

Operating Instructions

Stamoclean CAT411

Cross-flow filter for aqueous samples from pressure pipes

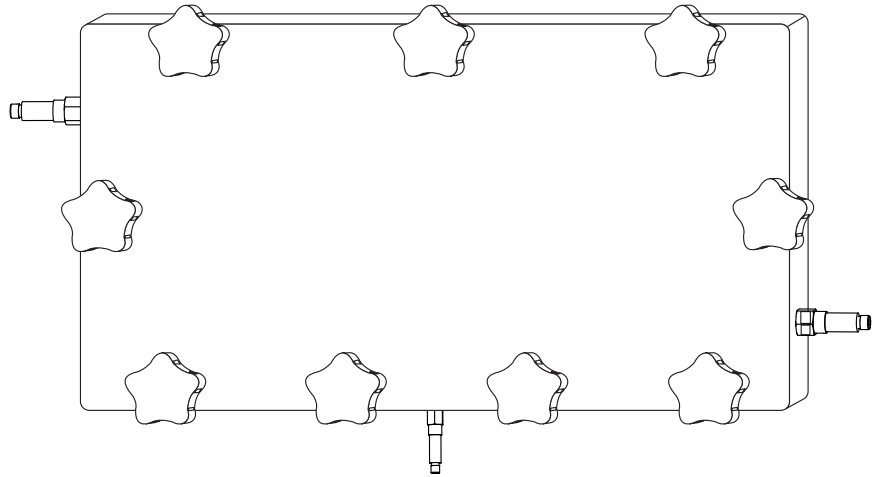





Table of contents








1	Document information	4
1.1	Warnings	4
1.2	Symbols	4
2	Basic safety instructions	5
2.1	Requirements for personnel	5
2.2	Designated use	5
2.3	Occupational safety	5
2.4	Operational safety	6
2.5	Product safety	7
3	Product description	8
3.1	Measuring system	8
4	Incoming acceptance and product identification	9
4.1	Incoming acceptance	9
4.2	Product identification	9
4.3	Scope of delivery	10
4.4	Certificates and approvals	10
5	Installation	11
5.1	Installation conditions	11
5.2	Mounting the sample preparation system	11
5.3	Post-installation check	13
6	Maintenance	14
6.1	Cleaning	14
6.2	Replacing the seals	14
7	Repair	16
7.1	Spare parts	16
7.2	Return	16
7.3	Disposal	16
8	Technical data	17
8.1	Process conditions	17
8.2	Mechanical construction	17
Index	18	

1 Document information

1.1 Warnings

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


1.2 Symbols

Symbol	Meaning
	Additional information, tips
	Permitted or recommended
	Not permitted or not recommended
	Reference to device documentation
	Reference to page
	Reference to graphic
	Result of a step

2 Basic safety instructions

2.1 Requirements for 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.
- Measuring point faults may be repaired only by authorized and specially trained personnel.

 Repairs not described in the Operating Instructions provided may only be carried out directly by the manufacturer or by the service organization.

2.2 Designated use

The CAT411 microfilter is a special cross-flow filter for sampling from pressure pipes for the purpose of continuous online monitoring.

A self-cleaning effect results from the flow of medium at the filter.

Application

- Wastewater treatment plant
 - Return activated sludge up to max. 4 g/l (4000 ppm) dry matter
 - Excess sludge up to max. 4 g/l (4000 ppm) dry matter
 - Secondary clarification
- Industry
 - Pressure on filter 0.2 to 1 bar (3 to 15 psi)
 - Sampling in the bypass at higher pressures

Use of the device for any purpose other than that described, poses a threat to the safety of people and of the entire measuring system and is therefore not permitted. The manufacturer is not liable for damage caused by improper or non-designated use.

2.2.1 Operating principle

A sample flow of 0.8 to 1.8 m³/h (3.5 to 8 gal/min) is permanently conducted through the microfilter via a pressure pipe. Some of the sample passes the filter membrane and is then conveyed to the measuring device as filtrate.

The principle of cross-flow filtration is used for sampling. The PTFE filter membrane separates particles > 0.45 µm from the filtrate. These particles collect in front of the filter membrane and are washed away with the sample flow.

The medium is conducted in a meander-like channel through the filter element. A consistently high flow velocity is achieved in this way. This causes the self-cleaning effect. Mechanical drives to generate a flow at the filter surface are therefore not required.

2.3 Occupational safety

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

- Installation guidelines
- Local standards and regulations
- Regulations for explosion protection

2.4 Operational safety

1. Before commissioning the entire measuring point, verify that all connections are correct. Ensure that electrical cables and hose connections are undamaged.
2. Do not operate damaged products, and safeguard them to ensure that they are not operated inadvertently. Label the damaged product as defective.
3. If faults cannot be rectified:
Take the products out of operation and safeguard them to ensure that they are not operated inadvertently.

2.5 Product safety

2.5.1 State of the art

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 European standards have been observed.

Devices connected to the cross-flow filter must comply with the applicable safety standards.

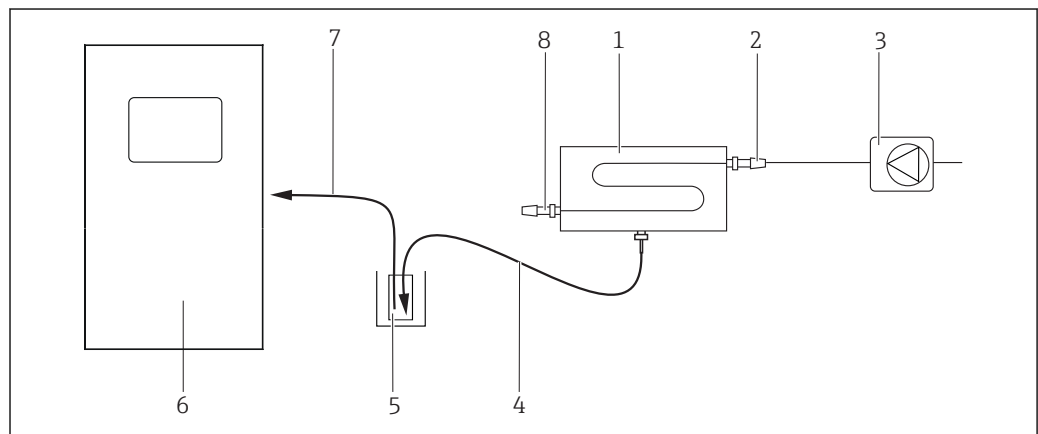
3 Product description

3.1 Measuring system

A complete sample conditioning system comprises:

- Stamoclean CAT411 microfilter
- Collecting vessel
- Analyzer

A sensor with a flow assembly can also optionally be integrated into the measuring system.



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1 Complete measuring system

1 CAT411

2 Inlet

3 Sample pump or pressure line

4 Filtrate line

5 Collecting vessel (optional)

6 Analyzer

7 Analyzer suction line

8 Free outlet

4 Incoming acceptance and product identification

4.1 Incoming acceptance

1. Verify that the packaging is undamaged.
 - ↳ Notify your supplier of any damage to the packaging.
Keep the damaged packaging until the matter has been settled.
2. Verify that the contents are undamaged.
 - ↳ Notify your supplier of any damage to the delivery contents.
Keep the damaged products until the matter has been settled.
3. Check the delivery for completeness.
 - ↳ Check it against the delivery papers and 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.
The permitted ambient conditions must be observed (see "Technical data").

If you have any questions, please contact your supplier or your local sales center.

4.2 Product identification

4.2.1 Nameplate

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

- Manufacturer identification
 - Order code
 - Serial number
 - Power connection
 - Degree of protection
 - Ambient and process conditions
- ▶ Compare the data on the nameplate with your order.

4.2.2 Product identification

Product page

www.endress.com/cat411

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 the product page for your product on the Internet.
2. At the bottom of the page, select the "Online Tools" link followed by "Check your device features".
 - ↳ An additional window opens.

3. Enter the order code from the nameplate into the search field, and then select "Show details".
 - ↳ You will receive information on each feature (selected option) of the order code.

4.3 Scope of delivery

The scope of delivery comprises:

- 1 Filter holder
- 1 Activating reagent
- 2 Perbunan seals
- 1 set of Operating Instructions

 The materials to secure the filter holder on the wall are not included in the scope of supply and must be provided by the customer.

If you have any questions, please contact your supplier or your local sales center.

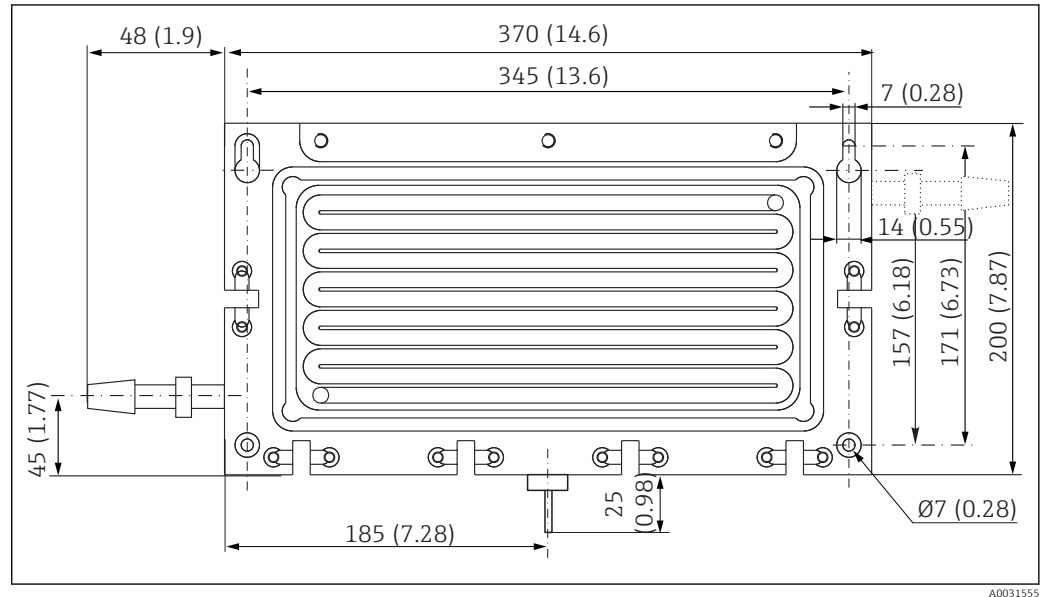
4.4 Certificates and approvals

4.4.1 CE mark

The product meets the requirements of the harmonized European standards. As such, it complies with the legal specifications of the EU directives. The manufacturer confirms successful testing of the product by affixing to it the **CE** mark.

5 Installation

5.1 Installation conditions



2 Dimensions

Filter membrane



L x B: 300 x 135 mm (11.8 x 5.31")

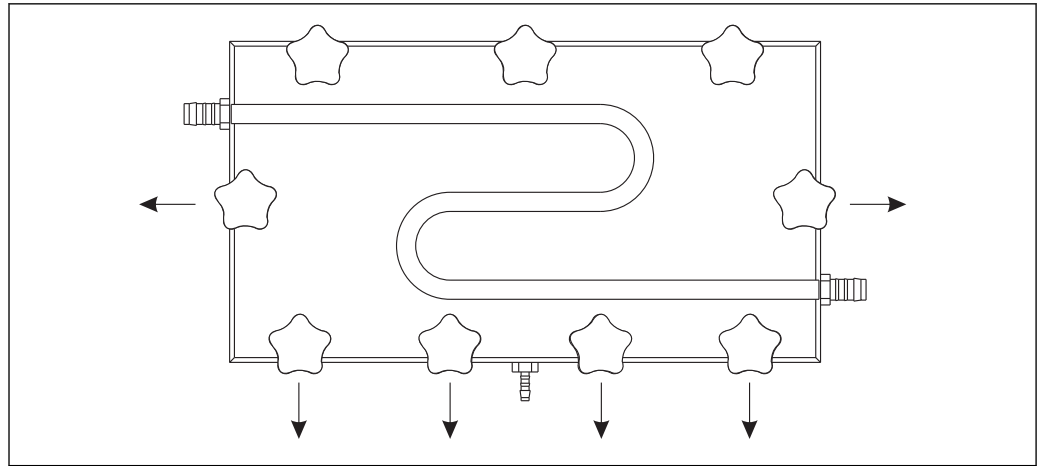
5.2 Mounting the sample preparation system

5.2.1 Wall mounting


i You require a hammer drill with a 6 mm drill bit. Wall plugs and screws are not included in the scope of delivery and must be provided by the customer.

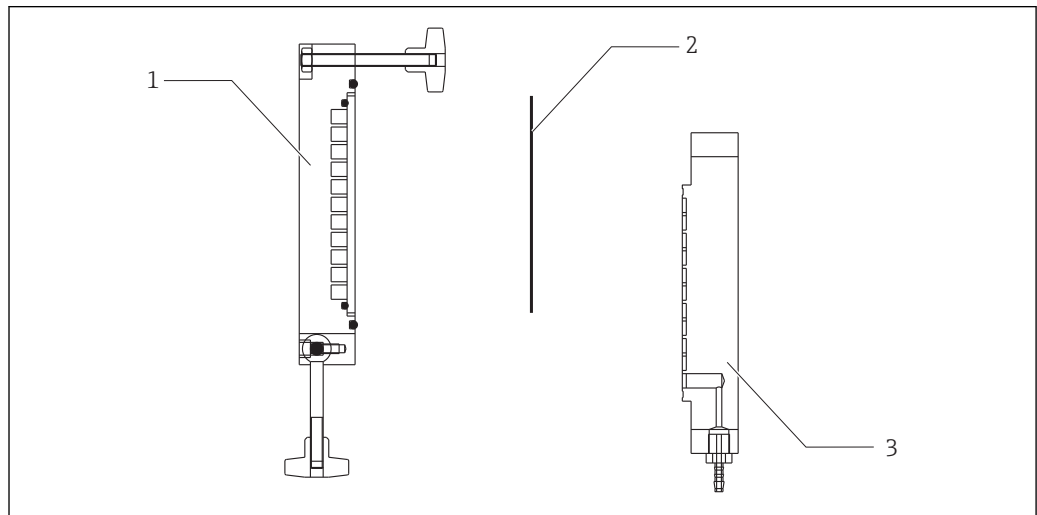
Securing the filter holder

1. Make four bore holes $\varnothing 6$ mm in the wall. Please refer to the graphic in the "Installation conditions" section for the spacing between the bore holes.
2. Remove the top part of the filter holder:
3. Loosen all the star knobs slightly.
4. Fold the side and bottom knobs to the side →  11.
5. Remove the top part (→  11 item 3) from the remaining threaded joints and place it to the side where it is readily available.
6. Secure the bottom part (item 1) of the holder to the wall with appropriate screws.



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 3 *Loosening the set screws*




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 4 *Structure*

- 1 *Bottom part*
- 2 *Filter membrane*
- 3 *Top part*

5.2.2 Inserting the filter membrane

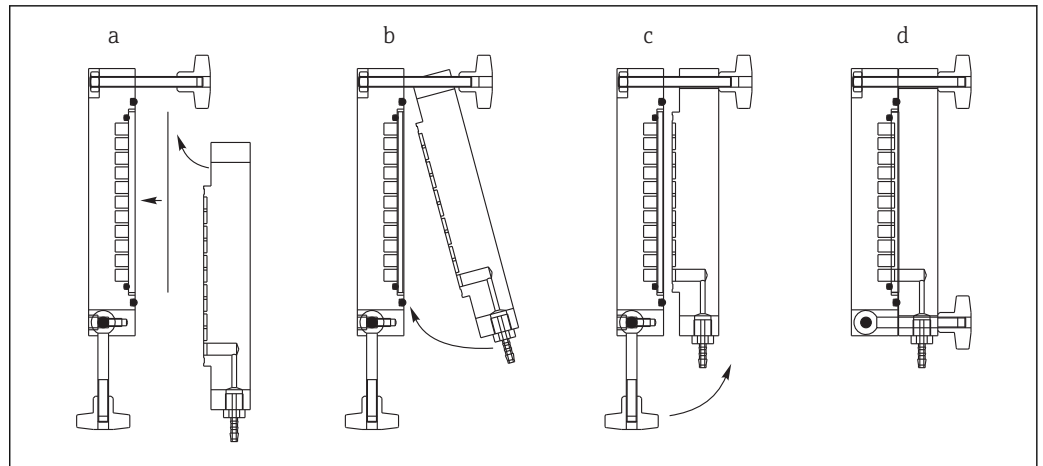
 Two filter membranes are included in the scope of delivery. You only need one membrane for correct operation. The other is a spare membrane.

Activating the filter membrane

1. Remove the filter membrane from the packaging.
2. Coat the filter membrane with the activating reagent on the smooth side (medium side).

Inserting the filter membrane

1. Insert the filter membrane into the bottom part of the filter holder which is still open after wall mounting. The smooth side of the filter membrane must face downwards (facing the bottom part = medium side).
2. Re-insert the top part of the filter holder.
3. Fold up the star knobs again.
4. Tighten the star grips finger-tight.



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5 Inserting the filter membrane

5.2.3 Connecting the supply lines

1. Connect the suction line (ID 14 mm) to the inlet of the microfilter (on the top part of the filter holder).
2. Leave the outlet (ID 14 mm) free.
3. Screw the hose connection nipple for filtrate outflow into the thread on the bottom of the filter holder.
4. Connect the filtrate line (ID 4 mm).
5. Connect the other end of the filtrate tube to the inlet of the analyzer collecting vessel.

5.3 Post-installation check

- After installation, check the sample preparation system and hoses for damage.
- After mounting, check all the connections to ensure they are secure and leak-tight.
- Ensure that the hoses cannot be removed without force.

6 Maintenance

6.1 Cleaning

You can clean the microfilter when it is closed (preliminary cleaning) or open. To clean the microfilter, treat the surface of the filter membrane with hydrochloric acid **or** sodium hypochlorite solution.


WARNING

Extremely caustic chemicals

Chemicals can cause fatal or serious injury.

- ▶ Never use hydrochloric acid and sodium hypochlorite together (in a mixture) as this causes a toxic chlorine gas to form!
- ▶ If necessary, use hydrochloric acid and sodium hypochlorite in separate cleaning stages. In this case, rinse thoroughly with water between the cleaning stages before you use the second cleaner.
- ▶ When working with hydrochloric acid or sodium hypochlorite, always wear protective gloves and protective goggles!
- ▶ Dispose of the cleaning agents correctly.

6.1.1 Cleaning when the filter holder is closed

 Cleaning when the filter holder is closed only constitutes preliminary cleaning. To perform intensive cleaning, you must open the filter holder, see the "Cleaning when the filter holder is open" section.


1. Disconnect and empty the sample supply and the filtrate line to the collecting vessel.
2. Fill the microfilter with cleaner manually or using an automatic cleaning unit. All the cleaner to act for approx. 20 minutes.
3. Afterwards, rinse it with copious amounts of water.
4. Reconnect the sample supply and the filtrate line to the collecting vessel.

6.1.2 Cleaning when the filter holder is open

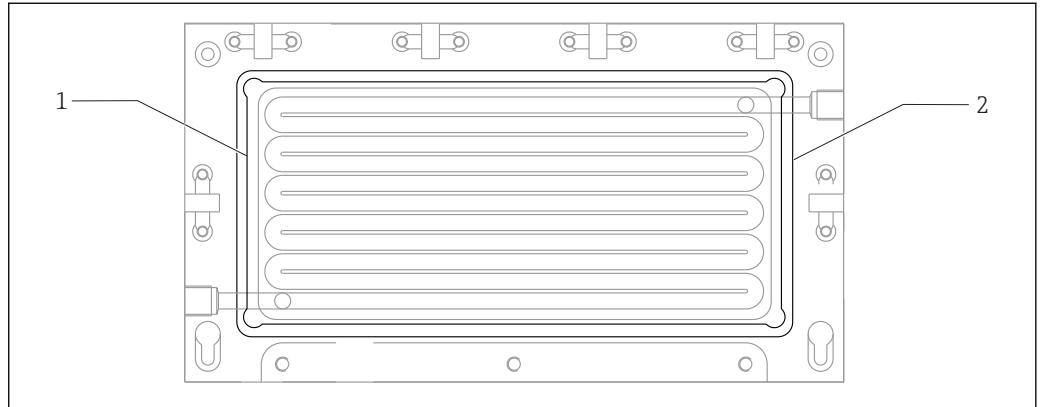
1. Disconnect and empty the sample supply and the filtrate line to the collecting vessel.
2. Open the filter holder at the star knobs and remove the top part and the filter membrane. Make sure that the top part does not come into contact with unfiltered media.
3. Remove any contamination and clogged material in the bottom part (medium side).
4. Remove any build-up on the filtrate side (top part).
5. Clean the filter membrane. Replace the filter membrane if necessary. Caution! Do not damage the filtration layer of the filter membrane! Do **not** use hard or pointed objects, such as a palette knife or screwdriver, to clean the membrane.
6. Reconnect the sample supply and the filtrate line to the collecting vessel.

6.2 Replacing the seals

If you discover that the seals are damaged when you open the filter holder, you must replace these seals:

1. Remove the damaged seal from the guide in the bottom part of the filter holder (→  14).
2. **Seal for filtrate compartment:** Insert the filtrate seal (item 2, thin round cord, Ø 4 mm) into the guide so that both ends are flush mounted.

3. **Seal for top/bottom part:** Insert the seal for the top/bottom part (item 1, thick round cord, Ø 5 mm) into the outer guide.
4. Reassemble the filter holder together with the filter membrane and tighten the star knobs in a diagonally opposite sequence.



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 6 Seals

- 1 Seal for top/bottom part
- 2 Seal for filtrate compartment

7 Repair

7.1 Spare parts

Description and contents	Order number Spare parts kit
CAT411 kit Hoses and connectors	51511474
CAT411 kit Spare membranes, 2 pcs	51511288
CAT411 kit Replacement seals	51516465

7.2 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 swift, safe and professional device returns, please read the return procedures and conditions at www.endress.com/support/return-material.

7.3 Disposal

Observe the local regulations.

8 Technical data

8.1 Process conditions

8.1.1 Medium temperature

5 to 50 °C (41 to 122 °F)

8.1.2 Process pressure

0.2 to 1 bar (3 to 15 psi)

8.1.3 Flow velocity

2.5 to 5.5 m/s (8 to 18 ft/s)

8.1.4 Inlet volume

0.8 to 1.8 m³/h (3.5 to 8 gal/min)

8.2 Mechanical construction

8.2.1 Dimensions

→  11

8.2.2 Weight

Approx. 3 kg (6.6 lbs)

8.2.3 Materials

Housing	POM
Fixing screws	Stainless steel
Seals	Perbunan
Filter membrane	PTFE

8.2.4 Channel cross-section

9 x 10 mm (0.35 x 0.39")

8.2.5 Filter membrane pore size

0.45 µm

8.2.6 Connections

Inlet and outlet:	Hose connection nipple for hose ID 14 mm (0.55")
Filtrate outlet:	Hose connection nipple for hose ID 4 mm (0.16")

Index

D

Declaration of conformity	10
Designated use	5
Disposal	16

I

Incoming acceptance	9
-------------------------------	---

N

Nameplate	9
---------------------	---

O

Occupational safety	5
Operational safety	6

P

Product identification	9
Product safety	7

R

Repair	16
Requirements for personnel	5
Return	16

S

Safety	
Occupational safety	5
Operation	6
Product	7
Safety instructions	5
Scope of delivery	10
Spare parts	16
State of the art	7
Symbols	4

T

Technical personnel	5
-------------------------------	---

U

Use	
Designated	5

W

Warnings	4
--------------------	---



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