



In addition to warnings posted previously, additional cautions/warnings are posted throughout the manual. These are designated by a symbol inside a triangle. Cautions are indicated with an exclamation point and may result in damage to the instrument. Warnings are indicated with a skull and may result in injury or death. Read and follow these important instructions. Failure to observe these instructions can result in permanent damage to the unit, property damage and personal injury.



The MAINS symbol indicates instructions or connections for the AC power supply. The AC power input must match the electrical specifications listed on the label on the rear panel of the instrument. The supplied AC mains power cord must be attached to the connector labeled ~MAINS. This connection serves as a means of disconnect and should be readily accessible.

~MAINS

- (0) The (0) symbol indicates the Off position for the electrical switches for your unit (AC Mains or accessories).

### Cleaning the CBC-100

Before cleaning the instrument, turn off the instrument and unplug the power cord. Do not clean the finned tube or remove the CBC-100 from the bath unless the temperature is within 10 °C of ambient.

### Returning a Product to CANNON

Before returning a CANNON product for repair or service, contact the company or your local service representative to consult with a product specialist. If the specialist cannot recommend a solution or repair, CANNON will authorize the return of the product through the issuance of a Return Authorization number (RA).

#### Shipping

Products returned to without prior notification (by either telephone or fax) or without CANNON authorization, will not be accepted. The customer may be billed a testing fee if a product is returned to CANNON and found to be working properly.

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# CANNON® Bath Cooler

## Installation & Operation Guide

### Introduction

This guide is designed to provide information about the installation and operation of the CANNON Bath Cooler (CBC-100).

### Application

The CANNON Bath Cooler is a thermoelectric cooling system designed for use with an existing heated constant temperature bath. Available in regular (CBC-100R) and shallow bath (CBC-100S) configurations, the CBC-100 provides constant and stable cooling which allows regulation of open bath temperatures within  $\pm 0.01$  °C at ambient temperatures at or near 25 °C.

### Range (°C)

Cooling within 0.01 °C of the desired temperatures as low as 10 °C at an ambient of 25 °C. Precise control at higher temperatures is also possible, depending on the capability of the controlling bath.

### Components

CBC-100 system components include the cooling unit with immersion probe (finned tube) and the CBC-100 Power Supply with attached mains cord.

### Caution

The CBC-100 should not be used at bath temperatures exceeding 80 °C. Damage to the unit may result if the unit is exposed to environmental or bath temperatures exceeding 80 °C.

### CANNON Bath Cooler Specifications

Instrument Model	CBC-100R Regular bath version - 23 cm or deeper	CBC-100S Shallow bath version - 15 cm or deeper
Power Supply Dimensions (W x D x H)	121 mm x 241 mm x 120 mm (4.75 x 9.5 x 4.72 in)	
Cooling Column Dimensions (W x D x H)	108 mm x 190 mm x 222 mm (4.25 x 7.5 x 8.75 in) height: 572 mm (22.5 in) incl. immersion probe	108 x 190 x 222 mm (4.25 x 7.5 x 8.75 in) height: 368 mm (14.5 in) incl. immersion probe
Weight	6.3 kg (13.9 lbs)	6 kg (13.2 lbs)
Shipping Weight	8 kg (17.5 lbs)	7.3 kg (16.2 lbs)
Control Temperatures	to 10 °C in a five gallon open bath (the CBC-100 is designed to be used in conjunction with a heated temperature bath and should NOT be placed in an environment exceeding 80 °C)	
Operating Conditions	15 °C to 30 °C ambient, 10% to 90% RH non-condensing; installation category II; pollution degree 2	
Compliance	EMC directive (89/336/EEC); Low voltage directive (73/23/EEC) HI-POT (1900 VDC, 60 sec)	
Fuse Replacement	115V AC: M 250V 4A; 5 x 20 mm 230V AC: M 250V 2A; 5 x 20 mm	
Catalog Number/Electrical Requirements	CBC-100R	CBC-100S
	<b>9726-D05</b> 115V AC $\pm 10\%$ ; 50/60 Hz, 500 watts max	<b>9726-D15</b> 115V AC $\pm 10\%$ ; 50/60 Hz, 500 watts max
	<b>9726-D10</b> 230V AC $\pm 10\%$ ; 50/60 Hz, 500 watts max	<b>9726-D20</b> 230V AC $\pm 10\%$ ; 50/60 Hz, 500 watts max
<i>*Use only the approved power cord supplied with your unit.</i>		

## Unpacking the CBC-100

1. Remove all components from the shipping container(s).
2. Remove all packing materials from the components.
3. Verify reception of shipped materials by comparing equipment items with packing/parts list(s). Report missing items to Cannon Instrument Company immediately.
4. Inspect each component for signs of damage. Report damages to the shipper and to CANNON immediately.

**Damages:** Retain all packing materials until the instrument is connected and functioning properly. If any components must be returned to CANNON, the damaged items should be packaged in the original shipping container. Refer to the final page of this guide for instructions on returning defective equipment. Customers outside the United States should contact the local CANNON dealer for procedures on returning products to the company.

## Installation

Note: for best temperature control, position the CBC-100 in the hole nearest the “return” flow of the bath circulation. (see diagram, right)

### Mount the CBC-100R

The CBC-100R is designed for vertical mounting above the existing bath unit. The CBC-100R is inserted into a 51 mm (2”) diameter hole in the bath cover. It is secured with a standard viscometer holder-type mount, integral to the CBC-100.

### Procedure

To mount the CBC-100R, ensure the unit is unplugged from the CBC-100 Power Supply. Then lower the finned tube through the hole in the bath cover and tighten the two mounting screws with a screwdriver until the mounting tabs at the screw base are pressed securely against the bottom of the bath cover on both sides of the mount.

### Mount the CBC-100S

The CBC-100S is designed for vertical mounting above the existing shallow bath unit. Mounting procedure will depend on the make and model of the bath. For maximum cooling stability, position the CBC so fluid is returning to the stirrer. A 51 mm (2”) cutout (aperture) is required for insertion of the finned tube from the CBC-100.

Note: If the bath is incompatible with the mounting procedure described in this section, the CBC-100S can be mounted using the Mounting Clamp accessory available from CANNON.

### Procedure

To mount the CBC-100S, ensure the unit is unplugged from the CBC-100 Power Supply. Then lower the finned tube through the hole in the bath cover. All four rubber suction feet must rest securely on the bath cover.

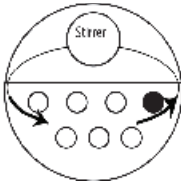
### Supply Power

Push the 4-pin plug from the CBC-100 into the matching connector on the front panel of the CBC-100 Power Supply and secure the connection by rotating the knurled ring on the plug clockwise until it stops.

Note: if it is necessary to remove the plug, rotate the knurled ring counter-clockwise as far as it turns easily; then pull the plug straight out.

Make sure the power switch on the front of the CBC-100 Power Supply is in the OFF position. Then plug the power cord into a MAINS power receptacle matching the electrical requirements on the label on the Power Supply rear panel. For most efficient cooling, fill the bath until the liquid level is above the finned portion of the tube.

● = desired CBC mount location  
(dependant on fluid flow)



## Operating the CBC-100

Note: Before operating the instrument, ensure the bath cooler is mounted securely atop the bath and that the bath fluid level is at or slightly above the finned portion of the tube. Cooling capability will be compromised if the bath fluid level is too low. Check all electrical connections (see preceding section).

Caution: Keep power cords away from the bath fluid. Only the finned tube from the CBC-100 may be immersed in bath fluid.

To operate the CBC-100, turn the power switch to the ON position. The LED indicator will light and thermoelectric cooling will begin.

## Troubleshooting

The CANNON CBC-100 has been durably crafted for years of trouble-free operation. In the unusual event of a cooling failure, check for the following:

- **Dust:** If gradual degradation in the cooling capacity of the CBC-100 is noticed over time, check for accumulation of airborne dust and debris around the fins of the thermoelectric cooling units. Clean the heat sinks of the thermoelectric modules by directing pressurized air at 120 psi through the vents in the side panels of the CBC-100.
- **Finned tube:** The finned tube may break if handled carelessly. Check the integrity of the fins. If they are bent or broken it may be necessary to return the unit to CANNON for repair.
- **Power Supply:** The CBC-100 Power Supply converts the user’s AC power to 48 V DC. Use a voltmeter to verify DC output from the Power Supply.
- **Fans:** Fans supply cooling for the thermoelectric modules. These fans may be observed through the rear and front panel grill. These fans should be rotating whenever the CBC-100 power switch is on.
- **Periodic loss of power:** In the event of fan failure, temperature around the thermoelectric cooling units may rise. An internal thermostat will interrupt power to the instrument before CBC-100 components can be damaged. Power is restored when the temperature drops to a safe level. To troubleshoot fan failure, visually check for motion of each fan while the CBC-100 is operating.

## Operator Safety

Please observe the following safety procedures and notices for proper operation of the CBC-100. Deviation from the installation, operation or maintenance procedures described in this manual may result in a hazardous situation and can void the manufacturer’s warranty.

- Only qualified personnel should operate the CBC-100.
- Read and understand all operating instructions and safety precautions listed in this manual before installing or operating the unit. Contact your CANNON representative with any questions.
- Transport the unit with care. Sudden jolts or drops may cause component damage.
- Observe all warning labels.
- Never remove warning labels.
- Never operate damaged or leaking equipment.
- Never operate an instrument with a damaged MAINS power cord.
- Only connect the power cord to suitable AC mains power source, with protective grounding, that matches the instrument specifications on the S/N label.
- Position power cords so they are not stepped on or pinched. Keep all connections as neat as possible.
- Disconnect the power cord by the plug. Never pull the cord.
- Do not operate the bath without proper levels of bath fluid.
- Do not splash liquids on the external surfaces of the CBC-100.
- Do not obstruct the side cooling vents on the CBC-100.
- Always turn off and disconnect mains cable from power source before performing approved service or maintenance procedures or moving the unit.
- Refer all service and repair to qualified personnel. Do not attempt to service the unit beyond the service and/or repair procedures detailed in this manual. Contact CANNON for all additional service/repair needs.



**Warning:** When supplying power to the instrument, connect the protective ground (earth) terminals of the instrument to the protective conductor of the (supplied) line (MAINS) power cord. The main plug for power cord should only be inserted in a receptacle provided with a protective ground (earth) contact. Do not use an extension cord (power cable) without a protective grounding.