

Installation Manual

PH1 POWERHALT
AIR INTAKE EMERGENCY SHUT-OFF VALVES by PACBRAKE



**PH1 AIR INTAKE EMERGENCY SHUT-OFF VALVE
PULL CABLE ACTUATION**

800.663.0096

www.powerhalt.com

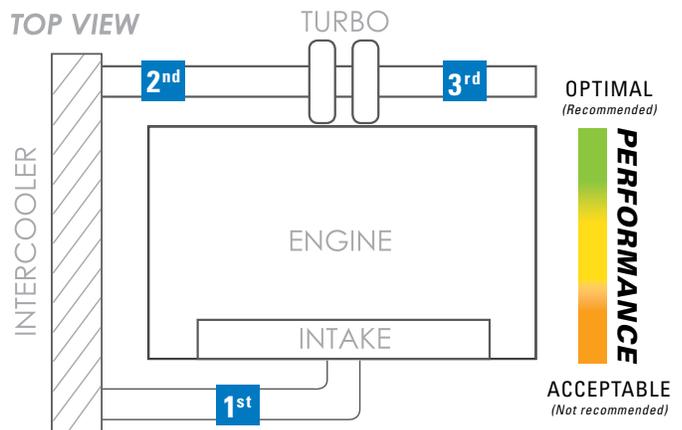
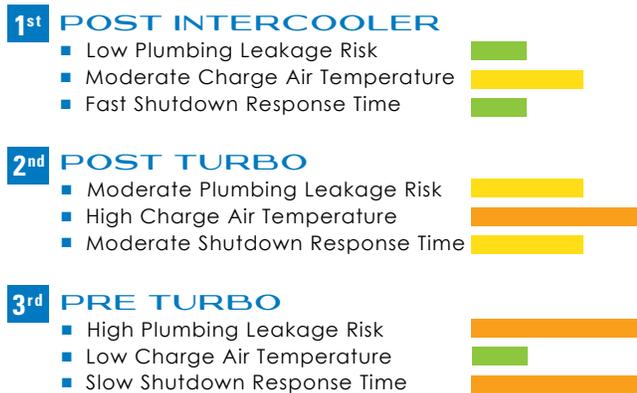


Thank you for your purchase of a PowerHalt Air Intake Emergency Shut-Off Valve by Pacbrake.

INSTALLATION REQUIREMENTS & RECOMMENDATIONS:

- A 1" [25.4 mm] clearance is required from the valve to any other components. The valve can be installed in any orientation.
 - NOTE:** • Attention to be paid to the air flow direction indicator. The air flow direction indicator can be found either on the label, or embedded on valve housing or both.
- Maximum ambient air temperature at the valve should not exceed 212°F [100°C]. On a turbo-charged engine, 'Option B' (see diagram below) should be the last option due to high temperatures. (For special applications only)
- All hoses, adapters, and fittings must be of reinforced type and suitable for the engine application.
- Flexible hose gaps should be kept to a minimum and the overall pipe quality and integrity from the shut-off valve to the intake manifold should be confirmed.
 - NOTE:** • Failure to ensure this may result in hose collapse during valve activation and possible system leaks, preventing engine shutdown
 - For applications with excessive vibration, and installations with long pipe runs, additional support brackets may be required.
- If an air intake flame trap is used, the valve must be installed upstream of the trap.
- If a crankcase breather connections is present in the intake system between the valve and engine (or in engine intake parts), the breather must be sealed or replaced by an external breather.
 - NOTE:** • Check manufacturer recommendation and applicable laws.
- If you need to cut the existing intake piping to allow for the shut-off valve installation, remove the pipe from the engine prior to cutting, and clean thoroughly to ensure no shavings are present.
 - NOTE:** • Failure to do so may result in engine damage caused by foreign debris ingesting into the engine.
- It is highly recommended that the pipe is rolled with a bead to ensure hose fitting retention on both the inlet and outlet sides of the shut-off valve.
 - NOTE:** • If no retention is present on the pipe, the connection between the valve and the pipe can get loose due to vibration and intake air pressure.
- If more than one shut-off valve is installed on one engine it is imperative that the control method is consistent with this requirement, ensuring valve activation is simultaneous for both valves.

In order of preferred location to least preferred



Please read the entire manual before beginning to ensure you can complete the installation once started.

Prior to the installation, please read through the requirements and recommendations listed on page 1, so you have a clear understanding of your system and the location you plan to install the shut-off valve.

If you cannot meet these requirements, or are unsure of your system, please contact your dealer or PowerHalt representative and we can work with you to overcome your installation constraints and challenges.

PowerHalt Service Representative can be reached Monday-Friday 6:00-4:30 (PST) at 800.663.0096

KIT CONTENTS

Please ensure that you have all the parts listed in this kit **before** you start the installation.



KIT CONTENTS

- A PowerHalt Shut-Off Valve
- B Pull Cable
- C Pull Cable Identification Plate
- D Silicon Hoses (x2)
- E Clamps (x4)
- F Coupling Sleeve

1 VALVE INSTALLATION

Disconnect the battery.

Note: It is recommended to disconnect the ground wire first.
If possible use a memory saver to avoid losing all the settings saved for electrical components.

2 Remove the engine panels or covers to gain access to the intake hose location where the shut-off valve will be installed.

3 Identify your installation location, taking into consideration the requirements and recommendations described in INSTALLATION REQUIREMENTS & RECOMMENDATIONS, (see page 1).

4 The PowerHalt valve may only be installed in one direction, please make note of the flow direction indicated by the flow arrow on the label of the valve's bracket, (see photos 4A & 4B).

5 Remove existing piping and make the necessary cuts or modifications to allow for the installation of the PowerHalt valve following the recommendation of this manual.

6 Install the modified piping and confirm the valve orientation, taking into consideration optimal routing of the pull cable. (See step 13).

7 Install both hoses provided in your kit based on your intake piping requirements.

NOTE: Ensure piping is cleaned and that the recommended rolled bead or other retention system for the hoses is in place prior to the installation.

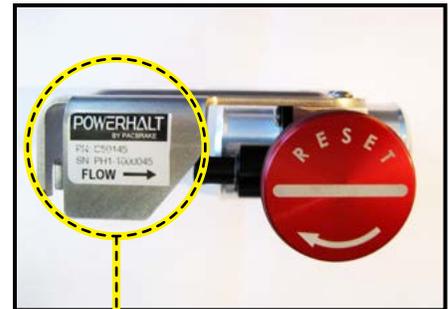
8 Loosely install the 4 clamps provided in your kit.

NOTE: 2 clamps go onto the intake hose upstream, and 2 clamps go on the intake hose downstream of the valve.

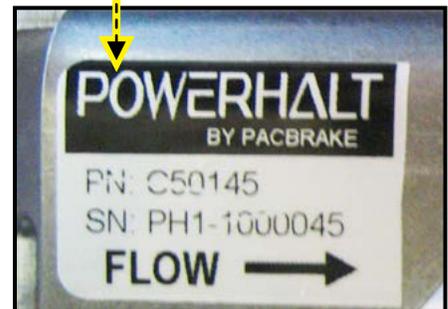
9 Install the valve, ensuring the hoses are correctly seated against the housing, (see photo 9A).

10 Rotate the valve to the desired orientation and adjust the band clamps to clear the housing.

Torque all 4 clamps to 45 in-lbf [5.1 N•m]



4A



4B



9A

11 PULL CABLE PARTS IDENTIFICATION

FIGURE A

- 1 T-Handle Bulk Head Fitting
- 2 M10 Nuts
- 3 M10 Flat Washers
- 4 M5 Nut
- 5 T-Handle

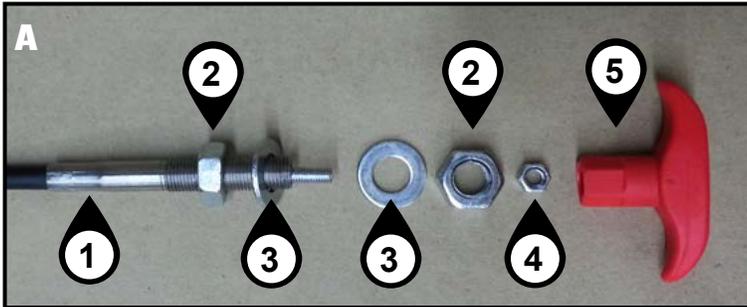


FIGURE B

- 1 Threaded end fitting
- 2 M8 Pretention adjusting nuts
- 3 M8 Flat washers
- 4 Cable Ball End

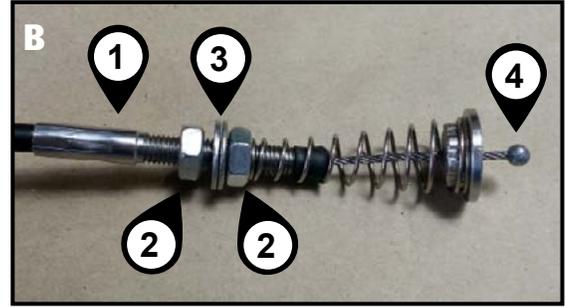


FIGURE C

- 1 T-Handle Bulk Head Fitting

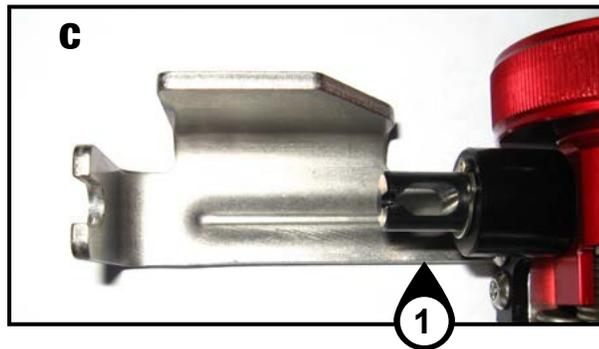
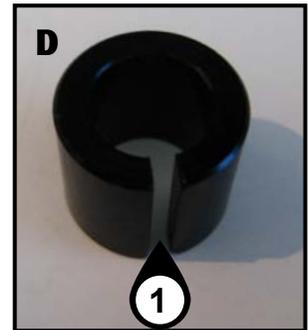


FIGURE D

- 1 Coupling Sleeve



12 PULL CABLE INSTALLATION

Locate a highly visible 5" x 5" [127 mm x 127 mm] flat area to install the pull cable activation station. Using the name plate as a template mark the center of the hole in the name plate and drill a 7/16" [11 mm] hole at this location.

NOTE: Ensure the pull cable station is close to the operating panel and is easy to access.

Pull handle locations should be as close to the operator location as possible - and easily accessible/visible to the operators and workers. The desired height of the pull handle should be no less than 2' [0.61 m] from the ground to ensure access.

Remove the T- handle, the M5 nut, one M10 nut and one M10 washer from the T- handle bulkhead fitting. Pass this bulkhead fitting end through the 7/16" [11 mm] hole.



12A

NOTE: For under the hood applications, both M10 nuts and washer can be removed to allow the cable to pass through the firewall. The use of a rubber grommet (not provided) is recommended to avoid the cable abrading the sharp edge of the firewall hole. One M10 nut and washer will have to be reinstalled on the cable end before the bulkhead fitting is attached on the pull cable activation station.

- 13** Run the pull cable to the valve location, ensuring the following:
- 1 The cable is securely fastened so that it is not exposed to any mechanical damage
 - 2 The cable is not contacting any hard surfaces which may lead to vibration wear
 - 3 The cable is not contacting any hot surfaces (exhaust manifold) which may lead to damage due to excessive heat
 - 3 The minimum cable radius should be no smaller than 4.0" [100 mm] (no sharp bends)
 - 4 Total degrees of all bends should not exceed 360°.

- 14** Insert the cable ball end into the activation pin. (See photo 14A)
Install the coupling sleeve over the activation pin; align the slot to allow the cable to pass through the coupling sleeve. (See photo 14B)

Rotate the cable 90° and insert the threaded end fitting into the slot on the attaching bracket, with one M10 nut and washer on either side of the bracket and at this point hand tighten the nuts to the bracket. (See photo 14C)

- 15** Adjust the threaded end fitting, M8 adjusting nut, with a two M14 wrenches to ensure the cable pretension is correct. Cable pretension is achieved when the T-handle M5 jam nut is slightly pulled against threaded end of the bulkhead fitting.

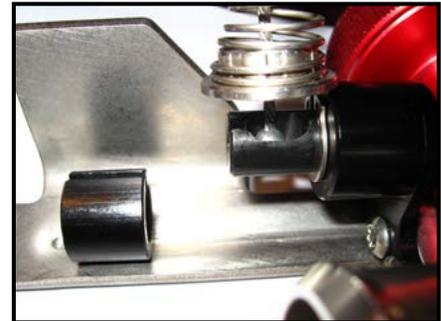
Make sure the cable disc is in contact with the coupling sleeve when the valve is in open position. (See photo 15A)

Torque adjusting nuts to 9 +/- 1 ft-lbs [12 +/- 2 N•m]

- 16** Torque M10 nuts from the T- handle bulkhead fitting to 9 +/- 1 ft-lbs [12 +/- 7 N•m]



12B



14A



14B



14C

- 17 Torque M5 nut and T-handle to 17 +/- 4 in-lbs [2.5 +/- 0.5 N•m]
- 18 Secure the pull cable with the provided tie straps, away from any moving parts or high heat sources.



15A

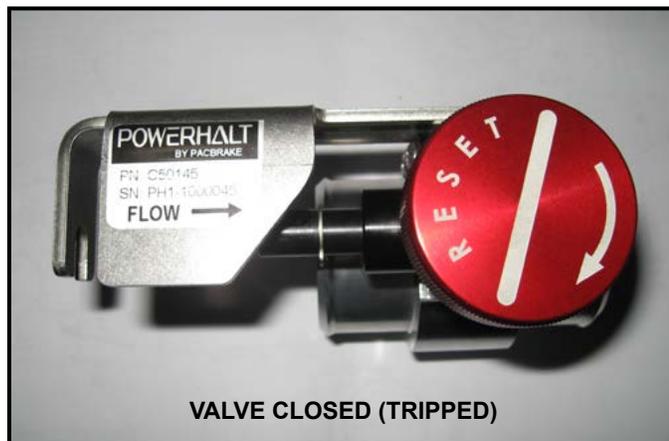
WINDOW DECAL

Install the window decal included in your kit to the lower corner of the inside of your windshield so that it is legible to those on the outside.

POST INSTALLATION TESTING OF YOUR POWERHALT SHUT-OFF VALVE

Once the installation is complete, ensuring all the steps, schematics and recommendations have been followed, it is time to test your system.

- 1 Without the engine running, pull the T-handle to activate the valve.
- 2 Check valve and confirm it has tripped. The reset knob should be in the tripped position. This will have the line direction on the reset knob facing approx. 90° from air flow direction. (See picture below).



- 3 Reset the valve by turning the red reset knob clockwise to the open (Run) position with knob line in parallel with air flow direction.
- 4 Start the engine and run at low RPM (preferably at idle).
- 5 Activate the PowerHalt shut-off valve by pulling the cable T-handle.
The engine should stop within a few seconds.
 - If the engine fails to shut down please check all intake piping and hoses for leaks between the valve and intake system.
 - If the system is leak-free and your valve still does not shut down the engine, please consult a PowerHalt Service Representative for support.
- 6 Once the engine stops reset the valve by turning the red reset knob clockwise to the open (Run) position with knob line parallel with air flow direction

VALVE OPERATION

Prior to running your system you must ensure that the valve is latched (clockwise) into its open (Run) position and that the above installation procedure was completed as described.

To carry out the emergency shutdown procedure, the pull cable T-handle must be pulled as this will shut the valve and stop the engine.

CAUTION: Do not attempt to restart the engine until the activation information/details are understood and the valve is confirmed to be returned back to the open "Run" position.

NOTE: Please refer to your specific operation procedures defined by your organization for additional operation specifics/details. If you require additional recommendations on the steps to operate your shut-off valve, please refer to PowerHalt's operation manual based on your application.

VALVE MAINTENANCE

To ensure a trouble-free long life of your PowerHalt shut-off valve, a scheduled maintenance procedure is mandatory. It is recommended that you follow the recommendations stated below:

MONTHLY REQUIREMENTS:

- Inspect all fasteners: clamps, nuts, and support brackets to ensure that they are tight and at the required torque
- Inspect cable to ensure there is no corrosion or vibration wear
- Check all hoses to ensure there is no cracking or damage

MONTHLY VALVE ACTIVATION

- Activate the valve monthly to ensure that it stays functional.

ACTIVATION PROCEDURE

- 1 Run engine at low RPM (preferably at idle).
- 2 Activate the PowerHalt shut-off valve by pulling the cable T-handle.
The engine should stop within a few seconds.

NOTE:

- If the engine fails to stop in few seconds please check all intake piping and hoses for leaks between the valve and intake system.
- If the intake system is leak free and the valve fail to shut down the engine, please consult PowerHalt's service representative for support

- 3 Once the engine stops reset the valve by turning the red reset knob clockwise to the open (Run) position with knob line parallel with air flow direction

CAUTION: The #1 failure mode of any valve in the market is seizing due to lack of use. As this is a safety device, it is imperative that you employ safety activation testing at a minimum of once per month.

PLEASE NOTE: Powerhalt valves and cables are non-serviceable parts. Any tampering with the valve or cables will void the warranty.



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