

Rivo™ Series Flow Cell Modules

DEPOLOX®-R, DEPOLOX® Pool-R, Varia Sens™-R



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1 GENERAL NOTES

WARNING

Danger in the case of failure to observe the instruction manuals

Possible consequence: fatal or serious injury and significant material damage..

- All persons working with the DEPOLOX®-R, DEPOLOX Pool®-R and Varia Sens™ (Mod. D10) Flow Cell Modules or the Rivo™ System must have read and understood these instruction manual and the associated manuals.
- This instruction manual is only valid in conjunction with the following instruction manuals:
 - Rivo™ I/II/III (Mod. E10/20/30) Electronics Modules
 - Sensors approved by Evoqua Water Technologies GmbH.
- The warnings and safety instructions must be observed.
- The owner/operator is responsible for ensuring compliance with the relevant accident prevention regulations, other statutory provisions and the accepted rules of safety engineering.

1.1 General precept of non-discrimination

In the interest of better legibility, the linguistic forms male, female and diverse (m/f/d) are not used in parallel in this instruction manual. Nevertheless, all personal nouns and pronouns are understood to apply equally to all genders. We apologize for any inconvenience this may cause.

1.2 Target groups

Only trained and authorized specialist personnel are permitted to work with the DEPOLOX®-R, DEPOLOX Pool®-R and Varia Sens™ (Mod. D10) Flow Cell Modules or the Rivo™ System. All electrical work (e.g. electrical installation, installation of Rivo™ Flex Modules) must be performed by a qualified electrician. The sections on assembly, installation, start-up, system messages, faults, maintenance, shut-down and dismantling are intended exclusively for trained specialist personnel. Operation, storage, transport and disposal can be carried out by instructed personnel.

1.3 Information in the instruction manual

The Rivo™ System always consists of a Rivo™ I/II/III Electronics Module (Mod. E10) with different Rivo™ Flex Modules and an optional Flow Cell Module (Mod. D10) as well as a sensor.

For clarity, the Rivo™ System is referred to in this instruction manual as the System.

The DEPOLOX®-R, DEPOLOX® Pool-R and Varia Sens™ (Mod. D10) Flow Cell Modules are referred as the Flow Cell Module or the Flow-through Adapter, device or by the product name.

The Rivo™ I/II/III (Mod. E10/20/30) Electronics Modules are referred as the Electronics Module.

The electrode, the 3-electrode single-rod measuring sequence, the combination electrode and the membrane sensor are referred to as the sensor.

Details of the actual equipment may differ from those shown in the illustrations.

1.4 Associated documents

All operating, assembly and installation instructions for assemblies and components as well as Quick Guides must be observed. These manuals are included with the respective assemblies and supplementary components.

1.5 Retention of the documentation

The installation manual form part of the device and must be kept in the immediate vicinity of the device and accessible at all times. The instruction manual must be passed on to third parties with the device.

1.6 Original version of the instruction manual

This instruction manual is created in several languages. The German-language version is the original version. All other language versions are translations of the original version.

1.7 Digital instruction manual

You can download the digital version of the instruction manual from the official website of Evoqua Water Technologies GmbH.

- Scan the QR code.
- OR enter the following link in your browser:
<https://www.evoqua.com>
Select the corresponding instruction manual and log in.



1.8 Warnings on the device

There is a warning label attached to the device. Read the warnings through carefully. Do not remove this label. If the label is missing or illegible, please contact your contractual partner.

1.9 Device Id/type plate

The type plate is affixed to the device. The type plate identifies the specific device. Please use or state this information if you need service support.

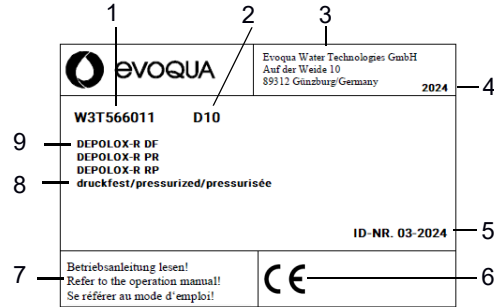


Abb. 1 For example, type plate



- 1 Article number
- 2 Series code/model code (e.g. Mod. D10)
- 3 Manufacturer's address
- 4 Year of issue
- 5 Sales-Order/Position/Serial number
- 6 CE mark (conformity of the device)
- 7 Read the operating instructions, multilingual
- 8 Spezifikation (e.g. pressurised/non-pressurised version)
- 9 Device name, multilingual


1.10 Warnings and safety instructions



The warnings and safety instructions are classified by means of a signal word and a pictogram. They comprise three parts:



- Nature and source of the danger
- Explanatory notes on nature and source of consequence if the instructions are not complied with
- Where applicable, measure to avoid the danger

 DANGER	
Immediate danger to life and limb	
Failure to comply leads to fatal or serious injury.	

 DANGER	
	Immediate danger caused by electric current
Failure to comply leads to fatal or serious injury.	

 WARNING	
Possible danger	
Failure to comply may lead to fatal or serious injury and to significant material damage.	

 WARNING	
	Danger caused by toxic substances
Failure to comply may lead to fatal or serious injury.	

 WARNING	
	Danger caused by fire or explosive material
Failure to comply may lead to fatal or serious injury.	

 ATTENTION	
Danger with low risk	
Failure to comply may lead to minor injury.	

CAUTION	
Danger with the risk of material damage	
Failure to comply may lead to serious material damage and impair functionality.	

1.11 Notes and information

NOTICE

Notes and information

Supplementary information and notes relevant to a specific topic or goal.



Notes and information



Read the instruction manual.

1.12 Design features

The following representations are used in these operating instructions:

Instructions for action



- 1 Carry out action
- 2 Consequence of action
- 3 Further consequence of action

=> result/goal of the action

List

- List/list item
 - List/list sub-item

2 SAFETY

 DANGER	
	<p>Danger fatal injury caused by electric shock External voltages may still be connected even if the operating voltage is switched off. Possible consequence: fatal or serious injury.</p> <ul style="list-style-type: none"> • All electrical work must be performed by a qualified electrician. • The Electronics module is not equipped with a mains switch and is in operation as soon as the supply voltage is applied. An external switch or circuit breaker with a clearly identifiable “Off” switch position is necessary. • The Electronics module may only be operated with the prescribed supply and control voltage (technical data). • In the event of a fault in the electrical power supply, switch the device off immediately. • Do not carry out work on active parts and equipment to which voltage is applied. • The device operates with liquids. For this reason, DIN EN IEC 62368/60950 must be observed when connecting the devices.

2.1 Intended use

- The DEPOLOX®-R, DEPOLOX® Pool-R and Varia Sens™-R (Mod. D10) Flow Cell Modules in combination with the installed sensors and the Rivo™ I/II/III (Mod. E10/20/30) Electronics Modules are intended only for measurement and control in the treatment of drinking water, process water, industrial water, wastewater, and swimming and bathing pool water.
- The Flow Cell Modules are part of the Rivo™ System.
- The Flow Cell Modules may only be operated in combination with the Rivo™ I/II/III (Mod. E10/20/30) Electronics Modules and only sensors approved by Evoqua Water Technologies GmbH may be connected.
- This instruction manual is only valid in conjunction with the instruction manuals for the Flow Cell Module and the relevant sensors.
- Operational safety can only be guaranteed if the device is used in accordance with its intended purpose.
- The device may only be used for the purpose defined in the contract and under the installation, operating, and environmental conditions specified in this instruction manual.

- No substances may be used other than those described in this instruction manual (chemicals and prescribed calibration chemicals).
- All inspection and maintenance work must be carried out at the specified intervals.
- The system must be protected against access by insufficiently qualified personnel by means of access restriction and the assignment of passwords. Corresponding security concepts must be provided to prevent unauthorized remote access.
- All inspection and maintenance work must be carried out at the specified intervals. Inspections and control measures must be carried out at the prescribed intervals and documented!
- Compliance with the intended use also includes reading this instruction manual and observing all the safety information, instructions and notes therein. The owner/operator of the installation bears sole responsibility for consequences of any use that does not conform with the installation's intended use.

2.2 Improper use

- The Flow Cell Modules (Mod. D10) must not be used with other Electronics Modules than the Rivo™ I/II/III (Mod. E10/20/30) Electronics Modules.
- The Flow Cell Modules (Mod. D10) must not be operated with sensors and sensor cables that were not approved by Evoqua Water Technologies GmbH.
- Do not use damaged or obsolete sensors or sensor cables.
- Any use above and beyond the intended use.
- Use that deviates from the information in the technical data.
- Modifications to the device or parts of the device.
- Assembly and installation of or work on electrical components must be carried out by a qualified electrician.
- The Rivo™ System must not be operated with flammable liquids.

2.3 General safety instructions

The manufacturer places great emphasis on safety when working on or with the device. This is already taken into account in the design of the installation and by the integration of safety features.

Safety instructions

This instruction manual describes the safe and proper handling of the device. The specified safety notes and instructions, as well as the local accident prevention regulations and general safety regulations applicable to the area of use, must be observed. Additional industry-wide or in-house safety regulations also continue to apply. The operating company is under obligation to provide operating instructions in accordance with local, national and international specifications, regulations and legislation. Modifications to the device other than those described in this instruction manual are not permissible.

State-of-the-art technology

The unit has been constructed in accordance with state-of-the-art technology and the accepted rules of safety engineering. However, if the unit is used by persons who have not been adequately instructed, danger to the life and limb of such persons or third parties and damage to the unit itself or to other property cannot be ruled out. Work not described in this instruction manual must be performed only by authorized personnel.

2.4 Personnel qualification

WARNING

Danger from unqualified personnel

Possible consequence: fatal or serious injury and significant material damage.

- The company operating the overall system must ensure that only authorized and qualified personnel are permitted to work with and on the device and within their defined scope of authority.
- Unqualified personnel must be kept away from the device.
- The system must be protected against access by insufficiently qualified personnel by means of the assignment of passwords and access restriction.
- Work on electrical components must be carried out by qualified electricians.

It is a prerequisite that all persons assigned to work on or at the device are familiar with and comply with the work safety and accident prevention regulations.

The operating company must train all persons handling the system, device, components, substances etc. and inform them of possible hazards.

It is the responsibility of the operating company to monitor personnel qualification.

If the personnel do not have the necessary knowledge, they must be trained. The responsibilities for work on and with the device (assembly, installation, installation or de-installation of interfaces, operation, troubleshooting, start-up, shut-down, maintenance, dismantling as well as storage, transport and disposal) must be clearly defined and adhered to so that there is no unclear distribution of competencies from the point of view of safety.

Only persons who can be expected to perform their work reliably may work on and with the device. Refrain from any working method that affects the safety of persons, the environment or the device.

Persons who are under the influence of drugs, alcohol or medication affecting their ability to react must not work on or with the device. When selecting personnel, the age- and occupation-specific regulations applicable at the device's place of use must be observed.

The operator must ensure that unauthorized persons are kept at a safe distance from the device.

Personnel are under obligation to immediately report to the operating company any changes that occur in the device that affect safety.

Instructed personnel

Instructed personnel are persons who have received instruction and, where necessary, training on the tasks assigned to them and the associated hazards and have been informed of the necessary protective devices and protective measures.

Trained user

A trained user meets the requirements that apply to an instructed person and in addition, has received system-specific training.

Qualified specialist

Qualified specialist personnel are persons who meet the requirements that apply to a trained user and who, in addition, on the basis of their technical training, knowledge, experience and knowledge of the relevant standards and regulations, are able to assess the work assigned to them and recognize possible hazards. When assessing specialist training, a period of several years' employment in the respective field may also be taken into consideration.

Qualified electrician

Qualified electricians are persons who, on the basis of their technical training, knowledge and experience, as well as knowledge of the relevant standards and regulations, are able to assess the work assigned to them and recognize possible hazards. Qualified electricians must comply with the provisions of the applicable accident prevention regulations.

IT specialist

IT specialists (IT = Information Technology) are persons who, on the basis of their technical training, knowledge and experience, as well as knowledge of the relevant standards and regulations, are able to carry out work on computer systems, networks and network components as well as to independently recognize and avoid possible hazards.

2.5 Spare parts/components

Trouble-free operation of the unit is only guaranteed if original spare parts and components are used in precisely the combination described in this instruction manual. Failure to observe this instruction may lead to malfunctions or damage to the device.

2.6 Extensions and modifications

Never attempt to perform any modifications, extensions or conversions on the device that could impair safety without the written approval of the manufacturer.

2.7 Electrical power

Only qualified electricians or trained personnel supervised by a qualified electrician are permitted to perform any work on electrical components and must do so in accordance with valid electro-technical regulations. During normal operation, the electronic module and the flow-through assembly must remain closed. The electronic module may only be put into operation when the housing is closed, and must be connected to protective earth. Power cables must be connected in accordance with the wiring diagram.

2.8 IT security

The manufacturer offers IT security mechanisms for its products to support secure system operation. We recommend checking on a regular basis to see what information is available regarding IT security developments for your products. Information on this can be found on the Internet. Moreover, for the safe operation of an installation, it is also necessary to integrate the automation components into a holistic IT security concept which comprises the entire system and is in accordance with the state of the art in IT technology. Integrated products from other manufacturers should also be taken into account.

Unsecure connections via the Internet or WLAN are not permitted.

During commissioning of the device, the factory-configured passwords and user names should be replaced with individual ones and the user administration enabled.

2.9 Safety instructions for specific operating phases

- Never employ any working methods which could affect safety!
- All system components must be correctly installed and meet the requirements.
- Only operate the electronic module when the housing is closed.
- The device poses hazards to persons and property. These hazards may arise due to parts carrying voltage or the incorrect dosing of chemicals.
- Only qualified electricians or trained personnel supervised by a qualified electrician are permitted to perform any work on electrical components and must do so in accordance with valid electro-technical regulations.
- Avoid setting up and operating the equipment where there are strong electromagnetic fields. Take appropriate measures to ensure electromagnetic compatibility (EMC) with other devices.
- Inspect the device at least once daily for externally visible damage and faults! Inform the responsible person/authority immediately of any detected changes (including any changes in the operating performance)!
- In the event of malfunctions, switch the device off immediately! Have malfunctions remedied immediately!
- Connect disconnected cables in accordance with the wiring diagram.
- During installation and maintenance work, secure the device against being switched back on!
- If stipulated, disconnect all parts of the device from the power supply before performing any inspection, maintenance or repair work. Then first test the disconnected components to ensure they do not carry any voltage.
- Use only original fuses with the prescribed rating!
- Observe the safety regulations applicable to the device when handling auxiliary materials and chemical substances. Remove leaked auxiliary materials with a suitable binding agent or wipe them up with a cloth. Danger of slipping! Collect auxiliary materials separately and dispose of them appropriately in accordance with the relevant national regulations.
- Never use corrosive cleaning agents (e.g. isopropyl alcohol, spirit, scouring agents) and do not clean using high-pressure steam!

2.10 Warranty conditions

The following must be observed for compliance with warranty conditions. If any of the conditions listed are not met, the warranty is void.

- Assembly, installation, start-up, troubleshooting, maintenance, shut-down and dismantling must be carried out by the manufacturer or qualified specialist personnel, e.g. from contracted companies
- Intended use
- Observation of the operational parameters and settings
- Operation, storage, transport and disposal of the unit must be carried out by qualified specialist personnel or instructed personnel
- Only approved calibration chemicals may be used
- The device must not be exposed to frost or explosive environments.
- The prescribed maintenance work must be carried out
- Use of original spare parts

2.11 Liability for defects

Liability for defects is regulated by the general terms and conditions of supply or by special contractual agreements. To preserve the liability for defects, the operating and environmental conditions, and the operating and maintenance regulations described in this instruction manual must be observed. If they are not observed, the right to claim under liability for defects is rendered invalid.

3 DELIVERY, TRANSPORT AND STORAGE

3.1 Checking incoming goods

- 1 Check transport packaging. Please notify the transport company immediately in the event of damage, as your rights to compensation will otherwise be lost.
- 2 Check that the consignment is complete and undamaged. Pay attention to small parts. If a component is damaged, please contact your contractual partner immediately.

3.2 Packaging

Packaging is reusable waste which must not be disposed of with household waste, but must be collected and disposed of separately, e.g. at public collection points. If necessary, contact your regional or local authorities for details of collection points and options for separating and collecting waste.

3.3 Scope of delivery

The scope of supply includes the following, depending on the individual order:

Article number	Flow Cell Modules (Mod. D10)
W3T565860	DEPOLOX®-R, non-pressurised version (3-electrode measuring cell integrated)
W3T566011	DEPOLOX®-R, pressurised version (3-electrode measuring cell integrated)
W3T565858	DEPOLOX® Pool-R, non-pressurised version
W3T565859	DEPOLOX® Pool-R, pressurised version
W3T566012	Varia Sens™-R, non-pressurised version
W3T566013	Varia Sens™-R, pressurised version
W3T173182	Mounting accessories
W3T566486	Instruction manual, English

3.4 Required components

Article number	Electronics Module
W3T570783	Rivo™ I Municipal/Industrial (Mod. E10)

Article number	Sensors
W3T160652	3-Elektroden-Einstabmesskette chlorine (platinum version)
W3T160991	3-Elektroden-Einstabmesskette chlorine (gold version)
W3T169297	pH sensor
W3T169298	Redox combination electrodes (platinum version)
W3T172356	Redox combination electrodes (gold version)
W3T172052	Conductivity sensor
W2T840142	Fluoride sensor
W3T570399	Membrane sensor FC2 M12 (free chlorine)
W3T570400	Membrane sensor CD10.1 (chlorine dioxide)
W3T570451	Membrane sensor OZ10.1 (ozone)
W3T570398	Membrane sensor TC3 M12 (total chlorine)

3.4.1 Modules and Sensor Kits

Article number	Designation
W3T585524	Rivo™ Flex Sens pH Kit
W3T585526	Rivo™ Flex Sens Redox Kit
W3T585527	Rivo™ Flex Sens Redox G Kit
W3T585529	Rivo™ Flex Sens Fluorid Kit
W3T585531	Rivo™ Flex Sens Cond. Muni Kit
W3T585290	Rivo™ Flex Mem TC Kit
W3T585521	Rivo™ Flex Mem FC Kit
W3T585522	Rivo™ Flex Mem CD Kit
W3T585523	Rivo™ Flex Mem OZ Kit
W3T586499	Rivo™ Flex Mem DIS-3E Pt Kit
W3T586500	Rivo™ Flex Mem DIS-3E AU Kit

3.5 Optional accessories

- Plug-cable combinations for sensor in different lengths
- Impedance converter
- Maintenance part sets and accessories for calibration
- Strainer and set of fittings for strainer
- PVC hose or PE hose and accessories
- Booster pump
- Pressure reducing valves

NOTICE

If required, please contact the service contractor or visit our e-commerce shop.

3.6 Transport

ATTENTION

Danger due to impact or breakage

Possible consequence: Injury or material damage.

- Follow the instructions and warnings on the packaging.
- Protect the device against impact during transport and transport it in the original packaging. Keep the packaging until the system has been commissioned and put into operation.
- Observe instructions on the packaging for the correct positioning of the device.
- Do not expose the device to shocks, moisture, rain, frost, heat or direct sunlight.
- Observe the specified temperatures for transport and storage (see Technical Data).

3.7 Storage

 **ATTENTION**

Danger caused by incorrect storage

Incorrect storage can impair the functionality of the device.
Possible consequence: Injury or material damage.

- Store the device in dry condition in a dust-free environment and protected against moisture.
- Do not store the device outdoors or expose it to aggressive media, and protect it against direct sunlight and mechanical damage.
- Observe the specified temperatures for storage (see Technical Data).
- Regularly check the general condition of the device and the packaging.

4 TECHNISCHE DATEN

DEPOLOX®-R Flow Cell Module (Mod. D10)	
Article number/Version	W3T565860 - non-pressurised version W3T566011 - pressurised version
Area of application	Drinking water, waste water, industrial water, Prozesswasser, swimming pool and bathing water
Description	Built-in 3-electrode measuring cell and freely selectable additional sensors
Measured variables	Free chlorine, ClO ₂ , O ₃ , Br ₂ , KMnO ₄
Messsystem	Amperometric working, potentiostatic 3-electrode-system
Measurement range	0 ... 50 mg/l (Chlorine reference value)
Typisches Ausgangssignal	20 µA / mg/l bei Chlor
Sample water of conductivity	>= 100 µS/cm
Sample water of temperature	0 ... 50 °C (32 ... 122 °F)
Sample water of pH value	HOCl characteristic for chlorine, Arbeitsbereich pH 6,0 ... pH 8,5
Response time	T ₉₀ <20 sec.
Sample water flow	Approx. 33 l/h (controlled), preset at the factory
Flow control range (admission pressure)	0.25 ... 3.0 bar (3.63 ... 43.51 psi)
Differential pressure (inlet/outlet)	min. 0.25 bar (min. 3.63 psi)
Back-pressure	Non-pressurised version: free drain Pressurised version: max. 1.5 bar When using membrane sensors: max. 0.5 bar (7.25 PSI). No pressure impulses or vibrations.

4 Technische Daten

EN Rivo™ Series Flow Cell Module

Flow Rate Monitoring	21 l/h ± 3 l/h
Temperature sensor	Pt1000
Hydraulic connections	Non-pressurised version: Inlet: G 1/2" A thread connection (adapter NPT-1/4") Outlet: Connecting nipple for hoses ID 6 mm
	Pressurised version: Inlet and outlet: Thread connection G 1/2" (adapter NPT-1/4")
Electrode system	Platinum working electrode/counter electrode, PE diaphragma, KCl gel electrolyte, Ag/AgCl-reference electrode
Dimensions (WxHxD)	252 x 375 x 155 mm (9.92 x 14.76 x 6.1")
Weight	Approx. 2.5 kg
Working temperature	0 ... +50° C (32 ... 122 °F)
Transport and storage temperature	-10 ... +50 °C (14 ... 122 °F), without electrolyte

The HOCl curve describes the influence of the pH value on the DEPOLOX®-R.

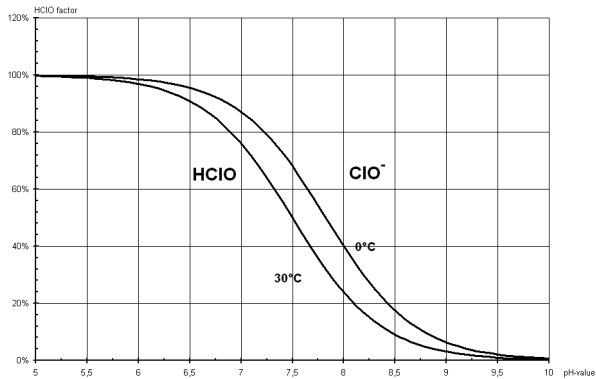


Abb. 2 HOCl curve

DEPOLOX® Pool-R Flow Cell Module (Mod. D10)	
Article number/Version	W3T565858 - non-pressurised version W3T565859 - pressurised version
Area of application	Swimming pool water.
Description	Focus on replaceable chlorine electrode sensor (glass) plus freely selectable additional sensors
Sample water flow	Approx. 33 l/h (controlled)
Flow control range (admission pressure)	0.25 ... 3.0 bar (3.63 ... 43.51 psi)
Back-pressure	Non-pressurised version: free drain Pressurised version: max. 1.5 bar When using membrane sensors: max. 0.5 bar (7.25 PSI). No pressure impulses or vibrations.
Flow Rate Monitoring	21 l/h ± 3 l/h
Temperature sensor	Pt1000
Hydraulic connections	Non-pressurised version: Inlet: G 1/2" A thread connection (adapter NPT-1/4") Outlet: Connecting nipple for hoses ID 6 mm
	Pressurised version: Inlet and outlet: Thread connection G 1/2" (adapter NPT-1/4")
Dimensions (WxHxD)	252 x 375 x 155 mm (9.92 x 14.76 x 6.1")
Weight	Approx. 2.5 kg
Working temperature	0 ... +50 °C (32 ... 122 °F)
Transport and storage temperature	-20 ... +70 °C (-4 ... 158 °F)

Varia Sens™-R Flow Cell Module (Mod. D10)	
Article number/Version	W3T566012 - non-pressurised version W3T566013 - pressurised version
Area of application	Flexible use in portable water quality
Description	Focus on membrane sensors with lower pH dependency
Sample water flow	Approx. 33 l/h (controlled)
Flow control range (admission pressure)	0.25 ... 3.0 bar (3.63 ... 43.51 psi)
Back-pressure	Non-pressurised version: free drain Pressurised version: max. 1.5 bar When using membrane sensors: max. 0.5 bar (7.25 PSI). No pressure impulses or vibrations.
Flow Rate Monitoring	21 l/h ± 3 l/h
Temperature sensor	Pt1000
Hydraulic connections	Non-pressurised version: Inlet: G 1/2" A thread connection (adapter NPT-1/4") Outlet: Connecting nipple for hoses ID 6 mm
	Pressurised version: Inlet and outlet: Thread connection G 1/2" (adapter NPT-1/4")
Dimensions (WxHxD)	252 x 375 x 155 mm (9.92 x 14.76 x 6.1")
Weight	Approx. 2.5 kg
Working temperature	0 ... +50° C (32 ... 122 °F)
Transport and storage temperature	-20 ... +70 °C (-4 ... 158 °F)

5 DESIGN

NOTICE

Rivo™ Series Flow Cell Modules (Mod. D10) are available in both a non-pressurised and a pressurised version. The pressurised version is characterized by a sample water inlet with shut-off ball valve. The following illustrations refer to the pressurised version.

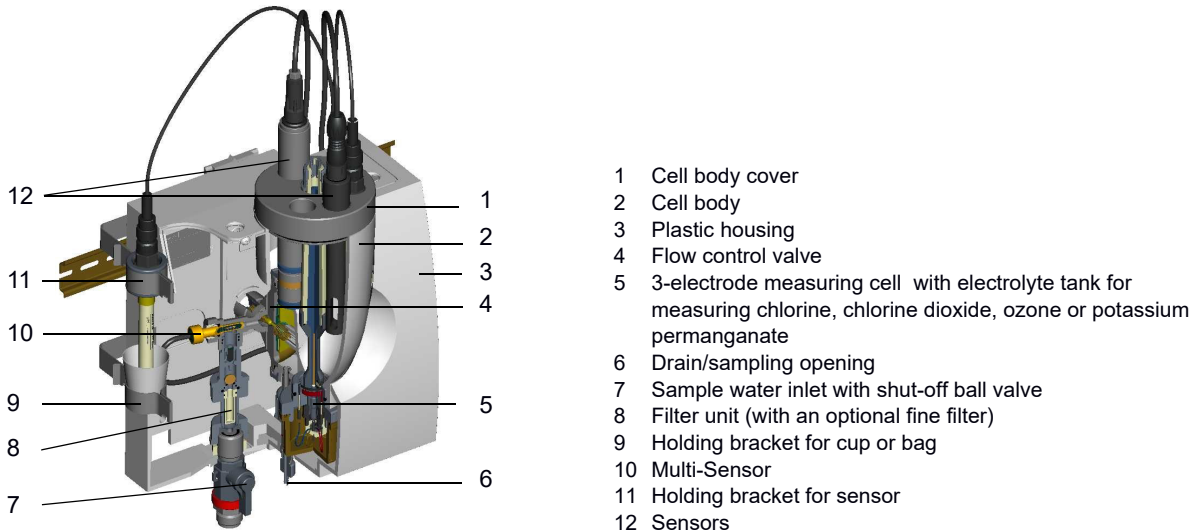


Fig. 1 DEPOLOX®-R Flow Cell Module (Mod. D10)

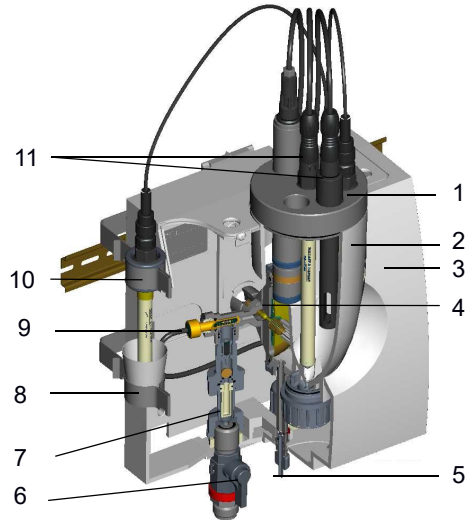


Fig. 2 DEPOLOX® Pool-R Flow Cell Module (Mod. D10)

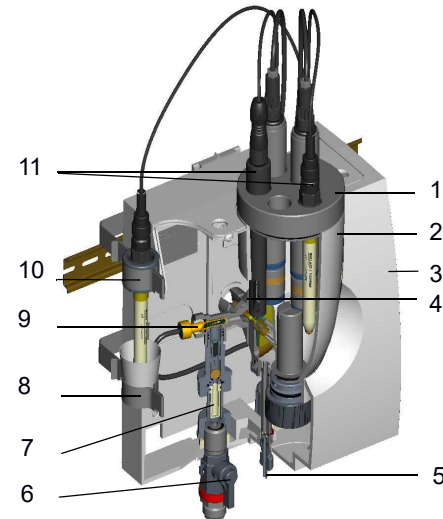


Fig. 3 Varia Sens™-R Flow Cell Module (Mod. D10)

- 1 Cell body cover
- 2 Cell body
- 3 Plastic housing
- 4 Flow control valve
- 5 Drain/sampling opening
- 6 Sample water inlet with shut-off ball valve

- 7 Filter unit (with an optional fine filter)
- 8 Holding bracket for cup or bag
- 9 Multi-Sensor
- 10 Holding bracket for sensor
- 11 Sensors

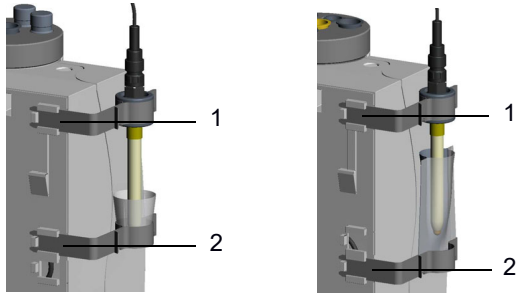


Fig. 4 Calibration aids

- 1 Holding bracket for sensor
- 2 Holding bracket for cup or bag

NOTICE

Two holding brackets are installed in the housing cover. These are inserted on the side at the back of the main housing.

6 DESCRIPTION, FUNCTION AND CONFIGURATION OPTIONS

6.1 General information

The flow cell modules DEPOLOX®-R, DEPOLOX® Pool-R and Varia Sens™-R (Mod. D10) are special flow-through assemblies that can be equipped with various sensors for measuring hygiene parameters.

Depending on the sensors fitted, the parameters free chlorine, total chlorine, pH, redox, conductivity, fluoride, chlorine dioxide and ozone can be measured.

The flow cell modules differ in the design of the sample water outlet (non-pressurized or pressurized version) and in the number of sensors that can be installed.

The DEPOLOX®-R flow cell module contains a 3-electrode measuring cell. It measures the parameters free chlorine, chlorine dioxide, ozone and potassium permanganate.

The integrated multi-sensor monitors the correct flow and records the temperature with a Pt1000 sensor.

6.2 Function

The functional principle is described from the sample water inlet to the sample water outlet.

6.2.1 DEPOLOX®-R (Mod. D10)

The sample water supply is connected on the input side via the threaded connection on the ball valve. The sample water flows via the optional strainer and then via the filter unit to the check valve housing.

NOTICE

Optionally, a fine filter can be installed in the filter unit. A fine filter is mandatory when membrane sensors are used.

The check valve housing offers a non-return function and guides the ball for flow rate monitoring. If the admission pressure rises, the ball in the check valve housing moves toward the closing direction, and if the admission pressure drops, the ball moves toward the opening direction.

The multi-sensor monitors the correct flow following the float principle with reed switch and records the temperature with a Pt1000 sensor.

Large-area sample water earthing is via the stainless steel housing of the multi-sensor.

The flow control valve ensures a sample water flow that is not dependent on the operating pressure.

NOTICE

The correct sample water flow of 33 l/h is preset at the factory.

The cell body contains the 3-electrode measuring cell with external potentiostatic control loop and a refillable electrolyte storage tank.

Working and counter electrode are designed as semi-annular electrodes and made from a special platinum alloy.

A silver-silver chloride electrode connected to the sample water via two diaphragms serves as the reference electrode. The reference electrode is dipped into an electrolyte solution. The electrolyte solution can also be topped up during operation.

The sample water flowing tangentially into the 3-electrode measuring cell ensures continual hydro-mechanical cleaning of the sensor electrode with a special electrode cleaning sand. The electrode cleaning sand must be refilled and replaced repeatedly and prevents the natural contamination of the electrode surfaces.

NOTICE

Clean electrode surfaces and a constant flow of sample water are decisive criteria for high-quality oxidant measurement and greater responsiveness.

The 3-electrode measuring cell is connected to the electronic module. The adjustable cell voltage U_{pot} is output via the potentiostatic control loop. The cell current (μA signal) is proportional to the concentration of disinfection agent in the sample water and is evaluated with the electronic module.

The cell body contains further sensors. The sensors are installed in the location hole in the cell body cover with standardized threaded connections or in special sensor holders and are connected to the electronic module.

The sample water runs off via a drain connection directly via the cell body outlet at the top. On the pressurized version, the sample water supply runs off via the ball valve.

Via the sample extraction unit, sample water can be drawn off from the cell body through the low-pressure side of the flow control valve (for calibration) or to drain the cell body for servicing purposes.

6.2.2 DEPOLOX® Pool-R (Mod. D10)

The sample water supply is connected on the input side via the threaded connection on the ball valve. The sample water flows via the optional strainer and then via the filter unit to the check valve housing.

NOTICE

Optionally, a fine filter can be installed in the filter unit. A fine filter is mandatory when membrane sensors are used.

The check valve housing offers a non-return function and guides the ball for flow rate monitoring. If the admission pressure rises, the ball in the check valve housing moves toward the closing direction, and if the admission pressure drops, the ball moves toward the opening direction.

The multi-sensor monitors the correct flow following the float principle with reed switch and records the temperature with a Pt1000 sensor.

Large-area sample water earthing is via the stainless steel housing of the multi-sensor.

The flow control valve ensures a sample water flow that is not dependent on the operating pressure.

The cell body contains the sensors. The sensors are installed in the location hole in the cell body cover with standardized threaded connections or in special sensor holders and are connected to the electronic module.

The flow distributor cap screwed into the cell body from below allows continuous hydro-mechanical cleaning of the electrode of the chlorine sensor using special electrode cleaning sand. The electrode cleaning sand must be refilled regularly and prevents the natural contamination of the electrode surfaces.

NOTICE

Clean electrode surfaces and a constant flow of sample water are decisive criteria for high-quality chlorine measurement and greater responsiveness.

The sample water runs off via a drain connection directly via the cell body outlet at the top. On the pressurized version, the sample water supply runs off via the ball valve. Via the sample extraction unit, sample water can be drawn off from the cell body through the low-pressure side of the flow control valve (for calibration) or to drain the cell body for servicing purposes.

6.2.3 Varia Sens™-R (Mod. D10)

NOTICE

The flow cell module Varia Sens™-R (Mod. D10) can be used in combination with membrane sensors for the measurement of free chlorine, total chlorine, ozone and chlorine dioxide. It must be ensured that only one of these disinfection agents is present in the water and that the cross-sensitivity of the sensors is allowed for.

The sample water supply is connected on the input side via the threaded connection on the ball valve. The sample water flows via the optional strainer and then via the filter unit to the check valve housing.

NOTICE

Optionally, a fine filter can be installed in the filter unit. A fine filter is mandatory when membrane sensors are used.

The check valve housing offers a non-return function and guides the ball for flow rate monitoring. If the admission pressure rises, the ball in the check valve housing moves toward the closing direction, and if the admission pressure drops, the ball moves toward the opening direction.

The multi-sensor monitors the correct flow following the float principle with reed switch and records the temperature with a Pt1000 sensor.

Large-area sample water earthing is via the stainless steel housing of the multi-sensor.

The flow control valve ensures a sample water flow that is not dependent on the operating pressure.

The cell body contains the sensors. The sensors are installed in the location hole in the cell body cover with standardized threaded connections or in special sensor holders and are connected to the electronic module.

The sample water runs off via a drain connection directly via the cell body outlet at the top. On the pressurized version, the sample water supply runs off via the ball valve.

Via the sample extraction unit, sample water can be drawn off from the cell body through the low-pressure side of the flow control valve (for calibration) or to drain the cell body for servicing purposes.

6.3 Configuration options

Electronics Module Series Rivo™ (Mod. E10) / Sensors	DEPOLOX®-R dnon-pressurised (Mod. D10)	DEPOLOX®-R pressurised version (Mod. D10)	DEPOLOX® Pool-R non-pressurised (Mod. D10)	DEPOLOX® Pool-R pressurised version (Mod. D10)	Varia Sens™-R non-pressurised (Mod. D10)	Varia Sens™-R pressurised version (Mod. D10)
Electronics Module						
Rivo™ I Municipal/Industrial (Mod. E10)	✓	✓	✓	✓	✓	✓
Sensoren						
3-electrode measuring cell for free Chlorine, ClO ₂ , KMnO ₄ , O ₃ (integrated)	1*	1*	-	-	-	-
Multi-Sensor (integrated)	1*	1*	1*	1*	1*	1*
Chlorine Sensor - Platinum version or gold version	x	x	✓	✓	x	x
pH Sensor	✓	✓	✓	✓	✓	✓
Redox Sensor - Platinum version or gold version	✓	✓	✓	✓	✓	✓
Conductivity Sensor 60 mS oder 600 µS	✓	✓	✓	✓	✓	✓
Fluoride Sensor	✓	x	x	x	✓	x

Electronics Module Series Rivo™ (Mod. E10) / Sensors	DEPOLOX®-R dinon-pressurised (Mod. D10)	DEPOLOX®-R pressurised version (Mod. D10)	DEPOLOX® Pool-R non-pressurised (Mod. D10)	DEPOLOX® Pool-R pressurised version (Mod. D10)	Varia Sens™-R non-pressurised (Mod. D10)	Varia Sens™-R pressurised version (Mod. D10)
Membrane Sensor FC2 (free Chlorine)	1x Membrane Sensor	x**	✓	x	2x Membrane Sensors	✓*
Membrane Sensor TC3 (total chlorine)		x**	✓	x		✓*
Membrane Sensor CD10.1 (ClO ₂)		x**	✓	x		✓*
Membrane Sensor OZ10.1 (O ₃)		x**	✓	x		✓*

✓ compatible

x incompatible

1* integrated (Standard)

NOTICE

x** x** The non-pressurised version can also be equipped with a membrane sensor. To do this, the standard cell body cover must be replaced with the optional cell body cover W3T417351.

NOTICE

✓* Beim Einbau eines Membransensors in ein druckfestes Durchfluss-Modul beträgt der maximal zulässige Betriebsdruck 0,5 bar (7,25 PSI)! Keine Druckstöße oder Schwingungen.

7 INSTALLATION

DANGER



Danger of fatal injury caused by electric shock

External voltages may still be connected even if the operating voltage is switched off.

Possible consequence: fatal or serious injury.

- All electrical installation work must be performed by a qualified electrician.
- Work on the device must be carried out when it is in de-energized state.
- Do not carry out work on active parts and equipment to which voltage is applied.
- In the event of a fault in the electrical power supply, switch the device off immediately.
- The device operates with liquids. For this reason, DIN EN IEC 62368/60950 must be observed when connecting the devices.

WARNING

Danger from unqualified personnel



Possible consequence: fatal or serious injury and significant material damage.

- To ensure safe operation and prevent serious injury, the device must be installed by trained and authorized specialist personnel.
- Local installation regulations, general guidelines, technical data and construction regulations of the respective water or building authority as well as applicable national and local regulations must be observed.

NOTICE

The assembly accessories included in the scope of delivery must be used for installation.

7.1 Requirements with regard to the environment and installation location

 WARNING	
	<p>Danger caused by fire or explosive material Possible consequence: fatal or serious injury.</p> <ul style="list-style-type: none">• Do not use the device in environments where there are flammable gases, fumes or dust or conductive dust.• Smoking, fire, naked flames, welding, and work that may generate sparks are forbidden in the vicinity of the device.

The installation location must meet the following requirements:

- The installation location must not be accessible to the public.
- The installation location must be such that operation by unauthorized personnel is ruled out.
- The installation location must not be used as a permanent workplace.
- Protect the device against moisture, rain, frost, heat and direct sunlight.
- Do not install the device outdoors.
- Do not expose the device to strong vibration or impact, magnetic fields or electromagnetic radiation.
- Provide sufficient aeration and ventilation.

- Note the minimum ceiling height.
- The installation wall must be vertical, flat and stable.
- The device must be accessible and visible from the front and side for installation, operation and maintenance.
- Operating and ambient temperature must lie between 0 and +50 °C (32 ... 122 °F) (technical data).
- The air in the room must be non-condensing.
- The Electronics Module is not suitable for electrical connection with permanently installed cable conduits. If the cable glands do not meet local installation rules and regulations, these glands must be replaced with suitable ones.

7.1.1 Installation location for drinking water, industrial water and waste water

For problem-free mixing of the chlorine solution, the distance between chlorine addition and sample water take-off must be at least ten times the pipe diameter:

Example:	Pipe DN300 => 300 mm x 10 = 3000 mm => minimum distance = 3 m
----------	---

The time between chlorine addition and free over dosing is the total sampling time. It consists of the travel time between chlorine addition point and sample water take-off and the travel time between sample water take-off and measurement (sample water line to flow cell). Keep the sample water line to the flow cell as short as possible.

For longer required soak times, for example 5 to 15 minutes, a delay tank can be installed into the sample water line immediately before the flow cell.

Note that longer soak time prevents chlorine addition control based purely on excess chlorine. Instead, combined flow and excess chlorine dependent control must be used. This also applies to the use of chlorine, chlorine dioxide and ozone as disinfectant.

7.1.2 Installation site for swimming pool water

The sample water take-off point must be installed in the pool return line according to standards (see DIN 19643, DIN = German Industrial Norm). Make sure that the sample water take-off point is upstream of the flocculant station.

7.2 Installation the device

The Electronics Module and the Flow Cell Module can be installed using a top-hat rail or tallow-drop screws (wall installation). Several of those devices can be installed directly next to each other. A special variant is available for control cabinet mounting.

NOTICE

Install the Flow Cell Module to the left of the Electronics Module.

If the Electronics Module and the Flow Cell Module are mounted at separate locations, the sensor cable extensions with a maximum length of 30 m must be used.

Required material and tools:

- top-hat rail (optional)
- screws and dowels (assembly accessories)
- drill
- screwdriver

ATTENTION

Danger caused by incorrect mounting fixtures

Possible consequence: injury or significant material damage.

- Use the corresponding screws and dowels.
- Dowels and screws/tallow-drop screws for fixing to a solid wall are included in the scope of delivery.
- If the device is to be installed on a suitable light-weight wall, the corresponding mounting fixtures must be used. These mounting fixtures are not included in the scope of delivery!

7.2.1 Installation with top-hat rail

- 1 Secure the top-hat rail to a vertical, stable and flat solid wall using the dowels and screws supplied.
- 2 Hook the Electronics Module onto the top-hat rail so that it is flush at the right.
- 3 Hook the Flow Cell Module on the top-hat rail to the left of the Electronics Module.
- 4 Fasten the Electronics Module and the Flow Cell Module to the solid wall at the bottom by the brackets using dowels and screws.

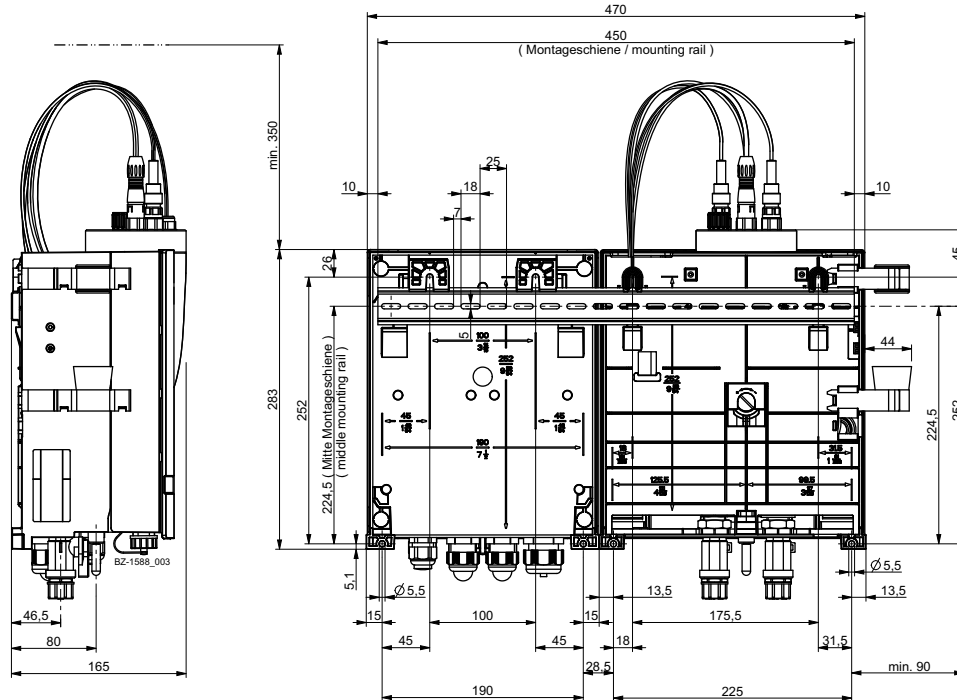
7.2.2 Installation without top-hat rail (wall installation)

NOTICE

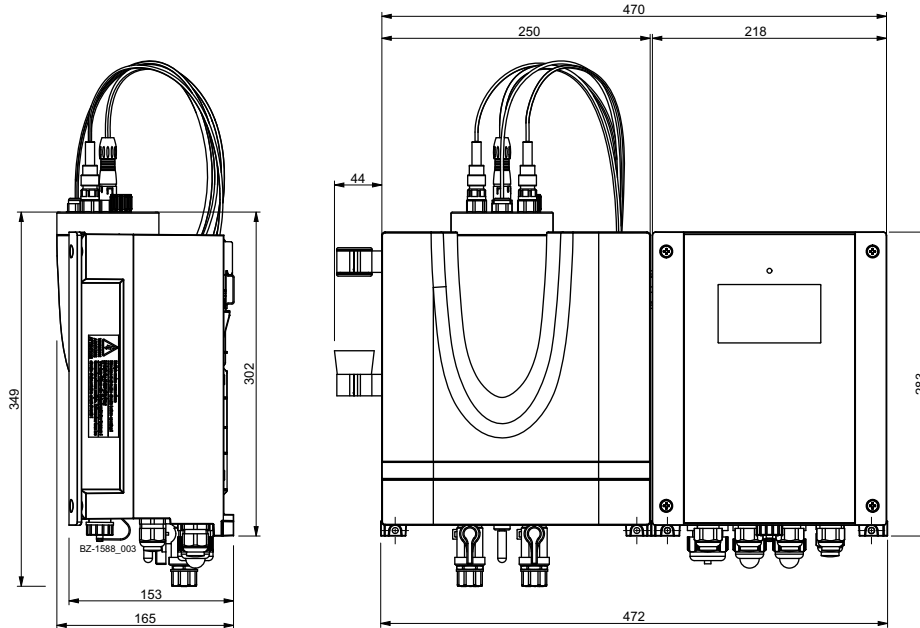
The dimensions for the drilling pattern can be found on the back of the plastic housing. Use the rear housing panel as a drilling template.

- 1 Secure the tallow-drop screws rail to a vertical, stable and flat solid wall using dowels.
- 2 Hook the electronics module and the flow cell module onto the tallow-drop screws.
- 3 Fasten the electronics module and the flow cell module to the solid wall at the bottom by the brackets using dowels and screws.

7.3 Assembly drawings



Img. 5 Flow Cell Module and Electronics Module



Img. 6 Flow Cell Module and Electronics Module

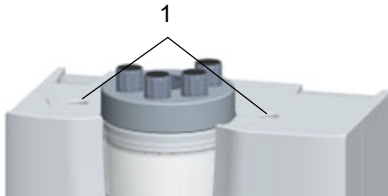
7.4 Removing and fitting the housing cover

Removing

- Press both unlocking buttons (1) on the top of the housing and carefully remove the cover toward the front.

Fitting

- Position the housing cover at the bottom and carefully press it upward until the housing cover engages on the unlocking buttons.



Img. 7 View of top of housing cover

1 Unlocking buttons

7.5 Installing a fine filter (optional)

⚠ ATTENTION

Damage to the membrane sensor if fine filter is not installed

Possible consequence: Material damage.

- A fine filter (sample water fine filter) must be installed in the filter unit to hold back foreign particles. A fine filter is mandatory when membrane sensors are used.

The fine filter is necessary to protect the sensitive membrane of a membrane sensor against contamination and damage and to prevent gradual blockage.

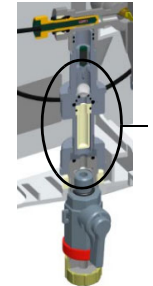


Fig. 8 Section, sample wa-
ter inlet

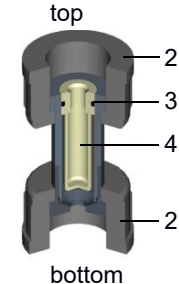


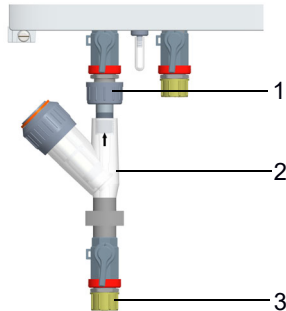
Fig. 9 Section, fil-
ter unit

- 1 Complete filter unit
- 2 Knurled nuts
- 3 O-ring
- 4 Fine filter

Procedure:

- 1 Release both knurled nuts (2).
- 2 Remove the entire filter unit (1).
- 3 Push the fine filter (4) into the filter unit. Ensure that the O-ring (3) is fitted correctly. Installation position flush as far as the stop.
- 4 Fit the complete filter unit (1). Observe the correct installation position (top/bottom).
- 5 Tighten the knurled nuts (2) again.

7.6 Installing the optional strainer (optional)



Img. 10 Section, installation of strainer

- 1 Screw joint on sample water inlet with shut-off ball valve
- 2 Strainer with pipe clamp
- 3 Sample water inlet

Procedure:

- 1 Release the screw joint on the sample water inlet with shut-off ball valve (1).
- 2 Connect strainer with pipe clamp (2).
- 3 Connect sample water inlet (3).

7.7 Connecting sample water inlet and outlet

⚠ ATTENTION

Danger due to incorrect threaded connection

Possible consequence: Injury or material damage.

- Use the corresponding threaded connection to prevent leakage.
- Connect the sample water to the ball valve on the input and output side of the flow module via the G 1/2" threaded connection or with special NPT-1/4" adapter.

The non-pressurized version is characterized by a free sample water outlet. On the pressurized version, the sample water is returned to the system circuit.

The following points must be observed:

- Comply with maximum permissible operating pressures. Observe the technical data for the flow-through assemblies and sensors.
- No water pipes made of copper may be fitted. They falsify the measurement.
- The location of the sample water inlet must be selected in such a way that a representative water sample and a continuous bubble-free sample water flow are guaranteed.

- Connect sample water inlet with hose connection or rigid pipework. Make sure that the hose screw connection does not leak.
- Sample water inlet must be located before the point where flocculant is added. Otherwise, measurement could be impaired.
- To prevent long loop dead times, the lines in the sample water inlet must be as short as possible and must not have a large line cross-section. Long loop dead times mean poorer control quality!
- The pressure in the sample water inlet must always be within a range of min. 0.25 to max. 3.0 bar (min 3.63 to max. 43.51 psi). At the same time, the pressure in the sample water inlet must generally be 0.25 bar (at least 3.63) higher than in the sample water outlet.
- To prevent the ingress of dirt particles, an external strainer with a mesh size of 0.5 mm (0.0019 inch) must be provided for the sample water inlet.
- Install optional fine filter in the filter unit (stainless steel sample water fine filter with a mesh size $w=500 \mu\text{m}$).
- On the pressure-free version, no back-pressure is permitted in the cell body. The sample water outlet must be open. Position a funnel in front of the outlet.
- On the pressure-free version, the sample water outlet must be routed in such a way that no siphoning can occur. Provide outlet via funnel.
- On the pressurized version, a maximum back-pressure of 1.5 bar is permitted on the sample water outlet. A maximum back pressure of 0.5 bar is permitted if membrane sensors are used.
- The drain screw (sample extraction unit) must always be closed.

NOTICE

To guarantee a constant flow, the minimum input pressure must not be less than 0.25 bar (3.63 psi). If the pressure is lower, an optional booster pump must be used.

If the admission pressure exceeds 3.0 bar (43.51 psi), an optional pressure reducing valve must be used.

Examples, sample water inlet and sample water outlet:

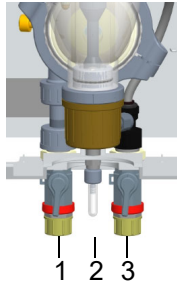


Fig. 11 Section, flow cell module, pressurized version

- 1 Sample water inlet with ball valve
- 2 Drainage/sample extraction (drain at the drain screw)
- 3 Sample water outlet with ball valve (only on pressurized version)

7.8 Sample water inlet and outlet with rigid pipework

- 1 Install the optional strainer.
- 2 Connect the sample water pipework to the corresponding threaded connection of the ball valve.

NOTICE

Install sample water pipes free of mechanical stress.

7.8.1 Sample water inlet and outlet with hose connection

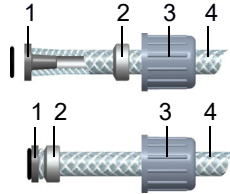


Fig. 12 Detail, hose screw connection before/after

- 1 Hose bushing
- 2 Locking ring
- 3 Union nut
- 4 Hose

Procedure:

- 1 Install the optional strainer.
- 2 Connect the hose to the corresponding threaded connection of the ball valve:
 - Release union nut (3) on the hose screw connection.
 - Insert the hose (4) until it meets the hose bushing (1).
 - Push the locking ring (2) on until the union nut (3) engages with the connecting threads.

7.9 Removing/replacing the felt ring and transport plug - DEPOLOX®-R only

7.9.1 Removing the felt ring

⚠ ATTENTION

Danger caused by failure to remove the felt ring

Possible consequence: Injury or material damage.

- The felt ring must be removed before commissioning.
- Carefully unscrew and remove the knurled nut and screw it on again hand-tight.
- Take care not to bend the electrode mount at all while removing it.
- Do not disconnect the signal cable!

In order to keep the diaphragm in the DEPOLOX®-R moist and prevent crystallization of the electrolyte solution during storage, a moist felt ring is inserted in the space between the electrolyte storage tank and electrode.

Procedure:

- 1 Carefully unscrew and remove the knurled nut (1).
- 2 Unscrew the cap (5) by turning it to the left as far as the marker (see Abb. 14). Take care not to disconnect the signal cable!

7 Installation

EN Rivo™ Series Flow Cell Module

- 3 Carefully take the complete electrode mount (2) out of the cell body (3) in downward direction.
Caution! Do not bend.
- 4 Remove the felt ring (4) between electrolyte storage tank and electrode (see Abb. 15).
- 5 Reinstall the complete electrode mount (3) in the cell body (4). To do this, carefully insert the complete electrode mount (2) from below.
- 6 Screw the cap (5) on again by turning it to the right as far as the marker (see Abb. 14).
Take care not to disconnect the signal cable!
- 7 Screw the knurled nut (1) back onto the complete electrode mount (2) by hand.

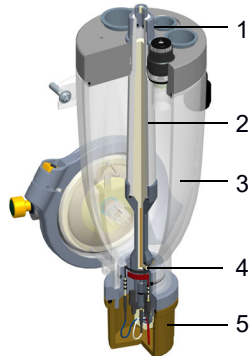


Fig. 13 Section, cell body

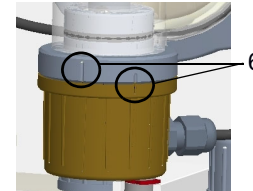


Fig. 14 Section, cap

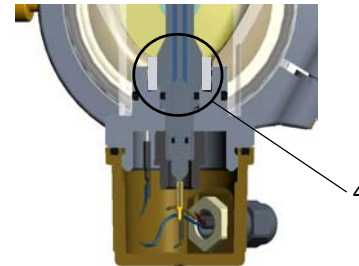


Fig. 15 Section, installation position of felt ring

- 1 Knurled nut
- 2 Complete electrode mount
- 3 Cell body
- 4 Felt ring
- 5 Cap
- 6 Marker

7.9.2 Remove and replace transport plug

⚠ ATTENTION

Danger due to incorrect plug

Possible consequence: Injury or material damage.

- Before commissioning, the transport plug must be removed and replaced with the stopper provided.
- Carefully unscrew and remove the knurled nut and screw it on again hand-tight.

Procedure:

- 1 Carefully unscrew and remove the knurled nut (3).
- 2 Remove yellow transport plug (1) from the 3-electrode measuring cell (4).
- 3 Replace the transport plug with the stopper (2) provided.
- 4 Carefully screw the knurled nut (3) on again hand-tight.

Non-pressurized version

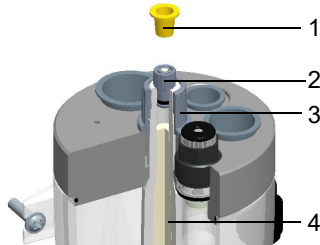


Fig. 16 Section, cell body cover

- 1 Transport plug (yellow)
- 2 Stopper (with white venting rod)
- 3 Knurled nut
- 4 3-electrode measuring cell

Pressurized version

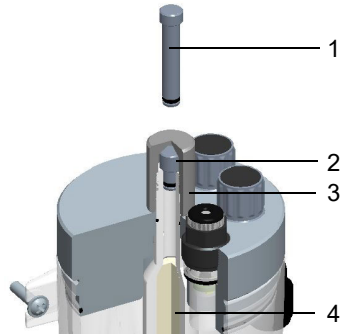


Fig. 17 Section, cell body cover

- 1 Transport plug (long)
- 2 Knurled nut
- 3 Stopper (short)
- 4 3-electrode measuring cell

Procedure:

- 1 Carefully unscrew and remove the knurled nut (2).
- 2 Remove the long transport plug (1) from the 3-electrode measuring cell (4) and replace it with the short stopper (3) provided.
- 3 Carefully screw the knurled nut (2) on again hand-tight.

7.9.3 Filling with electrode cleaning sand - DE-POLOX®-R and DEPOLOX® Pool-R only

The electrode cleaning sand is supplied in a plastic bottle. The cap serves as a measure.

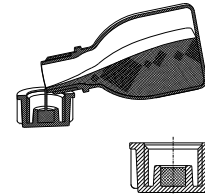


Fig. 18 Section, plastic bottle

⚠ ATTENTION
<p>Danger caused by back pressure in the cell body (pressurized version)</p> <p>Possible consequence: Injury or material damage.</p> <ul style="list-style-type: none"> • With the pressurized version, the back pressure in the cell body must always be released via the drain/sample extraction before removing the cell body cover.

7.9.4 DEPOLOX®-R (Mod. D10)

Non-pressurized and pressurized version

- 1 Close the ball valve on the sample water inlet.
- 2 On the pressurized version, it is also necessary to close the ball valve on the sample water outlet.
- 3 Remove plug (non-pressurized version) or protection plug (pressurized version) or sensor.
- 4 Pour half a cap of electrode cleaning sand into the cell body via the location hole of the sensor (approx. 1/2 cm³ of electrode cleaning sand).

NOTICE

Make sure that the opening and the thread are clean; if necessary, rinse with distilled water.

- 5 Insert or screw the plug, protection plug or sensor back into the cell body cover.
- 6 Re-open the ball valve on the sample water inlet.
- 7 On the pressurized version, it is also necessary to re-open the ball valve on the sample water outlet.

7.9.5 DEPOLOX® Pool-R (Mod. D10)

Non-pressurized version

NOTICE

With the non-pressurized version, the electrode cleaning sand can also be poured into the cell body more simply via the location hole of the sensor.

- 1 Close the ball valve on the sample water inlet.
- 2 Remove the plug (cell body cover) or sensor.
- 3 Fill the electrode cleaning sand cap (plastic bottle) up to one-third (approx. 1/3 cm³ of electrode cleaning sand).
- 4 Pour the electrode cleaning sand into the cell body via the location hole of the sensor.

NOTICE

Make sure that the opening and the thread are clean; if necessary, rinse with distilled water.

- 5 Insert or screw the plug or sensor back into the cell body cover.
- 6 Re-open the ball valve on the sample water inlet.

Pressurized version

- 1 Close the ball valve on the sample water inlet and outlet.
- 2 Remove the housing cover of the flow cell module.
- 3 Fill the electrode cleaning sand cap (plastic bottle) up to one-third (approx. 1/3 cm³ of electrode cleaning sand).
- 4 Unscrew the flow distributor cap.
- 5 Pour electrode cleaning sand into the center of the flow distributor cap. The inner indentation of the flow distributor cap is filled roughly half-way with electrode cleaning sand.
- 6 Screw the flow distributor cap back on.
- 7 Re-open the ball valve on the sample water inlet and outlet.

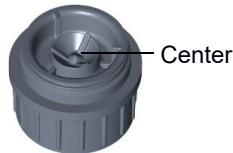


Fig. 19 Flow distributor cap

7.9.6 Installing and connecting sensors



See the operating instructions for the electronics module and the sensors.

⚠ ATTENTION

Danger if the operating pressure or back pressure is not correct and the sensor is not screwed in

Possible consequence: Injury or material damage.

- If the water pressure is too high, the sensor will slip out of the pressurized version. For this reason, with the pressurized version, the sensors must be screwed in and secured to prevent them from being pushed out.
- The maximum permissible operating pressure and back pressure of the flow modules and sensors must be observed! The maximum permissible operating pressure of the membrane sensors is 0.5 bar (7.25 psi). No pressure surges or vibration.

- 1 Remove plug or protection plug:

Non-pressurized version:

- Remove the plug from the location hole on the cell body cover.

Pressurized version:

- Unscrew the protection plug from the location hole on the cell body cover.

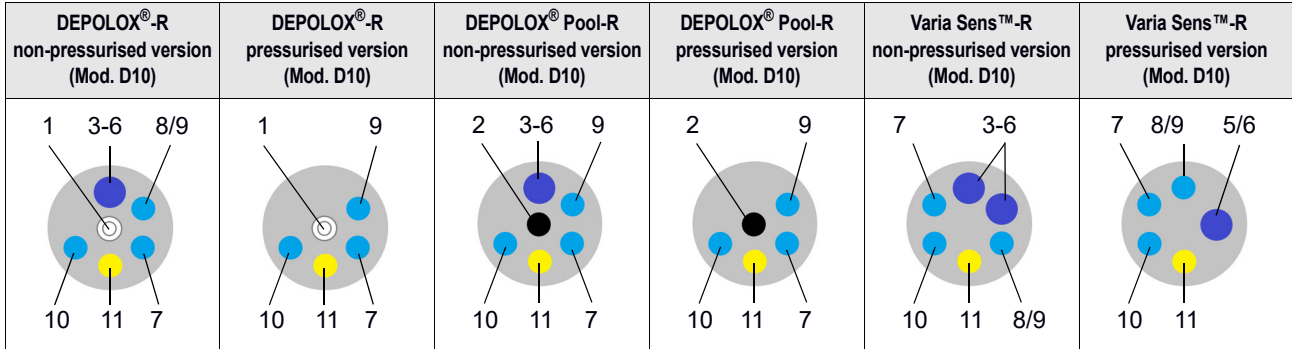
- 2 Insert or screw the prepared sensors into the corresponding location hole in the cell body cover.

NOTICE

Keep the dust protection caps, watering cap or transport container in a safe place for later use.

- Remove watering cap from the chlorine sensor.
 - Remove the watering cap or transport container (KCl tank and stand) for the pH or Redox sensor.
 - Before use, the fluoride sensor must be placed in a 100 mg/l fluoride solution at pH 7 (e.g. calibration solution) for approximately 24 hours.
- 3 Connect the sensors to the electronics module.

FITTING THE FLOW CELL MODULES



	1 3-electrode measuring cell for free chlorine, ClO ₂ , O ₃ , Br ₂ , KMnO ₄ (integrated)
	2 3-electrode single-rod measuring sequence - chlorine (free chlorine) - platinum or gold version
	3 Membrane sensor FC2 (free chlorine)
	4 Membrane sensor TC3 (total chlorine)
	5 Membrane sensor CD10.1 (chlorine dioxide)
	6 Membrane sensor OZ10.1 (Ozone)

	7 Redox sensor - platinum or gold version
	8 Fluoride sensor
	9 Conductivity sensor (60 mS or 600 µS)
	10 pH sensor
	11 LED glow stick (optional)

8 START-UP

WARNING

Danger due to inadequately qualified personnel

Possible consequence: fatal or serious injury and significant material damage.

- The company operating the overall system must ensure that only authorized and qualified specialist personnel are permitted to operate the device and the overall system within their defined scope of authority.

DANGER

Risk of injury or death!

Possible consequence: fatal or serious injury.

- The Rivo™ System must not be operated with flammable liquids.

DANGER

Danger in the case of incorrect mechanical and electrical installation

Possible consequence: fatal or serious injury.

- Only put the Rivo™ system into operation after checking the installation and performing a final inspection.
- Supply voltage must match the data on the type plate.

8.1 Initial commissioning and putting back into operation



See the operating instructions for the electronics module and the sensors.

Item	Work steps
1	Install the flow module and electronic module.
2	Install the optional fine filter (filter unit).
3	Install the optional strainer.
4	Install the optional booster pump.
5	Install the optional pressure reducing valve.
6	Install sample water inlet and outlet: <ul style="list-style-type: none"> • with fixed screw fitting • with hose connection
7	<p>Preparing the DEPOLOX®-R:</p> <ul style="list-style-type: none"> • Remove felt ring. • Remove and replace the transport plug. • Fill with electrode cleaning sand QJ. <p>Preparing the DEPOLOX® Pool-R:</p> <ul style="list-style-type: none"> • Fill with electrode cleaning sand QJ.
8	Prepare the sensors.
9	Install sensors in the flow module.

Item	Work steps
10	Connect sensor cables and connect to the electronic module.
11	Install optional module Rivo™ Flex Mod and Sensor Kit Rivo™ Sens/Mem.
12	Install optional USB interface, Rivo™ Com-Board expansion board and Ethernet interface.
13	Check whether sample water monitoring is active.
14	Check whether circulation output or flow rate monitoring are installed.
15	Put the electronics module into operation. See installation instructions for electronics module.

8.2 Restarting

See Chapter Start-up.

9 FAULTS AND REMEDIES

NOTICE

If you cannot remedy the cause of the fault yourself, please contact your contractual partner.

Error	Cause	Remedy
Dosing lines and hoses leaking.	Hose screw connection not correct. Excessively high temperature in the hot water area. Product quality inadequate (brittleness and cracks).	Check the hose screw connection. Check threaded connection. Replace dosing lines and hoses.
Fine filter (sample water fine filter) clogged.	Foreign particles in the sample water.	Replace fine filter.
Strainer clogged.	Foreign particles in the sample water.	Clean strainer.
Electrolyte needs topping up. DEPOLOX®-R only.	Fill level too low.	Top up electrolyte.
Not enough electrode cleaning sand.	Imprecise measurement.	Fill with electrode cleaning sand QJ.
Diaphragms are discolored. DEPOLOX®-R only.	Diaphragms are clogged.	Replace diaphragms.
Problems at sample water inlet or outlet.	Pressure in sample water inlet or outlet too high.	Check pressure in sample water inlet.
Flow not correct.	Not enough sample water.	Check water inlet or outlet.

Error	Cause	Remedy
DEPOLOX®-R not functioning properly.	Transport plug not removed and replaced.	Remove and replace the transport plug. Check that the right transport plug was removed and replaced.
	Felt ring not removed. Entire electrode unit not installed correctly.	Remove felt ring. Check installation of the entire electrode unit.
Reference electrode not connected correctly. DEPOLOX®-R only.	Signal cables swapped over or not connected correctly.	Connect signal cables with the correct color coding.
Sensor does not react.	Sensor possibly not installed correctly.	Check sensor installation.


10 SHUT-DOWN

WARNING

Danger from unqualified personnel

Possible consequence: fatal or serious injury and significant material damage.

- To ensure safe operation and prevent serious injury, the device must be taken out of operation by trained and authorized specialist personnel.

 Refer to instruction manual of Electronics Module and Sensors.

Procedure:

- 1 Switch the power supply off.
- 2 Drain the sample water inlet and sample water outlet.
- 3 Close the ball valve on the sample water outlet and sample water inlet on the pressurized version.
- 4 Drain the cell body via the sample extraction unit. Hold a container underneath (sample water drains off).
- 5 Remove the housing cover of the flow cell module.
- 6 Flush out the electrode cleaning sand (DEPOLOX®-R and DEPOLOX® Pool-R only).
- 7 Dismantle and drain the filter unit and the check valve housing.

- 8 When the remaining water has drained from the flow control valve, refit the filter unit and the check valve housing.
- 9 Remove the sensors from the location hole in the cover of the cell body and disconnect from the electronic module.
- 10 Shut down the sensors. See operating instructions for the sensors.
- 11 Screw plug or protection plug into the location hole on the cell body cover again.
- 12 Fit the housing cover of the flow module.

11 MAINTENANCE

WARNING

Danger from unqualified personnel

Possible consequence: fatal or serious injury and significant material damage.

- To ensure safe operation and prevent serious injury, the device must be serviced by trained and authorized specialist personnel.
- Observe the specified maintenance intervals.
- Adhere to the applicable standards and national and regional regulations.

NOTICE

The maintenance parts kits and wear parts (e.g. electrode cleaning sand) required for maintenance are listed in the Chapter Maintenance parts kits and wear parts.

11.1 Maintenance intervals

Daily maintenance

- Visual inspection of all dosing lines, hoses and screw connections for leakage. Repair any leaks immediately.
- Visual inspection of sensors and sensor connections.
- Perform comparative measurement; if applicable, calibrate to local regulations or standards, operating instructions.
- Check optional strainer, clean if necessary.

Weekly maintenance

- Check electrolyte fill level. DEPOLOX®-R only.
- Check electrode cleaning sand; replenish or replace if necessary. DEPOLOX®-R and DEPOLOX® Pool-R only.

Monthly maintenance

- Check sensors, clean and calibrate if necessary.
- Check fine filter, clean if necessary.

Quarterly maintenance

- Replace electrolyte of the membrane sensors.

Semi-annual maintenance

- Replace the electrode cleaning sand. DEPOLOX®-R and DEPOLOX® Pool-R only.
- Replace electrolyte. DEPOLOX®-R only.
- Replace diaphragms. DEPOLOX®-R only.

Annual maintenance

- Replace and calibrate sensors as necessary.

in accordance with standard or intervals prescribed by local regulations

- Perform comparative measurement of chlorine, combined chlorine, total chlorine and pH, calibrate if necessary.
- Calibrate pH and redox sensors with corresponding buffer solutions.
- Check conductivity measurement with comparative measurement and/or calibration solution.
- Check sensors in accordance with manufacturer's instructions, clean, calibrate or replace as necessary.

11.2 Checking for leaks

Check the flow modules, including all screw connections, for leakage every day. Repair any leaks immediately.

NOTICE

Ascending air bubbles in the cell body of the flow module influence the measuring accuracy. The cause must be determined and remedied.

11.3 Checking electrode cleaning sand - DEPOLOX®-R and DEPOLOX® Pool-R only

The electrode cleaning sand is necessary for cleaning the 3-electrode measuring cell and the chlorine sensor. Over time, the electrode cleaning sand becomes blunt as the result of friction. For this reason, it must be checked, topped up and replaced regularly.

NOTICE

The electrode cleaning sand must be swirled around in the bottom part of the cell body.

After adding fresh electrode cleaning sand or replacing it, the electrode current may increase slightly for approximately two to three hours. Calibration must therefore be carried out after approx. 3 hours (see operating instructions for electronic module).

11.4 Checking fill level and topping up electrolyte solution - DEPOLOX®-R only

The level of the electrolyte solution must be approx. 3 cm above the water level (narrowing of the KCl tank); top up if necessary. The electrolyte solution can also be topped up during operation.

- 1 Remove plug in the upper section of the electrolyte storage tank.
- 2 Inject electrolyte solution. To do this, use the disposable syringe provided (accessory kit).

11.5 Checking the diaphragms - DEPOLOX®-R only

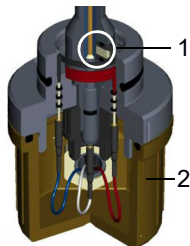


Fig. 20 Section, 3-electrode measuring cell with electrolyte storage tank

- 1 Diaphragms
- 2 Cap

The two diaphragms (1) in the electrolyte storage tank form the connection between the reference electrolytes and the sample water. If the quality of the sample water is poor (e.g. high iron content), the diaphragms will become soiled. This impairs the measuring accuracy. The diaphragms must be white. Any discoloration is a sign that the diaphragms are becoming clogged and must be replaced. The diaphragms cannot be cleaned.

NOTICE

Where the sample water quality is very good, the diaphragms can remain installed for up to one year before they need to be replaced. Diaphragms are included in the maintenance parts kit.

11.6 Cleaning or replacing the fine filter

ATTENTION

Danger caused by back pressure in the cell body (pressurized version)

Possible consequence: Injury or material damage.

- With the pressurized version, the back pressure in the cell body must always be released via the drain/sample extraction before removing the cell body cover.

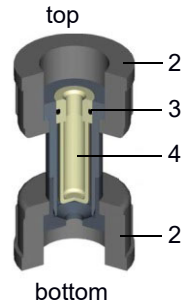


Fig. 21 Section, filter unit

- 1 Entire filter unit
- 2 Knurled nuts
- 3 O-ring
- 4 Fine filter

NOTICE

Possibly also clean flow rate monitor and check valve (see separate chapter).

Procedure:

- 1 Switch the power supply off.
- 2 Close the ball valve on the sample water inlet and sample water outlet on the pressurized version.
- 3 Open the drain screw on the sample extraction unit and empty the cell body. To do so, place a container beneath the screw and temporarily loosen a plug or sensor to allow air to flow in.
- 4 When the cell body is empty, close the drain screw once more.
- 5 Remove the housing cover of the flow cell module.
- 6 Release both knurled nuts.
- 7 Remove the entire filter unit.
- 8 Remove the fine filter. To do this, screw the M6 screw into the fine filter and pull the fine filter out of the filter unit.
- 9 Rinse the fine filter with water, replace if necessary.
- 10 Push the fine filter into the filter unit. Ensure that the O-ring is fitted correctly.

EN Rivo™ Series Flow Cell Module

- 11 Fit the complete filter unit. Ensure that it is in the correct position (top/bottom).
- 12 Tighten the knurled nuts.
- 13 Fit and engage the housing cover of the flow module.
- 14 Re-open the ball valve on the sample water inlet and sample water outlet on the pressurized version.
- 15 The cell body fills with sample water again.
- 16 Reconnect the power supply.

11.7 Cleaning the flow rate monitor and check valve

ATTENTION

Danger caused by back pressure in the cell body (pressurized version)

Possible consequence: Injury or material damage.

- With the pressurized version, the back pressure in the cell body must always be released via the drain/sample extraction before removing the cell body cover.

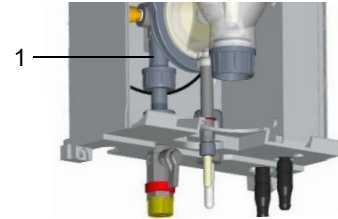


Fig. 22 Section, installation position of the check valve housing

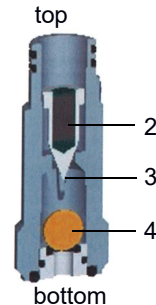


Fig. 23 Cross-section of the check valve housing

- 1 Check valve housing (overall view)
- 2 Flow ball
- 3 Ball seat
- 4 Glass ball

NOTICE

Possibly also clean fine filter (see separate chapter).

Procedure:

- 1 Switch off the power supply.
- 2 Close the ball valve on the sample water inlet and sample water outlet on the pressurized version.
- 3 Open the drain screw on the sample extraction unit and empty the cell body. To do so, place a container beneath the screw and temporarily loosen a plug or sensor to allow air to flow in.
- 4 When the cell body is empty, close the drain screw once more.
- 5 Remove the housing cover of the flow cell module.
- 6 Release both knurled nuts.
- 7 Remove the entire filter unit.
To do this, loosen both knurled nuts and remove the filter unit toward the front.
- 8 Carefully pull the complete check valve housing down and out.

- 9 Turn the check valve housing upside down and catch the flow ball or, if the ball is jammed, release it with a slight knock.
- 10 Now use a suitable blunt tool to push out the ball seat and glass ball against the direction of flow.
- 11 Clean the empty check valve housing, flow ball, ball seat and glass ball with distilled water.
- 12 During reassembly, make sure that the ball seat and ball are correctly positioned.
- 13 To help push the assembled check valve housing back into the control valve, we recommend slightly lubricating the gaskets with the Unisilikon grease provided.
- 14 Check that the check valve housing is correctly positioned by the guide lugs on the housing.
- 15 Fit the complete filter unit. Ensure that it is in the correct position (top/bottom).
- 16 Tighten the knurled nuts.
- 17 Fit and engage the housing cover of the flow module.
- 18 Re-open the ball valve on the sample water inlet and sample water outlet on the pressurized version.
- 19 The cell body fills with sample water again.
- 20 Reconnect the power supply.

11.8 Servicing the DEPOLOX®-R

Replace or clean:

- Electrode cleaning sand
- Electrolyte solution
- Reference electrode
- Fine filter
- Flow rate monitor
- Non-return ball

NOTICE

See separate chapter on replacing and cleaning the fine filter, flow rate monitor and check valve.

ATTENTION

Danger caused by back pressure

Danger caused by back pressure in the cell body (pressurized version)

Possible consequence: Injury or material damage.

- With the pressurized version, the back pressure in the cell body must always be released via the drain/sample extraction before removing the cell body cover.

Procedure:

- 1 Switch the power supply off.
- 2 Close the ball valve on the sample water inlet and sample water outlet on the pressurized version.
- 3 Open the drain screw on the drain/sample extraction and empty the cell body.
To do so, temporarily loosen a plug or sensor to allow air to flow in. Hold a container underneath (sample water drains off).
- 4 When the cell body is empty, close the drain screw once more.
- 5 Remove the housing cover of the flow cell module.

Removing sensors

- 6 Remove the sensors from the location hole in the cover of the cell body and store them in a safe place. To do this, also release the cable gland, holding the cable as you do so. It must not twist.



See operating instructions for the sensors.

- 7 Unscrew the cap on the 3-electrode measuring cell by turning it to the left as far as the marker (1) and remove it.

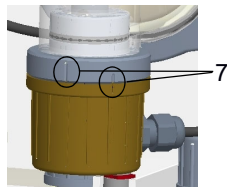


Fig. 24 Section, cap

- 8 Pull off signal cables (red, blue, white).

Replacing the electrolyte solution

- 9 Unscrew and remove the knurled nut from the electrolyte storage tank.
- 10 Remove or unscrew the cell body cover.
- 11 Press the electrolyte storage tank with the electrode mount downward out of the cell body.

Flushing out the electrode cleaning sand

- 12 Flush the electrode cleaning sand out of the electrode mount using distilled water.
- 13 Unscrew knurled nut in the electrode mount and pull the electrolyte tank out of the electrode mount.
- 14 Pull the electrolyte storage tank upward out of the electrode mount.
- 15 Pull the plug out of the electrolyte storage tank.

Draining electrolytes

- 16 Turn the electrolyte storage tank upside down and drain the KCl electrolyte by shaking it lightly.

Replacing the reference electrode

- 17 Replace reference electrode. To do this, unscrew the reference electrode from the electrolyte storage tank. Lightly moisten the O-ring and screw new electrode into the electrolyte storage tank.

Replacing diaphragms

- 18 Remove both diaphragms from the electrolyte storage tank using a suitable tool (e.g. tweezers).
- 19 Press new diaphragms into the electrolyte storage tank. To do this, lightly moisten the O-rings.
- 20 Fit electrolyte storage tank into the electrode mount again.

Topping up electrolyte

NOTICE

Pay attention to the expiration date of the electrolyte solution!

- 21 Top up tank with fresh electrolyte solution (to approx. 3 cm above the water level or narrowing point of the KCl tank).
- 22 Fit plug in the electrolyte storage tank.
- 23 Insert electrode mount with electrolyte storage tank into the cell body. The positioning pin of the cell body must engage in the corresponding hole in the electrode mount.
- 24 Screw the knurled nut back onto the 3-electrode measuring cell.
- 25 Reconnect signal cables, observing the color coding.

CNT	Counter electrode	Blue dot	Blue cable
WRK	Working electrode	Red dot	Red cable
Ref	Reference electrode (center)		White cable

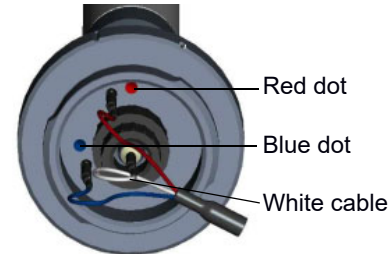


Fig. 25 Section, 3-electrode measuring cell

- 26 Screw the cap on again by turning it to the right as far as the marker (1) (see Abb. 24). Take care not to disconnect the signal cable!
- 27 Fill with electrode cleaning sand QJ.
- 28 Insert or screw on sensor and connect to the electronic module.
- 29 Fit the housing cover of the flow module.
- 30 Re-open the ball valve on the sample water inlet and sample water outlet on the pressurized version.
=> The cell body fills with sample water again.
- 31 Reconnect the power supply.
- 32 Run calibration.

NOTICE

After replacing or topping up the electrode cleaning sand, the electrode current may increase slightly for approximately three hours. Do not carry out calibration during this time.

Calibration must always be performed after replacing the electrode cleaning sand. The calibration must be checked after one day.

After approx. three hours running-in time, perform a chlorine calibration. If necessary, repeat the chlorine calibration after 24 hours. An initial rotating air bubble at the bottom of the cell body does not affect the measurement.

11.9 Servicing the DEPOLOX® Pool-R

Replace or clean:

- Electrode cleaning sand
- Electrolyte solution
- Reference electrode
- Fine filter
- Flow rate monitor
- Non-return ball

NOTICE

See separate chapter on replacing and cleaning the fine filter, flow rate monitor and check valve.

ATTENTION

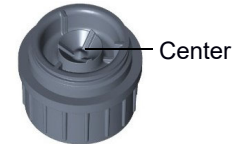
Danger caused by back pressure in the cell body (pressurized version)

Possible consequence: Injury or material damage.

- With the pressurized version, the back pressure in the cell body must always be released via the drain/sample extraction before removing the cell body cover.

Procedure:

- 1 Switch the power supply off.
- 2 Close the ball valve on the sample water inlet and sample water outlet on the pressurized version.
- 3 Release back pressure on the pressurized version. Open the drain screw on the drain/sample extraction and empty the cell body. To do so, temporarily loosen a plug or sensor to allow air to flow in. Hold a container underneath (sample water drains off).
- 4 When the cell body is empty, close the drain screw once more.
- 5 Remove the housing cover of the flow cell module.
- 6 Unscrew the flow distributor cap. Hold a container underneath, as the remaining water will drip out.
- 7 Flush electrode cleaning sand out of the flow distributor cap.
- 8 Fill the electrode cleaning sand cap (plastic bottle) up to one-third (approx. $1/3 \text{ cm}^3$ of electrode cleaning sand).
- 9 Pour electrode cleaning sand into the center of the flow distributor cap. The inner indentation of the flow distributor cap is filled roughly half-way with electrode cleaning sand.

**Fig. 26** Flow distributor cap

- 10 Screw the flow distributor cap back on.
- 11 Re-open the ball valve on the sample water inlet and sample water outlet on the pressurized version.
=> The cell body fills with sample water again.
- 12 Run calibration.

NOTICE

After replacing or topping up the electrode cleaning sand, the electrode current may increase slightly for approximately three hours. Calibration should not be carried out during this time.

Calibration must always be performed after replacing the electrode cleaning sand. The calibration must be checked after one day.

After approx. three hours running-in time, perform a chlorine calibration. If necessary, repeat the chlorine calibration after 24 hours. An initial rotating air bubble at the bottom of the cell body does not affect the measurement.

11.10 Servicing the Varia Sens™-R

Replace or clean:

- Fine filter
- Flow rate monitor
- Non-return ball

NOTICE

See separate chapter on replacing and cleaning the fine filter, flow rate monitor and check valve.

11.11 Servicing and cleaning the sensors



See operating instructions for the sensors.

If there are deviations in the measured values, the sensors must be cleaned and calibrated.

The frequency of cleaning depends on the degree of contamination of the sample water.

As a rule, calibration should be performed every four weeks.

11.11.1 Cleaning the chlorine sensor

Chlorine sensors (platinum or gold version) have a service life of one to two years. The chlorine sensor must then be replaced.

Cleaning:

- The metal surface must be free of dirt of any kind.
- According to the manufacturer, the following cleaning agents are permissible: mild glass cleaner, laboratory detergents, acetone, alcohol, weak acids, pepsin cleaning solutions (for removing albuminous deposits), chromo-sulfuric acid (degreasing).
- Clean soiled diaphragms.

11.11.2 Cleaning the pH sensor

pH sensors have a service life of one to two years. The pH sensor must then be replaced.

pH sensors age. This is usually the cause behind sluggish display of the pH value or a reduction in the span.

To avoid measuring errors, the soiling must be removed from the glass membrane and the diaphragm. The ceramic diaphragm of the pH sensor is especially prone to soiling or limescale deposits. We recommend cleaning it every two weeks.

Cleaning:

- Soiling deposited on the surface of the membrane glass must be removed; if necessary, use diluted hydrochloric acid (up to 10 %).
- The pH sensor should not be cleaned in dry state, as this tends to distribute the dirt layer evenly over the surface rather than removing it. Never use abrasive cleaning agents to clean the membranes. It is essential to rinse the pH sensor with water after cleaning.
- To remove limescale deposits on the glass membrane and the diaphragm, the pH sensor is dipped in hydrochloric acid (up to 10 %). Here, too, it is essential to rinse the sensor with water or distilled water.

11.11.3 Cleaning the conductivity sensor

Cleaning:

- Wipe the conductivity sensor off with a moist, soft paper towel.
- To remove stubborn soiling, use the following chemical cleaning methods:

Contaminant	Cleaning agent	Contact time at room temperature
Water-soluble substances	Distilled water	As required
Greases and oil	Warm water and household detergent	As required
Lime and hydroxide deposits	Hydrochloric acid 0.1 n	As required

11.11.4 Cleaning the fluoride sensor

Cleaning:

- The electrode shaft can be cleaned using a moist cloth. The cloth must not be allowed to touch the glass.

11.12 Cleaning

CAUTION

Danger caused by incorrect cleaning agent

The use of non-approved cleaning agents can damage housings, seals and cables.

Possible consequence: Serious material damage.

- Never use corrosive cleaning agents (e.g. isopropyl alcohol, spirit, scouring agents)!

Clean housing, seals and cables with a moist cloth, if necessary with the addition of a commercially available neutral cleaning agent, and then dry them.

12 DISMANTLING AND DISPOSAL



WARNING

Danger from unqualified personnel

Possible consequence: fatal or serious injury and significant material damage.

- To ensure safe operation and prevent serious injury, the device must be dismantled and disposed by trained and authorized specialist personnel.

- 1 Switch the power supply off.
- 2 Check that the flow cell module is de-energized.
- 3 Drain the cell body via the sample extraction unit.
- 4 Drain and de-install sample water inlet and sample water outlet on the pressurized version.
- 5 Remove sensors. See operating instructions for the sensors.
- 6 Remove the housing cover.
- 7 Pull off the multi-sensor. For details of disposal, see installation instructions for electronics module.
- 8 Fit the housing cover of the flow cell module again.
- 9 Store and dispose of the flow module properly and recycle raw materials.

13 SPARE PARTS, ACCESSORIES, RETROFIT KITS

WARNING

Danger from incorrect spare parts, accessories and retrofit kits

There is a risk of malfunction or damage to the appliance if unauthorised spare parts, accessories, retrofit kits, maintenance parts kits and wearing parts are used.

Possible consequence: fatal or serious injury and significant material damage.

- For reasons of safety, only use original spare parts, accessories and retrofit kits. If required, please contact our customer service or visit our e-commerce store.

13 Spare parts, accessories, retrofit kits

EN Rivo™ Series Flow Cell Module

13.1 Maintenance part set and wear parts

DEPOLOX®-R (Mod. D10) Flow Cell Module	non-pressurised version	pressurised version
Maintenance part set, annual maintenance Consists of: Special grease UNISILKON, diverse O-rings, ball seat (complete), flat gasket EPDM, diaphragm (complete), reference electrodes, KCl electrolyte set, adhesive label, measuring cup, electrode cleaning sand (grain size "QK") Additionally for the non-pressurised version: Stopper and fine filter with O-ring	W3T170065	W3T158875
Maintenance part set, every 4 years Consists of: Special grease UNISILKON, diverse O-rings, ball seat (complete), flat gasket EPDM, electrode mount (complete), diaphragm (complete), reference electrodes, KCl electrolyte set, adhesive label, Measuring cup, electrode cleaning sand (grain size "QK") Additionally for the non-pressurised version: Stopper and fine filter with O-ring	W3T170071	W3T170072
Electrode cleaning sand (grain size "QK")	W3T158743	W3T158743
KCl electrolyte set	W3T165565	W3T165565
Measuring cup (5 pieces)	W3T158600	W3T158600
Stopper	W3T159961	W3T163746
Fine filter (for membrane sensor)	W3T166194	W3T166194
Connector cable combination	W3T160702	W3T160702

DEPOLOX® Pool-R (Mod. D10) Flow Cell Module	non-pressurised version	pressurised version
<p>Maintenance part set, annual maintenance</p> <p>Consists of: Special grease UNISILKON, O-ring, ball seat (complete), flat gasket EPDM, measuring cup, electrode cleaning sand (grain size "Q"), adhesive label</p> <p>Additionally for the non-pressurised version: fine filter with O-ring</p>	W3T166181	W3T158874
<p>Maintenance part set, every 4 years</p> <p>Consists of: Special grease UNISILKON, diverse O-rings, ball seat (complete), flat gasket EPDM, measuring cup, electrode cleaning sand (grain size "Q"), adhesive label</p> <p>Additionally for the non-pressurised version: fine filter with O-ring</p>	W3T170073	W3T158878
Electrode cleaning sand (grain size "Q")	W3T171317	W3T171317
Measuring cup (5 pieces)	W3T158600	W3T158600
Fine filter (for membrane sensor)	W3T166194	W3T166194
Connector cable combination	W3T160702	W3T160702

13 Spare parts, accessories, retrofit kits

EN Rivo™ Series Flow Cell Module

VariaSens™-R (Mod. D10) Flow Cell Module	non-pressurised version	pressurised version
Maintenance part set, annual maintenance Consists of: Special grease UNISILKON, O-ring, ball seat (complete), flat gasket EPDM, measuring cup, fine filter with O-Ring, adhesive label	W3T158876	W3T158877
Maintenance part set, every 4 years Consists of: Special grease UNISILKON, diverse O-rings, ball seat (complete), flat gasket EPDM, measuring cup, fine filter with O-Ring, adhesive label	W3T158750	W3T158879
Measuring cup (5 pieces)	W3T158600	W3T158600
Fine filter (for membrane sensor)	W3T166194	W3T166194

13.2 Sensors

Designation	3-electrode measuring cell (DEPOLOX® R)	Chlorine sensor (free chlorine)	pH sensor	Redox sensor	Conductivity sensor	Fluoride sensor
Sensor						
Sensor	-	-	W3T169297	-	W3T172052	W2T840142
Platinum version	-	W3T160652	-	W3T169298	-	-
Gold version	-	W3T160991	-	W3T172356	-	-
Sensor cable	-	W3T271602	-	-	-	-
Conductivity sensor						
Measuring module, SiDiSens Conductivity	-	-	-	-	W3T183616	-
Seal set, pressurised	-	-	-	-	W3T166180	-
Electrode cleaning sand						
DEPOLOX®-R: grain size "QK"	W3T158743	-	-	-	-	-
DEPOLOX® Pool-R: grain size "Q"	-	W3T171317	-	-	-	-

13 Spare parts, accessories, retrofit kits

EN Rivo™ Series Flow Cell Module

Designation	3-electrode measuring cell (DEPOLOX® R)	Chlorine sensor (free chlorine)	pH sensor	Redox sensor	Conductivity sensor	Fluoride sensor
Electrolyte solution, only for DEPOLOX® Pool-R						
CAUTION						
Material damage to the 3-electrode measuring cell (DEPOLOX® R)						
Possible consequence: material damage.						
<ul style="list-style-type: none"> Do not pour into the 3-electrode measuring cell (DEPOLOX® 5 R)! The electrolyte solution (W3T160410) can be used only for the KCl tank with stand. 						
KCl tank with stand and 5 ml KCl solution	-	W3T164482	W3T164482	W3T164482	-	-
Electrolyte solution 3 mole/l KCl, bottle 250 ml	-	W3T160410	W3T160410	W3T160410	-	-
KCl electrolyte set, only for DEPOLOX® R						
KCl electrolyte set, consists of: KCl gel electrolyte, 3 mol/l KCl (bottle 100 ml), syringe and PVC hose	W3T165565	-	-	-	-	-

Designation	3-electrode measuring cell (DEPOLOX® R)	Chlorine sensor (free chlorine)	pH sensor	Redox sensor	Conductivity sensor	Fluoride sensor
Calibration solutions						
Buffer solution pH 7.00						
Bottle 250 ml	-	-	W3T165076	-	-	-
Bag 12 ml	-	-	W3T161181	-	-	-
Buffer solution pH 4.65						
Bottle 250 ml	-	-	W3T165084	-	-	-
Bag 12 ml	-	-	W3T161189	-	-	-
Calibration solution 478 mV						
Bottle 250 ml	-	-	-	W3T165048	-	-
Bag 12 ml	-	-	-	W3T161182	-	-
Calibration solution conductivity						
60 mS/cm - bottle 1000 ml	-	-	-	-	W3T427608	-
600 µS/cm - bottle 100 ml	-	-	-	-	W3T161187	-
Calibration solution fluoride						
0,2 mg/l - bottle 500 ml	-	-	-	-	-	W3T161789
2 mg/l - bottle 500 ml	-	-	-	-	-	W3T161845
100 mg/l - bottle 500 ml	-	-	-	-	-	W3T161884
Measuring beaker (5 pieces)	W3T158600					

13 Spare parts, accessories, retrofit kits

EN Rivo™ Series Flow Cell Module

13.3 Membrane sensors

Designation	FC2 (Free chlorine)	CD10.1 (ClO ₂)	OZ10.1 (Ozone)	TC3 (Total chlorine)
Membrane sensor (incl. membrane cap, lapping paper, electrolyte)				
Membrane sensor	-	W3T570400	W3T570451	-
Membrane sensor FC2 M12	W3T570399	-	-	-
Membrane sensor TC3 M12	-	-	-	W3T570398
Membrane cap				
Membrane cap	W3T365500	W3T517688	W3T517688	W3T365500
Membrane cap with membrane disk holder made of plastic	W3T391564*	-	-	W3T391564*
Optional: Please use at increased salt concentration!*				
Elektrolyt				
Electrolyte E-FC, 100 ml bottle	W3T168101	-	-	-
Electrolyte E-CD7/W, 100 ml bottle	-	W3T168102	-	-
Electrolyte E-OZ7/W, 100 ml bottle	-	-	W3T168105	-
Electrolyte E-TC, 100 ml bottle	-	-	-	W3T171793

Designation	FC2 (Free chlorine)	CD10.1 (ClO ₂)	OZ10.1 (Ozone)	TC3 (Total chlorine)
Spare Parts				
Spare part set consists of: O ring, elastomer seal, lapping paper	W3T164339	-	-	W3T164339
Spare part set consists of: O ring 20 x 1,5 mm (silicone), lapping paper, paper towel	-	W3T517689	W3T517689	-
Maintenance part set				
Maintenance part set consists of: membrane cap, lapping paper, O ring, elastomer seal, electrolyte	W3T365601	-	-	W3T391565
Maintenance part set consists of: membrane cap, lapping paper, paper towel, O ring 20 x 1,5 mm (silicone), electrolyte	-	W3T517741	W3T541987	-

NOTICE

*We recommend using a membrane cap made of plastic (W3T391564) for brine-/salt water up to 4% NaCl within a conductivity range of 2.5 to 60 mS/cm.

13 Spare parts, accessories, retrofit kits

EN Rivo™ Series Flow Cell Module

13.4 Multi-Sensor

Article number	Designation
W3T271603	Multi-Sensor

13.5 Optional accessories

- Plug-cable combinations for sensor in different lengths
- Impedance converter
- Maintenance part sets and accessories for calibration
- Strainer and set of fittings for strainer
- PVC hose or PE hose and accessories
- Booster pump
- Pressure reducing valves

13.6 Flow-through Adapters - Erweiterungen

Article number	Designation
W3T159950	Flow-through Adapter (Mod. D12) Flow Sens-R pH/Redox pressurised version
W3T167442	Flow-through Adapter (Mod. D12) Flow Sens-R pH/Redox/Fluorid non-pressurised version
W3T158503	Flow-through Adapter (Mod. D12) Flow Sens-R Conductivity pressurised version
W3T170361	Flow-through Adapter (Mod. D13) Flow Mem-R non-pressurised version

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Subject to modifications

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