Installation Manual

PH2 POWERHALT
AIR INTAKE EMERGENCY SHUT-OFF VALVE

C50232A AIR INTAKE SHUT-OFF VALVE

4" C300 D6R CUMMINS POWER GENERATOR

800.663.0096

www.powerhalt.com

L6337_REV3.17.04.2018
ECN 1-1859

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

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 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.

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 air temperature at the valve should not exceed 120°C. On a turbo-charged engine, 'Option B' (see diagram below) should be the last option due to high temperatures.
- All hoses, adapters, and fittings must be suitable for the vibration of the engine application, and of reinforced type. *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 in the intake system between the valve and engine (or in engine intake parts) 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, please make sure to cut the pipe off of the engine and that it is cleaned thoroughly to ensure no shavings are present.

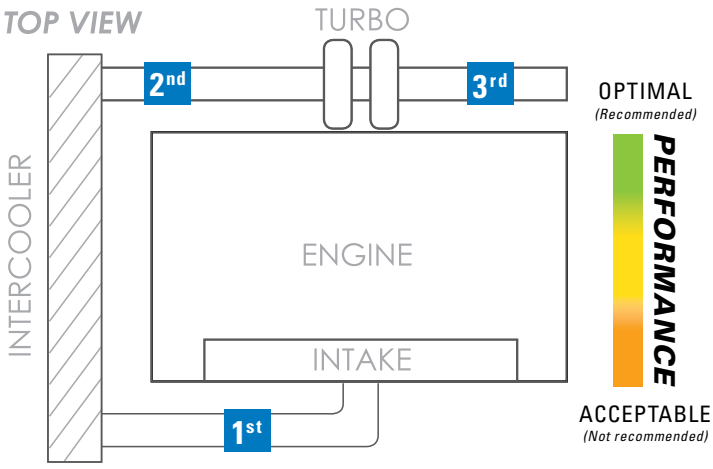
  NOTE: Failure to do so may result in engine damage caused by foreign debris ingesting into the engine.
- It is highly recommended that the pipe is rolled with a bead to ensure hose fitting retention on both the inlet and outlet sides of the shut-off valve.
- **If more than one shut-off valve is installed 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

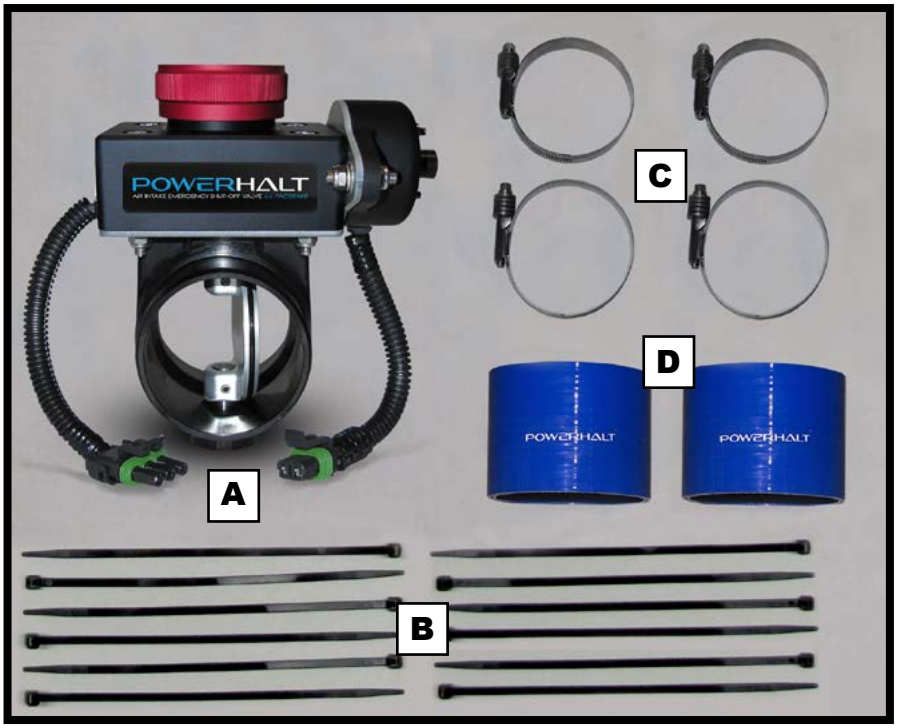
1st POST INTERCOOLER
- Low Plumbing Leakage Risk
- Moderate Charge Air Temperature
- Fast Shutdown Response Time

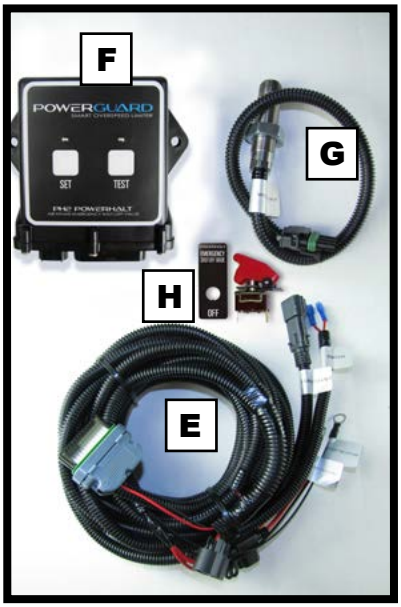
2nd POST TURBO
- Moderate Plumbing Leakage Risk
- High Charge Air Temperature
- Moderate Shutdown Response Time

3rd PRE TURBO
- High Plumbing Leakage Risk
- Low Charge Air Temperature
- Slow Shutdown Response Time



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





KIT CONTENTS

- **A** **C50071** – PH2 4" Shut-Off Valve with Micro Switch (1)
- **B** **C3877** – Tie Straps (12)
- **C** **C3792** – 4" Pre-Tension Clamps (4)
- **D** **C20549** – 4" Silicone Hose (2)
- **E** **C20550** – Wiring Harness (1)
- **F** **C20552** – PH2 PowerGuard Controller (1)
- **G** **C50033** – ⅝" Mag Pick-up (1)
- **H** **C3716, C3816, C3717** – Override Switch (1)

REQUIRED TOOLS

- Drill
- ½" Unibit
- Ratchet with 7/16" and 10 mm Deep Sockets
- Wire Strippers & Crimpers
- Torque Wrench

1

VALVE INSTALLATION

1 Open the access panel of the generator cabinet.

2 Loosen the stock clamps on both sides of the Charge Air Cooler (CAC) hose attaching the cooler to the intake horn.

Remove the CAC hose at the intake horn.

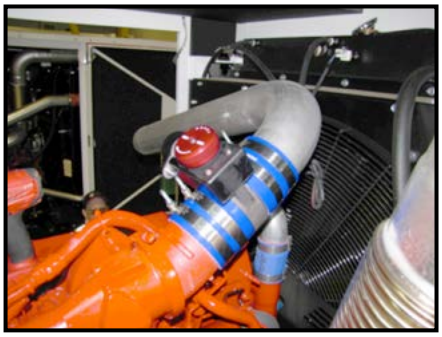
2

3 Install two of the provided 4" silicone hoses onto the PowerHalt valve, along with 4 clamps provided in the kit (keep the clamps loose so that the hose / valve assembly can be repositioned if necessary)

4 Install the assembly between the CAC outlet pipe and the intake horn.

NOTE: *The flow direction arrow is shown on the body of the valve, on the opposite side of the electric solenoid actuator and must point towards the intake.*

Rotate the valve to obtain the required clearance around the valve, torque the supplied clamps to 70-80 in-lbs (7.9-9 N•m). Torque the factory clamps to factory specification.



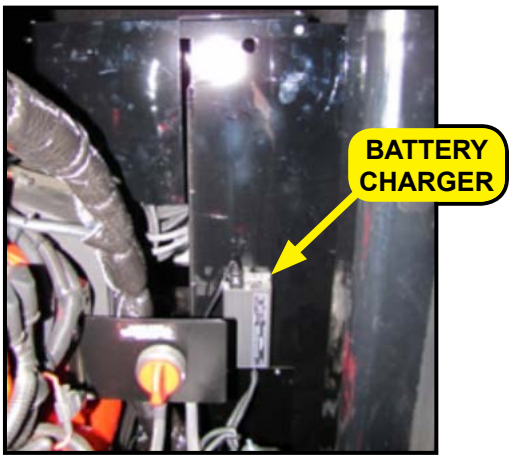
4

POWERGUARD CONTROLLER INSTALLATION

5 Use self-tapping screws (not provided) to secure the PowerGuard controller to the left hand side lifting frame, just above the battery charger (see photo 5A and 5B). Ensure the PowerGuard controller is accessible as it will need to be used for the test procedure.

Connect the two connectors of the wiring harness to the PowerGuard controller.

Route all harness legs down and towards the bell housing, connections will be made in steps 6-11.



5A

5B

6 Install the provided magnetic sensor (Mag) in to the existing ⅝-20" threaded boss on the bell housing of the engine. (Located on the left hand side, top of the bell housing. Thread the sensor in until it makes contact with the ring gear. Once this happens back off a ½ turn. Use hand tap to clean port threads if necessary. Tighten the jam nut to 18 +/- 2 ft-lbs

6

7 Route the Mag sensor wiring to the Mag Location on your engine and connect the weather-pack connector.

8 Route the harness leg with 2 connectors (one 2 pin metri-pack and one 3 pin weather-pack) along with the power/ground leg of the harness, over the bell housing, and forward to the PowerHalt valve. Connect each metri-pack and weather pack connector to mating connector on the valve.

NOTE: *Power and ground will get connected in step 12.*

9 Route the harness leg with 4 wires, RED and RED with WHITE trace (14 Awg) and RED and BLACK (20 Awg) over the bell housing and into the control panel. RED and RED with WHITE trace are to be connected to the PowerHalt override shutdown switch.

The RED and BLACK wires are for the valve activation signal, these wires, as per schematic, will be closed once the valve is tripped through the micro switch. (It is recommended that these be connected to the control panel indicator at this time).

Note: *Secure the wiring harness with the provided tie straps away from any moving parts or high heat sources.*

10

SWITCH INSTALLATION

10 Locate a convenient location on the control panel (see photo 10) to install the PowerHalt shutdown switch. Drill a ½" hole for the switch to be installed.

11 Install the toggle switch through the backside of the control panel and then remove the name plate cover film and install the nameplate, switch cover, washer, and nut (see photo 11). Tighten the nut firmly.

Using the supplied blue spade connectors crimp on to the RED and RED with WHITE trace wires, connect each wire to the PowerHalt shutdown switch.

11


12

POWER INSTALLATION

12 Route the harness leg with the 15 AMP fuse and ground wire to the starter, connect to the power and ground lugs.

Note: *Secure the wiring harness with the provided tie straps away from any moving parts or high heat sources.*

SET-UP

Kit C50232A comes pre-programmed to Cummins specification at a 20% over speed trip point.
This is 2160 RPM based on a 1800 RPM. No set-up is required for this kit.

OPERATIONAL NOTES

- During normal operation, “auto” mode, the “TEST” LED will flash every 5 seconds indicating that the mag sensor is reading the RPM.
- The “TEST” button has a green LED inside.

TEST FEATURES

- To show the functionality of the PowerGuard controller’s automatic shutdown feature a test feature has been incorporated
- With the engine running, the test button must be held for at least 3 seconds then released. The controller will trigger the PowerHalt valve to shut down the generator.
- The test feature reduces the automatic shut down set point to 1710 RPM (1800-5%).

POST INSTALLATION TESTING OF YOUR POWERHALT SHUT-OFF VALVE

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

1. Activate the manual switch (no engine running).

NOTE: DO NOT ACTIVATE THE MANUAL SWITCH FOR MORE THAN 10 SECONDS. Damage to the solenoid may occur

2. View valve and confirm valve has tripped. The reset knob should be in the tripped position. This will have the line direction on the reset knob facing 90° from the air flow direction.
3. Reset the valve.
4. Start the engine and run.
5. Activate the PowerHalt shut-off valve by pushing the test button on the PowerGuard controller for at least 3 seconds. The engine should stop within a few seconds.
   - If the engine does not shutdown 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 shutdown the engine, please consult a PowerHalt Service Representative for support.
6. Once the engine stops, wait 30 seconds, then reset the valve by turning the red reset knob clockwise to the open “Run” position with knob line in line with the air flow direction.

VALVE OPERATION

Prior to running your system you must ensure that the valve is latched (clockwise) into its open position and that the above installation procedure was completed as described. It is recommended that the engine be shipped with the shut-off valve system in its active/open and ready-to-use state.

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

CAUTION: *No attempt to restart the engine should happen until the activation information/details are understood and the valve is confirmed to be returned back to the open "Run" position.*

NOTE: *Please reference 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 reference 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 requirements & procedures stated below:

MONTHLY REQUIREMENTS

- Inspect all clamps, pull cables and support brackets to ensure they are in good condition and to the required torque.
- Inspect all wiring & cable runs to ensure there is no corrosion or wear.
- Inspect all hoses to ensure there are no cracks or damage.
- Activate the valve to ensure it is exercised.
  See procedure below.

3 MONTH REQUIREMENT *(or at oil change interval's whichever comes first)*

- Lubricate the PH2, flap O-ring, with Parker® Super O-Lube, Part # SLUBE 884-2, or equivalent.

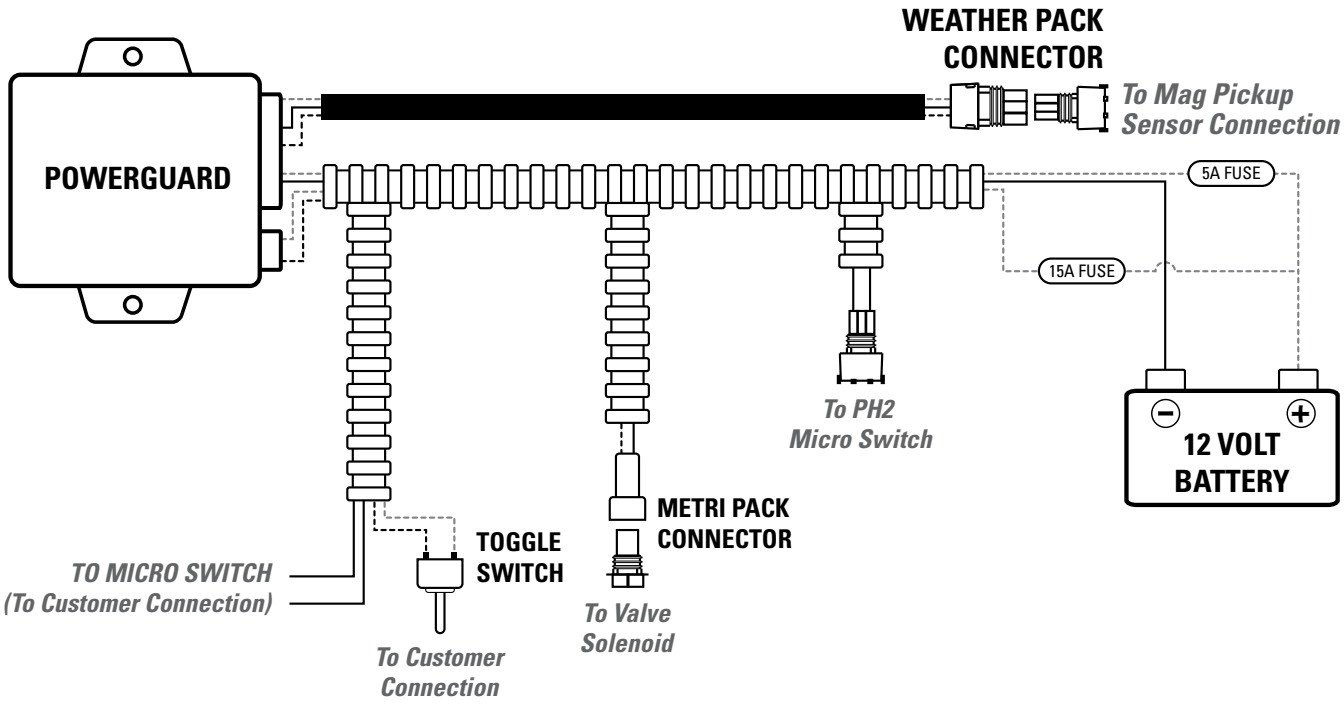
VALVE ACTIVATION PROCEDURE:

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

   NOTE:
   - *If the engine does not shutdown in the specified time, please check all intake piping and hoses for leaks between the valve and the intake system.*
   - *If the system is leak free and your valve still does not shut down the engine, please consult PowerHalt's service representative for support.*
3. Once the engine stops, wait 30 seconds, then reset the valve by turning the red reset knob clockwise to the open "Run" position with knob arrow in line 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.

WIRING DIAGRAM



PACBRAKE

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

Certified System ISO 9001 QMI-SAI Global

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