

# INTRA-AUTOMATION



MESS- UND REGELINSTRUMENTE / MEASUREMENT AND CONTROL

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## LEVEL GAUGING SYSTEM

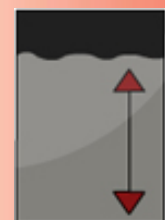
Type: Maglink

Series: 5300 and 5400



### Technical Information

04/2016



LEVEL

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# THE EXPERT IN LEVEL AND FLOW



Intra-Automation  
Technical Information  
01/2016

Technical details subject to be changed without notice.

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## Type: Maglink

## Series: 5300 and 5400

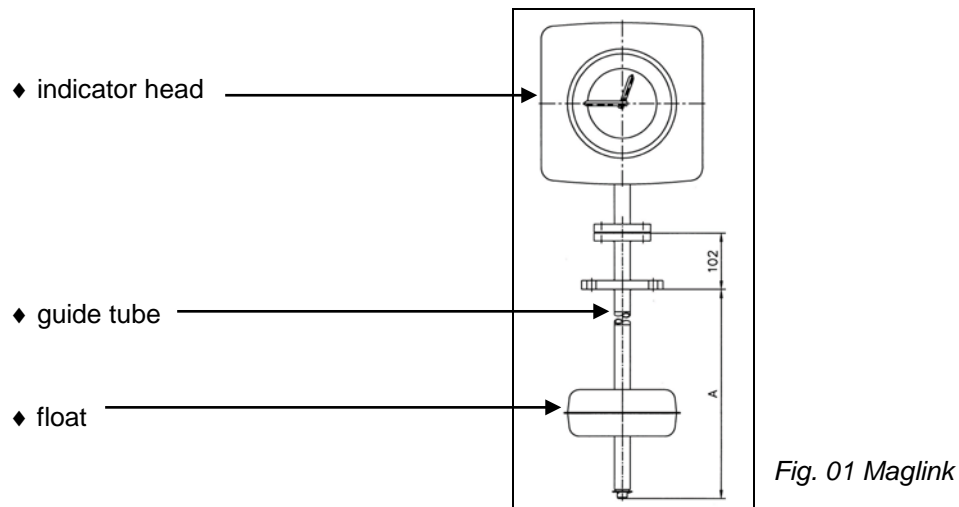
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## 1. General Information

### 1.1. Design and Measurement Principle

The Level Gauging System "Maglink" consists of three main modules:



1. In the indicator head contains all the mechanical parts of the level indicator. First of all, this is the scale which is designed like the dial of a clock. Two pointers (standard device) indicate the liquid level in the tank. These pointers are driven by a transmitter which transmits a linear movement into a circular one. A wire is spooled around a drum in the indicator head, which is spring actuated. The other end is connected to the follower magnet, which is placed in the guide tube.
2. The guide tube is directly connected to the indicator head and completely sealed against the process. The wire hangs into the guide tube with the follower magnet at it's end.
3. The float swims in the fluid to be measured. It is lead by the guide tube. In the float, there is a strong magnetic system, which builds up a strong magnetic link between the float and the follower magnet.

If now the fluid inside the tank rises or falls, the float will rise and fall, too. Due to the linked follower magnet in the guide tube, the drum in the indicator head gets turned by rolling up / down the wire. This rolling movement now gets transmitted by a gear box into the indication on the indication face of the indicator head.

In principle, there are two different series of Maglink Level Gauging Systems:

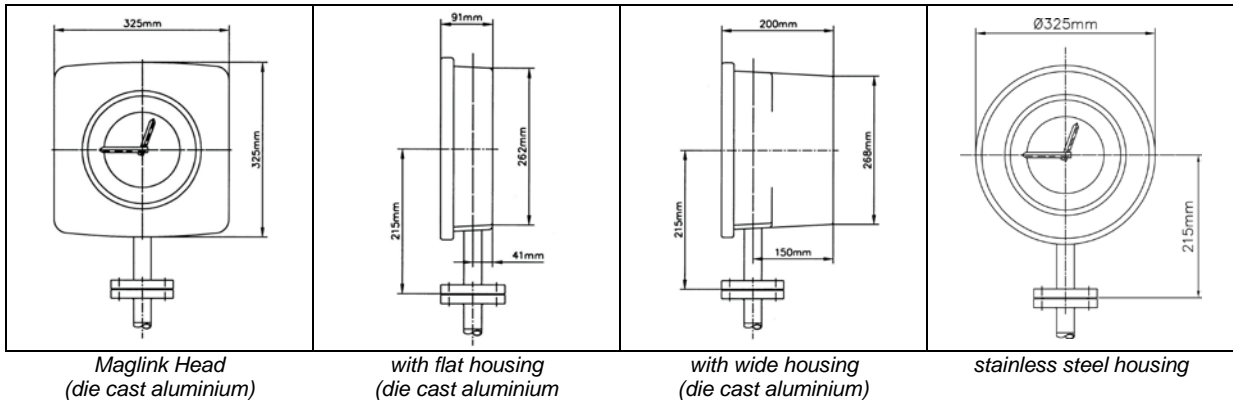
- 1.) **MAGLINK series 5300 (for non-Ex applications)**
- 2.) **MAGLINK series 5400 (for Ex-applications)**

## 1.2 Advantages of the Maglink-Level-Gauging-System

- ◆ sealed system for pressure or vacuum services
- ◆ high accuracy (linear transmission)
- ◆ materials of construction for corrosive services
- ◆ no calibration required
- ◆ remote electronic indication and/or alarm switches
- ◆ readability at eye level
- ◆ good readability by directly indicating scale  $\varnothing$  250 mm
- ◆ double-pointer-indication (standard)
- ◆ mechanical operation (explosion proof available)
- ◆ insensitive to foam
- ◆ simple operation and maintenance
- ◆ interface measurements
- ◆ weatherproof housing
- ◆ direct mounting on top of the tank, optional **indication on the side of the tank**
- ◆ open and sealed tanks
- ◆ underground tanks
- ◆ isolation between measured room and measurement system
- ◆ simple mechanical assembly

**2. Maglink-Components in Detail**

**2.1 Indication Head and Scale**



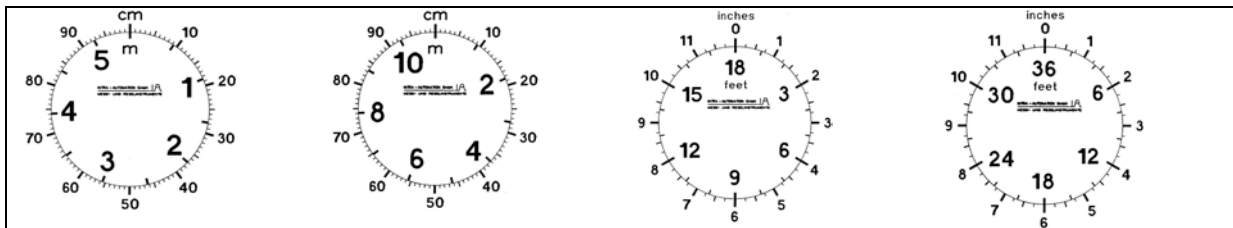
Basically, there are three different housings:

- flat cast housing : used only for visual indication,
- wide cast housing : used for visual indication **and** optional level switches and/or integral transmitter for 4-20 mA output. In this case the housing is equipped with an additional cover on its backside for a simpler mounting, installation and maintenance.
- st. st. housing: : used only for visual indication

Technical data **housing**:

- materials : housing – cast aluminum (std), optional stainless steel  
viewing glass, Ø220mm – glass (standard), optional Makrolon
- painting : PUR- polyester powder lacquer  
layer thickness approx. 70 µm  
color black  
(die cast aluminium housings only)
- ambient temperature : -40 °C (-40 °F) though 66 °C (150 °F)
- protection class : IP 65 (NEMA4)

Technical data **scale**:



0-5,4m

0-10,8m

0-18 ft

0-36 ft

Fig. 03: standard scales

The scale of the Maglink-Level-Gauge-System has a diameter of Ø 220 mm. Two different kinds of scales can be chosen from.

- Standard scale
  - design: double-pointer (*red / black*)
  - scaling: meters (*red*)/ centimeters (*black*) or feet (*red*)/ inches (*black*)
  - measuring range:: 0 - 5,4 m; 0 – 10,8 m; 0 – 18 ft or 0 – 36 ft
  - material: aluminum, white primed
- Special scale (optional)
  - design: one pointer (*black*)
  - scaling: according to customer specification (i.e. in cm; mm; ft; inch; Liter; m<sup>3</sup>)
  - measuring range: according to customer specification
  - material: aluminum, white primed

## 2.2 Guiding Tube

The guiding tube consists of the following parts:

- ◆ weld on head mounting flange, 1" 150 lbs
- ◆ tank mounting flange, (standard DN50 PN16 or 2" 150 lbs RF)  
[other dimensions on request]
- ◆ guiding tube
- ◆ end stop or bottom support for measurement length  $A > 3000$  mm

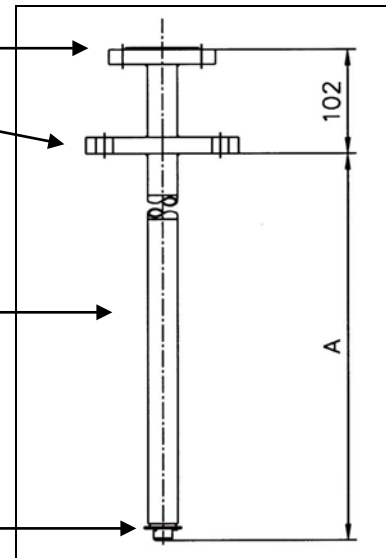


Fig. 04 Guiding tube

Technical data:

- ◆ materials : 1.4571 = 316Ti (standard), PP, PVC, PVDF  
[further materials on request]
- ◆ max. length : 17000 mm (for length > 5800 mm: multipart design)
- ◆ max. operation temperature : 1.4571 (316Ti) (standard) 0...250 °C (32...480 °F)  
PP, PVC, PVDF 0...60 °C (32...140 °F)
- ◆ max. operation pressure : 1.4571 (316Ti) (standard) Depends on selected float type  
PP, PVC, PVDF 6 bar (102 psi g)



**2.3 Float Systems**

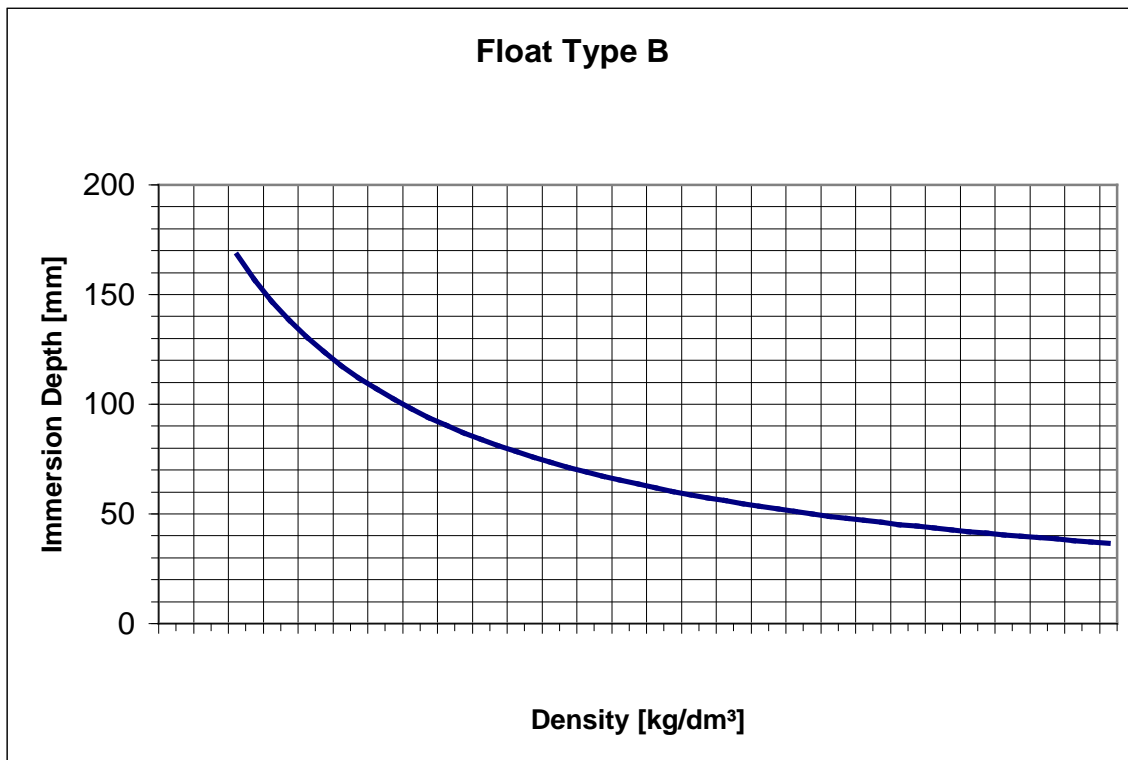
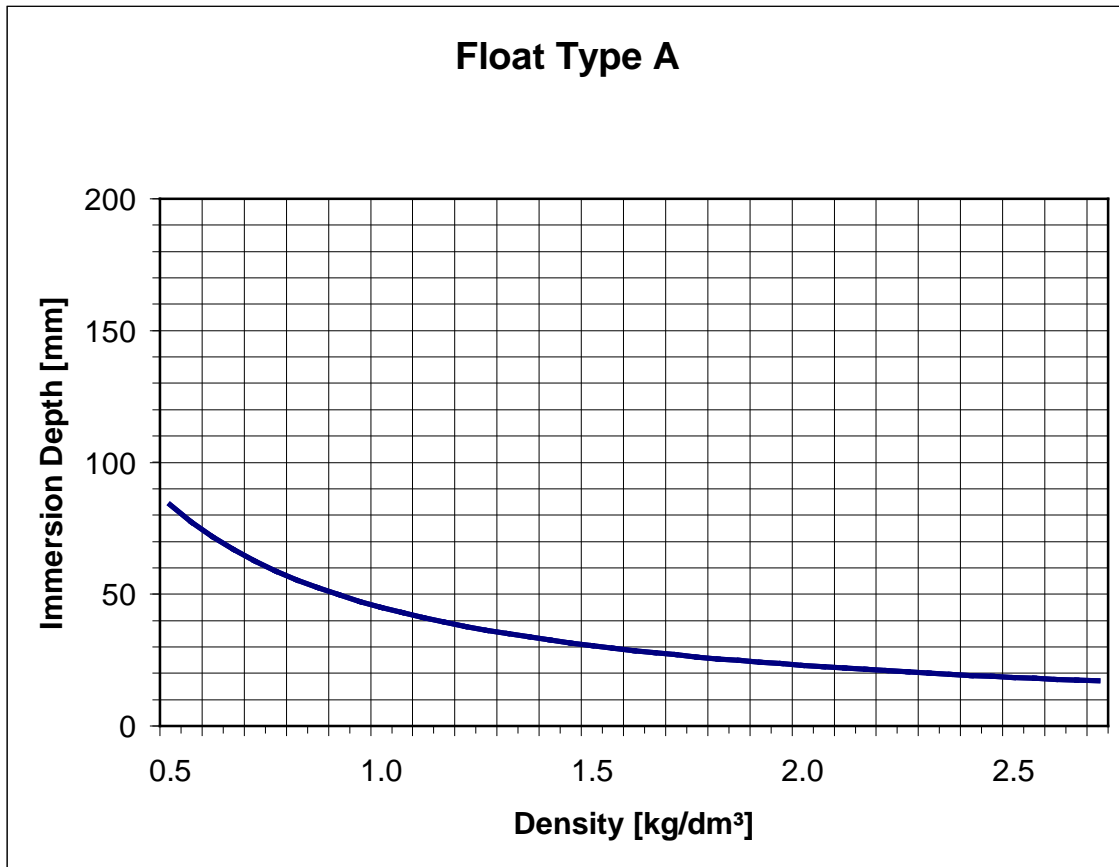
◆ **Types of Floats:**

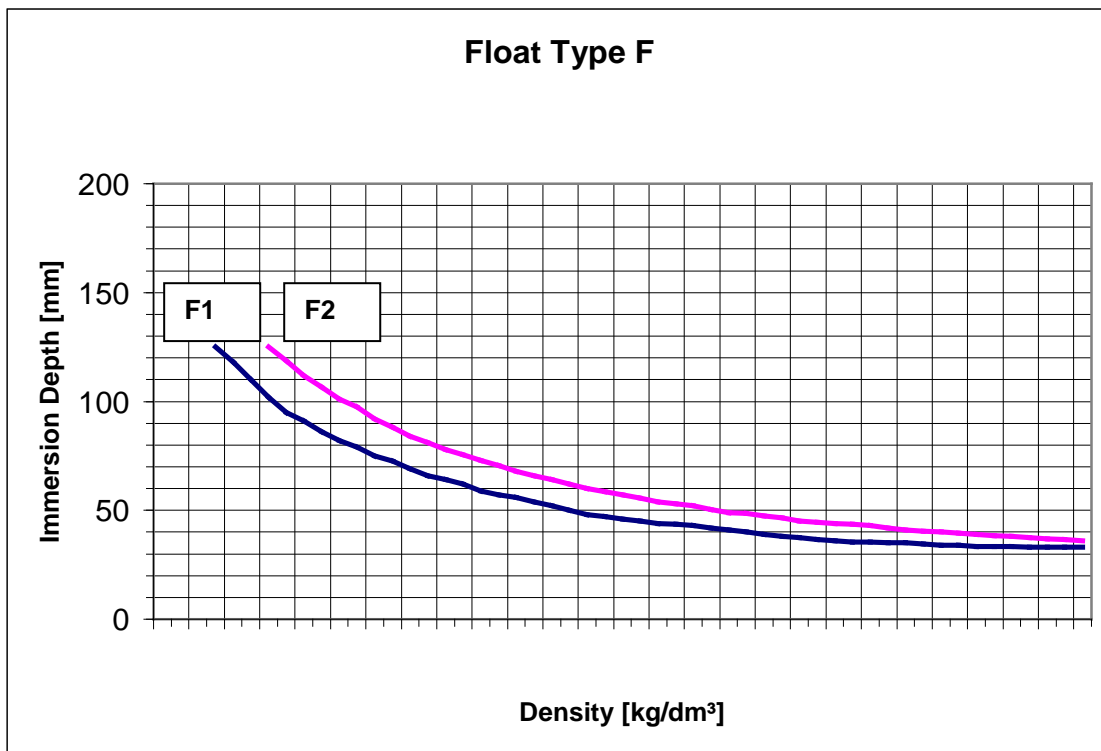
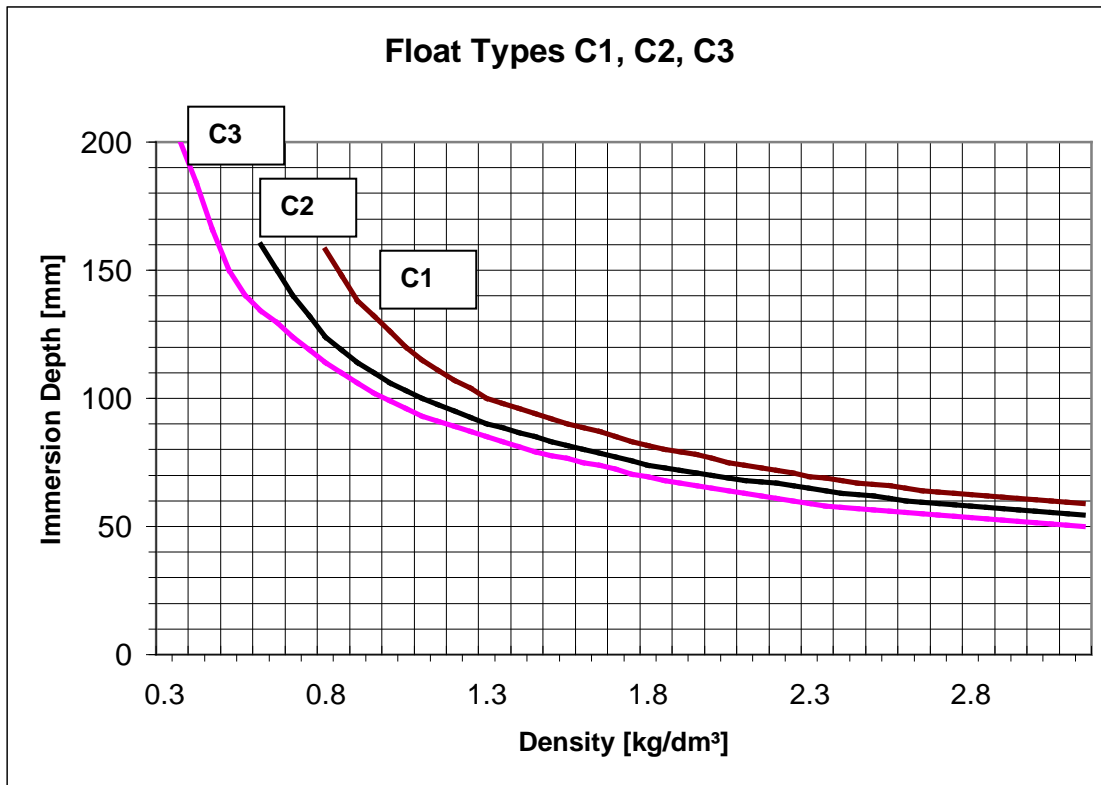
| Float                                  | Data (1, 2, 3)  | Standard version | Ex-version |  |
|--|---|------------------|------------|--|
| <b>Type A</b><br>(Standard)<br><br>(4) | min. 0,5 kg/dm <sup>3</sup><br>max. 3,5 bar (50 psig)<br>max. 250 °C (480 °F)<br>mat.: 1.4571 (316Ti)   |                  |            |  |
| <b>Type B</b><br><br>(4)               | min. 0,7 kg/dm <sup>3</sup><br>max. 5 bar (150 psig)<br>max. 250 °C (480 °F)<br><b>mat.: 1.4571 (316Ti)</b><br><br>ØD = 140 mm<br>H = 178 mm    |                  |            |  |
| <b>Type C1</b><br><br>(4)              | min. 0,75 kg/dm <sup>3</sup><br>max. 25 bar (350 psig)<br>max. 250 °C (480 °F)<br><b>mat.: 1.4571 (316Ti)</b><br><br>ØD = 190 mm<br>H = 184 mm  |                  |            |  |
| <b>Type C2</b><br><br>(4)              | min. 0,58 kg/dm <sup>3</sup><br>max. 18 bar (250 psig)<br>max. 250 °C (480 °F)<br><b>mat.: 1.4571 (316Ti)</b><br><br>ØD = 229 mm<br>H = 206 mm  |                  |            |  |
| <b>Type C3</b><br><br>(4)              | min. 0,35 kg/dm <sup>3</sup><br>max. 8,5 bar (120 psig)<br>max. 250 °C (480 °F)<br><b>mat.: 1.4571 (316Ti)</b><br><br>ØD = 267 mm<br>H = 254 mm |                  |            |  |

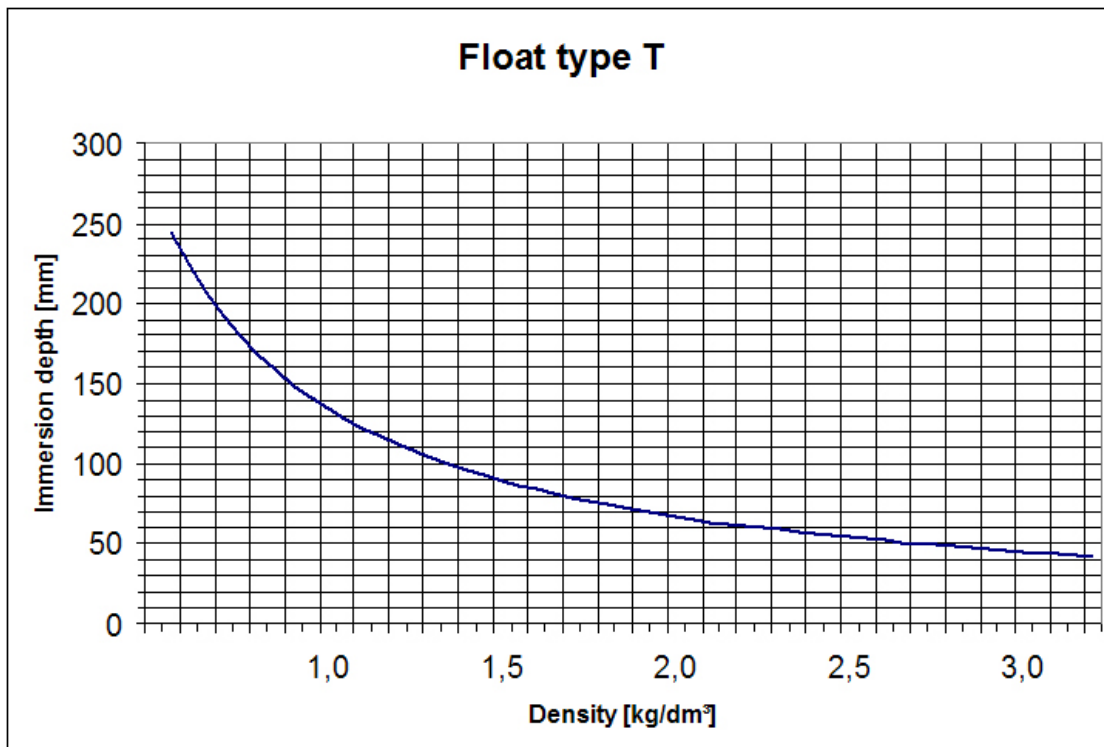
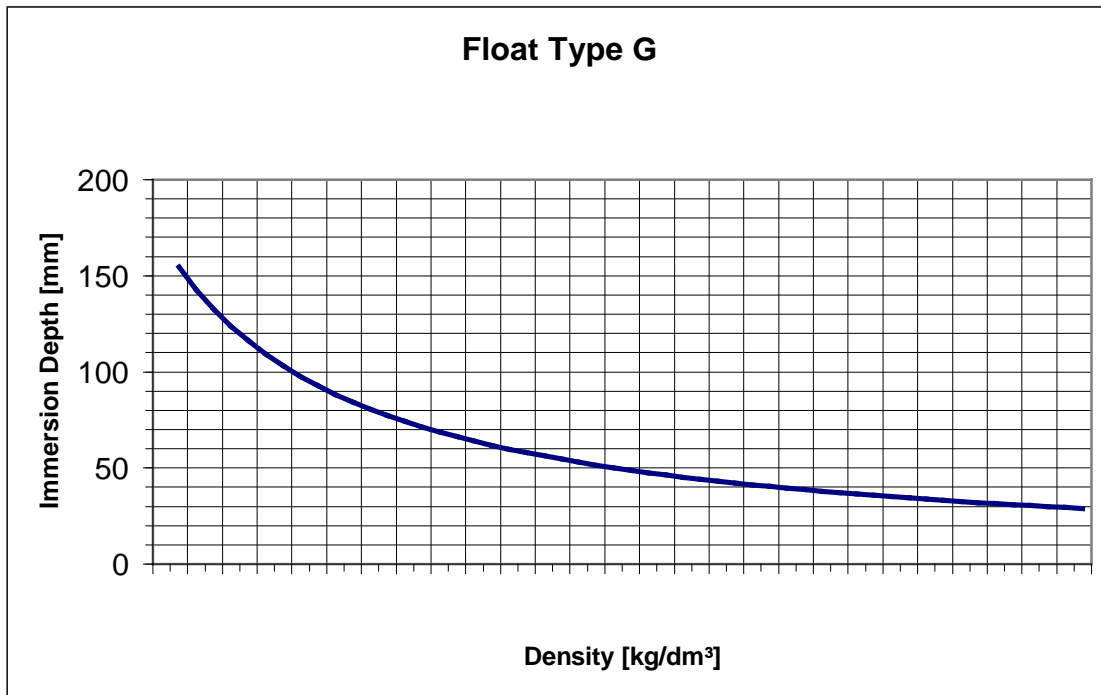
| Float                 | Data (1, 2, 3)  | Standard version | Ex-version |
|-----------------------|---|------------------|------------|
| <b>Type F1</b><br>(4) | min. 0,65 kg/dm <sup>3</sup><br>max. 7 bar (100 psig)<br>max. 60 °C (140 °F)<br>mat.: <b>Polypropylene (PP)</b>                       |                  |            |
| <b>Type F2</b><br>(4) | min. 0,80kg/dm <sup>3</sup><br>max. 7 bar (100 psig)<br>max. 60 °C (140 °F)<br>mat.: <b>Polyvinyl chloride (PVC)</b>                  |                  |            |
| <b>Type G</b><br>(5)  | min. 0,60 kg/dm <sup>3</sup><br>max. 3,2 bar (45 psig)<br>max. 250 °C (480 °F)<br>mat.: <b>Glass</b><br><br>ØD = 150 mm<br>H = 175 mm |                  |            |
| <b>Type T</b><br>(4)  | min. 0,58 kg/dm <sup>3</sup><br>max. 18 bar (250 psig)<br>max. 250 °C (480 °F)<br>mat.: <b>Titan</b><br><br>ØD = 94 mm<br>H = 240 mm  |                  |            |

- 1) Except the glass float all other float types can be vented for high pressure applications
- 2) It should be avoided to use floats close to their specified minimal liquid density
- 3) Special materials and –dimensions upon request
- 4) Version for interface measurements requires a minimal difference in density of **0,2 kg/dm<sup>3</sup>**
- 5) Version for interface measurements requires a minimal difference in density of **0,4 kg/dm<sup>3</sup>**

◆ **Immersion depths:**







## 2.4 Switches / Transmitters

- Switches**

| <b>Type</b> | <b>Description</b>                        |   |  |                                    |  |
|-------------|---|---|--|------------------------------------|--|
| <b>B</b>    | Slot proximity switch                     | Explosion protection<br><br>Protection class<br>Rated voltage<br>Rated current<br>Rated power<br>Inductivity<br>Capacity<br>EMC | <b>Ex II 2 G EEx ia IIC T6</b><br><br>IP 67<br>max. 16 VDC (intrinsically safe circuit)<br>max. 25 mA<br>max. 34 mW<br>30 nF<br>100 µH<br>EN 50014:1997; EN 50020:1994 |                                    |  |
| <b>C</b>    | Micro switch (change-over contact) (SPDT) | Explosion protection<br>Protection class<br><br>Utilization category<br>Rated voltage<br>Rated current                          | <b>Ex II 2 G EEx de IIC bzw. EEx d IIC</b><br>IP 66<br><br>AC-15<br>max. 250 V<br>max. 4 A   |                                    |  |
|             |   |   | AC-15<br>max. 400 V<br>max. 2 A  | DC-13<br>max. 250 V<br>max. 0,15 A |  |

- Transmitters**

| <b>Type</b> | <b>Description</b>          |  |   |  |  |
|-------------|-----------------------------|--|---|--|--|
| <b>E</b>    | Position sensing transducer | Explosion protection<br><br>Approval<br>Rated voltage<br>Rated current<br>Rated power<br>Capacity<br>External burden<br>EMC<br><br>Accuracy<br>Output signal | <b>Ex II 2 G EEx ia IIC T6</b><br><br>German Lloyd<br>max. 30 VDC<br>max. 160 mA<br>max. 1 W<br>≤ 10 nF (internal)<br>R = (supply voltage-12V)/ Signal value I<br>EN 50014:1997; EN 50020:1994<br><br>≤ 1,5 % of rate<br>4..20 mA (2-, 3- or 4-wire-version)<br>0..10/20 mA (3- or 4- wire-version) |  |  |

### 3. Approvals

- Maglink Series **5400** (with explosion protection)

| Type                                   | Approval                |
|--|-------------------------|
| 544_-D-...                             | ⊕II 1/2 G EEx ed IIC T4 |
| 544_-I-...<br>548_-I-...<br>549_-I-... | ⊕II 1/2 G EEx ia IIC T4 |
| 54__-...                               | ⊕II 1/2 G               |

### 4. Accuracies

- Measurement accuracy :  $\pm (2 + L)$  mm  
with „L“ = length of the guiding tube in meters
- Response sensitivity  
to float movements :  $\pm 2$  mm
- Reproducibility :  $\pm 2$  mm

### 5. Weights and Dimensions

- Model 531../ 541.. (only Indication = flat indicator head)**

appr. weight =  $15 + (2 \times L) + [1/3 \times (F)^2]$  (metric units)

appr. weight =  $33,05 + (0.111 \times L) + [0.735 \times (F)^2]$  (anglo-american units)

- Model 53..../ 54.... (Indication+switches/transmitter = deep indicator head)**

appr. weight =  $17 + (2 \times L) + [1/3 \times (F)^2]$  (metric units)

appr. weight =  $37,45 + (0.111 \times L) + [0.735 \times (F)^2]$  (anglo-american units)

| Value | metric   |   | Example  |
|-------|--|---|--|
|       | Process flange<br>$\leq DN65/ 2 \frac{1}{2}''$ | Process flange<br>$> DN65/ 2 \frac{1}{2}''$ |  |
| L     | Length of guide tube in m                      | Length of guide tube in m                   | Model 531.. with flange DN100<br>Guide tube length = 3000 mm<br>L= 3   |
| F     | 0  | Flange size in inch                         | F= 4   |
|       |  |   | Weight = $15+2 \times 3 + [1/3 \times (4)^2] = 26,3$ kg                |
| Value | anglo-american                                 |   | Example  |
|       | Process flange<br>$\leq DN65/ 2 \frac{1}{2}''$ | Process flange<br>$> DN65/ 2 \frac{1}{2}''$ |  |
| L     | Length of guide tube in<br>inch                | Length of guide tube in<br>inch             | Model 531.. with flange 4"<br>Guide tube length = 118 inch<br>L= 118   |
| F     | 0  | Flange size in inch                         | F= 4   |
|       |  |   | Weight =<br>$33,05+0,111 \times 118 + [0,735 \times (4)^2] = 57,9$ lbs |

## 6. Order codes

### 6.1 Maglink Series 5300 (non-ex-version)

#### 1. Maglink type

**A53** without explosion protection, indicator head die cast aluminium

**S53** without explosion protection, indicator head stainless steel

#### 2. Maglink head

**1** only local indication

**4** local indication, max. 4 electr. switches or max. 3 slot proximity switches possible

**8** local indication, max. 1 electr. transmitter, max. 3 electr. switches or max. 3 slot proximity switches possible

**9** local indication, max. 1 electr. transmitter possible

#### 3. scale

**1** 0.. 5,4m

**2** 0..10,8m

**3** 0..18 feet

**4** 0..36 feet

**5** single pointer style (f.e.: mm, %, inches)

**Y3** other

-

#### 4. certification

**0** without

**Y4** other

#### 5. transmitter (depends on certification)

**0** without

**E** 1 electr. transmitter; output signal: (0)4...20 mA  
power supply: 12...30 V; -20...70 °C; accuracy: <= 1,5%

**Y5** Other

#### 6. switch (depends on classification)

**00** without

**B1** 1 slot proximity switch type B

**B2** 2 slot proximity switches type B

**B3** 3 slot proximity switches type B

**B4** 4 slot proximity switches type B

**C1** 1 electr. switch type C

**C2** 2 electr. switches type C

**C3** 3 electr. switches type C

**C4** 4 electr. switches type C

**Y6** other

#### 7. float

**A** Ø 235x94mm; 1.4571; min. 0,5 kg/dm<sup>3</sup>; max. 3,5 bar; max. 250 °C

**B** Ø 140x178mm; 1.4571; min. 0,7 kg/dm<sup>3</sup>; max. 5 bar; max. 250 °C

**C1** Ø □ 190x184mm; 1

**C2** Ø □ max 18 bar; max 250 °C; 0,58 kg/dm

**C3** Ø □ 267x254mm; 1

**F1** Ø □ 133x140mm; PP; min

**F2** Ø □ 133x140mm; PVC; m

**T** Ø 240mm; 3.7035 (titanium); min. 0,58 kg/dm<sup>3</sup>; max. 18 bar; max. 250 °C

**Y7** other

#### 8. interface level measurement

**[min. difference in density: 0,2 kg/dm<sup>3</sup> (0,4 kg/dm<sup>3</sup> f. glass)]**

**0** without

**E** Interface level measurement

**Y8** other

#### 9. coating (except float type G)

**0** without

**H** float coating halar (except float type G)

**P** float coating PVDF (except float type G)

**Y9** other



**6.1 Maglink Series 5300 (non-ex-version) (Continuation):**

| <b>10. guide tube length</b>  |   |            |                   |
|---|---|------------|-------------------|
| <b>RM</b>   | guide tube; Ø32x2mm; <b>L ≤ 3000mm</b>                |            | length in mm      |
| <b>RZ</b>   | guide tube; 1" Sch40; <b>L &gt; 3000mm</b>            |            | length in mm      |
| <b>RZ5</b>  | guide tube; 1" Sch40; <b>L ab 5500mm (mehrteilig)</b> |            | length in mm      |
| <b>11. guide tube material</b>  |   |            |                   |
| <b>S</b>  | 316Ti (Standard)                                      |            |                   |
| <b>P</b>  | PP  |            |                   |
| <b>Q</b>  | PVC   |            |                   |
| <b>L</b>  | PVDF  |            |                   |
| <b>Y11</b>  | other   |            |                   |
| <b>12. distance head/ tank mounting flange</b>                            |   |            |                   |
| <b>B0</b>   | standard, B=102mm                                     |            |                   |
| <b>BG</b>   | man hole mounting; min. base B=500mm;                 |            | add. length in mm |
| <b>Y12</b>  | other   |            |                   |
| <b>13. tank mounting flange</b>   |   |            |                   |
| <b>always identical to guide tube material</b>                            |   |            |                   |
| <b>SM</b>   | flanges acc. to DIN                                   |            |                   |
| <b>SA</b>   | flanges acc. to ANSI                                  |            |                   |
| <b>Y13</b>  | other   |            |                   |
| <b>14. sealing surface</b>  |   |            |                   |
| <b>1</b>  | DIN   |            |                   |
| <b>2</b>  | ANSI RF   |            |                   |
| <b>3</b>  | ANSI RF SF (smooth finish)                            |            |                   |
| <b>5</b>  | ANSI FF   |            |                   |
| <b>Y14</b>  | other   |            |                   |
| <b>15. PN, material and DN of the guide tube flange for tank mounting</b> |   |            |                   |
| <b>CC1</b>  | PN16 / 150 lbs  | CS         | DN50 / 2"         |
| <b>CC2</b>  | PN40 / 300 lbs  | CS         | DN50 / 2"         |
| <b>C01</b>  | PN16 / 150 lbs  | 316Ti      | DN50 / 2"         |
| <b>C02</b>  | PN40 / 300 lbs  | 316Ti      | DN50 / 2"         |
| <b>C80</b>  | PN16 / 150 lbs  | PP         | DN50 / 2"         |
| <b>C90</b>  | PN16 / 150 lbs  | PVC        | DN50 / 2"         |
| <b>CX1</b>  | PN16 / 150 lbs  | 316Ti/PVDF | DN50 / 2"         |
| <b>CX2</b>  | PN40 / 300 lbs  | 316Ti/PVDF | DN50 / 2"         |
| <b>EC1</b>  | PN16 / 150 lbs  | CS         | DN80 / 3"         |
| <b>EC2</b>  | PN40 / 300 lbs  | CS         | DN80 / 3"         |
| <b>E01</b>  | PN16 / 150 lbs  | 316Ti      | DN80 / 3"         |
| <b>E02</b>  | PN40 / 300 lbs  | 316Ti      | DN80 / 3"         |
| <b>E80</b>  | PN16 / 150 lbs  | PP         | DN80 / 3"         |
| <b>E90</b>  | PN16 / 150 lbs  | PVC        | DN80 / 3"         |
| <b>EX1</b>  | PN16 / 150 lbs  | 316Ti/PVDF | DN80 / 3"         |
| <b>EX2</b>  | PN40 / 300 lbs  | 316Ti/PVDF | DN80 / 3"         |
| <b>FC1</b>  | PN16 / 150 lbs  | CS         | DN100 / 4"        |
| <b>FC2</b>  | PN40 / 300 lbs  | CS         | DN100 / 4"        |
| <b>F01</b>  | PN16 / 150 lbs  | 316Ti      | DN100 / 4"        |
| <b>F02</b>  | PN40 / 300 lbs  | 316Ti      | DN100 / 4"        |
| <b>F80</b>  | PN16 / 150 lbs  | PP         | DN100 / 4"        |
| <b>F90</b>  | PN16 / 150 lbs  | PVC        | DN100 / 4"        |
| <b>FX1</b>  | PN16 / 150 lbs  | 316Ti/PVDF | DN100 / 4"        |
| <b>FX2</b>  | PN40 / 300 lbs  | 316Ti/PVDF | DN100 / 4"        |

**6.1 Maglink Series 5300 (non-ex-version) (Continuation):**

|  |                                      |            |             |
|--|--------------------------------------|------------|-------------|
| <b>GC1</b>   | PN16 / 150 lbs                       | CS         | DN150 / 6"  |
| <b>GC2</b>   | PN40 / 300 lbs                       | CS         | DN150 / 6"  |
| <b>G01</b>   | PN16 / 150 lbs                       | 316Ti      | DN150 / 6"  |
| <b>G02</b>   | PN40 / 300 lbs                       | 316Ti      | DN150 / 6"  |
| <b>G80</b>   | PN16 / 150 lbs                       | PP         | DN150 / 6"  |
| <b>G90</b>   | PN16 / 150 lbs                       | PVC        | DN150 / 6"  |
| <b>GX1</b>   | PN16 / 150 lbs                       | 316Ti/PVDF | DN150 / 6"  |
| <b>GX2</b>   | PN40 / 300 lbs                       | 316Ti/PVDF | DN150 / 6"  |
| <b>HC1</b>   | PN16 / 150 lbs                       | CS         | DN200 / 8"  |
| <b>HC2</b>   | PN40 / 300 lbs                       | CS         | DN200 / 8"  |
| <b>H01</b>   | PN16 / 150 lbs                       | 316Ti      | DN200 / 8"  |
| <b>H02</b>   | PN40 / 300 lbs                       | 316Ti      | DN200 / 8"  |
| <b>H80</b>   | PN16 / 150 lbs                       | PP         | DN200 / 8"  |
| <b>H90</b>   | PN16 / 150 lbs                       | PVC        | DN200 / 8"  |
| <b>HX1</b>   | PN16 / 150 lbs                       | 316Ti/PVDF | DN200 / 8"  |
| <b>HX2</b>   | PN40 / 300 lbs                       | 316Ti/PVDF | DN200 / 8"  |
| <b>JC1</b>   | PN16 / 150 lbs                       | CS         | DN250 / 10" |
| <b>JC2</b>   | PN40 / 300 lbs                       | CS         | DN250 / 10" |
| <b>J01</b>   | PN16 / 150 lbs                       | 316Ti      | DN250 / 10" |
| <b>J02</b>   | PN40 / 300 lbs                       | 316Ti      | DN250 / 10" |
| <b>J80</b>   | PN16 / 150 lbs                       | PP         | DN250 / 10" |
| <b>J90</b>   | PN16 / 150 lbs                       | PVC        | DN250 / 10" |
| <b>JX1</b>   | PN16 / 150 lbs                       | 316Ti/PVDF | DN250 / 10" |
| <b>JX2</b>   | PN40 / 300 lbs                       | 316Ti/PVDF | DN250 / 10" |
| <b>Y15</b>   | other                                |            |             |
| <b>16. bottom support for guide tube length &gt;3000mm</b>                               |                                      |            |             |
| <b>0</b>   | without                              |            |             |
| <b>C</b>   | bottom support; material: CS/PTFE    |            |             |
| <b>S</b>   | bottom support; material: 316Ti/PTFE |            |             |
| <b>Y16</b>   | other                                |            |             |
| <b>17. indication on side of tank (tube mat.: CS, painted; elbow mat.: alu, painted)</b> |                                      |            |             |
| <b>0</b>   | without                              |            |             |
| <b>SA</b>  | with side tank indication            |            |             |
| <b>18. distance tank edge (G)/ upper tank edge To eye height (H) (dim. in mm)</b>        |                                      |            |             |
| <b>G/H</b>   | G in mm / H in mm                    |            |             |

**6.2 Maglink Series 5400 (ex-version)**

|   |   |
|---|---|
| <b>1. Maglink type</b>  |   |
| <b>A54</b>  | With explosion protection; guide tube/ float suitable for use in zone 0 in acc. PTB 04 ATEX 1102<br>Indication head die cast aluminium                          |
| <b>S54</b>  | With explosion protection; guide tube/ float suitable for use in zone 0 in acc. PTB 04 ATEX 1102<br>Indication head stainless steel                             |
| <b>2. Maglink head</b>  |   |
| <b>1</b>  | only local indication   |
| <b>4</b>  | local indication, max. 4 electr. switches or max. 3 slot proximity switches possible  |
| <b>8</b>  | local indication, max. 1 electr. transmitter, max. 3 electr. switches or max. 3 slot proximity switches possible  |
| <b>9</b>  | local indication, max. 1 electr. transmitter possible   |
| <b>3. scale</b>   |   |
| <b>1</b>  | 0.. 5,4m  |
| <b>2</b>  | 0..10,8m  |
| <b>3</b>  | 0..18 feet  |
| <b>4</b>  | 0..36 feet  |
| <b>5</b>  | single pointer style (f.e.: mm, %, inches)  |
| <b>Y3</b>   | Other   |
| -   |   |
| <b>4. certification</b>   |   |
| <b>0</b>  | Without electrical installation, guide tube zone 0, indicator zone 1; Ex II 1/2 G   |
| <b>D</b>  | Ex II 1/2 G EEx ed IIC T4; PTB 04 ATEX 1102; - only in conjunction with type 544.. – suitable for class I, div. 1, group A, T4 “flame proofed”                  |
| <b>I</b>  | Ex II 1/2 G EEx ia IIC T4; PTB 04 ATEX 1102; - only in conjunction with type 544../ 548/ 549.. – suitable for class I, div. 1, group A, T4 “intrinsically safe” |
| <b>Y4</b>   | other   |
| <b>5. transmitter (depends on classification)</b>   |   |
| <b>0</b>  | without   |
| <b>E</b>  | 1 electr. transmitter; output signal: (0)4...20 mA; [Ex II 2 G EEx ia IIC T6]; power supply: 12...30 V; -20...70 °C; accuracy: <= 1,5%                          |
| <b>Y5</b>   | other   |
| <b>6. switch (depends on classification)</b>  |   |
| <b>00</b>   | without   |
| <b>B1</b>   | 1 slot proximity switch type B; [Ex II 2 G EEx ia IIC T6]   |
| <b>B2</b>   | 2 slot proximity switches type B; [Ex II 2 G EEx ia IIC T6]   |
| <b>B3</b>   | 3 slot proximity switches type B; [Ex II 2 G EEx ia IIC T6]   |
| <b>B4</b>   | 4 slot proximity switches type B; [Ex II 2 G EEx ia IIC T6]   |
| <b>C1</b>   | 1 electr. switch type C; [II 2 G EEx de II C resp. EExd II C]   |
| <b>C2</b>   | 2 electr. switches type C; [II 2 G EEx de II C resp. EExd II C]   |
| <b>C3</b>   | 3 electr. switches type C; [II 2 G EEx de II C resp. EExd II C]   |
| <b>C4</b>   | 4 electr. switches type C; [II 2 G EEx de II C resp. EExd II C]   |
| <b>Y6</b>   | other   |
| <b>7. float</b>   |   |
| <b>A</b>  | ∅ $5 \frac{kg}{dm^3}$ ; max. 13,5 bar; max. 250 °C  |
| <b>B</b>  | ∅ $5 \frac{kg}{dm^3}$ ; max. 13,5 bar; max. 250 °C <input type="checkbox"/> 140x178mm; 1.4  |
| <b>C1</b>   | ∅ $5 \frac{kg}{dm^3}$ ; max. 13,5 bar; max. 250 °C <input type="checkbox"/> 190x184mm; 1  |
| <b>C2</b>   | ∅ $5 \frac{kg}{dm^3}$ ; max. 13,5 bar; max. 250 °C <input type="checkbox"/> 229x206mm; 1.4  |
| <b>C3</b>   | ∅ $5 \frac{kg}{dm^3}$ ; max. 13,5 bar; max. 250 °C <input type="checkbox"/> 267x254mm; 1  |
| <b>F1</b>   | ∅ $5 \frac{kg}{dm^3}$ ; max. 13,5 bar; max. 250 °C <input type="checkbox"/> 133x140mm; PP; min  |
| <b>F2</b>   | ∅ $5 \frac{kg}{dm^3}$ ; max. 13,5 bar; max. 250 °C <input type="checkbox"/> 133x140mm; PVC; m   |
| <b>T</b>  | ∅ $0,58 \frac{kg}{dm^3}$ ; max. 18 bar; max. 250 °C   |
| <b>Y7</b>   | other   |
| <b>8. interface level measurement</b><br>[min. difference in density: 0,2 kg/dm <sup>3</sup> (0,4 kg/dm <sup>3</sup> f. glass)] |   |
| <b>0</b>  | without   |
| <b>E</b>  | Interface level measurement   |
| <b>Y8</b>   | other   |
| <b>9. coating (except float type G)</b>   |   |
| <b>0</b>  | without   |
| <b>H</b>  | float coating halar (except float type G)   |
| <b>P</b>  | float coating PVDF (except float type G)  |
| <b>Y9</b>   | other   |


**6.2 Maglink Series 5400 (ex-version) (Continuation):**

| <b>10. guide tube length</b>  |   |            |                   |
|---|---|------------|-------------------|
| <b>RM</b>   | guide tube; Ø32x2mm; $L \leq 3000\text{mm}$                       |            | length in mm      |
| <b>RZ</b>   | guide tube; 1" Sch40; $L > 3000\text{mm}$                         |            | length in mm      |
| <b>RZ5</b>  | guide tube; 1" Sch40; $L \text{ ab } 5500\text{mm (meherteilig)}$ |            | length in mm      |
| <b>11. guide tube material</b>  |   |            |                   |
| <b>S</b>  | 316Ti (Standard)  |            |                   |
| <b>P</b>  | PP  |            |                   |
| <b>Q</b>  | PVC   |            |                   |
| <b>L</b>  | PVDF  |            |                   |
| <b>Y11</b>  | other   |            |                   |
| <b>12. distance head/ tank mounting flange</b>                            |   |            |                   |
| <b>B0</b>   | standard, B=102mm   |            |                   |
| <b>BG</b>   | man hole mounting; min. base B=500mm;                             |            | add. length in mm |
| <b>Y12</b>  | other   |            |                   |
| <b>13. tank mounting flange</b>   |   |            |                   |
| always identical to guide tube material                                   |   |            |                   |
| <b>SM</b>   | flanges acc. to DIN   |            |                   |
| <b>SA</b>   | flanges acc. to ANSI  |            |                   |
| <b>Y13</b>  | other   |            |                   |
| <b>14. sealing surface</b>  |   |            |                   |
| <b>1</b>  | DIN   |            |                   |
| <b>2</b>  | ANSI RF   |            |                   |
| <b>3</b>  | ANSI RF SF (smooth finish)  |            |                   |
| <b>5</b>  | ANSI FF   |            |                   |
| <b>Y14</b>  | other   |            |                   |
| <b>15. PN, material and DN of the guide tube flange for tank mounting</b> |   |            |                   |
| <b>CC1</b>  | PN16 / 150 lbs  | CS         | DN50 / 2"         |
| <b>CC2</b>  | PN40 / 300 lbs  | CS         | DN50 / 2"         |
| <b>C01</b>  | PN16 / 150 lbs  | 316Ti      | DN50 / 2"         |
| <b>C02</b>  | PN40 / 300 lbs  | 316Ti      | DN50 / 2"         |
| <b>C80</b>  | PN16 / 150 lbs  | PP         | DN50 / 2"         |
| <b>C90</b>  | PN16 / 150 lbs  | PVC        | DN50 / 2"         |
| <b>CX1</b>  | PN16 / 150 lbs  | 316Ti/PVDF | DN50 / 2"         |
| <b>CX2</b>  | PN40 / 300 lbs  | 316Ti/PVDF | DN50 / 2"         |
| <b>EC1</b>  | PN16 / 150 lbs  | CS         | DN80 / 3"         |
| <b>EC2</b>  | PN40 / 300 lbs  | CS         | DN80 / 3"         |
| <b>E01</b>  | PN16 / 150 lbs  | 316Ti      | DN80 / 3"         |
| <b>E02</b>  | PN40 / 300 lbs  | 316Ti      | DN80 / 3"         |
| <b>E80</b>  | PN16 / 150 lbs  | PP         | DN80 / 3"         |
| <b>E90</b>  | PN16 / 150 lbs  | PVC        | DN80 / 3"         |
| <b>EX1</b>  | PN16 / 150 lbs  | 316Ti/PVDF | DN80 / 3"         |
| <b>EX2</b>  | PN40 / 300 lbs  | 316Ti/PVDF | DN80 / 3"         |
| <b>FC1</b>  | PN16 / 150 lbs  | CS         | DN100 / 4"        |
| <b>FC2</b>  | PN40 / 300 lbs  | CS         | DN100 / 4"        |
| <b>F01</b>  | PN16 / 150 lbs  | 316Ti      | DN100 / 4"        |
| <b>F02</b>  | PN40 / 300 lbs  | 316Ti      | DN100 / 4"        |
| <b>F80</b>  | PN16 / 150 lbs  | PP         | DN100 / 4"        |
| <b>F90</b>  | PN16 / 150 lbs  | PVC        | DN100 / 4"        |
| <b>FX1</b>  | PN16 / 150 lbs  | 316Ti/PVDF | DN100 / 4"        |
| <b>FX2</b>  | PN40 / 300 lbs  | 316Ti/PVDF | DN100 / 4"        |

## 6.2 Maglink Series 5400 (ex-version) (Continuation):

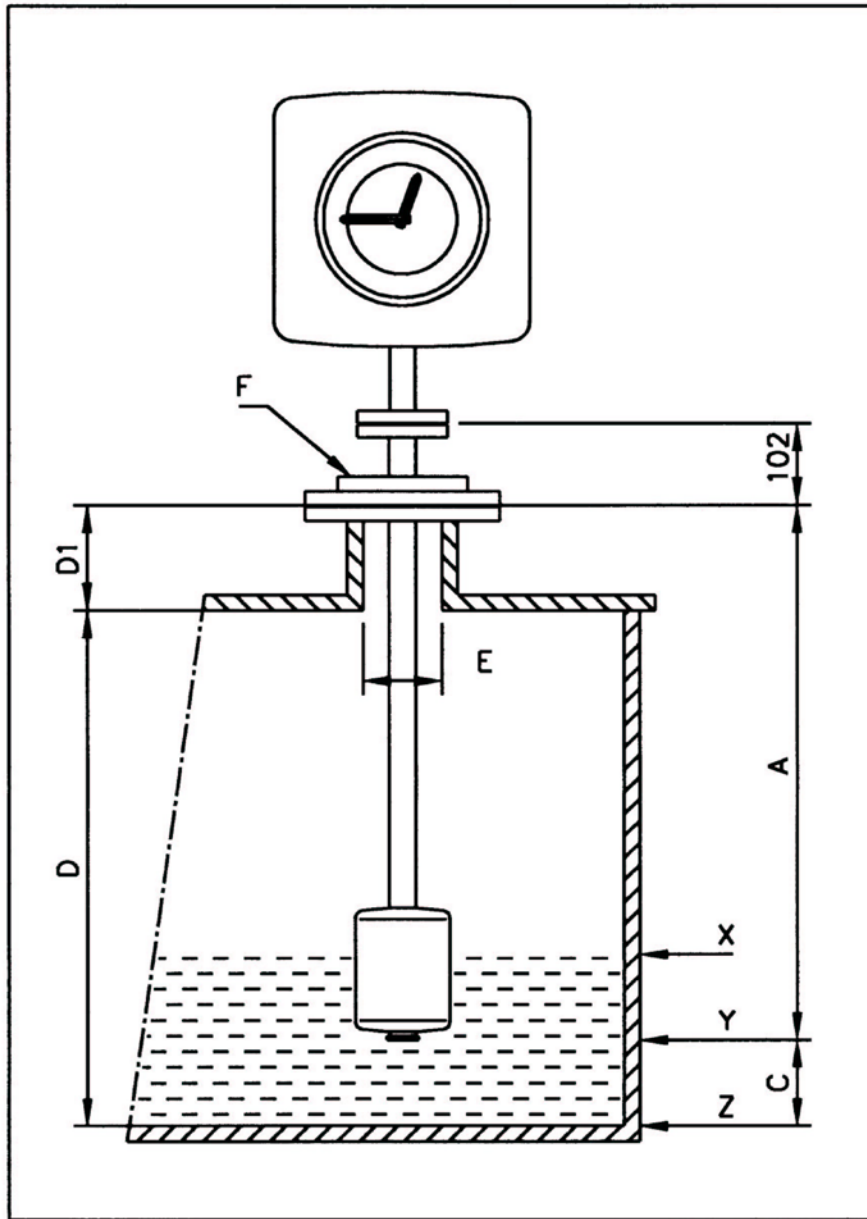
|  |                                      |            |             |
|--|--------------------------------------|------------|-------------|
| <b>GC1</b>   | PN16 / 150 lbs                       | CS         | DN150 / 6"  |
| <b>GC2</b>   | PN40 / 300 lbs                       | CS         | DN150 / 6"  |
| <b>G01</b>   | PN16 / 150 lbs                       | 316Ti      | DN150 / 6"  |
| <b>G02</b>   | PN40 / 300 lbs                       | 316Ti      | DN150 / 6"  |
| <b>G80</b>   | PN16 / 150 lbs                       | PP         | DN150 / 6"  |
| <b>G90</b>   | PN16 / 150 lbs                       | PVC        | DN150 / 6"  |
| <b>GX1</b>   | PN16 / 150 lbs                       | 316Ti/PVDF | DN150 / 6"  |
| <b>GX2</b>   | PN40 / 300 lbs                       | 316Ti/PVDF | DN150 / 6"  |
| <b>HC1</b>   | PN16 / 150 lbs                       | CS         | DN200 / 8"  |
| <b>HC2</b>   | PN40 / 300 lbs                       | CS         | DN200 / 8"  |
| <b>H01</b>   | PN16 / 150 lbs                       | 316Ti      | DN200 / 8"  |
| <b>H02</b>   | PN40 / 300 lbs                       | 316Ti      | DN200 / 8"  |
| <b>H80</b>   | PN16 / 150 lbs                       | PP         | DN200 / 8"  |
| <b>H90</b>   | PN16 / 150 lbs                       | PVC        | DN200 / 8"  |
| <b>HX1</b>   | PN16 / 150 lbs                       | 316Ti/PVDF | DN200 / 8"  |
| <b>HX2</b>   | PN40 / 300 lbs                       | 316Ti/PVDF | DN200 / 8"  |
| <b>JC1</b>   | PN16 / 150 lbs                       | CS         | DN250 / 10" |
| <b>JC2</b>   | PN40 / 300 lbs                       | CS         | DN250 / 10" |
| <b>J01</b>   | PN16 / 150 lbs                       | 316Ti      | DN250 / 10" |
| <b>J02</b>   | PN40 / 300 lbs                       | 316Ti      | DN250 / 10" |
| <b>J80</b>   | PN16 / 150 lbs                       | PP         | DN250 / 10" |
| <b>J90</b>   | PN16 / 150 lbs                       | PVC        | DN250 / 10" |
| <b>JX1</b>   | PN16 / 150 lbs                       | 316Ti/PVDF | DN250 / 10" |
| <b>JX2</b>   | PN40 / 300 lbs                       | 316Ti/PVDF | DN250 / 10" |
| <b>Y15</b>   | other                                |            |             |
| <b>16. bottom support for guide tube length &gt;3000mm</b>                               |                                      |            |             |
| <b>0</b>   | without                              |            |             |
| <b>C</b>   | bottom support; material: CS/PTFE    |            |             |
| <b>S</b>   | bottom support; material: 316Ti/PTFE |            |             |
| <b>Y16</b>   | other                                |            |             |
| <b>17. indication on side of tank (tube mat.: CS, painted; elbow mat.: alu, painted)</b> |                                      |            |             |
| <b>0</b>   | without                              |            |             |
| <b>SA</b>  | with side tank indication            |            |             |
| <b>18. distance tank edge (G)/ upper tank edge To eye height (H) (dim. in mm)</b>        |                                      |            |             |
| <b>G/H</b>   | G in mm / H in mm                    |            |             |

## 7. Specification sheet for Maglink

|  |   |
|--|---|
|   | <b>General Information:</b>   |
| <b>Client :</b>  |   |
| <b>Ref. No. :</b>  |   |
| <b>TAG-No. :</b>   |   |
| <b>Tank Data:</b>  |   |
| <b>Tank height (inside) :</b>  |   |
| <b>Tank form :</b>   |   |
| <b>Tank connection :</b>   | <input type="checkbox"/> DIN flange <span style="margin-left: 150px;"><input type="checkbox"/> ANSI flange</span> |
| <b>Nominal diameter :</b>  |   |
| <b>Nominal pressure :</b>  |   |
| <b>Material :</b>  |   |
| <b>Medium data:</b>  |   |
| <b>Fluid :</b>   |   |
| <b>Concentration :</b>   |   |
| <b>Temperature :</b>   |   |
| <b>Pressure :</b>  |   |
| <b>Desired version:</b>  |   |
| <input type="checkbox"/> Standard <span style="margin-left: 100px;"><input type="checkbox"/> EEx i</span> <span style="margin-left: 100px;"><input type="checkbox"/> EEx d</span> <span style="margin-left: 100px;"><input type="checkbox"/> GL</span> |   |
| <input type="checkbox"/> Indication <span style="margin-left: 100px;"><input type="checkbox"/> + switches (quantity)</span> <span style="margin-left: 100px;"><input type="checkbox"/> + 1x transmitter</span>   |   |

**7. Specification sheet for Maglink (Mounting options / dimensions)**

**A: Standard mounting on tank nipple**



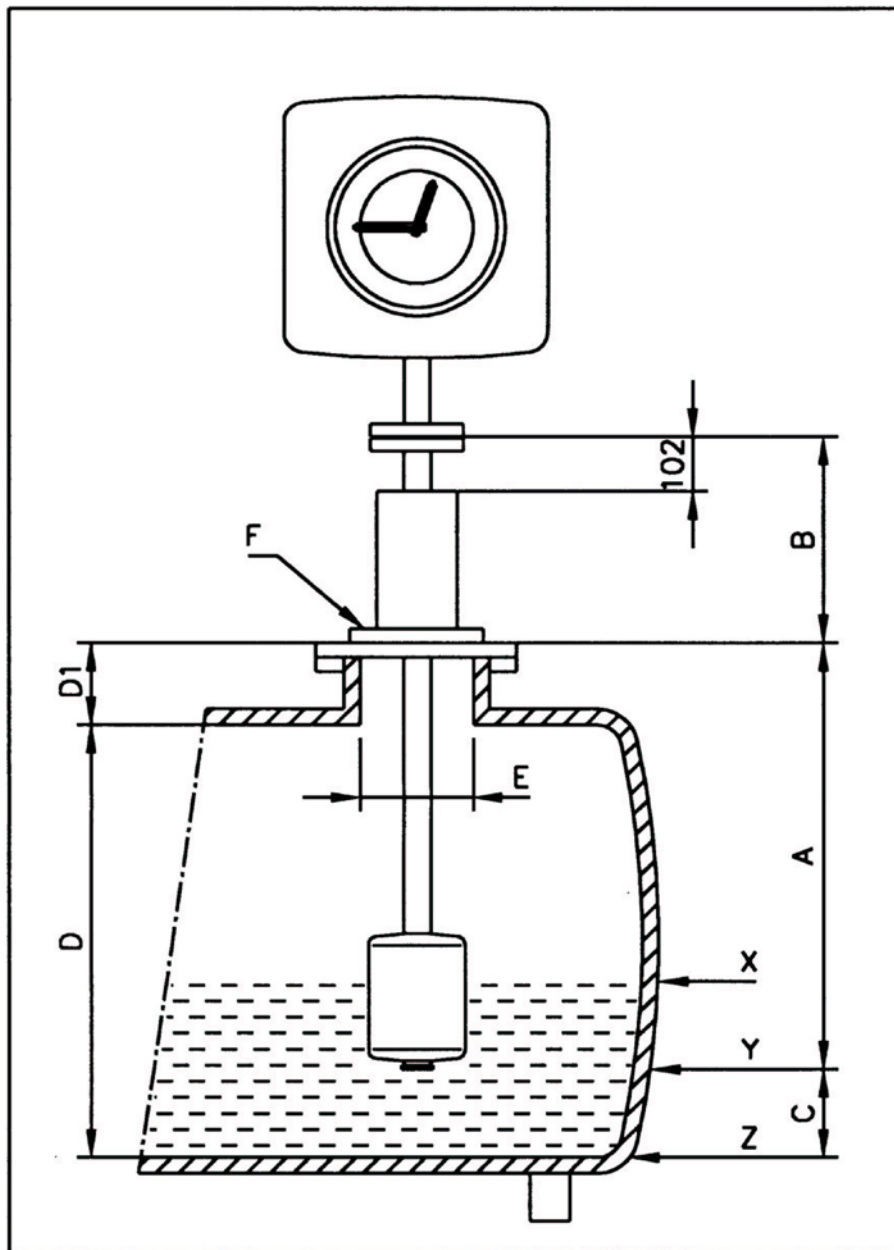
**Dimensions:**

| Dim. | Description                         | Value | Unit |
|------|-------------------------------------|-------|------|
| A    | Guiding tube length                 |       | mm   |
| C    | Distance guiding tube / tank bottom |       | mm   |
| D    | Tank height (inside)                |       | mm   |
| D1   | Height manhole pit                  |       | mm   |
| E    | Bore of manhole pit                 |       | mm   |
| F    | Flange size / pressure rating       |       |      |

**Scale zero point at:**

|   |                          |                          |
|---|--------------------------|--------------------------|
| X | Immersion depth of float | <input type="checkbox"/> |
| Y | End of guide tube        | <input type="checkbox"/> |
| Z | Tank bottom              | <input type="checkbox"/> |

**B: Mounting on manhole cover with reinforcement:**



**Dimensions:**

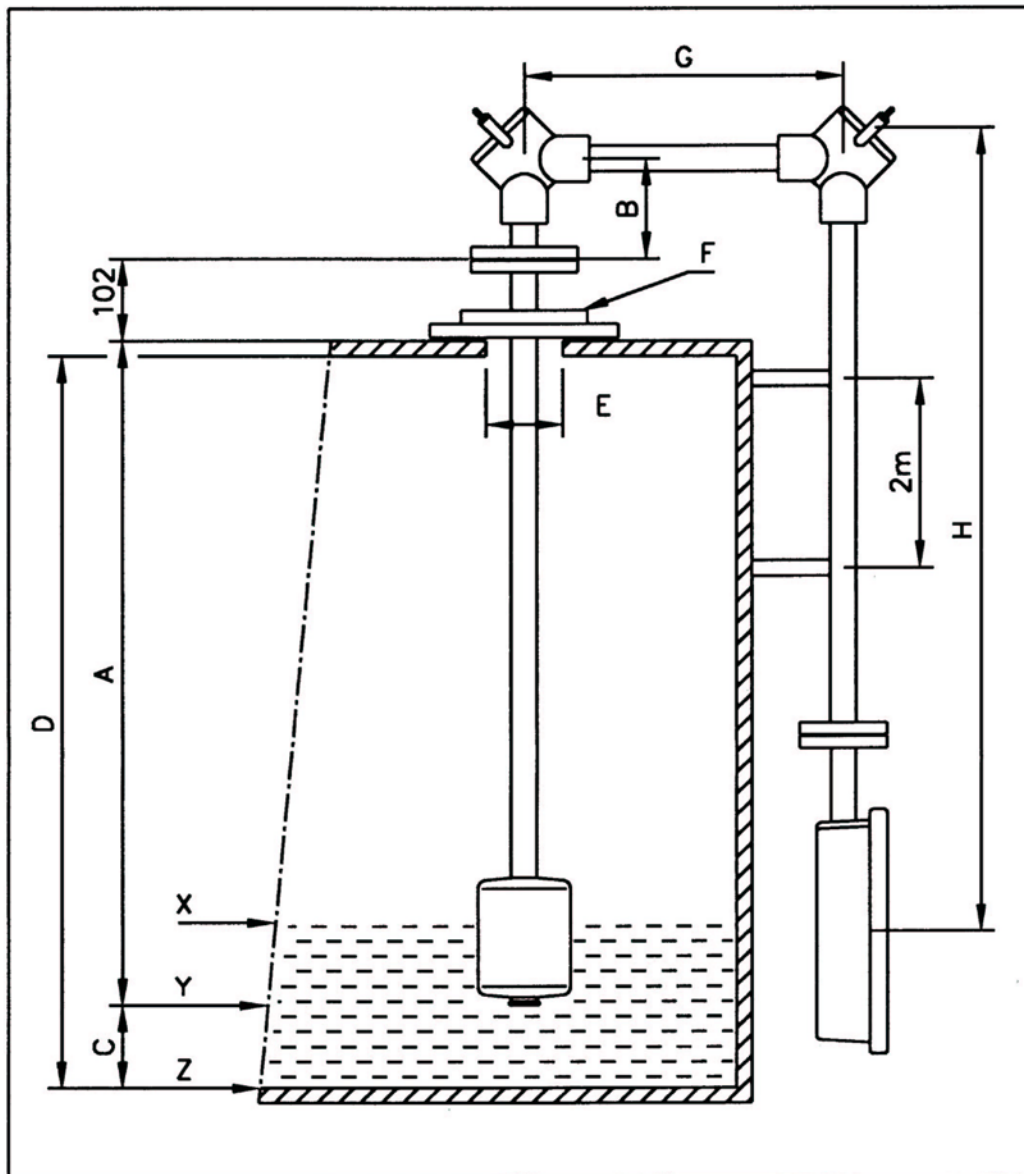
| Dim. | Description                         | Value | Unit |
|------|-------------------------------------|-------|------|
| A    | Guiding tube length                 |       | mm   |
| C    | Distance guiding tube / tank bottom |       | mm   |
| D    | Tank height (inside)                |       | mm   |
| D1   | Height manhole pit                  |       | mm   |
| E    | Bore of manhole pit                 |       | mm   |
| F    | Flange size / pressure rating       |       |      |

**Scale zero point at:**

|   |                          |                          |
|---|--------------------------|--------------------------|
| X | Immersion depth of float | <input type="checkbox"/> |
| Y | End of guide tube        | <input type="checkbox"/> |
| Z | Tank bottom              | <input type="checkbox"/> |



**C: Mounting on side of tank with lowered display:**



**Dimensions:**

| Dim. | Description                         | Value | Unit |
|------|-------------------------------------|-------|------|
| A    | Guiding tube length                 |       | mm   |
| B    | Distance bend loss from tank cover  |       | mm   |
| C    | Distance guiding tube / tank bottom |       | mm   |
| D    | Tank height (inside)                |       | mm   |
| E    | Bore of manhole pit                 |       | mm   |
| F    | Flange size / pressure rating       |       |      |
| G    | Distance tank flange / tank wall    |       | mm   |
| H    | Length of Indication lowering       |       | mm   |

**Scale zero point at:**

|   |                          |                          |
|---|--------------------------|--------------------------|
| X | Immersion depth of float | <input type="checkbox"/> |
| Y | End of guide tube        | <input type="checkbox"/> |
| Z | Tank bottom              | <input type="checkbox"/> |

Besides the products covered by this brochure, Intra-Automation GmbH also manufactures other high-quality and high precision instruments for industrial measurement tasks. For more information, please contact us (contact details on the backside of this brochure).

### Flow measurement



Itabar®-Flow Sensor



IntraSonic IS210 Ultrasonic Flow Meter

### Level measurement



ITA-mag. Level Gauge



MAGLINK Level Indicator

### Other Measurement Tasks:



DigiFlow Flow and Level Computers



IntraCon Digital Controllers



IntraDigit Digital Indicators / Meters



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