

## B/D/H-Series Switches Pressure, Differential Pressure & Hydraulic

### FEATURES

- Adjustable setpoints 15-100% of range
- Fixed or limited adjustable deadband
- Wide selection of switch elements
- Explosion proof enclosure provides uncompromising protection
- Special designs for NACE & fire applications
- SIL 3 Capable (B and D series only)

### TYPICAL USES

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



### SPECIFICATIONS



Setpoint:	Factory set or field adjustable		
Accuracy:	±1 % of full range (Additional setpoint shift of ±0,36 % of range per 10 K from initial setpoint set at 20 °C typical)		
Enclosure Rating:	B4/H4 Hydraulic: B7:	IP66 IP66	NEMA 4X NEMA 7/9
Enclosure Material:	Epoxy coated aluminum (standard) Optional: 316 stainless steel (IP66 and NEMA 7/9 only)		
Diaphragm Material:	Buna N, Viton, Teflon, Stainless steel, Monel® 400		
Process Connection:	¼ NPT Female (standard) Optional: ½ NPT Female, ¼ NPT Female & ½ NPT Male Combo		
Electrical Output:	SPDT or DPDT		
Electrical Termination:	¾ NPT Female (standard); Optional: ½ NPT Female, M20x1,5 Female		
Ambient Temperature Range:	-28 °C to 65 °C (-20 °F to 150 °F) ATEX: -20 °C to 60 °C (-4 °F to 140 °F) All units calibrated at 20 °C (70 °F)		
Process Temperature:	Buna N or Teflon diaphragm: -18 °C to 65 °C (0 °F to 150 °F) Viton diaphragm: -6 °C to 150 °C (20 °F to 300 °F) Stainless steel or Monel diaphragm -18 °C to 150 °C (0 °F to 300 °F)		
Pressure Range:	Pressure: -1 to 210 bar (Vac to 3000 psi) Differential: 0 to 42 bar (0 to 600 psid) Hydraulic: 70 to 500 bar (1000 to 7500 psi)		
Approvals:	UL:	E34743 (B4/D4) E38812 (B7/D7) 55541	
	CSA:	21UKEX1056X	(B7/D7 with XCN)
	CSAE:	21UKEX1056X	
	ATEX:	SIRA 02 ATEX 1391X IECEx SIR 14.0077X SIRA 04 ATEX 2081X IECEx SIR 16.0018X	(B7/D7 with XCN)  (B7/D7 with XCEN6/7)
	UKCA:	UKCA 0518 CE 2813	
	UKE:	CSAE 21 UKEX 2472X	
	CSAE:	21 UKEX 1056X	
	FM:	Limit Contol and Steam Limit Control	




### KEY BENEFITS


- Highly reliable
- Designed for use in wide range of applications
- Pressure ranges from vacuum to 7500 psi / 500 bar

Overpressure:	Check table at page 2		
Weight:	B4/H4: 0,7 kg	B7: 1,2 kg	B7 with YW: 2,4 kg
	D4: 1,6 kg	D7: 2,0 kg	D7 with YW: 3,2 kg



**FACTORY SEALED**  
 CLASS I DIV 1 GROUPS B, C, & D  
 CLASS II DIV 1 GROUPS E, F, & G

**Sira 02 ATEX 1391X**  
**IECEx SIR 14.0077X**  
**CSAE 21 UKEX 1056X**




 0518 2813 II 2GD  
 Ex db IIC T6 Gb  
 Ex tb IIIC T85°C Db IP 6X  
 (Ta = -20°C to +60°C)

**Sira 04 ATEX 2081X**  
**IECEx SIR 16.0018X**  
**CSAE 21 UKEX 2472X**




 0518 2813 II 1GD  
 Ex ia IIC T4 Ga  
 Ex ia IIIC T135°C Da IP6X  
 (Ta = -20°C to +60°C)

## B/D/H-Series Switches Pressure, Differential Pressure & Hydraulic

### RANGES & DEAD BANDS / HYSTERESIS

PRESSURE/VACUUM RANGES <sup>(1)</sup>			OVERPRESSURE RATINGS		APPROXIMATE DEADBAND SWITCH ELEMENT <sup>(2) (4)</sup> BUNA-N DIAPHRAGM				
NOMINAL PRESSURE			PROOF PSI	BURST PSI	20, 26, 27	21, 24, 31	50	22	32, 42
<b>Vacuum</b>									
-30" Hg	-760mm Hg	-100 kPa	250	400	0,3-0,7	1,5-4,0	0,5-2,2	0,4-1,5	2,1-4,2
<b>Compound</b>									
-15" H <sub>2</sub> O/ 15" H <sub>2</sub> O	-375 mm H <sub>2</sub> O/375 mm H <sub>2</sub> O	-3,7 kPa/ 3,7 kPa	20	35	0,15-0,75/ 0,15-0,75	1,5-2,5/ 1,5-2,5	0,45-2,0/ 0,45-2,0	0,5-1,2/ 0,5-1,2	2,1-3,5/ 2,1-3,5
-30" H <sub>2</sub> O/ 30" H <sub>2</sub> O	-760 mm H <sub>2</sub> O/ 760 mm H <sub>2</sub> O	-7,5 kPa/ 7,5 kPa	20	35	0,30-0,60/ 0,30-0,60	1,5-2,5/ 1,5-2,5	0,45-2,0/ 0,45-2,0	0,5-1,5/ 0,5-1,5	2,1-3,5/ 2,1-3,5
-30" Hg/ 15 psi	-760 mm Hg/ 1,0 kg/cm <sup>2</sup>	-100 kPa/ 100 kPa	250	400	0,5-1,0/ 0,3-0,7	2,0-3,0/ 0,5-2,5	0,75-2,5/ 0,5-1,0	0,7-1,8/ 0,7-1,4	2,8-4,2/ 0,7-2,1
-30" Hg/ 30 psi	-760 mm Hg/ 2,0 kg/cm <sup>2</sup>	-100 kPa/ 200 kPa	250	400	1,0-1,5/ 0,3-0,8	3,0-6,0/ 1,0-3,5	1,2-4,5/ 0,7-1,5	1,4-2,4/ 0,4-1,3	4,2-8,4/ 1,4-2,8
-30" Hg/ 60 psi	-760 mm Hg/ 4,0 kg/cm <sup>2</sup>	-100 kPa/ 400 kPa	250	400	2,0-3,0/ 0,7-1,5	5,0-9,0/ 3,0-5,0	2,5-7,0/ 3,0-5,0	2,8-4,5/ 3,0-5,0	7,0-12,0/ 4,2-7,0
<b>Pressure</b>									
10 H <sub>2</sub> O	250 mm H <sub>2</sub> O	2,5 kPa	20	35	0,2-0,5	1,0-2,0	0,35-1,5	0,4-1,0	1,4-2,8
30" H <sub>2</sub> O	750 mm H <sub>2</sub> O	7,5 kPa	20	35	0,3-0,6	1,5-2,5	0,45-2,0	0,5-2,0	2,1-3,5
60" H <sub>2</sub> O	1500 mm H <sub>2</sub> O	15 kPa	20	35	0,5-1,3	1,5-3,5	0,9-2,5	0,7-3,0	2,1-5,0
100" H <sub>2</sub> O	2500 mm H <sub>2</sub> O	25 kPa	20	35	0,6-1,6	2,5-5,5	1,1-4,0	1,0-4,0	3,5-7,7
150" H <sub>2</sub> O	3750 mm H <sub>2</sub> O	37 kPa	20	35	1,0-2,5	4,5-8,5	1,7-6,5	2,0-6,0	6,0-12,0
15 psi	1,0 kg/cm <sup>2</sup>	100 kPa	500	1500	0,1-0,35	0,5-1,5	0,2-1,0	0,4-1,0	0,7-2,1
30 psi	2,0 kg/cm <sup>2</sup>	200 kPa	500	1500	0,1-0,50	0,5-1,5	0,3-1,0	0,4-1,0	0,7-2,1
60 psi	4,0 kg/cm <sup>2</sup>	400 kPa	500	1500	0,3-1,0	1,0-3,5	0,7-2,5	0,6-2,0	1,4-5,0
100 psi	7,0 kg/cm <sup>2</sup>	700 kPa	1000	3000	0,5-1,7	1,5-5,0	1,1-3,5	1,0-4,5	2,1-7,0
200 psi	14 kg/cm <sup>2</sup>	1400 kPa	1000	3000	1-3	5-13	2-9	3,0-7,5	7,0-18,2
400 psi	28 kg/cm <sup>2</sup>	2800 kPa	2400	3000	4-7,5	5-24	5,5-15	4,0-11,0	7,0-33,6
600 psi	42 kg/cm <sup>2</sup>	4200 kPa	2400	3000	4-11	9-30	7-20	5,0-23,0	12,6-42
1000 psi	70 kg/cm <sup>2</sup>	7000 kPa	12000(5)	18000	7-30	30-110	18-70	15-80	42-154
3000 psi	210 kg/cm <sup>2</sup>	21000 kPa	12000	18000	15-60	80-235	37-160	30-230	112-329

DIFFERENTIAL PRESSURE RANGES			PRESSURE RATINGS		APPROXIMATE DEADBAND SWITCH ELEMENT <sup>(2) (3) (4)</sup> BUNA-N DIAPHRAGM				
NOMINAL PRESSURE			STATIC WORKING PRESSURE	PROOF PSI	20, 26, 27	21, 24, 31	50	22	32, 42
30" H <sub>2</sub> O	750 mm H <sub>2</sub> 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
60" H <sub>2</sub> O	1500 mm H <sub>2</sub> 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
100" H <sub>2</sub> O	2500 mm H <sub>2</sub> 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
150" H <sub>2</sub> O	3750 mm H <sub>2</sub> 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 psid	1,0 kg/cm <sup>2</sup>	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 psid	2,0 kg/cm <sup>2</sup>	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 psid	4,0 kg/cm <sup>2</sup>	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 psid	7,0 kg/cm <sup>2</sup>	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 psid	14,0 kg/cm <sup>2</sup>	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 psid	28,0 kg/cm <sup>2</sup>	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 psid	42,0 kg/cm <sup>2</sup>	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.
- 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  
 Monel: Multiply Buna N value by 1,7

- Deadbands given are for zero static working pressure.
- For approximate deadbands for dual switch elements, multiply the single switch element by 1,6.
- Proof pressure is 4000 psi with stainless steel and monel welded diaphragms.



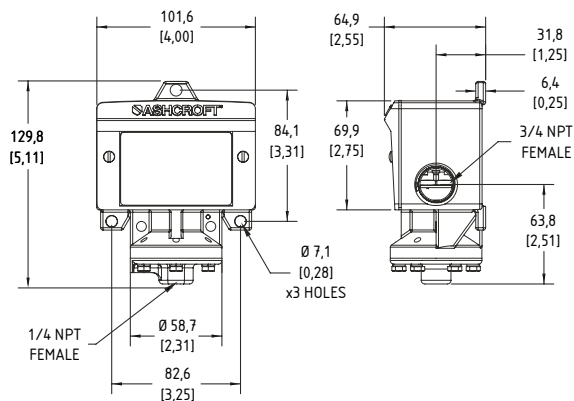
# B/D/H-Series Switches

## Pressure, Differential Pressure & Hydraulic

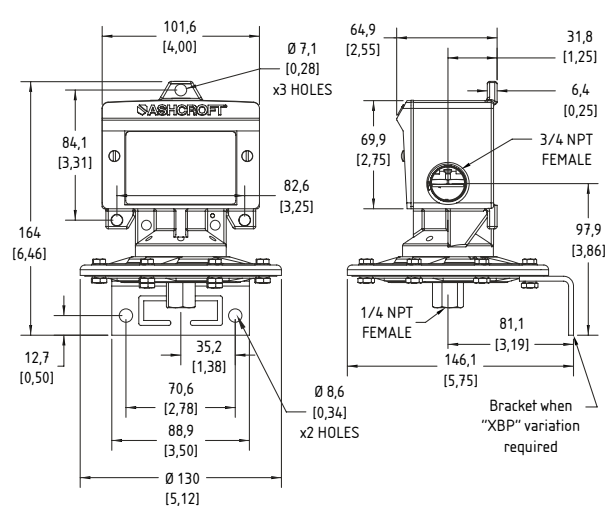
### DIMENSIONS IN MM [INCH]

For reference only, consult Ashcroft for specific dimensional drawings

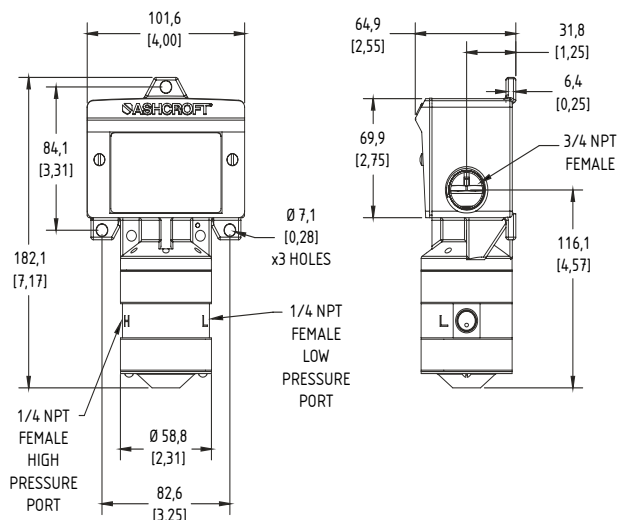
#### B4/H4 PRESSURE / HYDRAULIC PRESSURE SWITCH – PSI RANGES



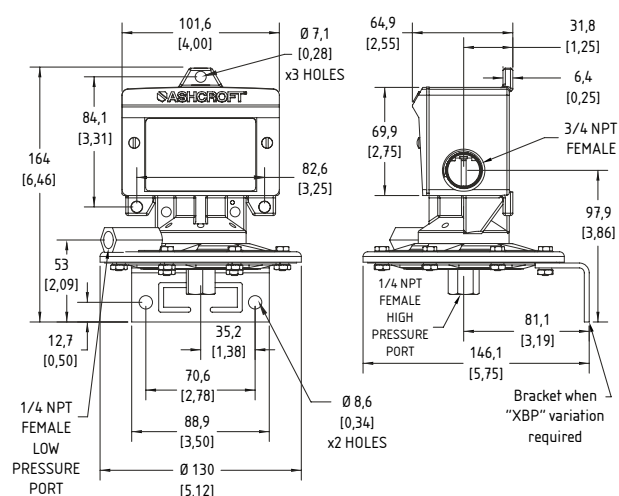
#### B4 PRESSURE SWITCH – INCHES OF WATER RANGES



#### D4 DIFFERENTIAL PRESSURE SWITCH – PSI DIFFERENTIAL RANGES



#### D4 DIFFERENTIAL PRESSURE SWITCH – INCHES OF WATER RANGES



**B4 - psi  
H4 - all ranges**



**B4 - inch H<sub>2</sub>O**



**D4 - inch H<sub>2</sub>O**

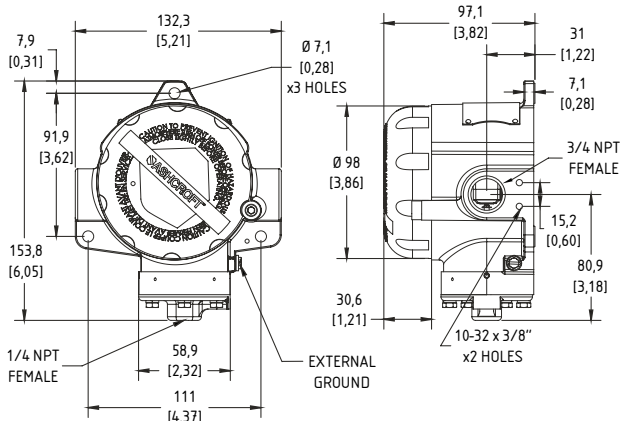


**D4 - psid**

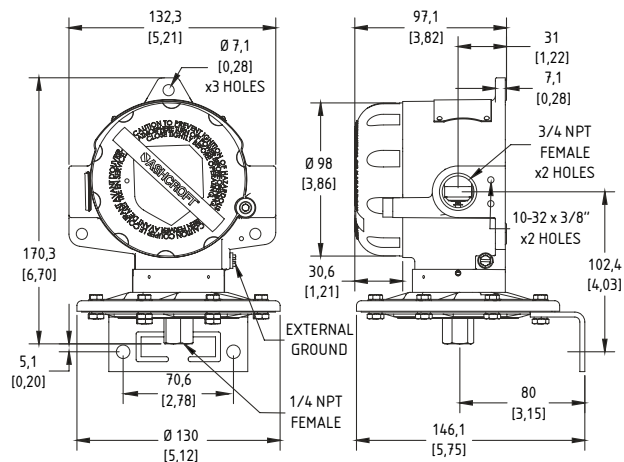


**B/D/H-Series Switches  
Pressure, Differential Pressure & Hydraulic**

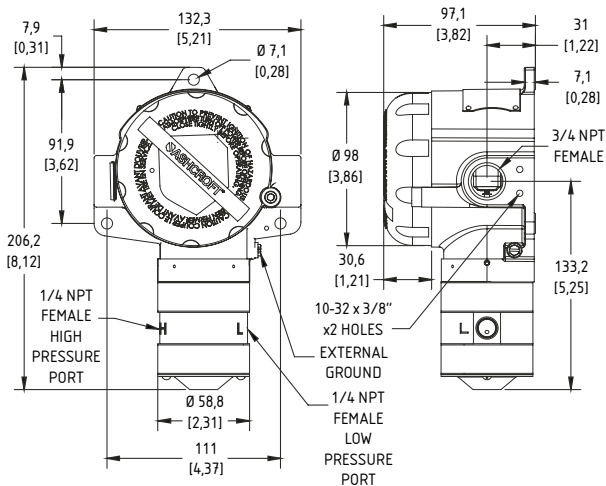
**B7 PRESSURE SWITCH –  
PSI RANGES**



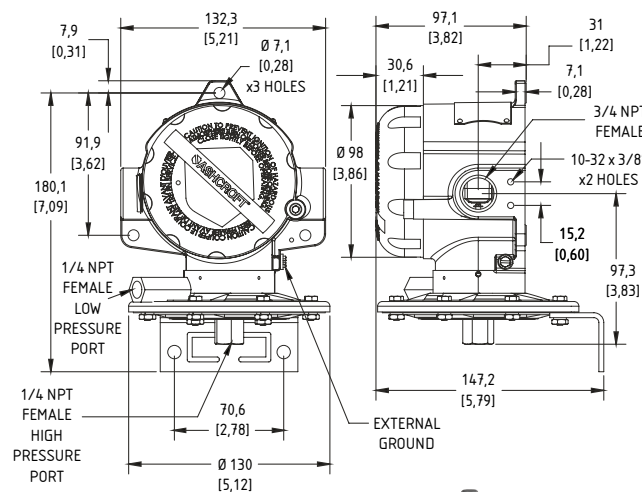
**B7 PRESSURE SWITCH –  
INCHES OF WATER RANGES**



**D7 DIFFERENTIAL PRESSURE SWITCH –  
PSI DIFFERENTIAL RANGES**



**D7 DIFFERENTIAL PRESSURE SWITCH –  
INCHES OF WATER RANGES**



**B7 - psi**



**B7 - inch H2O**



**D7 - inch H2O**



**D7 - psid**



**B7 - psi - YW**



**B7 - inch H2O - YW**



**D7 - inch H2O - YW**



**D7 - psid - YW**



## **B/D/H-Series Switches Pressure, Differential Pressure & Hydraulic**

Ashcroft Inc. supplies highly reliable Ashcroft<sup>®</sup> 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.

### **Pressure & Differential Pressure Switches**

B-Series pressure, differential pressure and vacuum switches use two different actuators depending on setpoint requirements. For setpoints between 150 mbar and 210 bar (2 psi and 3000 psi), the simple, rugged diaphragm-sealed piston actuator is used. This design features high reliability and choice of actuator seal materials for virtually every application. An optional welded design is also available for setpoints up to 70 bar (1000 psi) for maximum reliability. This design is available in 316 Stainless steel or Monel. Differential pressure models use a unique, dual diaphragm-sealed piston design that features very high static operating pressures and small size.

For setpoints between 10 mbar and 375 mbar (4,5 and 150 inches of H<sub>2</sub>O) 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  $\pm 1$  % of range setpoint repeatability and a minimum of 400 % 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.



## B-Series Switch Type B4 & B7 Pressure

ORDERING CODE	EXAMPLE:	B4	24	B	60#	IP
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**Enclosure**

B4	Pressure switch, watertight enclosure meets NEMA 3, 4, 4X, 13 and IP66	B4				
B7	Pressure switch, explosion-proof enclosure meets Div 1 & 2, NEMA 7 & 9 and IP66					

**Switch Element Selection - UL/CSA Listed SPDT**

20	Narrow deadband AC, 15 A - 125/250 VAC, estimated DC rating 0,4 A - 120 VDC (not UL listed)					
21	Ammonia service, 5 A - 125/250 VAC					
22	Hermetically sealed switch, narrow deadband, 5 A - 125/250 VAC, estimated DC rating 2,5 A - 28 VDC (not UL listed)					
23	Heavy duty AC, 22 A - 125/250 VAC					
24	General purpose, 15A - 125/250/480 VAC; 0,5 A - 125 VDC; 0,25 A - 250 VDC; 6 A - 30 VDC (Standard switch)		24			
25	Heavy duty DC, 10 A - 125 VAC or DC, 93 W - 125 VAC or DC					
26	Sealed environment proof, 15 A - 125/250 VAC, estimated DC rating 0,4 A - 120 VDC (not UL listed)					
27	High temperature 150 °C (300 °F), 15 A - 125/250 VAC					
28	Manual reset trip on, increasing 15 A - 125/250 VAC (Not available with type B7 enclosure)					
29	Manual reset trip on, decreasing, 15 A - 125/250 VAC (Not available with type B7 enclosure)					
31	Low level (gold) contacts, 1 A - 125 VAC					
32	Hermetically sealed switch, general purpose, 11 A - 125/250 VAC, 5 A - 30 VDC					
42	Hermetically sealed switch, gold contacts, 1 A - 125 VAC					
50	Variable deadband, 15 A - 125/250 VAC					

**Switch Element Selection - UL/CSA Listed Dual (2 SPDT)**

61	Dual narrow deadband, 15 A - 125/250 VAC, estimated DC rating, 0,4 A - 120 VDC (not UL listed)					
62	Dual sealed environment proof, 15 A - 125/250 VAC, estimated DC rating 0,4 A - 120 VDC (not UL listed)					
63	Dual high temperature 150 °C (300 °F), 15 A - 125/250 VAC					
64	Dual general purpose, 15A - 125/250/480 VAC; 0,5 A - 125 VDC; 0,25 A - 250 VDC; 6 A - 30 VDC					
65	Dual ammonia service, 5 A - 125/250 VAC					
67	Dual hermetically sealed switch, narrow deadband, 5 A - 125/250 VAC, estimated DC rating, 2,5 A - 28 VDC (Wires cannot be terminated inside type B4 switch enclosure and not UL listed)					
68	Dual hermetically sealed switch, general purpose, 11 A - 125/250 VAC, 5 A - 30 VDC (Wires cannot be terminated inside type B4 switch enclosure)					
70	Dual low level gold contacts, 1 A - 125 VAC					
71	Dual hermetically sealed switch, gold contacts, 1 A - 125 VAC (Wires cannot be terminated inside type B4 switch enclosure)					

**Actuator Seal**

	Material	Process temperatures °C    °F	Ranges				Notes
			Vacuum "H <sub>2</sub> O	0-42 bar 0-600 psi	0-70 bar 0-1000 psi	0-210 bar 0-3000 psi	
B	Buna	-18/65 (0/150)	•	•	•	•	Stainless steel process connection
V	Viton	-7/150 (20/300)	•	•	•	•	Stainless steel process connection
T	Teflon	-18/65 (0/150)	•	•	•	•	Stainless steel process connection
S	St.st 316L	-18/150 (0/300)		•	•		Available on pressure only, Stainless steel process connection
P	Monel	-18/150 (0/300)		•	•		Available on pressure only

**Range (coding examples only, see range table on page 2 for all standard ranges)**

60#    60 psi

60#

continued at page 7



## B-Series Switch Type B4 & B7 Pressure

**ORDERING CODE**      **EXAMPLE:**    **B4**    **24**    **B**    **60#**    **IP**    **02**    **X**
**Case Style**

IP	Standard case IP66	IP
CN	ATEX, UKEx and IECEx: Ex db IIC T6 Gb and Ex tb IIIC T85°C Db IP6X (Ta = -20°C to +60°C) with electrical connection ¾ NPT female (only admissible for type B7)	
CEN6	ATEX, UKEx and IECEx: Ex ia IIC T4 Ga and Ex ia IIC T135°C Da IP6X (Ta = -20°C to +60°C) with standard electrical connection ¾ NPT female (only admissible for type B7)	
CEN7	ATEX, UKEx and IECEx: Ex ia IIC T4 Ga and Ex ia IIC T135°C Da IP6X (Ta = -20°C to +60°C) with cable gland M20 (only admissible for type B7)	
IPM1	Case with protection IP66 and DIN Hirschmann connector	
UL	UL listed NEMA 3, 4, 4x, 13 and IP66 (only admissible for type B4)	

**Process Connection Size**

02	¼ NPT male (with adapter)
05	7/16-20 SAE female (only admissible for compound ranges and ranges ≤ 60 psi)
06	½ NPT male / ¼ NPT female (standard for ranges ≥ 1000 psi)
07	½ NPT female (inH2O ranges and ranges ≥ 1000 psi with adapter)
13	G ¼ B male (with adapter)
15	G ½ B male (with adapter)
16	M20x1,5 male (with adapter)
25	¼ NPT female (only for ranges ≤ 600 psi)
26	G ¼ female (with adapter)
51	G ½ female (with adapter)

**Options (If choosing an option(s) must include a "X")**

X\_

**Electrical Connection**

=	¾ NPT female (standard)
CEN3	Cable gland M20, Ex d (only admissible for type B7)
G15	Reducing bushing ¾ NPT female to G ½ female
HAN7DS	Harting connection HAN 7D with silver contacts (only admissible for type B4)
HAN7DG	Harting connection HAN 7D with gold contacts (only admissible for type B4)
JL	Reducing bushing ¾ NPT female to ½ NPT female
JM	Reducing bushing ¾ NPT female to M20x1,5 female
KV1	Plastic cable gland IP65, PG 9 (only admissible for type B4)
KV2	Plastic cable gland IP65, PG 11 (only admissible for type B4)
KV3	Plastic cable gland IP65, PG 13,5 (only admissible for type B4)
KV4	Plastic cable gland IP65, PG 16 (only admissible for type B4)
KV9	Cable gland EEx d II (Hawke UK), ¾ NPT male (only admissible for type B7)
KV42	Cable gland EEx d II PG 13,5 (only admissible for type B7)
KV52	Plastic cable gland PG 13,5 (only admissible for type B4)
LE	2 m (6 ft) leads on micro switch
M25	Reducing bushing ¾ NPT female to M25x1,5 female
PM	Wire leads potted in conduit single/dual

**Electrical Connection Options**

K3	Terminal block (only admissible for type B7; Standard with 2 SPDT and microswitch 22, 23, 31, 32, and 42)
PJ	24 VDC pilot light single/dual (only admissible for type B4)
PK	Pilot lights (neon) top mounted single/dual (only admissible for type B4)

continued at page 8



## B-Series Switch Type B4 & B7 Pressure

**ORDERING CODE**
**EXAMPLE:**
**B4** **24** **B** **60#** **IP** **02** **XNH**
**Agency Approval**

- EAC EAC declaration according TR-TC 012 (only admissible for type B7)  
 C8 CSA approval  
 FM FM approval, pilot lights included (not available on all combinations, consult Ashcroft for support)

**Case**

- BP Wall mounting bracket (only admissible for in.H2O ranges)  
 CH Chained cover  
 FP Fungus proof (not available on CN, CEN6 and CEN7)  
 TM 2" Pipe mounting bracket  
 TM1 2" Pipe mounting bracket, Material 316L (1.4404)

**Case Material Options**

- YW Case in stainless steel 316L (1.4404) (only admissible for type B7)

**Process Connection**

- D2 Dual seal rating (only admissible for type B7)  
 G3 Belleville actuator (64 or 68 switch element only; not available on all combinations)  
 G6 Gas/oil UL limit control to 600 psi (only Buna N and Viton actuator seal; not available on all combinations)  
 G7 Redundant diaphragm with vent (only stainless steel diaphragm; not available on all combinations)  
 G8 Steam limit control to 300 psi  
 G9 Fire safe actuator ¼ NPT female (only stainless steel diaphragm)  
 HX High pressure rating 100 psi proof (only admissible for in.H2O ranges)  
 TA Stainless steel 316 (1.4401) process connection ¼ NPT female (only admissible for in.H2O ranges)

**Setpoint**

- FS Factory adjusted setpoint (setpoint and direction must be specified by the customer)

**Cleaning**

- 6B Cleaned for gaseous Oxygen or other strong oxidizing agents (not available for Buna N actuator seal)  
 6W Cleaned for oxidizing processes other than Oxygen  
 YF Silicone free product

**Marking/Tagging**

- MD Metric range on label (Engineering unit must be specified by customer)  
 NH Stainless steel tagging, wired  
 NH1 Extra large stainless steel tagging, wired  
 RN Range scale

**Test/Certificate**

- CD2 Material test report according to EN 10204 / 2.2  
 C6 Typical material certificate  
 MA Certificate according to NACE MR0175 / ISO 15156-2015 and MR0103-2015 / ISO 15156-2015 (only for actuator seal P)  
 MQ Positive material Identification (PMI-Test) (only admissible for actuator seal P and S in combination with psi ranges)  
 C4 Individual certified calibration chart  
 HY Hydrostatic testing according EN10204 / 3.1





## D-Series Switch Type D4 & D7 Differential Pressure

ORDERING CODE		EXAMPLE:	D4	24	B	100#	=
<b>Enclosure</b>							
D4	Differential pressure switch, water-tight enclosure, NEMA 3, 4, 4X, 13 and IP66		D4				
D7	Differential pressure switch, explosion- proof enclosure, Div 1 & 2, NEMA 7 & 9 and IP66						
<b>Switch Element Selection - UL/CSA Listed SPDT</b>							
20	Narrow deadband AC, 15 A - 125/250 VAC, estimated DC rating 0,4 A - 120 VDC (not UL listed)						
21	Ammonia service, 5 A - 125/250 VAC						
22	Hermetically sealed switch, narrow deadband, 5 A - 125/250 VAC, estimated DC rating 2,5 A - 28 VDC (not UL listed)						
23	Heavy duty AC, 22 A - 125/250 VAC						
24	General purpose, 15A - 125/250/480 VAC; 0,5 A - 125 VDC; 0,25 A - 250 VDC; 6 A - 30 VDC (Standard switch)			24			
25	Heavy duty DC, 10 A - 125 VAC or DC, 93 W - 125 VAC or DC (Not available for type B7 and psid ranges)						
26	Sealed environment proof, 15 A - 125/250 VAC, estimated DC rating 0,4 A - 120 VDC (not UL listed)						
27	High temperature 150 °C (300 °F), 15 A - 125/250 VAC						
28	Manual reset trip on, increasing 15 A - 125/250 VAC (Not available with type B7 enclosure)						
29	Manual reset trip on, decreasing, 15 A - 125/250 VAC (Not available with type B7 enclosure)						
31	Low level (gold) contacts, 1 A - 125 VAC						
32	Hermetically sealed switch, general purpose, 11 A - 125/250 VAC, 5 A - 30 VDC						
42	Hermetically sealed switch, gold contacts, 1 A - 125 VAC						
50	Variable deadband, 15 A - 125/250 VAC						
<b>Switch Element Selection - UL/CSA Listed Dual (2 SPDT)</b>							
61	Dual narrow deadband, 15 A - 125/250 VAC, estimated DC rating, 0,4 A - 120 VDC (not UL listed)						
62	Dual sealed environment proof, 15 A - 125/250 VAC, estimated DC rating 0,4 A - 120 VDC (not UL listed)						
63	Dual high temperature 150 °C (300 °F), 15 A - 125/250 VAC						
64	Dual general purpose, 15A - 125/250/480 VAC; 0,5 A - 125 VDC; 0,25 A - 250 VDC; 6 A - 30 VDC						
65	Dual ammonia service, 5 A - 125/250 VAC						
67	Dual hermetically sealed switch, narrow deadband, 5 A - 125/250 VAC, estimated DC rating, 2,5 A - 28 VDC (Wires cannot be terminated inside type B4 switch enclosure and not UL listed)						
68	Dual hermetically sealed switch, general purpose, 11 A - 125/250 VAC, 5 A - 30 VDC (Wires cannot be terminated inside type B4 switch enclosure)						
70	Dual low level gold contacts, 1 A - 125 VAC						
71	Dual hermetically sealed switch, gold contacts, 1 A - 125 VAC (Wires cannot be terminated inside type B4 switch enclosure)						
<b>Actuator Seal</b>							
		Process temperatures		Ranges		Notes	
		°C	°F	0-6,2 bar 15-90 psi	7 - 42 bar 100-600 psi		
B	Buna	-18/65	(0/150)	•	•	Steel, nickel plated	
V	Viton	-7/150	(20/300)	•	•	Steel, nickel plated	
T	Teflon	-18/65	(0/150)	•	•	Steel, nickel plated	
S	St.st 316L	-18/150	(0/300)	•		Steel, nickel plated	
<b>Range (coding examples only, see range table on page 2 for all standard ranges)</b>							
100#	100 psi						100#

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## D-Series Switch Type D4 & D7 Differential Pressure

**ORDERING CODE** **EXAMPLE:** **D4** **24** **B** **100#** = **25** **X**

### Case Style

=	Standard enclosure, for description read "Enclosure" section of this table	=
CN	ATEX, UKEx and IECEx: Ex db IIC T6 Gb and Ex tb IIIC T85°C Db IP 6X (Ta = -20°C to +60°C) with electrical connection ¼ NPT female (only admissible for type B7)	
CEN6	ATEX, UKEx and IECEx: Ex ia IIC T4 Ga and Ex ia IIC T135°C Da IP6X (Ta = -20°C to +60°C) with standard electrical connection ¼ NPT female (only admissible for type B7)	
CEN7	ATEX, UKEx and IECEx: Ex ia IIC T4 Ga and Ex ia IIC T135°C Da IP6X (Ta = -20°C to +60°C) with cable gland M20 (only admissible for type B7)	
IPM1	Case with protection IP66 and DIN Hirschmann connector	
UL	UL listed NEMA 3, 4, 4x, 13 and IP66 (only admissible for type B4)	

### Process Connection Size

06	¼ NPT female (standard)	
02	¼ NPT male (with adapter)	02
07	½ NPT female (with adapter)	
13	G ¼ B male (with adapter)	
15	G ½ B male (with adapter)	
16	M20x1,5 male (with adapter)	
25	¼ NPT female (standard for all ranges)	
26	G ¼ female (with adapter)	

### Options (If choosing an option(s) must include a "X")

#### Electrical Connection

=	¼ NPT female (standard)
CEN3	Cable gland M20, Ex d (only admissible for type B7)
G15	Reducing bushing ¼ NPT female to G ½ female
HAN7DS	Harting connection HAN 7D with silver contacts (only admissible for type B4)
HAN7DG	Harting connection HAN 7D with gold contacts (only admissible for type B4)
JK	¼ NPT Female Left conduit connection (inadmissible for dual switches and standard on type B7)
JL	Reducing bushing ¼ NPT female to ½ NPT female
JM	Reducing bushing ¼ NPT female to M20x1,5 female
KV1	Plastic cable gland IP65, PG 9 (only admissible for type B4)
KV2	Plastic cable gland IP65, PG 11 (only admissible for type B4)
KV3	Plastic cable gland IP65, PG 13,5 (only admissible for type B4)
KV4	Plastic cable gland IP65, PG 16 (only admissible for type B4)
KV9	Cable gland EEx d II (Hawke UK), ¼ NPT male (only admissible for type B7)
KV42	Cable gland EEx d II PG 13,5 (only admissible for type B7)
KV52	Plastic cable gland PG 13,5 (only admissible for type B4)
LE	2 m (6 ft) leads on micro switch
M25	Reducing bushing ¼ NPT female to M25x1,5 female
PM	Wire leads potted in conduit single/dual

#### Electrical Connection Options

K3	Terminal block (only admissible for type B7; Standard with 2 SPDT and microswitch 22, 23, 31, 32, and 42)
PJ	24 VDC pilot light single/dual (only admissible for type B4)
PK	Pilot lights (neon) top mounted single/dual (only admissible for type B4)

continued at page 11



## D-Series Switch Type D4 & D7 Differential Pressure

**ORDERING CODE** **EXAMPLE:** **D4** **24** **B** **100#** = **25** **X****Agency Approval**

- EAC EAC declaration according TR-TC 012 (only admissible for type B7)  
C8 CSA approval  
FM FM approval, pilot lights included (not available on all combinations, consult Ashcroft for support)

**Case**

- BP Wall mounting bracket (only admissible for in.H2O ranges)  
CH Chained cover  
FP Fungus proof (not available on CN, CEN6 and CEN7)  
TM 2" Pipe mounting bracket

**Case Material Options**

- YW Case in stainless steel 316L (1.4404) (only admissible for type B7)

**Process Connection**

- HS High static pressure (max. 100 bar), stainless steel 316 (1.4401)  
G5 Gas/oil UL limit control to 150 in. H2O  
UD Stainless steel 316 (1.4401) pressure connection (only admissible for psid ranges and standard for actuator seal S)  
HX High pressure rating 40 psi static, 600 psi proof (only admissible for in.H2O ranges)  
TA Stainless steel 316 (1.4401) process connection 1/4 NPT female (only admissible for in.H2O ranges)

**Setpoint**

- FS Factory adjusted setpoint (setpoint and direction must be specified by customer)

**Cleaning**

- 6B Cleaned for gaseous Oxygen or other strong oxidizing agents (not available for Buna N actuator seal)  
6W Cleaned for oxidizing processes other than Oxygen

**Marking/Tagging**

- MD Metric range on label (Engineering unit must be specified by customer)  
NH Stainless steel tagging, wired  
NH1 Extra large stainless steel tagging, wired  
RN Range scale

**Test/Certificate**

- CD2 Material test report according to EN 10204 / 2.2  
C4 Individual certified calibration chart  
HY Hydrostatic testing according EN10204 / 3.1



## H-Series Switch Type H4 Hydraulic Pressure

**ORDERING CODE** **EXAMPLE:** H4 24 V 5000#

**Enclosure**

H4 Hydraulic pressure switch, watertight enclosure meets NEMA 3, 4, 4X, 13 and IP66

**Switch Element Selection - UL/CSA Listed SPDT**

- 20 Narrow deadband AC, 15 A - 125/250 VAC, estimated DC rating 0,4 A - 120 VDC (not UL listed)
- 22 Hermetically sealed switch, narrow deadband, 5 A - 125/250 VAC, estimated DC rating 2.5 A - 28 VDC (not UL listed)
- 23 Heavy duty ac, 22 A - 125/250 VAC
- 24 General purpose, 15A - 125/250/480 VAC; 0.5 A - 125 VDC; 0.25 A - 250 VDC; 6 A - 30 VDC (Standard switch)
- 25 Heavy duty DC, 10 A - 125 VAC or DC, 93 W - 125 VAC or DC
- 26 Sealed environment proof, 15 A - 125/250 VAC, estimated DC rating 0.4 A - 120 VDC (not UL listed)
- 27 High temperature 150 °C (300 °F), 15 A - 125/250 VAC
- 28 Manual reset trip on, increasing 15 A - 125/250 VAC
- 29 Manual reset trip on, decreasing, 15 A - 125/250 VAC
- 32 Hermetically sealed switch, general purpose, 11 A - 125/250 VAC, 5 A - 30 VDC

**Switch Element Selection - UL/CSA Listed Dual (2 SPDT)**

- 61 Dual narrow deadband, 15 A - 125/250 VAC, estimated DC rating, 0.4 A - 120 VDC (not UL listed)
- 62 Dual sealed environment proof, 15 A - 125/250 VAC, estimated DC rating 0.4 A - 120 VDC (not UL listed)
- 63 Dual high temp. 300°F, 15 A - 125/250 VAC
- 64 Dual general purpose, 15A - 125/250/480 VAC; 0.5 A - 125 VDC; 0.25 A - 250 VDC; 6 A - 30 VDC
- 65 Dual ammonia service, 5 A - 125/250 VAC
- 70 Dual low level gold contacts, 1 A - 125 VAC

**Actuator Seal**

Material	Process temperatures		Ranges	Notes
	°C	°F	70-500 bar 1000-7500 psi	
V Viton	-7/150	(20/300)	•	Viton O-ring, stainless steel pressure connection

**Range**

Range			Adjustable Setpoint	Proof Pressure
psi	kg/cm <sup>2</sup>	MPa	psi	psi
1000	70	7	150 - 1000	12000
2000	140	14	300 - 2000	12000
3000	210	21	450 - 3000	12000
5000	345	34	750 - 5000	10000
7500	500	50	1125 - 7500	10000

continued at page 13



## H-Series Switch Type 400 Hydraulic Pressure

<b>ORDERING CODE</b>	<b>EXAMPLE:</b>	H4	24	V	5000#	=	=	X
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**Case Style**

= Standard case, more details see "Enclosure" above at this table

**Process Connection Size**

= ¼ NPT female

**Options (If choosing an option(s) must include a "X")**
**Electrical Connection**

- = ¾ NPT female (standard)
- JK ¾ NPT Female Left conduit connection (inadmissible for dual switches)
- JL Reducing bushing ¾ NPT female to ½ NPT female
- JM Reducing bushing ¾ NPT female to M20x1,5 female
- LE 2 m (6 ft) leads on micro switch
- PM Wire leads potted in conduit single/dual

**Electrical Connection Options**

- PJ 24 VDC pilot light single/dual
- PK Pilot lights (neon) top mounted single/dual

**Case**

- CH Chained cover
- FP Fungus proof
- TM 2" Pipe mounting bracket

**Setpoint**

- FS Factory adjusted setpoint (setpoint and direction must be specified by customer)

**Cleaning**

- 6B Cleaned for gaseous Oxygen or other strong oxidizing agents
- 6W Cleaned for oxidizing processes other than Oxygen

**Marking/Tagging**

- MD Metric range on label (Engineering unit must be specified by customer)
- NH Stainless steel tagging, wired
- RN Range scale

**Test/Certificate**

- CD2 Material test report according to EN 10204 / 2.2
- C6 Typical material certificate
- C4 Individual certified calibration chart

