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Fig. 1: 35760-93 Magnetic stirrer with heating

Operating instructions

 The unit complies with the corresponding EC guidelines.

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1 SAFETY 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 staff use the instrument.
- Make sure the socket is earthed before use.
- The instrument can only be disconnected from the mains power supply by pulling out the mains or connector plug.
- Set the instrument on a stable, clean, dry, non-slip and fireproof surface.
- Keep a sufficient safety distance from walls and other equipment.
- Check instrument for damage before every use. Do not use damaged components.
- Ensure that the operating voltage stated on the label matches the mains voltage.
- Always disconnect the plug from the mains before fitting or changing accessories.
- Wear appropriate personal protective equipment (especially safety goggles) to protect against splashing liquids and possible glass breakage caused by mechanical vibrations
- Gradually increase the speed. Reduce the speed immediately if:
 - the stirring bar breaks away due to excessive speed or becomes unstable,
 - the instrument does not run smoothly or unusual vibrations occur,
 - the container moves on the base plate.
- The set temperature must always be at least 25 °C below the flash point of the medium used.

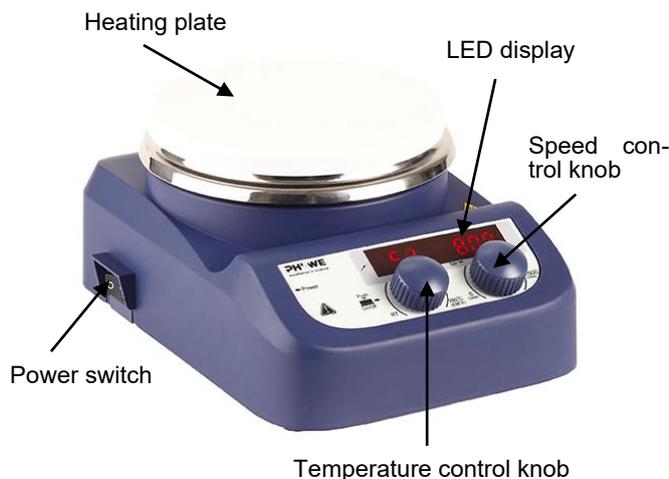
- Be aware of hazards due to:
 - flammable substances or media with a low boiling point,
 - overfilling of vessels,
 - unsafe or unsuitable containers.
- Never overfill the vessel and only use heat-resistant and suitable containers.
- The mains cable must not come into contact with the heating plate. Do not cover the instrument during operation.
- When using an external temperature sensor:
 - The tip of the sensor must be at least 5–10 mm away from the vessel bottom and wall.
 - The sensor must be immersed at least 20 mm into the liquid.
 - When using metal vessels, the sensor must not rest directly on the vessel bottom.
 - An ideal distance of approx. 10 mm from the bottom ensures optimal temperature measurement and heating performance.

2 PURPOSE AND CHARACTERISTICS

This instrument is designed for stirring and heating liquids.

The ceramic surface of the heating plate is highly durable and provides excellent 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 precise display and control of temperature inside the medium, please use the external temperature sensor 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.

Heating operation

When switched on, the instrument automatically displays the last set stirring speed and temperature values.

Set the desired temperature by slowly turning the left control knob. When the heating function is activated, the LED display first shows the set temperature and switches to the current temperature after approximately 5 seconds.

The heating function is switched on and off by pressing the temperature control knob.

The LED display generally does not indicate the actual temperature of the sample inside the vessel or the exact surface temperature of the heating plate. Temperature deviations may occur between:

- the center and the outer edge of the heating plate
- the sample inside the vessel and the surface of the heating plate

To ensure accurate temperature measurement inside the vessel, use an external PT1000 temperature sensor*.

* 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 warning function 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

Place the device on a clear, level, and stable surface.

Verify that the required operating voltage matches your mains supply voltage (200–240 V). The electrical connection must be properly grounded.

Connect the power cable and switch on the device.

Fill a suitable vessel with the desired medium and an appropriate stirring bar. Place the vessel on the heating plate of the magnetic stirrer.

Set the desired stirring speed and start the stirring function. Increase the speed gradually. If liquid splashes out of the vessel, reduce the speed accordingly. Observe the stirring bar and the LED display during operation.

Then set the desired temperature and start the heating function. Monitor the LED display.

The temperature of the heating plate must always be at least 25 °C below the flash point of the liquid used. Exercise particular caution when working with liquids that have a low flash point or low boiling point.

To stop operation, press the control knobs again to switch off the heating and stirring functions. After use, switch off the device and disconnect it from the power supply.

5 NOTES ON OPERATION

In the near field of strong high-frequency transmitters, e.g. radio equipment, the operating behaviour may deviate from the specified technical data.

The magnetic stirrer fulfils the technical requirements compiled in the current European Community directives.

This device may only be operated 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, radio transmitting equipment such as mobile phones must not be used in the immediate vicinity. The individual connected cables must not exceed 2 m in length. Electrostatic discharges or similar electromagnetic phenomena (HF fields, burst interference, indirect lightning discharges, etc.) may influence the device so that it no longer operates within the specified parameters.

The following measures reduce or eliminate such interference:

Avoid fitted carpets; ensure potential equalization; conduct experiments on a conductive, grounded surface; use shielding and shielded cables. Do not operate high-frequency transmitters (radio equipment, mobile phones) in the immediate vicinity.

In the event of a total malfunction, perform a restart by briefly disconnecting the device from the power supply.

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 stable place at room temperature.

Troubleshooting

Instrument cannot be powered on:

Check that the power cord is properly connected and that the instrument is supplied with power.

Fault during power-on self-test:

Switch the unit off and on again. If the problem persists, reset the instrument to the factory default settings. If proper operation still cannot be achieved, please contact customer service.

Stirring speed does not reach the set value:

Check the viscosity of the medium; excessive viscosity may cause reduced stirring speed.

Unit does not power down when switched off:

Check whether the residual heat warning is still active and whether the heating plate temperature is above 50 °C. In this case, the LED display will flash "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 °C increments)
Safety temperature	320 °C
External temperature sensor*	PT 1000
Control accuracy with PT 1000	2 °C
Protection art	IP21
Protection class	I
Weight	1.5 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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