



**Flow & Control System Private Ltd**

**Catalogue:  
Transparent/ Reflex Type Level Indicator  
(FCS TTLI / FCS RTLI Series)**

**Flow & Control System Private Limited, India**

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## Read this Manual Before Installation

This manual contains essential information about Magnetic liquid level indicators. Please read all instructions carefully and follow the steps given in order.

### Manual Conventions

This manual uses specific styles and symbols to share technical details, supporting information, and safety guidance. General explanations are written in plain text, while special notices are highlighted as Notes, Cautions, and Warnings.

- **Notes:** Provide additional information or clarification about an operating step. Notes are meant to assist understanding and do not normally include actions.
- **⚠ Caution:** Indicate conditions that could cause minor injury, equipment damage, or reduce system integrity. Cautions also highlight unsafe practices or the need for special tools, materials, or protective gear.
- **Warnings:** Identify serious hazards that could lead to major injury or death. A warning signals an immediate danger if proper precautions are not taken.

### Safety Instructions

- Always follow standard safety practices when working with electrical equipment, especially high-voltage systems. Disconnect power before touching or servicing any components.
  - **⚠ Warning:** Explosion risk — do not connect or disconnect any device unless power is turned off or the area is verified to be non-hazardous.
- **Low Voltage Directive:**  
This product is intended for Installation Category II, Pollution Degree 2. Any use beyond manufacturer instructions may reduce the equipment's safety and protection.

### Warranty

All Flow & Control System mechanical level controls carry a three-year warranty, and electronic level controls carry an eighteen-month warranty from the date of factory shipment. If a unit fails within the warranty period and inspection confirms a manufacturing defect, Flow & Control System will repair or replace it free of charge, excluding transportation costs.

The company is not responsible for misapplication, labour costs, or any direct or indirect damages arising from installation or use. No other warranties apply unless specified in writing for certain products.

### Quality Assurance

Flow & Control System maintains a rigorous quality management system to ensure consistent product and service excellence. The company's corporate quality assurance program is ISO 9001 certified, demonstrating compliance with recognized international standards and a commitment to total customer satisfaction.

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Product specifications are valid as of the publication date and may change without prior notice. Flow & Control System reserves the right to modify product designs or manuals at any time and does not guarantee complete accuracy of the information provided herein.



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## Transparent/ Reflex Type Level Indicator

### Introduction:

Designed to meet the demanding requirements of petrochemical, fertilizer, pharmaceutical, and chemical industries handling flammable, toxic, high-pressure, and high-temperature liquids. These gauges allow clear observation of the liquid level, colour, and clarity through a pair of heavy-duty glass plates mounted on both sides of the chamber.

### Working:

The liquid flows into the gauge chamber, where it becomes visible through **two robust glass panels** on either side. This design enables easy monitoring of the **liquid level, colour, and clarity** within the chamber.

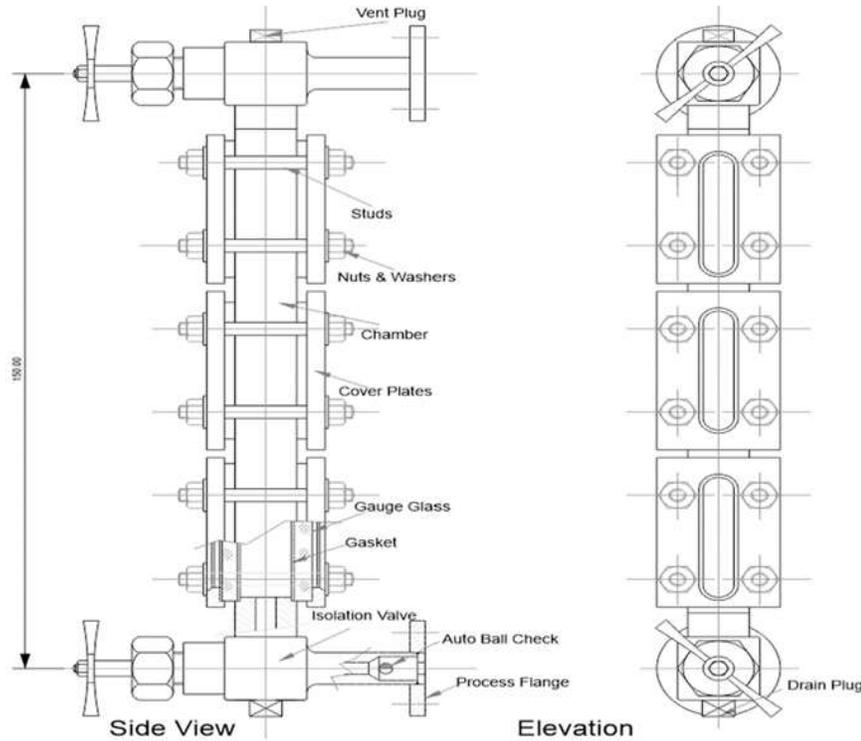
FCSRTL100  
Series

FCSTTL100  
Series



### Component: Specification:

<b>Item</b>	Transparent Type Level Indicator
<b>Model Number</b>	FCS TTLI 100, FCS RTLI 100
<b>Glass Type</b>	Toughened Borosilicate Glass / Pyrex / Mexos / Klinger
<b>Nuts &amp; Bolts</b>	Carbon Steel / ASTM A194 and 193 / S.S
<b>Gasket</b>	CAF / PTFE / Metallic Graphite / Spiral Wound / Pyrex / Klinger
<b>Isolation Valve</b>	In-built Straight / Off Set
<b>Vent &amp; Drain</b>	Plug / Valve
<b>Mounting</b>	Side / Vertical / R.H.S / L.H.S
<b>Rated Temperature</b>	120°C to 400°C
<b>Rated Pressure</b>	20 Kg/cm <sup>2</sup>
<b>Connection</b>	Flanged / Screwed
<b>Valve Body/ Trim</b>	P.P / C.S / A 105 / S.S 304 / S.S 304L / S.S 316 / S.S 316L
<b>Body</b>	P.P / C.S / A 105 / S.S 304 / S.S 304L / S.S 316 / S.S 316L
<b>Cover Plate</b>	P.P / C.S / A 105 / S.S 304 / S.S 304L / S.S 316 / S.S 316L



## Bill of Material

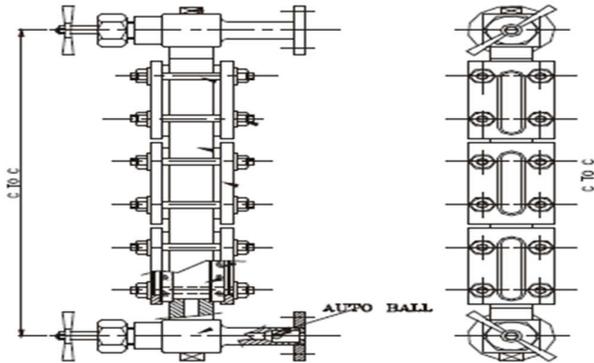
Sr. No.	Description	Material	Qty.	1 Body MS/SS
2	Flange	MS/SS		
3	Pipe	MS/SS		
4	Cover Plate	MS/SS		
5	Glass	Toughened Borosilicate Glass /Pyrex /Klinger		
6	Gasket	CAF / PTFE /Spiral Wound /Pyrex		
7	Gasket (Cushion)	CAF / PTFE /Spiral Wound /Pyrex		
8	Stud	MS/SS		
9	Nut	MS/SS		
10	Plug	MS/SS		
11	Isolation Valve	MS/SS		
12	Handle	MS/SS		
13	Nut	MS/SS		

Note\* (MOC can be customized as per Customer's Requirement)



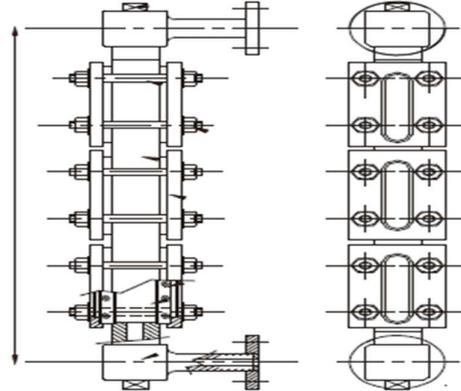
## Mounting Option:

Product Code: FCS TTLI 100BCIV



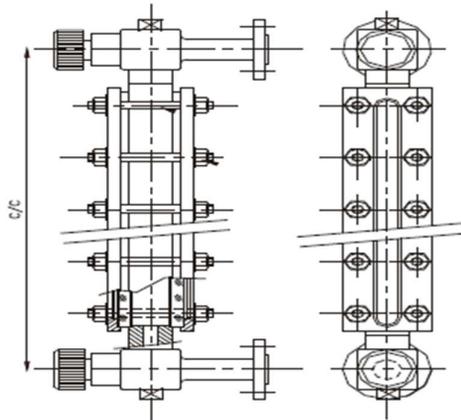
TTLI with Isolation Valve & Auto Ball Check

Product Code: FCS TTLI 100



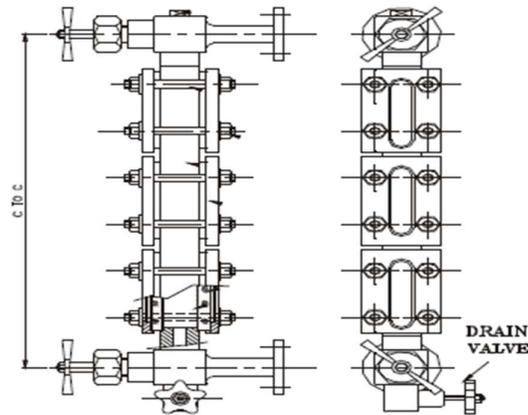
TTLI without Isolation Valve

Product Code: FCS TTLI100PV



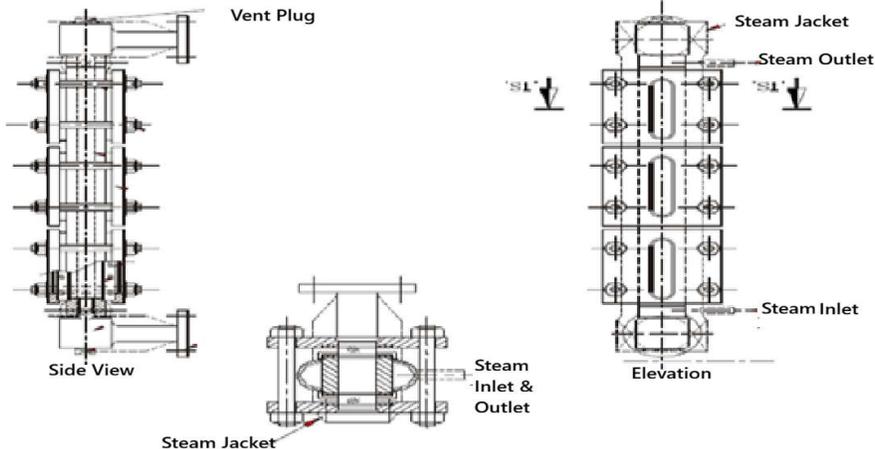
FCS TTLI/RTLI with Push Valve

Product Code: FCS TTLI100IVDV



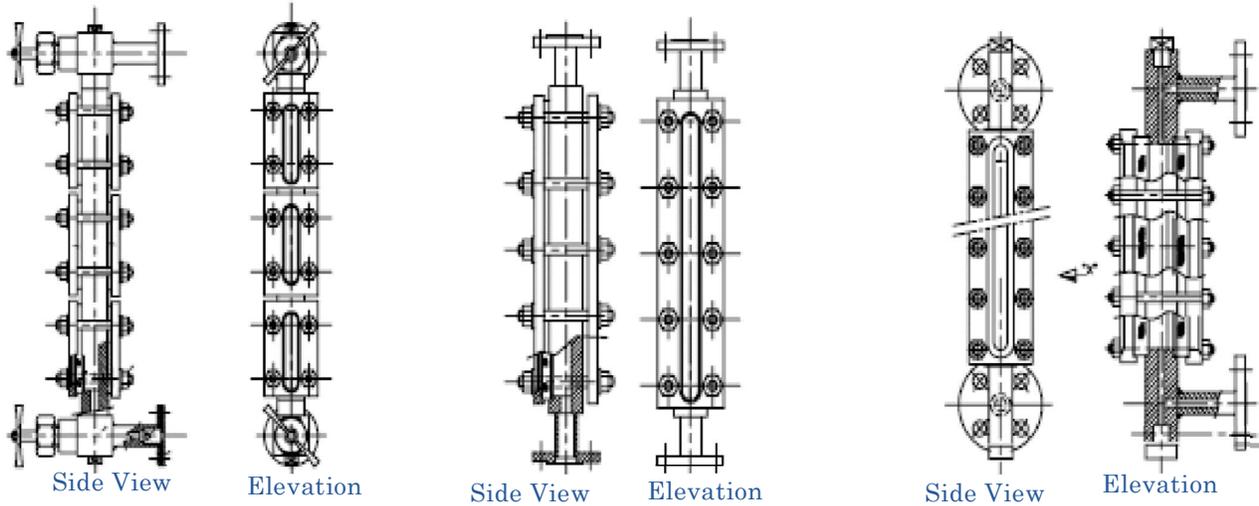
FCS TTLI with Isolation Valve & Drain Valve

Product Code: FCS TTLI 100SJ





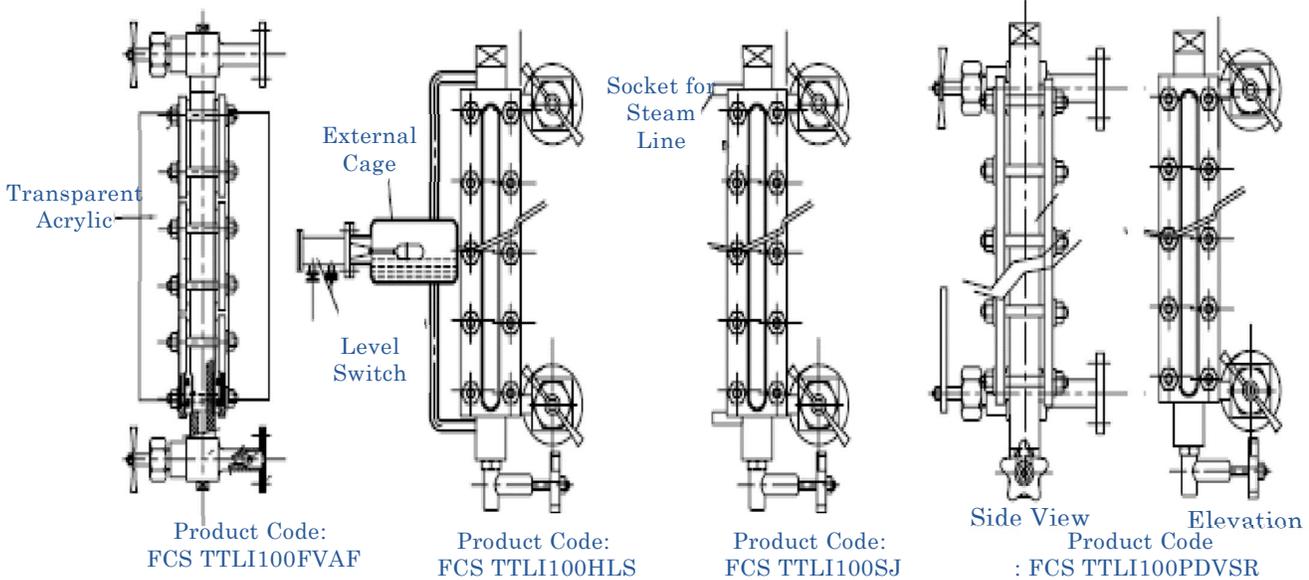
## Transparent Type Level Indicator with Steam Jacket



Product Code: FCS TTLI100

Product Code: FCS TLI100FV

Product Code: FCS TTLI100



## Changing of Reflex Toughened Gauge Glass: Arrangement

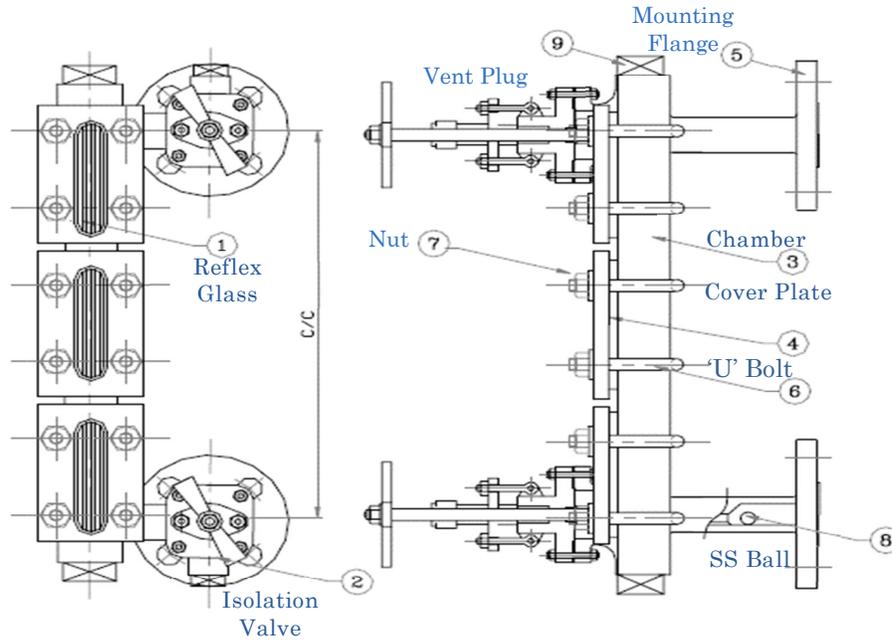
If the transparent gauge glass breaks, remove all bolts, nuts, packing, broken glass pieces, and the used gasket.

Clean the chamber thoroughly with water and a brush. Install the new transparent toughened gauge glass with a fresh gasket. Position it correctly on its seat and tighten the Studs/U Bolts gently in opposite directions.

After tightening, check for any leakage at the joint.



## Constructional Drawing: FCSRTLI

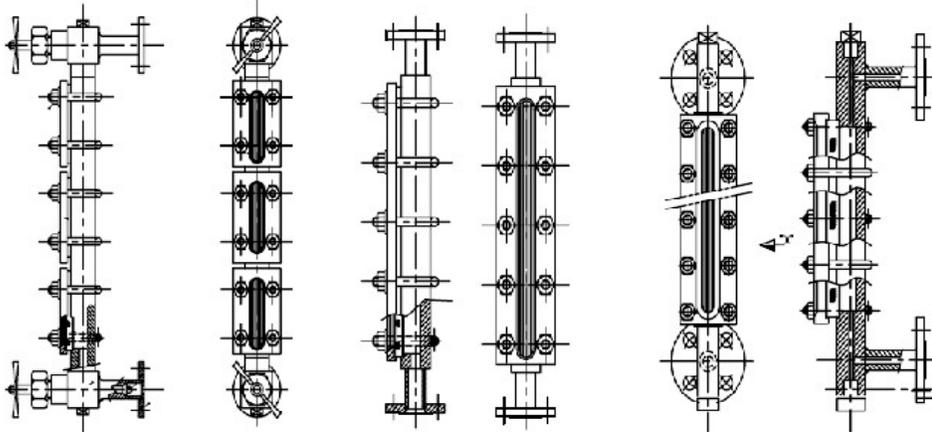


### Bill of Material

Sl No	Description	Material
1	Body	MS/SS
2	Flange	MS/SS
3	Pipe	MS/SS
4	Cover Plate	MS/SS
5	Glass	Toughened Borosilicate Glass /Pyrex /Klinger
6	Gasket	CAF / PTFE /Spiral Wound /Pyrex
7	Gasket (Cushion)	CAF / PTFE /Spiral Wound /Pyrex
8	Stud	MS/SS
9	Nut	MS/SS
10	Plug	MS/SS
11	Isolation Valve	MS/SS
12	Handle	MS/SS
13	Nut	MS/SS



## FCSRTL1



Side View

Elevation

Side View

Elevation

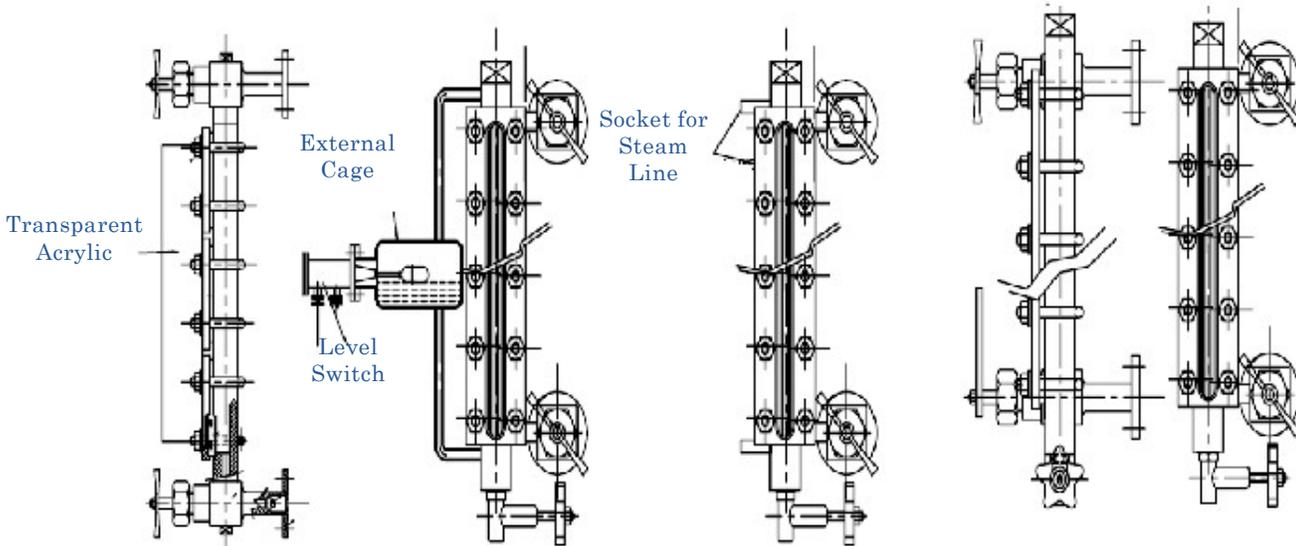
Side View

Elevation

PRODUCT CODE:  
FCS RTL1100

PRODUCT CODE:  
FCS RTL1100FV

PRODUCT CODE:  
FCS RTL1100PDVSR



Transparent Acrylic

External Cage

Level Switch

Socket for Steam Line

Side View

Elevation

PRODUCT CODE:  
FCS RTL1100FVAF

PRODUCT CODE:  
FCS RTL1100HLS

PRODUCT CODE:  
FCS RTL1100SJ

PRODUCT CODE:  
FCS RTL1100



## Installation, Operation and Maintenance Manual: Transparent Level Indicator (FCS TTLI/RTLI Series)

### Introduction:

Designed for accurate and reliable liquid level monitoring in **petrochemical, fertilizer, pharmaceutical, and chemical industries**, including applications involving **flammable, toxic, high-pressure, and high-temperature liquids**.

### Working Principle:

The liquid level is directly visible through the **transparent glass section**. For enhanced visibility in plant conditions, the indicator can be equipped with an **electrical illuminator** mounted on the **rear side** of the glass section.

### Application:

Suitable for **high-temperature, high-pressure, and steam-based** liquid applications in **hazardous environments**.

The design is **robust and dependable**, with optional features such as **isolation valves, ball check arrangements, anti-frost extensions, and integrated heating jackets**. Refer to the respective drawing for available model variants.

### Construction:

Mounted on the **side of the vessel**, the gauge features a **single-piece metallic chamber** for strength and durability.

The **liquid level** is visible through **toughened glass windows** securely clamped using **cover plates, nuts, and bolts**.

Precisely **machined seating surfaces, matching gaskets, and soft sealing cushions** ensure a leak-free joint between the **chamber and glass**.

For detailed configuration, refer to the sectional drawing.

### Installation:

- Carefully **unwrap the level indicator**, as it contains fragile glass components. Handle with care to prevent breakage.
- **Install the indicator vertically** in the required position, placing an appropriate **gasket** between the inlet and outlet flanges.
- Ensure **no stress or misalignment** on joints to prevent glass damage.
- **Tighten bolts and nuts diagonally** on both flanges with gentle, uniform force to avoid leakage.
- **After installation, check all joints to confirm that there are no leaks.**





## Different Types of Gauge Series:

### Model LC – Large Chamber Level Gauges for Boiling or Surging Liquids

Flow and Control System Model LC Level Gauges are engineered for accurate level measurement of liquids prone to boiling, surging, or gas release under pressure or temperature changes.

These gauges effectively minimize:

- Gas release during low-pressure conditions.
- Vapor formation when pressure drops below the critical point.
- Boiling due to temperature exceeding the liquid's boiling point.

For low-boiling-point liquids, thermal insulation and a non-frosting unit are recommended. Model LC Gauges are available in reflex and transparent designs, featuring heavy-duty, corrosion-protected chambers precisely machined to ensure a tight and leak-free seal.

Pressure Temperature Ratings									
Number of Window									
(Max. Pressure in Bars / PSI)									
°C / °F	1	2	3	4	5	6	7	8	9

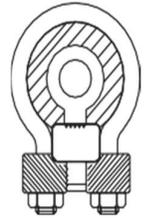
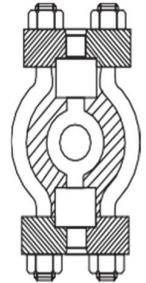
Series ' LC'

### Transparent

40° / 104°	83 / 1203.5	77 / 1116.5	70 / 1015	64 / 928	59 / 855.5	53 / 786.5	47 / 681.5	41 / 594.5	35 / 507.5
150° / 302°	66 / 957	61 / 884.5	57 / 826.5	52 / 754	47 / 618.5	43 / 623.5	38 / 551	29 / 420.5	25 / 362.5
260° / 500°	50 / 725	47 / 618.5	44 / 638	40 / 580	36 / 522	33 / 478.5	29 / 420.5	25 / 362.5	22 / 319
400° / 752°	30 / 435	28 / 406	27 / 391.5	24 / 348	22 / 319	20 / 290	18 / 261	16 / 232	14 / 203

### Reflex

40° / 104°	165 / 2392.5	155 / 2247.5	145 / 2102.5	134 / 1943	124 / 1798	113 / 1638.5	103 / 1493.5	93 / 1348.5	83 / 1203.5
150° / 302°	141 / 2044.5	132 / 1914	124 / 1798	116 / 1628	106 / 1537	99 / 1435.5	90 / 1305	82 / 1189	73 / 1058.5
260° / 500°	117 / 1696.5	110 / 1595	103 / 1493.5	96 / 1392	90 / 1305	84 / 1218	77 / 1116.5	70 / 1015	64 / 928
400° / 752°	89 / 1290.5	82 / 1189	77 / 1116.5	73 / 1058.5	69 / 1000.5	65 / 942.5	60 / 870	56 / 812	53 / 768.5



### Model GP – Standard Level Gauges for Medium Pressure and Temperature

Flow and Control System Model GP Level Gauges are ideal for general industrial applications involving moderate pressure and temperature. Each gauge features a solid, one-piece carbon steel chamber, toughened glass, and high-strength chrome-moly bolts for long-term performance.

Recessed gasket seats maintain alignment and provide leak-free service.

Optional fittings include illumination systems, heating tubes, non-frosting shields and mounting brackets. Also available in special materials for corrosive or high-temperature applications.

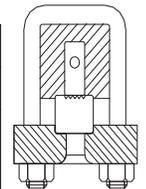
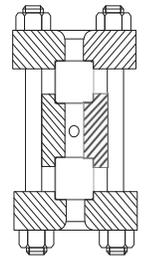
Series ' GP'

### Transparent

40° / 104°	138 / 2001	128 / 1856	121 / 1754.5	110 / 1595	104 / 1508	93 / 1348.5	86 / 1247	76 / 1102	69 / 1000.5
150° / 302°	122 / 1769	115 / 1667.5	107 / 1551.5	100 / 1450	92 / 1334	84 / 1218	76 / 1102	69 / 1000.5	62 / 899
260° / 500°	106 / 1537	100 / 1450	93 / 1348.5	86 / 1247	80 / 1160	72 / 1044	66 / 957	59 / 855.5	52 / 754
400° / 752°	76 / 1102	73 / 1058.5	69 / 1000.5	62 / 899	59 / 855.5	52 / 754	48 / 696	42 / 609	38 / 551

### Reflex

40° / 104°	206 / 2987	200 / 2900	188 / 2726	180 / 2610	172 / 2494	162 / 2349	153 / 2218.5	145 / 2102.5	138 / 2001
150° / 302°	183 / 2653.5	175 / 2537.5	168 / 2436	160 / 2320	152 / 2204	144 / 2088	136 / 1972	129 / 1870.5	121 / 1754.5
260° / 500°	156 / 2262	149 / 2160.5	142 / 2059	135 / 1957.5	128 / 1812.5	121 / 1754.5	114 / 1653	107 / 1551.5	100 / 1450
400° / 752°	114 / 1653	110 / 1595	103 / 1493.5	97 / 1406.5	90 / 1305	86 / 1247	80 / 1160	72 / 1044	69 / 1000.5



### Model HD – Heavy-Duty Level Gauges for High Reliability and Safety

Flow and Control System Model HD Level Gauges are designed for demanding industrial conditions requiring maximum safety and reliability. Available in reflex and transparent versions, each unit includes a solid-bar steel chamber with precision-machined recessed gasket seats for a perfect seal. Sectional glass panels and covers are securely fastened using high-tensile bolts and nuts. All internal and external metal surfaces, including threaded parts, are completely rustproofed to ensure long-lasting, dependable performance in harsh environments.

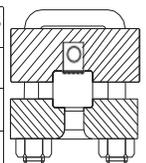
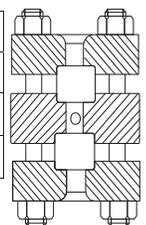
Series ' HD'

### Transparent

40° / 104°	207 / 3001.5	200 / 2900	190 / 2755	180 / 2610	172 / 2494	164 / 2378	155 / 2247.5	145 / 2102.5	138 / 2001
150° / 302°	192 / 2784	176 / 2552	169 / 2450.5	161 / 2334.5	155 / 2247.5	146 / 2117	138 / 2001	131 / 1899.5	122 / 1769
260° / 500°	161 / 2334.5	155 / 2247.5	150 / 2175	142 / 2059	133 / 1928.5	128 / 1856	121 / 1754.5	114 / 1653	106 / 1537
400° / 752°	117 / 1696.5	111 / 1609.5	107 / 1551.5	102 / 1479	97 / 1406.5	93 / 1348.5	87 / 1261.5	80 / 1160	76 / 1102

### Reflex

40° / 104°	276 / 4002	266 / 3857	259 / 3755.5	248 / 3596	242 / 3509	229 / 3320.5	222 / 3219	213 / 3088.5	207 / 3001.5
150° / 302°	248 / 3596	239 / 3465.5	231 / 3349.5	224 / 3248	215 / 3117.5	207 / 3007.5	199 / 2885.5	192 / 2784	184 / 2668
260° / 500°	212 / 3074	204 / 2958	198 / 2871	190 / 2755	185 / 2682.5	177 / 2566.5	170 / 2465	162 / 2349	156 / 2262
400° / 752°	159 / 2305.5	153 / 2218.5	148 / 2146	142 / 2059	138 / 2001	131 / 1899.5	126 / 1827	119 / 1725.5	114 / 1653





Selection Guide: Glass Level Gauge DE codification **5**  
**2**

Gauge Column

Selection		Suffix Codes				Description
A	Gauge Type	RG				Reflex Gauge
		TG				Transparent Gauge
		UG				Tubular Gauge
		WP				Weld Pad
B	No. of Sections	1				Section 1
		2				Section 2
		3				Section 3
		4				Section 4
		5				Section 5
		6				Section 6
		7				Section 7
		8				Section 8
		9				Section 9
C	Glass Size	1				115 mm
		2				140 mm
		3				165 mm
		4				190 mm
		5				220 mm
		6				250 mm
		7				280 mm
		8				320 mm
		9				340 mm
D	Liquid Chamber type	LC				Large Chamber
		MPC				Mid Pressure Chamber
		HPC				High Pressure Chamber
E	Material of Chamber	C				CS (A696)
		S				SST. 316
		**				Special Requirement (specify)
F	Cover Material	1				A105
		2				F316
		**				Special Requirement (specify)
G	Fasteners	1				B7 & 2H
		2				B8 & 8M
		**				Special (specify)
H	Glass	B				T. Borosilicate
		X				Special Requirement (specify)
I	Gasket	N				IFG 5500
		G				Grafoil SS316 Reinforced
		P				PTFE
		**				Special (specify)
J	Cushion	N				IFG 5500
		G				Grafoil SS316 Reinforced
		P				PTFE
		**				Special Requirement (specify)
K	Gauge / Chamber Conn. Size	1				1/2" NPT (F)
		2				1/2" NPT with Union
		**				Special I (specify)
L	Gauge / Chamber Connection				PN	Plain Nipple Screwed
					SU	Spherical Union
					PU	Plain Union
					**	Special Requirement (specify)
M	Gauge connection Orientation	E				Top & Bottom (End)
		S				Side to Side (Close Hookup)
		**				Special Requirement (specify)
N	Visible Distance				**	Special Requirement Specify Units



Auto Shutoff- Valves  
Gauge Column

DE codification:

Selection	Suffix Codes		Description	
O	Valve Model	V00	No Valve	
		V10	Tubular Type LG Valve (Straight)	
		V20	Integral Bonnet	
		V26	Tubular Type LG Valve (Offset)	
		V40	Union Bonnet	
		V83	Straight Pattern With NPT(F) Gauge Connection	
		V84	Straight Pattern With NPT(F) Union Gauge Connection	
		V86	Offset Pattern With NPT(F) Gauge Connection	
		V87	Offset Pattern With NPT(F) Union Gauge Connection	
	**	Special Requirement (Specify)		
P	Body Material	C	A105	
		S	F316	
		**	Special Requirement (specify)	
Q	Trim	S	SST 316	
		**	Special Requirement (specify)	
R	Closing	P	Plain	
		Q	Quick	
S	Vessel / Tank Connection	MSU	Spherical Union Male	
		FSU	Spherical Union Female	
		MPU	Plain Union Male	
		FPU	Plain Union Female	
		MSS	Solid Shank Male	
		FLG	Flanged	
		**	Special (specify)	
T	Vessel / Tank Conn. Size	1	1/2" NPT	
		2	3/4" NPT	
		3	3/4"150#	
		4	3/4"300#	
		5	1"150#	
		6	1"300#	
		**	Special Requirement (specify)	
U	Ball Check	Bc0	No Ball Check	
		Bc1	Ball Check Provided	
V	Valve Packing	Vp1	Graphite	
		Vp2	Grafoil	
		Vp3	PTFE	
		**	Special Requirement (specify)	
W	Body-Bonnet Gasket	BBG1	Sp. Wound SS316 + Graphite Filler	
		BBG2	Sp. Wound SS316 + Grafoil Filler	
		BBG3	Sp. Wound SS316 + PTFE Filler	
		**	Special Requirement (specify)	
X	Accessories	A00	Nil	
		A10	Illuminator IIA, IIB	
		A11	Illuminator IIC	
		A12	Scale SST304, mm	
		A21	Scale SST316, mm	
		A30	Frost Shield	
		A40	Mica Shield	
		A41	KEL-F Shield	
		A50	Support Bracket	
		A60	Heating Jacket External	
		A61	Heating Jacket Internal	
		A70	Vent Plug 1/2" NPT	
		A71	Vent Valve 1/2" Ball NPT	
		A7X	Vent Valve Special	
		A80	Drain Plug 1/2" NPT	
		A81	Drain Valve 1/2" Ball NPT	
		A8X	Drain Valve Special	
A90	PTFE Lined			
A95	NACE Wetted Parts			
**	Special Requirement (specify)			



## Process Gauges: Series LC

| 14

**Model LC – Large Chamber Gauges for Accurate Level Reading of Boiling Liquids.**

Flow and Control System Model LC Large Chamber Gauges are designed for precise level measurement of liquids that tend to boil, surge, or release entrained gas.

These gauges effectively minimize:

- Boiling effects from gases released at low pressure.
- Liquid vaporization when pressure drops to a critical point.
- Boiling caused by temperature rising above the liquid's boiling point.

For liquids with very low boiling points, it is recommended to insulate the gauge and valves and use a non-frosting unit.

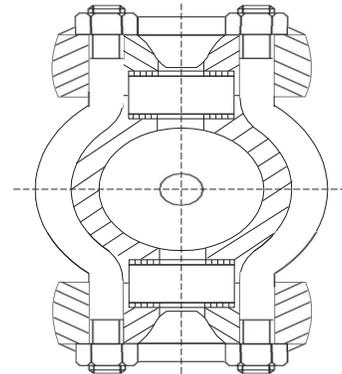
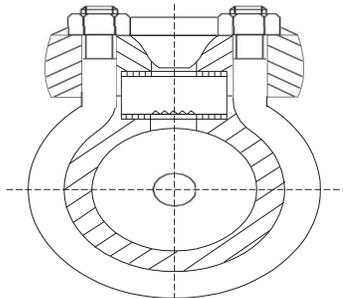
Model LC Gauges are available in reflex and transparent flat-glass designs.

The liquid chamber is made from heavy, corrosion-protected tubing, precisely machined for a smooth gasket and glass seating.

Covers are made of steel and secured with special high-strength bolts for safe and reliable operation. Covers are steel secured with specially designed bolts.

Series: RTLI-LC (Reflex Type Level Indicator)

Series: TTLL-LC (Transparent Type Level Indicator)



### Lengths:

Series-LC gauges are available in nine standard visible glass lengths. For extended visibility, multiple windows can be provided on a single-piece liquid chamber.

### Connections:

Standard process connections are ½" NPT or ¾" NPT. Other sizes and types are also available.

### 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. Rust protected.

### Covers:

Made of rust-resistant steel, ensuring long-term reliability.

### Special Materials:

Options available for NACE compliance and other specific material requirements upon request.

### Bolts & Nuts:

Manufactured from chrome-molybdenum alloy steel, heat-treated for strength and rust-protected to resist corrosion.

### Toughened Glass:

High-strength glass, resistant to both thermal and mechanical shock, manufactured as per BS 3463 and DIN 7081 standards. For corrosive media such as caustic or hydrofluoric acid, mica or plastic shields are recommended with transparent types.

### Gaskets:

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



Series LC

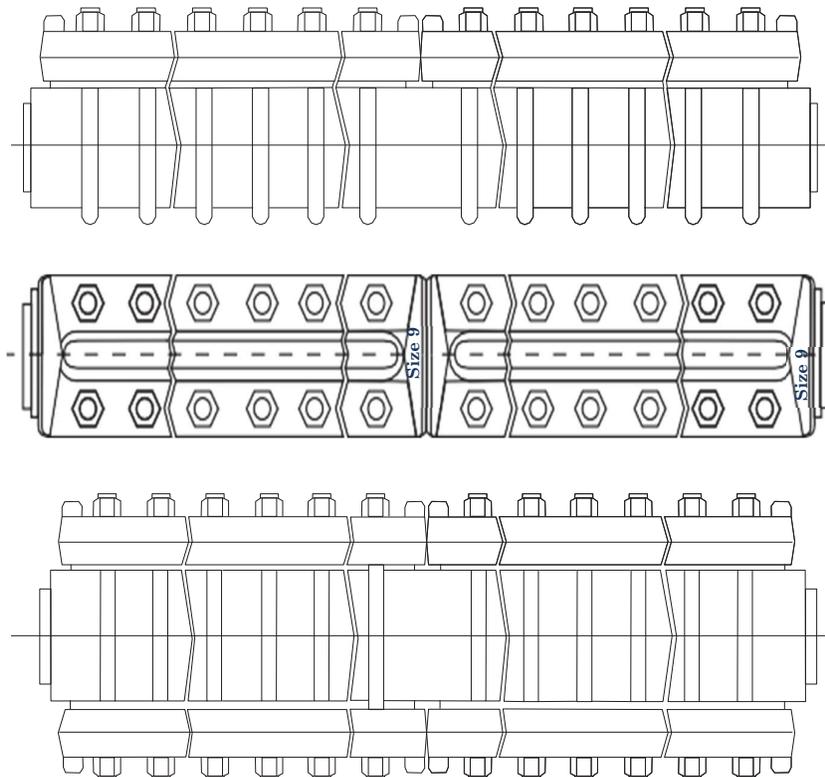
Pressure Temperature Rating:

15

Pressure-Temperature Chart for Reflex Type Level Indicator Gauges (RTLI)									
Series RTLI-LC	Window Size Number								
Temperature °C / °F	1	2	3	4	5	6	7	8	9
	Pressure (Bar / PSI)								
40° / 104°	165 / 2392.5	155 / 2247.5	145 / 2102.5	134 / 1943	124 / 1798	113 / 1638.5	103 / 1493.5	93 / 1348.5	83 / 1203.5
95° / 203°	153 / 2218.5	144 / 2088	135 / 1957.5	125 / 1812.5	115 / 1667.5	106 / 1537	97 / 1406.5	87 / 1261.5	78 / 1131
150° / 302°	141 / 2044.5	132 / 1914	124 / 1799	116 / 1682	106 / 1537	99 / 1435.5	90 / 1305	82 / 1189	73 / 1058.5
205° / 401°	128 / 1856	120 / 1740	113 / 1638.5	105 / 1522.5	98 / 1421	91 / 1319.5	83 / 1203.5	76 / 1102	69 / 1000.5
260° / 500°	117 / 1696.5	110 / 1595	103 / 1493.5	96 / 1392	90 / 1305	84 / 1218	77 / 1116.5	70 / 1015	64 / 928
316° / 600°	105 / 1522.5	99 / 1435.5	93 / 1348.5	87 / 1261.5	82 / 1189	76 / 1102	70 / 1015	64 / 928	59 / 855.5

Pressure-Temperature Chart for Transparent Type Level Indicator Gauges (PTLI)									
Series TTLI-LC	Window Size Number								
Temperature °C / °F	1	2	3	4	5	6	7	8	9
	Pressure (Bar / PSI)								
40° / 104°	83 / 1203.5	77 / 1116.5	70 / 1014	64 / 928	59 / 855.5	53 / 768.5	47 / 681.5	41 / 594.5	35 / 507.5
95° / 203°	75 / 1087.5	69 / 1000.5	64 / 928	58 / 841	52 / 754	47 / 681.5	42 / 609	37 / 536.5	31 / 449.5
150° / 302°	66 / 957	61 / 884.5	57 / 826.5	52 / 754	47 / 681.5	43 / 623.5	38 / 551	29 / 420.5	25 / 362.5
205° / 401°	59 / 855.5	55 / 797.5	50 / 725	46 / 667	42 / 609	37 / 536.5	33 / 478.5	29 / 420.5	25 / 362.5
260° / 500°	50 / 725	47 / 681.5	44 / 638	40 / 580	36 / 522	33 / 478.5	29 / 420.5	25 / 362.5	22 / 319
316° / 600°	43 / 623.5	39 / 565.5	37 / 536.5	33 / 478.5	30 / 435	28 / 406	25 / 362.5	22 / 319	19 / 275.5

**\*Note:** The ratings shown apply to standard constructions in Carbon Steel and Type 316 Stainless Steel. For ratings of other materials, please contact the factory.





## Process Gauges: Series GP

### Model GP – General Purpose Gauge for Medium Pressure and Temperature Applications

Flow & Control System Model GP Level Gauges are widely recognized for their dependability, safety, and long service life across numerous industrial installations.

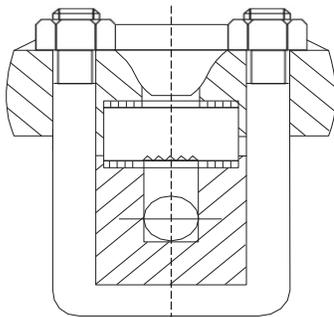
Each gauge features a solid, one-piece carbon steel chamber with steel covers, toughened glass, and chrome-molybdenum bolts and nuts.

All metallic components are rust-protected for durability.

The recessed gasket seats are precisely machined to prevent movement and ensure leak-free performance.

Model GP Gauges are also available in a range of materials to suit corrosive media or extreme temperature applications.

Series: RTLI-GP (Reflex Type Level Indicator)



#### 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 process connections are ½" NPT or ¾" NPT. Other options are also available.

#### Liquid chambers:

Precision-machined from solid bar stock of cold-rolled carbon steel.

Accurately machined gasket seats prevent movement and ensure a leak-proof seal.

All chambers are fully rust-protected.

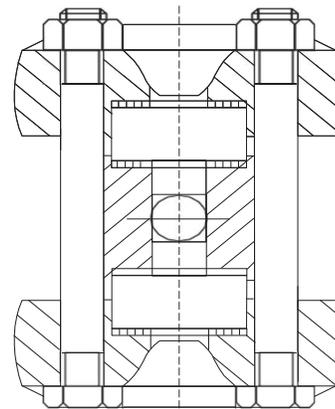
#### Covers:

Manufactured from rust-resistant steel for durability and safety.

#### Special Materials:

Options available for NACE-compliant and other special material requirements upon request.

Series: TTLI-GP (Transparent Type Level Indicator)



#### Bolts & Nuts:

Made from heat-treated chrome-molybdenum alloy steel, providing superior strength and corrosion resistance.

#### Toughened Glass:

High-strength glass resistant to thermal and mechanical shock, produced under strict quality controls as per BS 3463 and DIN 7081 standards.

For corrosive media such as caustic or hydrofluoric acid, mica or plastic shields are recommended with transparent types.

#### Gaskets:

Precision die-cut from premium materials, selected for compatibility with the indicated liquid.

**\*Note:** Ratings shown are for standard Carbon Steel and Type 316 Stainless Steel constructions. For other materials, please contact the factory.



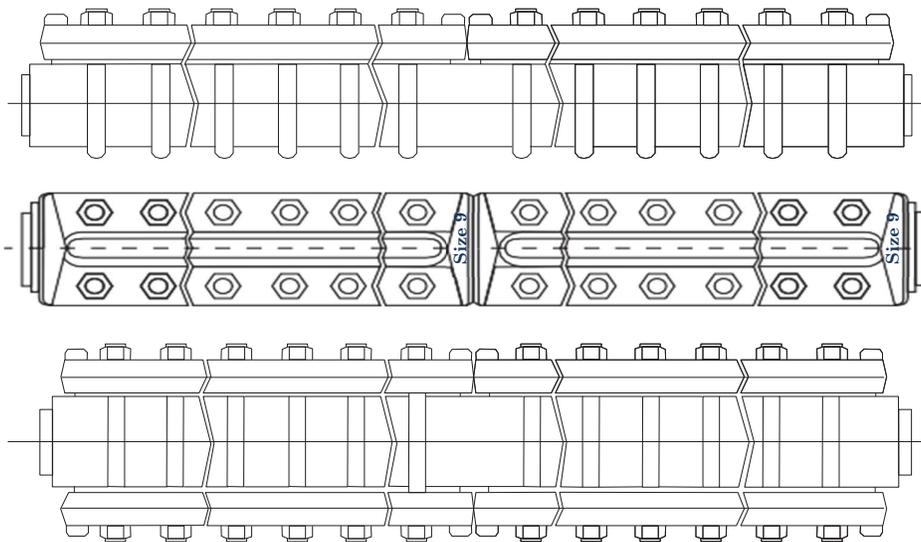
Series GP

Pressure Temperature Rating:

Pressure-Temperature Chart for Reflex Type Level Indicator Gauges (RTLII)									
Series RTLII-GP	Window Size Number								
Temperature °C/°F	1	2	3	4	5	6	7	8	9
	Pressure (Bar / PSI)								
40° / 104°	206 / 2987	200 / 2900	188 / 2726	180 / 2610	172 / 2494	162 / 2349	153 / 2218.5	145 / 2102.5	138 / 2001
95° / 203°	195 / 2827.5	188 / 2726	179 / 2595.5	170 / 2465	162 / 2349	153 / 2218.5	144 / 2088	138 / 2001	131 / 1899.5
150° / 302°	183 / 2653.5	175 / 2537.5	168 / 2436	160 / 2320	152 / 2204	144 / 2088	136 / 1972	129 / 1870.5	121 / 1754.5
205° / 401°	170 / 2465	162 / 2349	155 / 2247.5	147 / 2131.5	140 / 2030	133 / 1928.5	125 / 1812.5	118 / 1711	111 / 1609.5
260° / 500°	156 / 2262	149 / 2160.5	142 / 2059	135 / 1957.5	128 / 1812.5	121 / 1754.5	114 / 1653	107 / 1551.5	100 / 1450
316° / 600°	140 / 2030	134 / 1943	128 / 1586	121 / 1754.5	115 / 1667.5	107 / 1551.5	102 / 1479	95 / 1377.5	90 / 1305

Pressure-Temperature Chart for Transparent Type Level Indicator Gauges (PTLI)									
Series TTLII - GP	Window Size Number								
Temperature °C/°F	1	2	3	4	5	6	7	8	9
	Pressure (Bar / PSI)								
40° / 104°	138 / 2001	128 / 1856	121 / 1754.5	110 / 1595	104 / 1508	93 / 1348.5	86 / 1247	76 / 1102	69 / 1000.5
95° / 203°	121 / 1754.5	123 / 1783.5	115 / 1667.5	107 / 1551.5	99 / 1435.5	90 / 1305	81 / 1174.5	73 / 1058.5	66 / 957
150° / 302°	122 / 1769	115 / 1667.5	107 / 1551.5	100 / 1450	92 / 1334	84 / 1218	76 / 1102	69 / 1000.5	62 / 899
205° / 401°	116 / 1305	109 / 1580.5	101 / 1464.5	93 / 1348.5	86 / 1247	79 / 1145.5	72 / 1044	64 / 928	59 / 855.5
260° / 500°	106 / 1537	100 / 1450	93 / 1348.5	86 / 1247	80 / 1160	72 / 1044	66 / 957	59 / 855.5	52 / 754
316° / 600°	93 / 1348.5	88 / 1276	81 / 1174.5	76 / 1102	70 / 1015	64 / 928	59 / 855.5	52 / 754	47 / 681.5

**NOTE:** Rating shown are for our standard carbon steel, and type 316 stainless steel constructions. for other materials contact factory





## Process Gauges Series HD

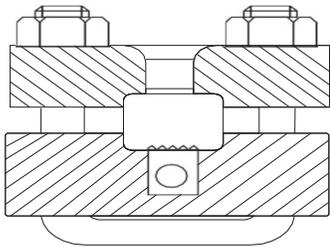
### Model HD- Heavy-Duty Gauge for High Pressure and Severe Service Applications

Flow & Control System® Model HD Process Gauges are engineered for maximum safety, reliability, and performance under demanding operating conditions. Available in both Reflex and Transparent types, these gauges meet the highest industrial standards.

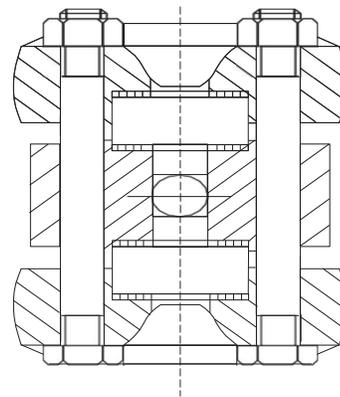
Each gauge features a solid, one-piece liquid chamber machined from bar stock steel, with interchangeable sectional covers and toughened glass secured by special high-strength bolts and nuts. The recessed gasket seats are precisely finished to ensure a tight, leak-proof seal between the chamber and glass.

All metallic surfaces, internal and external—including threaded areas—are rust-protected for long-term durability and dependable service in harsh environments.

Series: RTLI-HD (Reflex Type Level Indicator)



Series: TTLI-HD (Transparent Type Level Indicator)



### Lengths:

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

For longer ranges, multiple windows are incorporated into a single-piece liquid chamber.

### Connections:

Standard process connections are ½" NPT or ¾" NPT. Other options are also available.

### Liquid chambers:

Precision-machined from solid bar stock of cold-rolled carbon steel.

Accurately machined gasket seats prevent movement and ensure a leak-proof seal.

All chambers are fully rust-protected.

### Covers:

Manufactured from rust-resistant steel for durability and safety.

### Special Materials:

Options available for NACE-compliant and other special material requirements upon request.

### Bolts & Nuts:

Made from heat-treated chrome-molybdenum alloy steel, providing superior strength and corrosion resistance.

### Toughened Glass:

High-strength molded glass, resistant to thermal and mechanical shock, manufactured per BS 3463 and DIN 7081 standards. Mica or PCTFE shields are recommended for transparent gauges handling caustic, hydrofluoric acid, or other corrosive media.

### Gaskets:

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



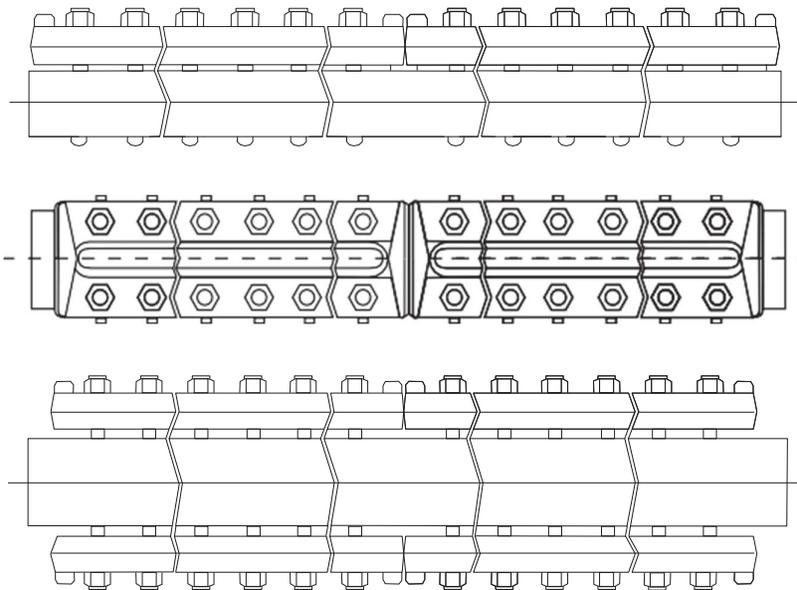
## Series HD

## Pressure Temperature Rating:

Pressure-Temperature Chart for Reflex Type Level Indicator Gauges (RTLI)									
Temperature °C/ °F	Series RTLI-HD					Window Size Number			
	1	2	3	4	5	6	7	8	9
	Pressure (Bar / PSI)								
40° / 104°	276 / 4002	266 / 3857	259 / 3755.5	248 / 3596	242 / 3509	229 / 3320.5	222 / 3219	213 / 3088.5	207 / 3001.5
95° / 203°	262 / 3799	254 / 3683	247 / 3581.5	236 / 3422	229 / 3320.5	221 / 3204.5	213 / 3088.5	206 / 2987	197 / 2856.5
150° / 302°	248 / 3596	239 / 3465.5	231 / 3349.5	224 / 3248	215 / 3117.5	207 / 3007.5	199 / 2885.5	192 / 2784	184 / 2668
205° / 401°	229 / 3320.5	221 / 3204.5	214 / 3103	207 / 3001.5	200 / 2900	192 / 2784	185 / 2682.5	177 / 2566.5	170 / 2465
260° / 500°	212 / 3074	204 / 2958	198 / 2871	190 / 2755	185 / 2682.5	177 / 2566.5	170 / 2465	162 / 2349	156 / 2262
316° / 600°	192 / 2784	186 / 2697	179 / 2595.5	172 / 2494	166 / 2407	160 / 2320	153 / 2218.5	147 / 2131.5	141 / 2044.5

Pressure-Temperature Chart for Transparent Type Level Indicator Gauges (PTLI)									
Temperature °C/ °F	Series TTLI - HD					Window Size Number			
	1	2	3	4	5	6	7	8	9
	Pressure (Bar / PSI)								
40° / 104°	207 / 3001.5	200 / 2900	190 / 2755	180 / 2610	172 / 2494	164 / 2378	155 / 2247.5	145 / 2102.5	138 / 2001
95° / 203°	197 / 2856.5	191 / 2769.5	181 / 2624.5	172 / 2494	162 / 2349	156 / 2262	147 / 2131.5	140 / 2030	131 / 1899.5
150° / 302°	192 / 2784	176 / 2552	169 / 2450.5	161 / 2334.5	155 / 2247.5	146 / 2117	138 / 2001	131 / 1899.5	122 / 1769
205° / 401°	174 / 2523	166 / 2407	160 / 2320	152 / 2204	145 / 2102.5	137 / 1986.5	131 / 1899.5	121 / 1754.5	116 / 1682
260° / 500°	161 / 2334.5	155 / 2247.5	150 / 2175	142 / 2059	133 / 1928.5	128 / 1856	121 / 1754.5	114 / 1653	106 / 1537
316° / 600°	142 / 2059	135 / 1957.5	129 / 1970.5	124 / 1798	119 / 1725.5	113 / 1638.5	105 / 1522.5	100 / 1450	93 / 1348.5

**Note:** Rating shown are for our standard carbon steel, and type 316 stainless steel constructions. for other materials contact factory



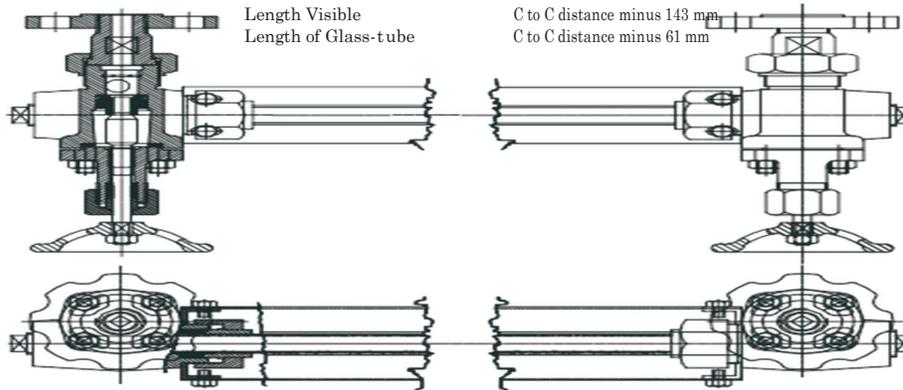


## TT Process Gauges Series:

### Model TT – Tubular Type Glass Gauges for Low-Pressure and Boiler Applications

Flow & Control System® Model TG Level Gauges are designed for low-pressure process and boiler drum applications, offering simple and reliable level indication.

Each gauge consists of a 19 mm OD borosilicate glass tube fitted with offset isolating valves at both ends for easy vessel connection. The Series-26 isolating valves feature a precision gland assembly that provides a secure, leak-free seal without stressing the glass tube.



Isolating Valve Model Series V26

### Lengths:

Standard single-glass lengths are available up to 200 mm vessel centers. Longer assemblies can be supplied on request.

**Valve Body:** Machined from high-quality carbon steel forging for strength and durability.

**Valve Bonnet:** Union-type bonnet, precisely machined from carbon steel for secure assembly and easy maintenance.

**Handwheel/Lever:** Made from ductile iron, ensuring robust and reliable operation.

**Packing:** Spindle packing consists of multi-ring, non-asbestos material compatible with standard services. Glass gland packing is available in rubber or PTFE.

**Carbon Steel Parts:** All carbon steel components are rustproofed to maximize corrosion resistance and extend service life.

**Special Materials:** Available to meet NACE MR-01-75 requirements or specific process liquid applications upon request.

**Valve Trim:** Renewable seat, plug/spindle, and ball check components manufactured from 316 stainless steel for superior corrosion resistance.

### Pressure Temperature Rating Pressure-Temperature Chart for Weld Pad Gauge Refer below:

Single Glass length (mm / inch)	Maximum Working Pressure for:	
	Temperature up to 65°C / 149°F with No Corrosion BARS / PSI	Steam Boiler Services up to 170°C / 338°F BARS / PSI
200 / 7.87	7 / 101.5	7 / 100
250 / 9.84	7 / 101.5	7 / 100
300 / 11.81	7 / 101.5	7 / 100
350 / 13.77	7 / 101.5	7 / 100
400 / 15.74	7 / 101.5	7 / 100
450 / 17.71	7 / 101.5	7 / 100
500 / 19.68	7 / 101.5	7 / 100
600 / 23.62	7 / 101.5	7 / 100

\*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.



## Tubular Gauge Valve: V26

## Optional Features and Accessories

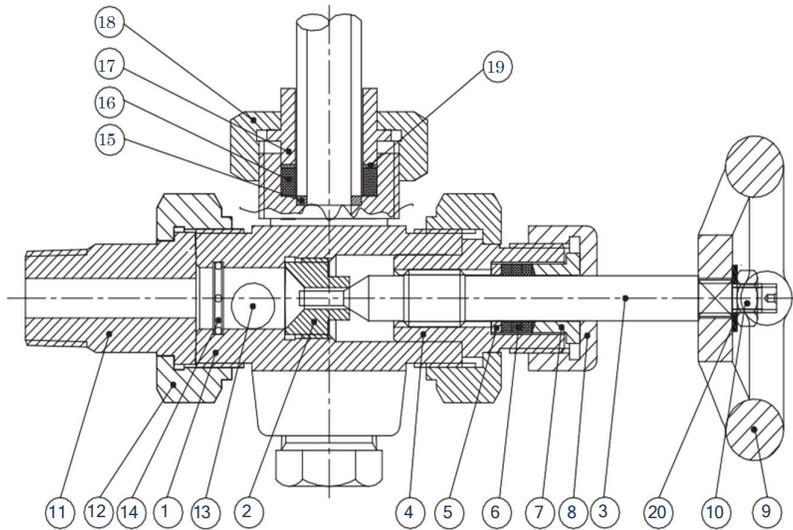
### Guard-Rod Protectors:

Supplied as standard with four guard rods and holders to protect the glass from mechanical impact. Optional box-type sheet metal protectors are also available.

### Safety Ball Check:

Valves can be equipped with a safety ball check for both pressurized and vacuum service, ensuring automatic isolation of the liquid in case of glass breakage.

Valve Series- V26



Part Number	Part Name	Quantity	Standard Material
1	Valve Body	1	Steel
2	Seat	1	316 SS
3	Stem	1	410 SS
4	Sleeve	1	Steel
5	Packing Ring	1	Steel
6	Packing (Valve)	4	Graphite
7	Gland (Valve)	1	Steel
8	Nut-Gland	1	Steel
9	Handwheel	1	Wcb
10	Nut-Stem	1	Steel
11	Union Pin	1	STEEL
12	Union Nut	1	STEEL
13	Ball Check	1	316 SS
14	Ball Check stop	1	316 SS
15	Glass Tube ring	1	STEEL
16	Packing (Glass Tube)	1	NITRILE
17	Gland (Glass Tube)	1	STEEL
18	Gland Nut	1	STEEL
19	Packing Top	1	PTFE
20	Tag Plate	1	SS 304



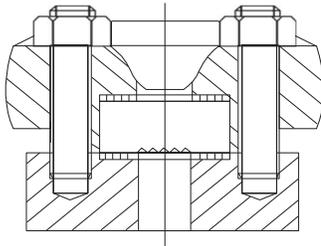
## Weld Pad: WPM:

### Model WP – Weld Pad Process Gauges for Direct Vessel Mounting:

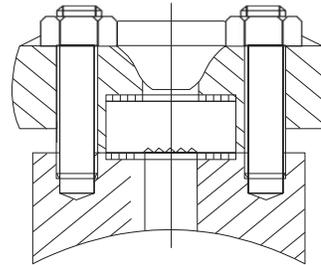
Flow & Control System® Model WP Flat Glass Level Gauges are designed to be welded directly to the vessel, forming an integral part of the equipment.

These gauges are ideal for applications where conventional gauge and valve assemblies are unsuitable—such as processes with suspended solids, where piping-induced thermal errors must be avoided, or where space limitations require a compact design. These gauges are available in a range of standard sizes with options for both **Reflex** and **Transparent** glass types. **Reflex** glasses are recommended for applications where clear liquid level indication is the primary requirement. **Transparent** gauges are preferred when visual observation of the process fluid or vessel interior is necessary, or when installed on opposite sides of a vessel for interface level applications.

WPM Series: (Flat Back)



WPM Series: (Radiused Back)



WPM Series

**Lengths:** Available in nine standard visible glass lengths. Longer ranges can be achieved by using multiple windows on a single-piece body or overlapping individual gauges for continuous visibility.

**Installation:** The weld pad body is directly welded to the vessel after cutting a slot or matching holes in the vessel wall corresponding to the gauge opening.

**Pressure Loads:** Model WP Gauges are designed to withstand process pressure but are not intended to replace the vessel's structural strength lost during wall cutting. Proper vessel wall reinforcement is required to prevent distortion during installation and operation.

**Gauge Body:** Machined from solid cold-rolled carbon steel bar stock and fully rust-protected for long service life.

**Covers:** Constructed from rustproofed steel for strength and corrosion resistance.

**Gaskets:** Die-cut from premium materials selected for compatibility with the process liquid.

**Bolts & Nuts:** Chrome-molybdenum alloy steel, heat-treated for high strength and rustproofed for maximum protection.

**Toughened Glass:** High-strength molded glass resistant to thermal and mechanical shock, manufactured under controlled conditions per BS 3463 and DIN 7081 standards. Mica or PCTFE shields are recommended for transparent gauges handling caustic, hydrofluoric acid, or other glass-corrosive media.

**Special Materials:** Available for NACE service or other specific application requirements upon request.

Pressure rating: Maximum permitted Working Pressure varies with Length - Refer below:

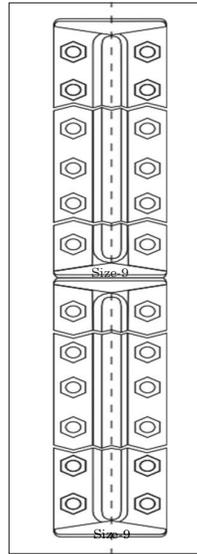
Pressure-Temperature Chart for Weld Pad Gauges (WPM)									
Series WPM	Window Size Number								
Temperature °C / °F	1	2	3	4	5	6	7	8	9
	Pressure (Bar / PSI)								
40° / 104°	207 / 3001.5	200 / 2900	190 / 2755	180 / 2610	172 / 2494	164 / 2378	155 / 2247.5	145 / 2102.5	138 / 2001
95° / 203°	197 / 2856.5	191 / 2769.5	181 / 2624.5	172 / 2494	162 / 2349	156 / 2262	147 / 2131.5	140 / 2030	131 / 1899.5
150° / 302°	192 / 2784	176 / 2552	169 / 2450.5	161 / 2334.5	155 / 2247.5	146 / 2117	138 / 2001	131 / 1899.5	122 / 1769
205° / 401°	174 / 2523	166 / 2407	160 / 2320	152 / 2204	145 / 2102.5	137 / 1986.5	131 / 1899.5	121 / 1754.5	116 / 1682
260° / 500°	161 / 2334.5	155 / 2247.5	150 / 2175	142 / 2059	133 / 1928.5	128 / 1856	121 / 1754.5	114 / 1653	106 / 1537
316° / 600°	142 / 2059	135 / 1957.5	129 / 1970.5	124 / 1798	119 / 1725.5	113 / 1638.5	105 / 1522.5	100 / 1450	93 / 1348.5

Rating shown are for our Standard Carbon Steel & Type 316 Stainless Steel Construction.

**Note:** It is the responsibility of the tank or vessel designer to determine the required strength and method of attachment for securing the gauge to the vessel.

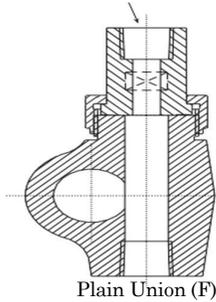


Weld Pad: WPM:



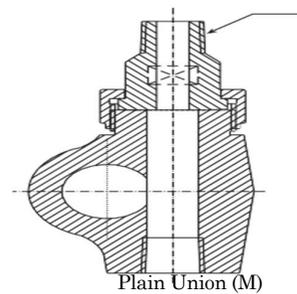
### Gauge Connection Options:

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

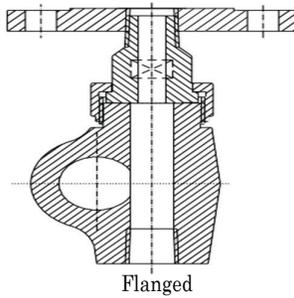


Plain Union (F)

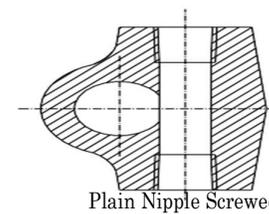
1/2" or 3/4" NPT (M)



Plain Union (M)

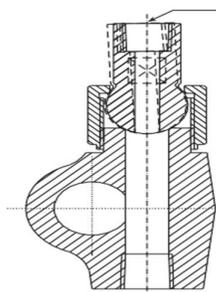


Flanged



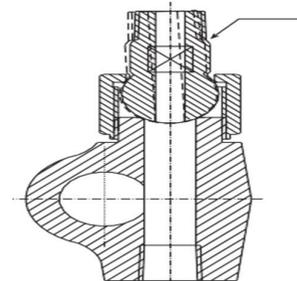
Plain Nipple Screwed

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



Spherical Union (F)

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



Spherical Union (M)



## Standard Visible Length Chart Dimensions & Weights Series: General Purpose (GP)

Select Size	Visible Range		Overall Length		Approximate Weight			
					Reflex, RTLI-M		Transparent TTLI-M	
	in	mm	in	mm	lbs.	Kgs	lbs.	Kgs
11	33/4	95	51/4	133	8	3.6	10	4.5
12	43/4	121	61/4	159	9	4.1	14	6.4
13	53/4	146	71/4	184	11	5.0	17	7.7
14	63/4	171	81/4	210	12	5.5	19	8.6
15	77/8	200	93/8	238	14	6.4	21	9.5
16	91/8	232	105/8	270	16	7.3	24	10.9
17	101/8	260	113/4	298	18	8.2	27	12.3
18	117/8	302	133/8	340	20	9.1	30	13.6
19	125/8	321	141/8	359	21	9.5	32	14.5
23	13	330	141/2	368	22	10.0	33	15.0
24	15	381	161/2	419	25	11.4	38	17.3
25	171/4	438	183/4	476	28	12.7	43	19.5
26	193/4	502	211/4	540	32	14.5	49	22.3
27	22	559	231/2	597	35	15.9	54	24.5
28	251/4	641	263/4	679	40	18.2	61	27.7
29	263/4	679	281/4	718	43	19.5	64	29.1
36	303/8	772	317/8	810	48	21.8	73	33.2
37	333/4	857	351/4	895	53	24.1	80	36.4
38	385/8	981	401/8	1019	60	27.3	92	41.8
39	407/8	1038	423/8	1076	64	29.1	97	44.1
47	451/2	1156	47	1194	71	32.3	107	48.6
48	52	1321	531/2	1359	80	36.4	122	55.5
49	55	1397	561/2	1435	85	38.6	129	58.6
57	571/4	1454	583/4	1492	88	40.0	134	60.9
58	653/8	1661	667/8	1699	100	45.5	152	69.1
59	691/8	1756	705/8	1794	106	48.2	161	73.2
68	783/4	2000	801/4	2038	120	54.5	187	85.0
69	831/4	2115	843/4	2153	127	57.7	196	89.1
78	921/8	2340	935/8	2378	140	63.6	221	100.5
79	973/8	2473	987/8	2511	148	67.3	230	104.5
88	1051/2	2680	107	2718	160	72.7	254	115.5
89	1111/2	2832	113	2870	169	76.8	265	120.5

- All dimensions in millimeters.
- All weights re in kilograms
- All information stated above is approximate and is given for Guidance only
- Support brackets are provided on all gauges consisting of 4-5 sections or more. For visible lengths other than those listed in the chart, please contact the factory.



## Optional Accessories:

Flow & Control System® supplies variety of accessories with Level Gauges, on request.



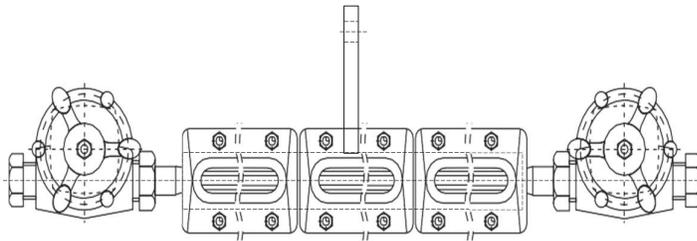
### 1) Illuminator:

Transparent Level Gauges are supplied with illuminators, available in both explosion-proof and weather-proof versions.



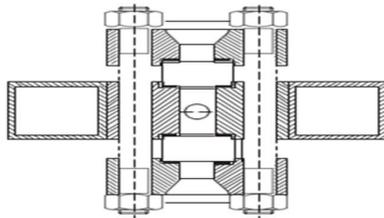
### 2) Scales:

A metallic engraved scale can be supplied with custom graduations as per user requirements.

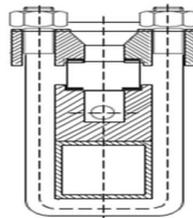


### 3) Support Brackets:

Recommended whenever Gauge Length exceeds 1.5 metre.



H Type Transparent



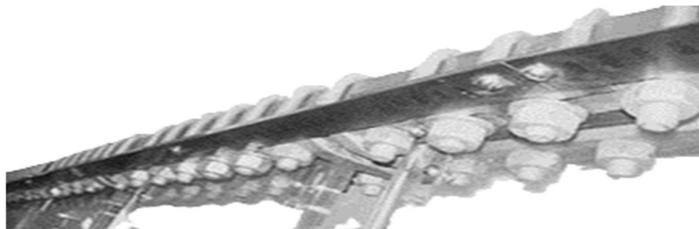
M Type Reflex

### 4) Heating Jackets:

Can be provided for process gauge both for reflex and transparent types.

### 5) Non-Frosting Shield:

Supplied for subzero application for both reflex and transparent type level gauges.





Gauge Valve:

| 26

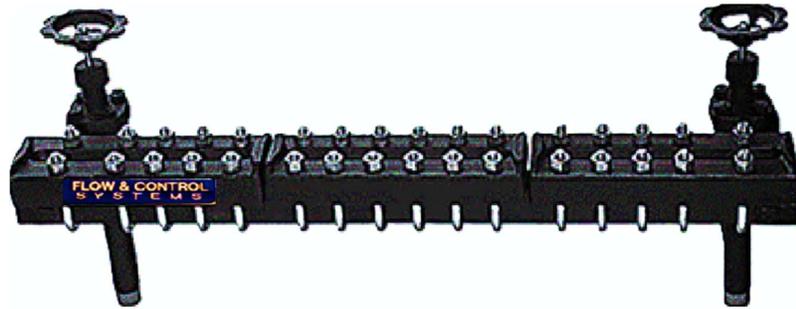
## Index: Gauge Valve

Gauge Valve	26-27
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Series 80	31-32
Tank Connection Options	33
Gauge Valve Combinations & Minimum C.C. Distance	34
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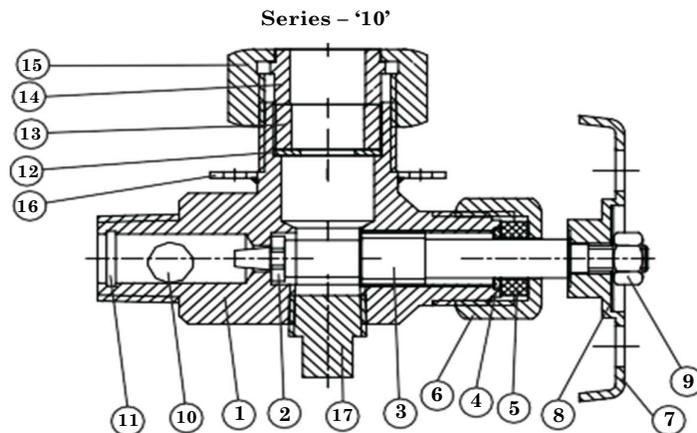
## Gauge Valve: Options



### Series '10': 100 LBS @ 100 °F

Flow & Control System® Model 10-TT Valves feature a straight-body design with an integrated seat and EPDM (Elastomer) glass tube packing bush, along with a PTFE valve cone for reliable sealing.

These valves are designed for **low-pressure and low-temperature** applications and are commonly used with tubular type level gauges. Each valve is equipped with **mounting clamps** for securing glass protection rods and includes a **ball check arrangement** for added safety.

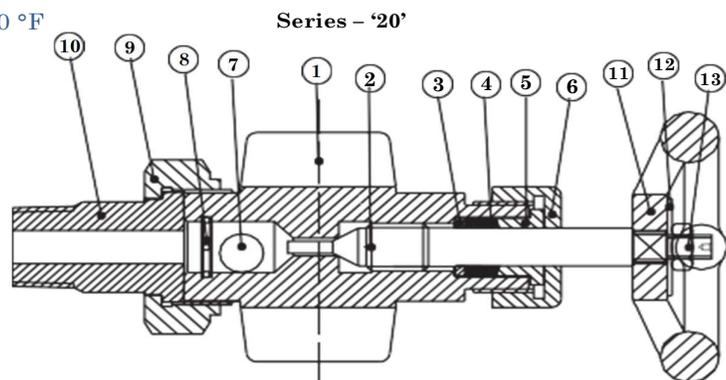


### Series '20': 2400 LBS @ 100 °F, 1400 LBS @ 750 °F

Flow & Control System® Series 20 valves feature integrated bonnet, drop-forged offset steel bodies with stainless steel trim and a wide choice of connections. These valves are designed for high-pressure and high-temperature applications.

Their design incorporates ball check arrangements and union gauge connections.

They are equipped with union gauge connections which permit simple installation and easy access to the ball check.

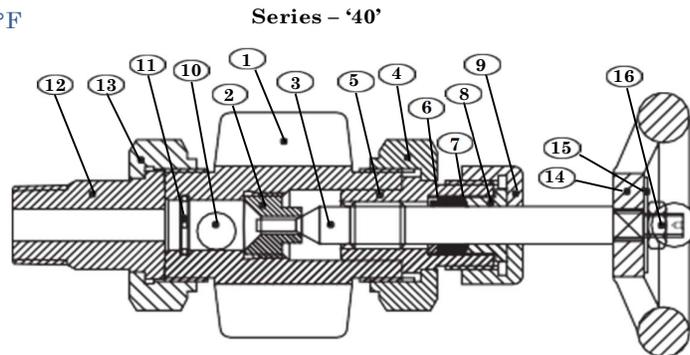


### Series '40': 4000 LBS @ 100 °F, 1500 LBS @ 750 °F

Flow & Control System® Series 40 valves are designed and built to the highest quality standards. They feature regrindable and renewable seats, with all carbon steel parts completely rustproofed to ensure long, trouble-free service.

The union gauge connection allows the gauge to be turned to any desired angle and removed without disturbing the valve, saving time during maintenance.

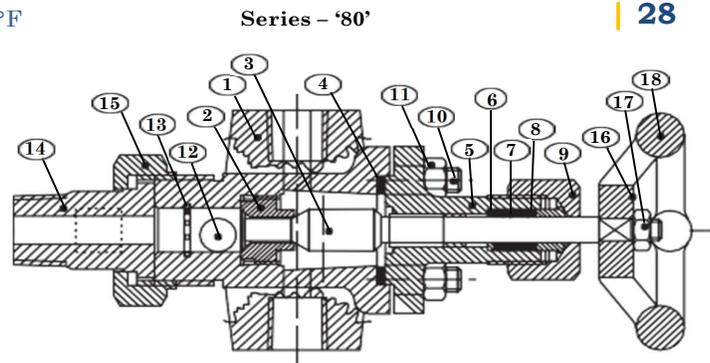
These valves also feature a union bonnet and stem back seating design.





Series '80': 4000 LBS @ 100 °F, 1500 LBS @ 750 °F

Flow & Control System® Series 80 valves are designed with a bolted bonnet construction. These valves are equipped with stainless steel ball checks, stem back seating, and offset construction. Union gauge connection is available as an optional feature.



Series - '80'

Series '10': 100 LBS @ 100 °F

**Standard Features:**

**Soft Seat Valve Cone:**

The valve features a soft-seating PTFE valve cone capped at the stem tip to ensure zero leakage when closed.

**Straight Body Pattern:**

The valve is designed with a straight body pattern for reliable operation and easy installation.

**Standard Connections:**

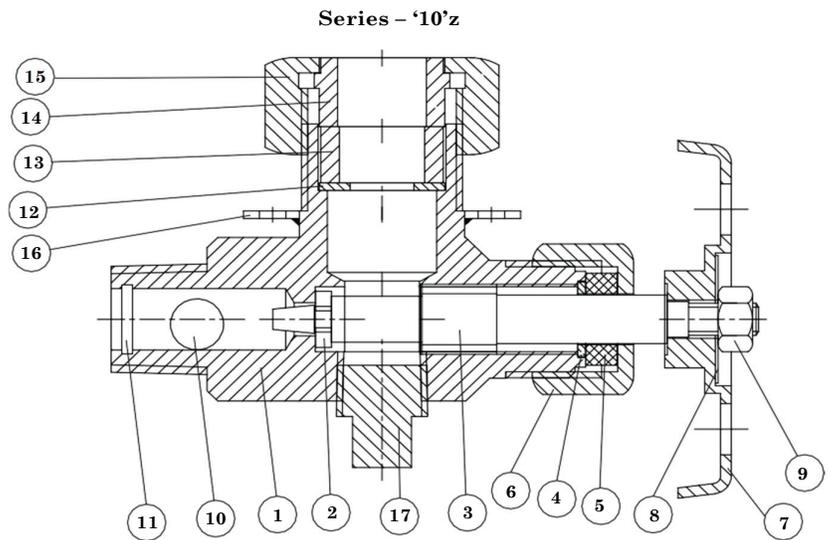
- Vessel: ¼" NPT male
- Drain: ¼" NPT female
- Gauge: ⅜" NPT female

**Optional Connections:**

- Vessel: ½" NPT male
- Vent & Drain: ¼" NPT plugged

**Safety Shut-Off:**

Valves are equipped with a stainless-steel ball check that automatically shuts off the flow of medium in case of glass breakage.



Series - '10'z

Part Number	Part Name	Standard Material
1	Valve Body	A-105
2	Valve Washer	Teflon
3	Stem	SS-304
4	Stem Packing Washer	SS-316
5	Stem Packing	Grafoil
6	Packing Nut	Steel
7	Handwheel	Zinc
8	Tag Name Plate	SS-304
9	Stem Nut	Steel
10	Ball Check	SS-316
11	Ball Check Stop	SS-304
12	Washer	SS-304
13	Glass Packing	EPDM
14	Packing Gland	Steel
15	Glass Packing Nut	Steel
16	Mounting Clamp	Steel
17	Plug	Steel



Series '20': 2400 LBS @ 100 °F, 1400 LBS @ 750 °F

### Standard Features:

#### Back seating Stem:

When the valve is fully opened, the stem seats against the bonnet, allowing the valve to be repacked while under pressure.

#### Straight Body Pattern:

The straight body is designed in a simple angle pattern, with the gauge, drain, and vessel connections positioned on intersecting centerlines.

#### Offset Body Pattern:

The offset body follows an angle pattern design, where the centerline of the gauge and drain connections is offset by 22 mm from the vessel connection centerline. This allows internal cleaning of a top and bottom connected gauge glass by removing the vent or drain plugs—without the need to remove the gauge.

#### Union Gauge Connection:

Both straight and offset body types can be supplied with a union gauge connection, allowing the gauge to be rotated to any desired viewing angle for convenient visibility. This feature also permits gauge removal without disturbing the valves, saving time during cleaning or maintenance.

#### Standard Connections:

Vessel: ¼" NPT male  
Drain: ½" NPT female  
Gauge: ½" NPT female

#### Optional Connections:

**Vessel:** ½" NPT male or ¾" NPT male, available for socket weld or flanged connections as per requirement. Series 80 valves can be supplied with ANSI 150, 300, or 600 integral flanges.

#### Gauge:

For union-connected valves — ½" NPT male or ¾" NPT male.

For all valves — ¾" NPT female screwed or ½" / ¾" female socket weld recess.

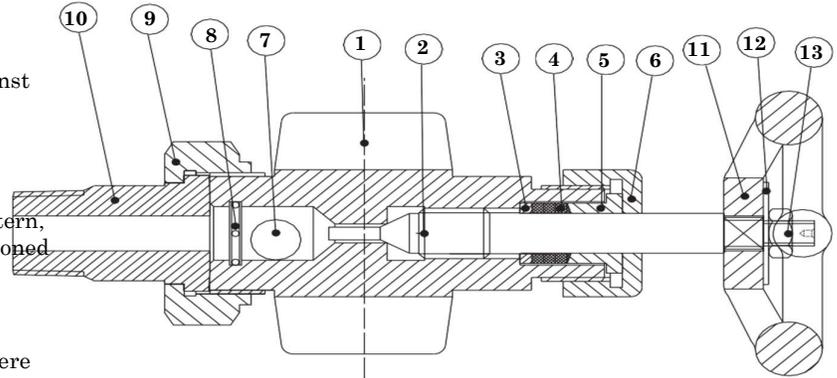
#### Vent/Drain:

¾" NPT female screwed or ½" / ¾" female socket weld recess.

Vent and drain valves available on request. All connections can also be supplied screwed.

#### Safety Shut-Off:

Valves can be provided with a stainless-steel ball check that instantly shuts off the flow of the process medium in case of glass breakage. The ball operates upstream from the seat and can be furnished for vacuum service if required.



Part Number	Part Name	Standard Material
1	Valve Body	A-105 / F-316L
2	Spindle	SS-316L
3	Gland Stopper	SS-316
4	Packing Ring	Graphite
5	Gland Follower	SS-316
6	Gland Nut	Steel
7	Ball	SS-316
8	Ball Stopper	SS-304
9	Tail Piece	Steel
10	Union Nut	Steel
11	Hand Wheel	WCB
12	Name Plate	SS-304
13	Hand Wheel Nut	Steel



Series '40': 4000 LBS @ 100 °F, 1500 LBS @ 750 °F

Series – '40'

30

### Standard Features:

#### Back seating 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 a simple angle pattern design, with the gauge, drain, and vessel connections positioned on intersecting centerlines.

#### Offset Body Pattern:

The offset body is an angle pattern valve, with the centerline of the gauge and drain connections offset by 22 mm from the centerline of the vessel connections. This allows the interior of a top and bottom connected gauge glass to be cleaned by removing the vent or drain plugs, without detaching the gauge.

#### Union Gauge Connection:

Both the straight and offset patterns can be supplied with a union gauge connection, allowing the gauge to be turned to any desired angle for convenient visibility. This feature also enables gauge removal without disturbing the valves, saving time during maintenance and cleaning.

#### Standard Connections:

Vessel: 3/4" NPT male  
Drain: 1/2" NPT female  
Gauge: 1/2" NPT female

#### Optional Connections:

**Vessel:** 1/2" NPT male or 3/4" NPT male, available for socket weld or flanged connections as per requirement.  
Series 80 valves can be supplied with ANSI 150, 300, or 600 integral flanges.

#### Gauge:

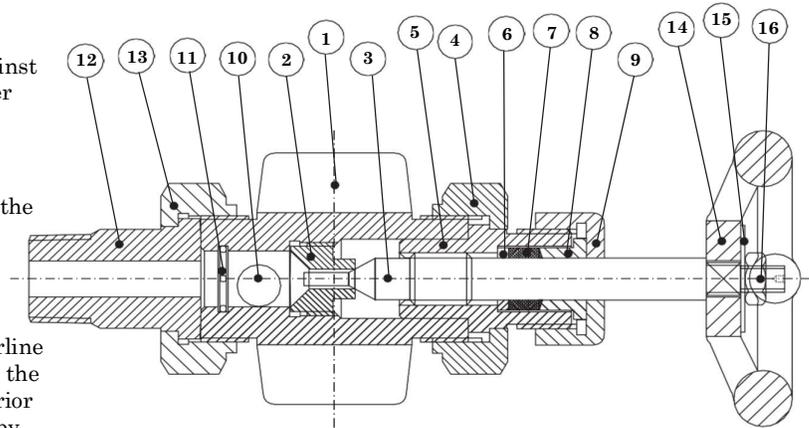
On union-connected valves: 1/2" NPT male or 3/4" NPT male.  
On all valves: 3/4" NPT female screwed and 1/2" or 3/4" female socket weld recess.

#### Vent/Drain:

3/4" NPT female screwed and 1/2" or 3/4" female socket weld recess.  
Vent and drain valves available on request. Connections 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.



Part Number	Part Name	Standard Material
1	Valve Body	A-105 / F-316L
2	Renewable Seat	SS-316L
3	Spindle	SS-316
4	Bonnet Nut	Steel
5	Bonnet	Steel
6	Gland Stopper	SS-316
7	Packing Ring	Graphite
8	Gland Follower	SS-316
9	Gland Nut	Steel
10	Ball	SS-316
11	Ball Stopper	SS-304
12	Tail Piece	Steel
13	Union Nut	Steel
14	Hand Wheel	WCB
15	Name Plate	SS-304
16	Hand Wheel Nut	Steel
17	Gland Nut	Steel



## Gauge Valves:

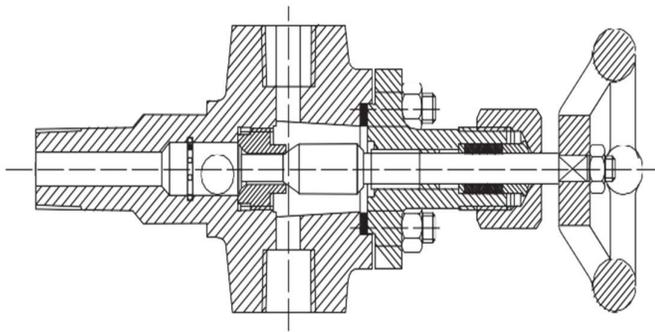
31

Gauge Valves with Bolted Bonnet and Inside Screw, Designed to Reduce Threaded Connections. These rugged valves are engineered and manufactured for reliable performance with flat glass level gauges, instrumentation piping, and various industrial applications.

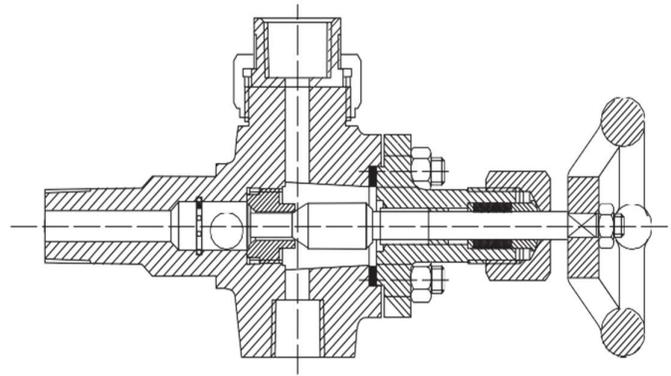
The bolted bonnet and inside screw design minimize threaded joints, ensuring enhanced sealing integrity, easy maintenance, and long service life even under demanding operating conditions.

### Series – '80'

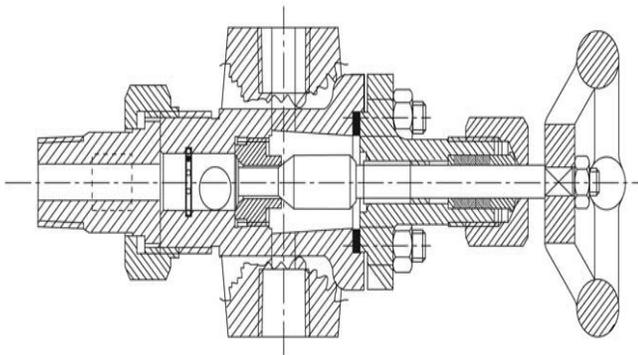
Pressure Rating per intermediate rating ANSI 1250



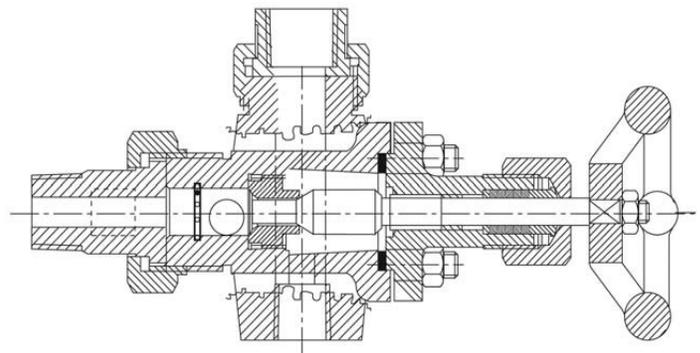
**83** Straight Pattern with Female NPT Gauge Connection. Male Vessel Connection on Solid Tank



**84** Straight Pattern with Female NPT Union Gauge Connection. Male Vessel Connection on Solid Tank



**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



## Gauge Valve: Options

Series – ‘80’

32

### Standard Features:

#### Back seating Stem:

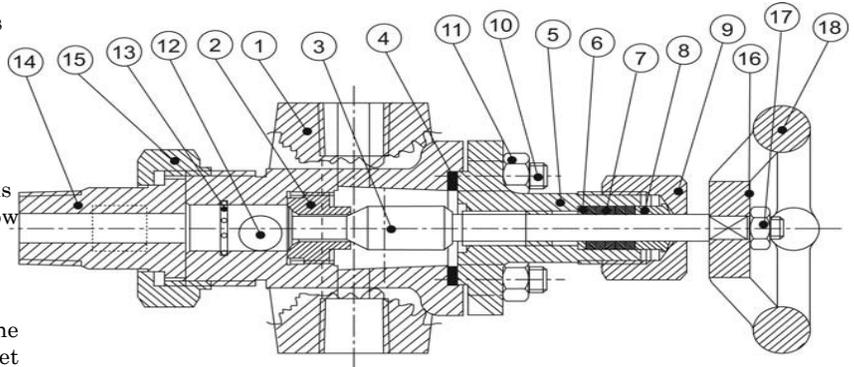
When the valve is opened to its limit, the stem seats firmly against the bonnet, allowing the valve to be repacked safely while under pressure.

#### Straight Body Pattern:

The straight body follows a simple angle pattern design, with the gauge, drain, and vessel connections positioned on intersecting centerlines for optimal flow and accessibility.

#### Offset Body Pattern:

The offset body is an angle-pattern valve in which the centerline of the gauge and drain connections is offset by 22 mm from the centerline of the vessel connection. By removing the vent or drain plugs, the interior of a top and bottom connected gauge glass can be cleaned without dismantling the gauge.



#### Union Gauge Connection:

Both straight and offset valves can be supplied with a union gauge connection, allowing the gauge to be turned to any desired viewing angle. This also enables removal of the gauge without disturbing the valves, saving valuable maintenance time.

#### Standard Connections:

Vessel: ¼” NPT male  
Drain: ½” NPT female  
Gauge: ½” NPT female

#### Optional Connections:

**Vessel:** ½” NPT male or ¾” NPT male connections available for socket weld or flanged configurations as required.

Series 80 valves can also be supplied with ANSI 150, 300, or 600 integral flanges.

#### Gauge:

For union-connected valves, ½” NPT male or ¾” NPT male connections are available.

All valves are provided with ¾” NPT female screwed connections and ½” or ¾” female socket weld recesses.

#### Vent/Drain:

¾” NPT female screwed and ½” or ¾” female socket weld recess connections.

Vent and drain valves can be supplied on request. Connections are also available in screwed design.

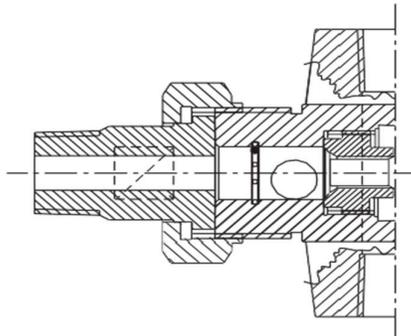
#### Safety Shut-Off:

Valves may be fitted with a stainless-steel ball check, which automatically isolates the medium in the event of glass breakage. The ball operates upstream from the seat and can also be supplied for vacuum service if required.

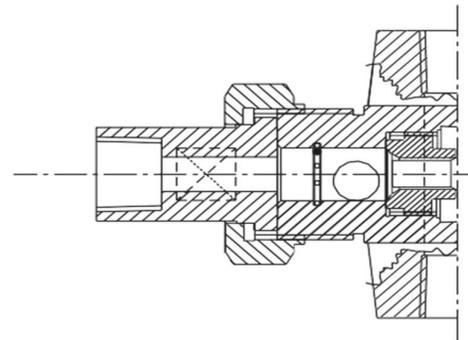
Part Number	Part Name	Standard Material
1	Valve Body	A-105 / F-316L
2	Renewable Seat	SS-316
3	Spindle	SS-316L
4	Bonnet Gasket	SP Wound, SS 316+ Grafoil
5	Bonnet	A-105/ F-316L
6	Gland Stopper	SS-316
7	Packing RING	Graphite
8	Gland Follower	SS-316
9	Gland Nut	Steel
10	Bonnet Stud	A-193 GR. B7
11	Bonnet Nut	A-194 GR. 2H
12	Ball	SS 316
13	Ball Stopper	SS 304
14	Tail Piece	Steel
15	Union Nut	Steel
16	Hand Wheel	WCB
17	Name Plate	SS 304



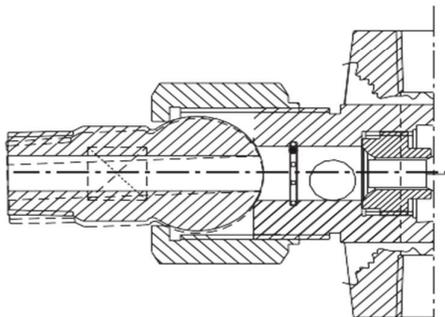
## Gauge Valve: Tank Connection Options



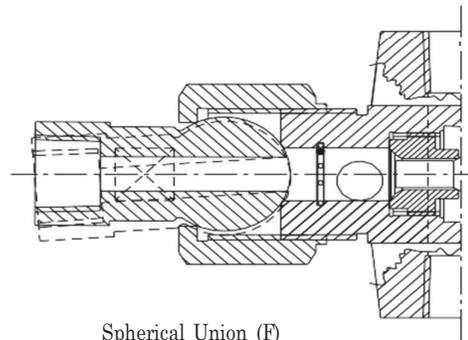
Plain Union (M)



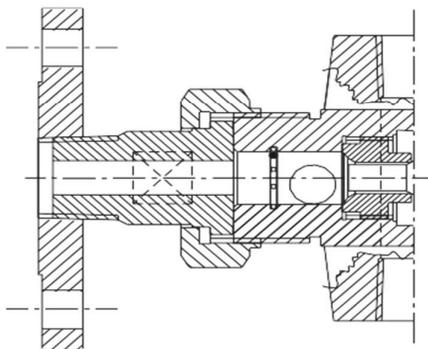
Plain Union (F)



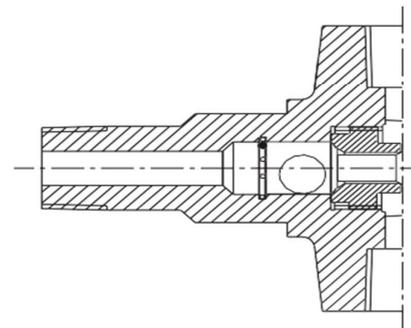
Spherical Union (M)



Spherical Union (F)



Flange Plain Union (M)



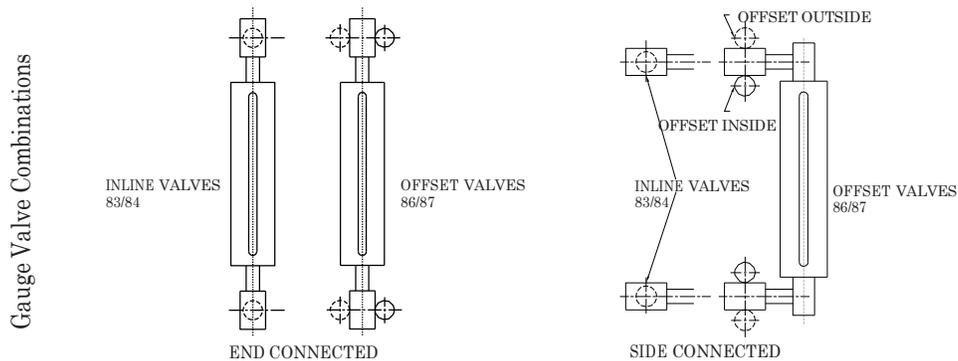
Solid Shank (M)



## Gauge Valve: Liquid Level Gauges and Valves Minimum Vessel Centers (All dimensions in mm) and Gauge-Valve Combinations

Connection		End /Top & Bottom										Side/Side					
Series		TL & RL		TM & RM				TH		RH		TL, RL, TM, RM, TH/RH					
Gauge Conn Size		1/2" & 3/4"		1/2"		3/4"		1/2"		3/4"		1/2"			3/4"		
Size No	Visible Length	86 87		86 87		86 87		86 87		86 87		In Line	Offset In Side	Offset Out Side	In Line	Offset In Side	Offset Out Side
		83 84	83 84	83 84	83 84	83 84	83 84	83 84	83 84	83 84	83 84	83 84	86 87	86 87	83 84	86 87	86 87
11	95	248	308	222	283	235	295	254	314	235	295	133	89	178	143	98	187
12	121	273	333	248	308	260	321	279	340	260	321	159	114	203	168	124	213
13	146	298	359	273	333	286	346	305	365	286	346	184	140	229	194	149	238
14	171	324	384	298	359	311	372	330	391	311	372	210	165	254	219	175	254
15	200	352	413	327	387	340	400	359	419	340	400	238	194	283	248	203	292
16	232	384	445	359	419	371	432	391	451	371	432	270	225	314	279	235	324
17	260	413	467	387	448	400	460	419	479	400	460	298	254	343	308	264	352
18	302	454	514	429	489	441	502	460	521	441	502	340	295	384	349	305	394
19	321	473	533	448	508	460	521	479	540	460	521	359	314	403	368	324	413
23	330	483	543	457	518	470	530	489	549	470	530	368	324	413	378	333	422
24	381	533	594	508	568	521	581	540	600	521	581	419	375	464	429	384	473
25	438	591	651	565	625	578	638	597	657	578	638	476	432	521	486	441	530
26	502	654	714	629	689	641	702	660	721	641	702	540	495	584	549	505	594
27	559	711	772	686	746	699	759	718	778	699	759	597	552	641	606	562	651
28	641	794	848	768	829	781	840	800	860	781	840	679	635	724	689	645	733
29	679	832	892	806	867	819	879	838	899	819	879	718	673	762	727	683	772
36	772	924	984	899	959	911	972	930	991	911	972	810	765	854	819	775	864
37	857	1010	1070	984	1045	997	1057	1016	1076	997	1057	895	851	940	905	860	949
38	981	1133	1194	1108	1168	1121	1181	1140	1200	1121	1181	1019	975	1064	1029	984	1073
39	1038	1191	1251	1165	1226	1178	1238	1197	1257	1178	1238	1076	1032	1121	1086	1041	1130
47	1156	1308	1368	1283	1343	1295	1356	1314	1375	1295	1356	1194	1149	1238	1203	1159	1248
48	1321	1473	1534	1448	1508	1461	1521	1480	1540	1461	1521	1359	1314	1403	1368	1324	1413
49	1397	1549	1610	1524	1584	1537	1597	1556	1616	1537	1597	1435	1391	1480	1445	1400	1489
57	1454	1607	1667	1581	1641	1594	1654	1613	1673	1594	1654	1492	1448	1538	1502	1457	1546
58	1661	1813	1873	1788	1848	1800	1861	1819	1880	1800	1861	1699	1654	1743	1708	1664	1753
59	1756	1908	1969	1883	1943	1895	1956	1915	1975	1895	1956	1794	1749	1838	1803	1759	1848
68	2000	2153	2213	2127	2188	2140	2200	2159	2219	2140	2200	2038	1994	2083	2048	2003	2092
69	2115	2267	2327	2242	2302	2254	2315	2273	2334	2254	2315	2153	2108	2197	2162	2118	2207
78	2340	2492	2553	2467	2527	2480	2540	2499	2559	2480	2540	2378	2334	2423	2388	2343	2432
79	2473	2626	2686	2600	2661	2613	2673	2632	2692	2613	2673	2511	2467	2556	2521	2477	2565
88	2680	2832	2892	2807	2867	2819	2880	2838	2899	2819	2880	2718	2673	2762	2727	2683	2772
89	2832	2985	3045	2959	3019	2972	3032	2991	3051	2972	3032	2870	2826	2915	2880	2835	2924
98	3019	3172	3232	3146	3207	3159	3219	3178	3239	3159	3219	3058	3013	3102	3067	3023	3112
99	3191	3343	3404	3318	3378	3331	3391	3350	3410	3331	3391	3229	3185	3273	3239	3194	3283

\*Note: Standard connections are NPT female screwed on gauges and valves, assembled using SCH 160 male threaded adaptors. Other connection options—such as male and female unions, socket welds, or flanged ends—are available on request. Center-to-center dimensions for these configurations are subject to confirmation by Flow & Control System®.





## Data required to submit the quotation:

- Product Code
- Name of the Liquid
- Operating Temperature
- Operating Pressure
- Operating Density
- Center to Center Distance
- Operating Specific Gravity
- Connection Details
- Material Of Construction
- Accessories
- Nozzle Size



## Assured Quality & Less Service Cost

### Service Policy

Owners may return any Flow & Control System instrument or component for rebuilding or replacement. Returns must be shipped prepaid. The company will repair or replace the gauge free of charge, excluding transportation costs, provided that, if:

- Returned within the warranty period; and
- The factory inspection finds the cause of the claim to be covered under the warranty.

If the issue arises from conditions beyond our control or is not covered under warranty, charges for labour and replacement parts will apply. In certain cases, it may be necessary to ship replacement parts or a new instrument before the original is returned.

To arrange this, please provide the model and serial numbers of the instrument to be replaced. Credit for returned materials will be determined based on warranty applicability. Claims for misapplication, labour, or consequential damages will not be accepted.

### Return Material Procedure

To ensure efficient processing of returned materials, a Return Material Authorization (RMA) number must be obtained from the factory before shipment. This can be arranged through your local Flow & Control System representative or by contacting the factory directly. Please provide the following information:

- |                      |                            |                  |
|----------------------|----------------------------|------------------|
| 1. Company Name      | 2. Description of Material | 3. Serial Number |
| 4. Reason for Return | 5. Application             |                  |

Units previously used in a process must be thoroughly cleaned in accordance with Occupational Safety and Health Administration (OSHA) standards before return. A Material Safety Data Sheet (MSDS) must accompany any unit exposed to process media. All returns must be shipped prepaid, and all replacements will be dispatched F.O.B. factory.

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**Manufacturing Units:**

**MIDDLE EAST**

Flow & Control System Private Ltd.  
INTERNATIONAL SOLUTIONS 4 INDUSTRIAL SERVICES

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