Fill level switch

Product series WSx

For oil and hydraulic fluid reservoirs
For use in SKF centralized lubrication systems

Fill level switches monitor the fill level in non-pressurized fluid reservoirs. Different designs are available to suit different requirements.

- Fill level switch with one switching point (WS32) for monitoring of the minimum fill level in a reservoir.
- Fill level switch with two switching points (WS35) for monitoring of the minimum fill level and for early warning of minimum fill level. With this design, a signal is given before a critical oil level is reached so that the oil can be topped up before the machine comes to a standstill. At the time when the signal is given, there is still enough oil in the reservoir for production to continue without stopping the machine or interrupting work.
- Fill level switch with two switching points (WS33) to monitor the minimum and maximum fill levels in the reservoir. The WS33 stops automatic filling of the reservoir when the maximum fill level is reached.

Other fill level switches are available on request, e.g. with three switching points, or for other media such as grease (with capacitive proximity switch).

Fill level switch

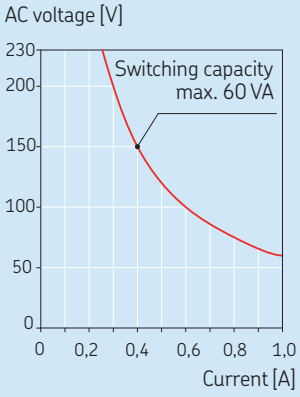
Note for the use of fill level switches

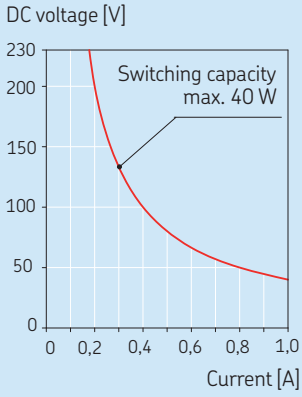
Be mindful of oil viscosity
SKF float switches may only be used in mineral and synthetic oils up to a maximum effective viscosity of 1 500 mm²/s. Use in media with an effective viscosity > 1 500 mm²/s can cause an increase in the shear forces between the float and contact tube, leading to failure of the float switch. This can result in insufficient lubrication and thereby to machine damage.

Protect contacts from erosion
The switching capacities specified for the individual switches refer to the resistive load. If inductive loads are connected, we recommend the use of a suitable means of spark suppression (e.g. RC element, varistor, free-wheeling or suppressor diode) to limit voltage spikes upon switch-off. This will extend the service life and improve the reliability of the contacts.

Be mindful of contact rating
The graphs show the voltage and current function in relation to the max. switching capacity and are valid for the fill level switches with reed contacts WS32-2, WS33-2 und WS35-2.

The maximum permissible AC or DC voltage is 230 V, and the maximum permissible AC or DC current is 1 A.





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Fill level switch

Product overview

WS32-S10

WS32-S30

WS32-2

WS32-2-V57-A

WS63-2

WS68

Productselection table

Series	Switching points	Function / contact type	Plug connector	Voltage, current, switching capacity	Fitting position	Page
WS32-S10	1	min. fill level/1 changeover	Circular connector with LED DIN EN 175201-804	24 V DC/1 A; 24 W [1)]	Vertical	4–5, 6
WS33-S10	2	max. fill level/1 changeover min. fill level/1 changeover	Circular connector with LED DIN EN 175201-804	24 V DC/1 A; 40 W [1)]	Vertical	4–5, 6
WS35-S10	2	early warning/1 changeover min. fill level/1 changeover	Circular connector with LED DIN EN 175201-804	24 V DC/1 A; 40 W [1)]	Vertical	4–5, 6
WS32-S30	1	min. fill level/1 changeover	Circular connector M12×1 with LED	24 V DC/1 A; 30 W	Vertical	4–5, 7
WS33-S30	2	max. fill level/1 NC contact min. fill level/1 NC contact	Circular connector M12×1 with LED	24 V DC/1 A; 30 W	Vertical	4–5, 7
WS35-S30	2	early warning/1 NO contact min. fill level/1 NC contact	Circular connector M12×1 with LED	24 V DC/1 A; 30 W	Vertical	4–5, 7
WS32-2	1	min. fill level/1 changeover	Square connector DIN EN 175301-803-A	See graph on page 2	Vertical	4–5, 8
WS33-2	2	max. fill level/1 NO contact min. fill level/1 NC contact	Square connector DIN EN 175301-803-A	See graph on page 2	Vertical	4–5, 8
WS35-2	2	early warning/1 NO contact min. fill level/1 NC contact	Square connector DIN EN 175301-803-A	See graph on page 2	Vertical	4–5, 8
WS32-2-V57-A	1	min. fill level/1 changeover	Circular connector M12×1	24 V AC/1 A; 24 VA [1)] 48 V DC/1 A 40 W [1)]	Vertical	4–5, 9
WS33-2-V57-A	2	max. fill level/1 NO contact min. fill level/1 NC contact	Circular connector M12×1	24 V AC/1 A; 24 VA [1)] 48 V DC/1 A 40 W [1)]	Vertical	4–5, 9
WS35-2-V57-A	2	early warning/1 NO contact min. fill level/1 NC contact	Circular connector M12×1	24 V AC/1 A; 24 VA [1)] 48 V DC/1 A 40 W [1)]	Vertical	4–5, 9
WS63-2	1	min. fill level/1 NO or NC contact (depending on mounting pos.)	Plug connector DIN EN 175301-803-A	240 V AC/0,5 A; 100 VA 200 V DC/0.5 A; 50 W	Horizontal	10–11
WS68	1	min. fill level/1 NC contact	Plug connector DIN EN 175301-803-A	48 V AC/DC 0.25 A; 10 VA/10 W	Horizontal	10–11

[1)] Safety measures to be applied for correct operation: "Protective extra-low voltage" (PELV) Standards: EN 60204-1 / IEC 60204-1; HD 60364-4-41 / DIN VDE 0100-410 / IEC 60364-4-41

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Fill level switch for vertical installation

Designs

Circular connector with LED and cable socket (S10)

Circular connector M12x1 with LED (S30)

Square connector with cable socket (2)

Switching points

Contact tube with float

Circular connector M12x1 (2-V57-A)

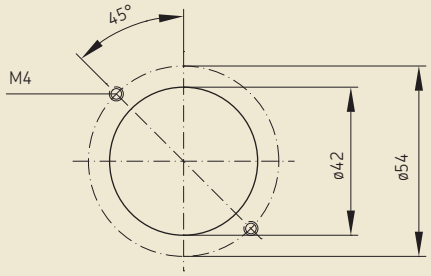
Note!
This illustration shows possible different designs of the WS32, WS33 and WS35. The product customizer on the following page allows functional assembly of a complete fill level switch including plug connector, immersion depth, and switching points.

Technical data WS32/WS33/WS35

Technical data

Switching element	Reed contact
Protection class according to DIN EN 60529	IP 65
Operating/ media temperature	–10 to + 80 °C
Media	Mineral and synthetic oils with an effective viscosity of max. 1 500 mm²/s
Fitting position	Vertical
Materials:	
Flange	Aluminum
Contact tube	CuZn
Seals	NBR
Float	PP

Drilling template for assembly



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Fill level switch for vertical installation

Product customizer

Order code W S [ ] [ ] – [ ] + [ ] [ ] [ ]

Product series

Code for switching points

Code for electrical connection

Code for ordered length

Switching points and ordered lengths

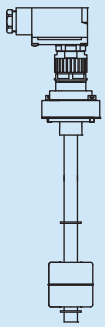
Switching points		Minimum fill level	Minimum and maximum fill levels				Early warning and min. fill level
Code		32 [1]	33 [1]				35 [1]
Switching point max. fill level (dimension A: see drawing p. 6)		–	50	65	100	150	–
Ordered length L [mm]	100	C49	–	–	–	–	–
	110	C25	–	–	–	–	–
	120	C17	V69	W51	–	–	C17
	130	B27	Y72	W80	–	–	B27
	140	B97	X16	W31	–	–	B97
	150	C08	X41	W05	Z06	–	C08
	160	E08	X24	V06	–	–	E08
	170	D84	X07	W41	–	–	D84
	180	B53	X22	V16	–	–	B53
	190	E77	Y91	ZG9	–	–	E77
	200	B31	V85	W21	Y87	–	B31
	210	D42	ZE7	W06	–	–	D42
	220	C52	V86	W29	–	–	C52
	230	C81	V27	W18	–	–	C81
	240	C79	Z49	V19	–	–	C79
	250	B44	X46	W33	V23	ZG4	B44
	260	F01	Y69	–	–	–	F01
	270	D54	ZL8	X18	–	–	D54
	280	C04	X98	W22	–	–	C04
	290	D65	X84	W08	–	–	D65
	300	B37	X76	W28	V75	–	B37
	325	E28	–	–	–	–	E28
	350	B46	X86	W36	V21	–	B46
	375	D13	–	–	–	–	D13
	400	B95	V74	W50	V43	–	B95
	425	D56	–	–	–	–	D56
	450	L69	Y85	W13	–	–	L69
	475	E30	–	–	–	–	E30
	500	B28	V49	W37	V17	Y77	B28
	550	B48	–	–	–	–	B48
	600	B51	–	–	X93	–	B51
	650	C65	–	–	–	–	C65
	700	F94	–	–	–	–	F94
	750	E54	–	–	–	–	E54
	800	F29	–	–	–	–	F29
	850	F53	–	–	–	–	F53
	900	L24	–	–	–	–	L24
	1000	B70	–	–	–	–	B70
	1100	B84	–	–	–	–	B84
	1200	F49	–	–	–	–	F49
	1300	F77	–	–	–	–	F77
	1400	L06	–	–	–	–	L06
	1500	F83	–	–	–	–	F83
	1600	L34	–	–	–	–	L34

[1] Flat gasket included

Plug connector and visual monitoring

Code	Description
S10	Circular connector with cable socket and LED (DIN EN 175201-804)
2	Square connector with cable socket, without LED (DIN EN 175301-803-A)
S30	Circular connector M12x1 with LED
2-V57-A	Circular connector ×1 without LED

Order example



WS35-S10+B37

- Fill level switch for minimum level with early warning
- Circular plug with LED and cable socket (DIN EN 175201-804)
- Length 300 mm

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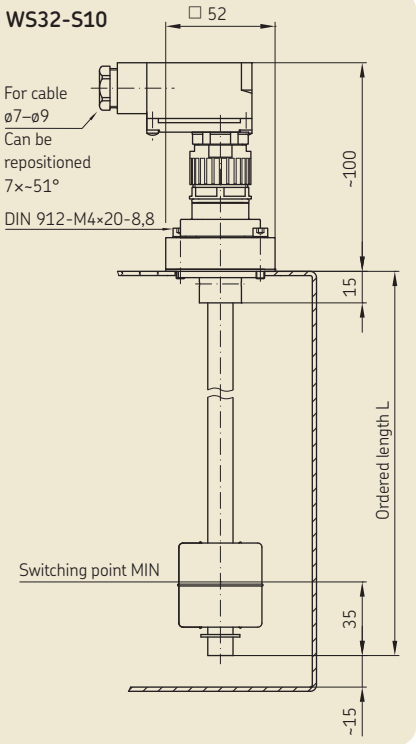
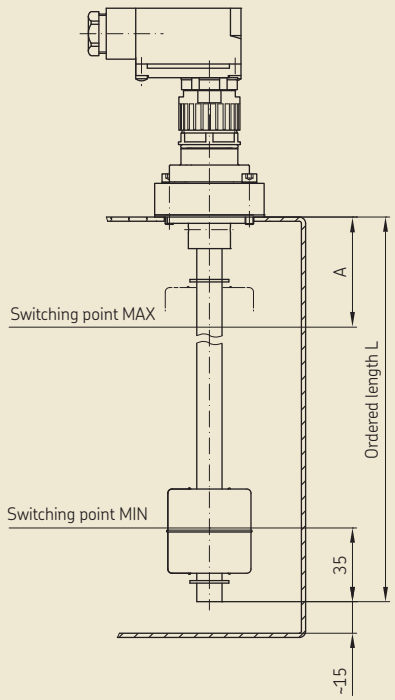
Fill level switch for vertical installation (with LED)

Dimensions, circuit diagrams and functional descriptions

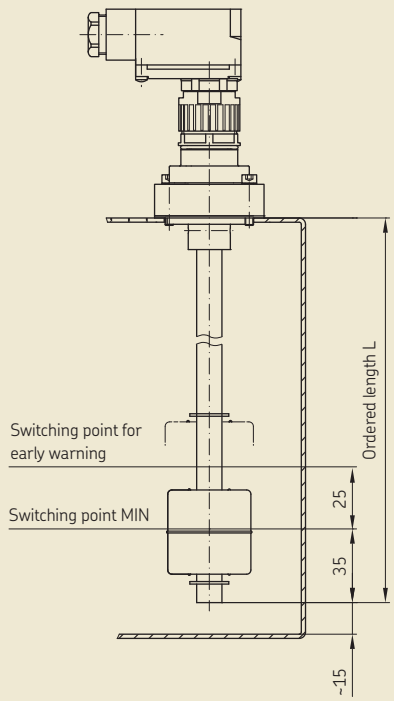
WS32-S10



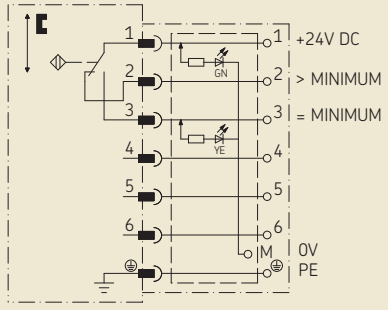
WS33-S10



WS35-S10

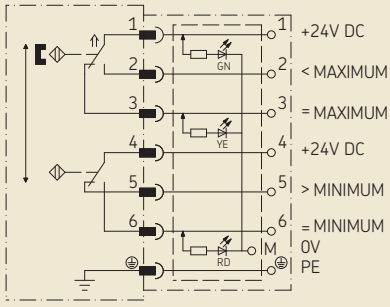


WS32-S10



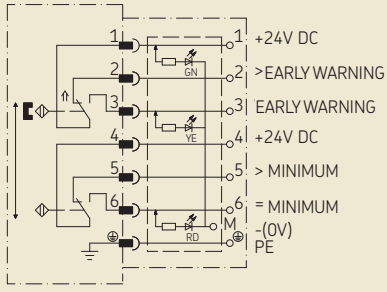
Contact diagram for reservoir filled to max.

WS33-S10



Contact diagram for reservoir filled to max.

WS35-S10



Contact diagram for reservoir filled to max.

Functional description

Float switch to monitor the minimum fill level. When operating voltage is applied, the green LED lights up. At minimum fill level, contact 1–2 opens and contact 1–3 closes. The yellow LED lights up.

Functional description

Float switch to monitor the minimum and maximum fill level. When operating voltage is applied, the green LED lights up. When the reservoir is full (max. fill level), contact 1–3 is closed and contact 1–2 is open. The yellow LED lights up. At minimum fill level, contact 4–5 opens and contact 4–6 closes. The red LED lights up.

Functional description

Float switch to monitor the minimum fill level with early warning. When operating voltage is applied, the green LED lights up. Contact 1–2 opens and contact 1–3 closes 25 mm before the minimum fill level. The yellow LED lights up. When the minimum fill level is reached, contact 4–5 opens and contact 4–6 closes. The red LED lights up.

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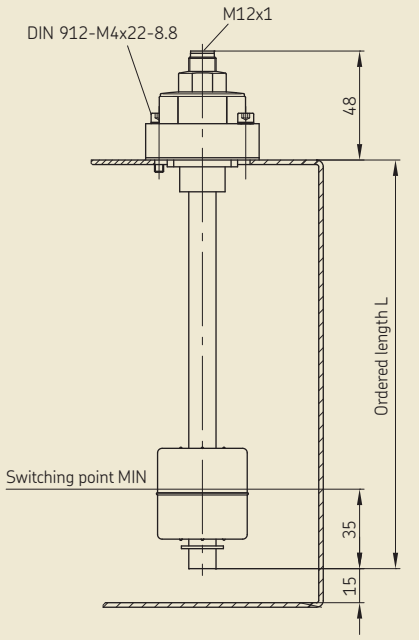
SKF

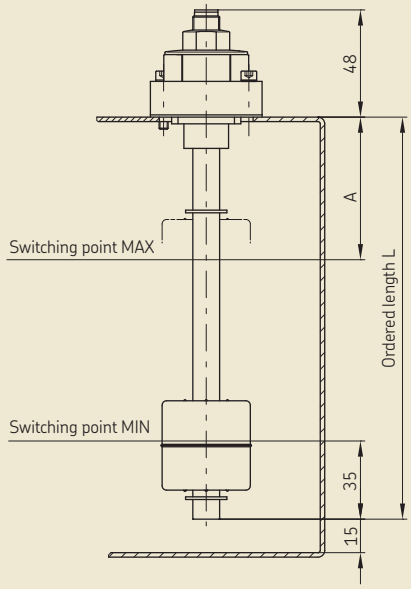
Fill level switch for vertical installation (with LED)

Dimensions, circuit diagrams and functional descriptions

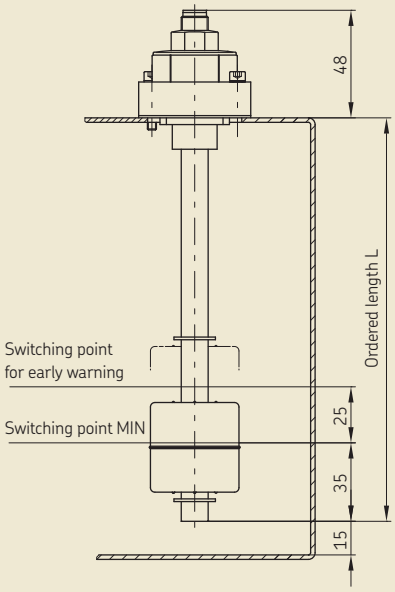
WS32-S30



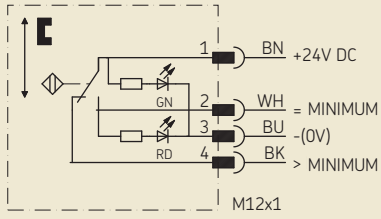
WS33-S30



WS35-S30

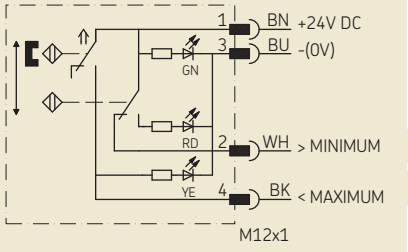


WS32-S30



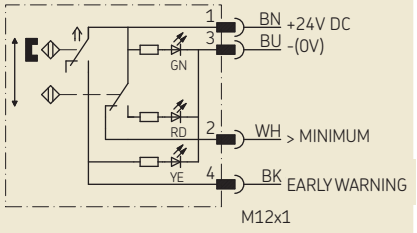
Contact diagram for reservoir filled to max.

WS33-S30



Contact diagram for reservoir filled to max.

WS35-S30



Contact diagram for reservoir filled to max.

Functional description

Float switch to monitor the minimum fill level. When operating voltage is applied, the green LED lights up. At minimum fill level, contact 1–4 opens and contact 1–2 closes. The red LED lights up.

Functional description

Float switch to monitor the minimum and maximum fill level. When operating voltage is applied, the green LED lights up. When the reservoir is full, contact 1–4 is open. When the fluid level falls below the maximum, contact 1–4 closes and the yellow LED lights up. When the minimum fill level is reached, contact 1–2 opens and the red LED lights up.

Functional description

Float switch to monitor the minimum fill level with early warning. When operating voltage is applied, the green LED lights up. Contact 1–4 closes 25 mm before the minimum fill level and the yellow LED lights up. When the minimum fill level is reached, contact 1–2 opens and the red LED lights up.

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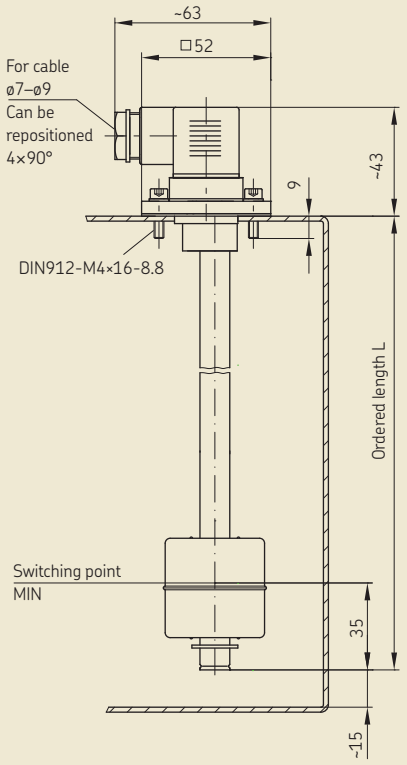
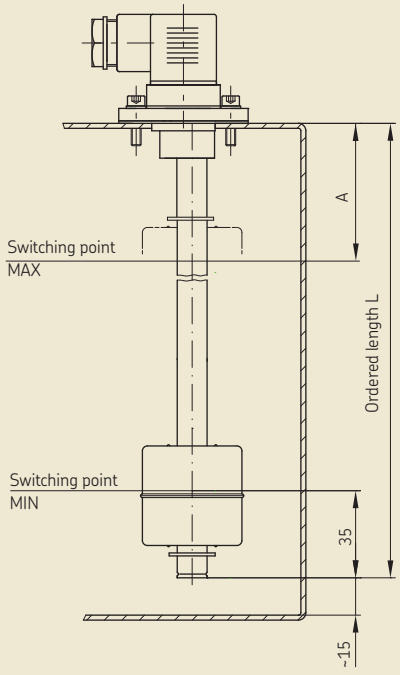
Fill level switch for vertical installation

Dimensions, circuit diagrams and functional descriptions

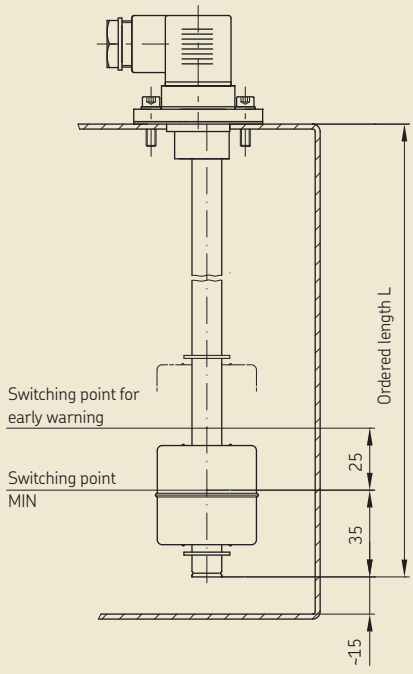
WS32-2



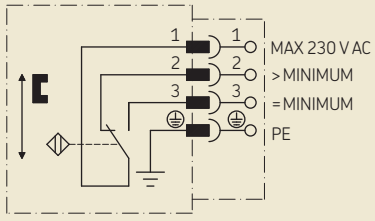
WS33-2



WS35-2

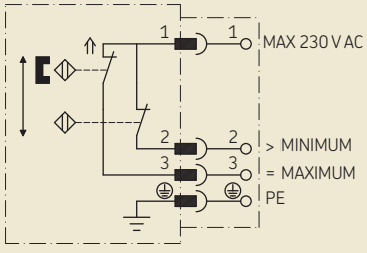


WS32-2



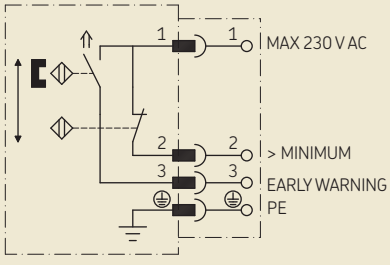
Contact diagram for reservoir filled to max.

WS33-2



Contact diagram for reservoir filled to max.

WS35-2



Contact diagram for reservoir filled to max.

Functional description

Float switch to monitor the minimum fill level. At minimum fill level, contact 1–2 opens and contact 1–3 closes.

Functional description

Float switch to monitor the minimum and maximum fill level. Contact 1–2 opens at minimum fill level. Contact 1–3 closes at maximum fill level.

Functional description

Float switch to monitor the minimum fill level with early warning. Contact 1–3 closes 25 mm before the minimum fill level. Contact 1–2 opens at minimum fill level.

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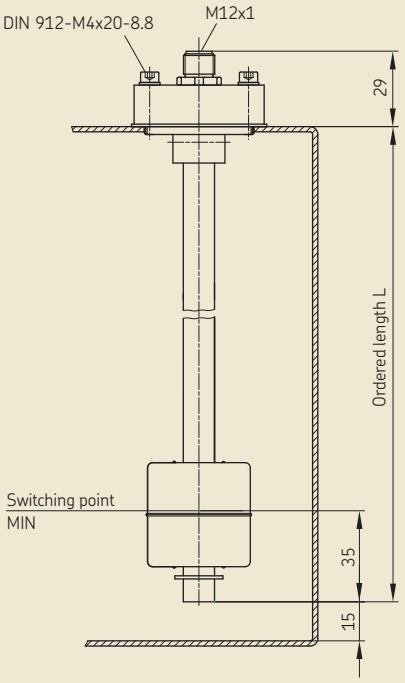
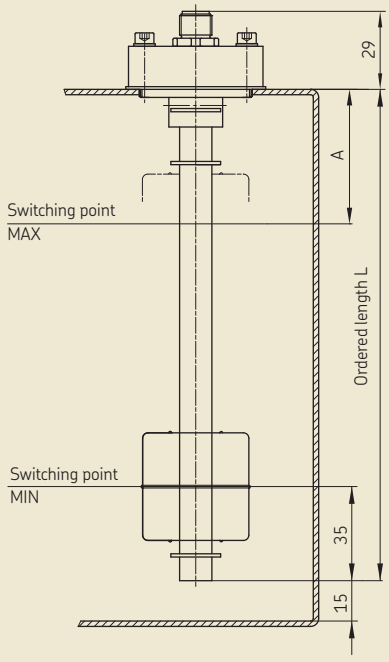
Fill level switch for vertical installation

Dimensions, circuit diagrams and functional descriptions

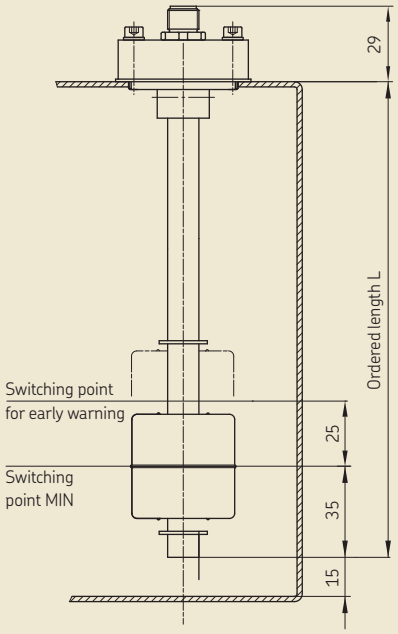
WS32-2-V57-A



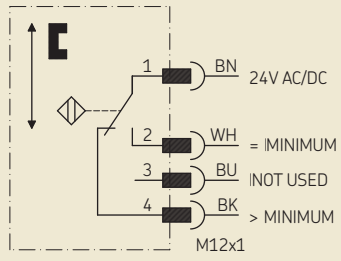
WS33-2-V57-A



WS35-2-V57-A

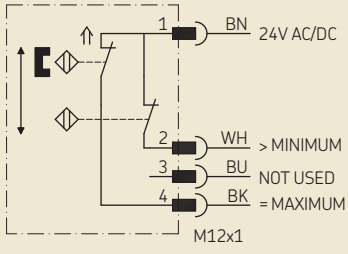


WS32-2-V57-A



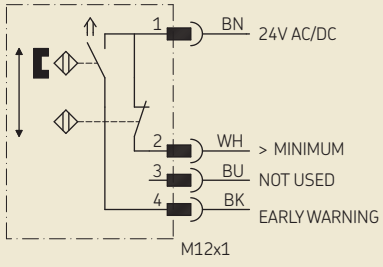
Contact diagram for reservoir filled to max.

WS33-2-V57-A



Contact diagram for reservoir filled to max.

WS35-2-V57-A



Contact diagram for reservoir filled to max.

Functional description

Float switch to monitor the minimum fill level. At minimum fill level, contact 1–4 opens and contact 1–2 closes.

Functional description

Float switch to monitor the minimum and maximum fill level. Contact 1–2 opens at minimum fill level. Contact 1–4 closes at maximum fill level.

Functional description

Float switch to monitor the minimum fill level with early warning. Contact 1–4 closes 25 mm before the minimum fill level. Contact 1–2 opens at minimum fill level.

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Fill level switch for horizontal installation

Different designs and technical data

WS63-2

WS68

Functional description

When the oil level falls, the float drops and opens the contact 1–2. If turned through 180° and installed in that position, the contact function changes. The contact 1–2 then closes when the oil level falls.

Functional description

When the fluid level falls, the float drops and opens the contact 1–2.

Technical data WS63-2

Order number	**WS63-2** [1]
Switching voltage, max.	240 V AC / 200 V DC
Switching capacity, max (resistive load)	100 VA / 50 W
Switching current, max.	0.5 A
Fitting position	Horizontal
Temperature range	–10 to + 80 °C
Media	Mineral and synthetic oils with effective viscosity of max. 1 500 mm^2/s
Materials:	
Float	PP
Flange	Aluminum
Gasket	NBR

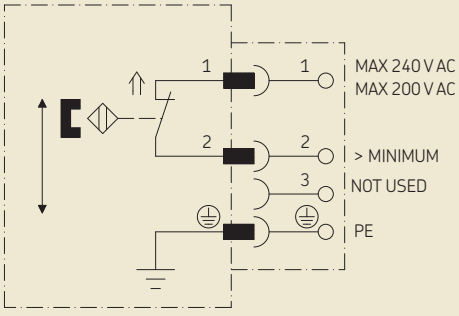
[1] Flat gasket included

Technical data WS68

Order number	**WS68** [1]
Switching voltage, max.	48 V AC/DC
Switching capacity, max.	10 VA/10 W
Switching current, max.	0.25 A
Fitting position	Horizontal
Temperature range	–10 to + 80 °C
Media	Mineral and synthetic oils with effective viscosity of max. 1 500 mm^2/s
Materials:	
Float	NBR
Flange	Aluminum
Casing	PA
Gasket	NBR

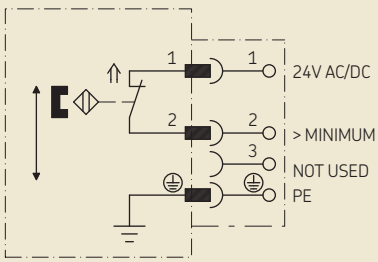
[1] Flat gasket included

WS63-2



Contact diagram for reservoir filled to max.

WS68



Contact diagram for reservoir filled to max.

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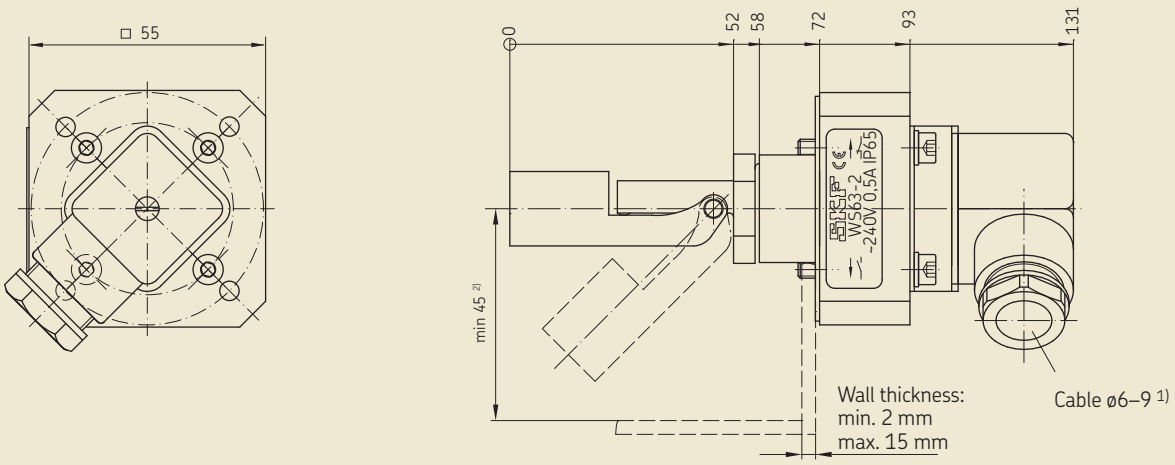
Fill level switch for horizontal installation

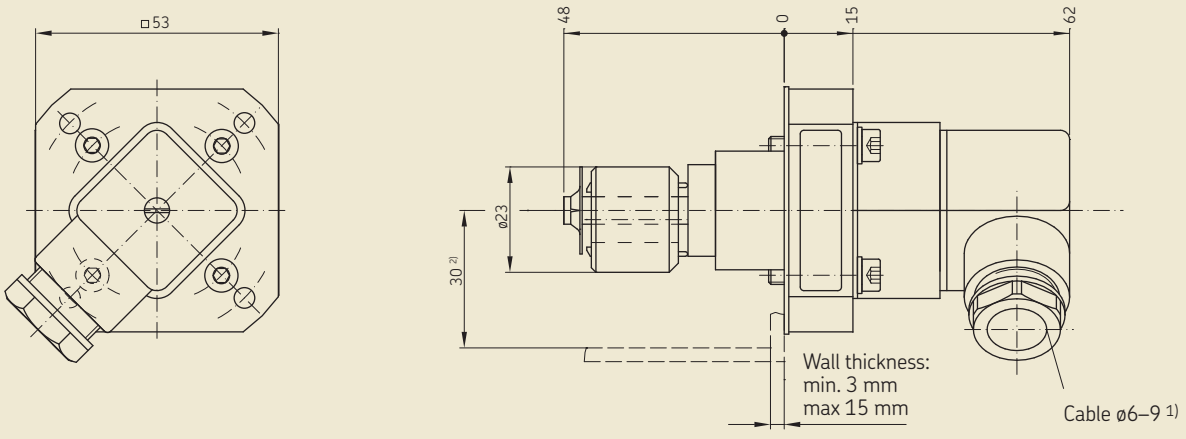
Dimensions and drilling template

WS63-2



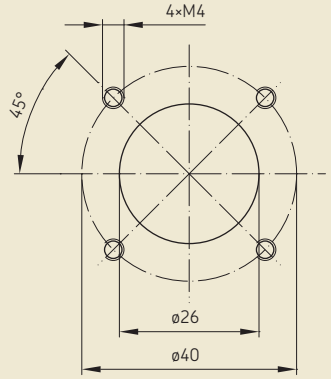
1) Connector socket can be repositioned in 90° increments
2) Minimum clearance from reservoir bottom

WS68



1) Connector socket can be repositioned in 90° increments
2) Minimum clearance from reservoir bottom

Drilling template for assembly for WS63-2/WS68



Note!
These float switches should never be installed in a distorted position. To prevent damage to the switches, they should be subjected to only the static and dynamic loads required by their normal use. To permit optimum functioning, fill level switches WS63-2 and WS68 must always be installed in a horizontal position.

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CAD models for products shown in this brochure can be downloaded at:
skf-lubrication.partcommunity.com

Important information on product usage
SKF and Lincoln lubrication systems or their components are not approved for use with gases, liquefied gases, pressurized gases in solution and fluids with a vapor pressure exceeding normal atmospheric pressure (1 013 mbar) by more than 0,5 bar at their maximum permissible temperature.

Further brochures:

1-0103-EN	*Fittings and accessories*
1-1202-EN	*Gear pump units*
1-1730-EN	*Electric push-to-connect fittings*
1-9201-EN	*Feeding lubricants with centralized lubrication systems*

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