Globe United

REFLEX LEVEL GAUGES

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Features

- Reflex level guage applicable upto 200 kg/cm and upto 400 deg cent
- Cryo applications upto -196 deg cent
- Toughened borosilicate glass with serrations
- For applicability in critical, acidic, cryo and temperature zone
- IBR certified device available
- NACE, H2S service compatibility applicable
- Non frost extension
- Heat tracing available
- Applicable for refinery, petrochemical, chemical, power, radioactive, fertilizer

Concept and Principle of operation

Liquid Level Gauge provides direct observation of liquid level in a tank/vessel rising and falling level of the liquid inside the tank/vessel can be observed through the glass assembled in the gauge.

Reflex Liquid Level Gauges use the R-form sight glasses. One side surface of Reflex Glass to use flat glass has several grooves for reflecting prism. The principle of the Reflex Glass is based on the difference in the refractive indices of liquid and gas or in particular of water and steam. Liquid level shows conspicuously dark hard colour for liquid space and light white colour for empty space. These Reflex series are not used with a mica shield. The Reflex Gauge is assembled firmly with gasket, reflex glass, cushion gasket and gauge cover on the body by U-bolts.

Reflex Liquid Level Gauges, designed and built for a wide range of high temperature and high pressure applications. Our reflex level gauge is used to make, besides other applications include observation of the level of corrosion-proof and chromatic liquids. The most advantage of this type is for easy level reading of boiling liquids. When liquids are boiling, their bubbles make the surface level indistinct. The manual adjustment of isolation valve at the input of the media entering the chamber reduces the bubbling. Therefore the level gauge ease to read the level or bubbling liquids. It also provides advantages for highly dense and viscous liquids, as the body is made of forged construction only.

This level gauge is designed and manufactured for easy and accurate reading the liquid level of highly foamy liquids. The gauge has a relatively spacious internal area where foamy liquid is held from forming foams.

Technical Specifications: Technical Data

Type of Gauge	a) Low Pressure - 30kg/cm^2 b) Medium Pressure - 100kg/cm^2 c) High Pressure - 200kg/cm^2
Mounting Orientation	Top - Bottom Vertical Side - Side Right Side - Side Left Side - Side Back (Right/Left)
Temperature	Upto 400^0 C
CCD	Max. upto 3000mm
Liquid Chamber	In forged construction: Carbon steel, SS304, SS304L, SS316, SS316L, Monel, Titanium, Inconnel 600, Hastelloy C, PolyPropylene, Other on request (Subject to pressure & Temperature Condition)
Cover Plate	In forged construction: Carbon steel, SS304, SS304L, SS316, SS316L, Monel, Titanium, Inconnel 600, Hastelloy C, PolyPropylene
Cushion	CAF, PTFE, Grafoil with SS prignated
Gasket	CAF, PTFE, Grafoil with SS prignated
Fastner	SS, ASTM A 193 Gr B7 / A194 Gr 2H / Anodized Aluminium (for PP moc)

Technical Specifications: Table-1 Technical Data

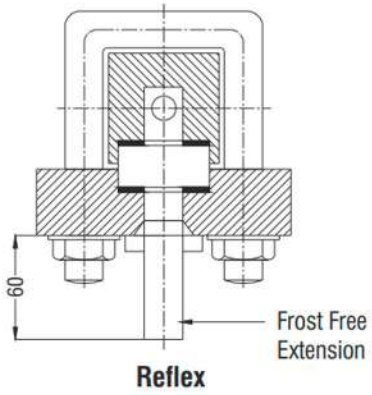
Scale	Aluminium anticorossion powder coated and SS engraved in mm
Glass	Applicable till 320°C as per DIN 708 / 7081, BS 3463, JS B 8211, Toughened Borosilicate glass
Process Connection	Screwed / Flanged / Socket Weld and other on request.
Isolation Valve	Auto Ball Check Valve a) Screwed Bonnet offset construction suitable upto 50 kg/cm^2 b) Bolted Bonnet offset construction suitable above 50 kg/cm^2 c) Material Construction as per wetted part
Vent	½" Plugged / ½" Needle Valve / ½" Ball Valve / ½" Globe Valve / ½" Gate Valve
Drain	½" Plugged / ½" Needle Valve / ½" Ball Valve / ½" Globe Valve / ½" Gate Valve
Optional	a) Non-Frost Extension for extreme low temperature application b) Heating Jacket - to read the level of high congelable or ebullient liquid c) IBR Certification

Special Application

Cryo Application

If a conventional level gauge is used for extreme low temperature applications, it becomes difficult to observe the level of liquid as the gauge front tends to freeze. To get rid of this problem, an acrylic non-frosting plate is mounted in front of the gauge. So the observation of the liquid level is much easier this way.

Our Non-Frosting Reflex Level Gauges are classified depending on the process temperature, they height of the non-frosting plate window may be selected from 80 to 250 mm.



Technical Specifications: Temp rating and dimensions of non-frosting plates

Temperature	°C 0...-20	-21...-45	-46...-100	-101...-160	-161...-200
Recommended Materials	LTCS	LTCS	304SS	316SS	316LSS
Acrylic Height mm	80	100	150	200	250

Jacket Type

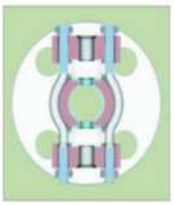
For a jacket type requirement application. This gauge is used to read the level of high congeal able or ebullient liquids. The principle is to inflow a steam for congeal able liquids and a cold water for enbullient liquids through the inside of the jacket to ensure accurate and reliable level observation.

This type is used for observing the fluid by changing it into state of liquid after heating or cooling it through jacket according to fluid's features. Our standard is that the inlet of the jacket for steam or cold water is ½" NPT(M) and or 15 NB flange. Others are available on request.

Corrossion Application

Cryo Application

More severe demands may often be required on liquid level gauges in terms of resistance to corrosion, and this is accomplished by lining or coating all wetted parts. The most important aspect of this process is the preparation of the metal substrate.



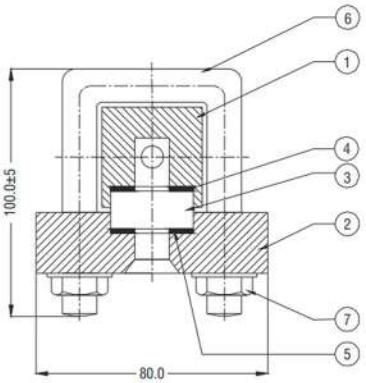
Construction and dimensional cross sectional overview

The gauge consists of a body having machined to have a liquid where high
temperature are liable to occur, the glass is toughened borosilicate glasses are used. These reflex gauges preferably used for reservoir tanks that require a relatively long visible length by constructing the supporter.

The reflex level gauge is assembled firmly with gasket, reflex glass, cushion gasket and gauge cover on the body by U bolts.

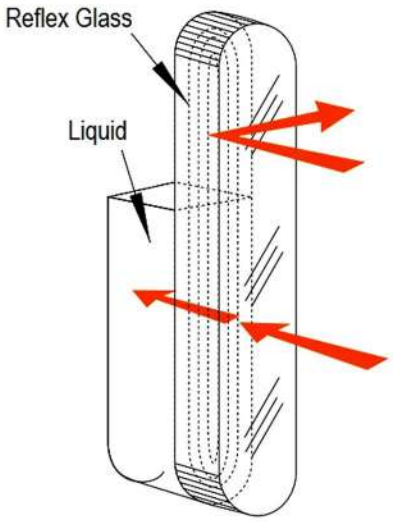
The most advantage of this type is that it has no invisible sections (dead band). Our standard overlapped section is 10 mm as minimum and the gauge is so designed that supporting brackets can be equipped to protect a long multiple connected gauge from distortion of fall down. The scale plate to mount alongside the gauge may be available on request by customers to observe the liquid level more accurately.

The gauge is used with a special reflex type gauge glass which has wider V-shaped refractive grove and red coating on the outside of the glass. It provides a clear observation of liquid level because of made refracting red colour on th V-groove for steam or beyond portion of the level and it's colour of fluid itself for liquid portions.

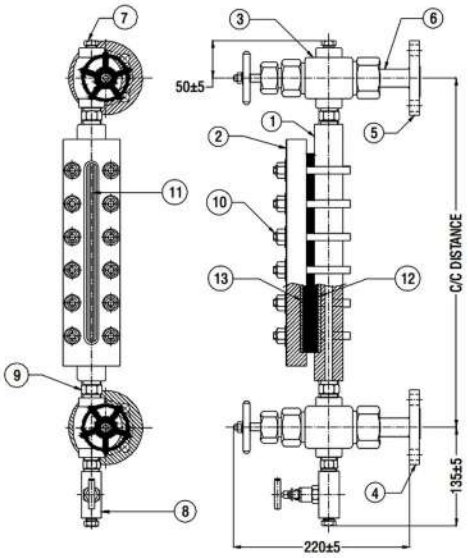


Reflex

1 Liquid Chamber
2 Cover Plate
3 Reflex Glass
4 Gasket
5 Cushion
6 “u” Bolt



Principle of reflex level glass

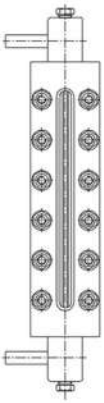


1 Liquid Chamber
2 Cover Plate
3 Isolation Valve
4 Inlet Process Flange
5 Outlet Process Flange
6 Tail Piece
7 Vent Plug
8 Drain Valve
9 Nipple
10 Fastener
11 Reflex Glass
12 Gasket
13 Cushion

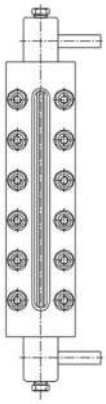
Basic GA drawing indicating the top bottom design with CCD interface with visible length. The distance between cover plate and bolted bonnet offset construction is 70mm and that of screwed bonnet is 80mm. The glass edge is approx 8mm more in each case against the isolation valve in top bottom design

Process Orientation

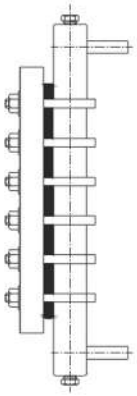
Top/Bottom



Side/Side (Right)



Side/Side-Left



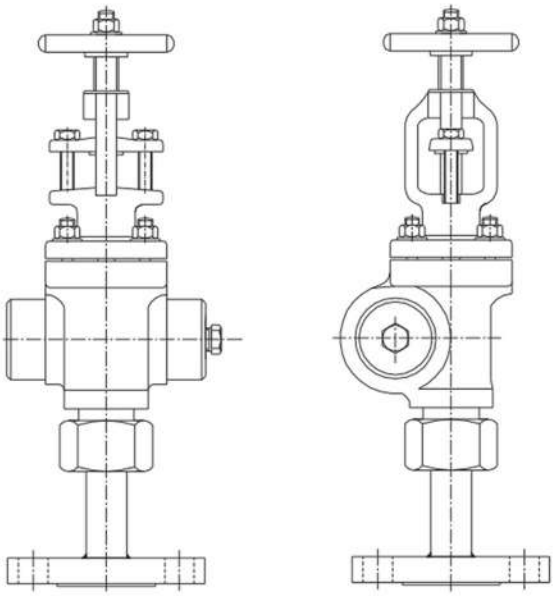
Side/Side-Back (Left/Right)

Orientation of Process Connection

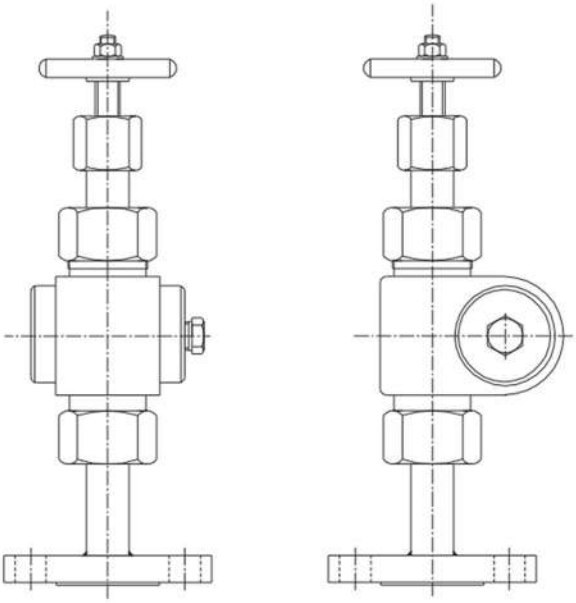
Isolation Valve

Bolted and screwed bonnet offset construction to attain device durability, high stability, low hysteresis, high leakage class, bolted bonnet construction for high temperature and pressure, all construction in forged only with the best level 1 radiographed and attain high leakage class of 10(-5) mbar lt/sec.

Screwed connection for low temperature and pressure with full forged construction and with best of level 1 radiography and attain high leakage sealing class of 10(-4) mbar lt/sec.



Bolted Bonnet



Screwed Bonnet

Isolation Valve

Ordering Information

Modle Code: RLG - X1 X2 X4 X5 X6 X7 X8 X9 X10 X11 X12 X13 X14 X15 X16

Type	X1
Low Pressure - 30kg/cm²	A
Medium Pressure - 85kg/cm²	B
High Pressure - 165kg/cm²	C
Very High Pressure - 200kg/cm²	D

Orientation of Process Connection	X2
Top-Bottom Vertical (Partial Visibility)	TB
Side-Side Right (Full Visibility)	SR
Side-Side Left (Full Visibility)	SL
Side-Side Back (Right/Left)	SB

Orientation of Process Connection	X3
Indicate the required Centre to Centre Distance in mm	1000

Process Connection

Flanged Connection	X4
½", 150# RF	F1
¾", 150# RF	F2
1", 150# RF	F3
1.5", 150# RF	F4
2 ", 150# RF	F5
½", 300# RF	F9
¾", 300# RF	F10
1", 300# RF	F11
1.5 ", 150# RF	F12
2", 300# RF	F13
1", 600# RF	F19
1.5", 600# RF	F20
2", 600# RF	F21
Any Other*	XX

Threaded Connecttion	X5
½"BSP (M)	B4
¾"BSP (M)	B5
1 "BSP (M)	B6
1.5"BSP (M)	B7
2 "BSP (M)	B8
½", NPT (M)	N4
¾", NPT (M)	N5
1", NPT (M)	N6
1.5 ", NPT (M)	N7
2", NPT (M)	N8
Any Other*	XX

MOC of Connection	X6
CS (A105)	ZA
CS (A106)	ZB
SS 304	ZC
SS 304 L	ZD
SS 316	ZE
SS 316L	ZF
PP	ZI
Monel 400	ZJ
Monel 500	ZK
Titanium	ZL
Hastelloy 'B'	ZM
Hastelloy 'C'	ZN
Inconel 600	ZO
Any Other*	XX

MOC of Chamber	X7
CS	VA
SS 304	VB
SS 304L	VC
SS 316	VD
SS 316L	VE
PP	VF
Monel 400	VG
Monel 500	VH
Titanium	VI
Hastelloy 'B'	VJ
Hastelloy 'C'	VK
Inconel 600	VL
Any Other*	XX

Optional	X8
Non-frost Extension	NF
Heating Jacket	HJ
Any Other*	XX
NIL	Z

Calibration Scale	X9
Aluminium with Powder coat	SO
Aluminium	SP
SS304	SQ
SS316	SR

Ordering Information

Modle Code: RLG - | X1 | X2 | X4 | X5 | X6 | X7 | X8 | X9 | X10 | X11 | X12 | X13 | X14 | X15 | X16 |

Drain	X10
½" NPT (F), Plug	RU
¾" NPT (F), Plug	RV
½" Needle Valve	RW
½" Ball Valve	RX
½" Gate Valve	RY
½" Gate Valve	RZ

Vent	X11
½" NPT (F), Plug	QU
¾" NPT (F), Plug	QV
½" Needle Valve	QW
½" Ball Valve	WX
½" Gate Valve	QY
½" Globe Valve	QZ

Isolation Valve	X12
Screwed Bonnet Offset Construction	UW
Bolted Bonnet Offset Construction	UX
Nipple	UY
Needle Valve	UZ

Gasket	X13
C.A.F.	XW
P.T.F.E	XX
Graphoil	XY

Cusion	X14
C.A.F.	WW
P.T.F.E	WX
Graphoil	WY

Fasteners	X15
ASTM A 193 Gr. B7 / ASTM A 194 Gr. 2H	VV
SS	VW
Anodized Aluminium	VX
CS Plated	VY

MOC of Cover Plate	X16
CS	WA
SS 304	WB
SS 304L	WC
SS 316	WD
SS 316L	WE
PP	WF
Monel 400	WG
Monel 500	WH
Titanium	WI
Hastelloy 'B'	WJ
Hastelloy 'C'	WK
Inconel 600	WL

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