OPERATING INSTRUCTIONS
CONTINUOUS FILL-LEVEL PROBE **NIVOMAT FSG**

Safety Precatutions:

- Installation, initial start-up and maintenance may only be performed by trained personnel! All applicable European and national regulations regarding installation of electrical equipment must be adhered to.
- The device may only be connected to supply power which complies with the specifications included in the technical data and on the serial plate!
- The device must be disconnected from all sources of power during installation and maintenance work!
- The device may only be operated under the conditions specified in the operating instructions!

Functions Description:

NIVOMAT FSG fill-level probes are designed for attachment to MAGTOP magnetic flag indicators or GNR5 sight glass level indicators for semi-continuous measurement of fill-levels in containers and storage tanks.
A float with integrated actuating magnet is located inside the standpipe of the MAGTOP magnetic flag indicator. The probe is mounted to this pipe. NIVOMAT FSG probes consist of a VA or plastic tube, within which a series of monostable reed contacts are situated. For this reason, the probes are highly impact and vibration resistant. When supply power is applied, the probe immediately reads out an analogue current signal which corresponds to the current fill-level.

NIVOMAT FSG probes are equipped with a 4 to 20mA output and can be connected to the following devices:
- Analogue input at a PLC
- NIVOMAT LCN 2519 or FM 1019 switching amplifier
- NIVOMAT MV 424 switching amplifier

Other commercially available 0 to 100% display devices with 4 to 20mA input

Applications:

- For mounting to MAGTOP… level indicators
- As a virtually continuous measurement with reed contact chain

Technical Data:

Materials:	Stainless steel, PE-HD, PP
Power supply:	12 - 28V DC
Output:	4 - 20mA; two wire connection
Solution:	1cm
Measuring range:	300 - 3000mm

Technical Data (continued):

Operating temperature media:	Stainless steel: -20...+160°C PE-HD: 0…+60°C PP: 0...+90°C
Ambient temperature:	-20...+60°C
Protection rate accordant to EN 60 529:	IP65
Connection cable:	0.5 - 1mm², shielded
Cable length:	max. 300m

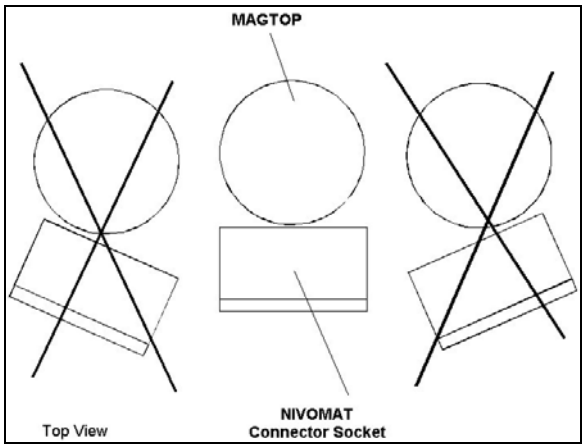
CE Mark:

In accordance with low-voltage directive RL 2006/95/EC and EMC directive 2004/108/EC

Installation:

NIVOMAT FSG to MAGTOP… level indicators

- The terminal housing of the NIVOMAT FSG fill-level probe must be at the top
- The connector socket at the back of the probe must be centred to the MAGTOP standpipe
- A misaligned probe results in faulty measurements (20mA is displayed)



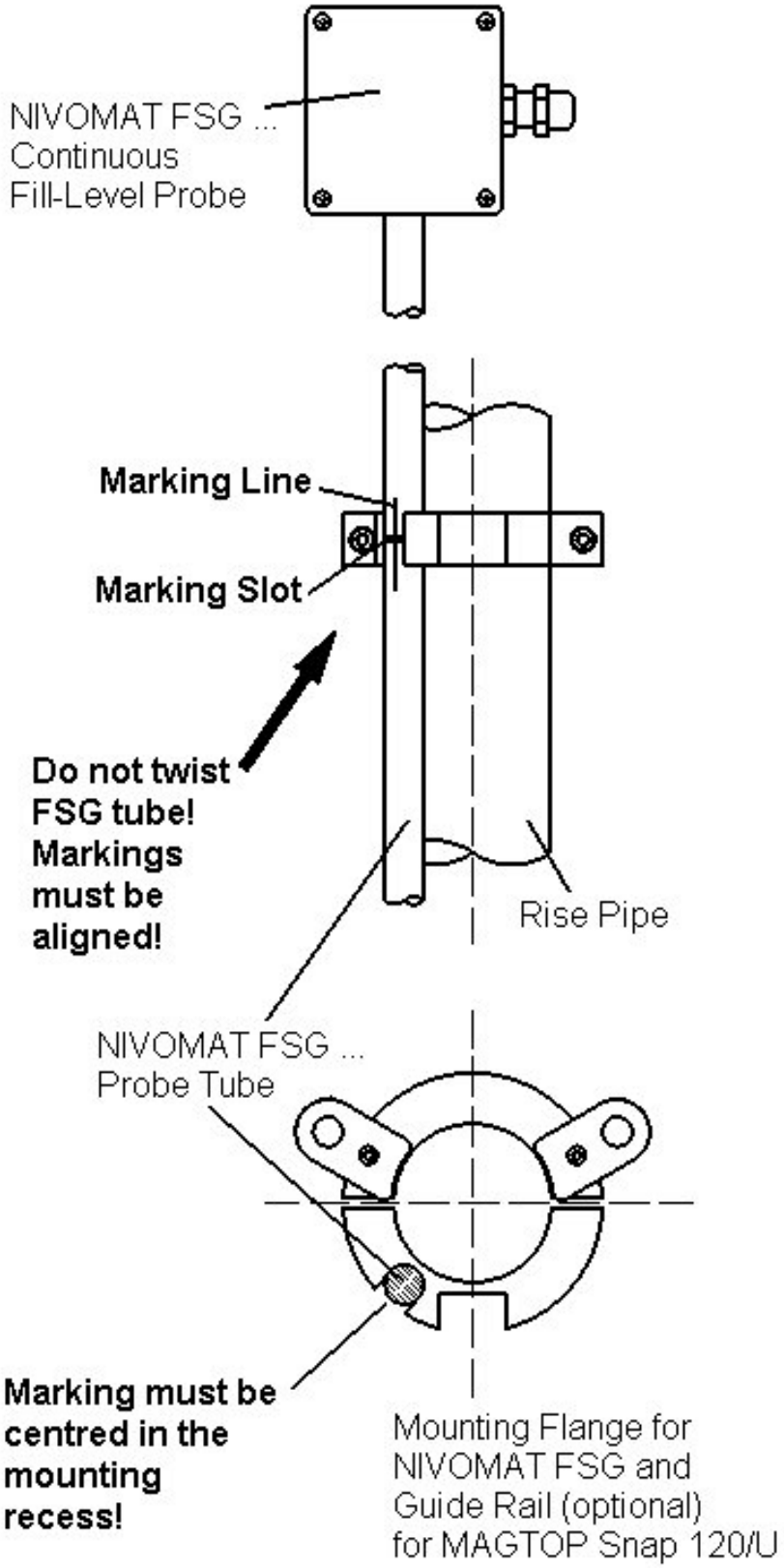
Attaching the NIVOMAT FSG… with Aluminium top to the MAGTOP…

Mounted with VA clamps

- The probe must be adjusted when the tank is empty.
- The probe is pushed down until a value of greater than 4mA (approx. 1%) is displayed. The probe is then pushed up until 4mA (0%) is displayed.

Installation (continued):

Attaching the NIVOMAT FSG… to the MAGTOP…
Flange mounted



Installation (continued)**:**

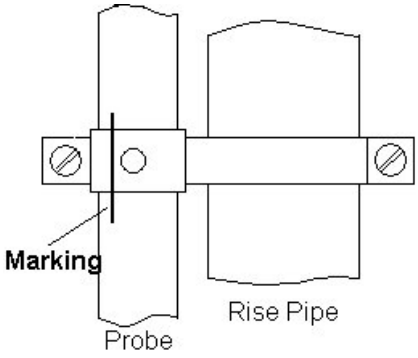
NIVOMAT FSG 1... VA to GNR5 Sight Glass Level Indicator

The FSG 1 fill-level probe must be removed in order to install the GNR5 sight glass level indicator.

When installing the GNR5 sight glass level indicator, make sure that the flats on the sleeve nut are positioned such that the tube included with the NIVOMAT FSG 1... VA probe does not come into contact with the sleeve nut.

The NIVOMAT FSG 1... VA probe must be installed vertically with the terminal housing at the top.

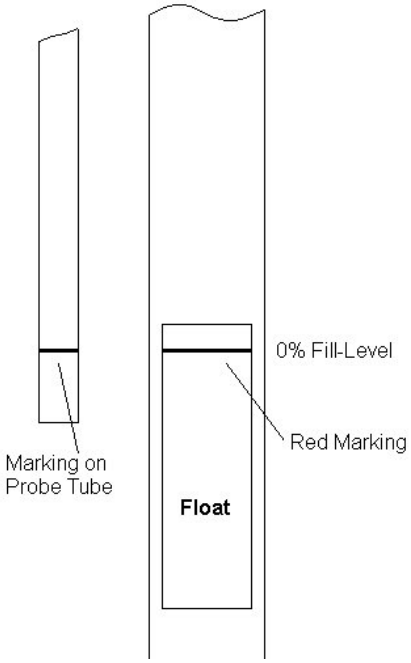
The mounting clamps for the NIVOMAT FSG 1... VA probe may not be twisted. The markings on the probe's tube and the clamp must line up with each other.



Markings on the FS Probe

The PP float must be inserted into the GNR5 with the red marking ring at the top.
Attention: Use only IER type S5/25d floats, because these are equipped with a magnet system which is suitable for use with the NIVOMAT FSG 1... VA probe.

The height of the NIVOMAT FSG 1... VA probe must be adjusted such that the 0% marking (black ring) on the probe's tube is at the same height as the red marking on the float when the tank is empty.



Adjusting the 0% Marking

Installation (continued)**:**

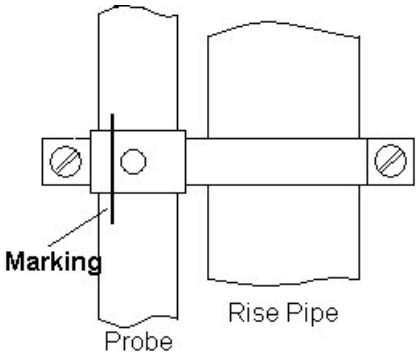
NIVOMAT FSG... VA to MAGTOP G5 Magnetic Flag Indicator

The FSG... VA fill-level probe must be removed from the standpipe in order to install the MAGTOP G5 magnetic flag indicator.

When installing the MAGTOP G5 rise pipe, make sure that the flats on the sleeve nut are positioned such that the tube included with the NIVOMAT FSG... VA probe does not come into contact with the sleeve nut.

The NIVOMAT FSG... VA probe must be installed vertically with the terminal housing at the top.

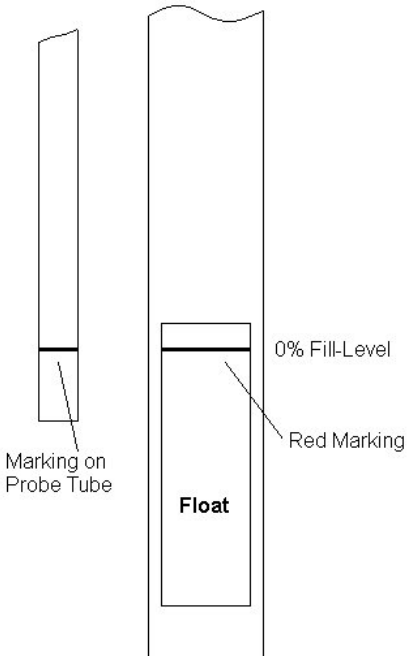
The mounting clamps for the NIVOMAT FSG ... VA probe may not be twisted. The markings on the probe's tube and the clamp must line up with each other.



Markings on the FS Probe

The PP float must be inserted into the GNR5 with the TOP marking at the top.
Attention: Use only IER type M25 floats, because these are equipped with a magnet system which is suitable for use with the NIVOMAT FSG 1... VA probe.

The height of the NIVOMAT FSG ... VA probe must be adjusted such that the 0% marking (black ring) on the probe's tube is at the same height as the red marking on the float when the tank is empty.



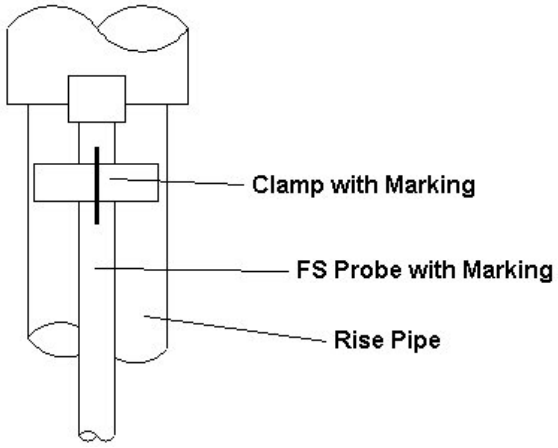
Adjusting the 0 % Marking

Installation (continued)**:**

NIVOMAT FSG... to MAGTOP K2 Magnetic Flag Indicator

The NIVOMAT FSG... probe must be installed vertically with the cable connector at the top.

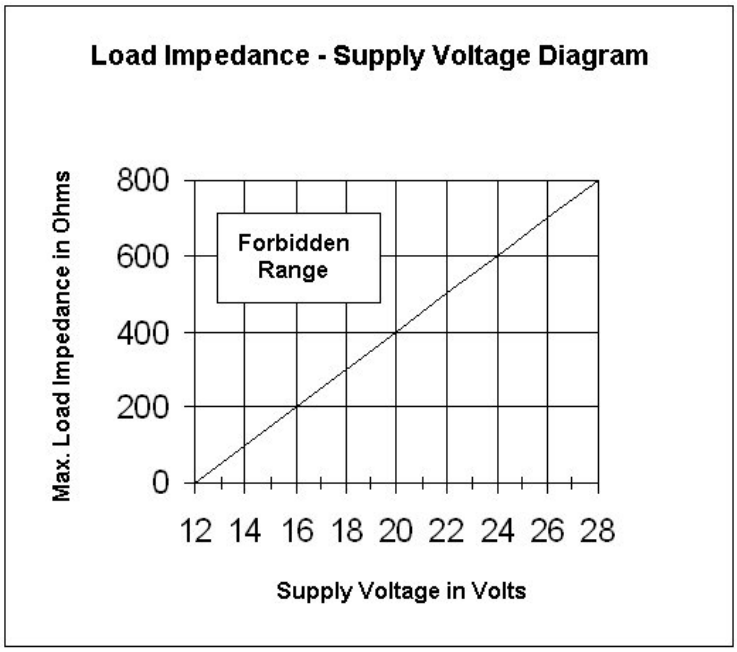
The mounting clamps for the NIVOMAT FSG probe may be vertically adjusted, but they **may not be twisted**.
The **vertical** markings on the probe's tube and the clamp must line up with each other in order to assure correct positioning of the reed contacts.



Elektrical Connection:

- Use shielded cables with an cross-section of at least 0.5mm².
- Maximum cable length: depends upon external load impedance (see diagram below)
- Observe applicable EMC regulations.

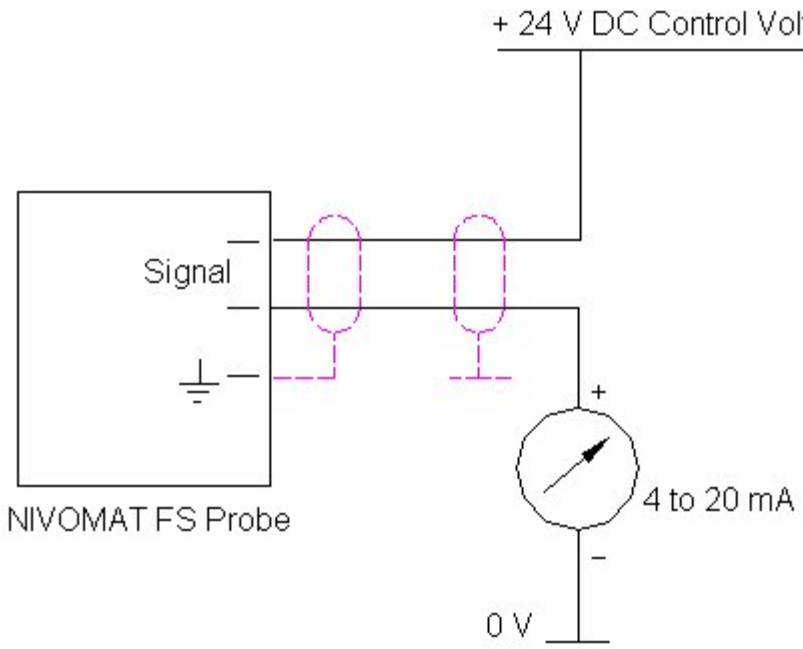
Supply power: 12 to 28V DC
Output current: 4 to 20mA
Max. load impedance: see diagram

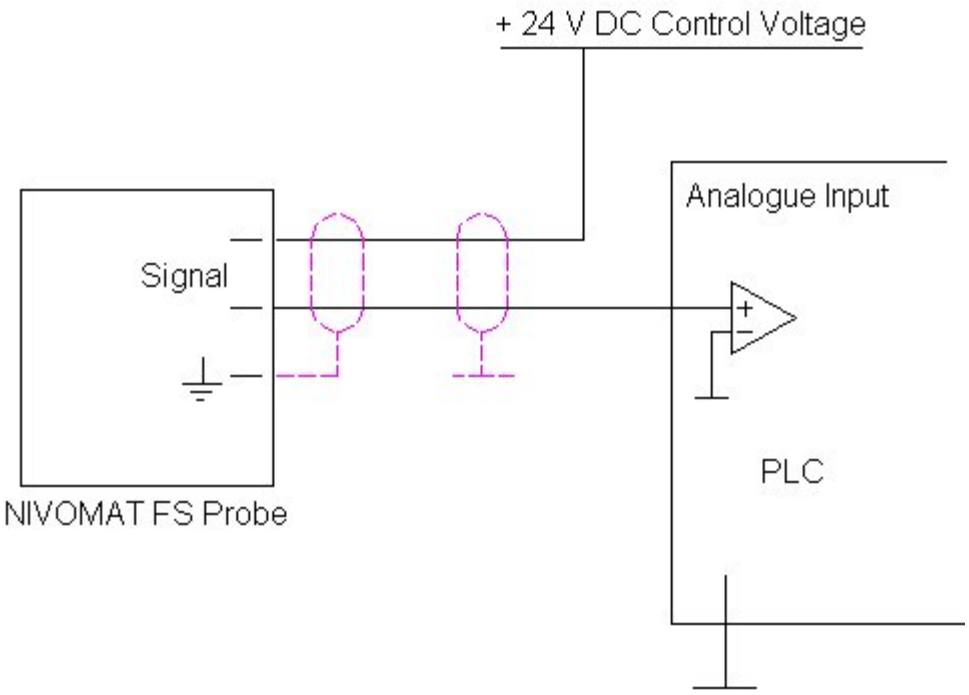


Note:
Load impedance is the sum of the resistance values for the interconnected devices **and** utilised connector cables.

Elektrical Connection (continued):

Connection Schematic





Note:
The signal line can be connected to the FS probe without any regard to correct polarity.
However, correct polarity is required when connecting the measuring instrument / PLC input.

Initial Start-Up

Before initial start-up, the NIVOMAT FSG… should be tested with an ammeter to make sure that it generates an output current of 4 to 20mA.