User Manual

Volumetric KF Titrator

V10S/V20S/V30S

METTLER TOLEDO

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1 Introduction

Thank you for choosing a METTLER TOLEDO Volumetric KF Titrator. The Volumetric KF Titrator is an easy-to-operate instrument for volumetric Karl Fischer titrations.

About this document

This document provides you with the information you need to get started with your METTLER TOLEDO titrator.

For a comprehensive description of the instrument and its functions, refer to the Operating Instructions, supplied as PDF file on the CD.

The instructions in this document refer to titrators running firmware version 5.2.0 or higher.

If you have any additional questions, contact your authorized METTLER TOLEDO dealer or service representative.

▶ www.mt.com/contact

Conventions and symbols

Refers to an external document.

Note for useful information about the product.

Elements of instructions

- Prerequisites

1 Steps

2 …

   ⇨ Intermediate results

⇨ Results

2 Safety information

- Read and understand the information in this User Manual before you use the instrument.
- Keep this User Manual for future reference.
- Include this User Manual if you pass on the instrument to other parties.

If the instrument is not used according to the information in the Operating Instructions or if it is modified, the safety of the instrument may be impaired and Mettler-Toledo GmbH assumes no liability.

For a comprehensive description of the instrument and its functions, refer to the Operating Instructions, supplied as PDF file on the CD.

2.1 Definition of signal words and warning symbols

Safety notes are marked with signal words and warning symbols. These show safety issues and warnings. Ignoring the safety notes may lead to personal injury, damage to the instrument, malfunctions and false results.

Signal words

WARNING for a hazardous situation with medium risk, possibly resulting in death or severe injury if not avoided.

NOTICE for 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

Electrical shock

2.2 Product-specific safety notes

Intended use

This instrument is designed to be used in laboratories by trained staff. The instrument is suitable for the processing of reagents and solvents.

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

Responsibilities of the instrument owner

The instrument owner is the person that uses the instrument for commercial use or places the instrument at the disposal of the staff. The instrument owner is responsible for product safety and the safety of staff, users and third parties.

METTLER TOLEDO assume that the instrument owner provides the necessary protective gear, appropriate training for the daily work and for dealing with potential hazards in their laboratory.

Safety notes

⚠ WARNING

Danger of death or serious injury due to electric shock!

Contact with parts that contain a live current can lead to injury and death.

1 Only use a METTLER TOLEDO power cable and AC 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.
4 Replace damaged power cables and AC adapters immediately.

NOTICE

Danger of damaging the touch screen with pointed or sharp objects!

Pressing on the touch screen with pointed or sharp objects may damage it.

– Operate the touch screen by applying gentle pressure with the pad of your finger.

NOTICE

Danger of damage to the instrument due to incorrect parts!

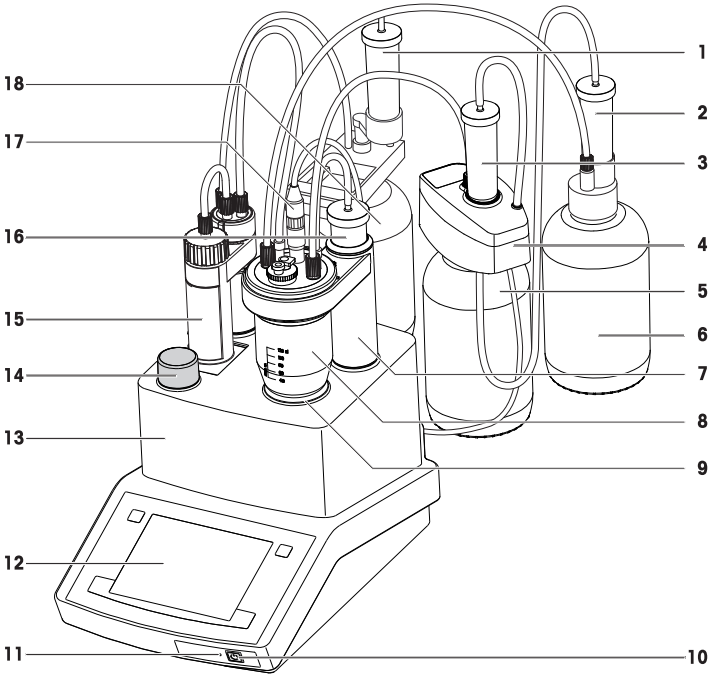
Using incorrect parts with the instrument can damage the Instrument or cause the instrument to malfunction.

– Only use parts supplied with the instrument, listed accessories and spare parts from METTLER TOLEDO.

3 Design and Function

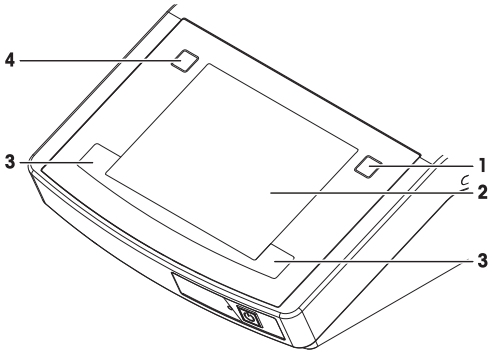
3.1 Instrument

3.1.1 Overview



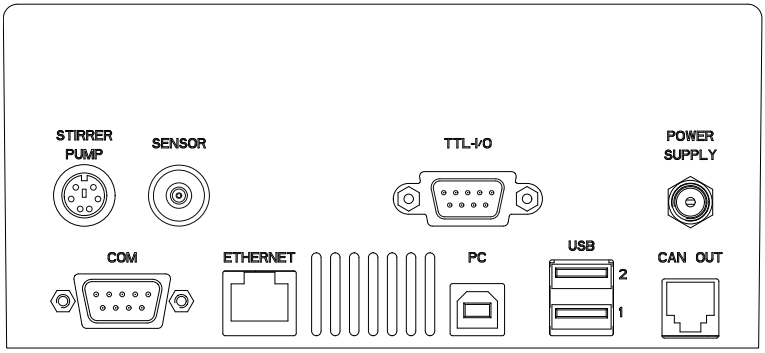
1	Titrant bottle drying tube	**10**	Power button
2	Solvent bottle drying tube	**11**	Indicator light (LED)
3	Waste bottle drying tube	**12**	Touchscreen
4	Solvent manager	**13**	Burette drive
5	Waste bottle	**14**	Burette arrestment knob
6	Solvent bottle	**15**	Burette 5 mL
7	Titration arm	**16**	Drying tube for the titration beaker
8	Titration beaker	**17**	Double platinum pin electrode
9	Internal magnetic stirrer	**18**	Titrant bottle

3.1.2 Terminal



Nr.	Name	Function
1	Info button	Accesses the interactive online help for the content of the current dialog.
2	Touch screen	Displays information and can be used to enter information.
3	Home button	Returns you to the home screen from any menu position.
4	**Reset** button	Ends all tasks that are currently running.

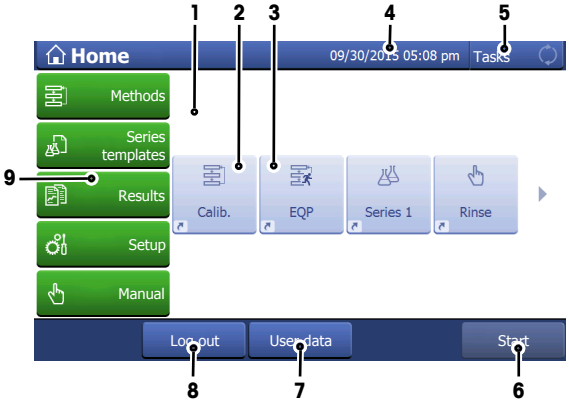
3.1.3 Titrator rear panel connections



Socket	Use	Example
STIRRER PUMP	Stirrer/pump	Solvent manager/stirrer
SENSOR	Measuring electrode	DM143-SC
TTL-I/O	Sample changer/homogenizer	Stromboli/homogenizer via TBox
POWER SUPPLY	AC adapter	AC adapter
COM	Balance	XS analytical balance
ETHERNET	Network	Link to LabX PC software via network
PC	PC connection via USB	Link to LabX PC software via USB interface
USB 1	Printer/barcode reader/memory stick/ USB hub/sample changer	USB-P25 compact printer/InMotion KF
USB 2	Printer/barcode reader/memory stick/ USB hub/sample changer	Barcode reader/InMotion KF
CAN OUT	CAN connection	For service use

3.2 User interface

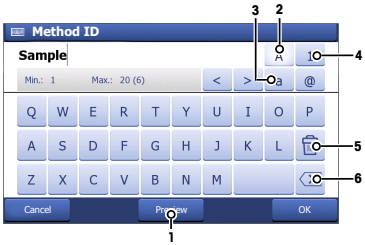
3.2.1 Home screen



	Name	Explanation
1	**Shortcut area**	Shows indirect and direct shortcuts for frequently used methods. Shortcuts are saved in the user profile and can be defined, changed and deleted by the user.
2	**Indirect shortcut**	An indirect shortcut opens the window **Start analysis** of the method.
3	**Direct shortcut**	A direct shortcut starts the method without opening the window **Start analysis**.
4	**Status bar**	The status bar contains the current menu item, user name as well as date and time.
5	**Instrument status**	Shows the current working status of the instrument. **Blue** No measurement running **Green** Measurement running
6	**Start**	Switch to direct measurement (quick start for the defined standard measurement of this instrument).
7	**User data**	Opens a window with information about the currently logged in user.
8	**Log out**	Directly log out the current user. The window **Login** opens after logging out.
9	**Menus**	**Methods** Create and handle methods for every measurement type.
		Series templates Open the menu for series templates for every method available on the instrument.
		Results Display all measurement results, print out or export them. Visit detail information about every single result.
		Setup Define all system settings in this menu, e.g,, hardware settings, user management or user preferences. These settings are usually made during installation of the instrument.
		Manual Display the manual operations available on the instrument.

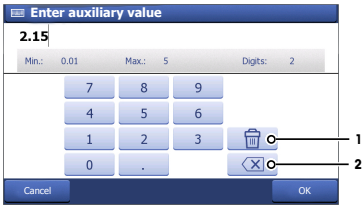
3.2.2 Keypads

Alphabetic keypad



- Tap (1) to see how your input looks like.
- Tap (2) for capital letters.
- Tap (3) for lowercase letters.
- Tap (4) to switch to a numeric keypad and (2) to turn back to alphanumeric.
- Tap (5) to delete all entered letters or numbers.
- Tap (6) to delete the last entered letter or number.

Numeric keypad



- Tap (1) to delete all entered numbers.
- Tap (2) to delete the last entered number.

3.2.3 Menu Structure

Methods

The menu **Methods** has no submenus.

Series templates

The menu **Series templates** has no submenus.

The menu **Results** has the following submenus.

- **All results**
  Statistics
- **Samples**
- **Add result**
- **Recalculate**
- **Undo all**

Menu level 2	Menu level 3
Chemicals	**Titrants**
	Concentration standards
User settings	**Language**
	Screen
	Audio signal
	Shortcuts
	Keyboard
Values (only V30S)	**Blanks** (only V30S)
	Auxiliary values (only V30S)

Menu level 2	Menu level 3
Hardware	**Sensors**
	Pumps
	Peripherals
	Titration Stands
	Homogenizers
Global settings	**System**
	User management
	Analysis and resources behavior
	Solvent Control (only V30S)
Mainten. & Service	**MT-Service**
	Import / Export
	Reset to factory settings
	Titrator firmware history
	Board firmware
	Terminal
	Board data
	Drives
	Burettes
	Update
	Delete Mettler method template (only V30S)

Manual

The menu **Manual** has the following submenus.

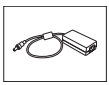
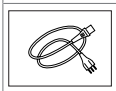
- **Stirrer**
- **Sensor**
- **Burette**
- **Pump**

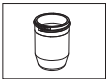
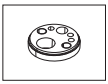
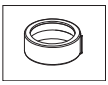
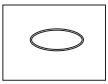
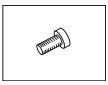
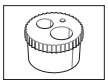
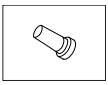
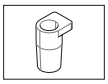
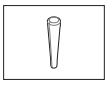
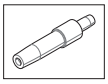
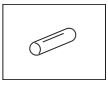
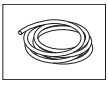
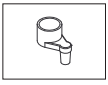
4 Installation

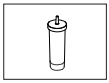
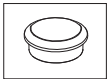
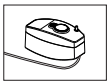
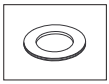
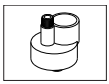
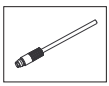
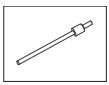
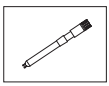
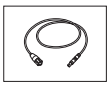
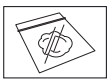
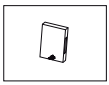
Standard equipment for the titrator types varies. For this reason, installation steps may vary.

4.1 Standard equipment

4.1.1 Scope of delivery

Part		Order number	V10S	V20S	V30S
	Volumetric KF Titrator	–	•	•	•
	External power supply (100...240 V)	–	•	•	•
	Power cable (country-specific)	–	•	•	•

Part		Order number	V10S	V20S	V30S
	Protective cover for touchscreen	51105567	•	•	•
	Titration vessel	51107463	•	•	•
	Cover plate for volumetric titration vessel	51107462	•	•	•
	Threaded ring	51107459	•	•	•
	O-ring	51190366	•	•	•
	Fastening screw (for titration vessel)	51107474	•	•	•
	Three-hole adapter	23943	•	•	•
	NS 7.5 stopper	23452	•	•	•
	NS 10 stopper	23836	•	•	•
	Pin-hole stopper	–	•	•	•
	Connector KF Titrators	23957	•	•	•
	Magnetic stirrer bar	51191159	•	•	•
	Interchangeable burette set, 5 mL	51107500	•	•	•
	Silicone tube, 133 mm	–	•	•	•
	Drying tube holder	23915	•	•	•

Part		Order number	V10S	V20S	V30S
	Drying tube with cover (3 pcs)	–	•	•	•
	Seal (titration stand drying tube)	51107492	•	•	•
	Solvent Manager set with: • Silicone tube, 850 mm • Silicone tube, 170 mm • Drying tube with cover • Flat seals (2 pcs.)	51105600	•	•	•
	Clear glass bottle, 1 L	30079610	•	•	•
	Flat seals (2 pcs.)	–	•	•	•
	Screw top (for bottles)	23937	•	•	•
	2 Draining tubes / dispensing tubes	51107481	•	•	•
	Adapter for immediate draining	51105594	•	•	•
	Dual platinum pin electrode, DM143-SC	51107699	•	•	•
	Triaxial SC LEMO cable, 70 cm	89601	•	•	•
	Glass wool (2 g)	51108143	•	•	•
	Molecular sieve, 250 g	71478	•	•	•
	CD Titration User Documentation	30297239	•	•	•
	User Manual	–	•	•	•

Part		Order number	V10S	V20S	V30S
	Memo Card	–	•	•	•
	Test report	–	•	•	•
	EC declaration of conformity	–	•	•	•

4.1.2 Unpack the titrator

1 Remove the titrator (and accessories) from the protective packing material.
2 Store the packing material for later transport over long distances.
3 Check if you received all parts listed in the scope of delivery.
4 Inspect the parts visually for flaws or damage.
5 If parts are missing or damaged, report it immediately and file a freight claim if needed.

4.1.3 Position the titrator

The instrument has been developed for indoor operation in a well-ventilated area. The following site requirements apply:

- The ambient conditions are within the limits specified in the technical data.
- No powerful vibrations
- No direct sunlight
- No corrosive gas atmosphere
- No explosive atmosphere
- No powerful electric or magnetic fields

4.1.4 Connect the titrator to the power supply

⚠ WARNING

Danger of death or serious injury due to electric shock!

Contact with parts that contain a live current can lead to injury and death.

1 Only use a METTLER TOLEDO power cable and AC 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.
4 Replace damaged power cables and AC adapters immediately.

NOTICE

Danger of damage to the AC adapter due to overheating!

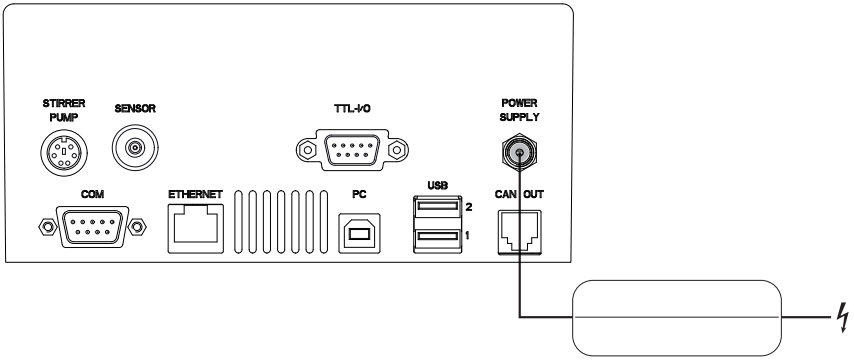
If the AC adapter is covered or in a container, it is not sufficiently cooled and overheats.

1 Do not cover the AC adapter.
2 Do not put the AC adapter in a container.

The titrator is operated using an AC adapter. The AC adapter is suitable for all supply line voltages ranging from 100...240 V AC ±10 % and 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 power cable in the socket of the AC adapter.



3 Insert the plug of the AC adapter in the **POWER SUPPLY** socket at the back of the titrator.

4 To secure the connection at the titrator, screw the plug connector firmly into place.

5 Insert the plug of the power cable in a grounded power outlet that is easily accessible.

4.1.5 Disconnect the titrator from the power supply

- The titrator has shut down.

1 Pull the plug of the power cable out of the power outlet.

2 Pull the plug of the AC adapter out of the **POWER SUPPLY** socket at the back of the titrator.

4.1.6 Assembling titration stand and titration vessel

The titration arm can be pivoted in both directions.

1 Carefully slide the magnetic stirring rod supplied into the titration vessel (7).

2 Place the O-ring (6) on the opening of the titration vessel (7).

3 Place the cover plate (2) over the opening of the titration vessel (7).

4 Place the threaded ring (1) on the titration vessel (7) and tighten the threaded ring (1).

⇨ The titration vessel is assembled.

5 Orient the titration vessel so the lobe on the threaded ring (1) is aligned with the center groove (11) of the titration arm (12).

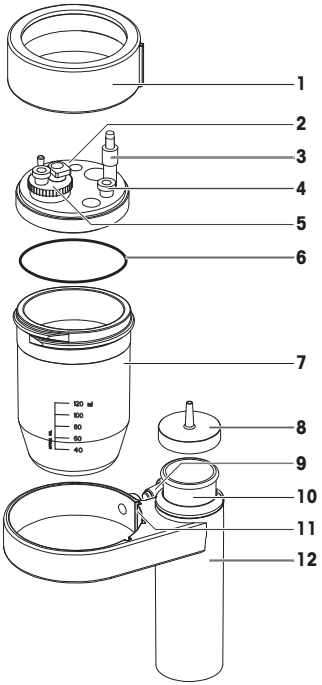
6 Slide the titration vessel (7) into the opening of the titration arm (12) and press it down until it rests on the internal magnetic stirrer.

7 To secure the titration vessel (7), tighten the fastening screw (9).

8 Place the three hole adapter (5), NS stopper (4) and connecting piece (3) into the lid openings.

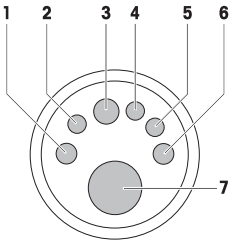
9 Fill a drying tube (10) with molecular sieve and press it into the titration stand (12).

10 Push a silicon tube over the opening of the drying tube (8) and the connecting piece (3).



4.1.7 Recommended positions for sensors, tubes and stoppers

The titration vessel is normally connected as illustrated.



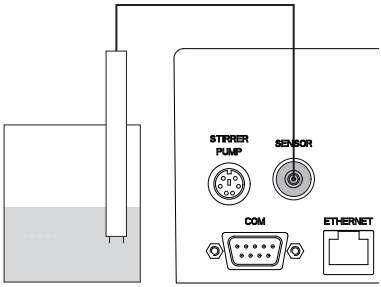
1 Dispensing tube for solvent
2 Dispensing tube for titrant
3 Measuring electrode
4 Stopper
5 Connection to drying tube on titration stand
6 Suction tube for used solvent
7 Three hole adapter

4.1.8 Connect the measuring electrode

- No task is running on the titrator

1 Place the measuring electrode into the appropriate opening of the titration vessel.

2 To connect the measuring electrode, plug the triaxial cable into the **SENSOR** socket on the rear of the titrator.



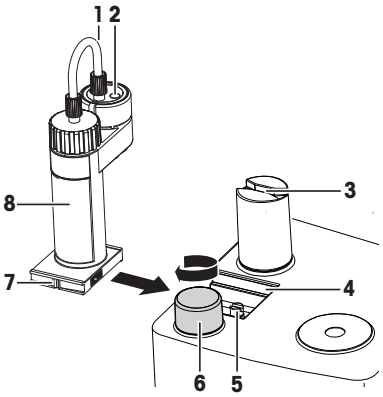
4.1.9 Insert and connect a burette

Current generation burettes are equipped with an Smart Tag on the holder (visible by the small, black cover plate). The Smart Tag is used for reading and writing properties such as titrate name, concentration or usable life.

For a description of the burette, refer to the operating instructions supplied with burettes.

- The burette is assembled.
- The burette holder is mounted on the titrant bottle.
- The piston rod (5) is in the home position.

1 Turn the arrestment knob (6) in the opposite direction of the arrow.
2 Orient the burette so that the recesses on the driver arm (3) are parallel to the groove (7) on the base of the burette housing.
3 Slide the burette (8) on the guides (4) of the titrator.
4 Turn the arrestment knob (6) in the direction of the arrow to secure the burette.
5 Place the suction tube from the titrant botttle into the left hole (1) of the burette.
6 Place the dispensing tube into the right hole (2) of the burette.
7 To prevents spills, place the free end of the dispensing tube into the titration vessel, the waste bottle or another suitable container.



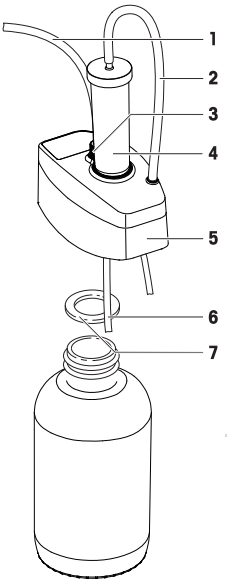
4.1.10 Connect the burette to the titration vessel

- The burette is installed and connected to the titrant bottle. See [Insert and connect a burette ▶ Page 15].

– Insert the free end of the dispensing tube for titrant into the next available opening in the titration stand, which is located counterclockwise from the electrode.

4.1.11 Assemble the waste bottle

1 Place the flat seal (7) on the opening of the bottle.
2 Screw the solvent manager (5) onto the bottle.
3 Loosen the threaded sleeve (3) on the solvent manager (5).
4 Push the thin end of the suction tube (1) through the threaded sleeve (3), so that it is just below the screw top.
5 Tighten the threaded sleeve (3).
6 Fill a drying tube (4) with molecular sieve.
7 Press the drying tube (4) into the appropriate opening of the solvent manager.
8 With a silicone tube (167 mm) (2), connect the drying tube (4) of the bottle to the appropriate adapter of the solvent manager.
9 To ensure that the system has no leaks, check all tubes and closing points for firm seating.



4.1.12 Connect the solvent manager to the titrator

1 Shut down the titrator.

2 Plug the cable supplied with the solvent manager into the **STIRRER PUMP** socket on the rear of the titrator.

3 Start up the titrator.

⇨ The titrator automatically detects the solvent manager.

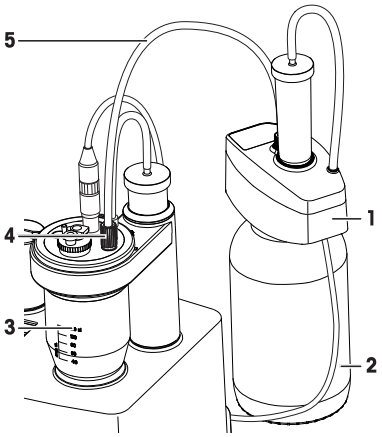
4.1.13 Connect the waste bottle to the tiration vessel

Manual exchange of solvent

- The solvent manager (1) is installed on the waste bottle (2).

1 Screw the adjusting sleeve (4) on the free end of the suction tube (5) into the cover plate.

2 To extract used solvent, push the suction tube (5) into the titration vessel (3) until it touches the bottom of the titration vessel.



Automatic exchange of solvent

NOTICE

Danger of blockage due to undissolved material

If a sample is not completely dissolved it can block tubes.

– Do not use the adapter for immediate draining if you work with samples that are not dissolved completely.

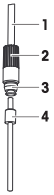
NOTICE

Danger of damage to the adapter for immediate draining by a homogenizer

The adapter for immediate draining can be damaged if it is sucked into the homogenizer.

– Do not use the adapter for immediate draining in connection with a homogenizer.

- The solvent manager is installed on the waste bottle. See Installing the solvent manager.



1 On the free end of the suction tube (1), push the adjusting sleeve (2) and PTFE ring (3) back a little.

2 Take the adapter for immediate draining (4) and carefully insert it into the suction tube (1).

3 Insert the suction tube (1) with the adapter for immediate draining (4) into one of the openings of the titration vessel.

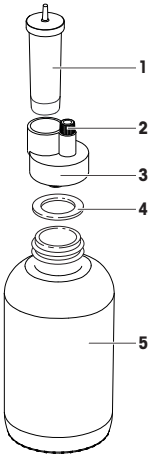
4 Screw the adjusting sleeve (2) into the cover plate.

5 Push the suction tube (1) into the titration vessel until the adapter for immediate draining (4) touches the bottom of the titration vessel.

See also

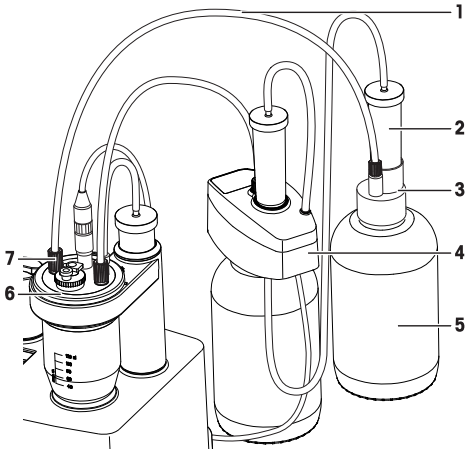
Assemble the waste bottle ▸ Page 16

4.1.14 Assemble the solvent bottle



1 Place the flat seal (4) on the opening of the bottle (5) and screw the screw top (3) onto the bottle.
2 Loosen the threaded sleeve (2) on the screw top (3).
3 Push the dispensing tube through the threaded sleeve (2) and the screw top (3) and down to the bottom of the bottle.
4 Tighten the threaded sleeve (2).
5 Fill a drying tube (1) with a molecular sieve and press the drying tube (1) into the screw top (3) of the bottle (5).
6 Connect the drying tube of the screw top to the appropriate connection of the solvent manager.
7 Press the park sleeve into the opening on the titration stand.
8 To ensure that the system has no leaks, check all tubes and closing points for firm seating.

4.1.15 Connect the solvent bottle



- The solvent manager (4) is installed on the waste bottle.
- The solvent bottle is assembled.

1 Connect the drying tube (2) to the solvent manager (4).
2 Screw the free end of the dispensing tube (1) with the adjusting sleeve (7) into an opening of the cover plate (6).

See also

- Assemble the waste bottle ▸ Page 16
- Assemble the solvent bottle ▸ Page 18

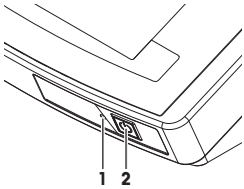
5 Operating the instrument

5.1 Start up the titrator and shut down the titrator

The power button is fitted with an LED and mounted on the front of the titrator. The LED indicates the operating status.

Start up the titrator

– Press the power button (2).
  ⇨ The titrator starts up and detects connected devices.
  ⇨ The LED (1) flashes as the system starts up.
  ⇨ The titrator is ready for use when the LED (1) remains permanently lit.



Shut down the titrator from the touch screen

– Tap **Home** > **Log out** > **Shut down**.
  ⇨ The titrator stops running tasks and shuts down.
  ⇨ The LED (1) flashes as the system shuts down, which can take up to 60 seconds.

⇨ When the LED goes out, the titrator has shut down. The built in AC adapter and the control circuit for the power button are energized. The rest of the titrator is no longer energized.

Shut down the instrument using the power button

– Press the power button for less than 1 second.
  ⇨ The titrator stops running tasks and shuts down.
  ⇨ The LED (1) flashes as the system shuts down, which can take up to 60 seconds.

⇨ When the LED goes out, the titrator has shut down. The built in AC adapter and the control circuit for the power button are energized. The rest of the titrator is no longer energized.

Shut down of the instrument in emergency situations

– Pull the plug of the power cable out of the power outlet.

5.2 Running a volumetric Karl Fischer titration

The following chapters show how to perform a simple volumetric Karl Fischer titration using the standard method KFVol 1-comp 5.

Chemicals

For this titration you need the chemicals listed below.

- 1% KF standard solution as sample
- KF 1-comp 5 as titrant
- Water-free methanol as KF solvent

5.2.1 Preparation

- The titrator is installed.
- The titration stand is installed and the titration vessel is assembled.
- The measuring electrode is connected.
- The solvent manager is installed on the waste bottle and connected to the titrator and the measuring cell.
- The reagent exchange set is installed and the solvent bottle is connected to the measuring cell.
- The burette is assembled.
- A USB printer is connected to port "USB1" or "USB2" of the titrator and configured.

1 Pivot the titration arm so the titration vessel is positioned over the internal magnetic stirrer.

2 Tap **Setup** > **Hardware** > **Titration Stands** > **KF stand**.
   ⇨ The menu **Titration stand parameters** opens.
3 Set **Stirrer output** to **Internal stirrer** and tap **Save**.
4 Insert the burette.
5 Insert the dispensing tube for the titrant into the opening on the titration vessel.
6 Follow the instructions on the Touchscreen until the PnP burette containing the titrant is displayed in the Setup.

5.2.1.1 Rinsing and filling the burette

To fill the burette and tubes with titrant and remove any air bubbles from the system, rinse the burette three times with titrant with the manual operation **Rinse**.

- The titrator is prepared as described in [Preparation ▸ Page 19].

1 To ensure that the system has no leaks, check all tubes and closing points for firm seating.
2 Make sure that the free end of the dispensing tube for the titrant is placed in the titration vessel or another container.
3 Tap **Manual** > **Burette** > **Rinse**.
   ⇨ The dialog **Rinse** opens.
4 Set **Titrant** to **KF 1-comp 5**.
5 Set **Cycles** to "3".
6 To start the rinse procedure, tap **Start**.
   ⇨ The rinse procedure starts. An animation shows the progress.
7 When the rinse procedure is complete, tap **OK**.
   ⇨ The dialog **Rinse** opens.

⇨ The burette is filled and the tubes are free of air bubbles.

5.2.1.2 Filling the titration vessel

- The titrator is prepared as described in [Preparation ▸ Page 19].

1 Tap **Manual** > **Pump**.
   ⇨ The dialog **Pump** opens.
2 Set **Action** to **Fill**.
3 Make sure **Reset counter** is activated.
4 Tap **Start**.
   ⇨ Solvent is pumped into the titration vessel.
5 To prevent the solvent from overflowing, watch the amount of solvent and tap **Stop** if too much solvent is added.

⇨ The titration vessel is filled with solvent.

5.2.2 Perform the volumetric KF titration

The following provides a brief description of the sequence involved in a volumetric KF titration. The analysis process is described as an example for the following sequence steps:

- Pretitration
- Standby
- Sample analysis.

5.2.2.1 Configure the method

- The titrator is prepared as described in Preparation.
- The burette is rinsed and filled.
- The titration vessel is filled.

1 Tap **Methods** > **New** > **Standard method template** > **KFVol 1-comp 5**.
   ⇨ A list with of method functions appears.
2 Tap **Sample**.
   ⇨ The **Sample (KF)** dialog is opened.
3 Tap **Sample**.
4 Set **Entry type** to **Weight** and typ **OK**.
5 Tap **OK**.
   ⇨ A list of method functions appears.
6 Tap **Save**.

5.2.2.2 Create a direct shortcut

1 Tap **Start**.
   ⇨ The **Start analysis** window opens.
2 Tap **AddToHome**.
   ⇨ The **Shortcut parameters** window opens.
3 Enter a name for the shortcut in **Description**.
4 Activate **Immediate start**.
5 Tap **Save**.

⇨ The home screen with the new shortcut opens.

5.2.2.3 Start the pretitration

1 To ensure that the system has no leaks, check all tubes and closing points for firm seating.
2 Select the shortcut on the home screen.
   ⇨ The system performs the pretitration to remove any water from the solvent.
   ⇨ As soon as the continually determined drift value falls below a defined value, the system automatically switches to **Standby** mode and the **Start sample** button is active.

5.2.2.4 Perform the analysis

- The system is in **Standby** mode.

1 Measure 500 mg of a 1 % KF standard solution into a syringe.
2 Tap **Start sample**.
   ⇨ You are prompted to add the sample.
3 Inject the measured sample into the titration beaker.
4 Enter the sample weight, 0.5 [g], on the touch screen and tap **OK**.
   ⇨ The analysis starts.

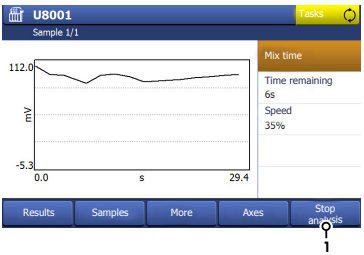
⇨ Once the titration is completed, the **Results** dialog is displayed. The dialog shows **R1**, the water content.

5.3 Stopping an analysis

Stop method directly on the measurement screen

1 Tap **Stop analysis** (1) to stop the current analysis.

⇨ A dialog opens where you have to confirm the stop.



Stop method in the dialog More KF functions

2 Tap **More** (1) to enter the dialog **More KF functions**.

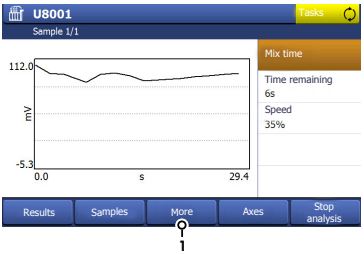
⇨ Depending on the measurement status, you will find different opportunities in this dialog.

3 Tap **End series** to end the current series.

4 Tap **Stop method** to stop the current method.

⇨ A dialog opens where you have to confirm the stop.

5 Tap **Back** to exit the dialog **More KF functions**.



6 Transporting the titrator

If you transport the titrator over long distances, use the original packaging.

1 Empty all tubes.
2 Empty the titration vessel.
3 Shut down the titrator.
4 Unplug the titrator.
5 Remove all cable connections.
6 Remove the titration vessel from the titration stand.
7 Remove all tubes.
8 Remove all burettes.
9 Move the titrator to the new location.

7 Care and maintenance

7.1 Cleaning

Housing of the titrator

1 Unplug the titrator.
2 Clean the housing of the titrator using a cloth moistened with alcohol.

Titration stand

1 Dismantle the titration stand.
2 Clean the parts of the titration stand.
3 Reassemble the titration stand.

7.2 Maintenance

Mettler Toledo recommends that a preventive maintenance and calibration certification is done at least once a year through your local Mettler Toledo Service Organization.

NOTICE

Danger of damage to the titrator through leaking burettes!

Substances leaking out of burettes can enter the housing and damage parts of the installed boards.

– Check the burettes for leaks and replace leaking burettes.

Daily

- Remove the burettes from the titrator.
- If you work with corrosive substances, rinse the burettes.
- If you work with corrosive substances, check the burettes for leaks and replace leaking burettes.

Weekly

- If you use the burettes daily, check the burettes for leaks and replace leaking burettes.

Before periods of inactivity

1 Rinse the burettes.
2 Empty all tubes.
3 Empty the titration vessel.
4 Shut down the titrator.
5 Unplug the titrator.
6 Remove the titration vessel from the titration stand.
7 Remove all tubes.
8 Remove all burettes.

8 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 (for private or professional use), the content of this regulation must also be related.

Thank you for your contribution to environmental protection.

9 Technical data

Power supply	Input voltage	100–240 V~ ±10 %
	Input frequency	50–60 Hz
	Primary connection socket	3 pin, IEC C14
	Power consumption	24 VA
	Connected load	24 V DC ⎓, 1.25 A
	Secondary connection plug	2 pin, DC plug

Dimensions	Width	210 mm
	Depth	333 mm
	Height	308 mm (with titration stand)
		320 mm (ready-to-operate device)
	weight	4.2 kg
Materials	Titrator housing	Crastin® PBT
	Cover sheet	PET
	Protective cover	Copolymer
	Chassis	Stainless steel
	Titration stand	Crastin® PBT
	Lid (titration beaker)	Polypropylene
	Threaded ring	Polypropylene
	Three hole adapter	Polypropylene
	Dispensing tube / extraction tube	FEP
	Air tubes	Silicone
	O-ring (screw top)	EPDM
	O-ring (threaded ring)	FEP / silicone
	Sealing ring (bottle)	PTFE / silicone
	Seal (dispensing tube / extraction tube)	PTFE
	Connecting piece	Polypropylene
Ambient conditions	Ambient temperature	+5 °C – 40 °C
	Relative humidity	Max. 80 % (non-condensing) at 31 °C, linear fall to 50 % at 40 °C
	Use	In interior spaces
	Overvoltage category	II
	Pollution degree	2

Power Management

The devices have a power management system which prevents the titrator from switching off unexpectedly in the event of a power overload. Tasks which would cause a power overload, because a number of pumps, stirrers and burette drives are already in use, cannot be started at all. A notification brings the start attempt to the attention of the user. It is advisable, if possible, to connect pumps and stirrers directly to sample changers or other devices which have their own power supply, such as a TBox, instead of to the titrator itself.

To protect your product's future:
METTLER TOLEDO Service assures the quality, measuring accuracy and preservation of value of this product for years to come.

Please request full details about our attractive terms of service.

www.mt.com/titration
For more information

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