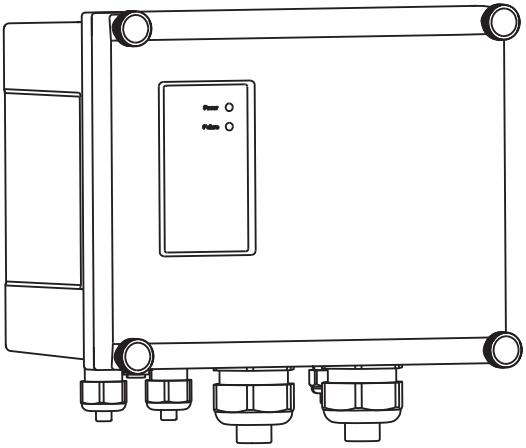
BA01274C/07/EN/01.14
71235592

Operating Instructions
Liquiline System CAT820

Automatic sample preparation system for supplying process measurement devices with filtered sample from sludge activation, secondary clarification or surface waters



Endress+Hauser
People for Process Automation

Table of contents

1 Document information

1.1 Warnings

The structure, signal words and safety colors of the signs comply with the specifications of ANSI Z535.6 ("Product safety information in product manuals, instructions and other collateral materials").

Structure of the safety symbol	Meaning
⚠ DANGER **Causes (/consequences)** Possible consequences if ignored ▶ Preventive measures	This symbol alerts you to a dangerous situation. Failure to avoid this situation **will** result in serious or fatal injury.
⚠ WARNING **Causes (/consequences)** Possible consequences if ignored ▶ Preventive measures	This symbol alerts you to a dangerous situation. Failure to avoid this situation **can** result in serious or fatal injury.
⚠ CAUTION **Causes (/consequences)** Possible consequences if ignored ▶ Preventive measures	This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in medium or minor injury.
NOTICE **Cause/situation** Possible consequences if ignored ▶ Measure/note	This symbol alerts you to situations that can cause damage to equipment or property.

1.2 Symbols used

- Additional information, tips
- Permitted or recommended
- Forbidden or not recommended

2 Basic safety instructions

2.1 Requirements for personnel

- Installation, commissioning, operation and maintenance of the measuring system may only be carried out by trained technical personnel.
- The technical personnel must be authorized to perform the tasks by the owner-operator.
- Only electrical technicians may carry out electrical connection work.
- The technical personnel must have read and understood these Operating Instructions and must follow the instructions they contain.
- Measuring point faults may only be rectified by authorized and specially trained personnel.

Repairs not described in the enclosed Operating Instructions may only be carried out by the manufacturer directly or by the Service Organization.

2.2 Designated use

The Liquiline System CAT820 sample preparation system is designed to automatically supply process measuring systems with filtered samples from sludge activation, secondary clarification or surface water.

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

2.3 Occupational 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, make sure all the connections are correct. Make sure that electric cables and hose connections are not damaged.
- Do not operate damaged products, and secure them against unintentional commissioning. Label the damaged product as defective.
- If faults cannot be rectified, the products must be taken out of service and secured against unintentional commissioning.

2.5 Product safety

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

3 Device design

The entire sampling system consists of the following:
- Liquiline System CAT820 sample conditioning
- Controller with soft keys and status LEDs
- Peristaltic pump
- Filter unit with filter and assembly in the configuration ordered
- Flexdip CYH112 holder for securing the unit
- Compressed air cleaning (optional) for longer filter maintenance intervals
- Sample hose, filter to pump in the configuration ordered
- Sample hose, pump to analyzer in the configuration ordered
- Cleaner (must be ordered separately)

4 Incoming acceptance and product identification

4.1 Incoming acceptance

1. Make sure the packaging is not damaged.
   ↳ Notify your supplier of any damage to the packaging.
   Keep the damaged packaging until the matter has been settled.
2. Make sure the contents are not damaged.
   ↳ Notify your supplier of any damage to the contents of the delivery.
   Keep the damaged goods until the matter has been settled.
3. Check that the delivery is complete and nothing is missing.
   ↳ Compare it with the delivery documents and your order.
4. For storage and transportation: Pack the product in such a way as to protect it reliably against impact and moisture.
   ↳ The original packaging materials provide optimum protection.
   The permitted ambient conditions must be observed (see technical data).

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

4.2 Product identification

4.2.1 Nameplate

The nameplate provides you with the following information on your device:
- Manufacturer's details
- Order code (device version)
- Serial number
- Power supply
- Degree of protection
- (Permitted) ambient conditions

Compare the data on the nameplate with your order.

4.2.2 Identifying the product

The order code and serial number of your device can be found in the following locations:
- On the nameplate
- In the delivery papers

4.3 Scope of delivery

The scope of delivery comprises:
- 1 Liquiline System CAT820 in the version ordered
- 1 copy of the Operating Instructions (in the desired language on selection of the order option)
- 1 CD
- Optional accessories

4.4 Certificates and approvals

Declaration of Conformity
The product meets the requirements of the harmonized European standards.
It therefore complies with the statutory requirements of the EC directives.
The manufacturer confirms successful testing of the product by affixing the CE symbol.

5 Installation

5.1 Installation conditions

5.1.1 Dimensions

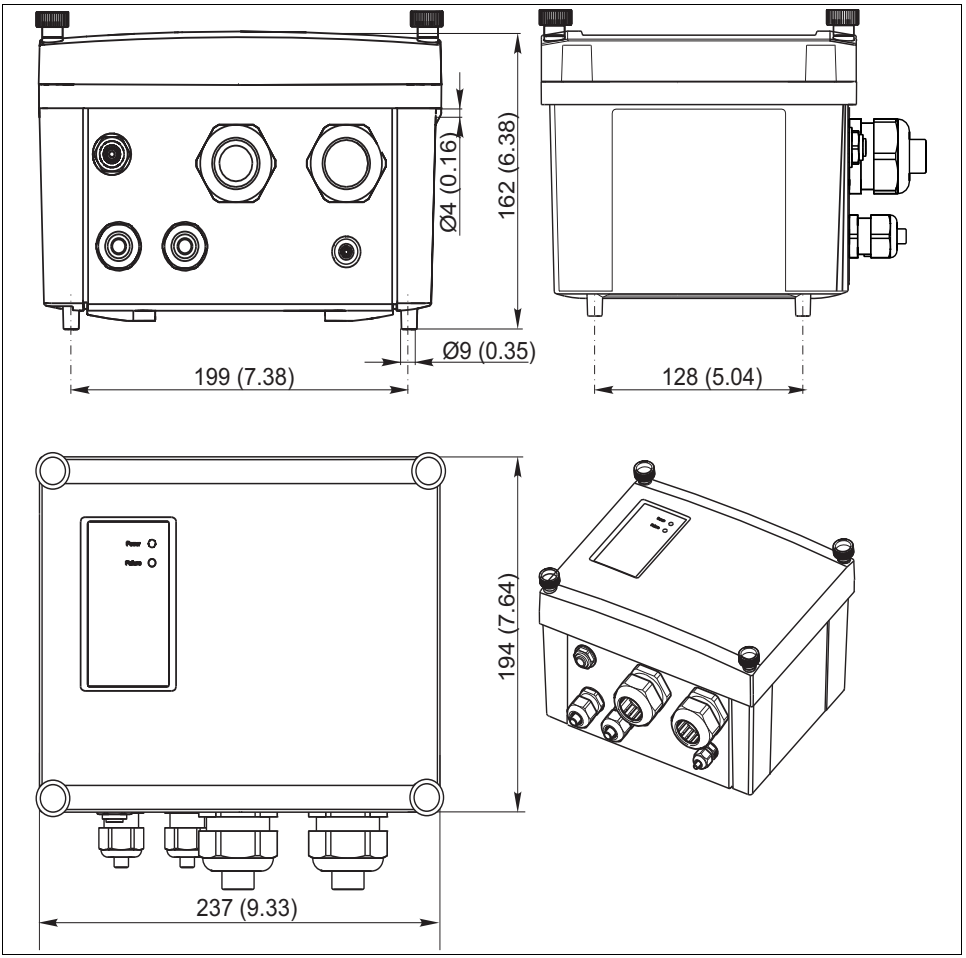


Fig. 1: Liquiline System CAT820 dimensions. Engineering unit mm (in).

5.1.2 Mounting plate

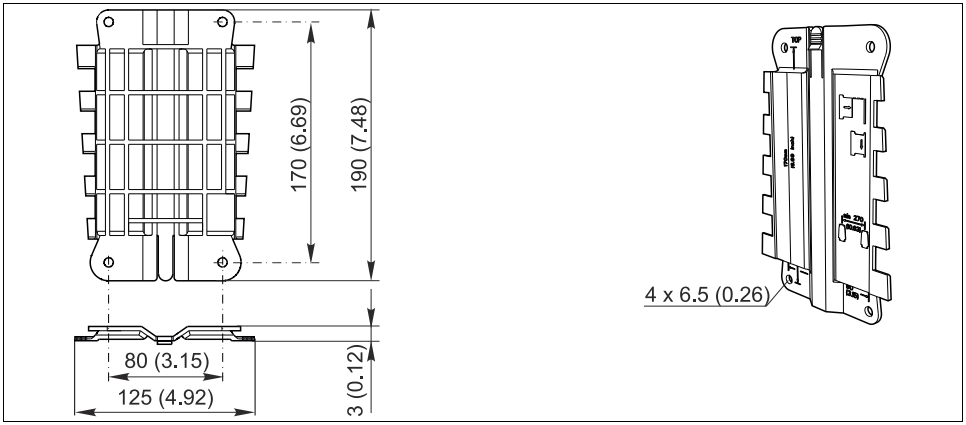


Fig. 2: Mounting plate in mm (inch)

5.1.3 Weather protection cover (optional)

NOTICE

Effect of climatic conditions (rain, snow, direct sun, etc.)

Malfunctions through to complete failure of the sample preparation system

▶ When mounting the device outdoors, always use the weather protection cover (accessories).

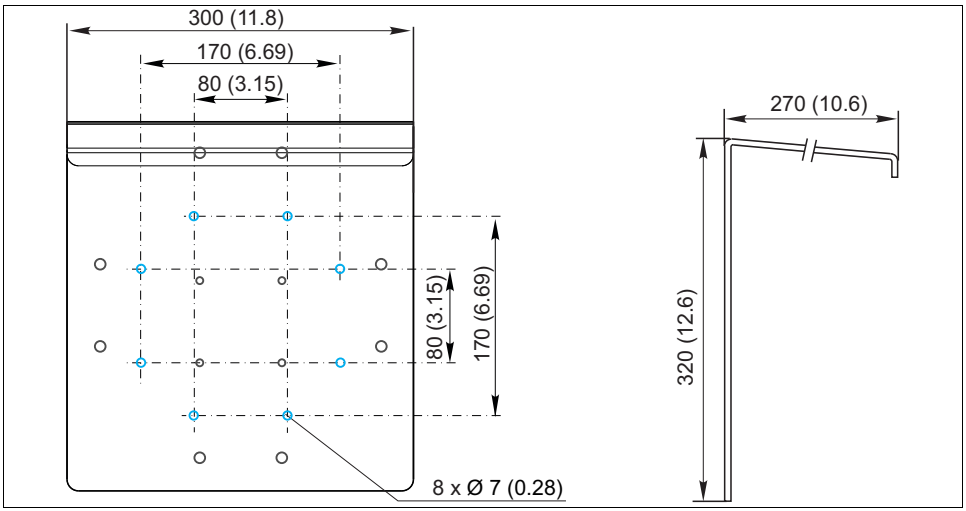


Fig. 3: Weather protection cover in mm (inch)

5.2 Mounting the sample preparation system

You will require the post mounting kit (optional extra) to mount the unit on a pipe, post or railing (round or square, clamping range 20 to 61 mm (0.79 to 2.40")).

5.2.1 Mounting to a post

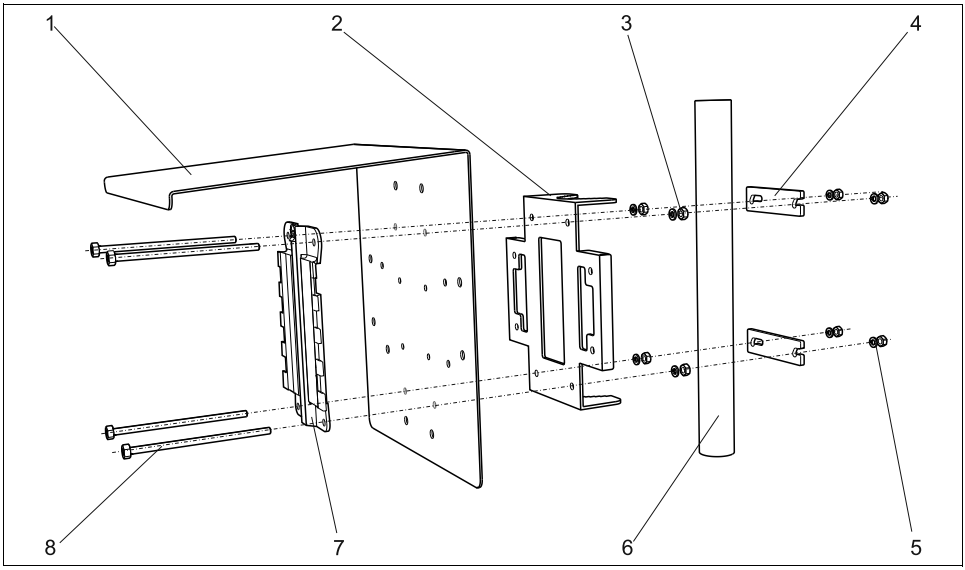


Fig. 4: Mounting to a post

1 *Weather protection cover (optional)*
2 *Post mounting plate (post mounting kit)*
3 *Spring washers and nuts (post mounting kit)*
4 *Pipe clamps (post mounting kit)*
5 *Spring washers and nuts (post mounting kit)*
6 *Pipe or post (circular/square)*
7 *Mounting plate*
8 *Threaded rods (post mounting kit)*

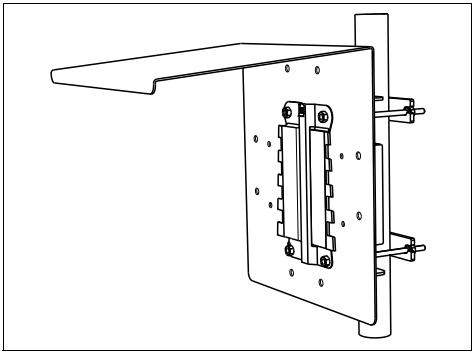


Fig. 5: Mounting to a post

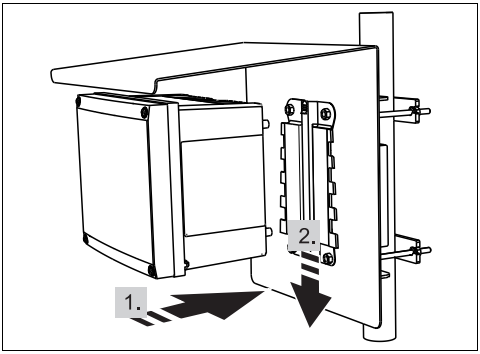
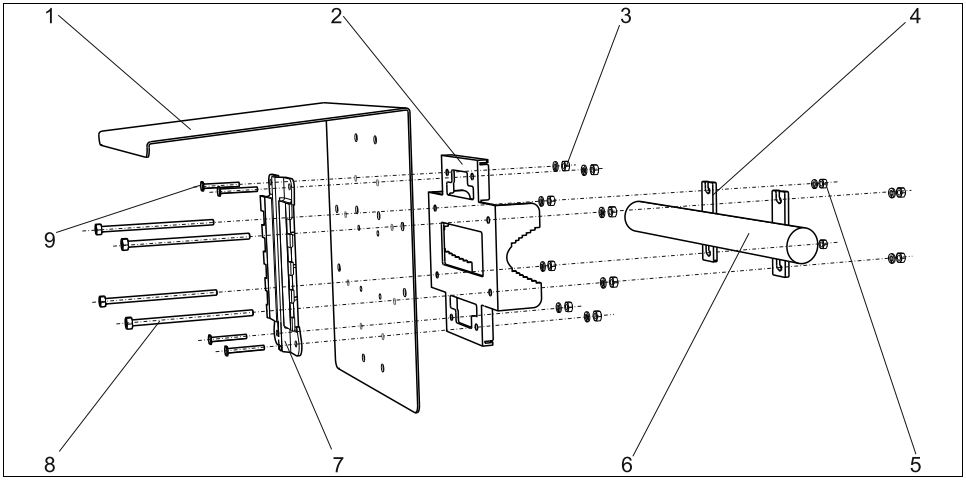


Fig. 6: Attach the device and click it into place

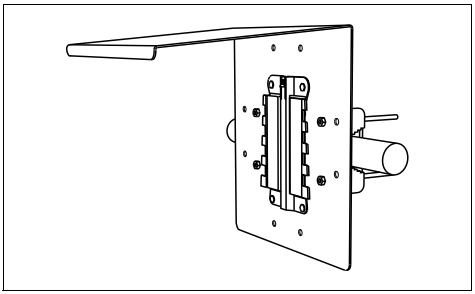
5.2.2 Mounting to a railing



a0012668

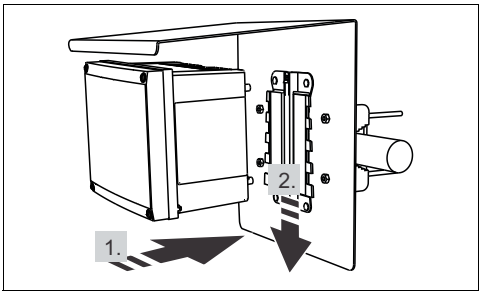
Fig. 7: Mounting to a railing

1 *Weather protection cover (optional)*
2 *Post mounting plate (post mounting kit)*
3 *Spring washers, nuts (post mounting kit)*
4 *Pipe clamps (post mounting kit)*
5 *Spring washers, nuts (post mounting kit)*
6 *Pipe or railing (circular/square)*
7 *Mounting plate*
8 *Threaded rods (post mounting kit)*
9 *Screws (post mounting kit)*



a0012669

Fig. 8: Mounting to a railing



a0022762

Fig. 9: Attach the device and click it into place

5.2.3 Wall mounting

Mount the sample preparation system in such a way that the wall support surface is the size of the rear housing panel at least.

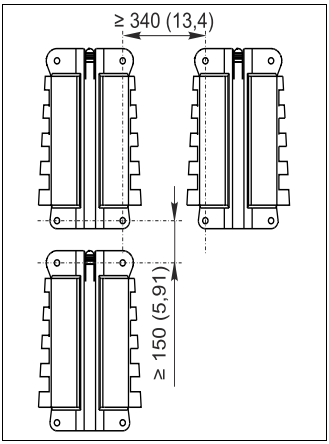


Fig. 10: Mounting distance in mm (inch)

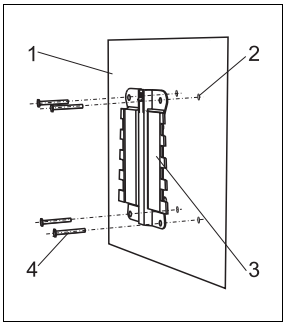


Fig. 11: Wall mounting

1 Wall
2 4 drill holes[1)]
3 Mounting plate
4 Screws Ø 6 mm (not part of scope of supply)

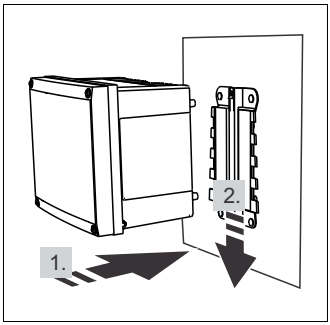


Fig. 12: Attach the device and click it into place

1) The size of the drill holes depends on the wall plugs used. The wall plugs and screws must be provided by the customer.

5.2.4 Removal (for conversion, cleaning etc.)

NOTICE

The device can be damaged if dropped

- When sliding the housing upwards out of the holder, secure it in such a way that it will not fall down. If possible, ask a second person to help you.

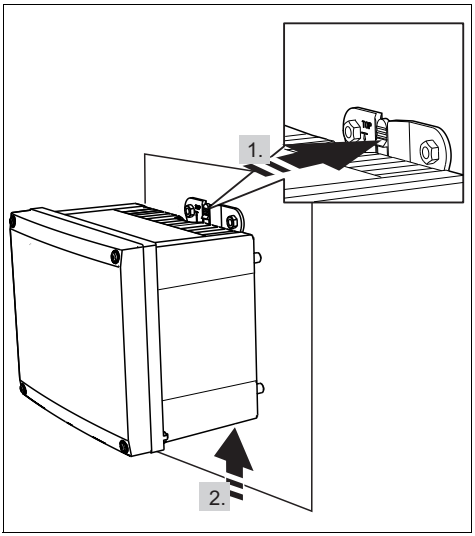


Fig. 13: Removal

1. *Hold down the latch*
2. *Push up the housing to remove it from the holder*

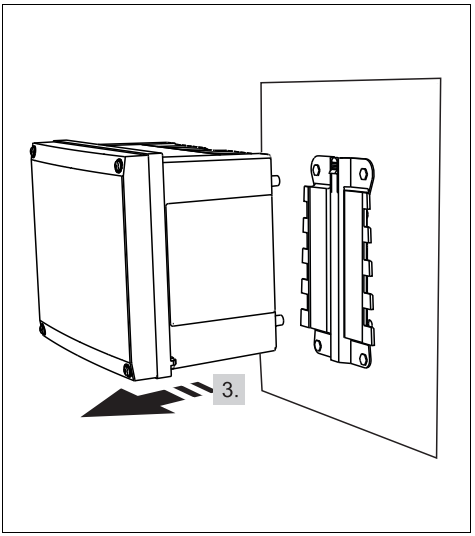


Fig. 14: Removal

3. *Remove the device from the front*

5.3 Mounting the filter in the process

Select the installation location in such a way that a suitable distance from the fixed installations is maintained, and the filter cannot be damaged even when moved (moving medium).
For fixed installation, the retaining point must be selected in such a way that the proper operation and maintenance of the assembly is guaranteed. The immersion tube must project at least 100 mm (3.94") above the retaining point (see figure).

The filter may only be installed with an assembly.

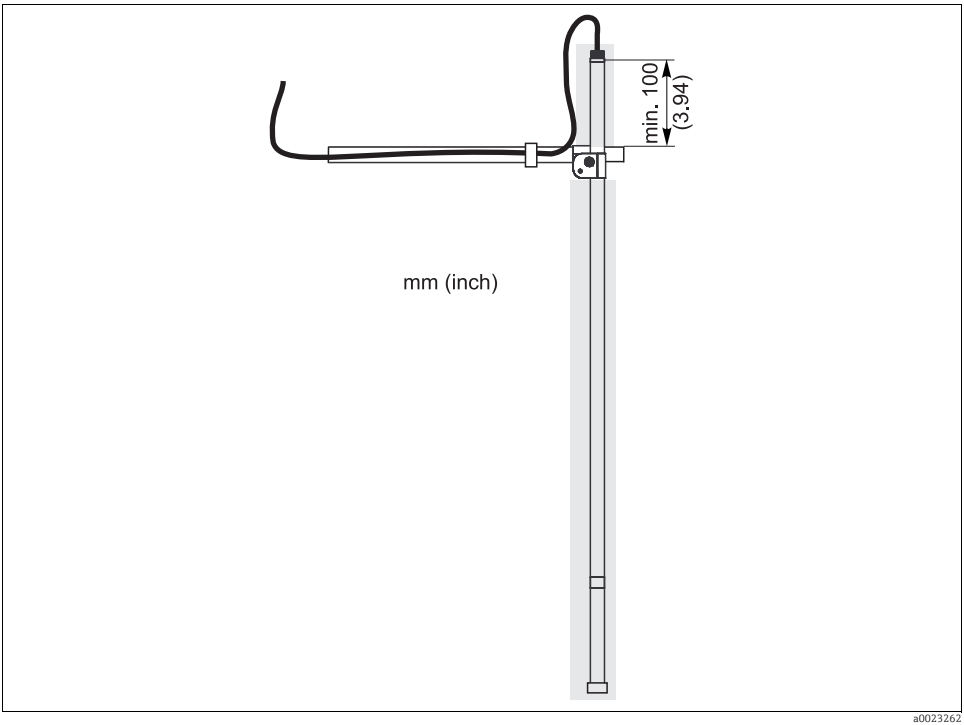
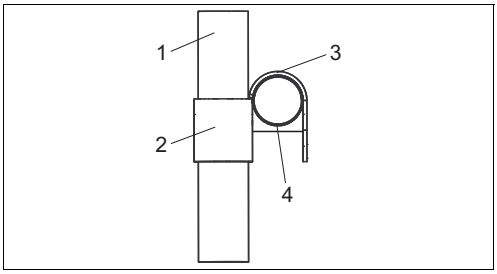


Fig. 15: Retaining point (shown without splash protection cap)

5.3.1 Mounting as fixed installation with immersion tube

The cross clamp is mounted in such a way that one closed side faces the center of the basin while the other closed side faces upwards.

Mount the immersion tube as follows:



1 *Immersion tube*
2 *Cross clamp, closed side facing center of basin*
3 *Cross clamp, closed side facing upwards*
4 *Holder transverse pipe*

Fig. 16: Mounting the cross clamp

1. Adjust the clamps on the cross clamp.
2. Slide the cross clamp over the immersion tube. Make sure that the closed side of the cross clamp is at the top.
3. Mount the multi-functional clamp ring (funnel-shaped side facing upwards) on the immersion tube above the cross clamp. The multi-functional clamp ring acts as an anti-slip lock.
4. Attach the cross clamp, along with the immersion tube, to the transverse pipe. Make sure that the closed side of the cross clamp faces the basin.
5. Align the assembly and the holder.
6. Tighten the clamp screws finger-tight (finger-tight corresponds to 13 Nm (9.6 lbf ft)).

Mount the filter as follows:

1. Screw the immersion tube connection (straight, 90°) onto the immersion tube.
2. Where applicable, screw the quick release fastener onto the immersion tube connection (optional).
3. Remove the thread adapter nut from the hose. The thread adapter nut is not required when installing with an immersion tube.
4. Guide the "filter to pump" hose with the connection for sample preparation through the splash protection cap from below.
5. Guide the "filter to pump" hose with the connection for the filter through the immersion tube from above.
6. If you are using a quick release fastener, insert the inner sleeve into the quick release fastener (see "Quick release fastener" section).
7. Connect the 4 mm, blue polytetrafluoro-ethylene sample hose to the filter (replacement hose PTFE, 4 mm, black).
8. Screw the filter onto the immersion tube connection or onto the quick release fastener if one is used.

Screw the pipes together finger-tight (without any gaps). The threads are lubricated and provided with an O-ring.

5.3.2 Mounting on a chain retainer

Prerequisite:

- The immersion tube is fitted with a filter.
- The transverse pipe is fitted with a chain.

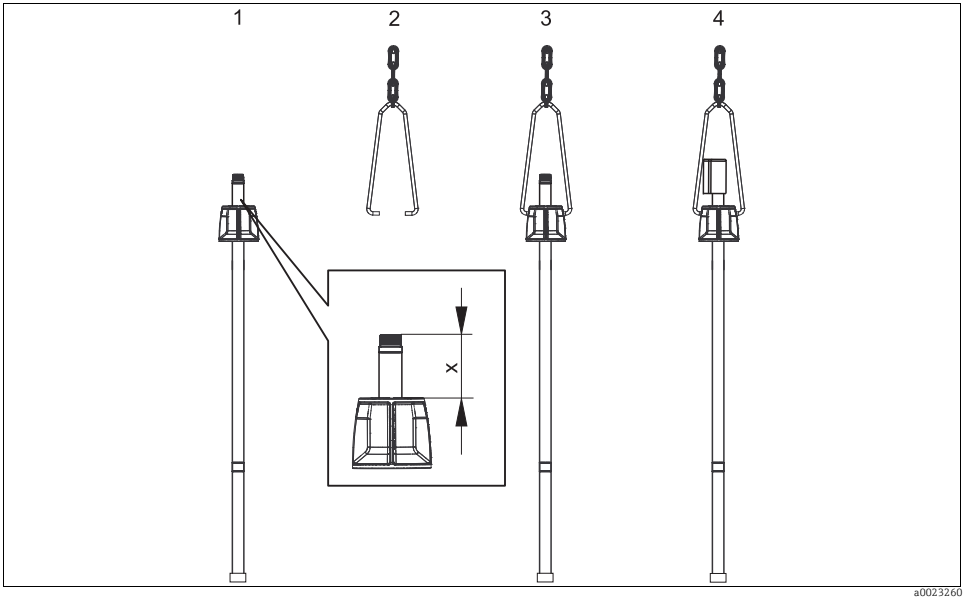


Fig. 17: Mounting the chain retainer

1 Mount the multi-functional clamp ring
2 Guide the bracket into the chain
3 Hook the bracket into the multi-functional clamp ring
4 Fit the splash protection cap
x 60 to 80 mm (2.35 to 3.15")

1. Insert the weights into the immersion tube.
2. Screw the multi-functional clamp ring onto the immersion tube.
3. Guide the bracket into the lowest link in the chain.
4. Attach the bracket to the multifunctional clamp ring.
5. Guide the "filter to pump" hose through the splash protection cap from below (do not bend).
6. Fit the Teflon hose onto the filter connection.
7. Secure the chain on the holder with the triangular carabiner.

5.3.3 Mounting with a float

Mount the filter as follows:

1. Screw the thread adapter nut onto the plastic insert of the float.
2. Connect the 4 mm, blue polytetrafluoro-ethylene sample hose to the filter.
3. Screw the filter adapter into the plastic insert of the float.
4. Guide the metal bracket through the lowest link in the chain.
5. Secure the metal bracket to the bores provided for this purpose.
6. Fix the "filter to pump" hose to the transverse pipe of the CYH112 holder using hook and loop Velcro fasteners.

Make sure that the filter is vertical and medium flows over it fully.

5.3.4 Quick release fastener

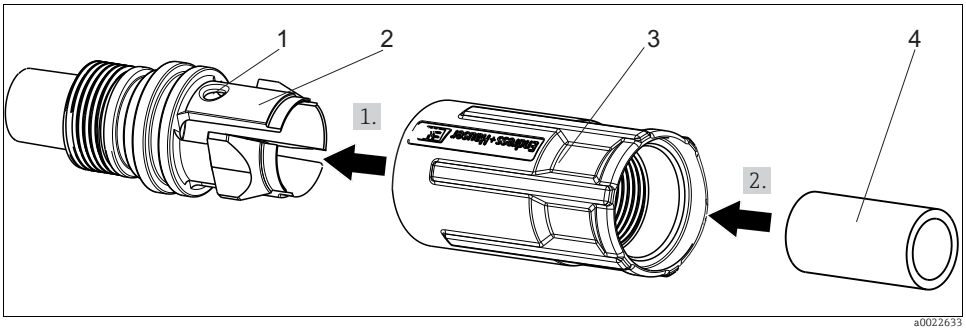


Fig. 18: Mounting the chain retainer

1 Bore - makes it possible to screw the adapter tight
2 Adapter
3 Thread adapter nut
4 Inner sleeve

Install the quick release fastener as follows:

1. Screw the adapter (item 2) into the immersion tube connection bracket.
2. Insert the Allen key or a similar tool through the bores (item 1) to secure the adapter.
3. Slide the thread adapter nut (item 3) over the adapter until the thread adapter nut engages with a click.
4. Guide the inner sleeve (item 4) through the thread adapter nut into the adapter as far as it will go.
5. Guide the hose for "filter to pump" through the immersion tube first of all and then through the quick release fastener.
6. Connect the sample hose (polytetrafluoro-ethylene, 4 mm, blue) to the filter.
7. Screw the filter into the quick release fastener as far as it will go. In doing so, turn the thread adapter nut, not the filter.

5.4 External compressed air connection

⚠ CAUTION

If not connected properly, this can result in injury and damage to the device

▶ Connect a pressure-reducing valve upstream if the air pressure is likely to rise to more than 5 bar (73 psi) (even with short pressure surges).

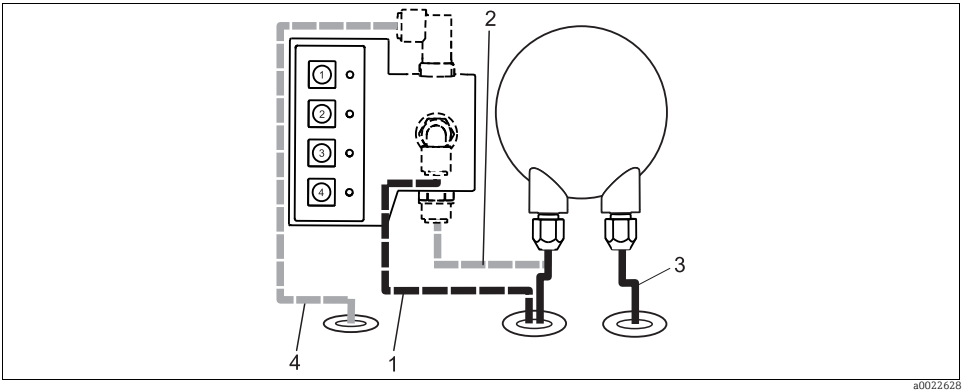


Fig. 19: Connecting external compressed air

1 Hose, filter to pump (1/2)
2 Hose, filter to pump (2/2)
3 Hose, pump to analyzer
4 Hose, compressed air cleaning (order option)

Prerequisites:
- Compressed air with 2 to 5 bar (58 to 87 psi)
- The compressed air must be filtered (40 µm) and free from water and oil
- No continuous air consumption
- Minimum nominal diameter for compressed air lines: 4mm (0.16 ")

1. Connect the compressed air line to the connection provided on the bottom of the device.
2. Run the valve's rinsing air connection at an air pressure of 2 to 5 bar (29 to 73 psi).

5.5 Post-installation check

- Once installation is complete, check the sample preparation system and hoses for damage.
- Check whether the sample preparation system is protected against moisture and direct sunlight (e.g. by the weather protection cover).
- After mounting, check whether all the screws are tightened correctly.
- When mounted, check all the connections to ensure that they are properly seated and leak-proof.
- Make sure that the hoses cannot be removed without use of force.

6 Electrical connection

⚠ WARNING

The device is live!

Incorrect wiring can result in injury or fatality

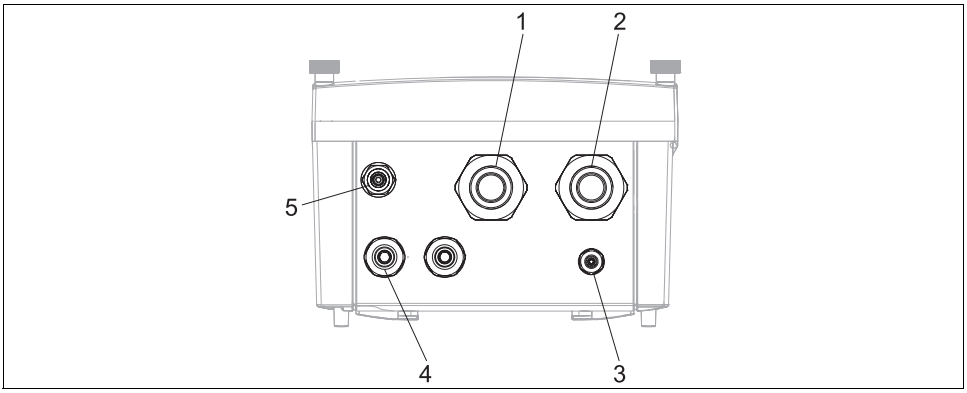
- The electrical system must only be connected by an electrical technician.
- The electrical technician must have read and understood these Operating Instructions and must follow the instructions they contain.
- **Before** commencing any wiring work, make sure voltage is not applied to any of the cables.

NOTICE

The device does not have a power switch

- As soon as there is a power supply to the device, it starts up.
- A fuse with a maximum rating of 6.0 A must be provided by the customer. Please observe local installation regulations.
- The protective ground connection must be connected before any other connection. Disconnecting the protective ground could result in danger.

6.1 Cable and hose entries

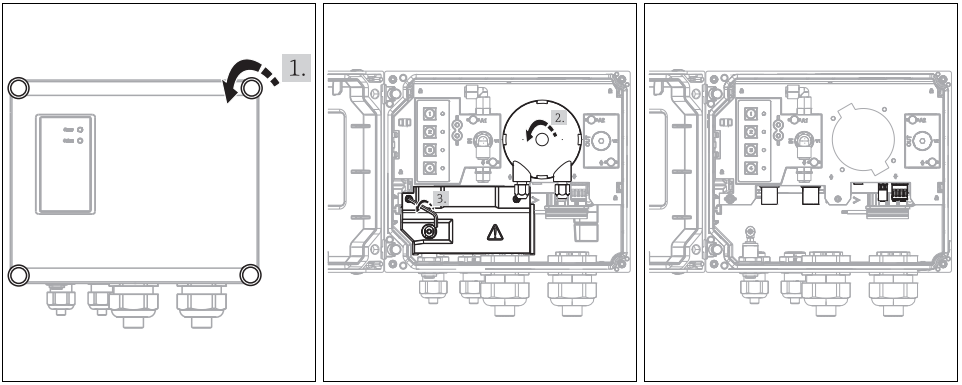


a0023316

1	*Hose, "filter to pump"*	4	*Power cable*
2	*Hose, "pump to analyzer"*	5	*External compressed air line*
3	*Temperature sensor*		

1. Release a suitable cable or hose gland on the underside of the housing and remove the dummy plug from the entry.
2. Making sure the gland is facing in the right direction, thread the gland onto the cable or hose end and pull the cable or the hose through the entry and into the housing.
3. Connect the cables as per the wiring diagram.
4. Lastly, tighten the cable gland or hose gland from the outside.

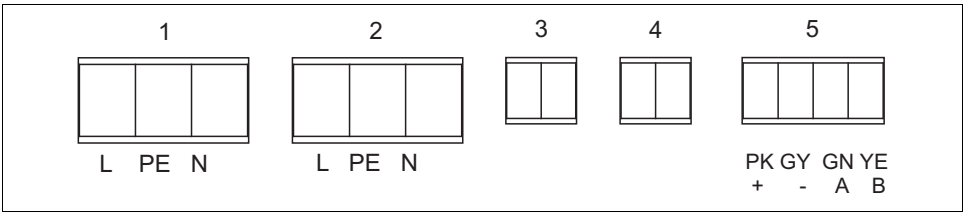
6.2 Connections



a0023318 a0023319 a0023320

1. Release the four screws.
2. Remove the diaphragm pump with a rotational movement.
3. Release the two screws on the protective cover.
   ↳ All connections should be accessible.
4. Fasten the protective cover after connecting.

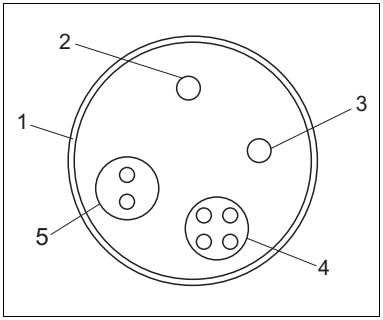
6.3 Wiring diagram



a0022328

1 Supply voltage 115/230VAC (for version with housing heater or hose heater)
2 Hose heating, filter to pump
3 Shield
4 Temperature sensor
5 Memosens

6.4 Structure of the spiral hose

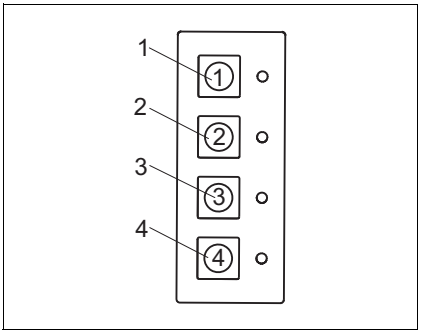


1 Spiral hose, PVC, green
2 PTFE, blue
3 PTFE, black
4 Memosens and power supply
5 Hose heating

Fig. 20: Structure of the spiral hose

7 Operation options

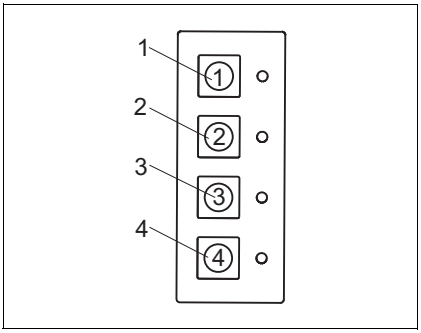
7.1 Version with Memosens technology



a0022329

1 On-site controller
2 Sample pump forwards
Sample pump backwards (press for longer)
3 Backflush filter with compressed air (order option)
4 Not assigned

7.2 Time-controlled version



a0022329

1 Sample pump on / off
2 Sample pump forwards
Sample pump backwards (press for longer)
3 Pulse/pause 1 10 s/60 s (press briefly, on)
Pulse/pause 2 10 s/50 s (press for longer, flashes)
4 Pulse/pause 3 10 s/30 s (press briefly, on)
Pulse/pause 4 10 s/20 s (press for longer, flashes)

Factory setting: 10 s / 40 s

Key functions

Press once:	Function 1	= LED on
Press for longer:	Function 2	= LED flashes
Press twice:	Stop	= LED off

8 Commissioning

8.1 Function check

⚠ WARNING

Risk of injury from medium leakage, incorrect supply voltage, no protective cover

Safety risks for staff and incorrect operation of the device

- ▶ Check all the connections to ensure that the device has been properly connected.
- ▶ Make sure that the supply voltage matches the voltage indicated on the nameplate.
- ▶ Make sure that the protective cover is mounted.

9 Operation

9.1 Setup for version with Memosens technology

The sample preparation menu is configured via the display and operating elements of a Liquiline System CA80 analyzer. The status and the current process step of the Liquiline System CAT820 sample preparation system are also displayed here. For further information please refer to the relevant documentation.

To ensure the optimum synchronization of the measuring point, all the components (analyzer, sensors, sample preparation system) are controlled in automatic mode by the Liquiline System CA80 analyzer. If key 1 on the Liquiline System CAT820 is pressed, this causes a request to activate the onsite mode. If this conflicts with a program cycle that has already begun, the system waits until the cycle is finished before the necessary activation is performed.

This process can take a few minutes, and sometimes even up to 20 minutes (e.g. if cleaning the sample preparation system). Status LED 1 flashes during this time.

9.2 Setup for version with time control

Configuration is performed using operating elements in the sample preparation system.

9.2.1 Manual control of the pump

With key 2, the sample pump can be switched on permanently forwards or backwards. This function can be used for diagnostic purposes for filling or draining the hoses quickly. Switch off the selected function on completion of the maintenance work. The sample pump once again follows the set pulse/pause interval.

9.2.2 Selecting the pulse/pause interval of the sample pump

The sample preparation system is configured using operating elements in the sample preparation system.

1. Open the sample preparation system cover.
2. The time-controlled version is always in the onsite mode.
3. Use operating keys 3 and 4 to select the required pulse/pause ratio for the sample pump.

The following predefined interval options are available

Operating key	Action	LED status	Program	Interval
1	Sample pump on / off			
2	Sample pump forwards	On		
	Sample pump backwards	Flashing		
3	Press briefly	On	Pulse/pause 1	10 s / 60 s
	Press and hold key down	Flashing	Pulse/pause 2	10 s / 50 s
4	Press briefly	On	Pulse/pause 3	10 s / 30 s
	Press and hold key down	Flashing	Pulse/pause 4	10 s / 20 s
Factory setting: interval - 10 s / 40 s (all LEDs off)				

1. The settings are adopted immediately.
2. Close the sample preparation system cover.

10 Diagnostics and troubleshooting

The Liquiline System CAT820 sample preparation system with Memosens technology supports the user with diagnostic messages when diagnosing and rectifying faults as per NAMUR NE 107. The relevant diagnostic message is output on the Liquiline System analyzer display.
If an error category "F" diagnosis message occurs, the status LED of the Liquiline System CAT820 is lit red and the display background of the Liquiline System CA80 changes to red.
--> Additional information is provided in BA01240C

11 Maintenance

⚠ WARNING

Electrical voltage

Possible risk of serious or fatal injury

- De-energize the device before opening it.

⚠ CAUTION

Risk of injury/infection from medium leakage or unclean filter

- Before carrying out any maintenance work, ensure that the automatic cleaning function is deactivated
- Before carrying out any maintenance work, ensure that the sample line is unpressurized and that it is empty and has been rinsed.
- Clean the filter immediately every time it is removed from the process; only store cleaned filters.

11.1 Cleaning

⚠ CAUTION

Risk of injury from cleaning solutions

- Wear protective clothes, goggles, and protective clothing.
- When disposing of unused cleaning solution, please comply with the local regulations.

NOTICE

Prohibited cleaning agents

Danger of damaging the housing surface or housing seal

- For cleaning purposes, never use concentrated mineral acids or bases.
- Never use organic cleaners such as benzyl alcohol, methanol, methylene chloride, xylene or concentrated glycerol cleaner.
- Never use high-pressure steam for cleaning purposes.

11.1.1 Cleaning agents

The type of cleaning agent selected depends on the degree and type of contamination. For the most common types of contamination and the suitable cleaning agent, please refer to the table below.

Type of contamination	Cleaning agents
Greases and oils:	CY820 alkaline cleaning solution
Limescale deposits, metal hydroxide buildup:	CY820 acidic cleaning solution
Protein buildup:	CY820 acidic cleaning solution
Fibers, suspended substances:	CY820 alkaline cleaning solution
Light biological buildup:	CY820 oxidizing cleaning solution
Antisoluble biological buildup:	CY820 oxidizing cleaning solution, then CY820 acidic cleaning solution

11.1.2 Process-wetted parts

For stable and reliable sampling, sample preparation system components that come in contact with the media must be cleaned regularly. The cleaning frequency and intensity depend on the medium.

Manual cleaning

- Remove minor contamination using a suitable cleaning solution (see "Cleaning solution" section).
- Heavy dirt can be removed with a soft brush and a suitable cleaning agent.
- In the case of difficult-to-remove contamination, soak the parts in a cleaning solution. Then clean the parts with a brush.

Manual filter cleaning

1. Use the transport packaging of the filter as the cleaning vessel.
2. First clean the filter for 1 to 2 days in a combination of alkaline (1.5 %) and oxidizing cleaner (1.0 %).

   ↳ See documentation on cleaner CY820.
3. Rinse the filter thoroughly with water.
4. Then clean the filter for 2 days in an acidic cleaning solution (1.5 %)
5. Rinse the filter thoroughly with water.

A typical filter cleaning interval, e.g. for installations in the aeration basin, is 12 weeks.

11.2 Replacing the pump hose and pump head

1. Open the sample preparation system cover.
2. Press operating key 1 to activate on-site mode.
   ↳ The status LED beside key 1 first starts flashing and is then lit continuously once the on-site mode has been enabled. This may take a few minutes, see "Operation" section.
3. Remove the filter from the medium.
4. Press key 2.
   ↳ The status LED beside key 2 comes on and the peristaltic pump rotates forward. The medium in the hoses is now replaced by intake air.
5. Wait until all the hoses have been completely emptied.
6. Press key 2 again.
   ↳ The pump stops and the status LED goes off.
7. Open the bayonet lock on the peristaltic pump.
8. Replace the hose and, where necessary, the pump head.
9. Close the bayonet lock on the peristaltic pump.
10. Check that all the hoses and connectors are properly seated.
11. Press operating key 1 to return to automatic mode.
    ↳ The settings are accepted, the LED status beside operating key 1 goes out.
12. Close the sample preparation system cover.

11.3 Replacing the filter

Fig. 21: Removing the filter cartridge

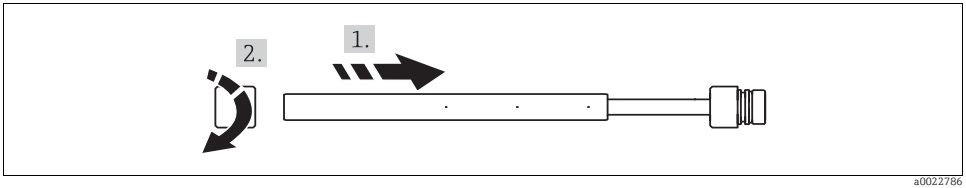


Fig. 22: Installing the new filter cartridge

- The filter unit can stay on the assembly when replacing. Only the ceramic is replaced.
- Lubricate the O-rings regularly.

12 Repair

⚠ CAUTION

Risk posed by unprofessional repairs

- Any time repairs or maintenance work is carried out, suitable measures must then be taken to ensure that the sample preparation system is leak-tight. Once the work is complete, the sample preparation system must once again meet the specifications in the technical data. Replace any other damaged parts immediately.

12.1 Spare parts

Item	Spare parts kit	Order number
201	CAT820/860 kit: solenoid valve (1 pc) ▪ Kit instructions: CAT820 / 860, electronics compartment	71218548
202	CAT820/860 kit: control module 100-240 V ▪ Kit instructions: CAT820 / 860, electronics compartment	71222174
203	CAT820/860 kit: 10 pc. plug-in connector L ▪ Kit instructions: CA8x / CAT8xx hose connection	71222175
204	CAT820/860 kit: key electronics ▪ Kit instructions: CAT820 / 860, electronics compartment	71222179
205	CAT820/860 kit: ceramic filter, pipe 0.1µm ▪ Kit instructions: CAT8xx filter	71222181
206	CAT820/860 kit: 10 x conn. peristaltic pump ▪ Kit instructions: CA8x / CAT8xx hose connection	71241442
208	CAT820/860 kit: pump head (10 x) ▪ Kit instructions: CAT820 / 860, electronics compartment	71222201
209	CAT8xx kit: filter O-ring set (20 x) ▪ Kit instructions: CAT8xx filter	71222206
210	CAT820/860 kit: pump hoses (10 pc) ▪ Kit instructions: CAT820 / 860, maintenance	71222209
212	CAT820/860 kit: 10 hose conn. straight ▪ Kit instructions: CA8x / CAT8xx hose connection	71222213
213	CAT8xx kit: 10 x 90° hose connections ▪ Kit instructions: CA8x / CAT8xx hose connection	71222214
214	CAT8xx kit: 10 x G1/4" hose connections ▪ Kit instructions: CA8x / CAT8xx hose connection	71222216
217	CAT820/860 kit: peristaltic pump, complete ▪ Kit instructions: CAT820 / 860, electronics compartment	71218549
218	CAT820 kit: small fan 40x40 mm ▪ Kit instructions: CAT820 / 860, electronics compartment	71218551
219	CAT8xx kit: PTFE hose, transparent, 5m ▪ Kit instructions: CAT820 / 860, maintenance	71222222

Item	Spare parts kit	Order number
220	CAT820 kit: housing cover ▪ Kit instructions: CAT820 / 860, electronics compartment	71218552
221	CAT820 kit: CPU module ▪ Kit instructions: CAT820 / 860, electronics compartment	71218553
222	CAT820 kit: heater, complete ▪ Kit instructions: CAT820 / 860, electronics compartment	71218554
224	CAT820 kit: upgrade set for compressed air rinsing ▪ CAT820 instruction kit: compressed air rinsing	71229925
238	CAT810/820 kit: PU hose, 4 mm, black, 5m ▪ Kit instructions: CAT810	71235288
244	CAT820/860 kit: ceramic filter, complete ▪ Kit instructions: CAT8xx filter	71241492
247	CAT820/860 kit: T-sensor (1 pc.) ▪ Kit instructions: CAT820 / 860, electronics compartment	71247278
248	CAT820 kit: CPU module, time-controlled ▪ Kit instructions: CAT820 / 860, electronics compartment	71247280
249	CAT820/860 kit: ceramic filter, PVC holder ▪ Kit instructions: CAT8xx filter	71222217
251	CAT8xx kit: compressor 230 V	71249987

Maintenance kit	Order number Spare parts kit
CAT820 kit: 3 year maintenance	CAT820 71229923

Detailed information on the spare parts kits is available in the "Spare Part Finding Tool", which can be accessed on the Web at: www.products.endress.com/spareparts_consumables

12.2 Return

The product has to be returned in the event of repair, factory calibration, incorrect delivery or incorrect ordering. As an ISO-certified company and due to legal regulations, Endress+Hauser is obligated to use particular handling techniques for all returned products that have come in contact with medium.

To ensure swift, safe and professional device returns:
Visit our website to obtain information about the return procedure and basic conditions
www.services.endress.com/return-material

12.3 Disposal

The product contains electronic components and must therefore be disposed of in accordance with regulations on the disposal of electronic waste.
Please observe local regulations.

13 Accessories

The most important accessories available at the time this document went to print are listed below. Contact your service representative or Sales Center for accessories that are not listed here.

13.1 Device-specific accessories

Weather protection cover
- Absolutely essential if operating outdoors
- Order No. 51510040

Post fastening set
- For securing the sample preparation to horizontal and vertical posts and pipes
- Order No. 71096920

CA71 kit: CAT820 upgrade
- Order No. 71236534

Please refer to TI00432C for the order numbers for accessories for the Flexdip CYA112 assembly. The quick release fastener for Flexdip CYA112 is not compatible with Liquiline System CAT8x0.

13.2 Cleaner for hoses and filter CY820

Cleaning concentrates to clean the hoses of the sample preparation system and the sample collecting vessel
- Base cleaner, concentrate 1 l (33.81 fl.oz.), Order No. CY820-1+TA
- Acid cleaner, concentrate 1 l (33.81 fl.oz.), Order No. CY820-1+T1
- Oxidizing cleaning solution, concentrate 1 l (33.81 fl.oz.), Order No. CY820-1+UA

14 Technical data

14.1 Temperature inputs

14.1.1 Measuring range

-30 to 70 °C (-20 to 160 °F)

14.1.2 Type of input

Pt1000

14.1.3 Accuracy

± 2.5 K

14.2 Power supply

14.2.1 Supply voltage

Version with Memosens technology, unheated:
- Power supply from Liquiline System CA80

Version with Memosens technology and housing or hose heating
- 100 to 120/200 to 240 V AC ± 10 %, 50/60 Hz

Time-controlled version:
- Power supply from CA71 analyzer (1-channel version) or other 12 W power supply source at 24 V
- Heating from CA71 analyzer, 100 to 120/200 to 240 V AC ± 10 %, 50/60 Hz with connection kit CA71 heated hose version

The power consumption of the CA71 analyzer increases accordingly.
On account of the power consumption, it is not possible to use the connection kit CA71 for heated hose version with module CA71 Modbus RS485.

14.2.2 Cable entry

Depending on the version:
- 2 x M32 cable gland (assigned internally)
- 2 x M20 cable gland (1 x assigned internally)
  M20 x 1.5 mm / NPT1/2" / G1/2
- 1 x M12 (temperature sensor, optional)

Permitted cable diameter:
- M20 x 1.5 mm: 7 to 13 mm (0.28 to 0.51")

14.2.3 Power consumption

- Maximum 12 Watt for 24 V
- Maximum 85 VA (with 5 m heating cable) + 20 VA (with housing heater)

14.2.4 Fuse

5x20 mm, 250 V, 3.15 A slow-blow (T3.15A)

14.3 Performance characteristics

14.3.1 Filtrate quantity

Version with Memosens technology:
- 5.5 to 16.5 ml/min
- Factory setting: 8.25 ml/min

Version with time control function:
- 4.7 to 11 ml/min
- Factory setting: 6.6 ml/min

All the values have been determined with new filters.

14.4 Environment

14.4.1 Ambient temperature

Unheated
- 5 to 50 °C (41 to 122 °F)

Heated
- -20 to 50 °C (-4 to 122 °F)

14.4.2 Storage temperature

-20 to 60 °C (-4 to 140 °F)

14.4.3 Humidity

10 to 95%, not condensating

14.4.4 Degree of protection

IP66/67

14.4.5 Electromagnetic compatibility

Interference emission and interference immunity as per EN 61326-1: 2006, class A for industry

14.4.6 Electrical safety

IEC 61010-1, Class I equipment
Low voltage: overvoltage category II
Environment < 2000 m (< 6562 ft) above MSL

14.4.7 Pollution degree

The product is suitable for pollution degree 4.

14.5 Process

14.5.1 Sample temperature

4 to 40 °C (39 to 104 °F)

14.5.2 Sample consistency

TS < 8 g/l

14.5.3 Sample supply

Unpressurized

14.5.4 pH value of the sample

pH 4 to 14

14.5.5 Salt content of the sample

NaCl concentration < 10,000 mg/l (ppm)

14.5.6 Compressed air

2 to 5 bar (29 to 73 psi)

14.6 Mechanical construction

14.6.1 Dimensions

--> "Installation" section

14.6.2 Weight

Approx. 2.5 kg (5.51 lbs), depends on version

14.6.3 Materials

Housing material	
Lower housing section	PC-FR
Display cover	PC-FR
Housing seal	EPDM

Process-wetted parts	
Filter (ceramic)	Al_2O_3, coated
Hose, sample preparation	PTFE
Couplings, peristaltic pump ▪ Nut + sleeve	 ▪ PP
Hose, peristaltic pump	PHARMED
Coupling, solenoid valve and T-section	POM
Solenoid valve on sample collecting vessel	PVDF
Seal, solenoid valve	FKM
Seal, valve backflushing	EPDM
Seal, valve sample collecting vessel	FKM
Solenoid valve for backflushing	PEEK
Hose from solenoid valve to sample collecting vessel	NORPRENE

14.6.4 Hoses and cables

Hose, filter to pump
- Lengths: 3 m (9.8 ft), 5 m (16.4 ft)
- Spiral hose:
  - PVC material
  - OD 21.6 mm (0.85")
  - ID 16 mm (0.63")
- Sample hose 1 / 2:
  - PTFE material
  - OD 4 mm (0.16")
  - ID 2 mm (0.08")
  - Color: blue/black
- Heated version:
  - Hose heating: 115V/230V (connection to sample preparation system)
  - Heating capacity 17 Watt per meter, self-limiting

If a 2400 mm immersion pipe is used, a 5 m hose must be selected from the filter to the pump.

Hose, pump to analyzer
- Lengths: 2 m (6.6 ft), 5 m (16.4 ft), 10 m (32.8 ft), 15 m (49.2 ft), 20 m (65.6 ft), 30 m (98.4 ft)
- Spiral hose:
  - PVC material
  - OD 24.6 mm (0.97")
  - ID 19 mm (0.75")
- Memosens cable
- Sample hose 1 / 2:
  - PTFE material
  - OD 4 mm (0.16")
  - ID 2 mm (0.08")
  - Color: blue/black
- Heated version:
  - Hose heating: 115V/230V (connection to CA80)
  - Heating capacity 17 Watt per meter, self-limiting

Compressed air hoses for optional compressed air cleaning
- Permitted hose lengths: 5 m (16.4 ft) (included in delivery), 10 m (32.8 ft), 15 m (49.2 ft), 20 m (65.6 ft), 30 m (98.4 ft), 50 m (164.0 ft)

Index

U

W

71235592

www.addresses.endress.com

Endress+Hauser

People for Process Automation