

HOTPLATES & HOTPLATE / STIRRERS

HOTPLATES:

Simmerstat control, plain plate: CH1920-001 with PTFE coated plate: CH1921-001

Thermostat control, plain plate: CH1922-001 with PTFE coated plate: CH1923-001

CH1920-001 (Simmerstat)

CH1922-001 (Thermostat)



PTFE coated plates are available for each model. The general appearance is the same except the top plate colour is a dark char grey

CH1920-001 or CH1922-001 200x180x125mm LxWxH Weight: 2.4kg

SPECIFICATIONS:

- Plate size: 200x180mm. Material: High temperature aluminium alloy.
- Front Panel Controls: Mains ON/OFF Switch. (illuminated). Control knob for heat.
- Cooling: Ventilated Housing and heat baffles mounted to the underside of hot plate. Convection cooling inside housing.
- Power: 220/240V.AC. 50/60 Hz. 3 Amp approx. Element 650 watt.
- “Simmerstat” model: Maximum plate surface temperature 420°C. with small load and with heat control on 'FULL'. Heat adjustable from 0-10 on scale.
- “Thermostat” model: 320°C as the maximum position on thermostat control knob.

NOTE: Because the Thermostat model is limited for maximum temperature, it is not suitable for boiling large volumes of water.

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

**HOTPLATE / MAGNETIC STIRRER COMBINATION:**

Simmerstat control, plain plate: CH2090-001 with PTFE coated plate: CH2091-001

Thermostat control, plain plate: CH2092-001 with PTFE coated plate: CH2093-001

CH2090-001 (Simmerstat)**CH2092-001 (Thermostat)**

PTFE coated plates are available for each model. The general appearance is the same except the top plate colour is a dark char grey

CH2090-001 or CH2092-001 200x180x125mm LxWxH Weight: 3.3kg**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.
- Stirring speed: Variable from approx. 150 to 1200 RPM.
- Cooling: Ventilated Housing and heat baffles mounted to the underside of hot plate. Convection cooling inside housing.
- Power: 220/240V.AC. 50/60 Hz. 3 Amp approx. Element 650 watt.
- “Simmerstat” model: Maximum plate surface temperature 420°C. with small load and with heat control on 'FULL'. Heat adjustable from 0-10 on scale.
- “Thermostat” model: 320°C as the maximum position on thermostat control knob.

NOTE: Because the Thermostat model is limited for maximum temperature, it is not suitable for boiling large volumes of water.

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

**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.

HEAT CONTROL METHODS: Because the Thermostat control limits max. plate temp. to 320°C, this type may not transfer sufficient heat into the vessel to bring larger volumes of water to boiling point. The maximum temperature of a Simmerstat model on 'full' is about 450°C and the thermal transfer into a vessel of water is much higher.

Simmerstat: Heating is controlled by the cycling of the heating element relative to time. As the heat control knob is rotated from 'OFF' to 'FULL', the element heating is cycled from 10% ON / 90% OFF progressively up to 100% ON time. The plate temperature stabilises depending on heat used by the load and the heat supplied by the element.

Thermostat: Heating is cycled ON/OFF to maintain a preset plate surface temperature. Maximum temperature setting is 320°C.

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.

CAUTION WHEN USING THE EQUIPMENT.

- Avoid touching the hot surface. Serious burns can result.
- Avoid spillage of corrosive materials on the hot plate's surface.
- If spillage occurs, clean with a wet sponge **WHEN PLATE IS COOL.**
- 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. Damage to the motor may result.
- 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.

Designed and manufactured in Australia



HOTPLATES & HOTPLATE / STIRRERS

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°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°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.