Glass Level Gauge

Gauge Valve
Glass Level Gauge

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Large Chamber Gauges for Easy Level Reading of Boiling Liquid

Series L Large Chamber Gauges are designed to give an accurate liquid level reading of liquids that have a tendency to surge or boil. These gauges are highly effective in (1) Reducing the boiling effects of entrained gas being released under lowered pressure (2) The liquid itself being vaporised when pressure reaches a critical low point and (3) Boiling caused by temperature exceeding the boiling point of liquid. When the liquid being gauged has an unusually low boiling point, the gauge and valves should be insulated and the gauge equipped with non-frosting unit. Series L Chamber Gauges are of flat glass reflex or transparent design. The liquid chambers is constructed of heavy tubing, rustproofed and carefully slotted and machined to provide plain seats for the gaskets and glass assemblies.

### PRESSURE-TEMPERATURE RATINGS

<table>
<thead>
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<td>260° / 500°</td>
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<td>86 / 1179</td>
<td>80 / 1074</td>
<td>76 / 969</td>
<td>72 / 864</td>
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<tr>
<td>400° / 752°</td>
<td>110 / 1598</td>
<td>103 / 1493.5</td>
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<td>76 / 969</td>
<td>72 / 864</td>
<td>69 / 860</td>
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| Reflex |
|---------|---|---|---|---|---|---|---|---|---|
| 40° / 104° | 130 / 1899.5 | 124 / 1786 | 119 / 1673 | 113 / 1559.5 | 107 / 1446 | 101 / 1333 | 96 / 1220.5 | 91 / 1107 | 86 / 994 |
| 150° / 302° | 126 / 1856 | 119 / 1673 | 113 / 1559.5 | 107 / 1446 | 101 / 1333 | 96 / 1220.5 | 91 / 1107 | 86 / 994 | 81 / 881 |
| 260° / 500° | 117 / 1696.5 | 110 / 1598 | 103 / 1493.5 | 97 / 1389 | 91 / 1284.5 | 86 / 1179 | 80 / 1074 | 76 / 969 | 72 / 864 |
| 400° / 752° | 110 / 1598 | 103 / 1493.5 | 97 / 1389 | 91 / 1284.5 | 86 / 1179 | 80 / 1074 | 76 / 969 | 72 / 864 | 69 / 860 |

A General Purpose Gauge for Mid-Range Pressure Temperature Applications

Standard construction includes a solid one-piece chamber machined from carbon steel with covers, toughened glass and chrome - molybdenum bolts and nuts.

All metal parts are rustproofed. Recessed gasket seat prevent movement and insure leak-free service.

Series-M gauges are also available in a wide variety of materials to meet specific corrosive or extreme temperature conditions. They are also available with illuminators, non-frosting shields, heating tubes and brackets.

A Heavy Duty Gauge for Safe, Dependable Service

Heavy-duty Series H Gauges are available in both reflex and transparent types. These Gauges are designed and manufactured to highest industrial standards. Their dependability under difficult operating conditions is well known in the process industries. Series H Gauges have a one-piece liquid chamber machined from solid bar steel. Interchangeable sectional gauges and cover glasses are tightly locked over the liquid chamber with special bolts and nuts. Recessed gasket seats have a fine finish to provide a positively leak proof seal between the chamber and glass. All metal surface inside and outside including threaded areas are rustproof.
## GLASS LEVEL GAUGE SELECTION GUIDE

### Gauge Column

<table>
<thead>
<tr>
<th>Selection</th>
<th>Suffix Codes</th>
<th>Description</th>
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## GLASS LEVEL GAUGE SELECTION GUIDE

### Auto Shutoff- Valves

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<td>PUM</td>
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<td>PUF</td>
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<td>SSM</td>
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<td>Sp. Wound SS316 + PTFE Filler</td>
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<td>Vent Plug ½&quot; NPT</td>
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<td>Vent Valve ½&quot; Ball NPT</td>
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SERIES L

PROCESS GAUGES
Large Chamber Gauges for easy level reading of boiling liquids

Series-L Large Chamber Gauges are designed to give an accurate liquid level reading of liquids that have a tendency to surge or boil.

**These gauges are highly effective in:**
1) Reducing the boiling effects of entrained gas being released under lowered pressure.
2) The liquid itself being vaporised when pressure reaches a critical low point.
3) Boiling caused by temperature exceeding the boiling point of liquid.

When the liquid being gauged has an unusually low boiling point the gauge and valves should be insulated and the gauge equipped with non-frosting unit. Large chamber gauges are of flat glass Reflex or Transparent design. The Liquid Chamber is constructed of heavy tubing, rustproofed and carefully slotted and machined to provide plain seats for the gaskets and glass assemblies.

Covers are steel secured with specially designed bolts.

**Series: R-L (Reflex)**

**Series: T-L (Transparent)**

**LENGTHS:**
Series-L gauges are available in nine standard visible glass lengths. Multiple Windows on a single piece liquid chamber are used for longer lengths.

**CONNECTIONS:**
Standard Connections are 1/2” NPT or 3/4” NPT.

**LIQUID CHAMBERS:**
Heavy tubing gasket seats are machined on the face of the chamber and assembly torque are designed to prevent sidewise movement of gasket. Rustproofed.

**COVERS:**
Rustproofed steel.

**SPECIAL MATERIALS:**
Materials to suit NACE applications, other special materials available on request.

**BOLTS & NUTS:**
Chrome molybdenum alloy steel bolts heat treated for strength and rustproof to provide maximum corrosion resistance.

**TOUGHENED GLASS:**
Toughened glass, resistant to thermal and mechanical shock. It is a tough, durable, moulded glass made under carefully controlled manufacturing techniques, in accordance with BS 3463, DIN 7081. Mica or plastic shields are recommended for transparent glasses when handling caustic, hydrofluoric acid or other media corrosive to glass.

**GASKETS:**
Die cut from highest quality material best suited for use with liquid indicated.
### PRESSURE-TEMPERATURE CHART FOR REFLEX GAUGES

**Series R-L**  
Size Number of Window

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<td>155 / 2247.5</td>
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<td>95° / 203°</td>
<td>153 / 2218.5</td>
<td>144 / 2088</td>
<td>135 / 1957.5</td>
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<td>93 / 1348.5</td>
<td>87 / 1261.5</td>
<td>82 / 1189</td>
<td>76 / 1102</td>
<td>70 / 1015</td>
<td>64 / 928</td>
<td>59 / 855.5</td>
</tr>
</tbody>
</table>

### PRESSURE-TEMPERATURE CHART FOR TRANSPARENT GAUGES

**Series T-L**  
Size Number of Window

<table>
<thead>
<tr>
<th>Temp °C / °F</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>40° / 104°</td>
<td>83 / 1203.5</td>
<td>77 / 1116.5</td>
<td>70 / 1014</td>
<td>64 / 928</td>
<td>59 / 855.5</td>
<td>53 / 788.5</td>
<td>47 / 681.5</td>
<td>41 / 594.5</td>
<td>35 / 507.5</td>
</tr>
<tr>
<td>95° / 203°</td>
<td>75 / 1087.5</td>
<td>69 / 1000.5</td>
<td>64 / 928</td>
<td>58 / 841</td>
<td>52 / 754</td>
<td>47 / 681.5</td>
<td>42 / 609</td>
<td>37 / 536.5</td>
<td>31 / 449.5</td>
</tr>
<tr>
<td>150° / 302°</td>
<td>66 / 957</td>
<td>61 / 884.5</td>
<td>57 / 826.5</td>
<td>52 / 754</td>
<td>47 / 681.5</td>
<td>43 / 623.5</td>
<td>38 / 551</td>
<td>29 / 420.5</td>
<td>25 / 362.5</td>
</tr>
<tr>
<td>205° / 401°</td>
<td>59 / 855.5</td>
<td>55 / 797.5</td>
<td>50 / 725</td>
<td>46 / 667</td>
<td>42 / 609</td>
<td>37 / 536.5</td>
<td>33 / 478.5</td>
<td>29 / 420.5</td>
<td>25 / 362.5</td>
</tr>
<tr>
<td>260° / 500°</td>
<td>50 / 725</td>
<td>47 / 681.5</td>
<td>44 / 638</td>
<td>40 / 580</td>
<td>36 / 522</td>
<td>33 / 478.5</td>
<td>29 / 420.5</td>
<td>25 / 362.5</td>
<td>22 / 319</td>
</tr>
<tr>
<td>316° / 600°</td>
<td>43 / 623.5</td>
<td>39 / 565.5</td>
<td>37 / 536.5</td>
<td>33 / 478.5</td>
<td>30 / 435</td>
<td>28 / 406</td>
<td>25 / 362.5</td>
<td>22 / 319</td>
<td>19 / 275.5</td>
</tr>
</tbody>
</table>

**NOTE:** RATING SHOWN ARE FOR OUR STANDARD CARBON STEEL, AND TYPE 316 STAINLESS STEEL CONSTRUCTIONS. FOR OTHER MATERIALS CONTACT FACTORY.
SERIES M

PROCESS GAUGES

A General Purpose Gauge for Mid-Range pressure temperature applications.

Series-M Liquid Gauges have been proven dependable and safe on thousands of installation.

Standard Construction includes a solid one-piece chamber machined from carbon steel with covers, toughened glass and chrome molybdenum bolts and nuts.

All metal parts are rustproofed. Recessed gasket seat prevent movement and insure leak-free service.

Series-M gauges are also available in a wide variety of materials to meet specific corrosive or extreme temperature conditions.

**Series: R-M (Reflex)**

**COVERS:**
Rustproofed steel.

**SPECIAL MATERIALS:**
Materials to suit NACE applications, other special materials available on request.

**BOLTS & NUTS:**
Chrome molybdenum alloy steel bolts heat treated for strength and rustproofed to provide maximum corrosion resistance.

**LIQUID CHAMBERS:**

**TOUGHENED GLASS:**
Toughened glass, resistant to thermal and mechanical shock. It is a tough, durable, moulded glass made under carefully controlled manufacturing techniques, in accordance with BS 3463, DIN 7081. Mica or plastic shields are recommended for transparent glasses when handling caustic, hydrofluoric acid or other media corrosive to glass.

**GASKETS:**
Die cut from highest quality material best suited for use with liquid indicated.

**Series: T-M (Transparent)**

**COVERS:**
Rustproofed steel.

**SPECIAL MATERIALS:**
Materials to suit NACE applications, other special materials available on request.

**BOLTS & NUTS:**
Chrome molybdenum alloy steel bolts heat treated for strength and rustproofed to provide maximum corrosion resistance.

**LIQUID CHAMBERS:**

**TOUGHENED GLASS:**
Toughened glass, resistant to thermal and mechanical shock. It is a tough, durable, moulded glass made under carefully controlled manufacturing techniques, in accordance with BS 3463, DIN 7081. Mica or plastic shields are recommended for transparent glasses when handling caustic, hydrofluoric acid or other media corrosive to glass.

**GASKETS:**
Die cut from highest quality material best suited for use with liquid indicated.

**LENGTHS:**
Series-M Gauges are available in nine standard visible glass lengths. Multiple windows on a single piece liquid chamber are used for longer lengths.

**CONNECTIONS:**
Standard Connections are 1/2” NPT or 3/4” NPT.

**COVERS:**
Rustproofed steel.

**SPECIAL MATERIALS:**
Materials to suit NACE applications, other special materials available on request.

**BOLTS & NUTS:**
Chrome molybdenum alloy steel bolts heat treated for strength and rustproofed to provide maximum corrosion resistance.

**LIQUID CHAMBERS:**

**TOUGHENED GLASS:**
Toughened glass, resistant to thermal and mechanical shock. It is a tough, durable, moulded glass made under carefully controlled manufacturing techniques, in accordance with BS 3463, DIN 7081. Mica or plastic shields are recommended for transparent glasses when handling caustic, hydrofluoric acid or other media corrosive to glass.

**GASKETS:**
Die cut from highest quality material best suited for use with liquid indicated.
### PRESSURE-TEMPERATURE CHART FOR REFLEX GAUGES

<table>
<thead>
<tr>
<th>Temp °C / °F</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>40° / 104°</td>
<td>206 / 2987</td>
<td>200 / 2900</td>
<td>188 / 2726</td>
<td>180 / 2610</td>
<td>172 / 2494</td>
<td>162 / 2349</td>
<td>153 / 2218.5</td>
<td>145 / 2102.5</td>
<td>138 / 2001</td>
</tr>
<tr>
<td>95° / 203°</td>
<td>195 / 2827.5</td>
<td>188 / 2726</td>
<td>179 / 2595.5</td>
<td>170 / 2465</td>
<td>162 / 2349</td>
<td>153 / 2218.5</td>
<td>144 / 2088</td>
<td>138 / 2001</td>
<td>131 / 1899.5</td>
</tr>
<tr>
<td>150° / 302°</td>
<td>183 / 2653.5</td>
<td>175 / 2537.5</td>
<td>168 / 2436</td>
<td>160 / 2320</td>
<td>152 / 2204</td>
<td>144 / 2088</td>
<td>136 / 1972</td>
<td>129 / 1870.5</td>
<td>121 / 1754.5</td>
</tr>
<tr>
<td>205° / 401°</td>
<td>170 / 2465</td>
<td>162 / 2349</td>
<td>155 / 2247.5</td>
<td>147 / 2131.5</td>
<td>140 / 2030</td>
<td>133 / 1928.5</td>
<td>125 / 1812.5</td>
<td>118 / 1711</td>
<td>111 / 1609.5</td>
</tr>
<tr>
<td>260° / 500°</td>
<td>156 / 2262</td>
<td>149 / 2160.5</td>
<td>142 / 2059</td>
<td>135 / 1957.5</td>
<td>128 / 1812.5</td>
<td>121 / 1754.5</td>
<td>114 / 1653</td>
<td>107 / 1551.5</td>
<td>100 / 1450</td>
</tr>
<tr>
<td>316° / 600°</td>
<td>140 / 2030</td>
<td>134 / 1943</td>
<td>128 / 1856</td>
<td>121 / 1754.5</td>
<td>115 / 1667.5</td>
<td>107 / 1551.5</td>
<td>102 / 1479</td>
<td>95 / 1377.5</td>
<td>90 / 1305</td>
</tr>
</tbody>
</table>

NOTE: RATING SHOWN ARE FOR OUR STANDARD CARBON STEEL, AND TYPE 316 STAINLESS STEEL CONSTRUCTIONS. FOR OTHER MATERIALS CONTACT FACTORY.
Heavy-duty Series-H Gauges are available in both Reflex and Transparent types.

These Gauges are designed and manufactured to highest industrial standards. Their dependability under difficult operating conditions is well known in the process industries.

Series-H Gauges have a one-piece liquid chamber machined from solid bar steel. Interchangeable sectional gauges covers a glasses are tightly locked over the liquid chamber with special bolts and nuts.

Recessed gasket seats have a fine finish to provide a positively leak proof seal between the chamber and glass.

All metal surface inside and out, including threaded areas, are rustproofed.

**SERIES H**

**PROCESS GAUGES**

A Heavy Duty Gauge for safe, dependable service

---

**LENGTHS:**

Series-H Gauges are available in nine standard visible glass lengths.

Multiple windows on a single piece liquid chamber are used for longer lengths.

**CONNECTIONS:**

Standard Connections are 1/2” NPT or 3/4” NPT.

**LIQUID CHAMBERS:**

Machined from solid bar stock of cold rolled carbon steel. Perfectly machined gasket seats prevent movement of gasket and insure leakproof performance.

Rustproofed.

**COVERS:**

Rustproofed steel.

**SPECIAL MATERIALS:**

Materials to suit NACE applications, other special materials available on request.

**BOLTS & NUTS:**

Chrome molybdenum alloy steel bolts heat treated for strength and rustproofed to provide maximum corrosion resistance.

**TOUGHENED GLASS:**

Toughened glass, resistant to thermal and mechanical shock. It is a tough, durable, moulded glass made under carefully controlled manufacturing techniques, in accordance with BS 3463, DIN 7081. Mica or plastic shields are recommended for transparent glasses when handling caustic, hydrofluoric acid or other media corrosive to glass.

**GASKETS:**

Die cut from highest quality material best suited for use with liquid indicated.
### PRESSURE-TEMPERATURE CHART FOR REFLEX GAUGES

<table>
<thead>
<tr>
<th>Series R-H</th>
<th>Size Number of Window</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp°C/°F</td>
<td>1</td>
</tr>
<tr>
<td>Pressure (Bar / PSI)</td>
<td></td>
</tr>
<tr>
<td>40° / 104°</td>
<td>276 / 4002</td>
</tr>
<tr>
<td>95° / 203°</td>
<td>262 / 3799</td>
</tr>
<tr>
<td>150° / 302°</td>
<td>248 / 3596</td>
</tr>
<tr>
<td>205° / 401°</td>
<td>229 / 3320.5</td>
</tr>
<tr>
<td>260° / 500°</td>
<td>212 / 3074</td>
</tr>
<tr>
<td>316° / 600°</td>
<td>192 / 2784</td>
</tr>
</tbody>
</table>

### PRESSURE-TEMPERATURE CHART FOR TRANSPARENT GAUGES

<table>
<thead>
<tr>
<th>Series T-H</th>
<th>Size Number of Window</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp°C/°F</td>
<td>1</td>
</tr>
<tr>
<td>Pressure (Bar / PSI)</td>
<td></td>
</tr>
<tr>
<td>40° / 104°</td>
<td>207 / 3001.5</td>
</tr>
<tr>
<td>95° / 203°</td>
<td>197 / 2856.5</td>
</tr>
<tr>
<td>150° / 302°</td>
<td>192 / 2784</td>
</tr>
<tr>
<td>205° / 401°</td>
<td>174 / 2523</td>
</tr>
<tr>
<td>260° / 500°</td>
<td>161 / 2334.5</td>
</tr>
<tr>
<td>316° / 600°</td>
<td>142 / 2059</td>
</tr>
</tbody>
</table>

**NOTE:** RATING SHOWN ARE FOR OUR STANDARD CARBON STEEL, AND TYPE 316 STAINLESS STEEL CONSTRUCTIONS. FOR OTHER MATERIALS CONTACT FACTORY.
TUBULAR GAUGES

Tubular Glass Gauges for low pressure process and boiler drum application.

Tubular Glass Level Gauges comprise a length of 19mm outside diameter drawn borosilicate glass tube fitted each end with an offset isolating valve to permit connection to a vessel.

The series 26 isolating valves have a specially designed gland assembly for positive sealing onto the glass tube without imposing stress.

Lengths: Any single glass up to and including 200mm vessel centres. Longer lengths available on request.

Visible length
Glass tube length

centre to centre distance minus 143mm

centre to centre distance minus 61mm

ISOLATING VALVE MATERIALS
SERIES 26
VALVE BODY: Machined from carbon steel forging.
VALVE BONNET: Union type bonnet machined from carbon steel.
VALVE TRIM: Renewable seat, plug / spindle and ballcheck manufactured in 316 stainless steel.
HANDWHEEL/LEVER: Ductile iron.
Packing: Spindle packing, multi ring non-asbestos compatible with service. Glass gland packing, rubber/PTFE.
CARBON STEEL PARTS: Are rustproofed to provide maximum corrosion resistance.
SPECIAL MATERIALS: Available to suit NACE specification MR-01-75 and/or specific liquid services.

Pressure rating: Maximum permitted working pressure varies with length - refer to table below:

<table>
<thead>
<tr>
<th>Single Glass length (mm / inch)</th>
<th>Maximum working pressure for:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Temp upto 65°C / 149°F with no corrosion BARS / PSI</td>
</tr>
<tr>
<td>200 / 7.87</td>
<td>7 / 101.5</td>
</tr>
<tr>
<td>250 / 9.84</td>
<td>7 / 101.5</td>
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<tr>
<td>300 / 11.81</td>
<td>7 / 101.5</td>
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<td>350 / 13.77</td>
<td>7 / 101.5</td>
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<tr>
<td>400 / 15.74</td>
<td>7 / 101.5</td>
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<td>450 / 17.71</td>
<td>7 / 101.5</td>
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<tr>
<td>500 / 19.68</td>
<td>7 / 101.5</td>
</tr>
<tr>
<td>600 / 23.62</td>
<td>7 / 101.5</td>
</tr>
</tbody>
</table>

Gauges with glass lengths up to 600mm / 23.62 inch are suitable for Steam Boiler application when installed in accordance with the requirement of British Standard BS 759.
OPTIONAL FEATURES AND ACCESSORIES

**Guard-Rod Protectors:** Four (4) guard rods and holders to protect glass from mechanical shock is standard. Box type sheet metal protector is optional.

**Safety Ballcheck:** Valves can be furnished with a ballcheck for pressurized and vacuum service to provide positive isolation of liquid in the event of glass breakage.

### SERIES-26 VALVE

<table>
<thead>
<tr>
<th>PART NO.</th>
<th>PART NAME</th>
<th>QTY</th>
<th>STD MATERIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>VALVE BODY</td>
<td>1</td>
<td>STEEL</td>
</tr>
<tr>
<td>2</td>
<td>SEAT</td>
<td>1</td>
<td>316 SS</td>
</tr>
<tr>
<td>3</td>
<td>STEM</td>
<td>1</td>
<td>410 SS</td>
</tr>
<tr>
<td>4</td>
<td>SLEEVE</td>
<td>1</td>
<td>STEEL</td>
</tr>
<tr>
<td>5</td>
<td>PACKING RING</td>
<td>1</td>
<td>STEEL</td>
</tr>
<tr>
<td>6</td>
<td>PACKING (VALVE)</td>
<td>4</td>
<td>GRAPHITE</td>
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<td>7</td>
<td>GLAND (VALVE)</td>
<td>1</td>
<td>STEEL</td>
</tr>
<tr>
<td>8</td>
<td>NUT-GLAND</td>
<td>1</td>
<td>STEEL</td>
</tr>
<tr>
<td>9</td>
<td>HANDWHEEL</td>
<td>1</td>
<td>WCB</td>
</tr>
<tr>
<td>10</td>
<td>NUT-STEM</td>
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<td>STEEL</td>
</tr>
<tr>
<td>11</td>
<td>UNION PIN</td>
<td>1</td>
<td>STEEL</td>
</tr>
<tr>
<td>12</td>
<td>UNION NUT</td>
<td>1</td>
<td>STEEL</td>
</tr>
<tr>
<td>13</td>
<td>BALL CHECK</td>
<td>1</td>
<td>316 SS</td>
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<tr>
<td>14</td>
<td>BALL CHECK STOP</td>
<td>1</td>
<td>316 SS</td>
</tr>
<tr>
<td>15</td>
<td>GLASS TUBE RING</td>
<td>1</td>
<td>STEEL</td>
</tr>
<tr>
<td>16</td>
<td>PACKING (GLASS TUBE)</td>
<td>1</td>
<td>NITRILE</td>
</tr>
<tr>
<td>17</td>
<td>GLAND (GLASS TUBE)</td>
<td>1</td>
<td>STEEL</td>
</tr>
<tr>
<td>18</td>
<td>GLAND NUT</td>
<td>1</td>
<td>STEEL</td>
</tr>
<tr>
<td>19</td>
<td>PACKING TOP</td>
<td>1</td>
<td>PTFE</td>
</tr>
<tr>
<td>20</td>
<td>TAG PLATE</td>
<td>1</td>
<td>SS 304</td>
</tr>
</tbody>
</table>
WELD PAD WPM

PROCESS GAUGES
Flat Glass Liquid Level Gauges designed to become an integral part of the vessel

Weld Pad Gauges are used where convectional gauge and valve construction is impractical, e.g. because of solid matter in suspension, when thermal error due to piping to a gauge glass cannot be tolerated, or where space restrictions suggest their use.

They are available in most standard sizes, with both Reflex and Transparent glasses. Reflex glasses are used where liquid level reading is the only requirement. Transparent gauges are usually used where there is also a requirement to see into the vessel or, with gauges installed on each side, through the vessel (e.g. interface applications.)

Series: WPM (Flat Back)  Series: WPM (Radiused Back)

LENGTHS:
Weld pad Gauges are available in nine standard visible glass lengths. Longer lengths can be achieved either by having multiple windows on a single piece or having several overlapping individual gauges (giving continues visible length).

INSTALLATION:
The weld pad body is welded to the vessel after cutting a slot, or holes, in the vessel wall to match the slot in the gauge body.

PRESSURE LOADS:
Weld pad gauges will withstand loading due to the service pressure, but they are not designed to replace the vessel strength lost when the vessel wall is cut.

he vessel wall provides suitable vessel wall reinforcement to prevent distortion during cutting, installation and operation.

GAUGE BODY:
Machined from solid bar stock of cold rolled carbon steel rustproofed.

COVERS:
Rustproofed steels.

BOLTS & NUTS:
Chrome molybdenum alloy steel bolts heat treated for strength and rustproofed.

TOUGHENED GLASS:
Toughened glass, resistance to thermal and mechanical shock. It is tough, durable, moulded glass made under carefully controlled manufacturing techniques, in accordance with BS 3463, DIN 7081. Mica or plastic shields are recommended for transparent glasses when handling caustic, hydrofluoric acid or other media corrosive to glass.

GASKETS:
Die cut from highest quality material best suited for use with liquid indicated.

SPECIAL MATERIALS:
Materials to suit NACE applications, other special materials available on request.
### PRESSURE-TEMPERATURE CHART FOR WELD PAD GAUGE

<table>
<thead>
<tr>
<th>Temp°C/°F</th>
<th>Series WPM</th>
<th>Size Number of Window</th>
</tr>
</thead>
<tbody>
<tr>
<td>40° / 104°</td>
<td>207 / 3001.5</td>
<td>200 / 2900 190 / 2755 180 / 2610 172 / 2494 164 / 2378 155 / 2247.5 145 / 2102.5 138 / 2001</td>
</tr>
<tr>
<td>95° / 203°</td>
<td>197 / 2856.5</td>
<td>191 / 2769.5 181 / 2624.5 172 / 2494 162 / 2349 156 / 2262 147 / 2131.5 140 / 2030 131 / 1899.5</td>
</tr>
<tr>
<td>150° / 302°</td>
<td>192 / 2784</td>
<td>176 / 2552 169 / 2450.5 161 / 2334.5 155 / 2247.5 146 / 2117 138 / 2001 131 / 1899.5 122 / 1769</td>
</tr>
<tr>
<td>205° / 401°</td>
<td>174 / 2523</td>
<td>166 / 2407 160 / 2320 152 / 2204 145 / 2102.5 137 / 1986.5 131 / 1899.5 121 / 1754.5 116 / 1682</td>
</tr>
<tr>
<td>260° / 500°</td>
<td>161 / 2334.5</td>
<td>155 / 2247.5 150 / 2175 142 / 2059 133 / 1928.5 128 / 1856 121 / 1754.5 114 / 1653 106 / 1537</td>
</tr>
<tr>
<td>316° / 600°</td>
<td>142 / 2059</td>
<td>135 / 1957.5 129 / 1970.5 124 / 1798 119 / 1725.5 113 / 1638.5 105 / 1522.5 100 / 1450 93 / 1348.5</td>
</tr>
</tbody>
</table>

RATING SHOWN ARE FOR OUR STANDARD CARBON STEEL, AND TYPE 316 STAINLESS STEEL CONSTRUCTION.

**NOTE:** It is the responsibility of the tank designer to determine the strength requirement of the method of attachment of the gauge to the tank.
GAUGE CONNECTION OPTIONS

1/2" or 3/4" NPT (M)

PLAIN UNION (M)

PLAIN NIPPLE SCREWED

1/2" or 3/4" NPT (M)

SPHERICAL UNION (M)
GAUGE CONNECTION OPTIONS

PLAIN UNION (F)

FLANGED

SPHERICAL UNION (F)
### STANDARD VISIBLE LENGTH CHART

**DIMENSIONS & WEIGHTS**

**SERIES-M**

<table>
<thead>
<tr>
<th>Sect. X Size</th>
<th>Visible Range</th>
<th>Overall Length</th>
<th>Approximate Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in mm</td>
<td>in mm</td>
<td>lbs Kgs lbs Kgs</td>
</tr>
<tr>
<td></td>
<td>Reflex, R-M</td>
<td>Transp., T-M</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>3 3/4</td>
<td>95</td>
<td>8 3.6 10 4.5</td>
</tr>
<tr>
<td>12</td>
<td>4 3/4</td>
<td>121</td>
<td>9 4.1 14 6.4</td>
</tr>
<tr>
<td>13</td>
<td>5 3/4</td>
<td>146</td>
<td>11 5.0 17 7.7</td>
</tr>
<tr>
<td>14</td>
<td>6 3/4</td>
<td>171</td>
<td>12 5.5 19 8.6</td>
</tr>
<tr>
<td>15</td>
<td>7 7/8</td>
<td>200</td>
<td>14 6.4 21 9.5</td>
</tr>
<tr>
<td>16</td>
<td>8 7/8</td>
<td>232</td>
<td>16 7.3 24 10.9</td>
</tr>
<tr>
<td>17</td>
<td>10 1/4</td>
<td>260</td>
<td>19 8.2 27 12.3</td>
</tr>
<tr>
<td>18</td>
<td>11 1/8</td>
<td>302</td>
<td>22 9.1 30 13.6</td>
</tr>
<tr>
<td>19</td>
<td>12 5/8</td>
<td>321</td>
<td>21 9.5 32 14.5</td>
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All dimensions in millimeters.
All weights are in kilograms.
All information stated above is approximate and is given for Guidance only.
Support brackets are provided on all gauges consisting of 5 sections or more.
For visible length other than shown in the chart contact factory.
BLISS ANAND Supplies variety of accessories with Level Gauges, on request.

1. **Illuminator:**
   
   Transparent level gauge are supplied with illuminator both explosion proof and weather proof.

2. **Scales:**

   Metallic engraved scale can be supplied with desired graduation.

3. **Support Brackets:**

   Support brackets are recommended when the overall gauge length exceeds 1.5 meters.
4. **Heating jacket:**

Heating jackets can be provided for process gauge both for reflex and transparent types.

5. **Non-Frosting Shield:**

Non-frosting Shields supplied for sub zero application for both reflex and transparent type level gauges.
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<th>VAPE VALVE OPTIONS</th>
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<td>'10'</td>
<td>BLISS ANAND 10-TU valves feature straight type body with integrated seat and Elastomer (EPDM) Glass tube packing bush, with integral seat and PTFE valve cone. These are primarily used for tubular type level gages for low pressure &amp; temperature applications. They are equipped with mounting clamps to fit glass protection rods. They also features a ball check arrangement.</td>
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<tr>
<td>'20'</td>
<td>BLISS ANAND SERIES 20 valves features integrated of bonnet drop forged offset steel bodies, stainless steel trim with wide choice of connections. Their design incorporate ball check arrangements and union gauge connections. They are equipped with union gauge connections which permits simple installation and easy access to the ball check.</td>
</tr>
<tr>
<td>'40'</td>
<td>BLISS ANAND SERIES 40 valves are designed and built to the highest standard quality features such as regrindable and renewable seat and complete rust proofed carbon steel parts assuring long trouble free services union gauge connection enables gauges to be turned to any desired angle and removed of gauge without disturbing the valve which saves time in maintenance. Also the valve features union bonnet, and stem back seating.</td>
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<tr>
<td>'80'</td>
<td>BLISS ANAND SERIES 80 valves are designed with bolted bonnet construction. Valves are equipped with stainless steel ball checks, stem back seating and offset construction. Union gauges connections is optional.</td>
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</table>
SERIES 10

SOFT SEAT VALVE CONE:
The valve features a soft seating valve cone in PTFE capped at the stem tip. This ensures zero leak when closed.

STRAIGHT BODY PATTERN:
The valve features a straight body pattern.

Standard Connections:
- Vessel: ¾” NPT male
- Drain: ¾” NPT female
- Gauge: 3/8” NPT female

Optional Connections:
- Vessel: ½” NPT male
- Vent & Drain: ¼” NPT plugged

Safety Shut OFF:
Valves are provided with stainless steel ball check which instantaneously shuts off flow of the medium being gauged in the event of glass breakage.

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<td>STEM PACKING WASHER</td>
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<td>PLUG</td>
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STANDARD FEATURES
STANDARD FEATURES

BACKSEATING STEM:
When the valve is opened to its limit, the stem seats against the bonnet allowing the valve to be repacked while under pressure.

STRAIGHT BODY PATTERN:
The straight body is of a straight forward angle pattern, with the gauge, drain and vessel connections on intersecting centrelines.

OFFSET BODY PATTERN:
The Offset body is an angle pattern valve, with the centreline of the gauge and drain connections offset 22mm from the centreline of the vessel connections. Hence by removing the vent/Drain plugs, the interior of a top and bottom connected gauge glass may be cleaned without removing the gauge.

UNION GAUGE CONNECTION:
Both the straight and the offset can be furnished with a union gauge connection which allows a top and bottom connected gauge to be turned to any desired angle for convenient visibility. It also makes possible the removal of the gauge without removing the valves, a feature which saves time when the gauges must be cleaned or serviced.

Optional Connections:

Vessel: ½" NPT male or ¾" NPT male for socket weld or flanged to suit requirements. Series 20 valves can be supplied with ANSI 150, 300 or 600 integral flanges.

Gauges: On union connected valves ½" NPT male or ¾" NPT male. On all valves ¾" NPT female screwed and ½" or ¾" female socket weld recess.

Vent/Drain: ¾" NPT female screwed and ½" or ¾" female socket weld recess. vent & drain valves on request.

Connections are also available screwed.

Safety Shut Off:
Valves may be provided with stainless steel ballcheck which instantaneously shuts off flow of the medium being gauged in the event of glass breakage. The ball operates upstream from the seat and can be furnished for vacuum seating if required.
STANDARD FEATURES

BACKSEATING STEM:
When the valve is opened to its limit, the stem seats against the bonnet allowing the valve to be repacked while under pressure.

STRAIGHT BODY PATTERN:
The straight body is of a straight forward angle pattern, with the gauge, drain and vessel connections on intersecting centre lines.

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Standard Connections:
- **Vessel**: ½” NPT male
- **Drain**: ½” NPT female
- **Gauge**: ½” NPT female

Optional Connections:
- **Vessel**: ¾” NPT male or ¾” NPT male for socket weld or flanged to suit requirements. Series 40 valves can be supplied with ANSI 150, 300 or 600 integral flanges.
- **Gauges**: On union connected valves ½” NPT male or ¾” NPT male. On all valves ¾” NPT female screwed and ½” or ¾” female socket weld recess.
- **Vent/Drain**: ¾” NPT female screwed and ½” or ¾” female socket weld recess. vent & drain valves on request.

Connections are also available screwed.

Safety Shut Off:
Valves may be provided with stainless steel ballcheck which instantaneously shuts off flow of the medium being gauged in the event of glass breakage. The ball operates upstream from the seat and can be furnished for vacuum seating if required.
GAUGE VALVES
Gauge Valves With Bolted and Bonnet & Inside Screw, Designed to Reduce Threaded Connections.

These rugged valves are designed and manufactured for use with flat glass gauges, instruments piping and other applications.

Pressure Rating per intermediate rating ANSI 1250

83 STRAIGHT PATTERN WITH FEMALE NPT GAUGE CONNECTION, MALE VESSEL CONNECTION ON SOLID SHANK

84 STRAIGHT PATTERN WITH FEMALE NPT UNION GAUGE CONNECTION, MALE VESSEL CONNECTION ON SOLID SHANK
GAUGE VALVES
Gauge Valves With Bolted and Bonnet & Inside Screw, Designed to Reduce Threaded Connections.

These rugged valves are designed and manufactured for use with flat glass gauges, instruments piping and other applications.

Pressure Rating per intermediate rating ANSI 1250

86 OFFSET PATTERN WITH FEMALE NPT GAUGE CONNECTION, MALE UNION VESSEL CONNECTION

87 OFFSET PATTERN WITH FEMALE NPT UNION GAUGE CONNECTION, MALE UNION VESSEL CONNECTION
STANDARD FEATURES

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Standard Connections:
Vessel  : ½” NPT male
Drain   : ½” NPT female
Gauge   : ½” NPT female

Optional Connections:
Vessel  : ½” NPT male or ¾” NPT male for socket weld or flanged to suit requirements.
Series 80 valves can be supplied with ANSI 150, 300 or 600 integral flanges.

Gauges  : On union connected valves ½” NPT male or ¾” NPT male. On all valves ¾” NPT female screwed and ½” or ¾” female socket weld recess.

Vent/Drain : ¾” NPT female screwed and ½” or ¾” female socket weld recess. vent & drain valves on request.

Connections are also available screwed.

Safety Shut Off:
Valves may be provided with stainless steel ballcheck which instantaneously shuts off flow of the medium being gauged in the event of glass breakage. The ball operates upstream from the seat and can be furnished for vacuum seating if required.
TANK CONNECTION OPTIONS

PLAIN UNION (M)

PLAIN UNION (F)

SPHERICAL UNION (M)

SPHERICAL UNION (F)

FLANGE PLAIN UNION (M)

SOLID SHANK (M)
### Gauge Valve Combinations

**Liquid Level Gauges and Valves**

**Minimum Vessel Centres**

*(All dimensions in mm)*

#### INLINE VALVES

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<td>3331</td>
<td>3393</td>
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</table>

**Note:** Standard connections are NPT female screwed on gauges and valves with assembling made using SCH 160 Male threaded adaptors. Other connection options are available including male and female unions, socket welds, flanges etc, however centres dimensions are subject to confirmation by Bliss Anand.
Manufacturing Locations:

<table>
<thead>
<tr>
<th>Location</th>
<th>Address</th>
<th>Phone</th>
<th>Fax</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNITED STATES OF AMERICA</td>
<td>3400 Awesome Lane, La Porte, Texas 77571, USA.</td>
<td>+1 (281) 479-2547</td>
<td>+1 (281) 542-7000</td>
<td><a href="mailto:sales@blissamericas.com">sales@blissamericas.com</a></td>
</tr>
<tr>
<td>UNITED ARAB EMIRATES</td>
<td>P.O. Box: 18576, S40412A, Jebel Ali Free Zone South, Dubai, U.A.E.</td>
<td>00971-4-883 56 33</td>
<td>00971-4-883 56 44</td>
<td><a href="mailto:reception.gesme@blissanand.com">reception.gesme@blissanand.com</a></td>
</tr>
<tr>
<td>INDIA</td>
<td>Plot No. 240, Sector-3, Growth Center, HSIIDC, Bawal, Haryana, India</td>
<td>+91 (1284) 269400-99</td>
<td>+91 124 2290884</td>
<td><a href="mailto:sales@blissanand.com">sales@blissanand.com</a></td>
</tr>
<tr>
<td>THE NETHERLANDS</td>
<td>Tijvoortsebaan 8Q, 5051 HJ Goirle, The Netherlands</td>
<td>+31 (0) 13 304 0111</td>
<td></td>
<td><a href="mailto:sales@blisseurope.eu">sales@blisseurope.eu</a></td>
</tr>
<tr>
<td>KINGDOM OF SAUDI ARABIA</td>
<td>Production Unit #101, B-2, Cluster 2, Modon Industrial City 3, KSA-Dammam</td>
<td>+966 (0) 56 678 4945</td>
<td></td>
<td><a href="mailto:ksa@blissanandusa.com">ksa@blissanandusa.com</a></td>
</tr>
</tbody>
</table>