803 Ti Stand

Manual

8.803.8001EN / 2019-09-26

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This documentation has been prepared with great care. However, errors can never be entirely ruled out. Please send comments regarding possible errors to the address above.

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1 Introduction

1.1 Instrument description

The 803 Ti Stand with a magnetic stirrer and a built-in pump is part of the Titrando system. It is mainly used for volumetric Karl Fischer titration together with a Titrando.

The titration stand is directly connected to the Titrando via an MSB connection cable.

With the integrated membrane pump it is possible to aspirate the titered-out solution and to add a new solvent without having to open the titration cell.

1.2 About the documentation

CAUTION

Please read through this documentation carefully before putting the instrument into operation. The documentation contains information and warnings which the user must follow in order to ensure safe operation of the instrument.

1.2.1 Symbols and conventions

The following symbols and styles are used in this documentation:

*(5-**12**)*	**Cross-reference to figure legend** The first number refers to the figure number, the second to the instrument part in the figure.
1	**Instruction step** Carry out these steps in the sequence shown.
	**Warning** This symbol draws attention to a possible life hazard or risk of injury.
	**Warning** This symbol draws attention to a possible hazard due to electrical current.

	**Warning** This symbol draws attention to a possible hazard due to heat or hot instrument parts.
	**Warning** This symbol draws attention to a possible biological hazard.
	**Caution** This symbol draws attention to a possible damage of instruments or instrument parts.
	**Note** This symbol marks additional information and tips.

1.3 Safety instructions

1.3.1 General notes on safety

WARNING

Operate this instrument only according to the information contained in this documentation.

This instrument left the factory in a flawless state in terms of technical safety. To maintain this state and ensure non-hazardous operation of the instrument, the following instructions must be observed carefully.

1.3.2 Electrical safety

The electrical safety when working with the instrument is ensured as part of the international standard IEC 61010.

WARNING

Only personnel qualified by Metrohm are authorized to carry out service work on electronic components.

WARNING

Never open the housing of the instrument. The instrument could be damaged by this. There is also a risk of serious injury if live components are touched.

There are no parts inside the housing which can be serviced or replaced by the user.

Protection against electrostatic charges

WARNING

Electronic components are sensitive to electrostatic charges and can be destroyed by discharges.

Do not fail to pull the power cord out of the power socket before you set up or disconnect electrical plug connections at the rear of the instrument.

1.3.3 Working with liquids

CAUTION

Periodically check all system connections for leaks. Observe the relevant regulations in respect to working with flammable and/or toxic fluids and their disposal.

1.3.4 Flammable solvents and chemicals

WARNING

All relevant safety measures are to be observed when working with flammable solvents and chemicals.

- Set up the instrument in a well-ventilated location (e.g. fume cupboard).
- Keep all sources of flame far from the workplace.
- Clean up spilled liquids and solids immediately.
- Follow the safety instructions of the chemical manufacturer.

1.3.5 Recycling and disposal

This product is covered by European Directive 2012/19/EU, WEEE – Waste Electrical and Electronic Equipment.

The correct disposal of your old instrument will help to prevent negative effects on the environment and public health.

More details about the disposal of your old instrument can be obtained from your local authorities, from waste disposal companies or from your local dealer.

2 Overview of the instrument

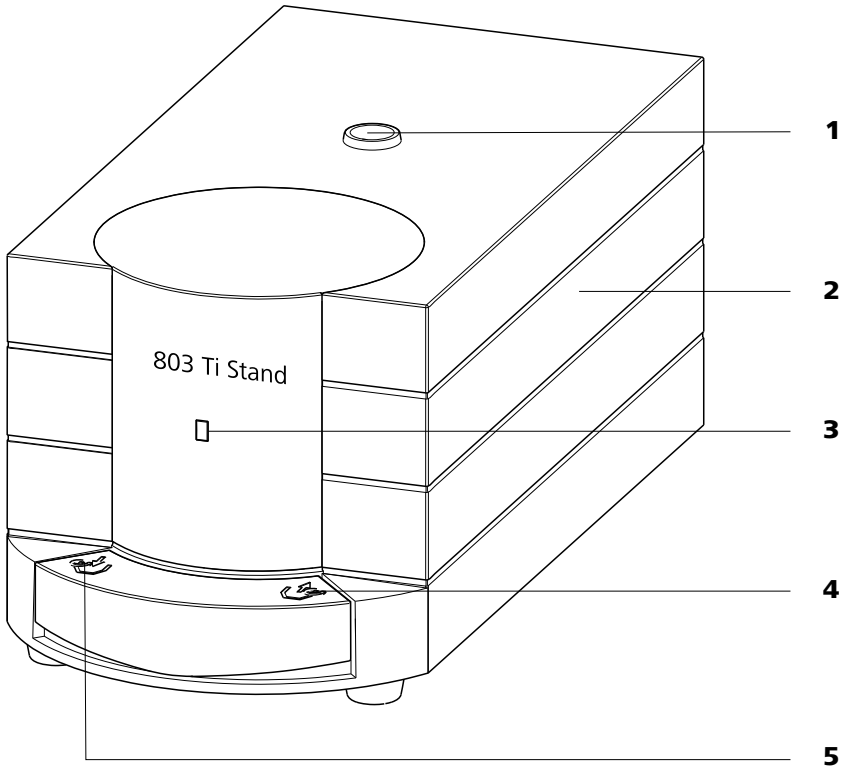


Figure 1 Front 803 Ti Stand

1 Bore hole
For support rod (6.2016.070), diameter 10 mm, length 40 mm

2 Housing
With built-in pump and magnetic stirrer

3 LED function display
Lights up, when the stirrer is switched on.

4 Key
Pressing the key aspirates air out of the aspiration bottle. The vacuum in the suction bottle suctions the liquid out of the KF titration cell and into the suction bottle.

5 Key
Pressing the key pumps air into the solvent bottle. The overpressure in the solvent bottle pushes solvent into the KF titration cell.

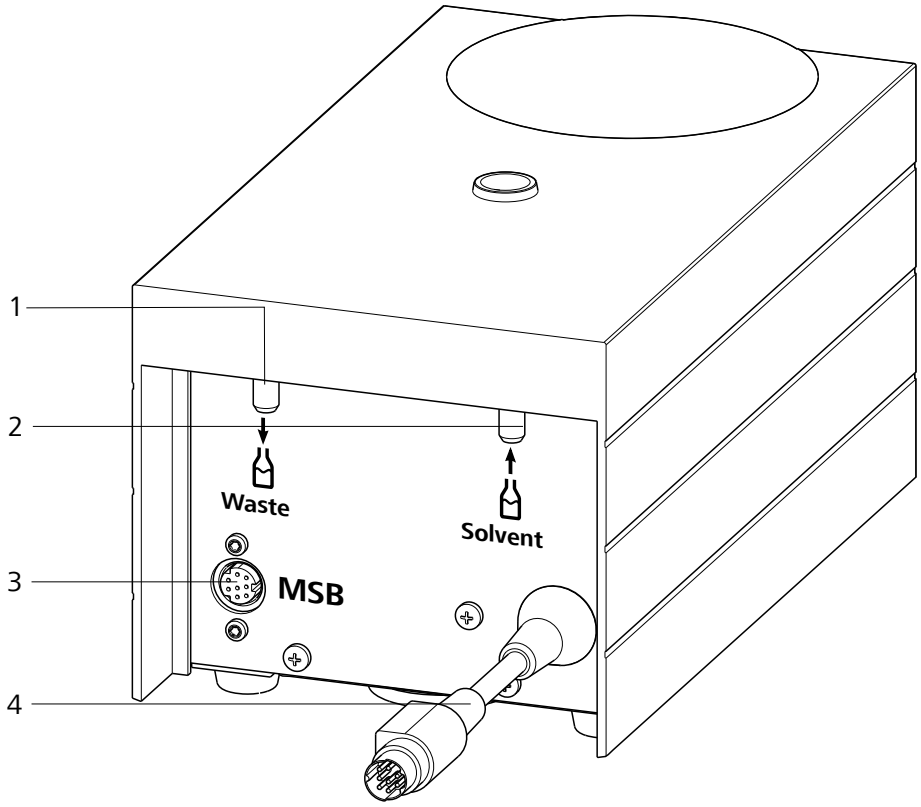


Figure 2 Rear 803 Ti Stand

1 **Connection nipple for PVC tubing** For aspirating the titration vessel content.	**2** **Connection nipple for PVC tubing** For aspirating solvent.
3 **MSB connector** For connecting additional devices (e.g. Dosino)	**4** **MSB connection cable** For connecting to an analysis device.

3 Installation

3.1 Setting up the instrument

3.1.1 Packaging

The instrument is supplied in protective packaging together with the separately packed accessories. Keep this packaging, as only this ensures safe transportation of the instrument.

3.1.2 Checks

Immediately after receipt, check whether the shipment has arrived complete and without damage by comparing it with the delivery note.

3.1.3 Location

The instrument has been developed for operation indoors and may not be used in explosive environments.

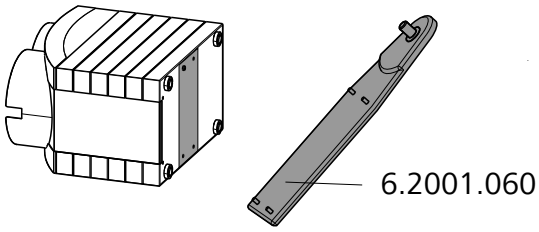
Place the instrument in a location of the laboratory which is suitable for operation and free of vibrations and which provides protection against corrosive atmosphere and contamination by chemicals.

The instrument should be protected against excessive temperature fluctuations and direct sunlight.

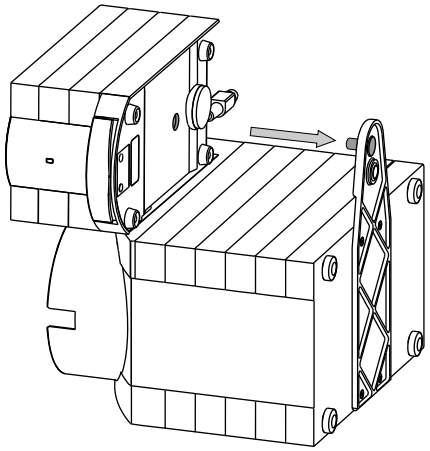
3.2 Mounting the 803 Ti Stand

Mounting the KF titration stand as follows:

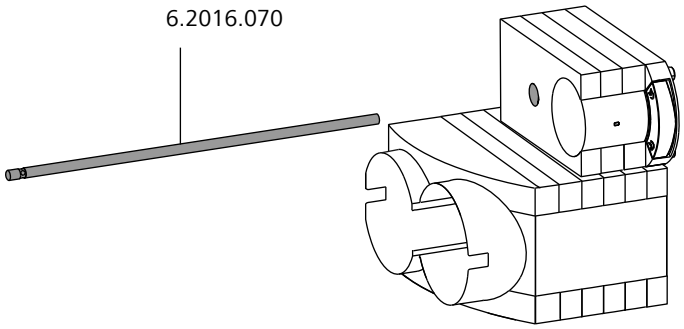
1 Screw the 6.2001.060 stand plate with the accompanying four screws tightly to the bottom of the instrument.



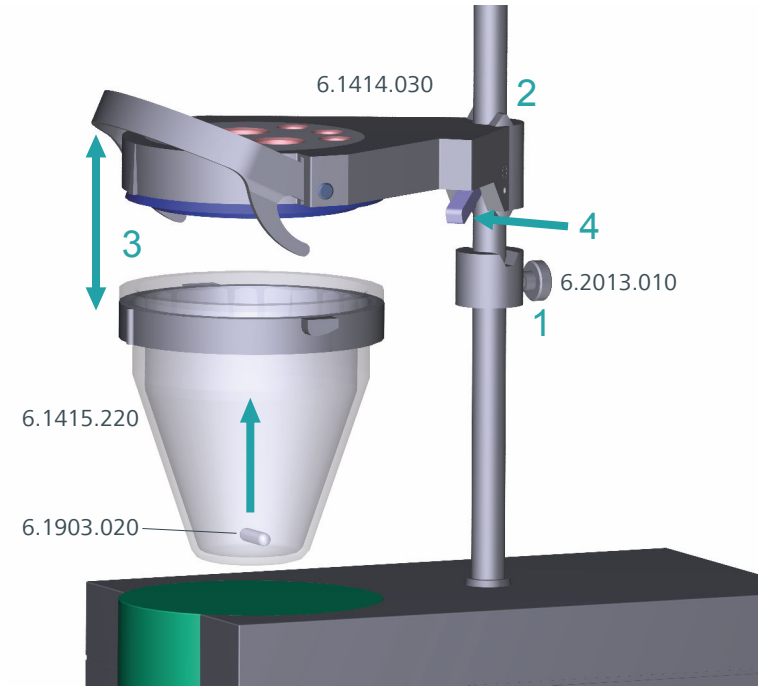
2 Attach the opening on the bottom of the KF titration stand onto the hexagon screw in the stand plate.



3 Slide the 6.2016.070 support rod from above into the opening of the KF titration stand intended for this purpose up to the hexagon screw and tighten.



Mounting the KF titration cell

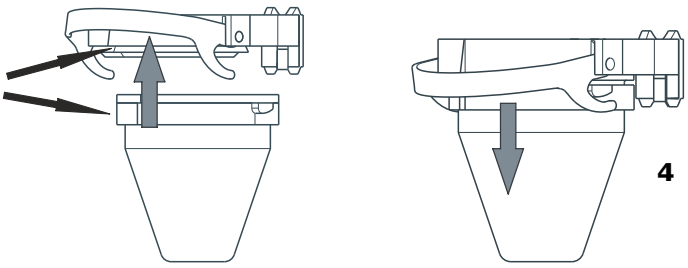


Install the KF titration cell as follows:

1 Screw the 6.2013.010 clamping ring tightly to the support rod.

2 Mount the 6.1414.030 vessel lid of the KF titration cell to the support rod. Keep the locking lever pressed down until it can be released at the desired position.

3 Fasten the 6.1415.220 (or 6.1415.250) titration vessel with a 6.1903.020 (or 6.1903.030) stirring bar inside on the vessel lid. Fold back the holding bracket upwards while doing so. The markings on the vessel lid and on the plastic ring must be aligned above one another.



4 Press the holding bracket downwards in order to fix the titration vessel. The levers of the holding bracket must enclose the pins of the plastic ring on the titration vessel in order to ensure a secure hold.

5 Adjust the height of the KF titration cell by pressing the locking lever. It should almost touch the surface of the stirrer. The position can now be fixed by readjusting the clamping ring.

Once the height of the KF titration cell has been adjusted correctly, the entire cell can be raised and swiveled to the right as required by pressing the locking lever.

3.3 Connecting the 803 Ti Stand

Connect the titration stand as follows:

1 Exit the control software.

2 Connect the connection cable of the titration stand to one of the sockets marked with **MSB** on the rear of the control device.

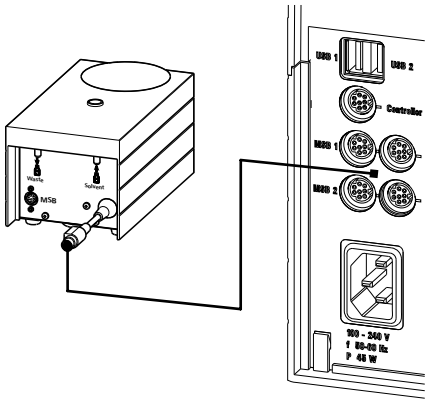


Figure 3 Connecting the 803 Ti Stand

3 Connecting an additional device (e.g. Dosimat or Dosino) to the MSB connector of the titration stand (optional).

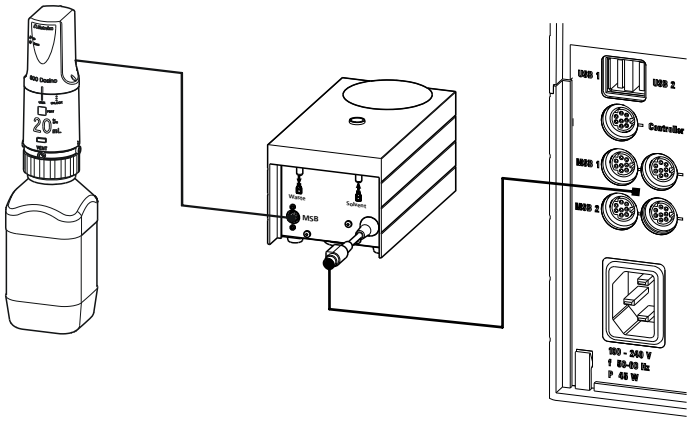


Figure 4 Connecting the Dosino to the 803 Ti Stand

4 Start the control software.

3.4 Mounting the accessories

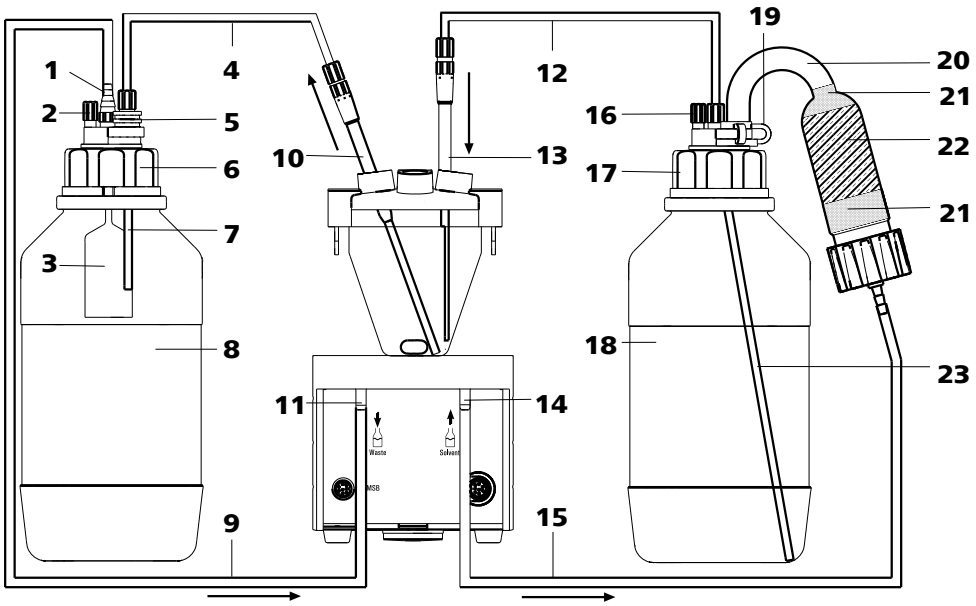


Figure 5 803 Ti Stand with volumetric titration vessel and equipment for automatic reagent exchange.

1	**Tubing adapter 6.1808.050**	**2**	**Threaded stopper 6.1446.040**
3	**Overflow protection 6.1623.000**	**4**	**PTFE tubing 6.1805.200**
5	**Stopper 6.1446.090**	**6**	**Bottle attachment 6.1602.105** For direct dosing out of reagent bottles with GL 45 thread.
7	**Cannula 6.1819.050**	**8**	**Amber glass bottle 6.1608.030** Waste bottle.
9	**PVC tubing 6.1801.120**	**10**	**Aspiration tip 6.1543.120**
11	**Connection nipple for PVC tubing** For aspirating the titration vessel content.	**12**	**PTFE tubing 6.1805.200**
13	**Transfer tip 6.1543.110**	**14**	**Connection nipple for PVC tubing** For aspirating solvent.
15	**PVC tubing 6.1801.120**	**16**	**Threaded stopper 6.1446.040**
17	**Bottle attachment 6.1602.105** For direct dosing out of the reagent bottle with GL 45 thread.	**18**	**Amber glass bottle 6.1608.023** Solvent bottle
19	**SGJ clip 6.2023.020**	**20**	**Adsorber tube with tubing nipple 6.1609.010**

21 Cotton

22 Molecular sieve 6.2811.000

23 Cannula 6.1819.030

Mounting the equipment for aspirating

Mount the waste bottle as follows:

1. Equip the 6.1602.105 bottle attachment with the 6.1446.040 threaded stopper, the 6.1808.050 tubing adapter and the 6.1446.090 stopper.
2. Plug the 6.1623.000 overflow protection from below into the 6.1602.105 bottle attachment (the opening, the 6.1808.050 tubing adapter is plugged in).
3. Screw the 6.1602.105 bottle attachment onto the 6.1608.030 waste bottle.
4. Cut the 6.1801.120 PVC tubing into two halves and use one to aspirate.
5. Fasten the one end of the aspiration tubing to the tubing adapter, the other to the connection nipple for the waste on the rear of the titration stand.
6. Insert the 6.1819.050 cannula through the 6.1446.090 stopper into the waste bottle.
7. Screw the 6.1805.200 PTFE tubing into the 6.1446.090 stopper.
8. Screw the 6.1543.120 aspiration tip to the other end of the PTFE tubing.
9. Insert the aspiration tip down to the bottom of the titration vessel to be emptied and fasten it to the titration vessel lid.

NOTICE

The waste bottle should periodically be emptied.

Mounting the equipment for aspirating solvent

Mount the solvent bottle as follows:

1. Fill the 6.1609.010 adsorber tube and the 6.2811.000 molecular sieve with cotton.

2. Use the other half of the 6.1801.120 PVC tubing previously cut in two pieces for aspirating the solvent. Fasten the one end of the tubing to the lower end of the adsorber tube, the other end to the connection nipple for aspirating the solvent.

3. Equip the 6.1602.105 bottle attachment with the 6.1446.040 threaded stopper and the 6.1609.010 adsorber tube.

4. Secure the adsorber tube with the 6.2023.020 SGJ clip.

5. Insert the 6.1819.030 cannula into the last open hole (with medium-sized diameter) of the 6.1602.105 bottle attachment.

6. Screw the 6.1602.105 bottle attachment onto the solvent bottle.

   Instead of the 6.1608.023 amber glass bottle, other reagent bottles with GL45 thread can be used (e.g. RIEDEL DE HAEN (1 liter), BAKER). For other bottles another bottle attachment or an additional thread adapter have to be used.

   MERCK bottles: 6.1602.110 bottle attachment

   FLUKA bottles, RIEDEL DE HAEN (500 ml): 6.1602.100 bottle attachment with 6.1618.000 thread adapter.

7. Screw the 6.1543.110 transfer tip to the free end of the 6.1805.200 PTFE tubing, insert into the titration vessel and fasten to the titration vessel lid.

4 Troubleshooting

4.1 Problems

Problem	Cause	Remedy
Solvent is added at the same time during aspiration.	*The drying tube is blocked.*	▪ Enlarge the hole of the drying tube cover to 2 mm at least. ▪ Refill the drying tube, not packing too tightly, eventually removing some of the molecular sieve.
The pump conveys no liquid.	*The add/aspirate key is not pressed tightly enough.*	▪ It is usually the case that the bottle attachments are not screwed tightly enough to the reagent and waste bottles. ▪ Check all connections for leak-tightness. ▪ Check whether the 803 Ti Stand has been set up correctly.
The solvent flows on into the titration vessel after the addition, without the add key being pressed.	*The solvent bottle is not set up correctly.*	Set the solvent bottle up in such a way that the liquid level in the bottle is lower than that in the titration vessel.

5 Technical specifications

5.1 Rotational speed

Maximum rotational speed	±1700 ... 1900 r/min
Setting of the rotational speed	±15 steps
Increase of rotational speed per step	±115...125 U/min

5.2 Pump

Add	> 600 mL/min. (at 25 °C; standard accessories)
Aspirate	> 400 mL/min. (at 25 °C; standard accessories)

5.3 Power supply

Voltage	+12 V, -12 V, +5 V
Power consumption	4 W
Fuse	Electronic overload protection

5.4 Ambient temperature

Nominal function range	+5…+45 °C (at a maximum of 85% humidity)
Storage	–20…+60 °C
Transport	–40…+60 °C

5.5 Dimensions

Width	106 mm
Height (without stand)	101 mm
Height (with stand)	412 mm
Depth	220 mm
Weight	1100 g

5.6 Material of housing

Polybutylene terephthalate (PBT)

6 Accessories

Up-to-date information on the scope of delivery and optional accessories for your product can be found on the Internet. You can download this information using the article number as follows:

Downloading the accessories list

1. Enter *https://www.metrohm.com/* into your Internet browser.
2. Enter the article number (e.g. **803**) into the search field.

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

   Detailed information regarding the product is shown on various tabs.
4. On the **Included parts** tab, click on **Download the PDF**.

   The PDF file with the accessories data is created.

NOTICE

Once you have received your new product, we recommend downloading the accessories list from the Internet, printing it out and keeping it together with the manual for reference purposes.