



DIFFERENTIAL PRESSURE SWITCHES

**DM
300
360**

- HIGH STATIC PRESSURE ● DIAPHRAGM SENSOR ● HIGH REPEATABILITY ●
- TAMPER PROOF SETPOINT ADJUSTMENT ●



This compact version in Switzer series DM 300 Differential Pressure Switches using components of high reliability and is specifically designed for OEMs.

Series 300 Compact Pressure Difference Switches are designed and made to the latest standards to comply with current international philosophy of process instrumentation. The series is compact, easy to install and features high sensitivity over the entire adjustable range together with high static pressure capability.

The sensing element is mounted external to the switch mechanisms which are of stainless steel for arduous atmospheres and high humidity. Sensing element and switching modes can be combined to offer the variety needed to suit the different applications.

The mechanical movements are restricted to absolute minimum which ensures long term stability.

Style DM Pressure Die Cast Aluminium weatherproof housing is best suited for harsh and outdoor mountings.

GENERAL SPECIFICATIONS

Enclosure	Aluminium pressure die cast weatherproof to IP:66	Ambient Temperature	(-10 to 60°C
Ranges	(-) 2.5 mbar to 15 bar, several standard ranges. Refer Ordering Matrix	Switching Element	Instrument quality snap acting SPDT microswitch (Note 7 & 8)
Sensor	316 LSS / Nitrile diaphragm	Switching Differential	Fixed or wideband adjustable. Refer table '3'
Wetted Parts	Aluminium / 304 SS / 316 SS	Process Connection	1/4" NPT(F) standard. Adaptors for other sizes optional
Repeatability	±1% FSR (Note 1)	Electrical Connection	3/4" ETF with Nylon Cable gland to suit 8 to 11 mm OD cable (OR)
Scale Accuracy	±5% FSR (Note 3)		1/2" NPTF Entry to suit Metallic double compression cable gland
Range Setting	External with lock	Mounting	Wall / Back panel / 2" Pipe
Max. Working Pressure	110 bar for 301 & 303 1 bar / 15 bar for 361 & 363 (MWP - Note 10 & Table - 2)	Weight	3.0 Kgs. for 301/303 2.2 Kgs for 361/363
Max. Process Temp.	70°C with Nitrile O Ring For higher temperatures use longer impulse lines. Ask for piping nomogram #441 184-4 (Note 11)	Confirmity	BS 6134 :1991

ORDERING MATRIX

ENCLOSURE

Aluminium pressure die cast weatherproof to IP:66 with Nitrile gasket ————— **DM**

MODEL

Fixed Diff. : This is the basic differential pressure switch having non-adjustable switching differential actuated by a stainless steel diaphragm with SS wetted parts ————— **301**

Adj. Diff. : Same as 301 but with auxiliary mechanism permitting switching differential adjustment over a wide band. ————— **303**

Fixed Diff. : Same as 301 but with Nitrile diaphragm and Aluminium wetted parts ————— **361**

Adj. Diff. : Same as 303 but with Nitrile diaphragm and Aluminium wetted parts ————— **363**

MATERIALS OF WETTED PARTS

For Models 301 / 303

316L SS diaphragm with 304SS wetted parts ————— **04**

316L SS diaphragm with 316 SS wetted parts ————— **02**

316L SS diaphragm with 316 SS wetted parts for NACE application with Viton 'O' ring ————— **ON**

Nitrile diaphragm with 304 SS wetted parts for applications with pressure reversal ————— **B4**

Nitrile diaphragm with 316 SS wetted parts for applications with pressure reversal ————— **B2**

For Models 361 / 363

Nitrile diaphragm with Aluminium wetted parts ————— **B5**

RANGE CODE : Refer Table-3 —————

SWITCH CODE AND RATING : Refer Table-1 —————

ELECTRICAL ENTRY

3/4" E T with Nylon Cable glands suitable for 8 to 11 mm O D cable (Single entry only) ————— **A**

1/2" N PTF (Single entry only) ————— **B**

Table 1 : SWITCH CODE, RATING & AVAILABILITY

SWTCH CODE (SPDT)	SWTCH CODE (DPDT)	AC RATING	DC RATING IN AMPS						AVAILABILITY OF SPCO & DPCO IN MODELS
			RESISTIVE			INDUCTIVE			
			220V	110V	24V	220V	110V	24V	
3	33	15A 250 / 125V	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	301, 361
D	DD	15A 250 / 125V	0.2	0.4	2.0	0.02	0.03	1.0	301, 361
W	WW	15A 250 / 125V	0.3	0.5	6.0	0.05	0.1	4.0	303, 363
5	55	5A 250 / 125V	0.2	0.4	4.0	0.2	0.4	3.0	301, 361
6	66	0.1A 125V	N.R.	N.R.	0.1	N.R.	N.R.	N.A.	301, 361
R	RR	0.1 250 / 125V	N.R.	N.R.	N.A.	N.R.	N.R.	N.A.	301, 361
S	SS	5A 250 / 125V	0.25	0.5	3.0	0.1	0.2	2.0	301, 361
J	JJ	5A 250V	N.A.	N.A.	5.0	N.A.	N.A.	3.0	301, 361
K	KK	1A 125V	N.A.	N.A.	1.0	N.A.	N.A.	0.5	301, 361

Code 3 & D – General purpose with Silver alloy contact. Code K – Hermetically sealed, inert gas filled with Gold plated contact.
 Code 5 – For general purpose with good DC rating with Silver alloy contact. Code R – IP:67 sealed microswitch with Gold plated contact.
 Code 6 – With Gold alloy contact. (Recommended for low energy switching) Code J – Hermetically sealed, inert gas filled with Silver alloy contact.
 Code W – General purpose with Silver alloy contact. Code S – IP:67 sealed microswitch with silver alloy contact.

N.A. – Not Available N.R. – Not Recommended

Table-2 : MAXIMUM WORKING PRESSURE RATING

Range Code	Wetted Parts				Max. Working Pressure (in Bar)			
	301	303	361	363	301	303	361	363
B3D	N.A.	N.A.	Aluminium	N.A.	N.A.	N.A.	1	N.A.
B6D	304/316 SS	304 / 316 SS		Aluminium	110	110	15	15
C6D			Aluminium					
E1D				Aluminium				
E8D			Aluminium					
G5B				Aluminium				
J0B			Aluminium					
B7K	Aluminium							
P8B		Aluminium						

N.A – Not available in these models

Table-3 : RANGE CODE & DIFFERENTIAL

Range Code	Range	Fixed Diffl.				Adj. Diffl.	Fixed Diffl.				Adj. Diffl.
		Model 301				Model 303	Model 361				Model 363
		D/3/6	5	J / K	S / R	W	D/3/6	5	J / K	S / R	W
in mbar											
B3D	(-) 2.5 to 2.5 mbar	--	--	--	--	--	0.8	1.5	--	--	--
B6D	0 to 5 mbar	--	--	--	--	--	0.4	1.4	--	--	--
C6D	3 to 25 mbar	6	6	10	12	--	0.8	-	--	--	--
E1D	5 to 120 mbar	5	10	12	20	55 to 70	12	12	--	30	65 to 70
E8D	50 to 350 mbar	12	20	30	40	80 to 200	20	25	60	45	95 to 200
G5B	0.1 to 1.5 bar	60	85	120	125	350 to 900	70	90	250	135	400 to 900
J0B	0.2 to 4 bar	175	350	500	450	--	300	600	700	675	--
B7K	0.7 to 7 bar	300	500	--	--	--	--	--	--	--	--
P8B	1.5 to 15 bar	800	1350	--	--	--	--	--	--	--	--

1. For On-Off differential valves for DPDT (2 x S PDT) switching, apply a multiplication factor of 1.3 to the above values.
 2. For Range codes B7K & P8B in model 301 DPCO switching is possible only for switch codes 3, D & 6

NOTES

1. Accuracy & Repeatability are not different for all blind differential pressure switches. A shift of $\pm 2\%$ may be observed in setpoint when pressure falls from full static pressure. Settings will also shift with varying temperature.
2. The instrument is calibrated in the mounting position depicted in the drawing. Mounting in any other direction will cause a minor range shift, especially in low and compound ranges. Ranges above 1 bar will not experience this shift.
3. A Differential Pressure switch is a switching device and not a measuring instrument — even though it has a scale with $\pm 5\%$ FSR accuracy to assist setting. For this reason, Test Certificates will not contain individual ON-OFF switching values at different scale readings. Maximum differential obtained alone will be declared, besides other specifications.
4. Select working range of the instrument such that the set value lies in the mid 35% of the range i.e., between 35% and 70% of range span.
5. For switching differential values please refer Table-1. Switching differentials furnished are nominal values under test conditions at mid-scale and will vary with range settings and operating conditions.
6. On a number of settings should not exceed the upper or lower range value.
7. DPDT action is achieved by two SPDT switches synchronised to practical limits i.e., $\pm 2\%$ of FSR. Deadband for DPDT contacts are higher than that of SPDT as force required to actuate the contacts are more. Please refer respective differential table.
8. Contact life of microswitches are 5×10^5 switching cycles for nominal load. To quench DC sparks, use diode in parallel with inductance, ensuring polarity. A 'R-C' network is also recommended with 'R' value in Ohms equal to coil resistance and 'C' value in micro Farads equal to holding current in Amps.
9. All differential pressure switches are calibrated by applying pressure to HI port, venting LO port to atmosphere. Inspection will also be limited to such a practice.
10. MWP: The value mentioned herein is the highest permissible pressure that can be applied. Cannot be proof tested for any higher pressure value.
11. Ambient temperature range: All models are suitable for operating within a range of ambient temperature from $(-)$ 25°C to $(+)$ 60°C provided the process does not freeze within this range. Below 0°C , precautions should be taken in humid atmospheres to prevent frost formation inside the instrument from jamming the mechanism. Occasional excursions beyond this range are possible but accuracy might be impaired. The microswitch is the limiting factor which should never exceed the limits of $(-)$ 50°C to $(+)$ 80°C .
12. Fluid Temperature: A Differential Pressure switch when connected to the process is not subjected to through flow and therefore is not fully exposed to the fluid temperature. Use of adequate length of impulse piping will greatly reduce excessive heating of the sensing element. For example connection of 7.5 cm of 12 mm dia impulse piping will reduce water temperature of 100°C to 65°C at an ambient temperature of 50°C . Ask factory for piping nomenclature # 441184-4 for different temperatures.

In 301 / 303 Higher temperatures greater than 70°C by using seal O rings of different material for different temperatures as below:

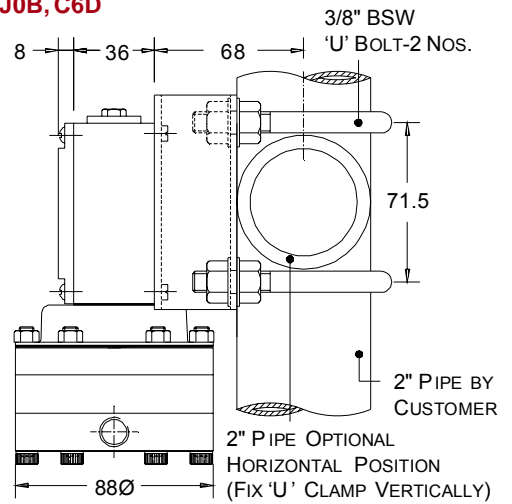
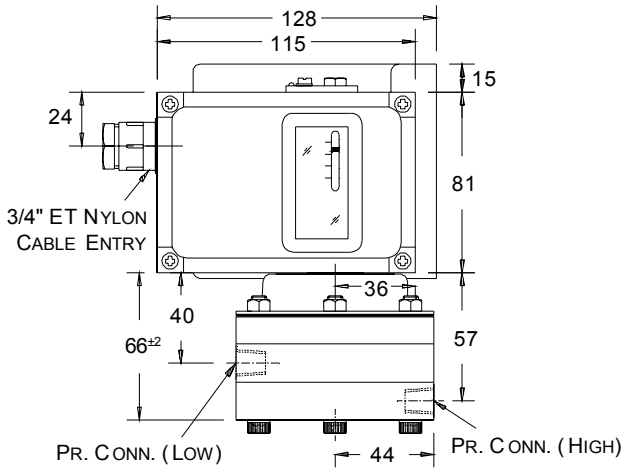
 125°C for EPDM and 205°C for Viton.
13. Style D M is weatherproof only if all entries and joint faces are properly sealed.
14. Ensure that impulse pipework applies no stress on sensing element housing and use spanners to hold pressure port / housing when connections are made.
15. Custom built instruments are available for special service requirements under Special Engineering Category.
16. A more versatile and wide range of Pressure & Differential Pressure Switches are available in Series 200, 020, 300, 931 & S20/920 Series upto 700 bar.
17. Complementary instrumentation for pressure is available in 200 series.
18. **Accuracy figures are exclusive of test equipment tolerance on the claimed values.**
19. **All performance data are guaranteed to $\pm 5\%$.**

OPTIONS / ACCESSORIES

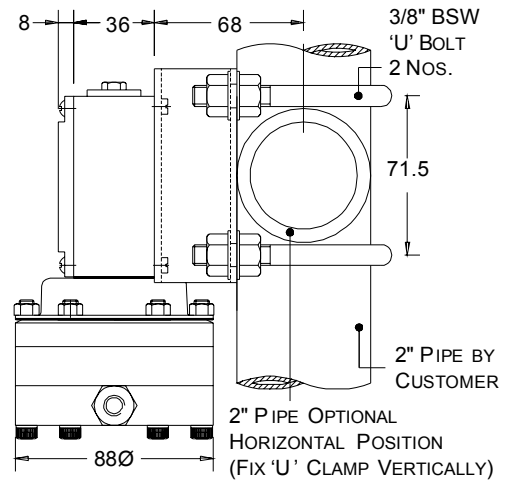
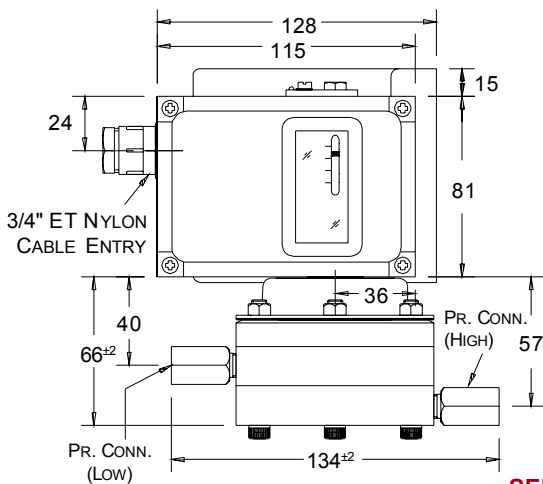
- * Damping coil for minimising process pulsations — increases instrument's life many times.
- * Blow out protection.
- * Snubbers, pigtail siphons, over-range protectors.
- * Brass / 316 SS double compression cable glands to suit cable OD of 1/2", 15 mm & 17 mm.
- * Degreasing for Oxygen service & special parts for Ammonia service.
- * Provision of line fault monitoring.

OVERALL AND MOUNTING DIMENSIONS

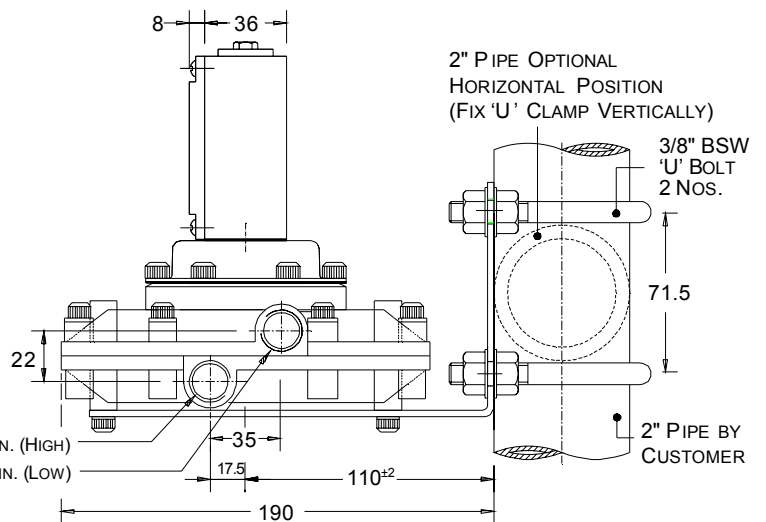
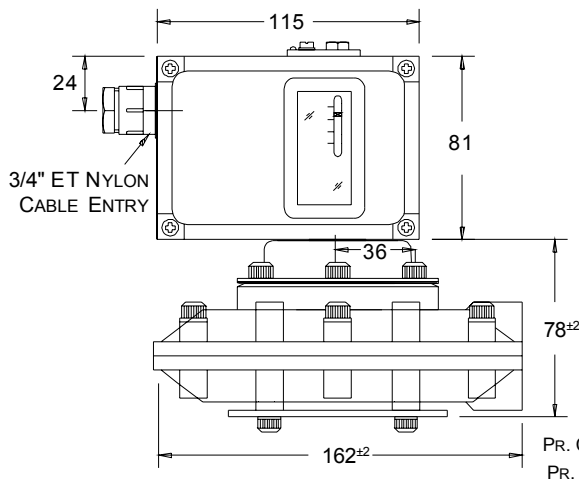
SERIES 301 / 303 – P8B, B7K, E1D, E8D, G5B, J0B, C6D



SERIES 361 / 363 – E1D, E8D, G5B, J0B



SERIES 361 – B3D, B6D, C6D



Note : The Instrument will be mounted directly on to wall / back panel.

All dimensions are in mm

This is not a contractual document. Prior notification of changes in specifications is impracticable due to continuous improvement

Switzer Switzer DfcWgg Instruments Pvt. Ltd.

web-site
www.switzerprocess.co.in

SALES – HEAD OFFICE

17, South Boag Road, T. Nagar, Chennai 600 017
Ph : 044-2434 0999 / 4321 Fax : 044-2434 7887
e-mail : sales@switzerinstrument.com

SALES OFFICES

Bangalore Phone: 080-22262613 Fax : 080-22257392
e-mail : bangalorebr@switzerinstrument.com

Chennai Phone: 044-24340999 / 24344321 Fax : 044-24347887
e-mail : chennaibr@switzerinstrument.com

Hyderabad Phone: 040-2781 1082 Fax : 040-2781 1082
e-mail : hyderabadbr@switzerinstrument.com

Kolkata Phone: 033-24659108 Fax : 033-24659109
e-mail : kolkatabr@switzerinstrument.com

REGD. OFFICE AND WORKS

128, SIDCO North Phase, Ambattur Estates, Chennai 600 050
Ph : 044-2624 2255 / 3355 Fax : 044-2624 8849
e-mail : works@switzerinstrument.com

Mumbai Phone: 022-25796284 / 25796365 Fax : 022-25780648
e-mail : mumbaibr@switzerinstrument.com

New D elhi Phone: 011-25706955 Fax : 011-25708492
e-mail : delhibr@switzerinstrument.com

Pune Phone: 020-27149667 Fax : 020-27149667
e-mail : punebr@switzerinstrument.com

Vadodara Phone: 0265-2322906 Fax : 0265-2331649
e-mail : controlmatic@switzerinstrument.com