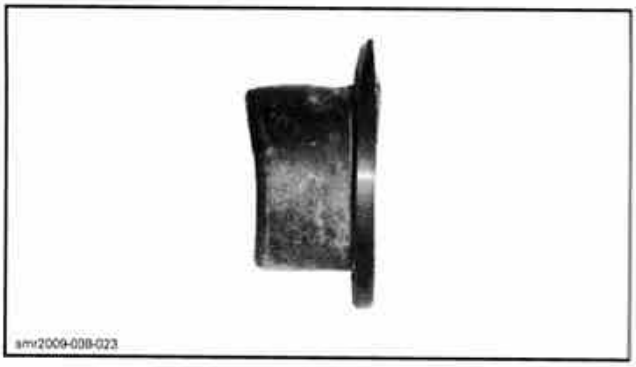
Trim Ring Inspection

1. Inspect trim ring and metal spacers for cracks, oblong holes, evidence of wear and deformation.
2. Inspect plastic bushings and friction sleeves for cracks, deformation and signs of wear.



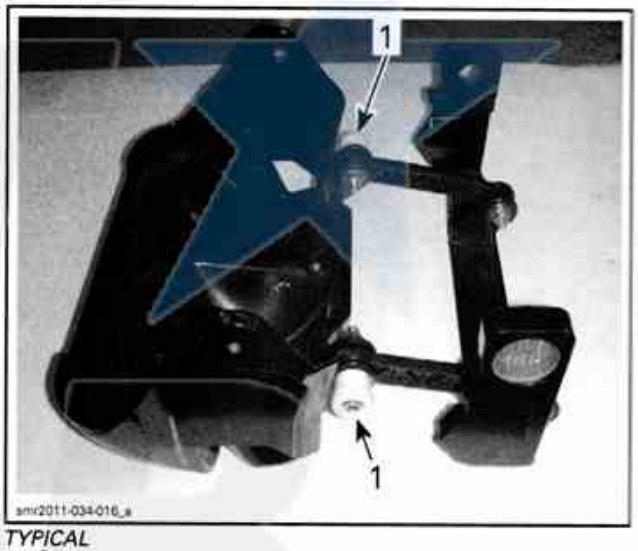
TYPICAL VTS TRIM RING (WITH NOZZLE AND STEERING ARM)
1. Friction sleeves (2 each side)
2. Plastic bushings (x8)

TYPICAL - WORN AND DEFORMED PLASTIC BUSHING



NOTE: Friction sleeves should be replaced as specified in maintenance chart or if they show signs of wear (flat surfaces). Plastic bushings are press fit and should be replaced if they show signs of wear, deformation, or if the iBR gate backlash is beyond service limit.

3. Inspect gate stoppers for signs of wear.



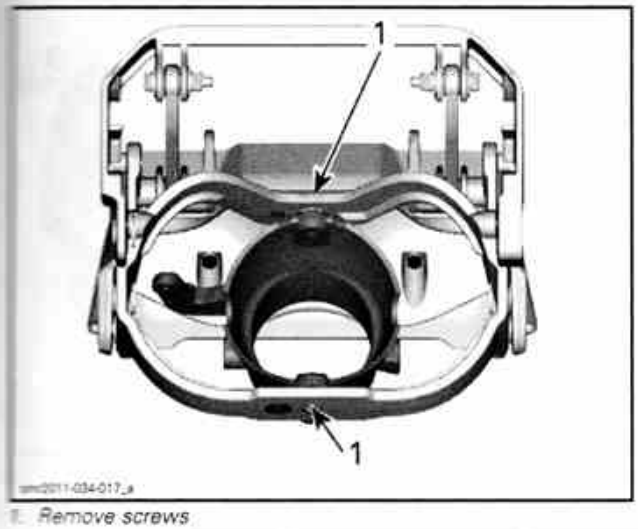
TYPICAL
1. Stoppers

4. Replace parts as required.

Steering Nozzle Removal

GTI and Wake Models

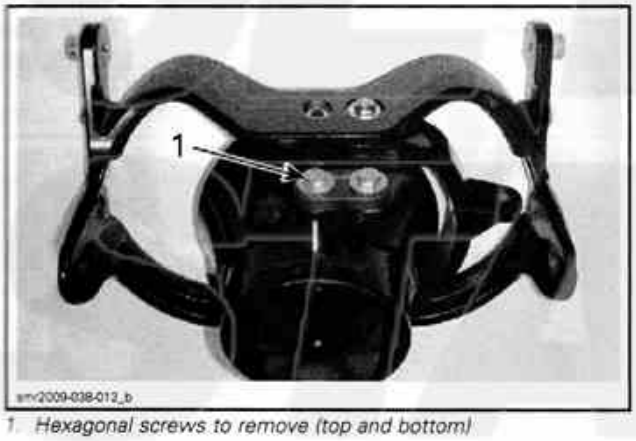
1. Remove screws securing nozzle to VTS ring.



1. *Remove screws*

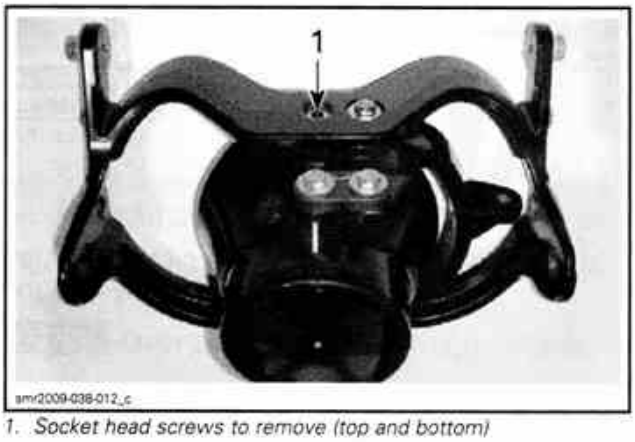
GTX, RXT and Wake Pro Models

1. Remove the 2 hexagonal screws securing the steering arms (links) to the steering nozzle (top and bottom).



1. *Hexagonal screws to remove (top and bottom)*

2. Remove the 2 socket head screws securing the nozzle to the VTS trim ring (1 top and 1 bottom).



1. *Socket head screws to remove (top and bottom)*

Steering Nozzle Lever Removal

GTX, RXT and Wake Pro Models

1. Remove the hexagonal screws securing the steering arms (links) to the steering nozzle lever, top and bottom.

1. *Hexagonal screws to remove (top and bottom)*

2. Remove the hexagonal screws securing the steering nozzle lever to the VTS trim ring, top and bottom.

1. *Hexagonal screws to remove (top and bottom)*

Steering Nozzle Inspection

1. Inspect steering nozzle for cracks, wear, deformation, and other damages.

Inspect bushings for wear or other damage.

2. Replace parts as required.

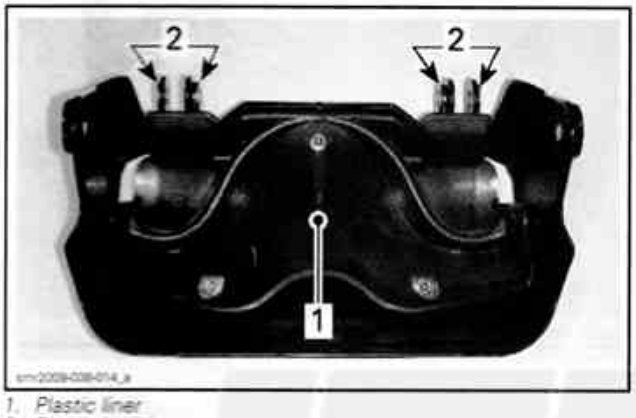
Steering Nozzle Lever Inspection

GTX, RXT and Wake Pro Models

1. Inspect steering nozzle lever, steering arms, and spacers for cracks, elongated holes, evidence of wear, deformation and other damages.
2. Replace as required.

iBR Gate Inspection

1. Inspect the iBR gate and its plastic liner for cracks, out of round holes, evidence of wear, deformation and other damages.
2. Inspect plastic bushings (x4) for cracks, wear, and deformation.
3. Replace as required.



1. *Plastic liner*
2. *Plastic bushings*

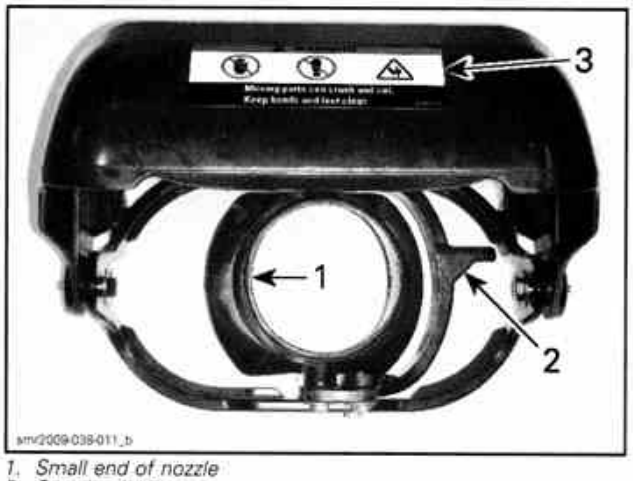
iBR Gate and VTS Ring Reassembly

Install all parts removed in the reverse order of removal, however pay attention to the following:

- Install new friction sleeves (as required).
- Install new plastic bushings (as required).
- Install new hexagonal screws with threadlocker.
- Torque all retaining screws as per exploded view.

When installing the iBR gate onto the VTS ring, position the VTS ring so that the small end of the steering nozzle is facing you with the steering lever towards the RH side.

Position the iBR gate over the ring so that the warning label is facing you (right side up) and install the mounting hardware as seen in the exploded view. The attachment points for the linkage arms will be facing away from you (not visible in following illustration of iBR gate and VTS ring assembly).



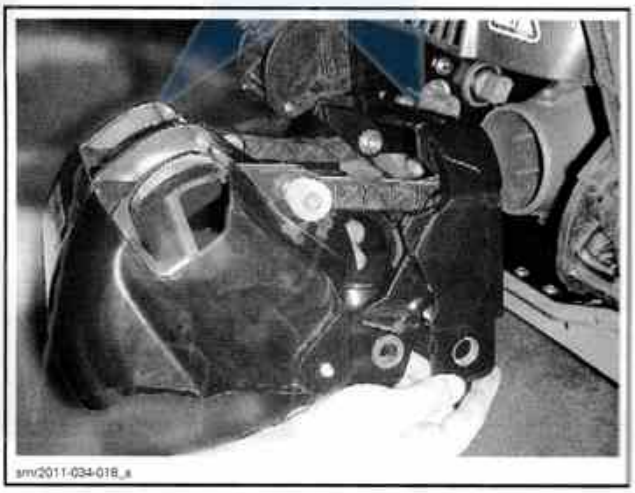
1. *Small end of nozzle*
2. *Steering lever*
3. *Warning label*

iBR Gate Installation (with VTS Trim Ring and Steering Nozzle)

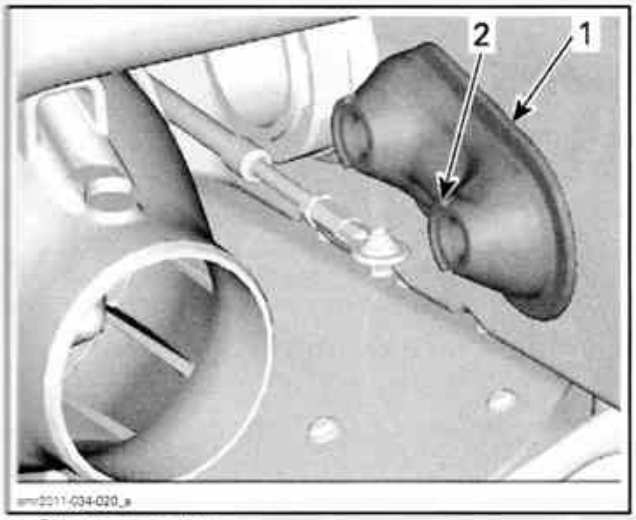
GTI and Wake Models

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

Position iBR gate down and components as shown to install into position.



Insert iBR gate ass'y between mounting plates.



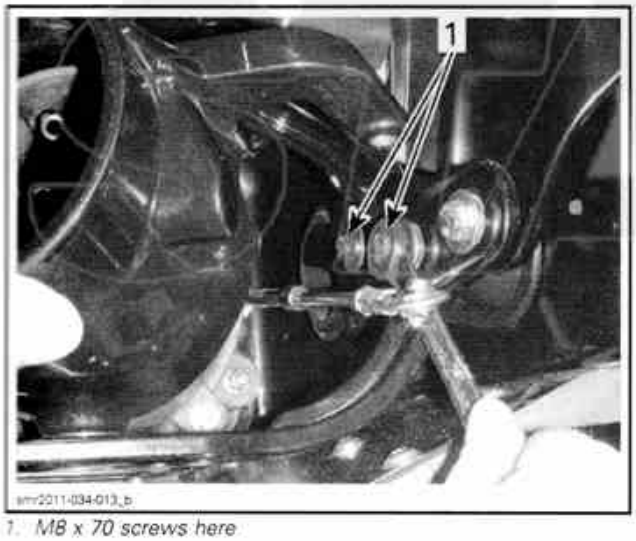
1. RH mounting plate
2. Rib here

NOTE: Ensure RH mounting plate is in place before inserting iBR gate ass'y. Also position its ribs as illustrated.

Raise iBR gate to its upper position. Hold in position.

Use new screws with threadlocker for installation.

Loosely install M8 x 70 mm screws on RH side.



1. M8 x 70 screws here

Install screw on LH side of VTS ring pivot point then iBR shaft screws.

Torque all retaining screws as specified in exploded view.

NOTICE **Over torquing will damage inserts.**

GTX, RXT and Wake Pro Models

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

- Install new plastic bushings (as required).
- Install all new hexagonal screws with threadlocker.
- Lift the 2 linkage arms on the U-arm as you insert the iBR gate and VTS ring between the mounting plates.
- Secure the VTS ring to the mounting plates, then secure the linkage arms to the iBR gate.
- Torque all retaining screws as specified in exploded view.

NOTICE **Overtorquing will damage inserts.**

U-ARM

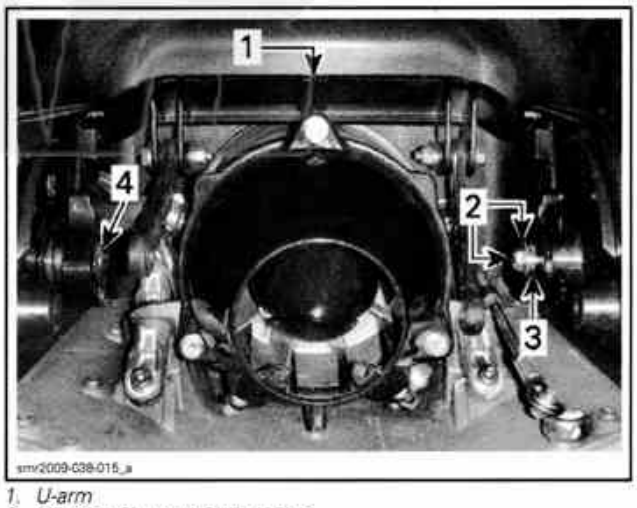
U-Arm Removal

GTI and Wake

Remove U-arm as an assembly with iBR gate. Refer to *iBR GATE* in this subsection.

RXT, GTX and Wake Pro

1. Carry out the *iBR GATE REMOVAL (WITH VTS TRIM RING)* procedure as detailed in this subsection.
2. Remove the RH U-arm retaining hexagonal screw and washer.
3. Secure the U-arm with one hand and remove the RH spacer sleeve.
4. Remove U-arm from actuator shaft.

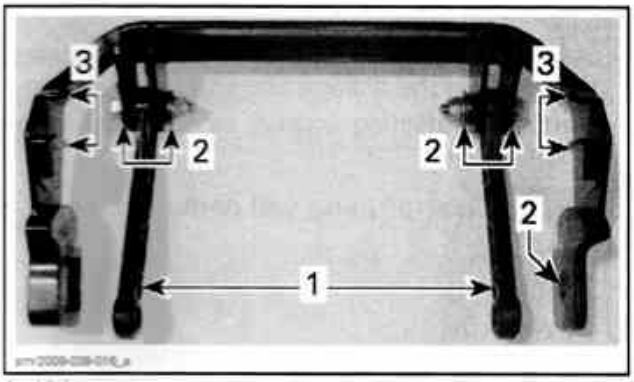


1. U-arm
2. Hexagonal screw and washer
3. Spacer sleeve
4. Actuator shaft

U-Arm Inspection

1. Inspect U-arm and linkage arms (x2) for cracks, wear, and signs of twisting and bending.
2. Ensure the VTS cams on the U-arm are not worn, cracked or broken.

3. Inspect the plastic bushings (x5) for cracks, wear and deformation.
4. Replace parts as required.



1. *Linkage arms*
2. *Plastic bushings (x5)*
3. *VTS cams*

U-Arm Installation

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

- Install new plastic bushings (as required).
- Install all new hexagonal screws with threadlocker.
- Torque all retaining screws as per exploded view.

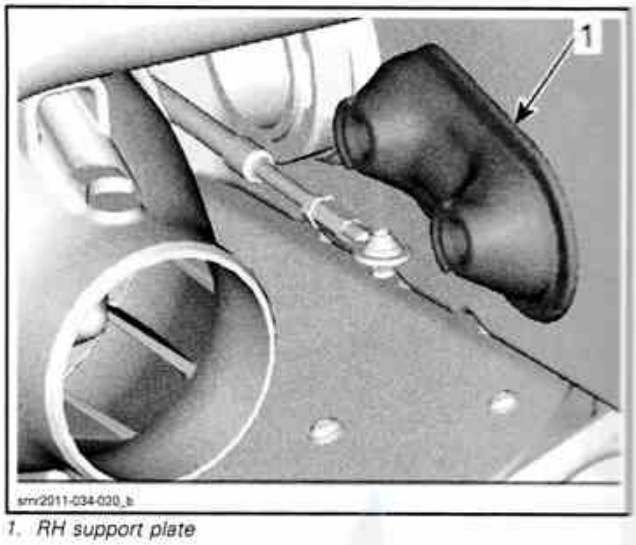
iBR GATE SUPPORT PLATES

iBR Gate Support Plate Removal

GTI and Wake Models

RH Support Plate Removal

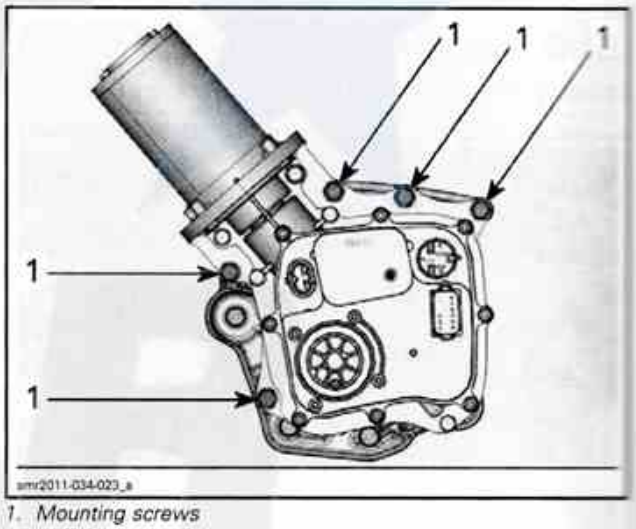
1. Remove iBR gate ass'y. Refer to procedure in this subsection.
2. Remove support plate.



1. *RH support plate*

LH Support Plate Removal

1. Remove iBR actuator. Refer to procedure in this subsection.
2. Remove support plate mounting screws.



1. *Mounting screws*

3. Pull out support plate.

GTX, RXT and Wake Pro Models

Preparation

NOTE: The following steps must be carried out when removing the LH or RH support plates.

iS Models

1. Open the boarding platform. Refer to *BODY* subsection.

All Models

2. Remove the following items, see procedures in this subsection:
   - iBR gate, VTS trim ring and the steering nozzle as an assembly
   - iBR U-arm.

RH Support Plate Removal

iS Models

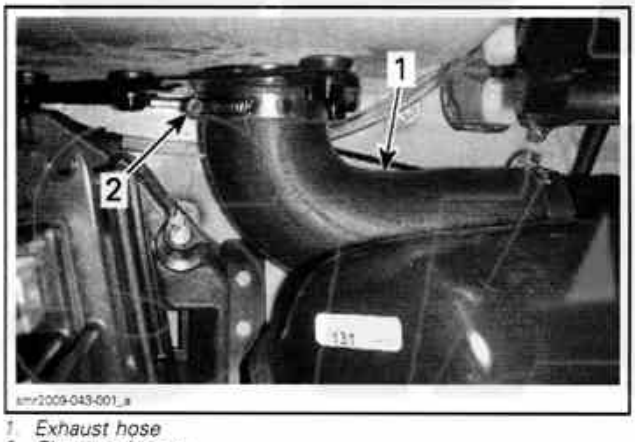
1. Remove the RH storage bin, refer to the *BODY* subsection.

Models Without iS

2. Remove RH access panel from the boarding platform.

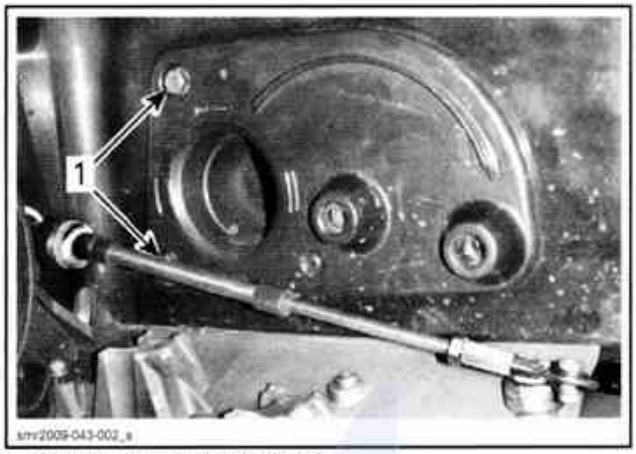
All Models

3. Remove the battery, refer to *CHARGING SYSTEM* subsection.
4. Disconnect the exhaust hose from the RH inner support plate.



1. *Exhaust hose*
2. *Clamp to loosen*

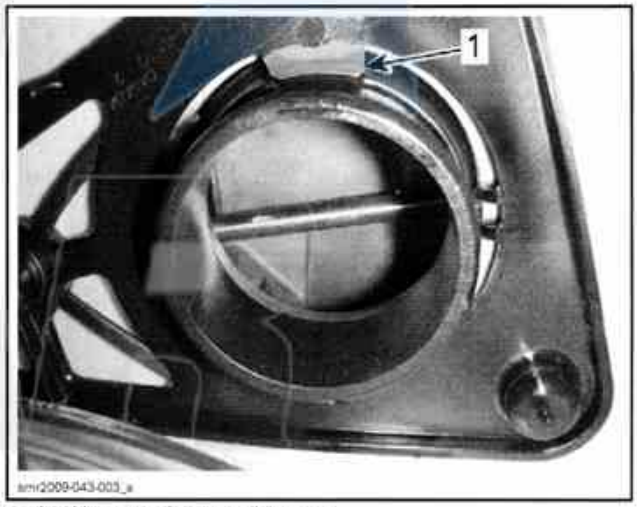
5. Remove and discard the 2 hexagonal screws securing the outer support plate to the inner support plate.



1. *Support plate retaining screws*

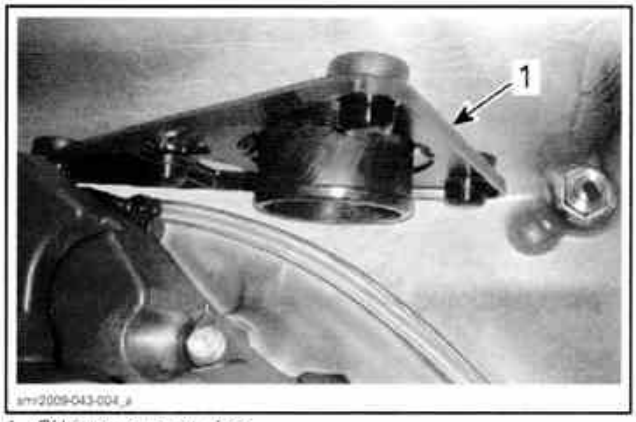
NOTE: Two locking tabs on the inner plate locks it to the outer plate exhaust nozzle.

6. Using a small screwdriver or a scriber, lift the upper locking tab slightly to help release the plates and avoid breaking the tabs.



1. *Locking tab x2 (top and bottom)*

7. Carefully pull the RH inner support plate off the outer plate.

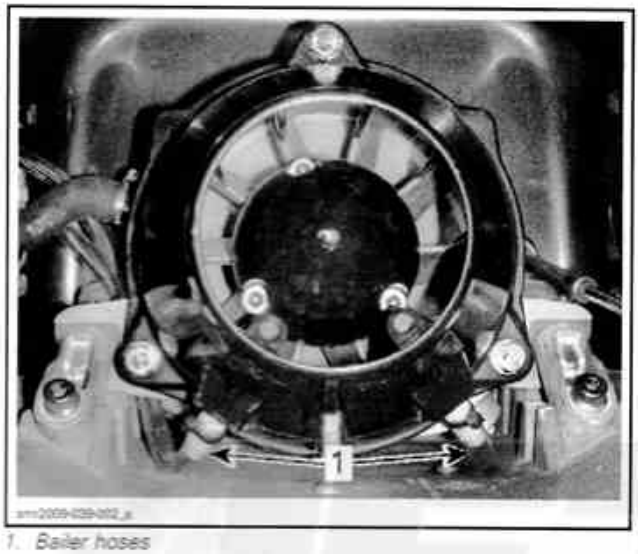


1. *RH inner support plate*

8. Pull the outer plate off the hull.

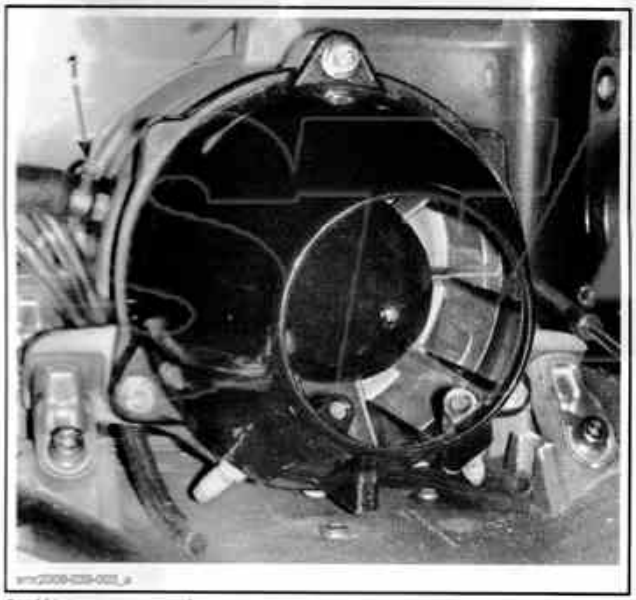
LH Support Plate Removal

1. Remove the iBR actuator, refer to procedure in this subsection.
2. Cut the locking ties and disconnect the 2 bailer hoses from the jet pump venturi.



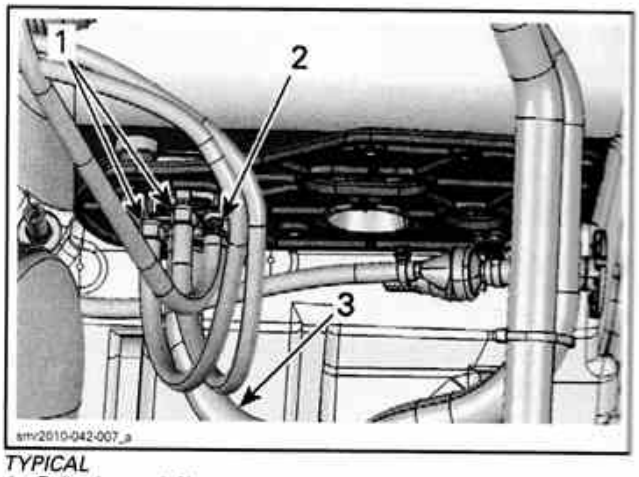
1. Bailer hoses

3. Loosen the gear clamp and disconnect the water pressure hose from the jet pump.



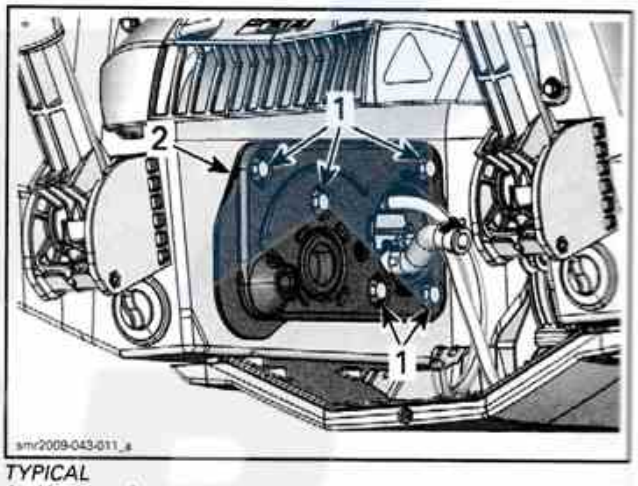
1. Water pressure hose

4. Disconnect the hoses connected to the fitting plate mounted in the iBR support plate.



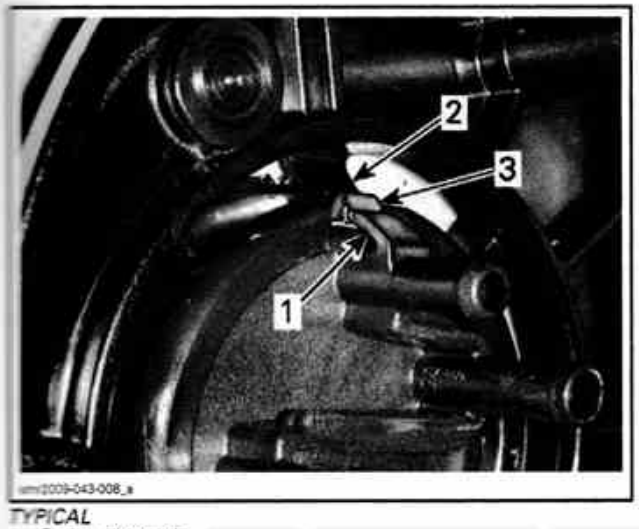
TYPICAL
1. Bailer hoses (x2)
2. Intercooler bleed hose (models with external intercooler)
3. Pump water pressure hose

5. Remove and discard the 5 hexagonal screws securing the outer support plate to the inner support plate.



TYPICAL
1. Hexagonal screws to remove
2. Outer support plate

6. From the iBR actuator side, carefully compress the outer support plate tab retaining the two support plates together using a common screwdriver.



TYPICAL
1. *Fitting plate tab*
2. *Inner plate tab*
3. *Outer plate tab to compress*

7. Pull the inner support plate off the outer support plate.
8. Pull the outer support plate from the hull.

iBR Support Plate Installation

GTI and Wake Models

RH Support Plate Installation

Installation is the reverse of the removal procedure.

LH Support Plate Installation

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

1. Install screws to secure support plate to iBR actuator and torque as per exploded view.
2. Ensure formed seal is in good condition and properly install on support plate.

GTX, RXT and Wake Pro Models

RH Support Plate Installation

1. Ensure formed seals are in good condition and properly installed on each support plate.
2. Position the RH inner support plate in front of its mounting position in the hull.
3. As you hold the inner support plate, insert exhaust fitting on the outer support plate through the hull. Push the outer plate in until it snaps onto the inner plate.
4. Install 2 new hexagonal screws to secure iBR support plates and torque to 12 N•m (106 lbf•**in**).
5. Install the exhaust hose on the support plate fitting and torque the gear clamp to 4 N•m (35 lbf•**in**).
6. Install the battery, refer to *CHARGING SYSTEM* subsection.
7. Install remaining parts in the reverse order of removal. Refer to applicable procedures for details, torque values and service products.

NOTICE **Overtorquing will damage inserts.**

LH Support Plate Installation

1. Ensure formed seals are in good condition and properly installed on each support plate.
2. Position the LH inner support plate in front of its mounting position in the hull.
3. As you hold the inner support plate, insert the round extension on the outer support plate through the hull. Push the outer plate in until it snaps onto the inner plate.
4. Install 5 new hexagonal screws to secure iBR support plates and torque as per exploded view.
5. Install the fitting plate, refer to *FITTING PLATE* in this subsection.
6. Install remaining parts in reverse order of removal. Refer to appropriate procedures for details, service products and torque values.

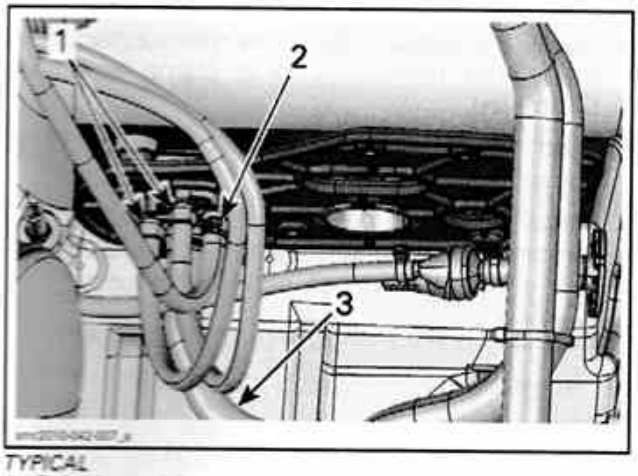
FITTING PLATE

The fitting plate connects the bailer and pressure hoses inside the hull to the hoses that are connected to the jet pump. It also provides the drain fitting for the intercooler drain hose (260 hp engine only).

Fitting Plate Removal

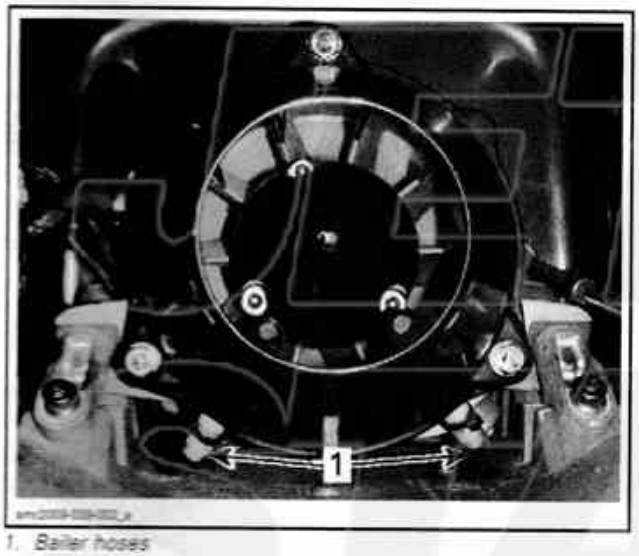
GTX, RXT and Wake Pro Models (215/260 Engines)

1. Remove the iBR actuator for access to the fitting plate, refer to *iBR ACTUATOR* in this section.
2. Disconnect the hoses connected to the fitting plate (inside hull).



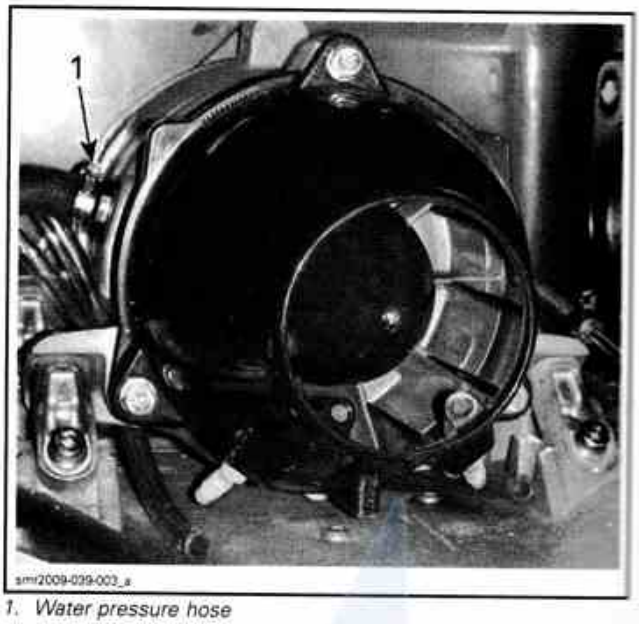
TYPICAL
1. *Bailer hoses (x2)*
2. *Intercooler bleed hose (models with an external intercooler*
3. *Water pressure hose from jet pump*

3. Cut the locking ties and disconnect the 2 bailer hoses from the jet pump venturi.



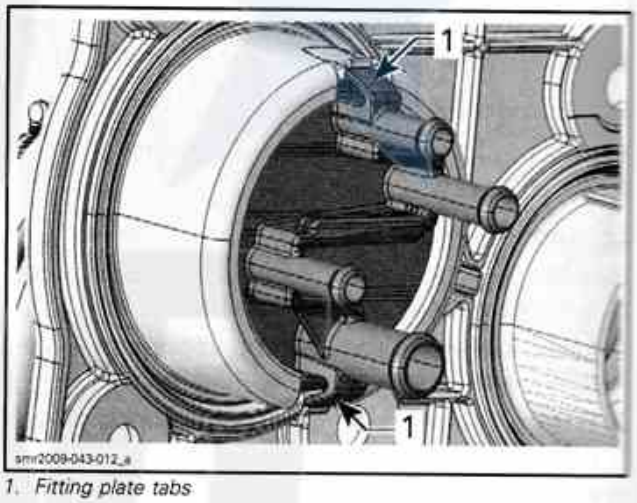
1. *Bailer hoses*

4. Loosen the gear clamp and disconnect the water pressure hose from the jet pump.



1. *Water pressure hose*

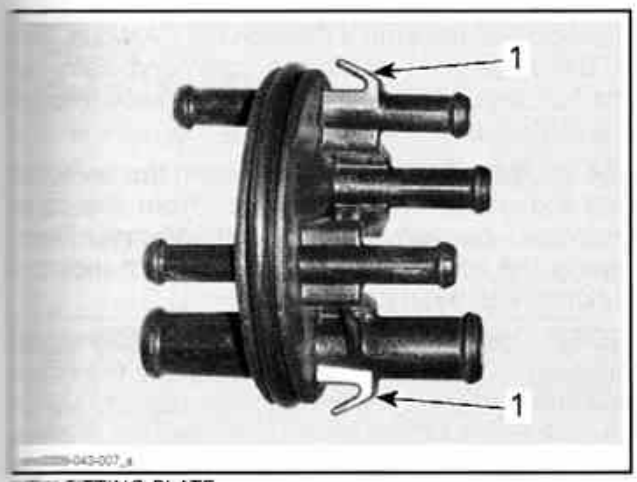
5. Compress the fitting plate retaining tab and push the fitting plate out of the outer support plate.



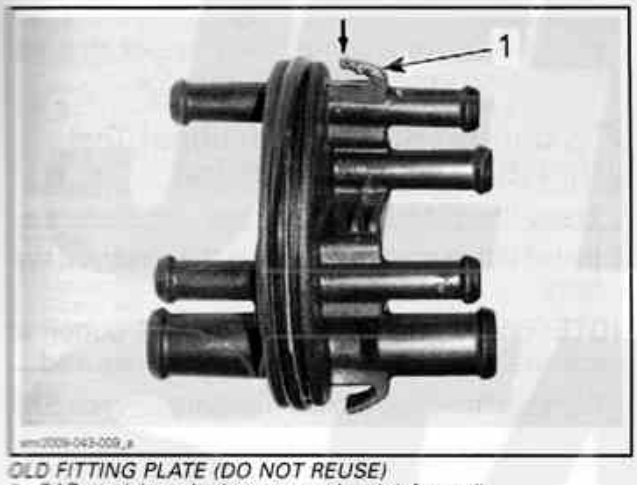
1. *Fitting plate tabs*

6. Discard the fitting plate.

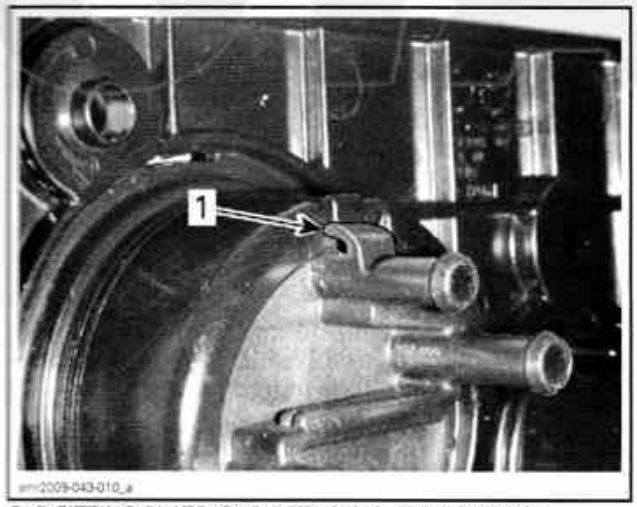
NOTICE When the fitting plate retaining tabs are compressed for removal, the tabs become deformed and weakened. Do not reinstall a used fitting plate. Always install a new fitting plate. Failure to comply with this notice can result in water seeping into the bilge.



NEW FITTING PLATE
1. Good retaining tabs



OLD FITTING PLATE (DO NOT REUSE)
1. BAD retaining tabs (compressed and deformed)



OLD FITTING PLATE (BAD RETAINING TAB CONTACT)
1. Retaining tab

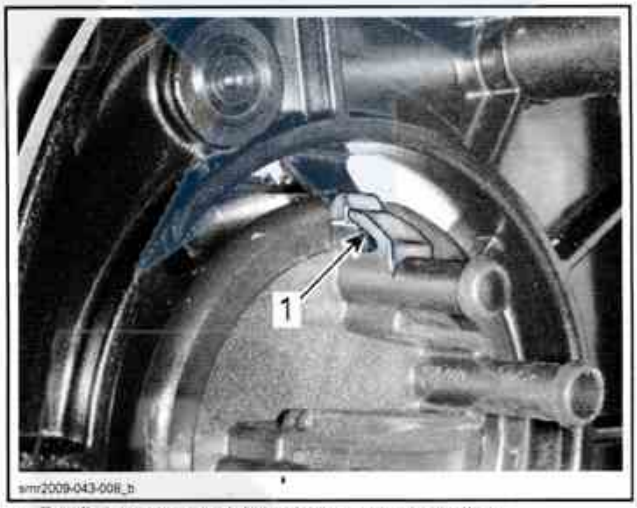
Fitting Plate Installation

1. Ensure the O-ring seal is properly installed on the fitting plate and in good condition.
2. Insert the fitting plate through the outer iBR support plate.

NOTICE The fitting plate used on models with an external intercooler is slightly different than, and not interchangeable with, the fitting plate used on all other models. Be sure to use the correct fitting plate.

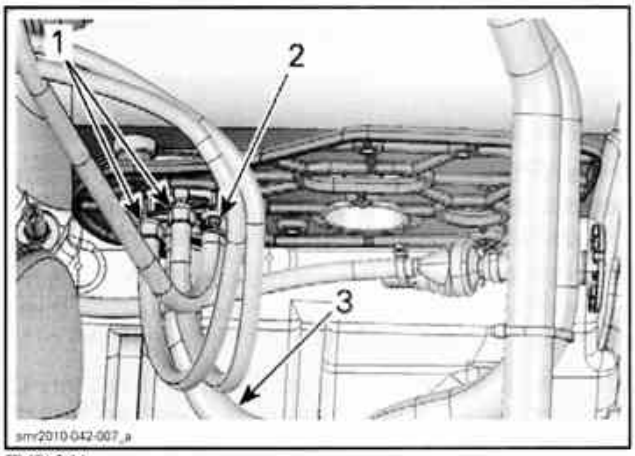
3. Push the fitting plate in until it bottoms out and the retaining tabs (x2) snap securely into position.

NOTICE Ensure both tabs are properly locked to secure fitting plate to the support plate. If fitting plate is not properly locked in position, water may seep into the bilge.



1. Top fitting plate retaining tab (bottom tab similar)

4. Install the hoses on the inner fitting plate.
5. Torque gear clamps to 1.7 N•m (15 lbf•**in**).

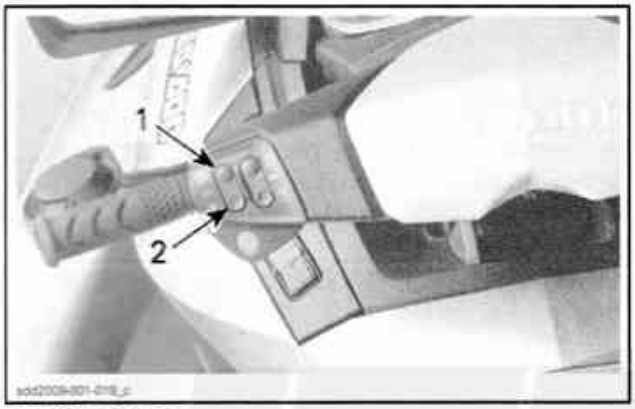


TYPICAL
1. Bailer hoses (x2)
2. Intercooler bleed hose (models with an external intercooler)
3. Water pressure hose from jet pump

6. Install the three hoses on the jet pump.

7. Torque the gear clamp securing pressure hose to the jet pump to 1.7 N•m (15 lbf•**in**).
8. Install remaining parts in the reverse order of removal, refer to appropriate procedure in this subsection.

VTS CONTROL BUTTON



1. *VTS up button*
2. *VTS down button*

VTS Button Overview

The VTS button contain a series of 4 diodes for the UP and DOWN arrow switches. Refer to *WIRING DIAGRAM*.

The center wire to the switches (pin "C"), is common for iS button and VTS button (somewhat like a ground wire). The other two wires (pins "A" and "B"), act as signal wires to the gauge for each set of switches. They actually each form one branch of an electronic circuit within the gauge.

Each diode (in circuit) drops a nominal 0.6 Vdc when conducting electricity. If the circuit current passes through all four diodes (say VTS switch open), a drop of 2.4 Vdc would be measured across the 4 diodes (pin "A" to pin "C"). This drop of 2.4 Vdc measured at pin "A" tells the gauge the VTS switch is open.

If the VTS UP button is pressed, 2 diodes are bypassed by the closed switch. The remaining two diodes in the circuit drop 1.2 Vdc (at pin "A").

If the VTS DOWN button is pressed, 1 diode is bypassed by the closed switch. The remaining three diodes in the circuit drop 1.8 Vdc (at pin "A").

The gauge senses these voltages through pin 13 of its connector, and interprets them as signals that tell it which switch is activated (VTS UP or VTS DOWN).

Since the command signal generated by the closure of a VTS switch concerns the VTS module, a circuit within the gauge will translate it to CAN protocol and transmit it through the CAN bus. The VTS module will react to the command, carry out the function, and transmit the result back through the CAN bus.

The gauge will use the signals from the switches and the transmitted information from the other modules, convert them to an indication, and cancel the command signal it sent out once the function has been carried out.

NOTE: The voltages stated above vary slightly depending on the actual voltage applied to the circuit and the current flow through the diodes. When using a Fluke 115 multimeter for testing in diode test mode, the voltage and current applied by the multimeter are lower than in circuit. The quality of probe contact, the actual probes and leads, and the precision of the meter calibration will all affect the results, which will most likely be slightly lower than nominal values stated.

VTS Control Button Functional Test Using iBR Override Function

1. Press the START/STOP button.
2. Install tether cord to power up the electrical system.

NOTE: Briefly press the START/STOP button to reactivate the electrical system when required.

3. Activate the iBR override function, refer to *SYSTEM DESCRIPTION (iBR)* in this subsection.
4. Press and hold the VTS DOWN arrow button. The iBR gate and steering nozzle will move downwards together until they reach the full VTS down position. The iBR gate will then continue moving to the full reverse/braking position alone.
5. Depress and hold the VTS UP arrow button and ensure the iBR gate moves up to the forward position.

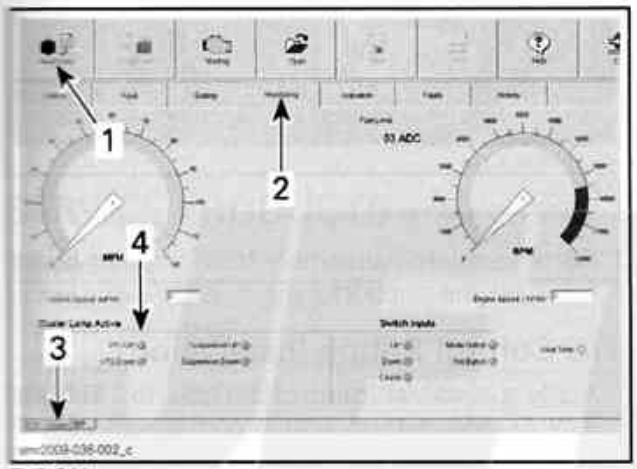
NOTE: If the VTS button is released before full travel of the iBR gate, movement of the iBR gate will cease.

If the iBR does not respond to VTS button commands (UP or DOWN), carry out the following *VTS SWITCH TEST USING B.U.D.S.*

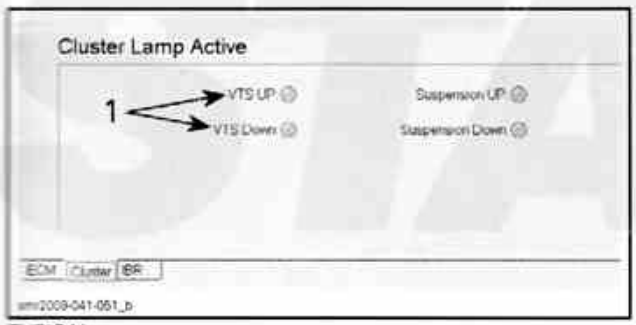
VTS Control Button Test Using B.U.D.S.

1. Connect watercraft to the latest B.U.D.S. software, refer to *COMMUNICATION TOOLS AND B.U.D.S.*
2. Click the **Read Data** button.

3. Check for an applicable fault code on the *FAULTS* page.
4. Click the **Monitoring** tab.
5. In the lower LH corner, click the **Cluster** tab.
6. On the LH handlebar, press the VTS UP and DOWN button alternately and look for the VTS UP and VTS Down indicator lights to come on in the **Cluster Lamp Active** area in B.U.D.S.



TYPICAL
1. *Read Data button*
2. *Monitoring tab*
3. *Cluster tab*
4. *Cluster Lamp Active area*



TYPICAL
1. *VTS UP and VTS Down indicator lights*

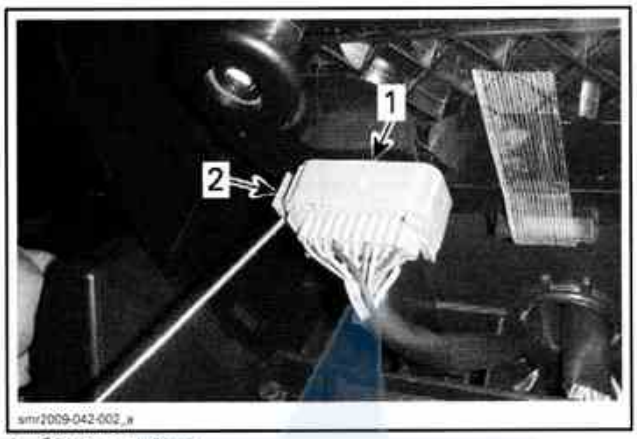
If each of the gauge button indicator lights come on when the applicable switch is pressed, the VTS control button switches and wiring are good. The problem may be related to the information center or iBR module.

If one or all of the indicator lights do not come on, refer to *VTS CONTROL BUTTON TEST USING A MULTIMETER*.

VTS Control Button Test Using a Multimeter

1. Remove the gauge support cover, refer to *GAUGE* subsection.
2. Disconnect the gauge connector.

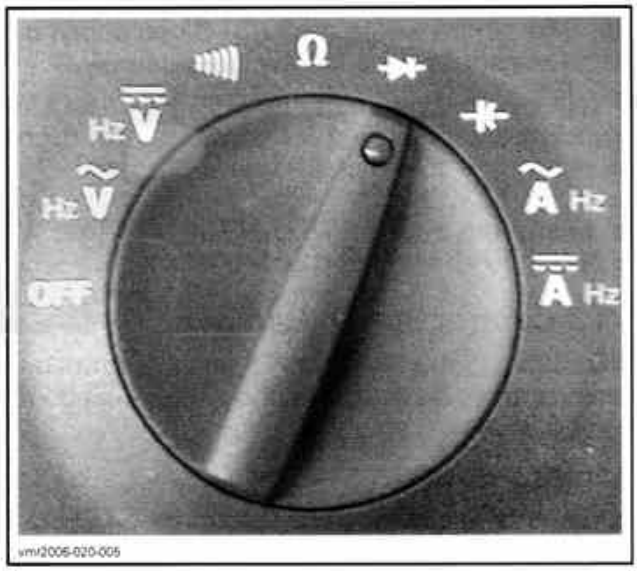
NOTICE Pull connector lock out. Do not twist the screwdriver.



1. *Gauge connector*
2. *Pull out to unlock connector*

3. Use a FLUKE 115 MULTIMETER (P/N 529 035 868) set to the diode test function. Test the VTS button switches as per following tables.

NOTE: It is important to set the multimeter to the diode check function when testing the VTS control switches.



NOTE: Pay attention to multimeter lead position for diode biasing during test. Remember that each diode should drop approximately 0.6 Vdc when positively biassed, and read as an OL (open circuit) when negatively biassed (leads reversed).

VTS CONTROL TEST			
SWITCH POSITION	MULTIMETER LEAD	GAUGE CONNECTOR	VOLTAGE
Switch released	RED lead BLACK lead	Pin 13 Pin 15	Approx. 2 Vdc
	BLACK lead RED lead	Pin 13 Pin 15	OL
UP depressed	RED lead BLACK lead	Pin 13 Pin 15	Approx. 1.1 Vdc
	BLACK lead RED lead	Pin 13 Pin 15	OL
DOWN depressed	RED lead BLACK lead	Pin 13 Pin 15	Approx. 1.6 Vdc
	BLACK lead RED lead	Pin 13 Pin 15	OL

When measuring between pins 13 and 15, if an OL is obtained with both positive and negative diode biassing, test the continuity of each wire between the gauge and switch assembly. If continuity is good, replace the switch assembly.

If any reading is significantly different than specified, carry out the same test at the switch connector, refer to the wiring diagram. If you obtain the same results, replace the switch assembly.

If voltages measured on the VTS UP and DOWN switch are as specified (or very close to it), the switches and the wiring harness are good. The fault may be within the gauge. Replace the gauge and carry out a new *VTS BUTTON TEST USING B.U.D.S.* to ensure the problem is solved.

VTS Control Button Removal

NOTE: On iS models, the VTS and iS control buttons come as a switch assembly that must be replaced as a unit.

Models with a VTS Switch

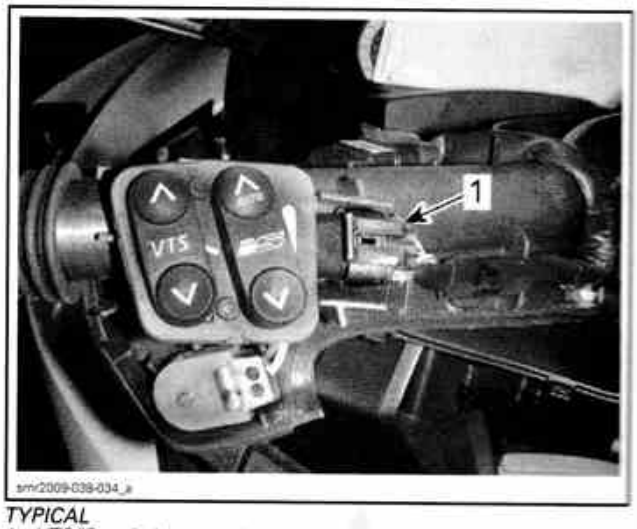
1. Remove steering cover, refer to *STEERING AND O.T.A.S.*

Models Without a VTS Switch

2. Remove the upper housing and housing cover from the LH handlebar housing.

All Models

3. Remove connector from switch assembly.

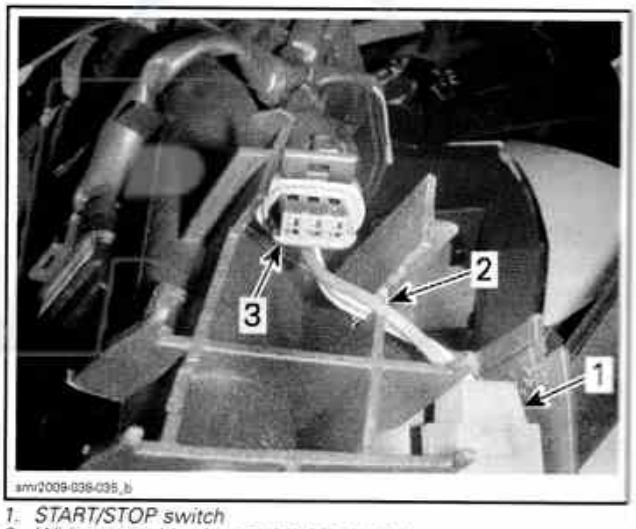


TYPICAL
1. VTS/iS switch connector

4. Remove switch assembly from support by lifting it off the support.

VTS Control Button Installation

1. Apply a small amount of DIELECTRIC GREASE (P/N 293 550 004) on switch contact pins.
2. Install connector on new switch assembly.
3. Ensure wiring from START switch is properly inserted in slot provided before installing VTS and iS control button assembly.



1. START/STOP switch
2. Wiring routed in slot provided in support
3. VTS/iS switch connector

4. Insert switch assembly in switch support.
5. Install remaining removed parts, refer to *STEERING AND O.T.A.S.*
6. Carry out an operational test of the VTS and iS systems to ensure proper operation of new switch assembly.

JET PUMP

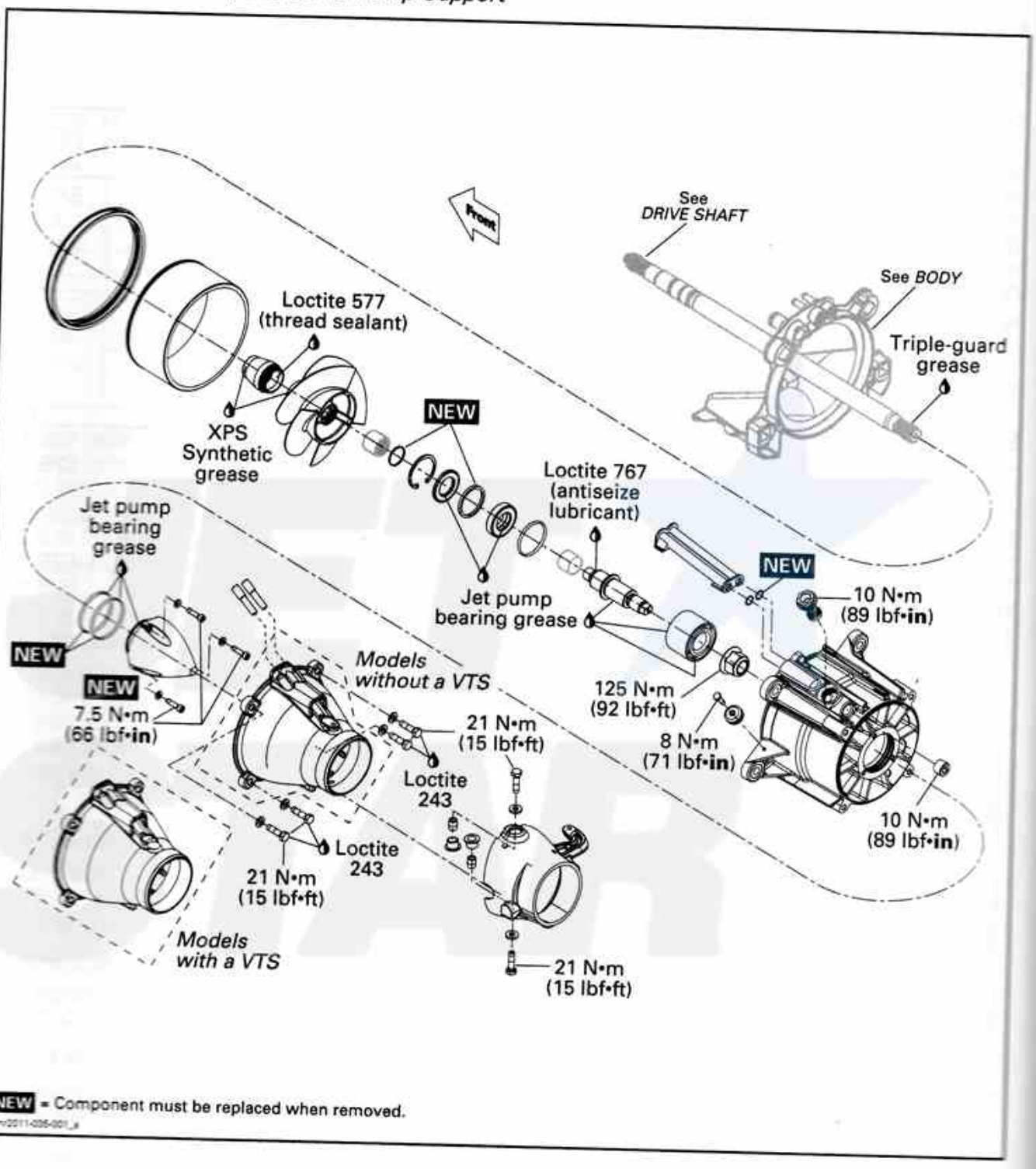
SERVICE TOOLS

Description	Part Number	Page
IMPELLER REMOVER/INSTALLER	529 035 820	529–531, 533, 536
IMPELLER REMOVER/INSTALLER	529 035 956	529–531, 533, 536
IMPELLER SHAFT BEARING TOOL	529 036 168	533–534
IMPELLER SHAFT PUSHER	529 035 955	533–534
PRESSURE CAP	529 036 172	519
PUMP PLATE	529 036 224	521–522
SEAL/BEARING PUSHER	529 035 819	535
VACUUM/PRESSURE PUMP	529 021 800	519

SERVICE PRODUCTS

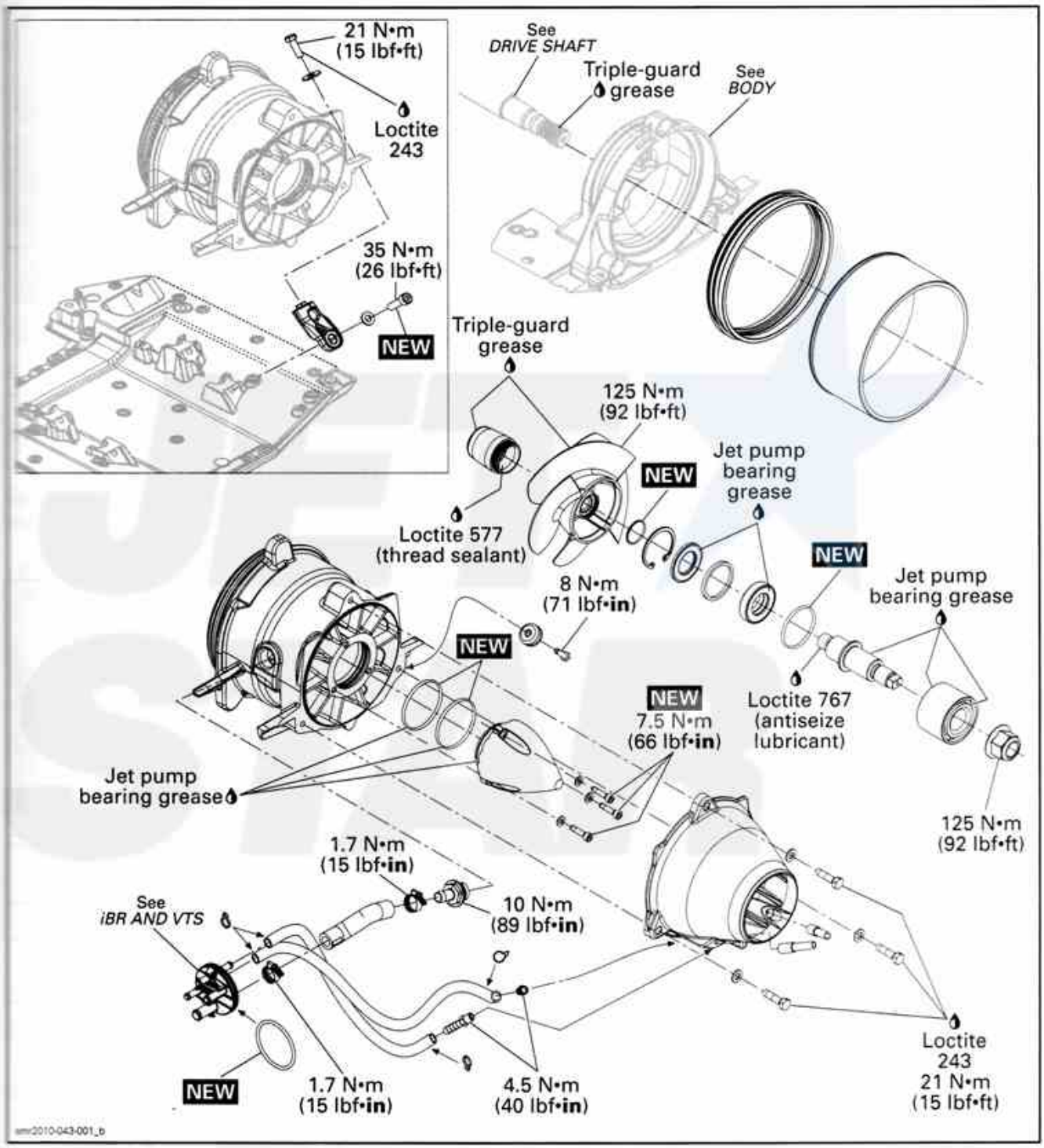
Description	Part Number	Page
JET PUMP BEARING GREASE	293 550 032	528, 535, 537
LOCTITE 243 (BLUE)	293 800 060	526, 537
LOCTITE 577 (THREAD SEALANT)	293 800 050	530
LOCTITE 767 (ANTISEIZE LUBRICANT)	293 800 070	529
PULLEY FLANGE CLEANER	413 711 809	524
TRIPLE-GUARD GREASE	296 000 329	524–525, 530
XPS LUBE	293 600 016	525, 529

Models with Jet Pump Bolted to Pump Support



NEW = Component must be replaced when removed.

Models with Jet Pump Bolted to Ride Plate



GENERAL

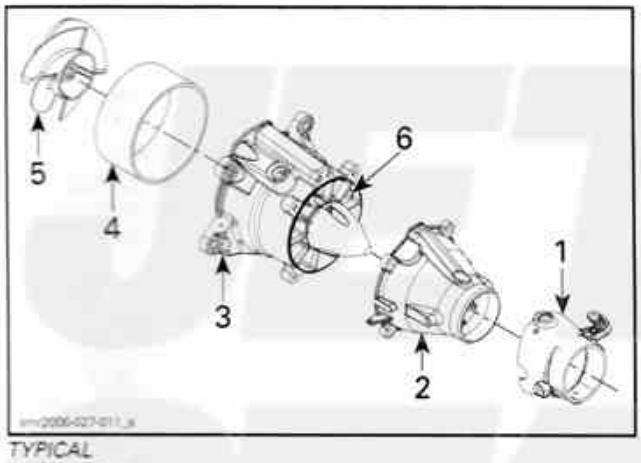
During assembly/installation, use torque values and service products as in the exploded view.

Clean threads before applying a threadlocker. Refer to *SELF-LOCKING FASTENER* 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, cotter pins, etc.) must be replaced.

JET PUMP MAIN COMPONENTS

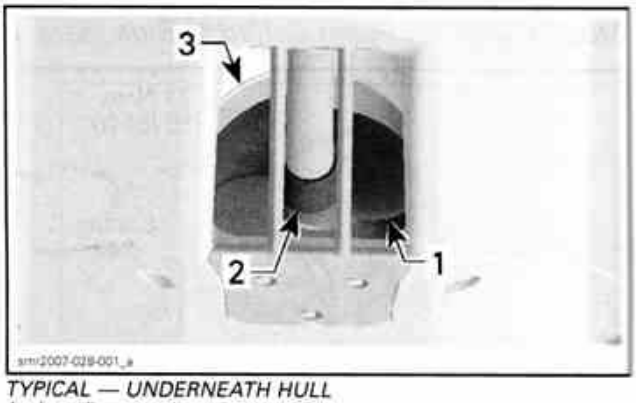


TYPICAL
1. *Nozzle*
2. *Venturi*
3. *Jet pump housing*
4. *Wear ring*
5. *Impeller*
6. *Stator*

INSPECTION

IMPELLER CONDITION

Condition of impeller, impeller boot and wear ring can be quickly checked from underneath the watercraft. With the vehicle on the trailer, use a flashlight to visually inspect them through the inlet grate.



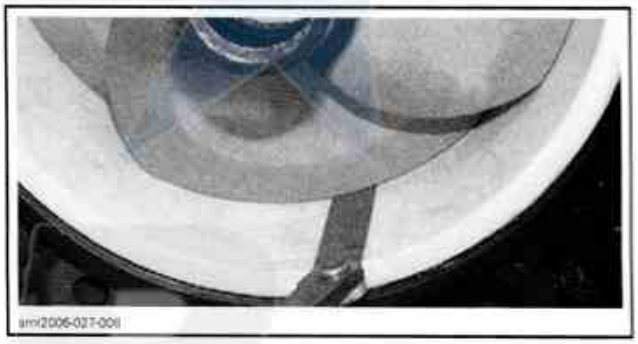
TYPICAL — UNDERNEATH HULL
1. *Impeller*
2. *Impeller boot*
3. *Wear ring*

IMPELLER/WEAR RING CLEARANCE

This clearance is critical for jet pump performance.

To check clearance, remove jet pump.

Using a feeler gauge, measure clearance between impeller blade tip and wear ring. Measure each blade at its center.



MODEL	MAXIMUM WEAR CLEARANCE
All models	0.35 mm (.014 in)

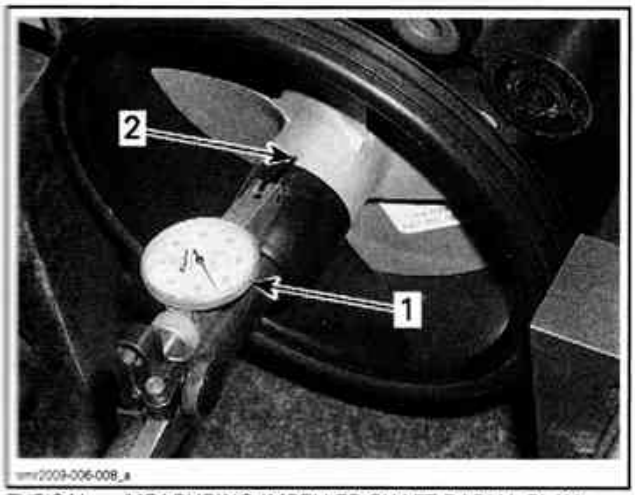
IMPELLER SHAFT RADIAL PLAY

Radial play is critical for jet pump life span.

To check radial play, remove jet pump.

Make sure impeller shaft turns freely and smoothly.

1. Retain housing in a soft jaw vise making sure not to damage housing lug.
2. Set a dial gauge and position its tip onto metal end, close to the end of the impeller hub.
3. Move shaft end up and down. Difference between highest and lowest dial gauge reading is radial play.



TYPICAL — MEASURING IMPELLER SHAFT RADIAL PLAY
1. *Dial gauge*
2. *Measure close to impeller hub end*

RADIAL PLAY
0 mm (0 in)

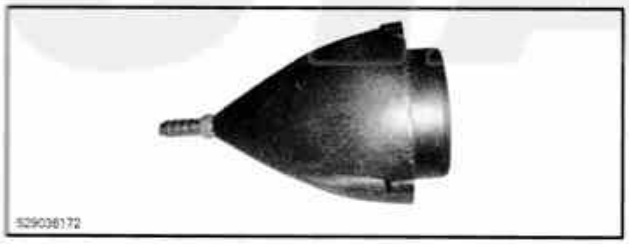
Excessive play can come either from worn bearing or damaged jet pump housing bearing surface.

LEAK TEST

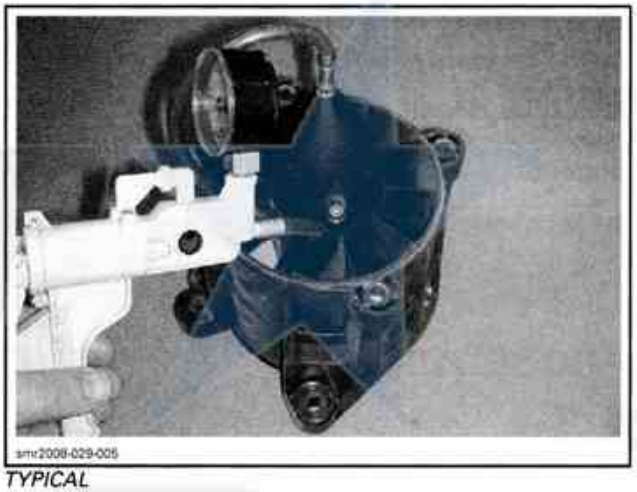
Whenever performing any type of repair on the jet pump, a leak test should be carry out.

Proceed as follows:

1. Remove impeller cover. Refer to *IMPELLER COVER* in this subsection.
2. Install the PRESSURE CAP (P/N 529 036 172) on pump housing.



3. Connect the VACUUM/PRESSURE PUMP (P/N 529 021 800) to the pressure cap fitting.



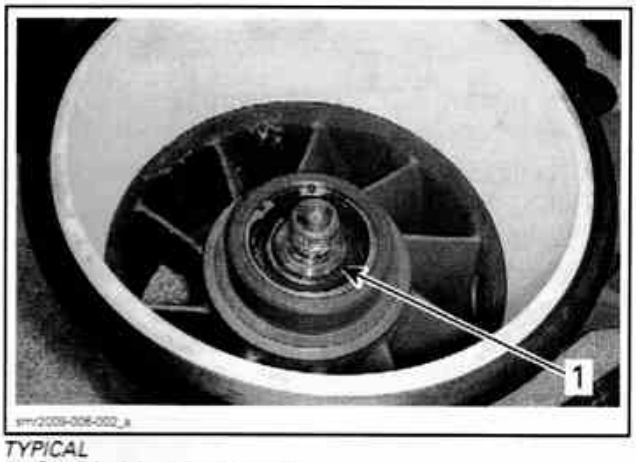
TYPICAL

4. Pressurize pump.

LEAK TEST PRESSURE
Maximum 70 kPa (10 PSI)

5. Pump must maintain this pressure for at least 5 minutes.
   - If there is a pressure drop, spray soapy water around cover. If there are no bubbles, impeller shaft, impeller shaft seal must be replaced. Jet pump unit has to be disassembled.

NOTE: If there is 2 or 3 bubbles coming out from the seal on the impeller side is acceptable. Leaks from other areas must be repaired.



TYPICAL
1. Small leak here is acceptable

NOTICE **Repair any leak. Failure to correct a leak will lead to premature wear of pump components.**

6. Disconnect pump and remove pressure cap.
7. Reinstall impeller cover. Refer to *IMPELLER COVER* in this subsection.

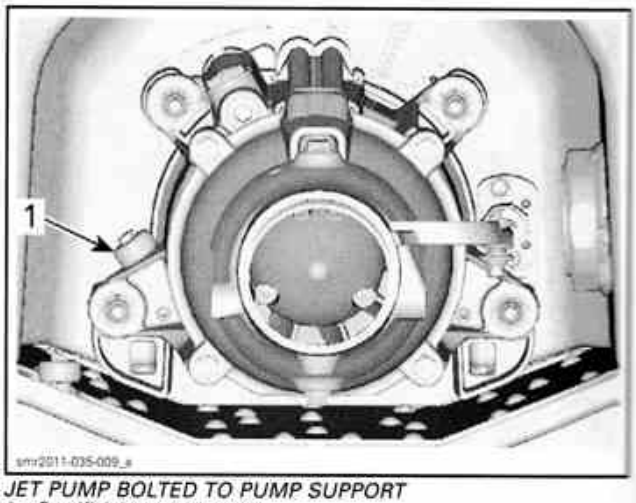
PROCEDURES

NOTE: Whenever removing a part, visually check for damage such as: corrosion, cracks, split, break, porosity, cavitation, deformation, distortion, heating discoloration, wear pattern, defective plating, missing or broken balls in ball bearing, water damage diagnosed by black-colored spots on metal parts, etc. Replace any damaged parts. As a quick check, manually feel clearance and end play, where applicable, to detect excessive wear.

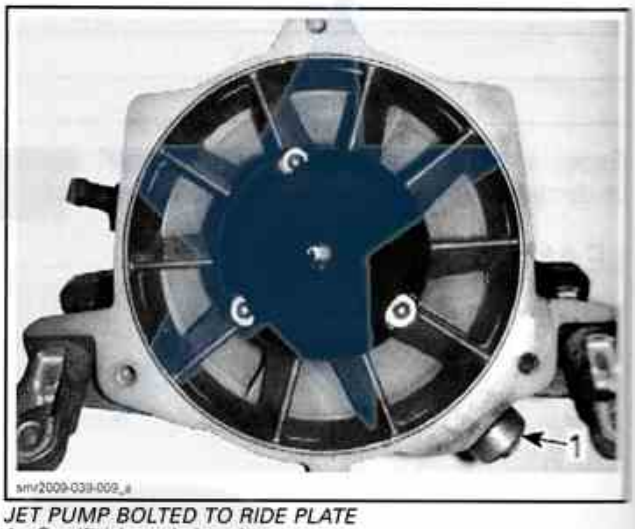
SACRIFICIAL ANODE

Sacrificial Anode Inspection

Check for wear. If worn more than half, replace anode.



JET PUMP BOLTED TO PUMP SUPPORT
1. Sacrificial anode location



JET PUMP BOLTED TO RIDE PLATE
1. Sacrificial anode location

Sacrificial Anode Removal

Unscrew sacrificial anode hexagonal screw and remove anode.

Sacrificial Anode Installation

Installation is the reverse of the removal procedure.

Torque anode retaining screw as specified in exploded view.

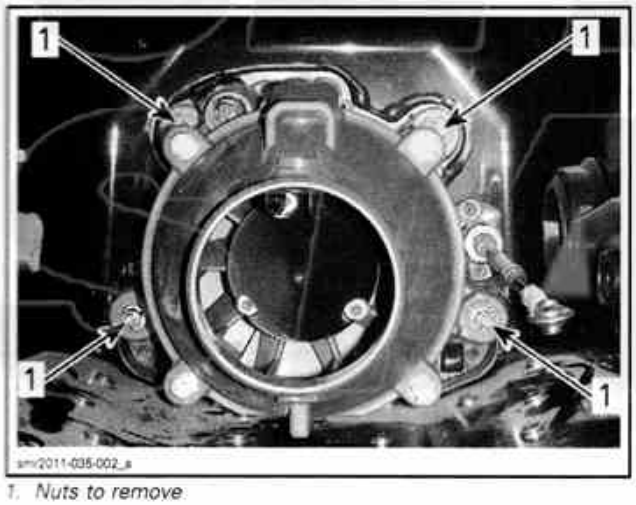
JET PUMP HOUSING

NOTE: The jet pump housing can be removed as an assembly with the venturi. This is the preferred procedure when either the drive shaft or engine removal is required.

Jet Pump Housing Removal (Jet Pump Bolted to Pump Support)

Do the following as applicable.

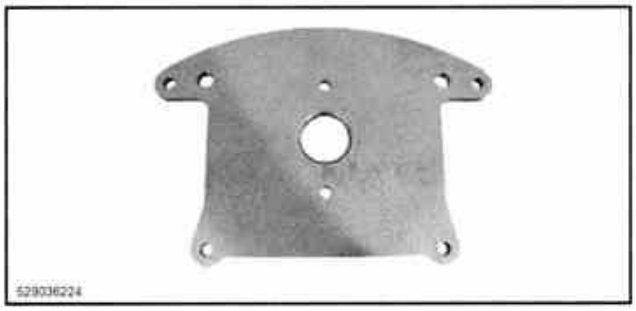
1. Remove the iBR gate and VTS trim ring. Refer to *iBR AND VTS* subsection.
2. Detach steering cable from nozzle.
3. Remove the nuts that retain the jet pump to the pump support.



1. Nuts to remove

4. Pull back jet pump housing to remove it from the pump support. It may be necessary to wiggle it slightly as you pull back on the pump.

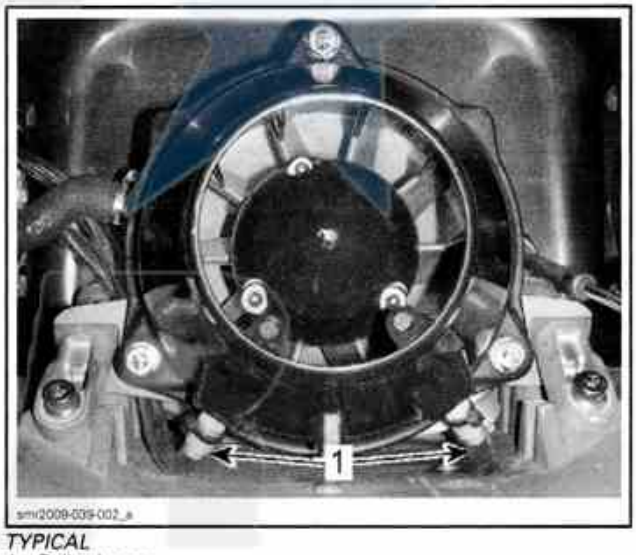
Temporarily fasten the PUMP PLATE (P/N 529 036 224) to pump support to support drive shaft and avoid PTO oil seal damage.



Jet Pump Housing Removal (Jet Pump Bolted to Ride Plate)

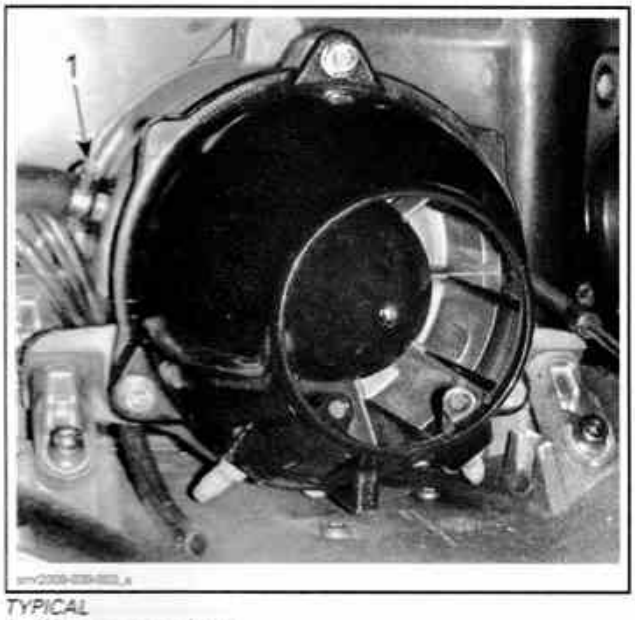
Remove the following parts as applicable.

1. Remove iBR gate and VTS trim ring. Refer to *iBR AND VTS* subsection.
2. Cut locking ties and disconnect both bailer hoses from the venturi.



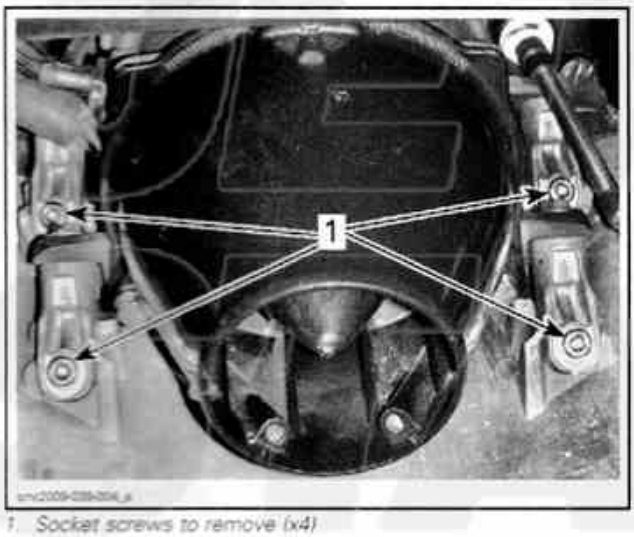
TYPICAL
1. Bailer hoses

3. Loosen gear clamp and remove the hose from the water pressure outlet fitting on the jet pump housing.



TYPICAL
1. Water pressure hose

4. Remove the socket screws that retain the jet pump to the ride plate.

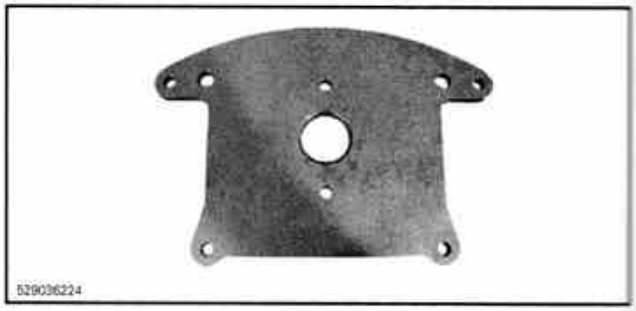


1. Socket screws to remove (x4)

5. Pull back jet pump housing to remove it from the pump support. It may be necessary to wiggle it slightly as you pull back on the pump.

NOTE: The jet pump housing is held tightly in the pump support due to the neoprene seal at the forward end of the pump. There are no fasteners securing the jet pump housing to the pump support.

Temporarily fasten the PUMP PLATE (P/N 529 036 224) to pump support to support drive shaft and avoid PTO oil seal damage.

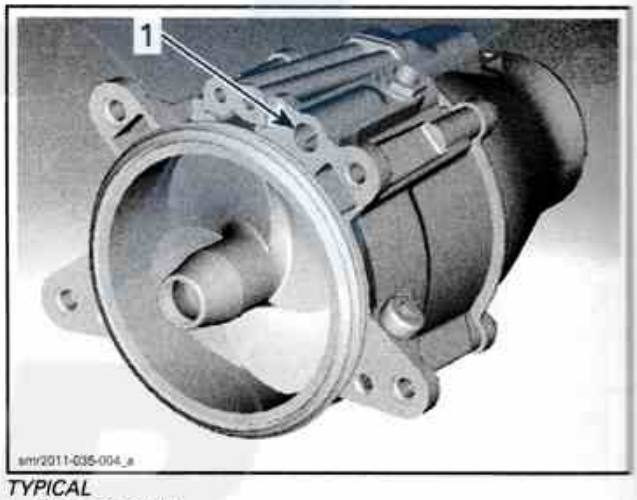


Jet Pump Housing Inspection and Cleaning

1. Visually inspect jet pump housing. Pay attention to the stator. Ensure the assembly is clean and free of any debris and defects.

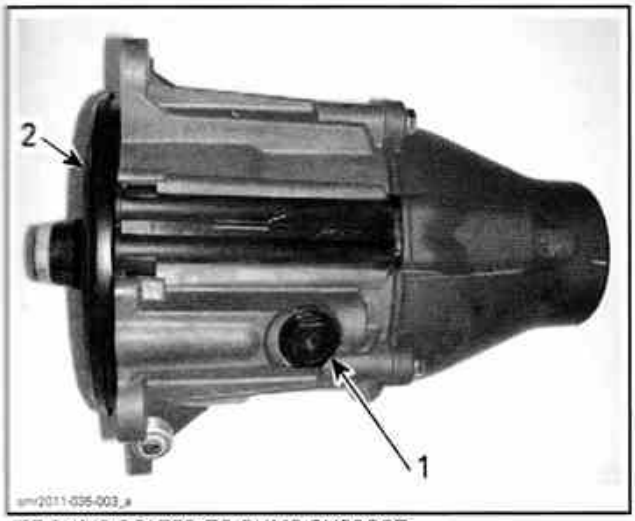
Do the following as applicable.

2. Blow low pressure compressed air through the pressure outlet fitting and make sure it is clear.

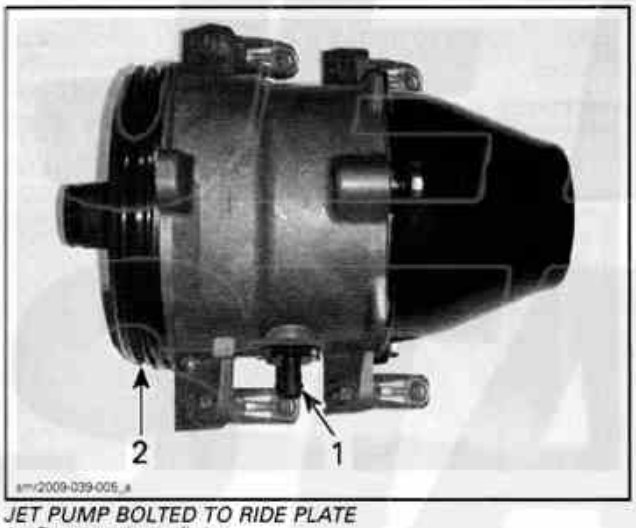


TYPICAL
1. Pressure outlet

3. Ensure cap screw is tight.
4. Ensure the neoprene seal is in good condition. Replace as required.

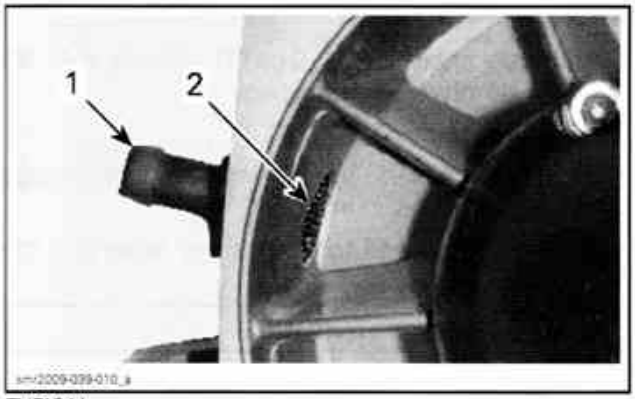


JET PUMP BOLTED TO PUMP SUPPORT
1. *Cap screw*
2. *Neoprene seal*



JET PUMP BOLTED TO RIDE PLATE
1. *Pressure hose fitting*
2. *Neoprene seal*

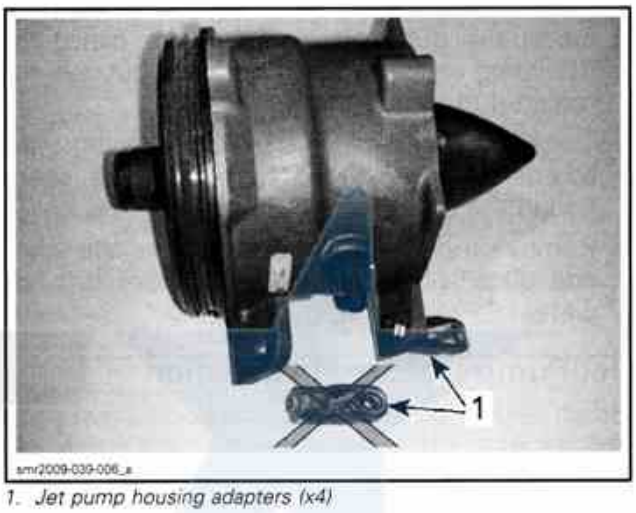
NOTE: Ensure holes of pressure inlet remain clear to ensure an adequate water supply for the intercooler and exhaust system.



TYPICAL
1. *Fitting*
2. *Holes in pump housing*

5. Check the 4 pump adapters (jet pump bolted to ride plate). Ensure they are free of any cracks.

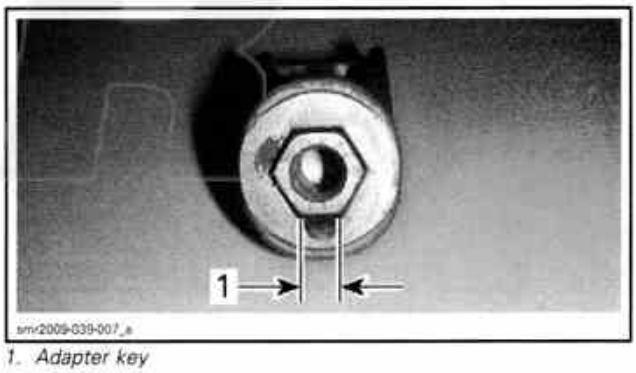
NOTE: Do not remove the jet pump housing adapters from the pump unless it is necessary to do so.



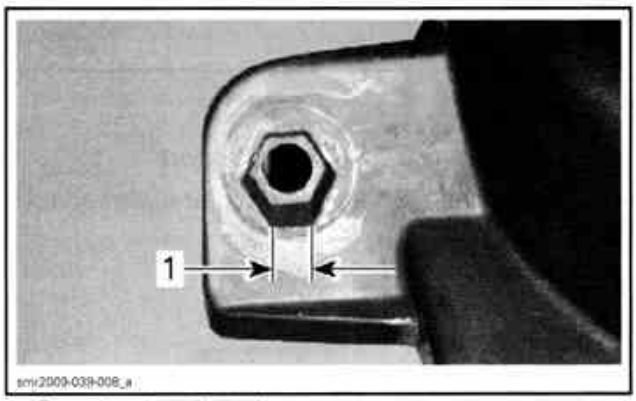
1. *Jet pump housing adapters (x4)*

Jet Pump Housing Adapter Replacement (Jet Pump Bolted to Ride Plate)

Adapters incorporate a keyway at the pump housing end of the adapter that provide for a small amount of play for mounting the jet pump.



1. *Adapter key*



1. *Pump housing adapter keyway*

If adapters are removed or replaced, or a new pump housing is installed, adapters may be aligned to the pump housing using a spare ride plate as a jig. Carry out the following steps.

1. Install the four adapters on the jet pump housing leaving the hexagonal screws slightly loose.
2. Install the pump on a spare ride plate, the mounting screws should be tight, but it is not required to torque them.
3. Torque hexagonal screws retaining the adapters to the jet pump housing as specified in the exploded view.
4. Remove the jet pump housing from the spare ride plate and install it on the watercraft ride plate.

Jet Pump Housing Installation

Brush and clean impeller splines and drive shaft splines with PULLEY FLANGE CLEANER (P/N 413 711 809) or equivalent. Splines must be free of any residue.

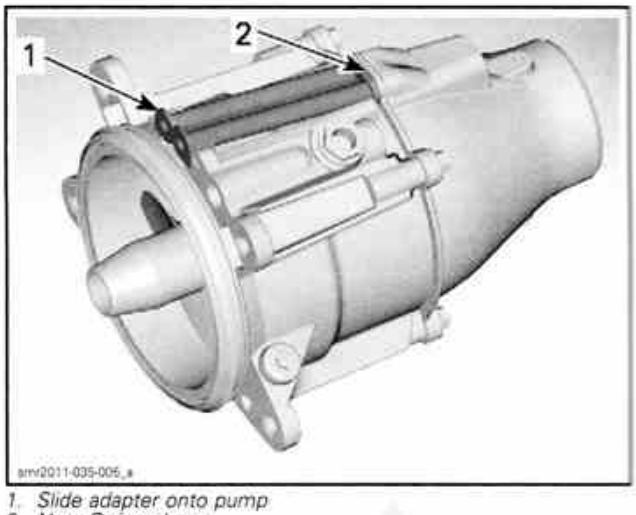
Lubricate drive shaft splines, impeller splines and the inside of the impeller boot with TRIPLE-GUARD GREASE (P/N 296 000 329).

Ensure the neoprene seal is properly installed on the jet pump.

TYPICAL
1. Neoprene seal

Jet Pump Bolted to Pump Support

Install new O-rings then slide water outlet adapter onto pump.

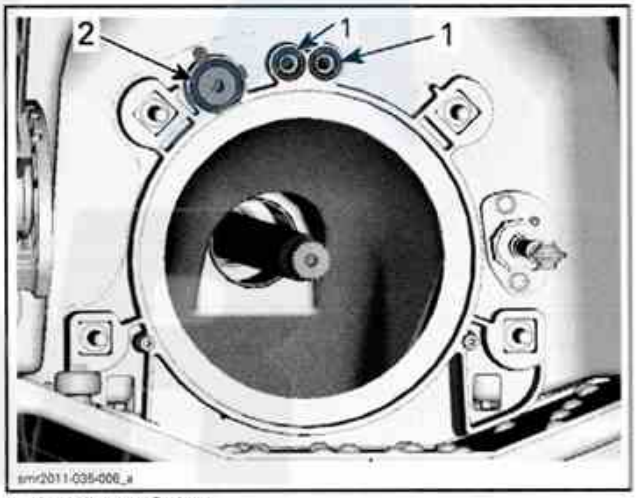


1. Slide adapter onto pump
2. New O-rings here

Install new O-rings on pump support.

The water flow is controlled by a calibrated reducer. Ensure to install the YELLOW color-coded reducer.

NOTICE Improper reducer can cause overheating and damage to exhaust system.



1. Install new O-rings
2. Calibrated reducer

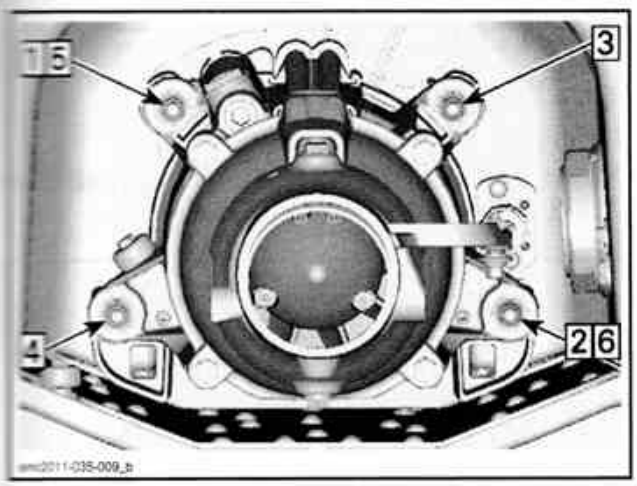
Generously apply TRIPLE-GUARD GREASE (P/N 296 000 329) on drive shaft splines.

Install jet pump.

NOTE: If necessary, wiggle jet pump to engage drive shaft splines in impeller.

Install new nuts and torque as per table and the illustrated sequence.

TORQUE
22 N•m (16 lbf•ft)



NOTE: Slightly lubricate wear ring with XPS LUBE (P/N 293 600 016) to minimize friction during initial impeller start.

Jet Pump Bolted to Ride Plate

Generously apply TRIPLE-GUARD GREASE (P/N 296 000 329) on drive shaft splines.

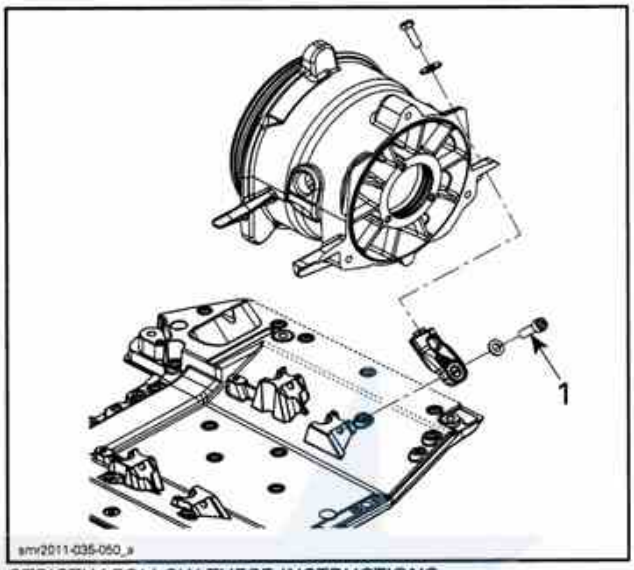
While holding the pump housing with the pump adapters downwards, align the pump with the drive shaft and carefully push the pump into the pump support.

Use NEW screws to retain pump adapters to ride plate.

Torque each screw to 35 N•m (26 lbf•ft) then torque each screw a second time.

NOTICE **Failure to properly follow the above procedure might lead to screw loosening.**

Wait one day before using the watercraft to let time for the thread locker to settle.



STRICTLY FOLLOW THESE INSTRUCTIONS
1. Use new screw
Torque to 35 N•m (26 lbf•ft) twice
Allow one day to settle without using watercraft

NOTE: Slightly lubricate wear ring with XPS LUBE (P/N 293 600 016) to minimize friction during initial impeller start.

VENTURI

Venturi Removal

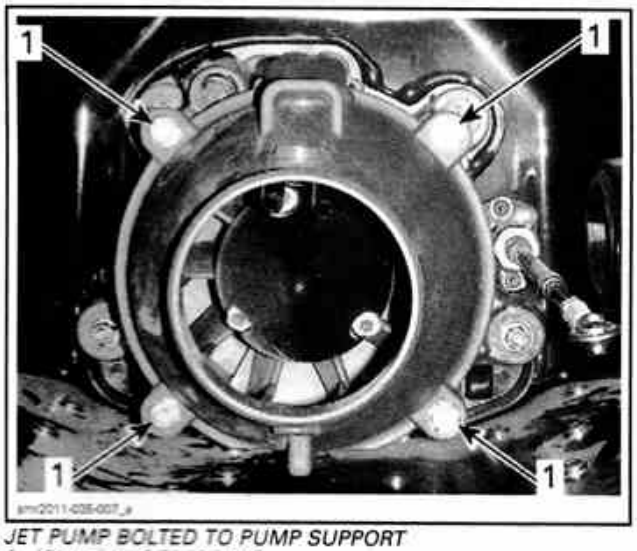
Jet Pump Housing installed

As applicable, do the following.

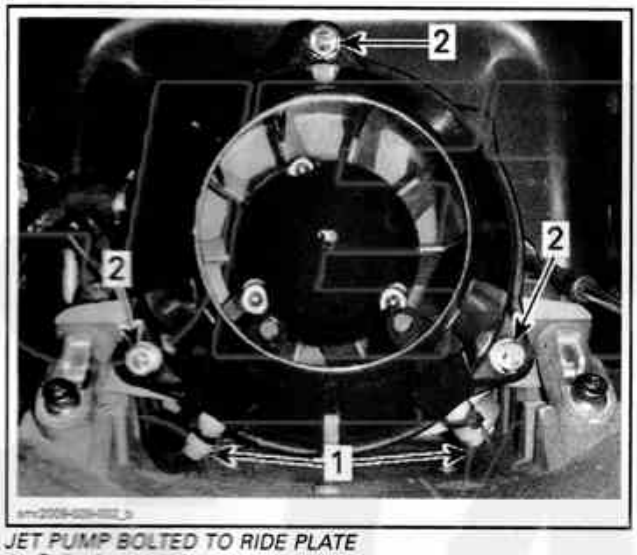
1. Remove the iBR gate and VTS trim ring as an assembly. Refer to *iBR AND VTS* subsection.
2. Remove nozzle.
3. Cut locking ties and remove the 2 bailer hoses from the venturi.
4. Refer to *JET PUMP HOUSING REMOVED* to continue procedure.

Jet Pump Housing Removed

1. Remove the screws retaining the venturi to the jet pump housing.



JET PUMP BOLTED TO PUMP SUPPORT
1. Venturi retaining screws



JET PUMP BOLTED TO RIDE PLATE
1. Bailer hoses
2. Venturi retaining screws

Venturi Installation

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

As applicable, align venturi bailer holes with those in pump support.

Apply LOCTITE 243 (BLUE) (P/N 293 800 060) on threads of venturi screws (or install new self-locking screws).

Install venturi screws and flat washers.

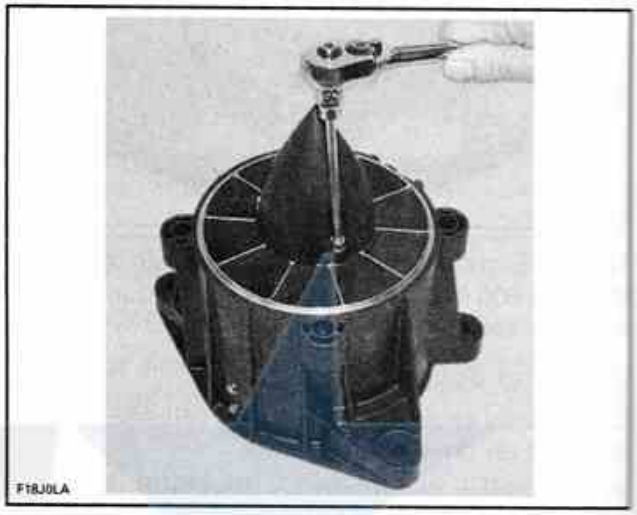
Torque venturi screws to 21 N•m (15 lbf•ft).

As applicable, ensure bailer hoses and fittings are in good condition.

IMPELLER COVER

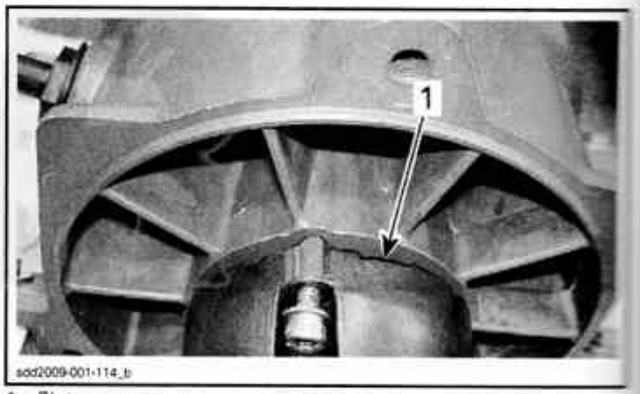
Impeller Cover Removal

1. Remove the venturi.
2. With pump housing in vertical position, remove and discard the 3 retaining screws.

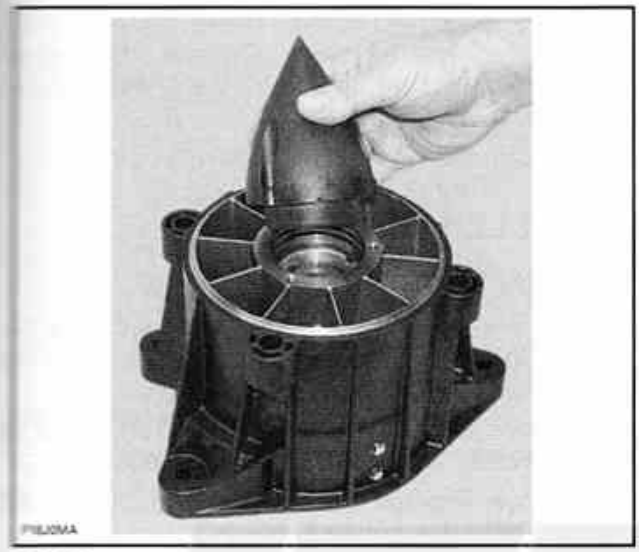


TYPICAL

3. Using a fiber hammer, gently tap impeller cover to help release it from the jet pump housing.
4. Use a flat screwdriver in the slots provided as pry points to remove it from the jet pump housing.

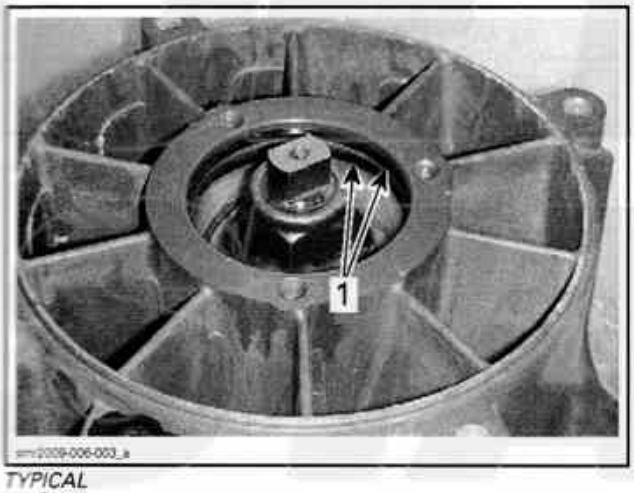


1. Slot



TYPICAL

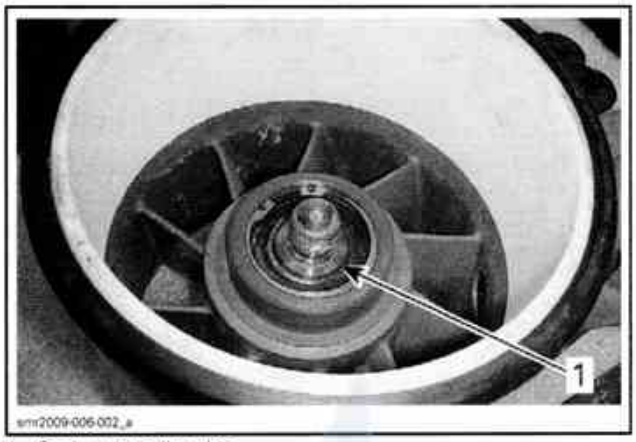
5. Remove both O-rings.



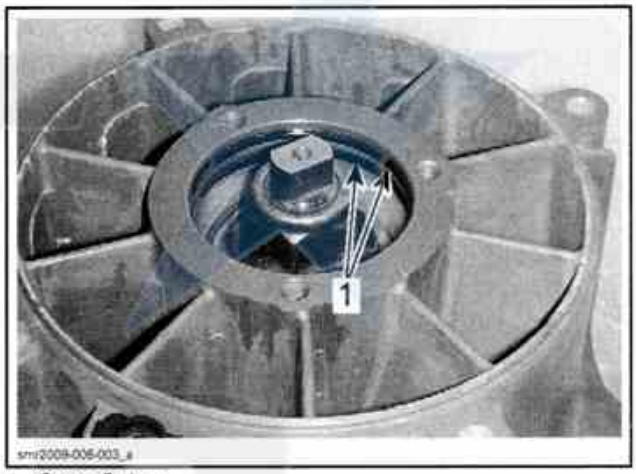
TYPICAL
1. O-rings

Impeller Cover Inspection

Check for presence of water in cover and bearing area. If water is found, replace seals on impeller side. Also replace O-rings and/or impeller cover.

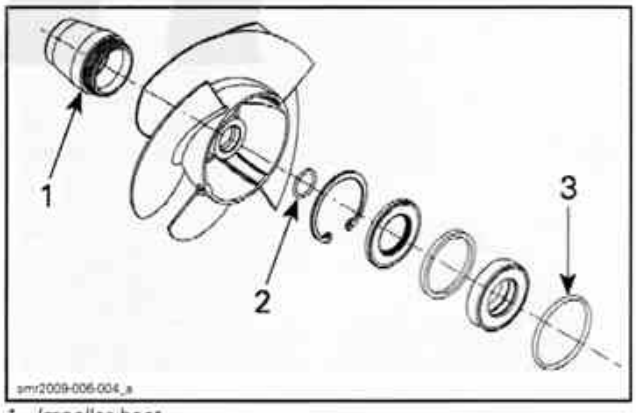


1. Seal on impeller side



1. Cover O-rings

Check impeller boot and O-rings condition on impeller. Replace as required.

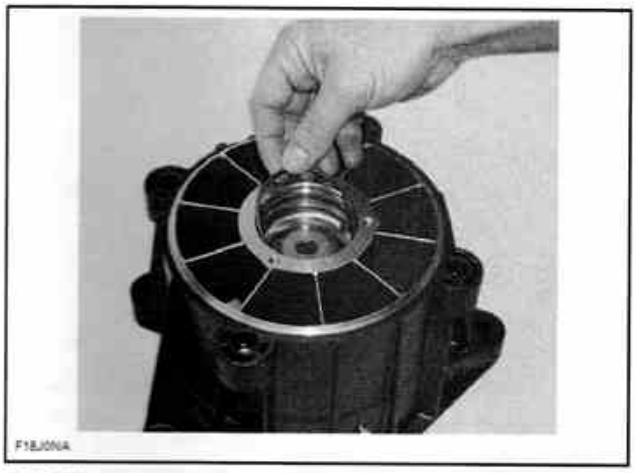


1. Impeller boot
2. Impeller O-ring
3. Pump housing O-ring

Perform a leak test. Refer to *LEAK TEST* in this subsection.

Impeller Cover Installation

1. Install O-rings in their respective groove.



TYPICAL

2. Put 23 ml (.8 U.S. oz) of JET PUMP BEARING GREASE (P/N 293 550 032) in the cover.

TYPICAL

3. Install impeller cover by aligning the cover index mark with the pump top fin as shown.

1. Align mark with top fin

NOTE: Cover can only be installed in one position as screw holes are not located symmetrically.

4. Secure cover with **NEW** self-locking screws.

NOTE: Push cover against pump housing while alternately tightening screws. Make sure O-rings are positioned correctly and they are not damaged when pushing the cover.

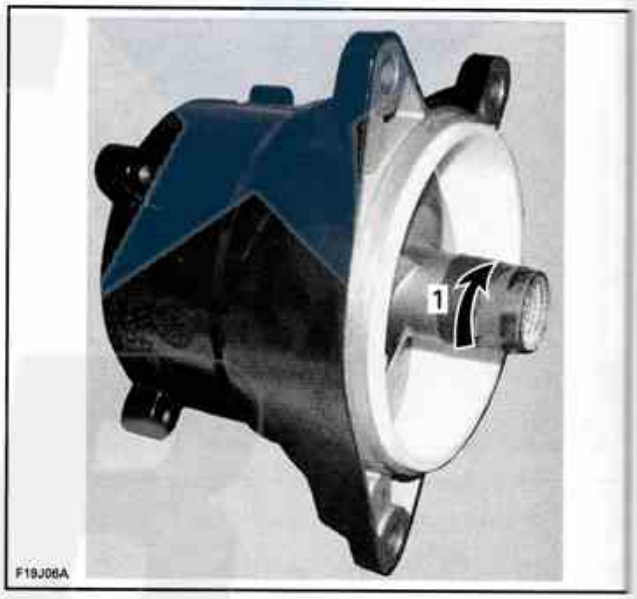
5. Torque cover screws to 7.5 N•m (66 lbf•**in**).

IMPELLER

Impeller Removal

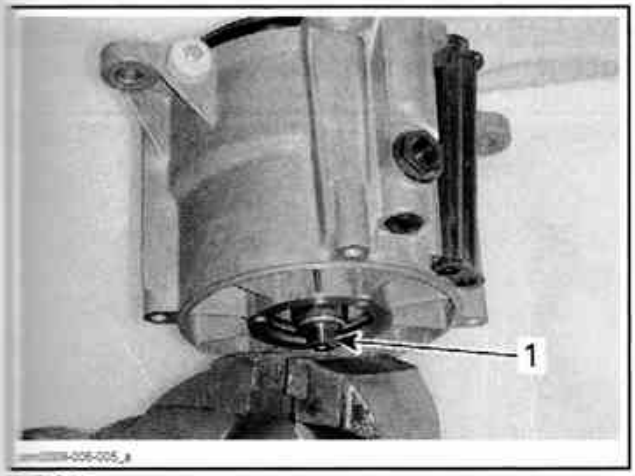
NOTE: If impeller shaft is to be disassembled, loosen the impeller shaft nut prior to removing the impeller.

1. Remove jet pump from the watercraft. Refer to *JET PUMP HOUSING* in this subsection.
2. Remove impeller cover. Refer to *IMPELLER COVER* in this subsection.
3. Remove impeller boot by turning it clockwise (LH threads).



TYPICAL
1. Unscrew clockwise

4. Mount the flat sides of impeller shaft in a vise.



TYPICAL
1. Flat side

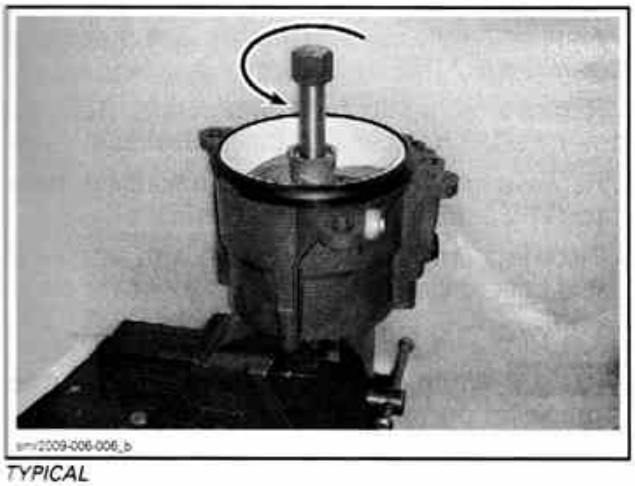
5. Unscrew the impeller counterclockwise using the required tool.

ENGINE	REQUIRED TOOL
130, 155	IMPELLER REMOVER/INSTALLER (P/N 529 035 820)
215, 260	IMPELLER REMOVER/INSTALLER (P/N 529 035 956)

TYPICAL

NOTE: It may be necessary to heat the impeller to ease removal.

NOTICE Never use an impact wrench to loosen impeller.

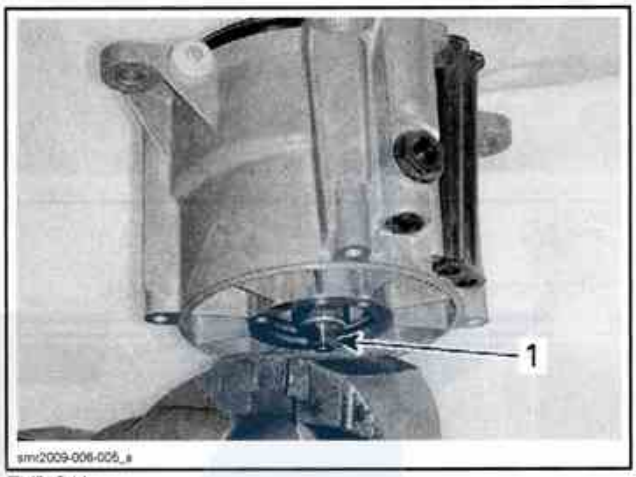


TYPICAL

6. To pull impeller out of the pump, apply a rotating movement as you pull on the impeller.

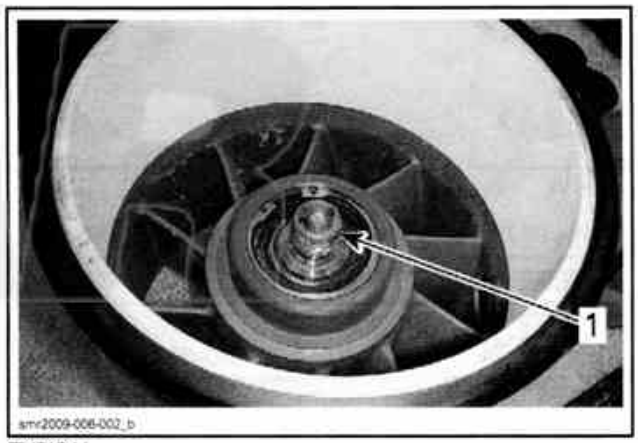
Impeller Installation

1. Mount the flat sides of the impeller shaft in a vise.



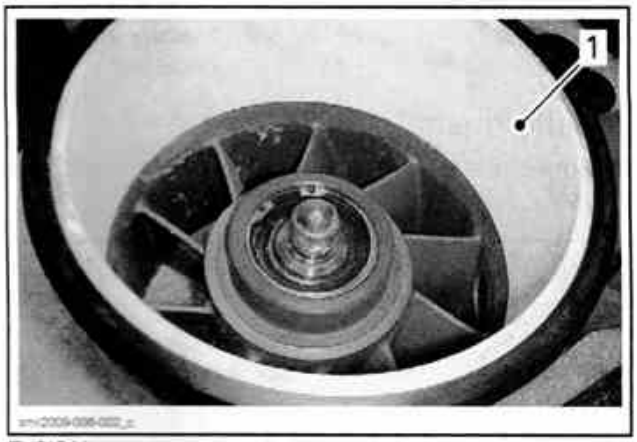
TYPICAL
1. Flat side

2. Apply LOCTITE 767 (ANTISEIZE LUBRICANT) (P/N 293 800 070) on threads of impeller shaft.



TYPICAL
1. Antiseize lubricant

3. Apply XPS LUBE (P/N 293 600 016) on the wear ring surface.



TYPICAL
1. XPS lube

4. Start screwing the impeller on its shaft.

TYPICAL

5. Mount the required tool in impeller splines.

ENGINE	REQUIRED TOOL
130, 155	IMPELLER REMOVER/INSTALLER (P/N 529 035 820)
215, 260	IMPELLER REMOVER/INSTALLER (P/N 529 035 956)

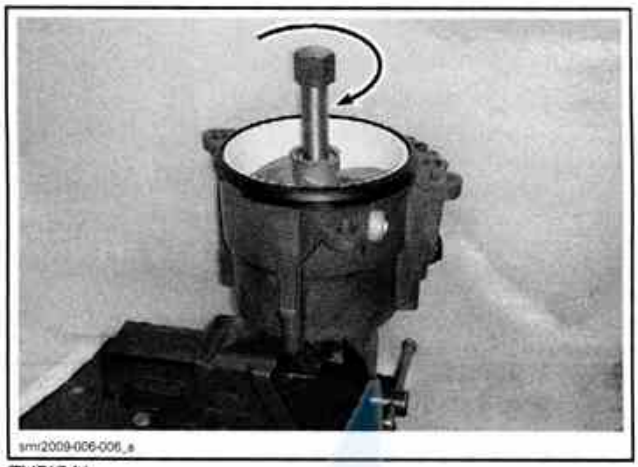
TYPICAL

6. Torque impeller as per table.

TORQUE
125 N•m (92 lbf•ft)

Remove tool.

NOTICE Never use an impact wrench to tighten impeller shaft.



TYPICAL

7. Apply LOCTITE 577 (THREAD SEALANT) (P/N 293 800 050) on impeller boot threads.
8. Apply TRIPLE-GUARD GREASE (P/N 296 000 329) inside impeller boot.
9. Install impeller boot on impeller and tighten counterclockwise.

WEAR RING

Wear Ring Inspection

Check wear ring for:
- Deep scratches
- Irregular surface
- Any apparent damage.

Check *IMPELLER/WEAR RING CLEARANCE*, see procedure at the beginning of this subsection.

Wear Ring Removal

1. Remove the iBR gate, VTS trim ring and the steering nozzle as an assembly. See procedure in *IBR AND VTS* subsection.
2. Remove jet pump from watercraft. Refer to *JET PUMP HOUSING* in this subsection.
3. Remove impeller from jet pump housing, refer to *IMPELLER* in this subsection.
4. Place jet pump housing in a vise with soft jaws. It is best to clamp housing using a lower ear.
5. Cut wear ring at two places.

NOTICE When cutting ring, be careful not to damage jet pump housing.

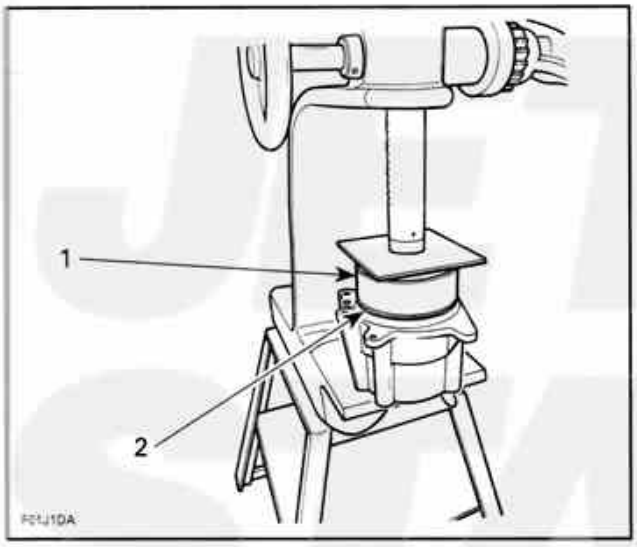
NOTE: Wear ring can be cut using a jigsaw, a small grinder or a low clearance hacksaw.

6. After cutting ring, insert a screwdriver blade between jet pump housing and ring outside diameter.
7. Push ring so that it can collapse internally.
8. Pull ring out.

Wear Ring Installation

To install wear ring in housing, use a square steel plate of approximately 180 x 180 mm x 6 mm thick (7 x 7 in x 1/4 in) and a press.

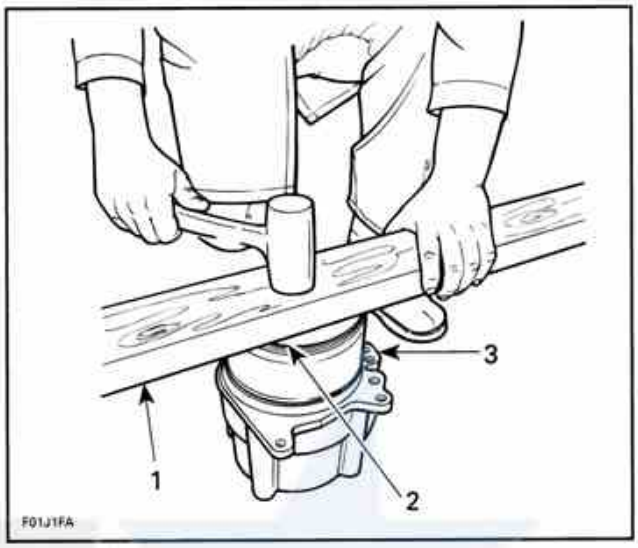
Manually engage ring in housing making sure it is equally inserted all around. Press ring until it seats into bottom of housing.



1. Rounded edge
2. Press wear ring

If a press is not readily available, a piece of wood such as a 2 x 4 in x 12 in long, can be used.

Manually engage ring in housing making sure it is equally inserted all around. Place wood piece over ring. Using a hammer, strike on wood to push ring. Strike one side then rotate wood piece about 90° and strike again. Frequently rotate wood piece so that ring slides in evenly until it seats into bottom of housing.



1. Piece of wood
2. Rounded edge
3. Wear ring

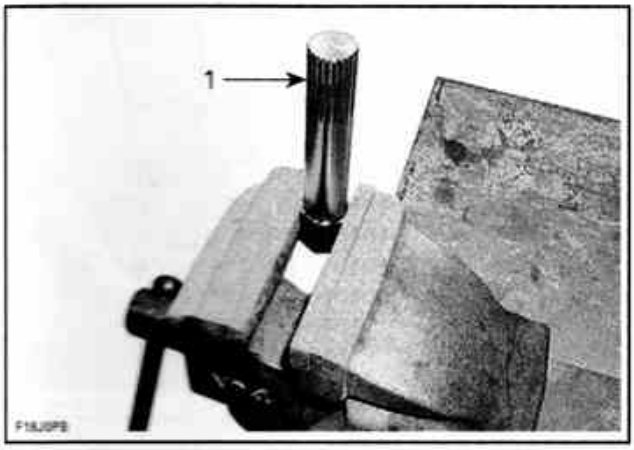
IMPELLER SHAFT AND BEARING

Impeller Shaft and Bearing Removal

1. Remove impeller cover. Refer to *IMPELLER COVER* in this subsection.
2. Mount in a vise the proper impeller remover/installer as per table.

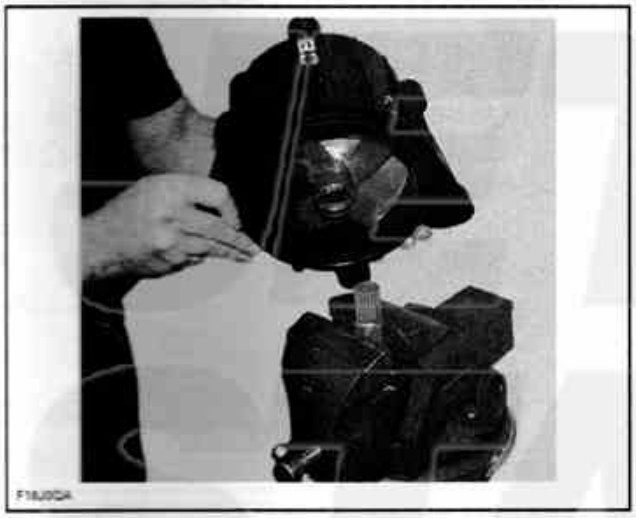
TYPICAL

ENGINE	REQUIRED TOOL
130, 155	IMPELLER REMOVER/INSTALLER (P/N 529 035 820)
215, 260	IMPELLER REMOVER/INSTALLER (P/N 529 035 956)



TYPICAL
1. Impeller remover/installer tool

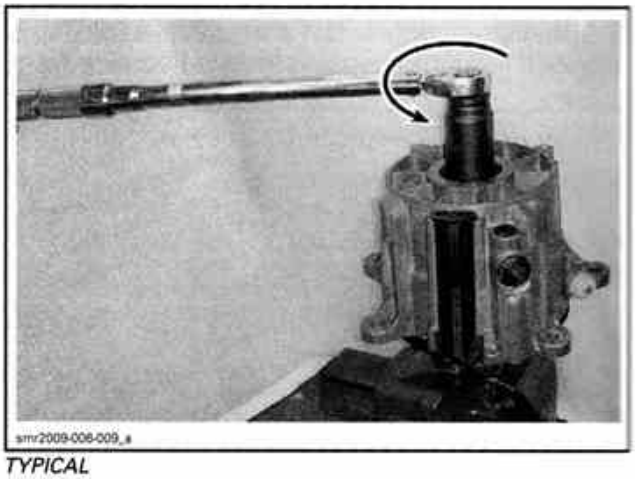
3. Install jet pump housing over impeller remover/installer tool.



TYPICAL

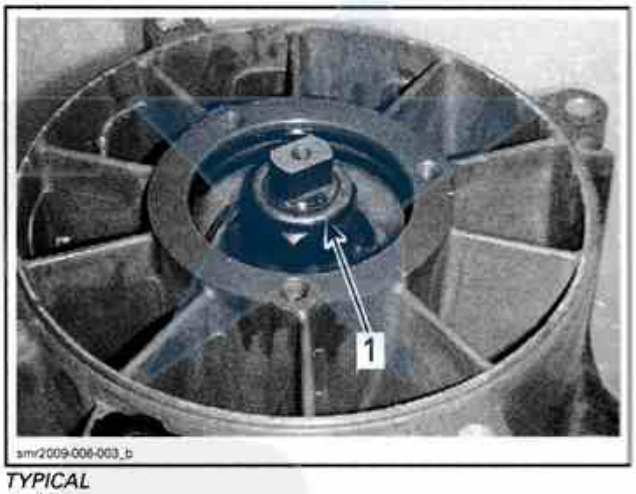
4. Using a 30 mm socket, unscrew the impeller shaft nut counterclockwise.

NOTE: If impeller loosens instead of shaft nut, refer to *IMPELLER SHAFT NUT REMOVAL IF IMPELLER HAS LOOSENED* further in this procedure.



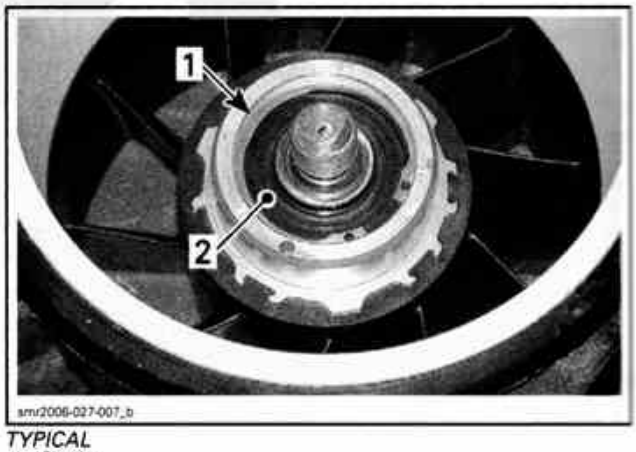
TYPICAL

5. Remove impeller shaft nut.



TYPICAL
1. Nut

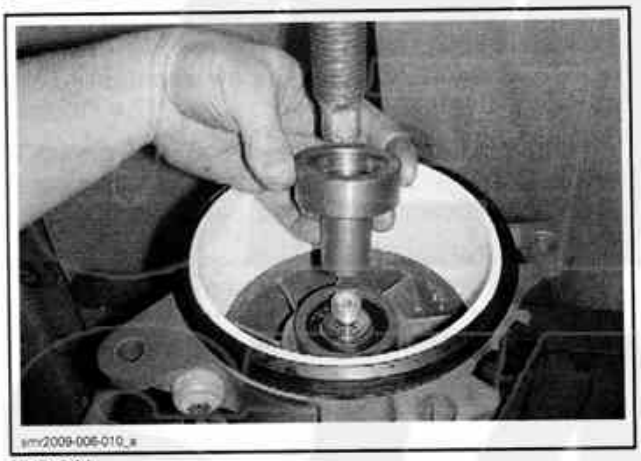
6. Remove impeller as described in this subsection.
7. From the impeller side, remove circlip, seals, spacer and O-ring.



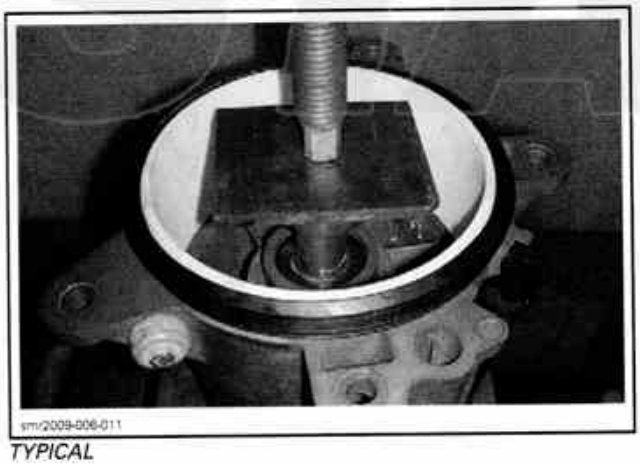
TYPICAL
1. Circlip
2. Seal

8. Use the IMPELLER SHAFT PUSHER (P/N 529 035 955) to press impeller shaft out of pump housing.

NOTE: Bearing will come out with the impeller shaft.

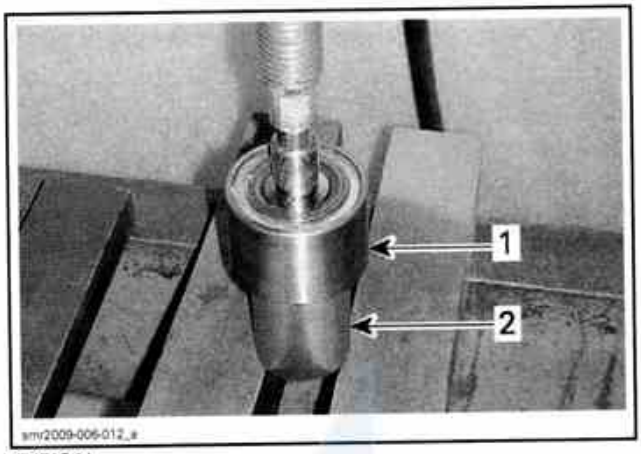


TYPICAL



TYPICAL

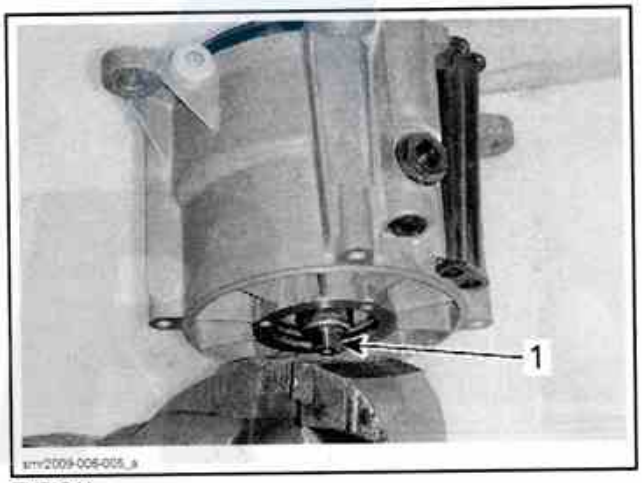
9. Use the IMPELLER SHAFT BEARING TOOL (P/N 529 036 168) to press bearing off impeller shaft.



TYPICAL
1. *Impeller shaft and bearing*
2. *Bearing tool on INNER race*

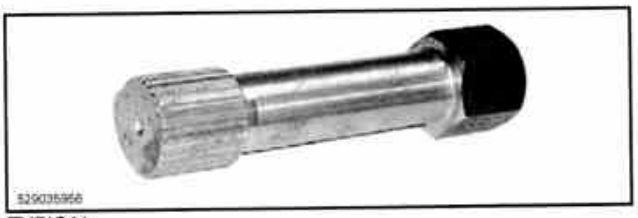
Impeller Shaft Nut Removal if Impeller Has Loosened

1. Turn pump upside down and mount the flat sides of impeller shaft in a vise.



TYPICAL
1. *Flat side*

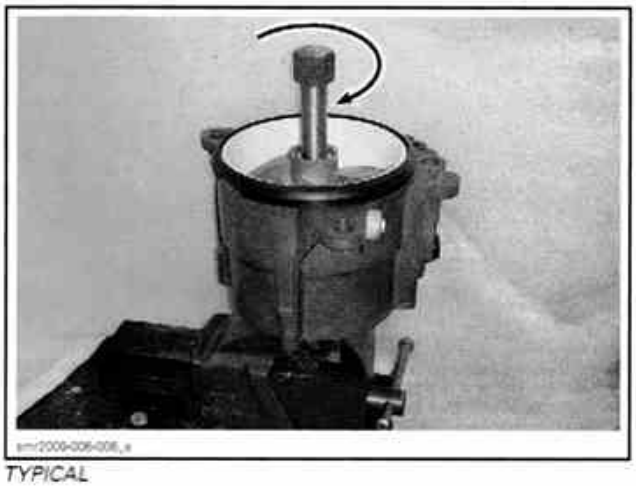
2. Mount in the impeller splines the proper impeller remover/installer as per table.



TYPICAL

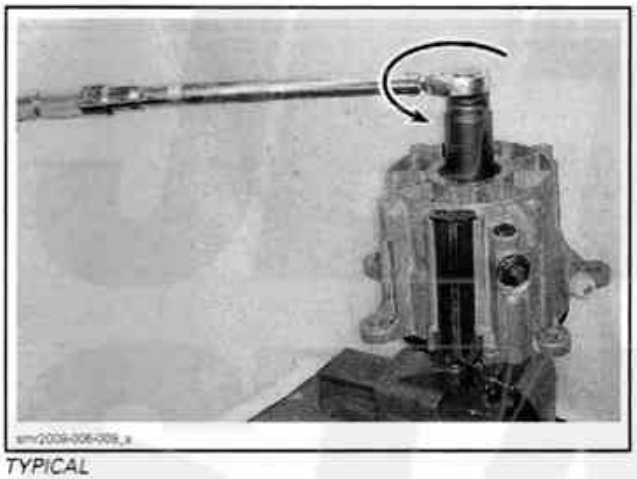
ENGINE	REQUIRED TOOL
130, 155	IMPELLER REMOVER/INSTALLER (P/N 529 035 820)
215, 260	IMPELLER REMOVER/INSTALLER (P/N 529 035 956)

3. Torque impeller more than impeller shaft nut.



TYPICAL

4. Turn pump upside down and retry unscrewing impeller shaft nut.



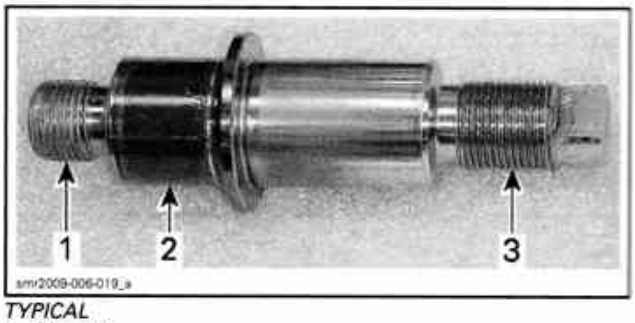
TYPICAL

5. If impeller still loosens instead of nut, retighten impeller more and retry. Repeat until nut loosens.
6. Remove impeller as described in this subsection.
7. Return to step 5 in the *IMPELLER SHAFT AND BEARING REMOVAL* main procedure.

Impeller Shaft and Bearing Inspection

With your finger nail, feel seal lip contact surface on shaft. If any irregular surface is found, replace shaft and seals.

Check condition of shaft threads.



TYPICAL
1. *Threads*
2. *Seal lip contact surface*
3. *Threads*

Inspect ball bearing for corrosion.

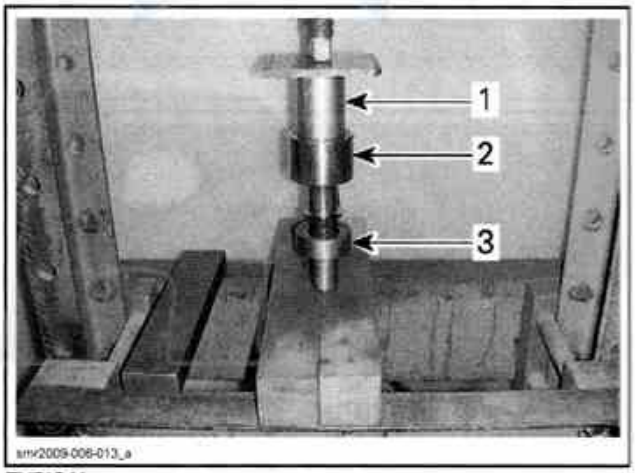
Impeller Shaft and Bearing Installation

Bearing Installation

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

1. Using the IMPELLER SHAFT BEARING TOOL (P/N 529 036 168) on the bearing inner race, press the bearing on the impeller shaft.
2. Use the IMPELLER SHAFT PUSHER (P/N 529 035 955) to protect the impeller shaft threads.

NOTE: The bearing can be installed in either direction.



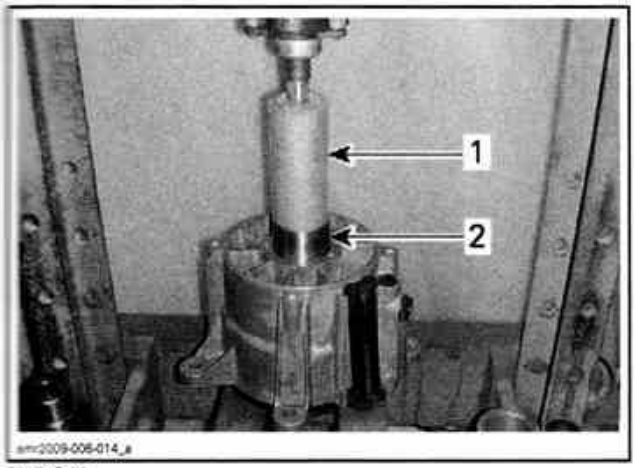
TYPICAL
1. *Impeller shaft bearing tool on INNER race*
2. *Impeller shaft and bearing*
3. *Impeller shaft installer/pusher tool*

3. Press bearing until it bottoms.

Impeller Shaft Installation

NOTE: Ensure there is no O-ring in pump housing on the cover side.

1. From the outlet side of pump, press impeller shaft assembly into housing using the IMPELLER SHAFT BEARING TOOL (P/N 529 036 168).

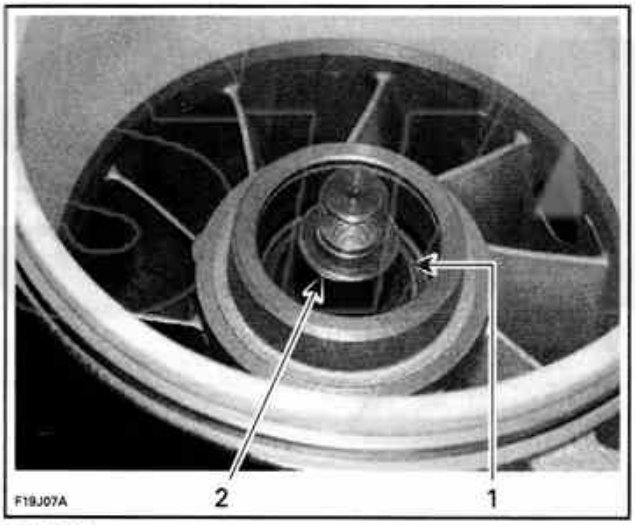


TYPICAL
1. *Bearing tool*
2. *Impeller shaft and bearing*

2. Press bearing until it bottoms.

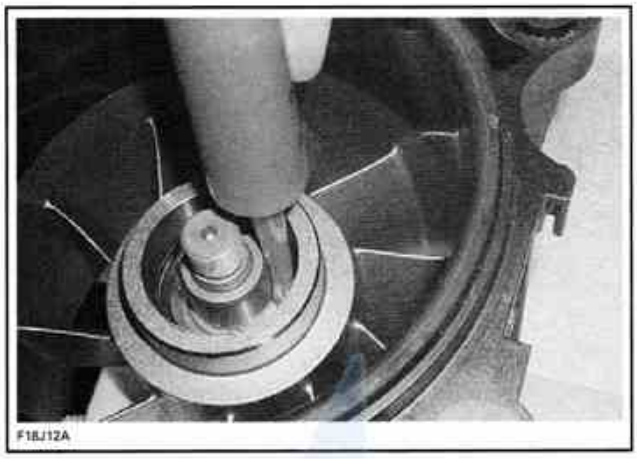
NOTE: Ensure impeller shaft turns freely and smoothly.

3. Turn pump upside down.
4. Coat shaft surface with JET PUMP BEARING GREASE (P/N 293 550 032).
5. Install O-ring at bottom.



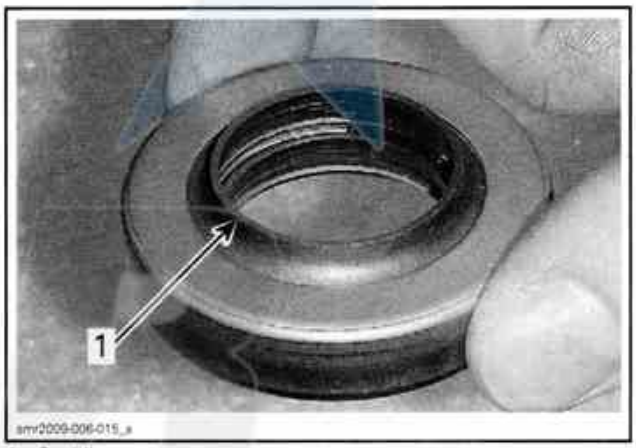
TYPICAL
1. *O-ring at bottom*
2. *Coat surface*

6. Apply 4 ml (.1 U.S. oz) of JET PUMP BEARING GREASE (P/N 293 550 032) on bearing.

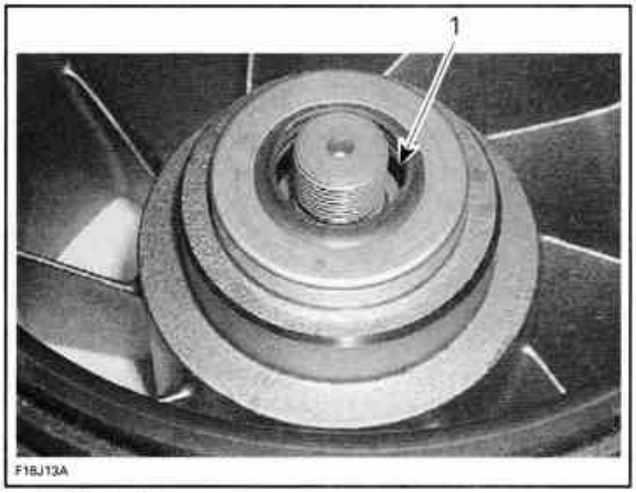


TYPICAL

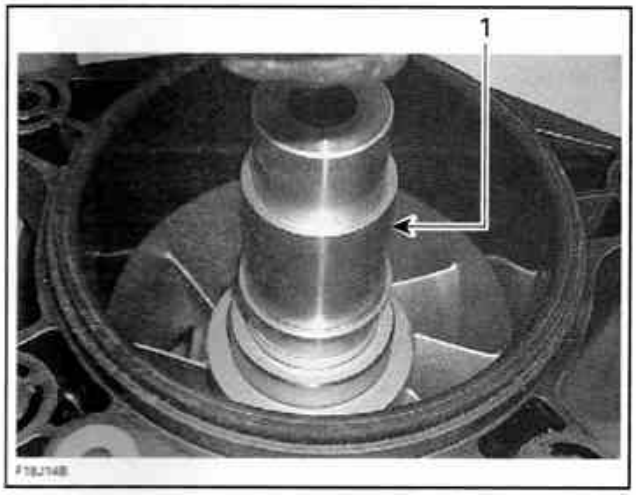
7. Press a **NEW** double lip seal using the SEAL/BEARING PUSHER (P/N 529 035 819) until seal bottoms. Make sure seal lip are facing upwards.



1. *Seal lip up*

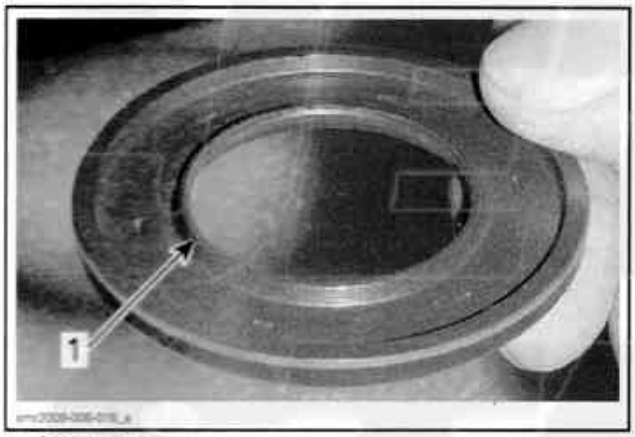


1. *Seal lip facing up*



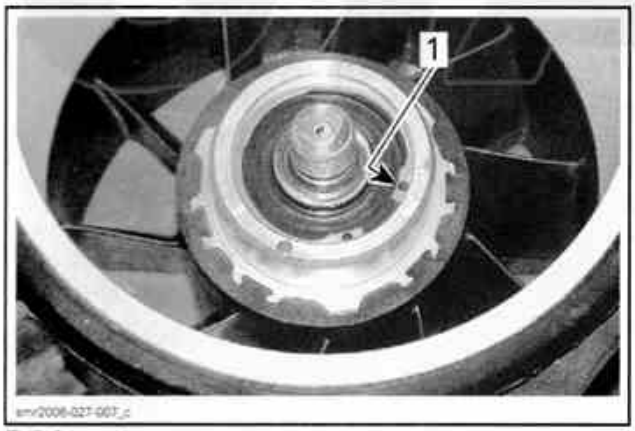
TYPICAL
1. Seal/bearing pusher

8. Install spacer and then the other seal (thin). Ensure seal lip is facing up.



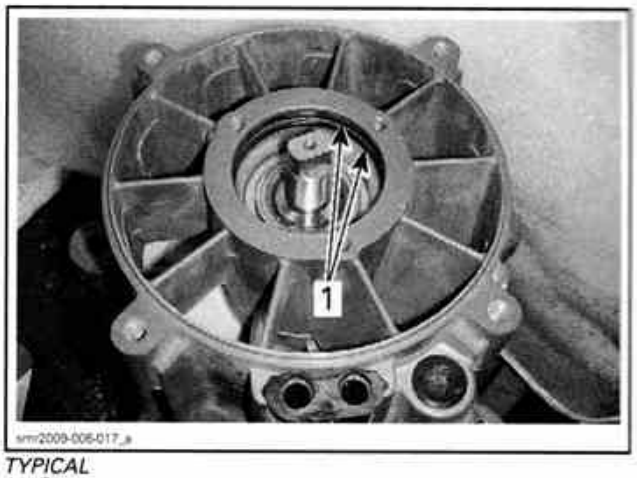
1. Seal lip facing up

9. Install circlip.



TYPICAL
1. Circlip

10. Turn pump upside down.
11. Install the two O-rings in pump housing.

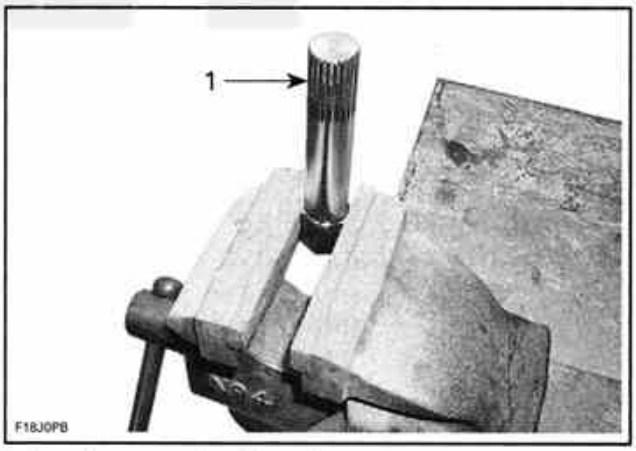


TYPICAL
1. O-rings

12. Before installing any other parts, pressurize jet pump to insure proper seal installation. Refer to *LEAK TEST* in this subsection.
13. Install impeller. Refer to *IMPELLER* in this subsection.
14. Mount in a vise the proper impeller remover/installer as per table.

TYPICAL

ENGINE	TOOL P/N
130, 155	IMPELLER REMOVER/INSTALLER (P/N 529 035 820)
215, 260	IMPELLER REMOVER/INSTALLER (P/N 529 035 956)

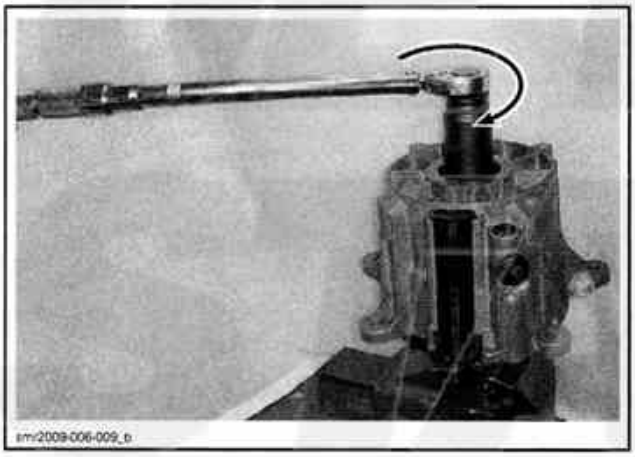


1. Impeller remover/installer tool

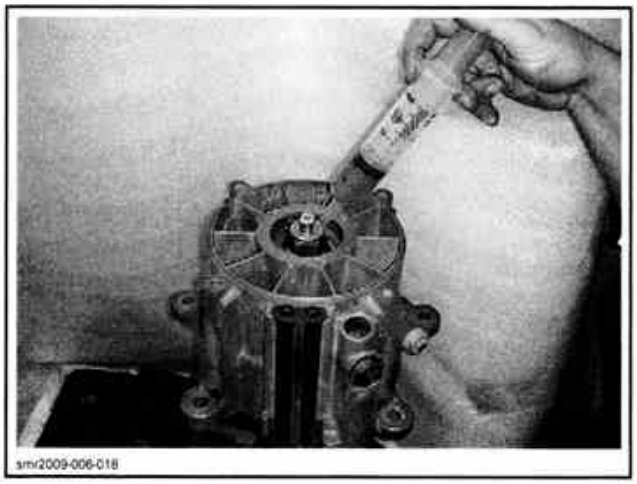
15. Install jet pump housing over this tool.

TYPICAL

16. Using a 30 mm socket, screw the impeller shaft nut on clockwise.
17. Torque nut as specified in exploded view.



18. Apply 24 ml (.8 U.S. oz) of JET PUMP BEARING GREASE (P/N 293 550 032) on the bearing (nut side).



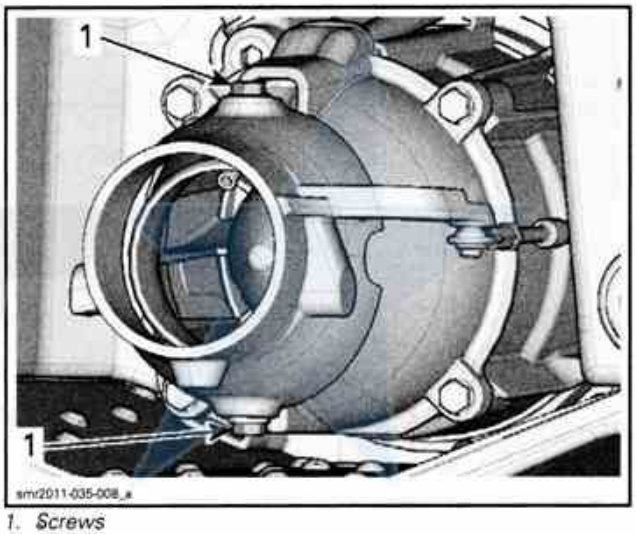
19. Install the impeller cover. Refer to *IMPELLER COVER* in this subsection.

NOZZLE (GTS MODELS)

Nozzle Removal

Disconnect steering cable from nozzle arm. Refer to *STEERING AND O.T.A.S.*

Remove screws retaining nozzle to venturi.



1. Screws

Remove nozzle.

Steering Nozzle Inspection

Inspect steering nozzle for cracks, wear, deformation, and other damages.

Inspect bushings for wear or other damage.

Replace parts as required.

Nozzle Installation

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

Apply LOCTITE 243 (BLUE) (P/N 293 800 060) on screw threads (or use new self-locking screws).

Torque screws as per table..

TORQUE
21 N•m (15 lbf•ft)

Secure steering cable to nozzle arm. Refer to Refer to *STEERING AND O.T.A.S.*

Perform the *STEERING ALIGNMENT*. Refer to *STEERING AND O.T.A.S.*

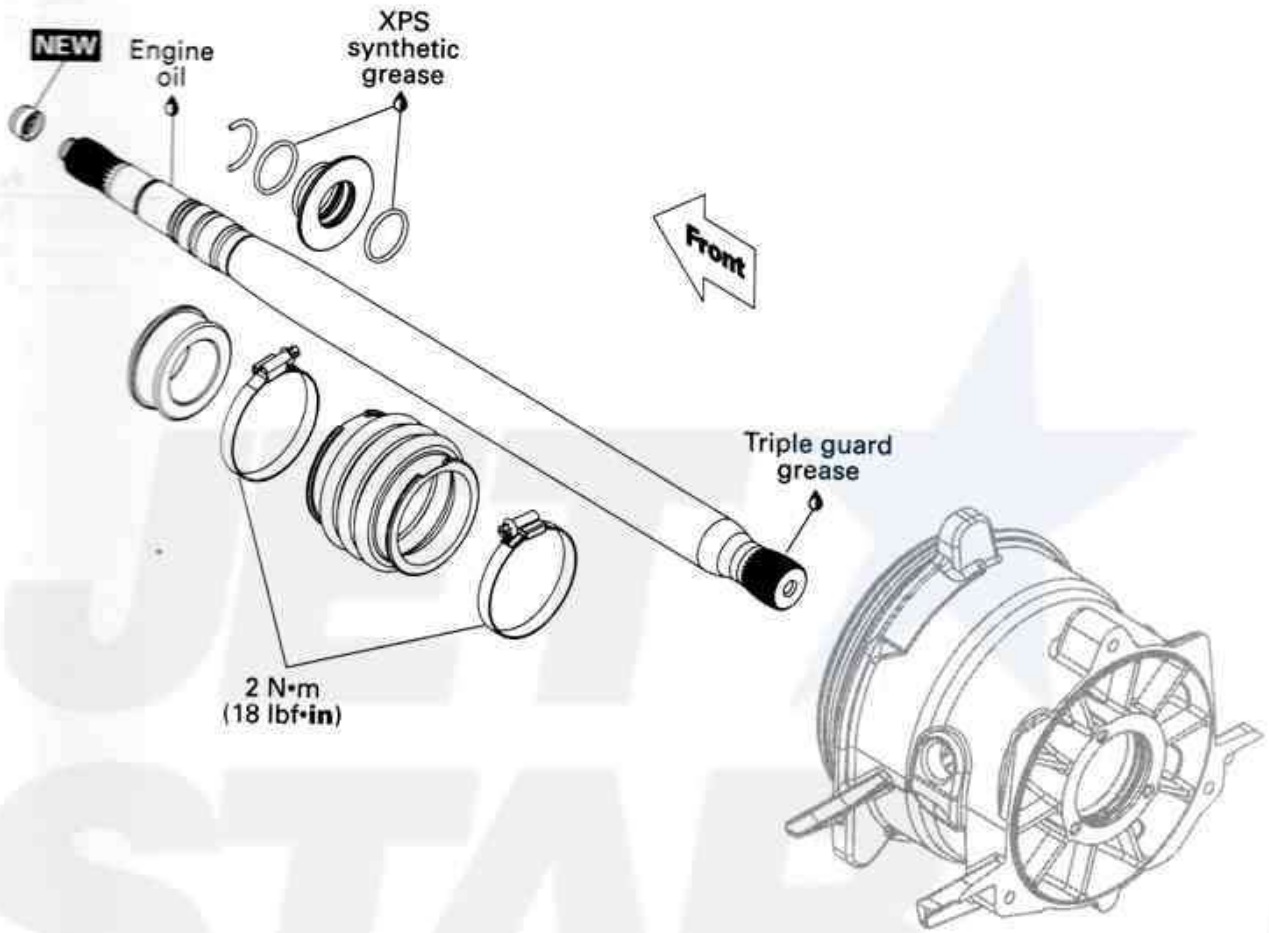
DRIVE SHAFT

SERVICE TOOLS

Description	Part Number	Page
DRIVE SHAFT C-CLIP REMOVER	529 036 026	542
FLOATING RING TOOL (TYPE I)	529 035 841	542, 547
PTO SUPPORT TOOL	529 035 842	543, 546

SERVICE PRODUCTS

Description	Part Number	Page
PULLEY FLANGE CLEANER	413 711 809	544
XPS LUBE	293 600 016	543
XPS SYNTHETIC GREASE	293 550 010	546



NEW = Component must be replaced when removed.

GENERAL

Jet pump must be removed to replace any components of the drive system. Refer to *JET PUMP* for removal procedure.

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 (e.g.: locking tabs, elastic stop nuts, self-locking fasteners, cotter pins, etc.).

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

PROCEDURES

DRIVE SHAFT

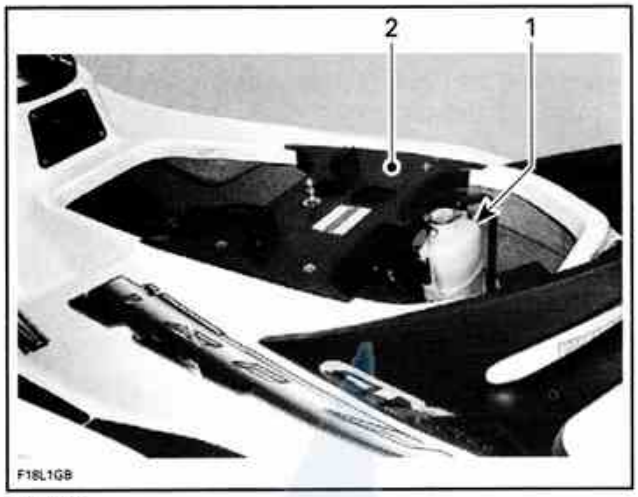
Drive Shaft Access (GTS/GTI/Wake)

Remove seat.

Drive Shaft Access (RXT/GTX/Wake Pro)

GTX 155/215

1. Remove seat.
2. Detach coolant expansion reservoir from vent tube support then move away.



TYPICAL
1. *Detach expansion reservoir*
2. *Remove vent tube support*

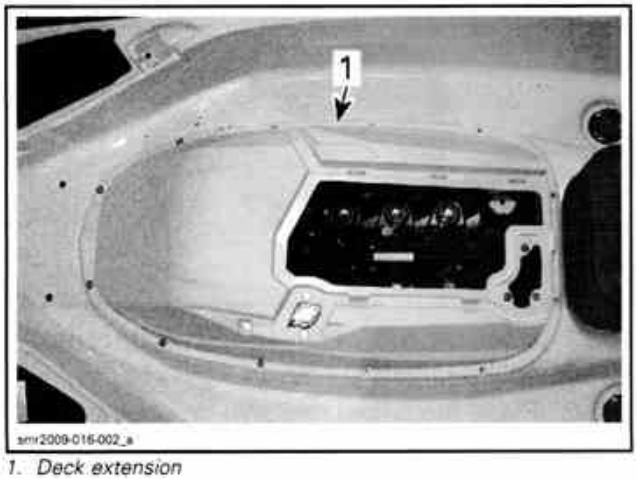
3. Detach vent tube.
4. Remove vent tube support.
5. On GTX 215, remove supercharger air inlet hose.

RXT 260/RXT-X 260

6. Remove seat.
7. Detach coolant expansion reservoir from vent tube support then move away.
8. Remove muffler hose.
9. Remove intercooler inlet and outlet air hoses.
10. Remove supercharger air inlet hose.

RXT-X aS 260, GTX iS 215 and GTX Ltd iS 260

1. Open seat.
2. Remove the deck extension. Refer to *BODY (RXT/GTX/WAKE PRO)* subsection.



1. *Deck extension*

3. Lower the moving deck onto the fixed deck and install a few hexagonal screws on the rear suspension arm to hold the deck steady for the duration of the procedures.

GTX iS 215

4. Remove air intake silencer.
5. Remove supercharger air inlet hose.

RXT-X aS 260 and GTX Ltd iS 260

6. Remove air intake silencer.
7. Remove muffler hose.
8. Remove intercooler inlet and outlet air hoses.
9. Remove supercharger air inlet hose.

Drive Shaft Removal

Preparation

Refer to *DRIVE SHAFT ACCESS* to remove required parts according to model.

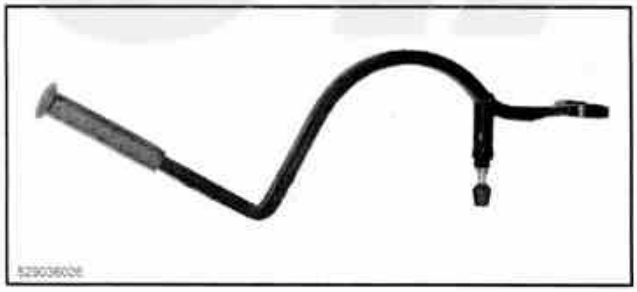
To minimize oil spillage, syphon oil in engine PTO area. Refer to *PTO HOUSING REMOVAL* in *PTO HOUSING AND MAGNETO* subsection.

Procedures

NOTE: Ensure jet pump is installed before beginning this procedure.

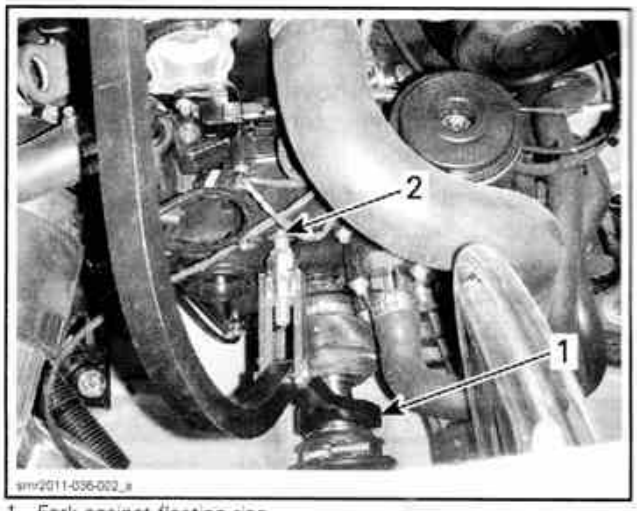
1. Disconnect EGTS sensor as necessary.
2. Lift rubber protector to expose PTO seal assembly.
3. Confirm the floating ring is not stuck on drive shaft as follows:

REQUIRED TOOL
DRIVE SHAFT C-CLIP REMOVER (P/N 529 036 026)



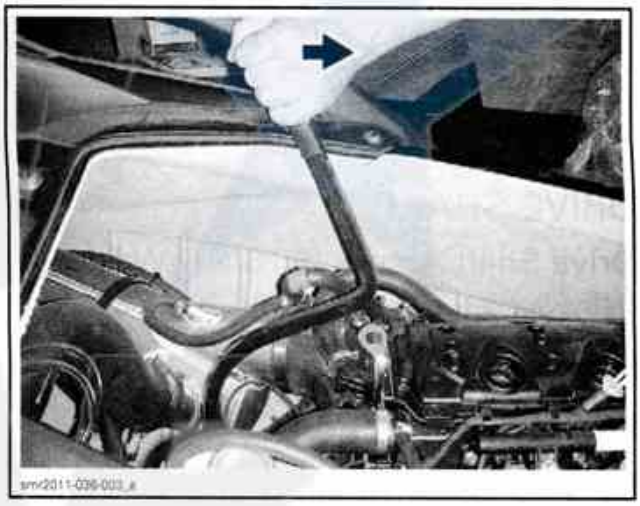
3.1 Place the fork of drive shaft circlip remover against floating ring.

3.2 Place the adjustable arm on engine.



1. *Fork against floating ring*
2. *Adjustable arm*

3.3 Move the tool handle toward the front of vehicle to push floating ring rearward.

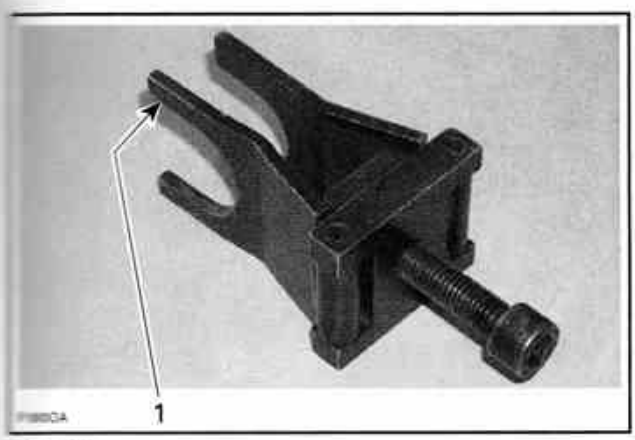


NOTE: Do not remove circlip at this time.

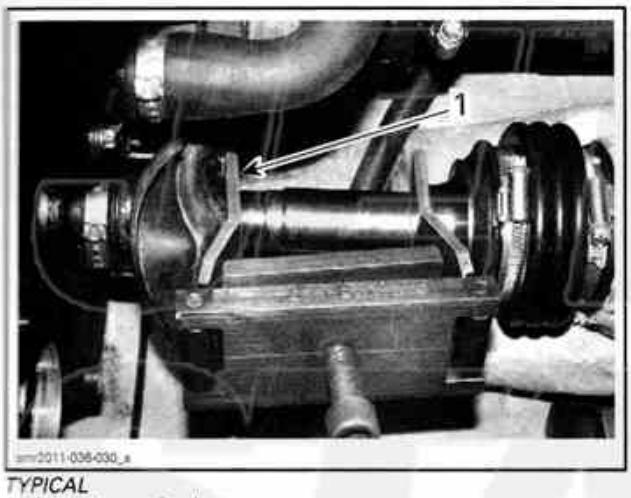
3.4 Remove the drive shaft C-clip remover.

4. Install the following tool on drive shaft with its largest opening on PTO side.

REQUIRED TOOL
FLOATING RING TOOL (TYPE I) (P/N 529 035 841)



TYPICAL
1. Largest opening on PTO seal side



TYPICAL
1. Largest opening here

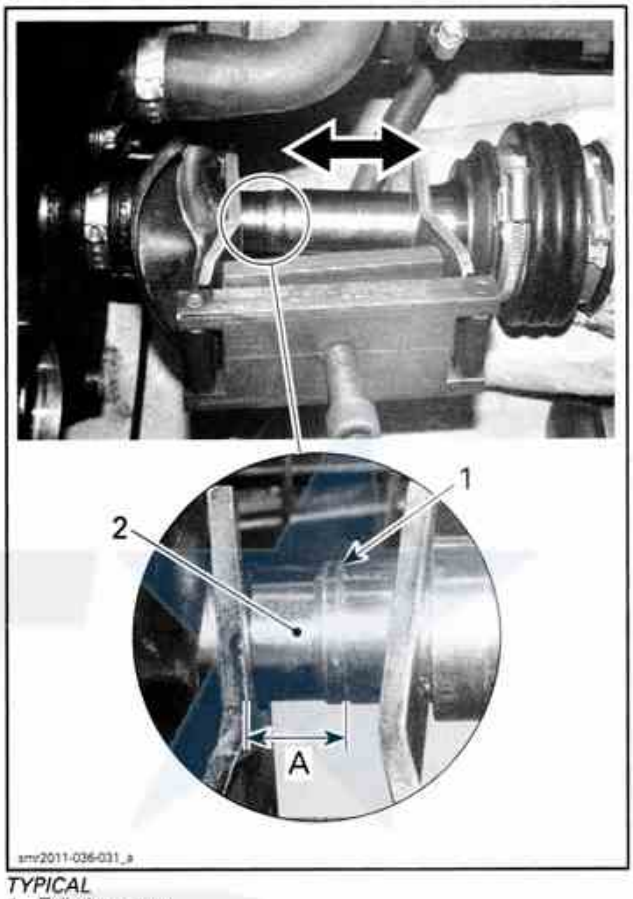
5. Turn tool screw CLOCKWISE until the following gap is obtained.

GAP BETWEEN TELLTALE GROOVE AND TOOL EDGE
18 mm (.71 in)

NOTE: This will expose the O-ring contact area.

6. Lubricate O-ring contact area with XPS LUBE (P/N 293 600 016).

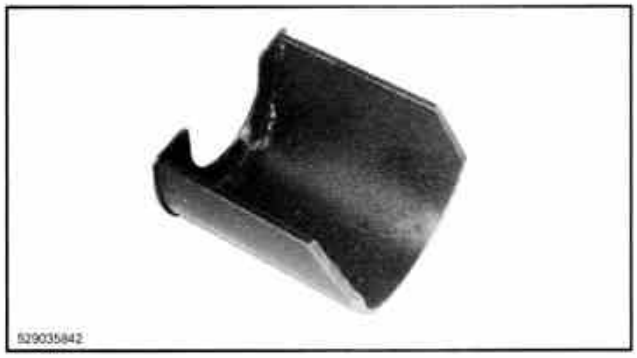
NOTE: This is necessary to ease drive shaft removal later in this procedure.

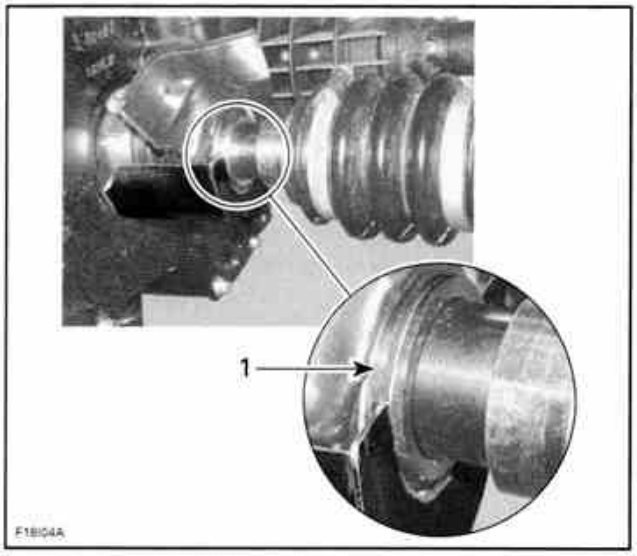


TYPICAL
1. Telltale groove
2. Lubricate this area
A. 18 mm (.71 in)

7. Remove the floating ring tool.
8. Install the following tool to PTO seal assembly.

REQUIRED TOOL
PTO SUPPORT TOOL (P/N 529 035 842)

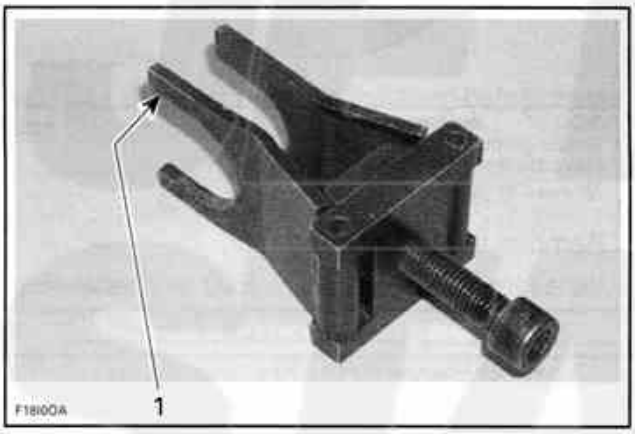




1. Insert in groove of PTO seal assembly

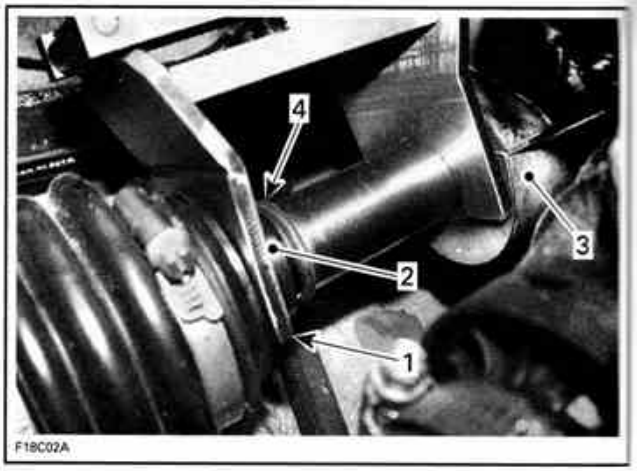
NOTICE **Strictly follow this procedure otherwise damage to component might occur.**

9. Reinstall the floating ring tool as shown.



TYPICAL
1. Largest opening on PTO seal side

10. Turn screw of tool clockwise to push floating ring rearward to expose circlip.
11. Remove and discard circlip.



TYPICAL
1. Largest opening here
2. Floating ring
3. PTO seal support tool
4. Remove circlip

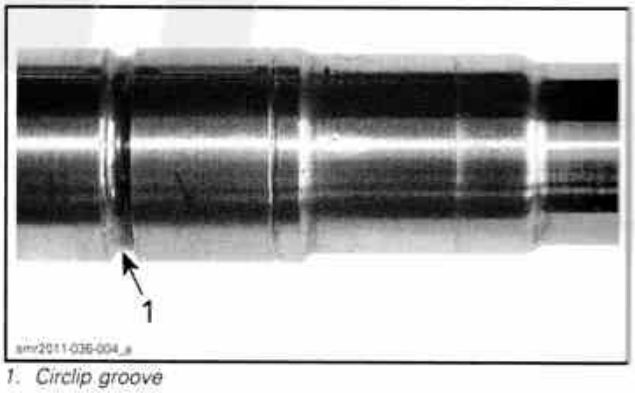
12. Remove the floating ring tool.
13. Place rags under PTO housing to prevent spillage. If spillage occurs, clean immediately with the PULLEY FLANGE CLEANER (P/N 413 711 809) to prevent oil stains.
14. Remove jet pump. Refer to *JET PUMP* section.
15. Remove drive shaft.

NOTE: A slight jerk to the rear may be required to remove the drive shaft from the PTO seal assembly.

Drive Shaft Inspection

Drive Shaft

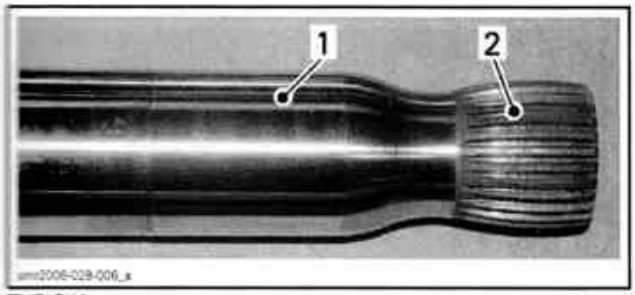
Inspect condition of circlip groove. If there is any damage or severe wear, replace drive shaft.



1. Circlip groove

Inspect condition of drive shaft splines. If splines are damaged, replace drive shaft.

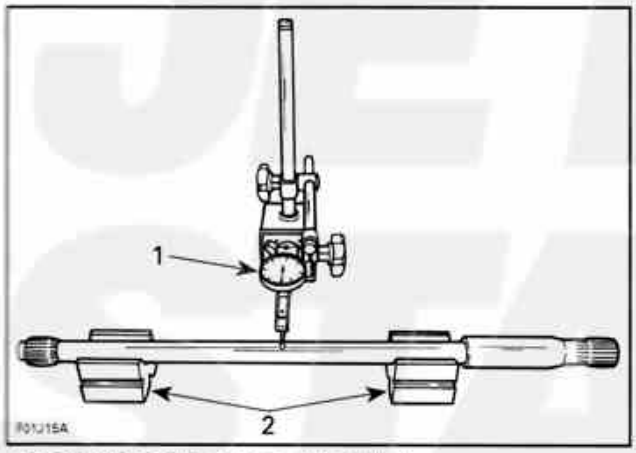
With your finger nail, feel machined surface of drive shaft. If any irregular surface is found, renew drive shaft.



TYPICAL
1. *Surface condition*
2. *Splines condition*

Excessive deflection could cause vibration and damage to drive shaft splines, impeller or floating ring.

Place drive shaft on V-blocks and set-up a dial gauge in center of shaft. Slowly rotate shaft; difference between highest and lowest dial gauge reading is deflection. Refer to the following illustration.



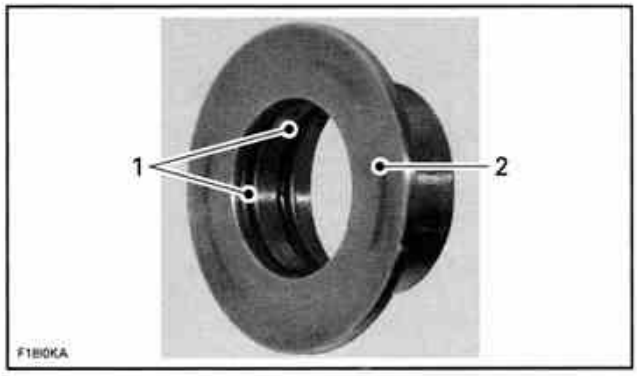
MEASURING DRIVE SHAFT DEFLECTION
1. *Dial gauge*
2. *V-blocks*

Maximum permissible deflection is 0.5 mm (.020 in).

Floating Ring

Inspect condition of O-rings and contact surface of floating ring.

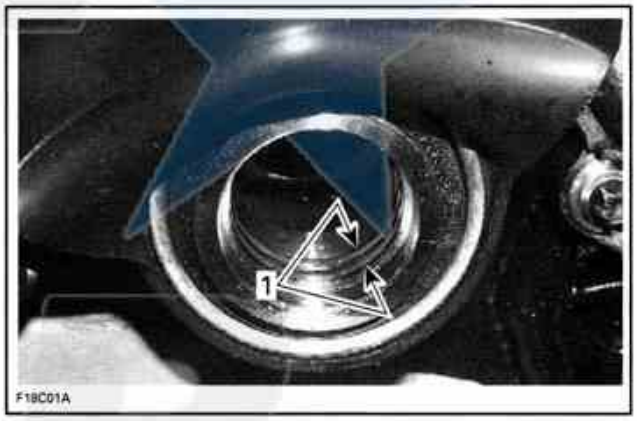
Replace as required.



1. *O-rings*
2. *Contact surface*

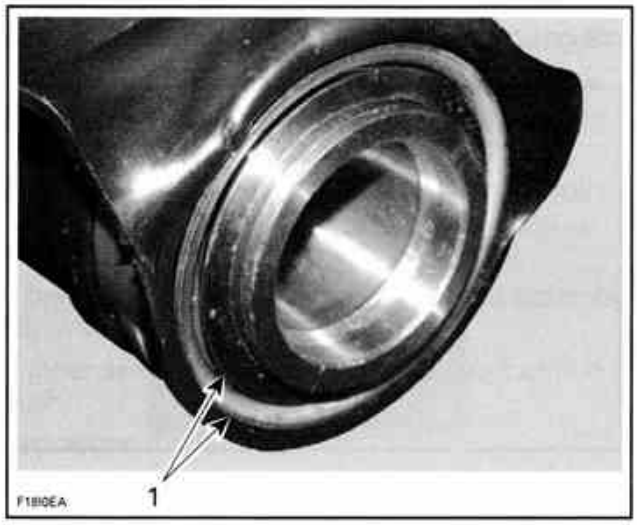
Drive Shaft Installation

Before installing drive shaft, discard both O-rings inside PTO seal and install NEW ones.

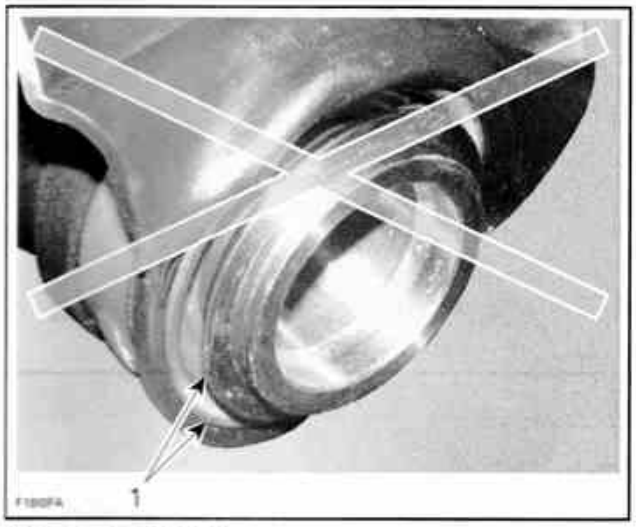


1. *O-rings*

Inspect PTO seal assembly. The inner sleeve must be flush with outer circumference of the assembly. Otherwise, gently push or tap on inner sleeve until flush.

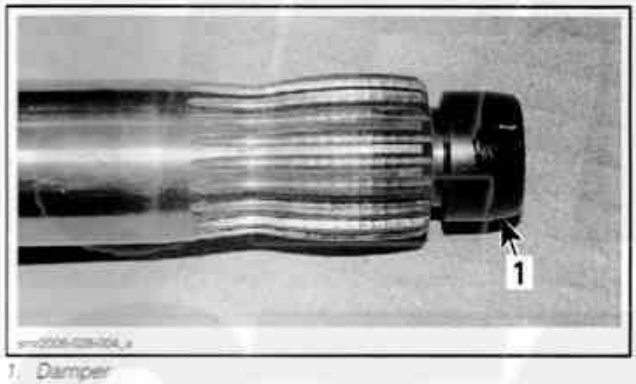


CORRECT POSITION
1. *Inner sleeve flush with outer circumference*



INCORRECT POSITION
1. Inner sleeve not flush with outer circumference

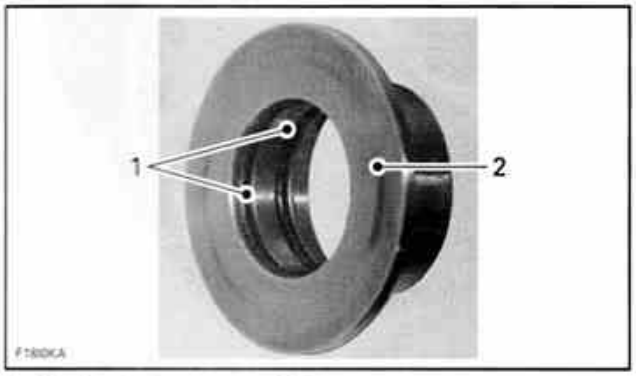
Remove the damper at the end of drive shaft and replace it with a NEW one.



1. Damper

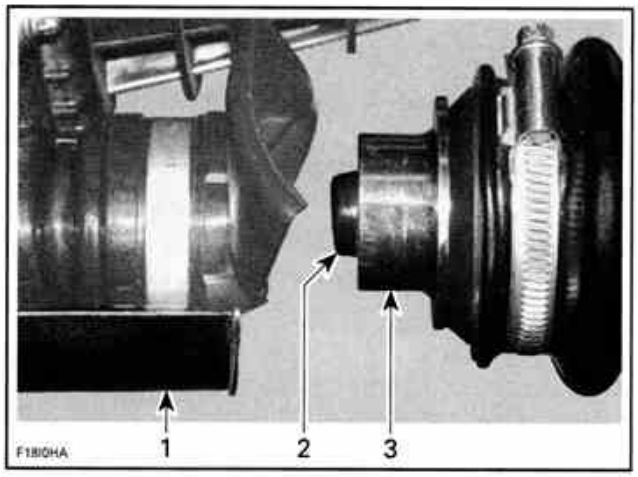
Install the PTO SUPPORT TOOL (P/N 529 035 842) on PTO seal assembly.

Apply a thin coat of XPS SYNTHETIC GREASE (P/N 293 550 010) on the floating ring O-rings. Do not get grease on floating ring contact surface.



1. XP-S synthetic gresse on O-rings
2. No lubrication on contact surface

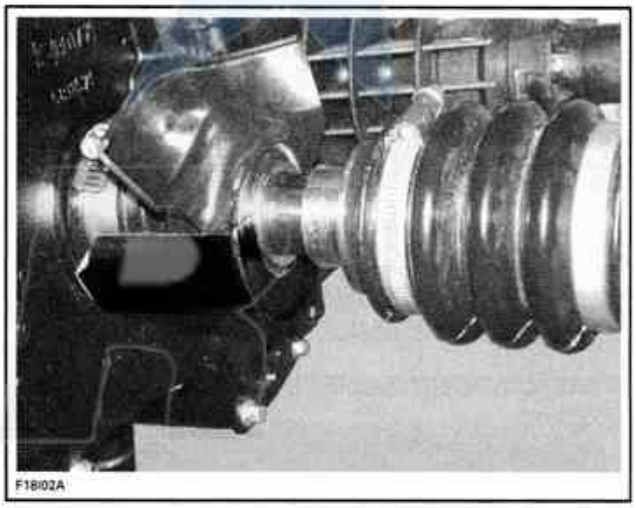
Slide drive shaft far enough to install floating ring.



1. PTO seal support
2. Drive shaft end
3. Insert floating ring on shaft end

Continue pushing drive shaft towards engine carefully guiding it in the PTO seal then in crankshaft splines. It may be necessary to move PTO seal assembly up and down to position it in the same axis as the drive shaft.

NOTE: If drive shaft does not enter into the PTO seal, check engine alignment.

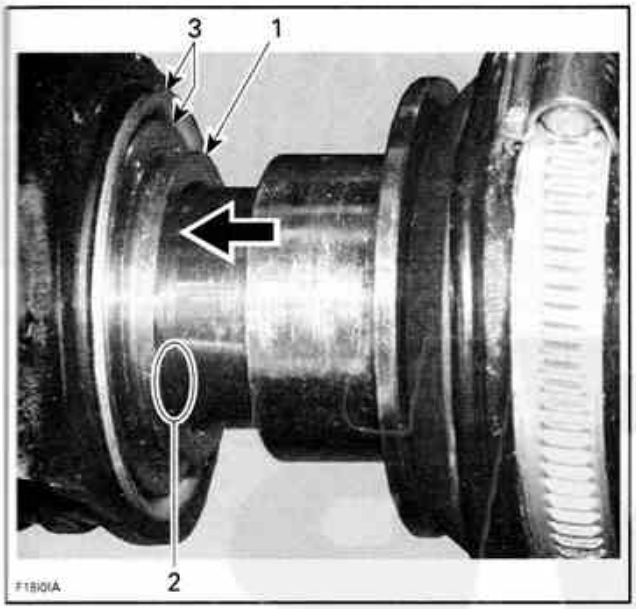


TYPICAL

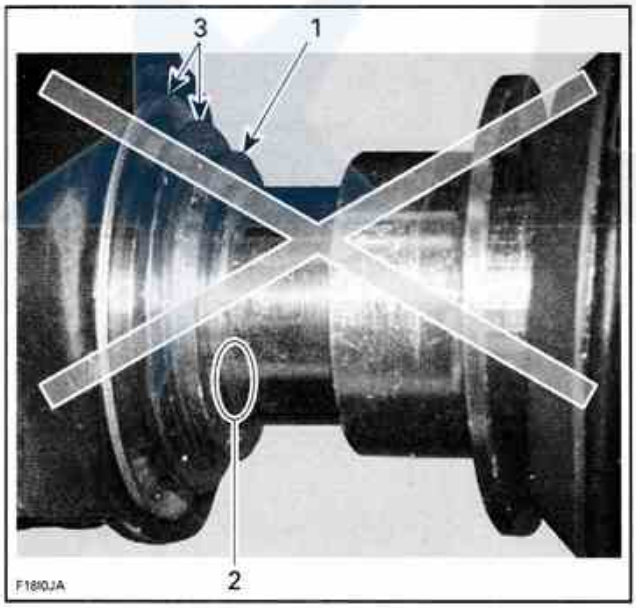
Maintain PTO seal assembly in the proper position and tap shaft end until it bottoms against engine.

At this time, the telltale groove MUST NOT be visible. This validates the correct position.

NOTICE **If the telltale groove is exposed, the installation is wrong and PTO seal assembly will be pressed into crankshaft splines which could rub a hole in seal thus creating an oil leak.**



CORRECT INSTALLATION
1. *PTO seal assembly*
2. *Shaft pushed in, hiding telltale groove*
3. *Inner sleeve flush with outer circumference*

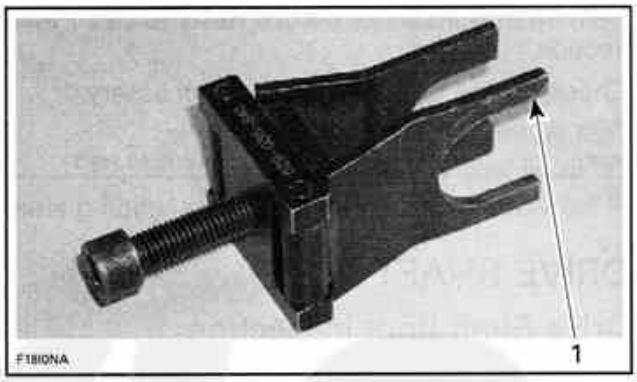


IMPROPER INSTALLATION
1. *PTO seal assembly*
2. *Telltale groove visible*
3. *Inner sleeve NOT flush with outer circumference*

Temporarily install the jet pump.

Install a new circlip using the following procedure and tools.

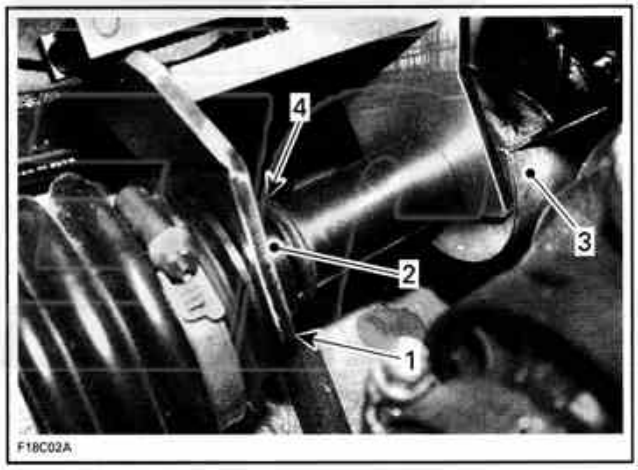
REQUIRED TOOL
FLOATING RING TOOL (TYPE I) (P/N 529 035 841)



TYPICAL
1. *Largest opening on through-hull fitting side*

NOTE: Ensure PTO seal support is still in place.

Push floating ring rearwards and install a NEW circlip.



TYPICAL
1. *Largest opening*
2. *Floating ring*
3. *PTO seal support tool*
4. *Install circlip*

Remove floating ring tool and PTO seal support.

NOTE: Pulling drive shaft boot rearward will ease removal of PTO support tool.

Ensure everything is properly positioned:
- Telltale groove is not visible
- Inner sleeve is flush with outer circumference of PTO seal assembly
- Circlip is not exposed.

If telltale groove is visible, pull PTO seal assembly rearwards to fully extend it.

If inner sleeve is not flush, gently tap it until it is flush.

Reposition rubber protector.

Reconnect EGTS sensor if applicable.

Permanently install jet pump. Refer to *JET PUMP* section.

Check engine oil level. Refill as necessary.

Test watercraft then ensure there is:
- No oil leak in PTO seal area
- No water intrusion by the thru-hull fitting area.

DRIVE SHAFT BOOT

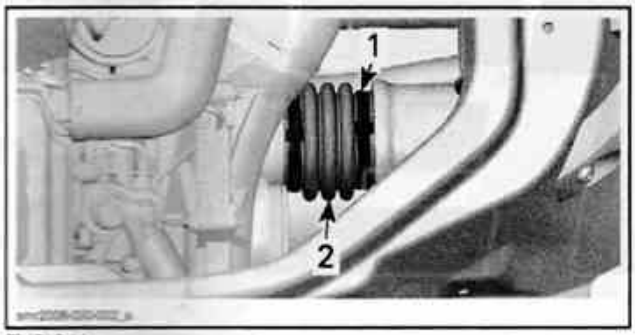
Drive Shaft Boot Inspection

Inspect the condition of boot. If there is any damage or evidence of wear, replace it.

Drive Shaft Boot Removal

Remove drive shaft. Refer to *DRIVE SHAFT* in this subsection.

Loosen gear clamp holding boot, then carefully pull boot and carbon ring from hull insert.



TYPICAL
1. *Loosen this clamp*
2. *Drive shaft boot*

Drive Shaft Boot Installation

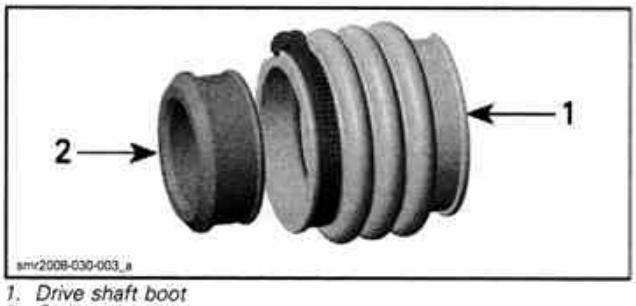
The installation is the reverse of the removal procedure.

CARBON RING

Carbon Ring Removal

Remove *DRIVE SHAFT BOOT*. See procedure in this section.

Loosen gear clamp then pull carbon ring from drive shaft boot.



1. *Drive shaft boot*
2. *Carbon ring*

Carbon Ring Installation

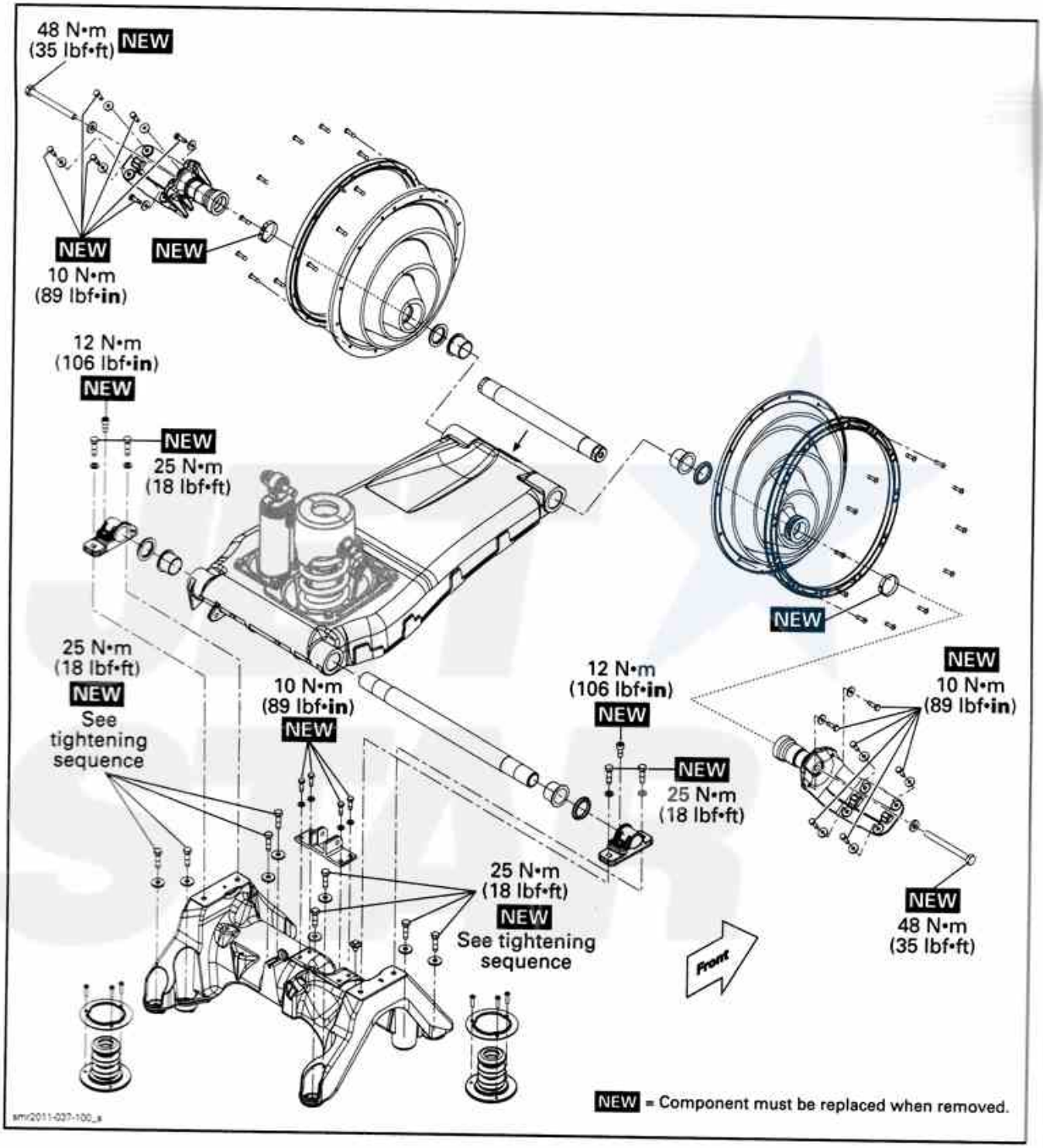
The installation is the reverse of the removal procedure.

SUSPENSION (aS)

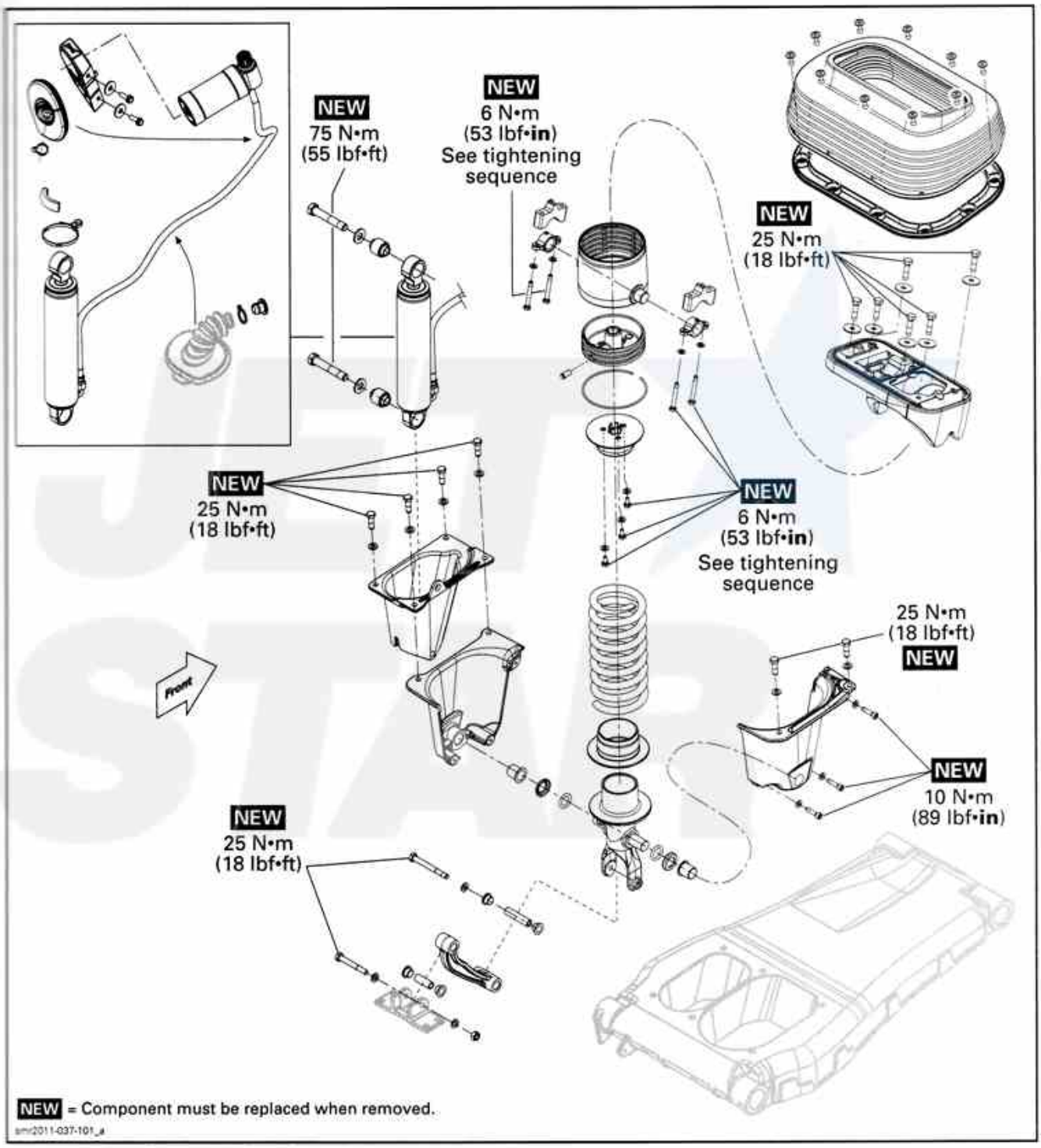
SERVICE TOOLS

Description	Part Number	Page
SUPERTANIUM DRILL BIT 3/16"	529 031 800	560

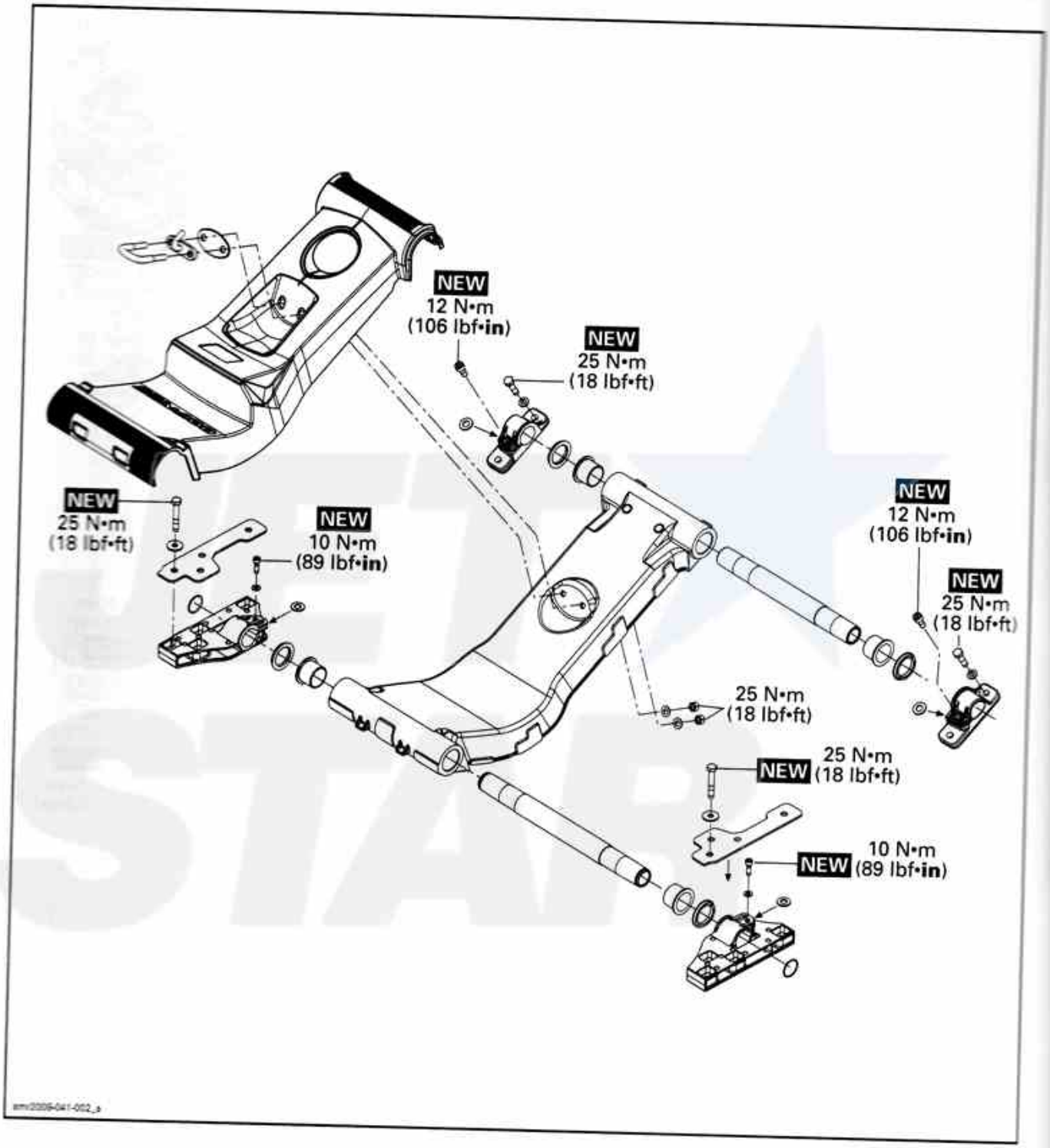
FRONT SUSPENSION ARM



SHOCK ABSORBER



REAR SUSPENSION ARM



GENERAL

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

NOTICE When applying threadlocker products (anaerobic products), pay attention so that it does not come in contact with ABS plastic parts (painted parts). It could lead to plastic cracks or other damage.

⚠ WARNING

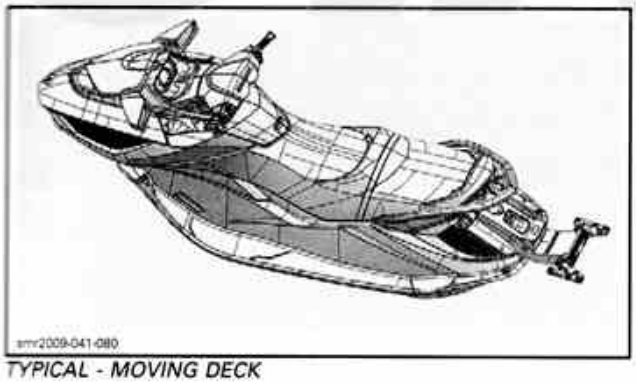
Torque wrench tightening specifications must be strictly adhered to.
Locking devices when removed (e.g.: locking tabs, elastic stop nuts, self-locking fasteners, cotter pins, etc.) must be replaced with new one.

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

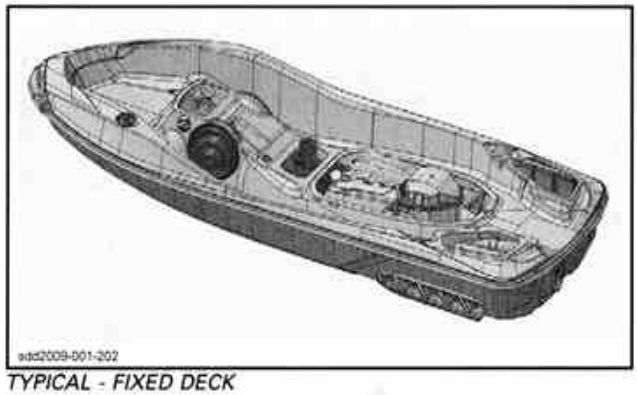
SYSTEM DESCRIPTION

The adjustable Suspension (aS) allows the moving deck to move independently from the fixed deck, isolating rider and passenger from the impact of rough water.

With the aS feature, the moving deck may be adjusted mechanically to absorb (dampen) water shocks according to the driver riding style and water conditions.



TYPICAL - MOVING DECK

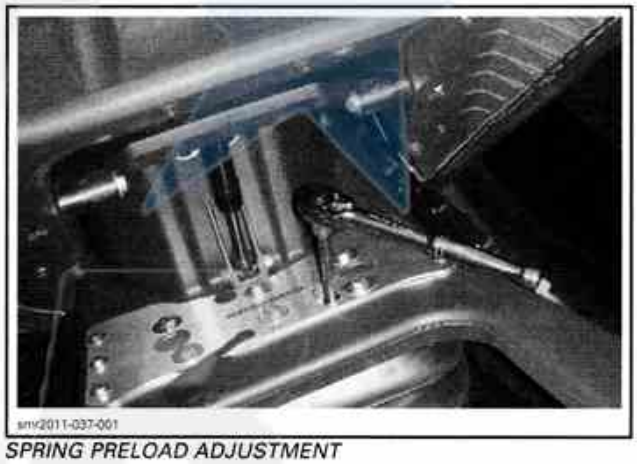


TYPICAL - FIXED DECK

Spring Preload Adjustment

The spring preload can be easily adjusted using a 1/2" drive ratchet wrench with an extension.

The spring preload adjuster is located under the seat.



SPRING PRELOAD ADJUSTMENT

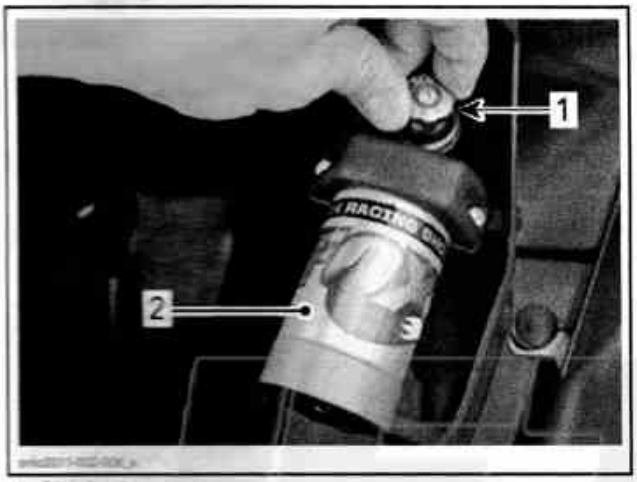
RIDERS TOTAL WEIGHT (KG/LB)	NBR OF CLICKS ON SPRING ADJUSTER (CLOCKWISE*)
57 kgf (125 lbf)	0
73 kgf (160 lbf)	2
89 kgf (195 lbf)	4
105 kgf (230 lbf)	6
120 kgf (265 lbf)	8
136 kgf (300 lbf)	10
152 kgf (335 lbf)	12
168 kgf (370 lbf)	14
184 kgf (405 lbf)	16
200 kgf (440 lbf)	18
* 0 is set at fully unscrewed position (counterclockwise).	

Damping Adjustment

The aS Suspension damping may be personally adjustable according to the driving preferences and water conditions.

Damping adjustment is carried out via the remote nitrogen reservoir in the glove box.

A blue knob located in glove box allows damper adjustment for this purpose.



1. Blue knob
2. Nitrogen gas damper

TYPICAL CONDITIONS	NBR OF CLICKS ON DAMPER ADJUSTER (CLOCKWISE*)
Calm water	0
	5
Rough water	10
	15
Offshore	20
* 0 is set at fully unscrewed position (counterclockwise).	

NOTE: These adjustments are provided as guidelines to ensure optimum suspension performance. Personal preference may dictate different settings than those recommended.

TROUBLESHOOTING

DIAGNOSTIC GUIDELINES

The following is provided to help in diagnosing the probable source of troubles. It is a guideline and it should not be assumed to list all possible problems.

SUSPENSION MOVES ERRATICALLY

1. **Defective shock absorber.**
   - *Replace the shock absorber.*
2. **Broken spring.**
   - *Replace spring.*

SUSPENSION NOISE (DURING A TURN)

1. **Front or rear suspension arm shaft supports position.**
   - *Supports must be flushed against both ends of shaft. Reposition shaft in its supports.*
2. **Worn arm shaft bushings.**
   - *Check front and rear arm shaft bushings condition and replace as required.*
3. **Snap rings on both sides of the rear lower arm shaft are not properly positioned.**
   - *Reposition shaft in its supports. Refer to SUSPENSION ARM SHAFTS.*

SUSPENSION NOISE (FRONT OF SEAT)

1. **Holder retaining screws are loose.**
   - *Tighten shock absorber holder screws to recommended torque.*
2. **Shock absorber screws are loose.**
   - *Tighten shock absorber screws to recommended torque.*

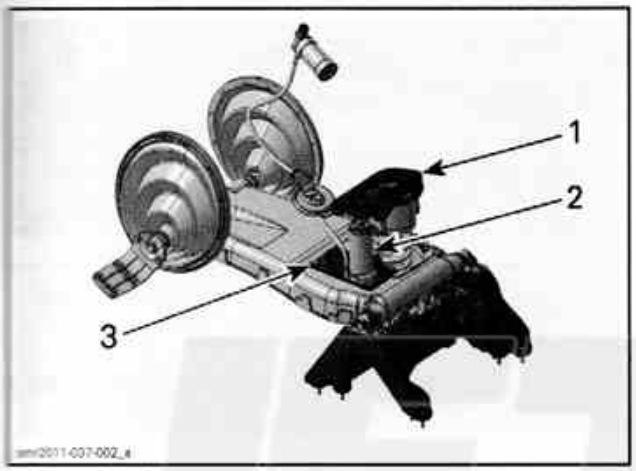
SUSPENSION BOTTOMS HARD

1. **Spring out of specification or broken.**
   - *Replace spring.*
2. **Shock absorber is damaged.**
   - *Check shock absorber resistance. Replace shock absorber.*
3. **Bump stops damaged or worn.**
   - *Replace both bump stops.*

PROCEDURES

SHOCK ABSORBER

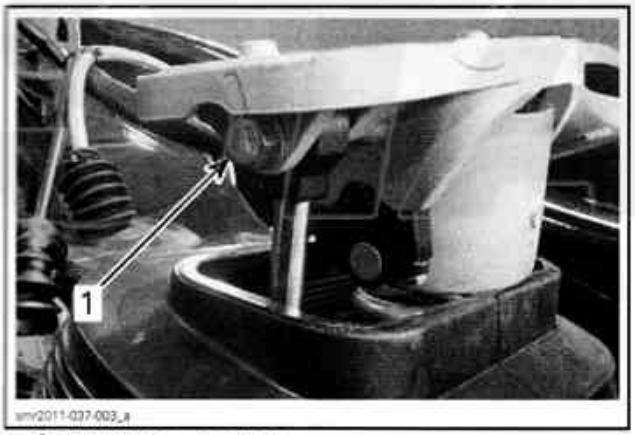
Shock Absorber Location



1. *Mounting plate*
2. *Shock absorber*
3. *Shock holder*

Shock Absorber Removal

1. Remove moving deck. Refer to *BODY* subsection.
2. Remove shock absorber upper bolt.

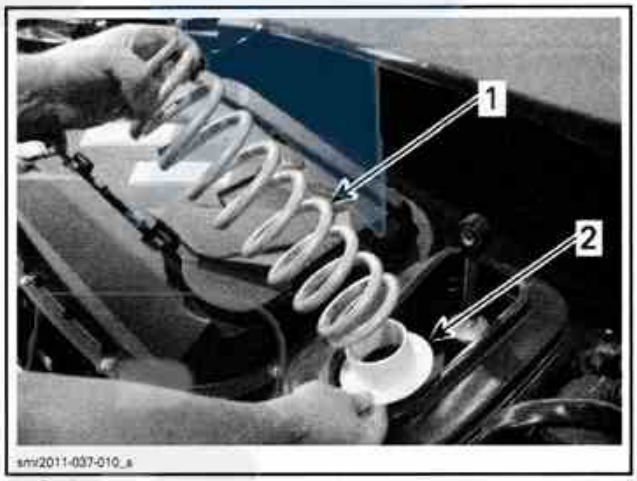


1. *Shock absorber upper bolt*

3. Remove mounting plate by pulling it upwards.

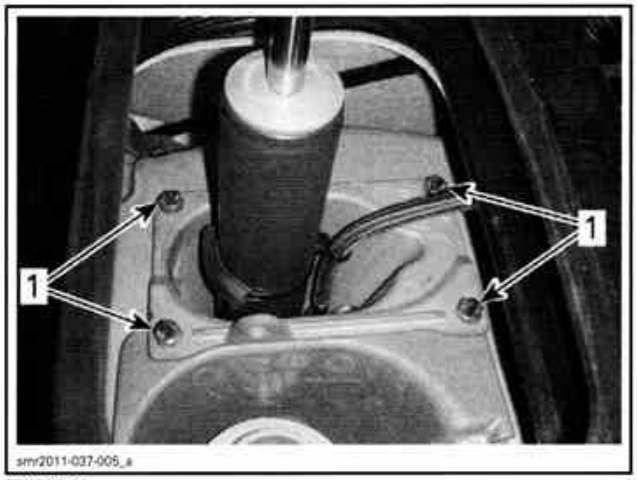
MOUNTING PLATE REMOVAL

4. Remove spring and lower spring bushing.



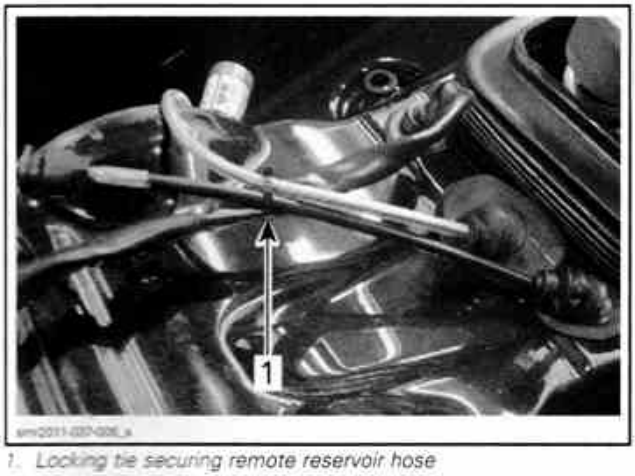
1. *Spring*
2. *Lower spring bushing*

5. Remove shock holder retaining screws.



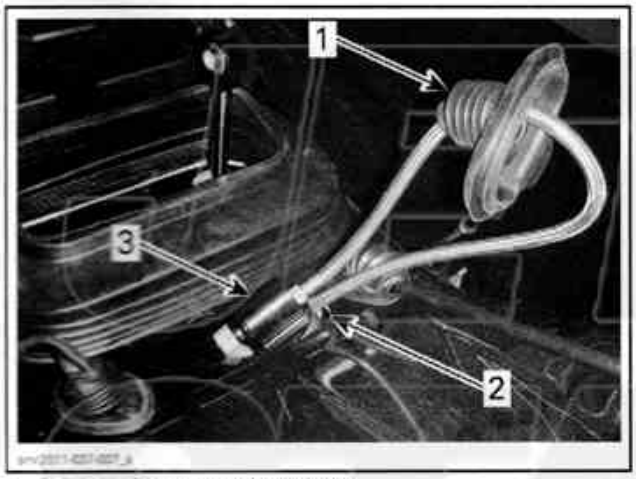
TYPICAL
1. *Shock holder retaining screws*

6. Remove locking tie securing remote reservoir hose.



1. Locking tie securing remote reservoir hose

7. Remove bellows of remote reservoir hose from deck.
8. Insert remote reservoir into deck hole.

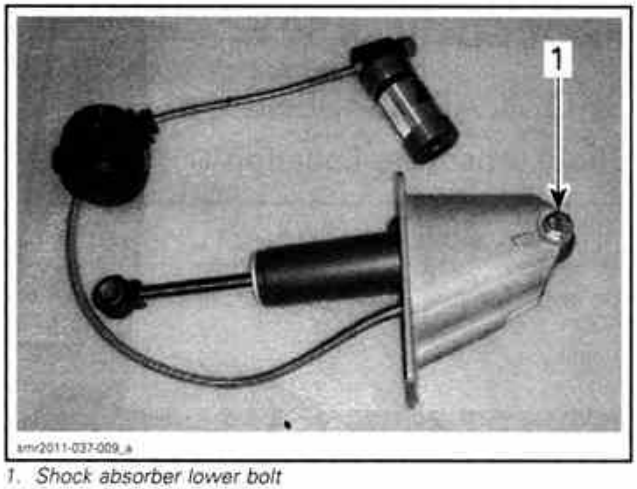


1. Bellows of remote reservoir hose
2. Deck hole
3. Remote reservoir

9. Remove shock absorber and remote reservoir.

SHOCK ABSORBER REMOVAL

10. Remove shock holder from shock absorber.



1. Shock absorber lower bolt

Shock Absorber Inspection

NOTE: Because of gas pressure, strong resistance is felt when compressing shock.

To inspect shock operation, or if suspecting an internal leak between oil chamber and gas chamber, check shock as follows:

1. Grab the shock absorber body firmly and press the rod end against a firm surface.
   - 1.1 Verify the compression stroke when the rod is fully extended.
   - 1.2 Make sure that shock absorber rod can be completely inserted in the shock body.
2. The shock should extend unassisted. Rod must come out at a steady speed.

If any problem is detected, replace the shock absorber.

Shock Absorber Installation

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

Secure shock absorber using **NEW** bolts.

Tighten shock absorber bolts to specification.

TORQUE	
Shock absorber bolt	75 N•m (55 lbf•ft)

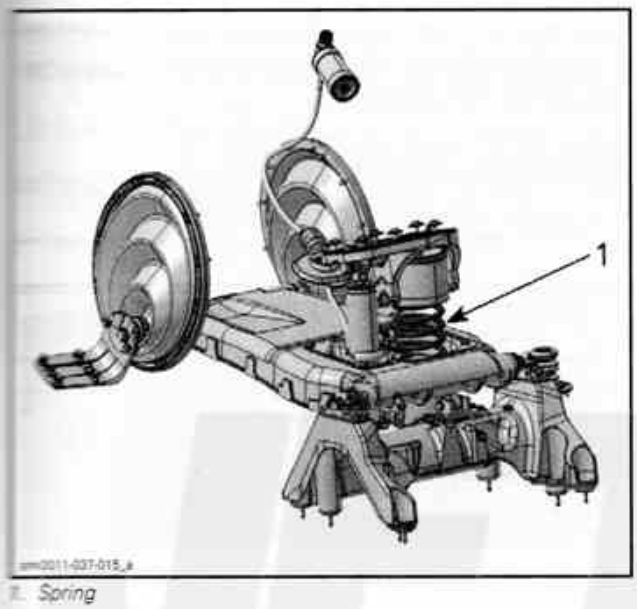
Install **NEW** shock holder screws.

Tighten shock holder screws to specification.

TORQUE	
Shock holder screw	25 N•m (18 lbf•ft)

SPRING

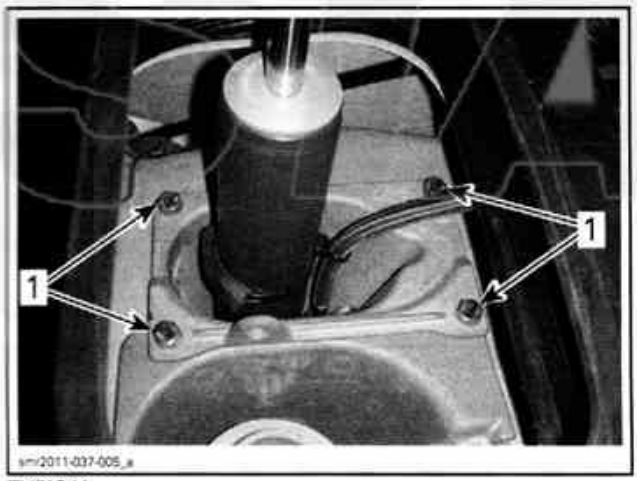
Spring Location



1. *Spring*

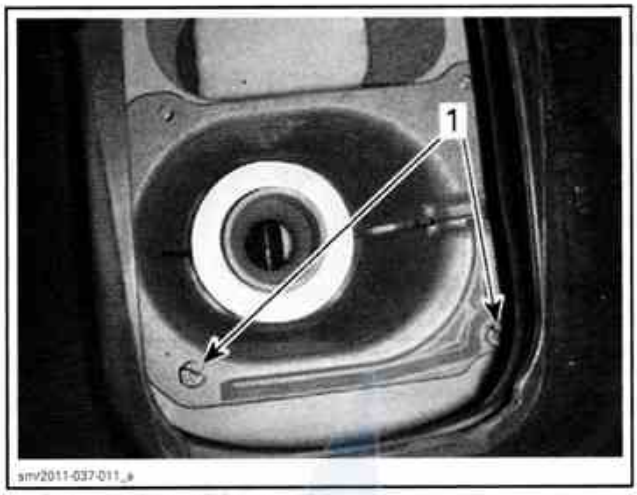
Spring Removal

1. Remove moving deck. Refer to *BODY* subsection.
2. Remove shock holder from its location. Refer to *SHOCK ABSORBER* in this subsection.



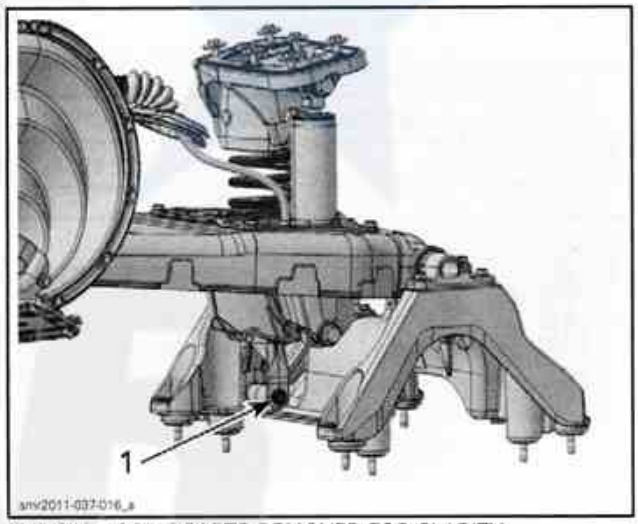
TYPICAL
1. *Shock holder retaining screws*

3. Move shock holder aside.
4. Remove spring holder retaining screws.



1. *Spring holder retaining screws*

5. Remove screw securing spring holder to link arm.



TYPICAL - SOME PARTS REMOVED FOR CLARITY
1. *Screw securing spring holder to link arm*

6. Remove spring holder.

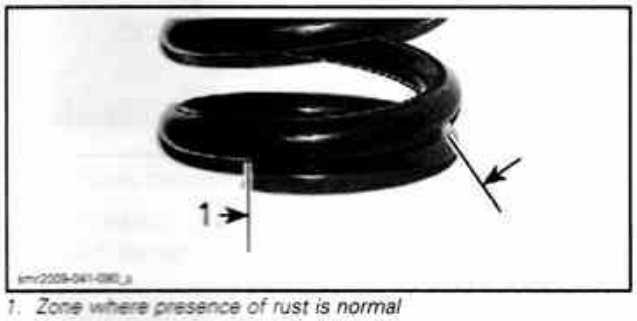
SPRING HOLDER REMOVAL

Spring Inspection

Inspect spring and replace if one of the following damage is detected:

- Crack in the paint
- Rust
- Other visible damages.

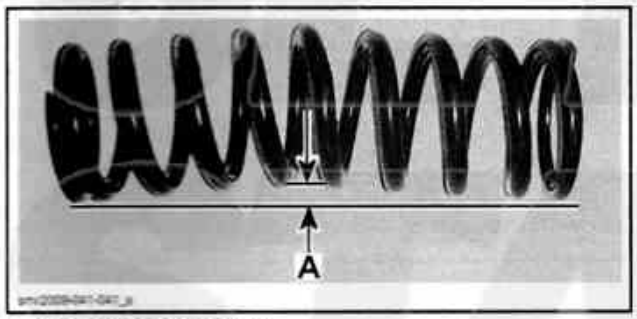
NOTE: If rust is limited to a 1/4 of the first coil, the spring should not be replaced.



1. Zone where presence of rust is normal

Check the curve line of spring.

SPRING SHAPE	
Maximum	7 mm (9/32 in)



A. 7 mm (9/32 in) maximum

Replace spring if out of specification.

Spring Installation

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

Secure shock absorber using **NEW** bolts.

Tighten shock absorber bolts to specification.

TORQUE	
Shock absorber bolt	75 N•m (55 lbf•ft)

Install **NEW** shock holder screws and spring holder screws.

Tighten shock and spring holder screws to specification.

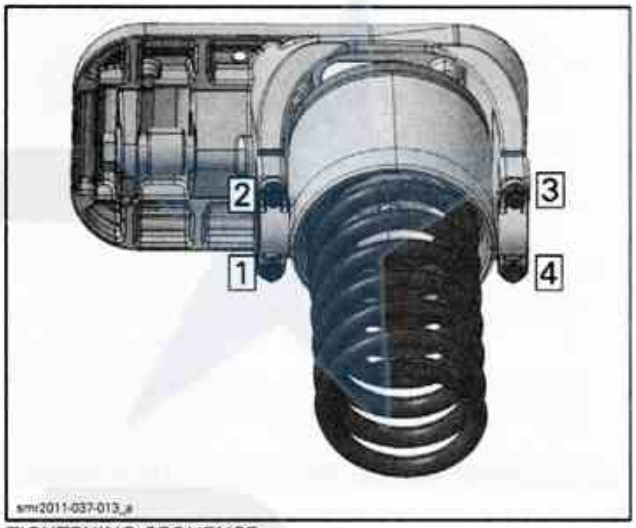
TORQUE	
Shock holder screw	25 N•m (18 lbf•ft)
Spring holder screw	25 N•m (18 lbf•ft)

If spring supports were disassembled, pay attention to the following.

Install **NEW** upper spring support screws.

Tighten upper spring support screws to specification as per the following sequence.

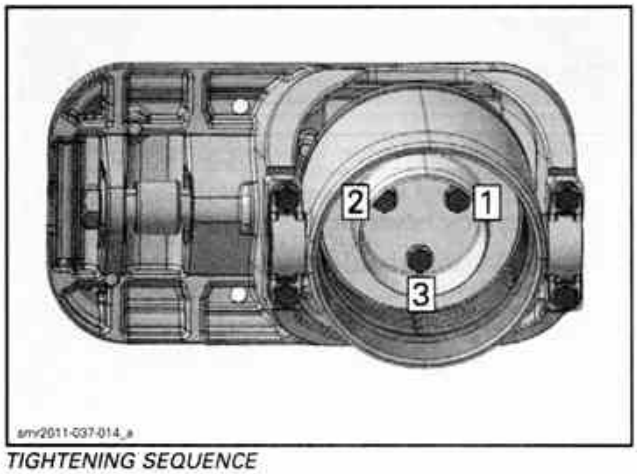
TORQUE	
Upper spring support screw	6 N•m (53 lbf•**in**)



TIGHTENING SEQUENCE

Tighten upper wear ring retaining screws to specification as per the following sequence.

TORQUE	
Upper wear ring retaining screw	6 N•m (53 lbf•**in**)



TIGHTENING SEQUENCE

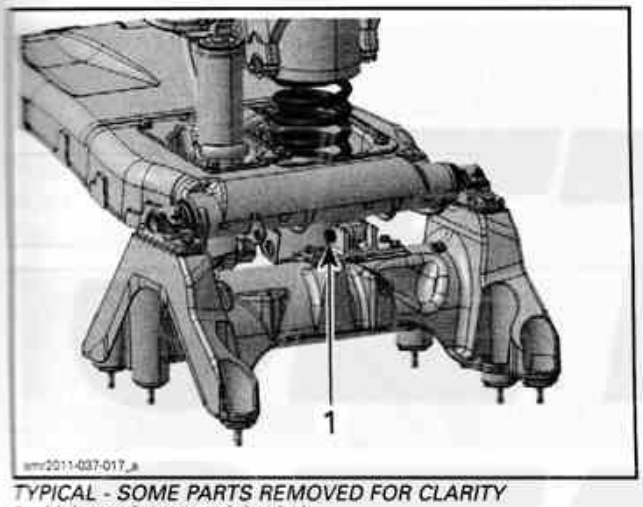
LINK ARM

Link Arm Access

Refer to *BODY* subsection and remove:
- Moving deck
- Deck extension.

Link Arm Removal

1. Remove spring holder. Refer to *SPRING REMOVAL* in this subsection.
2. Remove link arm lower retaining bolt.



TYPICAL - SOME PARTS REMOVED FOR CLARITY
1. Link arm lower retaining bolt

Link Arm Installation

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

Secure link arm using **NEW** bolts.

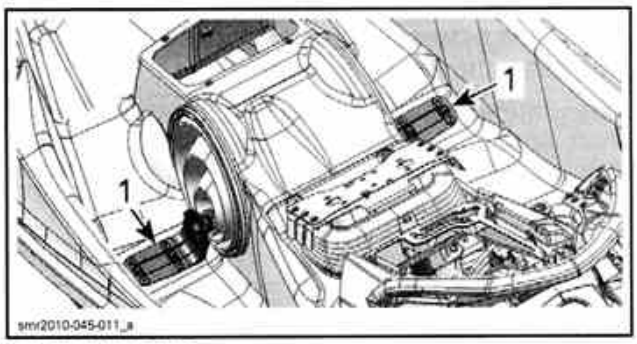
Tighten link arm bolts to specification.

TORQUE	
Link arm bolt	25 N•m (18 lbf•ft)

LATERAL SUPPORT

Lateral Support Location

The lateral supports are located on both side of the fixed deck to support the moving deck.

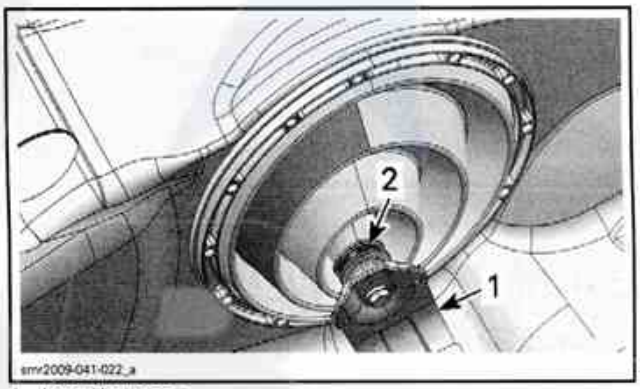


1. Lateral supports

Lateral Support Removal

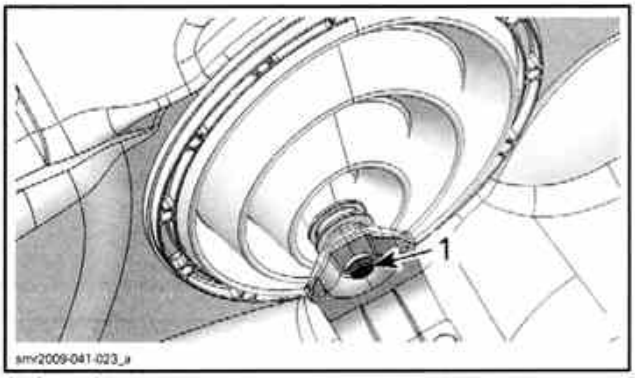
NOTE: The following instruction can be used for RH or LH support.

1. Remove the moving deck. Refer to *BODY* subsection.
2. Cut the Oetiker clamp retaining lateral bellows to lateral support.



1. Lateral support
2. Oetiker clamp

3. Remove the lateral support screw.



1. Lateral support screw

4. Remove lateral support from lateral bellows.

Lateral Support Installation

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

Apply soapy water solution on bellows opening and insert the lateral support.

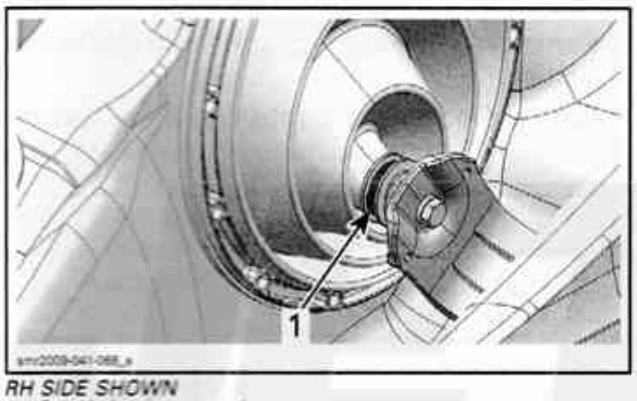
Index lateral supports with the front suspension shaft ends. Lateral supports can be inserted in one position only.

Install **new** lateral support screw.

Tighten lateral support screw to specification.

TORQUE	
Lateral support screw	48 N•m (35 lbf•ft)

Install a **new** Oetiker clamp. Position the ear of clamp rearwards.

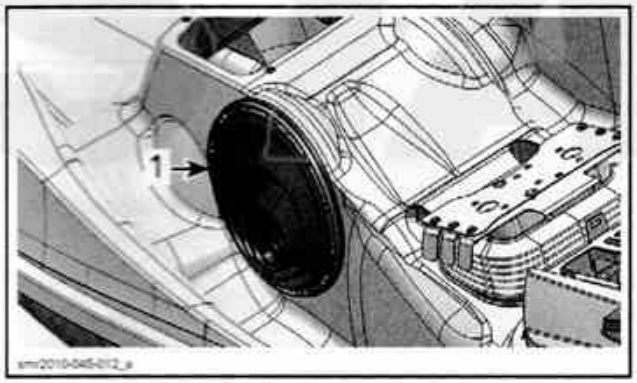


RH SIDE SHOWN
1. Ear of clamp rearwards

LATERAL BELLOWS

Lateral Bellows Location

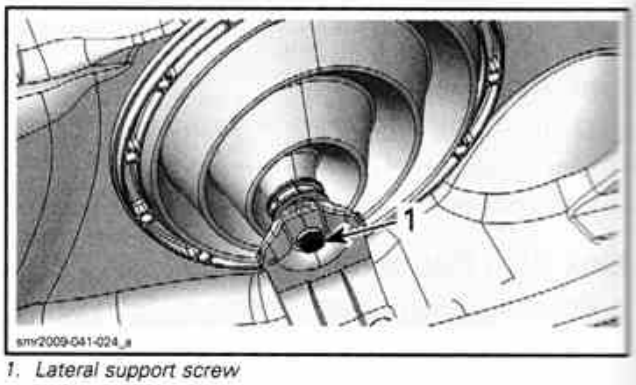
The lateral bellows are located on each side of the fixed deck.



1. LH lateral bellows shown

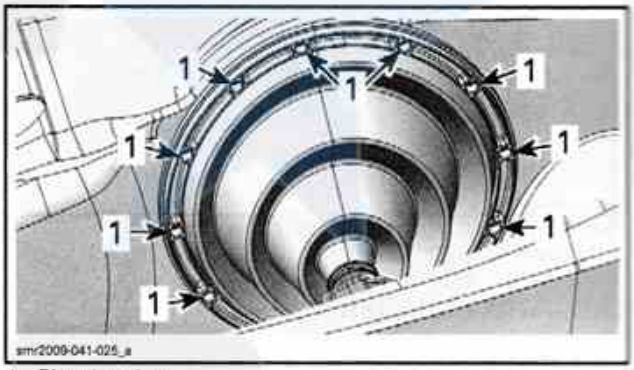
Lateral Bellows Removal

1. Remove lateral support screw.



1. Lateral support screw

2. Detach lateral support from suspension shaft.
3. Using the SUPERTANIUM DRILL BIT 3/16" (P/N 529 031 800), remove all rivets (12) securing the lateral bellows ring to body.



1. Rivet location

4. Remove lateral ring.
5. Cut Oetiker clamp securing bellows to lateral support.
6. Separate lateral support from bellows.

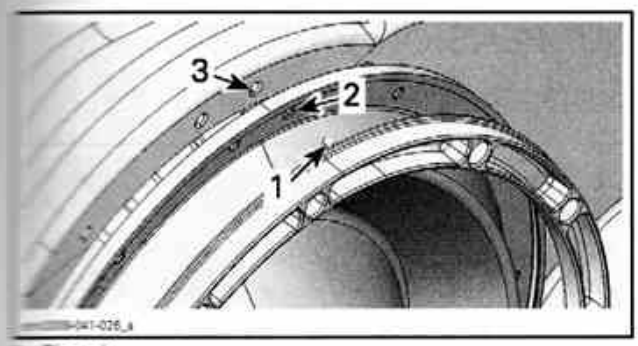
Lateral Bellows Installation

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

Apply soapy water solution on bellows opening and insert the lateral support.

Index suspension shaft with the lateral support. The lateral support can be inserted in one position only.

Install the retaining ring. Align the ring pin with holes in bellows and body.



1. Ring pin
2. Bellows alignment hole
3. Body hole

Install new rivets. If the head of rivet tool cannot be inserted in ring opening, use the sleeve (P/N 707 000 181) to offset the rivet tool and well lean the rivet head against ring.

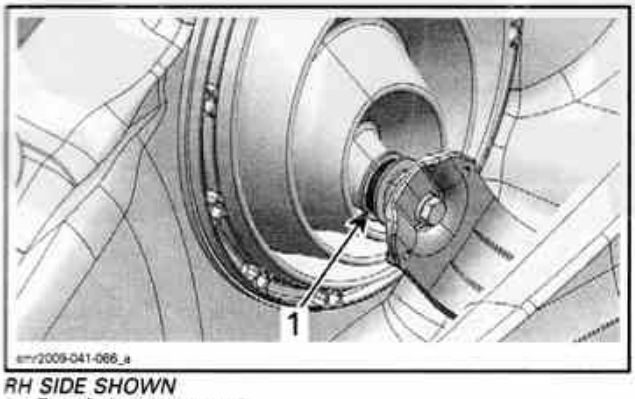
Index lateral supports with the front suspension shaft ends. Lateral supports can be inserted in one position only.

Install **new** lateral support screw.

Tighten lateral support screw to specification.

TORQUE	
Lateral support screw	48 N•m (35 lbf•ft)

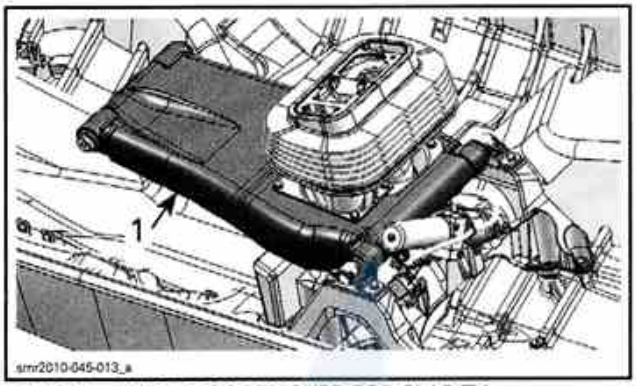
Install a new Oetiker clamp. Position the ear of clamp rearwards.



RH SIDE SHOWN
1. *Ear of clamp rearwards*

FRONT SUSPENSION ARM

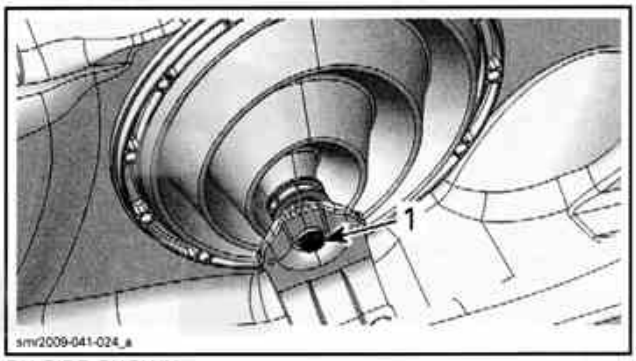
Front Suspension Arm Location



TYPICAL - FIXED DECK REMOVED FOR CLARITY
1. *Front suspension arm*

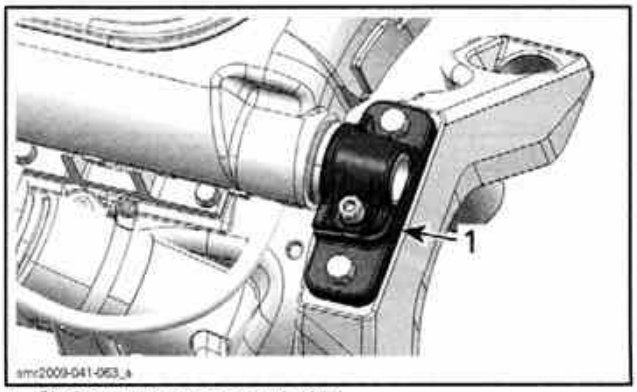
Front Suspension Arm Removal

1. Remove the moving deck. Refer to *BODY* subsection.
2. Remove the engine. Refer to *ENGINE REMOVAL AND INSTALLATION* subsection.
3. Remove both lateral support screws.



RH SIDE SHOWN
1. *Lateral support screw*

4. Detach lateral supports from suspension arm shaft.
5. Remove screws securing both shaft supports to suspension base.



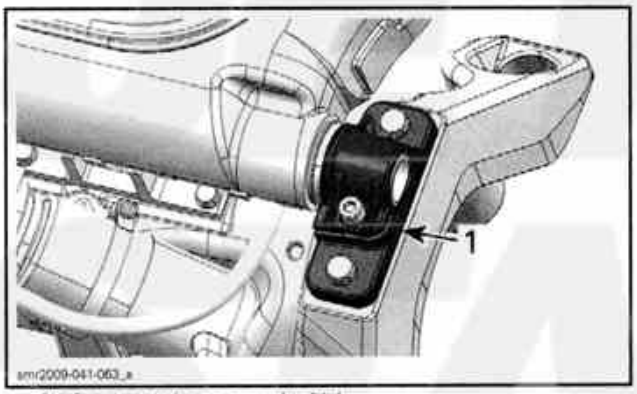
1. Shaft support (one on each side)

6. Move front suspension arm rearward to remove it.

Front Suspension Arm Installation

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

If a shaft support has been loosened from the suspension arm shaft, see *SUSPENSION ARM SHAFTS* for proper installation procedure.



1. Shaft support (one on each side)

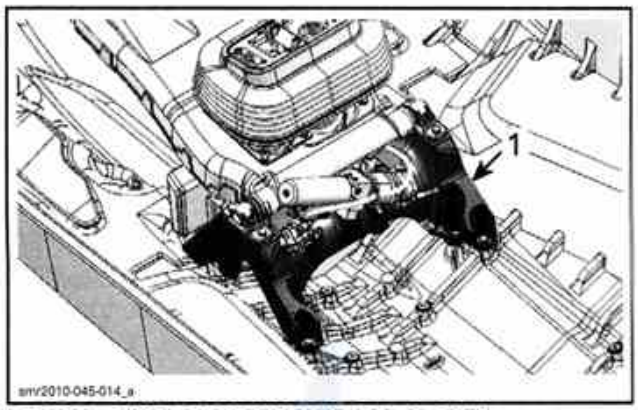
Install **NEW** shaft support screws.

Tighten shaft support screws to specification.

TORQUE	
Shaft support screws	25 N•m (18 lbf•ft)

SUSPENSION BASE

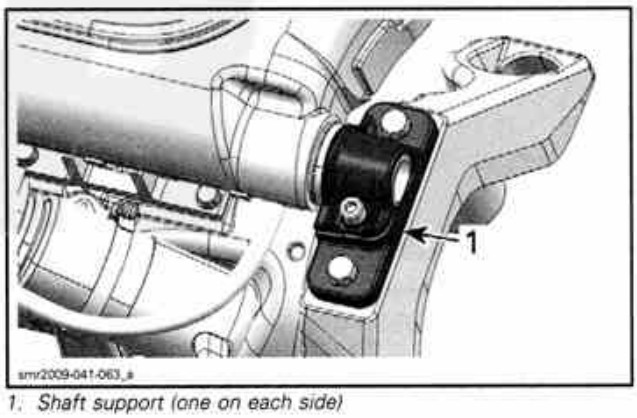
Suspension Base Location



TYPICAL - FIXED DECK REMOVED FOR CLARITY
1. Suspension base

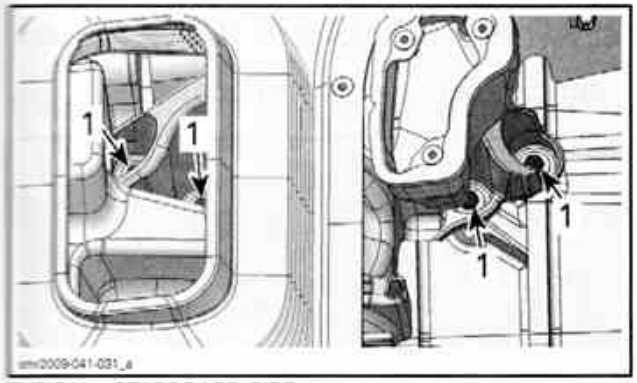
Suspension Base Removal

1. Refer to the appropriate procedures and remove the following parts:
   - Moving deck
   - Engine
   - Shock absorber and spring.
2. Using a marker, **trace the shape of suspension base at the bottom of the hull** to reposition it at the same place.
3. Remove screws securing both shaft supports to suspension base.

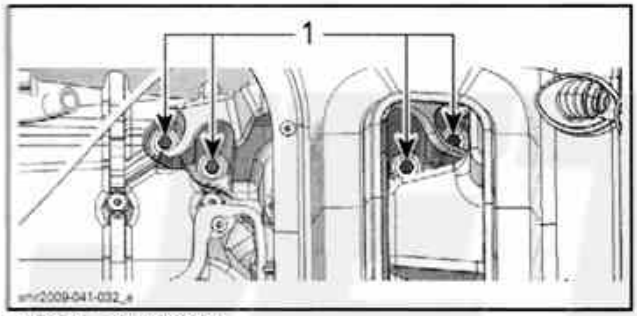


1. Shaft support (one on each side)

4. Remove and discard suspension base screws.

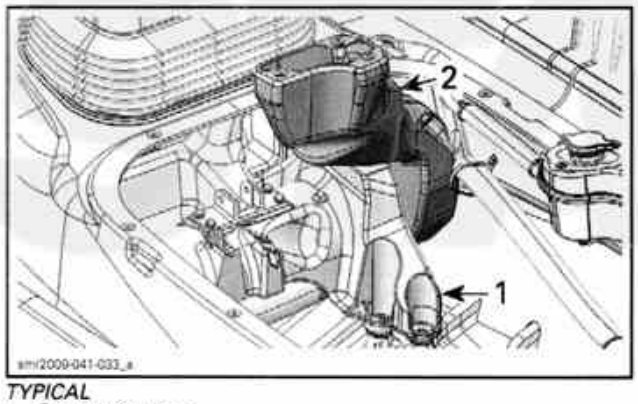


TYPICAL - STARBOARD SIDE
1. Suspension base screws



TYPICAL - PORT SIDE
1. Suspension base screws

5. Remove suspension base with the rear vent duct.



TYPICAL
1. Suspension base
2. Rear vent duct

Suspension Base Installation

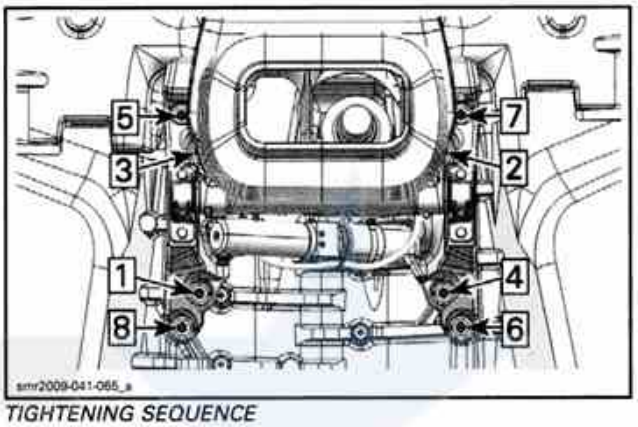
The installation is the reverse of the removal procedure. However, pay attention to the following.

1. Install the suspension base.
   1.1 Position the base in accordance with the reference marks previously drawn at the bottom of the hull.

   NOTE: If no marks are available, see *SUSPENSION BASE INSTALLATION WITHOUT REFERENCE MARKS.*

   1.2 Install **NEW** suspension base screws.
   1.3 Tighten suspension base screws to specification as per the following sequence.

TORQUE	
Suspension base screws	25 N•m (18 lbf•ft)



TIGHTENING SEQUENCE

2. Install **NEW** shaft support screws to secure front suspension arm.
3. Tighten shaft support screws to specification.

TORQUE	
Shaft support screws	25 N•m (18 lbf•ft)

4. Refer to the appropriate procedures and install all other removed parts.
   - Shock absorber and spring
   - Engine
   - Moving deck.

Suspension Base Installation without Reference Marks

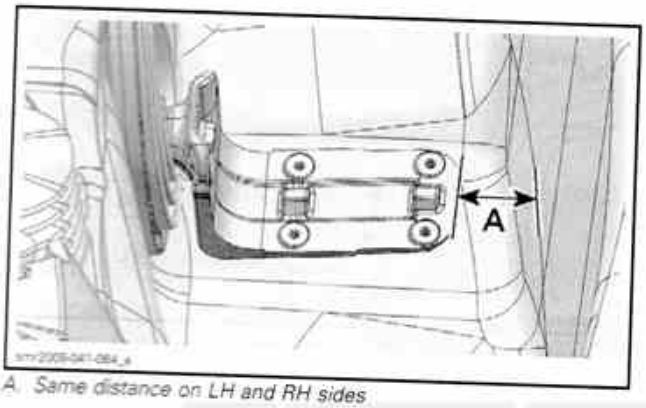
1. Install the suspension base on watercraft using **NEW** screws. Do not tighten them yet.
2. Install **NEW** shaft support screws to secure front suspension arm.
3. Tighten shaft support screws to specification.

TORQUE	
Shaft support screws	25 N•m (18 lbf•ft)

4. Install lateral supports.
   4.1 Index lateral supports with the front suspension shaft ends. Lateral supports can be inserted in one position only.
   4.2 Tighten lateral support screws to specification.

TORQUE	
Lateral support screws	48 N•m (35 lbf•ft)

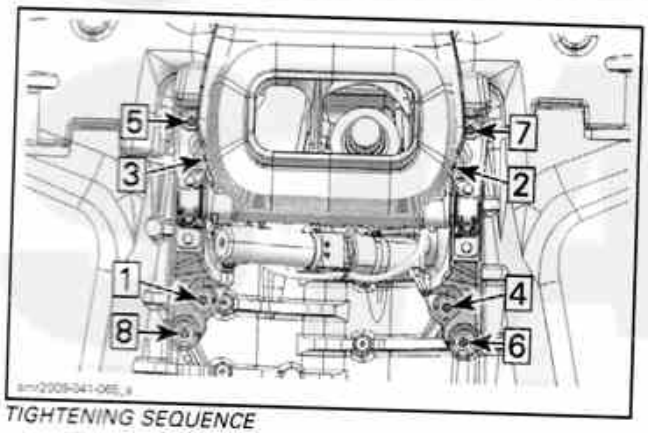
5. Align suspension base on watercraft.
   5.1 On both sides, measure the distance between the end of lateral support and fixed deck.



A. Same distance on LH and RH sides

   5.2 If required, move suspension base until both distances are equal.
   5.3 Tighten suspension base screws to specification as per the following sequence.

TORQUE	
Suspension base screws	25 N•m (18 lbf•ft)

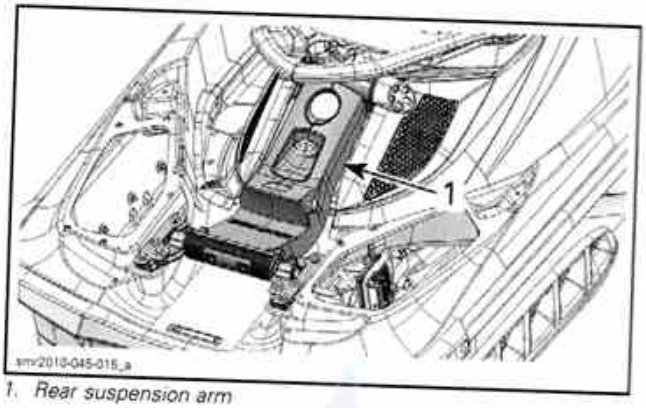


TIGHTENING SEQUENCE

6. Refer to the appropriate procedures and install all other removed parts.
   - Shock absorber and spring
   - Engine
   - Moving deck.

REAR SUSPENSION ARM

Rear Suspension Arm Location



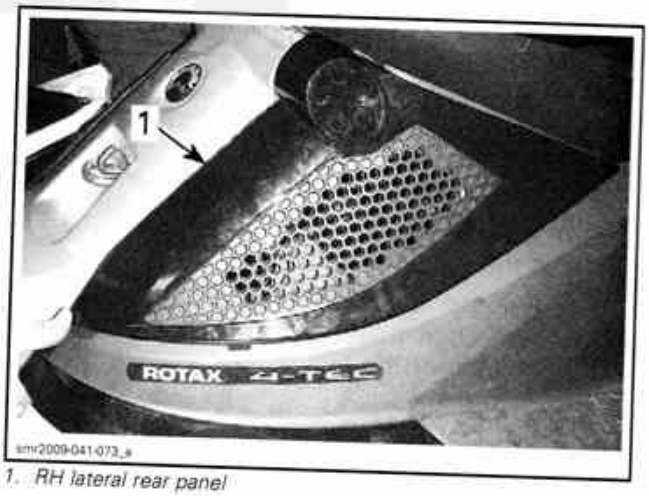
1. Rear suspension arm

Rear Suspension Arm Removal

1. Open the boarding platform.
2. Remove bolts securing both rear suspension arm covers.

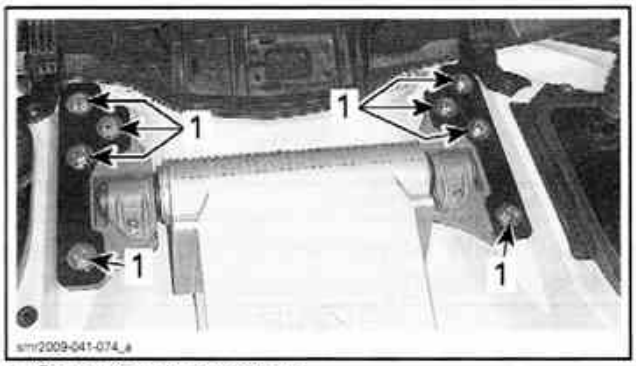
1. Rear suspension arm cover

3. Unclip and remove both lateral rear panels.



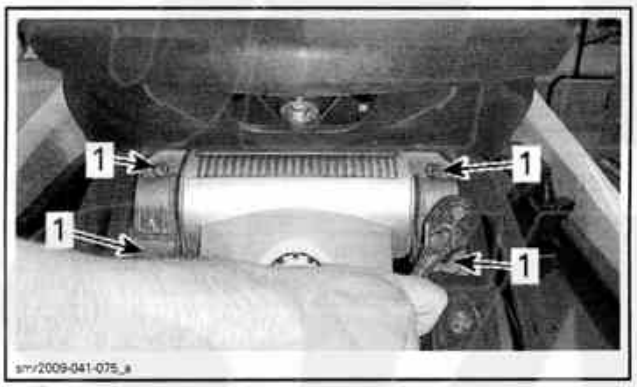
1. RH lateral rear panel

4. Mark position of rear suspension arm brackets for proper reinstallation.
5. Remove and discard screws securing rear suspension arm to fixed deck.



1. Rear suspension arm screws

6. Remove and discard screws securing the top of rear suspension arm.



1. Retaining screws

7. Remove the rear suspension arm from watercraft.

Rear Suspension Arm Installation

1. Using **NEW** screws, install the top of rear suspension arm.

NOTE: If the upper arm shaft or one of its arm shaft support has been removed or loosened, refer to *SUSPENSION ARM SHAFTS* for proper installation procedure.

2. Tighten upper arm support screws to specification.

TORQUE	
Upper arm support screws	25 N•m (18 lbf•ft)

3. Carefully lower and secure the rear suspension arm to the fixed deck.
   3.1 Position the rear suspension arm brackets in accordance with the reference marks previously draw on fixed deck.

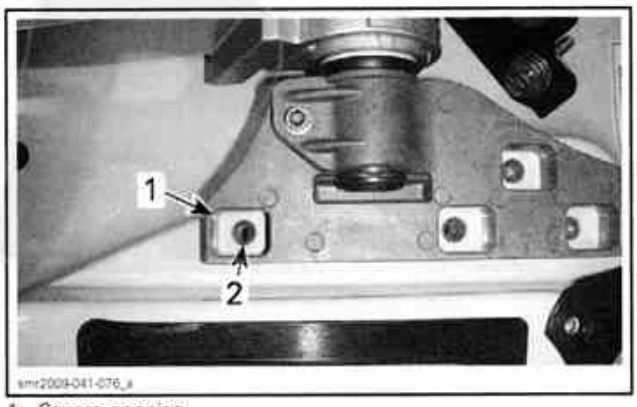
   NOTICE If no mark was traced, refer to *REAR SUSPENSION ARM INSTALLATION WITHOUT REFERENCE MARKS* for proper procedure to install and align the rear suspension arm.

   3.2 Install **NEW** screws to secure rear suspension arm brackets.
   3.3 Tighten rear suspension arm screws to specification.

TORQUE	
Rear suspension arm screws	25 N•m (18 lbf•ft)

Rear Suspension Arm Installation Without Reference Marks

1. Lower the rear suspension arm on fixed deck.
2. Position the square openings of rear suspension arm brackets so that the threaded inserts in fixed deck are centered.



1. Square opening
2. Threaded insert

3. On each bracket, install the retaining plate and one screw.
4. Install a weight of 90 kg (200 lb) on vehicle to lower the moving deck.
5. Check moving deck position in comparison to fixed deck.
   5.1 Check the gap between moving deck wipers and fixed deck. It should be the same on both sides.
   5.2 Check front and rear gaps. Moving deck should be able to move without having contact with the fixed deck.

5.3 Reposition rear suspension arm brackets on fixed deck until positioning of moving deck is satisfactory.

6. Secure the rear suspension arm to the fixed deck.
   6.1 Install NEW screws to secure rear suspension arm brackets.
   6.2 Remove and replace screws installed during alignment.
   6.3 Tighten rear suspension arm screws to specification.

TORQUE	
Rear suspension arm screws	25 N•m (18 lbf•ft)

SUSPENSION ARM SHAFTS

Removal of Front Suspension Arm Shaft

1. Remove the *FRONT SUSPENSION ARM*, see procedure in this subsection.
2. Remove and discard socket screws securing supports to shaft.
3. Separate arm shaft supports from arm shaft.

Installation of Front Suspension Arm Shaft

1. Insert shaft in the suspension arm.
2. Install a support on each end of shaft.
3. Secure the LH arm shaft support to suspension base using NEW support screws.

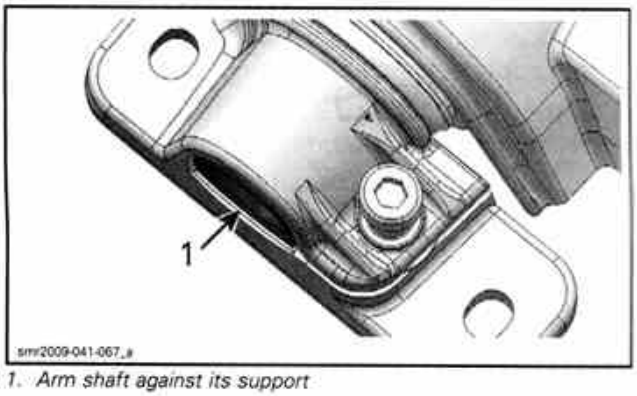
NOTE: Make sure to insert the support pin into suspension base hole.

4. Tighten the LH support screws to specification.

TORQUE	
Shaft support screws	25 N•m (18 lbf•ft)

5. Apply a force on the RH support to move it on the left side.

NOTICE Make sure arm shaft is fully inserted, it must lean against the arm shaft support.



1. Arm shaft against its support

6. Install NEW support screws and tighten them to specification.

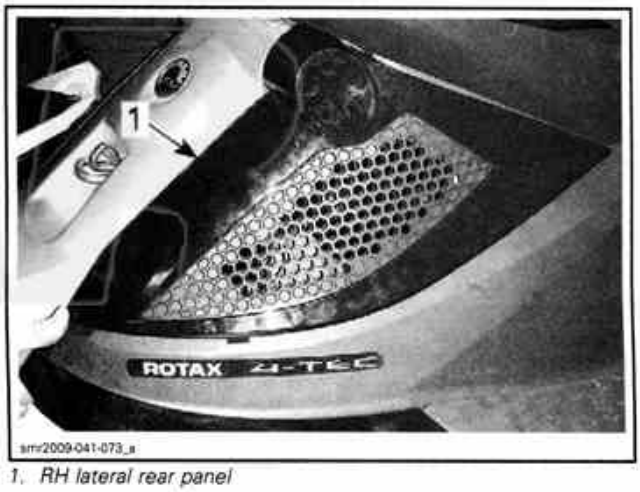
TORQUE	
Shaft support screws	25 N•m (18 lbf•ft)

7. Secure both supports to shaft using NEW socket screws.
8. Tighten shaft screws to specification.

TORQUE	
Shaft screws	12 N•m (106 lbf•**in**)

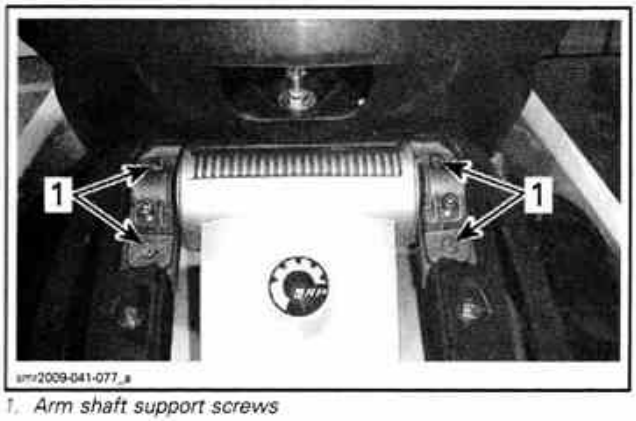
Removal of Rear Suspension Arm Upper Shaft

1. Unclip and remove both lateral rear panels.



1. RH lateral rear panel

2. Remove arm shaft support screws.



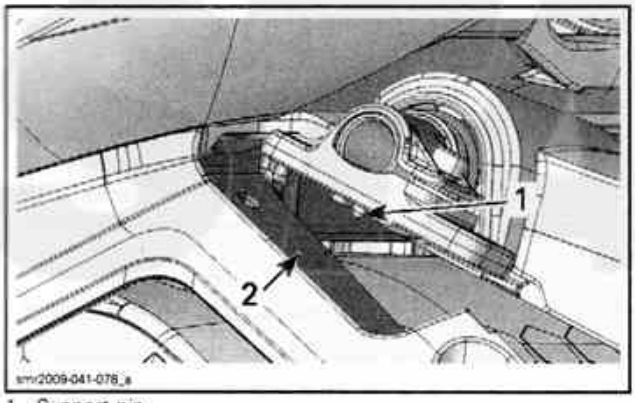
1. Arm shaft support screws

3. Remove and discard socket screws securing supports to arm shaft.
4. Separate arm shaft support from arm shaft.

Installation of Rear Suspension Arm Upper Shaft

1. Insert shaft in the rear arm.
2. Install a support on each end of shaft.
3. Secure the LH support to rear arm holder using NEW support screws.

NOTE: Make sure to insert the support pin into holder hole.



1. Support pin
2. Holder hole

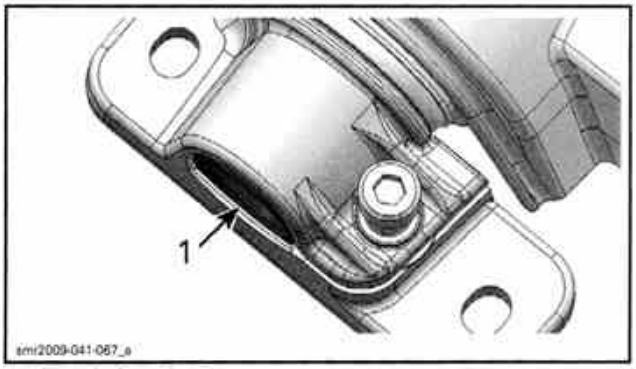
4. Tighten the LH support screws to specification.

TORQUE	
Upper arm support screws	25 N•m (18 lbf•ft)

5. Apply a force on the RH support to move it to the left side.

NOTE: A bar clamp can be used to compress both supports together.

NOTICE **Make sure arm shaft is fully inserted, it must flush against the arm shaft support.**



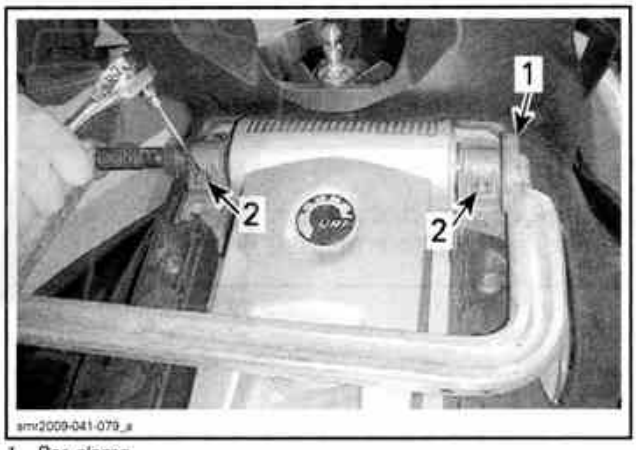
1. Arm shaft against its support

6. Install NEW support screws and tighten them to specification.

TORQUE	
Upper arm support screws	25 N•m (18 lbf•ft)

7. Secure both supports to shaft using NEW socket screws.
8. Tighten upper shaft screws to specification.

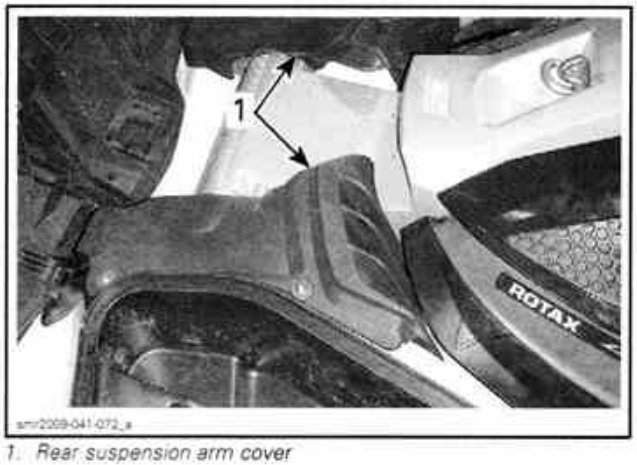
TORQUE	
Upper shaft screws	12 N•m (106 lbf•**in**)



1. Bar clamp
2. New socket screws

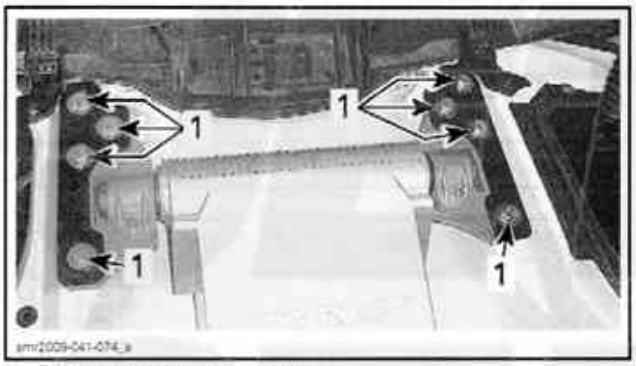
Removal of Rear Suspension Arm Lower Shaft

1. Open the boarding platform.
2. Remove bolts securing both rear suspension arm covers.



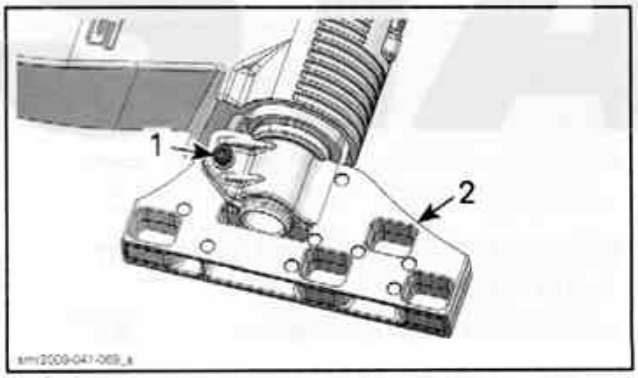
1. *Rear suspension arm cover*

3. Mark position of rear suspension arm brackets for proper reinstallation.
4. Remove and discard screws securing rear suspension arm to fixed deck.



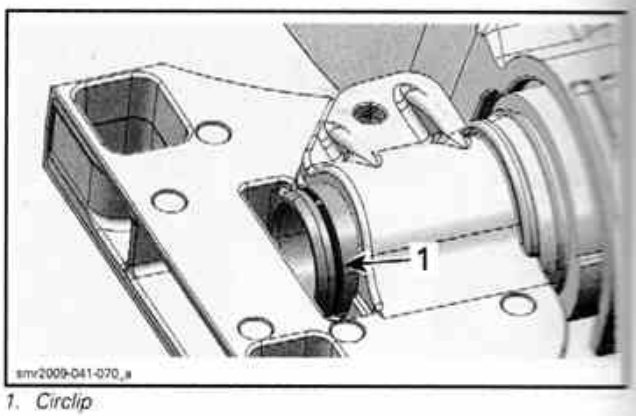
1. *Rear suspension arm screws*

5. Remove and discard socket screws securing rear brackets to arm shaft ends.



1. *Socket screw*
2. *LH rear bracket*

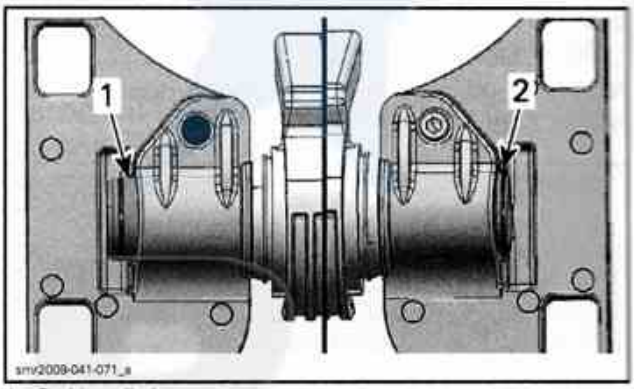
6. Press one rear bracket against the suspension arm bushing and remove the circlip. Repeat for the other side.



1. *Circlip*

Installation of Rear Suspension Arm Lower Shaft

1. When reassembly the rear bracket on shaft end, press bracket on bushing to install the circlip.
2. When both brackets are installed on shaft, pull brackets outside to position circlips against brackets.



1. *Bad installation*
2. *Good installation*

3. Lower the rear suspension arm on fixed deck.
4. Tighten **NEW** socket screws to specification.

TORQUE	
Lower shaft screws	10 N•m (89 lbf•**in**)

5. Refer to *REAR ARM* for reinstallation.

SUSPENSION (iS)

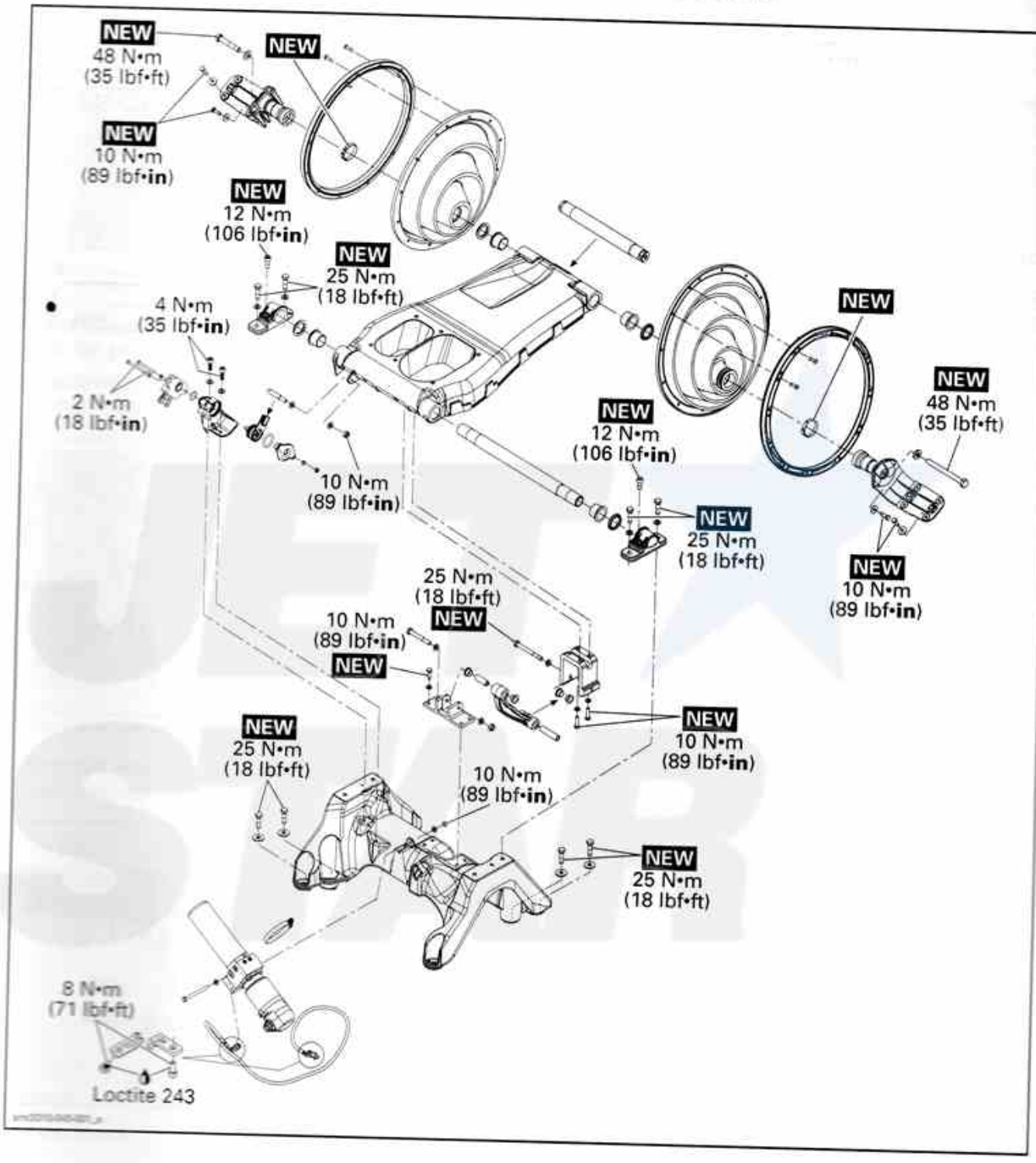
SERVICE TOOLS

Description	Part Number	Page
FLUKE 115 MULTIMETER	529 035 868	582–585, 587
MAGNETO HARNESS 6 PINS	295 000 136	582
SUPERTANIUM DRILL BIT 3/16"	529 031 800	594

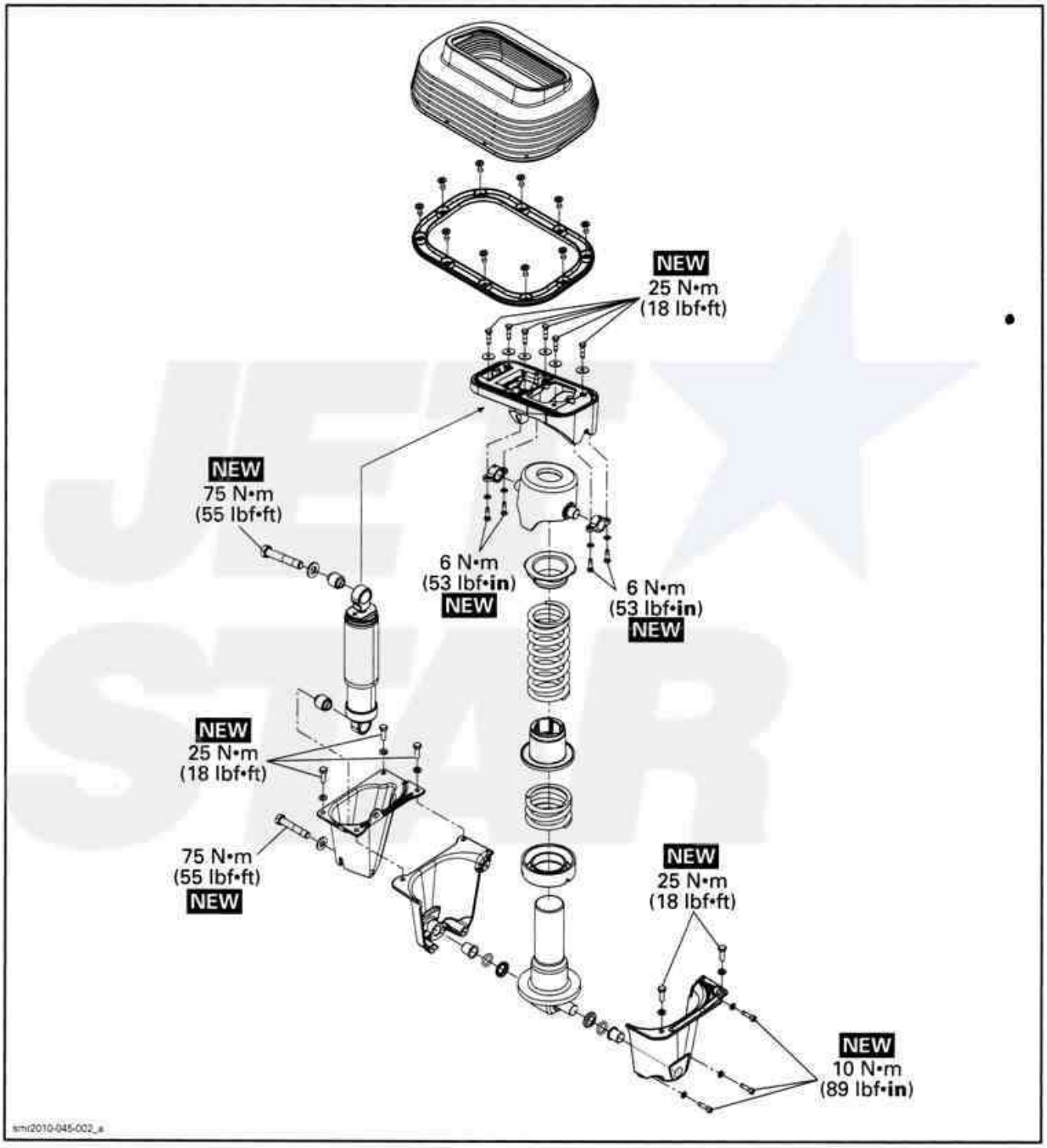
SERVICE PRODUCTS

Description	Part Number	Page
DIELECTRIC GREASE	293 550 004	576
LOCTITE 243 (BLUE)	293 800 060	591, 593

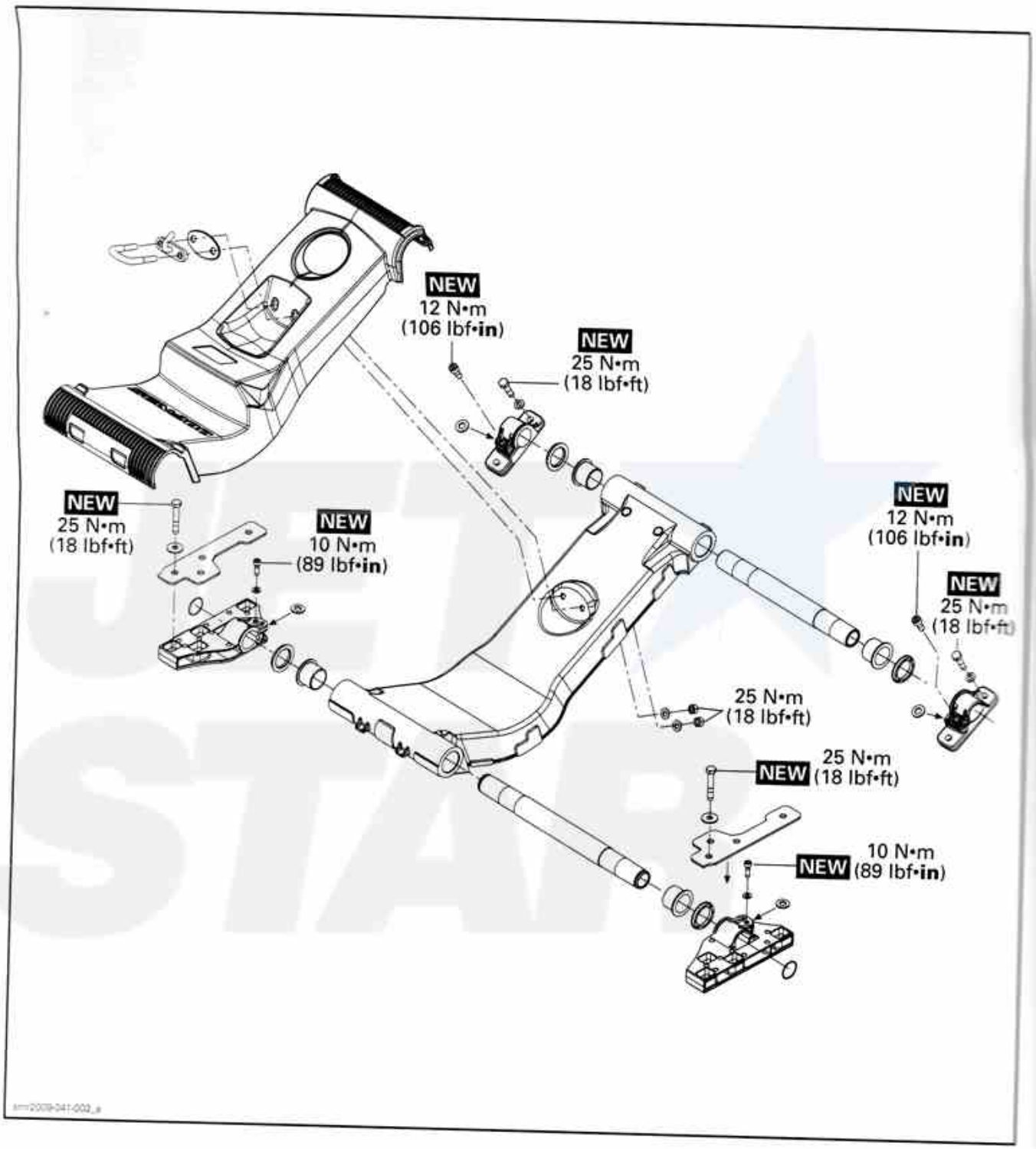
FRONT SUSPENSION ARM AND HYDRAULIC PUMP



ACTUATOR AND SHOCK ABSORBER



REAR SUSPENSION ARM



GENERAL

NOTE: For a complete overview of the electrical system, refer to *POWER DISTRIBUTION AND GROUNDS* subsection.

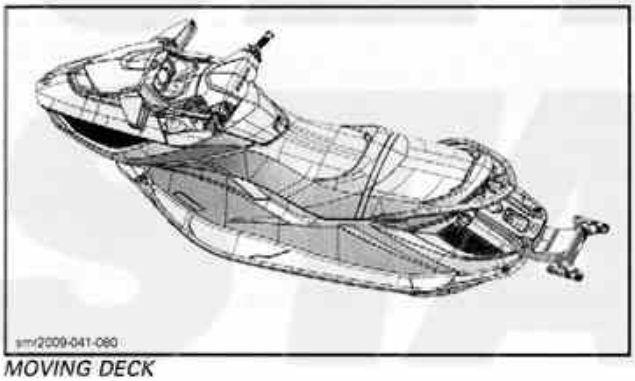
It is highly recommended to disconnect the battery when replacing any electric or electronic component.

⚠ WARNING

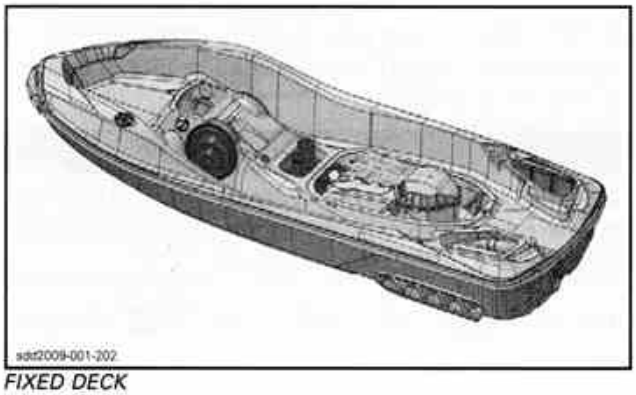
Always disconnect battery exactly in the specified order, BLACK (-) cable first, RED (+) cable last. Always reconnect BLACK (-) cable last. Do not place tools on battery.

SYSTEM DESCRIPTION (COMPONENTS)

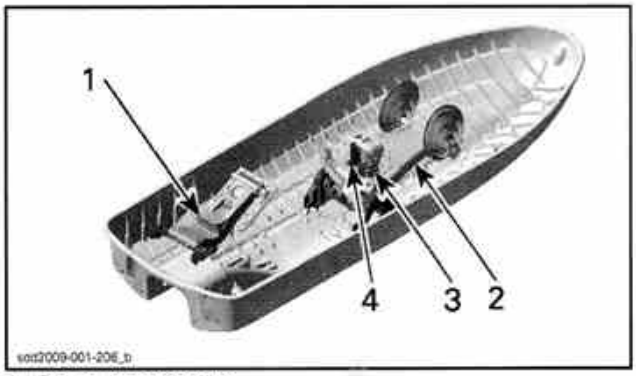
The intelligent suspension is a mechanical system composed of two springs and one shock absorber installed in the fixed deck which connects to the moving deck to isolate the riders from the rough water.



MOVING DECK

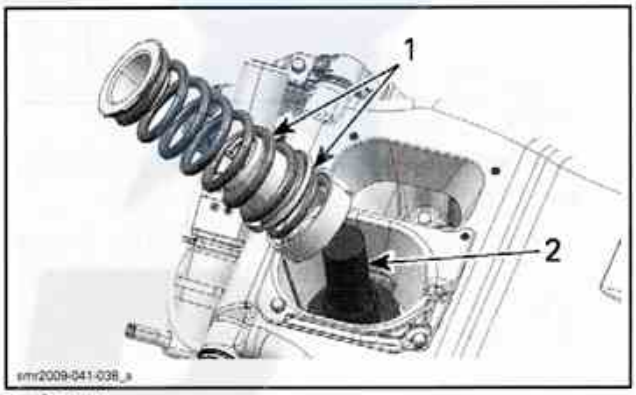


FIXED DECK



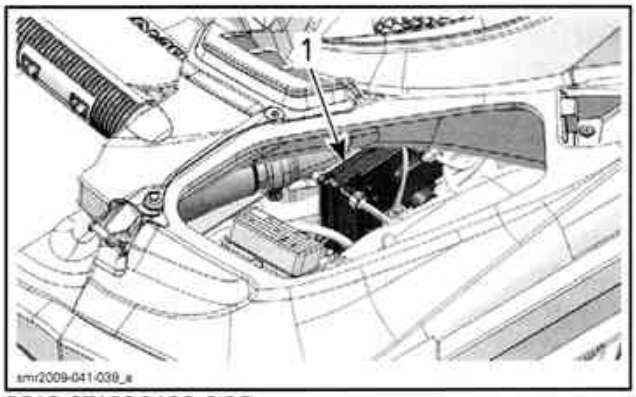
1. Rear suspension arm
2. Front suspension arm
3. Springs
4. Shock absorber

An actuator is mounted underneath the springs to control the spring preload and therefore the suspension height.



1. Springs
2. Actuator

The iS module controls the electric motor of the hydraulic pump to adjust the actuator height. It also sets the suspension height according to the active mode of operation and input signals.



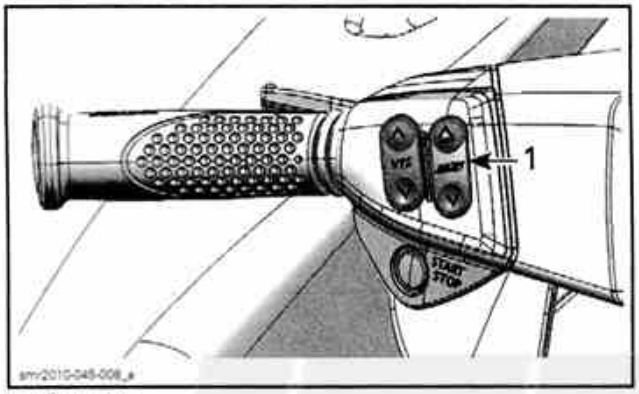
REAR STARBOARD SIDE
1. iS module

iS Module

The iS module communicates via CAN protocol with the multifunction gauge.

The iS module receives information from the multifunction gauge and a comparison is made with the input from the suspension position sensor. If the suspension is not in the proper position, the iS module will send an output signal to the hydraulic pump to either raise or lower the suspension to pre-programmed positions.

iS Button



1. iS buttons

The iS button contain a series of 4 diodes for the UP and DOWN arrow switches.

The center wire to the switches (pin C), is common for iS button and VTS button. The other two wires (pins A and B), act as signal wires for each set of switches to the gauge.

Each diode (in circuit) drops a nominal 0.6 Vdc when conducting electricity. If the circuit current passes through all four diodes (if the iS switch is open), a drop of 2.4 Vdc would be measured across the 4 diodes (pin B to pin C). This 2.4 Vdc at pin B tells the gauge the iS switch is open.

If the iS UP switch is pressed, 2 diodes are bypassed. The remaining two diodes in the circuit drop 1.2 Vdc (at pin B).

If the iS DOWN switch is pressed, 1 diode is bypassed. The remaining three diodes in the circuit drop 1.8 Vdc (at pin B).

The gauge senses these voltages through pin 14 of its connector, and interprets them as signals that tell it which switch is activated.

The command generated by the closure of a switch is transmitted to the iS module through CAN .

Suspension Position Sensor

The suspension position sensor is a potentiometer that sends a signal to the iS module which is proportional to the front suspension arm angle.

SYSTEM OPERATION

The occupants sit on what is known as the moving deck. When the suspension system is active, the moving deck is usually in an "up" position. This means the moving deck is raised above the fixed deck sufficiently for the suspension system to absorb the up and down movement of the watercraft as it travels through the water.

The iS module is programmed with various parameters that it compares to the input signals and information it obtains through the CAN bus from the other electronic modules.

The suspension can be set to the AUTO or MANUAL mode.

In AUTO mode, suspension height is factory preset and the iS module constantly monitors the stroke of the suspension and it automatically readjusts suspension height for changing water conditions and passenger load.

In MANUAL mode, the driver may choose to set the suspension higher or lower by using the UP and DOWN s on the handlebar.

The iS system incorporates a function known as DOCK MODE. When activated manually or automatically, DOCK MODE moves the suspension down to lower the center of gravity of the watercraft. This function is useful when transporting the watercraft, operating at slow speed or when O.T.A.S. is activated as it reduces the possibility of capsizing.

Suspension Adjustment

The suspension height (up position) is factory calibrated to a preset height for most riding conditions while cruising in AUTO SUSPENSION MODE. The factory calibrated height is the same regardless of the number of passengers or weight on the moving deck.

⚠ WARNING

Do not overload the watercraft or take on more passengers than designated. Refer to *SPECIFICATIONS* for details.

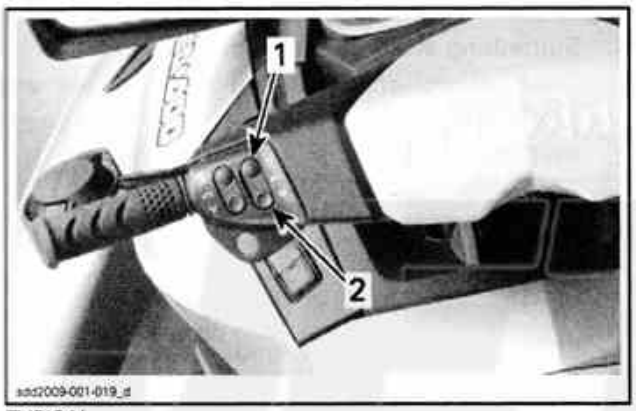
The iS button is primarily used to manually fine-tune the suspension height to operator preference.

Using the iS button to change the suspension height overrides the AUTO SUSPENSION MODE function. The iS system switches to MANUAL SUSPENSION MODE and the operator can select a different suspension height as preferred in accordance with riding style and riding conditions.

Suspension height and mode of operation is indicated in the information center (gauge) digital screen.

Manually Adjusting Ride Height

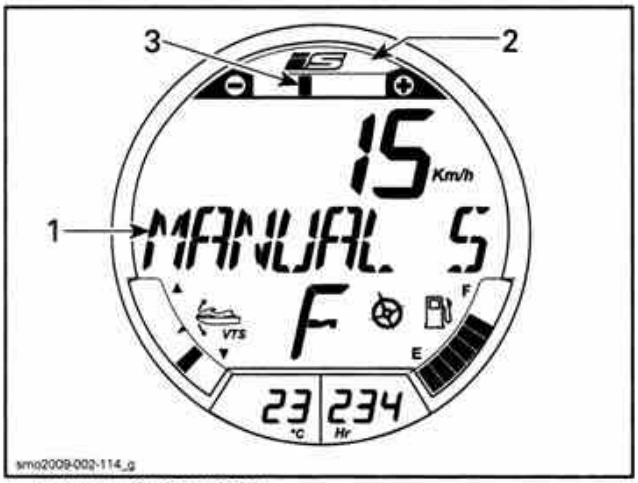
Press the iS UP or DOWN arrow button once to move the suspension to the next height increment, or press and hold the button until the desired ride height is obtained.



TYPICAL
1. *iS UP arrow button*
2. *iS DOWN arrow button*

The following indications of manual suspension mode can be observed in the digital screen of the information center:

- A scrolling message in the digital screen that states MANUAL SUSPENSION.
- The AUTO indication in the iS display will disappear.
- The suspension position indicator will indicate the relative suspension height (only one segment of the indicator will be on).



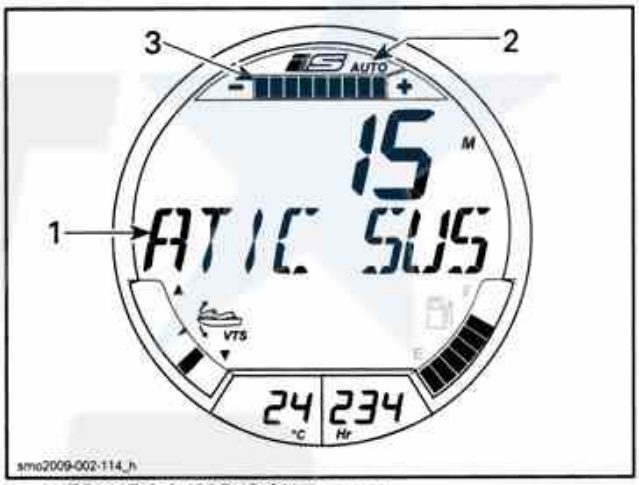
1. *MANUAL SUSPENSION message*
2. *AUTO mode indicator OFF*
3. *Relative suspension position indication*

Selecting Auto Suspension Mode

To revert back to AUTO selection mode, double click the iS UP arrow button.

The following indications of automatic suspension mode can be observed in the digital screen of the information center:

- A scrolling message in the digital screen stating AUTOMATIC SUSPENSION.
- The AUTO indication in the iS display will appear.
- All segments of the suspension position indicator will be on.



1. *AUTOMATIC SUSPENSION message*
2. *AUTO mode indicator ON*
3. *All segments of suspension position indicator ON*

TROUBLESHOOTING

DIAGNOSTIC TIPS

It is important to determine first if the problem is electrical or mechanical related. If you hear the hydraulic motor running when pressing the UP or DOWN suspension button, check for related mechanical problem.

NOTE: It is a good practice to check for fault codes using B.U.D.S. software as a first troubleshooting step. If a problem occurs with the suspension, several fault codes pertaining to the suspension position sensor may be generated.

IMPORTANT: When troubleshooting an electrical system fault, check battery condition, cables and connections first.

Electrical System Activation

1. Press the START/STOP button.

NOTE: Pressing the START/STOP button without the D.E.S.S. key installed on its post will turn on electrical power without starting the engine; the information center will cycle through a self-test function and shut off its display after a few seconds. However, the electrical system will stay powered up for approximately three minutes after the START/STOP button was depressed.

2. Install D.E.S.S. key to activate ECM and the information center when testing procedures require the device or system to be supplied with electrical power.

NOTE: When using B.U.D.S., **briefly** press the START/STOP button to initiate back the communication after the electrical system has shut off.

Circuit Testing

Check the related-circuit fuse condition with a fuse tester or test light (relying solely on a visual inspection could lead to an incorrect conclusion).

Electrical Connection Inspection

When replacing an electric or electronic component, always check electrical connections. Make sure they are tight, make good contact, and are corrosion-free. Dirty, loose or corroded contacts are poor conductors and are often the source of a system or component malfunction.

Pay particular attention to ensure that pins are not bent or pushed out of their connectors.

Ensure all wire terminals are properly crimped on wires, and connector housings are properly fastened.

Check for signs of moisture, corrosion or dullness. Clean pins properly and coat them with DIELECTRIC GREASE (P/N 293 550 004) or other appropriate lubricant (except if otherwise specified) when reassembling them.

Pay attention to the ground wire connections. Make sure they are clean, tight and free of corrosion.

DIAGNOSTIC GUIDELINES

The following is provided to help in diagnosing the probable source of troubles. It is a guideline and it should not be assumed to list all possible problems.

SUSPENSION DOES NOT MOVE

1. **Check gauge display for iS informations.**
   - *No information, refer to the diagnostic flow chart (electrical) in this subsection.*
   - *iS information appears, refer to the diagnostic flow chart (hydraulic/mechanical) in this subsection.*

SUSPENSION DOES NOT LOWER IN DOCK MODE POSITION

1. **Something stuck under moving deck.**
   - *Remove object(s) between moving deck and fixed deck.*
2. **PWC is not level.**
   - *Place PWC level*
3. **Hydraulic fluid level too low.**
   - *Refill hydraulic pump reservoir and check for leaks.*
4. **Shock absorber is damaged.**
   - *Replace shock absorber.*
5. **Leak in hydraulic circuit.**
   - *Repair or replace defective part(s).*
6. **Faulty suspension position sensor.**
   - *Test sensor and replace as required.*
7. **Actuator is damaged.**
   - *Replace the actuator.*
8. **Hydraulic pump cannot build enough pressure.**
   - *Replace hydraulic pump.*

SUSPENSION MOVES ERRATICALLY

1. **Defective shock absorber.**
   - *Replace the shock absorber.*
2. **Broken spring(s).**
   - *Replace spring(s).*

SUSPENSION NOISE (DURING A TURN)

1. **Front or rear suspension arm shaft supports position.**
   - *Supports must be flushe against both ends of shaft. Reposition shaft in its supports.*
2. **Worn arm shaft bushings.**
   - *Check front and rear arm shaft bushings condition and replace as required.*
3. **Snap rings on both sides of the rear lower arm shaft are not properly positioned.**
   - *Reposition shaft in its supports.*

SUSPENSION NOISE (FRONT OF SEAT)

1. Holder retaining screws are loose.
   - *Tighten shock absorber and actuator holder screws to recommended torque.*
2. Shock absorber screws are loose.
   - *Tighten shock absorber screws to recommended torque.*
3. Link under actuator holder loosened or not installed.
   - *Install link properly.*
   - *Tighten bolts to recommended torque.*

SUSPENSION IS LOWER THAN THE DOCK MODE POSITION

1. Spring (s) out of specification or broken.
   - *Replace the defective spring(s).*
2. Bump stops damaged or worn.
   - *Replace both bump stops.*

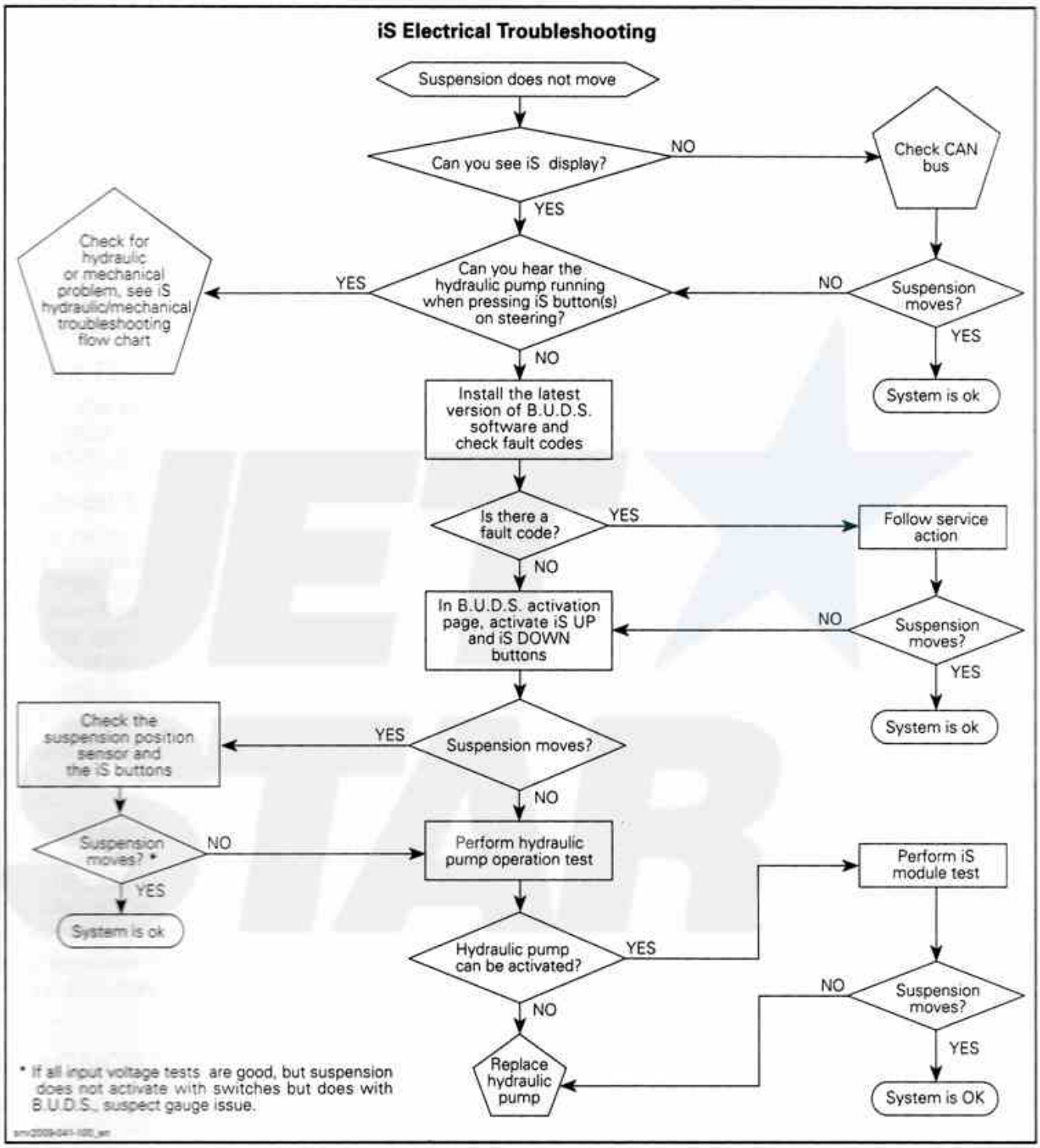
SUSPENSION BOTTOMS HARD

1. Spring(s) out of specification or broken.
   - *Replace the defective spring(s).*
2. Shock absorber is damaged.
   - *Check shock absorber resistance. Replace shock absorber.*
3. Bump stops damaged or worn.
   - *Replace both bump stops.*

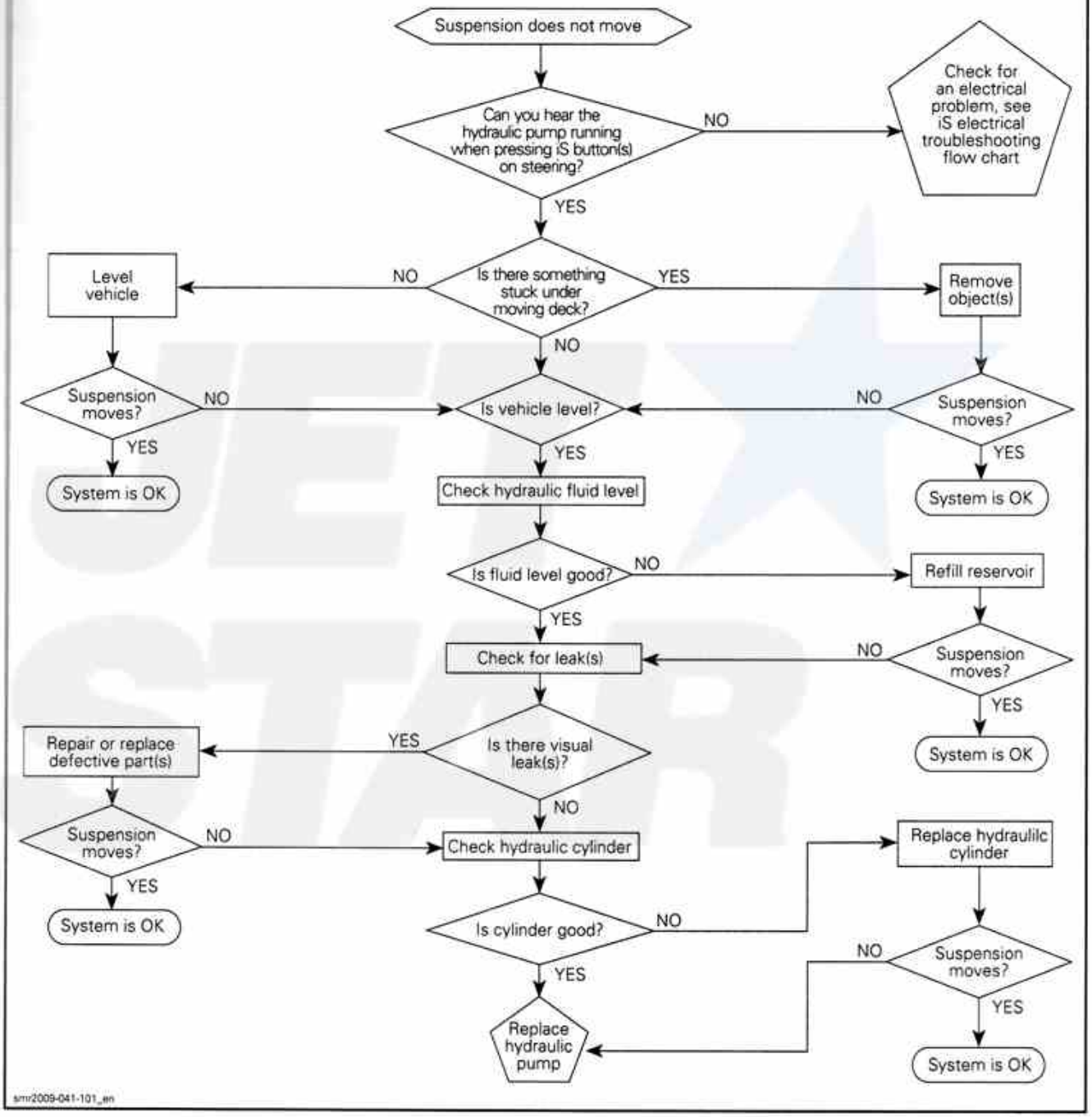
SUSPENSION QUIT WORKING BUT MAY OPERATE MOMENTARILY AFTER RESTARTING THE ENGINE

1. Hydraulic pump current draw is too high.
   - *Check hydraulic pump.*
2. Internal problem within iS module.
   - *Replace iS module.*

DIAGNOSTIC FLOW CHARTS



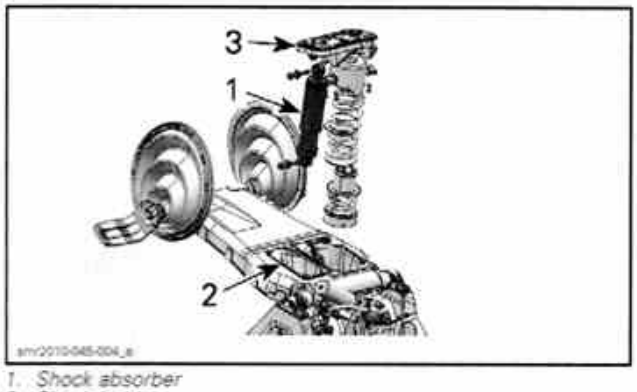
iS Hydraulic/Mechanical Troubleshooting



PROCEDURES

SHOCK ABSORBER

Shock Absorber Location

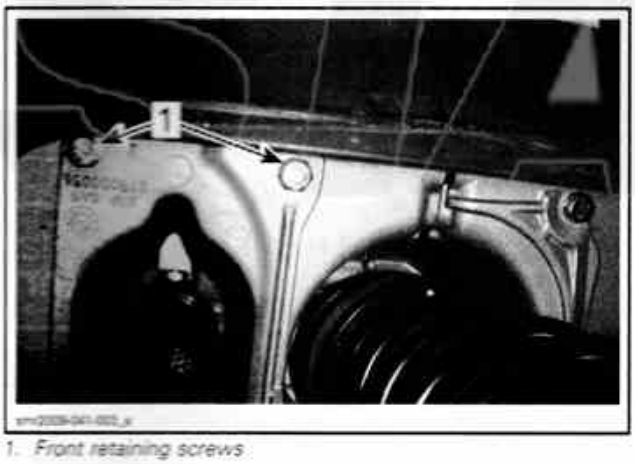


1. *Shock absorber*
2. *Shock holder*
3. *Mounting plate*

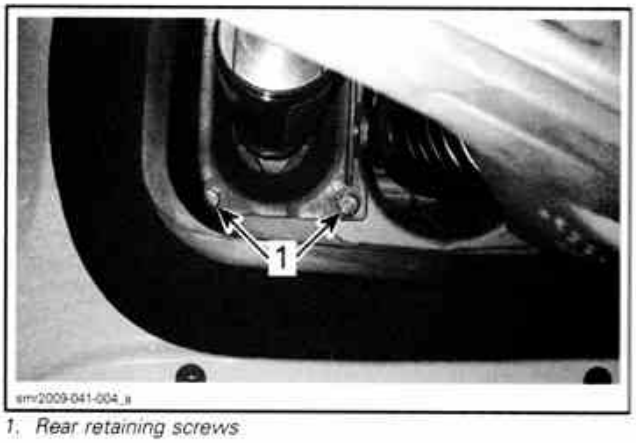
Shock Absorber Removal

1. Remove the moving deck. Refer to *BODY* subsection.
2. Remove tapes securing central bellows to mounting plate.
3. Move down central bellows to reach shock holder screws.
4. Remove and discard the four screws securing the shock holder.

NOTE: Using lateral supports, raise front arm to reach front screws.



1. *Front retaining screws*

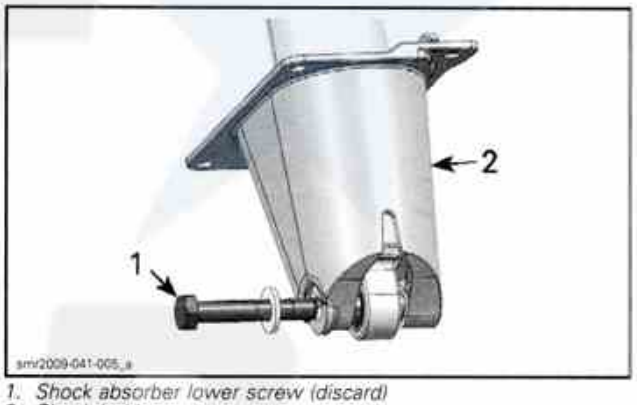


1. *Rear retaining screws*

5. Remove shock absorber with mounting plate and shock holder.

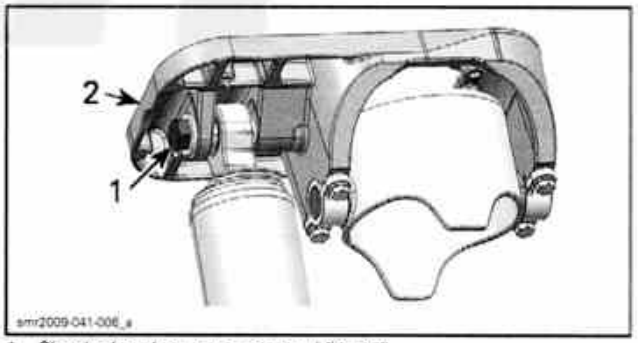
NOTE: Take care not to let the spring protector fall into the hull.

6. Remove and discard the screw securing shock absorber to shock holder.



1. *Shock absorber lower screw (discard)*
2. *Shock holder*

7. Detach the top of shock absorber from mounting plate. Discard screw.



1. *Shock absorber upper screw (discard)*
2. *Mounting plate*

Shock Absorber Inspection

NOTE: Because of gas pressure, strong resistance is felt when compressing shock.

To inspect shock operation, or if suspecting an internal leak between oil chamber and gas chamber, check shock as follows:

1. Grab the shock absorber body firmly and press the rod end against a firm surface.
   1.1 Verify the compression stroke when the rod is fully extended.
   1.2 Make sure that shock absorber rod can be completely inserted in the shock body.
2. The shock should extend unassisted. Rod must come out at a steady speed.

If any problem is detected, replace the shock absorber.

Shock Absorber Installation

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

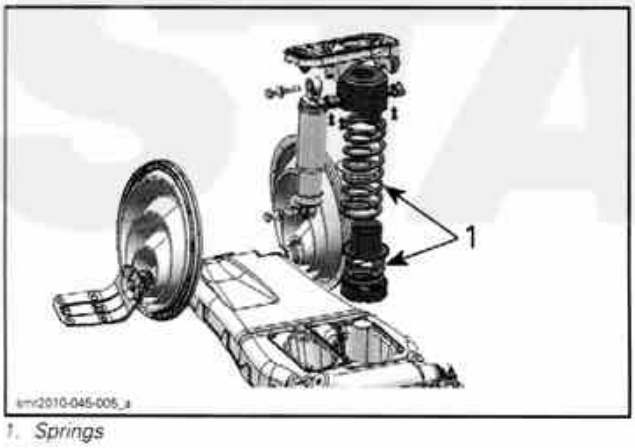
Secure the shock absorber using **NEW** screws.

Tighten screws to 75 N•m (55 lbf•ft).

Install **NEW** shock holder screws and tighten them to 25 N•m (18 lbf•ft).

SPRINGS

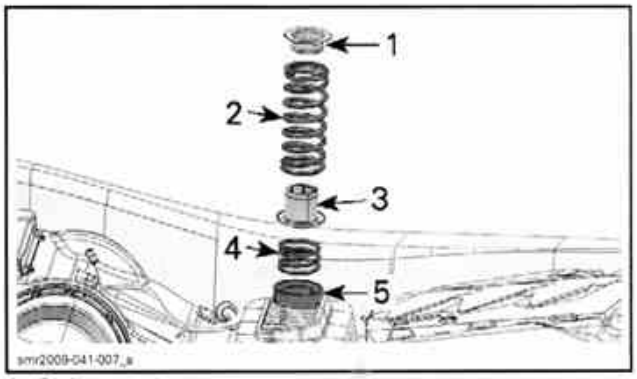
Spring Location



1. Springs

Spring Removal

1. Remove *SHOCK ABSORBER*, see procedure in this subsection.
2. Remove the spring protector, the long spring, the spacer, the short spring and the spring holder.



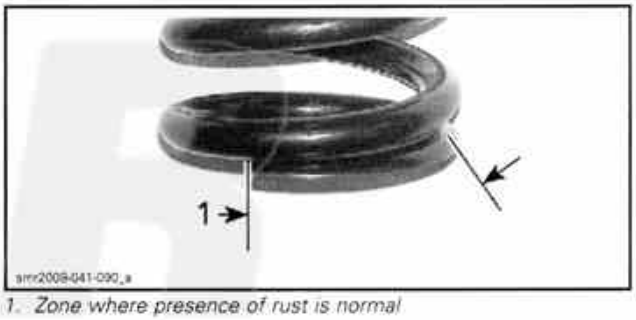
1. Spring protector
2. Long spring
3. Spacer
4. Short spring
5. Spring holder

Spring Inspection

Inspect both springs and replace if one of the following damage is detected:

- Crack in the paint
- Rust
- Other visible damage.

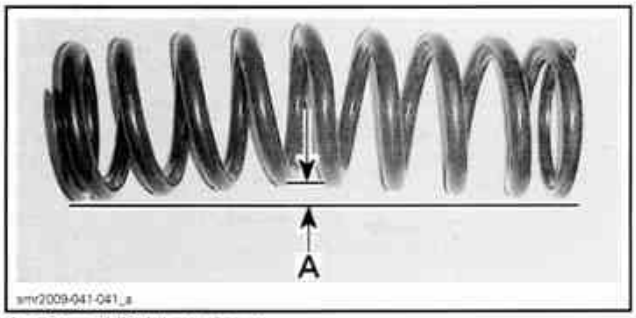
NOTE: If rust is limited to a 1/4 of the first coil, the spring should not be replaced.



1. Zone where presence of rust is normal

Check the curve line of the long spring.

LONG SPRING SHAPE	
Maximum	7 mm (9/32 in)



A. 7 mm (9/32 in) maximum

Replace spring if out of specification.

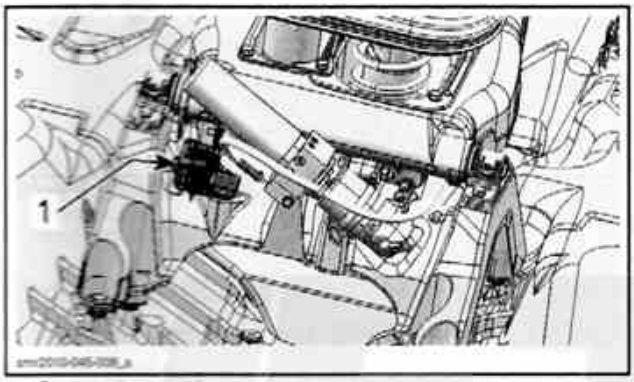
Spring Installation

The installation is the reverse of the removal procedure.

SUSPENSION POSITION SENSOR

Suspension Position Sensor Location

The suspension position sensor is located on suspension base, under the hydraulic pump reservoir.



1. Suspension position sensor

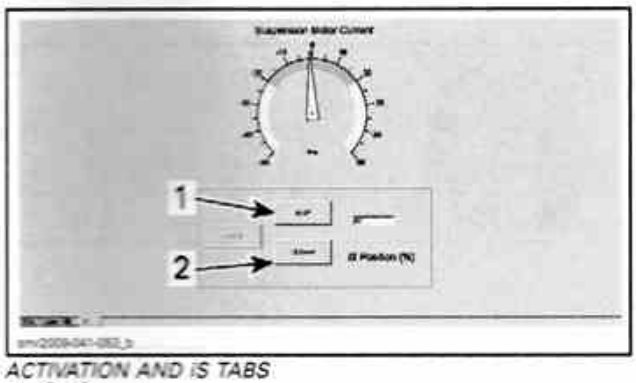
Suspension Position Sensor Input Voltage Test

At Sensor Connector

SUSPENSION POSITION SENSOR CONNECTOR		VOLTAGE
Pin 1	Pin 2	5 Vdc

Using the 6-pin Magneto Harness Tool

1. Connect B.U.D.S. Refer to *COMMUNICATION TOOLS AND B.U.D.S.* subsection.
2. Using B.U.D.S., raise suspension to the fully up position.



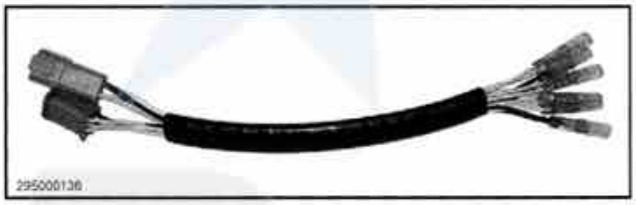
ACTIVATION AND iS TABS
1. iS UP
2. iS down

NOTE: If the seat is moving up and the number does not increase in B.U.D.S. but it is between 10 and 100%, check the suspension position sensor fork.

3. Unplug the 6-pins connector from the iS module. The module is located in front of the battery in the same compartment.

1. Suspension position sensor connector on iS module

4. Connect the MAGNETO HARNESS 6 PINS (P/N 295 000 136) to iS module for voltage checks.



5. Using the FLUKE 115 MULTIMETER (P/N 529 035 868), check voltage as per the following table.

SUSPENSION POSITION (% in B.U.D.S.)	MAGNETO HARNESS (wire lead color)		VOLTAGE (Vdc)
All positions	BK	BK/YL	4.99
100%	WH	BK/YL	3.23
100%	BK	WH	1.75
88%	WH	BK/YL	3.09
88%	BK	WH	1.89
75%	WH	BK/YL	2.99
75%	BK	WH	1.98
53%	WH	BK/YL	2.81
53%	BK	WH	2.16
35%	WH	BK/YL	2.68
35%	BK	WH	2.30

6. Remove the 6-pin magneto harness tool.

Suspension Position Sensor Resistance Test

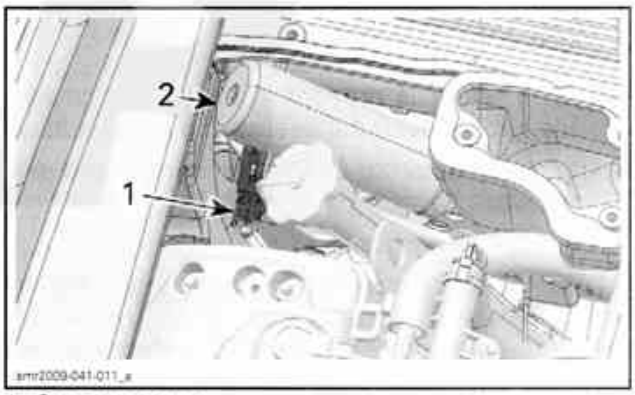
At iS Module Connector

1. Using the FLUKE 115 MULTIMETER (P/N 529 035 868), check resistance values on iS connector as per the following table.

SUSPENSION POSITION (% in B.U.D.S.)	iS MODULE (6-pin connector)		RESISTANCE Ω
All positions	4	6	1803 - 2203
100%	5	6	1957 - 2391
100%	4	5	1361 - 1663
88%	5	6	1904 - 2327
88%	4	5	1410 - 1724
75%	5	6	1871 - 2287
75%	4	5	1448 - 1770
53%	5	6	1799 - 2199
53%	4	5	1516 - 1852
35%	5	6	1752 - 2142
35%	4	5	1565 - 1913

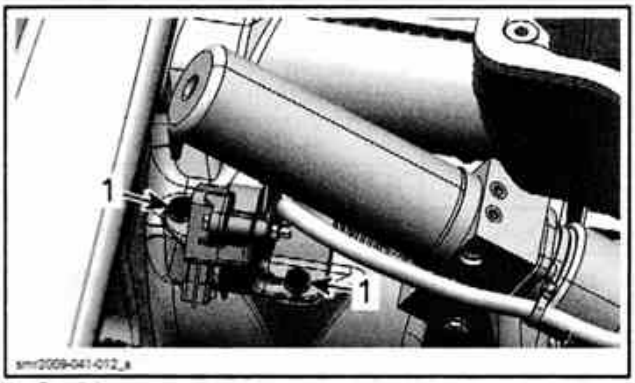
Suspension Position Sensor Replacement

1. Remove the deck extension. Refer to *BODY* subsection.
2. Remove the air intake tube. Refer to *AIR INTAKE SYSTEM* subsection.
3. Unplug the suspension position sensor connector.



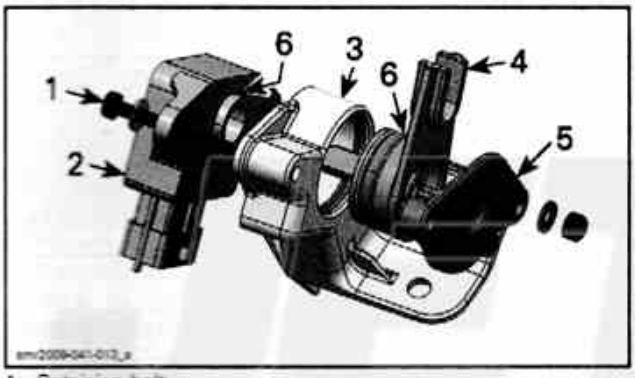
1. *Sensor connector*
2. *Hydraulic pump reservoir*

4. Remove screws securing the suspension position sensor.



1. Retaining screws

5. Remove bolts securing the sensor and its cover to the sensor support and the sensor lever.



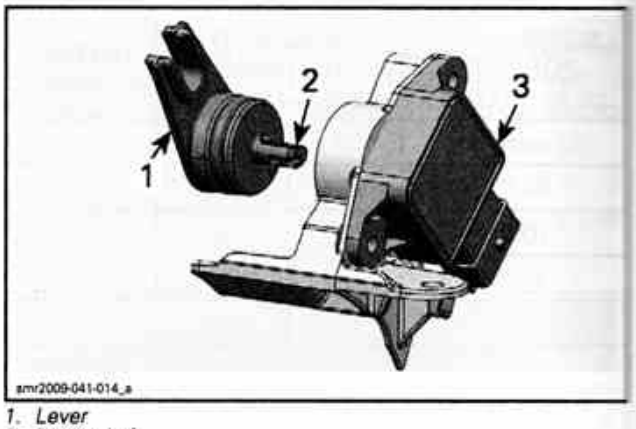
1. Retaining bolt
2. Sensor
3. Support
4. Lever
5. Cover
6. O-rings

NOTE: If water is present in the sensor always replace sensor even if it seems in good condition.

6. Check condition of O-rings on sensor and sensor lever.

7. Reinstall all parts.

NOTE: When reassembling parts, index sensor lever shaft with sensor inner slot. The sensor lever must be positioned to 180° with the sensor electrical connector.



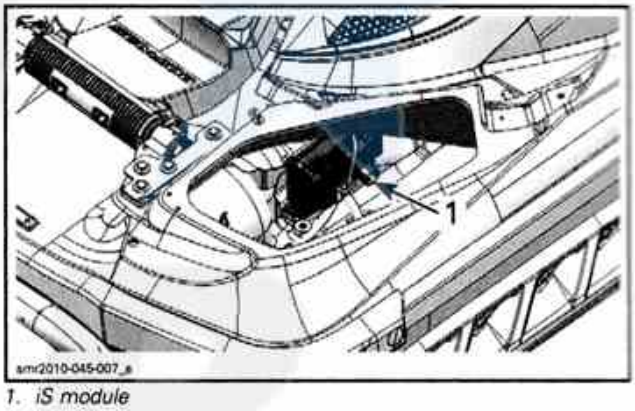
1. Lever
2. Lever shaft
3. Sensor

8. Reinstall and connect the sensor in PWC.

iS MODULE

iS Module Location

The iS module is located inside hull, in front of the battery.



1. iS module

iS Module Input Voltage Test (Switched Power)

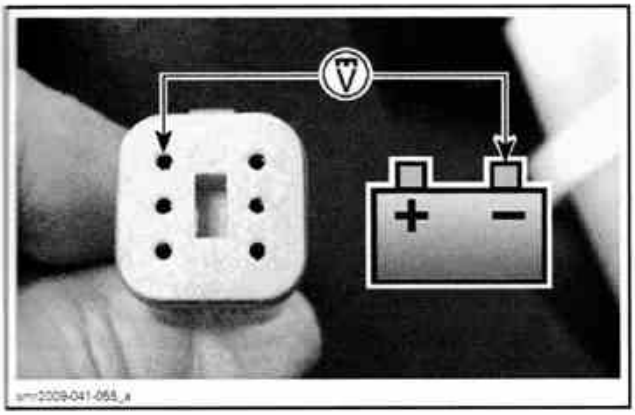
Make sure fuse F1 is powered and in good condition.

Press the START/STOP button to activate the electrical system.

Install the D.E.S.S. key.

Using the FLUKE 115 MULTIMETER (P/N 529 035 868), perform the following test.

MULTIMETER LEAD POSITION		VOLTAGE (VDC)
Pin 1 of iS module 6-pin connector	Negative battery post	Battery voltage



Repeat the test using a test light.

TEST LIGHT POSITION		RESULT
Pin 1 of iS module 6-pin connector	Negative battery post	Bright light

If tests succeed, carry out the *iS MODULE INPUT VOLTAGE TEST (BATTERY POWER).*

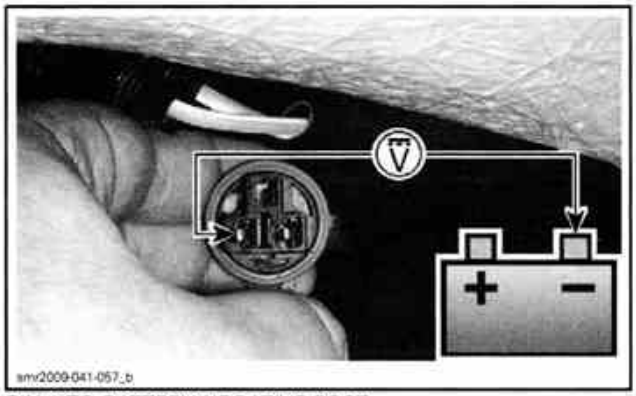
If tests fail, check wiring and connectors between fuse box pin A8 and module 6-pin connector pin 1.

iS Module Input Voltage Test (Battery Power)

Make sure fuse F7 is powered and in good condition.

Using the FLUKE 115 MULTIMETER (P/N 529 035 868), perform the following test.

iS MODULE 3-PIN CONNECTOR	BATTERY	VOLTAGE (VDC)
Pin 2	Negative post	Battery voltage



PIN 2 TO BATTERY NEGATIVE POST

Repeat the test using a test light.

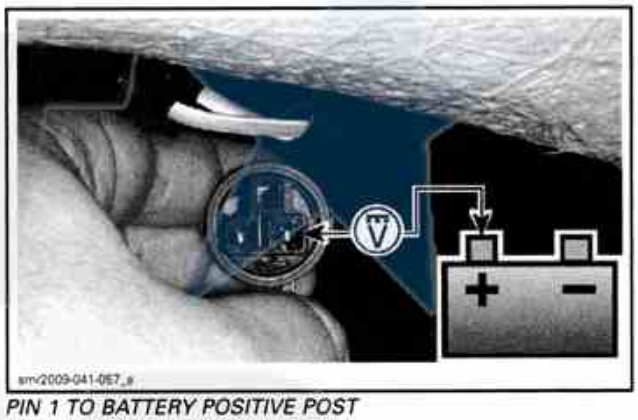
iS MODULE 3-PIN CONNECTOR	BATTERY	RESULT
Pin 2	Negative post	Bright light

If tests succeed, carry out *iS MODULE GROUND TEST.*

If tests fails, check wiring and connectors between fuse box pin A2 and module 3-pin connector pin 2.

iS Module Ground Test

Using the FLUKE 115 MULTIMETER (P/N 529 035 868), perform the following test.



PIN 1 TO BATTERY POSITIVE POST

iS MODULE 3-PIN CONNECTOR	BATTERY	RESULT
Pin 1	Positive post	Battery voltage

Repeat the test using a test light.

iS MODULE 3-PIN CONNECTOR	BATTERY	RESULT
Pin 1	Positive post	Bright light

If tests succeed, carry out *iS BUTTON TEST USING B.U.D.S.*

If tests fails, check wiring and connectors module 3-pin connector pin 1 and engine ground.

iS Module Output Voltage Test

At the hydraulic pump motor connector, connect multimeter leads.

Activate the iS either UP and DOWN with B.U.D.S. or with iS button on steering.

There will be either a positive 12 Vdc or a negative 12 Vdc reading.

Activate the opposite UP or DOWN and the reading should reverse polarity.

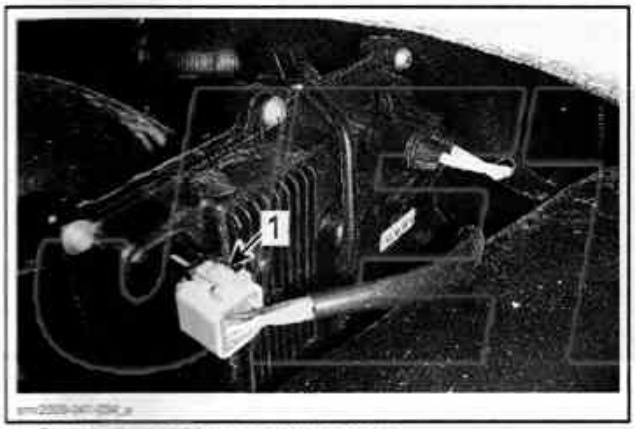
If the voltage is as specified, carry out the same test using a 12 V test light to ensure the circuit can supply enough current to operate the hydraulic pump.

The light should be bright in both the UP or DOWN positions.

If tests fail, carry out the *iS MODULE INPUT VOLTAGE TEST (SWITCHED POWER).*

iS Module Removal

1. Open boarding platform and remove the starboard storage bin.
2. Disconnect the suspension position sensor connector from the iS module.

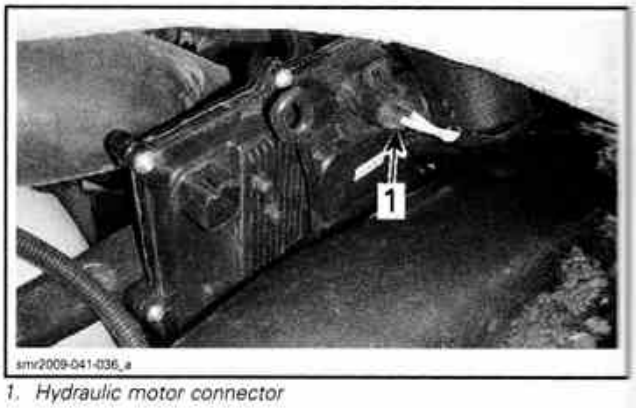


1. Suspension position sensor connector

3. Detach the retaining strap.

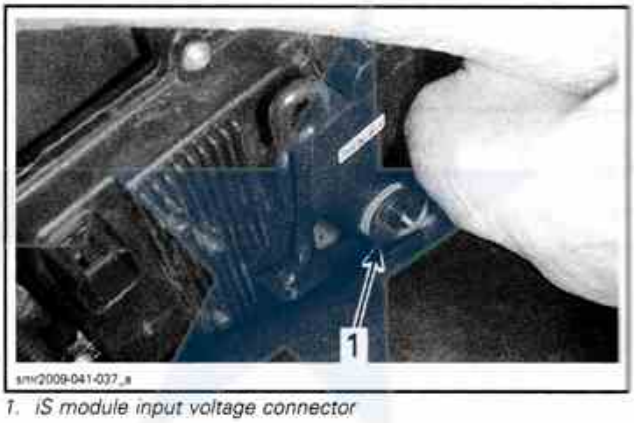
1. Retaining strap

4. Disconnect the hydraulic motor connector.



1. Hydraulic motor connector

5. Disconnect the iS module input voltage connector.



1. iS module input voltage connector

NOTE: The locking tab of input voltage connector is located underneath.

6. Remove the iS module from PWC.

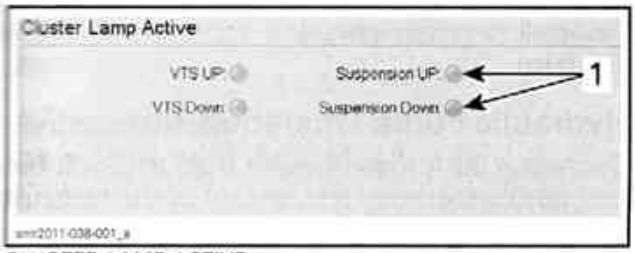
iS Module Installation

The installation is the reverse of the removal procedure.

iS BUTTON

iS Button Test Using B.U.D.S.

1. Connect PWC to B.U.D.S. Refer to *COMMUNICATION TOOLS AND B.U.D.S.*
2. Select **Monitoring** and **Cluster** tabs.
3. Press START/STOP button to activate the electrical system.
4. In the **Cluster Lamp Active** box, monitor the **Suspension UP** and **Suspension Down** indicators while pressing the buttons.

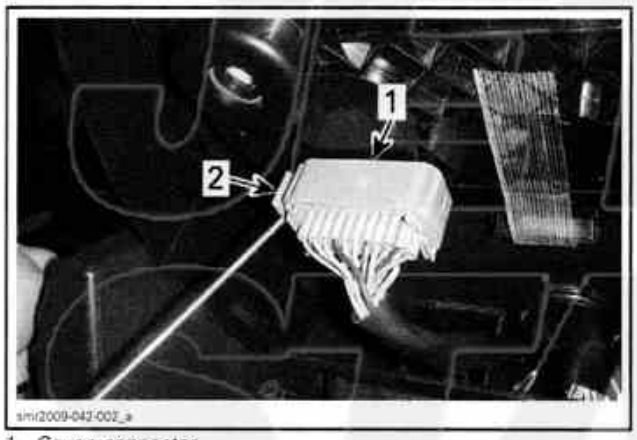


CLUSTER LAMP ACTIVE
1. UP and Down button indicators

If test fails, carry out the *iS BUTTON TEST USING A MULTIMETER.*

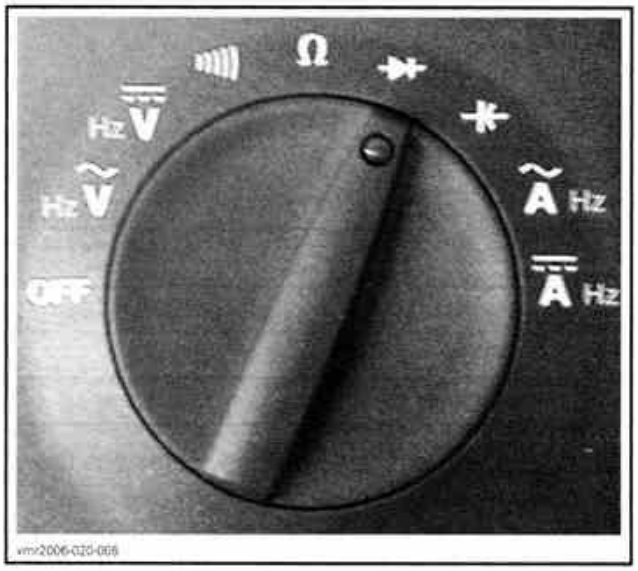
iS Button Test Using a Multimeter

1. Press START/STOP button to activate the electrical system.
2. Remove the gauge support cover.
3. Disconnect the gauge connector.



1. Gauge connector
2. Slide out gauge connector tab to unlock

4. Set the FLUKE 115 MULTIMETER (P/N 529 035 868) to diode test function.



5. Test as follows.

iS SWITCH TEST		
SWITCH POSITION	MULTIMETER LEAD/GAUGE CONNECTOR	VOLTAGE
Switch released	RED lead/Pin 14 BLACK lead/Pin 15	Approx. 2 Vdc
	BLACK lead/Pin 14 RED lead/Pin 15	OL
UP depressed	RED lead/Pin 14 BLACK lead/Pin 15	Approx. 1.1 Vdc
	BLACK lead/Pin 14 RED lead/Pin 15	OL
DOWN depressed	RED lead/Pin 14 BLACK lead/Pin 15	Approx. 1.6 Vdc
	BLACK lead/Pin 14 RED lead/Pin 15	OL

If any reading is significantly out of specification, carry out the same test at the switch connector.

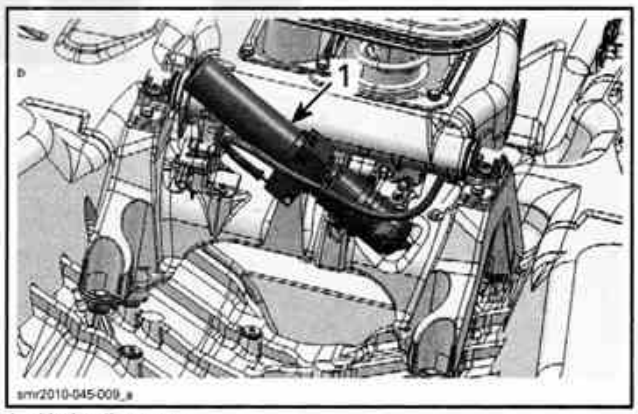
If the same results are obtained at the switch connector, replace the switch assembly.

If results are as per specification at the switch connector, check wiring and connectors.

HYDRAULIC PUMP

Hydraulic Pump Location

The hydraulic pump is located at the rear of the suspension base.



1. Hydraulic pump

Hydraulic Pump Recommended Fluid

Always use automatic transmission fluid (ATF) Dexron III.

NOTICE **Use ATF Dexron III only. Do not use fluids other than the recommended one, nor mix different types of fluids.**

Hydraulic Pump Fluid Level Verification

NOTE: The fluid level will drop slightly during break-in period because the actuator uses a small amount of fluid to lubricate its moving parts. If a large amount of fluid is required, check components for leaks.

Reservoir in Vehicle

Place the PWC level (longitudinally and transversely). Make sure suspension is in DOCK MODE position.

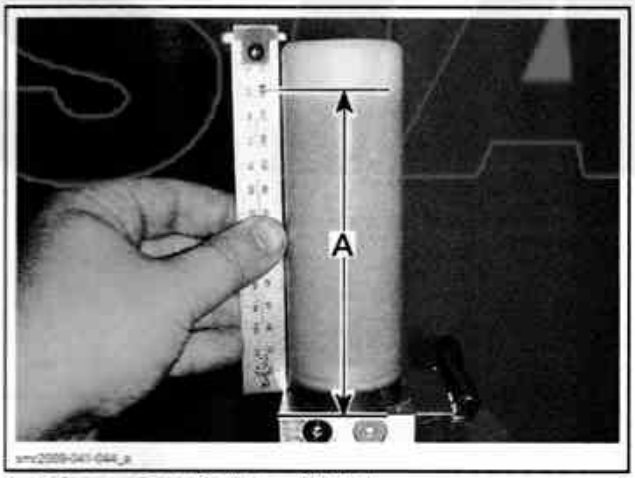
The fluid should be near reservoir plug.

1. Fluid level

Reservoir Out of Vehicle

Place the reservoir vertically.

Using a ruler, measure the fluid level. The reservoir is full when fluid level reaches 130 mm ± 5 mm (5-1/8 in ± 13/64 in).



A. 130 mm ± 5 mm (5-1/8 in ± 13/64 in)

To Add Fluid

Remove the plug on the end of reservoir.

Using a syringe, fill up the reservoir to the recommended level.

Reinstall reservoir plug and tighten it to 1 N•m (9 lbf•**in**).

Hydraulic Pump Operation Test

Connect a 30 A fused jumper from a 12-volt battery positive terminal and one pin of the hydraulic pump 2-pin connector .

Connect a jumper from battery negative terminal and the other pin of the hydraulic pump 2-pin connector .

The hydraulic pump should activate and suspension should go up or down.

Reverse the jumpers position at the pump connector. The suspension should reverse direction.

If the hydraulic pump does not run, replace hydraulic pump.

If hydraulic pump turns, carry out the *HYDRAULIC PUMP CURRENT DRAW* test to confirm pump operation.

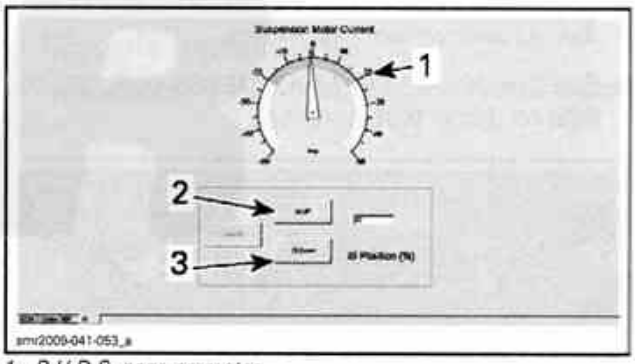
Hydraulic Pump Current Draw

If the current draw is to high, the iS module activates an internal protection.

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

Select **ACTIVATION** and **iS** tabs.

Activate the suspension by pressing iS UP and iS DOWN and check monitor the ammeter in the B.U.D.S. page.



1. B.U.D.S. page ammeter
2. iS UP button
3. iS DOWN button

SWITCH POSITION	CURRENT
iS UP	16 - 20 A
iS DOWN	15 - 18 A

If current is as per specification, carry out the *iS MODULE OUTPUT VOLTAGE TEST.*

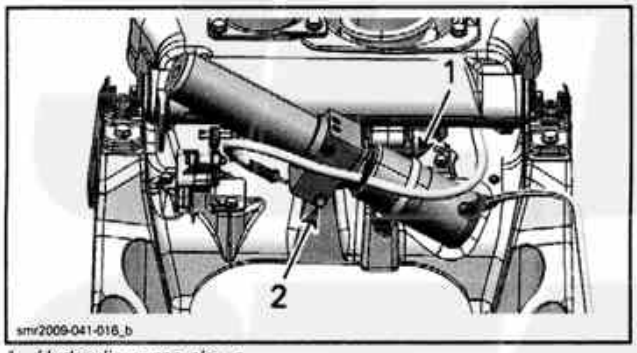
If current draw is low, check connections and wires.

If the current draw is excessive, replace the hydraulic pump.

Hydraulic Pump Removal (as a Unit with Actuator)

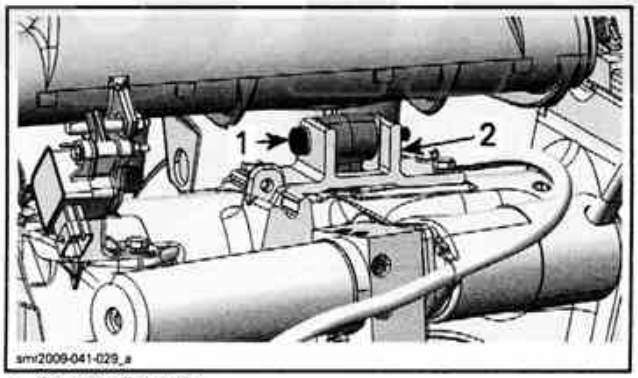
To work on many parts of suspension system, the removal of the hydraulic pump and actuator as an unit is necessary.

1. Remove *SHOCK ABSORBER* and *SPRINGS*. See procedures in this subsection.
2. Unplug the hydraulic pump connector from the iS module.
3. Cut any locking ties securing the pump harness to PWC harness.
4. Remove clamp and bolt securing the hydraulic pump from suspension base.



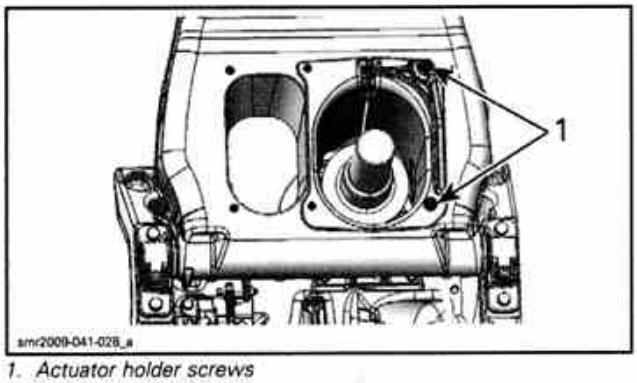
1. Hydraulic pump clamp
2. Retaining bolt

5. Remove actuator link bolt.



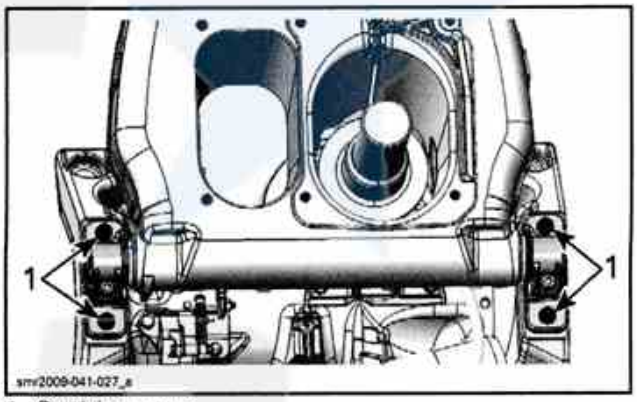
1. Actuator link bolt
2. Link support on the top of suspension base

6. Remove screws retaining the actuator holder.



1. Actuator holder screws

7. Remove the suspension position sensor to avoid damaging it.
8. Remove screws securing both rear ends of front suspension arm to suspension base.



1. Retaining screws

9. Lift the rear of the front suspension arm to make room for hydraulic pump.
10. Remove hydraulic pump with actuator by lifting them through the suspension bellows opening.

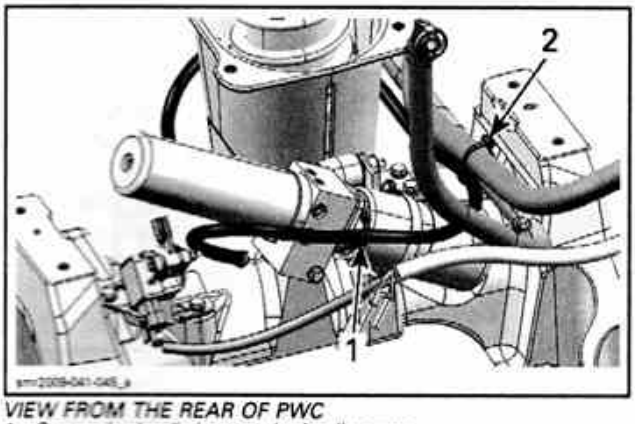
Hydraulic Pump Installation (as a Unit with Actuator)

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

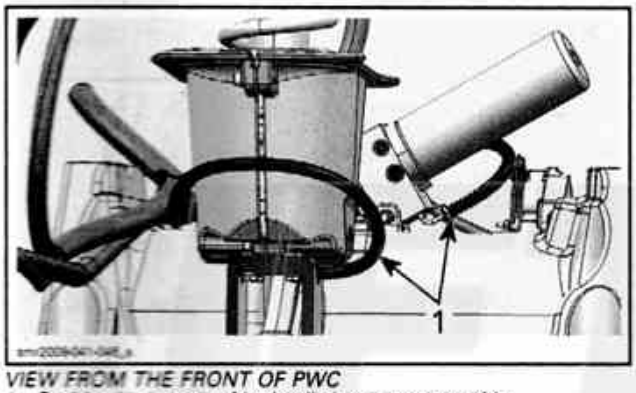
Make sure to secure the actuator link to suspension base. Tighten actuator link bolt to 25 N•m (18 lbf•ft).

NOTICE Failure to do so might result in spring failure.

Hydraulic hose routing is very critical to avoid problems with hydraulic unit. Use the following illustration to route and attach the hydraulic hose properly.



VIEW FROM THE REAR OF PWC
1. *Secure hydraulic hose to hydraulic pump*
2. *Secure hydraulic hose, fuel hose and PWC wiring harness*

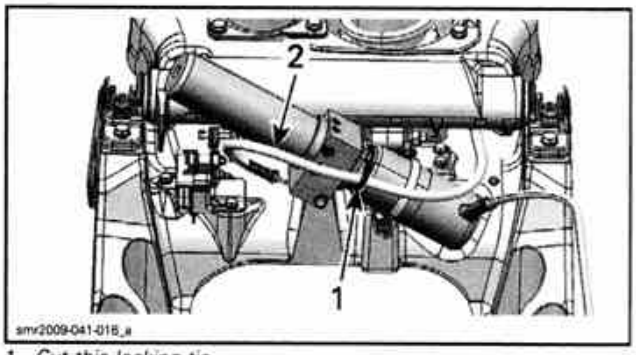


VIEW FROM THE FRONT OF PWC
1. *Position both ends of hydraulic hose on same side*

Install the *FRONT SUSPENSION ARM*. See procedure in this subsection.

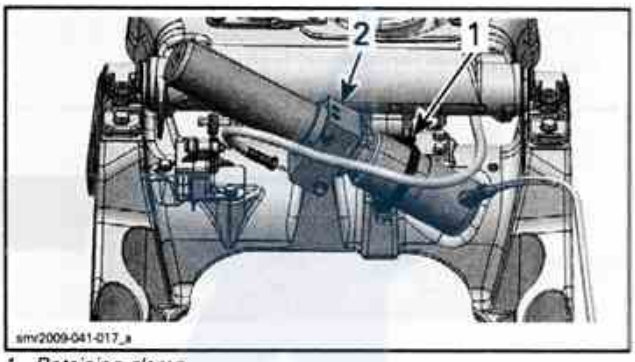
Hydraulic Pump Removal (Without Actuator)

1. Remove the deck extension. Refer to *BODY* subsection.
2. Remove the air intake tube. Refer to *AIR INTAKE SYSTEM* subsection.
3. Unplug the hydraulic pump connector from the iS module.
4. Cut any locking ties securing the pump harness to PWC harness.
5. Cut locking tie securing the hydraulic hose to pump.



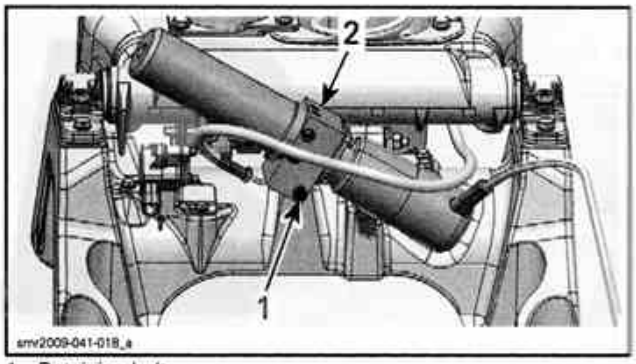
1. *Cut this locking tie*
2. *Hydraulic hose*

6. Unscrew the retaining clamp completely and remove it.



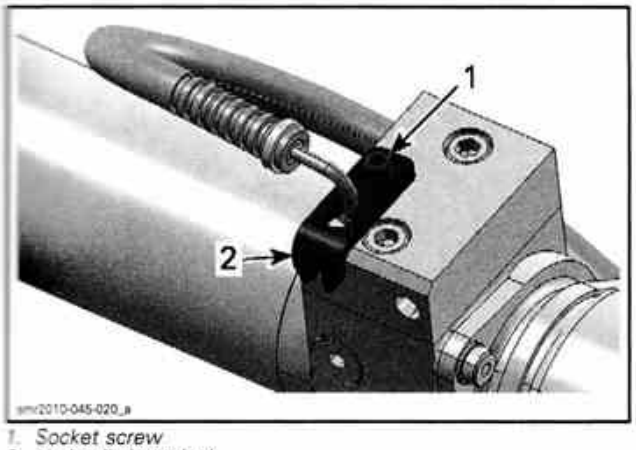
1. *Retaining clamp*
2. *Hydraulic pump*

7. Remove hydraulic pump retaining bolt.



1. *Retaining bolt*
2. *Hydraulic pump*

8. At the bottom of pump housing, remove socket screw securing hydraulic hose lock.



1. *Socket screw*
2. *Hydraulic hose lock*

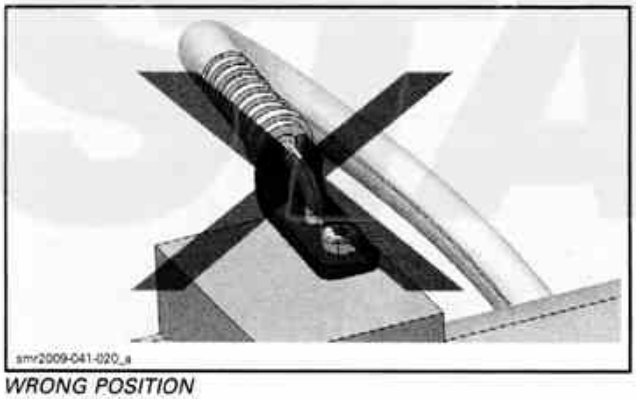
9. Remove hose from pump and plug hose to avoid oil spillage.
10. Place your finger on pump opening and remove pump from PWC.

NOTE: Wipe any oil spillage.

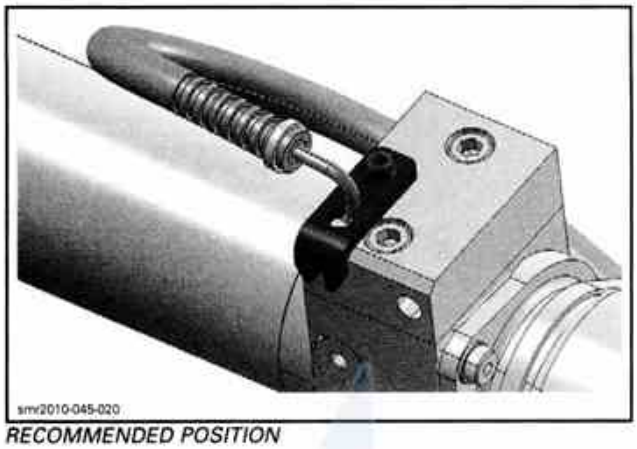
Hydraulic Pump Installation (Without Actuator)

1. Install hydraulic hose on pump and secure hose using the hydraulic hose lock.

NOTE: The hose must turn freely. Do not insert hose into lock hook.



WRONG POSITION



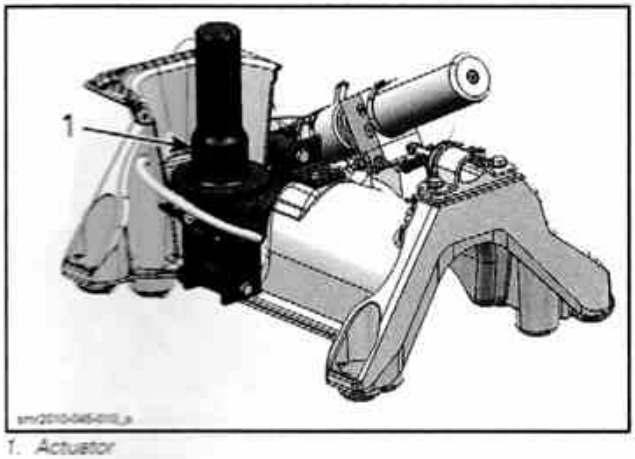
RECOMMENDED POSITION

2. Apply LOCTITE 243 (BLUE) (P/N 293 800 060) on threads of lock screw.
3. Tighten screw to 8 N•m (71 lbf•**in**).
4. Secure hydraulic pump to suspension base.
   - 4.1 Install pump retaining screw and tighten it to 10 N•m (89 lbf•**in**).
   - 4.2 Install retaining clamp and tighten it to 2 N•m (18 lbf•**in**).
5. Secure hose to reservoir with a new locking tie.
6. Route pump harness and secure it with new locking ties.
7. Connect the hydraulic pump connector to iS module.
8. Install a weight of 90 kg (200 lb) on moving deck and using suspension controls on steering, cycle the suspension fully up and fully down 3 times. This action will remove air bubbles trapped into hose and pump during installation.
9. Check for leaks.
10. Install all other removed parts.

ACTUATOR

Actuator Location

The actuator is located at the front of the suspension base under suspension springs.



1. Actuator

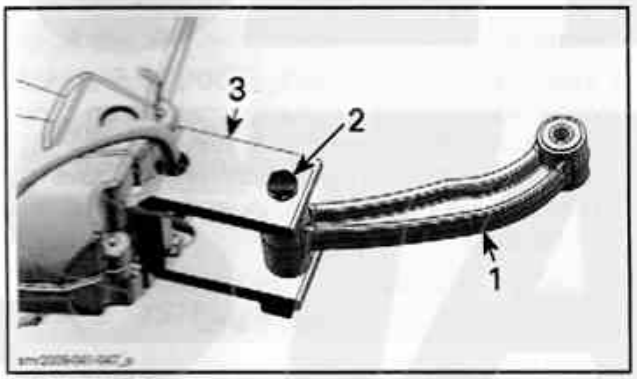
Actuator Inspection

Check actuator for leaks at hose opening and around inner piston.

Replace actuator if any leak is detected.

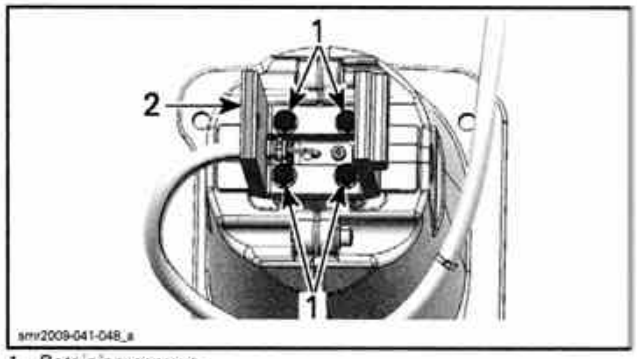
Actuator Removal

1. Refer to *HYDRAULIC PUMP REMOVAL (AS A UNIT WITH ACTUATOR)* and remove the pump from the PWC.
2. Remove and discard the screw securing actuator link to alignment support.



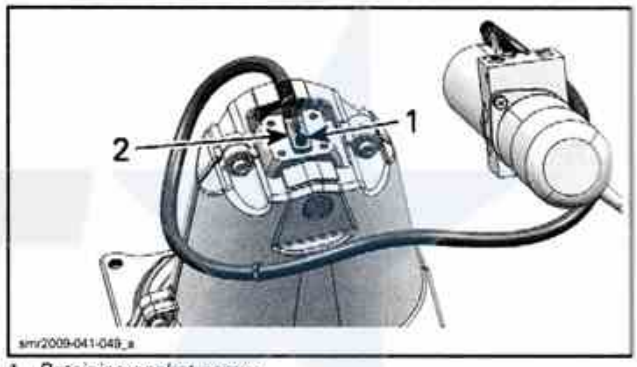
1. Actuator link
2. Retaining screw
3. Alignment support

3. Remove the alignment support from actuator holder. Discard screws.



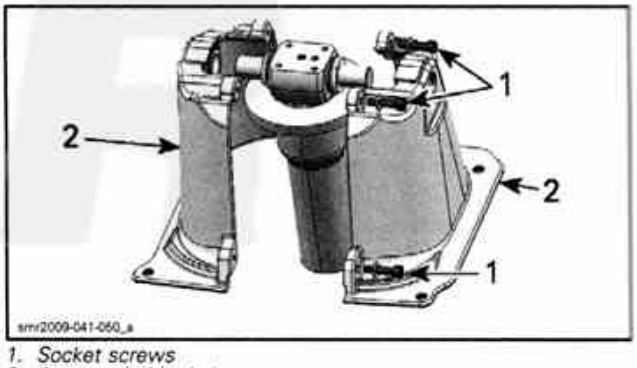
1. Retaining screws
2. Alignment support

4. Turn actuator up side down and remove hydraulic hose.



1. Retaining socket screw
2. Hydraulic hose lock

5. Remove and discard the three socket screws securing actuator holder halves and split the actuator holder.

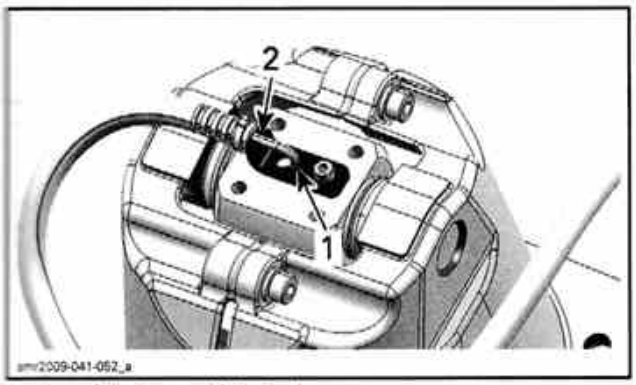


1. Socket screws
2. Actuator holder halves

Actuator Installation

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

Install hydraulic hose in accordance with the following illustration.



1. *Hose fully inserted in lock slot*
2. *Position hydraulic hose in lock hook*

Apply LOCTITE 243 (BLUE) (P/N 293 800 060) on threads of lock screw.

Tighten screw to 8 N•m (71 lbf•**in**).

Install the hydraulic pump in PWC. Make sure to route the hydraulic hose properly. See *HYDRAULIC PUMP INSTALLATION (AS A UNIT WITH ACTUATOR)* in this subsection.

Install a weight of 90 kg (200 lb) on moving deck and using suspension controls on steering, cycle the suspension fully up and fully down 3 times. This action will remove air bubbles trapped into hose and pump during installation.

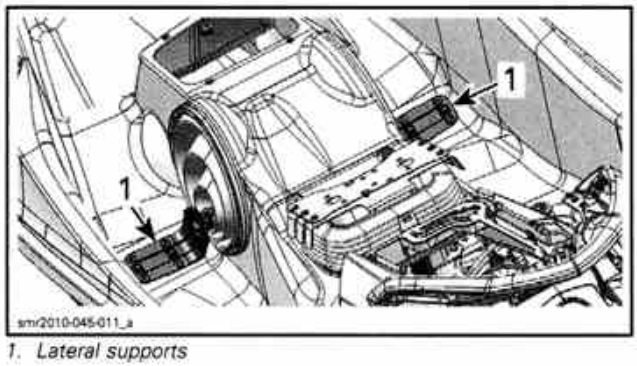
Check for leaks.

Install all other removed parts.

LATERAL SUPPORT

Lateral Support Location

The lateral supports are located on both side of the fixed deck to support the moving deck.

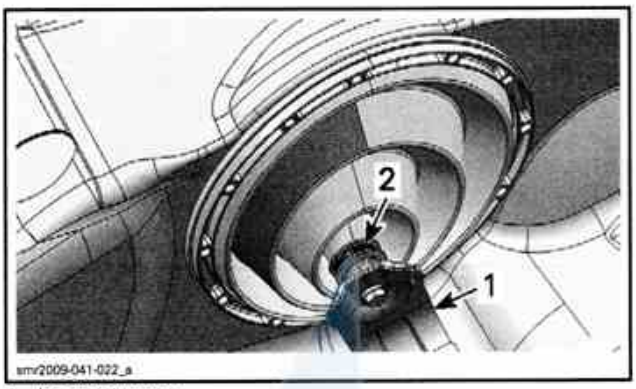


1. *Lateral supports*

Lateral Support Removal

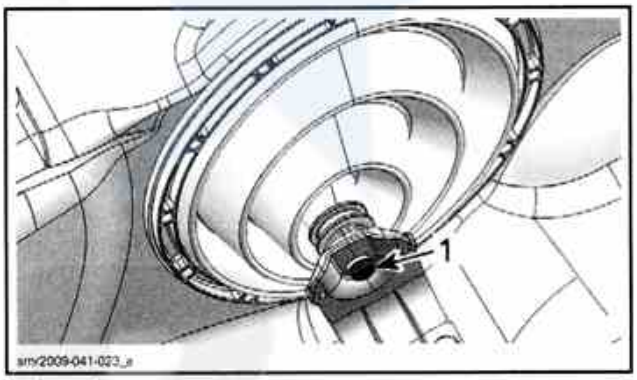
NOTE: The following instruction can be used for RH or LH support.

1. Remove the moving deck. Refer to *BODY* subsection.
2. Cut the Oetiker clamp retaining lateral bellows to lateral support.



1. *Lateral support*
2. *Oetiker clamp*

3. Remove the lateral support screw.



1. *Lateral support screw*

4. Remove lateral support from lateral bellows.

Lateral Support Installation

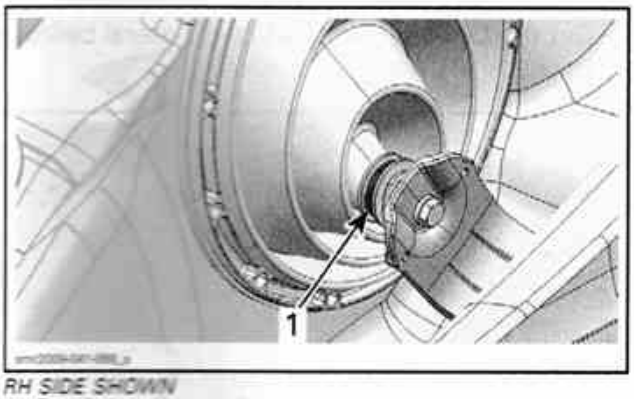
The installation is the reverse of the removal procedure. However, pay attention to the following.

Apply soapy water solution on bellows opening and insert the lateral support.

Index lateral supports with the front suspension shaft ends. Lateral supports can be inserted in one position only.

Tighten lateral support screw to 48 N•m (35 lbf•ft).

Install a new Oetiker clamp. Position the ear of clamp rearwards.

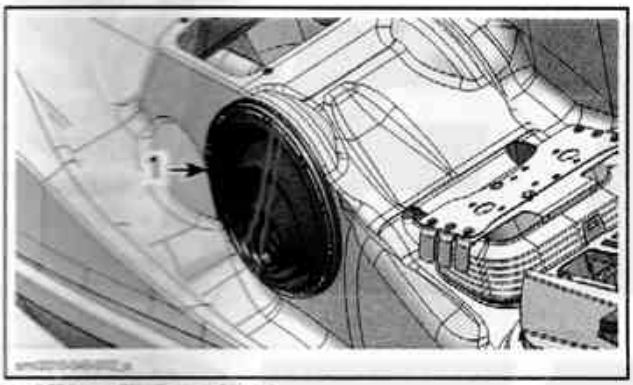


RH SIDE SHOWN
1. Ear of clamp rearwards

LATERAL BELLOWS

Lateral Bellows Location

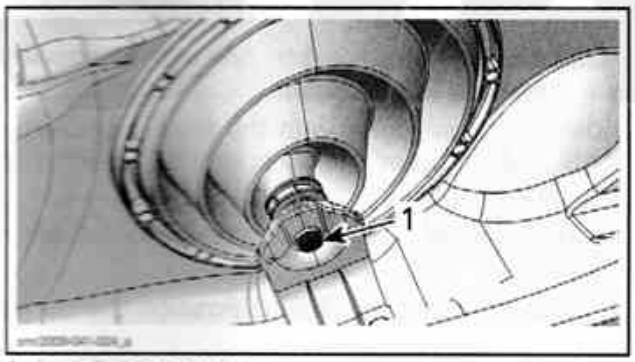
The lateral bellows are located on each side of the fixed deck.



1. LH lateral bellows shown

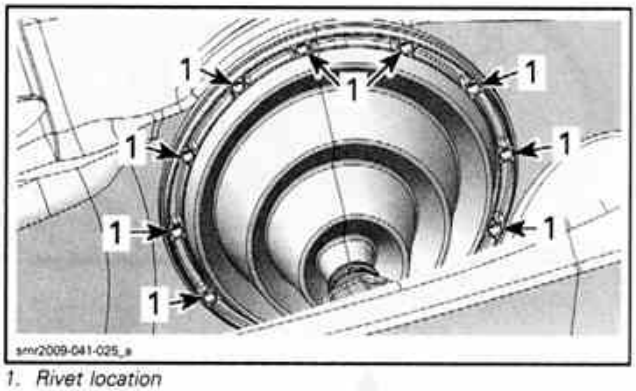
Lateral Bellows Removal

1. Remove lateral support screw.



1. Lateral support screw

2. Disconnect lateral support from suspension shaft.
3. Using the SUPERTANIUM DRILL BIT 3/16" (P/N 529 031 800), remove all rivets (12) securing the lateral bellows ring to body.



1. Rivet location

4. Remove lateral ring.
5. Cut Oetiker clamp securing bellows to lateral support.
6. Separate lateral support from bellows.

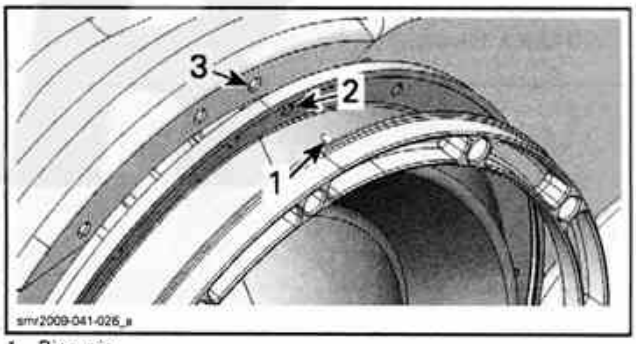
Lateral Bellows Installation

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

Apply soapy water solution on bellows opening and insert the lateral support.

Index suspension shaft with the lateral support. The lateral support can be inserted in one position only.

Install the retaining ring. Align the ring pin with holes in bellows and body.



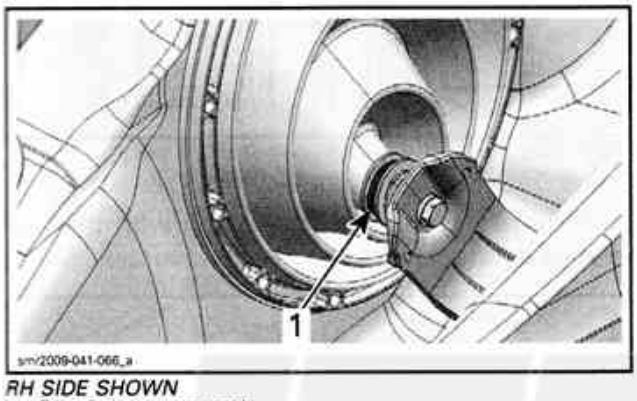
1. Ring pin
2. Bellows alignment hole
3. Body hole

Install new rivets. If the head of rivet tool cannot be inserted in ring opening, use the sleeve (P/N 707 000 181) to offset the rivet tool and well lean the rivet head against ring.

Index lateral supports with the front suspension shaft ends. Lateral supports can be inserted in one position only.

Tighten lateral support screw to 48 N•m (35 lbf•ft).

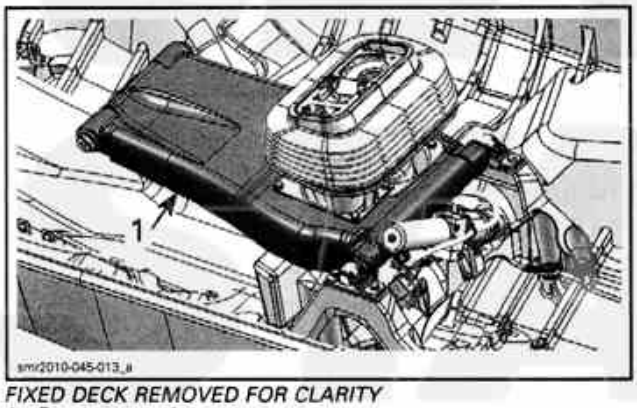
Install a new Oetiker clamp. Position the ear of clamp rearwards.



RH SIDE SHOWN
1. Ear of clamp rearwards

FRONT SUSPENSION ARM

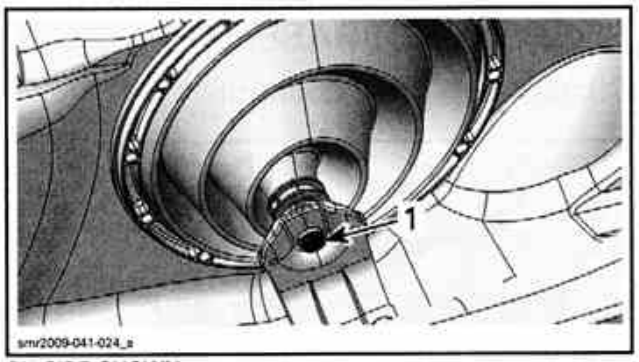
Front Suspension Arm Location



FIXED DECK REMOVED FOR CLARITY
1. Front suspension arm

Front Suspension Arm Removal

1. Remove the moving deck. Refer to *BODY* subsection.
2. Remove the engine. Refer to *ENGINE REMOVAL AND INSTALLATION* subsection.
3. Remove both lateral support screws.



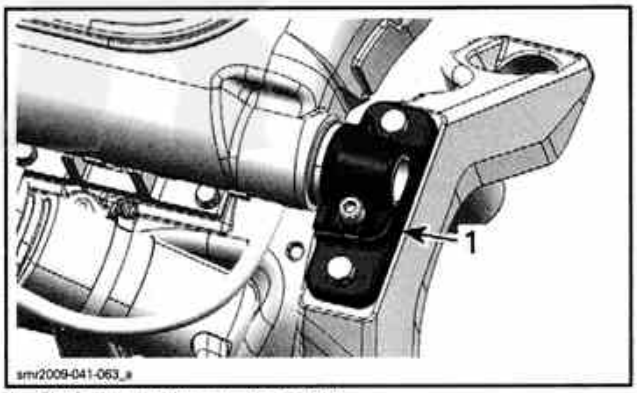
RH SIDE SHOWN
1. Lateral support screw

4. Disconnect lateral supports from suspension arm shaft.
5. Refer to *HYDRAULIC PUMP REMOVAL (AS A UNIT WITH ACTUATOR)* and remove the pump from the PWC.
6. Remove screws securing both shaft supports to suspension base.
7. Move front suspension arm rearward to remove it from the PWC.

Front Suspension Arm Installation

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

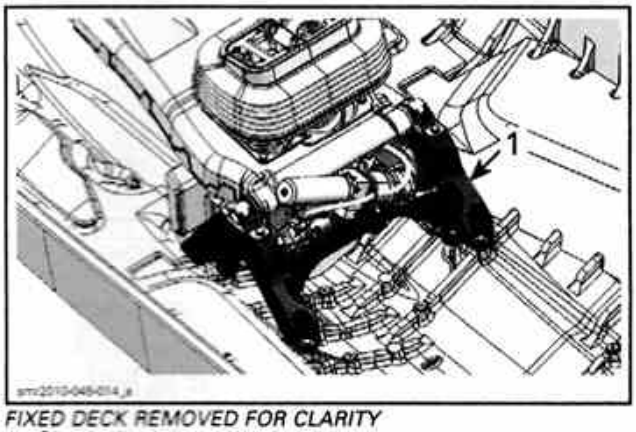
If a shaft support has been loosened from the suspension arm shaft, see *SUSPENSION ARM SHAFTS* for proper installation procedure.



1. Shaft support (one on each side)

SUSPENSION BASE

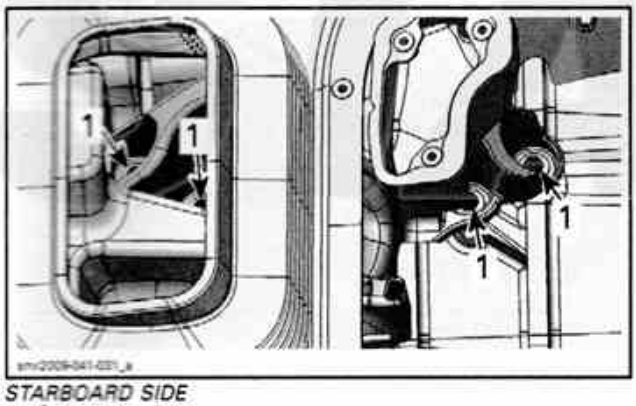
Suspension Base Location



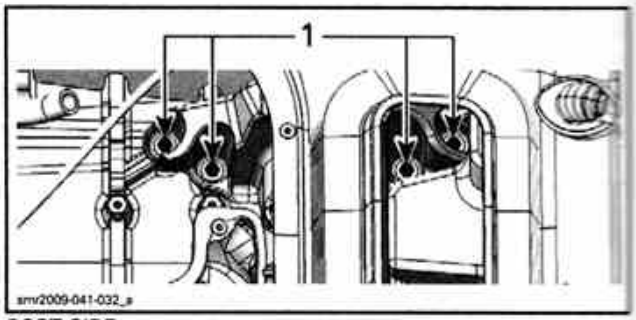
FIXED DECK REMOVED FOR CLARITY
1. Suspension base

Suspension Base Removal

1. Refer to the appropriate procedures and remove the following parts:
   - Moving deck
   - Engine
   - Shock absorber and springs
   - Hydraulic pump (with actuator)
   - Suspension position sensor.
2. Using a marker, **trace the shape of suspension base at the bottom of the hull** to reposition it at the same place.
3. Remove and discard suspension base screws.

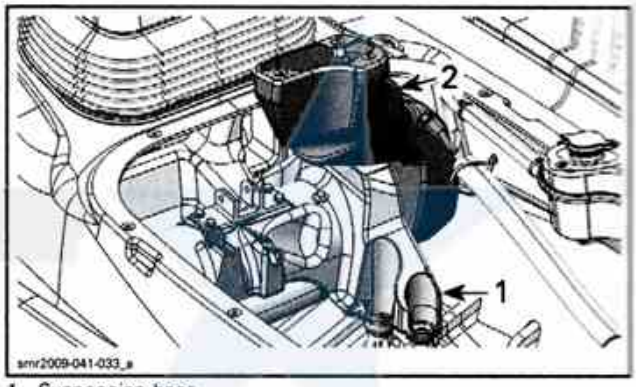


STARBOARD SIDE
1. Suspension base screws



PORT SIDE
1. Suspension base screws

4. Remove suspension base along with the rear vent duct.



1. Suspension base
2. Rear vent duct

Suspension Base Installation

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

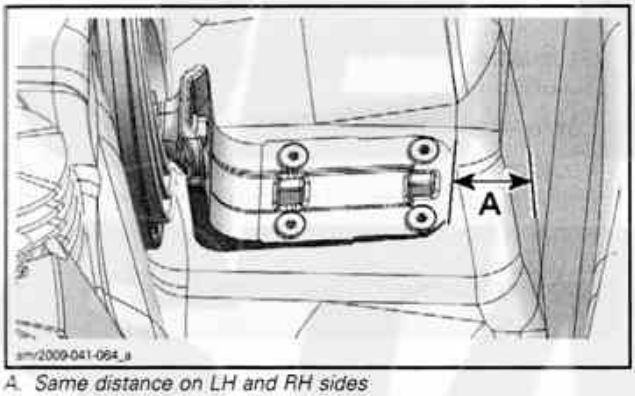
1. Install the suspension base.
   1.1 Position the base in accordance with the reference marks previously drawn at the bottom of the hull.

   NOTE: If there is no mark, see *SUSPENSION BASE INSTALLATION WITHOUT REFERENCE MARKS.*

   1.2 Install **NEW** suspension base screws.
   1.3 Tighten suspension base screws to 25 N•m (18 lbf•ft).
2. Refer to the appropriate procedures and install all other removed parts.
   - Actuator and hydraulic pump
   - Front suspension arm
   - Shock absorber and springs
   - Engine
   - Moving deck.

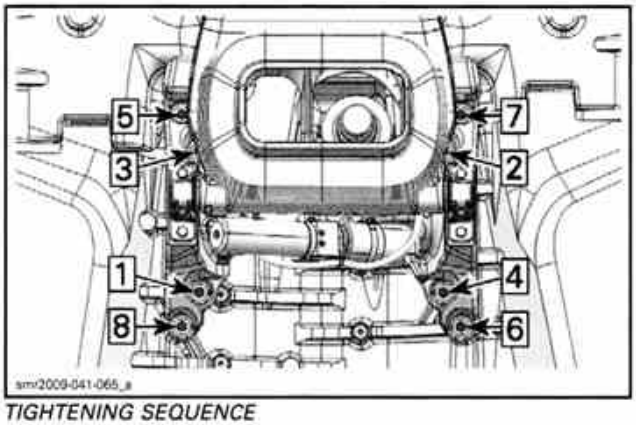
Suspension Base Installation without Reference Marks

1. Install the suspension base in PWC using **NEW** screws. Do not tighten them yet.
2. Install the front arm on suspension base and tighten screws to 25 N•m (18 lbf•ft), use the OLD screws.
3. Install lateral supports.
   - 3.1 Index lateral supports with the front suspension shaft ends. Lateral supports can be inserted in one position only.
   - 3.2 Tighten lateral support screws to 48 N•m (35 lbf•ft).
4. Align suspension base in PWC.
   - 4.1 On both sides, measure the distance between the end of lateral support and fixed deck.



A. Same distance on LH and RH sides

   - 4.2 If required, move suspension base until both distances are equal.
   - 4.3 Tighten suspension base rear screws to 25 N•m (18 lbf•ft).

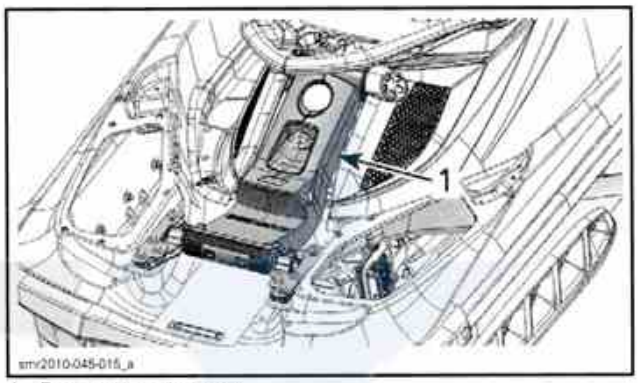


TIGHTENING SEQUENCE

5. Refer to the appropriate procedures and install all other removed parts.
   - Actuator and hydraulic pump
   - Shock absorber and springs
   - Engine
   - Moving deck.

REAR SUSPENSION ARM

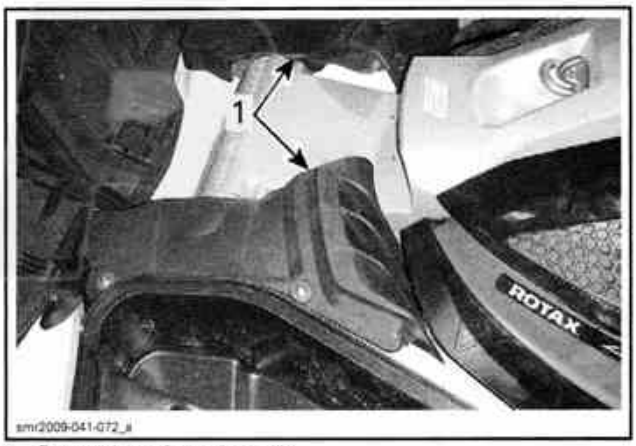
Rear Suspension Arm Location



1. Rear suspension arm

Rear Suspension Arm Removal

1. Open the boarding platform.
2. Remove bolts securing both rear suspension arm covers.

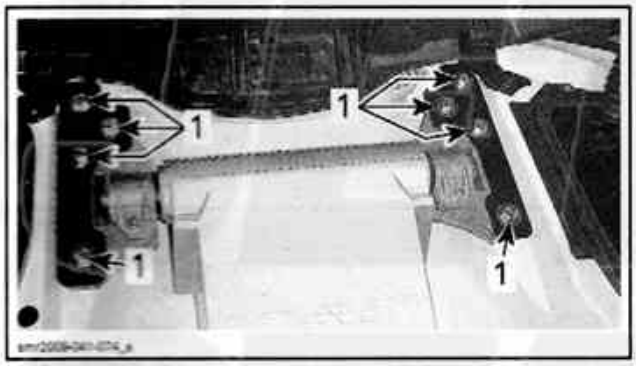


1. Rear suspension arm cover

3. Unclip and remove both lateral rear panels.

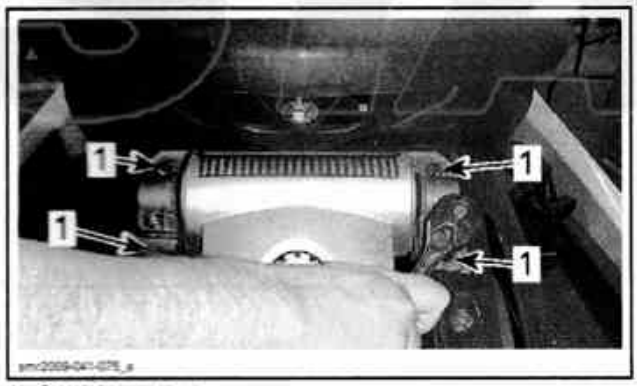
1. RH lateral rear panel

4. Mark position of rear suspension arm brackets for proper reinstallation.
5. Remove and discard screws securing rear suspension arm to fixed deck.



1. Rear suspension arm screws

6. Remove and discard screws securing the top of rear suspension arm.



1. Retaining screws

7. Remove the rear suspension arm from PWC.

Rear Suspension Arm Installation

1. Using **NEW** screws, install the top of rear suspension arm.

NOTE: If the upper arm shaft or one of its arm shaft support has been removed or loosened, refer to *SUSPENSION ARM SHAFTS* for proper installation procedure.

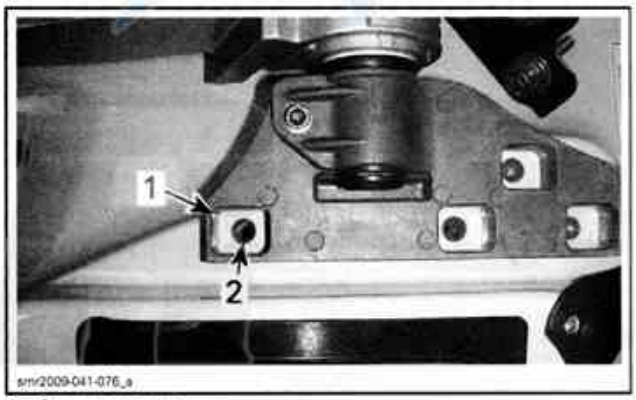
2. Tighten screws to 25 N•m (18 lbf•ft).
3. Carefully lower and secure the rear suspension arm to the fixed deck.
   3.1 Position the rear suspension arm brackets in accordance with the reference marks previously draw on fixed deck.

   NOTICE **If no mark was traced, refer to *REAR SUSPENSION ARM INSTALLATION WITHOUT REFERENCE MARKS* for proper procedure to install and align the rear suspension arm.**

   3.2 Install **NEW** screws to secure rear suspension arm brackets.
   3.3 Tighten screws to 25 N•m (18 lbf•ft).

Rear Suspension Arm Installation Without Reference Marks

1. Lower the rear suspension arm on fixed deck.
2. Position the square openings of rear suspension arm brackets so that the threaded inserts in fixed deck are centered.



1. Square opening
2. Threaded insert

3. On each bracket, install the retaining plate and one screw.
4. Install a weight of 90 kg (200 lb) on PWC to lower the moving deck.
5. Check moving deck position in comparison to fixed deck.
   5.1 Check the gap between moving deck wipers and fixed deck. It should be the same on both sides.
   5.2 Check front and rear gaps. Moving deck should be able to move without having contact with the fixed deck.