

HOT FOOD DISPLAY

Technical Service Manual

MODELS HFD000006 & 7
HFDC00002 & 3
HFDM00002
HFDH00001 thru 3
HFDHC0001 thru 10



HFD000006, HFD000007



HFDC00002, HFDC00003



HFDM00002

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HFDH00001,2,3
HFDHC0001,2,3,4,5,6,7,8,9,10

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.

FOOD FOR THE HOT FOOD DISPLAY

The HFD, HFDM, and HFDH units are design to hold unwrapped, wrapped, and boxed food. The HFDHC is designed to hold wrapped and boxed food. Hot food displays are not designed to heat cold food - put only hot food in the hot food display.



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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.

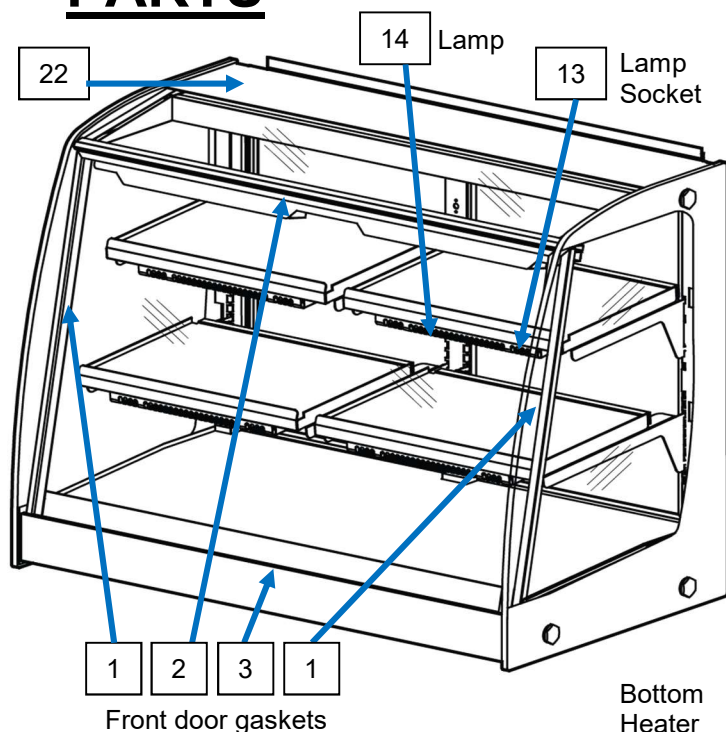
Use only authorized replacement parts.

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

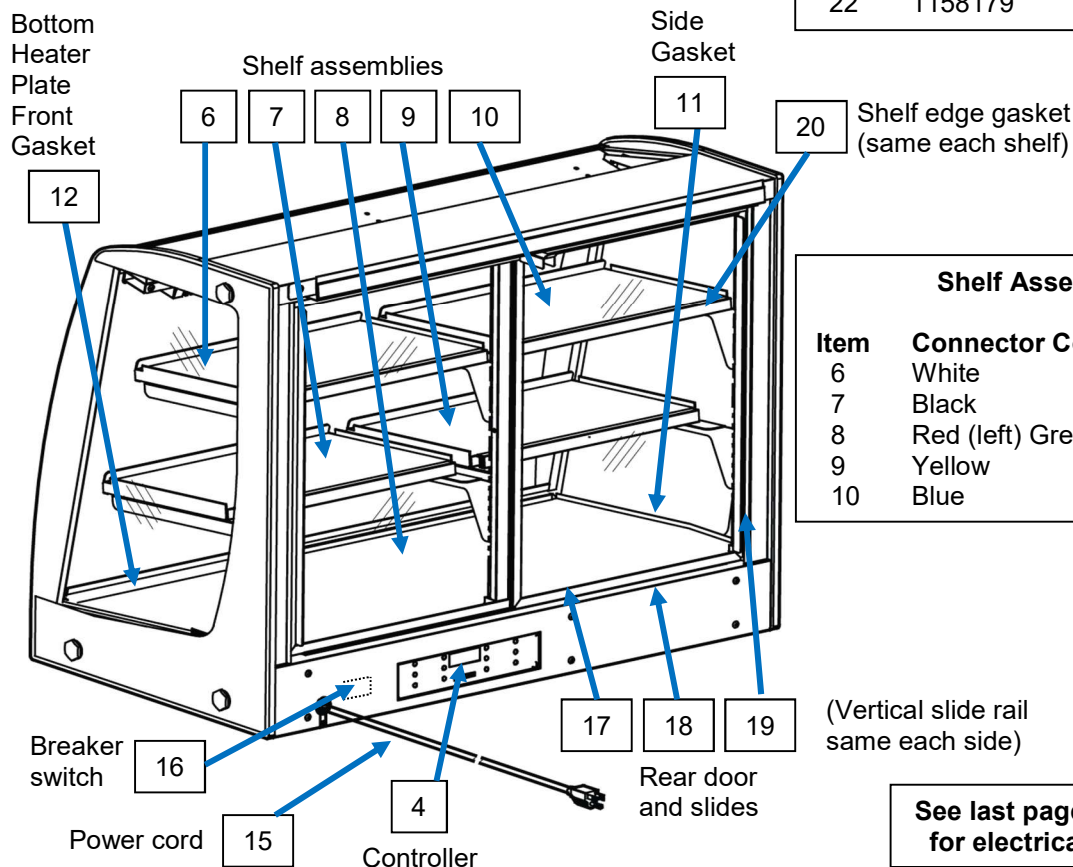
The lamps are an integral part of the food heating system. If a lamp is not illuminated, the temperatures may not be maintained for food safety.

PARTS

HFD000006, HFD000007



Item	Part #	Description
1	1158489	Gasket, Door, Side
2	1158477	Gasket, Door, Upper
3	1158491	Gasket, Door, Lower
4	1201293-2	Controller
5	1207087	Heater Kit (not shown)
6	1207441	Shelf Assembly, Upper Left
7	1207465	Shelf Assembly, Middle Left
8	1207415	Shelf Assembly, Bottom
9	1207476	Shelf Assembly, Middle Right
10	1207453	Shelf Assembly, Upper Right
11	1158685	Gasket A
12	1158696	Gasket B
13	1159513	Lamp Socket
14	1159525	Xenon Heating Lamp
15	1255614	Power Cord Plug
16	1257854	Circuit Breaker, 20 Amp
17	1194238	Rear Door, HFD
18	1158673	Slide Rail, Lower (Horizontal)
19	1158969	Slide Rail, Side (Vertical)
20	1159604	Shelf Edge Gasket
21	1180812	Fan, HFD (HFD 7 only)
22	1158179	Weld Asy, Outer Top



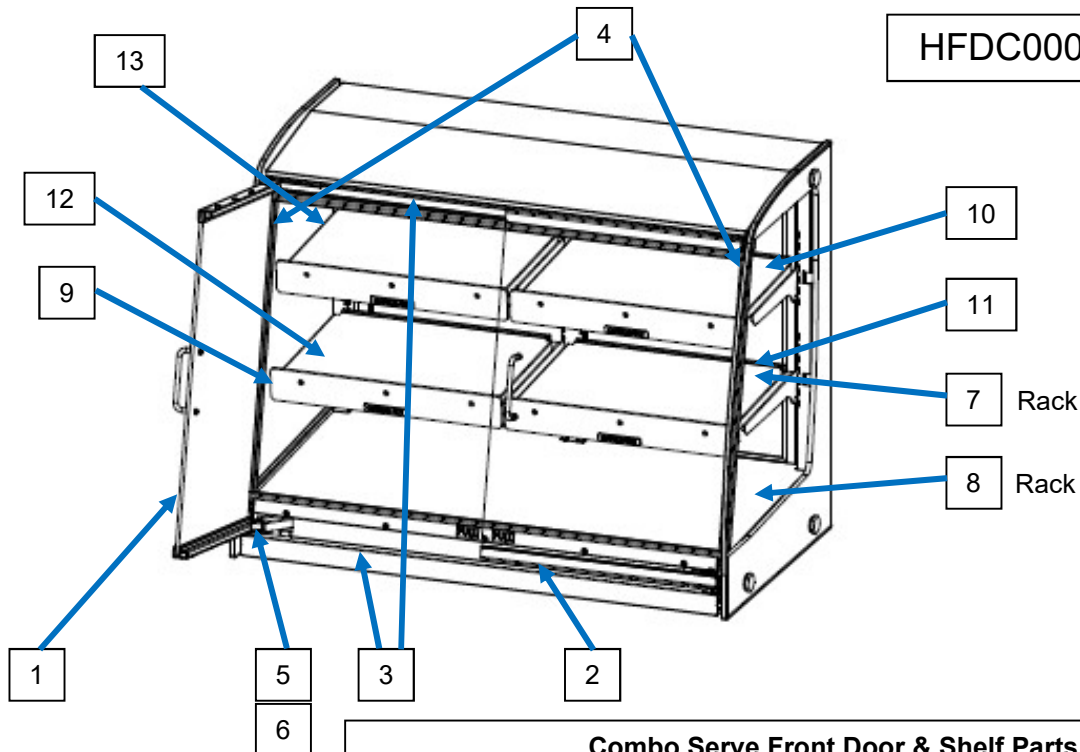
Shelf Assembly Connector Colors

Item	Connector Color	Description
6	White	Shelf Asy, Upper Left
7	Black	Shelf Asy, Middle Left
8	Red (left) Green (right)	Shelf Asy, Bottom Shelf
9	Yellow	Shelf Asy, Middle Right
10	Blue	Shelf Asy, Upper Right

(Vertical slide rail same each side)

See last page for Controller Connections for electrical component part numbers

HFDC00002, HFDC00003

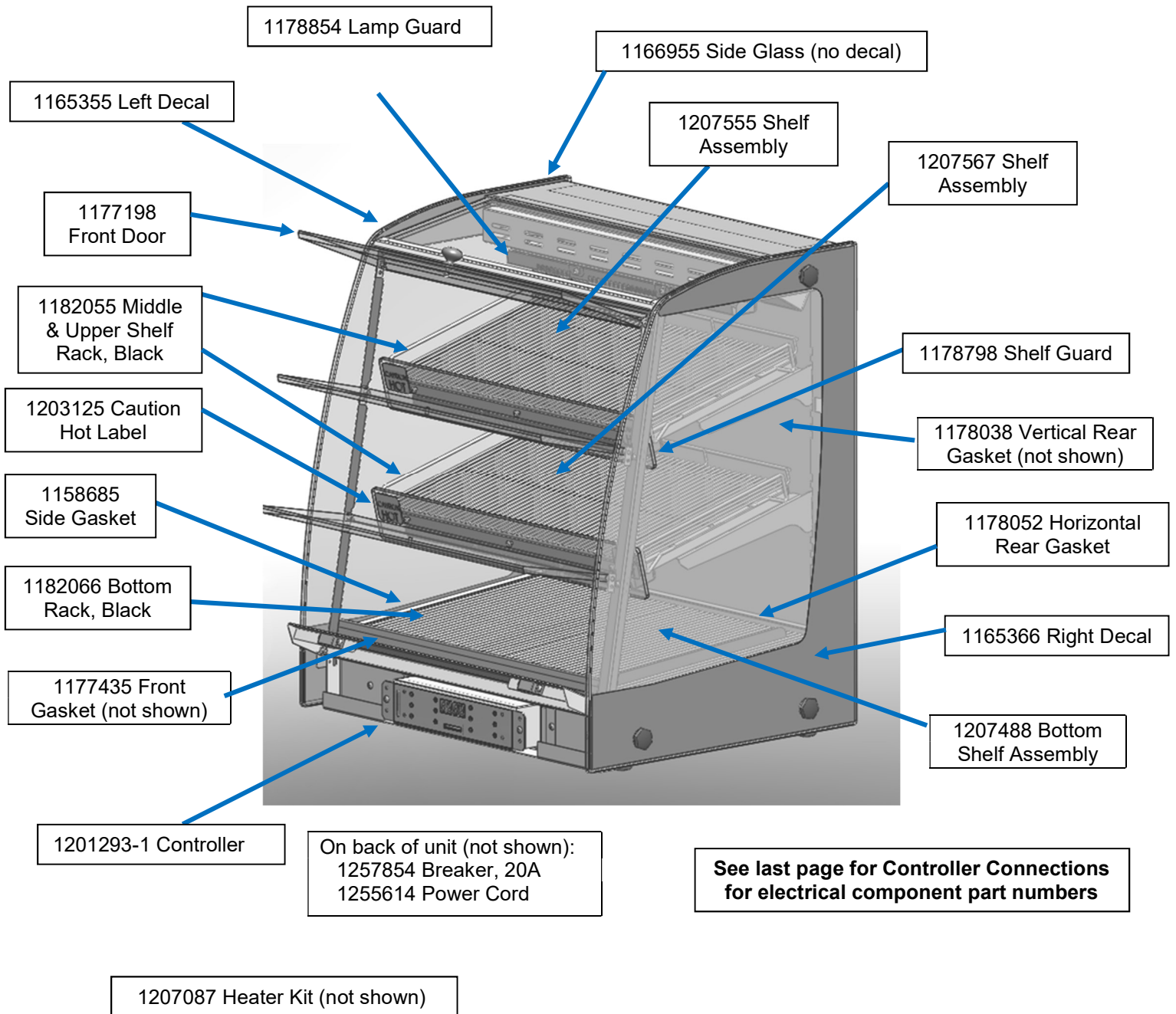


Combo Serve Front Door & Shelf Parts

Item	Part #	Description
1*	1259989	Left Door w/ Center Handle Assembly
2*	1259989-1	Right Door w/ Center Handle Assembly
3	1185603-1	Frame Gasket (Horizontal, 2x)
4	1185603-2	Frame Gasket (Vertical, 2x)
5	1187405	Damper (one each side)
6	1202273	Extension Spring (one each side)
7	1199716	Rack, Top/Middle Shelf (not shown, 4x)
8	1199728	Rack, Bottom Shelf (not shown, 2x)
9	1201311	Shelf Guard (4x)
10	1207751	Shelf Assembly, Upper Left
11	1207775	Shelf Assembly, Middle Left
12	1207786	Shelf Assembly, Middle Right
13	1207763	Shelf Assembly, Upper Right
14	1219634	Rear Door Keep-Closed bracket (not shown)
15	1207087	Heater Kit (not shown)
16	1201293-3	Controller, HFDC (not shown)

*Note when ordering replacement doors for units without the center door handles use kit part number 1262106 so you get a set of matching doors (both left and right).

HFDM00002



HFDHC0001,2,3,4,5,6,7,8,9,10

See last page for Controller Connections
for electrical component part numbers

1226236 Shelf Guard

1185603-3 Horizontal
Frame Gasket

1226272 Side Glass
(no decals)

1158696-2 Side Gasket

1158696-1 Front Gasket

1226352 Top/Middle
2 Racks per shelf
(not shown)

1185603-4 Vertical
Frame Gasket

1226399 Bottom 2
Racks (not shown)

1253573 Lt Front Door w/center handle (HFDHC0009,10)
*For HFDHC0001 through HFDHC0008, use kit p/n
1262114 to get a matching door set (both left and right).

1242342 Pan Restraint (2x)

1253573-1 Rt Front Door w/center handle (HFDHC0009,10)
*For HFDHC0001 through HFDHC0008, use kit p/n
1262114 to get a matching door set (both left and right).

Models & Heaters

1229516 Solid Front Glass

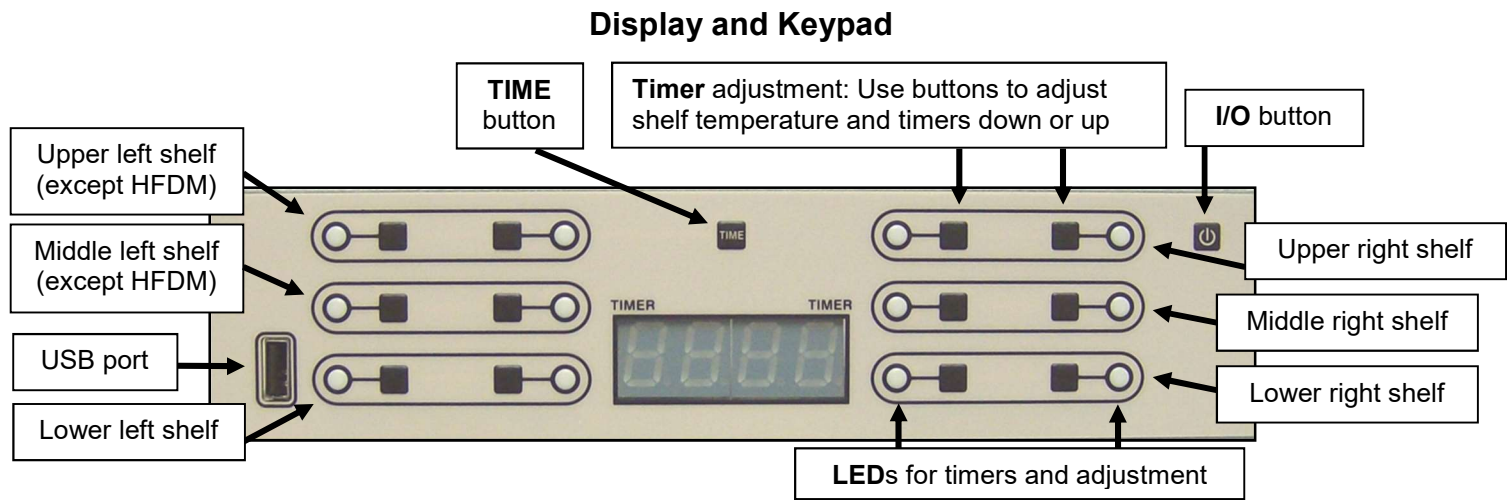
1201293-4
Controller

1226094 Rear Door

1242342 Pan Restraint (2x)

Model	Bottom shelf heaters	Mid / Upper shelf heaters
HFDHC0001	1250388 141 watt 94Ω 16" x 16"	1250388 141 watt 94Ω 16" x 16"
HFDHC0002		
HFDHC0003		
HFDHC0004		
HFDH00001		
HFDHC0005	1231472 200 watt 66Ω 19" x 23.5"	1255606 200 watt 66Ω 16 x 16"
HFDHC0006		
HFDH00002		
HFDHC0007	1255592 300 watt 44Ω 19" x 23.5"	1255606 200 watt 66Ω 16 x 16"
HFDHC0008		
HFDH00003		
HFDHC0009		
HFDHC0010		

SANDENVENDO AMERICA INC **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.

Circulation fans may be turned on or off by the switch at the top rear of the HFD (HFD 7 and HFDC).

Normal Operation

Pressing the **I/O** button turns the HFD on or off. When controller is off, all lamps, heaters, displays and indicators are off. Front on/off button (HFDC only): press and hold for 5 seconds to turn the HFDC on or off.

Timers

Holding down the **TIME** button, then pressing a **Timer** button, turns off the timer. 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 (while the indicator next to the button is blinking) sets the timer to 30 minutes.

Each successive press (within three seconds) adds 30 minutes to the time, up to 4 hours.

At 4 hours, the next button press cycles the timer back to 30 minutes again.

Once the timer is activated, the **LED** next to the shelf timer button stops blinking and stays on.

The display then reverts to HFD internal air temperature.

While a timer is on, pressing a timer button displays the remaining time for 4 seconds, then shelf actual temperature (not the setpoint) for 4 seconds, and then the display reverts to the internal ambient temperature display.

At 15 minutes remaining time, the **LED** turns yellow.

When no time remains, the **LED** turns red, plus an audible alarm sounds. Shelf heaters stay on.

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

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

With controller power off, hold down the **TIME** button, then press and hold the **I/O** button until the display comes on. The display shows the firmware revision (example 4.11).

Press and release the **TIME** button to change from °F to °C (or °C to °F).

Push the **I/O** button to turn on the HFD and lock in this setting.

Ambient Temperature Display

To turn the ambient temperature display on or off: with the controller on, press and hold the Time button and press the I/O button. (This feature is disabled in firmware revision 4.01).

Front Door

If the front door is opened (HFD6 and 7 only), 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

Push the **I/O** button to turn the unit off. The lights and heaters turn off.

With controller power off, hold down the **TIME** button, then press and hold the **I/O** button until the display comes on. The display will show the firmware revision.

Push either of the two buttons corresponding to the shelf that you wish to change the temperature.

Both lights on either side of the buttons will begin blinking.

Push and hold the button on the left to decrease the temperature (shown on the display).

Push and hold the button on the right to increase the temperature (shown on the display).

Repeat the procedure using the buttons that correspond to each of the six shelves (for HFD6 & 7), or four shelves (HFDM).

Once the temperatures are adjusted for each of the separate zones, push the **I/O** button to lock in the new temperature settings and to turn the HFD back on (the lights in the HFD will come on).

Error Codes

E30 Internal ambient thermistor open circuit	
E60 Upper left shelf thermistor open circuit (except HFDM)	E63 Upper right shelf thermistor open circuit
E61 Middle left shelf thermistor open circuit (except HFDM)	E64 Middle right shelf thermistor open circuit
E62 Lower left shelf thermistor open circuit	E65 Lower right shelf thermistor open circuit
E90 Unable to read USB drive (check vendo.cfg for file format error)	
E70 Upper left shelf not heating (except HFDM)	E73 Upper right shelf not heating
E71 Middle left shelf not heating (except HFDM)	E74 Middle right shelf not heating
E72 Lower left shelf not heating	E75 Lower right shelf not heating

Clear the error by powering off the unit, correcting the problem, and turning the unit on again.

Programming using USB drive

The file name must be vendo.cfg and be saved on the root directory of the USB drive. The file may be edited using Notepad.

Temperature and Timer Programming Format and Download

SV01	Must be SV01
001h	This is configuration 001, h for standard HFD (n for HFDM, c for HFDC, etc.)
UL:235,2:00,0:30	Upper Left shelf, set to 235°F, left timer 2 hours, right timer 30 minutes
ML:235,2:00,2:00	Shelf temperatures may be set between 100 and 265°F
LL:220,1:00,2:00	Setting a shelf temperature to 000 turns off that shelf
UR:235,2:00,1:00	Shelf temperature must be 3 digits, always in °F
MR:235,2:00,2:00	Each timer may be set between 0:30 and 4:00
LR:220,1:00,2:00	
CF:1	1 displays °F, 0 displays °C
DA:1	1 turns on controller ambient display, 0 turns display off
DS:1	Front door switch – 1 for HFD6 & 7; all others 0.
Any text may follow here	

There can be no spaces or blank lines. A line is terminated by pressing Enter. The only variables that are allowed to change are the date code, shelf temperatures and times, the 0 or 1 after CF:, DA:, and DS:, and the comment at the end of the file.

With the HFD off:

1. Insert the flash drive in the controller's USB port.
2. Turn on the controller. The configuration will load in less than 5 seconds.
3. The display will show the configuration code (example: 001h) from the vendo.cfg file.
4. Pull the flash drive out of the controller (controller may remain on).

Factory Controller Configurations

SV01 001h UL:235,2:00,1:00 ML:235,2:00,2:00 LL:220,1:00,2:00 UR:235,1:00,1:00 MR:235,2:00,2:00 LR:220,2:00,1:00 CF:1 DA:1 DS:1	HFD 6 & 7					
	Left Side			Right Side		
	Heater Setpoint °F	Left Timer	Right Timer	Heater Setpoint °F	Left Timer	Right Timer
	235	2:00	1:00	235	1:00	1:00
	235	2:00	2:00	235	2:00	2:00
	220	1:00	2:00	220	2:00	1:00

SV01 001n UL:000,2:00,2:00 ML:000,2:00,2:00 LL:245,2:00,2:00 UR:245,2:00,2:00 MR:245,2:00,2:00 LR:245,2:00,2:00 CF:1 DA:0 DS:0	HFDM 2					
	Left Side			Right Side		
	Heater Setpoint °F	Left Timer	Right Timer	Heater Setpoint °F	Left Timer	Right Timer
	OFF	2:00	2:00	245	2:00	2:00
	OFF	2:00	2:00	245	2:00	2:00
	245	2:00	2:00	245	2:00	2:00

SV01 001c UL:240,2:00,2:00 ML:240,2:00,2:00 LL:240,2:00,2:00 UR:240,2:00,2:00 MR:240,2:00,2:00 LR:240,2:00,2:00 CF:1 DA:1 DS:0	HFDC 2					
	Left Side			Right Side		
	Heater Setpoint °F	Left Timer	Right Timer	Heater Setpoint °F	Left Timer	Right Timer
	240	2:00	2:00	240	2:00	2:00
	240	2:00	2:00	240	2:00	2:00
	240	2:00	2:00	240	2:00	2:00



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HFDH and HFDHC

SV01

00HC

UL:245,2:00,2:00

ML:245,2:00,2:00

LL:245,2:00,2:00

UR:245,2:00,2:00

MR:245,2:00,2:00

LR:245,2:00,2:00

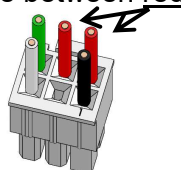
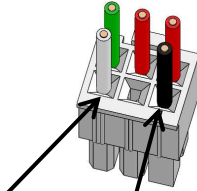
CF:1

DA:1

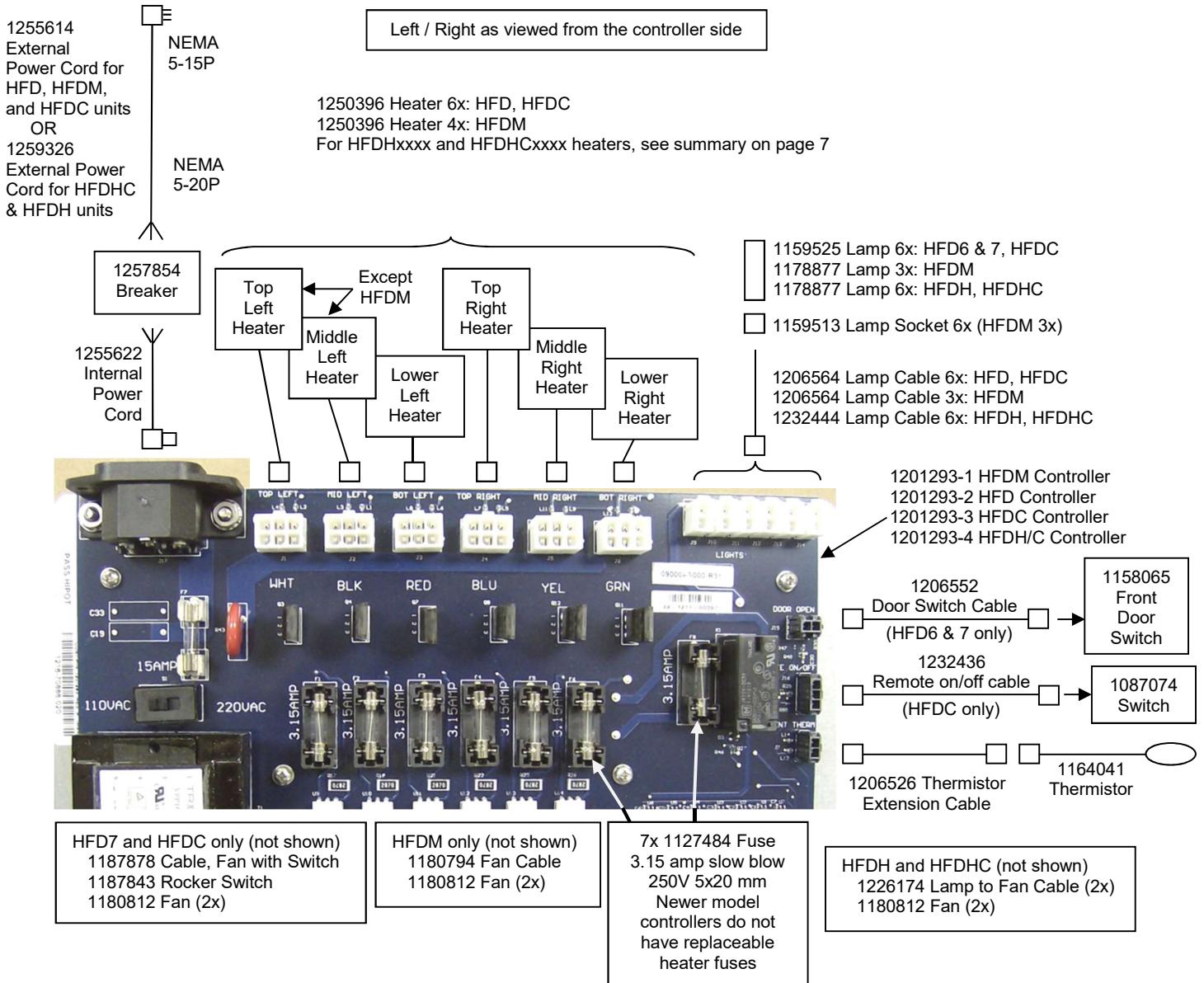
DS:0

HFDH and HFDHC					
Left Side			Right Side		
Heater Setpoint °F	Left Timer	Right Timer	Heater Setpoint °F	Left Timer	Right Timer
245	2:00	2:00	245	2:00	2:00
245	2:00	2:00	245	2:00	2:00
245	2:00	2:00	245	2:00	2:00

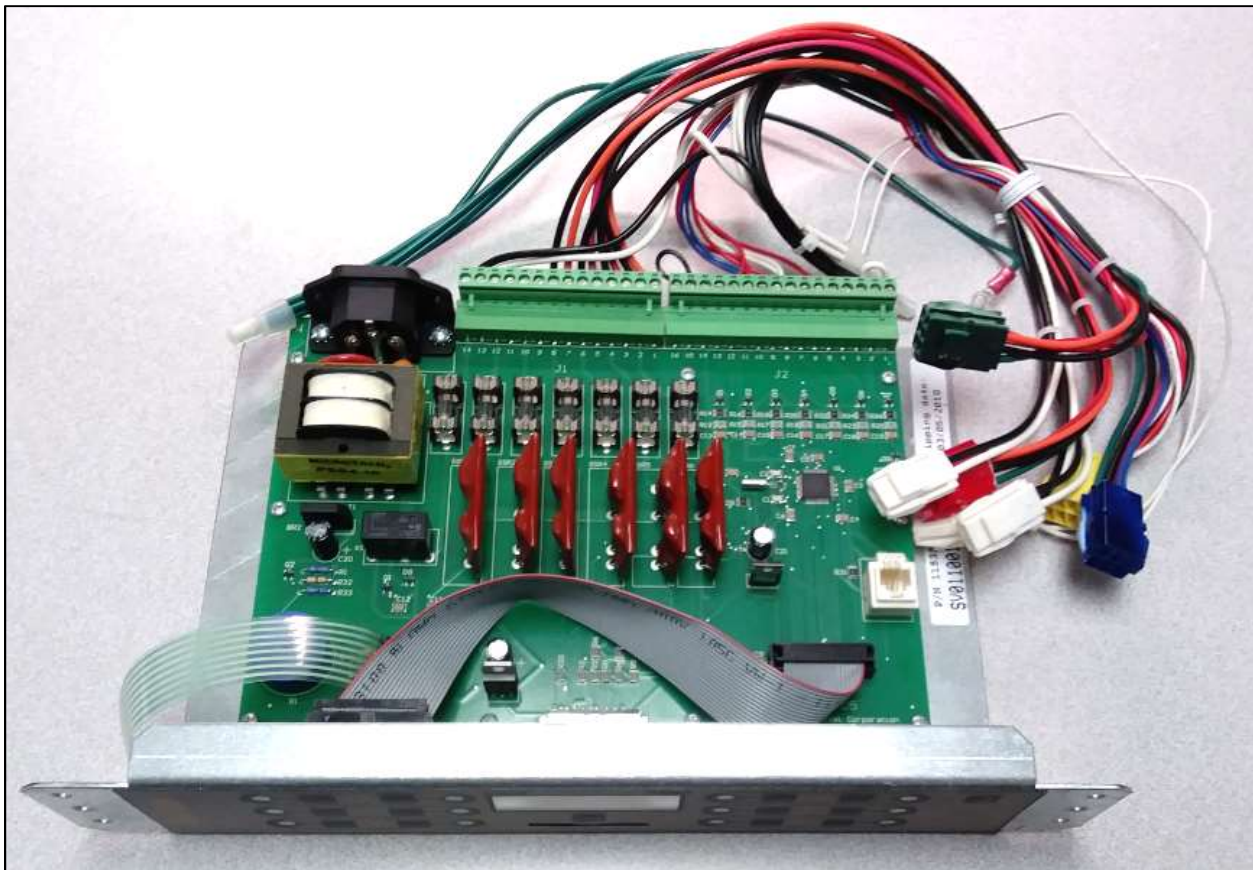
TROUBLESHOOTING Unplug unit before servicing

Symptom	Possible Cause	Remedy
Unit does not turn on	Power cord unplugged No power at outlet	Plug HFD cord in outlet. Check voltage at outlet (115VAC)
	HFD circuit breaker off	Turn on breaker. HFD6 & 7: remove lower rear cover to access breaker.
	Internal power cord disconnected	Check resistance across plug, ensure the breaker is on, measure resistance across plug terminal, line and neutral, should be about 160Ω.
	Front glass door open	HFD6 & 7 only: Controller should read " OPEn ". Shut front glass door, press power button on controller to initialize.
One or more Xenon lamps is off	Bulb blown	Check at terminal for resistance of about 44Ω. Check to ensure bulb is securely installed. Replace blown bulb(s).
HFD display ambient does not reach 150°F	One or more heater plates not reaching temperature. An error (E70 to E75) may be displayed on controller.	HFD, HFDC and HFDM need 30 minutes to reach temperature. HFDH and HFDHC needs at least 1 hour. Check plate temperature at controller (see controller operation).
	One or more Xenon lamp not functioning	Check at terminal for resistance of about 44Ω. Check to ensure bulb is securely installed. Replace blown bulb(s).
E60 to E65 error	Heater thermistor open circuit	Pull out controller, disconnect corresponding heater connector. If resistance between red wires is greater  than 100k ohms, check cause of open circuit. Heater may need replacing.
Heater plate not heating. Possible E70 to E75 error.	Fuse blown on controller	Remove controller and check fuses.
	Wires disconnected	Remove controller and check all connections at controller.
	Failed heating element	 Check resistance across <u>white</u> and <u>black</u> wires from heater. Resistance should be about 94 ohms at room temperature (for HFDH and HFDHC units, see page 7). If circuit is open, heater needs replacing.

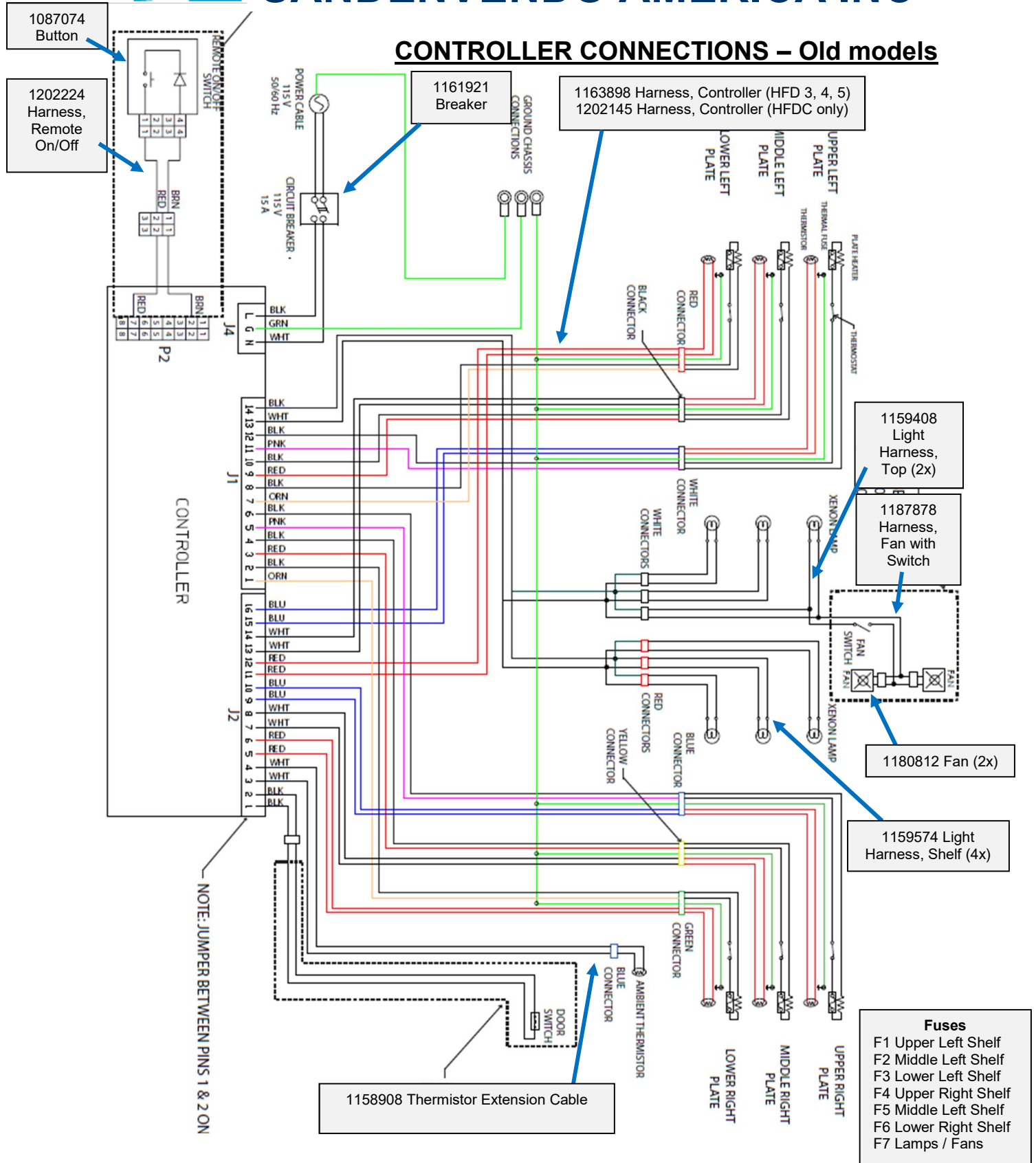
CONTROLLER CONNECTIONS



Older controller appearance and schematic



CONTROLLER CONNECTIONS – Old models



1201218

Left / Right as viewed from the back side (controller side) of the HFD

1213686J ECN 57413

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