

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 |

| | |
|--|--------|
| Further mounting accessories | 1-1-19 |
| TSV/... level monitors with mounted floating switch SSP... | 1-1-21 |
| TS/O/... immersion probes with mounted floating switches SSP... | 1-1-22 |
| TS/... immersion probes with mounted floating switches SSX..., SSR... or SS/PTFE 55/ /K | 1-1-23 |
| Questionnaire for enquiries and orders | 1-1-25 |
| Options for safety applications | 1-1-27 |

Jola 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:

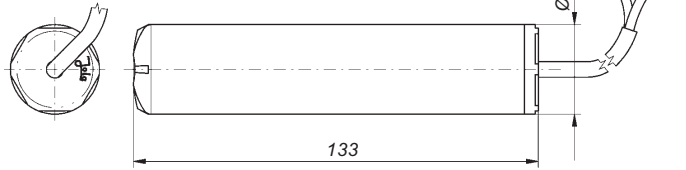
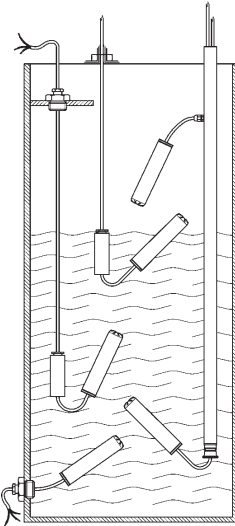
- Floating switch is seldom in operation but should continue to work reliably even after years: SSP 1/K/... or SSP/S1/K/... .
- Floating switch is frequently in operation, is permanently in action: SSP 3/K/... or SSP/S3/K/... .

| 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 | <ul style="list-style-type: none"> • black PVC cable: water, used water, slightly aggressive liquids, oils without aromatic additives, fuel oil and diesel fuel with a specific gravity $\geq 0.82 \text{ g/cm}^3$ <ul style="list-style-type: none"> • grey A05RN-F cable: water, used water, slightly aggressive liquids with a specific gravity $\geq 0.82 \text{ g/cm}^3$ <ul style="list-style-type: none"> • red-brown silicone cable: water and certain other liquids with a specific gravity $\geq 0.82 \text{ g/cm}^3$, 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 $\geq 0.82 \text{ g/cm}^3$ <ul style="list-style-type: none"> • black CM cable: water and certain acids and lyes with a specific gravity $\geq 1 \text{ g/cm}^3$ | |
| 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

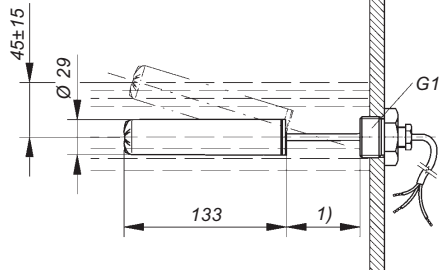
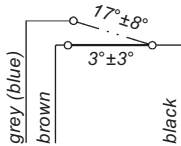
Application examples



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 G^{3/8}, brass
- stuffing gland G^{1/2}, brass
- stuffing gland G^{1/2}, stainless steel 316 Ti
- stuffing gland G^{1/2}, 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

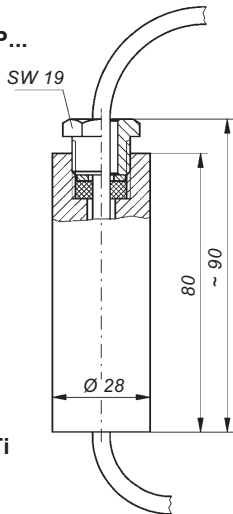
PP

Optional extras:

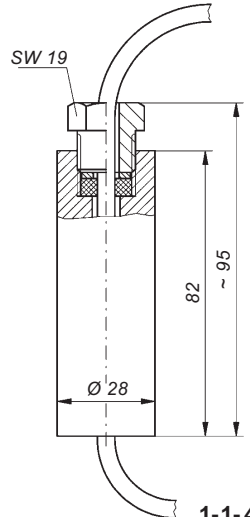
fixing weight for SSP...



stainless steel 316 Ti
or brass



PP



Jola 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.

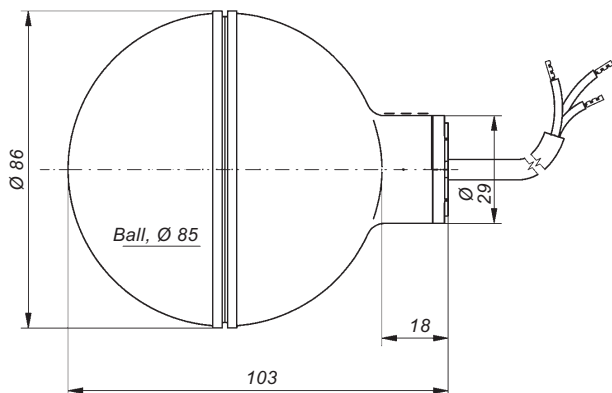
If you need to choose between an SPH 1/K/... or SPH/S1/K/... with gold-plated contact and an SPH 3/K/... or SPH/S3/K/... with AgNi contact for an AC/DC 24 V application, your choice should be based on the following criteria:

- 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 | <ul style="list-style-type: none"> • black PVC cable: water, used water, slightly aggressive liquids, oils without aromatic additives, fuel oil and diesel fuel with a specific gravity $\geq 0.7 \text{ g/cm}^3$ • grey A05RN-F cable: water, used water, slightly aggressive liquids with a specific gravity $\geq 0.7 \text{ g/cm}^3$ • red-brown silicone cable: water and certain other liquids with a specific gravity $\geq 0.7 \text{ g/cm}^3$, 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 $\geq 0.7 \text{ g/cm}^3$ • black CM cable: water and certain acids and lyes with a specific gravity $\geq 0.8 \text{ g/cm}^3$ • 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 $\geq 0.8 \text{ g/cm}^3$ | |
| 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 | |

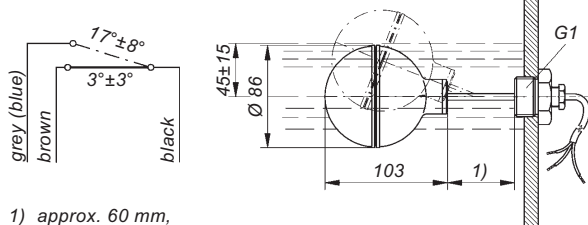


SPH 3/K/PVC

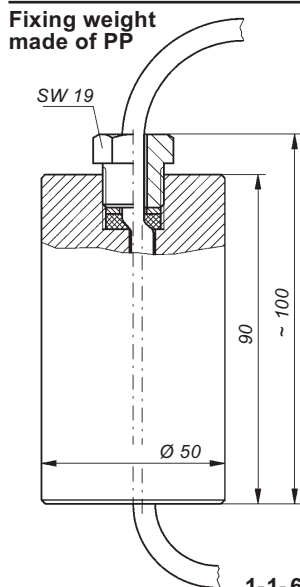
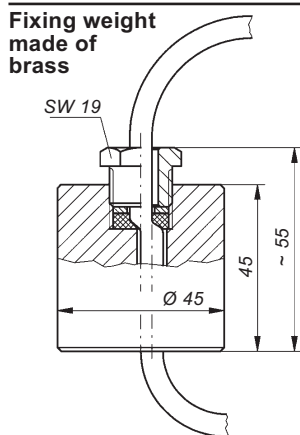
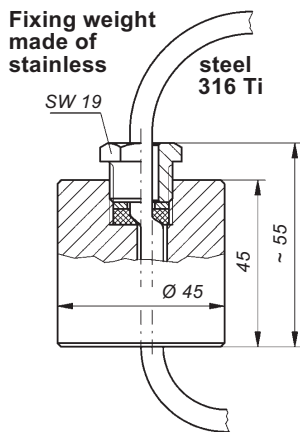


Switching action in liquids with a specific gravity of 1 g/cm^3

Contact switches over at



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



Jola 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:

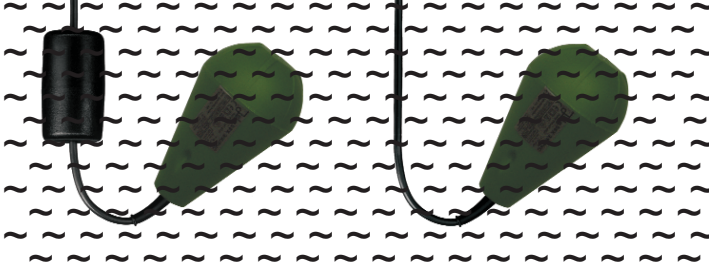
- The gold layer may become burnt off even after just one-off overload. If this happens, the contact loses its ability to reliably switch the smallest voltages and smallest currents.
- Extremely frequent switching actions can also impair or destroy the gold layer, leading to the same effects as outlined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

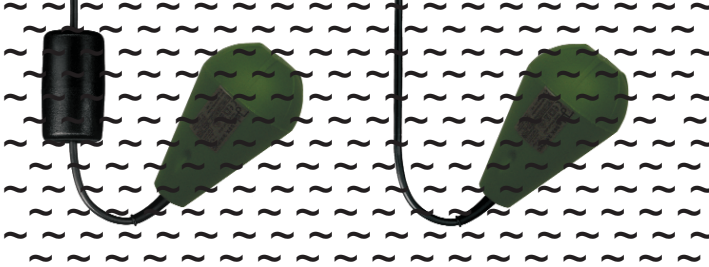
- Floating switch is seldom in operation but should continue to work reliably even after years: SSX 1/K/... or SSX/S1/K/... .
- Floating switch is frequently in operation, is permanently in action: SSX 3/K/... or SSX/S3/K/... .

| 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 | <ul style="list-style-type: none"> • black PVC cable: water, used water, slightly aggressive liquids, oils without aromatic additives, fuel oil and diesel fuel with a specific gravity $\geq 0.7 \text{ g/cm}^3$ • grey A05RN-F cable: water, used water, slightly aggressive liquids with a specific gravity $\geq 0.7 \text{ g/cm}^3$ <ul style="list-style-type: none"> • black CM cable: water and certain acids and lyes with a specific gravity $\geq 0.8 \text{ g/cm}^3$ • 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 $\geq 0.8 \text{ g/cm}^3$ | |
| Connecting cable length | 2 metres, other cable lengths on request. When ordering, please always state the desired cable type and cable length. | |
| Optional extras | <ul style="list-style-type: none"> • external fixing weight made of cast steel for liquids with a specific gravity $\geq 0.7 \text{ g/cm}^3$ (not suitable for the PTFE cable) • external fixing weight made of stainless steel 316 Ti for liquids with a specific gravity $\geq 0.7 \text{ g/cm}^3$ • internal fixing weight (integrated in the float) - additional reference /IG - for liquids with a specific gravity between 0.95 and 1.05 g/cm^3 | |

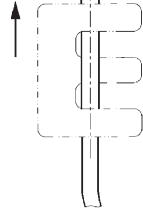
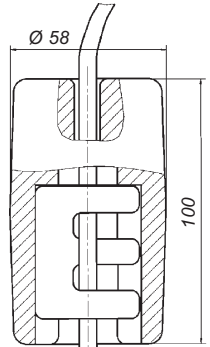
Switching action of the SSX...
with external fixing weight
(optional)
(idealized representation)



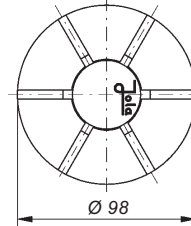
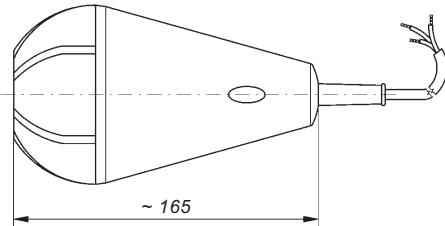
Switching action of the SSX...
with internal fixing weight
(optional)
(idealized representation)



Optional extras

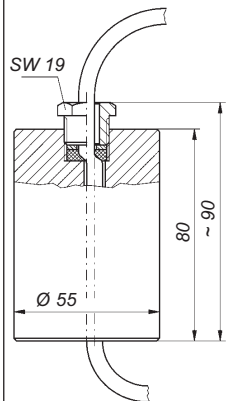
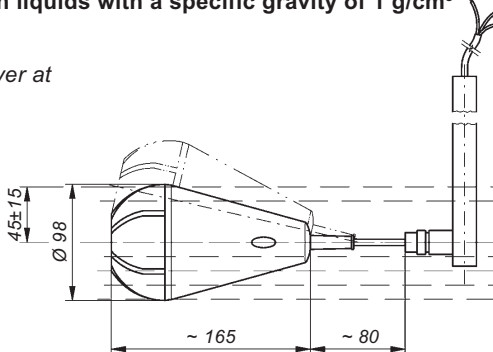
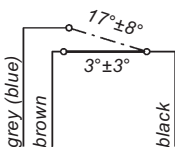


External fixing weight made of cast steel



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

Contact switches over at



External fixing weight made of stainless steel 316 Ti



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:

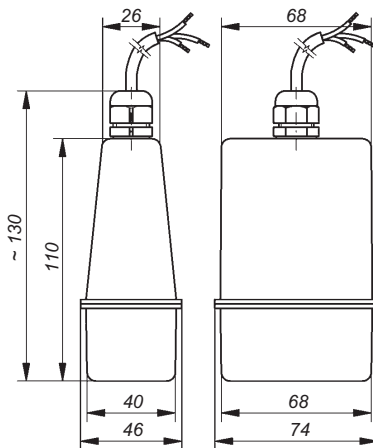
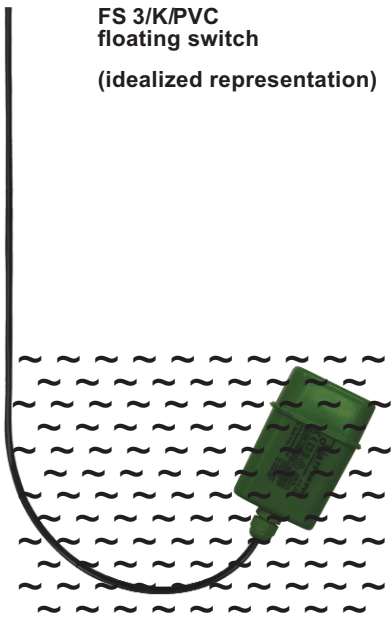
- The gold layer may become burnt off even after just one-off overload. If this happens, the contact loses its ability to reliably switch the smallest voltages and smallest currents.
- Extremely frequent switching actions can also impair or destroy the gold layer, leading to the same effects as outlined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

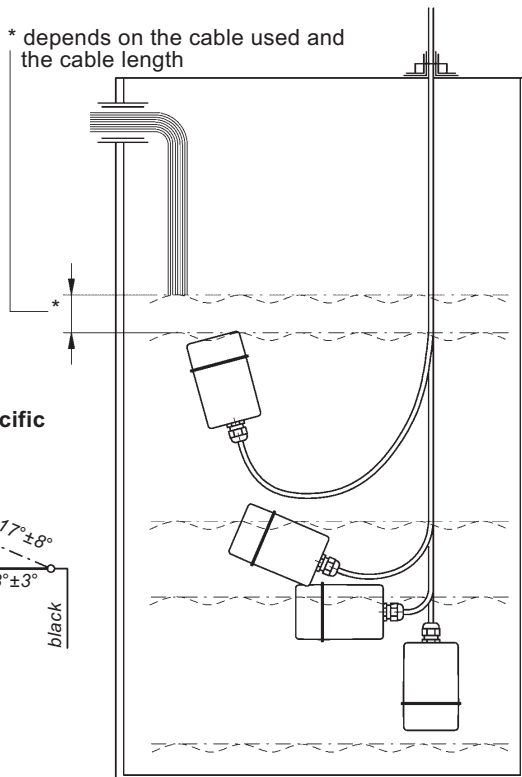
- Floating switch is seldom in operation but should continue to work reliably even after years: FS 1/K/... or FS/S1/K/... .
- Floating switch is frequently in operation, is permanently in action: FS 3/K/... or FS/S3/K/... .

| 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 | <ul style="list-style-type: none"> • 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)**

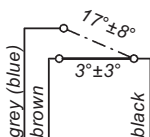


**Function diagram of the FS...
(idealized representation)**



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

Contact switches over at



Jola 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.

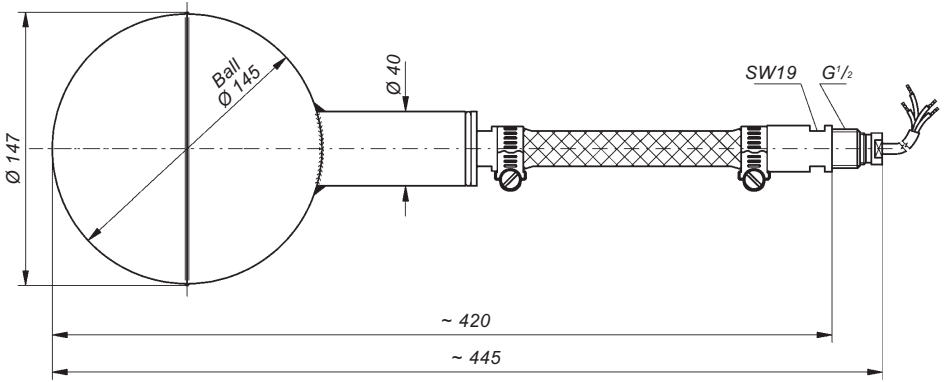
If you need to choose between an SSR 1/K/... or SSR/S1/K/... with gold-plated contact and an SSR 3/K/... or SSR/S3/K/... with AgNi contact for an AC/DC 24 V application, your choice should be based on the following criteria:

- 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/... .

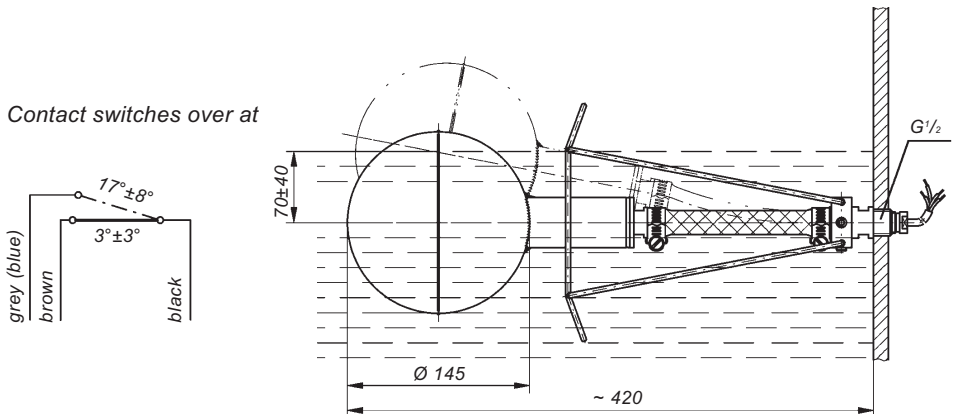
| Technical data | SSR 3/K/... SSR/S3/K/... | SSR 1/K/... SSR/S1/K/... |
|--|---|--|
| Application | standard application | light current application |
| Switching voltage | between AC/DC 24 V and AC/DC 250 V | between AC/DC 1 V and AC/DC 42 V |
| Switching current | between AC 20 mA and AC 3 (1) A or between DC 20 mA and DC 100 mA max. 350 VA | between AC 0.1 mA and AC 100 (50) mA or between DC 0.1 mA and DC 10 mA max. 4 VA |
| Switching capacity | | |
| 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 see chart on page 1-1-14 | |
| Temperature appl. range | max. 30 metres head of water at + 20°C | |
| Max. immersion depth of the float | see chart on page 1-1-14 | |
| Connecting cables | see chart on page 1-1-14 | |
| Application range of the connecting cables | <ul style="list-style-type: none"> • black A05RN-F cable • red-brown silicone cable | |
| Connecting cable length | <p>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.</p> <p>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</p> <p>2 metres from screw-in nipple, other cable lengths on request.</p> <p>When ordering, please always state the desired cable type and cable length.</p> | |
| 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/cm^3 –
Diagram of SSR... with stainless steel stirrup (optional)





| 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 | | | | |
| 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 | | | | |
| 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 | | | | |
| 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 | | | | |
| 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 | | | | |

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 | | | | |
| 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 | | | | |
| 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 | | | | |
| 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 | | | | |

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 | | | | |
| 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 | | | | |
| 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 | | | | |
| 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 | | | | |
| 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 | | | | |

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 | | | | |
| 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 | | | | |



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:

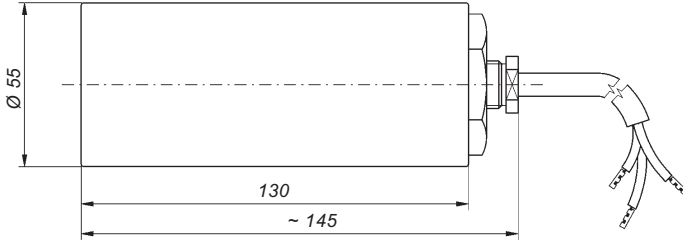
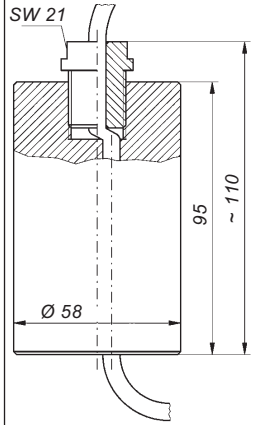
- Floating switch is seldom in operation but should continue to work reliably even after years: SS/PTFE 55/A 1/K.
- Floating switch is frequently in operation, is permanently in action: SS/PTFE 55/A 3/K.

| 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 $\geq 1.0 \text{ g/cm}^3$ | |
| Connecting cable | white PTFE cable, 3 x 0.75 | |
| Connecting cable length | 2 metres, other cable lengths on request. | |
| Optional extra | When ordering, please always state the desired cable length. fixing weight made of PTFE | |



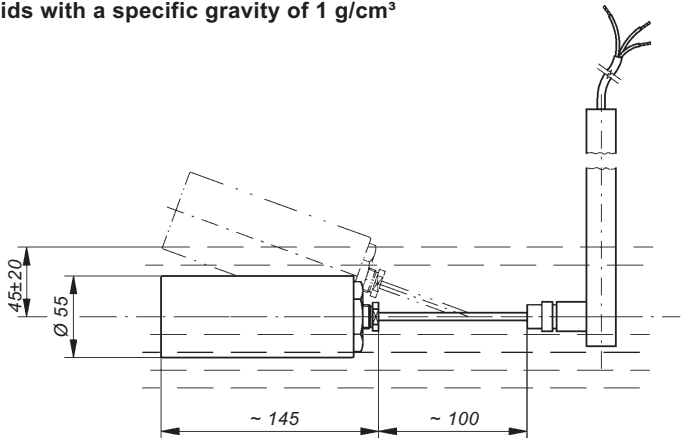
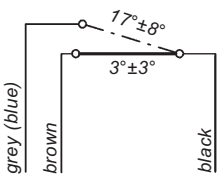
SS/PTFE 55/A .IK

Optional extra:
fixing weight
made of PTFE



Switching action in liquids with a specific gravity of 1 g/cm^3

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 G $\frac{1}{2}$ (G2) screw-in nipple must be screwed in a horizontal G $\frac{1}{2}$ (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.

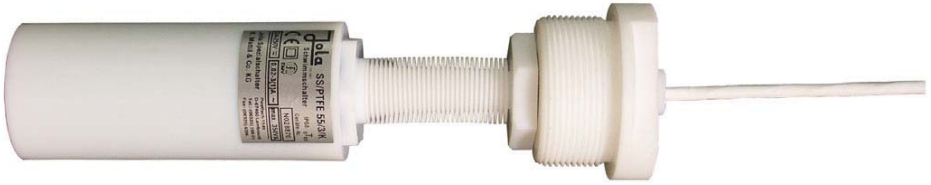
If you need to choose between an SS/PTFE 55/1/K with gold-plated contact and an SS/PTFE 55/3/K with AgNi contact for an AC/DC 24 V application, your choice should be based on the following criteria:

- 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.

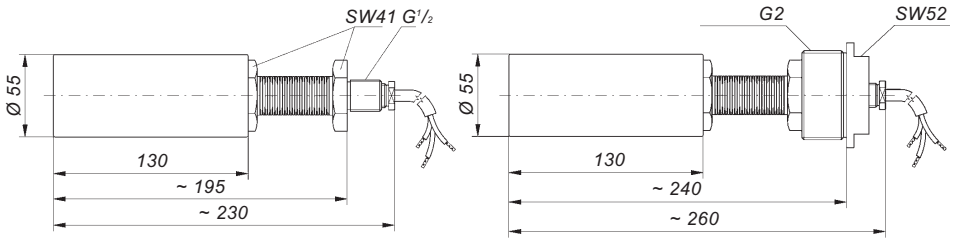
| Technical data | SS/PTFE 55/3/K | SS/PTFE 55/1/K |
|-----------------------------------|--|---|
| Application | standard application | light current application |
| Switching voltage | between AC/DC 24 V and AC/DC 250 V | between AC/DC 1 V and AC/DC 42 V |
| Switching current | between AC 20 mA and 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 $\geq 1.0 \text{ g/cm}^3$ | |
| Connecting cable | white PTFE cable, 3 x 0.75 | |
| Connecting cable length | <p>The connecting cable is routed through a protective bellows made of PTFE to which a G$\frac{1}{2}$ screw-in nipple made of PTFE is fastened.</p> <p>2 metres from screw-in nipple, other cable lengths on request.</p> <p>When ordering, please always state the desired cable length.</p> | |
| Optional extra | <p>G2 screw-in nipple in place of G$\frac{1}{2}$ nipple for installation from the outside through the tank wall</p> | |



SS/PTFE 55./K

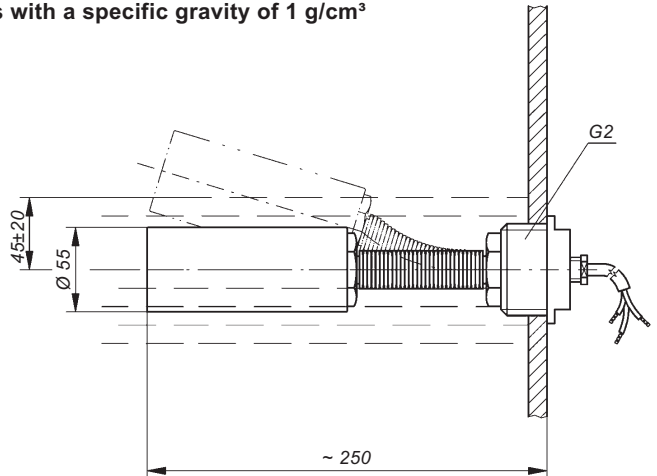
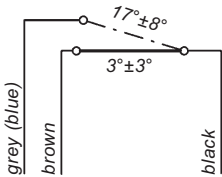


**SS/PTFE 55./K
with G2 screw-in nipple (optional)**



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

Contact switches over at

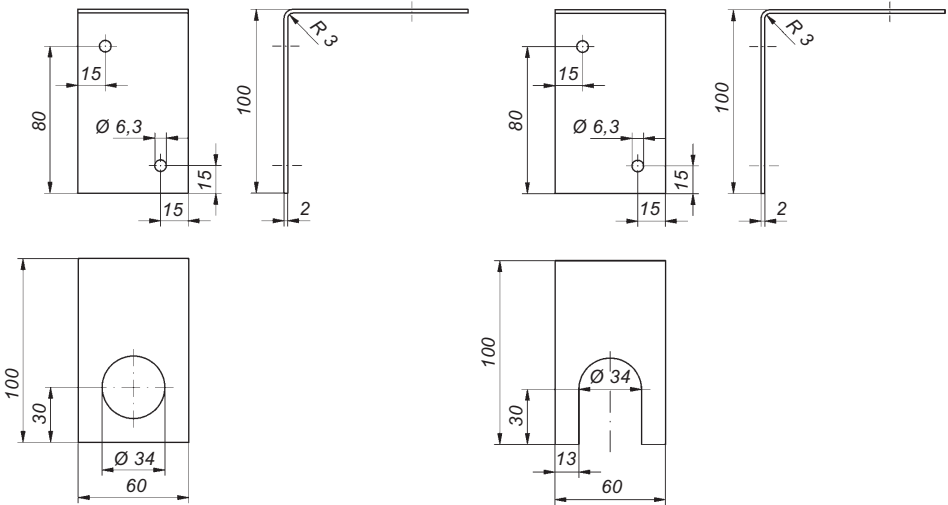


Further mounting accessories

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

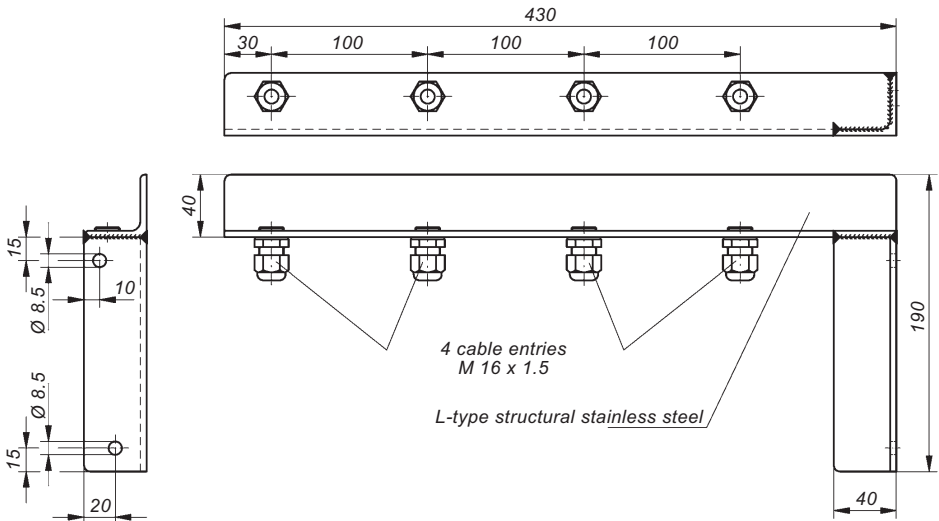
MW 100x100x60/G1/B

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 according to customer's specifications |
| Probe tube length | |
| 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 | SSX... | SSX... | SSR... | SS/PTFE 55/./K |
| Electrical data | 1-1-7 | see technical data on page 1-1-7 1-1-11 | | 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 |

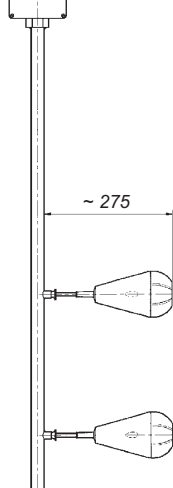
On request also with more than 5 mounted floating switches.



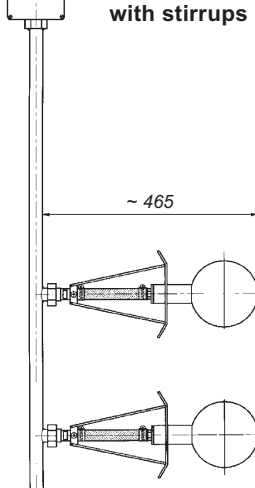
TS/E/4 x SSR...
with stirrups

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

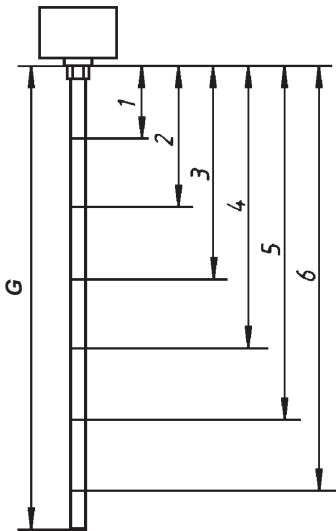
**Questionnaire for enquiries and orders
for immersion probes with screw-in nipple or flange**

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.**

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

Desired options:

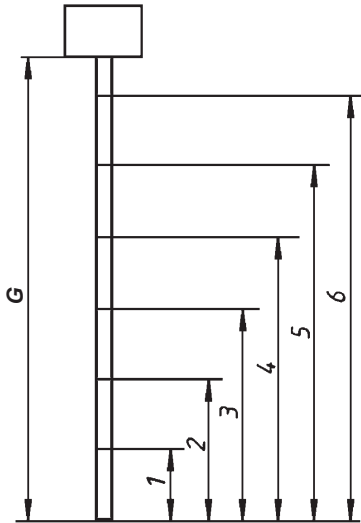
**Questionnaire for enquiries and orders
for immersion probes without screw-in nipple or flange**

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**.

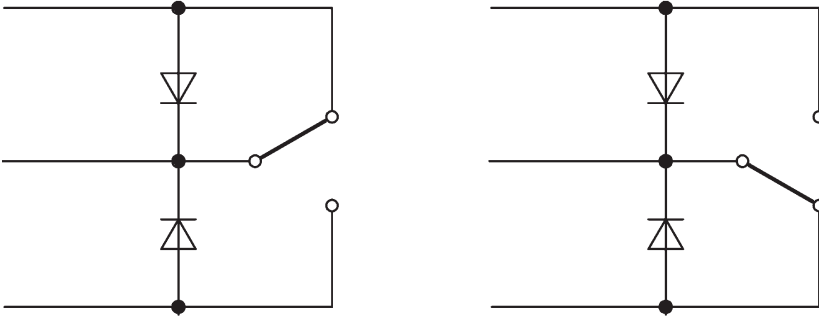
| | <i>Desired floating switch type</i> | <i>Distance from end of probe tube in mm</i> | <i>Switching function (e.g. high alarm, pump ON, pump OFF etc.)</i> | <i>Working direction of the floating switch: rising = ↑ falling = ↓</i> |
|---|-------------------------------------|--|---|---|
| 1 | | | | |
| 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 k Ω , 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

