



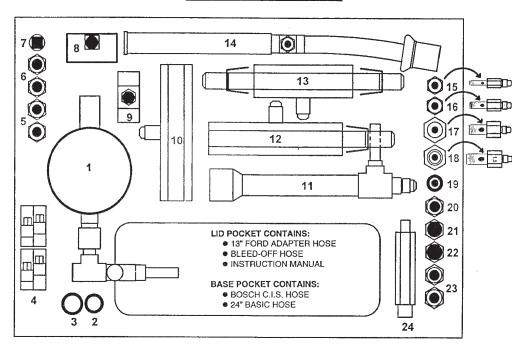


COMPREHENSIVE FUEL INJECTION PRESSURE TEST KIT

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I. TEST KIT LAYOUT



- 1. 0-100 PSI (0-7 BAR) Gage
- 2. 1/4" Hose
- 3. 5/16" Hose
- 4. Hose Clamps (4 Pcs.)
- 5. 1/4" X 1/4" NPT Hose Barb (2 Pcs.)
- 6. 5/16" x 1/4" NPT Hose Barb (2 Pcs.)
- 7. 1/4 " NPT Pipe Plug
- 8. 0-50 PSI (0-3.5 BAR) Gage
- 9. 1/4" NPT Tee with Valve
- 10. GM T.B.I. Adapter
- 11. Ford Hair Pin Adapter
- 12. GM 2.2L Adapter

- 13. GM Quick Connect Adapter
- 14. Ford Spring Lock Adapter
- 15. 8MM-1.00 Banjo Bolt Adapter
- 16. 10MM-1.00 Banjo Bolt Adapter
- 17. 12MM-1.25 Banjo Bolt Adapter
- 18. 12MM-1.50 Banjo Bolt Adapter
- 19. Honda Adapter
- 20. 12MM-1.50 Male x 10MM-1.00 Male x 1 9/16"
- 21. 12MM-1.50 Male x 10MM-1.00 Female x 1 1/4"
- 22. 12MM-1.50 Male x 8MM-1.00 Female x 15/16"
- 23. 12MM-1.50 Male x 8MM-1.00 Male (2 Pcs.)
- 24. 12MM-1.50 Male x 8MM-1.00 Male x 3"

NOTE: Please familiarize yourself with all parts of this kit before assembling any components or performing any tests. After any test, clean the adapter(s) and components if necessary. Replace all components in their original positions inside the case. This will ensure proper operation and organization for every use.

II. IMPORTANT PRE-TEST INFORMATION

CAUTION: FUEL INJECTION SYSTEMS ARE PRESSURIZED! RELIEVE FUEL PRESSURE BEFORE CONNECTING ANY TEST EQUIPMENT TO SYSTEM OR DISASSEMBLING ANY SYSTEM COMPONENT(S). REFER TO THE VEHICLE'S SERVICE MANUAL FOR SPECIFIC FUEL PRESSURE RELIEF PROCEDURE(S).

- 1. Always refer to the vehicle's service manual whenever possible for proper fuel pump pressures and maintenance procedures.
- 2. DO NOT USE THIS TEST EQUIPMENT ON DIESEL FUEL SYSTEMS!
- 3. Always wear eye protection. **DO NOT SMOKE WHILE PERFORMING ANY FUEL INJECTION TESTS OR REPAIRS.**
- 4. Have a dry chemical (Class B) fire extinguisher within reach.
- 5. Provide a suitable container to catch released fuel when the system is depressurized.
- 6. Take extra care to prevent fuel from contacting hot engine surfaces. It is recommended that tests are performed when the engine is cold.
- 7. If a drop light is used, do not allow fuel to contact the hot surface of the bulb.
- 8. NEVER REMOVE ANY FITTINGS WITH THE ENGINE RUNNING!
- Never loosen any fittings or attempt to remove hoses of vehicle or test kit until you have relieved the fuel system pressure. Refer to the vehicle service manual for specific fuel pressure relief procedure(s).
- 10. Always check all connections for leaks during test. At any sign of leaks, turn off the engine or disable the fuel pump. Clean up any spilled fuel and correct all leaks before resuming test.
- 11. When test is complete, de-pressurize the system and remove test equipment.
 - Re-assemble vehicle's fuel line(s) to original condition. Start engine and check for leaks. If any leaks are present, stop the engine, relieve fuel pressure and repair all leaks.
- 12. Use caution at all times. Keep yourself, clothing and test equipment away from all moving engine parts.
- 13. DO NOT DRIVE VEHICLE WITH TESTER CONNECTED.

III. BASIC GAGE ASSEMBLY INSTRUCTIONS

NOTE: Please familiarize yourself with all parts of this kit before assembling any components or performing any tests. After any test, clean the adapter(s) and components if necessary. Replace all components in their original positions inside the case. This will ensure proper operation and organization for every use.

There are two basic gage assemblies that will be used for all of the pressure tests. One assembly is used for all tests except Bosch C.I.S. and the other is used only for Bosch C.I.S.

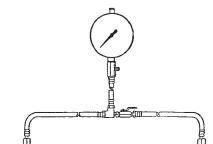
A. ASSEMBLY FOR ALL EXCEPT BOSCH C.I.S.:

- 1. Assemble 24" basic hose to gage (# 1). Use a small amount of pipe compound or Teflon tape on threads. Tighten securely with wrench.
- 2. Push bleed-off hose onto barb of gage assembly.
- 3. This basic assembly is now complete and will be used for all of the pressure tests (except Bosch C.I.S.).



B. ASSEMBLY FOR ONLY BOSCH C.I.S.:

- 1. Unscrew the gage from the tee and bushing on gage assembly (# 1).
- 2. Thread the gage into the Bosch C.I.S. hose assembly (located in base of storage case). Use a small amount of pipe compound or Teflon tape on threads. Tighten securely with a wrench.
- 3. This basic assembly is now complete and will be used for all Bosch C.I.S. pressure tests.



FOR THE FOLLOWING HOOK-UP INSTRUCTIONS, PLEASE REFER TO THE TEST KIT LAYOUT SHEET ON PAGE 2

IV. <u>TYPICAL HOOK-UPS</u> FOR MULTI-PORT FUEL INJECTION

A. GM Multi-port and Chrysler Multi-port:

- 1. Turn ignition OFF.
- 2. Make sure bleed-off valve on test assembly is closed tightly (turned fully clockwise).
- 3. Relieve fuel pressure. Refer to the vehicle's service manual for specific pressure relief procedure(s).
- 4. Remove protective cap from test fitting on vehicle.
- 5. Using Basic Assembly "A" on Page 4, thread swivel female fitting on 24" basic hose to the test fitting on vehicle. Hand tighten.
- 6. Start engine and allow it to idle. Check for leaks.
- 7. Read gage and compare result with pressure in service manual.
- 8. Stop engine and turn ignition OFF.
- 9. With free end of bleed-off hose in suitable container, open bleed-off valve on tester (turn counterclockwise) slowly to de-pressurize the fuel system.
- 10. Refer to Pre-Test Information (Page 3) before removing tester from vehicle.
- 11. Replace protective cap onto test fitting on vehicle. Check for leaks.



B. Ford Multi-port (E.F.I.)

- 1. Turn ignition OFF.
- 2. Make sure bleed-off valve on test assembly is closed tightly (turned fully clockwise).
- 3. Relieve fuel pressure: Refer to the vehicle's service manual for specific pressure relief procedure(s).
- 4. Using Basic Assembly "A" on Page 4, thread male end on 13" long Ford adapter (located in lid of storage case) to female fitting on 24" basic hose. Hand tighten.
- 5. If vehicle has multi-port fuel injection, the test valve is located on the fuel rail. Remove protective cap from the test valve.
- 6. Attach female end of Ford adapter to the test valve. Hand tighten.
- 7. Start engine and allow it to idle. Check for leaks.
- 8. Read gage and compare result with pressure in service manual.
- 9. Stop engine and turn ignition OFF.
- With free end of bleed-off hose in suitable container, open bleed-off valve on tester (turn counterclockwise) slowly to de-pressurize the fuel system.
- 11. Refer to Pre-Test Information (Page 3) before removing tester from vehicle.
- 12. Replace protective cap onto test fitting on vehicle. Check for leaks.



C. Honda, Acura & Sterling Multi-port (PGM-FI)

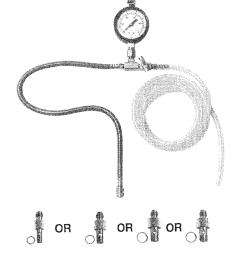
- 1. Turn ignition OFF.
- Make sure bleed-off valve on test assembly is closed tightly (turned fully clockwise).
- 3. Using Basic Assembly "A" on Page 4, thread large male end of Honda adapter (#19) into female fitting on 24" basic hose. Hand tighten.
- 4. Relieve fuel pressure. Refer to the vehicle's service manual for specific pressure relief procedure(s).
- 5. The test point is at the vehicle's fuel filter, under the hood, just forward of the firewall.
- 6. The fuel outlet is secured to the filter by a "double D" bolt. Within this bolt is a smaller hexagonal bolt that provides access to the test connection.
- 7. Place a shop cloth around the fuel outlet and slowly remove the smaller hexagonal bolt.
- 8. Screw the small male end of the Honda adapter into the hole where the removed hexagonal bolt was. Hand tighten.
- 9. Start engine and allow it to idle. Check for leaks.
- 10. Read gage and compare result with pressure in service manual.
- 11. Stop engine and turn ignition OFF.
- 12. With free end of bleed-off hose in suitable container, open bleed-off valve on tester (turn counterclockwise) slowly to de-pressurize the fuel system.
- 13. Refer to Pre-Test Information (Page 3) before removing tester from vehicle.
- 14. Re-install hexagonal bolt on the fuel filter. Check for leaks.



- 1. Turn ignition OFF.
- 2. Make sure bleed-off valve on test assembly is closed tightly (turned fully clockwise).
- 3. Relieve fuel pressure. Refer to the vehicle's service manual for specific pressure relief procedure(s).
- 4. The pressure test connection for these vehicles is located at the point where the fuel inlet meets the fuel rail or cold start injector. The fuel inlet is secured to the fuel rail or cold start injector by a banjo fitting.
- 5. Remove the banjo fitting that secures the fuel inlet to the fuel rail or cold start injector. Place a shop cloth around the bolt to catch any spilled fuel.
- 6. Install one of the four pressure test adapters (#'s 15, 16, 17 or 18) with corresponding sealing washer and one of the gaskets from the banjo fitting so that the fuel inlet is once again connected to the fuel rail or cold start injector. The test adapter will hold the banjo assembly in position.
- 7. Torque the adapters to the following specifications:

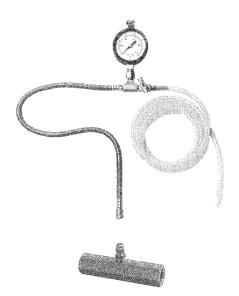
			IURQUE
ADAPTER #	SIZE	WRENCH	SPECIFICATION
15	8mm-1.00	1/2" hex	48 in. lbs. (5.5 N-m)
16	10mm-1.00	9/16" hex	72 in. lbs. (8.0 N-m)
17	12mm-1.25	11/16" hex	96 in. lbs. (11.0 N-m)
18	12mm-1.50	11/16" hex	96 in. lbs. (11.0 N-m)

- 8. Using Basic Assembly "A" on Page 4, thread swivel female fitting on 24" basic hose to the banjo adapter. Hand tighten.
- 9. Start engine and allow it to idle. Check for leaks.
- 10. Read gage and compare result with pressure in service manual.
- 11. Stop engine and turn ignition OFF.
- 12. With free end of bleed-off hose in suitable container, open bleed-off valve on tester (turn counterclockwise) slowly to de-pressurize the fuel system.
- 13. Refer to Pre-Test Information (Page 3) before removing tester from vehicle.
- 14. Remove the tester and the pressure test adapter.
- 15. Re-assemble the banjo fitting to the fuel inlet and fuel rail (or cold start injector). New gaskets should be used when re-assembling fuel lines. Check for leaks.



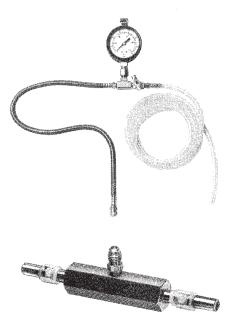
V. TYPICAL HOOK-UPS FOR THROTTLE BODY FUEL INJECTION

- A. GM Throttle Body Injection (T.B.I.) with Fuel Filter Threaded on Both Sides
- 1. Turn ignition OFF.
- 2. Make sure bleed-off valve on test assembly is closed tightly (turned fully clockwise).
- 3. Relieve fuel pressure. Refer to the vehicle's service manual for specific pressure relief procedure(s).
- 4. Locate the fuel filter on the vehicle.
- 5. Remove the fuel filter by unscrewing the fuel lines from both ends of the fuel filter. Use a container to catch any fuel that may spill out. Wipe off any excess fuel that may spill on the vehicle.
- 6. Install the GM T.B.I. adapter (#10) in place of the fuel filter by threading each fuel line into either end of the adapter. Do not overtighten.
- 7. Using Basic Assembly "A" on Page 4, thread swivel female fitting on 24" basic hose onto GM T.B.I. Adapter.
- 8. Start the engine and check for leaks. Read the fuel pressure. Compare the value on the gage to the value in the service manual.
- 9. Remove the fuel pressure adapter following the above instructions for removing the fuel filter.
- 10. Stop engine and turn ignition OFF.
- 11. With free end of bleed-off hose in suitable container, open bleed-off valve on tester (turn counterclockwise) slowly to de-pressurize the fuel system.
- 12. Re-install the fuel filter. Start the vehicle and check for leaks. If there are any leaks, turn the engine OFF and secure all connections.



B. GM Throttle Body Injection (T.B.I.) with Quick Connect Fuel Filter (2.5L 1989 and up, 5.7L 1991 and up)

- 1. Turn ignition OFF.
- 2. Make sure bleed-off valve on test assembly is closed tightly (turned fully clockwise).
- 3. Relieve fuel pressure. Refer to the vehicle service manual for specific pressure relief procedure(s).
- 4. Locate the fuel filter on the vehicle.
- 5. Remove the fuel filter by compressing the tabs while pulling outward on each fuel line. Use a container to catch any fuel that may spill out. Wipe off any excess fuel that may spill on the vehicle.
- Install the fuel pressure adapter in place of the fuel filter by pushing each of the adapter's male tubes into the fuel lines. Make sure the nylon clips on the tubes are seated inside the fuel line connectors.
- 7. Using Basic Assembly "A" on Page 4, thread swivel female fitting on 24" basic hose onto adapter.
- 8. Start the engine and check for leaks. Read the fuel pressure. Compare the value on the gage to the value in the service manual.
- 9. Stop engine and turn ignition OFF.
- 10. With free end of bleed-off hose in suitable container, open bleed-off valve on tester (turn counterclockwise) slowly to de-pressurize the fuel system.
- 11. Remove the fuel pressure adapter following the above instructions for removing the fuel filter.
- 12. Re-install the fuel filter. Start the vehicle and check for leaks. If there are any leaks, turn the engine OFF and secure all connections.



C. GM 2.2L Engines, 1992 and up

- 1. Turn ignition OFF.
- 2. Make sure bleed-off valve on test assembly is closed tightly (turned fully clockwise).
- 3. Relieve fuel pressure. Refer to the vehicle's service manual for specific pressure relief procedure(s).
- 4. Locate the fuel filter on the vehicle.
- 5. Remove the fuel filter by unscrewing the steel fuel line from one end of the fuel filter. Remove the nylon fuel line on the other end by compressing the tabs while pulling outward on the fuel line. Use a container to catch any fuel that may spill out. Wipe off any excess fuel that may spill out.
- 6. Install the fuel pressure adapter in place of the fuel filter by threading the steel fuel line into the threaded end of the adapter. Do not overtighten. Connect the other end of the adapter by pushing the male tube into the nylon fuel line. Make sure the nylon clip on the tube is seated inside the fuel line connector.
- 7. Using Basic Assembly "A" on Page 4, thread swivel female fitting on 24" basic hose onto adapter.
- 8. Start the engine and check for leaks. Read the fuel pressure. Compare the value on the gage to the value in the service manual.
- 9. Stop engine and turn ignition OFF.
- 10. With free end of bleed-off hose in suitable container, open bleed-off valve on tester (turn counterclockwise) slowly to de-pressurize the fuel system.
- 11. Remove the fuel pressure adapter following the above instructions for removing the fuel filter.
- 12. Re-install the fuel filter. Start the vehicle and check for leaks. If there are any leaks, turn the engine OFF and secure all connections.



D. Chrysler Throttle Body Injection

- 1. Turn ignition OFF.
- 2. Relieve fuel pressure. Refer to vehicle's service manual for specific fuel pressure relief procedures.
- Loosen the hose clamp and disconnect the fuel line hose from the inlet side of the vehicle's throttle body.
- 4. Check for the size of the inlet fuel line hose on the vehicle by inserting one of either the 1/4" hose barbs (#5) or 5/16" hose barbs (#6) included with kit.
- Assemble the correct hose barbs and supplied hose (#2, #3) to the tee (#9) as shown.
- 6. Connect the adapter as shown between the disconnected fuel line and the throttle body inlet nipple on the vehicle. Tighten all hose clamps securely.
- 7. Using Basic Assembly "A" on Page 4, thread swivel female fitting on 24" basic hose onto the check valve on the adapter. Make sure bleed-off valve on test assembly is closed tightly (turned fully clockwise).
- 8. Start engine and allow it to idle. Check all connections for leaks.
- 9. Read gage and compare result with pressure values in service manual.
- 10. Stop engine and turn ignition OFF.
- 11. With free end of bleed-off hose in suitable container, open bleed-off valve on tester (turn counterclockwise) slowly to de-pressurize the fuel system.
- 12. Refer to Pre-Test Information (Page 3) before removing tester from vehicle.
- 13. Replace vehicle's fuel line and tighten all clamps securely. Check all connections for leaks.



← TO INLET FUEL LINE HOSE



TO THROTTLE
BODY INLET
NIPPLE

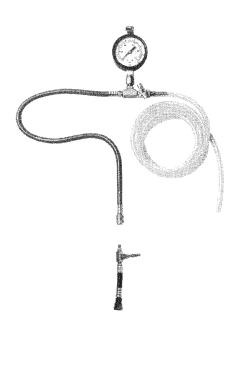
E. Ford Throttle Body Injection with Small Schrader Valve

- 1. Turn ignition OFF.
- 2. Relieve fuel pressure. Refer to vehicle's service manual for specific fuel pressure relief procedures.
- 3. Remove air cleaner assembly. The test valve is located at the top of the throttle body unit.
- 4. Attach male end of 13" Ford adapter hose (located in lid of case) to the female fitting on 24" basic hose (use Basic Assembly "A" on Page 4). Make sure bleed-off valve on test assembly is closed tightly (turned fully clockwise).
- 5. Attach female end of the Ford adapter to the test valve. Make sure bleed-off valve on test assembly is closed tightly (turned fully clockwise).
- 6. Start engine and allow it to idle. Check all connections for leaks.
- 7. Read gage and compare result with pressure values in service manual.
- 8. Stop engine and turn ignition OFF.
- 9. With free end of bleed-off hose in suitable container, open bleed-off valve on tester (turn counterclockwise) slowly to de-pressurize the fuel system.
- 10. Refer to Pre-Test Information (Page 3) before removing tester from vehicle.
- 11. Start the vehicle and check for leaks.



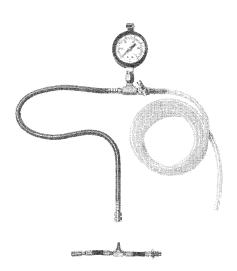
F. Ford Central Fuel Injection (C.F.I.) with Hair Pin Coupling - 1.9L and 2.3L

- 1. Turn ignition OFF.
- 2. Relieve fuel pressure. Refer to service manual for specific fuel pressure relief procedures.
- 3. The connection with the vehicle's fuel injection system is at the throttle body. Remove fuel line at inlet by prying up on the hair pin from the coupling with a small screwdriver. Use care as the hair pin is made of plastic. Once disconected, re-install the hair pin into the hair pin coupling.
- 4. Attach the Ford Hair Pin Adapter (#11) to the disconnected fuel line. Make sure both ends of mating parts are seated and locked together.
- 5. Using Basic Assembly "A" on Page 4, thread female end of the 24" basic hose (located in base of case) to the test valve on the adapter. Make sure bleed-off valve on test assembly is closed tightly (turned fully clockwise). Hand tighten.
- 6. Start engine and allow it to idle. Check all connections for leaks.
- 7. Read gage and compare result with pressure values in service manual.
- 8. Stop engine and turn ignition OFF.
- 9. With free end of bleed-off hose in suitable container, open bleed-off valve on tester (turn counterclockwise) slowly to de-pressurize the fuel system.
- 10. Refer to Pre-Test Information (Page 3) before removing tester from vehicle.
- 11. Re-install the vehicle's fuel line.
- 12. Start the vehicle and check for leaks.



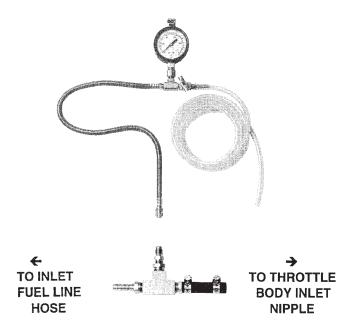
G. Ford Central Fuel Injection (C.F.I.) with Spring Lock Fittings - 2.5L

- 1. Turn ignition OFF.
- 2. Relieve fuel pressure. Refer to service manual for specific fuel pressure relief procedures.
- 3. The connection with the vehicle's fuel injection system is on the fuel rail.
- A disconnect tool is required to separate the spring lock fitting on the vehicle's fuel line.
- 5. After the spring lock fitting has been disconnected, assemble the Ford Spring Lock Adapter (#14) into the line, making sure that both ends of the mating couplings are locked together.
- 6. Using Basic Assembly "A" on Page 4, attach female end of the 24" basic hose (located in base of case) to the test valve on the adapter. Make sure bleed-off valve on test assembly is closed tightly (turned fully clockwise). Hand tighten.
- 7. Start engine and allow it to idle. Check all connections for leaks.
- 8. Read gage and compare result with pressure values in service manual.
- 9. Stop engine and turn ignition OFF.
- 10. With free end of bleed-off hose in suitable container, open bleed-off valve on tester (turn counterclockwise) slowly to de-pressurize the fuel system.
- 11. Refer to Pre-Test Information (Page 3) before removing tester from vehicle.
- 12. Using the disconnect tool, remove the test adapter and install the vehicle's fuel line.
- 13. Start the vehicle and check for leaks.



H. All Vehicles with 1/4" or 5/16" Fuel Line Hose

- 1. Turn ignition OFF.
- 2. Relieve fuel pressure. Refer to service manual for specific fuel pressure relief procedures.
- 3. Loosen the hose clamp and disconnect the fuel line hose from the inlet side of the vehicle's throttle body or discharge side of the fuel pump.
- Check for the size of the fuel line hose on the vehicle by inserting one
 of either the 1/4" hose barbs (#5) or 5/16" hose barbs (# 6) included
 with kit.
- 5. Construct an adapter by assembling the correct hose barbs and supplied hose (#2, #3) to the tee (#9) as shown.
- 6. Connect the adapter as assembled above between the disconnected fuel line and the throttle body inlet or fuel pump. Tighten all hose clamps securely.
- 7. Using Basic Assembly "A" on Page 4, thread swivel female fitting on the 24" basic hose to the check valve on the adapter. Make sure bleed-off valve on test assembly is closed tightly (turned fully clockwise).
- 8. Start engine and allow it to idle. Check all connections for leaks.
- 9. Read gage and compare result with pressure values in service manual.
- 10. Stop engine and turn ignition OFF.
- 11. With free end of bleed-off hose in suitable container, open bleed-off valve on tester (turn counterclockwise) slowly to de-pressurize the fuel system.
- 12. Refer to Pre-Test Information (Page 3) before removing tester from vehicle.
- Replace vehicle's fuel line and tighten all clamps securely. Check all connections for leaks.



VI. BOSCH CONTINUOUS INJECTION **SYSTEM (C.I.S.) TESTING**

REFER TO ADAPTER SELECTION AND HOOK-UP CHART ON PAGE 18

A. TEST INSTRUCTIONS

- 1. Assemble Bosch C.I.S. hose (in base of case) and gage (#1) as explained in Section III B, Page 4.
- 2. Turn ignition OFF.
- 3. Clean the top of the fuel distributor to keep dirt from entering the fuel system.
- 4. Relieve fuel pressure. Refer to the vehicle's service manual for specific pressure relief procedure(s).
- 5. The C.I.S. System has a primary circuit with pressure regulated at the fuel distributor. This is known as supply pressure, primary pressure or line pressure. The side of the tester without the ball valve is connected in this circuit.
- 6. The other circuit is known as the control circuit. This contains the control pressure regulator, known as the warm-up compensator. The side of the tester with the ball valve is connected in this circuit.
- 7. Attach adapters and O Rings as required by the Adapter Selection and Hook-Up Chart. Hand tighten only.
- 8. Release any air in the test hose by depressing the relief valve under the gage. Wrap a shop cloth over the valve to catch any fuel that may leak out.
- 9. Start the engine and check for leaks. Read the fuel pressure. Compare the value on the gage to the value in the service manual.
- 10. Relieve fuel pressure.
- 11. Remove tester and adapter(s) from vehicle.
- 12. Reconnect vehicle's fuel injection lines to original condition. Start the vehicle and check for leaks.

