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Scientific Equipment

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# Overhead Stirrers

**IKA**®



**designed**  
to work perfectly

**Mechanical, Electronic, Software, Control and Design Engineering... Combining the best of all worlds**

Designed to optimize complex stirring applications, IKA® offers the very best in overhead stirrer technology. Our overhead stirrers provide the perfect solution to all of your laboratory stirring and mixing needs, from lower to higher viscosities. IKA® overhead stirrers process stirring quantities up to 200 liters.

Our overhead stirrers stand out because of their indispensable features, which include: electronic safety circuit, push through agitator shaft, digital display, two speed ranges, and the ability to control the rheological changes and monitor all parameters using labworldsoft® software. Additionally, there are several other special features available, such as microprocessor controlled speed technology, removable wireless controller and a digital error display. A broad spectrum of stirring tools is the key to successful mixing! IKA® equipment meets CE standards and fulfils international safety regulations.



**3 Year warranty\***

\* 24h years after registering at [www.ika.com/register](http://www.ika.com/register)

Protection class according to DIN EN 60529: IP 40



## Twin technology | Digital & Control



**Digital display** for precise monitoring of set and actual speeds

**Torque trend display** to get real-time information on viscosity changes

**Rotating knob** for adjusting the speed and **pressing knob** for navigating through the menu on the wireless controller

**TFT Display** for better image quality and easy navigation

**External probe** for connection to a temperature sensor for accurate temperature control

**USB interface** to control and document rheological changes and other parameters using labworksat® software and for updating your firmware

**Brushless EC motor** for longer life span, low maintenance and higher efficiency

**Wireless Controller (WiCo)**  
Removable wireless controller for easy and user-friendly operation

**2+1**  
New warranty

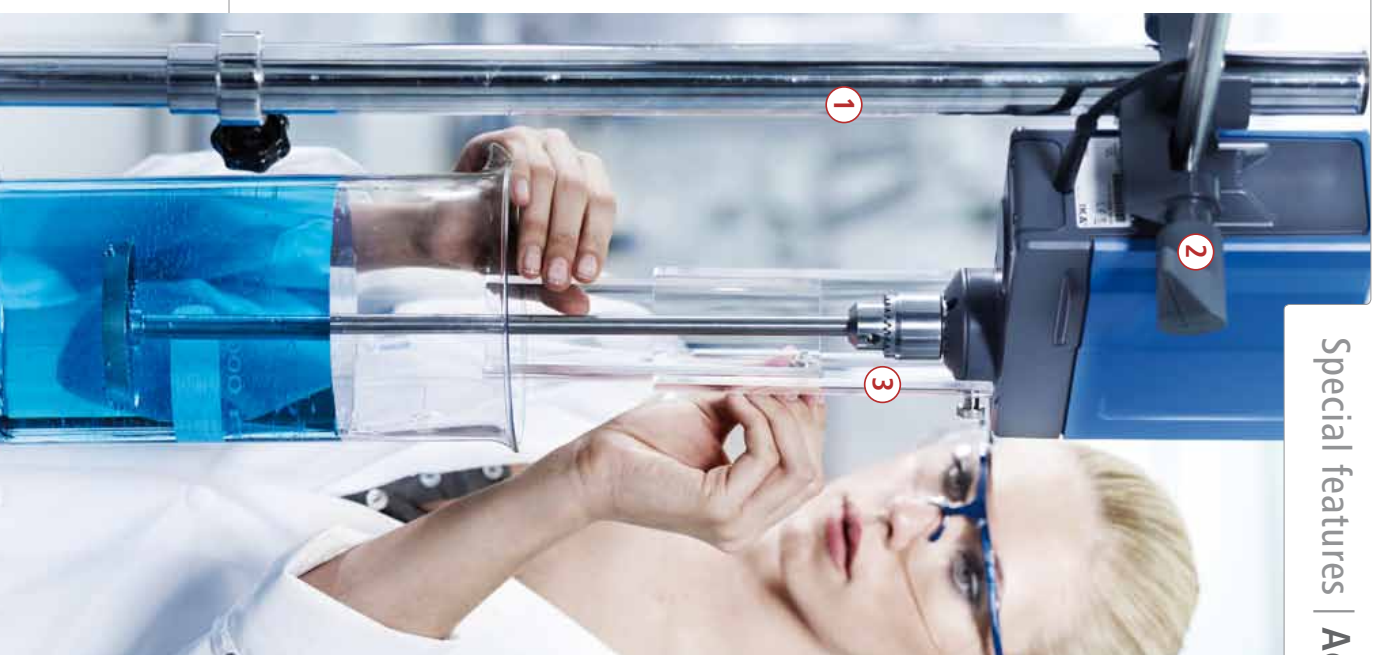
2+1 years after registering at [www.ika.com/register](http://www.ika.com/register)

**IKA+**



R 60 keyless chuck is available for EUROSTAR 20 / 40 / 60 / 100 series

## Special features | Accessories



**1 R 2723 Telescopic stand**  
Particularly stable stand with an H-shaped base that prevents the stand from tipping backwards. Additionally, this stand is equipped with a spring stand rod, which enables heavy instruments / attachments to be raised and lowered smoothly without difficulty.

**2 R 270 Boss head clamp**  
Specialized clamp with openings for stands R 2722 and R 2723

**RH 3 Strap clamp**  
For securing vessels ind. boss head clamp R 270

**3 R 301 Stirring shaft protection**  
Prevents potential injuries around rotating shafts and stirring elements

**IKA+**

To get customized and additional accessories, please visit [www.ika.com/service](http://www.ika.com/service)

## EUROSTAR control | Advanced precision

LED bar indicates the connectivity of the wireless controller (WiCo).



Safe stop function for the quick stop of overhead stirrer

Connector for fixing the wireless controller



IKA® further advances its mixing technology by offering the first overhead stirrers with wireless technology. Stress-free mixing at your convenience with increased productivity, flexibility and enhanced safety features. Additionally, comes equipped with the new online update function (only control version), your device is always up-to-date.

The display shows torque, temperature, time, speed and P-C connectivity. Additionally, several other parameters can be set such as language, background, brightness, sound, etc.



The EUROSTAR control series can be operated via Bluetooth as well

## EUROSTAR control | Wireless technology



The wireless controller can be separated from the overhead stirrer. This allows for working in a fume hood or safety cabinet without lifting the protective screen, which in turn helps protect the user from toxic material exposure in addition to preserving sample integrity.

## EUROSTAR 100 | Digital & Control

## EUROSTAR | 20 high speed digital & 200 control P4

**IKA+**

The only stirrer with clockwise and counter clockwise rotation for intensive applications and better mixing results

Laboratory stirrer designed for highly viscous applications and intensive mixing



**2+1**

Year warranty\*

2+1 years after registering at [www.ika.com/register](http://www.ika.com/register)



Clockwise and counter clockwise rotation



**Digital Display**

Digital display for precise monitoring of set and actual speeds



**TFT Display**

TFT Display for better image quality and easy navigation



**Wireless Controller (MICO)**  
Removable wireless controller for easy and user-friendly operation



**USB interface** to control and document rheological changes and other parameters using Labworks® software and for updating your firmware



**RS 232 interface** for PC connection



## Electronic Overhead Stirrers

 **red dot design award**  
winner 2012

The Beginner



EUROSTAR 20 digital | 40 digital

The Compact Power



EUROSTAR 60 digital | control

The Unique Clockwise and Counter Clockwise Rotation



EUROSTAR 100 digital | control

The All-Rounder



EUROSTAR 200 digital | control

The High-Performer



EUROSTAR 200 control P4

The Speedster



EUROSTAR 20 high speed digital

### Technical data

|                                |                        |                                       |                                       |                   |                                 |
|--------------------------------|------------------------|---------------------------------------|---------------------------------------|-------------------|---------------------------------|
| Stirring quantity max. (kg/l)  | 15   1.25   1001       | 1001                                  | 1001                                  | 1001              | 20   20   81                    |
| Max. viscosity                 | 10000 mPa.s            | 50000 mPa.s                           | 10000 mPa.s                           | 10000 mPa.s       | 50000 mPa.s                     |
| Motor energy input/output      | 20   24 W   118   84 W | 80   128 W                            | 150   98 W                            | 120   125 W       | 20   25 W                       |
| Speed range                    | 0.30 – 2000 rpm        | 0.30 – 2000 rpm                       | 0.30 – 1300 rpm                       | 0.30 – 2000 rpm   | 0.150 – 4000 rpm                |
| Speed range II (at 50/60 Hz)   | –                      | –                                     | –                                     | –                 | 60 – 2000 rpm / 72 – 2400 rpm   |
| Speed range III (at 50/60 Hz)  | –                      | –                                     | –                                     | –                 | 60 – 500 rpm / 72 – 400 rpm     |
| Max. torque at stirring shaft  | 20 Nm   40 Nm          | 60 Nm                                 | 200 Nm                                | 60 Nm             | 240 – 2000 rpm / 288 – 2400 rpm |
| Max. torque at stirring shaft  | –                      | –                                     | –                                     | –                 | 150 Nm                          |
| Display                        | LED                    | LED   TFT                             | LED   TFT                             | TFT               | LED                             |
| Reverse operation              | no                     | no   yes                              | no   yes                              | yes               | no                              |
| Intermittent operation         | no                     | no   FT 1000                          | no   FT 1000                          | FT 1000           | no                              |
| Temp. sensor correction        | 0.5 – 10 mm            | 0.5 – 10 mm                           | 0.5 – 10 mm                           | 0.5 – 10 mm       | 0.5 – 10 mm                     |
| Check range                    | no                     | no   yes                              | no   yes                              | no                | no                              |
| Force feed measurement         | no                     | no   yes                              | no   yes                              | no                | no                              |
| Temperature measurement        | no                     | no   yes                              | no   yes                              | yes               | no                              |
| Temperature measuring range    | –                      | –   -10 to 350 °C                     | –   -10 to 350 °C                     | –   -10 to 350 °C | –                               |
| Dimension (W x D x H)          | 86 x 208 x 248 mm      | 86 x 208 x 248 mm   86 x 230 x 267 mm | 91 x 209 x 214 mm   91 x 231 x 272 mm | 91 x 230 x 378 mm | 88 x 212 x 294 mm               |
| Weight                         | 4.4 kg                 | 4.4 kg   4.7 kg                       | 4.6 kg   4.9 kg                       | 5.8 kg            | 5.3 kg                          |
| Removable ambient temp.        | 5 – 40 °C              | 5 – 40 °C                             | 5 – 40 °C                             | 5 – 40 °C         | 5 – 40 °C                       |
| Removable relative moisture    | 80%                    | 80%                                   | 80%                                   | 80%               | 80%                             |
| IP protection class            | IP 40                  | IP 40                                 | IP 40                                 | IP 40             | IP 40                           |
| IP protection class (EUROSTAR) | IP 40                  | IP 40                                 | IP 40                                 | IP 40             | IP 40                           |
| Voltage                        | 230 V                  | 230 V                                 | 230 V                                 | 230 V             | 230 V                           |
| Frequency                      | 50/60 Hz               | 50/60 Hz                              | 50/60 Hz                              | 50/60 Hz          | 50/60 Hz                        |

Ident. No. 000442000 | 000444000

Ident. No. 000444600 | 000444000

Ident. No. 0004238100 | 000423900

Ident. No. 000393000 | 000393000

Ident. No. 000493000

Ident. No. 000423800

## Mechanical Overhead Stirrers

Please also see IKA® Pilots



RV 20 digital



RV 2.8 digital



RV 4.7 digital

Available Q2/2013

### Technical data

|                                |                                 |                                 |
|--------------------------------|---------------------------------|---------------------------------|
| Stirring quantity max. (kg/l)  | 20   20   81                    | 2001                            |
| Max. viscosity                 | 10000 mPa.s                     | 50000 mPa.s                     |
| Motor energy input/output      | 20   25 W                       | 513   593 W                     |
| Speed range                    | 60 – 2000 rpm / 72 – 2400 rpm   | 57 – 1800 rpm / 69 – 1560 rpm   |
| Speed range II (at 50/60 Hz)   | 60 – 500 rpm / 72 – 400 rpm     | 57 – 275 rpm / 69 – 380 rpm     |
| Speed range III (at 50/60 Hz)  | 240 – 2000 rpm / 288 – 2400 rpm | 275 – 1300 rpm / 330 – 1560 rpm |
| Max. torque at stirring shaft  | 150 Nm                          | 3000 Nm                         |
| Max. torque at stirring shaft  | –                               | –                               |
| Display                        | LED                             | LED                             |
| Reverse operation              | no                              | no                              |
| Intermittent operation         | no                              | no                              |
| Temp. sensor correction        | 0.5 – 10 mm                     | 3 – 16 mm                       |
| Check range                    | no                              | no                              |
| Force feed measurement         | no                              | no                              |
| Temperature measurement        | no                              | no                              |
| Temperature measuring range    | –                               | –                               |
| Dimension (W x D x H)          | 88 x 212 x 294 mm               | 145 x 353 x 465 mm              |
| Weight                         | 3.1 kg                          | 16.9 kg                         |
| Removable ambient temp.        | 5 – 40 °C                       | 5 – 40 °C                       |
| Removable relative moisture    | 80%                             | 80%                             |
| IP protection class            | IP 20                           | IP 40                           |
| IP protection class (EUROSTAR) | IP 20                           | IP 40                           |
| Voltage                        | 230 V                           | 230 V                           |
| Frequency                      | 50/60 Hz                        | 50/60 Hz                        |

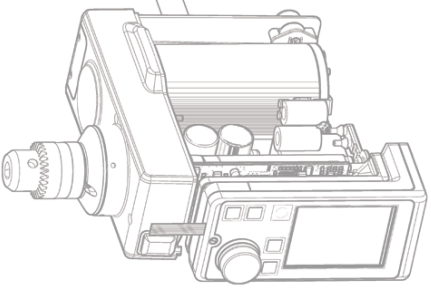
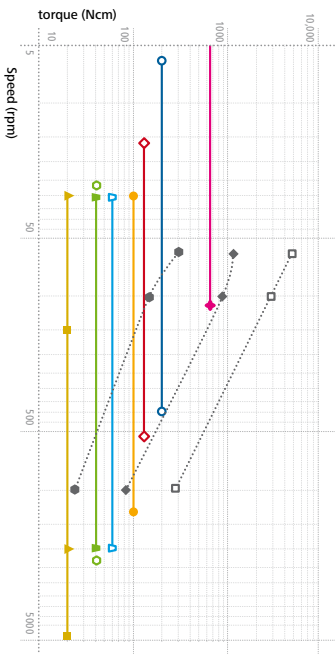
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## Stirring elements | Accessories



The electronic overhead stirrer have a constant torque over the entire speed range. The electronic stirrers are ideal for reproducible procedures as well.

The mechanical overhead stirrer have a high torque at low speed and the torque decreases as the speed increases. The speed range is for highly viscous samples and the speed range fits for intensive mixing of low viscous samples.

**Propeller stirrer 4-bladed**  
Standard stirring element for drawing the bottom. It creates local shearing forces and axial flow in the vessel. This propeller stirrer is used at medium to high speeds.

| Name            | R 1342    | R 1345    | R 1302    |
|-----------------|-----------|-----------|-----------|
| Ident. No.      | 000024300 | 000041200 | 000025800 |
| Stroke (l) mm   | 50        | 100       | 150       |
| Shaft (l) mm    | 8         | 8         | 13        |
| Shaft length mm | 350       | 540       | 800       |
| Max. speed rpm  | 2000      | 800       | 600       |

**Propeller stirrer 3-bladed**  
Flow-efficient design for drawing the bottom while creating minimum shearing forces. This propeller stirrer is used at medium to high speeds.

| Name            | R 1381    | R 1382    | R 1401    | R 1405    |
|-----------------|-----------|-----------|-----------|-----------|
| Ident. No.      | 000129600 | 000129500 | 000142500 | 000128800 |
| Stroke (l) mm   | 45        | 55        | 55        | 45        |
| Shaft (l) mm    | 8         | 8         | 8         | 8         |
| Shaft length mm | 350       | 350       | 300       | 300       |
| Max. speed rpm  | 2000      | 2000      | 2000      | 2000      |

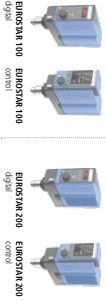
**Propeller stirrer 3-bladed**  
Flow-efficient design for drawing the material to be stirred from the top and the bottom while creating minimum shearing forces. This propeller stirrer is used at medium to high speeds.

| Name            | R 1355    | R 1358    | R 1389 (PFE-control) |
|-----------------|-----------|-----------|----------------------|
| Ident. No.      | 000047700 | 000047800 | 000024800            |
| Stroke (l) mm   | 140       | 140       | 75                   |
| Shaft (l) mm    | 10        | 10        | 8                    |
| Shaft length mm | 550       | 800       | 350                  |
| Max. speed rpm  | 800       | 400       | 800                  |

**Dissolver stirrer**  
This stirrer provides radial flow by drawing the material to be stirred from the top and bottom while creating minimum shearing forces. This dissolver stirrer is used at medium to high speeds.

| Name            | R 1310    | R 1302    | R 1303    | R 1307    | R 1402    |
|-----------------|-----------|-----------|-----------|-----------|-----------|
| Ident. No.      | 000015300 | 000238700 | 000238600 | 000238900 | 000124300 |
| Stroke (l) mm   | 80        | 100       | 42        | 42        | 42        |
| Shaft (l) mm    | 8         | 10        | 8         | 8         | 8         |
| Shaft length mm | 350       | 500       | 350       | 350       | —         |
| Max. speed rpm  | 2000      | 1000      | 2000      | —         | —         |

\* K&T recommendations only



**Tablet stirrer**  
This stirrer is used for drawing the material to the bottom of the vessel. It creates a minimum level of danger of injury when contact is made with vessel. K&T creates minimum shearing forces and axial flow in relation to high speeds.

| Name            | R 1311    | R 1312    | R 1313    |
|-----------------|-----------|-----------|-----------|
| Ident. No.      | 000232500 | 000233000 | 000233100 |
| Stroke (l) mm   | 30        | 50        | 70        |
| Shaft (l) mm    | 8         | 8         | 10        |
| Shaft length mm | 350       | 350       | 400       |
| Max. speed rpm  | 2000      | 2000      | 800       |

**Centrifuge stirrer**  
Two-bladed stirrer with 3 blades open with vessel with narrow neck and the flow is similar to that of a 4-bladed propeller stirrer. Medium to high speeds required.

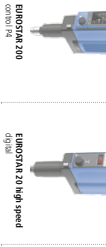
| Name            | R 1332    | R 1335    |
|-----------------|-----------|-----------|
| Ident. No.      | 000036600 | 000132700 |
| Stroke (l) mm   | 60/115    | 100/124   |
| Shaft (l) mm    | 8         | 8         |
| Shaft length mm | 350       | 550       |
| Max. speed rpm  | 2000      | 800       |

**Paddle stirrer**  
This stirrer creates tangential flow, minimum turbulence, good heat exchange and gentle stirring. It is ideal for products with medium speeds required.

| Name            | R 1315    | R 1316    | R 2311    |
|-----------------|-----------|-----------|-----------|
| Ident. No.      | 000037700 | 000035800 | 000029500 |
| Stroke (l) mm   | 70        | 150       | 150       |
| Shaft (l) mm    | 8         | 10        | 13        |
| Shaft length mm | 550       | 550       | 800       |
| Max. speed rpm  | 800       | 800       | 600       |

**Archives stirrer**  
This stirrer creates tangential flow, high shearing rate at the edges, minimum reports polymer reactions and even distribution of high mineral contents in liquid. Ideal for medium to highly viscous fluids. Low speeds required.

| Name            | R 1330    | R 1331    | R 1333    |
|-----------------|-----------|-----------|-----------|
| Ident. No.      | 000032200 | 000032400 | 000034600 |
| Stroke (l) mm   | 45        | 90        | 150       |
| Shaft (l) mm    | 8         | 8         | 10        |
| Shaft length mm | 350       | 350       | 550       |
| Max. speed rpm  | 1000      | 1000      | 800       |





### RH 5 Strap clamp

For securing vessels against walls or for synchronized rotation during stirring. Incl. boss head clamp R.270.



Ident. No. 0003159000  
② ③

### RK 3 Strap clamp

For securing vessels during stirring.



Ident. No. 0003008600  
①

### R.270 Boss head clamp



Ident. No. 0002657800  
② ③

### R.271 Boss head clamp

Specialized clamp with openings for the screws R.2722 and R.2722 as well as extensions with Ø 16 mm.



Ident. No. 0002664000  
② ③

### FK 1 Flexible coupling

Required for stirring tasks using glass stirring rods. The flexible coupling compensates for any structural variances.



Ident. No. 0002336000  
A

### R.182 Boss head clamp



Ident. No. 0002657700  
①

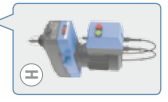


### R.4765 Floor stand

Electrically adjustable telescopic floor stand, specially designed for RW.47 digital and T.65 basic/digital.

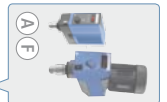
Ident. No. 0004035000

Height: 1014 – 1588 mm



### Plate stands

- R.1825
  - R.1826
  - R.1827
- With slip resistant foil.

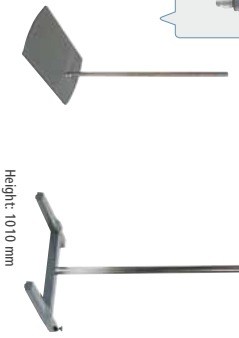


Ident. No. 0003160000 R.1825  
0003160100 R.1826  
0003160200 R.1827

### R.2722 H-stand

Stable stand with H-shaped base which prevents the stand from tipping backwards.

Ident. No. 0001412000  
A ... G



Height: R.1825: 560 mm  
R.1826: 800 mm  
R.1827: 1000 mm

Height: 1010 mm

### H.62.51 Stainless steel sensor

Temperature sensor for working with non-aggressive media.

Ident. No. 0002735451

\* Option available only for control units



### H.66.51 Stainless steel sensor glass-coated

Temperature sensor for working with media such as acid and alkaline solutions.

Ident. No. 0002735551

\* Option available only for control units



### H.70 Extension cable

To connect EUROSTAR control with the temperature sensor.

Ident. No. 0002735600

\* Option available only for control units



Several safety accessories are available for RW.47 digital

### R.60 keyless chuck

Available for EUROSTAR.20 / 40 / 60 / 100 series. It allows you to quickly and easily remove the stirring elements without any tools.

Ident. No. 0003889500

### H.66.53 Temperature sensor

Chemical resistant coated sensor.

Ident. No. 0004489900

\* Option available only for control units



**COMING SOON:**  
More stand options for optimal stability!

### R.2723 Telescopic stand

Similar to R.2722, additionally equipped with a pneumatic spring, which enables effortless raising of the dispersing unit.

Ident. No. 0001412100

A ... G



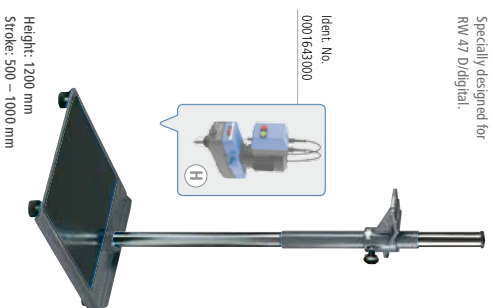
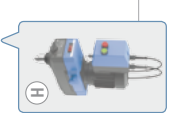
Height: 620 – 1010 mm

Stroke: 390 mm

### R.474 Telescopic stand

Specially designed for RW.47 D/digital.

Ident. No. 0001648000



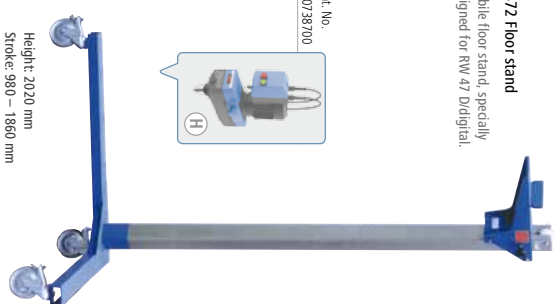
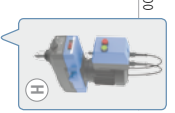
Height: 1200 mm

Stroke: 500 – 1000 mm

### R.472 Floor stand

Mobile floor stand, specially designed for RW.47 D/digital.

Ident. No. 0000738700



Height: 2020 mm

Stroke: 980 – 1860 mm



# Knowledge | Torque & Viscosity

# Quality standards | Integrated Safety

## Torque

Torque is mathematically defined as the vector product of force and lever arm. It is therefore calculated as  $M = F \cdot r$ , where M is the torque, r is the lever arm and F is the force. The magnitude of the force is based on the perpendicular distance from the axis of rotation to the line of action of the force.

The unit of measurement of torque is Nm. For example, in mixing systems, the drive power of an electric motor is delivered to the rotating drive shaft or the drill chuck fixed to the mixing tool. What matters is the transfer of power in the drive to the rotating mixing tool. Torque is the key to the relationship between the mixing tool geometry, viscosity of the medium to be mixed and the speed of rotation. The power is transferred from the motor to the shaft and then to the mixing tool. The torque acts on the mixing tool at the drill chuck as shown in the brochure.

## Viscosity

The "viscosity" shown in our brochure always refers to the dynamic viscosity  $\eta$ . Viscosity is a measure of the fluid's resistance to flow or change in shape due to internal friction between the molecules. If a fluid has high viscosity, then it strongly resists flow. This is an important parameter to be considered when it is required to create product emulsions and suspensions by mixing and homogenizing or merely in the transfer of fluids from one location to another.

$$1 \text{ N} = [n] \cdot (\text{m}^2 \text{ m} / \text{s}) \Rightarrow [n] = \text{Ns} / \text{m}^2 = \text{Pa} \cdot \text{s}$$

Fluids are either Newtonian or Non-Newtonian. Fluids whose viscosity is constant at all shear rates are called Newtonian fluids (e.g., pure fluids, ideal fluids / water, oil and most gases which have a constant viscosity). Fluids whose viscosity is not constant at all shear rates are called Non-Newtonian fluids (e.g., blood, sand-water mixtures, dough, puddings, asphalt cement, etc.).

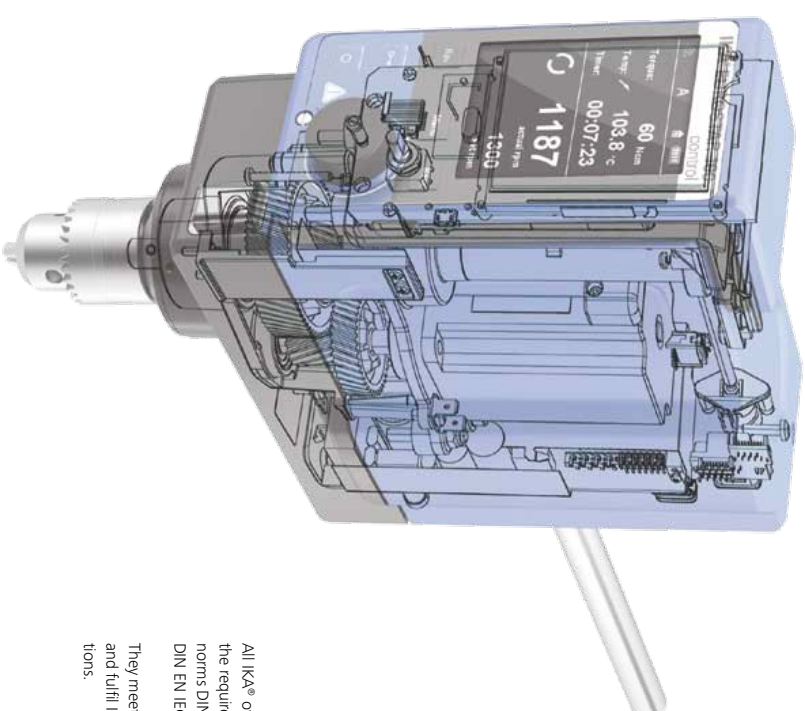
Oil is a good example of a highly viscous liquid. It does not flow easily and affects parameters such as the thickness of the lubricating film in bearings, motors, gear units, leakage losses in the hydraulics, pump efficiency and friction losses in pipes.

## Applications and Industries

- Food:** Butter, mayonnaise, ketchup...
- Cosmetics:** Creams, shampoo, soap...
- Pharmaceutical industry:** Pills, tablets, suppositories...
- Chemical industry:** Aluminum oxide, calcium hydroxide, glycerin...
- Abrasives:** Silicon carbide, crystals, sand...
- Inks and Coatings:** Printing ink, coating paint...
- Glues and Adhesives:** Adhesive mixture, Vaseline, two-component glue...
- Plastics and Polymers:** PVC powder, pre-polymer, polyester resin...
- Paints and Pigments:** Metallic paints, color pigment suspension, dyes for adhesive plasters...
- Cement and Construction:** Concrete, mineral clay, loam...

| Substance            | Viscosity $\eta$ in mPa·s |
|----------------------|---------------------------|
| Water                | 1                         |
| Milk                 | 2                         |
| Coffee whipped cream | 10                        |
| Olive oil            | 100                       |
| Lubricant oil        | 200                       |
| Motor oil            | 650 – 900                 |
| Shampoo              | 3000                      |
| Hand cream           | 8000                      |
| Honey                | 10,000                    |
| Ketchup              | 50,000                    |
| Toothpaste (40°C)    | 70,000                    |
| Asphalt              | 100,000                   |

Unless otherwise stated, the values refer to the viscosity at 20°C and atmospheric pressure



All IKA® overhead stirrers adhere to the requirements set forth by the norms DIN EN IEC 61010-1 and DIN EN IEC 61010-2-051.

They meet and exceed CE standards and fulfill International safety regulations.



IKA® offers more



### labworldsoft®

IKA® laboratory software labworldsoft® is an advanced software for all your laboratory needs. With the help of this software, you can network up to 64 laboratory devices via one PC. All test parameters can be documented ensuring complete automation of your laboratory experiments. Measurements and processes may be run independently. Long waits and processing times are reduced, which increases productivity.



### Comprehensive Worldwide Service!

Our dedicated team of engineers provides comprehensive, worldwide technical service. Please feel free to contact your dealers or IKA® directly in case of any service queries. Hotline: In the event of an equipment malfunction or technical questions regarding devices and spare parts:  
call 00 8000 4523457 (00 8000 IKAHELP)



### IKA® Application Support

Our Application Center spans 400 sqm and offers modern facilities for presenting and testing lab devices and processes. This brings us even closer to our customers and improves our service. Here, prospective buyers and customers can test out processes that involve stirring, shaking, dispersing, grinding, heating, analyzing and distilling. In addition, it also further extends the opportunity to test your own devices and to develop new models.



## FAQ

**Does IKA® supply an explosion-proof stirrer system?**  
IKA® does supply custom-made explosion-proof systems for larger volumes upon request.

**What does torque trend display mean in the case of the EUROSTAR control range – can they measure viscosity?**

The EUROSTAR control units only display the change in torque. Normally, this is associated with a change in the viscosity of the medium. The viscosity cannot, however, be directly calculated from the data. In order to do so, one can use a viscometer.

**How long can a stirrer be operated without interruption?**

All IKA® stirrers have a 100% duty cycle, i.e. they can be operated without interruption.

**Are there any stirrers which rotate in different directions?**

All IKA® stirrers rotate in clockwise direction except for EUROSTAR 100 control which rotates in both clockwise and counter clockwise direction. Additionally, upon request for special applications, counter clockwise direction can be incorporated.

**What is the difference between the electronic and mechanical versions of the stirrers?**

In mechanical stirrers, the speed is set by means of a continuously variable transmission. A higher torque can be made available directly in the lower speed range by altering the transmission ratio of the actuator. Whereas in electronic stirrers, the power output is monitored and controlled by a processor. This ensures a constant speed range even with changes in viscosity.

**What quantities and viscosities can be processed with IKA® stirrers?**

Depending on the unit, maximum stirring quantity ranges from 20 ml to 200 liters. Similarly, the viscosity ranges from 1 mPas to 150,000 mPas.

**What should be the diameter of the vessel in relation to the stirrer tool?**

In the case of water, the diameter of the vessel should be twice the diameter of the stirrer element and the height two or three times that of the stirrer element. In the case of high viscosity material, the stirrer element should be closer to the vessel wall.

**What ambient conditions are required for the operation of IKA® stirrers?**

The ambient temperature should be consistent between 5 °C and 40 °C and the humidity should not exceed 80%.

### Application Support!

**IKA+**

For questions regarding applications and processes, you can call our hotline number:  
**00 8000 4522777 (00 8000 IKAAPP5)\***  
E-Mail: [applicationsupport@ika.de](mailto:applicationsupport@ika.de)

\* Monday – Thursday from 8:30 – 16:30  
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