Cool Smoke® HP

High Pressure Leak Diagnostics System

Part No. 500-0150 & 500-0150NA

USER MANUAL

LEAK DETECTION SERVICE

ISO 9001
CERTIFIED

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Introduction

Congratulations! You are in possession of the most advanced and powerful (yet simple to operate) high pressure diagnostic leak test machine available. Our patented Cool Smoke “no heat” technology creates a high volume, smoke-like vapor eliminating the need for high temperature glow plugs or resistance coils. The MotorVac Cool Smoke HP was specifically developed to OEM specifications for diagnosing leaks in high pressure air systems such as turbo chargers and charge air coolers. The Cool Smoke HP can be used to not only determine if there is a leak in a system and pinpoint its location, it can also determine the actual size of the leak allowing the technician to decide whether a repair is necessary.
The Cool Smoke HP uses advanced dynamically controlled pneumatics and microprocessor technology to determine the actual leak size throughout the entire operational pressure range. The Cool Smoke fluid will deposit ultraviolet (UV) dye at the location of small leaks where it would be difficult to see smoke.

The Cool Smoke HP comes with both a powerful UV light to easily locate the UV dye deposits at leak points, as well as a powerful white light to locate the smoke at visible leak points.

The Cool Smoke Fluid is a unique solution that allows for highly visible vapor (smoke) to carry UV dye to leak points. The UV dye will be deposited at small leak locations where the smoke is forced out during a test. Your MotorVac Cool Smoke HP can perform smoke or leak tests between 3-60 psi (0.2-4.1 bar). The MotorVac Cool Smoke HP comes prefilled with a charge of Cool Smoke Fluid and is refillable by the end-user when the smoke-producing solution is depleted. The smoke it produces, as well as the UV dye, is non-toxic solvent free and noncorrosive. The MotorVac Cool Smoke HP needs no assembly; it is self-calibrating and requires no maintenance.

Please review the User Guide to become familiar with the Cool Smoke HP and all of its features.

Thank you for choosing MotorVac.

Table of Contents

Safety Information and Precautions

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.
- Correctly connect power supply to battery and chassis ground.
- Use only Cool Smoke Fluid in the Cool Smoke HP. Altering the fluid, hoses, cables or any other replacement parts will void the warranty; may cause machine malfunction; may cause damage to the vehicle, to property or may cause personal injury.
- To view the dye deposit, use the included UV Phazer Black light and UV enhancing safety glasses.
- Do not use when vehicle engine is running.
- The 12-24V DC battery source you use to power the machine must be in good condition and fully charged.
- Machine input pressure must be 90-150 psi. Operate the machine in an upright position.

TIP: Whenever possible allow the system to vent as far away from where the smoke is being introduced. This will purge the air and quickly fill the system with smoke. Once the system is filled with smoke, close the vent and allow the system to be pressurized.

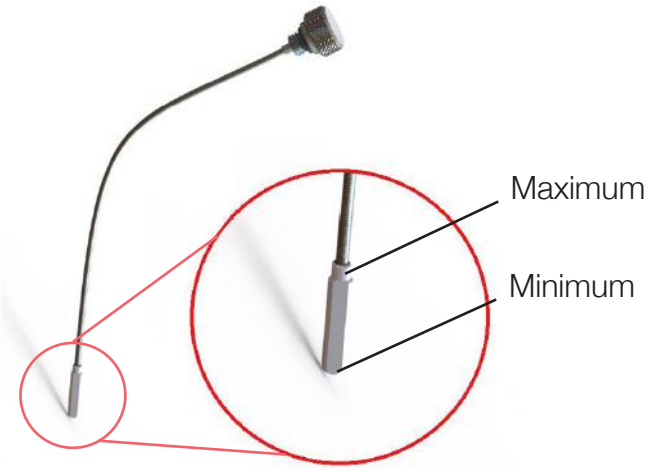
WARNING: Do not overfill unit.

WARNING: This is a high pressure leak detection tool NOT suitable for EVAP/fuel tank system testing. Use of this machine to test for leaks in EVAP systems may cause serious personal injury and/or vehicle damage.

CAUTION: Wear gloves and safety goggles (user and bystanders) when performing this service

System Features and Functions

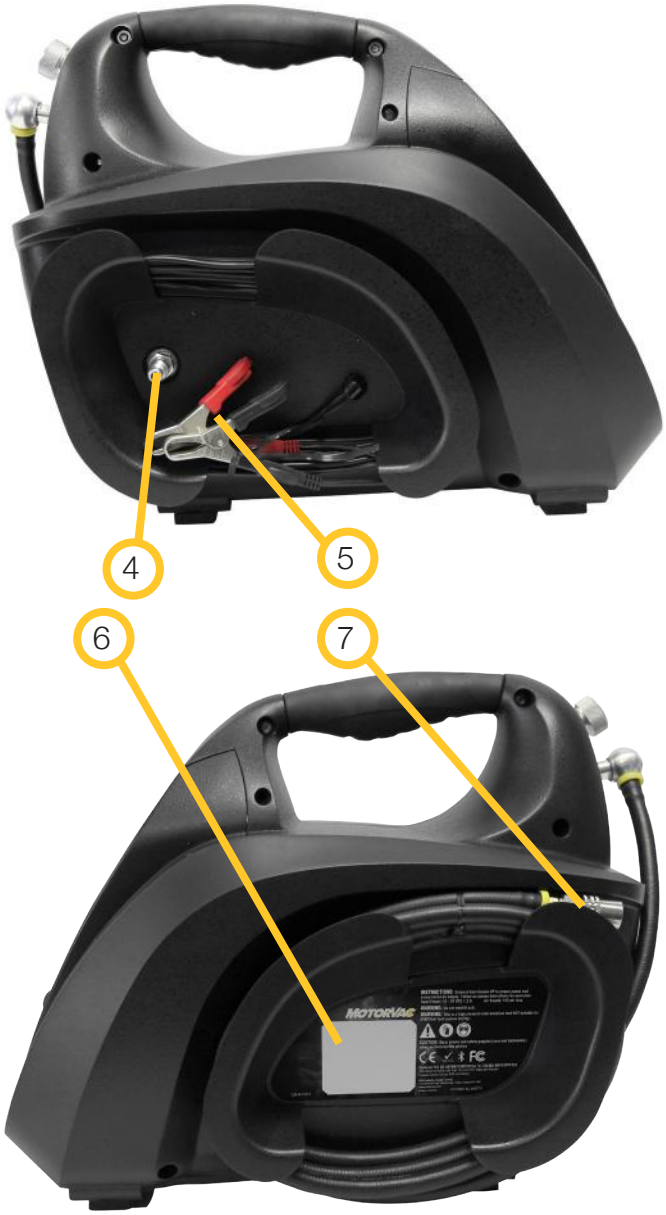
1. COOL SMOKE FLUID DIPSTICK: To check the fluid level insert dipstick until threads touch then remove and read.
CAUTION: DO NOT OVERFILL THE UNIT.



2. COLOR SCREEN: The advanced color LCD display is used to navigate through all modes and gives feedback on pressure in the system.

3. BUTTONS: The 4 buttons on the front of the unit are used to navigate through on screen menus and select service modes.

System Features and Functions



4. COMPRESSED AIR INLET: Connect appropriate ¼" NPT male quick coupler to supply the Cool Smoke HP with compressed air supply.

5. POWER CABLE: The power harness with battery clips is intended to be connected to either a 12 VDC or 24 VDC battery. The unit will automatically adjust for the voltage that it is supplied.

6. SERIAL LABEL

7. SMOKE OUTPUT HOSE: The smoke output hose is used to connect the Cool Smoke to the system being tested in either smoke or leak mode through the use of the appropriate adapters. This hose swivels at the connection to the Cool Smoke HP to allow for easier use.

Technical Specifications

Dimensions Length x Width x Height	18" x 11" x13" 46 cm x 28 cm x 33 cm	**Current Usage**	1.2 A
Weight (Equipment)	9.8 lbs (4.5 Kg)	**Input pressure required**	90-150 psi (6.0-10 bar)
Weight Turbo Adapter Kit	15.8 lbs (7.15 Kg)	**Output pressure**	3-60 psi (0.2- 4.1 bar)
Voltage Requirement	12-24 VDC	**Output Volume**	0-42 CFH (0-20 LPM)
Power Cord Length	10' (3 m)	**Output hose Length**	8' (2.4 m)

Modes of Operations

The Motorvac Cool Smoke has two modes of testing:

Smoke mode: The Cool Smoke HP will produce high density smoke-like vapor at set pressures between 3-60 psi to quickly pinpoint the location of a leak using both visible vapor and UV dye deposits.

Leak mode: The Cool Smoke HP utilizes two methods to determine if the system under test is leaking beyond OEM specifications. The machine can use either a Pressure Decay or Leak Size/ Flow Rate Test that can determine the actual leak size.

First Time Operation

The Cool Smoke HP comes factory filled with Cool Smoke Fluid and is ready to use right out of the box. The air inlet is supplied with a female ¼" NPT port. Connect an appropriate coupler that mates with your compressed air supply hose.

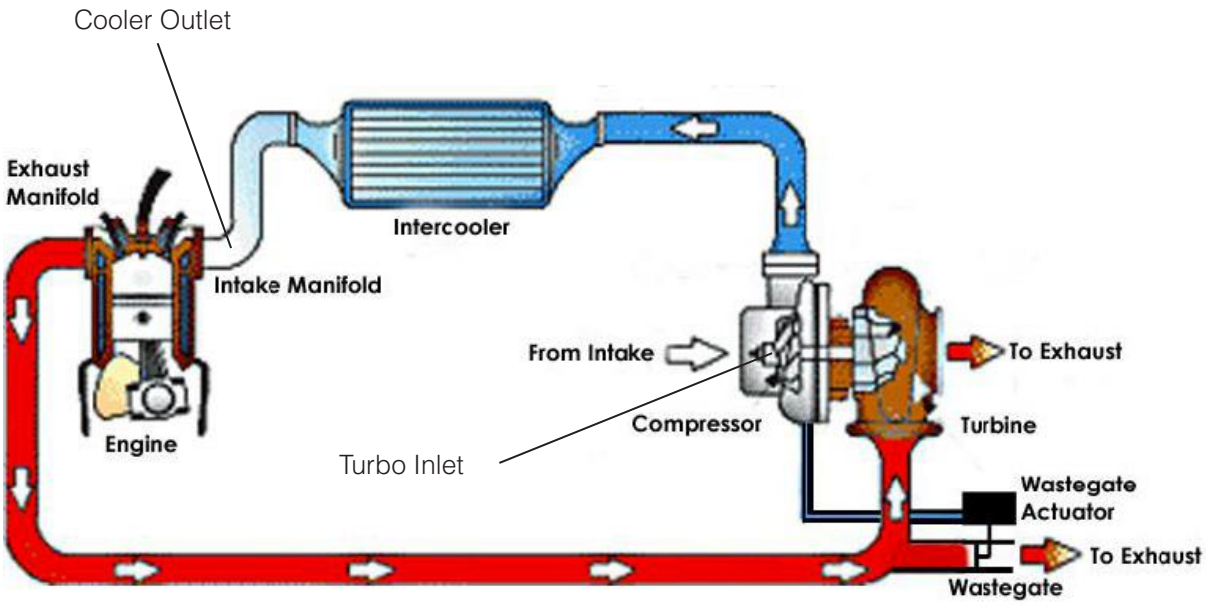
Your Cool Smoke HP is now ready for its first use!

Install ¼" NPT couple for compressed air supply

Test Procedure

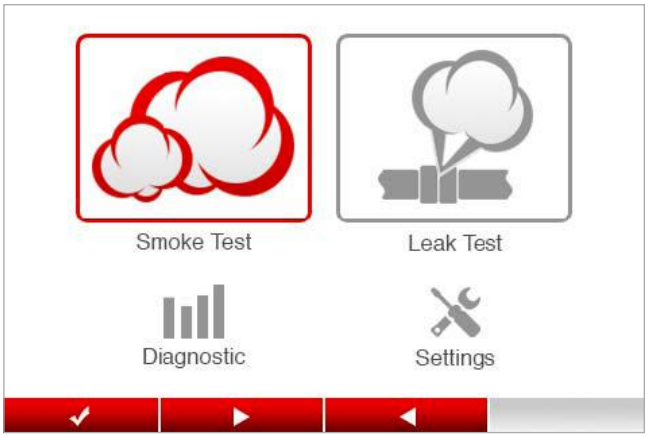
Initial Setup:

1. ALL tests with the MotorVac Cool Smoke HP are performed with the engine off.
2. Connect the Motorvac Cool Smoke HP red (+) battery clip to vehicle's positive battery terminal; connect the black (-) battery clip to a solid ground point as far from the battery as possible.
3. Connect shop air to the MotorVac Cool Smoke HP inlet located on the side of the machine. Be sure supply pressure to the machine is between 90-150 psi.
4. Connect supplied adapters to the vehicle's turbo induction system. To test the turbo charger and intercooler (or charged air cooler) attach the adapters to the inlet of the turbo and the outlet of the cooler.
5. Ensure you are connecting to pressurized parts of the system only. Do not connect to the air filter box that is not intended for pressure.
6. Use leak test to determine if there is a leak in the system. See page 9 for description.
7. If there is a leak, use smoke test to pinpoint the leak location.

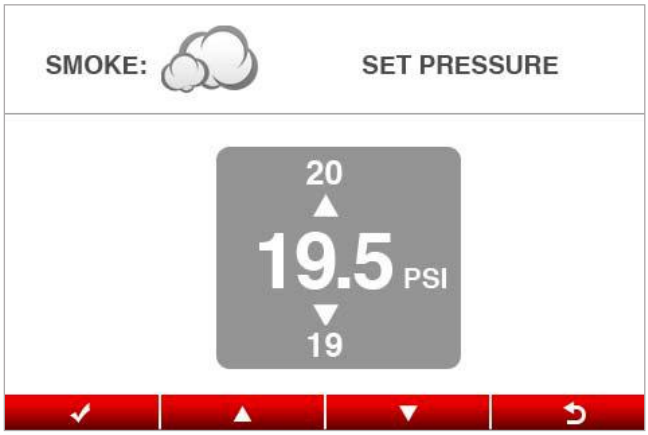


Smoke Test:

The purpose of a smoke test is to fill a system with pressurized smoke until the set pressure is reached. Use the high intensity Phazer White light to detect the smoke exiting any leak points. The Phazer White light has a focusing feature to zoom in on the leak points and improve visibility.

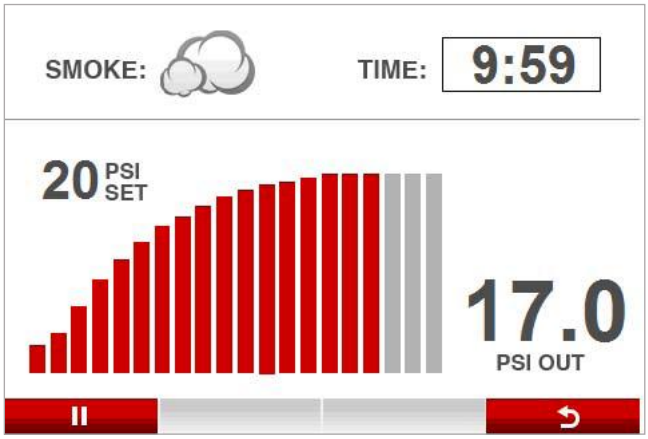


1. **Select smoke test by pressing "select" ( ) button while smoke test icon is highlighted in red.**



2. **Set the test pressure by using the scroll buttons ( ) to adjust pressure. The test pressure should be the same or less than the operating pressure of the system being tested.**

3. **Follow on screen instructions and press the ( ) button to start pressuring the system.**



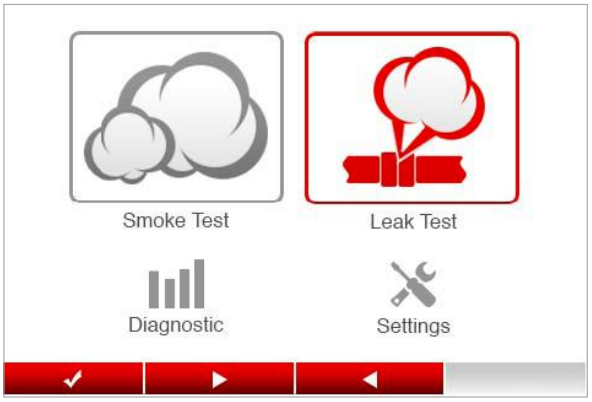
4. **The screen displays the set pressure as well as the current output pressure. The test will automatically stop after 10 minutes.**

Leak Test:

The purpose of a leak test is to verify if a system is leaking and after repairing the vehicle confirm that the leak has been fixed. The Cool Smoke HP has two different leak tests: Leak Size and Pressure Decay.

1. Leak Size Test

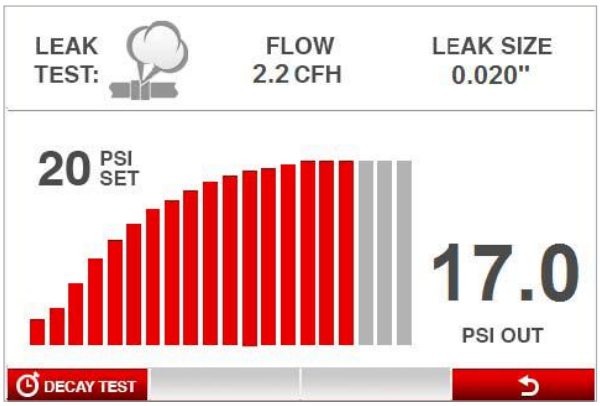
The Cool Smoke HP has advanced electronics that are capable of determining the size of a leak that is greater than 0.015" (0.4mm).



1. Select leak test by pressing "select" ( ) button while leak test icon is highlighted in red.

2. Set the test pressure by using the scroll buttons ( ) to adjust pressure. The test pressure should be the same or less than the operating pressure of the system being tested.

3. Follow on screen instructions and press the ( ) button to start pressuring the system.



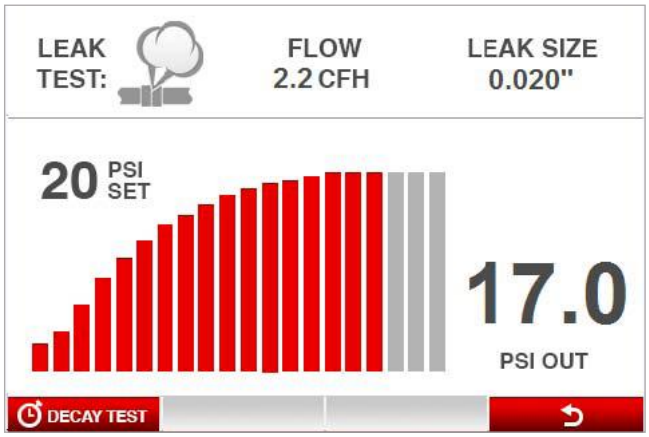
4. The machine will fill the system with pressurized smoke until the set pressure is reached.

5. Results - When the output pressure stabilizes at the set pressure, the leak size results page will display the leak size and resulting flow rate from the test.

2. Pressure Decay Test

A pressure decay test can be used for any size leak. This specification is used by many OEM vehicle manufacturers to determine if the amount of leakage in the turbo system is acceptable or requires repair.

Smoke Test



1. **To perform a pressure decay test, begin a leak test. When the pressure has reached the set pressure. Press the "DECAY TEST" (DECAY TEST)button**

2. **The decay test will start the decay timer and show a live update on the screen of the output pressure. The time for the decay test can be changed in the options menu.**

3. **Results: When the pressure decay test is complete the results will be displayed. These results can be compared with the manufacturer's specifications.**

Included System Accessories

Part # 500-0150 - Cool Smoke HP with Turbo adapter set.
Turbo Kit Part # 200-0150

ITEM NO.	PART NO.	DESCRIPTION	QTY
1	98821846	Phazer White 5 W Light AAA	1
2	98006475	Black UV LED Light AAA S/A	1
3	068-0100	Turbo Adapter Plug 2.25" to 2.5" Assembly	2
4	068-0120	Turbo Adapter Plug 2.75" to 3" Assembly	2
5	068-0140	Turbo Adapter Plug 1.75" to 2" Assembly	2
6	068-0250	Turbo Adapter Plug Assembly	1
7	98821847	Hose Silicone 1.75" I.D. X 3.7"	2
8	98821849	Hose Silicone 2.25" I.D. X 3.7"	2

ITEM NO.	PART NO.	DESCRIPTION	QTY
9	98821852	Hose Silicone 2.75" I.D. X 3.7"	2
10	98821854	Hose Clamp Turn Key 64-89mm	2
11	98820992	Hose Clamp Turn Key 46-70 mm	2
12	471112	UV Enhancing Safety Glasses	1
13	98821848	Hose Silicone 2" I.D. X 3.7"	2
14	98821851	Hose Silicone 2.5" I.D. X 3.7"	2
15	98821853	Hose Silicone 3" I.D. X 3.7"	2
16	98027050	Battery AAA	12

Part # 500-0150NA - Cool Smoke HP without Turbo adapter set.
break down of included lights. Part # 200-0175

ITEM NO.	PART NO.	DESCRIPTION	QTY
1	98821846	Phazer White 5 W Light AAA	1
2	98006475	Black UV LED Light AAA S/A	1
3	471112	UV Enhancing Safety Glasses	2
4	98027050	Battery AAA	12

Appendix A: Troubleshooting and Additional Help

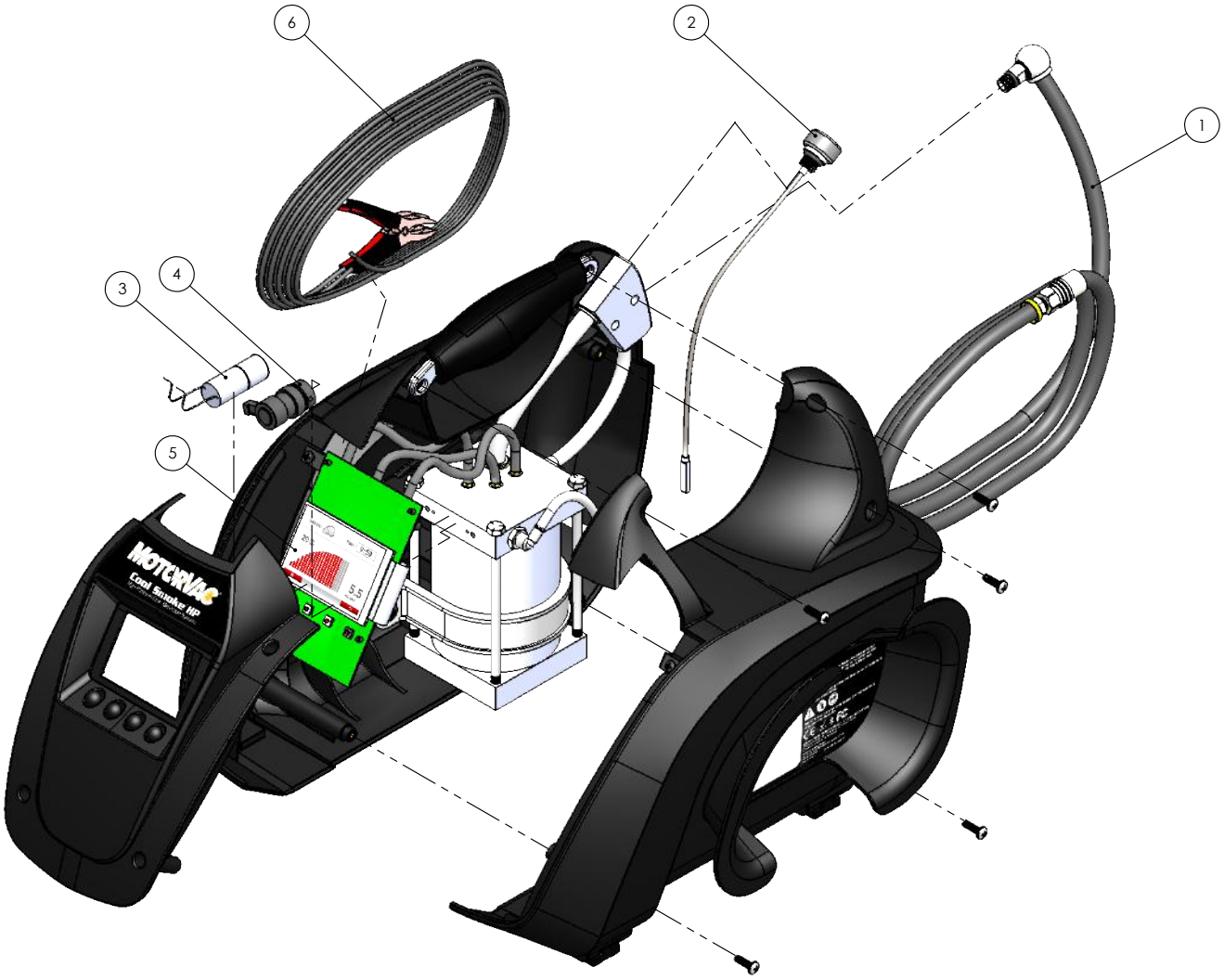
Refer to the list below in the unlikely event that you have any operating issues with your Cool Smoke® HP Diagnostic System.

Issue	Solution
Excess fluid exits output hose	The unit may have been overfilled with Cool Smoke fluid. Check fluid level with dipstick. If overfilled, remove the dipstick and allow fluid to pour out of the dipstick port into an appropriate container. Remove the smoke output hose and use compressed air to expel any fluid that is in the hose. Refill the tank. Use the dipstick to ensure proper fluid level. (From empty the tank capacity is 180ml)
Screen does not power on	Check connection with battery and check voltage (12-24 VDC)
No smoke output	Check fluid level with dipstick. Check compressed air supply.
Ouput pressure does not reach set pressure	If there is a large leak the unit may not be able to reach the set output pressure. Repair leak and re-test.
Machine Error	If the machine declares an internal error, call customer service for support.

For additional help you can contact our Technical support at 1-877-776-8486 or outside of North America +1-905615-8620 or e-mail info@motorvac.com.

Appendix B: Service Parts

Please refer to the part number below when ordering parts for the Cool Smoke® HP units. For Turbo kit accessories page 11.



ITEM NO.	PART NO.	DESCRIPTION	QTY
1	200-1801	Smoke Output Hose Cool Smoke HP	1
2	200-1802	Dipstick Cool Smoke HP	1
3	200-1803	Smoke Solenoid Cool Smoke HP	1
4	200-1804	Pressure Solenoid Cool Smoke HP	1
5	200-1805	PCB Cool Smoke HP	1
6	200-1806	Power Harness	1

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