Conex® DIA-1-A PA/HP / Conex® DIA-2Q-A PA/HP

Unit for measurement and control

Installation and operating instructions
1. Symbols used in this document

Warning
If these safety instructions are not observed, it may result in personal injury!

Caution
If these safety instructions are not observed, it may result in malfunction or damage to the equipment!

Note
Notes or instructions that make the job easier and ensure safe operation.

2. Installation data

Please fill in the data below after commissioning. It will help you and your Grundfos service partner make subsequent adjustments to the installation.

Owner:
Grundfos customer number:
Order number:
Product number:
Product serial number:
Put into service on:
Location of product:
Used for:

Warning
These complete installation and operating instructions are also available on www.Grundfosalldos.com.

Prior to installation, read these installation and operating instructions. Installation and operation must comply with local regulations and accepted codes of good practice.
3. Installation sketch
4. Identification

4.1 Nameplate

Fig. 1 Nameplate, Conex® DIA-1-A, HP/PA

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Type designation</td>
</tr>
<tr>
<td>2</td>
<td>Model</td>
</tr>
<tr>
<td>3</td>
<td>Product name</td>
</tr>
<tr>
<td>4</td>
<td>Voltage [V]</td>
</tr>
<tr>
<td>5</td>
<td>Frequency [Hz]</td>
</tr>
<tr>
<td>6</td>
<td>Product number</td>
</tr>
<tr>
<td>7</td>
<td>Country of origin</td>
</tr>
<tr>
<td>8</td>
<td>Year and week of production</td>
</tr>
<tr>
<td>9</td>
<td>Marks of approval, CE mark, etc.</td>
</tr>
<tr>
<td>10</td>
<td>Power consumption [VA]</td>
</tr>
<tr>
<td>11</td>
<td>Enclosure class</td>
</tr>
<tr>
<td>12</td>
<td>Serial number</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type key example</th>
<th>DIA-1-A, PA/HP-X-X-HP-X-X, W-G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit for measurement and control</td>
<td></td>
</tr>
<tr>
<td>DIA-1</td>
<td>Dosing Instrumentation Advanced with 1 input</td>
</tr>
<tr>
<td>DIA-2Q</td>
<td>Dosing Instrumentation Advanced with 2 inputs + flow measurement</td>
</tr>
<tr>
<td>Assembly</td>
<td>Preassembled</td>
</tr>
<tr>
<td>Cell type</td>
<td></td>
</tr>
<tr>
<td>PA/HP</td>
<td>Peracetic acid or hydrogen peroxide only</td>
</tr>
<tr>
<td>X</td>
<td>No disinfection measuring</td>
</tr>
<tr>
<td>X</td>
<td>Without pressure retention valve</td>
</tr>
<tr>
<td>Electrodes</td>
<td></td>
</tr>
<tr>
<td>PA</td>
<td>Peracetic acid</td>
</tr>
<tr>
<td>HP</td>
<td>Hydrogen peroxide</td>
</tr>
<tr>
<td>Flow sensor</td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>No flow sensor</td>
</tr>
<tr>
<td>Temperature sensor</td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>No temperature sensor</td>
</tr>
<tr>
<td>Controller mounting option</td>
<td></td>
</tr>
<tr>
<td>W</td>
<td>Wall-mounted</td>
</tr>
<tr>
<td>P</td>
<td>Panel-mounted</td>
</tr>
<tr>
<td>Power supply</td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>1 x 230/240 V, 50/60 Hz</td>
</tr>
<tr>
<td>H</td>
<td>1 x 115/120 V, 50/60 Hz</td>
</tr>
<tr>
<td>I</td>
<td>24 VDC</td>
</tr>
<tr>
<td>X</td>
<td>No power supply</td>
</tr>
</tbody>
</table>
5. General information

These installation and operating instructions contain all information important for users of the peracetic acid measuring cell or the hydrogen peroxide measuring cell and the preassembled systems Conex® DIA-1-A, PA/HP-PA (314-711), Conex® DIA-1-A, PA/HP-HP (314-811), Conex® DIA-2Q-A, PA/HP-PA or Conex® DIA-2Q-A, PA/HP-HP:
• technical data
• instructions on commissioning, use and maintenance
• safety information.

Should you require further information or should you encounter problems that are not handled in sufficient depth in this manual, please contact Grundfos Water Treatment.

We shall be pleased to support you with our comprehensive know-how in the fields of measuring and control technology as well as water treatment.

We always welcome suggestions on how to optimise our installation and operating instructions to satisfy our customers.

6. Applications

The preassembled systems Conex® DIA-1-A, PA/HP-PA, Conex® DIA-1-A, PA/HP-HP, Conex® DIA-2Q-A, PA/HP-PA and Conex® DIA-2Q-A, PA/HP-HP with measuring cells are designed to measure and control the concentration of peracetic acid or hydrogen peroxide (H₂O₂) within water treatment systems for pool and drinking water as described in this manual.

7. Safety

7.1 Obligations of the owner/operations manager

The owner/operations manager of the plant is responsible for the following:
• compliance with country-specific safety regulations
• provision of prescribed protective gear
• implementation of regular maintenance.

The owner/operations manager must ensure persons working with the device described fulfil these requirements:
• They are acquainted with the regulations concerning working safety and accident prevention.
• They have been trained in use of the device.
• They have read and understood the warning information and handling symbols.

The owner/operations manager is also responsible for ensuring that this manual is kept in the immediate vicinity of the device and is always available for the operating personnel.

7.2 Avoidance of danger

Warning
Installation and connection of the device and the associated supplementary components must only be carried out by authorised personnel!
The local safety regulations must be observed!
Switch off the power supply before connecting the power supply cable and relay contacts!
Do not dismantle the device!
Cleaning, maintenance and repair must only be carried out by authorised personnel!
The mounting location must be selected so that the housing is not subjected to mechanical loading.
Check that all settings are correct before starting up the device!

Caution
Other applications than those described in section 6. Applications are not approved and not permitted.
Grundfos cannot be held liable for any damage resulting from incorrect use.
8. Technical data

8.1 Components

8.1.1 Measuring cells

- Peracetic acid measuring cell: Measuring cell for peracetic acid (covered with diaphragm), including flow armature and cables.
- Hydrogen peroxide measuring cell: Measuring cell for hydrogen peroxide (covered with diaphragm), including flow armature and cables.

8.1.2 Preassembled systems

**Conex® DIA-1-A, PA/HP-PA (Conex® DIA-2Q-A, PA/HP-PA)**

- Instrument amplifier and controller: Conex® DIA-1 (Conex® DIA-2Q)
  - For wall-mounting, mounted on a PVC plate
  - For panel-mounting

**Conex® DIA-1-A, PA/HP-HP (Conex® DIA-2Q-A, PA/HP-HP)**

- Instrument amplifier and controller: Conex® DIA-1 (Conex® DIA-2Q)
  - For wall-mounting, mounted on a PVC plate
  - For panel-mounting

8.2 General data

- **Enclosure**: PVC, polycarbonate, stainless steel and silicone rubber, resistant against tensides and comparable water additives.
- **Measuring ranges**: Standard ranges 0-100 / 0-500 / 0-1000 / 0-2000 mg/l or freely adjustable within 0-2000 mg/l.
- **Permissible pH range**: pH 1 to 11.
- **Recommended sample-water flow**: Minimum 30 l/h.
- **Temperature drift**: Measuring signal is temperature-compensated.

### Peracetic acid measuring cell

- **Accuracy**: 2 % of measured value ± 5 ppm
- **Repeatability**: 2 % of measured value ± 3 ppm
- **Disturbances**: No disturbances by tensides, Negligible disturbance by hydrogen peroxide, selectivity factor = 0.005
- **Resolution**: 1 mg/l
- **Response time, T₉₀**: Approximately 3 minutes
- **Permissible working temperature**: 0 °C to 50 °C

### Hydrogen peroxide measuring cell

- **Accuracy**: 2 % of measured value
- **Repeatability**: 2 % of measured value
- **Disturbances**: No disturbance by tensides, Strong disturbance by peracetic acid
- **Resolution**: 1 mg/l
- **Response time, T₉₀**: Approximately 5 minutes
- **Permissible working temperature**: 0 °C to 45 °C

### Voltage for Conex® DIA-1 (Conex® DIA-2Q)

<table>
<thead>
<tr>
<th>Type designation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIA-1 (2Q), 1-P/R/D/HP/PA/F, W-G</td>
<td>230/240 V (50/60 Hz)</td>
</tr>
<tr>
<td>DIA-1 (2Q), 1-P/R/D/HP/PA/F, W-H</td>
<td>115/120 V (50/60 Hz)</td>
</tr>
<tr>
<td>DIA-1 (2Q), 1-P/R/D/HP/PA/F, W-I</td>
<td>24 V (DC)</td>
</tr>
</tbody>
</table>
8.3 Dimensional sketches / drilling diagram

Dimensions in mm

**Fig. 2** Dimensional sketch / drilling diagram for Conex® DIA-1-A PA/HP / Conex® DIA-2Q-A PA/HP

Dimensions in mm

**Fig. 3** Dimensional sketch / drilling diagram for Conex® DIA-1 / Conex® DIA-2Q for control panel wall-mounting
9. Installation

9.1 Transport and storage

• Transport the device carefully, do not drop.
• Store at dry and cool location.

9.2 Unpacking

Caution Do not allow any foreign bodies to enter!
• Check the device for damage.
  Do not install or connect damaged devices!
• Install as soon as possible after unpacking.

Note Retain the packing material or dispose of it according to local regulations.

9.3 Installation requirements

• Dry room
• Room temperature: 0 °C to 50 °C
• Vibration-free location.
Observe the data in section 8. Technical data.

Caution If you do not observe the installation requirements, the device may be damaged!
  The measurements may not be correct!

Caution Only mount the device on a completely level surface!
  Ensure that the base plate is not twisted!

9.4 Assembling

9.4.1 Assembling the Conex® DIA-1 / Conex® DIA-2Q
1. Drill four dowel holes with a diameter of 10 mm.
   See section 8.3 Dimensional sketches / drilling diagram.
2. Insert the supplied dowel pins.
3. Screw the device onto the wall.

9.4.2 Assembling the Conex® DIA-1 / Conex® DIA-2Q housing for installation in control panel
1. Make an opening of 92 + 0.8 mm x 92 + 0.8 mm in the control panel.
2. Slip on the supplied gasket.
3. Insert the Conex® DIA-1 / Conex® DIA-2Q into the opening from the front.

Caution Do not damage the gasket.
  The gasket must be fitted exactly.
4. Hook the clamps into the tightening cones on the sides at the top and bottom.
5. Secure the device from the rear using a screwdriver.
10. Commissioning / connection

10.1 Water connections

- Connect the sample-water supply line (tube 6/8).
- Connect the flexible pressure tubing!
- Connect the sample-water discharge line, and route the discharge line downwards to avoid siphon effect.

**Fig. 4** Water connections

**Caution**
Connect the flexible pressure tubing exactly!
Air bubbles in front of the diaphragm impede the passing through of the disinfectant (peracetic acid or peroxide). This can result in incorrect measuring signals!

**Caution**
Connect the flexible pressure tubing!
Connect the sample-water discharge line, and route the discharge line downwards to avoid siphon effect.

**Note**
The measuring cell may be run at a constant pressure up to about 1 bar.

10.2 Electrical connections

For electrical connections, see the installation and operating instructions for the Conex® DIA-1 / Conex® DIA-2Q!

**Warning**
Switch off the power supply before connecting the power supply cable and relay contacts!
Observe the local safety regulations!
Observe the instructions for electrical connections in the installation and operating instructions for the Conex® DIA-1 / Conex® DIA-2Q!

**Pos.** | **Description**
--- | ---
1 | PVC plug
2 | Flow armature
3 | Measuring cell

**Warning**
A sudden breakdown of the measuring cell can lead to an overdosing of disinfection agent!
Take appropriate precautions!

---

10.3 Preparation of the measuring system

See section 11. Operation.
At delivery of the measuring cell, the diaphragm is dry. It must be filled before starting up.

**Caution**
See also section 13.2 Maintenance of the measuring cell for detailed instructions! There is a risk of incorrect measurements if the device is not maintained correctly!

1. Prepare the flow armature:
   - Insert the black O-ring in the 1” opening of the flow armature, and after that insert the PVC support/sliding ring.
   - Loosely screw the hollow PVC plug with the 1” thread into the flow armature.

2. Insert the measuring cell in the flow armature:
   - Ensure that the inserted measuring cell is sufficiently covered by the sample water so that the diaphragm cup is immersed in water.
   - Tip: The upper part of the measuring cell should project by about 20 mm from the opening of the flow armature.
   - Fix the measuring cell with the PVC plug in place.

**Fig. 5** Preparation of the measuring system
10.4 Starting up

1. Check that all electrical connections are correct.
2. Check that the sample water lines have been connected correctly.
3. Start up the sample-water supply.
   – The minimum sample-water flow is approximately 30 l/h.
4. Switch on the power supply.

The measuring cells require a running-in period:
- peracetic acid measuring cell: about one hour
- hydrogen peroxide measuring cell: about three hours.

Note
The first calibration cannot be carried out until this running-in period is over!
Check the calibration after about one day, and repeat the calibration, if necessary!

10.5 Basic setup of the measuring system

See the installation and operating instructions for the Conex® DIA-1 / Conex® DIA-2Q!

Setup with the instrument amplifier and controller Conex® DIA-1 / Conex® DIA-2Q:

1. In the "Setup" menu, select the line "Parameter" using the [Up] and [Down] buttons, and press [OK] to switch to the corresponding menu.
2. Select the line containing the value to be measured (parameters peracetic acid or hydrogen peroxide) using the [Up] and [Down] buttons.
3. Press [OK] to confirm the selection and return to the "Setup" menu.
4. Select the line "Measuring ranges" using the [Up] and [Down] buttons, and press [OK] to switch to the corresponding menu.
5. In the "Measuring ranges" menu, the following options are available:
   - 0-100 mg/l
   - 0-500 mg/l
   - 0-1000 mg/l
   - 0-2000 mg/l
   - Others: range freely adjustable.
6. Select the line containing the correct measuring range using the [Up] and [Down] buttons.
7. Using the option "others", the operator can set the lower and upper limit of the measuring range to any value within the widest standard measuring range.

For further settings, see the installation and operating instructions for the Conex® DIA-1 / Conex® DIA-2Q!

10.6 Calibration of the measuring system

Observe the installation and operating instructions for the Conex® DIA-1 / Conex® DIA-2Q!

Calibration function of the instrument amplifier and controller Conex® DIA-1 / Conex® DIA-2Q

1. Press [Cal] to switch to the calibration menu.
   – The LED next to [Cal] illuminates.
2. Depending on the set access rights, it may be necessary to enter the four-digit code number using the [Up] and [Down] buttons.
3. Press [OK] to switch to the "Per-acetic acid" or "Peroxide" menu respectively.
4. The following options are available:
   - Cal. meas. value
   - Cal result
   - Cal. cycle.

Cal. meas. value
Cal result
Cal. cycle

Calibration
1. Select the line "Cal. meas. value", and press [OK] to switch to the corresponding menu.
2. In the bottom line, the entry field (value in mg/l) for the reference value (determined analytically) and the actual cell current (in µA) is displayed.

Per-acetic acid

Cal. meas. value
150 mg/l
I-cell 120 µA

3. Enter the reference value using the [Up] and [Down] buttons, and confirm using [OK].
4. Press [OK] to start calibration.
   – An automatic reading function reads in the sensor data, and the calibration is carried out.
   – The slope (sensitivity) of the sensor is calculated.
5. Immediately after calibration, the result of the calibration is shown automatically (first line for example "CALDATA PERAC").
   – The slope of the sensor in µA/ppm is displayed.

CALDATA PERAC
Slope
8.53 µA / ppm

Checking the calibration result and setting the calibration cycle
1. Press [OK] to return to the "Per-acetic acid" or "Peroxide" menu respectively. See above.
2. When selecting "Cal result" (after the calibration), the computed slope of the sensor can be checked.
3. Selecting "Cal. cycle" in the "Measured value" menu starts a countdown function. When the countdown interval, which can be set to a value between 1 and 100 days, is over, the alarm message "Calibrate sensor" is triggered.
## 11. Operation

### 11.1 Description of the device

![Diagram of Conex® DIA-1-A PA/HP / Conex® DIA-2Q-A PA/HP (wall-mounting)](image)

**Fig. 6** Description of the Conex® DIA-1-A PA/HP / Conex® DIA-2Q-A PA/HP (wall-mounting)

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mounting plate of the preassembled system</td>
</tr>
<tr>
<td>2</td>
<td>Instrument amplifier and controller Conex® DIA-1 / Conex® DIA-2Q</td>
</tr>
<tr>
<td>3</td>
<td>Measuring cell</td>
</tr>
<tr>
<td>4</td>
<td>Flow armature</td>
</tr>
<tr>
<td>5</td>
<td>Connection for the sample-water discharge (tube 6/8)</td>
</tr>
<tr>
<td>6</td>
<td>Mounting plate for the flow armature</td>
</tr>
<tr>
<td>7</td>
<td>Connection of the sample-water supply (tube 6/8)</td>
</tr>
</tbody>
</table>

### 11.2 Assembling the measuring cell

![Diagram of Assembling the measuring cell](image)

**Fig. 7** Assembling the measuring cell

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Four-pole connection plug</td>
</tr>
<tr>
<td>2</td>
<td>Electrode adapter with integrated electronics</td>
</tr>
<tr>
<td>3</td>
<td>Reference/counter-electrode</td>
</tr>
<tr>
<td>4</td>
<td>Measuring electrode</td>
</tr>
<tr>
<td>5</td>
<td>O-ring, 14 x 1.8 mm</td>
</tr>
<tr>
<td>6</td>
<td>Diaphragm cap</td>
</tr>
<tr>
<td>7</td>
<td>Valve opening</td>
</tr>
<tr>
<td>8</td>
<td>Tubular ring</td>
</tr>
<tr>
<td>9</td>
<td>Diaphragm holder</td>
</tr>
<tr>
<td>10</td>
<td>Diaphragm</td>
</tr>
</tbody>
</table>
11.3 Function

The preassembled electrochemical systems Conex® DIA-1-A, PA/HP-PA, Conex® DIA-1-A, PA/HP-HP, Conex® DIA-2Q-A, PA/HP-PA or Conex® DIA-2Q-A, PA/HP-HP are used for measuring and controlling the concentrations of peracetic acid or hydrogen peroxide in water. The concentrations of the disinfection agents are measured by the measuring cell types for peracetic acid (95701375 (314-700)) or hydrogen peroxide (95701376 (314-800)). They are resistant against tensides and comparable water additives.

- The sensor is separated from the sample water by a special diaphragm.
  - The disinfection additive in the sample water (peracetic acid or hydrogen peroxide) diffuses through the diaphragm and is reduced at the electrode.
  - The electrochemical reaction produces an electrical measuring signal which is proportional to the concentration of peracetic acid or hydrogen peroxide.

- The instrument amplifier and controller Conex® DIA-1 / Conex® DIA-2Q has the following functions:
  - amplification of the electrical signal (current or voltage)
  - calculation of the concentration using the calibration parameters
  - indication of the concentration as a digital value
  - control of a final control element, for example a dosing pump.

11.4 Operation

All settings must be made with the instrument amplifier and controller Conex® DIA-1 / Conex® DIA-2Q.

See the installation and operating instructions for the Conex® DIA-1 / Conex® DIA-2Q!

During operation, the measuring cell and amplifier must run continuously!

The measuring cell must not become dry!

11.4.1 Decommissioning and storage

1. Switch off the power supply.
2. Turn off the sample-water supply.
3. Remove the measuring cell.
4. Unscrew the diaphragm cap.

When unscrewing the diaphragm cap and cleaning, strictly follow the instructions in section 13.2 Maintenance of the measuring cell. Otherwise, the diaphragm and the electrode may be damaged!

5. Clean the electrode shaft and the diaphragm cap with clean water, and let the cell parts dry at a dust-free place.
6. Loosely screw the dry diaphragm cap onto the electrode shaft.

During storage, the diaphragm must not touch the electrode!

11.4.2 Recommissioning

1. Clean the electrode tip with the enclosed special emery paper.
2. Fill up with the enclosed electrolyte using a new diaphragm cap, if necessary.

When cleaning the electrode and filling up with electrolyte, strictly follow the instructions in section 13.2 Maintenance of the measuring cell. Otherwise, the measuring cell may not function correctly!
## 12. Fault finding

See the installation and operating instructions for the Conex® DIA-1 / Conex® DIA-2Q!

<table>
<thead>
<tr>
<th>Fault</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Display permanently indicates the same value.</td>
<td>a) Cable breakage.</td>
<td>Replace the cable.</td>
</tr>
<tr>
<td>2. Measured value unsteady shortly after the start-up.</td>
<td>a) Running-in period of the measuring cell too short.</td>
<td>Observe the necessary running-in period of the measuring cell: about one hour for peracetic acid and about three hours for hydrogen peroxide.</td>
</tr>
<tr>
<td>3. Measured value display very unsteady.</td>
<td>a) Electrode not correctly inserted into the flow armature (too deep) or not sufficiently covered by sample water.</td>
<td>When inserting the electrode in the flow armature, ensure that the electrode is sufficiently covered by sample water.</td>
</tr>
<tr>
<td></td>
<td>b) Cable and/or connector corroded.</td>
<td>• Replace the cable and connector respectively.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Replace the electrode, if necessary.</td>
</tr>
<tr>
<td>4. Measured value too high or too low.</td>
<td>a) Air bubbles in the electrolyte or at the diaphragm.</td>
<td>• Uncover the valve of the diaphragm cap by lifting the tubular ring (rubber band), and unscrew the diaphragm cap</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Let the air bubble out by carefully knocking on the diaphragm cap</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• If these measures do not help, wash the diaphragm cap with clean water, wet the diaphragm with the activation fluid, fill up with electrolyte again, and repeat the calibration.</td>
</tr>
<tr>
<td></td>
<td>b) Not enough electrolyte in the diaphragm cap.</td>
<td>• Uncover the valve of the diaphragm cap by lifting the tubular ring (rubber band), and unscrew the diaphragm cap.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Fill up with electrolyte.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Repeat the calibration.</td>
</tr>
<tr>
<td></td>
<td>c) Large temperature fluctuations for the sample water</td>
<td>Repeat the calibration.</td>
</tr>
<tr>
<td></td>
<td>d) Deposits at the electrode.</td>
<td>• Uncover the valve of the diaphragm cap by lifting the tubular ring (rubber band), and unscrew the diaphragm cap.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Wash the electrode, and dry it with dry disposable paper tissue.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Carefully clean the electrode (only the tip of the electrode) with the special emery paper.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Repeat the calibration.</td>
</tr>
<tr>
<td></td>
<td>e) Air bubbles in front of the diaphragm (sample-water side).</td>
<td>Check that the water supply functions correctly.</td>
</tr>
</tbody>
</table>
13. Maintenance

Functional testing
• Every week at least.

Intervals for cleaning and maintenance
• In case of operational faults.

Service life of electrolyte and diaphragm
• Electrolyte: about half a year, depending on the concentration of peracetic acid or hydrogen peroxide.
• Diaphragm: about one year, depending on the water quality.

13.1 Recalibration

Intervals for recalibration
• Every week at least.
• Repeat the calibration with the analytically measured value.

See section 10.6 Calibration of the measuring system and the installation and operating instructions for the Conex® DIA-1 / Conex® DIA-2Q!

13.2 Maintenance of the measuring cell

In case of failure, the cap must be removed in order to check the electrolyte level or the degree of furring or soiling.
Follow the procedure described in the following exactly!

13.2.1 Unscrewing the diaphragm cap

1. Loosen the connecting cable, and remove the measuring cell from the flow armature.

   It is very important to aerate the cap before unscrewing the diaphragm cap.

   Uncover the valve by lifting the tubular ring (rubber band) at the black marking, so that the valve opening is uncovered.

   Fig. 8 Unscrewing the diaphragm cap

   If the valve at the diaphragm cap remains covered, the diaphragm can be damaged by the underpressure that builds up while unscrewing the cap!

   Make sure that the thumb does not touch the diaphragm!

   • Unscrew the diaphragm cap with uncovered valve.
     – Air flows through the valve opening.

   Caution

   The calibration must always be repeated after cleaning or maintenance!

13.2.2 Cleaning of the diaphragm cap

In case of furring:
1. Put the diaphragm cap into hydrochloric acid of about 1 % for several hours.
2. After that, wash the cap with clean water.

   Caution

   Never remove the metallic diaphragm holder from the plastic part (diaphragm cap)?
   Otherwise, the diaphragm may not function correct!

   Fig. 9 Cleaning the diaphragm cap

13.2.3 Cleaning of the electrode

In case of a large amount of soiling, the electrode must be cleaned.

1. Unscrew the diaphragm cap as described above.

   Strictly observe the following precautions for unscrewing the diaphragm cap and for the cleaning procedure!

   Otherwise, the diaphragm and the electrode may be damaged!

2. Rinse the electrode with clean water, and dry it with dry disposable paper tissue.

3. Carefully clean the tip of the electrode with the enclosed special emery paper.
   – Place the special emery paper on disposable paper tissue, and hold one of the edges.
   – Hold the measuring cell vertically, and move the electrode tip over the emery paper two or three times.

   Do not sand the metallic coating of the electrode!

   Caution

   Clean the tip of the electrode carefully. No other parts must be cleaned!

Caution

If the valve at the diaphragm cap remains covered, the diaphragm can be damaged by the underpressure that builds up while unscrewing the cap!
13.2.4 Filling the diaphragm cap with electrolyte

1. Hold the diaphragm cap at the side edges.
2. Pour the electrolyte into the diaphragm cap up to the screw thread.
3. Use the electrode shaft to knock several times on the top of the cap as shown below.
   – Repeat this procedure until no more air bubbles are seen.
4. After that, fill the diaphragm cap completely up to the brim.

**Note**
Ensure that the tubular ring is correctly positioned!
The valve opening must be completely covered!

**Caution**
Hold the diaphragm cap at the edges as shown in fig. 10.

![Fig. 10 Filling with electrolyte](image)

**Warning**
When screwing on the diaphragm cap, the electrolyte can squirt from the valve opening!
Strictly follow the instructions in section 13.2.5 Screwing the diaphragm cap onto the electrode shaft.

**Caution**
Never use another electrolyte!
If the electrode is damaged by using a wrong electrolyte, the warranty becomes void!

13.2.5 Screwing the diaphragm cap onto the electrode shaft

1. Hold the electrode shaft vertically, and place it carefully upon the filled diaphragm cap.
2. Lock the thread into place.
3. Slowly screw the electrode shaft clockwise into the diaphragm cap by hand.
   – The surplus electrolyte escapes through the valve opening.
   – At the O-ring, the screwing stops the first time.
   – Screw further until the diaphragm cap is flush-mounted on the electrode shaft.

**Warning**
The electrolyte can squirt from the valve opening!
Make sure to screw the electrode shaft into the diaphragm cap!
Do it carefully and slowly as described below!

**Caution**
Do not touch the valve with the hand, and do not close the valve by hand, in order to allow the surplus electrolyte to escape through the valve opening.

**Caution**
Never use another electrolyte!
If the electrode is damaged by using a wrong electrolyte, the warranty becomes void!

**Warning**
The electrolyte can squirt from the valve opening!
Make sure to screw the electrode shaft into the diaphragm cap!
Do it carefully and slowly as described below!

**Caution**
Never use another electrolyte!
If the electrode is damaged by using a wrong electrolyte, the warranty becomes void!

13.2.6 Recommissioning the system

1. Start up as described in section 10.4 Starting up.
2. Wait until the required running-in period is over:
   – about one hour in case of peracetic acid
   – about three hours in case of hydrogen oxide.
3. Calibrate the measuring system again!
14. Spare parts

14.1 Accessories and wear parts

<table>
<thead>
<tr>
<th>Product number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>95701374 (314-750-10000)</td>
<td>Peracetic acid sensor with diaphragm cap</td>
</tr>
<tr>
<td>95701111 (314-850-10000)</td>
<td>Hydrogen oxide sensor with diaphragm cap</td>
</tr>
<tr>
<td>95701375 (314-700-10000)</td>
<td>Peracetic acid measuring cell consisting of sensor with diaphragm cap, flow armature, cables</td>
</tr>
<tr>
<td>95701376 (314-800-10000)</td>
<td>Hydrogen peroxide measuring cell consisting of sensor with diaphragm cap, flow armature, cables</td>
</tr>
<tr>
<td>99047005</td>
<td>Flow armature</td>
</tr>
<tr>
<td>91835331 (45.10124)</td>
<td>Cable</td>
</tr>
<tr>
<td>553-1729 (96729544)</td>
<td>Fixing set for measuring cell consisting of PVC plug, seal ring and O-ring</td>
</tr>
<tr>
<td>96622962 (48.1118)</td>
<td>Diaphragm cap for peracetic acid, including electrolyte</td>
</tr>
<tr>
<td>96622974 (48.1120)</td>
<td>Diaphragm cap for hydrogen peroxide, including electrolyte</td>
</tr>
<tr>
<td>96622966 (48.1119)</td>
<td>Electrolyte for peracetic acid</td>
</tr>
<tr>
<td>96622975 (48.1121)</td>
<td>Electrolyte for hydrogen peroxide</td>
</tr>
</tbody>
</table>

15. Disposal

This product or parts of it must be disposed of in an environmentally sound way:

1. Use the public or private waste collection service.
2. If this is not possible, contact the nearest Grundfos company or service workshop.

Subject to alterations.
Declaration of conformity

We, Grundfos, declare under our sole responsibility that the products Conex® DIA-1, DIA-2, DIA-2Q, to which the declaration below relates, are in conformity with the Council Directives listed below on the approximation of the laws of the EU member states.

Standards used:
- EN 61000-3-2:2015
- EN 61000-3-3:2014
- EN 61326-1:2013
- EN 61010-1:2011-07

Low Voltage Directive (2014/35/EU)*.

Standards used:
EN 61326-1:2013,
EN 61000-3-2:2015,
EN 61000-3-3:2014.

* Only for products with operating voltage > 50 VAC or > 75 VDC.

This EU declaration of conformity is only valid when published as part of the Grundfos installation and operating instructions (publication numbers 91834770, 95708321, 96681475, 96681473, 9708322, 96681468, 95708712).

Pfinztal, 1 May 2016

Ulrich Stemick
Technical Director
Grundfos Water Treatment GmbH
Reetzstr. 85, D-76327 Pfinztal, Germany

Person authorised to compile technical file and empowered to sign the EU declaration of conformity.
Контрольно-измерительные анализаторы моделей DIA-1, DIA-2, DIA-2Q, DIS-PR, DIS-D сертифицированы на соответствие требованиям Технических регламентов Таможенного союза "О безопасности низковольтного оборудования" (ТР ТС 004/2011), "Электромагнитная совместимость технических средств" (ТР ТС 020/2011).
Сертификат соответствия:

Истра, 1 января 2014 г.

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