

EFI FUSES

Fuel Pump	15	Blue	Blade
ECM Power	15	Blue	Blade

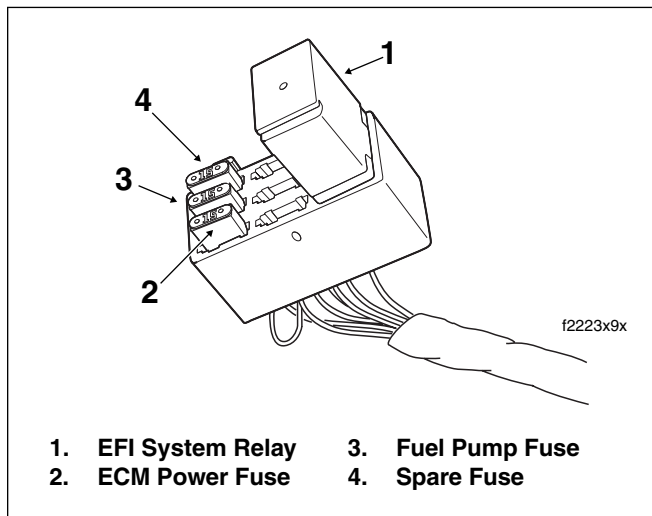


Figure 9-1. EFI Fuses (Under Right Side Cover)

TORQUE VALUES

Item	ft/in-lbs	Nm
Battery hold-down clamp TORX screw	15-20 ft-lbs	20-27 Nm
Battery cable bolt	60-96 in-lbs	6.8-10.9 Nm
ECM socket screws	50-60 in-lbs	5.7-6.8 Nm
Electrical bracket flange nuts	36-48 in-lbs	4.1-5.4 Nm
CKP sensor screw	90-120 in-lbs	10.2-13.6 Nm
ET sensor	120-180 in-lbs	13.6-20.3 Nm
Fuel tank rear mounting bolt	15-20 ft-lbs	20-27 Nm
Fuel tank front mounting bolts	15-20 ft-lbs	20-27 Nm
Fuel tank canopy TORX screws	18-24 in-lbs	2.0-2.7 Nm
Fuel level sender TORX screw	25-35 in-lbs	2.8-4.0 Nm
Fuel supply line quick-connect fitting	22-26 ft-lbs	29.8-35.3 Nm
Intake flange adapter screws	96-144 in-lbs	10.9-16.3 Nm
Exhaust flange adapter nuts	100-120 in-lbs	11.3-13.6 Nm
Fuel supply tube clamp hex screw	90-110 in-lbs	10.2-12.4 Nm
IAT sensor TORX screw	15-20 in-lbs	1.7-2.3 Nm
TP sensor TORX screws	15-20 in-lbs	1.7-2.3 Nm
Throttle cable/IAC bracket TORX screws	20-35 in-lbs	2.3-4.0 Nm
Console mounting bolt acorn nut	50-90 in-lbs	5.7-10.2 Nm

NOTES

DATA LINK CONNECTOR

SETTING ENGINE IDLE SPEED

NOTE

Engine idle speed can only be set using DIGITAL TECHNICIAN (Part No. HD-44750). Do not tamper with the throttle stop screw as it will not permanently change idle speed.

1. Turn the ignition/light key switch to OFF.
2. Remove right side saddlebag. See Section 2.26 SADDLEBAG, REMOVAL.
3. Gently pull side cover from frame downtubes (no tools required).
4. Gently pull on data link connector [91] to disengage from arms on electrical bracket. See Figure 9-2.
5. Remove rubber protective plug from data link connector.
6. See DIGITAL TECHNICIAN (Part No. HD-44750) or the TOURING MODELS ELECTRICAL DIAGNOSTIC MANUAL to use the data link connector for system diagnosis and electrical troubleshooting.
7. Install protective plug in data link connector.
8. With the plug side down and in contact with tab, position connector between arms on electrical bracket.

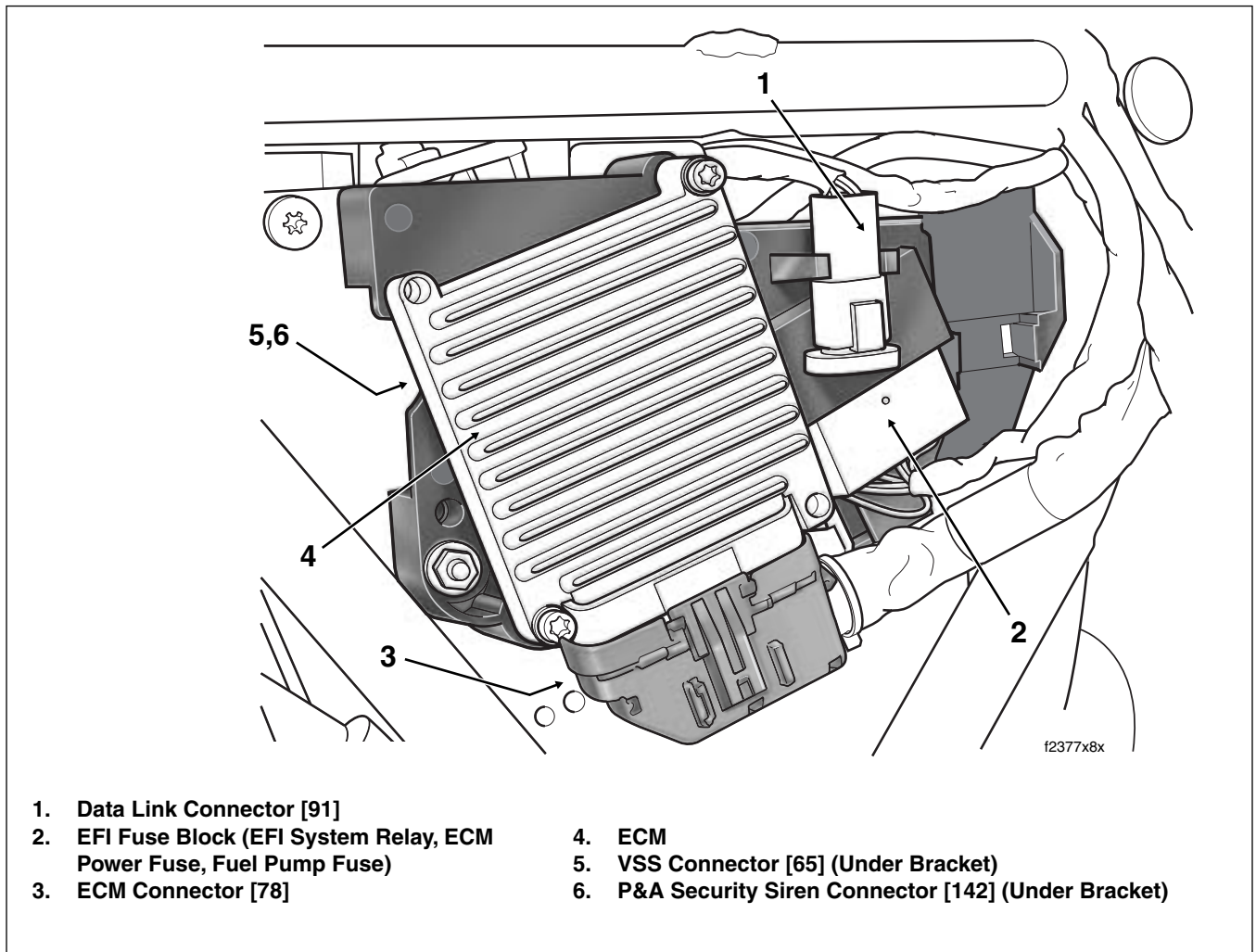


Figure 9-2. Electrical Bracket Assembly

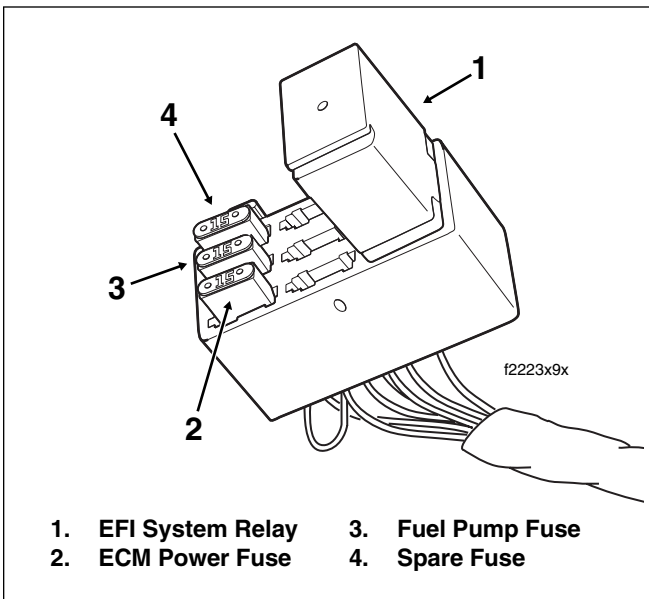


Figure 9-3. EFI Fuse Block

9. Align barbed studs in side cover with grommets in frame downtubes and push firmly into place (no tools required).
10. Install right side saddlebag. See Section [2.26 SADDLEBAG, INSTALLATION](#).

EFI SYSTEM RELAY/EFI FUSES

REMOVAL

1. Remove right side saddlebag. See Section [2.26 SADDLEBAG, REMOVAL](#).
2. Gently pull side cover from frame downtubes (no tools required).
3. Locate painted white dot on inboard side of fuse block. Pressing on dot, gently tug on conduit to release tabs on fuse block from slots in bracket.
4. Pull relay/fuses from slots in fuse block and inspect for damage. See [Figure 9-3](#). Replace fuse if the element is burned or broken. Standard automotive type ATO fuses are used.

NOTE

While a single spare 15 amp fuse is stored in the EFI fuse block, one extra 10 amp fuse and one extra 15 amp fuse are also located in the system fuse block cover. See Section [8.3 SYSTEM FUSES](#) for more information.

INSTALLATION

1. Install relay/fuses in slots of fuse block. See [Figure 9-3](#).

2. Engage tabs on fuse block with slots in bracket. Slide fuse block up into cavity. Gently tug on conduit to verify that fuse block is locked in place.
3. Align barbed studs in side cover with grommets in frame downtubes and push firmly into place (no tools required).
4. Install right side saddlebag. See Section [2.26 SADDLEBAG, INSTALLATION](#).

ECM

REMOVAL

1. Remove right side saddlebag. See Section [2.26 SADDLEBAG, REMOVAL](#).
2. Gently pull side cover from frame downtubes (no tools required).
3. Depress external latch and use rocking motion to remove ECM connector [78]. See [Figure 9-2](#).
4. Remove two socket screws to detach ECM from electrical bracket.

INSTALLATION

1. Align holes in ECM with those in electrical bracket. Install two socket screws and tighten to 50-60 **in-lbs** (5.7-6.8 Nm). See [Figure 9-2](#).
2. Install ECM connector [78]. Push connector halves together until latch clicks.
3. Align barbed studs in side cover with grommets in frame downtubes and push firmly into place (no tools required).
4. Install right side saddlebag. See Section [2.26 SADDLEBAG, INSTALLATION](#).

SECURITY SIREN CONNECTOR

REMOVAL

1. Remove right side saddlebag. See Section [2.26 SADDLEBAG, REMOVAL](#).
2. Gently pull side cover from frame downtubes (no tools required).
3. Remove two flange nuts to release electrical bracket from studs on side of battery box. See [Figure 9-4](#).

INSTALLATION

1. Install security siren connector [142] and VSS connector [65] on inboard side of electrical bracket as shown in [Figure 9-4](#). Be sure that conduit and cables are properly routed or wires may be pinched during installation.
2. Slide electrical bracket onto studs at side of battery box.
3. Install flange nuts on studs and tighten to 36-48 **in-lbs** (4.1-5.4 Nm).
4. Align barbed studs in side cover with grommets in frame downtubes and push firmly into place (no tools required).
5. Install right side saddlebag. See Section [2.26 SADDLE-BAG, INSTALLATION](#).

ELECTRICAL BRACKET

REMOVAL

1. Remove right side saddlebag. See Section [2.26 SADDLE-BAG, REMOVAL](#).
2. Gently pull side cover from frame downtubes (no tools required).
3. Gently pull on data link connector [91] to disengage from arms on electrical bracket. See [Figure 9-2](#).
4. Locate painted white dot on inboard side of fuse block. Pressing on dot, gently tug on conduit to release tabs on fuse block from slots in bracket.
5. Depress external latch and use rocking motion to remove ECM connector [78]. See [Figure 9-2](#).
6. Remove two socket screws to detach ECM from electrical bracket.
7. Remove two flange nuts to release electrical bracket from studs on side of battery box. See [Figure 9-4](#).
8. Remove security siren connector [142] and VSS connector [65] from inboard side of electrical bracket.

INSTALLATION

1. Install security siren connector [142] and VSS connector [65] on inboard side of electrical bracket as shown in [Figure 9-4](#). Be sure that conduit and cables are properly routed or wires may be pinched during installation.
2. Slide electrical bracket onto studs at side of battery box.
3. Install flange nuts on studs and tighten to 36-48 **in-lbs** (4.1-5.4 Nm).

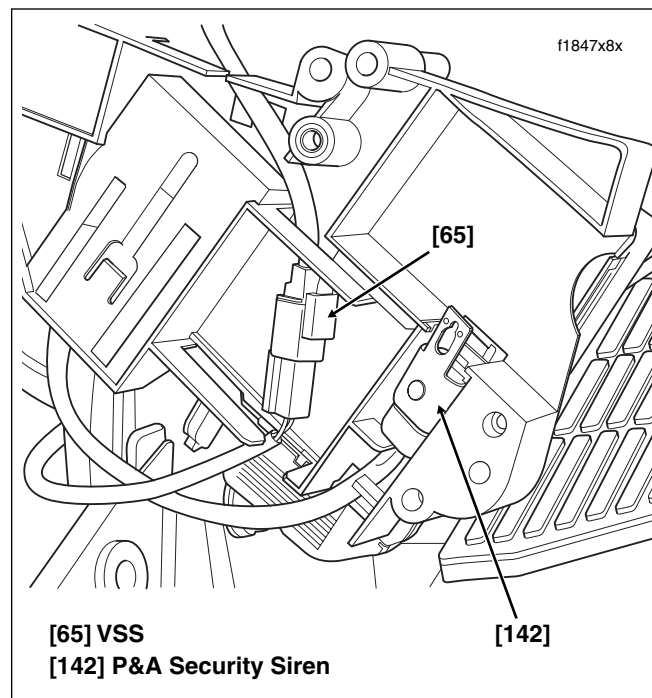


Figure 9-4. Electrical Bracket (Inboard Side)

4. Align holes in ECM with those in electrical bracket. Install two socket screws and tighten to 50-60 **in-lbs** (5.7-6.8 Nm). See [Figure 9-2](#).
5. Install ECM connector [78]. Push connector halves together until latch clicks.
6. Engage tabs on fuse block with slots in bracket. Slide fuse block up into cavity. Gently tug on conduit to verify that fuse block is locked in place.
7. With the plug side down and in contact with tab, position data link connector [91] between arms on electrical bracket.
8. Align barbed studs in side cover with grommets in frame downtubes and push firmly into place (no tools required).
9. Install right side saddlebag. See Section [2.26 SADDLE-BAG, INSTALLATION](#).

GENERAL

Six sensors inform the ECM of the environmental and engine operating factors influencing fuel and spark requirements. The sensors are as follows:

- IAT Sensor
- TP Sensor
- MAP Sensor
- BAS (Internal to TSM/TSSM)
- CKP Sensor
- ET Sensor

IAT SENSOR

See Section 9.5 INDUCTION MODULE ASSEMBLY, IAT SENSOR.

TP SENSOR

See Section 9.5 INDUCTION MODULE ASSEMBLY, TP SENSOR.

MAP SENSOR

See Section 9.5 INDUCTION MODULE ASSEMBLY, MAP SENSOR.

BAS

See Section 8.18 TSM/TSSM.

CKP SENSOR

REMOVAL

1. Remove maxi-fuse. See Section 8.3 SYSTEM FUSES, MAXI-FUSE, REMOVAL.
2. Locate CKP sensor connector [79], 2-place Deutsch, fixed to bracket at bottom of voltage regulator. See Figure 9-5.
3. Push connector toward right side of motorcycle to disengage small end of slot on attachment clip from T-stud on bracket. Lift connector off T-stud.
4. Depress button on socket terminal side and pull apart pin and socket halves.

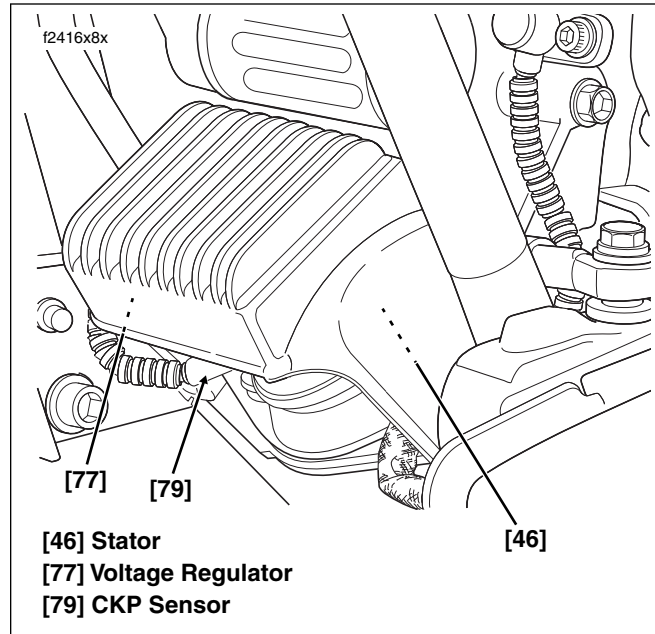


Figure 9-5. Voltage Regulator (Left Side View)

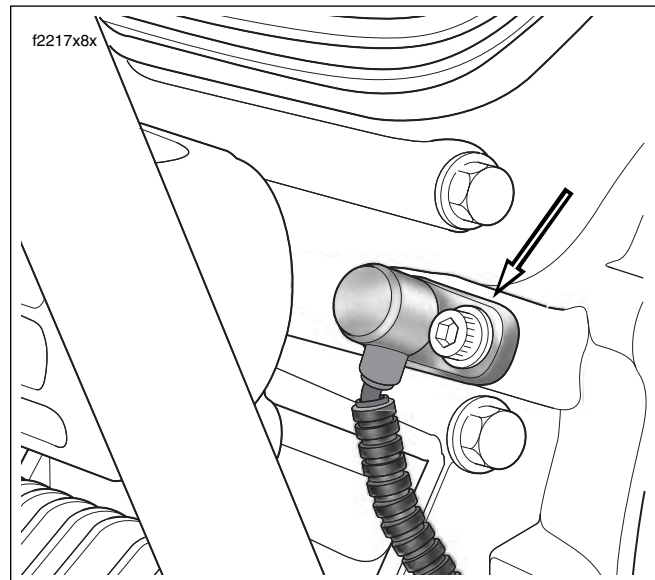


Figure 9-6. Remove Sensor Mount Socket Screw

5. Remove allen head socket screw to free CKP sensor mount from front left side of crankcase. Pull sensor from bore. See Figure 9-6.
6. Pull sensor to draw convoluted tubing and connector out from under voltage regulator.

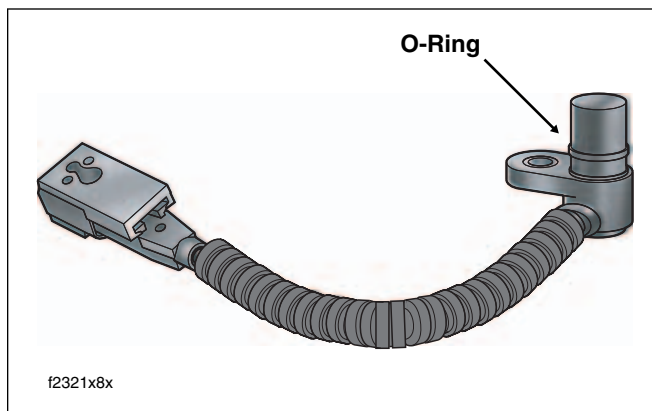


Figure 9-7. CKP Sensor

INSTALLATION

1. Install **new** O-ring on sensor body if missing, distorted, pinched or otherwise damaged. Apply a thin film of clean H-D 20W50 engine oil to O-ring before installation.
2. Push sensor into bore aligning hole in sensor mount with hole in spot face. Install allen head socket screw and tighten to 90-120 **in-lbs** (10.2-13.6 Nm). See [Figure 9-6](#).
3. Route connector and convoluted tubing under front engine stabilizer link to underside of voltage regulator.
4. Mate pin and socket halves of CKP sensor connector [79]. See [Figure 9-5](#).
5. Place large end of slot on attachment clip over T-stud on bracket. Push connector toward left side of motorcycle to engage small end of slot.
6. Install maxi-fuse. See Section [8.3 SYSTEM FUSES, MAXI-FUSE, INSTALLATION](#).

ET SENSOR

REMOVAL

1. Remove maxi-fuse. See Section [8.3 SYSTEM FUSES, MAXI-FUSE, REMOVAL](#).
2. On left side of motorcycle, pull back boot at back of front cylinder and remove ET sensor connector [90], 2-place Delphi.
3. Slide a 3/4 inch deepwell socket over the sensor body hex and turn counter-clockwise to loosen. See [Figure 9-8](#). When sensor turns easily, pull out the deepwell socket and remove sensor by hand.

INSTALLATION

1. Hand start threaded end of **new** temperature sensor into cylinder head bore.
2. Slide 3/4 inch deepwell socket over sensor body hex and tighten to 120-180 **in-lbs** (13.6-20.3 Nm).
3. Install ET sensor connector [90], 2-place Delphi, at back of front cylinder.
4. Pull boot over sensor to keep out dirt and debris.
5. Install maxi-fuse. See Section [8.3 SYSTEM FUSES, MAXI-FUSE, INSTALLATION](#).

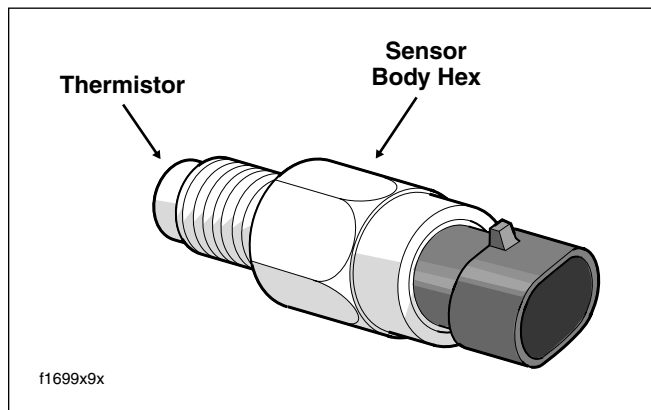


Figure 9-8. ET Sensor

FUEL TANK (FUEL INJECTED)

9.4

COMPLETE REMOVAL

FLHXI, FLHT/C/U/I, FLTRI

⚠ WARNING

Gasoline is extremely flammable and highly explosive. When servicing the fuel system, do not smoke or allow open flame or sparks in the vicinity. Inadequate safety precautions could result in death or serious injury.

⚠ WARNING

Gasoline will drain from the crossover hose when disconnected from the fuel tank. Thoroughly wipe up any spilled fuel immediately. Dispose of rags in a suitable

manner. Gasoline is extremely flammable and highly explosive. Inadequate safety precautions could result in death or serious injury.

CAUTION

Do not kink crossover hose or crimp shut using pliers or similar tool. Damage to the rigid inner lining will occur.

1. Drain fuel tank as follows:

Obtain a short section of hose with a 5/16 inch (7.9 mm) I.D. Insert bolt in one end of hose and install hose clamp to ensure that end is securely plugged. Using a side cutters, cut clamp from one end of crossover hose beneath fuel tank. Quickly replace crossover hose on fuel tank fitting with open end of short hose while directing flow of gasoline from free end of crossover hose into suitable container.

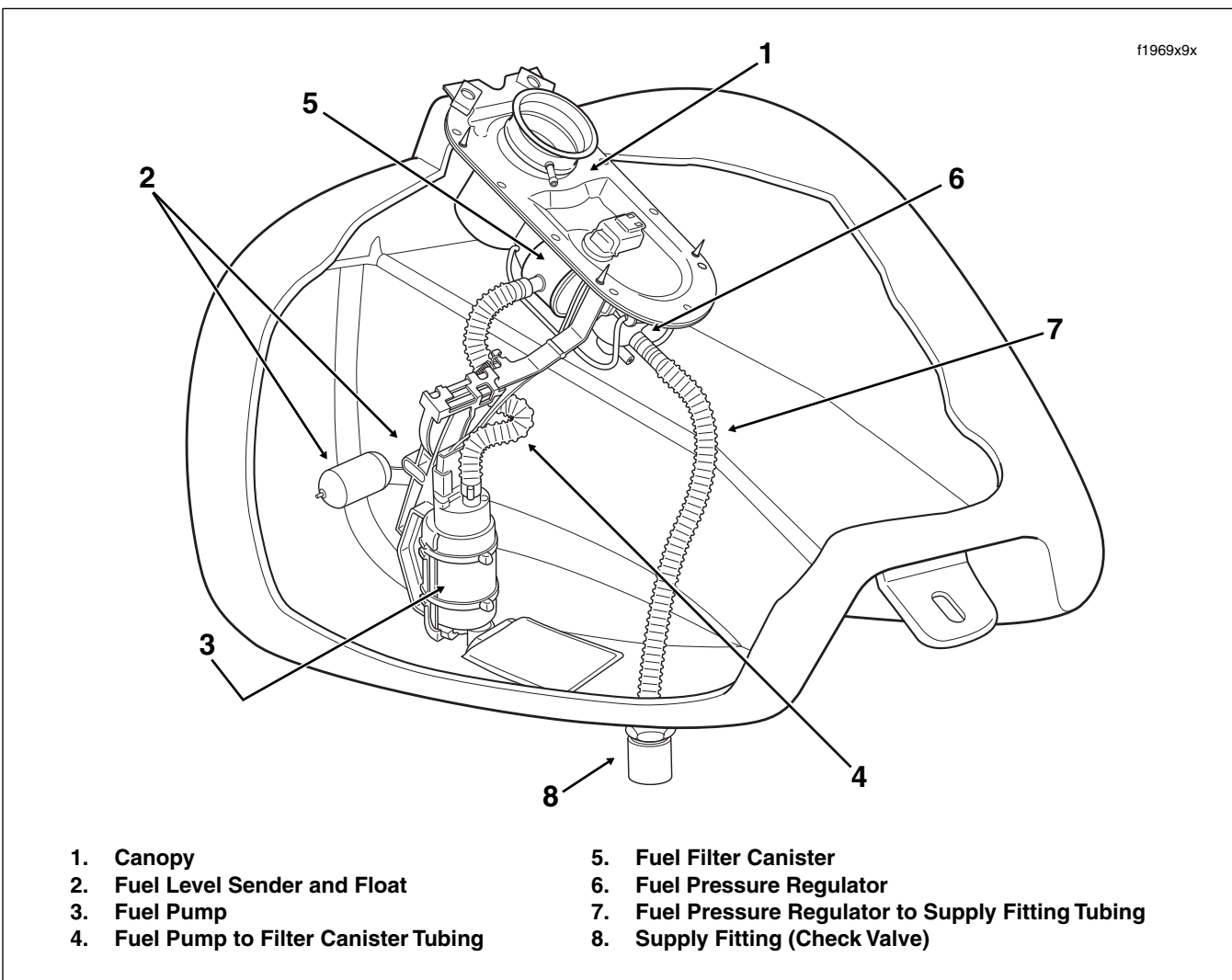


Figure 9-9. Fuel Tank Assembly (FLHXI, FLHT/C/U/I, FLTRI)

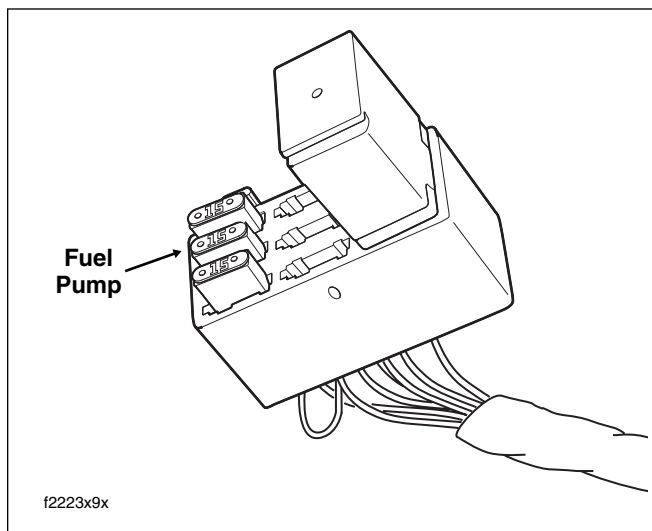


Figure 9-10. EFI Fuse Block

2. Remove seat. See Section 2.25 SEAT, REMOVAL.

⚠ WARNING

The gasoline in the fuel supply line downstream of the fuel pump is under high pressure (58 psi). To avoid an uncontrolled discharge or spray of gasoline, always purge the system of high pressure gas before the fuel supply line is disconnected. Gasoline is extremely flammable and highly explosive. Inadequate safety precautions could result in death or serious injury.

3. Purge the fuel supply line of high pressure gas. Proceed as follows:
 - a. Remove the 15 amp fuel pump fuse. See Figure 9-10. If necessary, see Section 9.2 ELECTRICAL BRACKET ASSEMBLY, EFI SYSTEM RELAY/EFI FUSES, REMOVAL.
 - b. Start the engine and allow the motorcycle to run.
 - c. When the engine stalls, operate starter for 3 seconds to remove remaining fuel from fuel lines.

⚠ WARNING

To protect against shock and accidental start-up of vehicle, disconnect the negative battery cable before proceeding. Inadequate safety precautions could result in death or serious injury.

4. Unthread bolt and remove battery negative cable (black) from battery negative (-) terminal.
5. Remove two fuel tank front mounting bolts (with flat washers) from left and right side of frame. Remove bolt (with flat washer) to free rear of fuel tank from frame backbone. On FLHXI models, removal of rear bolt also releases console bracket.

NOTE

The fuel tank mounting bolts have both an internal TORX recess and an external hex, which allows them to be removed with either a T40 TORX bit or a 1/2 inch open end/box wrench. Use of the external hex allows the front mounting bolts to be removed without having to loosen or remove the fairing lowers, if installed.

6. Open fuel door on console. Remove two Allen head screws inboard of rubber bumpers. These screws secure console to clip nuts on the canopy bracket. If present, also remove Allen head screw to detach flange at rear of console from clip nut on fuel tank weldment (absent on FLHXI models).
7. Lay a clean shop towel on forward part of rear fender.
8. Remove filler cap from neck of fuel tank. Remove console and lay upside down on shop towel. Reinstall filler cap.
9. Remove fuel level sender/fuel pump connector [141], 4-place Packard, at top of canopy.
10. Gently pry fuel vapor vent tube from fitting on filler neck of fuel tank. Exercise caution to avoid pulling fitting from filler neck.

⚠ WARNING

A small amount of gasoline may drain from the fuel supply line when disconnected from the fuel tank. Thoroughly wipe up any spilled fuel immediately. Dispose of rags in a suitable manner. Gasoline is extremely flammable and highly explosive. Inadequate safety precautions could result in death or serious injury.

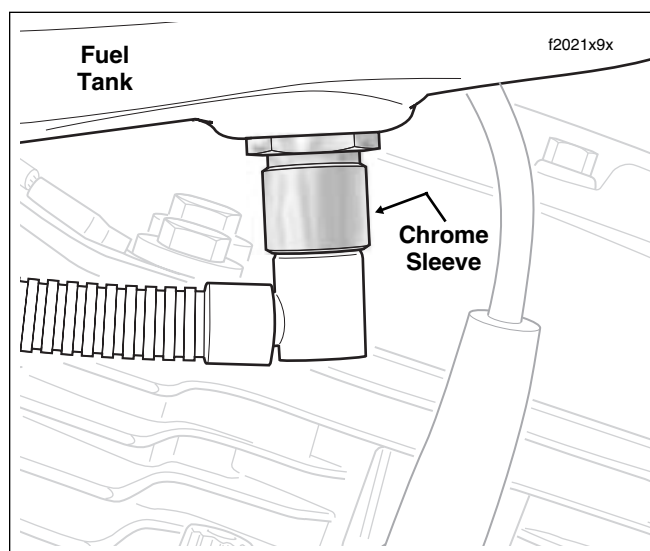


Figure 9-11. Fuel Supply Line Fitting

⚠ WARNING

Exercise caution to avoid twisting the fuel supply line fitting, as any cracks in the plastic construction of the line can result in gas leaks. Gas leakage can cause fire or explosion which could result in death or serious injury.

11. Locate quick-connect fitting on left side of fuel tank. Pull up on chrome sleeve and pull down on fuel supply line fitting to disconnect. See [Figure 9-11](#).
12. Remove fuel tank from motorcycle.

FLHR/C/S/I

1. See Section [9.4 FUEL TANK \(FUEL INJECTED\)](#), [COMPLETE REMOVAL](#), [FLHXI](#), [FLHT/C/U/I](#), [FLTRI](#), steps 1-4.
2. Remove two fuel tank front mounting bolts (with flat washers) from left and right side of frame. Remove bolt (with flat washer) to free rear of fuel tank from frame backbone. On FLHRSI models, removal of rear bolt also releases instrument console bracket.
3. Remove acorn nut from instrument console. If present, also remove Phillips screw and large flat washer (absent on FLHRSI models).
4. Raise instrument console and bend back flexible clamp on canopy to release main harness conduit. Remove fuel level sender/fuel pump connector [141], 4-place Packard, at top of canopy.

CAUTION

When removing instrument console, exercise caution to avoid damaging speedometer unit. Wrap console in a clean, dry shop towel to prevent damage.

5. Secure instrument console to top of rear fender using bungee cords.
6. Remove console mounting bolt from slot at top of canopy.
7. Gently pry fuel vapor vent tube from fitting.
8. At bottom left side of fuel tank, gently pull on convoluted tubing to draw fuel gauge connector [117], 4-place Multilock, out of tunnel. Depress button on socket terminal side and pull apart pin and socket halves.

⚠ WARNING

A small amount of gasoline may drain from the fuel supply line when disconnected from the fuel tank. Thoroughly wipe up any spilled fuel immediately. Dispose of rags in a suitable manner. Gasoline is extremely flammable and highly explosive. Inadequate safety precautions could result in death or serious injury.

⚠ WARNING

Exercise caution to avoid twisting the fuel supply line fitting, as any cracks in the plastic construction of the line can result in gas leaks. Gas leakage can cause fire or explosion which could result in death or serious injury.

9. Locate quick-connect fitting on left side of fuel tank. Pull up on chrome sleeve and pull down on fuel supply line fitting to disconnect. See [Figure 9-11](#).
10. Remove fuel tank from motorcycle.

**INSTALLATION
(AFTER COMPLETE REMOVAL)****FLHXI, FLHT/C/U/I, FLTRI**

1. Work fuel tank into position aligning front flange holes with those in left and right side of frame.
2. Start fuel tank front mounting bolts (with flat washers).
3. Route free end of crossover hose under frame backbone and in front of ignition coil to other side of fuel tank. Install convoluted tubing, if removed, and **new** clamp onto hose. Install hose onto fitting at bottom of fuel tank (after removing temporary plug) and crimp clamp using HOSE CLAMP PLIERS (HD-97087-65B).

⚠ WARNING

Exercise caution to avoid twisting the fuel supply line fitting, as any cracks in the plastic construction of the line can result in gas leaks. Gas leakage can cause fire or explosion which could result in death or serious injury.

4. Locate quick-connect fitting on left side of fuel tank. Pull up on chrome sleeve and insert neck of fuel supply line fitting. While pushing up on bottom of fitting, pull down on chrome sleeve until it "clicks" into the locked position.

⚠ WARNING

To avoid an uncontrolled discharge or spray of gasoline, always be sure the quick-connect fitting is properly mated. A slight tug on the fuel supply line fitting will verify this condition. Gasoline is extremely flammable and highly explosive. Inadequate safety precautions could result in death or serious injury.

5. Connect fuel vapor vent tube to nipple on filler neck of fuel tank.
6. Install fuel level sender/fuel pump connector [141], 4-place Packard, at top of canopy.
7. Remove filler cap. Exercising caution to avoid pinching harnesses, overflow hose and vent tube, position console on canopy as shown in [Figure 9-12](#). Reinstall filler cap.

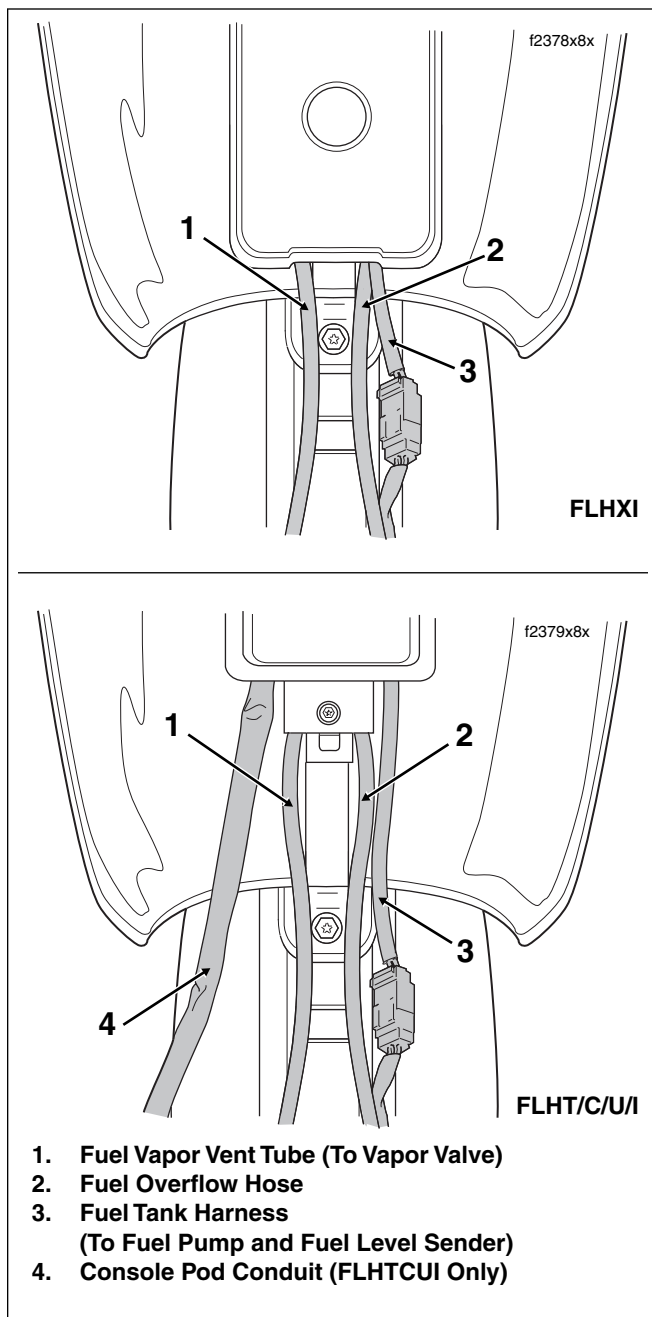


Figure 9-12. Console Cable/Hose Routing (FLHXI, FLHT/C/U/I)

8. Install bolt (with flat washer) to secure rear of fuel tank to frame backbone. On FLHXI models, capture console bracket during installation. Tighten bolt to 15-20 ft-lbs (20-27 Nm).
9. Tighten fuel tank front mounting bolts to 15-20 ft-lbs (20-27 Nm).
10. Open fuel door on console. Install two Allen head screws to secure front of console to clip nuts on canopy bracket. Alternately tighten screws to 25-30 in-lbs (2.8-3.4 Nm). If

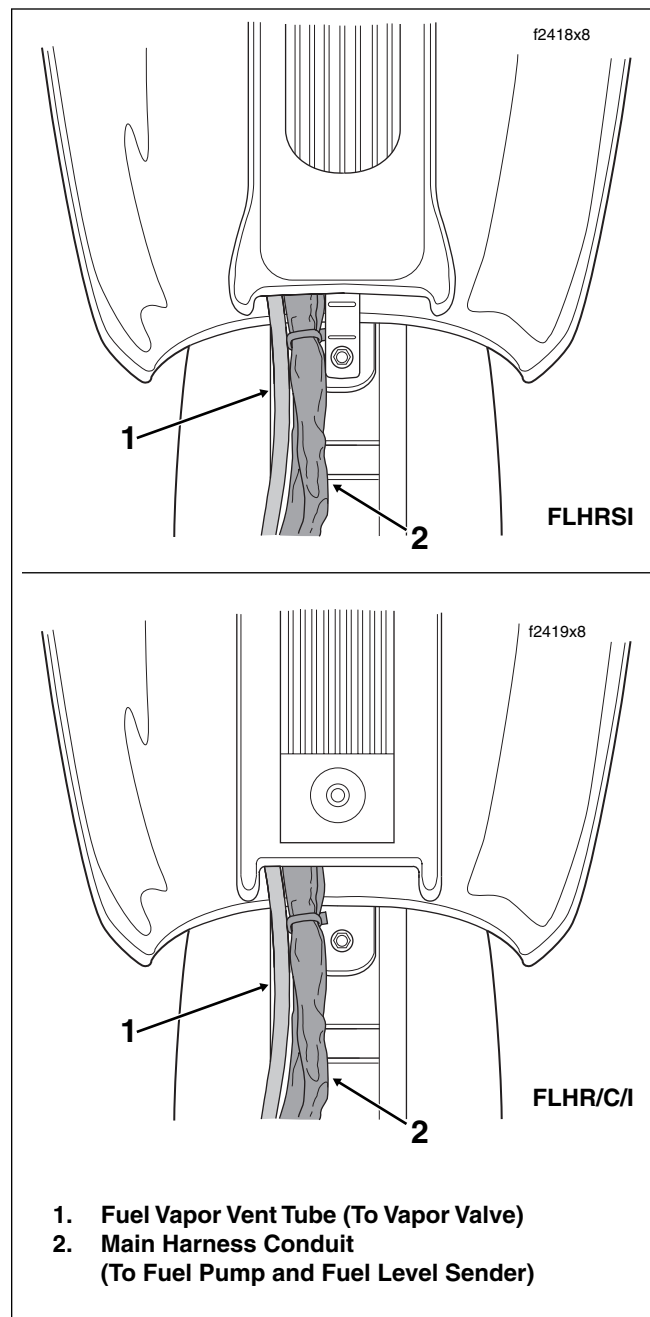


Figure 9-13. Console Cable/Hose Routing (FLHR/C/S/I)

- present, also install Allen head screw to fasten rear flange of console to clip nut on fuel tank weldment (absent on FLHXI models). Tighten screw to 25-30 in-lbs (2.8-3.4 Nm).
11. Insert bolt through battery negative cable (black) into threaded hole of battery negative (-) terminal. Tighten bolt to 60-96 **in-lbs** (6.8-10.9 Nm).
 12. Install the 15 amp fuel pump fuse. See [Figure 9-10](#). If necessary, see [Section 9.2 ELECTRICAL BRACKET ASSEMBLY, EFI SYSTEM RELAY/EFI FUSES, INSTALLATION](#).

13. Install seat. See Section [2.25 SEAT, INSTALLATION](#).

FLHR/C/S/I

1. Work fuel tank into position aligning front flange holes with those in left and right side of frame.
2. Start fuel tank front mounting bolts (with flat washers).
3. Route free end of crossover hose under frame backbone and in front of ignition coil to other side of fuel tank. Install convoluted tubing, if removed, and **new** clamp onto hose. Install hose onto fitting at bottom of fuel tank (after removing temporary plug) and crimp clamp using HOSE CLAMP PLIERS (HD-97087-65B).

WARNING

Exercise caution to avoid twisting the fuel supply line fitting, as any cracks in the plastic construction of the line can result in gas leaks. Gas leakage can cause fire or explosion which could result in death or serious injury.

4. Locate quick-connect fitting on left side of fuel tank. Pull up on chrome sleeve and insert neck of fuel supply line fitting. While pushing up on bottom of fitting, pull down on chrome sleeve until it “clicks” into the locked position.

WARNING

To avoid an uncontrolled discharge or spray of gasoline, always be sure the quick-connect fitting is properly mated. A slight tug on the fuel supply line fitting will verify this condition. Gasoline is extremely flammable and highly explosive. Inadequate safety precautions could result in death or serious injury.

5. Connect fuel vapor vent tube to fitting at top of canopy.
6. Slide head of console mounting bolt into slot at top of canopy.
7. Moving instrument console toward installed position, install fuel level sender/fuel pump connector [141], 4-place Packard, at top of canopy. Bend flexible clamp to capture main harness conduit.
8. Exercising caution to avoid pinching harness and vent tube, align hole in instrument console with console mounting bolt and place into position on fuel tank. See [Figure 9-13](#).
9. Install bolt (with flat washer) to secure rear of fuel tank to frame backbone. On FLHRSI models, capture instrument console bracket during installation. Tighten bolt to 15-20 ft-lbs (20-27 Nm).
10. Tighten fuel tank front mounting bolts to 15-20 ft-lbs (20-27 Nm).
11. Install acorn nut at top of instrument console and tighten to 50-90 in-lbs (5.7-10.2 Nm). If present, also install Phillips screw and large flat washer (absent on FLHRSI models). Tighten screw to 36-60 in-lbs (4.1-6.8 Nm).

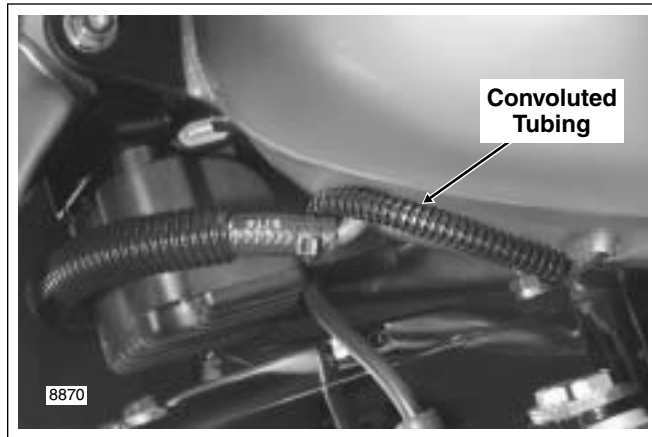


Figure 9-14. Fuel Gauge (FLHR/C/S)

12. Connect fuel gauge to main harness. Route pin housing and convoluted tubing forward and then inboard between front of crossover hose fitting and bottom of fuel tank. Mate pin and socket halves of fuel gauge connector [117], 4-place Multilock. Feed connector into tunnel of fuel tank. See [Figure 9-14](#).
13. Insert bolt through battery negative cable (black) into threaded hole of battery negative (-) terminal. Tighten bolt to 60-96 in-lbs (6.8-10.9 Nm).
14. Install the 15 amp fuel pump fuse. See [Figure 9-10](#). If necessary, see Section [9.2 ELECTRICAL BRACKET ASSEMBLY, EFI SYSTEM RELAY/EFI FUSES, INSTALLATION](#).
15. Install seat. See Section [2.25 SEAT, INSTALLATION](#).

PARTIAL REMOVAL

FLHXI, FLHT/C/U/I, FLTRI

WARNING

Gasoline is extremely flammable and highly explosive. When servicing the fuel system, do not smoke or allow open flame or sparks in the vicinity. Inadequate safety precautions could result in death or serious injury.

1. Remove seat. See Section [2.25 SEAT, REMOVAL](#).

WARNING

The gasoline in the fuel supply line downstream of the fuel pump is under high pressure (58 psi). To avoid an uncontrolled discharge or spray of gasoline, always purge the system of high pressure gas before the fuel supply line is disconnected. Inadequate safety precautions could result in death or serious injury.

2. Purge the fuel supply line of high pressure gas. Proceed as follows:
 - a. Remove the 15 amp fuel pump fuse. See [Figure 9-10](#). If necessary, see [Section 9.2 ELECTRICAL BRACKET ASSEMBLY, EFI SYSTEM RELAY/EFI FUSES, REMOVAL](#).
 - b. Start the engine and allow the motorcycle to run.
 - c. When the engine stalls, operate starter for 3 seconds to remove remaining fuel from fuel lines.

WARNING

To protect against shock and accidental start-up of vehicle, disconnect the negative battery cable before proceeding. Inadequate safety precautions could result in death or serious injury.

3. Unthread bolt and remove battery negative cable (black) from battery negative (-) terminal.
4. Remove two fuel tank front mounting bolts (with flat washers) from left and right side of frame. Remove bolt (with flat washer) to free rear of fuel tank from frame backbone. On FLHXI models, removal of rear bolt also releases console bracket.

NOTE

The fuel tank mounting bolts have both an internal TORX recess and an external hex, which allows them to be removed with either a T40 TORX bit or a 1/2 inch open end/box wrench. Use of the external hex allows the front mounting bolts to be removed without having to loosen or remove the fairing lowers, if installed.

5. Open fuel door on console. Remove two Allen head screws inboard of rubber bumpers. These screws secure console to clip nuts on the canopy bracket. If present, also remove Allen head screw to detach flange at rear of console from clip nut on fuel tank weldment (absent on FLHXI models).
6. Lay a clean shop towel on forward part of rear fender.
7. Remove filler cap from neck of fuel tank. Remove console and lay upside down on shop towel. Reinstall filler cap.
8. Remove fuel level sender/fuel pump connector [141], 4-place Packard, at top of canopy.
9. Gently pry fuel vapor vent tube from fitting on filler neck of fuel tank. Exercise caution to avoid pulling fitting from filler neck.

WARNING

A small amount of gasoline may drain from the fuel supply line when disconnected from the fuel tank. Thoroughly wipe up any spilled fuel immediately. Dispose of rags in a suitable manner. Gasoline is extremely flammable and highly explosive. Inadequate safety precautions could result in death or serious injury.

WARNING

Exercise caution to avoid twisting the fuel supply line fitting, as any cracks in the plastic construction of the line can result in gas leaks. Gas leakage can cause fire or explosion which could result in death or serious injury.

10. Locate quick-connect fitting on left side of fuel tank. Pull up on chrome sleeve and pull down on fuel supply line fitting to disconnect. See [Figure 9-11](#).
11. Raise the fuel tank approximately 2 inches. Move the fuel tank crossover hose to the rear of the ignition coil, so that the tank can be raised an additional 2-3 inches. Move fuel tank straight back and rest on frame backbone.
12. Obtain several 1 x 2 inch wooden blocks. Raise front and rear of fuel tank off the frame backbone by placing blocks in tunnel at bottom of tank.

FLHR/C/S/I

1. See [Section 9.4 FUEL TANK \(FUEL INJECTED\), PARTIAL REMOVAL, FLHXI, FLHT/C/U/I, FLTRI](#), steps 1-3.
2. Remove two fuel tank front mounting bolts (with flat washers) from left and right side of frame. Remove bolt (with flat washer) to free rear of fuel tank from frame backbone. On FLHRSI models, removal of rear bolt also releases instrument console bracket.
3. Remove acorn nut from instrument console. If present, also remove Phillips screw and large flat washer (absent on FLHRSI models).
4. Raise instrument console and bend back flexible clamp on canopy to release main harness conduit. Remove fuel level sender/fuel pump connector [141], 4-place Packard, at top of canopy.

CAUTION

When removing instrument console, exercise caution to avoid damaging speedometer unit. Wrap console in a clean, dry shop towel to prevent damage.

5. Secure instrument console to top of rear fender using bungee cords.
6. Remove console mounting bolt from slot at top of canopy.
7. Gently pry fuel vapor vent tube from fitting at top of canopy.
8. At bottom left side of fuel tank, gently pull on convoluted tubing to draw fuel gauge connector [117], 4-place Multilock, out of tunnel. Depress button on socket terminal side and pull apart pin and socket halves. See [Figure 9-14](#).

⚠ WARNING

A small amount of gasoline may drain from the fuel supply line when disconnected from the fuel tank. Thoroughly wipe up any spilled fuel immediately. Dispose of rags in a suitable manner. Gasoline is extremely flammable and highly explosive. Inadequate safety precautions could result in death or serious injury.

⚠ WARNING

Exercise caution to avoid twisting the fuel supply line fitting, as any cracks in the plastic construction of the line can result in gas leaks. Gas leakage can cause fire or explosion which could result in death or serious injury.

9. Locate quick-connect fitting on left side of fuel tank. Pull up on chrome sleeve and pull down on fuel supply line fitting to disconnect. See [Figure 9-11](#).
10. Raise the fuel tank approximately 2 inches. Move the fuel tank crossover hose to the rear of the ignition coil, so that the tank can be raised an additional 2-3 inches. Move fuel tank straight back and rest on frame backbone.
11. Obtain several 1 x 2 inch wooden blocks. Raise front and rear of fuel tank off the frame backbone by placing blocks in tunnel at bottom of tank.

INSTALLATION (AFTER PARTIAL REMOVAL)

FLHXI, FLHT/C/U/I, FLTRI

1. Remove wooden blocks and move fuel tank toward its installed position. While positioning fuel tank, move crossover hose in front of ignition coil. Work fuel tank into position aligning front flange holes with those in left and right side of frame.
2. Start fuel tank front mounting bolts (with flat washers).

⚠ WARNING

Exercise caution to avoid twisting the fuel supply line fitting, as any cracks in the plastic construction of the line can result in gas leaks. Gas leakage can cause fire or explosion which could result in death or serious injury.

3. Locate quick-connect fitting on left side of fuel tank. Pull up on chrome sleeve and insert neck of fuel supply line fitting. While pushing up on bottom of fitting, pull down on chrome sleeve until it “clicks” into the locked position.

⚠ WARNING

To avoid an uncontrolled discharge or spray of gasoline, always be sure the quick-connect fitting is properly mated. A slight tug on the fuel supply line fitting will verify this condition. Gasoline is extremely flammable and highly explosive. Inadequate safety precautions could result in death or serious injury.

4. Connect fuel vapor vent tube to fitting on filler neck of fuel tank.
5. Install fuel level sender/fuel pump connector [141], 4-place Packard, at top of canopy.
6. Remove filler cap. Exercising caution to avoid pinching harnesses, overflow hose and vent tube, position console on canopy as shown in [Figure 9-12](#). Reinstall filler cap.
7. Install bolt (with flat washer) to secure rear of fuel tank to frame backbone. On FLHXI models, capture console bracket during installation. Tighten bolt to 15-20 ft-lbs (20-27 Nm).
8. Tighten fuel tank front mounting bolts to 15-20 ft-lbs (20-27 Nm).
9. Open fuel door on console. Install two Allen head screws to secure front of console to clip nuts on canopy bracket. Alternately tighten screws to 25-30 in-lbs (2.8-3.4 Nm). If present, also install Allen head screw to fasten rear flange of console to clip nut on fuel tank weldment (absent on FLHXI models). Tighten screw to 25-30 in-lbs (2.8-3.4 Nm).
10. Insert bolt through battery negative cable (black) into threaded hole of battery negative (-) terminal. Tighten bolt to 60-96 in-lbs (6.8-10.9 Nm).
11. Install the 15 amp fuel pump fuse. See [Figure 9-10](#). If necessary, see Section [9.2 ELECTRICAL BRACKET ASSEMBLY, EFI SYSTEM RELAY/EFI FUSES, INSTALLATION](#).
12. Install seat. See Section [2.25 SEAT, INSTALLATION](#).

FLHR/C/S/I

1. Remove wooden blocks and move fuel tank toward its installed position. While positioning fuel tank, move crossover hose in front of ignition coil. Work fuel tank into position aligning front flange holes with those in left and right side of frame.
2. Start fuel tank front mounting bolts (with flat washers).

⚠ WARNING

Exercise caution to avoid twisting the fuel supply line fitting, as any cracks in the plastic construction of the line can result in gas leaks. Gas leakage can cause fire or explosion which could result in death or serious injury.

3. Locate quick-connect fitting on left side of fuel tank. Pull up on chrome sleeve and insert neck of fuel supply line fitting. While pushing up on bottom of fitting, pull down on chrome sleeve until it “clicks” into the locked position.

WARNING

To avoid an uncontrolled discharge or spray of gasoline, always be sure the quick-connect fitting is properly mated. A slight tug on the fuel supply line fitting will verify this condition. Gasoline is extremely flammable and highly explosive. Inadequate safety precautions could result in death or serious injury.

4. Connect fuel vapor vent tube to fitting at top of canopy.
5. Slide head of console mounting bolt into slot at top of canopy.
6. Moving instrument console toward installed position, install fuel level sender/fuel pump connector [141], 4-place Packard, at top of canopy. Bend flexible clamp to capture main harness conduit.
7. Exercising caution to avoid pinching harness and vent tube, align hole in instrument console with console mounting bolt and place into position on fuel tank. See [Figure 9-13](#).
8. Install bolt (with flat washer) to secure rear of fuel tank to frame backbone. On FLHRSI models, capture instrument console bracket during installation. Tighten bolt to 15-20 ft-lbs (20-27 Nm).
9. Tighten fuel tank front mounting bolts to 15-20 ft-lbs (20-27 Nm).
10. Install acorn nut at top of instrument console and tighten to 50-90 in-lbs (5.7-10.2 Nm). If present, also install Phillips screw and large flat washer (absent on FLHRSI models). Tighten screw to 36-60 in-lbs (4.1-6.8 Nm).
11. Connect fuel gauge to main harness. Route pin housing and convoluted tubing forward and then inboard between front of crossover hose fitting and bottom of fuel tank. Mate pin and socket halves of fuel gauge connector [117], 4-place Multilock. Feed connector into tunnel of fuel tank. See [Figure 9-14](#).
12. Insert bolt through battery negative cable (black) into threaded hole of battery negative (-) terminal. Tighten bolt to 60-96 **in-lbs** (6.8-10.9 Nm).
13. Install the 15 amp fuel pump fuse. See [Figure 9-10](#). If necessary, see Section [9.2 ELECTRICAL BRACKET ASSEMBLY, EFI SYSTEM RELAY/EFI FUSES, INSTALLATION](#).
14. Install seat. See Section [2.25 SEAT, INSTALLATION](#).

CONSOLE POD/CANOPY

FLHXI, FLHT/C/U/I, FLTRI

REMOVAL

WARNING

Gasoline will drain from the crossover hose when disconnected from the fuel tank. Thoroughly wipe up any spilled fuel immediately. Dispose of rags in a suitable manner. Gasoline is extremely flammable and highly explosive. Inadequate safety precautions could result in death or serious injury.

CAUTION

Do not kink crossover hose or crimp shut using pliers or similar tool. Damage to the rigid inner lining will occur.

1. Drain fuel tank as follows:

Obtain a short section of hose with a 5/16 inch (7.9 mm) I.D. Insert bolt in one end of hose and install hose clamp to ensure that end is securely plugged. Cut clamp from one end of crossover hose beneath fuel tank. Quickly replace crossover hose on fuel tank fitting with open end of short hose while directing flow of gasoline from free end of crossover hose into suitable container.

2. Remove seat. See Section [2.25 SEAT, REMOVAL](#).

WARNING

The gasoline in the fuel supply line downstream of the fuel pump is under high pressure (58 psi). To avoid an uncontrolled discharge or spray of gasoline, always purge the system of high pressure gas before the fuel supply line is disconnected. Inadequate safety precautions could result in death or serious injury.

3. Purge the fuel supply line of high pressure gas. Proceed as follows:
 - a. Remove the 15 amp fuel pump fuse. See [Figure 9-10](#). If necessary, see Section [9.2 ELECTRICAL BRACKET ASSEMBLY, EFI SYSTEM RELAY/EFI FUSES, REMOVAL](#).
 - b. Start the engine and allow the motorcycle to run.
 - c. When the engine stalls, operate starter for 3 seconds to remove remaining fuel from fuel lines.

WARNING

To protect against shock and accidental start-up of vehicle, disconnect the negative battery cable before proceeding. Inadequate safety precautions could result in death or serious injury.

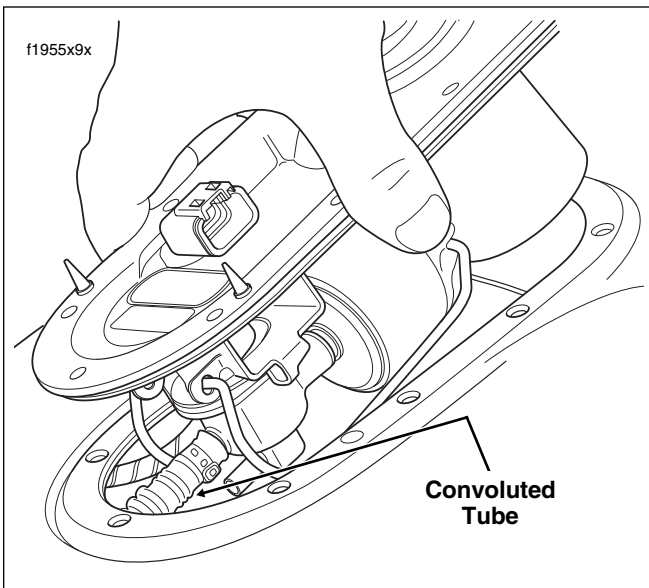


Figure 9-15. Raise Canopy and Remove Tube (FLHXI, FLHT/C/U/I, FLTRI)

4. Unthread bolt and remove battery negative cable (black) from battery negative (-) terminal.
5. Open fuel door on console. Remove two Allen head screws inboard of rubber bumpers. These screws secure console to clip nuts on the canopy bracket. If present, also remove Allen head screw to detach flange at rear of console from clip nut on fuel tank weldment (absent on FLHXI models).
6. On FLHXI models only, remove bolt (with flat washer) to free rear of fuel tank from frame backbone. Removal of rear bolt also releases console bracket.
7. Lay a clean shop towel on forward part of rear fender.
8. Remove filler cap from neck of fuel tank. Remove console and lay upside down on shop towel. Reinstall filler cap.
9. Remove fuel level sender/fuel pump connector [141], 4-place Packard, at top of canopy.
10. Gently pry fuel vapor vent tube from fitting on filler neck of fuel tank. Exercise caution to avoid pulling fitting from filler neck.
11. Using a T20 TORX bit, remove ten screws around the outer edge of the canopy. Discard screws.
12. Raise canopy slightly to access top fitting (inlet port) at back of fuel pressure regulator. Using a side cutters, cut hose clamp and remove convoluted tube. Exercise caution to avoid cutting or damaging tube or dropping pieces of cut clamp into fuel tank. See Figure 9-15.
13. Remove canopy from fuel tank (with attached fuel pressure regulator, fuel filter canister, fuel pump and fuel level sender).

A spring-loaded hinge on the fuel pump bracket facilitates removal of the assembly. For best results, press down on top of fuel pump with index finger or end of screwdriver, and after raising canopy slightly, rotate on hinge in a counterclockwise direction. When canopy is at a 45° angle to top of fuel tank, carefully pull assembly from left side lobe of fuel tank. See Figure 9-17.

14. Remove and discard canopy gasket. Verify that sealing devices from screws are not lodged in canopy holes. Remove and discard devices if present.

INSTALLATION

1. Obtain **new** canopy gasket. With the locator bump on the gasket OD toward the front, position gasket at bottom of canopy. Start four nubs on gasket into holes in canopy. Moving to top of canopy, alternately grasp each nub and pull through hole.

CAUTION

Exercise care to avoid bending float rod of fuel level sender during installation. Be sure to position float rod to the right of the fuel gauge drain tube or it will be bent during installation of the canopy. A bent float rod will result in erroneous gauge readings.

2. While holding fuel pump stationary, raise canopy slightly and rotate on hinge 90° in a counterclockwise direction.
3. Holding assembly so that canopy is at a 45° angle to top of fuel tank, insert assembly into left side lobe of fuel tank. The spring-loaded hinge on the fuel pump bracket automatically returns assembly to its installed position inside fuel tank.

CAUTION

Carefully inspect end of convoluted tube for cuts, tears, holes or other damage. Replace tube if any damage is found. Even the smallest hole can cause a reduction in fuel pressure.

4. Raise canopy slightly and slide **new** hose clamp onto free end of convoluted tube. Install tube onto top fitting (inlet port) at back of fuel pressure regulator. Crimp clamp. See Figure 9-15.

⚠ WARNING

Always use new screws when installing the canopy. Reusing old screws may compromise sealing integrity resulting in gas leaks. Gas leakage can cause fire or explosion which could result in death or serious injury.

NOTE

Check canopy screws for proper sealing devices. Screws must have a bonded seal on underside of head. Replace screws if seal is missing or damaged. See Figure 9-16.

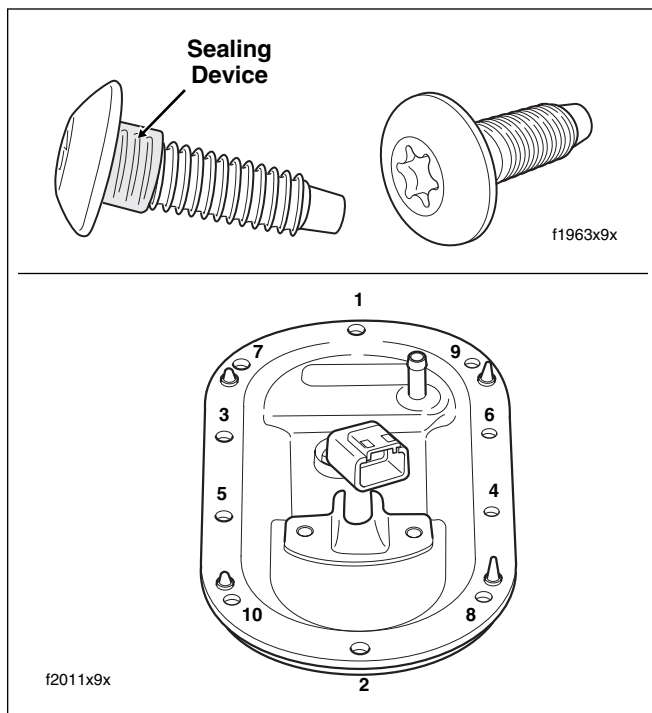


Figure 9-16. Canopy Sealing Screws and Torque Sequence

5. While pushing down on the canopy, align holes in canopy with those in fuel tank. Hand start ten **new** T20 TORX screws in perimeter of canopy. Tighten screws to **18-24 in-lbs** (2.0-2.7 Nm) using the pattern shown in [Figure 9-16](#).
6. Connect fuel vapor vent tube to fitting on filler neck of fuel tank.
7. Install fuel level sender/fuel pump connector [141], 4-place Packard, at top of canopy.
8. Remove filler cap. Exercising caution to avoid pinching harnesses, overflow hose and vent tube, position console on canopy as shown in [Figure 9-12](#). Reinstall filler cap.
9. Open fuel door on console. Install two Allen head screws to secure front of console to clip nuts on canopy bracket. Alternately tighten screws to 25-30 in-lbs (2.8-3.4 Nm). If present, also install Allen head screw to fasten rear flange of console to clip nut on fuel tank weldment (absent on FLHXI models). Tighten screw to 25-30 in-lbs (2.8-3.4 Nm).
10. On FLHXI models only, install bolt (with flat washer) to secure rear of fuel tank and console bracket to frame backbone. Tighten bolt to 15-20 ft-lbs (20-27 Nm).
11. Slide **new** clamp onto free end of crossover hose. Install hose onto fitting at bottom of fuel tank. Crimp clamp using HOSE CLAMP PLIERS (HD-97087-65B).

12. Insert bolt through battery negative cable (black) into threaded hole of battery negative (-) terminal. Tighten bolt to **60-96 in-lbs** (6.8-10.9 Nm).
13. Install the 15 amp fuel pump fuse. See [Figure 9-10](#). If necessary, see [Section 9.2 ELECTRICAL BRACKET ASSEMBLY, EFI SYSTEM RELAY/EFI FUSES, INSTALLATION](#).
14. Install seat. See [Section 2.25 SEAT, INSTALLATION](#).

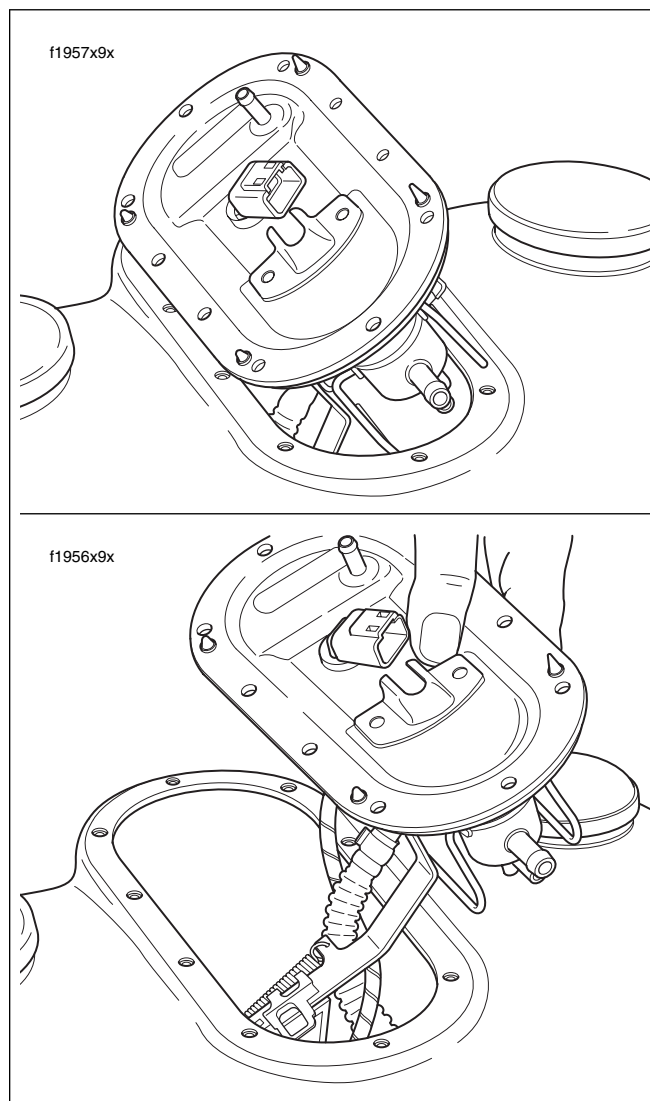


Figure 9-17. Remove Canopy From Motorcycle (FLHR/C/S/I)

INSTRUMENT CONSOLE/CANOPY

FLHR/C/S/I

REMOVAL

WARNING

Gasoline will drain from the crossover hose when disconnected from the fuel tank. Thoroughly wipe up any spilled fuel immediately. Dispose of rags in a suitable manner. Gasoline is extremely flammable and highly explosive. Inadequate safety precautions could result in death or serious injury.

CAUTION

Do not kink crossover hose or crimp shut using pliers or similar tool. Damage to the rigid inner lining will occur.

1. Drain fuel tank as follows:

Obtain a short section of hose with a 5/16 inch (7.9 mm) I.D. Insert bolt in one end of hose and install hose clamp to ensure that end is securely plugged. Cut clamp from one end of crossover hose beneath fuel tank. Quickly replace crossover hose on fuel tank fitting with open end of short hose while directing flow of gasoline from free end of crossover hose into suitable container.

2. Remove seat. See Section 2.25 SEAT, REMOVAL.

WARNING

The gasoline in the fuel supply line downstream of the fuel pump is under high pressure (58 psi). To avoid an uncontrolled discharge or spray of gasoline, always purge the system of high pressure gas before the fuel supply line is disconnected. Inadequate safety precautions could result in death or serious injury.

3. Purge the fuel supply line of high pressure gas. Proceed as follows:
 - a. Remove the 15 amp fuel pump fuse. See Figure 9-10. If necessary, see Section 9.2 ELECTRICAL BRACKET ASSEMBLY, EFI SYSTEM RELAY/EFI FUSES, REMOVAL.
 - b. Start the engine and allow the motorcycle to run.
 - c. When the engine stalls, operate starter for 3 seconds to remove remaining fuel from fuel lines.

WARNING

To protect against shock and accidental start-up of vehicle, disconnect the negative battery cable before proceeding. Inadequate safety precautions could result in death or serious injury.

4. Unthread bolt and remove battery negative cable (black) from battery negative (-) terminal.

5. Remove acorn nut from instrument console. If present, also remove Phillips screw and large flat washer (absent on FLHRSI models).
6. On FLHRSI models only, remove bolt (with flat washer) to free rear of fuel tank from frame backbone. Removal of rear bolt also releases instrument console bracket.
7. Raise instrument console and bend back flexible clamp on canopy to release main harness conduit. Remove fuel level sender/fuel pump connector [141], 4-place Packard, at top of canopy.

CAUTION

When removing instrument console, exercise caution to avoid damaging speedometer unit. Wrap console in a clean, dry shop towel to prevent damage.

8. Secure instrument console to top of rear fender using bungee cords.
9. Remove console mounting bolt from slot at top of canopy.
10. Gently pry fuel vapor vent tube from fitting at top of canopy.
11. Using a T20 TORX bit, remove ten screws around the outer edge of the canopy. Discard screws.
12. Raise canopy slightly to access top fitting (inlet port) at back of fuel pressure regulator. Using a side cutters, cut hose clamp and remove convoluted tube. Exercise caution to avoid cutting or damaging tube or dropping pieces of cut clamp into fuel tank. See Figure 9-15.
13. Remove canopy from fuel tank (with attached fuel pressure regulator, fuel filter canister, fuel pump and fuel level sender).

A spring-loaded hinge on the fuel pump bracket facilitates removal of the assembly. For best results, press down on top of fuel pump with index finger or end of screwdriver, and after raising canopy slightly, rotate on hinge in a counterclockwise direction. When canopy is at a 45° angle to top of fuel tank, carefully pull assembly from left side lobe of fuel tank. See Figure 9-17.
14. Remove and discard canopy gasket. Verify that sealing devices from screws are not lodged in canopy holes. Remove and discard devices if present.

INSTALLATION

1. Obtain new canopy gasket. With the locator bump on the gasket OD toward the front, position gasket at bottom of canopy. Start four nubs on gasket into holes in canopy. Moving to top of canopy, alternately grasp each nub and pull through hole.

CAUTION

Exercise care to avoid bending float rod of fuel level sender during installation. Be sure to position float rod to the right of the fuel gauge drain tube or it will be bent during installation of the canopy. A bent float rod will result in erroneous gauge readings.

2. While holding fuel pump stationary, raise canopy slightly and rotate on hinge 90° in a counterclockwise direction.
3. Holding assembly so that canopy is at a 45° angle to top of fuel tank, insert assembly into left side lobe of fuel tank keeping the float rod positioned to the right of the fuel gauge drain tube. The spring-loaded hinge on the fuel pump bracket automatically returns assembly to its installed position inside fuel tank.

CAUTION

Carefully inspect end of convoluted tube for cuts, tears, holes or other damage. Replace tube if any damage is found. Even the smallest hole can cause a reduction in fuel pressure.

4. Raise canopy slightly and slide **new** hose clamp onto free end of convoluted tube. Install tube onto top fitting (inlet port) at back of fuel pressure regulator. Crimp clamp. See [Figure 9-15](#).

WARNING

Always use new screws when installing the canopy. Reusing old screws may compromise sealing integrity resulting in gas leaks. Gas leakage can cause fire or explosion which could result in death or serious injury.

NOTE

Check canopy screws for proper sealing devices. Screws must have a bonded seal on underside of head. Replace screws if seal is missing or damaged. See [Figure 9-16](#).

5. While pushing down on the canopy, align holes in canopy with those in fuel tank. Hand start ten **new** T20 TORX screws in perimeter of canopy. Tighten screws to 18-24 **in-lbs** (2.0-2.7 Nm) using the pattern shown in [Figure 9-16](#).
6. Connect fuel vapor vent tube to fitting at top of canopy.
7. Slide head of console mounting bolt into slot at top of canopy.
8. Moving instrument console toward installed position, install fuel level sender/fuel pump connector [141], 4-place Packard, at top of canopy. Bend flexible clamp to capture main harness conduit.
9. Exercising caution to avoid pinching harness and vent tube, align hole in instrument console with console mounting bolt and place into position on fuel tank. See [Figure 9-13](#).

10. Install acorn nut at top of instrument console and tighten to 50-90 **in-lbs** (5.7-10.2 Nm). If present, also install Phillips screw and large flat washer (absent on FLHRSI models). Tighten screw to 36-60 **in-lbs** (4.1-6.8 Nm).
11. On FLHRSI models only, install bolt (with flat washer) to secure rear of fuel tank and instrument console bracket to frame backbone. Tighten bolt to 15-20 ft-lbs (20-27 Nm).
12. Slide **new** clamp onto free end of crossover hose. Install hose onto fitting at bottom of fuel tank. Crimp clamp using HOSE CLAMP PLIERS (HD-97087-65B).
13. Insert bolt through battery negative cable (black) into threaded hole of battery negative (-) terminal. Tighten bolt to 60-96 **in-lbs** (6.8-10.9 Nm).
14. Install the 15 amp fuel pump fuse. See [Figure 9-10](#). If necessary, see Section [9.2 ELECTRICAL BRACKET ASSEMBLY, EFI SYSTEM RELAY/EFI FUSES, INSTALLATION](#).
15. Install seat. See Section [2.25 SEAT, INSTALLATION](#).

FUEL FILTER CANISTER

See Section [1.2 MAINTENANCE SCHEDULE](#) for the required service interval, and then proceed as follows:

REMOVAL

1. See [CONSOLE POD/CANOPY, FLHXI, FLHT/C/U/I, FLTRI, REMOVAL](#), or [INSTRUMENT CONSOLE/CANOPY, FLHR/C/S/I, REMOVAL](#).
2. Release fuel filter canister as follows:
 - a. Pull wireform to release from slots on fuel filter canister bracket. See A of [Figure 9-18](#).
 - b. Use hinge to swing wireform out of the way. Move canister bracket forward to disengage tab from slot on canopy weldment. See B of [Figure 9-18](#).
 - c. Pull fitting on canister from fuel pressure regulator assembly. See C of [Figure 9-18](#).
3. Using a side cutters, cut hose clamp and remove convoluted tube from inlet port at side of fuel filter canister. Exercise caution to avoid cutting or damaging tube. Discard fuel filter canister.

INSTALLATION**CAUTION**

Do not replace tubes inside of fuel tank with ordinary bulk hose. All internal lines must be replaced with the special original equipment convoluted nylon tubes. Bulk hose will degrade when immersed in gasoline (particularly stale gasoline), resulting in contamination of the fuel supply. Use of contaminated fuel will cause starting and driveability problems and possible vehicle damage.

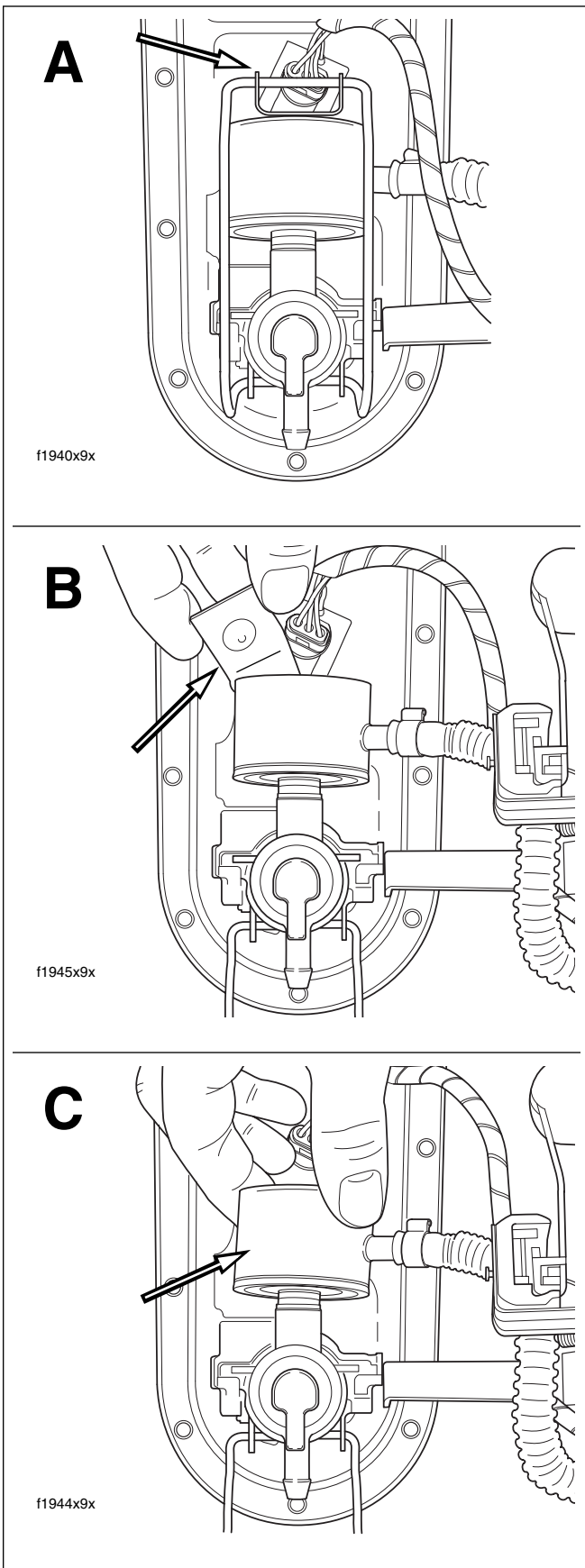


Figure 9-18. Remove Fuel Filter Canister (FLHR/C/S/I)

1. If present, remove and discard plastic caps from fittings of **new** fuel filter canister.
2. Slide **new** hose clamp onto free end of convoluted tube (from fuel pump). Install tube onto inlet port at side of fuel filter canister. If necessary, use a little isopropyl alcohol or glass cleaner to aid installation. Crimp clamp.
3. Install fuel filter canister as follows:
 - a. Install **new** O-ring onto fitting of fuel filter canister. Insert fitting into fuel pressure regulator assembly, so that inlet port is on fuel pump side. See C of [Figure 9-18](#).
 - b. Slide tab on canister bracket into slot of canopy weldment until bump on bracket engages depression at side of canister. See B of [Figure 9-18](#).
 - c. Use hinge to rotate wireform over canister bracket. Press on wireform until it fully engages slots on canister bracket. See A of [Figure 9-18](#).
 - d. Verify that socket terminal is firmly installed on spade contact on canister bracket, if present.

CAUTION

Carefully inspect end of convoluted tube for cuts, tears, holes or other damage. Replace tube if any damage is found. Even the smallest hole can cause a reduction in fuel pressure.

4. See [CONSOLE POD/CANOPY, FLHXI, FLHT/C/U/I, FLTRI, INSTALLATION](#), or [INSTRUMENT CONSOLE/CANOPY, FLHR/C/S/I, INSTALLATION](#).

FUEL PRESSURE REGULATOR

REMOVAL

1. See [CONSOLE POD/CANOPY, FLHXI, FLHT/C/U/I, FLTRI, REMOVAL](#), or [INSTRUMENT CONSOLE/CANOPY, FLHR/C/S/I, REMOVAL](#).
2. See [FUEL FILTER CANISTER, REMOVAL](#), step 2.
3. Slide fuel pressure regulator assembly forward to free arms from catches on canopy weldment. See [Figure 9-19](#).
4. Remove fuel pressure regulator from housing. To overcome the resistance of two O-rings, insert blade of small screwdriver into gap between regulator and housing and gently pry regulator out. See [Figure 9-20](#).
5. Inspect O-rings for cuts, tears or general deterioration. Replace the O-rings if they have taken a definite set.

INSTALLATION

1. Apply a thin coat of clean engine oil to **new** O-rings. Install O-rings in grooves of fuel pressure regulator. See [Figure 9-20](#).

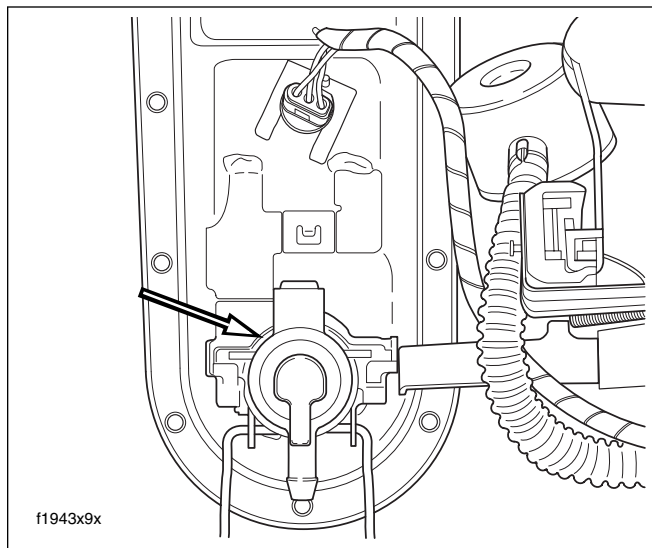


Figure 9-19. Remove Fuel Pressure Regulator (FLHR/C/S/I)

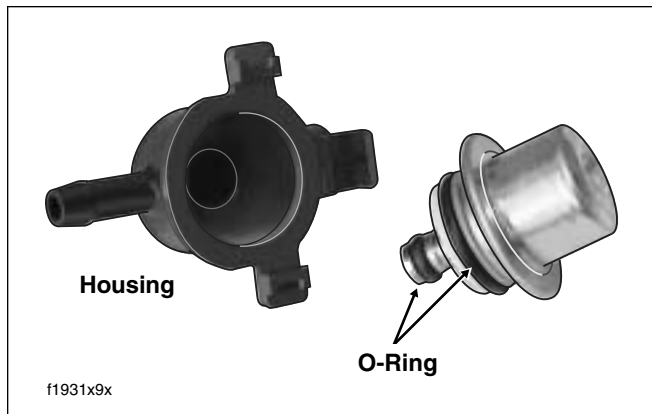


Figure 9-20. Fuel Pressure Regulator Assembly

2. Install fuel pressure regulator into housing.
3. Fit fuel pressure regulator assembly into canopy weldment engaging arms in catches. See [Figure 9-19](#).
4. See [FUEL FILTER CANISTER, INSTALLATION](#), step 3.
5. See [CONSOLE POD/CANOPY, FLHXI, FLHT/C/U/I, FLTRI, INSTALLATION](#), or [INSTRUMENT CONSOLE/CANOPY, FLHR/C/S/I, INSTALLATION](#).

FUEL PUMP

REMOVAL

1. See [CONSOLE POD/CANOPY, FLHXI, FLHT/C/U/I, FLTRI, REMOVAL](#), or [INSTRUMENT CONSOLE/CANOPY, FLHR/C/S/I, REMOVAL](#).
2. Depress external latch and remove electrical connector at top of fuel pump.

3. Using a side cutters, cut hose clamp and pull convoluted tube from fuel pump outlet port. Exercise caution to avoid cutting or damaging tube (and cracking or breaking outlet port).
4. Remove T15 TORX screw and pull fuel level sender from post on fuel pump bracket.
5. Release end of return spring from hook on fuel pump bracket.
6. Remove fuel pump as follows:

NOTE

Two methods are presented based upon whether the fuel pump is being discarded or retained. If the fuel pump is faulty, follow step 6(a). Note that the hinge is damaged during removal so replacement of the fuel pump and bracket assembly is required. On the other hand, if the fuel pump and bracket assembly are still serviceable, follow step 6(b) to remove without damaging.

- a. Insert flat tip screwdriver at location shown in [Figure 9-21](#). Carefully crack plastic webbing at top of hinge and remove from support arm. Discard fuel pump and bracket assembly.
 - b. Using the tip of a needle nose pliers, depress pin and slide hinge off end of support arm. See [Figure 9-21](#).
7. Inspect the condition of the fuel pump wiring. If the wiring needs to be replaced, see [FUEL PUMP/FUEL LEVEL SENDER WIRING](#) on the next page.

INSTALLATION

1. If removed, install hinge at top of fuel pump bracket, so that support arm slot is on the fuel level sender mount side.

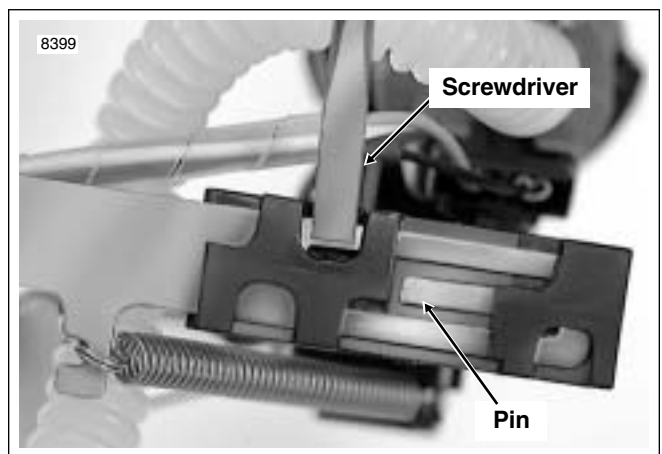


Figure 9-21. Either Crack Webbing or Depress Pin to Remove Hinge From Support Arm

2. Slide end of support arm into slot at top of hinge. Pull on hinge to verify that it is locked by pin on support arm. Install free end of return spring onto hook on fuel pump bracket.

CAUTION

Carefully inspect end of convoluted tube for cuts, tears, holes or other damage. Replace tube if any damage is found. Even the smallest hole can cause a reduction in fuel pressure.

3. Slide **new** hose clamp onto free end of convoluted tube (to fuel filter canister inlet). Install tube onto outlet port of fuel pump. Crimp clamp, but exercise caution to avoid cracking or breaking outlet port.
4. Install electrical connector at top of fuel pump. Gently tug on connector to verify that external latch is locked and connector will not come free of terminals.
5. Align two holes in fuel level sender with threaded hole and post on fuel pump bracket. Install T15 TORX screw in upper hole and tighten to 25-35 **in-lbs** (2.8-4.0 Nm).
6. See [CONSOLE POD/CANOPY, FLHXI, FLHT/C/U/I, FLTRI, INSTALLATION](#), or [INSTRUMENT CONSOLE/CANOPY, FLHR/C/S/I, INSTALLATION](#).

FUEL PUMP/FUEL LEVEL SENDER WIRING

CAUTION

Do not replace the special teflon coated fuel pump/fuel level sender wiring with ordinary bulk wire. Ordinary insulation materials may deteriorate when in contact with gasoline.

NOTE

Damaged wiring, terminals and/or connectors requires replacement of the fuel level sender unit. See [FUEL LEVEL SENDER](#) on this page.

FUEL LEVEL SENDER

REMOVAL

1. See [CONSOLE POD/CANOPY, FLHXI, FLHT/C/U/I, FLTRI, REMOVAL](#), or [INSTRUMENT CONSOLE/CANOPY, FLHR/C/S/I, REMOVAL](#).
2. Cut cable strap to release fuel pump/fuel level sender wiring from support arm.
3. At bottom of canopy, depress external latch and remove socket housing of 4-place Packard connector.

4. Remove socket terminal from spade contact on either connector clip or fuel filter canister bracket.
5. Depress external latch and remove electrical connector at top of fuel pump.
6. Remove T15 TORX screw and pull fuel level sender from post on fuel pump bracket.

INSTALLATION

1. Align two holes in fuel level sender with threaded hole and post on fuel pump bracket. Install T15 TORX screw in upper hole and tighten to 25-35 **in-lbs** (2.8-4.0 Nm).
2. Install electrical connector at top of fuel pump. Gently tug on connector to verify that external latch is locked and connector will not come free of terminals.
3. At bottom of canopy, install socket housing of 4-place Packard connector.
4. Install socket terminal onto spade contact on either connector clip or fuel filter canister bracket.
5. Install **new** cable strap to attach fuel pump/fuel level sender wiring to support arm. Cut any excess cable strap material.
6. See [CONSOLE POD/CANOPY, FLHXI, FLHT/C/U/I, FLTRI, INSTALLATION](#), or [INSTRUMENT CONSOLE/CANOPY, FLHR/C/S/I, INSTALLATION](#).

FUEL SUPPLY CHECK VALVE/TUBE

NOTE

The in-tank check valve is housed in the quick-connect fitting. The check valve prevents the fuel tank from draining when the external supply line is disconnected.

REMOVAL

1. See [CONSOLE POD/CANOPY, FLHXI, FLHT/C/U/I, FLTRI, REMOVAL](#), steps 1-12, or [INSTRUMENT CONSOLE/CANOPY, FLHR/C/S/I, REMOVAL](#), steps 1-12.

⚠ WARNING

A small amount of gasoline may drain from the fuel supply line when disconnected from the fuel tank. Thoroughly wipe up any spilled fuel immediately. Dispose of rags in a suitable manner. Gasoline is extremely flammable and highly explosive. Inadequate safety precautions could result in death or serious injury.

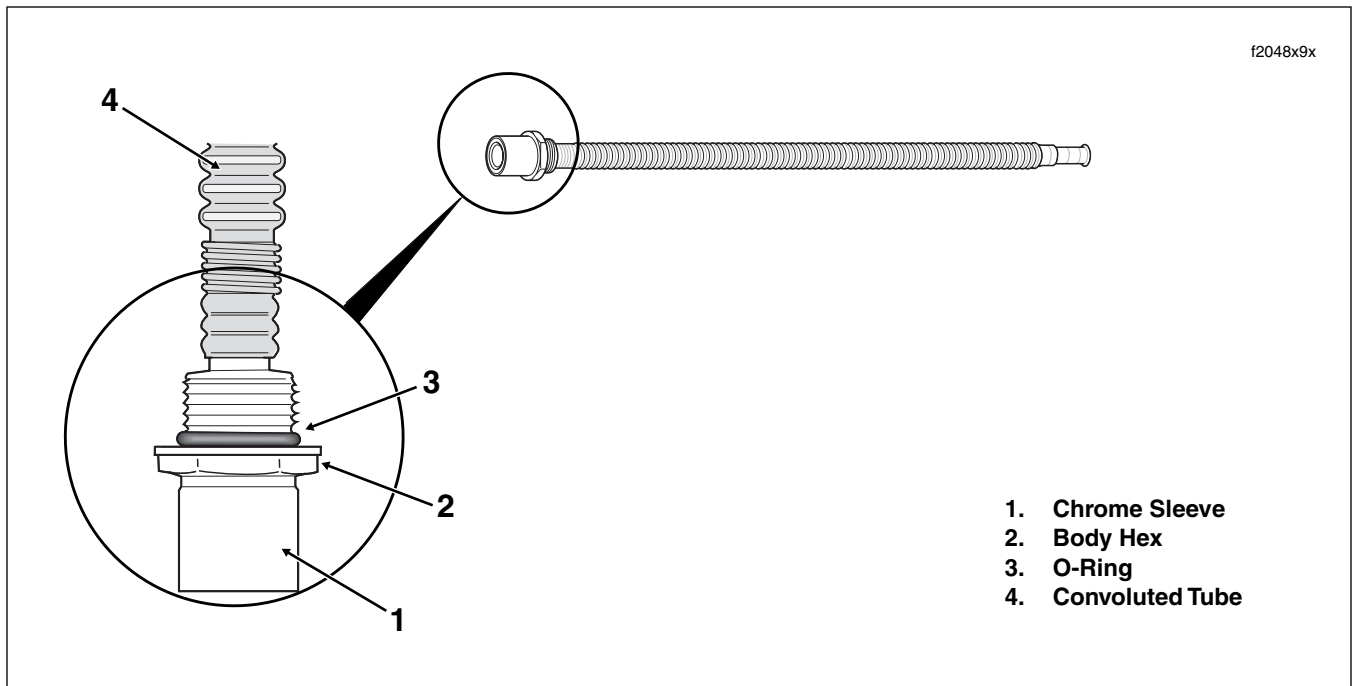


Figure 9-22. Fuel Supply Check Valve/Tube (Quick-Connect Fitting)

⚠ WARNING

Exercise caution to avoid twisting the fuel supply line fitting, as any cracks in the plastic construction of the line can result in gas leaks. Gas leakage can cause fire or explosion which could result in death or serious injury.

2. Locate quick-connect fitting on left side of fuel tank. Pull up on chrome sleeve and pull down on fuel supply line fitting to disconnect. See [Figure 9-11](#).

⚠ WARNING

A small amount of gasoline may drain from the fuel tank when the quick-connect fitting is removed. Thoroughly wipe up any spilled fuel immediately. Dispose of rags in a suitable manner. Inadequate safety precautions could result in death or serious injury.

3. Slide a 7/8 inch deepwell socket over chrome sleeve engaging hex on quick-connect fitting. See [Figure 9-22](#). Looking down at top of fuel tank, rotate fitting in a clockwise direction until it turns easily. Remove the fitting by hand drawing convoluted tube out through hole at bottom of fuel tank.

INSTALLATION

CAUTION

Carefully inspect convoluted tube for cuts, tears, holes or other damage. Replace tube (with attached quick-connect fitting) if any damage is found. Even the smallest hole can cause a reduction in fuel pressure.

1. Apply a very thin film of clean H-D 20W50 engine oil to **new** O-ring. Slide O-ring down convoluted tube and into groove of **new** quick-connect fitting. See [Figure 9-22](#).
2. Feeding convoluted tube through hole at bottom of fuel tank, hand thread quick-connect fitting into bore. Looking down at top of fuel tank, rotate fitting in a counter-clockwise direction until snug.
3. Slide a 7/8 inch deepwell socket over chrome sleeve engaging hex on quick-connect fitting. Tighten fitting to 22-26 ft-lbs (29.8-35.3 Nm).

⚠ WARNING

Exercise caution to avoid twisting the fuel supply line fitting, as any cracks in the plastic construction of the line can result in gas leaks. Gas leakage can cause fire or explosion which could result in death or serious injury.

4. Pull up on chrome sleeve of quick-connect fitting and insert neck of fuel supply line fitting. While pushing up on bottom of fitting, pull down on chrome sleeve until it "clicks" into the locked position.

⚠ WARNING

To avoid an uncontrolled discharge or spray of gasoline, always be sure the quick-connect fitting is properly mated. A slight tug on the fuel supply line fitting will verify this condition. Gasoline is extremely flammable and highly explosive. Inadequate safety precautions could result in death or serious injury.

5. See [CONSOLE POD/CANOPY, FLHXI, FLHT/C/U/I, FLTRI, INSTALLATION](#), steps 4-14, or [INSTRUMENT CONSOLE/CANOPY, FLHR/C/S/I, INSTALLATION](#), steps 4-15.

NOTES
