

# Introduction

For over sixty years, throughout the world, British Rototherm equipment has been installed wherever reliability and long lasting accurate performance is demanded.

British Rototherm products are manufactured in its modern factory located in the South Wales region of the United Kingdom. Sited on 6 acres of land at Kenfig Industrial Estate, the company operates from a 5,574 square metre (60,000 square feet) factory.

Since the introduction of the original bimetallic thermometer, the product range has been developed to include instrumentation for measuring, monitoring and controlling Temperature, Pressure, Humidity, Flow and Level. Rototherm instrumentation is suitable for use in many industrial and commercial applications.

## World-wide Reliability

Rototherm's high quality and performance is guaranteed by an uncompromising approach to quality. British Rototherm's policy has always been to maintain a consistently high level of quality and reliability throughout its product range and service to customers.



The company has worked energetically towards establishing comprehensive quality controls and has earned a world-wide reputation for product quality.

This reputation has been confirmed by formal approval to Quality Assurance Standard ISO 9001 and will be updated as new standards become applicable. All calibration standards are traceable to national standards thus allowing the issuing of test or calibration certificates when required.

## Global Reputation

British Rototherm is approved by major companies and contractors in the United Kingdom and throughout the world, for the supply of instrumentation and associated products.

Rototherm is supported throughout the United Kingdom and the world by Technical Representatives and by Distributor/Stockists, who can be relied upon for support, technical advice and service.

## Pressure Gauges - Over 150 Years of Manufacturing Experience

British Rototherm has worked hard to establish itself as a world class manufacturer of pressure gauges.

With the acquisition of the pressure gauge manufacturer Sydney Smith Dennis (SSD) in 1998, Rototherm's range of pressure gauges dramatically increased to include gauges to suit most industrial applications.



For over 150 years Sydney Smith Dennis has been manufacturing pressure gauges. In this time the company had earned a reputation as a world class manufacturer of high quality, value for money gauges - today Rototherm carries on this tradition.

The Rototherm range of pressure gauges now includes a comprehensive selection of process, utility, test and differential gauges. To complement these gauges a range of accessories are available that include diaphragm seal units and electrical contact heads. For high accuracy process applications the DigiGauge range of Digital Pressure Gauges and Transmitters is available.

To complement the range of pressure gauges, Rototherm also manufactures pressure recorders, controllers and transmitters.



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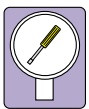
To assist you in selecting the correct gauge for your application, we have indicated the following popular options on each applicable gauge type. For further details of other options available please refer to the specific gauge page or page 20 of this brochure.



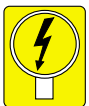
Safety Pattern Pressure Gauge or available as an option



Glycerine filling is available as an option. Damped movement may be offered in lieu of glycerine filling for some gauge types



External zero adjustment or micro pointer adjustment is available as either a standard feature or as an option.



100mm and 150mm nominal size gauges can be fitted with Electrical Contact Head units as an option.



100mm and 150mm nominal size gauges that are particularly suitable for use with a Diaphragm Seal Unit.

# Pressure Gauge Selection

## Process Medium

The process medium to which the gauge will be exposed is especially important when using a thin walled Bourdon tube because, if the wrong materials are selected, corrosion may occur which could lead to catastrophic failure. Materials which display the essential combination of properties (good spring memory, easy to form, easy to join, reasonably priced) are phosphor bronze, 316 stainless steel and Monel.

Where these materials cannot satisfy the application, a diaphragm seal (gauge isolator) can be added to prevent the process media from contacting the Bourdon tube. This protects the gauge from corrosion attack, and also prevents viscous or dirty media from clogging the small bore Bourdon tube. The only limitation in using a diaphragm seal is that it typically degrades the accuracy of the pressure gauge by an additional 0.5% of the full scale deviation.

## Pressure Gauge Range

It is important to select a pressure range which accommodates all anticipated pressure swings, and which prevents excessive pointer movement. It is recommended to confine normal operating pressure to 25% - 75% of scale. With fluctuating pressures (e.g. pulsation caused by a pump or compressor), the maximum operating pressure should be lower (50% of the full range).

Gauges intended for severe service conditions may be liquid filled and restricted to reduce Bourdon tube stresses. To minimise sensing element stress and to extend the life of the gauge use internal restriction screws, pulsation dampeners, pressure snubbers, gauge savers or diaphragm seals.

## The Environment

Temperature changes cause the elastic modulus of the Bourdon tube to indicate higher pressure than actual as temperature increases, (lower as temperature decreases), except if made with expensive constant modulus materials.

In a liquid filled gauge with an uncompensating case, a temperature increase of as little as 10°C results in internal case pressure build up which causes a downscale pointer shift. An upscale pointer shift can result from a temperature drop of 10°C or more. This potential error most often occurs in pressure ranges of 60 Bar or less. In gauges with true case compensation, temperature error from internal case pressure build-up is negligible.

All Rototherm pressure gauges are calibrated at an ambient temperature of 20°C ±3°C.

Where ambient conditions are corrosive or contain a large number of particles, specify hermetically sealed and / or liquid filled pressure gauges to prevent foreign elements from entering the case. Vibration can cause wear to the gears of the rotary movement and can make it difficult to accurately read pressure with an oscillating pointer. Filling a gauge with dampening fluid, such as glycerine, helps prevent these problems.

## Accuracy

Accuracy is the conformity of a pressure gauge reading to an accepted standard (e.g. deadweight tester). Inaccuracy is the difference (error) between the true value and the indication, expressed as a percent of the span. It includes the combined errors of method, observer, apparatus and environment. Total accuracy error includes hysteresis and repeatability errors. Accuracy is not a percentage of the gauge reading - for mechanical pressure gauges, accuracy is a percentage of the full range, full scale or span of the gauge.

Guidelines are: Test Gauges (0.25%); Critical Processes (0.5%); General Industry Processes (1.0%); Less Critical Commercial Uses (2.0%).

## Dial Size

Sizes range from 63mm (2.5") to 300mm (12") diameters, with the 63mm (2.5"), 100mm (4") and 150mm (6") being the most popular. The dial size is generally determined by the readability requirements (larger for remote reading and smaller where the gauge is close to the operator). More accurate pressure gauges generally have larger dials as more dial graduations are needed to read the higher degree of accuracy.

## Connections

Factors to consider include gauge pressures, size and weight, space limitations, leak integrity and past experience. 150mm (6") and 100mm (4") process gauges usually have 1/2" NPT/BSP connections, especially when direct stem mounted and liquid filled. Smaller dial sizes generally have 1/4" or 1/8" connections.

## Mountings

Pressure gauges may be:

- Direct stem mount bottom connection;
- Wall -surface mount bottom connection;
- Panel surface mount back connection;
- Panel hole U clamp (yoke) flush mount back connection;
- Panel hole front flange flush mount back connection.

See page 21 for full configuration information.

## Pressure Equipment Directive

British Rototherm pressure gauges fully comply with Pressure Equipment Directive 97/23/EC.

# SPG "Elite" SafeGauge Safety Pattern Pressure Gauge

The Rototherm "Elite" SafeGauge, safety pattern pressure gauge incorporates a series of unique features that have given rise to new standards of safety and sealing.

SafeGauges are available in either 100mm (4") or 150mm (6") nominal sizes. All 100mm SafeGauges with the exception of the back entry types can be glycerine filled without the need for any modification. The 150mm gauges have a damped movement as an option.

The new back plate features a specially designed membrane forming a perfect seal every time - compensating for any atmospheric changes that could affect the calibration of the gauge.

The SafeGauge has a truly integral baffle wall between the gauge internals and dial, there is no dependence on welding or other joining methods previously used in safety pattern gauge construction.

The "SafeCase" blow-out back provides even greater operator protection, over and above the requirements of EN837. Being retained on the gauge by a centre screw, it prevents the risk of injury due to flying debris from the rear of the case in the unlikely event of tube failure.



## Case & Bezel

304 stainless steel, natural finish. 316 stainless steel option

## Element

Bourdon tube in 316 stainless steel or Monel 400 to NACE spec MR-01-75

## Pressure Ranges

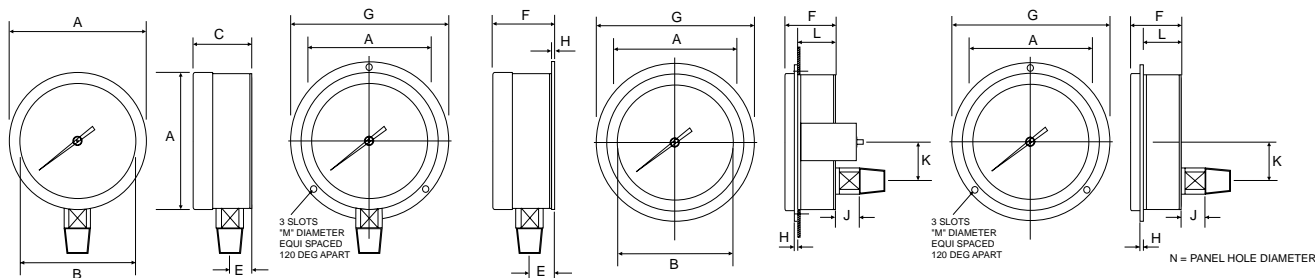
30" Hg VAC to 16000 psi (-1 to 1000 bar) - *higher ranges available on request.* Please refer to standard pressure ranges page 22.

## Connections

1/4", 1/2" NPT or 3/8", 1/2" BSP in 316 stainless steel, 1/4", 1/2" NPT in Monel 400 to NACE spec MR-01-75

## Configurations

A B D F U



Configuration A + D Fig 331  
Direct mounting, bottom entry  
Direct mounting, back entry

Configuration B Fig 334  
Surface mounting, bottom entry

Configuration U Fig 338C  
Panel mounting - clamp fixing,  
back entry

Configuration F Fig 338  
Panel mounting - 3 hole fixing,  
back entry

Nominal Size	A	B	C	E	F	G	H	J	K	L	M	N
100 (4")	108	90	62	28	68	135	6.2	17	33	54	6	110
150 (6")	162	144	62	28	68	196	6.2	17	33	54	6	164

N = Panel Hole Diameter

Weight Approx.

100mm = 0.6kg (dry) 1.1kg (filled)

150mm = 1.1kg (dry)

PCD 100mm(4") = 118 PCD

150mm (6") = 178 PCD



All dimensions are in mm. Drawings are for illustration purposes only.

# RPG Stainless Steel Case & Bezel

A range of economically priced 63mm, 100mm and 150mm nominal size pressure gauges ideally suited to most industrial applications where accuracy and durability is required.

Gauges are available with either brass/bronze, stainless steel or Monel 400 internals.

## Case & Bezel

304 stainless steel - 63mm, 100mm and 150 mm nominal sizes. 316 stainless steel option available

## Element

Bourdon tube in non ferrous material, 316 stainless steel or Monel 400 to NACE spec MR-01-75

## Blow-out Disc

Top or back

## Configuration

A B C D E F V

## Pressure Ranges

30" Hg VAC to 10000 psi (-1 to 600 bar)  
Please refer to standard pressure ranges page 22.

## Connections

1/4" + 3/8" + 1/2" (NPT - BSP) *other connections available on request.*

## Window

Glass as standard, perspex if required

## Dial

Aluminium - white with black scale markings



## Pointer

Aluminium, black finish (micrometer adjustable option)

## Movement

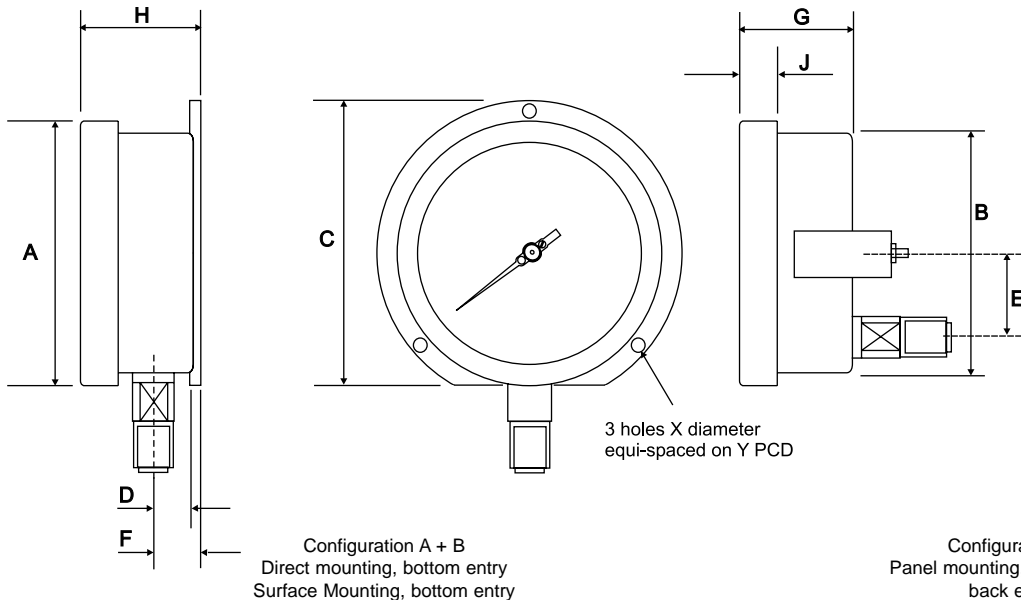
Brass with stainless steel option

## Accuracy

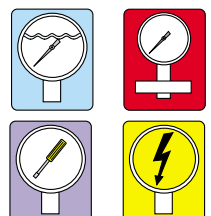
Class 1 to EN837

## Options

Suitable for electrical contact head (100 mm and 150 mm nominal dial only)  
Glycerine filling  
Maximum and minimum pointer available  
Index pointer



Nominal Size	A	B	C	D	E	F	G	H	J	X	Y
63 (2.5")	69.0	62.0	78.5	8.0	18.0	20.0	36.0	38.0	13.0	3.6	75
100 (4")	112.0	99.0	122.0	15.0	33.0	20.0	48.0	50.0	16.0	5.0	116
150 (6")	172.0	158.0	184.0	15.0	33.0	20.0	50.0	53.0	18.0	5.0	178



All dimensions are in mm. Drawings are for illustration purposes only.

# RCG Stainless Steel Case & Bezel Capsule Gauge

A range of economically priced pressure gauges ideally suited to measuring low range pressures in dry, gaseous media

## Element

Capsule Beryllium Copper or 316 stainless steel

## Pressure Ranges

-25 mbar to 1000 mbar  
or equivalent other units of pressure or vacuum  
Please refer to standard pressure ranges page 22.

## Connections

3/8" BSP standard. Other connections available upon request

## Window

Glass as standard, perspex if required

## Dial

Aluminium - white with black scale markings

## Pointer

Aluminium, black finish, balanced

## Accuracy

Class 1 to EN837

## Dimensions

Please refer to the dimensions of RPG gauge on page 5

# Absolute Pressure Gauge

These gauges are sealed to prevent changes in the prevailing barometric pressure affecting the calibration.

## Case & Bezel

100 mm (4") nominal diameter Brass case (hot stamping), brass screw on bezel, black enamelled finish

## Configuration

A B V

## Pressure Element

Stainless steel capsule

## Connections

3/8" BSP coned as standard. 1/4" NPT also available.

## Window

High quality toughened glass.

## Dial

Aluminium alloy - white with black scale markings

## Pointer

Knife edged pointer, steel, black finish

## Movement

Specially designed sensitive brass movement.

## Accuracy

1.5% FSD

## Weight

1.2 Kg

## Standard Ranges & Part Numbers

### Range

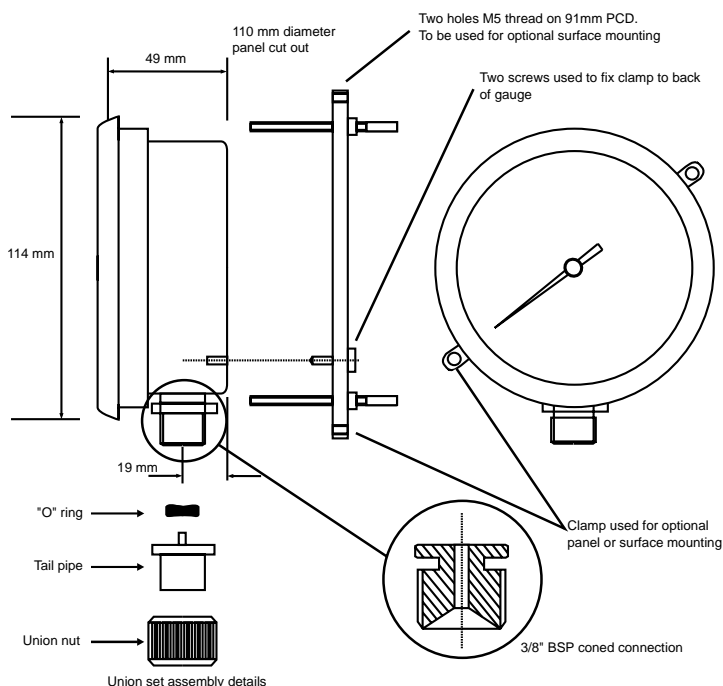
0 to 20 TORR / 25 mbar  
0 to 40 TORR / 50 mbar  
0 to 100 TORR / 130 mbar  
0 to 760 TORR / 1000 mbar

Barometric Union Set

### Part Number

BI-349  
BI-350  
BI-351  
BI-352

BI-1413



# DMC Cased Pressure Gauges

The ideal instrument for petrochemical applications both on and off shore.

DMC (Dough Moulded Compound) material has a high resistance to atmospheric and chemical corrosion and high temperatures, being able to withstand 160°C direct heat without distortion.

DMC gauges are available as safety pattern gauges with solid front and blow out back.



## Case & Bezel

Black DMC safety pattern case, DMC screw on type bezel. Weatherproof to IP65

## Configuration

A B D V\* (\*150mm only)

## Pressure Element

Bourdon tube: phosphor bronze, beryllium copper, stainless steel or Monel 400 to NACE MR-01-75

## Connections

3/8" + 1/2" (NPT - BSP) other connections available on request.

## Maximum Range

Vacuum through 1000 Bar - higher ranges available on request. Please refer to standard pressure ranges page 22.

## Window

Safety glass as standard

## Dial

Aluminium - white with black scale markings

## Pointer

Aluminium, black finish (micrometer adjustable option)

## Movement

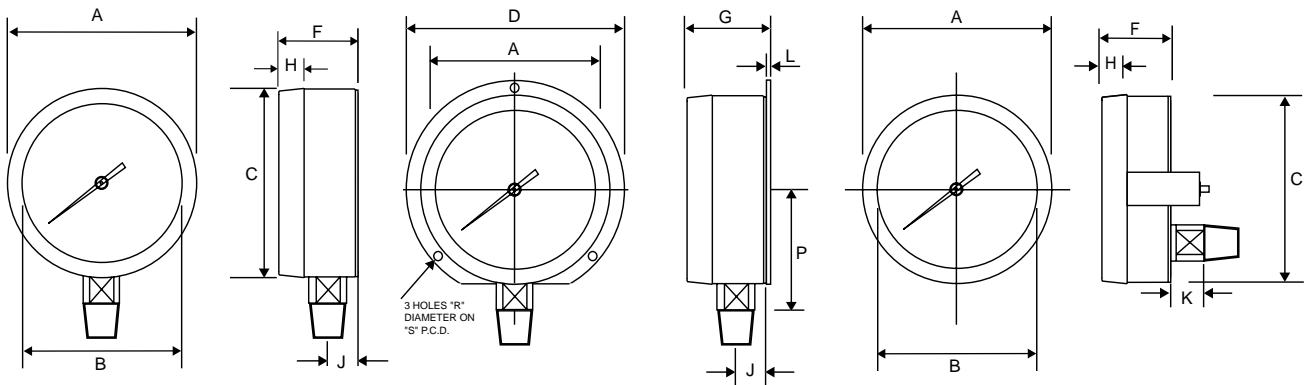
Stainless steel

## Accuracy

Class 1 to EN837

## Weight

100mm (4") nominal size = 0.6 kg  
150mm (6") nominal size = 1.1 kg



Configuration A  
Fig 421 Direct mounting, bottom entry

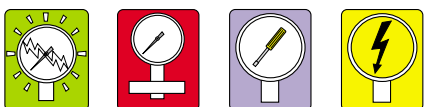
Configuration B  
Fig 424 Surface mounting, bottom entry

Configuration V  
Fig 428C Panel mounting, back entry

All dimensions are in mm. Drawings are for illustration purposes only.

Nominal Size	A	B	C	D	F	G	H	J	K	L	P	R	S
100 (4")	111	92	109	127	48	50	23	16	16	3	65	5.4	116
150 (6")	170	145	162	188	68	68	25	26	14	6	97	5.5	173

For 150mm nominal case size : Panel Hole Diameter = 165mm



# Turret Safety Pattern Pressure Gauges

Turret style gauges are used extensively in harsh environments - primarily those found in chemical and off shore industries.

These gauges have a 4.5" (115mm) nominal dial diameter, with phenolic construction.

As part of their design, turret gauges are suitable for both direct and surface mounting, moulded spacer legs at three fixing points allow the back to blow out, even if the gauge is surface mounted.

The gauges are supplied as standard dry and sealed for liquid filling, or can be supplied ready filled with glycerine.

## Case & Bezel

Phenolic case and screw bezel ring.

## Configuration

A B

## Pressure Element

Bourdon tube: 316 stainless steel or Monel 400 to NACE MR-01-75

## Pressure Ranges

30" Hg VAC to 16000 psi (-1 to 1000 bar) - *higher ranges available on request.* Please refer to standard pressure ranges page 22.

## Mountings

Direct or surface mounting

## Connections

1/4", 1/2" NPT or 3/8", 1/2" BSP in 316 stainless steel or Monel 400 to NACE MR-01-75

## Window

Safety glass as standard

## Dial

Aluminium - white with black scale markings

## Pointer

Aluminium, black finish, micrometer adjustable

## Movement

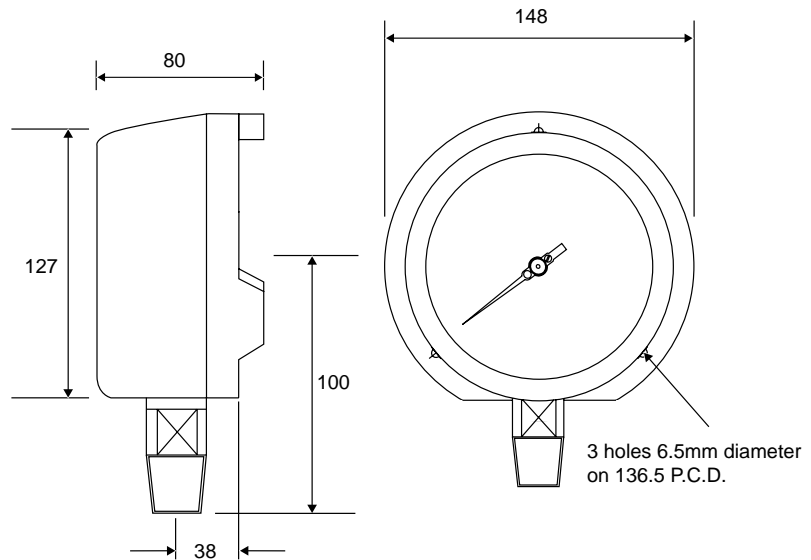
Stainless steel

## Accuracy

0.5% of scale to ANSI B 40.1

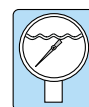
## Weight

1.0 Kg (Dry)



Configuration A  
Direct mounting, bottom entry

Configuration B  
Surface mounting, bottom entry



# SPGA Safety Pattern Pressure Gauges Aluminium Case

Used predominantly in power generation, marine and defence applications, these form the basis of the Rototherm range of gauges manufactured to Defence Standard 66-2.

Their construction conforms in all respects to the requirements of BS 1780 EN837.

## Case & Bezel

Aluminium with integral baffle between the dial and the bourdon tube. Brass/Aluminium bezel. 8" / 200mm dial gauges have a black steel case as standard.

## Blow-out Device

Rear blow-out disc fitted in the gauge case back.

## Mountings / Configurations

Direct, surface or panel mounting A B D F U/V

## Connections

1/4" + 3/8" + 1/2" (NPT - BSP) brass, stainless steel or Monel 400 - other connections available on request.

## Maximum Range

Vacuum through 1000 Bar - higher ranges available on request. Maximum pressure for 63 mm gauges is 400 Bar. Please refer to standard pressure ranges page 22.

## Window

Perspex or safety glass

## Dial

Aluminium - white with black scale markings

## Pointer

Aluminium, black finish

## Movement

Stainless steel

## Accuracy

Class 1 to EN837

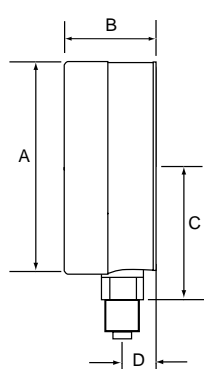


## Standard Connections

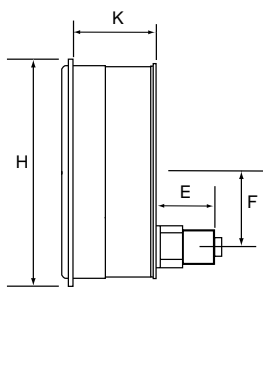
Gauge Size (mm) Nom	63	100, 150 & 200	250 & 300	
Direct & Surface Mounting	Up to 60 Bar Above 60 Bar	1/4" BSP/NPT 1/4" BSP/NPT	3/8" BSP 1/2" BSP/NPT	1/2" BSP/NPT 1/2" BSP/NPT
Flush Mounting	All ranges	1/4" BSP/NPT	3/8" BSP	3/8" BSP/NPT

## Fixing Dimensions

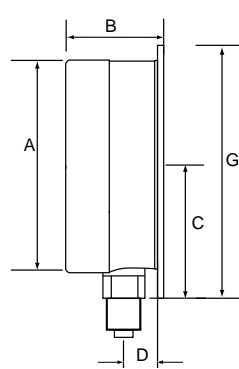
Gauge Size	Hole	Surface Mounting		Flush Mounting	
		P.C.D.	Panel Cut Out	Flange Dia. Max	P.C.D.
63	M4	76	70	90	78
100	M5	116	112	134	121
150	M5	168	165	188	175
200	M5	221	215	240	225
250	M6	273	270	305	285
300	M6	325	330	370	345



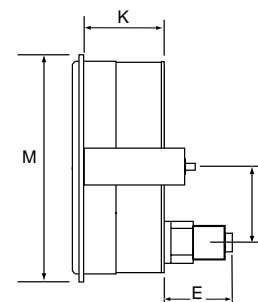
Configuration A Fig.501S  
Direct mounting, bottom entry



Configuration F Fig.508S  
Panel front flange mounting, back entry



Configuration B Fig.504  
Surface mounting, bottom entry



Configuration U/V Fig.508S/C  
Panel clamp mounting, back entry

Nominal Size	A	B	C	D	E	F	G	H	K	M
63 (2.5")	68	42	46	17	29	22	89	89	38	89
100 (4")	102	49	65	20	30	35	127	133	41	133
150 (6")	159	56	102	19	38	54	181	187	57	187
200 (8")	205	53	124	22	38	54	235	232	52	238
250 (10")	256	60	152	24	38	54	292	305	52	305
300 (12")	307	60	178	24	38	54	343	368	52	368

All dimensions are in mm. Drawings are for illustration purposes only.

# Test Gauges

## Case & Bezel

Aluminium safety pattern case, brass bezel, black stove enamelled as standard. Test gauges are also available in 150mm (6") dial DMC or stainless steel safety pattern cases. For dimensional details please refer to pages 4 and 7. For DigiGauge Digital Pressure Gauges with 0.2% full scale accuracy see page 17.

## Configuration

A B D F U/V

## Pressure Element

Bourdon tube: stainless steel

## Mountings

Direct, surface or panel mounting

## Connections

3/8" + 1/2" (NPT - BSP) other connections available on request.

## Maximum Range

Vacuum through 1000 bar - higher ranges available on request. Please refer to standard pressure ranges page 22.

## Window

Safety glass as standard or perspex if required

## Dial

Aluminium - white with black scale markings - mirror dial for anti-parallax readings.



## Pointer

Aluminium knife edge black finish

## Movement

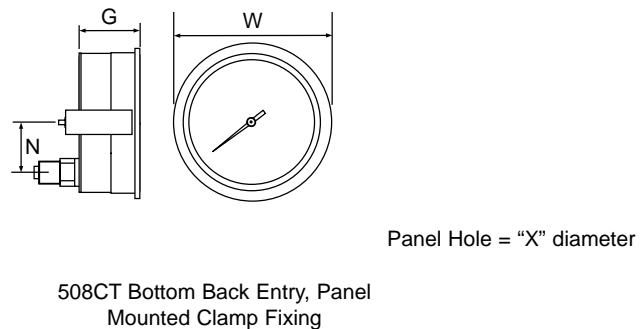
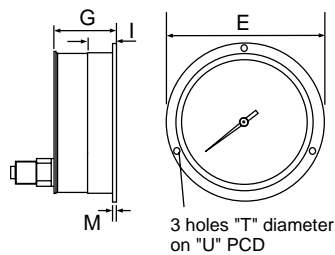
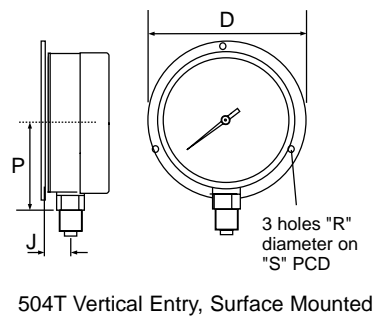
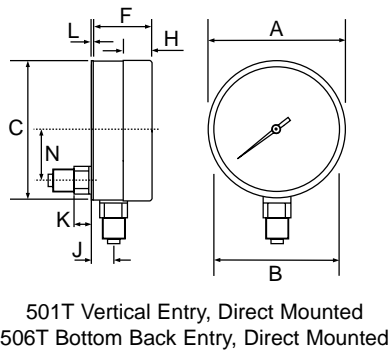
Stainless steel

## Accuracy

The error in pressure indication on either increasing or decreasing pressure at any point on the scale is not greater than 0.25% of the maximum scale value.

## Certification

A full certificate of calibration is issued with all test gauges as standard.



All dimensions are in mm. Drawings are for illustration purposes only.

Nominal Size	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	R	S	T	U	W	X
150mm (6")	159	146	162	181	187	56	57	37	30	19	22	5	3	54	97	5.4	168	5.5	175	171	165
200mm (8")	205	192	203	233	241	56	58	29	33	23	22	6	4	54	124	5.2	221	5.5	225	226	215
250mm (10")	256	244	254	292	305	59	61	29	33	19	22	6	8	54	152	7.2	273	6.5	286	283	270
300mm (12")	305	293	308	343	268	67	69	33	34	21	22	5	4	54	178	7.1	325	6.5	346	356	330

Weight Approx.:  
150mm = 1.3 kg      250mm = 2.8 kg  
200mm = 1.7 kg      300mm = 3.5 kg

# Diaphragm Seal Pressure Gauges

The fitting of a diaphragm seal unit to a pressure gauge is recommended where the medium to be measured is highly viscous or contains suspended solids or is potentially corrosive to the Bourdon Tube. Seal units are normally connected directly to the gauge, but connection may be made by flexible capillary, which makes them ideal for remote pressure indication. Flexible capillary can be used to facilitate the fitting of a gauge in a surface or panel mounting location. Maximum capillary length is 25 metres.

Pressure is transmitted from the diaphragm seal unit to the bourdon tube by a suitable filling medium, the selection of which will ensure compatibility with the process and process temperature. Where it is known that the instrument will be used on processes subject to extremes of temperature, the temperature at the tapping point should be advised at the time of ordering.

Diaphragm seal units can be fitted to Rototherm gauge types: SPG, RPG, DMC, SPGA and Turret gauges. Please refer to individual pressure gauge data sheets for full instrument specifications.



Type A

## Diaphragm Seal Arrangements - Welded Diaphragm Construction

**Type A** seals are of fully welded construction and are hence most suited to applications that do not involve viscous fluids, suspended solids or crystallising liquids. **Type B** seals are of a bolted construction with the diaphragm welded to the top section enabling the seal to be easily disassembled and are particularly suited for applications in which periodic cleaning of the seal may be required. **Type C** seals use similar construction to the **Type B**, but are flange mounted and are most suitable for viscous product applications. **Type C** seals require a flange with a nominal bore of at least 2"; for applications requiring smaller bore flanges please refer to details on Rototherm extended flange seals Types 4 and 6 (see page 13)

### Maximum Working Pressures

Type A & B\* 5000 psi (\* Type B 3000 psi)  
 Type C Refer to flange maximum pressure rating

### Process Connections

Type A (male screwed) 3/8", 1/2" BSP, 1/2" BSPT, 1/2" NPT, 1" BSP and 1" BSPT. Other screwed connections on request.  
 Type B - as Type A  
 Type C - Flange mounted seals (see tables below)

### Diaphragm Materials - Types A, B and C

Stainless steel - standard  
 Monel, Hastelloy, Tantalum diaphragms and PTFE coatings are available on most models

### Materials of Construction

Type A - all 316 stainless steel construction  
 Type B & C - 316 stainless steel tops  
 Bases are available in 316 stainless steel, PTFE lined, Monel and Hastelloy

## Flange Rating & Size

### Flanges to ANSI B16.5

Flange Size	Rating					
2"	150	300	600	900	1500	2500
2.5"	150	300	600	900	1500	2500
3"	150	300	600	900	1500	2500
3.5"	150	300	600	900		
4"	150	300	600	900	1500	2500

### Flanges to BS4504

Flange Size	Rating			
DN40		PN10	PN16	
DN50	PN6	PN10	PN16	

### Flanges to BS10

Flange Size	Rating			
2"	Table D	Table E	Table F	Table H



Type B

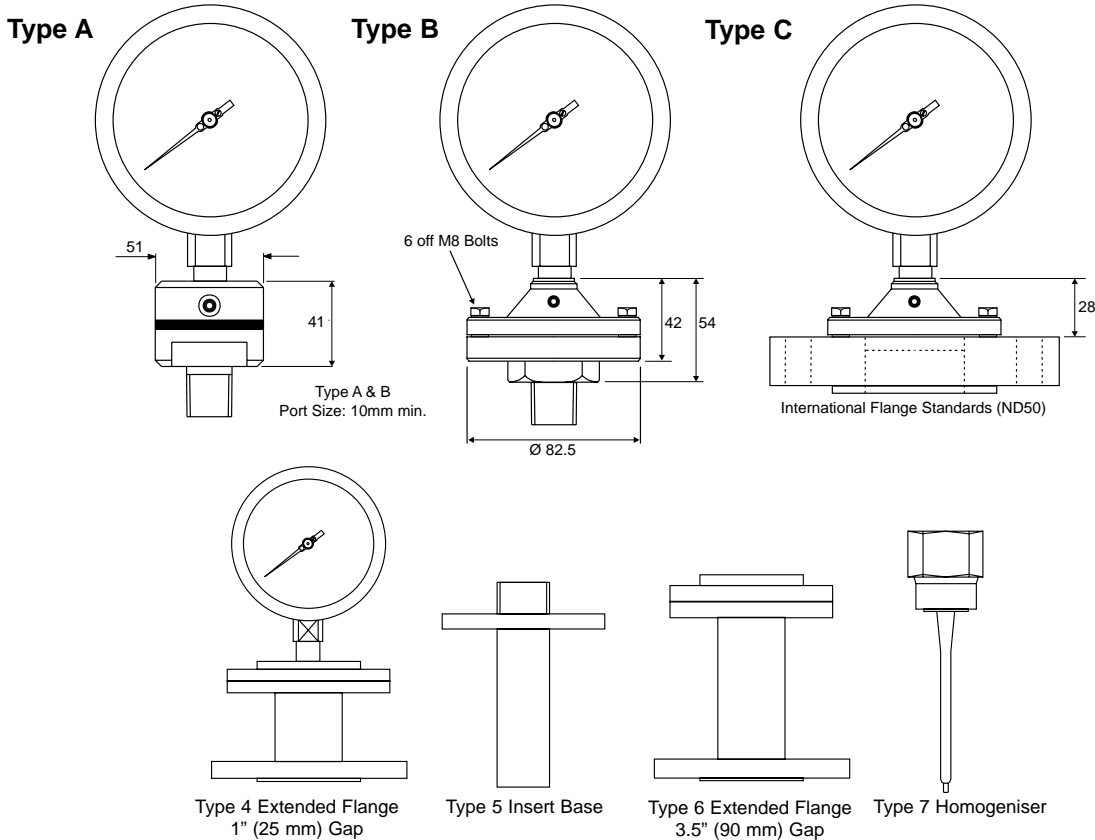


Type C

## Filling Fluids Available

Filling Fluid	Process Temperatures	Recommended Usage
Mineral Oil (Diala DX) Standard Filling	-40 to 120°C	Standard applications NOT suitable for food
Lockheed	-20 to 35°C	As above
Galdon DO5	-20 to 150°C	Most higher than ambient applications
Glycerine/Water	0 to 30°C	Food systems
Silicone 200/100	-20 to 160°C	Higher temperatures NOT suitable for food
Silicone 704	80 to 300°C	As above
Fluorolube FS5	0 to 250°C	Higher temperature applications

## Diaphragm Seal Arrangements



All dimensions are in mm. Drawings are for illustration purposes only. Dimensions may vary to those shown.

## Schaffer Pressure Gauges

Schaffer gauges are designed for measuring the pressure or vacuum of substances avoiding the use of bourdon tube instruments.

These gauges particularly suit applications where corrosive products or liquids containing suspended solids are present. The measuring element is a steel diaphragm, connected via a rod and ball joint to an adjustable movement.

These gauges should not be used on pressures over 25 bar or on pulsating processes - for these applications diaphragm seal gauges should be used.

### Case & Bezel

Black DMC or stainless steel Weatherproofed to IP65

### Pressure Element

Diaphragm, 316 stainless steel for vacuum and pressure ranges up to 2.5 bar. EN56D steel for pressures 0 to 4 bar up to 25 bar.

### Diaphragm Protection

Stainless steel (4 to 25 bar)

PTFE, Tantalum, Monel 400, Hastelloy "C" and Silver

### Connections

Screwed male, female or flanged.

### Accuracy

1.5% of scale to BS EN837-3

### Standard Pressure Ranges

See page 22.



# Differential Pressure Gauges

Rotherm's quality differential pressure gauges are designed to measure the difference in pressure between two points in a system and show it on a single dial gauge. A magnetic movement senses the differential pressure. The gauge has separate pressure and indicating chambers.

These diaphragm 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 can detect abnormal system conditions.

Gauges can be supplied with reed switches to initiate alarms, activate other equipment or to 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

Monitor filter conditions, set filter by-pass, or initiate filter cleaning cycle. Determine obstructions in process lines. Check condition of pumps, heat exchangers and other processing equipment. Adjust flow rates in piping systems. Monitor liquid levels in storage tanks.

## Operating Principle

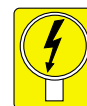
High and low pressures are separated by a sensor assembly consisting of a magnet, piston or diaphragm and a range spring. The difference in pressure causes the sensor assembly to move in proportion to the change against a range spring.

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.

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



Clockwise from top: 300DGC, 200DGR flush mounted, 200DPG, 200DGR with optional switch.



## 200 DPG Piston Gauges



### Magnetic coupling using a spring on a piston with marginal migration of media

<b>Case</b>	Stainless steel case and flange (standard), IP65 protection
<b>Mounting</b>	Direct, panel - front flange, 2" pipe
<b>Nominal Sizes</b>	50mm (2"), 63mm (2.5"), 80mm (3"), 100mm (4"), 115mm (4.5") and 150mm (6")
<b>Body Material</b>	Aluminium, 316 stainless steel & Brass

<b>Connections</b>	1/4" BSP or NPT female
<b>Wetted Parts</b>	Body material, PTFE, 304 stainless steel spring, screw and ceramic magnet
<b>Seals</b>	Buna N (standard), Viton®
<b>Porting</b>	In-line, bottom or back
<b>Ranges</b>	0 - 0.25 to 0 - 10 bar
<b>Working Pressure</b>	200 bar / 3000 psi
<b>Accuracy</b>	±2% FSD (Ascending)
<b>Switch</b>	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.
<b>Options</b>	Glycerine filling, red setable follower pointer, dial scale, DIN plug, strainer in (+) connection.
<b>Temperature</b>	80°C Max. for the media

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## 200 DGR Rolling Diaphragm Differential Gauges



### Magnetic coupling with a rolling diaphragm sensor with no migration of media

<b>Case</b>	Stainless steel case and flange IP65 protection
<b>Mounting</b>	Direct, panel - front flange, 2" pipe
<b>Nominal Sizes</b>	50mm (2"), 63mm (2.5"), 80mm (3"), 100mm (4"), 115mm (4.5") and 150mm (6")

<b>Body Material</b>	Aluminium, 316 stainless steel & brass
<b>Connections</b>	1/4" BSP or NPT female
<b>Wetted Parts</b>	Diaphragm, ceramic magnet, 304 stainless steel spring. Other internal parts in Aluminium or 316 stainless steel
<b>Seals</b>	Buna N (standard), Viton®
<b>Porting</b>	In-line (standard) bottom or back
<b>Ranges</b>	0 - 0.25 to 0 - 7 bar
<b>Working Pressure</b>	200 bar / 3000 psi
<b>Accuracy</b>	±2% FSD (Ascending)
<b>Switch</b>	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.
<b>Options</b>	Glycerine filling, red follower pointer, dual scale, DIN plug, strainer in (+) connection.
<b>Temperature</b>	80°C Max. for the media

## 300 DGC Small & 400 DGC Medium Convoluted Diaphragm Differential Pressure Gauge



### Magnetic coupling with a convoluted diaphragm sensor with zero media migration

<b>Case</b>	Stainless steel case and flange IP65 protection
<b>Mounting</b>	Direct, panel - front flange, 2" pipe
<b>Nominal Sizes</b>	63mm (2.5"), 80mm (3"), 100mm (4"), 115mm (4.5") and 150mm (6"). (400 DGC is not available with 63mm dial)

<b>Body Material</b>	Aluminium, Brass* and 316 Stainless Steel (*300DGC only)
<b>Connections</b>	1/4" BSP or NPT female
<b>Wetted Parts</b>	Diaphragm, ceramic magnet, 304 stainless steel spring. Other internal parts in Aluminium, brass or 316 Stainless Steel as per gauge body
<b>Seals</b>	Buna N (standard), Viton®
<b>Porting</b>	In-line (standard), bottom or back
<b>Ranges</b>	0 - 0.075 to 0 - 4 bar (60 psi) (300DGC) 0 - 25 to 0 - 600 mmH <sub>2</sub> O (400DGC)
<b>Working Pressure</b>	100 bar (300DGC) 35 bar (400DGC)
<b>Accuracy</b>	±2% FSD (Ascending)
<b>Switch</b>	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.
<b>Options</b>	Glycerine filling, red follower pointer, dual scale, DIN plug.
<b>Temperature</b>	80°C Max. for the media

## 600 DGC Magnetic Convoluted Diaphragm Differential Pressure Gauge



### The 600 DGC instrument is designed for use in air handling units, pharmaceutical and medical equipments & HVAC.

<b>Case</b>	Stainless steel case. IP65 protection
<b>Mounting</b>	Flush (standard) surface & 2" pipe

<b>Nominal Sizes</b>	112mm
<b>Body Material</b>	Engineering polymer
<b>Connections</b>	1/8" NPT female (standard)
<b>Wetted Parts</b>	Diaphragm, body material, 304 stainless steel spring & ceramic magnet.
<b>Seals</b>	Buna N (standard)
<b>Porting</b>	In-line (standard) or back
<b>Ranges</b>	0 - 15 to 0 - 1000 mm of water
<b>Working Pressure</b>	2.4 bar
<b>Accuracy</b>	±2% FSD (Ascending)
<b>Switch</b>	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.
<b>Options</b>	Glycerine filling, red follower pointer, dual scale, DIN plug, strainer in (+) connection.
<b>Temperature</b>	60°C Max. for the media

# DP3 Series Differential Pressure Gauges



A range of economically priced 100mm and 150mm nominal size differential pressure gauges ideally suited to most industrial applications where accuracy and durability is required.

Model DP352 gauges are available with ranges between 25 and 100 mBar and have a maximum static pressure of 100 bar. Model DP362 gauges are available with ranges between 100 mBar and 25 bar and have a maximum static pressure of 200 bar.

A choice of mounting options enables simple installation - either direct mounting to the process, in a panel, surface mounting on a wall or with a vertical or horizontal pipe mounting.

Both DP352 and DP362 instruments are available with electrical contact head options and can be fitted with diaphragm seal units.

## Nominal Sizes

100 and 150mm.

## Mounting

Direct mounting, surface mounting with clamp, back panel flush mounting, 2" vertical or horizontal pipe mounting

## Case and Bezel

Case and bezel in AISI 304 stainless steel (AISI 316 on request - option ) with bayonet bezel.

## Ingress Protection

IP 55 for pipe mounting (dry); IP 65 for liquid filled and for liquid fillable.

## Window

Standard glass for dry gauges. Methacrylate for liquid filled and fillable gauges. Laminated safety glass (on request).

## Filling Liquid

Silicone fluid (standard)

## Pressure Connections

AISI 316L stainless steel: 1/4" to 1/8" NPT (1/4 NPT female) (standard); G 1/2 B (1/2 BSP male) or 1/2-14 NPT EXT (1/2 NPT male) (on request).

## Pressure Element

Model DP 352:

AISI 316Ti 1.4571 stainless steel double welded diaphragm for measuring ranges between 25 and 100 mbar

Model DP 362:

AISI 316L 1.4435 stainless steel double welded diaphragm for measuring ranges included between 100 mbar and 4 bar; Duratherm (Co Ni Cr Mo alloy) double welded diaphragm for ranges included between 6 and 25 bar.

*Note: AISI 316L 1.4435 is in accordance with NACE standards.*

## Static Pressure

For all scale ranges, apart from the pressure entry in one or both connections:

100 bar for model DP 352;

200 bar for model DP 362;

400 bar for model DP 362 (available on request).

## Differential Cell (material and sizes)

AISI 316L stainless steel: DP 352, 150mm x 150mm;

DP 362 100mm x 100mm

## Differential Element Filling Liquid

silicone fluid (standard); fluoride fluid (for oxygen service); food compatible fluid (on request only).

## Differential Cell Gaskets

Nitrile rubber (NBR); FPM (Viton®) on request.

## Ranges

Standard ranges for pressure values between 25 mbar and 25 bar: Other ranges and dial markings are available upon request

## Units of Pressure

mbar, bar, kPa, kg/cm<sup>2</sup> and psi for single or double range.

## Scale Angle

270° Note: scale angle is 180° with ranges 0-25 mbar for model DP 352 and 0-100 mbar for model DP362

## Accuracy

Class 1,6 ( $\pm 1,6\%$  of full scale deflection);

Class 1 ( $\pm 1\%$  of full scale deflection)

**Note : If an electric contact is fitted the accuracy of the gauge is approximately doubled.**

## Pointer

Aluminium with micrometer adjustment.

## Dial

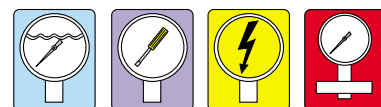
White aluminium with black figures

## Movement

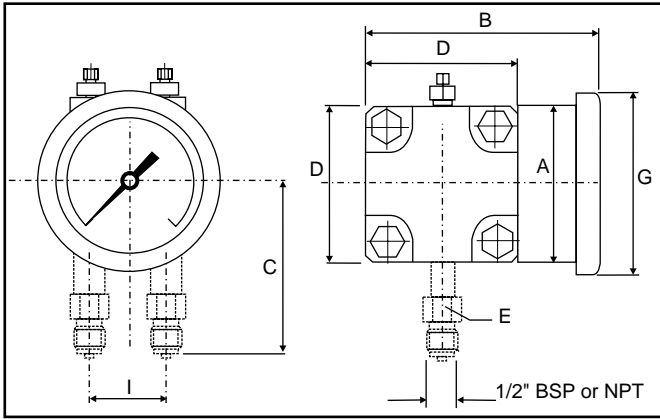
Stainless steel.



Model DP362 gauge fitted with optional electric contact head



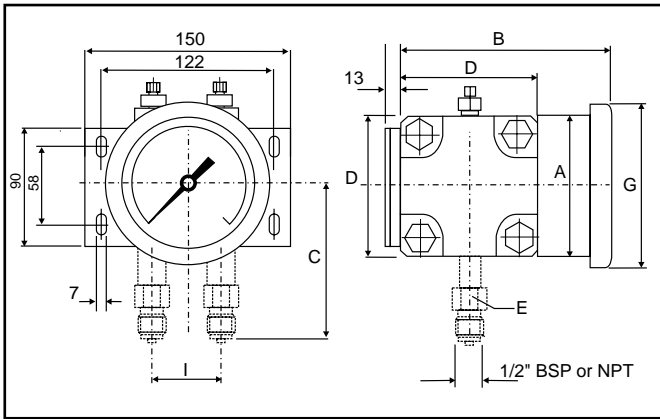
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### Model DP3 Direct Mounting - Configuration A

Model	DN	A	B	C	D	E	G	I
DP352-A	100	103	200	137	150	22	118	54
	150	150	200	137	150	22	166	54
DP362-A	100	103	150	112	100	22	118	54
	150	150	150	112	100	22	166	54

All dimensions are in mm

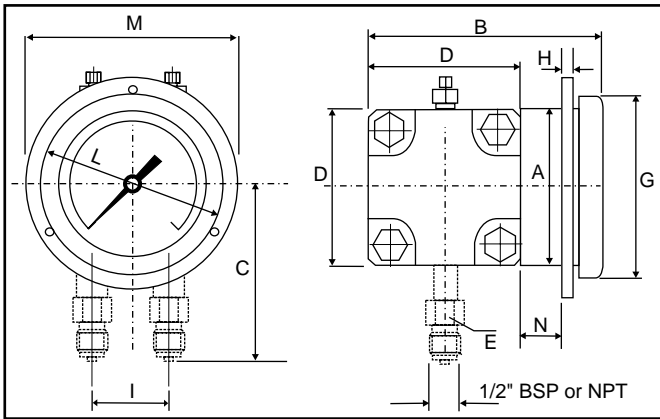


### Model DP3 Surface Mounting - Configuration B

Surface mounting with clamp differential pressure gauge

Model	DN	A	B	C	D	E	G	I
DP352-B	100	103	200	137	150	22	118	54
	150	150	200	137	150	22	166	54
DP362-B	100	103	150	112	100	22	118	54
	150	150	150	112	100	22	166	54

All dimensions are in mm

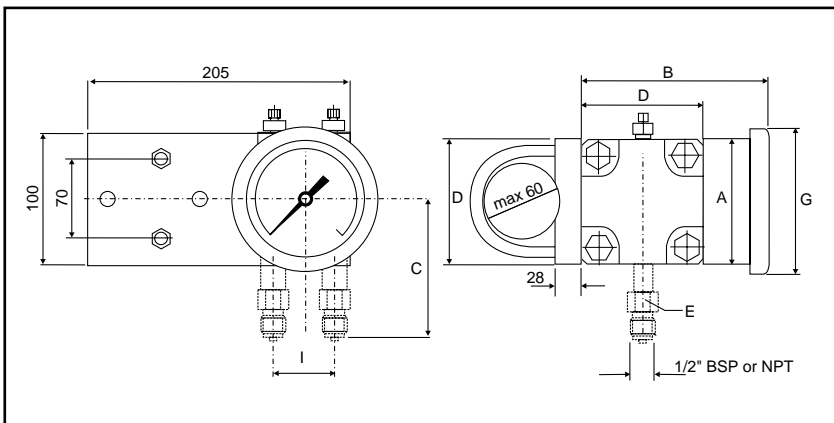


### Model DP3 Panel Mounting - Configuration C

Back panel flush mounting with 3 fixing holes

Model	DN	A	B	C	D	E	G	H	I	L	M	N
DP352-C	100	103	200	137	150	22	118	7	54	126	140	27
	150	150	200	137	150	22	166	7	54	178	192	27
DP362-C	100	103	150	112	100	22	118	7	54	126	140	27
	150	150	150	112	100	22	166	7	54	178	192	27

All dimensions are in mm



### Model DP3 Pipe Mounting - Configuration D

Horizontal or vertical 2" pipe mounting with AISI 304 stainless steel support

Model	DN	A	B	C	D	E	G	I
DP352-D	100	103	200	137	150	22	118	54
	150	150	200	137	150	22	166	54
DP362-D	100	103	150	112	100	22	118	54
	150	150	150	112	100	22	166	54

All dimensions are in mm

# DigiGauge - Digital Pressure Gauge & Transmitters

- **High Accuracy  $\pm 0.2\%$  full scale**
- **Stainless steel IP67 case**
- **Long battery life - 1 year continuous operation from 2 AA cells**
- **Wide selection of pressure ranges from vacuum to 400 bar**
- **4 to 20mA output option available**
- **Intrinsically safe versions available**
- **Supplied with calibration certificate traceable to National Standards**
- **Available with MAX and MIN pressure readings**

High accuracy and a 4 digit display enables the DigiGauge to be used as a digital standard test gauge, replacing less accurate, sometimes fragile analogue test gauges. Factory calibration certificates traceable to National Standards are provided and NAMAS calibration certificates can be supplied if required.

Covering a wide range of test and measurement applications with pressure ranges available from vacuum to 400 bar, DigiGauge can be supplied with hygienic fittings for food applications or with diaphragm seals for use on corrosive, viscous or crystallising fluids.

DigiGauge can be supplied with two pressure units, for example bar and psi - the required measurement unit being selected by an internal switch. The first pressure unit defines the actual range of the instrument, the second pressure unit provides an equivalent scale.

All standard DigiGauge's are calibrated in a controlled environment at  $20^{\circ}\text{C} \pm 3^{\circ}\text{C}$ . Temperature compensated sensors are fitted as standard to automatically correct zero and span drift.

All versions of DigiGauge can also be specified with a MAXIMUM and MINIMUM pressure logging option.



## DigiGauge Tx

For applications that require both local indication and a 4/20mA transmitted signal to a remote control or monitoring system the DigiGauge Tx is the ideal instrument. The DigiGauge Tx operates as a conventional loop-powered 4/20mA two wire transmitter and can accept excitation voltages between 12V and 32V DC. The 4/20mA output can be set to operate across 100% of the instrument span or can be user configured, in set up mode, to operate across a limited range, minimum being 10% of instrument span.

Additionally, custom factory set configurations can be provided. Pressure ranges, accuracy and general specifications are as per the standard Rototherm DigiGauge. DigiGauge Tx is supplied with a 2 metre lead terminating in a 3 pole M8 connector.

## DigiGauge i.s.

For use in hazardous areas, as found in oil and gas processing, chemical and pharmaceutical plants, tankers and storage vessels, an intrinsically safe version of the DigiGauge is available.

Certified as intrinsically safe, by BASEEFA to the very latest ATEX standards, the DigiGauge i.s. is approved to EEx ia IIC T4(-20°C <math>T\_a</math> <math>< 60^{\circ}\text{C}</math>) certification and is designated as equipment Group II Category I Intrinsically Safe Apparatus.

The Rototherm DigiGauge i.s is covered by ATEX certificate BAS99 ATEX 1004X.

Ranges, accuracy and general specifications are as per the standard DigiGauge.



**Case**

100mm / 4" diameter 304 stainless steel case and bezel

**Process Connection**

1/4" NPT or 1/4" BSP - other sizes are available on request

**Protection**

IP67 / NEMA 4X

**Display**

4 digit LCD with 12.7mm / 1/2" high characters

**Display Update Rate**

0.5 seconds or 2 seconds user selectable

**Sensor**

Alumina ceramic (Al<sub>2</sub>O<sub>3</sub>) diaphragm strain gauge

**Over pressure**

Maximum pressure applied to be < 1.25 x full scale

**Compensated Range**

-10 to 60°C (14 to 140°F)

**Wetted Parts**

316 stainless steel, Fluorocarbon and ceramic

**Temperature Limits**

Storage : -20 to 85°C (-4 to 185°F)  
 Ambient operating : -20 to 70°C (-4 to 158°F)  
 Internal Case : -10 to 60°C (14 to 140°F)  
 Pressure Medium: -20 to 100°C (-4 to 212°F)

**Power Source**

(3V DC battery), 2 x 1.5V "AA" alkaline cells

**Battery Life**

12 months continuous operation at 2 second update.

**Low Power Warning\***

Display will alternate between reading & "BATT"

**EMC Compatibility**

BS EN 50081-1: 1992 & BS EN 50082-2 1995

**Accuracy**

See range table below

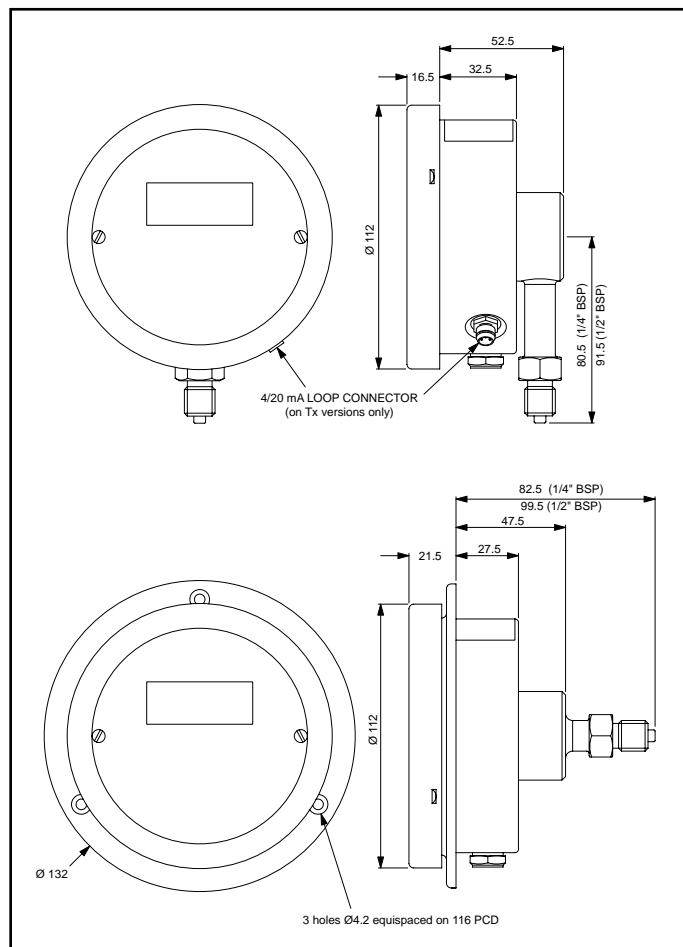
**Weight**

900g (32 ozs).

\*Not applicable to DigiGauge TX

Bar Range	Resolution	PSI Range	Resolution	Accuracy*
-1 to +1 bar	1 mbar	-15 to +15 psi	0.01 psi	±0.25%fs
0 to 1.6 bar	1 mbar	0 to 24 psi	0.01 psi	±0.25%fs
0 to 2.5 bar	1 mbar	0 to 37 psi	0.01 psi	±0.2%fs
0 to 4 bar	1 mbar	0 to 60 psi	0.01 psi	±0.2%fs
0 to 6 bar	1 mbar	0 to 90 psi	0.01 psi	±0.2%fs
0 to 10 bar	10 mbar	0 to 150 psi	0.1 psi	±0.2%fs
0 to 16 bar	10 mbar	0 to 275 psi	0.1 psi	±0.2%fs
0 to 25 bar	10 mbar	0 to 375 psi	0.1 psi	±0.2%fs
0 to 40 bar	10 mbar	0 to 600 psi	1 psi	±0.2%fs
0 to 60 bar	10 mbar	0 to 900 psi	1 psi	±0.2%fs
0 to 100 bar	100 mbar	0 to 1500 psi	1 psi	±0.2%fs
0 to 160 bar	100 mbar	0 to 2400 psi	1 psi	±0.2%fs
0 to 250 bar	100 mbar	0 to 3750 psi	1 psi	±0.25%fs
0 to 400 bar	100 mbar	0 to 6000 psi	1 psi	±0.25%fs

\*Note: Accuracy includes non linearity + hysteresis + repeatability  
 Temperature coefficient of zero and span < 0.02% FS/°C



# PTx Series Pressure Transmitters

The Rototherm range of pressure transmitters provide a standardised 4-20mA output signal by utilising a ceramic diaphragm strain gauge mounted with an amplifier in a stainless steel housing.

The DIN43650 connector plugs into the transmitter, eliminating the need for soldering thus making field interchangeability an easy operation.

Temperature compensated sensors are fitted as standard to automatically correct zero and span drift.

## Supply Voltage

8.5 to 36 V DC

## Output Current

Operating 4 to 20 mA  
Limits 2.5 to 30 mA

## Materials

Pressure Block Stainless steel  
Case Stainless steel  
Wetted Parts Stainless steel  
Alumina Ceramic  
Fluorocarbon

## Electrical Connection

DIN 43650 Type A

## Pressure Connections

1/4" BSP/NPT or 1/2" BSP/NPT male thread

## Temperature Range

Storage -25 to +105°C  
Operating -10 to +85°C

## Protection

IP67

## Weight

235g

## Insulation Test

>100 Mohm 500 V DC

## Temperature Coefficient

Zero : ±0.04% FS/°C Span : ±0.04% FS/°C

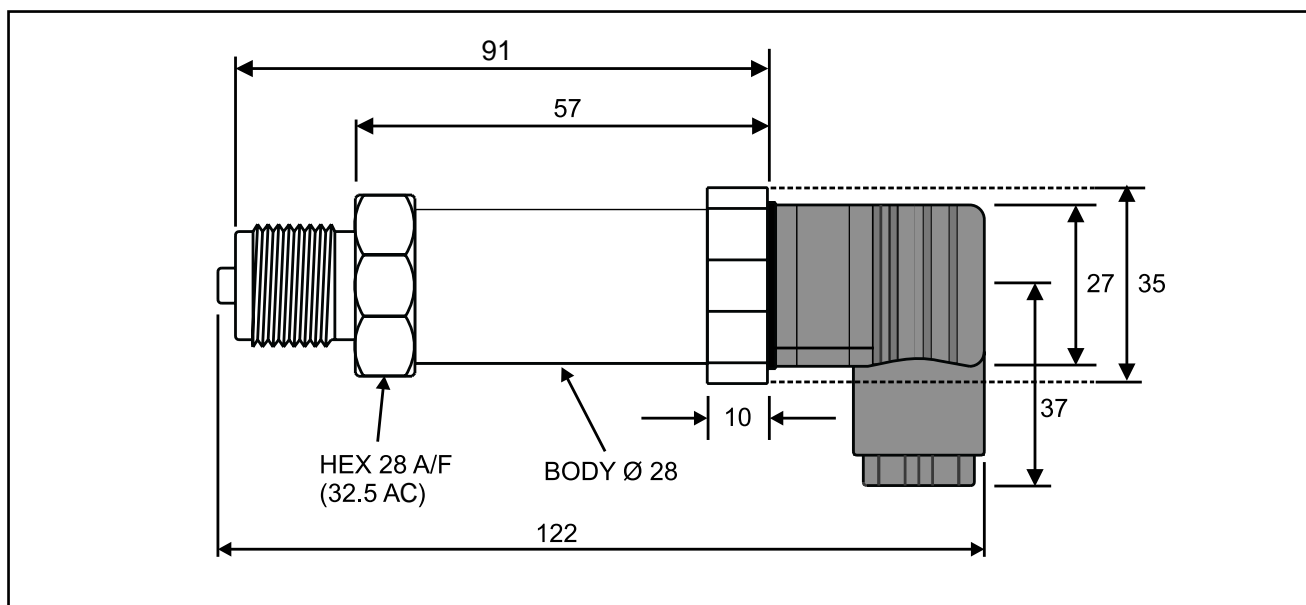
## Linearity / Hysteresis / Repeatability

±0.2



Pressure Range	Burst Pressure
-1 to +1 bar	4 bar
0 to 1.6 bar	4 bar
0 to 2.5 bar	6.25 bar
0 to 4 bar	10 bar
0 to 6 bar	15 bar
0 to 10 bar	25 bar
0 to 16 bar	40 bar
0 to 25 bar	62.5 bar
0 to 40 bar	100 bar

Pressure Range	Burst Pressure
0 to 60 bar	150 bar
0 to 100 bar	175 bar
0 to 160 bar	280 bar
0 to 250 bar	400 bar
0 to 400 bar	700 bar
0 to 600 bar	1050 bar



All dimensions are in mm. Drawings are for illustration purposes only.

# Accessories and Optional Features

## Electrical Contact Heads

To provide alarm or control functions, 100 and 150mm nominal dial instruments can be specified with electrical contact heads mounted in a clear plastic window which replaces the standard one. The set point can be adjusted to any position on the scale with a removable key. Single and dual contacts systems are available.

Electrical contact heads provide a repeatable switching point, but the absolute accuracy tolerance of the instrument is approximately doubled by the contacts.

### Contact Rating

Standard contact head assemblies: 250V, switching capacity 10W, 18VA, maximum current 0.7A. For higher switching capacities, 150 mm (6") SPG "Elite" and RPG gauges can be supplied with integral 5A or 15A relays.

### Service

Indoor use, ambient temperature -10/70°C, free from vibration

### Application

100 and 150mm nominal dial size instruments



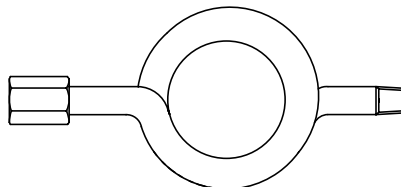
System	Operation	Typical Application
A	Break on rise	Pressure control
B	Make on rise	Over pressure alarm
C	2 contacts break on rise in pressure	Pressure control plus alarm or 2 step pressure control
D	2 contacts make on rise in pressure	Alarm and trip
E	Break on rise and make on rise in pressure	Pressure control plus alarm

Electrical Contact Heads are available on models SPG, RPG, DMC and SPGA

## Syphons

Syphons should be installed on all live steam applications to protect the gauge from the high temperatures encountered.

Available in either "pigtail" or "U-type" configurations for installation on horizontal or vertical line respectively.

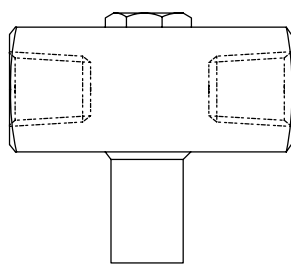


Typical Pig-Tail Syphon

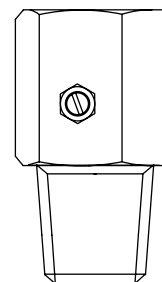
## Over-range Protectors & Snubbers

The adjustable over-range protector is used as a safety device against occurring over-pressures exceeding the measuring range of the pressure gauge. On reaching the adjusted pressure, the valve closes automatically and consequently blocks the flow to the pressure measuring element. After a decrease of pressure by about 25% below the closing pressure, the valve opens again.

Gauge snubbers should be used when a pressure gauge is subjected to rapid pressure fluctuations or pulsation. Such a device reduces pressure impact, slows the speed and range of pointer movement and prolongs the life of the gauge.



Typical Over-range Protector

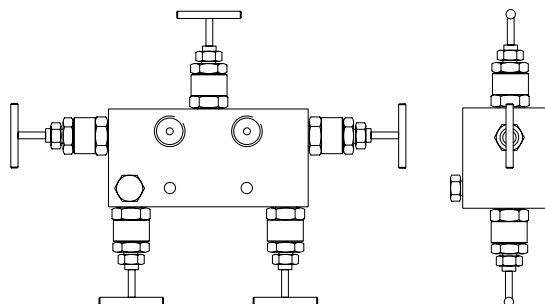


Typical Gauge Snubber

## Needle Valves & Manifolds

British Rototherm has expanded its' process control instrumentation portfolio by introducing a complementary range of valves and manifolds. Ideal for use in conjunction with Rototherm pressure gauges, these robust accessories are the perfect solution for even the most demanding applications.

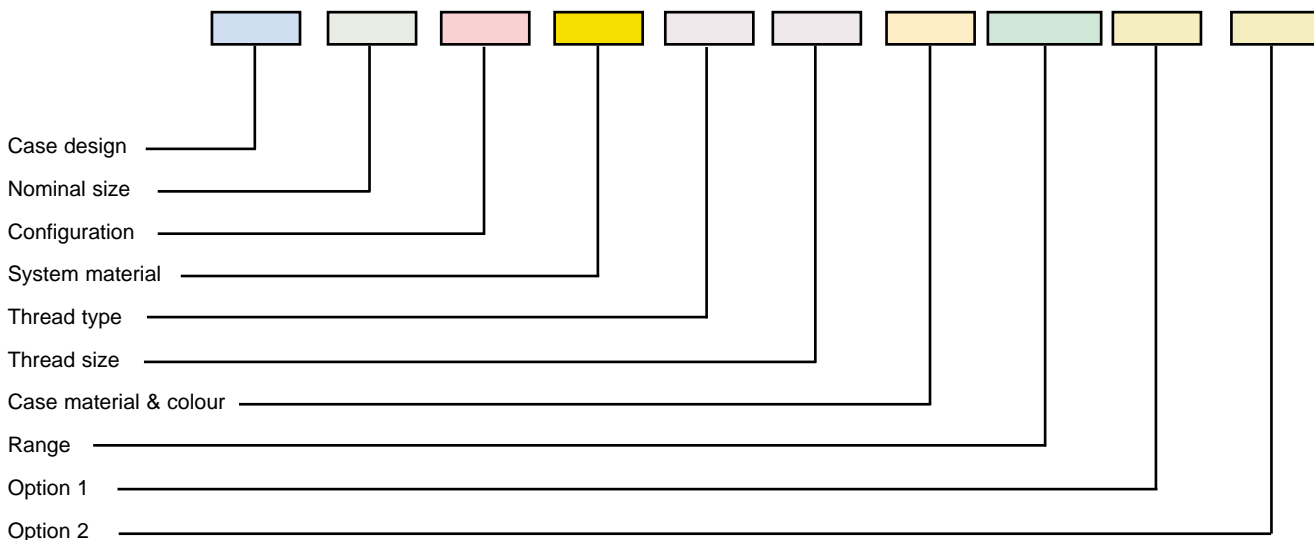
- Needle Valves
- 2 Valve Manifold
- In-line 2 Valve Manifold
- Direct Mount 2 Valve Manifold
- Remote Mount 3 Valve Manifold
- Direct Mount 3 Valve Manifold
- Remote Mount 5 Valve Manifold
- Direct Mount 5 Valve Manifold



Typical 5 valve manifold

These drawings are for illustration only and are not to scale.

# Ordering Information



## Example Order Code:

**SPG/100/A/SS/1/4/Q/0-10Bar/G/N**

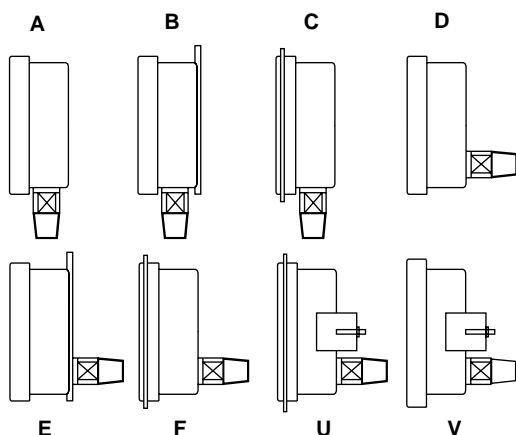
SPG Safety Pattern Gauge, 304 stainless steel case, 100 mm nominal size, bottom connection, direct mounting, 316 stainless steel bourdon tube, 1/2" BSP connection. Range 0 to 10 Bar. Options: glycerine filled.

*For the complete part number for Diaphragm, Schaffer and Differential Pressure Gauges, please consult with your sales representative when placing an order*

## Case Type & Size

Case	Case & Bezel Material	Size Code	Nom. Size mm (inch)	Available Configuration
SPG	304 stainless steel	100	100 (4)	A B D F U
	316 stainless steel option (S1)	150	150 (6)	
RPG	304 stainless steel	63	63 (2.5)	A B D E F V
	316 stainless steel option (S1)	100	100 (4)	
		150	150 (6)	
RCG	304 stainless steel	100	100 (4)	A B D E F V
	316 stainless steel option (S1)	150	150 (6)	
DMC	Dough Moulded Compound	100	100 (4)	A B D V* (150 mm dial only)
		150	150 (6)	
Turret	Phenolic (black plastic)	115	115 (4.5)	A B
SPGA	Aluminium case - brass or Aluminium bezel	63	63 (2.5)	A B D E F U
		100	100 (4)	
		150	150 (6)	
		200	200 (8)	
		250	250 (10)	
		300	300 (12)	

## Gauge Configurations



- A bottom connection, direct mounting
- B bottom connection, back flange, surface mounting
- C bottom connection, front flange, surface mounting
- D back connection, direct mounting
- E back connection, back flange, surface mounting
- F back connection, wide front flange, (drilled) panel mounting
- U back connection, wide front flange, (un-drilled) panel mounting (yoke)
- V back connection, narrow front-ring, panel mounting (yoke)

## Bourdon Tube Selection

System Code	Socket Material	Bourdon Tube Material
BB	brass	bronze tube
SS	316 stainless steel	316 stainless steel
MM	Monel 400	Monel 400

## Capsule System Material Selection

SS	316 stainless steel	stainless steel
BB	brass	beryllium copper

*Some materials may not be available for all gauge models. Please refer to individual gauge specification, or alternatively contact Rototherm sales*

## Thread Type & Size

Thread Type	Thread Size (size code = number 1/8" 's)
0 = NPT	1 = 1/8"
1 = BSP	2 = 1/4"
2 = BSPT	3 = 3/8"
3 = API	4 = 1/2"

## Case Material

Q = standard (see Case Type & Size)  
 S = stainless steel case (where not standard)  
 S1 = 316 stainless steel case - when available as an option

X = non standard

## Standard Pressure Ranges

Below is a list of standard pressure ranges that are available. Gauges may be ordered with dual scales. Other units and non-standard ranges are available on request.

Imperial	Metric
3 to 15 psi Rec	0.2 to 1 bar
0 to 10" WG	0 to 25 mbar
0 to 16 " WG	0 to 40 mbar
0 to 24" WG	0 to 60 mbar
0 to 30" WG	0 to 75 mbar
0 to 40" WG	0 to 100 mbar
0 to 60" WG	0 to 150 mbar
0 to 100" WG	0 to 250 mbar
0 to 160" WG	0 to 400 mbar
0 to 200" WG	0 to 500 mbar
0 to 300" WG	0 to 700 mbar
0 to 400" WG	0 to 1000 mbar
0 to 30 in Hg VAC	0 to -1 bar
30" Hg to 15 psi	-1 to +1.5 bar
30" Hg to 30 psi	-1 to +3 bar
30" Hg to 60 psi	-1 to +5 bar
30" Hg to 100 psi	-1 to +9 bar
0 to 10 psi	0 to 600 mbar
0 to 15 psi	0 to 1 bar
0 to 25 psi	0 to 1.6 bar
0 to 30 psi	0 to 2.5 bar
0 to 60 psi	0 to 4 bar
0 to 100 psi	0 to 6 bar
	0 to 7 bar
0 to 120 psi	
0 to 150 psi	
0 to 160 psi	0 to 10 bar
0 to 200 psi	0 to 16 bar
0 to 300 psi	0 to 20 bar
0 to 400 psi	0 to 25 bar
0 to 600 psi	0 to 40 bar
0 to 800 psi	0 to 60 bar
0 to 1000 psi	0 to 70 bar
0 to 1600 psi	0 to 100 bar
0 to 2000 psi	0 to 160 bar
0 to 3000 psi	0 to 250 bar
0 to 4000 psi	0 to 5000 psi
0 to 6000 psi	0 to 400 bar
0 to 10000 psi	0 to 600 bar
0 to 15000 psi	
0 to 16000 psi	0 to 1000 bar

Equivalent units available include:

inches H<sub>2</sub>O, inches Hg, cm H<sub>2</sub>O, cm Hg, kg/cm<sup>2</sup>, kPa, MPa.

Some ranges may not be available for all gauge models. Please refer to individual gauge specification, or alternatively contact Rototherm sales.

## Options

Both option digits to be filled in:

No options = NN

One option = selected digit then N

Two options = list from below alpha-numerically

N	No option
X	Special instruction
C	Customer drawing or specification
D	Defence Standard 66-2
E	Electrical Contact Head
G	Glycerine filled
H	0.5% accuracy
J	Red setting pointer
L	No aluminium parts
O	Oxygen cleaned
P	Perspex window
R	Restrictor
S	Internal stops
T	Drag pointer
V	Low magnetic permeability
W	Test Gauge (0.25% accuracy)
Y	Damped movement
Z	Wetted parts to NACE MR-01-75

Some options may not be available for all gauge models. Please refer to individual gauge specification, or alternatively contact Rototherm sales.

## DigiGauge Standard Pressure Ranges

### Pressure Conversion Chart

	psi	in W.G.	kg/cm <sup>2</sup>	m W.G.	In. Hg	mm Hg	cm Hg	bar	mbar	kPa
psi	1	27.72	0.07	0.7	2.04	51.88	5.19	0.69	68.95	6.9
in W.G.	0.0361	1	0.0025	0.03	0.07	1.87	1.09	0.0025	2.49	0.25
kg/cm <sup>2</sup>	14.23	394.41	1	10.02	29.05	737.96	73.8	0.98	980.66	98.07
m W.G.	1.42	39.37	0.1	1	2.91	73.8	7.38	0.098	98.07	9.81
In. Hg	0.49	13.58	0.03	0.35	1	25.4	2.54	0.034	33.75	3.38
mm Hg	0.02	0.53	0.0014	0.01	0.04	1	0.1	0.001	1.33	0.13
cm Hg	0.193	5.34	0.14	0.14	0.39	10	1	0.01	13.29	1.33
bar	14.5	402.16	1.02	10.21	29.63	752.47	75.25	1	1,000	100
mbar	0.01	0.4	0.001	0.01	0.03	0.75	0.08	0.001	1	0.1
kPa	0.15	4.02	0.01	0.102	0.3	7.53	0.75	0.01	10	1