

## APPROVALS



Directive 2014/34/UE (ATEX)

## FEATURES

- All SS measuring system
- Shank-case direct welded for rigid construction
- Fillable / liquid filled
- NBR rubber parts

## APPLICATION

- Pharma, Food & Beverages
- Chemical & Petrochemical
- Corrosive environments
- Liquid & gaseous mediums

### Bourdon tube element ≤DN100



### EN 837-1

#### STANDARD PARAMETERS

|                     |  |
|---------------------|--|
| Accuracy            | : CL 1.6 [DN63 / DN80 / DN100] & CL 2.5 [DN50]   |
| Ambient temperature | : -40...+ 65°C [dry or silicon oil dampening filling]<br>: -20...+ 65°C with dampening liquid, glycerin  |
| Service temperature | : - 40...+200 °C [without dampening filling]<br>: - 20...+100 [with dampening filling, glycerin]<br>: - 40...+100 [with dampening filling, silicon oil]  |
| Pressure limits     | : Steady pressure up to FS value<br>: Fluctuating pressure up to 90% of FS value<br>: Short time 130% of FS value [≤ 100 bar]<br>: Short time 115% of FS value [> 100 bar ≤ 600 bar]<br>: Short time 110% of FS value [> 600 bar ≤ 1000 bar] |

#### MATERIAL OF CONSTRUCTION

|                                       |  |
|---------------------------------------|--|
| Sensing element                       | : Bourdon  |
| Case & Ring material                  | : AISI 304 SS [Bayonet type]                     |
| Case & Shank [DN50 & 63]              | : AISI 316L SS [Shank welded directly to case]   |
| Case & Shank [DN80 & 100]             | : AISI 316L SS [Through adaptor]                 |
| Movement mechanism                    | : AISI 304 SS                                    |
| Dial                                  | : Aluminum, black graduation on white background |
| Pointer                               | : Fixed, aluminum, black powder coated           |
| Gaskets, Blow off disc & filling plug | : NBR  |
| Window                                | : Safety glass, Plexi glass, Toughened glass     |

#### STANDARD SPECIFICATIONS

|                              |  |
|------------------------------|--|
| Dial size                    | : DN50 / DN63 / DN80 / DN100   |
| Range [DN50]                 | : -1...0...400 bar [or equivalent other units of pressure or vacuum ranges]  |
| Range [DN 63 / DN80 / DN100] | : -1...0...1000 bar [or equivalent other units of pressure or vacuum ranges] |
| Mounting pattern             | : Direct, Bottom connection  |
| Process connection           | : 1/4" NPT (M) / 1/4" BSP (M)  |
| Ingress protection           | : IP 65  |
| Execution                    | : Dry but fillable   |

#### STANDARD SPECIFICATIONS : FILLED VERSION

|                  |   |
|------------------|---|
| Window           | : Safety glass, Plexi glass, Toughened glass  |
| Dampening liquid | : Glycerin [service temperature up to 65 °C]<br>: Silicon [service temperature up to 100°C] |

#### TEMPERATURE EFFECT

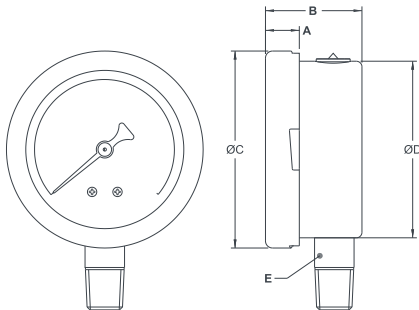
The variation of indication caused by effects of temperature is to be calculated as per the below formula; which is to be added in the specified accuracy while measurement :-

$$\text{Formula: } \pm 0.04 \times (t_z - t_r)\% \text{ of Full Scale Value}$$

Where  $t_r$  = reference temperature (+20°C) &  $t_z$  = ambient temperature in °C.

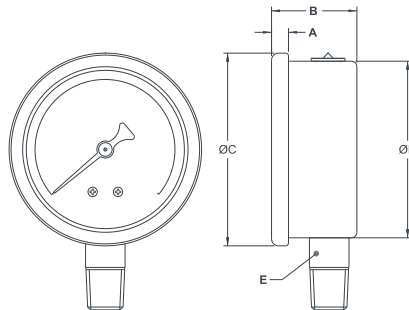
## DIMENSIONAL DRAWING

### Type B0 [Bayonet ring]



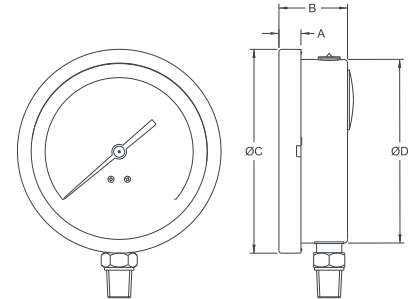
| DN | A  | B  | ØC   | ØD   | E     | Weight (grams) |
|----|----|----|------|------|-------|----------------|
| 50 | 9  | 34 | 58.5 | 52   | SQ.14 | 120            |
| 63 | 12 | 33 | 69.7 | 62.5 | SQ.14 | 209            |

### Type B0 [Rolling ring]



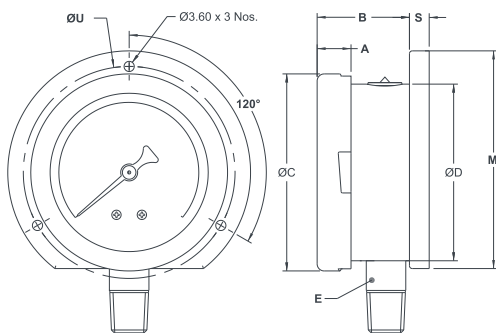
| DN | A   | B    | ØC   | ØD   | E     | Weight (grams) |
|----|-----|------|------|------|-------|----------------|
| 50 | 5   | 32.5 | 57.5 | 52   | SQ.14 | 110            |
| 63 | 7.5 | 31.5 | 68   | 62.5 | SQ.14 | 189            |

### Type B0 [Bayonet ring]



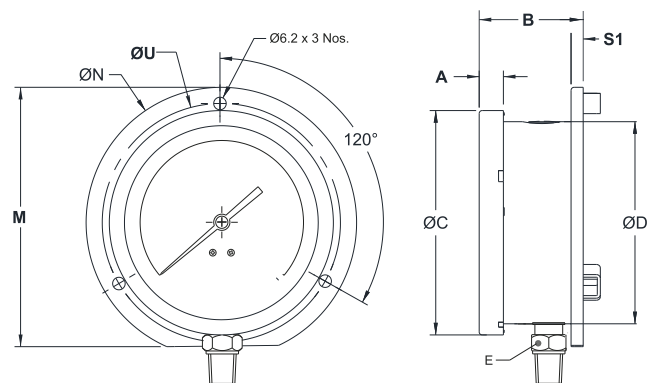
| DN  | A  | B    | ØC   | ØD  | E     | Weight (grams) |
|-----|----|------|------|-----|-------|----------------|
| 80  | 12 | 33.5 | 89.5 | 80  | A/F14 | 450            |
| 100 | 12 | 38   | 111  | 100 | A/F14 | 500            |

### Type B1 [Bayonet ring]



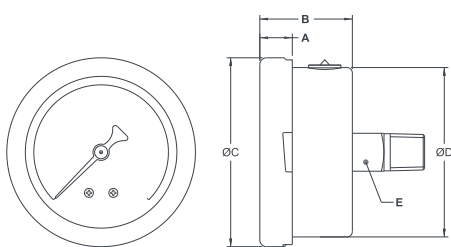
| DN | A  | B  | ØC   | ØD   | E     | ØN | ØU | M  | S | Weight (grams) |
|----|----|----|------|------|-------|----|----|----|---|----------------|
| 63 | 12 | 33 | 69.7 | 62.5 | SQ.14 | 86 | 75 | 77 | 7 | 254            |

### Type B1 [Bayonet ring]



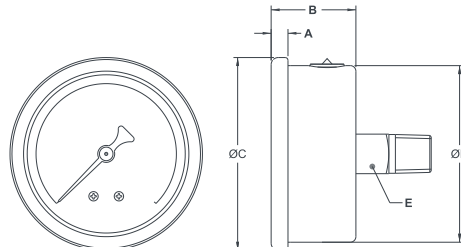
| DN  | A  | B  | ØC  | ØD  | E     | ØN  | ØU  | M   | S | Weight (grams) |
|-----|----|----|-----|-----|-------|-----|-----|-----|---|----------------|
| 100 | 12 | 38 | 111 | 100 | A/F14 | 134 | 118 | 128 | 6 | 607            |

### Type R0 [Bayonet ring]



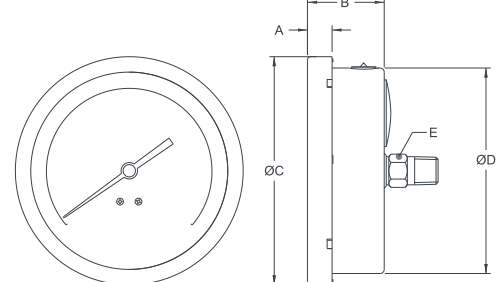
| DN | A  | B  | ØC   | ØD   | E     | Weight (grams) |
|----|----|----|------|------|-------|----------------|
| 50 | 9  | 34 | 58.5 | 52   | SQ.14 | 120            |
| 63 | 12 | 33 | 69.7 | 62.5 | SQ.14 | 209            |

### Type R0 [Rolling ring]



| DN | A   | B    | ØC   | ØD   | E     | Weight (grams) |
|----|-----|------|------|------|-------|----------------|
| 50 | 5   | 32.5 | 57.5 | 52   | SQ.14 | 110            |
| 63 | 7.5 | 31.5 | 68   | 62.5 | SQ.14 | 189            |

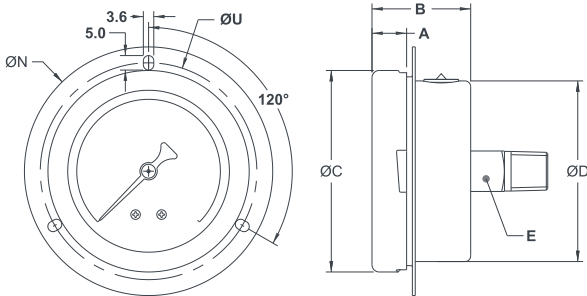
### Type R0 [Bayonet ring]



| DN  | A  | B    | ØC   | ØD  | E     | Weight (grams) |
|-----|----|------|------|-----|-------|----------------|
| 80  | 12 | 33.5 | 89.5 | 80  | A/F14 | 450            |
| 100 | 12 | 38   | 111  | 100 | A/F14 | 500            |

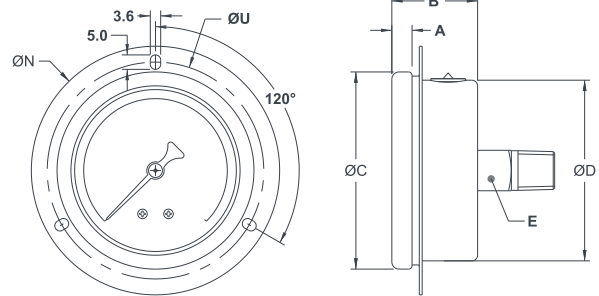
DIMENSIONAL DRAWING

Type R2 [Bayonet ring]



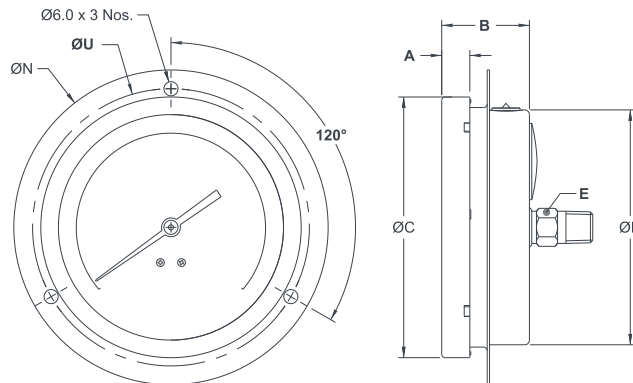
| DN | A  | B  | ØC   | ØD   | E     | ØN | ØU | Weight (grams) |
|----|----|----|------|------|-------|----|----|----------------|
| 63 | 12 | 33 | 69.7 | 62.5 | SQ.14 | 86 | 75 | 240            |

Type R2 [Rolling ring]



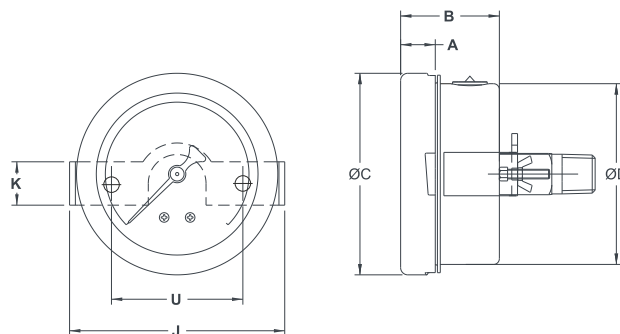
| DN | A   | B    | ØC | ØD   | E     | ØN | ØU | Weight (grams) |
|----|-----|------|----|------|-------|----|----|----------------|
| 63 | 7.5 | 31.5 | 68 | 62.5 | SQ.14 | 86 | 75 | 189            |

Type R2 (Bayonet ring)



| DN  | A  | B  | ØC  | ØD  | E      | ØN  | ØU  | Weight (grams) |
|-----|----|----|-----|-----|--------|-----|-----|----------------|
| 100 | 12 | 38 | 111 | 100 | A/F 14 | 134 | 118 | 574            |

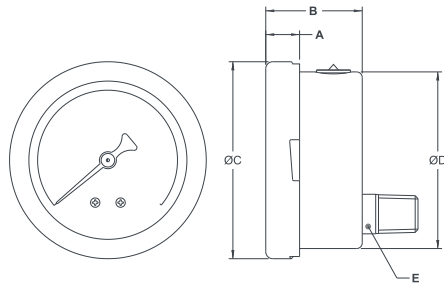
Type R3 [Bayonet ring]



| DN | A  | B  | ØC   | ØD   | E     | U    | J    | K  | Weight (grams) |
|----|----|----|------|------|-------|------|------|----|----------------|
| 63 | 12 | 33 | 69.7 | 62.5 | SQ.14 | 45.5 | 74.5 | 15 | 254            |

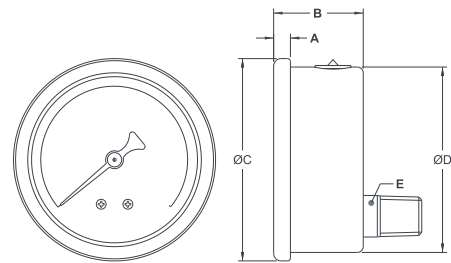
DIMENSIONAL DRAWING

Type L0 [Bayonet ring]



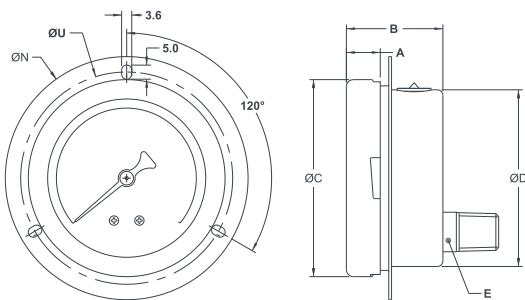
| DN | A  | B  | ØC   | ØD   | E     | Weight (grams) |
|----|----|----|------|------|-------|----------------|
| 63 | 12 | 33 | 69.7 | 62.5 | SQ.14 | 209            |

Type L0 [Rolling ring]



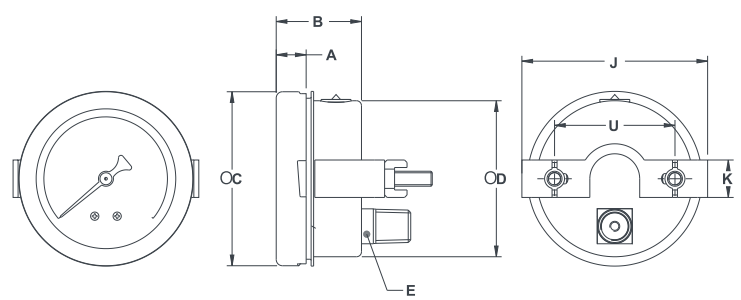
| DN | A   | B    | ØC | ØD   | E     | Weight (grams) |
|----|-----|------|----|------|-------|----------------|
| 63 | 7.5 | 31.5 | 68 | 62.5 | SQ.14 | 189            |

Type L1 [Bayonet ring]



| DN | A  | B  | ØC   | ØD   | E     | ØN | ØU | Weight (grams) |
|----|----|----|------|------|-------|----|----|----------------|
| 63 | 12 | 33 | 69.7 | 62.5 | SQ.14 | 86 | 75 | 240            |

Type L2 [Bayonet ring]



| DN | A  | B  | ØC   | ØD   | E     | U    | J    | K  | Weight (gram) |
|----|----|----|------|------|-------|------|------|----|---------------|
| 63 | 12 | 33 | 69.7 | 62.5 | SQ.14 | 45.5 | 74.5 | 15 | 376           |

Drawings are not to Scale, all dimensions are in mm.  
The weight mentioned are approximate and of standard version. Consult ITEC for other executions.

**RANGE TABLE**
**GUIDE TO MAKE RANGE CODE**

1. While selecting the dual scales (bar/psi), primary scale bar in "**BLACK**" and secondary scale psi in "**RED**" color.
2. **Approximate unit conversion**; 1 bar = 1.019 kg/cm<sup>2</sup> = 14.503 psi = 100 kPa = 750.061 mmHg = 1000 mbar = 10197 mmWC
3. **Equivalent scales** are available in UOMs like mbar, mmWC, Inch WC, kPa/psi or custom dial design, contact **ITEC**

| UOM : SINGLE SCALE |                    |     | UOM : DUAL SCALE |                         |
|--------------------|--------------------|-----|------------------|-------------------------|
| UOM                | UOM                | UOM | UOM              | UOM                     |
| bar                | kg/cm <sup>2</sup> | Mpa | bar/psi          | kg/cm <sup>2</sup> /psi |
| psi                | mmHg               |     | psi/bar          | psi/kg/cm <sup>2</sup>  |
| kPa                | Inch Hg            |     | bar/kPa          |                         |

| STANDARD RANGES AVAILABLE IN ( bar & kg/cm <sup>2</sup> ) |        |         |         |          |
|---|--------|---------|---------|----------|
| RANGE   | RANGE  | RANGE   | RANGE   | RANGE    |
| 0...0.6   | 0...6  | 0...28  | 0...160 | 0...400  |
| 0...1   | 0...7  | 0...35  | 0...200 | 0...600  |
| 0...1.6   | 0...10 | 0...40  | 0...250 | 0...700  |
| 0...2   | 0...14 | 0...60  | 0...280 | 0...1000 |
| 0...2.5   | 0...16 | 0...70  | 0...350 |          |
| 0...3.5   | 0...20 | 0...100 |         |          |
| 0...4   | 0...25 | 0...140 |         |          |

| SINGLE SCALE RANGES : VACUUM & COMPOUND |                 |          |        |         |
|---|-----------------|----------|--------|---------|
| VACUUM                                  | VACUUM          | "bar"    | "bar"  | "bar"   |
| -1bar...0                               | -30 Inch Hg...0 | -1...0.6 | -1...3 | -1...15 |
| -1kg/cm <sup>2</sup> ...0               | -100kPa...0     | -1...1   | -1...5 | -1...20 |
| -760 mmHg...0                           | -15psi...0      | -1...1.6 | -1...9 | -1...24 |

| DUAL SCALE RANGES : COMPOUND (Vacuum Side mmHg/ 11Hg, Positive Side - kg/cm <sup>2</sup> /psi) |                       |                       |                       |
|--|-----------------------|-----------------------|-----------------------|
| "kg/cm <sup>2</sup> "  | "kg/cm <sup>2</sup> " | "kg/cm <sup>2</sup> " | "kg/cm <sup>2</sup> " |
| -760mmHg...0.6   | -760mmHg...2.5        | -760mmHg...10         | -760mmHg...24         |
| -760mmHg...1   | -760mmHg...4          | -760mmHg...15         |                       |
| -760mmHg...2   | -760mmHg...7          | -760mmHg...21         |                       |

**RANGE : FREON, AMMONIA & RECEIVER RANGES (in dual scale)**

| FREON RANGES<br>with temperature scale | AMMONIA RANGES<br>with temperature scale |
|--|--|
| -30 °Hg...0...150 psi                  | -30 °Hg...0...150 psi                    |
| -30 °Hg...0...300 psi                  | -30 °Hg...0...300 psi                    |
| 0...300 psi                            | 0...300 psi                              |
| 0...500 psi                            | -1...0...12.5 kg/cm <sup>2</sup>         |
|  | -1...0...16 kg/cm <sup>2</sup>           |
|  | -1...0...25 kg/cm <sup>2</sup>           |

Freon range temperature scale as per refrigerant gas

Supplied with Temperature scale R717 / NH<sub>3</sub>.

### ORDERING CODES

#### 1. DIAL SIZE

|           |            |           |             |
|-----------|------------|-----------|-------------|
| <b>02</b> | 50 mm / 2" | <b>25</b> | 63 mm / 2½" |
| <b>03</b> | 80 mm / 3" | <b>04</b> | 100 mm / 4" |

25

#### 2. RANGE

**XXXX** Refer "Range Table"

XXXX

#### 3. MOUNTING PATTERN

|           |   |
|-----------|---|
| <b>B0</b> | Direct, Bottom connection                           |
| <b>B1</b> | Wall/Surface/Projection mounting, Bottom connection |
| <b>R0</b> | Centre, Back connection                             |
| <b>R2</b> | Panel Front flange mounting, Centre Back connection |
| <b>R3</b> | Panel bracket mounting, Centre Back connection      |
| <b>L0</b> | Lower, Back connection                              |
| <b>L1</b> | Panel Front flange mounting, Lower Back connection  |
| <b>L2</b> | Panel bracket mounting, Lower Back connection       |

B0

#### 4. PROCESS CONNECTION

|              |                 |              |                |
|--------------|-----------------|--------------|----------------|
| <b># 11B</b> | 1/8" BSP (M)*   | <b># 11N</b> | 1/8" NPT (M)*  |
| <b>12B</b>   | 1/4" BSP (M)    | <b>12N</b>   | 1/4" NPT (M)   |
| <b>13B</b>   | 3/8" BSP (M)*   | <b>13N</b>   | 3/8" NPT (M)*  |
| <b>14B</b>   | 1/2" BSP (M)*   | <b>14N</b>   | 1/2" NPT (M)*  |
| <b>14M</b>   | M20x1.5 mm (M)* | <b>13T</b>   | 3/8" BSPT (M)* |
| <b>14T</b>   | ½" BSPT (M)*    |              |                |

12N

# Not Available for range above 400 bar

\* Through adaptors

#### 5. INGRESS PROTECTION

|           |       |           |       |
|-----------|-------|-----------|-------|
| <b>ER</b> | IP 65 | <b>ET</b> | IP 67 |
|-----------|-------|-----------|-------|

ER

#### 6. EXECUTION

|           |                                      |
|-----------|--------------------------------------|
| <b>EB</b> | Fillable                             |
| <b>EG</b> | Dampening liquid filled, glycerine   |
| <b>EH</b> | Dampening liquid filled, silicon oil |

EA

#### 7. OTHER OPTIONS

|           |  |
|-----------|--|
| <b>BA</b> | Case & Ring in AISI 316 SS (B0)  |
| <b>BB</b> | Case & Ring in AISI 316 SS (B1)  |
| <b>BG</b> | Case & Ring in AISI 316 SS (R0)  |
| <b>BI</b> | Case & Ring in AISI 316 SS (R2)  |
| <b>BJ</b> | Case & Ring in AISI 316 SS (R3)  |
| <b>BK</b> | Case & Ring in AISI 316 SS (L0)  |
| <b>BL</b> | Case & Ring in AISI 316 SS (L1)  |
| <b>BM</b> | Case & Ring in AISI 316 SS (L2)  |
| <b>EN</b> | Dampening screw, AISI 316 SS   |
| <b>GC</b> | Shatterproof safety glass  |
| <b>GD</b> | Toughened glass  |
| <b>GW</b> | Maximum Reading pointer for DN63, DN100 & DN 150 [Combined accuracy within CL 2.5] |
| <b>RA</b> | Rubber parts, Viton  |
| <b>RW</b> | Vent plug, ON-OFF type   |
| <b>TA</b> | 5 - point calibration certificate  |
| <b>TL</b> | Helium leak testing  |
| <b>TO</b> | Certificate for O <sub>2</sub> service & Acetylen                                  |
| <b>XF</b> | SS tag plate, AISI 304 SS  |
| <b>XG</b> | SS tag plate, AISI 316 SS  |
| <b>XO</b> | Rolling type case & ring   |
| <b>XR</b> | Dial, Custom designed  |
| <b>XT</b> | Dial, Tag marking  |
| <b>EM</b> | Dampening Screw, Monel   |
| <b>MN</b> | Wetted Part Monel  |
| <b>TC</b> | Material Test Certificate 3.1  |
| <b>TT</b> | Certificate with NABL Traceability   |
| <b>E7</b> | Two Pieces Construction  |
| <b>X8</b> | Extended socket for bottom mounting (DN 50)  |
| <b>TE</b> | ATEX certificate   |

XX

Ordering Example : P103-25-XXXX-B0-12N-ER-EA

### COMPATIBLE ACCESSORIES

| CODE | DESCRIPTION                        |
|------|------------------------------------|
| A101 | Gauge cock                         |
| A102 | Gauge siphon                       |
| A201 | Gauge snubber / Pulsation dampener |
| A202 | Gauge saver / Overload protector   |
| A203 | Cooling tower                      |

| CODE | DESCRIPTION         |
|------|---------------------|
| DXXX | Diaphragm seals     |
| VXXX | Needle valves       |
| A304 | Adaptors            |
| M102 | Two valve manifolds |