

**IKA**®

## Overhead Stirrers



**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\*

\* 2+1 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 labworldsoft® 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

Year 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

The EUROSTAR digital and control series are conceptually similar; both series feature a speed display and an overload protection. Furthermore, the control version is designed with a removable wireless controller and is equipped with a torque trend display, TFT display, RS 232 and USB interface. In addition, you will be able to update your firmware online by connecting your control device via USB to a computer.

## Special features | Accessories



Ident. No.  
0001412100

### 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.



Ident. No.  
0002657800

### 2 R 270 Boss head clamp

Specialized clamp with openings for stands R 2722 and R 2723



Ident. No.  
0003008600

### RH 3 Strap clamp

For securing vessels incl. boss head clamp R 270



Ident. No.  
0002603000

### 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, timer, speed and PC 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 years after registering at [www.ika.com/register](http://www.ika.com/register)

Year warranty\*



Clockwise and counter clockwise rotation



Digital display for precise monitoring of set and actual speeds



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



TFT Display for better image quality and easy navigation



Extremely powerful laboratory stirrer designed with high torque



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



RS 232 interface for PC connection



## Electronic Overhead Stirrers



reddot 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



reddot design award  
winner 2012

### The All-Rounder



EUROSTAR 200 digital | control

### The High-Performer



EUROSTAR 200 control P4

### The Speedster



EUROSTAR 20 high speed digital

## Mechanical Overhead Stirrers

Please also see  
IKA® Pilots



RW 20 digital



RW 28 digital



RW 47 digital

Available  
Q2/2013

Technical data	
Stirring quantity max. (H <sub>2</sub> O)	15 l   25 l
Max. viscosity	10,000 mPas   30,000 mPas
Motor rating input/output	70 / 42 W   118 / 84 W
Permissible ON time	100 %
Speed range	0/30 – 2000 rpm
Speed range I (at 50/60 Hz)	–
Speed range II (at 50/60 Hz)	–
Max. torque at stirring shaft	20 Ncm   40 Ncm
Display	LED
Reverse operation	no
Intermittent operation	no   yes
Temp. sensor connection	no   PT 1000
Chuck range	0.5 – 10 mm
Hollow shaft	yes
Torque trend measurement	no   yes
Timer	no   yes
Temperature measurement	no   yes
Temperature measuring range	–   -10 to 350 °C
Dimensions (W x D x H)	86 x 208 x 248 mm
Weight	4.4 kg   4.7 kg
Permissible ambient temp.	5 – 40 °C
Permissible relative moisture	80%
Protection class DIN EN 60529	IP 40
USB / RS 232 interface	no   yes
Voltage	230 V
Frequency	50/60 Hz

Ident. No. 0004442000 | 0004444000

Ident. No. 0004446000 | 0004440000

Ident. No. 0004238100 | 0004028500

Technical data	
Stirring quantity max. (H <sub>2</sub> O)	100 l
Max. viscosity	100,000 mPas
Motor rating input/output	130 / 84 W
Permissible ON time	100%
Speed range	0/6 – 2000 rpm
Speed range I (at 50/60 Hz)	0/6 – 400 rpm
Speed range II (at 50/60 Hz)	0/30 – 2000 rpm
Max. torque at stirring shaft	200 Ncm
Display	LED   TFT
Reverse operation	no
Intermittent operation	no   yes
Temp. sensor connection	no   PT 1000
Chuck range	0.5 – 10 mm
Hollow shaft	yes
Torque trend measurement	no   yes
Timer	no   yes
Temperature measurement	yes
Temperature measuring range	–   -10 to 350 °C
Dimensions (W x D x H)	91 x 209 x 274 mm   91 x 231 x 274 mm
Weight	4.6 kg   4.9 kg
Permissible ambient temp.	5 – 40 °C
Permissible relative moisture	80%
Protection class DIN EN 60529	IP 40
USB / RS 232 interface	no   yes
Voltage	230 V
Frequency	50/60 Hz

Ident. No. 0003990000 | 0003992000

Ident. No. 0004090000

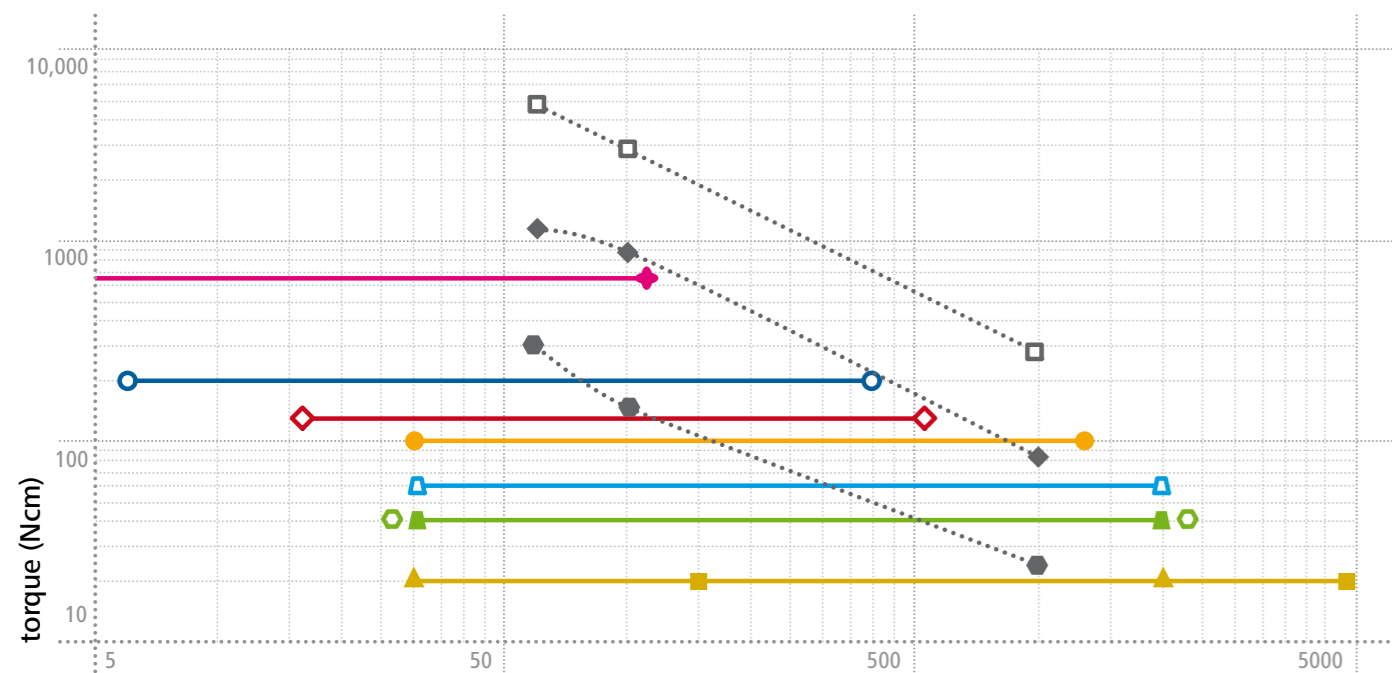
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Technical data	
Stirring quantity max. (H <sub>2</sub> O)	20 l
Max. viscosity	10,000 mPas
Motor rating input/output	70 / 35 W
Permissible ON time	100%
Speed range (at 50/60 Hz)	60 – 2000 rpm / 72 – 2400 rpm
Speed range I (at 50/60 Hz)	60 – 500 rpm / 72 – 600 rpm
Speed range II (at 50/60 Hz)	240 – 2000 rpm / 288 – 2400 rpm
Max. torque at stirring shaft	150 Ncm
Display	LED
Reverse operation	no
Intermittent operation	no
Temp. sensor connection	no
Chuck range	0.5 – 10 mm
Hollow shaft	yes
Torque trend measurement	no
Timer	no
Temperature measurement	no
Temperature measuring range	–
Dimensions (W x D x H)	88 x 212 x 294 mm
Weight	3.1 kg
Permissible ambient temp.	5 – 40 °C
Permissible relative moisture	80%
Protection class DIN EN 60529	IP 20
USB / RS 232 interface	no
Voltage	220 – 240 V
Frequency	50/60 Hz

Ident. No. 0003593000

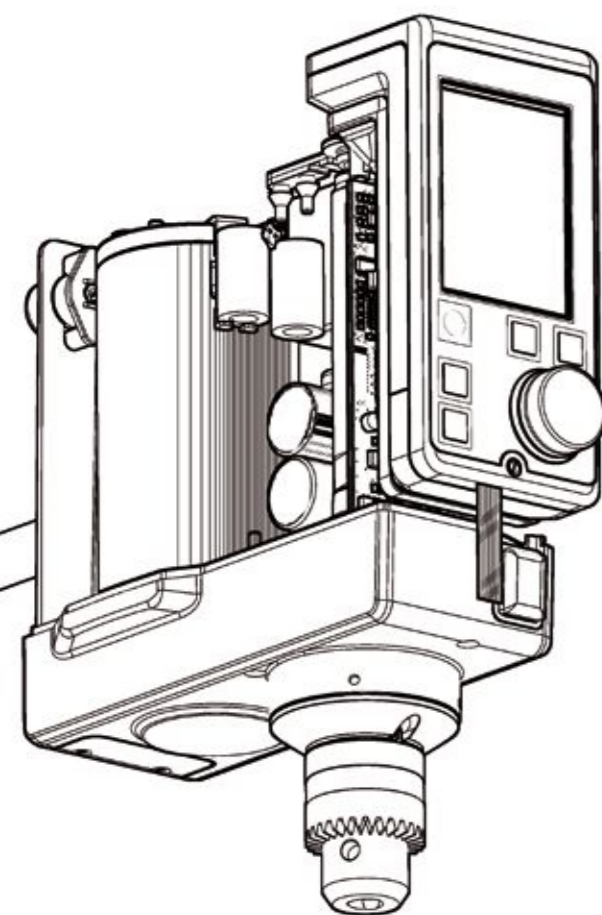
Ident. No. 0005040000

Ident. No. 0004050000



Speed (rpm)

- ES 200 control P 4 I
- ES 40 digital
- ES 100 digital / control
- ES 60 digital / control
- ES 200 digital / control I
- ES 200 control P 4 II
- ES 200 digital / control II
- ES 20 digital
- ES 20 high speed
- RW 47 digital
- RW 28 digital
- RW 20 digital



The electronic overhead stirrers have a constant torque over the entire speed range. They can also be used for short-term overload operations. The electronic stirrers are ideal for reproducible procedures as well.

The mechanical overhead stirrers have a high torque at low speed and the torque decreases when the speed increases. The speed range I is for highly viscous samples and the speed range II is for intensive mixing of low viscous samples.

## Stirring elements | Accessories



### Propeller stirrer, 4-bladed

Standard stirring element for drawing the material to be mixed from the top to the bottom. It creates local shearing forces and axial flow in the vessel. This propeller stirrer is used at medium to high speeds.



### Propeller stirrer, 3-bladed

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



### Propeller stirrer, 3-bladed

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



### Dissolver stirrer

This stirrer provides radial flow for drawing the material to be mixed from the top and the bottom while creating high turbulence and high shearing forces for particle reduction. Medium to high speeds required.

\* IKA® recommendations only



A



B



C



EUROSTAR 200 control P4

D



EUROSTAR 20 high speed digital

E



RW 20 digital

F



RW 28 digital

G



RW 47 digital

H

### axial flow



Name	R 1342	R 1345	R 2302
Ident. No.	0000741000	0000741300	0000739000
Stirrer (Ø) mm	50	100	150
Shaft (Ø) mm	8	8	13
Shaft length mm	350	540	800
Max. speed rpm	2000	800	600
	A B C D F	A B C D F G	H

### axial flow



Name	R 1381	R 1382	R 1401	R 1405
Ident. No.	0001296000	0001295900	0001242900	0001289800
Stirrer (Ø) mm	45	55	55	45
Shaft (Ø) mm	8	8	-	-
Shaft length mm	350	350	-	-
Max. speed rpm	2000	2000	-	-
	A B C D F	A B C D F	E	E

### axial flow



Name	R 1385	R 1388	R 1389 (PTFE-coated)
Ident. No.	0000477700	0000477800	0002343600
Stirrer (Ø) mm	140	140	75
Shaft (Ø) mm	10	10	8
Shaft length mm	550	800	350
Max. speed rpm	800	400	800
	A B C D F G	A B C D F G	A B C

### radial flow



Name	R 1300	R 1302	R 1303	R 1402
Ident. No.	0000513500	0002387900	0002746700	0001243300
Stirrer (Ø) mm	80	100	42	42
Shaft (Ø) mm	8	10	8	-
Shaft length mm	350	350	350	-
Max. speed rpm	2000	1000	2000	-
	A B C D F G	A B C D F G	A B C D F	E



### Turbine stirrer

This stirrer is used for drawing the material to be mixed from above while generating axial flow within the vessel. It carries a minimum level of danger of injury when contact is made with vessel. It also creates minimum shearing forces and is used at medium to high speeds.



### Centrifugal stirrer

Two-bladed stirrer who's blades open with increasing speed. Perfect for stirring in round vessels with narrow necks and the effect is similar to that of a 4-bladed propeller stirrer. Medium to high speeds required.



### Paddle stirrer

This stirrer creates tangential flow, minimum turbulence, good heat exchange and gentle treatment of the product. Low to medium speeds required.



### Anchor stirrer

This stirrer creates tangential flow, high shearing rate at the edges, minimum deposits on the vessel wall making them great for polymer reactions and even distribution of high mineral contents in liquids. Ideal for medium to highly viscous fluids. Low speeds required.

### axial flow



Name	R 1311	R 1312	R 1313
Ident. No.	0002332900	0002333000	0002333100
Stirrer (Ø) mm	30	50	70
Shaft (Ø) mm	8	8	10
Shaft length mm	350	350	400
Max. speed rpm	2000	2000	800
	A F C	A B C D F	A B C D F

### axial flow



Name	R 1352	R 1355
Ident. No.	0000756900	0001132700
Stirrer (Ø) mm	60 / 15	100 / 24
Shaft (Ø) mm	8	8
Shaft length mm	350	550
Max. speed rpm	2000	800
	A B C D F	A B C D F

### tangential flow



Name	R 1375	R 1376	R 2311
Ident. No.	0000757700	0000757800	0000739500
Stirrer (Ø) mm	70	150	150
Shaft (Ø) mm	8	10	13
Shaft length mm	550	550	800
Max. speed rpm	800	800	600
	A B C D F	B C D F G	H

### tangential flow



Name	R 1330	R 1331	R 1333
Ident. No.	0002022300	0002022400	0002747400
Stirrer (Ø) mm	45	90	150
Shaft (Ø) mm	8	8	10
Shaft length mm	350	350	550
Max. speed rpm	1000	1000	800
	A B C D F	A B C D F G	B C D F G

## 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

## RH 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 stands R 2722 and R 2723 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

**NEW**

## 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



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

①

## Plate stands

R 1825  
R 1826  
R 1827

With slip resistant foil.



A F

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



Height: 1010 mm

②

## R 2722 H-Stand

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

Ident. No.  
0001412000

A ... G



## 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

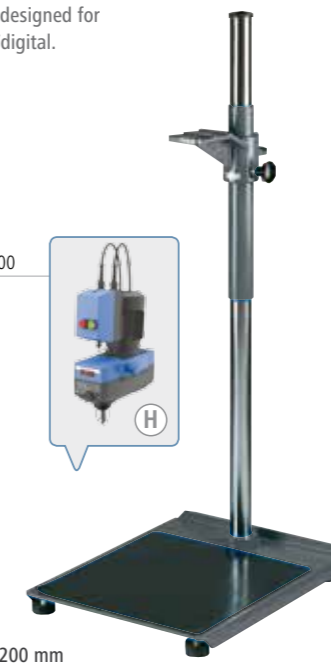
③

## R 474 Telescopic stand

Specially designed for RW 47 D/digital.

Ident. No.  
0001643000

H



Height: 1200 mm  
Stroke: 500 – 1000 mm

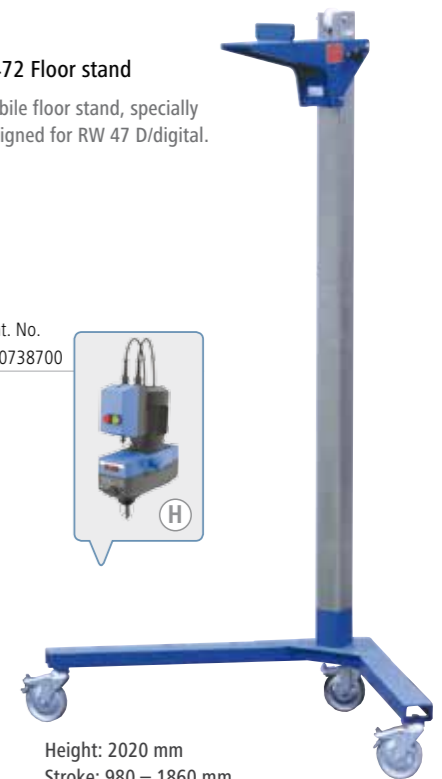
⑤

## R 472 Floor stand

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

Ident. No.  
0000738700

H



Height: 2020 mm  
Stroke: 980 – 1860 mm

⑥

## 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.  
0004499900

\* Option available only for control units

## Stirring shaft protection

Available for all overhead stirrers for preventing potential injuries at rotating shafts and stirring elements

**IKA+**

**COMING SOON:**

More stand options for optimal stability!



**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.

**Typical Dynamic viscosity values (Range 1 – 100,000 mPa\*s)**

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

$$1N = [\eta] \cdot (m^2 m / m s) \Rightarrow [\eta] = Ns / m^2 = Pa*s$$

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.).

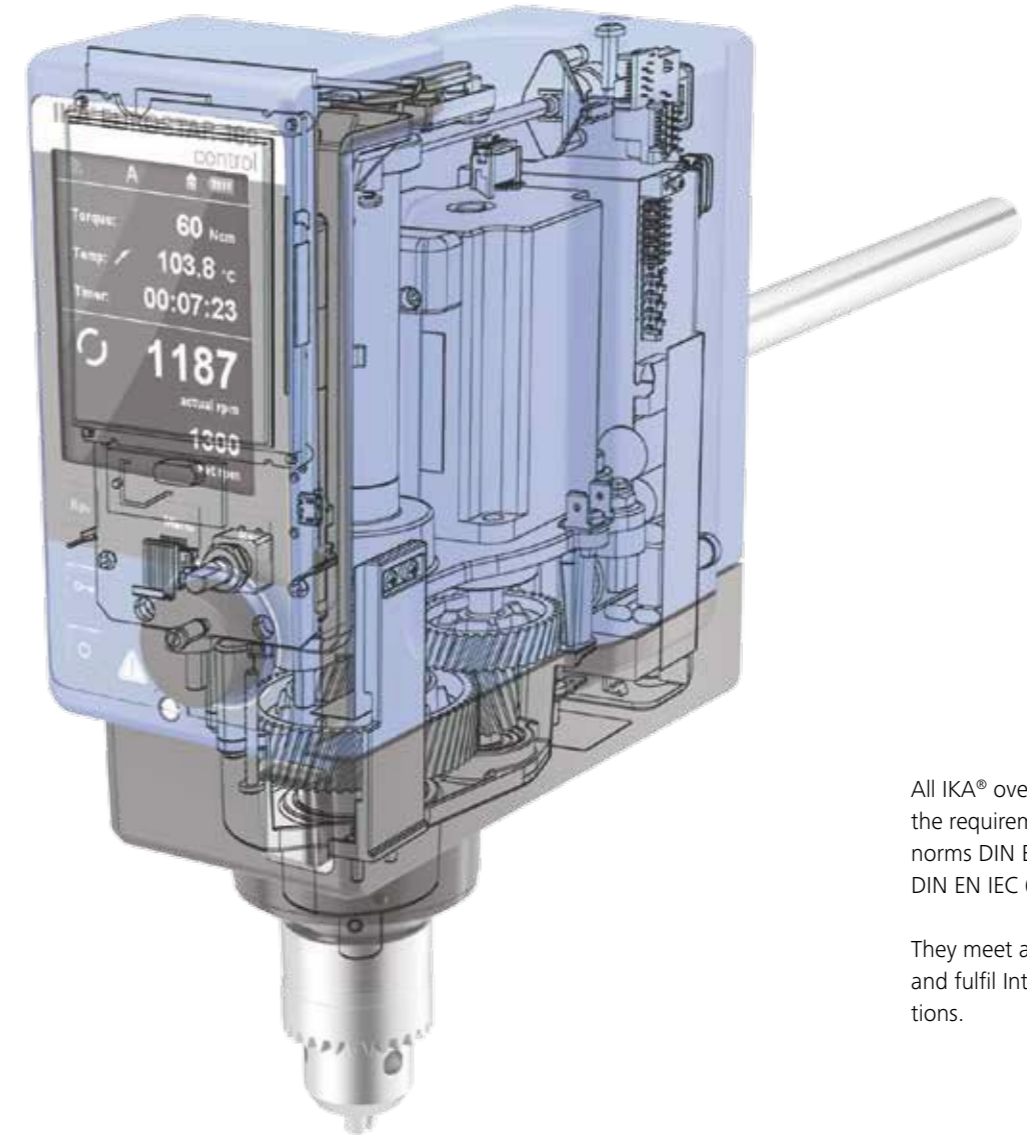
Oil is a good example of a highly viscous liquid. It does not flow easily and affects parameters such as the thickness of the lubricating film in bearings, motors, gear units, leakage losses in the hydraulics, pump efficiency and friction losses in pipes.

**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...



DIN EN IEC 61010-1  
DIN EN IEC 61010-2-051



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 fulfil International safety regulations.



**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 4524357 (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.



**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

Subject to technical changes  
Indications not binding for delivery

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**IKA**<sup>®</sup> German technology