

# FS11

## Magnetic Float Switch Angled, for Lateral Installation

- side installation into vessel wall
- reliable and robust technique
- screw in thread, tank screw
- design in stainless steel  
(plastic on request)
- contact as N/C, N/O, or SPDT
- Pmax: 40 bar, Tmax: 150 °C
- max. guide tube length: 3000 mm



### Description:

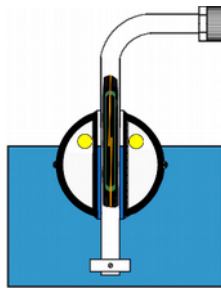
The level switch of the model type series FS11 operates according to float principle with magnetic transmission. The sensor consists of a guide tube with embedded Reed contacts, one or more floats with fitted ring magnets and a process connection module. The float is raised by the rising liquid in the tank and operates a Reed contact through the guide tube wall by means of the magnetic field produced by permanent magnets located in the float. The Reed contact can be designed as a NO, NC or SMDT function.

### Typical applications:

The FS11 magnetic float level sensors are suitable for monitoring the level practically all liquids, e.g. as a full or empty tank sensor, for controlling valves and pumps and for alarm function. The potential free Reed contacts fitted in the level sensor make it an ideal control element when coupled with PLC controllers.

## Function:

A ring magnet installed in the float operates Reed contacts, which are embedded at defined positions in the guide tube, via its magnetic field through the walls of the guide tube. Float stops mounted on the guide tube prevent the float from passing the contact – this assures bistable switching. Consequently, a maximum of 2 contacts per float can be operated. If more contacts are fitted, more floats must be used.



## Structure of the measuring instrument:

Each magnetic float level sensor consists of the three key modules below, which, depending on requirements, are available in different models:

- Guide tube
- Float
- Process connection

Secondary instrumentation like contact protection relays complete the measuring system.

## Guide tube:

The guide tube is the key component in the level sensor: it houses the reed contacts and it is made of st. steel 1.4571 with 12 mm diameter.

## Guide tube length:

max. length of vertical branch: 3000 mm  
 length of horizontal branch: Standard = 70 mm  
 (special lengths on request)

## Number of contacts inside guide tube:

| Electrical connection | Max. number of contacts |      |
|-----------------------|-------------------------|------|
|                       | N/O or N/C              | SPDT |
| PVC/PUR cable         | 6                       | 4    |
| Silicone cable        | 5                       | 3    |
| Housing               | 6                       | 4    |

**Recommended accessories:** contact protection relay type MSR01, also suitable for direct pump control

isolating amplifier type P+F

## Floats:

The choice of float is based on the liquid being monitored (corrosion, density), the process parameters (pressure, temperature) and the guide tube materials and diameters. The available float models are listed in the following table.

## Float models and dimensions (Table 1):

| Type                  | Material  | Min. DN<br>G / flange | Ø ID/AD<br>[mm] | Min.<br>density<br>[kg/m <sup>3</sup> ] | Max.<br>press.<br>[bar] | Max.<br>temp<br>[°C] |
|-----------------------|-----------|-----------------------|-----------------|---|-------------------------|----------------------|
| <b>Cylinder float</b> |           |                       |                 |   |                         |                      |
| E1544                 | st. steel | 1 ½" / DN 50          | 15 / 44         | 820                                     | 16                      | 300                  |
| <b>Ball float</b>     |           |                       |                 |   |                         |                      |
| E1552                 | st. steel | 2" / DN 65            | 15 / 52         | 770                                     | 40                      | 300                  |
| E1562                 |           | - / DN 65             | 15 / 62         | 600                                     | 32                      | 300                  |
| E1583                 |           | - / DN 80             | 15 / 83         | 410                                     | 25                      | 300                  |

## Process connection:

Typically, the magnetic float level sensors are screwed from inside the vessel with a 3/8" female thread. When installed in this fashion, the devices are supplied with a PVC or silicone-jacket connection cable.

To mount the float level sensor from outside through the wall of the vessel the device must be fitted with a tank fitting or with flanges. In this case it is recommended, that the diameter of the tank fitting or flange is large enough to allow the float to pass through the opening in the top of vessel. In the standard version, an adjustable stop ring is fixed to the end of the guide tube, therefore the float can be removed and afterwards mounted from inside the vessel, if the diameter of the process connection is too small.

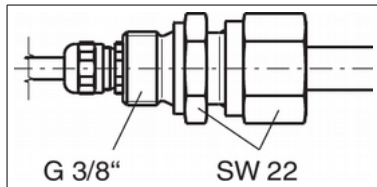
## Contact rating of Reed switches:

| Contact function | Maximum contact rating |                     |
|------------------|------------------------|---------------------|
|                  | AC                     | DC                  |
| N/O              | 250 V, 1 A, 100 VA     | 250 V, 0,5 A, 50 VA |
| N/C              | 250 V, 1 A, 100 VA     | 250 V, 0,5 A, 50 VA |
| SPDT             | 250 V, 1 A, 40 VA      | 250 V, 0,5 A, 20 VA |

Please take contact protection measures into account. For exact details, see type plate.

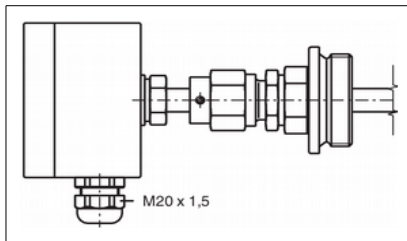
## Process Connections:

### Male thread with cable connection:



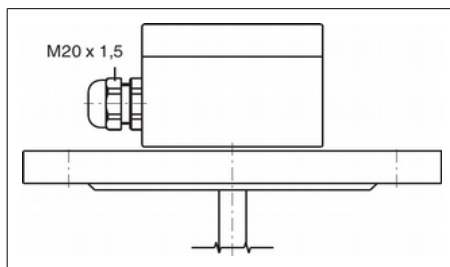
**Process connection:** G 3/8  
**Material:** stainless steel 1.4571 or 1.4404  
**Cable material:** PVC  
temperature range -10...+80°C  
Silicone  
temperature range -30...+150°C  
**Connection code:** **G10**

### With tank fitting and terminal housing:



**Process connection:** Tank fitting G 1 1/2 or G 2  
**Material:** stainless steel 1.4571 or 1.4404  
**Temperature range:** -30...+150°C  
**Connection codes:** G 1 1/2: **TG40**  
G 2: **TG50**

### With connection flange and terminal housing:



**Process connection:** flange acc. to DIN EN 1092  
DN50...DN200, PN6...PN40  
flange acc. to ANSI  
1 1/2"...8", #150 RF, #300 RF  
**Material:** stainless steel 1.4571  
**Temperature range:** -30...+150°C  
**Connection codes:** DN 50...DN 200: FD50 to FD200...  
FD = DIN-EN flange  
FA = ANSI flange  
.../6 to 100 (PN 6... PN 40)  
example: **FD50/6**  
  
ANSI, 2"...8": FA2...FA8...  
.../150 bis 300 (Class 150...300)  
example: **FA2/150**

## Technical Data:

**Guide tube material:** stainless steel 1.4571 or 1.4404

**Guide tube diameter:** 12 mm

**Guide tube length:** maximal 3000 mm

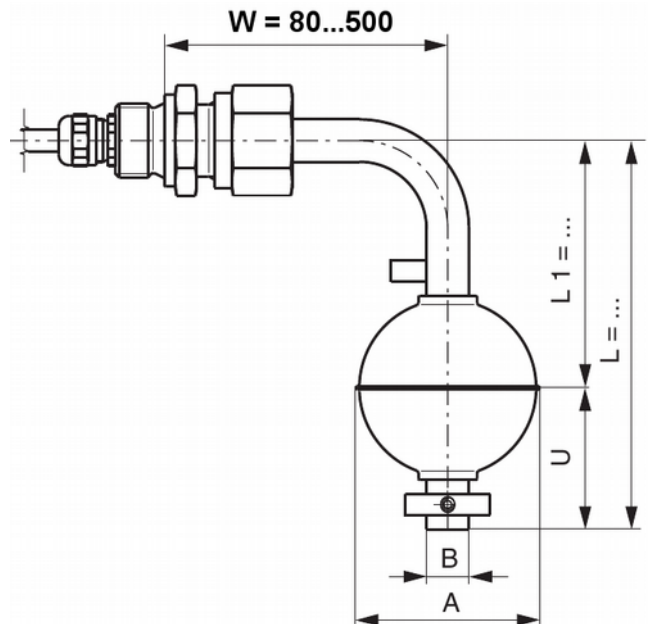
**Process connections:** male thread  
tank fitting  
flange connection

**Max. pressure:** depends on selected float and PN of process connection

**Temperature range:** depends on selected float, and PN of process connection

**further data of order:** position and function of contacts, measured from sealing edge of thread, total length of guide tube L, length of horizontal part W.

## Dimensions:



## Order Code:

**Order Number:** FS11. 2. 2. 3. G10. 1. 1. E1544. 0

**Magnetic Float Switch  
angled, for lateral installation**

**Guide tube material:**

2 = stainless steel 1.4571  
3 = stainless steel 1.4404

**Guide tube diameter:**

2 = 12 mm

**Material process connection:**

3 = stainless steel as guide tube material

**Connection code:**

G10...FD200/40

(see chapter "process connections")

**Electrical connection:**

1 = aluminium terminal housing  
2 = stainless steel terminal housing  
3 = PP terminal housing  
6PVC1 = 1 m connection cable PVC  
6SIL1 = 1 m connection cable Silicone  
(other length please specify)  
9 = special

**Contacts (from top to bottom)\*:**

Distance of contacts from centre line of horizontal part,  
please indicate for each contact individually.

1 = N/O at rising level  
2 = N/C at rising level  
3 = SPDT

**Float models (see table 1):**

E1544...E1583

9 = special

**Options:**

0 = without  
9 = please specify in plain text



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