MA-98N

Magnetic Level Gauge

- **Up to 6 meter measuring length**
- **Flange, thread and welded connections**
- **Fully stainless steel measuring tube**
- **Switching contacts and optional measuring transmitter**
- **Customized designs**

Description: A stainless steel measuring tube has two connecting sleeves on the side which are joined with the vessel to be monitored. Since in this reference vessel the same fluid level is found as that in the tank, a cylindrical stainless steel or titanium float is located always at the level with the vessel level. The float is counterbalanced exactly to the density of the medium and it carries a specially designed disc-shaped magnetic system that acts through the stainless steel wall of the measuring tube on an indicator bar which is sensitive to magnetic forces. Due to the magnetic force of the float, its pre-magnetized rollers are flipped by 180° in such a way that all rollers below the float train their red side and the remaining rollers above the float their silver side to the front. Thus, the observer obtains a precise visual statement on the level in the container. Optionally, the reference tube 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 measuring tube that would convert the float movement into a stepped resistance or current signal. Instead of the reed contact chain, also a magnetostrictive sensor can be used which breaks up the level at a higher accuracy and provides a 4 to 20 mA power signal in 2-wire circuit.

Range of application: The MA-98N series of magnetic level gauges has been long in use in large numbers in the entire industry. Wherever a level needs to be durably transmitted in visualized or electrical form under harsh conditions or at high pressure or extreme temperatures, the principle of magnetic float transmission in bypass, that has a proven record of over 30 years, is worth its while to deploy it. Meanwhile, the technology of remote transmission, for example, by using magnetostrictive sensor has been perfected to such extent that it is no way inferior to other methods of level measurement and monitoring. 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. Besides pressure levels up to PN250, also all conceivable variants of draining and ventilation such as valves, ball-cocks or compression and cutting ring fittings are available with us. Just contact us for more details.

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Versions:

Measuring range (ME): The distance between the upper and the lower lateral connection is specified in millimeters. The maximum length of a measuring tube is 6000 mm; for greater lengths, however, several reference tubes must be used. For a length of 3000 mm and above, we recommend equipping the magnetic level gauge with a welded bracket for additional securing (Option /7). 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. In an empty vessel, the float for the MA-98N 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, special materials like titanium must be used in case of space constraints, if necessary, in order to reduce the float length.

Process connection: Flanges as per EN or ANSI, female and male threads or welded ends are the most commonly used features for connecting the MA-98N on the side of the vessel. Customized solutions like aligning the connecting piece on top/ below or on top/laterally or at the bottom/laterally are available on request.

Nominal diameter and pressure level for flange: The precise name of the connecting flange on the vessel must be specified in a detailed text. Some examples are EN DN25 PN16 DL-C or ANSI 1" 300 lbs RF. Standard flanges are EN DN15 PN16 with sealing bar Form-C.

Male thread for screw neck or bushing: If a screw neck or a bushing is selected as a variant for the connection, the thread size must be specified in detailed text. Here the standard is G3/4". All normally used inch or metric thread systems are available on request.

Drain: For changing the float the MA-98N is always provided with a flange connection on the lower side of the tube which is closed with a blind flange. As a standard, the blind flange is provided with a thread hole and a 1/2"-NPT plug so that the vessel can be emptied through this hole during operation. Optionally, a valve can be mounted into the flange, which normally points to the bottom and can be aligned also laterally in case of space constraints. Customized versions like drain ball-cocks, compression and cutting ring fittings for connecting a tube directly are available on request.

Ventilation: Normally, the MA-98N has a completely closed cap as the top closure for the reference vessel. In this solution, in applications at high pressure 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 cap can be provided with a threaded hole. As a standard, we supply a 1/2"-NPT connection with sealing plugs. Other thread variants or also hose nipples can be provided on request.

Options: With regard to options, specify in detail if the MA-98N 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 on the MA-98N which provides a 4 to 20 mA signal at the output (see also FM-01N and FM-02 for details). Mounting brackets stabilize the magnetic level gauge for lengths above 3 meters (Option /7), and a low temperature version (Option /8) has a special type level gauge bar which will not become "blind" due to condensate. The MA-98N is available also for pressure level PN40 (Option /5).

Technical specifications:

Material for vessel, connecting piece, flange, brackets:	stainless steel (standard), titanium, Hastelloy etc.
Float:	stainless steel 1.4571 (titanium on request)
Pressure:	PN6 (standard) up to PN40
Temperature:	-160°C to +450°C
Measuring range:	up to 6000 mm, above split construction, from 3000 mm holding bracket each 1500 mm
Ventilation/drain:	cap/plug 1/2"-NPT or G 1/2“, optional valves, other thread types, flange connecting piece etc
Lateral connections:	welded end (standard), flange EN and ANSI, thread
Density:	from 0.7 g/cm^3
Separating layer:	from density difference ± 0.1 g/cm^3 with special type float
Viscosity:	max. 1000 mPas

Electrical specifications:

Limit contact Function:	magnetic change-over (reed), bistable
Voltage:	230 V max.
Current:	max. 1 A for AC or 0.5 A for DC
Switching load:	60 VA or 30 W
Protection class:	IP65
Connecting cable:	1.0 m PVC cable, 3 x 0.75 mm^2
Hysteresis:	approx. 6 mm
Assembling position:	cable pointing downwards
Fixture:	integrated clamping tape
Connection housing:	aluminium anodized
Ambient temperature:	max. +90°C

Ordering codes:

Ordering number: **MA-98N. [][][][]. 1. DN15-PN16. 0000. 0. 0. 0**

Magnetic Level Gauge

Center distance of lateral connections in mm:
[ ][ ][ ][ ] mm (6000 mm max.)

Process connection:
1 = flange in stainless steel EN 1092-1
2 = ANSI flange in stainless steel
3 = thread connecting piece
4 = thread bushing
5 = welded connecting piece

Nominal diameter and pressure level flange:
[ ][ ][ ][ ] e.g. DN15 PN25 o.1" 300 lbs RF 0000 for thread or welded end)

Connecting thread for thread connecting piece or bushing:
[ ][ ][ ][ ] e.g. G3/4" o. M18x1.5
(0000 for flange or welded end)

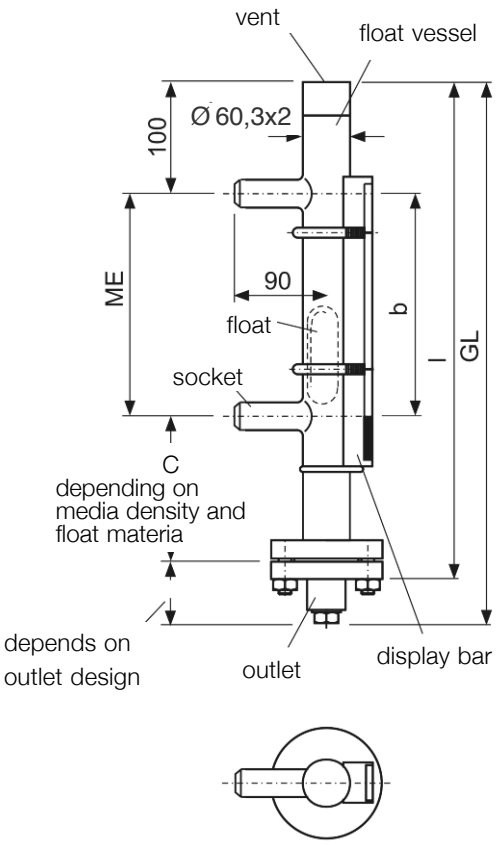
Drain:
0 = plug 1/2-NPT
0a = plug G 1/2“
1 = valve DN6 in stainless steel
99 = customized special version, please specify in detailed text

Ventilation:
0 = cap
1 = cap with ventilation screw 1/2"-NPT
1a = cap with ventilation screw G 1/2"
99 = customized special version, please specify in detailed text

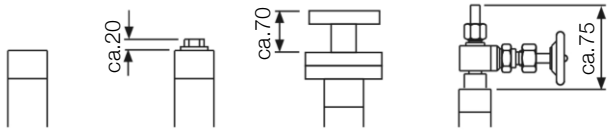
Options (multiple names like /1/7/8 possible):
0 = none
1 = limit contacts (details of number and function)
2 = remote transmitter REED contact chain with resistance output
3 = remote transmitter REED contact chain with power output 4 to 20 mA
4 = remote transmitter magnetostrictive with linear power output 4 to 20 mA
5 = pressure level above PN6 (in clear text)
7 = mounting bracket for lengths from 3000 mm
8 = low temperature version below -10°C,
Please specify operating temperature in detailed text.

Please specify media density in detailed text.

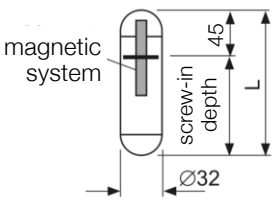
Dimensions:



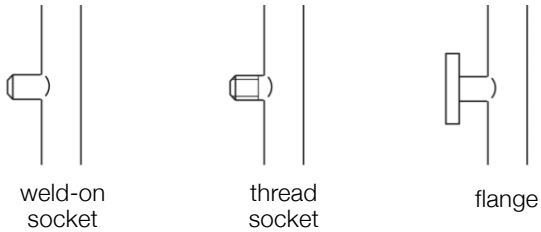
Ventilation variants:



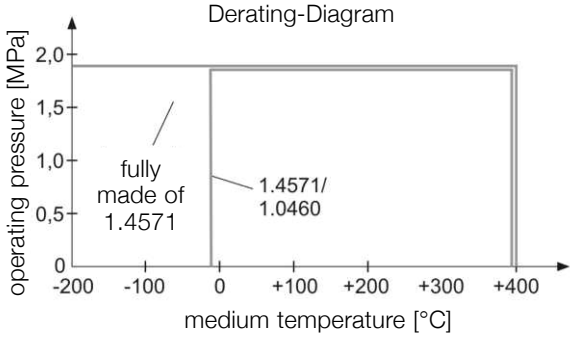
Float:



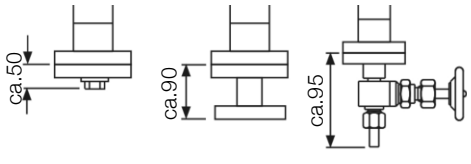
Lateral connections:



P-T-Diagram:



Drain variants:



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