

# Installation Manual

**PH3 POWERHALT**  
AIR INTAKE EMERGENCY SHUT-OFF VALVES by PACBRAKE



**PH3 AIR INTAKE EMERGENCY SHUT-OFF VALVE**

PH3 MANUAL GENERIC (with Membrane Switch)

800.663.0096

[www.powerhalt.com](http://www.powerhalt.com)



**INSTALLATION REQUIREMENTS & RECOMMENDATIONS:**

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

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

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

- A 1" clearance is required from the valve to any other components. The valve can be in any orientation.
- Maximum ambient air temperature at the valve should not exceed 120°C.
- All hoses, adapters, and fittings must be suitable for the vibration\* of the engine application.

**\*If unsure of your vibration requirement, contact Pacbrake.**

- 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.**

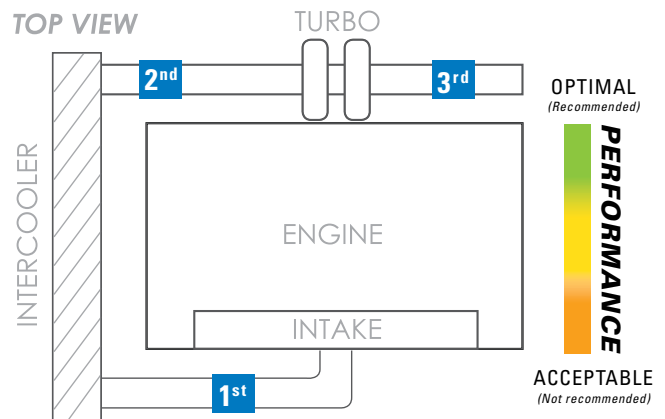
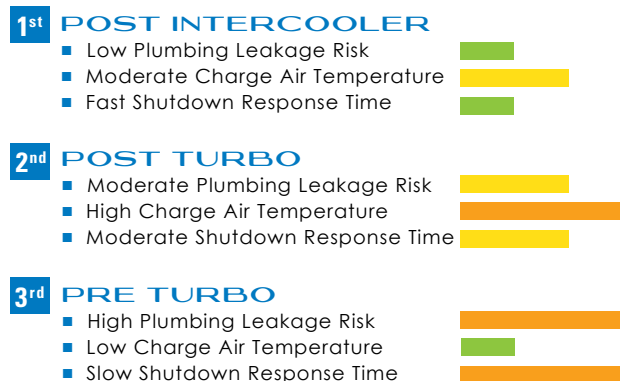
**For excessive vibration applications, and installations with long pipe runs, additional support brackets may be required.**

- If an air intake flame trap is used, the valve must be installed upstream of the trap.
- Crankcase breather connections to the intake system must be sealed and replaced by an external breather.
- If you need to cut the existing intake piping to allow for the shut-off valve installation, remove the pipe off of the engine and thoroughly clean it to ensure no shavings are present prior to the installation.

**NOTE: Failure to do so may result in engine damage caused by foreign debris ingesting into the engine.**

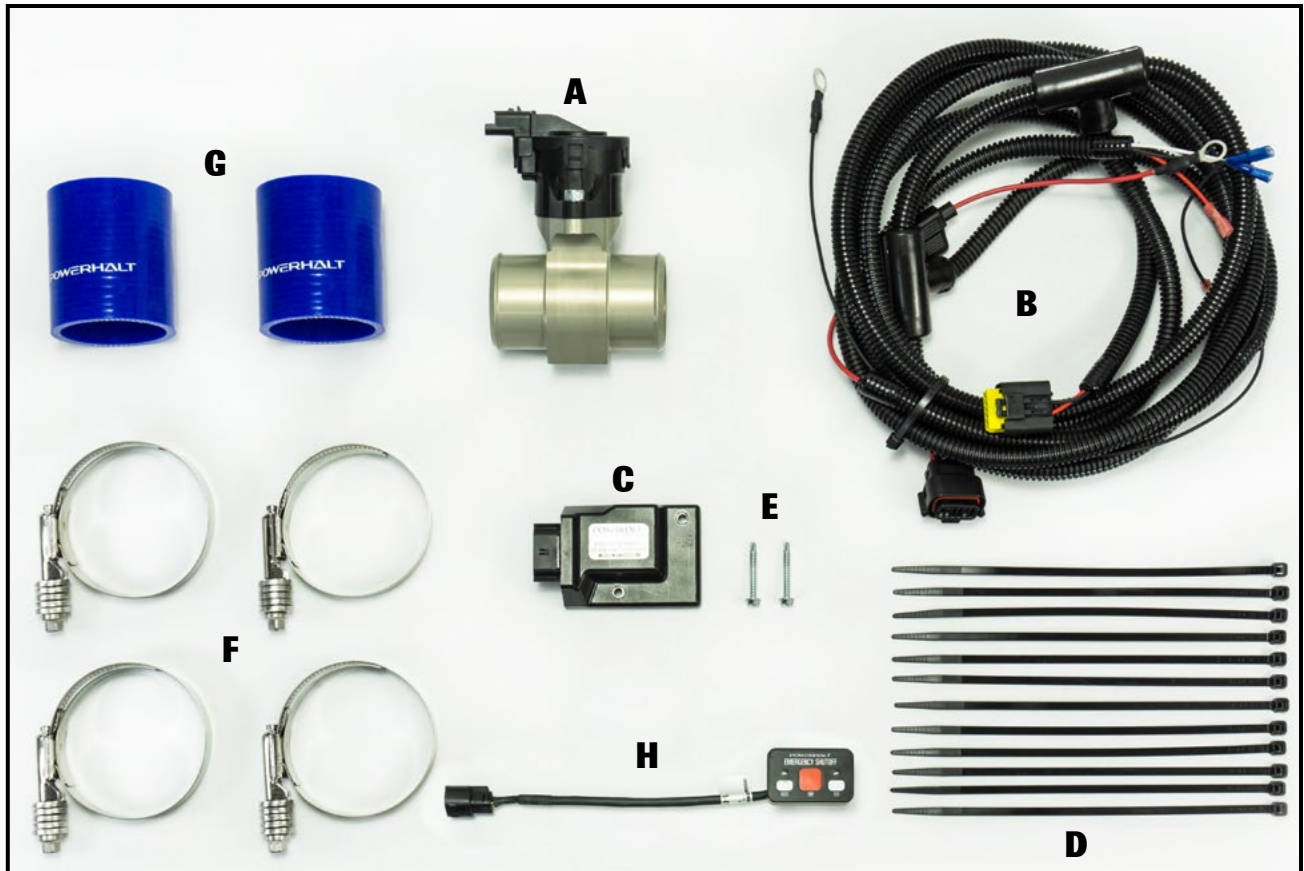
- It is highly recommended that the pipe is rolled with a bead to ensure hose fitting retention on both the inlet and outlet sides of the shut-off valve.
- If more than one shut-off valve is installed on one engine it is imperative that the control method is consistent with this requirement, ensuring valve activation is simultaneous for both valves.

*In order of preferred location to least preferred*



**KIT LAYOUT**

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

**KIT CONTENTS**

<b>A</b>	Air Intake Shut-Off Valve	(1)
<b>B</b>	Wiring Harness	(1)
<b>C</b>	PowerGuard Manual Controller	(1)
<b>D</b>	Tie Straps	(12)
<b>E</b>	Self-Tapping Screw	(2)
<b>F</b>	Clamps	(4)
<b>G</b>	Silicone Hose	(2)
<b>H</b>	Membrane Switch	(1)

**REQUIRED TOOLS**

- Drill
- 1 1/8" Unibit
- Ratchet with 1/4", 5/16", 3/8", 1/2", and 7/16" Sockets
- Socket extensions (14 mm is ideal)
- Side Cutters
- Sharp Utility Knife or Razor
- 1/8" Hex Allen Key

**OPTIONAL TOOLS**

- Fine Pick Tool/Precision electronics screwdriver (flat blade)
- Small Needle Nose Pliers

Thank you for your purchase of a PowerHalt Air Intake Emergency Shut-Off Valve by Pacbrake. Please read the entire manual before you begin to ensure that you can complete the installation once started.

**Should you have any issues during the installation, please call technical support at 800.663.0096.**

## 1 VALVE INSTALLATION:

- Taking into consideration our recommendation on valve placement on page 1, remove any covers and/or panels to access your chosen location
- With the PH3 valve held in the approximate location, confirm the clearance around the valve is adequate as per requirements
- **Install away from bends in engine piping.** Poor valve placement combined with extreme operating conditions can result in false trips. It is best practice to install in a straight section of hose or pipe that is NOT directly after a bend.

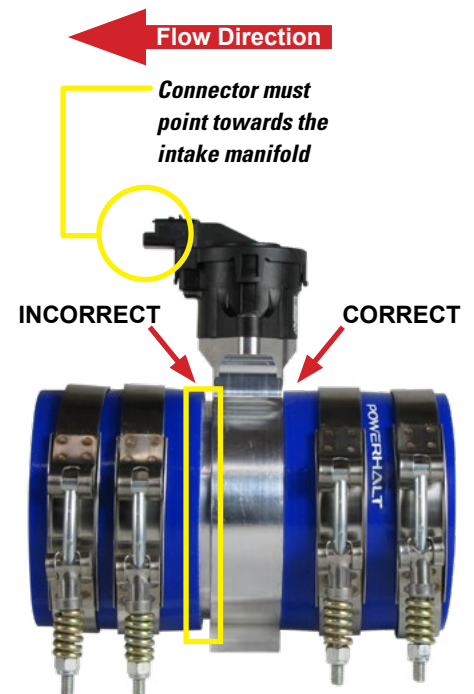
## 2 HOSE INSTALLATIONS (REUSING EXISTING RUBBER INTAKE HOSE)

**Note: The use of a different sized clamp may be required. Please contact Pacbrake at 800.663.0096 for more info.**

- 1 Attempt to choose a straight section of the hose and mark for a section to be cut for the valve install. A PH3 valve requires a 1.26" section of hose to be cut off.
- 2 Remove the hose and use appropriate tools to cut the hose as required.
- 3 Clean hoses of all debris.
- 4 Loosely install the supplied pre-tension clamps onto the hoses and install the PH3 valve into the hoses. The electrical connector of the PH3 valve motor **MUST** point towards the intake manifold of the engine when the assembly is reinstalled.
- 5 Install the assembly and torque the supplied pre-tension clamps to 70-80 in-lbs. (7.9-9 N•m).

## HOSE INSTALLATIONS (NEW SILICONE INTAKE HOSES)

- 1 Remove the existing intake hose.
- 2 Loosely install the supplied pre-tension clamps onto the new silicone hoses and install the PH3 valve into the hoses, the electrical connector of the PH3 valve motor **MUST** point towards the intake manifold of the engine when the assembly is reinstalled.
- 3 Install the assembly and torque the supplied pre-tension clamps to 70-80 in-lbs. (7.9-9 N•m).



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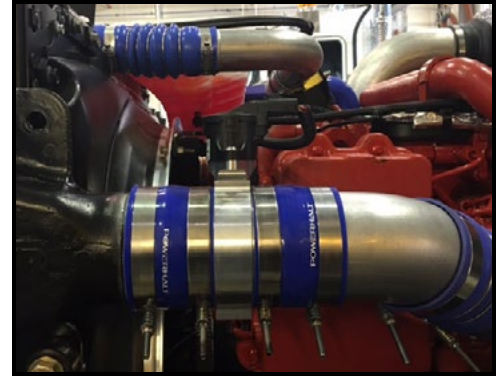
### 3 PIPE INSTALLATIONS (REUSING EXISTING METAL INTAKE PIPE)

**Note:** For pipe installations, the PH3 valve requires a 3.75" section of pipe to be removed to allow for the valve install and adequate pipe to valve clearance.

- 1 Remove the existing piping from the engine before cutting.
- 2 Use the appropriate tools to cut the pipe as required.

**NOTE:** Pipe ends should be beaded as per installation requirements and recommendations.

- 3 De-burr and clean the debris from the pipes.
- 4 Install shortened pipes back onto the engine.
- 5 Loosely install the supplied pre-tension clamps onto the new silicone hoses and install the PH3 valve into the hoses, the electrical connector of the PH3 valve motor **MUST** point towards the intake manifold of the engine when the assembly is reinstalled.
- 6 Install the assembly and torque the supplied pre-tension clamps to 70-80 in-lbs. (7.9-9 N•m).



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### 4 CONTROLLER & HARNESS INSTALLATION

- 1 Using the self-tapping screw, install the controller unit on a flat surface in a desired location.

**Note:** Controller can be installed in either the vehicle cabin or the engine bay.

- 2 Layout the wiring harness starting at the controller unit.
- 3 Plug in the main connector at the controller.
- 4 Route the shut off valve connection to the valve motor.
- 5 Route the switching control connection to the desired location.
- 6 Connect power lead (red wire) to positive terminal of battery.
- 7 Connect the ground lead (black wire) to the chassis ground or the negative terminal of battery.
- 8 Secure wiring with tie straps as needed – ensure that wiring is not stretched or pinched.
- 9 Inside the cabin, locate the desired location for the activation control while taking into the considerations below:
  - The shut-off switch must be accessible from the ground outside of the driver's door. Ideally the switch should be to the window side of the steering column.
  - A flat 2" x 4" location that is accessible from the backside of the panel is required.
  - Panel thickness and construction must be accounted for – please consult the maximum panel mounting thickness in product data sheet.

**CAUTION:**

**Ensure that existing vehicle wiring and other components will not interfere prior to drilling.**

**WARNING! DO NOT MODIFY HARNESS**

Doing so may compromise the integrity and reliability of the system.

## 5 SWITCH INSTALLATION

Use the Layout Template provided and cut out and mark drill locations for the switch to ensure accuracy.

**CAUTION: Ensure control wiring is moved so it is not damaged during drilling**

- Drill a 1 1/8" hole for the wire connector and drill two 1/4" holes for fasteners (as per template layout)
- De-burr holes
- Install the switch to the panel location with the supplied hardware
- Torque the nuts on the backside of the panel of both bolts to 15-25 in-lbf (1.7-2.8) N•m.

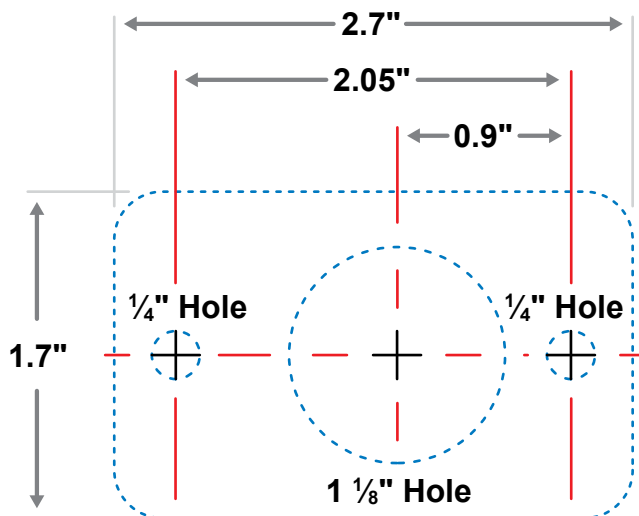
**CAUTION: Do not over-torque nuts.**

**NOTE: When printing out the drill template for use, ensure that the image is not being stretched or scaled. Open the print dialogue box and select print at 100% scale or select no scaling.**



5A

### PH3 DRILL TEMPLATE





## 6 SYSTEM OPERATION

### POWERGUARD MANUAL CONTROLLER FUNCTION STATES

**STATE 1 – Valve held closed:** Red panel indicator light is lit and the shut-off valve is closed, blocking the air flow path of the engine.

**STATE 2 – Valve open:** Red panel indicator light is off and air flow path is not blocked by the shut off valve into the engine. System is at idle state and is awaiting input from toggle switch to actuate valve.

**Note:** *While the system is in State 1 where the valve is held closed, actuating the toggle switch again will reset the countdown reset time for valve to return to idle state. The valve will remain held closed until the countdown reset time has been reached (15 seconds).*

## 7 POST INSTALLATION TESTING OF YOUR POWERHALT SHUT-OFF VALVE

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

- 1 Actuate the toggle switch while engine is off by disengaging the toggle cover and pushing the lever upwards.
- 2 Confirm that the red indicator light is on to show that the valve is held closed.
- 3 Wait until red indicator light is off for system to return to idle state.
- 4 Start the engine and run at low RPM (preferably at engine idle RPM).
- 5 Activate the shut off valve again and confirm that the engine has stopped running within a short amount of time.
  - If the engine does not shut down in the specified time, 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 engine has stopped, wait until the red light turns off and system to return to idle state.

## 8 VALVE OPERATION

Prior to running the system, please ensure that the above installation procedure was completed as described. To carry out the emergency shutdown procedure, disengage the toggle cover and actuate the toggle switch upwards.

**CAUTION: No attempt to restart the engine should happen until the panel indicator light is off and valve is confirmed to have returned to its normally open position. Should an emergency stop be required to perform due to an over speed condition, do not attempt to start the engine until it is understood and shared with the necessary safety parties.**

**NOTE: Please reference your organization's specific operation procedures and ensure they are in line with the PowerHalt operating instructions and requirements. If there is a discrepancy, always follow the site requirements first.**

## 9 VALVE MAINTENANCE

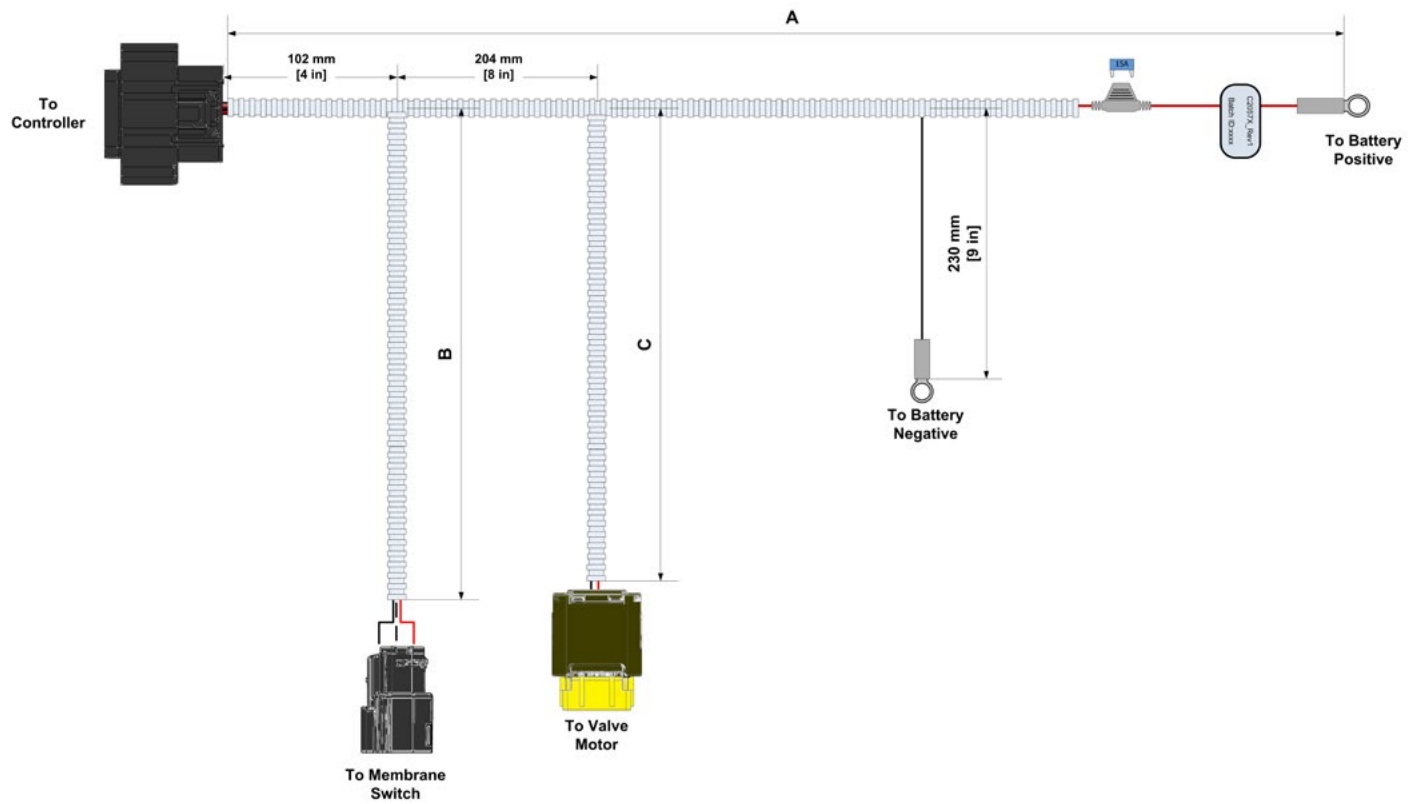
As the PH3 is a maintenance free and self-resetting valve, it does not require any specific operator involvement. However, if the unit is stored for extended periods or have been running for extended periods without pause, it is imperative that a periodic inspection or test is performed to ensure the full integrity of the system.

## 10 MONTHLY INSPECTION REQUIREMENTS

- Inspect all fasteners and clamps to ensure proper torque.
- Inspect all hoses and pipes for signs of wear or vibration related issues.
- Inspect all wiring connections and routing to ensure correct strapping and free of chafing/pinching.



**WIRING SCHEMATIC**



**CUSTOMER SERVICE HOURS**

MONDAY TO FRIDAY FROM 6:00 AM TO 4:30 PM PST

**BUSINESS HOURS OF OPERATION**

MONDAY TO FRIDAY FROM 7:30 AM TO 4:00 PM PST

**CORPORATE HEADQUARTERS / R&D CENTER**

19594 96TH AVENUE  
SURREY, BRITISH COLUMBIA



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QMI-SAI Global