

# IKA

designed for scientists

**IKA MultiDrive DI 2000 T**

ENGLISH

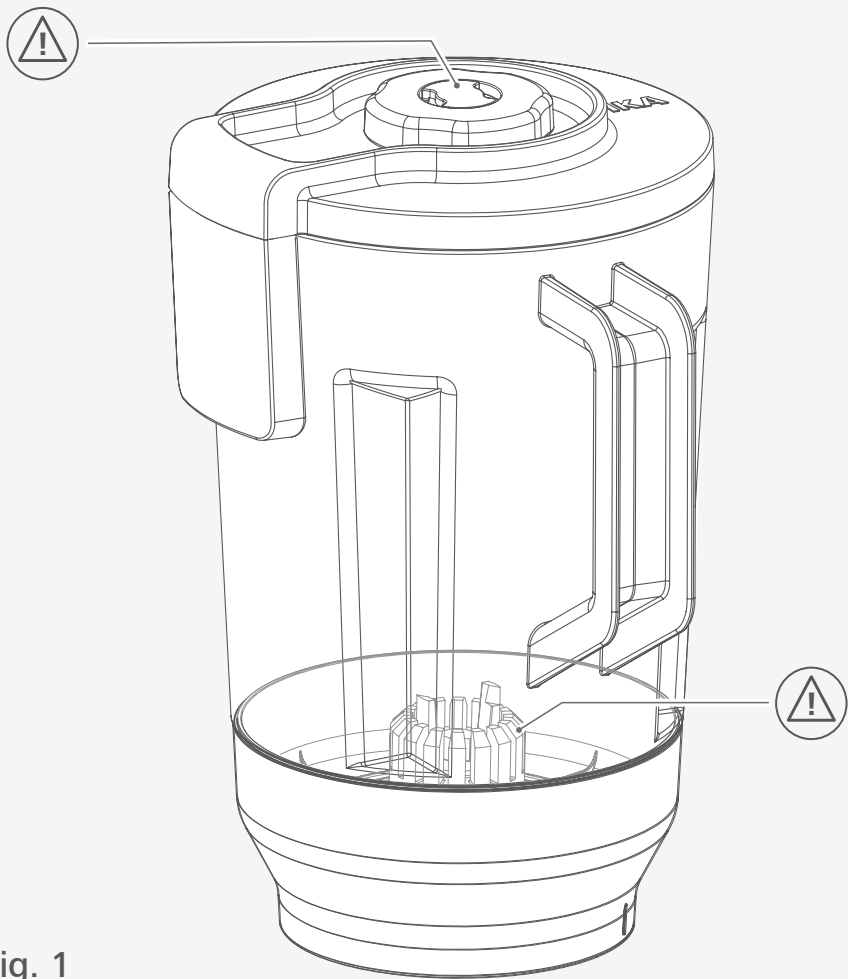







Fig. 1

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## 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 cover is firmly attached to the drive unit prior to operating the device.
- > The drive unit cannot be operated without a closed vessel.

### /// 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 and inside medium may be very hot after operation. Allow it to cool down before opening the lid. Use your personal protective equipment.

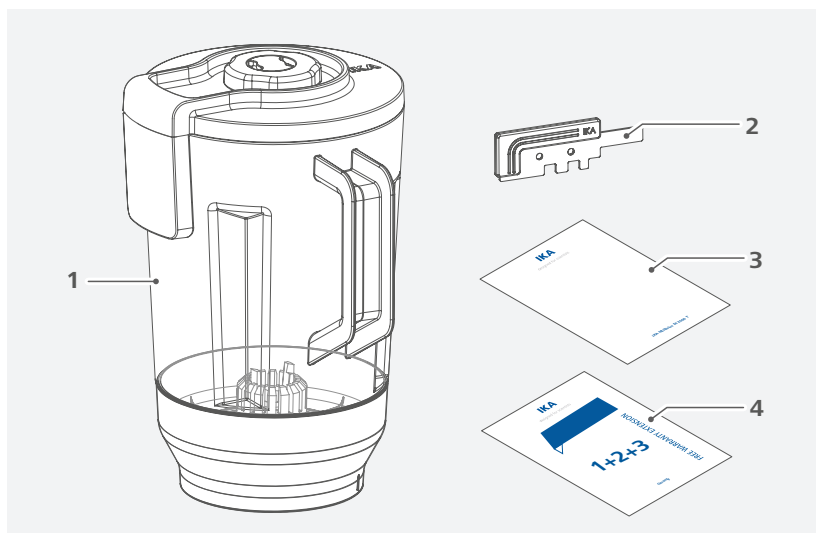
### ⚠ Notice!

- › 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 temperature of the medium must not exceed 80 °C.
- › Observe the prescribed filling quantity (min. / max).
- › The processing time is limited (depending on the drive unit, see "Technical data"). The vessel must be allowed to cool down for a few minutes before processing the sample further in the vessel.



## 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 DI 2000 T
2	Flat key
3	User guide
4	Warranty card

## Useful information

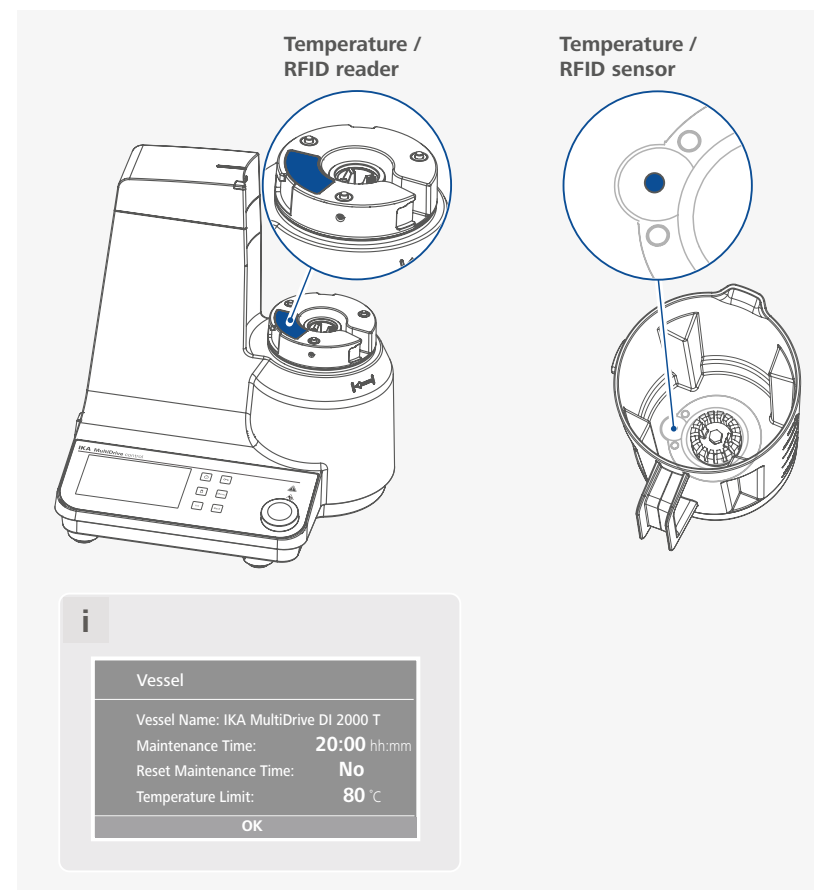
The dispersing vessel is designed for use in combination with **MultiDrive control**. It can be used for dispersing and wet crushing free-flowing and liquid media in batches.

Production of:

Suspension

Emulsions

**Note:** MultiDrive DI 2000 T has integrated temperature / RFID sensor. When used in combination with the **MultiDrive control**, it can be used to measure and limit the sample temperature as well as to record the operating time and set the maintenance time.



The temperature measurement with the vessel **MultiDrive DI 2000 T** works exclusively with the **MultiDrive control**. When the "Temperature Limit" is set in **MultiDrive control** that the device stops after the temperature is reached. With the setting, both sample and the vessel can be protected from overheating.

**Note:** The temperature measurement is useful to measure / limit the temperature increase of the medium during the operation. It is not for a long time measurement of the room temperature or medium temperature without operation!

The temperature sensor react slowly without operation. When hot or cold medium is filled in the empty vessel, it need some time for **MultiDrive control** to show the right temperature. During operation the sensor react very fast and the **MultiDrive control** can show the right temperature fast.

**⚠ Notice!**

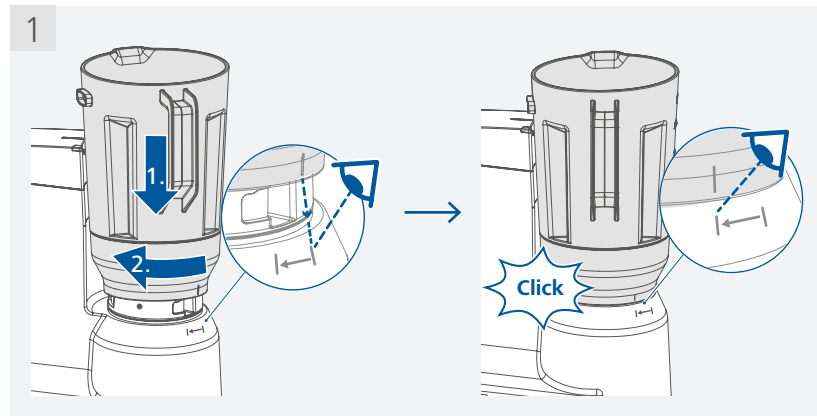
The vessels **MultiDrive DI 2000 T** has also an operating hours counter. This works exclusively with the **MultiDrive control**. This drive unit can detect the operating hours of the vessel and indicates when the next maintenance is required for the vessel. The operating hours counter can also be used to monitor cleaning intervals. In this case shorter times can be set.

**Note:** For more information on temperature measurement and maintenance intervals, please refer to the operating instructions of the drive unit.

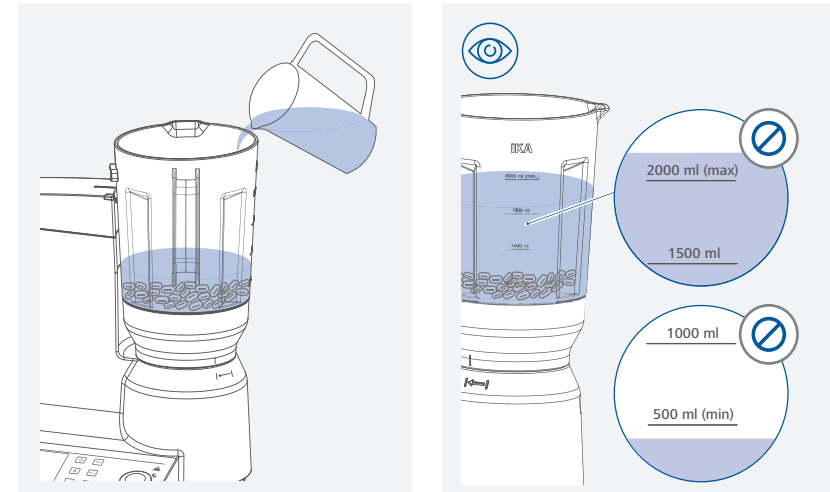


## Installation

### /// Attaching the vessel to the drive unit



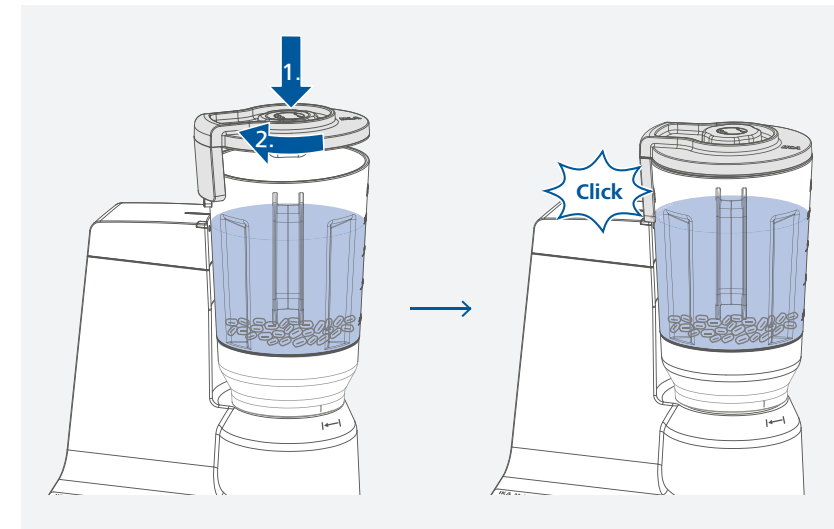
### /// Filling the vessel



**⚠ Notice!**

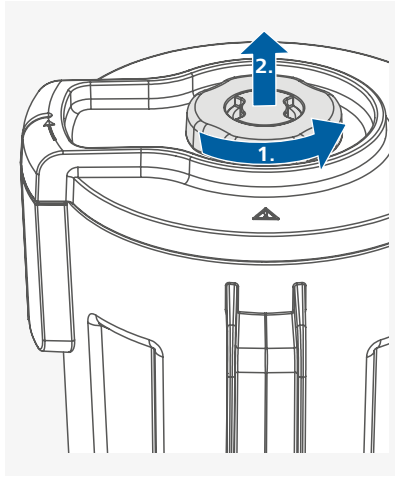
Pay attention to the minimum / maximum filling level!

### /// Closing the vessel



### /// Using the filling opening

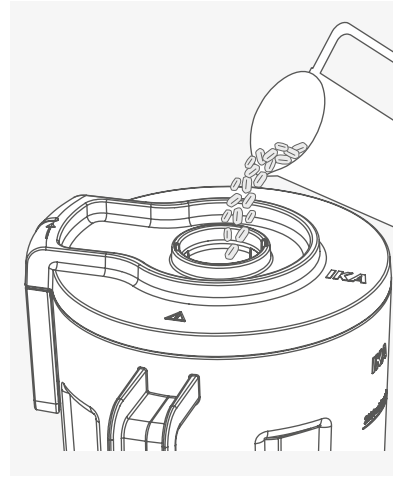
› Opening the filling opening



#### ⊗ Caution!

Don't open the filling opening when the drive unit is running!

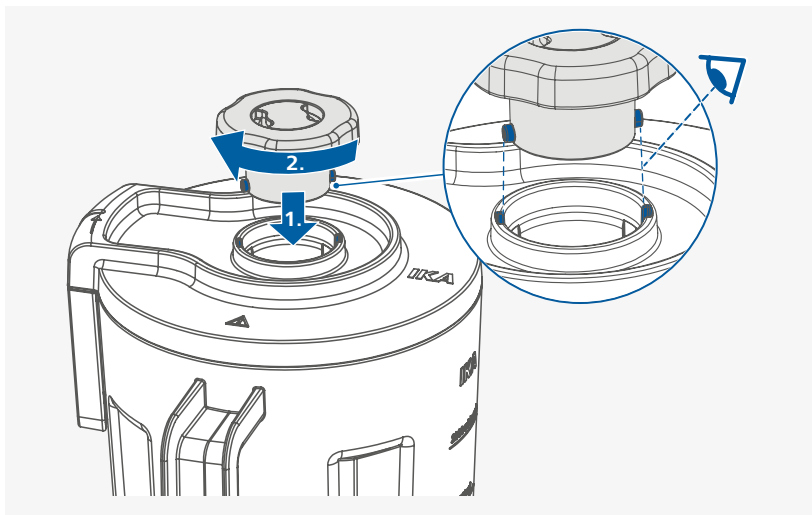
› Filling medium via the filling opening



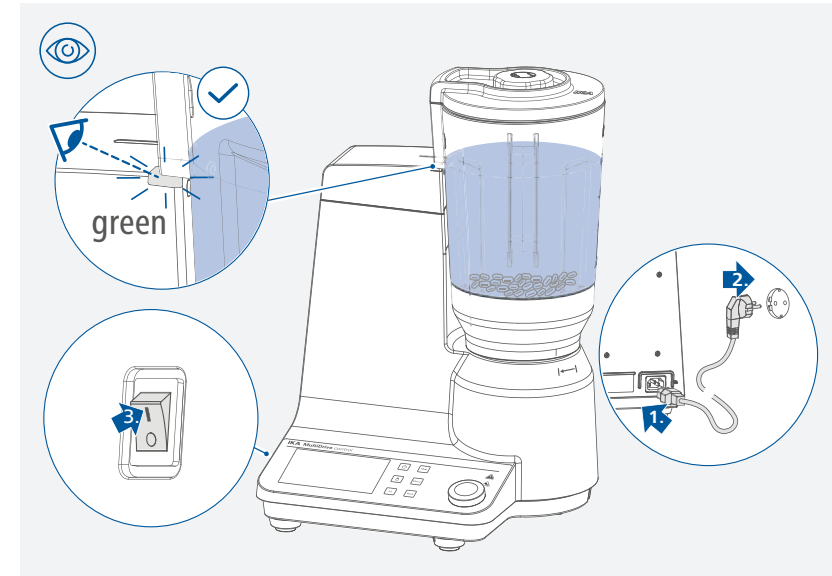
#### ⊗ Caution!

Add medium only when the drive unit is in standby status!

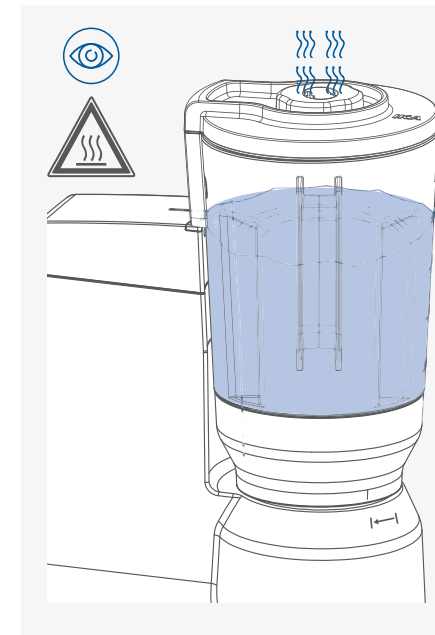
› Closing the filling opening



### /// Switching on the drive unit



**Note:** After the cover has been securely closed, the color of the LED signal lamp changes from red to green. The unit is only ready for operation when the LED is green.



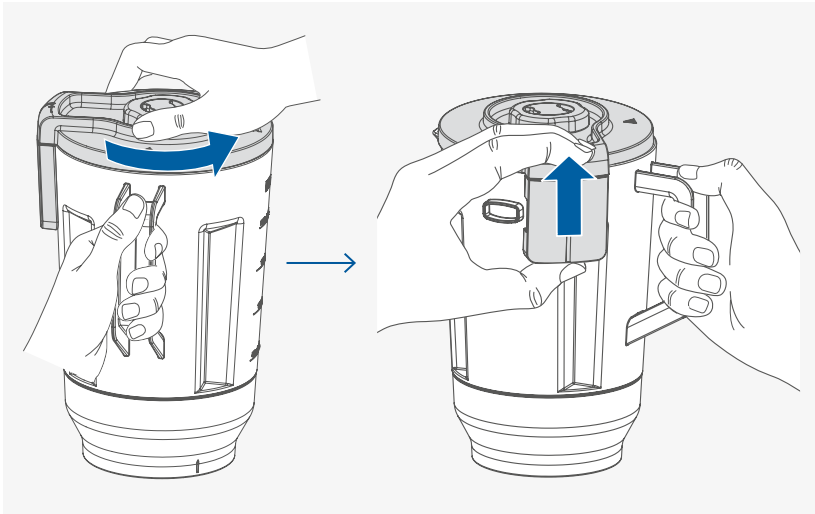
#### ⊗ Caution!

When the drive unit is running, the hot steam may emit from the vent. Don't put your hand on the top of the cover!

#### ⚠ Notice!

During an application, if leakage in the cap area happens, check the sealing and possibly check and adjust the filling volume, the speed and the application time, so that no medium leaks.

### /// Opening the vessel after processing



#### **Caution!**

The vessel may be very hot after operation. Allow it to cool down before touching it.

## 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.

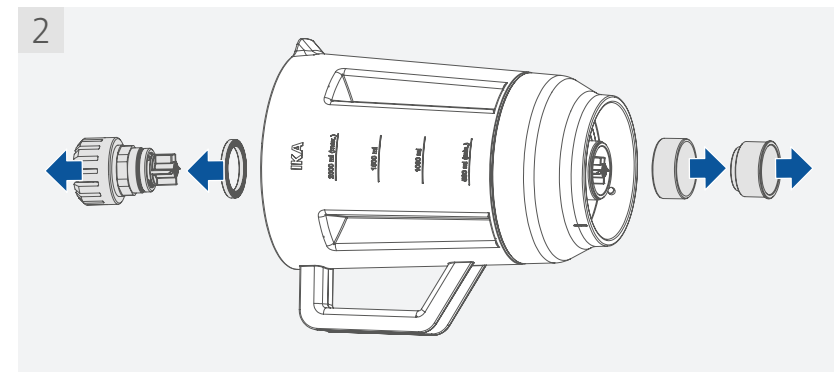
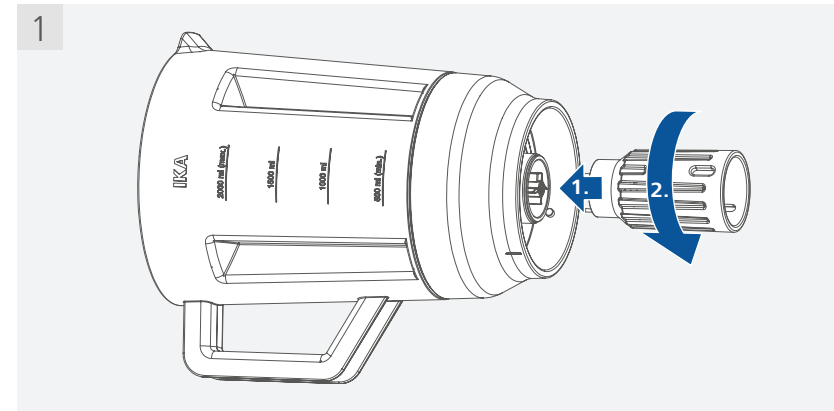
### /// Cleaning

- › Use only cleaning agents which have been approved by IKA to clean the devices:  
These are: water (containing surfactant) and isopropyl alcohol.

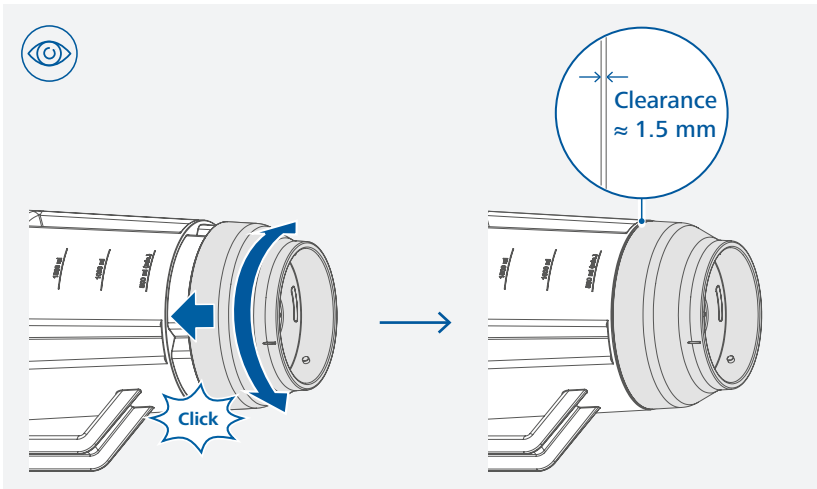
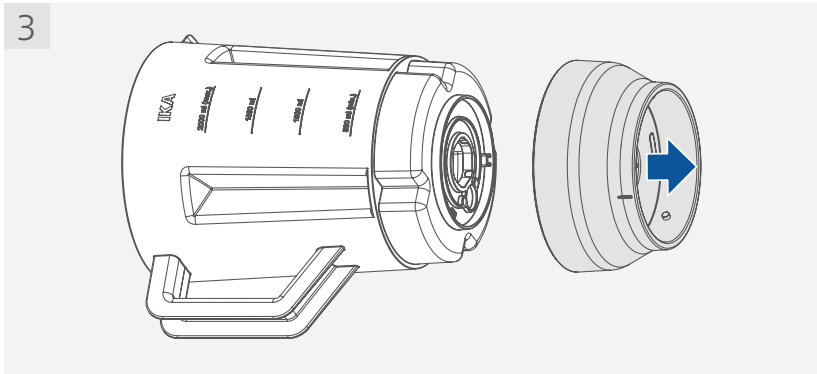
**Note:** make sure cleaning agents contain no corrosive alkalis, peroxides, chlorine compounds, acids or brine.

- › 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.

If there is heavy accumulation of dirt on the vessel, it can be cleaned in a dishwasher after disassembly. Disassembly tools are included in the delivery scope of the drive unit. Disassembly of the vessel for intensive cleaning of the individual parts:

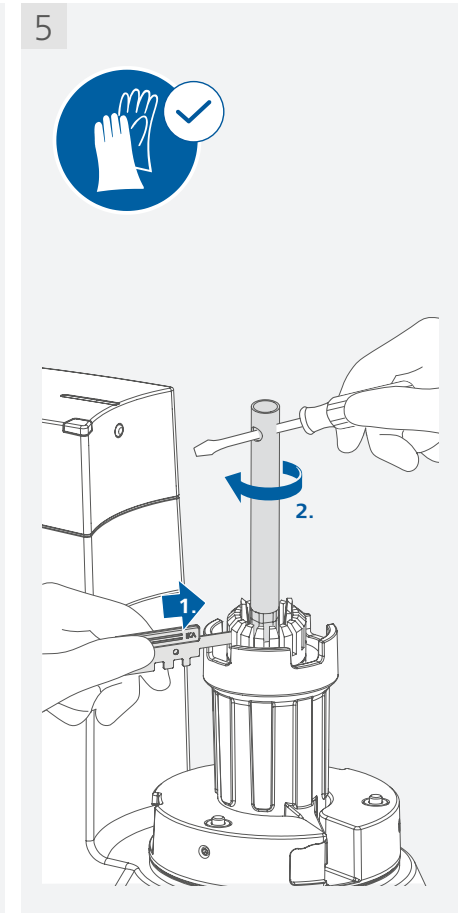
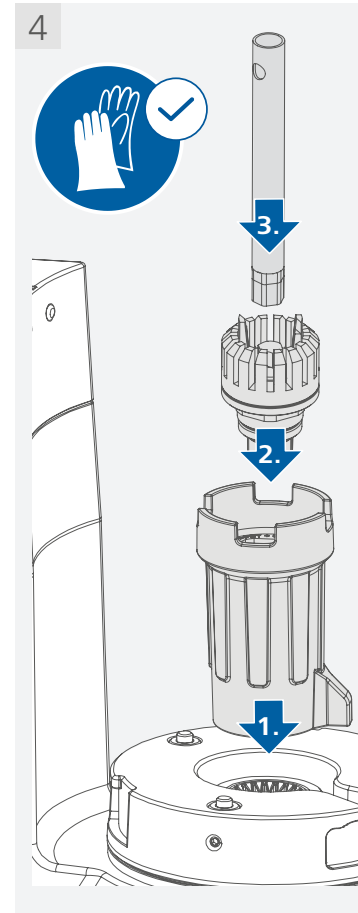






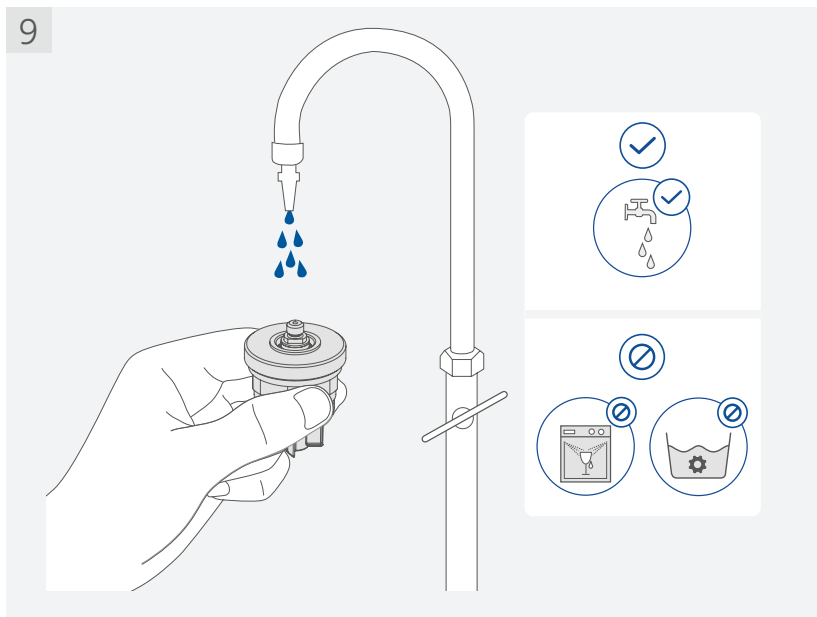
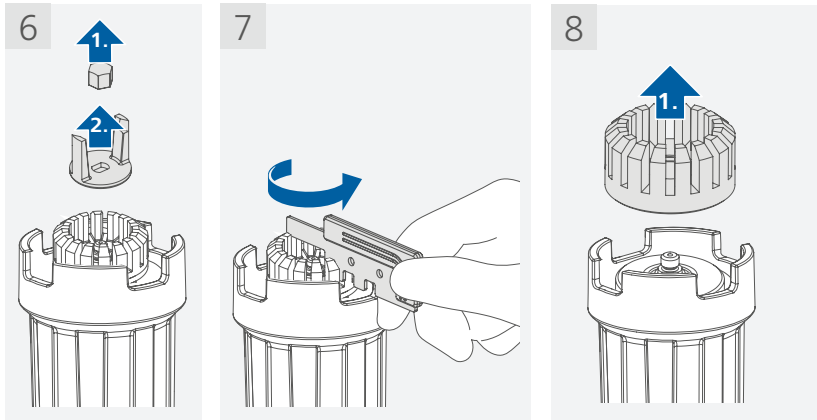
**⚠ Notice!**

When assembling, ensure the vessel base is assembled to properly position!



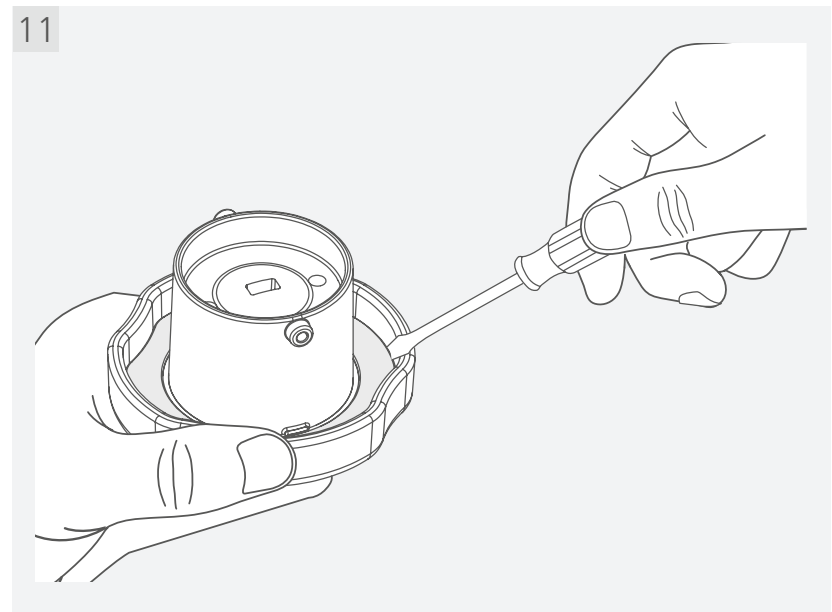
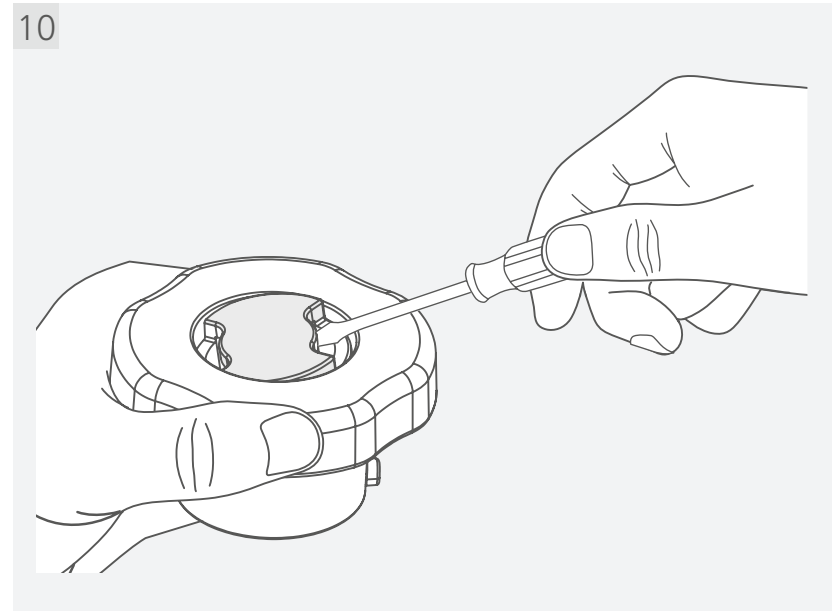
**⚠ Caution!**

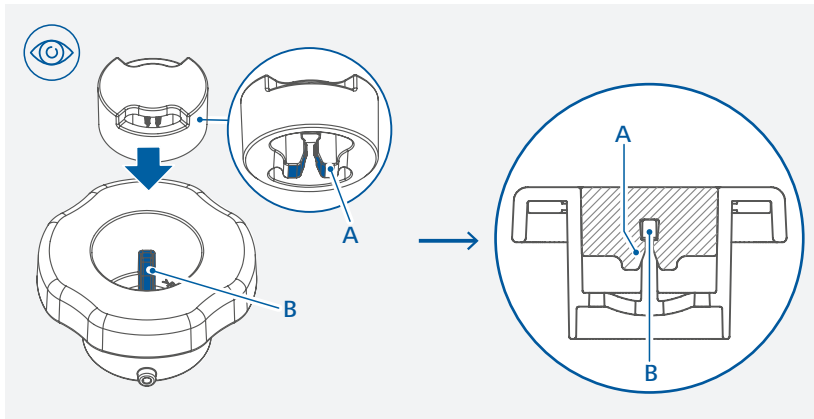
The edges of the dispersing tool are sharp. Wear protective gloves for handling and please observe the safety instructions.  
To loosen the retaining nut of the dispersing tool, turn the socket wrench in clockwise direction (left-hand thread)!



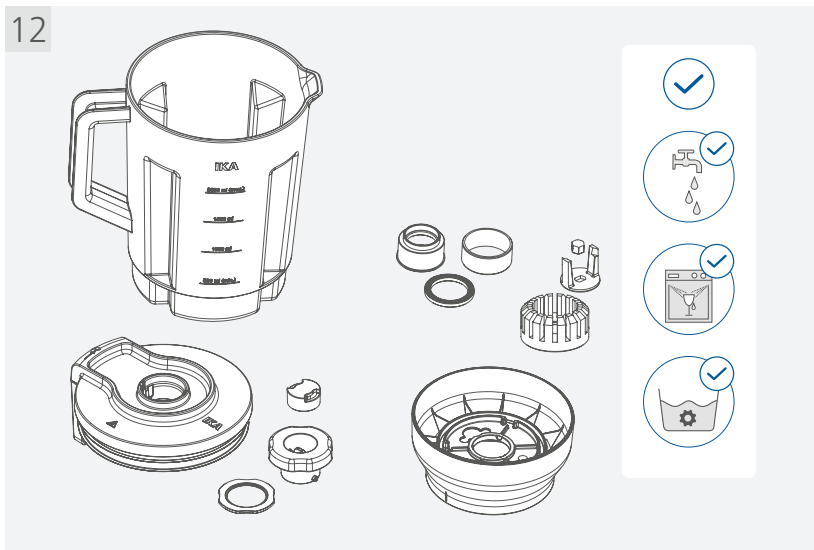
**⚠ Notice!**

The bearing carrier can be cleaned manually with water. Do NOT put it into water or a dishwasher for cleaning!





**Note:** When assembling the cover, make sure that the silicone cover is in the correct position.



### /// Ordering spare parts

When ordering spare parts, please indicate:

- > Vessel type.
- > Item and designation of the spare part, see: [www.ika.com](http://www.ika.com), spare parts diagram and spare parts list.

### /// Exchanging and replacing the dispersing tool

The dispersing tool can be disassembled (see section "Cleaning").

When changing the dispersing tool directly after a dispersing procedure, the dispersing tool is hot! Let it cool down before handling it!

Before reassembling the dispersing tool, make sure that all parts are clean!

### /// Repairs

**Please send in device for repair only after it has been cleaned and is free from any materials which may constitute a health hazard.**

For repair, please request the "Decontamination Certificate" from **IKA**, or download printout of it from the **IKA** website [www.ika.com](http://www.ika.com).

If you require servicing, return the device in its original packaging. Storage packaging is not sufficient. Please also use suitable transport packaging.

## Accessories

See more accessories on [www.ika.com](http://www.ika.com).



## Technical data

Max. useful volume	ml	2000
Dispersing tool material		Stainless steel
Part in contact with product		Stainless steel PCTG PTFE Silicone
Stator diameter	mm	43
Rotor diameter	mm	28
Gap between rotor and stator	mm	0.5
Max. circumferential speed	m/s	22
Allowed speed range	rpm	3000 ... 15000 ①
Max. feed grain size	mm	10
Max. operating time	min.	30 ①
Min. cooling time		10
Ultimate fineness, suspensions	µm	40 ... 100
Ultimate fineness, emulsions	µm	10 ... 30
Integrated temperature / RFID sensor		Yes
Min. / Max. temperature limit	°C	- 50 ... +80 ①
Temperature measurement		Yes
Temperature measurement resolution	K	0.1
Temperature measurement accuracy	K	± 1
Maintenance time counter		Yes
Max. maintenance time	h	40 ①
Recommended for drive unit		<b>MultiDrive control</b>
FDA conformity		Yes
Suitable for solvents		No
Suitable for abrasive substances		No
Dishwasher cleanable		Yes
Permissible ambient temperature	°C	+5 ... +40
Permissible relative humidity	%	80
Dimension (W x D x H)	mm	180 x 220 x 280
Weight	kg	1.35

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

Subject to technical changes!

## Warranty

In accordance with IKA warranty conditions, the warranty period is 24 months. For claims under the warranty please contact your local dealer. You may also send the machine direct to our factory, enclosing the delivery invoice and giving reasons for the claim. You will be liable for freight costs.

The warranty does not cover worn out parts, nor does it apply to faults resulting from improper use, insufficient care or maintenance not carried out in accordance with the instructions in this operating manual.



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