

## Pressure Switch Selection Guide

A pressure switch for sensing fluid or air pressure contains a capsule, bellows, bourdon tube, diaphragm or piston element that deforms or displaces when pressure is applied. The resulting motion is applied directly or through amplifying levers (rod and float ball) to a set of switch contacts activating the controlled pump. When selecting a fluid pressure switch it is important to check the specifications of the switch to ensure it will function properly for your application. There are many styles of pressure switches but all are either electromechanical or solid state.



### Electromechanical Switch

The most common mechanical pressure switches are composed of a sensing element and an electrical snap-action switch. A number of different types of sensing elements can be used but they have one thing in common: they move in response to changes in the system pressure. Through their movement, they directly act on the switch's contacts by opening or closing the contact.



### Solid State Switch

Solid state switches use a metal diaphragm about the size of a dime with a micro-miniature strain gauge etched onto its dry surface. Increasing pressure changes the impedance of the strain gauge. A digital comparator monitors the output from the strain gauge and compares it to the user specified set point. When the set point is reached, the electronic circuit turns on a solid state relay, completing the circuit.



### Pressure Switch Selection Specifications

Knowing the requirements for the pump you are controlling will help select a switch that will function properly. The specifications below are key to selecting the correct switch for your pump. Read each specification description to ensure you understand what the specification is and determine the correct range for your pump.

**Pressure Range** gives the pressures in which the valve will operate. The pressure the application is creating for its on and off function must be within this set of numbers to function properly. Some switches are manufactured with a fixed setting that cannot be adjusted, and some are made adjustable to operate multiple applications. Be sure of which one you need when selecting a switch for your application.

**Example:** Factory ON/OFF settings 20 to 40 psi

**Horsepower to Voltage** shows the limit of horse power the switch can transfer to the pump being controlled based on either a single or three-phase power supply. Check the pump horsepower and power specifications before installing a switch to ensure it can handle the pump it is controlling.

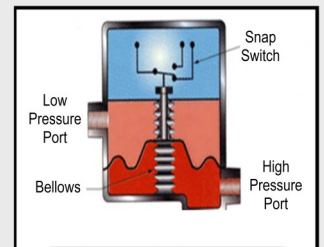
**Example:** 2HP @ 3 Phase—460V

### Special Features

Some special features of pressure switches include a manual switch for ON/OFF/AUTO, and unloader connection for an air compressor unloader valve, which automatically relieves the pressure on the compressor pump to ease restart. Special features can also include low or high pressure cut offs, and multiple pole contacts. Be sure to check your application requirements for any of these features, including port connection sizes and types.

**Differential Range** is the range in which the switch contacts will not react to movement. Instead of a gradual drop to the contactors the switch reacts when the pressure has dropped far enough from the set point to cause a quick snapping action to the contacts activating the controlled pump. Depending on the switch selected some switches may have this range fixed while some are adjustable.

**Burst Pressure** is the maximum working pressure the switch can handle before the inner seals and mechanically controlled pieces begin to break apart or fail. Your application should use pressures well below this limit to prevent damage or product failure.



Sources Include : W. W. Grainger, Square D

If you are still having difficulty choosing a Pressure Switch,  
please contact us at [askzoro@zoro.com](mailto:askzoro@zoro.com) or 855-289-9676

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