

## Rhomberg Process Gauges

Liquid Fillable Process Gauges with Brass, Stainless Steel or Monel Wetted Parts

- PBB** - stainless steel case and bezel
- PBZ** - colour coded case and bezel
- PBX** - colour coded, solid front safety pattern case
- PCB** - stainless steel case capsule gauge
- PDBH** - stainless steel case diaphragm gauge
- CBC** - aluminium case simplex and duplex gauges
- BBR** - aluminium case butterfly gauge
- PBR** - aluminium case gauge
- MBB** - stainless steel case master gauge
- HGZ** - stainless steel case homogenizer gauge



### Features common to all Rhomberg Process Gauges

**Window**

Acrylic as standard (safety glass optional)

**Seal**

Nitrile (natural rubber for silicon fills)

**Dampening Fluid**

Glycerine, silicon or halocarbon (for oxidising services)

**Socket and Bourdon Tube**

Code:	SS	BB	MM
Socket:	316L/Ti	brass	Monel 400
Bourdon tube:	316Ti	bronze	K-Monel

**Movement**

Code:	SS/MM	BB
	300 series stainless steel	brass/nickel silver
	high impact movement	high impact movement

**Dial**

Dished aluminium, black lettering on white background

**Pointer**

Black aluminium, micrometer adjustable

**Connections**

$1/4'' + 3/8'' + 1/2''$  (NPT - BSP)  
Other connections available on request

**Maximum Range**

Vacuum through 100 MPa  
Higher ranges available on request

**Snubbing**

Snubbing / throttle screws available in brass and stainless steel

**Accuracy**

100mm & 150mm	1.0% FSD (SABS 1062)
63mm	1.6% FSD

**Temperature Range**

Ambient temperature -25°C to +60°C  
Note: minimum temperature should not be less or equal to the freezing point of the process fluid.  
Higher temperatures can be accommodated with heat reducing devices.

**Approvals**

SABS 1062 (1985) for 100mm and 150mm

**Feature Highlights**

- Adjustable micrometer pointer as standard
- Calibration without removal of dial / pointer / back plate
- All brushed high impact movement (100mm & 150mm)
- Field liquid fillable
- Limited one year warranty on materials and workmanship
- Threaded for retro-fit snubber / throttle screw
- Fully repairable
- Retro-fit electrical contacts
- SABS 1062 (1985) for 100mm and 150mm

## PBB - Stainless Steel Case and Bezel

### Welded Construction with Back Blow Out Disc

This gauge is ideally suited to most industrial applications where high accuracy and durability is required.

Gauges are available with either brass / bronze internals, all stainless steel internals, or Monel Bourdon tube and socket with stainless steel movement.

All gauges are retro-fillable and totally repairable. A number of optional accessories are available either as factory fitted or retro-fitted. A Rhomberg manocont movement can be fitted where filling material is not allowed or excessive vibration is present.

(Conforming to military specification) the high impact movement protects against entanglement of the hairspring in the pinion and segment - the most common cause of gauge failure.

#### Case

Brush finish 304 stainless steel

#### Bezel

Brush finish 304 stainless steel

#### Blow-Out Disc

Back blow out

#### Configuration

A B D E F U V

#### Mountings

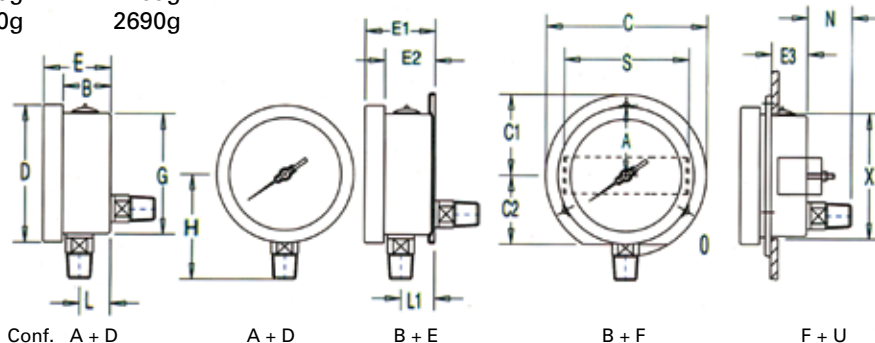
Direct, surface or panel mounting

#### Nominal Sizes

mm	63	100	150	250
Imp	2 1/2"	4"	6"	10"

#### Nett Mass

	63mm	100mm	150mm	250mm
Dry	155g	556g	850g	1789g
Filled	230g	816g	1 750g	2690g



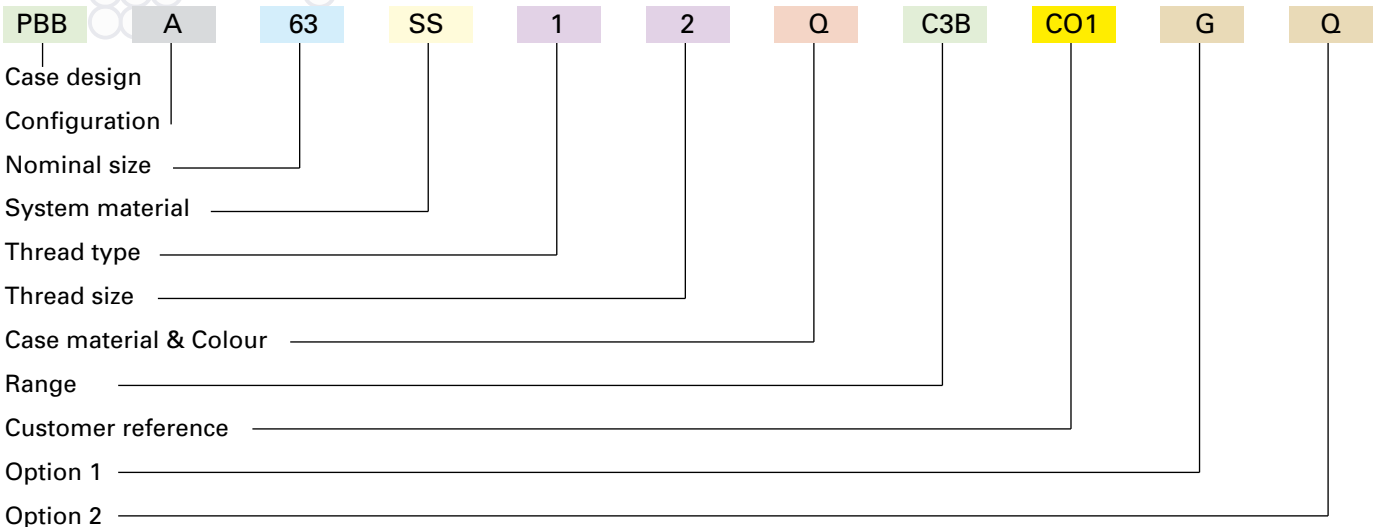
Nominal size

Dimensions (X is panel cut-out diameter)

Metric Imperial	B	C	C1	C2	D	E	E1	E2	E3	G	H	S	L	L1	N	O	X
63mm 2 1/2"	22,70 0,89	85,00 3,35	42,50 1,67	36,00 1,42	69,60 2,74	32,50 1,28	35,70 1,41	27,20 1,07	22,00 0,87	62,00 2,44	60,00 2,36	66,50 2,62	9,00 0,35	13,00 0,51	27,00 1,06	3,50 0,14	63,50 2,50
100mm 4"	36,85 1,54	133,00 5,24	66,50 2,62	56,50 2,22	108,00 4,43	47,65 2,17	57,50 2,26	38,55 1,64	29,70 1,17	99,00 3,90	92,60 3,39	106,00 4,17	16,50 0,74	21,90 0,86	38,00 1,49	4,80 0,19	101,00 3,98
150mm 6"	29,00 1,14	196,00 7,72	98,00 3,85	86,00 3,38	155,00 6,10	56,00 2,20	59,00 2,32	32,00 1,26	28,00 1,10	140,00 5,51	108,00 4,25	146,00 5,75	17,00 0,67	18,00 0,71	38,00 1,49	5,80 0,23	142,00 5,60
250 mm 9.8"	34 1.3	285 11.2	N/A N/A	N/A N/A	250 9.8	56 2.2	58 2.3	36 1.4	51 2.0	248 9.8	156 6.1	N/A N/A	19 0.7	22 0.9	41 1.6	N/A N/A	253 10.0

# Gauges Ordering Code

Example of how to make up the ordering product code:



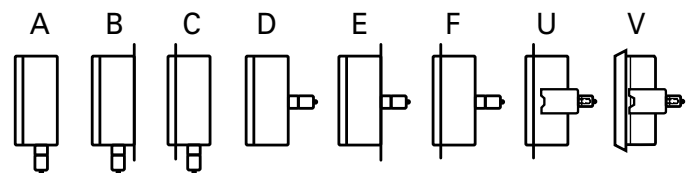
For the complete part number for Diaphragm and Differential Pressure Gauges, please consult with your sales representative when placing an order.

## Case Type and Size

Case	Case & Bezel Material (Std)	Size Code	Nom. size mm (inch)	Available Configuration
PBB	polished 304 stainless steel	63 10 15	63 (2 1/2) 100 (4) 150 (6)	ABC* DEFUV *100mm only
PBZ	colour coded (grey) PBT polybutylene-terephthalate	10 15	100 (4) 150 (6)	ABD* *centre-back connection available only brass 100mm
PBX	colour coded (black) PBT polybutylene-terephthalate	10	100 (4)	A
PCB	polished 304 stainless steel	10 15	100 (4) 150 (6)	ABC* DFUV *100mm only
PCZ	colour coded (grey) PBT polybutylene-terephthalate	10 15	100 (4) 150 (6)	AB
PCK	(black) mild steel	68	68 (2 1/2)	A D V
PDB	polished 304 stainless steel	10 15	100 (4) 150 (6)	H
PDZ	colour coded (grey) PBT polybutylene-terephthalate	10 15	100 (4) 150 (6)	H
DBB	304 stainless steel	15	150 (6)	ABDF
DCB	polished 304 stainless steel	15	150 (6)	ABDF
PBG	304 stainless steel	63 10	63 (2 1/2) 100 (4)	ABDEFUV
PBJ	(black) injection moulded, 304 stainless steel bezel	63 80	63 (2 1/2) 80 (3)	A

Case	Case & Bezel Material (Std)	Size Code	Nom. size mm (inch)	Available Configuration
PBN	(black) injection moulded case polycarbonate clip-in lens	42 54 68	42 (1 1/2) 54 (2) 68 (2 1/2)	A D
PBM	(black) mild steel polycarbonate clip-in lens	42 54 68	42 (1 1/2) 54 (2) 68 (2 1/2)	A D V
PBK	(black) mild steel threaded polycarbonate window	42 54 68 96	42 (1 1/2) 54 (2) 68 (2 1/2) 96 (4)	A* D V* * only option for safety pattern ** 54 mm & 68 mm only
PBU	(black) mild steel flat acrylic window	42 54 63 10 12	42 (1 1/2) 54 (2) 63 (2 1/2) 100 (4) 125 (5)	AB**DE**F*U* * 54 mm & 68 mm only ** on application 100 mm, 125 mm
PBV	(black) mild steel with nickel plated bezel, flat acrylic window	52	52 (2)	V

## Configurations



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

## Bourdon Tube Selection

System code	Socket material	Bourdon tube material	Tube type	Range selection (kPa)
BB	brass brass tip	bronze tube	C-tube	60 / 6 000
	stainless steel tube and tip		spiral / 100 000	10 000
SS	316 L	316 Ti	C-tube	60 / 6 000
	316 Ti	spiral	10 000 / 100 000	
MM	Monel 400	K-Monel	C-tube	60 / 6 000
	K-Monel	spiral	10 000 / 60 000	

Utility gauges-ranges above 20 MPa on request

Process gauges-ranges above 100 MPa on request

## Capsule Systems Materials Selection

System code	Socket material	Capsule material	Tube type	Range selection (kPa)
SS	316 L	stainless	capsule	2,5 to 100 kPa -10 to -25 kPa (Vac)
BB	brass	copper	capsule	2,5 to 100 kPa -6 to -25 kPa (Vac)

## Thread Type and Size

Thread type	Thread size (size code = number $\frac{1}{8}$ " 's)
O = NPT	1 = $\frac{1}{8}$ "
1 = BSP	2 = $\frac{1}{4}$ "
2 = BSPT	3 = $\frac{3}{8}$ "
	4 = $\frac{1}{2}$ "

## Customer Reference

Codes allocated to customers describing their specific requirements

Standard CI gauge code is C01

Where applicable consult with our sales representative for your specific code

## Case Material and Case Colour

Q = standard (see Case type & size)  
C = nickel plated  
P = brass plated  
S = stainless steel case (where not standard)

H = white                      R = red  
E = yellow                    2 = gold  
I = pink                        3 = brown  
Z = violet                     4 = olive green  
L = blue                        A = purple  
N = green                      5 = charcoal  
O = orange                    6 = dark brown  
D = dark blue                B = black

X = non standard (describe under special instructions)

## Standard Metric Ranges (kPa)

Range		Dial graduation	
kPa (kilopascal)	range code	figure interval	minor graduation
0/10 Pa	C1A	1	0,1
0/16 Pa	C1B	1	0,2
0/25 Pa	C1C	5	0,2
0/40 Pa	C1D	5	0,5
0/60 Pa	C1E	10	0,5
0/100 Pa	C1F	10	1
0/160 Pa	C1G	10	2
0/250 Pa	C1H	50	5
0/400 Pa	C1J	50	5
0/600 Pa	C1K	100	10
0/1 000 Pa	C1L	100	10
0/1 600 Pa	C1M	100	20
0/2 500 Pa	C2A	500	50
0/4 000 Pa	C2B	500	50
0/6 000 Pa	C2C	1 000	100
0/1	C2D	0,1	0,01
0/1,6	C2E	0,1	0,02
0/2,5	C2F	0,5	0,5
0/4	C2G	0,5	0,5
0/6	C2H	1	0,1
0/10	C2J	1	0,1
0/16	C2K	1	0,2
0/25	C2L	5	0,2
0/40	C2M	5	0,5
0/60	C3A	10	0,5
0/100	C3B	10	1
0/160	C3C	10	2
0/250	C3D	50	5
0/400	C3E	50	5
0/600	C3F	100	10
0/1 000	C3G	100	10
0/1 600	C3H	100	20
0/2 500	C3J	500	50
0/4 000	C3K	500	50
0/6 000	C3L	1 000	100
0/1 MPa	C3M	0,1	0,01
0/1,6 MPa	C4A	0,1	0,02
0/2,5 MPa	C4B	0,5	0,5
0/4 MPa	C4C	0,5	0,5
0/6 MPa	C4D	1	0,1
0/10 MPa	C4E	1	0,1
0/16 MPa	C4F	1	0,2
0/25 MPa	C4G	5	0,2
0/40 MPa	C4H	5	0,5
0/60 MPa	C4J	10	0,5
0/100 MPa	C4K	10	1
0/160 MPa	C4L	10	2
0/250 MPa	C4M	50	5
vacuum			
-100/0	A5B	10	1
compound			
-100/0/150	B5A	50	5
-100/0/300	B5B	50	5
-100/0/500	B5C	100	10
-100/0/900	B5D	100	10
-100/01 500	B5E	100	20
-100/0/2 400	B5F	500	50

Gauges may be ordered with non-standard metric dials (kPa, bar or kg/cm<sup>2</sup>). Range in accordance with SABS 1062. Dual scale dials will be supplied with a standard metric inner scale and equivalent psi outer scale. psi dominant dual scales are also available. Please be specific when ordering.



**Other Standard Metric Ranges (kg/cm<sup>2</sup> & Bar)**

Range		Dial graduation	
kg/cm <sup>2</sup> (kilograms per sq.cm <sup>2</sup> )	bar	figure interval	minor graduation
<i>pressure</i>			
0/1	0/1	0,1	0,01
0/1,6	0/1,6	0,2	0,02
0/2,5	0/2,5	0,5	0,05
0/4	0/4	0,5	0,05
0/6	0/6	0,5	0,1
0/10	0/10	1	0,1
0/16	0/16	1	0,2
0/25	0/25	5	0,5
0/40	0/40	5	0,5
0/60	0/60	5	0,5
0/100	0/100	10	1
0/160	0/160	10	2
0/250	0/250	50	5
0/400	0/400	50	5
0/600	0/600	50	10
0/1 000	0/1 000	100	10
<i>vacuum</i>			
-10/0	-1/0	0,1	0,01
<i>compound</i>			
-10/0/1,5	-1/0/1,5	0,5	0,05
-1/0/3	-1/0/3	0,5	0,05
-1/0/5	-1/0/5	1	0,1
-1/0/9	-1/0/9	1	0,1
-1/0/15	-1/0/15	2	0,2
-1/0/24	-1/0/24	5	0,5

**Note:** Where required range has no code indicated, that range should be clearly specified on ordering.

**Options**

Both option digits to be filled in:  
 No options = QQ; One option = selected digit then Q;  
 Two options = list from below alpha-numerically

Q = no options  
 X = special instruction  
 A = drag pointer  
 B = blow-out back with baffle (safety)  
 C = red set pointer  
 D = micro switch movement single  
 E = micro switch movement double  
 F = manocont movement  
 G = safety glass  
 H = bar secondary scale  
 I = kPa secondary scale  
 J = zero adjuster  
 K = oil free, oxygen clean logo; gauge bagged in plastic  
 L = psi secondary scale

**Standard Imperial Ranges (psi)**

Range		Dial graduation	
psi	range code	figure interval	minor graduation
0/15	G2D	1	0,2
0/30	G2F	5	0,5
0/60	G2G	10	1
0/100	G3A	10	1
0/160	G3E	10	2
0/200	G3C	50	2
0/300	G3D	50	5
0/400	G3E	50	5
0/600	G3G	100	10
0/800	G3H	100	10
0/1 000	G3J	100	10
0/1 500	G3K	500	20
0/2 000	G3L	500	20
0/3 000	G4A	500	50
0/4 000	G4B	500	50
0/5 000	G4C	1 000	100
0/6 000	G4D	1 000	100
0/10 000	G4E	1 000	100
0/15 000	G4F	5 000	500
<i>vacuum</i>			
30-0 inches mercury	E1A	5 inches	0,5
<i>compound</i>			
30" Hg Vac/0/15psi	F1A	5	3
30" Hg Vac/0/30psi	F1B	10	5
30" Hg Vac/0/60psi	F1C	10	10
30" Hg Vac/0/100psi	F1D	10	10
30" Hg Vac/0/150psi	F1E	10	25
30" Hg Vac/0/300psi	F2B	30	25

M = refrigeration scale  
 N = retarded scale  
 P = overload stop internal  
 R = studs and bracket  
 S = nickel plated block  
 T = snubbers  
 U = adaptor fitted  
 V = silicon oil filled  
 W = block welded to case  
 Y = glycerine filled  
 Z = opanol oil filled  
 2 = other filling medium (Siltherm 800, Fluorolube, Krytox GPL 100, etc.)  
 3 = female thread  
 4 = stainless steel movement in brass system  
 5 = no aluminium parts  
 9 = centre back option

**Pressure Cross Reference Chart**

psi	atms.	Ft.Hd. H <sub>2</sub> O at 20°C	in H <sub>2</sub> O	kg/cm <sup>2</sup>	meters H <sub>2</sub> O	in.Hg. at 20°C	mm.Hg.	cm.Hg.	bar	Milibar (mbar)	kPa
1	0,0680	2,310	27,720	0,0700	0,704	2,043	51,884	5,188	0,0690	68,947	6,895
14,696	1	33,659	407,513	1,0330	10,351	30,019	762,480	76,248	1,0130	1013,0	101,325
0,433	0,0290	1	12,000	0,0300	0,305	0,884	22,452	2,245	0,0300	29,837	2,984
0,036	0,0025	0,833	1	0,0025	0,025	0,074	1,871	0,187	0,0025	2,486	0,249
14,233	0,9680	32,867	394,408	1	10,018	29,054	737,959	73,796	0,9810	980,662	98,066
1,422	00,0970	3,287	39,370	0,0990	1	2,905	73,796	7,379	0,0980	98,066	9,807
0,489	0,0330	1,131	13,575	0,0340	0,345	1	25,400	2,540	0,0340	33,753	3,375
0,019	0,0013	0,045	0,534	0,0014	0,0136	0,039	1	0,100	0,0010	1,329	0,133
0,193	0,0131	0,445	5,340	0,0140	0,1360	0,393	10,000	1	0,0133	13,290	1,328
14,503	0,9870	33,514	402,164	1,0200	10,2110	29,625	752,470	75,247	1	1000,0	100,00
0,014	0,0009	0,033	0,402	0,0010	0,0102	0,029	0,752	0,075	0,001	1	0,100
0,145	0,0098	0,335	4,021	0,0100	0,1020	0,296	7,525	0,752	0,010	10,000	1