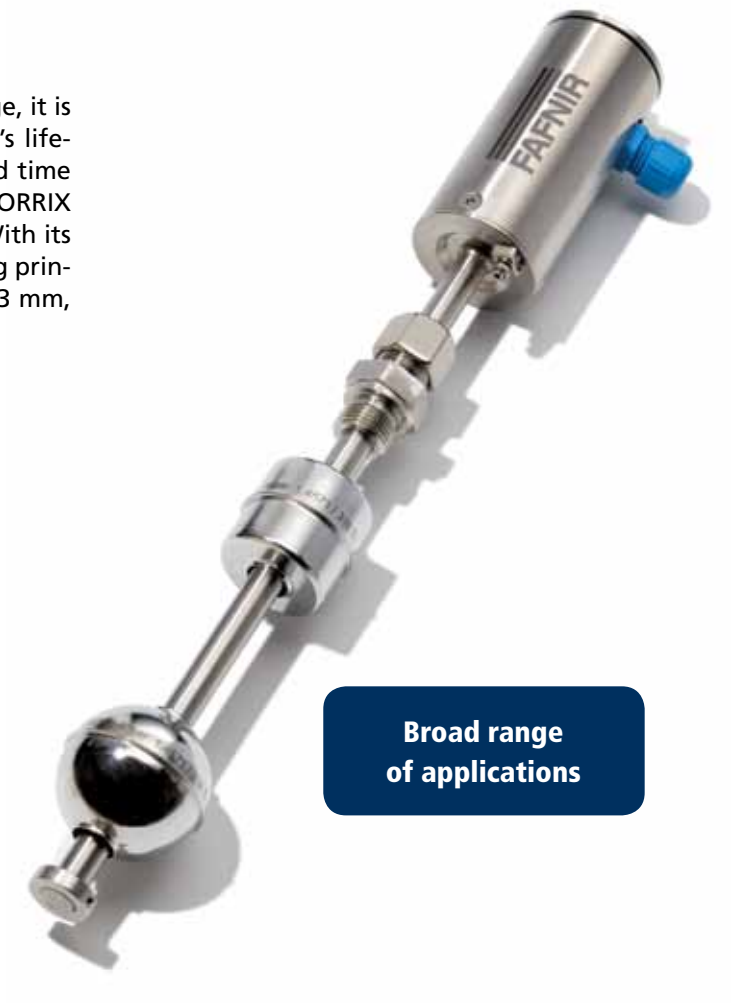
Highly Versatile Solution

TORRIX

Magnetostrictive Level Sensor

The most versatile level sensor in our range, it is easy to install and reliable throughout it's life-time. Forget complicated installations and time consuming and costly troubleshooting, TORRIX is very easy to use and to troubleshoot. With its high-precision magnetostrictive measuring principle, it archives an accuracy of up to ± 0.3 mm, and is among the very best in its class.



Broad range of applications

Installed and tested in the following industries

» Chemical, petrochemical, liquid gas, pharmaceutical, laboratory, off-shore, ship building, power plants, energy systems, mechanical engineering, process and drinking water treatment.

Just get started

» Easy to install and easy to use. TORRIX saves your time and even if you have a challenging application, troubleshooting is very easy. The sensor can even be dry tested without liquids before installation.

A solution for the most difficult installation conditions

» Due to the small sensor head and a small tube diameter of only 6 mm, the TORRIX can be installed almost anywhere.

The solution for interface layer measurement

» Equipped with two floats, the sensors measures both the filling and the interface layer very precisely, even when an emulsion layer is present at the interface.

TORRIX level sensor in brief

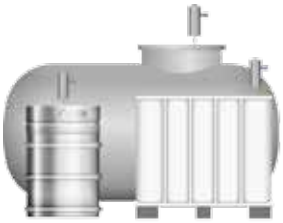
- Easy to install and to configure
- Measurement of the separation layer and the filling level via HART®
- 2-wire terminal (4 to 20 mA)
- Optional HART® protocol
- Robust long life design
- Resistant to shock and vibration (OIML D11)
- Measuring range freely configurable along the entire probe length
- Use in Ex zone 0 (ATEX and IECEx approval)

Attractive examples?

TORRIX

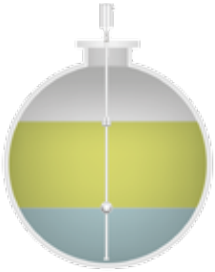
TORRIX is already being used successfully here:

Storage Tanks and Storage Containers



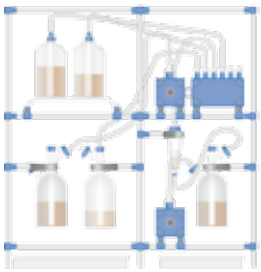
TORRIX is ideally suited for measuring in all non-adhesive liquids and almost all tank geometries. There is no need to adjust the sensor to the liquid or the shape of the tank. Another advantage is that there are no dead zones in the upper and lower areas. The starting point of the measurement is only defined by the size of the float; therefore the entire volume can be measured and used.

Interface layer measurements where emulsions are present



When used with HART® protocol, TORRIX can measure both the interface level and the overall level of a tank. Unlike sensors that operate on the guided microwave principle, the interface layer can be easily recognized even when emulsion is present.

Pilot plant and prototype systems



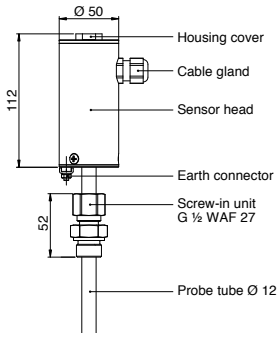
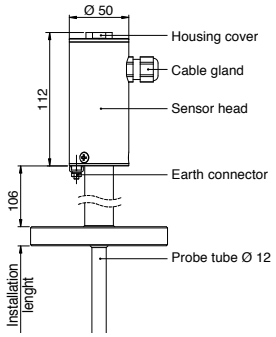
The TORRIX 6 with his probe diameter of 6 mm and float diameter of 27 mm is ideal for applications in smaller containers. Unlike most sensors, TORRIX measures in the upper and lower region with no dead zone with the threshold point defined only by the float. The TORRIX is ideal in applications where frequent changes of media are needed as it does not require adjustment.

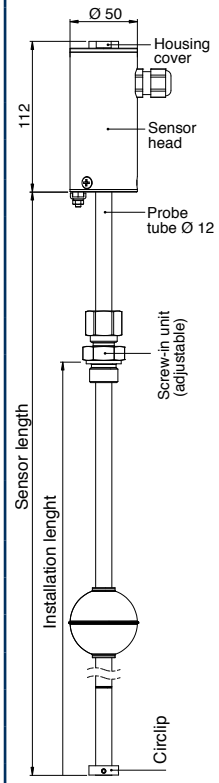
System with toxic chemicals

The TORRIX can be welded gas tight with any flange and reduce the potential for leaks in your system. This allows TORRIX to be used in processes with hazardous fluids such as ammonia.

TORRIX

Technical data

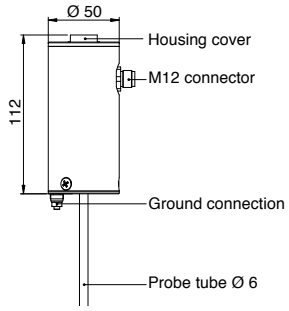
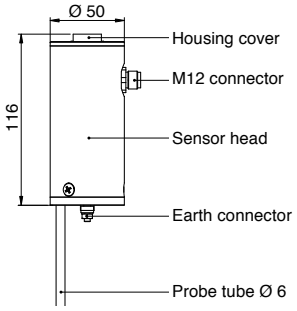
Name	TORRIX	TORRIX flange
Technical drawing		
Process connection*	Height adjustable with cutting ring coupling: all common threads.	Welded: all common threads and flanges
Probe head		
Protection class	IP68	
Material	Standard: Stainless steel 303: optional: Stainless steel 316 L	
Cable terminal	M16 x 1.5 cable gland for cable diameter 5 to 10 mm; optional: ½" NPT threads for conduit cabling; M12 plug	
Ambient temperature	– 40 °C to + 85 °C	
Probe tube		
Material	Standard: Stainless steel 316 Ti; optional: Stainless steel 316 L, Hastelloy®, titanium, tantalum, stainless steel 316 Ti coated	
Diameter	12 mm	
Length	200 mm to 6,000 mm Highest temperature versions up to 3,000 mm	
Accuracy		
Filling level	± 0.5 mm or ± 0.025 %, optional ± 0.3 mm or ± 0.01 %	
Resolution (HART®)	0.1 mm	
Electrical connection		
Connection	2-wire	
Voltage	8 to 30 V_{DC}, Ex version 10 to 30 V_{DC}	
Signal	Power output: 4 to 20 mA/HART®	
HART® functions	Float position in mm, cm, m, inches or feet; positioning of second float; separation layer (difference between floats); sensor status information	
Process conditions		
Temperature	Normal temperature (NT): – 40 °C to + 125 °C High temperature (HT): – 40 °C to + 250 °C Highest temperature (HHT): – 40 °C to + 450 °C Low temperature (LT): – 65 °C to + 125 °C	
Pressure**	0 bar to 120 bar (room temperature) 0 bar to 95 bar (250 °C) 0 bar to 82 bar (450 °C)	
Options		
	Vibration resistant design (to OIML D11)	
	High pressure version up to 200 bar	
	ATEX and IECEx approval	
	Material and calibration certificate	

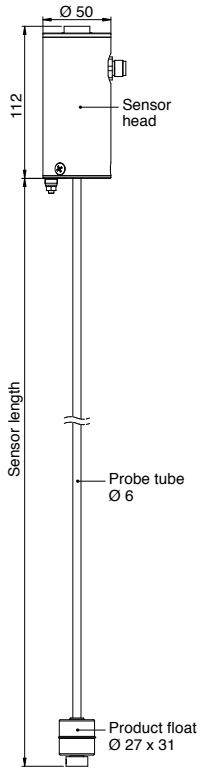


* See order information page 8 ** Higher pressure version on request.

TORRIX 6

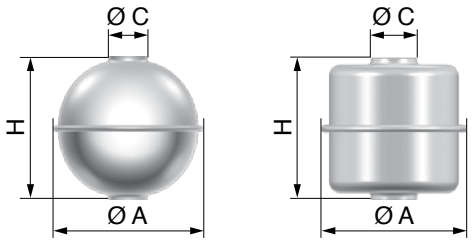
Technical data

Name	TORRIX 6	TORRIX 6 B
Technical drawing		
Process connection*	Height adjustable with cutting ring coupling: All common threads. Bottle unions for all common laboratory bottles, e. g. GL45.	
Probe head		
Protection class	IP68	
Material	Standard: Stainless steel 303; optional: Stainless steel 316 L	
Cable terminal	M16 x 1.5 cable gland for cable diameter 5 to 10 mm; optional: M12 plug (see figure)	
Ambient temperature	– 40 °C to + 85 °C	
Probe tube		
Material	Standard: Stainless steel 316 Ti: optional: Stainless steel 316 L, Hastelloy®, titanium, tantalum	
Diameter	6 mm	
Length	200 mm to 1,000 mm	
Accuracy		
Filling level	0.75 mm or ± 0.025 %	
Resolution (HART®)	0.1 mm	
Electrical connection		
Connection	2-wire	
Voltage	8 to 30 V_{DC}, Ex version 10 to 30 V_{DC}	
Signal	Power output: 4 to 20 mA/HART®	
HART® functions	Float position in mm, cm, m, inch or feet; sensor status information	
Process conditions		
Temperature	Normal temperature (NT): – 40 °C to + 125 °C	
Options		
	Material and calibration certificate	
	ATEX and IECEx approval	
Float**	External diameter 27 mm; for substances with a density < 0.75 g/mm³; Process pressure max. 19 bar	



* See order information page 8 ** Other floats on request.

Floats and Process Connections



Floats

(Other floats on request.)

For medium density	Float density	Temperature range	Max. operating pressure	Dimensions in mm A	H	C	Shape	Order number
Stainless Steel 316 Ti								
≥0.95 g/cm³	<0.85 g/cm³	– 200 °C to +250 °C	50 bar	43.0	40.0	15.0	Sphere	909115
≥0.85 g/cm³	<0.75 g/cm³	– 200 °C to +250 °C	20 bar	43.0	40.0	15.5	Sphere	909130
≥0.70 g/cm³	<0.60 g/cm³	– 200 °C to +250 °C	40 bar	52.0	52.0	15.5	Sphere	900013
≥0.60 g/cm³	<0.50 g/cm³	– 200 °C to +250 °C	20 bar	52.0	49.0	15.5	Sphere	909109
≥0.45 g/cm³	<0.36 g/cm³	– 40 °C to +250 °C	25 bar	83.0	82.0	15.0	Sphere	909229
≥0.70 g/cm³	<0.60 g/cm³	– 200 °C to +250 °C	16 bar	43.0	43.0	15.5	Cylinder	909119
≥0.70 g/cm³	<0.60 g/cm³	– 200 °C to +250 °C	5 bar	29.5	40.0	12.5	Cylinder	908495
≥0.70 g/cm³	<0.60 g/cm³	– 200 °C to +250 °C	1 bar	29.5	40.0	12.5	Cylinder	908528
Titanium								
≥0.50 g/cm³	<0.40 g/cm³	– 200 °C to +250 °C	20 bar	50.0	48.0	15.4	Sphere	909113
≥0.40 g/cm³	<0.30 g/cm³	– 40 °C to +125 °C	25 bar	83.0	81.0	15.0	Sphere	909140
≥0.50 g/cm³	<0.42 g/cm³	– 40 °C to +125 °C	25 bar	98.0	96.0	23.0	Sphere	909177
≥0.69 g/cm³	<0.59 g/cm³	– 200 °C to +450 °C	200 bar	60.0	59.0	14.5	Sphere	909205
Hastelloy® C 276								
≥0.70 g/cm³	<0.60 g/cm³	– 200 °C to +250 °C	10 bar	46.0	48.0	15.2	Cylinder	909096
Buna								
≥0.45 g/cm³	<0.38 g/cm³	– 40 °C to +80 °C	16 bar	40.0	120.0	15.0	Cylinder	909183

Process Fittings

(Other fittings and flanges on request.)

Fittings, Flanges and Threads			
Description	**Material**	**Thread**	**Order number**
Fittings for TORRIX (Ø 12 mm probe tube)			
Screw-in unit	Brass	R 1½"	909097
Screw-in unit	316 Ti	G ½"	909092
Screw-in unit (Swagelok®)	316	NPT ½"	909117
Screw-in unit (Swagelok®)	316	G ½"	909093
Fitting for TORRIX 6 (Ø 6 mm probe tube)			
Cutting ring coupling	316 Ti	G 3/8"	909250
Flange			
2" ANSI, 150 lbs	316 Ti		909245
DN 25, PN 6, DIN 2527, Form B	316 Ti		909238
DN 50, PN 16, DIN 2527, Form C	316 Ti		909243
DN 63, PN 16, DIN 2527, Form C	316 Ti		909247

TORRIX

Order code

Version										
TORRIX (order code)		–		–		–		–		–
Material (probe tube)	Stainless Steel 316 Ti	SS								
	Stainless Steel 316 L	SC								
	Hastelloy® C4	C4								
	Hastelloy® B2	B2								
Surface treatment	none		N							
	electropolished		E							
Version	Standard (12 mm) for variable screw connection			SV						
	Standard (12 mm) for welded screw connection or flange			SF						
	Bypass (12mm probe tube) for magnetic level indicator			SB						
	TORRIX 6 (6 mm probe tube, centred)			6S						
	TORRIX 6 B (6 mm probe tube, offset)			6B						
	Heavy duty version (18 mm probe tube)			SW						
Length / Extra charge for probe or fitting length more than 1,000 mm / per 100 mm										
Temperature range	Normal temperature (– 40 °C to + 125 °C)					NT				
	High temperature (– 40 °C to + 250 °C)					HT				
	Highest temperature (– 40 °C to + 450 °C)					HH				
	Low temperature (– 65 °C to + 125 °C)					LT				
Approvals	None						NN			
	Ex (ATEX and IECEx)						Ex			
Electrical output	4 to 20 mA/HART®							HA		
Cable terminal	Cable gland (M16 x 1.5)									CC
	M12 connector									M2
	½ NPT female thread									NM
	½ NPT male thread									NF

Accessories (Please indicate in addition to standard order code)

Description				
TORRIX accessories	–		–	
Spring for extending the measuring range at the probe end	S			
Vibration-resistant version (in accordance with OIML D11)		V		
Increased accuracy ± 0.3 mm				P

Certificates

Description	Order number
Inspection certificate 3.1 in accordance with EN 10204:2004	904495
Inspection certificate 3.1 with supplier report in accordance with EN 10204:2004	904496
TORRIX calibration protocol	904498

Special designs for process connection

When ordering please specify (nominal diameter DN, nominal pressure PN, standard, shape).

Variants	
▪ All common flanges	▪ Tri-Clamp
▪ Dairy fitting	▪ Other fittings on request