



# SenTix<sup>®</sup> HW-T 900(-P)

pH ELECTRODE WITH LIQUID REFERENCE SYSTEM AND GROUND JUNCTION



a xylem brand

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## 1 General information

### **Automatic sensor recognition**

The sensor electronics with the stored sensor data are in the connecting head of the electrode. The data include, among other things, the sensor type and series number. In addition, the calibration data are stored in the sensor with each calibration and the calibration history is recorded (the last 10 calibrations). The data is recalled by the meter when the sensor is connected and is used for measurement and for measured value documentation.

Storing the calibration data in the sensor ensures that the correct slope and asymmetry are automatically used if the sensor is operated with different meters. On the other hand, different calibrated sensors can be used with one meter without the need to recalibrate.

The digital transmission technique guarantees the failure-free communication with the meter even with long connection cables. The sensor firmware can be updated via the meter.

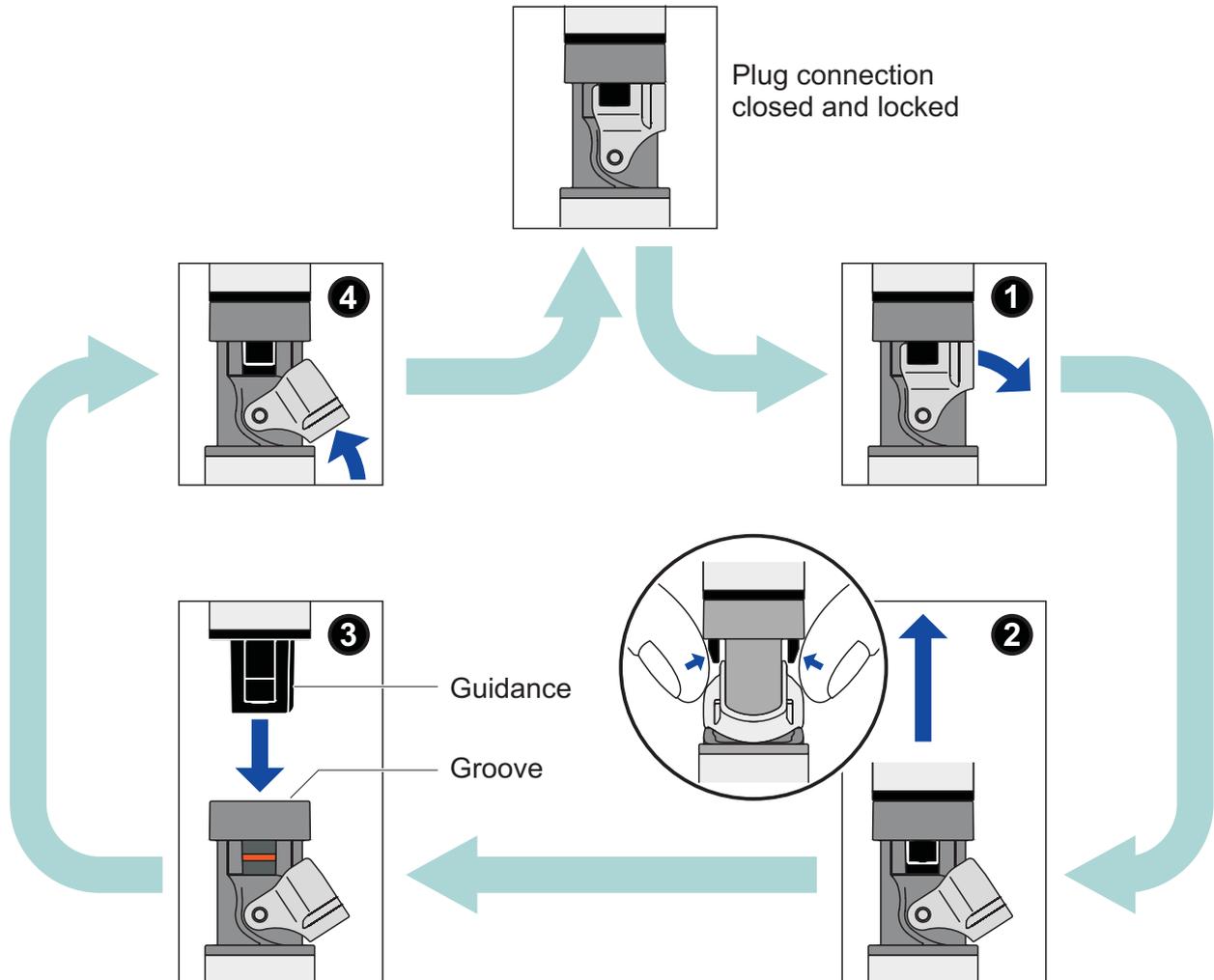
### **Armoring A 925-P/K and A 925-P/S (accessories)**

To protect the electrode against mechanical impacts, the A 925-P/K armoring (with plastic protective hood) or A 925-P/S (with steel protective hood) can be installed and uninstalled as necessary. The steel model is simultaneously used as a sinker for depth measurements.

## 2 Commissioning, measuring, calibration

### 2.1 Opening and closing the IDS plug connection

This section only applies to IDS plug variants (SenTix® ... -P).



#### Opening the plug connection

- If necessary, clean the plug connection.
- Open the locking device (step 1).
- Use your thumb and index finger to press the clips of the connector together, and pull the connector out of the plug (step 2).

#### Closing the plug connection

- Make sure that the plug connection is completely dry and clean.
- Align the guidance of the connector with the groove in the plug and insert the connector in the unlocked plug until it catches (step 3).
- Close the locking device (step 4).

## 2.2 Commissioning

### Scope of delivery

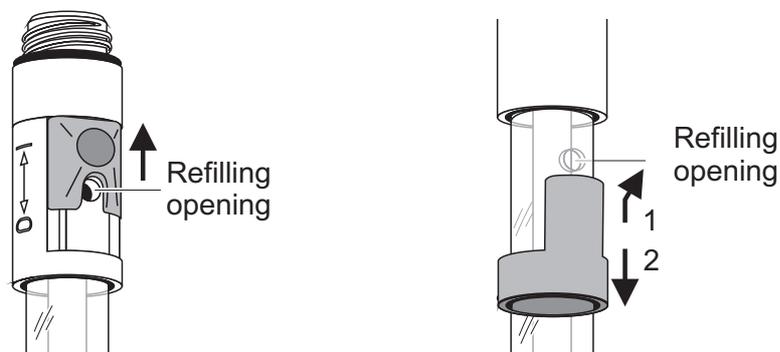
- Electrode SenTix®HW-T 900(-P)
- Operating manual

### Commissioning

The electrode is filled with reference electrolyte solution in the factory. Prepare the electrode for measuring as follows:

- Open the refilling opening for the reference electrolyte solution. Depending on the model, the stopper of the refilling opening is an elastomer stopper or a slider.

**The refilling opening must always be open during calibration and measurement!**



- Remove the watering cap from the electrode tip. Possible salt deposits in the area of the watering cap do not affect the measuring characteristics and can easily be removed with deionized water.



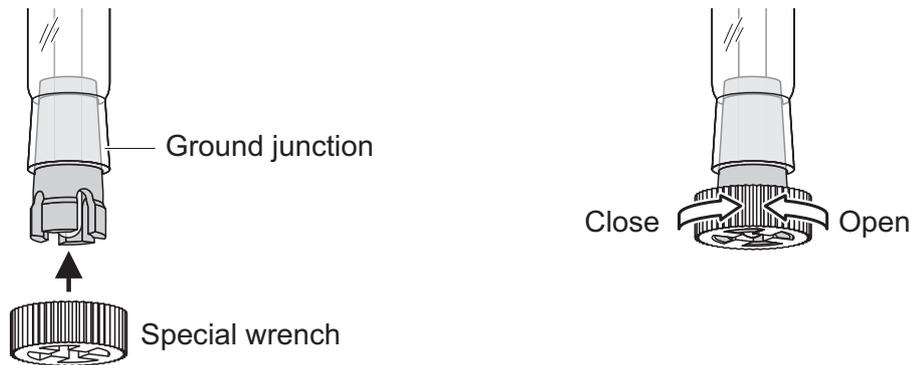
Please keep the watering cap. It is required for the electrode to be stored. Always keep the watering cap clean.

- Connect the electrode to the meter
- Calibrate the electrode according to the operating manual of the meter. When doing so, observe the general rules on the following page.

### Ground junction of SenTix®HW-T 900(-P)

With the ground junction of the SenTix®HW-T 900 (-P) electrodes, the electrode outflow can be adjusted with a thread:

- Hold the electrode with the pH glass membrane pointing downward. Using the provided special wrench, open the ground junction until some electrolyte solution can be seen to come out of the junction and all ground surfaces are completely moist.



- Carefully and using little power close the junction until the contact between the rough ground surfaces can be noticed as a resistance. The electrode is now ready to measure.

**NOTE**

**Caution: Always use very little power to close the junction so the ground surfaces are not damaged!**

- The ground junction can be opened further so that more electrolyte solution comes out.

**Preparing the sensor for measurement**

SenTix®HW-T 900	Connect the sensor to the meter. The sensor is immediately ready to measure.
SenTix®HW-T 900-P	Connect the sensor to a free IDS sensor plug-in position of the multi parameter probe or to an IDS connection of the meter. To open and close the IDS plug-in position please note the section 2.1 OPENING AND CLOSING THE IDS PLUG CONNECTION. The sensor is immediately ready to measure.  Connection cables in different lengths to connect the SenTix®HW-T 900-P sensor to the meter are listed in chapter 7 WEAR PARTS AND ACCESSORIES.

Connect the sensor to the meter.  
The sensor is immediately ready to measure.

**2.3 Calibration and measurement: General rules**

- Make sure the refilling opening for the reference electrolyte solution is open.
- Avoid the displacement of any solution (sample or buffer solution) from one measurement to the next by taking the following measures:
  - Shortly rinse the calibration and sample beakers with the solution the beakers are to be filled with next.
  - Between measurements, rinse the electrode with the solution that fol-

lows. Alternatively, you can also rinse the electrode with deionized water and then carefully dab it dry.

- Immerse the electrode in the solution in a vertical or slightly tilted position.
- Make sure the immersion depth is correct. The ground junction must be completely submerged in the solution. At the same time, the level of the reference electrolyte must be at least 2 cm above the level of the solution.
- Provide approximately the same stirring conditions for measuring as for calibrating.

### Subsequent calibrations

The frequency of subsequent calibrations depends on the application. Many meters provide an option where you can enter a calibration interval. After the calibration interval has expired, the meter will automatically remind you of the due calibration.

## 3 Storage

### During short measuring breaks

With the refilling opening open, immerse the electrode in reference electrolyte (KCl 3 mol/L, Ag<sup>+</sup> free). Observe the minimum depth of immersion. Prior to the next measurement, shortly rinse the electrode with the test sample or deionized water.



Prevent contact of the pH membrane to the beaker bottom to avoid scratches on the pH membrane.

### Overnight or longer

Put the clean electrode in the watering cap that is filled with reference electrolyte (KCl 3 mol/L, Ag<sup>+</sup> free) and close the refilling opening.

#### **NOTE**

**pH electrodes must not be stored dry or in deionized water. The electrode could be permanently damaged by this. If the liquid in the watering cap has dried up, condition the electrode in reference electrolyte (KCl 3 mol/L, Ag<sup>+</sup> + free) for at least 24 hours.**



During longer storing periods, salt sediments may develop on the watering cap. They do not affect the measuring characteristics and can easily be removed with deionized water when the electrode is put into operation again.

## 4 Aging

pH electrodes are consumables. Every pH electrode undergoes a natural aging process. With aging, the responding behavior becomes slower and slower and the electrode slope and asymmetry change. Moreover, extreme operating conditions can considerably shorten the lifetime of the electrode.

**Extreme operating conditions****NOTE**

**pH electrodes must not be operated under extreme operating conditions. The electrode could be permanently damaged by this.**

Examples for extreme operating conditions:

- Strong acids or lyes, hydrofluoric acid, organic solvents, oils, fats, bromides, sulfides, iodides, proteins
- High temperatures
- High changes in pH and temperature.

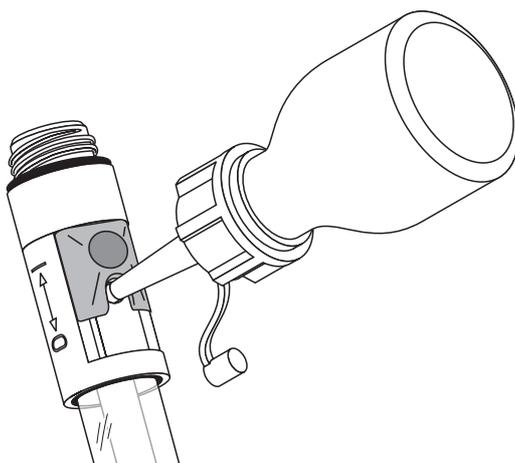
The warranty does not cover failure caused by measuring conditions and mechanical damage.

## 5 Maintenance and cleaning

**Refilling the reference electrolyte**

During operation, a small amount of reference electrolyte leaks through the junction from the electrode into the test sample. If the level of reference electrolyte becomes too low with time, refill it through the refilling opening. Refilling is very easy with the enclosed dropping bottle. Proceed as follows:

- Cut off the tip of the dropping bottle at a right angle until the opening in the tip can be seen
- Open the refilling opening of the electrode
- Press the tip of the dropping bottle into the refilling opening while turning it slightly
- Pump the reference electrolyte in the shaft using the dropping bottle
- Pull the dropping bottle out of the refilling opening while turning it slightly if necessary.

**Cleaning**

Remove water-soluble contamination by rinsing with deionized water. Remove other contamination as follows:

Contamination	Cleaning procedure
Fat and oil	Rinse with water containing household washing-up liquid
Lime and hydroxide deposits	Rinse with citric acid (10 % by weight)
Proteins	Immerse in pepsin cleaning solution PEP/pH for approx. 1 hour. <u>Note:</u> Make sure the level of the reference electrolyte is above that of the cleaning solution.



Hydrofluoric acid, hot phosphoric acid and strong alkaline solutions destroy the glass membrane.

If you want to clean and rinse the ground junction, you can open it as follows:

- completely unscrew the ground stopper (see figure on page 5).

#### After cleaning

Rinse the electrode with deionized water and condition it in reference electrolyte solution for at least 1 hour. Then recalibrate the electrode.

## 6 Technical data

<b>Measurement</b>	pH measuring range	0.000 ... 14.000
	Allowed temperature range	0 ... 60 °C
<b>Accuracy of the IDS measuring technique</b>	<b>Measured parameter</b>	<b>Accuracy (± 1 digit)</b>
	pH	± 0.004
	U [mV]	± 0.2
	T [°C]	± 0.1
<b>General features</b>	Reference electrolyte	KCl 3 mol/L, Ag <sup>+</sup> free
	Junction	Ground
	Temperature sensor	Integrated NTC 30 (30 kΩ at 25 °C / 77 °F)
<b>Connection cable</b>	Lengths	SenTix®HW-T 900: 1,5 SenTix®HW-T 900-P: 1,5 / 3 / 6 / 10 / 15 / 25 / 40 / 60 / 100 m
	Diameter	4.3 mm
	Smallest allowed bend radius	Fixed installation: 20 mm Flexible use: 60 mm

	Plug type	Socket, 4 pins
<b>Shaft dimensions, material</b>	Shaft length	170 mm
	Shaft diameter	12 mm
	Shaft material	Glass
	IDS plug	<ul style="list-style-type: none"> <li>● Synthetic materials: Glass fiber reinforced Noryl, TPU, TPC-ET, POM, PVC, PEEK, PBT</li> <li>● O-ring: FPM</li> <li>● Contacts gold-Plated</li> </ul>
<b>IDS plug</b>	Connection type	4-Pole, watertight plug connection with lock, reverse polarity protected
<b>Storage</b>	With watering cap; filled with KCl 3 mol/L, Ag <sup>+</sup> free	

## 7 Wear parts and accessories

<b>Maintenance equipment</b>	<b>Description</b>	<b>Model</b>	<b>Order no.</b>
	Reference electrolyte solution 250 mL (KCl 3 mol/L, Ag <sup>+</sup> free)	KCI-250	109 705
	Pepsin cleaning solution 3 x 250 ml	PEP/pH	109 648
<b>Connection cable SenTix®HW-T 900(-P) - meter</b>	<b>Description</b>	<b>Model</b>	<b>Order no.</b>
	IDS connection cable, 1.5 m	AS/IDS-1.5	903 850
	IDS connection cable, 3 m	AS/IDS-3	903 851
	IDS connection cable, 6 m	AS/IDS-6	903 852
	IDS connection cable, 10 m	AS/IDS-10	903 853
	IDS connection cable, 15 m	AS/IDS-15	903 854
	IDS connection cable, 20 m	AS/IDS-20	903 855
	IDS connection cable, 25 m	AS/IDS-25	903 856
	IDS connection cable, 40 m	AS/IDS-40	903 857
	IDS connection cable, 60 m	AS/IDS-60	903 858
IDS connection cable, 100 m	AS/IDS-100	903 859	
<b>General accessories</b>	<b>Description</b>	<b>Model</b>	<b>Order no.</b>
	Blind plug for IDS plug	BPO/IDS 900	908 371
	Armoring without protective hood	A 925-P	903 838

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Armoring with plastic protective hood	A 925-P/K	903 839
Armoring with steel protective hood	A 925-P/S	903 840
Plastic arming for SenTix®HW-T 900(-P) pH electrodes	A pHLab/K	903 841

## 8 Disposal

At the end of its operational lifetime, the electrode must be returned to the disposal or return system statutory in your country (electronic waste). If you have any questions, please contact your supplier.





# What can Xylem do for you?

We're a global team unified in a common purpose: creating innovative solutions to meet our world's water needs. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. We move, treat, analyze, and return water to the environment, and we help people use water efficiently, in their homes, buildings, factories and farms. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise, backed by a legacy of innovation.

**For more information on how Xylem can help you, go to [xyleminc.com](http://xyleminc.com).**



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