

Application Note

Honeywell Pressure Switches
 High Pressure: HP Series, HE Series
 Low Pressure: LP Series, LE Series



Mud pump line pressure measurement

Background

Due to the demanding conditions found within industrial and transportation industries, pressure switches are often designed into equipment and vehicle applications to make or break an electrical connection in response to a system pressure change. These switches are frequently exposed to chemical splashes, dirt, grime, and harsh media, as well as performance spikes. They must provide reliable and consistent performance and have a high life cycle rating.

Potential Applications

Transportation	
Agricultural machinery	<ul style="list-style-type: none"> Hydraulic and braking systems Engine/transmission oil pressure Filtration systems
Heavy duty construction machinery	<ul style="list-style-type: none"> Hydraulic and braking systems Engine/transmission oil pressure Filtration systems
Heavy duty trucks	<ul style="list-style-type: none"> Engine/transmission oil pressure Filtration systems
Lawn and garden	<ul style="list-style-type: none"> Engine/transmission oil pressure Filtration systems
Marine vessels	<ul style="list-style-type: none"> Engine/transmission oil pressure Filtration systems
Material handling machinery	<ul style="list-style-type: none"> Hydraulic and braking systems Engine/transmission oil pressure Filtration systems
Railway	<ul style="list-style-type: none"> Engine/transmission oil pressure Filtration systems
Industrial	
CNC machines	<ul style="list-style-type: none"> Cutting fluid
Compressors, boilers	<ul style="list-style-type: none"> Line pressure
Food and beverage equipment	<ul style="list-style-type: none"> Line pressure
Fracking equipment	<ul style="list-style-type: none"> Line pressure
Generators	<ul style="list-style-type: none"> Oil pressure
HVAC/R equipment	<ul style="list-style-type: none"> Air pressure
Mud pumps	<ul style="list-style-type: none"> Line pressure
Pneumatic equipment	<ul style="list-style-type: none"> Air pressure
Presses and punches	<ul style="list-style-type: none"> Hydraulic pressure
Pressure washers	<ul style="list-style-type: none"> Water pressure
Trash compactors	<ul style="list-style-type: none"> Hydraulic oil pressure
Water jet cutting machines	<ul style="list-style-type: none"> Water pressure
Water pumps	<ul style="list-style-type: none"> Lift pressure

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Hydraulic and braking systems

Solution

Honeywell Pressure Switches are durable, reliable electromechanical gauge pressure on/off switches that are available with either single pole single throw (SPST) normally open or normally closed circuitry, or single pole double throw (SPDT) circuitry. Their IP67 environmental sealing and high proof pressure and burst pressure ratings allow for use in many rugged applications that require the making or breaking of an electrical connection in response to a pressure change of the system media.

The media (gas or liquid) pressure is applied via the port of the switch to a diaphragm or sealed piston. A pre-tensioned spring on the other side of the sealed piston or diaphragm controls the set-point pressure. If the force resulting from the pressure is greater than the tension on the spring, the electrical contacts within the switch will change state. If the contacts are normally open when no pressure is applied, they close on increasing pressure when the set point is reached. On decreasing pressure, the contacts will open again at a pressure somewhat less than the set switching point. The difference between the activation point on increasing pressure and the deactivation point on decreasing pressure is called hysteresis. The set point pressure for the switch can be configured such that the switch will actuate on increasing or decreasing system pressure.

Features



- Life cycle rating: up to 2 million
- IP67 sealing rating
- Operating temperature range: -40 °C to 120 °C [-40 °F to 248 °F]
- Proof pressure: 10000 psi [689 bar] (High Pressure), 500 psi [34,47 bar] (Low Pressure)
- Burst pressure: 20000 psi [1379 bar] (High Pressure), 750 psi for 3.5 psi to 22 psi, 1250 psi > 22 psi (Low Pressure)
- Hysteresis option (HP Series and LP Series only)
- Variety of pressure ports and electrical terminations
- Pressure switching set point range: Factory set 150 psi to 4500 psi [10,34 bar to 310,26 bar] (High Pressure) or factory set or field adjustable 3.5 psi to 150 psi [0,24 bar to 10,34 bar] (Low Pressure)
- Switching point accuracy: up to ± 2 %

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Selection Guide

Honeywell offers four versions from which to choose:

	High Pressure: HP Series, HE Series	Low Pressure: LP Series, LE Series <i>(LP Series available April 2014)</i>
		
Life cycle rating	up to 2 million	up to 2 million
Pressure switching set point range	factory set 150 psi to 4500 psi [10,34 bar to 310,26 bar]	field adjustable 3.5 psi to 150 psi [0,24 bar to 10,34 bar]
Accuracy	up to ± 2 %	up to ± 2 %
Burst pressure	20000 psi [1379 bar]	750 psi for 3.5 psi to 22 psi, 1250 psi > 22 psi
Proof pressure	10000 psi [689 bar]	500 psi [34,47 bar]
Operating temperature range	HP Series: -40 °C to 120 °C [-40 °F to 248 °F] HE Series: -40 °C to 85 °C [-40 °F to 185 °F]	-40 °C to 120 °C [-40 °F to 248 °F]
Contact ratings	5 mA to 5 A	7.5 mA to 3 A

For more information about Honeywell Pressure Switches, including nomenclature and dimensional drawings, see our Datasheet.

Find Out More

To learn more about Honeywell safety solutions, contact a Honeywell representative today at **1-800-537-6945**, e-mail info.sc@honeywell.com, or visit sensing.honeywell.com

Sensing and Control

Honeywell

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While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

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