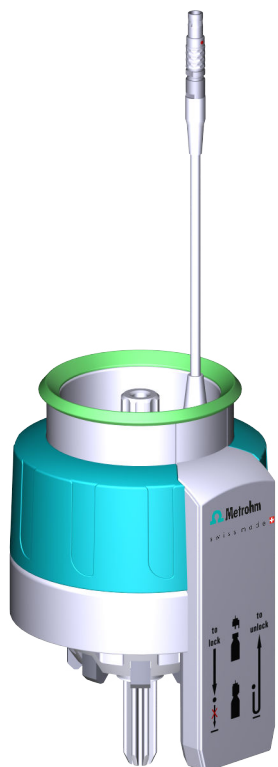


OMNIS Liquid Adapter



6.01600.010

Product manual

8.0108.8011EN / 2021-07-23



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IV ■■■■■■

1 Overview

1.1 OMNIS Liquid Adapter – Product description

The **OMNIS Liquid Adapter (6.01600.010)** is a quick-change coupling for chemical bottles with the following sealing mechanisms:

- **Bottle cap single-use** (mounted on the 3S reagents by Merck / Sigma Aldrich)
- **Bottle cap multi-use (6.01601.000)** (for all other bottles)

It takes only a single hand movement to transfer the OMNIS Liquid Adapter from one bottle to the next. The cable connection and the tube connection remain.

The OMNIS Liquid Adapter has an RFID reader. The RFID reader reads the data stored on the chemical bottle and transmits it to the software.

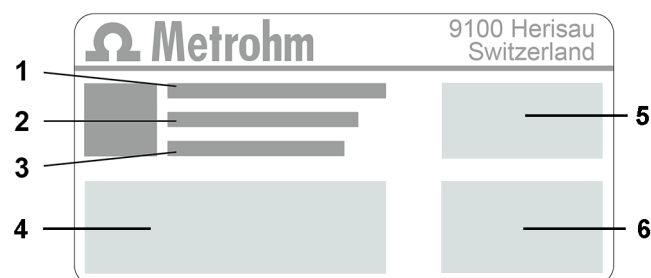
1.2 OMNIS Liquid Adapter – Product versions

The product is available in the following versions:

Table 1 Product versions

Article number	Designation
6.01600.010	OMNIS Liquid Adapter

The article number and serial number for identifying the product can be found on the type plate:



1 (01) = Article number in accordance with GS1 standard

2 (21) = Serial number

3 (240) = Metrohm article number

4 Certification

5 Certification

6 Technical specifications

1.3 Symbols and conventions

The following formatting may appear in the documentation:

(5-12)	Cross-reference to figure legend The first number refers to the figure number. The second number refers to the product part in the figure.
1	Instruction step Numbers indicate the order of the instructions steps.
Method	Names of parameters, menu items, tabs and dialog windows
File ► New	Menu path
[Continue]	Button or key

1.4 Further information

The Metrohm Knowledge Base <https://guide.metrohm.com> always provides the current version of this document. Further instructions, leaflets, release notes etc. may be available, depending on the product. You can directly access the required information or the associated PDF document using the full-text search function and filters.

1.5 Accessories

Up-to-date information on the scope of delivery and on optional accessories can be found on the Metrohm website. Download this information as follows:

Downloading the accessories list

- 1 Go to <https://www.metrohm.com>.
- 2 Enter the article number of the product (e.g. **2.1001.0010**) into the search field.

The search result is displayed.
- 3 Click on the product.

Detailed information regarding the product is shown on various tabs.

- 

Metrohm recommends downloading the accessories list from the Internet and keeping it for reference purposes.

2 Safety

2.1 Intended use

Metrohm products are used for the analysis and handling of chemicals.

Usage therefore requires the user to have basic knowledge and experience in handling chemicals. Knowledge regarding the application of fire prevention measures prescribed for laboratories is also mandatory.

Adherence to this technical documentation and compliance with the maintenance specifications make up an important part of intended use.

Any utilization in excess of or deviating from the intended use is regarded as misuse.

Specifications regarding the operating values and limit values of individual products are contained in the "Technical specifications" section, if relevant.

Exceeding and/or not observing the mentioned limit values during operation puts people and components at risk. The manufacturer assumes no liability for damage due to non-observance of these limit values.

The EU declaration of conformity loses its validity as soon as modifications are carried out on the products and/or the components.

2.2 Responsibility of the operator

The operator must ensure that basic regulations on occupational safety and accident prevention in chemical laboratories are observed. The operator has the following responsibilities:

- Instruct personnel in the safe handling of the product.
- Train personnel in the use of the product according to the user documentation (e.g. install, operate, clean, eliminate faults).
- Train staff on basic occupational safety and accident prevention regulations.
- Provide personal protective equipment (e.g. protective glasses, gloves).
- Provide suitable tools and equipment to carry out the work safely.

The product may be used only when it is in perfect condition. The following measures are required to ensure the safe operation of the product:

- Check the condition of the product before use.
- Remedy defects and malfunctions immediately.
- Maintain and clean the product regularly.

2.3 Requirements for operating personnel

Only qualified personnel may operate the product. Qualified personnel are persons who meet the following requirements:

- Basic regulations on occupational safety and accident prevention for chemical laboratories are known and complied with.
- Knowledge of handling hazardous chemicals is present. Personnel have the ability to recognize and avoid potential dangers.
- Knowledge regarding the application of fire prevention measures for laboratories is available.
- Safety-relevant information is communicated and understood. The personnel can operate the product safely.
- The user documentation has been read and understood. The personnel operate the product according to the instructions in the user documentation.

2.4 Safety instructions

2.4.1 Danger from electrical potential

Contact with electrical potential can cause serious injuries or death. To avoid danger from electrical potential, observe the following:

- Operate the product only if it is in perfect condition. The housing must also be intact.
- Only use the product with the covers fitted. If covers are damaged or missing, disconnect the product from the energy supply and contact the regional Metrohm service representative.
- Protect live components (e.g. power supply unit, power cord, connection sockets) against moisture.
- Always have maintenance work and repairs on electrical components carried out by a regional Metrohm service representative.
- Disconnect the product from the energy supply immediately if at least one of the following cases occurs:
 - The housing is damaged or open.
 - Live parts are damaged.
 - Moisture penetrates.

2.4.2 Danger from biological and chemical hazardous substances

Contact with biological hazardous substances may cause poisoning from toxins or infections from microorganisms. Contact with aggressive chemical substances may cause poisoning or chemical burns. To avoid danger from biological or chemical hazardous substances, observe the following:

- Label the product according to regulations if it is used for substances that have a potential for chemical hazards and are generally subject to the Hazardous Substances Ordinance.
- Wear personal protective equipment (e.g. protective glasses, gloves).
- Use exhaust equipment when working with vaporizing hazardous substances.
- Dispose of hazardous substances in accordance with regulations.
- Clean and disinfect contaminated surfaces.
- Only use detergents that do not cause any unwanted side reactions with the materials to be cleaned.
- Dispose of chemically contaminated materials (e.g. cleaning material) in accordance with regulations.
- Proceed as follows in case of a return shipment to Metrohm AG or a regional Metrohm representative:
 - Decontaminate the product or product component.
 - Remove the labeling for hazardous substances.
 - Create a declaration of decontamination and enclose it with the product.

2.4.3 Danger from highly flammable substances

Using highly flammable substances or gases may cause fires or explosions. To avoid danger from highly flammable substances, observe the following:

- Avoid ignition sources.
- Use protective grounding.
- Use exhaust equipment.

2.4.4 Danger from leaking liquids

Leaking liquids may cause injuries and may damage the product. To avoid danger from leaking liquids, observe the following:

- Check the product and its accessories for leakages and loose connections.
- Replace leaking parts and connecting elements without delay.
- Tighten loose connecting elements.
- Do not loosen tubing connections under pressure.
- Do not remove aspiration tubing under pressure.
- Carefully pull the ends of the tubing out of the containers.
- Carefully let liquids from tubing drain into suitable containers.
- Insert the buret tips completely into the containers.
- Remove and dispose of leaked liquids in accordance with regulations.
- If you suspect that liquid has penetrated the instrument, disconnect the instrument from the energy supply. Then have the instrument checked by a regional Metrohm service representative.

2.4.5 Danger during transport of the product

Chemical or biological substances may be spilled during the transport of the product. Parts of the product may fall down or may be damaged. There is a risk of injury from chemical or biological substances and pieces of broken glass. To ensure safe transport, observe the following:

- Remove loose parts (e.g. sample racks, sample vessels, bottles) before transport.
- Remove liquids.
- Lift and transport the product with both hands on the base plate.
- Lift and transport heavy products only according to instructions.

2.5 Design of warning messages

There are 4 hazard levels for warning messages. The following signal words are used for classifying the hazard levels in warning messages:

- **DANGER** indicates a hazardous situation which, if not avoided, will result in serious injury or death.
- **WARNING** indicates a hazardous situation which, if not avoided, could result in serious injury or death.
- **CAUTION** indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
- **NOTICE** indicates a hazardous situation which, if not avoided, could result in property damage.

Warning messages differ in design (color and warning sign) depending on the hazard level:



DANGER

Type and source of danger

Consequences when not observing the notice: An irreversible injury that may result in death is very probable.

- Measures to avoid the danger



WARNING

Type or source of danger

Consequences when not observing the notice: A serious injury that may result in death is probable.

- Measures to avoid the danger



CAUTION

Type or source of danger








Consequences when not observing the notice: A minor to moderate injury is probable.





- Measures to avoid the danger

2.6 Meaning of warning signs

This documentation uses the following warning signs:

Table 2 Warning sign according to ISO 7010

Warning sign	Meaning
	General warning sign
	Warning of electrical voltage
	Warning of hand injuries
	Warning of sharp object
	Warning of hot surface
	Warning of biological hazard
	Warning of toxic materials







Warning sign	Meaning
	Warning of flammable materials
	Warning of corrosive substances
	Warning of optical radiation
	Warning of laser beams

Depending on the intended use of the product, the corresponding warning sign stickers must be placed on the product.

The data cable fastened to the OMNIS Liquid Adapter transfers the information to the analyzer and to the software.

3.3 System – Signals

System components with status indicators show their operating status with colors and/or flashing patterns. The meaning of the colors and flashing patterns is explained in the following table.

Visual signal		Meaning
	LED lights up yellow.	System start or initialization
	LED flashes yellow (slowly).	Ready for connection setup or locking
	LED flashes yellow (fast).	Connection setup started or locking underway
	LED lights up green.	Ready for operation
	LED flashes green (slowly).	In operation
	LED flashes red (fast).	Malfunction or error

Some system components only use part of the explained flashing patterns.



4 Delivery and packaging

4.1 Delivery

Inspect the delivery immediately upon receipt:

- Check the delivery against the delivery note to ensure completeness.
- Check the product for damage.
- If the delivery is incomplete or damaged, contact your regional Mettler representative.

4.2 Packaging

The product and accessories are supplied in protective special packaging. Keep this packaging to ensure safe transportation of the product. If a transport locking device is present, keep this as well for future reuse.



5 Installation

5.1 Installation by Metrohm

As a basic rule, the installation of the system is carried out by the regional Metrohm service representative.

5.2 Setup location


The product is only suitable for operation indoors and may not be used in explosive environments.

The following requirements apply to the setup location:

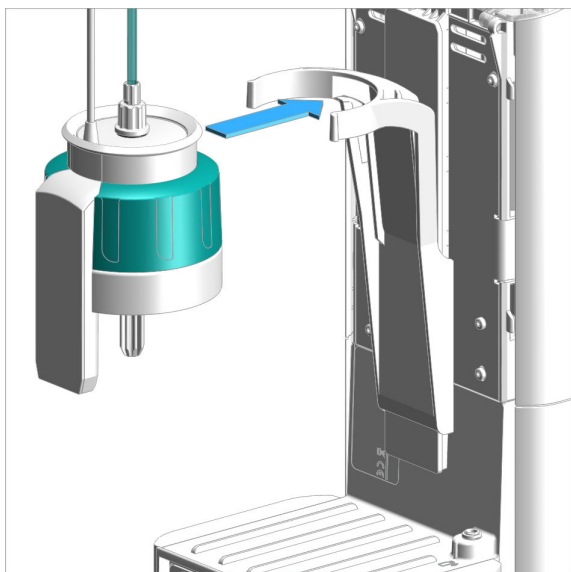
- The room is well ventilated, protected against direct sunlight and excessive temperature fluctuations.
- The setup space is stable and free of vibrations. The setup space must be suitable for the dimensions and weight of the components (see Technical specifications).
- All cables and connectors are accessible during operation. The cables are safely installed (no tripping hazards).
- The workplace is ergonomically designed and ensures trouble-free operation of the product.

5.3 Mounting and connecting the OMNIS Liquid Adapter

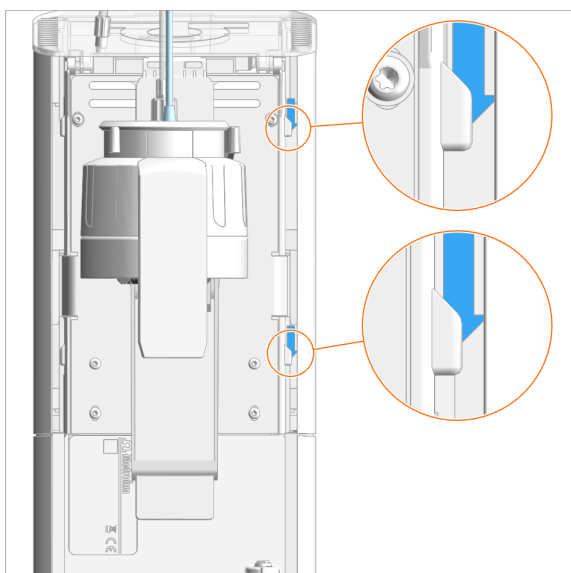
The OMNIS Liquid Adapter can be securely inserted into the bottle holder of OMNIS instruments.

The OMNIS Liquid Adapter is equipped with a data cable. The cable transmits the data stored on the RFID tag of the chemical bottle to the system. It must therefore be connected to the instrument or module that is to receive the data. All instruments or modules that can receive data from the OMNIS Liquid Adapter are equipped with a MSI socket. MSI sockets are marked with the  symbol.

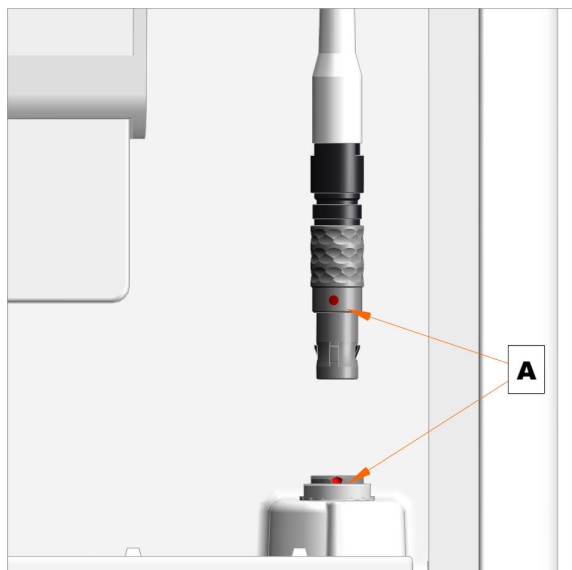
Mounting the OMNIS Liquid Adapter to the instrument



Insert the OMNIS Liquid Adapter into the bottle holder.



Insert the cable of the OMNIS Liquid Adapter through the right cable guide of the instrument. At the same time, push the cable behind the two clips.



1. Align the red dot on the plug with the red dot on the MSI socket [A].
2. Plug in the plug until you can feel the plug snap in.



NOTICE

It should be easy to plug in the cable.

- Do not apply force if the plug cannot be inserted easily!
- Rotate the plug to the right or left using light pressure until it latches in the socket.

Extension cable

Extension cables in two lengths are available with the OMNIS Liquid Adapter:

Table 3 Extension cable

Order number	Length
6.02106.000	55 cm
6.02106.010	2 m



NOTICE

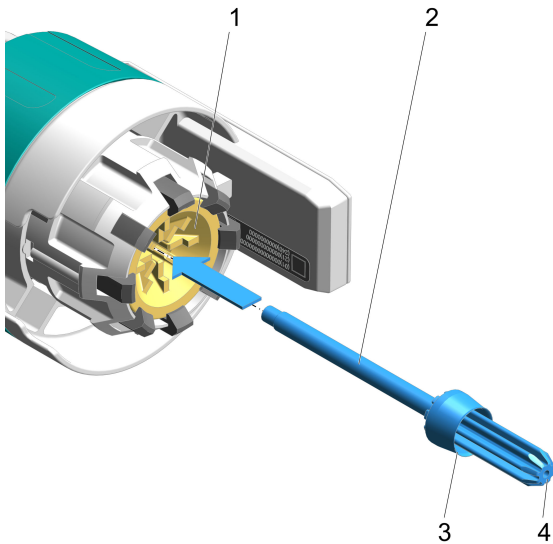
To make sure that the data transmission is complete, use only **one** extension cable.

5.4 Assembling the OMNIS Liquid Adapter

Assembling the aspiration coupling

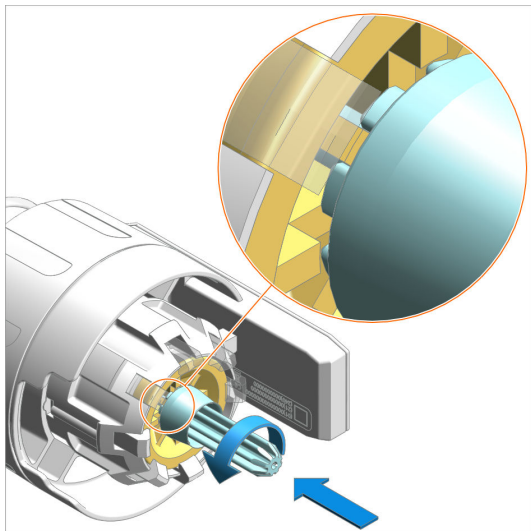
Prerequisites:

- The aspiration coupling (6.01602.000) is freshly cleaned and its sealing lip and sealing surface are undamaged.
- The tubing adapter is removed from the aspiration coupling.



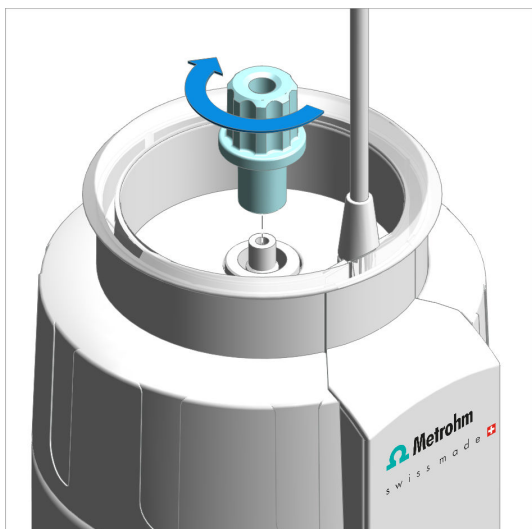
Inserting the aspiration tube

Insert the aspiration tube **(2)** from below into the aspiration cone **(1)** of the OMNIS Liquid Adapter. Make sure that the sealing lip **(3)** and the sealing surface **(4)** are not damaged while doing so.



Mounting the aspiration tube

1. Push the aspiration tube further in.
2. Rotate the aspiration tube slightly, so that the teeth of the aspiration tube snap into the gaps in the OMNIS Liquid Adapter, see figure.
3. Press the aspiration tube into the OMNIS Liquid Adapter as far as it will go.



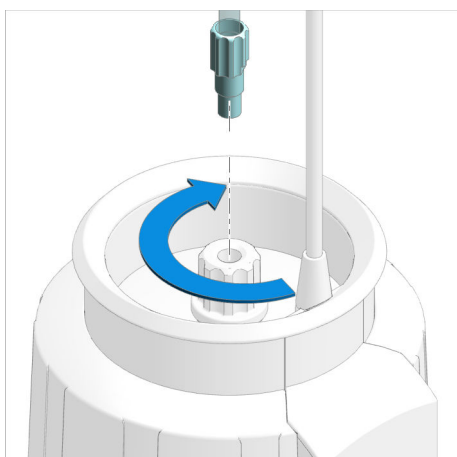
Screwing tight the tubing adapter

Screw tight the tubing adapter from above.

Connecting the FEP tubing

Accessories

- FEP tubing with M6 connector (6.1805.XXX)



Screw tight the FEP tubing onto the tubing adapter by hand.

Plugging in the cable

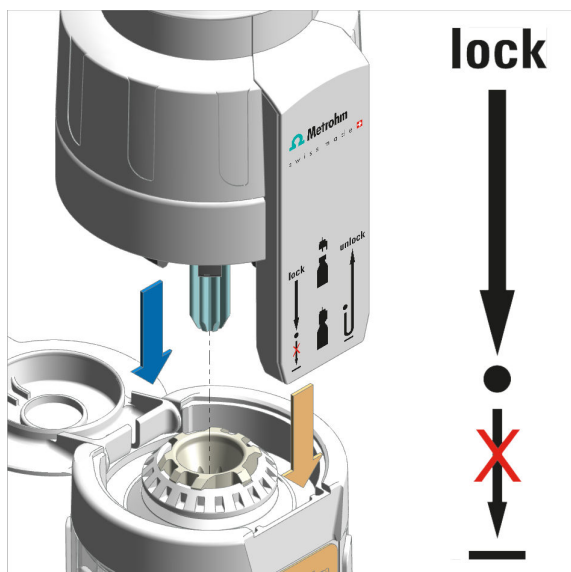
To connect the cable to the desired instrument or module that is to receive data, see *OMNIS Liquid Adapter – Plugging in the cable* (see chapter 5.5, page 18).

6 Start-up

6.1 Initial start-up by Metrohm

As a basic rule, the initial start-up of the system is carried out by the regional Metrohm service representative.

Locking the OMNIS Liquid Adapter



1. Open the flip-top lid of the bottle.
2. Rotate the OMNIS Liquid Adapter in such a way that the RFID reader of the OMNIS Liquid Adapter and the RFID tag on the bottle are aligned.
3. Place the OMNIS Liquid Adapter on the bottle and press it down only as far as the first pressure point (*see where "lock" is imprinted on the OMNIS Liquid Adapter*).

The OMNIS Liquid Adapter clicks in place on the bottle.

8 Maintenance

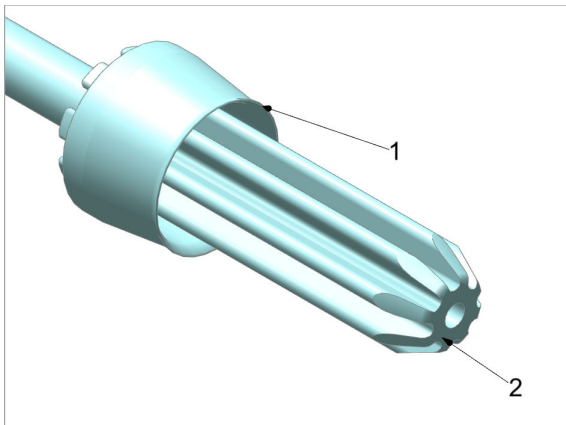
8.1 Maintenance

Regularly perform maintenance work on the product to prevent malfunctions and to ensure a long service life.

- Metrohm recommends having the products maintained by specialist personnel of Metrohm AG as part of an annual service. Shorter maintenance intervals may be necessary if you frequently work with caustic and corrosive chemicals.
- Only perform maintenance work that is described in this instruction. Contact your regional Metrohm service representative for further maintenance work and repairs. The regional Metrohm service representative offers every form of technical advice for maintenance and service of all Metrohm products.
- Only use spare parts that meet the technical requirements of the manufacturer. Original spare parts always meet these requirements.

8.2 Cleaning the OMNIS Liquid Adapter

Cleaning the aspiration tube



1. Rinse the aspiration tube thoroughly under running water.
Rub dry with a lint-free, damp cloth.
2. Check whether the sealing lip **(1)** and the sealing surface **(2)** are clean and intact.

If the sealing lip or the sealing surface of the aspiration tube can no longer be cleaned, mount a new aspiration tube.

Cleaning the OMNIS Liquid Adapter



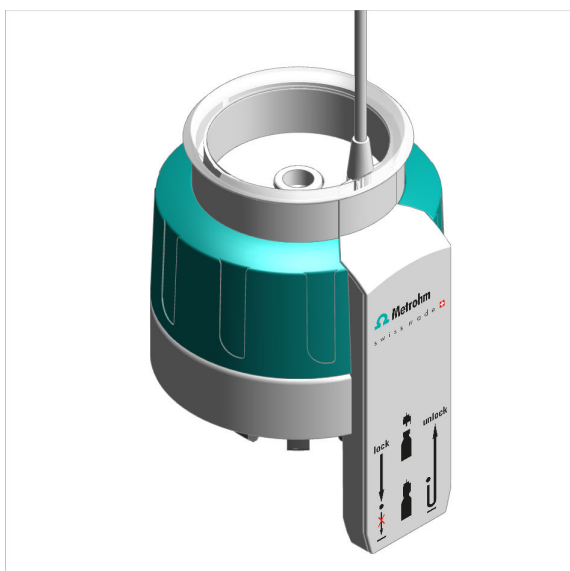
CAUTION

Instrument damage through inward seepage of liquid

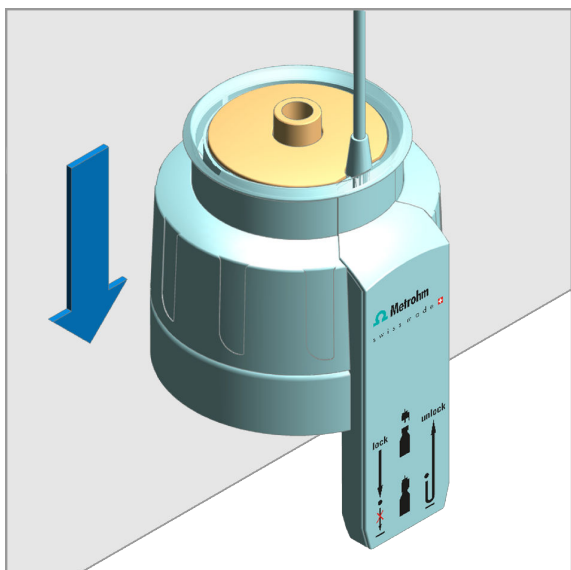
Property damage to the instrument or malfunction through the inward seepage of liquids (e.g. when cleaning).

The instrument is not resistant to splash water. Water can seep into the interior during cleaning and cause damage (e.g. to the electronics).

- Do not clean the instrument under running water.
- Do not use a wash bottle to clean the instrument.
- Only wipe the instrument thoroughly with a damp cloth.



Wipe the OMNIS Liquid Adapter thoroughly from the outside with a damp cloth.



1. In order to access the lowered part better, set the OMNIS Liquid Adapter on a table edge. Push the OMNIS Liquid Adapter down and keep it pushed down. The lowered part rises.
2. Thoroughly wipe the surface and the slot for the aspiration tube with a damp cloth.
3. If the interior of the slot is contaminated, wipe it with a moistened cotton bud.
4. Release the housing of the OMNIS Liquid Adapter.

Contamination with organic substances

If the OMNIS Liquid Adapter is contaminated with organic substances, clean it with ethanol, methanol and/or isopropanol.



NOTICE

Do not use solvents that contain acetone to clean the OMNIS Liquid Adapter. Acetone will corrode the labels on the OMNIS Liquid Adapter.

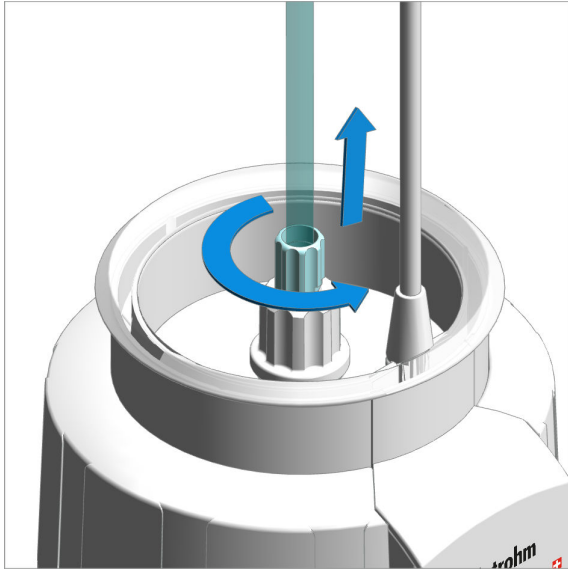
8.3 Dismantling the OMNIS Liquid Adapter

Removing the aspiration tube



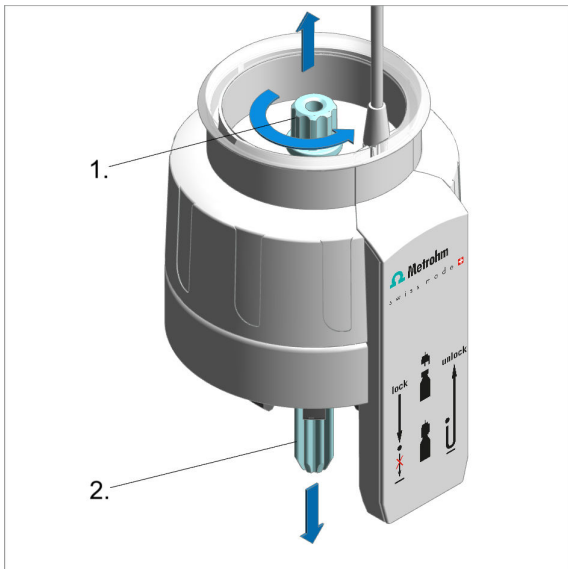
NOTICE

Unplug the cable before you dismantle the OMNIS Liquid Adapter.



Removing the FEP tubing

Unscrew the FEP tubing.



Removing the aspiration tube

1. Unscrew the tubing adapter.
2. Pull out the aspiration tube from below.

8.4 OMNIS Liquid Adapter – Replacing the aspiration coupling



CAUTION

Problems with leak-tightness

The leak-tightness of the OMNIS Liquid Adapter can no longer be guaranteed if the sealing lip or the sealing surface of the aspiration coupling is soiled or damaged.

The sealing lip and the sealing surface of the aspiration coupling must always be kept clean and intact.

- Check the status of the aspiration coupling every time a bottle is replaced.
- Only mount an aspiration coupling that is new or cleaned and intact.
- Do not use an aspiration coupling that has been in operation for more than a year.

Replacing the aspiration coupling

- The old aspiration coupling is disassembled.
- The aspiration coupling is cleaned and checked.
- A new aspiration coupling (6.01602.000) is available.

- 1 To replace the aspiration coupling, follow the steps described in **Assembling the OMNIS Liquid Adapter**, see *Assembling the OMNIS Liquid Adapter* (see chapter 5.4, page 16).

9 Troubleshooting

Messages on malfunctions and errors are displayed in the control software or in the embedded software (e.g. on the display of an instrument) and contain the following information:

- Descriptions of causes of malfunctions (e.g. jammed drive)
- Descriptions of problems with the control (e.g. missing or invalid parameter)
- Information on how to solve the problem

System components with status display elements also indicate malfunctions and errors with a red flashing LED.

Troubleshooting on the product is often only possible with the control software or the embedded software (e.g. initializing, moving to a defined position).

See also

System – Signals (chapter 3.3, page 11)

11.4 OMNIS Liquid Adapter – Housing

Materials

Enclosure

Adapter	PP	polypropylene
Wet end	PFA	perfluoroalkoxy alkane

IP degree of protection IP 20

11.5 OMNIS Liquid Adapter – Connectors specifications

Energy supply

Socket	round plug 4-pin, size 00, 0°
--------	-------------------------------

MSI

Metrohm Solution Identification

<i>Cable type</i>		cable sheath poly(vinyl chloride) (PVC), shielded
<i>Cable length</i>	0.6 m	from Metrohm accessories

RFID

<i>Data transmission</i>	radio
<i>Technology</i>	ISO/IEC 14443 A, MIFARE, inductive
<i>Frequency</i>	13.56 MHz
<i>Range</i>	max. 50 mm

11.6 Display specifications

Status display

LED

multi-colored