

OPERATOR'S MANUAL



Diagnostic Smoke[®] Vapor Machine *with UltraTraceUV[®] Dye Solution*

Leak Detection System
Model No. GLD-40



Caution



TO PREVENT PERSONAL INJURY AND / OR DAMAGE TO VEHICLE OR EQUIPMENT



- Use this equipment in the manner specified by the manufacturer.
- Understand operating procedures / Follow all safety precautions.
- Connect Tester to chassis ground.
- Use UltraTraceUV® Smoke Solution No. GLD0712UV in this Tester. Using a non-approved solution may cause damage to vehicles being tested and may cause personal injury.
- ALWAYS use on vehicle with engine turned <OFF>.
- Never leave the Tester's hoses or power cables connected to the vehicle for extended periods of time when tests are not being performed.
- Do not perform test near source of spark or ignition.
- Wear eye protection that meets OSHA standards.
- Follow safety precautions when using ultraviolet light source.
- Always use hood support if hanging Tester from hood of car.
- Air pressure (or gas pressure) supplied to Tester can be between 50-175 PSI (3.4 to 12 bar).

Usage Tips

- Connect to workshop airline for general purpose leak detection applications.
- Smoke exiting a very small leak is sometimes even easier to see if after filling the system with smoke you reduce the smoke flow by turning the flow control knob clockwise, which slows the exiting smoke velocity and helps you see very small leak(s)
- Use the white light provided to highlight the smoke exiting a leak.
- Use the Ultraviolet (UV) light and yellow glasses provided to look for the fluorescent deposit at the exact location of a leak. When using alternate source of UV light, be sure it is one that covers the 400 nanometer (nm) UV light range.
- When operating the Tester in near freezing temperatures, cycle the operation of the Tester 15 seconds ON and 15 seconds OFF for approximately the first minute or two of operation. This will allow the Tester to reach its optimum operating temperature.
- When testing an engine's intake or exhaust system for leaks, it is recommended that the engine be cold. Small leaks may be sealed due to thermal expansion.

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Be sure to visit our website www.smokewizard.com for:

- Instructional Videos • Additional Product Details
- Frequently Asked Questions • Tech Tips • Downloads

Congratulations! You have purchased the finest and most feature-rich portable leak detection smoke machine available today. The patented technology inside your Smoke Wizard was designed in collaboration with major automakers; was designed specifically to be safe for leak testing a vehicle's fuel evaporative (EVAP) system as well as many other vehicle systems; is the only smoke vapor technology in the world approved by any automaker; and is the only smoke technology that meets SAE INTERNATIONAL published papers recommendation to use a smoke machine designed to function with an inert gas (such as Nitrogen, Argon or CO2) when testing a vehicle's EVAP system [SAE: 2007-01-1235 & 2008-01-0554].

Global Leak Detection Corp. and our Authorized Dealers of **Smoke Wizard**, thank you for the purchase of your new **Smoke Wizard!**

Diagnostic Smoke® Vapor – Safe for Vehicle Systems.

Included with the Smoke Wizard

UltraTraceUV®; (GLD0712UV) this patented solution is the only Automaker-approved smoke-producing solution in the world. The solution's chemistry contains a special dye that deposits at the exact location of a leak. Will not harm automotive systems and will perform approximately 300 tests. (12 oz. / 355 ml).

Cap Plugs Kit: (GLD005) these cap plugs are useful when sealing an intake manifold system in order to contain the smoke in the system for proper leak testing, such as mass airflow sensor ducting, etc.

Smoke Diffuser: (GLD006) this adapter is designed to locate leaks around doors, windows, sunroofs and trunk compartment. The adapter allows the operator to lay down a thick bed of smoke (from outside the vehicle) along door and window seams in order to watch for disturbance caused by escaping airflow due to a leaking seal. Internal pressure is created by vehicle's HVAC set to fresh air (i.e. not recirculation) and blower fan on high speed.

Adapter Cone: (GLD007) for introducing smoke into the exhaust system or into any orifice that accommodates the cone's size, such as the induction system.

Combination Light: (GLD043K) delivers a white light for easier smoke location, an ultraviolet (UV) light that highlights the fluorescent dye deposited at the exact location of a leak and a laser pointer.

EVAP Service Port Adaptor – standard size: (GLD003)

Schrader Valve Removal Tool: (GLD004)

The Schrader valve has a *left-hand* thread. **Turn *clockwise* to remove!**

Air fitting: (GLD014) two fittings are supplied. The automotive style fitting (GLD013) is installed on the tester. The spare fitting is an industrial fitting, also popular in auto facilities.



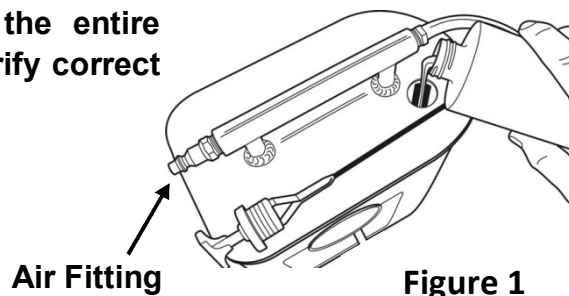
Visit www.SmokeWizard.com for additional accessories

Prior to Using Tester for the First Time

NOTE: Your Smoke Wizard arrives with: i) a full charge bottle (12 oz.) of UltraTraceUV® Smoke Producing Solution, and ii) with a commonly used male quick-disconnect Air Fitting.

1. Remove the Smoke Wizard's dipstick; pour the entire contents of one bottle into the smoke chamber; verify correct level and secure dipstick. (Figure 1)

NOTE: Maintain solution level at or near FULL mark.

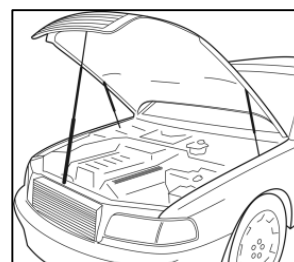


2. Be sure the Smoke Wizard's Air Fitting is the correct fitting for your air hose connector or change it to match. (Figure 1)

NOTE: Your Smoke Wizard is now ready for operation.



Caution: Factory vehicle hood supports are not designed to support more than the weight of the hood. A supplemental prop rod (or similar device) such as the one shown in this caption should always be used when hanging the smoke machine from the hood, in order to avoid hazard and possible injury due to a hood falling unexpectedly.



NOTE: A common question asked is if one can use a basic generic mineral oil, such as 'Baby Oil', in the Tester to create the smoke.

You can if you want to, but we don't recommend it. The patented UltraTraceUV® smoke solution supplied with this Tester; will perform hundreds of tests that only cost pennies per test; is the only solution in the world approved by the auto manufacturers; and will not void any vehicle factory warranties. Plus you have the added benefit of the trace dye that marks the exact location of a leak, increasing diagnostic accuracy unlike any other. This special solution is not a "generic" mineral oil. In fact, generic mineral oils are not intended for this type industrial use. The generic mineral oils break down, evidenced by its foul odor and could damage vehicle components.

Tester Overview

Air Fitting – connect to shop air
Note: There is a pressure regulator inside the Tester so no external regulator is required as long as input pressure is between 50 and 175 PSI (3.4 to 12 bar).

12V DC Power-Supply Cables
 (Back of unit)

Control Panel – See next page

Filter Drain Port – located under Tester, keeps unit and vehicle clean by automatically draining water and contaminants from shop air compressor.



Suspension Hanger – allows the option of hanging your Smoke Wizard from a convenient test location on the vehicle or possibly for storage when not in use.
Note: Always use hood support device when hanging from the hood.

Smoke Supply hose – hose with scratch-resistant Delrin® nozzle delivers the smoke vapor into a system for leak testing.

Smoke Solution Dipstick – use to check and maintain proper smoke solution level.

Technical Specifications

Height (less hanger)	13 in. (33 cm)	Solution Max. Volume	12 oz. (355 ml)
Length	5.5 in. (14 cm)	Power consumption	15 amps.
Width	9.5 in. (24 cm)	Supply pressure	13.0 in. H ₂ O (0.032 bar)
Weight	10 lb. (4.5 kg)	Supply volume	10 liters per minute
Shipping weight	14 lb. (6.3 kg)	Smoke supply line	10 feet (3m)
Power supply	12 volts DC	Power supply line	10 feet (3m)

Control Panel Overview



POWER Light (Green):
Turns ON when you connect Tester to 12-Volt DC power.
→ *Blinks if the battery power source is insufficient.*

SMOKE Light (Red): Turns ON when you press the START button. This light indicates that smoke is being produced.

START Button:
Press for smoke production.
Note: Is on 5-minute timer.

Flow Control Valve: Easy to read ¼ turn valve allows total control of the volume of Diagnostic Smoke[®] vapor being delivered from the smoke machine and/or exiting the leak.

→ *Sometimes less smoke exiting a small leak is easier to see.*

→ *Flow Control Valve does not affect delivery pressure; it only affects the volume of flow.*

Pressure Gauge:

(-30 to +30 IWC) used to verify leak(s) in a system, using either pressure-decay or vacuum-decay.

→ *The pressure / vacuum decay test cannot tell the size of the leak(s). Leak size can be determined using the indexed flow meter.*

Indexed Flow Meter: indicates three critical EVAP leak thresholds for diagnostic accuracy.

.040" (1.0 mm)

.020" (0.5 mm)

.010" (0.25 mm)

[For newer Chrysler systems]

Note: Flow Control Valve must be in **full flow** position for proper measurement.

Flow Meter: If the meter indicates flow, then you know there is flow going into (or through) the system being tested. If flow meter indicates flow after the system is filled, this indicates a leak. The higher the ball is in the flow meter, the larger the leak size.

No flow indicates no leak.

Observing the flow meter behavior allows Technicians to judge system blockage, restrictions, control effectiveness, and system operational integrity.

Basic Testing Procedure

NOTE: ALL TESTS WITH THIS TESTER ARE PERFORMED WITH THE VEHICLE'S ENGINE OFF!

1. Connect Tester to shop air. See Optional Gas Source below.
2. Connect Tester's Red power cable to vehicle's 12 Volt DC battery positive terminal.
3. Connect Tester's Black cable to vehicle's chassis ground. Do NOT connect the black cable to battery ground because a spark in the vicinity of the battery can cause an explosion! **(Figure 2)**
4. Observe that the Green Power indicator lamp on the Tester is 'ON' confirming that you are properly connected.

> *Battery must be in good condition and fully charged!*

> *A blinking green power lamp indicates insufficient battery power to the Tester.*

5. Connect smoke supply hose to system being tested.

6. **Flow Control Valve must be in Full Open position. (Figure 3)**

7. Press START button and fill system with smoke.

> *Whenever possible it is best to 'purge' the 'non-smoke' air out of the system being tested in order to quickly fill the system with smoke.*

> *Smoke production is on 5-minute timer.*

8. Use white light supplied and look for exiting smoke or use ultraviolet light supplied to look for fluorescent dye deposit at exact location of a leak.

> *The longer smoke is allowed to exit a leak, the more fluorescent dye will be deposited at leak locations.*

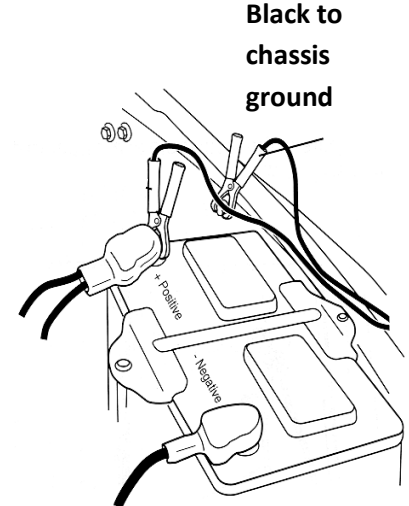
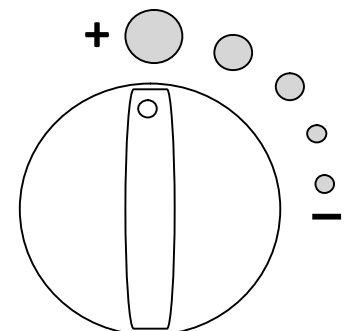


Figure 2



Flow Control

Figure 3

Optional Gas Source

Shown here using the optional portable Inert Gas Pack.
(Part No. GLD028K)

This gas pack makes the Tester very portable and is also perfect for safer EVAP testing, since the gas supplied is inert. One 20 oz. cylinder will perform about 25 full cycle tests.



Sample Leak Detection Applications:

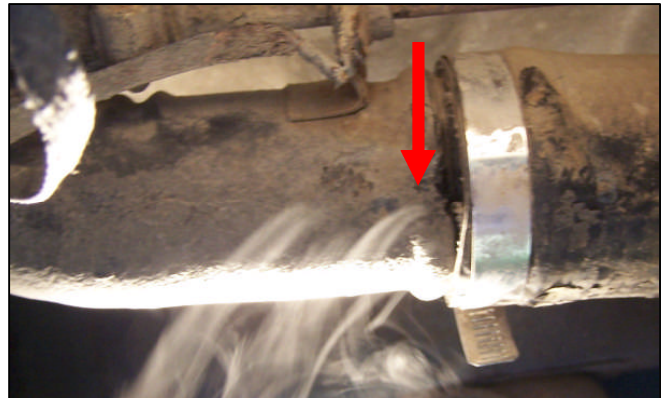
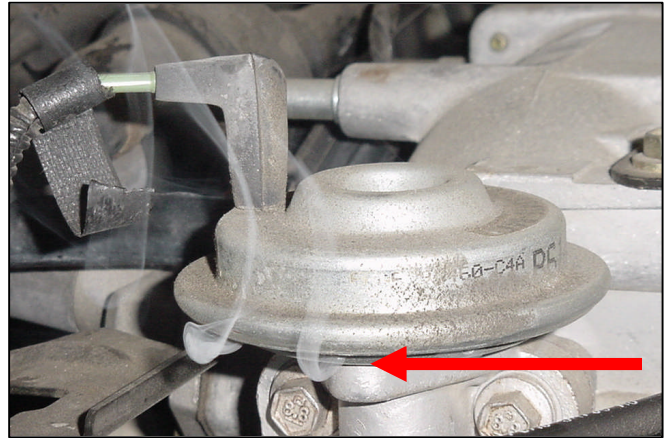
This leak Tester can be used in virtually any vehicle low pressure system suspected of having a leak, such as; EVAP system, intake / induction system, intercooler and turbocharger system, vacuum system, exhaust system, wind/water leaks and can also be used to verify air solenoid functions and test components prior to assembly.

1. Introduce smoke into system.
2. Look for smoke (or dye) exiting leak(s).

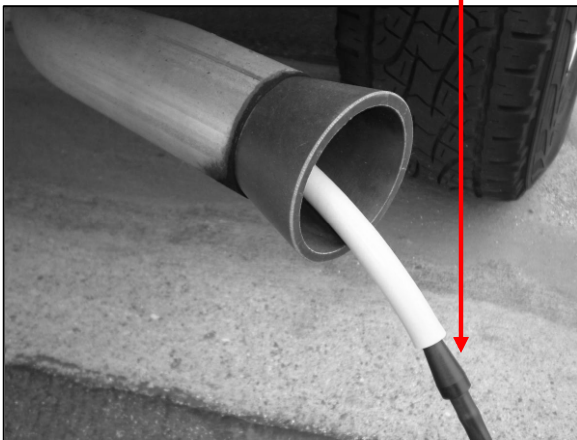
Intake / Induction Leaks



Smoke Supply



Exhaust Leaks



Wind and Water Leaks

1. Set vehicle's climate control to 'Fresh Air' (not to re-circulate) and set blower on full speed.

> *This creates positive cabin pressure.*

2. Connect Tester's supply hose nozzle to Smoke Diffuser.

3. Lay smoke path along seals.

4. Look for smoke disturbance indicating a leak.

No air disturbance means 'No Leak' >



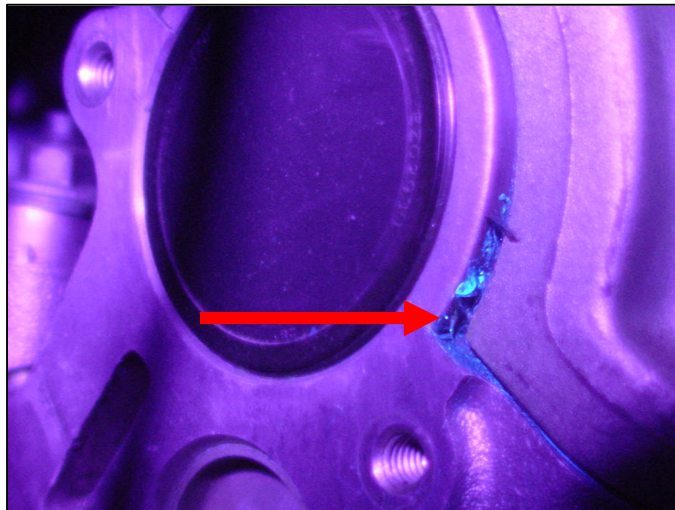
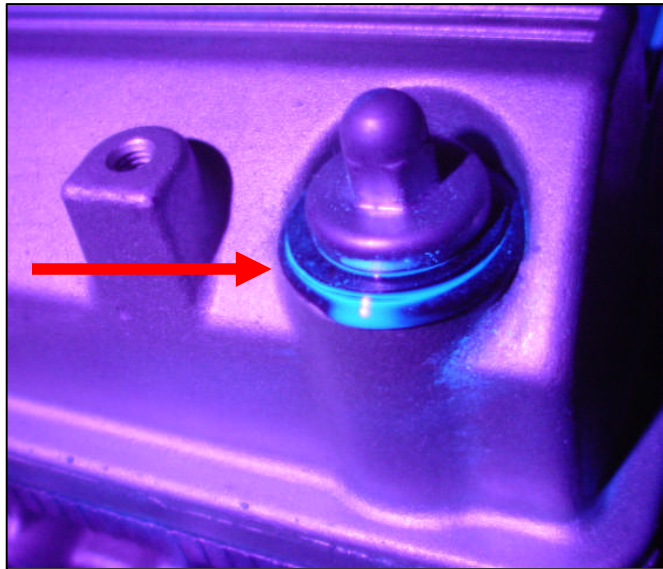
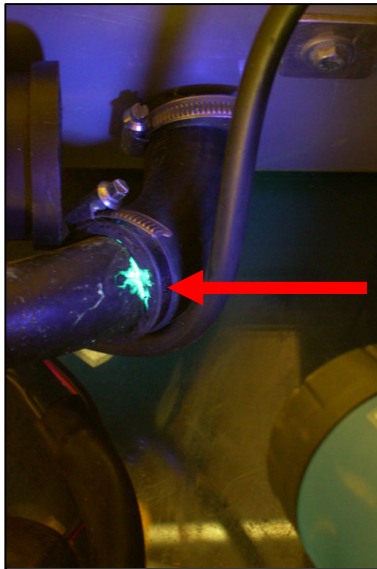
< Smoke disturbance pinpoints the leak

Sample Fluorescent Dye Deposits

The patented smoke vapor contains a special ultraviolet-activated fluorescent dye that gets deposited at the exact location of a leak. Use the UV light provided to highlight the dye.

> *This technology is designed so that the dye will only deposit if there is pressure-differential. So for instance; the dye will deposit when exiting a leak but will not deposit during the wind and water leak test.*

> *The longer the smoke is allowed to exit a leak, the more dye will be deposited.*



Troubleshooting Guide

Your Smoke Wizard has two indicator lights on the control panel that double as diagnostic lights, indicating if the Tester is working correctly. The following table describes the indicator light function codes.

Green	Red	Interval	Cause
✓		Constant ON	Sufficient battery power
✓		Blinks: 1 per second	Insufficient battery power
✓	✓	Blink simultaneously: 1 per second	Bad ground or power connection at smoke canister or short in circuit
✓	✓	Blink simultaneously: 4 times per second	Bad ground at smoke canister or open heating circuit
✓	✓	Blink alternately: 1 per second (System will shut down; Power must be disconnected then reconnected)	Bad ground. Can also mean circuit board failure *

* If circuit board failure occurs, first try disconnecting power to your Smoke Wizard for 10 seconds and reconnect. If failure code occurs a second time, disconnect Smoke Wizard and contact Smoke Wizard Authorized Dealer or Tech Support at (866) 670-7734.

Symptom	Likely Cause	Solution
The green power indicator lamp on the Tester does not turn ON.	<ol style="list-style-type: none"> 1. The power cables are reversed. 2. Poor power-supply cable connection. 3. Battery providing power is too weak. 	<ol style="list-style-type: none"> 1. <i>Correctly position the power cables.</i> 2. <i>Secure the connection at the positive terminal and chassis ground.</i> 3. <i>Verify the battery is in good condition and fully charged.</i>
I turn the Tester ON but there is no air or smoke coming out of the supply hose.	<ol style="list-style-type: none"> 1. Flow Control valve is closed. 2. Poor power-supply cable connection. 3. Battery providing power is too weak. 4. Air supply to tester is insufficient. 	<ol style="list-style-type: none"> 1. <i>Open flow control.</i> 2. <i>Secure the connection at the positive terminal and chassis ground.</i> 3. <i>Verify the battery is in good condition and fully charged.</i> 4. <i>Be sure air supply is sufficient.</i>

Warranty

Warranty Issues or Questions?

Contact Tech Support at (866) 670-7734

www.SmokeWizard.com

LIMITED ONE (1) YEAR WARRANTY



Global Leak Detection warrants the Smoke Wizard to the Original Purchaser that under normal use, care and service, the Equipment (except as otherwise provided herein) shall be free from defects in material and workmanship for ONE YEAR from the date of original invoice.

Seller's obligations under this warranty are limited solely to the repair or, at Seller's option, replacement of or refund of the original purchase price for, Equipment or parts which to Seller's satisfaction are determined to be defective and which are necessary, in Seller's judgment, to return the equipment to good operating condition.

Repairs or replacements qualifying under this Warranty will be performed or made on regular business days during Seller's normal working hours within a reasonable time following Buyer's request. All requests for warranty service must be made during the stated warranty period.

