

**HBR Series RETHERMALIZATION CABINETS
MODELS: HBR14 & HBR28
OWNERS / OPERATORS MANUAL**



MANUFACTURED BY:

CARTER-HOFFMANN
1551 McCormick Avenue
Mundelein, IL 60060 USA

Phone: 847-362-5500
Toll Free: 800-323-9793
Fax: 847-367-8981

Email: service@carter-hoffmann.com



HBR28



**READ THIS MANUAL COMPLETELY
BEFORE OPERATING THIS APPLIANCE**

IMPORTANT: DO NOT DISCARD THIS MANUAL

This manual is considered to be part of the appliance and is to be given to the OWNER, MANAGER, or to the person responsible for training operators of this appliance.

**THIS MANUAL IS TO BE UNDERSTOOD BY ALL PERSONS
USING OR INSTALLING THIS APPLIANCE.**

Contact Carter-Hoffmann if you have questions regarding installation, operation or maintenance of this equipment.

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SAFETY PRECAUTIONS



WARNING: ELECTRIC SHOCK HAZARD

All service requiring access to non-insulated components must be performed by qualified service personnel. Failure to heed this warning may result in severe electric shock.



CAUTION: ELECTRIC SHOCK HAZARD

Disconnect this appliance from electrical power before performing any maintenance or service.

CAUTION: BURN HAZARD

Exposed metal surfaces can be hot to the touch and may cause burns.

IMPORTANT SAFETY INSTRUCTIONS

When using electrical appliances basic safety precautions should be followed, including the following:

- 1) Be familiar with the appliance use, limitations and associated restrictions. Operating instructions must be read and understood by all persons using or installing this appliance.
- 2) This appliance must be grounded. Connect only to properly grounded outlet.
- 3) Use this appliance only for its intended purpose as described in the manual.
 - a. This equipment is specifically designed to hold pre-cooked food at temperature.
 - b. This equipment is intended for use in commercial establishments only.
 - c. This equipment is not designed for industrial or laboratory use.
- 4) Cleanliness of this appliance and its accessories is essential to good sanitation.
- 5) DO NOT submerge this appliance in water. This appliance is not jet stream approved. DO NOT direct water jet or steam jet at this appliance, or at any control panel or wiring. DO NOT splash or pour water on, in or over any controls, control panel or wiring. DO NOT use corrosive chemicals or vapors in this appliance.
- 6) DO NOT store this appliance outdoors. DO NOT use this product near water – for example, near a kitchen sink, in a wet basement, or near a swimming pool, or similar environment.
- 7) DO NOT operate this appliance if it has a damaged cord or plug, if it is not working properly, or if it has been damaged or dropped. Do not immerse cord or plug in water, keep cord away from heated surfaces, and do not let cord hang over edge of table or counter.
- 8) DO NOT cover or block any openings on the appliance.
- 9) **Only qualified service personnel should service this appliance.**

NOTE: This equipment has been designed and manufactured to meet all applicable health and safety codes and will give years of dependable service if used properly. All cabinets should be thoroughly cleaned before using.

NOTE: The technical content of this manual, including any wiring diagrams, schematics, parts breakdown illustrations and/or adjustment procedures, is **intended for use by qualified technical personnel** and is subject to change without notice.

INTRODUCTION

Carter-Hoffmann Series HBR Rethermalization cabinets are designed to uniformly rethermalize bulk food in pans, hot and fresh, at the right environment.

This equipment manual will provide you with basic information to safely install and operate this piece of equipment. Should you encounter any difficulties, have any questions, or require any assistance, please contact Carter-Hoffmann's Technical Service department directly, at:

Telephone 800-323-9793 (toll-free) 847-362-5500
 Fax 847-367-8981
 Email service@carter-hoffmann.com.

PRODUCT SPECIFICATIONS



HBR28

Features & Benefits

- Precision engineered heat duct system for optimal air flow and even heating
- Uses the energy of steam to retherm dense foods in bulk pans
- Ten programmable four-step retherm cycles
- Retherm from refrigerated in an hour or less
- Large 3-gallon water reservoir
- Easy access stopcock drain makes water reservoir draining quick and simple
- Menu card holder is a standard feature

Humidified Bulk Rethermalization Cabinets

Model Number	Pan / Tray Capacity*		Spacing* in (mm)	Inside Working Height	Overall Dimensions			Caster Diameter	Class 100 Shipping Weight
	12"x20"	18" x 26"			Height	Depth in (mm)	Width		
HBR14	14	7	3-1/2	27	48-3/4	34-1/4	27-1/4	5	375
HBR28	28	14	3-1/2	51-1/2	73-1/4	34-1/4	27-1/4	5	518

Electrical Specifications*

Volts	Phase	kW	Amps	Plug
208	1	6	30	6-30P



* Electrical specifications shown are typical for standard cabinets. Due to the often customized nature of this product line, i.e. cabinets built to consultant's/ facility specifications, the electrical specifications on your particular cabinet may be different. Consult serial tag on rear of heating unit for electrical info.

UNPACKING, INSPECTION & INSTALLATION



This appliance should be thoroughly cleaned prior to use.

See the CLEANING INSTRUCTIONS in this manual.

NOTE: DO NOT discard the carton or other packing materials until you have inspected the appliance for hidden damage and checked it for proper operation. Refer to *FREIGHT DAMAGE CLAIM PROCEDURE BELOW*

1. Remove the cabinet from shipping carton, ensuring that all packing materials and protective plastic has been removed from the unit.
2. Inspect all components for completeness and condition.
3. If any freight damage is present, a freight claim must be filed immediately with the shipping company.
4. **Freight damage is not covered under warranty.**
5. Check to insure all components are included: cabinet, instruction packet and additional accessories.
6. Read operation instructions completely.
7. Appliance should be thoroughly cleaned before use. See CLEANING INSTRUCTIONS in this manual.

FREIGHT DAMAGE PROCEDURE

NOTE: For your protection, please note that equipment in this shipment was carefully inspected and packaged by skilled personnel before leaving the factory. Upon acceptance of this shipment, the transportation company assumes full responsibility for its safe delivery.

IF SHIPMENT ARRIVES DAMAGED:

1. **VISIBLE LOSS OR DAMAGE:** Be certain that any visible loss or damage is noted on the freight bill or express receipt, and that the note of loss or damage is signed by the delivery person.
2. **FILE CLAIM FOR DAMAGE IMMEDIATELY:** Regardless of the extent of damage. **Contact your dealer immediately.**
3. **CONCEALED DAMAGE:** If damage is unnoticed until the merchandise is unpacked, notify the transportation company or carrier immediately, and then file a "CONCEALED DAMAGE" claim with them. This should be done within fifteen (15) days from the date the delivery was made to you. **Be sure to retain the container for inspection.**

Carter-Hoffmann cannot assume liability for damage or loss incurred in transit, **freight damage is not covered under warranty.** We will, however, at your request, supply you with the necessary documents to support your claim.

INSTALLATION LOCATION

For proper operation and maximum performance, locate the unit in an ambient air temperature of 70°F (21°C). For safe operation and maximum performance, locate the unit at least 4" from any wall or combustible material.

Avoid placement in areas near exhaust fans or where there are active air movements.

Do not locate this unit under an overhead ventilation system or close to other cooking equipment. Fumes and grease particles can be drawn by the cooling fans into the control compartment of the heater which should be avoided in order to assure top performance and longer life.

Unit must be on a solid level surface.

INSTALLATION AND STARTUP



WARNING: Risk of personal injury

Installation procedures must be performed by a qualified technician with full knowledge of all applicable electrical codes. Failure could result in personal injury and property damage.



IMPORTANT: See page 3 for power requirements

If necessary, contact a licensed electrician to install an appropriate electrical circuit with correct receptacle. Electrical requirements vary by model number. Consult serial tag on rear of heating unit for proper electrical specifications.

DO NOT use an extension cord.



CAUTION: Electrical Shock Hazard

The ground prong of the power cord is part of a system designed to protect you from electric shock in the event of internal damage.

DO NOT cut off the large round ground prong or twist a blade to fit an existing receptacle.



IMPORTANT: Not under warranty

Damage to unit due to being connected to the wrong voltage or phase is **NOT** covered by warranty.



WARNING: Risk of personal injury

Unit is not waterproof, to avoid electrical shock, keep unit from being submerged in water. Do not operate if unit has been in contact with water.

GROUNDING INSTRUCTIONS

This appliance is equipped with a cord having a grounding wire with a grounding plug which must be plugged into an outlet that is properly installed and grounded. In the event of an electrical short circuit, grounding reduces the risk of electric shock by providing an escape wire for the electric current.

WARNING—Improper use of the grounding can result in a risk of electric shock. Consult a qualified electrician or service agent if the grounding instructions are not completely understood, or if doubt exists as to whether the appliance is properly grounded.

To prevent an electrical shock hazard between the appliance and other appliances or metal parts in close vicinity, an equalization-bonding stud is provided. An equalization bonding lead must be connected to this stud and the other appliances/metal parts to provide sufficient protection against potential difference. The terminal is marked with the following symbol:



START UP

1. Prior to use, thoroughly clean the interior of the cabinet, according to the instructions in this manual. Familiarize yourself with the controls.
2. Plug the power cord of the cabinet into a grounded outlet with a electrical service according to the electrical information provided on the serial tag located on the rear of the cabinet heating unit. **DO NOT MODIFY CORD PLUG.**



Sample serial tag

3. Set POWER switch to the "ON" position.
4. Do not load product into the cabinet. Allow the heat to remove any residual oils which may adhere to inside metal surfaces. A slight emission of smoke is common during the first few hours of operation.
5. Heat rethermalizer at 315° F for 35 minutes by pressing Product Key number ten. The heat will remove any residual oils which may adhere to inside metal surfaces. To cool down unit, press Product Key #10 again to turn off cycle and open doors for about 15 minutes. A slight emission of smoke is normal for the first few hours of operation.
6. Rethermalizer is ready for custom programming, if desired. See pages 9-21 for instructions.

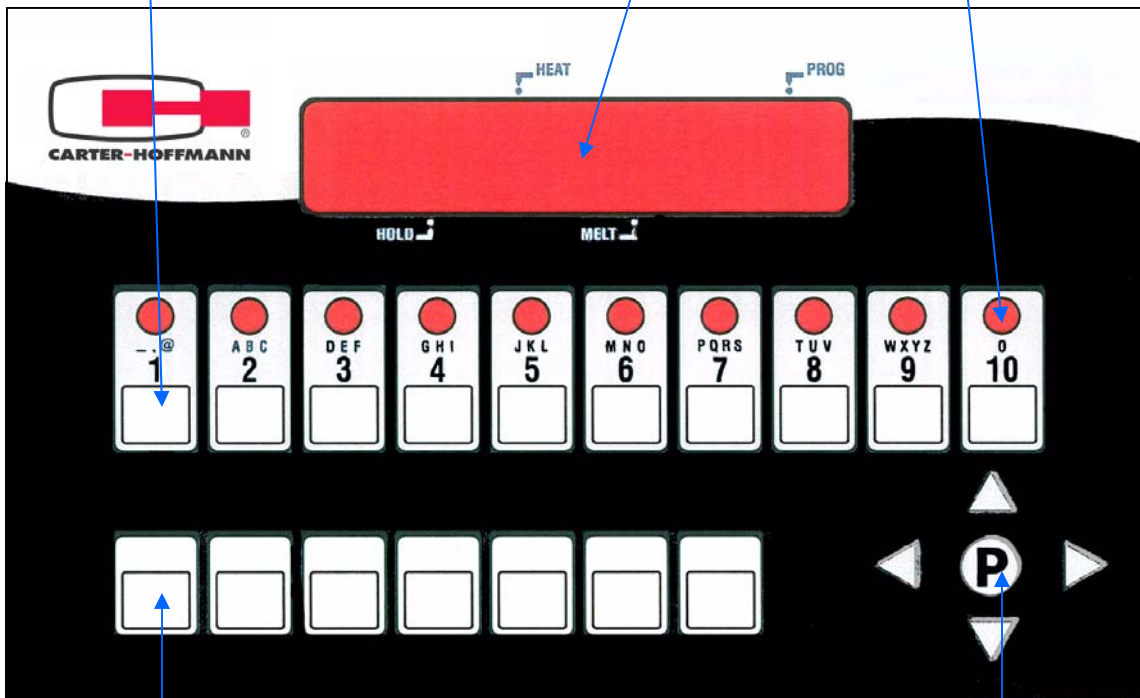
CONTROLLER FEATURES

On/Off rocker switch: located to the left of the control panel (not shown). Switch will illuminate when cabinet is turned on.

Product Keys: press to start a cook cycle; also used in programming. Replaceable menu strip to make menu changes quickly and easily

8 Character LED Display: displays programming and cook cycle information

Indicator Lights: lit when active cook cycle is in programming mode



Feature Keys: used to access programming functions and controller features

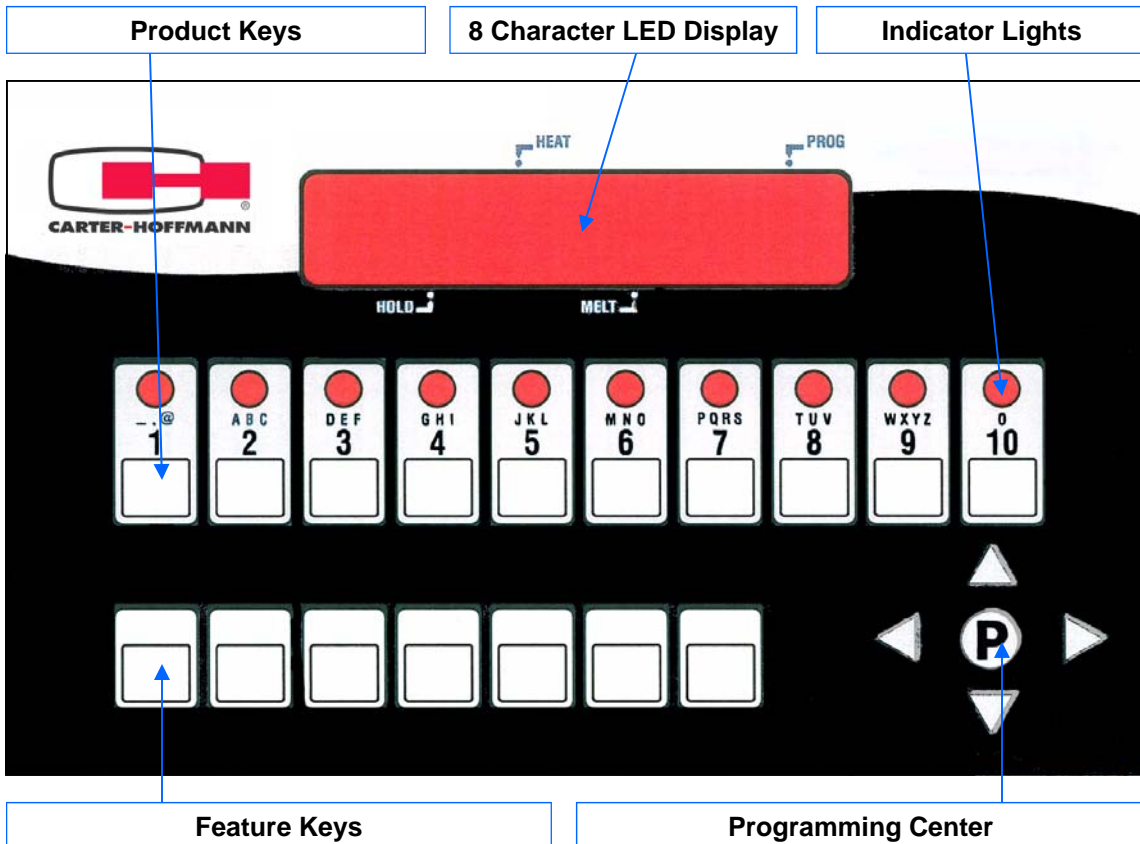
Programming Center: access programming mode and change cooking parameters

FEATURE DETAILS

Fahrenheit of Celsius Temperature Display: the controller can be configured to display the temperature in degrees Fahrenheit or Celsius; accessible through the system program mode.

Programmable Hold Times: Product Key hold times can be programmed to track product quality through a specified holding period. Hold time countdown begins as soon as the cook cycle is complete. The controller will sound an alarm when the product's hold time has expired, alerting the operator to discard the product.

CONTROLLER FEATURE DETAILS



Four-Stage Programming: each Product Key can be programmed to personalize your cooking system with up to four cooking temperatures and up to ten cook times for a single cook cycle. With each Product Key, you can select a menu, start and stop a menu, scroll through programmed data (in Program Mode).

Programmable Stage Temperatures: cook temperatures for each stage on each Product Key can be programmed. The temperature range is 200°F to 329°F (93.3°C to 165°C)

Programmable Stage Times: cook times for each Product Key can be programmed.

The controller is programmable in minutes (up to 99) and seconds (up to 59) and allows up to ten stages per Product Key. Note: multiple cook starts are not allowed if a product key has more than one stage programmed.

Programmable Fast.Flex™ Timing Mode: flex or straight timing can be configured for each stage on each Product Key. To insure consistent, high-quality food product, **flex time** will adjust the actual cook time, taking into consideration the temperature variation due to load size, initial product temperature, product moisture content, and other factors affecting the cook cycle. If cooking by **straight time**, the controller will cook only for the specified time without adjusting for these variances.



**WARNING:
HOT SURFACE**

Inner surfaces of the unit will be very hot during and after operation.

Avoid touching the cabinet when loading or removing product.

Operating range:

Temperature: 165°F-329°F
(74°C to 165°C)

Time: up to 99 minutes, 59 seconds, for each stage on the Product Key



**CONTROLLER
OPERATING
ENVIRONMENT**

The solid state components in the controller are designed to operate reliably in a temperature range up to 158°F (70°C). Before installing, verify that the ambient temperature where this product is located does not exceed this temperature.

NOTE: To review and/or program time and temperature settings for each Product Key, refer to **Programming Instructions** on pages 9-21.

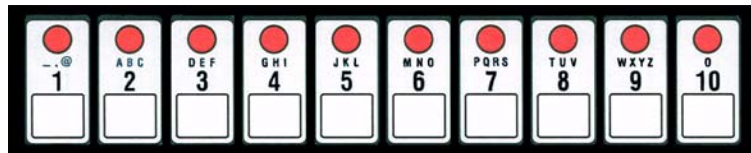
***NOTE:** FAST.FLEX™ Timing Mode may assist you with variable product features such as temperature and load; see page 17 for programming instructions.

DAILY OPERATION

When cabinet is turned on, controller will default to **Product Key 1**, indicated by illuminated indicator light. The display will read **“LOW”**. Fill water reservoir with approximately 3 gallons of clean water with low mineral content. Distilled water is best.

1) Turn power switch **ON**.

2) **Load Product:** For best retherm times, product must be thawed or slacked prior to loading. Chilled or frozen food will extend retherm time substantially*. Load pans of food, beginning at the bottom of the cabinet and working up. If retherming less than a full load, arrange pans so they are located on the center shelves; this will ensure best air circulation and even heating around the food.



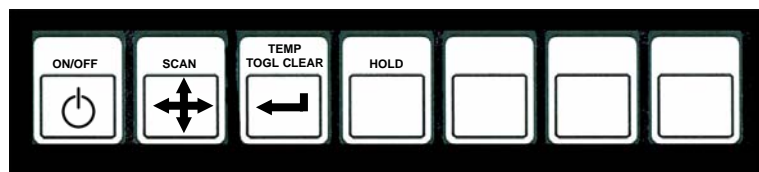
3) **Start a Cook Cycle:** Press desired Product Key (1 through 10) to start a cook cycle. If the key is programmed, the correct cooking time will be displayed and will immediately start to count down in minutes and seconds. **“DONE”** will display when the cook cycle has ended. Product is ready to be removed, but may stay in the cabinet in Hold Mode until served.

4) **Respond to DONE Alarm:** DONE alarm will sound at the end of a completed cycle. Cancel the signal by pressing the same Product Key used to start the cook cycle.

5) **Stop a Cook Cycle:** Press and hold an active Product Key for 3 seconds. Timing will stop.

6) **Holding Cycle:** If the controller is programmed with holding times, they will automatically start counting upon expiration of the cooking cycle. When there are active hold times the **HOLD** indicator light will be lit.

To **view all active hold times**, press and hold the **HOLD** Key. Upon expiration, the timer will display **“HOLD”** and pulse with an audible tone. To cancel, press the **HOLD** Key.



CABINET ENVIRONMENT

Operating range:

Temperature: 165°F-329°F
(74°C to 165°C)

Time: up to 99 minutes, 59
seconds, for each stage on the
Product Key



CONTROLLER OPERATING ENVIRONMENT

The solid state components in the controller are designed to operate reliably in a temperature range up to 158°F (70°C). Before installing, verify that the ambient temperature where this product is located does not exceed this temperature.

The temperature and humidity levels in the cabinet are controlled by setting the cabinet air temperature and the water reservoir temperature. The laws of physics determine that heat and moisture are interdependent. Consult the chart below to determine the necessary cabinet air and water reservoir temperature settings to obtain the desired cabinet environment.

While the cabinet has been pre-set for a common environment for many foods, it may be necessary to vary the cabinet settings to obtain a different desired cabinet environment. To do so, begin by setting the air temperature for the Cook and Hold cycles as close to the desired temperature as possible. Next, set the water reservoir temperature to an approximate setting for the desired humidity level. Allow 60 minutes for the cabinet environment to adjust. Check the resultant cabinet air temperature and adjust the cabinet air temperature settings as necessary.

See programming instructions on the following pages.

Desired Cabinet Temperature	Desired Relative Humidity (%)	Set Air Temperature	Set Water Temperature
160°F	45	160°F	130°F
160°F	55	160°F	145°F
170°F	45	160°F	145°F
170°F	70	160°F	155°F
180°F	45	170°F	150°F
180°F	70	190°F	130°F
190°F	30	190°F	130°F
190°F	45	185°F	155°F
190°F	70	185°F	180°F
220°F	30	215°F	155°F
220°F	45	210°F	180°F
240°F	65	240°F	180°F

CONTROLLER PROGRAMMING INSTRUCTIONS

Operating range:

Temperature: 165°F-329°F
(74°C to 165°C)

Time: up to 99 minutes, 59 seconds, for each stage on the Product Key

Operation Mode: When the power is turned “ON”, the controller will read **LOW** and the temperature of the cabinet displayed in °F or °C. From the operation mode, a menu can be started by pressing the appropriate Product Key. Note: the fan will be ON in the operation mode.

NOTE: To view actual cabinet temperature, press the **TEMP TOGL CLEAR** button. Press the button again to exit.



CONTROLLER OPERATING ENVIRONMENT

The solid state components in the controller are designed to operate reliably in a temperature range up to 158°F (70°C). Before installing, verify that the ambient temperature where this product is located does not exceed this temperature.

Controller Programming: Retherm cabinets may or may not have been pre-programmed by the factory to end user specifications. If the factory has pre-programmed the controller, it should be reviewed to ensure proper set-points prior to use.

If the controller has not been pre-programmed by the factory, it will be programmed to the default menu settings listed on the chart below. Default water temperature settings cycle between 150° and 160°F to general the proper amount of humidity.

If programming is needed, follow the Controller Programming Instructions on pages 9 through 21. Use the programming worksheet provided below to aid your controller programming.

Pre-Programmed Default Menu Settings

Control Display	Product Key Description	Product Key 1	Product Key 2	Product Key 3	Product Key 4	Product Key 5	Product Key 6	Product Key 7	Product Key 8	Product Key 9	Product Key 10
Time 1	Cook 1 Time	45	45	45	45	45	45	45	45	45	45
Cook	Cook 1 Air Temp	165	165	165	165	165	165	165	165	165	165
Water 1	Cook 1 Water Temp	170	170	170	170	170	170	170	170	170	170
Time 2	Cook 2 Time	45	45	45	45	45	45	45	45	45	45
Hold	Hold Air Temp	165	165	165	165	165	165	165	165	165	165
Water 2	Cook 2 Water Temp	170	170	170	170	170	170	170	170	170	170

Controller Programming Worksheet

Control Display	Product Key Description	Product Key 1	Product Key 2	Product Key 3	Product Key 4	Product Key 5	Product Key 6	Product Key 7	Product Key 8	Product Key 9	Product Key 10
Time 1	Cook 1 Time										
Cook	Cook 1 Air Temp										
Water 1	Cook 1 Water Temp										
Time 2	Cook 2 Time										
Hold	Hold Air Temp										
Water 2	Cook 2 Water Temp										

CONTROLLER PROGRAMMING INSTRUCTIONS (Continued)

Operating range:

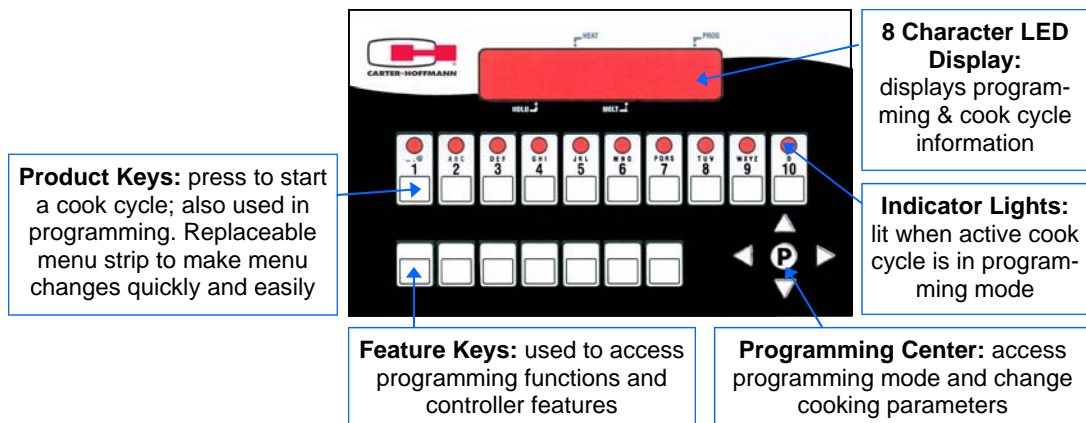
Temperature: 165°F-329°F
(74°C to 165°C)

Time: up to 99 minutes, 59
seconds, for each stage on the
Product Key

Programming Levels The controller is equipped with two levels of programming access:

End User Programming Path 1724 allows the end user to program Menu Settings. Daily users of this cabinet should be familiar with all aspects of Program Mode 1724. See pages 12-14 for Program Mode 1724 instructions.

Manager Programming Path 3228 allows the user to program parameters such as Machine Type, Duct Temperature, Fahrenheit/Celcius, Temperature Minimum and Maximum and Set Point Differential. It is advised that access to Program Mode 3228 be known only to owners/operators and not daily users of the product. See pages 15-21 for Program Mode 3228 instructions.



CONTROLLER PROGRAMMING INSTRUCTIONS (Continued)

Operating range:

Temperature: 165°F-329°F
(74°C to 165°C)

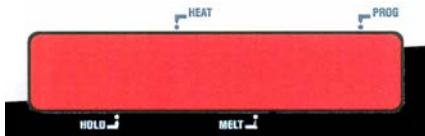
Time: up to 99 minutes, 59 seconds, for each stage on the Product Key

END-USER PROGRAMMING PATH 1724

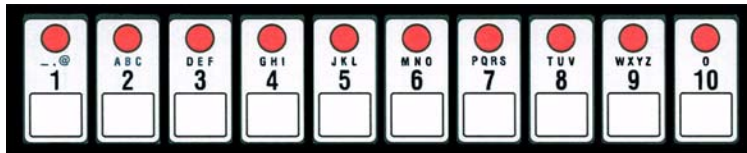
Program Path 1724 allows the end user to program up to ten Menu Settings, one for each Product Key. Each Product Key can be programmed for the stages in the Cook Cycle. This allows the user to vary the time and temperature in each stage throughout the cooking cycle to achieve best product quality.



Programming Center Keys



LED Display



When scrolling through the Program Mode, the sequence of programming will take you through programming all program settings for the Product Key. The programming order scrolls as such:

- Setting 1:** Time 1 (default setpoint: 45 minutes)
- Setting 2:** Cook 1 (air temp default setpoint: 165°F)
- Setting 3:** Water 1 (reservoir temperature default setpoint: 170°F)
- Setting 4:** Time 2 (default setpoint: 45 minutes)
- Setting 5:** Hold (air temp default setpoint: 165°F)
- Setting 6:** Water 2 (reservoir temperature default setpoint: 170°F)

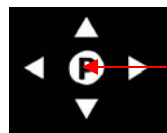
Pressing the **DOWN ARROW** will scroll through the entire sequence. If you wish to go back to a particular time or temperature, press the **UP ARROW** until the desired setting is reached.

PROGRAMMING NOTES

Pressing the **DOWN ARROW** will scroll through the entire sequence. If you wish to go back to a particular parameter, press the **UP ARROW** until the desired setting is reached.

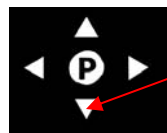
To EXIT the Programming Mode, scroll through the programming choices until the display reads **"SYSTEM"**. Press **UP ARROW**. The display will read **"EXIT"**. Press **"P"** and you will return to the Operating Mode.

If you discontinue programming and leave the controller idle, it will automatically exit the Programming Mode after two minutes.



To access Program Mode 1724 press and hold "P".

The display will read: **"COUNTS"**



Press the **DOWN ARROW**

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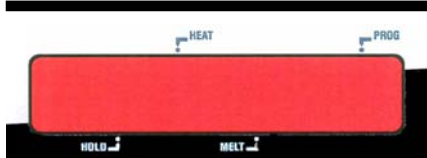
CONTROLLER PROGRAMMING INSTRUCTIONS (Continued)

Operating range:

Temperature: 165°F-329°F

(74°C to 165°C)

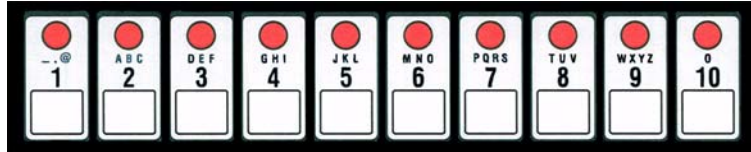
Time: up to 99 minutes, 59 seconds, for each stage on the Product Key



LED Display

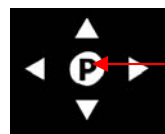
The display will read: **“PROGRAM”**

Enter code **“1724”** using the **Product Keys**. As you type in the numbers, they will appear as asterisks on the display.



Then, press **“P”**

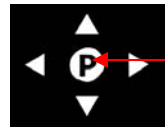
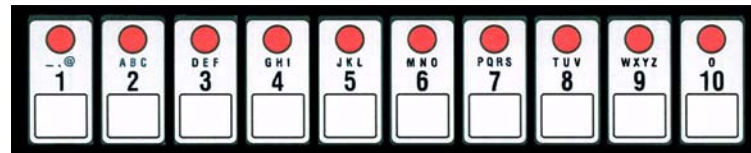
The display will read: **“RECIPE”**



Press **“P”**

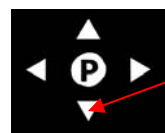
The display will read: **“PRODUCT”**

Select the **Product Key (1 through 10)** you wish to program by pressing the product key.



Press **“P”**

The display will read: **“ALL”**

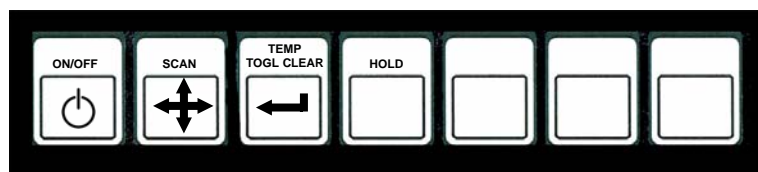


Press the **DOWN ARROW** button

TIME & TEMPERATURE PROGRAMMING INSTRUCTIONS

The display will read: **“TIME 1”** (this is the COOK Time setting) and then it will display the current time that has been programmed.

Press the **“TEMP TOGL CLEAR”** key to clear the display; it will revert to **“:00”**



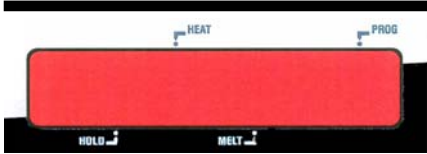
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CONTROLLER PROGRAMMING INSTRUCTIONS (Continued)

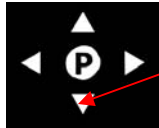
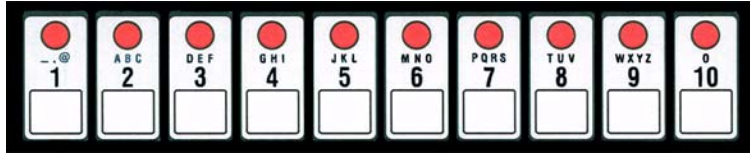
Operating range:

Temperature: 165°F-329°F
(74°C to 165°C)

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Product Key



LED Display

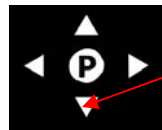


Press the **DOWN ARROW** button to scroll through settings for temperature and time for each Product Key. The first setting will be **TIME 1** with subsequent settings for **COOK** (cook temp), **WATER 1** (hold water temp), **TIME 2** (hold time) **HOLD** (hold air temp) and **WATER 2** (hold water temp).

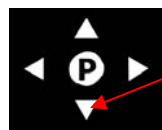
TIME AND TEMPERATURE PROGRAMMING INSTRUCTIONS

To program time settings, **TIME 1** and **TIME 2**: Using the **Product Keys**, type in the time desired time in minutes and seconds, for example 25:30 is 25 minutes and 30 seconds. Use the #10 product key for the number 0.

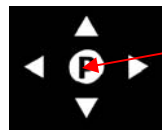
To program the temperature settings, The display will read **COOK, WATER 1, HOLD and WATER 2** and then the currently programmed temperature for each cycle (for example 250°F). Type in the desired temperature for the desired cycle. Use the #10 product key for the number 0.



Press the **DOWN ARROW** button to scroll through the setting sequence and use the procedures above for **COOK, WATER 1, TIME 2, HOLD and WATER 2** settings



After programming the **WATER 2** temperature, press the arrow down button twice (scrolling past the "**ALRM TIME**") to get to the **EXIT** display).



When the display reads "**EXIT**", press "**P**" to exit the Programming Mode.

CONTROLLER PROGRAMMING INSTRUCTIONS (Continued)

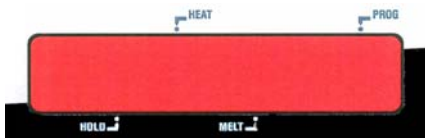
Operating range:

Temperature: 165°F-329°F
(74°C to 165°C)

Time: up to 99 minutes, 59 seconds, for each stage on the Product Key



Programming Center Keys



LED Display

PROGRAMMING NOTES

Once in Programming Path 3228, pressing “**DOWN ARROW**” or “**P**” will scroll through the entire sequence of parameters. If you wish to go back to a particular parameter, press the **UP ARROW** until the desired setting is reached.

To EXIT the Programming Mode, scroll through the programming choices until the display reads “**SYSTEM**”. Press **UP ARROW**. The display will read “**EXIT**”. Press “**P**” and you will return to the Operating Mode.

If you discontinue programming and leave the controller idle, it will automatically exit the Programming Mode after two minutes.

MANAGER PROGRAMMING PATH 3228

Program Path 3288 is a deeper level programming mode that should be used by the manager only. In most cases, this mode would be used infrequently, if at all. The sequence of parameters that may be programmed in **Program Path 3228** is:

MACHINE You should not need to change this parameter; however make sure it reads “TYPE 1”

APPLIANC (you will not ever need to change this parameter)

GD BAND Allows changes to the heating duct temperature; maximum temperature is 400°F

TIMING Allows you program standard or FAST.FLEX™ timing mode

COOKUNIT Allows you to change the timing to hours and minutes, or minutes and seconds

STONE VOL Allows you to change the volume of the controller alarm

TEMP UNIT Allows you to change the temperature scale to Fahrenheit or Celsius

RANGE L 1 Allows you to change the lower programmable menu temperature; minimum 32°F

RANGE L 2 Allows you to change the upper programmable menu temperature; maximum 350°F

HYS 1 Allows you to set the lower temperature differential; this tells the machine when the temperature drops a certain number of degrees below the temperature setpoint to turn the heating element on. Preprogrammed differential is 5°; In most cases this is sufficient for effective machine performance

HYS 2 Allows you to set the upper temperature differential; this tells the machine when the temperature goes above the set point temperature to turn the heating element off. Preprogrammed differential is 5°; In most cases this is sufficient for effective machine performance

RANGEL 2 (you will not ever need to change this parameter)

RANGEH 2 (you will not ever need to change this parameter)

HYSL 2 (you will not ever need to change this parameter)

HYSH 2 (you will not ever need to change this parameter)

Continued on next page

CONTROLLER PROGRAMMING INSTRUCTIONS (Continued)

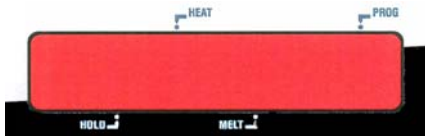
Operating range:

Temperature: 165°F-329°F
(74°C to 165°C)

Time: up to 99 minutes, 59 seconds, for each stage on the Product Key



Programming Center Keys



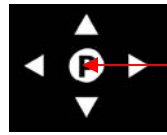
LED Display

*PROGRAMMING NOTE

You may also enter **Programming Mode 1724** by scrolling to **"RECIPE"** from the **"SYSTEM"** screen using the **DOWN ARROW** button. You may then program the menu settings for Product Keys 1 through 10, according to the instructions on pages 12-13.

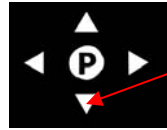
Scrolling past **"RECIPE"** at this level will take you to **"DIAGNOST"**, **"OFFSET"**, **SCK ADDR** and **"EXIT"** in that order. **"DIAGNOST"** **"OFFSET"** and **"SCK ADDR"** are to be used by service technicians only. Do not change any of the settings in these parameters.

To exit, scroll until the screen reads **"EXIT"** by using the **UP** or **DOWN ARROW** buttons, and then press **"P"**.



To access Program Mode 3228 press and hold **"P"**.

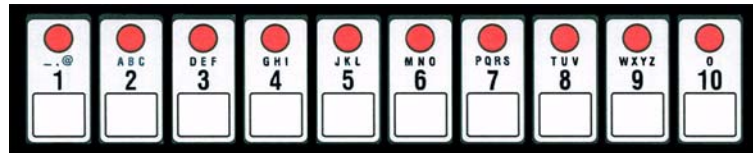
The display will read: **"COUNTS"**



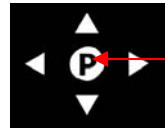
Press the **DOWN ARROW**

The display will read: **"PROGRAM"**

Enter code **"3228"** using the **Product Keys**. As you type in the numbers, they will appear as asterisks on the display.



*The display will read: **"SYSTEM"**

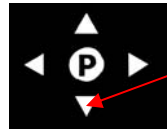


Press **"P"**

The display will read **"MACHINE"**. Verify that it reads **TYPE 1**. If it says **TYPE 1**, skip this program by pressing the **DOWN ARROW** button. If it does not, press **RIGHT ARROW** or **LEFT ARROW** to alternate between **TYPE 1** and **TYPE 2**. When it says **TYPE 1**, press **P**.

The display will read **"APPLIANC"**

Skip this program by pressing the **DOWN ARROW** button



Press the **DOWN ARROW** button

The display will read **"GD BAND"**

Continued on next page

CONTROLLER PROGRAMMING INSTRUCTIONS (Continued)

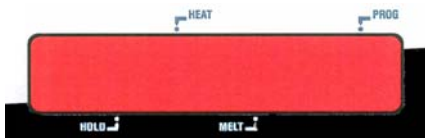
Operating range:

Temperature: 165°F-329°F
(74°C to 165°C)

Time: up to 99 minutes, 59 seconds, for each stage on the Product Key



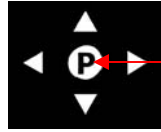
Programming Center Keys



LED Display

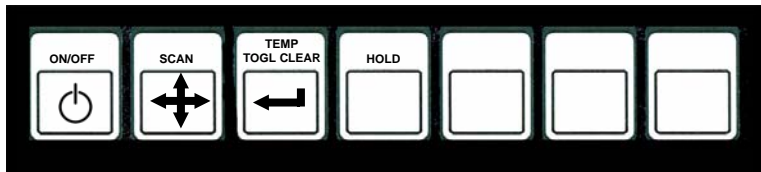
TO CHANGE THE HEATER DUCT TEMPERATURE, scroll using the **DOWN ARROW** until the display reads “GD BAND”

If you wish to change the heating duct temperature

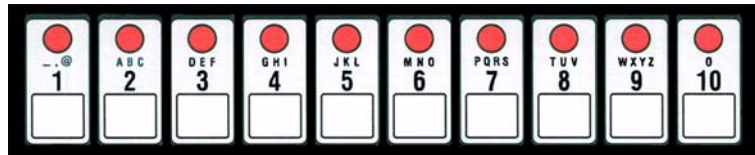


press “P”.

and the display will read the current duct temperature. To change the temperature, press the **TEMP TOGL CLEAR** button. The display will read **0°F**.



Type in the desired duct temperature using the **Product Keys** (use 10 for the number 0). The maximum number that may be entered is 400°F.



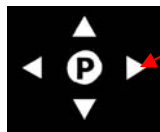
After typing in your desired temperature, press “P” to return to the main 3228 Program Sequence. The display will read “TIMING”.

ABOUT FAST.FLEX™ OR STRAIGHT TIMING MODE

Flex or straight timing can be configured for each stage on each Product Key. The advantage of the FAST.FLEX mode is to insure consistent, high-quality food product. FAST.FLEX will adjust the actual cook time, taking into consideration the temperature variation due to load size, initial product temperature, product moisture content, and other factors affecting the cook cycle. However, using FAST.FLEX mode may alter the time expected to finish the cooking cycle. If cooking by straight time, the controller will cook only for the specified time without adjusting for these variances.

TO CHANGE THE TIMING MODE, scroll by pressing **DOWN ARROW** until the display reads “TIMING”

If you wish to change the timing from standard cooking mode to **FAST.FLEX™** mode or vice versa



press **RIGHT ARROW** or **LEFT ARROW** to alternate between “FLEX” and “STRAIGHT”

When your desired timing appears on the display, press “P” to select and save your choice.

The display will read “COOKUNIT”

Continued on next page

CONTROLLER PROGRAMMING INSTRUCTIONS (Continued)

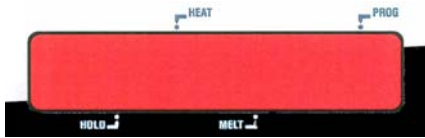
Operating range:

Temperature: 165°F-329°F
(74°C to 165°C)

Time: up to 99 minutes, 59
seconds, for each stage on the
Product Key



Programming Center Keys



LED Display

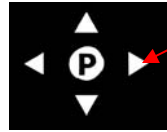
PROGRAMMING NOTES

Once in Programming Path 3228, pressing "**DOWN ARROW**" or "**P**" will scroll through the entire sequence of parameters. If you wish to go back to a particular parameter, press the **UP ARROW** until the desired setting is reached.

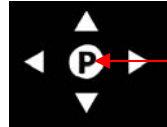
To EXIT the Programming Mode, scroll through the programming choices until the display reads "**SYSTEM**". Press **UP ARROW**. The display will read "**EXIT**". Press "**P**" and you will return to the Operating Mode.

If you discontinue programming and leave the controller idle, it will automatically exit the Programming Mode after two minutes.

TO CHANGE THE TIMER COUNTDOWN from minutes and seconds to hours and minutes or vice versa, scroll using the **DOWN ARROW** until the display reads "**COOKUNIT**"



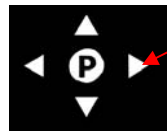
Press **LEFT ARROW** or **RIGHT ARROW** to select "**HH:MM**" (hours and minutes) or "**MM:SS**" (minutes and seconds) for the timer countdown



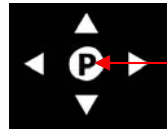
press "**P**".

The display will read "**TONE VOL**"

TO CHANGE THE TONE VOLUME of the controller, scroll using the **DOWN ARROW** until the display reads "**TONE VOL**"



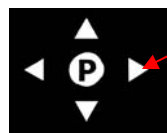
Press **LEFT ARROW** or **RIGHT ARROW** to select your desired volume; tone ranges from 1 (softest) to 4 (loudest). When you reach the desired volume



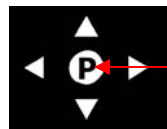
press "**P**".

The display will read "**TEMP UNIT**"

TO CHANGE THE TEMPERATURE SCALE of the controller from Fahrenheit to Celsius or vice versa, scroll using the **DOWN ARROW** until the display reads "**TEMP UNIT**"



Press **LEFT ARROW** or **RIGHT ARROW** to select your desired scale (controller will read "**F**" or "**C**"). When you reach the desired scale



press "**P**".

The display will read "**RANGE L 1**"

Continued on next page

CONTROLLER PROGRAMMING INSTRUCTIONS (Continued)

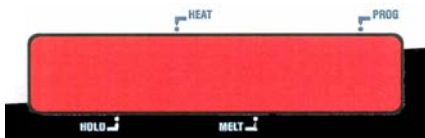
Operating range:

Temperature: 165°F-329°F
(74°C to 165°C)

Time: up to 99 minutes, 59 seconds, for each stage on the Product Key



Programming Center Keys



LED Display

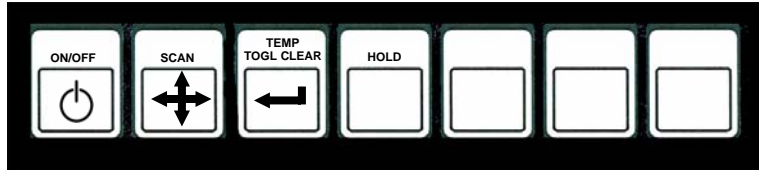
PROGRAMMING NOTES

Once in Programming Path 3228, pressing “**DOWN ARROW**” or “**P**” will scroll through the entire sequence of parameters. If you wish to go back to a particular parameter, press the **UP ARROW** until the desired setting is reached.

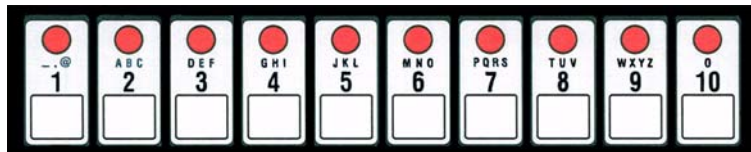
To EXIT the Programming Mode, scroll through the programming choices until the display reads “**SYSTEM**”. Press **UP ARROW**. The display will read “**EXIT**”. Press “**P**” and you will return to the Operating Mode.

If you discontinue programming and leave the controller idle, it will automatically exit the Programming Mode after two minutes.

TO CHANGE THE LOW TEMPERATURE RANGE of the controller, scroll using the **DOWN ARROW** until the display reads “**RANGEL 1**” and then the currently stored LOW temperature setting (i.e. **32°F**). Press “**TEMP TOGL CLEAR**” button to clear the temperature setting. The display will read “**0°F**”

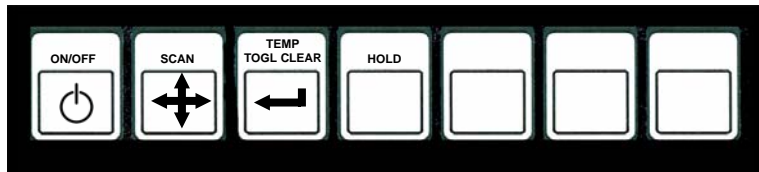


Using the **Product Keys**, type in the new desired LOW temperature setting (Use the number 10 for 0). NOTE: 32°F is the lowest possible setting that can be used.

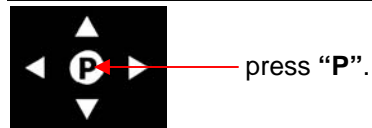
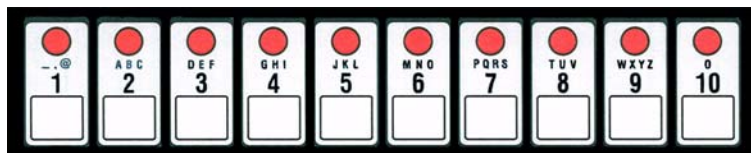


The display will read “**RANGEL 1**”

TO CHANGE THE HIGH TEMPERATURE RANGE of the controller, scroll using the **DOWN ARROW** until the display reads “**RANGEH 1**” and then the currently stored HIGH temperature setting (i.e. **329°F**). Press “**TEMP TOGL CLEAR**” button to clear the temperature setting. The display will read “**0°F**”



Using the **Product Keys**, type in the new desired HIGH temperature setting (Use the number 10 for 0). NOTE: 329°F is the highest possible setting that can be used.



The display will read “**HYS L 1**”

Continued on next page

CONTROLLER PROGRAMMING INSTRUCTIONS (Continued)

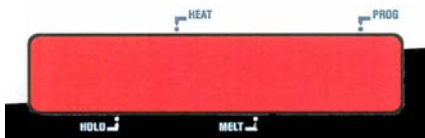
Operating range:

Temperature: 165°F-329°F
(74°C to 165°C)

Time: up to 99 minutes, 59 seconds, for each stage on the Product Key



Programming Center Keys



LED Display

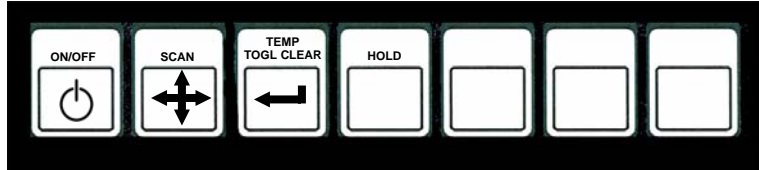
PROGRAMMING NOTES

Once in Programming Path 3228, pressing “**DOWN ARROW**” or “**P**” will scroll through the entire sequence of parameters. If you wish to go back to a particular parameter, press the **UP ARROW** until the desired setting is reached.

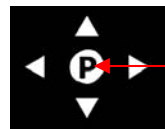
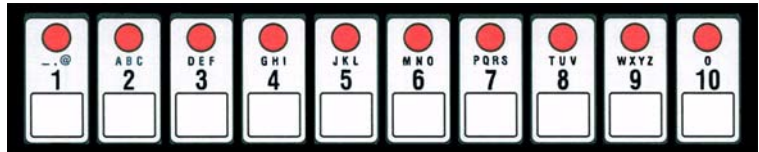
To EXIT the Programming Mode, scroll through the programming choices by pressing “**P**” until the display reads “**SYSTEM**”. Press **UP ARROW**. The display will read “**EXIT**”. Press “**P**” and you will return to the Operating Mode.

If you discontinue programming and leave the controller idle, it will automatically exit the Programming Mode after two minutes.

TO CHANGE THE LOWER TEMPERATURE DIFFERENTIAL of the controller, scroll using the **DOWN ARROW** until the display reads “**HYSL 1**” and then the currently stored lower differential temperature setting (i.e. **5°F**). Press “**TEMP TOGL CLEAR**” button to clear the temperature setting. The display will read “**0°F**”



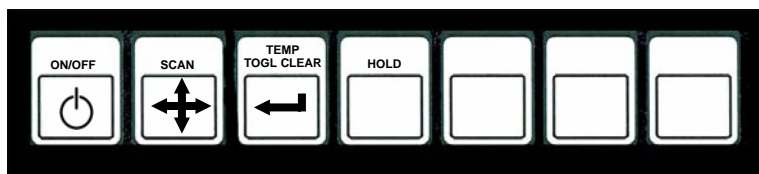
Using the **Product Keys**, type in the new desired low temperature setting (Use the number 10 for 0).



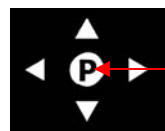
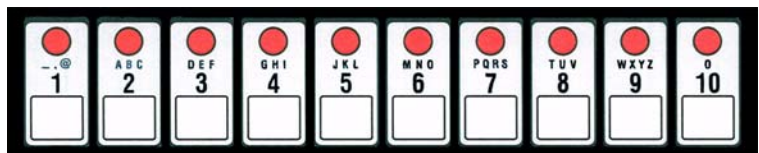
press “**P**”.

The display will read “**HYSH 1**”

TO CHANGE THE UPPER TEMPERATURE DIFFERENTIAL of the controller, scroll using the **DOWN ARROW** until the display reads “**HYSH 1**” and then the currently stored upper differential temperature setting (i.e. **5°F**). Press “**TEMP TOGL CLEAR**” button to clear the temperature setting. The display will read “**0°F**”



Using the **Product Keys**, type in the new desired upper temperature setting (Use the number 10 for 0).



press “**P**”.

Continued on next page

CONTROLLER PROGRAMMING INSTRUCTIONS (Continued)

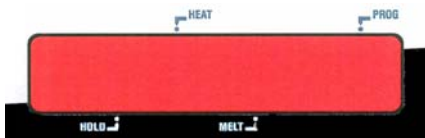
Operating range:

Temperature: 165°F-329°F
(74°C to 165°C)

Time: up to 99 minutes, 59
seconds, for each stage on the
Product Key



Programming Center Keys



LED Display

PROGRAMMING NOTES

Once in Programming Path 3228, pressing "**DOWN ARROW**" or "**P**" will scroll through the entire sequence of parameters. If you wish to go back to a particular parameter, press the **UP ARROW** until the desired setting is reached.

To EXIT the Programming Mode, scroll through the programming choices until the display reads "**SYSTEM**". Press **UP ARROW**. The display will read "**EXIT**". Press "**P**" and you will return to the Operating Mode.

If you discontinue programming and leave the controller idle, it will automatically exit the Programming Mode after two minutes.

It is not necessary to program the rest of the parameters in the sequence. They are:

The display will read "**RANGEL 2**"
Skip this parameter by pressing "**P**"

The display will read "**RANGEH 2**"
Skip this parameter by pressing "**P**"

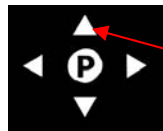
The display will read "**HYSL 2**"
Skip this parameter by pressing "**P**"

The display will read "**HYSH 2**"
Skip this parameter by pressing "**P**"

The controller will return to the beginning of the sequence and the display will read "**MACHINE**"

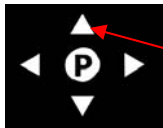
To EXIT PROGRAMMING MODE 3228

Scroll through the programming sequence using the **DOWN ARROW** or **UP ARROW** until the display reads "**MACHINE**"



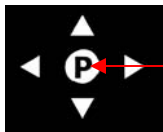
Press **UP ARROW**

The display will read "**SYSTEM**"



Press **UP ARROW**

The display will read "**EXIT**"



press "**P**".

The controller is now out of Program Mode and in Operating Mode.

The controller will also exit Programming Mode if left idle for more than two minutes.

DAILY CLEANING PROCEDURES



CAUTION: ELECTRIC SHOCK HAZARD

Disconnect appliance from electric power before cleaning.

NOTE: When the power is turned off, the cooling fans will continue to operate until the heater compartment cools down. **DO NOT** unplug the cabinet until the cooling fans turn off.



CAUTION: HOT SURFACE

Exposed surfaces can be hot to the touch and may cause burns. Allow appliance to cool before cleaning.



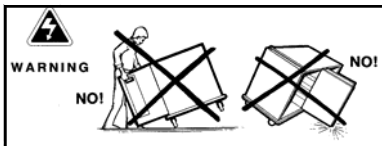
IMPORTANT:

DO NOT spill or pour water into controls, control panel or wiring. Water damage is **not** covered by warranty.



CAUTION:

Beware of sharp edges with sheet metal during cleaning process.



1. After all food products have been removed from the cabinet, turn the power switch to "OFF" and allow the cabinet to cool.
2. Unplug the unit prior to any cleaning.
3. Remove the side heat duct and rack assemblies. Simply lift up and pull out. They may be hand washed or run through an automatic washer. Clean the inside of the unit as well as the removed parts. Reinstall when all parts are dry and clean.
4. To clean stainless steel surfaces, use only cleansers, detergents, degreasers or sanitizers that are certified to be "chloride-free" and "phosphate-free." Use these products only in recommended concentrations. **DO NOT** exceed recommended concentrations or mixing ratios. After cleaning and sanitizing, rinse all exposed surfaces thoroughly with large amounts of clean, clear water. Wipe off any standing liquid or residue from all surfaces, corners and near edges.
5. Inspect and clean the areas where there are vents or filters, making sure no water gets into the internal controls or electrical areas of the cabinet. **CAUTION:** When using solvents, it is essential that proper precautionary measure be observed. Refer to solvent manufacturer's instructions. Use of direct steam/hot water at temperatures above 190°F may result in bubbling or loosening of the control panel.
6. Plastic control panel should be washed with a clean damp cloth and chlorine-free detergent. Rinse thoroughly with clean damp cloth and allow to dry. Do not use abrasive cleaners, waxes, car polish, or substances containing strong aromatic solvents or alcohol.

CLEANING THE WATER RESERVOIR

The water reservoir must be cleaned daily to prevent chlorides (salts) from accumulating. Failure to clean the reservoir daily will result in corrosion, pitting and leaks. This damage is permanent, costly to repair and not covered by the warranty.

1. Unplug cabinet and allow to cool
2. Place empty pan under the stopcock at the front of the reservoir and drain.
3. Inspect for scale build-up on tank surface. Apply de-scaling agent, according to the manufacturer's recommendations and mixing concentration.
4. If needed, scrub with a Teflon or nylon bristle brush to remove any food particles and scale deposits. Further cleaning may be done with a plastic scouring pad and alkaline based cleansers.
5. Rise well several times with clean water, drain and wipe immediately.
6. Close stopcock and reconnect electrical power.



CAUTION: Cleansers, detergents, degreasers, sanitizers, or bleaching agents that contain chlorides or phosphates will cause permanent damage to stainless steel products. The damage appears as pits, eruptions, voids, small holes, severe discoloration or dulling of the metal finish.

Water with high chloride content can also damage stainless steel. If unsure of your water quality, we recommend you have it tested. **THIS DAMAGE IS PERMANENT, COSTLY TO REPAIR, AND IS NOT COVERED BY THE WARRANTY.**

SEE NEXT PAGE FOR RECOMMENDED TIPS FOR CLEANING STAINLESS STEEL

CABINET MAINTENANCE



CAUTION:

Never move cart unless all doors are securely closed. Serious damage to hinges and doors may result if bumped into tables, walls, or other equipment when doors are open.

CASTERS

Your cabinet may be equipped with casters or legs. If your cabinet has casters they may be easily lubricated with a grease gun. Lubricate bearings at least once every six months. Lubrication will be required every one to two weeks if carts are cleaned with hot water or steam cleaning system. NOTE: Casters with special Delrin™ bearings are recommended for frequent cart wash with steam cleaning systems or high pressure hose.

LATCHES

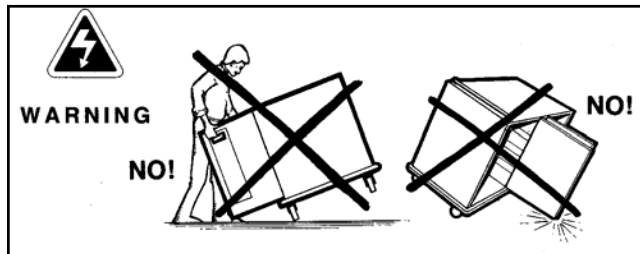
Check frequently to insure that all door latches are secure. Latches may become "sticky" due to residue buildup from daily use and cleaning procedures. Lubricate latches once every six months or when needed with WD40, silicone spray, graphite or other commercial lubricant for stainless steel products. Do not use oil.

HINGES

Your cart doors and hinges have been factory aligned to assure positive latching and smooth action. If doors are removed for cleaning, we recommend that they be put back on the same cart to assure the best possible alignment and operation.

DOORS

Never tip carts forward on open doors to drain water during or after washing. This can cause serious damage to hinges, doors and latches.



RECOMMENDED TIPS FOR CLEANING STAINLESS STEEL

Purpose	Frequency	Cleaning Agent	Method of Application
Routine	Daily	Soap, ammonia detergent and water	Sponge with cloth, rinse with clear water and wipe dry.
Smears/ Fingerprints	As needed	Stainless steel cleaner or similar products	Rub with soft cloth as directed on package. Rub in direction of grain of stainless steel. Do not use on vinyl trim.
Stubborn spots and stains	Daily as needed	Any chloride-free or phosphate-free cleaner	Apply with damp sponge or cloth. Rub in direction of grain of stainless steel. Rinse thoroughly, especially if cleaner contains chlorine bleach, do not use on vinyl trim.
Hard water spots	Daily as needed	Vinegar	Swab with cloth. Rinse with water and wipe dry.

TROUBLESHOOTING GUIDE

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
NO POWER	Power cord not plugged in	Plug in power cord to proper receptacle
	ON/OFF Switch OFF	Turn ON/OFF Switch ON
	Main circuit breaker tripped	Check and reset breaker
	Line fuse blown	Correct cause of fuse failure and replace fuses
	Defective 24VAC transformer	Replace transformer. Replace controller
CABINET FAILS TO HEAT (Start/Stop button pressed. Oven will not heat. Blower fan runs)	Door not fully closed	Close door again. Retry cooking cycle.
	Incorrect cooking cycle	Retry cooking cycle
	Inoperable component	Identify & replace failed part (s)
CABINET FAILS TO HEAT (Heat indicator comes on. All other displays normal)	RF Interference	Verify RF leakage within limits
	Faulty controller	Replace controller
CABINET FAILS TO HEAT (Temperature lamp comes on. All other displays normal)	Hi-limit tripped	Reset hi-limit
	Faulty heater relay	Replace relay
	Faulty heat elements	Replace elements
OVEN NOT HEATING NORMALLY	Incorrect heating procedure	Check time setting
	Wattage output too low	Check element
	Defective capacitor	Check & replace if necessary
CONTROLLER INOPERATIVE OR ERRATIC	RF Interference	Verify RF leakage within limits
	Faulty controller	Replace controller
	Faulty controller transformer	Replace transformer
AIR TEMP PROBE FAILURE (Air probe malfunctions)	Loose probe connection	Repair connections
	Faulty air thermocouple	Replace air probe
NO SOUND	Inoperable speaker	Replace controller
BUTTON PROBLEM	Frozen key	Unplug controller. Hold down the TEMP TOGGLE/CLEAR key as you plug the controller back in
	Inoperable key	Replace controller
READING WRONG TEMPERATURE	Defective temperature probe	Replace temperature probe
Display reads "PROBE"	Defective temperature probe	Replace probe
	Probe not plugged in	Plug in probe

SERVICE EXPECTATIONS

Service Philosophy

For over fifty years, Carter-Hoffmann has enjoyed a reputation for manufacturing rugged, dependable foodservice equipment that permits foodservice professionals serve more food products to more people, and thus, to grow their business.

Our goal is not only to provide the best food service equipment for the price, but also to back it up with after-sale service that is responsive fast, efficient and professional. To ensure a clear understanding of our goals, expectations, and responsibilities, we have prepared this brief document

Carter-Hoffmann products are innovative and efficient. They are easy to use, easy to clean and easy to maintain. Although the products are quite reliable, when necessary they are also easy to repair.

We believe that a malfunction to a Carter-Hoffmann product should cause as little inconvenience to the customer as possible. Our aim is to provide "same day"/first time fix" repair service on all of our products, whether in warranty or not.

We are dedicated to making every aspect of our customer service the standard by which others are judged.

End-User Responsibilities

While we all strive to serve our mutual customers as well as possible that does not mean that the end-user (including his employees) does not share some responsibilities.

1. All shipping damage must be noted on the freight bill when the shipment is received. Any freight damages must be collected from the Freight Company, NOT Carter-Hoffmann.
2. The end-user should be advised beforehand to carefully unpack and inspect all products when they are received BEFORE SIGNING THE SHIPPER'S RECEIPT OF DELIVERY.
3. The end-user must provide a safe, dry, level surface for the equipment to be placed upon.
4. The end-user must provide the proper electrical supply. All in-wall electrical modifications are to be completed by a licensed electrician. All building modifications are the responsibility of the end-user.
5. The end-user must operate, clean and maintain the equipment in accordance with the procedures described in the Equipment Manual.
6. Carter-Hoffmann is NOT responsible for any loss of the customer's income, loss of food product, extra labor charges, or any other incidental or consequential costs as a result of the malfunction of our product.
7. The end-user shall contact our authorized service provider only whenever service or repair to a Carter-Hoffmann product under warranty is required.
8. The end-user shall allow for on-premises repair of the equipment to be completed at a mutually convenient place and time.

Warranty Service

1. Warranty service is to be **initiated** by authorized Carter-Hoffmann personnel only.
2. The service provider is **NOT** authorized to change or extend any of the terms or conditions of our warranty.
3. Initial freight damage is NOT covered by the product warranty.

Confidentially

1. The end user and all his employees and sub-agents shall protect and keep confidential Carter-Hoffmann's proprietary designs, information, and knowledge.
2. All materials provided by Carter-Hoffmann is to be considered confidential; it remains Carter-Hoffmann's property; and is not to be reproduced without our prior approval

Carter-Hoffmann Warranty:

Carter-Hoffmann ("CARTER-HOFFMANN") warrants to the initial purchaser of its standard Carter Line Products that CARTER-HOFFMANN will, at its option, repair or replace, during the warranty period set forth below, any part of such products made necessary due to a defect in material or workmanship which is present when the product leaves its factory and which manifests itself during the warranty period under normal use and service.

*This warranty applies only to original equipment owned and possessed by the initial purchaser and the warranty period begins on the date of original shipment from the CARTER-HOFFMANN factory and extends as follows: **to component parts and labor for 12 months.***

Repair or replacements under this warranty will be performed, unless otherwise authorized in writing by CARTER-HOFFMANN, at its factory. All parts or components to be repaired or replaced under this warranty are to be shipped prepaid to CARTER-HOFFMANN, with reimbursement credit for such part or component to be given if found by CARTER-HOFFMANN to be defective.

CARTER-HOFFMANN neither makes nor assumes and does not authorize any other person to make or assume any obligation or liability in connection with its products other than that covered in this warranty. This warranty applies only within the continental United States and Canada. In Alaska and Hawaii, this warranty applies only to and is limited to the supply of replacement parts.

Warranty Exclusions and Limitations:

Any implied warranty of merchantability or fitness for a particular purpose is hereby specifically disclaimed by CARTER-HOFFMANN. There are no warranties, expressed or implied, which extend beyond the description on the face hereof. This warranty does not cover and CARTER-HOFFMANN shall not under any circumstances be liable for any incidental, consequential or other damages (such as injury to persons or property, loss of time, inconvenience, loss of business or profits, or other matters not specifically covered) arising in connection with the use of, inability to use, or failure of these products.

Specifications are subject to change through product improvement and innovation.

Carter-Hoffmann

1551 McCormick Ave.

Mundelein, Illinois, 60060 USA

Phone: 847-362-5500 Toll free: 800-323-9793 Fax: 847-367-8981

Sales and Marketing E-mail: sales@carter-hoffmann.com

Service E-mail: service@carter-hoffmann.com

Company Website: www.carter-hoffmann.com

CFESA

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North American Association of
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