

Troubleshooting Guide

PH5 **POWERHALT**
AIR INTAKE EMERGENCY SHUT-OFF VALVE



PLEASE NOTE:

Store this document in your vehicle glove box or with your important engine documents for future reference.

L6456 • ECN 1-1941

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www.powerhalt.com



IMPORTANT: Prior to proceeding:

- Ensure all wiring harness connections are securely connected to their mates.
- Inspect all wiring for signs of damage or wear that could cause electrical shorts or discontinuities.

WARNING:

- **Do NOT cycle power until instructed to do so. In certain cases, cycling the power can cause the system to fail.**
- **Do NOT operate engine with any harness connections disconnected. This is dangerous and could cause valve to trip.**
- **Unnecessary connection and disconnection of harness connections wears out plating on electrical contacts and will affect continuity.**
- **Do NOT disassemble any valve or system components. Doing so will void the owner's warranty.**

Engine fails to shut down when valve actuates

Cause	Solution
There is a leak in the system allowing air to continue entering the engine.	<ul style="list-style-type: none"> • Inspect all piping/hosing for leaks and repair/patch.

Valve fails to remain open

Cause	Solution
Valve is being forced to close due to manual override.	<ul style="list-style-type: none"> • Ensure toggle switch is not activated. • Ensure all connectors are fully seated. • Inspect all wiring for signs of damage. Identify valve serial number and contact Pacbrake support for replacement harness if necessary.
Valve is being forced to close due to False Trip.	<ul style="list-style-type: none"> • See Causes and Solutions for False Trip.
Latching mechanism is damaged.	<ul style="list-style-type: none"> • Inspect valve reset mechanism for any visible damage.
Actuator is damaged.	<ul style="list-style-type: none"> • Perform Manual Trip and listen for movement to determine if it is seized. • Remove wiring harness and ensure coil resistance is equal to $0.1522\Omega \pm 6\%$ (12V system) or $0.5409\Omega \pm 6\%$ (24V system)@ 25°C. • Identify valve serial number and contact Pacbrake support.

Valve opens/closes too slowly or not all the way

Cause	Solution
Valve is obstructed.	<ul style="list-style-type: none"> • Inspect valve for any obstructions and remove if possible. • Attempt to manually press flap open/closed while feeling for any binding.

Manual Override Function fails to actuate the valve

Cause	Solution
Wiring harness is loose.	<ul style="list-style-type: none"> • Ensure all connectors are fully seated.
Wiring harness is damaged.	<ul style="list-style-type: none"> • Inspect all wiring for signs of damage. Identify valve serial number and contact Pacbrake support for replacement harness if necessary.
Switch is damaged.	<ul style="list-style-type: none"> • Disconnect switch and check for electrical continuity. • Identify valve serial number and contact Pacbrake support for replacement switch if necessary.
System is not receiving adequate power.	<ul style="list-style-type: none"> • Check fuses and replace if necessary. • Ensure battery voltage is not less than 10V (12V system) or 20V (24V system) and replace/charge battery if necessary. • Ensure alternator is functioning correctly.
Actuator is damaged.	<ul style="list-style-type: none"> • Perform Manual Trip and listen for movement to determine if it is seized. • Remove wiring harness and ensure coil resistance is equal to $0.1522\Omega \pm 6\%$ (12V system) or $0.5409\Omega \pm 6\%$ (24V system)@ 25°C. • Identify valve serial number and contact Pacbrake support.

Automatic shutdown function fails to actuate valve at programmed Trip Speed

Cause	Solution
Wiring harness is loose.	<ul style="list-style-type: none"> • Ensure all connectors are fully seated.
Wiring harness is damaged.	<ul style="list-style-type: none"> • Inspect all wiring for signs of damage. Identify valve serial number and contact Pacbrake support for replacement harness if necessary.
System is not receiving adequate power.	<ul style="list-style-type: none"> • Check fuses and replace if necessary. • Ensure battery voltage is not less than 10V (12V system) or 20V (24V system) and replace/charge battery if necessary. • Ensure alternator is functioning correctly.
PowerGuard Controller is not programmed for correct trip speed.	<ul style="list-style-type: none"> • Use <u>TEST Mode</u> to ensure controller was programmed correctly. Refer to PowerGuard Programming Manual for more information.
Gear tooth sensor is not correctly sensing engine speed.	<ul style="list-style-type: none"> • See Gear Tooth Sensor troubleshooting below.
Actuator is damaged.	<ul style="list-style-type: none"> • Perform Manual Trip and listen for movement to determine if it is seized. • Remove wiring harness and ensure coil resistance is equal to $0.1522\Omega \pm 6\%$ (12V system) or $0.5409\Omega \pm 6\%$ (24V system)@ 25°C. • Identify valve serial number and contact Pacbrake support.

False Trip: System has automatically shut down the engine at the incorrect engine speed

Cause	Solution
Wiring harness is loose.	<ul style="list-style-type: none"> • Ensure all connectors are fully seated.
Wiring harness is damaged.	<ul style="list-style-type: none"> • Inspect all wiring for signs of damage. Contact Pacbrake support for replacement harness if necessary.
PowerGuard Controller is not programmed for correct trip speed.	<ul style="list-style-type: none"> • Use <u>TEST Mode</u> to ensure controller was programmed correctly. Refer to PowerGuard Programming Manual for more information.
Gear tooth sensor is not correctly sensing engine speed.	<ul style="list-style-type: none"> • See Gear Tooth Sensor troubleshooting below.

Green LED Indicator on controller is not flashing while engine is running – indicating the system is not active and the RPM is not being monitored

Cause	Solution
Wiring harness is loose.	<ul style="list-style-type: none"> • Ensure all connectors are fully seated.
Wiring harness is damaged.	<ul style="list-style-type: none"> • Inspect all wiring for signs of damage. Contact Pacbrake support for replacement harness if necessary.
System is not receiving adequate power.	<ul style="list-style-type: none"> • Ensure battery voltage is not less than 10V (12V system) or 20V (24V system) and replace/charge battery if necessary. • Ensure alternator is functioning correctly. • Check fuses and replace if necessary.
Buttons/lights are damaged.	<ul style="list-style-type: none"> • Identify valve serial number and contact Pacbrake support for replacement controller if necessary.
PowerGuard Controller was not correctly programmed.	<ul style="list-style-type: none"> • Use <u>SET Mode</u> to correctly program controller. Refer to PowerGuard Programming Manual for more information.
Gear tooth sensor is not correctly sensing engine speed.	<ul style="list-style-type: none"> • See Gear Tooth Sensor troubleshooting below.

Controller is unresponsive and neither LED indicator flashes

Cause	Solution
Wiring harness is loose.	<ul style="list-style-type: none"> • Ensure all connectors are fully seated.
Wiring harness is damaged.	<ul style="list-style-type: none"> • Inspect all wiring for signs of damage. Contact Pacbrake support for replacement harness if necessary.
System is not receiving adequate power.	<ul style="list-style-type: none"> • Ensure battery voltage is not less than 10V (12V system) or 20V (24V system) and replace/charge battery if necessary. • Ensure alternator is functioning correctly. • Check fuses and replace if necessary.
Buttons/lights are damaged.	<ul style="list-style-type: none"> • Identify valve serial number and contact Pacbrake support for replacement controller if necessary.

Engine will not start

Cause	Solution
Valve does not remain open or is stuck in closed position.	<ul style="list-style-type: none"> • Confirm if red LED indicator is illuminated. • Attempt to manually reset the valve position with the reset knob. • Attempt to actuate the valve with the manual override function. Listen for valve movement. • Inspect the valve for any obstructions and remove if possible. • Ensure all wiring harness connectors are fully seated. • Inspect all wiring for signs of damage. Contact Pacbrake support for replacement harness if necessary.

Gear tooth sensor is not correctly sensing engine speed

Cause	Solution
Wiring harness is loose.	<ul style="list-style-type: none"> • Ensure all connectors are fully seated.
Sensor is damaged.	<ul style="list-style-type: none"> • Inspect sensor and wiring leads for visible signs of damage. Contact Pacbrake support for replacement sensor if necessary.
Gear tooth sensor is not installed to the correct depth.	<ul style="list-style-type: none"> • Ensure push-in type sensor is fully inserted and correctly torqued. • Ensure thread-in type sensor was fully threaded into port so that it contacts flywheel teeth and then backed off ½ turn. Remove sensor and measure depth of port to confirm. • Use bottoming tap to clear impeding dirt and burrs from port threads. • Ensure sensor is centered over flywheel teeth.
Gear tooth sensor is faulty.	<ul style="list-style-type: none"> • Test by using a 12VDC power source to supply power to Pin A and ground to Pin B of sensor. Use multi-meter to ensure that 5VDC is being read at Pin C of the sensor when it is away from a steel plate. The reading should drop to 0VDC when the sensor is touching the plate. • Identify valve serial number and contact Pacbrake support for replacement sensor if necessary.

Unable to program trip speed; lights slowly flash alternatingly

Cause	Solution
Speed sensor is not correctly sensing the engine speed.	<ul style="list-style-type: none"> • See Speed Sensor troubleshooting section.
Buttons are damaged.	<ul style="list-style-type: none"> • Identify valve serial number and contact Pacbrake support for replacement controller if necessary.