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WHITE PAPER

Improving Pressure Switch Efficiency
with Lever Mechanism

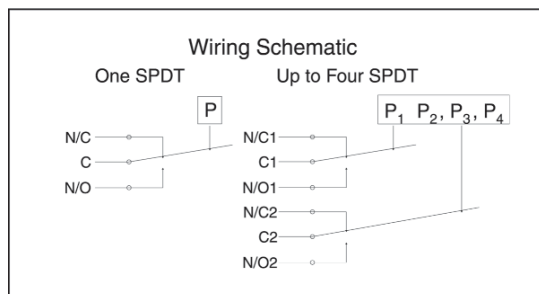
Improving Pressure Switch Efficiency with Lever Mechanism

A pressure switch is a device that senses pressure changes in a system and then actuates an electrical switch at a pre-determined setting.

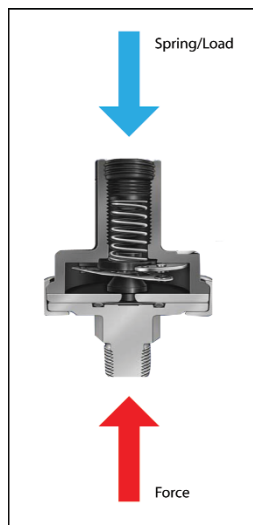
Some common applications are:

- Tank and compressor level control
- Maintain pressure in hydraulic systems
- Pumping controls
- Hazardous area lift controls
- Multiple tank or pump controls
- Alarm
- Filtration systems

Pressure switches are found in positive, vacuum, compound and differential pressure applications. They may be equipped with Single (SP) or Double Poles (DP) with either Single Throw (ST) or Double Throw (DT) types. Note that these switches may be wired to be "Normally Open" or "Normally Closed".



Winters Pressure Switches offer from one SPDT to four SPDT, or two DPDT contacts. Winters' 6WPS Series, in particular, has a large enough housing to hold 4 SPDT snap-action switches that can be independently adjusted.



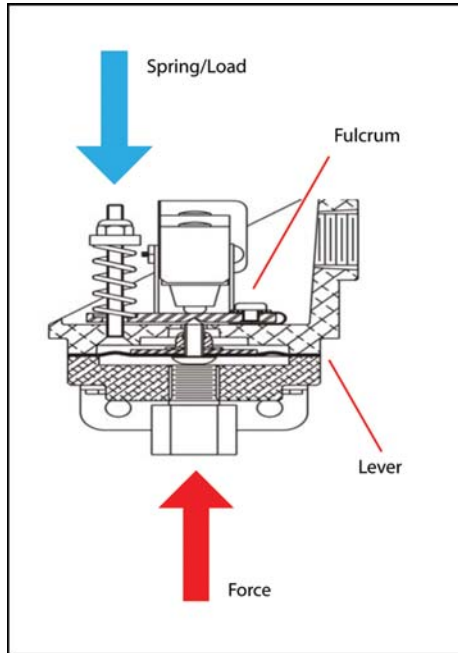
Pressure switches are usually designed with an in-line mechanism: the sensing element, piston, spring and micro-switch button are all centered along the same axis. The sensing element will move with the changing pressure in the process. The sensing element will push the piston, which in turn will push the switch button, actuating the snap-action switch. The load is directly opposed to the force (as shown in the diagram below). The piston is normally guided with a bushing that is subject to wear as the pressure switch cycles during operation.

Normal pressure switch design



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In contrast, Winters Pressure Switches do not follow this principal. Their pressure switches are uniquely designed to greatly reduce friction by using a lever mechanism, which amplifies the movement of the sensing element. Utilizing this system leads to greater accuracy (0.5%) as well as the lowest deadbands in the industry (Pressure switch deadband is defined as the difference between the actuation pressure and the de-actuation pressure).

The set points can range from vacuum to 5000 psi. For low pressures, Winters' 7WPS Series pressure ranges are from 1.5" H₂O to 0-150" H₂O.

Reduced friction pressure switch design

Winters Instruments offers a wide range of pressure switches for all your application needs in pneumatic systems, power generation, water, waste water, hydraulics, oil and gas, chemical, petro-chemical, and explosive environment industries, and many more.

Their pressure switches are made with durability and quality in mind, with case construction made from heavy-duty cast aluminum. Housings are NEMA 4X, 12 and 13 rated. Further, the 6WPS and 7WPS Series are both equipped with CSA and UL approvals for Class I, Groups C & D and Class II, Groups E, F & G.

Many applications involve aggressive media. Winters offers a wide selection of wetted parts to meet virtually all corrosive applications. Pressure switch diaphragms are available in Buna-N, Stainless Steel, Teflon, Viton, Kynar, Kalrez and Hastelloy, as well as many others. For more on Pressure Switches, contact Winters Instruments (1-800-WINTERS / www.winters.com).