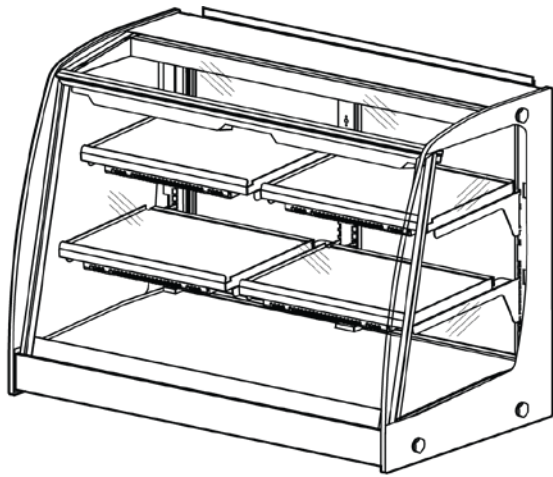


# HOT FOOD DISPLAY

## Technical Service Manual

**MODELS HFD000001, 2, 3, 4**



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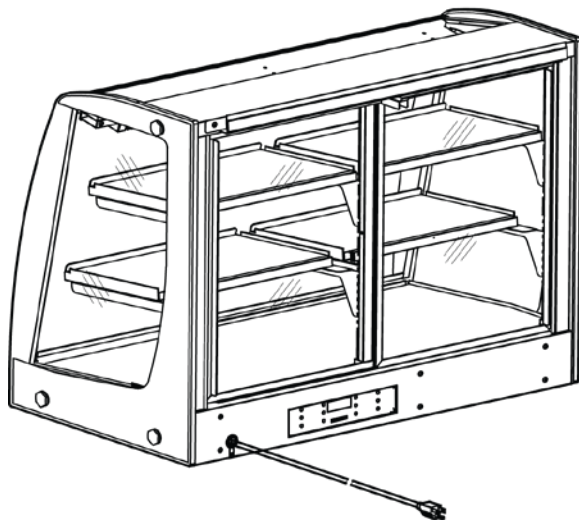
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## A COMMITMENT TO SAFETY

The SandenVendo is committed to safety in every aspect of our product design. SandenVendo is committed to alerting every user to the possible dangers involved in improper handling or maintenance of our equipment. The servicing of any electrical or mechanical device involves potential hazards, both to those servicing the equipment and to users of the equipment. These hazards can arise because of improper maintenance techniques. The purpose of this manual is to alert everyone servicing SandenVendo equipment of potentially hazardous areas, and to provide basic safety guidelines for proper maintenance.

This manual contains various warnings that should be carefully read to minimize the risk of personal injury to service personnel. This manual also contains service information to insure that proper methods are followed to avoid damaging the Hot Food Display (HFD) or making it unsafe. It is also important to understand these warnings are not exhaustive. SandenVendo could not possibly know, evaluate, or advise of all of the conceivable ways in which service might be done, nor can SandenVendo predict all of the possible hazardous results. The safety precautions outlined in this manual provide the basis for an effective safety program. Use these precautions, along with the service manual, when installing or servicing the HFD.

We strongly recommend a similar commitment to safety by every servicing organization. Only properly trained personnel should have access to the interior of the machine. This will minimize the potential hazards that are inherent in electrical and mechanical devices. SandenVendo has no control over the machine once it leaves the premises. It is the owner or lessor's responsibility to maintain the Hot Food Display in a safe condition. Follow all Safety Rules and Safety Warnings in this manual. If you have any questions, please contact the Technical Services Department of SandenVendo.

### SAFETY RULES

- Read the Safety Warnings before installation or service.
- Test for proper grounding before installing to reduce the risk of electrical shock and fire.
- Turn off power switch and disconnect power cord from wall outlet before servicing.
- Use only fully-trained service technicians for Power-On servicing.
- Use adequate equipment when moving the HFD.
- Use only authorized replacement parts.
- Be aware of inherent dangers in rocking or tipping the HFD.
- Always turn power off before plugging or unplugging HFD to wall outlet.

## **SAFETY WARNINGS**

The HFD is for indoor use only. Do not use near water or in condensing humidity.

To prevent electric shock or fire, do not kink, pull, or pinch the power cord, and insure no equipment is resting on the power cord. If the power cord is damaged, unplug and replace.

Do not connect with other plugs. Do not use an extension cord.

When unplugging, first turn off the power switch. Then pull the plug at the end of the power cord, not by pulling the power cord, since the cord can be damaged, overheat, and cause a fire.

Do not spray water on the HFD. It may cause an electric shock or fire.

Do not touch the power plug, switches, or other electrical parts with wet hands. It can cause an electric shock.

Periodically check that the plug is pushed in all the way.

To prevent injuries due to falling objects, liquid spills, electric shock or fire, do not place heavy objects or liquid-filled objects on top of the HFD.

To prevent electric shock or fire, do not use volatile or flammable products in or near the HFD.

When moving the HFD: turn the HFD off, unplug, and allow the unit to cool. To prevent glass breakage and injury, do not push on the glass. Also, use proper equipment and lifting techniques. Insure the product doesn't tip while it is being moved.

If a lamp or any glass cracks or breaks, turn off the power and discard all food in the HFD. Replace lamp and / or glass. Remove all glass fragments. Carefully inspect all surfaces, corners, and gaskets to insure all glass fragments have been removed before returning HFD to service.

Keep HFD out of direct sunlight and away from heat sources.

Do not hang from the door – this may cause injury or electric shock.

Turn off and unplug HFD before servicing, and let HFD cool before cleaning or servicing.

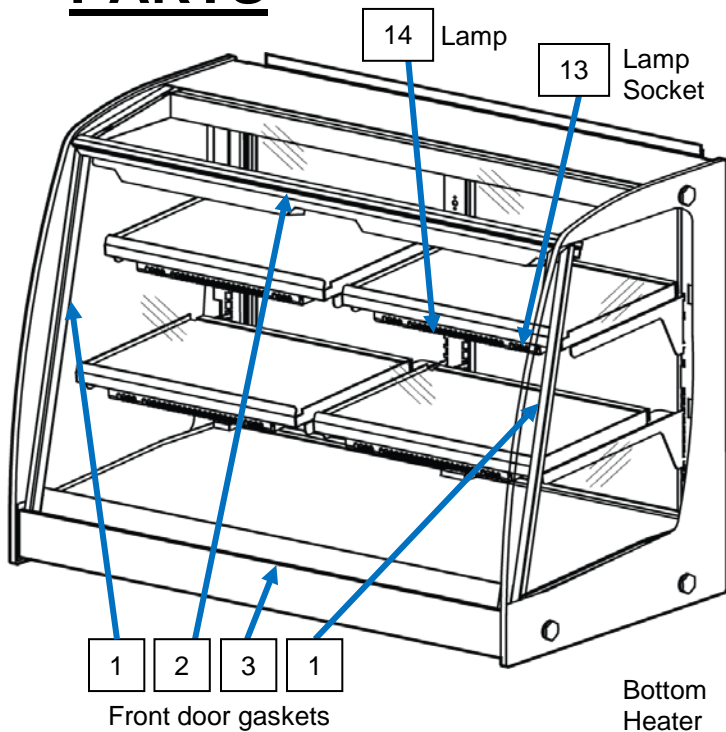
Use proper tools while servicing.

Use only authorized replacement parts.

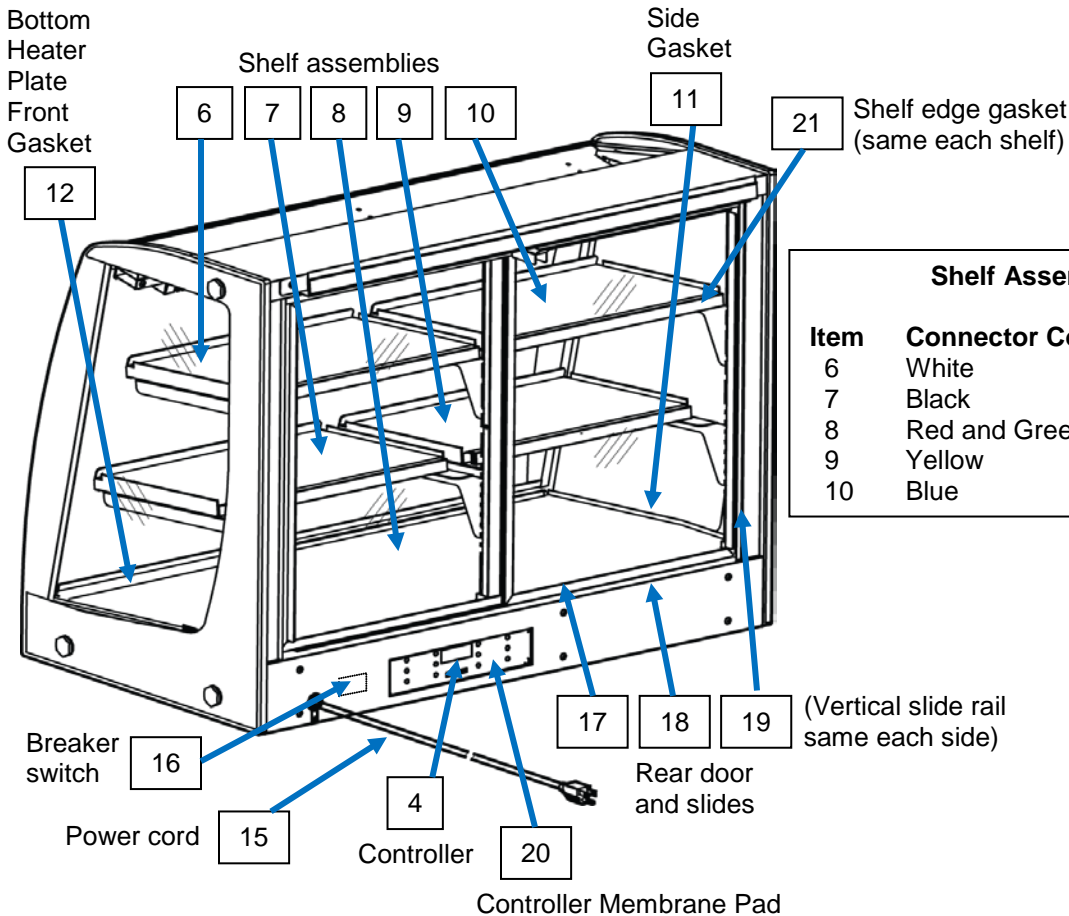
The HFD temperatures are factory set to meet NSF food safety requirements. Changing temperature settings may adversely impact food safety.

The lamps are an integral part of the food heating system. If a lamp is not illuminated, the temperatures may not be maintained for food safety.

## PARTS

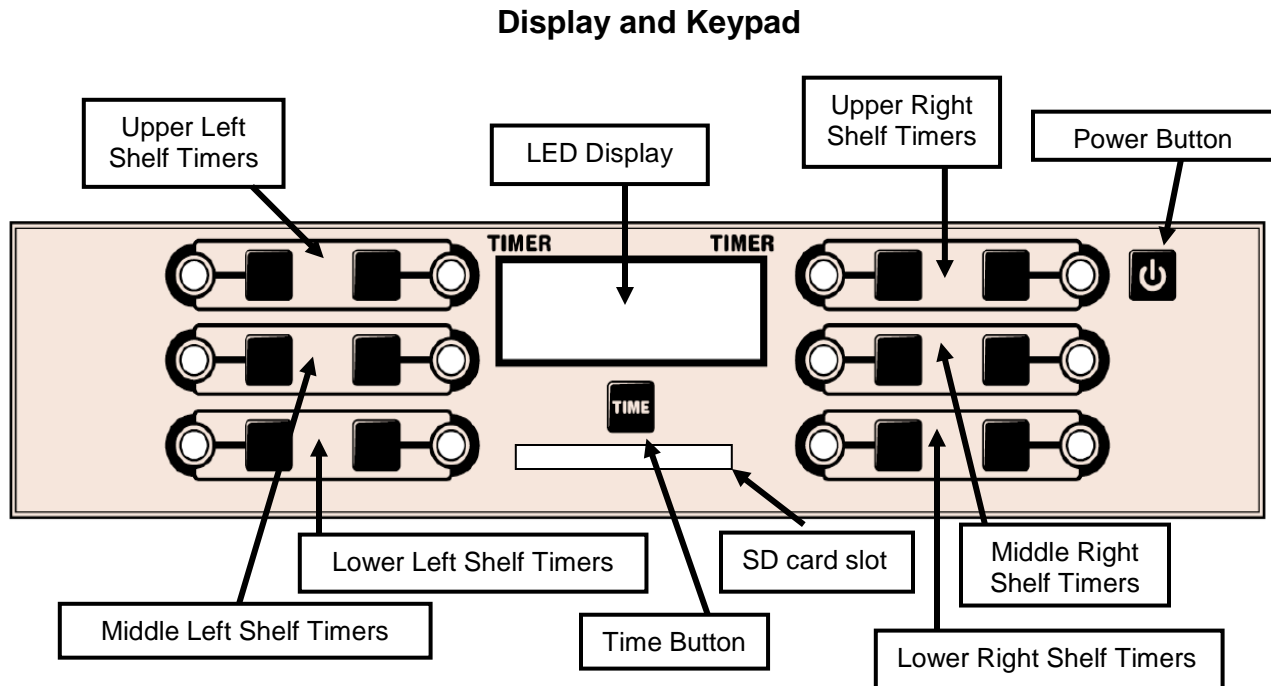


Item	Part#	Description
1	1158489	Gasket, Door, Side
2	1158477	Gasket, Door, Upper
3	1158491	Gasket, Door, Lower
4	1153225	Controller
5	1187519	Heater Kit (not shown)
6	1173478	Shelf Assembly, Upper Left
7	1173508	Shelf Assembly, Middle Left
8	1173455	Shelf Assembly, Bottom
9	1173522	Shelf Assembly, Middle Right
10	1173492	Shelf Assembly, Upper Right
11	1158685	Gasket A
12	1158696	Gasket B
13	1159513	Lamp Socket
14	1159525	Xenon Heating Lamp
15	1162225	Power Cord Plug
16	1161921	Circuit Breaker, 15 Amp
17	1184283	Rear Door, HFD
18	1158673	Slide Rail, Lower (Horizontal)
19	1158969	Slide Rail, Side (Vertical)
20	1153213	Controller Membrane Pad
21	1159604	Shelf Edge Gasket



Shelf Assembly Connector Colors		
Item	Connector Color	Description
6	White	Shelf Asy, Upper Left
7	Black	Shelf Asy, Middle Left
8	Red and Green	Shelf Asy, Bottom Shelf
9	Yellow	Shelf Asy, Middle Right
10	Blue	Shelf Asy, Upper Right

## OPERATION



### Timer Setting and Operation

Note: to help prevent keypad damage, push keypad buttons only with finger or thumb; do not use fingernail, utensil, tool, pen, or other object.

#### Normal Operation

Pressing the power button turns the HFD on or off. When controller is off, all lamps, heaters, displays and indicators are off.

#### Timers

When a timer is off, pressing the timer button once sets the countdown timer to the value preprogrammed into the controller.

Pressing the timer button again within three seconds activates the timer adjustment mode and sets the timer to one hour.

Each successive press (within three seconds) adds one hour to the time, up to four hours.

At four hours, the next button press cycles the timer back to one hour again.

Once the timer is activated, the LED next to the shelf timer button becomes green.

The display then reverts to HFD internal ambient temperature display.

While a timer is on, pressing a timer button once displays the remaining time for 4 seconds, then shelf temperature for 4 seconds, and then the display reverts to the internal ambient temperature display.

At 14 minutes remaining time, the LED blinks yellow.

When no time remains, the LED blinks red, plus a brief audible alarm sounds.

Pressing the timer button next to the blinking red LED clears the alarm and restarts the timer.

Holding down the Time button, then pressing a timer key, turns off the timer.

### Converting Temperature from °F to °C (or °C to °F)

1. Controller must be off.
2. While holding down the TIME button, press the On/Off button. Software revision will be displayed.
3. Press and release the TIME button.
4. Wait 5 seconds.
5. Press any timer key once to change from °F to °C (or °C to °F).
6. Press the On/Off button to turn the unit on.
7. Verify the display indicates the desired temperature units (°F or °C).

### Front Door

If the front door is opened, the controller turns off only the lights. The display reads "OPeN". After closing the front door, the lights turn on, and the display reverts to internal ambient temperature.

### Heater Temperature Adjustment

With controller power off, hold down the Time button, then press & release the Power button. The left timer button for a shelf decreases the temperature setpoint. The right timer button for a shelf increases the temperature setpoint. To exit heater temperature adjustment mode, press the power button.

### Error Codes

E30	Inside ambient thermistor error (open circuit)
E60	Upper left shelf thermistor error (open circuit) ( <i>E61</i> )
E61	Middle left shelf thermistor error (open circuit) ( <i>E64</i> )
E62	Lower left shelf thermistor error (open circuit) ( <i>E67</i> )
E63	Upper right shelf thermistor error (open circuit) ( <i>E60</i> )
E64	Middle right shelf thermistor error (open circuit) ( <i>E63</i> )
E65	Lower right shelf thermistor error (open circuit) ( <i>E66</i> )
E90	Unable to read SD card

*(Error codes in italics reflect codes on some controllers)*

Clear error codes by pressing any key (except for E90 error).

Clearing an error code turns that shelf's heater off.

Clear the E90 error by pressing the power button, then press again to turn HFD on again.

### SD Card Programming

The SD card must be formatted in FAT32, preferably by Windows XP instead of Vista. It must contain a single file, and the file name does not matter. 512MB or 1GB cards only. The contents must be ASCII text as follows, in exactly the format shown:





## Temperature and Timer Programming Format

SV01 (must be SV01)  
 087A (this is the date code: month 08 year 7 product b,L,d A)  
 UL:235,2:00,1:00 (Upper Left shelf, set to 235°F, left timer value, right timer value)  
 ML:235,2:00,2:00  
 LL:220,1:00,2:00  
 UR:235,2:00,1:00  
 MR:235,2:00,2:00  
 LR:220,1:00,2:00

There can be no extra spaces or blank lines. A line is terminated with a CR LF (carriage return, linefeed). The controller will read the file and parse the information. It expects to see this format and order of the file. The only variables that are allowed to change are the filename, menu code, the temperature and timer values, and the comment at the end of the file. The controller shall be shipped from the factory with the default values above.

Temperatures must be 3 digits, timer hour value one digit, and timer minute value two digits. Any heater circuit(s) and associated timers may be disabled by entering the following in the programming file (example): UL:x

## Loading the SD Card Program in the HFD controller

With the HFD on:

1. Insert the SD card in the controller's SD card slot until it clicks in place
2. The HFD display will show dashes while the program is loading
3. Loading will take about 15 to 30 seconds
4. Once loaded, the display will revert to internal ambient temperature
5. Press (don't pull) the card to remove it from the slot

## Controller Connectors

Modular three-prong receptacle: 115 VAC power.

(Left and right below are viewed from the front or controller side of the Mini HFD.)

### J1 connector: Heater and light power

J1 – 1 Lower Right Shelf Heater  
 J1 – 2 Lower Right Shelf Heater  
 J1 – 3 Middle Right Shelf Heater  
 J1 – 4 Middle Right Shelf Heater  
 J1 – 5 Upper Right Shelf Heater  
 J1 – 6 Upper Right Shelf Heater  
 J1 – 7 Lower Left Shelf Heater  
 J1 – 8 Lower Left Shelf Heater  
 J1 – 9 Middle Left Shelf Heater  
 J1 –10 Middle Left Shelf Heater  
 J1 –11 Upper Left Shelf Heater  
 J1 –12 Upper Left Shelf Heater  
 J1 –13 Lights  
 J1 –14 Lights

### J2 connector: Sensor signals

J2 – 1 Door Open Signal  
 J2 – 2 Door Open Signal  
 J2 – 3 Inside Case Ambient Thermistor  
 J2 – 4 Inside Case Ambient Thermistor  
 J2 – 5 Lower Right Shelf Thermistor  
 J2 – 6 Lower Right Shelf Thermistor  
 J2 – 7 Middle Right Shelf Thermistor  
 J2 – 8 Middle Right Shelf Thermistor  
 J2 – 9 Upper Right Shelf Thermistor  
 J2 –10 Upper Right Shelf Thermistor  
 J2 –11 Lower Left Shelf Thermistor  
 J2 –12 Lower Left Shelf Thermistor  
 J2 –13 Middle Left Shelf Thermistor  
 J2 –14 Middle Left Shelf Thermistor  
 J2 –15 Upper Left Shelf Thermistor  
 J2 –16 Upper Left Shelf Thermistor

## TROUBLESHOOTING

Unit does not turn on	Power cord unplugged No power at outlet	Plug HFD cord in outlet Check power output at outlet (115VAC)
	HFD circuit breaker off	Remove lower stainless steel panel and check breaker.
	Power cord wire disconnected	Check resistance across plug, ensure the breaker is on, measure resistance across plug terminal, line and neutral (160 ohms +/- 2)
	Front glass door open	Controller should read "OPEn" . Shut front glass door, press power button on controller to initialize.
One or more Xenon lamps off	Bulb blown	Check at terminal for resistance of 44 ohms +/-2. Check to ensure bulb is securely installed. Replace blown bulb(s).
HFD display ambient does not reach +160°F	One or more heater plates not reaching temperature	HFD needs approx. 30 minutes to reach temperature at default setting. Check plate temperature at controller (see controller operation).
	One or more Xenon lamp not functioning	Check at terminal for resistance of 44 ohms +/-2. Check to ensure bulb is securely installed. Replace blown bulb(s).
Heater plate not heating	Fuse blown on controller	Remove controller and check fuses.
	Wires disconnected	Remove controller and check all connections at controller. Check all terminal connections.
	Failed heating element	Check resistance on terminals from heater plates. Resistance should be approximately 94 ohms.



