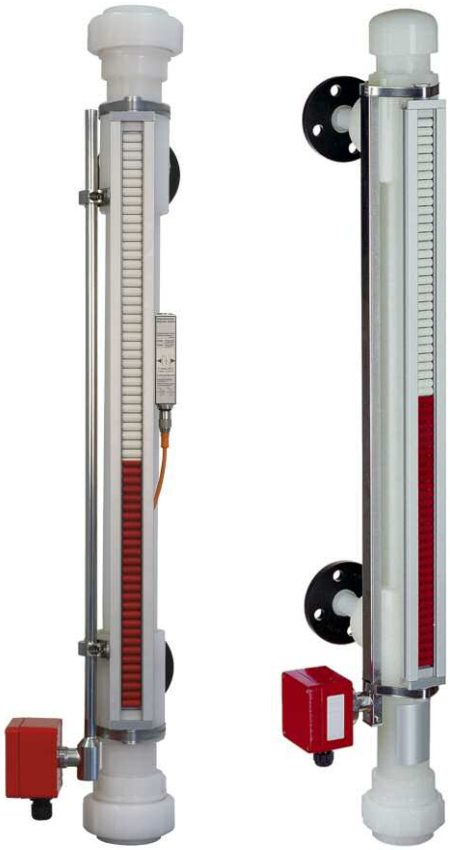

MA-98K

Bypass-Magnetic Level Gauge made from Plastics

- PP or PVDF versions
- Up to 4 meter measuring length
- Resistant to aggressive liquids
- Pressure- and gas-proof separation of chamber and display
- Flanges or welded connections
- Optional with switching contacts
- Optional with measuring transmitter
- Customized designs

Description: A bypass chamber made of PP or PVDF has two lateral connecting sleeves which are connected to the vessel to be monitored. Since in this bypass chamber the fluid level corresponds to the level in the vessel, a cylindrical float within, is always at the same level. The float is counter-balanced exactly to the density of the medium to maintain bouyancy and carries a specially designed disc-shaped magnetic system that acts through the plastic wall of the bypass chamber on an indicator bar with built-in rollers which are sensitive to magnetic forces. Due to the magnetic force of the float, the pre-magnetized rollers are turned through 180° from white to red for increasing level and from red to white for decreasing level. Thus, the observer obtains a precise visual statement of the level in the vessel. Optionally, the bypass chamber can be equipped with bistable, magnetic sensitive limit contacts which emit a binary signal when the float has passed the level where the sliding contacts are mounted. Another alternative to the remote transmission of value is adding a reed contact chain externally on the bypass chamber that would convert the float movement into a stepped resistance or current signal. Instead of the reed contact chain, a magnetostrictive sensor with higher resolution and accuracy can also be used to provide a 4 to 20 mA output signal in 2-wire technology.

Range of application: Magnetic level gauges made from plastics are suitable for level monitoring and continous level measuring of the most, even aggressive, fluid media. Moreover, the advantage here is that the level can be identified at one glance directly at the measuring point. The electrical signals in the control room can be verified visually without much assembling work.

The main fields of application include the level monitoring and level controlling in tanks, agitator- and open vessels with media such as acids, alkalis, fuels, oils etc.

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Versions:

Material: All wetted parts, with exception of the gaskets for the treaded fittings, are made of the same material, respectevely. As possible choice PP or PVDF are available. Standard gaskets are made of EPDM (other materials on request).

Measuring range (M): The distance between the upper and the lower lateral connection is specified in millimeters. The maximum length of a measuring tube is 4000 mm; for greater lengths, however, several reference tubes must be used. For a length of 2000 mm and above, we recommend equipping the magnetic level gauge with a welded bracket for additional securing (Option /5). If the free space (dugout) between the lower connecting piece and the base or the space (projection) between the upper connecting piece and the ceiling are in one way or the other restricted, the relevant maximum parameter must be specified in detailed text at the time of placing an order.

Ordering codes:

Order.-No.: MA-98K. | 1. | [][][][]. | 1. | DN[]-PN[]. | 1. | 1. | 0

Bypass-Magnetic Level Gauge made of Plastic

Material version:
1 = PP [1)]
2 = PVDF [1)]

Center distance of lateral connections in mm:
[ ][ ][ ][ ] mm (min. 200 mm up to max. 4000 mm)

Process connection:
1 = slip-on flange made of plastic with dimensions according to EN 1092-1
2 = slip-on flange made of plastic with dimensions according to ANSI B 16.5
3 = welding socket
99 = customized special version

Nominal diameter and pressure level flange:
[ ][ ][ ][ ] e.g. DN 10 PN 6 or 1/2" Class 150
(0000 for welded end)

Drain:
1 = threaded fitting
2 = threaded fitting incl. drain screw 1/2-NPT
3 = threaded fitting incl. drain screw G 1/2“
4 = threaded fitting incl. drain valve (ball valve)
5 = drain flange
99 = customized special version, please specify in detailed text

Ventilation:
1 = without (welding cap)
2 = threaded fitting incl. vent screw 1/2-NPT
3 = threaded fitting incl. vent screw G 1/2“
4 = threaded fitting incl. vent valve (ball valve)
5 = vent flange
99 = customized special version, please specify in detailed text

Options (multiple names like /1/5 possible):
0 = none
1 = limit contacts (quantity and function, see electrical specifications)
2 = remote transmitter REED contact chain with resistance output
3 = remote transmitter REED contact chain with power output 4 to 20 mA
4 = remote transmitter magnetostrictive with linear power output 4 to 20 mA
5 = mounting bracket for lengths from 2000 mm

[1)] Please note that the gaskets for the threaded fittings, which are also wetted parts, are made of EPDM (other materials on request). Also specify in detailed text the media density, operating temperature and operating pressure.

In an empty vessel, the float for the MA-98K is located in the so-called float-sack below the connection and in a full tank in the projection above the connection. This means that these dimensions must correspond with at least the float length. However, since the float's mounting length also depends on the media density, if necessary special materials must be used in case of space constraints in order to reduce the float length.

Process connection: Slip-on flanges made from plastics with dimensions according to EN or ANSI and welding sockets are the most commonly used features for connecting the MA-98K to the side of the chamber. Customized solutions like aligning the connecting piece to top/ below or to top/ laterally or at the bottom/laterally are available on request.

Nominal diameter and pressure level for flange: The precise name of the slip-on flange made from plastics on the chamber must be specified in a detailed text. Some examples are dimensions according to EN 1092-1 DN10 PN6 shape B1 or ANSI 1/2" 150 lbs RF.

Drain: For changing the float the MA-98K is always provided with a threaded fitting on the lower side of the tube which is fitted with a thread hole and a drain screw thus the vessel can be emptied through this hole during operation. Optionally, the lower side of the tube can be fitted with a drain valve, which normally points to the bottom respectively with a drain flange.

Ventilation: Normally, the MA-98K has a completely closed welding cap as the top closure of the bypass chamber. In this solution there is a risk of formation of a locked-in pressure pocket above the float which may affect the measuring accuracy. To circumvent this, the upper end of the tube can be provided with a vent valve, a vent flange or with a threaded fitting including a vent screw.

Options: With regard to options, specify in detail if the MA-98K should be provided with electrical limit contacts and as to how many (Option /1). Optionally, for remote transmission of level value a reed contact measuring transmitter (Option /2 and /3) or a magnetostrictive sensor (Option /4) can be mounted externally to the MA-98K which provides a 4 to 20 mA output signal (see also FM-01N and FM-02 for details). Mounting brackets stabilize the magnetic level gauge for lengths above 2 meters (Option /5).

Technical specifications:

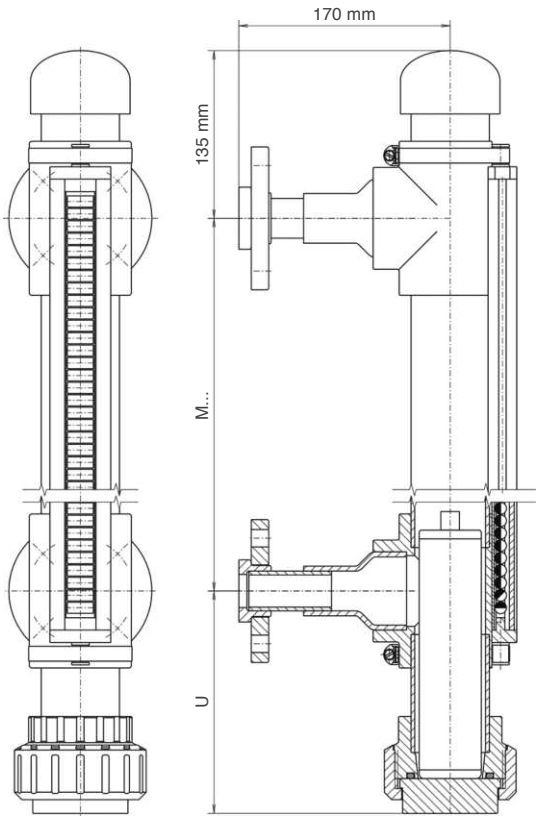
Chamber:	Ø 63 x 3 mm
Chamber end top:	welding cap Options: - threaded fitting - vent valve - vent flange
Chamber end bottom:	threaded fitting Options: - drain valve - drain flange
Center distance of lateral connections (M):	200 mm up to 4000 mm
Process connection:	slip-on flange made from plastics with dimensions according to EN 1092-1 (DN10-DN50, PN6-PN16); slip-on flange made from plastics with dimensions according to ANSI B 16.5 (1/2"-2", Class 150); welding sockets 1/2"-1"
Nominal pressure:	max. 4 bar
Temperature range:	PVDF max. 80°C PP max. 60°C
Density:	590 kg/m^3 up to 2000 kg/m^3 (depends on the used float)
Materials:	
Chamber, float and lateral connections:	PVDF or PP
Gaskets:	EPDM (others materials on request)
Flanges:	PP-GF 30% (non-wetted parts)
Display:	magnetic roller display, type A
Ambient temperature:	max. +200°C
Housing:	aluminium anodised
Rollers:	Crastin PBT, red and white
Cover:	Makrolon PC

Electrical specifications - Magnetic Switch:

Connection housing:	aluminium anodised or stainless steel
Assembling position:	cable pointing downwards
Fixture:	sliding block (for aluminium housing) or clamping tape (for stainless steel housing)
Limit contact:	reed, bistable
Contact function:	1x change-over
Connecting cable:	3 x 0.75 mm^2
Type MS-1-PVC:	1 m PVC grey (standard)
Type MS-1-SIL:	1 m Silicone
max. Ambient temp.:	
Type MS-1-PVC:	+90°C
Type MS-1-SIL:	+150°C
Switch rating:	
Type MS-1-PVC:	230 V AC, 60 VA, 1 A; 230 V DC, 30 W, 0.5 A
Type MS-1-SIL:	230 V AC, 60 VA, 1 A; 230 V DC, 30 W, 0.5 A
Type code adder /N:	for use in control circuits acc. to DIN EN 60947-5-6
Protection class:	IP65

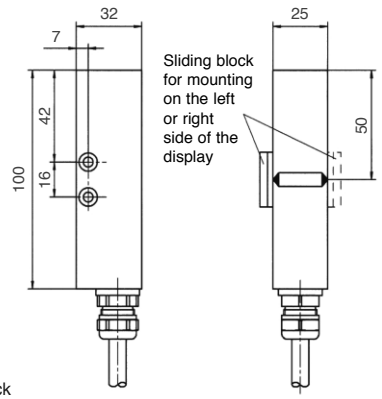
Dimensions:

Magnetic Level Gauge



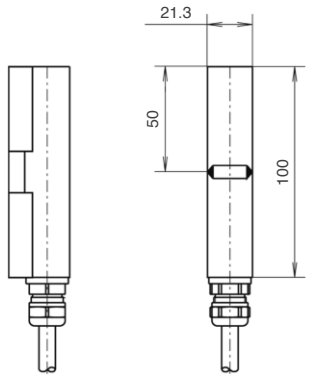
M = center distance of lateral connections
U = length of float (min. 155 mm)

Magnetic Switch Type A



Housing: aluminium anodised
Connection: cable
Fixture: sliding block

Magnetic Switch Type B



Housing: stainless steel
Connection: cable
Fixture: clamping tape

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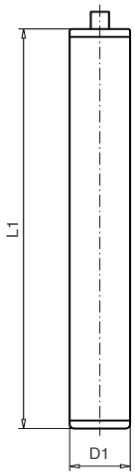
Dimensions:

Cylinder float



Type	Material	Ø D1 (mm)	Length L1 (mm)	Density (kg/m³)	max. Pressure (bar)	max. Temp. (°C)
1	PVDF	50	150	1340-2000	6	80
2			200	1070-2000		
3			250	930-1140		
4			300	850-980		
5			350	790-890		
6	PP		150	1200-2000		60
7			200	910-1320		
8			250	750-970		
9			300	660-790		
10			350	590-690		