

INSTRUCTION MANUAL



Smart Pressure[®] Plus[™]
Variable Pressure Diagnostic Smoke[®] Machine
with UltraTrace^{UV}[®] Non-Contaminant Dye Solution
Model No. WV711-PLUS

Leak Detection System for EVAP and Heavy Duty applications



Patents: US 5,922,944 • 6,392,227 • 6,439,031 • 6,526,808 • 7,387,014

CA 2,279,147 • 2,394,911 EU 1384984 | JA 3710772 | AU 2002300308

Caution and Usage Tips

	<ul style="list-style-type: none"> ▪ The fuel evaporative (EVAP) system must ONLY be tested when Tester's PRESSURE MODE is set to "EVAP". For added safety; use supplied EVAP Adapter Block with Pressure Relief Valve & Nozzle (Part No. WVA-129). ▪ Introducing high pressure into the EVAP system can result in fire or explosion, bodily injury and property damage. ▪ DO NOT exceed system pressure of ANY system being tested. For example; DO NOT introduce a higher pressure than the normal system pressure into the engine's crank case system, or oil seals may be damaged.
	<ul style="list-style-type: none"> ▪ ALWAYS use Tester with vehicle engine turned <OFF>. ▪ Follow common sense safety precautions. ▪ Connect Tester's black cable to chassis ground, when using Battery Cables WVRP-40. ▪ Use UltraTraceUV[®] Smoke Solution No. WV0712UV in Tester. Using a non-approved solution can cause damage to vehicles being tested and may void vehicle warranty. ▪ Do not leave Tester's hose or power cables connected to the vehicle if tests are not being performed.
	<ul style="list-style-type: none"> ▪ Do not perform EVAP test near source of spark or ignition. ▪ Follow OEM's safety requirement and connect Tester to Nitrogen, if inert gas is required for testing EVAP systems. ▪ Wear appropriate eye protection. ▪ Wear yellow glasses supplied when using ultraviolet light. ▪ When using alternate source of UV light, use light that includes 405 nanometer (nm) UV light range.
	<ul style="list-style-type: none"> ▪ Tester can be used with workshop compressed air or any inert gas. ▪ Air or inert gas pressure supplied to Tester can be between 3.4 to 12 bar (50 ~ 175 PSIG). ▪ When testing an engine's boosted intake or exhaust system for leaks, it is best if the engine is cold. Small leaks may be sealed due to thermal expansion. ▪ If using a gas other than workshop air (such as nitrogen), disconnect it from the Tester after every use. An internal calibration 'bleed' system in the Tester will cause the nitrogen to slowly bleed off when the Tester is not in use.

Specifications			
Height	14.5 in. (36.8 cm)	Inlet gas source	Compressed air or inert gas
Length	13.75 in. (34.9 cm)	Inlet pressure	50 to 175 PSIG (3.4 to 12 bar)
Width	10 in. (25.4 cm)	High output pressure	3-20 PSIG (0.20 bar-1.4 bar)
Weight	20 lb. (9 kg)	EVAP output pressure	0.5 PSIG (0.03 bar)
Shipping weight	25 lb. (11.3 kg)	Output volume	0-15 liters per minute
Power supply	12-24 volts DC (or 110-240V AC with optional WVA-080)	Smoke output line	15 feet (4.6 m)
Solution Max. Volume	24 oz. (0.7 liter)	Power supply line	15 feet (4.6 m)
		Power consumption	5-15 amps.
Meets ASME Standards: for Division 1 Pressure Vessel Code and Pressure Relief Valve			



This product contains
STAR licensed technology, *inside*.

www.StarEnviroTech.com

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Thank You and Congratulations! Your Smart Pressure *Plus*[™] leak detector, which incorporates STAR Diagnostic Smoke[®] Technology *inside*, is the simplest and quickest way to find many vehicle system leaks. **STAR Technology is the only smoke technology in the world OEM-approved for both EVAP and Heavy Duty leak detection, containing the features of this machine.**

Unlike conventional high pressure smoke machines, Smart Pressure[®] technology produces the densest visible smoke vapor over the Tester's *entire* operating pressure range. Smart Pressure[®] technology software prevents thinning of smoke density that occurs when conventional analog units are set at high pressure. A denser smoke vapor means it's easier to see at leak points. And setting the test pressure is fully automatic and could not be simpler.

At high pressure, the smoke vapor escaping a leak can be very difficult to see with a conventional high pressure smoke machine. However, this Smart Pressure[®] *Plus*[™] leak detector contains UltraTraceUV[®] smoke-producing solution, which is an essential feature for high pressure leak testing. The vaporized UltraTraceUV[®] solution deposits a trace dye at the exact location of a leak. **You simply cannot find all high pressure leaks without it!**

The patented technology *inside* your Tester, including the UltraTraceUV[®], was designed in collaboration with major OEMs, in order to establish an effective and contaminant-free standard for leak detection. It is designed to be safe for vehicle systems and will not void factory warranties.

Included Accessories

UltraTraceUV®: (WV0712UV) this patented solution is the only Automaker-Mandated smoke-producing solution of its kind in the world. The solution's chemistry will not damage vehicle components and contains a special contaminant-free dye that deposits at the exact location of a leak. Each bottle will perform approximately 150 test cycles. (12 oz. / 355 ml). (Part No. is for one bottle, two bottles included with Tester).



Combination Light: (WVA-065) white light, for easier smoke location and ultraviolet (UV) light to highlight the fluorescent dye deposited at the exact location of a leak. Also has laser pointer to view laser reflections on exiting vapor.



Remote Control: (WVA-073)



Plug-in Battery Cables: (WVRP-40) connects to WV711-PLUS and 12VDC battery.



EVAP Safety Block w/ Pressure Relief Valve, extension hose and Nozzle (WVA-129)



Standard Size Service Port Adapter: (WVA-06)



Schrader Removal / Installation Tool: (WVA-049)



Cap Plugs Kit: (WVA-02)



Smoke Diffuser: (WVA-03)



Included Accessories, *continued*

<p>Adapter Cone (standard): (WVA-01)</p>	
<p>Adapter Cone (large): (WVA-067)</p>	
<p>Supply Hose Male Fitting: (sourced locally) it is the same fitting as is attached to optional adapter kit WVA-110 and is the matching coupler to the female connection at the end of the WV711-PLUS smoke supply hose. It can be used as a universal fitting to convert to whatever adapter is needed to access a test system.</p>	
<p>Air/Gas Fitting: (sourced locally) two are supplied. The automotive style fitting is already installed on the air/gas inlet side of the WV711-PLUS. The spare fitting is an industrial fitting.</p>	
<p>Visit www.vacutec.com for additional optional accessories</p>	

Optional Accessories

Turbo Adapter Set, with through hole: (WVA-110): sizes 35mm to 135mm, in 5mm increments.
Adapters also available individually at www.vacutec.com.



Adapter plug: (WVA-095): used to convert a WVA-091 through-hole adapter into a plug. It is included in the WVA-091 set.



VW Turbo Adapter: (WVA-092)



Power Converter (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



Nitrogen Tank Pressure Regulator: (WVA-051) preset 100 PSIG (6.9 bar) regulator connects directly onto nitrogen cylinder and coiled hose WVA-041, in the event test specifications requires nitrogen instead of compressed air.



¼" x 25' Coiled Nitrogen Hose: (WVA-041) connects directly onto nitrogen tank pressure regulator WVA-051 and WV711 Tester.



Inert Gas Pack Kit: (WVA-060) Inert Gas pack includes: preset CO₂ regulator with cylinder fitting, pressure gauge, universal push-on female coupler and 20 oz. **liquid** CO₂ cylinder. (Cylinder arrives empty). Performs approximately 25 EVAP full cycle tests per 20 oz. cylinder. Cylinders can be locally filled or exchanged with **liquid** CO₂ at larger paintball or welding supplies store.



HD Bladder with Through Hole and Pressure Pop-Off Valve: (WVA-124) 2.9 inch diameter, inflates to 6 inches.



Visit www.vacutec.com for additional optional accessories

Product Overview



Power Plug
Smoke Supply Hose

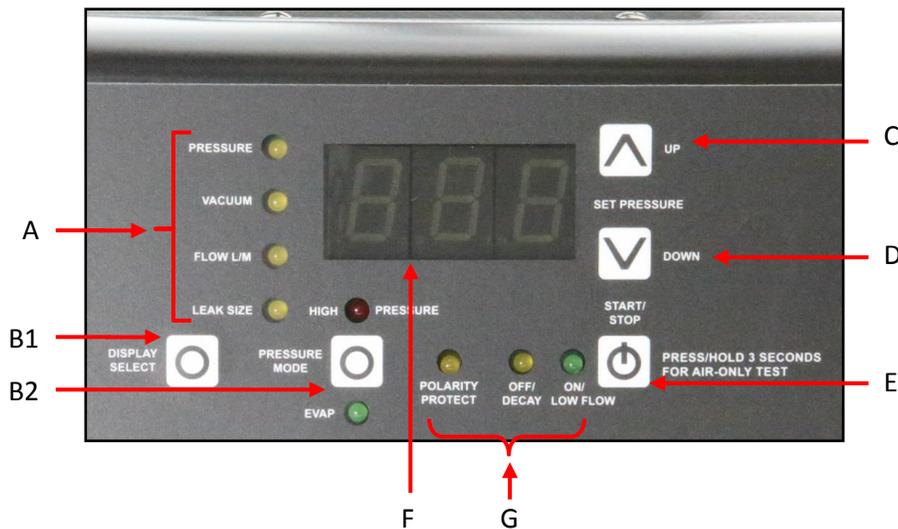


Filter Drain Port
Underside of Tester

Water Separator / Filter (inside tester) with filter drain port on 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. But excessive drainage indicates your air compressor requires draining and/or a filter system.

IMPORTANT NOTE: In order for the moisture and contaminants that collect in the filter bowl of the Tester to drain, the air supply to the Tester must be disconnected and re-connected at the Tester's Air Fitting. So do not leave air supply to the Tester connected for days at a time, or the filter will never drain. It is sufficient to occasionally disconnect/ connect air supply to tester. This procedure is not necessary if using nitrogen.

Product Overview; Control Panel



A - Test Mode Lights: indicates if Tester is set to measure system test PRESSURE, VACUUM, FLOW (in liters per minute), or LEAK SIZE (when PRESSURE MODE button selects EVAP), all of which are controlled by DISPLAY SELECT button (B1) and is displayed in the Digital Display (F).

B1 - DISPLAY SELECT Button: selects test mode and turns on appropriate light (A).

B2 - PRESSURE MODE Button: selects between Low Pressure EVAP testing and HIGH PRESSURE testing. See Helpful Tips on page 9 on simple ways to switch from one pressure to another, once Tester is already delivering pressure.

C - UP Arrow Button: increases test pressure (in high pressure mode).

D - DOWN Arrow Button: selects desired test pressure and/or decreases test pressure (in high pressure mode).

E – START/STOP Button: > **While in HIGH PRESSURE setting:** 'START' begins a 10-minute test cycle and illuminates the green light (G). 'STOP' goes into OFF/DECAY mode, turning on yellow OFF/DECAY light (G) and shows pressure setting on display, in order to determine pressure loss. **While in EVAP setting:** 'START' begins a 5-minute test cycle and illuminates the green light (G). 'STOP' begins an audible low flow smoke pulsation mode and green light (G) blinks. Press 'STOP' again and it goes into OFF/DECAY mode. **Testing Without Smoke:** There may be a test application whereby you want to perform a pressure test, but without smoke. This feature is available on the (EVAP) setting only. Press and hold the START button for at least three seconds. Release the button once the digital display reads "tSt" (test). The Tester starts delivering whatever gas you connected to the Tester, but without smoke. Pressing the STOP button, stops the gas flow, and puts the Tester back on normal smoke-production mode.

F - Digital Display: shows selected setting: pressure in PSI, pressure in bar, or flow in L/M. Also, when system is turned OFF it verifies if system being tested has decay (leak), indicated by if pressure reading on the display decreases. In EVAP mode, it also displays LEAK SIZE in inches.

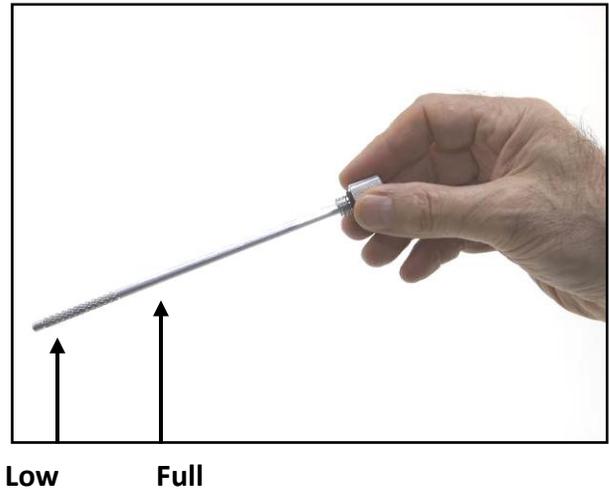
G - Function Lights: green 'ON' light turns on when 'ON' button (E) is pressed and blinks when 'ON' button is pressed again, indicating pulsation mode. Yellow OFF/DECAY light turns on when 'OFF' button (E) is pressed again, turning Tester off and starting a decay test. Red POLARITY light turns on if battery power cables are reversed.



Initial Setup

Prior to Using for the First Time

1. Pour entire contents of two 12 oz. (355 ml) UltraTrace^{UV}® solution bottles into the smoke chamber. NOTE: Check solution level regularly and maintain at or near FULL mark.



2. If not supplied; install correct air/gas fitting onto the Tester.



**NOTE: Your Tester is now ready for operation.
Read instruction in its entirety prior to using this Tester.**

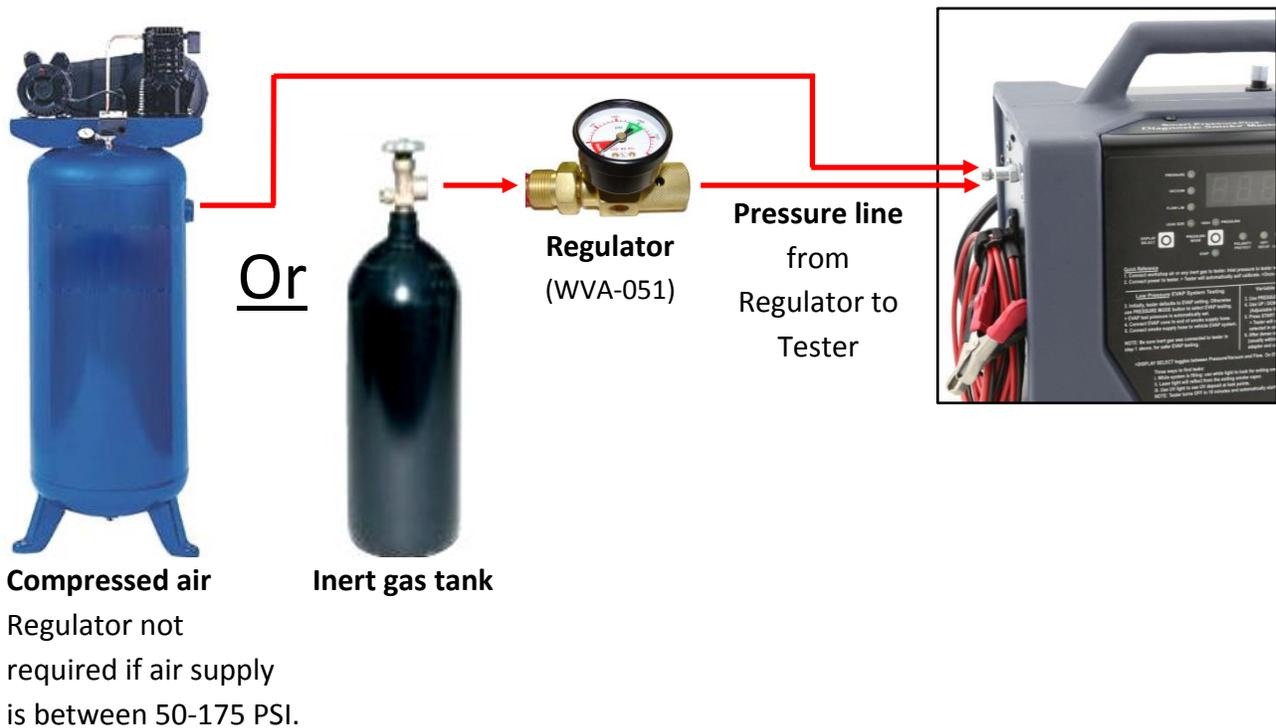
Quick Start Guide

1. Connect Tester to either compressed air or any inert gas, such as nitrogen.



NOTE: When using inert gas; you must regulate the pressure exiting the gas tank, prior to connecting to the WV711-PLUS!

Compressed air or nitrogen tank pressure to the Tester can be between 50-175 PSI (3.4 to 12 bar). The internal pressure regulator in the Tester automatically sets EVAP test pressure. Operator can set high pressure between 3-20 PSIG (0.20 bar- 1.4 bar).



2. a) Connect power cord onto back of Tester.
b) Push white tab forward to locked position.

- c) To remove: pull white tab.
d) Push inner section downward, while at the same time pulling plug away from Tester.



Smart Pressure *Plus*[™] | Basic Test Procedure

NOTE: This Tester provides the following safety features, in order to prevent High Pressure from being introduced into a vehicle's low pressure fuel evaporative (EVAP) system:

- Tester always defaults to Low Pressure EVAP setting when first connected to power.
- The Tester tries to prevent you from making a mistake and adding High Pressure to the EVAP system. Do the following whenever you are testing at High Pressure and want to switch to Low Pressure EVAP testing. 1) Press STOP button. The OFF/DECAY light will blink for a few seconds, which indicates that the Tester is calibrating itself for the next pressure test. 2) After the OFF/DECAY light stops blinking, press the PRESSURE MODE button and select EVAP. Now you can press the START button to start the test.
- When testing EVAP system, use Adapter Block (218-WVA-129) which contains a Pressure Relief Valve that will not allow excessive pressure to enter the EVAP system.

Quick Reference

1. Connect workshop air or any inert gas to Tester. Inlet pressure to tester must be between 50-175 PSI (3.5-12 bar).

NOTE: perform step 1 above before step 2, or error code "n0A" (no air connected) will display.

2. Connect power to Tester. > Tester will automatically self-calibrate. > Once calibrated: tester displays all zeros.

Low Pressure EVAP System Testing

3. Initially, Tester defaults to EVAP setting. Otherwise use PRESSURE MODE button to select EVAP testing.
 - > EVAP test pressure is set automatically.
 - > Up/Down pressure arrows inoperative in this mode.
4. Connect EVAP block (WVA-129) onto smoke hose.
5. Connect smoke supply hose to vehicle EVAP system.
6. Press START button.

NOTE: Pressing START a second time gives pulsating smoke flow.



NOTE: For safer EVAP testing, connect inert gas to Tester in step 1 above.

Variable High Pressure Testing

3. Press PRESSURE MODE button to select HIGH PRESSURE testing.
4. Use UP / DOWN arrows to set desired test pressure. (Adjustable from 3 to 20 PSI / 0.2 bar to 1.4 bar).
5. Press START button.
 - > Tester will not turn ON unless a pressure has been selected in step 4 above.
6. After dense smoke exits the smoke supply hose, (usually within 15 seconds), use appropriate adapter and connect supply hose to system for test.

> Turning system OFF begins pressure decay.

> **DISPLAY SELECT:** toggles between Pressure/Vacuum and Flow. On EVAP mode it also displays LEAK SIZE in inches (E.g. 020 is twenty thousands of an inch, or ½ mm | 040 = 1 mm).

Three ways to find leaks:



- i. While system is filling: use white light to look for exiting smoke at leak points.
- ii. Laser light will reflect from the exiting smoke vapor.
- iii. Use UV light to see UV deposit at leak points.

Smart Pressure *Plus*[™] | Helpful Tips

NOTE: Prior to pressing the START button, you can switch between High and Low pressure mode by simply pressing the PRESSURE MODE button. Once the STAR button is pressed, perform the following steps to switch from one pressure mode to the other.



Switching from Low Pressure EVAP Testing to HIGH PRESSURE Testing: **1)** press STOP button *twice* (this takes the Tester from smoke pulsating to OFF). **2)** Press the PRESSURE MODE button and select HIGH PRESSURE. **3)** Press UP arrow and set desired test pressure. **4)** Press START button to start the test. Note: always use EVAP Safety Block (WVA-129).



Switching from HIGH PRESSURE Testing to Low Pressure EVAP Testing: **1)** press STOP button. You will see the OFF/DECAY light blinking for a few seconds. **2)** When the OFF/DECAY light *stops* blinking, press the PRESSURE MODE button to select low pressure EVAP testing. **3)** Press START button to start the EVAP test.



Testing Without Smoke: There may be a test application whereby you want to perform a pressure test, but *without* smoke. This feature is available on the low pressure (EVAP) setting only. Simply press *and hold* the START button for at least three seconds. Release the button once the digital display reads “**tSt**” (test). The Tester starts delivering whatever gas you connected to the Tester, but without smoke. Pressing the STOP button stops the gas flow and puts the Tester back on normal smoke-production mode.



NOTE: If possible, it is best to first purge the ‘non-smoke’ air out of the system by leaving an opening in the system being filled. Close the system once smoke exits that opening and continue to fill with smoke. This quickly fills the system with Diagnostic Smoke[®].

NOTE: Smoke vapor exiting from a leak is even easier to see at low test pressures.

NOTE: The longer the Diagnostic Smoke[®] is allowed to leak, the more UV dye will deposit at the leak source.



NOTE: Any time Tester turns off it automatically starts a pressure-decay cycle.

NOTE: During decay mode, do not press either the UP or DOWN pressure arrows or it will interrupt the decay process.



NOTE: For best Tester performance when testing an EVAP system; on a vehicle with an EVAP service port; remove the Schrader valve (left-hand thread) from inside the service port. The Schrader valve will cause the smoke vapor to be drastically reduced and diminish its effectiveness. Otherwise, access EVAP system at other connection.

NOTE: To prevent the possibility of creating a flammable fuel vapor mixture inside the fuel tank, use an inert gas such as liquid CO₂ with part #218-WVA-060, or Nitrogen, when testing the EVAP system.

DO NOT exceed normal system pressure in systems being tested!

DO NOT connect the Tester to the vehicle in such a way whereby excessive pressure will be

introduced into the engine’s crankcase system, or oil seals may be damaged. Some crankcase systems can only take up to 4 PSI of pressure or oil seals may be damaged.



Leak Sample

Three Ways to See the Leak

White light highlights the smoke



Laser light is reflected by the smoke vapor



UV light sees the dye trace



LED Display Codes

The LED display is capable of showing the following codes.

- rE Revision: indicates 'Program Version' which displays on next screen.
- C.O.x Program Version ("x" indicates program version number).
- EN English: if preset to standard PSI. Otherwise shows 'Si': if preset to Metric.
- CAL Calibrate
- Fob Key Fob
- Pr9 Program
- tSt Indicates "Test" *without* smoke being produced
- End End of function .
- Lo bAt Low Battery or Bad Battery Connection (shown in two consecutive displays).
- E01 Open Circuit (ground or power)
- E02 There is pressure in the system to be tested; cannot calibrate.
NOTE: this error code will be followed by the amount of pressure in the system to be tested.
Relieve pressure in the system to be tested prior to continuing with the test.
- n0A No Air: no air/gas connected to Tester.
- LOA Low Air: insufficient inlet air/gas pressure connected to Tester.
- PSI Set to read PSI pressure (instead of bar).
- bAr Set to read bar pressure (instead of PSI).
- Utl Utilities
- FuL Full: sensor is over range, which can display while filling a system.

Programing Remote Control Fob

Your remote control Fob has already been programmed at the factory. Follow this procedure if reprogramming becomes necessary, due to Fob replacement or after changing the Fob's battery.

1. Disconnect Tester from power.
2. Connect Tester to workshop air.
3. While pressing and holding the **SET PRESSURE** arrow **UP** button on the Tester: connect Tester to power.
4. When **Utl** (Utilities) is displayed; release arrow UP button.
NOTE: "**Pr9**" (Program) is displayed.
5. Momentarily press the red button on the Remote Fob and release. After two seconds press the red button again and release.

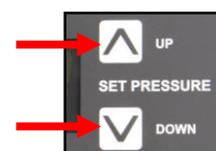


- NOTE: The display will now read "**End**", indicating the remote is now programmed to the Tester.
6. Disconnect and reconnect Tester from power to resume normal operations.

Setting Pressure Reading Default to PSI or BAR

Your Tester has been preset at the factory to either default to PSI or BAR readings. Follow the steps below to change the default setting.

1. Disconnect Tester from power.
2. Connect Tester to workshop air.
3. While pressing and holding both the **SET PRESSURE** arrows **UP / DOWN** buttons on the Tester: connect Tester to power.
4. When **Utl** (Utilities) is displayed; release UP / DOWN arrow buttons.
5. Push **START** button until you see **PSI** (or until you see **bAr**, if system is preset to PSI).
6. Push arrow button **DOWN** once to read **bAr** (or to read PSI, if system is preset to bar).
7. Push start.
8. Disconnect and reconnect Tester from power to resume normal operations.



When set to PSI: PRESSURE will read in PSI and VACUUM will read in inches of water.

When set to bar: PRESSURE will read in bar and VACUUM will read in mbar.

EVAP LEAK SIZE always measures in inches: 0.40" (1mm), .020" (0.5mm), 0.10" (0.25mm)

Warranty | Technical Support


Worldwide Vapor, Inc.

LIMITED ONE (1) YEAR WARRANTY

Smart Pressure *Plus*[™] Leak Detector Model WV711-PLUS

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 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.

For Technical Support:

1-888-822-8832 (Opt. #2) Mon.-Fri. 8:00am to 3pm Pacific Time or TechSupport@vacutec.com

Activate Your Warranty:

To activate your warranty; send the information below to the email address or fax number provided within 30 days of your purchase.

Send information below to: TechSupport@vacutec.com or Fax: 714-433-2840

Purchaser's Name:

Company Name:

Address:

Country:

Telephone number:

Email address:

Web address:

Smoke Machine Model:

Serial Number:

Date Purchased (keep your invoice for verification, if required):

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