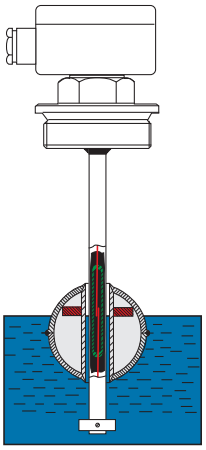
LS-10

Float Switch for Vertical Mounting



- **Reliable and robust technology**
- **Mounting from top or into vessel bottom**
- **Plastic or stainless steel versions**
- **Contacts available as NC-contact, NO-contact or change-over contact**

Description:
The LS-10 series of level switches operates according to the principle of a float with magnetic transmission. The switch consists of a sliding tube with embedded reed contacts, one or more floats in which ring magnets are mounted, and a connecting module. The float is lifted inside the vessel due to the rising fluid level; subsequently, it actuates a reed contact as a result of the magnetic field of the permanent magnet situated in the float through the sliding tube wall. The reed contact can be designed to function as a NC-contact, NO-contact or change-over contact.

Range of application:
The LS-10 level switches are suited for monitoring the level of nearly all types of fluid media as an alarm for full or empty levels, for controlling valves and pumps or for alert signals. By deploying potential-free reed contacts, the level switches provide an ideal switching element in combination with PLC controls (apply PLC-contact or series resistor).

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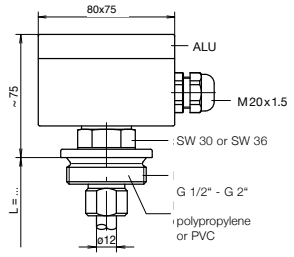
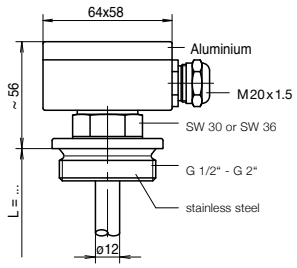
Versions:

- miniature float switch made of plastic or stainless steel
- float switch for general applications made of stainless steel

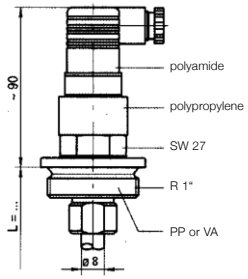
No. 1



No. 2



No. 3



Ordering codes:

Ordering number: **LS-10. | 09. | 6. | 33. | 0**

Float Switch for Vertical Mounting
Version (combination of sliding tube / float No.):

03= mini float switch, stainless steel/Buna (No. 1)
05= mini float switch, stainless steel/stainless steel (No. 2)
07= standard float switch, stainless steel/Buna (No. 3)
09= standard float switch, stainless steel/stainless steel (No. 4)

Connection:
0 = standard (as per description on following pages)
1...9 = as per table "Connection"
x = special type connection (please specify in detailed text)

Contacts:
(from top for each contact, specify the function of contact)
1 = NO-contact
2 = NC-contact
3 = change-over contact

Special versions:
0 = none
1 = please specify in detailed text (e.g. PLC-contact ...)

Float types:

Float No.	Form	Material	Ø (mm)	min. Density	max. Pressure	max. Temp.
1	cylinder	buna	25	0.787 kg/l	3 bar	80°C
2	cylinder	stainless steel	27	0.787 kg/l	16 bar	100°C
3	cylinder	buna	40	0.581 kg/l	3 bar	80°C
4	sphere	stainless steel	52	0.769 kg/l	40 bar	300°C
4a	cylinder	stainless steel	44	0.818 kg/l	16 bar	300°C

Connections:

Connection No.	Description	Drawing No.	Can be used for type:
1	polyester housing, locking plug G 2" made of PP	1	LS-10.07-09
2	polyester housing, locking plug G 2" made of PVC	1	LS-10.07-09
4	aluminium housing, locking plug G 2" made of stainless steel	2	LS-10.07-09
4a	aluminium housing, locking plug G 1 1/2" made of stainless steel	–	LS-10.07-09
6	aluminium housing, locking plug G 1" made of stainless steel	2	LS-10.03
7	Durethan coupling pin, locking plug G 1" made of PP	3	LS-10.03-05
9	Durethan coupling pin, locking plug G 1"made of stainless steel	3	LS-10.03

Other specifications:
- Sliding tube length: L = xxxx mm
- Position of 1st switching point: L1 = xxxx mm
- Position of 2nd switching point: L2 = xxxx mm

(all length specifications are measured from the sealing edge of relevant connection joint)

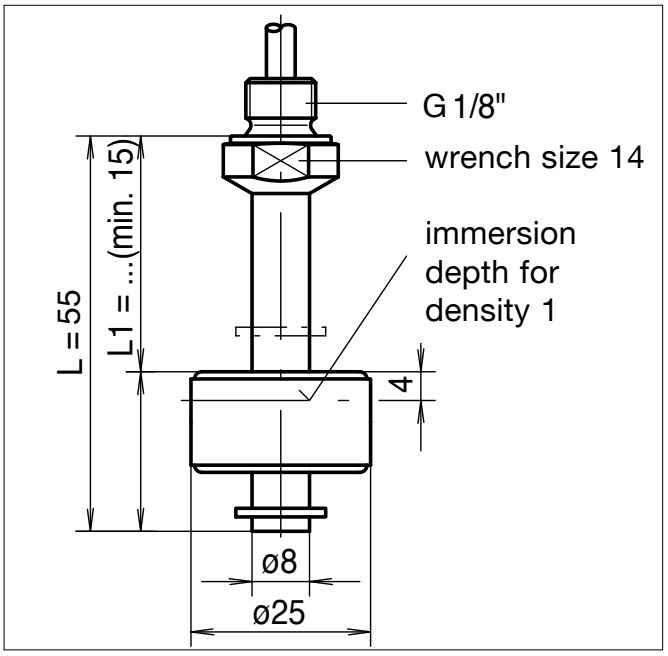
- medium
- medium density
- max. pressure
- max. temperature
- special issues

Example:
LS-10. 09. 4. 33. 0
L = 1000, L1 = 150, L2 = 950,
water, density 1 kg/l, 0 bar, +40°C

standard level switch
with stainless steel sliding tube and VA float No. 4,
connection No. 4, housing Al, locking plug G2",
2 change-over contacts
total length 1 m,
1. switching point 150 mm from top,
2. switching point 950 mm from top
no special issues

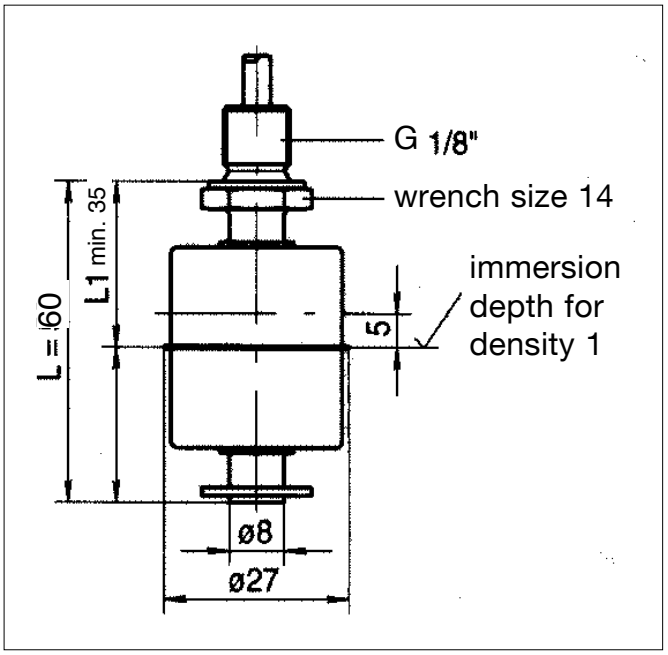
LS-10.03

Connecting cable:	2 m PVC
Sliding tube material:	stainless steel
Sliding tube diameter:	8 mm
min. Sliding tube:	50 mm
max. Sliding tube:	500 mm
Screw in thread:	G 1/8”-male
Float type:	No. 1, Buna
Immersion depth:	approx. 10 mm
Number of contacts (normal):	1
Number of contacts (max.)	see table A
Function of contacts:	1, 2, 3
Switching load:	see table A
max. Temperature:	+60°C
max. Pressure:	3 bar
Protection class	IP 54



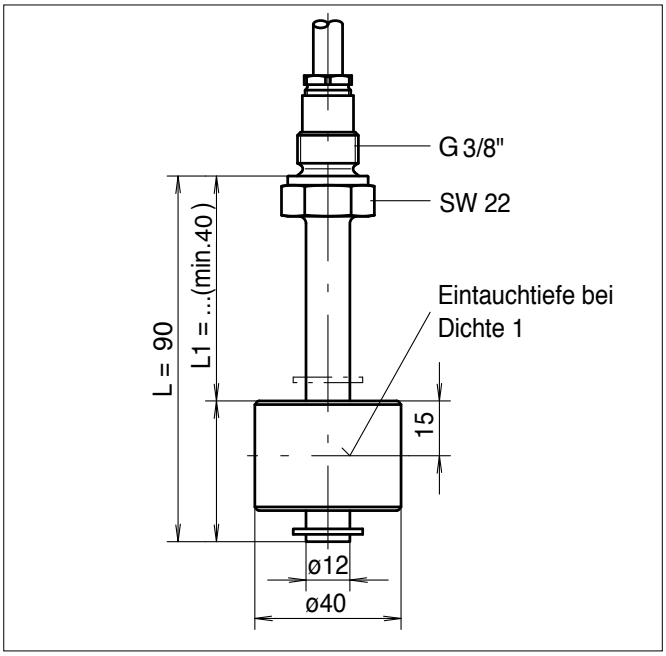
LS-10.05

Connecting cable:	2 m PVC
Sliding tube material:	stainless steel
Sliding tube diameter:	8 mm
min. Sliding tube:	50 mm
max. Sliding tube:	500 mm
Screw in thread:	G 1/8”-male
Float type:	No. 2, stainless steel
Immersion depth:	approx. 18 mm
Number of contacts (normal):	1
Number of contacts (max.):	see table A
Function of contacts:	1, 2, 3
Switching load:	see table A
max. Temperature:	+60°C
max. Pressure:	16 bar
Protection class:	IP 54



LS-10.07

Connecting cable:	2 m PVC
Sliding tube material:	stainless steel
Sliding tube diameter:	12 mm
min. Sliding tube:	100 mm
max. Sliding tube:	3000 mm
Screw in thread:	G 3/8”-male
Float type:	No. 3, Buna
Immersion depth:	approx. 15 mm
Number of contacts (normal):	1
Number of contacts (max.):	see table A
Function of contacts:	1, 2, 3
Switching load:	see table A
max. Temperature:	+80°C
max. Pressure:	3 bar
Protection class:	IP 65



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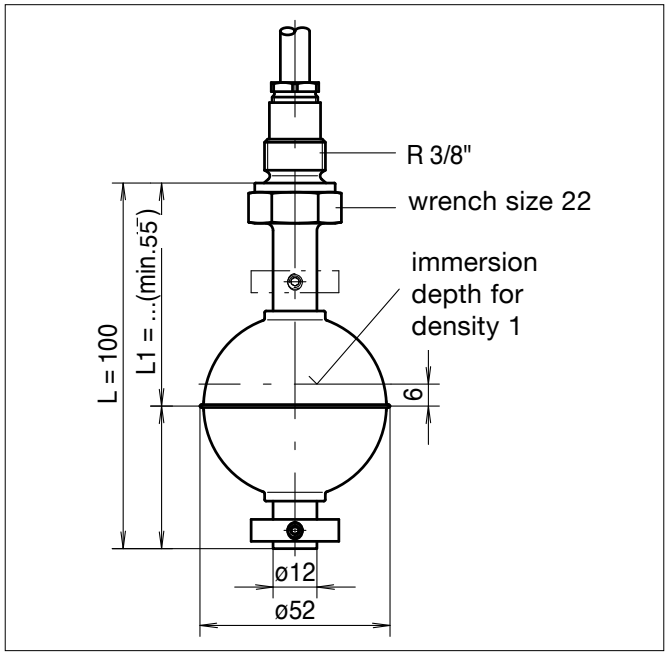
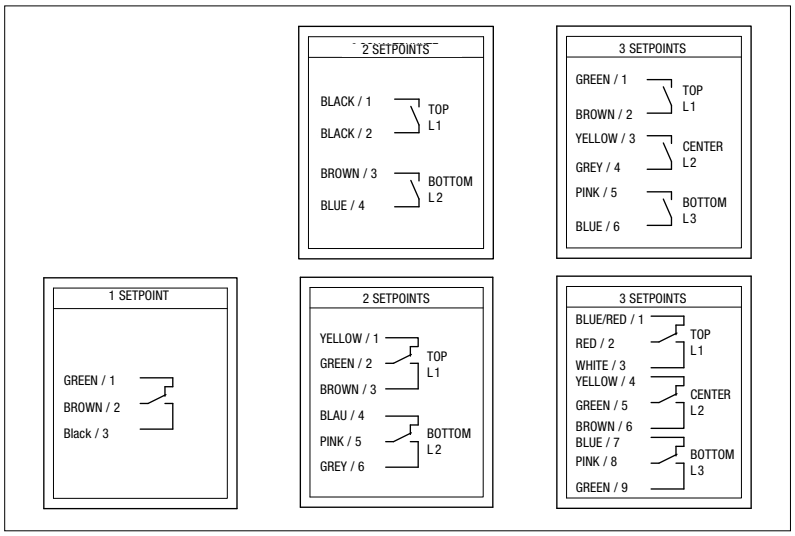


	LS-10.09
Connecting cable:	2 m PVC
Sliding tube material:	stainless steel
Sliding tube diameter:	12 mm
min. Sliding tube:	100 mm
max. Sliding tube:	3000 mm
Screw in thread:	R 3/8"-male
Float type:	No. 4, (No. 5) stainless steel
Immersion depth:	approx. 32 mm
Number of contacts (normal):	1
Number of contacts (max.):	see table A
Function of contacts:	1, 2, 3
Switching load:	see table A
max. Temperature:	+80°C
max. Pressure:	40 bar, (16 bar)
Protection class:	IP 65

Pin layout and connector colours:

Cable colours and numbering for connections 1-6



Connections 7, 8, 9

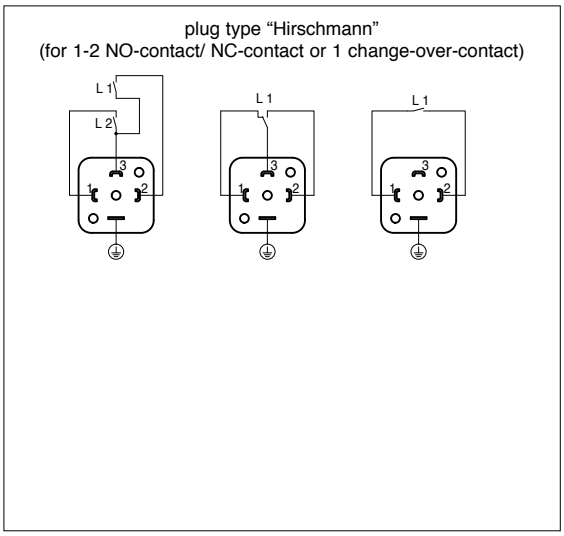


Table A: Float Switch (for vertical mounting)

Sliding tube						
Sliding tube diameter	8 mm	12 mm	14 mm	(16 mm)	18 mm	(20 mm)
Sliding tube length max. (other special lenghts on request)	500 mm	3000 mm	3000 mm	3000 mm	6000 mm	6000 mm

Contact function	**Switch rating**** (all values are maximum values when using earth conductor, if technically executable)	
NO-contact (**S**)	250 VAC; 10 VA; 0.5 A 250 VDC; 5 W; 0.25 A	230 VAC; 100 VA; 1 A 230 VDC; 50 W; 0.5 A
NC-contact (**O**)	250 VAC; 10 VA; 0,5 A 250 VDC; 5 W; 0.25 A	230 VAC; 100 VA; 1 A 230 VDC; 50 W; 0.5 A
Change-over contact (**U**)	28 VAC; 6 VA; 0,6 A 28 VDC; 3 W; 0.3 A	230 VAC; 40 VA; 1 A 230 VDC; 20 W; 0.5 A
Contact for PLC (**S**,**O**,**U**)	24 VDC	24 VDC
Ex-contact	-	only for use in certified intrinsically safe circuits with Umax. 36 V; Imax. 100 mA

Electrical connection	**Number of contacts (max.)** (NO-contact **S**, NC-contact **O** or Change-over contact **U** - on rising level)	
PVC cable	3x **S** or **O**; or 1x **U**	6x **S** or **O**; or 4x **U**
Silicone cable	3x **S** or **O**; or 1x **U**	3x **S** or **O**; or 2x **U**
Terminal box	3x **S** or **O**; or 1x **U**	6x **S** or **O**; or 4x **U**
Plug	3x **S** or **O**; or 1x **U**	on request

**** Switch rating**

The values shown above are maximum values when using earth conductor. In some cases it is not always technically possible to provide an earth conductor, for example versions with cable- or plug connection and multiple number of contacts. Designs without eart connection should use low voltage only, for example contact protection relais or external protective earth.
With inductive load, magnetic switches have to be connected to a RC network when using AC power, respectively to a shunt diode for DC power.
With capacitive load, connecting cables longer than 50 m or connecting to a PLC with capacitive input circuit, a 22 Ω respectively 47 Ω (10 VA contacts) resistor is required to be connected in series to limit current spikes. A 220 Ω resistor shall be used when connected to an electronic timer.

Remarks for high and low temperature design:
Switching capacity (NO-contact or NC-contact): 48 VAC; 20 VA; 0.4 A 48 VDC; 10 W; 0.2 A

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