



DIFFERENTIAL PRESSURE INDICATORS — SWITCHES

105
106

- MID-WEST, USA DESIGN ● CAPSULE / BELLOWS SENSOR ●
- HIGH OVER RANGE ● HI-LO SWITCHING ● 270 DEG. POINTER TRAVEL ●
- FLOW OR LEVEL MEASUREMENT ●



MODEL 105 & 106

SWITZER style **105 / 106** sensor unit consists of an assembly of sensitive multiple diaphragm (capsule) or bellows which responds to differential pressure across it.

A free spring torque tube, a unique yet time proven device, senses the motion of element in contact with the process medium and transfers it to a precision friction free pointer movement mechanism in the gauge case through the wall of the pressure housing.

Unreliability of leak due to wear of 'O' rings encountered in conventional motion transfer shaft systems is totally eliminated, as the torque tube with its welded

construction provides a perfect high pressure seal between the process and the gauge case.

Alarm switching is provided through snap acting SPCO microswitch. One microswitch for a single high or low alarm or two microswitches one each for high and low alarms are possible.

Model 105 / 106 indicators are available with ranges 0 – 10 InWC to 0 – 1.6 Kg/Cm² in different engineering units. Indicators with centre zero / bi-directional ranges and liquid filled dials are possible. Refer range tables for details.

Higher DP ranges for 0–1 to 0–350 Kg/Cm² are available in Model 109.

FEATURES

- 270° Pointer travel.
- Field adjustable switching — one or two alarm points.
- Centre zero on request.
- No liquid filled sensor thus eliminating complicated temperature compensation, failure due to leaks and loss of liquid.
- Over pressure protection by a two-way over-range relief valve
- Buna-N seal standard; Viton® seals optional.
- Panel, Wall or 2" pipe mounting.

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GENERAL SPECIFICATIONS

Gauge Case	Die Cast Aluminium or 304 SS, weatherproof to IP:66.	Sensing Element	Model 105 : 316 SS Multiple Diaphragm (capsule) Model 106 : 316L SS Bellows
Dial Size	150 mm dia nominal. Effective scale length 300 mm. Black letters on white background standard.	Body Material	316 SS Std.
Scale	Linear, Square Root or Both	Movement	Jewelled Brass (non-wetted)
Window Material	Toughened float safety glass	Process Connection	1/4" NPT F Top (or) Bottom 1/2" NPT F through adaptor – optional
Accuracy	Refer Table 'D'	Vent / Drain Plug	Optional
Ranges	See tables below	Mounting	Flush Panel, Wall or 2" Pipe
Max. Working Pressure	1500 / 3000 / 6000 PSIG	Alarm Switching (optional)	Snap acting microswitch
Over range Protection	Built-in bi-directional relief valve	No. of Switches	'One' for Hi or Lo. 'Two' one each for Hi & Lo
Max. Process Temp.	100°C for Buna-N seal 230°C for Viton Seal	Switch Rating	5A, 250V AC (Res.) 3A, 250V AC (Ind-p.f.0.6)
	For higher temperature use adequate length of impulse piping. Ask for piping nomogram #441184-4	Switch Setting	Adj. from 10% to 90% FSR
Zero Adjustment	Via Micrometer Pointer	Switching Differential	6 to 8% FSR fixed, for 1 Switch 10 to 12% FSR fixed, for 2 Switches
		High Low Gap (min.)	15% FSR
		Electrical Connection	Via DIN 43650 plug

RANGES FOR STYLES 105 / 106

MODEL 105			MODEL 106				
InWC	mbar	mmWC	InWC	mbar	PSI	Kg/Cm ²	mmWC
0 – 10	0 – 25	0 – 250	---	---	---	---	---
---	---	0 – 300	---	---	---	---	---
0 – 15	---	---	0 – 120	0 – 300	---	0 – 0.3	0–3000
---	0 – 40	0 – 400	---	---	0 – 5	---	0–3500
0 – 20	0 – 50	0 – 500	0 – 150	---	---	---	---
0 – 25	---	---	0 – 160	0 – 400	0 – 6	0 – 0.4	0–4000
0 – 30	0 – 70	0 – 700	---	---	---	---	---
---	---	0 – 800	0 – 200	0 – 500	0 – 7	0 – 0.5	0–5000
0 – 40	0 – 100	0–1000	0 – 250	---	---	---	---
0 – 50	0 – 125	---	---	0 – 700	0 – 10	0 – 0.7	0–7000
0 – 60	0 – 150	0–1500	0 – 300	0 – 750	---	---	0–7500
0 – 65	0 – 160	0–1600	0 – 400	0–1000	0 – 15	0 – 1.0	0–10000
0 – 80	0 – 200	0–2000	---	---	---	0 – 1.6	---
0 – 100	0 – 250	0–2500	---	---	---	---	---

MODEL 105		MODEL 106				
mbar	mmWC	InWC	mbar	PSI	Kg/Cm ²	mmWC
0 – 35	0 – 350	---	---	---	---	---
0 – 65	0 – 650	---	---	0 – 4.5	---	---
---	0 – 1250	0 – 135	0 – 350	---	0 – 0.35	---
---	---	---	0 – 375	0 – 5.5	0 – 0.375	0 – 3750
---	---	---	0 – 450	0 – 6.5	0 – 0.45	0 – 4500
---	---	---	0 – 650	---	0 – 0.65	0 – 6500
---	---	0 – 270	---	---	---	---

Model 105	mmWC	± 250	± 350	± 500	± 750	± 1000	± 1250	---
Model 106	mmWC	---	---	± 2000	± 2500	± 5000	---	---

Indicator without switch	±1% FSR for all ranges, except ±1.5% FSR for low ranges upto 350 mmWC and center zero bi-directional ranges.
Indicator with switches	±2% FSR at and after switching for all ranges, except ±3% FSR at and after switching for low ranges upto 350 mmWC and center zero bi-directional ranges.
Indicator with Liquid Filled dial	±3% FSR for all ranges. (Switching not possible)
Note : Accuracy includes linearity and Hysteresis	

0 – 10	0 – 25	0 – 40	0 – 50	0 – 75	0 – 100
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NOTES

- Special ranges can be supplied without extended delivery at Extra Price. Refer Tables 'B' & 'C'.
- Calibration is as per ANSI / ASME B40.1 Clause 6.2.3.
- Switching is **not possible** for instruments with **liquid filled dials**. However switching action can be provided through externally mounted Differential Pressure Switch (Refer factory for details).
- Chemical seals are not possible.
- Accuracy figures are exclusive of test equipment tolerance on the claimed values.**
- All performance data guaranteed ±5%.**

Caution

- Use of snubber is a must if pressure fluctuations are rapid.
- Use 3-way / 5-way manifold to avoid damage / shift in calibration.
- Do not use these gauges for measuring pressure difference between two incompatible fluids, since the built-in over pressure valve relieves pressure from Hi to Lo pressure chambers and vice versa.**

Model 106D is available for incompatible fluids.

ORDERING MATRIX

105 U E 1 0 0 0

Differential Pressure Indicator / Switches

105 Style 105 Multiple diaphragm (Capsule) for ranges 0 – 25 to 0 – 250 mbar

106 Style 106 Bellows element for ranges 0 – 300 mbar to 0 – 1.6 bar

Body, Element Material and Rating

U 316 SS Body, 316 SS element & internals, 1500 PSIG

V 316 SS Body, 316 SS element & internals, 3000 PSIG

W 316 SS Body, 316 SS element & internals, 6000 PSIG

Accuracy

E ± 1% FSR for all ranges above 350 mmWC, uni-directional (**no switch**)

F ± 1.5% FSR for low ranges upto 350 mmWC and center zero bi-directional ranges (**no switch**)

G ± 2% FSR at and after switching for ranges above 350 mmWC, uni-directional (**with switch**)

H ± 3% FSR (i) for instruments with Liquid Filled Dial, †
(ii) Gauges with switch upto 350 mmWC range, center zero bi-directional ranges

Seals

1 Buna–N

2 Viton

3 Others (consult factory)

Process Connection

0 1/4" NPT F Standard

6 1/2" NPT F Optional

9 Others – on request

Alarm Switches

0 None

1 One SPCO Microswitch for one alarmpoint

2 Two SPCO Microswitch, one each for two alarmpoints

Accessories and Options *

0 None – Std. with Studs for Panel Mounting

F Pipe Mounting with U Bolt & Nuts

W Wall Mounting bracket

L Liquid Filled Dial †

S 304 SS Case

T Degreasing for Oxygen Service

B Blow-out Disc

V Vent

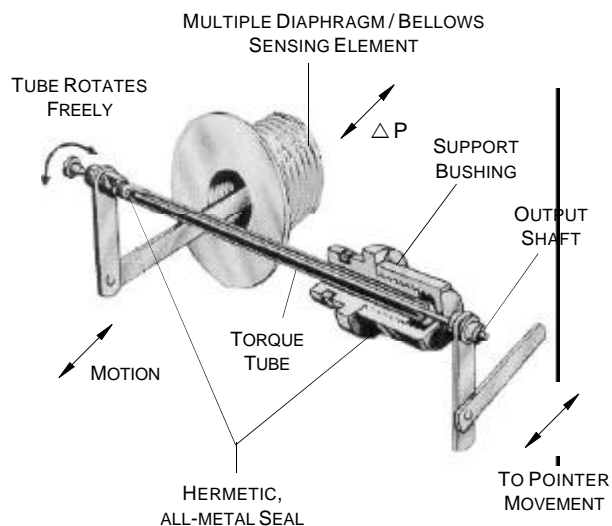
D Drain

X Others (consult factory)

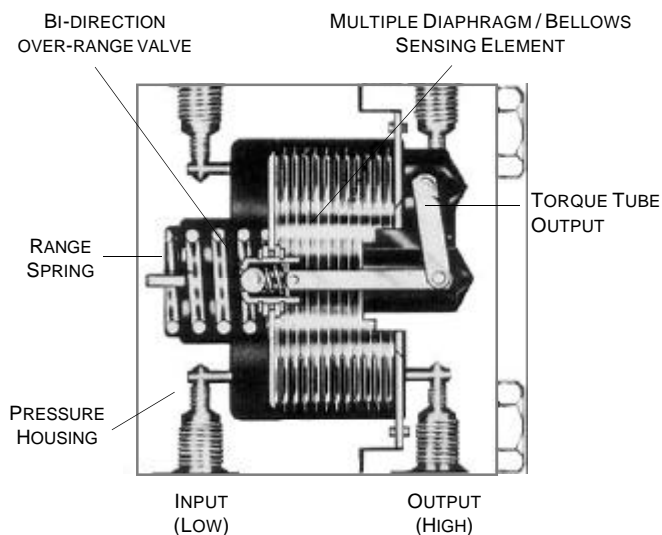
* If more than one accessory / option is required specify W, L . . . etc.

† Gauges with **Liquid Filled** dials :

Switching facility not possible. However switching action can be provided through an externally mounted Differential Pressure Switch (Refer factory for details).



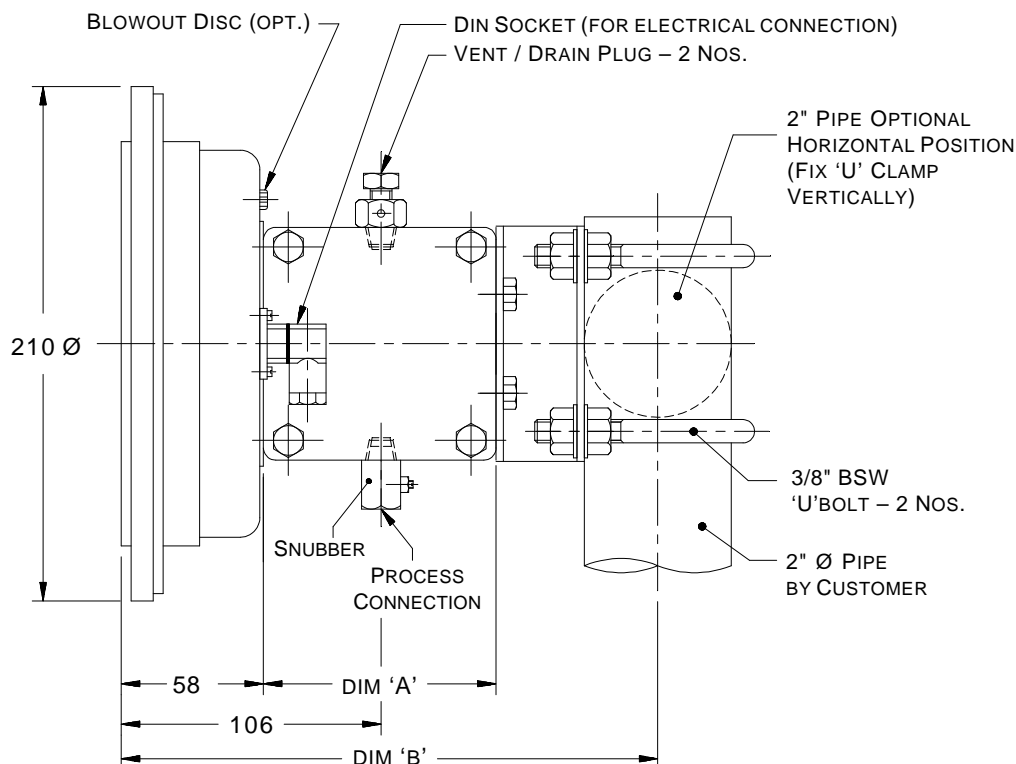
TORQUE TUBE ASSEMBLY



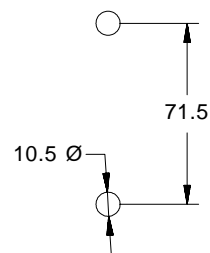
TYPICAL CROSS SECTION

MOUNTING DIMENSIONS

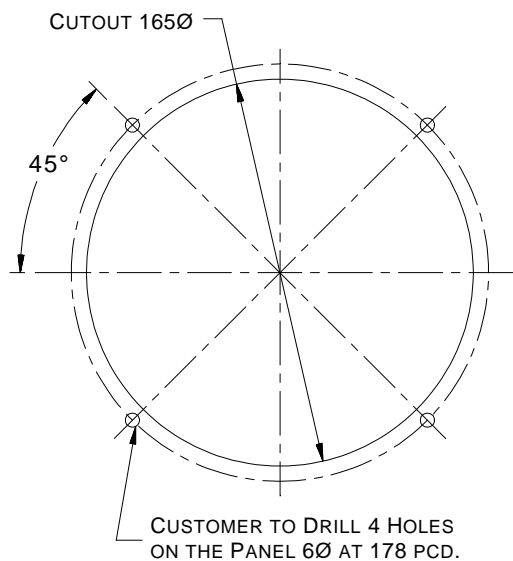
PIPE MOUNTING



WALL MOUNTING



FLUSH PANEL MOUNTING



Model	Dim 'A'	Dim 'B'
105	95	220
106	83	208

Notes :

1. For wall mounting drill or punch 2 x 10.5Ø holes at 71.5 mm. Use 3/8" x 40L Coach Screws for fixing the instrument.
2. S.S. Gauge case dimensions are different. Ask factory for drawing.
3. Snubbers & Vent / Drain Plugs are interchangeable.
4. All dimensions have a tolerance of ±2.0 mm

ALL DIMENSIONS ARE IN mm

Prior notification of changes in specification is impracticable due to continuous development.

FOR **SWITZER'S** OFFICES IN INDIA

CHECK AT:

<http://www.switzerinstrument.com/offices.htm>