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Installation Instructions
Peristaltic dosing pump

Peristaltic dosing pump for Flowfit CYA27 flow assembly

Endress+Hauser
People for Process Automation

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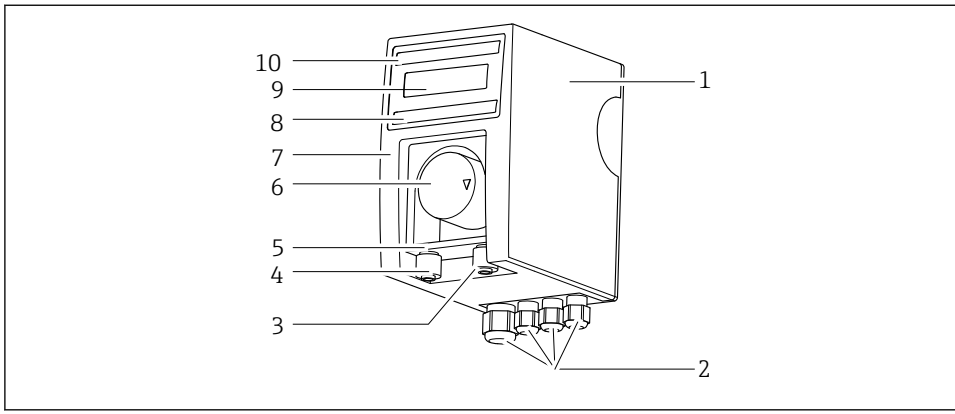
1 Product description



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1 Description of peristaltic dosing pump

1 Pump housing
2 Cable glands for the electrical wiring
3 Pressure side, hose for assembly
4 Suction side, hose from the collecting vessel (acid, cleaner)
5 Hose holder (behind the rotor cover)
6 Rotor
7 Pump housing cover
8 Operating keys for menu control
9 Display
10 Operating keys for start/stop, as well as quick fill and status LEDs

Kit CYA27 dosing pump 0.1-22 ml/min: order no. 71621627

Kit CYA27 pump maintenance 0.1-22 ml/min: order no. 71621629

Kit CYA27 dosing pump 1-200 ml/min: order no. 71610954

Kit CYA27 pump maintenance 1-200 ml/min: order no. 71610955

Kit CYA27 dosing pump suction lance: order no. 71610956

1.1 Use cases

Cleaning 1-200 ml/min
Use for short-time operation:
- Controlled via a time control of the cleaning program
- Condition is only sufficient flow, apart from the cleaner having to act, then take away the flow
- The pH value can definitely drop here, depending on the cleaner; a reference to chlorine gas formation must be made.

Disinfection agent or acid dosing: 0.1- 22 ml/min
Use for short-term operation, for testing the reference measurement:
- Time-controlled or externally controlled feed of a DI agent to test the reference measurement of the sensors
- The condition is sufficient flow and, depending on the DI agent, a pH value over 4.0.

Use for continuous operation, acid dosing:
- Continuous pH value reduction. There is a risk that the pH value is less than or equal to 4 and therefore, depending on the disinfectant, chlorine gas is produced.
- The condition is sufficient flow and, depending on the DI agent, a pH value over 4.0.

2 Scope of delivery

The kit contains the following parts :

- Pump including enclosed accessories in the version ordered
- Operating instructions

3 Additional documentation

For additional information on the operation and control of the dosing hose pump, see the manufacturer's documentation.

4 Intended use

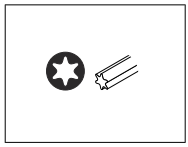
- The peristaltic dosing pump may only be used as an accessory for the Flowfit CYA27 flow assembly. Another use is not permitted.
- Use only original parts from Endress+Hauser.
- In the W@M Device Viewer, check if the spare part is suitable for the existing device.

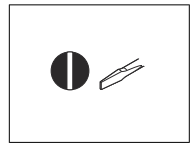
5 Authorized installation personnel

- 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 Installation Instructions and must follow the instructions they contain.
- Faults at the measuring point may only be rectified by authorized and specially trained personnel.

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

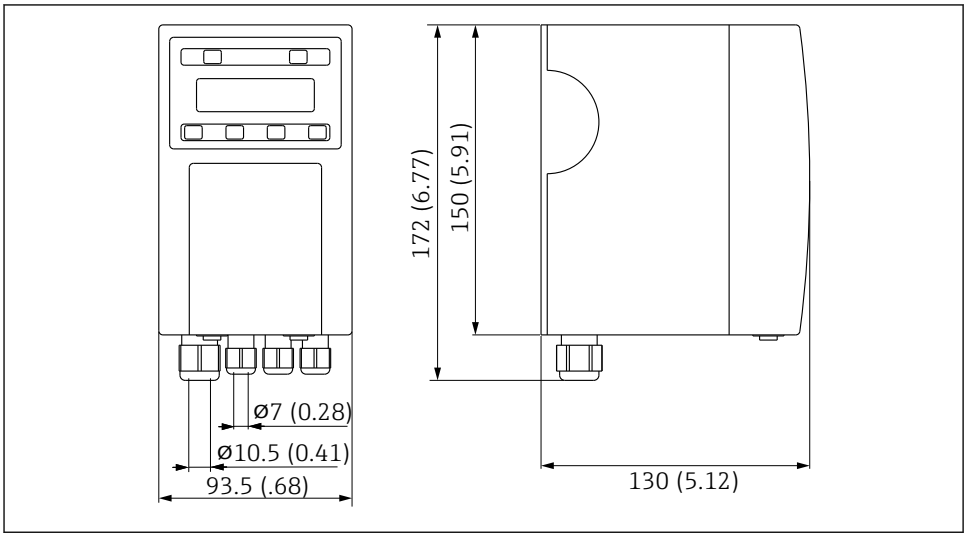
5.1 Tool list



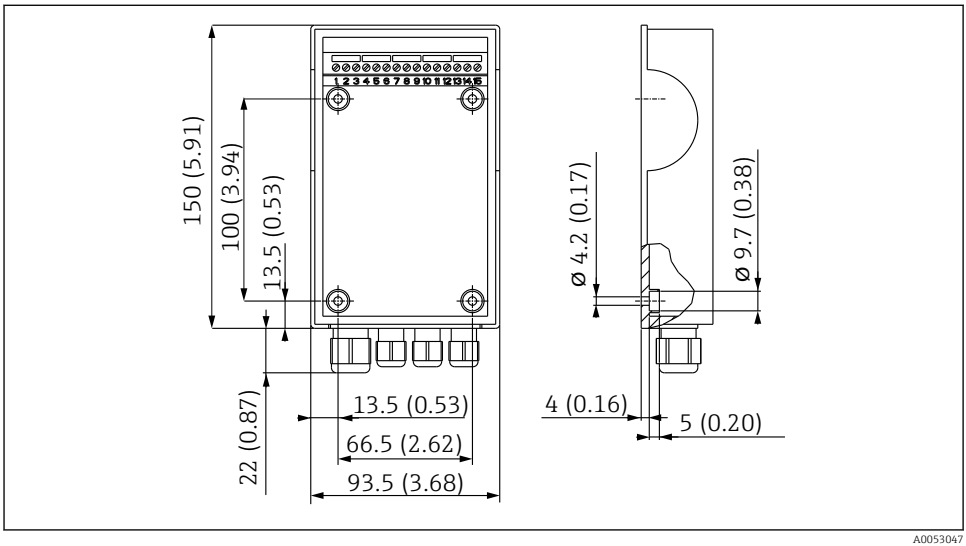


6 Mounting

6.1 Dimensions

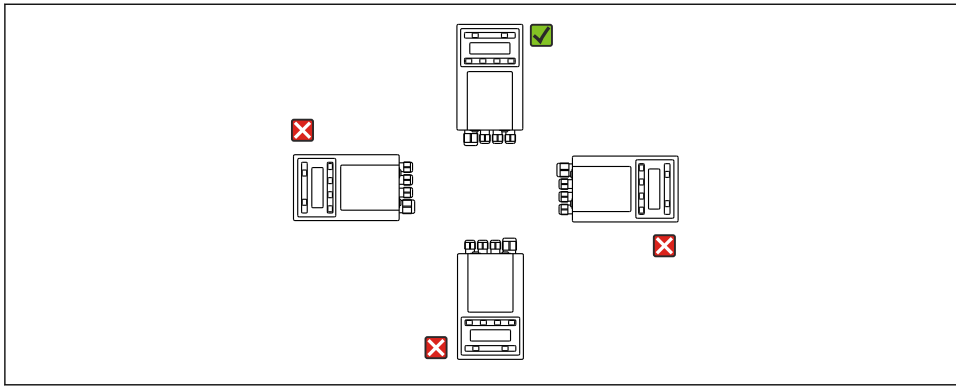


2 Pump dimensions. Unit of measurement mm (in)



3 Drill plate for wall holder, dimensions

6.1.1 Installation



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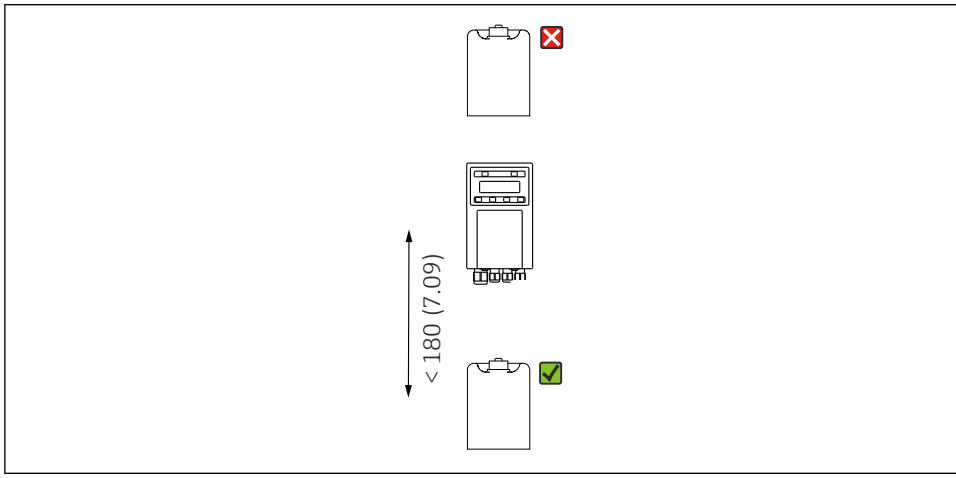
4 *Mounting requirements for pump*

► Only mount the pump in a vertical position.



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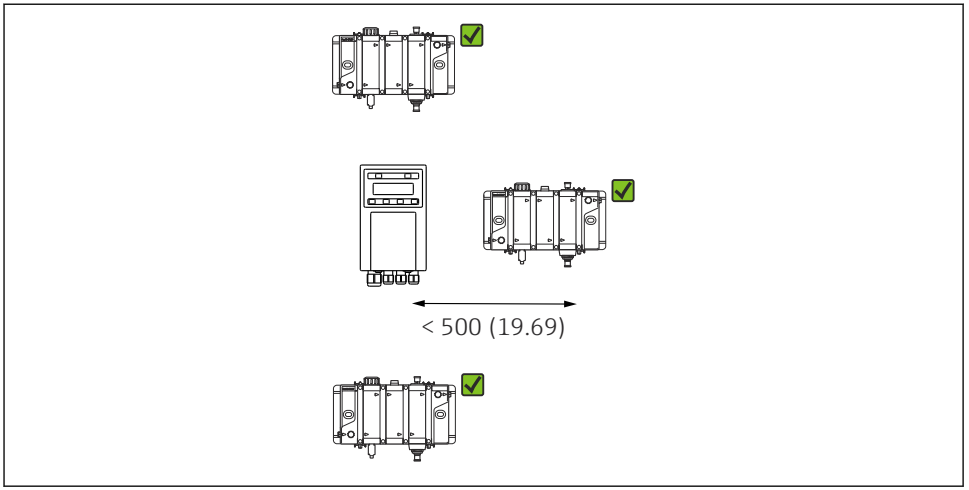
5 *Mounting requirements for pump and canisters. Unit of measurement mm (in)*

1. Mount the canisters below or to the side below the pump.
2. The maximum suction height must not exceed 180 mm (7.09 in).



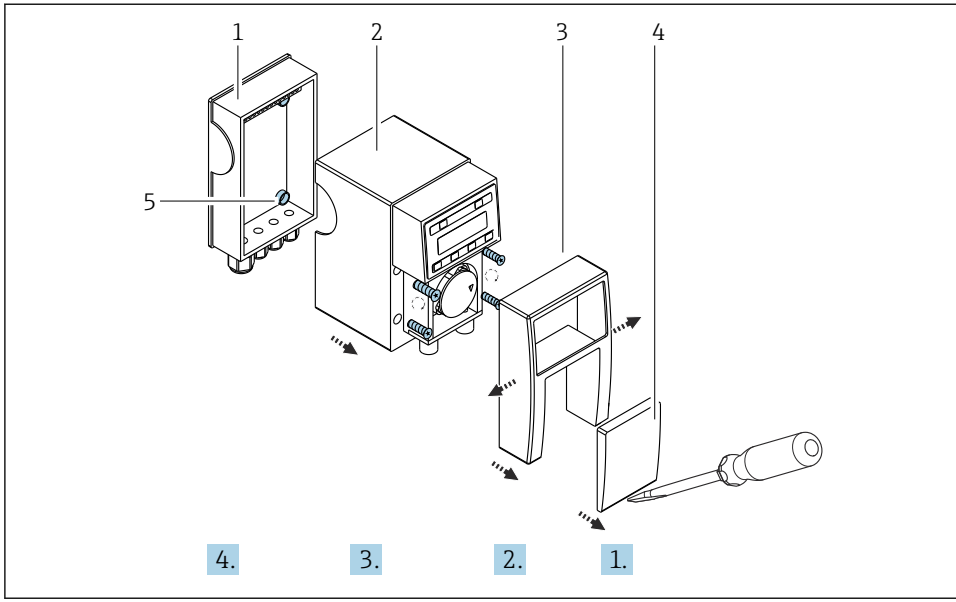
6 Mounting requirements for pump and assembly. Unit of measurement mm (in)

1. Mount the assembly below, to the side of or above the pump.
2. Maximum distance must not exceed 500 mm (19.69 in) to counteract pressure loss of pumped medium and hydrostatic counterpressure.

6.1.2 Mounting the device

Wall mounting

Prerequisite:
Screws and wall plugs (not included in the scope of delivery) for wall mounting must be provided by the customer.



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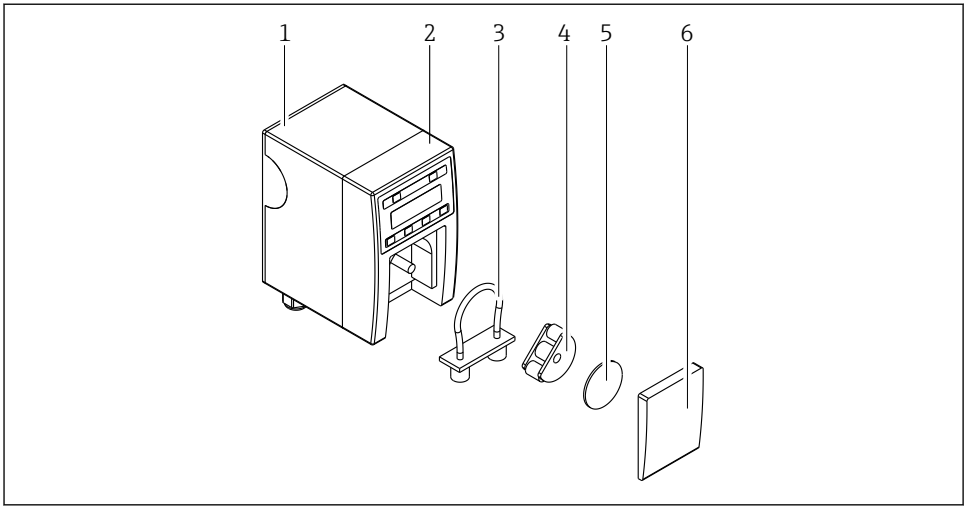
1 Base plate
2 Pump housing
3 Pump housing cover
4 Rotor cover
5 Securing points

1. Lift the rotor cover (4).
2. Remove the pump housing cover (3).
   ↳ The screw holes in the pump housing (2) are now exposed.
3. Unscrew and remove the pump housing (2).
   ↳ The securing points are now exposed.
4. Mount the device firmly on the wall or panel using the four securing points provided (5). After this step, it is recommended to carry out the wiring for the electrical connection.
5. Fit the pump housing (2) again and screw in place.
6. Fit the pump housing cover (3).
7. Fit the rotor cover (4).

Installing the hose holder

Prerequisite:
The hose to be replaced has been removed.



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1 Base plate with pump housing
2 Pump housing cover
3 Hose holder
4 Rotor
5 Rotor cap
6 Rotor cover

1. Remove the rotor cap (5) and rotor cover (6).
2. Turn the rotor (4) manually so that it forms a "D", i.e. the flat side points to the left.
3. Position the hose holder (3) over the blue rotor so that the opening points towards the housing..
4. Using your left hand, insert the hose into the hose track and turn the rotor (4) clockwise with your right hand so that the hose can be inserted cleanly into its track within a half a turn.
5. Fit the rotor cap (5) and rotor cover (6).
6. Put the pump back into operation.

Installing lines

1. Pressure side: hose to assembly = fasten on right in hose holder.
2. Suction side: hose from collecting vessel (acid, cleaner, etc.) or directly on the suction lance = fasten on left in hose holder.

7 Electrical connection

Wiring the supply voltage, CM44 signal cable and suction lance

1. Lift the rotor cover.
2. Remove the pump housing cover (7).
   ↳ The screw holes are exposed.
3. Screw on the pump housing (1).
4. Remove the pump housing (1).
5. Guide the wiring through the cable glands (2).
6. Complete the wiring as shown in the following table:

Wiring	Color	Pump terminal
Suction lance	Brown	11
	Blue	12
Supply voltage	Brown	2
	Blue	1
Liquiline CM44	Brown	13
	Blue	14

Wiring in Liquiline CM44

1. Guide the wiring through the cable glands of the Liquiline CM44.
2. Complete the wiring as shown in the following table:

Module	Color	Module terminal
DIO module	Brown	45
	Blue	46
2R or 4R module	Brown	41
	Blue	42
2AO or 4AO module	Brown	31
	Blue	32

8 Operation

⚠ WARNING

Development of chlorine gas

Chlorine gas can develop with pH values below 4 and the simultaneous presence of free chlorine. This can cause injury and damage to property!

- ▶ In the case of media with free chlorine, the pH value must be measured after the dosing module. The control system must be set in such a way to ensure that the pH value does not drop below a critical value of 4.
- ▶ Set the pump control so that the pump switches off when the limit value is undershot.

⚠ WARNING

Escaping cleaning solution

If cleaning solution escapes, there is a risk of injury from high pressure, high temperature or chemical hazards!

- ▶ Adhere to the maintenance intervals for the components used, such as pipes or a dosing pump, and replace the component in the event of a defect.
- ▶ Shorten the maintenance intervals accordingly in the event of high operating temperatures.

⚠ CAUTION

Untested cleaning agent

Cleaning agents that have not been tested can damage the assembly and cause liquid to leak.

- ▶ Only the cleaning agents described in may be used.

⚠ WARNING

Overdosing of cleaning or acid solution, reverse medium flow due to blocked assembly or the outlet valve has not been opened.

Overdosing cleaning or acid solution into the assembly or reverse medium flow into the (feeder) vessel can cause injury or damage to property!

- ▶ If there is no flow through the assembly, the dosing pump must be switched off automatically. Use a relay control via the transmitter for this purpose.

⚠ WARNING

Reverse medium flow: faulty pressure-reducing valve or no pressure-reducing valve is installed.

There is a risk of injury and a defective hose.

- ▶ Configure the pump control so that it only operates when there is sufficient flow.
- ▶ Install a check valve on the process side for maintenance cycles or flow measurement.

⚠ WARNING

Cleaning agent is not suitable for the installed device materials.

The measurement performance of the sensor is impaired.

- ▶ Pay attention to the warning label on the cleaning module.
- ▶ Place the transmitter "on hold" during cleaning.

⚠ WARNING

Temperature effect on hoses

Hoses become leaky. Cleaner or process medium escapes.

► Pay attention to fluctuating temperatures.

Measured values, e.g. pH value or conductivity, of installed sensors may change due to the type and composition of the added solutions, acids or cleaning agents. This may have undesired effects on processes that are controlled by these measured values. Changes in the measured values and their effects on a controller should be taken into account at all times. Alternatively, a test is recommended prior to implementation. The measured values may need to be set to HOLD during the dosing.

For additional information on the operation and control of the dosing hose pump, see the manufacturer's documentation.

8.1 Use cases

Cleaning 1-200 ml/min

Use for short-time operation:

- Controlled via a time control of the cleaning program
- Condition is only sufficient flow, apart from the cleaner having to act, then take away the flow
- The pH value can definitely drop here, depending on the cleaner; a reference to chlorine gas formation must be made.

Disinfection agent or acid dosing: 0.1- 22 ml/min

Use for short-term operation, for testing the reference measurement:

- Time-controlled or externally controlled feed of a DI agent to test the reference measurement of the sensors
- The condition is sufficient flow and, depending on the DI agent, a pH value over 4.0.

Use for continuous operation, acid dosing:

- Continuous pH value reduction. There is a risk that the pH value is less than or equal to 4 and therefore, depending on the disinfectant, chlorine gas is produced.
- The condition is sufficient flow and, depending on the DI agent, a pH value over 4.0.

8.2 Settings in Liquiline CM44

⚠ WARNING

Device is live!

Incorrect connection may result in injury or death!

► The electrical connection may only be performed by an electrical technician.

► The electrical technician must have read and understood the instructions in this manual and must adhere to them.

► Prior to commencing connection work, ensure that no voltage is present on any cable.

For continuous dosing (acidification), monitoring both the flow rate and the pH value is recommended. It is also recommended, if necessary, to stop the dosing pump if corresponding limit values are undershot.

Preparation

- Pay attention to the pump dosing.
- Only use the dosing pump in conjunction with a flow switch or a flow measurement and a pH measurement in the assembly. The flow switch or flow measurement is used to monitor sufficient flow and thus avoid overdosing. The pH measurement is used to avoid pH values that are too low as a result of overdosing.
- The pump is operated in "Auto External" mode (see the pump manufacturer's documentation). Pump delivery is activated via the CM44 when all conditions for operation are met. Activation is carried out by a binary output of a DIO card or by a relay of a 2R or 4R card. The delivery rate can be adjusted directly on the pump; see the pump manufacturer's documentation.

Activating the binary output for the pump

1. Go to **Menu**: **Setup/Outputs/Binary output** y:x and enable **Binary output**.
2. Set **Signal type**: **Static signal**, **Function**: **Device status signal**, **Operating mode**, **NAMUR F**.

Activating a relay for the pump:

1. Go to **Menu**:**Setup/Outputs/ Relay** y:x.
2. Set **Function**: **Device status signal**, **Operating mode**, **NAMUR F**.

Activating a limit switch for pH:

1. Go to **Menu**: **Setup/Basic setup/Limit switch** x.
2. Make the following settings:

Source of data	CHx: x:y, pH xxx
Meas. value	pH
Cleaning program	---
Operation mode	Below limit check
Function	On
Limit value	4.50 pH
Hysteresis (+/-)	0.00 pH
Start delay	0s
Switch off delay	0s

Activating a limit switch for flow switches:

1. Go to **Menu**: **Setup/Basic setup/Limit switch** x.
2. Make the following settings:

Source of data	**Binary output** x:y
Input variable	Flow rate
Cleaning program	---
Operation mode	Below limit check
Function	On
Limit value	30l/h (for the 30 l/h CYA27 version) or 5 l/h (for the 5 l/h CYA27 version)
Hysteresis (+/-)	0.00 l/h
Start delay	0s
Switch off delay	0s

Assigning diagnostic message S910 of the limit switches as an error message F for insufficient flow or pH value that is too low

1. Reconfigure the diagnostic message for the limit switch (S910) in **Menu**: **Setup**/**Basic setup**/Diagnostics settings/Diag. behavior/S910 Limit switches.
   ↳ The status of the limit switch and thus the flow rate in the assembly is available as a process value for all outputs of the transmitter. As soon as there is insufficient flow, F910 Limit switches is displayed on the device along with a red screen.
2. Make the following settings:

Diag. code	910 Limit switches
Diagnostics message	On
Failure current	Off
Status signal	Failure (F)
▶ If desired, adjust the diagnostic message.	

3. Open **Menu**: **Setup**/**Additional functions**/**Diagnostic module**/**Diagnostic module** x.
4. Make the following settings: Data source:

Limit switches	x
Active low	On
▶ Short text: Enter the individual text here, e.g. Low flow	

Activating a time-controlled cleaning program

1. Go to **Menu**: **Setup**/**Basic setup**/Cleaning/Cleaning x.
2. Make the following settings:

Cleaning type	Standard clean
Cleaning time	x
Cleaning cycle	Interval
Start signal	---
HOLD	Enabled

Assigning the cleaning to a binary output for the pump:

1. Go to **Menu**: **Setup**/**Outputs**/ Binary Output y:x and enable binary output.
2. Make the following settings:

Status signal	Static signal
Function	Cleaning
Source of data	**Cleaning** x

Assigning the cleaning on the relay for the pump:

1. Go to **Menu**:**Setup**/**Outputs**/ **Relay**y:x.
2. Function: cleaning, configure data source: cleaning x.

If flow monitoring and/or pH value monitoring for time-controlled dosing for cleaning is to be carried out in order to stop the dosing, the pump must be additionally controlled via a second binary output connected in series or a second relay. See the sections above on activating and assigning the limit switches and the status signal NAMUR F.

Setting the sensors to "on Hold" during the cleaning interval is recommended if the sensor readings (pH value, conductivity, etc.) are adversely affected by the type of cleaning agent.

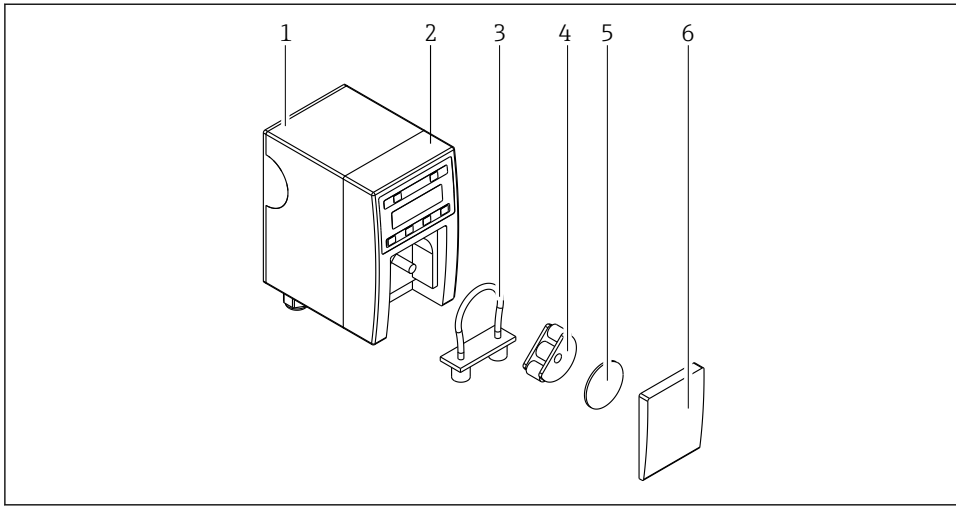
Activating the cleaning hold for sensor channels:

1. Go to **Menu**: **Inputs**/**CH:** x: y/**Extended setup**.
2. Make the following setting: **Cleaning hold**: **Cleaning** x.
3. Repeat this step for all the sensors concerned.

9 Maintenance

Replacing the hose holders

Required tools:
Flat screwdriver



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1. Lift the rotor cover (4).
2. Insert a screwdriver into the hole in the hose holder (5) and carefully lever out the hose holder until it is loose.
3. Remove the rotor cover (4) and rotor cap (5).
4. Remove the pump housing cover (2).
5. Turn the rotor (4) manually so that it forms a "D", i.e. the flat side points to the left.
6. Pull the hose holder (3) out of the holder at the bottom and manually turn the rotor clockwise so that the hose can be removed gradually.

Installing a new hose holder

Prerequisite:
The hose to be replaced has been removed.

▶ See → 8

10 Troubleshooting

Problem	Possible cause	Remedial action
No delivery from peristaltic pump	Empty collecting vessel	▶ Check the pump indicator (container-empty-message). ▶ Fill or replace the collecting vessel/dosing agent container.
	Hose rupture	▶ Check the pump indicator (hose rupture message). ▶ Replace the pump hose. ▶ Clean and dry the parts around the pump rotor.

Problem	Possible cause	Remedial action
	Missing start signal	▶ Check the connections to the transmitter. ▶ Check the transmitter settings.
Peristaltic pump is not delivering continuously.	pH value under range	▶ Reduce the dosing quantity on the pump. ▶ Reduce the dosing agent concentration. ▶ Increase the flow settings for the assembly. ▶ Change the hysteresis in the limit switch.
	Insufficient flow through assembly	▶ Check the assembly's flow settings and increase if necessary.

11 Disposal

Electronic components may be used in the product. The product must be disposed of as electronic waste.

▶ Observe the local regulations.

If required by the Directive 2012/19/EU on waste electrical and electronic equipment (WEEE), the product is marked with the depicted symbol in order to minimize the disposal of WEEE as unsorted municipal waste. Do not dispose of products bearing this marking as unsorted municipal waste. Instead, return them to the manufacturer for disposal under the applicable conditions.

12 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:

▶ Refer to the website www.endress.com/support/return-material for information on the procedure and conditions for returning devices.

13 Technical data

Operating voltage:	110/230 VAC ±10%
Frequency:	50/60 Hz
Current consumption:	200 mA
Switch-on time:	100 % (specified temperature range)
Degree of protection:	IP65
Delivery rate:	0.1 to 22 ml/min (hose 1.6 x 1.6 mm (0.06 x 0.06 in)); 3.0 bar 1.0 to 190 ml/min (hose 4.8 x 1.6 mm (1.89 x 0.06 in)); 1.5 bar
Process temperature:	0 to 50 C° (32 to 122 F°), non-freezing
Ambient temperature:	0 to 50 C° (32 to 122 F°), non-freezing
Hose material:	BPT
Control:	floating shutter (on/off) current-controlled 0 to 20 mA/4 to 20 mA pulse-controlled/pulse width modulation time relay/batch

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