

# Operating Instructions

## CYA680

Flow assembly








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
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# 1 About this document



## 1.1 Safety information

Structure of information	Meaning
 <b>DANGER</b> <b>Causes (/consequences)</b> If necessary, Consequences of non-compliance (if applicable) ▶ Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid the dangerous situation <b>will</b> result in a fatal or serious injury.
 <b>WARNING</b> <b>Causes (/consequences)</b> If necessary, Consequences of non-compliance (if applicable) ▶ Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid the dangerous situation <b>can</b> result in a fatal or serious injury.
 <b>CAUTION</b> <b>Causes (/consequences)</b> If necessary, Consequences of non-compliance (if applicable) ▶ Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in minor or more serious injuries.
<b>NOTICE</b> <b>Cause/situation</b> If necessary, Consequences of non-compliance (if applicable) ▶ Action/note	This symbol alerts you to situations which may result in damage to property.

## 1.2 Symbols used

	Additional information, tips
	Permitted
	Recommended
	Forbidden or not recommended
	Reference to device documentation
	Reference to page
	Reference to graphic
	Result of a step


## 1.3 Symbols on the device

	Reference to device documentation
	Do not dispose of products bearing this marking as unsorted municipal waste. Instead, return them to the manufacturer for disposal under the applicable conditions.

## 2 Basic safety instructions

### 2.1 Requirements for the personnel

- Installation, commissioning, operation and maintenance of the measuring system may be carried out only by specially trained technical personnel.
- The technical personnel must be authorized by the plant operator to carry out the specified activities.
- The electrical connection may be performed only by an electrical technician.
- The technical personnel must have read and understood these Operating Instructions and must follow the instructions contained therein.
- Faults at the measuring point may only be rectified by authorized and specially trained personnel.

 Repairs not described in the Operating Instructions provided must be carried out only directly at the manufacturer's site or by the service organization.

### 2.2 Intended use

The CYA680 flow assembly is designed for the installation of 12 mm sensors with Pg 13.5 in pipes.

Its mechanical construction means that it can be operated in pressurized systems (see technical data).

Any use other than that intended puts the safety of people and the measuring system at risk. Therefore, any other use is not permitted.

The manufacturer is not liable for harm caused by improper or unintended use.

### 2.3 Workplace safety

As the user, you are responsible for complying with the following safety conditions:

- Installation guidelines
- Local standards and regulations

## 2.4 Operational safety

### Before commissioning the entire measuring point:

1. Verify that all connections are correct.
2. Ensure that electrical cables and hose connections are undamaged.
3. Do not operate damaged products, and protect them against unintentional operation.
4. Label damaged products as defective.

### During operation:

- ▶ If faults cannot be rectified,  
take products out of service and protect them against unintentional operation.

## 2.5 Product safety

The product is designed to meet state-of-the-art safety requirements, has been tested, and left the factory in a condition in which it is safe to operate. The relevant regulations and international standards have been observed.

# 3 Incoming acceptance and product identification

## 3.1 Incoming acceptance

1. Verify that the packaging is undamaged.
  - ↳ Notify the supplier of any damage to the packaging.  
Keep the damaged packaging until the issue has been resolved.
2. Verify that the contents are undamaged.
  - ↳ Notify the supplier of any damage to the delivery contents.  
Keep the damaged goods until the issue has been resolved.
3. Check that the delivery is complete and nothing is missing.
  - ↳ Compare the shipping documents with your order.
4. Pack the product for storage and transportation in such a way that it is protected against impact and moisture.
  - ↳ The original packaging offers the best protection.  
Make sure to comply with the permitted ambient conditions.

If you have any questions, please contact your supplier or your local Sales Center.

## 3.2 Product identification

### 3.2.1 Nameplate

The nameplate provides you with the following information on your device:

- Manufacturer identification
- Order code
- Extended order code
- Serial number
- Ambient and process conditions
- Safety information and warnings

► Compare the information on the nameplate with the order.

### 3.2.2 Identifying the product

#### Product page

[www.endress.com/cya680](http://www.endress.com/cya680)

#### Interpreting the order code

The order code and serial number of your product can be found in the following locations:

- On the nameplate
- In the delivery papers

#### Obtaining information on the product

1. Go to [www.endress.com](http://www.endress.com).
2. Page search (magnifying glass symbol): Enter valid serial number.
3. Search (magnifying glass).
  - ↳ The product structure is displayed in a popup window.
4. Click the product overview.
  - ↳ A new window opens. Here you fill information pertaining to your device, including the product documentation.

#### Manufacturer address

Endress+Hauser Conducta GmbH+Co. KG  
Dieselstraße 24  
70839 Gerlingen  
Germany

## 3.3 Scope of delivery

The delivery comprises:

- Assembly in the version ordered
- Operating Instructions

## 4 Mounting

### 4.1 Mounting requirements

The CYA680 flow assembly is designed for mounting in pipes. This requires the availability of suitable Tri-Clamp connections.

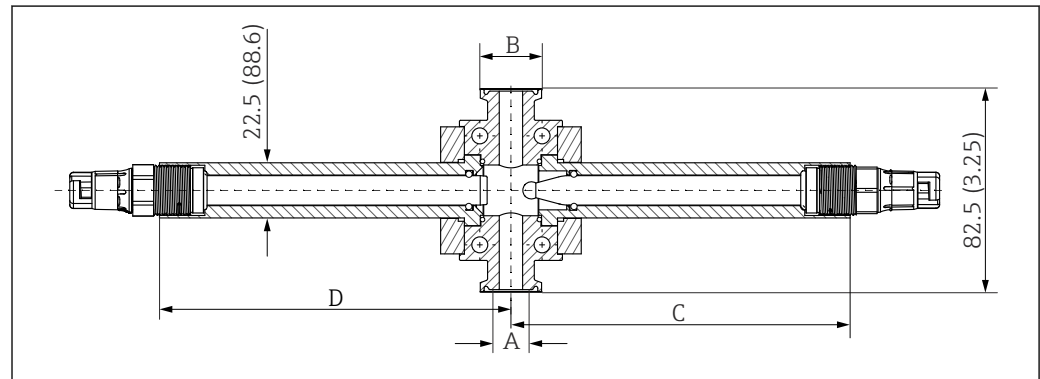
It can be installed both in horizontal and vertical pipes.

#### Orientation


Please follow the installation instructions for the sensors used!

If the Ceragel CPS71D is installed vertically, use electrode version TU for upside-down installation.

### 4.2 Dimensions



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 1 Dimensions in mm (inch)

- A Internal diameter
- B Flange diameter
- C Sensor holder pH
- D Sensor holder conductivity

Flange	A	B	C	D
¼" Tri-Clamp	4.57 mm (0.18")	25 mm (0.984")	138.4 mm (5.45")	143.4 mm (5.65")
½" Tri-Clamp	9.53 mm (0.375")	25 mm (0.984")	138.4 mm (5.45")	143.4 mm (5.65")
¾" Tri-Clamp	15.24 mm (0.60")	25 mm (0.984")	138.4 mm (5.45")	143.4 mm (5.65")
1" Tri-Clamp	22.1 mm (0.87")	50.39 mm (1.984")	144 mm (5.67")	149 mm (5.87")
1 ½" Tri-Clamp	34.44 mm (1.356")	50.39 mm (1.984")	144 mm (5.67")	149 mm (5.87")
2" Tri-Clamp	45 mm (1.856")	63.91 mm (2.516")	150 mm (5.92")	155 mm (6.10")

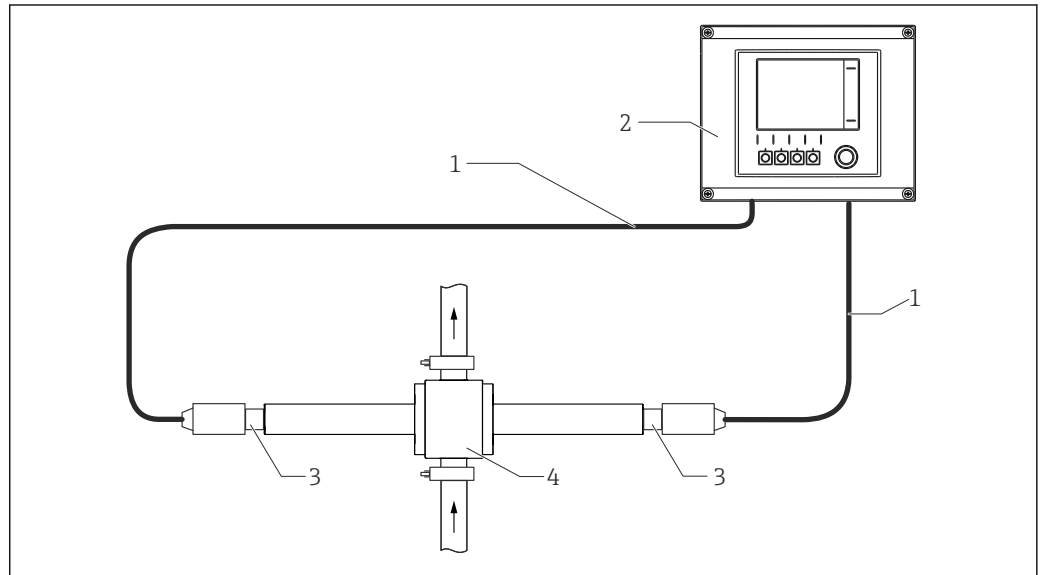


## 4.3 Installation

### 4.3.1 Measuring system

A complete measuring system comprises:

- Transmitter, for example Liquiline CM44P
- One or two 12 mm sensors, e.g. CLS82D and / or CPS71D
- Flow assembly CYA680
- Measuring cable, for example CYK10



2 Example of a measuring system

- 1 Measuring cable
- 2 Liquiline CM44P transmitter
- 3 Sensors
- 4 Flow assembly CYA680

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### 4.3.2 Installing the assembly in the process

#### **⚠ WARNING**

**Risk of injury from high pressure, high temperature or chemical hazards if process medium escapes.**

- ▶ Wear protective gloves, protective goggles and protective clothing.
- ▶ Only mount the assembly if the pipes are empty and unpressurized.

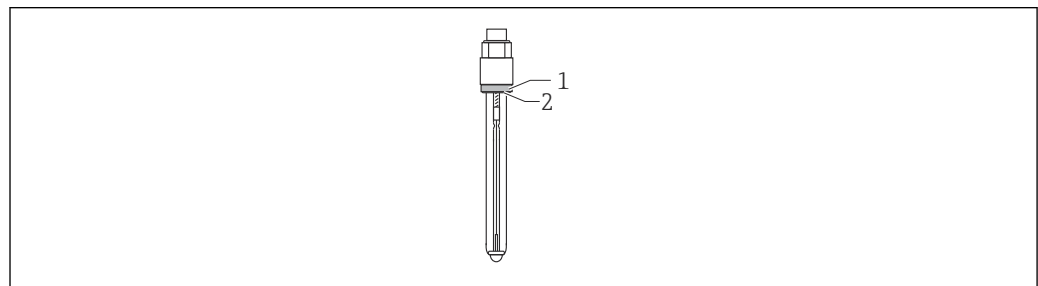
Install the assembly as follows:

1. Apply a thin layer of grease (e.g. Klüber Paraliq GTE 703) to the two O-rings on the Tri-Clamp connections.
2. Position both O-rings in the grooves on the Tri-Clamp connections.
3. Secure both brackets and ensure that the O-rings do not slip.

### 4.4 Sensor installation

You can only install sensors that meet the following requirements:

- Threaded plug-in head Pg 13.5
- 120 mm shaft length
- 12 mm shaft diameter



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 3 Sensor

1 Thrust collar

2 O-ring

1. Remove the protective cap from the sensor.
2. Check that the O-ring (item 2) and the pressure ring (item 1) are provided on the sensor shaft.
3. Wet the sensor shaft with water.
  - ↳ This makes it easier to screw in the sensor.
4. Screw in the sensor until it is hand-tight (3 Nm (2.2 lbf ft)).

### 4.5 Post-mounting check

- ▶ After mounting, check all the connections to ensure they are secure and leak-tight.

## 5 Maintenance


### WARNING


#### Risk of injury if medium escapes

- ▶ Before each maintenance task, ensure that the process pipe is empty and rinsed.
- ▶ The assembly may contain residual medium; please rinse thoroughly before commencing work.

### 5.1 Cleaning the assembly

To ensure stable and reliable measurements, the assembly and the sensor must be cleaned regularly. The frequency and intensity of the cleaning depend on the medium.

1. Remove the sensor for cleaning.
2. Clean the assembly depending on the degree of fouling.
  - ↳ Remove light dirt and fouling using suitable cleaning agents (→  11). Remove heavy soiling using a soft brush and a suitable cleaning agent. For very persistent dirt, soak the parts in a cleaning solution. Then clean the parts with a brush.

 A typical example of a cleaning interval would be 6 months in the case of drinking water.

### 5.2 Cleaning the sensor

You must clean the sensor:

- Before every calibration
  - Regularly during operation
  - Before returning it for repairs
- ▶ Remove the sensor and clean it manually.

### NOTICE

#### Incorrect measurement or damage to sensor due to incorrect cleaning

- ▶ Clean the ORP electrodes mechanically only and always use water. Never clean with chemical cleaning agents. Such cleaning agents cause a potential to build up at the electrode which takes a few hours to dissipate. The potential causes errors in the measurement.
- ▶ Do not use abrasive cleaning agents. These cleaning agents may cause irreparable damage to the sensor.
- ▶ After the sensor has been cleaned, rinse the assembly's rinse chamber using an ample quantity of water (possibly distilled or deionized). Otherwise, residue from the cleaning agent may distort the measurement.
- ▶ Perform another calibration following cleaning if necessary.

### 5.3 Cleaning agent

### WARNING

#### Organic solvents containing halogens

Limited evidence of carcinogenicity! Dangerous for the environment with long-term effects!

- ▶ Do not use organic solvents that contain halogens.

**⚠ WARNING****Thiocarbamide**

Harmful if swallowed! Limited evidence of carcinogenicity! Possible risk of harm to the unborn child! Dangerous for the environment with long-term effects!

- ▶ Wear protective goggles, protective gloves and appropriate protective clothing.
- ▶ Avoid all contact with the eyes, mouth and skin.
- ▶ Avoid discharge into the environment.

The most common types of soiling and the appropriate cleaning agents in each case are shown in the following table.

**i** Pay attention to the material compatibility of the materials to be cleaned.

Type of soiling	Cleaning agent
Greases and oils	Hot water or tempered, surfactant-containing (basic) agents or water-soluble organic solvents (e.g. ethanol)
Limescale deposits, metal hydroxide buildup, lyophobic biological buildup	approx. 3% hydrochloric acid
Sulfide deposits	Mixture of 3% hydrochloric acid and thiocarbamide (commercially available)
Protein buildup	Mixture of 3% hydrochloric acid and pepsin (commercially available)
Fibers, suspended substances	Pressurized water, possibly surface-active agents
Light biological buildup	Pressurized water

- ▶ Choose a cleaning agent to suit the degree and type of soiling.

## 5.4 Replacing the O-rings

Replace the O-rings at least every 12 months.

Maintenance intervals depend on the application. Certain conditions (heat, pressure, aggressive chemicals, abrasion) require that maintenance intervals be reduced.

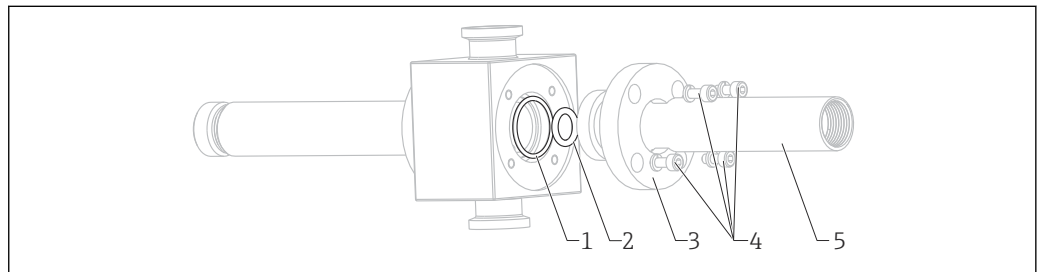
### **CAUTION**

#### **Risk of injury due to residual medium and elevated temperatures**

- ▶ When handling parts that are in contact with the medium, protect against residual medium and elevated temperatures. Wear protective goggles and safety gloves.

Preparation:

1. Interrupt the process. Pay attention to residual medium, residual pressure and elevated temperatures.
2. Completely detach the assembly from the process connection.
3. Remove the sensor.
4. Clean the assembly (see the "Cleaning the assembly" section).



#### **4 Replacing the O-rings**

- 1 O-ring
- 2 O-ring
- 3 Lap joint flange
- 4 Securing screws
- 5 Sensor guide

Replace the O-rings as follows:

1. Release the four securing screws (item 4).
2. Remove the sensor guide (item 5) and lap joint flange (item 3).
3. Remove the O-ring (item 1) from the assembly.
4. Remove the O-ring (item 2) from the sensor guide.
5. Apply a thin layer of grease (e.g., Klüber Paraliq GTE 703) to the new O-rings.
6. Insert the new O-rings into the appropriate grooves.
7. Assemble the assembly.

## 6 Repair

### 6.1 Spare parts kit

The repair and conversion concept provides for the following:

- The product has a modular design
- Spare parts are grouped into kits which include the associated kit instructions
- Only use original spare parts from the manufacturer
- Repairs are carried out by the manufacturer's Service Department or by trained users
- Certified devices can only be converted to other certified device versions by the manufacturer's Service Department or at the factory
- Observe applicable standards, national regulations, Ex documentation (XA) and certificates

1. Carry out the repair according to the kit instructions.
2. Document the repair and conversion and enter, or have entered, in the Life Cycle Management tool (W@M).

Device spare parts that are currently available for delivery can be found on the website:

<https://portal.endress.com/webapp/SparePartFinder>

- ▶ Quote the serial number of the device when ordering spare parts.

### 6.2 Return

The product must be returned if repairs or a factory calibration are required, or if the wrong product was ordered or delivered. As an ISO-certified company and also due to legal regulations, Endress+Hauser is obliged to follow certain procedures when handling any returned products that have been in contact with medium.

To ensure the swift, safe and professional return of the device:

- ▶ Check the website [www.endress.com/support/return-material](http://www.endress.com/support/return-material) for information on the procedure and general conditions.

## 7 Accessories

The following are the most important accessories available at the time this documentation was issued.

Listed accessories are technically compatible with the product in the instructions.

1. Application-specific restrictions of the product combination are possible.  
Ensure conformity of the measuring point to the application. This is the responsibility of the operator of the measuring point.
2. Pay attention to the information in the instructions for all products, particularly the technical data.
3. For accessories not listed here, please contact your Service or Sales Center.

### 7.1 pH sensors

#### **Memosens CPS61E**

- pH sensor for bioreactors in life sciences and for the food industry
- Digital with Memosens 2.0 technology
- Product Configurator on the product page: [www.endress.com/cps61e](http://www.endress.com/cps61e)

 Technical Information TI01566C

#### **Ceragel CPS71**

- pH electrode with reference system including ion trap
- Product Configurator on the product page: [www.endress.com/cps71](http://www.endress.com/cps71)

 Technical Information TI00245C

#### **Memosens CPS71E**

- pH sensor for chemical process applications
- With ion trap for poison-resistant reference
- Digital with Memosens 2.0 technology
- Product Configurator on the product page: [www.endress.com/cps71e](http://www.endress.com/cps71e)

 Technical Information TI01496C

### 7.2 ORP sensors

#### **Memosens CPS62E**

- ORP sensor for hygienic and sterile applications
- Digital with Memosens 2.0 technology
- Product Configurator on the product page: [www.endress.com/cps62e](http://www.endress.com/cps62e)

 Technical Information TI01604C

### 7.3 pH-ISFET sensors

#### **Memosens CPS47E**

- ISFET sensor for pH measurement
- Digital with Memosens 2.0 technology
- Product Configurator on the product page: [www.endress.com/cps47e](http://www.endress.com/cps47e)

 Technical Information TI01616C

**Memosens CPS77E**

- Sterilizable and autoclavable ISFET sensor for pH measurement
- Digital with Memosens 2.0 technology
- Product Configurator on the product page: [www.endress.com/cps77e](http://www.endress.com/cps77e)



Technical Information TI01396

## 7.4 Conductivity sensors

**Memosens CLS82E**

- Four-electrode sensor
- With Memosens technology
- Product Configurator on the product page: [www.endress.com/cls82e](http://www.endress.com/cls82e)



Technical Information TI01529C




## 8 Technical data

### 8.1 Process

Process temperature and pressure range

Process temperature and pressure range depend on the material and nominal diameter.

Process connection	Nominal diameter	Nominal pressure	Temperature
316L Tri-Clamp 1.4435 Tri-Clamp	0.25 to 2"	16 bar (230 psi)	0 to 130 °C (32 to 266 °F)
PVDF Tri-Clamp (Kynar)	0.25", 0.5", 0.75"	4 bar (58 psi)	0 to 130 °C (32 to 266 °F)

 Please observe the maximum permitted process temperature and process pressure of the sensor.

### 8.2 Mechanical construction

Dimensions

→ Section "Installation"

Weight

Weight of the stainless steel version (examples):

Flange	1 Sensor location	2 Sensor locations
¼" Tri-Clamp	Approx. 1.30 kg (2.86 lbs)	Approx. 1.65 kg (3.64 lbs)
2" Tri-Clamp	Approx. 2.20 kg (4.85 lbs)	Approx. 2.55 kg (5.63 lbs)

Materials

Flow assembly:           Stainless steel 1.4404/1.4435  
                                  PVDF  
O-rings:                    EPDM FDA, KALREZ FDA, VITON FDA  
PVDF is not suitable for all hazardous areas.

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