FUEL INJECTION PRESSURE SYSTEM TESTER

Model: F40JE
Instruction Manual

Important Pre - Test Information

ALWAYS

- Know where your fire extinguisher is before commencing any work on fuel systems.
- Check a reliable shop manual or manufacturer's specifications for proper test procedure, access points, and pressure specifications.
- Wear eye protection.
- Keep clothing and tools away from moving or hot engine parts.
- Clean fuel system connections before loosening. If dirt gets into the system, damage could result. Watch for leaks.
- Wrap a cloth around fittings when connecting or disconnecting.
- Provide for proper ventilation for gas and exhaust fumes.
- Use hose clamps when using hose adaptors.
- Make sure all quick-connect couplers snap into proper position and sleeve is slid into lock position.
- Make sure battery is fully charged and fuel supply is adequate.
- Use two wrenches to loosen fuel lines to prevent damage or twisting of fuel lines.
- Check general condition of engine and fuel system. This includes broken or loose fuel lines, vacuum lines, ignition wires, battery cables, electrical wires, and fuses. Also check tank filler cap and venting systems.
- Drain tester of any excess fuel after tests. Put hose and adapter ends into a proper container and disconnect gauge head. Any fuel remaining in the tester will quickly drain.

NEVER

- Smoke, or work near sparks or open flame when working on fuel systems.
- Allow fuel to spill on hot engine parts. If a leak or spill develops, turn off ignition, disable fuel pump, and clean up spill immediately.

General Information

Because fuel systems and test points are so varied, it is impractical to list each application. Always refer to a reliable shop manual. or the vehicle manufacturer. for the recommended test procedure and access points.

There are two basic types of fuel injection systems. **"Multi- Point" injection** uses separate injectors to supply fuel to each cylinder. **"Throttle - Body" injection** supplies fuel from a position above the throttle plate on the intake manifold. On both systems there is a supply side, which brings fuel to the injectors, and a return side which brings unused fuel back to the tank.

There are basically four ways to access a system to check fuel pressure:

1. Some vehicles are equipped with a special test port". Simply attach the proper adaptor (fig. 1.a) to the gauge head, thread the adaptor to the test port, and run the test.

2. Many older- style "Multi-Point' systems have a flexible hose connection at the cold start injector. Simply use the single - ended barb fitting with a hose clamp to run the test. (fig 1.b)

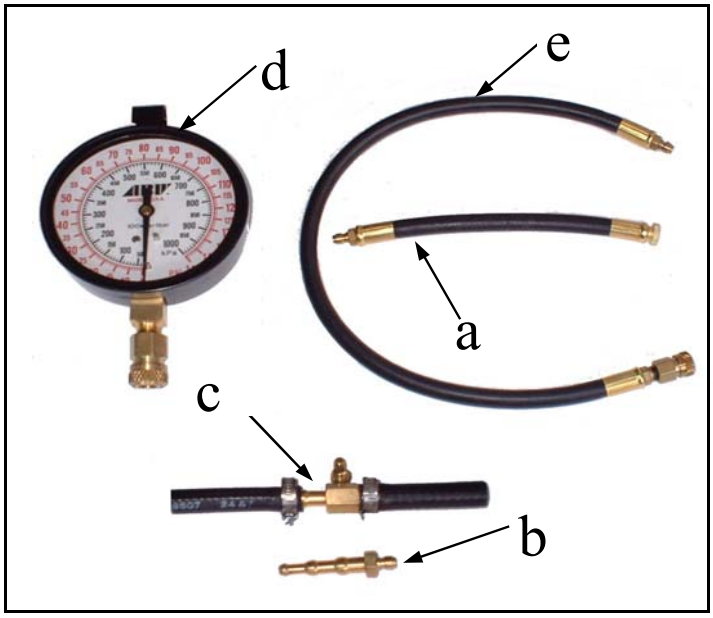
3. Modern Japanese systems commonly have fuel bolt or banjo fittings as access points. Simply replace the original bolt with the adaptor which matches the diameter and thread pitch and connect the adaptor to the gauge to run the test. (fig. 2)

4. Other systems require in-line connecting, using various barbed fittings or adaptors in series with the fuel line. (fig. 1.c)

Unless the Schrader - type test port (1) is available, most manufacturers specify that the fuel pressure be relieved before accessing the system. To relieve the pressure, it may be necessary to remove the fuel pump connector, relay or fuse. Some models have two fuel pumps - make sure both are disabled. Run the engine until it stalls. then try to restart for five to ten seconds. The system will now be ready to open for testing. Once the proper adaptors and gauge are in place, reactivate the fuel pump.

PRESSURE CONVERSION CHART

From	To	Multiply By
PSI	kPa	6.8946
PSI	bar	0.0689
PSI	kg/CM2	0.0703
kPa	PSI	0.145
kPa	bar	0.01
kPa	kg/cm2	0.0102
bar	PSI	14.504
bar	kPa	100
bar	kg/CM2	1.02
kg/cm2	PSI	14.22
kg/cm2	kPa	98.074
kg/cm2	bar	0.9807



Fuel Injection Test Set

Basic components for testing most systems with the following access points,

- push-on supply line,
- push-on cold start injection &
- small schrader valve connections

Figure 1

Components:

- Adaptor for Schrader test ports 0.308” x 32 thread
- Single-ended barb fitting-multi-size for end-of-hose connections. Fites 1/4”, 5/16” & 3/8” hoses
- Double-ended bard tee with hoses and hose clamps. The tee adaptor fits 5/16” or 3/8” hose.
- 0-1000kPA (0-10Bar) pressure gauge with 3 1/2” dial face. Dual calibration with 0-100psi.
- Approx. 27” (686mm) hose assembly for coupling adaptors to gauge head.

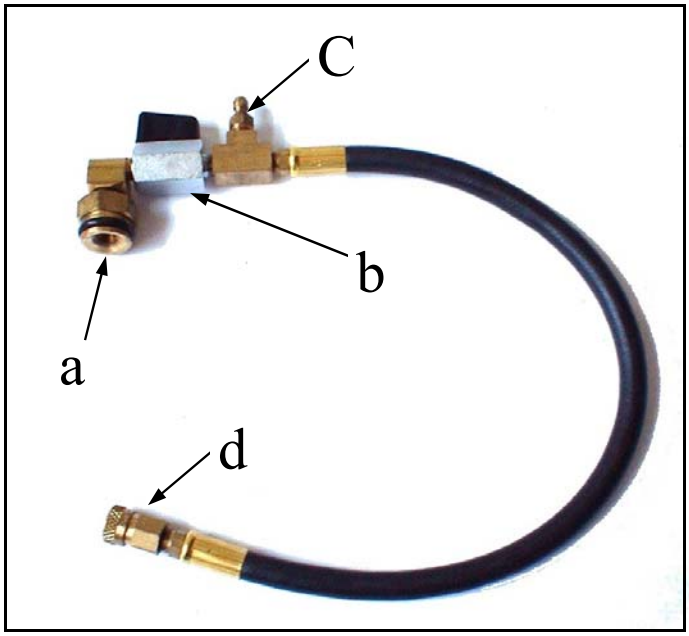
Fuel Bolt Adaptor Set

For use where a fuel bolt or banjo type bolt is removed to provide the system access point. Remove the original bolt and replace with the matching size adaptor and washer(s) . After test, always re-torque bolts to manufacturer’s specifications.

Figure 2

Components:

6xl.0mm, 8xl.0mm, 10xl.0mm, 12x 1.25mm, 12x1.5mm adaptors 10 pc. nylon washer set



Cleaning Hose Assembly (Optional)

This adaptor works with the commonly available pressurised cleaning fluids to restore system performance. Use with pressure gauge and follow the vehicle and cleaning fluid manufacturers' instructions.

Figure 3

Components:

A) AEROSOL CAN ADAPTOR
B) REGULATOR TAP
C) GAUGE CONNECTOR
D) HOSE ASSEMBLY WITH QUICK COUPLER

Aerosol Cleaning Instructions

INSTRUCTIONS: *Most manufacturers recommend the following, or a similar, procedure for using pressurised cleaning fluids. The example given below is suitable for VL Commodores - be sure to check the specific instructions for each vehicle in a reliable shop manual.*

1. Disarm the fuel pump and pinch off the fuel return line - a #70035 flexible line clamp is ideal for this purpose.

2. Connect the barb and hose assembly (Fig. 1, c) to the fuel supply line at the chassis, and connect the hose to the cleaning assembly. (Fig. 3)

3. Connect the 0-70OkPa (0-7bar) gauge to the cleaning hose tee-piece. (Fig. 3, c) Shake the cleaning fluid can, and attach it to the hose connection. Turn the tap until pressure reads between 3 and 3.5 bars.

4. Start the car and run at fast idle (140Orpm) for approx 2 minutes, then turn off the car and the cleaning hose tap. Leave the car to soak for 15 to 30 minutes.

5. After soak period, again set pressure between 3 and 3.5 bars and restart the car. Shake the can gently and run until cleaning fluid is completely exhausted. Stop the car.

6. Disconnect hoses from system and restore original connections, taking care when hose contents are under pressure. Remove clamp from fuel return line. Road test vehicle for at least 4km. Test emissions and reset to factory specifications if necessary.

Bosch CIS Systems (K – jectronic) Adaptor Test Set

For servicing vehicles fitted with Bosch K –jectronic (CIS) , K-Lambda (CIS) , KE-Tronic (CIS-EIII, Motronic and Digital Control) or equivalent systems, including :

Audi, BMW,
Mercedes-Benz,
Peugeot, Porsche,
Volkswagen, Volvo

Diagnosis

Fuel pressure readings can indicate the condition of the fuel system. Without the correct pressure performance and fuel economy can suffer.

It may help to picture the fuel system as a circle. Fuel is pumped from the tank to the fuel regulator and injectors, and the unused fuel is then returned to the tank. A fuel regulator serve as a divider between the supply side and the return side. Lower than recommended pressure usually indicates a problem on the supply side of the circle. Likely causes would include a damaged or restricted fuel lines, clogged fuel flitter, defective fuel pump or regulator or improper tank ventilation.

Higher than normal pressure usually indicates a problem on the return side of the circle. Likely causes are damaged or restricted fuel lines, poor venting of tank or a defective fuel regulator. A problem on the return side can be isolated by re-testing. For example, by removing the return line near the fuel regulator and putting the fuel line into a proper container, a retest that still shows a higher reading would indicate a faulty regulator. If the reading drops into the normal range, the problem must be further down the return line or in the tank.

Always consult the manufacturers recommended procedures for specific trouble –shooting.

When testing is completed make sure the fuel lines is reassembled correctly. Replace any O-rings or washers and follow the manufacturer's recommendations for proper torque on any bolts or connections. Check the entire systems thoroughly for any leaks.