

USER'S MANUAL



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Introduction

The Mityvac Fuel System Pressure Test Kit is designed to perform fuel pressure testing on most domestic and imported cars and trucks that are equipped with return and returnless electronic fuel injection systems.

The tester can help identify and diagnose:

- Low fuel pressure
- Faulty fuel pump
- Faulty fuel pressure regulator
- Leaking fuel injectors
- Clogged fuel filter
- Pinched fuel lines

Safety Precautions

The use of this service tool requires the exposure of highly flammable gasoline. To prevent fires, explosions and/or severe injury, always apply extra precautions when diagnosing or working on fuel systems.

The fuel pressure test kit is designed for servicing a variety of vehicles in a safe, convenient manner. However, fuel delivery systems vary widely between makes and models of vehicles, potentially requiring additional steps or equipment to perform a proper service job. The procedures outlined in this manual are to serve as guidelines for the use of this equipment. In addition to these guidelines, always follow the manufacturer's recommended procedures when servicing each unique vehicle. Use common sense in the application of this tester; and do not attempt to force a test on a fuel system for which this equipment is not designed to perform.

- Always read carefully and understand instructions prior to using this equipment
- Wear safety glasses at all times
- Operate the vehicle only in a well ventilated area, and away from potential sources of flame or ignition.
- Prior to starting an engine, make sure all components of the tester, body parts, and personal clothing are clear of rotating engine components
- Avoid burns by remaining cautious of engine parts that may become hot when the engine is running
- Never leave a vehicle unattended while testing
- Check and secure all fuel system connections before starting the vehicle or activating the fuel pump
- Wear gloves and protective clothing to avoid the contact of gasoline on skin. If contact occurs, immediately wash the area and perform necessary first aid
- Always keep a fire extinguisher on hand when performing fuel related diagnostics. Make sure the extinguisher is rated for fuel, electrical and chemical fires
- Avoid spilling fuel on hot engine parts. Clean-up any fuel spills immediately after they occur.

Specifications

Maximum Rated Pressure: 120 PSI (800 kPa) (8 bar)

Components, Service Parts and Accessories

The Mityvac Fuel Pressure Test Kit combines the highest quality materials and workmanship to create a durable, finely tuned diagnostic tool, which with proper care will provide years of valuable service. All components are designed and quality controlled in the U.S.

Following is a list of standard components, service parts and accessories relating to model MV5546. Components and accessories are available from your local Mityvac distributor. Service parts, warranty information and technical service information are available at the contact information shown on the front of this user manual.

Standard Kit Components

Model MV5546 includes the following high quality components:

- 3.5" (90 mm) diameter diaphragm style Pressure Gauge
 - 0 to 120 PSI (0 to 8 bar) (0 to 800 kPa) scale of measure
 - Push-button pressure relief valve
 - 360° swivel hook
 - Protective rubber boot
- 1/8" (3 mm) ID x 6' (1.8 m) long Pressure Relief Hose
- 5/16" (8 mm) ID x 4' (1.2 m) long Extended Pressure Hose
- Inline Pressure Test Hose
- (2x) Scissor Hose Clamp
- Custom Storage Case
- Automotive Fuel System Test Adapters (see pages 5 – 6)
- (6x) Quick-connect Replacement Clip

Fuel Pressure Test Kit MODEL MV5546
























Accessories

Part Number	Description
MVA500	Low Pressure Gauge
MVA506	Inline Pressure Test Hose
MVA509	Extended Pressure Test Hose
MVA5552	Pressure Test Accessory Kit
MVA5553	Flowmeter Upgrade Kit
MVA502	American Adapter Kit
MVA503	European Adapter Kit
MVA504	Asian Adapter Kit

Service Parts

Part Number	Description
824183	Wing-Style Hose Clamp (Qty 4)
824178	3/8" Springlock Tether with Clip
824193	1/2" Springlock Tether with Clip
824172	Quick Connect Replacement Clips
824179	Storage Case
824141	High Pressure Gauge
824149	Pressure Relief Hose (1/8" (3mm) x 6' (1.8m) long
824144	Scissor Hose Clamps (Qty 2)

















Fuel System Test Adapters

Description	Applications	Order No.	Reference No.	
GM/Chrysler Right Angle Test Port Adapter	GM & some Chrysler vehicles with 7/16" x 20 thread test port on fuel rail	MVA507**	20	
Ford/Chrysler Right Angle Test Port Adapter	Ford & some Chrysler vehicles with .308 x 32 thread test port on fuel rail	MVA508**	21	
GM/Chrysler Test Port Adapter	GM & some Chrysler vehicles with 7/16" x 20 thread test port on fuel rail	MVA510**	18	
Ford/Chrysler Test Port Adapter	Ford & some Chrysler vehicles with .308 x 32 thread test port on fuel rail	MVA511**	19	
3/8" Quick-change Adapter	GM, Chrysler, Jeep/Eagle	MVA512	1	
1/4" - 3/8" Barbed Flex Hose Adapter	Vehicles with 1/4", 5/16" or 3/8" rubber to steel hose connection	MVA505*	16	
1/4" Flex Hose Adapter	Vehicles with 1/4" rubber to steel hose connection		16A	
5/16" Flex Hose Adapter	Vehicles with 5/16" rubber to steel hose connection		16B	
3/8" Flex Hose Adapter	Vehicles with 3/8" rubber to steel hose connection		16C	
M8 x 1.0 Banjo Adapter	Toyota	MVA513	13B	
			13A	
M10 x 1.0 Banjo Adapter	Toyota	MVA514	14B	
			14A	
M12 x 1.25 Banjo Adapter	Toyota, Lexus, Geo, Honda, Acura, Hyundai, Mazda, Daihatsu, Chrysler imports	MVA515	15B	
			15A	
M12 x 1.5 Banjo Adapter	Audi, Volkswagen	MVA516	9B	
			9A	
M12 x 1.5 Ball Nose Adapter	European vehicles with CIS fuel system	MVA517	12A	
			12B	
M14 x 1.5 Ball Nose Adapter	European vehicles with CIS fuel system	MVA518	10A	
			10B	

**Fuel Pressure Test Kit
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Fuel System Test Adapters

Description	Applications	Order No.	Reference No.	
M16 x 1.5 Ball Nose Adapter	European vehicles with CIS fuel system	MVA519	11A	
			11B	
M16 x 1.5 Adapter	GM Vortec	MVA520	3A	
			3B	
M14 x 1.5 Adapter	GM Vortec	MVA521	4A	
			4B	
3/8" Flare Nut Adapter	Carbureted & early fuel injected systems	MVA522	6A	
			6B	
3/8" Flare Nut Adapter	Carbureted & early fuel injected systems	MVA523	5A	
			5B	
3/8" Spring Lock Adapter	Ford fuel injection systems	MVA524	7A	
			7B	
1/2" Spring Lock Adapter	Ford fuel injection systems	MVA525	8A	
			8B	
5/16" Quick-Change Adapter	GM, Chrysler, Jeep/Eagle	MVA526	2B	
			2A	

Connections

Adapters

The MV5546 includes a selection of adapters for connecting to the pressure test port or inline with the fuel delivery systems of a wide range of automotive makes and models. The chart on pages 5 and 6 outlines the adapters available, and their applications. Each adapter is etched with an identification number for easy reference. Adapters can be purchased separately in sets according to the order number indicated in the chart.

In most cases, selecting and installing adapters into the fuel delivery system and connecting the inline pressure test hose for testing, is straightforward and logical. Simply match the fuel system connection to the equivalent male and female adapter set, and install them as outlined in the instructions later in this manual.

Banjo Connections

Banjo style connections are commonly used by many Asian and European manufacturers to connect a hose or fuel line to the filter and/or the fuel rail. Often, this will be the best place to connect the inline pressure test hose with the fuel system. This type of connection may be a little confusing the first time it is encountered.

A banjo connection consists of a round, hollowed-out “banjo” connector with two flat sides. A hollow bolt with a cross-hole passes through the banjo connector and threads into the connecting component (i.e. filter, fuel rail). When the bolt is tightened, it creates a secure face-to-face seal through which the fuel flows. See Fig. 1 for an illustration of this connection. Two (2) threaded adapters and a closed end nut are required to properly install the inline pressure test hose into a banjo style connection. Refer to the adapter chart on pages 5 and 6 for a list of the banjo adapters included with the kit. To install the banjo adapters:

1. Follow the proper procedure recommended by the manufacturer to relieve the fuel pressure and proportion for disconnecting.
2. Loosen and remove the bolt from the banjo connection at the fuel filter or fuel rail.
3. Pass the hollow adapter with the cross-hole through the banjo fitting. Be sure to include a washer on both sides of the banjo fitting (Fig. 2).
4. Thread the closed-end nut onto the end of the bolt and tighten securely with a wrench, trapping the banjo fitting.
5. Thread the hollow bolt adapter without the cross-hole into the filter or fuel rail, in place of the original bolt, and tighten securely with a wrench. Be sure to include a washer between the face of the filter or fuel rail, and the opposing face of the adapter bolt (Fig. 3).
6. Follow normal testing procedures.

NOTE: Always throw away the original used washers, and replace them with new when reconnecting the banjo fitting back to the vehicle’s original specification.

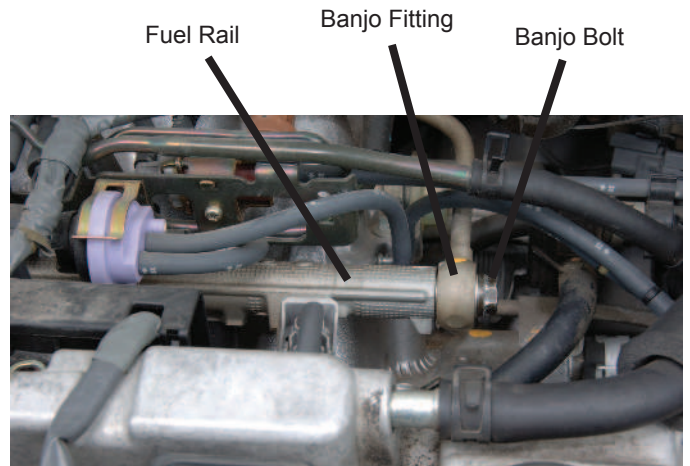


Fig. 1

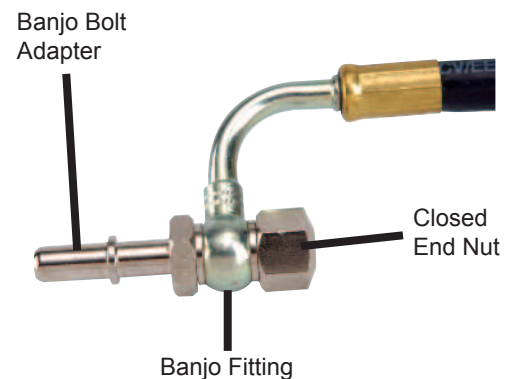


Fig. 2

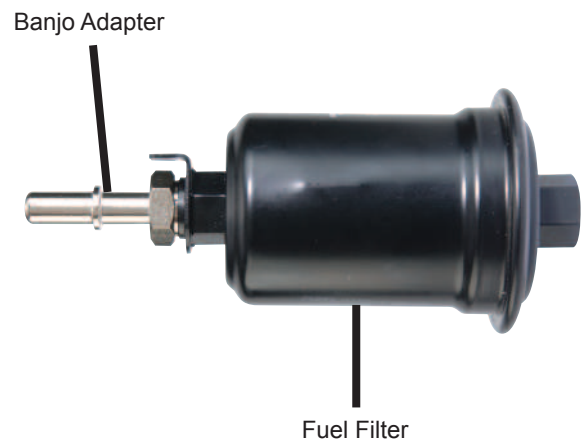


Fig. 3

Fuel Pressure Test Kit MODEL MV5546



Flex Hose Connections

In many cases it is convenient to connect the inline pressure test hose into the fuel delivery system at a location where a flexible rubber hose is secured to a steel fuel line using a screw clamp. A special adapter set is included with the MV5546 for installing the inline pressure test hose into this type of connection. It includes a universal barb adapter, three flexible hose adapters (1/4", 5/16", 3/8"), and four wing screw clamps.

To install the flex hose adapters:

1. Follow the proper procedure under the setup instructions to relieve the fuel pressure and prepare for disconnecting.
2. Loosen the screw clamp securing the rubber hose to the steel fuel line on the vehicle's fuel delivery system, and carefully disconnect the rubber hose (Fig. 4).
3. Insert the universal barb adapter (#16) into the rubber hose (Fig. 5) and tighten the hose clamp (Fig. 6).
4. Select the appropriate size flex hose adapter (1/4", 5/16", or 3/8"), and install it onto the steel fuel line (Fig. 7). Secure it with one of the wing screw clamps provided (Fig. 8).
5. Follow normal testing procedures.

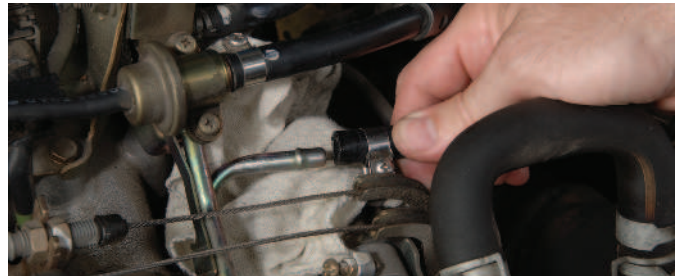


Fig. 4



Fig. 5



Fig. 6



Fig. 7



Fig. 8

Connection Types

The Mityvac MV5546 is capable of connecting to and testing the following types of fuel systems:

1. All fuel injection systems that are factory equipped with suitable fuel pressure test ports on the fuel rail (Schrader valve ports).
2. Fuel injection systems that are equipped with a removable fuel pressure inlet line that can utilize one of the many adapters covered on Pages 5 & 6. Fuel injection systems that are not equipped with a fuel pressure test port or a removable pressure line but are equipped with a flexible rubber hose line into the fuel rail.

The inline pressure test hose utilizes a special female quick-connect fitting (Fig. 9). This fitting was selected because it conforms to the SAE J2044 specification for fuel fittings, it is a common fuel delivery system connection on which many manufacturers are standardizing, and the connection releases with a simple push-button action. No special tools are required to disconnect the fittings.

The pressure gauge extension hose, as well as the adapters and fittings that connect into the fuel system, have the complimenting male SAE J2044 endform (Fig. 10). To secure the male to female connection, simply push the male endform into the female quick-connect until it snaps securely into place (Fig. 11). Always test the connection by trying to pull it apart without pressing the release button.

To release the connection, press and hold the release button on the side of the female quick-connect, while pulling the connection apart (Fig. 11). Do not attempt to release the quick-connect connection using a disconnect tool, as this may damage the fitting. Replacement clips are included if needed.



Fig. 9



Fig. 10



Fig. 11

Fuel Pressure Test Kit MODEL MV5546



Fuel System Pressure Testing

Fuel Systems

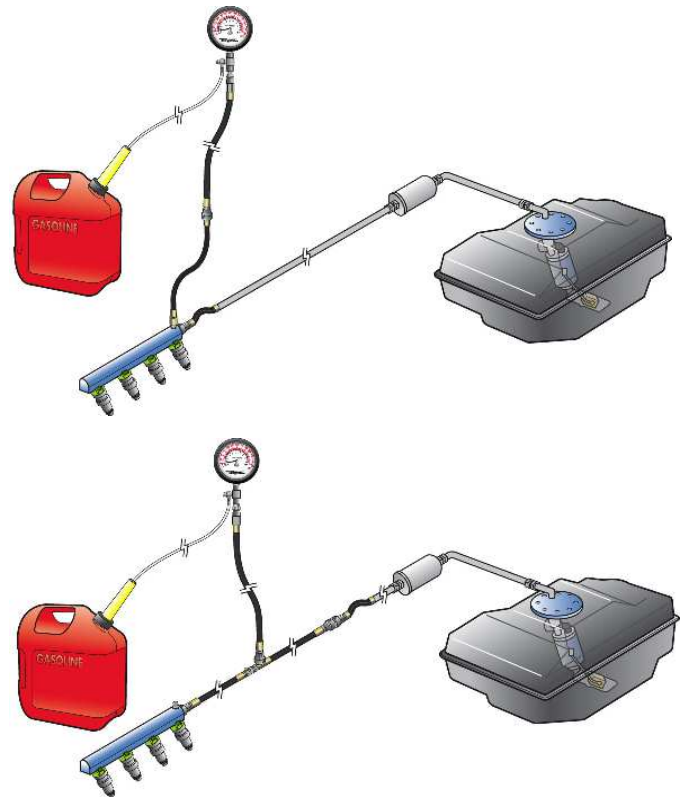
There are two basic types of electronic fuel injections: Throttle Body Injection (TBI) and Multi-port or Multi-point injection (MPI). The tests outlined in this manual are for testing fuel system pressure on these types of systems. On most vehicles, two basic tests are performed when checking fuel system pressure:

1. "Key on, engine on" (engine running) test
2. "Key on, engine off" (engine not running) test

Connecting to Systems with Existing Test Ports

1. Be sure the vehicle transmission is in park or neutral, the parking brake is engaged, and the engine is off.
2. Follow the vehicle manufacturer's recommended procedure to relieve the pressure from the vehicle fuel delivery system.
3. Locate the test port on the engine's fuel rail.
4. Attach the correct test port adapter. The 90° adapters can be used if the test port is in a tight space.
5. Connect the test port adapter to the extended pressure hose
6. Connect the extended pressure hose to the pressure gauge
7. Before proceeding:
 - Double check the connections.
 - Route and secure the clear pressure relief hose into an approved gasoline container
 - Route any hoses away from any rotating engine components, belts, fans, and hot exhaust components
 - Reconnect components such as PCV tubes, wiring harnesses, vacuum tubes, etc., that were disconnected to gain access to the test port.
8. Re-enable the fuel pump (if previously disabled), and cycle the ignition switch to the ON position for a brief time, and then back OFF. Do not start the engine.
On most vehicles, cycling the ignition ON and OFF will allow the fuel pump to run briefly, and prime the system. After cycling the ignition, check all fuel connections for leaks. If all fitting connections are secure, the installation is complete and the fuel pressure tester is ready to be used for diagnostic tests.

Connecting to System with Fuel System Adapters



1. Be sure the vehicle transmission is in park or neutral, the parking brake is engaged, and the engine is off.
2. Follow the vehicle manufacturer's recommended procedure to relieve the pressure from the vehicle fuel delivery system.
3. Locate the fuel supply line to the engine's fuel rail, and select the best location to disconnect the supply line and install the inline pressure test assembly. For additional assistance, consult the vehicle manufacturer's service information. If the engine has a cover, it will most likely have to be removed to gain appropriate access.
4. Remove or disconnect any obstacles required to gain access to the connection, and place shop towels under and around the connection to absorb fuel from the disconnected line. To minimize fuel spillage and reduce the amount of time the fuel line is disconnected, try to identify the type of connection before disconnecting the fuel line, and have the required fuel connection adapter(s) readily available.
5. Follow the vehicle manufacturer's service information for the proper method to disconnect the fuel line. Special wrenches or disconnect tools may be required.
WARNING: Avoid spilling fuel on hot engine parts. Clean-up any fuel spills immediately after they occur.
6. Install the appropriate adapter into the fuel supply line extending from the tank.
7. Connect the inline pressure test assembly to the inlet and outlet fuel line adapters
8. Connect the extended pressure hose to the tee in inline pressure test assembly.

9. Connect the pressure gauge to the other end of the extended pressure hose.
10. Before proceeding:
 - Double check the connections.
 - Route and secure the clear pressure relief hose into an approved gasoline container
 - Route any hoses away from any rotating engine components, belts, fans, and hot exhaust components
 - Remove the fuel spillage rags
 - Reconnect components such as PCV tubes, wiring harnesses, vacuum tubes, etc., that were disconnected to gain access to the fuel line connection.
11. Re-enable the fuel pump (if previously disabled), and cycle the ignition switch to the ON position for a brief time, and then back OFF. Do not start the engine.

On most vehicles, cycling the ignition ON and OFF will allow the fuel pump to run briefly, and prime the system. After cycling the ignition, check all fuel connections for leaks. If all fitting connections are secure, the installation is complete and the fuel pressure tester is ready to be used for diagnostic tests.

Test Procedures

Key On, Engine Off Test

Cycle the ignition switch to the ON position. Verify that the pressure gauge indicated a system pressure within the specification provided by the manufacturer. If the reading is within the manufacturer's specification, proceed to the "Key On, Engine On" test. If it is not, follow the test and repair procedures outline in the vehicles service manual to correct the problem.

Key On, Engine On Test

1. Complete all the steps indicated in the Key On, Engine Off test
2. Start the car and idle the engine. Recheck the test setup for fuel leaks
3. Read the fuel pressure from the gauge
4. Turn the car off when the readings have been made

Disconnecting the Fuel Pressure Tester

1. When vehicle testing is completed, turn off engine and relieve pressure on the fuel system by pressing the pressure relief valve located on the stem of the pressure gauge. Watch the pressure gauge readings and fuel being released through the small clear hose to the collecting container.
Make sure that the pressure relief hose is routed and secured into an approved gasoline fuel container.
2. Place shop towels under the connections to capture any fuel that may spill out when the hoses are disconnected. **WARNING:** After testing a returnless fuel system, use extreme caution when disconnecting the hoses to the fuel rail. If the engine is hot, releasing the pressure from a returnless fuel system will cause the fuel to boil in the fuel rail. Even though the pressure has been released, the boiling fuel will cause it to build up again once the hose is clamped. To reduce the risk of fuel spray it is best to allow the engine to cool before disconnecting the hose. Otherwise, use the pressure relief valve to relieve the pressure just before removal. Try to keep a shop towel wrapped around the connection to catch any fuel spray.
3. Disconnect the Schrader port adapter or the inline pressure test assembly.
4. Remove the fuel rail adapters if applicable
5. Reconnect the fuel lines