

PRESSURE SWITCHES - Description of Special Features

Code Description

- A **ADJUSTABLE DEAD BAND** - specified with one electric switch or (II) the tandem electrical switches, the snap-over pressure minus the snap-back pressure is adjustable. The range of this adjustment is between 5% and 50% of the specified pressure range. The Adjustable Dead Band is above the decreasing pressure set point; ie., if the pressure is set at 50 psi decreasing pressure, and the Dead Band adjusted to 20 psi, the electric switch will snap over at 70 psi increasing pressure and snap back at 50 psi. **Note:** The "A" special feature cannot be combined with special features 2,3,4, BDD,DD,Q,R and is not recommended for 7VOS ranges 1.5,3, and 6 WC.
- B **BELLOWS ACTUATED** - Bellows actuation is required for all pressure ranges above 300 psi, or where an all metal pressure sensing element is required. Standard Bellows Assemblies are constructed using stainless steel bellows brazed into stainless steel housings. All welded bellows assemblies are available - consult factory. The movement of the mechanism requires less than 15% of the maximum bellows stroke.- this means exceptionally good life. The small fluid displacement required to operate these bellows assemblies makes them easy to apply to all types of protective diaphragms seals.
- BD **BELLOW ACTUATED DIFFERENTIAL PRESSURE (DP)** - Opposed bellows assemblies sense the difference between pressure sources (DP). These are the same stainless steel bellows assemblies as described above. Both the High and Low pressure bellows assemblies can withstand the Maximum Allowable Pressure with the opposite bellows assembly at atmospheric pressure.
- D **DIAPHRAGM ACTUATED DIFFERENTIAL PRESSURE(DP)** - Opposed diaphragm areas sense the difference between pressure sources (DP). Both the High and Low pressure areas can withstand the Maximum Allowable Pressure with the opposite side at atmospheric pressure.
- E **EXTERNAL PRESSURE ADJUSTMENT** - This nut allows adjustment of the set point in the field without removing the cover. Pressure and Differential Pressure Models use adjustment nuts with micrometer markings which allow reasonably good pressure settings without the use of a gauge. Vacuum and Special Switches may have nuts supplied without micrometer markings. External adjustment nuts are typically used on models with one electric switch or tandem(II) electric switches. They can be used on models with 2,3,4, electric switches, but cannot be supplied with micrometer markings when used this way.
- EE **TWO EXTERNAL PRESSURE ADJUSTMENTS** - This special feature is used in combination with "A" adjustable Dead Band where it is necessary to adjust both the set point and the Dead Band externally. **Note:** EE special feature cannot be combined with special features 2,3,4,BDD,DD,Q,R.

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- F** **FLANGE BASE MOUNTING** - Models constructed with a flange base will bolt directly to a standard flange. 6VPS Models mate with 1.5" 150# ASA flange. 7VPS Models mate with a 5" 150# ASA flange. These are the diaphragm actuated switches available in ranges with specifications given in the model series tables. **NOTE:** The F special feature cannot be combined with B,BD,BDD,D,M,P.
- G** **DOUBLE DIAPHRAGM** - This special feature is designed to double the sensitivity of low range 7VPS Models 1.5,3,6,15 WC. Two main diaphragms are operated in parallel which doubles the area and force available to operate the mechanism. The fixed dead bands become half of what appears in the 7VPS table. Combining "G" with "A" adjustable dead band helps make "A" more practical for use in the lower pressure ranges.
Note: Special feature G cannot be combined with special features DS,F,S.
- DG** **DOUBLE DIAPHRAGM DIFFERENTIAL PRESSURE(DP)** - This is the same feature as described above for differential pressure applications.
- J** **SAFETY SEAL** - This special feature installs a seal between the switch housing and the atmospheric side of the main diaphragm. A 1/4" NPT connection vents this cavity. **Note:** the J special feature cannot be combined with D,DD,DS.
- L, LL** **INDICATOR LIGHTS** - One or two indicator lights can be specified to give visual indications of pressure settings. 5VPS models use neon lights mounted on the cover. 6VPS and 7VPS models use 3/4" jewels (clear,red,green,amber) mounted on the cover and separate 6 watt instrument lamps mounted in the switch housing. This special feature is useful when combined with (2) independently adjustable electric switches where the lights can show the pressure within a normal range or the lights can show the pressure too high or too low. Specify the color of the light jewels when ordering this special feature. **Note:** Indicator lights cannot be furnished on "X" explosion proof housings.
- M** **MALE PIPE MOUNTING** - This 1/2" NPT male pipe fitting is rigidly attached to the pressure switch. It can be used to mount the switch directly on a pipe or where a 1/2" pressure connection is required.
- O** **HIGH OVER PRESSURE DIAPHRAGM** - This special feature incorporates a diaphragm which is fully supported during an overpressure. The support allows the diaphragm to withstand extremely high pressures and return to normal operation. Model 2VPS and some model 5VPS switches are available with this special feature. See range table maximum allowable pressure.
- P** **PANEL MOUNTING** - On models 6VPS & 7VPS four mounting brackets are attached to the switch where the normal mounting feet are installed. These panel mounting brackets are intended for use where the cover protrudes through a hole in the panel wall, such that the cover can be removed from the front of the panel exposing the pressure adjustments and the electric switches. The conduit outlet and the pressure connections are on the rear side of the panel wall.

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- Q **DOUBLE SNAP ACTION** - A negative rate Belleville Spring, installed as an auxiliary spring, provides positive snap action to the switching mechanism as it responds to set pressure. The electric switch is instantaneously operated as the mechanism snaps over and snaps back. Two electric switches (Tandem DPDT) can be operated simultaneously this way. Double Snap Action eliminates electrical contact chatter associated mechanical vibration or rapid pressure pulsation. The DeadBand (snap-over minus snapback pressure) is determined by the Belleville Spring and can not be less than 10% nor greater than 25% of the adjustable pressure range. The deadband can be factory adjusted to customer specifications within these limits. Once the DeadBand has been established the operating points of the pressure switch are adjustable over the pressure range given in the tables.

Note: The Q special feature cannot be combined with 2,3,4,A,BDD,DD,EE,R.

- R > **RESET SWITCH** - A "push-to-reset" type electric switch is installed such that after the switch is operated it remains in that position until pressure has returned to normal and the reset button is manually pushed. Switches can be furnished to operate on either pressure increase or pressure decrease. To specify this the code symbol R> is used for operation on increasing pressure, and code symbol R< is used for switch operation on decreasing pressure. Two manual reset electric switches, operating in parallel (Tandem) or at a difference in pressure settings, can be supplied. Also one standard and one manual reset electric switch can be furnished to give an alarm at one pressure and to shutdown at further increase or decrease in pressure.

Note: The R special feature cannot be combined with A,EE,Q.

- S [] **SPECIAL TRIM BASE** - Applied to diaphragm actuated pressure switches, special trim bases allow the wetted area to be constructed with material other than the standard aluminum alloy. Code symbols for material, available are as follows:

SS 316 Stainless steel

SN Brass

SI Teflon. Max. Pr. 50 psi - 2VPS & 6VPS models.
15 psi - 7VPS models.

SY PVC. Max.Pr. 100 psi - 2VPS & 6VPS models.
25 psi - 7VPS models.

Note: Special feature SI & SY cannot be furnished on explosion proof housings - consult factory.

- T **TEFLON PROTECTED DIAPHRAGM** - This is a Teflon face which protects the diaphragm on the wetted side.

- Z **SPECIAL EPOXY PAINT** - The entire assembled pressure switch is given a coat of standard one part epoxy paint. For more severe applications a special two part epoxy paint is available - consult factory.

- V **HIGH TEMPERATURE SERVICE** - The pressure switch is constructed with high temperature electric switches, diaphragms and gaskets for service where the fluid operating the switch does not exceed 300° F and temperature surrounding the switch does not exceed 250° F.

- Z **VITON DIAPHRAGM** - Viton diaphragm material replaces the standard Buna N diaphragm material.

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Code	Description
BDD	UNIQUE DIFFERENTIAL PRESSURE SPECIAL FEATURES BELLOWS ACTUATED TWO WAY DIFFERENTIAL PRESSURE (DP) - These differential pressure switches are constructed to sense A differential pressure in two directions. Either pressure source can become higher relative to the other and electric switch operation will occur. This special feature must be specified with at least two electric switches. - one for either direction. When specified with four electric switches two electric switches are available for operation in either direction. The fixed dead bands listed in the table for this special feature are corrected for either two or four electric switches. Note: The BDD special feature cannot be combined with special feature A,E,EE,Q.
DD	DIAPHRAGM ACTUATED TWO - WAY DIFFERENTIAL PRESSURE (DP) - Same as described above except diaphragm actuated.
DDG	DOUBLE DIAPHRAGM TWO - WAY DIFFERENTIAL PRESSURE (DP) - Sensitive two-way differential pressure is achieved by using double diaphragms as described by DG and G. Not available with: A,DS,E,EE,Q,F.
DO	HIGH PRESSURE - LOW DIFFERENTIAL PRESSURE(DP) - DO type differential pressure (DP) switches are designed to sense low differential pressure (DP) between high pressure sources. The 6VPS and 7VPS Models use opposed stainless steel bellows assemblies for high pressure seals, while the differential pressure is sensed by a diaphragm clamped between the bellows assemblies. The diaphragm has a large area to accurately sense low differential pressure and during an over-pressure the diaphragm is fully supported. The differential pressure assembly is symmetrically designed such that both the high and low pressure areas can withstand the maximum allowable pressure with the opposite side at atmospheric pressure. The Standard trim base used for DO switches is a strong aluminum alloy. Other materials are available which are described by the following code symbols:
DOSS	316 Stainless Steel Trim Base.
DOSN	Brass Trim Base.
DDO	HIGH PRESSURE TWO-WAY DIFFERENTIAL PRESSURE - DO type switch which will sense differential pressure in either direction. Also available are DDOSS and DDOSN Models.
DS []	SPECIAL TRIM DIAPHRAGM DIFFERENTIAL PRESSURE - These diaphragm actuated differential pressure switches, are designed with special trim which allows the wetted area to be constructed with material other than the standard aluminum alloy. The code symbols for these material. are as follows:
DSS	316 Stainless Steel
DSN	Brass
DSI	Teflon Max. Pr. 50 psi - 2VPS & 6VPS, 25 psi - 7VPS Models.
DSY	PVC Max, Pr. 100 psi - 2VPS & 6VPS, 50 psi - 7VPS Models
DSK	Aluminum trim base with higher than normal Max. allowable pressure.



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