



The level switches and level with temperature switches (NVT) serve for controlling the level and for controlling both the level and the temperature in simple hydraulic and lubrication power packs.

General Hints

Please read these mounting instructions carefully before you set the level switch and level with temperature switch into operation. Please pay special attention to the safety instructions! The mounting instructions are part of your product. Please keep them carefully and close to the level switch and level with temperature switch. The copyright for these mounting instructions remains with **KTR Kupplungstechnik GmbH**.

Safety and Advice Hints



DANGER! Danger of injury to persons.



CAUTION! Damages on the machine possible.



ATTENTION! Pointing to important items.

General Hints of Danger



DANGER!
With the assembly and disassembly of the level switch and level with temperature switch it has to be ensured that the entire power train is secured against unintentional connection. You may be seriously hurt by rotating parts. For that reason please make absolutely sure to read through and adhere to the following safety hints.

- All operations on and with the level switch and level with temperature switch have to be performed taking into account "safety first".
- Please disconnect the driving power pack before you perform any maintenance work on the level switch and level with temperature switch.
- Protect the power pack against unintentional engagement, e. g. by providing hints at the place of engagement or removing the fuse for current supply.
- Do not touch the operation area of the engine as long as it is in operation.
- Please secure the rotating driving parts against unintentional contact. Please provide for the necessary protection devices and caps.

Proper Use

You may only assemble and disassemble the level switch and level with temperature switch if you

- have carefully read through the operating-/mounting instructions and understood them
- had technical training
- are authorized to do so by your company

The level switch and level with temperature switch may only be used in accordance with the technical data (see hydraulic components catalogue). Unauthorized modifications on the level switch and level with temperature switch design are not admissible. We do not take any warranty for resulting damages. To further develop the product we reserve the right for technical modifications.

The **level switch and level with temperature switch (NVT)** described in here corresponds to the technical status at the time of printing of these mounting instructions.

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Assembly

The level switches are delivered fully assembled and can be fastened to the tank by means of the inserted thread and the seal. Please make sure that the swimmer can easily be moved and that there is sufficient distance to the tank wall and the installations. After a potential disassembly of the swimmer it has to be made sure that the magnet in the swimmer is above the liquid level. This can easily be inspected by means of a piece of iron which allows you to determine the position of the magnet in the swimmer.

Starting



CAUTION!

The electrical connection may only be performed by specialists.

Please find the pin configuration for your level switch and level with temperature switch in the selection tables on pages 4 and 5.

Please find the electrical data about plugs and contacts on page 5.

Contacts to be Adjusted Subsequently

The contacts activated by the swimmer are jammed in an edge bar. They are positioned according to the order details by the manufacturer and can be adjusted either higher or deeper subsequently (please note the minimum distances)!

Please proceed as follows:

- **Please interrupt the power supply!**
- Please disconnect plug-connections and connections
- Please screw off the plug base
- Pull off the edge bars with the contacts carefully upwards.



CAUTION!

The earth connection is designed as a circuit and is soldered to the protection tube in the direction of the plug-in unit. In order to prevent the earth connection from tearing off, it should not be pulled off completely.

For an inspection we would recommend to mark the original contact position. The contacts can be moved continuously adjustable in an edge bar. They are assembled as falling break contact. Since bistable contacts are concerned, the contact functions of the break-before-make contact can be adjusted subsequently. This amendment can be achieved by turning the contacts by 180°. On the housing contact symbols for make contact and break contact are marked. An arrow is each shown under the symbol. The arrow pointing upwards in an assembled condition points to the contact function that applies (see illustration 1).



Contacts to be Adjusted Subsequently

Continuation:

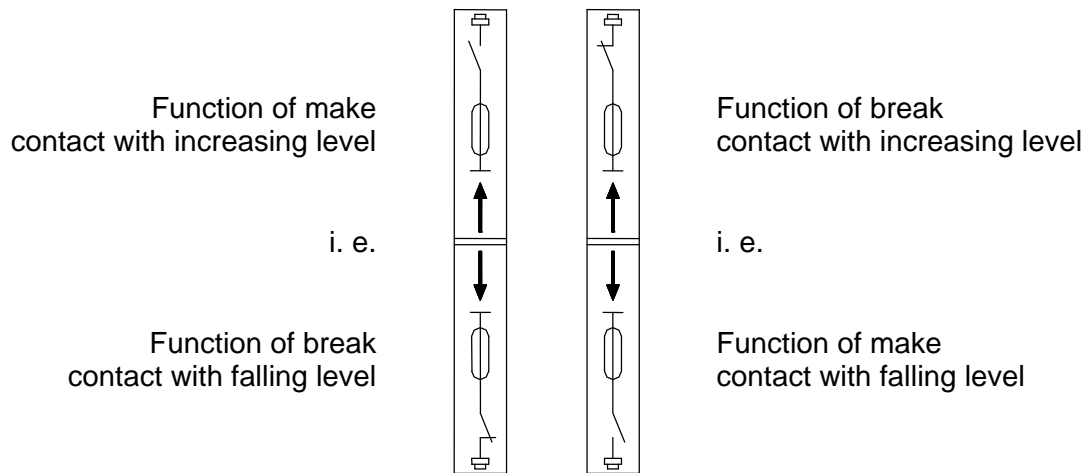


Illustration 1: function

The contact logic assumes that the level switch and level with temperature switch is installed in an empty tank, i. e. that it is in the operating position after filling.

The thermal switch is situated on the lower end of the edge bar. It is shrunk onto a fixing link. After positioning of the contacts the edge bar is pushed back into the protection tube. Please mount the additional cable lengths which are necessary to adjust the contacts as a circuit and insert this one together with the edge bar.

If the circuit of the earth connection has been pulled out of the protection tube, the connection is inserted again first of all and then the edge bar is pushed in again. Screw on the plug base.

Maintenance

If the devices have been installed and connected according to the aforementioned instructions, a regular maintenance is not necessary.



ATTENTION!

Extension of service life of reed contacts

Due to their design reed contacts are very long-lasting and reliable components. Anyway, the following should be observed:

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Securing of Contacts

Too high inductive loads producing a high return voltage when a reed switch is opened can be avoided by means of the following switching:

- a) DC voltage: protective diode in parallel to load, see illustration 2
- b) AC voltage: RC module in parallel to load, see Illustration 3 and table 1

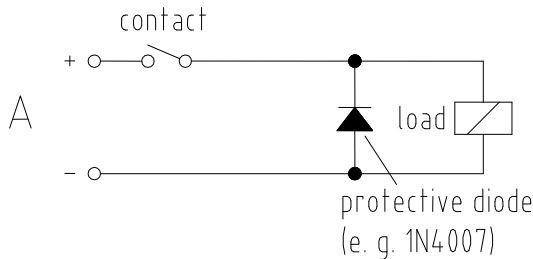


Illustration 2: contact - A

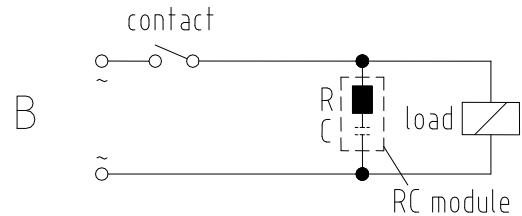


Illustration 3: contact - B

Table 1:

VA voltage on open contact	10		25		50		75		100	
	R/Ohm	C/μF	R/Ohm	C/μF	R/Ohm	C/μF	R/Ohm	C/μF	R/Ohm	C/μF
24 AC	22	0,022	1	0,1	1	0,47	1	1,0	1	1,0
48 AC	120	0,0047	22	0,022	1	0,1	1	0,47	1	0,47
115 AC	470	0,001	120	0,0047	22	0,022	22	0,047	22	0,1
230 AC	470	0,001	470	0,001	120	0,0047	120	0,022	120	0,022

Selection of Pin Configuration

With regard to lengths the contacts have to be read from the bottom to the top (see illustration 4).

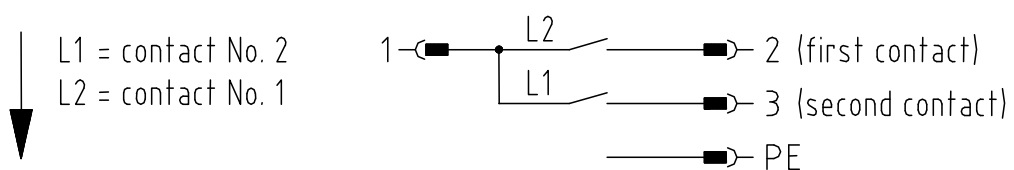


Illustration 4: pin configuration of contacts

Details about Temperature Contacts

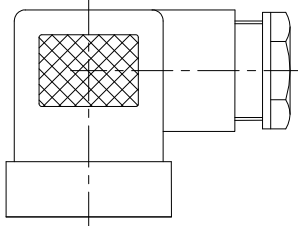
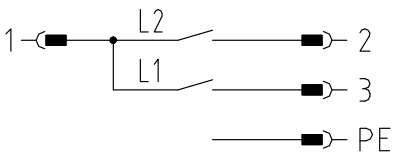
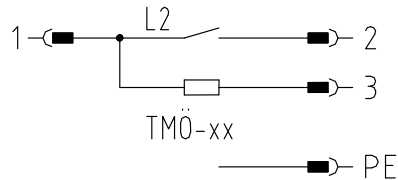
In case of the temperature contact a temperature contact serving as a break contact (TMÖ) is concerned.

For technical details please see sheet 5.

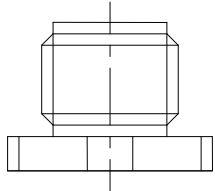
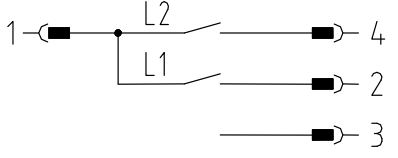
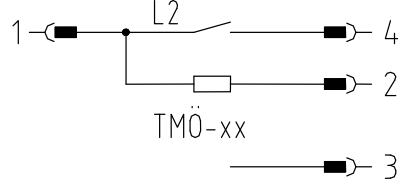


Pin Configuration

Pin configuration of level switch and level with temperature switch series D3

Plug type	Type	Part No.	Type	Part No.
 <p>Illustration 5: plug-in connection D03</p>	NVT xx-1-0-D3	261xx0100100	NVT xx-2-60-D3	261xx0260100
			NVT xx-2-70-D3	261xx0270100
			NVT xx-2-80-D3	261xx0280100
	 <p>Illustration 6: pin configuration</p>		 <p>Illustration 7: pin configuration</p>	

Pin configuration of level switch series DM12

Plug type	Type	Part No.	Type	Part No.
 <p>Illustration 8: plug-in connection DM12</p>	NVT xx-1-0-DM12	261xx0100200	NVT xx-2-60-DM12	261xx0260200
			NVT xx-2-70-DM12	261xx0270200
			NVT xx-2-80-DM12	261xx0280200
	 <p>Illustration 9: pin configuration</p>		 <p>Illustration 10: pin configuration</p>	

Technical Details about Level and Temperature Contacts

Table 2: level contact

Type	K8
function	NC / NO ¹⁾
min. contact distance	40 mm
max. operating voltage	230 V
max. switching current	0,5 A
max. contact load	10 VA

Table 3: temperature contact

Type	TMÖ
function	NC ¹⁾
min. contact distance	----
max. operating voltage	250 V
max. switching current	2 A
max. contact load	100 VA

1) NC = break contact, NO = make contact



Technical Details about Plugs

Table 4:

Type	D03 3-pole + PE DIN 43650	DM12 4-pole
protection	IP65	IP67
cable screwing	PG11	PG7
max. voltage	230 V AC/DC 48 V with changeover contact	24 V DC

Level switch type D03

NVT xx-1-0-D3
NVT xx-2-60-D3
NVT xx-2-70-D3
NVT xx-2-80-D3

Level switch type DM12

NVT xx-1-0-DM12
NVT xx-2-60-DM12
NVT xx-2-70-DM12
NVT xx-2-80-DM12

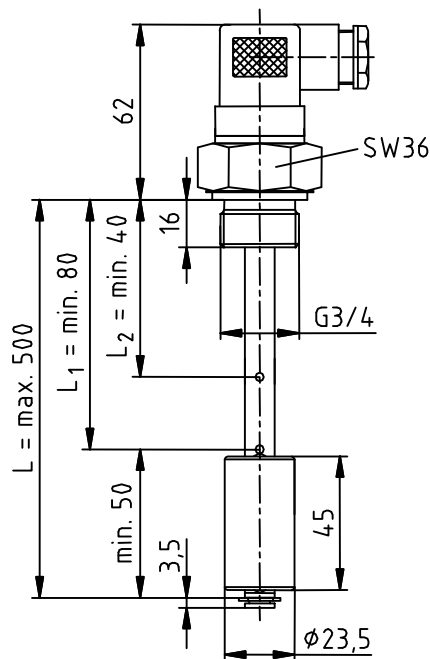


Illustration 11: Type D03

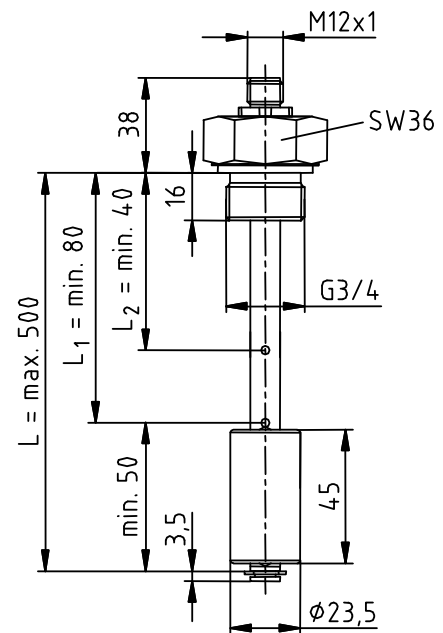


Illustration 12: Type DM12

Spares Inventory, Customer Service Addresses

Contact addresses of the KTR partners for spare parts and orders can be obtained from the KTR homepage under www.ktr.com.



ATTENTION!

KTR does not assume any liabilities or guarantees regarding the use of spare parts and accessories which are not provided by KTR and for the damages resulting herefrom.

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