DOC023.52.90173

FILTRAX *eco*

User Manual

08/2021, Edition 4

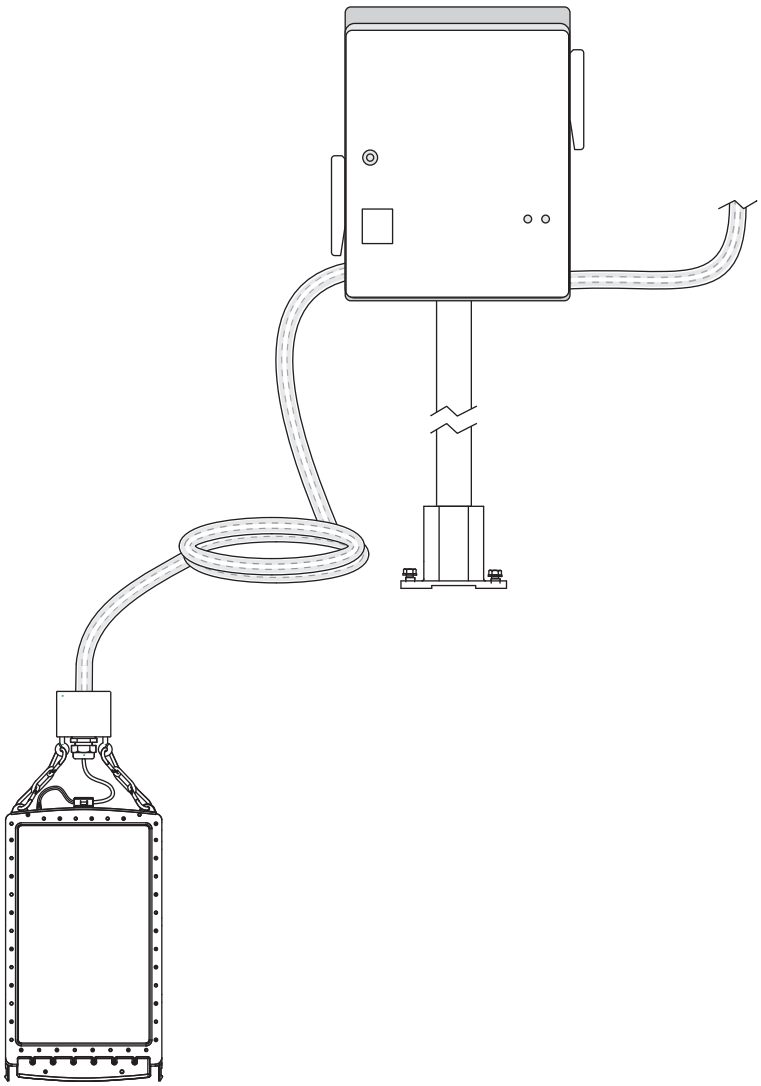


Table of Contents

Section 1 Specifications 5
1.1 Dimensions 6
Section 2 General Information 7
2.1 Safety information 7
2.1.1 Danger notes in this manual 7
2.1.2 PWarning labels 7
2.2 General Information 8
2.2.1 Areas of application 8
2.2.2 Functional description 8
2.3 Product contents 10
2.4 Instrument design 11
2.4.1 Control unit 11
2.4.2 Module carrier 12
2.4.3 Sample tubes 12
2.4.4 Filter module 13
Section 3 Installation 15
3.1 Unpacking 16
3.2 Installation 16
3.3 Mechanical installation 17
3.3.1 Attach the control unit to a wall 17
3.3.2 Install pump cassette 19
3.3.3 Install suction tube 20
3.3.4 Install sample tube 22
3.4 Electrical Connections 24
3.5 Connection to process measuring instruments 26
3.6 Attach filter module to the module carrier 28
3.7 Commission the instrument 29
3.7.1 Filter module 29
Section 4 Operation 31
4.1 Control unit operation 31
4.2 Overview of control unit menu 31
4.3 [+DEVICEDATA] menu 32
4.3.1 Overview of +DEVICEDATA menu 32
4.4 [+SIGNALS] menu 33
4.4.1 Overview of +SIGNALS menu 33
4.5 [+OP.COUNTERS] menu 33
4.5.1 Overview of +OP.COUNTERS menu 33
4.6 [+SERVICE] menu 33
4.6.1 Overview of +SERVICE menu 34

Section 5 Maintenance 35
5.1 Maintenance tasks 35
5.1.1 Weekly 36
5.1.2 Every 3 months 37
5.1.3 Every 6 months 38
5.1.4 Every 12 months 38
5.2 Cleaning 39
5.2.1 Menu-controlled cleaning tasks 39
5.2.2 Cleaning tasks with optional cleaning container LZX216 40
5.2.3 Cleaning tasks with optional cleaning set LZX217 42
5.3 Instrument decommissioning and storage 43
5.3.1 Filter module 43
5.3.2 Control unit 43
Section 6 Troubleshooting 45
6.1 Messages 45
6.2 Warnings 45
6.3 Malfunctions 46
6.4 Voltage drop (power failure) 46
Section 7 Spare Parts and Accessories 47
7.1 Replacement parts 47
7.2 Accessories 47
Section 8 Warranty and Liability 49
Index 51

Section 1 Specifications

Subject to change without notice

<table>
<tr><th colspan="5">Electrics</th></tr>
<tr><td>Power supply</td><td colspan="4">230 V (Option: 115 V) ±10 % AC voltage, 50/60 Hz</td></tr>
<tr><td rowspan="5">Power consumption</td><td colspan="4">Device with system components: 1500 VA</td></tr>
<tr><td>Line</td><td>Heater off</td><td>Max.
(–20 °C [–4 °F])
start-up</td><td>Cont.
(–20 °C [–4 °F])</td></tr>
<tr><td>2 m [6.56 ft]</td><td>150 VA</td><td>450 VA</td><td>< 200 VA</td></tr>
<tr><td>10 m [32.8 ft]</td><td>150 VA</td><td>950 VA</td><td>< 300 VA</td></tr>
<tr><td>20 m [65.6 ft]
30 m [98.4 ft]</td><td>150 VA
150 VA</td><td>1500 VA
2100 VA</td><td>< 400 VA
< 500 VA</td></tr>
<tr><td>Outputs
(Use screened cables!)</td><td colspan="4">Fault contact: potential-free contact (230 V, max. 3 A)
Alarm contact: potential-free contact (230 V, max. 3 A)
Service interface: RS 232</td></tr>
<tr><td>Protection type (control unit)</td><td colspan="4">IP55</td></tr>
<tr><td>Fuses</td><td colspan="4">T 4A E; 250V (2 x)
T 7A E; 250V (2 x)</td></tr>
<tr><th colspan="5">Environment</th></tr>
<tr><td>Medium temperature</td><td colspan="4">+5 °C to +40 °C [41 °F to 104 °F], 95% relative humidity, non-condensing</td></tr>
<tr><td>Ambient temperature</td><td colspan="4">–20 °C to +40 °C [–4 °F to 104 °F], 95% relative humidity, non-condensing</td></tr>
<tr><td>Sample quantity</td><td colspan="4">Approx. 600 mL/h for up to 2 process photometers</td></tr>
<tr><td>Delivery height</td><td colspan="4">Module carrier — control unit: 3 m [9.84 ft]
Control unit — process measuring instrument: 7 m [22.97 ft]</td></tr>
<tr><td>Altitude</td><td colspan="4">2000 m</td></tr>
<tr><td>Pollution degree</td><td colspan="4">2</td></tr>
<tr><td>Overvoltage category</td><td colspan="4">II</td></tr>
<tr><td>Environmental conditions</td><td colspan="4">Outdoor use</td></tr>
<tr><th colspan="5">General specifications</th></tr>
<tr><td>Line length</td><td colspan="4">Suction tube (heated): 5 m [16.4 ft]
Sample tube (unheated): 2 m [6.56 ft]
Sample tube (heated): 2 m [6.56 ft], 10 m [32.8 ft], 20 m [65.6 ft], 30 m [98.4 ft]</td></tr>
<tr><td>Maintenance requirements</td><td colspan="4">Approx. 1 hour/month</td></tr>
<tr><td>Weight</td><td colspan="4">Control unit: approx. 20 kg [44 lb]
Module carrier with 5 m [16.4 ft] suction tube: approx. 3.5 kg [77 lb]
2 m [6.56 ft] sample tube: approx. 1 kg [2.2 lb]
10 m [32.8 ft] sample tube: approx. 5 kg [11 lb]
20 m [65.6 ft] sample tube: approx. 10 kg [22 lb]
30 m [98.4 ft] sample tube: approx. 15 kg [33 lb]</td></tr>
<tr><td>Dimensions (W × H × D)</td><td colspan="4">Control unit: 430 × 530 × 220 mm [16.9 × 20.86 × 8.66 in.]
Filter module: 251 × 445 × 17 mm [9.9 × 17.5 × 0.67 in.]</td></tr>
<tr><th colspan="5">Certification</th></tr>
<tr><td>Certification</td><td colspan="4">CE. The manufacturer clarifies conformity with the applicable EU safety guidelines and EMC guidelines.</td></tr>
</table>

1.1 Dimensions

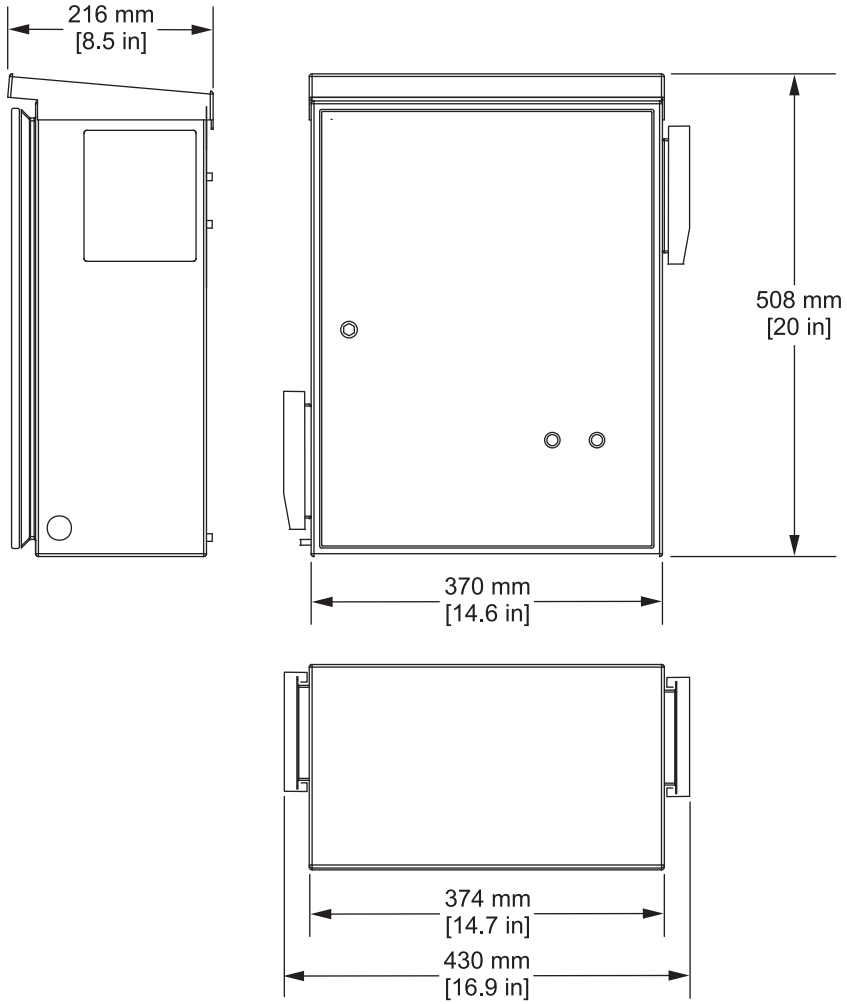


Figure 1 Control unit dimensions

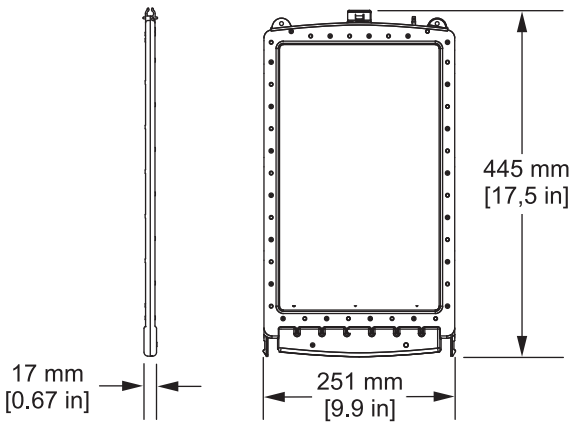


Figure 2 Filter module dimensions

Section 2 General Information

2.1 Safety information

Please read this entire manual before unpacking, setting up, or operating this equipment. Pay attention to all danger and caution statements. Failure to do so could result in serious injury to the operator or damage to the equipment.

To ensure that the protection provided by this equipment is not impaired, do not use or install this equipment in any manner other than that specified in this manual.

2.1.1 Danger notes in this manual

⚠DANGER

Indicates a potentially or imminently hazardous situation that, if not avoided, results in death or serious injury.

⚠WARNING

Indicates a potentially or imminently hazardous situation that, if not avoided, could result in death or serious injury.

⚠CAUTION

Indicates a potentially hazardous situation that may result in minor or moderate injury.

NOTICE

Indicates a situation that, if not avoided, could result in damage to the instrument. Information that particularly should be emphasized.

Note: *Information that supplements aspects from the main text.*

2.1.2 PWarning labels

Observe all marks and labels that are attached to the device. Nonobservance can result in personal injury or damage to the device.

	This symbol is a warning triangle. Follow all safety notes that follow this symbol to avoid potential injuries. If this symbol is located on the instrument, it refers to information in the operating and/or safety instructions of this manual.
	This symbol may be found on an enclosure or barrier within the product and indicates a risk of electrical shock and/or death by electrocution.
	Electrical equipment marked with this symbol may as of August 12, 2005 Europe-wide no longer be disposed of in unsorted house or industrial waste. According to valid provisions (EU Directive 2002/96/ EC), from this point consumers in the EU must return old electrical devices to the manufacturer for disposal. This is free for the consumer. ***Note:*** *Instructions on the correct disposal of all (marked and unmarked) electrical products supplied or manufactured by Hach Lange can be obtained from your local Hach Lange sales office.*

2.2 General Information

2.2.1 Areas of application

The FILTRAX *eco* sampling system is used to filter and deliver waste water samples from the activation basin in order to supply downstream process measuring instruments with a sample free from solid matter.

NOTICE

Any use other than that defined in the operating instructions as correct use will result in the loss of any rights to make claims under the warranty and may result in injury or damage for which the manufacturer accepts no liability.

2.2.2 Functional description

The FILTAX *eco* sampling and preparation system comprises three components: a control unit, a module carrier and a filter module.

The filter module (refer to Figure 3, item 4) is immersed with a module carrier (refer to Figure 3, item 1) at the sample location with an optional basin edge attachment. The filter module has a filter membrane covering both sides. This membrane is used to suck in and filter the waste water sample, and then feed it to the control unit.

A pump within the control unit sucks the sample from the filter module through a 5 m [16.4 ft] long heated suction tube to the control unit, which is installed right next to the sampling location. The sample is then pumped over 2, 10, 20 or 30 m [6.56, 32.8, 65.6 or 98.4 ft]—depending on the sample tube connected—to the process measuring instruments.

The sample delivery is interrupted once a minute for 10 seconds in order to minimize the amount of solid matter adhesion on the filter membranes.

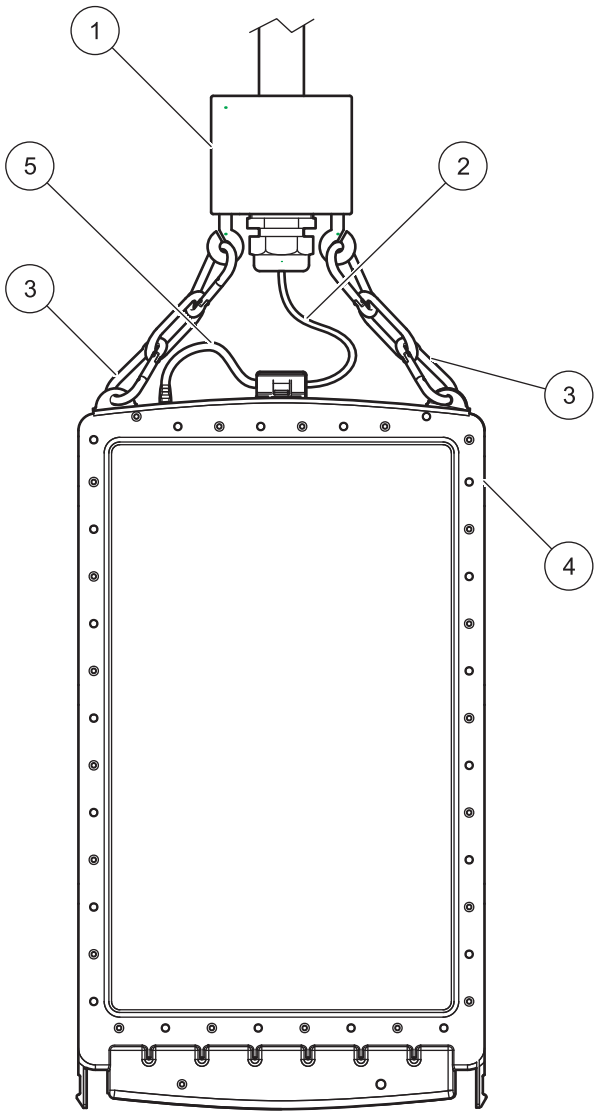


Figure 3 Filter module design

1	Module carrier	**4**	Filter module
2	Sample suction tube	**5**	Suction tube, module side
3	Karabiner		

2.3 Product contents

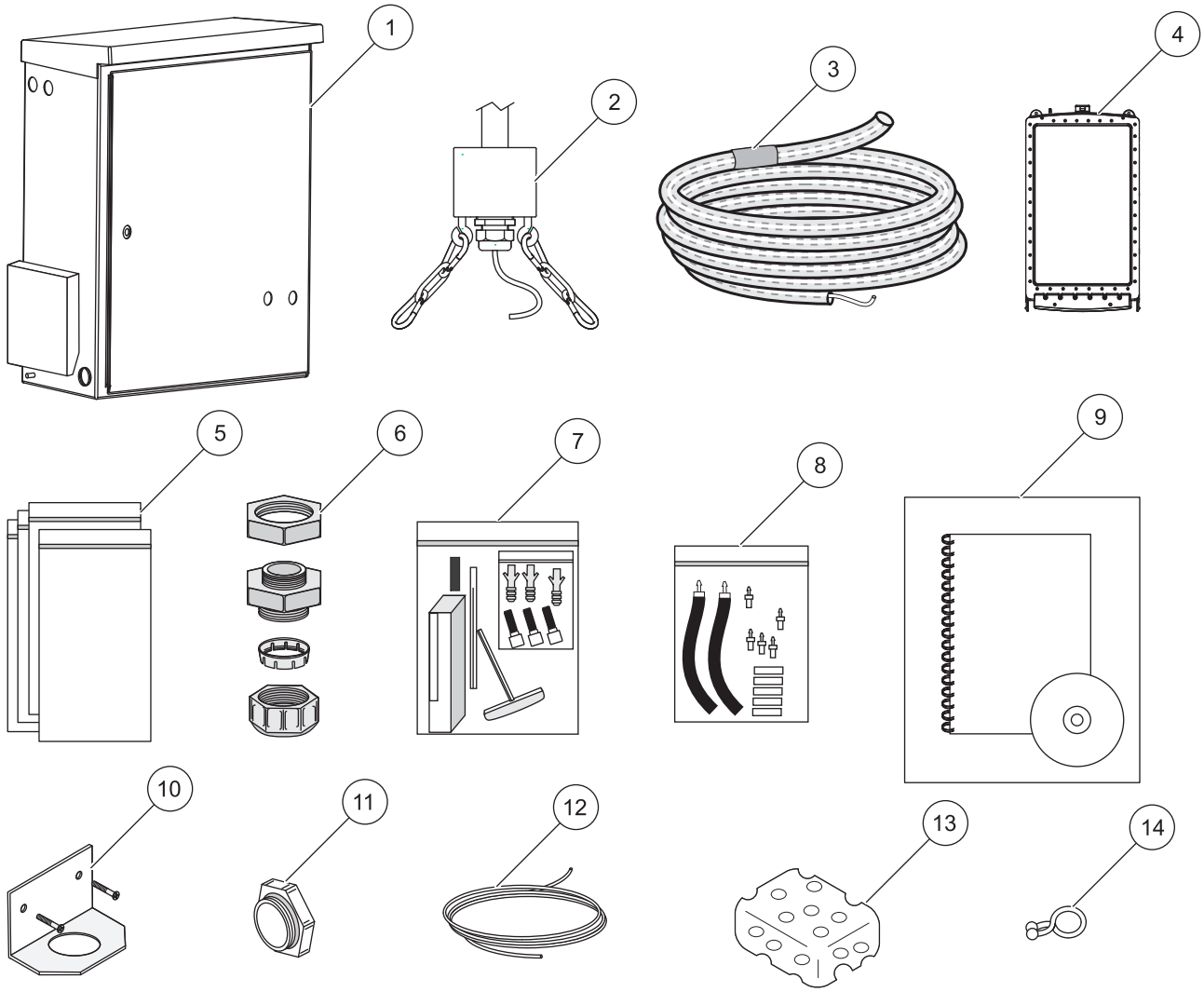


Figure 4 Product contents

1	Control unit	**9**	Documentation (operating instructions, certificate of compliance, DOC273.xx.90174 maintenance schedule (xx = language code)
2	Module carrier (LZY678, 230 V) (LZY677, 115 V) with 5 m [16.4 ft] heated suction tube		
3	Sample tube 2, 10, 20 or 30 m [6.56, 32.8, 65.6 or 98.4 ft]	**Included in accessory set LZX702**	
4	LZX677 filter module	**10**	Installation bracket for sample tube
5	EYV017 plastic bag for filter module storage (4×)	**11**	Dummy plugs (2×) + seals (2×)
6	Cable gland M20 × 1.5 (2×)	**12**	HLS191 size 2/4 tube, 6 m [19.7 ft]
7	LZX702 accessory set	**13**	Cleaning sponge
8	LZX701 tube adapter set	**14**	Bundle clip

2.4 Instrument design

2.4.1 Control unit

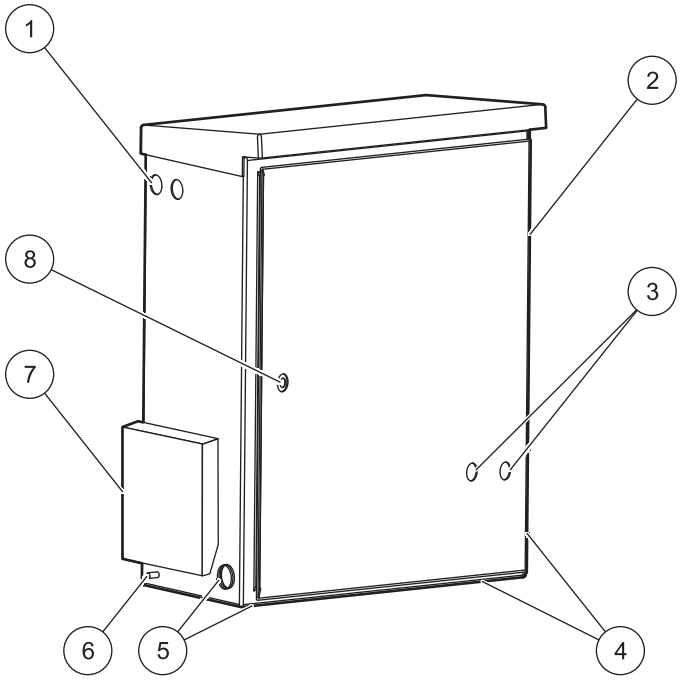


Figure 5 Control unit

1	PG fitting for electrical connection cable (2x)	**5**	Suction tube connection (left or left underside) (dummy plug and seal for unused opening)
2	Air filter cover (air outlet)		
3	Red and green indicator lights	**6**	Connection for equipotential bonding
4	Sample tube connection (right or right underside) (dummy plug and seal for unused opening)	**7**	Air filter cover (air inlet)
		8	Lock

2.4.2 Module carrier

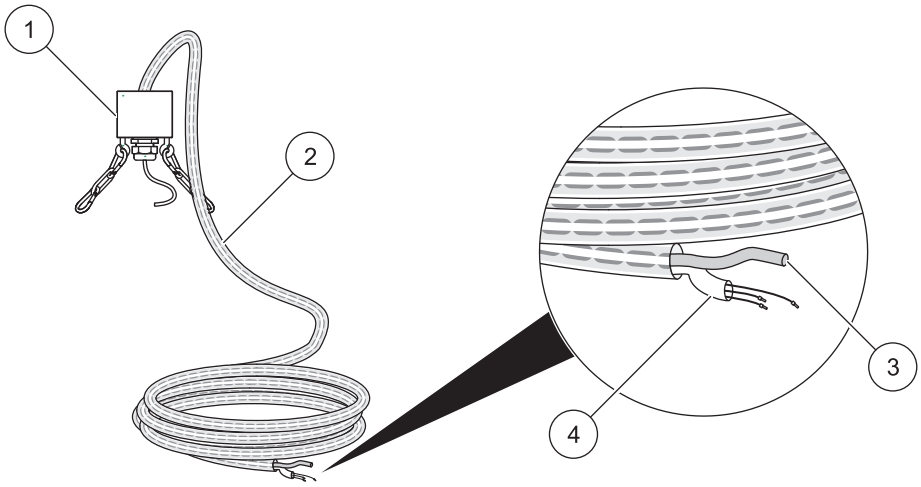


Figure 6 Module carrier

1	Module carrier	**3**	Sample suction tube, 3.2 mm [0.1 in.] external Ø
2	5 m [16.4 ft] suction tube	**4**	Heat tracing connection line

2.4.3 Sample tubes

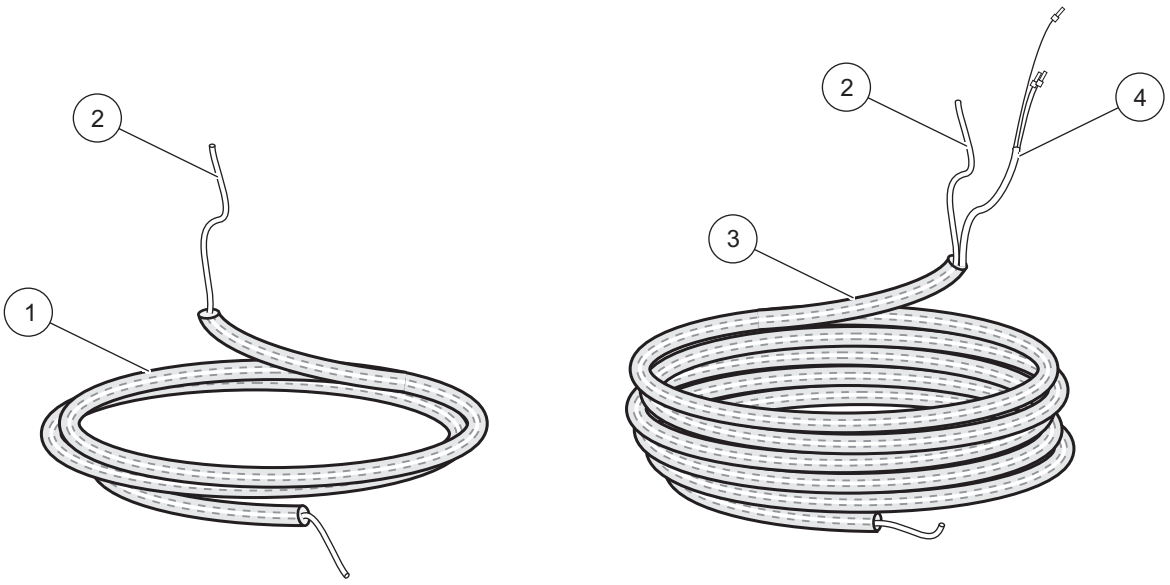


Figure 7 Sample tubes

1	Sample tube, ∅ 23 mm [0.91 in.], unheated, 2 m [6.56 ft]	**3**	Sample tube, ∅ 23 mm [0.91 in.], heated, 2, 10, 20 or 30 m [6.56, 32.8, 65.6 or 98.4 ft]
2	Sample pressure tube 3.2 mm [0.1 in.] external Ø	**4**	Heat tracing connection line

2.4.4 Filter module

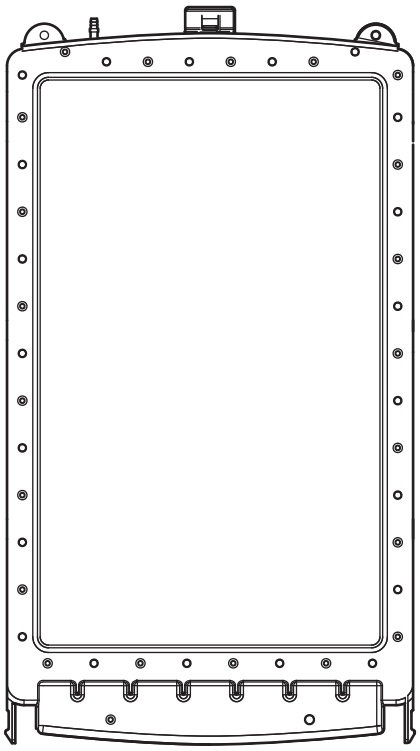


Figure 8 Filter module

⚠ DANGER

Only qualified experts should conduct the tasks described in this section.

⚠ DANGER

Select an appropriate installation location for the instrument.

Plan out the mechanical mount before positioning poles or drilling holes. Make sure the mount has a sufficient bearing capacity. The dowels must be selected and authorized according to the condition of the wall.

The manufacturer shall accept no liability if the instrument is installed incorrectly.

Plan how to lay cables and tubes and their path in advance. Lay the tubes, data cables and power cables without any bends and so they do not pose a tripping risk.

Do not connect the electrical supply to the mains until the instrument is completely wired and protected against short circuits.

Sufficiently protect the electrical power supply against short circuits.

For the external power supply, always connect a residual-current circuit breaker (trip current max.: 30 mA) between the mains and the system.

If the instrument is to be installed outdoors, connect a surge arrester between the mains and the system.

Products intended by the manufacturer for outdoor use offer a higher level of protection against the penetration of liquids and dust. If these products are connected to a mains outlet with a cable and plug rather than a permanently connected cable, the plug and outlet are much more susceptible to liquid and dust penetration. The operator must sufficiently protect the plug and outlet against liquid and dust penetration in accordance with local safety regulations. If the instrument is to be used outdoors, it must be connected to a suitable outlet with a protection type of at least IP44 (splash protection).

⚠ WARNING

Electrical dangers and fire hazard. Use only the supplied power cable.

Only qualified experts may perform the tasks described in this section of the manual, in compliance with all locally applicable safety regulations.

NOTICE

Protect the device against extreme temperatures from heaters, direct sunlight and other heat sources.

⚠ CAUTION

Note the weight (control unit approx. 20 kg, module carrier with 5 m suction tube approx. 3,5 kg) of the instrument. Do not try to carry the instrument without help. Use only suitable lifting devices for the transport.

3.1 Unpacking

NOTICE

The filter module should only be unpacked directly before commissioning and quickly attached to the module carrier. The filter membranes are packed in protective plastic; once they have been moistened they must not be allowed to dry out.

3.2 Installation

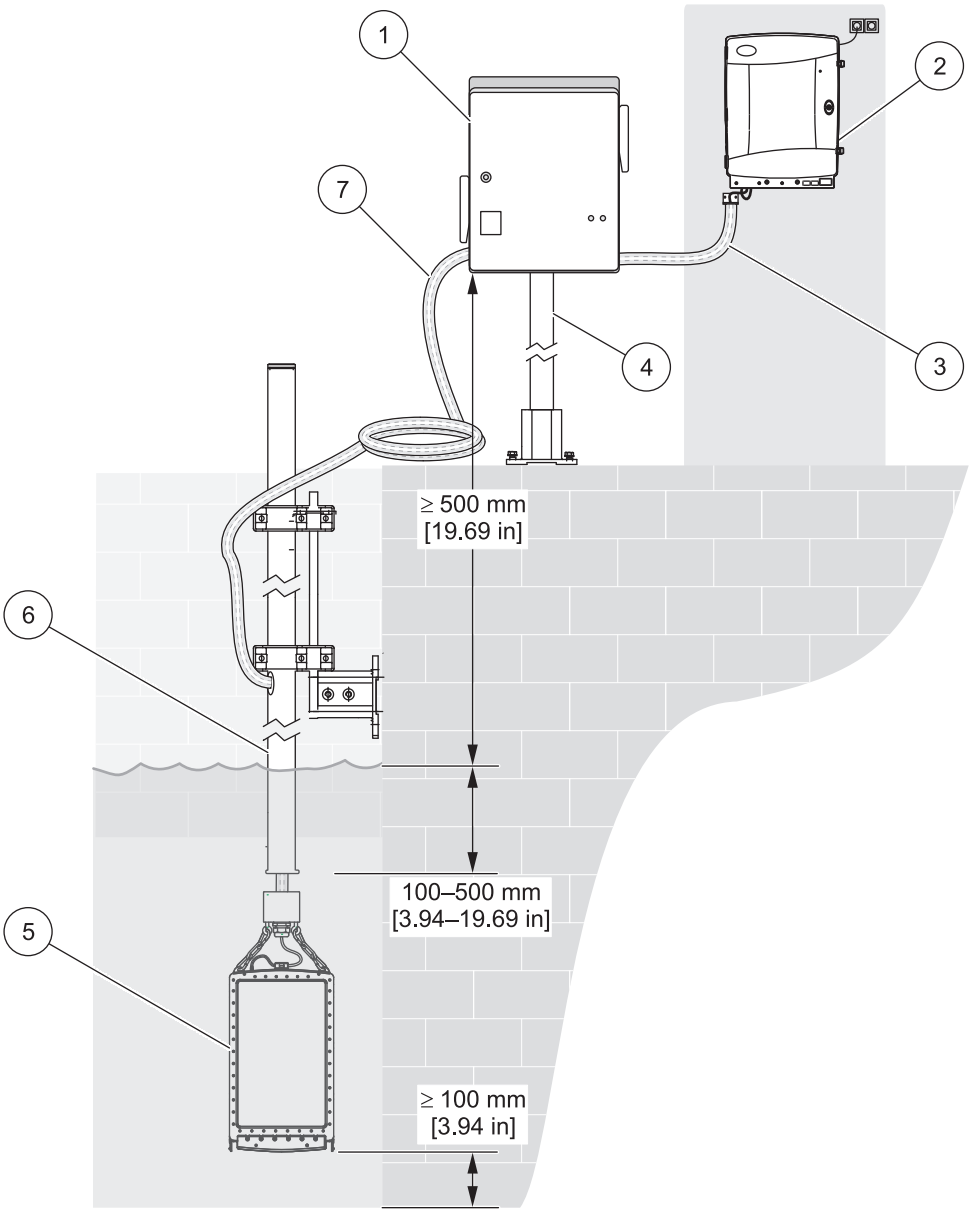


Figure 9 Example of installation
with optional control unit bracket LZX676 and optional basin edge attachment LZX414.00.XXXXX

1	Control unit	**5**	Module carrier with filter module
2	Process instrument	**6**	Bracket for FILTRAX *eco* module carrier (optional)
3	Sample tube	**7**	5 m [16.4 ft] suction tube
4	Bracket for FILTRAX *eco* control unit (optional)		

3.3 Mechanical installation

DANGER

Select an appropriate installation location for the instrument.

Plan out the mechanical mount before positioning poles or drilling holes. Make sure the mount has a sufficient bearing capacity. The dowels must be selected and authorized according to the condition of the wall.

The manufacturer shall accept no liability if the instrument is installed incorrectly.

Plan how to lay cables and tubes and their path in advance.

Lay the tubes, data cables and power cables without any bends and so they do not pose a tripping risk.

NOTICE

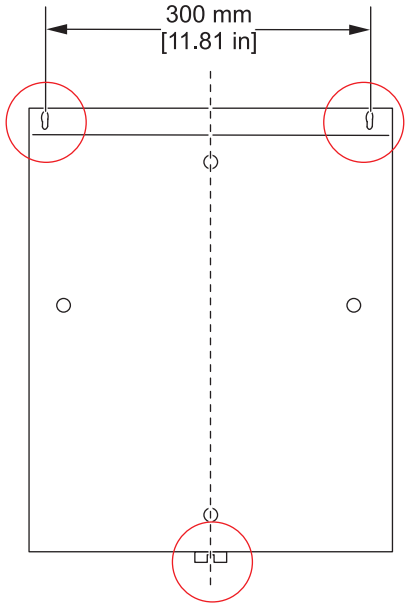
For information on installation with optional accessories, refer to the relevant installation instructions.

NOTICE

The filter module should only be unpacked directly before commissioning and quickly attached to the module carrier.

The filter membranes are shrink-wrapped in protective plastic; once they have been moistened they must not be allowed to dry out.

3.3.1 Attach the control unit to a wall



1. Select a suitable attachment point for the instrument.
   Make sure that there is sufficient space for tubes, cabling and maintenance operations.
2. Drill the top two holes in accordance with the adjacent diagram.
3. Attach the instrument at the top two mounts and mark the lower mount.
4. Drill the bottom hole and finish attaching the instrument.

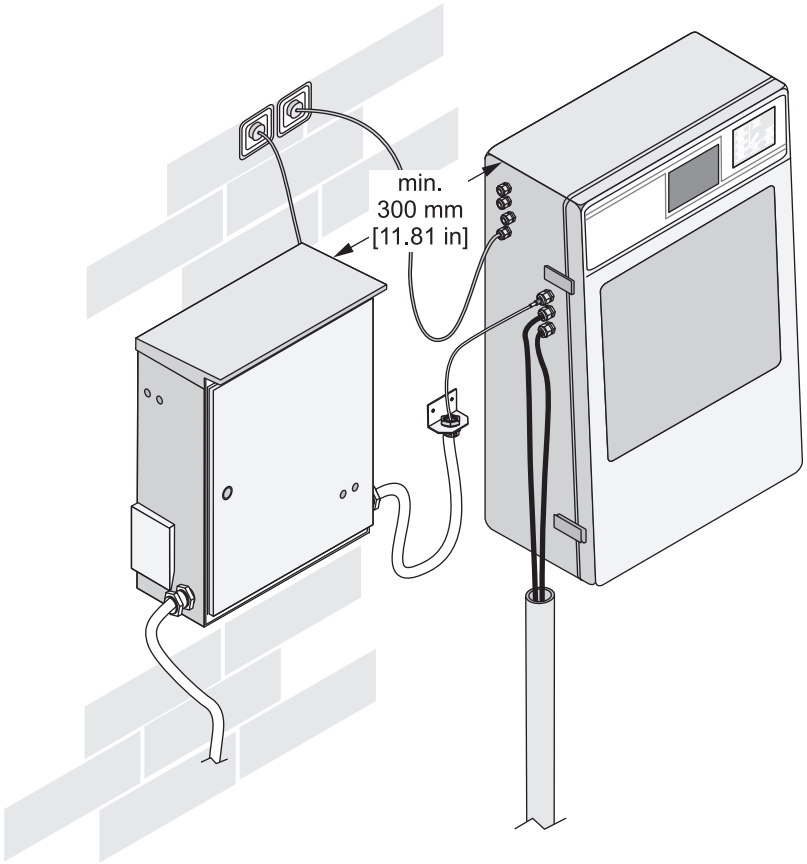


Figure 10 Attachment example, wall mount

3.3.2 Install pump cassette

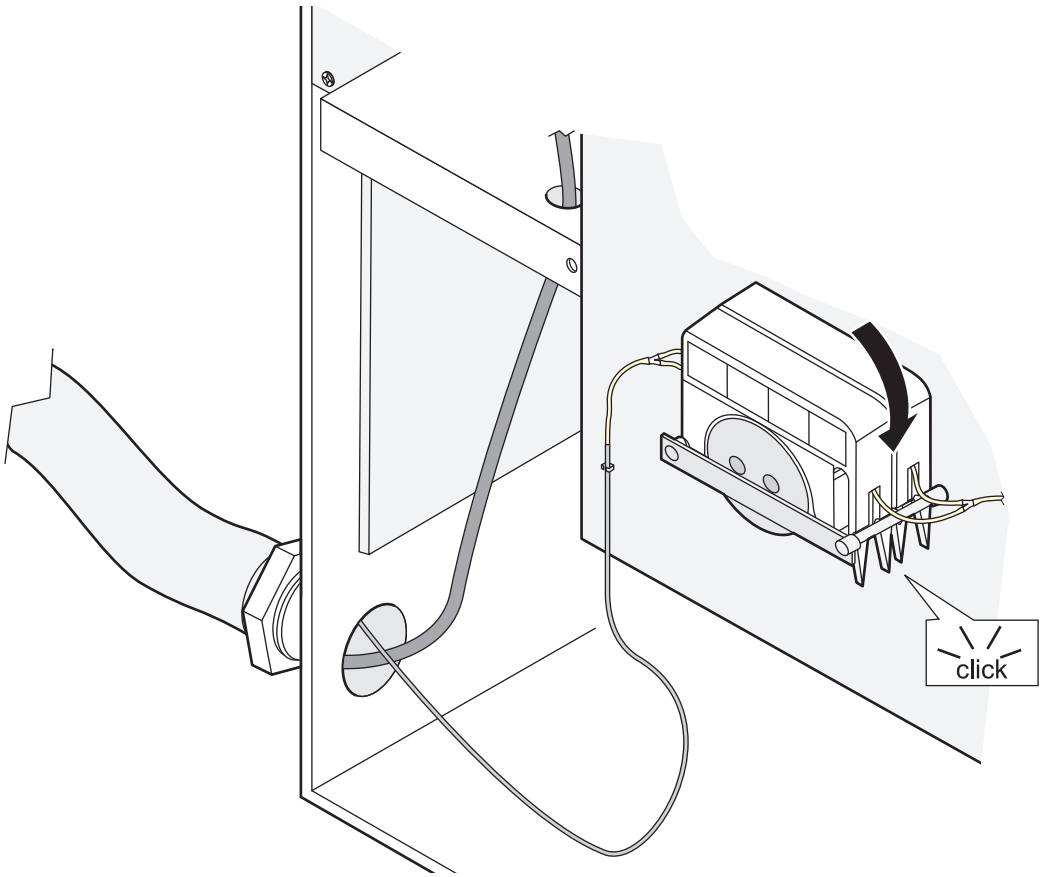


Figure 11 Click pump cassette into place

3.3.3 Install suction tube

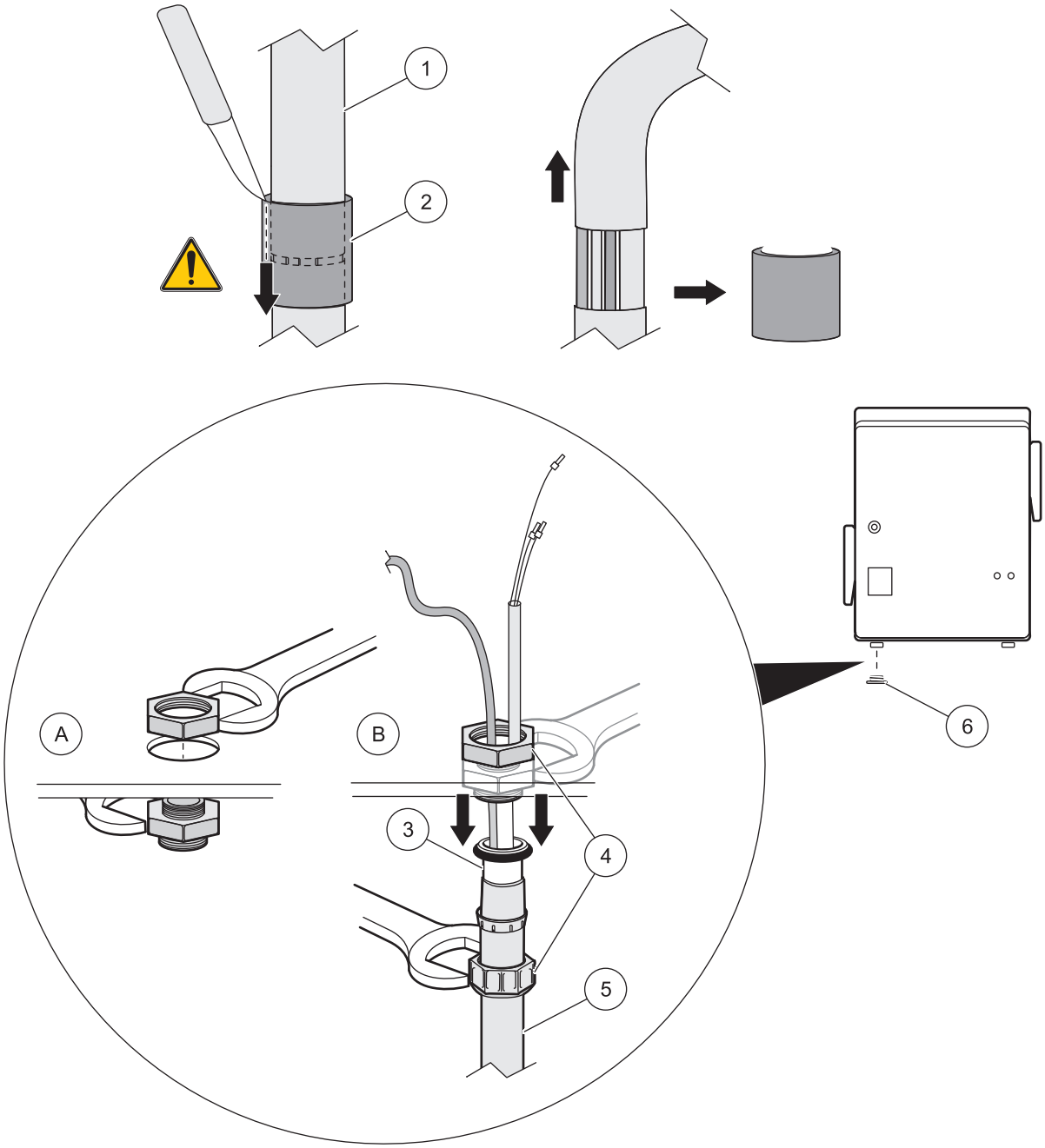


Figure 12 Suction tube connection preparation

1	Protective tube (transportation safety device)	**4**	Cable gland M20 × 1.5
2	Heat-shrink tube	**5**	Suction tube
3	Metal connection	**6**	Dummy plug

NOTICE

Make sure the tubes are connected correctly. The filter module may be damaged if the sample is sucked back via the sample suction tube.

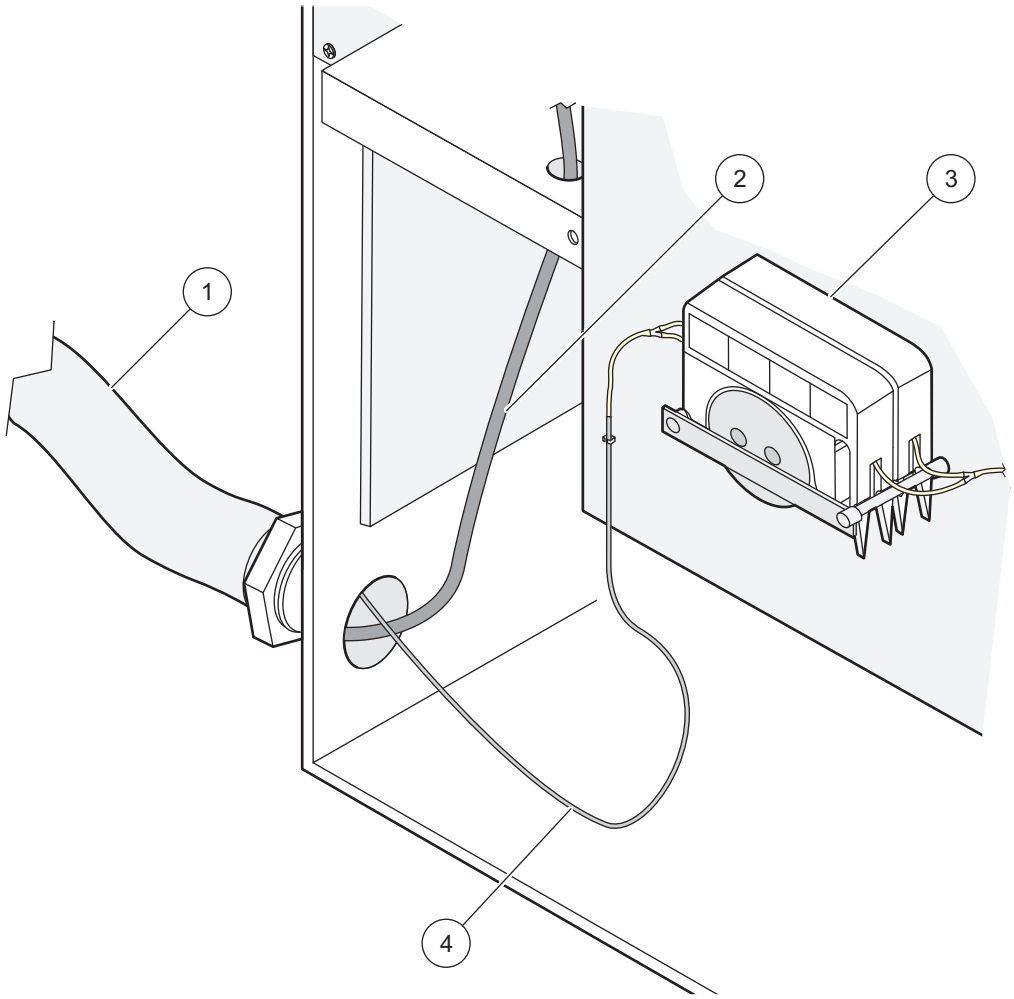


Figure 13 Suction tube connection

1	Suction tube	**3**	Pump cassette
2	Heat tracing connection cable	**4**	Sample suction tube

3.3.4 Install sample tube

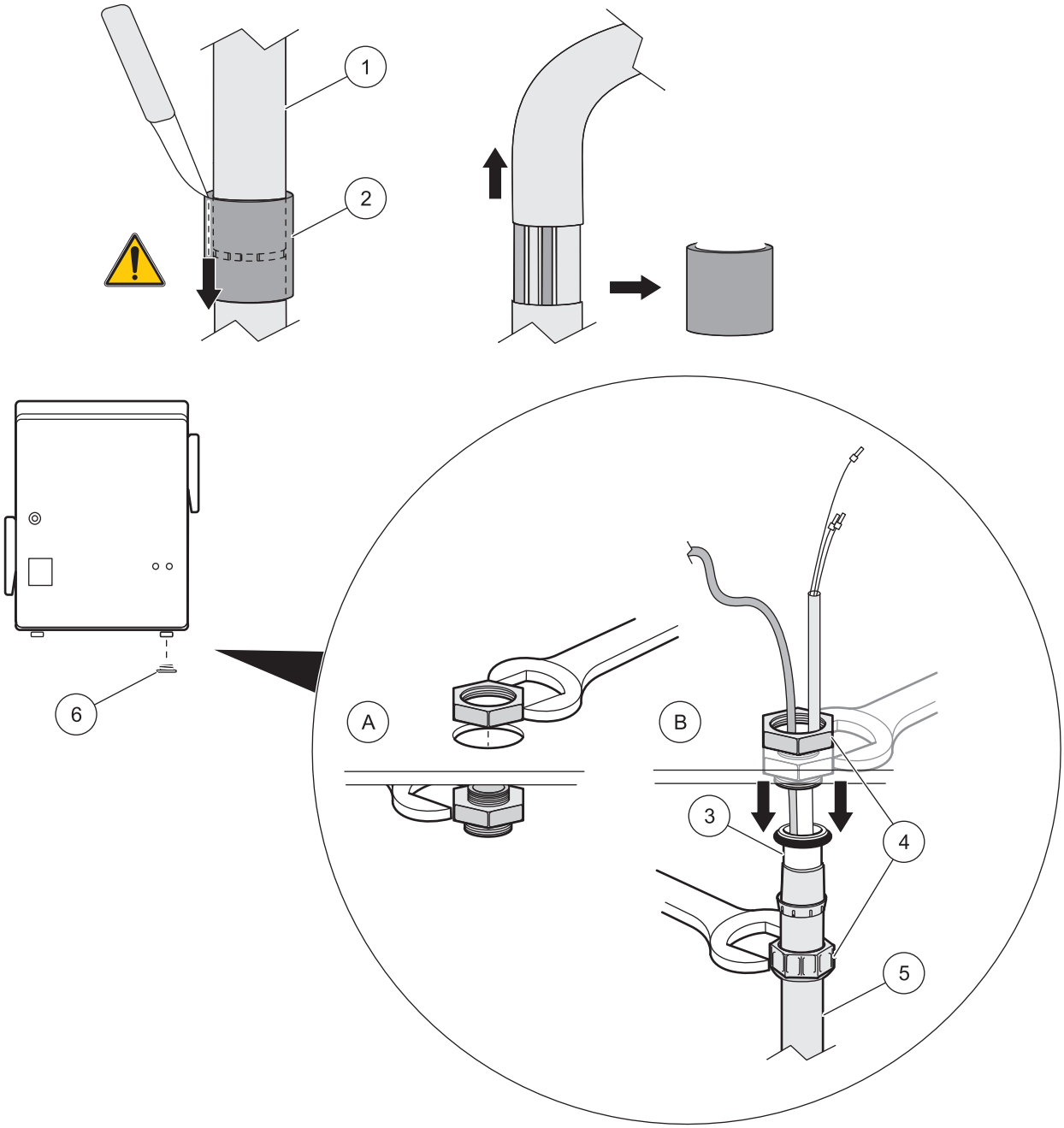


Figure 14 Sample tube connection preparation

1	Protective tube (transportation safety device)	**4**	Cable gland M20 × 1.5
2	Heat-shrink tube	**5**	Suction tube
3	Metal connection	**6**	Dummy plug

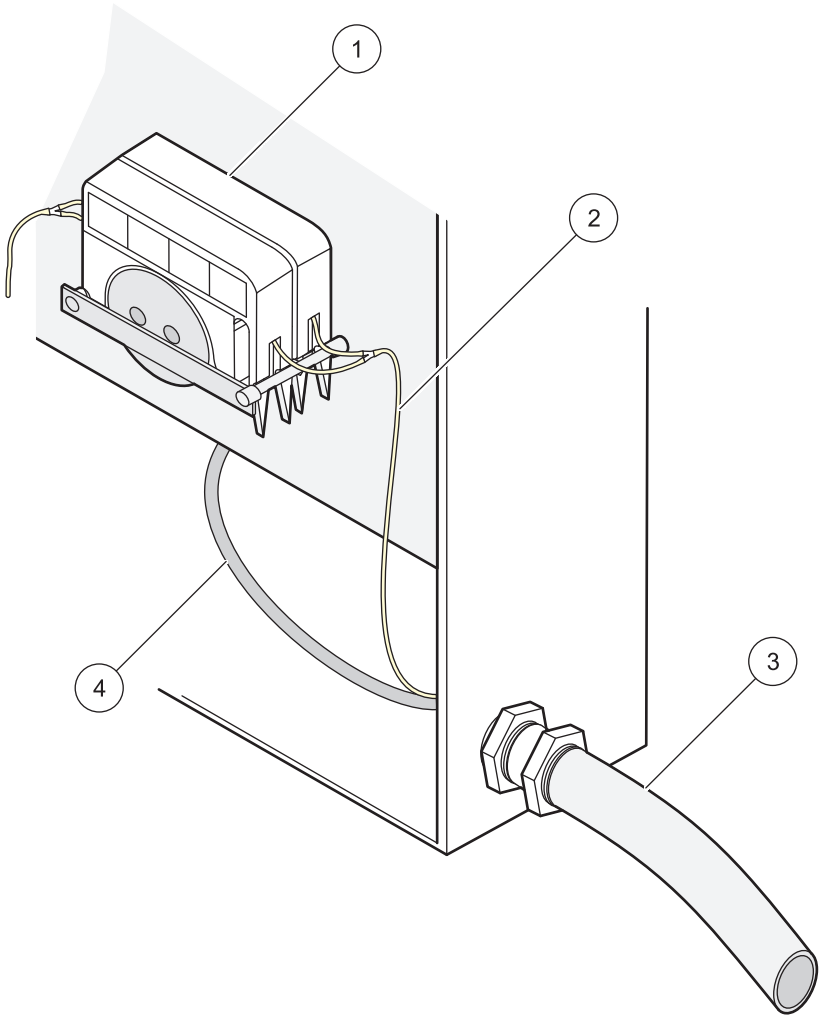


Figure 15 Sample tube connection

1	Pump cassette	**3**	Sample tube
2	Sample pressure tube	**4**	Heat tracing connection cable

3.4 Electrical Connections

⚠ DANGER

Do not connect the electrical supply to the mains until the instrument is completely wired and protected against short circuits.

Sufficiently protect the electrical power supply against short circuits.

For the external power supply, always connect a residual-current circuit breaker (trip current max.: 30 mA) between the mains and the system.

If the instrument is to be installed outdoors, connect a surge arrester between the mains and the system.

If the mains plug of the power supply cable is removed, a suitable double-pole one-way switch must be installed immediately next to the display unit with clear labeling for the power supply.

Products intended by the manufacturer for outdoor use offer a higher level of protection against the penetration of liquids and dust. If these products are connected to a mains outlet with a cable and plug rather than a permanently connected cable, the plug and outlet are much more susceptible to liquid and dust penetration. The operator must sufficiently protect the plug and outlet against liquid and dust penetration in accordance with local safety regulations. If the instrument is to be used outdoors, it must be connected to a suitable outlet with a protection type of at least IP44 (splash protection).

⚠ WARNING

Only qualified experts may perform the tasks described in this section of the manual, in compliance with all locally applicable safety regulations.

NOTICE

Use only earthed sockets for the connection of this device to the power supply.

If it is not clear whether the sockets are earthed, have this checked by a qualified electrician.

In addition to supplying power, the power plug also serves to isolate the device quickly from the mains where necessary.

The entire measurement system has two power plugs (measurement device and control unit). During the disconnection from the mains, it must be made sure that the correct power plug is pulled (e.g. labeling of the sockets).

This is recommended for long-term disuse and can prevent potential dangers in the event of a fault.

Therefore make sure that the sockets to which the device is connected are easy to reach by each user at all times.

NOTICE

On removal of the power plug (fixed installation of mains supply lead), a suitable bipolar circuit breaker must be installed!

NOTICE

Pull out the power plug before opening the device.

1. Make sure that the instrument is disconnected from the mains.
2. Open the housing door.
3. Remove the 4 cross-head screws from the cover (refer to Figure 16 Terminal assignment) and remove the cover.
4. Connect the cable in accordance with Table 1 Terminal assignment.

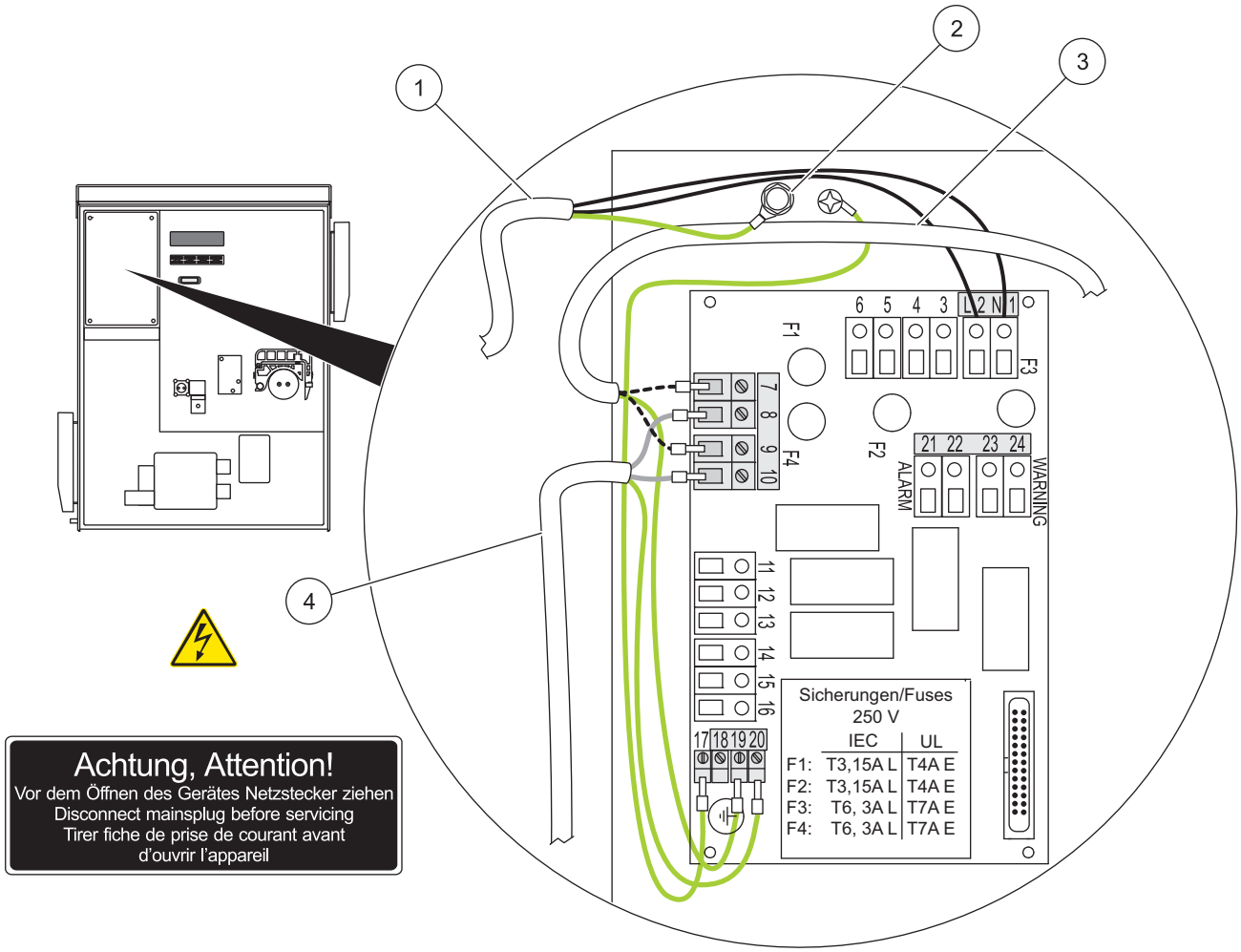


Figure 16 Terminal assignment

1	Power supply cable (power supply)	**3**	Heater connection cable, sample tube
2	Protective conductor connection	**4**	Heater connection cable, suction tube

NOTICE

Route the signal lines (21, 22, 23, 24) separated from the power cable.

Table 1 Terminal assignment

Terminal number	Connection
1	N (230 V AC / 50–60 Hz, Option: 115 V AC)
2	L (230 V AC / 50–60 Hz, Option: 115 V AC)
7	N (sample tube heater)
8	N (suction tube heater)
9	L (sample tube heater)
10	L (suction tube heater)
17/18	Protective conductor for signal line screening
19	Protective conductor for suction tube heater
20	Protective conductor for sample tube heater
21/22	Potential-free fault contact (NO)
23/24	Potential-free warning contact (NO)

3.5 Connection to process measuring instruments

The filtered sample is pumped through the sample suction tube (in the sample tube) to the connected process measuring instruments.

The angle bracket enables the sample tube to be attached to a wall at a distance of approx. 20 cm [7.87 in.] from the process measuring instrument.

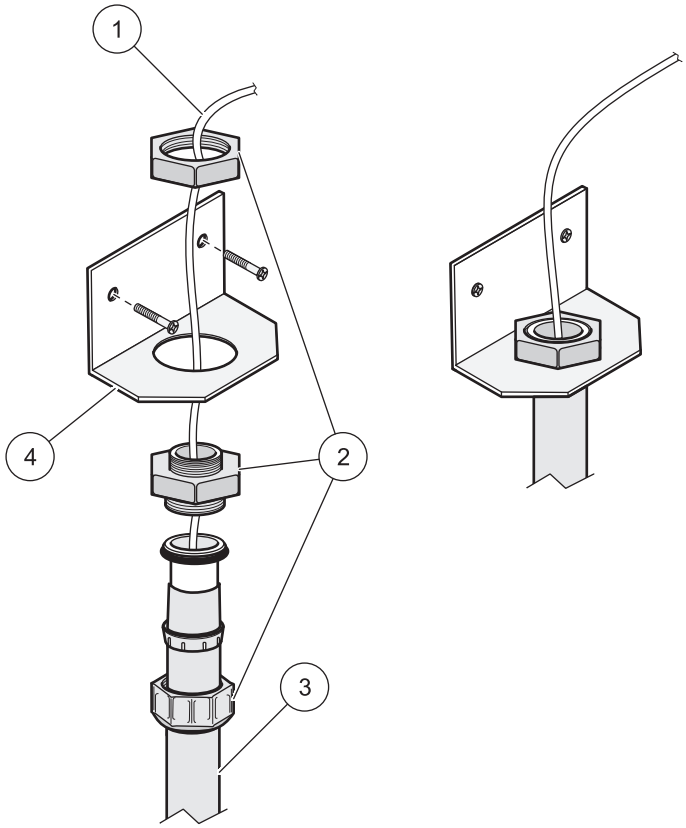


Figure 17 Angle bracket installation

1	Sample pressure tube	**3**	Sample tube
2	Cable gland M20 × 1.5	**4**	Angle bracket

The supplied tube adapter set (LZX701) contains all the adapters required to enable direct connection of the sample pressure tube to the sample feed openings on the process measuring instruments.

If several instruments are supplied by one FILTRAX *eco*, the sample must be fed on from the first instrument to the next via the 2/4 tube (HLS119) to make sure any delay is minimal.

NOTICE

The sample pressure tube must never be disconnected — the pressure buildup in this line would either damage the tubes or cause the tube connections to fly off.

Note: *For detailed information on connection of the sample pressure tube, please refer to the relevant operating instructions for the process measuring instruments.*

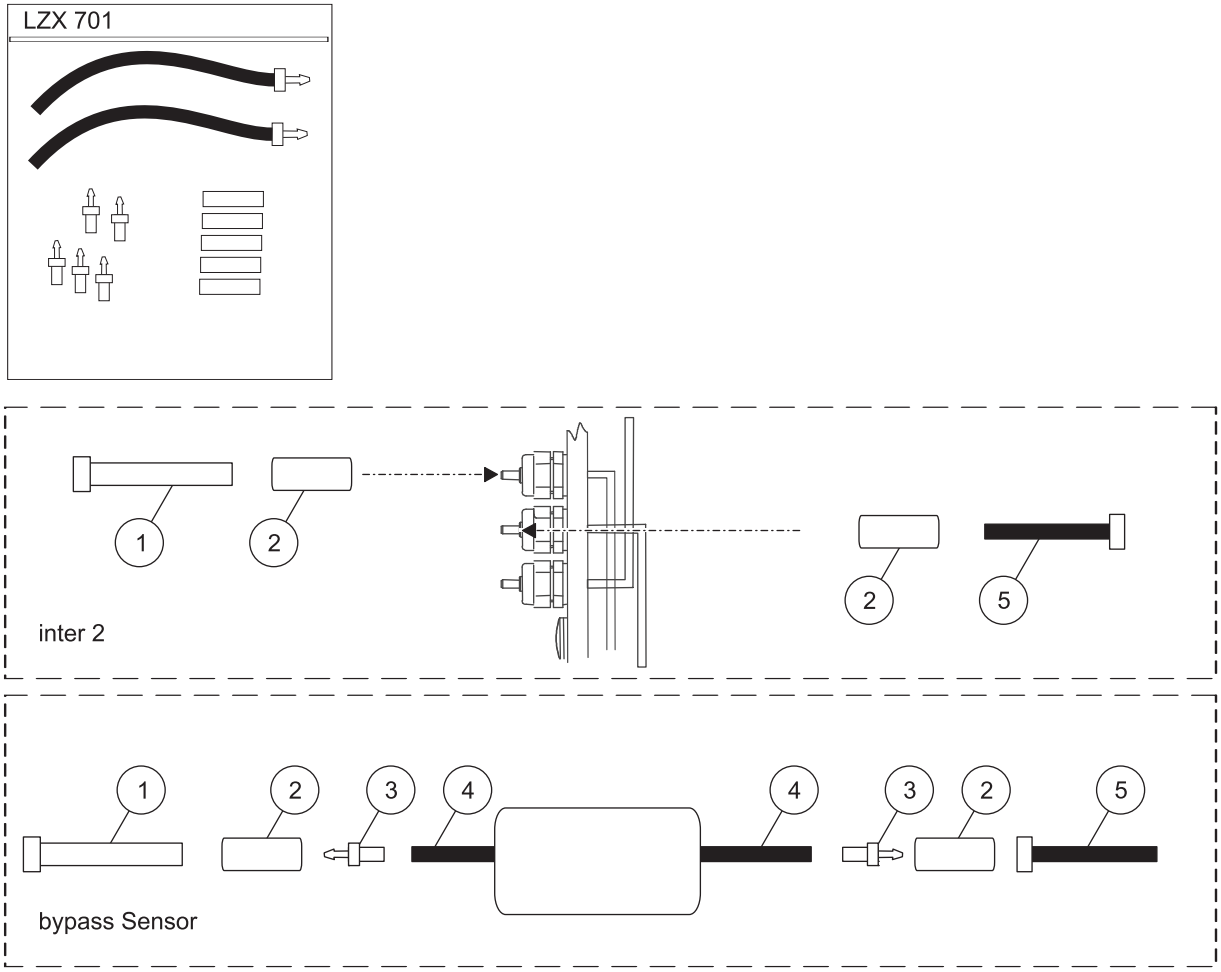


Figure 18 Sample pressure tube connection

1	FILTRAX *eco* sample pressure tube	**4**	4/6 tube
2	Sleeve	**5**	2/4 tube
3	Large fitting		

3.6 Attach filter module to the module carrier

NOTICE

The filter module should only be unpacked directly before commissioning and then quickly attached to the module carrier. The filter membranes are shrink-wrapped in protective plastic; once they have been moistened they must not be allowed to dry out.

NOTICE

The membrane surface is very sensitive!

Refer to section 3.7.1 Filter module on page 29.

3.7 Commission the instrument

3.7.1 Filter module

Once installation is complete, the FILTRAX *eco* can be commissioned.

1. Make sure that the pump cassette is correctly engaged in the control unit (refer to Figure 11 Click pump cassette into place on page 19).
2. Unpack the filter module and hook onto the module carrier using the karabiner (refer to Figure 19, item 1).

NOTICE

Do NOT touch the sensitive filter membrane.

3. Connect the sample tube in accordance with Figure 19.
4. Connect the control unit to the mains and set the instrument parameters (refer to section 4.3 on page 32).

Note: *The black 3 mm tube that protrudes from the filter module is not required when a FILTRAX eco is used.*

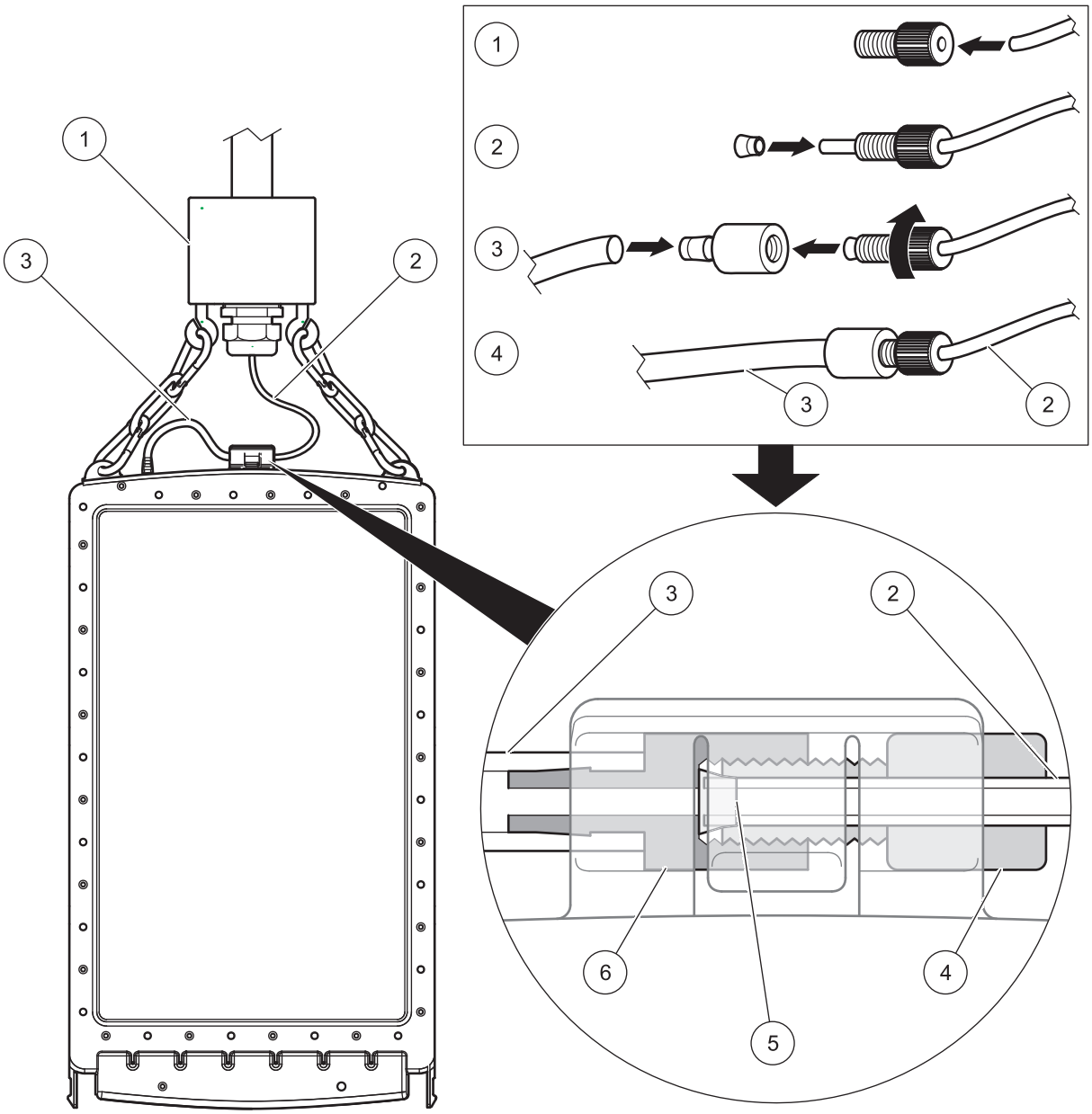


Figure 19 Commission the filter module

1	Module carrier	**4**	Flared screw fitting
2	Sample suction tube	**5**	Clamping ring
3	Sample suction tube, module side	**6**	Tube connecting piece

Section 4 Operation

4.1 Control unit operation

All the instrument functions are software-controlled; they are menu-operated via four keys below the display. The display indicates the operating condition of the heater (Figure 20, item 1). The program menus are accessed by pressing one of the four function keys F1–F4 (Figure 20, item 2) for 3 seconds.

The meaning of the menu buttons (abbreviated) is indicated in the second display line (softkey function):

X = Cancel

✓ = Setting change

∧ = Back to previous menu item

∨ = Move to next menu item



Figure 20 Display

1	Operating condition of the tube heater, alternative: messages, warnings, malfunctions	**2**	Function keys

4.2 Overview of control unit menu

Menu level 1	Menu level 2
+DEVICEDATA for adjusting the instrument parameters	Δ CONTRAST
	LANGUAGE
	HEATER
	HEAT.START
	HEAT.STOP
	DATE
	TIME
	PASSWORD
	SW-VERSION
	SW-CO.PROC.
+SIGNALS for checking internal data when servicing	TEMPERATURE (control unit)

4.2 Overview of control unit menu

+SERVICE for maintenance and functional tests	EXTRACTION
	PREPUMP
	FILTERCLEANING
	+OP.COUNTERS (display and reset)
	+TEST OF FUNCT.
	+SIGNALS
	+DEVICEDATA
	STATUS (output of detailed error messages and acknowledgement)
+OP.COUNTERS (display only)	CLEANED in the
	MODUL
	PUMPTUBES
	PUMP CASSETTE
	PUMP WHEELS
	AIRFILTER CASE

4.3 [+DEVICEDATA] menu

This menu is used to adjust instrument parameters to suit the respective application conditions.

Note: *Normal operation continues while the instrument is in this menu. If no buttons are pressed for over ten minutes, the instrument automatically switches to the operation display.*

4.3.1 Overview of +DEVICEDATA menu

+DEVICEDATA	Setting	Description
Δ **CONTRAST**	–20 to +20	Improves the readability of the display. (Readability depends on the viewing angle and the temperature).
LANGUAGE	D, GB, NL, F, I, E, PL, S	German, English, Dutch, French, Italian, Spanish, Polish, Swedish
HEATER	On, off, timer (time control	Mode of operation for the tube heaters Initial setting: timer
HEAT.START	January to December	Heated activated at the beginning of the selected month Initial setting: October
HEAT.STOP	January to December	Heating deactivated at the end of the selected month Initial setting: March
DATE		Date setting
TIME		Time setting
PASSWORD	4 characters using digits 1–4	Password protection on activation
SW-VERSION	Information only	Instrument software version
SW-CO.PROC.	Information only	Coprocessor software version

4.4 [+SIGNALS] menu

The [+SIGNALS] menu is used for services and manufacturer inspections. It is not required for operation or the adjustment of instrument settings.

Note: *Normal operation continues while the instrument is in this menu. If no buttons are pressed for over ten minutes, the instrument automatically switches to the operation display.*

4.4.1 Overview of +SIGNALS menu

+SIGNALS	Setting	Description
TEMPERATURE (housing)	Information only	Temperature in the control unit in °C or °F

4.5 [+OP.COUNTERS] menu

The [+OP.COUNTERS] menu provides information on the operating time of the various instrument components and wear parts. It is not required for operation or the adjustment of instrument settings.

Note: *Normal operation continues while the instrument is in this menu. If no buttons are pressed for over ten minutes, the instrument automatically switches to the operation display.*

4.5.1 Overview of +OP.COUNTERS menu

+OP.COUNTERS	Description
CLEANED in the	Month when last clean took place, automatically updated via [FILTERCLEANING]
MODUL	Operating time of the filter module in days
P.TUBES IN	Remaining operating time for pump tube set in days (91 - 0 - negative number[1])
P.CARTR. IN	Remaining operating time for pump cassette in days (365 - 0 - negative number[1])
P.ROLL. IN	Remaining operating time for pump rollers in days (365 - 0 - negative number[1])
AIR F.H. IN	Remaining operating time for the two air filters in the control unit in days (91 - 0 - negative number[1]) — the air filter on the air outlet side may not necessarily need to be replaced that often

[1] When replacement date is exceeded.

4.6 [+SERVICE] menu

Important Note: *With the exception of purely visual inspection, all maintenance and service work must be carried out via this menu.*

Note: *When the menu is called up, the message "OK -> NO SAMPLE!" is shown first of allto signify that the activation of this menu interrupts the supply of samples to the measuring instruments immediately. Operation only recommences following a definitive exit from the menu via the keyboard or a called up program.*

When this menu is selected,

- the pump stops immediately
- the red indicator light comes on
- the fault relay is set

Note: *The climate control and heater systems for the control unit and the tubes remain active.*

Note: *The functions of the individual menu items and submenus ([FILTERCLEANING], [OP.COUNTERS], [+TEST OF FUNCT.]) are explained in detail in* *Section 5 Maintenance on page 35* *and section* *6.1 Messages on page 45*. *They are not required for normal operation.*

4.6.1 Overview of +SERVICE menu

+SERVICE	Setting	Description
EXTRACTION	50 to 130% (Initial setting 100% = 600 mL/h, this sample size is produced under normal installation and operating conditions with clean filter modules)	The delivery volume of the pump is set by the speed.
PREPUMP		The pump is activated for ten minutes in order to fill all the tubes. Operation is then resumed automatically.
FILTERCLEANING		Menu-controlled cleaning is described in detail in section 5.2.1 Menu-controlled cleaning tasks on page 39. After each clean, the date in the operating time counter [CLEANED] is automatically updated and operation is resumed.
+OP.COUNTERS		Calls up the [+OP.COUNTERS] menu — all counters can now be reset.
+TEST OF FUNCT.	**Component(s) / Options** Pump: (3 s forward and back), stop Fan housing: on, off Heater housing: on, off Heater line: on, off Warning: on, off Malfunction: on, off Indicator lights: on, off (green/red at same time)	Each of these components can be controlled and tested individually.
+SIGNALS		Calls up the [+SIGNALS] menu.
+DEVICEDATA		Calls up the [+DEVICEDATA] menu.
Status		Detailed description of the error and acknowledgement

⚠ DANGER

Only qualified experts may perform the tasks described in this section of the manual, in compliance with all locally applicable safety regulations.

⚠ DANGER

Potential danger with contact with chemical/biological substances.

Working with chemical samples, standards and reagents can be dangerous.

Make yourself familiar with the necessary safety procedures and the correct handling of the chemicals before use and read and follow all relevant safety data sheets.

Normal operation of this device may require the use of samples that are biologically unsafe.

⚠ WARNING

Observe all cautionary information printed on the original solution containers and safety data sheets prior to their use.

Dispose of all consumed solutions in accordance with the local and national regulations and laws.

Select the type of protective equipment suitable to the concentration and quantity of the dangerous material being used.

Observe instructions and safety information (information on risks and safety) on the containers for the chemicals used.

Wear safety clothing: Lab coat, Safety glasses, Rubber gloves

The manufacturer recommends that a service contract be taken out. This contract extends the warranty period to 5 years and makes sure that all inspection and maintenance tasks are carried out by qualified experts.

Maintenance tasks carried out by the user are restricted to regular visual inspections, the replacement of wear parts and any cleaning procedures that may be required.

5.1 Maintenance tasks

This sample preparation system is only guaranteed to operate reliably and correctly if the maintenance tasks are performed on a regular basis in line with the maintenance schedule.

NOTICE

The sample pressure tube must never be disconnected. The pressure buildup in this line would either damage the tubes or cause the tube connections to fly off.

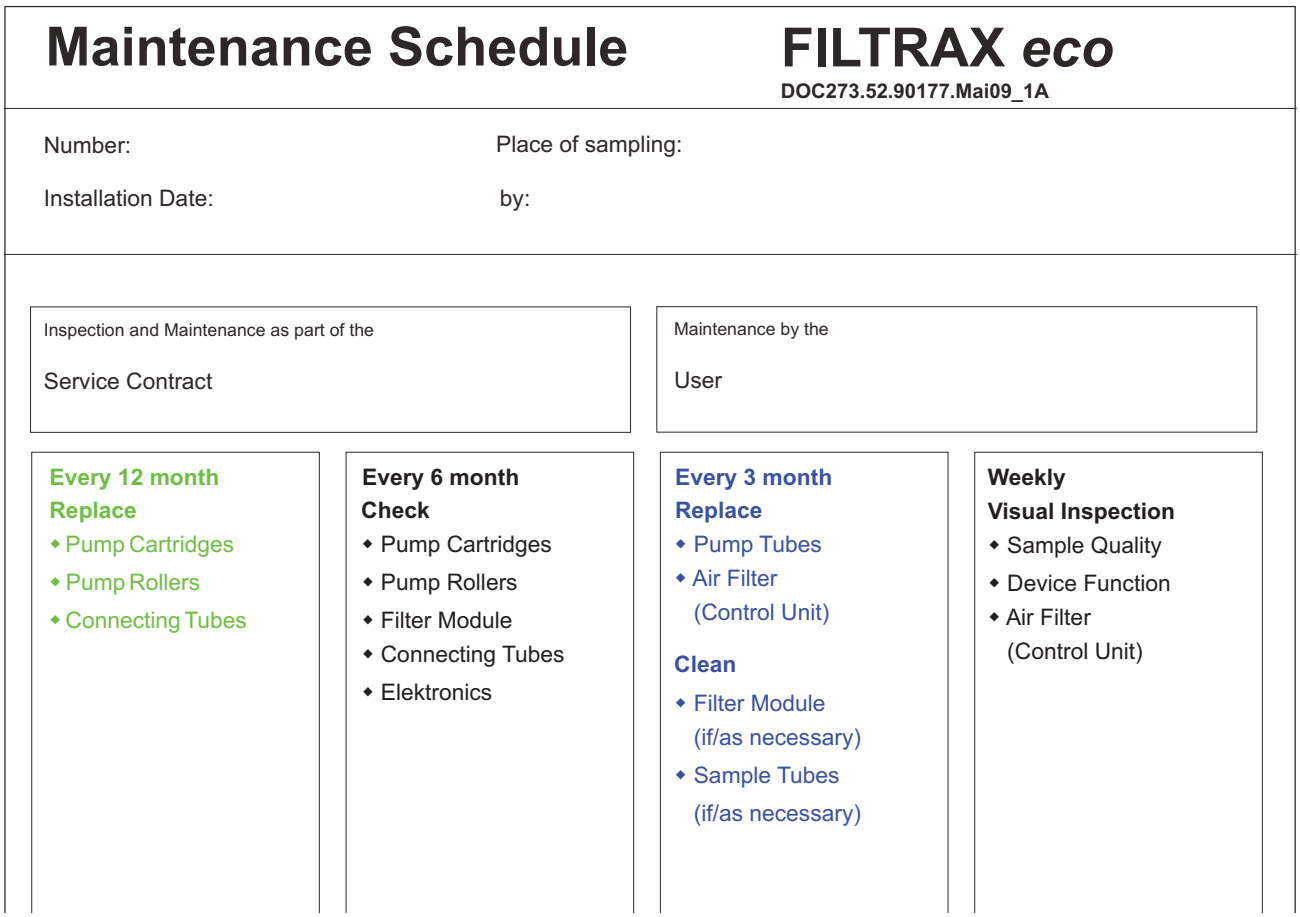


Figure 21 Maintenance schedule FILTRAX *eco*

5.1.1 Weekly

Note: *Once a service contract has been taken out, these tasks are carried out every 6 months by the service department.*

Carry out a visual inspection of the following:

- Quality of the filtered sample
- General instrument functionality
- Condition of the air filter in the control unit

5.1.2 Every 3 months

Note: *Once a service contract has been taken out, these tasks are carried out every 6 months by the service department.*

Important Note: *All maintenance tasks must be carried out via the [+SERVICE] menu.*

In addition to the weekly visual inspection, perform the following:

- Pump tube replacement
- Air filter control unit replacement
  (depending on load, air inlet only)
- Filter module and sample line cleaning,
  menu-controlled cleaning tasks (refer to section 5.2.1 on page 39) (this cleaning interval may vary depending on the application conditions)

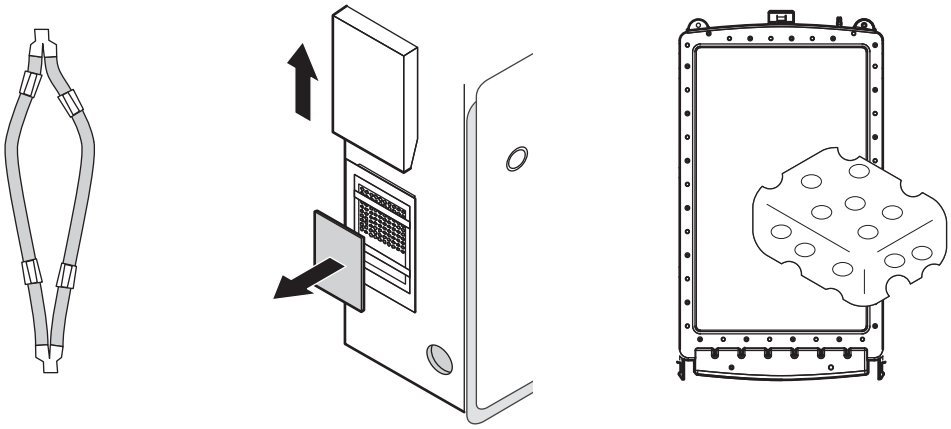


Figure 22 Maintenance tasks every 3 months

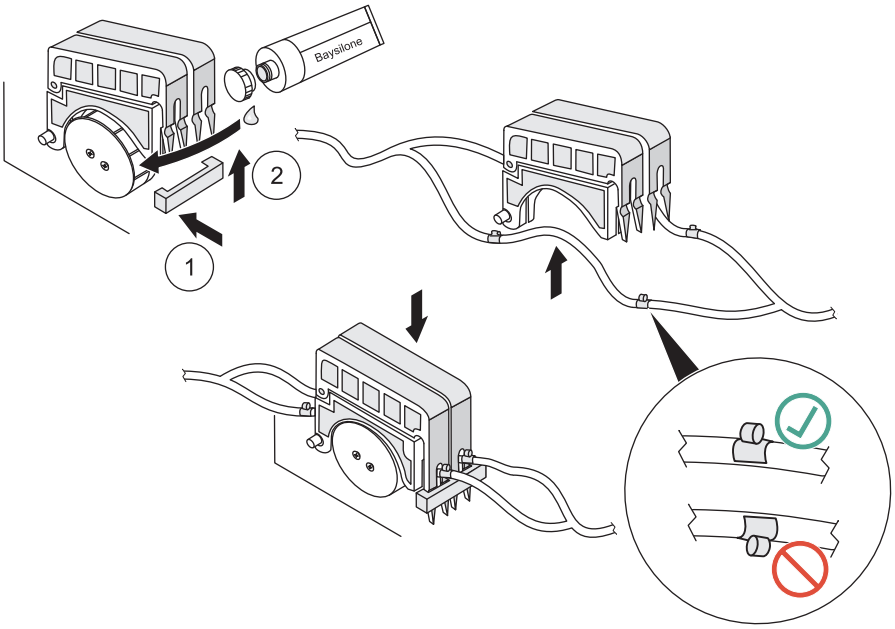


Figure 23 Pump tube replacement

5.1.3 Every 6 months

Additional tasks performed by the customer services department as part of the service contract:

- Inspection of pump cassette and pump rollers
- Inspection of filter module
- Inspection of all connection tubes
- Inspection of the electronics

5.1.4 Every 12 months

Additional tasks performed by the customer services department as part of the service contract:

- Replacement of pump tubes and connection tubes
- Replacement of pump cassette and pump rollers

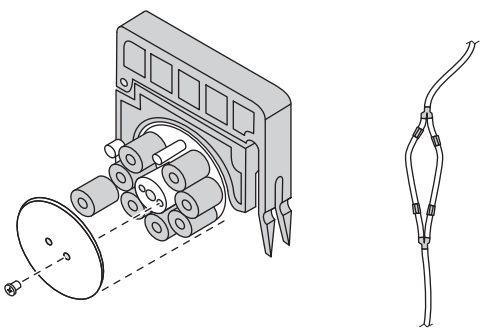


Figure 24 Pump roller replacement

5.2 Cleaning

⚠DANGER

Potential danger with contact with chemical/biological substances.

Working with chemical samples, standards and reagents can be dangerous.

Make yourself familiar with the necessary safety procedures and the correct handling of the chemicals before use and read and follow all relevant safety data sheets.

Normal operation of this device may require the use of samples that are biologically unsafe.

⚠WARNING

Observe all cautionary information printed on the original solution containers and safety data sheets prior to their use.

Dispose of all consumed solutions in accordance with the local and national regulations and laws.

Select the type of protective equipment suitable to the concentration and quantity of the dangerous material being used.

Observe instructions and safety information (information on risks and safety) on the containers for the chemicals used.

Wear safety clothing: Lab coat, Safety glasses, Rubber gloves

5.2.1 Menu-controlled cleaning tasks

Table 2 Menu-controlled cleaning tasks

Action		FILTRAX *eco* display
1	For all connected process measuring instruments and for the FILTRAX *eco*, call up the [+SERVICE] menu. Next, call up the [+FILTERCLEANING] menu.	+FILTERCLEANING NO SAMPLE!
2	Lift the module carrier out of the basin or channel and confirm with [OK].	REM.MOD.CARRIER
3	Detach the sample tube from the module carrier, disconnect the filter module from the module carrier and confirm with [OK].	REMOVE MODUL
NOTICE		
Do not touch the sensitive membrane and never allow it to dry out. Only store the filter module in the plastic bags provided.		

Table 2 Menu-controlled cleaning tasks (Continued)

Action	FILTRAX *eco* display
4 Carefully clean the filter module with 5% chlorine bleach (sodium hypochlorite) or 5% hydrochloric acid (for high concentrations of iron) and a soft sponge. Do not contaminate the sample suction line in the process.	CLEAN MODUL
⚠WARNING	
Observe the safety regulations related to handling the cleaning solution and wear appropriate protective clothing. Do not allow chlorine bleach to come into contact with acidic reagents as this may cause chorine vapors to form.	
5 Attach the filter module to the module carrier again after 10 minutes' exposure time, without rinsing with water beforehand. To clean the sample tube with the solution still present in the filter, confirm the cleaning operation with [OK].	
6 Immerse the module carrier once more and confirm with [OK].	REP.MOD.CARRIER
7 Active sample line cleaning with the [PREPUMP] function (600 seconds — counter runs backwards, the operating time counter date [CLEANED] is automatically updated). Once the prepump program is complete, commission all connected instruments.	PREPUMP 600 s

5.2.2 Cleaning tasks with optional cleaning container LZX216

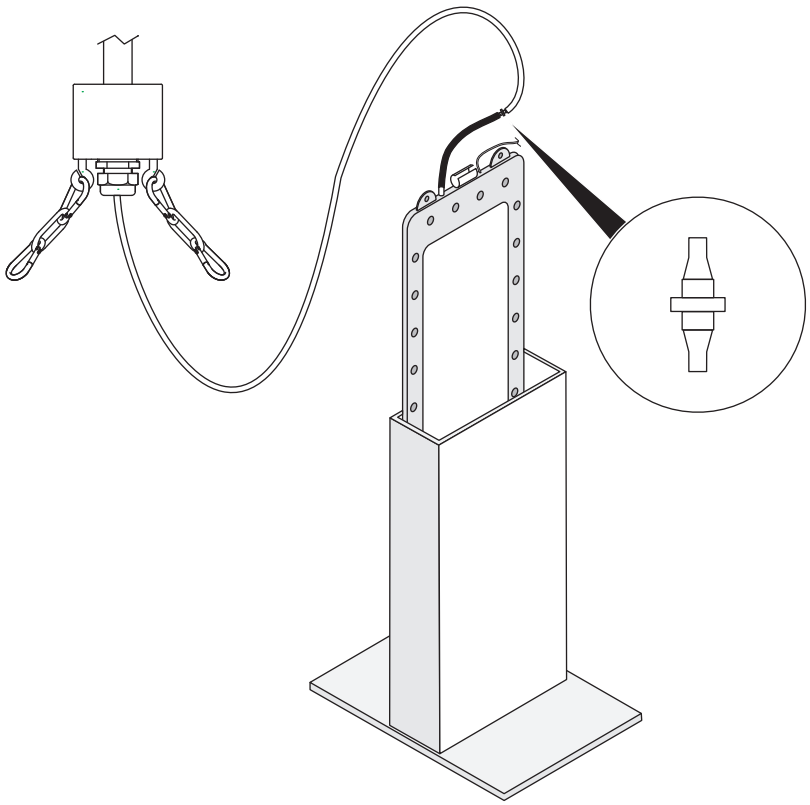


Figure 25 Cleaning container LZX216

Table 3 Cleaning tasks with optional cleaning container LZX216

Action	FILTRAX *eco* display
1 Avoid a situation where the process measuring instruments suck in cleaning solution. For all connected process measuring instruments and for the FILTRAX *eco*, call up the [+SERVICE] menu. Select the [+FILTERCLEANING] menu.	[+FILTERCLEANING], NO SAMPLE
2 Lift the module carrier out of the basin or channel and confirm with [OK].	REM.MOD.CARRIER
3 Detach the sample tube from the module carrier, disconnect the filter module from the module carrier and confirm with [OK].	REMOVE MODUL
NOTICE	
Do not touch the sensitive membrane and never allow it to dry out. Only store the filter module in the plastic bags provided.	
4 Slide the filter module into the cleaning container (tube connection in accordance with Figure 25 on page 40).	CLEAN MODUL
5 Carefully fill the cleaning container with 5% chlorine bleach (sodium hypochlorite).	
⚠WARNING	
Observe the safety regulations related to handling the cleaning solution and wear appropriate protective clothing. Do not allow chlorine bleach to come into contact with acidic reagents as this may cause chorine vapors to form.	
6 Exposure time: 10 minutes. Confirm afterwards with [OK]. Clean again mechanically as required if there is significant contamination.	REP.MOD.CARRIER
7 Activate sample line cleaning with the [PREPUMP] function (counter runs backwards from 600 seconds. The operating time counter date [CLEANED] is automatically updated).	PREPUMP 600 s (runs backwards to 0)
8 Attach the filter module to the module carrier again and immerse the module carrier once more at the measuring location.	
9 Call up the [+SERVICE] menu and then the [PREPUMP] function.	[+SERVICE] PREPUMP 600 s (runs backwards to 0)
10 After 10–15 minutes, commission all instruments.	

5.2.3 Cleaning tasks with optional cleaning set LZX217

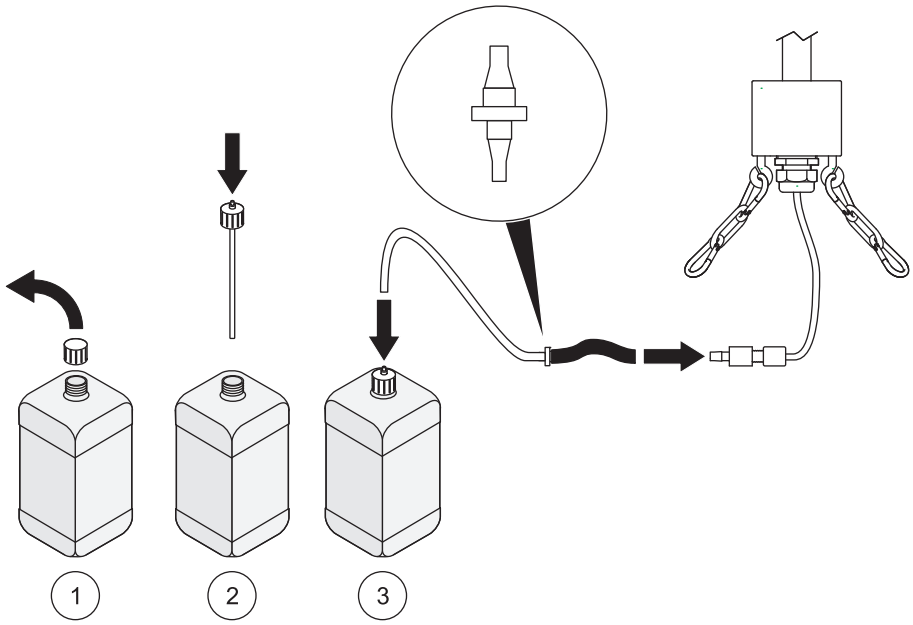


Figure 26 Cleaning set LZX217

Table 4 Cleaning tasks with optional cleaning set LZX217

Action	Menu/acknowledgement
1 Avoid a situation where the process measuring instruments suck in cleaning solution. For all connected process measuring instruments and for the FILTRAX *eco*, call up the [+SERVICE] menu. Select the [+FILTERCLEANING] menu.	[+FILTERCLEANING], NO SAMPLE
2 Lift the module carrier out of the basin or channel and confirm twice with [OK].	REM.MOD.CARRIER REMOVE MODUL
3 Carefully fill the cleaning bottle with 5% chlorine bleach (sodium hypochlorite).	CLEAN MODUL
⚠WARNING	
Observe the safety regulations related to handling the cleaning solution and wear appropriate protective clothing. Do not allow chlorine bleach to come into contact with acidic reagents as this may cause chorine vapors to form.	
4 Detach the sample suction tube at the module side (refer to Figure 19 on page 30) and confirm with [OK] (tube connection in accordance with Figure 26 on page 42).	
5 Active sample line cleaning with the [PREPUMP] function (counter runs backwards from 600 seconds. The operating time counter date [CLEANED] is updated automatically.	PREPUMP 600 s (runs backwards to 0)
6 Connect the filter module as before and immerse the module carrier once more at the measurement location	
7 Call up the [+SERVICE] menu and then the [PREPUMP] function.	[+SERVICE] PREPUMP 600 s (runs backwards to 0)
8 After 10–15 minutes, commission all instruments.	

5.3 Instrument decommissioning and storage

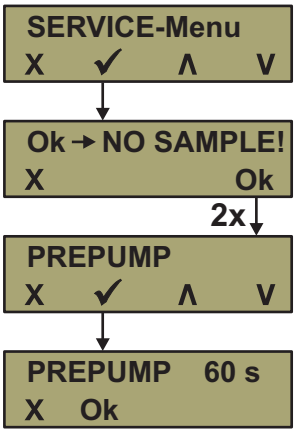
For outdoor installations, the control unit should remain permanently in operation to make sure the climate control is protected against heat and frost.

5.3.1 Filter module

If the system is decommissioned:

1. Remove the filter module from the basin.
2. Remove the sample tube.
3. Remove the filter module from the module carrier.
4. Clean the filter module
   (refer to Section 5 Maintenance on page 35).
5. Pack the filter module in a plastic bag (EYV017) to protect it from drying out.

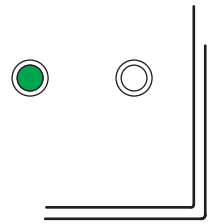
5.3.2 Control unit



6. Select the [+SERVICE] menu and confirm.
7. Remove the suction tube and sample tube (refer to section 3.3.3 Install suction tube on page 20).
8. Select the [PREPUMP] menu and confirm to allow the internal tube system to drain.
9. Select the [+SERVICE] menu and confirm.
10. Disengage the pump cassette (refer to Figure 23 Pump tube replacement on page 38).
11. Disconnect the system from the mains.
12. Uninstall the control unit and store in a dry location.

Section 6 Troubleshooting

6.1 Messages

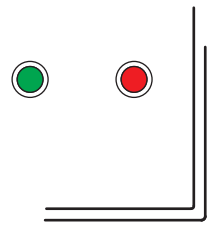


Only text is displayed to indicate that a wear part needs replacing; — the green indicator light is lit.

Table 5 Messages

Messages displayed	Definition	Resolution
AIRFILTER CASE	The operating time counter for the control unit air filter [AIR F.H.] has expired	Replace the control unit air filter and reset the operating time counter.
PUMP WHEELS	The operating timer for the pump rollers [P.ROLL.] has expired	Replace the pump rollers and reset the operating time counter.
Pump cassette	The operating timer for the pump cassette [P.CARTR] has expired	Replace the pump cassette and reset the operating time counter.

6.2 Warnings



Text is displayed — the red and green indicator lights are lit and the warning relay contact is set.

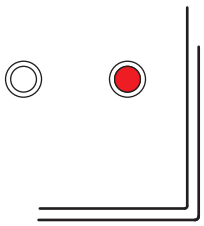
NOTICE

The instrument may be damaged. Take appropriate counteractive measures as soon as possible.

Table 6 Warnings

Warnings displayed	Definition	Resolution
PUMPTUBES	The operating timer for the pump tubes [P.TUBES] has expired	Replace the pump tubes and reset the operating time counter.
TEMPERATURE temperature	The temperature in the control unit is too high.	Check the fan in the control unit and replace the filter pads if required. Reduce the ambient temperature.
TEST SETTINGS	Some settings may have been lost from the [+DEVICEDATA] menu.	Check all instrument settings in the [+DEVICEDATA] menu and the [+SERVICE] menu.

6.3 Malfunctions



Text is displayed — the red indicator light is lit and the fault relay contact is set.

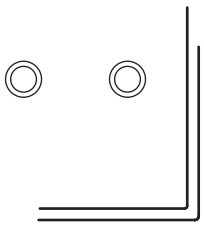
NOTICE

The instrument may be damaged. Take appropriate counteractive measures as soon as possible.

Table 7 Malfunctions

Malfunctions displayed	Definition	Resolution
WARM UP MODE!	The temperature in the housing is < 1 °C [34 °F], the instrument is warming up	Wait until the heater has raised the temperature inside the housing to > 1 °C [34 °F] — this warm-up phase then takes another 30 minutes. Keep the door closed during this time.
DEVICE ERROR	Serious electronic error/bus error. Normal operation no longer possible.	Unplug from the mains for 1 minute. If the error is still present: Call customer service.
TEMP.SENSOR	Temperature sensor faulty or not installed ***Note:*** *Normal operation is stopped because it is not possible to regulate the temperature.*	Check the temperature sensor connection. If the error is still present: Call customer service.

6.4 Voltage drop (power failure)



If the power supply is interrupted (e.g. due to a power failure), no indicator light is lit. The warning relay contact and fault relay contact are automatically closed.

Section 7 Spare Parts and Accessories

7.1 Replacement parts

Description	Catalog number
Baysilone paste	EZH051
Sample tube, 2 m [6.56 ft] unheated	LZX675
Sample tube, 2 m [6.56 ft] heated 230 V	LZY679
Sample tube, 2 m [6.56 ft] heated 115 V	LZY680
Sample tube, 10 m [32.8 ft] heated 230 V	LZX672
Sample tube, 10 m [32.8 ft] heated 115 V	LZX671
Sample tube, 20 m [65.6 ft] heated 230 V	LZX674
Sample tube, 20 m [65.6 ft] heated 115 V	LZX673
Sample tube, 30 m [98.4 ft] heated 230 V	LZX765
Filter pad set (8 pieces) for control unit	LZX017
Filter module, fully packed	LZX677
Plastic bag for filter module storage	EYV017
Set of tubes for one year	LZY690
Module carrier complete with 5 m [16.4 ft] 230 V suction tube	LZY678
Module carrier complete with 5 m [16.4 ft] 115 V suction tube	LZY677
Sample connection tube (external), 6 m [19.7 ft], 2/4 mm [0.07/0.15 in.], black	HLS191
Pump cassette	LZP777
2-channel pump rollers (5 pieces)	LZX019

7.2 Accessories

Description	Catalog number
Basin edge attachment for module carrier	LZX414.00.00000
Basin edge attachment for module carrier (assembly pipe with slot on side)	LZX414.00.40000
Control unit bracket	LZX676
Tube adapter set for instruments connected in series	LZX701
Pipe clamps	EHK063
Second attachment point for assembly pipe (for long struts)	LZX456
Cleaning container	LZX216
Cleaning set	LZX217

Section 8 Warranty and Liability

The manufacturer warrants that the product supplied is free of material and manufacturing defects and undertakes the obligation to repair or replace any defective parts at zero cost.

The warranty period for instruments is 24 months. If a service contract is taken out within 6 months of purchase, the warranty period is extended to 60 months.

With the exclusion of further claims, the supplier is liable for defects including the lack of assured properties as follows: All those parts that, within the warranty period calculated from the day of the transfer of risk, can be demonstrated to have become unusable or that can only be used with significant limitations due to a situation present prior to the transfer of risk, in particular due to incorrect design, poor materials or inadequate finish, will be improved or replaced at the supplier's discretion. The identification of such defects must be reported to the supplier in writing without delay, but no later than 7 days after the identification of the fault. If the customer fails to notify the supplier, the product is considered approved despite the defect. Further liability for any direct or indirect damages is not accepted.

If instrument-specific maintenance and servicing work defined by the supplier is to be performed within the warranty period by the customer (maintenance) or by the supplier (servicing) and these requirements are not carried out, claims for damages due to the failure to comply with the requirements are rendered void.

Any further claims, in particular claims for consequential damages, cannot be made.

Consumables and damage caused by improper handling, unsafe assembly or by incorrect use are excluded from this provision.

Process instruments of the manufacturer are of proven reliability in many applications and are therefore often used in automatic control loops to provide the most economical operation possible for the related process.

To avoid or limit consequential damage, it is therefore recommended to design the control loop such that a malfunction in an instrument results in an automatic change over to the backup control system, which is the most secure operating condition for the environment and for the process.

Index

A

Accessories 47

C

Cleaning 39
  with optional cleaning container 40
  with optional cleaning set 42
Cleaning tasks 35
  menu-controlled 39
Connections
  electrical 24
  process measuring instruments 26
Control unit
  decommission 43
  menu overview 31
  operation 31

D

Documentation 47

E

Error messages 45

F

Filter module
  attach 28
  commission 29
  decommission 43
  design 9
Functional description 8

H

Hazard information 7

I

Installation 15, 17

M

Maintenance
  annual 38
  every 3 months 37
  every 6 months 38
  weekly 36
Maintenance schedule 36
Malfunctions 46

P

Power failure 46
Precautionary labels 7
Pump cassette
  disengage 38
  install 19

S

Sample tube 12
  install 22
Service contract 35, 49
Spare parts 47
Specifications 5
Suction tube 12
  install 20

T

Troubleshooting 45

U

Unpacking 16

W

Warnings 45

HACH COMPANY World Headquarters
P.O. Box 389, Loveland, CO 80539-0389 U.S.A.
Tel. (970) 669-3050
(800) 227-4224 (U.S.A. only)
Fax (970) 669-2932
orders@hach.com
www.hach.com

HACH LANGE GMBH
Willstätterstraße 11
D-40549 Düsseldorf, Germany
Tel. +49 (0) 2 11 52 88-320
Fax +49 (0) 2 11 52 88-210
info-de@hach.com
www.de.hach.com

HACH LANGE Sàrl
6, route de Compois
1222 Vésenaz
SWITZERLAND
Tel. +41 22 594 6400
Fax +41 22 594 6499



© Hach Company/Hach Lange GmbH, 2009, 2012, 2021. All rights reserved. Printed in Germany
08/2021, Edition 4