Magnetic Stirrer, Hot Plate

Thermostat

CH2093-001 PTFE Coated Plate

Specifications:

- Plate size: 200x180mm.
  Material: High temperature aluminium alloy.
- Front Panel Controls: Mains ON/OFF Switch. (illuminated). Control knob for heat and for stirrer speed.
- Power: 220/240V.AC. 50/60 Hz. 3 Amp approx. Element 650 watt.
- Cooling: Ventilated Housing and heat baffles mounted to the underside of hot plate. Convection cooling inside housing.
- Thermostat" model: 320^{o}C as the maximum position on thermostat control knob.

Caution When Using The Equipment:

- Avoid touching the hot surface. Serious burns can result.
- Avoid spillage of corrosive materials on the plate surface.
- Never store the equipment unless the plate is cool.
- Never allow the electrical cord to touch the hot plate when the unit is on.
- Never drop the unit.
- If spillage occurs, remove power and clean with a wet sponge.
- Never carry the unit with a vessel of fluid placed on the plate.
- Never use insulation materials on the plate under the vessel being heated. In the case of Simmerstat controlled units, over heating and damage to the plate may result.

Note for Safety Testers:

The hot plate element is the 'tubular sheathed type'.
The insulation resistance of a sheathed element must exceed 10,000 ohms to earth.
Refer AS/NZS 3000:2000 Para 1.11.2.3

Length: 180mm	Width: 200mm	Height: 125mm	Weight: 2.4kg

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Hotplate Stirrer:

- Incorporates a speed controlled motor driving a rotating magnet under the hot plate to provide rotating field for stirring fluids by a magnetic "spin bar" immersed in the fluid. It is designed to heat and stir a fluid simultaneously.
- Motor: Brushless AC. motor with ball bearings for maintenance free and reliable operation. Speed control is electronic type providing a slow minimum speed for titration work and excellent high speed for very strong mixing and stirring. High magnet strength permits the stirring of high viscosity fluids.

Use Of Equipment.

Ensure there is no residual packaging materials between the heat baffles that may be jamming the rotating magnet under the plate. Plug into 220/240V.AC. 50/60 Hz. Power outlet. Turn on main switch. Switch actuator should illuminate to indicate 'Power On'.

Rotate the Simmerstat or Thermostat control knob clockwise. The plate should then be heating. For max. heating rate, select 'FULL' or highest temperature on the control knob.

For magnetic stirrer models, turn the speed control knob and check for rotation of magnet as viewed under the hot plate between the heat baffles. Check for smooth and vibration-free operation of rotating magnet from minimum to maximum speed.

Why Am I Having Trouble Boiling Water On A Hot Plate ?:

IEC Hot Plates are available with either ‘Simmerstat’ or ‘Thermostat’ temperature control. It is sometimes confusing as to which style should be chosen. This sheet is to try to explain the difference and to make the choice more correct.

Information on ‘Simmerstat’ and ‘Thermostat’ Models:

A ‘Thermostat’ control cycles the heating element to hold a specific temperature up to 320^{o}C and only enough heat is fed to the plate to maintain this set temperature.

This type of plate control is excellent for lower temperature work or for melting solids at specific temperatures. It is not ideal for boiling water or other applications where maximum heating effort and highest plate temperature is required.

A ‘Simmerstat’ control (or energy regulator) adjusts the heat from zero to maximum on a scale of 0 to 10. When set to ‘5’, the heater is on for 50% of the time and off for 50% of the time. When set to ‘10’, the heater is on 100% of the time and it reaches its maximum temperature of around 450^{o}C.

This temperature is much higher than can be obtained with the Thermostat control and, for bringing water to the boil in a vessel (beaker or similar), the plate needs to achieve the highest temperature, as explained below.

Explanation:

When a beaker of liquid is heated on a hot plate, several things should be considered:

1) Most of the available heating energy is lost from the plate area that is not covered by the beaker.
2) The beaker normally has a small air space that is captive between the hot plate and the glass of the beaker and heat must pass through both this insulating pocket and the glass before it can heat the liquid.
3) As water is approaching a boil, steam is produced which cools the surface of the water. This loss of heat must be made up by further heat from the plate.
4) As water approaches a boil, there is considerable heat loss also from the walls of the beaker to the surrounding atmosphere.

In summary, the ‘Simmerstat’ control permits the maximum power of the hot plate to be used and provides a higher plate temperature. It is the better choice for general laboratory applications and particularly for bringing fluids to a simmer or a boil.

Designed and manufactured in Australia