

## ▪ SUBMERSIBLE PROBE SHI 63

Manual for operation and maintenance

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### EXPLANATORY NOTES

In this manual, following signs are used:



Ignoring this warning may lead to a damage of the sensor or to a wrong measuring, (control).



Ignoring this warning may lead to an irreversible damage of the sensor, of the technological equipment or to a jeopardy of safety and security of persons.



Information for manipulation with wastes

### CAUTION

Manipulate with the sensor may only a person with adequate qualification, familiar with its function and maintenance.

The use of the sensors beyond the frame determined by this manual is inadmissible.

**As long as the sensor is used for an automatic control, it is necessary to provide a regular check-up of its function. It is essential to realize, that by a failure of the sensor the dosing element can be maximally opened or fully closed and this may cause serious problems in the operation of the controlled technology or manacing of personnel.**

The automatic control is irregular even during the cleaning or another manipulation with the sensor (calibration).

For the sensor, only the original spare parts delivered by the manufacturer may be used.

The function of sensor must be checked-up regularly. The time intervals between the individual check-ups will arise from the operational experience.

Greatest possible care was used on the correctness of the information in this manual. If errors should be discovered nevertheless, INSA s.r.o. is pleased to be informed about it.

## ▪ 1. RANGE OF APPLICATION

Submersible probe **SHI 63** serves as shelter of sensors for measurement of pH (ORP) and temperature together with MFD 88 controllers This probe is designed for measurement on open surface. One sensor pH 521 BNC can be installed into the probe. One temperature sensor is integrated in the probe. The probe is installed vertically into open reservoirs, channels or tanks. It is used slide-fixed onto the **MUT 14** clamp. Standard length of connecting cable is 5 and 10 m..

## ▪ 2. DELIVERY SIZE

Delivery consist of the **SHI 63** probe and:

- manual for operation and maintenance 1 Pc

### ▪ 3. INSTALLATION

Probe is mounted with help of clamping device - see figure 2. Clamp **MUT 14** enables an easy attaching of the probe to the circular profile - diameter 25 to 50 mm (e.g. railings). Connecting cable is fixed in the tube of the clamp by fixed plate. Clamp **MUT 14** is not a part of standard delivery of the probe.

Location of the probe and depth of dipping must be chosen in a way, that sensor would respond to the changes of measured variable as quick as possible (if possible next to dosing element, agitator or water inlet).

Submersible probe placed in nitrification basins of the wastewater treatment plants should be dipped approx. 20 cm (is important especially in the case of surface aeration) and the distance to the basin wall should be approx. 50 cm. Minimum depths of dipping is 4 cm above metal block (2) – fig 1 - of the probe. To achieve the best self-cleaning effect should be water movement most intensive.

#### **WARNING**



**The probe must not be dipped into measured medium before sensor is fixed up.**

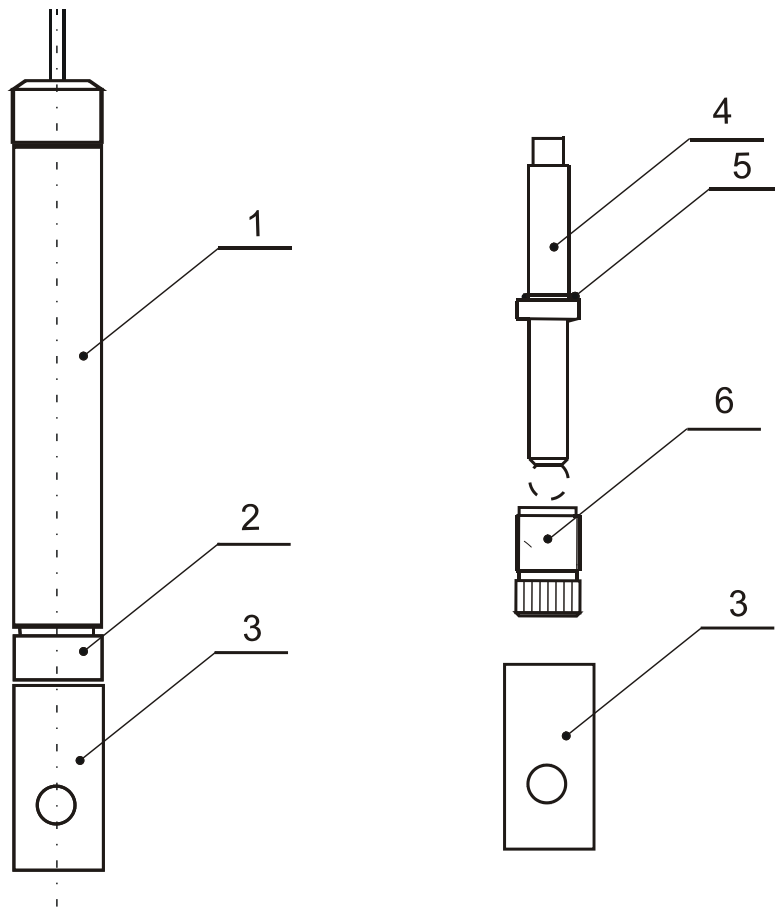
### ▪ 4. ASSEMBLY AND EXCHANGE OF SENSOR

At first we remove sensor transport cover if installed. Cover we can use as calibration vessel afterwards.

From the body of the probe (1) – fig. 1 - we unscrew pH sensor cover (3) and screw off screw joint (6). We insert pH sensor (4) with sealing “o” ring ( $\phi 10,6 \times 2,3$ ) – pos. (5) - **all out to sensor body. Connector (inside of the probe) to which is sensor inserted is provided with no bayonet – we do not rotate sensor.** Screw joint we screw in **tight** back to probe so that sealing ring fit tightly in the probe. Sensor pH is fixed in probe by screw joint not by the connector..

Sensor cover we screw back to the probe.

Dismantling of the sensor we perform in reverse way.



**Fig. 1 Submersible probe SHI 63**

## ▪ 5. CALIBRATION

At first we remove cover of the sensor (3).

If it is necessary we clean the sensor. We proceed according to the recommendations of the manufacturer of sensor. Basically, we use a short time (up to 5 minutes) exposition in a diluted HCl (concentration 1M), for the removal of deposits with calcium, potassium or metal hydroxides. For removal of fatty substances, spirit, acetone, organic solvents or, preferably, the cleaning solutions delivered by the manufacturers of the electrodes can be used. We wet a cotton wool in them and clean the sensor. After the cleaning, we wash carefully the sensor with distilled or potable water. After the exposition in HCl, the properties of the sensor stabilise, for approx. 30 minutes.

We fill transport cover that we use as the calibration vessel with the buffer, screw it on the

probe and proceed according the procedure given in the MFD 88 manual.  
After finishing calibration we put sensor cover back on te probe.

## ▪ 6. MAINTENANCE

The probe das not require any maintenance.

## ▪ 7. SPARE PARTS

Sealing "o" ring  $\phi 10,6 \times 2,3$  - pos.5

Sensor cover MM0751 - pos. 3

## ▪ 8. SPECIFICATIONS

Temperature of measured medium	*max. 70°C
Materials in contact with measured medium	polyethylene-terephalat, silicone rubber, stainless steel
Cover	IP 68
Connecting cable	two core non shielded cable, outer shell polyurethane, outer diameter 6,9 mm
Cable length	5 m and 10 m - standard
Pobe dimensions	$\phi 30 \times 290$ mm
Sensor dimensions	$\phi 12 \times 120$ mm
Weight [kg]	approx 0,5

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\*The sensor used also determines the temperature of measured medium

▪ **9. STORAGE**

The probe must be stored in a covered and dry store. The temperature is to be between –  
-10°C to 70°C and a relative humidity not higher than 80%. During the storage, the probe  
must be protected against mechanical damage, weather effects and chemical fumes.

Probe with pH sensor must be stored in environment suitable for pH sensor also.

▪ **10. PROTECTING THE ENVIRONMENT**

For the disposal of the probe, we dismount sensor and cable.

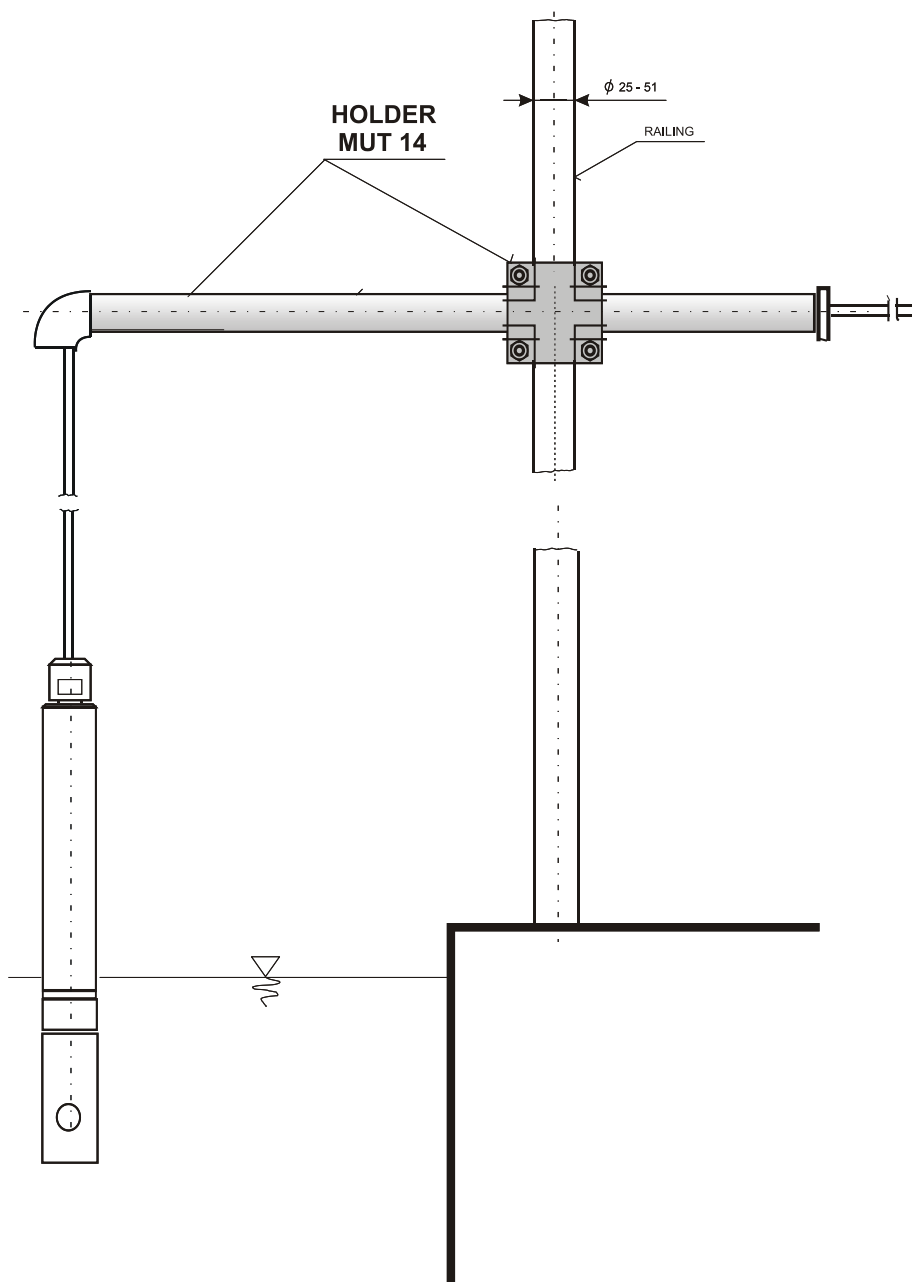
Sensor is to be liquidated according to instructions of the sensor producers.

The metallic part belong to the metallic waste, cable to the container for electrical waste..



All plastic parts of the probe are made of a recycled plastic.

## Submersible probe SHI 63



**Fig. 2 Submersible probe SHI 63 with MUT 14 holder**

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