

CH cleaning head

SENSOR CLEANING ACCESSORY OPERATED BY COMPRESSED AIR



The latest version of the present operating manual is available on the Internet under www.WTW.com.

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1 Overview

The CH cleaning head is a retrofit accessory for WTW online sensors with a shaft diameter of 40 mm. The sensor element is cleaned by a compressed air stream which removes any contaminants.

The compressed air is provided in one of the following ways:

- The compressed air connected to the valve module (MIQ/CHV Plus or DIQ/CHV) is switched on and off via an electronically operated control valve.
- Pulsing compressed air is created by switching on or off a membrane pump (Cleaning Air Box) directly on site.

**How it functions:
CH cleaning head
System 184 XT / 2020 XT**

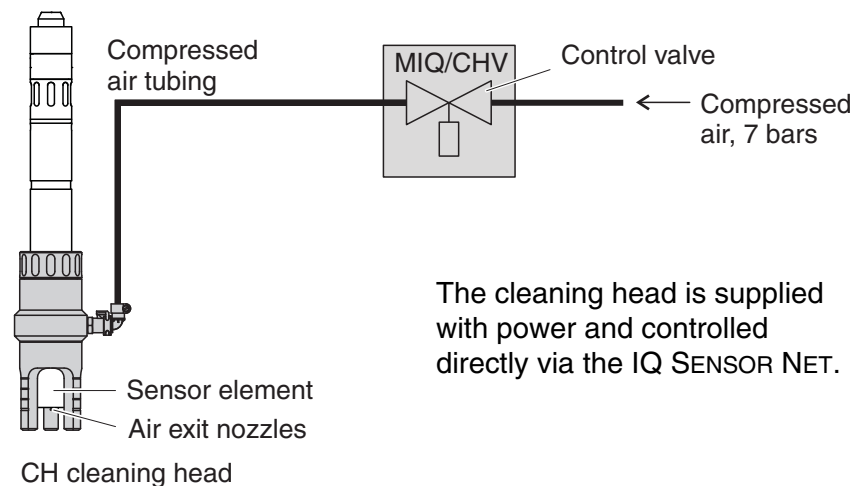


Fig. 1-1 Example with MIQ/CHV Plus

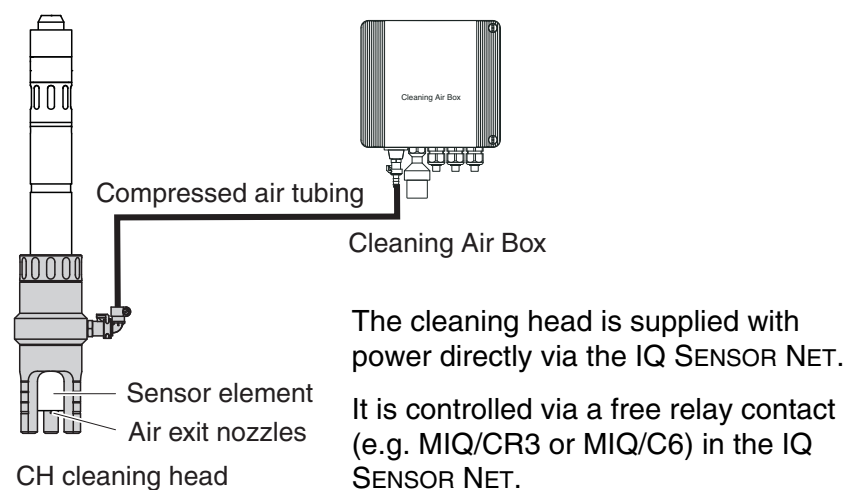


Fig. 1-2 Example with Cleaning Air Box

**How it functions:
CH cleaning head
System 182 (XT)**

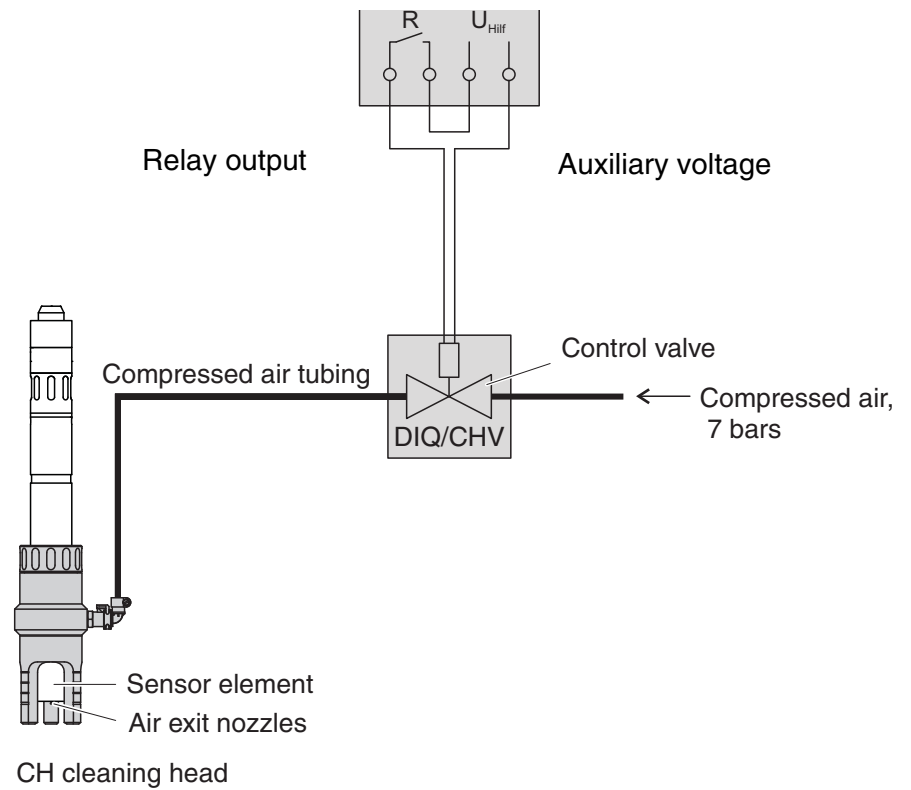


Fig. 1-3 Example with DIQ/CHV Plus

**How it functions:
with analog measuring
transmitters
(e.g. measuring
transmitter 170/296)**

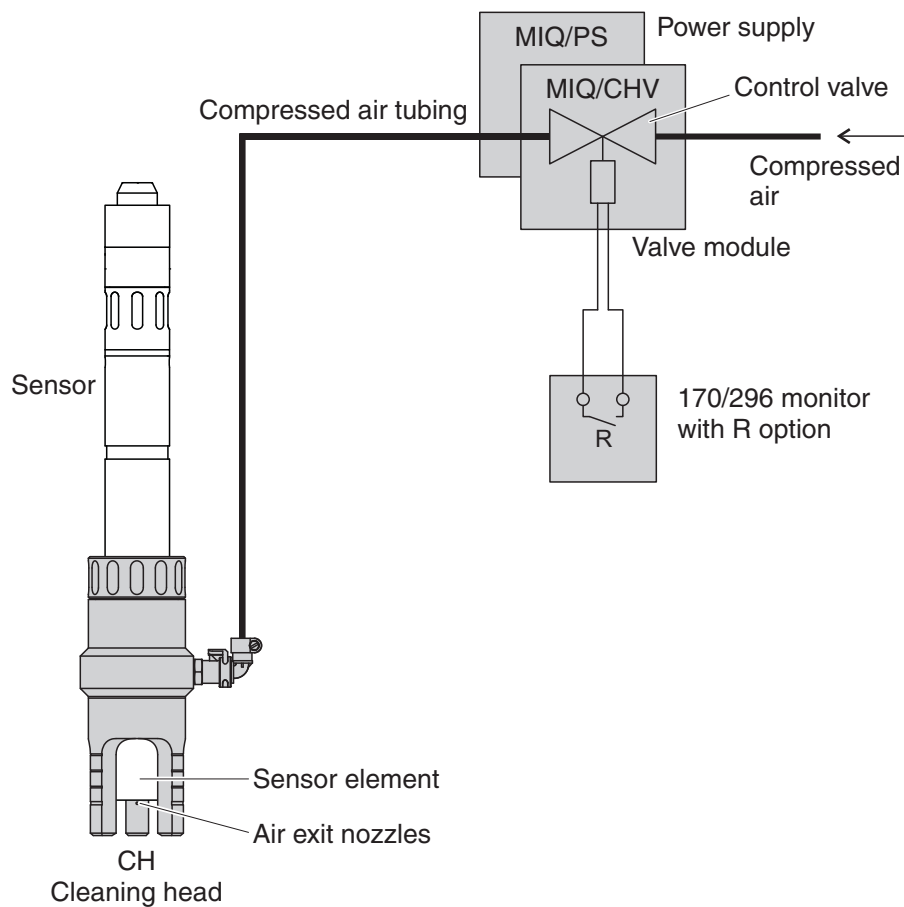


Fig. 1-4 Example with MIQ/CHV Plus

2 Commissioning

2.1 Scope of delivery

Scope of delivery of the CH cleaning head:

- Cleaning head with quick-acting closure coupling
- 15 m compressed air tubing with quick-acting plug
- Hose clip
- Fastening ring
- Operating manual

2.2 Installation

2.2.1 Installing the sensor in the cleaning head

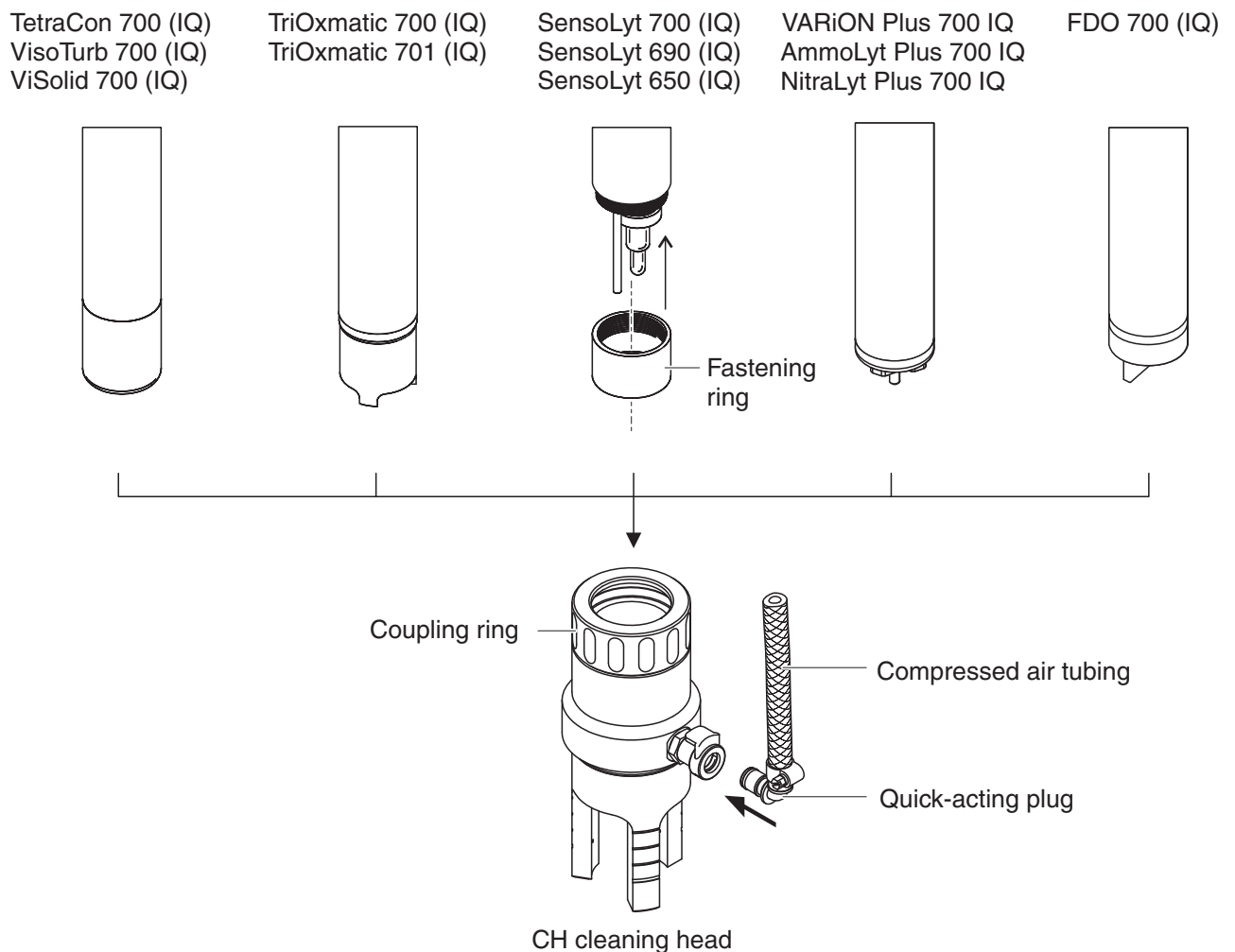


Fig. 2-1 Installing the various sensor types in the cleaning head

1	<i>TriOxmatic sensors:</i> The sensor may be installed with or without the protective hood. Instead of the standard protective hood, you can also install the MSK 600 protective hood, e. g. to prevent the membrane from being bitten by fish.
2	<i>SensoLyt sensors:</i> Screw off the protective hood and screw on the fastening ring. <u>Note:</u> Keep the original protective hood. You will need it as a tool when replacing the electrode of the SensoLyt!
3	<i>VARiON Plus, AmmoLyt Plus, NitraLyt Plus and FDO sensors:</i> Dismount the protective hood.
4	Loosen the coupling ring on the cleaning head.
5	Insert the sensor in the cleaning head and put it in the correct position. Observe the instructions concerning the mounting position in section 2.2.2 MOUNTING POSITION. Then, slightly tighten the coupling ring. Check the position once more and, if necessary, correct it. Then tighten the coupling ring by hand.
6	Insert the quick-acting plug of the compressed air tubing in the quick-acting closure coupling of the cleaning head and let it click into place.
7	Connect the other end of the compressed-air tube to the valve module. Secure all tubing connections with hose clips.
8	Before every commissioning, blow the compressed air line through in order to remove any water that might be in the line.

**WARNING**

Danger of injury from pressurized line. During the cleaning process, the cleaning head and the compressed air tubing are under pressure. Before opening the compressed air line, make sure that the relevant section of the line is pressure-free.

NOTE

Do not suspend the sensor on the sensor connection cable. Use a sensor holder or an armature. Information on this and other accessories is given in the WTW catalog and on the Internet.

2.2.2 Mounting position

For effective cleaning, the mounting position is different for each sensor type. In general, the air stream should flow as directly as possible towards the active areas of the sensor (electrodes or membranes). This

is generally the case when the active areas are on the same height as the air exit nozzles.

With some sensors, the angular orientation of the electrode or temperature sensor in relation to the air exit nozzles has to be observed as well.



The following data concerning the mounting position are recommendations for a basic position. The position can be further optimized empirically for the relevant application. Height markings on the outside of the cleaning head make it easier to find proven positions again. The lowest, wide marking indicates the level of the air exit nozzles.

The three extensions with the air exit nozzles form a protective hood for the sensor. To maintain this function, make sure that the sensor does not project beyond the extensions.

Recommended installation of TetraCon sensors (conductivity)

- Ensure the tip of the sensor is level with the upper edge of the air exit nozzles.

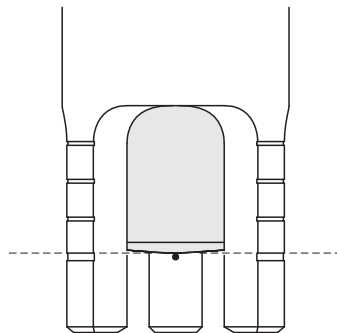


Fig. 2-2 Cleaning head with TetraCon sensor



In older TetraCon models with lateral temperature sensors, make sure that the temperature sensor is not covered by the cleaning head.

Adjusting the cell constant (K):

When the cleaning head is mounted, the cell constant of the TetraCon increases by approx. 2 % - depending on the exact installation position. Adjust the changed cell constant as follows:



How to set the cell constant on the measuring system is described in the respective operating manual.

- 1 Immerse the conductivity sensor ready to measure but without the cleaning head in the test solution (normal tap water). Maintain the minimum distances to the bottom and wall of the vessel (see sensor operating manual).

2	While stirring, add so much common salt to the solution that the measured value reaches approx. 1 mS/cm. Subsequently, continue stirring until the measured value is stable.
3	Read and note down the measured value.
4	Take the sensor out of the test solution and mount the cleaning head.
5	Immerse the sensor <u>with the cleaning head</u> in the test solution.
6	Adjust the cell constant on the measuring system so that the displayed value equals the value that was noted down without the cleaning head. With the TetraCon 700 (IQ), start with a value of $K = 0.935$.

**Recommended
installation of
SensoLyt sensors
(pH/ORP)**

- Insert the sensor in the cleaning head so that the air exit nozzles lie approx. half-way between the membrane and diaphragm(s) of the electrode.
- Turn the sensor so that the electrode points to one of the three air exit nozzles.

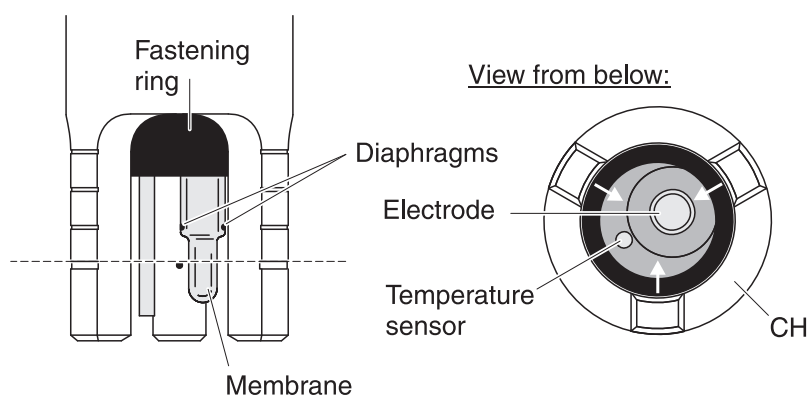


Fig. 2-3 Cleaning head with SensoLyt sensor

**Recommended
installation of
TriOxmatic sensors
(D.O.)**

- Ensure that the tip of the membrane cap is level with the upper edge of the air exit nozzles.
- When using a protective hood, turn the sensor so that the protective hood does not cover the air exit nozzles.

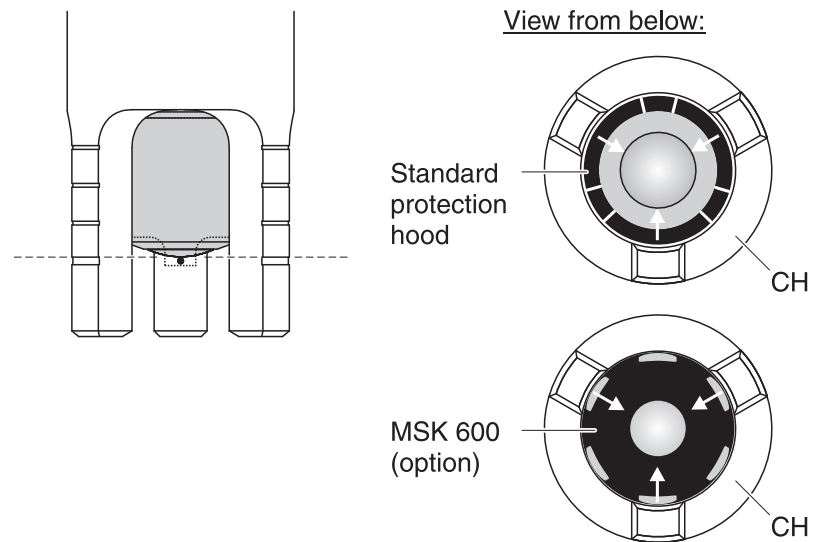


Fig. 2-4 Cleaning head with TriOxmatic sensor

**Recommended
installation of
VARiON Plus,
AmmonoLyt Plus and
NitraLyt Plus sensors**

- Insert the sensor in the cleaning head so that one air exit nozzle is approx. 1 mm below the edge of the reference electrode.

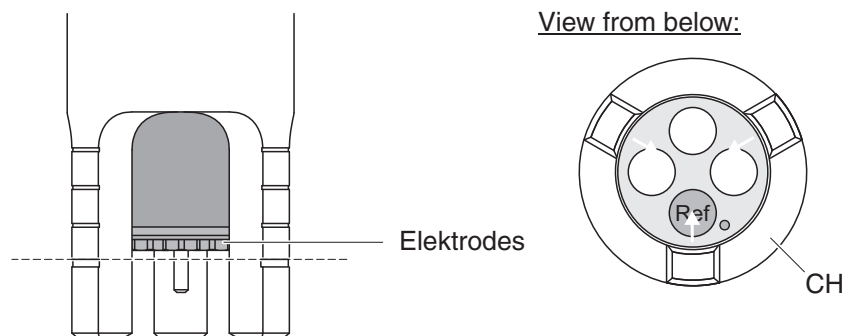


Fig. 2-5 Cleaning head with VARiON sensor

**Recommended
installation of VisoTurb
sensors**

- Insert the sensor in the cleaning head so that one air exit nozzle is approx. 5 ... 10 mm below the measurement windows, as close as possible to the reference electrode and on an axis with both measurement windows.
- If the Cleaning Head affects the measured value:
Carry out a new application adjustment (see sensor operating manual).

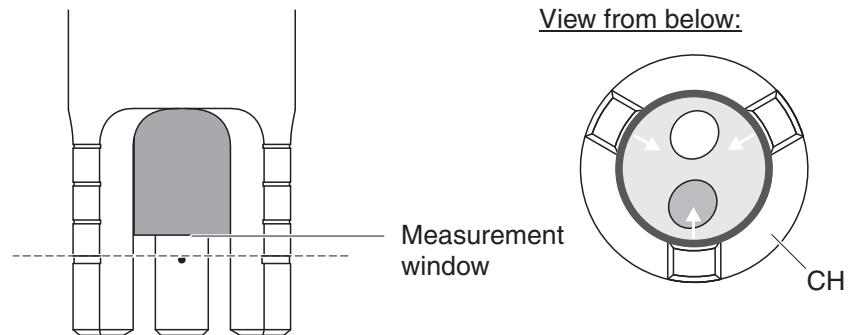


Fig. 2-6 Cleaning head with VisoTurb sensor

Recommended installation of ViSolid sensors

- Insert the sensor in the cleaning head so that one air exit nozzle is approx. 5 ... 10 mm below the measurement windows, as close as possible to one measurement window and on an axis with both measurement windows.
- If the Cleaning Head affects the measured value: Determine and enter the correction factor (see sensor operating manual).

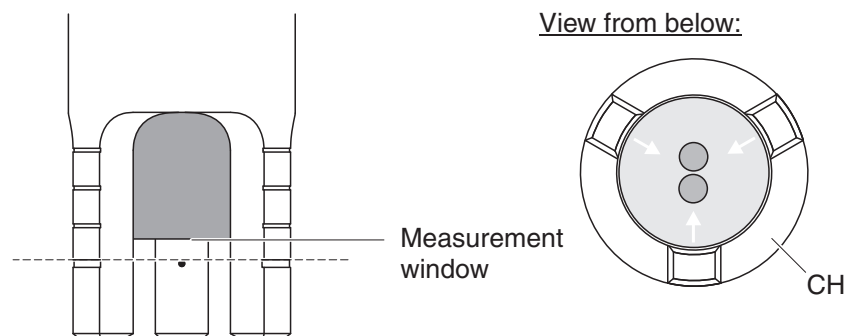


Fig. 2-7 Cleaning head with ViSolid sensor

Recommended installation of FDO sensors

- Insert the sensor in the cleaning head so that one air exit nozzle points to the center of the measurement membrane.

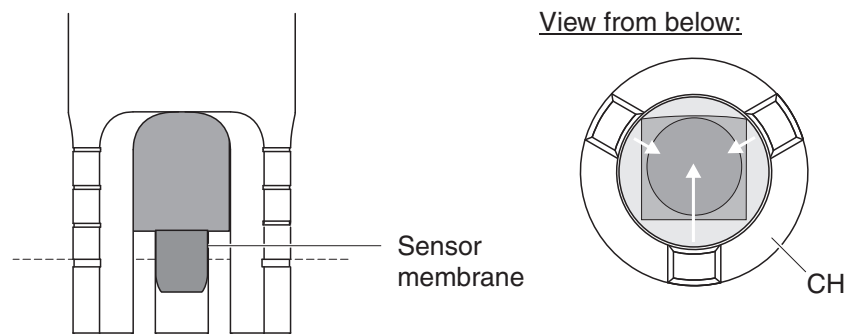


Fig. 2-8 Cleaning head with FDO sensor

2.2.3 Cleaning interval, cleaning period and freezing period (hold time)



How to set the values is described in the operating manual of the measuring system.

The shorter the cleaning interval (i. e. more often the sensor is cleaned) and the longer the cleaning period, the higher the cleaning power will be.

Start with the following basic setting:

- Cleaning interval: One cleaning procedure per day
- Cleaning period: 2 min.

Monitor the cleaning result and adjust the settings of your application accordingly.



Note that the air blown in may affect the measurement. For example, the oxygen content in the measuring solution and in the membrane cap of oxygen sensors may be increased - depending on the oxygen saturation already present. In this case, the sensor needs some time after the cleaning procedure for the concentrations to readjust, depending on the measuring solution. This effect will be less significant with a shorter cleaning period. Observe the following rules for all sensors:

- If you want to increase the cleaning power, clean the sensor more often instead of extending the cleaning period.
- After the cleaning process, freeze any linked outputs until the influence of the air blown in wears off.

Rule of thumb for oxygen sensors: Freezing period \approx Cleaning period.

2.2.4 Compressed air supply

Observe the specifications in chapter 4 TECHNICAL DATA. Also observe the specifications of the control valve.

With most applications, the cleaning with the MIQ/CHV Plus or DIQ/CHV will only be effective if the absolute pressure adjusted at the compressed air input is more than 3×10^5 Pa (3 bar). Determine the optimum pressure for your application empirically.

The Cleaning Air Box provides 1×10^5 Pa (1 bar) at the compressed air output. Cleaning with the Cleaning Air Box is more effective due to the pulsing compressed air stream.

Note that a greater immersion depth requires a higher operating pressure due to the higher hydrostatic back pressure.

3 Maintenance, cleaning, wear parts

3.1 Maintenance and cleaning

**WARNING**

Danger of injury from pressurized line. During the cleaning process, the cleaning head and the compressed air tubing are under pressure. Before opening the compressed air line, make sure that the relevant section of the line is pressure-free.

The CH cleaning head works almost maintenance-free. The cleaning head should be checked for contamination at regular intervals. It can be cleaned under a water jet using a brush.

Before putting it into operation again, blow the compressed air line through in order to remove any water column that might be in the line.

3.2 Wear parts

Description	Model	Order no.
Tubing set, consisting of: <ul style="list-style-type: none">– 15 m compressed-air tube– 1 quick connect fitting, complete– 2 hose clips– Teflon tape	CH/Epack	900 111

4 Technical data

Dimensions

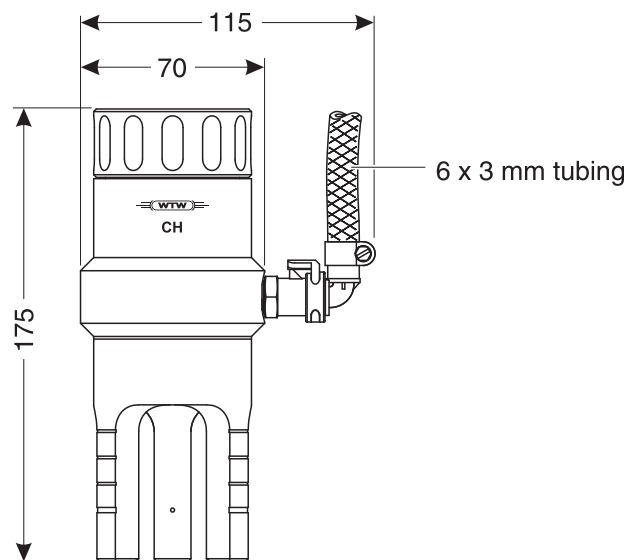


Fig. 4-1 Dimensions of the CH cleaning head

Material

Compressed air tubing 6 x 3 mm	PVC
Quick-acting closure coupling	Housing: POM Gasket: EPDM
Hose clips	Stainless steel V4A
Plastic parts of the housing	POM
Fastening ring	POM
O rings	FPM (Viton) or EPDM

Weight

Cleaning head without tubing	300 g
Cleaning head with tubing	1800 g

Immersion depth

Max. 5 m water depth

Operating temperature

Cleaning head	0 ... +60 °C
Tubing	-20 ... +60 °C

Storing temperature (dry)

-20 ... +60 °C

Compressed air	Required air quality	Dry, free of dust and oil
	Operating pressure at the compressed-air input of the MIQ/CHV Plus or DIQ/CHV	Max. 7×10^5 Pa (7 bar) absolute
	Quantity of air required at the compressed-air output	40 l/min (standard liters/minute) for MIQ/CHV Plus or DIQ/CHV 24 l/min (standard liters/minute) for Cleaning Air Box*
	Thread for quick-acting closure coupling in the housing	1/4 " NPT

* due to the pulsing compressed-air a lower pressure and lower flow rate are possible

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- 2) a leading global water technology company.

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