

Float switch

For the process industry, vertical installation

Models FLS-S, FLS-M, FLS-P, FLS-H

KSR data sheet LM 30.01



for further approvals
see page 3

Applications

- Level measurement for almost all liquid media
- Pump and level control and monitoring of distinct filling levels
- Chemical, petrochemical industry, natural gas, offshore, shipbuilding, machine building, power generating equipment, power plants
- Process water and drinking water treatment, food and beverage industry

Special features

- Large range of application due to the simple, proven functional principle
- For harsh operating conditions, long service life
- Operating limits:
 - Operating temperature: $T = -50 \dots +350 \text{ }^\circ\text{C}$
 - Operating pressure: $P = \text{Vacuum up to 40 bar}$
 - Limit density: $\rho \geq 300 \text{ kg/m}^3$
- Wide variety of different electrical connections, process connections and materials
- Explosion-protected versions

Description

A float with a permanent magnet moves reliably along with the liquid level on a guide tube. Within the guide tube is fitted a reed contact (inert gas contact), which is energised, through the non-magnetic walls of the float and guide tube, by the approach of the float magnet. By using a magnet and reed contact the switching operation is non-contact, free from wear and needs no power supply. The contacts are potential-free. Float switches are also available with multiple switch points.

The switching functions always refer to a rising liquid level: Normally open, normally closed or change-over contact.



Fig. left: Stainless steel version, mounting thread, model FLS-S

Fig. right: Plastic version, flange connection, model FLS-P

Through the use of a float for a max. of 2 switch points a bistable switch behaviour can be achieved, meaning that the switching status also remains available, when the filling level continues to rise above or drop below the switch point.

The float switch is simple to mount and maintenance-free, so the costs of mounting, commissioning and operation are low.

Further special features

- Process connection, guide tube and float from stainless steel 1.4571, plastic or Buna
- Universal signal processing:
Connection direct to a PLC is possible, NAMUR connection, signal amplification / contact protection relays
- Works independently of foaming, conductivity, dielectricity, pressure, vacuum, temperature, vapours, condensation, bubble formation, boiling effects and vibrations
- Multiple functionality in a single instrument - up to 8 potential-free contacts
- Exact repeatability of the switch points
- Float switches qualify as simple apparatus in accordance with EN 60079-11 section 5.7 and can be installed in "zone 1" hazardous areas without certification, so long as the equipment is operated in a certified intrinsically safe circuit with a minimum explosion protection of Ex ib.

Options

- Customer-specific solutions
- Special versions for interface layer detection
 $\Delta\rho \geq 100 \text{ kg/m}^3$
- Process connection, guide tube and float from stainless steel 1.4435, 1.4539, titanium, Hastelloy (others on request)

Model overview

Model	Description	Materials								
		Stainless steel							Titanium 3.7035 (grade 2)	PVC / PP / PVDF
		1.4571 (316Ti)	1.4404 (316L)	1.4435 (316L)	1.4571 (316Ti) / PP	1.4571 (316Ti) / PA	1.4571 (316Ti) / Ms	1.4571 (316Ti) / Buna		
FLS-SE	Standard version, cable connection, safety extra-low voltage	x	x	x	x	x	x	x	x	-
FLS-SF	Standard version, cable connection, low voltage	x	x	x	x	x	x	x	x	-
FLS-SA	Standard version, connection housing or connector, low voltage	x	x	x	x	x	x	x	x	-
FLS-SB	Standard version, connection housing or connector, safety extra-low voltage	x	x	x	x	x	x	x	x	-
FLS-SBI (60)	Intrinsically safe, Ex i	x	x	-	-	-	-	-	x	-
FLS-SAD FLS-SBD (AL-ADF)	Flameproof enclosure, Ex d	x	x	-	-	-	-	-	-	-
FLS-ME	Miniature design, cable connection, safety extra-low voltage	x	x	-	x	-	-	x	-	-
FLS-MB	Miniature design, connection housing or connector, safety extra-low voltage	x	x	-	x	-	-	x	-	-
FLS-PF	Plastic version, cable connection, low voltage	-	-	-	-	-	-	-	-	x
FLS-PA	Plastic version, connection housing or connector, low voltage	-	-	-	-	-	-	-	-	x
FLS-HE	Pharmaceutical version, cable connection, safety extra-low voltage	-	x	x	-	-	-	-	-	-
FLS-HA	Pharmaceutical version, connection housing, low voltage	-	x	x	-	-	-	-	-	-
FLS-HA3	Sterile version (3-A), connection housing, low voltage	-	x	x	-	-	-	-	-	-
FLS-F	Food version, connection housing, low voltage	-	x	x	-	-	-	-	-	-

Temperature range (process)

- Models FLS-SE, FLS-SF, FLS-HE -30 ... +180 °C
- Models FLS-SA, FLS-SB -50 ... +350 °C
- Model FLS-Sxl (60) -50 ... +180 °C
- Models FLS-SxD (AL-ADF) -10 ... +120 °C
- Model FLS-M -10 ... +100 °C
- Model FLS-P -10 ... +100 °C
- Models FLS-HA, FLS-HA3 -40 ... +200 °C
- Model FLS-F -30 ... +180 °C








Ingress protection (IP code) per EN 60529:1991 + A1:2000 + A2:2013

- With aluminium or stainless steel connection housing IP66/IP68
- With plastic connection housing or connector IP65

All ingress protections depend on the cable gland, sealing (e.g. O-ring) and cable used.

Approvals

■ Model FLS-S

Logo	Description	Country
	EU declaration of conformity <ul style="list-style-type: none"> ■ Low voltage directive ■ RoHS directive ■ ATEX directive (option) Hazardous areas - Ex i II 1/2G Ex ia IIC T6 ... T1 Ga/Gb II 2D Ex ib IIIC T80°C ... T230°C Db - Ex d II 2G Ex d IIC T6 Gb II 2D Ex tb IIIC T80 °C Db	European Union
		
	EAC <ul style="list-style-type: none"> ■ EMC directive ■ Low voltage directive ■ Hazardous areas 	Eurasian Economic Community
	DNV GL <ul style="list-style-type: none"> ■ Ships, shipbuilding (e.g. offshore) ■ Hazardous areas 	International
	ABS <ul style="list-style-type: none"> ■ Ships, shipbuilding (e.g. offshore) ■ Hazardous areas 	International
	Bureau Veritas Ships, shipbuilding	International
	Lloyd's Register Ships, shipbuilding (e.g. offshore)	International
-	DIBt Safety (e.g. electr. safety, overpressure, ...) Overflow control per German Water Resources Act (WHG) § 19	Germany

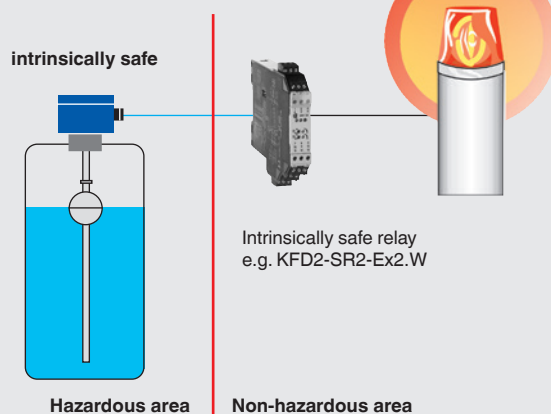
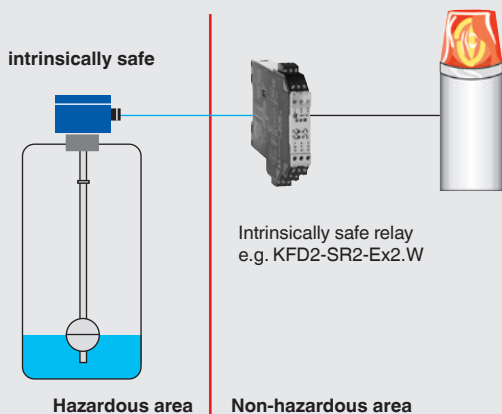
■ Models FLS-H, FLS-P, FLS-M, FLS-F

Logo	Description	Country
	EU declaration of conformity <ul style="list-style-type: none"> ■ Low voltage directive ■ RoHS directive 	European Union
	EAC EMC directive Low voltage directive	Eurasian Economic Community

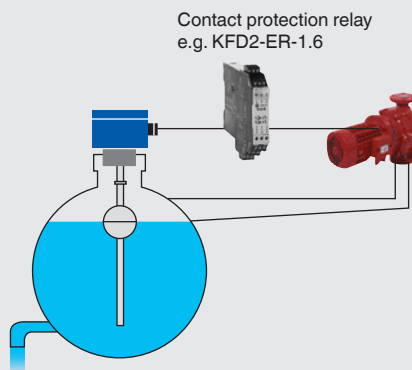
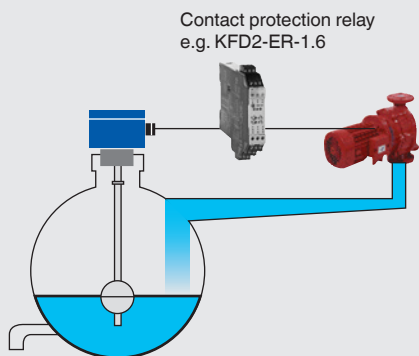
Approvals and certificates, see website

Application examples

Full detector (Ex i)

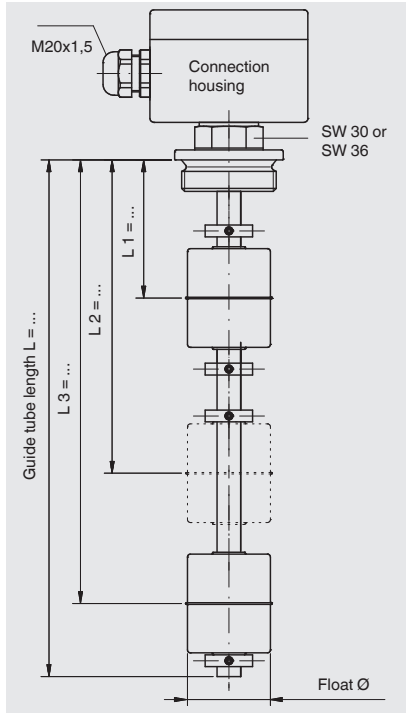


Level control (min/max control)

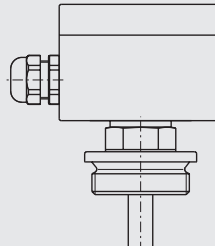


Standard version with connection housing or connector, models FLS-SA, FLS-SB

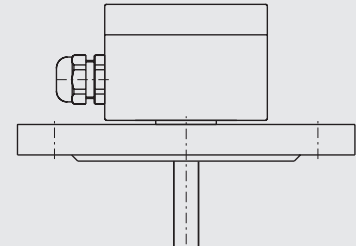
Process connection, guide tube and float from stainless steel 1.4571 (316Ti)



Mounting thread



Flange

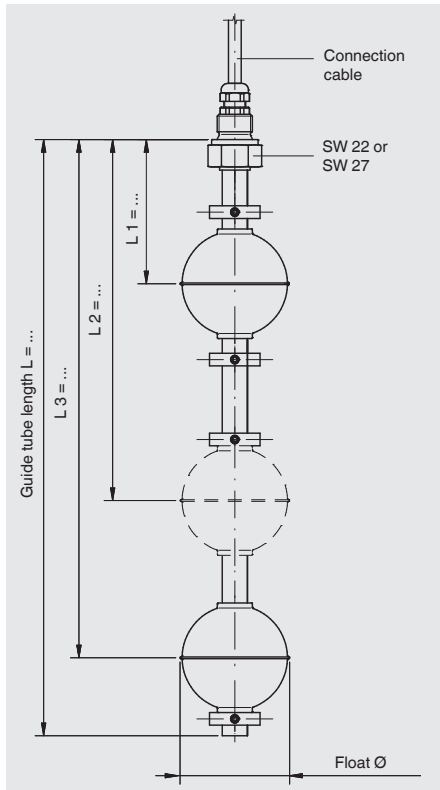


Reference point for NPT thread deviating from drawing
Please contact WIKA personnel.

	Model FLS-SA, low voltage	Model FLS-SB, safety extra-low voltage
Electrical connection	<ul style="list-style-type: none"> ■ Connection housing Aluminium 64 x 58 x 34 mm, with 1 contact Aluminium 80 x 75 x 57 mm, 2 or more contacts Option: Polypropylene, polyester, stainless steel ■ Coupler connector DIN EN 175301-803 (previously DIN 43650, 4-pin) M12 (4- or 8-pin) 	
Process connection	<ul style="list-style-type: none"> ■ Mounting thread downwards G 1 1/2" G 2" Others on request 	<ul style="list-style-type: none"> ■ Mounting flange DIN DN 50 ... DN 200, PN 6 ... PN 100 DIN EN 1092-1 DN 50 ... DN 200, PN 6 ... PN 100 ANSI 2" ... 8", Class 150 ... 600
Guide tube diameter	12 mm / 14 mm / 18 mm	
Guide tube length L	≤ 3,000 mm for guide tube diameter 12 or 14 mm ≤ 6,000 mm for guide tube diameter 18 mm	
Float	Material: Stainless steel 1.4571 (option: Buna (NBR), titanium) Float diameter: 44 ... 120 mm Float selection depending on guide tube diameter and process conditions (see page 16, 17, 18)	
Temperature range	Observe the temperature range of the float and the connection housing Temperature range of the connector on request	
Standard version	-30 ... +180 °C	
High-temperature version	-30 ... +250 °C	
Low-temperature version	-50 ... +180 °C	
Maximum temperature version	-30 ... +350 °C	
Switching function	Alternatively normally open (NO), normally closed (NC) or change-over (SPDT) contact - on rising level	
Max. number of contacts	6 x NO or NC, or 4 x SPDT	
Switch position	Dimensions L1, L2, L3 ... (from sealing face, starting from top)	
Distance between switch points	Minimum 20 mm (depending on the selection of the float and the contacts)	
Switching power		
Normally open, normally closed	AC ≤ 230 V; 100 VA; 1 A DC ≤ 230 V; 50 W; 0.5 A	AC < 50 V; 100 VA; 1 A DC < 75 V; 50 W; 0.5 A
Change-over	AC ≤ 230 V; 40 VA; 1 A DC ≤ 230 V; 20 W; 0.5 A	AC < 50 V; 40 VA; 1 A DC < 75 V; 20 W; 0.5 A
Mounting position	Vertical ±30°	

Standard version with cable connection, models FLS-SE, FLS-SF

Process connection, guide tube and float from stainless steel 1.4571 (316Ti)

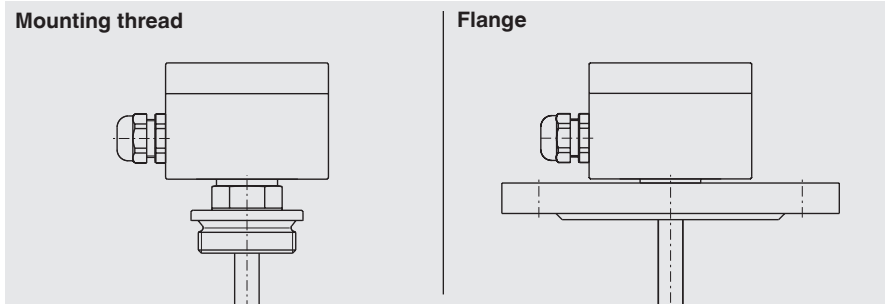
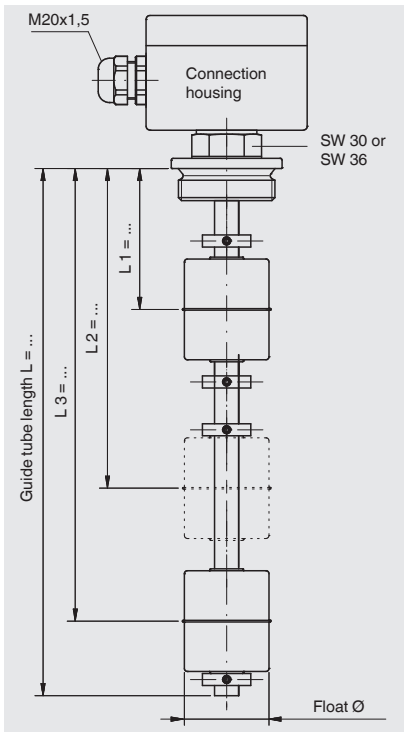


	Model FLS-SF, low voltage	Model FLS-SE, safety extra-low voltage
Electrical connection	Connection cable ■ PVC ■ Silicone ■ PUR	
Process connection	Mounting thread upwards: G 3/8" or G 1/2" Others on request	
Guide tube diameter	12 mm / 14 mm / 18 mm	
Guide tube length L	≤ 3,000 mm for guide tube diameter 12 or 14 mm ≤ 6,000 mm for guide tube diameter 18 mm	
Float	Material: Stainless steel 1.4571 (option: Buna (NBR), titanium) Float diameter: 44 ... 120 mm Float selection depending on guide tube diameter and process conditions (see page 16, 17, 18)	
Temperature range	PVC/PUR cable: -10 ... +80 °C Silicone cable: -30 ... +180 °C Observe the temperature range of the float	
Switching function	Alternatively normally open (NO), normally closed (NC) or change-over (SPDT) contact - on rising level	
Max. number of contacts	6 x NO or NC, or 4 x SPDT for PVC and PUR cable 5 x NO or NC, or 3 x SPDT for silicone cable	
Switch position	Dimensions L1, L2, L3 ... (from sealing face, starting from top)	
Distance between switch points	Minimum 20 mm (depending on the selection of the float and the contacts)	
Switching power		
Normally open, normally closed	AC ≤ 230 V; 100 VA; 1 A DC ≤ 230 V; 50 W; 0.5 A	AC < 50 V; 100 VA; 1 A DC < 75 V; 50 W; 0.5 A
Change-over	AC ≤ 230 V; 40 VA; 1 A DC ≤ 230 V; 20 W; 0.5 A	AC < 50 V; 40 VA; 1 A DC < 75 V; 20 W; 0.5 A
Mounting position	Vertical ±30°	

Intrinsically safe (Ex i), model FLS-SBI (60)

II 1/2G Ex ia IIC T6 ... T1 Ga/Gb or II 2D Ex ib IIIC T80°C ... T230°C Db

Process connection, guide tube and float from stainless steel 1.4571 (316Ti)



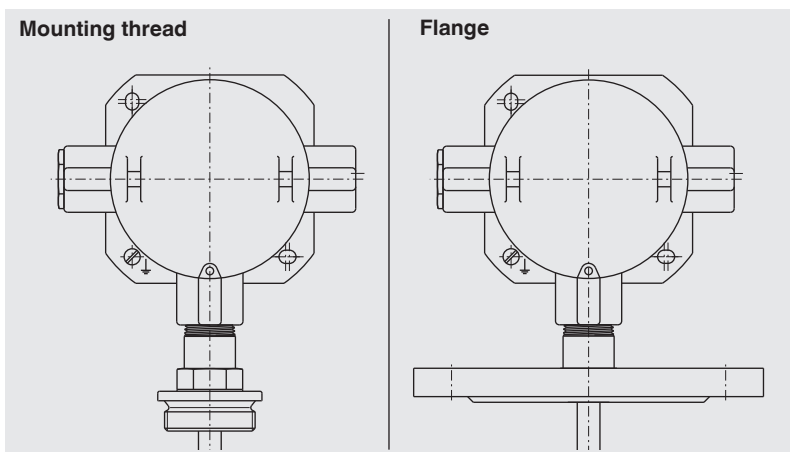
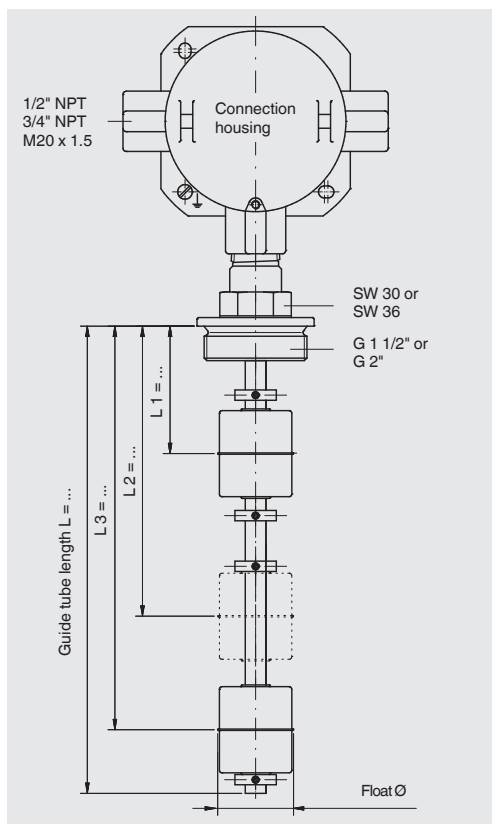
Reference point for NPT thread deviating from drawing
Please contact WIKA personnel.

Model FLS-SBI																						
Electrical connection	Connection housing: Aluminium Option: Polyester, stainless steel																					
Process connection	<ul style="list-style-type: none"> ■ Mounting thread downwards G 1 1/2" or G 2" ■ Mounting flange <ul style="list-style-type: none"> - DIN DN 50 ... DN 200, PN 6 ... PN 100 - DIN EN 1092 DN 50 ... DN 200, PN 6 ... PN 100 - ANSI 2" ... 8", Class 150 ... 600 Others on request																					
Guide tube diameter	12 mm / 14 mm / 18 mm																					
Guide tube length L	≤ 3,000 mm for guide tube diameter 12 or 14 mm ≤ 6,000 mm for guide tube diameter 18 mm																					
Float	Material: Stainless steel 1.4571 (option: Buna (NBR), titanium) Float diameter: 44 ... 120 mm Float selection depending on guide tube diameter and process conditions (see page 16, 17, 18)																					
Temperature class	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>T1</th> <th>T2</th> <th>T3</th> <th>T4</th> <th>T5</th> <th>T6</th> </tr> </thead> <tbody> <tr> <td>Process temperature</td> <td>Max. 180 °C</td> <td>Max. 180 °C</td> <td>Max. 180 °C</td> <td>Max. 130 °C</td> <td>Max. 95 °C</td> <td>Max. 80 °C</td> </tr> <tr> <td>Ambient temperature at connection housing (T_a)</td> <td>Max. 80 °C</td> <td>Max. 80 °C</td> <td>Max. 80 °C</td> <td>Max. 80 °C</td> <td>Max. 65 °C</td> <td>Max. 50 °C</td> </tr> </tbody> </table>		T1	T2	T3	T4	T5	T6	Process temperature	Max. 180 °C	Max. 180 °C	Max. 180 °C	Max. 130 °C	Max. 95 °C	Max. 80 °C	Ambient temperature at connection housing (T _a)	Max. 80 °C	Max. 80 °C	Max. 80 °C	Max. 80 °C	Max. 65 °C	Max. 50 °C
	T1	T2	T3	T4	T5	T6																
Process temperature	Max. 180 °C	Max. 180 °C	Max. 180 °C	Max. 130 °C	Max. 95 °C	Max. 80 °C																
Ambient temperature at connection housing (T _a)	Max. 80 °C	Max. 80 °C	Max. 80 °C	Max. 80 °C	Max. 65 °C	Max. 50 °C																
	→ Versions with optional circuits (e.g. resistor connection, NAMUR or temperature contacts), as well as surface temperature (EPL Db) at dust protection see operating instructions																					
Switching function	Alternatively normally open (NO), normally closed (NC) or change-over (SPDT) contact - on rising level																					
Max. number of contacts	6 x NO or NC, or 4 x SPDT for guide tube diameter 12, 14 or 18 mm																					
Switch position	Dimensions L1, L2, L3 ... (from sealing face, starting from top)																					
Distance between switch points	Minimum 20 mm (depending on the selection of the float and the contacts)																					
Switching power	Only for connection to a certified intrinsically safe circuit with max. U _i = 36 V I _i = 100 mA C _i = 0 nF L _i = 0 μH																					
Mounting position	Vertical ±30°																					

Flameproof enclosure (Ex d), models FLS-SAD, FLS-SBD (AL-ADF)

II 2G Ex d IIC T6 Gb or II 2D Ex tb IIIC T80 °C Db

Process connection, guide tube and float from stainless steel 1.4571

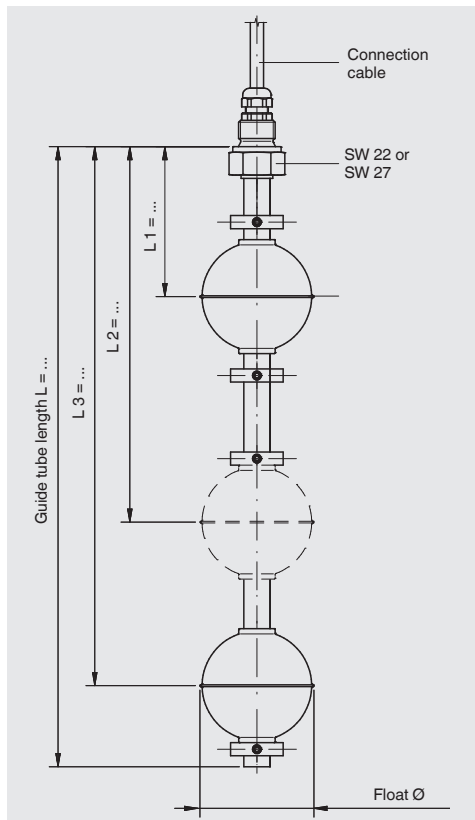


Reference point for NPT thread deviating from drawing
Please contact WIKA personnel.

	Model FLS-SAD	Model FLS-SBD
Electrical connection	Connection housing: Aluminium Option: Stainless steel	
Process connection	<ul style="list-style-type: none"> ■ Mounting thread downwards G 1 1/2" or G 2" ■ Mounting flange DIN DN 50 ... DN 350, PN 6 ... PN 40 ANSI 2" ... 14", Class 150 ... 300 Others on request	
Guide tube diameter	12 mm / 14 mm	
Guide tube length L	≤ 4,000 mm for guide tube diameter 12 mm ≤ 6,000 mm for guide tube diameter 14 mm	
Float	Material: Stainless steel 1.4571 Float diameter: 44 ... 80 mm Float selection depending on guide tube diameter and process conditions (see page 16, 17, 18)	
Temperature range (process temperature)	T4 ≤ 120 °C	T5 ≤ 95 °C
Switching function	Change-over SPDT - on rising level	
Max. number of contacts	4 x SPDT	
Switch position	Dimensions L1, L2, L3 ... (from sealing face, starting from top)	
Distance between switch points	Minimum 20 mm (depending on the selection of the float and the contacts)	
Switching power	AC ≤ 230 V; 100 VA; 1.5 A DC ≤ 230 V; 60 W; 1.5 A	<ul style="list-style-type: none"> ■ With series resistance AC < 50 V; 40 VA; 150 mA DC < 75 V; 20 W; 150 mA ■ With NAMUR circuit per DIN EN 60947-5-6 AC < 50 V; 40 VA; 7 mA DC < 75 V; 20 W; 7 mA
Mounting position	Vertical ±30°	

Miniature design, models FLS-ME, FLS-MB

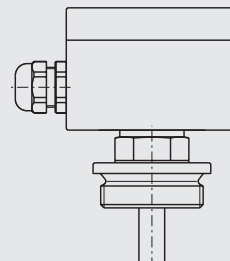
Process connection, guide tube 8 mm and float from stainless steel 1.4571 (316Ti)



Mounting thread and connection cable



Mounting thread and connection housing

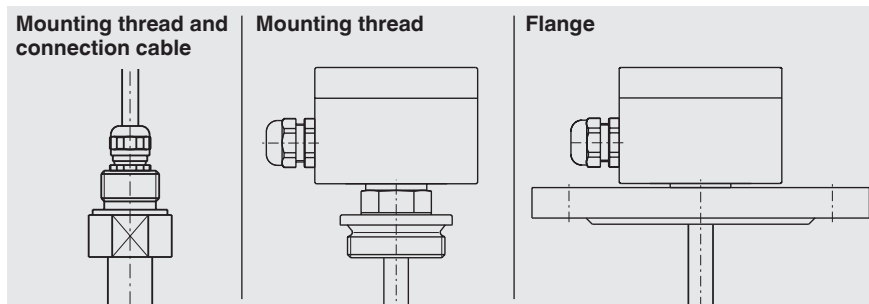
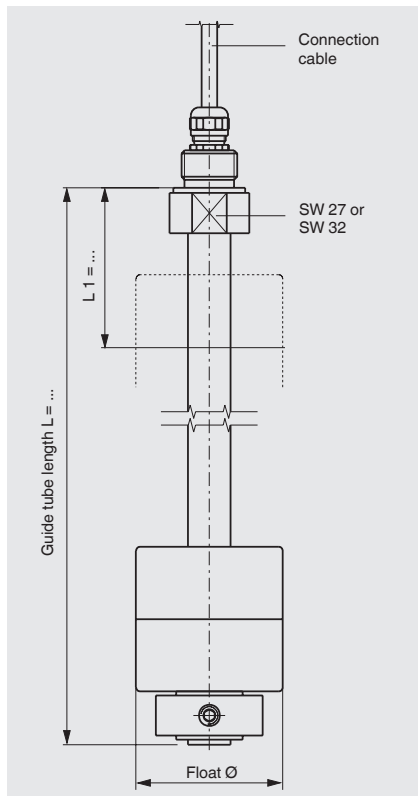


	Model FLS-ME	Model FLS-MB
Electrical connection	Connection cable ■ PVC ■ Silicone ■ PUR	■ Connection housing: Aluminium 64 x 58 x 34 mm ■ Coupler connector DIN EN 175301-803 (previously DIN 43650, 4-pin) M12 (4- or 8-pin)
Process connection	Mounting thread upwards G 1/8" Others on request	Mounting thread downwards G 3/4" or G 1" Others on request
Guide tube diameter	8 mm	
Guide tube length L	≤ 500 mm	
Float	Material: Stainless steel 1.4571 (option: Buna (NBR), titanium, PP) Float diameter from 20 ... 35 mm Float selection depending on guide tube diameter and process conditions (see page 16, 17, 18)	
Temperaturbereich	PVC/PUR cable -10 ... +80 °C Silicone cable -30 ... +150 °C	Buna (NBR), PP -10 ... +80 °C Stainless steel, titanium -30 ... +150 °C
	Observe the permissible temperature range of the float.	
Switching function	Alternatively normally open (NO), normally closed (NC) or change-over (SPDT) contact - on rising level	
Max. number of contacts	3 x NO or NC, or 2 x SPDT	
Switch position	Dimensions L1, L2, L3 ... (from sealing face, starting from top)	
Distance between switch points	Minimum 20 mm (depending on the selection of the float and the contacts)	
Switching power		
Normally open, normally closed	AC < 50 V; 10 VA; 0.5 A	DC < 75 V; 5 W; 0.25 A
Change-over	AC < 50 V; 5 VA; 0.25 A	DC < 75 V; 2.5 W; 0.15 A
Versions FLS-MF, FLS-MA ¹⁾	AC ≤ 230 V; 10 VA; 0.5 A	DC ≤ 230 V; 5 W; 0.25 A
Mounting position	Vertical ±30°	

1) FLS-MF (connection cable), FLS-MA (connection housing or connector) versions on request

Plastic version, models FLS-PA, FLS-PF

Process connection, guide tube and float from PVC, PP or PVDF

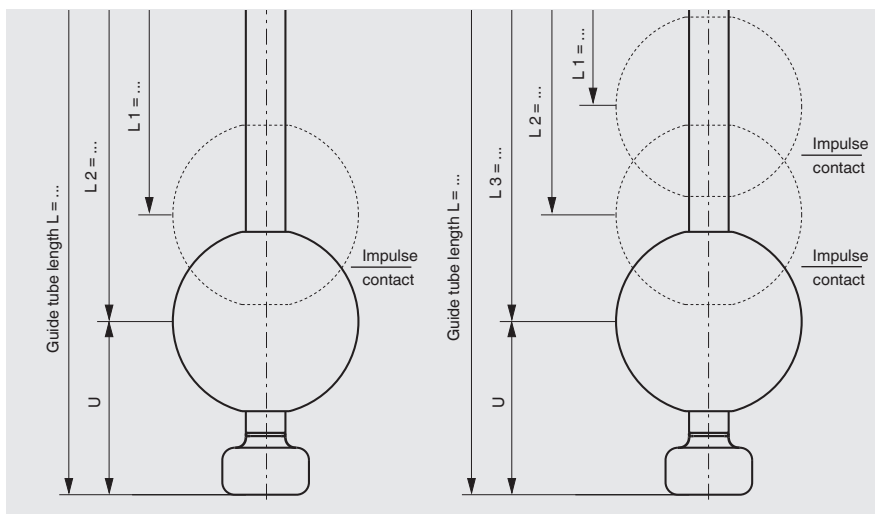
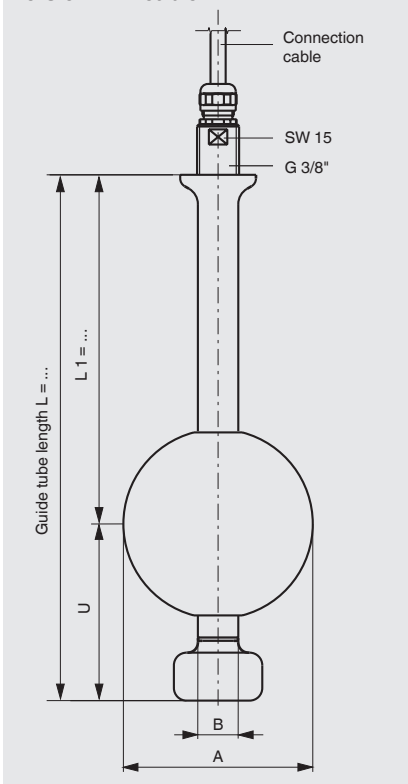


	Model FLS-PF	Model FLS-PA
Electrical connection	Connection cable ■ PVC ■ PUR	■ Connection housing Polypropylene 80 x 82 x 55 mm Polyester 80 x 75 x 55 mm ■ Coupler connector DIN EN 175301-803 (previously DIN 43650, 4-pin) M12 (4- or 8-pin)
Process connection	Mounting thread upwards G 3/8" others on request	Mounting thread downwards ■ G 1 1/2" ■ G 2" Flange ■ DIN DN 50 ... DN 200, PN 6 ... PN 100 ■ DIN EN 1092-1 DN 50 ... DN 200, PN 6 ... PN 100 ■ ANSI 2" ... 8", Class 150 ... 600
Guide tube diameter	12 mm / 16 mm / 20 mm	
Guide tube length L	≤ 500 mm for guide tube diameter 12 mm ≤ 3,000 mm for guide tube diameter 16 mm ≤ 5,000 mm for guide tube diameter 20 mm	
Float	Material: PVC, PP or PVDF Float diameter from 44 ... 80 mm Float selection depending on guide tube diameter and process conditions (see page 16, 17, 18)	
Temperature range	For float material PVC 0 ... 60 °C For float material PP -10 ... +80 °C For float material PVDF -10 ... +100 °C	
Switching function	Alternatively normally open (NO), normally closed (NC) or change-over (SPDT) contact - on rising level	
Max. number of contacts	6 x NO or NC, or 4 x SPDT	
Switch position	Dimensions L1, L2, L3 ... (from sealing face, starting from top)	
Distance between switch points	Minimum 20 mm (depending on the selection of the float and the contacts)	
Switching power		
Normally open, normally closed	AC ≤ 230 V; 100 VA; 1 A	DC ≤ 230 V; 50 W; 0.5 A
Change-over	AC ≤ 230 V; 40 VA; 1 A	DC ≤ 230 V; 20 W; 0.5 A
Mounting position	Vertical ±30°	

Pharmaceutical version, models FLS-HA, FLS-HE

Process connection, guide tube and float from stainless steel

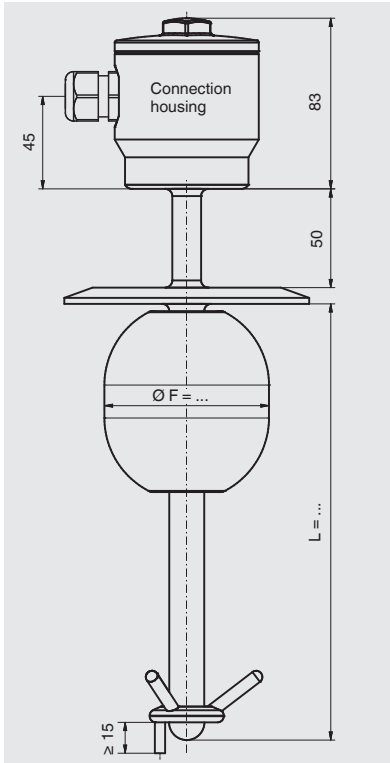
Version with cable



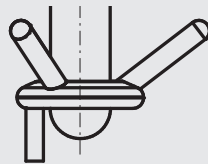
	Model FLS-HA	Model FLS-HE
Electrical connection	Connection housing: ■ Stainless steel	Connection cable ■ PVC ■ Silicone ■ PUR
Process connection	<ul style="list-style-type: none"> ■ Mounting thread upwards G 3/8" ■ Mounting flange per DIN or ANSI ■ Threaded connection per DIN 11851 ■ Clamp pipe connection per DIN 32676 ■ Ingot connection Others on request	
Guide tube diameter	17.2 mm (stainless steel 1.4435 or 1.4539, surface ground and polished)	
Guide tube length L	≤ 5,000 mm	
Float	Material: Stainless steel 1.4435 or 1.4539 Float diameter from 44 ... 120 mm Float selection depending on guide tube diameter and process conditions (see page 16, 17, 18)	
Temperature range	PVC/PUR cable -10 ... +80 °C Silicone cable -30 ... +150 °C	
Switching function	Alternatively normally open (NO), normally closed (NC) or change-over (SPDT) contact - on rising level	
Max. number of contacts	6 x NO or NC, or 4 x SPDT	6 x NO or NC, or 4 x SPDT for PVC and PUR cable 3 x NO or NC, or 2 x SPDT for silicone cable
Switch position	Dimensions L1, L2, L3 ... (from sealing face, starting from top)	
Distance between switch points	Minimum 20 mm (depending on the selection of the float and the contacts)	
Switching power		
Normally open, normally closed	AC ≤ 230 V; 100 VA; 1 A DC ≤ 230 V; 50 W; 0.5 A	AC < 50 V; 100 VA; 1 A DC < 50 V; 50 W; 0.5 A
Change-over	AC ≤ 230 V; 40 VA; 1 A DC ≤ 230 V; 20 W; 0.5 A	AC < 50 V; 40 VA; 1 A DC < 50 V; 20 W; 0.5 A
Mounting position	Vertical ±30°	

Sterile version (3-A), model FLS-HA3

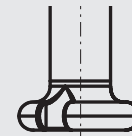
Process connection, guide tube and float from stainless steel



With separate float bracket



With welded tube end

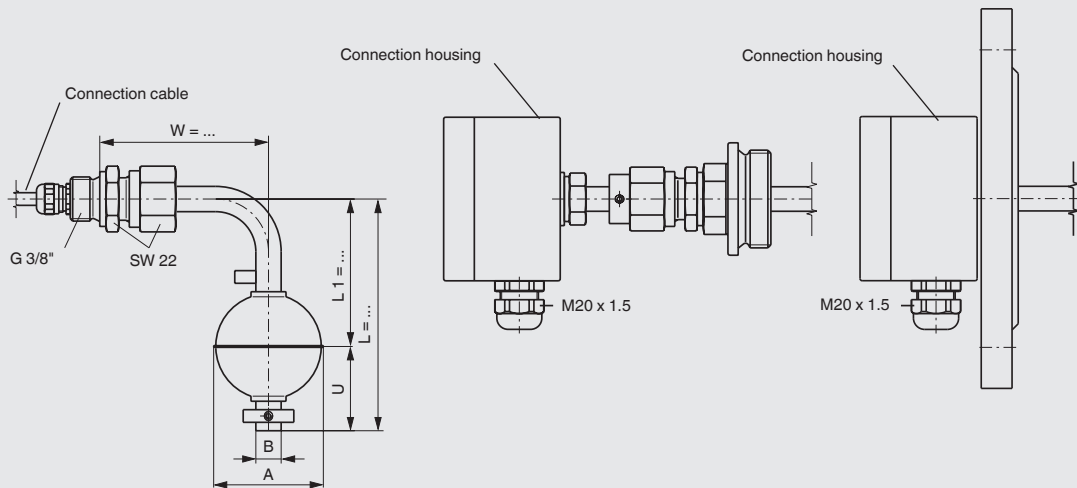


	Model FLS-HA3 with separate float bracket	Model FLS-HA3 with welded pipe connection
Electrical connection	Connection housing: stainless steel	
Process connection	<ul style="list-style-type: none"> ■ Clamp pipe connection ISO 2852, DN 32 ... DN 100 or 1.5" ... 4" ■ Clamp pipe connection DIN 32676, DN 32 ... DN 100 or 1.5" ... 4" ■ Aseptic mounting thread downwards DIN 11864-1, DN 32 ... DN 100 or 1.5" ... 4" ■ Aseptic liner DIN 11864-1, DN 32 ... DN 100 or 1.5" ... 4" ■ Aseptic flange connection DIN 11864-2 (DN 32 ... DN 50 or 1.5" ... 2" ■ Aseptic clamp connection DIN 11864-3, DN 32 ... DN 100 or 1.5" ... 4" ■ VARIVENT® (form F,N and G) ■ BioConnect® threaded connection, DN 32 ... DN 100 or 1,5" ... 2" ■ BioConnect® flange connection, DN 32 ... DN 100 or 1.5" ... 2" ■ BioConnect® clamp connection, DN 32 ... DN 100 or 1.5" ... 4" 	
Guide tube diameter	12 mm / 14 mm / 17.2 mm (stainless steel 1.4435 or 1.4539, surface ground or polished, $R_a < 0.8 \mu\text{m}$)	
Guide tube length L	≤ 5,000 mm	
Float	Material: Stainless steel 1.4435 or 1.4539 Float diameter: 50 ... 80 mm Float selection depending on guide tube diameter and process conditions (see page 16, 17, 18)	
Temperature range		
Process temperature	-40 ... +200 °C	
Ambient temperature	-40 ... +85 °C	
Switching function	Alternatively normally open (NO), normally closed (NC) or change-over (SPDT) contact - on rising level	
Max. number of contacts	3 x NO or NC, or 3 x SPDT	
Switch position	Dimensions L1, L2, L3 ... (from sealing face, starting from top)	
Distance between switch points	Minimum 50 mm (depending on the selection of the float and the contacts)	
Switching power		
Normally open, normally closed	AC ≤ 230 V; 100 VA; 1 A DC ≤ 230 V; 50 W; 0.5 A	
Change-over	AC ≤ 230 V; 40 VA; 1 A DC ≤ 230 V; 20 W; 0.5 A	
Mounting position	Vertical ±30°	

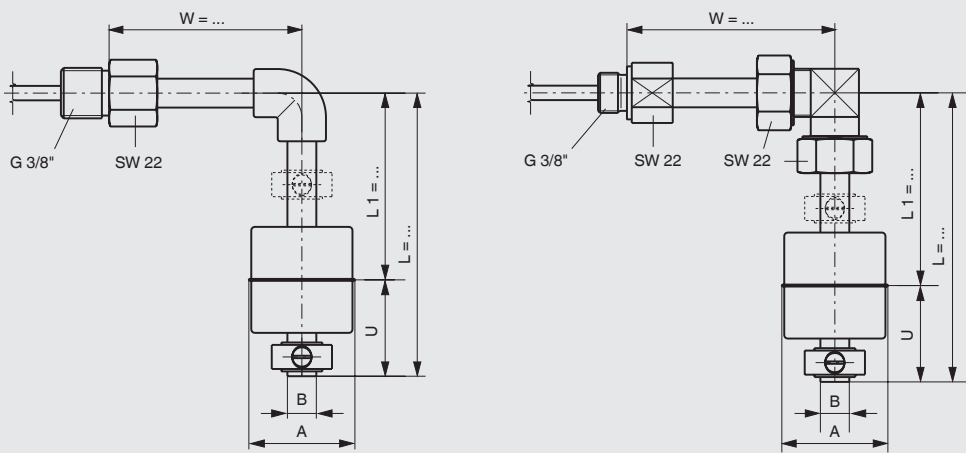
Optional versions

Model	Angled version	Adjustable guide tube	ECTFE coating	Special flange from polyamide or brass	Food version
FLS-SE	X	X	-	-	X
FLS-SF	X	X	-	-	X
FLS-SA	X	X	X	X	X
FLS-SB	X	X	X	X	X
FLS-SBI (60)	X	-	-	-	-
FLS-ME	X	X	-	-	-
FLS-MB	X	X	-	-	-
FLS-PF	X	-	-	-	-
FLS-PA	X	-	-	-	-

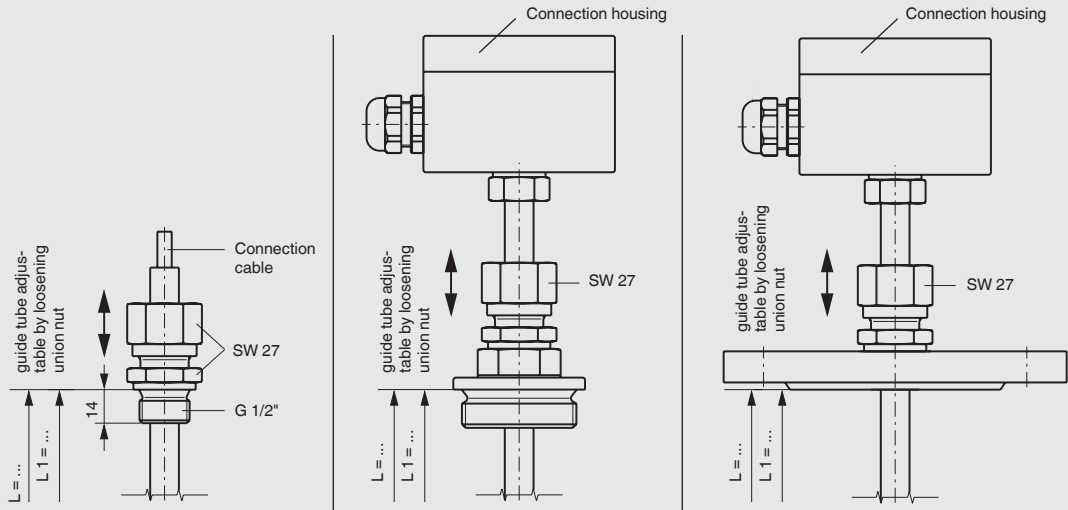
Angled version, material: Metal



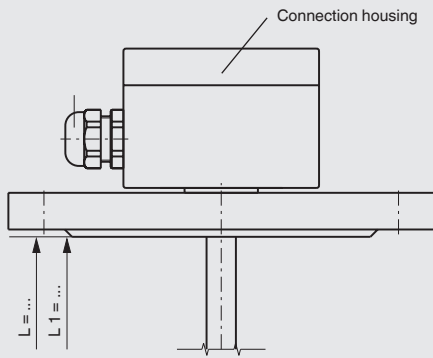
Angled version, material: Plastic



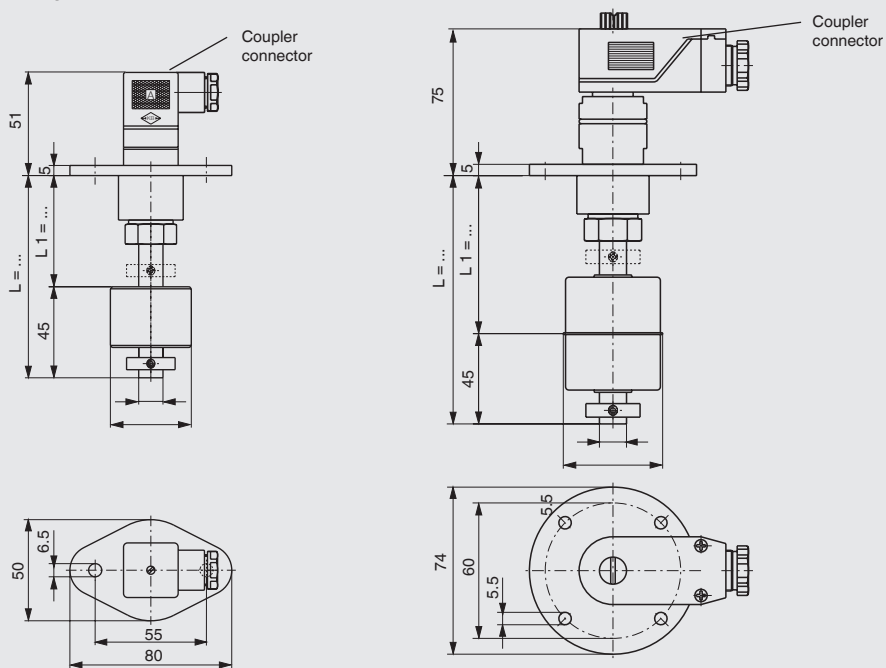
Version with adjustable guide tube



Version with ECTFE coating

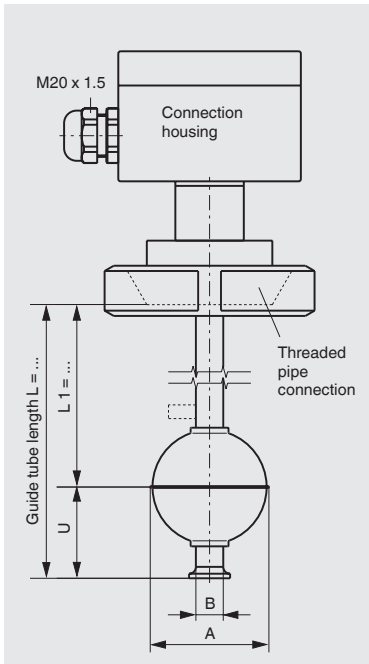


Special flange from polyamide or brass

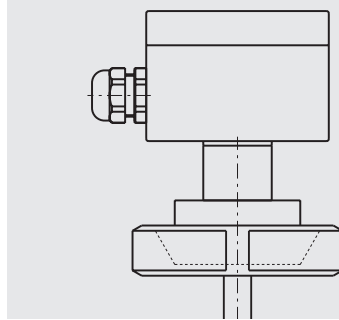


Food version for float switch, model FLS-F

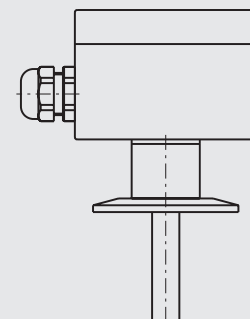
Process connection, guide tube and float from stainless steel



Threaded pipe connection per DIN 11851

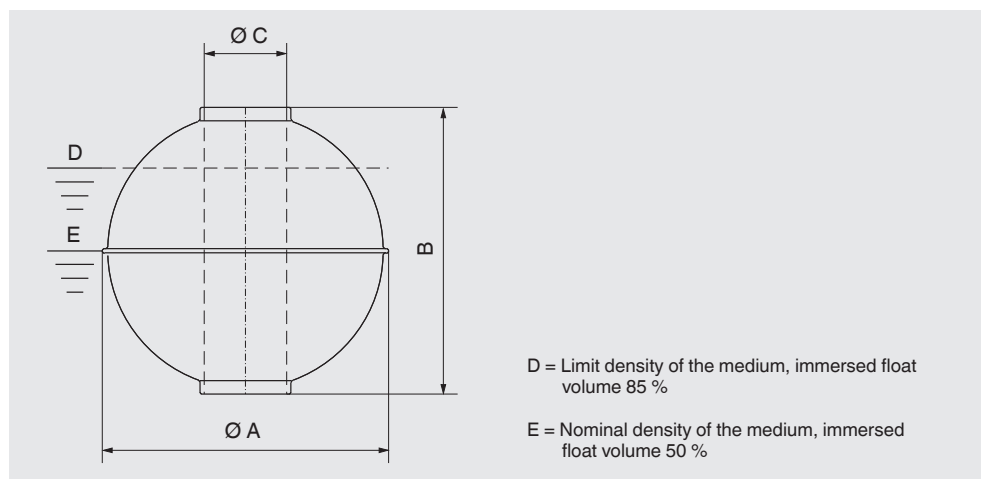


Clamp pipe connection per DIN 32676



	Threaded pipe connection	Clamp pipe connection
Electrical connection	Connection housing: <ul style="list-style-type: none"> ■ Aluminium 64 x 58 x 34 mm, with 1 contact ■ Aluminium 80 x 75 x 57 mm, 2 or more contacts Option: Polypropylene, polyester, stainless steel	
Process connection	Threaded pipe connection per DIN 11851, downwards DN 50 ... DN 150 others on request	Clamp pipe connection per DIN 32676, DN 25 ... DN 100 or 1" ... 4" others on request
Guide tube diameter	12 mm / 14 mm / 18 mm	
Guide tube length L	≤ 3,000 mm for guide tube diameter 12 or 14 mm ≤ 6,000 mm for guide tube diameter 18 mm	
Float	Material stainless steel 1.4435 or 1.4404, option electropolished Float diameter from 44 ... 80 mm Float selection depending on guide tube diameter and process conditions (see page 16, 17, 18)	
Temperature range (process temperature)	-30 ... +180 °C	
Switching function	Alternatively normally open (NO), normally closed (NC) or change-over (SPDT) contact - on rising level	
Max. number of contacts	3 x NO or NC, or 3 x SPDT	
Switch position	Dimensions L1, L2, L3 ... (from sealing face, starting from top)	
Distance between switch points	Minimum 50 mm (depending on the selection of the float and the contacts)	
Switching power		
Normally open, normally closed	AC ≤ 230 V; 100 VA; 1 A DC ≤ 230 V; 50 W; 0.5 A	
Change-over	AC ≤ 230 V; 40 VA; 1 A DC ≤ 230 V; 20 W; 0.5 A	
Mounting position	Vertical ±30°	

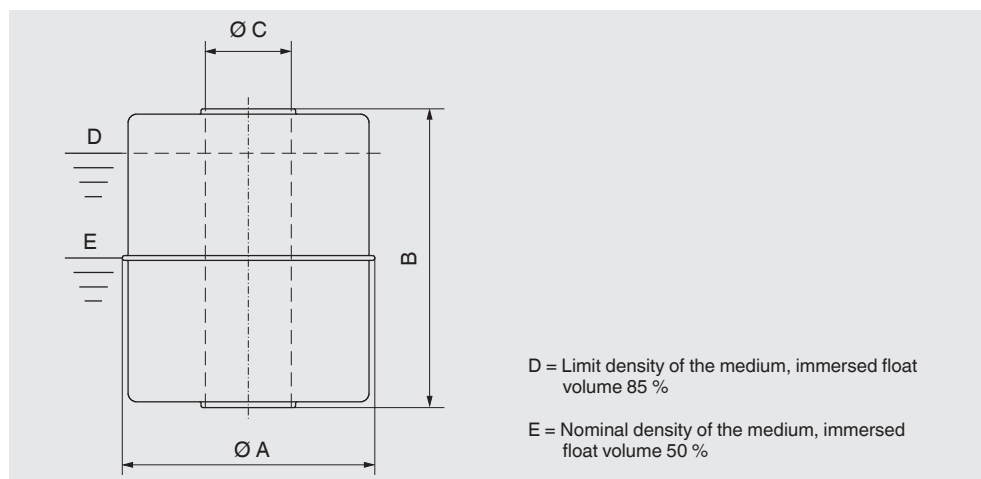
Spherical float



Material	Version	Suits guide tube Ø in mm	Ø A in mm	B in mm	Ø C in mm	Max. operating pressure in bar	Max. operating temp. in °C	Limit density 85 % in kg/m ³	Order no.
Stainless steel 1.4571	V29A	8	29	28	9	25	100	920	027355
	V52A	12	52	52	15	40	250	700	005462
	V52T	12	52	52	15	40	350	730	033560
	V62A	12	62	61	15	32	250	590	005473
	V83A	12	83	81	15	25	250	430	005485
	V80A	18	80	76	23	25	250	680	005478
	V98A	18	98	96	23	25	250	600	005489
	V105A	18	105	103	23	25	250	530	020652
	V120A	18	120	117	23	25	250	390	021721
Titanium 3.7035	T29A	8	29	28	9	30	100	700	005522
	T52A	12	52	52	15	25	300	570	005525
	T62A	12	62	62	15	25	300	505	005536
	T83A	12	83	81	15	25	300	350	005544
	T80A	18	80	76	23	25	300	665	112263
	T98A	18	98	96	23	25	300	495	-
	T105A	18	105	103	23	25	300	370	-
	T120A	18	120	117	23	25	300	330	-
Stainless steel 1.4571 ECTFE coated	VEC53A	12	53	53	14	25	Depending on medium	850	111415
	VEC63A	12	63	62	14	25	Depending on medium	590	-
	VEC84A	12	84	82	14	25	Depending on medium	400	-
	VEC81A	18	81	77	22	25	Depending on medium	720	-
	VEC99A	18	99	97	22	25	Depending on medium	675	-
	VEC106A	18	106	104	22	25	Depending on medium	630	-
	VEC121A	18	121	118	22	25	Depending on medium	460	-

Note: The optimum float will be selected after a feasibility test carried out by WIKA.

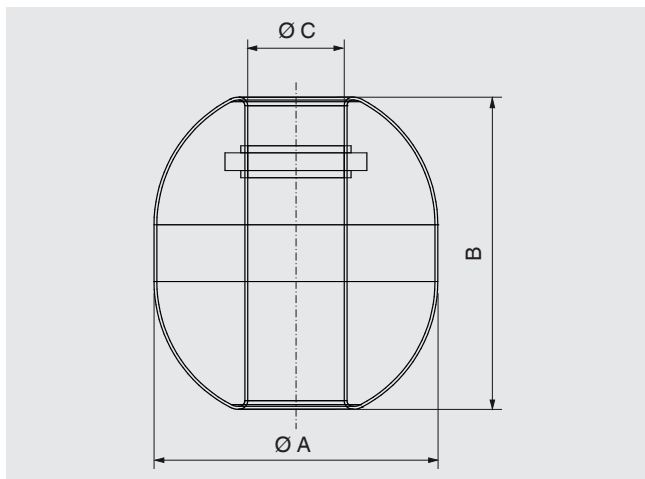
Cylindrical float



Material	Version	Suits guide tube Ø in mm	Ø A in mm	B in mm	Ø C in mm	Max. operating pressure in bar	Max. operating temp. in °C	Limit density 85 % in kg/m ³	Order no.
Stainless steel 1.4571	V27A	8	27	31	10	16	100	787	009679
	V29A/40	12	29	40	13,4	10	180	720	030352
	V44A	12	44	52	15	16	300	720	009681
	V44T	12	44	52	15	16	350	780	033561
Titanium 3.7035	T44A	12	44	52	15	16	300	720	009744
Buna (NBR)	B20A	8	20	20	9	3	80	940	009719
	B23A	8	23	25	9	3	80	800	009721
	B25A	8	25	14	9	3	80	790	009720
	B30A	8	30	45	13	3	80	680	034047
	B40A	12	40	30	15	3	80	580	009728
	B40A/120	12	40	120	15	3	80	410	14377687
	B50A	18	50	45	19	3	80	500	009725
PVC	P44A	12	44	44	14	3	60	650	033790
	P55A	16	55	54	22	3	60	800	033793
	P80A	20	80	79	25	3	60	570	033796
Polypropylene	PP27A	8	27	29	9	3	80	755	015516
	PP35A	8	35	33	9	3	80	675	100347
	PP44A	12	44	44	14	3	80	480	015514
	PP55A	16	55	54	22	3	80	580	033792
	PP80A	20	80	79	25	3	80	430	033795
PVDF	PF44A	12	44	55	14	3	100	780	033791
	PF55A	16	55	69	22	3	100	820	116235
	PF80A	20	80	79	25	3	100	680	033797
Stainless steel 1.4571 E-CTFE coated	VEC45A	12	45	53	14	16	Depending on medium	891	114412

Note: The optimum float will be selected after a feasibility test carried out by WIKA.

Hygienic float



Material	Model	Suits guide tube Ø in mm	Ø A in mm	B in mm	Ø C in mm	Max. operating pressure in bar	Max. operating temp. in °C	Limit density 85 % in kg/m ³	Order no.
Stainless steel 1.4435	V80/88/A34/3A/35, axial	18	80	55	23	16	250	790	129383
	V50/55/17/A34/3A/35	12	50	55	16.8	16	250	955	129583
	V55/70/A34/3A/35 axial	12	55	70	17	16	250	780	14462858

Note: The optimum float will be selected after a feasibility test carried out by WIKA.

Contact protection measures

The reed contacts should be protected against any voltage or current spikes that might occur.

Depending on the different load types different protective circuits are used.



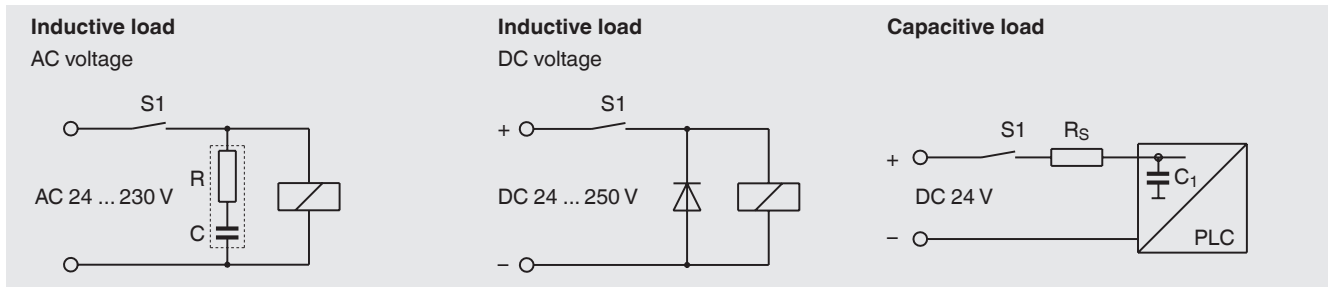
Model KFD2-ER-1.6



RC element

Contact protection relays	Contacts	Input	Power supply	Ex marking	Order no.
KFD2-ER-1.6	1 x change-over AC 250 V, 2 A	2 x contacts	DC 20 ... 30 V	-	123806
KFD2-SR2-Ex2.W	2 x change-over AC 253 V, 2 A	2 x contacts	DC 20 ... 30 V	II 1GD Ex ia IIC	124344
KFA6-ER-1.6	1 x change-over AC 250 V, 2 A	2 x contacts	AC 230 V	-	124341
KFA6-SR2-Ex2.W	2 x change-over AC 253 V, 2 A	2 x contacts	AC 230 V	II 1GD Ex ia IIC	123794

RC element	Capacitance	Resistance	Voltage	Order no.
B3/110	0.33 μ F	470 Ω	AC 110 V	126529
B3/230	0.33 μ F	820 Ω	AC 230 V	126530



Ordering information

To order the described product the order number (if available) is sufficient.

Alternatively:

Model / Version / Electrical connection / Process connection / Guide tube diameter / Guide tube length L / Information about contact (switching function, number of switch points, switch position) / Process specifications (operating temperature and pressure, limit density) / Options

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