

PH3 Product Data Sheet

Pacbrake PowerHalt 3 emergency air intake shut-off valve is an electronically controlled emergency engine shut down system which forces engine shut down by blocking an engine's air intake path. It is available in an automatic engine speed sensing model where shutdown occurs if engine speed exceeds a pre-set speed (or by manual override). Alternatively, a manual activation only configuration is available where an operator or external input will activate emergency engine shut-down. The valves automatically return to open position after emergency engine shutdown, all while providing feedback to the operator that the valve is held closed via in-cab/panel lights.



- Reliable and safe emergency shut down for diesel engines
- Operator friendly fully automatic operation with manual override
- Secondary pre-set speed for Power Take Off (PTO) applications
- Enclosed drive system is debris and corrosion resistant
- Aluminum flap and housing for durable seal
- High temperature design for challenging thermal applications
- Corrosion tested to ASTM B117 – 96 hours Salt Fog
- Rated for 18.6 G_{RMS} vibration (7.7 G_{RMS} for 5" bore)
- Robust design – designed to pass 100k+ fatigue cycles
- IP 67 rated valve and controller enclosures
- Low power consumption with smart control
- Supports multiple trip input sources
- Expansion auxiliary trip inputs available (PowerGuard Automatic)
- Multiple built-in inputs & selectable reset times (PowerGuard Manual)
- Compatible with hall effect and VR sensors

Applications

- | | | | |
|---------------------------|----------------|-------------------------|-------------------|
| • Bulk Haulers | • Tankers | • Power Generators | • Drilling Rigs |
| • Grain Processing Plants | • Cranes | • Forklifts | • Work Boats |
| • Refinery Processing | • Vehicles | • Underground Equipment | • Barges |
| • Fueling Vehicles | • Tow Vehicles | • Support Vehicles | • Welders |
| • Pump Trucks | • Fire Trucks | • Vacuum Trucks | • Lighting Trucks |
| • Lighting Units | • Frac Trucks | | |

*Pressures are indicated in "gauge"

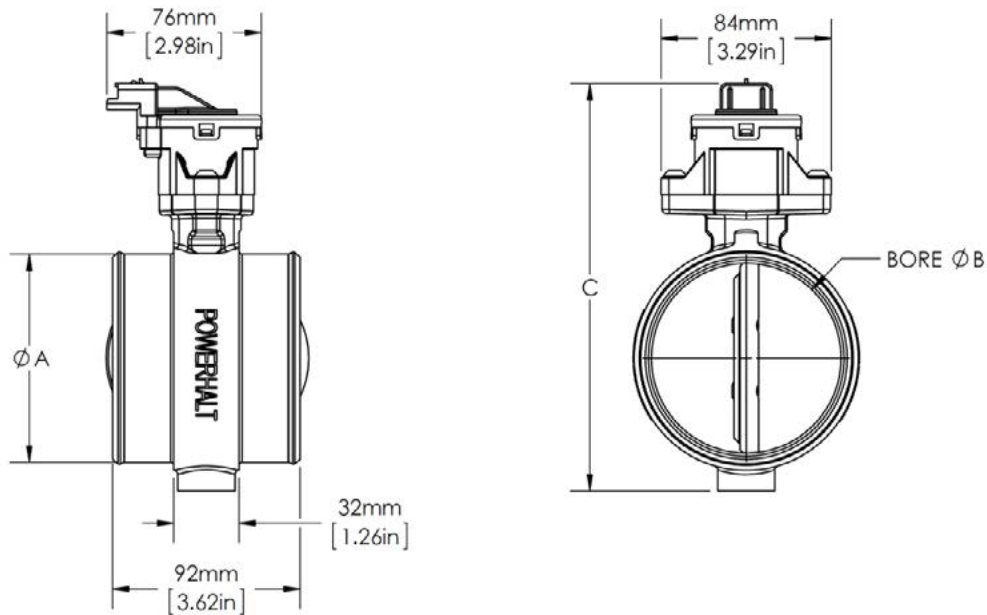
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Valve

Maximum Intake Boost Air Pressure* 3.45 bar [50 psi]
Continuous Intake Air Temperature -55°C to +200°C [-40°F to 392°F]
Ambient Temperature Range -40°C to +120°C [-40°F to 248°F]

Resting Position Valve open
Activated Position Valve closed

Standard Mounting Flanges Hose to Hose
Pipe Sizes Supported Ø38 mm to Ø140 mm [Ø1.5 in to Ø5.5 in]



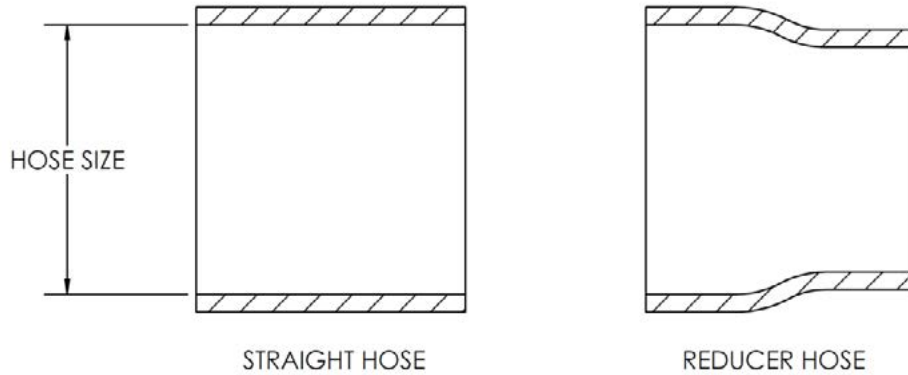
Dimensions			Weight
'A' - Hose Bore Diameter	'B' - Valve Bore Diameter	'C' - Height	
44.5 mm [1.75 in]	35.5 mm [1.40 in]	149 mm [5.87 in]	0.75 kg [1.7 lbs]
51 mm [2.0 in]	42 mm [1.65 in]	149 mm [5.87 in]	0.73 kg [1.6 lbs]
57 mm [2.25 in]	48 mm [1.89 in]	149 mm [5.87 in]	0.71 kg [1.6 lbs]
64 mm [2.5 in]	55 mm [2.17 in]	170 mm [6.69 in]	0.90 kg [2.0 lbs]
70 mm [2.75 in]	61 mm [2.40 in]	170 mm [6.69 in]	0.87 kg [1.9 lbs]
76 mm [3.0 in]	67 mm [2.64 in]	170 mm [6.69 in]	0.84 kg [1.8 lbs]
89 mm [3.5 in]	80 mm [3.15 in]	200 mm [7.87 in]	1.1 kg [2.4 lbs]
102 mm [4.0 in]	93 mm [3.66 in]	200 mm [7.87 in]	1.0 kg [2.2 lbs]
127 mm [5.0 in]	118 mm [4.65 in]	226 mm [8.90 in]	1.42 kg [3.1 lbs]

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PowerGuard Accessories

Hoses



Temperature Rating	-55°C to 175°C [-67°F to 347°F]
Pressure Rating	Conforms to SAE J20 (20R1 HD SW)
Hose Sizes	38 mm to 140 mm [1.5 in to 5.5 in]

Clamps

Description	Spring Loaded T-Bolt, Heavy Duty
Standard	SAE J15006 Type SLTB
SAE Sizes	64, 68, 76, 84, 92, 102, 112, 116, 124, 136, 140, 148, 154
Size Range	73 mm to 152 mm [2.88 in to 6 in]
Installation Torque	7.9 Nm [70 in-lbf]

Description	Constant Tension Gear Clamp, Heavy Duty
Size Range	45 mm to 80 mm [1.75 in to 3.13 in]
Installation Torque	5.1 Nm [45 in-lbf]

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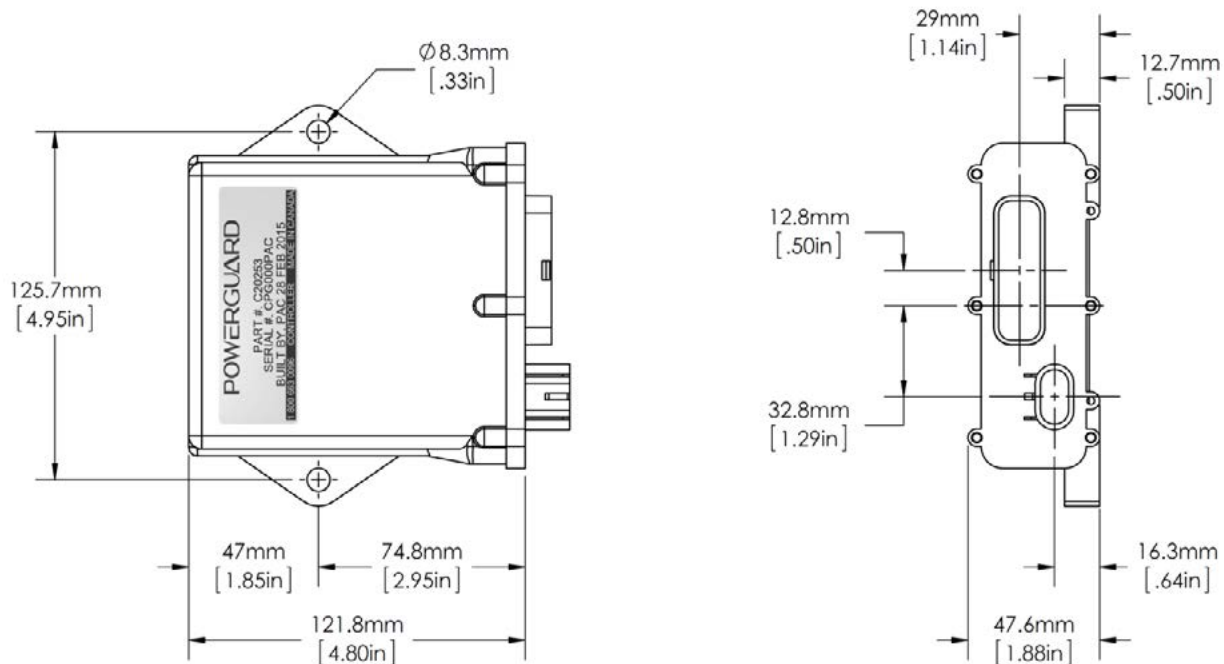
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PowerGuard Automatic Control

PowerGuard Automatic Control monitors engine speed through a gear tooth sensor mounted to the transmission bell housing using an existing auxiliary port or by the drilling and tapping of a new port. The controller has a programmable trip point – when the programmed pre-set speed is exceeded, emergency engine shutdown will occur automatically. Emergency shutdown can be activated at any time through a manual override button. All control and programming is completed using a membrane switch mounted in a vehicle’s cab or on a control panel. An auxiliary input harness is available to expand systems to utilize external trip input signals or switches.

- Automatically activates and resets after programmable engine speed trip point is exceeded
- Manual override, programming and valve position feedback from cab/panel mounted membrane switch
- Secondary pre-set speed for PTO applications. Providing ground to the PTO input allows users to engage a second emergency shut-down speed for while powering auxiliary equipment. To prevent accidental shut down while enabling and disabling PTO, a 5 second grace period is applied when switching to a lower threshold, to allow for engine speed to reduce. When switching to a higher threshold, the threshold change is applied immediately.

Controller



Controller Housing Material Compliance

Controller Voltage

Control Method

Power Consumption (Idle)

Power Consumption (Valve Actuated)

Seal Rating

SAE J1455 (-40°C to 85°C [-40°F to +185°F])

12/24 VDC (10.8 to 28 VDC)

PID, PWM, H-Bridge

35 mA max continuous, nominal

6.5 A continuous, nominal

IP 67

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Gear Tooth Sensor (Magnetic Pickup)

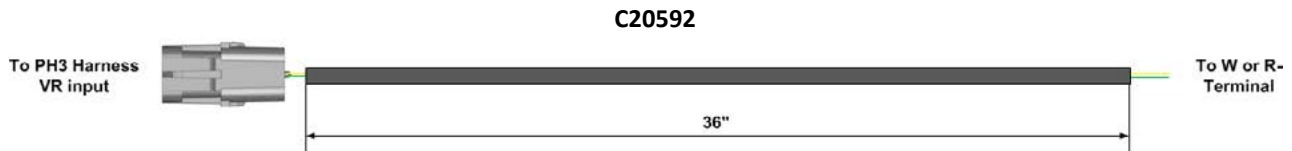
Sizes Available:

Thread Size	Length	Installation Torque
3/8 - 24 UNF	51 mm, 76 mm [2 in, 3 in]	5.1 ± 0.3 Nm [45 ± 3 in-lbf]
5/8 - 18 UNF	51 mm [2 in]	25.8 ± 1.4 Nm [19 ± 1 ft-lbf]
3/4 - 16 UNF	64 mm [2.5 in]	81.3 ± 2.7 Nm [60 ± 2 ft-lbf]

Temperature Range -40°C to 105°C [-40°F to +221°F]
Signal Output 0 to 5 VDC TTL
Connector Weather-Pack, Female, 3 Pin

W or R-Terminal

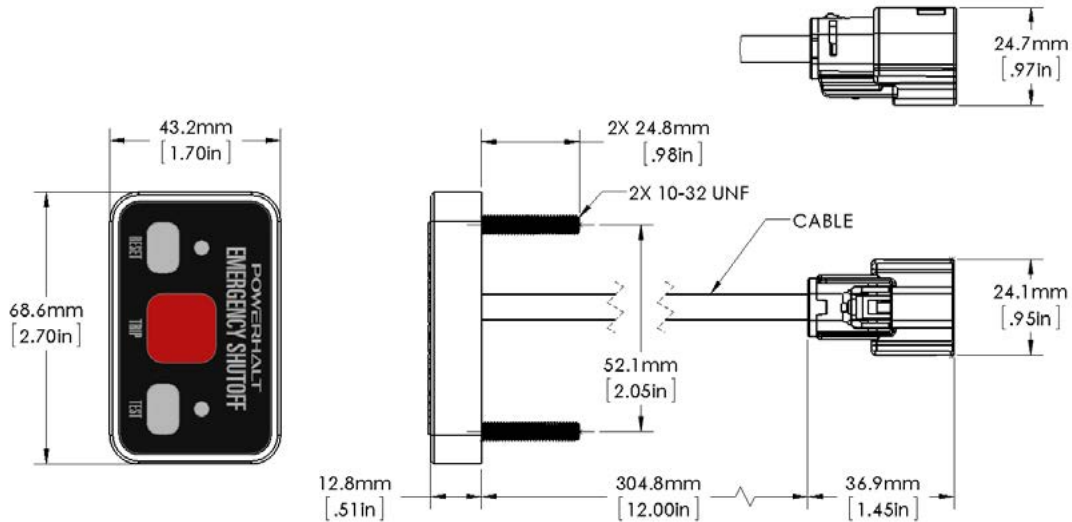
The PowerHalt PH3 R or W-Terminal kit is an addition to the PH3 system that utilizes a Variable Reluctance (VR) sensor to read engine speed to determine proper and safe shut down event. Alternative to a VR sensor is to measure on the R or W-Terminal on an automotive engine’s alternator stator tap. The output is used as a tachometer signal with AC voltage waveform similar to that of a VR sensor. The benefit of using the alternator output reduces the need for an external sensor, as the installation process is greatly simplified.



Temperature Range -40°C to 105°C [-40°F to +221°F]
Voltage Rating 60V

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Membrane Switch



Electrical Connector Hole Drill Size
Mounting Hole Drill Size
Temperature Rating
Installation Torque

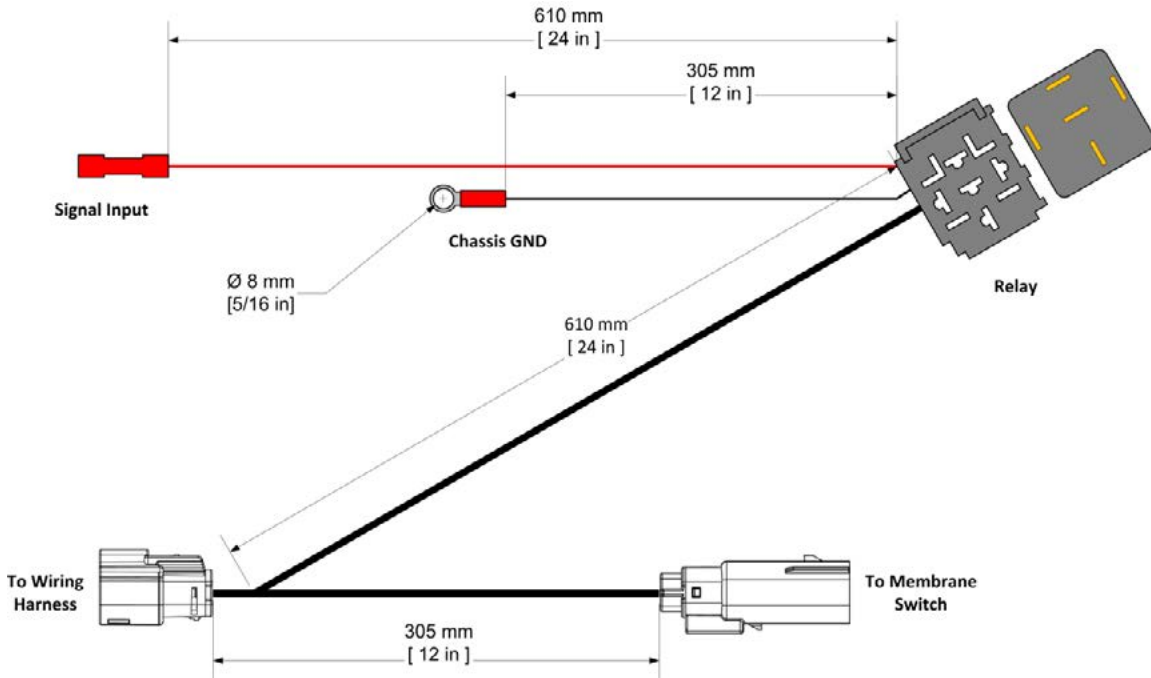
28.5 mm [1.125 in]
 6.4 mm [.25 in]
 -25°C to +80°C [-13°F to +176°F]
 2.25 ± 0.5 Nm [20 ± 5 in-lbf]

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Auxiliary Trip Input Harness

- Expands the standard PowerGuard Automatic wiring harness to allow for an external trip signal (emergency shut down will be activated when 12 VDC or 24 VDC voltage is supplied)
- Integrates in-line with membrane switch and wiring harness connection



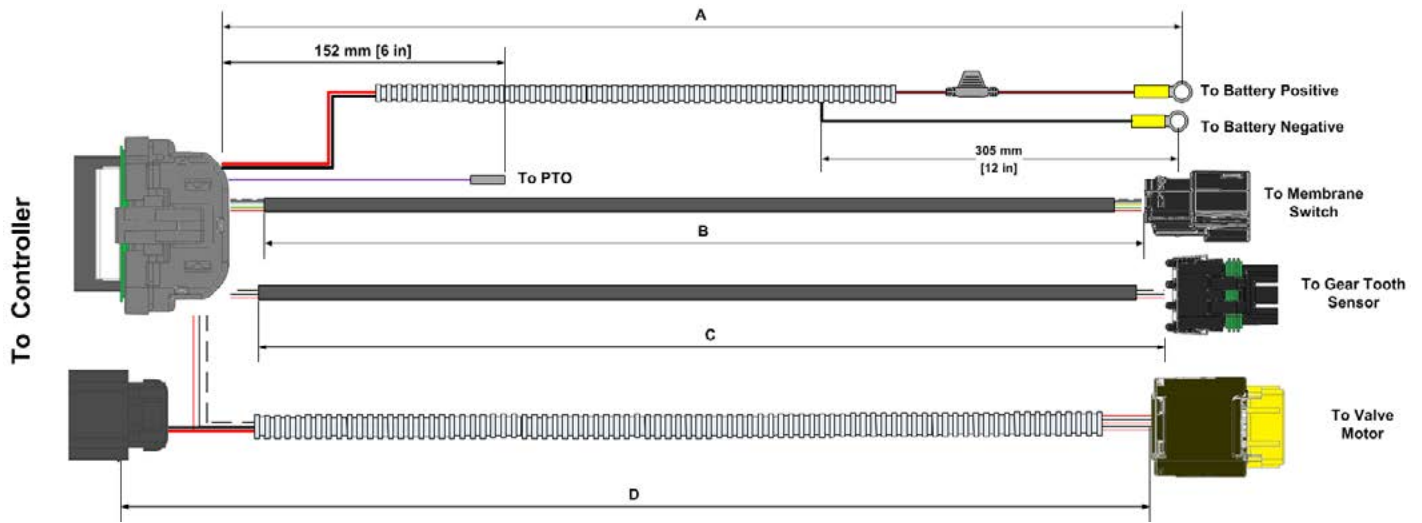
Signal Voltage	12/24 VDC, nominal
Current Source/Sink Requirement	300 mA (12 V) or 480 mA (24 V)
Switching Response Time	50 ms
Environmental Resistance	Fuel, oil, and solvent compatible
Wiring	SAE J1128, Tinned Copper Conductor

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Wiring Harness

Temperature Rating (Continuous)	-40°C to +105°C [-40°F to +221°F]
Sealed Connectors	Yes
Flammability Rating	FT2
RoHS Compliant	Yes
Environmental Resistance	Fuel, oil, and solvent compatible
Wiring	SAE J1128, Tinned Copper Conductor



Harness Part Number	Dimension A	Dimension B	Dimension C	Dimension D	Engine RPM Speed Sensor	Speed Sensor Connector
C20544	1245 mm [49 in]	1220 mm [48 in]	1370 mm [57 in]	1550 mm [61 in]	Hall Effect	Delphi (3 Pins)
C20535	3251 mm [128 in]	2745 mm [108 in]	3353 mm [132 in]	3175 mm [125 in]		
C20594	1245 mm [49 in]	1220 mm [48 in]	1370 mm [57 in]	1550 mm [61 in]	VR	Delphi (2 Pins)
C20534	3251 mm [128 in]	2745 mm [108 in]	3353 mm [132 in]	3175 mm [125 in]		
C20543	1245 mm [49 in]	1220 mm [48 in]	1370 mm [57 in]	1550 mm [61 in]	VR, T-Connection	Deutsch (2 Pins)
C20567	3251 mm [128 in]	2745 mm [108 in]	3353 mm [132 in]	3175 mm [125 in]	VR	
C20538	3050 mm [120 in]	1780 mm [70 in]	1270 mm [50 in]	2415 mm [95 in]	OEM Signal Input	Wire Only
C20551	1245 mm [49 in]	1220 mm [48 in]	N/A	2160 mm [85 in]	None	N/A

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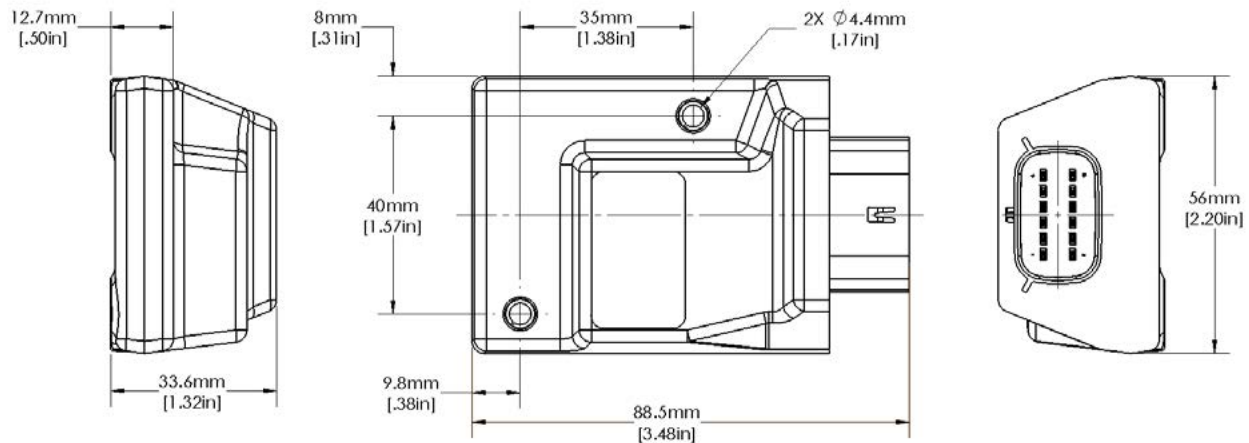
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PowerGuard Manual Control

PowerGuard Manual Control will force emergency shutdown when an operator or external device activates an emergency trip switch. By default, the time that system will remain activated after trip is 30 seconds. However, a user may choose to utilize the 15 second duration by connecting to the optional controller pin-out (various durations may be used in combination when connected to multiple input sources). A supplied light will illuminate when the valve is held closed to provide feedback to an operator that an engine may not yet be started.

- Multiple manual valve trip inputs with different actuation durations
- Compact controller size ideal for tight overall integration and packaging
- Cab/panel indicator light to display valve status

Controller

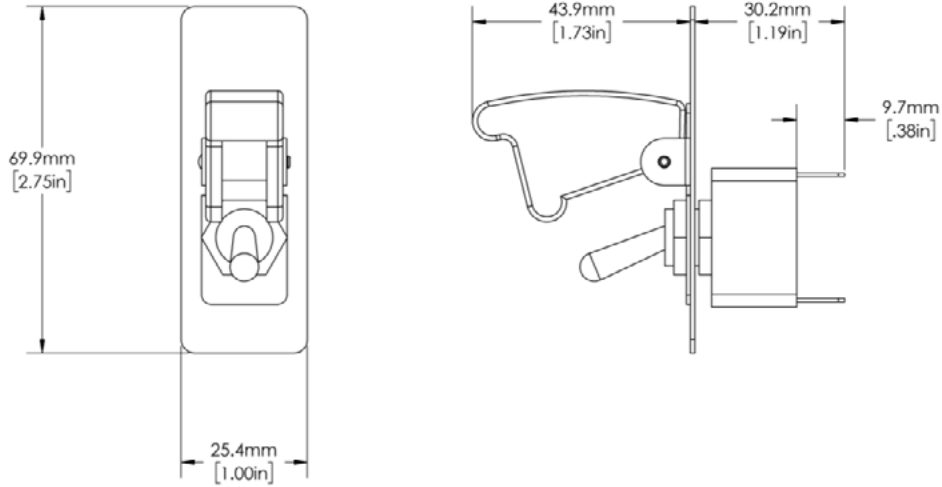


Controller Voltage	12 VDC nominal (10.8 to 14 VDC)
Seal Rating	IP 67
Valve Actuation Duration	15 or 30 seconds (30 seconds default)
Installation Torque	3.39 ± 0.56 Nm [30 ± 5 in-lb]
Current Consumption (Idle/Valve Actuated)	10 mA/4.9 A, nominal
Rated Service Temperature	-40°C to +85°C [-40 °F to +185 °F]

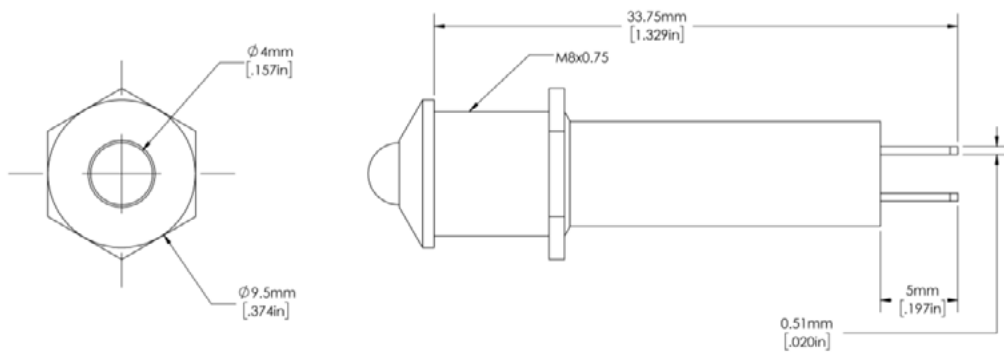
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Toggle Switch, Toggle Cover, Label and Panel Indicator Light



Thru-Hole Drill Size	12.7 mm [0.5 in]
Temperature Rating	-25°C to +80°C [-13°F to +176°F]
Rated Current	6.25 A @ 12 VDC
Max. Mounting Panel Thickness	6.75 mm [0.266 in]



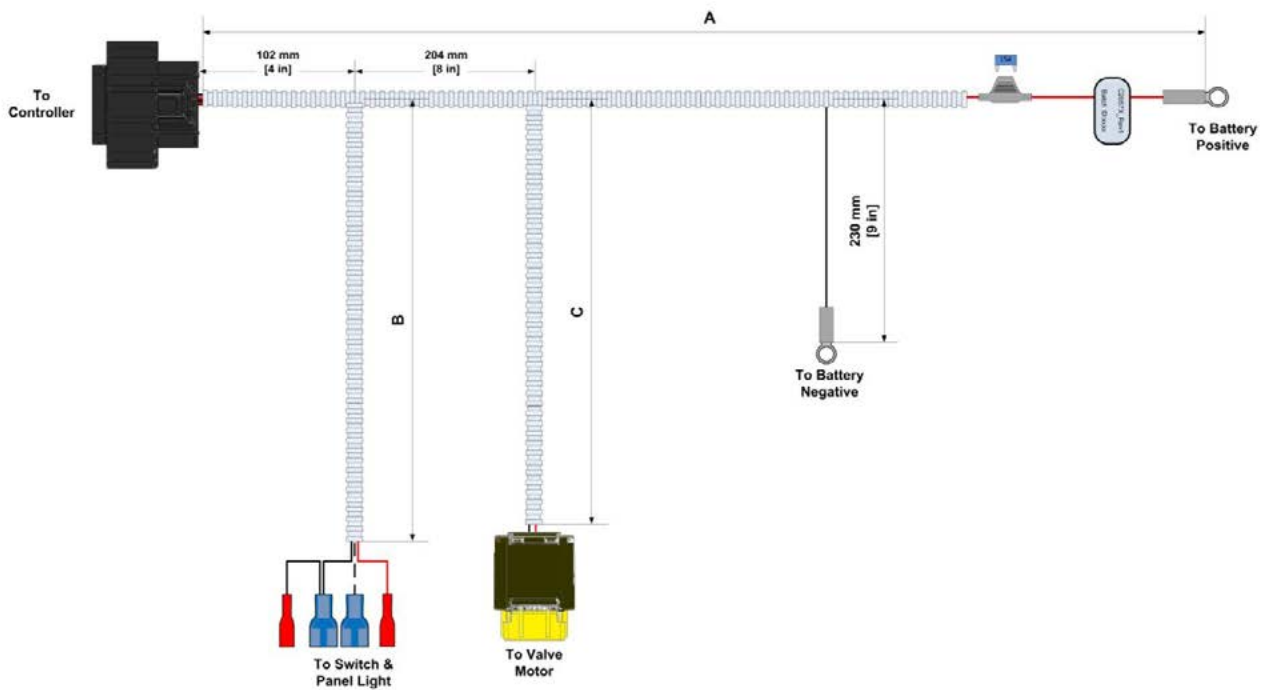
Thru-Hole Drill Size	8 mm [0.315 in]
Temperature Rating	-40°C to +85°C [-40°F to +185°F]
Supply Voltage	12 VDC nominal (10.8 - 13.2 VDC)
Connection	2.79 mm x 0.5 mm [0.11 in x 0.02 in] quick connect terminals
Max. Mounting Panel Thickness	6.75 mm [0.266 in]

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Wiring Harness

Temperature Rating (Continuous)	-40°C to +105°C [-40°F to +221°F]
Sealed Connectors	Yes
Flammability Rating	FT2
RoHS Compliant	Yes
Environmental Resistance	Fuel, oil, and solvent compatible
Wiring	SAE J1128, Tinned Copper Conductor



Pacbrake Harness Part Number	Dimension A	Dimension B	Dimension C
C20574	3050 mm [120 in]	2920 mm [115 in]	2720 mm [107 in]
C20575	1525 mm [60 in]	1475 mm [58 in]	1475 mm [58 in]

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