Level Switches

for oil, hydraulic and fluid reservoirs

WS68

WS32-2

WS35-S30

Level switches are used to monitor the level of fluids in unpressurized reservoirs.

Various versions are available to meet the different requirements related to the monitoring of fluid levels.

– Switches with one switching point (WS32-...), e.g. ones used to monitor the minimum level of fluid in a reservoir.

– Switches with two switching points (WS35-...), likewise used to monitor the minimum level of fluid, an advance warning being emitted before a critical level is reached. So it is possible to refill without having to shut down the machine. Before the second switching point is reached, there is still enough oil in the reservoir for a shift to be completed without having to stop the machine or interrupt work.

– Switches with two switching points (WS33-...), e.g. for a minimum and maximum level of fluid in the reservoir, automatic topping up of the reservoir being terminated, before the maximum level is reached.

Further level switches, e.g. for other fluids like NLGI grades 000 and 00 grease, are available on request (capacitive proximity switches).

Tips for the use of level switches

Pay attention to the viscosity of oil!

Only use oils and other fluids with a max. effective viscosity of 1500 mm²/s. Fluids with an eff. viscosity greater than 1500 mm²/s can lead to indication failures due to the increase in shear forces between the float and contact tube. This can cause damages of the system.

Pay attention to loads on the contact!

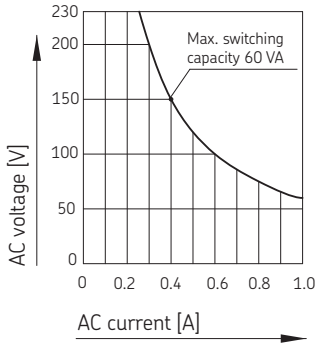
The charts show the relationship between current and voltage as a function of the max. switching capacity and apply to level switches with reed contacts WS32-2, WS33-2 and WS35-2.

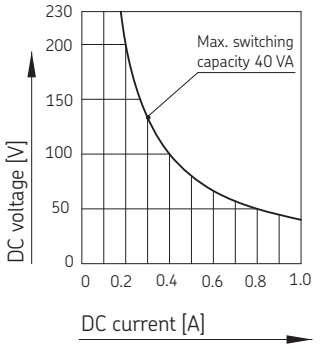
Protect contacts from arc erosion!

All indicated capacities of the individual switches are related to the ohmic load. When inductive loads are switched, we recommend use of appropriate spark quenching devices (e.g. RC elements, varistor, free-wheeling or suppressor diode), in order to limit voltage peaks when the system is switched off.

The contacts' service life and dependability will be increased as a result.

See important product usage information on the back cover.





	AC voltage	DC voltage
Max. switching voltage	230 V AC	230 V DC
Max. switching current	1 A	1 A

Overview

Group	Contact function / type of contact	Plug	Electric circuit	Number of switching point
WS32-2	min. level / 1 changeover contact	connector plug DIN EN 175301-803-A	cf. diagram (page 2)	1 switching point
WS32-2-V57-A	min. level / 1 changeover contact	circular plug M12×1	24 V AC / 1 A; 24 VA [1)] 48 V DC / 1 A; 40 W [1)]	1 switching point
WS32-S30 (with LED)	min. level / 1 changeover contact	circular plug M12×1	24 V DC / 1 A; 30 W	1 switching point
WS33-2	max. level / 1 NO type min. level / 1 NC type	connector plug DIN EN 175301-803-A	cf. diagram (page 2)	2 switching points
WS33-2-V57-A	max. level / 1 NO type min. level / 1 NC type	circular plug M12×1	24 V AC / 1 A; 24 VA [1)] 48 V DC / 1 A; 40 W [1)]	2 switching points
WS33-S30 (with LED)	max. level / 1 NC type min. level / 1 NC type	circular plug M12×1	24 V DC / 1 A; 30 W [1)]	2 switching points
WS35-2	advance warning / 1 NO type min. level / 1 NC type	connector plug DIN EN 175301-803-A	cf. diagram (page 2)	2 switching points with fixed spacing approx. 25 mm
WS35-2-V57-A	advance warning / 1 NO type min. level / 1 NC type	circular plug M12×1	24 V AC / 1 A; 24 VA [1)] 48 V DC / 1 A; 40 W [1)]	2 switching points with fixed spacing approx. 25 mm
WS35-S30 (with LED)	advance warning / 1 NO type min. level / 1 NC type	circular plug M12×1	24 V DC / 1 A; 30 W [1)]	2 switching points with fixed spacing approx. 25 mm
WS68	Depending on mounting height / 1 NC type	connector plug DIN EN 175301-803-A	48 V AC/DC 0,25 A; 10 W	1 switching point

1) Risk protective measures to be taken for proper operation: "Functional extra-low voltage with protective separation" (PELV)
Standard: EN 60204-1 / IEC 60204-1
HD 60364-4-41 / DIN VDE 0100-410 / IEC 60364-4-41

Technical data

Switching element . . . . . reed switch
Type of enclisure . . . . . IP 65
Normen . . . . . EN 60947-5-1
Temperature range. . . . . –10 °C to +60 °C
Suitable for fluids with a maximum eff. viscosity of 1500 mm^2/s

Mounting position
WS32-... / WS33-... / WS35-... . . . . vertical
WS68 . . . . . horizontal

Material
WS32-... / WS33-... / WS35-...
flange . . . . . Al
contact tube . . . . . CuZn
seals . . . . . NBR
float . . . . . PP
WS68
body . . . . . polyamid
float . . . . . NBR

WS32-2 / WS33-2 / WS35-2

When the level of fluid drops, a toric magnet built into the float actuates the reed contact cast into the contact tube. If necessary, the contact can be used to trigger a signal that calls for the reservoir to be topped up. The switching point for the minimum lubricant level is always 35 mm above the end of the contact tube.

The level switch **WS33-...** has an upper switching point for the maximum level in addition to the lower one. Control of automatic filling and emptying is possible with this model.

The level switch **WS35-...** has two contacts in the lower area that respond one after the other. The first switching point issues the advance warning. The second switching point can, after the float travels roughly 25 mm, break a connected command link and thus shut down a machine.

The advance warning remains in effect.

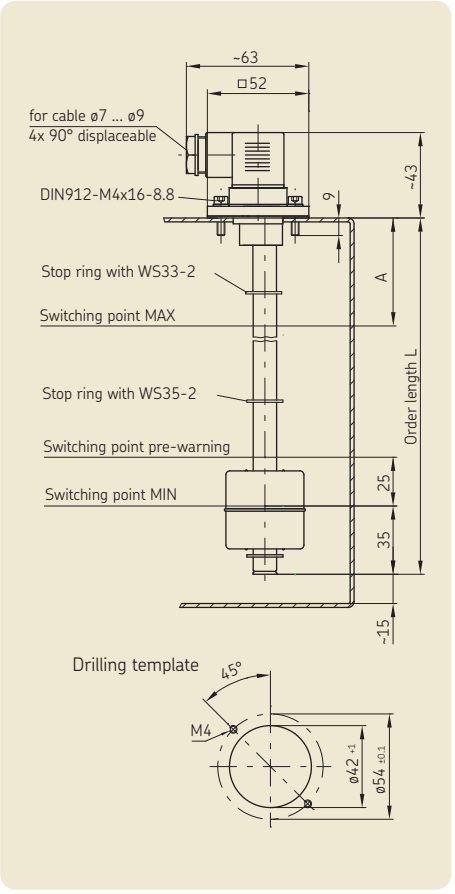
Order example
When ordering, please indicate the desire lengths **A** (min. 50 mm at WS33...) and **L** (at WS32... min. 100 mm; at WS33... and WS35... min. 120 mm) in addition. Please observe preferred lengths.

Preferred lengths **A** = 50, 65 and 100 mm

Order examples:
WS32-2 with order length **L = 150 mm**:
Order No.: WS32-2-150

WS33-2 with order length **A = 50** mm, **L = 200** mm:
Order No.: WS33-2-50-200

Preferred lengths for order length L:
100, 125, 150, 200, 230, 250, 290, 315, 350, 400, 450, 500 mm



WS32-2
for minimum level

Type of contact:
1 changeover – for minimum level
(magnetically actuated reed contact)

Function
After the level of fluid drops to a minimum level, contact 1–2 opens and contact 1–3 closes.

WS33-2
for minimum and maximum level

Type of contact:
1 NO type – for maximum level
1 NC type – for minimum level
(magnetically actuated reed contact)

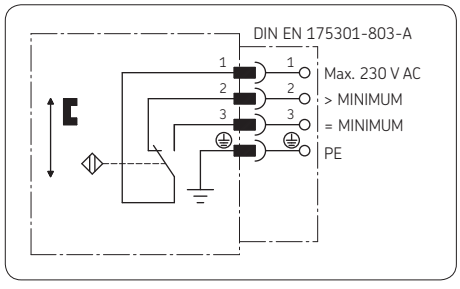
Function
Contact 1–3 closes after the fluid rises to a maximum level.

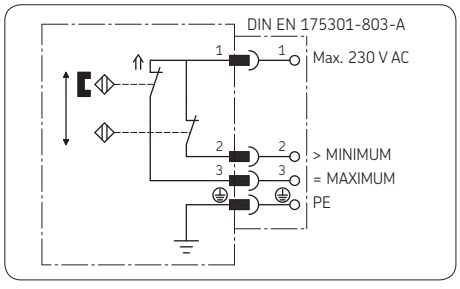
Contact 1–2 opens after the fluid drops to a minimum level.

WS35-2
for minimum level with pre-warning

Type of contact:
1 NO type – pre-warning
1 NC type – for minimum level
(magnetically actuated reed contact)

Function
After the level of fluid drops to 25 mm above the min. filling level, contact 1–3 closes; if the level of fluid continues to drop to the min. level, contact 1–2 opens.





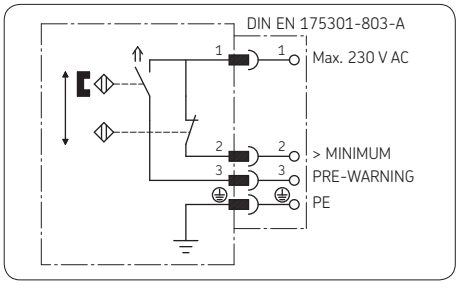
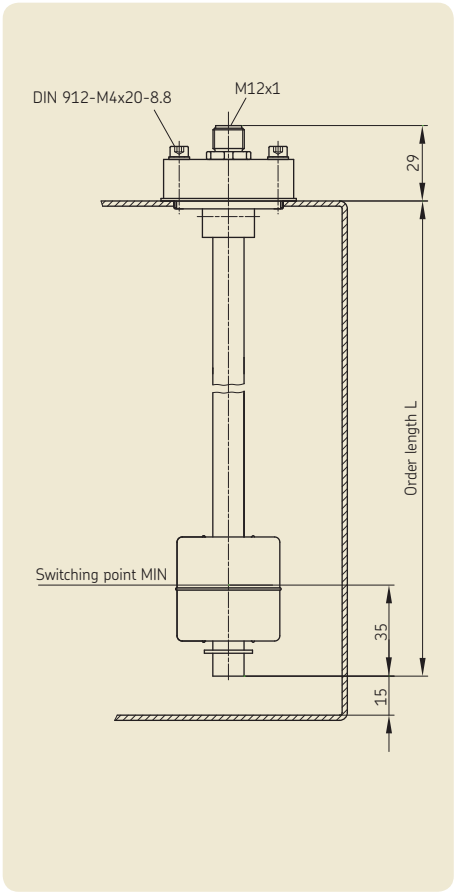


Illustration of contacts in wiring diagrams: reservoir filled to max. level.

WS32-2-V57-A

for minimum level



Type of contact:

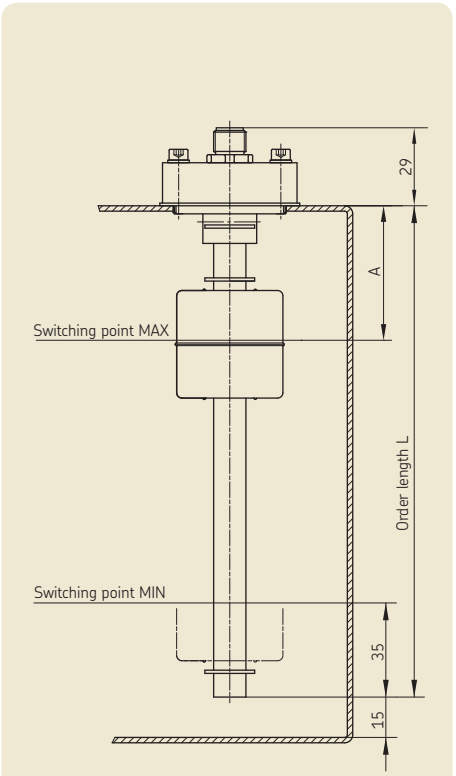
1 changeover – for minimum level
(magnetically actuated reed contact)

Function

After the level of fluid drops to a minimum level, contact 1–4 opens and contact 1–2 closes.

WS33-2-V57-A

für minimalen und maximalen Füllstand



Type of contact:

1 NO type – for maximum level
1 NC type – for minimum level
(magnetically actuated reed contact)

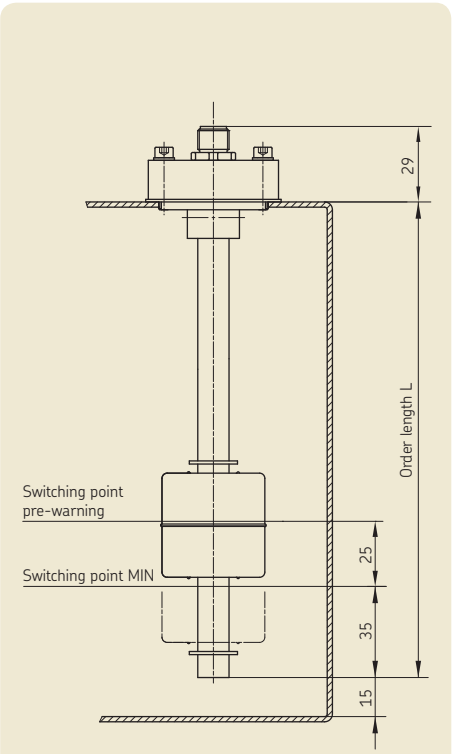
Function

Contact 1–4 closes after the fluid rises to a maximum level.

Contact 1–2 opens after the fluid drops to a minimum level.

WS35-2-V57-A

für minimalen Füllstand mit Vorwarnung

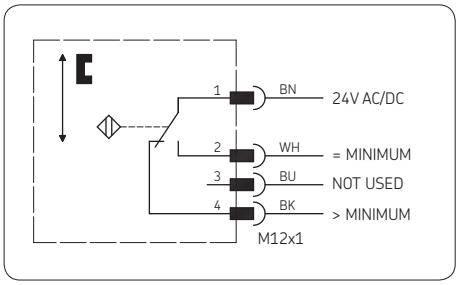


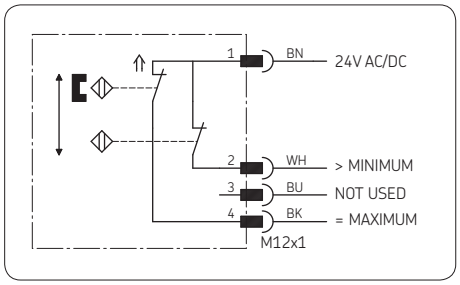
Type of contact:

1 NO type – pre-warning
1 NC type – for minimum level
(magnetically actuated reed contact)

Function

After the level of fluid drops to 25 mm above the min. filling level, contact 1–4 closes; if the level of fluid continues to drop to the min. level, contact 1–2 opens.





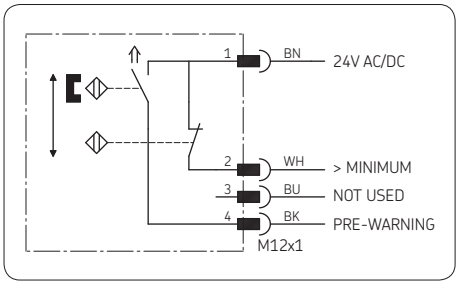
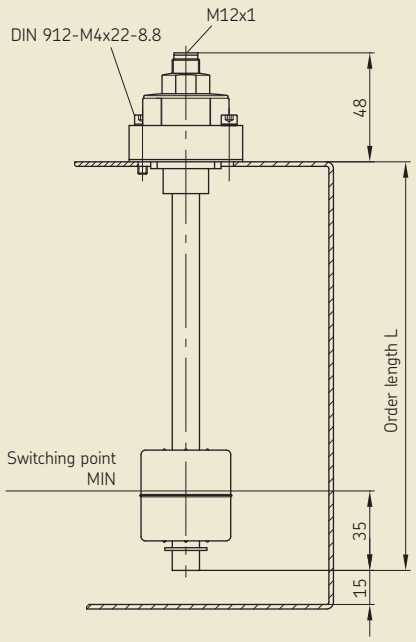


Illustration of contacts in wiring diagrams: reservoir filled to max. level.

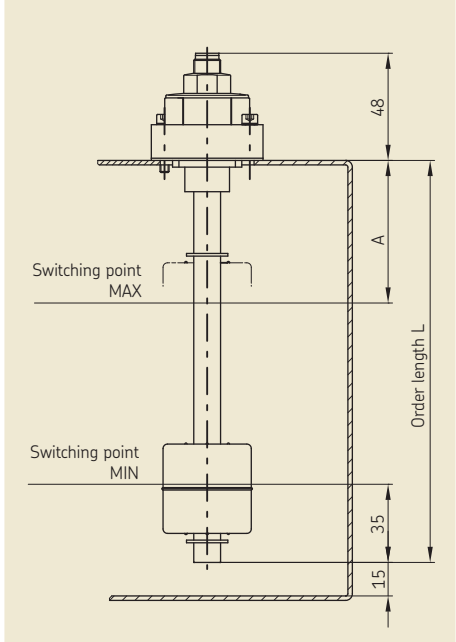
WS32-S30 (with LED)

for minimum level



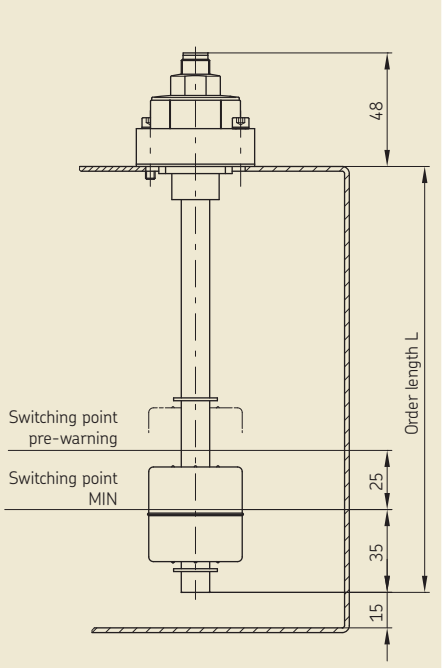
WS33-S30 (with LED)

for minimum and maximum lever



WS35-S30 (with LED)

for minimum level with pre-warning



Drilling templates for reservoir cover and order examples, see page 4.

Type of contact:

1 changeover – for minimum level
(magnetically actuated reed contact)

Function

After the level of fluid drops to a minimum level, contact 1–4 opens and contact 1–2 closes.

LED $_{green}$ operating voltage
LED $_{red}$ minimum level

Type of contact:

1 NC type – for maximum level
1 NC type – for minimum level
(magnetically actuated reed contact)

Function

Contact 1–4 opens after the fluid drops to a maximum level.

Contact 1–2 opens after the fluid rises to a minimum level.

LED $_{green}$ operating voltage
LED $_{yellow}$ < maximum level
LED $_{red}$ minimum level

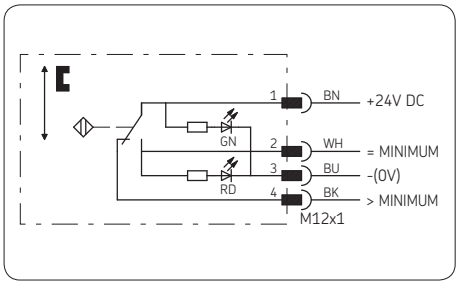
Type of contact:

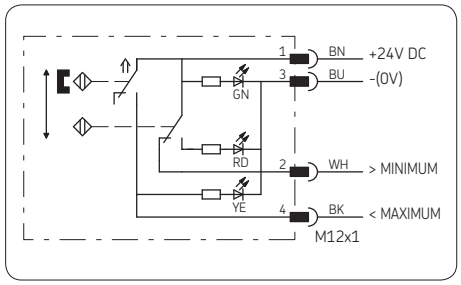
1 NO type – pre-warning
1 NC type – for minimum level
(magnetically actuated reed contact)

Function

After the level of fluid drops to 25 mm above the min. filling level contact 1–4 closes; if the level of fluid continues to drop to the min. level, contact 1–2 opens.

LED $_{green}$ operating voltage
LED $_{yellow}$ pre-warning
LED $_{red}$ minimum level





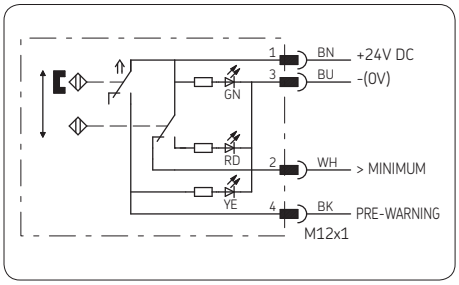
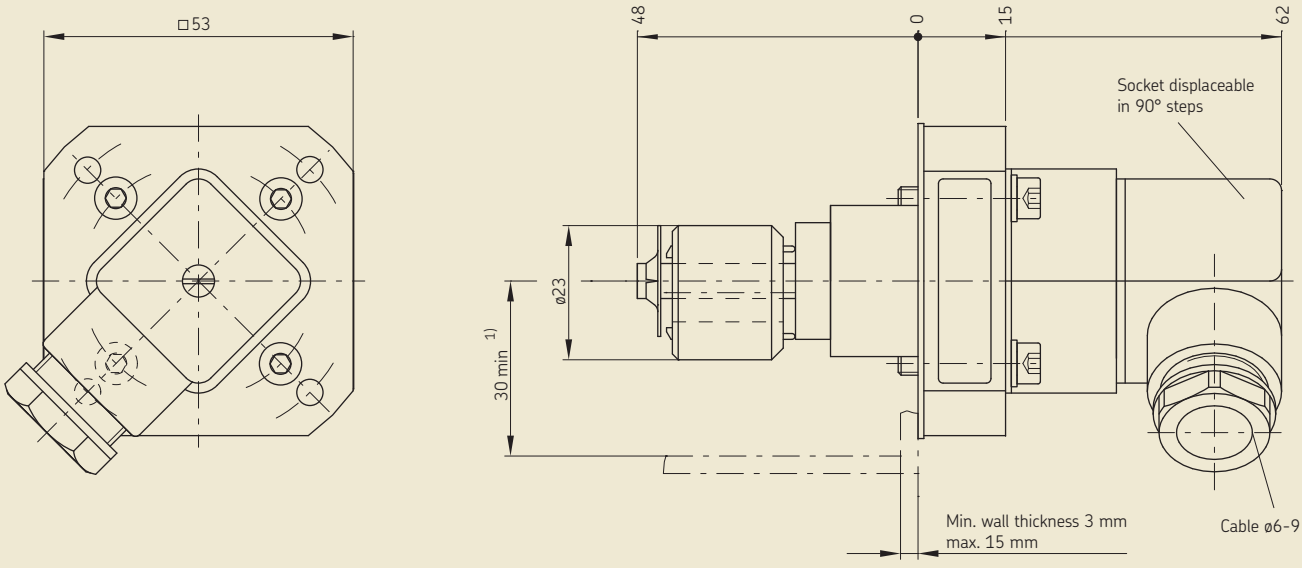


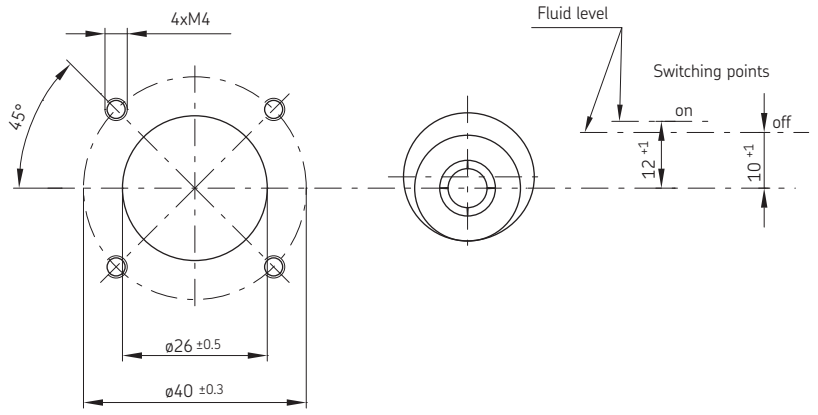
Illustration of contacts in wiring diagrams: reservoir filled to max. level.

WS68



1) Minimum distance from bottom of reservoir

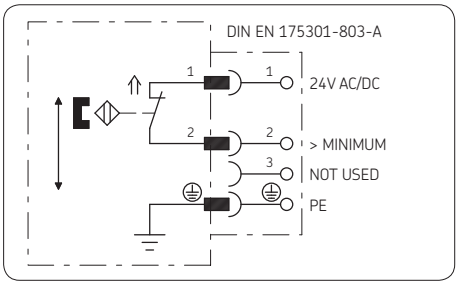
Drilling template



Function

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

Illustration below shows the contacts when the reservoir is filled to max. level.



Order No. 1-1702-EN
Subject to change without notice! (07/2009)

Important product usage information
All products from SKF may be used only for their intended purpose as described in this brochure and in any instructions. If operating instructions are supplied with the products, they must be read and followed.
Not all lubricants are suitable for use in centralized lubrication systems. SKF does offer an inspection service to test customer supplied lubricant to determine if it can be used in a centralized system. SKF 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 (1013 mbars) by more than 0.5 bar at their maximum permissible temperature.
Hazardous materials of any kind, especially the materials classified as hazardous by European Community Directive EC 67/548/EEC, Article 2, Par. 2, may only be used to fill SKF centralized lubrication systems and components and delivered and/or distributed with the same after consulting with and receiving written approval from SKF.

Further brochures
1-1730-EN Electric Plug-and-Socket Connectors
1-9201-EN Transport of Lubricants in Centralized Lubrication Systems

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