SCL

SCL 17
SCL 18

CLOSED AMPEROMETRIC CELLS

OPERATING MANUAL

EN

INDEX

This operating instructions contains safety information that if ignored can endanger life or result in serious injury.
The original instruction is in Italian. All non-Italian instructions are translations of the original instruction.

Read these instructions **carefully** before use and keep them for future reference.

Information and specifications on this manual could be uncorrect or could have printing errors. Specifications are subject to change without notice.

Version: R3-05-21

NORME CE
EC RULES (STANDARD EC)
NORMAS DE LA CE

Direttiva Bassa Tensione
Low Voltage Directive
Directiva de baja tensión
} **2014/35/UE**

Direttiva EMC Compatibilità Elettromagnetica
EMC electromagnetic compatibility directive
EMC directiva de compatibilidad electromagnética
} **2014/30/UE**

GENERAL SAFETY GUIDELINES

Operating, installing, or maintaining the unit in any way that is not covered in this manual could cause death, serious personal injury, or damage to the equipment.

ICON

This manual use the following safety message icon:

Danger!
Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

Warning!
Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

Important - A practice not related to personal injury or additional information.

Cross reference - An instance which refers to related information elsewhere in the same document

PURPOSE OF USE AND SAFETY

EQUIPMENT INTENDED FOR THE MEASUREMENT OF CHLORINE (OR ITS ABSENCE) IN WATER.

Do not use in explosive area (EX).
Do not use with flammable chemicals.
Do not use with radioactive chemicals.

Use the probe in accordance with the data and specifications printed on the label.

Do not modify or use in a manner inconsistent with the provisions of the operating manual.

⚠ **When using this product with aggressive chemicals observe the regulations concerning the transport and storage of aggressive fluids.**

⚠ **When installing always observe national regulations.**

⚠ **Manufacturer is not liable for any unauthorized use or misuse of this product that may cause injury, damage to persons or materials.**

⚠ **Probes must be serviced and repaired by qualified and authorized personnel only.**

⚠ **Before any operation:**
- **always read chemical Material Safety Data Sheet (MSDS);**
- **always wear protective clothing;**
- **empty and rinse the liquid end before work on a the product which has been used with hazardous or unknown chemicals.**

⚠ **Avoid grinding / shock / falls / friction.**

Environmental safety

Work area
Always keep the area clean to avoid and/or discover emissions.

Recycling guidelines

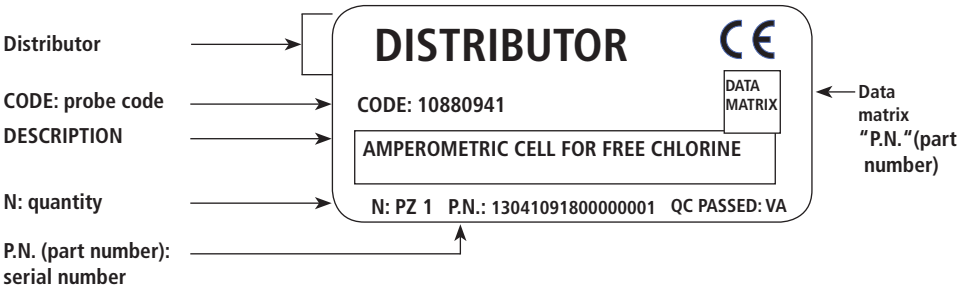
EWC code: 16 02 16

Always recycle according to these guidelines:
1. If the unit or parts are accepted by an authorized recycling company, then follow local recycling laws and regulations.
2. If the unit or parts are not accepted by an authorized recycling company, then return them to the nearest representative.

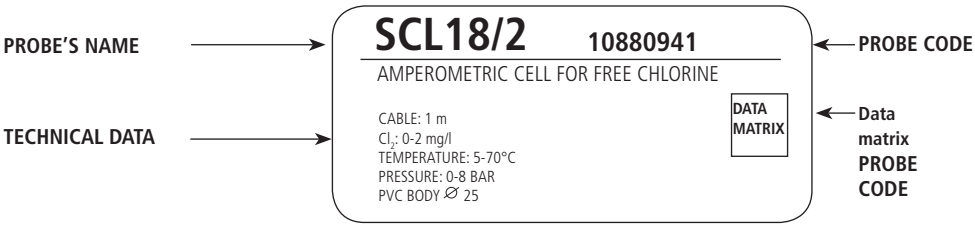
Waste and emissions regulations
Observe these safety regulations regarding waste and emissions:
- Dispose appropriately of all waste.
- Handle and dispose of the dosed chemical in compliance with applicable environmental regulations.
- Clean up all spills in accordance with safety and environmental procedures.
- Report all environmental emissions to the appropriate authorities.

LABELS

On the box (example)



On the probe (example)



Spare parts

For spare parts orders or any other communication, refer to the pump's label.
Code (CODE) and serial number (P / N) uniquely identify the probe.

Transportation and storage

An unsuitable transportation or storage can cause damages.

Use original box to pack the probe.

Observe storage conditions also for transportation.

Although packed, always protect the unit against humidity and the action of chemicals.

Before returning the probe to the manufacturer repair service, clean and rinse it. Disassemble the membrane cap and discard electrolyte.

DO NOT DISCARD PACKAGING. USE IT TO RETURN THE PROBE.

IMPORTANT

Storage procedure

After use, clean and store the sensor with sensor cap and protective cap.

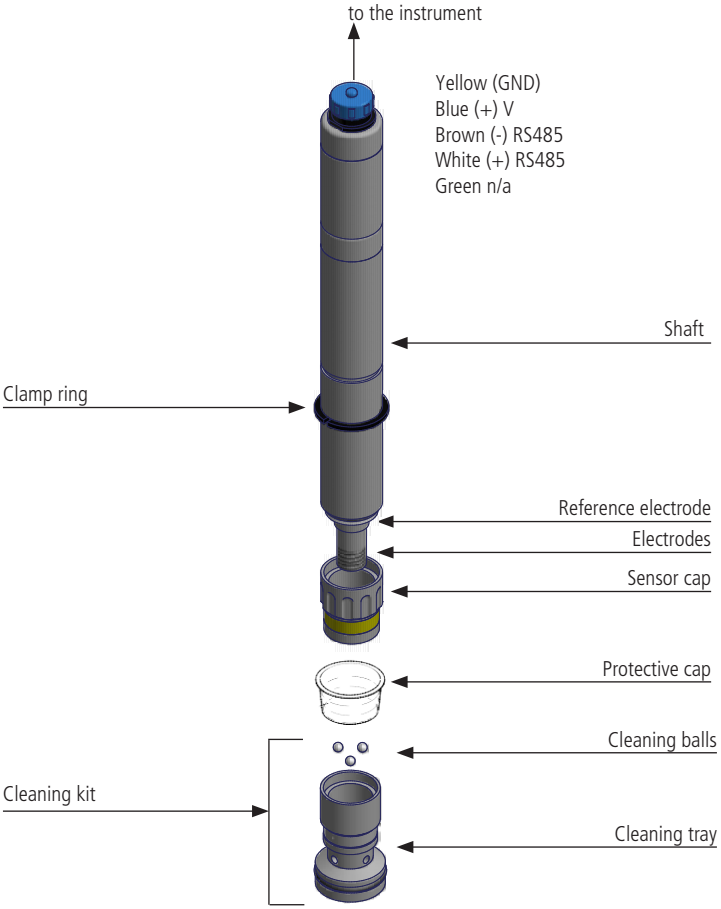
Transportation and storage temperature ..... 10 - 50°C (32 - 122°F)
Humidity ..... 95% relative humidity (not condensed)

INTRODUCTION

Closed amperometric cells

Closed amperometric cells SCL17 and SCL18 are amperometric three-electrode sensors without a membrane. The sensors for free chlorine measures the content of hypochlorous acid (HOCl) in water. The sensor signal depends on the conductivity of the sample medium.
The sensor signal is flow-dependent. The rate of flow in the probe holder must therefore be kept constant at ± 5 l/h.

The probe has to be installed into a probe holder and connected to a measuring and control instrument.



Packaging

The packaging will include the following:

- Sensor complete with sensor cap, protective cap and clamp ringc
- Cleaning kit (2 bags with 3 balls, cleaning tray, abrasive paper)
- connector cable
- electrolyte
- cannula needle
- nitrile gloves powder free
- operating manual

	SCL17
Parameter	CHLORINE DIOXIDE
Measuring range	SCL17/2: 0-2 mg/l (0-2 ppm) resolution: ± 0.001 SCL17/20: 0-20 mg/l (0-20 ppm) resolution: ± 0.001
Voltage supply	0/5 VDC (10 mA)
Connection	5-pole screw connector
Measuring system	amperometric 3-electrode system
Ph working range	5-9 pH (ref. HOCl dissociation curve)
Water sample conductivity	0.05 µS/cm - 10 mS/cm
Run-in-time	first start up: 1-24 h (6 hours usually) depending on water quality
Response time	T_{90}: 60 sec. approx.
Zero point adjustment	see chapter "Probe alignment"
Slope calibration	see chapter "Probe alignment" - DPD1
Alcalinity	80 ppm
Working temperature	5-70° C (41-158°F)
Temperature compensation	automatically, by an integrated temperature sensor
Max pressure	8 bar (116 PSI) - 80 mwc [mH2O] no pressure impulses and/or vibration, no depressure
Power supply	4 wires
Cable (standard)	1 m (3.28 ft)
Electrolyte mod.	ELESCL17
Working flow	40 l/h
Suitable for probe holder mod.	PEF1, PEF1/E, PEF5, PEF23
Material	shaft: PEEK; clamp ring:PPE; electrode: gold; oring: EPDM
Storage	probe: frost-protected, dry and without electrolyte (5-40° C) electrolyte: in original bottle, protect from sunlight (5-25°C)
Maintenance	regular control of measuring signal electrode cleaning: every 4-12 weeks change electrolyte: every 3-6 months SHORTEN THE MAINTENANCE INTERVALS APPROPRIATELY DEPENDING ON WATER QUALITY.

	SCL18
Parameter	FREE CHLORINE (INORGANIC)
Measuring range	SCL18/2: 0-2 mg/l (0-2 ppm) resolution: ± 0.001 SCL18/20: 0-20 mg/l (0-20 ppm) resolution: ± 0.001
Voltage supply	0/5 VDC (10 mA)
Connection	5-pole screw connector
Measuring system	amperometric 3-electrode system
Ph working range	5-9 pH (ref. HOCl dissociation curve)
Water sample conductivity	0.05 µS/cm - 10 mS/cm
Run-in-time	first start up: 1-24 h (6 hours usually) depending on water quality
Response time	T_{90}: 60 sec. approx.
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Operating principle

SCL probes are amperometric 3-electrode systems.
SCL probes measuring method is an electrochemical technique that measures the changes in current resulting from chemical reaction as function of the analyte concentration.

Precautions

Before any operation (preparation, cleaning and replacements) and before handly the probe you MUST FOLLOW these PRECAUTIONS.

⚠ DANGER

Wear unpowdered nitrile gloves.
Avoid contact of the electrolyte with the skin.
In case of contact with skin, rinse immediately with plenty of water.

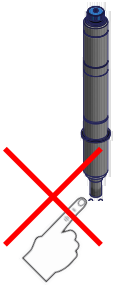
⚠ DANGER

Wear eye protection
Avoid contact of the electrolyte with the eyes.
In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Preparation

IMPORTANT

Prepare BEFORE USE.
Once assembled, insert the probe in the PEF flow cell with water flowing through it.

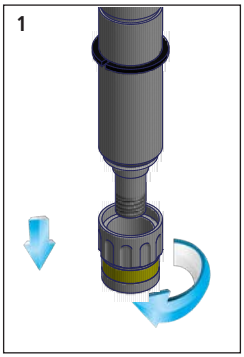


IMPORTANT

DO NOT TOUCH OR DAMAGE THE ELECTRODES AT THE BOTTOM OF THE SHAFT OR BRING THEM INTO CONTACT WITH GREASY SUBSTANCES.
OTHERWISE THE SENSOR WILL NO LONGER WORK ACCURATELY.

WARNING

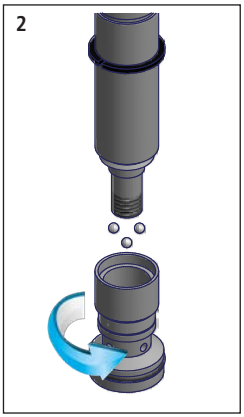
Wear nitrile gloves powder free.
Avoid electrolyte contact with skin.
In case of contact, immediately rinse with water.



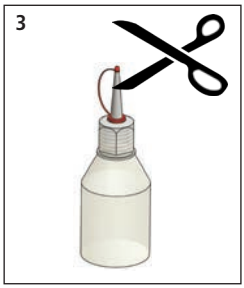
1 Keeping the probe in vertical position, unscrew membrane cap from the shaft.

IMPORTANT

Keep the membrane cap and the protective cap.



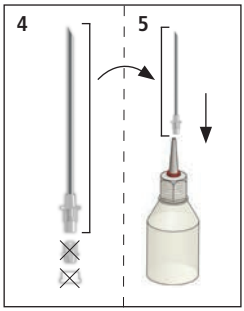
2 Insert 3 balls into the trays.
Screw the trays to the probe shaft but not completely.



IMPORTANT

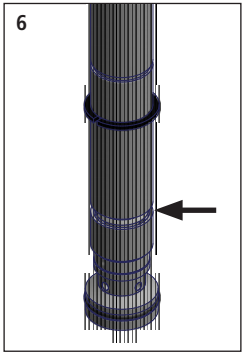
Perform the following operations over a sink.

3 Remove the red end cap and cut off the top end of the electrolyte spout.



4 Needle cannula is contained into the packaging.
Remove:
- white cap,
- transparent connection
- safety transparent hose.

5 Fix needle cannula on the nozzle of the electrolyte bottle in order to facilitate next step.



6 Fill the trays through the opening.
Screw the trays on the shaft until completely tightened.

IMPORTANT

Excess electrolyte may exit from the opening when screwing together. Rinse it with water.

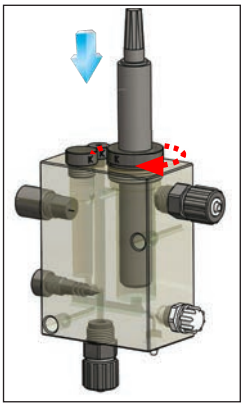
REPLACEMENT INTERVAL

The electrolyte has a limited lifetime and must be replaced as soon as the sensor can no longer be calibrated.

After electrolyte filling, proceed with probe alignment.

IMPORTANT

After use, close electrolyte bottle.
Do not pour the electrolyte in other bottles.
- The electrolyte should not be stored above accepted limits
- Expiring date on label
- Pour the electrolyte avoiding the formation of bubbles.



Connect the probe to the measuring instrument.
Install the probe into PEF flow cell (PEF in the pictures is an example):

- close water inlet/outlet through the PEF;
- unscrew completely the threading nut on PEF:
- insert the probe **slowly** until **stop**;
- screw the threading nut to fix the probe into the PEF. Use **hands only**. Make sure the the probe is **tightly fastened** in the place.

⚠ ATTENTION

Make sure that the probe is locked into place, water pressure could push it out.

Commissioning

⚠ ATTENTION

Incorrect metering due to sensor failure
Possible consequence: Slight or minor injuries, material damage
– If a sensor fails then there may be an incorrect reading at the input of the controller/measuring device
– This may result in uncontrolled metering
– The operator must therefore ensure that no subsequent damages can result from this event.

⚠ ATTENTION

– Do not switch off the measuring system during intermittent operation!
– A run-in time will be necessary following operation without chlorine.
– If no chlorine is added for a long time (~ 1 week) then the sensor must be cleaned before use.
The sensor is once more ready for use after run-in time and calibration.

The sensor requires a specific run-in time to display a steady display value.

Initial commissioning: 1-24 hours (usually 6 hours)
After cleaning procedure: 1-24 hours (usually 6 hours)
Electrolyte replacement: 1-3 hours

Probe alignment procedure

Alignment procedure must be performed for higher precision.
The sensor needs to be calibrated to the instrument it is connected to.
Two points calibration: 0 and a value close to working point.

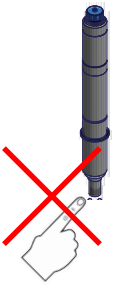
To calibrate the probe to **point 0**, water must be chlorine free.
For a chlorine free water, substitute the filter (installed before the PEF) with a carbon filter one.
Check the absence of chlorine by a DPD1 or a colorimetric method (depending on the probe).

Open PEF water outlet and then water inlet.
Wait the time as in "Run-in-time" on the probe technical sheet (p. 9-10).
Proceed to 0 calibration as described on instrument manual.

To calibrate the probe on the **second point**, substitute the carbon filter with a standard filter.
Open PEF water outlet and then water inlet.
Wait the time as in "Run-in-time" on the probe technical sheet (p. 9-10).
Check the water chlorine by a DPD1 or a colorimetric method (depending on the probe).
Proceed to slope calibration (Point 2) as described on instrument manual.

Cleaning procedure

La procedura di pulizia della sonda deve essere effettuata per una migliore precisione di lettura.



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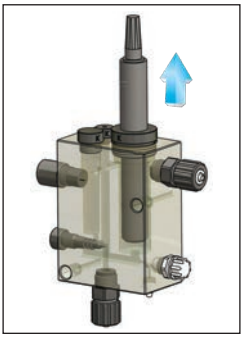
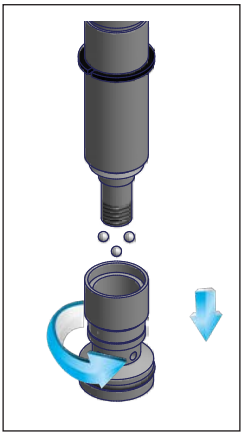


Uninstall the probe from PEF flow cell.
- close water inlet/outlet through the PEF;
- unscrew completely the threading nut on PEF:
- extract the probe **slowly**.

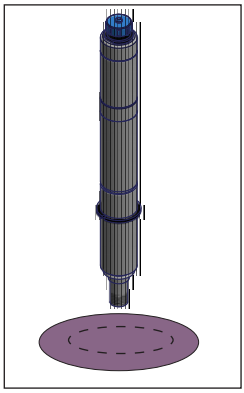


Unscrew the trays being careful to the 3 balls inside.

Use the special abrasive paper of the original box.

Hold the sheet on a flat surface with the textured part up.

Gently rub the electrode tip of the slightly inclined probe over the paper.
Repeat this movement 2/3 TIMES.
Prepare again the probe as described in "**Preparation**".



Gently rub the electrode tip of the slightly inclined probe over the paper.

Prepare again the probe as described in "**Preparation**"filling the trays with fresh electrolyte

IMPORTANT

After cleaning, proceed with probe alignment.

MAINTENANCE

Maintenance schedule

DANGER
MAINTENANCE SCHEDULE
In order to ensure the requirements of potable drinking water treated and the maintenance of the improvements as declared by the manufacturer, this equipment must be checked at least once a week.

DANGER
OPERATOR PROTECTION
Use safety equipment according to the company regulations.
Use this safety equipment within the work area during installation, service and when handling chemicals:

- protective mask
- unpowdered nitrile gloves
- safety goggles
- further security device, if necessary.

DANGER
POWER SUPPLY DISCONNECTION
Always disconnect power to the motor before you perform any installation or maintenance tasks. Failure to disconnect power will result in serious physical injury.

DANGER
AUTHORIZED AND QUALIFIED PERSONNEL
Installation and maintenance tasks should be carried out by AUTHORIZED AND QUALIFIED PERSONNEL only in accordance with local regulations.

IMPORTANT
Use original spare parts.

Maintenance inspection

INTERVAL	MAINTENANCE INSPECTIONS	REFERENCE
Weekly	Control probe reading using a DPD1 method.	Probe calibration procedure
Monthly	Check probe integrity	Cleaning procedure
Monthly	Check electrical wiring	-
Every 3/6 months	Refill electrolyte solution into electrode housing..	Electrolyte refilling procedure

Shorten the inspection intervals appropriately if the chemical is abrasive or corrosive.

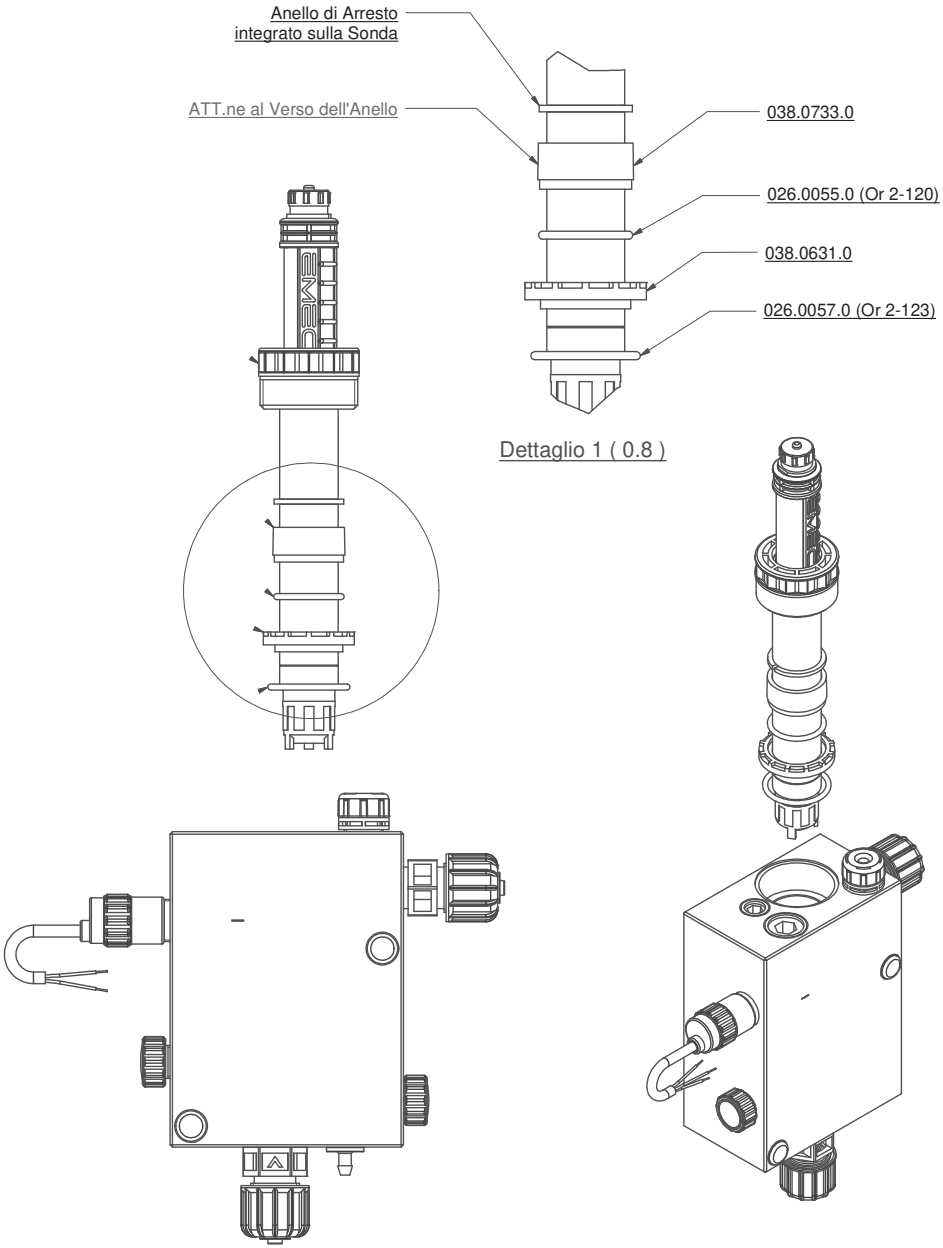
Decommissioning

1. Disconnect the sensor from the power
2. Depressurise the in-line probe housing
3. Loosen the clamping screw
4. Remove the sensor slowly from the in-line probe housing
5. Screw open and empty the trays over a sink or similar vessel
6. Flush the membrane and electrode with clean water and dry until free of dust
7. Loosely screw on the membrane cap and protecion to protect the electrodes

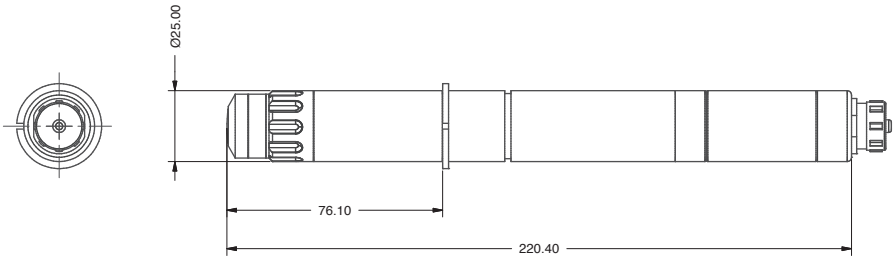
TROUBLESHOOTING

PROBLEM	CAUSES	SOLUTIONS
Probe cannot calibrated / deviation between measuring value and DPD result	Run-in time too short	Repeat calibration
	Interfering substances in the measuring water	Examine the measuring water for interfering substances and remedy, if necessary contact supplier
	Short-circuit / damage in the signal leads	Locate and eliminate short-circuit / defect, if necessary change the measuring cable
	Electrode housing is not completely screwed	Screw the electrode housing tightly onto the shaft
	Deposits on electrode	Carefully remove deposits with a soft brush or replace the membrane cap.
	No electrolyte in the electrode housing	Fill with electrolyte
	Protective cap not removed before installation	Remove protective cap
Measuring signal is not stable	Air bubbles in the electrolyte	Refill electrode housing carefully with new electrolyte avoiding bubbles
	Air bubbles on the outside of the membrane	Increase the flow rate temporary, if necessary check installation and revise it
	Pressure fluctuations in the measuring water	Check and revise installation

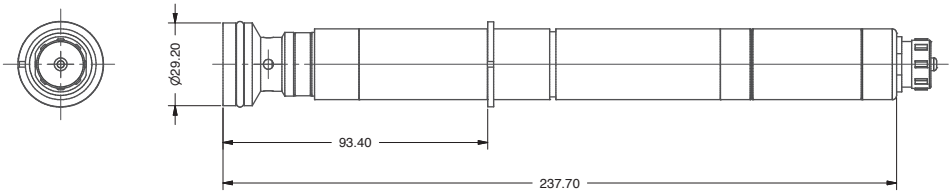
PEF1-E PROBE HOLDER MOUNTING



DIMENSIONS WITH MEMBRANE CAP



DIMENSIONS WITH TRAYS



PRODUCT SERVICE REPAIR FORM

ENCLOSE THE PRESENT FORM TO THE DELIVERY NOTE

DATE .....

SENDER

Company name.....
Address .....
Phone no. .....
Contact person.....

PRODUCT TYPE (see product label)

DEVICE CODE .....
S/N (serial number).....

OPERATING CONDITIONS

Location/installation description .....
.....
Chemical .....
Start-up (date) ..... Running time (approx. hours).....

REMOVE ALL THE LIQUID AND DRY IT BEFORE PACKAGING IN ITS ORIGINAL BOX.

DESCRIPTION OF PROBLEM

☐ MECHANICAL
- Wear parts.....
- Brekage/other damages .....
- Corrosion.....
- Other.....

☐ ELECTRICAL
- Connections, connector, cables .....
- Other.....

☐ NOT OR INADEQUATE FUNCTION/OTHER
.....
.....
.....

I declare that the product is free of any hazardous chemical.

Signature of the compiler
Firma del compilatore

Company stamp
Timbro dell'azienda

Disposal of end-of-life equipment by users

This symbol warns you not to dispose of the product with normal waste. Respect human health and the environment by giving the discarded equipment to a designated collection center for the recycling of electronic and electrical equipment. For more information visit the online site.

When dismantling a pump please separate material types and send them according to local recycling disposal requirements. We appreciate your efforts in supporting your local Recycle Environmental Program. Working together we'll form an active union to assure the world's invaluable resources are conserved.