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1 Introduction

Thank you for choosing a METTLER TOLEDO instrument. The instrument combines high performance with ease of use.

This document is based on the software version V 2.21.

1.1 Further documents and information

This document is available in other languages online.

▶ www.mt.com/quantos

▶ www.mt.com/QLx3-RM

Search for software downloads

▶ www.mt.com/labweighing-software-download

Search for documents

▶ www.mt.com/library

For further questions, please contact your authorized METTLER TOLEDO dealer or service representative.

▶ www.mt.com/contact

1.2 Explanation of conventions and symbols used

Conventions and symbols

Key and/or button designations and display texts are shown in graphic or bold text, e.g.,  **Printer**.

 **Note** For useful information about the product.



Refers to an external document.

Elements of instructions

- Prerequisites

- 1 Steps

- 2 ...

- ⇒ Intermediate results

- ⇒ Results

1.3 Acronyms and Abbreviations

English term	Translated term	Explanation
EMC		Electromagnetic Compatibility
FCC		Federal Communications Commission
INI		Installation Instructions
LPS		Limited Power Source
POM		Polyoxymethylene
RFID		Radio-frequency identification
RM		Reference Manual
SELV		Safety Extra Low Voltage
SOP		Standard Operating Procedure
UM		User Manual
USB		Universal Serial Bus

1.4 Compliance information

The compliance information related to this product can be found in appendix.

2 Safety Information

- Read and understand the instructions in this manual before using the device.
- Keep this manual for future reference.
- Include this manual if you pass on the device to other parties.

If the device is not used according to the instructions in this manual or if it is modified, the safety of the device may be impaired and Mettler-Toledo GmbH assumes no liability.

2.1 Definitions of signal words and warning symbols

Safety notes contain important information on safety issues. Ignoring the safety notes may lead to personal injury, damage to the instrument, malfunctions and false results. Safety notes are marked with the following signal words and warning symbols:

Signal words

WARNING	A hazardous situation with medium risk, possibly resulting in death or severe injury if not avoided.
CAUTION	A hazardous situation with low risk, resulting in minor or moderate injury if not avoided.
NOTICE	A hazardous situation with low risk, resulting in damage to the instrument, other material damage, malfunctions and erroneous results, or loss of data.

Warning symbols



General hazard: read the User Manual or the Reference Manual for information about the hazards and the resulting measures.



Electrical shock



Notice

2.2 Product-specific safety notes

Intended use

This dosing system is designed to be used in analytical laboratories by trained staff. The dosing system is intended for weighing and dosing powder or liquid samples.

Any other type of use and operation beyond the limits of use stated by Mettler-Toledo GmbH without consent from Mettler-Toledo GmbH is considered as not intended.

Responsibilities of the instrument owner

The instrument owner is the person holding the legal title to the instrument and who uses the instrument or authorizes any person to use it, or the person who is deemed by law to be the operator of the instrument. The instrument owner is responsible for the safety of all users of the instrument and third parties.

METTLER TOLEDO assumes that the instrument owner trains users to safely use the instrument in their workplace and deal with potential hazards. METTLER TOLEDO assumes that the instrument owner provides the necessary protective gear.

Protective equipment



Chemical-resistant gloves



Goggles



Lab coat

Safety notes



⚠ WARNING

Death or serious injury due to electric shock

Contact with parts that carry a live current can lead to death or injury.

- 1 Only use the METTLER TOLEDO power supply cable and AC/DC adapter designed for your instrument.
- 2 Connect the power cable to a grounded power outlet.
- 3 Keep all electrical cables and connections away from liquids and moisture.
- 4 Check the cables and power plug for damage and replace damaged cables and power plugs.



⚠ WARNING

Injury and/or damage due to hazardous substances

Chemical, biological or radioactive hazards can be associated with the substances processed by the instrument. During dosing procedures, small amounts of the dosed substance may become airborne and penetrate the instrument or contaminate its surroundings.

The substance characteristics and related hazards is the full responsibility of the instrument owner.

- 1 Be aware of possible hazards associated with the substance and take adequate safety measures, e.g., those stated on the safety data sheet provided by the manufacturer.
- 2 Make sure that every instrument part in contact with the substance will not get altered or damaged by the substance.



⚠ WARNING

Injury or damage due to powder handling

Powders may get compacted in the dosing head and block it. Too much force applied by the dosing head mechanism may lead to a break and potentially hazardous substances may get airborne.

- 1 Handle the dosing heads with care.
- 2 If the dosing head seems blocked, avoid further dosing. Remove the head from the instrument and turn it upside down to loosen the powder.
- 3 Cease work immediately in the event of leak or break.



⚠ WARNING

Injury and/or damage due to reacting, flammable, or explosive substances

During the dosing procedure, substances could be combined and cause an exothermic reaction or explosion. This includes powders, liquids, and gases. It may lead to serious injuries and significant material damage.

The sample characteristics and related hazards is the full responsibility of the instrument owner.

- 1 Be aware of possible hazards associated with reacting, flammable, or explosive substances.
- 2 Ensure a working temperature low enough to prevent the formation of flames or an explosion.



⚠ WARNING

Injury or death due to toxic substances

If you use toxic, explosive, or flammable liquids with the pump, the exhaust air will be contaminated.

- Connect a tube to the exhaust air outlet to collect the contaminated air.



⚠ WARNING

Injury and/or damage due to reacting substances

When pressure is released from the bottle, the air/gas in the bottle moves back towards the pump. The air/gas coming from the coupled outlets mixes in the pump. Molecules of the substances in the various bottles can get in contact through this contaminated air/gas.

- 1 Do not connect bottles with incompatible liquids to the same pump simultaneously.
- 2 Before connecting a second, incompatible liquid to the pump, disconnect the first bottle and purge the pump cavity with clean air/gas.



⚠ WARNING

Injury and damage to pump or bottle due to high pressure

High pressure from external gas can damage the pump or the bottle.

- 1 Use a regulator on the external gas line.
- 2 Ensure that the pressure of the external gas does not exceed 0.5 bar (7.2 psi).



⚠ CAUTION

Injury due to splashing liquids

If the pressure in the bottle is not released, liquid might splash when removing the micro dosing valve, opening the bottle, or removing the liquid tube.

- Always release pressure before removing the micro dosing valve, opening the bottle, or removing the liquid tube.



⚠ CAUTION

Injury due to leaking liquids

Wrongly cut tubing can result in leaking connections.

- Cut the tubes with a tube cutter or a sharp knife.



⚠ CAUTION

Injury due to moving parts

- Do not reach into the working area while parts of the instrument are moving.



⚠ CAUTION

Injury due to sharp objects or broken glass

Instrument components, e.g., glass, can break and lead to injuries.

- Always proceed with focus and care.



NOTICE

Damage to the instrument due to the use of unsuitable parts

Using unsuitable parts with the instrument can damage the instrument or cause it to malfunction.

- Only use parts from METTLER TOLEDO that are intended to be used with your instrument.

**NOTICE****Damage to the instrument**

The instrument contains no user-serviceable parts.

- 1 Do not open the instrument.
- 2 In the event of problems, please contact a METTLER TOLEDO representative.

**NOTICE****Damage to the instrument due to inappropriate cleaning methods**

The instrument can be damaged by certain cleaning agents, solvents, or abrasives. If liquids enter the housing, they can damage the instrument.

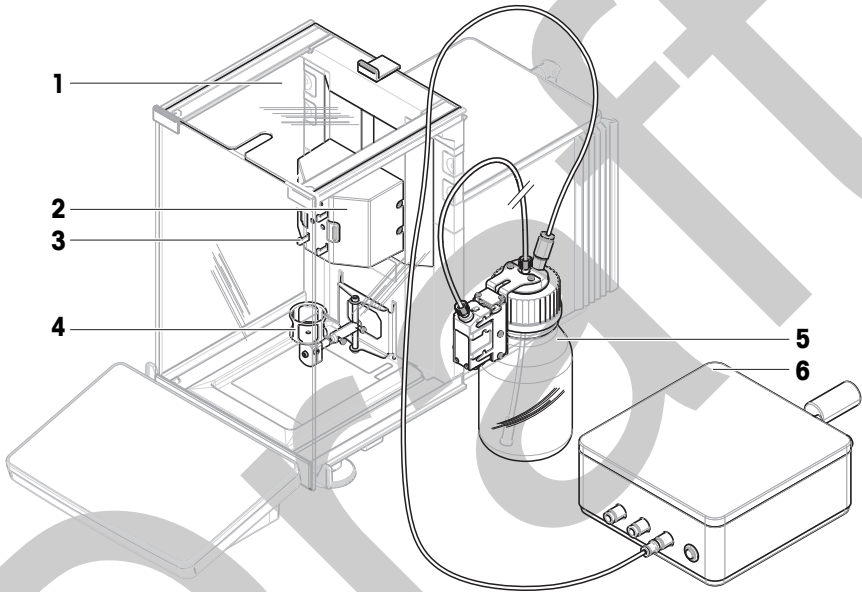
- 1 Only use a wet cloth with water and a mild detergent to clean the instrument or terminal.
- 2 Wipe off any spills immediately.
- 3 Make sure that no liquid penetrates the instrument.

3 Design and Function

3.1 Function description

The **QLX3 liquid module** can be added to **XPR analytical balances** to perform automatic dosing. The liquid dosing head is attached to the liquid module and located inside the weighing chamber. The height of the dosing module is adjusted manually. The **QL3 pump** and **QLL kit for bottle** are completing the system. The **QL3 pump** is used to built pressure in the bottle. When pressure is high enough, the micro dispensing valve in the liquid dosing head opens and liquid can ascend the liquid tube. Several pumps can be connected to the balance simultaneously

3.2 Overview



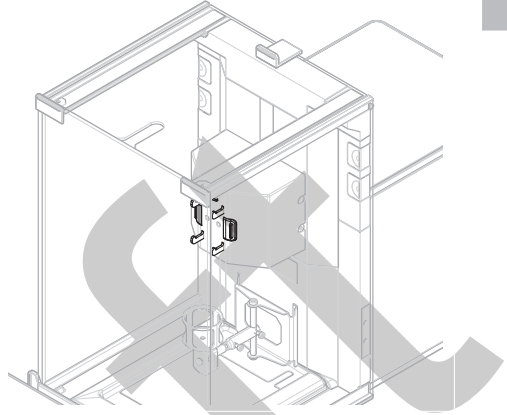
Legend for overview QLX3 liquid module

1	Top door	4	ErgoClip vial
2	Liquid module	5	QLL kit for bottle (not included)
3	Dosing head holder	6	QL3 pump (not included)

3.3 Components description

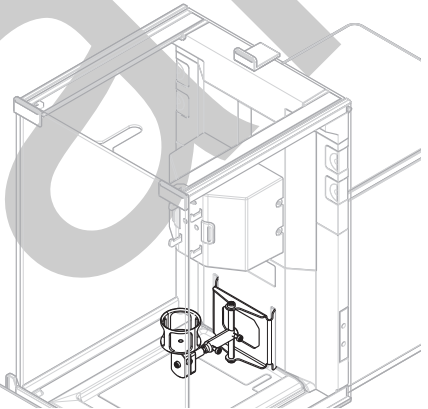
Dosing head holder

The dosing head holder is where the liquid dosing head is secured. The dosing head can be released by pressing the buttons on either side.



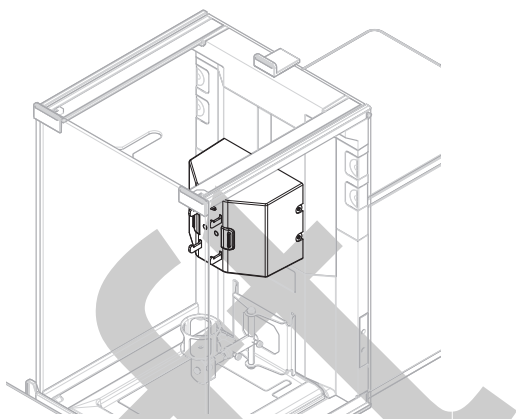
ErgoClip vial

The ErgoClip vial is used together with vial adapters to hold a vial in place. Those adapters are available for vials of various diameters and heights. See [Accessories ▶ Page 31]



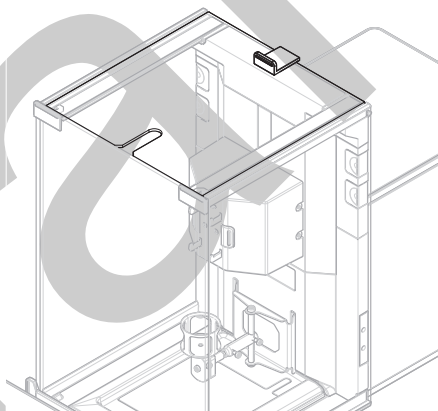
Liquid module

The liquid module is where the liquid dosing head is attached. It can be moved up and down manually to adjust the distance between the sample vessel and the tip of the dosing head.



Top door liquid module

The liquid module is provided with a top door designed with a slit through which the liquid tube can pass to reach the inside of the weighing chamber. This door is installed in the same railings as the normal door and can be open and closed manually as well as automatically.



See also

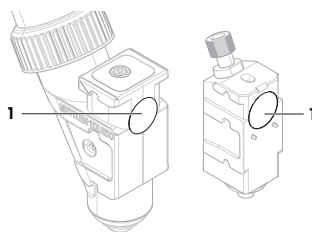
Accessories ▶ Page 31

3.4 Dosing head RFID tag

Each powder and liquid dosing head is equipped with an integrated RFID tag (1) that stores and exchanges data with the instrument.

Various data is stored in the RFID tag of the dosing heads, such as the substance name, lot ID, filling date, expiry date, etc. It can also include customized data fields.

This data can be edited on the terminal and should be set before using a new dosing head for the first time to have the data available for reports and labels.



3.5 Compliance information

The compliance information related to this product can be found in appendix.

4 Installation and Putting into Operation

This instrument must be installed by a METTLER TOLEDO service technician.

4.1 Scope of delivery

QLX3 liquid module

- QLX3 liquid module
- Top door liquid module
- ErgoClip vial
- Various vial adapters, 4 pcs
- Declaration of conformity
- User Manual

The scopes of delivery for the **QL3 pump** and the **QLL kit for bottles** are in the documentation delivered with these products.

4.2 Selecting the location

A balance is a sensitive precision instrument. The location where it is placed will have a profound effect on the accuracy of the weighing results.

Requirements of the location

Place indoors on stable table

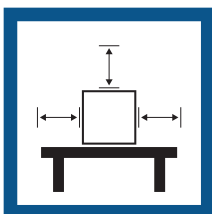
Ensure sufficient spacing

Level the instrument

Provide adequate lighting



Avoid direct sunlight



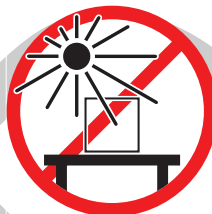
Avoid vibrations



Avoid strong drafts



Avoid temperature fluctuations



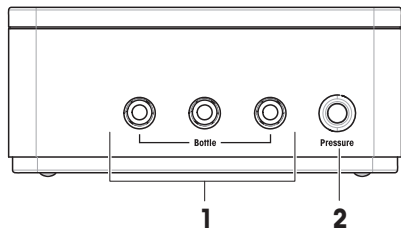
Sufficient spacing for balances: > 15 cm all around the instrument

Take into account the environmental conditions. See "Technical Data."

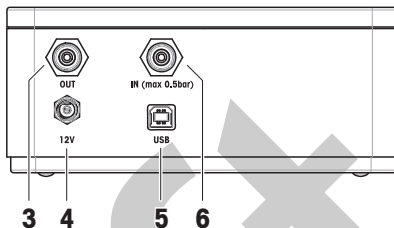
4.3 Setting up the liquid dosing system

4.3.1 Interface of the pump

Front



Rear



1	Air outlets to bottle	4	Socket for AC/DC adapter
2	Pressure release button and indicator light	5	USB port
3	Air exhaust outlet	6	Air inlet

4.3.2 Wiring the pump

The instrument is supplied with an AC/DC adapter and a country-specific power cable. The AC/DC adapter is suitable for use with:

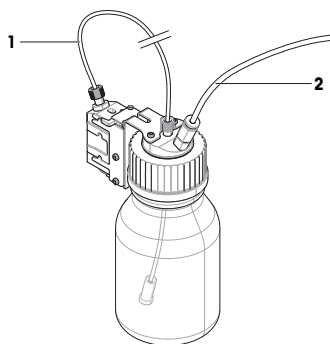
100 – 240 V AC, 50/60 Hz.

- 1 Install the cables in such a way that they cannot be damaged or interfere with operation.
- 2 Insert the plug of the AC/DC adapter in the power inlet of the pump.
- 3 Secure the plug by firmly tightening the knurled nut.
- 4 Insert the plug of the power cable into a grounded power outlet that is easily accessible.
- 5 Using the USB cable, connect the USB port of the pump to the USB device port of the balance.

4.3.3 Connecting the tubes

Tubes definition

The liquid tube is the thinner tube (1) used for transporting liquid from the bottle to the liquid dosing head. The air tube is the slightly bigger tube (2) used for pumping air into the bottle. By adding air through the air tube, pressure rises in the bottle. When the pressure reaches the configured target pressure, between 0.3 and 0.5 bar (4.4 to 7.2 psi), the micro dispensing valve in the dosing head opens and liquid can ascend the liquid tube. .



- 1 Liquid tube
- 2 Air tube

Preparing the liquid tube



CAUTION

Injury due to leaking liquids

Wrongly cut tubing can result in leaking connections.

- Cut the tubes with a tube cutter or a sharp knife.

- The liquid dosing head is inserted in the liquid dosing head support of the bottle.

- 1 Using a tube cutter or a sharp knife, cut a sufficient amount of tubing. The appropriate length mainly depends on the distance between the bottle and the dosing module while dosing.

Recommended length: about 0.9 m

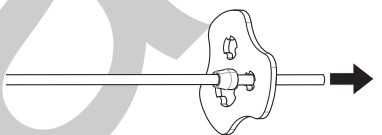
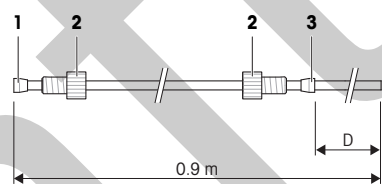
- 2 Place the sealing ring (1) on a flat stable surface, e.g., a table or a workbench, with the wider end downwards.
- 3 Take the end of the liquid tube and press it into the sealing ring.

⇒ This is the dosing-head end of the tube. The opposite end is the bottle end.

- 4 Thread the fastening nuts (2), paying attention to the orientation.

- 5 Thread the sealing ring (3) from the bottle end of the tube. Pay attention to the orientation.

- 6 Using the micro dosing valve tool, slide the sealing ring until the distance (D) is enough for the tube to reach the bottom of the bottle. Recommended distances for typical bottle volumes are listed next.



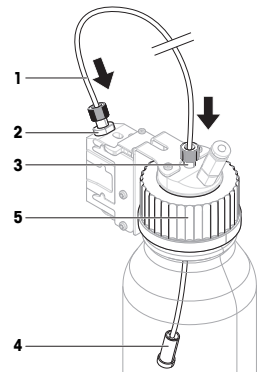
Typical distances (D) between the sealing ring and the bottle-end of the tube

Thread	Bottle volume	Distance (D)
GL45	1000 ml	220 mm
	500 ml	170 mm
	250 ml	135 mm
GL25	25 ml	90 mm

Connecting the liquid tube

- 1 Insert the dosing-head end of the tube (1) in the dosing head (2).
- 2 Tightly fasten the fastening nut to the dosing head.
- 3 Insert the bottle end of the tube through the corresponding hole in the bottle cap (3). The tube should reach the bottom of the bottle.
- 4 If needed, attach the suction filter (4) to the bottle end of the tube.
- 5 Tightly fasten the fastening nut to the bottle cap.
- 6 Screw the cap to the bottle (5).

The suction filter is used to ensure that no particles or impurities are carried through the liquid dosing head. Using the suction filter will extend the life time of the dosing head.



However, when dosing solutions, molecules of one of the substances might be absorbed by the suction filter, altering the concentration of the solution. The suction filter should only be used when dosing pure solvents.

Connecting the air tube



⚠ WARNING

Injury and/or damage due to reacting substances

When pressure is released from the bottle, the air/gas in the bottle moves back towards the pump. The air/gas coming from the coupled outlets mixes in the pump. Molecules of the substances in the various bottles can get in contact through this contaminated air/gas.

- 1 Do not connect bottles with incompatible liquids to the same pump simultaneously.
- 2 Before connecting a second, incompatible liquid to the pump, disconnect the first bottle and purge the pump cavity with clean air/gas.

- 1 Using a tube cutter or a sharp knife, cut a sufficient amount of tubing. The appropriate length mainly depends on the distance between the bottle and the pump while dosing. Recommended length: about 0.7 m
- 2 Connect the air tube (1) to the air inlet of the bottle (2)

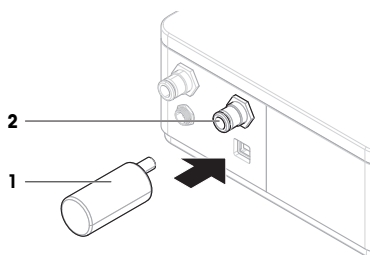
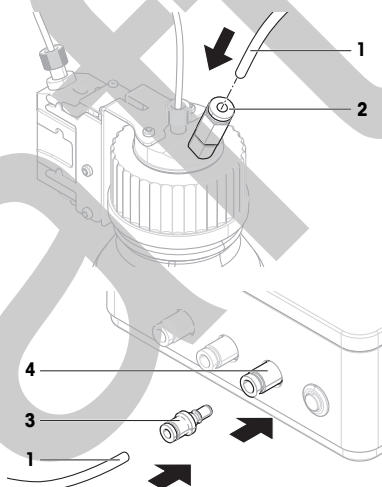
- 3 Insert the other end of the air tube (1) in a tube adapter (3) and press firmly.
- 4 Connect the tube adapter (3) to one of the air outlets (4) of the pump. Press until you hear a click.

When a tube is connected to the air outlet of the pump, the valve of the air outlet opens. Never leave a tube that is connected to the air outlet unconnected at the other end because pressure can not be built up.

You can connect up to 3 bottles to each pump.

Connecting the muffler

- Insert the muffler (1) into the air inlet (2) to absorb the noise.



Removing the air tube



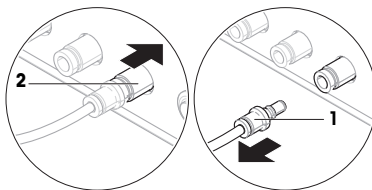
NOTICE

Damage to tube connectors due to mishandling

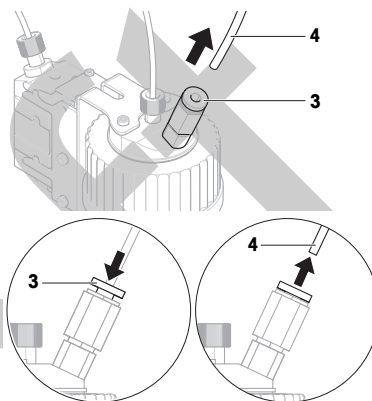
If the tubes are not removed correctly, the connectors of the pump and the bottle cap can be damaged.

- To remove the tubes, press down the ring on the connector and pull out the tube carefully.

- 1 Remove the tube adapter (1) from the pump by pushing the connector (2) of the air outlet towards the pump.
⇒ The adapter is released and can be removed.



- 2 Remove the air tube from the bottle by firmly pressing down the ring (3) and pulling the tube (4) simultaneously.
- 3 If necessary, e.g., for maintenance purposes, use the same procedure to remove the air tube from the tube adapter: firmly press the ring and pull the tube simultaneously.



Using the pump with external gas

The liquid can be protected by feeding an external gas, e.g., nitrogen, to the pump. Make sure that the pressure of the external gas does not exceed 0.5 bar (7.2 psi).



WARNING

Injury and damage to pump or bottle due to high pressure

High pressure from external gas can damage the pump or the bottle.

- 1 Use a regulator on the external gas line.
- 2 Ensure that the pressure of the external gas does not exceed 0.5 bar (7.2 psi).

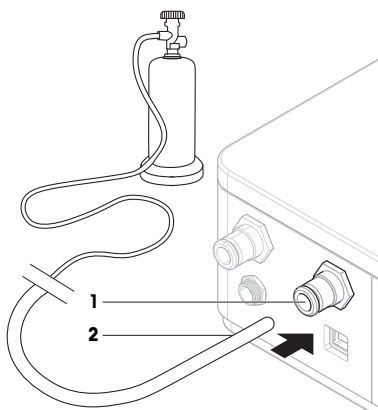
- A regulator is connected to the external gas line.
- 1 Remove the muffler from the air inlet (1).
 - 2 Connect the tube of external gas (2) to the air inlet (1).

Note

Outer tube diameter: 6 mm

Pressure in external gas line: The pressure must be at least 0.1 bar (1.5 psi) The pressure must not exceed the configured dosing pressure set on the terminal.

The external gas tube is not provided by METTLER TOLEDO.



Collecting contaminated air



WARNING

Injury or death due to toxic substances

If you use toxic, explosive, or flammable liquids with the pump, the exhaust air will be contaminated.

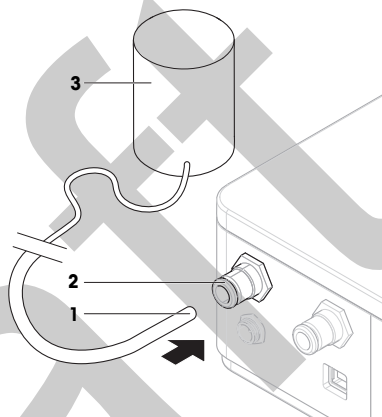
- Connect a tube to the exhaust air outlet to collect the contaminated air.

- Connect a tube (1) to the exhaust air outlet (2) to collect the contaminated air into a safe container (3).

Note

Outer tube diameter: 6 mm

The exhaust air tube is not provided by METTLER TOLEDO.



5 Operation

5.1 Liquid dosing



For further information, consult the XPR Reference Manual (RM).

► www.mt.com/XPR-analytical-RM

5.1.1 Installing and removing the liquid dosing head

Installing the dosing head

- 1 Slide the dosing head (1) onto the dosing head holder (2) until it comes to a stop.
- 2 Slightly press down the dosing head until it properly sits in the dosing head holder (2).
 - ⇒ The dosing head is locked in the holder. Check that it is secured by slightly pulling on it.
- 3 Thread the liquid tube through the slot in the top door.
 - ⇒ The dosing head is ready to dose.
 - ⇒ The dosing head will be locked automatically when the first dosing starts.

Removing the dosing head

Once the dosing head has been locked, it needs to be unlocked before it can be removed.

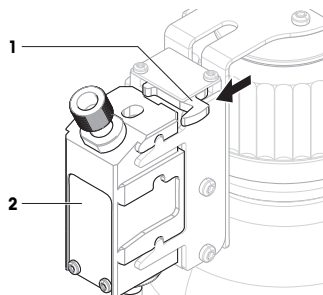
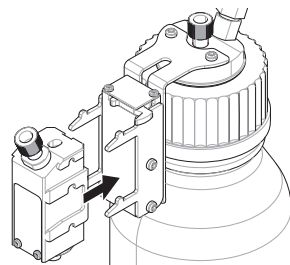
- The function key XXX must be active.
 - 1 Tap XXX.
 - ⇒ The dosing head is unlocked.
 - 2 Press the release button (1) on either side of the dosing head holder to release the dosing head (2).
 - 3 Simultaneously, pull the dosing head (2) up and outwards.

5.1.2 Adjusting the dosing height

The vertical position of the liquid module is adjusted by moving it manually up and down along its rails.

5.1.3 Attaching the dosing head to the bottle cap

- 1 Insert the liquid dosing head in the liquid dosing head support.
- 2 To remove the liquid dosing head from the liquid dosing head support, pull the lever (1) towards the dosing head and remove the liquid dosing head (2).



5.1.4 Handling the bottle



CAUTION

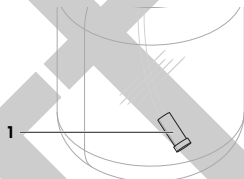
Injury due to splashing liquids

If the pressure in the bottle is not released, liquid might splash when removing the micro dosing valve, opening the bottle, or removing the liquid tube.

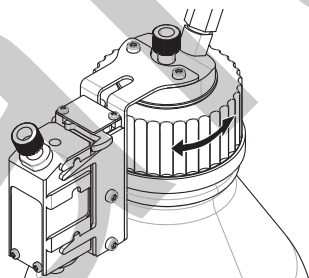
- Always release pressure before removing the micro dosing valve, opening the bottle, or removing the liquid tube.

Filling the bottle

The suction filter (1) has to be covered with liquid at all times. Before the suction filter gets dry, refill the bottle.



- Pressure is released.
- 1 Unscrew the cap.
 - 2 Fill in the liquid. (max. is shown on bottle, e.g., 1000 ml). Do not exceed the maximum. The air above the liquid is necessary for dosing.
 - 3 Screw cap on.
 - 4 Check that the cap is tight.



Changing the liquid of the bottle

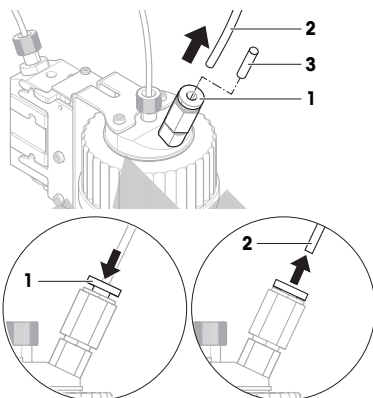
This procedure is used if you have a single cap with dosing head and want to change the liquid.

- Pressure is released.
- 1 Unplug the air tube.
 - 2 Unscrew the cap.
 - 3 Remove the suction filter, if applicable.
 - 4 If the cap needs to be cleaned, remove the air tube. Unscrew the fastening nuts from the cap. Rinse the cap with the appropriate solvent or liquid. Insert the liquid tube into the cap.
 - 5 If the liquid tube needs to be cleaned with a solvent, fill the bottle with the appropriate solvent. Screw the cap on the bottle. Insert the air tube on the cap. Purge using the **Purge** function. Unscrew the cap. Dispose of the remainder of the solvent.
 - 6 Attach a new suction filter, if applicable.
 - 7 Screw the cap on the bottle containing the new liquid.
 - 8 Check that the cap is tight.
 - 9 Connect the air tube to the new bottle.
 - 10 Purge using the **Purge** function.

Changing the bottle

If you have more than one bottle equipped with cap and dosing head:

- Pressure is released.
- 1 Install the dosing head on the dosing head support of the bottle.
 - 2 Unplug the air tube by pressing down the ring (1) and simultaneously pulling out the tube (2).
 - 3 To seal the bottle, insert the pin delivered with the QLL kit (3) into the air tube connector.
 - 4 Take the new bottle.
 - 5 Connect the air tube to the new bottle.
 - 6 To continue dosing with the new bottle, install the dosing head.



5.1.5 Using the QL3 pump

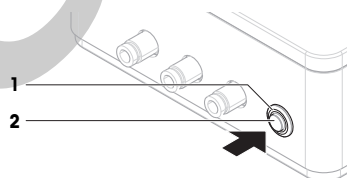
Pressure indicator light

The pressure indicator light displays the status of the pump:

- Light on: pressure is building up or pressure is established
- Light off: there is no pressure and no pressure is building up
- Light blinking: pump error and/or warning

Releasing the pressure

- The pressure indicator light (1) is on.
 - Press the pressure release button (2) to release the pressure.
- ⇒ The status light (1) turns off when pressure is released.



Purging the pump cavity

- A dosing head is attached to the dosing or liquid module. This dosing head is not connected to any pump.
 - A method Dosing is running on the terminal.
- 1 Disconnect all tube adapters from the pump.
 - 2 Connect an empty tube adapter to the right-most air outlet of the pump.
 - ⇒ The pump is trying to build pressure and air flows through the cavity of the pump.
 - ⇒ The pump cavity has been purged and bottles can be re-connected to the air outlets.

5.2 Using other weighing methods

To use other methods with the balance, move the dosing module to its uppermost position.



For further information, consult the XPR Reference Manual (RM).

► www.mt.com/XPR-analytical-RM

6 Maintenance

Please contact your METTLER TOLEDO representative for details about the available service options. Regular servicing by an authorized service technician ensures constant accuracy for years to come and prolongs the service life of your instrument.



For further information, consult the XPR Reference Manual (RM).

► www.mt.com/XPR-analytical-RM

The appropriate maintenance interval depends on your standard operating procedure (SOP).

6.1 Cleaning



⚠ WARNING

Risk of electric shock

- 1 The power cable must be disconnected prior to cleaning and maintenance.
- 2 Use only the power cable from METTLER TOLEDO, if it needs replacing.
- 3 Ensure that no liquid comes into contact with the terminal or the AC adapter.
- 4 Never open the instrument housing, terminal, or AC adapter – they contain no components that can be cleaned, repaired, or replaced by the user.



NOTICE

Damage to the instrument due to inappropriate cleaning methods

The instrument can be damaged by certain cleaning agents, solvents, or abrasives. If liquids enter the housing, they can damage the instrument.

- 1 Only use a wet cloth with water and a mild detergent to clean the instrument or terminal.
- 2 Wipe off any spills immediately.
- 3 Make sure that no liquid penetrates the instrument.

6.1.1 Cleaning the housing

The housing of the dosing module, dosing lift, and liquid module is the same as the one of the balance. All surfaces can therefore be cleaned with a commercially available, mild cleaning agent.

6.1.2 Cleaning the weighing chamber

The cleaning procedure is the same as for the balance. Refer to the Reference Manual (RM) of the balance for more details.

6.1.3 Cleaning the liquid dosing elements

Cleaning the suction filter

- 1 **Once a week**, check visually that the suction filter is clean. If necessary, rinse the suction filter with solvent using the **Purge** function or replace it.
- 2 At least **once a year**, change suction filter. Maintenance interval depends on the liquid used.

Cleaning the liquid dosing head

The liquid dosing head can be rinsed/purged by letting a large quantity of solvent (or another liquid) run through it. Use the **Purge** function. See the Reference Manual (RM) of the XPR balance.

If purging is not enough, clean the liquid dosing head as follows.



⚠ CAUTION

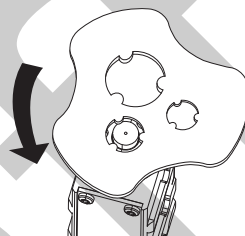
Injury due to splashing liquids

If the pressure in the bottle is not released, liquid might splash when removing the micro dosing valve, opening the bottle, or removing the liquid tube.

- Always release pressure before removing the micro dosing valve, opening the bottle, or removing the liquid tube.

- The liquid dosing head is installed on the dosing or liquid module.
 - A sample vessel is on the weighing pan, big enough for the quantity of liquid in the liquid tube.
- 1 Empty the liquid tube by replacing the bottle by an empty bottle and using the **Purge** function.
 - ⇒ The liquid tube is empty.
 - 2 Release pressure.
 - 3 Remove the dosing head from the dosing or liquid module.
 - 4 **⚠ WARNING: Injury or contamination from hazardous substances. Be aware of any liquid draining from the tubing and the valve.**

Open the dosing head with the micro dosing valve tool.
 - 5 Take out the micro dosing valve and clean it, e.g., in an ultrasonic bath.
 - 6 After the cleaning, reinstall the micro dosing valve and refill/replace the bottle.



6.2 Replacing the sealing ring and fastening nut on the liquid tube



⚠ CAUTION

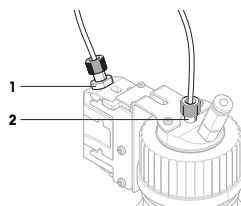
Injury due to splashing liquids

If the pressure in the bottle is not released, liquid might splash when removing the micro dosing valve, opening the bottle, or removing the liquid tube.

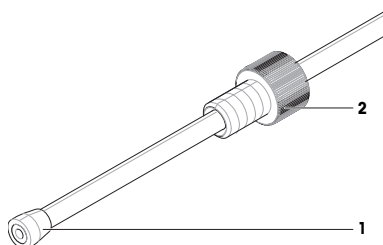
- Always release pressure before removing the micro dosing valve, opening the bottle, or removing the liquid tube.

Removing the sealing ring and the fastening nut

If liquid is leaking from the dosing head nut, replace the sealing ring and fastening nut at the dosing head (1). If pressure cannot be built in the bottle, replace the sealing ring and fastening nut at the bottle cap (2).



- Pressure is released.
- 1 Unscrew the fastening nut at the dosing head or the bottle cap.
 - 2 To access the sealing ring (1), slide back the fastening nut (2).
 - 3 If changing the nut and ring at the bottle cap, remove the suction filter and slide the sealing ring all the way to the bottle-end of the tube.
 - 4 Cut off the tube above sealing ring (1). Check that the end of the tube is straight.




5 Remove the fastening nut.

Reconnecting the liquid tube

Insert the new sealing ring and fastening nut and reconnect the liquid tube.

See also

 Connecting the tubes ▶ Page 12

Draft

7 Troubleshooting



For further information, consult the XPR Reference Manual (RM).

► www.mt.com/XPR-analytical-RM

7.1 Error symptoms

Error symptoms	Possible cause	Diagnostic	Remedy
The liquid dosing head does not dispense any liquid.	The suction filter is clogged.	Check if there is liquid in the liquid tube.	Clean or replace the suction filter.
	The dosing head is not installed properly.	Check if there is a gap between the dosing head and the dosing head holder.	Slightly press the dosing head down.
Liquid drips from the bottle cap and/or the dosing head.	The sealing ring and/or fastening nut are damaged.	–	Change sealing ring and fastening nuts at the bottle cap and/or the dosing head. See [Replacing the sealing ring and fastening nut on the liquid tube ► Page 21] Make sure that the end of the tube is cut straight.
The pump is not listed as a device connected to the balance.	The pump is not properly connected to the balance.	Check that the USB cables are not damaged and are connected properly.	Connect the USB cables properly. Replace the USB cables.
	The pump is disconnected from power.	Disconnect the AC/DC adapter from the pump. Reconnect it. The indicator light should blink once when the device is connected to power. Check that the AC/DC adapter and the power cable are not damaged.	Exchange the AC/DC adapter and power cable.
	The USB device port on the balance is damaged.	Disconnect the pump from the USB port on the balance. Connect a USB mouse to the same USB socket. Verify that a pointer (arrow) appears on the terminal and can be moved by moving the mouse.	If the mouse pointer does not appear, contact your METTLER TOLEDO service representative.
	The pump is damaged or malfunctioning.		Contact your METTLER TOLEDO service representative.

See also

► Replacing the sealing ring and fastening nut on the liquid tube ► Page 21

8 Technical Data

8.1 General data

Weight (without packaging): 470 g
 Power consumption: 12 V DC \pm 10%, 1 A

Protection and standards

Overvoltage category: II
 Degree of pollution: 2
 Range of application: Use only indoors in dry locations

Environmental conditions

Height above mean sea level: Up to 5000 m
 Ambient temperature: +5 – +40 °C
 Relative air humidity: 20 – 80 %, non-condensing

Storage conditions (in packaging)

Ambient temperature: -25 – +70 °C
 Relative air humidity: 10 – 90 %, non-condensing

8.2 Model-specific data

Liquid dosing heads

	QL001	QL002	QL003
Dosing properties			
Suitable liquids: max. viscosity	20 mPa·s	20 cP	20 mPa·s
Typical values			
Dosing quantity, offset ¹⁾	1 mg	20 mg	2.5 mg
Dosing quantity, repeatability (sd) ¹⁾	1 mg	10 mg	2 mg
Dosing time ¹⁾	30 s	12 s	20 s

¹⁾ Liquid; quantity = H₂O; 5 g
 1 mPa·s = 1 cP = 1 cSt = 1 mm²/s

Tubing

	Outer Diameter	Inner Diameter	Recommended length
Liquid tube, for GL45 bottles (dosing head to bottle)	3.2 mm	1.6 mm	0.9 m
Liquid tube, for GL25 bottles (dosing head to bottle)	1.6 mm	0.8 mm	0.9 m
Air tube (pump to bottle)	4.0 mm	2.4 mm	0.7 m
Tube for exhaust air	6 mm	–	–
Tube for external gas	6 mm	–	–

Suction filter

Tubing outer diameter	3.2 mm
Filter pore size	10 µm

Bottle

Pressure resistance, min. ¹⁾	1.5 bar
Burst pressure, min.	3 bar
Volume, max.	2 l

¹⁾ According to DIN EN 1595: Pressure Equipment made from Borosilicate Glass 3.3 – General Rules for Design, Manufacture and Testing

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8.3 Material specifications

Materials in contact with the substance to be dosed. Please note that traces of all contact material could be transferred to the sample.

8.3.1 Glossary of material acronyms

Acronyms defined in ISO 1043: Plastics – Symbols and abbreviated terms.

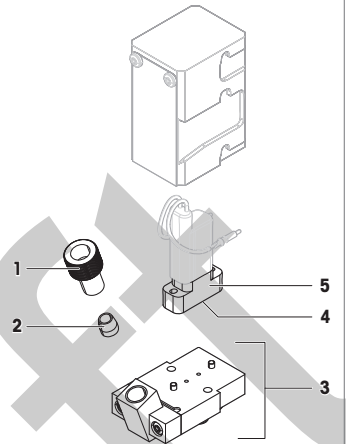
ETFE	=	Ethylene tetrafluoroethylene
FEP	=	Fluorinated ethylene propylene
FFKM	=	Perfluoroelastomer
PE	=	Polyethylene
PEEK	=	Polyetheretherketone
PMP	=	Polymethylpentene
POM	=	Polyoxymethylene
PP	=	Polypropylene
PP (ESD)	=	Polypropylene (electrostatic dissipative)
PTFE	=	Polytetrafluoroethylene

8.3.2 Liquid dosing head QL001

	Designation	Material
1	Fastening nut	PEEK
2	Sealing ring	ETFE
3	Tube connector	Stainless steel 1.4404
4	O-Ring	FFKM
5	Solenoid valve	PEEK Sapphire-Ruby Stainless steel 1.4105L Stainless steel 1.14301 / 1.4306 Stainless steel 1.4305

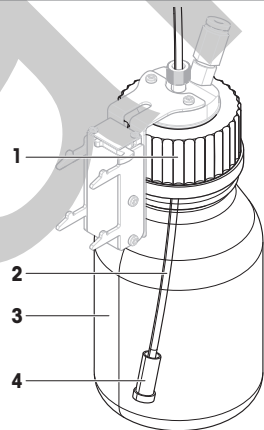
8.3.3 Liquid dosing head QL003

	Designation	Material
1	Fastening nut	PEEK
2	Sealing ring	ETFE
3	Valve block	PTFE
4	Gasket	EPDM
5	Valve	PEEK



8.3.4 QLL standard/advanced kit for (small) bottles

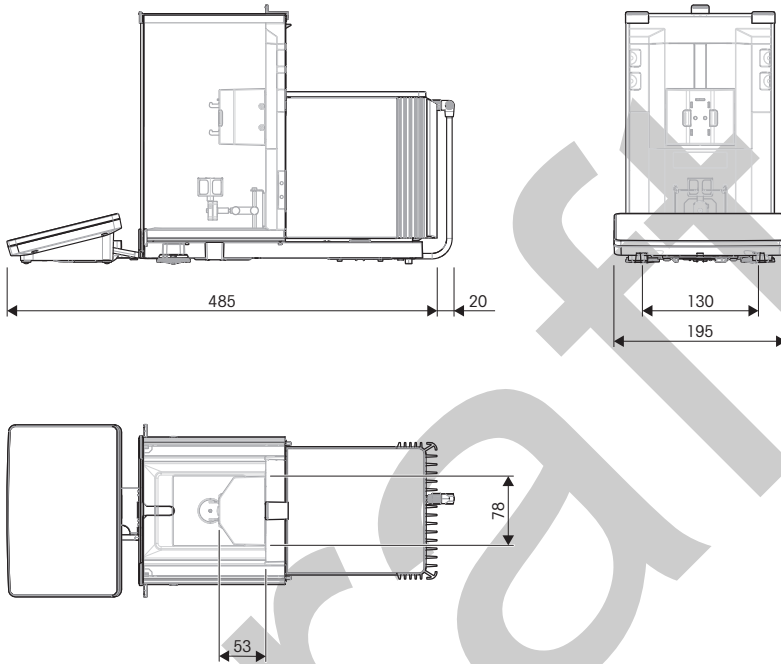
	Designation	Material
1	Cap insert	PE
2	Bottle	Borosilicate glass
3	Tubing	FEP
4	Suction filter	PP



8.4 Dimensions

QLX3 liquid module and XPR balance

Dimensions in mm.

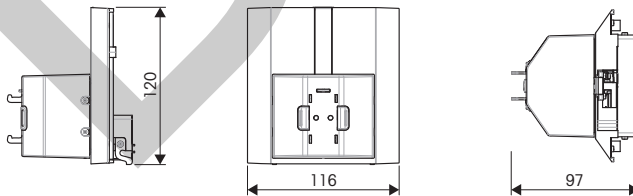


Dimensions

Minimum height of sample vessel, without adapter	53 mm
Maximum height of sample vessel, without adapter	128 mm
Minimum opening of sample vessel (diameter)	6 mm
Vertical range of movement of liquid module	53 mm

QLX3 liquid module

Dimensions in mm.



9 Disposal

In conformance with the European Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE) this device may not be disposed of in domestic waste. This also applies to countries outside the EU, per their specific requirements.

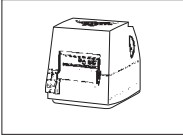



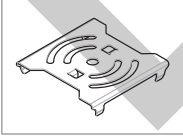
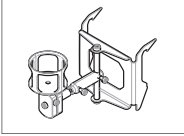


Please dispose of this product in accordance with local regulations at the collecting point specified for electrical and electronic equipment. If you have any questions, please contact the responsible authority or the distributor from which you purchased this device. Should this device be passed on to other parties, the content of this regulation must also be related.

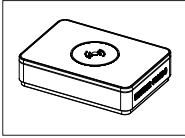
10 Accessories and Spare Parts

10.1 Accessories

Please contact your METTLER TOLEDO sales representative for more details about using accessories with your product.

	Description	Part No.
Printers		
	CL5-631 Label printer for Quantos (RS232C/USB-A) Quantos label and ink ribbon kit <ul style="list-style-type: none"> NetCom Kit needed if used with XPE balance 	11141820 30004309
	P-52RUE dot matrix printer RS232C, USB and Ethernet connections, simple print-outs Paper roll (length: 20 m), set of 5 pcs Paper roll (length: 13 m), self-adhesive, set of 3 pcs Ribbon cartridge, black, set of 2 pcs	30237290 00072456 11600388 00065975
	P-56RUE thermal printer with RS232, USB and ethernet connections, simple print-outs, date and time, label printing (limited) Paper roll, white (length: 27 m), set of 10 pcs Paper roll, white, self-adhesive (length: 13 m), set of 10 pcs Paper roll, white, self-adhesive labels (550 labels), set of 6 pcs Dimension of the label 56 × 18 mm	30094673 30094724 30094725 30094723 30094724 30094725
	P-58RUE thermal printer with RS232, USB and ethernet connections, simple print-outs, date and time, label printing, balance applications: statistics, formulation, totaling, Paper roll, white (length: 27 m), set of 10 pcs Paper roll, white, self-adhesive (length: 13 m), set of 10 pcs Paper roll, white, self-adhesive labels (550 labels), set of 6 pcs Dimension of the label 56 × 18 mm	30094674 30094723 30094724 30094725 30094725
ErgoClips		
	ErgoClip adapter holder	30521809
	ErgoClip vial	30521808

RFID readers / writers / cards



EasyScan USB
Reads and writes RFID tags.

30416173

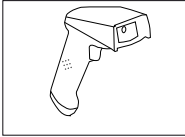


Smart Tag
Set of 50 pieces
Set of 200 pieces

30101517

30101518

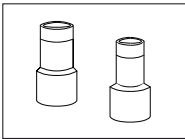
Barcode readers



USB Barcode Reader

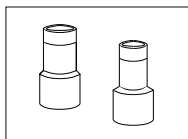
30417466

Adapters



Vial adapters (POM)

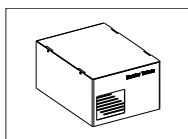
- 8.5 mm × 15 mm (5 pcs.) 30428901
- 9 mm × 25 mm (5 pcs.) 30428902
- 9.5 mm × 25 mm (5 pcs.) 30428903
- 10 mm × 25 mm (5 pcs.) 30428904
- 10.5 mm × 25 mm (5 pcs.) 30428905
- 11 mm × 30 mm (5 pcs.) 30428906
- 11.5 mm × 30 mm (5 pcs.) 30428907
- 12 mm × 20 mm (5 pcs.) 30428908
- 12.5 mm × 30 mm (5 pcs.) 30428909
- 13.5 mm × 20 mm (5 pcs.) 30428910
- 14.5 mm × 25 mm (5 pcs.) 30428911
- 15.5 mm × 25 mm (5 pcs.) 30428912
- 16.5 mm × 25 mm (5 pcs.) 30428913
- 17.5 mm × 25 mm (5 pcs.) 30428914
- 18.5 mm × 25 mm (5 pcs.) 30428915
- 19.5 mm × 25 mm (5 pcs.) 30428916
- 20.5 mm × 25 mm (5 pcs.) 30428917
- 21.5 mm × 25 mm (5 pcs.) 30428918
- 22.5 mm × 25 mm (5 pcs.) 30428919
- 23.5 mm × 25 mm (5 pcs.) 30428920
- 26 mm × 25 mm (5 pcs.) 30428926
- 27.5 mm × 25 mm (5 pcs.) 30428921
- 28.5 mm × 25 mm (5 pcs.) 30428922
- 29.5 mm × 35 mm (5 pcs.) 30428923
- 31.5 mm × 30 mm (5 pcs.) 30428924

**Bottle adapters (POM)**

33.5 mm × 15 mm (5 pcs.)	30459921
35.5 mm × 15 mm (5 pcs.)	30459922
37.5 mm × 15 mm (5 pcs.)	30459923
40.5 mm × 15 mm (5 pcs.)	30459924
44.5 mm × 15 mm (5 pcs.)	30459925
48 mm × 15 mm (5 pcs.)	30459926
52 mm × 15 mm (5 pcs.)	30459927

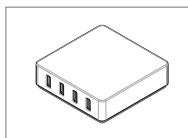
Tube adapters (POM)

Eppendorf 1.5 ml (5 pcs.)	30306209
Falcon 16.4 mm × 60 mm (5 pcs.)	30459992
Falcon 29.3 mm × 60 mm (5 pcs.)	30459991

Various

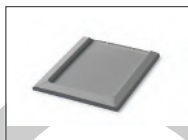
Cable Box

11141845



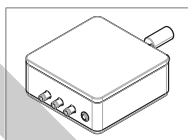
EasyHub USB

30468768



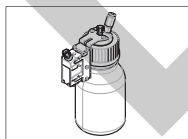
Drip pan, gray

30460856

Dosing

QL3 pump

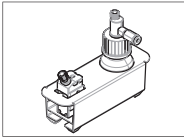
30418660



QLL standard kit for bottles

30008318

- QL001 liquid dosing head
- Bottle, pressure resistant
- Bottle cap (GL45) with tube connector and dosing head support
- Spare parts for QLL standard kit



QLL standard kit for small bottles

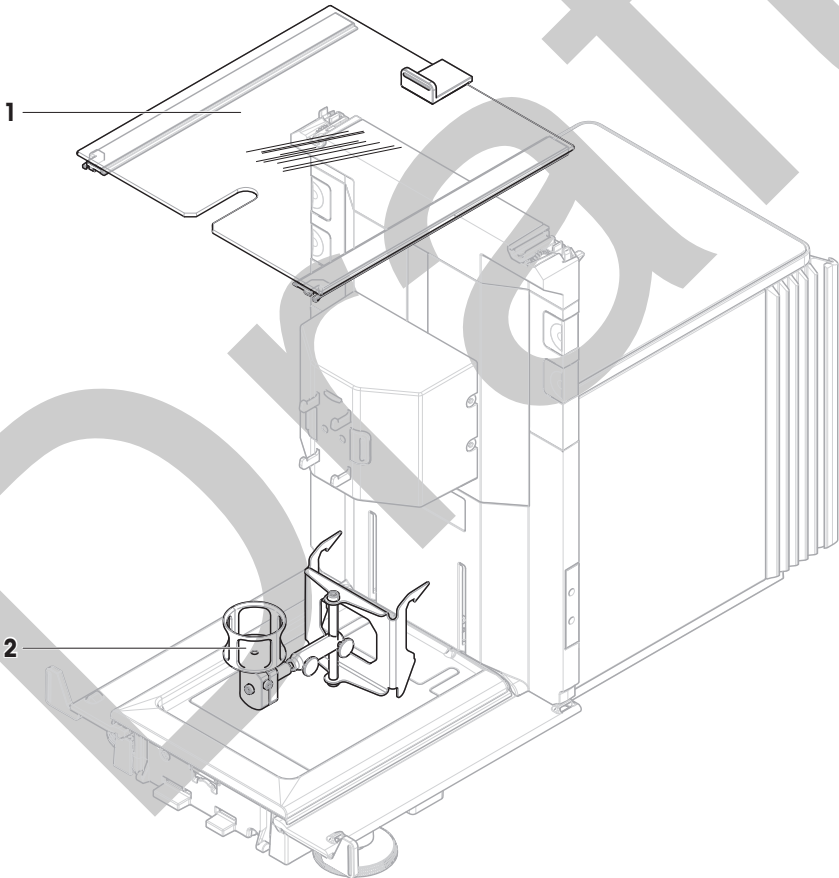
- QL001 liquid dosing head
- Bottle, pressure resistant
- Stand for bottle
- Bottle cap (GL25) with tube connector
- Spare parts for QLL standard kit small



QLL advanced kit for bottles

- QL003 liquid dosing head
- Bottle, pressure resistant
- Bottle cap (GL45) with tube connector and dosing head support
- Spare parts for QLL standard kit

10.2 Spare parts



	Order no.	Designation	Remarks
1	30525849	Door top draft shield liquid module	Material: Glass

	Order no.	Designation	Remarks
2	30521808	ErgoClip vial	–

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11 Appendix

11.1 Compliance information

European Union

The instrument complies with the directives and standards listed on the EU Declaration of Conformity.

United States of America

This equipment has been tested and found to comply with the limits for a **Class A** digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The FCC Supplier Declaration of Conformity is available online.

► <http://www.mt.com/ComplianceSearch>

Canada

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

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GWP®

Good Weighing Practice™

GWP® is the global weighing standard, ensuring consistent accuracy of weighing processes, applicable to all equipment from any manufacturer. It helps to:

- Choose the appropriate balance or scale
- Calibrate and operate your weighing equipment with security
- Comply with quality and compliance standards in laboratory and manufacturing

▶ www.mt.com/GWP

www.mt.com/quantos

For more information

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Subject to technical changes.
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