



## **Installation, Operating and Maintenance Instructions for**

### **Jola immersion probes TSR and NTR**

**These Installation, Operating and Maintenance  
Instructions must always be handed over to the  
fitter/operator/service personnel  
of our products together with all other user  
documentation and information!  
They should be stored in a safe place together  
with all other user documentation and  
information so they can be consulted again  
when necessary at any time!**

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## 1. Design and operating principle of TSR and NTR immersion probes

The immersion probes TSR and NTR are magnetically operated level controllers for liquids.

They have a probe tube with 1 or more built-in reed contacts (NTR: 1 reed contact; TSR: 1 or more reed contacts). The float is fitted with a permanent magnet and moves freely up and down the probe tube, activating the reed contacts as it rises and falls.

It should be noted that reed contacts are not toggle switches, but that they switch only for as long as they are influenced by the magnetic field. Once the float passes beyond a contact upwards or downwards, the latter returns to its original position. However, the contacts can be made to hold by using collars to limit the motion of the float.

## 2. Area of application

### Application in accordance with the number of contacts

The immersion probe TSR or NTR **with 1 built-in reed contact** serves as an individual switch that gives off an alarm signal when the liquid level reaches a certain point (e.g. high-level alarm or low-level alarm).

The immersion probe TSR **with 2 built-in reed contacts** serves to control a pump, for example (ON-OFF via a suitable downstream external pump controller) or a solenoid valve (OPEN-CLOSE via a suitable downstream external solenoid valve controller).

The use of an immersion probe TSR **with more than 2 built-in reed contacts** allows you to perform more complex switching tasks (e.g. overflow protection, high-level alarm, pump ON, pump OFF, low-level alarm, run-dry protection etc.).

### Installation position

The immersion probes with straight probe tube are designed **for vertical mounting from above**.

The immersion probes with angled probe tube are designed **for vertical mounting from the side**.

### Impossibility of use

If there is a risk of any kind that **adhesive residues or solid particles** might impair the function of the immersion probes, then the probes are not suitable for the application in question.

### Technical parameters of the immersion probes

All the **technical parameters of the immersion probes** are listed in this brochure and the accompanying product description. **You must always observe and follow all the instructions relating to these parameters. The probes may not be used for applications outside the specified parameter range.**

If the product description is not supplied with the product or is lost, **you must always request a copy of the description prior to installation, connection or start-up and ensure that it is read and observed by the suitably qualified specialist personnel. Otherwise the immersion probe(s) may not be installed, connected and started up.**

### 3. Preconditions for correct and safe use

#### Values for each reed contact of the immersion probes TSR or NTR

Type of immersion probe	TSR/3/... or TSR/S3/..., NTR/3/... or NTR/S3/...	TSR/1/... or TSR/S1/..., NTR/1/... or NTR/S1/...	TSR/0/ED/E6
Switching voltage	AC/DC 24 V – 250 V	AC/DC 1 V – 42 V	AC/DC 1 V – 42 V
Switching current	AC 100 mA – 2 A (0,4 A)	AC 1 mA – 500 mA	AC 1mA – 100 mA
Switching capacity	max. 100 VA	max. 20 VA	max. 2 VA

**Use of the immersion probes TSR and NTR outside these electrical parameters is not permitted.**

#### Important note for operation with inductive load:

When operating the types TSR and NTR with inductive load, a suitable suppressor (e.g. an RC combination) must be used parallel to the exciter coil of the air contactor.

#### Special requirements/conditions for the safe use of the immersion probes TSR and NTR:

**In order to ensure safe use, the green-and-yellow conductor of the cable / the green-and-yellow terminal in the terminal box of the unit must be connected to**

the protective earth system (PE).

#### 4. Additional conditions for safe operation

##### Admissible temperature range

The media temperature and the ambient temperature at the terminal box and/or at the connecting cable of the immersion probe TSR or NTR must be within the limits of the temperature range specified in the technical documentation or on the type label.

##### Chemical and mechanical resistance

Before using the immersion probe TSR or NTR, you must ensure that the materials used in the screw-in nipple or mounting flange, the probe tube, the float and the collars or the terminal box are sufficiently chemically and mechanically resistant to the liquid to be monitored and/or all external influences.

In case of doubt, consult a suitably trained expert prior to use. Do not use the product before these questions have been fully clarified.

#### 5. Installation, connection, start-up and maintenance, general regulations

**Installation, connection, start-up and maintenance of the immersion probes may only be performed by suitably qualified specialist personnel in line with all the information material and documentation supplied with the probes and following all instructions contained therein.**

**The qualified specialist personnel must ensure that they are familiar with all valid standards, regulations, local requirements and specific conditions and must proceed accordingly.**

You must always read – and adhere to the instructions outlined in - the yellow DIN A 5 leaflet "User information/Instructions for use with mounting, operating and maintenance instructions for the product...". If the leaflet is not supplied with the product or is lost, you must always request a replacement leaflet from Jola.

#### 6. Installation of the immersion probes TSR and NTR

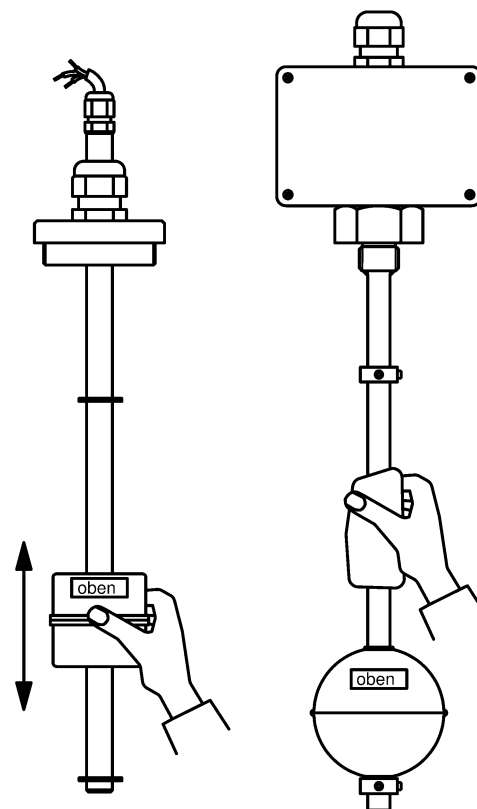
##### Conformance check prior to installation

Before you install the immersion probe, you must always check whether the supplied immersion probe corresponds to the details of your order (materials, dimensions, switching points, electrical values, function etc.). If the supplied immersion probe does not correspond to the order in all respects, you must inform Jola without delay and send the immersion probe back to Jola.

If, however, the delivered immersion probe corresponds to your order in all respects, you can begin with installation followed by electrical connection.

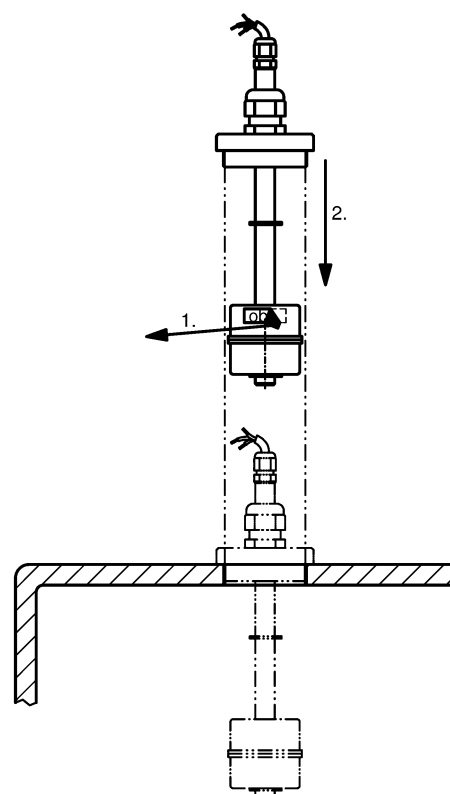
### Cleaning of the immersion probe before installation

All dirt or soiling on the probe tube or the float must be removed; e.g. packaging remains, adhesive identification labels etc., but not the adhesive label on the float with the word "oben" (top). After it has been cleaned, the float must be able to move freely up and down along the entire length of the probe tube.

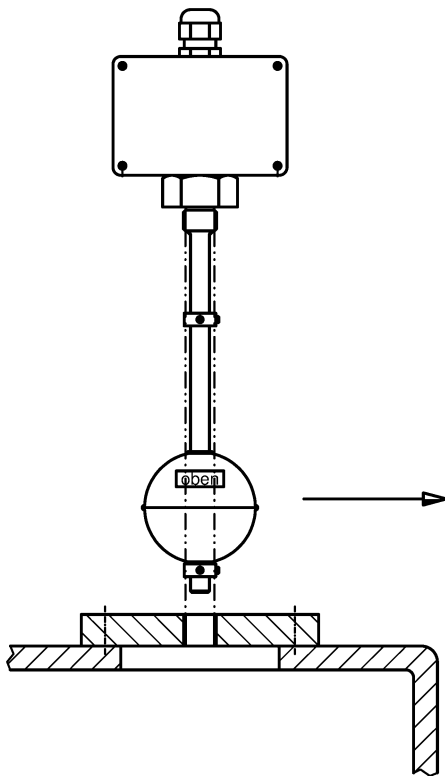


### Mounting of the immersion probe without removing the collar(s) and the float(s)

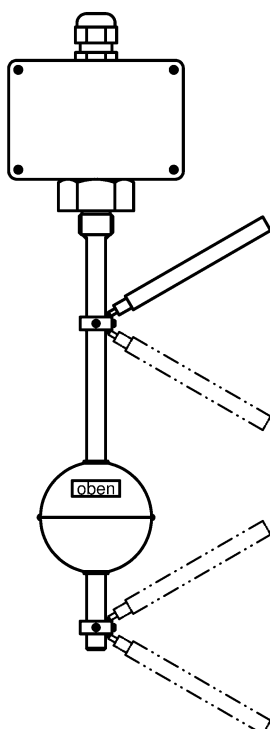
If the immersion probe is fitted with a screw-in-nipple or a mounting flange with dimensions that permit installation of the float(s) in the corresponding tank bushing or counter-flange, then the immersion probe can be installed and sealed in right away. In this case, however, the adhesive label on the float containing the word "oben" (top), which is on every float, must be removed beforehand.



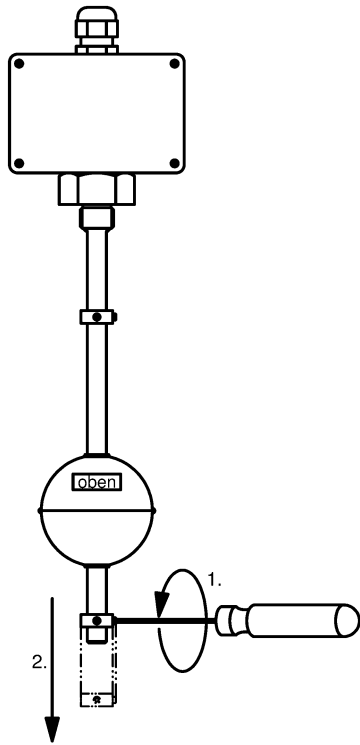
**Installation of the immersion probe with  
 removal of the collar(s) and the float(s)**



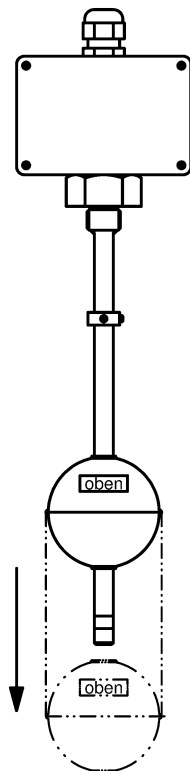
If the immersion probe is fitted with a screw-in-nipple or a mounting flange with dimensions that do not permit installation of the float(s) through the corresponding tank bushing or counter-flange passage, then you must proceed as follows:



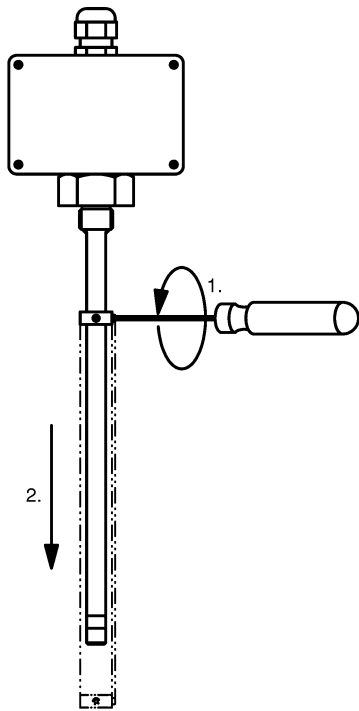
Mark the exact position (top and bottom edge) of each collar on the probe tube using a felt-tip pen.



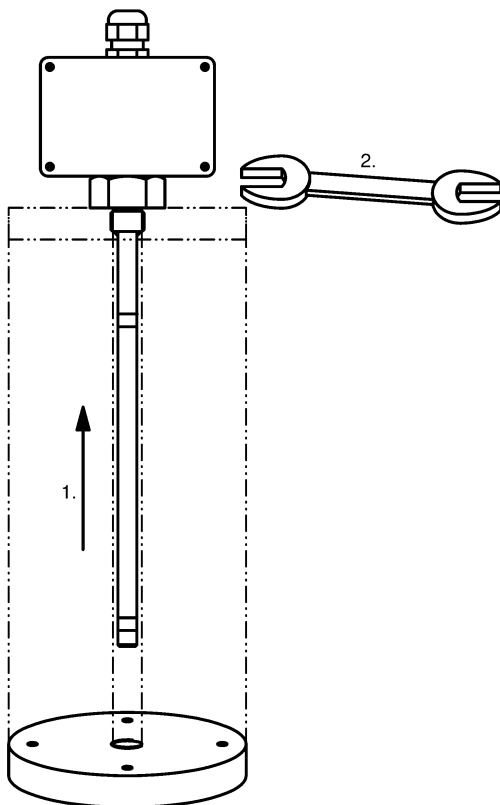
Then loosen and remove the collar or retaining disc at the bottom end of the probe tube.



The bottom float must then be removed.



Any other collars and floats that are present must be removed in the same way.

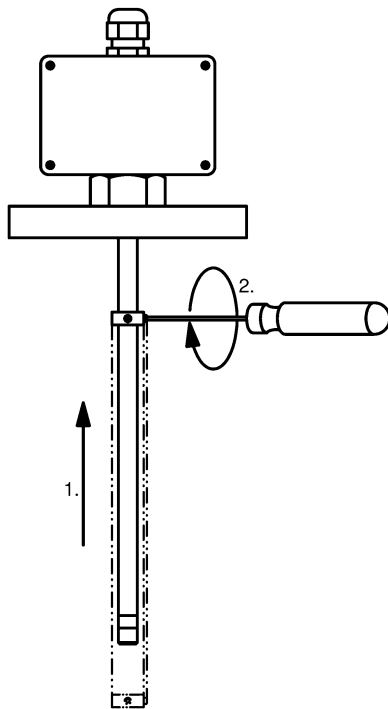


Then insert the probe tube from the top into the suitable customer-side threaded bushing or the customer-side flange and seal it in place.

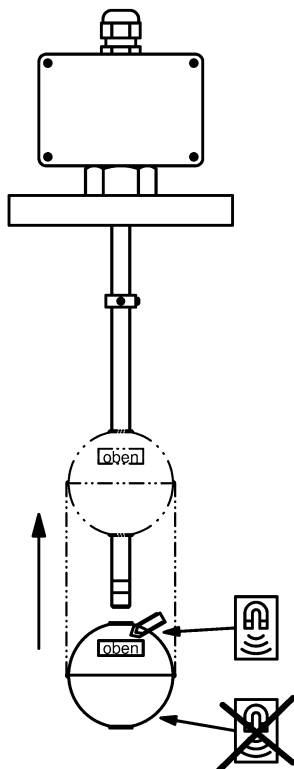
Then screw the screw-in nipple tightly into the threaded bushing or flange using a suitable OE spanner but without using unnecessary force.

The probe must be sealed in based on customer-side circumstances and preferences, and then checked.



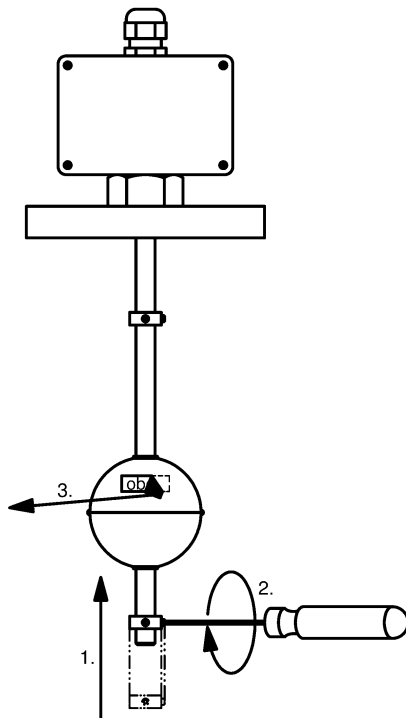


Then push the upper collar onto the probe from below and secure it at the marked point.



Then push the float onto the probe tube from below. The magnet side marked "O" or with the adhesive label showing the word "oben" (top) must point in the direction of the screw-in nipple. Then remove the adhesive label.

If the marking on the float is no longer properly visible or if the adhesive label is no longer in place, it is easy to identify the magnet side using a magnetisable metal object (e.g. a paper clip or a small screwdriver).



Any other collars and floats should be installed in the same way.

After installation, the adhesive label must be removed from each float.

The bottom collar is the last collar to be secured in the marked position - or the retaining disc should be secured once again at the end of the probe tube in such a way that the original condition is restored (tighten nut, possibly re-insert any splint etc.).

## 7. Electrical connection

**Before making the electrical connection, please note the following:**

Before connecting the unit to the electrical supply system, you should check once again whether the electrical values of the contacts as listed on the type label are compatible with the voltage, current and power to be connected. If this is not the case, the unit must not be connected to the electrical supply system.

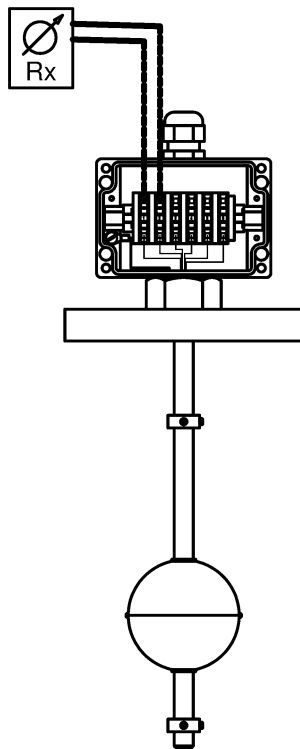
**If the immersion probe is to be used in a potentially explosive area, you must always consult the following documents:**

**Installation, Operating and Maintenance Instructions for Jola Immersion Probes  
TSR and NTR/.../Variant /Ex-**

or

**Installation, Operating and Maintenance Instructions for Jola Immersion Probes  
TSR and NTR/.../Ex d/Ex-**

**You must read these instructions fully and carefully before you install, connect or operate the unit. Compliance with these instructions is essential for safe and reliable operation of the unit.**



The function of the contacts must be checked using a continuity tester. The continuity tester must be suitable for the electrical values of the contacts.

It may be necessary to adjust the position of the collars. This is the case if a collar prevents the float from influencing a reed contact in the planned position via its built-in magnet.

In order to ensure reliable switching of the contact, it must always be assured that there is a reserve of several millimetres between the point at which the reed contact is switched and the collar.

## The electrical connection itself

### Connection diagram

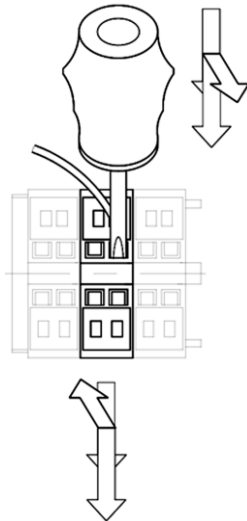
The contact of the immersion probe NTR or the contact(s) of the immersion probe TSR must be connected in line with the connection diagram enclosed with the supplied unit.

### Connection in the terminal box

In the case of an immersion probe equipped with a terminal box, it is important to ensure that the cable suits the gasket insert of the cable entry of the terminal box and permits correct sealing, as a non-matching cable will negatively affect the IP protection.

After inserting the cable, fasten the movable part of the cable entry (but do not use unnecessary force) in order to achieve the required IP protection level.

Connect the cable as shown below:



Push a screwdriver into the opening as shown in the drawing. Open the relevant terminal by pushing the screwdriver down towards the centre of the terminal block using a lever action.

## 8. Start-up

You must check and verify that there is no possibility whatsoever of hazardous conditions occurring due to non-adherence to any of the relevant instructions, standards or official regulations.

**Prior to start-up, you must re-check the mounting position, the mechanical fastening and the electrical connection. In addition, a function test must always be performed by suitably qualified personnel under normal application conditions.**

In the case of an immersion probe equipped with a terminal box:

After performing the corresponding checks, close the cover of the terminal box and tighten the 4 cover screws evenly and firmly but without applying unnecessary force.

Only then may the unit in question be started up electrically

## 9. Maintenance

The immersion probes TSR or NTR are maintenance-free when used in low-viscosity, non-adhesive liquids that are free of solids and do not attack the component materials.

**To rule out any risks, however, the immersion probe must be sight-checked and function-tested by qualified specialist personnel at least once a year.**

**Where risks cannot be ruled out, you should adhere to an inspection frequency suited to the application in question and laid down in consultation with the relevant supervisory authorities.**

If the immersion probe is installed as a safety element within a system, it must always be inspected and checked at intervals to be agreed with the local supervisory



authorities.

**Prior to all maintenance work, the qualified specialist personnel must inform themselves of all valid standards, regulations, local guidelines and special conditions and proceed accordingly**

## 10. Repair

All alterations and repairs to the immersion probes must be performed by the manufacturer's suitably qualified specialist personnel. Under no circumstances may other individuals or companies perform unauthorised alterations or repairs.