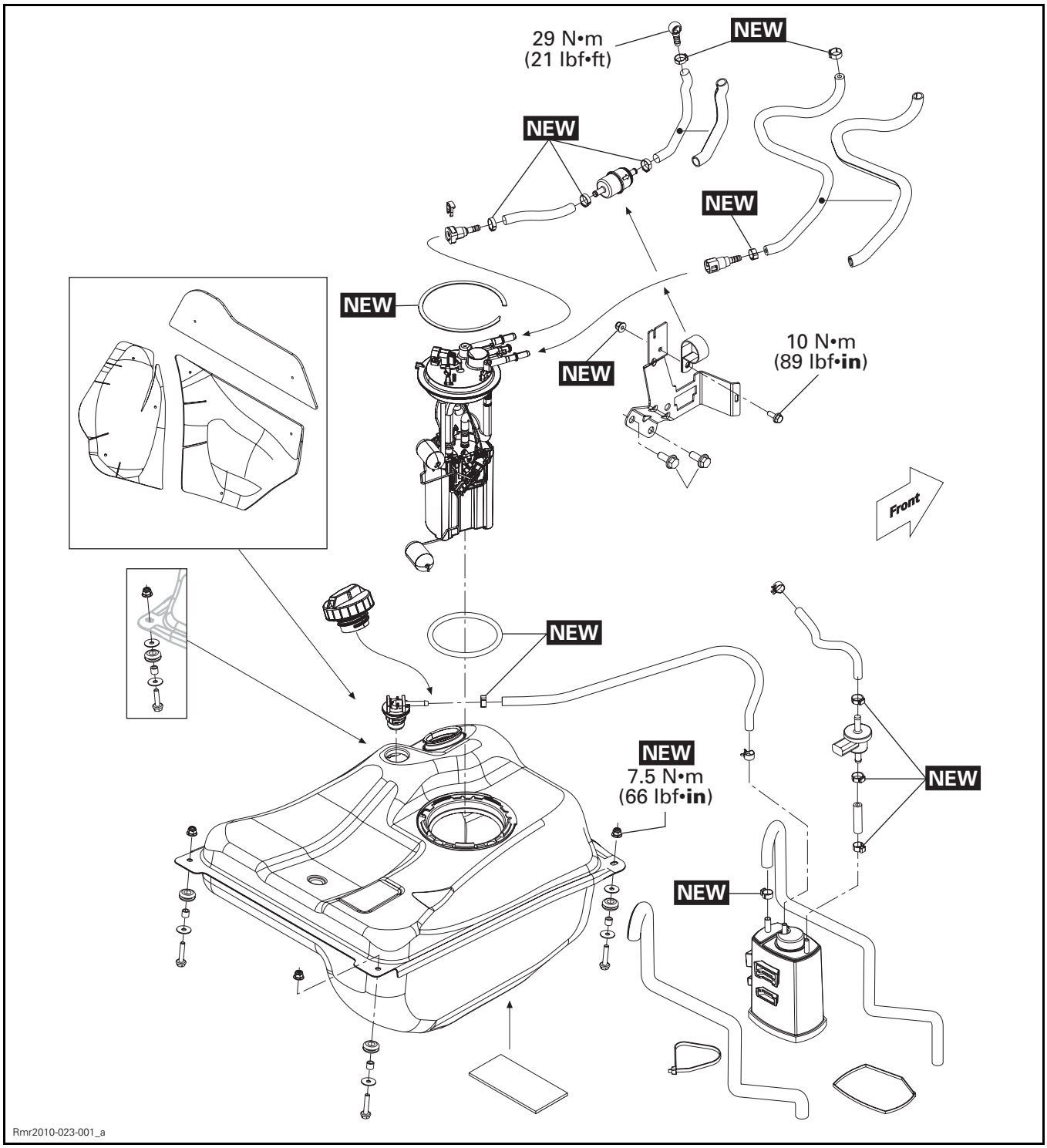
FUEL TANK AND FUEL PUMP

SERVICE TOOLS

Description	Part Number	Page
ECM ADAPTER TOOL	529 036 166	14, 21
FLUKE 115 MULTIMETER	529 035 868	17, 20
FUEL HOSE ADAPTER	529 036 023	6
OETIKER PLIERS	295 000 070	10–11, 22
PRESSURE GAUGE	529 035 709	6
VACUUM/PRESSURE PUMP	529 021 800	4, 19, 22


29 N•m
(21 lbf•ft)
NEW
NEW
NEW
NEW
NEW
10 N•m
(89 lbf•in)
Front
NEW
NEW
7.5 N•m
(66 lbf•in)
NEW
NEW
Rmr2010-023-001_a

GENERAL

⚠ WARNING

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

⚠ WARNING

Always disconnect battery prior to working on the fuel system.

⚠ WARNING

Fuel is flammable and explosive under certain conditions. Always work in a well ventilated area.

⚠ WARNING

Do not allow fuel to spill on hot engine parts and/or on electrical connectors.

⚠ WARNING

Always proceed with care and use appropriate safety equipment when working on pressurized fuel system. Wear safety glasses.

Fuel lines remain under pressure at all times. Proceed with care when removing/installing high pressure test equipment.

Use B.U.D.S. software to disable fuel pump and crank engine to release fuel pressure prior to removing a hose.

Cover the fuel hose connections with an absorbent shop rag and carefully disconnect them to minimize spilling.

Wipe off any fuel spillage.

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

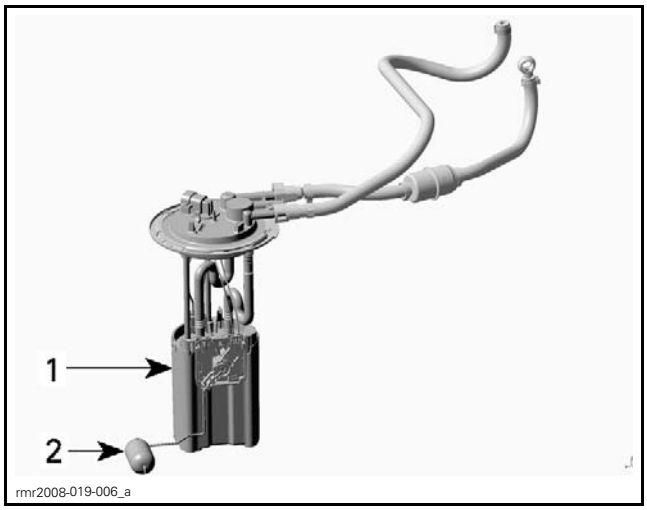
SYSTEM DESCRIPTION

The fuel tank and fuel pump system main components are:

– A fuel tank
– An electric fuel pump module
– An in line fuel filter
– An evaporative emission system
– A purge valve.

Fuel Pump Module

The fuel pump module is inserted through the top of the fuel tank. It includes an electric fuel pump and a float type fuel level sensor that varies in resistance according to fuel level.

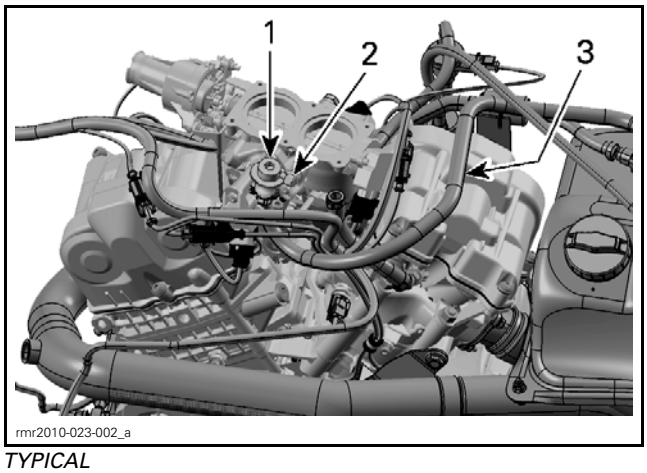


TYPICAL
1. *Fuel pump*
2. *Fuel level sensor*

Fuel Pressure Regulator

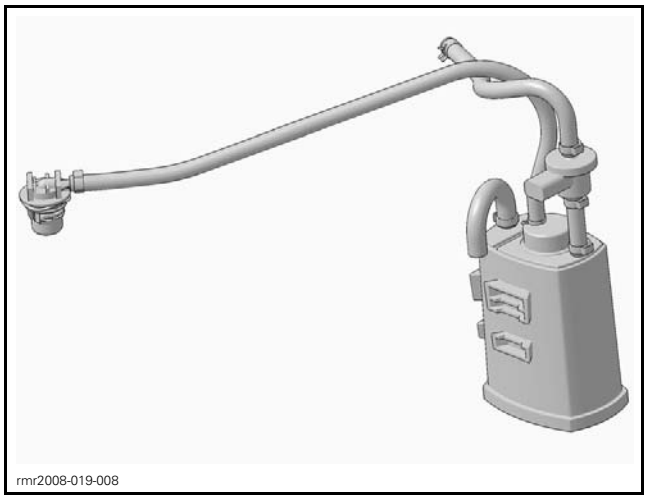
The fuel pressure regulator is mounted on the LH side of the throttle body. It controls the fuel pressure in the system and allows excess fuel to return to the fuel tank.

The fuel pressure regulator is referenced to atmospheric pressure. A small filter is attached to the atmospheric pressure port.

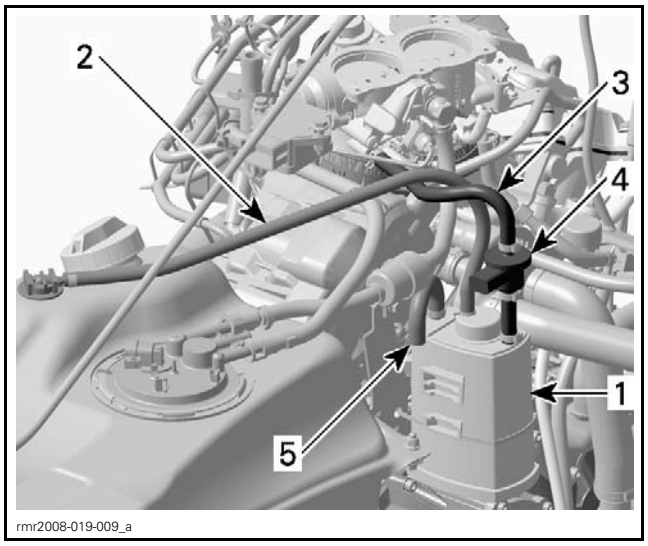


TYPICAL
1. *Fuel pressure regulator*
2. *Filter*
3. *Fuel return line to fuel tank*

Evaporative Emission System (EVAP)



TYPICAL - EVAP CANISTER



TYPICAL
1. *EVAP canister*
2. *Vent hose from fuel tank*
3. *Vacuum hose from throttle body*
4. *EVAP purge solenoid valve*
5. *Overflow hose*

As the vehicle is sitting and not running, fuel evaporates within the fuel tank.

The fuel tank vent is connected to an EVAP canister (charcoal) that is used to trap any hydrocarbon emissions from the evaporated fuel preventing them from escaping to the atmosphere. The fuel vapors are absorbed by a charcoal medium inside the canister.

An EVAP purge valve is used in conjunction with the EVAP canister. A hose connects the solenoid operated valve to a vacuum port on the throttle body.

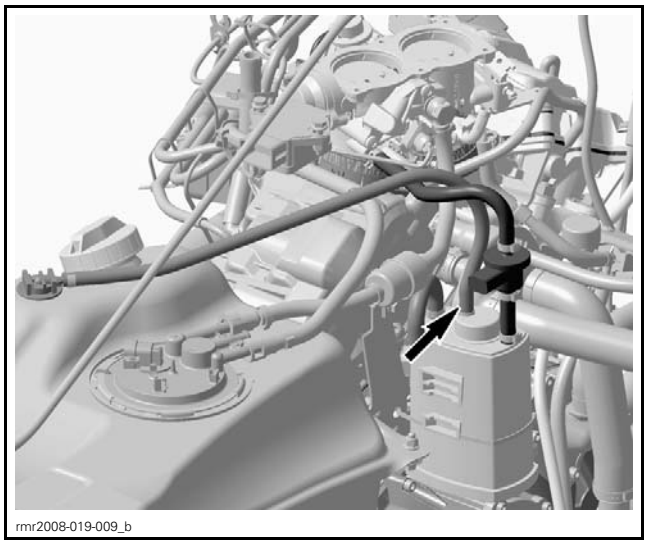
Once the engine is running and reaches a predetermined engine RPM, the ECM energizes the solenoid valve open. Thus, vacuum from the engine draws (or purges) the hydrocarbon emissions from the canister and burns them during the combustion process. The ECM cycles the solenoid ON and OFF as necessary.

Should the canister overfill with liquid fuel, an overflow hose is provided to direct the fuel under the vehicle.

INSPECTION

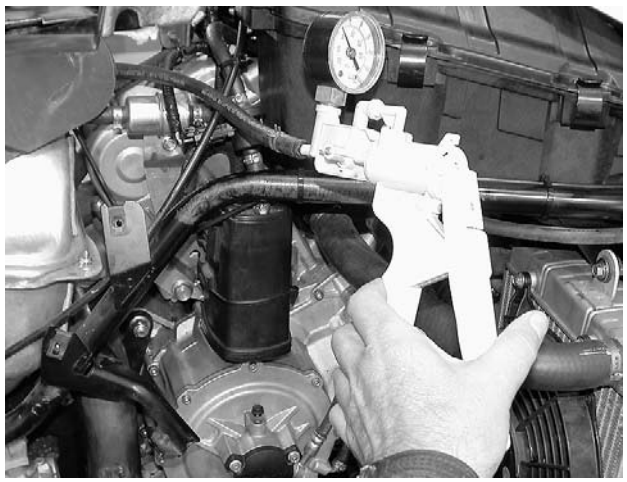
FUEL SYSTEM LEAK TEST

1. Remove body parts on the RH side of the vehicle as required to access fuel system components. Refer to the *BODY* subsection.
2. Fill up fuel tank (recommended).
3. Disconnect vent line from EVAP canister.



TYPICAL - EVAP CANISTER VENT LINE

4. Install VACUUM/PRESSURE PUMP (P/N 529 021 800) onto EVAP canister vent line.


rmr2008-022-015_a

TYPICAL

5. Set hand pump to pressure and pressurize fuel tank as per following table.

FUEL SYSTEM LEAK TEST	
PRESSURE	TIME WITHOUT PRESSURE DROP
28 kPa (4 PSI)	10 minutes

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

NOTE: To ease locating leak(s), spray a solution of soapy water on hoses and components. Bubbles will indicate leak location(s). When testing is complete, thoroughly rinse off the soapy water solution with clear water to prevent premature deterioration of components.

6. Reinstall fuel tank vent hose on EVAP canister.
7. Reinstall all removed body parts, refer to *BODY* subsection.

FUEL PUMP PRESSURE TEST

The fuel pump pressure test provides an indication of the available pressure at the fuel pump outlet. It validates the pressure regulator, the fuel pump and allows checking for leaks in the fuel system (high pressure side).

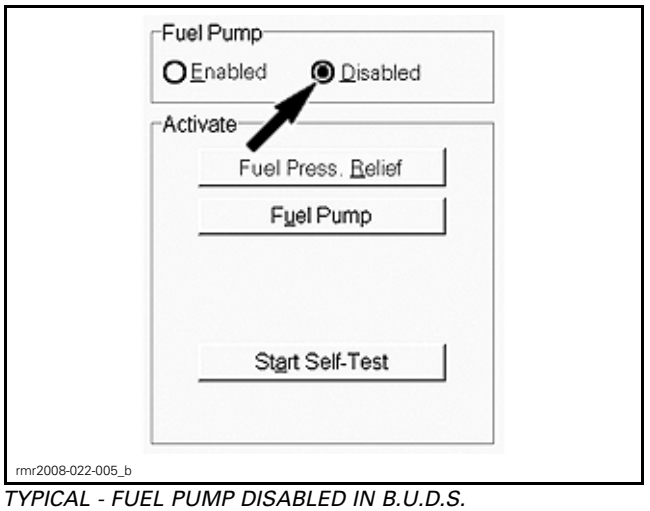
Fuel Pump Pressure Test (Static)

This test allows the following fuel system checks:

– Internal component and external fuel system leak checks (high pressure system)
– Static fuel pressure test (engine not running).

Proceed as follows to conduct test:

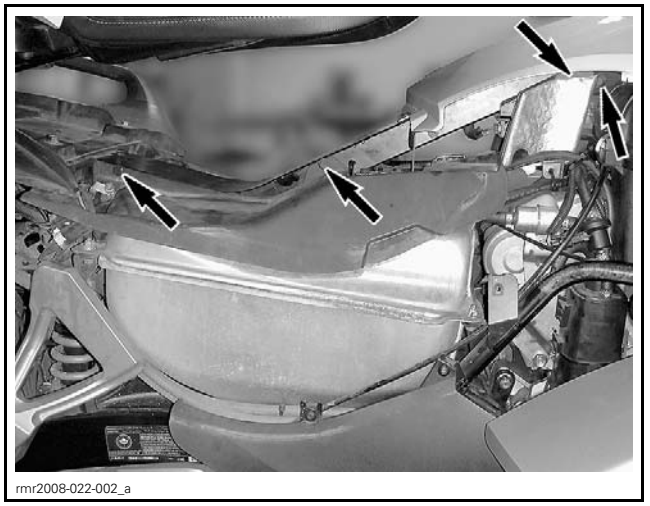
1. Ensure the battery is fully charged. Battery voltage must be over 12 volts.
2. Ensure there is enough gas in fuel tank.
3. Connect to the latest B.U.D.S. software, refer to *COMMUNICATION TOOLS AND B.U.D.S. SOFTWARE* subsection.
4. Select the **Read Data** button.
5. Select the **Activation** tab.
6. On the RH side of the activation page in the **Fuel Pump** field, select the **Disabled** button to disable the fuel pump.



rmr2008-022-005_b

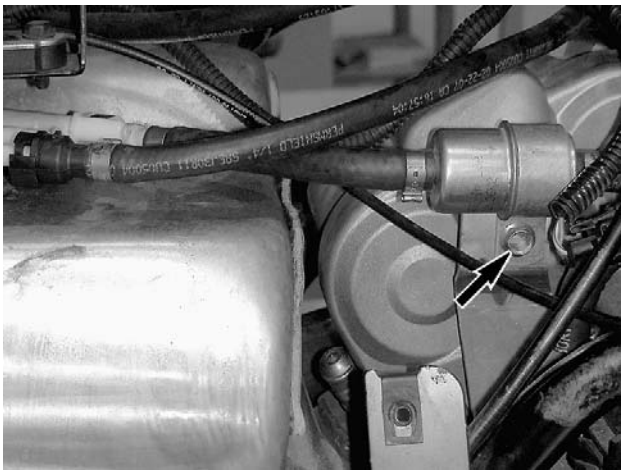
TYPICAL - FUEL PUMP DISABLED IN B.U.D.S.

7. Release fuel pressure in system by running the engine until it runs out of gas.
8. Remove body parts on the RH side of the vehicle as required to access fuel system components. Refer to *BODY* subsection.
9. Remove RH fuel tank cover.


rmr2008-022-002_a

TYPICAL - FUEL TANK COVER PUSH LOCKS

10. Remove fuel filter retaining screw.


rmr2008-022-008_a

TYPICAL - FUEL FILTER RETAINING SCREW

11. Disconnect the pressure hose from the fuel pump module.

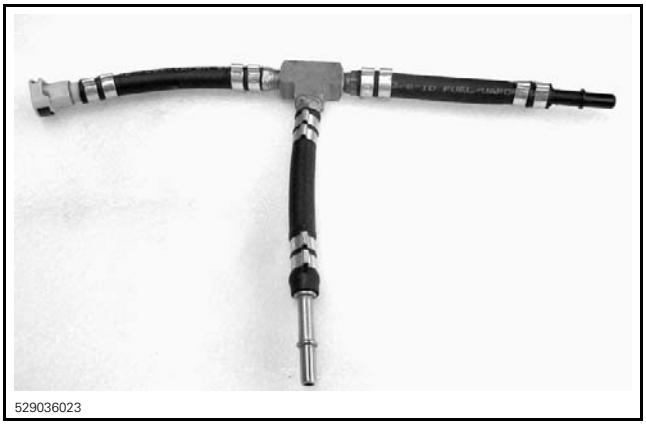
⚠ WARNING

Cover the fuel hose connection with an absorbent shop rag. Slowly disconnect the fuel hose to minimize spilling. Wipe off any fuel spillage.

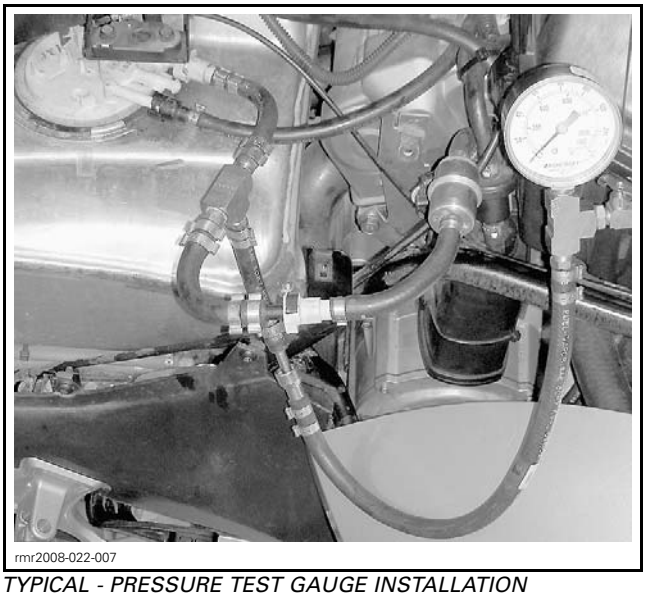

rmr2008-022-006_a

TYPICAL - PUMP MODULE PRESSURE HOSE

12. Connect a fuel PRESSURE GAUGE (P/N 529 035 709) to the FUEL HOSE ADAPTER (P/N 529 036 023).

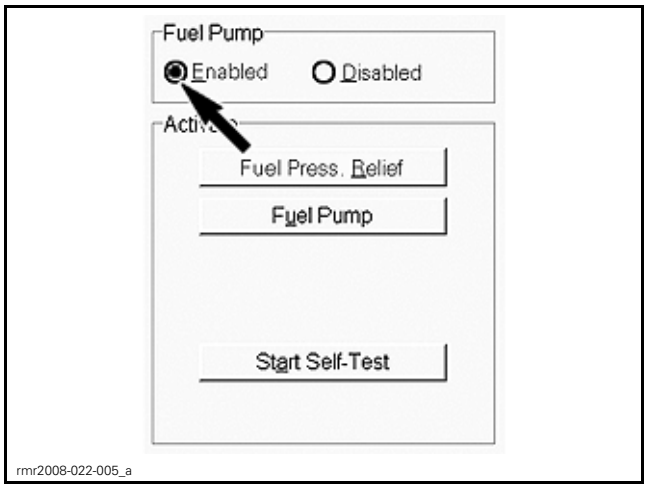

529036023

13. Install gauge T-fitting between disconnected fuel system hoses (in-line installation).


rmr2008-022-007

TYPICAL - PRESSURE TEST GAUGE INSTALLATION

14. In B.U.D.S., reactivate fuel pump by selecting the **Enabled** button in the fuel pump field on the activation page.



TYPICAL - ENABLE FUEL PUMP

15. Set engine stop switch to RUN.
16. Turn ignition key ON. **Do not crank engine.**
17. Observe fuel pressure on test gauge.
18. Turn ignition key OFF.
19. Repeat the test 3 - 4 times to ensure a consistent pressure reading.

FUEL PRESSURE TEST (STATIC)	
FUEL PRESSURE	350 ± 20 kPa (51 ± 3 PSI)

If pressure is not within specifications, refer to *DIAGNOSTIC FLOW CHART (FUEL PUMP)* in *TROUBLESHOOTING* in this subsection.

If pressure is within specifications, carry out the *FUEL PUMP PRESSURE TEST (DYNAMIC)*.

Fuel Pump Pressure Test (Dynamic)

This test validates the following components in the fuel system:

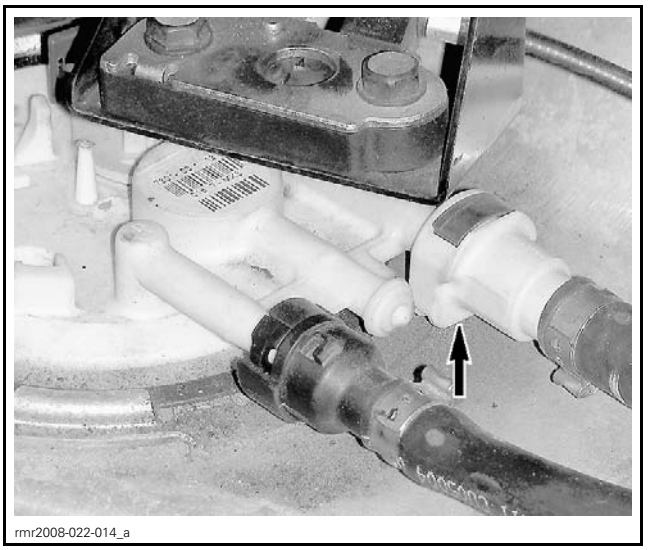
– Fuel filter (if badly clogged)
– Fuel supply and return hoses
– Fuel pump (under partial load)
– Pressure regulator.

1. Follow the instructions in the *FUEL PUMP PRESSURE TEST (STATIC)* procedure to disconnect the fuel pump pressure hose and install the pressure gauge.
2. Start engine.
3. Increase and vary engine RPM.
4. Observe fuel pressure.

FUEL PRESSURE TEST (DYNAMIC)	
FUEL PRESSURE	350 ± 20 kPa (51 ± 3 PSI)

5. If pressure is not within specifications, refer to *DIAGNOSTIC FLOW CHART (FUEL PUMP)* in *TROUBLESHOOTING* in this subsection.
6. Release fuel system pressure using B.U.D.S.
7. Remove all test equipment.
8. Reconnect fuel hoses.

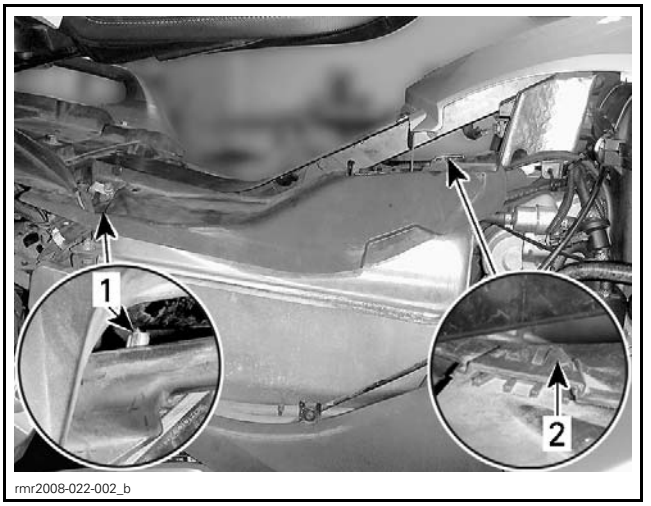
NOTE: Be sure to reconnect the quick connect fitting on the fuel pump pressure hose with the flat portion facing down.



TYPICAL - FLAT SIDE FACING DOWN

9. Reinstall fuel filter retaining screw.
10. Reinstall all removed body parts, refer to *BODY* subsection.

When reinstalling fuel tank covers, pay attention to the following.



TYPICAL
1. Align locating pin
2. Align locking tab

Use locking ties to secure wiring and hoses as per factory specifications.

TROUBLESHOOTING

DIAGNOSTIC FLOW CHART (FUEL PUMP)

Special Procedures using Flow Chart

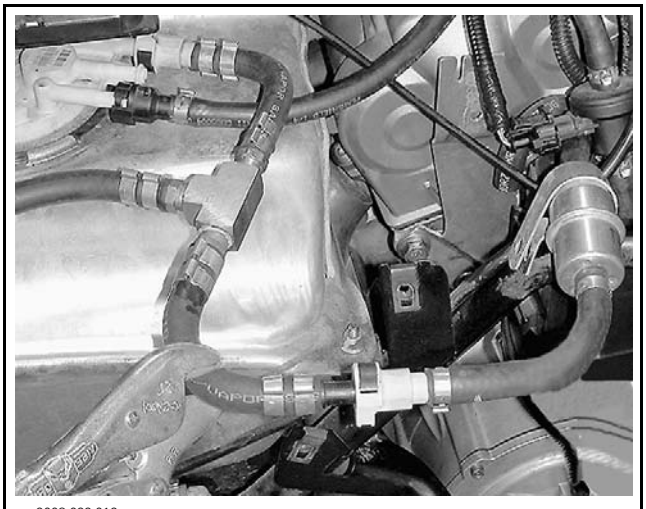
Follow these recommendations and procedures to block fuel hoses as described in the flow chart.

Use hose pinching pliers to momentarily pinch hose.

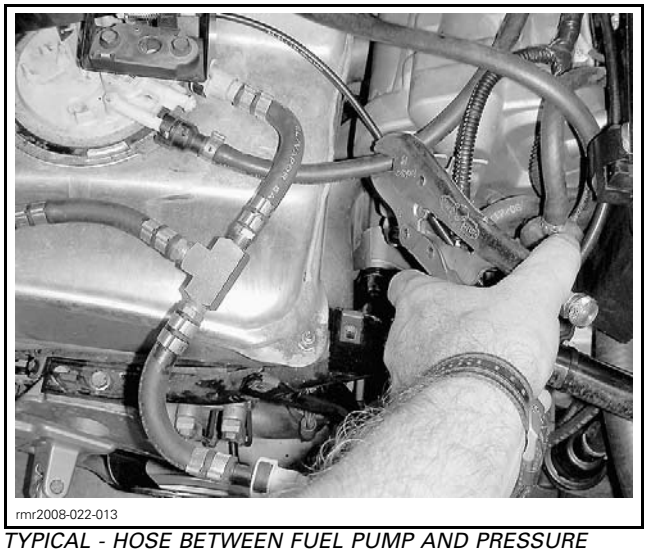
NOTICE Do not use regular pliers. Use only appropriate hose pincher pliers.


rmr2008-022-011

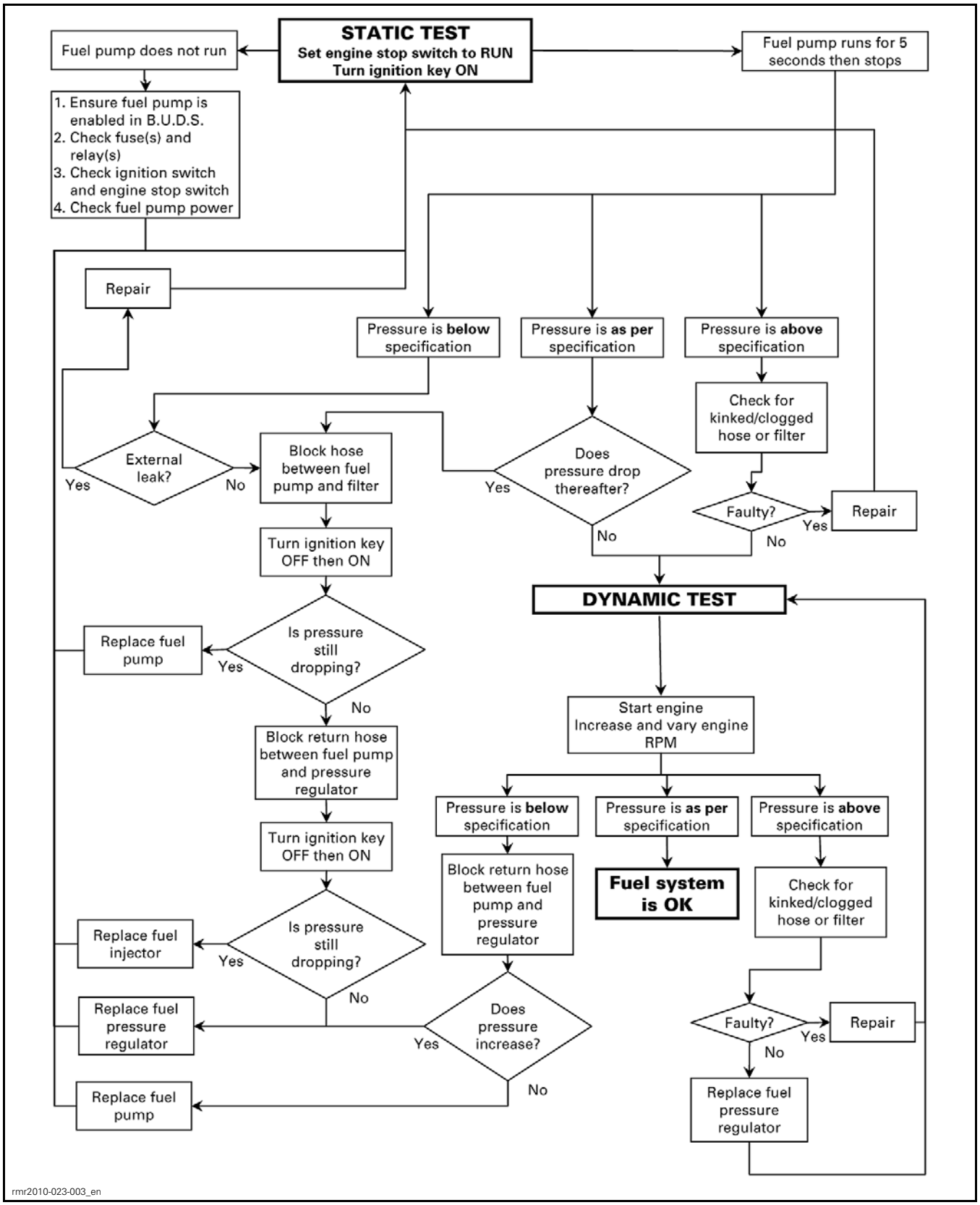
NOTICE Do not pinch hose too hard and no more than 10 seconds.


rmr2008-022-012

TYPICAL - HOSE BETWEEN PUMP AND FILTER


rmr2008-022-013

TYPICAL - HOSE BETWEEN FUEL PUMP AND PRESSURE REGULATOR

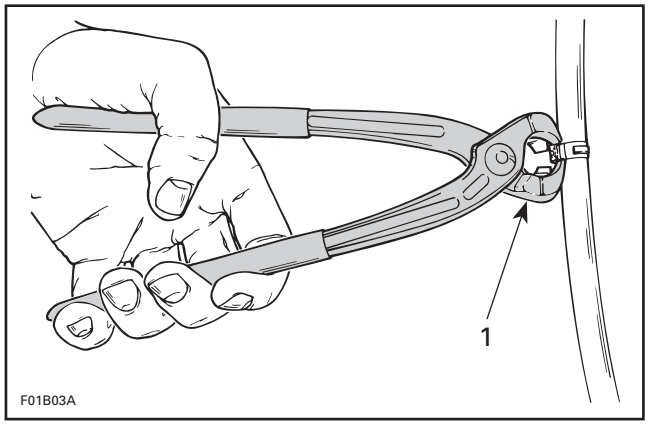

STATIC TEST
Set engine stop switch to RUN
Turn ignition key ON
Fuel pump does not run
Fuel pump runs for 5 seconds then stops
1. Ensure fuel pump is enabled in B.U.D.S.
2. Check fuse(s) and relay(s)
3. Check ignition switch and engine stop switch
4. Check fuel pump power
Repair
Pressure is below specification
Pressure is as per specification
Pressure is above specification
Check for kinked/clogged hose or filter
External leak?
Yes
No
Block hose between fuel pump and filter
Does pressure drop thereafter?
Yes
No
Faulty?
Yes
No
Repair
Turn ignition key OFF then ON
DYNAMIC TEST
Is pressure still dropping?
Yes
No
Replace fuel pump
Start engine
Increase and vary engine RPM
Block return hose between fuel pump and pressure regulator
Pressure is below specification
Pressure is as per specification
Pressure is above specification
Turn ignition key OFF then ON
Block return hose between fuel pump and pressure regulator
Fuel system is OK
Check for kinked/clogged hose or filter
Is pressure still dropping?
Yes
No
Replace fuel injector
Replace fuel pressure regulator
Does pressure increase?
Yes
No
Faulty?
Yes
No
Repair
Replace fuel pump
Replace fuel pressure regulator
rmr2010-023-003_en

PROCEDURES

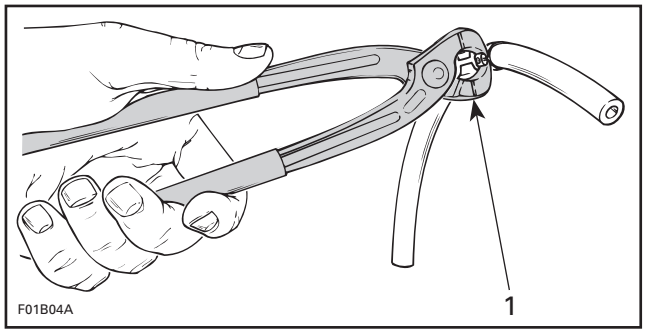
FUEL LINES

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

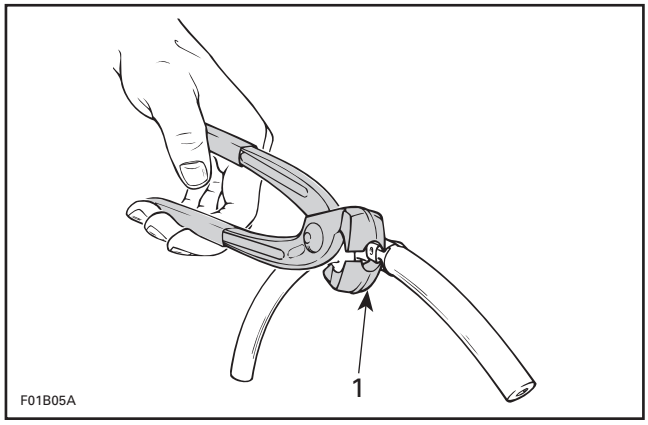
To secure or cut Oetiker clamps on fuel lines, use OETIKER PLIERS (P/N 295 000 070).



1. Cutting clamp



1. Securing clamp



1. Securing clamp in limited access

⚠ WARNING

Replace any damaged, leaking or deteriorated fuel line. Use of damaged fuel lines, or fuel lines not approved by BRP, could compromise fuel system integrity.

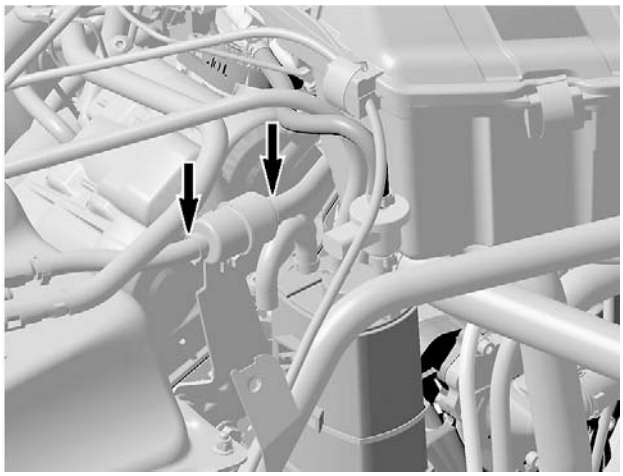
⚠ WARNING

Always disconnect battery exactly in the specified order, BLACK (-) cable first. It is recommended to disconnect electrical connections prior to disconnecting fuel lines.

FUEL FILTER

Fuel Filter Removal

1. Remove body parts on the RH side of the vehicle as required to access fuel system components. Refer to the *BODY* subsection.
2. Release fuel pressure. Refer to *FUEL PUMP PRESSURE TEST (STATIC)* in this subsection.
3. Cut the Oetiker clamps retaining the fuel hoses on each side of the fuel filter.



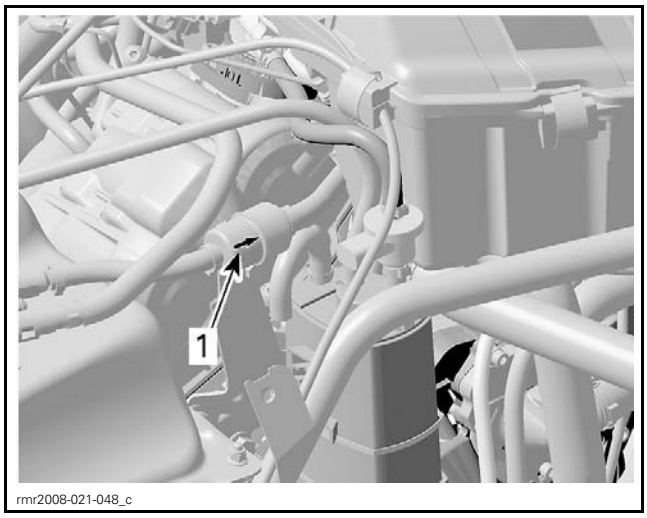
TYPICAL - FUEL FILTER OETIKER CLAMPS

4. Remove the fuel hoses from the fuel filter.
5. Remove the fuel filter support retaining screw.

Fuel Filter Installation

1. Install fuel filter .

NOTE: Be sure to position the arrow on the fuel filter in the direction of fuel flow; from fuel pump towards throttle body.



1. Direction of flow arrow on fuel filter

2. Install new Oetiker clamps on fuel filter hoses using OETIKER PLIERS (P/N 295 000 070).

⚠ WARNING

Always install new Oetiker clamps. Only use the Oetiker clamps recommended in the *PARTS CATALOG*.

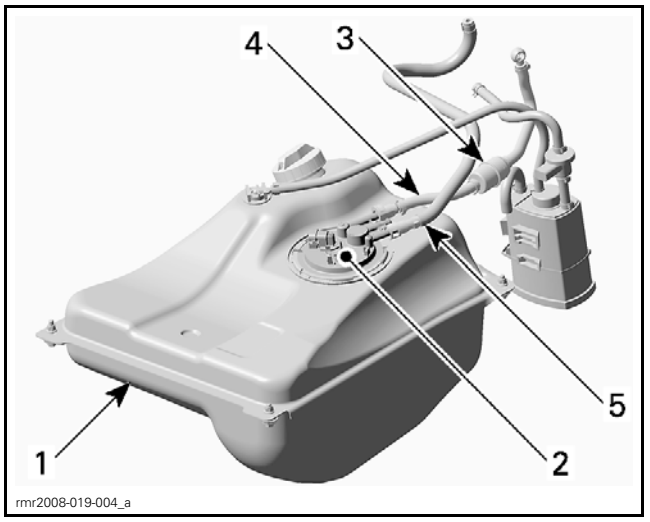
3. Secure filter to chassis. Torque screw on filter retaining clamp to 10 N•m (89 lbf•**in**).
4. Re-enable fuel pump in B.U.D.S. as described in the *FUEL PUMP PRESSURE TEST (STATIC)* procedure in this subsection.
5. Turn ignition switch ON to activate fuel pump and check for leaks in the system. Pay particular attention to the hose connections that were disconnected for the procedure.
6. Reinstall all removed body parts, refer to *BODY* section.

FUEL TANK

Fuel Tank Draining

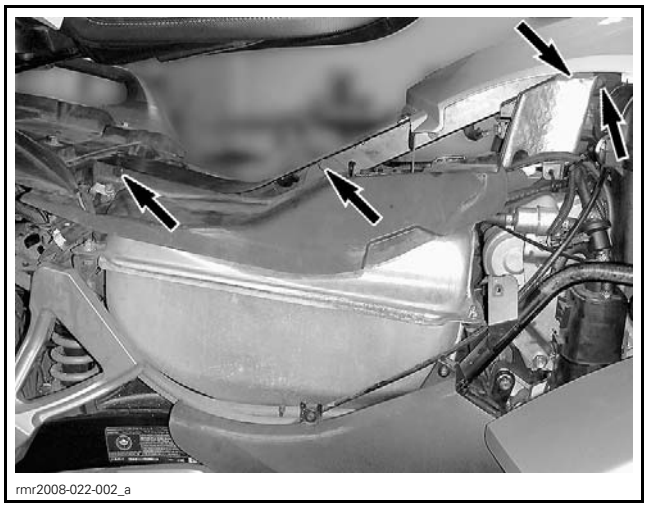
Siphon fuel from tank into an approved fuel storage container.

Fuel Tank Removal



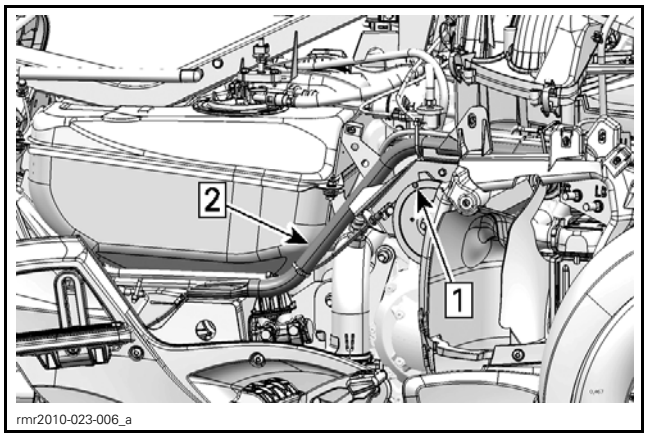
TYPICAL
1. Fuel tank
2. Fuel pump
3. In-line fuel filter
4. Fuel supply hose
5. Fuel return hose

1. Siphon fuel tank.
2. Remove body parts on both sides of the vehicle as required to access the fuel tank, refer to *BODY* subsection.
3. Remove fuel tank covers above fuel tank.



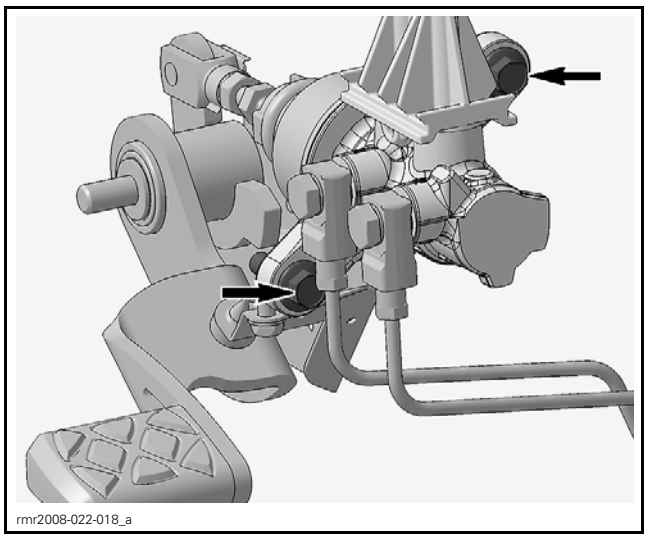
TYPICAL - FUEL TANK COVER PLASTIC RIVETS (RH SIDE ILLUSTRATED)

4. Remove the rear cargo compartment assembly, refer to *BODY* subsection.
5. Disconnect parking brake cable from actuator pulley, refer to *BRAKES* subsection.
6. Remove the RH lateral frame support, refer to *FRAME* subsection.



Step 1: Disconnect parking brake cable here
Step 2: Remove lateral frame support

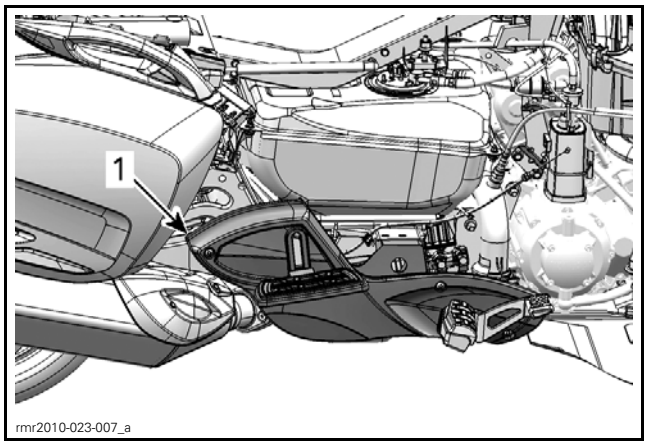
7. Remove 2 retaining screws from the master cylinder.



TYPICAL - MASTER CYLINDER RETAINING SCREWS

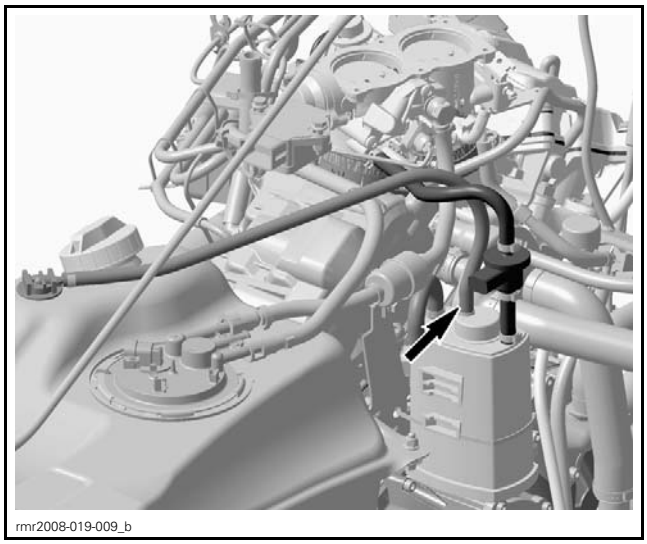
8. Remove the remaining screws that secure the RH foot peg support to the frame, and remove the support from the vehicle.

NOTE: The remaining screws are screwed into the rear face of the foot peg support.



1. RH foot peg support

9. Cut locking ties securing master cylinder hoses coming from brake oil reservoirs (as required).
10. Remove the two brake oil reservoir retaining screws, refer to the *BRAKES* subsection.
11. Remove fuel tank retaining bolts.
12. Remove the bushing and grommet from the LH aft fuel tank mounting bracket.
13. Disconnect fuel pump connector.
14. Disconnect fuel supply and return hoses from fuel tank.
15. Disconnect fuel tank vent hose from EVAP canister.



TYPICAL - EVAP CANISTER VENT HOSE

16. Pull fuel tank up and out from RH side of vehicle.

NOTE: Move master cylinder from side to side as necessary to allow removal of fuel tank. Be specially careful not to damage brake oil hoses and fittings.


rmr2008-022-020_a

TYPICAL - LIFT AND PULL OUT OVER BRAKE OIL HOSES

Fuel Tank Inspection

Inspect fuel tank for any damage or cracks which may result in fuel leaks. Replace fuel tank as required.

Fuel Tank Installation

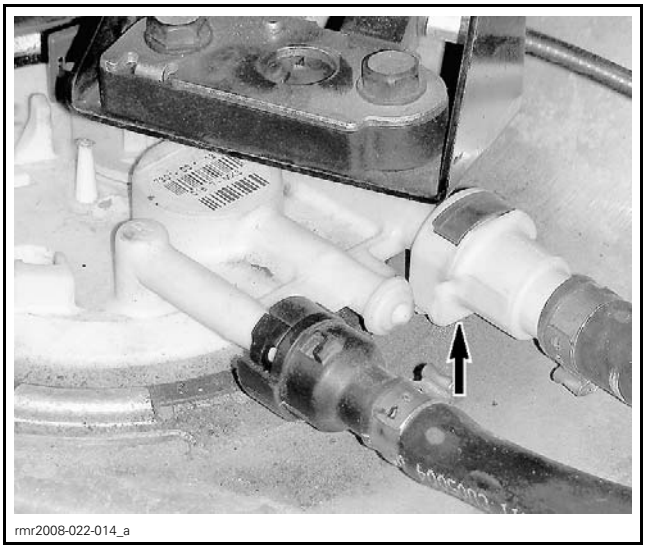
Reverse the removal procedure. However, pay attention to the following:

1. Reinstall fuel tank. Install hardware as illustrated in exploded view at the beginning of this subsection.
2. Torque fuel tank mounting screws to 7.5 N•m (66 lbf•**in**).
3. Reinstall foot peg support. Refer to the *BODY* subsection.
4. Properly reinstall brake system master cylinder and reservoir. Refer to the *BRAKES* subsection.

⚠ WARNING

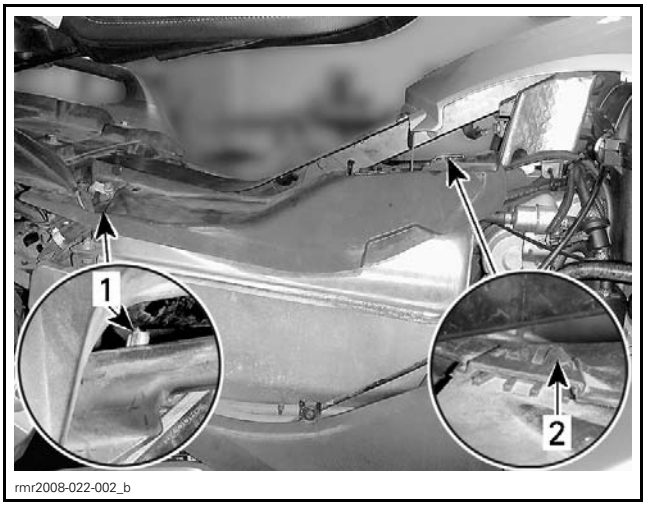
Be sure to carry out a leak test and an operational test of the brake system as indicated in the *BRAKES* subsection.

5. Use locking ties to secure wiring and hoses as per factory specification.
6. Connect fuel supply hose and fuel return hose quick connects. Flat section of quick connect must face down towards fuel tank.


rmr2008-022-014_a

TYPICAL - FLAT SIDE DOWN

7. Install the fuel tank vent hose on the EVAP canister fitting.
8. Install the fuel pump electrical connector after all fuel hoses have been connected.
9. Install fuel tank covers. Ensure proper insertion of alignment pins.

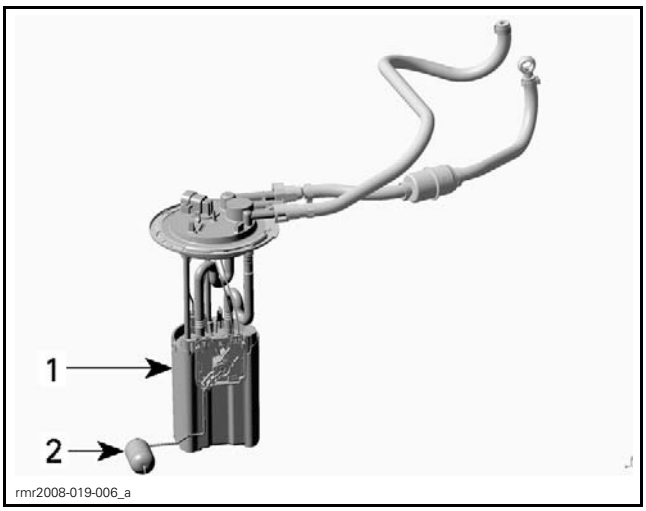


rmr2008-022-002_b

TYPICAL
1. Align locating pin
2. Align locking tab

10. Refill fuel tank.
11. Pressurize fuel system by turning ignition key ON, and check for leaks. Refer to *FUEL SYSTEM LEAK TEST* in this subsection.
12. Reinstall lateral frame support, refer to *FRAME* subsection.
13. Reinstall rear cargo assembly and all other removed body parts, refer to *BODY* subsection.

FUEL PUMP



TYPICAL - FUEL PUMP MODULE
1. *Fuel pump (in pump reservoir)*
2. *Fuel level sensor*

Fuel Pump Quick Test

Open the seat for access to top of fuel tank.

Apply the metal end of a screwdriver to the top of the fuel pump module and, the other end against your ear.

When turning ignition switch to ON, listen for the fuel pump. It should run for a few seconds to build up pressure in the fuel system, and then shut off.

If you do not hear the fuel pump function for a few seconds, check fuse F12 (front fuse box). If fuse is good, carry out a *FUEL PUMP CIRCUIT TEST*.

NOTE: If fuse F12 is blown, the PRE-STARTING RELAY (R2) will NOT be energized closed and the starter solenoid will not function when the start button is pressed, even if all cranking conditions are met.

Fuel Pump Circuit Continuity Test

Remove fuse F12 in front fuse box.

Disconnect ECM connector "B" and install it on the ECM ADAPTER TOOL (P/N 529 036 166).

Set multimeter to Ω and test for circuit continuity through the fuel pump as per following table.

FUEL PUMP CIRCUIT TEST		
FUSE BOX	ECM ADAPTER	RESISTANCE @ 20°C (68°F)
Pin A-9	Pin M-1	Approx. 2 Ω

If you obtained a resistance close to 2 ohms (or slightly higher), the fuel pump and its circuit wiring is good.

NOTE: The fuel pump motor winding resistance should be slightly less than 2 ohms when measured at the pump connector.

If you obtained a high resistance or an open circuit, disconnect the fuel pump connector and carry out the *FUEL PUMP INPUT CIRCUIT CONTINUITY* and the *FUEL PUMP CONTROL CIRCUIT CONTINUITY* tests separately as per following tables. Refer to *WIRING DIAGRAM* for circuit detail.

FUEL PUMP CIRCUIT CONTINUITY (POWER WIRE)		
FUSE BOX	PUMP HARNESS CONNECTOR	RESISTANCE @ 20°C (68°F)
Pin A-9	Pin B	Close to 0 Ω

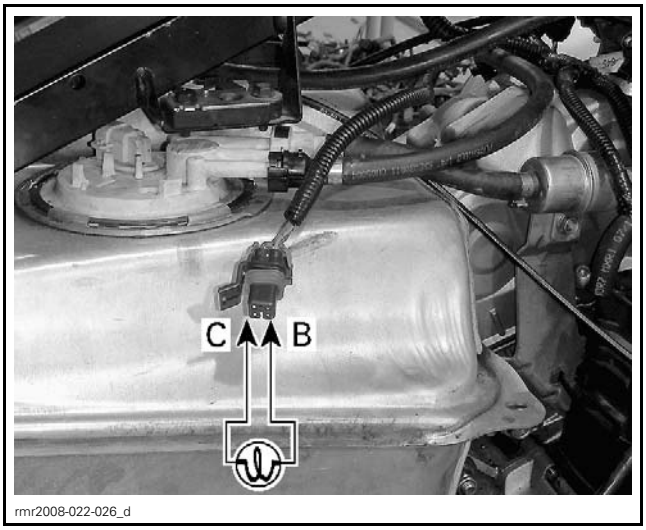
FUEL PUMP CIRCUIT CONTINUITY (CONTROL WIRE)		
ECM CONNECTOR "B"	PUMP HARNESS CONNECTOR	RESISTANCE @ 20°C (68°F)
Pin M-1	Pin C	Close to 0 Ω

If you do not obtain close to 0 ohms (continuity), repair applicable wiring/connectors.

If you obtained close to 0 ohms, carry out a *FUEL PUMP INPUT VOLTAGE TEST*.

Fuel Pump Circuit Test Using a Test Light

1. Connect a 12 Vdc test light between the fuel pump harness connector pins B and C.
2. Turn the ignition switch ON. The test light should turn on for a few seconds, then turn off.



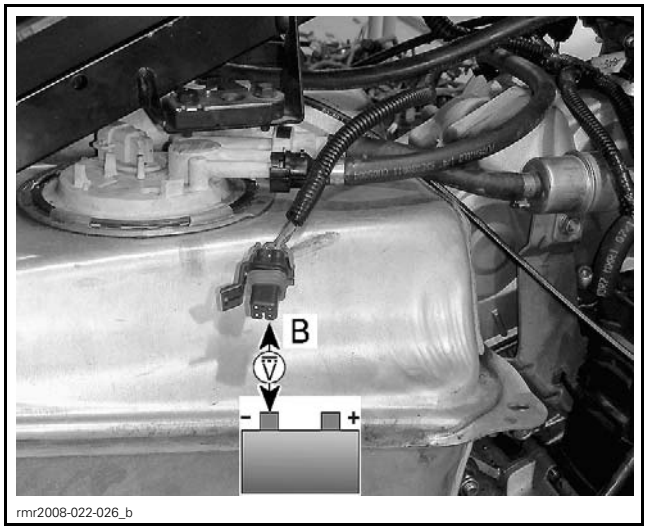
TYPICAL

If test light came ON for a few seconds and then turned OFF, the fuel pump circuit and ECM are functioning normally. Replace fuel pump.

If the test came on dim or not at all, carry out the *FUEL PUMP INPUT VOLTAGE TEST*.

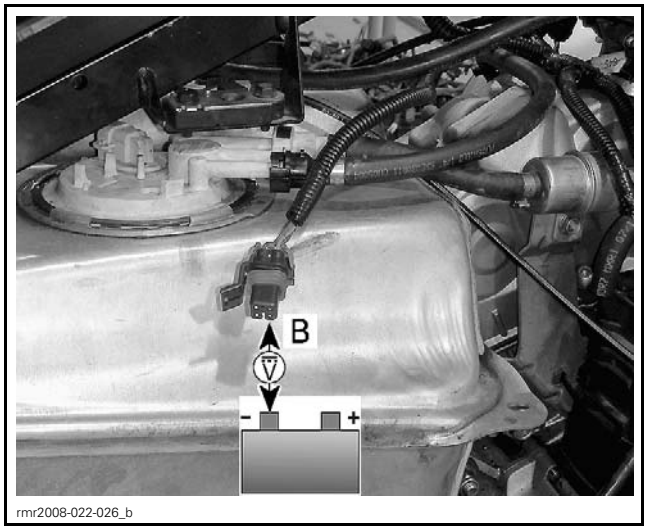
Fuel Pump Input Voltage Test

Probe fuel pump harness connector as illustrated using a multimeter set to 12 Vdc. When turning ignition switch ON, you should read close to battery voltage.



TYPICAL

If battery voltage is not read, carry out a *FUEL PUMP CIRCUIT CONTINUITY TEST* for the pump power wire.



TYPICAL

If battery voltage is read to ground, the pump input circuit is good. Carry out a *FUEL PUMP CIRCUIT CONTINUITY TEST* for the control wire (ground circuit) from the ECM.

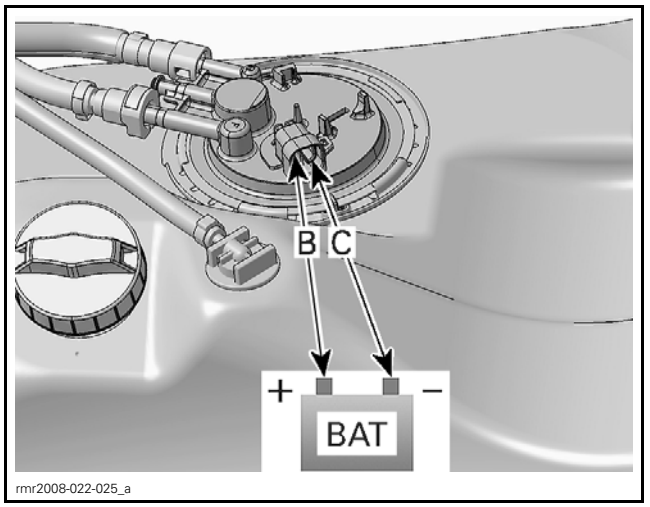
If voltage is low to battery ground, test for a short or partial short circuit to ground with the pump circuit isolated from parallel circuits, refer to the *WIRING DIAGRAM*.

NOTE: A fault in the ECM or in a parallel circuit may prevent fuel pump operation. Use B.U.D.S. to check for fault codes.

Fuel Pump Operational Test

Install small insulated jumper wires between the fuel pump module connector and a known good 12 volt battery as in following illustration.

Ensure normal pump circuit polarity is respected as illustrated.



TYPICAL

NOTICE **Running the fuel pump connected in reverse polarity for a few minutes can damage the pump motor.**

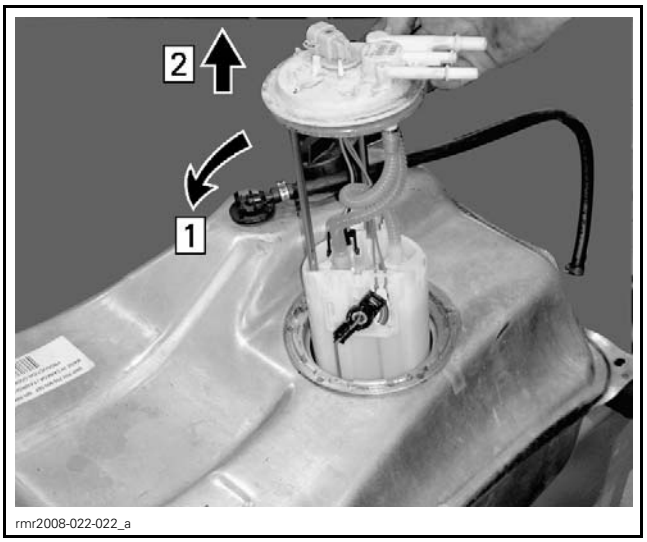
If pump does not function, replace it.

Fuel Pump Removal

1. Remove fuel tank, see *FUEL TANK REMOVAL* in this subsection.
2. Use an appropriate screwdriver to carefully pry out the tapered end of fuel pump retainer ring.


rmr2008-022-021_a

3. Remove and discard retainer ring.
4. Carefully pull out fuel pump paying attention to float arm.



rmr2008-022-022_a

Step 1: Rotate pump backward
Step 2: Pull out pump

5. Discard O-ring seal on pump module.

Fuel Pump Installation

Reverse removal procedure. However, pay attention to the following:

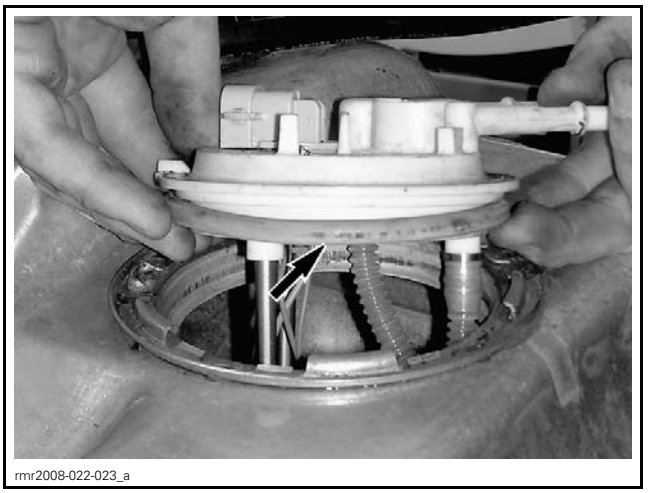
⚠ WARNING

Install a new fuel pump ring seal and retainer ring.

1. Install and hold a NEW ring seal against fuel pump flange.

NOTE: Apply some oil on ring seal to ease installation.

2. Carefully insert pump in fuel tank; be careful not to damage fuel level float arm.


rmr2008-022-023_a

TYPICAL - PUMP RING SEAL INSTALLATION

3. Index fuel pump tab with notch in fuel tank and ensure pump and O ring seal are properly seated.

rmr2008-022-024_a

TYPICAL - PUMP INDEXING
1. Index tab with notch

4. Install a new fuel pump retaining ring.

⚠ WARNING

Ensure retainer ring is properly seated and locked.

5. Pressurize fuel system and check for leaks. Refer to *FUEL SYSTEM LEAK TEST.*

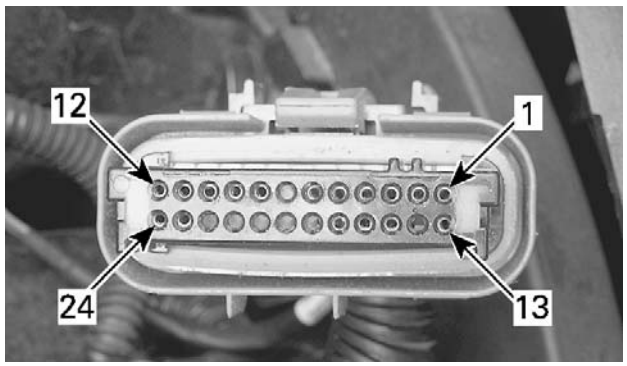
FUEL LEVEL SENSOR

Fuel Level Sensor Resistance Test

With Digital Fuel Indication in Multifunction Gauge

1. Remove the multifunction gauge (cluster), refer to the *LIGHTS, GAUGE AND ACCESSORIES* subsection.
2. Disconnect the multifunction gauge connector.
3. Set the FLUKE 115 MULTIMETER (P/N 529 035 868) to Ω selection.
4. Alternately fill and empty fuel tank, and measure the fuel sensor resistance through the wiring harness as per following table.

FUEL LEVEL SENSOR RESISTANCE TEST		
FUEL LEVEL	CLUSTER CONNECTOR	RESISTANCE READING AT 21°C (70°F)
Empty	Pin 15 to chassis ground	Approx. 290 Ω
Full		Approx. 80 Ω



rmr2008-066-002_a

CLUSTER CONNECTOR PIN OUT

If you did not obtain readings as specified, carry out the *CONTINUITY TEST OF FUEL LEVEL SENSOR WIRING*.

If you obtained resistance readings as specified, fuel level sensor and harness wiring are good. Carry out a WOW test of the multifunction gauge using the B.U.D.S. software. See *MULTIFUNCTION GAUGE TEST USING B.U.D.S* in the *LIGHTS, GAUGE AND ACCESSORIES* subsection. Check for proper operation of the fuel level indication during the WOW test.

With Analog Fuel Gauge

1. Remove the analog fuel gauge connector (FG1).
2. Carry out a fuel level sensor resistance test as per following table.

TEST PROBES	
FG1 pin S	Chassis ground

FUEL LEVEL SENSOR RESISTANCE TEST	
FUEL LEVEL	RESISTANCE READING AT 21°C (70°F)
Empty	Approx. 290 Ω
Full	Approx. 80 Ω

If you obtain resistance readings as specified, the fuel level sensor and it's wiring harness are good. Refer to the *LIGHTS, GAUGE AND ACCESSORIES* subsection.

If you do not obtain readings as specified, carry out the *CONTINUITY TEST OF FUEL LEVEL SENSOR WIRING*.

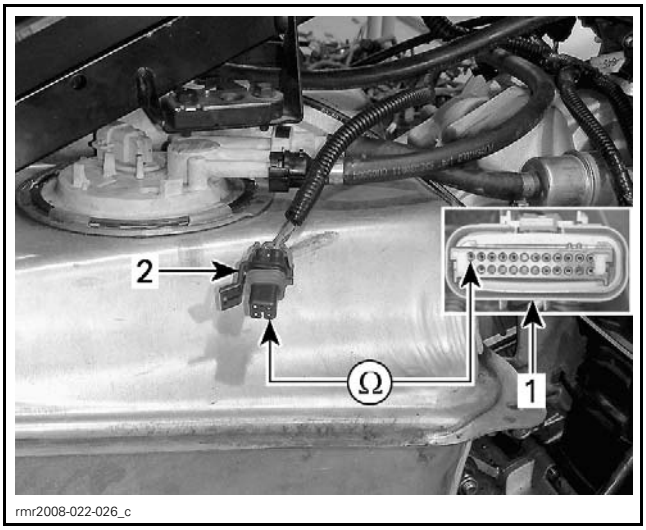
Continuity Test of Fuel Level Sensor Wiring

Disconnect the fuel pump module electrical connector.

With Digital Fuel Indication in Multifunction Gauge

Measure for continuity of the wiring from the fuel pump connector **(FP)** and the multifunction gauge cluster connector **(CL)** as per following table. Refer to *WIRING DIAGRAM* for details.

CONTINUITY TEST OF FUEL LEVEL SENSOR WIRING		
PROBE CONNECTORS		RESISTANCE READING AT 21°C (70°F)
FP-A (BU wire)	CL-15	Close to 0 Ω
	Chassis ground	OL (infinite)
FP-D (BK)	Chassis ground	Close to 0 Ω



TYPICAL - CONTINUITY TEST OF FUEL LEVEL SENSOR WIRING
1. *Cluster connector*
2. *Fuel pump module connector*

If resistance readings are as specified, remove the fuel pump module and replace the fuel level sensor. Refer to the *FUEL TANK AND FUEL PUMP* subsection.

If resistance readings are not as specified, carry out continuity test at D1C1-D connector pin. Repair or replace wiring and connectors as required.

With Analog Fuel Gauge

Measure for continuity of the wiring from the fuel pump connector **(FP)** and the analog fuel gauge connector **(FG)** as per following table. Refer to *WIRING DIAGRAM* for details.

CONTINUITY TEST OF FUEL LEVEL SENSOR WIRING		
PROBE CONNECTORS		RESISTANCE READING AT 21°C (70°F)
FG1-S (BU wire)	FP-A (BU wire)	Close to 0 Ω
	Chassis ground	OL (infinite)
FP-D (BK)	Chassis ground	Close to 0 Ω

If resistance readings are as specified, remove the fuel pump module and replace the fuel level sensor. Refer to the *FUEL TANK AND FUEL PUMP* subsection.

If resistance readings are not as specified, carry out continuity test at DIC1-D connector pin. Repair or replace wiring/connectors as required.

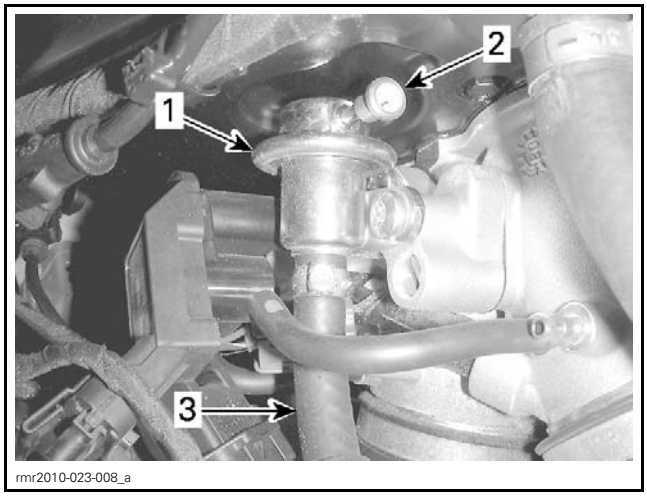
NOTE: The DIC1 connector is located between the air inlet resonator and the instrument console.

FUEL PRESSURE REGULATOR

The fuel pressure regulator is mounted to the fuel rail on the LH side of the throttle body.

The fuel pump pressure hose is connected to the fuel rail on the RH side of the throttle body. It provides the full fuel pump pressure to both injector fuel rails through an interconnecting port within the throttle body.

The pressure regulator regulates the pressure from the pump by bleeding away excess pressure in the fuel rails and returning it to the fuel pump.



TYPICAL
1. *Fuel pressure regulator*
2. *Filter*
3. *Fuel return hose to fuel pump*

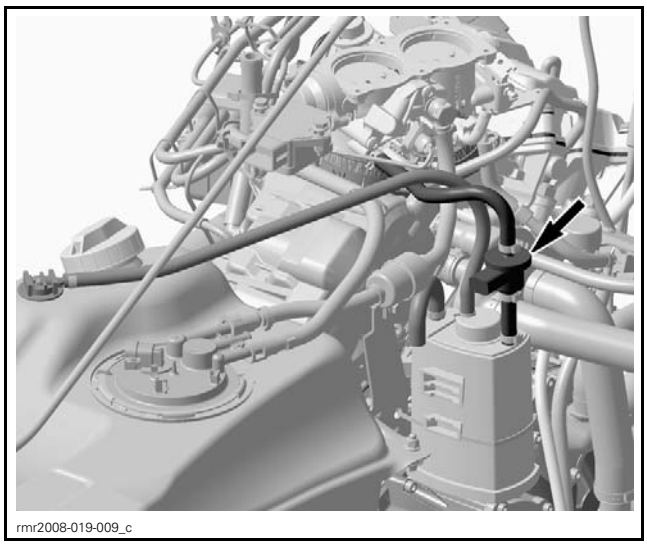
Fuel Pressure Regulator Test

Refer to *FUEL PRESSURE TEST* in this subsection for testing procedure.

Fuel Pressure Regulator Replacement

For replacement of the fuel pressure regulator, refer to *FUEL RAIL REPLACEMENT* in the *ELECTRONIC FUEL INJECTION (EFI)* subsection.

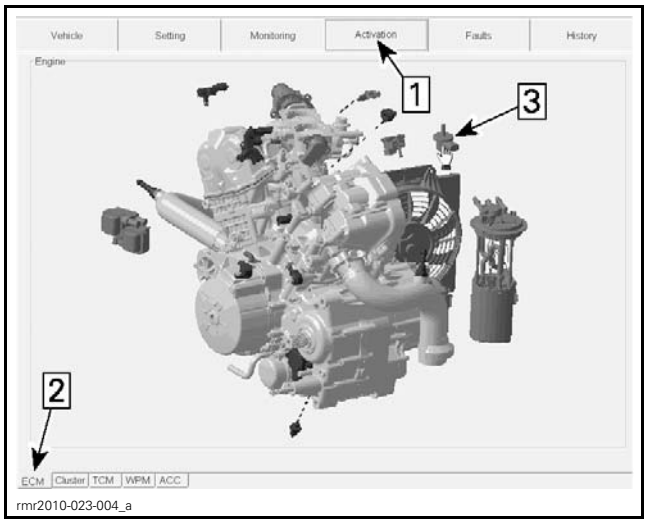
EVAP PURGE VALVE



TYPICAL - EVAP PURGE VALVE

Purge Valve Test using B.U.D.S.

1. Remove RH side panels as required to access the purge valve. Refer to the *BODY* subsection.
2. Turn ignition key ON.
3. Using B.U.D.S. software, activate the purge valve as per following illustration.



TYPICAL - PURGE VALVE ACTIVATION IN B.U.D.S.
Step 1: Select activation page tab
Step 2: Choose ECM page
Step 3: Click on purge valve icon

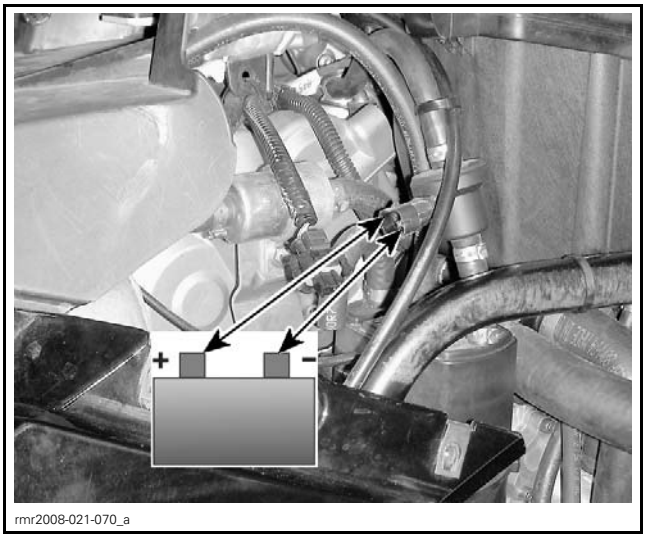
You should feel the solenoid within the purge valve operating.

If operation of the solenoid is felt when activated, carry out the *PURGE VALVE OPERATION TEST*.

If solenoid does not function, carry out the *PURGE VALVE SOLENOID TEST*.

Purge Valve Solenoid Test

1. Disconnect the purge valve connector.
2. Connect small jumper wires to the purge valve solenoid.
3. Momentarily connect the jumper wires to a remote 12 Vdc battery.



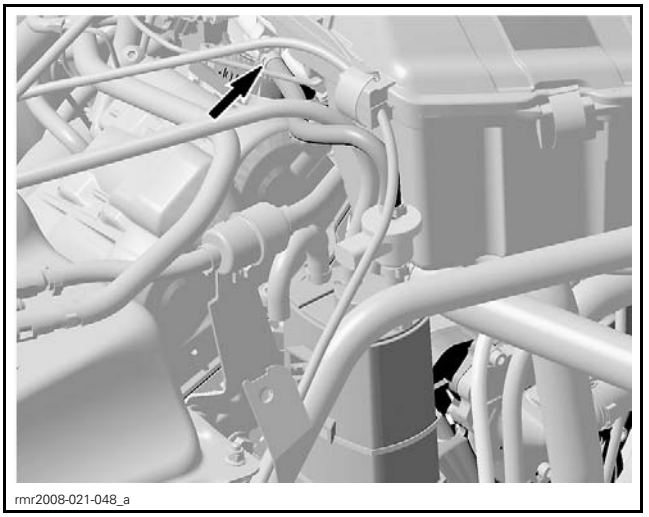
TYPICAL

If the solenoid does not function, replace it.

If the solenoid functions, carry out the *PURGE VALVE INPUT VOLTAGE TEST*.

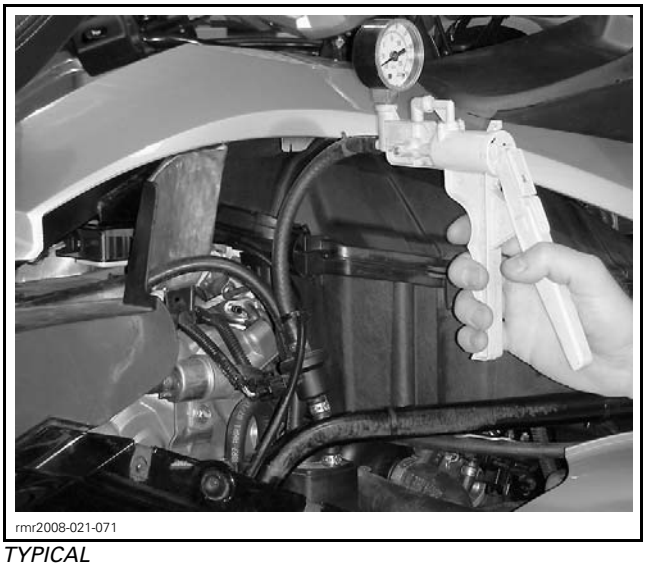
Purge Valve Operational Test

1. Disconnect purge valve vacuum hose from the throttle body.



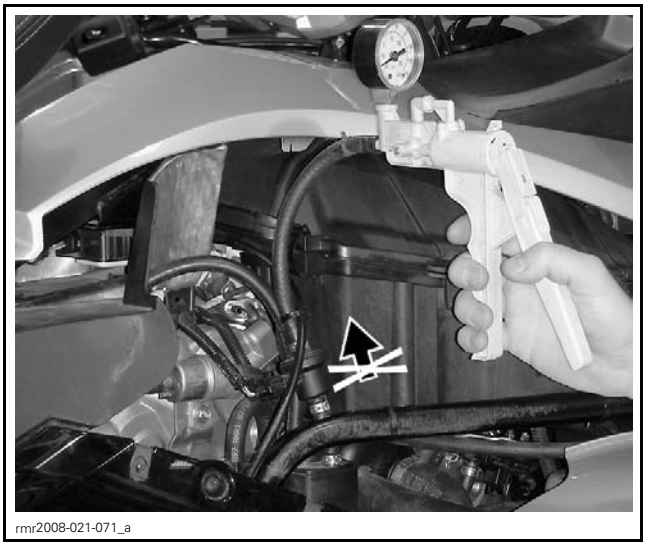
TYPICAL

2. Install the VACUUM/PRESSURE PUMP (P/N 529 021 800) on the vacuum hose.



TYPICAL

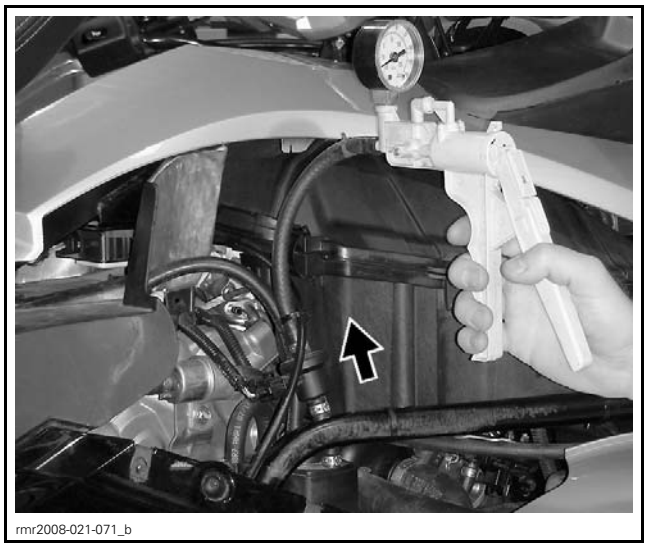
3. Set pump to vacuum function.
4. Activate pump lever several times. Air should not come through the purge valve. Otherwise, replace the purge valve.



TYPICAL

5. Turn ignition key ON.
6. Using B.U.D.S. software, activate the purge valve as illustrated in *PURGE VALVE TEST USING B.U.D.S.*.

Air should now flow through purge valve when you apply vacuum with the hand pump. Otherwise, replace the valve as it does not open when the valve solenoid is activated.



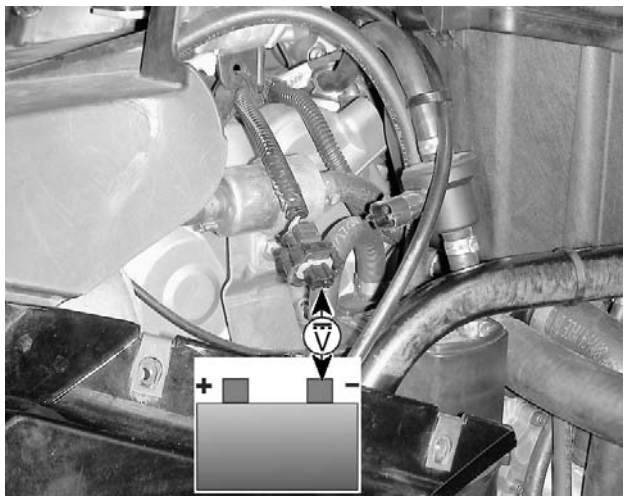
TYPICAL

7. Remove the hand pump and reconnect the vacuum hose on the throttle body.
8. Install all removed parts in the reverse order of removal.

Purge Valve Input Voltage Test

1. Disconnect the purge valve connector.
2. Turn ignition switch to ON.
3. Using a FLUKE 115 MULTIMETER (P/N 529 035 868) set to Vdc, measure for input voltage at the purge valve connector (EVAP) as per following table.

PURGE VALVE INPUT VOLTAGE TEST		
PURGE VALVE SOLENOID (HARNESS SIDE)		MEASUREMENT
PROBE		
Pin 2 (ORANGE/GREEN)	Battery ground	Battery voltage



rmr2008-021-070_b

TYPICAL

If input voltage is as specified, carry out the *PURGE VALVE CONTROL CIRCUIT TEST*.

If input voltage is not as specified, check fuse F12.

NOTE: If fuse F12 is open, the starter solenoid will not function either.

If fuse is good, carry out a *PURGE VALVE INPUT CIRCUIT TEST (CONTINUITY)* in this subsection.

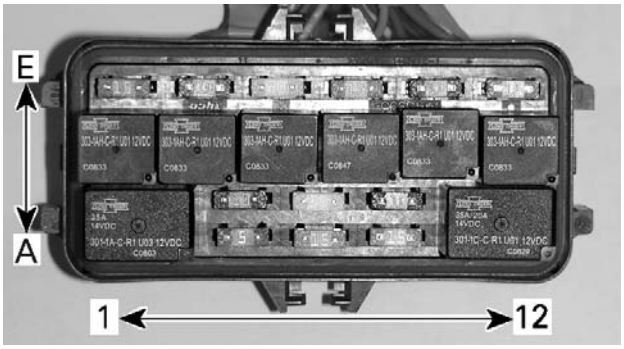
Purge Valve Input Circuit Test (Continuity)

Remove fuse F12 in front fuse box.

Disconnect the purge valve connector.

Set multimeter to Ω and test for continuity of the purge valve input circuit (12 Vdc) as per following table.

PURGE VALVE INPUT CIRCUIT TEST (CONTINUITY)		
PURGE VALVE HARNESS CONNECTOR	FRONT FUSE BOX	RESISTANCE @ 20°C (68°F)
Pin 2	Pin A9	Close to 0 Ω (continuity)



rmr2010-023-005_a

TYPICAL – FRONT FUSE BOX PIN-OUT

If continuity is not good, repair or replace wiring and connectors between fuse box and valve connector.

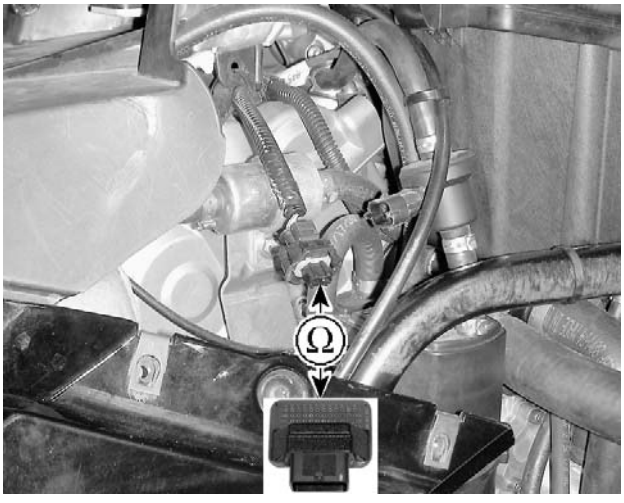
If continuity is good, carry out the *PURGE VALVE CONTROL CIRCUIT TEST* in this subsection.

Purge Valve Control Circuit Test (Continuity)

Disconnect "A" connector from the ECM and connect it to the ECM ADAPTER TOOL (P/N 529 036 166).

Set multimeter to Ω and test for continuity of the purge valve control circuit (ground) as per following table.

PURGE VALVE CONTROL CIRCUIT TEST		
PURGE VALVE HARNESS CONNECTOR	ECM CONNECTOR "A"	RESISTANCE @ 20°C (68°F)
Pin 1	M3	Close to 0 Ω (continuity)



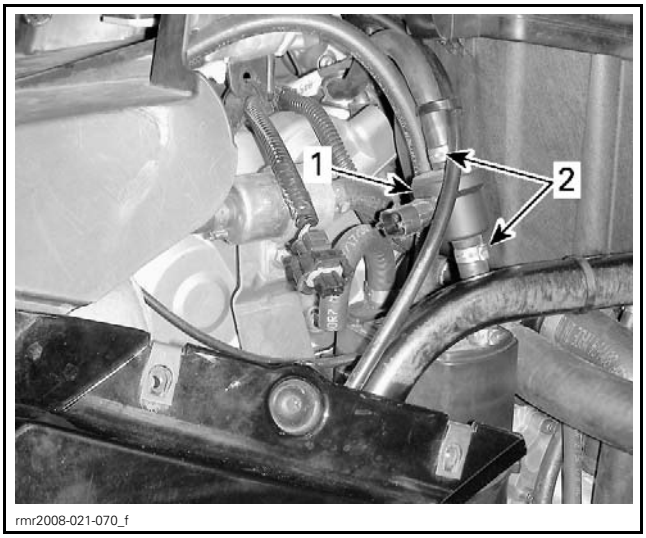
rmr2008-021-070_g

If ground circuit is faulty, repair/replace wiring/connector.

Purge Valve Replacement

Removal

1. Disconnect purge valve connector.
2. Cut Oetiker clamps securing hoses to purge valve.



1. EVAP purge valve
2. Oetiker clamps

NOTE: To secure or cut Oetiker clamps, use OETIKER PLIERS (P/N 295 000 070).

3. Pull hoses off valve.

Installation

1. Carry out a functional test of the purge valve prior to installation using a remote 12 Vdc battery and the VACUUM/PRESSURE PUMP (P/N 529 021 800) as described in *PURGE VALVE OPERATIONAL TEST* in this subsection.
2. Secure hoses to the purge valve using NEW Oetiker clamps.
3. Reconnect purge valve connector.