

B-Series Differential Pressure Switches

Features

- Single setpoint
- Adjustable setpoints 15-100% of range (on increasing differential)
- Fixed or limited adjustable deadband pressure
- Wide selection of switch elements
- Wide range of switch elements
- Explosion proof enclosure provides uncompromising protection
- Special designs for NACE & fire applications
- SIL 3 Capable

Typical uses

- Offshore oil rigs
- Chemical and petrochemical plants
- Pulp and paper mills
- Steel mills
- Power plants
- Water and sewage-treatment plants
- Other corrosive environments

Specifications

Setpoint:	Factory set or field adjustable
Setpoint Repeatability:	±1% of full range (Additional setpoint shift of 1% of range per 50 °F from initial setpoint set at 70 °F typical)
Enclosure Rating:	D4: NEMA 4X, IP66 D7: NEMA 7/9, IP66
Enclosure Material:	Epoxy coated aluminum (standard) Optional: 316 stainless steel (NEMA 7/9 only)
Diaphragm Material:	Buna-N, Viton™, Teflon™
Pressure Connection:	Standard: ¼ NPT Female Optional: ½ NPT Female
Electrical Output:	SPDT or DPDT
Electrical Termination:	Standard: ¾ NPT Female Optional: ½ NPT Female, M20 X 1.5
Ambient Temperature Range:	-20 °F to 150 °F (-28 °C to 65 °C) All units calibrated at 70 °F
Process Temperature:	20 °F to 300 °F (Viton™, diaphragm)
Pressure Ranges:	Differential: 0-600#D
Approvals	UL E34743 (D4) E38812 (D7) CSA: 55541 ATEX: Sira 02ATEX1391X (D7 with XCN) IECEX SIR 14.0077X FM: Limit Contol and Steam Limit Control CE

D400 Series
Pressure Switch
Watertight
Enclosures



D700 Series
Pressure Switch
Explosion Proof
Enclosures



D700 Series
Proof Switch
Explosion Proof
Stainless Steel
Enclosures



SIL 3 CAPABLE



Key Benefits

- Highly reliable
- Designed for use in wide range of applications
- Pressure ranges from vacuum to 7,500 psi



II 2GD
Ex d IIC T6 Gb
Ex tb IIIC T85 °C Db
Ta = -20 °C to +60 °C

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B-Series Differential Pressure Switches

Pressure Ranges

Differential Pressure Ranges			Pressure Ratings		Approximate Deadband Switch Element ⁽²⁾ (3) (4) Buna-N Diaphragm				
Nominal Pressure			Static Working Pressure	Proof psi	20, 26, 27	21, 24, 31	50	22	32, 42
30IWD	760 mm H ₂ O	7.5 kPa	5.4	21.6	0.3-0.6	1.5-2.5	0.45-2.0	0.5-2.0	2.1-3.5
60IWD	1500 mm H ₂ O	15 kPa	5.4	21.6	0.5-1.3	1.5-3.5	0.9-2.5	0.7-3.0	2.1-5.0
100IWD	2500 mm H ₂ O	25 kPa	5.4	21.6	0.6-1.6	2.5-5.5	1.1-4.0	1.0-4.0	3.5-7.7
150IWD	3800 mm H ₂ O	37 kPa	5.4	21.6	1.0-2.5	4.5-8.5	1.8-6.5	2.0-6.0	6.3-12.0
15#D	1.0 kg/cm ²	100 kPa	500	2000	0.5-1.0	2.0-5.0	0.7-3.5	0.7-1.4	2.8-7.0
30#D	2.0 kg/cm ²	200 kPa	500	2000	1.0-2.0	2.0-5.0	1.5-3.5	1.4-2.8	2.8-7.0
60#D	4.0 kg/cm ²	400 kPa	500	2000	2.0-4.0	3.0-6.0	3.0-4.5	2.8-5.6	4.2-8.5
100#D	7.0 kg/cm ²	700 kPa	1000	4000	4.0-10.0	11.0-20.0	7.0-15.0	6.0-14.0	16.0-28.0
200#D	14.0 kg/cm ²	1400 kPa	1000	4000	5.0-15.0	12.0-40.0	10.0-26.0	7.0-21.0	17.0-56.0
400#D	28.0 kg/cm ²	2800 kPa	1000	8000	10.0-20.0	20.0-60.0	15.0-40.0	14.0-28.0	28.0-84.0
600#D	42.0 kg/cm ²	4200 kPa	1000	8000	20.0-40.0	80.0-150.0	30.0-115.0	30.0-56.0	12.0-210.0

NOTES:

- Switches may generally be set between 15% and 100% of nominal range on increasing pressure. Consult factory for applications where setpoints must be lower. Switches typically can be set between 10% and 90% of range on decreasing pressure.
- All deadbands are given in English units as shown in the nominal range column. Deadbands shown are for switches with Buna-N diaphragm.

Approximate deadbands for optional diaphragms:

Viton: Multiply Buna-N value by 1.4
 Teflon: Multiply Buna-N value by 1.2
 Stainless Steel: Multiply Buna-N value by 1.7

- For approximate deadbands for dual switch elements, multiply the single switch element by 1.6.

B-Series Differential Pressure Switches

Ordering Code

 Example: **D4 20 B XPK 600#**

Enclosure				
D4 - Differential pressure switch, Type 400, water-tight enclosure meets NEMA 3, 4, 4X, 13 and IP66 requirements.				
D7 - Differential pressure switch, Type 700, explosion- proof enclosure meets Div. 1 & 2, NEMA 7, 9 and IP66 requirements. Standard housing epoxy coated aluminum. Use variation code XYW for 316SS housing.				
Switch Element Selection - UL/CSA Listed SPDT				
20 - Narrow deadband ac, 15A - 125/250 Vac. Estimated dc rating, 0.4A, 120 Vdc (not UL listed).				
21 - Ammonia service, 5A - 125/250 Vac				
22 - Hermetically sealed switch, narrow deadband, 5A - 125/250 Vac. Estimated dc. rating, 2.5A, 28 Vdc (not UL listed).				
23 - Heavy duty ac, 22A - 125/250 Vac				
24 - General purpose, 15A - 125/250/480 Vac, ½A - 125 Vdc, ¼A - 250 Vdc; 6A, 30 Vdc. (Standard switch)				
25 - Heavy duty dc, 10A - 125 Vac or dc, ½ HP - 125 Vac or dc. Not available with psid ranges.				
26 - Sealed environment proof, 15A - 125/250 Vac. Estimated dc rating, 0.4A, 120 Vdc (not UL listed).				
27 - High temperature 300 °F, 15A - 125/250 Vac				
28 - Manual reset trip on, increasing 15A - 125/250 Vac. Not available with type 700 enclosure.				
29 - Manual reset trip on decreasing, 15A - 125/250 Vac. Not available with type 700 enclosure.				
31 - Low level (gold) contacts, 1A - 125 Vac				
32 - Hermetically sealed switch, general purpose, 11A - 125/250 Vac, 5A - 30 Vdc				
42 - Hermetically sealed switch, gold contacts, 1A - 125 Vac				
50 - Variable deadband, 15A - 125/250 Vac				
Switch Element Selection - UL/CSA Listed Dual (2 SPDT)				
61 - Dual narrow deadband, 15A - 125/250 Vac. Estimated dc rating, 0.4A, 120 Vdc (not UL listed).				
62 - Dual sealed environment proof, 15A - 125/250 Vac. Estimated dc rating, 0.4A, 120 Vdc (not UL listed).				
63 - Dual high temp. 300 °F, 15A - 125/250 Vac				
64 - Dual general purpose, 15A - 125/250/480 Vac, ½A- 125 Vdc, ¼A - 250 Vdc				
65 - Dual ammonia service, 5A - 125/250 Vac				
67 - Dual hermetically sealed switch, narrow deadband, 5A - 125/250 Vac. Wires cannot be terminated inside B400 switch enclosure. Estimated dc. rating, 2.5A, 28 Vdc (not UL listed).				
68 - Dual hermetically sealed switch, general purpose, 11A - 125/250 Vac 5A, 30 Vdc. Wires cannot be terminated inside B400 switch enclosure.				
70 - Dual low level gold contacts, 1A - 125 Vac				
71 - Dual hermetically sealed switch, gold contacts, 1A - 125 Vac. Wires cannot be terminated inside B400 switch enclosure.				
Actuator Seal	Process Temp.	Range		
Material	Limits °F ⁽¹⁰⁾	Vac. in. H ₂ O	0-600 psi	Ambient operating temperature limits -20 to 150 °F, all styles, setpoint shift of ±1% of range per 50 °F temperature change is normal. Switches are calibrated at 70 °F reference
B - Buna-N	0 to 150	•	•	
V - Viton™	20 to 300	•	•	
T - Teflon™	0 to 150	•	•	
S - 316L	0 to 300		•	Ranges 30, 60, & 90 psid only
Options - Use table from page 5				
Range - Select from table page 2				

B-Series Differential Pressure Switches

Optional Features and Accessories

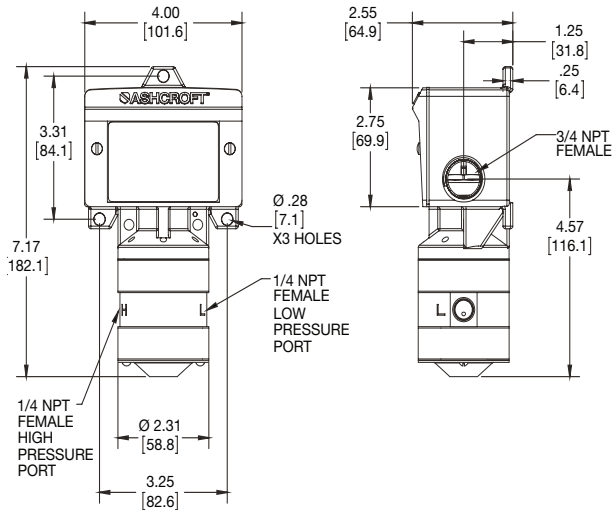
Code	Description	(psi)	(in. H ₂ O)	Notes
BP	Wall Mounting Bracket in. H ₂ O		•	
CH	Chained Cover	•	•	
CN	ATEX Directive 94/9/EC/IECEx Rating	•	•	700 Series only.
FM	FM Approval – Single Element FM Approval – Dual Element	•	•	N/A on all combinations. "T" diaphragm N/A on IW ranges.
FP	Fungus Proofing	•	•	
FS	Factory Adjusted Setpoint	•	•	
FT	FM approval with no pilot light B4 only	•	•	
HS	High Static DP Capsule	•		15# and 30# ranges only, Static pressure rating 1500#
HX	100 psi (proof) pressure only (in. H ₂ O)		•	
HY	Hydrostatic testing			
JK	Left Conduit Connection	•	•	Standard on 700 Series. N/A with DPDT element on 400 Series.
JL	¾" to ½" Reducing Bushing	•	•	
JM	Metric Electrical Conduit Conn. M20 x 1.5	•	•	
LE	6 foot Leads on the Micro Switch	•	•	
MA	NACE (MR-01-75)	•		15-600 PSID only
MD	Metric Range on Label	•	•	
NH	Tagging Stainless Steel	•	•	
NN	Paper Tag	•	•	
PJ	VDC Pilot light(s), Single/Dual B4 only	•	•	
PK	Pilot Light(s) Top Mounted	•	•	N/A on 700 Series.
PM	¾" Sealed Conduit Connectionw/16" Lead Wires	•	•	
RN	Range Scale	•	•	
TA	316 Stainless Steel Pressure Connection for in. H ₂ O Range		•	
TM	2" Pipe Mounting Bracket	•	•	
UD	316SS Pressure connection	•		
YF	Silicone Free (B, V or T diaphragm, 0-600 psi only)			
YW	316 Stainless steel housing	•	•	
C4	Traceable Calibration Certificate	•	•	
C8	CSA Approval Explosion proof N7 only	•	•	Standard on 400 Series
D2	Dual Seal Rating (700 Series only)	•		
K3	Terminal Block (700 Series only)	•	•	Terminal Blocks standard with 700 dual switches.
6B	Cleaned for Oxygen Service	•		Buna-N cannot be cleaned for oxygen service.
06	Pressure Connection ½ NPT Male, ½ NPT Female 316 Stainless Steel (Combination)	•	•	
07	½ NPTF Press. Conn., 316 SS	•	•	N/A with Monel® diaphragm.

B-Series Differential Pressure Switches

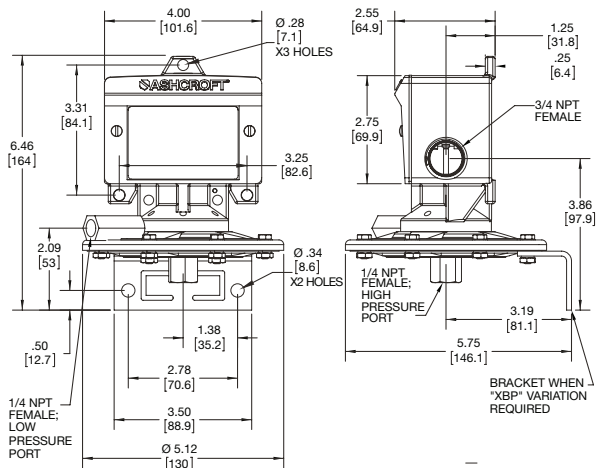
B400 Enclosure Dimensions

For reference only, consult Ashcroft for specific dimensional drawings

Differential pressure switch – psi differential ranges



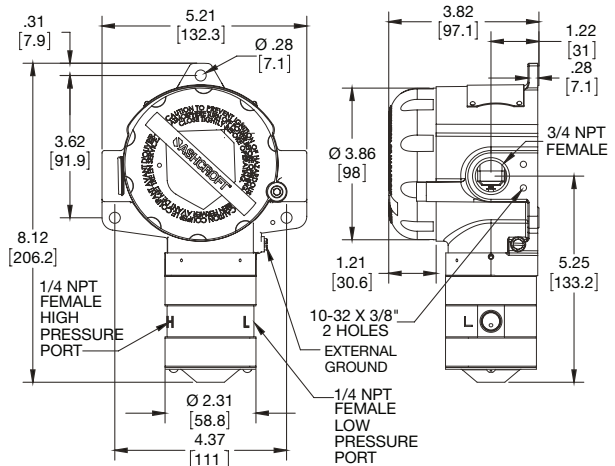
Differential pressure switch – inches of water ranges



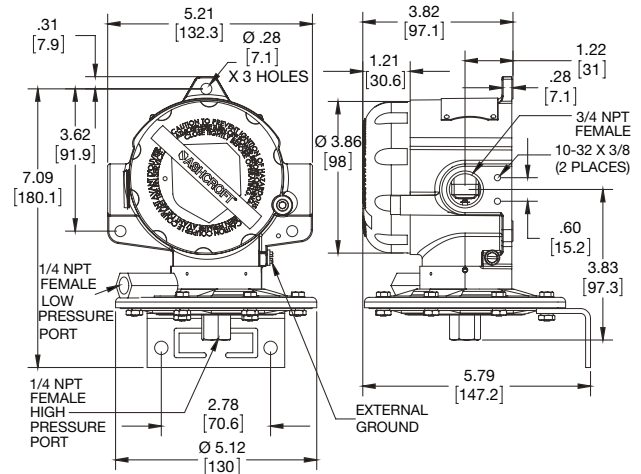
B700 Enclosure Dimensions

For reference only, consult Ashcroft for specific dimensional drawings

Differential pressure switch – psi differential ranges



Differential pressure switch – inches of water ranges

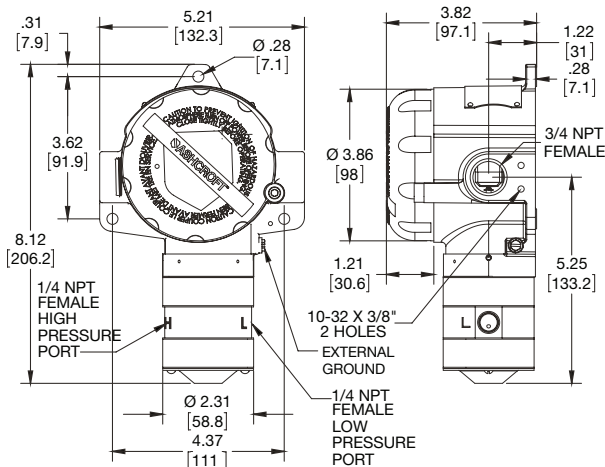


B-Series Differential Pressure Switches

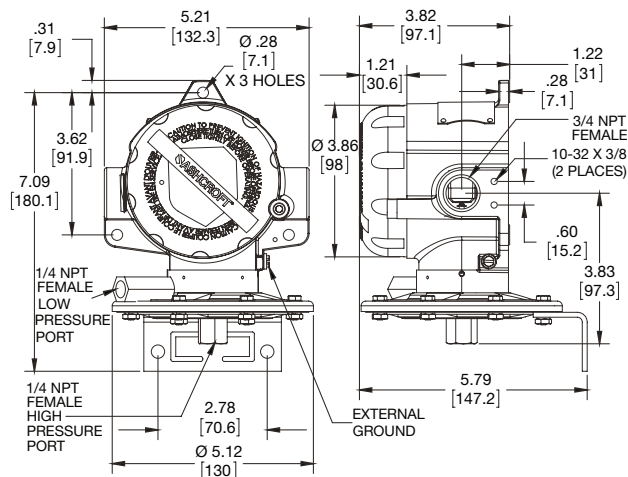
B700 Explosion Proof Enclosure Dimensions

For reference only, consult Ashcroft for specific dimensional drawings

Differential pressure switch – psi differential ranges



Differential pressure switch – inches of water ranges



Pressure Switches

Ashcroft Inc. supplies highly reliable Ashcroft® switches and controls for industrial and process applications. We begin with rock-solid designs, matching the most appropriate technology with the safety and reliability requirements of the applications. The materials of construction are specified to Ashcroft's exacting standards, and product is built to last in the toughest applications. Our modern, responsive manufacturing facility is supported by an extensive network of stocking distributors and factory sales offices located in virtually every part of the world. Special application assistance is always just a telephone call away.

The Ashcroft B-Series switch line is designed to satisfy most switch requirements. Materials of construction have been selected for long life. A wide variety of precision switch elements are available to meet every application requirement, including hermetically sealed contacts for added reliability and safety. The actuators we use have been proven in more than 20 years of service in the world's plants and mills. Special designs are available for fire safety, NACE, limit control and other more stringent requirements. Simplicity and ease of use are stressed to improve reliability of the installation.

Applications include: pumps, compressors, washers, filters, degreasers, evaporators, recovery systems, food processing, ground support equipment, reverse osmosis systems, heat exchangers, hydraulic systems, lubrication systems, marine equipment, textile machinery, heating and air conditioning equipment.

Differential pressure models use a unique, dual diaphragm-sealed piston design that features very high static operating pressures and small size. For setpoints between 4.5 and 150 inches of H₂O, a large diaphragm is used for increased sensitivity in both pressure and differential pressure designs with good choice of materials of construction. All standard models feature ± 1 percent of range setpoint repeatability and a minimum of 400 percent of range proof pressures.

These standard designs perform well in applications where shock and vibration could be a problem and may be used in conjunction with Ashcroft diaphragm seals in extreme services such as slurries or abrasive process fluids.

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