

## PISTON INSTRUMENTS



Manometer India manufactures quality differential pressure instruments designed to measure the difference in pressure between two points in a system and show it on a single dial instrument. A magnetic movement senses the differential pressure.

These piston instruments can indicate small values of differential pressure even when used at high line pressures. They provide instantaneous and continuous information regarding system conditions helping in eliminating premature servicing of equipment, avoid unscheduled down time of costly processes and detect abnormal system conditions.

**Switching Facility :** Instruments can be supplied with reed switches to initiate alarms, activate other equipment, or shut the system down. Two switches are used when high and low limits are desired. Gauge-switch models provide the user with both, gauge readout and switch operation.

### APPLICATIONS :

Filters, Hydraulic systems, Water treatment plants, Chemical plants, Natural gas processing, Heat exchangers, Gasoline / Diesel engine filters, Pumps and Valves, Compressors.

## 200 DPG

Piston Instruments

### SALIENT FEATURES

Cost effective and reliable.  
Simple and compact design.  
Easy to read dial instrument eliminates accumulated errors of two instrument installations.

**High operating pressure up to 200 bar.**  
**Differential pressure range up to 10 bar.**

Over pressure safe from either side to maximum working pressure.

Adjustable reed contact switching.

Indicating mechanism isolated from pressure chamber.

Only switch is also available.

Wide applications in air, gas and liquid media.

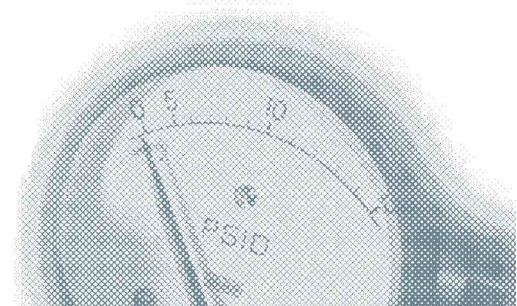
Manufactured in ISO 9002 certified plant.

Exported worldwide.



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## MAGNETIC PRINCIPLE

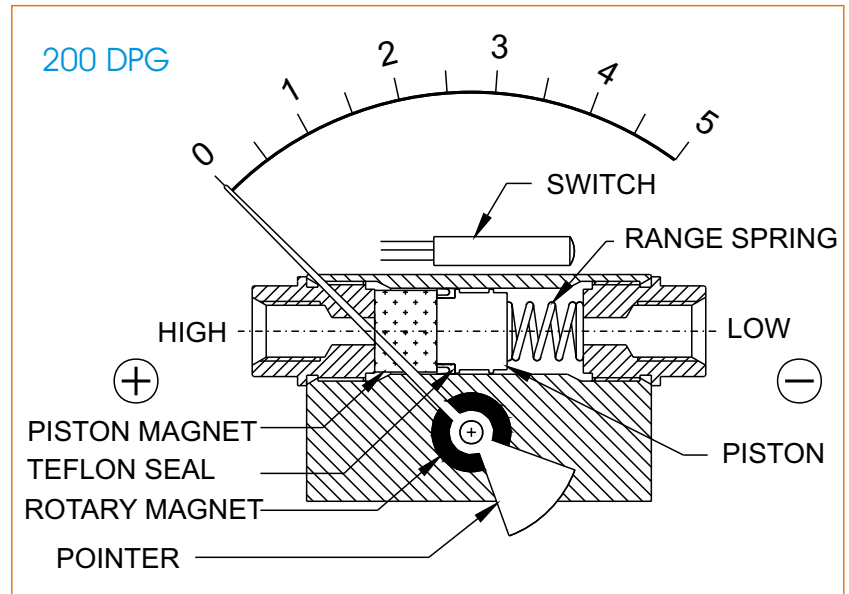


## OPERATING PRINCIPLE

High and Low pressures are separated by a sensor assembly consisting of a magnet, piston, Teflon seal and a range spring. The difference in pressure causes the sensor assembly to move in proportion to the change against a range spring.

A rotary magnet, located in a separate body cavity and isolated from the acting pressures, is rotated by magnetic coupling as per the linear movement of the sensor assembly. A pointer attached to the rotary magnet indicates differential pressure on the dial.

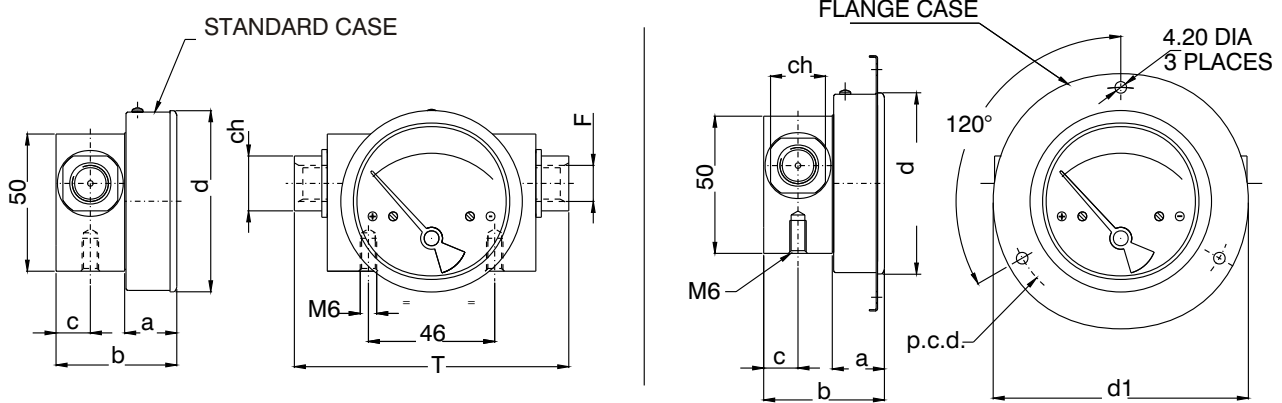
**Switch** : Reed switches are located adjacent to the pressure chamber and are activated by the magnetic field of the sensor assembly.



## TECHNICAL DATA (MODEL 200 DPG)

Ranges	:	0-0.25 to 0-10 bar
Units of calibration	:	Kg/cm <sup>2</sup> , kPa, bar, mbar, psi.
Operating principle	:	Magnetic coupling using piston & spring.
Working pressure	:	200 bar / 3000 psi for Aluminium & 400 bar / 6000 psi for SS-316
Accuracy	:	± 2 % of FSD (Ascending)
Dial sizes	:	2"(50mm), 2.5" (63mm), 3.5"(80mm), 4"(100mm), 4.5"(115mm), & 6" (150mm)
Body Material	:	Aluminium, SS-316, & Brass
Temperature	:	80°C Max. for the media.
Protection	:	IP 65 for gauge.
Migration of media	:	Marginal
Connections	:	¼" NPT(F) or ¼" BSP(F) (on request, longer lead time)
Wetted parts	:	Body material, PTFE, SS 304 spring, screw, and ceramic magnet.
Seals	:	Buna-N (Standard), Viton
Porting	:	In-line, Bottom, or Back
Switch	:	SPST or SPDT, one or two. Switches are field adjustable. The set points can be increased or decreased externally with simple screwdriver adjustments. When two switches are used, either switch can be adjusted independently.
		Switch unit can also be installed later on gauges with in-line and bottom porting.
Dial case	:	Stainless steel case and flange (Standard)
Window	:	Glass ( Standard ) Acrylic, Toughened glass on request.
Mounting	:	Direct, front panel flange, 2" pipe.
Other options	:	Glycerine filling, red resettable follower pointer, dual scale, strainer in (+) connection, dual scale.

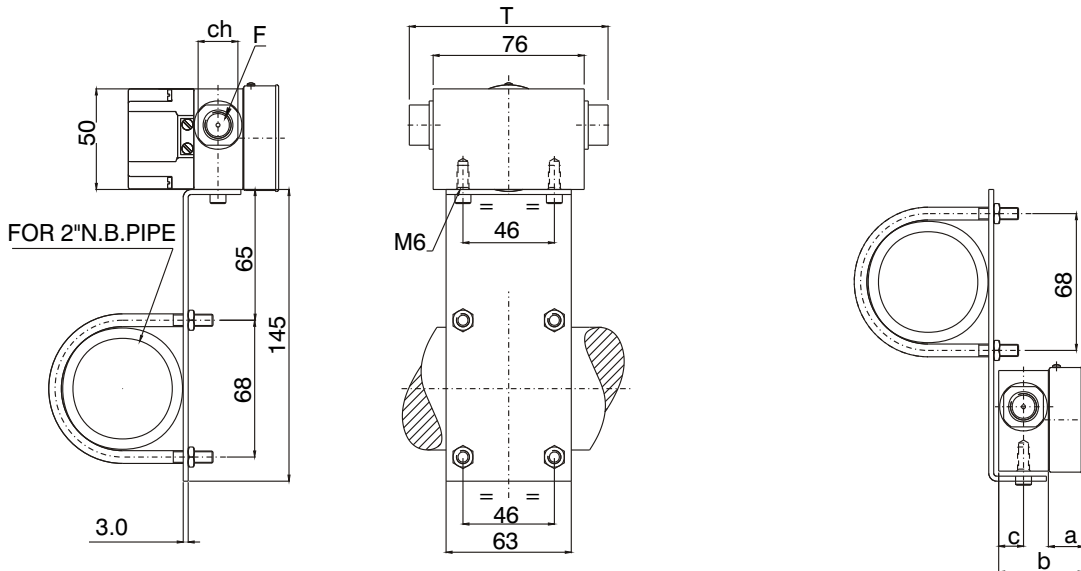
## STANDARD DIMENSIONS (MODEL 200 DPG)



DIAL Ø	F	a	b	c	d	d1	T	ch	p.c.d.
50 (2")	1/4"BSP - 1/4"NPT	18	43	12.5	53	79	100	20	69
63 (2.5")	1/4"BSP - 1/4"NPT	19	44	12.5	66	93	100	20	83
80 (3")	1/4"BSP - 1/4"NPT	19	44	12.5	83	109	100	20	99
100 (4")	1/4"BSP - 1/4"NPT	19	44	12.5	104.3	131	100	20	121
115 (4.5")	1/4"BSP - 1/4"NPT	19	44	12.5	119.7	146	100	20	136
150 (6")	1/4"BSP - 1/4"NPT	19	44	12.5	154.3	181	100	20	171

\* PANEL CUT OUT = d+ 1

## MOUNTING BRACKETS (MODEL 200 DPG)



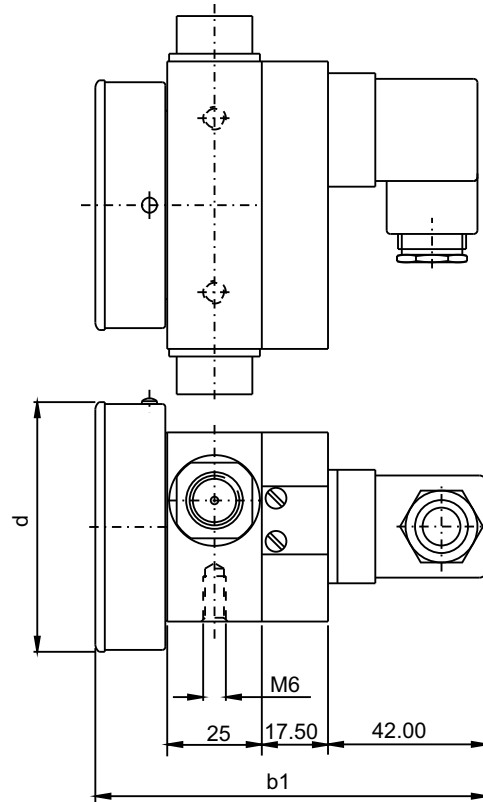
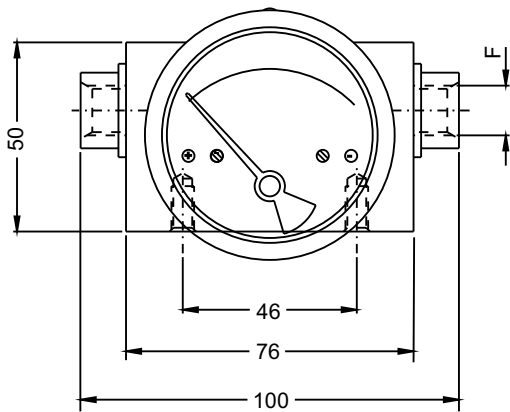
BRACKET MOUNTING FOR GAUGE+ SWITCH

BRACKET MOUNTING FOR GAUGE

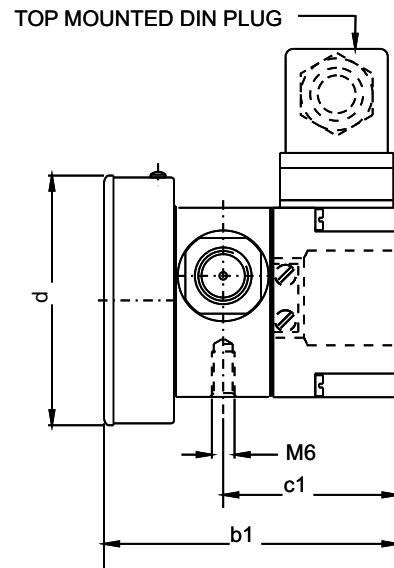
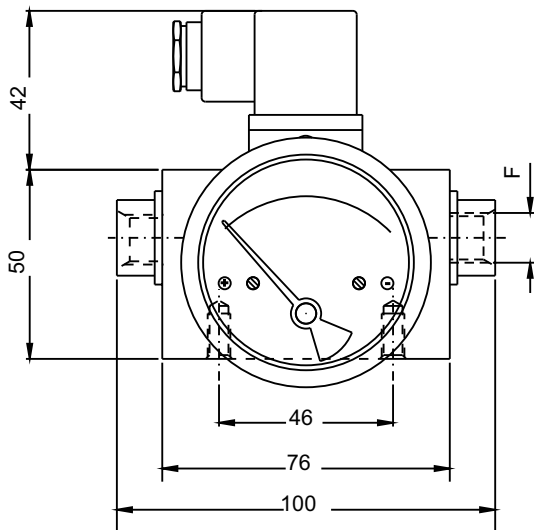
DIAL Ø	F	a	b	c	T	ch
50 (2")	1/4"BSP - 1/4"NPT	18	43	12.5	100	20
63 (2.5")	1/4"BSP - 1/4"NPT	19	44	12.5	100	20
80 (3")	1/4"BSP - 1/4"NPT	19	44	12.5	100	20
100 (4")	1/4"BSP - 1/4"NPT	19	44	12.5	100	20
115 (4.5")	1/4"BSP - 1/4"NPT	19	44	12.5	100	20
150 (6")	1/4"BSP - 1/4"NPT	19	44	12.5	100	20

**GAUGE + SWITCH WITH REED CONTACTS WITH DIN PLUG AT BACK (MODEL 200 DPG)**

DIAL $\varnothing$	F	d	b1
50 (2")	1/4"BSP - 1/4"NPT	53	102.5
63 (2.5")	1/4"BSP - 1/4"NPT	66	103.5
80 (3.5")	1/4"BSP - 1/4"NPT	83	103.5
100 (4")	1/4"BSP - 1/4"NPT	104.3	103.5
115 (4.5")	1/4"BSP - 1/4"NPT	119.7	103.5
150 (6")	1/4"BSP - 1/4"NPT	154.3	103.5



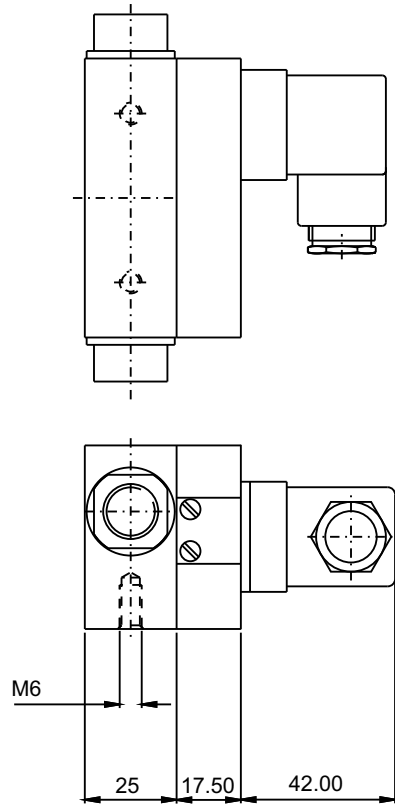
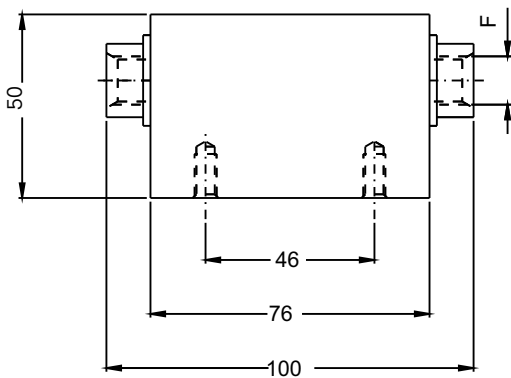
**GAUGE + SWITCH WITH REED CONTACTS WITH DIN PLUG ON TOP (MODEL 200 DPG)**



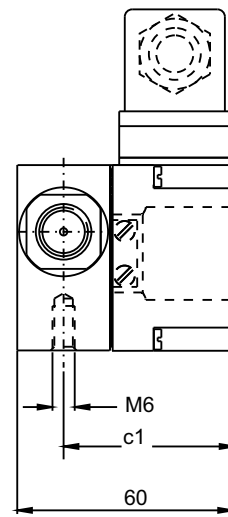
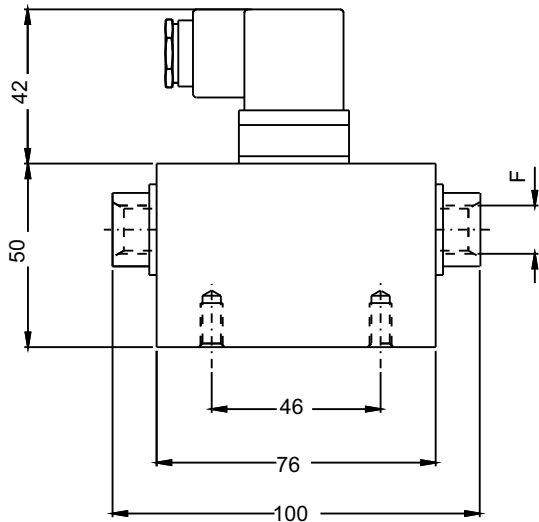
DIAL $\varnothing$	F	b1	c1	d
50 (2")	1/4"BSP - 1/4"NPT	78	47.5	53
63 (2.5")	1/4"BSP - 1/4"NPT	79	47.5	66
80 (3.5")	1/4"BSP - 1/4"NPT	79	47.5	83
100 (4")	1/4"BSP - 1/4"NPT	79	47.5	104.3
115 (4.5")	1/4"BSP - 1/4"NPT	79	47.5	119.7
150 (6")	1/4"BSP - 1/4"NPT	79	47.5	154.3

## SWITCH WITH DIN PLUG AT BACK (MODEL 200 DPG)

DIAL $\varnothing$	F
50 (2")	1/4"BSP - 1/4"NPT
63 (2.5")	1/4"BSP - 1/4"NPT
80 (3.5")	1/4"BSP - 1/4"NPT
100 (4")	1/4"BSP - 1/4"NPT
115 (4.5")	1/4"BSP - 1/4"NPT
150 (6")	1/4"BSP - 1/4"NPT

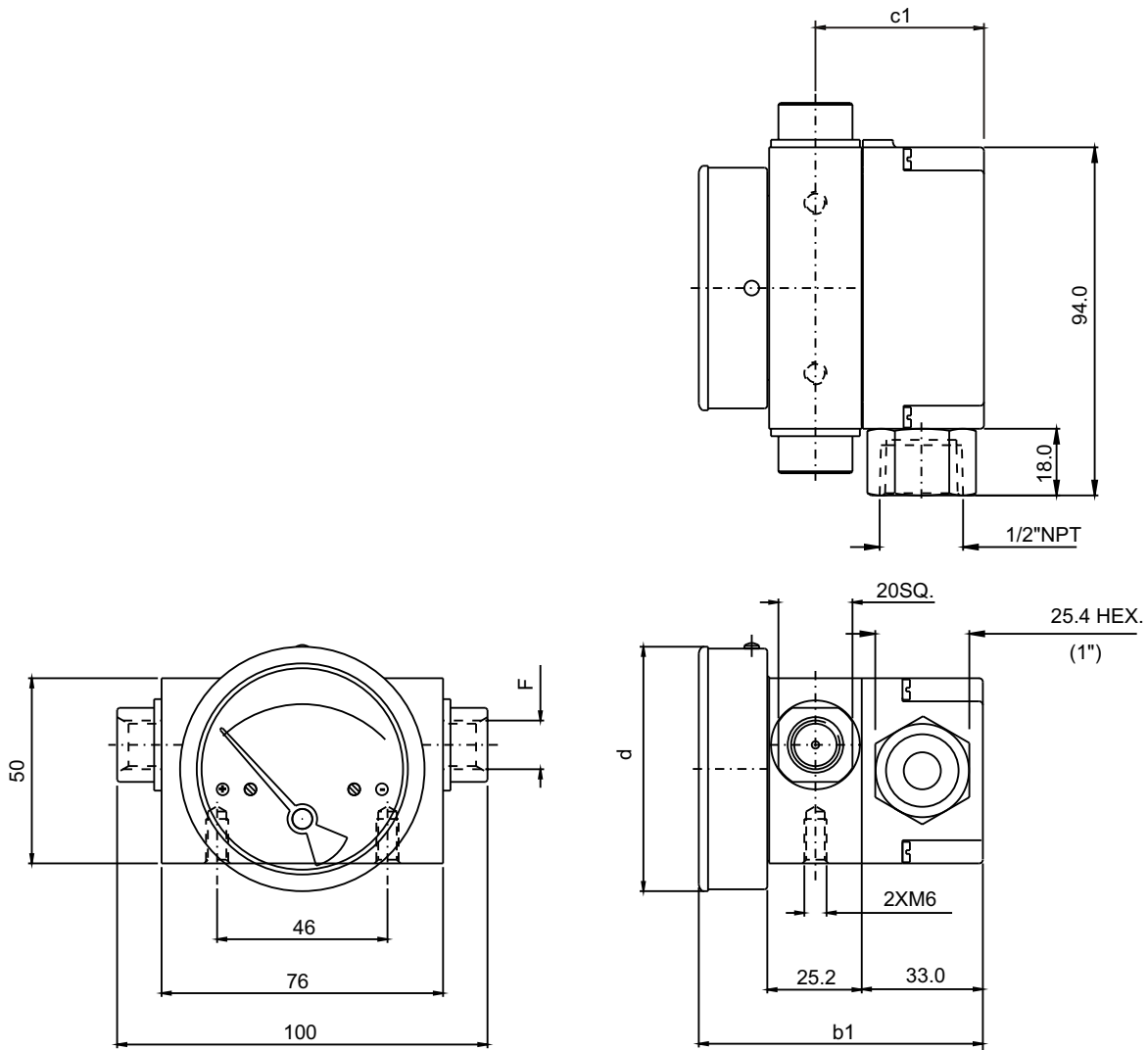


## SWITCH WITH DIN PLUG ON TOP (MODEL 200 DPG)



DIAL $\varnothing$	F	c1
50 (2")	1/4"BSP - 1/4"NPT	47.5
63 (2.5")	1/4"BSP - 1/4"NPT	47.5
80 (3.5")	1/4"BSP - 1/4"NPT	47.5
100 (4")	1/4"BSP - 1/4"NPT	47.5
115 (4.5")	1/4"BSP - 1/4"NPT	47.5
150 (6")	1/4"BSP - 1/4"NPT	47.5

**GAUGE + SWITCH WITH REED CONTACTS WITH TERMINAL STRIP & 1/2" NPT CONDUIT CONNECTION (MODEL 200 DPG)**

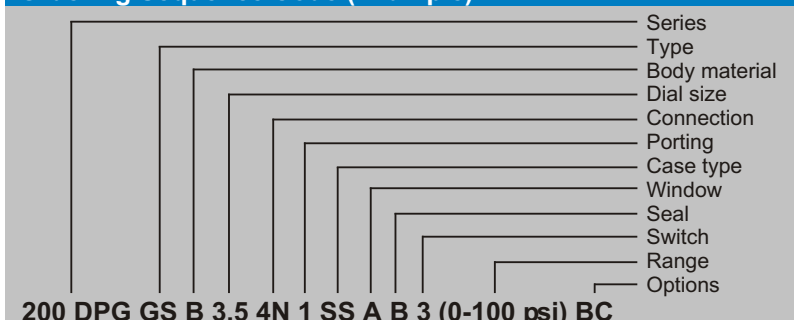


DIAL $\varnothing$	F	b1	c1	d
50 (2")	1/4"BSP - 1/4"NPT	78	47.5	53
63 (2.5")	1/4"BSP - 1/4"NPT	79	47.5	66
80 (3.5")	1/4"BSP - 1/4"NPT	79	47.5	83
100 (4")	1/4"BSP - 1/4"NPT	79	47.5	104.3
115 (4.5")	1/4"BSP - 1/4"NPT	79	47.5	119.7
150 (6")	1/4"BSP - 1/4"NPT	79	47.5	154.3

# HOW TO ORDER A DIFFERENTIAL PRESSURE INSTRUMENT, MODEL 200 DPG

Example	Code	Descriptions																																																																																															
Series	200 DPG																																																																																																
Type	GS	G S GS Gauge + Switch																																																																																															
Body material	B	A Aluminium (anodized) B Brass S SS-316 H Heavy duty Al. (5000 psi) with 32mm thick body.																																																																																															
Dial size	3.5	2.0 2.0" (50 mm) 4.0 4.0" (100 mm) 2.5 2.5" (63 mm) 4.5 4.5" (115 mm) 3.5 3.5" (80 mm) 6.0 6.0" (150 mm)																																																																																															
Connection	4N	4B 1/4" BSP (Female) (on request, longer lead time) 4N 1/4" NPT (Female) 4T 1/4" BSPT (Female) (on request, longer lead time) ZZ Special connection sizes using adaptor																																																																																															
Porting	1	1 In-line (Standard) 2 Rear / Back 3 Bottom 6 In-line & Bottom																																																																																															
Case type	SS	SS SS 304 with a rubber ring (standard) SF SS 304 flange with a rubber ring (standard flange)																																																																																															
Window	A	F Glass (standard) A Acrylic T Toughened glass																																																																																															
Seal	B	B Buna-N (standard) V Viton E EPDM																																																																																															
Switch	3	0 None 1 One SPST, with a DIN plug* 2 One SPST, with a terminal strip 2A One SPST, with built in relay 3 Two SPSTs, with a DIN plug* 4 Two SPSTs, with a terminal strip 4A Two SPSTs, with built in relay 5 One SPDT, with a DIN plug* 6 One SPDT, with a terminal strip 7 Two SPDTs, with two DIN plugs* 8 Two SPDTs, with a terminal strip																																																																																															
		<p><b>SPST Specifications :</b> 10 VA AC or DC (max) 150 V AC or DC (max) 0.5 Amp AC or DC (max)</p> <p><b>SPDT Specifications :</b> 5 VA AC or DC (max) 175 V AC or DC (max) 0.25 Amp AC or DC (max)</p> <p><b>Built in relay :</b> 230 V AC, 1 Amps.</p>																																																																																															
		<p>* <b>DIN plug</b> : we mount it on the top, on the plastic switch cover. However we can give it at the back as a request.)</p> <p>Switch applicable for "S" &amp; "GS" types only. Switches operate from 20 to 100% of the range &amp; mounted at the back. Switches are in a plastic enclosure, they are factory set, field adjustable.</p>																																																																																															
Standard Ranges	0-100 psi	<table border="1"> <tr> <td>Kg/cm<sup>2</sup></td> <td>0.25</td> <td>-</td> <td>0.5</td> <td>0.75</td> <td>1</td> <td>-</td> <td>1.6</td> <td>2</td> <td>2.5</td> <td>3</td> <td>3.5</td> <td>4</td> <td>5</td> <td>-</td> <td>6</td> <td>7</td> <td>9</td> <td>10</td> </tr> <tr> <td>bar</td> <td>0.25</td> <td>-</td> <td>0.5</td> <td>0.75</td> <td>1</td> <td>-</td> <td>1.6</td> <td>2</td> <td>2.5</td> <td>3</td> <td>3.5</td> <td>4</td> <td>5</td> <td>-</td> <td>6</td> <td>7</td> <td>9</td> <td>10</td> </tr> <tr> <td>Mbar</td> <td>250</td> <td>-</td> <td>500</td> <td>750</td> <td>1000</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>psi</td> <td>-</td> <td>5</td> <td>8</td> <td>-</td> <td>15</td> <td>20</td> <td>25</td> <td>30</td> <td>-</td> <td>40</td> <td>50</td> <td>60</td> <td>-</td> <td>80</td> <td>-</td> <td>100</td> <td>-</td> <td>-</td> </tr> <tr> <td>Kpa</td> <td>25</td> <td>-</td> <td>50</td> <td>75</td> <td>100</td> <td>-</td> <td>160</td> <td>200</td> <td>250</td> <td>300</td> <td>350</td> <td>400</td> <td>500</td> <td>-</td> <td>600</td> <td>700</td> <td>900</td> <td>1000</td> </tr> </table> <p style="text-align: right;"><i>Other ranges on request.</i></p>	Kg/cm <sup>2</sup>	0.25	-	0.5	0.75	1	-	1.6	2	2.5	3	3.5	4	5	-	6	7	9	10	bar	0.25	-	0.5	0.75	1	-	1.6	2	2.5	3	3.5	4	5	-	6	7	9	10	Mbar	250	-	500	750	1000	-	-	-	-	-	-	-	-	-	-	-	-	-	psi	-	5	8	-	15	20	25	30	-	40	50	60	-	80	-	100	-	-	Kpa	25	-	50	75	100	-	160	200	250	300	350	400	500	-	600	700	900	1000
Kg/cm <sup>2</sup>	0.25	-	0.5	0.75	1	-	1.6	2	2.5	3	3.5	4	5	-	6	7	9	10																																																																															
bar	0.25	-	0.5	0.75	1	-	1.6	2	2.5	3	3.5	4	5	-	6	7	9	10																																																																															
Mbar	250	-	500	750	1000	-	-	-	-	-	-	-	-	-	-	-	-	-																																																																															
psi	-	5	8	-	15	20	25	30	-	40	50	60	-	80	-	100	-	-																																																																															
Kpa	25	-	50	75	100	-	160	200	250	300	350	400	500	-	600	700	900	1000																																																																															
Options	BC	0 None A Glycerine filling (Affects accuracy) B Red follower pointer on acrylic window (Affects accuracy) C Customer Logo D Dual scale E Colour band F Strainer in (+) connection G Reverse port H Descending calibration (longer lead time)																																																																																															

## Ordering Sequence Code (Example)



## Limitations for making combinations:

Glycerine filling will not have follower pointer. For bottom or back porting no mounting holes are given and hence can not be mounted using a bracket.  
Gauge with back porting cannot have a switch. (However, only switch with back porting is available.)  
Toughened glass and follower pointer not available in 2" (50 mm) dial.  
No follower pointer available in 6" (150 mm).

Specifications and dimensions given in this leaflet represent the state of engineering at the time of printing, modifications may take place and materials specified may be replaced by others without prior notice.