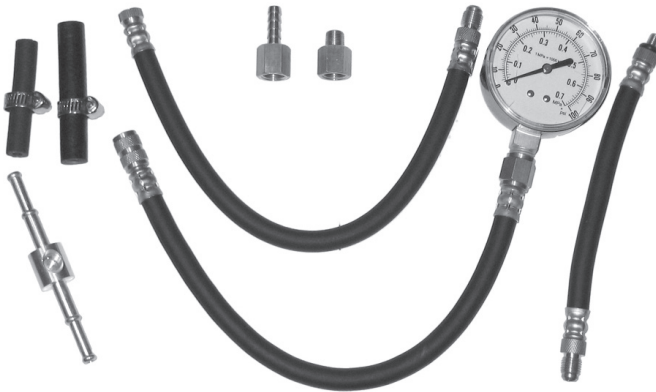


# U.S. GENERAL®

## FUEL INJECTION TEST KIT

### Model 92699

### ASSEMBLY AND OPERATING INSTRUCTIONS



3491 Mission Oaks Blvd., Camarillo, CA 93011

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**For technical questions and replacement parts, please call 1-800-444-3353**

# Specifications

Item	Description
Function	Indicates if fuel pump is defective or inconsistent in pressure flow
Pressure Gauge	2-9/16"; 0-100 PSI, 0.7 Bar; Fitting: ¼"x18 NPT swivel
Fuel Injection Types	For most fuel injection systems except: Bosch®, C.I.S. Jethronic®, and throttle body systems on G.M.® vehicles.
Weight	1 lb.

**Note:** Accuracy of the Gauge is  $\pm 2\%$ .

## Save This Manual

You will need the manual for the safety warnings and precautions, assembly instructions, operating and maintenance procedures, parts list and diagram. Keep your invoice with this manual. Write the invoice number on the inside of the front cover. Keep the manual and invoice in a safe and dry place for future reference.

## Safety Warnings and Precautions

**WARNING:** When using tool, basic safety precautions should always be followed to reduce the risk of personal injury and damage to equipment.

**Read all instructions before using this tool!**

1. **Keep work area clean.** Cluttered areas invite injuries.
2. **Observe work area conditions.** Do not use machines or power tools in damp or wet locations. Don't expose to rain. Keep work area well lit.
3. **Keep children away.** Children must never be allowed in the work area. Do not let them handle machines, tools, or extension cords.
4. **Store idle equipment.** When not in use, tools must be stored in a dry location to inhibit rust. Always lock up tools and keep out of reach of children.
5. **Use the right tool for the job.** Do not attempt to force a small tool or attachment to do the work of a larger industrial tool. There are certain applications for which this tool was designed. It will do the job better and more safely at the rate for which it was intended. Do not modify this tool and do not use this tool for a purpose for which it was not intended.
6. **Dress properly.** Do not wear loose clothing or jewelry as they can be caught in moving parts. Protective, electrically non-conductive clothes and non-skid footwear are recommended when working. Wear restrictive hair covering to contain long hair.
7. **Use eye and ear protection.** Always wear ANSI approved impact safety goggles.
8. **Do not overreach.** Keep proper footing and balance at all times. Do not reach over or across running machines.

9. **Maintain tools with care.** Keep tools sharp and clean for better and safer performance. Follow instructions for lubricating and changing accessories. Inspect tool cords periodically and, if damaged, have them repaired by an authorized technician. The handles must be kept clean, dry, and free from oil and grease at all times.
10. **Remove adjusting keys and wrenches.** Check that keys and adjusting wrenches are removed from the tool or engine work surface before operating.
11. **Stay alert.** Watch what you are doing, use common sense. Do not operate any tool when you are tired.
12. **Check for damaged parts.** Before using any tool, any part that appears damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment and binding of moving parts; any broken parts or mounting fixtures; and any other condition that may affect proper operation. Any part that is damaged should be properly repaired or replaced by a qualified technician.
13. **Replacement parts and accessories.** When servicing, use only identical replacement parts. Use of any other parts will void the warranty. Only use accessories intended for use with this tool. Approved accessories are available from Harbor Freight Tools.
14. **Do not operate tool if under the influence of alcohol or drugs.** Read warning labels if taking prescription medicine to determine if your judgment or reflexes are impaired while taking drugs. If there is any doubt, do not operate the tool.
15. **Avoid working alone.** If an accident happens, an assistant can bring help.

### **Additional Product Specific Safety Precautions**

1. Do not use Fuel Injection Test Kit on diesel engines.
2. Loosen gas cap and relieve fuel pump pressure before testing.
3. Before testing fuel system, verify all connections are tight to eliminate leaking.
4. Do not change fittings with engine running.
5. Gasoline is highly flammable. Do not smoke, or test near open flames or a source of electrical sparks.
6. Do not allow gasoline to come in contact with the hot manifolds or other engine components.
7. Do not drive the vehicle while under test.
8. If portable lighting is required, use only explosion proof drop-light.

9. Before testing, review and follow instructions from the vehicle manufacturer's service manual.
10. After testing, turn engine off and depressurize system before removing test components. Place absorbing cloths around fittings before disconnecting. Wipe up any spilled fuel. Place cloths in a fireproof container.
11. Clean all testing components of residual fuel before storing.

## Warnings

**The vehicle engine must never be started in a closed garage, or any other sealed structure. Carbon monoxide is produced during operation and is deadly in a closed environment. Early signs of carbon monoxide poisoning resemble the flu, with headaches, dizziness, or nausea. If you have any of these signs get fresh air immediately.**

**The warnings, cautions, and instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.**

**The brass components of this product contain lead, a chemical known to the State of California to cause birth defects (or other reproductive harm). (California Health & Safety Code 25249.5 et seq.)**

## Unpacking

When unpacking, check to make sure the following parts are included. Refer to the Parts List and Drawing at the end of this manual. If any parts are missing or broken, please call Harbor Freight Tools at the number on the cover of this manual.

## Operation

**Caution: Before making connections and testing, place a dry chemical (Class B) fire extinguisher nearby.**

The components in this Fuel Injection Test Kit enable the testing of the fuel delivery pressure to the engine. Pressure Gauge (1) connections are made either directly to the pump, or in-line with the pump and engine.

1. Relieve the fuel line pressure from the vehicle fuel system.

Refer to the vehicle manufacturer's service manual for instruction on relieving pressure from the fuel line, testing procedures and connection points, and normal pressure readings.

2. Use the various fittings and hoses to connect the Pressure Gauge (1) directly to the fuel pump, as in the case of the VW<sup>®</sup>, or in-line with the fuel pump and engine for most other vehicles. See connection examples on the next page.

Use a small amount of pipe compound or teflon tape on the connection threads to prevent leaks. Tighten using a wrench (not supplied).

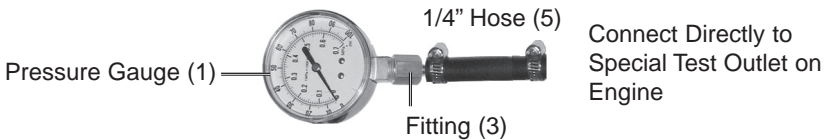
**Caution: Make sure all connections are tight to avoid fuel leaks.**

3. Start the engine and immediately check for fuel leaks. If fuel leaks are found, turn engine off and fix leaks.
4. Read the pressure off the Pressure Gauge (1).
5. Turn off the engine and remove the keys from the ignition.
6. Wrap a cloth around the hose connection point before relieving the pressure from the fuel line, and remove testing components.
7. Reconnect vehicle's fuel injection line.
8. Wipe up any spilled fuel. Dispose of fuel-soaked rags in a fireproof container.
9. Start the engine and check for leaks. Fix leaks if found.
10. Clean and store Fuel Injection Test Kit components and place in the plastic kit bag.

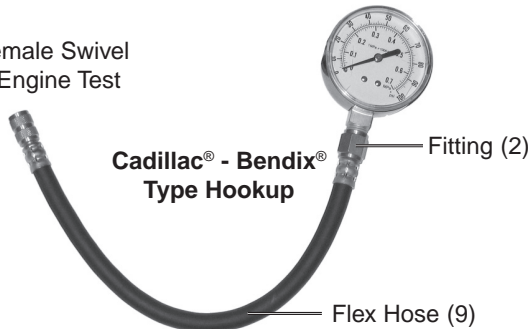
**Typical Hookup**



**VW® Hookup**



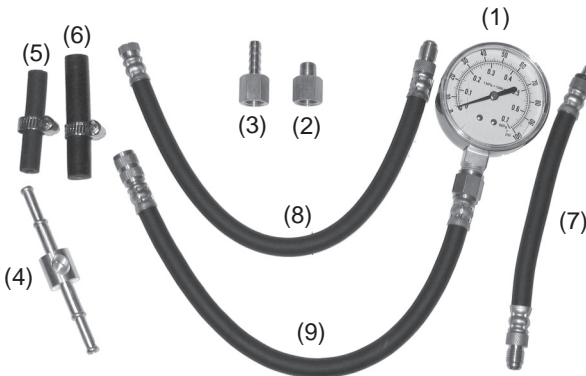
Screw on Female Swivel Coupling to Engine Test Fitting



## Parts List

Item	Description	Qty
1.	Pressure Gauge	1
2.	Fitting, brass, 1/8"- 27 NPT x 1/4"-18NPT	1
3.	Fitting, brass, 1/4" Barbed x 1/4"-18NPT	1
4.	Fitting, aluminum, 1/4" & 3/8" Barbed x 1/8"-24 NPT	1
5.	Hose, rubber, 1/4" x 2.5" (L)	1
6.	Hose, rubber, 3/8" x 3.0" (L)	1
7.	Flex Hose, short	1
8.	Flex Hose, medium	1
9.	Flex Hose, long	1
10.	Clamp, Rubber Hose	2

## Parts Assembly



**NOTE:** Some parts are listed and shown for illustration purposes only and are not available individually as replacement parts.

### PLEASE READ THE FOLLOWING CAREFULLY

THE MANUFACTURER AND/OR DISTRIBUTOR HAS PROVIDED THE PARTS DIAGRAM IN THIS MANUAL AS A REFERENCE TOOL ONLY. NEITHER THE MANUFACTURER NOR DISTRIBUTOR MAKES ANY REPRESENTATION OR WARRANTY OF ANY KIND TO THE BUYER THAT HE OR SHE IS QUALIFIED TO MAKE ANY REPAIRS TO THE PRODUCT OR THAT HE OR SHE IS QUALIFIED TO REPLACE ANY PARTS OF THE PRODUCT. IN FACT, THE MANUFACTURER AND/OR DISTRIBUTOR EXPRESSLY STATES THAT ALL REPAIRS AND PARTS REPLACEMENTS SHOULD BE UNDERTAKEN BY CERTIFIED AND LICENSED TECHNICIANS AND NOT BY THE BUYER. THE BUYER ASSUMES ALL RISK AND LIABILITY ARISING OUT OF HIS OR HER REPAIRS TO THE ORIGINAL PRODUCT OR REPLACEMENT PARTS THERETO, OR ARISING OUT OF HIS OR HER INSTALLATION OF REPLACEMENT PARTS THERETO.

# ADDENDUM A

## EXAMPLES OF FUEL INJECTION FUEL PUMP PRESSURES

**Note:** Always read the vehicle's factory service manual to determine the actual Fuel Injection Fuel Pump pressure. The chart below is meant to be only a guideline for pump pressure.

### U.S. Built Vehicles

	Pump Pressure
Cadillac - EFI	37.5 to 41 PSI
Cadillac - DEFI	9 to 12 PSI
Imperial	8 PSI
Lincoln & Versailles	30 to 40 PSI

### Foreign Built Vehicles

	Pump Pressure
Alfa Romeo	16 to 18 PSI
Alliance (49 states) Bendix Type	28 to 36 PSI
Alliance (California only) L-Jetronic	36 PSI
Audi-Fox	66.8 to 75.3 PSI
BMW	21.7 to 40 PSI
Datsun	28 to 43 PSI
Fiat	28 to 30 PSI
Jaguar	28 to 30 PSI
Mercedes Benz	29 to 30 PSI
Porsche	28.4 PSI
Renault 17TS	35 PSI
Saab	27 PSI
Volkswagen	28 PSI
Volvo	28 PSI

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