

KC-1B

KEEP-COLD CONTROLLER

SET-UP AND TECHNICAL MANUAL



Custom
BioGenic
Systems

www.custombiogenics.com

150 Shafer Drive ♦ Romeo, MI 48065 ♦ USA

1.800.523.0072 ♦ Tel: 1.586.331.2600 ♦ Fax: 1.586.331.2588



Leading the World with Innovative Cryopreservation Technology Solutions

- IMPORTANT INFORMATION -

We at Custom Biogenic Systems are proud of our work, and appreciate your purchase of this product. With proper care, this equipment will be trouble free for many years to come. Before setting up and using your new cryogenic system, first check to see that all parts are accounted for and that no damage has occurred during shipping. Also, read this manual completely before proceeding to set-up. If at any time you are unsure of the procedures for set-up and use of this product, please contact Custom Biogenic Systems or your Custom Biogenic Systems representative.

PRODUCT WARRANTY

Custom BioGenic Systems warrants all manufactured cryogenic equipment to be free from defects in workmanship and materials for a period of one year. Custom BioGenic Systems' liabilities under the warranty shall be limited to correcting or replacing the defective workmanship or materials. A claimant under the warranty must notify CustomBioGenic Systems within ten (10) days after discovery of the defect and immediately discontinue use of the defective equipment. Custom BioGenic Systems reserves the right, at their discretion, to correct the defect(s) in the field without return shipment to Romeo, Michigan. This warranty does not cover defects on cryogenic equipment resulting from abusive handling and subsequent failure.

Serial Number _____

Model number _____

For Technical Assistance Call: 1.800.523.0072 (U.S. Only)

Phone: 586.331.2600 Fax: 586.331.2588

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- SAFETY -

IMPORTANT!

The following section on LIQUID NITROGEN SAFETY should be read carefully and followed completely, but is by no means a complete volume on the use of cryogenic liquids. All personnel should have a complete knowledge of the correct procedures, as well as the hazards of working with liquid nitrogen. Failure to do so could result in serious injury or death.

WARNING

LIQUEFIED GASES ARE EXTREMELY COLD LIQUIDS. LIQUID NITROGEN EXISTS AT -196°C. BECAUSE OF THESE TEMPERATURES, LIQUEFIED GASES WILL "BURN" IF THEY COME INTO CONTACT WITH SKIN. NEVER ALLOW DIRECT SKIN CONTACT WITH LIQUID NITROGEN OR SERIOUS BURNS WILL RESULT.

ALTHOUGH LIQUID NITROGEN ITSELF IS NON-TOXIC, WHEN RELEASED INTO A CONFINED SPACE IT CAN DISPLACE OXYGEN CAUSING ASPHYXIATION. ENTERING AN OXYGEN DEFICIENT ROOM CAN CAUSE UNCONSCIOUSNESS WITHOUT WARNING. ALWAYS CHECK AIR QUALITY UPON ENTERING A ROOM WHERE CRYOGENIC LIQUIDS ARE BEING USED AND IF POSSIBLE, HAVE A RESPIRATOR AVAILABLE.

INTRODUCING EQUIPMENT WHICH IS AT ROOM TEMPERATURE INTO LIQUID NITROGEN IS ALWAYS SOMEWHAT HAZARDOUS. BEWARE OF SPLASHING AND "BOILING" WHICH MAY OCCUR. ALL PERSONNEL PERFORMING THESE OPERATIONS SHOULD BE FULLY INFORMED OF PROPER HANDLING PROCEDURES AND SHOULD ALWAYS WEAR A FACE SHIELD AND PROTECTIVE CLOTHING.

LIQUEFIED GASES SHOULD NEVER BE USED IN COMBINATION WITH OTHER SUBSTANCES WITHOUT KNOWING WHAT THE RESULT WILL BE. WHEN IN DOUBT, CONTACT A COMPETENT AUTHORITY.

HANDLING

Personnel handling liquefied gases should be thoroughly instructed as to the nature of these materials. Proper training is essential to safety and will ensure the accident-free use of this equipment.

Because of their low temperatures, liquefied gases will burn the skin much the same way as hot liquids can. For this reason, always wear the proper protective clothing when handling these materials. It is advised that during use, handlers of liquid nitrogen should protect themselves by wearing goggles or face shields, heavy rubber gloves large enough to allow quick removal and a heavy rubber apron. It is preferable that shoes worn at these times have high tops as to not permit accidentally spilled liquid from entering as well as pant legs which come down over the tops of shoes for further protection.

Also because of the extremely low temperatures, liquid nitrogen should only be handled and transported in approved containers. Many materials become brittle and may shatter when put into contact with liquid nitrogen and other cryogenic liquids.

FIRST AID

In the event a person is burned by liquefied gas, the following first aid treatment should be given while awaiting the arrival of medics or a doctor:

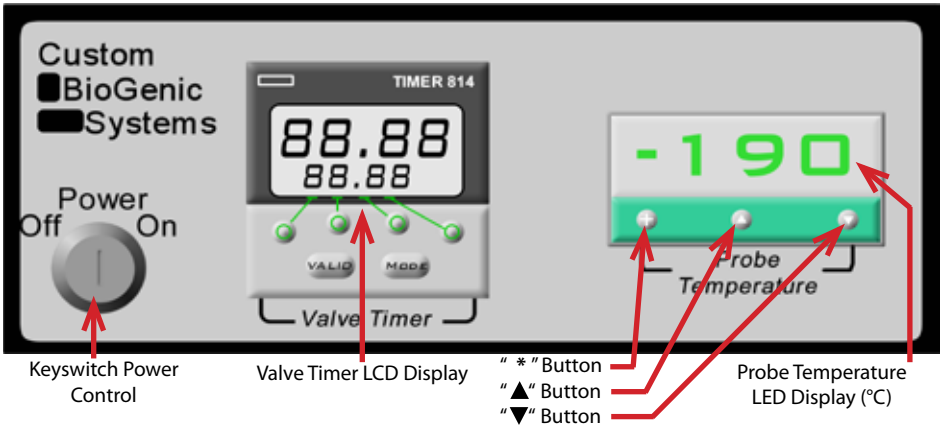
1. If the material has contacted skin or eyes, flood those areas with large quantities of unheated water and protect frozen areas with loose, bulky, dry and sterile dressings.
2. If the skin is blistered or there is a chance that the eyes have been affected, seek medical help immediately.

- BEFORE USE -

Caution: Do not plug in the AC power plug before completing initial set-up. Check to see that all parts accounted for and are damage-free.

- PARTS IDENTIFICATION -

Front Panel



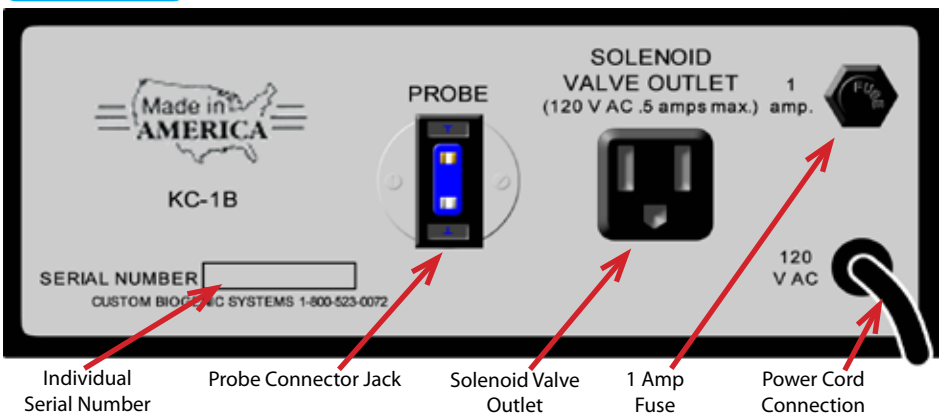
Keyswitch Power Control

Valve Timer LCD Display

" * " Button
"▲" Button
"▼" Button

Probe Temperature LED Display (°C)

Back Panel



Individual Serial Number

Probe Connector Jack

Solenoid Valve Outlet

1 Amp Fuse

Power Cord Connection

- PROGRAMMING THE VALVE TIMER -

Note: DO NOT touch VALID and MODE buttons on the Valve Timer at any time, or a complete re-programming of the valve timer may be required.

The valve timer unit is very easy to operate. The smaller numbers in the lower part of the display window indicate the delay time of the solenoid valve. In the upper part of the display window, the larger numbers are the clock-counter that count down the time before valve activation. When a signal is sent from the thermocouple, the valve timer is activated. The clock-counter will begin counting down, and when the (larger) numbers match the (smaller) set-time numbers, the solenoid valve will activate. To set the valve timer, locate the four buttons (in a horizontal row) that correspond with the smaller set-time numbers in the display window of the valve timer. Each button controls one of the numbers. To set the delay time, press the buttons one at a time, until the desired time is displayed. Each number counts 0-9 continuously when the button is pressed, and will not affect the surrounding numbers. The delay time is in minutes and tenths of a minute (01.50 = 1 minute 30 seconds).

- PROGRAMMING THE TEMPERATURE SET-POINT -

Refer to the Parts Identification section on the page for proper button I.D.

1. Press and hold down the * button.
2. Press the "▲" button (while holding "**") to increase set point temperature.
3. Press the "▼" button (while holding "**") to decrease the set point temperature.

- INSTALLATION AND SET-UP -

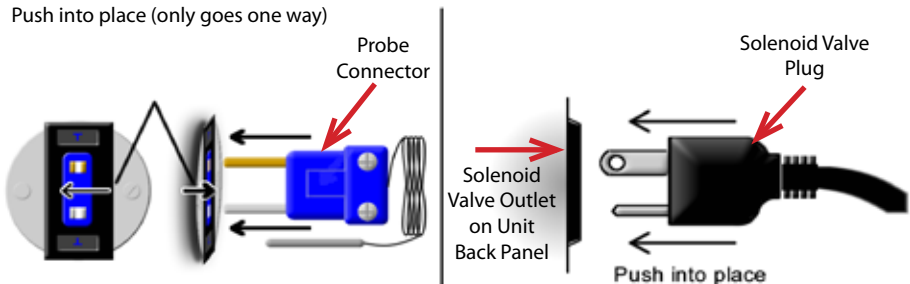
Note: Before beginning installation, be sure that power cords are unplugged from power sources and that LN2 supply valves are closed. Also, be sure a relief valve is installed to avoid LN2 pressure build-up.

1. Connect solenoid valve to LN2 supply and desired equipment application. Be aware of the flow direction of the solenoid valve when connecting to LN2 supply
2. Secure probe in appropriate location to accurately monitor temperature. Note: It is important that the **tip** of the thermocouple probe be positioned in the path of the LN2 flow to ensure proper equipment operation.
3. Connect solenoid valve cord to solenoid outlet (splice into lines if necessary).
4. Plug probe connector into corresponding jack on unit back panel (see illustration).
5. Plug power cord into wall socket (120 V AC/properly grounded).
6. Open LN2 supply valve, and the equipment is ready to operate.
7. Turn key-switch to ON position (probe temperature display will light-up and through self-diagnostic mode).

- CONNECTIONS -

Use the diagrams to ensure correct hook-up of all parts (drawings not to scale).

Push into place (only goes one way)



- TROUBLE SHOOTING GUIDE -

Use this chart to help correct any problems you may encounter. If further assistance is needed, contact your **Custom BioGenic Systems** representative.

CONDITION	CAUSES	SOLUTIONS
<ul style="list-style-type: none"> ◆ No Lights 	<ul style="list-style-type: none"> ◆ Blown fuse ◆ No power at wall outlet ◆ AC power cord not plugged in ◆ ON/OFF switch in OFF position 	<ul style="list-style-type: none"> ◆ Replace with 1 amp fuse ◆ Use live power source ◆ Plug the AC power cord into a wall socket ◆ Move power switch into the ON position
<ul style="list-style-type: none"> ◆ LED display flashing FAIL InPt alternately 	<ul style="list-style-type: none"> ◆ Probe plug is disconnected ◆ Probe is damaged 	<ul style="list-style-type: none"> ◆ Connect probe plug properly ◆ Replace damaged probe
<ul style="list-style-type: none"> ◆ Liquid Nitrogen continues to flow when solenoid valve has become de-energized 	<ul style="list-style-type: none"> ◆ Valve has become stuck in the open position ◆ Valve is defective or damaged 	<ul style="list-style-type: none"> ◆ Shut-off LN2 manually, remove and clean valve ◆ Verify defect and replace valve if necessary

AVAILABLE FROM CBS

Liquid Nitrogen Equipment Including:

Freezers & Dewars
Controlled Rate Freezing Systems
Freezer Racks and Boxes
Transfer Lines
Solenoid Valves
Liquid Level & Temperature Alarms
Liquid Level & Temperature Controls
Temperature Recorders / Monitors
Cryogenic Accessories



**Custom
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Romeo, Michigan 48065 U.S.A.**

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