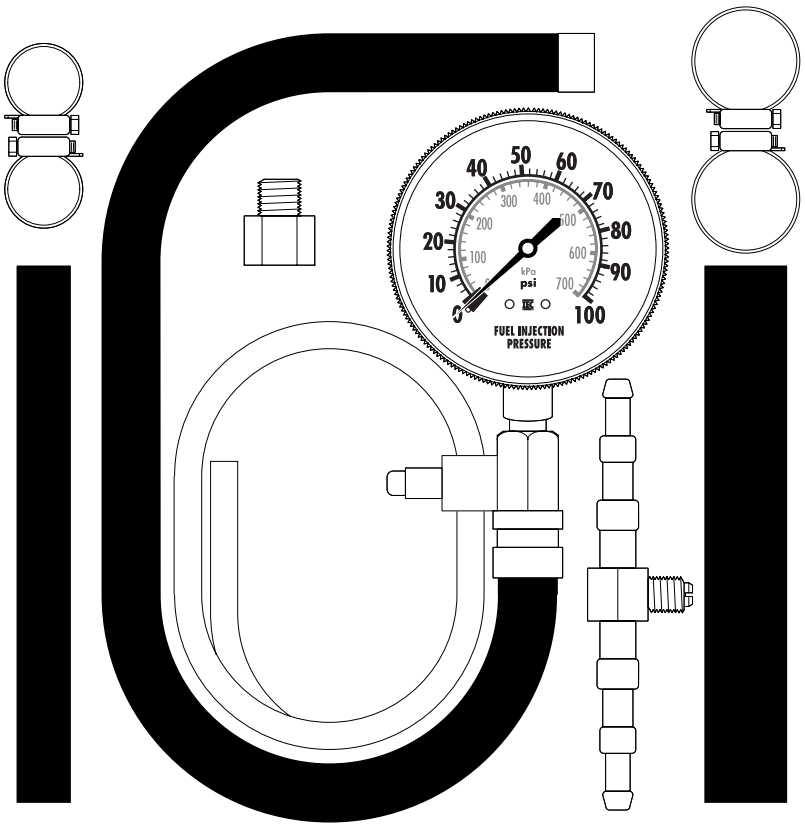
#3640

EQUUS

FUEL INJECTION PRESSURE TESTER KIT



ABOUT THE TESTER

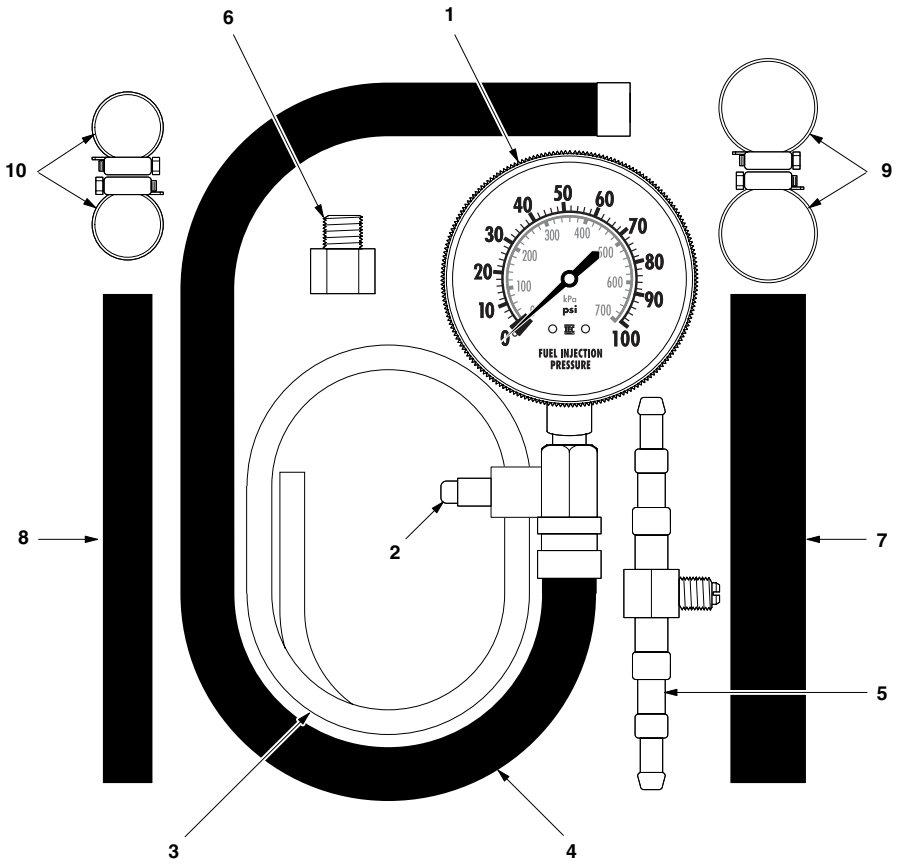
The Fuel Injection Pressure Tester Kit is designed to perform fuel pressure tests on most domestic and import cars and trucks. The tester saves you time and money by helping you test and troubleshoot fuel system problems which can affect your vehicle's performance and fuel economy.

The tester can help you identify and diagnose:

- Low fuel pump pressure
- Faulty fuel pressure regulator
- Leaks in the fuel system
- Leaking fuel injectors
- Clogged fuel filter

Fuel Injection Pressure Tester Kit Components (see Figure 1)

Figure 1. Fuel Injection Pressure Tester Kit Components



1. **Tester Gauge.** Shows fuel pressure in system during test.
2. **Relief Valve.** Relieves pressure in the fuel system during and after testing.
3. **Bleed-Off Hose.** Drains bleed-off fuel into a suitable container.
4. **Gauge Hose.** High pressure hose with threaded female connector; connects to the vehicle's fuel system test port.
5. **Tee Fitting.** Universal fitting with built-in test port. Allows the tester to be used on some vehicles not factory-equipped with a test port (Schrader valve).
6. **Ford Adapter.** Installs on the fuel system test port of Ford and some Chrysler vehicles to allow connection of the tester.

7, 8. Hose. 5/16" and 3/8" universal high-pressure hoses used in conjunction with tee fitting (5).

9, 10. Hose Clamp. High-pressure fuel line clamps used in conjunction with hoses (7, 8) and tee fitting (5).

The adapters provided with the tester are designed to facilitate the most common fuel injection system applications. Some vehicle applications may require additional tools or adapters to properly test the vehicle. Refer to your vehicle's service manual, and consult your auto parts dealer for the availability of these items.

VEHICLES COVERED

Domestic Vehicles (1980-98)

- Dodge, Chrysler, Plymouth
- Ford, Lincoln, Mercury
- Dodge, Chrysler, Plymouth
- GMC, Chevrolet, Buick, Oldsmobile, Pontiac, Saturn, Cadillac
- Jeep, Eagle

Import Vehicles (1980-98)

- Geo
- Isuzu
- Mazda
- Nissan
- Subaru
- Suzuki
- Volkswagen

Fuel System Type/Applications

- All electronic fuel injection systems (port, sequential, multi-point, throttle body), which are equipped with a fuel pressure test port (Schrader valve)
- All fuel injection systems (without a fuel pressure test port) equipped with flexible rubber fuel supply lines
- Includes light trucks and vans
- Excludes diesel

BEFORE YOU BEGIN

- Fix any known mechanical problems before performing any test.

Please be aware that fuel systems are UNDER PRESSURE AND HIGHLY FLAMMABLE. In addition to following all safety precautions, a basic understanding of fuel systems is necessary. Read this manual thoroughly to prevent accidents, personal injury and/or damage to your vehicle.

- If a further understanding of fuel injection systems is necessary, many publications covering this topic are available.
- Your vehicle's service manual can give you specialized test procedures and repair methods which can make your job easier. **READ YOUR VEHICLE'S SERVICE MANUAL**.
- Keep a pencil and paper handy to make notes and record test results.

a. Read and follow all safety precautions.

b. Make sure the battery is fully charged and the vehicle has enough fuel in the tank.

c. Perform a thorough underhood inspection. Check for loose or cracked electrical wiring, battery cables, ignition wires, fuel and/or vacuum lines. Perform necessary repairs and ensure the fuel system is leak-free. **WIPE UP ANY FUEL LEAKS IMMEDIATELY**.

d. Verify all related fuses are in good condition. Verify integrity of all electrical component connections.

e. For Ford vehicles ONLY: Make sure the inertia switch (the fuel system's safety switch) is not tripped and is operating properly. (Refer to your vehicle's service manual for location.)

f. Check the vapor recovery system and fuel tank cap for proper operation.

g. Make sure the intake (engine) vacuum is within original manufacturer's specifications.

h. If the engine does not start, refer to your vehicle's service manual for proper diagnostic procedures.

SAFETY PRECAUTIONS

- **Read this manual COMPLETELY before performing any test procedures.**
- Always observe safety precautions whenever working on a vehicle.

a. Always wear safety eye protection.

b. Only work on your vehicle in a well-ventilated area.

c. Put transmission in PARK (automatic transmission) or NEUTRAL (manual transmission). Set parking brake.

d. Put blocks on the drive wheels.

e. Release fuel system pressure before connecting test equipment or performing tests **(refer to your vehicle's service manual for procedures)**.

f. Make sure the ignition is off before connecting or disconnecting any test equipment.

g. Never connect the Fuel Injection Tester to any location other than those indicated in the test procedures (many air conditioning fittings resemble fuel injection test ports).

h. Fuel and battery vapors are highly flammable. **DO NOT SMOKE NEAR THE VEHICLE DURING TESTING.**

i. **DO NOT** attempt to use this tool on systems not covered in this manual.

j. During testing, be careful to avoid fuel spills on hot engine parts. If spills occur or if leaks are present, turn ignition off **IMMEDIATELY** and correct the problem. **WIPE UP FUEL SPILLS IMMEDIATELY.**

k. Avoid moving fan blades or any potentially moving parts.

l. Avoid hot engine parts. Keep tools away from the battery to avoid possible shorting and sparks which could start a fire.

m. In case of emergency, keep a fire extinguisher handy. **MAKE SURE** it is rated for fuel/electrical and chemical fires.

n. **NEVER** leave the vehicle unattended during testing.

o. Take care when working near ignition system components (coil, distributor cap, ignition wires, etc). These are all **HIGH VOLTAGE** areas.

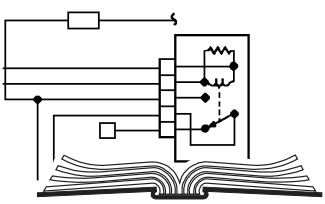
p. When placing the bleed-off hose into a container to collect excess fuel, make sure the container is approved for gasoline.

q. When working on vehicles equipped with airbags, follow all cautions and test procedures in your vehicle's service manual to avoid accidental airbag deployment.

r. Gasoline and gasoline additives are **TOXIC. AVOID CONTACT OF GASOLINE WITH SKIN.** Wear protective clothing and hand covering (approved latex gloves) when performing pressure tests. In case of contact with skin, **WASH THE AREA IMMEDIATELY.**

VEHICLE SERVICE MANUALS

Always refer to the manufacturer's service manual for your vehicle before performing any test or repair procedures. Contact your local car dealership, auto parts store or bookstore for availability of these manuals.



GENERAL

The tests outlined in this manual are for checking Throttle Body Fuel Injection (TBI) (see Figure 2) and Multi-port Fuel Injection (MFI) (see Figure 3) fuel system pressures with the engine running (key on, engine on) and without the engine running (key on, engine off). Engine running tests are performed with the engine at idle (unless otherwise noted). The adapter for testing GM vehicles with test ports is already installed on the end of the gauge hose, while the Ford adapter is separate. For Chrysler vehicles, depending upon application, either adapter may be used.

Figure 2. Typical Throttle Body Fuel Injection (TBI) Systems

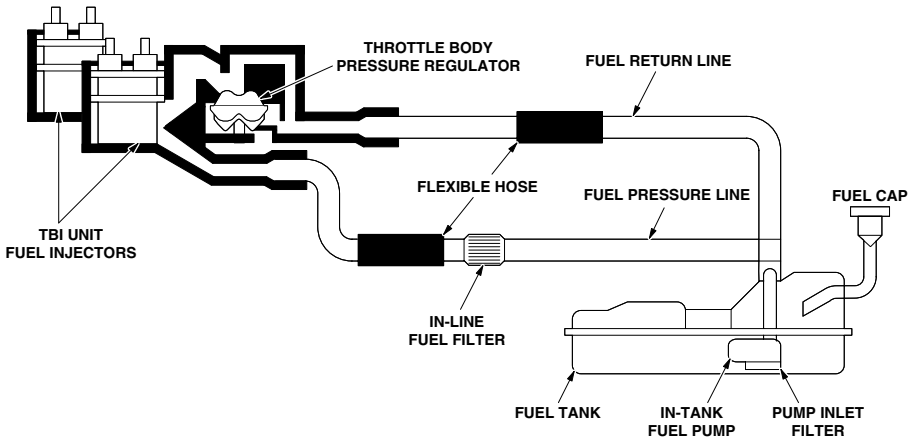
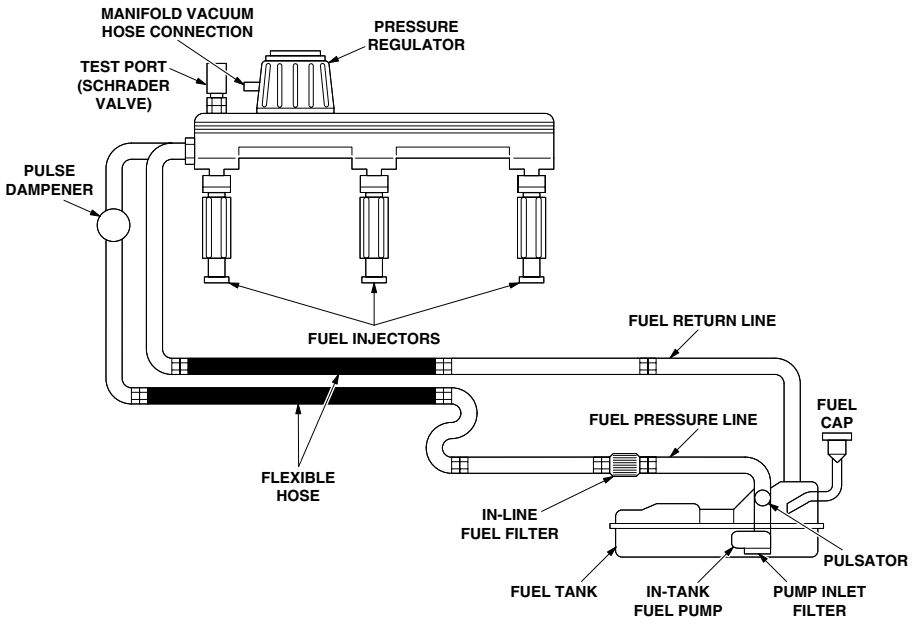


Figure 3. Typical Multi-Port Fuel Injection (MFI) System



Some fuel injection systems **are not** equipped with a test port (Schrader valve). In some cases, these systems may be tested using the tee adapter provided with the tester:

- The tee adapter is suitable for use with most fuel injection systems equipped with rubber fuel hoses secured by fuel line clamps at the fuel rail or throttle body (see Figure 6).
- The tee adapter **is not** suitable for use with fuel injection systems equipped with rigid, metallic or plastic fuel lines or connectors.

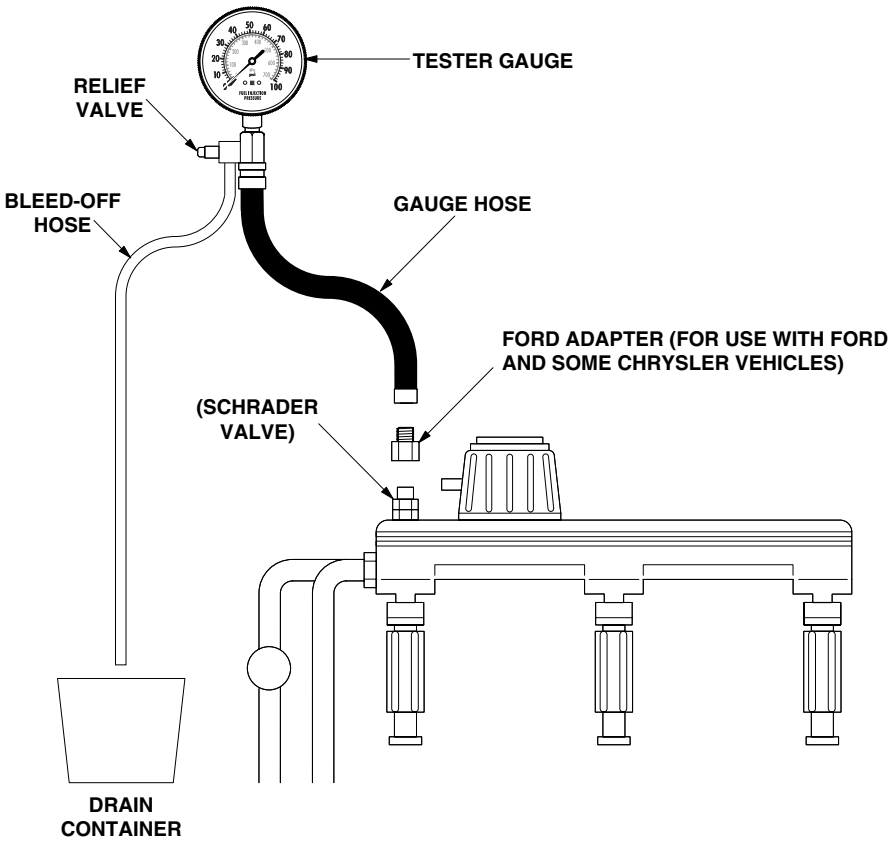
TEST PROCEDURES

Fuel injection systems are under high pressure. You MUST relieve system pressure before connecting the tester. REFER TO YOUR VEHICLE'S SERVICE MANUAL FOR PROCEDURES.

- Before connecting the tester to the fuel system, apply a small amount of light grade household oil or lubricant to the o-rings located in the port adapters.
- When attaching the gauge hose or adapters to test ports, make sure you use the proper adapter for your vehicle. **TAKE CARE** not to damage the threads on the test port.
- Wrap shop rags around fitting when connecting or disconnecting the tester.
- Have shop rags ready to clean up leaks or spills.

Testing Systems WITH Schrader Valve Test Ports (Typical TBI & MFI Systems) (see Figure 4)

Figure 4. Testing Systems With Schrader Valve Test Ports



a. Relieve fuel system pressure **BEFORE** connecting tester (refer to your vehicle's service manual for procedures).

b. Loosen the fuel tank cap to release any pressure from the fuel tank.

c. **MAKE SURE** the ignition is off. Locate the fuel system's test valve or port. Remove the protective cap.

The air conditioning test port looks similar to the fuel system test port. DO NOT CONFUSE THESE PORTS. Refer to your vehicle's service manual to ensure proper connections.

d. Connect the tester to your vehicle's fuel system:

- **For Ford and some Chrysler vehicles:** Install the Ford port adapter on the throttle body or fuel rail test port, **FINGER TIGHT ONLY**, then connect the gauge hose to the adapter.
- **For GM and some Chrysler vehicles:** Connect the gauge hose directly to the test port, **FINGER TIGHT ONLY**.

e. Place bleed-off hose into an approved drain container. **MAKE SURE** the hose remains in the container until testing is complete.

f. **MAKE SURE** all of the vehicle's accessories (air conditioner, fan, radio, defroster, lights, etc.) are turned off.

g. Turn ignition on and listen for fuel pump activation (most systems will activate the fuel pump circuit for approximately two seconds when the ignition is initially turned on to prime the fuel system). Check the test setup and **MAKE SURE** no fuel leaks are present.

- If fuel leaks ARE present, turn off ignition **IMMEDIATELY** and repair any leaks. **BE SURE TO CLEAN UP FUEL SPILLS IMMEDIATELY.**

If your fuel system does not operate as described in step g, or if fuel system is not operating properly, refer to the manufacturer's service manual for repair procedures or activation instructions.

h. When the fuel pump has been activated in step g, the fuel system is pressurized. Verify the tester gauge indicates a system pressure which corresponds with the specifications provided in your vehicle's service manual. If the fuel pressure is within vehicle manufacturer's specifications, proceed to step j. If pressure is not within manufacturer's specifications, proceed to step i.

i. Turn ignition off and follow the test and repair procedures in your vehicle's service manual to correct the problem. After all necessary repairs have been completed, return to step g.

j. Start and idle engine. **RECHECK THE TEST SETUP FOR FUEL LEAKS.**

k. Read fuel pressure from the tester gauge. If the fuel pressure is within vehicle manufacturer's specifications, proceed to step m. If pressure is not within manufacturer's specifications, proceed to step l.

l. Turn ignition off and follow the test and repair procedures in your vehicle's service manual to correct the problem. After all necessary repairs have been completed, return to step j.

m. Turn ignition off.

n. **MAKE SURE** that the bleed-off hose is still routed to the drain container. Press and hold the relief valve to bleed off system pressure. Hold the relief valve until the tester gauge indicates 0 (see Figure 5).

o. Shake the bleed-off hose to ensure all residual fuel has been expelled.

p. Wrap a shop rag around test port area to avoid fuel spray and to absorb excess fuel. **CAREFULLY** disconnect the gauge hose from the port adapter.

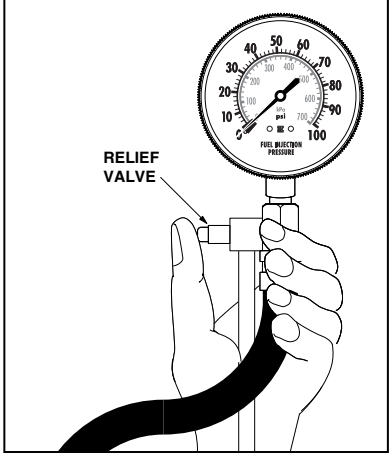
If installed, remove the Ford adapter from the vehicle's test port.

q. Remove the bleed-off hose from the drain container and hold both gauge hoses over the container to let any remaining fuel drain. Store the tester in a well-ventilated area to dry completely.

r. Recheck all fuel system connections, then start the engine. Check for any leaks and repair as necessary.

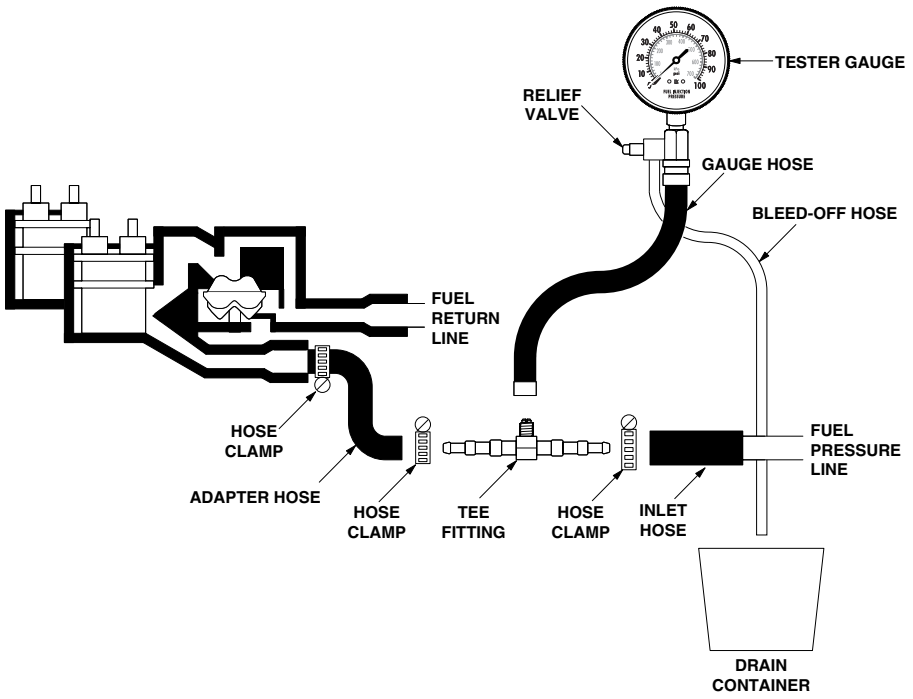
The engine may crank for several seconds before restarting.

Figure 5



Testing Systems WITHOUT Schrader-Type Test Ports (TBI & MFI Systems) (see Figure 6)

Figure 6. Testing Systems Without Schrader Valve Test Ports



TESTING SYSTEMS WITHOUT SCHRADER VALVE TEST PORTS

Fuel injection systems are under high pressure. You MUST relieve system pressure before connecting the tester. REFER TO YOUR VEHICLE'S SERVICE MANUAL FOR PROCEDURES.

Systems without test ports require that fuel lines be removed or disconnected. Please be aware that these lines may be UNDER PRESSURE, and when removed could cause fuel spray and/or leakage onto hot engine parts.

a. Relieve fuel system pressure **BEFORE** connecting tester (refer to your vehicle's service manual for procedures).

b. Loosen the fuel tank cap to release any pressure from the fuel tank.

c. Verify the ignition is off. Locate the fuel system's inlet line (or hose) leading to the fuel rail or throttle body. (Refer to your vehicle's service manual for locations.)

d. CAREFULLY disconnect inlet fuel line (supply line) from system connection point. **INLET MAY BE UNDER PRESSURE.** Try to keep hoses in an upright position to avoid excess fuel leakage. **BE SURE TO CLEAN UP FUEL SPILLS IMMEDIATELY.**

On Throttle Body Injection (TBI) systems, the supply line connection is typically located at the throttle body. On Multiport Fuel Injection (MFI) systems, the supply line connection is typically located at the fuel rail.

e. Connect the inlet fuel line (supply line) from the vehicle (the one removed in step d) to one end of the tee fitting. Push the hose on to the fitting as far as it will go and secure using a hose clamp. Tighten the hose clamp securely.

f. Locate the two hose pieces included with the tester (there are two different size hose pieces). Select the hose piece which fits best on the open end of the tee fitting and on the injection system's inlet fitting. Attach one end of the hose piece to the tee fitting. Push the hose on to the fitting as far as it will go and secure using a hose clamp. Tighten the hose clamp securely. Attach the other end of the hose piece to the injection system's inlet fitting. Push the hose on to the fitting as far as it will go and secure using a hose clamp. Tighten the hose clamp securely (see Figure 6).

g. Connect the gauge hose to the open fitting on top of the tee, **FINGER TIGHT ONLY.**

h. Place the bleed-off hose into an approved drain container. **MAKE SURE** the hose remains in the container until testing is complete.

i. **MAKE SURE** all of the vehicle's accessories (air conditioner, fan, radio, defroster, lights, etc.) are turned off.

j. Turn ignition on and listen for fuel pump activation (most systems will activate the fuel pump circuit for approximately two seconds when the ignition is initially turned on to prime the fuel system). Check the test setup and **MAKE SURE** no fuel leaks are present.

- If fuel leaks **ARE** present, turn off ignition **IMMEDIATELY** and repair any leaks. **BE SURE TO CLEAN UP FUEL SPILLS IMMEDIATELY.**

If your fuel system does not operate as described in step j, or if fuel system is not operating properly, refer to the manufacturer's service manual for repair procedures or activation instructions.

k. When the fuel pump has been activated in step j, the fuel system is pressurized. Verify the tester gauge indicates a system pressure which corresponds with the specifications provided in your vehicle's service manual. If the fuel pressure is within vehicle manufacturer's specifications, proceed to step m. If pressure is not within manufacturer's specifications, proceed to step l.

l. Turn ignition off and follow the test and repair procedures to correct the problem. After all necessary repairs have been completed, return to step j.

m. Start and idle engine. **RECHECK THE TEST SETUP FOR FUEL LEAKS.**

n. Read fuel pressure from the tester gauge. If the fuel pressure is within vehicle manufacturer's specifications, proceed to step p. If pressure is not within manufacturer's specifications, proceed to step o.

o. Turn ignition off and follow the test and repair procedures in your vehicle's service manual to correct the problem. After all necessary repairs have been completed, return to step m.

p. Turn ignition off.

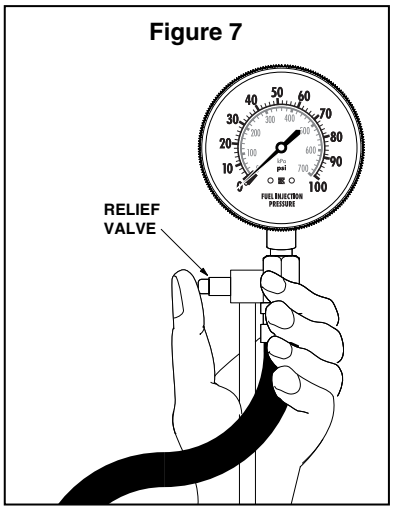
q. **MAKE SURE** the bleed off-hose is still routed to the drain container. Press and hold the relief valve to bleed off system pressure. Hold the relief valve until the tester gauge indicates 0 (see Figure 7).

r. Shake the bleed-off hose to ensure all residual fuel has been expelled.

s. Wrap a shop rag around tee fitting area to avoid fuel spray and to absorb excess fuel. **CAREFULLY** disconnect the gauge hose from the tee fitting. Hold both the bleed-off hose and the gauge hose over the drain container to let any remaining fuel drain. Store the tester in a well-ventilated area to dry completely.

t. Loosen hose clamps and remove the tee fitting and any additional hose pieces which were previously installed to perform testing.

Figure 7



u. Reconnect the fuel inlet line (supply line) to it's original connection point. **MAKE SURE** all hose clamps are reinstalled and tightened properly (refer to your vehicle's service manual for proper connections, as necessary).

v. Recheck all fuel system connections, then start the engine. Check for any leaks and repair as necessary.

The engine may crank for several seconds before restarting.

Shop rags which have been exposed to any flammable liquids or materials should be stored in an approved container to avoid hazardous conditions.

The service life of the port adapter o-rings can be prolonged by applying a film of oil to them before storing.