Pune Techtrol Private Limited

IBR APPROVED BICOLOR MULTIPORT LEVEL GAUGE 'TBLG'

It is a multiport water level gauge designed to sustain high temperature and pressure as compared to conventional glass gauges in boilers and steam drums. The water level is visually indicated in green color and steam in red color.

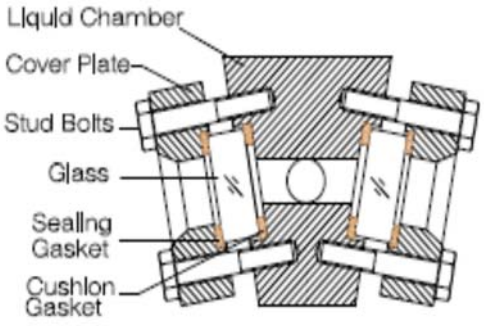
Salient Features

- High quality mica sheet to protect the inner surface of gauge glass from steam erosion
- Belleville spring washer used for high pressure to maintain gasket loading under thermal and pressure cycles
- Single or double expansion loop to eliminate thermal expansion due to high temperature and pressure
- Illuminator with low powered, high intensity LED bulbs, longer life
- Viewing hood for clear visibility during day time
- Available with IBR/ASME certification

Fig 1. Port Assembly

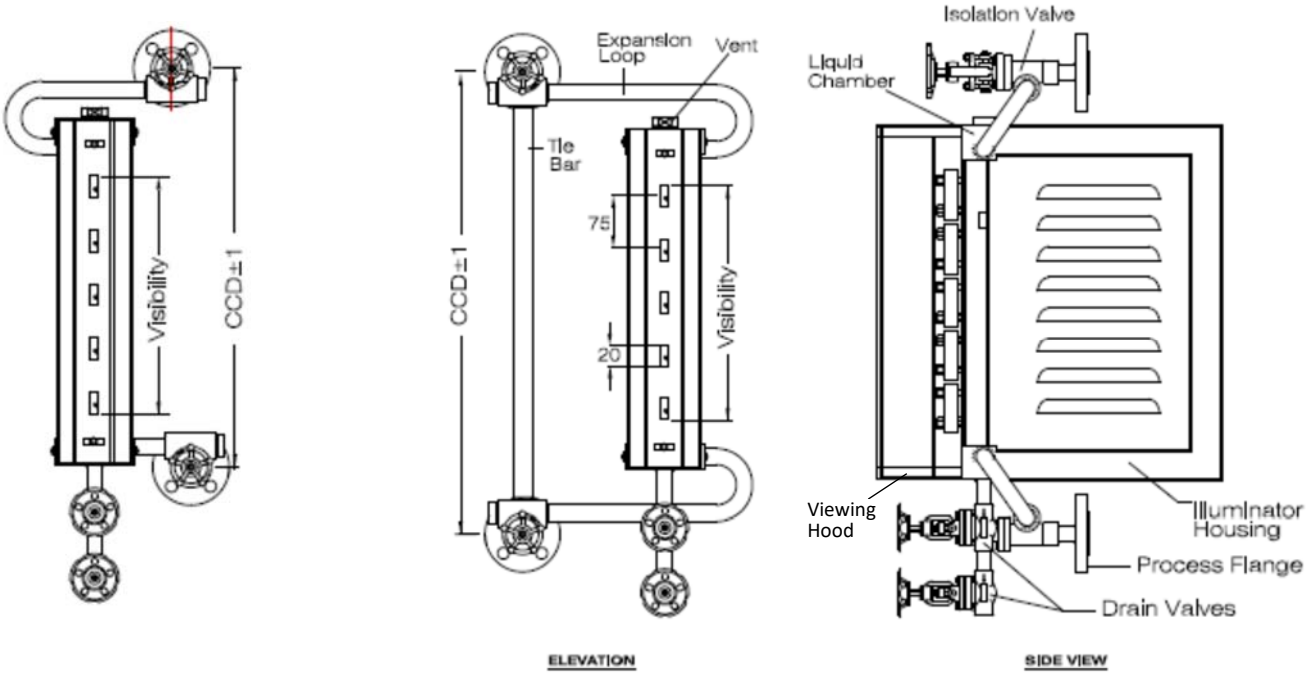
Construction & Operation

It consists of trapezoid shaped liquid chamber in metallic construction with 5 to 21 number equi-spaced ports in front and rear of non-parallel vertical plane. Circular gauge glass with inner mica sheet is fitted on each port with sealing/ cushion gaskets and cover plate (fig 1). The liquid chamber is fitted between two end blocks with isolation valves through single or double expansion loops (fig.2). Tie bar is provided for better circulation of condensate and robustness of gauge assembly. An illuminator comprising bi-colour glass filters (red & green) and a light source, housed in a steel enclosure with louvres are fitted on the rear side of the gauge. A viewing hood is fitted on front side of the gauge for clear visibility. The gauge mounting is oriented on right or left side of the process connections (fig. 4). It is provided with two drain valves for extra safety. Refer Table-1 for CC distance, visibility and number of ports.



Single Expansion Loop **Double Expansion Loop**

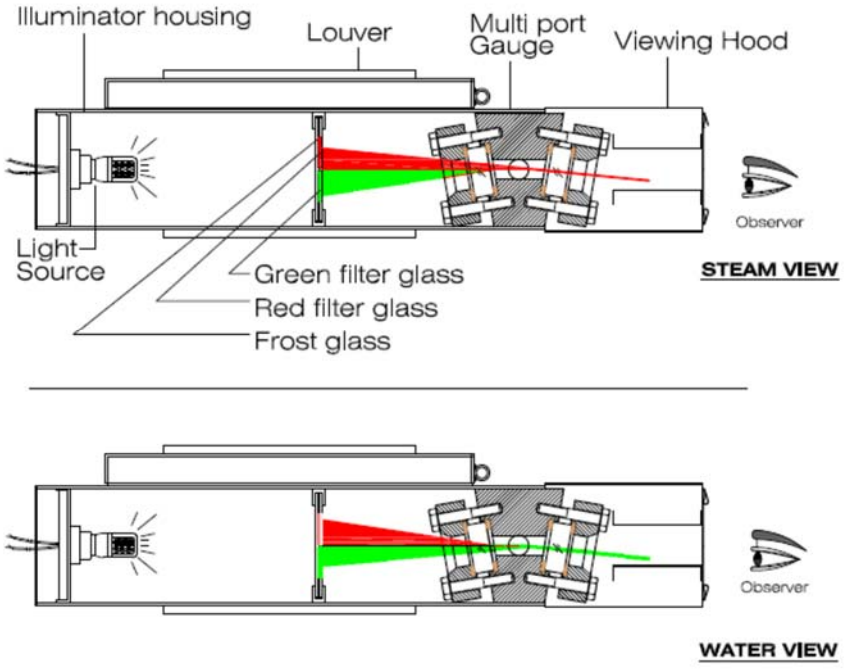
Fig 2.



The rays from light source pass through bi-coloured filter glass, fall on inclined gauge glass fitted on trapezoid shaped chamber and are refracted in steam or water according to their refractive index. (Refer fig. 3)

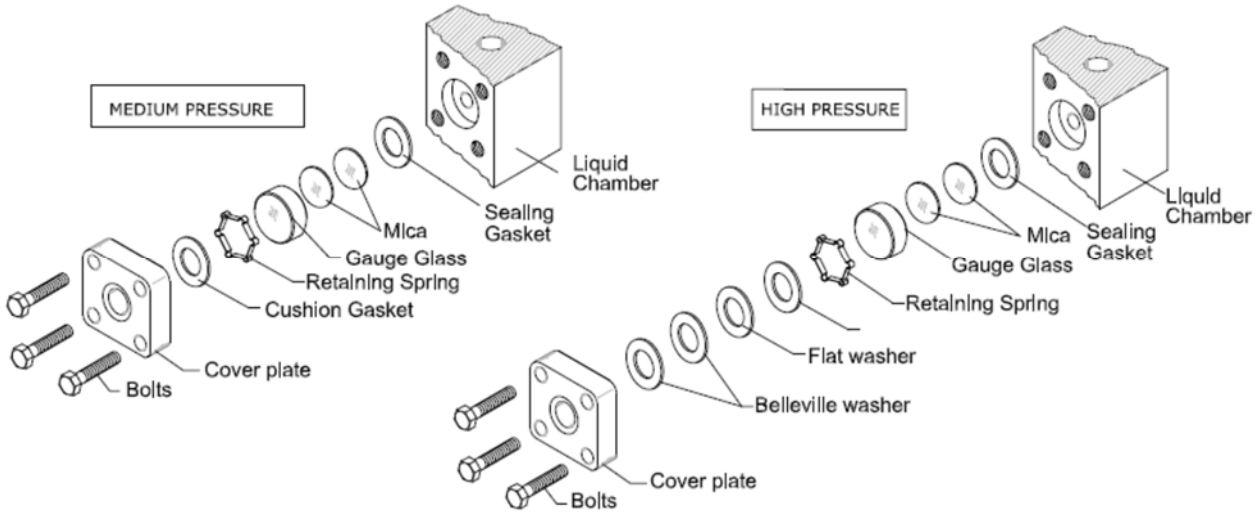
It appears to the viewer as red colour, when light passes through steam and green colour, when light passes through water.

Fig 3.



Gauge Glass Fitment at Every Port

Fig 4



Specifications

Gauge Glass	1) Tempered Borosilicate (Medium pressure) 2) Aluminosilicate (High pressure)
Sealing/ Cushion Gasket	SS graphite
Mica	High quality grade with clear transparency
Liquid Chamber (Gauge Body)	1) CS SA516 Gr. 70, CS ASTM A105 **(IBR)**, 2) ASTM 182F SS316 **(Non-IBR)**
Port Cover/ Cover Plate	CS ASTM A105 or ASTM 182F SS316
Bolts	ASTM A193 Gr. B7
Process Connection	3/4" or 1" Socket weld or ASME Flange
Process Conn. MOC	CS ASTM A105 **(IBR),** ASTM A182 F SS316 **(Non-IBR)**
Isolation Valves	Integral Offset Needle Valve Bolted Bonnet x Auto Ball Check MOC- CS ASTM A105 **(IBR)** or ASTM A182 F SS316 **(Non-IBR)**
Stand Pipe	CS ASTM A106 Gr B or ASTM A312 TP SS316
Expansion Loop	CS ASTM A106 Gr B or ASTM A312 TP SS316; Single expansion loop for optg. pressure < 50 kg/cm^2
Vent	1/2" NPT plug
Drain Valves	CS ASTM A106 or ASTM A182 F SS316 MOC-1/2" Socket Weld Globe Valve (1500#)
CC Distance (CCD)	535 to 1815 mm (CCD >1140 mm in dual section with flanged coupler joint – multiport design)
No. of Ports	05 to 21
Visible Port Diameter	15 mm

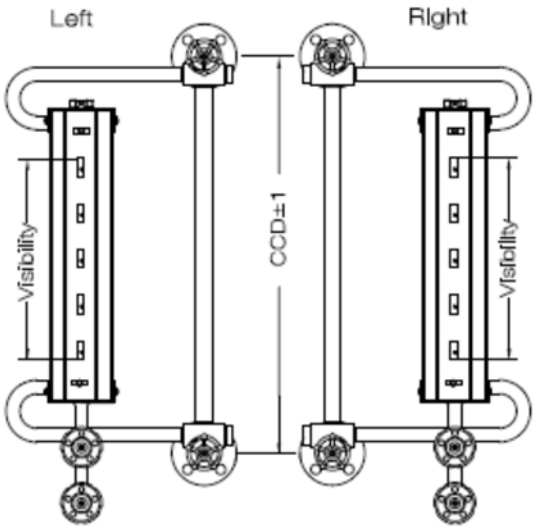
Viewing Hood	SS MOC (for clear visibility)
Viewing Window Size	8 W x 20 H mm
CC Dist. betⁿ Viewing Windows	75 mm
Illuminator	SS Enclosure ventilating louvers housed with high intensity LED bulbs
Conduit Connection	1/2" NPT Cable Gland, Brass
Power Supply	230 VAC or 24 VDC
Gauge Mtg. Orientation	Left or right
Max. Temperature	300ºC
Max. Operating Pressure	1) upto 60 kg/cm^2 (Medium), 2) upto 80 kg/cm^2 (High Pressure)
Max. Test Pressure	1) upto 120 kg/cm^2 (Medium), 2) upto 160 kg/cm^2 (High Pressure)

Table 1. CC Distance Vs No. of Ports

SL	CC Distance		Visibility	No. of Ports
	Single Loop	Double Loop		
1	535	615	315	05
2	610	690	390	06
3	685	765	465	07
4	760	840	540	08
5	835	915	615	09
6	910	990	690	10
7	985	1065	765	11
8	1060	1140	840	12
9	1135	1215	915	13
10	1210	1290	990	14
11	1285	1365	1065	15
12	1360	1440	1140	16
13	1435	1515	1215	17
14	1510	1590	1290	18
15	1585	1665	1365	19
16	1660	1740	1440	20
17	1735	1815	1515	21

Gauge Orientation

Fig 5



Applications

Boiler Drum, Feed Water Heater, Deaerator feed water tank, Utility Boiler, Recovery Boilers, Condenser Hotwell, Small Industrial Boilers, Process Heaters.

Model Identification

TBLG -												x CC Dist.
1. No. of Ports												
Refer CC Distance Table	05 to 21											
2. Max. Operating Pressure												
Medium Pressure (upto 60 kg/cm^2)		M										
High Pressure (upto 80 kg/cm^2)		H										
3. Transparent Gauge Glass												
Tempered Borosilicate *(Medium Pressure)*			B									
Tempered Aluminosilicate *(High Pressure)*			A									
4. Liquid Chamber x Port Cover												
CS SA516 Gr. 70 x CS ASTM A105				1								
ASTM 182F SS316 x CS ASTM A 105				5								
ASTM 182F SS316 x ASTM 182F SS316				6								
Others				O								
5. Process Connection MOC												
CS ASTM A105					A							
ASTM 182F SS316					S							
Others					O							
6. Process Connection Size & Type												
¾" Socket Weld 3000#						1						
1" Socket Weld 3000#						2						
¾" NB Flange ASME 300#						3						
¾" NB Flange ASME 600 #						4						
1" NB Flange ASME 300 #						5						
1" NB Flange ASME 600#						6						
Others						O						
7. Gauge Mounting Orientation												
Right							R					
Left							L					
8. No. of Expansion Loop												
Single *(Optg. Pressure ≤ 50 kg/cm^2)*								S				
Double *(Optg. Pressure > 50 kg/cm^2)*								D				
Others								O				
9. Vent & Drain												

½" NPT Plug x ½" NPT Plug	1		
½" NPT Plug x ½" NPT Globe Valve 1500# (2 nos.)	2		
½" NPT Plug x ½" Socket Weld Globe Valve 1500# (2 nos.)	3		
Others	O		
10. Power Supply			
230 VAC		1	
24 VDC		2	
Others		O	
11. IBR Approval			
Not Provided			W
Provided			P

Ordering Information: Model Number x CC Distance x Operating Temperature & Pressure