CORNING
Discovering Beyond Imagination

Life
Sciences

Instruction Manual

For All Hot Plates, Stirrers, and Stirrer/Hot Plates with Digital Displays and for the 6795PR Temperature Controller

Model Number	Product Type	Top Plate Size	Catalog Number			
			120 Volt	100 Volt	230 Volt (Non-Europe)	230 Volt (Europe)
PC-400D	Hot Plate	5" x 7" (12.7 x 17.8 cm)	6795-400D	6797-400D	6798-400D	6796-400D
PC-410D	Stirrer	5" x 7" (12.7 x 17.8 cm)	6795-410D	6797-410D	6798-410D	6796-410D
PC-420D	Stirrer/ Hot Plate	5" x 7" (12.7 x 17.8 cm)	6795-420D	6797-420D	6798-420D	6796-420D
PC-600D	Hot Plate	10" x 10" (25.4 x 25.4 cm)	6795-600D	6797-600D	6798-600D	6796-600D
PC-610D	Stirrer	10" x 10" (25.4 x 25.4 cm)	6795-610D	6797-610D	6798-610D	6796-610D
PC-620D	Stirrer/ Hot Plate	10" x 10" (25.4 x 25.4 cm)	6795-620D	6797-620D	6798-620D	6796-620D
6795PR	Temperature Controller	All	6795PR			

LAB Online Exhibition

Operation Manual

knowledge

operating video

www.1788lab.com E-mail:info@1788lab.com

About This Manual

This manual is designed to assist you in optimal usage of your new hot plate, stirrer, stirrer/hot plate or temperature controller. The manual is available in English, French, German, Japanese, Korean, Mandarin Chinese and Spanish in the product literature section of Corning's website http://www.corning.com/lifesciences.

Product Voltages

Hot plates, stirrers, and stirrer/hot plates are available in different voltages. Before initial use, check that the unit you received is the correct voltage for your location.

Warranty Registration

Filling out and mailing the attached Warranty Registration Card or submitting this information online at http://www.corning.com/lifesciences/warranty will validate the hot plate, stirrer or stirrer/hot plate's two year warranty.

Mode d'emploi

Ce mode d'emploi a pour but de vous aidez à utiliser votre nouvelle plaque chauffante, agitateur, agitateur chauffant ou contrôleur de température, de manière optimale. Il est disponible en français, anglais, allemand, espagnol, japonais et chinois. Vous pouvez également le consulter et le télécharger sur notre site dans la section «product literature». http://www.corning.com/lifesciences

Voltage des appareils

Les plaques chauffantes, agitateurs et agitateurs chauffants sont disponibles en différents voltages. Vérifiez avant la première utilisation que l'appareil fourni possède le voltage adéquat.

Garantie

Remplissez et envoyez la carte de garantie incluse ou remplissez ces renseignements en ligne sur notre site http://www.corning.com/lifesciences/warranty.

Votre garantie de deux ans sera alors activée.

Zu dieser Gebrauchsanleitung

Diese Gebrauchsanleitung wurde erstellt, um Ihnen dabei zu helfen, Ihre neu erworbenen Geräte wie Heizplatte, Rührer, Rührer/Heizplatte oder Temperaturregler optimal zu gebrauchen. Diese Gebrauchsanleitung ist in Englisch, Französisch, Deutsch, Japanisch, Koreanisch, Mandarin Chinesisch und Spanisch sowie im Abschnitt zur Produktliteratur der Corning Internetseite unter http://www.corning.com/lifesciences erhältlich.

Produkt Netzspannungen

Heizplatten, Rührer und Rührer/Heizplatten sind für verschiedene Netzspannungen erhältlich. Kontrollieren Sie bitte vor dem ersten Gebrauch, ob das Gerät, das Sie erhalten haben, über die korrekte Netzspannung für Ihren Standort verfügt.

Garantie-Registrierung

Das Ausfüllen und Zusenden der beigefügten Karte für Garantie-Registrierung oder das Einreichen dieser Information online unter http://www.corning.com/lifesciences/warranty bestätigt die zwei Jahre Garantie für Heizplatte, Rührer oder Rührer/Heizplatte.

本マニュアルについて

このマニュアルは、ご購入いただいたホットプレート、スターラー、ホットプレートスターラー、または温度コントローラーを最適な方法でご使用いただくために作成されたものです。英語、フランス語、ドイツ語、日本語、韓国語、標準中国語、または欧スペイン語のマニュアルが用意されており、Corning ウェブサイトの製品情報ページ http://www.corning.com/lifesciences から参照いただけます。

製品の電源電圧
ホットプレート、スターラー、ホットプレートスターラーには、さまざまな電源電圧仕様があります。使用を開始される前に、納入された装置の電源電圧が使用場所の電源に適合していることをご確認ください。

保証登録
同梱されている保証登録カードに記入して郵送いただくか、登録カードの情報を http://www.corning.com/lifesciences/warranty からオンラインで登録いただくことにより、ホットプレート、スターラー、ホットプレートスターラーの２年間

사용 설명서에 관하여

본 사용설명서는 새로운 Hot plate, stirrer, stirrer/hot plate, 온도 조절 장치를 사용자가 잘 사용할 수 있도록 작성되었습니다.
본 사용설명서는 영어, 프랑스어, 독일어, 일본어, 한국어, 중국어, 스페인어로 제작되어 있으며, 저널 웹사이트의 Product literature 부분에서도 찾아 보실 수 있습니다. http://www.corning.com/lifesciences

제품 전압
Hot plates, stirrers, stirrer/hot plates 는 사용전압이 제품에 따라 다릅니다. 사용하시기 전 반드시 제품의 사용전압이 정확한지 확인하여 주십시오.

품질보증서 등록
첨부된 품질보증서 카드를 작성해 주시거나 웹 상에서 정보를 제공해 주시면 2년 품질보증기간이 보장됩니다. http://www.corning.com/lifesciences/warranty

关于这个说明书

这个说明书是为帮助您使用加热仪、搅拌器、加热仪/搅拌器或者温度控制器而设计的。在康宁网站产品资料部分http://www.corning.com/lifesciences提供本说明书提供英文、法文、德文、日文、韩文、中文与西班牙文版本。

产品电压
我们提供不同电压的加热仪、搅拌器与加热仪/搅拌器，在开始使用前，请检查您收到的产品是否与您所在区域的电压一致。

保修登记
请填写并邮寄附件中的保修登记卡或在线http://www.corning.com/lifesciences/warranty提交信息可以生效加热仪、搅拌器与加热仪/搅拌器的两年保修

Acerca de este Manual

Este manual está diseñado para ayudarlo a optimizar el uso desu nueva parrilla de calentamiento, agitador, parrilla de calentamiento/agitador ó contolador de temperatura. El manual está disponible en Inglés, Francés, Alemán, Japonés, Coreano, Mandarín Chino y Español y en la sección de literatura de productos de la página Web de Corning http://www.corning.com/lifesciences.

Voltaje de los productos

Parrillas de calentamiento, agitadores, parrillas de calentamiento/agitador están disponibles en diferentes voltajes. Antes de usarla, revise que la unidad recibida tiene el voltaje correcto para su locación.

Registro de garantía

Llene y envie por correo la tarjeta de registroo envie esta information a través de nuestra página web http://www.corning.com/lifesciences/warranty para validar por dos años la garantía de Parrillas de calentamiento, agitadores, parrillas de calentamiento/agitador.

Table of Contents

Safety Information

The Corning product you purchased has undergone rigorous electrical, design and safety testing. For optimal performance, usage should be in accordance with the following operating conditions and safety precautions.

Product Symbols

POWER	HOT TOP	
Indicates that unit is plugged in to power supply	Cautions that the top plate is too hot to touch	Indicates that the accessory external temperature controller is properly plugged into the unit

Warnings

Personal Injury

- Do not use this product in a manner other than as stated in the Operating Conditions section of this manual as the protection provided by the equipment may be impaired.
- This product is designed for use in laboratory environments by persons knowledgeable in safe laboratory practices.
- Always wear safety glasses and other appropriate protective equipment when operating this product.

Electrical Shock

- This product must be connected to a grounded power outlet for safe functioning.
- Use only the power cord supplied with the product.
- Position the product for use so that the power cord can be easily disconnected without having to move the product.
- Disconnect the power cord before moving or cleaning the unit.

Product Damage

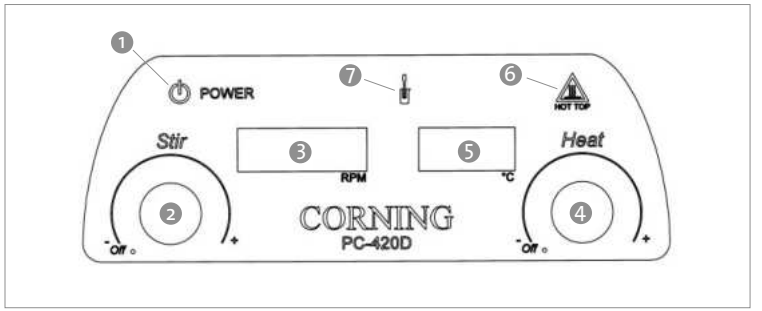
- Keep the product dry and clean.
- Do not immerse the product for cleaning.
- The ceramic top may break if impacted.
- The maximum gross weight placed on the top surface must not exceed 11 kg (25 lbs.).
- These units are not explosion or spark proof.
- Do not heat or stir volatile or flammable materials.
- Do not operate this product near volatile or flammable materials.
- Do not use this product with a metal vessel.

Operating Conditions

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

- Indoor use
- Altitude up to 2000 meters (6,500 feet)
- Ambient temperatures of 0°C to 40°C
- Product should be placed on a flat surface at least 30.5 cm (12") from walls, 122 cm (48") from ceilings, and 30.5 cm (12") 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: Any foreign matter that may accumulate on or within the product during normal use is not electrically conductive.
- Installation Category II: Product is designed for connection to an electrical branch circuit inside a building with main supply voltage fluctuations not exceeding ±10% of the nominal voltage.

Product Controls and Indicators



1 *Power Indicator*: It is illuminated at all times when the product is properly connected to input power.

2 *Stir Control Knob*: Turn it all the way counterclockwise to turn off stirring function. Turn it clockwise to set desired stirring speed.

3 *Stirring Speed Display*: Shows the speed set for stirring

4 *Heat Control Knob*: Turn it all the way counterclockwise to turn off. heating function. Turn it clockwise to set desired heating temperature.

5 *Heating Temperature Display*: It shows the temperature set for heating.

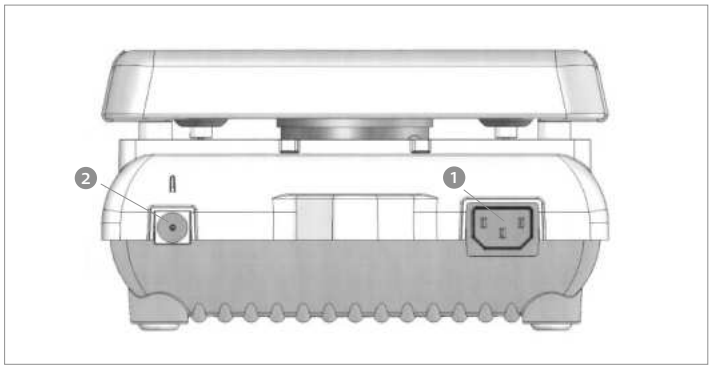
6 *Hot Top Indicator*: It illuminates when the temperature of the top is too hot to touch (greater than ~60°C).

7 *Temperature Probe In Use Indicator*: It illuminates when the external temperature probe is connected to the unit.

Product Connections

1 *Power Cord Input*: Connect the supplied power cord into this connector.

2 *External Temperature Controller Input*: Connect the optional External Temperature Controller (Corning Cat. No. 6795PR) into this connector.



To Connect the External Temperature Controller

1 Turn the Stir Control Knob and Heat Control Knob to the OFF position.

2 Disconnect power cord.

3 Remove cover from the temperature probe input connector. Save for later use (reattaching cover when not using temperature controller will insure that the connector is not damaged).

4 Insert temperature controller connector into the input connector.

5 Reconnect power cord.

6 Product is now ready for use with External Temperature Controller.

Repeat the above process when disconnecting the temperature controller. Reinsert the cover onto the temperature probe input connector when the temperature probe is not in use.

Operation for Stirring

PC-410D, PC-420D, PC-610D, PC-620D

1 Fill vessel with solution to be stirred.

2 Place stir bar into vessel.

3 Place vessel in the center of the top surface.

4 Turn Stir Control Knob until the Stirring Speed Display shows the desired speed.

- Flashing Display: The number will **FLASH** when actual stirring speed is not at set speed.
- Constant Display: The number will not flash when actual stirring speed is at the set speed. The number will remain constantly **ON** when the actual astirring speed is at the set speed.

5 When desired stirring is complete, turn the Stir Control Knob to the **OFF** position. Allow stir bar to cease rotation before removing the vessel from the unit.

6 Heating and stirring can be performed simultaneously with PC-420D and PC-620D models which offer both heating and stirring functions.

Operation for Heating
(without External Temperature Controller)

PC-400D, PC-420D, PC-600D, and PC-620D

1 Fill vessel with solution to be heated.

2 If using a PC-420D or PC-620D and the stirring function, place stir bar into vessel.

3 Place vessel in the center of the top surface.

4 Turn Heat Control Knob until the Heating Temperature Display shows the desired temperature.

- *Flashing Display*: The number shown on the Heating Temperature Display will **FLASH** when actual heating temperature is not at the set temperature.
- *Constant Display*: The number shown on the Heating Temperature Display will remain constantly **ON** when the actual heating temperature is at the set temperature.
- *Hot Top Indicator*: The Hot Top Indicator will be **ON** at all times when the temperature of the top surface is too hot to touch (greater than approximately 60°C).
- The Hot Top Indicator will **FLASH** when the Heat Control Knob is turned **OFF**, but the top surface is still too hot to touch.
- The Hot Top Indicator will be **OFF** when the temperature of the top is less than approximately 60°C.

Caution: The Hot Top Indicator will turn **OFF** when the power cord is disconnected from the product even if the temperature of the top surface is still too hot to touch.

Operation for Heating
(using the External Temperature Controller, Corning Catalog No. 6795PR)

PC-400D, PC-420D, PC-600D, PC-620D, and 6795PR

1 Connect the External Temperature Controller to the connector on the back of the unit.
- Temperature Probe in Use Indicator: This will illuminate when External Temperature Controller is properly connected.

2 Fill vessel with solution to be heated.

3 If using a PC-420D or PC-620D and the stirring function, place stir bar into vessel.

4 Place vessel in the center of the top surface.

5 Insert the tip of the External Temperature Probe into the solution.
- The tip should be located in the center of the vessel and at approximately one-half of the depth of the solution.

6 Secure the position of the External Temperature Controller by using a ring stand/support rod and clamp.
- Assure that the cable of the External Temperature Controller does not come into contact with the heating surface.

7 Turn Heat Control Knob until the Heating Temperature Display shows the desired heating temperature.
- Flashing Display: The number shown on the Heating Temperature Display will **FLASH** when the actual heating temperature is not at the set temperature.
- Constant Display: The number shown on the Heating Temperature Display will remain constanly **ON** when the actual heating temperature is at the set temperature.
- Hot Top Indicator: The Hot Top Indicator will be **ON** at all times when the temperature of the top surface is too hot to touch (greater than ~60°C).
- The Hot Top Indicator will **FLASH** when the Heat Control Knob is turned **OFF** but the top surface is still too hot to touch.
- The Hot Top Indicator will be **OFF** when the temperature of the top is less than ~60°C.

Caution: The Hot Top Indicator will turn **OFF** when the power cord is disconnected from the product even if the temperature of the top surface is still too hot to touch.

Stirring Operation Principles

This product uses an electric motor in a closed loop control process. The motor has a permanent ring magnet assembly mounted to the motor shaft near the top of the product. A speed sensor disk is mounted to the motor shaft near the bottom of the product. Both the ring magnet assembly and the speed sensor disk rotate at the same speed as the motor shaft during operation.

The magnetic stir bar placed into the solution is rotated during operation by attraction to the magnetic field provided by the rotating ring magnet attached to the motor.

The slots on the rotating speed sensor disk pass through a stationary pickup sensor which is on the controlling printed circuit board.

The microprocessor receives feedback from the speed sensor disk and adjusts the amount of voltage sent to the motor so that the rotational speed of the stirring system is within range of the value set on the Stirring Speed Display. When the rotational speed is outside of the range, the set value on the Stirring Speed Display will **FLASH**. When the speed is within the range, the display will be constantly **ON**.

The microprocessor is programmed to manage the stirring process so that the potential of decoupling the stir bar from the magnetic field of the ring magnet is minimized. The viscosity of the stirred material will affect the ability of the stir bar to remain coupled to the rotating ring magnet. Materials of high viscosity must be stirred at slower speed settings.

Heating Operation Principles

This product converts electrical energy into heat using a nickel and chromium alloy resistive heating element and is controlled by a microprocessor using a closed loop process. The heating element and temperature sensor are located just beneath the ceramic top surface. When the temperature measured by this sensor is more than ±2% of the value set on the Heating Temperature Display, the display will **FLASH**. When the temperature is within range, the value displayed will remain constantly **ON**.

The microprocessor is programmed to heat to the desired set temperature in the shortest time feasible while minimizing the possibility of increasing the top temperature beyond the set value.

The closed loop process controls the temperature just below the ceramic top surface. During typical use, there will be differences between the temperature set on the Heating Temperature Display and the actual temperature of the

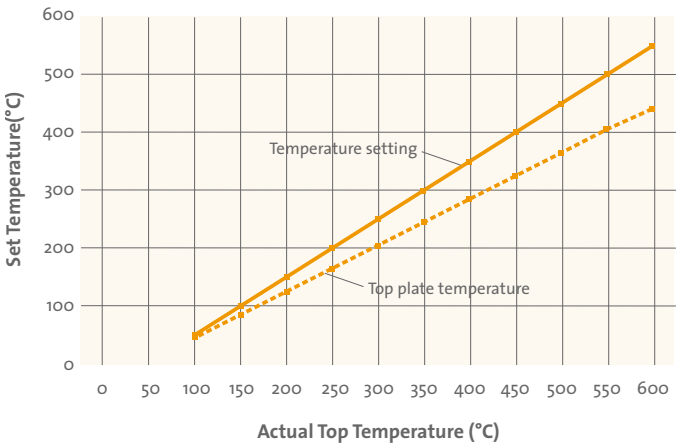
- exterior of the ceramic top,
- vessel, and
- solution in the vessel.

These differences exist due to variations in heat transfer characteristics of materials and exists on all currently available hot plates.

To insure precision temperature accuracy inside the vessel, use the External Temperature Controller, Corning Catalog No. 6795PR.

The chart below shows a typical difference between the temperatures as set on the Heating Temperature Display and the actual measurement of the top surface when the setting is stable and there are no materials placed on the top surface.

Materials placed on top of the heating surface (the load) will affect the actual top temperature relative to the set value. The amount of this effect will depend upon the surface area of the load contact to the heating surface and the overall heat transfer characteristics of the total load.



Heating Operation using the External Temperature Controller (Corning Catalog Number 6795PR)

An External Temperature Controller is available for this product as an accessory item or as part of 3 kits. See page 11 for more details.

The closed loop heating and temperature control process as previously described is also used when the External Temperature Controller is connected to the product. The microprocessor manages electrical power to the heating element to keep the temperature measured by the External Temperature Controller within ±2% of the value set on the Heating Temperature Display. When the temperature measured by the External Temperature Controller is outside of this range, the value on the Heating Temperature Display will **FLASH**. When the temperature is within range, the value displayed will remain constantly **ON**.

When the External Temperature Controller is used and the Heating Temperature Display is constantly **ON,** the temperature of the heated solution will be within range of the setting shown on the Heating Temperature Display.

Caution: The top surface and the vessel used may be at substantially higher temperatures than indicated by the setting on the Heating Temperature Display as the controller regulates the liquid temperature inside the vessel.

Heating Operation Safety Features

The temperature sensor located between the heating element and the top surface is used to determine when the temperature of the top surface is too hot to touch (greater than ~60°C). If an abnormal condition is detected, the product will shut down. If this occurs, unplug the power input cord and contact Corning for additional instructions.

The External Temperature Controller must be placed within the solution to be heated. If it is not placed into the solution, the unit will detect abnormal operating conditions and will shut down. If this occurs:

1. Turn the Heat Control Knob to the **OFF** position.
2. Assure that the External Temperature Controller is properly immersed into the solution to be heated.
3. Turn **ON** the Heat Control Knob and set the Heating Temperature Display to the desired temperature.

The unit should then return to proper functioning. If it does not, contact Corning for additional instructions.

Product Repair

There are no direct user serviceable components inside this series of products. A list of available replacement parts are listed on page 11.

Please contact Corning or a Corning authorized repair facility for repair or maintenance issues.

Product Maintenance

Power

- Disconnect power to the product by unplugging the power cord before performing any maintenance or inspection procedures.
- Inspect the power cord regularly and replace if damaged. Use only replacement power cords available from Corning and Corning authorized product distributors.

Ceramic Top Plate

- These products come with Corning's proprietary Pyroceram® top that is easy to clean and highly resistant to scratches, corrosion, and chemical attack.
- The ceramic top may break during use if not properly maintained.
- Keep the ceramic top clean. A nonabrasive cleaner may be used to clean the ceramic top.
- Inspect the ceramic top for damage during cleaning.
- Discontinue product use if the ceramic top is chipped, etched, or shows excessive scratching. A replacement top can be ordered. See page 11 for details.
- Contact Corning or a Corning authorized repair facility for top replacement.

General

- It is important to keep this product dry and clean.
- Remove minor exterior liquid spills promptly.
- Clean exterior surfaces with a nonabrasive cleaner. Do not reconnect product to power input until all cleaned surfaces have dried.
- If liquid or wet solid material gets inside the product, immediately disconnect power to the product and discontinue use. Contact Corning for additional instructions regarding interior spills.

Replacement Parts

Corning Catalog No.	Description	Usage
411007	Power Cord	PC-400D/410D/420D, 120V
410956	Power Cord	PC-600D/610D/620D, 120V
411021	Power Cord	PC-400D/410D/420D and PC-600D/610D/620D, 100V
410942	Power Cord	PC-400D/410D/420D and PC-600D/610D/620D, 230V (UK plug)
440124	Power Cord	PC-400D/410D/420D and PC-600D/610D/620D, 230V (Euro Plug)
410948	Temperature Connector Cover	All models
Contact Corning customer service for part number	Ceramic top plate/ element assembly, 5" x 7"	PC-400D/410D/420D, All Voltages
Contact Corning customer service for part number	Ceramic top plate/ element assembly, 10" x 10"	PC-600D/610D/620D, All Voltages
Contact Corning customer service for part number	PC Control Board	
440135	Control Knob	All models

Optional Accessories

Corning Catalog No.	Description
440129	PC-400D/410D/420D and PC-600D/610D/620D support rods (Two 9" [22.86 cm] rods)
6795-420KIT	6795-420D (5" x 7" [12.7 x 17.8 cm] stirrer/hot plate) Kit[1]
6795-620KIT	6795-620D (10" x 10" [25.4 x 25.4 cm] stirrer/hot plate) Kit[1]
6795KIT	Universal Accessories Kit includes temperature controller, stir bar retriever, heating & stirring guide, two 9" [22.86 cm] support rods (all voltages, all sizes)
6795PR	External Temperature Controller for Digital Display Hotplate and Hotplate/Stirrer[2]
6970SR	Stir Bar Retriever
400430	Teflon® coated magnetic stir bar, 1 x 5.1 cm (.39" x 2") (recommended size for PC-600D series)
401435	Teflon® coated magnetic stir bar, 1 x 2.5 cm (.39" x 1") (recommended size for PC-400D series)
409830	0.8 x 45.7 cm (0.3" x 18") Ring Stand Rod (PC-400D/410D/420D series)

[1] Kits include a 120V stirrer hot plate, 6795PR temperature controller, two 9" support rods (can be screwed together), 6970SR stir bar retriever, instruction manual, Heating and Stirring Guide, and a stir bar.
[2] Requires use of ring stand or support rod. Order correct rod listed above for your model. Use standard laboratory clamps to secure Temperature Probe to ring stand or support rod.

Technical Specifications

Model	Type	Power (Volts/Hz/Watts/Amp) 120V (6795 models)	100V (6797 models)	230V (6796 models)	230V (6798 models)[2]	Temp. Range[1]	Stir Range (RPM)	Weight
PC-400D	Hot Plate	120V/60Hz/ 628W/5.3A	100V/60Hz/ 548W/5.5A	230V/50Hz/ 628W/2.7A	230V/50Hz/ 628W/2.7A	5°-550°C (41°-1022°F)		2.7kg (6.0 lbs.)
PC-600D	Hot Plate	120V/60Hz/ 1043W/8.7A	100V/60Hz/ 1043W/10.5A	230V/50Hz/ 1043W/4.5A	230V/50Hz/ 1043W/4.5A	5°-550°C (41°-1022°F)		4.5kg (10.0 lbs.)
PC-410D	Stirrer	120V/60Hz/ 73W/0.7A	100V/60Hz/ 78W/0.8A	230V/50Hz/ 73W/0.3A	230V/50Hz/ 73W/0.3A		60-1150	2.9kg (6.5 lbs.)
PC-610D	Stirrer	120V/60Hz/ 73W/0.7A	100V/60Hz/ 78W/0.8A	230V/50Hz/ 73W/0.3A	230V/50Hz/ 73W/0.3A		60-1150	4.5kg (10.0 lbs.)
PC-420D	Stirrer/ Hot Plate	120V/60Hz/ 698W/5.9A	100V/60Hz/ 623W/6.3A	230V/50Hz/ 698W/3.0A	230V/50Hz/ 698W/3.0A	5°-550°C (41°-1022°F)	60-1150	3.2kg (7.0 lbs.)
PC-620D	Stirrer/ Hot Plate	120V/60Hz/ 1113W/9.3A	100V/60Hz/ 1113W/11.2A	230V/50Hz/ 1113W/4.8A	230V/50Hz/ 1113W/4.8A	5°-550°C (41°-1022°F)	60-1150	5.2kg (11.5 lbs.)

[1] The Temperature Range using the External Temperature Controller is 5°-200°C (41°-392°F).
[2] Catalog numbers beginning with 6798 in 230V are non European configuration models.

Product Size and Dimensions

Models	Top Plate Size Inches (Millimeters)	Product Dimensions Inches (Millimeters)
PC-400D/410D/420D	5" x 7" (12.7 x 17.8 cm)	4.25 x 7.75 x 11" (10.8 x 19.7 x 28 cm)
PC-600D/610D/620D	10" x 10" (25.4 x 25.4 cm)	4.625 x 11 x 15.375" (11.75 x 19.7 x 39.05 cm)

Frequently Asked Questions

I have a beaker of water on my hot plate and set the temperature for 550°C. Why does the display setting blink and not remain constant?

The display will blink at any time when the temperature sensor is not within range of the set temperature value. The temperature measured by the sensor is a composite of the temperature of the heating element located beneath the sensor, the ceramic top above the sensor, and the very small air space around the sensor. Water requires a substantial amount of heat in order to boil yet remains at a constant temperature of 100°C for the duration of the boiling process. Although the heating element is producing maximum heat at the 550°C setting, the water consumes this heat so quickly during the boiling process that the heat is unable to raise the temperature measured by the sensor to within range of the 550°C set value.

How long does it take to bring a beaker of water to boil?

Using a 600 mL PYREX® beaker with 400 mL of water at 25°C, it takes approximately 15 minutes to bring the water to a full, rolling boil.

Can I use a metal tray on top of my Corning® hot plate?

No. The metal will act as a heat sink, and have a high probability of creating an abnormal heating condition. If an abnormal condition is detected, the product will shut down. A metal vessel will also scratch the ceramic top plate.

The stir bar keeps decoupling. Why and what can I do to stop this?

These units are programmed to minimize decoupling. However, liquid viscosity, stir bar magnetic strength, vessel used, and speed changes can cause decoupling. High viscosity liquids must be stirred at slower speed settings. The magnetic strength of stir bars can weaken over time and may need to be replaced. Vessels used need to have thin, flat bottoms to insure optimal performance. Rapid decreases in stir speed can cause decoupling as the magnet slows down quicker than the stir bar and the liquid.

What size stir bar should I use?

Corning supplies a stir bar with each stirrer or stirrer/hot plate. The size and style of these stir bars is selected to give optimal performance.

What size vessel should I use?

Vessels used on the top of a hot plate must not be larger than the top plate.

- **Corning sells replacement parts. Can I do the repairs myself instead of sending it in to Corning's equipment repair department?**

  When repairs are completed by Corning or a Corning authorized repair facility, the performance and safety of the product will be verified before being returned to you. We do sell replacement parts so customers can complete repairs themselves. It is recommended that only people knowledgeable in electronics complete those repairs. There is no warranty or return on equipment replacement parts.

- **I only need one of the circuit boards. Can I buy just the one I need?**

  No. The circuit boards are sold as a complete set, Control PC Board Set.

- **Can I buy just a replacement top?**

  No. The top is sold as a top plate/element assembly for the hot plates and stirring hot plates, and a stirrer top plate assembly for stirrers.

- **Can I buy a replacement potentiometer?**

  No. The potentiometer is an integral part of the Control PC Board Set.

- **Can you send me the schematics for the equipment?**

  No. We do not provide equipment schematics to customers, only to authorized repair facilities.

Warranty Statement

Corning Incorporated warrants this product to be free from defects in material and workmanship when used under normal laboratory conditions for two (2) years. This warranty begins from the date of the purchase by the end user.

This warranty is made in lieu of all other warranties expressed or implied including the warranties of merchantability and fitness for a particular purpose. Corning shall not be liable for loss or damages arising from the use of these products nor for consequential damages of any kind.

In the event this product fails under normal laboratory conditions with the specified period of time because of a defect in material or workmanship, Corning will, at its option, repair or replace the product.

Contact the Corning Technical Information Center for return authorization and shipping instructions at:

- 1.800.492.1110 (for toll-free calling within the U.S. and Canada)
- 1.978.635.2200 (outside the U.S.), or
- contact your local Corning support office listed on the back cover of this manual.

Warranty Registration

Your purchase of this product must be registered with Corning in order for your warranty to be in effect.

Register by mail by detaching the Warranty Registration card from this instruction manual and mailing the completed card.

Or you can register online at **http://www.corning.com/lifesciences/warranty**.

Your Purchase Record

Corning recommends that you record the details of your purchase in the spaces below for your future reference.

Model Number _____

Serial Number _____

Date Purchased/Received for use _____

Purchased From _____

Purchase Reference Number _____

Please register your warranty online at
http://www.corning.com/lifesciences/warranty

Corning Incorporated
Life Sciences

45 Nagog Park
Acton, MA 01720
t 800.492.1110
t 978.635.2200
f 978.635.2476

www.corning.com/
lifesciences

Worldwide Support Offices

ASIA/PACIFIC

Australia
t 61 2-9416-0492
f 61 2-9416-0493

China
t 86 21-6361-0826
f 86 21-6361-0827

Hong Kong
t 852-2807-2723
f 852-2807-2152

India
t 91-124-235-7850
f 91-124-401-0207

Japan
t 81 (0) 3-3586 1996/1997
f 81 (0) 3-3586 1291/1292

Korea
t 82 2-796-9500
f 82 2-796-9300

Singapore
t 65 6733-6511
f 65 6861-7310

Taiwan
t 886 2-2716-0338
f 886 2-2716-0339

EUROPE

France
t 0800 916 882
f 0800 918 636

Germany
t 0800 101 1153
f 0800 101 2427

The Netherlands and All Other European Countries
t 31 (0) 20 659 60 51
f 31 (0) 20 659 76 73

United Kingdom
t 0800 376 8660
f 0800 279 1117

LATIN AMERICA

Brasil
t (55-11) 3089-7419
f (55-11) 3167-0700

Mexico
t (52-81) 8158-8400
f (52-81) 8313-8589

Corning Incorporated, One Riverfront Plaza, Corning, NY 14831-0001

 Printed in U.S.A. 2/06 MW CLS-EQ-091