PHYWE
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Magnetic stirrer with heating

35760-93

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Fig. 1: 35760-93 Magnetic stirrer with heating

Operating instructions

CE The unit complies with the corresponding EC guidelines.

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1 SAEFTY PRECAUTIONS

Caution!

- Carefully read these operating instructions before operating this instrument. This is necessary to avoid damage to it, as well as for user-safety.
- Only use the instrument for the purpose for which it was designed.
- Only use the instrument in dry rooms in which there is no risk of explosion.
- Ensure that only trained stuff use the instrument. The instrument must only be opened by a qualified and trained technician.
- Make sure the socket is earthed before use.
- Set the instrument on a stable, clean, dry, non-slip and fireproof surface.
- Check instrument for damage before every use. Do not use damaged components.
- The operation voltage noted on the label must match.
- Always disconnect the plug before fitting accessories.
- When working, wear personal protection to avoid the risk from splashing of liquids and possible glass breakage which can result from mechanical vibrations.
- Gradually increase the speed, reduce the speed if:
  - the stirring bar breaks away due to high speed, or
  - the instrument is not running smoothly, or
  - the container moves on the base plate.
- Temperature must always be set at least 25 °C lower than the fire point of the media used.
- Be aware of hazards due to:
  - flammable materials or media with a low boiling temperature, or
  - overfilling of media, or
  - the container is unsafe.
- Do not work with defective parts.
- When the external temperature sensor is required, the tip of the measuring sensor must be at least 5

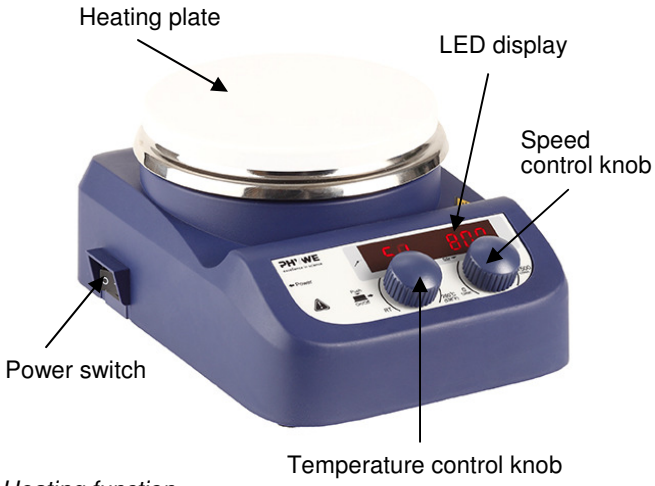
- 10 mm from vessel bottom and wall.

- The instrument can only be disconnected from the mains power supply by pulling out the main or the connector plug.
- Keep a good, clear distance around the instrument (from wall/other equipment).

2 PURPOSE AND CHARACTERISTICS

The instrument is designed for stirring liquids. The porcelain surface of the heating plates provides a durable surface with high chemical resistance.

3 FUNCTIONAL AND OPERATING ELEMENTS



Heating function
The device is controlled by digital temperature control technology which has two separate safety circuits. The heating plate is kept at a constant temperature by a digital control circuit. For a precice display and control of temperature inside the medium, please use the external temperature sensor PT 1000*.

- Plug in the external PT 1000.
- Set the temperature by rotating the temperature control knob slowly to the target value.
- When the heating function is switched on, the LED displays the temperature value on the left-hand side.
- The heating function is switched on or off by pushing the heating knob.

When turned on, the instrument automatically displays the last running speed and temperature parameters. Generally, the LED screen cannot display the actual temperature of the sample in the vessel or of the surface of the heating plate. The temperature differences are as following:

- Heating plate center and outer edge.
- The sample in the vessel and the surface of the heating plate.
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In order to ensure the accuracy of the temperature inside the container, please use the external temperature sensor PT1000*.

* Not included.

*Using an external temperature sensor PT 1000**
When the PT 1000 sensor is connected and the temperature control knob is rotated, the LED displays the temperature setting value and shifts to real value in 5 seconds. Compared with the temperature control of the heating plate, the external temperature sensor can control the medium's temperature more precisely. The heating function will be stopped automatically under abnormal conditions.

Please operate following the instructions below:
- Switch OFF the instrument.
- Ensure the external temperature sensor is inserted into the heated media.
- Switch ON the instrument and run heating function.

If the heating function does not work, please contact the customer service.

Residual heat warning (HOT)
In order to prevent the risk of burns from the heating plate, the digital plate has a residual heat warning function. When the heating function is switched OFF and the heating plate temperature is still above 50 °C, the LCD will flash "HOT" to warn of the hazard of burns. When the unit is powered off, the LED screen displays the temperature of the heating plate and "HOT" in turn. When the plate's temperature drops to below 50 °C, the unit will automatically switch off. If you wish to turn off the LED immediately, just pull out the plug directly. When the plug is pulled out, the residual heat warningfunction cannot be run.

Stirring function
The "stirring" function is switched ON or OFF by pushing the speed control knob. The speed range is 100 to 1500 rpm, in increments of 10 rpm.

Temperature control knob „Heat"
Sets the temperature parameters.
The function "heating" is switched ON or OFF by pushing the temperature control knob.

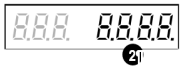
Speed control knob „Stir"
Sets the stirring speed. The function "Stirring" is switched ON or OFF by pushing the speed control knob.

LED display
LED displays the real working state and all settings.

Probe
When the external temperature sensor PT 1000 is plugged in, probe icon  is lit.

Power switch
Switches the instrument ON or OFF

Temperature display area(1)
When heating function was switched ON, the LED displays the temperature setting value and shifts to real value in 5 seconds. When the heating function is switched OFF and the heating plate temperature is still above 50 °C, LED displays "Hot", otherwise LED displays OFF.



Speed display area(2)
When stirring function was switched ON, the LED displays the speed setting value and flashes. The setting value does not flash until real speed reaches the set point.

4 HANDLING

Make sure the required operating voltage and power supply voltage match. Ensure the socket is properly grounded. Plug in the power cable, ensure the power is on and begin initialising. Add the medium into the vessel with an appropriate stirring bar. Place vessel on the heating plate. Set the target stirring speed and begin. Observe the stirring bar and LED display. Set the target temperature and start heating. Observe the LED display. Stop the heating and stirring functions.

5 NOTES ON OPERATION

This high-quality instrument fulfils all of the technical requirements that are compiled in current EC guidelines. The characteristics of this product qualify it for the CE mark.
The ADM 2 is only to be put into operation under specialist supervision in a controlled electromagnetic environment in research, educational and training facilities (schools, universities, institutes and laboratories).
This means that in such an environment, no mobile phones etc. are to be used in the immediate vicinity.

The instrument can be so influenced by electrostatic charges and other electromagnetic phenomena that it no longer functions within the given technical specifications. The following measures reduce or do away with disturbances:
Avoid fitted carpets; ensure potential equalization; carry out experiments on a conductive, earthed surface, use screened cables, do not operate high-frequency emitters (radios, mobile phones) in the immediate vicinity. When a total failure of the instrument occurs, unplug it and plug it back in again for a reset.

Maintenance and cleaning

Proper maintenance and cleaning will keep the instrument in good working order and will lengthen its life time. Be careful not spray cleaning fluid into the instrument. Unplug the power cord when cleaning. Please use only Isopropyl alcohol and water containing tenside. Wear protective gloves during cleaning of the instrument. When not in use for long periods, switch off the instrument and store it in a dry, clean and stableplace at room temperature.

Troubleshooting

- Instrument can not be powered ON:
  - check that the power cord is plugged in.
- Fault in power on self test:
  - switch OFF the unit, then switch ON and reset the instrument to factory default setting.
- Stirring speed will not reach set point:
  - excessive medium viscosity may cause abnormal speed reduction of the motor.
- Unit does not power down when switched OFF:
  - check if the residual heat warning function is still ON and the heating plate temperature is above 50 °C (the LED screen will be flashing “HOT”).

6 TECHNICAL DATA

(typical values for 25°C)
Operating temperature range: 5 - 40°C
Rel. humidity < 80%

Voltage	100 – 240 V
Frequency	50/60 Hz
Power	515 W (heating) 10 W (without heating
Stirring points	1
Max. stirring quantity	3 l
Max. length, magnetic bar	50 mm
Motor type	DC motor
Motor power (input)	5 W
Motor power (output)	3 W
Speed	100 – 1500 rpm
Display	LED
Heating plate diameter	135 mm
Heating power	500 W
Temperature range	Room temp to 280 °C (in 1 ºC increments)
Safety temperature	320 °C
External temperature sensor*	PT 1000
Control accuracy with PT 1000	2 °C
Protection art	IP21
Protection class	I
Weight	1.4 kg
Dimensions (mm)	220 x 160 x 95

7 SCOPE OF SUPPLY

The packing includes:

- Magnetic stirrer
- Power supply
- Operating instruction

8 ACCESSORIES

Temperature sensor Pt1000 for magnetic stirrer with heating	35760-01

9 NOTES ON THE GUARANTEE

We guarantee the instrument supplied by us for a period of 24 months within the EU, or for 12 months outside of the EU. Excepted from the guarantee are damages that result from disregarding the Operating Instructions, from improper handling of the instrument or from natural wear.

The manufacturer can only be held responsible for the function and technical safety characteristics of the instrument, when maintenance, repairs and alterations to the instrument are only carried out by the manufacturer or by personnel who have been explicitly authorized by him to do so.

10 WASTE DISPOSAL

The packaging consists predominately of environmentally compatible materials that can be passed on for disposal by the local recycling service.

Should you no longer require this product, do not dispose of it with the household refuse.

Please return it to the address below for proper waste disposal.

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