

CG-2037-30



CE



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## Safety instructions

Never operate the equipment with the stirrer tools rotating freely. Ensure that parts of the body, hair or items of clothing cannot be trapped by the rotating parts. Pay attention when setting the speed to any imbalance of the stirrer tools and possible spraying of the medium to be stirred. Use a stirrer shaft protection device!

The equipment is not suitable for manual operation. Please follow the relevant safety instructions and guidelines, and occupational health and safety regulations for use in the laboratory.

Avoid knocks and impacts on the lower end of the shaft and the chuck gear teeth. Even minor, invisible damage can lead to imbalance and uneven shaft action. Careful handling guarantees safe working and the long life of the equipment.

Imbalance of the output shaft, the chuck and in particular the stirring tools can lead to uncontrolled resonant vibrational behaviour of the equipment and the whole assembly. Glass apparatus and stirrer containers can be damaged or shattered by this. It can cause injury to the operator, as can the rotating stirring tool. If vibration of the equipment is noticed, the speed must be reduced immediately in all cases until no more vibration occurs. In this case exchange the stirring tool for one without imbalance or remedy the cause of the imbalance.



Operating with a freely rotating shaft end is dangerous. Therefore for safety reasons the stirrer tool is permitted to project over the upper edge of the housing only when the machine is not running. For correct operation, the rubber diaphragm must always be completely closed. Take care to ensure that the shaft never runs directly in the rubber diaphragm and any friction with rotating parts (stirrer shafts) is excluded.

The machine may only be opened by trained specialists - even during repairs. The machine is to be unplugged from the mains before opening. Live parts inside the machine may still be live for some time after unplugging from the mains.

## Correct use

The basic stirrer is suitable for stirring and mixing fluids with low viscosity. It is designed for use in laboratories. For correct use, the equipment must be secured to a fixed object.

## Unpacking

Please unpack the machine carefully and inspect for damage. It is important that any transit damage should be noted at the time of unpacking. In certain circumstances it may be necessary to investigate immediately (post, rail or freight forwarder). The guarantee covers: One stirring machine, one extension arm, one hexagonal socket screw, one hexagon socket offset screw key and operating instructions.

## Useful facts

In buying this machine you have chosen a high quality product. Ease of use is guaranteed with its handy shape and simple operation. The housing offers protection against ingress of liquids. The materials used and their precise identification make recycling possible and simple, and enables re-use of the parts. The generously proportioned cooling surfaces enable distribution and transference of heat to be as even as possible. The two metre long mains lead makes it possible to work on stands - even with high glass apparatus under vapour extraction hoods - without

extension leads. The precision stirrer shaft is designed as a hollow shaft to allow the stirrer shanks to be inserted.

## Drive

The speed of the basic stirrers can be infinitely adjusted by electronic means. The ball bearing equipped DC motor has a quiet synchronous belt drive. The motor is controlled via a computer-controlled speed regulator using pulse-width modulated voltage (PWM). The whole drive unit is maintenance-free.

## Motor protection; safety devices

The machine is suitable for continuous operation. The motor current is electronically limited. The machine has an anti-stall and anti-overload system. If a fault occurs, a safety circuit immediately switches off the motor permanently via a relay.

To start the machine again after a fault, please operate the mains switch. If the machine still does not work, please contact our Service department.

## Speed

The speed is set using the front knob(A). The scale from 1 to 10 corresponds to a speed range for the output shaft of 40 to 1200 rpm under nominal load. With no load the speed at maximum setting of the knob (right position) is 1600 rpm, at minimum setting of the knob (left position) 0 rpm. If viscosity increases due to the process, the speed reduces gradually. If, however, the viscosity is reduced by eg the addition of thinning agents, the speed increases somewhat. This can be balanced out in both cases by re-setting the knob accordingly, provided torque does not exceed maximum torque. Please note that fluctuations in mains voltage within the permitted tolerances may also cause minor fluctuations in speed.

## Commissioning

For correct use, the stirrer must be secured to a stable object with a cross-sleeve. For safety reasons the stirrer container should always be fixed with a tension-holder.

## Mounting the extension arm

**For diagram see**

(Fig. 2)

The extension arm (X) has a step at its end with a cross hole. This end is used to insert the extension arm into the hole on the back of the machine. To do this, the cross hole in the extension arm must point upwards. It must be brought into alignment with the

hole in the fixing rib on the back of the machine. To do this, press the extension arm until it catches in the hole. Please do not use force to do this. If it proves difficult to insert the extension arm, light oiling may help. The hexagonal socket screw (Y) used for fixing is inserted in the hole in the housing from above. The screw is tightened using the hexagon socket offset screw key (Z). Check that the extension arm is firmly seated. The screw may loosen with vibration. Therefore as a precaution check from time to time that the extension arm is still securely attached.

If necessary tighten the hexagonal socket screw.

You can also secure the hexagonal socket screw with adhesive, but you are then unable to release the connection later.

## Switching on the machine

Check whether the voltage given on the type plate corresponds to the available mains voltage. The socket used must be earthed (fitted with earth contact). If these conditions have been met, the machine is ready to operate when the mains plug is plugged in. If these conditions are not met, safe operation is not guaranteed and the machine could be damaged.

The machine is started by pressing the mains switch (B) into position "I". A green control light (C) signals the operating condition "ON".

During commissioning of the machine the output shaft starts to run at the last speed set. Therefore check the setting of the control knob. Also ensure that the speed set is suitable for the test texture selected. If in doubt, set the speed knob (A) to the lowest speed (left-hand position).

## Output shaft

The clamping chuck and output shaft permit all standard commercial stirrer tools up to 10mm diameter to be gripped and screwed in. The opening on the top side of the housing is closed with a slotted rubber diaphragm. It is, however, possible for stirring shafts to push out over the top edge of the housing eg during change of container.

If it becomes necessary - depending on the layout of the equipment - to allow the shaft end to project over the edge of the housing during operations, the rubber diaphragm should be removed. Instead a stirrer shaft cover, which can be obtained as an accessory, must be placed on the housing. If the stirrer shaft cover is removed again, the rubber diaphragm must be pressed into the housing opening again so that this is closed. This is the only way of ensuring safe working and preventing any fluids from penetrating the equipment.

**Please see section "Safety Instructions"!**

## Maintenance and cleaning

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

**When ordering spare parts, please give the manufacturing number shown on the type plate, the machine type and the name of the spare part.**

Please send in equipment for repair only after it has been cleaned and is free from any materials which may constitute a health hazard. Only use water with a detergent additive containing a surfactant for cleaning, or for heavier soiling isopropylalcohol.

## Accessories

Fixed plate                      Tension-holder  
Cross-sleeve                    Flexible connection  
Speedometer

## Technical data

Speed range under nominal load: **min<sup>-1</sup>** 40-1200  
Max. stirrer speed: **Ncm** 40  
Permitted switched-on time: **%** 100  
Speed setting: Speed adjuster with pulse width modulator  
Speed indicator: Scale on knob  
Nominal voltage: **VAC** 230±10%*EURO*  
**VAC** 115±10%*USA*  
Frequency: **Hz** 50 / 60  
Input power: **W** 75  
Output power: **W** 55  
Output on stirrer shaft: **W** 53  
Total efficiency: 0,71  
Protection type to DIN 40 050: IP42

Protection measures:		0
Class	Protection device	Recommended use
0	No additional protection	Used only on equipment where failure of the controls does not represent a hazard. The operating conditions should be monitored at regular intervals.

Excess voltage category: II  
Degree of pollution: 2  
Overload protection: El. current limitation  
Fuses (on mains plate): **A** 4 T

A Drive (maintenance-free): DC motor with 1-level synchronous belt drive  
 Environmental temp.: °C +5 to+40  
 Environmental humidity: % 80  
 Operating position: on fixed object, tension filler facing down  
 Max. qty. of stirred water: **ltr** 10  
 for viscosity: LV

Viscosity	mPa · s	
VLV very low viscosity	0 ..... 100	water up to thin-flowing oil
LV low viscosity	100..... 1000	thin-flowing oil up to thick-flowing oil
MV medium viscosity	1000.. 10000	thick-flowing oil up to honey at approx. 20 °C.
HV high viscosity	10000 100000	honey at approx. 20 °C up to printing inks

Clamping chuck tension range: **mm** 0,5 -10  
 Hollow shaft, internal dia.: **mm** 11  
 Extension: **mm** 13x160long  
 Housing: Al diecast, thermoplast. plastic  
 Dimensions excl. extension: **mm** (BxTxH) 80x190x175  
 Weight with extension and clamping chuck: **kg** 2,8  
 Speed deviations:  
 Adjustment precision: % 10  
 When loaded: % 0 load  $n_{max}= 1600 \text{ min}^{-1}$  (nom.)  
 % 100 load  $n_{max}= 1200 \text{ min}^{-1}$  (nom.)

## Permitted stirrer tools

	<i>Max. speed rpm</i>
Propeller stirrer 4fl	2 000
Propeller stirrer 3fl	2 000
Propeller stirrer 3fl	2 000
Propeller stirrer 3fl PTFE	800

Centrifugal stirrer	2 000
Turbine stirrer	2 000
Turbine stirrer	2 000
Kneading stirrer	2 000
Anchor stirrer PTFE	1 000

## Associated standards and regulations

### Associated EU guidelines

EMV guidelines: 89/336/EC  
 Machine guidelines: 89/392/EC

### Construction in accordance with the following safety standards:

EN 61 010-1 /VDE 411-1	EN 292-1, -2
EN 50 082-1	EN 414
EN 55 014-1	IEC 1010-1
EN 60 555-2, -3	UL 3101-1
EN 60 204-1	CAN/CSA C22.2 (1010-1)

## Guarantee

You have purchased an original CGLS laboratory machine which meets the highest engineering and quality standards. In accordance with CGLS guarantee conditions, the guarantee period is 12 months. For claims under the guarantee 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.