1992 Volvo 940

Submodel: | **Engine Type:** L4 | **Liters:** 2.3
Fuel Delivery: FI | **Fuel:** GAS

When there is a problem starting or driving a vehicle, two of the most important checks involve the ignition and the fuel systems. The questions most mechanics attempt to answer first, `is there spark?'' and `is there fuel?'' will often lead to solving most basic problems. For ignition system diagnosis and testing, please refer to the information on engine electrical components and ignition systems found earlier in this manual. If the ignition system checks out (there is spark), then you must determine if the fuel system is operating properly (is there fuel?).

1992 Volvo 940

Submodel: | **Engine Type:** L4 | **Liters:** 2.3
Fuel Delivery: FI | **Fuel:** GAS

LH denotes that this is a "hot wire" system. The system is fully electronically controlled and incorporate a number of sensors, whose signals are processed by a control unit. There are several different versions of the LH system, including the 2.2, 2.4, 3.1 and 3.2. The Bosch LH-Jetronic system is used in combination with the EZK ignition system and the turbocharged control system, where applicable. The LH fuel system is characterized by the following:

- Measurement of intake air through the air mass meter of the hot wire type
- Use of a separate cold start valve that supplies extra fuel, at or below 60°F (16°C)
- Knock controlled fuel enrichment system
- Engine speed taken from an inductive transmitter on the flywheel
- Lambda probe (oxygen sensor) providing oxygen content of the exhaust gases
- EVAP system to minimize evaporation from the fuel tank
- Three-way catalytic converter

Several sensors feed the control unit information to precisely control fuel injection. To accomplish this, the control unit evaluates: exhaust gas oxygen content from the oxygen sensor (Lambda-sond), engine RPM and crankshaft position information from the ignition system control unit (if information is not received, the fuel system control unit will not function), engine temperature from the coolant temperature sensor, engine load information from the air mass meter, information from the throttle switch, which indicates if the throttle is closed or wide open, electrical system voltage from the battery current and signals from the A/C switch and clutch, indicating whether they are operating.

1992 Volvo 940

Submodel: | **Engine Type:** L4 | **Liters:** 2.3
Fuel Delivery: FI | **Fuel:** GAS

The Bosch Motronic fuel injection system is equipped with a powerful control unit that controls ignition and fuel injection functions by means of individual ignition coils and injectors. There are several different Motronic fuel injection versions. These include the 1.8, 4.3, and 4.4.

In addition to controlling the ignition and fuel injection functions, Motronic also:

- Determines whether the A/C compressor may be switched on
- Reduces the engine torque in response to a signal from the automatic transmission control unit, to insure smooth engagement of the different gears, and also supplies the transmission control unit with information on engine running conditions for computing gear changes
- Controls the operation of the radiator fan

The control unit is provided with adaptive Lambda control and idling control functions, as well as timing retardation function, to eliminate knock. The service requirement is minimal, since neither the carbon monoxide level nor the idling speed require adjustment.

1992 Volvo 940

Submodel: | **Engine Type:** L4 | **Liters:** 2.3
Fuel Delivery: FI | **Fuel:** GAS

Most Volvo fuel lines use threaded-type connections. These connections are removed using the appropriate size flare-nut wrenches. Use one wrench to hold the male fitting, while the other wrench turns the female fitting until the lines are separated.

Some connections do have quick-connect fittings. The fuel filter has a quick-connect fitting; it is removed using a 17mm wrench to depress the tab and remove the line. Other quick-connect fittings have clips which must be removed before the line can be separated. **NOTE: For additional information on Fuel Filter removal and installation, refer to Section 1 of this manual.**

1992 Volvo 940

Submodel: | **Engine Type:** L4 | **Liters:** 2.3
Fuel Delivery: FI | **Fuel:** GAS

2.3L 4-Cylinder and 2.8L 6-Cylinder Engines

1. Properly relieve the fuel system pressure.
2. Disconnect the negative battery cable.
3. Label and remove electrical connectors from the injectors.
4. Remove the fuel lines from the fuel rail.
5. Remove the retaining bolts from the fuel rail.

NOTE: On the 2.8L engine, remove one fuel rail at a time.

6. Remove the fuel rail and injectors as an assembly.

To install:

7. Lubricate the O-rings on the injectors with petroleum jelly or equivalent.
8. Install the fuel rail assembly. Ensure that the O-rings seat properly.
9. Tighten the fuel rail retaining bolts.
10. Install the fuel lines on the fuel rail.
11. Install the injector connectors.
12. Connect the negative battery cable.
13. Start the vehicle and check for leaks.

Fig. 1: Exploded view of the 2.3L 4-cylinder fuel rail and pressure regulator assembly

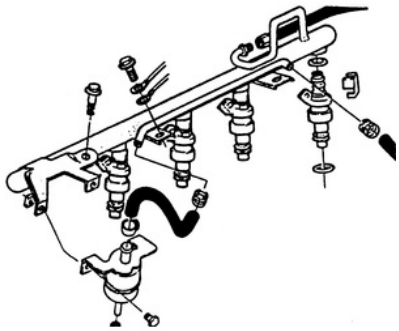
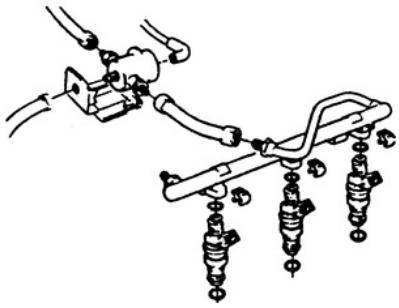


Fig. 2: Exploded view of the 2.8L 6-cylinder fuel rail and pressure regulator assembly



2.3L and 2.4L 5-Cylinder Engines and 2.9L 6-Cylinder Engine

1. Remove the throttle pulley cover and shield over the valve on the fuel rail.
2. Properly relieve the fuel system pressure.
3. Disconnect the negative battery cable.
4. Remove or disconnect the following components:
   - Upper air charge pipe
   - Fuel rail cover
   - Injector connectors
   - Fuel line clips
5. Disconnect the vacuum hose from the pressure regulator.
6. Remove the fuel rail retaining bolts and lift the rail off with the injectors.

To install:

7. Make sure the rubber dampers are installed in the injector ports in the intake manifold.
8. Install the rail into the intake manifold.
9. Install or connect the following:
    - New bolts in the fuel rail and tighten to 7.5 ft. lbs. (10 Nm)
    - Fuel line clips
    - Injector connector with rubber seal
    - Fuel rail and throttle pulley covers
    - Upper air charge pipe
10. Connect the negative battery cable.
11. Run car and check for leaks.

Fig. 3: Remove the fuel rail cover retaining bolts

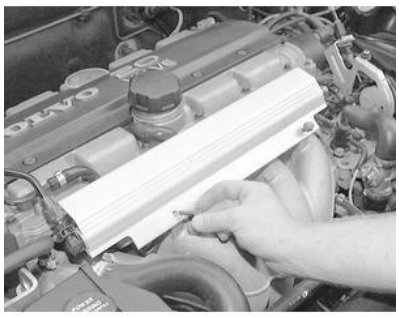


Fig. 4: Unplug the injector connectors by pressing the retaining spring down, and pulling the connector off

Fig. 5: Remove the fuel feed line using the proper size wrenches

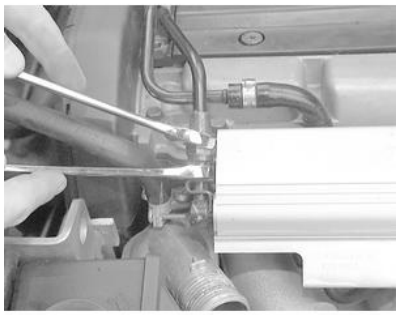


Fig. 6: Remove the fuel return line clamp, and make sure both lines are free before removing the fuel rail

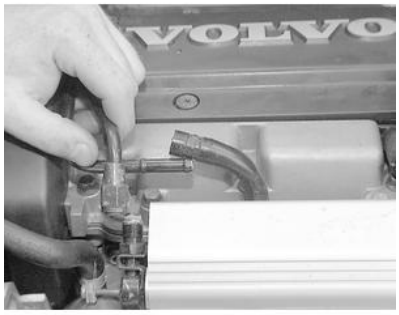


Fig. 7: Lift the fuel rail off evenly, taking care not to lose any spacers or O-rings while removing

1992 Volvo 940

Submodel: | **Engine Type:** L4 | **Liters:** 2.3
Fuel Delivery: FI | **Fuel:** GAS

2.3L 4-Cylinder and 2.8L 6-Cylinder Engines

1. Relieve the fuel system pressure.
2. Disconnect the negative battery cable.
3. Disconnect the fuel lines, electrical connectors and vacuum hose from the injection manifold and pressure regulator.
4. Unbolt the pressure regulator from the fuel rail bracket.
5. Remove the injector cover plate, if equipped.
6. Remove the fuel injection manifold retaining bolts. Remove the fuel injection manifold and injectors as one unit.
7. Secure the injection manifold in a suitable holding fixture and remove the fuel injectors.

To install:

8. Check the fuel injector O-rings, and replace if necessary.
9. Coat the O-rings with petroleum jelly and install the fuel injectors to the injection manifold.
10. Install the fuel injection manifold and fuel injectors as one unit.
11. Install and tighten the retaining bolts.
12. Install the injector cover plate, if equipped.
13. Connect the pressure regulator to the fuel injection manifold and then attach to the bracket.
14. Connect the vacuum hose, fuel lines and electrical connectors.
15. Connect the negative battery cable.
16. Start the vehicle and check for leaks.

2.9L 6-Cylinder Engine

1. Properly relieve the fuel system pressure.
2. Disconnect the negative battery cable.
3. Remove fuel rail protective cover.
4. Remove the fuel lines from the fuel rail.
5. Label and remove electrical connectors from the injectors.
6. Remove fuel rail retaining bolts.
7. Remove fuel rail assembly by pulling the rail up evenly to ensure the injectors come out of the intake.
8. Remove the injector(s) from the fuel rail.

To install:

9. Lubricate the O-rings on the injectors with petroleum jelly or equivalent and place the injectors into the fuel rail, ensuring that the O-rings are seated.
10. Install the fuel rail assembly. Ensure the O-rings seat properly.
11. Tighten the fuel rail retaining bolts.
12. Install the fuel injector connectors.
13. Install the fuel lines on the fuel rail.
14. Install the protective cover on the fuel rail.
15. Connect the negative battery cable.
16. Start the vehicle and check for leaks.
17. Ensure that the fuel pressure is correct.
18. Shut the engine **OFF** and install the protective cover on the fuel rail.

2.3L and 2.4L 5-Cylinder Engines

1. Remove the throttle pulley cover and shield over the valve on the fuel rail.
2. Properly relieve the fuel system pressure.
3. Disconnect the negative battery cable.
4. Remove or disconnect the following components:
    - Upper air charge pipe
    - Fuel rail cover
    - Injector connectors
    - Fuel line clips
5. Disconnect the vacuum hose from the pressure regulator.
6. Remove the fuel rail retaining bolts and lift the rail off with the injectors.

NOTE: Handle the fuel injectors with care, to avoid damaging the nozzles or needles. Be sure to retain the rubber dampers from the intake manifold.

7. Remove the injector(s) to be replaced and soak up any fuel spillage. Make sure that a spacer is in the fuel rail O-ring seat.

To install:

8. Lubricate the O-ring(s) with petroleum jelly, then install the new injector(s) into the rail.
9. Make sure the rubber dampers are installed in the injector ports in the intake manifold.
10. Install the rail into the intake manifold.
11. Install or connect the following:
    - New bolts in the fuel rail and tighten to 7.5 ft. lbs. (10 Nm)
    - Fuel line clips
    - Injector connector with rubber seal
    - Fuel rail and throttle pulley covers
    - Upper air charge pipe

12. Connect the negative battery cable.
13. Run the car and check for leaks.

Fig. 1: Remove the injector from the fuel rail and replace the O-ring

Fig. 2: Make sure the injector spacers are not lost

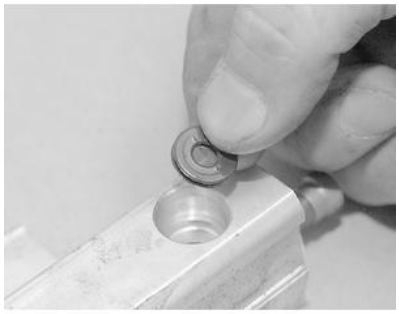


Fig. 3: Replace the O-ring on the intake manifold side of the injector as well

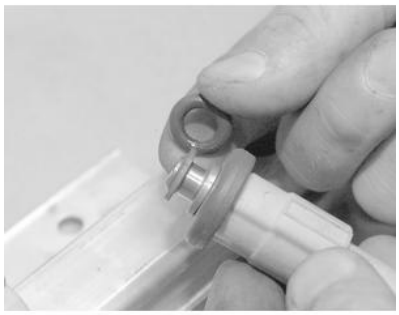
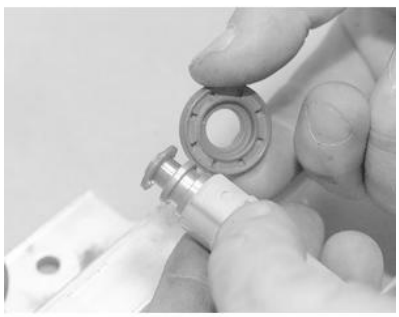


Fig. 4: The rubber dampers for the intake manifold must be installed before the fuel rail is reinstalled



1992 Volvo 940

Submodel: | **Engine Type:** L4 | **Liters:** 2.3
Fuel Delivery: FI | **Fuel:** GAS

The easiest way to test the operation of the fuel injectors is to listen for a clicking sound coming from the injectors while the engine is running. This is accomplished using a mechanic's stethoscope, or a long screwdriver. Place the end of the stethoscope or the screwdriver (tip end, not handle) onto the body of the injector. Place the ear pieces of the stethoscope in your ears, or if using a screwdriver, place your ear on top of the handle. An audible clicking noise should be heard; this is the solenoid operating. If the injector makes this noise, the injector driver circuit and computer are operating as designed. Continue testing all the injectors this way.

CAUTION
Be extremely careful while working on an operating engine, make sure you have no dangling jewelry, extremely loose clothes, power tool cords or other items that might get caught in a moving part of the engine.

All Injectors Clicking

If all the injectors are clicking, but you have determined that the fuel system is the cause of your driveability problem, continue diagnostics. Make sure that you have checked fuel pump pressure as outlined earlier in this section. An easy way to determine a weak or unproductive cylinder is a cylinder drop test. This is accomplished by removing one spark plug wire at a time, and seeing which cylinder causes the least difference in the idle. The one that causes the least change is the weak cylinder.

If the injectors were all clicking and the ignition system is functioning properly, remove the injector of the suspect cylinder and bench test it. This is accomplished by checking for a spray pattern from the injector itself. Install a fuel supply line to the injector (or rail if the injector is left attached to the rail) and momentarily apply 12 volts DC and a ground to the injector itself; a visible fuel spray should appear. If no spray is achieved, replace the injector and check the running condition of the engine.

One or More Injectors Are Not Clicking

If one or more injectors are found to be not operating, testing the injector driver circuit and computer can be accomplished using a "noid" light. First, with the engine not running and the ignition key in the **OFF** position, remove the connector from the injector you plan to test, then plug the "noid" light tool into the injector connector. Start the engine and the "noid" light should flash, signaling that the injector driver circuit is working. If the "noid" light flashes, but the injector does not click when plugged in, replace the injector and retest.

If the "noid" light does not flash, the injector driver circuit is faulty. Disconnect the negative battery cable. Unplug the "noid" light from the injector connector and also unplug the ECM. Check the harness between the appropriate pins on the harness side of the ECM connector and the injector connector. Resistance should be less than 5.0 ohms; if not, repair the circuit. If resistance is within specifications, the injector driver inside the ECM is faulty and replacement of the ECM will be necessary.

1992 Volvo 940

Submodel: | **Engine Type:** L4 | **Liters:** 2.3
Fuel Delivery: FI | **Fuel:** GAS

2.3L 4-Cylinder and 2.8L 6-Cylinder Engines

1. Properly relieve the fuel system pressure.
2. Disconnect the negative battery cable.
3. Remove the fuel lines from the pressure regulator.
4. Remove the vacuum line from the pressure regulator.
5. Remove the pressure regulator-to-bracket retaining bolts/nuts.

To install:

6. Install the pressure regulator in the bracket and tighten the retaining bolts/nuts.
7. Install the vacuum line.
8. Install and tighten the fuel lines.
9. Connect the negative battery cable.
10. Start vehicle and check for leaks.
11. Ensure fuel pressure is correct.
12. Shut engine off and install the protective cover on the fuel rail.

2.9L 6-Cylinder Engine; 2.3L and 2.4L 5-Cylinder Engines

1. Properly relieve the fuel system pressure.
2. Disconnect the negative battery cable.
3. Remove the fuel rail assembly.
4. Remove the vacuum line from the pressure regulator.
5. Remove the fuel lines from the pressure regulator.
6. Remove the pressure regulator from the fuel rail.

To install:

7. Lubricate the O-ring on the pressure regulator and the O-rings on the injectors with petroleum jelly or equivalent.
8. Install new pressure regulator ensuring O-ring seats properly.
9. Install and tighten the fuel lines to the regulator.
10. Install the vacuum line to the pressure regulator.
11. Install the fuel rail assembly. Ensure that the O-rings seat properly.
12. Connect the negative battery cable.
13. Start the vehicle and check for leaks.
14. Check that the fuel pressure is correct.
15. Shut the engine **OFF** and install the protective cover on the fuel rail.

Fig. 1: Remove the pressure regulator retaining bolts

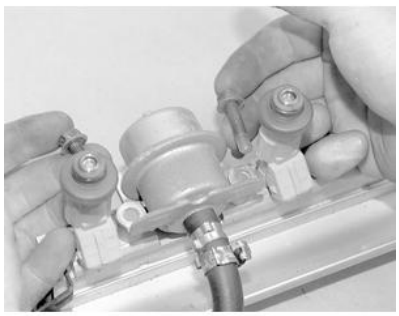


Fig. 2: Remove and safely store the spacers that go under the retaining bolts

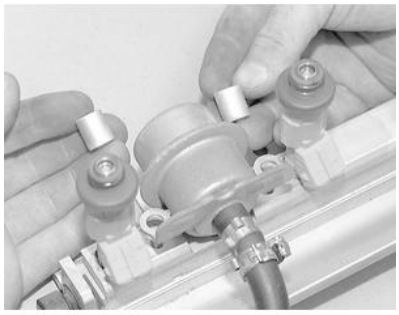


Fig. 3: Lift the regulator off of the fuel rail

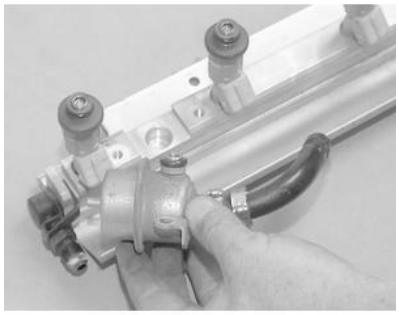


Fig. 4: Remove the O-ring from the pressure regulator port; install a new O-ring during assembly

Fig. 5: Also replace the copper gasket on the pressure regulator body to prevent leaks

1992 Volvo 940

Submodel: | **Engine Type:** L4 | **Liters:** 2.3
Fuel Delivery: FI | **Fuel:** GAS

1. Relieve the fuel pressure.
2. Connect a fuel pressure gauge 5011 or equivalent, between the fuel line and distribution manifold or Schrader valve if equipped.

NOTE: Position a shop towel in place to catch any spilled fuel when the fuel line connections are removed.

3. On 700 and 900 Series vehicles, remove the seat belt reminder, since this makes the test more easily performed. It is located in the middle of the top row in the fuse box.
4. Start the fuel pump (fuel pump relay removed) by connecting a jumper lead between terminals 30 and 87/2 on the relay socket. Verify the pump operation by removing the fuel cap and listening.
5. Note the gauge reading. The fuel pressure should be approximately 43.5 psi (300 kPa).
6. Remove the jumper lead.
7. Relieve the fuel system pressure and remove the pressure gauge.
8. Re-install the fuel pump relay.

Fig. 1: The Schrader valve is located on the fuel rail — remove the protective cap to test fuel pressure

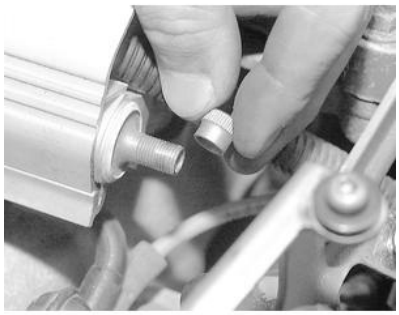
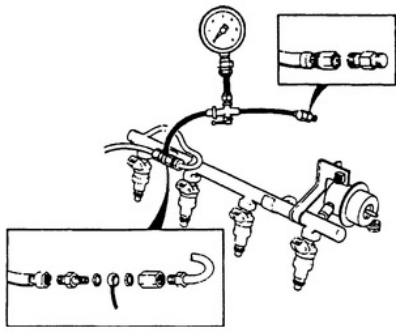


Fig. 2: Install the gauge and adapters between the fuel feed line and fuel rail on models without a Schrader valve



1992 Volvo 940

Submodel: | **Engine Type:** L4 | **Liters:** 2.3
Fuel Delivery: FI | **Fuel:** GAS

2.3L 4-Cylinder and 2.8L 6-Cylinder Engines

1. Properly relieve the fuel system pressure.
2. Disconnect the negative battery cable.
3. Raise and support the vehicle safely.
4. Remove the fuel tank.
5. Loosen the lock ring at the top of the fuel tank and remove the sending unit with the transfer pump attached. Note the direction of the float in the tank.
6. Remove the transfer pump from the sending unit.

To install:

7. Install the transfer pump on the sending unit.
8. Install the sending unit in the fuel tank and tighten the lock ring to specification. Do not overtighten the lock ring as the plastic threads on some fuel tanks are easily stripped.
9. Install the fuel tank in the vehicle.
10. Lower the vehicle.
11. Connect the negative battery cable.
12. Start the engine and check for leaks.

Fig. 1: Fuel pump assembly for the 2.3L 4-cylinder engine

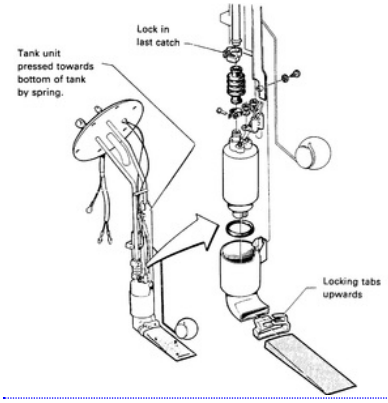
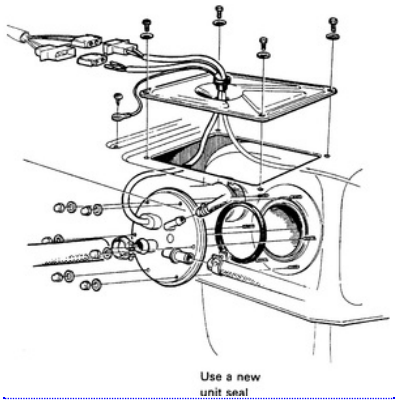


Fig. 2: Fuel pump assembly for the 2.8L 6-cylinder engine



2.3L and 2.4L 5-Cylinder, and 2.9L 6-Cylinder Engines

1. Relieve the fuel system pressure.
2. Disconnect the negative battery cable.
3. Tilt the rear seat forward and remove or fold back the trunk compartment carpet over the right-hand wheel well panel.
4. Disconnect the fuel pump electrical connections.

NOTE: Take note of the color markings on the hoses; colored tape should identify hose locations on the pump.

5. Detach the quick-connect couplers for the fuel delivery and return hoses.
6. Remove the pump unit by unscrewing the retaining nut using tool 999-5485 or equivalent.
7. Lift the pump out carefully and remove the rubber seal. When lifting the pump out, do not grab the connections with pliers or any other sharp tools that might cause damage and result in fuel leakage.

To install:

WARNING
Install the retaining nut while the pump is removed, otherwise the tank connection may swell and the nut will be difficult to install.

8. Install a new dry seal, making sure that it is seated properly. Lubricate the top and outer side of the seal with petroleum jelly.
9. Install the pump with the heater connection facing towards the right side of the vehicle.

10. Install the fuel pump retaining nut and tighten it to 30 ft. lbs. (40 Nm) using tool 999-5484 or equivalent.
11. Apply a small amount of petroleum jelly to the delivery and return hose ends and install them on the pump. The delivery line is marked with yellow tape, which should be matched to the yellow marked pump outlet. Make sure that the quick-connectors are properly seated on the pump.
12. Connect the electrical connections, making sure that they are in the correct position. Install the panels and carpets.
13. Connect the negative battery cable.
14. Run the engine and check for leaks.

Fig. 3: Remove the clips retaining the carpet . . .

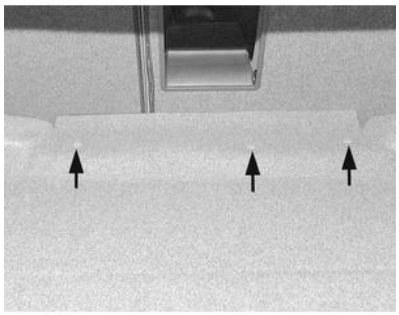


Fig. 4: . . . to expose the fuel pump access cover

Fig. 5: The rear seats can be folded down from the inside, but this lever must be in the up position

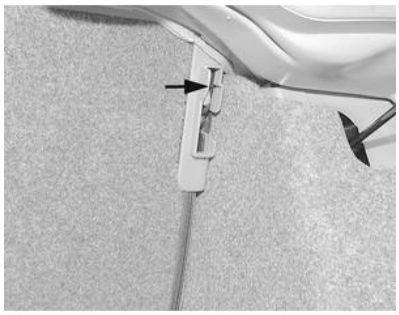


Fig. 6: Release this lever from inside the car to lower the rear seats

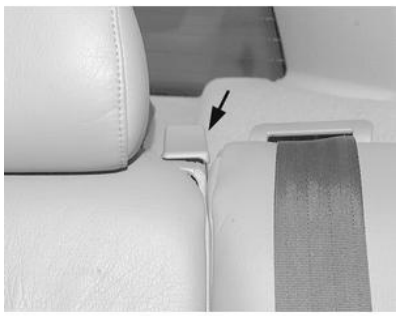


Fig. 7: Remove the trim retaining bolt from the bottom of the panel

Fig. 8: Remove the seat back striker using a T30 Torx® bit

Fig. 9: Carefully push the trim back . . .

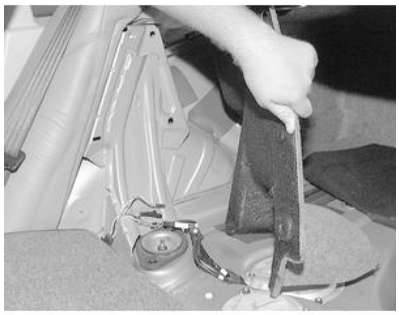


Fig. 10: . . . to access the fuel pump harness connections

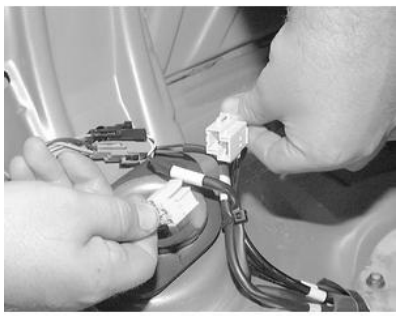


Fig. 11: Remove the fuel pump access cover retaining bolts

Fig. 12: When the cover is removed, the fuel pump is visible

Fig. 13: Detach the quick-connect fittings . . .

Fig. 14: . . . and remove the fuel lines from the pump

Fig. 15: Use wrench 5485 or equivalent to remove the fuel pump retaining ring

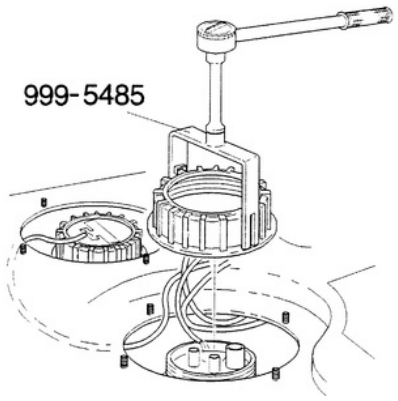
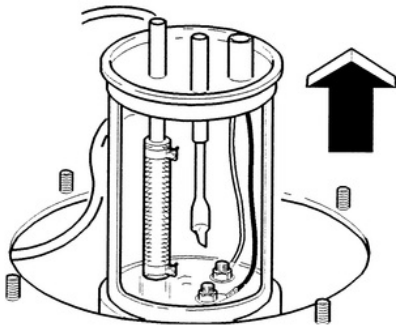


Fig. 16: After the retaining ring is removed, lift the pump out of the tank



1992 Volvo 940

Submodel: | **Engine Type:** L4 | **Liters:** 2.3
Fuel Delivery: FI | **Fuel:** GAS

Safety is the most important factor when performing not only fuel system maintenance, but any type of maintenance. Failure to conduct maintenance and repairs in a safe manner may result in serious personal injury or death. Maintenance and testing of the vehicle's fuel system components can be accomplished safely and effectively by adhering to the following rules and guidelines:

- To avoid the possibility of fire and personal injury, always disconnect the negative battery cable unless the repair or test procedure requires that battery voltage be applied.
- Always relieve the fuel system pressure prior to disconnecting any fuel system component (injector, fuel rail, pressure regulator, etc.), fitting or fuel line connection. Exercise extreme caution whenever relieving fuel system pressure to avoid exposing skin, face and eyes to fuel spray. Please be advised that fuel under pressure may penetrate the skin or any part of the body that it contacts.
- Always place a shop towel or cloth around the fitting or connection prior to loosening to absorb any excess fuel due to spillage. Ensure that all fuel spillage (should it occur) is quickly removed from engine surfaces. Ensure that all fuel soaked cloths or towels are deposited into a suitable waste container.
- Always keep a dry chemical (Class B) fire extinguisher near the work area.
- Do not allow fuel spray or fuel vapors to come into contact with a spark or open flame.
- Always use a backup wrench when loosening and tightening fuel line connection fittings. This will prevent unnecessary stress and torsion to fuel line piping.
- Always follow the proper torque specifications.
- Always replace worn fuel fitting O-rings with new ones.
- Do not substitute fuel hose or equivalent, where fuel pipe is installed.
- Whenever servicing the fuel system, always work in a well ventilated area.
- Always keep fuel in a container specifically designed for fuel storage; also, always properly seal fuel containers to avoid the possibility of fire or explosion.

1992 Volvo 940

Submodel: | **Engine Type:** L4 | **Liters:** 2.3
Fuel Delivery: FI | **Fuel:** GAS

The Regina fuel injection system is a self-diagnosing system that is capable of storing up to 3 fault codes in its memory. It is used in conjunction with the REX-1 ignition system. Both are adaptive systems that are capable of multiple adjustments based on previous driving. If a fault occurs, a warning lamp lights up the instrument panel. Fault tracing can be carried out using the diagnostic program.

The Regina fuel system is characterized by the following:

- A pressure sensor for measuring engine load
- An air mass meter for measuring air intake volume
- A separate cold start valve to ensure starting at low temperatures
- An automatic idle shut-off valve if power is lost
- An induction sensor, mounted on the flywheel, to indicate rpm and crankshaft position through the ignition system control unit
- An electrically heated oxygen sensor (Lambda-sond)
- EVAP system to minimize evaporation from the fuel tank
- Three-way catalytic converter

Various input sensors feed information that is interpreted by the control unit to achieve optimum efficiency. The control unit receives signals from the pressure sensor, air intake temperature sensor and receives crankshaft position information from the ignition control unit, without which the system will not function. The coolant temperature sensor, oxygen sensor and throttle switch also send information to the control unit.

1992 Volvo 940

Submodel: | **Engine Type:** L4 | **Liters:** 2.3
Fuel Delivery: FI | **Fuel:** GAS

1. Connect adapter 999-5484 or equivalent to fuel drainage unit 981-2270, 2273 or 2282 or suitable equivalent.
2. Remove the protective cap from the valve on the rear of the fuel rail.
3. Connect the adapter in the locked or closed position to the valve on the fuel rail.
4. Start the fuel drainage unit.
5. Unlock or open the adapter valve.
6. Raise and safely support the vehicle.
7. Remove the fuel filter valve cap.
8. Connect vent hose 999 5480 or equivalent to the upstream valve of the fuel filter.
9. Drain the system for approximately 2 minutes.
10. When the system is drained, disconnect vent hose and install the valve cap.
11. Lower the vehicle and disconnect the adapter from the fuel rail.
12. Install the valve cap.
13. Install the protective cap for the fuel rail and throttle pulley cover.

An alternative method is to remove the fuel pump relay or fuse (if equipped) and idle the engine until it stalls, thereby relieving the fuel pressure. Place the ignition key in the **OFF** position and reinstall the fuel pump relay/fuse.

Â

Fig. 1: Fuel pump relay location — 240 models

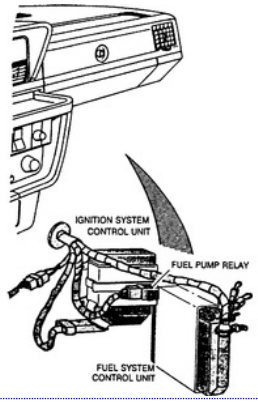


Fig. 2: Fuel pump relay location — 940 models

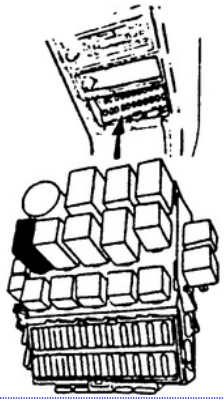


Fig. 3: Fuel pump fuse location — 960 models

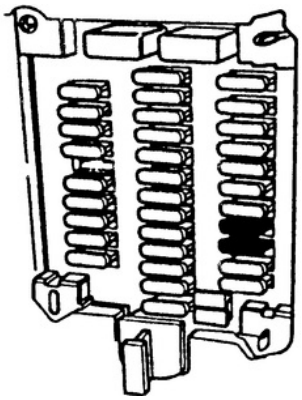
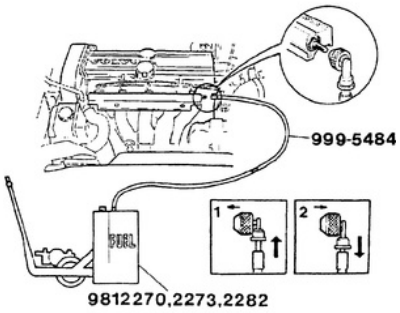


Fig. 4: Connect the adapter to the pressure port, and drain the fuel on 2.3L and 2.4L 5-cylinder engines



1992 Volvo 940

Submodel: | **Engine Type:** L4 | **Liters:** 2.3
Fuel Delivery: FI | **Fuel:** GAS

On all vehicles, the fuel tank contains the fuel pump and sending unit assembly.

1992 Volvo 940

Submodel: | **Engine Type:** L4 | **Liters:** 2.3
Fuel Delivery: FI | **Fuel:** GAS

1. Disconnect the negative battery cable.
2. Properly relieve the fuel system pressure.
3. On the 2.9L 6-cylinder, as well as 2.3 and 2.4L 5-cylinder engine equipped vehicles:
   A. Tilt the rear seat forward and remove or fold back the trunk compartment carpet over the right-hand wheel well panel.
   B. Disconnect the fuel pump electrical connections.

      NOTE: Take note of the color markings on the hoses; colored tape should identify hose locations on the pump.

   C. Detach the quick-connect couplers for the fuel delivery and return hoses.
4. Raise and safely support the vehicle on jackstands.
5. Drain the fuel tank completely.

CAUTION
When performing this procedure, always have a dry-chemical fire extinguisher handy. Fuel vapors are extremely explosive.

6. In the trunk, remove the panels which cover the filler hose.
7. It may be necessary to remove the spare tire on some vehicles.
8. Roll back the carpet and remove the access panel cover.
9. Disconnect the fuel filler pipe connection. Remove the circlip retaining the fuel filler pipe (if equipped).
10. Label and disconnect all fuel lines leading to the fuel tank.
11. Label and remove all electrical connectors at the fuel tank.
12. On some models, it may be necessary to remove the driveshaft.
13. Position a floor jack under the tank, using a large piece of wood as a cushion between the fuel tank and the floor jack.
14. Raise the jack so that it just contacts the tank.
15. Remove any shields or protective covers on the tank.
16. Loosen and remove the tank retaining bolts.
17. Lower the jack slowly and inspect for any obstructions.

To install:

18. Install the protective shields and raise the fuel tank into position.
19. Install and tighten the attaching bolts.
20. Remove the floor jack.
21. Fasten the electrical connections, making sure that they are in the correct position.
22. Install the protective panel in the trunk, then replace the spare tire (as required) and the carpet.
23. Lower the vehicle.
24. Connect the negative battery cable.
25. Turn the ignition key **ON** and check for leaks.

Fig. 1: Remove the circlip on the fuel filer pipe to remove the pipe

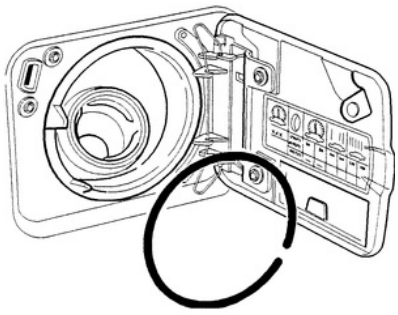


Fig. 2: On rear drive models, the driveshaft must be removed

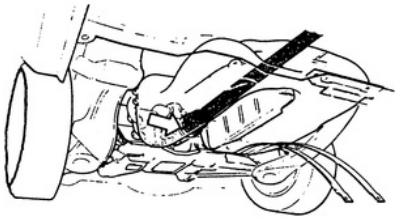


Fig. 3: Remove the tank-to-body attaching bolts

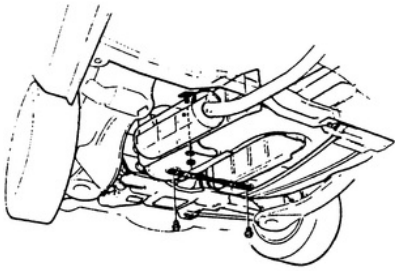


Fig. 4: Fuel tank assembly for a rear drive model

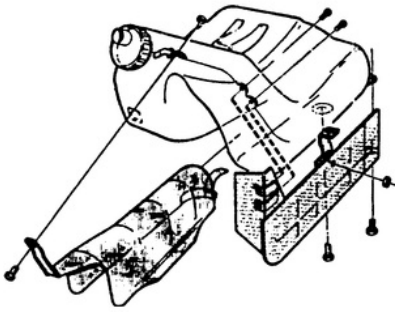
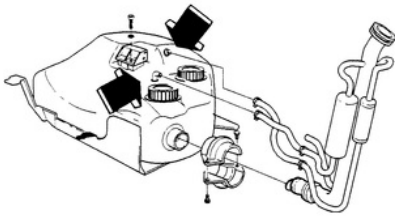


Fig. 5: Fuel tank assembly — 850/C70/S70 and V70 non-AWD models



1992 Volvo 940

Submodel: | **Engine Type:** L4 | **Liters:** 2.3
Fuel Delivery: FI | **Fuel:** GAS

1. Disconnect the negative battery cable.
2. Remove the throttle pulley cover (if equipped).
3. Remove the throttle body to air cleaner hose.
4. Remove the link between the throttle pulley and the throttle body (if equipped).
5. Remove the throttle cable from the throttle body.
6. Remove any necessary hoses.
7. Remove the connector from the Throttle Position (TP) sensor.
8. Remove the four throttle body-to-intake manifold retaining bolts.
9. Remove the throttle body from the intake manifold.

To install:

NOTE: If replacing the throttle body, install the TP sensor onto the new throttle body before installing it onto the intake manifold.

10. Thoroughly clean the mounting surfaces of the intake manifold and the throttle body.
11. Install a new gasket onto the throttle body.
12. Install the throttle body onto the intake manifold.
13. Tighten the retaining bolts to 62 inch lbs. (7 Nm).
14. Install the TP sensor connector.
15. Install the throttle cable onto the throttle body.
16. Install the link between the throttle pulley and the throttle body (if equipped).
17. Install any hoses which were removed.
18. Install the throttle body-to-air cleaner hose.
19. Install the throttle pulley cover.
20. Connect the negative battery cable.

Fig. 1: Unfasten the TP sensor's electrical connector

Fig. 2: Disconnect the accelerator cable

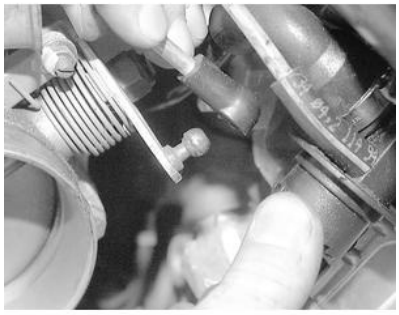


Fig. 3: Unfasten the retaining bolts and remove the throttle body assembly

Fig. 4: Make sure you replace the throttle body gasket to prevent leaks