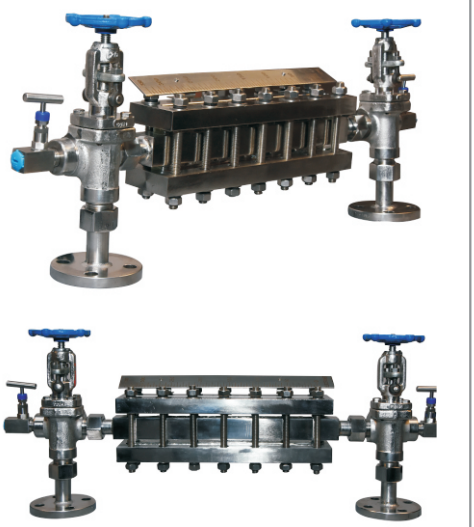
# TRANSPARENT LEVEL GAUGE

ELECTRONET®

## Features

- Transparent level gauge applicable upto 200 kg and up to 400 deg cent
- Cryo applications upto–196 deg cent
- Toughened glass and borosilicate glass
- For applicability in critical, acidic, cryo and high temperature zone
- IBR certified device available
- NACE, H2S service compatibility applicable
- Non frost extension and high temperature extension
- Heat tracing available
- Level 1 radiographed body available
- Helium leak test proved design @ 10(–7) mbar lt/sec
- Viscous media (max upto 380 cst and upto 100 deg cent) besides other acidic, non–acidic, steam water media
- CE applicability
- Applicable for refinery, petrochemical, chemical, power, radioactive, fertilizer, food, pharma, metal industry applications



## 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. The liquid level is discriminated in the form of different transparency of the two media. The gauge is mainly recommended for color liquids, steam water and interface liquid level.

Transparent Liquid Level Gauges, designed and built for a wide range of high temperature and high–pressure applications. Our transparent 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.

## Sealing Gaskets, Cushions and Glasses

Sealing gaskets and cushions for tight sealing at rated pressure and temperature. Tight sealing PTFE with glass inserted, GFT and SS316 impregnated in graphite are the special features of the gaskets Electronet provides.

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.

## Special 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.

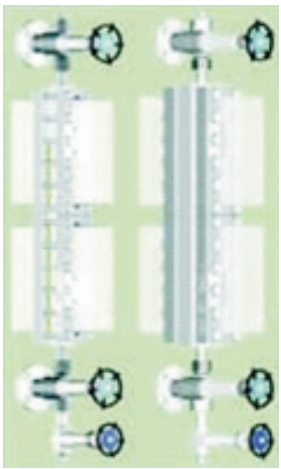
Our **Non-Frosting** Transparent Level Gauges are classified depending on the process temperature, the height of the non–frosting plate window may be selected from 80 to 250 mm.

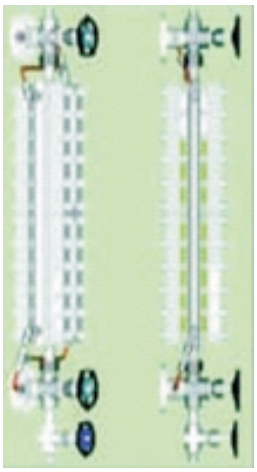
Fsotca **zz** type requirement application. This gauge is used to read the level of high congealable or ebullient liquids. The principle inflow a steam for congealable liquids and a cold water for ebullient liquids through the inside of the jacket to ensure accurate and reliable level observation.

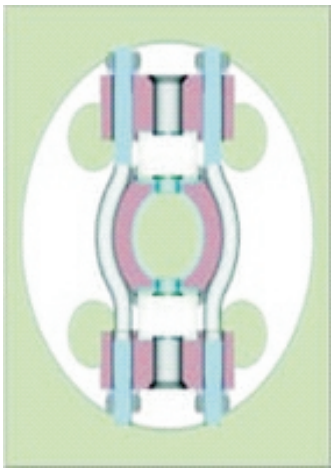
This type is used for observing the fluid by changing it into state of liquid after heating or cooling it through jacket according to fluid's features. Our standard is that the inlet of the jacket for steam or cold water is ½" NPT(M) and or 15 NB flange. Others are available on request.

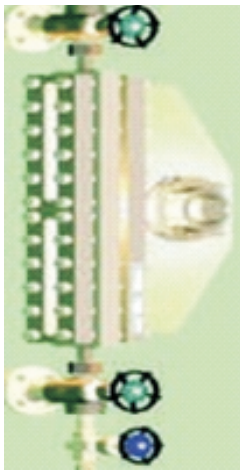
More severe demands may often be required on liquid level gauges in terms of **Resistance to corrosion**, and this is accomplished by lining or coating all wetted parts. The most important aspect of this process is the preparation of the metal substrate.

Transparent level gauges with **illuminator** are useful for observing the fluid level in a dim place or at night by using an explosion–proof and weather–proof. The illuminator can be mounted on all types of transparent level gauges.

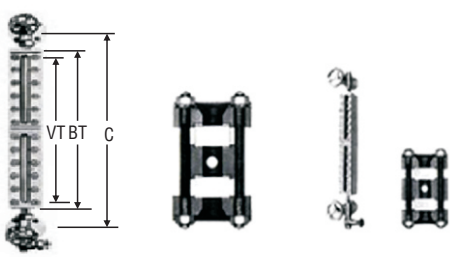


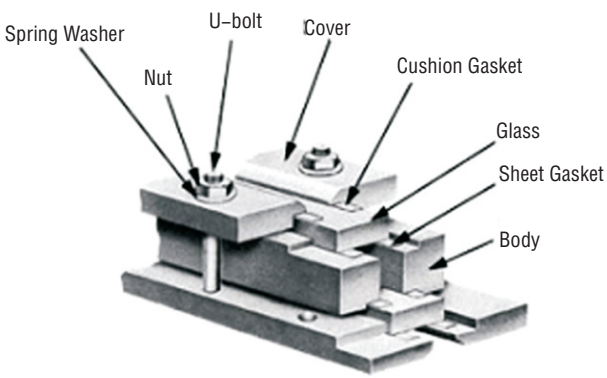






C : Center to center for installation
BT : Length of gauge body
VT : Visible length



## Technical Specifications

| | |
|---|---|
| Type | Transparent |
| Liquid Chamber | In forged construction: Carbon steel, SS 304, SS304L, SS316, SS316L, Monel, Titanium, Inconnel 600, Hastealloy C, PolyPropylene, others on request, subject to Pressure and temperature condition |
| Cover plate | In forged construction: Carbon steel, SS 304, SS304L, SS316, SS316L, Monel, Titanium, Inconnel 600, Hastealloy C, PolyPropylene |
| Cushion | CAF, PTFE, Grafoil, Graphite |
| Gasket | CAF, PTFE, Grafoil, Graphite |
| Fastners | SS, ASTM A 193 Gr B7/A194Gr 2 H |
| Scale | Aluminum anticorrosion powder coated and SS engraved in mm |
| Glass | Klinger/Maxos applicable till 320 deg cent as per DIN 7080/7081, BS 3463, JIS B 8211, Toughened Borosilicate glass |
| Protection shields for temperature upto 550 deg cent | Mica shield of 0.2/0.35/0.5mm |
| Borosilicate glass | Upto 400 deg cent and higher applicability on special protection |
| Toughened glass | Upto 150 deg cent |
| Glass thickness | 17 mm |
| Glass width | 30 mm |
| Glass dimensions type | 250 mm and 340 mm |
| Operating pressure applicable as input | 100 kg, higher depending on temp |
| Shell test applicable, pressure | 200 kg at 20 deg cent |
| Shell test applicable, temperature | Max 400 deg cent depending on selected MOC |
| Cryo applicability applicable (nosn frost at the glass) | Max upto 200 kg and upto –196 deg cent |
| Cushion and gasket thickness | 1.5 mm applicable for –194 deg cent to upto 400 deg cent against suitable MOC |
| Centre to center distance | Max upto 3000 mm applicable with desired accuracy and visibility |
| Vent /drain | 1/2" plugged / 1/2" needle valve / 1/2" ball valve /1/2" globe valve |
| Process connection | 15 to 50 mm flanged / upto 25mm screwed / socket weld & others on request. |

## 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 |

## Technical Specifications: Visible Length According to Sections

| Sr. No. | Visible Length (of level gauge) in mm | No. of Sections VI (glass length = 250 mm) | No. of Sections IX (glass length = 340 mm) | No of Illuminator (on special request) if applicable |
|---|---|---|---|---|
| 1 | 230 | 1 | 0 | 1 |
| 2 | 320 | 0 | 1 | 1 |
| 3 | 495 | 2 | 0 | 1 |
| 80 | 585 | 1 | 1 | 1 |
| 80 | 675 | 0 | 2 | 1 |
| 80 | 760 | 3 | 0 | 2 |
| 80 | 850 | 2 | 1 | 2 |
| 80 | 940 | 1 | 2 | 2 |
| 80 | 1030 | 0 | 3 | 2 |
| 80 | 1115 | 3 | 1 | 2 |
| 80 | 1205 | 2 | 2 | 2 |
| 80 | 1295 | 1 | 3 | 2 |
| 80 | 1385 | 0 | 4 | 2 |
| 80 | 1470 | 3 | 2 | 3 |
| 80 | 1560 | 2 | 3 | 3 |
| 80 | 1650 | 1 | 4 | 3 |
| 80 | 1740 | 0 | 5 | 3 |
| 80 | 1825 | 3 | 3 | 3 |
| 80 | 1915 | 2 | 4 | 3 |
| 80 | 2005 | 1 | 5 | 3 |
| 80 | 2095 | 0 | 6 | 3 |
| 80 | 2180 | 3 | 4 | 4 |
| 80 | 2270 | 2 | 5 | 4 |
| 80 | 2355 | 5 | 3 | 4 |
| 80 | 2445 | 4 | 4 | 4 |
| 80 | 2535 | 3 | 5 | 4 |
| 80 | 2625 | 2 | 6 | 4 |
| 80 | 2715 | 1 | 7 | 4 |
| 80 | 2805 | 0 | 8 | 4 |
| 80 | 2890 | 3 | 6 | 5 |
| 80 | 2980 | 2 | 7 | 5 |

## Technical Specifications: Illuminator Specifications

| | |
|---|---|
| Rating | Upto 15 W / 25W GLS Lamp or 15W LED Lamp with or without Flashing 240 VAC |
| Construction | In cast alloy LM6 |
| Gas Group | IIA, IIB , IIC as per IS 2148 / 2004 |
| Certificate | Ip66 WP/FLP : CCOE / CMRI / PESO |
| Earthing | 2Nos. External & 1 No. Internal |
| Enclosure | Anticorrosion Powder Coated Light Grey / Blue shade 631 of IS:5 |
| Cable Entry | 2 Nos. …" ET With cable glands |
| Mounting | Transparent acrylic sheet with mounting bracket |

## Technical Specifications: Indicative weights in kgs

| Transparent level guage visible length in mm | With isolation valve (upto 1" RF flange) and with handle with drain and vent plug (upto 300# body) | With isolation valve (upto 1" RF flange) and with handle with drain and vent plug (600# body) | With isolation valve (upto 1" input) and with handle with drain and vent plug (900# & 1500# body) | Add on for heating jacket | Add on for frost extension | Add on for illuminator applicable for the visible length | Add on for ball valve replacing the drain & vent plug |
|---|---|---|---|---|---|---|---|
| 320 | 17 | 25 | 45 | 1 | 0.5 | 5 | 2 |
| 585 | 30 | 45 | 80 | 2 | 1 | 5 | 2 |
| 1030 | 60 | 90 | 162 | 3 | 1.5 | 10 | 2 |
| 1915 | 110 | 165 | On Request | 5 | 2.5 | 15 | 2 |
| 2980 | 160 | On Request | On Request | 9 | 4.5 | 25 | 2 |

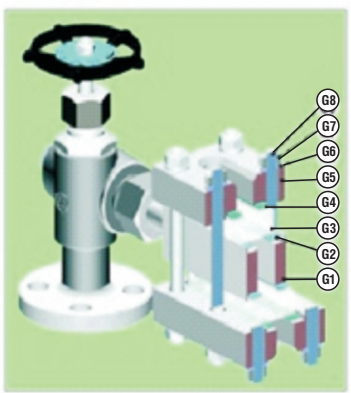
## Construction and dimensional cross-sectional overview

The gauge consists of a body having machined to have a liquid Where high temperature and corrosions are liable to occur, it can be furnished with a mica shield to prevent it from being corroded. There types are preferably used for reservoir tanks that require a relatively long visible length by constructing the supporter.

The transparent level gauge is assembled firmly with gasket, transparent glass, cushion gasket and gauge cover on the body by stud–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 gauges 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.

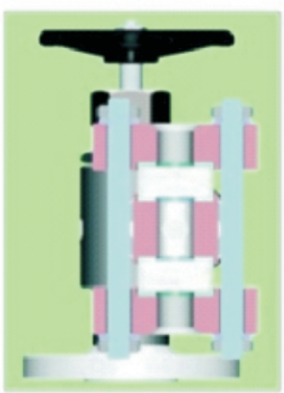
The gauge is used with a special reflex type gauge glass which has wider V–shaped refractive grove and red coating on the outside of the glass. It provides a clear observation of liquid level because of made refracting red color on V–groove for steam or beyond portion of the level and it's color of fluid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

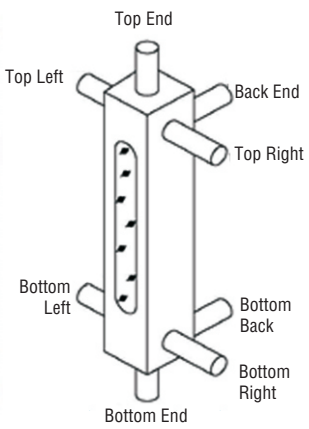
Transparent Gauges manufactured by Electronet will provide at ease the orientation as per your convenience to have the maximum visibility with respect to process changes i.e. level, isolation valve settings, whether any kind of leakages, leakages through plugs for vent and drain, settings for needle/ball valves. All orientations at your process suitability with optimum results




| No | Part | Material |
|---|---|---|
| G1 | Gauge Body | CS SS |
| G2 | Sealing Gasket | Graphite |
| G3 | Reflex Glass | Borosilicate |
| G4 | Cushion Gasket | Non–Asbestos |
| G5 | Gauge Cover | CS |
| G6 | Washer | SWRH–62B |
| G7 | Nuts | A194 Gr 2H |
| G8 | Stud–Bolts | A193 Gr B7 |

Construction Sectional View

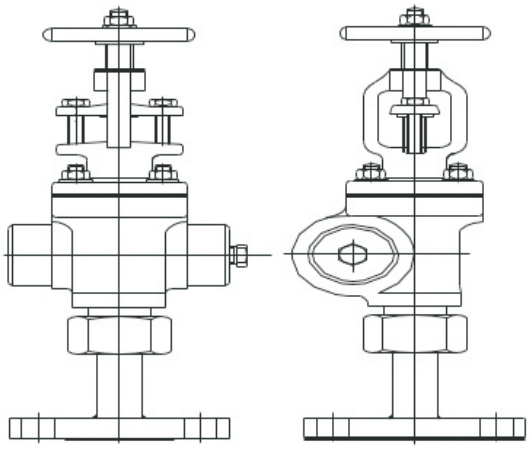




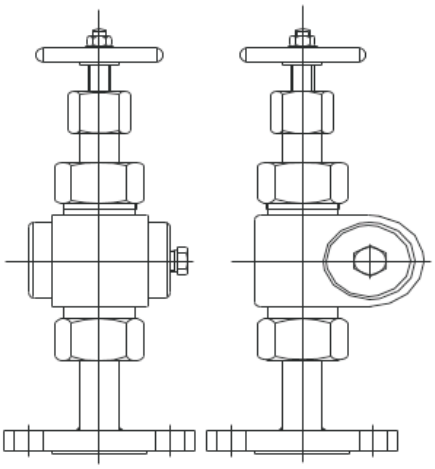
## Isolation Valve

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 Valve**



**Screwed Bonnet Valve**

## Ordering Information

**Sample Order Code :**

| RLG | TBV | 1000MM | 25F150#RF | S4 | S4 | C | NA | AL | P | P | B | C | C | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Type of Level Gauge | Code |
|---|---|
| Reflex Level Gauge | RLG |
| Transparent Level Gauge | TLG |
| **Orientation Process Connection** | **Code** |
| Top Bottom Vertical (Partial Visibility) | TBV |
| Side–Side Right (Full Visibility) | SSR |
| Side–Side Left (Full Visibility) | SSL |
| **CCD. Center to Center Distance** | **Code** |
| Indicate the required center to center distance in mm | XXXX |

**Process Connection**

**Flanged Connection**

| Code | Size | Code | Code | Size |
|---|---|---|---|---|
| 15 | ½" | F | 150 | 150#RF |
| 20 | ¾" | | 300 | 300#RF |
| 25 | 1" | | 600 | 600#RF |
| 40 | 1½" | | 900 | 900#RF |
| 50 | 2" | | 1500 | 1500#RF |
| 65 | 2½" | | 2500 | 2500#RF |
| 80 | 3" | | | |

**Screwed Connection**

| Code | Size | Code | Threading Type |
|---|---|---|---|
| ½" | ½" | T | NPTM |
| ¾" | ¾" | | BSPM |
| 1" | 1" | | NPTF |
| 1½" | 1½" | | BSPF |

**Type of Level Gauge**

| Material | Code | Material | Code |
|---|---|---|---|
| S S304 | S4 | Polypropylene | PP |
| CS | C | Monel | M |
| SS304L | S4L | Titanium | T |
| S S316 | S6 | Inconel 600 | I |
| S S316L | S6L | Hastelloy C | H |

**MOC of Cover Plate**

| Material | Code | Material | Code |
|---|---|---|---|
| S S304 | S4 | Polypropylene | PP |
| CS | C | Monel | M |
| SS304L | S4L | Titanium | T |
| S S316 | S6 | Inconel 600 | I |
| S S316L | S6L | Hastelloy C | H |

| Fasteners | Code |
|---|---|
| ASTMA193 Gr.B7/ASTMA194 Gr.2H | C |
| SS | S |

| Special Features | Code |
|---|---|
| Non–Frost Extension | NF |
| Heating Jacket | HJ |
| Mica Shield (For TLG only) | MS |
| Illuminator–Weatherproof IP–65 | I W5 |
| Illuminator–Weatherproof IP–66 | I W7 |
| Illuminator–Flameproof Gr. IIA/IIB | IFA |
| Illuminator–Flameproof Gr. IIC | IFC |
| IBR Certification | IC |
| Not Applicable | NA |
| **Calibrated Scale** | **Code** |
| Aluminium | AL |
| SS(SS316 / SS304) | SS |
| Acrylic Plastic | AC |
| **Drain Connection** | **Code** |
| ½" NPT F, ¾" NPT F | P |
| ½" & ¾" Needle Valve | N |
| ½" & ¾" Ball Valve | B |
| ½" & ¾" Globe Valve / Globe Valve | O |
| Flange Type | A |
| **Vent Connection** | **Code** |
| ½" NPT F, ¾" NPT F | P |
| ½" & ¾" Needle Valve | N |
| ½" & ¾" Ball Valve | B |
| ½" & ¾" Globe Valve / Globe Valve | O |
| Flange Type | A |
| **Isolation Valves** | **Code** |
| Screwed Bonnet Offset Construction | S |
| Bolted Bonnet Offset Construction | B |
| Without Isolation Valves | N |
| **Gasket** | **Code** |
| C.A.F. / Non–Asbestos | C |
| P.T.F.E | P |
| Graphoil / Graphite | G |
| **Cushion** | **Code** |
| C.A.F. / Non–Asbestos | C |
| P.T.F.E | P |
| Graphoil / Graphite | G |
| **Toughened Borosilicate Glass** | **Code** |
| Indigenous | L |
| Imported Klinger / Maxos or Equivalent | F |

Note :
- Due to our continuous product revisions, design specification and model numbers are subject to change without notice.
- Accuracy defined at Lab Conditions.
- For other requirement please consult factory.


ELECTRONET EQUIPMENTS PVT. LTD.

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We reserve the right to continuously improve our products and make any changes in the stated specifications and dimensions without prior notice