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Installation Instructions
Liquiline System CA80TN analyzer

Process engineering

Endress+Hauser
People for Process Automation

Table of contents

1 Overview

1.1 Spare parts kits

These installation instructions apply to the following spare parts kits:

Order code	Designation
71504588	CA80TN Peristaltic pump complete
71504592	CA80TN Valve block
71504593	CA80TN Receiver module photometer V1.0
71750182	CA80TN Receiver module photometer V2.0
71504596	CA80TN Transmitter module photometer
71504598	CA80TN Reactor module
71504599	CA80TN Reactor heater
71504602	CA80TN Pinch valve
71504604	CA80TN Reactor valve bottom
71504605	CA80TN Reactor valve top
71504606	CA80TN Reactor fan
71561382	CA80TN Hose light barrier

2 Intended use

- The parts of the kits must only be used as spare parts for CA80TN analyzers. Any other use is not permitted!
- Only use original parts from Endress+Hauser.
- In the Device Viewer, check if the spare part is suitable for the device in question.

3 Personnel authorized to carry out conversion

- 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 perform the stated tasks.
- The electrical connection may only be established by an electrical technician.

- The technical personnel must have read and understood these Installation Instructions and must follow the instructions they contain.
- Measuring point faults may be repaired only by authorized and specially trained personnel.
- In the case of Ex-certified devices, the technical staff must also be trained in explosion protection.

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

4 Safety instructions

⚠ WARNING

Risk of death from electrical shock!

- ▶ Perform work on the device with the utmost caution, especially when the device remains fully or partially powered on during maintenance tasks.
- ▶ Follow the instructions in the relevant chapters of this manual, as the procedure for electrical safety depends on the service kits used.
- ▶ All work must be carried out according to applicable safety standards.
- ▶ Follow the instructions in the Operating Instructions for the device.

⚠ CAUTION

Risk to health due to contact with reagents, chemicals or process solutions!

- ▶ Wear protective gloves, protective goggles and protective clothing.
- ▶ Immediately rinse splashes with plenty of water and a 1% sodium bicarbonate solution ($NaHCO_3$, baking soda).
- ▶ In case of eye contact, rinse the affected area with plenty of water and then seek medical advice. Show the relevant safety data sheet to the physician.
- ▶ Note the nationally applicable workplace safety regulations for the work area when handling toxic or corrosive chemicals.

⚠ CAUTION

Electronic assemblies are sensitive to electrostatic discharges (ESD)!

- ▶ Before removing an assembly from the antistatic packaging, it must be discharged, e.g. at a protective ground. Continuous grounding, e.g. with an ESD wristband, is recommended.

Potential impact on the process

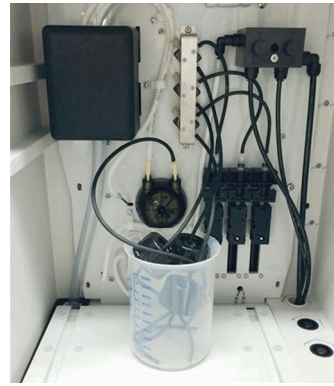
Before decommissioning an active device, the potential impact on the overall process must be taken into account! This applies in particular when using the switching contacts, the analog signal outputs or the communication interface of the associated measuring instrument to control process variables. Coordinate service tasks with the operator!

Contact Endress+Hauser Service if you have questions: www.addresses.endress.com

5 Replacing the components

5.1 Preparation

1. Select **Mode → Manual mode** and confirm by pressing the navigator button.
2. Wait until the analyzer has finished the measurement and **Manual** is displayed as the **Current mode**.
3. Stop the sample feed.
4. Remove the covers of the reagent bottles and the hoses and place them in a plastic vessel.



A0058761

1 *Beaker for covers with hoses*

5. Remove the bottle tray together with the bottles from the analyzer.
6. Place the hoses in an empty beaker and select **Menu → Operation → Maintenance → Decommissioning → Empty hoses**.

The software evaluates this as the bottles being removed. Therefore, they need to be reinserted at a later time.

7. Place the hoses in a beaker with distilled or treated water and select **Menu → Operation → Maintenance → Decommissioning → Rinse with water**. Wait until rinsing is finished.
8. Place the hoses back in an empty beaker and select **Menu → Operation → Maintenance → Decommissioning → Empty hoses**.

All the hoses are now flushed, clean and filled with air. It is now possible to work on the analyzer without risk.

9. **Disconnect the analyzer from the power supply using the circuit breaker provided on the system and secure the circuit breaker against unintentional recommissioning.**

⚠ WARNING

Risk of injury due to high voltage present during operation on the transmitter module and high-voltage circuit board.

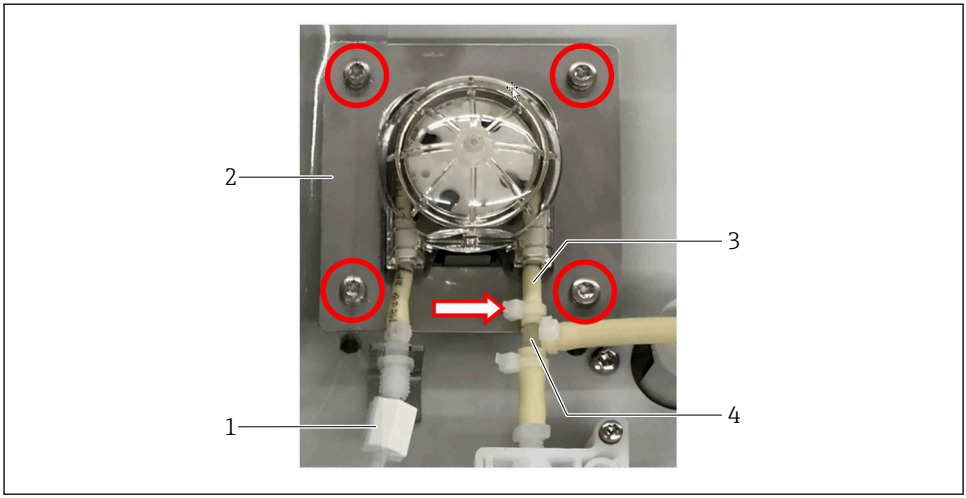
- ▶ Only open the protective cover (see CAD/detail drawings in the spare parts finder) when the device is switched off!

5.2 Replacing the peristaltic pump

A0060695

2 Link to Components Sheet, including scope of delivery and device overview

1. Carry out preparatory work as per Section 5.1 → 5.
2. Release the screws for securing the carrier plate (see Components Sheet, item d) and fold the carrier plate forwards.
3. Remove the pump cable plug connector from the control module (connector SM2/PP).
4. Fold back the carrier plate and secure it provisionally with a screw.
5. Cut the cable tie on the pump hose (→ 3, 8, item 3) and pull the pump hose off the T-connector (→ 3, 8, item 4).
6. Open the threaded fitting of the hose adapter (→ 3, 8, item 1) and take the adapter off the pump connection.
7. Release the 4 fixing screws on the mounting plate (→ 3, 8, item 2) and remove the pump.
8. Install the new pump in reverse order.
9. Finally, secure the carrier plate using the 6 screws (see Components Sheet, item d).
10. Secure the pump hose on the T-connector with a cable tie.
11. Put the analyzer back into operation → 28.
12. **Refer to Section 5.14.1 regarding any additional, final tasks required (pump hose operating hours counter) → 29.**



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3 CA80TN peristaltic pump

1 Hose adapter
2 Mounting plate, pump
3 Pump hose
4 T-connector

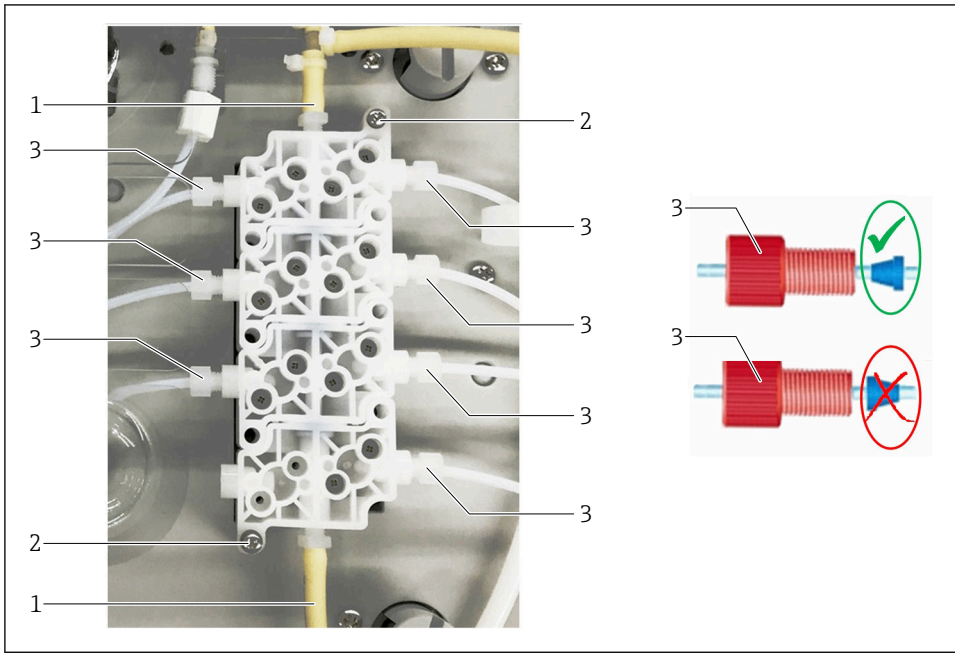
5.3 Replacing the valve block

A0060907

4 Link to Components Sheet, including scope of delivery and device overview

1. Carry out preparatory work as per Section 5.1 → 5.
2. Release the screws for securing the carrier plate (see Components Sheet, item d) and fold the carrier plate forwards.
3. Release the plug connector of the valve block at the control module (plug connector "Dosing unit valve block"/V1 to V8).
4. Fold back the carrier plate and secure it provisionally with a screw.

5. Remove the flexible hoses from the top and bottom of the valve block (→ 5, 9, item 1).
6. Release the two fixing screws of the valve block (→ 5, 9, item 2).
7. Raise the valve block and pull the connecting cable forwards and out.
8. Pull the connecting cable of the new valve block backwards, move the new valve block into the correct installation position under the old one and secure it with the two screws (→ 5, 9, item 2).



5 *Valve block*

Perform the following steps individually, one after the other, i.e. hose by hose, to ensure that connections are not mixed up. If in doubt, use the hosing plan in the spare parts finder or on the inside of the door for guidance.

9. Release the side hose glands (→ 5, 9, item 3, color may vary) on the old valve block and pull the threaded fittings together with the clamping cones and hoses out of the valve block. Leave the threaded fittings and clamping cones on the hoses!

10. Screw the hose glands together with the clamping cones and hoses into the new valve block.

The threads of the plastic hose connectors are sensitive! Carefully tighten the connectors and union nuts; finger tight only!

Pay attention to the installation position of the clamping cones → 5, 9, right.

11. Remove the old valve block.
12. Unscrew the hose connections at the top and bottom (threaded fittings with hose nozzles, → 5, 9, item 1) from the old valve block and screw them into the new valve block.
13. Fit the flexible hoses at the top and bottom of the hose nozzles of the new valve block (→ 5, 9, item 1).
14. Fold the carrier plate forwards and insert the plug connectors of the valve block cable into the control module (plug connector "Dosing unit valve block"/V1 to V8).
15. Fold back the carrier plate and secure it with the 6 screws (see Components Sheet, item d).
16. Put the analyzer back into operation → 28.

5.4 Replacing the receiver module photometer V1.0 or V2.0

A0060908

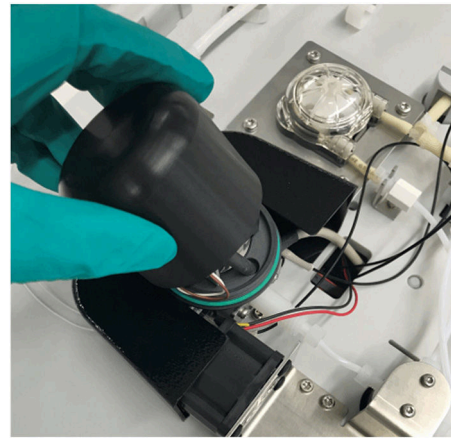
6 Link to Components Sheet, including scope of delivery and device overview

NOTICE

Requirements for replacing the receiver module

► Only qualified E+H personnel are permitted to work on the reactor!

1. Carry out preparatory work as per Section 5.1 → 5.
2. Remove the transparent protective cover on the reactor (see Components Sheet, carrier plate, item 2 and red circles).
3. Unscrew and remove the black protective cap.

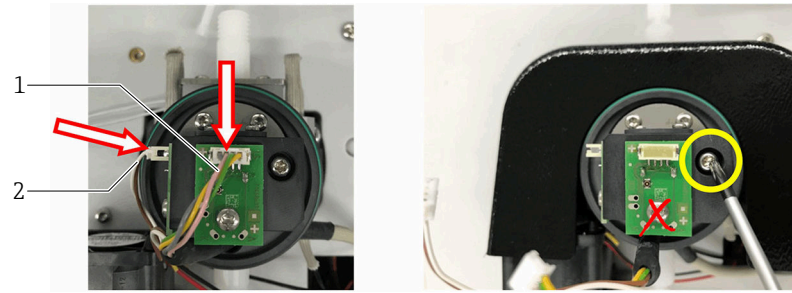


A0060910

7 Remove the reactor protective cap

4. Remove the plugs of both connecting cables at the receiver module → 8, 11, left.
5. Release the fixing screw of the receiver module → 8, 11, right.

Do not open the fixing screw of the circuit board (✗)!



A0060911

8 Removing the receiver module

1 Short cable, 4-wire
2 Long cable, 2-wire

6. Pull up the receiver module to remove it.
7. Remove the dust cover from the new receiver module.
8. Insert the new receiver module.

9. Reassemble the device in the reverse order.
10. Put the analyzer back into operation → 📄 28.
11. **Refer to Section 5.14.2 regarding any additional, final tasks required (photometer calibration, reactor cleaning, factory calibration) → 📄 29.**

The complete V2.0 receiver module photometer only works from firmware version 01.15.00 on! If the complete V2.0 receiver module photometer was installed, it must be activated by following the steps below after the upgrade:

1. Select **Menu → Setup → General settings → Extended setup → Data management → Upgrade code → Enter upgrade code**.
2. Enter upgrade code **S51FILT**.
3. Complete the entry by selecting **Confirm**.
4. Restart the device.

5.5 Replacing the transmitter module photometer

A0060909

9 Link to Components Sheet, including scope of delivery and device overview

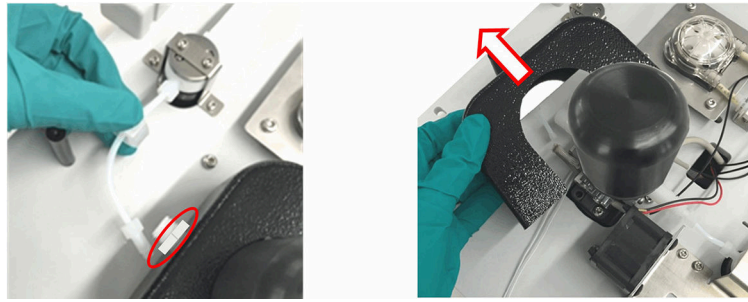
NOTICE

Requirements for replacing the transmitter module photometer

► Only qualified E+H personnel are permitted to work on the reactor!

1. Carry out preparatory work as per Section 5.1 → 📄 5.
2. Release the screws for securing the carrier plate (see Components Sheet, item d) and fold the carrier plate forwards.
3. Remove the two cables on the connection board (accessible through the opening in the safety cover), (see item 11 in Components Sheet, carrier plate).
4. Release the screws at the top and side of the safety cover for the photometer electronics and fold the cover to the side. The cover is still attached to the safety switch and the grounding wire and can remain attached.
5. Release the 4 fixing screws of the high-voltage circuit board (item 13 in Components Sheet, carrier plate).

6. Remove the high-voltage circuit board from the receiver module photometer (item 14 in Components Sheet, carrier plate).
7. Fold back the carrier plate and secure it provisionally with a screw.
8. Remove the transparent protective cover on the reactor (see CAD/detail drawings in the spare parts finder).
9. Open the hose gland at the top of the reactor and remove the hose. Then release the hexagonal nut on the hose gland (→ 10, 13, left).
10. Take off the air hood (→ 10, 13, right).



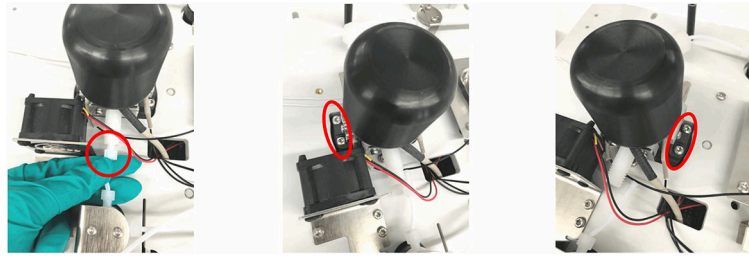
A0060912

10 Preparation for transmitter module replacement

11. Open the lower hose gland on the reactor and remove the hose (→ 11, 13, left).

Make sure that the hose is not kinked when disassembling and reassembling!

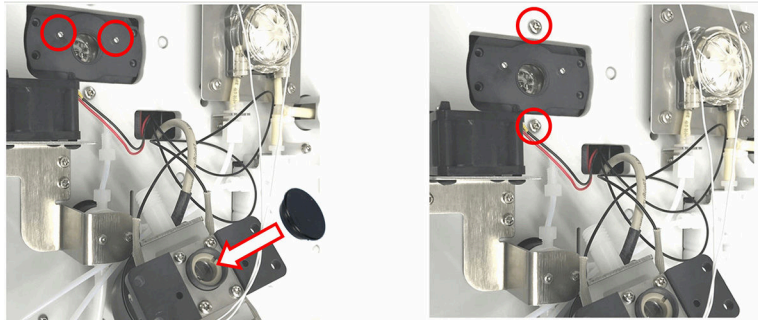
12. Unscrew the reactor (4 screws, → 11, 13, center and right).



A0060913

11 Unscrewing the reactor

13. Use the cover supplied, ID 15, OD 18 mm, to protect the reactor lens (→ 🖼 12, 🖹 14, left).
14. Release the two fixing screws of the transmitter module → 🖼 12, 🖹 14, right).



A0060914

🖼 12 *Lens protection, unscrewing the transmitter module*

15. Fold the carrier plate forwards. The faulty transmitter module can now be removed to the rear.
16. Insert the new transmitter module and reassemble the device in reverse order.

Please note the following (see also “Reactor versions” note in Section 5.6 → 🖹 15):

- If a V1 reactor is used, alignment pins are required in the transmitter module (→ 🖼 12, 🖹 14, top left). Insert any missing alignment pins into the transmitter module.
- If a V2 reactor is used, alignment pins cannot be used. Remove any alignment pins from the transmitter module.

17. Put the analyzer back into operation → 🖹 28.
18. **Refer to Section 5.14.3 regarding any additional, final tasks required (confirm lamp replacement, photometer calibration) → 🖹 29.**

5.6 Replacing the reactor module

A0060917

13 Link to Components Sheet, including scope of delivery and device overview

NOTICE

Requirements for reactor replacement

- Only qualified E+H personnel are permitted to work on the reactor module!
- A suitable and clean workplace is required in a dust-free environment.

NOTICE

Reactor versions

- Please note that there are two versions of the reactor (referred to hereinafter as V1 or V2). Both versions are compatible; the difference in how they are handled is described in step no. 17 below.

NOTICE

Measure to protect lenses

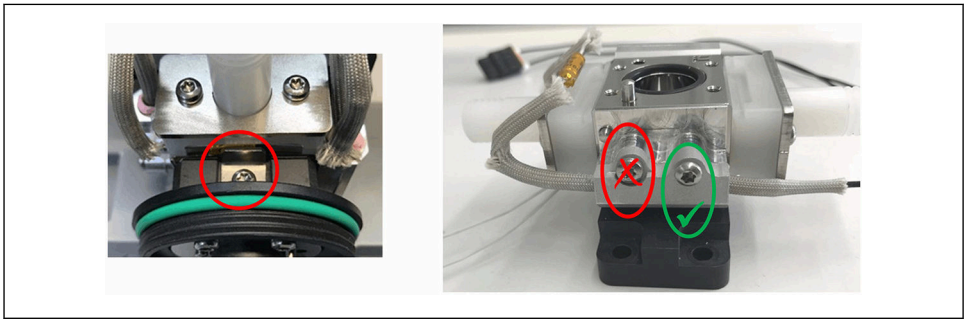
- Leave the protective covers on the lenses of the new reactor module for as long as possible!

1. Carry out preparatory work as per Section 5.1 → 🖹 5.
2. Release the screws for securing the carrier plate (see Components Sheet, item d) and fold the carrier plate forwards.
3. Disconnect the 4-pin plug with the two black strands from the control module (connector “BOT/Heating RH” = heating connection).
4. Disconnect the 4-pin plug with the two gray strands from the control module (connector "BOT/RT" = Temperature probe").
5. Disconnect the 8-pin plug with the gray control line from the connection board (see Components Sheet, rear carrier plate, item 11).
6. Fold back the carrier plate and secure it provisionally with a screw.
7. Remove the receiver module: → 🖹 10, steps 2 - 6.
8. Remove the reactor module: → 🖹 12, steps 9 - 13.
9. Pull all the cables of the reactor module forwards through the opening in the carrier plate and remove the reactor module.

Completing the new reactor module

Before installation, the heating elements from the old reactor module must be transferred to the new reactor module. To do this, proceed as follows:

10. Remove the retaining plate for the temperature fuse (→ 🖼 14, 🖹 16, left).
11. Release the fixing screws on the two heating bars. **Caution!**Make sure to observe → 🖼 14, 🖹 16 on the right. For each heating bar, only the long, non-recessed screw (✔) may be loosened!
12. Remove the entire heater.



A0060915

🖼 14 *Disassembling the heater*

13. Remove the old thermal conducting foils on both sides → 🖼 15, 🖹 16, item 1). Insert the two new thermal conducting foils provided in their place.
14. Mount the reactor heater on the new reactor.
15. Bend the cables of the thermal fuse so that the fuse is positioned in the recess provided in the upper hose connection (→ 🖼 15, 🖹 16).
16. Reinstall the retaining plate for the temperature fuse (→ 🖼 14, 🖹 16, left).

A0060916

🖼 15 *Thermal fuse positioning*

1 Thermal conducting foil

17. Mount the receiver module and reinstall the assembled reactor module in reverse order. Do not remove the protective covers on the lenses until just before the corresponding steps are completed.

Note the following:

- No additional measures are required when replacing a V2 reactor with a new V2.
- If replacing an old V1 reactor with a new V2 reactor, pull the two alignment pins in the transmitter module (→ 12, 14, top left) if present.
- If, in exceptional cases, a V2 reactor is replaced by a V1 reactor, the missing alignment pins must be retrofitted in the transmitter module.

18. Insert all the plugs, fit all the protective covers, fold back and secure the mounting plate.
19. Put the analyzer back into operation → 28.
20. **Refer to Section 5.14.4 regarding any additional, final tasks required (run-in period, photometer calibration, reactor cleaning, factory calibration) → 29.**

5.7 Replacing the reactor heater

A0060918

16 *Link to Components Sheet, including scope of delivery and device overview*

NOTICE

Requirements for replacing the reactor heater

- Only qualified E+H personnel are permitted to work on the reactor module!
- A suitable and clean workplace is required in a dust-free environment.
- Do not touch the lenses after the photometer is removed as otherwise, they will have to be cleaned carefully.

Section 5.6 already describes how to replace the heater → 15.

Follow the instructions in Section 5.6, noting the following differences:

- Step 7 can be omitted.
- Add the following to step 18: The new heater is supplied without a plug connector (connector "BOT/Heating RH"). Use the existing plug connector.

1. Put the analyzer back into operation → 28.

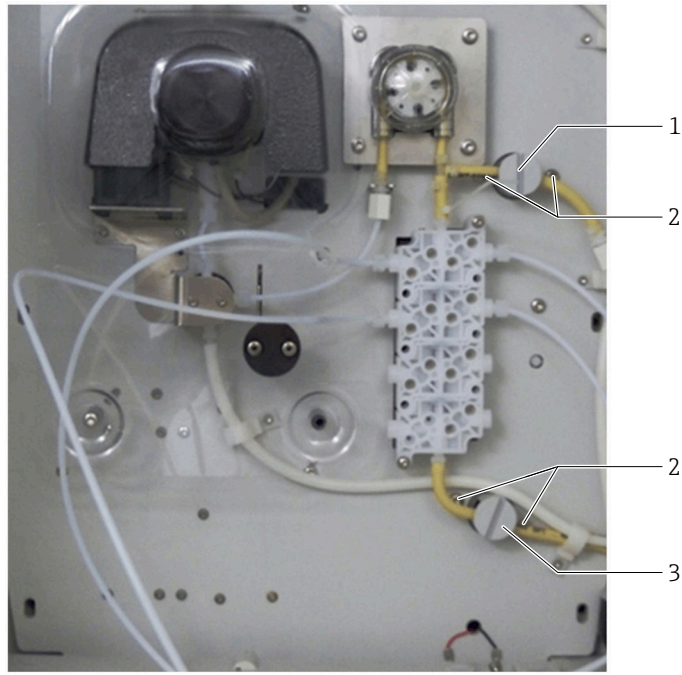
2. **Refer to Section 5.14.5 regarding any additional, final tasks required (photometer calibration) → 30.**

5.8 Replacing the pinch valves

A0060919

17 Link to Components Sheet, including scope of delivery and device overview

1. Carry out preparatory work as per Section 5.1 → 5.
2. Pull the hose out of the valve in question.
3. Unscrew the two fixing screws of the valve in question (→ 18, 19, item 2).



A0060924

18 *Pinch valves*

4. Release the screws for securing the carrier plate (see Components Sheet, item d) and fold the carrier plate forwards.
5. Release the plug connector of the valve from the control module (plug connector "Sample valve SV" or "WV" = Waste valve).
6. Remove the cover of the control module (the cover is only clipped in).
7. Release all of the screws of the control module and lift the control module as far as necessary. Then pull the valve backwards.
8. Insert and tighten the new valve.
9. Screw the control module back on.
10. Change the plug connector from the old to the new valve and reinsert the plug.
11. Refit the cover of the control module.
12. Fold back the carrier plate and secure it with the 6 screws (see Components Sheet, item d).
13. Pull the hose through the valve and reconnect it. Secure the hose to the appropriate hose nozzle using a cable tie. **We recommend you use a new hose (PharMed® ID 3.2, OD 6.4 mm, kit 71431075).**

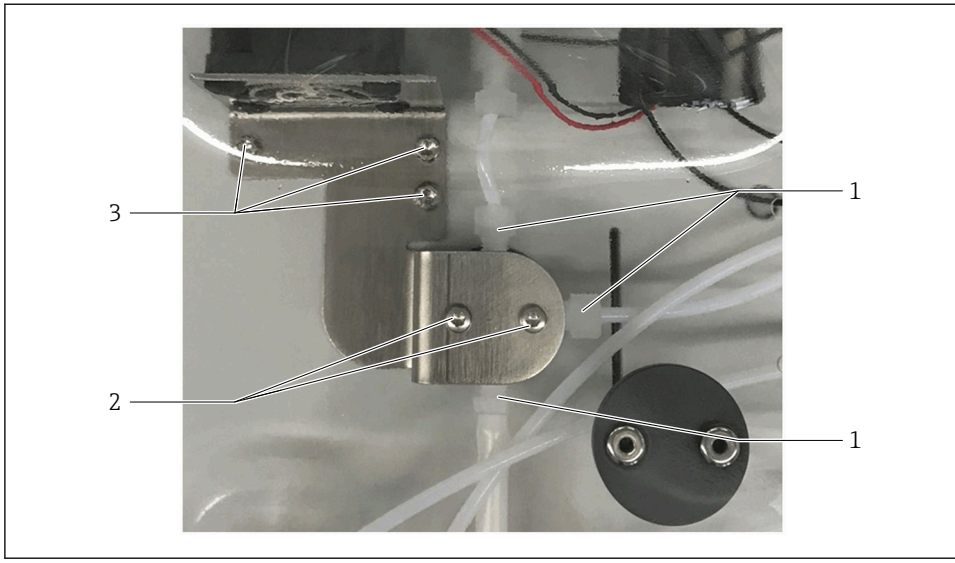
14. Put the analyzer back into operation → 28.
15. **Refer to Section 5.14.6 regarding any additional, final tasks required (valve test) → 30.**

5.9 Replacing the reactor valve at bottom

A0060920

19 Link to Components Sheet, including scope of delivery and device overview

1. Carry out preparatory work as per Section 5.1 → 5.
2. Remove the transparent protective cover on the reactor (see Components Sheet, carrier plate, item 3 and red circles).
3. Open all three hose glands (→ 20, 21, item 3) at the bottom of the reactor valve and remove the hoses.



A0060936

20 Reactor valve at bottom

1 Retaining bracket fixing screws
2 Valve fixing screws
3 Hose glands

4. Unscrew the hose glands from the valve. The threaded fittings are reused.
5. Release the screws for securing the carrier plate (see Components Sheet, item d) and fold the carrier plate forwards.
6. Disconnect the "Reactor valves RV" plug connector from the control module and remove the two "RVU+" and "RVU−" cables from the plug connector.
7. Fold back the carrier plate and secure it provisionally with a screw.
8. Remove the air hood → 10, 13.
9. Release the three fixing screws on the retaining bracket (→ 20, 21, item 1) for the reactor fan and the valve at the bottom.
10. Release the two fixing screws for the valve (→ 20, 21, item 2) on the retaining bracket.
11. Pull the retaining bracket to the side until the valve and cable can be removed towards the front.
12. Screw the hose glands into the new valve.

The threads of these plastic hose glands are sensitive! Carefully tighten the connectors; finger tight only!

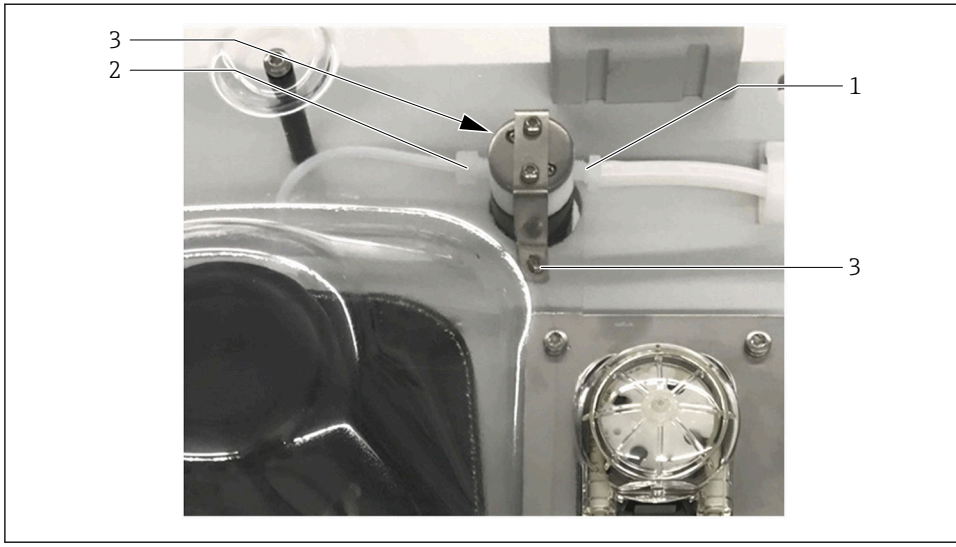
13. Fit the new valve.
14. Reassemble the device in the reverse order.
15. Put the analyzer back into operation → 📄 28.
16. **Refer to Section 5.14.7 regarding any additional, final tasks required (reactor pressure test) → 📄 30.**

5.10 Replacing the reactor valve at the top

A0060921

21 Link to Components Sheet, including scope of delivery and device overview

1. Carry out preparatory work as per Section 5.1 → 📄 5.
2. Remove the transparent protective cover on the reactor (see Components Sheet, carrier plate, item 3 and red circles).
3. Open the hose gland on the left of the valve and remove the hose together with the union nut → 22, 📄 23.
4. Disconnect the attached hose from the hose connector on the right of the valve → 22, 📄 23.



A0060937

22 *Reactor valve at top*

1 Retaining bracket fixing screws
2 IN
3 OUT

5. Release the screws for securing the carrier plate (see Components Sheet, item d) and fold the carrier plate forwards.
6. Disconnect the "Reactor valves RV" plug connector from the control module and remove the two "RVU+" and "RVU−" cables from the plug connector.
7. Fold back the carrier plate and secure it provisionally with a screw.
8. Release the two fixing screws (→ 22, 23, item 1) of the retaining bracket for the "reactor valve at top".
9. Unscrew the hose glands from the old valve. The threaded fittings are reused.
10. Screw the hose glands into the new valve. Pay attention to the different threaded fittings for the input (IN) and output (OUT) (→ 22, 23, item 2 and item 3).

The threads of these plastic hose glands are sensitive! Carefully tighten the connectors; finger tight only!

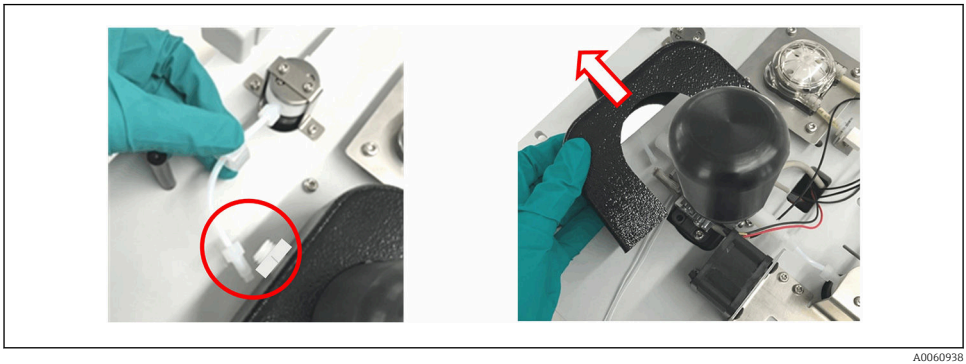
11. Use the new bracket supplied and fit the new valve.
12. Reassemble the device in the reverse order.
13. Put the analyzer back into operation → 28.
14. **Refer to Section 5.14.7 regarding any additional, final tasks required (reactor pressure test) → 30.**

5.11 Replacing the reactor fan

A0060922

23 Link to Components Sheet, including scope of delivery and device overview

1. Carry out preparatory work as per Section 5.1 → 5.
2. Remove the transparent protective cover on the reactor (see Components Sheet, carrier plate, item 3 and red circles).
3. Release the screws for securing the carrier plate (see Components Sheet, item d) and fold the carrier plate forwards.
4. Disconnect the plug of the fan cable on the control module (connector "TOP/Reactor fan, RF+ and RF–").
5. Release the two cables from the plug.
6. Fold back the carrier plate and secure it provisionally with a screw.
7. Open the hose gland at the top of the reactor and remove the hose. Then release the hexagonal nut on the hose gland (→ 24, 24, left).
8. Pull off the air hood (→ 24, 24, right).

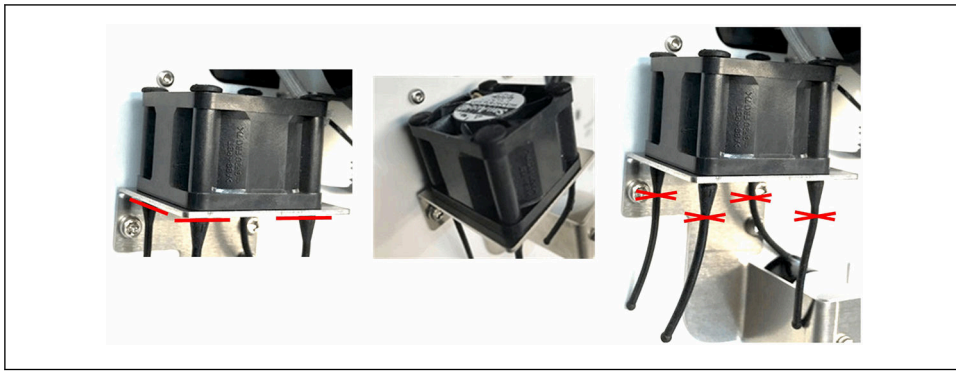


A0060938

24 Preparation for replacing the fan

9. Cut all four fan mounts directly at the retaining plate (→ 25, 25, left), e.g. with a sharp knife or a flat, edge-less wire cutter, and remove the old fan.

10. Remove the plug connector from the old fan and keep it for reuse.
11. Pull the new fan mounts supplied through the holes in the new fan (installation direction → 25, 25, center).
12. Secure the new fan in the retaining plate using the fan mounts. When installing, make sure that the nameplate of the fan is at the top and the connection cable is at the bottom right.
13. Following installation, shorten the fan mounts (→ 25, 25, right).



A0060939

25 *Fan assembly*

14. Connect the cable of the fan to the plug connector. Pay attention to the polarity when connecting: Red wire = “RF+”, black wire = "RF−.
15. Reassemble the device in the reverse order.
16. Put the analyzer back into operation → 28.

5.12 Replacing/retrofitting the hose light barrier

A0060923

26 *Link to Components Sheet, including scope of delivery and device overview*

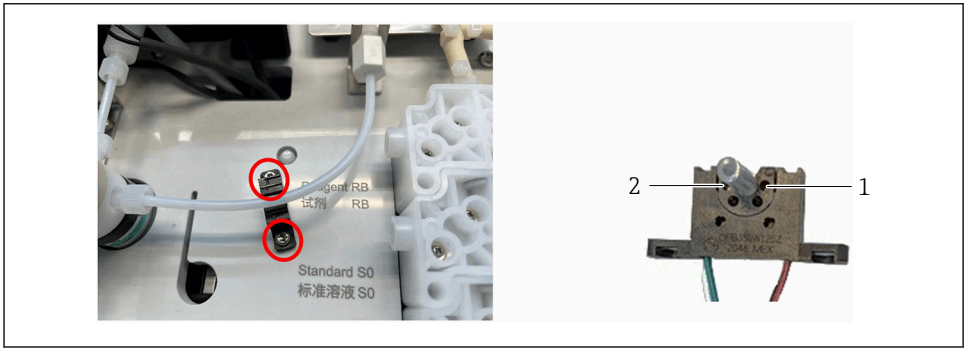
NOTICE

Requirements for replacing or retrofitting the hose light barrier

- The "hose light barrier" kit can be used as an alternative spare part or for retrofitting.
- Only devices whose carrier plate already has the appropriate cutout and threaded holes can be retrofitted → 29, 28.
- The hose light barrier is only supported from SW version 01.13.00 on.

5.12.1 Replacing the light barrier

1. Carry out preparatory work as per Section 5.1 → 5.
2. Carefully pull the hose out of the light barrier.
3. Release the fixing screws of the light barrier → 27, 26.

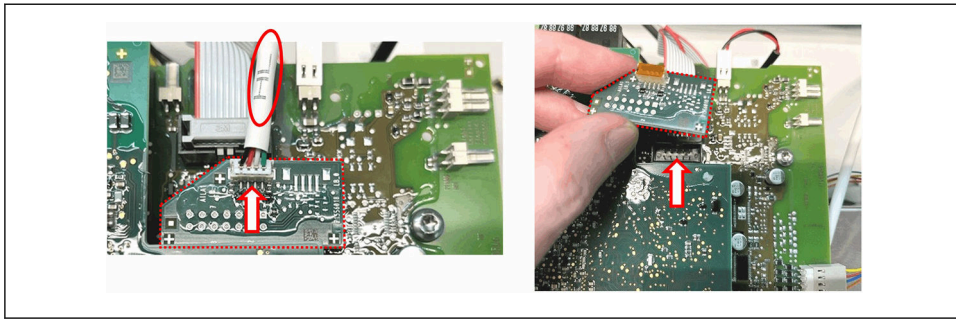


A0060940

27 *Carrier plate with light barrier*

1 Transmitter
2 Receiver

4. Release the screws for securing the carrier plate (see Components Sheet, item d) and fold the carrier plate forwards.
5. Remove the cover of the control module with complete connection labeling (cf. product images in SFT).
6. Remove the light barrier plug connector ("HL" cable) on the ALIA1 module (→ 28, 27, left).
7. Pull the AILA1 module out of the plug connectors on the control module (→ 28, 27, right).



A0060941

28 *Light barrier cable ("HL") and AILA1 module*

8. Pull the cable and plug connector through the mounting hole in the carrier plate and remove the light barrier.
9. Fit the new light barrier and the new AILA1 module.
10. Press the hose into the new light barrier. Please work carefully as the transmitter and receiver can easily break.
11. Reassemble the device in the reverse order.
12. Put the analyzer back into operation → 28.

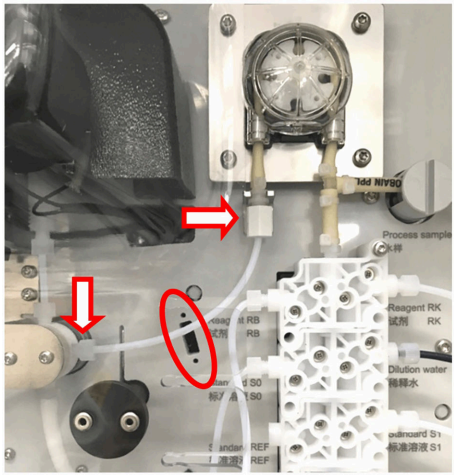
5.12.2 Retrofitting the light barrier

NOTICE

Requirements for retrofitting the hose light barrier

- Only devices whose carrier plate already has the appropriate cutout and threaded holes can be retrofitted → 29, 28.

1. Carry out preparatory work as per Section 5.1 → 5.
2. Push the cable of the hose light barrier through the cutout to the rear and secure the light barrier with the screws provided.
3. Release the hose glands at the outlet of the peristaltic pump and at the reactor inlet valve → 29, 28. Remove the relevant hose.
4. Install the long hose provided in its place. Press the hose into the light barrier → 27, 26. Please work carefully as the arms with the transmitter and receiver break relatively easily.



A0060942

29 Carrier plate prepared for light barrier

5. Release the screws for securing the carrier plate (see Components Sheet, item d) and fold the carrier plate forwards.
6. Remove the cover of the control module (cf. product images in SFT).
7. Insert the AILA1 module supplied into the free plug connector of the control module (→ 28, 27, right).
8. Insert the cable of the light barrier ("HL") into the AILA1 module (→ 28, 27, left).
9. Reassemble the device in the reverse order.
10. Put the analyzer back into operation → 28.
11. **Refer to Section 5.14.8 regarding any additional, final tasks required (SW check, entering upgrade code)→ 30.**

5.13 Recommissioning

1. Insert the bottle tray with reagents, standard and cleaner.
2. Switch the power supply to the analyzer back on.
3. Connect hoses to the reagent containers and fill as described below:
4. Select **Menu → Operation → Maintenance → Bottle replacement → Bottle insertion → Bottle selection**.
5. Highlight all the bottles and confirm by pressing the **OK** softkey.
6. Select the **Bottles inserted confirmation** entry.
7. Activate the sample feed.

8. Select **Mode → Continue automatic mode** to start the normal measuring operation.
9. Check all the new components for leaks.

Recalibration is not required if only the hose connectors have been replaced.

A two-point calibration may be necessary if additional maintenance work has been performed. In this case, follow the Operating Instructions or the relevant kit instructions.

5.14 Additional final tasks

The following tasks depend on the work performed beforehand, → 🖹 7 to → 🖹 25.

5.14.1 If replacing the peristaltic pump → 🖹 7

▶ Reset the operating hours counter for the peristaltic pump: **Menu → Operation → Maintenance → Replace the pump hose → Reset the operating hours counter**.

5.14.2 When replacing the receiver module → 🖹 10 and replacing the reactor heater → 🖹 17

1. Perform a photometer calibration (duration approx. 8:50 minutes): **Menu → Expert (password entry) → Operation → Maintenance → Photometer replacement → Start photometer calibration**.
2. Perform manual reactor cleaning: **Menu → Expert (password entry) → Operation → Manual operation → Cleaning**.
3. Perform a factory calibration with standard 15 mg/l (duration approx. 10 hrs.): **Menu → Expert (password entry) → Operation → Maintenance → Photometer replacement → Start factory calibration update**.

5.14.3 If replacing the transmitter module photometer → 🖹 12

1. Confirm lamp replacement: **Menu → Expert (password entry) → Operation → Maintenance → Photometer replacement → Lamp → Confirm lamp replacement**.
2. Perform a photometer calibration (duration approx. 8:50 minutes): **Menu → Expert (password entry) → Operation → Maintenance → Photometer replacement → Start photometer calibration**.

5.14.4 If replacing the reactor module → 🖹 15

1. Perform manual reactor cleaning: **Menu → Expert (password entry) → Operation → Manual operation → Cleaning**.
2. Run-in time: operate the device for approx. 10 hrs. ("overnight") in measuring mode. As the sample solution, use a standard solution that is suitable for the measuring range or a particle-free sample.
3. Read out the photometer status: **Menu → Diagnostics → Device test → Analyzer → Photometer/Photometer status" (setpoint > 70%)**.
4. Carry out a reactor pressure test: **Menu → Expert (password entry) → Diagnostics → Device test → Analyzer → Reactor → Reactor pressure test**.

5. Perform a photometer calibration (duration approx. 8:50 minutes): **Menu → Expert (password entry) → Operation → Maintenance → Photometer replacement → Start photometer calibration**.
6. Perform a factory calibration with standard 15 mg/l (duration approx. 10 hrs.): **Menu → Expert (password entry) → Operation → Maintenance → Photometer replacement → Start factory calibration update**.

5.14.5 If replacing the reactor heater → 17

▶ Perform a photometer calibration (duration approx. 8:50 minutes): **Menu → Expert (password entry) → Operation → Maintenance → Photometer replacement → Start photometer calibration**.

5.14.6 If replacing the pinch valves → 18

1. Carry out a valve test. To do this, select the following path after replacing the sample valve: **Menu → Diagnostics → Device test → Analyzer → Valves → Valve selection → Process P**.
2. After replacing the waste valve, select the following path: **Menu → Diagnostics → Device test → Analyzer → Valves → Valve selection → Sequence D**.

5.14.7 If replacing the reactor valve at the bottom → 20 and replacing the reactor valve at the top → 22

▶ Carry out a reactor pressure test: **Menu → Expert (password entry) → Diagnostics → Device test → Analyzer → Reactor → Reactor pressure test**.

5.14.8 If retrofitting the hose light barrier → 27

1. The hose light barrier is only supported from SW version 01.13.00 on. Therefore, check the SW version: **Menu → Diagnostics → System information → Software version**.
2. Activate the light barrier by entering the upgrade code. A general code is used that does not depend on the device serial number: **Menu → Setup → General settings → Extended setup → Data management → Upgrade code → Enter upgrade code**. Enter upgrade code S21HOLB, save by selecting **Confirm** and carry out a "Device restart".

6 Additional documentation

Detailed information on the devices can be found in the Operating Instructions for the analyzer and in the other documentation, available at:
- www.endress.com/device-viewer
- Smartphone/tablet: Endress+Hauser Operations app

7 Disposal

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.

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