

Installation Manual

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



L6325 • ECN 1-1981

800.663.0096

www.powerhalt.com



ATTENTION

Prior to installation, read through all system requirements.

If you cannot meet certain 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

CAUTION

Failure to comply with these instructions may result in PRODUCT DAMAGE:

- Maximum ambient air temperature at valve should not exceed 120°C.
- Install valve upstream of air intake flame trap, if present.
- All hoses, adapters, and fittings must be suitable for vibration of engine application.

CAUTION

Failure to comply with these instructions may result in ENGINE DAMAGE:

- Confirm overall pipe quality and integrity. Use additional support brackets for long pipe runs and/or excessive vibration applications.
- Flexible hose gaps should be kept to a minimum to avoid hose collapse during valve activation.
- Clear intake plumbing of any shavings and/or debris prior to installation.

CAUTION

Failure to comply with these instructions may result in SYSTEM FAILURE – FALSE TRIPS AND/OR IMPROPER FUNCTION:

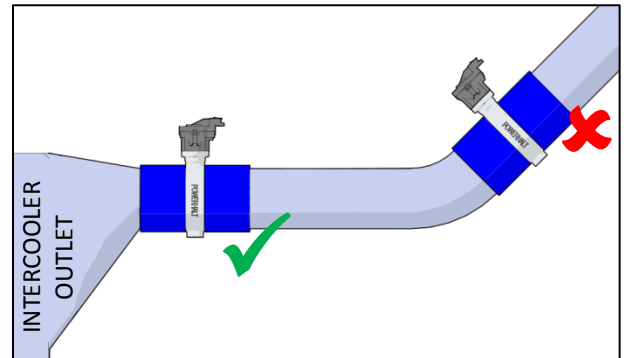
- Install away from bends in engine piping. Poor valve placement combined with extreme operating conditions can result in false trips.
- Do NOT operate engine with any harness connections disconnected. Doing so could cause system components to fail under extreme operating conditions.
- Ensure all intake plumbing gaps are kept to a minimum to avoid system leaks preventing engine shutdown.
- Crankcase breather connections to intake system must be sealed and replaced with external breather.
- If more than one shut-off valve is installed ensure valve activation is simultaneous for all valves.

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

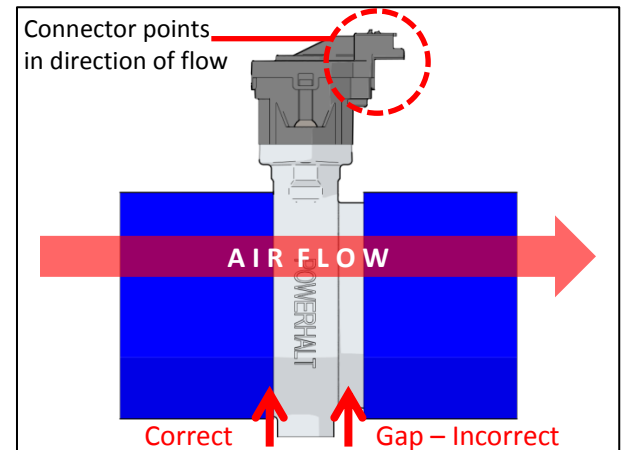
Should you have any issues during installation, please call technical support at 800.663.0096.

1 Valve Installation

- Select a location to install the valve post intercooler. Mounting directly next to outlet of intercooler as shown in FIGURE 1-A is recommended.
- ⚠ Install away from bends in engine piping. Areas of laminar flow at end of straight pipe sections are preferred.
- Ensure 1" clearance from valve to surrounding components. Valve can be rotated as long as it is correctly oriented with respect to air flow.
- Remove appropriate length from intake plumbing to allow for installation of valve. Clear intake plumbing of all shavings and debris.
- If applicable, use beaded pipe to ensure hose retention. See Page 6 for more information on optional PowerHalt Bead Ring Kit.
- Correctly orient valve to flow of air as shown in FIGURE 1-B.
- Fully seat hoses onto valve as shown in FIGURE 1-B.
- ⚠ If modifying factory engine hose, ensure air path is clear of any interfering wires or protrusions.
- Torque provided clamps to $8.5 \pm 0.6 \text{ Nm}$ [$75 \pm 5 \text{ in-lbf}$].



1-A



1-B

2 Speed Sensor Installation

Follow relevant step below depending on your sensor.

2.1 Threaded Gear Tooth Sensor

⚠ Use bottoming tap to clean port threads.

To install sensor, thread sensor into sensor port on bell housing until it contacts flywheel teeth and back off ½ turn. Tighten jam nut securely as per TABLE 2 A.

CAUTION: Sensor port must be centered over flywheel teeth as shown in FIGURE 2-B. Contact PowerHalt Representative if sensor port is offset.

For DD 13/15/16 Engines (C50223A Kits) without sensor port:

1. Replace stock engine flywheel access cover plate with Mag Adapter Plate to create sensor port.

For all other engines without sensor port:

1. Find suitable location on bell housing for mounting gear tooth sensor.
2. Drill and tap as required based on sensor thread.

2.2 Push-In Gear Tooth Sensor

To install sensor, remove stock fastener and cover plate. Insert provided sensor into port. Re-install stock fastener and torque to factory specifications.

2.3 R- or W- Terminal Harness

Allows system to sense speed from engine alternator if using gear tooth sensor is not possible or desired. Ensure alternator has R- or W- Terminal and is compatible with harness prior to ordering. Harness is included with and compatible with certain kits only – **must** have C20552 controller.

To install harness, follow provided wiring schematic.

⚠ Ensure harness is grounded directly at battery.

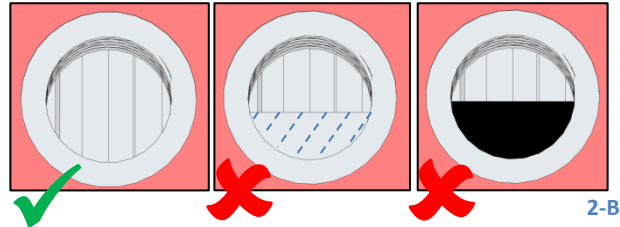
2.4 Jumper Harness

Allows system to use factory installed gear tooth sensor to sense speed. Harness is included with and compatible with certain kits and certain engines only.

To install harness, locate factory gear tooth sensor and follow provided wiring schematic.

2-A

Sensor Thread	Installation Torque
3/8 – 24	5.1 ± 0.3 Nm [45 ± 3 in-lbf]
5/8 – 18	25.8 ± 1.4 Nm [19 ± 1 ft-lbf]
3/4 – 16	81.3 ± 2.7 Nm [60 ± 2 ft-lbf]

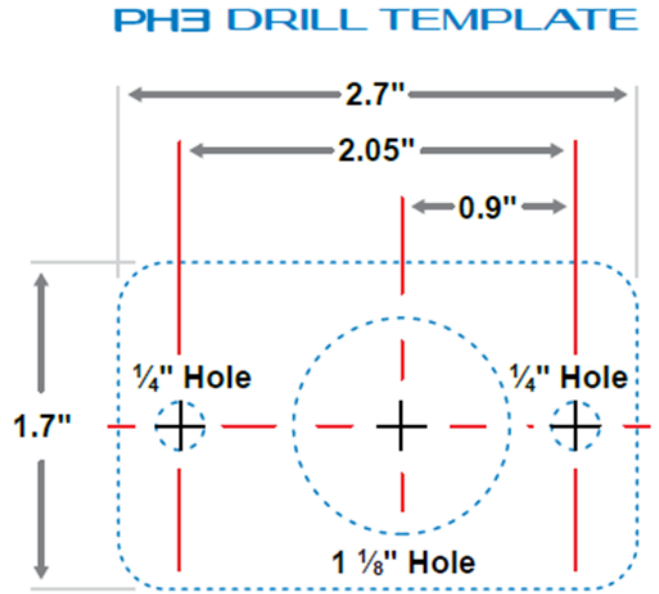


2-B

3 Switch Installation

Read requirements below and find suitable location on vehicle dash or engine control panel to install provided switch.

- For Vehicle Applications, switch must be on dash and accessible from ground outside of driver's door.
- Mount switch away from locations exposed to high pressure water and excessive UV exposure.
- Use provided Drill Template to drill holes.
- ⚠ Do NOT remove pins from connector to pass through small sized holes.
- Torque nuts to 2.2 ± 0.6 Nm [20 ± 5 in-lbf].

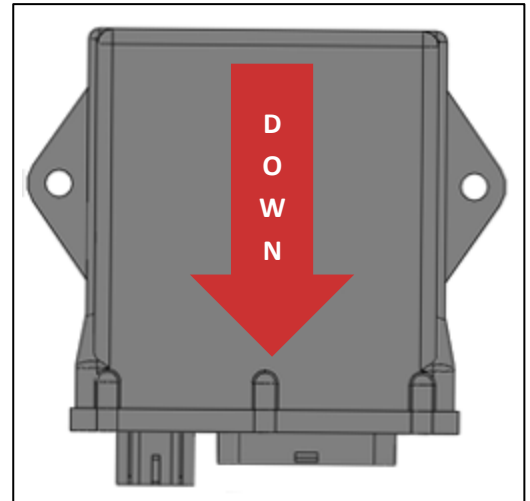


NOTE: Ensure image is not stretched or scaled when printing. Open print dialog box and select 'Print at 100% Scale' or 'No Scaling.'

4 Controller Installation

Read requirements below and find suitable location for PowerGuard Controller. Mount using self-tapping screws or provided tie straps.

- ⚠ Mount controller within vehicle cab underneath dash or within control panel of stationary engines.
- ⚠ Do NOT mount directly on engine, vehicle frame, or other vibrating components.
- Mount controller away from locations exposed to high pressure water or steam during engine cleaning.
- Mount controller away from locations exposed to ambient temperatures above 80°C.
- Mount controller with connectors exiting from bottom to prevent ingress of standing water.



4-A

5 Wiring Harness

Read requirements below and follow wiring schematic on following page to make all electrical connections.

- Securely latch all connectors. Do NOT disconnect connectors once latched.
- Allow adequate slack in wiring harness near connections to prevent vibrating components from straining wires.
- ⚠ Do NOT remove pins from connectors to pass through small sized holes.
- Secure wiring harness away from moving parts or high heat sources with provided tie straps.
- ⚠ Ensure power is drawn directly from battery.

5.1 Secondary Set-Point [Optional]

System can force engine shutdown at 2 different engine speeds. Secondary set-point can be used for protection of auxiliary equipment powered by Power Take-Off (PTO) system or as anti-theft mechanism when set near idle speed.

To activate Secondary Set-Point, ground Purple Wire. This can be done via existing PTO activation device or via latching switch (not provided). See wiring schematic for more detail.

6 Optional Accessories

Contact PowerHalt Representative to purchase optional accessories below.

6.1 Auxiliary Input Jumper Harness

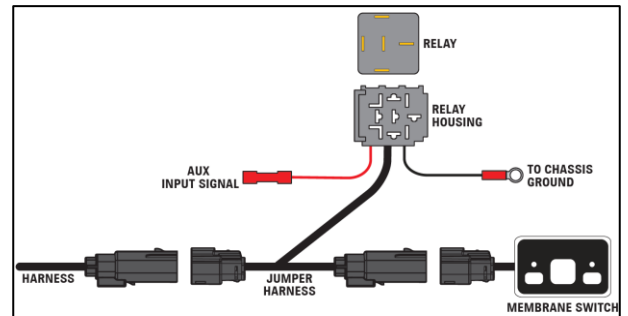
Expands standard wiring harness to allow external trip signal to actuate shut-off valve in emergency situation. Available in 12 and 24 VDC varieties.

To install harness, follow wiring schematic in FIGURE 6-A. Depending on system, ensure Aux Input Signal is capable of supplying 0.3 A @ 12 VDC or 0.48 A @ 24 VDC.

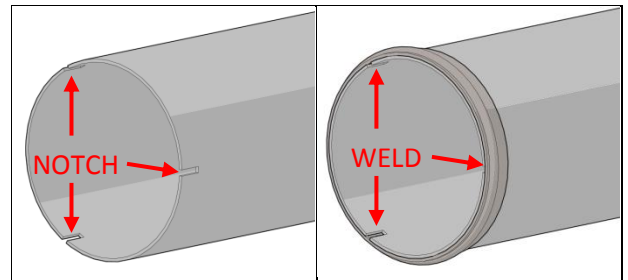
6.2 Bead Ring Kit

Creates beaded end on modified engine piping to ensure silicone hoses remain seated.

To install bead ring, notch ends of cut pipe in 3 equal places, attach machined bead ring to pipe, and tack weld at notches as shown in FIGURE 6-B.

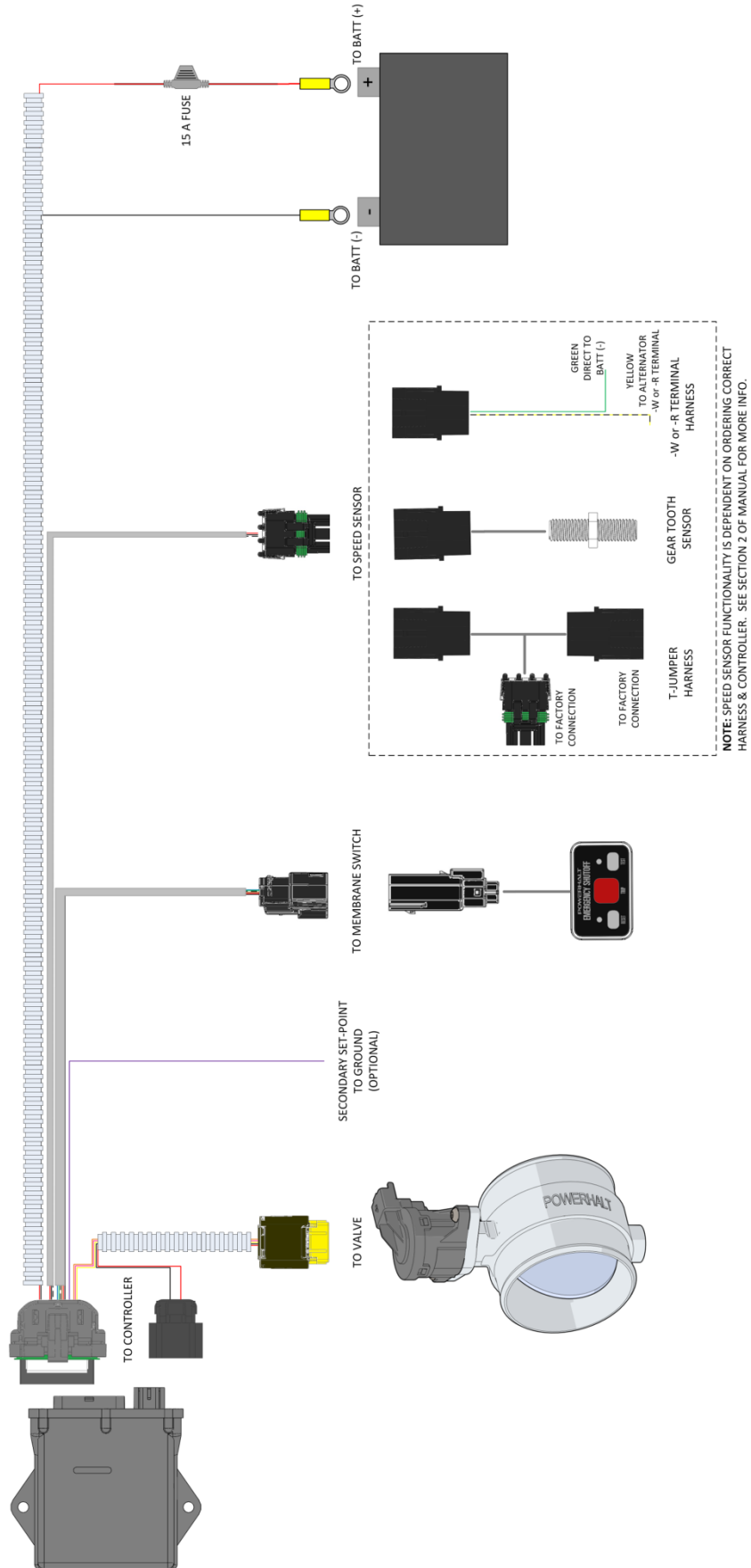


6-A



6-B

Wiring Schematic



7 Post Installation

Once installation is complete, ensure all steps, schematics, and requirements have been followed.

Refer to PowerGuard Programming Manual (L6452) for procedure on programming and testing system’s automatic shutoff function.



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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