

INSTRUCTION MANUAL



Leakfinder[®]

Model No. 625-WV609

BMW Smoke Tester



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

Leak Detection System for the Professional Technician



Caution and Usage Tips



- DISCONNECT the smoke tester from the vehicle prior to starting the engine or prior to running any on-board monitor, including the DMTL or LDP. Damage caused by not following proper operating procedures will not be covered by the vehicle warranty or the smoke tester warranty.



- Refer to SI B16 01 07 for additional information.
- ALWAYS use smoke tester with vehicle engine turned <OFF>.
- Use this equipment in the manner specified by the manufacturer.
- Follow common sense safety precautions.



- Connect to grounded extension cord supplied and grounded 120-volt AC 60 Hz wall outlet.
- Use UltraTraceUV® Smoke Solution No. 625-WV0712UV in Tester. Using a non-approved solution; may cause damage to vehicles being tested; may cause personal injury and may void vehicle warranties.



- Do not leave Tester's hose connected to the vehicle if tests are not being performed.
- Do not perform test near source of spark or ignition.
- Wear appropriate eye protection.
- Wear yellow glasses supplied when using ultraviolet light.
- Air or gas pressure supplied to Tester can be between 3.4 to 12 bar (50 ~ 175 PSI).
- Connect Tester to inert gas, such as nitrogen or CO₂, when testing fuel vapor (EVAP) system. Note: DO NOT use workshop air for EVAP testing. Adding oxygen to the fuel vapor space can create a flammable mixture in the fuel tank.
- Connect Tester to workshop compressed air for general purpose leak detection applications.
- When using alternate source of UV light, use light that includes 405 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 optimum operating temperature.
- When testing an engine's intake or exhaust system for leaks, it is best if the engine is cold. Small leaks may be sealed due to thermal expansion.

NOTE: A common question asked is if one can use a very basic generic mineral oil, such as 'baby oil', in the Leakfinder® to create the smoke vapor.

Your Leakfinder® will create smoke vapor with baby oil, but we do not recommend it. The patented UltraTraceUV® smoke solution supplied with your Leakfinder®; will perform hundreds of tests (is very economical to use); is the only solution in the world containing dye that is approved by the OEMs; 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. UltraTraceUV® 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 they could damage vehicle components or systems, such as EVAP system's activated charcoal, and void factory warranty.

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Thank You and Congratulations! Your *Leakfinder*[®] 625-WV609 smoke tester is approved for Evaporative Emissions System (EVAP) leak-testing, as well as other systems, on all BMW vehicles.

Your tester incorporates STAR Diagnostic Smoke[®] Technology, *inside*. It is the simplest and quickest way to find many vehicle system leaks. Smoke vapor-generating leak detectors containing STAR Technology *inside* are the only leak detectors in the world approved by BMW.

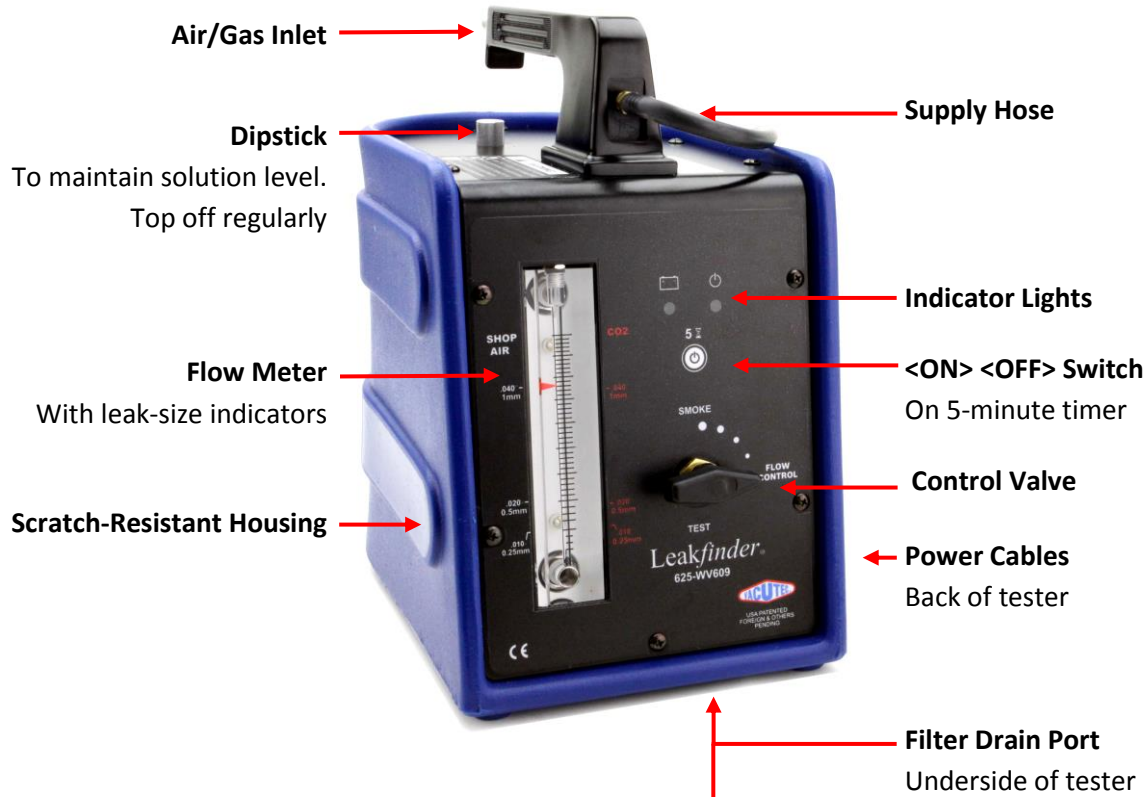
The patented technology *inside* your *Leakfinder*[®], including the vapor-producing solution (UltraTraceUV[®]), was designed in collaboration with major OEMs, in order to establish a standard for leak detection. It is designed to be safe for vehicle systems and will not void factory warranties.

It is also the only smoke technology in the world that meets SAE INTERNATIONAL Published Papers' safety standards recommendation to use a smoke tester designed to function with an inert gas (such as Nitrogen, Argon or CO₂) when testing a vehicle's fuel evaporative (EVAP) system [SAE: 2007-01-1235 & 2008-01-0554].

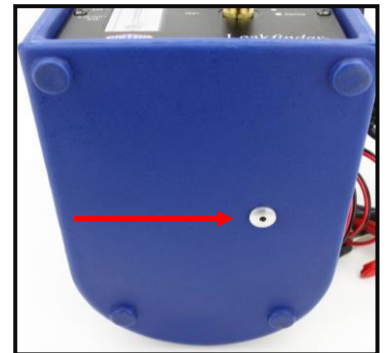
Accessories Included

<p>UltraTraceUV®: (625-WV0712UV) this patented solution is the only Automaker-approved smoke-producing solution in the world. The solution's chemistry is specially formulated to withstand vaporization temperatures, is designed not to damage vehicle components and contains a special dye that deposits at the exact location of a leak. Each bottle will perform approximately 300 tests. (12 oz. / 355 ml). (Part No. is for one bottle. Two bottles included with smoke tester).</p>	
<p>Combination Light: (625-WVA-074) white light, for easier smoke location and ultraviolet (UV) light to highlight the fluorescent dye deposited at the exact location of a leak. Note: For eye safety and UV enhancement; always use yellow glasses with UV light.</p>	
<p>Smoke Diffuser: (625-WVA-03) locates leaks around doors, windows, sunroofs and trunk compartment seals.</p>	
<p>Adapter Cone (standard): (625-WVA-01) for introducing smoke into the exhaust system or the induction system. Cone is 1" x 3.5" and 6" long (25.4 mm x 89 mm x 152 mm).</p>	
<p>Power Converter (625-WVA-080) connects to smoke tester and grounded wall power outlet, to avoid using the vehicle battery as a power source. AC input: 100-240V AC/5A 50/60Hz DC output: 12V 25A</p>	
<p>Inert Gas Pack Kit: (625-WVA-060E) includes preset pressure regulator, pressure gauge, quick-connect fitting and 20 oz. liquid CO₂ cylinder. (Cylinder arrives empty) Cylinders can be locally filled or exchanged with <i>liquid</i> CO₂ at larger paintball or welding supplies stores.</p>	
<p>Handle Pad (625-WVA-087)</p>	
<p>Air fitting: Two are supplied. The automotive style fitting is installed on the smoke tester. The spare fitting is an industrial fitting but also popular in auto facilities.</p>	
<p style="text-align: center;">See website for additional accessories and information: www.vacutec.com</p>	

Product Overview & Technical Specifications



Water Separator / Filter (inside tester) with drain port at underside of tester; keeps tester and vehicle clean by automatically draining water and contaminants from workshop air compressor. It is normal to occasionally see drainage of fluid from this port. Excessive drainage indicates your air compressor requires draining and/or a filter system.

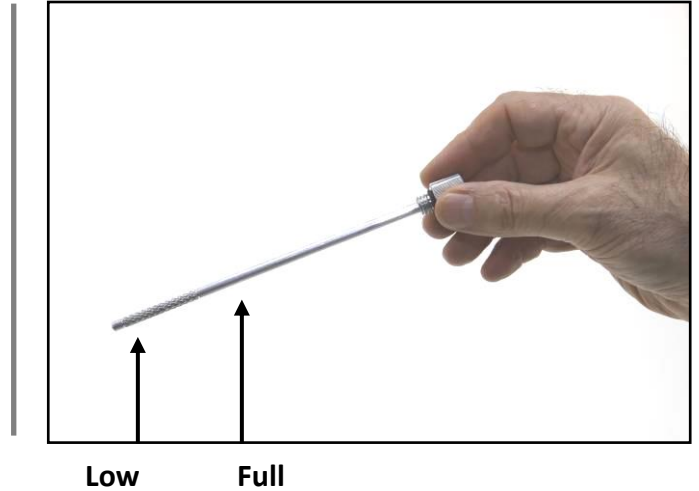


Technical Specifications

Height	13.5 in. (34 cm)	Solution Max. Volume	12 oz. (355 ml)
Length	13 in. (33 cm)	Supply pressure	14.0 in. H ₂ O (0.035 bar 3.5 kPa)
Width	9 in. (23 cm)	Supply volume	10 liters per minute
Weight	10.5 lb. (4.8 kg)	Smoke supply line	8 feet (2.4m)
Shipping weight	13.5 lb. (6.1 kg)	Power supply line	8 feet (2.4m)
Power supply	12 volts DC	Power consumption	15 amps.

Initial Setup

1.



> Pour entire contents of one 12 oz. UltraTraceUV® solution bottle into the smoke chamber.

NOTE: Use second bottle supplied to regularly maintain at or near FULL mark.

2.



> If not supplied; install correct air fitting onto the *Leakfinder*®.

NOTE: Your *Leakfinder*® is now ready for operation.

Read this Instruction Manual in its entirety before operating this tester.

Quick Start Guide

Do One of the Following:

1.



Connect to workshop air for general purpose (non EVAP) leak testing.



Or

1.



Regulate nitrogen from 50 to 175 PSI
(3.4 bar - 12 bar | 345 kPa – 1,206 kPa)

Connect to Nitrogen, or other inert gas, when testing fuel evaporative (EVAP) system.



Or

1.

Inert Gas Pack

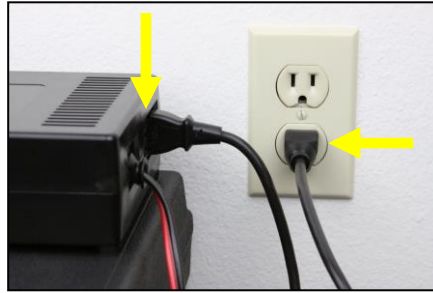
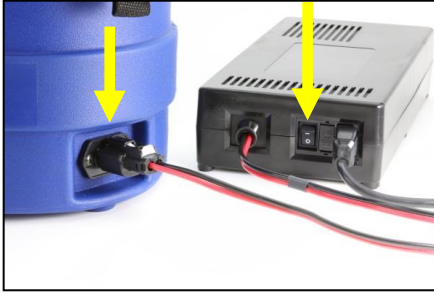
Inert Gas Pack Kit (625-WVA-060). When filled with *liquid* CO₂ will perform approximately 50 EVAP tests.

(Cylinder arrives empty)



2.

<ON> / <OFF> switch



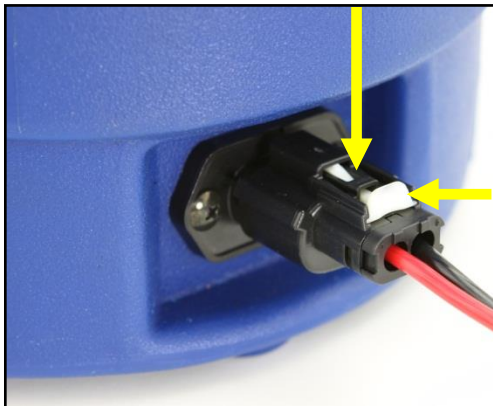
> Connect power converter to smoke tester and grounded extension cord supplied to grounded 120-Volt AC 50/60 Hz wall outlet and turn power converter <ON>.



> Green light will turn <ON>.
> A blinking green light indicates a lack of power from the converter, which means it could be set too low).

To remove plug:

First, unlock. Then push tab downward while pulling plug at the same time.



Push in toward tester to lock, pull out to unlock.



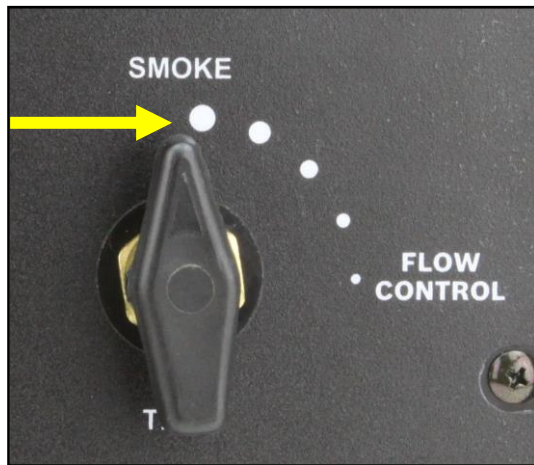
The tester can also be powered by 12V DC harness (625-WVA-072), not included

3.



- > Use cone to access intake system and connect smoke supply hose to cone.
- > Refer to SI B 16 01 07 for additional information.

4.

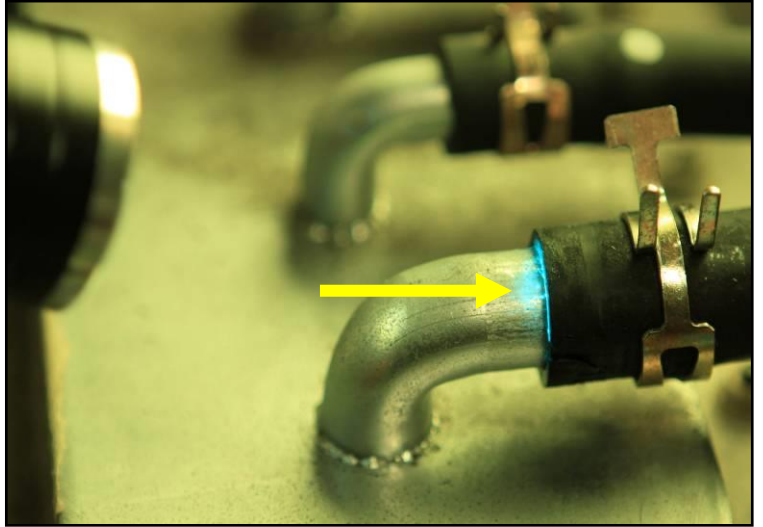


- > Position to SMOKE (full flow).



- > Press START button.
- > Green and red lights are <ON>.
- > 5-minute timer.

5.



> Use white light to find the smoke.



> Use UV light and yellow glasses to find the dye.

Other Leak Samples

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

Exhaust

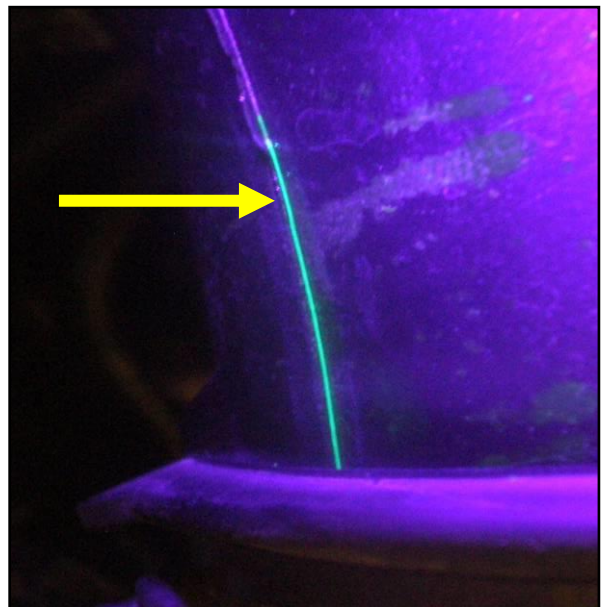


Fluorescent Dye Deposit

The UltraTraceUV® smoke solution contains a special ultraviolet-activated fluorescent dye that deposits at the exact location of a leak. Use the UV light provided to highlight the dye.

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

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



Wind and Water Leaks

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

> *This creates positive cabin pressure.*

2. Connect supply hose nozzle to Smoke Diffuser.

3. Lay smoke path along seals.

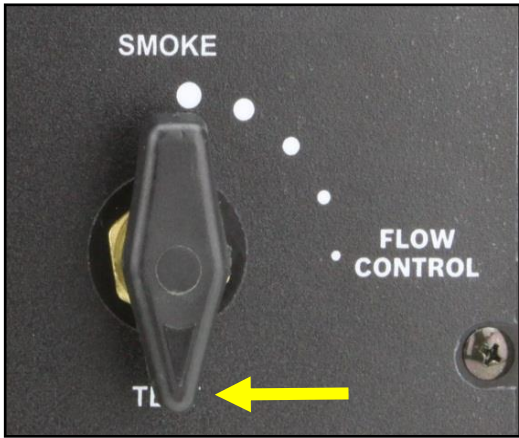
4. Look for smoke disturbance indicating a leak.

No smoke disturbance means 'No Leak' >

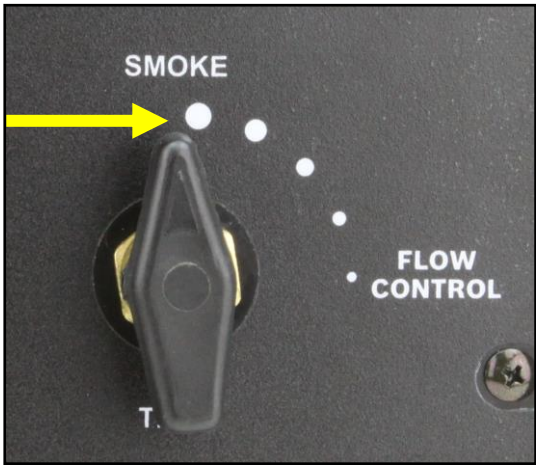


< Smoke disturbance pinpoints the leak

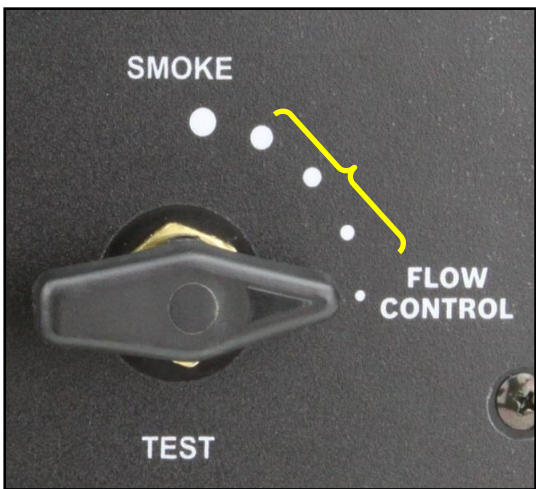
Control Valve Overview



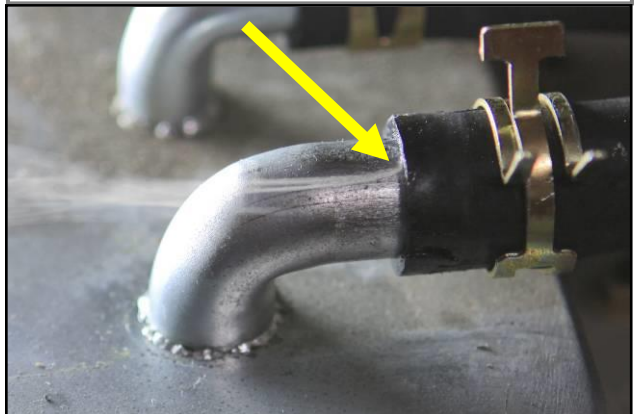
TEST: Delivers non-smoke air and a very accurate flow meter reading. This setting is for determining if a leak exists and how large it is.



SMOKE: Delivers maximum smoke volume.



FLOW CONTROL: Controls smoke volume.
> Locating the leak source is sometimes easier with less smoke volume. First, fill system with smoke then reduce volume.



Note: Flow Control does not affect delivery pressure; it only affects flow volume.

Flow Meter Overview

A flow meter ball indicating flow means there is flow going into (or through) the system being leak-tested. This is normal while the system is being filled. 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 flow through the system, or no leak.

Leak Size Reference Points:

The flow meter has leak size reference points which quantifies the leak size in the system being leak tested.

→ When using workshop air (or nitrogen); read the left side of the flow meter.

→ When using CO₂; read the right side of the flow meter.

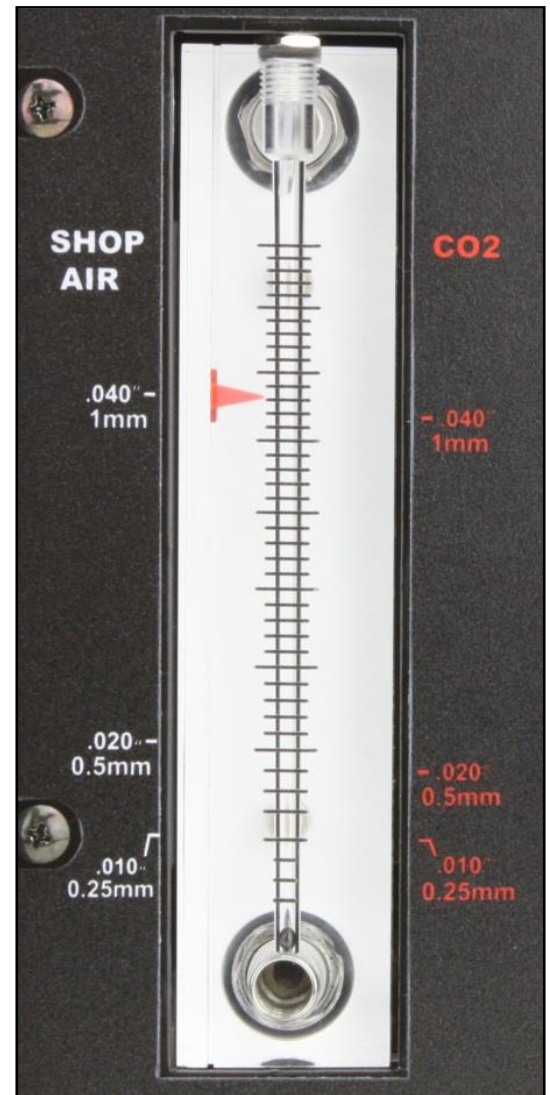
The .010" (0.25 mm), .020" (0.5 mm) and .040" (1.0 mm) reference points are equivalent to leaks of those sizes in the EVAP system being tested.

Once the system is filled (either in TEST or SMOKE setting) and the flow meter ball stops descending, compare the level of the ball with the reference points in order to determine a leak size or pass/fail.

> Above reference point = FAIL.

> Below reference point = PASS.

NOTE: The flow meter measurements are most accurate when the tester's Control Valve is in TEST setting.



EVAP Tech Tip



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

Do One of the Following:

1. The flow meter is active in the SMOKE and TEST positions of the Flow Control Valve. However, for the most precise quantifying of a leak size use the **TEST** position in either of these two methods.
 - A. Fill system in TEST (no smoke) setting until flow meter ball stops descending. Position the flow meter's red flag so that it aligns with the flow meter ball position. Compare flow meter ball position with flow meter's Leak Size Reference Points.

NOTE: If the leak size is unacceptable and leak testing is required; first alleviate all pressure from the EVAP system so that smoke can be introduced.

Then set control valve to SMOKE (full flow) setting, introduce smoke and look for smoke or dye to find the leak(s).

Or

- B. To save time; fill system in SMOKE (full flow) setting until flow meter ball stops descending. Be sure the *Leakfinder*[®] is still <ON> and immediately position control valve to TEST, for a more accurate flow meter reading. Be sure ball has stopped descending and compare flow meter ball position with flow meter's Leak Size Reference Points.

> Above reference point = FAIL.

> Below reference point = PASS.

If the leak size is unacceptable and leak testing is required, then time will have been saved because you will have already filled the EVAP system with smoke. Immediately position the control valve again to SMOKE and continue to introduce smoke while looking for smoke or dye at leak points.

NOTE: When testing a closed system, such as the EVAP system, it is best to purge the 'non-smoke' air out of the system by leaving an opening in the system being filled (e.g. EVAP vent). Close the system once smoke exits that opening and continue to fill with smoke. This quickly fills the system with smoke.

Troubleshooting Guide

Two lights on the control panel double as diagnostic lights.

Green	Red	Interval	Cause
✓		Blinks: 1 per second	Indicates a lack of power from the power converter, which means it could be set too low.
✓	✓	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 shuts down)	Bad ground or circuit board failure *

* If circuit board failure occurs, first disconnect power to your Tester for 10 seconds and reconnect. If failure code occurs a second time, disconnect Tester and contact Authorized Dealer.

Symptom	Likely Cause	Solution
The green power indicator lamp on the Tester does not turn ON.	1. Poor power-supply cable connection.	<i>1. Secure power connection at the machine and wall outlet.</i>
There is no air or smoke coming out of the supply hose.	1. Flow Control valve is closed. 2. Air/gas supply to tester is insufficient. 3. Bad power-supply cable connection, or power converter is set too low.	<i>1. Open flow control. 2. Check for sufficient air/gas supply. 3. Secure power converter connections and/or increase power converter setting.</i>
Very little smoke coming out of the smoke hose or oil dripping from the smoke hose.	1. There is too much smoke condensation inside the smoke supply hose. > This usually does <u>not</u> indicate a failure.	<i>1. Position the hose lower than the Tester. Set control valve to TEST and turn Tester <ON> for one cycle, or until oil has drained from hose.</i>

Warranty | Technical Support

Worldwide Vapor, Inc.

LIMITED TWO (2) YEAR WARRANTY

Leakfinder[®] Model 625-WV609

Worldwide Vapor, Inc. Warrants To the Original Purchaser; under normal use, care and service, Tester shall be free from defects in material and workmanship for TWO YEARS 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.

→ Your Product Warranty has already been activated,
no need for you to send us any information.



STAR, inside

This product contains
STAR licensed technology, *inside*.

www.StarEnviroTech.com

