# Magnetic Level Gauges & Level Transmitters

Magnetic Level Gauges provides clear, high clarity indication of liquid level. Magnetic Level Gauges are principally designed as an alternative to glass level gauges. MLGs are now widely used in all industries as they avoid direct contact with indicator system; it eliminates need of glass for direct level indication and prevents chemical spillage due to breakage of glass.

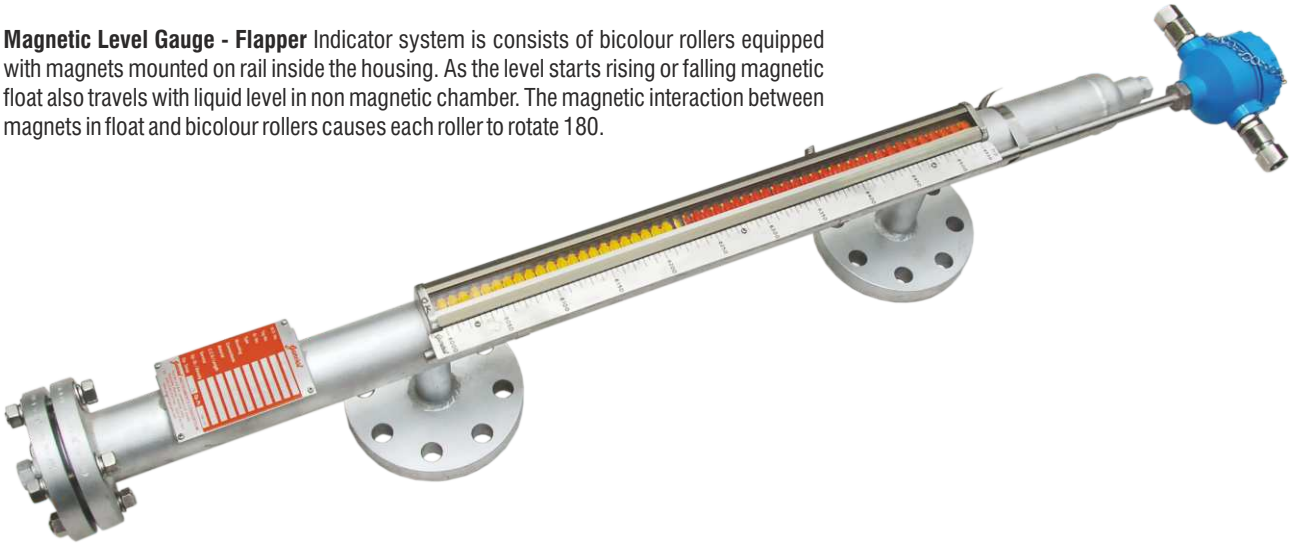
## Features

- Magnetic level gauge applicable upto 100 kg/cm$^2$ and upto 300 deg cent
- Cryo applications upto -196 deg cent
- Jacketed design applicable
- For applicability in critical, acidic, cryo and high temperature zone
- IBR certified device available
- NACE, H2S service compatibility applicable
- Heat tracing available
- Viscous media (max upto 380 cst and upto 100 deg cent) besides other acidic, non acidic, steam water media
- CE applicability
- Device fully compatible for conductive and non conductive media
- Special float design to enable to meet low critical specific gravity
- Design applicability test with special media available
- Applicable for refinery, petrochemical, chemical, power, radioactive, fertilizer, food, pharma, metal industry applications
- CCOE approved switches available, ATEX, FM certified available on demand
- Versions available with analog and digital (HART) and FIELDBUS transmitters fully integrated with the system for level gauge and transmitter
- CCOE approved and ATEX and FM versions applicable for HART and analog transmitters available


## Concept and Principle of operation

Magnetic Level Gauges operates on the principle of magnetic field coupling to provide fluid level information. Float chamber is typically constructed having process connections that matches to the vessel connections. Float size and weight is determined by the process fluid, pressure, temperature and the specific gravity of the process fluid. Float contains magnets to provide 360 magnetic flux field.

**Magnetic Level Gauge - Flapper** Indicator system is consists of bicolour rollers equipped with magnets mounted on rail inside the housing. As the level starts rising or falling magnetic float also travels with liquid level in non magnetic chamber. The magnetic interaction between magnets in float and bicolour rollers causes each roller to rotate 180.



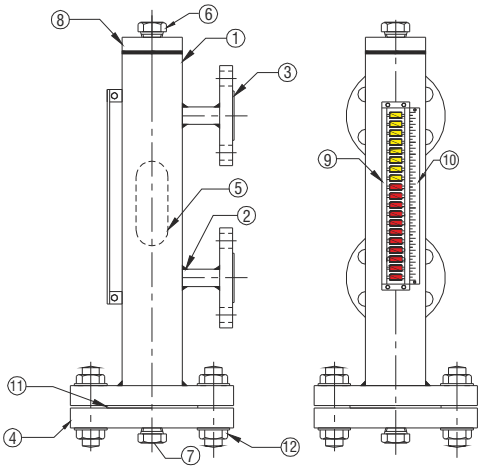


10/17 REV.: 00

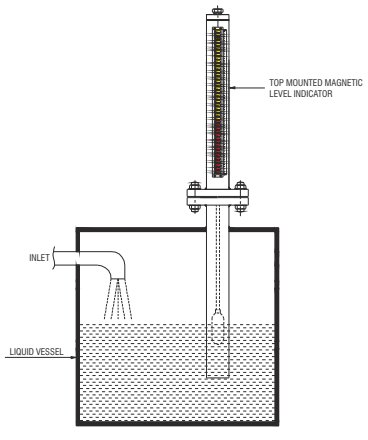
## Technical Specifications: Table-1 Technical Data

| | |
|---|---|
| **Type of Gauge** | Magnetic Level Gauge - MLG |
| **Mounting Orientation** | Top Mounted<br>Side Mounted |
| **Pressure** | Upto 100 kg/cm$^2$ |
| **Temperature** | Upto 300$^0$C |
| **CCD** | Max. upto 7000mm |
| **Liquid Chamber** | In forged construction: SS304, SS304L, SS316, SS316L, PP, Titanium, Inconnel 600, Hastelloy C, Other on request subject to pressure & temperature condition |
| **MOC of Float** | In forged construction: SS304, SS304L, SS316, SS316L, PP, Titanium, Inconnel 600, Hastelloy C |
| **Gasket** | CAF, PTFE, Grafoil with SS pregnated |
| **Fastner** | CS Plated, SS |
| **Scale** | Aluminium, Aluminium anticorossion powder coated and SS engraved in mm |
| **Indicating System** | Bicolour flapper in ABS/ Aluminium/ SS with 4mm length & 0.25mm thickness with aligned magnets |
| **Protection box for bicolour flapper & follower type** | In mild steel, Aluminium, SS304, SS316 base on the requirements of atmospheric condition |
| **Process Connection** | Flanged |
| **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 |
| **Specific gravity** | Please specify |
| **Limit Switch Assembly** | Snap acting 1 SPDT Microswitch, 5A,230VAC |
| **Switch Housing** | Die Cast Aluminium Weatherproof to IP-67 |
| | Die Cast Aluminium Explosionproof suitable for Gr. IIA, IIB |
| | Die Cast Aluminium Explosionproof suitable for Gr. IIC |
| **Cable Entry** | 1 no / 2 nos. of 3/4"ET(F) |
| **Optional** | Still well for top mounted construction |

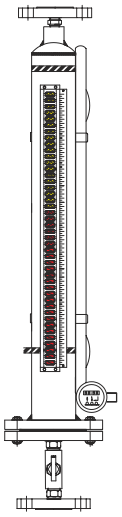
## Construction and Dimensional Cross Sectional Overview




1 Liquid Chamber
2 Nozzle
3 Process Flange
4 Bottom Flange
5 Magnetic Float
6 Vent Plug
7 Drain Valve
8 Top Cap
9 Indicating System
11 Scale
12 Gasket
13 Fastener




**G A drawing for mounting and assembly**



**Front View**

With HART transmitter mounted on a 900# application gauge at CCD of 4000 mm with magnetostrictive principle for chemical plant application.

## Ordering Information

**MLG SM-1000-F03-ZE-VD-XD-VW-XW-QU-RU-SO-LX-Z**

| Orientation of Process Connection | |
|---|---|
| MT | Top Mounted |
| SM | Side Mounted |

| Centre to Centre Distance | |
|---|---|
| 1000 | Indicate the required Centre to Centre Distance in mm |

| Process Connection | | | |
|---|---|---|---|
| Flanged Connection | | | |
| F01 | 1/2", 150# RF | F13 | 2", 300# RF |
| F02 | 3/4", 150# RF | F17 | 1/2", 600# RF |
| F03 | 1", 150# RF | F19 | 1", 600# RF |
| F04 | 1.5", 150# RF | F20 | 1.5", 600# RF |
| F05 | 2", 150# RF | F21 | 2", 600# RF |
| F09 | 1/2", 300# RF | F48 | 1", 900# RTJ |
| F10 | 3/4", 300# RF | F49 | 1.5", 900# RTJ |
| F11 | 1", 300# RF | F50 | 2", 900# RTJ |
| F12 | 1.5", 300# RF | XX | Any Other* |

| MOC of Connection | | | |
|---|---|---|---|
| ZC | SS 304 | ZK | Monel 500 |
| ZD | SS 304L | ZL | Titanium |
| ZE | SS 316 | ZM | Hastelloy B |
| ZF | SS 316L | ZN | Hastelloy C |
| ZI | PP | ZO | Inconel 600 |
| XX | Any Other* | | |

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

| MOC of Float | | | |
|---|---|---|---|
| XB | SS 304 | XH | Monel 500 |
| XC | SS 304L | XI | Titanium |
| XD | SS 316 | XJ | Hastelloy 'B' |
| XE | SS 316L | XK | Hastelloy 'C' |
| XF | PP | XL | Inconel 600 |
| XX | Any Other* | | |

| Optional | |
|---|---|
| LX | Limit Switch with Die cast Aluminium Weatherproof IP-67 |
| LY | Limit Switch with Die cast Aluminium Flameproof suitable to Gr. IIA/ IIB |
| LZ | Limit Switch with Die cast Aluminium Flameproof suitable to Gr. IIC |
| IB | IBR |
| Z | NIL |

| Calibration Scale | |
|---|---|
| SO | Aluminium with Powder coat |
| SP | Aluminium |
| SQ | SS304 |
| SR | SS316 |
| SS | Acrylic |

| Drain | | | |
|---|---|---|---|
| RU | 1/2" NPT (F), Plug | RX | 1/2" Ball Valve |
| RV | 3/4" NPT (F), Plug | RY | 1/2" Gate Valve |
| RW | 1/2" Needle Valve | RZ | 1/2" Globe Valve |

| Vent | | | |
|---|---|---|---|
| QU | 1/2" NPT (F), Plug | WX | 1/2" Ball Valve |
| QV | 3/4" NPT (F), Plug | QY | 1/2" Gate Valve |
| QW | 1/2" Needle Valve | QZ | 1/2" Globe Valve |

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

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

**Note:** * Please consult factory