

**INSTRUCTIONAL MANUAL  
CAT. Series #72348, #72349, #72350**

**Corning® Hot Plate/Stirrer Model PC-220  
Corning® Digital Stirring Hot Plate  
Models PC-420D & PC-620D**



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## Symbols Used on Corning® Instruments



**Hot Top** – Cautions that unit top plate is too hot too touch (<60°C/140°F)



**Heat** – Denotes Heat Knob



**Power** – Denotes unit is plugged into power supply



**Stir** – Denotes Stir Knob

Please read and understand this entire manual before using the Corning® hot plate, stirrer, stirrer/hot plate, or external temperature controller to ensure proper operation and optimum performance.

## Features

The Corning™ name has been a laboratory standard for many years. Our products are meticulously engineered and rigorously tested with innovation, precision manufacturing, customer satisfaction and safety in mind. Some of the features our stir plates offer are as follows:

### **All three Series (PC 200, 400, and the 600) feature:**

- Exclusive Microprocessor design ensures faster and even heating
- Exclusive closed-loop stirring monitors and regulated stirring speed
- Exclusive external 'spill trough' deflects spills away from electronic and control knobs
- A Pyroceram® top that is easy to clean; highly resistant to scratches, corrosion, and chemical attack; flatter for quicker, more uniform heating; whiter for better contrast during applications requiring color change monitoring
- Superior component designs and enclosed control electronics protect temperature and stirring control circuits from harsh environments
- Extra large knobs with easy-to-read numbers provide better control
- Rigorous testing standards for EMI (Electro Magnetic Interference) and regulatory approvals
- Corning hotware meets:
  - UL (USA)
  - CUL (Canada and Mexico)
  - IEC1010 and CE (Europe)
  - GS (Germany)
  - ... and FCC regulations, where appropriate

### **The 400 and the 600 Series have added features of:**

- External Temperature Controller socket is provided on the 400 and 600 series Closed-loop heating and stirring controls that monitor and regulate both temperature and stirring speed.
- Microprocessor maintains consistent and repeatable temperature setting from 25°C (if ambient temperature is 0°C or lower) up to 550°C.
- Digital LED temperature display is adjustable in 5°C increments and blinks until temperature is reached.
- Optional external temperature controller truly controls temperature inside the vessel and eliminates the need to closely monitor liquid temperature.
- Exclusive closed-loop stirring control monitors and regulates the stirring speed from 60 -1150 RPM for aqueous, viscous, or semi-solids solutions.
- Digital LED speed display gives you better control of your stirring process.
- Stronger, larger magnet improves stir bar coupling combined with automatic up speed adjustment minimizes decoupling.

## Warnings

Corning hot plates, stirrers, and stirrer/hot plates are NOT designed for industrial use. They are designed to provide safe functioning in laboratory settings only, by persons knowledgeable in good laboratory practices (GPL).

- Always wear safety goggles along with any other safety wear suited for the type of protocol being performed.
- These units are not explosion- or spark-proof.
- DO NOT heat or stir flammable or volatile materials.
- DO NOT use near flammable or volatile materials.
- DO NOT immerse instrument for cleaning it.
- The Pyroceram® top plate may break if impacted. It must be kept clean. Use only a non-abrasive cleanser on it. Any spill on it may damage it and lead to thermal failure. **NOTE:** Should a spill occur, immediately unplug the unit and clean off spill.
- DO NOT use if the top plate has been damaged (etched, chipped, scratched, etc.). Replace top plate and element assembly immediately.
- DO NOT place anything heavier than 25 lb/11 kg on top surface.
- DO NOT use a ring stand to support unit on a lattice or to support heavy loads.
- DO NOT use unit with a metal vessel, foil or thick, glass-walled vessels
- Keep the product dry and clean.
- DO NOT modify the unit electrically or mechanically – personal injury and/or product damage may occur.
- DO NOT modify/substitute the earthed power plug that come with the unit.
- Use only power cords supplied by the manufacturer.
- Use only properly grounded outlet in order to avoid shock hazard.
- DO NOT turn Heat Knob or Stir Knob counterclockwise from the “0”/OFF position.
- Use equipment only as specified in the Operating Conditions as listed below.

## Operating Conditions


Corning hot plates, stirrers, and stirrer/hot plates are designed to provide safe functioning under these conditions:

- Indoor, laboratory use only.
- Ambient temperatures of 0°C to 30°C (32°F to 104°F).
- Altitude up to 6,500 feet (2,000 meters).
- Unit needs to be on a flat surface at least 12 in. (30.5 cm) from walls, 48 in. (122 cm) from ceilings, and 12 in. (30.5 cm) from other hot plates, if using multiple units.
- Maximum relative humidity of 80% for temperatures up to 31°C, decreasing linearly to 50% relative humidity at 40°C.
- *Pollution Degree 2:* Normally only non-conductive pollution occurs. Temporary conductivity caused by condensation is to be expected.
- *Installation Category II:* Product is designed for connection to an electrical branch circuit inside a building with main supply voltage fluctuations not exceeding  $\pm 10\%$  of the nominal voltage.



## Heating – Operation and Controls

**NOTE:** DO NOT turn Heat Knob counterclockwise from the “0”/OFF position.

### Features

- State-of-the-art microprocessor makes sample heat-up time shorter by supplying maximum power to the heating element until set point is reached.
- Well insulated, which saves money and also keeps the heat on the top, away from controls and the lab bench.
- Hot Top Indicator light  warns when the top is too hot to touch (>140°F/60°C).
- Temperature sensor limits top plate temperature to 1022°F / 550°C, providing power cutoff in abnormal situations.
- *Optional* temperature controller (see Accessories Table at end of manual) features a digital display, automatic shut off, stainless steel probe, flashing heat light and tilt indicator. Hot Plates and Stirrer/Hot Plates (PC-400 and PC-600 Series Only) include a socket for an optional temperature controller for ability to control samples between 77°F and 390°F (25°C and 199°C) to an accuracy of ±4°F (±2°C).

### Directions

1. Fill vessel with solution.
2. Place provided stir into vessels.
3. Set vessel in the center of the top plate.
4. Plug line cord into grounded power outlet (Green power light  will light up.)
5. Turn Heat Knob clockwise to desired setting. **NOTES:** Amber heat light (To left of knob) will light up and Hot Top indicator light  will light up and stay on when temperature of the top plate reaches approximately 140°F/60°C. When heat is turned off, hot top indicator light will blink until top plate is less than 140°F/60°C.

### DIAL SETTINGS

**NOTE:** These temperatures listed are typical under full top load condition. Actual temperature will vary depending on dial setting, top load and voltage.

Setting	Approximate Temperature	
	°F	°C
0	OFF	OFF
1-2	77°	25°
3	194°	90°
4	338°	170°
5	446°	230°
6	572°	300°
7	770°	410°
8	860°	460°
9-10	896°	480°



## Stirring – Operation and Controls

**NOTE:** DO NOT turn Stir Knob counterclockwise from the “0”/OFF position.

### Features

- Stir aqueous, viscous or semi-solid solutions with confidence, as the exclusive closed-loop stirring controller monitors and regulates the stirring speed.
- Decoupling is minimized since the stirring controller also provides a “cushioning” reaction to large speed increases.

### Directions

1. Fill vessel with solution.
2. Place provided stir into vessels.
3. Set vessel in the center of the top plate.
4. Plug line cord into grounded power outlet (Green power light  will light up.)
5. Turn Stir Knob  clockwise to desired setting. **NOTE:** Amber stir light (to left of knob) will light up.

### DIAL SETTINGS

Revolutions per minute (RPM) are typical and were taken with a top load of 400 ml of water in a 600 ml PYREX® beaker at room temperature. Actual speeds will vary depending on dial setting, top load and voltage.

Dial Setting	RPMS
0	OFF
1-2	60
3	100
4	155
5	250
6	380
7	550
8	870
9-10	1100

## Preventive Maintenance

To keep your Hot Plate/Stirrer in working condition, be sure to check it frequently for any signs of etching, scratching or chipping on the top plate. If any of these signs are present, the top plate and the element must be replaced right away. Also, check for any wear or damage to the power cord. Replace if any is present.

Before attempting any preventative maintenance, be sure to unplug unit from power source.

To help prevent malfunction of unit:

Always use a grounded power outlet.

ALWAYS unplug unit from power source before attempting any of the following:

Keep the top plate clean. The Pyroceram® can be cleaned with a non-abrasive cleaner.

Clean spills promptly.

DO NOT immerse unit to clean it.

ALWAYS keep plug closure in socket when not using optional temperature controller.

Have a qualified service person replace a damaged top immediately, using a complete top plate and element assembly.

Corning® Digital Stirring Hot Plates							
EMS #	Model #	Power*	Plate Size	Dimensions H x W x D in/cm	Temp Range °C	Stirring RPM	Weight lb/kg
72348-10	PC-220	120V/60Hz/283W/2.4A	4" x 5"	4.4" x 5.8" x 7.3" 11.2x14.7x18.5 cm	25-550°C	60-1100	5.0/2.3
72348-20	PC-220	230V/50Hz/288W/1.3A					
72350	PC-420D	120V/60Hz/698W/5.9A	5" x 7"	10.9" x 7.8" x 4.4" 27.7x19.8x11.2 cm	25-550°C	60-1150	7.0/3.2
72350-20	PC-420D	230V/50Hz/698W/3.1A					
72349-10	PC-620D	120V/60Hz/1113W/9.3A	10" x 10"	15.8" x 10.6" x 4.8" 40.1x26.9x12.2cm			11.5/5.2
72349-20	PC-620D	230V/60Hz/1113W/4.9A					

\*NOTES: 230 volt Units come with UK plug. Continental European and Italian plugs are available upon request.

Accessories		
EMS #	Description	Use with Models
72351-21	Temperature Controller	PC-400/420/600/620
72351-22	Temperature Controller for digital display hot plates & stirring hot plates	PC-400D, PC-420D, PC-600D, PC-620D
72351-30	Probe Support Clamp for #72351-21 & 72351-22	All Corning® Hot Plates and Stirring Hot Plates that have temperature probes
72351-25	Two 9" support rods that screw together	PC-400/410/420, PC-400D-410D/420D, PC-600D/610D/620D
72351-50	Universal Accessory Kit	PC-400D, PC-420D, PC-600D, PC-620D
72351-12	Support Rod 5/16" x 12"L	PC-200/210/220
72351-18	Support Rod 5/16" x 18"L	PC-400/410/4/305
72351-24	Support Rod 5/16" x 24"L	PC-600/610/620/505

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For any questions or for ordering information,  
please contact Customer Service at

**1-800-523-5874**

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