IKA

designed for scientists

T 10 basic ULTRA-TURRAX®

Source language: German

EN

Contents

EU Declaration of conformity

We declare under our sole responsibility that this product corresponds to the directives: 2014/35/EU, 2006/42/EC, 2014/30/EU and 2011/65/EU and conforms with the following standards or normative documents: EN 61010-1, EN 6010-2-051, EN 61326-1, EN 60529 and EN ISO 12100.

A copy of the complete declaration of conformity or further declarations of conformity can be requested at sales@ika.com.

Explanation of symbols

General hazard

DANGER This symbol identifies information **that is of vital importance for safeguarding your health and safety**. Disregarding this information can lead to health impairment and injuries.

WARNING This symbol identifies information **that is of importance for the technically correct functioning of the system**. Disregarding this information can result in damage to the instrument or to system components.

ATTENTION This symbol indicates information **which is important for ensuring that the operations of the appliance are performed efficiently and for using the instrument**. Failure to observe this information can result in inaccurate results.

Safety instructions

- **Read the operating instructions in full before starting up and follow the safety instructions.**
- Keep the operating instructions in a place where they can be accessed by everyone.
- Ensure that only trained staff work with the instrument.
- Follow the safety instructions, guidelines, occupational health, safety and accident prevention regulations.

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

DANGER **Please pay attention to the dangerous points of the equipment marked in Fig. 1.**

- Check the instrument and accessories beforehand for damage each time when you use them. Do not use damaged components.

DANGER Do not use the device in explosive atmospheres, it is not EX-protected.

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.

- There may be electrostatic discharges between the medium and the dispersing instrument shaft which could cause a direct danger.
- The instrument is also suitable for manual operation.
- Set up the stand in a spacious area on an even, stable, clean, non-slip, dry and fireproof surface.
- Ensure that the stand does not start to move.
- The agitated vessels used for dispersing have to be secured. Consider on a good stability of the entire structure.
- Secure the dispersing vessel against twisting.
- Glass vessels must always be secured with a clamp to prevent them spinning. When working with glass vessels, the dispersing tool must not come into contact with the glass.
- Note the operating instructions of the dispersing tool and accessories.
- Only dispersing elements approved by **IKA** can be used.
- Assemble exactly the dispersion tool following the instructions.
- Do not use the instrument without a dispersing element.
- Use the dispersing tool always inside the dispersing vessel.
- Check that the turning handles are secure and tighten if necessary.
- Make certain that the unit is set at the lowest speed before commissioning; otherwise, the unit will begin running at the set speed in last operation. Gradually increase the speed.
- Reduce the speed if the medium splashes out of the vessel because the speed is too high.
- Before switching on the dispersing instrument make sure that its shaft is immersed min. 20 mm in the medium to prevent the medium from splashing out.

WARNING The distance between the dispersing tool and the vessel bottom should not be less than 10 mm (**Fig. 1**).

- In the event of unbalance or unusual noises, switch off the instrument immediately. Replace the dispersing element. If there is no difference after the change of the dispersing tool, return it to the dealer or the manufacturer along with a description of the fault.

DANGER **Do not touch rotating parts during operation!**

- Please note that the dispersing element and the journal bearings may become extremely hot during use.

- Only process media 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.

⚠ DANGER Beware of the risk of:

- flammable materials
- glass breakage
- sharp edges on the dispersing tool.

- Process pathogenic materials only in closed vessels under a suitable fume hood. Please contact **IKA** if you have any questions.
- Abrasion of the dispersion equipment or the rotating accessories may get into the medium you are working on.
- Powder can not be too close to the flange. It can be blown away by air turbulences of the drive.
- The instrument starts up again following a cut in the power supply. Please note that the instrument must be switched off at the ON/OFF switch in this case before the power supply is reconnected.
- The instrument can only be disconnected from the mains supply by pulling out the mains plug or the connector plug.
- The socket for the mains cord must be easily accessible.
- Always disconnect the plug before fitting accessories.
- Safe operation is only guaranteed with the accessories described in the "**Accessories**" chapter.

⚠ WARNING Never run dispersion tools dry, as the gasket and bearings will be destroyed if the tools are not cooled by the medium.

- The voltage stated on the nameplate must correspond to the mains voltage.
- Protect the instrument and accessories from bumps and impacts.
- The instrument can only be opened by experts.
- Removable parts must be refitted to the instrument to prevent the infiltration of foreign objects, liquids etc.
- Do not cover the ventilation slots on the drive in order to ensure adequate cooling of the drive.
- The gasket and bearings are made of PTFE and rustproof steel; the following points should therefore be noted: *Chemical reactions of PTFE occur in contact with molten or solute alkali metals and alkaline earth metals, as well as with fine powders of metals in groups 2 and 3 of the periodic system at temperatures above 300 °C - 400 °C. Only elementary fluorine, chlorotrifluoride and alkali metals attack it; halogenated hydrocarbons have a reversible swelling effect.* (Source: Römpps Chemie-Lexikon and "**Ulmann**", Volume 19)

Intended use

Use:

When used in combination with one of our recommended dispersing elements, the drive unit is a high-speed dispersing and emulsifying unit capable of handling free-flowing and liquid media in batches.

- Production of:	Emulsions Dispersions Wet crushing
- Operating modes:	Hand hold mode On stand

Range of use:

Indoor environments similar to that a laboratory of industry area.

The safety of the user cannot be guaranteed:
- If the instrument is operated with accessories that are not supplied or recommended by the manufacturer
- If the instrument is operated improperly or contrary to the manufacture's specifications
- If the instrument or the printed circuit board are modified by the third parties.

Unpacking

Unpacking:
- Please unpack the device carefully
- In the case of any damage a fact report must be sent immediately (post, rail or forwarder).

Delivery scope:
One **T 10 basic ULTRA-TURRAX®** dispersion equipment according to the ordered type, one clamp **R 200**, an operating instructions, a warranty card, all stored in a suitcase.

Useful information

Dispersion refers to the dissipation and scattering of a solid, liquid or gaseous phase in a liquid which cannot be fully mixed with this phase.

The rotor/stator principle:
Due to the high rotation speed of the rotor, the medium to be processed is automatically drawn axially into the dispersing head and then forced radially through the slots in the rotor/stator arrangement. The high accelerations acting on the material produce extremely strong shear and thrust forces. In addition, high turbulence occurs in the shear gap between rotor and stator, which provides optimum mixing of the suspension.
The dispersion effectiveness is heavily dependent on the product of the shear gradient and the time the particles spend in the shear zone. The optimum range for the circumferential velocity of the rotor/stator arrangement is 6-20 m/s.
A processing time of a few minutes is usually sufficient to produce the desired fineness. Long processing times bring only insignificant improvements in the obtainable fineness; the energy expended serves merely to increase the temperature of the medium.

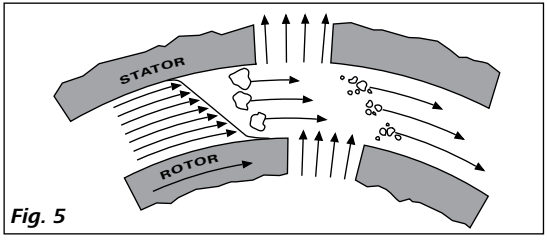


Fig. 5

Drive

The open up a wide range of possibilities for dispersion technology in the conventional laboratory with a respective performance output of approximately 75 watts at 30000 rpm.
The speed of the **T 10 basic ULTRA-TURRAX®** dispersion unit set by using the speed adjusting wheel.

Assembly of clamp and stand

Assembly (see Fig. 1 and Fig. 2)
- Push the clamp (6) as shown in **Fig. 1** over the dispersion instrument, until it engages in the position planned for it audibly.
- Tighten the turning handle (5) by hand until to stop.
- Screw the clamp (6) by means of cross sleeve (7) onto the stand (8).

For safe working the drive units should be fastened by means of a cross sleeve to the plate stand. Pay attention when assembling the dispersion instrument to the stand to a perfect and firm seat of the cross sleeve.
In order to increase the stability of the mechanical structure, the drive unit must be installed as closely as possible to the stand support rod.

Disassembly (see Fig. 1 and Fig. 2)

- For the disassembly of the dispersion instrument from the clamp (6), turn handle (5) firstly to loosen the clamp.
- Hold the dispersion instrument with a hand, with the other hand to pressure on the locking lever (**Fig. 2**). Now, the dispersing instrument could be disassemble from the clamp.

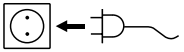
Working with the unit

Check that the voltage listed on the designation plate matches the mains voltage. Also pay attention to the ambient conditions listed in the technical data.

Assembly of the dispersing tool (see Fig. 1 and Fig. 3)

- Open the shaft lock (3) by turning to the left as far as the stop.
- Insert the dispersing element into the collet as far as the stop.
- Lock the shaft lock (3) by turning it to the right until it noticeably clicks into place. The marks (A) on the shaft lock (3) and mark (B) on the casing should be over each other when closed.

The distance between the dispersion tool and the vessel bottom should not be less than 10 mm.
Please observe also the operating instructions of the dispersion tool to ensure a safe usage.
The entire unit may also be arranged somewhat off centre in order to avoid any undesired air admission caused by the strong rotational turbulence.
Set the adjusting wheel (1) to the minimum speed before switching on the instrument. You can read the set speed by comparing the numbers on the adjusting wheel (1) and the speed table (see chapter: **Speed Table**).
By using the adjusting wheel (1) the speed may be infinitely adjusted to meet the requirements of the medium to be processed. The no-load speed of the **T 10 basic ULTRA-TURRAX®** driving unit may be set between 8.000 and 30.000 rpm.



The unit is ready for service when the mains plug has been plugged in.

The driving unit is switched on by pressing the rocker switch (2) in "**I**" position.

Error correction

The instrument is appropriate for short-time duty (10 minutes **ON**/5 minutes **OFF**), i.e. the **OFF** time must be noted. Failure to observe the **ON/OFF** time, the instrument can switch off depending upon load by temperature rise during the dispersing, since the drive is equipped with an overload safety device, which switches the instrument off with overload or temperature rise. If the instrument switched off at the **ON/OFF** switch, after an appropriate cooling time the equipment can be restartet.

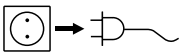
Note: The instrument does not restart it after responding the overload safety device automatically, must for cooling at the rocker switch (2) be switched off.

Maintenance and cleaning

Cleaning:

Drive unit:

The drive unit is maintenance-free but not immune from wear. The carbon brushes of the motor wear down over the time.



For cleaning disconnect the main plug.

Only use cleansing agents which have been recommended by **IKA**: water (containing surfactant) and isopropyl alcohol.

- Wear protective gloves during cleaning the instruments.
- Electrical instruments may not be placed in the cleansing agent for the purpose of cleaning.
- Do not allow moisture to get into the instrument when cleaning.
- Before using another than the recommended method for cleaning or decontamination, the user must ascertain with **IKA** that this method does not destroy the instrument.

Dispersion tools:
Please refer to the manuals associated to the dispersion tools.

Spare parts order
When ordering spare parts, please give:
- machine type
- serial number, see type plate
- item and designation of the spare part, see **www.ika.com**, spare parts diagram and spare parts list.

Repair
In case of repair the device has to be cleaned and free from any materials which may constitute a health hazard.
For repair, please request the "**Decontamination Certificate**" form **IKA** or use the download printout of it from **IKA** website: **www.ika.com**.
If you require servicing, return the appliance in its original packaging. Storage packaging is not sufficient. Please also use suitable transport packaging.

Accessories

• **R 104**	Stand	• **R 1827**	Plate stand
• **R 1825**	Plate stand	• **R 182**	Cross sleeve
• **R 1826**	Plate stand	• **H 44**	Cross sleeve

Permitted dispersion tools

Designation		Material of shank
S 10 N - 5 G		Stainless steel
S 10 N - 8 G		Stainless steel
S 10 N - 10 G		Stainless steel
S 10 D - 7 G - KS - 65		Synthetic material
S 10 D - 7 G - KS - 110		Synthetic material

Only use the dispersing tools listed in the table and note the according operating instructions of the dispersion tool.

Speed table

Note: The speed table was calculated on the basis of a dispersion volume of 5 ml water using the dispersing tool **S 10 N - 5 G**. With other combinations (dispersion tools; medium quantity and medium viscosity) can result other number of revolutions values.

Adjusting wheel scale	1	2	3	4	5	6
Voltage: 100 V	7100 rpm	7300 rpm	8000 rpm	9100 rpm	12800 rpm	22300 rpm
Speed deviation	± 10 % of current speed					

Adjusting wheel scale	1	2	3	4	5	6
Voltage: 115 V	7900 rpm	8400 rpm	9300 rpm	10700 rpm	15500 rpm	26100 rpm
Speed deviation	± 6 % of current speed					

Adjusting wheel scale	1	2	3	4	5	6
Voltage: 220 V	7700 rpm	8300 rpm	10000 rpm	13400 rpm	19900 rpm	27300 rpm
Speed deviation	± 6 % of current speed					

Adjusting wheel scale	1	2	3	4	5	6
Voltage: 230 V	8300 rpm	9100 rpm	10900 rpm	14500 rpm	21100 rpm	28800 rpm
Speed deviation	± 6 % of current speed					

The speeds depend on the dispersing element used as well as the viscosity and quantity of the medium. Therefore it may change over the course of a dispersing process if the viscosity of the liquid 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 works, enclosing the delivery invoice and giving reasons for the claim. You will be liable for freight costs.
The warranty does not cover wearing parts, nor does it apply to faults resulting from improper use or insufficient care and maintenance contrary to the instructions in this operating manual.

Technical data

Speed range	**rpm**	6300 ... 24000 (Voltage: 100 V) 7800 ... 26000 (Voltage: 115 V) 7300 ... 27000 (Voltage: 220 V) 8300 ... 29000 (Voltage: 230 V)
Speed display		Scale (see speed table)
Speed variation on load change	**%**	< 6
Perm. ambient temperature	**°C**	5 ... 40
Perm. relative humidity	**%**	80
Perm. on time (drive unit)	**min**	max. 10 ON / min. 5 OFF
Overload protection / blocking protected		locking bimetallic switch; temperature and power sensitively
IP code according to EN 60 529		IP 30
Power consumption	**W**	125
Power output	**W**	75
Voltage	**VAC**	220 ... 240 (nominal design voltage 230V) 100 ... 120 (nominal design voltage 115V)
Frequency	**Hz**	50 / 60
Noise (without dispersing element)	**dB (A)**	65
Drive dimension (W x D x H)	**mm**	56 x 66 x 178
Clamp arm dimension (Ø x L)	**mm**	8 x 100
Weight	**kg**	0.61
Contamination level		2
Protection class		II
Overvoltage categorie		II
Operation at a terrestrial altitude	**m**	max. 2000 above sea level

Subject to technical changes!