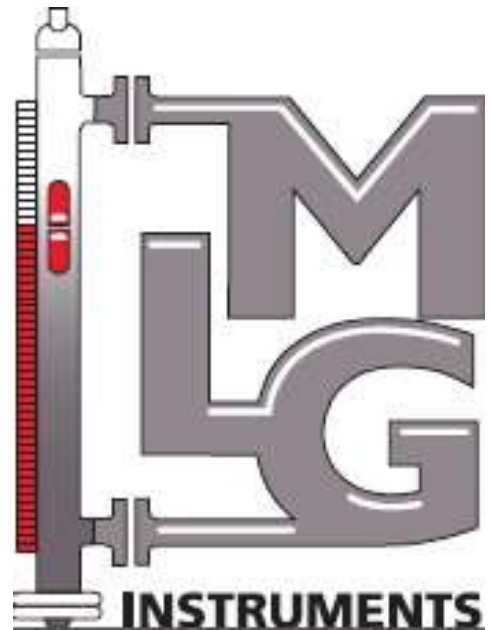


MLG Instruments - Schiedam



Catalogue



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Magnetic level gauges

Working principle

A magnetic level gauge is mounted to the side or the top of a liquid tank with flanges or with thread connections. The device is made of a vertical measuring tube and an exterior measuring column with an indication rail with flaps on it. Each flap is fitted with a permanent magnet and is colored white on one side and red on the other.

The tube and the measuring column are both made of non-magnetic material. A custom made float that contains a ring magnet is inserted in the measuring tube. By default the floats are made of stainless steel (SS316Ti). However a different type of alloy or metal such as titanium, Inconel and Monel 400 will be used if required.

Based on calculations and in consultation with the customer the best material for the float and the correct size and shape will be chosen by us. Magnetic level gauges work on the principle of communicating vessels and therefore the level in the tube is equal to the level in the tank.

The ring magnet in the float repels the magnets in the flaps. When the float moves up with the liquid surface, the flaps will turn red and indicate the liquid level in the tank. The red colored flaps indicate how much liquid is in the tank and the white colored flaps show which part of the tank is empty and contains gas.

Magnetic level gauges can be used as well to measure the interface level between two liquids in the same tank. They are maintenance free and are unaffected by dust, shocks, vibrations, high temperatures, humidity or even corrosive, acidic substances.

As an option the standard level gauge can also be supplied with electronic components such as switches and transmitters like reed chains.

In addition the possibility exists to order a magnetic level gauge with a bypass bridge chamber including a radar sensor or a switch.



Model MLA-10 / MLA-150

1 side connection, up to 10 barg

MLA-10 acc. to EN/DIN/ISO and MLA-150 acc. to ASME/ANSI

Process specification

Working pressure max. : 10 barg (145 psi)
 Process temperature : - 45°C to +400°C
 Density : min. 700 kg/m³

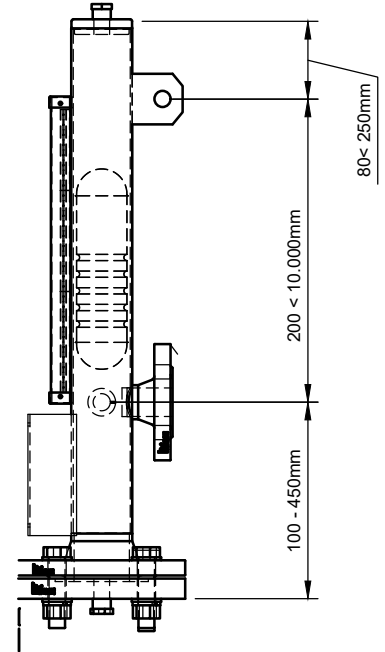
Standard material specifications

Tube ODØ 60,30 x 2,00mm : SS316/316L
 ODØ 60,33 x 2,77mm : SS316/316L

Process connections : SS316/316L
 Plug ½" BSPT or ½" NPT : SS316/316L
 Top cap : SS316/316L
 Indicator flappers red/white : SS316/316L
 Bottom flange : SS316/316L
 Drain flange : SS316/316L
 Float : SS316Ti (1.4571)
 Gasket : Graphite or Aramide¹
 Support plate : SS316L (1.4404)
 Bolts, nuts and washers : SS304L (1.4104)

Dimensions (mm)

A = 200
 B = min. 200 to max. < 5700
 C = 80
 D = see table 1



Diameter	EN (DIN) ² flanges	ASME (ANSI) ³ flanges	BSPTM ⁴	NPTM ⁵
DN15 - 1/2"	68	76	81	81
DN20 - 3/4"	72	83	82	82
DN25 - 1"	72	86	82	82
DN40 - 1½"	78	92	83	83

Table 1

Options:

- Compact design: tube ODØ 40,00 x 2,00mm or 50,00 x 2,00mm
- Chamber materials lined: 304L, PVC, PP, PVDF, Halar coated or PTFE lined (NON-ATEX)
- Drain and vent valves
- PTFE gasket
- SS316L scale (CM, % or inches)
- Switches (SPDT or SPST)
- Transmitter 4-20 mA with local display
- Insulation Glass fiber (hot applications to + 400°)
- Insulation Armaflex (cold application till - 45°C)
- Damping springs
- Float materials: Titanium, Inconel or Monel 400
- Steam Jacket or heat tracing
- Process connections with RTJ Flanges

¹ Depending on the pressure/temperature rating and chemical resistance of the media

² Flange dimension acc. to EN1092-1 type 11 PN10/16/40 < DN40 on request

³ Flange dimension acc. to ASME B16.5 150#RF

⁴ Thread connection acc. to ISO 7-1R

⁵ Thread connection acc. to ASME B16.11

Model MLB-10 / MLB-150-1

2 side connections, up to 10 barg

MLB-10 acc. to EN/DIN/ISO and MLB-150A acc. to ASME/ANSI

Process specification

Working pressure max. : 10 barg (145 psi)
 Process temperature : - 45°C to +400°C⁶
 Specific gravity (S.G.) : min. 700 kg/m³

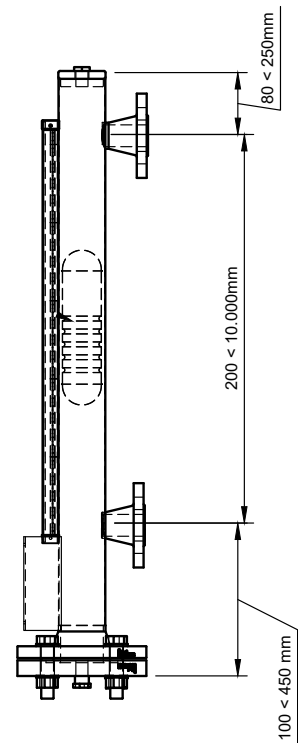
Standard material specifications

Tube ODØ 60,30 x 2,00mm : SS316/316L
 ODØ 60,33 x 2,77mm : SS316/316L

Process connections : SS316/316L
 Plug ½" BSPT or ½" NPT : SS316/316L
 Top cap : SS316/316L
 Indicator flappers red/white : SS316/316L
 Bottom flange : SS316/316L
 Drain flange : SS316/316L
 Float : SS316Ti (1.4571)
 Gasket : Graphite or Aramide⁷
 Bolts, nuts and washers : SS304L (1.4104)

Dimensions (mm)

A = 200 standard⁸
 B = min. 200 to max. < 5700
 C = 80
 D = see table 1



Diameter	EN (DIN) ⁹ flanges	ASME (ANSI) ¹⁰ flanges	BSPTM ¹¹	NPTM ¹²
DN15 - 1/2"	68	76	81	81
DN20 - 3/4"	72	83	82	82
DN25 - 1"	72	86	82	82
DN40 - 1½"	78	92	83	83

Table 1

Options:

- Compact design: tube ODØ 40,00 x 2,00mm or 50,00 x 2,00mm
- Chamber materials lined: 304L, PVC, PP, PVDF, Halar coated or PTFE lined (NON-ATEX)
- Drain and vent valves
- PTFE gasket
- SS316L scale (CM, % or inches)
- Switches (SPDT or SPST)
- Transmitter 4-20 mA with local display
- Insulation Glass fiber (hot applications to + 400°)
- Insulation Armaflex (cold application till - 45°C)
- Damping springs
- Float materials: Titanium, Inconel or Monel 400
- Steam Jacket or heat tracing
- Process connections with RTJ Flanges

⁶ For Atex zone maximum temperature of < 360°C

⁷ Depending on the pressure/temperature rating and chemical resistance of the media

⁸ Possible from 140mm, depends on the specific gravity

⁹ Flange dimension acc. to EN1092-1 type 11 PN10/16/40 < DN40 on request

¹⁰ Flange dimension acc. to ASME B16.5 150#RF

¹¹ Thread connection acc. ISO 7-1R

¹² Thread connection acc. ASME B16.11

Model MLB-16 / MLB-150-2

2 side connections, up to 16 barg

MLB-16 acc. to EN/DIN/ISO and MLB-150B acc. to ASME/ANSI

Process specification

Working pressure max. : 16 barg (232 psi)
 Process temperature : - 45°C to +400°C¹³
 Specific gravity (S.G.) : min. 700 kg/m³

Standard material specifications

Tube ODØ 60,30 x 2,00mm : SS316/316L
 ODØ 60,33 x 2,77mm : SS316/316L

Process connections : SS316/316L
 Plug ½" BSPT or ½" NPT : SS316/316L
 Top cap : SS316/316L
 Indicator flappers red/white : SS316/316L
 Bottom flange : SS316/316L
 Drain flange : SS316/316L
 Float : SS316Ti (1.4571)
 Gasket : Graphite or Aramide¹⁴
 Bolts, nuts and washers : SS304L (1.4104)

Dimensions (mm)

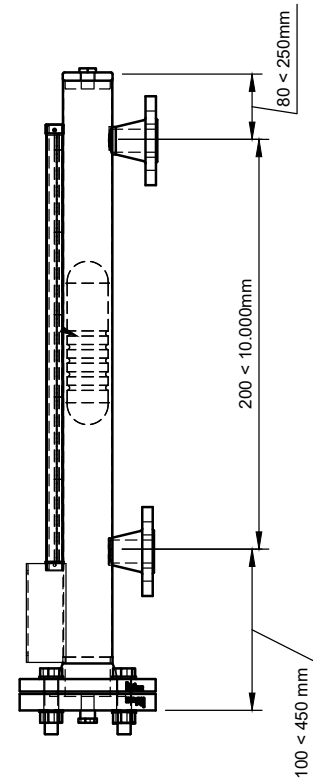
A = 200 standard¹⁵
 B = min. 200 to max. < 5700
 C = 80
 D = see table 2

Diameter	EN (DIN) ¹⁶ flanges	ASME (ANSI) ¹⁷ flanges	BSPTM ¹⁸	NPTM ¹⁹
DN15 - 1/2"	68	76	81	81
DN20 - 3/4"	72	83	82	82
DN25 - 1"	72	86	82	82
DN40 - 1½"	78	92	83	83

Table 2

Options:

- Chamber materials lined: 304L, PVC, PP, PVDF, Halar coated or PTFE lined (NON-ATEX)
- Float materials: Titanium, Inconel or Monel 400
- Isolation valves
- SS316L scale (CM, % or inches)
- Switches (SPDT or SPST)
- Transmitter 4-20 mA 2 wires
- Transmitter 4-20 mA with local display
- Insulation Glass fiber (hot applications to + 400°)
- Insulation Armaflex (cold application to -45)
- Damping springs
- PTFE gasket
- Steam Jacket or heat tracing
- Process connections with RTJ flanges



¹³ For Atex zone maximum temperature of < 360°C

¹⁴ Depending on the pressure/temperature rating and chemical resistance of the media

¹⁵ Possible from 140 mm, depends on the specific gravity

¹⁶ Flange dimension acc. to EN1092-1 type 11 PN10/16/40 < DN40 on request

¹⁷ Flange dimension acc. to ASME B16.5 150#RF

¹⁸ Thread connection acc. to ISO 7-1R

¹⁹ Thread connection acc. to ASME B16.11

Model MLB-40 / MLB-300

2 side connections, up to 40 barg

MLB-40 acc. to EN/DIN/ISO and MLB-300 acc. to ASME /ANSI

Process specification

Working pressure max. : 40 barg (580 psi)
 Process temperature : - 45°C to +400°C²⁰
 Specific gravity (S.G.) : min. 700 kg/m³

Standard material specifications

Tube ODØ 60,30 x 2,00mm : SS316/316L
 ODØ 60,33 x 2,77mm : SS316/316L

Process connections : SS316/316L
 Plug ½" BSPT or ½" NPT : SS316/316L
 Top cap : SS316/316L
 Indicator flappers red/white : SS316/316L
 Bottom flange : SS316/316L
 Drain flange : SS316/316L
 Float : SS316/316L
 Gasket : Graphite or Aramid²¹
 Bolts, nuts and washers : SS304L (1.4104)

Dimensions (mm)

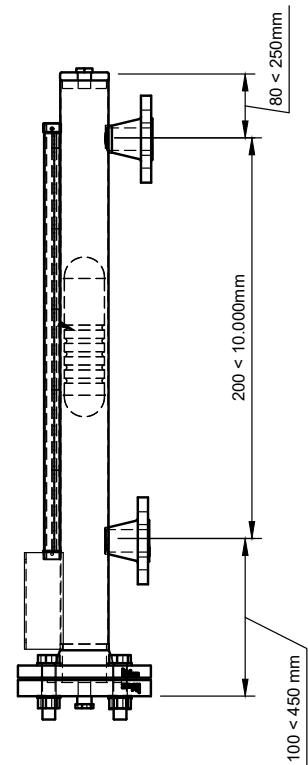
A = 200 standard²²
 B = min. 200 to max. < 5700
 C = 80
 D = see table 3

Diameter	EN (DIN) ²³ flanges	ASME (ANSI) ²⁴ flanges	NPTM ²⁵
DN15 - 1/2"	68	76	81
DN20 - 3/4"	72	88	82
DN25 - 1"	72	92	82
DN40 - 1½"	78	100	83

Table 3

Options:

- Chamber materials lined: 304L, PVC, PP, PVDF, Halar coated or PTFE lined (NON -ATEX)
- Float materials: Titanium, Inconel or Monel 400
- Isolation valves
- SS316L scale into (CM, % or inches)
- Switches (SPDT or SPST)
- Transmitter 4-20 mA 2 wires
- Transmitter 4-20 mA with local display
- Insulation Glass fiber (hot applications to + 400°)
- Insulation Armaflex (cold application -45°C)



²⁰ For Atex zone maximum temperature of < 360°C

²¹ Depending on the pressure/temperature rating and chemical resistance of the media

²² Possible from 140mm, depends on the specific gravity

²³ Flange dimension acc. to EN1092-1 type 11 PN10/16/40 < DN40 on request

²⁴ Flange dimension acc. to ASME B16.5 300#RF

²⁵ Thread connection acc. to ASME B16.11

Model MLB-600 / MLB-900 / MLB-1500

High pressure, 2 side connections, up to 192 barg

MLB-600, MLB-900 and MLB-1500 acc. to ASME / ANSI

Process specification

Working pressure max. : 167 barg (2421 psi)
 Process temperature : - 45°C to +400°C²⁶
 Specific gravity (S.G.) : min. 650 kg/m³

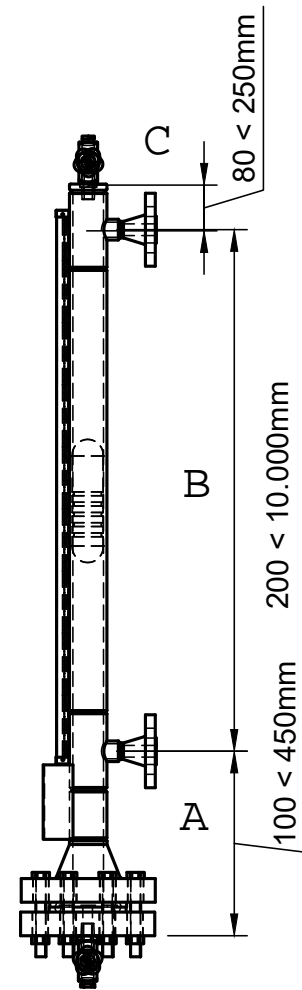
Standard material specifications

Tube²⁷ ODØ 60, 33 x 2,77mm : SS316/316L
 ODØ 60, 33 x 3,91mm : SS316/316L
 ODØ 60, 33 x 5,54mm : SS316/316L

Process connections : SS316/316L
 Plug ½" BSPT or ½" NPT : SS316/316L
 Top cap : SS316/316L
 Indicator flappers red/white : SS316/316L
 Bottom flange : SS316/316L
 Drain flange : SS316/316L
 Float : Titanium grade 2
 Gasket : Graphite or RTJ
 Bolts, nuts and washers : SS304L (1.4104)

Dimensions (mm)

A = 300 standard²⁸
 B = min. 200 to max. < 5700
 C = 100
 D = see table 4



Diameter ASME B16.5	flanges 1/2"	flanges 3/4"	flanges 1"	flanges 1 ½"	flanges 2"	NPTM 1/2"	NPTM 3/4" ²⁹
600#	59	64	69	77	80	OR	OR
900#	67	77	80	90	109	OR	OR
1500#	NA	58	65	74	NA	OR	OR

Table 4

Options:

- Chamber materials lined: 304L, PVC, PP, PVDF, Halar coated or PTFE lined (NON -ATEX)
- Float materials: Stainless steel 316TI (1.4571), Inconel or Monel 400
- Isolation valves
- SS316L scale into (CM, % or inches)
- Switches (SPDT or SPST)
- Transmitter 4-20 mA 2 wires
- Transmitter 4-20 mA with local display
- Insulation Glass fiber (hot applications to + 400°)
- Insulation Armaflex (cold application -45°C)
- Damping springs
- PTFE gasket (low pressure)
- Steam Jacket or heat tracing

²⁶ For Atex zone maximum temperature of < 360°C

²⁷ Tube size depends on the pressure rating

²⁸ Possible from 300mm, depends on the specific gravity

²⁹ Thread connection acc. to ASME B16.11

Model MLB-LV10 / MLB-LV150

Up to 17 meters, 2 side connections, up to 10 barg

MLB-LV10 acc. to EN/DIN/ISO and MLB-LV150 acc. to ASME/ANSI

Process specification

Working pressure max. : 10 barg (145 psi)³⁰
 Process temperature : - 45°C to +400°C³¹
 Specific gravity (S.G.) : min. 700 kg/m³

Standard material specifications

Tube ODØ 60,30 x 2,00mm : SS316L (1.4404)
 ODØ 60,33 x 2,77mm : SS316L (1.4404)

Process connections : SS316L (1.4404)
 Plug ½" BSPT or ½" NPT : SS316L (1.4404)
 Top cap : SS316L (1.4404)
 Indicator red/white flappers : SS316L (1.4404)
 Bottom flange : SS316L (1.4404)
 Drain flange : SS316L (1.4404)
 Float : SS316Ti (1.4571)
 Gasket : Graphite or Aramid³²
 Bolts, nuts and washers : SS304L (1.4104)

Dimensions (mm)

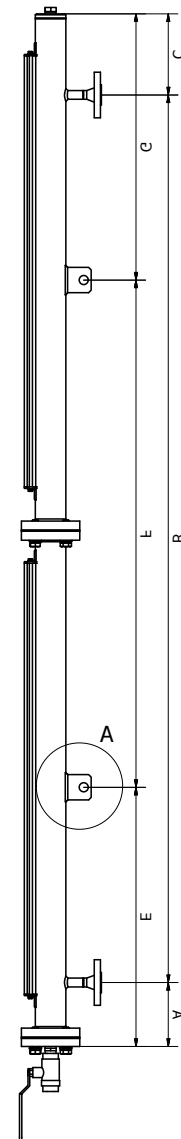
A = 200 standard³³
 B = min. 200 to max. 17000
 C = 80
 D = see table 5
 E = special
 F = special
 G = special

Diameter	EN (DIN) ³⁴ flanges	ASME (ANSI) ³⁵ flanges
DN20 - 3/4"	72	83
DN25 - 1"	72	86
DN40 - 1½"	78	92

Table 5

Options:

- Chamber materials lined: 304L, PVC, PP, PVDF, Halar coated or PTFE lined (NON-ATEX)
- Float materials: Titanium, Inconel or Monel 400
- SS316L isolation valves
- SS316L scale (CM, % or inches)
- Switches (SPDT or SPST)
- Transmitter 4-20 mA with local display
- Insulation Glass fiber (hot applications to + 400°)
- Insulation Armaflex (cold application -45°C)
- Damping springs
- PTFE gasket
- Steam Jacket



³⁰Higher pressure on request

³¹ For Atex zone maximum temperature of < 360°C

³² Depending on the pressure/temperature rating and chemical resistance of the media

³³ Possible from 140mm, depends on the specific gravity

³⁴ Flange dimension acc. to EN1092-1 type 11 PN10/16/40 < DN40 on request

³⁵ Flange dimension acc. to ASME B16.5 150#

Model MLC-40 / MLC-300

Inline connections, between 2 pipes, up to 40 barg

MLC-40 acc. to EN/DIN/ISO and MLC-300 acc. to ASME/ANSI

Process specification

Working pressure max. : 40 barg (580 psi)
 Process temperature : - 45°C to +400°C³⁶
 Specific gravity (S.G.) : min. 700 kg/m³

Standard material specifications

Tube ODØ 60,30 x 2,00mm : SS316/316L
 ODØ 60,33 x 2,77mm : SS316/316L

Process connection : SS316/316L)
 Indicator red/white flappers : SS316/316L
 Body flange : SS316/316L
 Drain flange : SS316/316L
 Float : SS316Ti (1.4571)
 Gasket : Graphite or Aramid³⁷
 Bolts, nuts and washers : SS304L (1.4104)

Dimensions (mm)

A = 150 to max. 5700

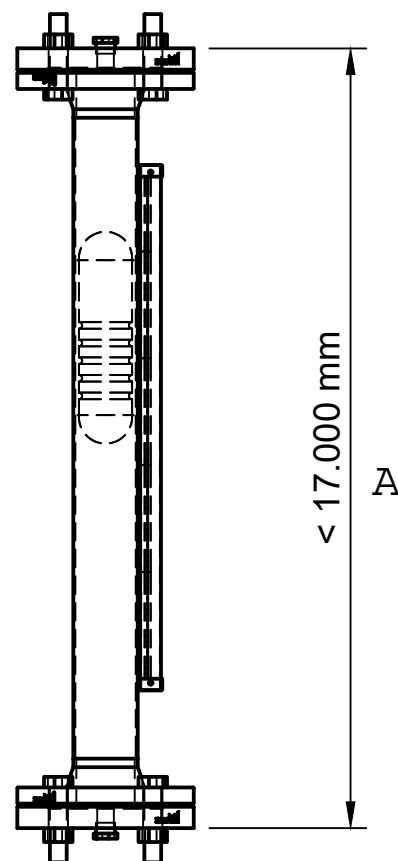
For ATEX application the length of the chamber is limited = see table 6

ATEX group	Max. length
IIA	4000 mm
IIB	4000 mm
IIB + H2	2000 mm
IIC	1000 mm

Table 6

Options:

- Chamber materials lined: 304L, PVC, PP, PVDF, Halar coated or PTFE lined (NON-ATEX)
- Float materials: Titanium, Inconel or Monel 400
- Isolation valves
- SS316L scale (CM, % or inches)
- Switches (SPDT or SPST)
- Transmitter 4-20 mA 2 wires
- Transmitter 4-20 mA with local display
- Insulation Glass fiber (hot applications to + 400°)
- Insulation Armaflex (cold application -45°C)
- Damping springs
- PTFE gasket
- Steam Jacket



³⁶ For Atex zone maximum temperature of < 360°C

³⁷ Depending on the pressure/temperature rating

Model MLD-40 / MLD-300

Top mounted level, indicator above a tank, up to 40 barg

MLD-40 acc. to EN/DIN/ISO and MLD-300 acc. to ASME/ANSI

Process specification

Working pressure max. : 40 barg (580 psi)
 Process temperature : - 45°C to +400°C³⁸
 Specific gravity (S.G.) : min. 700 kg/m³

Standard material specifications

Tube ODØ 60,30 x 2,00mm : SS316/316L
 ODØ 60,33 x 2,77mm : SS316/316L

Process connections : SS316/316L
 Plug ½" BSPT or ½" NPT : SS316/316L
 Top cap : SS316/316L
 Top "dry" float : SS316Ti (1.4571)
 Floating "wetted" float : SS316Ti (1.4571)
 Connection tube : Titanium grade 2
 Float block rod with pins : SS316L (1.4404)

Dimensions (mm)

A = max. 4000

For ATEX application the length of the chamber is limited= see table 6

ATEX group	Max. length
IIA	4000 mm
IIB	4000 mm
IIB + H2	2000 mm
IIC	1000 mm

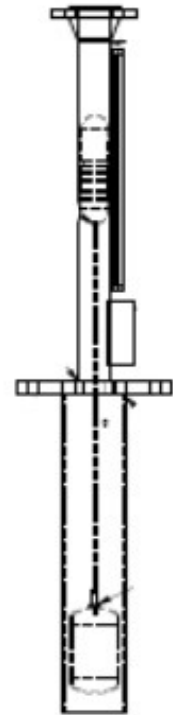
Table 6

B = max. 3800

C = see table 7

Diameter	EN (DIN) ³⁹ flanges	ASME (ANSI) ⁴⁰ flanges
DN65 - 2½"	93	95
DN80 - 3"	100	105
DN100 - 4"	118	128
DN125 - 5"	135	140
DN150 - 6"	150	160

Table 7



Options:

- Chamber materials: 304L, PVC, PP or PVDF or Halar or PTFE lined (NON-ATEX)
- Float materials: Titanium, Inconel or Monel 400
- Isolation valves
- SS316L scale (CM, % or inches)
- Switches (SPDT or SPST)
- Transmitter 4-20 mA 2 wires
- Transmitter 4-20 mA with local Display
- Insulation Glass fiber (hot applications to + 400°)
- Insulation Armaflex (cold application -45°C)
- Damping springs
- PTFE gasket
- Insulation Armaflex (cold application -45°C)
- Damping springs
- PTFE gasket

³⁸ For Atex zone maximum temperature of < 360°C

³⁹ Flange dimension acc. to EN1092-1 type 05 PN16 or PN40 pressure rating

⁴⁰ Flange dimension acc. to ASME B16.5 150#

Magnetically actuated reed switches for magnetic level gauges

Magnetically actuated reed switches

The magnetic switches are used to monitor the liquid level. You can forward the signal to other controls, alarms or even a PLC. The best material is chosen to produce a reliable and hermetically sealed sensor that is suitable for various applications.

Switch model	MLS-101439	MLS-101450
Function	single pole double throw	single pole double throw
Connection	3 core	3 core
Voltage	24-230V	24-230V
Current	2A (at 24V)	2A (at 24V)
Contacts	latching type (SPDT)	latching type (SPDT)
Protection degree	IP67	IP67
Working temperature	-30 °C up to 120 °C	-30 °C up to 180 °C
Cable material	Silicone	Silicone
Cable length	2 meters	3 meters
Housing material	Aluminum	Aluminum

Switch model	MLS-100300	MLS-100301
Function	single pole double throw	single pole double throw
Connection	3 core	3 core
Voltage	24-230 V	24-230 V
Current	2.5A at 24VDC 540 mA at 110 VAC 250mA at 230 VAC	2.5A at 24VDC 540 mA at 110 VAC 250mA at 230 VAC
Contacts	SPDT (SPCO)	SPDT (SPCO)
Maximum voltage	400V AC/DC	400V AC/DC
Power Watts	60 W VA	60W VA
Protection degree	IP66/67/68	IP66/67/68
Working temperature	-20 °C up 70 °C	-20 °C up to 70 °C
Cable material	Silicone	Silicone
Cable length	2 meters	2 meters
Housing material	Stainless steel 316L	Brass
Approvals	ATEX Exd IIC T6	ATEX Exd IIC T6
Zone	1,2,21,22	1,2,21,22

Switch model	MLS-100300	MLS-100301
Connection	3 core	3 core
Voltage	24-230 V	24-230 V
Current	2.5A at 24VDC 540 mA at 110 VAC 250mA at 230 VAC	2.5A at 24VDC 540 mA at 110 VAC 250mA at 230 VAC
Contacts	SPDT (SPCO)	SPDT (SPCO)
Maximum voltage	400V AC/DC	400V AC/DC
Power Watts	60W VA	60W VA
Protection degree	IP66/67/68	IP66/67/68
Working temperature	-20 °C up 75 °C	-60 °C up to 125 °C
Cable length	2 meters	2 meters
Housing material	Stainless steel 316L	engineered Resin
Approvals	EX ia IIC T6	EX ia IIC T4/T6

On request:

- SS Junction box with ½" or ¾" cable entry
- Aluminum junction box with ½" or ¾" cable entry

Model reed probe transmitter

VRP

This model with reed chains works on the float principle with magnetic transmission. This high-reliability visual indication system has an analog output. A float that contains a permanent magnet is inserted in a stainless steel pipeline that is linked to a tank. The float rides up and down in the tube following the changes in liquid level. The magnet in the float affects the reed switches on the reed probe, changing the resistance and, therefore, the analog output. A junction box with a transmitter head is mounted to the top of the reed probe.

Standard material specifications

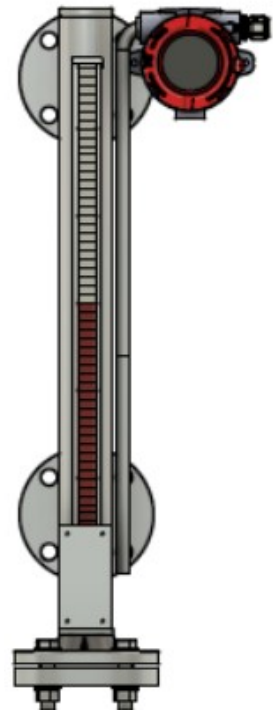
Tube 14,00 x 2,00mm	: SS316L (1.4404)
Junction box	: anodized Aluminum
Inner encapsulation	: molded
Cable gland	: M 20x1,5mm
Enclosure	: IP67

Technical details

Type	: 5333A/ B or with Hart® 5777D
Power supply	: 8-35VDS (ATEX 8-30VDS)
Output	: 4-20mA
Connection	: 2 wire
Accuracy	: ± 5mm
max. length	: 5700mm

Options:

- EX version, EX i or EX d
- Junction box made from SS 316L
- EX version, EXi or EX d
- With Local LCD
- Hart® 5 or Hart® 7 protocol
- ATEX Exd and Exi
- Profibus PA
- Foundation™ Fieldbus
- ATEX, IECEx, UL, FM, Gost, CSA, Inmetro, NEPSI, DNV approval



On request with local touchscreen display

Magnetic floats for magnetic level gauges

Float type	Suitable model	Level gauge chamber diameter	Magnet	Material	OD (mm)	Length (L)	S.G (kg/m ³)	Max. temp. (°C)	Max. pressure (barg) at 25°C
MLV30	MLB-M10 - MLB-M150	40 x 2	1.1	1.4571 (316Ti)	30	175	1000	100	10
MLV1	MLA-MLB-MLC-MLD	60,3 x 2	2.2	1.4571 (316Ti)	52	150	< 827	350	40
MLV1	MLA-MLB-MLC-MLD	60,3 x 2	3.3	1.4571 (316Ti)	52	150	< 950	350	40
MLV2	MLA-MLB-MLC-MLD	60,3 x 2	2.2	1.4571 (316Ti)	52	230	< 650	350	40
MLV2	MLA-MLB-MLC-MLD	60,3 x 2	3.3	1.4571 (316Ti)	52	230	< 740	350	40
MLVT1	MLA-MLB-MLC	60,3 x 2	2.2	Titanium gr.2	52	150	< 620	350	40
MLVT1	MLA-MLB-MLC	60,3 x 2	3.3	Titanium gr.2	52	150	< 794	350	40
MLVT2	MLA-MLB-MLC-MLD	60,3 x 2	2.2	Titanium gr.2	52	250	< 461	350	40
MLVT2	MLA-MLB-MLC	60,3 x 2	3.3	Titanium gr.2	52	250	< 549	350	40
MLVT3	MLA-MLB-MLC	60,3 x 2	2.2	Titanium gr.2	52	350	< 385	350	40
MLVT3	MLA-MLB-MLC	60,3 x 2	3.3	Titanium gr.2	52	350	< 444	350	40
MLVBB1D	MLD	60,3 x 2	2.2	1.4571 (316Ti)	52	100	-	350	85
MLVBB2	Special	60,3 x 2	2.2	1.4571 (316Ti)	52	100	998	350	85
MLVBB3	Special	60,3 x 2	2.2	1.4571 (316Ti)	52	150	820	350	85
MLVBB4	Special	60,3 x 2	2.2	1.4571 (316Ti)	52	200	670	350	85



On request:

- Low specific gravity > 320 kg/m³
- High pressure floats up to 300 bar
- Float materials; Hastelloy, Monel
- ECTFE (Halar) coated
- PTFE, PFA or ETFE lined

Recommended insulation table								
The temperature class or max. surface temperature depends on the process temperature				Recommended insulation			Flapper indicator protection cover plate	
Process temperature	Ambient temp.	Temp. classes	Max. surface temp.	Insulation name	Isolation thickness (mm)	Layer	Flapper indicator protection cover	Delivery
-50 ≤ -10°C	<div style="display: flex; align-items: center; justify-content: center;"> <div style="margin-right: 5px;">-50°C</div> <div style="margin-right: 5px;">+60°C</div> </div>			Armaflex	9	2	Glass	not standard
≤ 68°C		T6	T 85°C	Glass fiber	-	-	Polycarbonate	standard
> 68°C ≤ 80°C		T5	T100°C	Glass fiber	1	1	Polycarbonate	standard
> 80°C ≤ 108°C		T4	T135°C	Glass fiber	1	1	Polycarbonate	not standard
> 108°C ≤ 160°C		T3	T200°C	Glass fiber	0,5 + 1	1	Glass	not standard
> 160°C ≤ 240°C		T2	T300°C	Glass fiber with Shield	1	2	Glass	not standard
> 240°C ≤ 360°C		T1	T450°C	Glass fiber with Shield	1	3	Glass	not standard

Bridles for radar sensors and switches

New product

Now the possibility exists to order a bridle suitable for radar sensors or switches with or without a magnetic level indicator.

A bridle is a vertical pipe connected to the side of a storage tank or process vessel. A bridle can also be a bypass chamber that is connected to a larger process vessel on which the level instrumentation for that vessel is mounted. The level measurement equipment is usually placed in its own cage or nozzle attached to the bridle and therefore it is unaffected by specific gravity, temperature and pressure conditions.

The combination of a magnetic level indicator and a bypass bridle chamber provides the benefits of both visual indication and electronic level monitoring. This product is also suitable for applications where interface measurements are needed.

A various number of radar sensors and switches can be mounted to bridle chambers. Below are two examples of a radar sensor and a vibrating level switch of VEGA that are suitable for bridles.

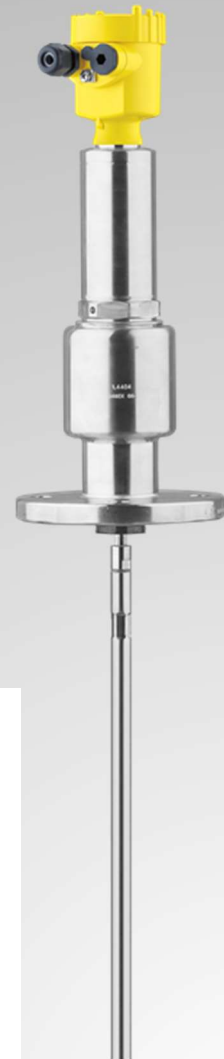
Vegaflex 86 radar sensor for bridles

The robust guided radar sensor VEGAFLEX 86 measures the level and interface of liquids at high process temperatures and pressures in tanks of all types. It operates independently of media properties such as density or dielectric constant in widely different vessels, bypasses or boilers. The robust mechanical design and second seal (second line of defense) protect the sensor while it performs demanding measurement tasks in the chemical, petrochemical, energy and oil/gas sectors, e.g.



Vegaswing 61 level switch for bridles

The VEGASWING 61 is a universal level switch for use in all liquids. Independent of the mounting position, it detects reliably with millimeter accuracy the limit level. The instrument can be used as empty or full detector, as approved overfill protection, dry run protection or pump protection in vessels and pipelines. The VEGASWING 61 offers maximum reliability in a wide application range.



Model MLB-10BR / MLB-150BR-1

With a bypass bridle chamber

2 side connections, low pressure, up to 10 barg

MLB-BR10 acc. to EN/DIN/ISO and ASME/ANSI

Process specification

Working pressure max. : 10 barg (145 psi)
 Process temperature : - 45°C to +400°C ⁴¹
 Specific gravity (S.G.) : min. 700 kg/m³

Standard material specifications level gauge

Tube ODØ 60,30 x 2,00mm : SS316/316L
 ODØ 60,33 x 2,77mm : SS316/316L

Process connections : SS316/316L
 Plug ½" BSPT or ½" NPT : SS316/316L
 Top cap : SS316/316L
 Indicator flappers red/white : SS316/316L
 Bottom flange : SS316/316L
 Drain flange : SS316/316L
 Float : SS316Ti (1.4571)
 Gasket : Graphite or Aramid⁴²
 Bolts, nuts and washers : SS304L (1.4104)

Dimensions (mm)

A = 200 standard⁴³
 B = min. 200 to max. < 5700
 C = 80
 D = see table 9

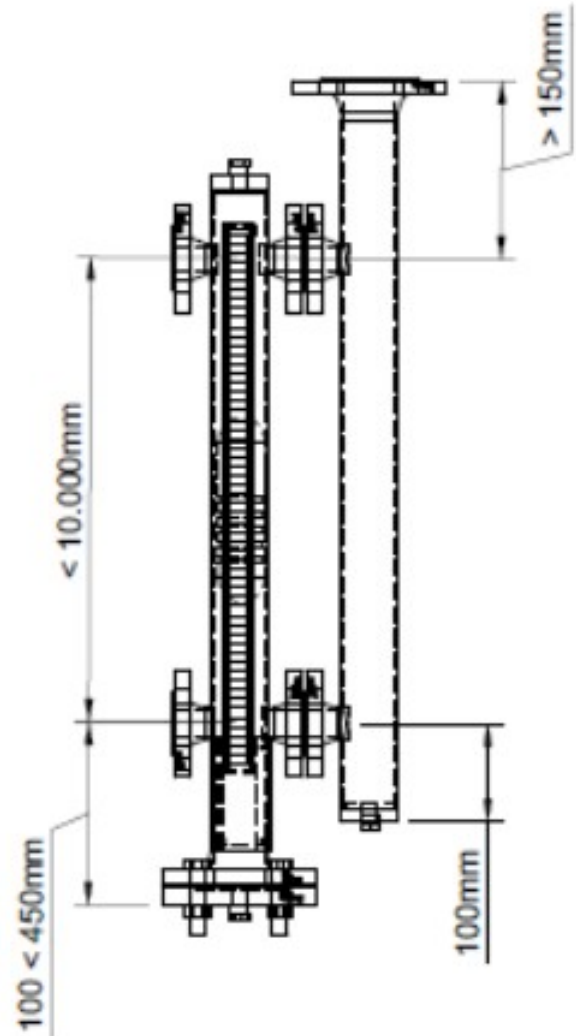
Diameter	EN (DIN) ⁴⁴ flanges	ASME (ANSI) ⁴⁵ flanges	BSPTM ⁴⁶	NPTM ⁴⁷
DN15 - 1/2"	68	76	81	81
DN20 - 3/4"	72	83	82	82
DN25 - 1"	72	86	82	82
DN40 - 1½"	78	92	83	83

Table 9

Standard material specifications bridle

Bridle tube
 ODØ 48,26 x 2,77mm (2"- sch. 10) : SS316/316L
 ODØ 60,33 x 2,77mm (2"- sch. 10) : SS316/316L
 Process fittings ODØ 33,70 x 2,77mm : SS316/316L

Process connections : SS316/316L
 Top cap : SS316/316L
 Drain tube : SS316/316L
 Gasket : Graphite or Aramid
 Bolts, nuts and washers : SS304L (1.4104)



⁴¹ For Atex zone maximum temperature of < 360°C

⁴² Depending on the pressure/temperature rating and chemical resistance of the media

⁴³ Possible from 140mm, depends on the specific gravity

⁴⁴ Flange dimension acc. to EN1092-1 type 11 PN10/16/40 < DN40 on request

⁴⁵ Flange dimension acc. to ASME B16.5 150#RF

⁴⁶ Thread connection acc. ISO 7-1R

⁴⁷ Thread connection acc. ASME B16.11

Model MLB-16BR / MLB-150BR-2

With a bypass bridle chamber

2 side connections, low pressure, up to 10 barg

MLB-BR16 acc. to EN/DIN/ISO and MLB-BR150-2 acc. to ASME/ANSI

Process specification

Working pressure max. : 40 barg (580 psi)
 Process temperature : -45°C to +400°C⁴⁸
 Specific gravity (S.G.) : min. 700 kg/m³

Standard material specifications level gauge

Tube ODØ 60,30 x 2,00mm : SS316/316L
 ODØ 60,33 x 2,77mm : SS316/316L

Process connections : SS316/316L
 Plug ½" BSPT or ½" NPT : SS316/316L
 Top cap : SS316/316L
 Indicator flappers red/white : SS316/316L
 Bottom flange : SS316/316L
 Drain flange : SS316/316L
 Float : SS316Ti (1.4571)
 Gasket : Graphite or Aramide⁴⁹
 Bolts, nuts and washers : SS304L

Standard material specifications bridle

Bridle tube
 ODØ 48,26 x 2,77mm (2" - sch. 10) : SS316/316L
 ODØ 60,33 x 2,77mm (2" - sch. 10) : SS316/316L
 Process fittings ODØ 33,70 x 2,77 : SS316/316L

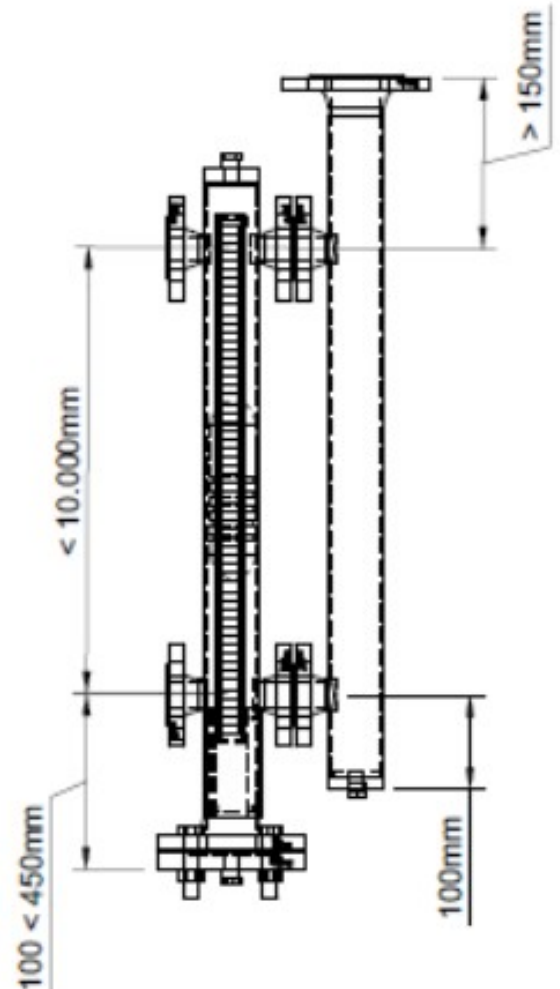
Process connections : SS316/316L
 Top cap : SS316/316L
 Drain tube : SS316/316L
 Gasket : Graphite or Aramid
 Bolts, nuts and washers : SS304L (1.4104)

Dimensions (mm)

A = 200 standard⁵⁰
 B = min. 200 to max. < 5700
 C = 80
 D = see table 10

Diameter	EN (DIN) ⁵¹ flanges	ASME (ANSI) ⁵² flanges	NPTM ⁵³
DN15 - 1/2"	68	76	81
DN20 - 3/4"	72	88	82
DN25 - 1"	72	92	82
DN40 - 1½"	78	100	83

Table 10



⁴⁸ For Atex zone maximum temperature of < 360°C

⁴⁹ Depending on the pressure/temperature rating and chemical resistance of the media

⁵⁰ Possible from 140mm, depends on the specific gravity

⁵¹ Flange dimension acc. to EN1092-1 type 11 PN10/16/40 < DN40 on request

⁵² Flange dimension acc. to ASME B16.5 300#RF

⁵³ Thread connection acc. to ASME B16.11

Model MLB-40BR / MLB-300BR

With a bypass bridle chamber

2 side connections, low pressure, up to 40 barg

MLB-BR40 acc. to EN/DIN/ISO and MLB-300 acc. to ASME/ANSI

Process specification

Working pressure max. : 40 barg (580 psi)
 Process temperature : - 45°C to +400°C⁵⁴
 Specific gravity (S.G.) : min. 700 kg/m³

Standard material specifications

Tube ODØ 60,30 x 2,00mm : SS316/316L
 ODØ 60,33 x 2,77mm : SS316/316L

Process connections : SS316/316L
 Plug ½" BSPT or ½" NPT : SS316/316L
 Top cap : SS316/316L
 Indicator flappers red/white : SS316/316L
 Bottom flange : SS316/316L
 Drain flange : SS316/316L
 Float : SS316Ti (1.4571)
 Gasket : Graphite or Aramide⁵⁵
 Bolts, nuts and washers : SS304L

Dimensions (mm)

A = 200 standard⁵⁶
 B = min. 200 to max. < 5700
 C = 80
 D = see table 11

Diameter	EN (DIN) ⁵⁷ flanges	ASME (ANSI) ⁵⁸ flanges	NPTM ⁵⁹
DN15 - 1/2"	68	76	81
DN20 - 3/4"	72	88	82
DN25 - 1"	72	92	82
DN40 - 1½"	78	100	83

Table 11

Standard material specifications bridle

Bridle tube
 ODØ 48,26 x 2,77mm (2"- sch. 10) : SS316/316L
 ODØ 60,33 x 2,77mm (2"- sch. 10) : SS316/316L
 Process fittings ODØ 33,70 x 2,77mm : SS316/316L

Process connections : SS316/316L
 Top cap : SS316/316L
 Drain tube : SS316/316L
 Gasket : Graphite or Aramid
 Bolts, nuts and washers : SS304L (1.4104)

⁵⁴ For Atex zone maximum temperature of < 360°C

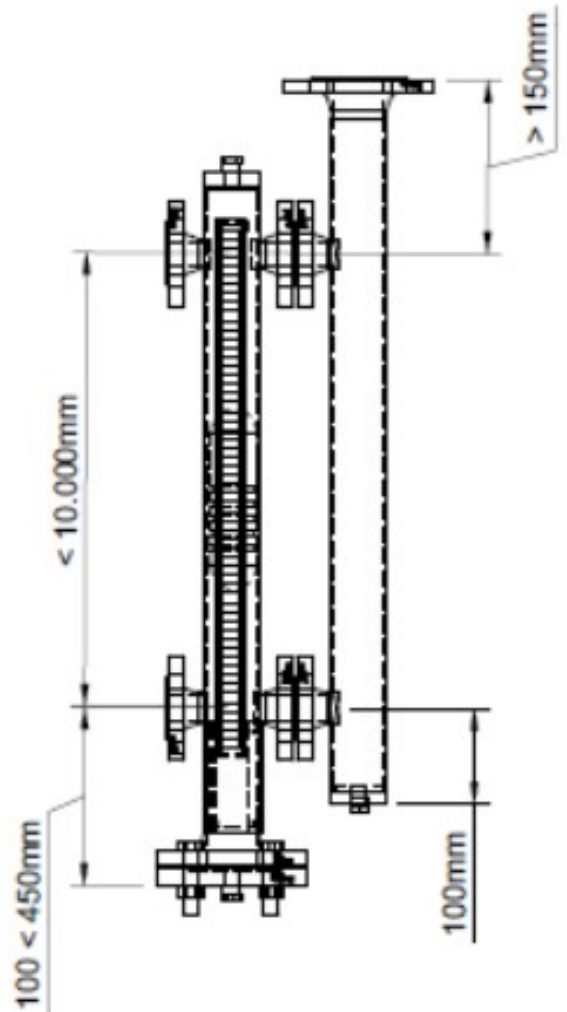
⁵⁵ Depending on the pressure/temperature rating and chemical resistance of the media

⁵⁶ Possible from 140mm, depends on the specific gravity

⁵⁷ Flange dimension acc. to EN1092-1 type 11 PN10/16/40 < DN40 on request

⁵⁸ Flange dimension acc. to ASME B16.5 300#RF

⁵⁹ Thread connection acc. to ASME B16.11



Model MLB-600BR / MLB-900BR / MLB-1500BR

With a bypass bridle chamber

High pressure, up to 192 barg

MLB-BR1500 acc. to ASME/ANSI

Process specification

Working pressure max. : 192 barg (2421 psi)
 Process temperature : -45°C to +400°C⁶⁰
 Specific gravity (S.G.) : min. 650 kg/m³

Standard material specifications

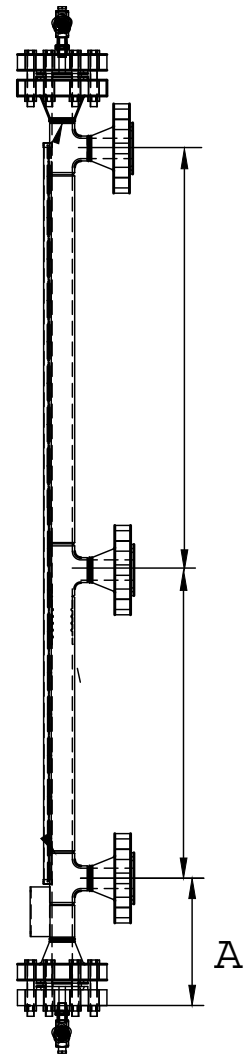
Tube⁶¹

ODØ 60,33 x 2,77mm (2"- sch. 10) : SS316/316L
 ODØ 60,33 x 3,91mm (2"- sch. 40) : SS316/316L
 ODØ 60,33 x 5,54mm (2"- sch. 80) : SS316/316L

Process connections : SS316/316L
 Plug ½" BSPT or ½" NPT : SS316/316L
 Top cap : SS316/316L
 Indicator flappers red/white : SS316/316L
 Bottom flange : SSS316/316L
 Drain flange : SS316/316L
 Float : Titanium grade 2, SS316Ti (1.4571)
 Gasket : Graphite or RTJ
 Bolts, nuts and washers : SS304L (1.4104)

Dimensions (mm)

A = 300 standard⁶²
 B = min. 200 to max. < 5700
 C = 100
 D = see table 12



Diameter ASME B16.5	flanges 1/2"	flanges 3/4"	flanges 1"	flanges 1 ½"	flanges 2"	NPTM 1/2"	NPTM 3/4" ⁶³
600#	59	64	69	77	80	OR	OR
900#	67	77	80	90	109	OR	OR
1500#	NA	58	65	74	NA	OR	OR

Table 12

Standard material specifications bridle

Bridle tube
 ODØ 60,33 x 2,77mm : SS316/316L
 Process fittings ODØ 33,70 x 2,77mm : SS316/316L
 Process connections : SS316/316L
 Top cap : SS316/316L
 Drain tube : SS316/316L
 Gasket : Graphite or Aramid
 Bolts, nuts and washers : SS304L (1.4104)

⁶⁰ For Atex zone maximum temperature of < 360°C
⁶¹ Tube size depends on the pressure rating, other sizes on request
⁶² Possible from 300mm, depends on the specific gravity
⁶³ Thread connection acc. to ASME B16.11