DOC013.52.90205

BÜHLER 3010, 3900, 4010–4410

Short Manual

1/2017, Edition 3

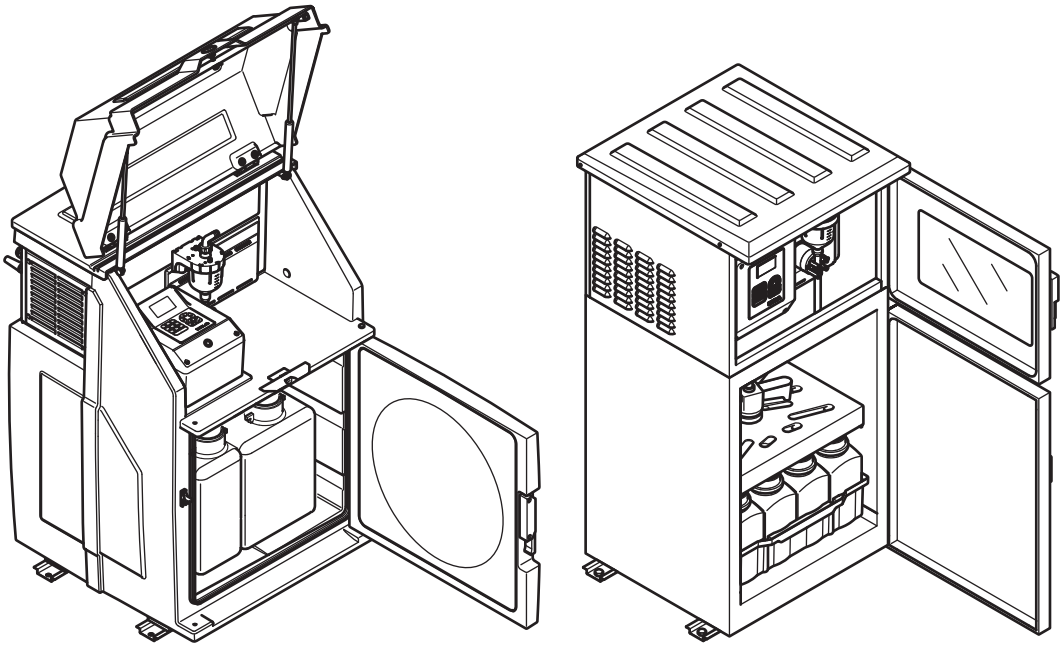


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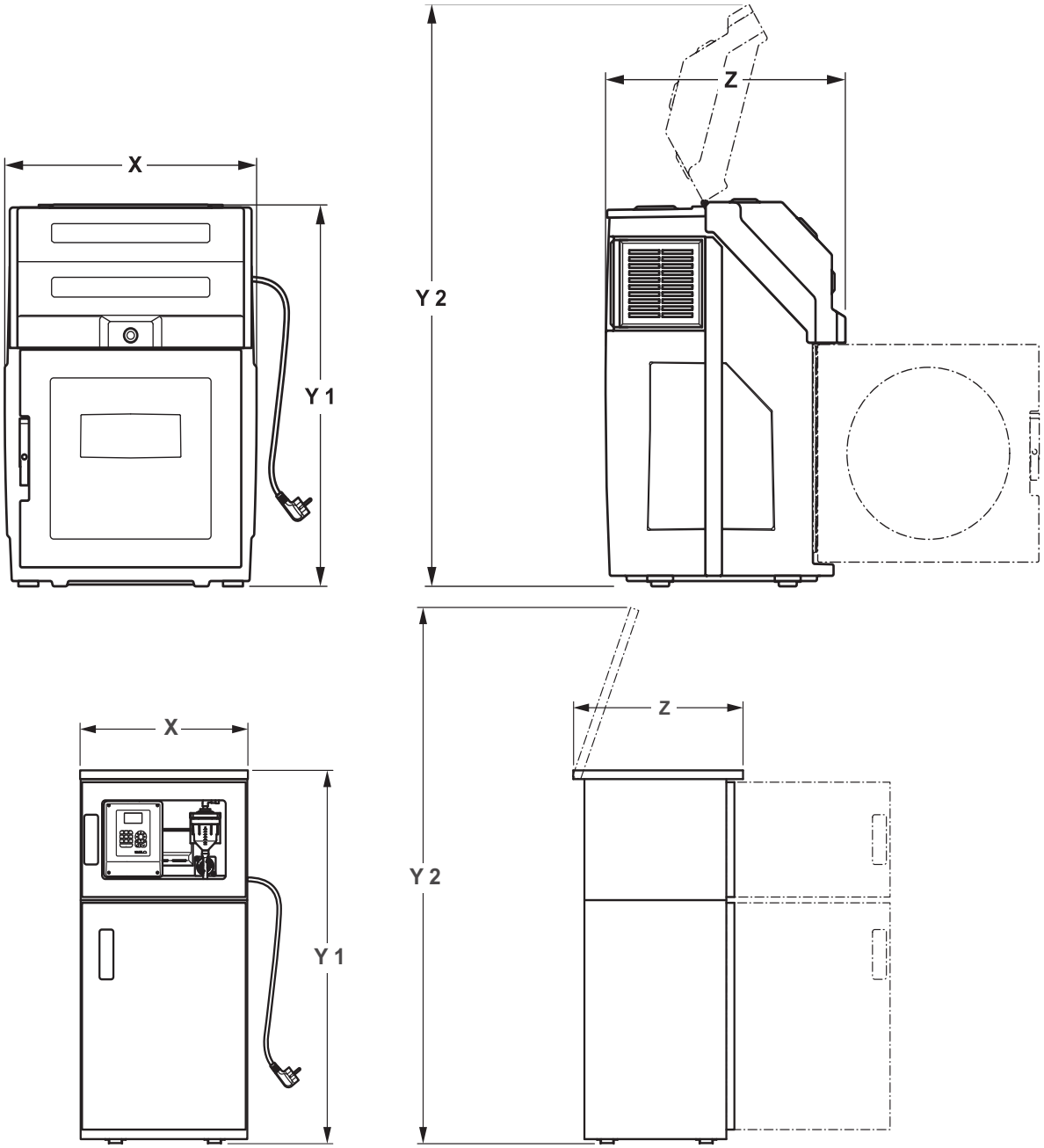
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Section 1 Specifications

Specifications are subject to change without notice.

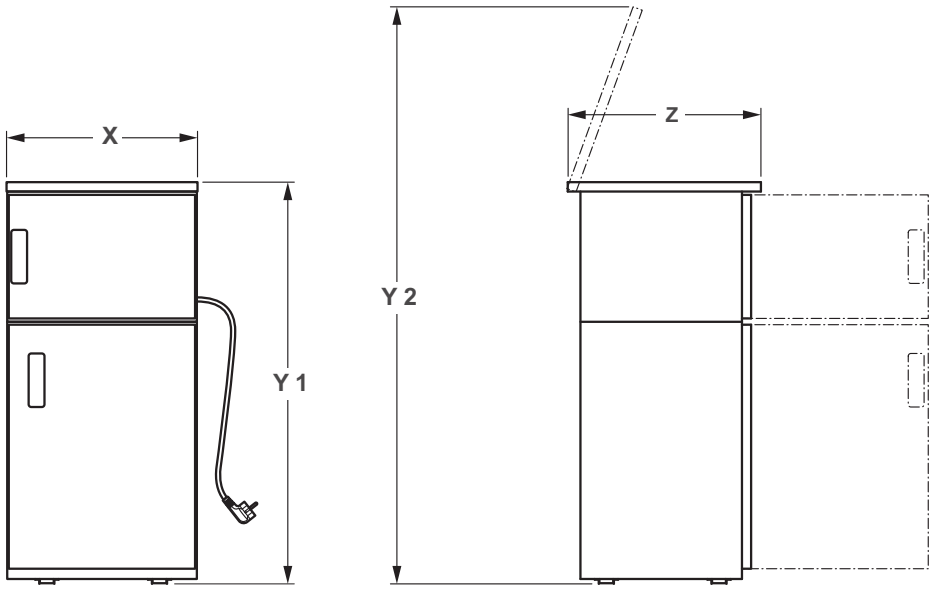
Electrics	
Power supply	230 V/50 Hz.,16 A fuse
Power consumption	approx. 350 VA
Environment	
Medium temperature	0 to +40 °C [32 to 104 °F]
Ambient temperature	–20 to +40 °C [–4 to 104 °F]
Delivery height	< 8 m [26.2 ft}
General specifications	
Maintenance requirements	Maintenance-free
Weight	See Figure 11, page 18
Dimensions (W × H × D)	See Figure 1
Certification	
Certification	CE compliant, MCERTS (not 3010, 3900) Sampling in accordance with ISO 5667-2/3-10

1.1 Dimensions



	X mm [in.]	Y 1 mm [in.]	Y 2 mm [in.]	Z mm [in.]
BÜHLER 3010	760 [30]	1100 [43.3]	1640 [64.6]	725 [28.5]
BÜHLER 4010	605 [23.8]	1325 [52.2]	1895 [74.6]	645 [25.4]
BÜHLER 4110	605 [23.8]	1475 [58.1]	2030 [79.9]	645 [25.4]
BÜHLER 4210 (23 bottles)	605 [23.8]	1325 [52.2]	1895 [74.6]	645 [25.4]
BÜHLER 4210 (2–12 bottles)	715 [28.1]	1415 [55.7]	2120 [83.5]	810 [31.9]
BÜHLER 4410 (24 bottles)	605 [23.8]	1325 [52.2]	1895 [74.6]	645 [25.4]

Figure 1 Dimensions 3010, 4010 - 4410



	X mm [in.]	Y 1 mm [in.]	Y 2 mm [in.]	Z mm [in.]
BÜHLER 3900	625 [24.6]	1125 [44.3]	1695 [66.7]	648 [25.5]

Figure 2 Dimensions 3900

Section 2 General information

2.1 Safety information

Please read this entire manual before the equipment is unpacked, set up or operated. Pay attention to all danger and caution statements. Personal injury or damage to the equipment could occur if they are not observed.

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 Hazard information in this manual



DANGER

Indicates a potentially or imminently hazardous situation which, if not avoided, will result 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 or imminently hazardous situation that could result in minor or moderate injury.

Important note: *Information that requires special emphasis.*

Note: *Information that supplements points in the main text.*

2.1.2 Warning labels

Read all labels and notices attached to the equipment. Personal injury or damage to the equipment could occur if they are not observed. Any symbol on the equipment will appear along with a caution statement in the manual.

	This symbol, if noted on the instrument, references the user manual for operation and/or safety information.
	This symbol, when noted on a product enclosure or barrier, indicates that a risk of electrical shock and/or electrocution exists.
	This symbol may appear on the product and indicates the need for protective eye wear.
	This symbol may appear on the product and identifies the connection point for the protective ground.

	When this symbol appears on the product, it identifies the location of a fuse or a current limiter.
	Electrical equipment marked with this symbol may not be disposed of in European domestic or public disposal systems after 12 August 2005. In conformity with European local and national regulations (EU Directive 2002/96/EC), European electrical equipment users must now return old or end-of life equipment to the manufacturer for disposal at no charge to the user. ***Note:*** *For return for recycling, please contact the equipment manufacturer or supplier for instructions on how to return end-of-life equipment, manufacturer-supplied electrical accessories, and all auxiliary items for proper disposal.*

2.2 General information

2.2.1 Areas of application

The equipment is used for sampling aqueous liquids with a temperature between 0°C and 40°C [32 to 104 °F].

2.2.2 Functional description

The equipment provides temporary storage for liquids of a specified volume so that they can be analyzed.

2.3 Scope of delivery

The equipment is supplied with a tube and a short manual.
If you require further information, you can order the operating instructions (refer to Section 6 Spare parts and accessories, page 57) from the manufacturer or you can download it from the Internet.

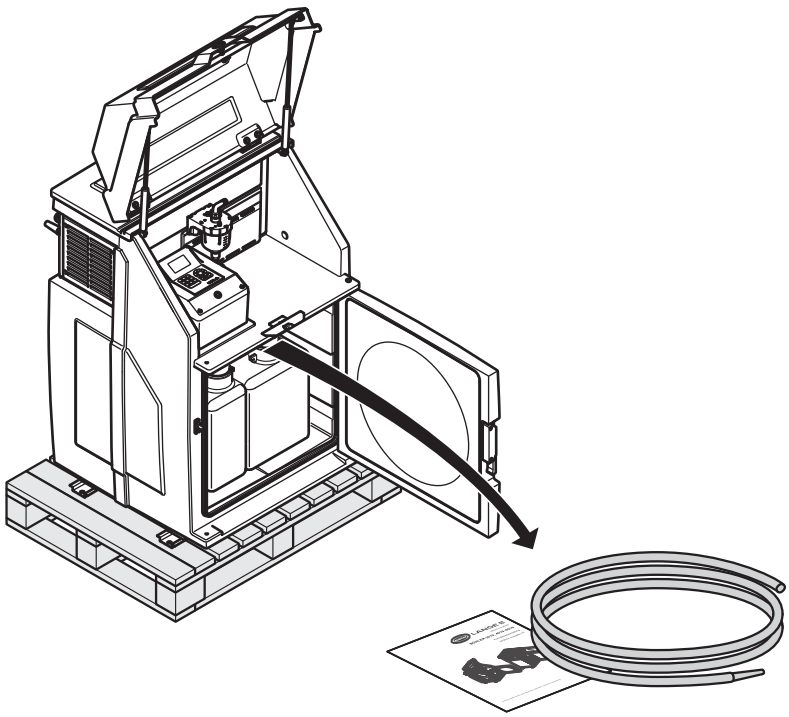


Figure 3 Scope of delivery (3010)

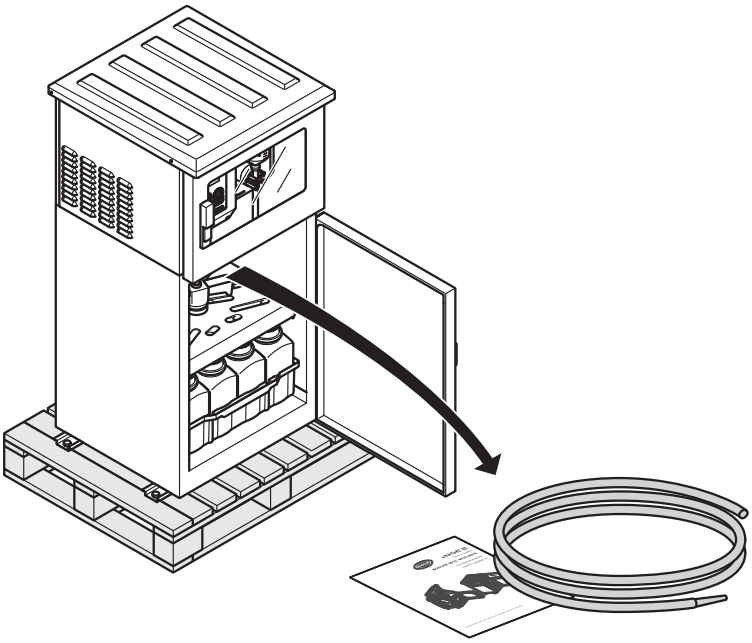


Figure 4 Scope of delivery (3900–4410)



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 if the equipment has not been wired and fused correctly.

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 equipment is to be installed outdoors, switch the overload protection between mains and 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).

3.1 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.

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

3.1.1 Required tools

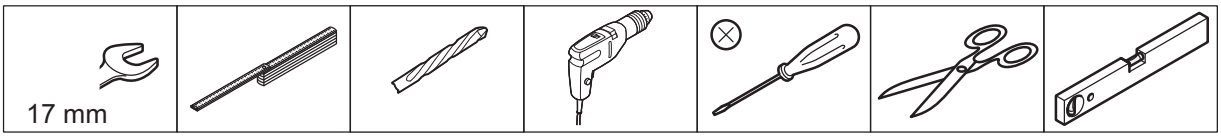
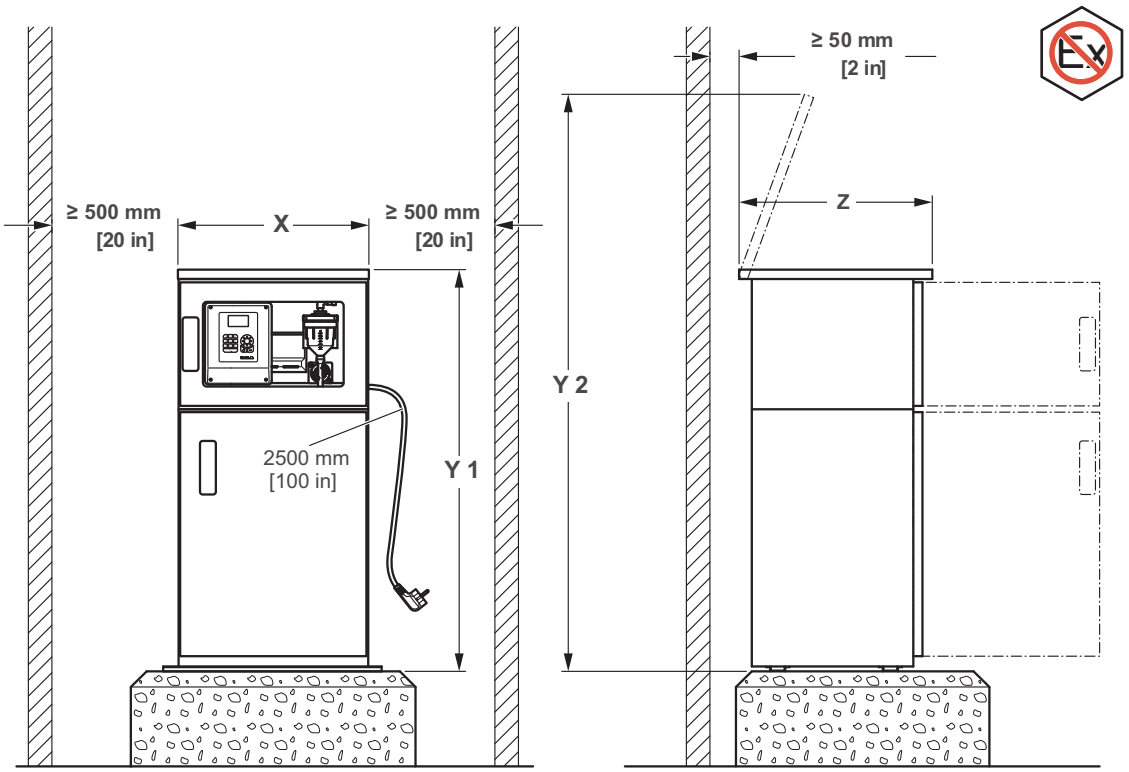
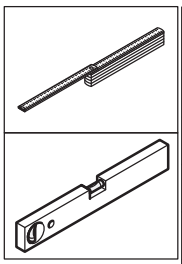


Figure 5 Required tools

3.1.2 Select installation location





	X mm [in.]	Y 1 mm [in.]	Y 2 mm [in.]	Z mm [in.]
BÜHLER 3010	760 [30]	1100 [43.3]	1640 [64.6]	725 [28.5]
BÜHLER 3900	625 [24.6]	1125 [44.3]	1695 [66.7]	648 [25.5]
BÜHLER 4010	605 [23.8]	1325 [52.2]	1895 [74.6]	645 [25.4]
BÜHLER 4110	605 [23.8]	1475 [58.1]	2030 [79.9]	645 [25.4]
BÜHLER 4210	605 [23.8]	1325 [52.2]	1895 [74.6]	645 [25.4]
BÜHLER 4210 (23 bottles)	715 [28.1]	1415 [55.7]	2120 [83.5]	810 [31.9]
BÜHLER 4410 (2–12 bottles)	605 [23.8]	1325 [52.2]	1895 [74.6]	645 [25.4]
BÜHLER 4410 (24 bottles)	715 [28.1]	1415 [55.7]	2120 [83.5]	810 [31.9]

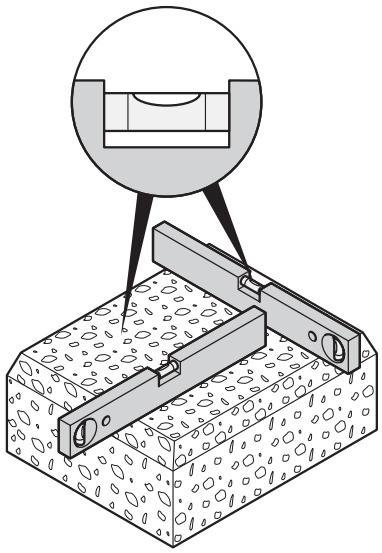
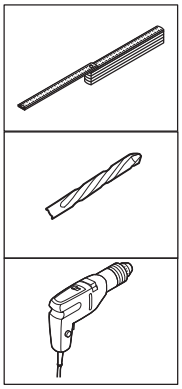


Figure 6 Select installation location



	A mm [in.]	B mm [in.]
BÜHLER 3010	730 [28.7]	384 [15.1]
BÜHLER 3900	660 [26]	383 [15.1]
BÜHLER 4010	660 [26]	383 [15.1]
BÜHLER 4110	660 [26]	383 [15.1]
BÜHLER 4210	660 [26]	383 [15.1]
BÜHLER 4410 (23 bottles)	770 [30.3]	500 [19.7]
BÜHLER 4410 (2–12 bottles)	660 [26]	383 [15.1]
BÜHLER 4410 (24 bottles)	770 [30.3]	500 [19.7]

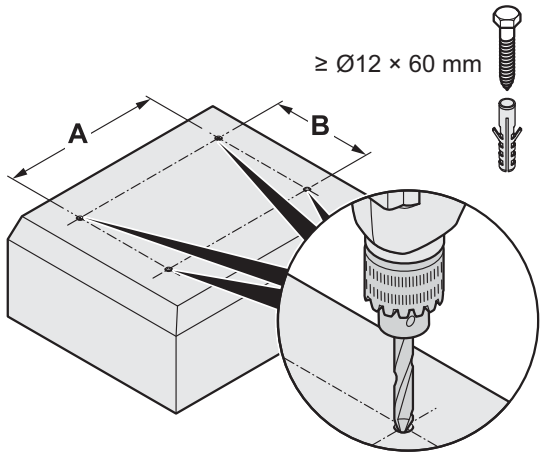


Figure 7 Prepare the installation location

3.1.3 Unpacking



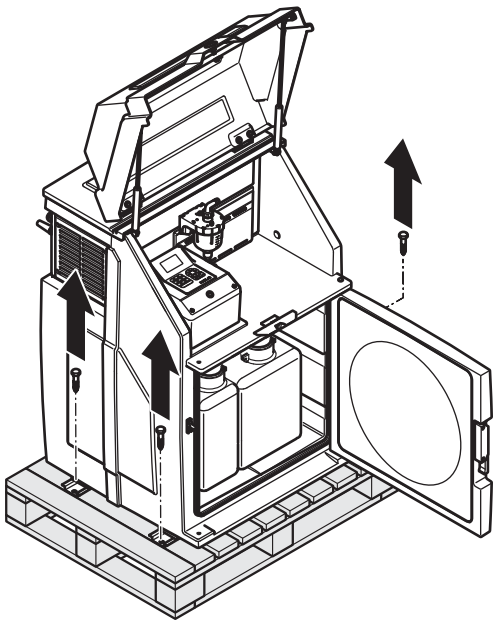


Figure 8 Move the equipment from the transport pallet (3010)

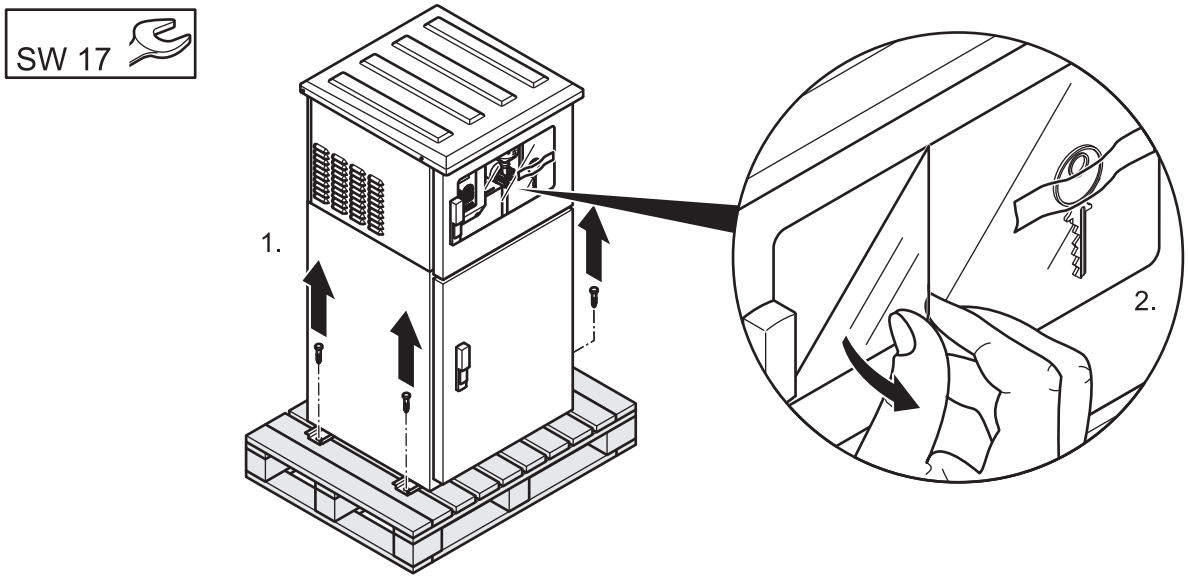
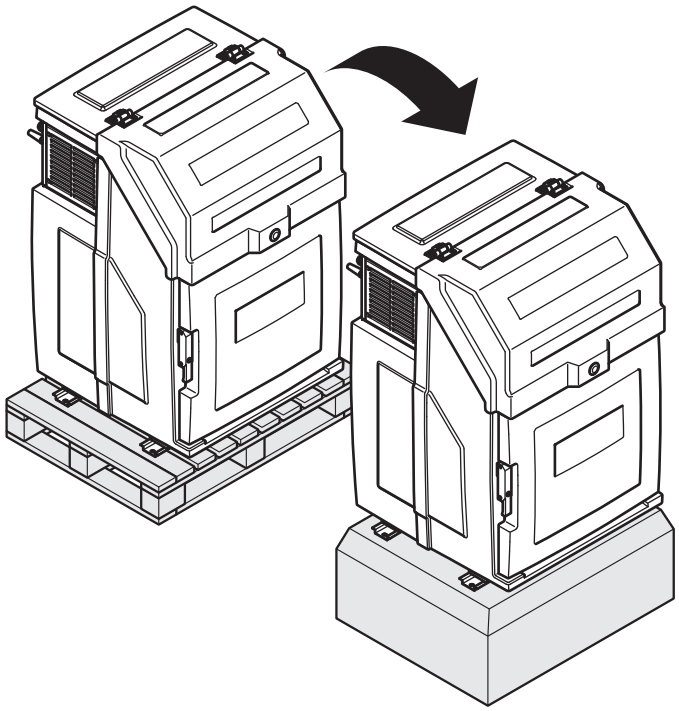


Figure 9 Move the equipment from the transport pallet (3900–4410)

3.1.4 Set up



	kg	
BÜHLER 3010	75	

Figure 10 Set up the equipment (3010)

	kg	
BÜHLER 3900	82	
BÜHLER 4010	100	
BÜHLER 4210	105	
BÜHLER 4410	105	
BÜHLER 4110	115	

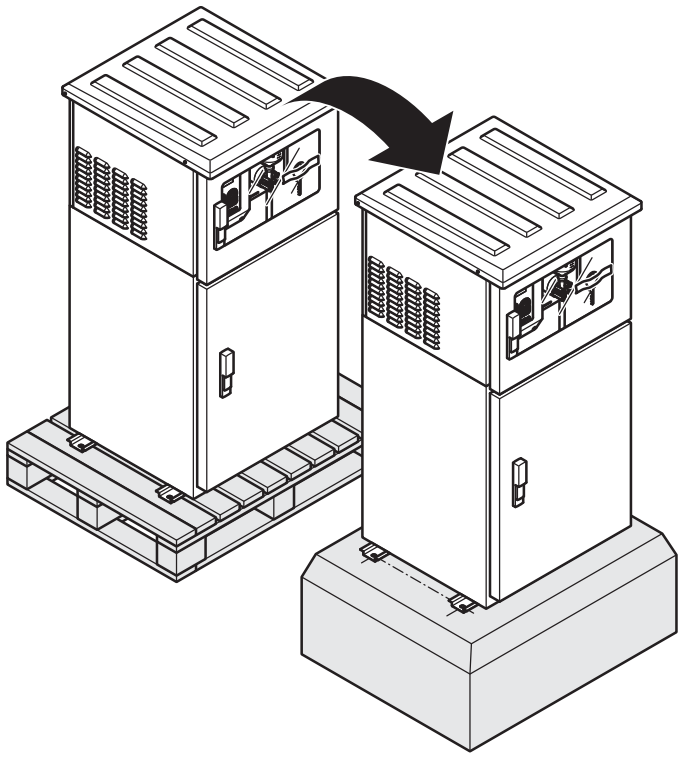


Figure 11 Set up the equipment (3900, 4010-4410)

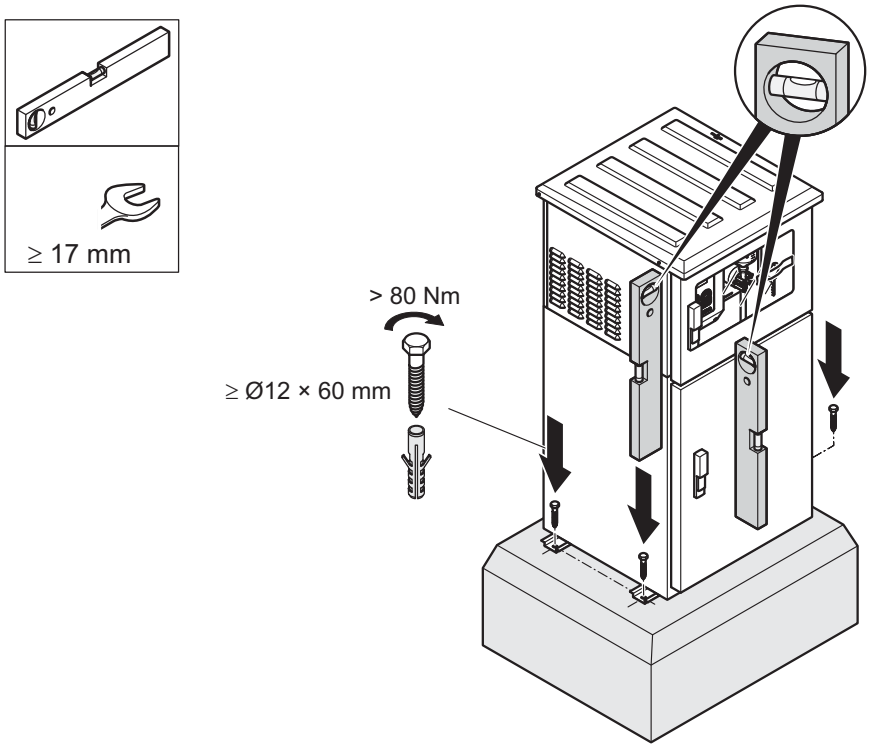


Figure 12 Align and secure the equipment

3.2 Electrical connections



DANGER

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



DANGER
Do not connect the electrical supply to the mains if the equipment has not been wired and fused correctly.

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 equipment is to be installed outdoors, switch the overload protection between mains and 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 socket with a cable and plug·rather than a permanently connected cable, the plug and socket 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).

3.2.1 Electrical installation

3.2.1.1 Prepare the electrical installation (3010)

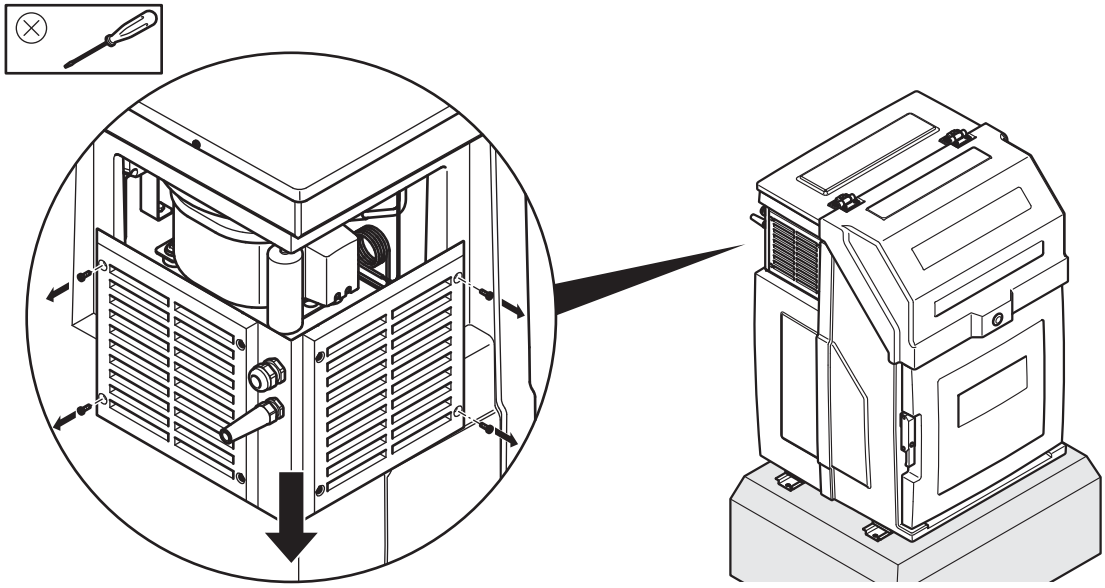


Figure 13 Loosen the screws and remove the cover (3010)

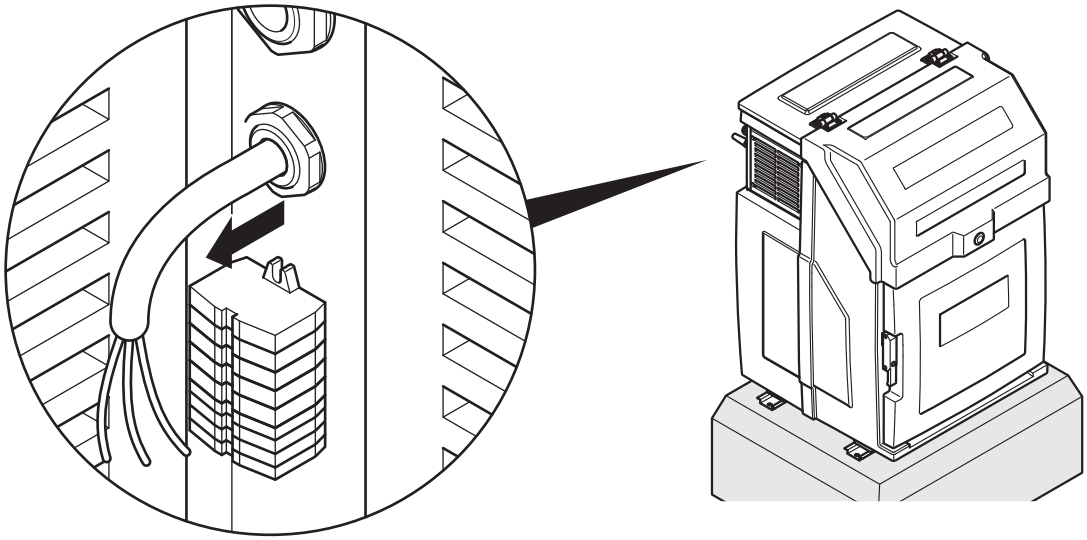


Figure 14 Feed cable through (3010)

3.2.1.2 Prepare the electrical installation (3900–4410)

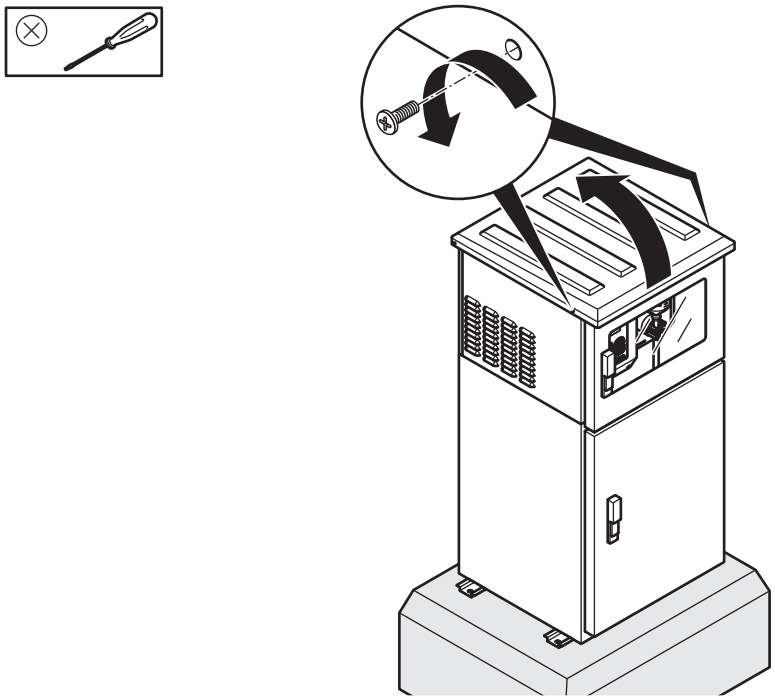


Figure 15 Loosen the lid screws and open the lid (3900–4410)

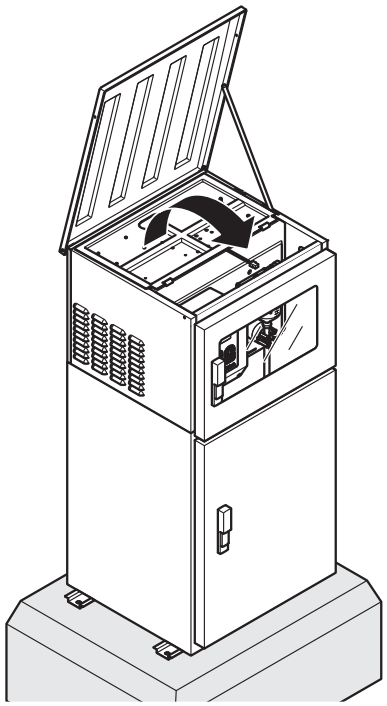


Figure 16 Lift up the cover (3900–4410)

3.2.1.3 Wiring diagram (3010)

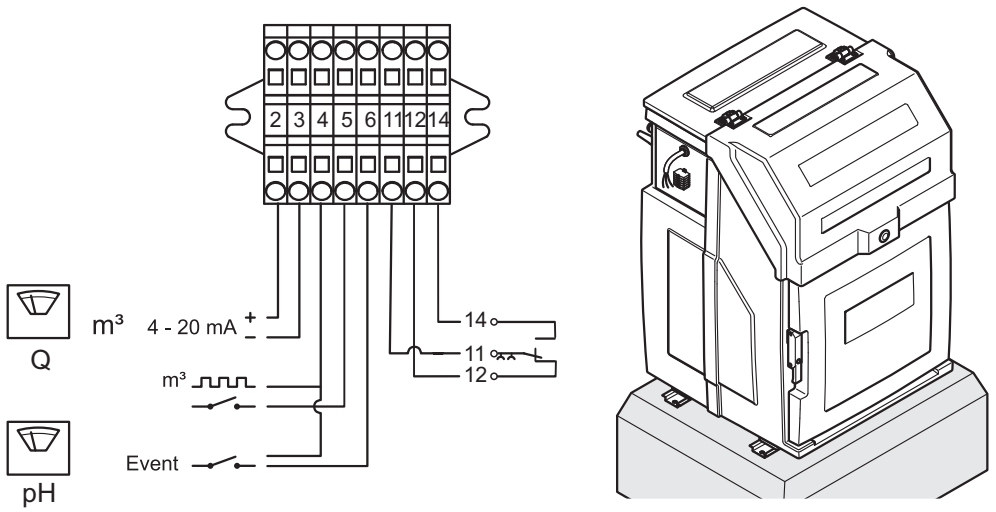


Figure 17 Wiring diagram (3010)

3.2.1.4 Wiring diagram (3900–4410)

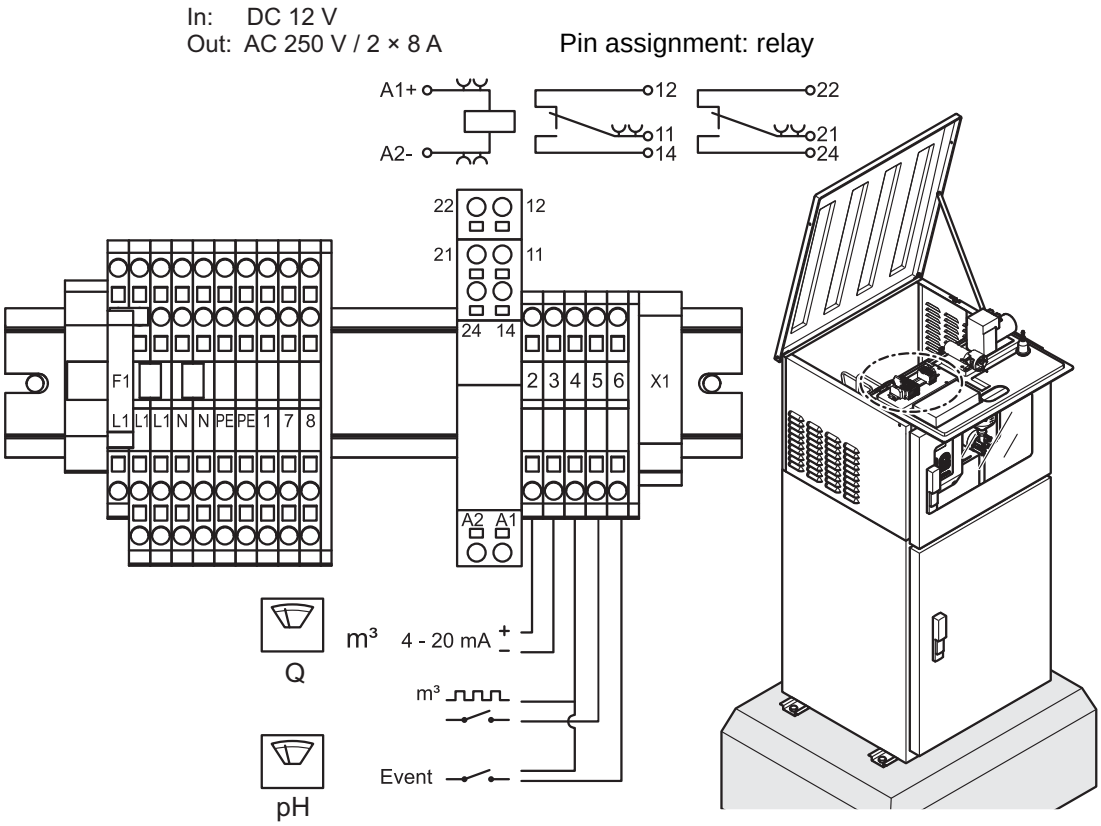


Figure 18 Wiring diagram (3900–4410)

3.2.1.5 Complete the electrical installation (3010)

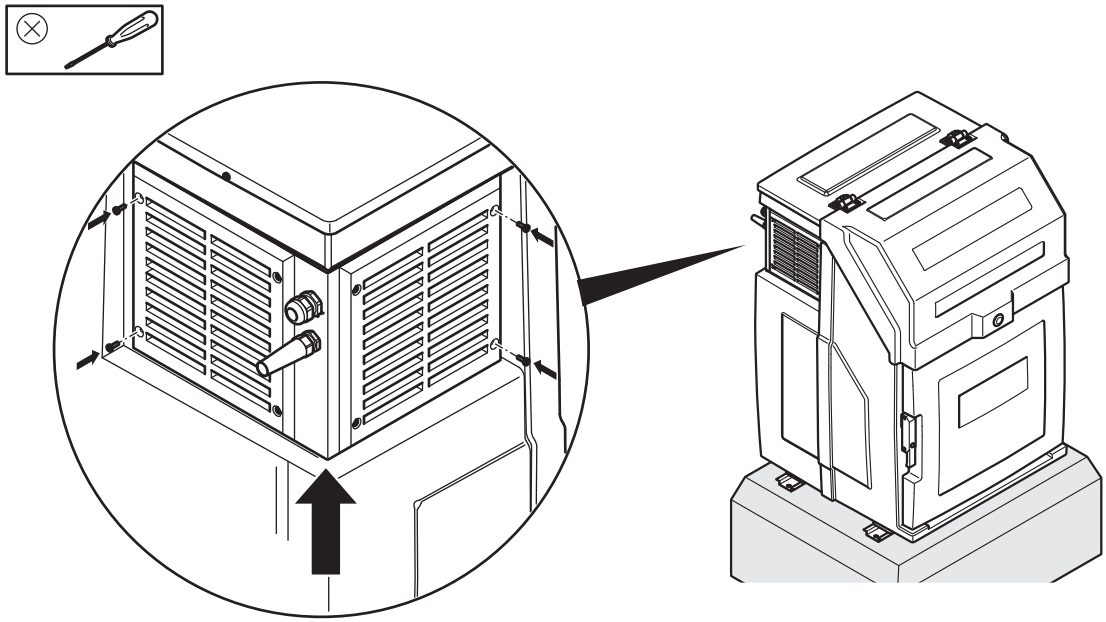


Figure 19 Attach cover

3.2.1.6 Complete the electrical installation (3900–4410)

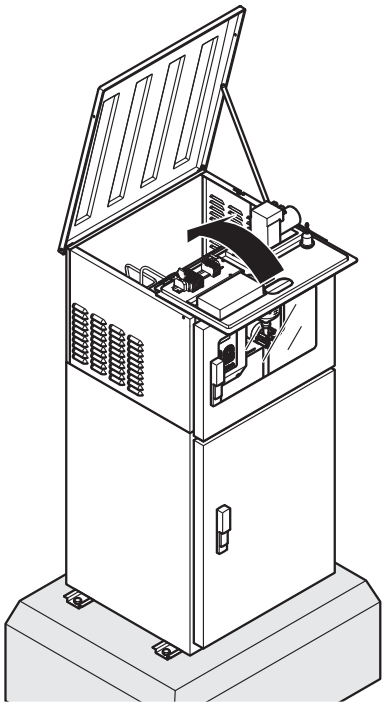


Figure 20 Shut the cover

If suction tube is not connected immediately, close the housing lid as described in Figure 24, page 25 and Figure 25, page 26.

3.3 Commission the equipment

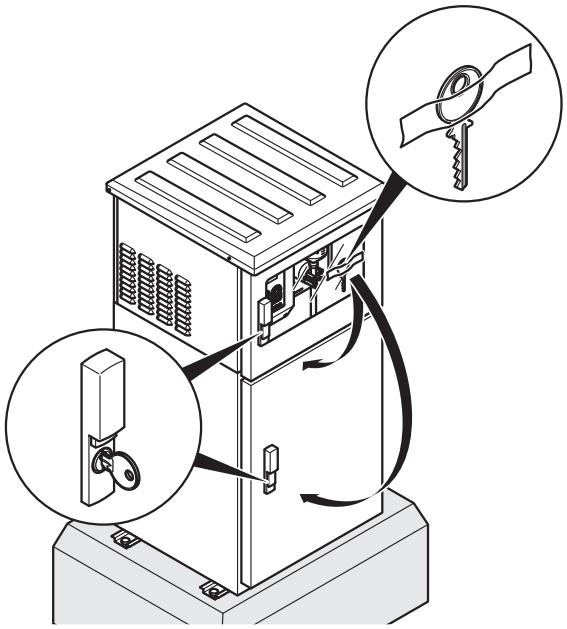


Figure 21 Key storage location (for key option)

3.3.1 Tube connection

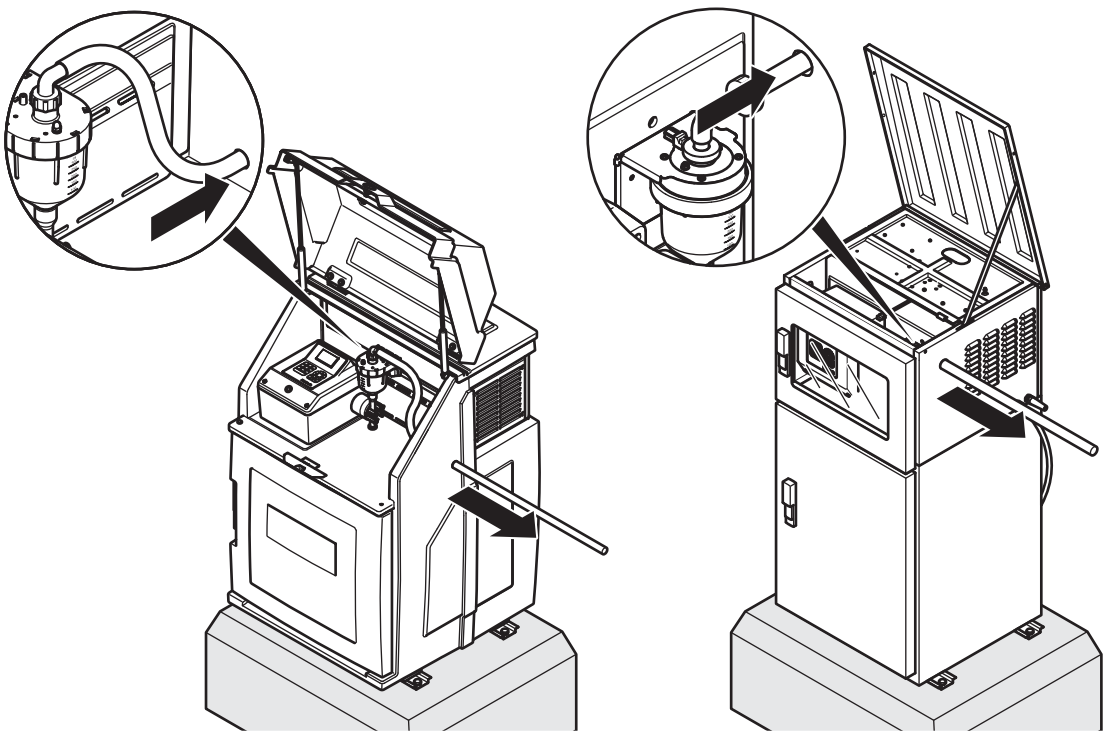


Figure 22 Feed the suction tube though housing opening

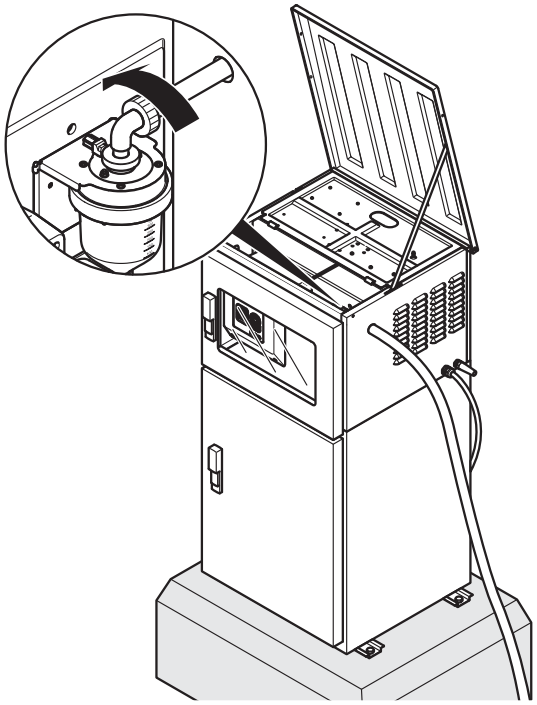


Figure 23 Screw in the union nut

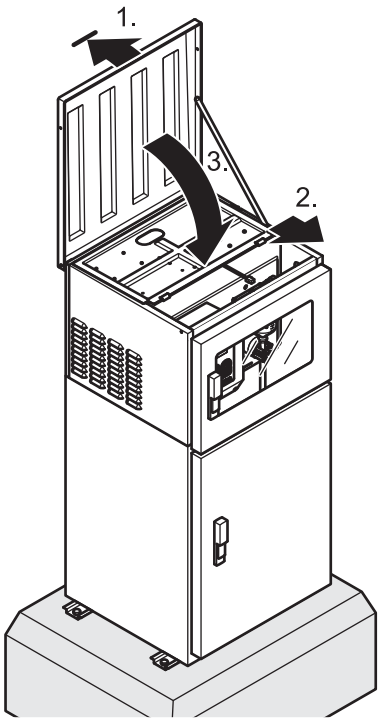


Figure 24 Close the lid

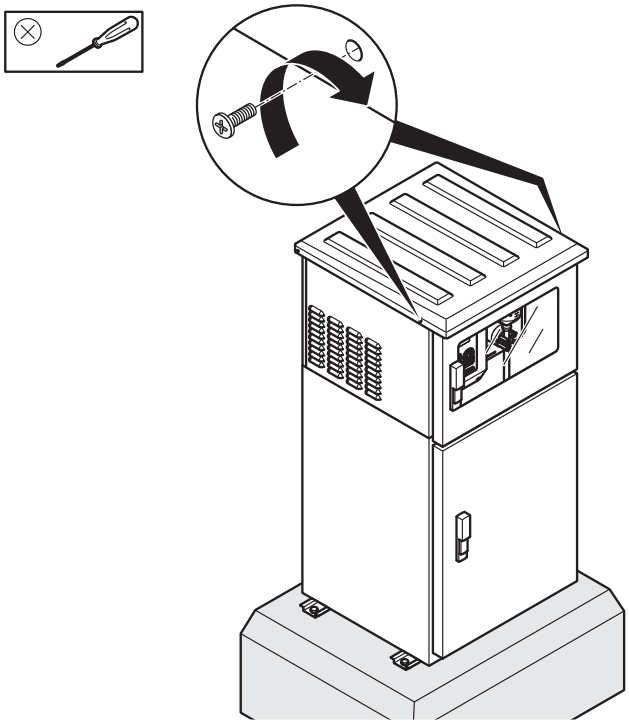


Figure 25 Screw down the lid tightly

Position the tubes in accordance with the following installation diagram.

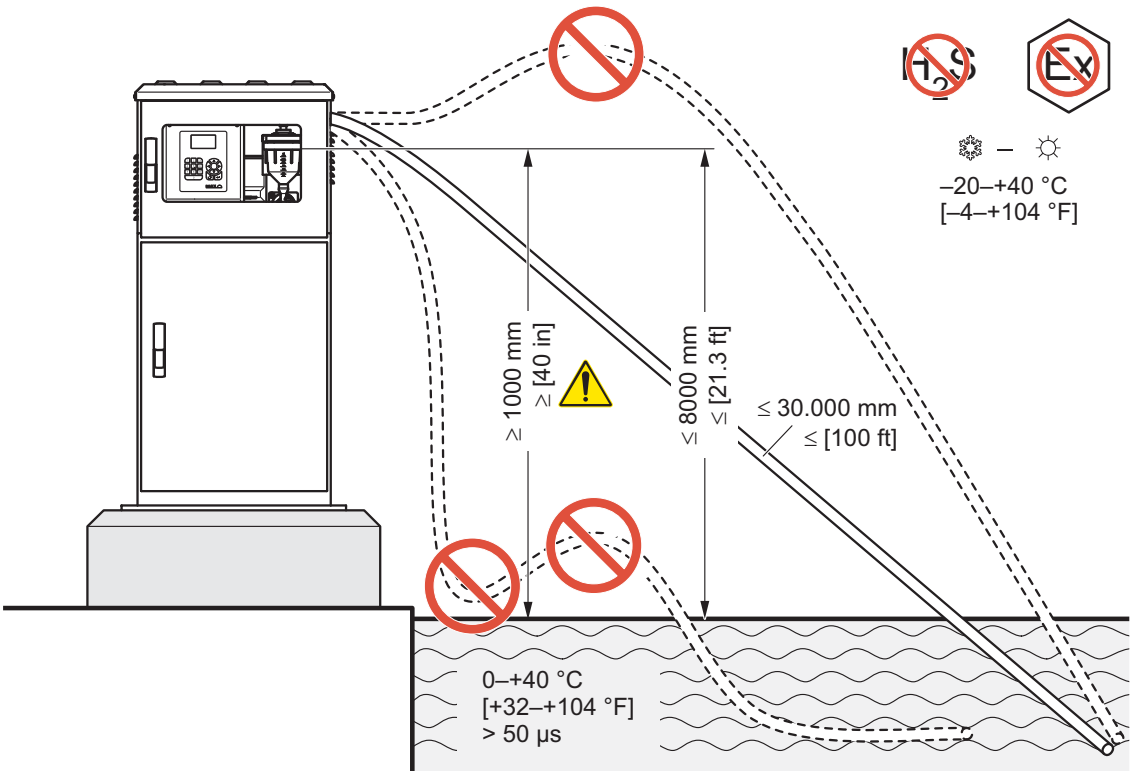


Figure 26 Installation diagram

3.3.2 Set the individual sample volumes

3.3.2.1 Plastic dosing vessel

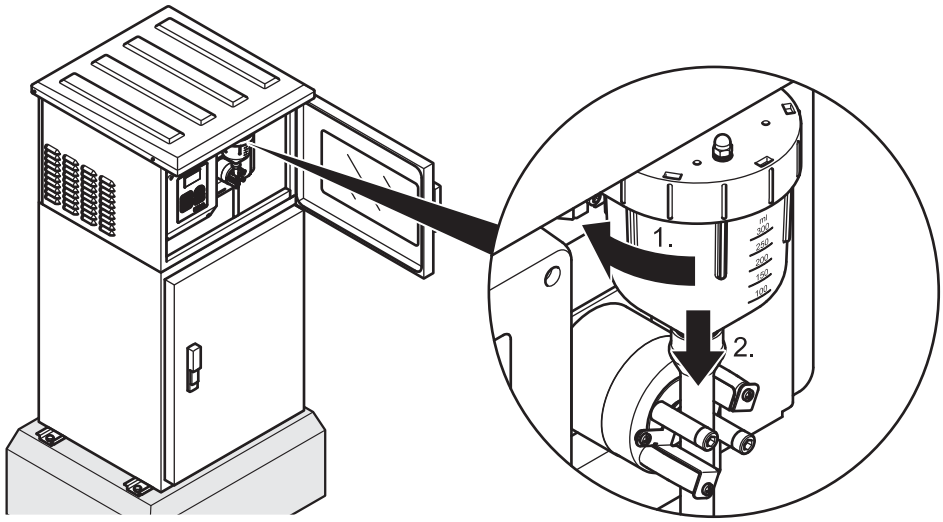


Figure 27 Release the plastic dosing vessel

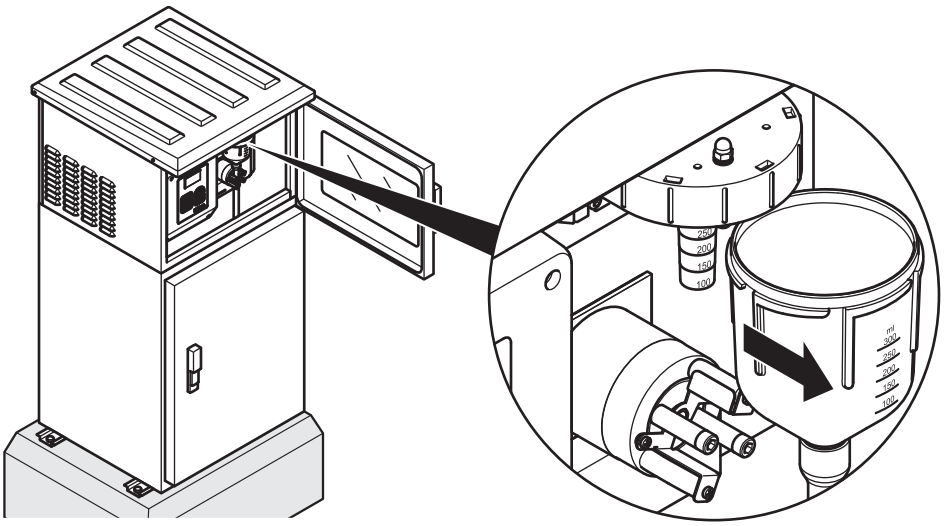


Figure 28 Remove the plastic dosing vessel

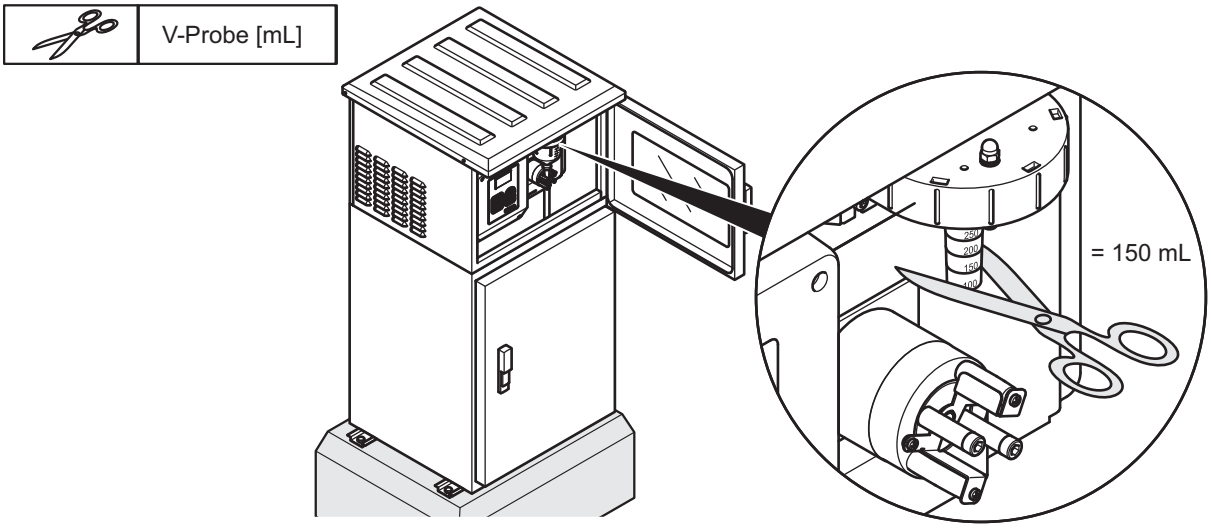


Figure 29 Cut the dosing tube to set the sample volume

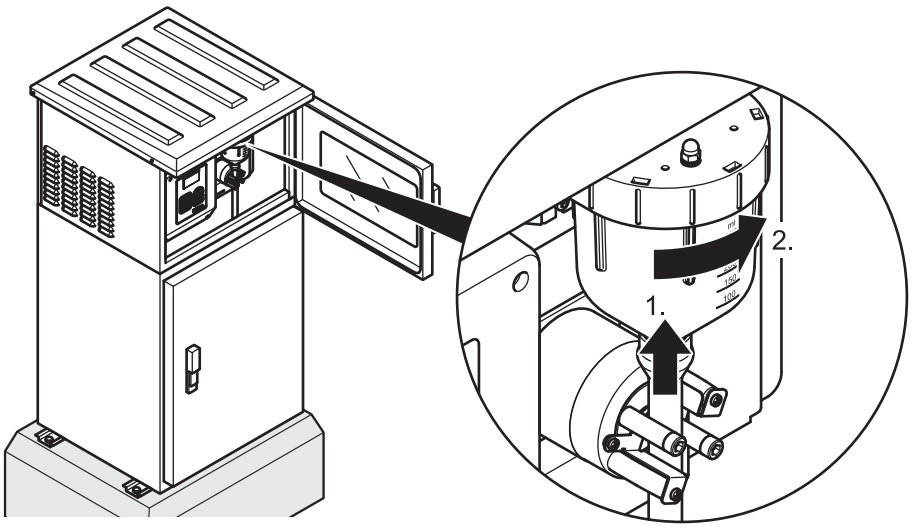


Figure 30 Reinstall the plastic dosing vessel

3.3.2.2 Glass dosing vessel

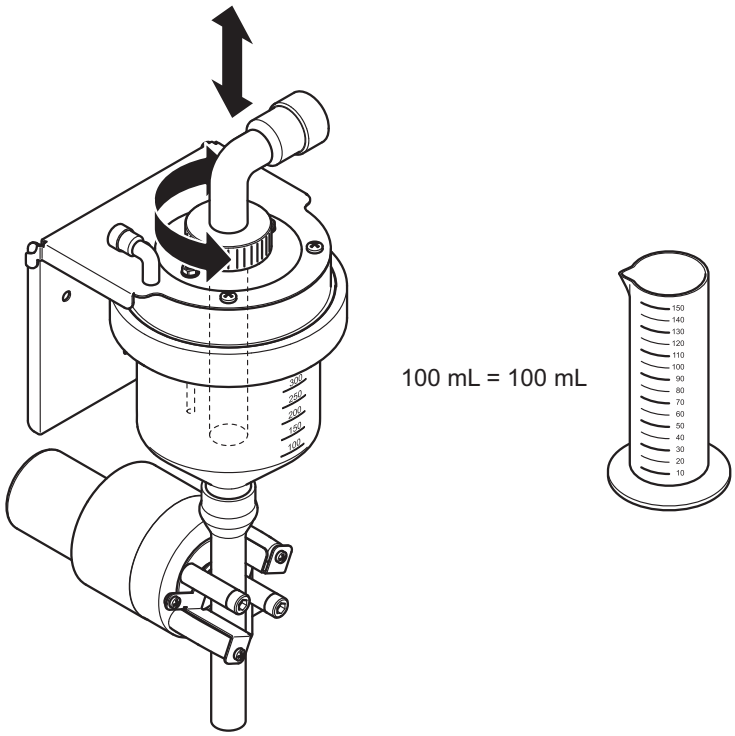


Figure 31 Adjust the dosing pipe to set the sample volume

3.3.2.3 Dosing vessel for flow-proportional sampling

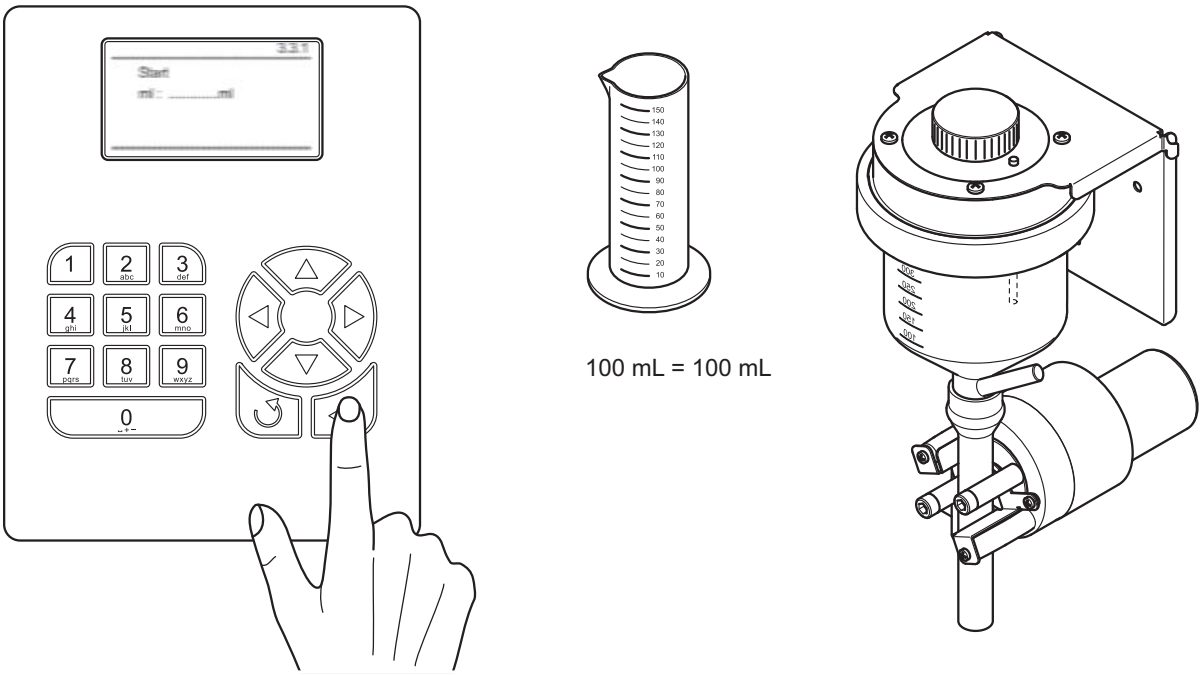


Figure 32 Calibrate the flow-proportional dosing vessel via the service menu

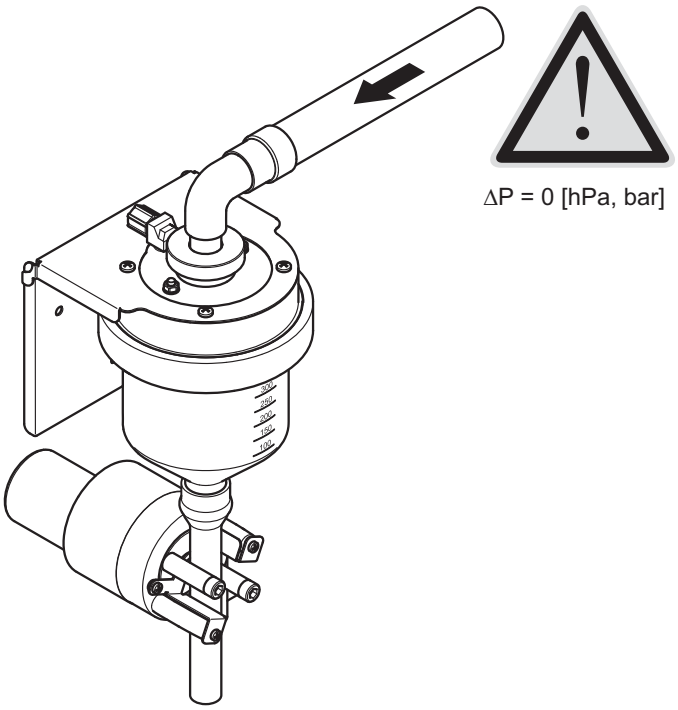


Figure 33 The flow-proportional dosing vessel may only be used, if there is NO counter pressure

3.3.2.4 Bypass dosing vessel

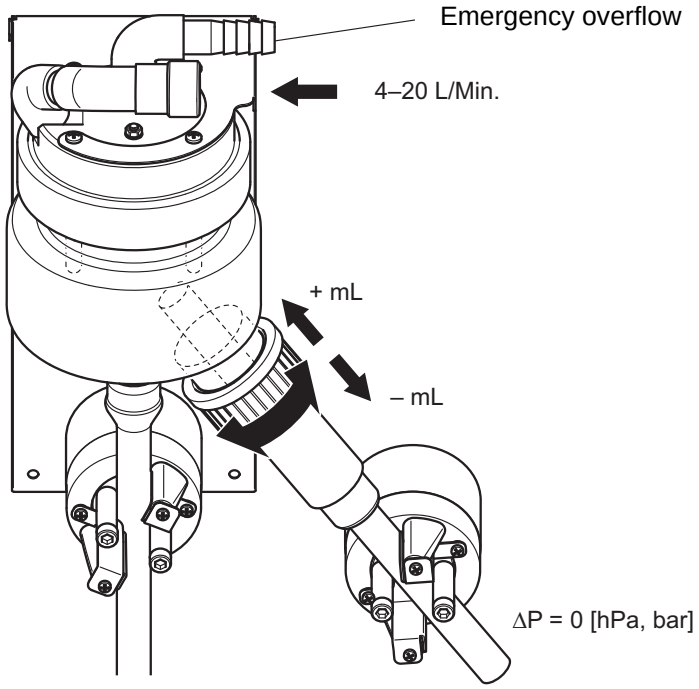


Figure 34 Set the sample volume of the bypass dosing vessel

3.3.2.5 Flush water connection and drain (4210/4410)

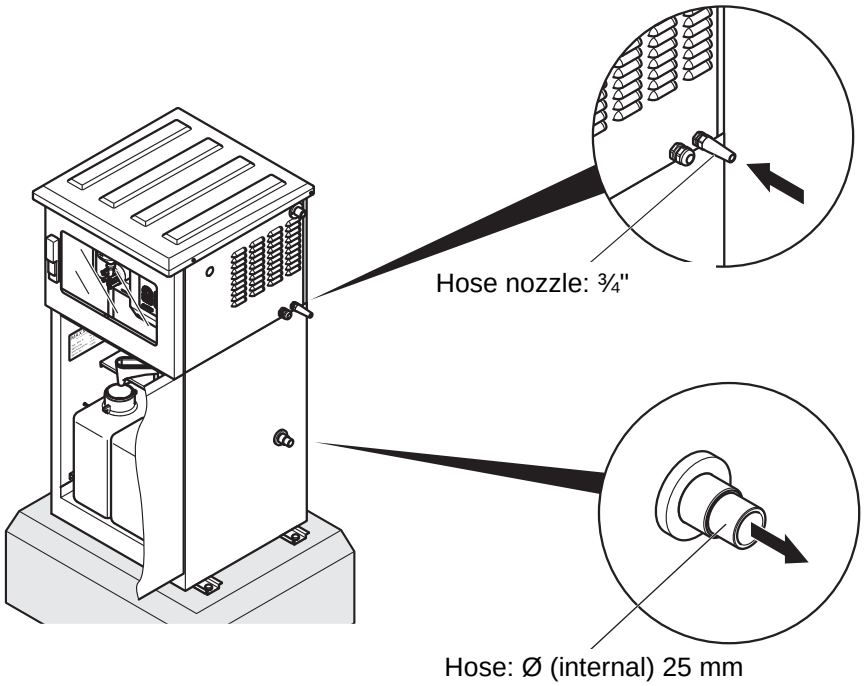


Figure 35 Flush water connection and drain (4210)

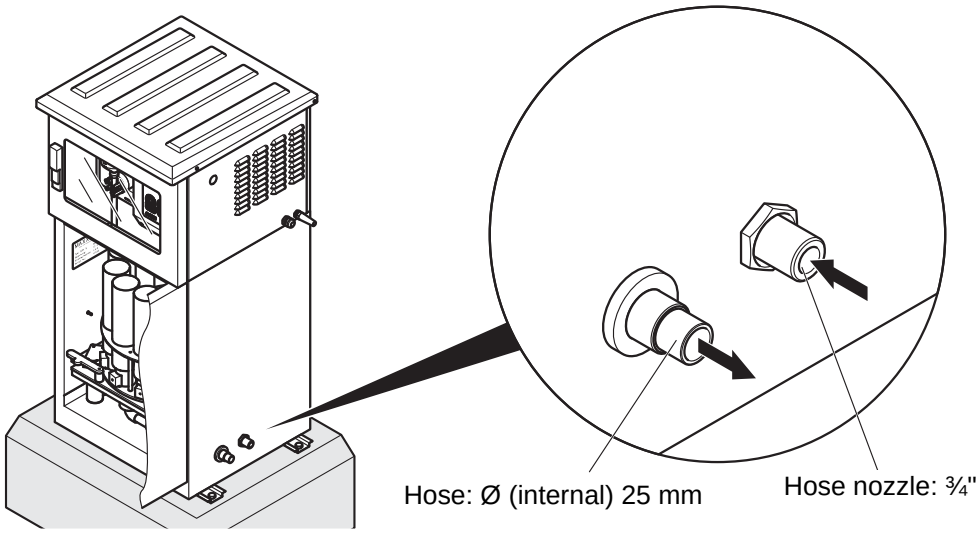


Figure 36 Flush water connection and drain (4410)

3.3.3 Preparing the sample containers (3010, 3900, 4010, 4110, 4210)

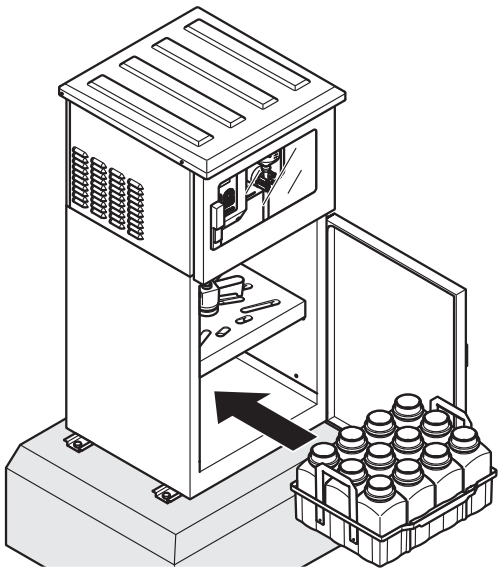


Figure 37 Place the empty bottles in the housing

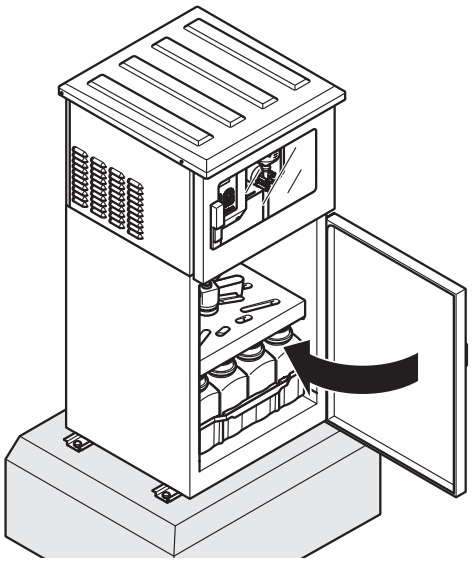


Figure 38 Close the door

3.3.4 Connect the equipment to the mains

Make sure that:

- The equipment has been fully prepared for commissioning
- The values on the rating label correspond with those of the mains supply
- The correct plug has been attached or the direct wire has been implemented correctly
- The equipment can be put into operation without any risks

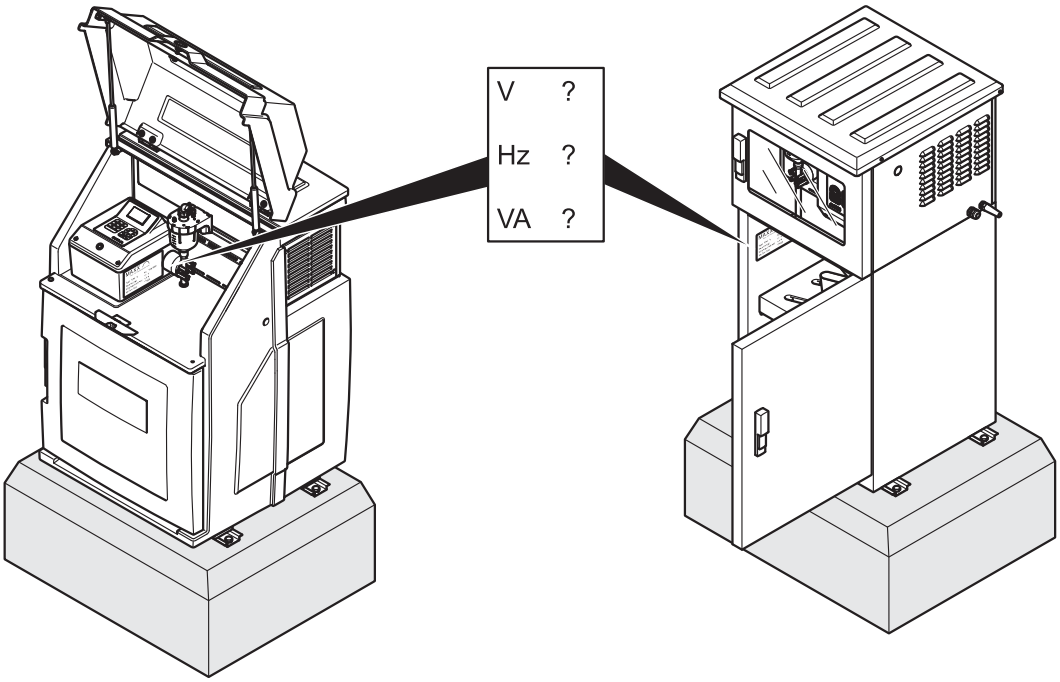


Figure 39 Rating label

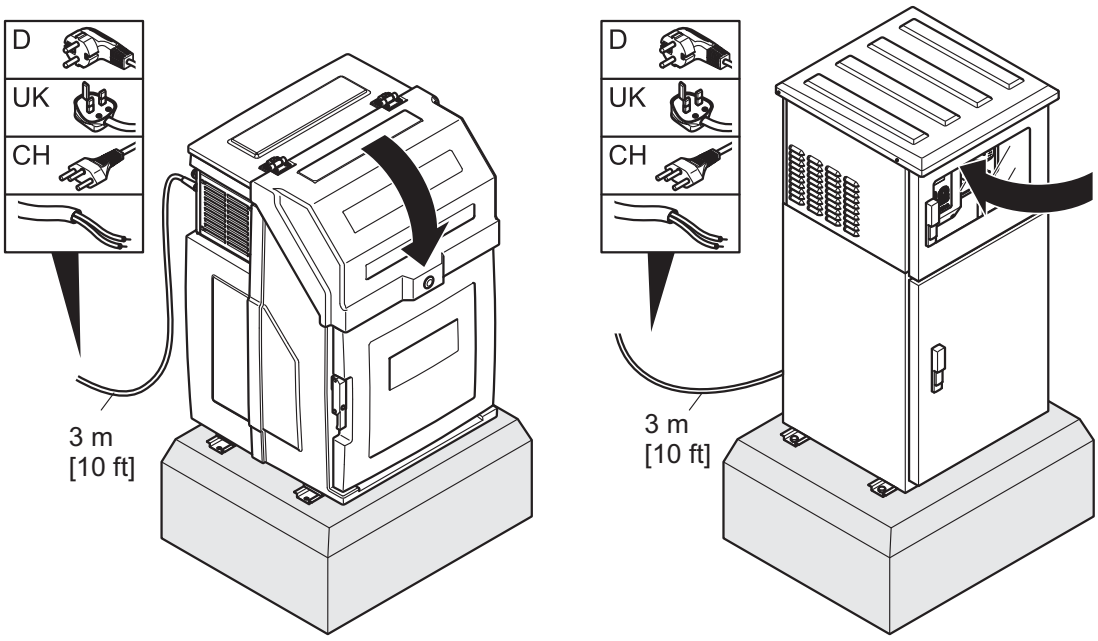


Figure 40 Possible connection configurations

Section 4 Operation

4.1 Control unit operation

All the equipment functions are software-controlled.

4.1.1 Password

Password to program sampler and to change settings is:

6299

4.1.2 Programming

The menu structure resembles the directory structure of a computer hard drive and is divided into main menus and sub menus.

4.1.2.1 Keyboard layout/function

The equipment is programmed by the operator.

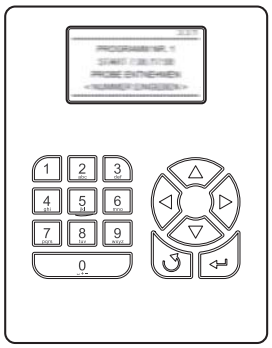


Figure 41 Control panel

The key functions are configured as follows to enable highly intuitive operation:

Table 1 Key functions

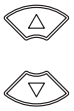
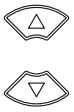
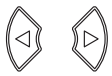
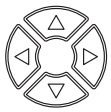
Display help text (in the case of selection fields, the cursor must be placed on the left-hand side)	Arrow key	
Move from one menu item to the next menu selection	Arrow keys	
Select the menu required	Enter key	
Move within a menu	Arrow keys	

Table 1 Key functions (Continued)

Select from within a menu	Arrow keys	
Confirm the selection (automatically marked with a ✓)	Enter key	
Enter/change values	Arrow keys	
Confirm the entered values	Enter key	
Return to the next superordinate menu level	Back key	
Enter values	Numeric keypad	
RESET (restore factory settings) Press and hold Back for at least 10 seconds	Back key	

Example: A setting needs to be changed.

1. Press Enter.

   The cursor then flashes.

2. Use the arrow keys to move the cursor until it is in the required position.
3. Press Enter.

   The selection is now confirmed and the program can be started.

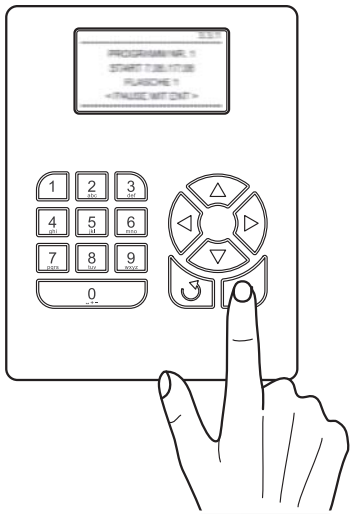


Figure 42 Start the program

Depending on the program range,

- an activity is started or
- the next menu item is automatically selected.

Note: *The general rule:*
If you press Back,
– the activity is cancelled or
– the navigation takes one step back in the menu.

4.2 Normal operation

The described normal operation applies to several models
(e.g.) 3010, 3900, 4010, 4011, 4110, 4210, 4411).
The 3010, 4011 and 4411 models are displayed as examples in the images.

4.2.1 Replace the sample bottles (3010, 3900, 4010, 4110, 4211)

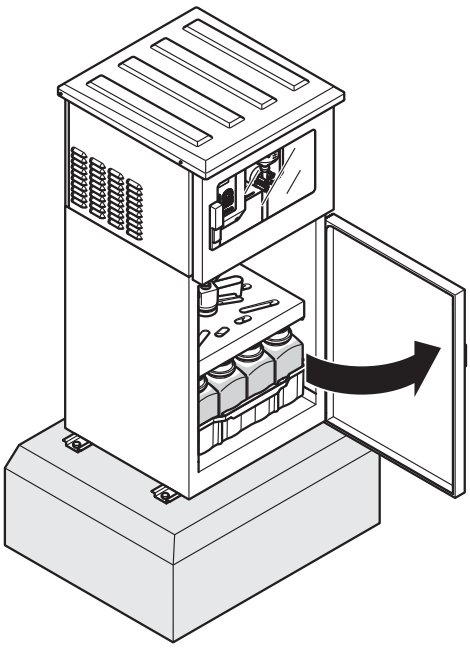


Figure 43 Open the door

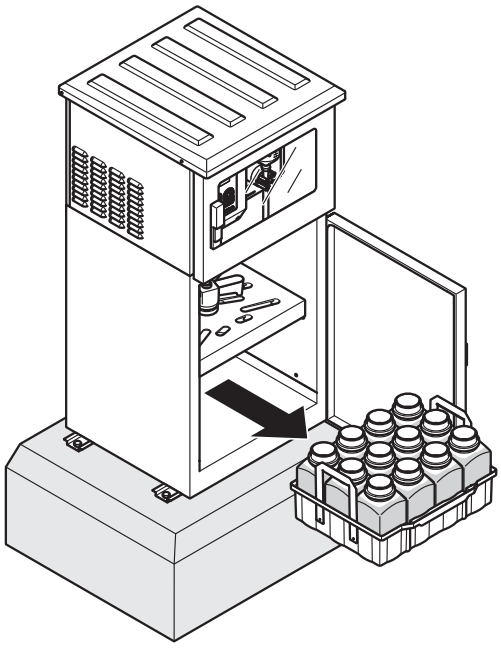


Figure 44 Remove the full bottles

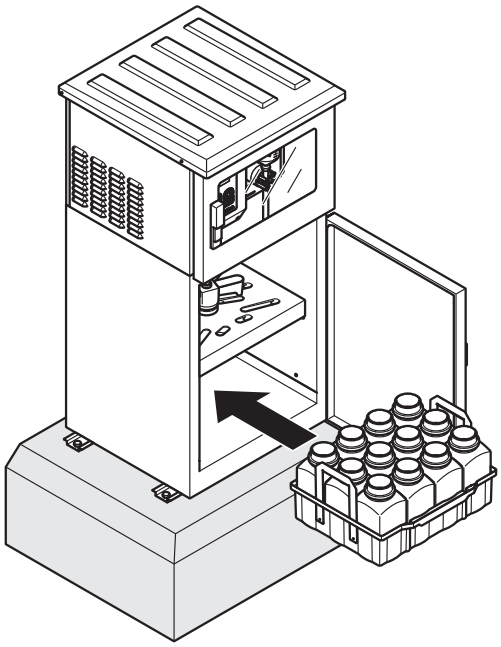


Figure 45 Replace with empty bottles

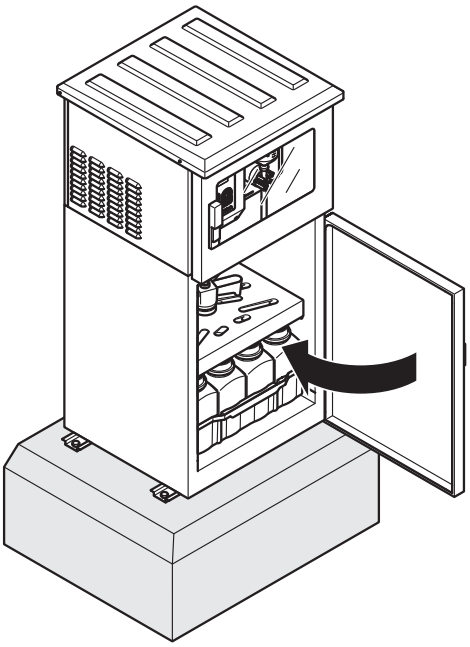


Figure 46 Close the door

4.2.2 Sampling (4411 with 12 or 24 bottles)

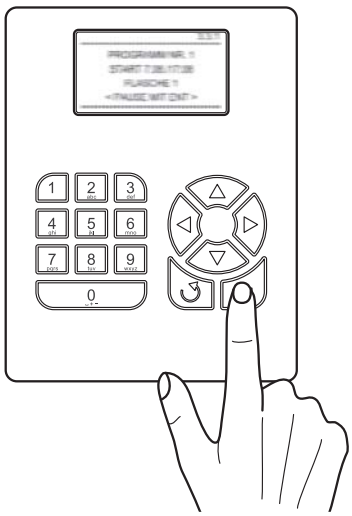


Figure 47 Press PAUSE to suspend the current program (4411 with 12 or 24 bottles)

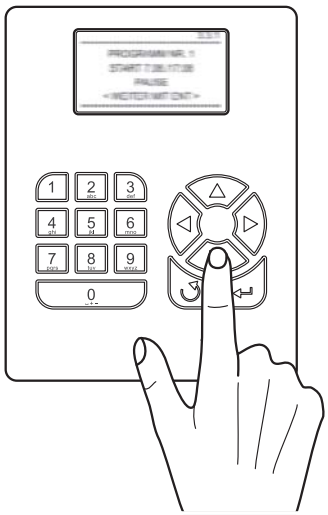


Figure 48 Select to remove the sample (4411 with 12 or 24 bottles)

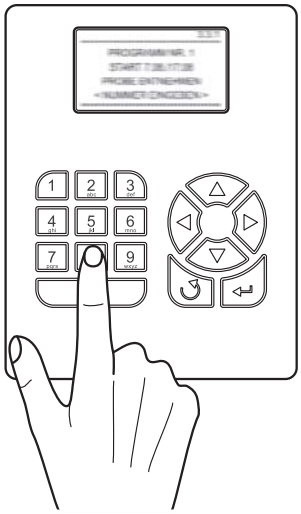


Figure 49 Select bottle number (4411 with 12 or 24 bottles)

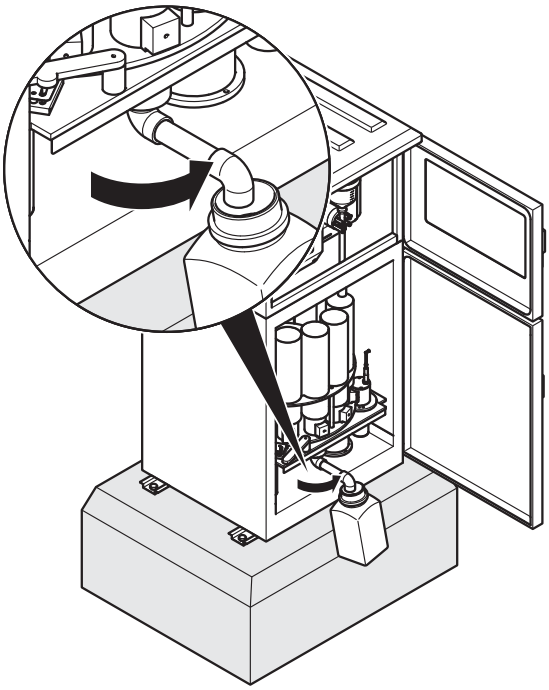


Figure 50 Swivel out the sample faucet (4411 with 12 or 24 bottles)

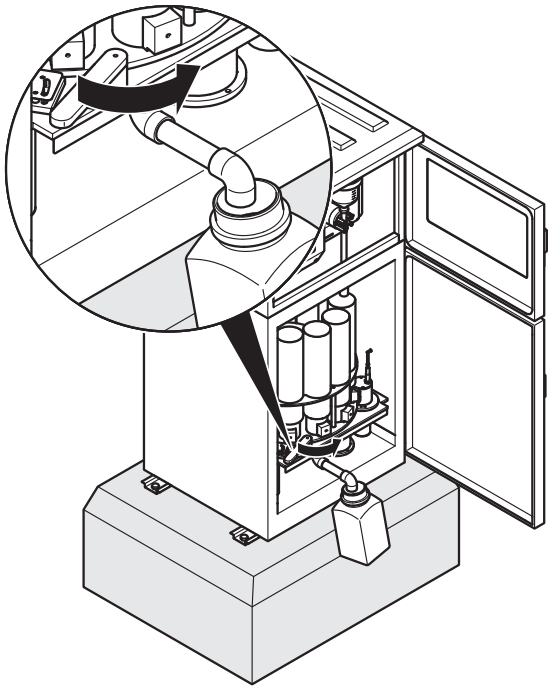


Figure 51 Press the lever to open the sample faucet
(4411 with 12 or 24 bottles)

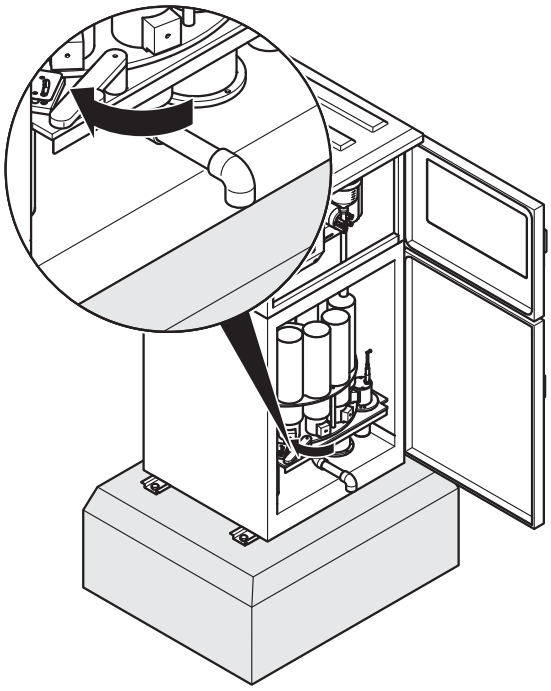


Figure 52 Swivel the lever back to close the sample faucet (4411 with 12 or 24 bottles)

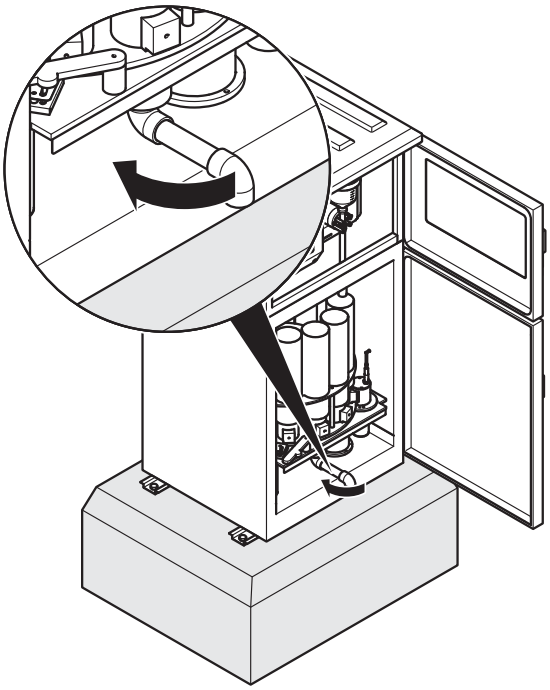


Figure 53 Swivel in the sample faucet (4411 with 12 or 24 bottles)

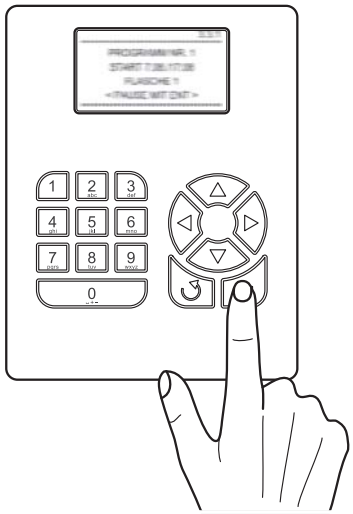


Figure 54 Select to continue the program (4411 with 12 or 24 bottles)

4.2.3 Sampling (4411 with 2 or 4 bottles)

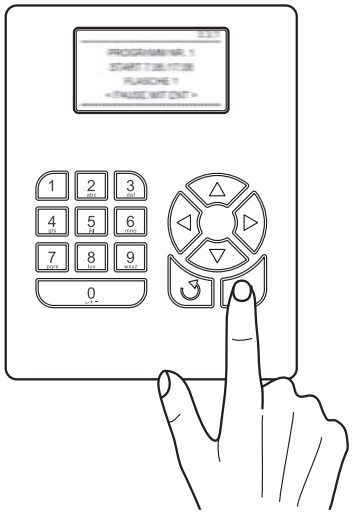


Figure 55 Select pause (4411 with 2 or 4 bottles)

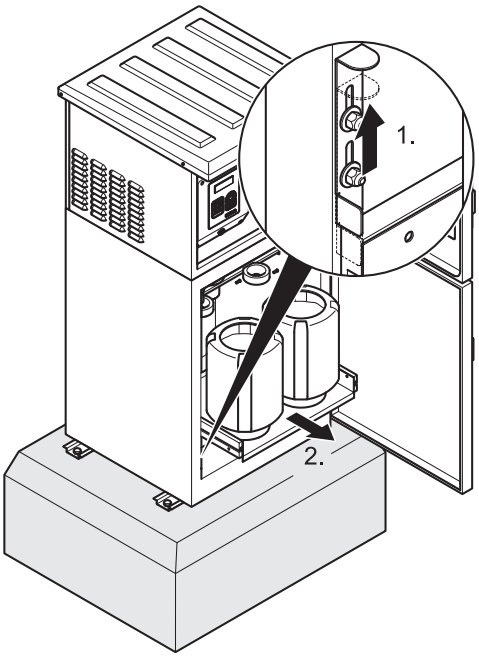


Figure 56 Release the bottle holder (4411 with 2 or 4 bottles)

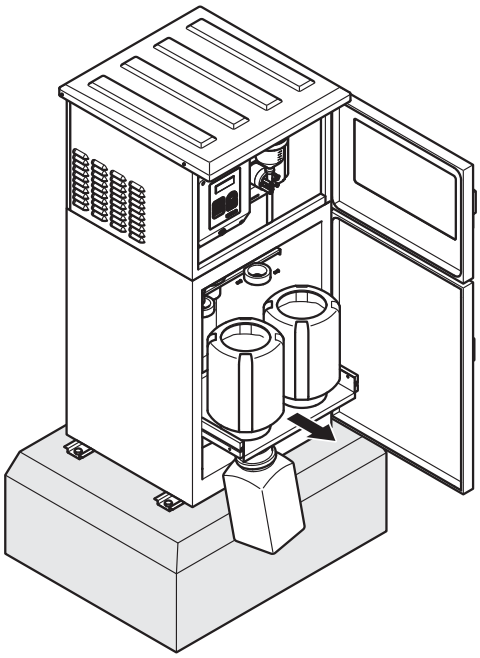


Figure 57 Pull out the bottle holder and take sample (4411 with 2 or 4 bottles)

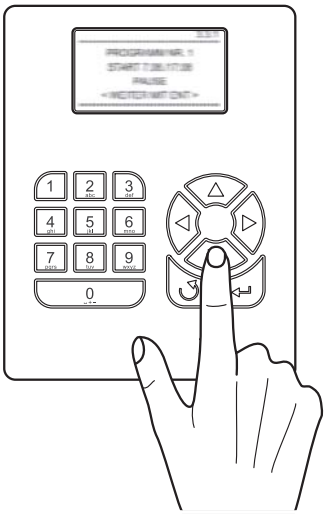


Figure 58 Select to remove sample (4411 with 2 or 4 bottles)

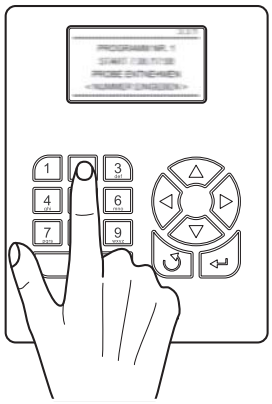


Figure 59 Select the bottle number (4411 with 2 or 4 bottles)

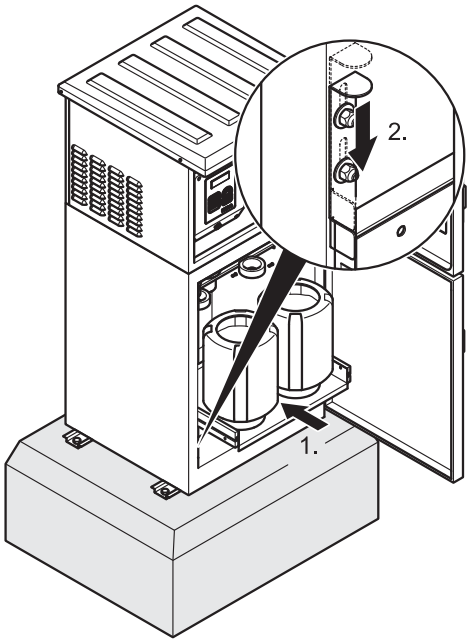


Figure 60 Push the bottle holder back in and secure (4411 with 2 or 4 bottles)

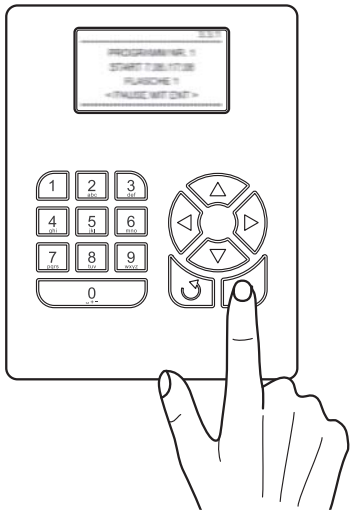


Figure 61 Select to continue program (4411 with 2 or 4 bottles)

Section 5 Maintenance and cleaning



DANGER

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



WARNING
Please observe the following points for the use of chemicals and/or waste water:

Wear protective clothing:
– Laboratory coat
– Protective eyewear
– Rubber gloves

5.1 Maintenance tasks

The equipment is maintenance-free, therefore the operator does not need to carry out any maintenance work.

5.2 Cleaning

5.2.1 Clean the housing and distribution unit



WARNING!
Manual rotation of the distribution unit can damage the drive.
Never rotate the distribution unit manually.

Clean the interior and exterior of the housing with a damp, lint-free cloth. Add commercial household cleaner to the cleaning water as required.

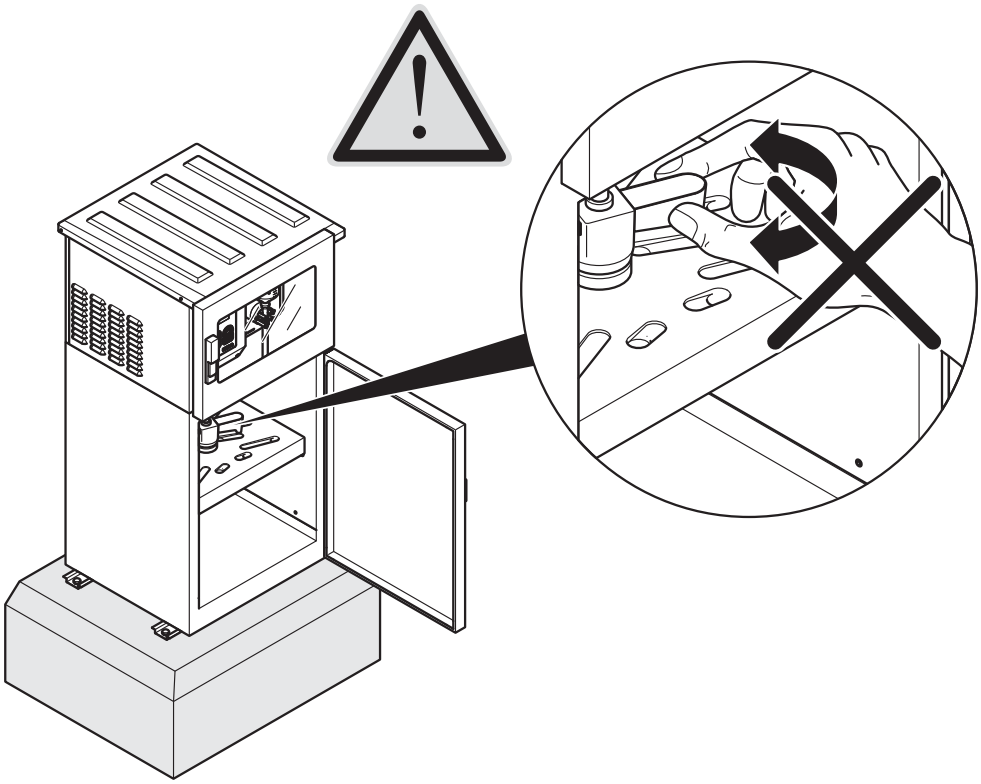


Figure 62 NEVER rotate the distribution unit manually

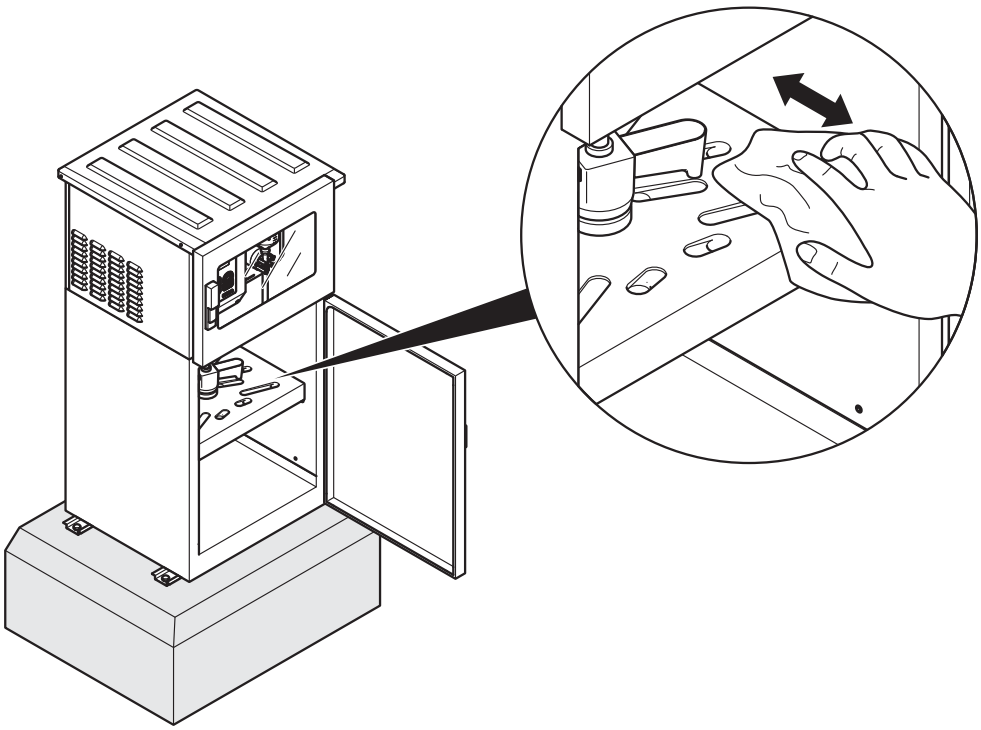


Figure 63 Clean the distribution unit

5.2.2 Clean the dosing vessel

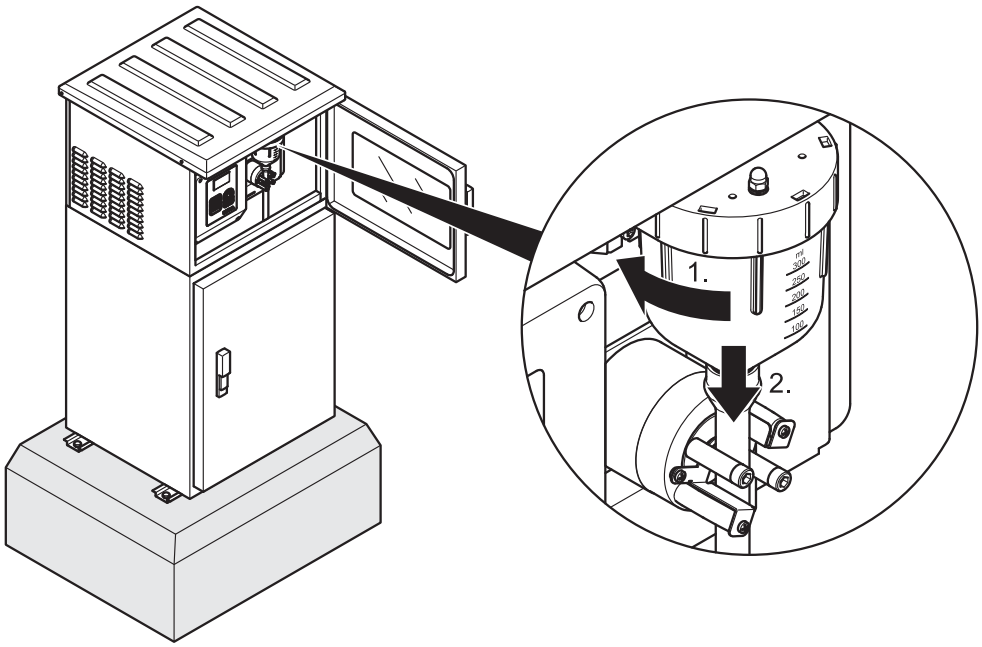


Figure 64 Release the dosing vessel

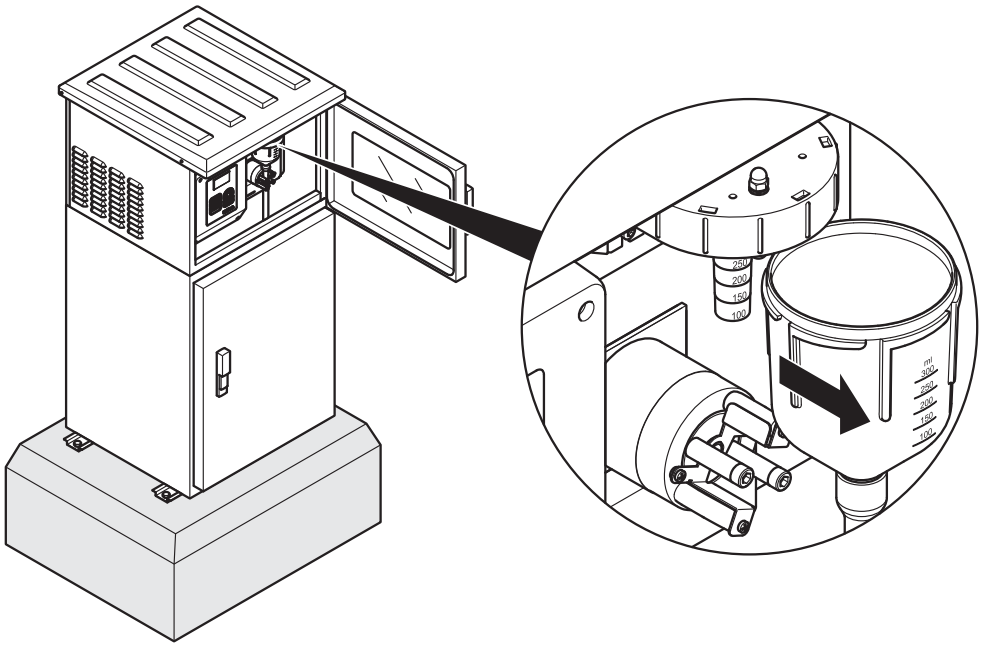


Figure 65 Remove the dosing vessel

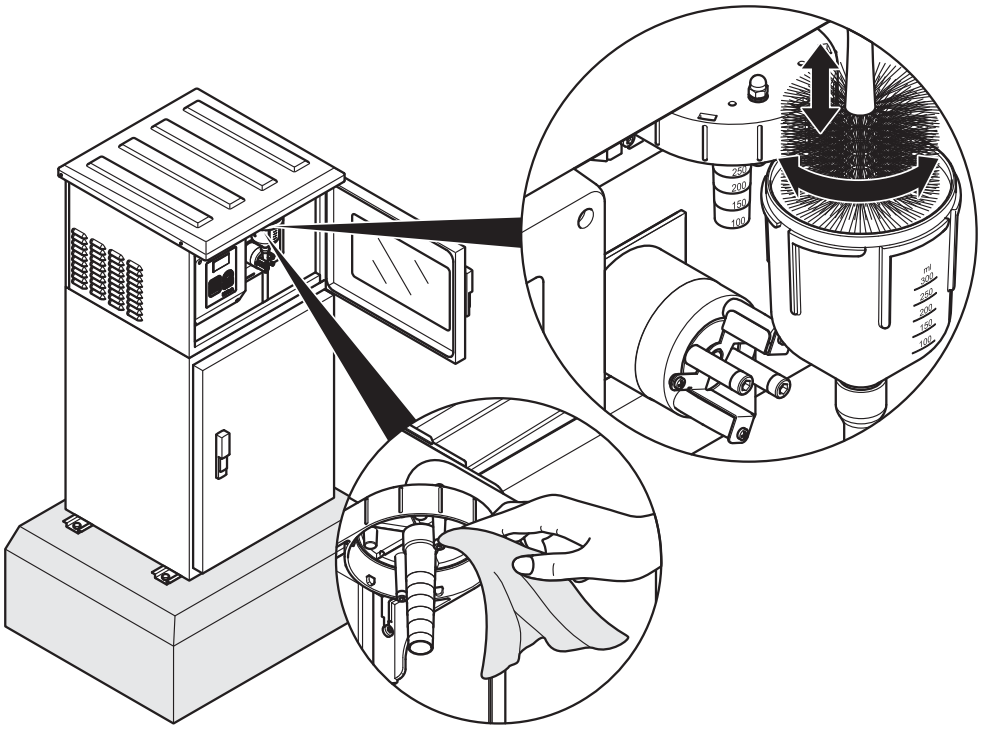


Figure 66 Clean the dosing vessel

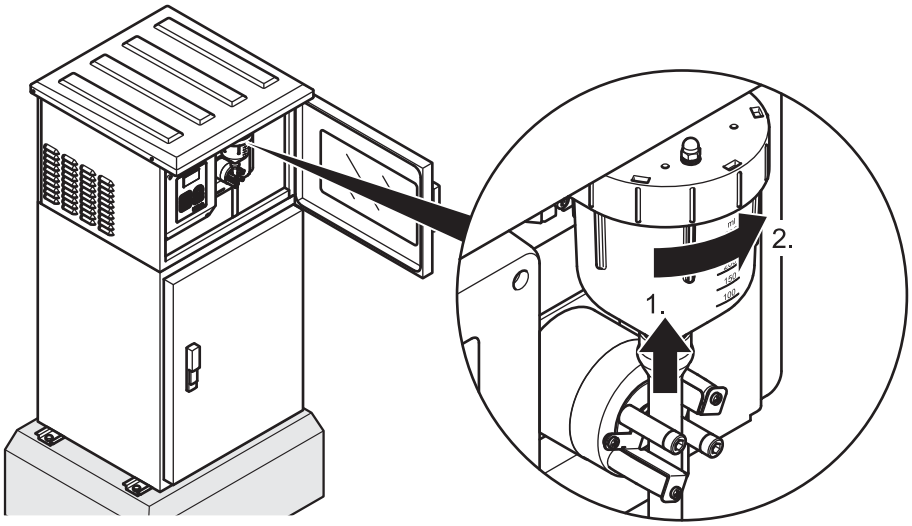


Figure 67 Insert the dosing vessel

5.3 Troubleshooting

If the equipment does not function as required, check the fuse and replace if necessary.

5.3.1 Open the housing to change the fuse (3010)

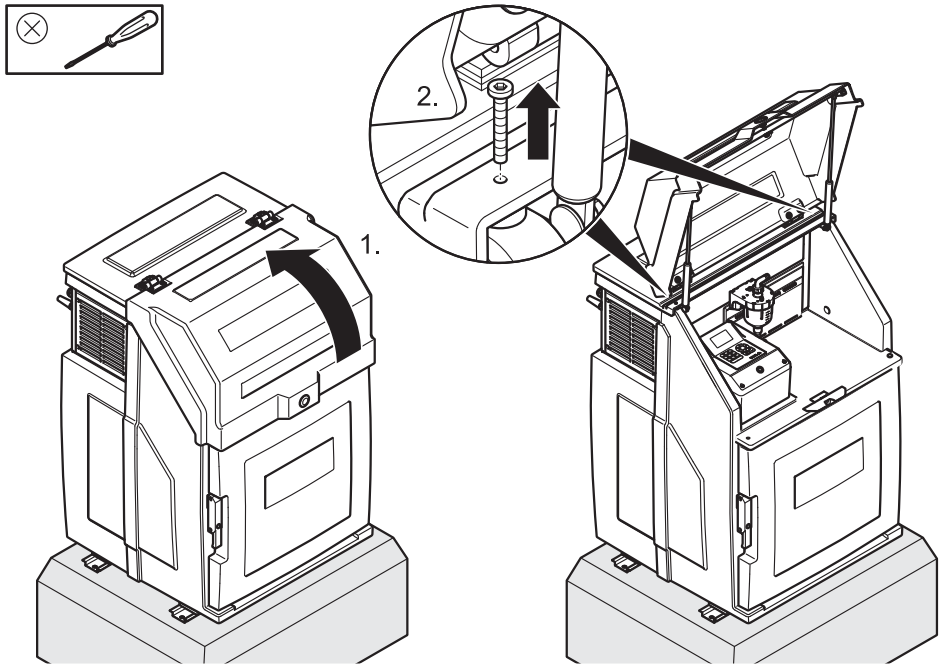


Figure 68 Open the lid and detach the cover (3010)

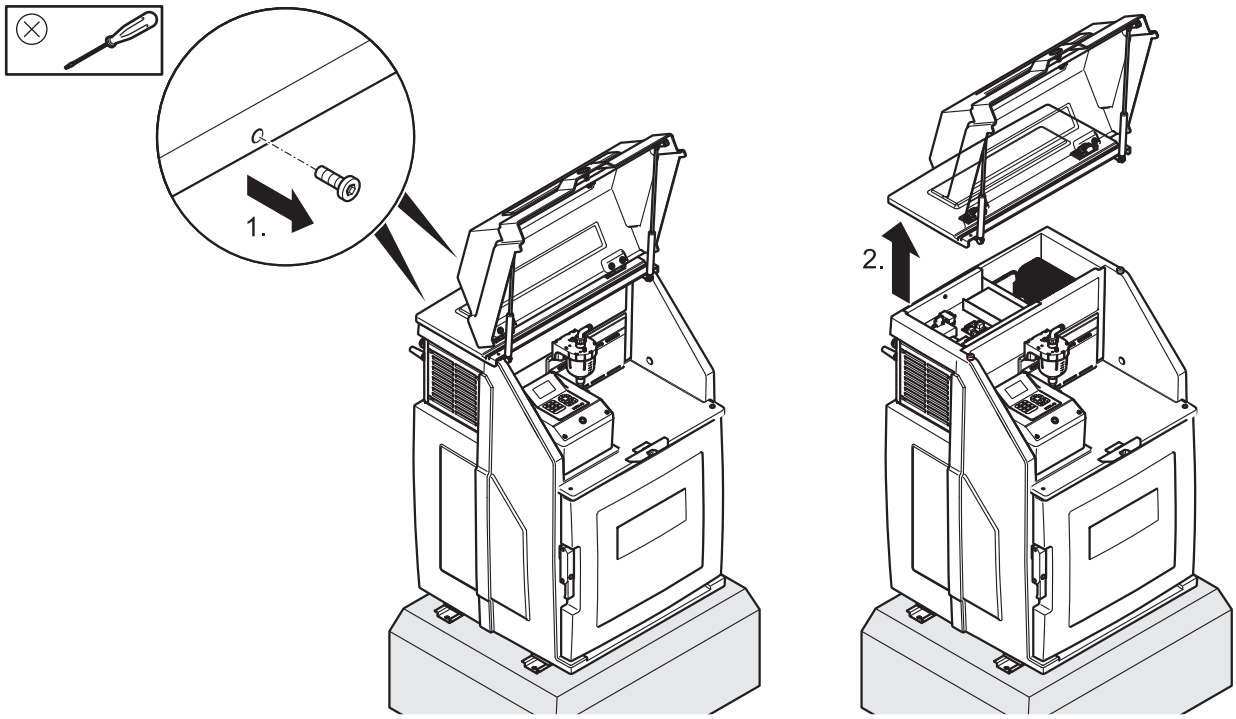


Figure 69 Remove the safety cover (3010)

5.3.2 Open the housing to change the fuse (3900–4410)

Open the housing lid as described in Figure 15, page 21 and Figure 16, page 21.

5.3.3 Change the fuse

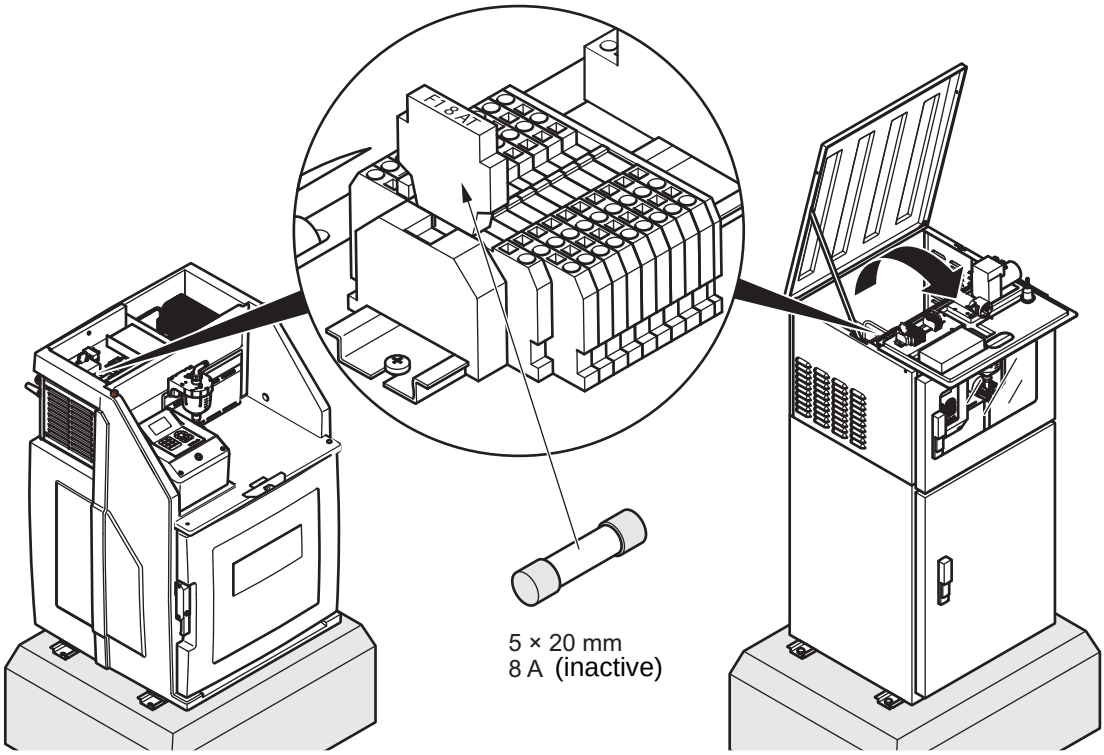


Figure 70 Fuse support

If the error is not rectified, please contact the customer service of the manufacturer (refer to Contact information, page 61).

5.3.4 Reassemble the housing (3010)

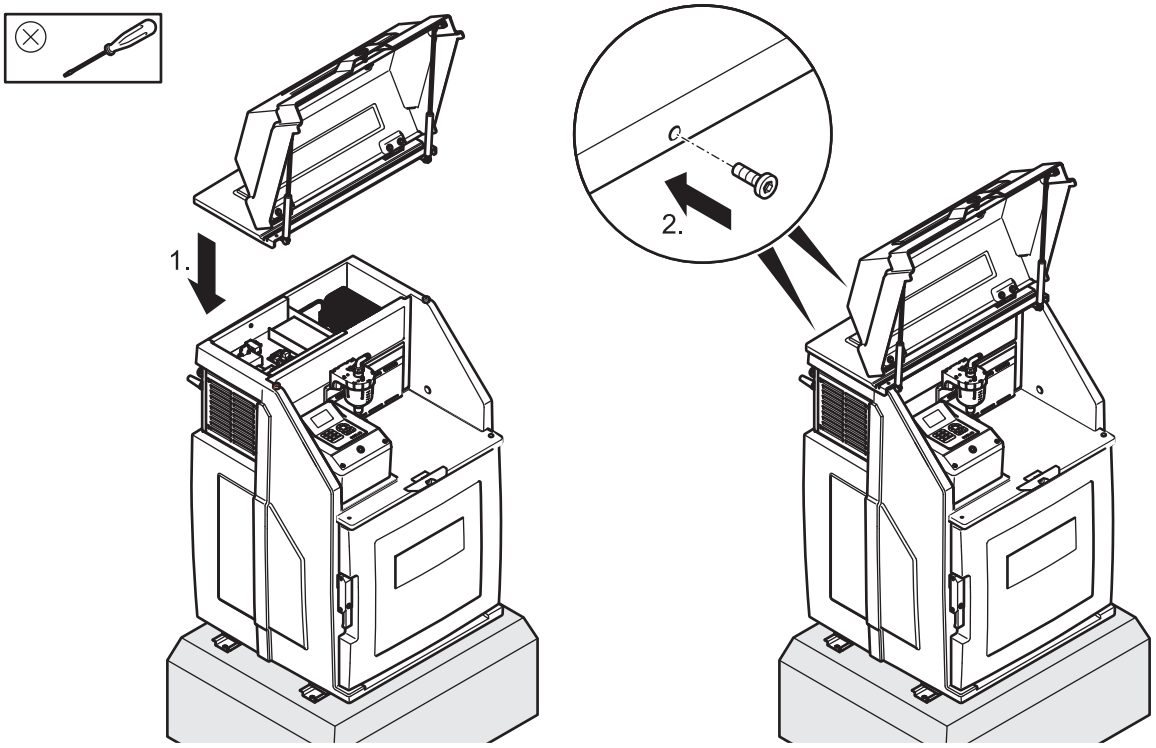


Figure 71 Install the safety cover (3010)

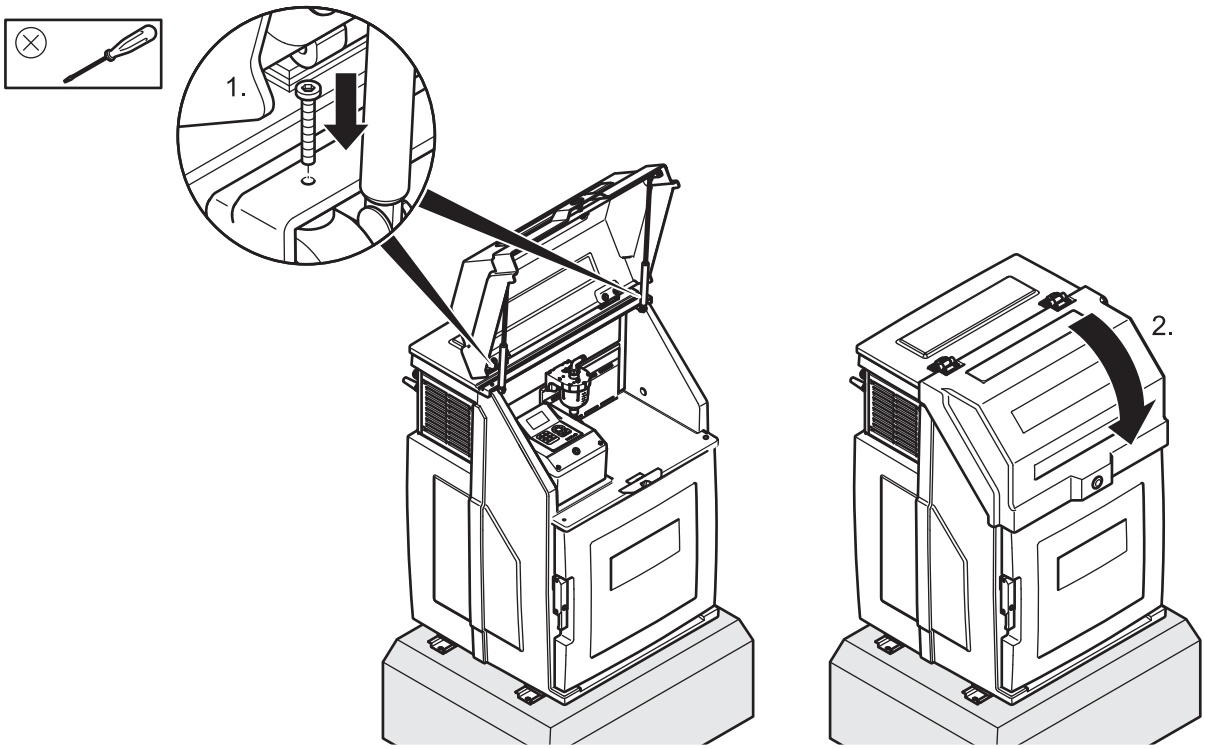


Figure 72 Close the housing (3010)

5.3.5 Reassemble the housing (3900–4410)

Close the housing lid as described in Figure 20, page 23, Figure 24, page 25 and Figure 25, page 26.

5.4 Instrument decommissioning and storage

1. Remove all liquids and, if necessary, solid matter from the infeed and outfeed lines and sample containers and clean as required.
2. Close all active programs.
3. Switch the equipment off.

6.1 Spare parts

Description	Cat. no.
Short Manual (xx = language number)	Doc013.xx.90205
Full User Manual (xx = language number)	Doc023.xx.90144

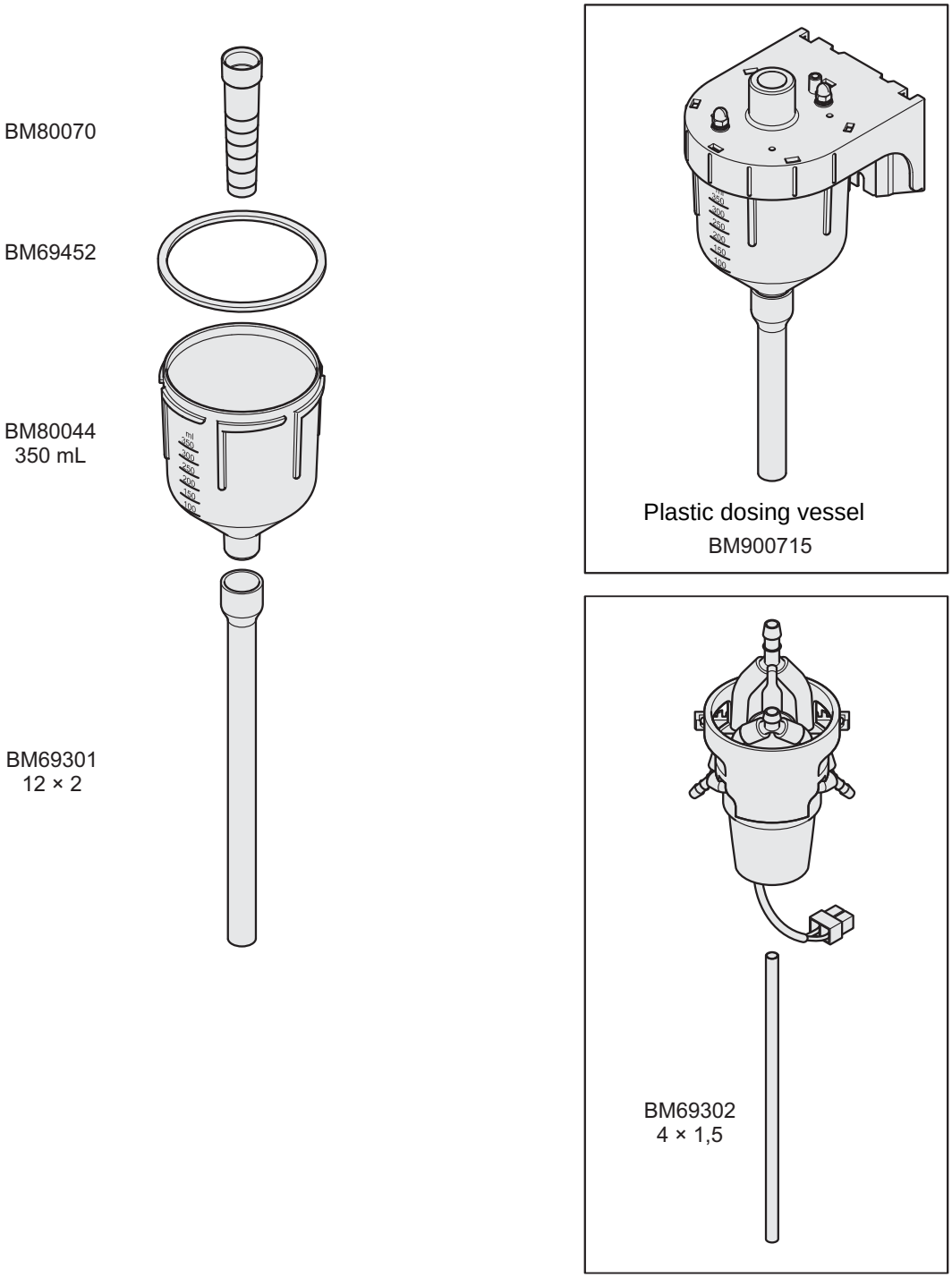


Figure 73 Plastic dosing vessel

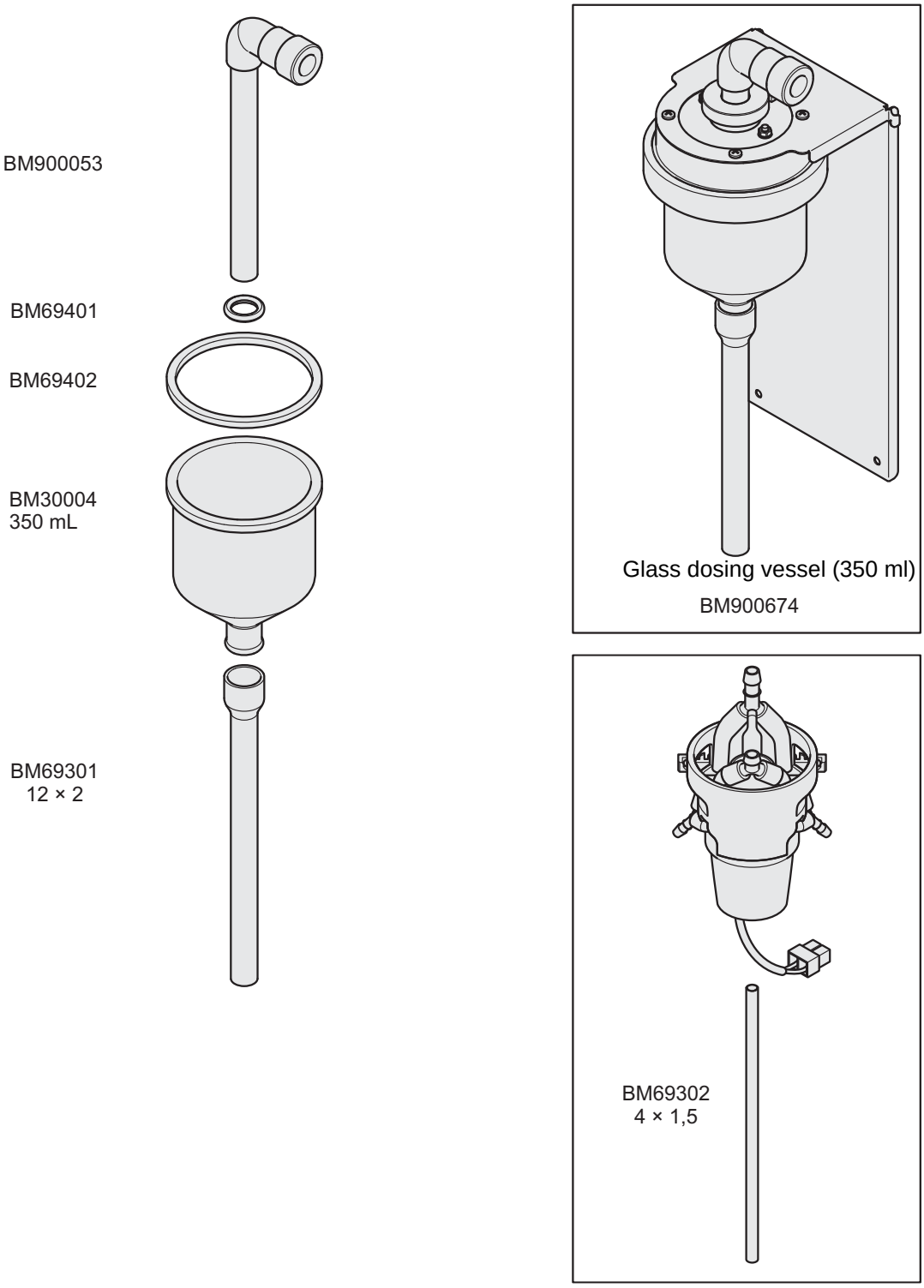


Figure 74 Glass dosing vessel (350 ml)

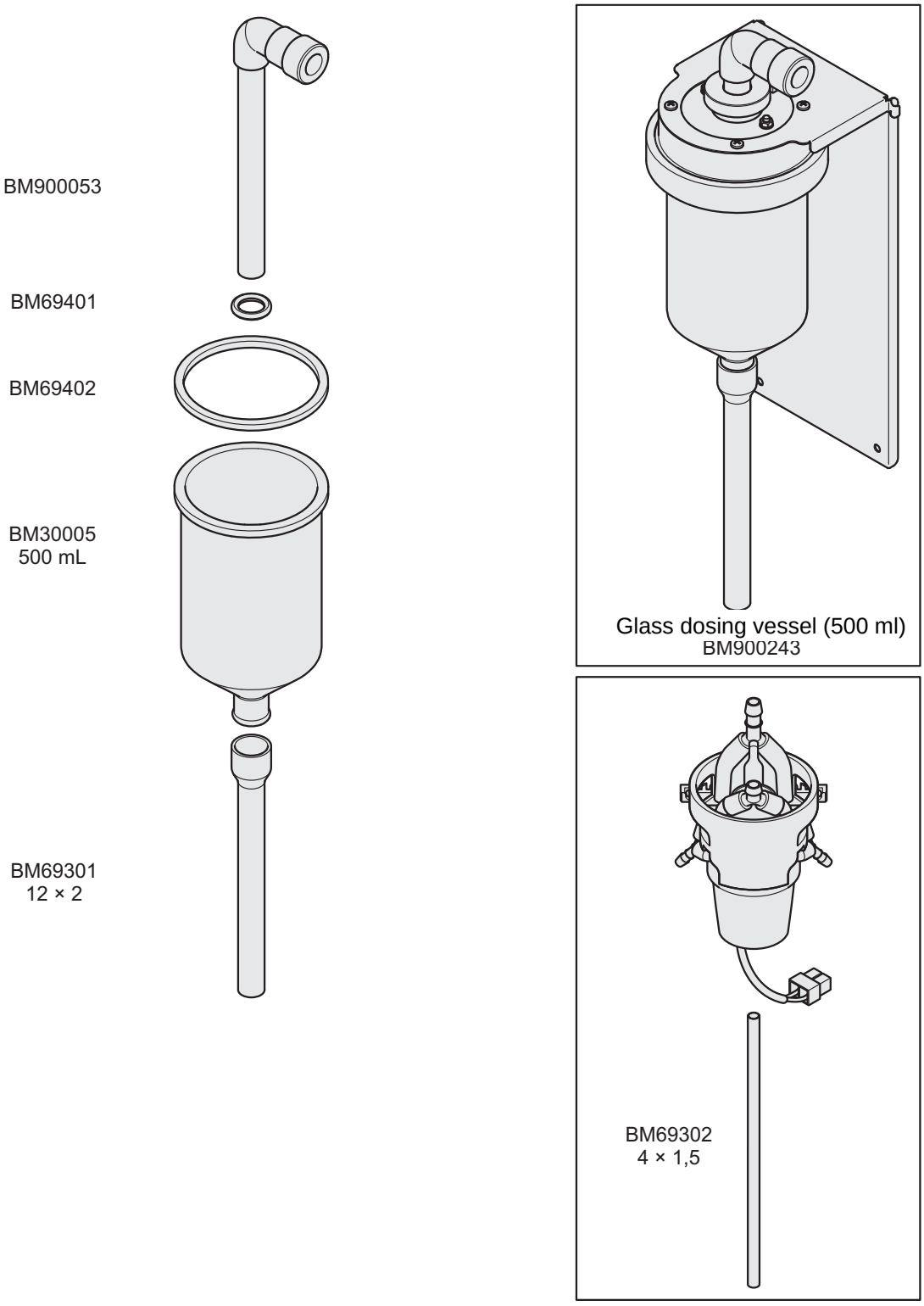


Figure 75 Glass dosing vessel (500 ml)

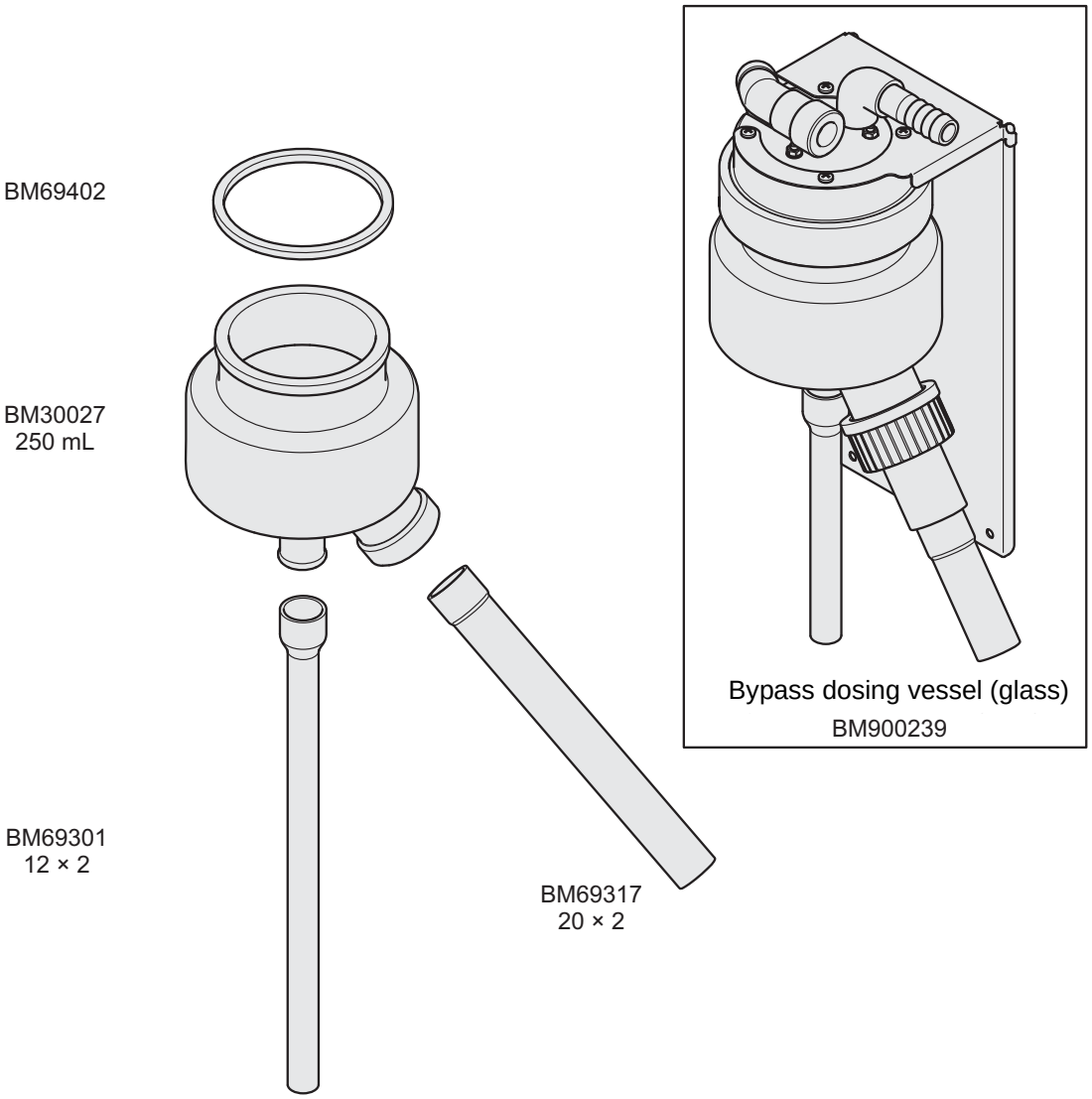


Figure 76 Glass dosing vessel (flow)

Section 7 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 equipment-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 are rendered void due to the failure to comply with the requirements.

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.

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