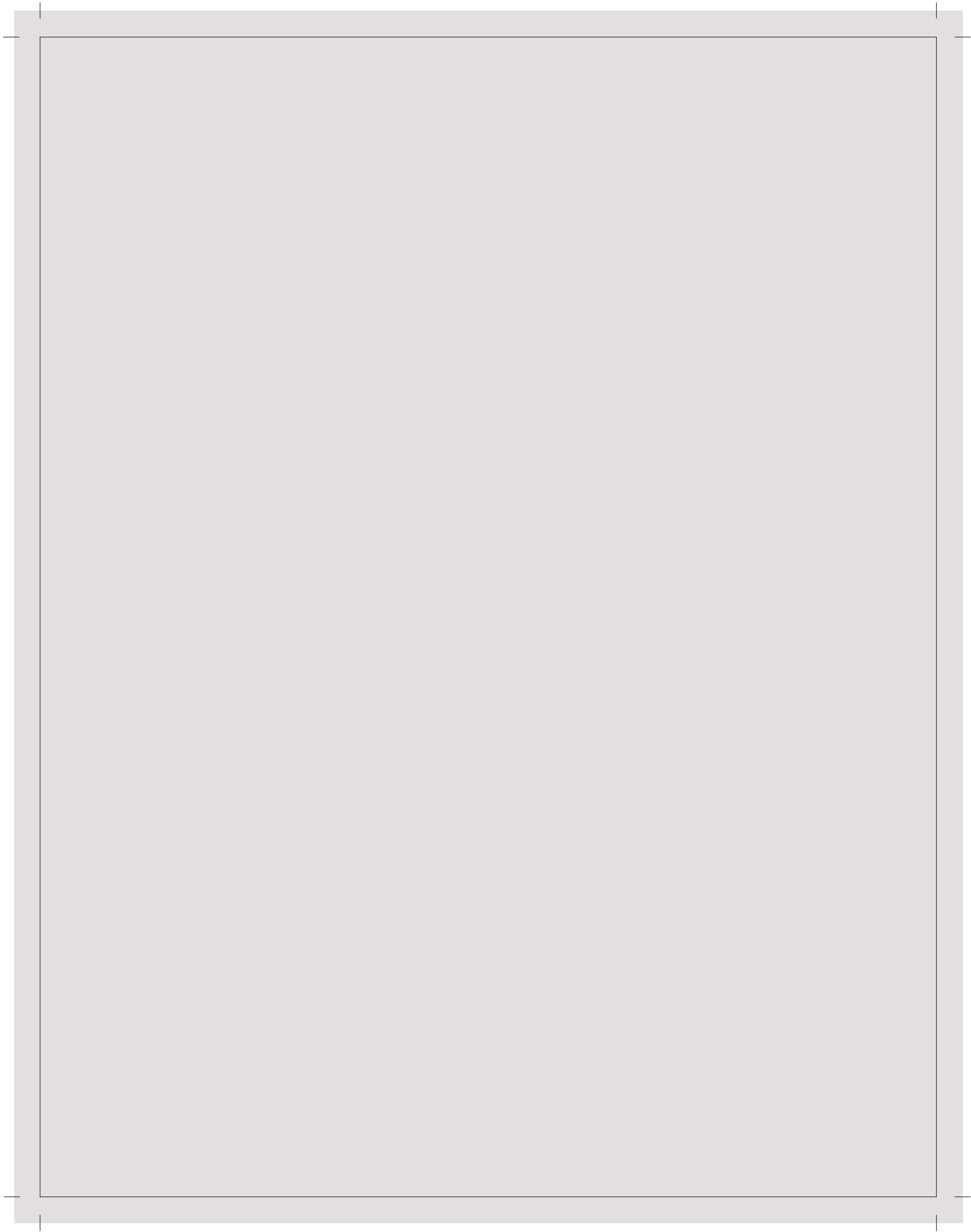




BLISS ANAND

BAM Series Magnetic Level Gauge







BAM Series Magnetic Level Gauge

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BAM Series Magnetic Liquid Level Gauges



Superior Level Indicator

Bliss Anand magnetic level gauges are highly accurate, low-maintenance alternatives to sight glasses and other outdated level indicators. They provide redundant, non-invasive level indication while eliminating leak points and fugitive emissions. Their robust design is ideal for high temperatures, high pressures and corrosive services. Bliss Anand gauges are easy to install and require no extra piping in most applications.

Combined with externally mounted transmitters and switches, Bliss Anand magnetic level gauges provide the industry's most advanced and cost-effective level solutions.

FEATURES

1. Level indication viewable upto 150 feet away
2. No process liquid in contact with indicator glass
3. Ideal for high-temperature, high-pressure and corrosive applications
4. Manufactured to meet specifications (ASME B31.1/B31.3 or PED as specified)
5. Magnetostrictive and radar transmitter options for non-invasive and/or redundant level control
6. Float Failure Indicator (Std.)
7. All external parts SS316 or as specified
8. 360° magnetic coupling.
9. Fully corrosion resistance system.
10. Measurement is unaffected by pressure, vacuum, temperature, foam and viscosity.
11. Min sensitivity to density variation.
12. Permanent local indication without external power supply.
13. Fully adjustable alarm switches.
14. Safe, environment friendly and trouble free design.
15. Indicating assembly certified to IP-66.



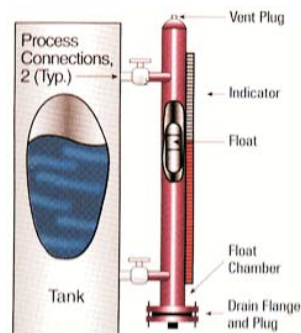
DESCRIPTION

Bliss Anand magnetic level gauges consist of a float chamber with process connections suitable for installation to the vessel where level is to be measured. The process connections may be side couplings, flanges or other configurations as illustrated on the following page.

The magnetic bargraph indicators is externally mounted to the float chamber; therefore, it is not a wetted part and is isolated from the process. Flipper-style indicators are standard with bright, contrasting colors for clear and concise level indication.

The bargraph indicators is operated by the custom float installed in the chamber. Contained within the float is a 360° magnet assembly which operates the external bargraph indicators through the chamber pipe wall. Floats are designed to meet the application process S.G. and pressure and are sized accordingly.

As the float rises and falls with the process level, the magnets drive the external bargraphs assembly, providing local indication to the operator, or providing the magnetic coupling for transmitter output.



BAM Series Level Gauge with Bargraph Indicator

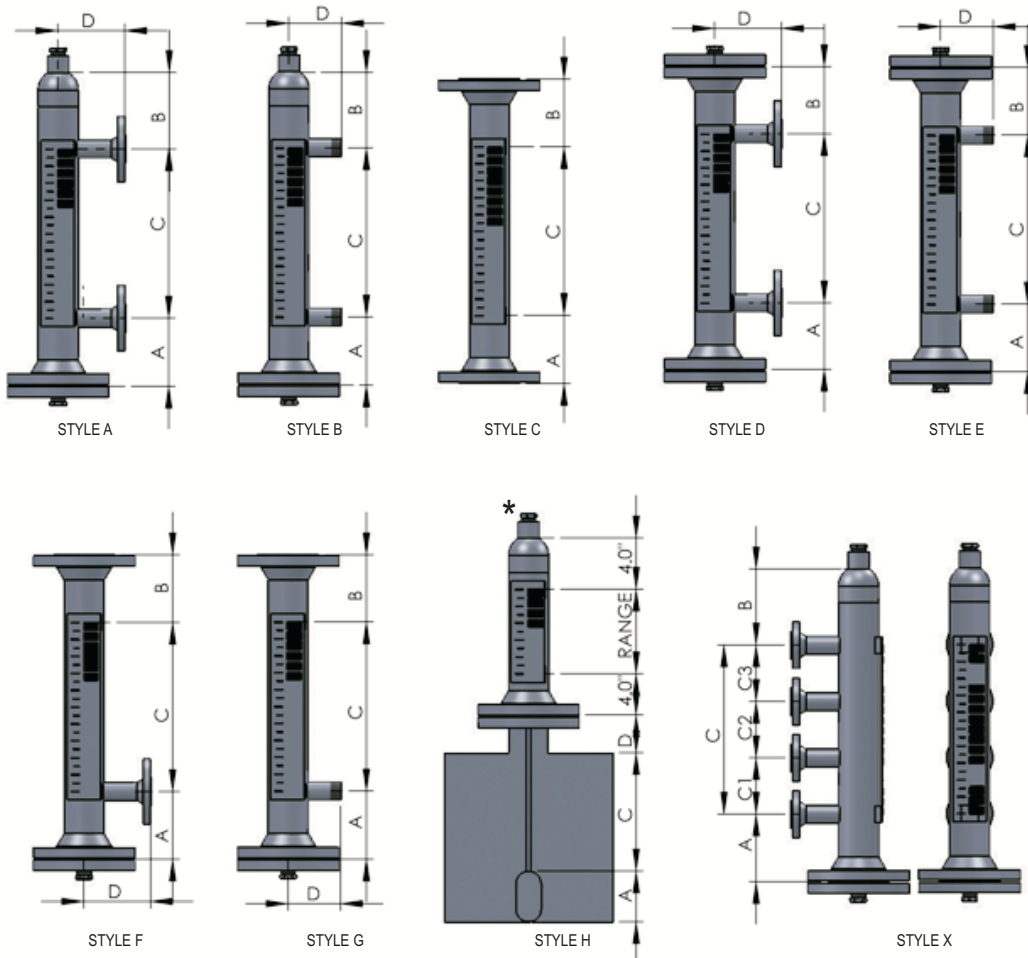
SPECIFICATION

All Bliss Anand liquid level gauges are custom-engineered and manufactured based on customer application, specifications and other requirements. The chart below lists minimum standard materials, design, testing and other options as required by the application.

	Typical Construction	Optional as Required
Chamber Material	316 Series stainless wetted parts	Other non-ferrous materials that do not exhibit ferro-magnetic properties such as Hastelloy, CB20, Inconel, Monel 400 and T-321 stainless
Chamber Pipe	2" S40 welded pipe depending upon the application pressure, temperature and corrosion allowance	2", 2½", 3" may be required, schedules up to 160 depending upon application requirements
Chamber Flanges	As per customer specifications	Common upgrades are ANSI weld neck style, socket weld, or lap joint, and other flange faces such as RTJ or flat face
Process Connections	As per customer specifications	As with chamber flanges, upgrades to process connections, vents & drains are ANSI weld neck style, socket weld, or lap joint, and other size or rating NPT or socket weld connections
Float Assembly	Titanium / SS 316 STD. Others available per application -320°F to 1000°F, Sg.30 pressure = vacuum to 3000 psi	Bliss Anand offers floats in Hastelloy, Monel, and Titanium, as required and rated up to 3000 psi or as low as 0.30 minimum S.G.
Indicator	Brightly colored red and contrasting silver SS316 all-metal, high-temperature design reading in feet and inches with 1/2" divisions; approximately 1/4" resolution	SS 316 stainless steel housing construction is available as std. In addition, other indicator colors, units of measure or follower type may be specified.
Chamber Design	Float chamber is designed to ANSI B31.1 and B31.3, and ASME Boiler Code PG60. Welding and welder qualification in accordance with ASME Section IX.	Non-standard welding procedures, qualifications or testing may be supplied if required, as well as designs to proprietary customer design specifications
Testing	Functional and calibration test are performed on every Bliss Anand gauge	Additional testing and documentation, such as MTR's, radiography, hydrostatic pressure tests, PMI, dye penetrant, NACE or witness testing are available as specified



Typical LG Series Mounting Styles



Typical Installations



* Most Common

MAGNETIC LEVEL GAUGE SELECTION GUIDE - BAM 92 Series

Selection	Suffix Codes										Description	
A Orientation Style	A											Side-Side Flanged
	B											Side-Side Screwed
	C											Top & Bottom
	D											Side-Side with Top Flanged
	E											Side-Side Screwed with Top Flanged
	F											Top & Side Flanged
	G											Top & Side Screwed
	H											Top Mounted
B Chamber Material	X											Special
	S1											304 SS
	S2											316 SS
	S6											Inconel 625
	S8											Inconel 825
	HA											Hastelloy-C 276
	KY											PVDF
	PP											Polypropylene
C Float Material	PV											PVC/CPVC
	XX											Special
	S2											SS-316 / 316L
	TI											Titanium
	PV											PVC/CPVC
	PP											Polypropylene
	KY											PVDF
	HA											Hastelloy
D Process Connection Type	XX											Special
	F											Flanged
	S											Screwed
	W											Welded
	X											Special
E Process Connection Size	1											1/2"
	2											3/4"
	3											1"
	4											1 1/2"
	5											2"
	6											2.5"
	7											3"
	8											4" (Only Top Mounted)
	F Process Connection Rating	A										
B												300#
C												600#
D												900#
E												1500#
F												2500#
T												NPT(F) - 3000#
X												Special
G Process Connection Finish	TH											Threaded
	RF											RF
	WN											WNRF
	WJ											WNRTJ
	SJ											SORTJ
	XX											Special
H Indicator Type	F											Flipper
	S											Shuttle
I Indicator Construction	AL											Aluminium Enclosure With AL Flap
	SS											St. Steel Enclosure With SS Flap
	XX											Special
J Scale	NS											No Scale
	SM											St. Steel in mm
	SI											St. Steel in Inches
	XX											Special

MAGNETIC LEVEL GAUGE SELECTION GUIDE - BAM 92 Series

Selection	Suffix Codes	Description
K Vent Connection	PL	Plugged
	FL	Flanged
	FV	Flanged with Valve
	SV	Screwed with Valve
	XX	Special
L Vent Connection Size	1	1/2"
	2	3/4"
	3	1"
	X	Special (Specify)
M Vent Connection Rating	A	150#
	B	300#
	C	600#
	D	900#
	E	1500#
	F	2500#
	T	NPT(F) - 3000#
	X	Special (Specify)
N Vent Connection Type	TH	Threaded
	RF	RF
	WN	WNRF
	SJ	SORTJ
	WJ	WNRTJ
	XX	Special (Specify)
O Drain Connection	PL	Plugged
	FL	Flanged
	FV	Flanged with Valve
	SV	Screwed with Valve
	XX	Special
P Drain Connection Size	1	1/2"
	2	3/4"
	3	1"
	X	Special (Specify)
Q Drain Connection Rating	A	150#
	B	300#
	C	600#
	D	900#
	E	1500#
	F	2500#
	T	NPT(F) - 3000#
	X	Special (Specify)
R Drain Connection Type	TH	Threaded
	RF	RF
	WN	WNRF
	SJ	SORTJ
	WJ	WNRTJ
	XX	Special (Specify)
S Options & Specials	NA	No Optional Accessories
	HT	Heat Tracing (External)
	MX	Transmitter Magnetostrictive
	SW	Point Switch (SPDT Reed)
	IN	Insulation
	FS	Frost Shield
	CY	Cryogenic Application
XX	Special	
T CC Distance		XXXX Specify with unit
U Indicating Range		XXXX Specify with unit
V Application		L Level I Interphase
W Liquid Density (Upper)		X.XX To Specify
X Liquid Density (Lower)		X.XX To Specify



MAGNETIC LEVEL GAUGE

ORDERING INFORMATION

The following information is required to order or request a quotation for Magnetic Level Gauges. Use the following configuration Guide to select the model number.

Required Information

1. Magnetic Level Gauge to be used for : A) Level
B) Interface Level
C) Level & Interface

2. Service Liquid, please specify
A) Upper Liquid & Specific Gravity
B) Lower Liquid & Specific Gravity

3. Operating Pressure _____
Maximum Pressure _____

4. Operating Temperature _____
Maximum Temperature _____
Minimum Temperature _____

Model No. Configuration

BAM92 A/B/C/D/E/F/G/H/I/J/K/L/M/N/O/P/Q/R/S/T/U/V/W/X

SPECIAL APPLICATION

All gauge dimensions are nominal except "CL" or "measuring range".

Standard chamber size is 2". Schedule 40.

(Consult Factory)

MAGNETIC LEVEL GAUGE



STANDARD INDICATORS

BARGRAPH INDICATOR

Features a column of magnetic Bargraph which are generally white on one side and red on the opposite side. The bargraphs made from SS-316. As the float moves up or down the magnetic field of the permanent magnet inside the float pulls the bargraphs 180 degrees thus changing the color. As the float rises, the bargraphs are turned from white to red and as the float falls, they are changed back to white again. The housing of this indicator is made of Aluminium or SS-316.

PRESSURE AND TEMPERATURE

Magnetic Level Gauges are available for a working pressure of 200 bar / 3000 PSI and a maximum temperature of 538°C / 1000°F. For higher pressure, temperature & customised specifications, please consult factory.

FLOATS

Magnetic floats available for a pressure of 200 bar / 3000 PSI and a maximum temperature of 538°C / 1000°F. For higher pressure, temperature & customised specifications, please consult factory.



MAGNETIC LEVEL GAUGE WITH BARGRAPH INDICATOR



MAGNETIC LEVEL GAUGE

LEVEL SENSOR - MAGNETOSTRICTIVE TYPE

Magnetostrictive Level Sensor are used for continuous remote liquid level measurement and are based on position monitoring of a magnetic float following the magnetostrictive principle.

The measuring process is initiated by a current pulse. This current generates an axial magnetic field along the length of a wire made of magnetostrictive material, which is held under tension inside the guide tube. The float, which sits on the liquid surface, is fitted with permanent magnets. When the pulse reaches the float the two magnetic fields interact and a torsional force results.

A torsional wave is induced in the wire. A piezoceramic converter in the transmitter housing at the end of the wire converts this into an electrical signal. By measuring the elapsed transit time, it is possible to determine the start point of the torsional stress wave and therefore the float position with a high degree of accuracy.

STANDARD SPECIFICATIONS

1. Operations : By the float magnet of the magnetic level gauge inside the chamber
2. Protection : a) EEx ia intrinsic safely IP 65
b) EExd explosion proof feature-IP 65
3. Accuracy : $\pm 0.05\%$ of span (± 2 mm min)
4. Measuring Range: 9m maximum
5. Supply : 12 to 36 V dc
6. Output : 4~20 mA two wire system
7. COMM. : HART



MAGNETIC LEVEL GAUGE



STANDARD TECHNICAL SPECIFICATIONS

Cage	2-3" NB Pipe: SS-316 / 316L / Alloy 625 / Alloy 825 / 904L / UNS - 31254 / MONEL 400 / Titanium / Host C276, other materials
Max Center to Center Dist.	60ft. / 18.28m
Max Depth of Top Mounted	20 ft / 6000mm (Style H)
Connecting Flanges	ANSI B16.5
Max. Viscosity	500 CST
Pr. Rating	200 bar / 3000 PSI Maximum
Max Opr. Temp.	1000°F for SS-316 / 316L / Alloy 625 / Alloy 825 / 904L / UNS - 31254 80°C / 176°F for PVDF 40°C / 104°F for PVC
Min Sp.GR of Service liquid	0.30
Min Diff in Sp Gr Between Interface Liquid	0.10 (less than 0.10 consult factory)
Accuracy	±10 mm / $\frac{3}{8}$ "

Note: Refer to Transmitter Catalog for Model Selection of Magnetostrictive TORRIX.



MAGNETIC LEVEL GAUGE

CALIBRATED SCALE

Stainless Steel Scale is standard for the indicating assembly, other material on request.

ALARM SWITCH

Magnetically operated Alarm Switches.

MAGNETIC LEVEL SWITCH

1. Contact Element : Reed Switch
2. Switch Form : SPDT Hold type
3. Contact Rating : 1AMP 30 V DC & 110 / 220 VAC
4. Protection : EExd IIC





Special Requirements & Testing

- H2 Compliance
- PMI
- D.P. Test
- Radiography
- Ultra Sonic
- Approved Weld Procedures & Welder Certifications
- Nace Compliance
- HIC Compliance
- SP. Alloy Weldings (Alloy 825, StSt, Monel, LF2 etc.)
- Other testing available as required



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