TO: All Subaru Retailers

FROM: Subaru of America, Inc.
Service Department

DATE: July 21, 2014

SUBJECT: Special Service Tools and Equipment

Starting the week of July 21, 2014, Subaru retailers will receive the new Subaru Leak Detection System. It is an extremely useful piece of equipment, especially when used to pinpoint small leaks in the evaporative emissions system. Please refer to TSB 14-20-14 (starting on page 2) for information and operating instructions.

The shipped cost of this tool is $1,575, plus any applicable taxes. It should arrive at all Subaru stores between 7/22/14 – 7/30/14.

Also, the following 2015 Legacy and Outback special service tools will be shipped towards the end of next month:

Radar Reflector
Radar Reflector Stand

If these tools are required prior to the delivery date, please contact Garrick Goh to request a loaner sample.

Questions or concerns? Contact Garrick Goh at ggoh@subaru.com.

ATTENTION:
GENERAL MANAGER ❑
PARTS MANAGER ❑
CLAIMS PERSONNEL ❑
SERVICE MANAGER ❑

IMPORTANT - All Service Personnel Should Read and Initial in the boxes provided, right.

QUALITY DRIVEN® SERVICE

SERVICE INFORMATION

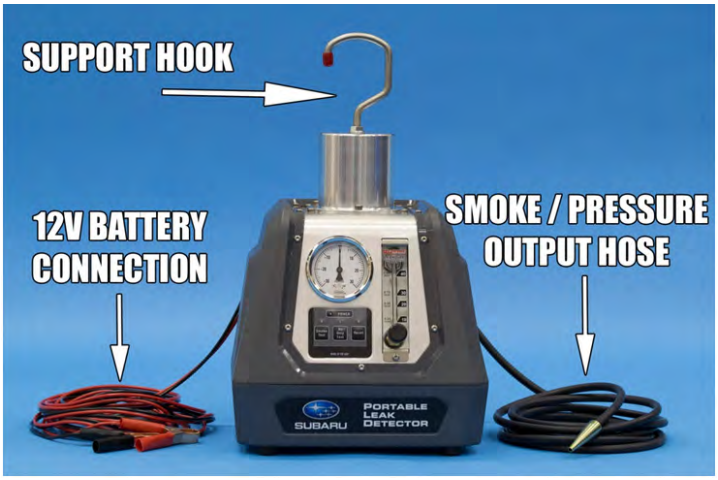
APPLICABILITY: All Vehicles **NUMBER:** 14-20-14R

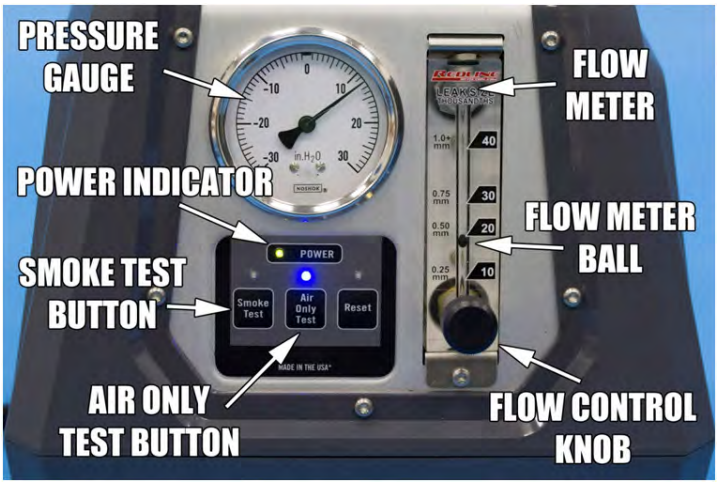
SUBJECT: Subaru Leak Detection System **DATE:** 07/15/14

INTRODUCTION

This bulletin will cover the Subaru Portable Leak Detector and its accessories, which includes a custom Subaru adapter kit. Some uses for this machine include diagnosing evaporative emissions systems, engine vacuum, PCV, exhaust systems, and passenger cabins.

SERVICE INFORMATION





NOTE: The Reset button is only used if the positive and negative battery cables have been reversed.

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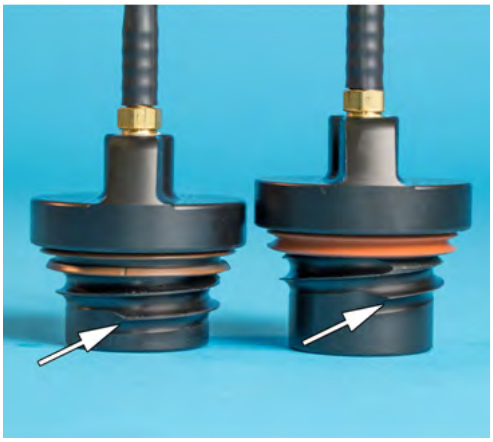
The Subaru Portable Leak Detector uses a mineral-oil based smoke producing agent which contains no dyes or contaminants. The machine produces a distinct visible vapor and smell both of which will help find leaks. The fluid reservoir is filled by accessing the fluid fill plug located on the top rear of the machine. Always use Subaru Approved fluid to ensure proper performance. The fluid capacity is 2oz. Do not overfill the reservoir. Inspect fluid level every 50-100 tests performed. Do not use dyes / UVdyes in Subaru EVAP or intake systems because it may coat critical sensors.

Custom accessories designed specifically for use with Subaru evaporative systems are included with this kit:

- Nipple covers (qty 4)
- Quick Connector Hose plug
- Quick Connector Hose plug with pressure input
- Single start filler cap adapter
- Dual start filler cap adapter

The filler cap adapters provide a pressurization input for the Subaru Portable Leak Detector. The two filler cap adapters appear very similar. Using the wrong adapter may cause a leak or damage the adapter or filler neck. The dual start adapter is labeled. The single start adapter is not labeled. Perform a check on the gas cap of the test vehicle by rotating it by 180 degrees to see if there is two thread starts or a single start. Select the matching filler cap adapter.



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A halogen inspection light is provided to aid in the identification of system leaks. The bright white beam of the halogen light enhances even the smallest wisps of smoke from escape points. The halogen inspection light connects to standard 12v power sources.

SAFETY PRECAUTIONS

- All diagnostic work should be performed with the engine off.
- Do not leave a vehicle unattended while equipment is connected or operating.
- Equipment operates on a 12 Volt battery.
  Connect machine to battery (+) and chassis ground (-).
- Do not perform tests near a source of spark or ignition.
- Work in a well-ventilated area.
- Always wear the appropriate safety clothing and protective equipment.

DIAGNOSTICS

1. Self-test

Prepare the Subaru Portable Leak Detector by connecting the battery power cables to a fully charged automotive battery. Select Air Only Test and adjust the Flow Control Knob until full flow is achieved by observing the Flow Meter Ball.

NOTE: Do not over loosen or tighten the Flow Control Knob as damage to the machine will occur.

Block the pressure output hose with your thumb until the pressure gauge displays approximately 12 in.H_2O.

Turn the machine off and monitor the pressure and flow gauges. Pressure should remain constant at 12 in.H_2O and the flow rate should remain at zero. If any pressure decay or leak down is observed, a leak in the machine is present. No further vehicle diagnostics should be attempted until the machine has been repaired.

2. Evaporative Emissions System, Vehicle Preparation

The Subaru Portable Leak Detector can be used to perform a variety of evaporative emissions system tests. The custom adapter kit has been designed to allow for diagnostic flexibility in isolating the root cause of an evaporative emissions system leak. After performing the Subaru Portable Leak Detector self test, prepare the vehicle for an evaporative emission system pressurization test by sealing the entire system or specific components.

NOTE: This preparation will vary depending on the year, make, and model of the vehicle. Always consult STIS for system component identification and locations. Also refer to the *Basic Emissions and Fuel Systems* [405] Technician Reference Booklet (TRB) for details on evaporative emissions systems theory and diagnosis.

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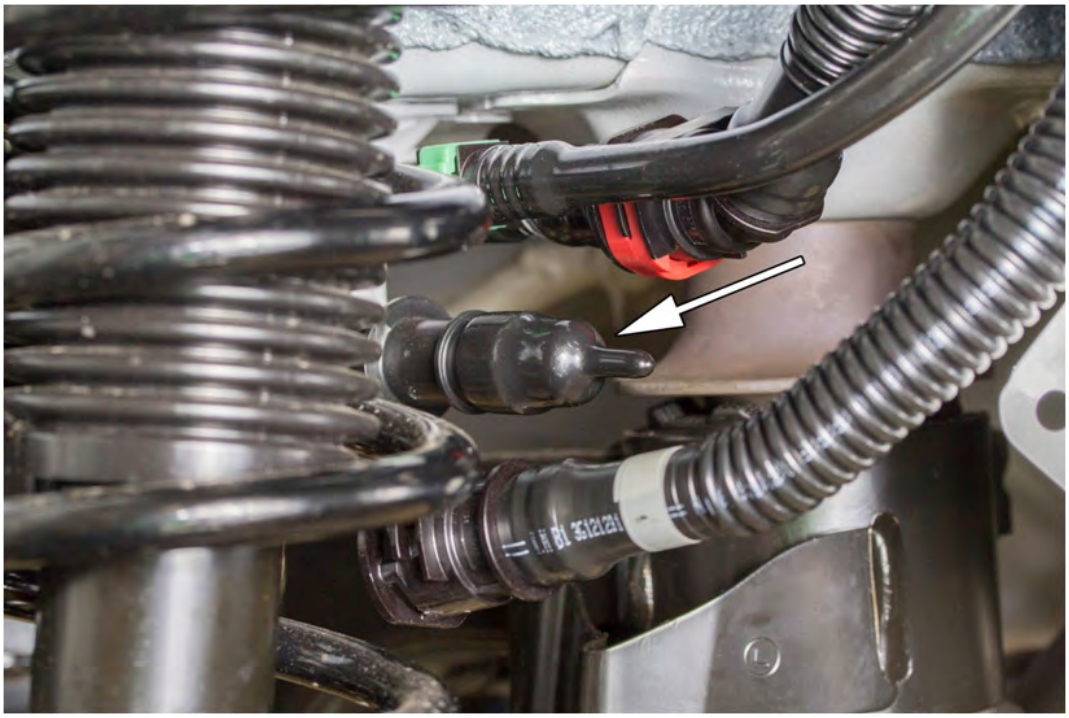
A. To seal off the entire evaporative emissions system, plug the Drain Hose from the Evaporative Canister with the Quick Connector Hose Plug Adapter. (2015 Outback 2.5i Drain Hose shown.)

NOTE: Ensure that the Quick Connector lock is fully engaged before proceeding.

B. The nipple caps can also be used to seal the male side of the Quick Connectors. (2015 Outback 2.5i Fuel Tank Vent Hose shown.)



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C. The Quick Connector Hose Plug with pressure input can be used to isolate specific segments of the Evaporative Emissions system for diagnosis.
(2015 Outback 2.5i Evaporative Canister shown.)

3. Evaporative Emissions System, Pressure and Smoke Testing

Once vehicle preparations are complete, prepare the Subaru Portable Leak Detector for pressure and smoke diagnosis. The system can be pressurized from several locations including, but not limited to, the filler cap and canister purge line.

NOTE: If the ELCM is pressurized from the drain outlet, some leakage from the ELCM's waterproof electrical connector may occur. This is normal, as the drain side of the ELCM is normally only exposed to atmospheric pressures. So, any pressure greater than atmospheric pressure can induce leakage.

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Begin by pressurizing the system with the Air Only Test. Once system pressure has stabilized at approximately 12-13 in.H_2O, press the Air Only Test button to turn off the machine. Observe the pressure gauge to identify any decay or leak down. If a leak is present, the rate of loss can be determined by the position of the flow meter ball.

If a leak is suspected, press the Smoke Test button and allow the system to fill with smoke. Visually inspect the system for signs leaks with the aid of the Halogen Inspection Light. Adjusting the Flow Control Knob may assist in pinpointing a smaller leak.

NOTE: When using the Smoke Test function, operating pressure will be higher. Exercise caution when working with sensitive components.

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The Smoke Test function can also be used as a decay or leak down test. Once the machine is turned off, the leak detector itself will bleed off pressure to approximately 12 - 13 in.H_2O, just as in the Air Only Test. Again, pressure loss and flow rate should be observed.