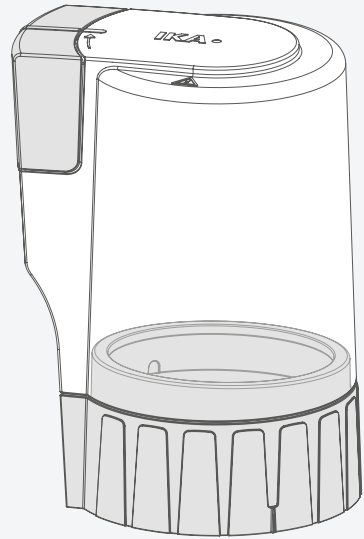


IKA

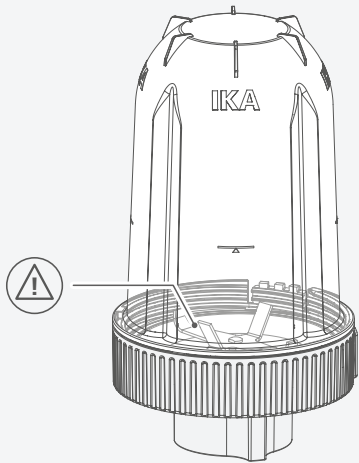
designed for scientists

IKA MultiDrive TC 1
IKA MultiDrive BT 250
IKA MultiDrive MT 150

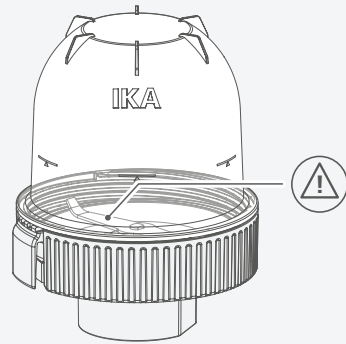
ENGLISH



IKA MultiDrive TC 1








IKA MultiDrive BT 250



IKA MultiDrive MT 150

Fig. 1

	Explication of warning symbols	6
	Safety instructions.....	7
	Unpacking	9
	Useful information	10
	Installation	12
	Maintenance and cleaning	14
	Accessories	18
	Technical Data	18



Explication of warning symbols

/// Warning symbols



Danger! Indicates an (extremely) hazardous situation, which, if not avoided, will result in death, serious injury.



Warning! Indicates a hazardous situation, which, if not avoided, can result in death, serious injury.



Caution! Indicates a potentially hazardous situation, which, if not avoided, can result in injury.



Notice! Indicates practices which, if not avoided, can result in equipment damage.

/// General Symbols

A — Position number



Correct/Result
Shows the correct execution or the result of an action step.



Wrong
Shows the incorrect execution of an action step.



Note
Displays action steps that require particular attention to detail.

Safety instructions



/// General information

- › **Read the operating instructions completely before starting up and follow the safety instructions.**
- › Keep the operating instructions in a place where it can be accessed by everyone.
- › Ensure that only trained staff work with the device.
- › Follow the safety instructions, guidelines, occupational health and safety and accident prevention regulations.
- › The vessel must only be used in a technically perfect condition.
- › Refer to the operating instructions for the drive unit.

Caution!

- › Wear your personal protective equipment in accordance with the hazard category of the medium to be processed, there is a risk of:
 - splashing of liquids
 - body parts, hair, clothing and jewellery getting caught
 - sharp blade edges.

Notice!

- › Pay attention to the marked sites in Fig. 1.
- › Protect the vessel from bumping and impacting.
- › Do not use any damaged vessel e.g. with hairline cracks or splits.
- › Check the vessel beforehand for damage each time when you use them. Do not use damaged components.

/// Device setup

Notice!

- › Ensure that the vessel and the **MultiDrive TC 1** protective cap is firmly attached to the drive unit prior to operating the device.
- › The drive unit cannot be operated without a **MultiDrive TC 1** protective cap.
- › The **MultiDrive BT 250** and **MT 150** together with the **MultiDrive TC 1** are only suitable for operation with the **MultiDrive control**.

/// Working with the vessel

Danger!

- › With substances capable of forming an explosive mixture, appropriate safety measures must be applied, e.g. working under a fume hood.
- › To avoid body injury and property damage, observe the relevant safety and accident prevention measures when processing hazardous materials.

Warning!

- › Only process samples that will not react dangerously to the extra energy produced through processing. This also applies to any extra energy produced in other ways, e.g. through light irradiation.

⊗ Caution!

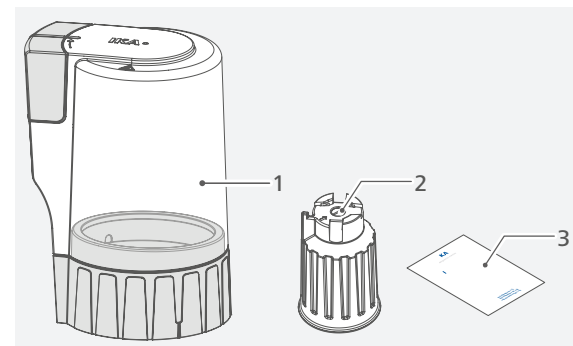
- › Please pay attention to avoiding hand injury when operate and clean the vessel.
- › The vessel may be very hot and under pressure after operation. Allow it to cool down before remove it from the drive and before open it. Use your personal protective equipment.

⚠ Notice!

- › The vessel must always be closed during operation. Switch off the drive unit immediately if any material leaks from the vessel. Clean the device after disconnected power plug.
- › The use of liquid nitrogen for directly cooling the sample in the vessel is not permitted.
- › The processing time is limited to 1 minutes. The vessel must be allowed to cool down for a few minutes before processing the sample further in the vessel.
- › Excessive sizes and excessive hardness can damage the vessel (see "Technical data").
- › Don't fill the vessel above the maximum mark.
- › The temperature of the medium must not exceed 90 °C.
The temperature of the medium can increase easily 20°C (wet applications) to 50 °C (dry applications) during processing with the max. settings of speed and time. So don't fill in medium with more than 70 °C (liquids) or else 40°C (dry medium). According to the medium and process settings the values can differ and needs to be determined by testing.
- › Vessels once operated without liquid may only be refilled with liquid and operated after a new seal has been inserted.
- › Abrasion of the sealing or the rotating accessories can get into the medium you are working on.

Unpacking

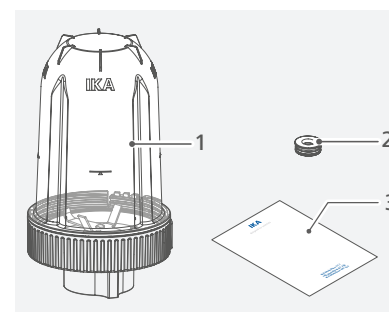
- › Please unpack the vessel carefully.
- › Any damage should be notified immediately to the shipping agent (post office, railway network or logistics company).



1 IKA MultiDrive TC 1

2 Disassembly tool III

3 User guide

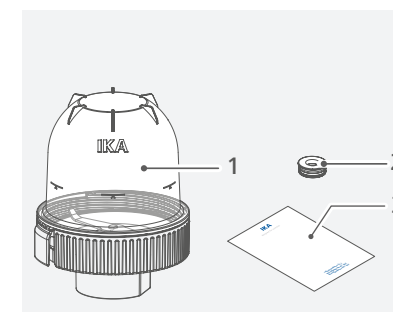


1 IKA MultiDrive BT 250

(x pcs according to order)

2 MultiDrive TS 1 (Spare seal set)

3 User guide



1 IKA MultiDrive MT 150

(x pcs according to order)

2 MultiDrive TS 1 (Spare seal set)

3 User guide

Useful information

The vessels are designed for use in combination with **MultiDrive control**, for dry milling (**MultiDrive MT 150**) and wet crushing (**MultiDrive BT 250**).

MultiDrive TC 1:

MultiDrive TC 1 is a protective cap. It is for use together with **MultiDrive BT 250** or **MultiDrive MT 150** on **MultiDrive control**. The drive unit cannot be operated without **MultiDrive TC 1**.

Note: The **MultiDrive TC 1** is not a vessel! Don't fill water or other medium to the protective cap!

MultiDrive BT 250:

Primarily, it is suitable for wet crushing and meanwhile mixing samples with liquid, e.g. water. Due to the high rotation speed of the beater and high turbulence caused by the integrate flow breaker, the sample can be crushed and mixed into liquid.

Note: In a few special cases the vessel can mix and mill dry samples too.

MultiDrive MT 150:

Primarily, it is suitable for milling dry samples up to 5 Mohs hardness. The sample pieces must not be larger than 1 cm³. If the sample pieces are larger than this they must be pre-milled before placing them in the vessel. The harder the sample pieces, the smaller they must be. If for instance the hardness is 5 Mohs the edge length must be no longer than 0.5 cm (corresponding to a piece size of approx. 0.125 cm³).

The vessel can be used for preparing samples for e.g. quality control in food industry or pharmacy. It is suitable for processing include grains, sugar, coffee, tea and tablet etc.. Dry ice can be used to extend the application range to include moist and resilient samples such as fruits, leaves, jelly babies etc..

Before you open the vessel after processing it is advisable to tap it lightly on the table so that all the milled material falls into the sample vessel.

Working with coolants – Dry ice (CO₂) cooling:

Please observe the safety instructions!

Grinding causes the mill feed to heat up. This may not always be desirable as the mill feed can change when heated (e.g. increased oxidation, loss of moisture, evaporation of volatile components, etc.).

It may only be possible to crush mill feed which is viscous or has a high fat content by embrittling using coolants.

Working with the coolants dry ice (CO₂):

- › Put the feed material into the grinding vessel.
- › Add crushed dry ice.
- › Thoroughly mix the dry ice with the feed material.
- › Attach the grinding vessel cap when the dry ice is completely vaporized, otherwise high pressure may build up in the grinding chamber.

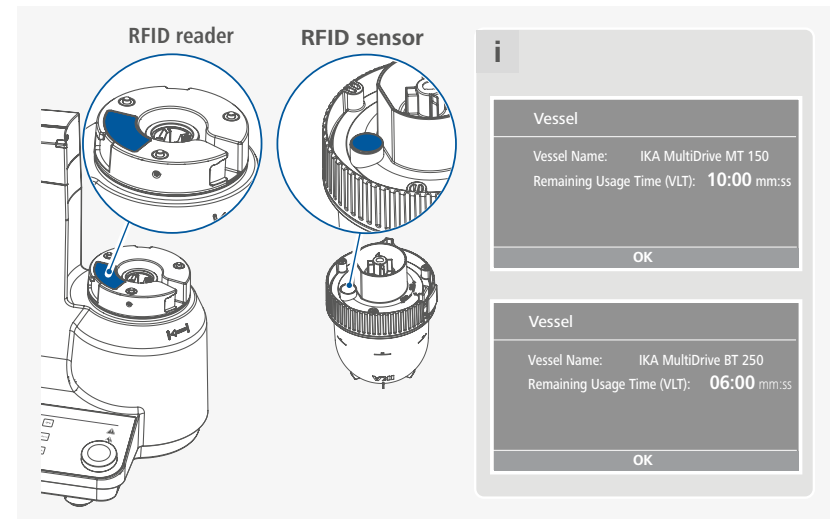
Note: That the mill feed heats up again extremely quickly during grinding (it may reach room temperature again after approximate 10 seconds of grinding). You may have to repeat the process several times if the product is not adequately ground after one cooling process.

Warning!

Dry ice is solid carbon dioxide that expands into a gas. You can lose of consciousness, if dry ice vapors are inhaled directly over a longer period of time. Use dry ice only in a well ventilated place. Dry ice is extremely cold (-109 F / -78 °C). Avoid contact with skin and eyes. When using dry ice, observe the applicable accident prevention regulations.

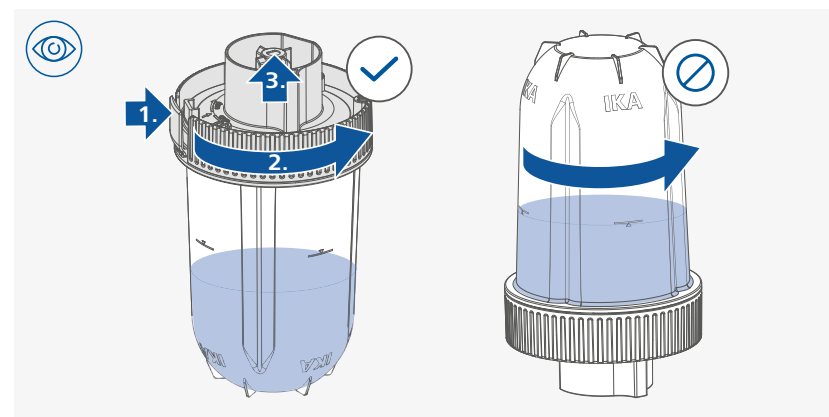
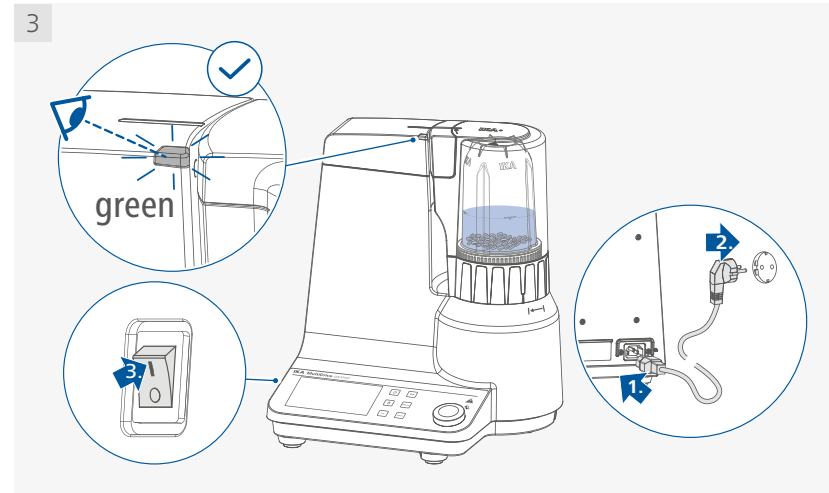
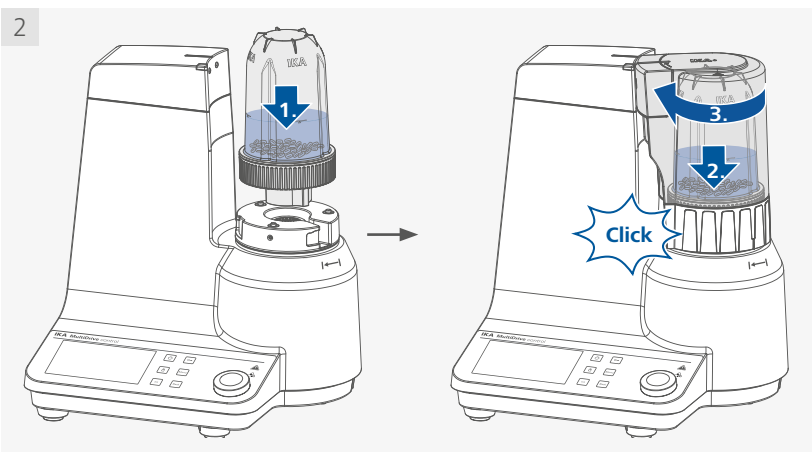
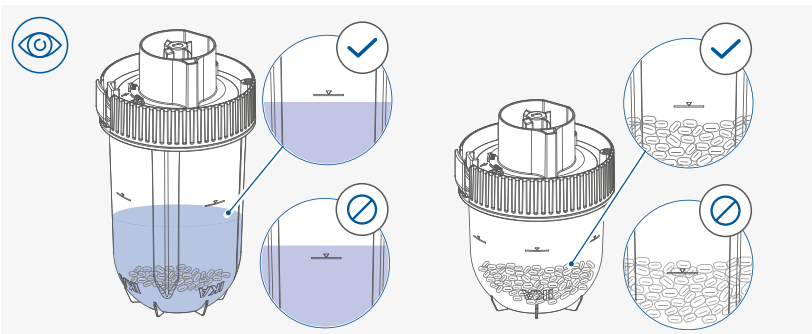
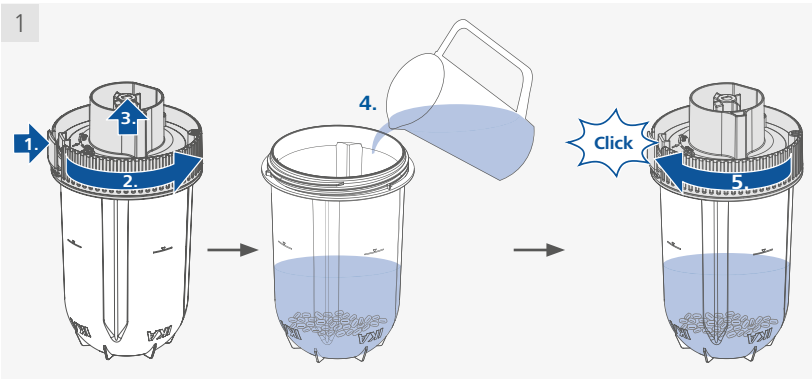
Note: In a few special cases the vessel can mix wet samples too.

MultiDrive BT 250 and **MultiDrive MT 150** has integrated RFID sensor. The remaining usage time (VLT) is displayed on the display of the **MultiDrive control**. A negative value means that the vessel usage time has already been exceeded. The vessel usage time refers to the seal. If the specified vessel usage time is exceeded, medium may escape due to the worn seal. Insert a new sealing after the vessel usage time has expired. Then reset the vessel usage time by entering the six-digit seal code (supplied with the spare part sealing set **MultiDrive TS 1**). (See also the operating instructions of the **MultiDrive control**).





Installation

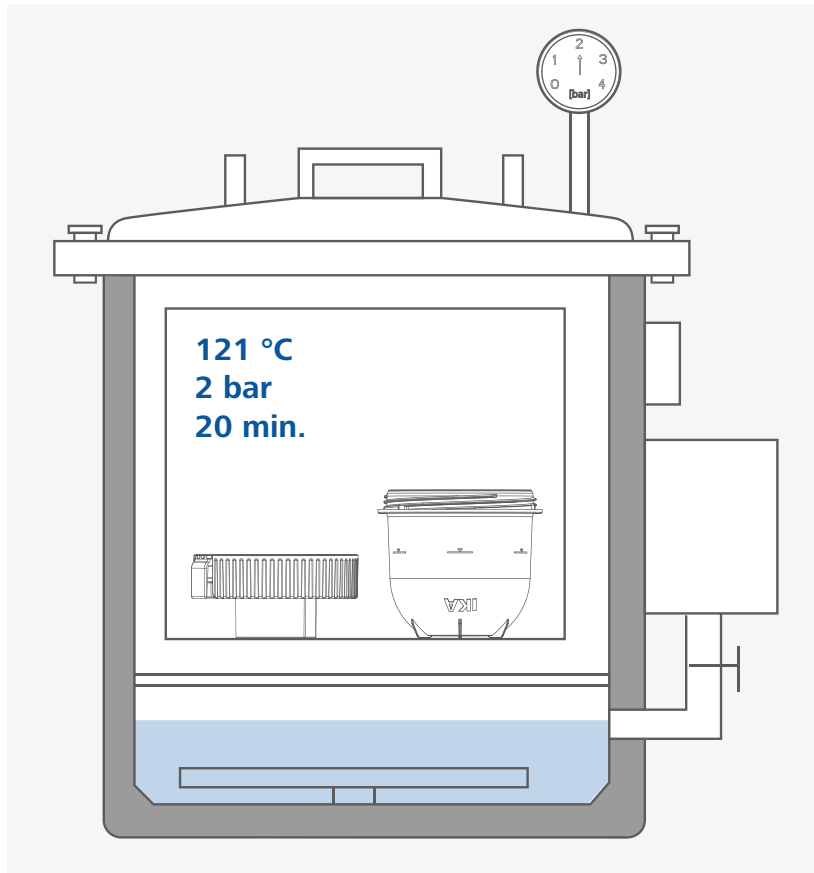


Maintenance and cleaning

The vessel is maintenance-free. It is only subject to the natural wear and tear of components and their statistical failure rate.

/// Sterilization

- › The vessel can be sterilized with autoclave in condition: 121 °C, 2 bar and 20 minutes.
To do this, the vessel upper part must be removed or you can completely disassemble the vessel.

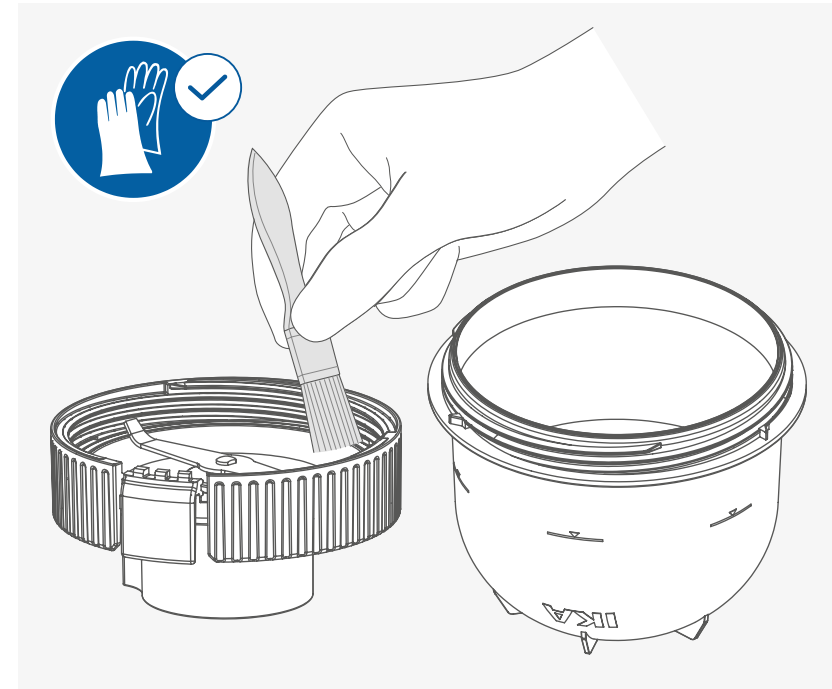


/// Cleaning

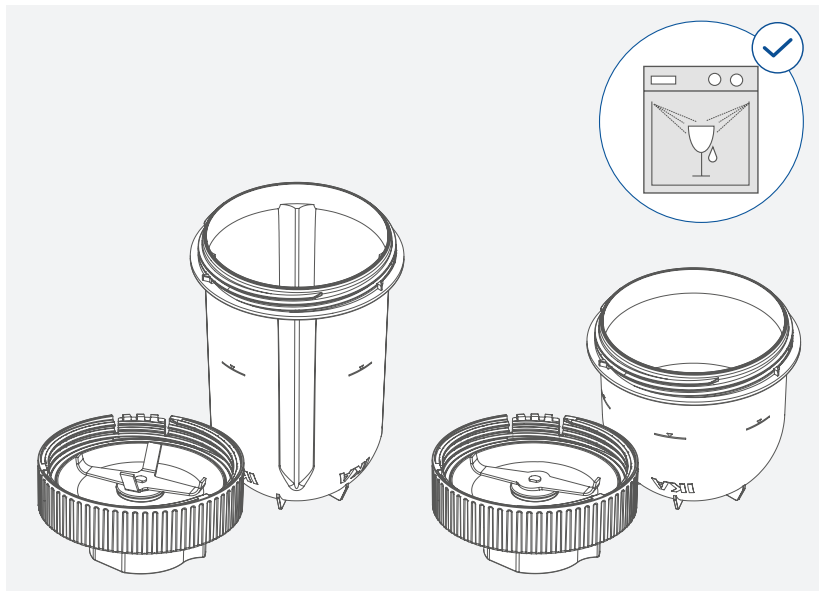
- › Use only cleaning agents which have been approved by IKA to clean the devices: water (containing surfactant) and isopropyl alcohol.
- › Before using another than the recommended method for cleaning or decontamination, the user must ascertain with that this method does not destroy the device.
- › Wear protective gloves during cleaning the vessel.

MultiDrive MT 150:

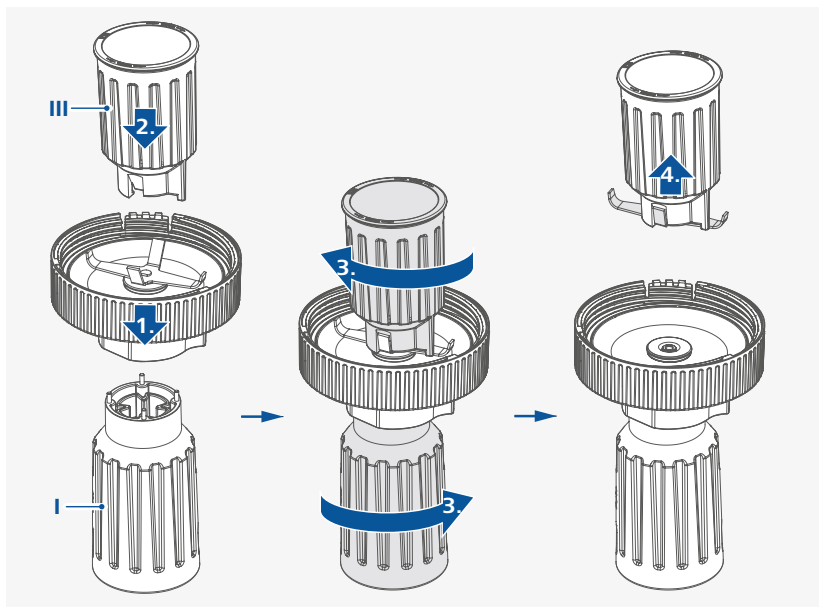
Dirty parts can be cleaned with a cleaning brush included with the drive unit.



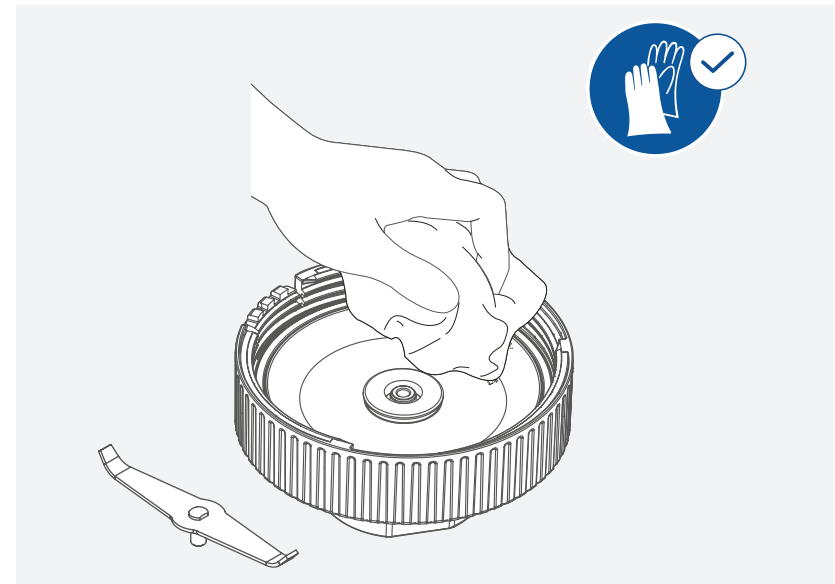
If there is heavy accumulation of dirt on the vessel, it can be cleaned in a dishwasher.



You can also disassemble the vessel for thorough cleaning of the individual parts with a wet cloth:

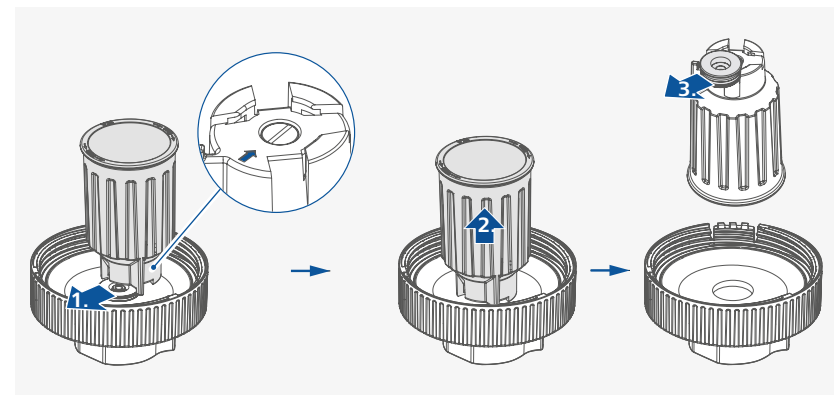


Note: Disassembly Tool I: is included in the delivery scope of the drive unit.
Disassembly Tool III: is included in the delivery scope of the protection cover.



/// Exchanging and replacing the sealing

The sealing can be disassembled as below:



Accessories

MultiDrive TS 1 (Spare seal set)

See more accessories on www.ika.com.



Technical data

		MultiDrive MT 150	MultiDrive BT 250
Max. useful volume	ml	150	250
Part material in contact with product:			
Blending / Grinding tool		Stainless steel	
Vessel		Polycarbonate (PC)	
Coupling cover		Polyamide (PA)	
Sealing		PTFE / Silicone	
Milling / Blending tool diameter	mm	69	66
Max. circumferential speed	m/s	72.5	69
Allowed speed range	rpm	3000 ... 20000 ①	
Max. feed grain size	mm	10	
Max. feed hardness	Mohs	5	
Max. processing time	min.	1 ①	
Min. cooling time		10	
Remaining usage time (VLT) counter		Yes	
Usage time of the vessel seal	min.	10 ①	6 ①
Suitable for drive unit		MultiDrive control	
FDA conformity		yes	
Suitable for solvents		No	
Suitable for abrasive substances		No	
Sterilization methods		Yes, autoclavable (121 °C, 2 bar and 20 min.)	
Dishwasher cleanable		Yes	
Permissible ambient temperature	°C	+5 ... +40	
Permissible relative humidity	%	80	
Dimension (W x D x H)	mm	90 x 90 x 115	90 x 90 x 160
Weight	kg	0.110	0.133

① **Note:** The value is limited by the drive unit!

Subject to technical changes!



designed for scientists

IKA-Werke GmbH & Co. KG

Janke & Kunkel-Straße 10, 79219 Staufen, Germany
Phone: +49 7633 831-0, Fax: +49 7633 831-98
eMail: sales@ika.de

USA

IKA Works, Inc.
Phone: +1 910 452-7059
eMail: usa@ika.net

KOREA

IKA Korea Ltd.
Phone: +82 2 2136 6800
eMail: sales-lab@ika.kr

BRAZIL

IKA Brazil
Phone: +55 19 3772 9600
eMail: sales@ika.net.br

MALAYSIA

IKA Works (Asia) Sdn Bhd
Phone: +60 3 6099-5666
eMail: sales.lab@ika.my

CHINA

IKA Works Guangzhou
Phone: +86 20 8222 6771
eMail: info@ika.cn

POLAND

IKA Poland Sp. z o.o.
Phone: +48 22 201 99 79
eMail: sales.poland@ika.com

JAPAN

IKA Japan K.K.
Phone: +81 6 6730 6781
eMail: info_japan@ika.ne.jp

INDIA

IKA India Private Limited
Phone: +91 80 26253 900
eMail: info@ika.in

UNITED KINGDOM

IKA England LTD.
Phone: +44 1865 986 162
eMail: sales.England@ika.com

VIETNAM

IKA Vietnam Company Limited
Phone: +84 28 38202142
eMail: sales.lab-vietnam@ika.com

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