

Magnetic Level Gauge

Bypass level indicator with bi-colour magnetic display

Model ILG

Magnetic Level Gauges have long been a preferred method of liquid level measurement for end users across the world. The inherent design of the Model ILG offers dependable level indication in high-pressure, extreme-temperature and corrosive services, without any external power supply. The gauge chamber is attached to the vessel as a communicating bypass and connects directly with the process fluid, while the hermetically isolated indicator provides a clear, high-contrast display of the level.

Applications

- Storage tanks and terminals
- Oil & gas — onshore and offshore process plants
- Chemical, petrochemical and fertiliser plants
- Pharmaceutical and beverage plants
- Custody transfer installations

Special features

- Reliable level measurement in high-pressure, high-temperature or corrosive applications
- Contrasting bi-colour flags for excellent operator visibility
- SS316/316L dual certified measuring scale
- Magnetically coupled switches and transmitters — no process penetration
- Custom-weighted magnetic float engineered for each service
- Leak-proof, maintenance-free design; easy installation
- Chamber centre-to-centre distances from 300 to 6,000 mm



Magnetic level gauge, Model ILG, with SS316/316L dual certified scale and flanged process connections

1 DESCRIPTION AND OPERATING PRINCIPLE

Overview

The Model ILG magnetic level gauge consists of a bypass chamber attached to the side of a tank or vessel as a communicating vessel via the process connections. The level in the bypass chamber therefore always corresponds exactly to the level in the vessel. A precision-engineered float with a built-in permanent magnet system travels inside the chamber and transmits the liquid level — contact-free — through the chamber wall to the magnetic display mounted on the outside.

Because the indication is entirely mechanical and magnetically coupled, the gauge operates without any supply voltage and the display remains readable even in the event of a power failure. The measuring system is pressure- and gas-tight, fully separating the process medium from the indication.

Operating principle

As the process liquid rises in the tank or vessel, the same level is established inside the float chamber. Buoyancy causes the magnetic float to travel with the liquid surface. As the float's magnet system passes each element of the display, the bi-coloured flappers rotate through 180°, presenting a continuous, high-contrast column that indicates the liquid level. The positive magnetic coupling protects against false actuation from vibration or flow turbulence.

Magnetic float

The most important element of the level gauge is the magnetic float. Floats are manufactured from SS316, Titanium and other alloys, and each float is individually designed and weighted according to the fluid density, required volume displacement, and the process temperature and pressure of the application.



Custom-weighted magnetic floats, SS316 / Titanium construction

Bi-colour flapper display

The flapper indicator is bi-coloured and mounted on a rail inside the sealed indicator housing. Each coloured flap contains a small magnet which rotates through 180° when passed by the magnet system within the float, producing a crisp two-colour boundary at the liquid level.



Bi-colour flapper rail — red & white standard; yellow & white, red & black and orange & black optional

2 BENEFITS AT A GLANCE

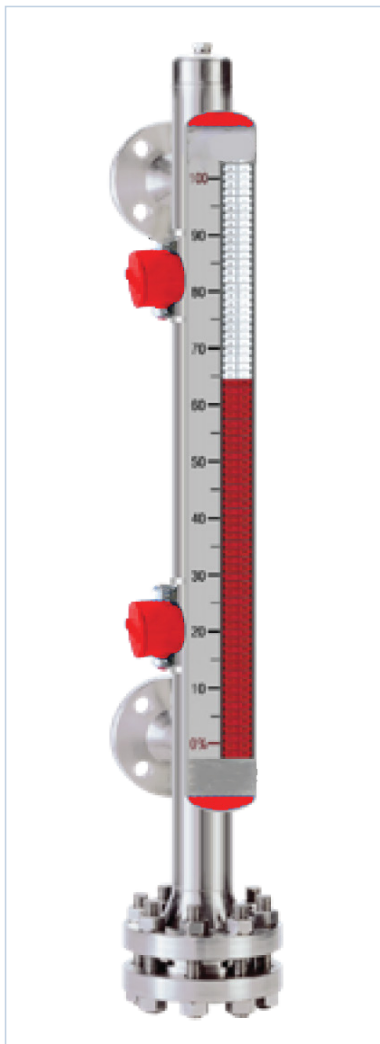
- Continuous level indication without supply voltage — display holds position on power loss
- Pressure- and gas-tight separation between measuring chamber and display
- Suitable for aggressive, flammable, toxic, hot and highly contaminated media
- Broad materials programme: SS316/316L, Inconel, Monel, Hastelloy C-276, 6Mo, Titanium, PVDF, CPVC
- Individually engineered chamber lengths — centre-to-centre 300 to 6,000 mm (± 3 mm)
- Level transmitters and magnetic switches can be retro-fitted without breaking containment
- Optional hermetically sealed indicator for severe outdoor environments
- Manufactured in SAIF Zone, Sharjah, U.A.E., with full 3.1 material traceability

3 TECHNICAL DATA

Specifications — Model ILG

Mounting	Side-Side
Indicator	Bi-colour flags (flapper display)
Top side vent	Welded top cap with plug; other options available
Bottom side drain	Dual flange & plug (for side-mounted versions)
Process connection	Flanged or screwed
C-C distance (±3 mm)	300 to 6,000 mm; as per requirement
Flag display length (L)	300 to 6,000 mm; as per requirement
Flag colour	Red & White (standard); Yellow & White, Red & Black, Orange & Black optional
Scale material	SS316/316L dual certified stainless steel
Maximum operating pressure	Max. 220 barg
Temperature range	(-)50 to 150 °C; 240 °C optional
Chamber materials	AISI 316 SS, Inconel, Hastelloy, 6Mo, PVDF, Titanium
Float materials	AISI 316 SS, Titanium
Indicator roller	Metallic
Ingress protection	IP66 as per IEC 60529
Certificates	3.1 MTC / NACE, DP test report, hydro test report, functional test report available on request
Options	Hermetically sealed indicator; switches and transmitters

4 CONSTRUCTION — STANDARD VERSION



Model ILG standard version with optional high- and low-level switches

The standard side-side mounted gauge comprises the following principal components:

- 1 Vent connection
- 2 Top float stop spring (standard)
- 3 Wide range of process connections
- 4 High level switch (optional)
- 5 SS316/316L dual certified scale
- 6 Low level switch (optional)
- 7 Broad range of alloys
- 8 Bottom float stop spring (standard)
- 9 Drain connection
- 10 Flange bottom
- 11 316 SS indicator housing
- 12 Flapper style indicator
- 13 Welded end cap or flange top

Indicator housing and scale

The 316 SS indicator housing carries the flapper rail and the graduated measuring scale, which is supplied in SS316/316L dual certified stainless steel, and is rated IP66 to IEC 60529. A hermetically sealed indicator is available as an option for severe or offshore environments. Float stop springs are fitted as standard at the top and bottom of the chamber to protect the float during filling, draining and transport.

5 PROCESS CONNECTIONS

The Model ILG is offered with one of the most complete selections of process connection types and sizes in the industry. Flanged connections are supplied to ASME B16.5 or EN 1092-1; screwed and welded connections are supplied to ASME B16.11. Special connections are available on request.



Slip-on flange



Weld neck flange



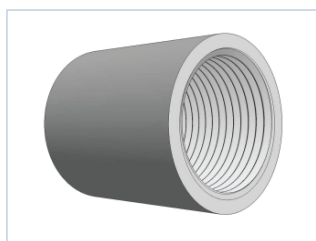
Socket weld flange



Threaded flange



Socket weld



Threaded NPT — female



Pipe nipple butt weld NPT



Threaded NPT — male

6 OPTIONAL ACCESSORIES AND TRANSMITTERS

Magnetically operated switches and level transmitters can be clamped externally onto the gauge chamber at any time — including retrofits on installed gauges — without breaking process containment.

Optional accessories

Switch	Bistable micro switch
Transmitter	Reed chain transmitter, magnetostrictive level transmitter, reed switches
Enclosure	Epoxy coated cast aluminium
Protection	Waterproof, IP66
Cable entry	PG 13.5 [1/2" NPT, M20 × 1.5 available as options]
Switch type	SPST, SPDT, DPDT
Switch rating	5 A, 230 V AC
Mounting	Clamped on the level gauge chamber

Transmitter specifications

Input	24 V DC
Output	4–20 mA, 0–10 V DC, RS 485
Resolution	5 mm, 10 mm
Maximum temperature	150 °C
C/C distance	100 mm to 6,000 mm
Enclosure	Weatherproof, flameproof
MOC	SS304, SS316, PP

Transmitter mounting options

Transmitters are available in three mounting arrangements — Type A (bottom-entry housing), Type B (top-entry housing) and Type C (remote head) — each with a defined top dead band, sensing range and bottom dead band across the 4–20 mA output span. The sensing range is matched to the ordered centre-to-centre distance; dead band dimensions are stated on the approved GA drawing for each configuration.

7 ORDERING INFORMATION — MODEL CODE

Configure the Model ILG by selecting one code from each option group below. The complete model code is composed as follows:

ILG — **X1** **X2** **X3** **X4** **X5** **X6** **X7** **X8** **X9** **X10** **X11** **X12** **X13** **X14**

X1 Mounting · X2 Chamber MOC · X3 Chamber bottom flange · X4 Chamber flange rating · X5 Process connection type · X6 Process connection size · X7 Vent type · X8 Vent size · X9 Drain type · X10 Drain size · X11 C-C distance · X12 Scale MOC · X13 Flag colour · X14 Optional accessories

1 MOUNTING — X1

Chamber top	Chamber bottom	Mounting	Code
Welded end cap	Flange	Side / Side	1
Flange	Flange	Side / Side	2

2 CHAMBER MOC — X2

Material of construction	Code
316/316L stainless steel chamber	A
PVDF	C
CPVC	D
Inconel 625	E
Inconel 825	F
Monel	G
Hastelloy C-276	H
6Mo	I
Titanium	J

3 CHAMBER BOTTOM FLANGE — X3

Style	Code
Slip on style	SO
Weld neck	WN
Socket weld	SW
RTJ Weld Neck	RWN
Threaded	TH

5 PROCESS CONNECTION TYPE — X5

Flanged (ASME B16.5)	Code
Slip on flange	SO
Weld neck flange	WN
Socket weld flange	SW
RTJ Weld Neck flange	RWN
Threaded flange	TH

4 CHAMBER FLANGE RATING — X4

ASME B16.5	Code	EN 1092	Code
150#	A	PN16	1
300#	B	PN25	2
600#	C	PN40	3
900#	D	PN63	4
1500#	E	PN100	5
2500#	F	PN160	6
		PN250	7

Threaded / screwed	Code
Threaded NPT-M (male)	M
Threaded NPT-F (female)	N
Socket weld	O
Pipe nipple butt weld end	R

7 ORDERING INFORMATION — MODEL CODE (CONTINUED)

6 PROCESS CONNECTION SIZE — X6

ASME B16.5	Code	EN 1092	Code
1/2"	A	DN 15	1
3/4"	B	DN 20	2
1"	C	DN 25	3
1 1/2"	D	DN 40	4
2"	E	DN 50	5
2 1/2"	F	DN 65	6
3"	G	DN 80	7

8 VENT SIZE — X8

ASME B16.5	Code	EN 1092	Code
1/2"	A	DN 15	1
3/4"	B	DN 20	2
1"	C	DN 25	3
1 1/2"	D	DN 40	4
2"	E	DN 50	5

10 DRAIN SIZE — X10

ASME B16.5	Code	EN 1092	Code
1/2"	A	DN 15	1
3/4"	B	DN 20	2
1"	C	DN 25	3
1 1/2"	D	DN 40	4
2"	E	DN 50	5

13 FLAG COLOUR — X13

Colour	Code
Red & White (standard)	RW
Yellow & White	YW
Red & Black	RB
Orange & Black	OB

14 OPTIONAL ACCESSORIES — X14

Accessory	Code
Reed chain transmitter	RCT
Magnetostrictive level transmitter	MLT
Reed switches	RS
Hermetically sealed indicator	HSI
Special painting (per project painting spec.)	SP

7 VENT TYPE — X7

Type (ASME B16.5)	Code
Butt weld end	BW
RF slip-on flange	SO
RF weld neck flange	WN
RTJ Weld Neck flange	RWN
Threaded flange	TH
Threaded fitting (ASME B16.11)	TF

9 DRAIN TYPE — X9

Type (ASME B16.5)	Code
RF slip on flange	SO
RF weld neck flange	WN
RTJ Weld Neck flange	RWN
Threaded flange	TH
Threaded fitting (ASME B16.11)	TF

11 C-C DISTANCE — X11

Centre-to-centre distance	Code
Specify distance in mm (300 – 6,000 mm)	XXXX

12 SCALE MOC — X12

Material	Code
SS316/316L dual certified	SSL

8 HOW TO ORDER — CONFIGURATION EXAMPLE

The example below shows a fully configured model code and the meaning of each selected option. Simply state the complete code on your enquiry or purchase order; our applications team will confirm the configuration on the General Arrangement drawing issued for approval.

ILG - 1 - A - SO - A - SO - A - BW - A - SO - A - 1000 - SSL - RW

Group	Code	Selection
X1	1	Mounting: chamber top — welded end cap; chamber bottom — flange; side / side
X2	A	Chamber MOC: 316/316L stainless steel chamber
X3	SO	Chamber bottom flange (ASME): slip on style
X4	A	Chamber flange rating (ASME): 150#
X5	SO	Process connection type (ASME): slip on flange
X6	A	Process connection size (ASME): 1/2"
X7	BW	Vent type (ASME): butt weld end
X8	A	Vent size (ASME): 1/2"
X9	SO	Drain type (ASME): RF slip on flange
X10	A	Drain size (ASME): 1/2"
X11	1000	C-C distance: 1,000 mm
X12	SSL	Scale MOC: SS316/316L dual certified
X13	RW	Flag colour: Red & White (standard)

Option group X14 (optional accessories) is omitted in this example; append the relevant code — RCT, MLT, RS, HSI or SP — when switches, transmitters, a hermetically sealed indicator or special painting are required.

9 WHY CHOOSE GLOBE UNITED?

With our manufacturing presence in SAIF Zone, Sharjah, U.A.E., we are able to offer:

Graded raw materials

Variety of graded raw material, sourced from Europe, Japan and North America.

Stage-wise inspection

Intrusive stage-wise inspections carried out as per project requirements.

NDE compliance

Compliance to NDE requirements as per project specifications.

10+ years of experience

More than a decade of proven operation in level instrumentation.

Instant spares

Instant availability of spare parts from our Sharjah facility.

Prompt site service

Prompt site service support within the U.A.E. and across the GCC.

200+ clients worldwide

A growing installed base with over 200 clients around the world.

30+ technical professionals

A dedicated team of more than 30 technical professionals.