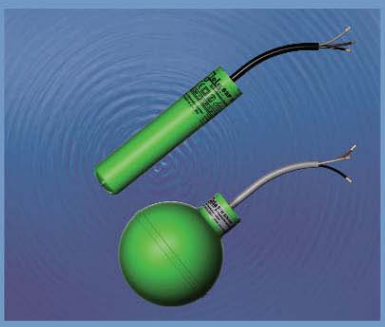
Mercury-free floating switches and immersion probes

Controlling devices with potential-free microswitch, for automatic control, regulation and signalling of liquid levels



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The units described in this documentation may only be installed, connected and started up by suitably qualified personnel!

Subject to deviations from the diagrams and technical data.

The details in this brochure are product specification descriptions and do not constitute assured properties in the legal sense.

Contents

Floating switches:

Types	Housing material	Dimensions approx.	Special features	Pages
SSP...	PP	Ø 29 x 133 mm	---	1-1-3, 1-1-4 and 1-1-13
SPH...	PP	Ø 86 mm	---	1-1-5, 1-1-6 and 1-1-13
SSX...	PP	Ø 98 x 165 mm	optionally with internal fixing weight	1-1-7, 1-1-8 and 1-1-14
FS...	PP	46 x 74 x 110 mm	with internal fixing weight	1-1-9, 1-1-10 and 1-1-14
SSR...	stainless steel 316 Ti	Ø 147 x 445 mm	with protective bellows made of stainless steel	1-1-11, 1-1-12 and 1-1-14
SS/PTFE 55/A ./K	PTFE	Ø 55 x 145 mm	---	1-1-15 and 1-1-16
SS/PTFE 55/./K	PTFE	Ø 55 x 230 mm	with protective bellows made of PTFE	1-1-17 and 1-1-18

SSP... floating switches

These floating switches are designed for mounting **from the side or from the top.**

To ensure a correct switching the cable must be fixed at the required height using a stuffing gland, for example, in the case of mounting from the side or using a fixing weight, for example, in case of mounting from the top.

These units are not suitable for use in turbulent liquids (e.g. in stirrer tanks).

Please note the following:

The floating switch SSP 1/K/... or SSP/S1/K/... is equipped with a gold-plated crosspoint contact. One of the characteristic properties of gold-plated contacts is that they can reliably switch the smallest voltages and smallest currents, even after extremely long standstill times.

These gold-plated contacts have the following unfavourable properties:

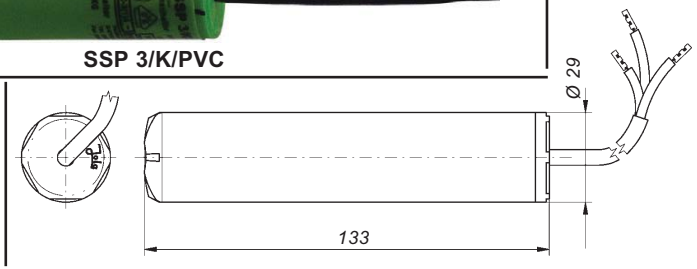
- The gold layer may become burnt off even after just one-off overload. If this happens, the contact loses its ability to reliably switch the smallest voltages and smallest currents.
- Extremely frequent switching actions can also impair or destroy the gold layer, leading to the same effects as outlined above.

If you need to choose between an SSP 1/K/... or SSP/S1/K/... with gold-plated contact and an SSP 3/K/... or SSP/S3/K/... with AgNi contact for an AC/DC 24 V application, your choice should be based on the following criteria:

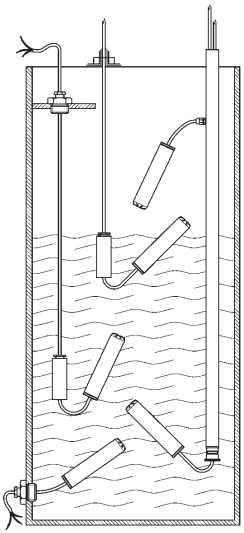
- Floating switch is seldom in operation but should continue to work reliably even after years: SSP 1/K/... or SSP/S1/K/... .
- Floating switch is frequently in operation, is permanently in action: SSP 3/K/... or SSP/S3/K/... .

Technical data	**SSP 3/K/... / SSP/S3/K/...**	**SSP 1/K/... / SSP/S1/K/...**
Application	standard application	light current application
Switching voltage	between AC/DC 24 V and AC/DC 250 V	between AC/DC 1 V and AC/DC 42 V
Switching current	between AC 20 mA and AC 3 (1) A or between DC 20 mA and DC 100 mA	between AC 0.1 mA and AC 100 (50) mA or between DC 0.1 mA and DC 10 mA
Switching capacity	max. 350 VA	max. 4 VA
Operating principle	ball-operated microswitch, potential-free changeover contact	
Options for safety appl.	——	see page 1-1-27
Recommended appl.	——	via Jola protection relay KR ..
Float material	PP	
Seal material	FPM; on request: EPDM	
Float protection class	IP 68	
Temperature appl. range	see chart on page 1-1-13	
Max. immersion depth of the float	max. 10 metres head of water at + 20°C	
Connecting cables	see chart on page 1-1-13	
Application range of the connecting cables	• **black PVC cable:** water, used water, slightly aggressive liquids, oils without aromatic additives, fuel oil and diesel fuel with a specific gravity ≥ 0.82 g/cm³ • **grey A05RN-F cable:** water, used water, slightly aggressive liquids with a specific gravity ≥ 0.82 g/cm³ • **red-brown silicone cable:** water and certain other liquids with a specific gravity ≥ 0.82 g/cm³, with low mechanical strength • **green halogen-free PUR cable:** water, used water, slightly aggressive liquids and some oils without aromatic additives with a specific gravity ≥ 0.82 g/cm³ • **black CM cable:** water and certain acids and lyes with a specific gravity ≥ 1 g/cm³	
Connecting cable length	1 metre, other cable lengths on request. **When ordering, please always state the desired cable type and cable length.**	
Optional extras	**stuffing glands and fixing weights made of brass, stainless steel 316 Ti or PP**	

SSP 3/K/PVC



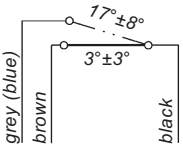
Application examples

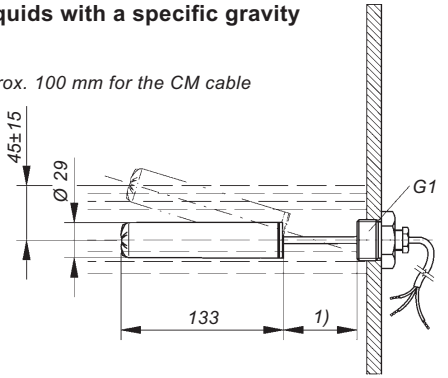


Switching action in liquids with a specific gravity of 1 g/cm³

1) approx. 60 mm, but approx. 100 mm for the CM cable

Contact switches over at





Optional extras:
Floating switch mounting only possible **from the inside**:
- stuffing gland G3/8, brass
- stuffing gland G1/2, brass
- stuffing gland G1/2, stainless steel 316 Ti
- stuffing gland G1/2, PP

Floating switch mounting possible **from the outside**:
- stuffing gland G1, brass
- stuffing gland G1, stainless steel 316 Ti
- stuffing gland G1, PP

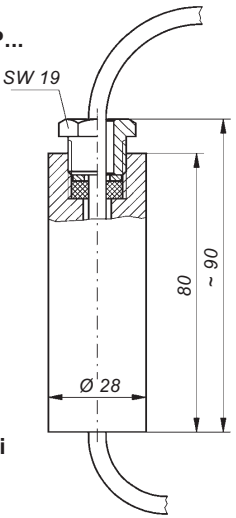
Stuffing gland G1

stainless steel

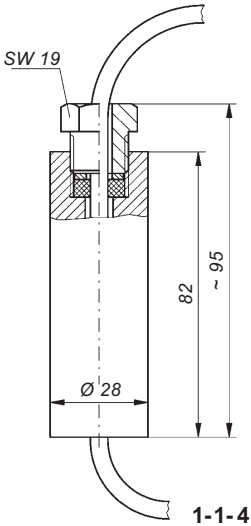
PP

Optional extras:
fixing weight for SSP...

stainless steel 316 Ti or brass



PP



SPH... floating switches

These floating switches are designed for mounting **from the side or from the top.**

To ensure a correct switching the cable must be fixed at the required height using a stuffing gland, for example, in the case of mounting from the side or using a fixing weight, for example, in case of mounting from the top.

These units are not suitable for use in turbulent liquids (e.g. in stirrer tanks).

Please note the following:

The floating switch SPH 1/K/... or SPH/S1/K/... is equipped with a gold-plated crosspoint contact. One of the characteristic properties of gold-plated contacts is that they can reliably switch the smallest voltages and smallest currents, even after extremely long standstill times.

These gold-plated contacts have the following unfavourable properties:

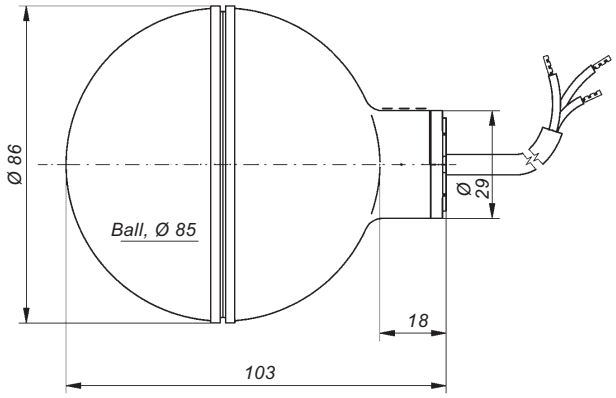
- The gold layer may become burnt off even after just one-off overload. If this happens, the contact loses its ability to reliably switch the smallest voltages and smallest currents.
- Extremely frequent switching actions can also impair or destroy the gold layer, leading to the same effects as outlined above.

If you need to choose between an SPH 1/K/... or SPH/S1/K/... with gold-plated contact and an SPH 3/K/... or SPH/S3/K/... with AgNi contact for an AC/DC 24 V application, your choice should be based on the following criteria:

- Floating switch is seldom in operation but should continue to work reliably even after years: SPH 1/K/... or SPH/S1/K/... .
- Floating switch is frequently in operation, is permanently in action: SPH 3/K/... or SPH/S3/K/... .

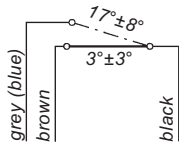
Technical data	**SPH 3/K/... / SPH/S3/K/...**	**SPH 1/K/... / SPH/S1/K/...**
Application	standard application	light current application
Switching voltage	between AC/DC 24 V and AC/DC 250 V	between AC/DC 1 V and AC/DC 42 V
Switching current	between AC 20 mA and AC 3 (1) A or between DC 20 mA and DC 100 mA	between AC 0.1 mA and AC 100 (50) mA or between DC 0.1 mA and DC 10 mA
Switching capacity	max. 350 VA	max. 4 VA
Operating principle	ball-operated microswitch, potential-free changeover contact	
Options for safety appl.	——	see page 1-1-27
Recommended appl.	——	via Jola protection relay KR ..
Float material	PP	
Seal material	FPM; on request: EPDM	
Float protection class	IP 68	
Temperature appl. range	see chart on page 1-1-13	
Max. immersion depth of the float	max. 10 metres head of water at + 20°C	
Connecting cables	see chart on page 1-1-13	
Application range of the connecting cables	• **black PVC cable:** water, used water, slightly aggressive liquids, oils without aromatic additives, fuel oil and diesel fuel with a specific gravity ≥ 0.7 g/cm³ • **grey A05RN-F cable:** water, used water, slightly aggressive liquids with a specific gravity ≥ 0.7 g/cm³ • **red-brown silicone cable:** water and certain other liquids with a specific gravity ≥ 0.7 g/cm³, with low mechanical strength • **green halogen-free PUR cable:** water, used water, slightly aggressive liquids and some oils without aromatic additives with a specific gravity ≥ 0.7 g/cm³ • **black CM cable:** water and certain acids and lyes with a specific gravity ≥ 0.8 g/cm³ • **white PTFE cable:** suitable for all liquids in which the float material PP and the seal material FPM or EPDM are also resistant with a specific gravity ≥ 0.8 g/cm³	
Connecting cable length	1 metre, other cable lengths on request. **When ordering, please always state the desired cable type and cable length.**	
Optional extras	**stuffing glands and fixing weights made of brass, stainless steel 316 Ti or PP**	

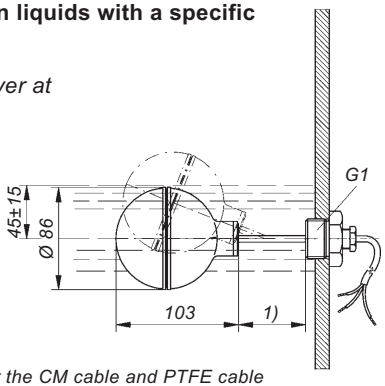
SPH 3/K/PVC



Switching action in liquids with a specific gravity of 1 g/cm³

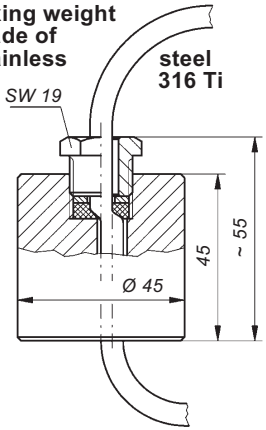
Contact switches over at



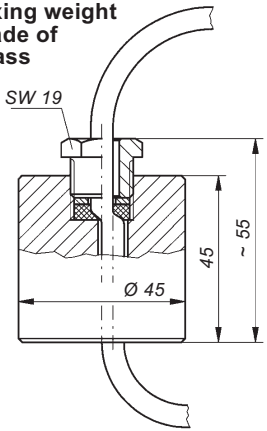


1) approx. 60 mm,
but approx. 100 mm for the CM cable and PTFE cable

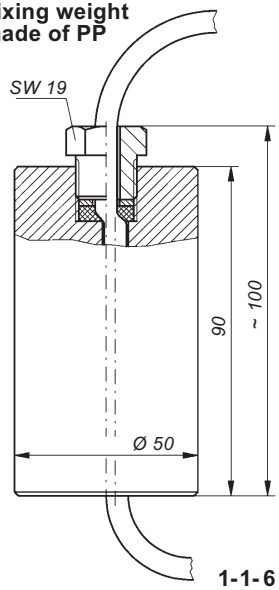
Fixing weight made of stainless steel 316 Ti



Fixing weight made of brass



Fixing weight made of PP



SSX... floating switches

These floating switches are designed for mounting **from the side or from the top.**

To ensure a correct switching the cable must be fixed at the required height using a stuffing gland, for example, in the case of mounting from the side or using a fixing weight, for example, in case of mounting from the top.

These units are not suitable for use in turbulent liquids (e.g. in stirrer tanks).

Please note the following:

The floating switch SSX 1/K/... or SSX/S1/K/... is equipped with a gold-plated crosspoint contact. One of the characteristic properties of gold-plated contacts is that they can reliably switch the smallest voltages and smallest currents, even after extremely long standstill times.

These gold-plated contacts have the following unfavourable properties:

- The gold layer may become burnt off even after just one-off overload. If this happens, the contact loses its ability to reliably switch the smallest voltages and smallest currents.
- Extremely frequent switching actions can also impair or destroy the gold layer, leading to the same effects as outlined above.

If you need to choose between an SSX 1/K/... or SSX/S1/K/... with gold-plated contact and an SSX 3/K/... or SSX/S3/K/... with AgNi contact for an AC/DC 24 V application, your choice should be based on the following criteria:

- Floating switch is seldom in operation but should continue to work reliably even after years: SSX 1/K/... or SSX/S1/K/... .
- Floating switch is frequently in operation, is permanently in action: SSX 3/K/... or SSX/S3/K/... .

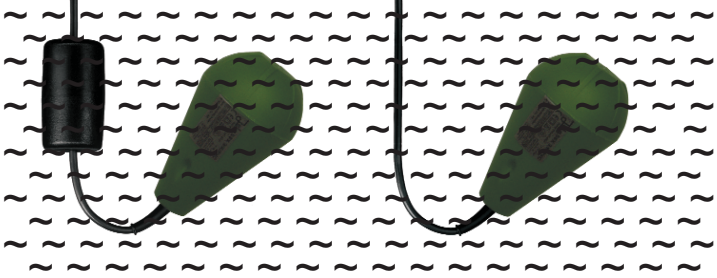
Technical data	**SSX 3/K/... / SSX/S3/K/...**	**SSX 1/K/... / SSX/S1/K/...**
Application	standard application	light current application
Switching voltage	between AC/DC 24 V and AC/DC 250 V	between AC/DC 1 V and AC/DC 42 V
Switching current	between AC 20 mA and AC 3 (1) A or between DC 20 mA and DC 100 mA	between AC 0.1 mA and AC 100 (50) mA or between DC 0.1 mA and DC 10 mA
Switching capacity	max. 350 VA	max. 4 VA
Operating principle	ball-operated microswitch, potential-free changeover contact	
Options for safety appl.	——	see page 1-1-27
Recommended appl.	——	via Jola protection relay KR ..
Float material	PP	
Seal material	FPM; on request: EPDM	
Float protection class	IP 68	
Temperature appl. range	see chart on page 1-1-14	
Max. immersion depth of the float	max. 10 metres head of water at + 20°C	
Connecting cables	see chart on page 1-1-14	
Application range of the connecting cables	• **black PVC cable:** water, used water, slightly aggressive liquids, oils without aromatic additives, fuel oil and diesel fuel with a specific gravity ≥ 0.7 g/cm³ • **grey A05RN-F cable:** water, used water, slightly aggressive liquids with a specific gravity ≥ 0.7 g/cm³ • **black CM cable:** water and certain acids and lyes with a specific gravity ≥ 0.8 g/cm³ • **white PTFE cable:** suitable for all liquids in which the float material PP and the seal material FPM or EPDM are also resistant, with a specific gravity ≥ 0.8 g/cm³	
Connecting cable length	2 metres, other cable lengths on request. **When ordering, please always state the desired cable type and cable length.**	
Optional extras	• **external fixing weight made of cast steel** for liquids with a specific gravity ≥ 0.7 g/cm³ (**not** suitable for the **PTFE** cable) • **external fixing weight made of stainless steel 316 Ti** for liquids with a specific gravity ≥ 0.7 g/cm³ • **internal fixing weight (integrated in the float) - additional reference /IG -** for liquids with a specific gravity between 0.95 and 1.05 g/cm³	

Switching action of the SSX... with external fixing weight (optional)

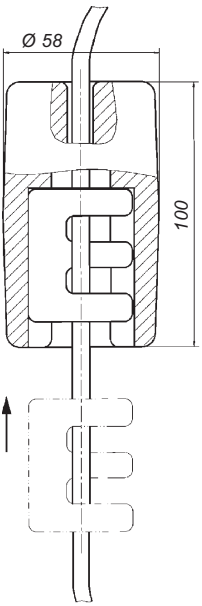
(idealized representation)

Switching action of the SSX... with internal fixing weight (optional)

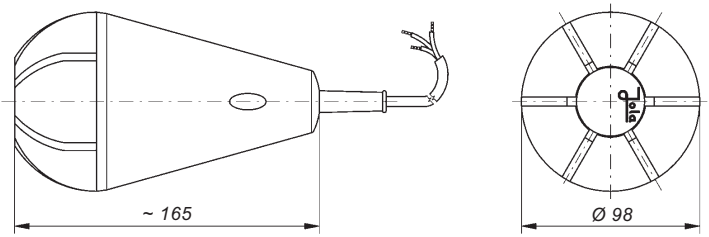
(idealized representation)

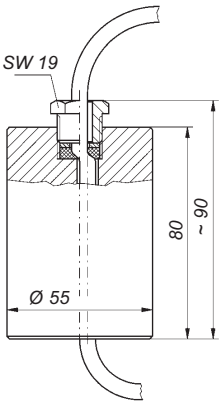


Optional extras



External fixing weight made of cast steel

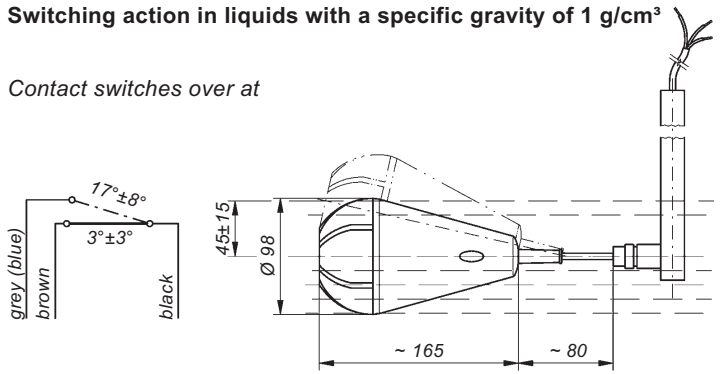




External fixing weight made of stainless steel 316 Ti

Switching action in liquids with a specific gravity of 1 g/cm³

Contact switches over at



FS... floating switches

with built-in weight for fixing of switching point

These floating switches are designed for mounting **from the top.**

They are fitted with a **built-in weight for fixing the switching point** at the desired height; this renders **additional fastening** of the switch at the height of the switching point **unnecessary**. This weight is dimensioned in such a way that the switch tilts around its own axis when the liquid level rises and then follows the rising liquid level (see function diagram on page 1-1-10). This tilting action of the float activates the switching process.

These units are not suitable for use in turbulent liquids (e.g. in stirrer tanks).

Please note the following:

The floating switch FS 1/K/... or FS/S1/K/... is equipped with a gold-plated crosspoint contact. One of the characteristic properties of gold-plated contacts is that they can reliably switch the smallest voltages and smallest currents, even after extremely long standstill times.

These gold-plated contacts have the following unfavourable properties:

- The gold layer may become burnt off even after just one-off overload. If this happens, the contact loses its ability to reliably switch the smallest voltages and smallest currents.
- Extremely frequent switching actions can also impair or destroy the gold layer, leading to the same effects as outlined above.

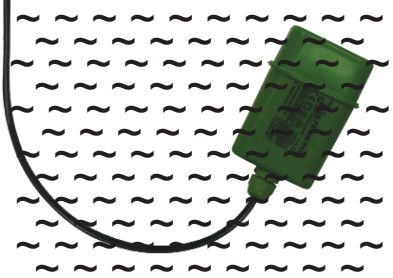
If you need to choose between an FS 1/K/... or FS/S1/K/... with gold-plated contact and an FS 3/K/... or FS/S3/K/... with AgNi contact for an AC/DC 24 V application, your choice should be based on the following criteria:

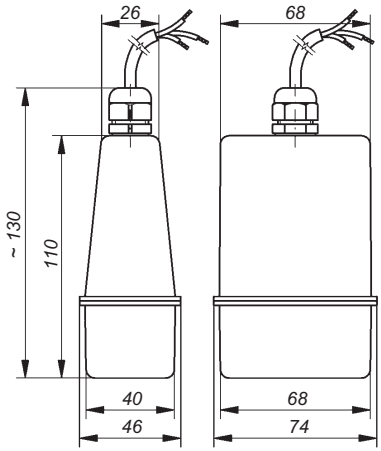
- Floating switch is seldom in operation but should continue to work reliably even after years: FS 1/K/... or FS/S1/K/... .
- Floating switch is frequently in operation, is permanently in action: FS 3/K/... or FS/S3/K/... .

Technical data	**FS 3/K/... / FS/S3/K/...**	**FS 1/K/... / FS/S1/K/...**
Application	standard application	light current application
Switching voltage	between AC/DC 24 V and AC/DC 250 V	between AC/DC 1 V and AC/DC 42 V
Switching current	between AC 20 mA and AC 3 (1) A or between DC 20 mA and DC 100 mA	between AC 0.1 mA and AC 100 (50) mA or between DC 0.1 mA and DC 10 mA
Switching capacity	max. 350 VA	max. 4 VA
Operating principle	ball-operated microswitch, potential-free changeover contact	
Options for safety appl.	——	see page 1-1-27
Recommended appl.	——	via Jola protection relay KR ..
Float material	PP	
Seal material	FPM; on request: EPDM	
Float protection class	IP 68	
Temperature appl. range	see chart on page 1-1-14	
Max. immersion depth of the float	max. 10 metres head of water at + 20°C	
Application range	**in liquids with a specific gravity between 0.95 and 1.05 g/cm³**	
Connecting cables	see chart on page 1-1-14	
Application range of the connecting cables	**• black PVC cable:** water, used water and slightly aggressive liquids **• grey A05RN-F cable:** water, used water and slightly aggressive liquids **• red-brown silicone cable:** water and certain other liquids, with low mechanical strength **• green halogen-free PUR cable** water, used water and slightly aggressive liquids **• black CM cable:** water and certain acids and lyes	
Connecting cable length	1 metre, other cable lengths on request. **When ordering, please always state the desired cable type and cable length.**	

FS 3/K/PVC
floating switch

(idealized representation)

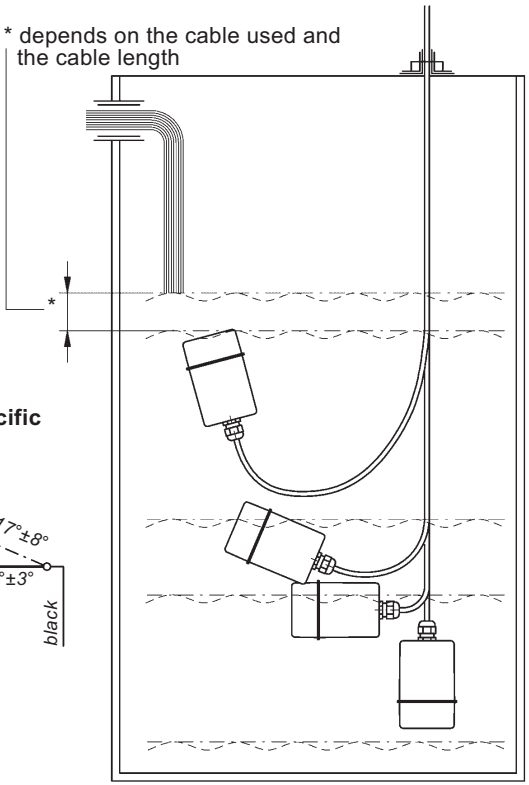




Function diagram of the FS...

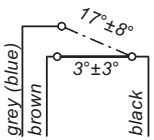
(idealized representation)

* depends on the cable used and the cable length



Switching action in liquids with a specific gravity of 1 g/cm³

Contact switches over at



SSR... floating switches

These floating switches are designed for mounting **from the side.**

To ensure a correct switching the G½ screw-in nipple must be screwed in a horizontal G½ sleeve.

These units are not suitable for use in turbulent liquids (e.g. in stirrer tanks).

Please note the following:

The floating switch SSR 1/K/... or SSR/S1/K/... is equipped with a gold-plated crosspoint contact. One of the characteristic properties of gold-plated contacts is that they can reliably switch the smallest voltages and smallest currents, even after extremely long standstill times.

These gold-plated contacts have the following unfavourable properties:

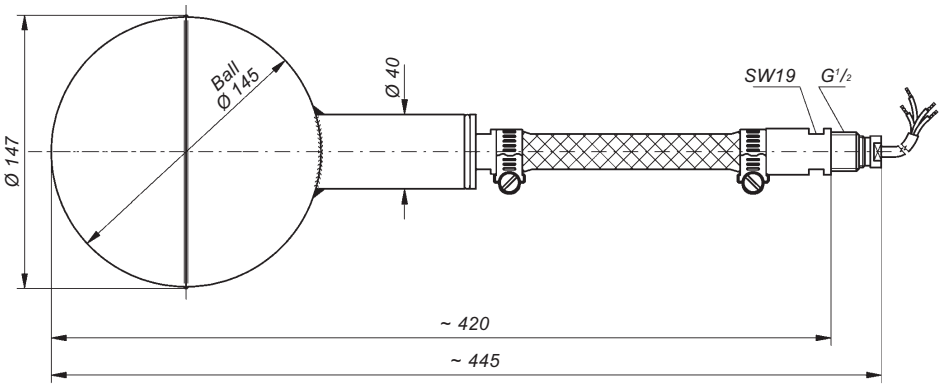
- The gold layer may become burnt off even after just one-off overload. If this happens, the contact loses its ability to reliably switch the smallest voltages and smallest currents.
- Extremely frequent switching actions can also impair or destroy the gold layer, leading to the same effects as outlined above.

If you need to choose between an SSR 1/K/... or SSR/S1/K/... with gold-plated contact and an SSR 3/K/... or SSR/S3/K/... with AgNi contact for an AC/DC 24 V application, your choice should be based on the following criteria:

- Floating switch is seldom in operation but should continue to work reliably even after years: SSR 1/K/... or SSR/S1/K/... .
- Floating switch is frequently in operation, is permanently in action: SSR 3/K/... or SSR/S3/K/... .

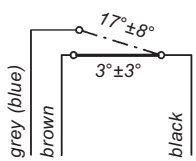
Technical data	**SSR 3/K/... SSR/S3/K/...**	**SSR 1/K/... SSR/S1/K/...**
Application	standard application	light current application
Switching voltage	between AC/DC 24 V and AC/DC 250 V	between AC/DC 1 V and AC/DC 42 V
Switching current	between AC 20 mA and AC 3 (1) A or between DC 20 mA and DC 100 mA	between AC 0.1 mA and AC 100 (50) mA or between DC 0.1 mA and DC 10 mA
Switching capacity	max. 350 VA	max. 4 VA
Operating principle	ball-operated microswitch, potential-free changeover contact	
Options for safety appl.	——	see page 1-1-27
Recommended appl.	——	via Jola protection relay KR ..
Float material	stainless steel 316 Ti	
Seal material	PTFE	
Appliance protection class	in installed condition inside the tank: IP 68, on the stuffing gland screw fitting outside the tank: IP 54	
Temperature appl. range	see chart on page 1-1-14	
Max. immersion depth of the float	max. 30 metres head of water at + 20°C	
Connecting cables	see chart on page 1-1-14	
Application range of the connecting cables	**• black A05RN-F cable** **• red-brown silicone cable** **The selected connecting cable is routed through a protective bellows made of stainless steel 316 Ti to which a G½ screw-in nipple is fastened.** The selected connecting cable under the protective bellows is suitable for all liquids in which the stainless steel bellows is resistant, with a specific gravity ≥ 0.7 g/cm³	
Connecting cable length	2 metres from screw-in nipple, other cable lengths on request. **When ordering, please always state the desired cable type and cable length.**	
Optional extra	**stainless steel stirrup to limit the movement of the float**	

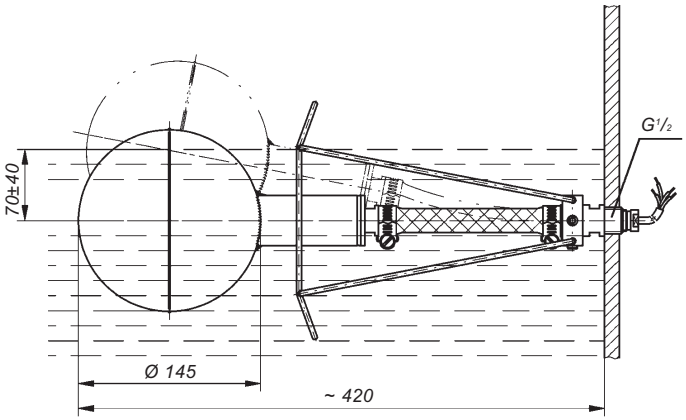
SSR 3/K/RN



Switching action in liquids with a specific gravity of 1 g/cm³ – Diagram of SSR... with stainless steel stirrup (optional)

Contact switches over at





Types	Application	Cable	Temperature application range	VDE mark	EMC certificate
List of the available SSP... floating switches					
SSP **3**/K/PVC	Application up to max. 250 V	PVC, black, 3 x 0.75	+ 8°C to + 60°C	X	X
SSP **1**/K/PVC	Light current application				X
SSP **3**/K/RN	Application up to max. 250 V	A05RN-F, grey, 3 x 0.75	0°C to + 60°C	X	X
SSP **1**/K/RN	Light current application				X
SSP/**S3**/K/SIL	Application up to max. 250 V	silicone, red-brown, 3 x 0.75	0°C to + 85°C		X
SSP/**S1**/K/SIL	Light current application				X
SSP/**S3**/K/PUR	Application up to max. 250 V	PUR, green, halogen-free, 3 x 0.5	0°C to + 85°C		X
SSP/**S1**/K/PUR	Light current application				X
SSP/**S3**/K/CM	Application up to max. 250 V	CM, black, 3 x 0.75	0°C to + 85°C		X
SSP/**S1**/K/CM	Light current application				X
List of the available SPH... floating switches					
SPH **3**/K/PVC	Application up to max. 250 V	PVC, black, 3 x 0.75	+ 8°C to + 60°C		
SPH **1**/K/PVC	Light current application				
SPH **3**/K/RN	Application up to max. 250 V	A05RN-F, grey, 3 x 0.75	0°C to + 60°C		
SPH **1**/K/RN	Light current application				
SPH/**S3**/K/SIL	Application up to max. 250 V	silicone, red-brown, 3 x 0.75	0°C to + 85°C		
SPH/**S1**/K/SIL	Light current application				
SPH/**S3**/K/PUR	Application up to max. 250 V	PUR, green, halogen-free, 3 x 0.5	0°C to + 85°C		
SPH/**S1**/K/PUR	Light current application				
SPH/**S3**/K/CM	Application up to max. 250 V	CM, black, 3 x 0.75	0°C to + 85°C		
SPH/**S1**/K/CM	Light current application				
SPH/**S3**/K/PTFE	Application up to max. 250 V	PTFE, white, 3 x 0.75	0°C to + 85°C		
SPH/**S1**/K/PTFE	Light current application				

Types	Application	Cable	Temperature application range	VDE mark	EMC certificate
List of the available SSX... floating switches					
SSX **3**/K/PVC	Application up to max. 250 V	PVC, black, 3 x 0.75	+ 8°C to + 60°C	X	X
SSX **1**/K/PVC	Light current application				X
SSX **3**/K/RN	Application up to max. 250 V	A05RN-F, grey, 3 x 0.75	0°C to + 60°C	X	X
SSX **1**/K/RN	Light current application				X
SSX/**S3**/K/CM	Application up to max. 250 V	CM, black, 3 x 0.75	0°C to + 85°C		X
SSX/**S1**/K/CM	Light current application				X
SSX/**S3**/K/PTFE	Application up to max. 250 V	PTFE, white, 3 x 0.75	0°C to + 85°C		X
SSX/**S1**/K/PTFE	Light current application				X
List of the available FS... floating switches					
FS **3**/K/PVC	Application up to max. 250 V	PVC, black, 3 x 0.75	+ 8°C to + 60°C	X	X
FS **1**/K/PVC	Light current application				X
FS **3**/K/RN	Application up to max. 250 V	A05RN-F, grey, 3 x 0.75	0°C to + 60°C	X	X
FS **1**/K/RN	Light current application				X
FS/**S3**/K/SIL	Application up to max. 250 V	silicone, red-brown, 3 x 0.75	0°C to + 85°C		X
FS/**S1**/K/SIL	Light current application				X
FS/**S3**/K/PUR	Application up to max. 250 V	PUR, green, halogen-free, 3 x 0.5	0°C to + 85°C		X
FS/**S1**/K/PUR	Light current application				X
FS/**S3**/K/CM	Application up to max. 250 V	CM, black, 3 x 0.75	0°C to + 85°C		X
FS/**S1**/K/CM	Light current application				X
List of the available SSR... floating switches					
SSR **3**/K/RN	Application up to max. 250 V	A05RN-F, black, 4 G 0.75	0°C to + 70°C	X	X
SSR **1**/K/RN	Light current application				X
SSR/**S3**/K/SIL	Application up to max. 250 V	silicone, red-brown, 4 G 0.75	0°C to + 85°C		X
SSR/**S1**/K/SIL	Light current application				X

SS/PTFE 55/A ./K floating switches

These floating switches are designed for mounting **from the top.**

To ensure a correct switching the cable must be fixed at the required height using for example a fixing weight or a mounting pipe.

These units are not suitable for use in turbulent liquids (e.g. in stirrer tanks).

Please note the following:

The floating switch SS/PTFE 55/A 1/K is equipped with a gold-plated crosspoint contact. One of the characteristic properties of gold-plated contacts is that they can reliably switch the smallest voltages and smallest currents, even after extremely long standstill times.

These gold-plated contacts have the following unfavourable properties:

- The gold layer may become burnt off even after just one-off overload. If this happens, the contact loses its ability to reliably switch the smallest voltages and smallest currents.
- Extremely frequent switching actions can also impair or destroy the gold layer, leading to the same effects as outlined above.

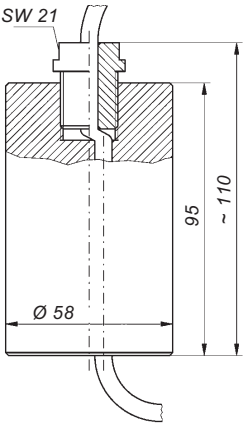
If you need to choose between an SS/PTFE 55/A 1/K with gold-plated contact and an SS/PTFE 55/A 3/K with AgNi contact for an AC/DC 24 V application, your choice should be based on the following criteria:

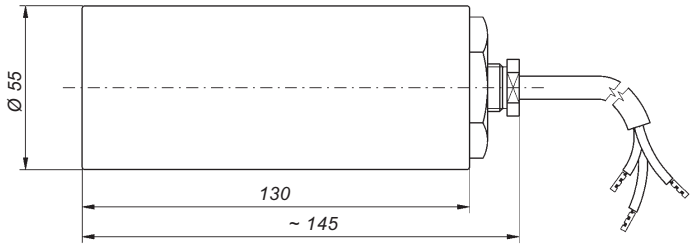
- Floating switch is seldom in operation but should continue to work reliably even after years: SS/PTFE 55/A 1/K.
- Floating switch is frequently in operation, is permanently in action: SS/PTFE 55/A 3/K.

Technical data	**SS/PTFE 55/A 3/K**	**SS/PTFE 55/A 1/K**
Application	standard application	light current application
Switching voltage	between AC/DC 24 V and AC/DC 250 V	between AC/DC 1 V and AC/DC 42 V
Switching current	between AC 20 mA and AC 3 (1) A or between DC 20 mA and DC 100 mA	between AC 0.1 mA and AC 100 (50) mA or between DC 0.1 mA and DC 10 mA
Switching capacity	max. 350 VA	max. 4 VA
Operating principle	ball-operated microswitch, potential-free changeover contact	
Options for safety appl.	——	see page 1-1-27
Recommended appl.	——	via Jola protection relay KR ..
Float material	PTFE	
Seal material	FPM	
Float protection class	IP 68	
Temperature appl. range	0°C to + 85°C	
Max. immersion depth of the float	max. 3 metres head of water at + 20°C	
Application range	in liquids with a specific gravity ≥ 1.0 g/cm³	
Connecting cable	white PTFE cable, 3 x 0.75	
Connecting cable length	2 metres, other cable lengths on request. **When ordering, please always state the desired cable length.**	
Optional extra	**fixing weight made of PTFE**	

SS/PTFE 55/A ./K

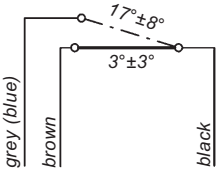
Optional extra: fixing weight made of PTFE

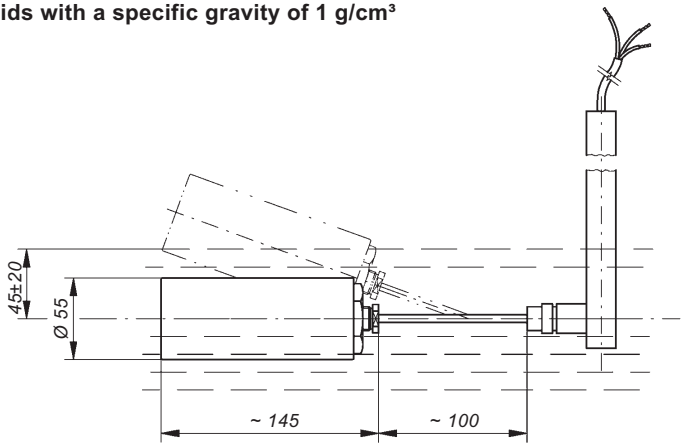




Switching action in liquids with a specific gravity of 1 g/cm³

Contact switches over at





SS/PTFE 55/./K floating switches

These floating switches are designed for mounting **from the side.**

To ensure a correct switching the G½ (G2) screw-in nipple must be screwed in a horizontal G½ (G2) sleeve.

These units are not suitable for use in turbulent liquids (e.g. in stirrer tanks).

Please note the following:

The floating switch SS/PTFE 55/1/K is equipped with a gold-plated crosspoint contact. One of the characteristic properties of gold-plated contacts is that they can reliably switch the smallest voltages and smallest currents, even after extremely long standstill times.

These gold-plated contacts have the following unfavourable properties:

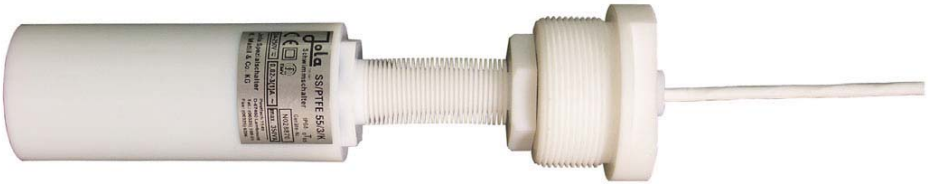
- The gold layer may become burnt off even after just one-off overload. If this happens, the contact loses its ability to reliably switch the smallest voltages and smallest currents.
- Extremely frequent switching actions can also impair or destroy the gold layer, leading to the same effects as outlined above.

If you need to choose between an SS/PTFE 55/1/K with gold-plated contact and an SS/PTFE 55/3/K with AgNi contact for an AC/DC 24 V application, your choice should be based on the following criteria:

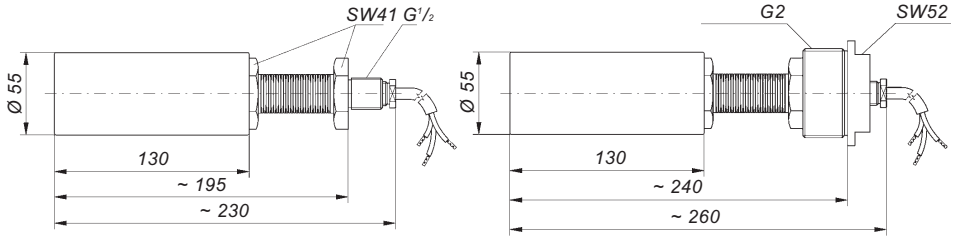
- Floating switch is seldom in operation but should continue to work reliably even after years: SS/PTFE 55/1/K.
- Floating switch is frequently in operation, is permanently in action: SS/PTFE 55/3/K.

Technical data	**SS/PTFE 55/3/K**	**SS/PTFE 55/1/K**
Application	standard application	light current application
Switching voltage	between AC/DC 24 V and AC/DC 250 V	between AC/DC 1 V and AC/DC 42 V
Switching current	between AC 20 mA and AC 3 (1) A or between DC 20 mA and DC 100 mA	between AC 0.1 mA and AC 100 (50) mA or between DC 0.1 mA and DC 10 mA
Switching capacity	max. 350 VA	max. 4 VA
Operating principle	ball-operated microswitch, potential-free changeover contact	
Options for safety appl.	——	see page 1-1-27
Recommended appl.	——	via Jola protection relay KR ..
Float material	PTFE	
Seal material	FPM	
Appliance protection class	in installed condition inside the tank: IP 68, on the stuffing gland screw fitting outside the tank: IP 54	
Temperature appl. range	0°C to + 85°C	
Max. immersion depth of the float	max. 1 metre head of water at + 20°C	
Application range	in liquids with a specific gravity ≥ 1.0 g/cm³	
Connecting cable	white PTFE cable, 3 x 0.75 **The connecting cable is routed through a protective bellows made of PTFE to which a G½ screw-in nipple made of PTFE is fastened.**	
Connecting cable length	2 metres from screw-in nipple, other cable lengths on request. **When ordering, please always state the desired cable length.**	
Optional extra	**G2 screw-in nipple in place of G$^{1}/_{2}$ nipple for installation from the outside through the tank wall**	

SS/PTFE 55/./K

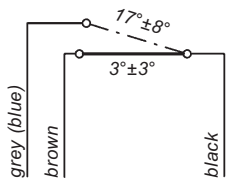


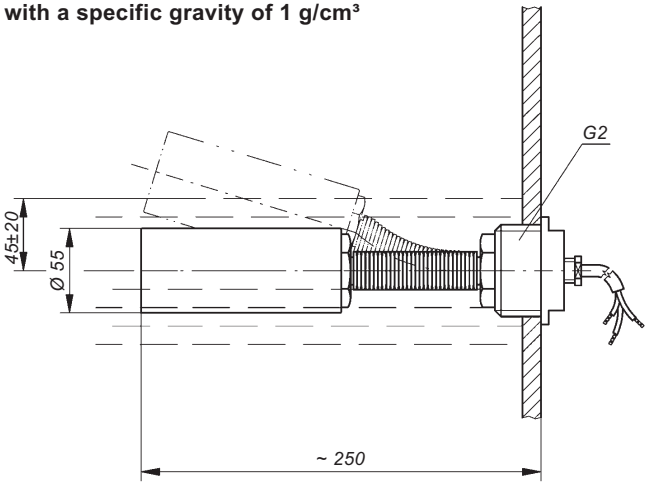
SS/PTFE 55/./K
with G2 screw-in nipple (optional)



Switching action in liquids with a specific gravity of 1 g/cm³

Contact switches over at

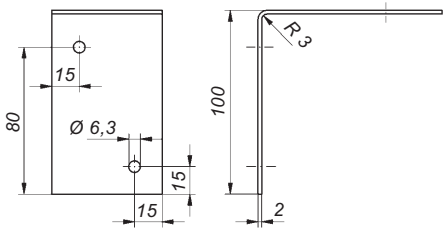


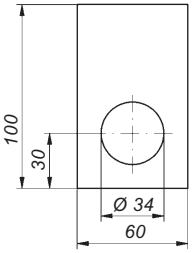


Further mounting accessories

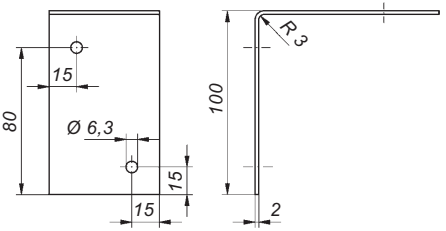
Mounting bracket made of stainless steel 316 Ti for G1 stuffing gland (fixing of the G1 stuffing gland via G1 counternut)

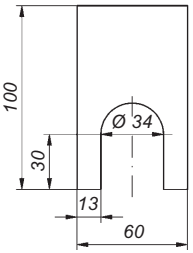
MW 100x100x60/G1/B





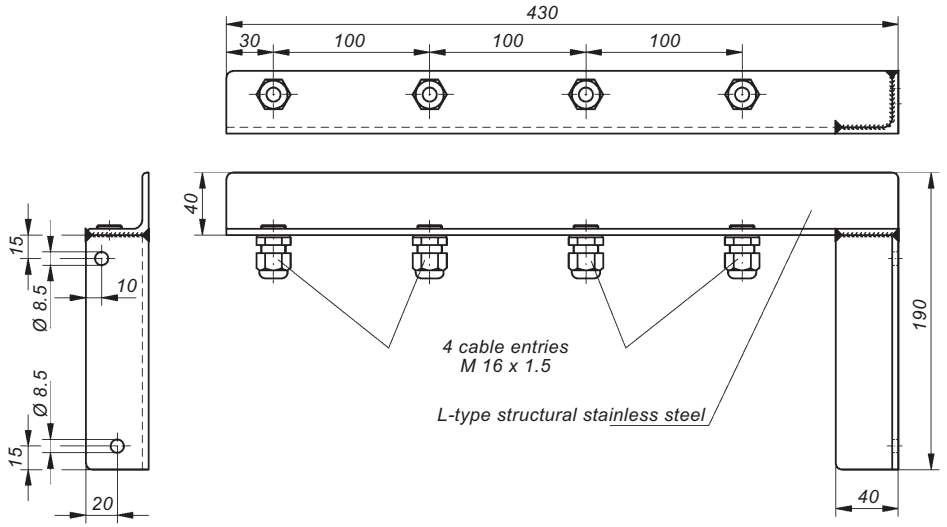
MW 100x100x60/G1/L





Mounting bracket with 4 cable entries made of nickel-plated brass (on request made of PP or stainless steel) suitable for 4 floating switches

MW 190x430x40/4xM16-Ms



Further mounting brackets see page 16-1-0 ff.

MW 190x430x40/4xM16-PP
with 4 cable entries made of PP and
with 4 SSX-type floating switches
with internal fixing weight

TSV/... level monitors

with mounted floating switch SSP...

Probe tube in terminal box / screw-in nipple adjustable

These units are not suitable for use in turbulent liquids (e.g. in stirrer tanks).

Technical data	TSV/PP/SSP ./K/...	TSV/E/SSP ./K/...
Probe tube material	PP	stainless steel 316 Ti
Probe tube diameter	12 mm	12 mm
Probe tube length	approx. 500 mm, longer on request	
Screw-in nipple	PP, G1	stainless steel 316 Ti, G1
Terminal box	PP, A 307, 120 x 80 x 55 mm, protection class IP 54	
Mounting orientation	vertical	
Temperature appl. range	depends on the type of cable used, see chart on page 1-1-13	
Pressure resistance	for pressureless applications only	
Mounted floating switch	**SSP••• (see pages 1-1-3, 1-1-4 and 1-1-13)**	
Electrical data	see technical data on pages 1-1-3, 1-1-4 and 1-1-13	

. = to be specified: 3 or 1 (for type SSP 3/K/... or SSP 1/K/...); see page 1-1-3
... = to be specified according to the list of types on page 1-1-13

TS/O/... immersion probes

with mounted floating switches SSP...

These units are not suitable for use in turbulent liquids (e.g. in stirrer tanks).

Functional description based on a switching example:

Automatic filling of a tank

The bottom floating switch falls together with the liquid to a minimum level and acts on the contactor coil winding when it falls below the horizontal. Liquid is then pumped into the tank. When the maximum level is reached, the top floating switch rises above the horizontal, the contactor holding circuit is interrupted, and the filling process is stopped.

Technical data	TS/O/...
Probe tube material	PP
Probe tube diameter	depends on the type and number of switches
Probe tube length	according to customer's specifications
Screw-in nipple (on request)	PP; flange on request
Terminal box	PP, A 307, 120 x 80 x 55 mm, protection class IP 65, for max. 12 terminals; for more than 12 terminals: polyester, A 113, 160 x 160 x 90 mm, protection class IP 65
Mounting orientation	vertical
Temperature appl. range	from 0°C or + 8°C to + 60°C or + 85°C (depends on the type of cable used, see page 1-1-13)
Pressure resistance	for pressureless applications only
Mounted floating switches	**SSP••• (please always state when ordering)**
Electrical data	see technical data on pages 1-1-3 ff.

Type designation	No. of mounted floating switches	Type of mounted floating switches	Probe tube diameter	Screw-in nipple (on request)
TS/O/1 x SSP•••	1	SSP••• (please always state when ordering)	16 mm	G1 1/2 or G2
TS/O/2 x SSP•••	2		20 mm	G2
TS/O/3 x SSP•••	3		25 mm	G2
TS/O/4 x SSP•••	4		25 mm	G2
TS/O/5 x SSP•••	5		25 mm	G2

••• = to be specified, see chart on page 1-1-13

On request:
- **with more than 5 mounted floating switches**
- **with adjustable screw-in nipple**

The above equipment will be manufactured in accordance with customer's specifications.

For enquiries or orders, please complete the questionnaire on page 1-1-25 or 1-1-26 (as applicable).

TS/... immersion probes

with mounted floating switches SSX..., SSR... or SS/PTFE 55/./K

These units are not suitable for use in turbulent liquids (e.g. in stirrer tanks).

Mode of operation:
see example on page 1-1-22.

**TS/E/1 x SSR ...
with stainless steel stirrup to limit float movement and with cable in place of terminal box**

Technical data	TS/PP/...	TS/G/...	TS/E/...	TS/PTFE/...
Probe tube material	PP	stainless steel 316 Ti		PTFE
Probe tube dia.	see chart on page 1-1-24			
Probe tube length	according to customer's specifications			
Option: flange	on request, but making allowance for the installation dimensions of the mounted floating switches			
Terminal box	PP, A 307, 120 x 80 x 55 mm, protection class IP 65, for max. 9 terminals	cast aluminium, A 119, 125 x 80 x 60 mm, protection class IP 65, for max. 12 terminals		PP, A 307, 120 x 80 x 55 mm, protection class IP 65, for max. 9 terminals
	for more than 9 or 12 terminals: polyester, A 113, or cast aluminium, A 113b, each 160 x 160 x 90 mm, protection class IP 65; on request: with free connecting cable			
Mounting orientation	vertical			
Temperature application range	depends on the type of cable used, see page 1-1-14	1-1-14	1-1-14	1-1-17
Pressure resistance	for pressureless applications only			
Mounted floating switches Electrical data	**SSX•••** see technical data on page 1-1-7	**SSX•••** 1-1-7	**SSR•••** 1-1-11	**SS/PTFE 55/•/K** 1-1-17

**Suitable for types on pages 1-1-23 and 1-1-24:
••• = to be specified according to the list of types on page 1-1-14
• = to be specified: 3 or 1 (for type ... 3/K or ... 1/K); see page 1-1-17**

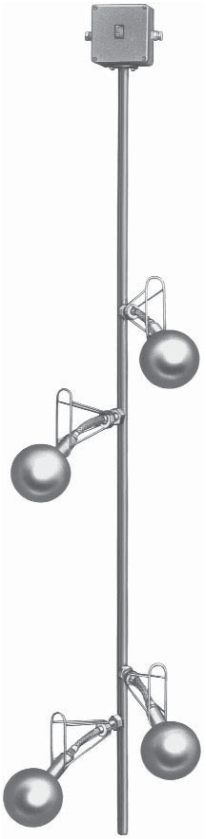
On request **TS/PTFE/... with screw-in nipple G2 for mounting from inside the container** (the terminal box has to be removed prior to mounting and then fixed back in place).

The above equipment will be manufactured in accordance with customer's specifications.

For enquiries or orders, please complete the questionnaire on page 1-1-25 or 1-1-26 (as applicable).

Type designation	No of mounted floating switches	Type of mounted floating switches	Probe tube diameter
TS/PP/1 x SSX••• TS/PP/2 x SSX••• TS/PP/3 x SSX••• TS/PP/4 x SSX••• TS/PP/5 x SSX•••	1 2 3 4 5	SSX••• **(please always state when ordering)**	32 mm
TS/G/1 x SSX••• TS/G/2 x SSX••• TS/G/3 x SSX••• TS/G/4 x SSX••• TS/G/5 x SSX•••	1 2 3 4 5	SSX••• **(please always state when ordering)**	28 mm 28 mm 34 mm 34 mm 34 mm
TS/E/1 x SSR••• TS/E/2 x SSR••• TS/E/3 x SSR••• TS/E/4 x SSR••• TS/E/5 x SSR•••	1 2 3 4 5	SSR••• with stirrup **(please always state when ordering)**	28 mm 28 mm 34 mm 34 mm 34 mm
TS/PTFE/1 x SS/PTFE 55/•/K TS/PTFE/2 x SS/PTFE 55/•/K TS/PTFE/3 x SS/PTFE 55/•/K TS/PTFE/4 x SS/PTFE 55/•/K TS/PTFE/5 x SS/PTFE 55/•/K	1 2 3 4 5	SS/PTFE 55/•/K **(please always state when ordering)**	27 mm

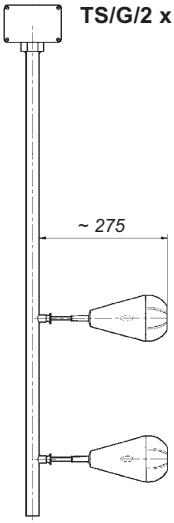
On request also with more than 5 mounted floating switches.



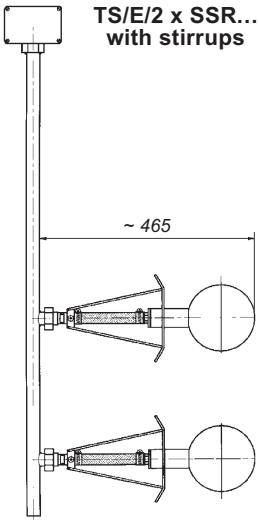
TS/E/4 x SSR... with stirrups

Design examples

TS/G/2 x SSX...



TS/E/2 x SSR... with stirrups



TS/PTFE/2 x SS/PTFE 55/./K with mounting flange

Questionnaire for enquiries and orders
for immersion probes <u>with</u> screw-in nipple or flange

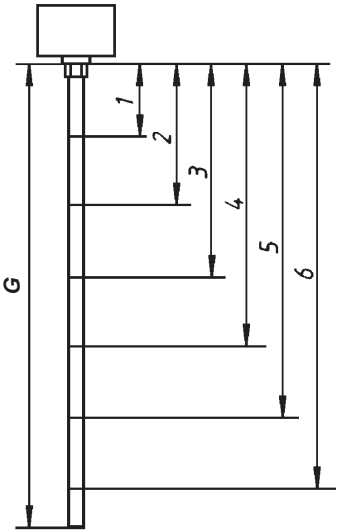
Desired switching functions (indication max., min., pump or valve ON – OFF, filling or emptying, dry-run or overflow protection): _____

Tank dimensions and installation conditions (sketch if applicable): _____

Type of liquid: _____ Specific gravity: _____

Viscosity: _____ Temperature: _____ Operating pressure: _____

Desired immersion probe type: TS/



When planning the design of the immersion probes, please consider that **when the liquid level rises,** the contact of the floating switches is not activated when the floating switches reach the horizontal position, but is activated as depicted in the diagrams of the various floating switches on pages 1-1-3 and following.
When the liquid level sinks, the contact of the floating switches is activated **shortly below their horizontal position.**

	Desired floating switch type	*Distance from sealing surface of screw-in nipple or flange in mm*	*Switching function (e.g. high alarm, pump ON, pump OFF etc.)*	*Working direction of the floating switch: rising = ↑ falling = ↓*
1				
2				
3				
4				
5				
6				

Desired options:

Questionnaire for enquiries and orders
for immersion probes <u>without</u> screw-in nipple or flange

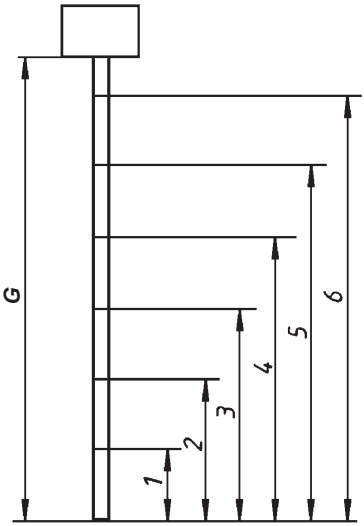
Desired switching functions (indication max., min., pump or valve ON – OFF, filling or emptying, dry-run or overflow protection): _____

Tank dimensions and installation conditions (sketch if applicable): _____

Type of liquid: _____ Specific gravity: _____

Viscosity: _____ Temperature: _____ Operating pressure: _____

Desired immersion probe type: TS/...



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When the liquid level sinks, the contact of the floating switches is activated **shortly below their horizontal position.**

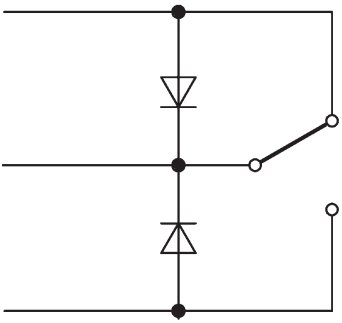
	Desired floating switch type	*Distance from end of probe tube in mm*	*Switching function (e.g. high alarm, pump ON, pump OFF etc.)*	*Working direction of the floating switch: rising = ↑ falling = ↓*
1				
2				
3				
4				
5				
6				

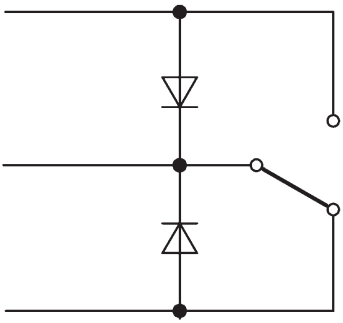
Desired options:

Options for safety applications suitable for ..... 1/K/... floating switches

Variant 1:

Two (2) diodes of the type 1N4004 or equivalent





Variant 2:

Two (2) metal film resistors or carbon film resistors R 1, R 2,
each greater than or equal to 2 kΩ,
each P greater than or equal to 1/4 W

and

one (1) metal film resistor or carbon film resistor R 3
greater than or equal to 330 Ω,
P greater than or equal to 1 W