E-MAIL 1

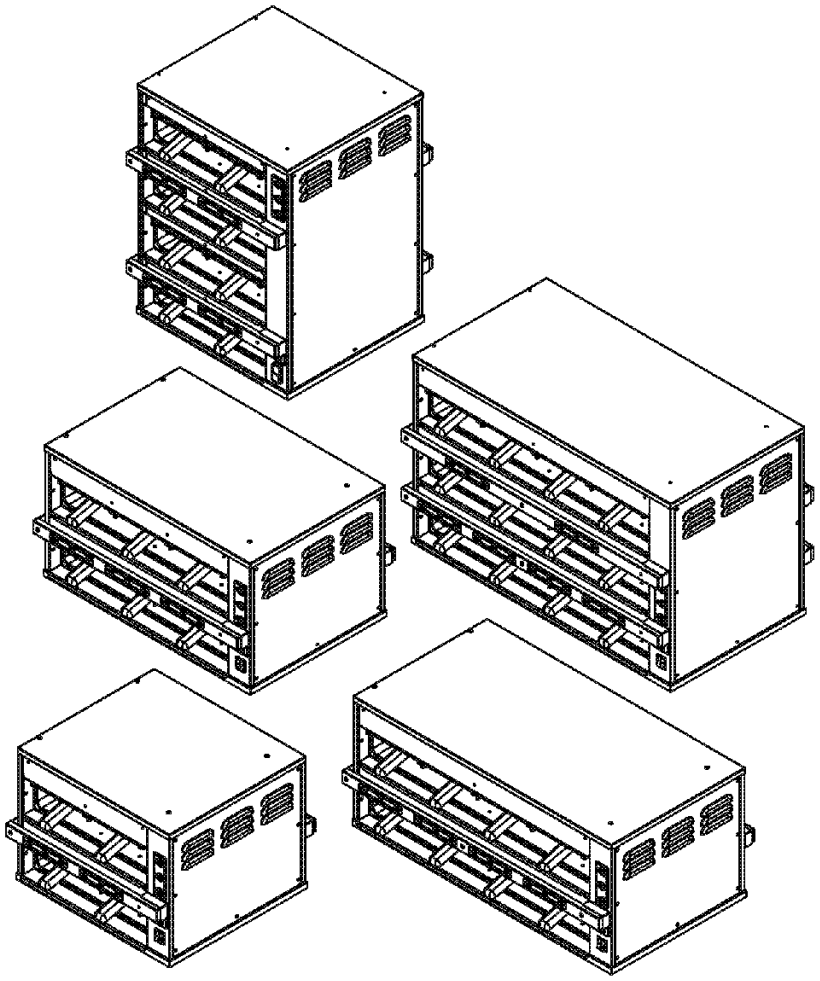
Duke Manufacturing Co. EX1034
U.S. Patent No. 10,841,981

From: Scotty Loyd [/O=DUKEMFGCO/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=SCOTTY LOYD]
Sent: 1/13/2015 5:46:43 PM
To: jborngesser@jayhillrepairs.com
Subject: RE: burger king IRHS
Attachments: IPL-PH-IH-0010 Infrared Heatsink Holding Unit.pdf; SM-PH-IH-0003 Infrared Heatsink Holding Unit.pdf

Illustrated Parts List

Your Solutions Partner

INFRARED HEATSINK™ HOLDING UNIT



MODELS:

IRHS-22
IRHS-23
IRHS-24
IRHS-34
IRHS-42

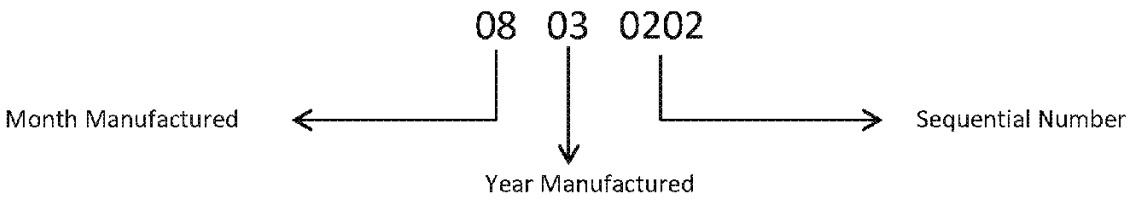
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Duke Manufacturing Company

2305 N. Broadway
St. Louis, MO 63102
Phone: 314-231-1130
Toll Free: 1-800-735-3853
Fax: 314-231-5074
www.dukemfg.com

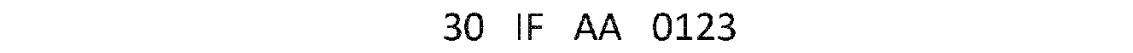
How to Determine Manufacture Date from Duke Equipment Serial Numbers

All units currently manufactured in St. Louis and Sedalia, Missouri (After 2/1/2013):



(Example: 08030202 = Indicates the unit was manufactured in August of 2003)

Units Manufactured in St. Louis, Missouri (Before 2/1/2013):



Unit Identification

10	=	5/9
20	=	6/13 & E-Series
30	=	6/18 & 3/9
90	=	FBB
94	=	FWM
95	=	IRHU
99	=	Dry Channel

Year of Manufacture

A	=	1
B	=	2
C	=	3
D	=	4
E	=	5
F	=	6
G	=	7
H	=	8
I	=	9
J	=	0

(Examples)
(JJ = 2000)
(JA = 2001)
(JB = 2002)

Sequential Number

Month of Manufacture

JA	=	January
JB	=	February
JC	=	March
JD	=	April
JE	=	May
JF	=	June
JG	=	July
JH	=	August
JI	=	September
AJ	=	October
AA	=	November
AB	=	December

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PARTS LIST – INFRARED HEATSINK™ HOLDING UNIT

IRHS Deck Assembly			Quantity per Unit				
Locator	P/N	Description	IRHS-22	IRHS-23	IRHS-24	IRHS-34	IRHS-42
1	1030-2816	ASSY, MENU BAR, 2W, TOP FRONT					1
	1030-2817	ASSY, MENU BAR, 2W, TOP REAR					
	1030-2747	ASSY, MENU BAR, 2W, RH FRONT	1				1
	1030-2759	ASSY, MENU BAR, 2W, RH REAR					
	1030-2760	ASSY, MENU BAR, 2W, LH FRONT	1				
	1030-2761	ASSY, MENU BAR, 2W, LH REAR					
	1030-2746	ASSY, MENU BAR, 3W, RH FRONT		1			
	1030-2762	ASSY, MENU BAR, 3W, LH FRONT					
	1030-2763	ASSY, MENU BAR, 3W, RH REAR		1			
	1030-2764	ASSY, MENU BAR, 3W, LH REAR					
	1030-2741	ASSY, MENU BAR, 4W, TOP/FRONT				1	
	1030-2745	ASSY, MENU BAR, 4W, TOP/REAR					
	1030-2739	ASSY, MENU BAR, 4W, FRONT			1	1	
	1030-2765	ASSY, MENU BAR, 4W, REAR					
2	157828	DISPLAY, KEYPAD, (UP/DOWN)	4	6	8	8	8
	156735	DISPLAY, KEYPAD, (UP/UP)				4	
3	157881	HARNESS, MENU BAR, 2W,TOP FRONT/REAR					2
	166661	HARNESS, MENU BAR, 2W, LH FRONT/REAR	2				
	166662	HARNESS, MENU BAR, 2W, RH FRONT/REAR	2				2
	166663	HARNESS, MENU BAR, 3W, LH FRONT/REAR		2			
	166664	HARNESS, MENU BAR, 3W, RH FRONT/REAR		2			
	166665	HARNESS, MENU BAR, 4W, TOP FRONT/REAR				2	
	166053	HARNESS, MENU BAR, 4W, FRONT/REAR			2	2	
4	166017	EMITTER, 340W-208V	4	6	8	12	8
	166018	EMITTER, 340W-240V					
5	166015	SOCKET, EMITTER, STRIPPED	8	12	16	24	16
6	166011	COVER, PAN	AS REQUIRED				
7	1030-2550	ASSY, IR GLASS FRAME, 2W	2				4
	1030-2549	ASSY, IR GLASS FRAME, 3W		2			
	1030-2548	ASSY, IR GLASS FRAME, 4W			2	3	
8	158279	RTD 1K OHM MEDIUM	2	2	4	6	4
9	158312	THERMOSTAT, HI LIMIT 300F	2	2	2	3	4
10	166004	ELEMENT, HEAT, 2W, 300W-208V	2				4
	166005	ELEMENT, HEAT, 2W, 300W-240V	2				4
	166007	ELEMENT, HEAT, 3W, 450W-208V		2			
	166008	ELEMENT, HEAT, 3W, 450W-240V		2			
	166009	ELEMENT, HEAT, 4W, 300W-208V			4	6	
	166010	ELEMENT, HEAT, 4W, 300W-240V			4	6	

Table: PL-1 IRHS Deck Assembly

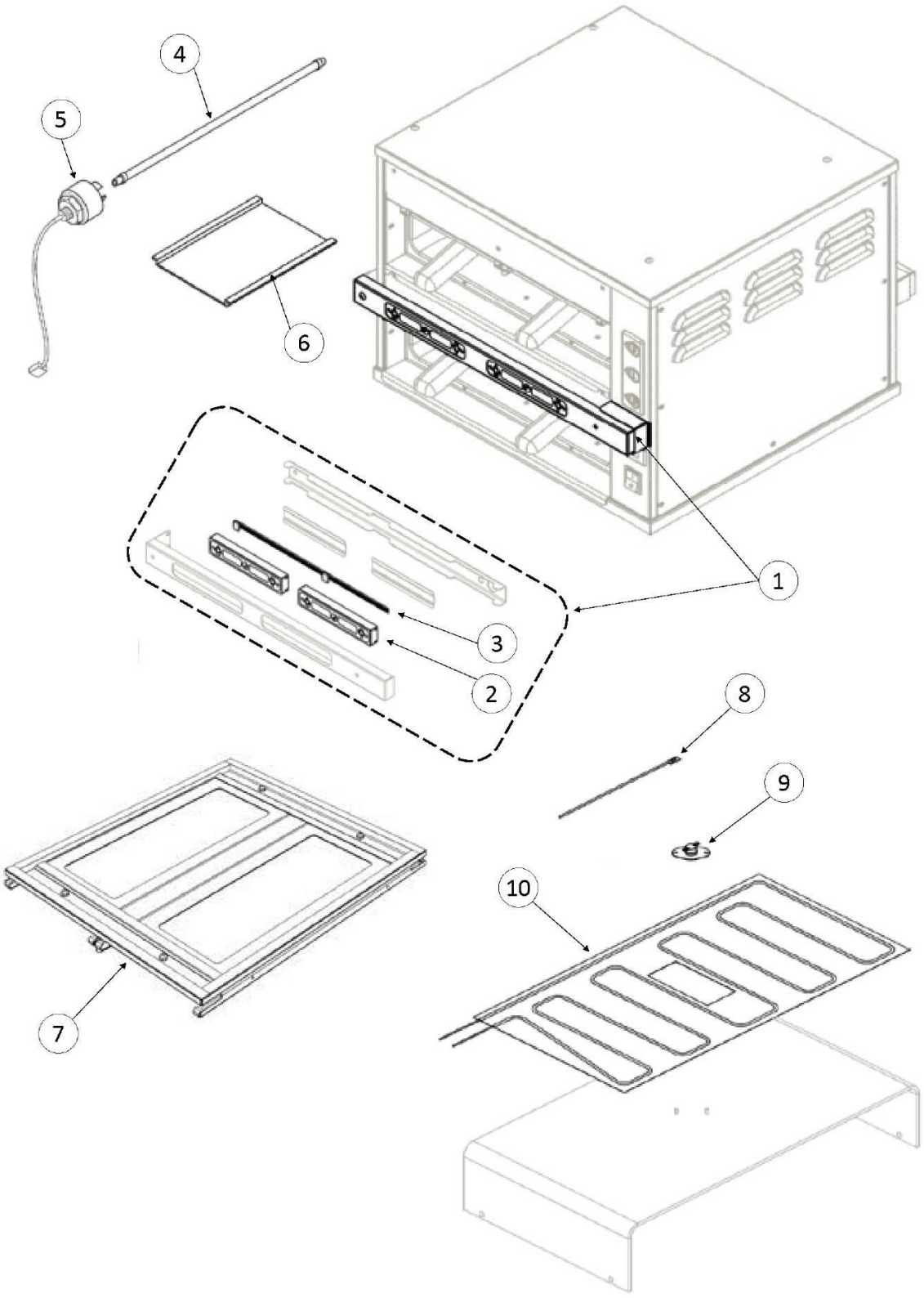


Figure: PL-1 IRHS Deck Assembly

PARTS LIST – INFRARED HEATSINK™ HOLDING UNIT

IRHS CONTROL COMPARTMENT			Quantity per Unit				
Locator	P/N	Description	IRHS-22	IRHS-23	IRHS-24	IRHS-34	IRHS-42
11	157916	ASSY, DAYPART SWITCH	1	1	1	1	1
12	156195	ADAPTER, USB HOST	1	1	1	1	1
13	169629	SWITCH, POWER	1	1	1	1	1
14	157830	RELAY, SMART POWER MODULE	3	4	6	10	6
15	155749	TRANSFORMER, 208/240 VAC	1	1	1	1	1
	156838	TRANSFORMER, 230 VAC	1	1	1	1	1
16	120102	HOLDER, FUSE	1	1	1	1	1
Not Shown	120103	FUSE, 12A	2	2	2		2
	166030	FUSE, 16A				2	
17	1030-2915	KIT, IRHS CONTROL SERVICE REPLACEMENT HMC-34-DU7	1	1	1	1	1
18	158337	RTD BOARD	1	1	1	1	1
19	156624	POWERCORD, 15 AMP 250V, W/TERMINALS, 6' (Units Mfg. Before 7/24/2014)	1	1	1		
	222170	POWERCORD, 15 AMP 250V W/TERMINALS, 6' (Units Mfg. After 7/24/2014)	1	1	1		1
	156631	POWERCORD, 16 AMP 230V, CE W/TERMINALS, 8' (Units Mfg. Before 11/3/2014)	1	1	1	1	1
	160448	POWERCORD, 16 AMP 230V, W/TERMINALS, 8', IEC 60309 (Units Mfg. After 11/3/2014)	1	1	1	1	1
	166070	CORD, POWER 20 AMP 208/240				1	

IRHS KITCHEN MINDER (If Installed)			Quantity per Unit				
Locator	P/N	Description	IRHS-22	IRHS-23	IRHS-24	IRHS-34	IRHS-42
20	222250	MASTER CONTROL BOARD	1	1	1	1	1
21	222252	ADAPTER BOARD - W/LI	1	1	1	1	1
22	1030-2895	PLATE, MOUNTING RJ45, 2 HOLE (RJ12/RJ45)				1	
23	1030-2571	PLATE, MOUNTING RJ45, 3 HOLE (RJ12/RJ45)	1	1	1		1
24	156617	COUPLER, 8X8 RJ45 (Cat 3)				1	
25	156616	COUPLER, 6X6 RJ12 (Cat 3)				1	
26	166147	COUPLER, 8X8 RJ45 (Cat 5e)	2/3	2/3	2/3		2/3
27	1030-2906	SHIELD, CABLE LG (Ref. 1030-2912)	1	1	1		1
	1030-2907	SHIELD, CABLE SM (Ref. 1030-2911)				1	
Not Shown	222109	CABLE, RJ45 CAT 5E, MALE x MALE, 25' BLACK	AS REQUIRED				
Not Shown	156491	CABLE, RJ12, MALE x MALE, 8'	AS REQUIRED				
Not Shown	600376	KIT, KM CONVERSION, MASTER CONTROL	1	1	1	1	1
Not Shown	600377	KIT, KM CONVERSION, SATELLITE CONTROL	1	1	1	1	1

Table: PL-2 IRHS Control Compartment & Kitchen Minder

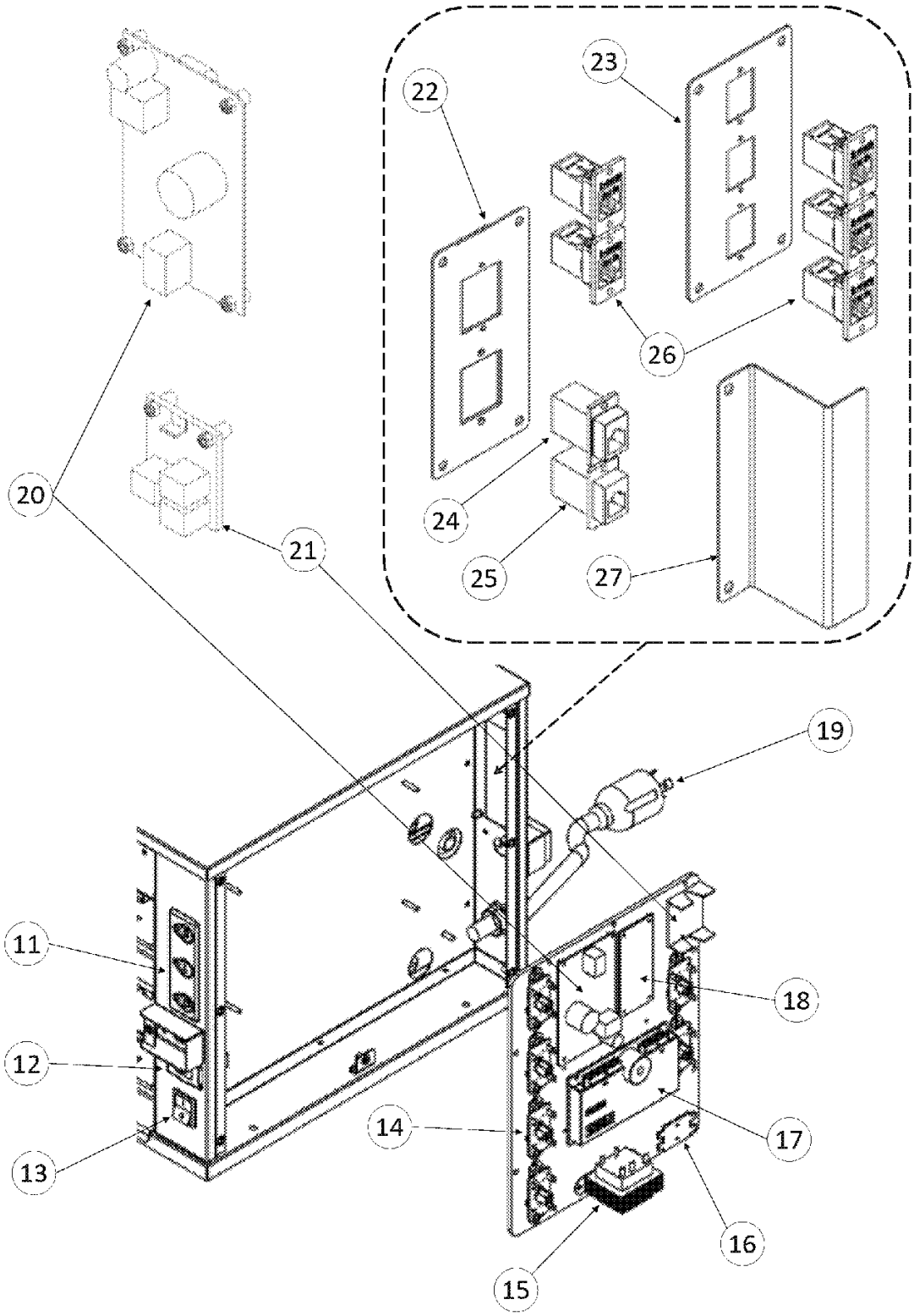


Figure: PL-2 IRHS Control Compartment & Kitchen Minder

PARTS LIST – INFRARED HEATSINK™ HOLDING UNIT

Kitchen Minder Connections (If Installed)			Quantity
Locator	Part #	Description	
24	156617	COUPLER, 8X8 RJ45 (Cat 3)	AS REQUIRED
25	156616	COUPLER, 6X6 RJ12 (Cat 3)	
28	222109	CABLE, RJ45 CAT 5E, MALE x MALE, 25' BLACK	
29	156491	CABLE, RJ12, MALE x MALE, 8'	

Table: PL-3 IRHS Kitchen Minder Connections

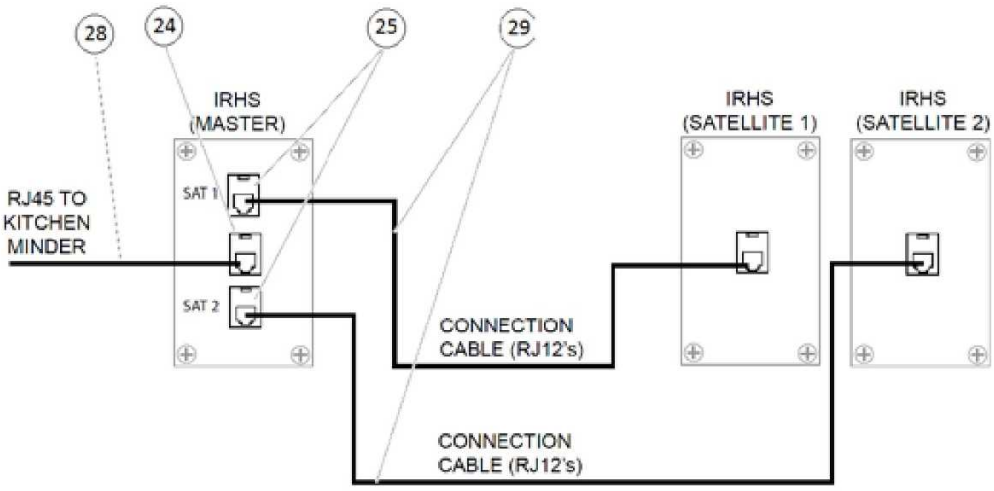


Figure: PL-3 IRHS Kitchen Minder Connections

PARTS LIST – INFRARED HEATSINK™ HOLDING UNIT

IRHS VISOR COMPONENTS (If Installed)			Quantity per Unit				
Locator	P/N	Description	IRHS-22	IRHS-23	IRHS-24	IRHS-34	IRHS-42
30	1031-0087	PANEL, CONTROL, 3X4, RH				1	
	1031-0082	PANEL, CONTROL, 2X2, 2X3-RHC, LH	1	1			
	1031-0081	PANEL, CONTROL, 2X3-IHC, 2X4, RH		1	1		
	1031-0080	PANEL, CONTROL, 2X2, 2X3-RHC, RH	1	1			
31	120102	HOLDER, FUSE	1	1	1	1	1
32	120103	FUSE, 12A	2	2	2		2
	166030	FUSE, 16A				2	
33	120011	PCB, 12V PWR 208/230V	1	1	1	1	1
34	166112	ACM, PCB-MAIN	1	1	1	1	1
35	166113	103M PCB - 4 IN / 08 OUT	1	1 or 2	2	3	
36	166114	TRIAC DRIVE PCB - 4 CIRCUIT	2	2 or 4	4	6	
37	212106	CONNECTOR, 5 CONDUCTOR	AS REQUIRED				
38	1031-0159	PLATE, COVER, OUTER PEMSTUDS	1	1	1	1	1
39	166136	INDICATOR, LED, FLUSH BEZEL	1	1	1	1	1
40	1031-0018	PLATE, USB PANEL MT	1	1	1	1	1
41	166111	MODULAR, JACK IP67	1	1	1	1	1
42	166141	JUMPER, USB TO USB	1	1	1	1	1
43	1031-0036	COVER, ETHERNET CABLE	1	1	1	1	1
Not Shown	600393	KIT, MENU BAR TO DMC 2X2 RH, 2X3 RH	1	1			
Not Shown	600394	KIT, MENU BAR TO DMC 2X2 LH, 2X3 LH	1	1			
Not Shown	600395	KIT, MENU BAR TO DMC 2X4 RH			1		
Not Shown	600396	KIT, MENU BAR TO DMC 3X4 RH				1	

Table: PL-4 IRHS Visor Components

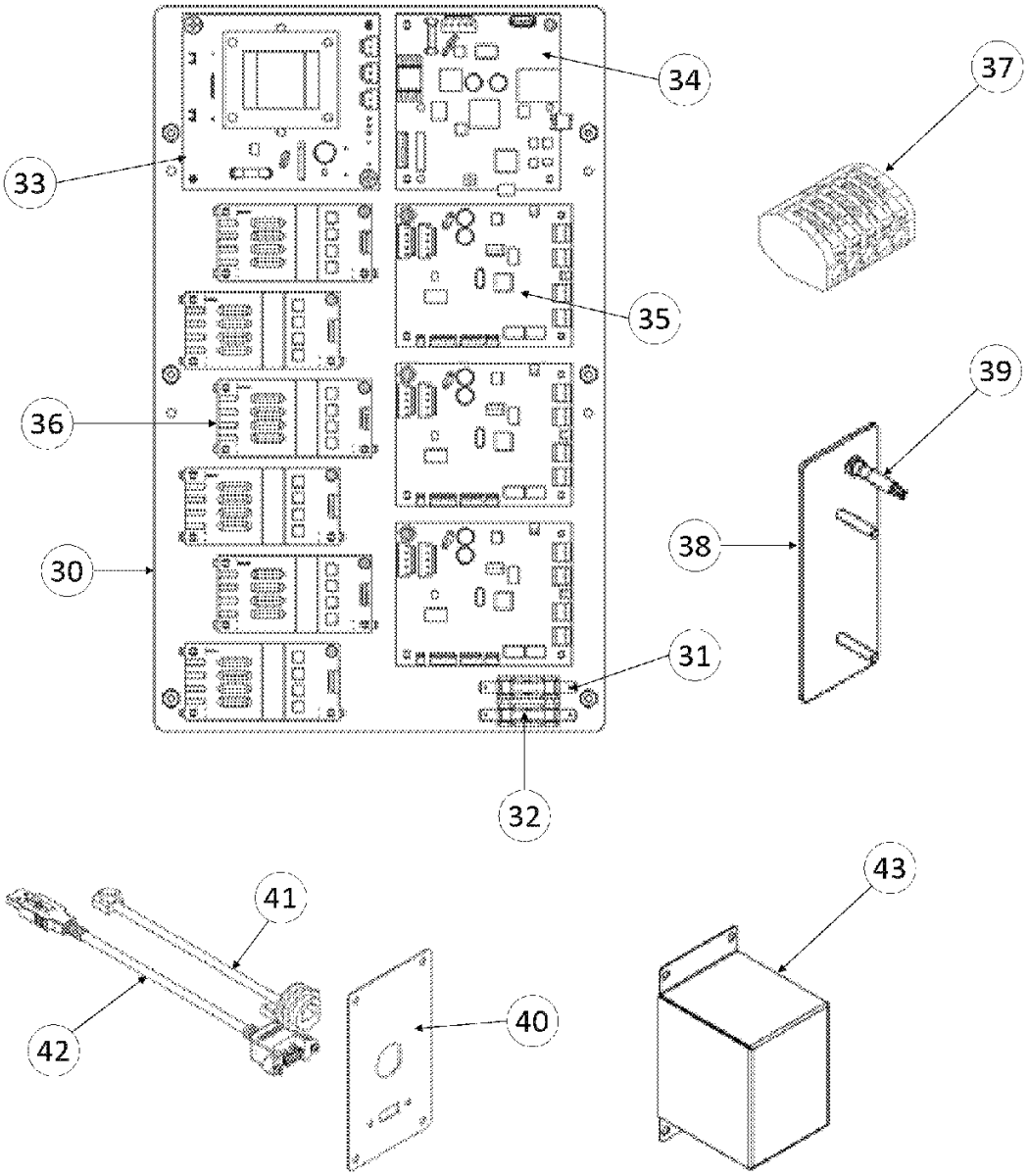


Figure: PL-4 IRHS Visor Components

CUSTOMER ASSISTANCE

To aid in reporting this unit in case of loss or theft, please record below the model number and serial number located on the unit. We also suggest you record all the information listed and retain for future reference.

MODEL NUMBER:	**SERIAL NUMBER:**
DATE OF PURCHASE:	
DEALER:	**TELEPHONE:**
SERVICER:	**TELEPHONE:**

FOR WARRANTY, PARTS & SERVICE:

DUKE CORPORATE,
CANADA, LATIN AMERICA

2305 N. Broadway
St. Louis, MO 63102
Phone: 314-231-1130
Toll Free: 800-735-3853
Fax: 314-231-2460
service-dispatch@dukemfg.com

DUKE ASIA PACIFIC

Duke Manufacturing
No.3 Building
Lane 28, Yu Lv Road
Malu Town, Jiading District
Shanghai 201801, China
Phone: +86 21 59153525 / 59153526
Fax: +86 21 33600628
service.asiapac@dukemfg.com

DUKE EMEA - EUROPE,
MIDDLE EAST, AFRICA, RUSSIA

Duke Manufacturing CR, s.r.o.
Na Dlouhem 86
Jazlovice, Ricany
Building number DC 4 on the
ProLogis Park Prague D1 West
Prague 251 01
Czech Republic
Phone: +420 323 608 193
Fax: +420 323 608 144
service.emea@dukemfg.com

DUKE EMEA – UK, IRELAND

Phone: +44 (0) 1395 234140
Fax: +44 (0) 1395 234154
service.emea@dukemfg.com

TO ACCESS INTERNET: www.dukemfg.com

Please provide the following information when you write or call: model number, serial number, date of purchase, your complete mailing address (including zip code), and description of the problem.

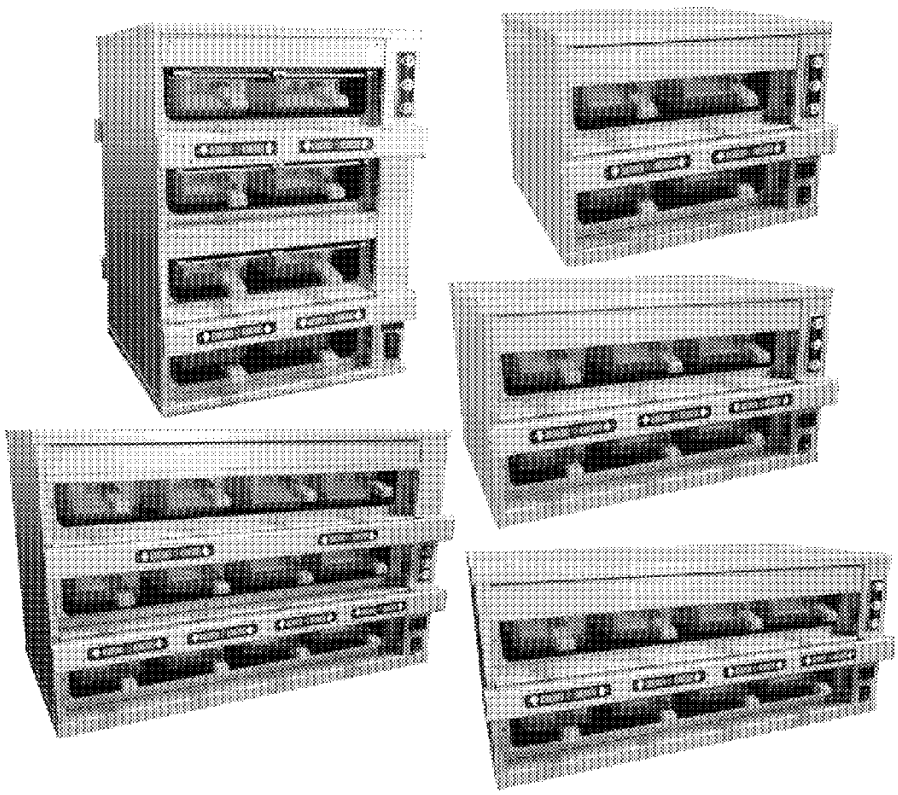
Your Solutions Partner

Your Solutions Partner

Service Manual

INFRARED HEATSINK™ HOLDING UNIT

Includes Standalone, Kitchen Minder and VISOR models



MODELS
IRHS22
IRHS23
IRHS24
IRHS34
IRHS42

Please read this manual completely before attempting to install, operate or service this equipment.

This document is prepared for trained Duke service technicians. It is not to be used by anyone not properly qualified to perform these procedures.

This Service Manual is not all encompassing. If you have not been trained on servicing this product, be sure to read the manual completely before attempting servicing. Be sure all necessary tools, test equipment, and skills are available. Those procedures for which you do not have the proper skills and test equipment must be performed only by a qualified Duke trained service technician.

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Duke Manufacturing Co.

2305 North Broadway • St. Louis, MO 63102-1405
Phone: 314-231-1130 • Toll Free: 1-800-735-3853 • Fax: 314-231-5074
service-dispatch@dukemfg.com • www.dukemfg.com

IMPORTANT WARNING AND SAFETY INFORMATION

READ THIS MANUAL THOROUGHLY BEFORE OPERATING, INSTALLING OR PERFORMING MAINTENANCE ON THE EQUIPMENT.

⚠ WARNING READ THIS MANUAL THOROUGHLY BEFORE OPERATING, INSTALLING OR PERFORMING MAINTENANCE ON THE EQUIPMENT

⚠ WARNING FAILURE TO FOLLOW INSTRUCTIONS IN THIS MANUAL CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.

⚠ WARNING DO NOT USE OR STORE GASOLINE OR OTHER FLAMMABLE VAPORS OR LIQUIDS IN THE VICINITY OF THIS OR ANY OTHER APPLIANCE.

⚠ WARNING DO NOT OPERATE THIS EQUIPMENT WITHOUT PROPERLY PLACING AND SECURING ALL COVER AND ACCESS PANELS.

⚠ WARNING IMPROPER INSTALLATION, ADJUSTMENT, ALTERATION, SERVICE OR MAINTENANCE CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH. READ THE INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS THOROUGHLY BEFORE INSTALLING THIS EQUIPMENT.

FOR YOUR SAFETY

Electricity and water do not mix. Unplug the unit before cleaning. If repairs are required, use a qualified service agent. While repairs are being made, be sure the unit is not plugged in. Do not store highly combustible substances on or near the unit. Be sure the compressor compartment has adequate ventilation.

CAUTION

Observe the following:

- Provide and maintain adequate minimum clearances from all walls and combustible materials.
- Provide and maintain adequate clearance for air openings.
- Keep the equipment area free and clear of combustible material.
- Operate equipment only on the type of electricity indicated on the specification plate.
- Retain this manual for future reference.

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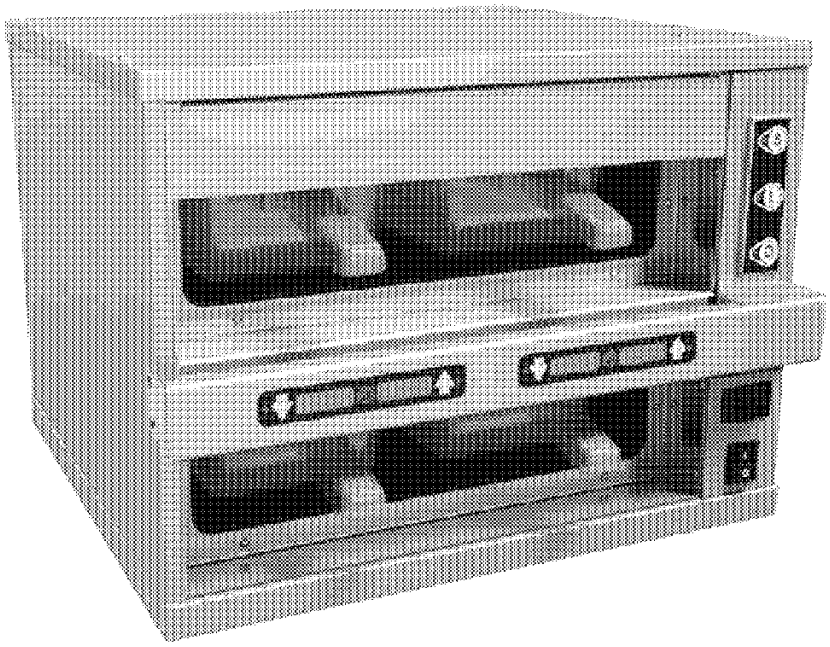
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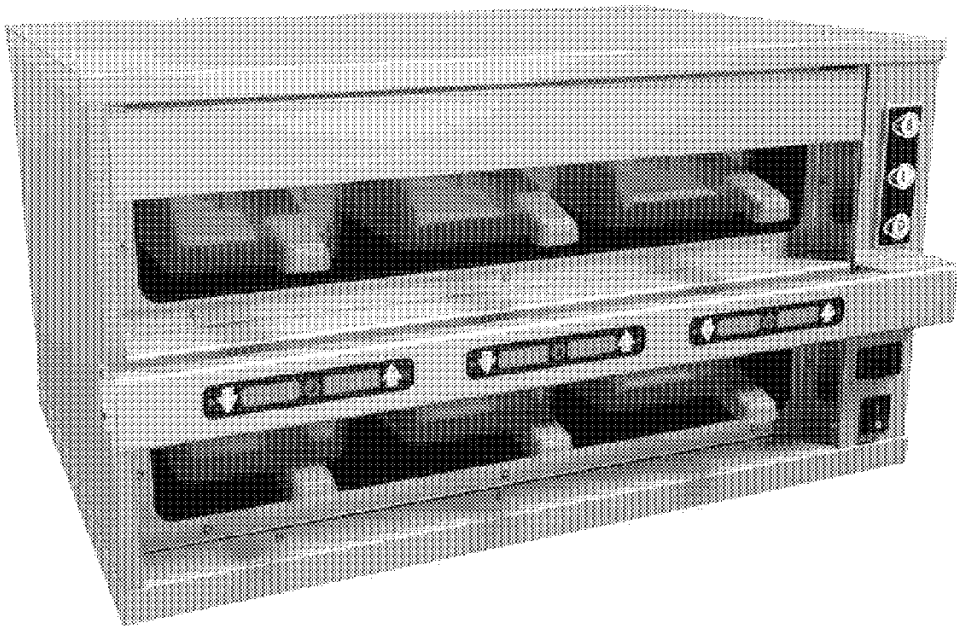
SPECIFICATIONS

IRHS22



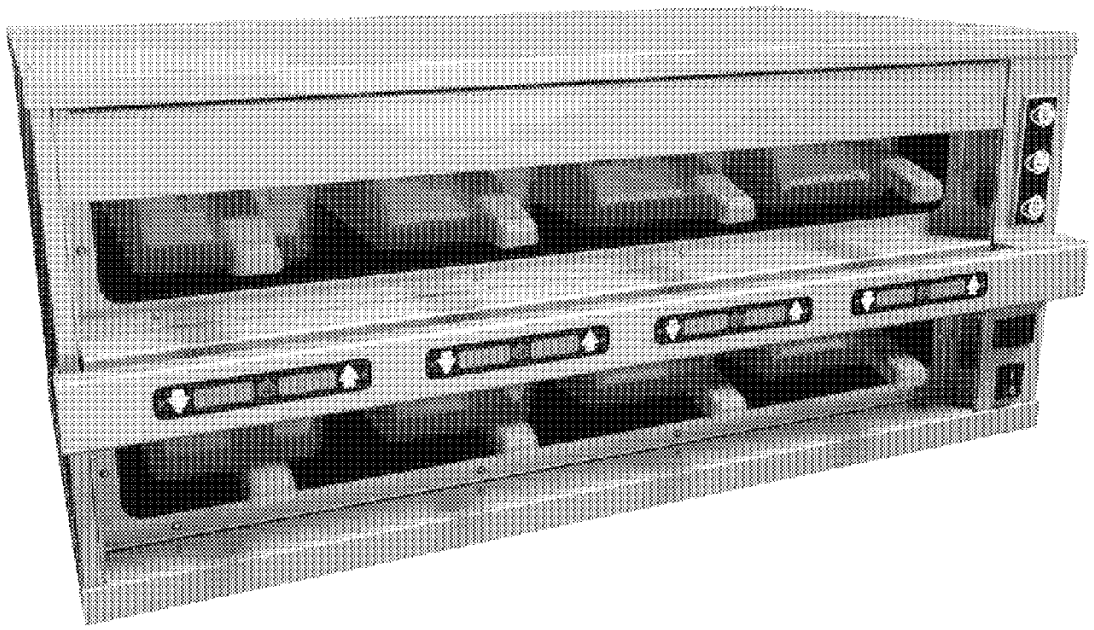
			Before Serial# 10140480 (10/1/14)			*As of Serial# 10140480*		
		Shipping Weight	125 lbs / 56.7 kg			110 lbs / 49.9 kg		
Model	**Electrical**	**Plug**	**H**	**W**	**D**	**H**	**W**	**D**
IRHS22-208	208V ~ 12 A, 50/60 Hz	NEMA 6-15P	14.4 in / 36.6 cm	19.3 in / 49.0 cm	20.1 in / 51.1 cm	13.3 in / 33.8 cm	19.3 in / 49.0 cm	20.1 in / 51.1 cm
IRHS22-230	230V ~ 12 A, 50/60 Hz	SHUKO, 16 AMP (*as of 11/3/14*) IEC, 16 AMP						
IRHS22-240	240V ~ 12 A, 50/60 Hz	NEMA 6-15P						

IRHS23



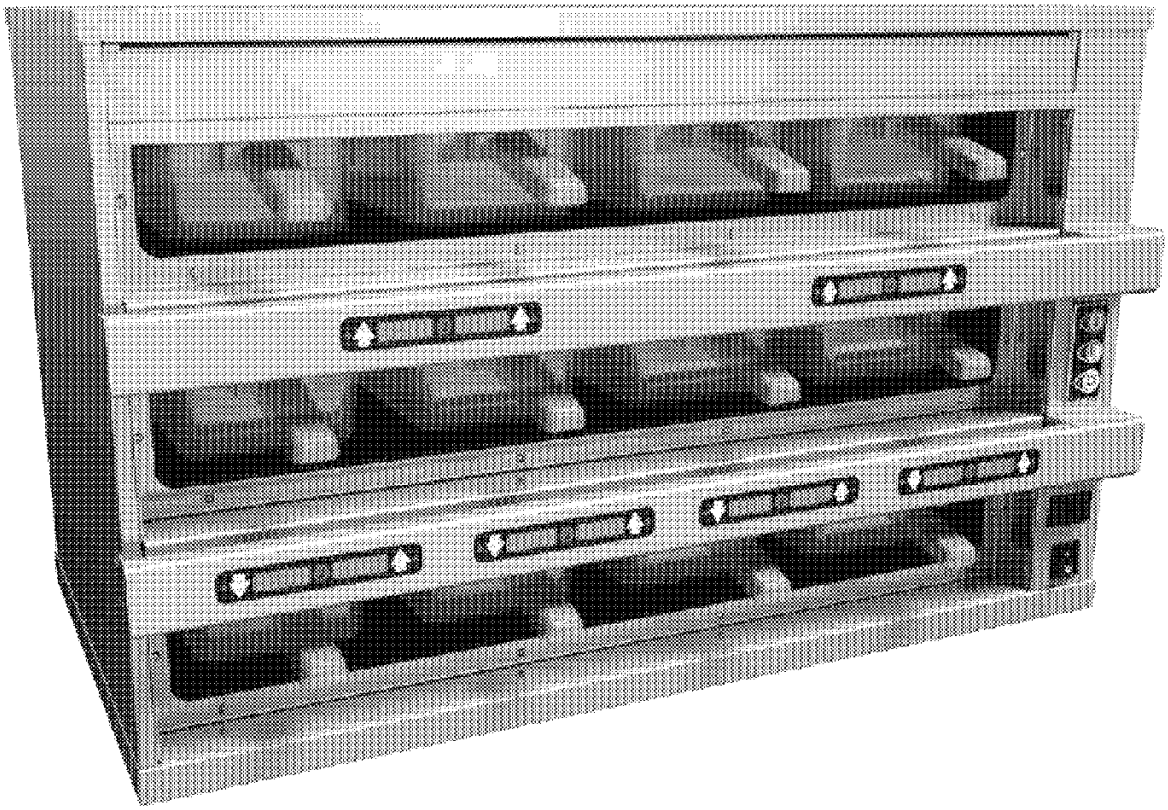
			Up to Serial# 101413198 (10/20/14)			*After SN# 101413198*		
		Shipping Weight	160 lbs / 72.6 kg			143 lbs / 64.9 kg		
Model	**Electrical**	**Plug**	**H**	**W**	**D**	**H**	**W**	**D**
IRHS23-208	208V ~ 12 A, 50/60 Hz	NEMA 6-15P	14.4 in / 36.6 cm	26.4 in / 67.1 cm	20.1 in / 51.1 cm	13.3 in / 33.8 cm	26.4 in / 67.1 cm	20.1 in / 51.1 cm
IRHS23-230	230V ~ 12 A, 50/60 Hz	SHUKO, 16 AMP (*as of 11/3/14*) IEC, 16 AMP						
IRHS23-240	240V ~ 12 A, 50/60 Hz	NEMA 6-15P						

IRHS24



			Before Serial# 10140545 (10/3/14)			*As of Serial# 10140545*		
		Shipping Weight	195 lbs / 88.4 kg			181 lbs / 82.1 kg		
Model	**Electrical**	**Plug**	**H**	**W**	**D**	**H**	**W**	**D**
IRHS24-208	208V ~ 12 A, 50/60 Hz	NEMA 6-15P	14.4 in / 36.6 cm	33.4 in / 84.8 cm	20.1 in / 51.1 cm	13.3 in / 33.8 cm	33.4 in / 84.8 cm	20.1 in / 51.1 cm
IRHS24-230	230V ~ 12 A, 50/60 Hz	SHUKO, 16 AMP / (*as of 11/3/14*) IEC, 16 AMP						
IRHS24-240	240V ~ 12 A, 50/60 Hz	NEMA 6-15P						

IRHS34



			Before Serial# 10140032 (10/1/14)			*As of Serial# 10140032*		
		Shipping Weight	275 lbs / 124.7 kg			243 lbs / 110.2 kg		
Model	**Electrical**	**Plug**	**H**	**W**	**D**	**H**	**W**	**D**
IRHS34-208	208V ~ 16 A, 50/60 Hz	NEMA 6-20P	20.9 in / 53.1 cm	33.4 in / 84.8 cm	20.1 in / 51.1 cm	19.3 in / 49.0 cm	33.4 in / 84.8 cm	20.1 in / 51.1 cm
IRHS34-230	230V ~ 16 A, 50/60 Hz	SHUKO, 16 AMP (*as of 11/3/14*) IEC, 16 AMP						
IRHS34-240	240V ~ 16 A, 50/60 Hz	NEMA 6-20P						

IRHS42



		Shipping Weight	187 lbs / 84.8 kg		
Model	**Electrical**	**Plug**	**H**	**W**	**D**
IRHS42-208	208V ~ 12 A, 50/60 Hz	NEMA 6-15P	25.3 in / 64.3 cm	19.3 in / 49.0 cm	20.1 in / 51.1 cm
IRHS42-230	230V ~ 12 A, 50/60 Hz	SHUKO, 16 AMP (*as of 11/3/14*) IEC, 16 AMP			
IRHS42-240	240V ~ 12 A, 50/60 Hz	NEMA 6-15P			

REMOVAL AND REPLACEMENT OF PARTS

EQUIPMENT USED IN THESE INSTRUCTIONS

- Phillips screwdriver
- #1 precision screwdriver
- Flat-head screwdriver
- Needle-nose pliers
- 11/16" open-end wrench
- 11/32" nut driver or socket
- 1/4" nut driver or socket
- Tie wraps
- ESD Wrist Strap
- Aluminum tape
- Ohmmeter
- Heat transfer compound
- Clean gloves/cloths/towels

ELECTRICAL LOCKOUT/TAGOUT PROCEDURE

WARNING

BEFORE PERFORMING ANY SERVICE THAT INVOLVES ELECTRICAL CONNECTION OR DISCONNECTION AND/OR EXPOSURE TO ELECTRICAL COMPONENTS, ALWAYS FOLLOW THE ELECTRICAL LOCKOUT/TAGOUT PROCEDURE. DISCONNECT ALL CIRCUITS. FAILURE TO COMPLY CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.

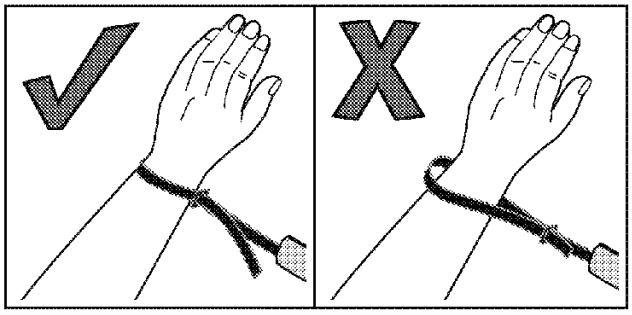
The Electrical LOCKOUT/TAGOUT Procedure is used to protect personnel working on an electrical appliance. Before performing any maintenance or service that requires exposure to electrical components, follow these steps:

1. In electrical box, place appliance circuit breaker into OFF position.
2. Place a lock or other device on electrical box cover to prevent someone from placing circuit breaker ON.
3. Place a tag on electrical box cover to indicate that appliance has been disconnected for service and power should not be restored until tag is removed by maintenance personnel.
4. Disconnect appliance power cord from electrical outlet.
5. Place a tag on the cord to indicate that unit has been disconnected for service and power should not be restored until tag is removed.

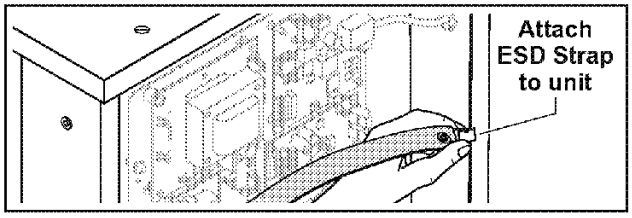
ESD WRIST STRAP

Electrostatic Discharge (ESD) is one of the biggest dangers to components in electronic devices. An ESD wrist strap allows any accumulated static charge to disperse safely through its cable, rather than through static-sensitive components such as unit computer-related components.

1. Place the ESD wrist strap around your wrist. The wrist strap should be next to your skin, so it needs to be placed under any clothes.
2. Tighten the wrist strap so that the attached metal plate maintains good contact with your skin. Do not over tighten as the wrist strap should not be uncomfortable.



3. Connect the cable to the wrist strap if it is disconnected. The cable should be securely clipped in place to maintain a good connection.
4. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
5. Connect the alligator clip on the other end of the cable to a metal surface on the unit. This creates a path through which any built-up static charge can safely flow without causing any damage. A built-in high value resistor ensures the charge leaks away in a controlled manner, and protects the user.



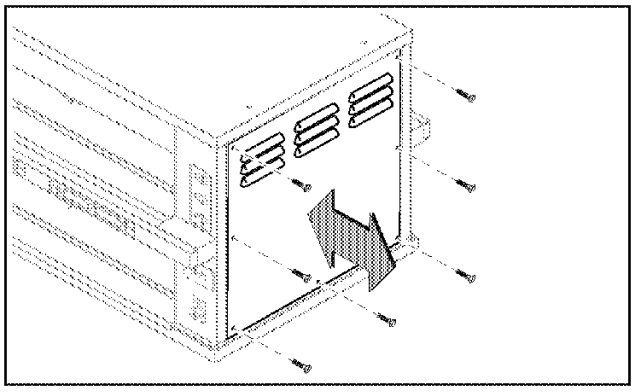
DECK ASSEMBLY COMPONENTS

MENU BARS

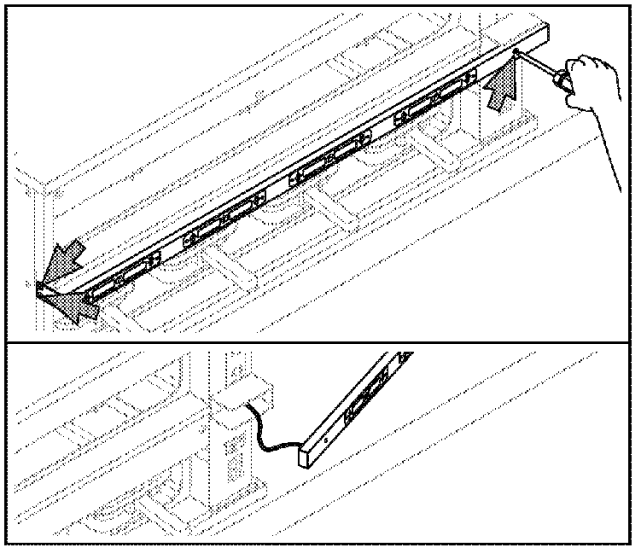
The Menu Bars hold the Keypad Displays that control and monitor the performance of each heating well. The quantity varies (depending on model) and are located on the front and back faces of the unit.

TOOLS REQUIRED: Phillips screwdriver; Flat-head screwdriver

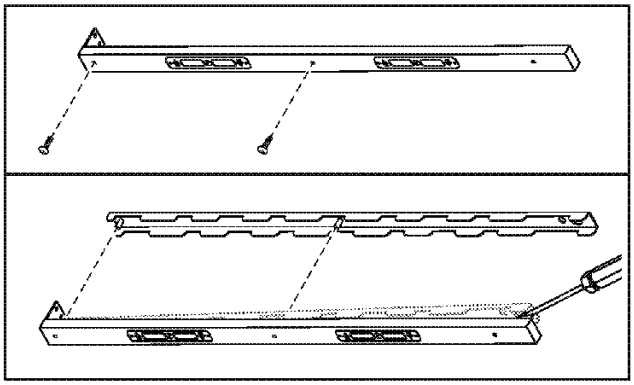
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.



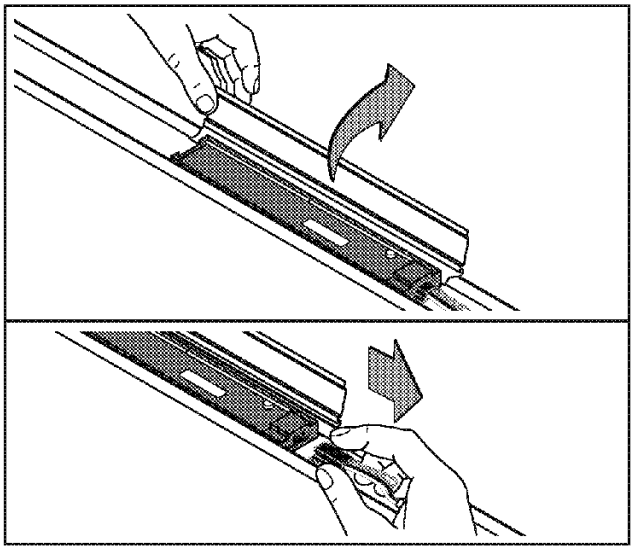
3. Remove and retain screws of the affected Menu Bar and pull away from the face of the unit. It is not necessary, but recommended, to completely remove the Menu Bar from the unit.



4. Mark and disconnect the affected Menu Bar's molex connector inside the control compartment.
5. If it is necessary to reuse the existing Keypad Displays in a replacement Menu Bar:
   a. Remove and retain the two (2) screws securing the Menu Bar Back Channel and pry out of the former Menu Bar.

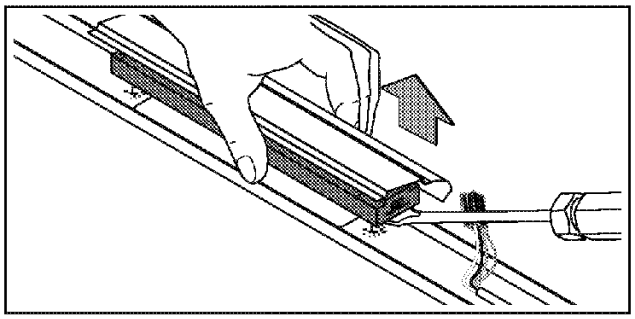


   b. A Keypad Spacer is attached to the rear of each Keypad Display with double-sided tape. Carefully pry off and remove the Keypad Spacer from the affected Keypad Display(s). This will free-up the Menu Bar Harness.

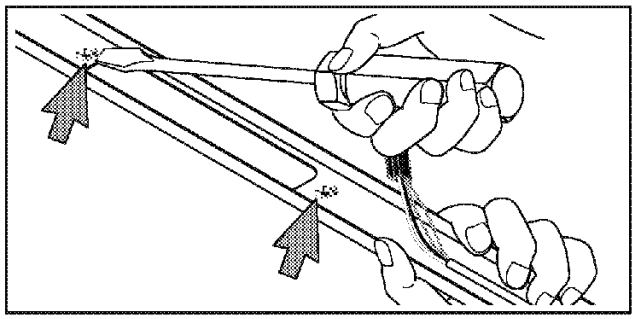


c. Disconnect the affected Keypad Display(s) electrical connector from the Menu Bar Harness.

d. The Keypad Displays are attached to the Menu Bar with double-sided glue dots. Carefully pry off and remove the affected Keypad Display from the Menu Bar.

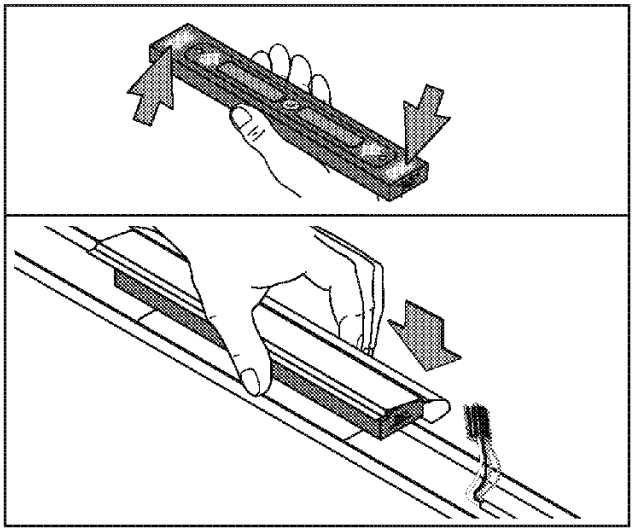


e. Carefully scrape any remaining adhesive residue from the inside of the Menu Bar.



RESTORE

6. Carefully place the Keypad Displays in place on the interior side of the replacement Menu Bar. If reusing the Keypad Displays, it may be necessary to use additional double-sided tape to secure the Keypad Displays to the Menu Bar.



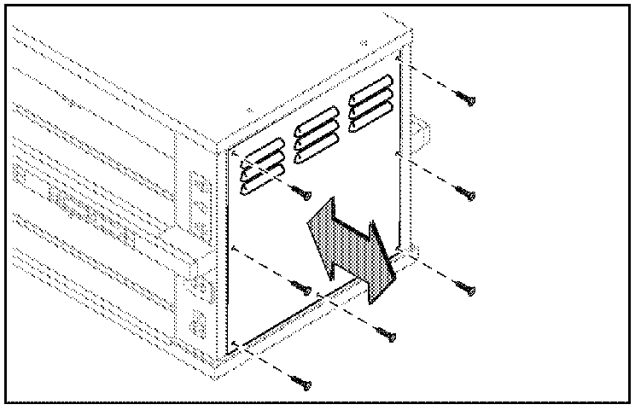
7. Connect the replacement Menu Bar Harness' molex connector in the control compartment.
8. Replace the Keypad Spacer, over the Menu Bar Harness, to the rear of the Keypad Display(s).
9. Reinstall Menu Bar Back Channel using its screws.
10. Reinstall the Menu Bar using its screws.
11. Replace the Control Side Cover and secure with its screws.
12. Restore power to the unit and test for proper function.

KEYPAD DISPLAYS

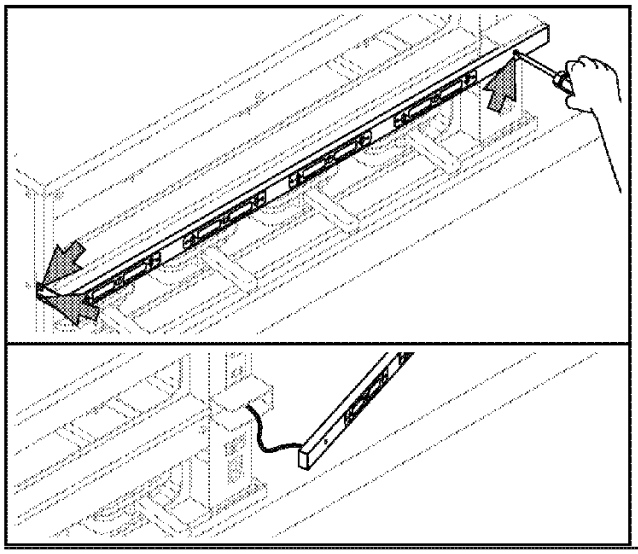
The Keypad Displays control and monitor the performance of each heating well. They are located inside of the Menu Bar(s) and the quantity varies (depending on model).

TOOLS REQUIRED: Phillips screwdriver; Flat-head screwdriver

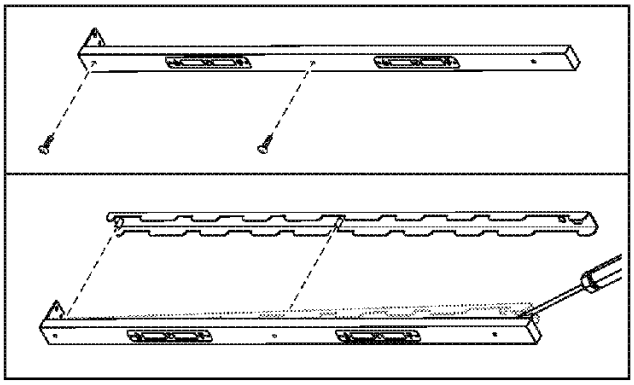
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.



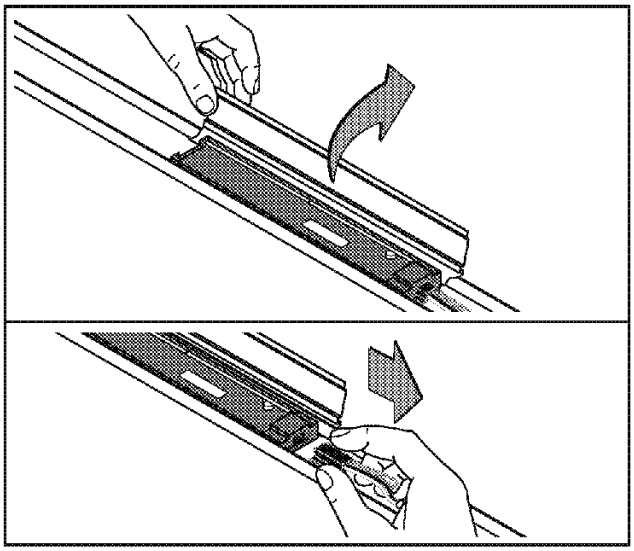
3. Disconnect the affected Menu Bar's molex connector inside the control compartment.
4. Remove and retain screws of the Menu Bar containing the affected Keypad Display and pull away from the face of the unit. It is not necessary, but recommended, to completely remove the Menu Bar from the unit.



5. Remove and retain the screws securing the Menu Bar Back Channel from the front of the Menu Bar and pry out of the Menu Bar.

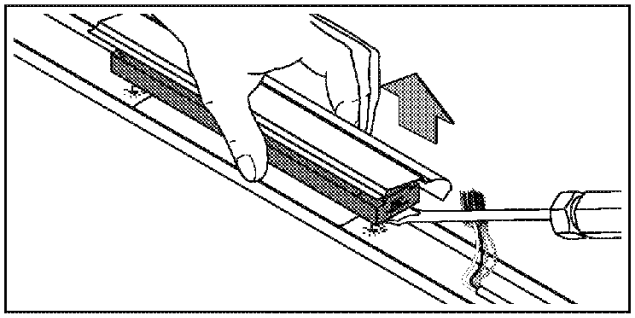


6. A Keypad Spacer is attached to the rear of each Keypad Display with double-sided tape. Carefully pry off and remove the Keypad Spacer from the affected Keypad Display(s). This will free-up the Menu Bar Harness.

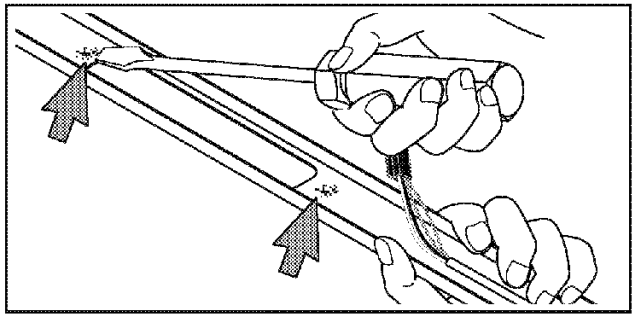


7. Disconnect the affected Keypad Display(s) electrical connector from the Menu Bar Harness.

8. The Keypad Displays are attached to the Menu Bar with double-sided glue dots. Carefully pry off and remove the affected Keypad Display from the Menu Bar.

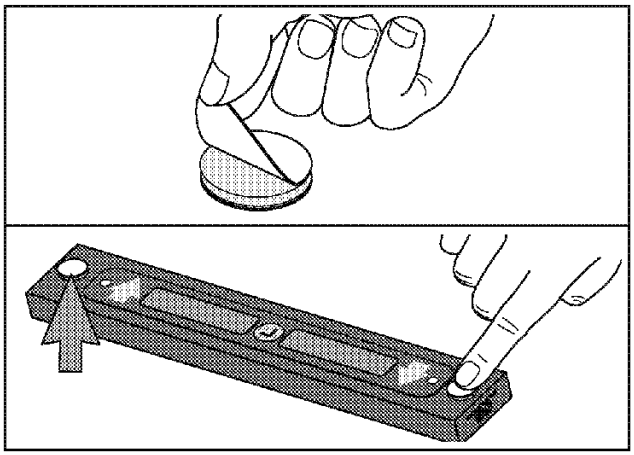


9. Carefully scrape any remaining adhesive residue from the inside of the Menu Bar.

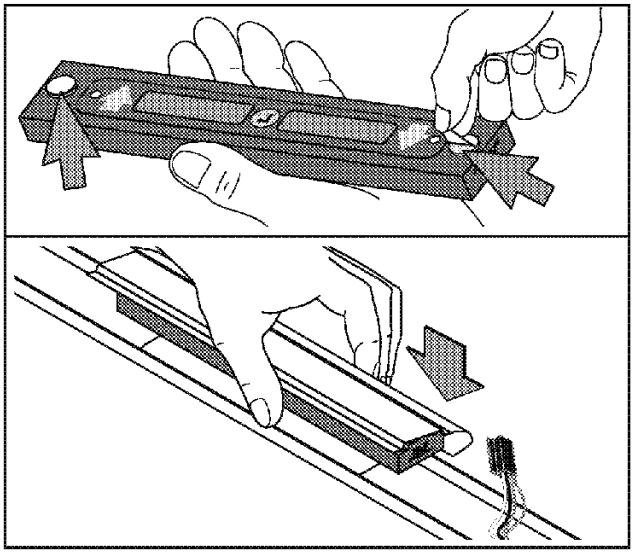


RESTORE:

10. Peel off the adhesive cover from the glue dots and place on the replacement Keypad Display.



11. Peel off the other adhesive cover from the glue dots and carefully position the replacement Keypad Display in place on the interior side of the Menu Bar.



12. Reconnect the affected Keypad Display(s) electrical connector to the Menu Bar Harness.

13. Replace the Keypad Spacer, over the Menu Bar Harness, to the rear of the Keypad Display(s).

14. Reinstall the Menu Bar Back Channel using its screws.

15. Reinstall the Menu Bar using its screws.

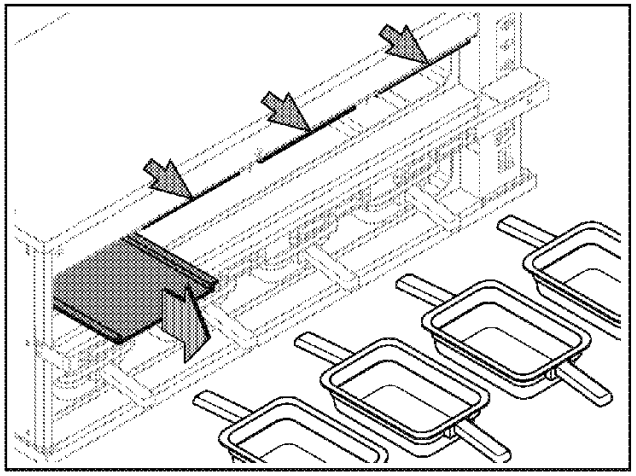
16. Restore power to the unit and test for proper function.

RTD (TEMPERATURE) SENSORS

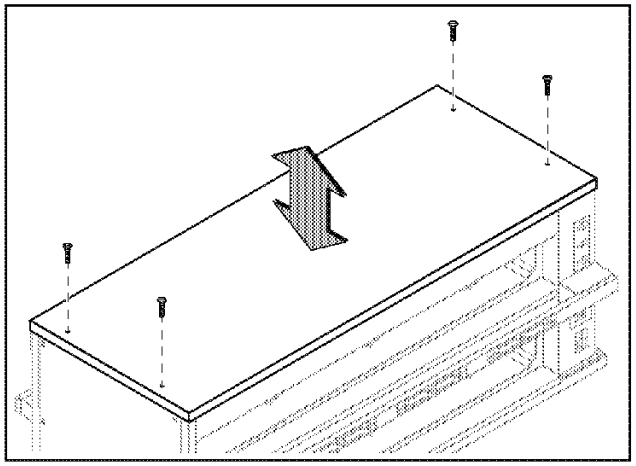
The RTD Sensors monitor the temperature of the heating wells. They are affixed to the bottom-center of each Heat Element, and the quantity varies (depending on model).

TOOLS REQUIRED: Phillips screwdriver; Aluminum tape; Tie wraps

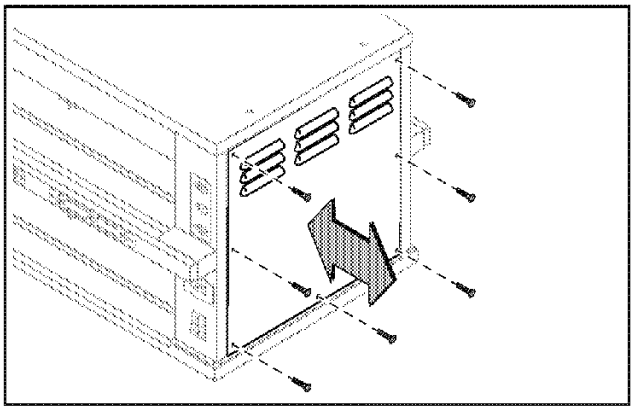
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove any pans and covers on the level(s) being removed.



3. Remove and retain the screws securing the Top Panel and remove the cover.

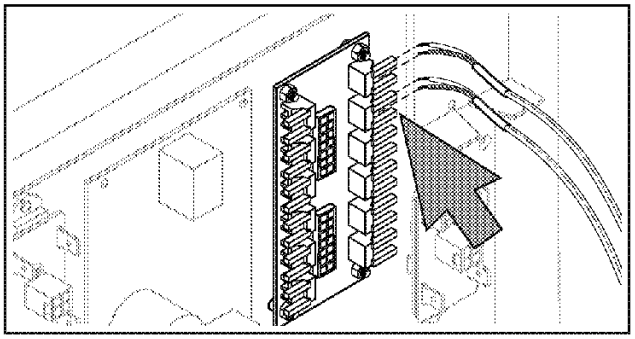


4. Remove and retain the screws securing the Control Side Cover and remove the cover.

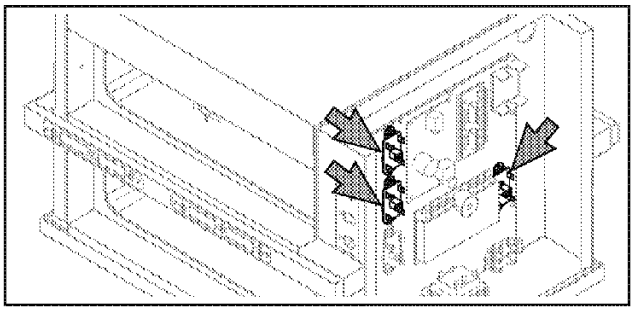


NOTE: If the RTD Sensor to be replaced is on a lower level, start from the top and repeat the following four steps for each level above the desired level.

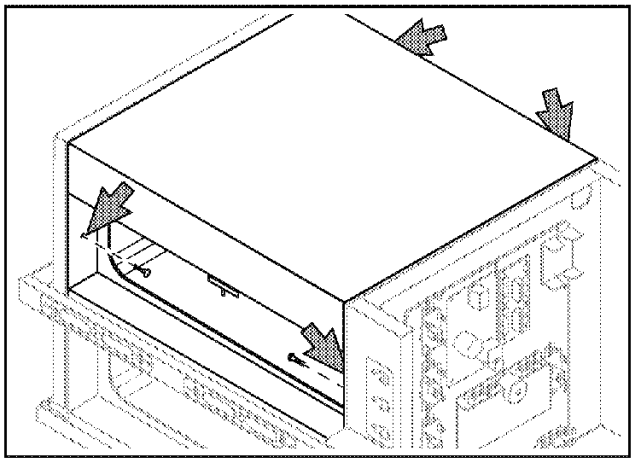
5. Mark, remove the tie wraps, and disconnect the wires for the RTD Sensors from the RTD board in the Control Compartment.



6. Mark, remove the tie wraps, and disconnect the wires for the Emitter (IR Bulb) Sockets and Heat Elements from the Relays in the Control Compartment.

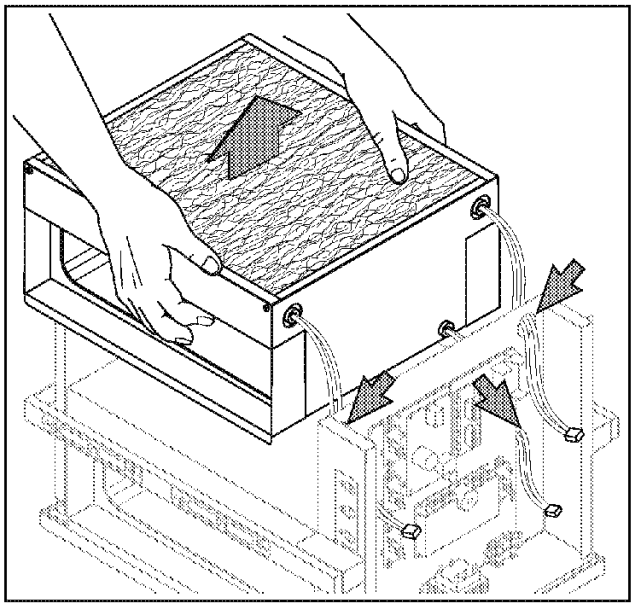


7. Remove the four (4) screws (2 in front, 2 in back) securing the liner deck assembly to the unit.



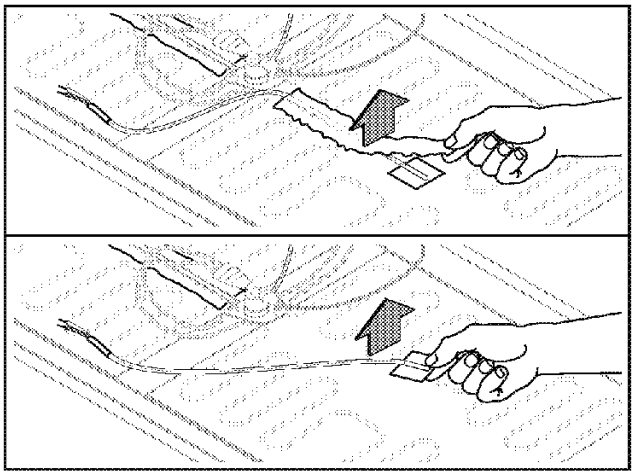
8. Carefully lift the entire liner deck assembly out through the top of the unit. This may require two people, depending on the location of the IRHS unit. Though not required to do so, removing the level's IR glass frame assembly (instructions are contained in the Emitter instructions) will lighten the weight of the liner deck assembly and make it easier for one person to accomplish this task if the IRHS is located in an elevated location or has limited access.

NOTE: It will be necessary to feed the RTD Sensor, Emitter, and Heat Element wires through the control compartment bushings. Take caution not to damage any of the wires.



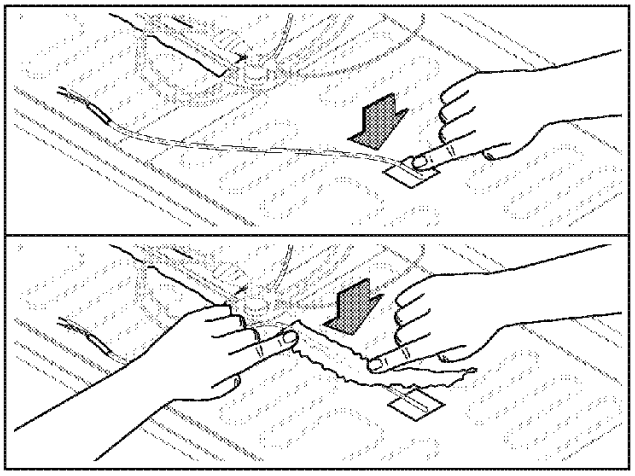
9. Invert the liner deck assembly upside-down, then remove and retain the insulation.

10. The RTD Sensor is attached to the heat element with double-sided adhesive tape and covered with aluminum tape. Carefully pry off and remove the affected RTD Sensor from the Heat Element.



RESTORE:

11. Peel off the adhesive tape cover from the replacement RTD Sensor and press in place on the heat element. Replace aluminum tape cover.



12. Feed the Heat Element and RTD Sensor wires in the direction of and through the control compartment bushings and replace the insulation.

13. Invert the liner deck assembly right-side up. While feeding the RTD Sensor, Emitter, and Heat Element wires through the appropriate control compartment bushings, carefully slide the liner deck assembly into the unit, taking caution not to damage any of the wires.

NOTE: This may require two people, depending on the location of the IRHS unit.

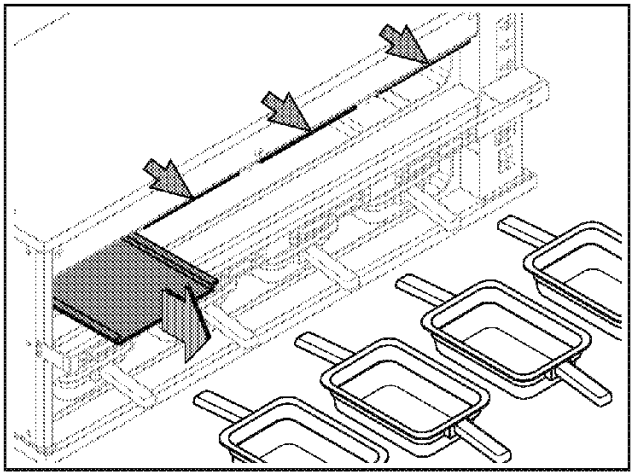
14. Reconnect and tie wrap all previously disconnected wires and connectors in the control compartment.
15. Replace the Control Side Cover and secure with its screws.
16. Replace the Top Panel and secure with its screws.
17. Restore power to the unit and test for proper function.

HIGH LIMIT THERMOSTATS

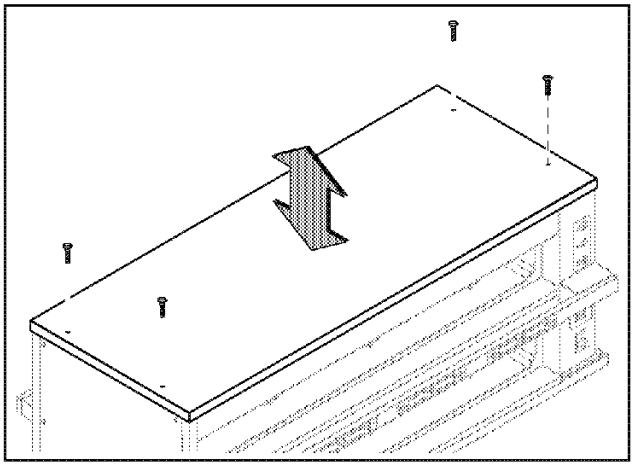
The High Limit Thermostats monitor well temperatures and serves as an emergency circuit interrupter in case of inadvertent overheating. There is one per level, and are affixed to the bottom-center of each heat sink.

TOOLS REQUIRED: Phillips screwdriver; Heat transfer compound; Tie wraps

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove any pans and covers on the level(s) being removed.

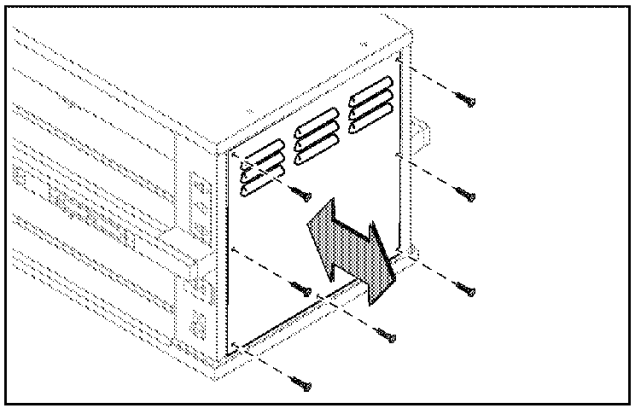


3. Remove and retain the screws securing the Top Panel and remove the cover.

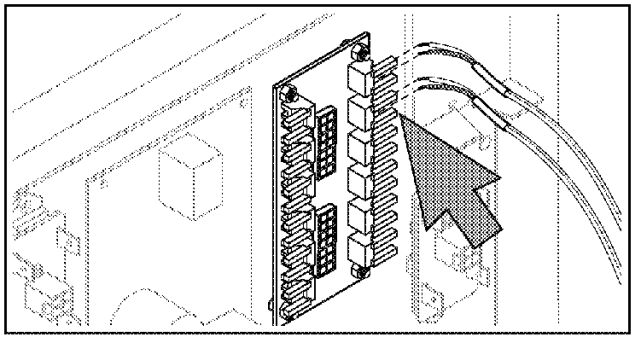


4. Remove and retain the screws securing the Control Side Cover and remove the cover.

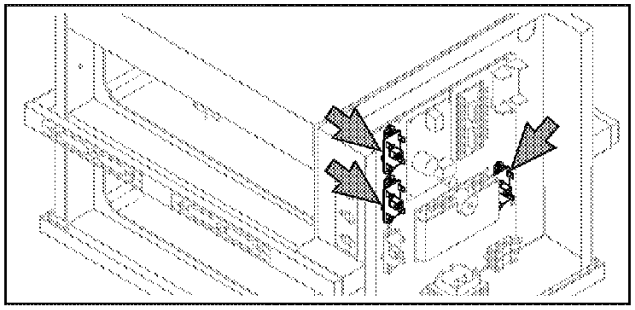
NOTE: If the High Limit Thermostat to be replaced is on a lower level, start from the top and repeat the following four steps for each level above the desired level.



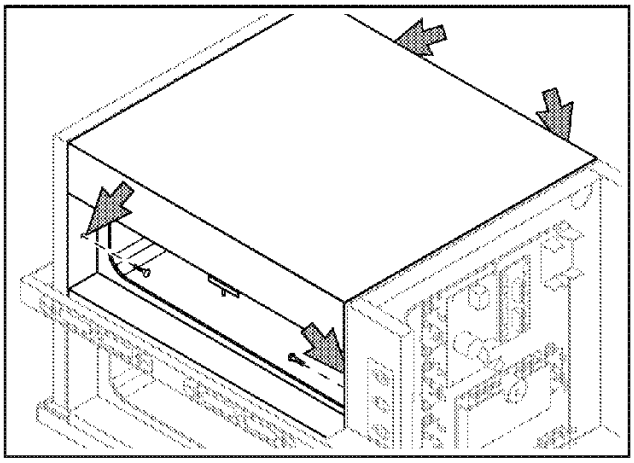
5. Mark, remove the tie wraps, and disconnect the wires for the RTD Sensors from the RTD board in the Control Compartment.



6. Mark, remove the tie wraps, and disconnect the wires for the Emitter (IR Bulb) Sockets and Heat Elements from the Relays in the Control Compartment.

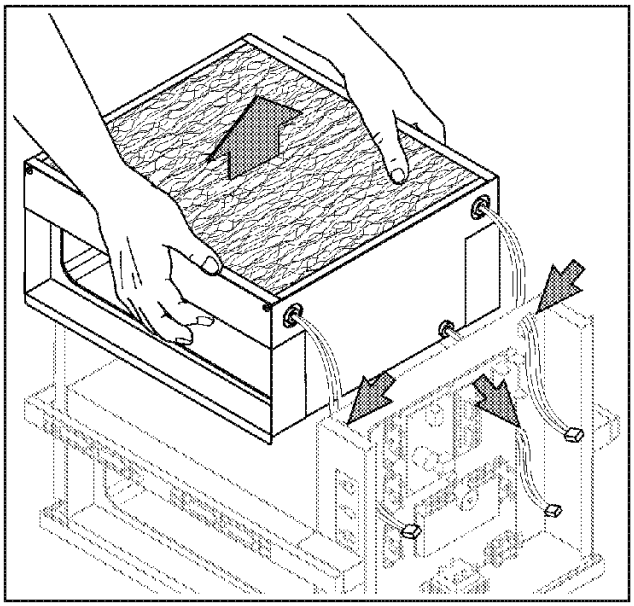


7. Remove the four (4) screws (2 in front, 2 in back) securing the liner deck assembly to the unit.



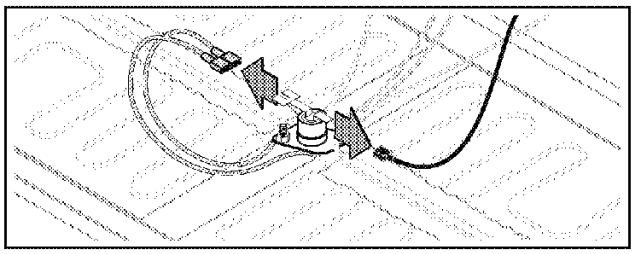
8. Carefully lift the entire liner deck assembly out through the top of the unit. This may require two people, depending on the location of the IRHS unit. Though not required to do so, removing the level's IR glass frame assembly (instructions are contained in the Emitter instructions) will lighten the weight of the liner deck assembly and make it easier for one person to accomplish this task if the IRHS is located in an elevated location or has limited access.

NOTE: It will be necessary to feed the RTD Sensor, Emitter, and Heat Element wires through the control compartment bushings. Take caution not to damage any of the wires.

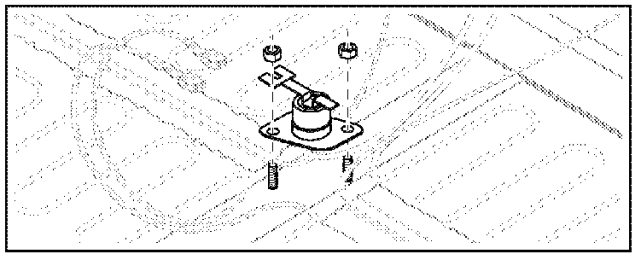


9. Invert the liner deck assembly upside-down, then remove and retain the insulation.

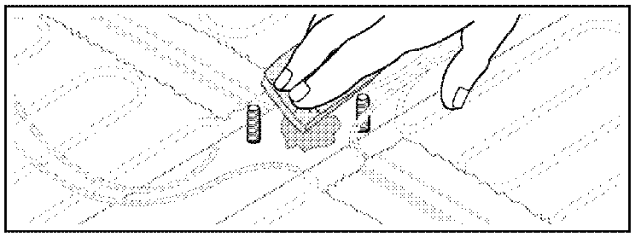
10. Mark and disconnect the spade terminals for the affected High Limit Thermostat.



11. Remove and retain the two (2) 11/32" nuts securing the High Limit Thermostat to the heat sink and remove the High Limit Thermostat.

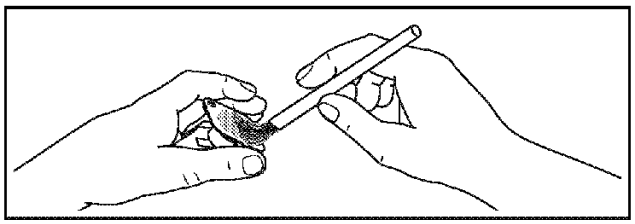


12. Clean the mounting surface of any residual heat transfer compound.



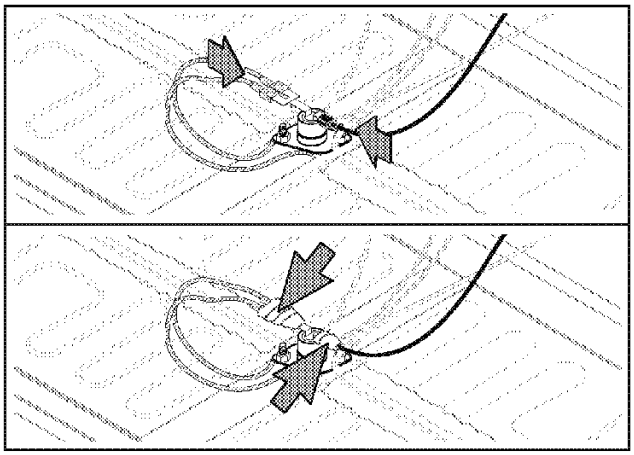
RESTORE:

13. Apply heat transfer compound to the mounting surface of the replacement High Limit Thermostat.



14. Install the replacement High Limit Thermostat and secure with its nuts.

15. Reattach the High Limit Thermostat spade terminals. Be sure to reapply the tape that helps secure the spade terminals to the High Limit Thermostat.



16. Feed the Heat Element and RTD Sensor wires in the direction of and through the control compartment bushings and replace the insulation.

17. Invert the liner deck assembly right-side up. While feeding the RTD Sensor, Emitter, and Heat Element wires through the appropriate control compartment bushings, carefully slide the liner deck assembly into the unit, taking caution not to damage any of the wires.

NOTE: This may require two people, depending on the location of the IRHS unit.

18. Reconnect and tie wrap all previously disconnected wires and connectors in the control compartment.

19. Replace the Control Side Cover and secure with its screws.

20. Replace the Top Panel and secure with its screws.

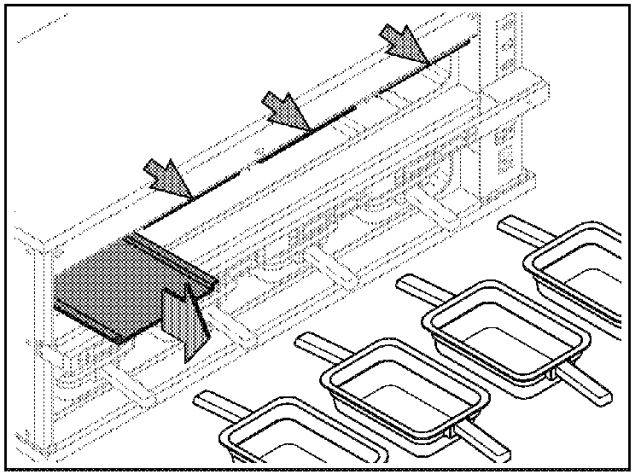
21. Restore power to the unit and test for proper function.

HEAT ELEMENTS

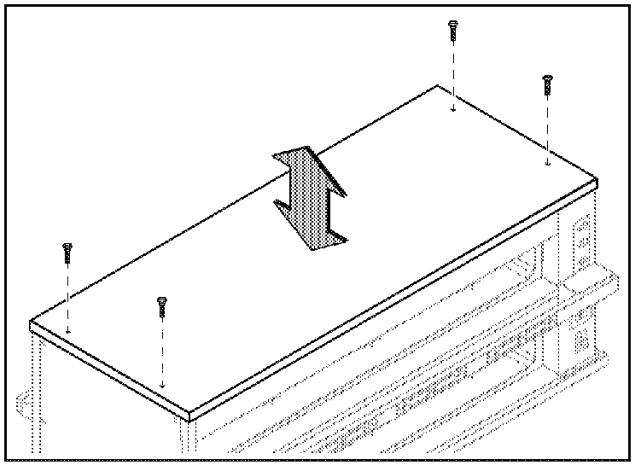
The Heat Elements provide the heating required to keep the heating wells at proper operating temperatures. The quantity varies depending on model and are affixed to the bottom of each Heat Sink.

TOOLS REQUIRED: Phillips screwdriver; 11/32" nut driver or socket; Heat transfer compound; Tie wraps

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove any pans and covers on the level(s) being removed.

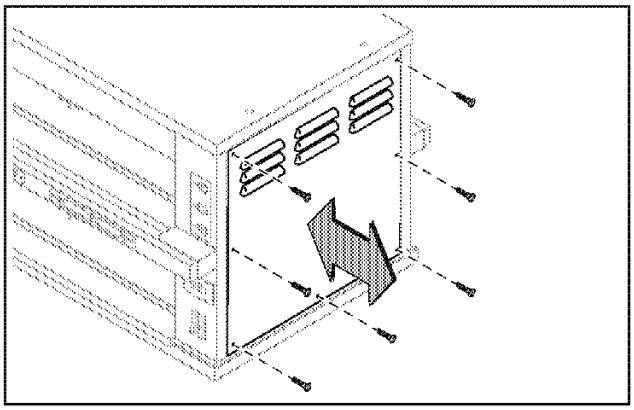


3. Remove and retain the screws securing the Top Panel and remove the cover.

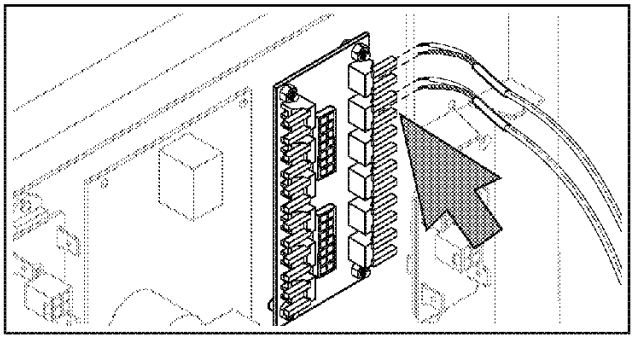


4. Remove and retain the screws securing the Control Side Cover and remove the cover.

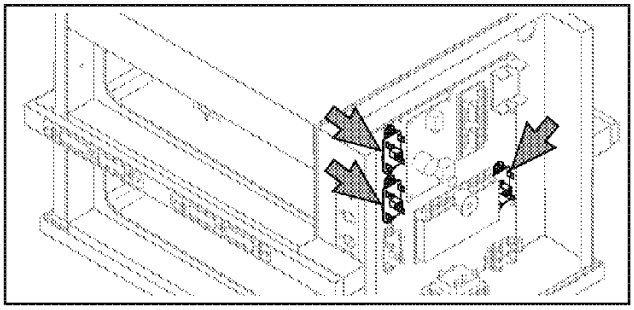
NOTE: If the Heat Element to be replaced is on a lower level, start from the top and repeat the following four steps for each level above the desired level.



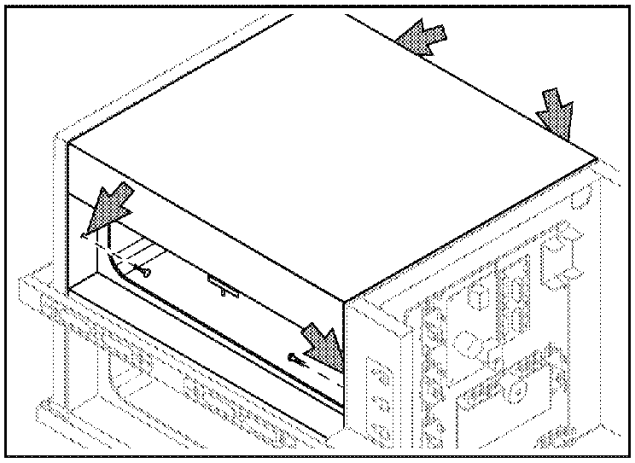
5. Mark, remove the tie wraps, and disconnect the wires for the RTD Sensors from the RTD board in the Control Compartment.



6. Mark, remove the tie wraps, and disconnect the wires for the Emitter (IR Bulb) Sockets and Heat Elements from the Relays in the Control Compartment.



7. Remove the four (4) screws (2 in front, 2 in back) securing the liner deck assembly to the unit.

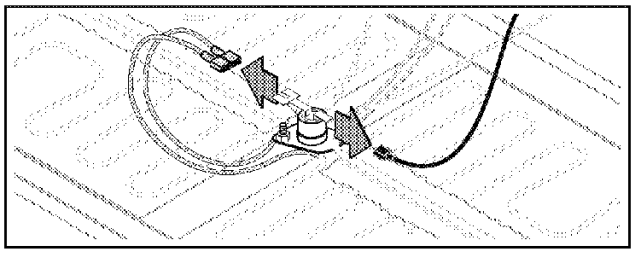


8. Carefully lift the entire liner deck assembly out through the top of the unit. This may require two people, depending on the location of the IRHS unit. Though not required to do so, removing the level's IR glass frame assembly (instructions are contained in the Emitter instructions) will lighten the weight of the liner deck assembly and make it easier for one person to accomplish this task if the IRHS is located in an elevated location or has limited access.

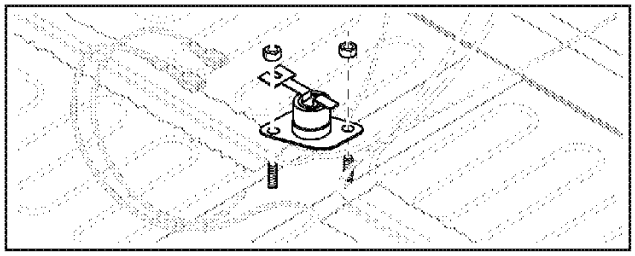
NOTE: It will be necessary to feed the RTD Sensor, Emitter, and Heat Element wires through the control compartment bushings. Take caution not to damage any of the wires.

9. Invert the liner deck assembly upside-down, then remove and retain the insulation.

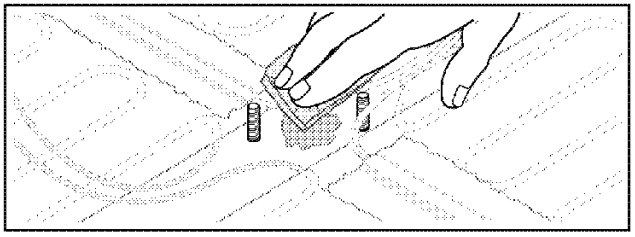
10. Mark and disconnect the spade terminals for the level's High Limit Thermostat.



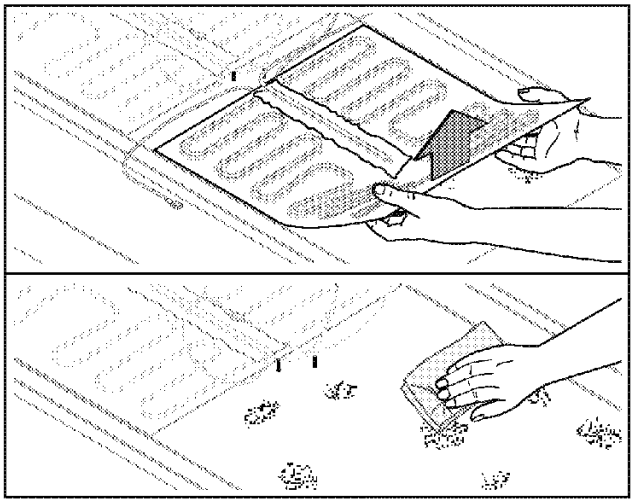
11. Remove and retain the two (2) 11/32" nuts securing the High Limit Thermostat to the heat sink and remove the High Limit Thermostat.



12. Clean the mounting surface of any residual heat transfer compound.

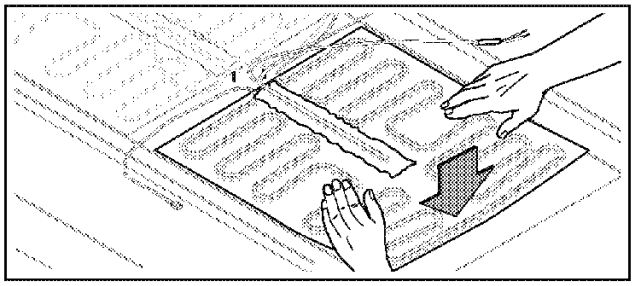


13. Remove the affected Heat Element by peeling off from the heat sink. Ensure any excess tape and/ or adhesive is removed.



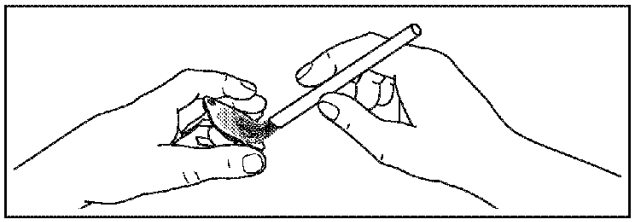
NOTE: The replacement Heat Element will come with a new RTD Sensor attached, so retaining the existing RTD Sensor is unnecessary.

14. Peel the adhesive tape cover off the replacement Heat Element and press in place on the heat sink, ensuring all air bubbles are smoothed out.



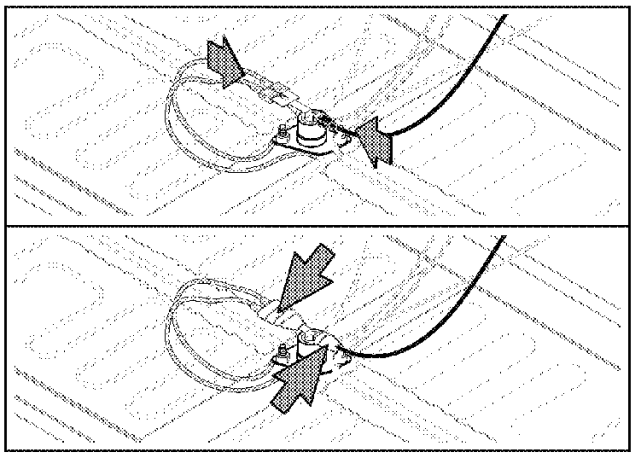
RESTORE:

15. Apply heat transfer compound to the mounting surface of the High Limit Thermostat.



16. Reinstall the High Limit Thermostat and secure with its nuts.

17. Reattach the High Limit Thermostat spade terminals. Be sure to reapply the tape that helps secure the spade terminals to the High Limit Thermostat.



18. Feed the Heat Element and RTD Sensor wires in the direction of and through the control compartment bushings and replace the insulation.

19. Invert the liner deck assembly right-side up. While feeding the RTD Sensor, Emitter, and Heat Element wires through the appropriate control compartment bushings, carefully slide the liner deck assembly into the unit, taking caution not to damage any of the wires.

NOTE: This may require two people, depending on the location of the IRHS unit.

20. Reconnect and tie wrap all previously disconnected wires and connectors in the control compartment.

21. Replace the Control Side Cover and secure with its screws.

22. Replace the Top Panel and secure with its screws.

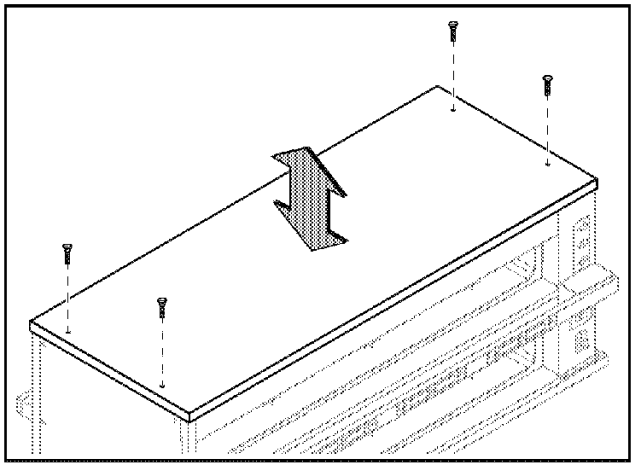
23. Restore power to the unit and test for proper function.

EMITTER (IR BULB) SOCKETS

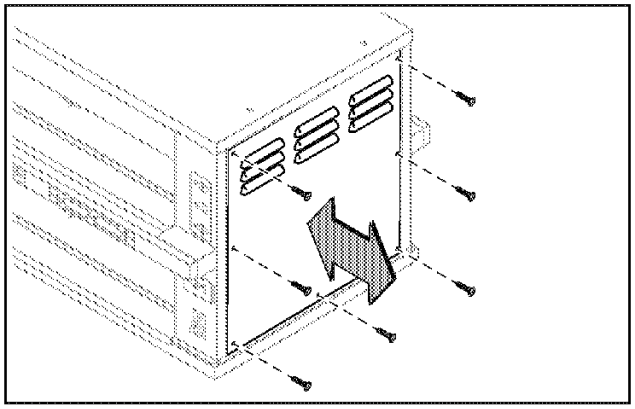
The Emitter Sockets hold and provide power to the Emitters. There are two (2: 1 front, 1 back) at the top of each heating well.

TOOLS REQUIRED: Phillips screwdriver; clean gloves/ cloths/towels; 11/16" open-end wrench; Tie wraps

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove all pans and covers from the liner deck assembly, and levels above where the affected Emitter Socket is to be replaced.
3. Remove and retain the screws securing the Top Panel and remove the cover.

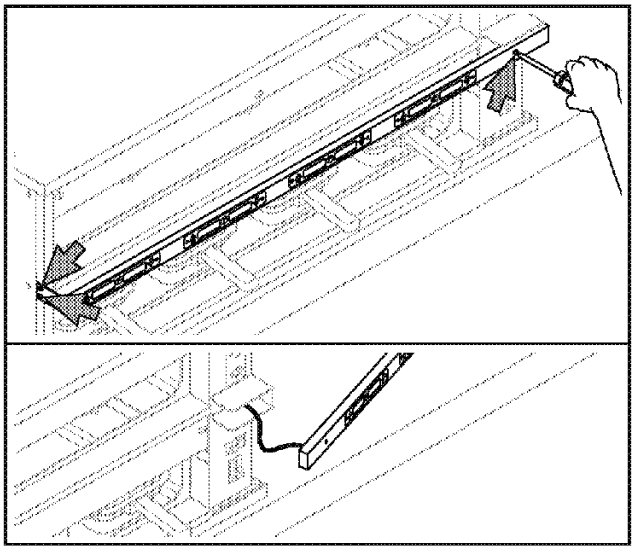


4. Remove and retain the screws securing the Control Side Cover and remove the cover.

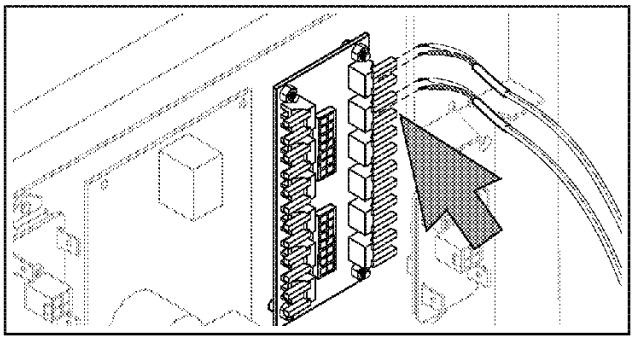


If the Emitter Socket to be replaced is on a lower level (not for top level replacement), starting from the second level, repeat the following five steps for each level above the desired repair level:

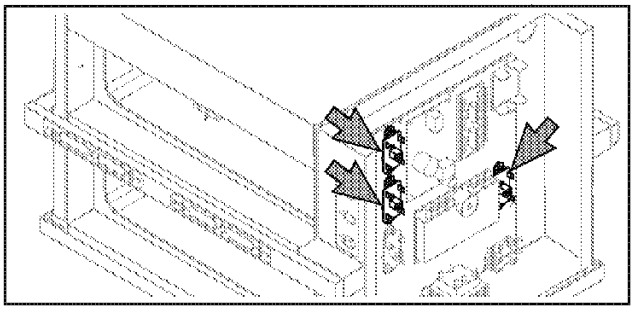
a. Remove and retain the screws securing the appropriate Menu Bar(s) and move to one side. It is not necessary, but recommended, to completely remove the Menu Bar from the unit. Menu Bar instructions are contained in this manual.



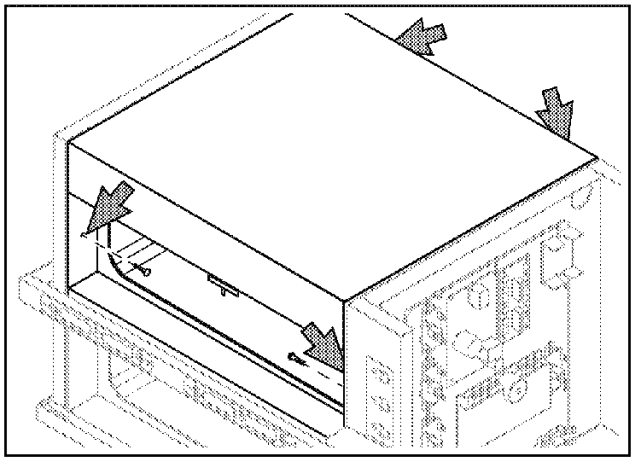
b. Mark, remove the tie wraps, and disconnect the wires for the RTD Sensors from the RTD board in the Control Compartment.



c. Mark, remove the tie wraps, and disconnect the wires for the Emitter (IR Bulb) Sockets and Heat Elements from the Relays in the Control Compartment.

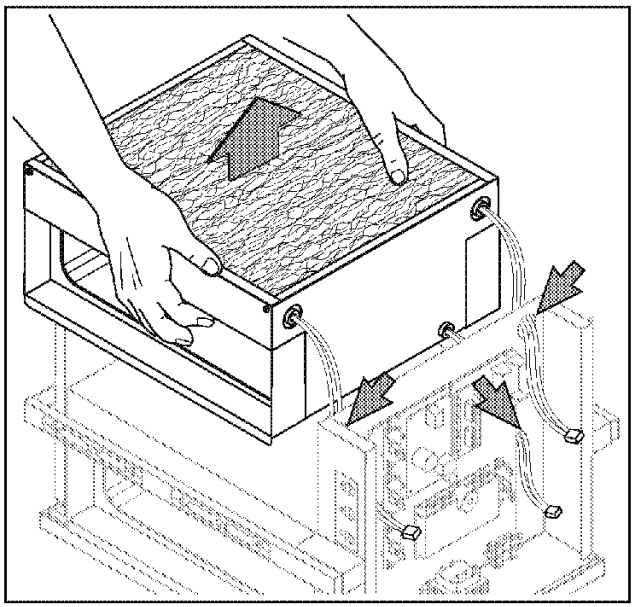


d. Remove the four (4) screws (2 in front, 2 in back) securing the liner deck assembly to the unit.



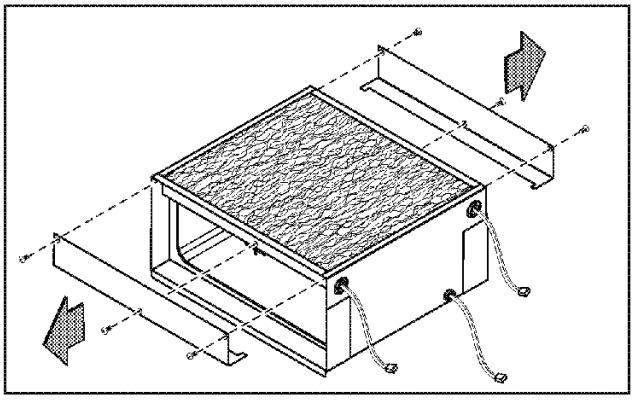
e. Carefully lift the entire liner deck assembly out through the top of the unit. This may require two people, depending on the location of the IRHS unit. Though not required to do so, removing the level's IR glass frame assembly (instructions are contained in the Emitter instructions) will lighten the weight of the liner deck assembly and make it easier for one person to accomplish this task if the IRHS is located in an elevated location or has limited access.

NOTE: It will be necessary to feed the RTD Sensor, Emitter, and Heat Element wires through the control compartment bushings. Take caution not to damage any of the wires.



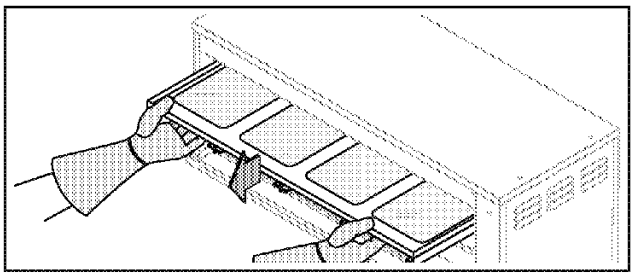
You will now have access to remove the nut securing socket in place.

5. Each liner deck's frame support angles (front and back) support the IR glass frame assembly in place. Remove and retain the screws securing the frame support angle on the row where the affected Socket is to be replaced and remove the frame support angle. Repeat for the other side of the liner deck assembly. Be careful to support and not let the IR glass frame assembly fall and damage the heat sink.



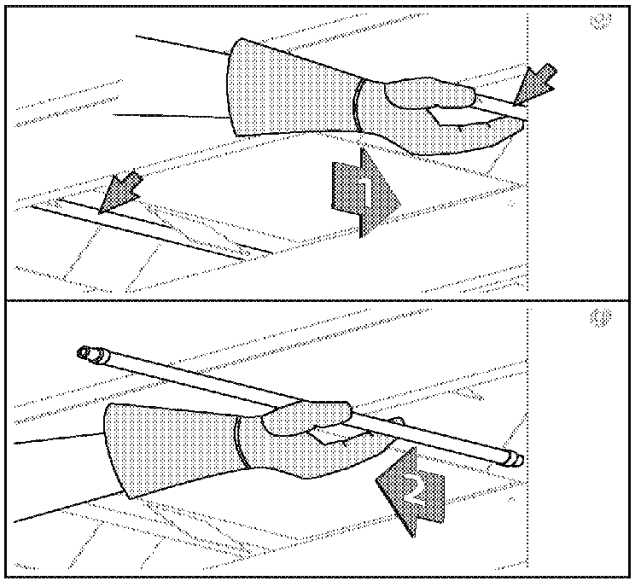
6. Slide the IR glass frame assembly out of the liner deck assembly below the Socket to be replaced.

NOTE: Make sure the glass has cooled off sufficiently to avoid burns to bare skin. Use gloves if necessary.

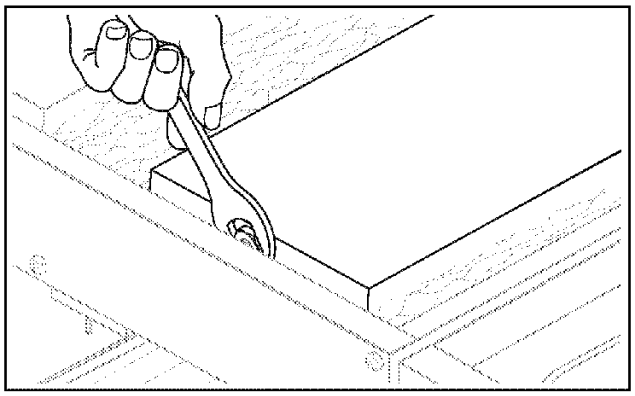


7. The Emitter Sockets are spring-loaded. Push the Emitter (IR Bulb) towards the rear socket until the Emitter is free from the front socket and carefully remove.

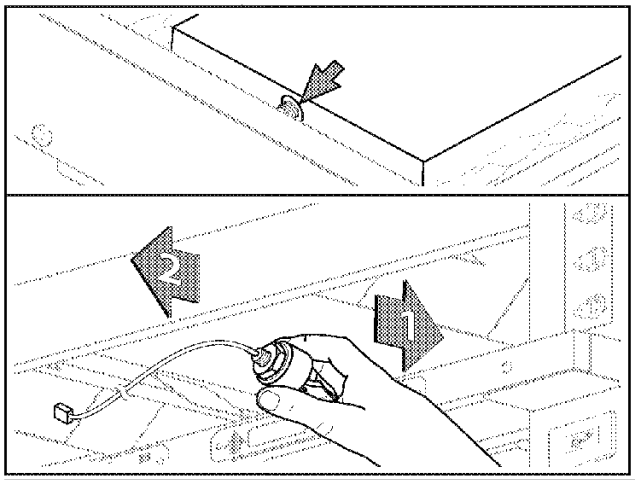
NOTE: DO NOT TOUCH THE EMITTER WITH BARE HANDS! The oil on human skin will shorten the life of the Emitters. If the Emitter is to be reused, use clean gloves, a clean cloth, or a clean paper towel to handle.



8. Mark and disconnect the faulty Emitter Socket's wires from the Relay in the control compartment.
9. Using an 11/16" open-end wrench, remove the nut securing the socket in place.



10. From the bulb side of the affected Socket, pull the Socket and its wires through its mounting hole.



RESTORE:

11. Install the replacement Emitter Socket into its mounting hole and secure with its nut.
12. Using clean gloves, a clean cloth, or a clean paper towel, reinstall or insert the replacement Emitter into the rear socket first and then gently push inward until the front of the bulb can be inserted into the front socket.
13. Slide the IR glass frame assembly into the liner deck assembly.
14. Replace the frame support angles on the front and back and secure them with their screws.
15. If other liner deck assemblies were removed, starting with the lowest, feed their RTD Sensor, Emitter, and Heat Element wires through the appropriate control compartment bushings, and carefully slide the liner deck assemblies into the unit, taking caution not to damage any of the wires. Replace any moved/removed insulation.

NOTE: This may require two people, depending on the location of the IRHS unit.

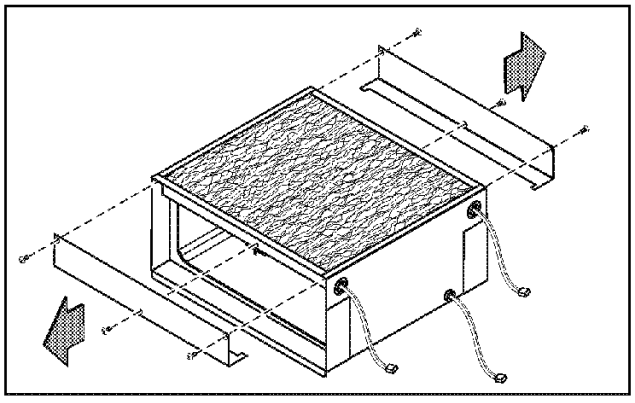
16. If other liner deck assemblies were removed, reinstall their Menu Bar(s).
17. Reconnect and tie wrap all previously disconnected wires and connectors in the control compartment.
18. Replace the Control Side Cover and secure with its screws.
19. Replace the Top Panel and secure with its screws.
20. Restore power to the unit and test for proper function.

EMITTERS (IR BULBS)

The Emitters heat the top of each well. The quantity varies (depending on model) and are held in place by two Emitter Sockets at the top of each heating well.

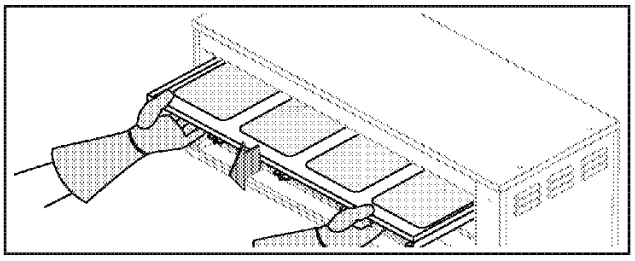
TOOLS REQUIRED: Phillips screwdriver; clean gloves/ cloths/towels; Tie wraps

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove all pans and covers from the liner deck assembly where the affected Emitter is to be replaced.
3. If the Emitter to be replaced is on a lower level (not for top level replacement), remove and retain the screws securing the appropriate Menu Bar(s) and move to one side. It is not necessary, but recommended, to completely remove the Menu Bar from the unit. Menu Bar instructions are contained in this manual.
4. The liner deck assembly's frame support angles (front and back) support the IR glass frame assembly in place. Remove and retain the screws securing the frame support angle on the row where the affected Emitter is to be replaced and remove the frame support angle. Repeat for the other side of the liner deck assembly. Be careful to support and not let the IR glass frame assembly fall and damage the heat sink.



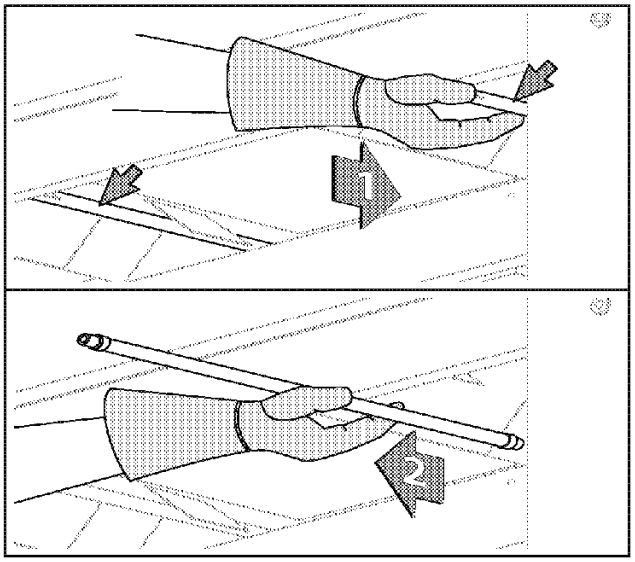
5. Slide the IR glass frame assembly out of the liner deck assembly below the Emitter to be replaced.

NOTE: Make sure the glass has cooled off sufficiently to avoid burns to bare skin. Use gloves if necessary.



6. The Emitter Sockets are spring-loaded. Push the Emitter towards the rear socket until the Emitter is free from the front socket and carefully remove.

NOTE: DO NOT TOUCH THE EMITTER WITH BARE HANDS! The oil on human skin will shorten the life of the Emitters. If the Emitter is to be reused, use clean gloves, a clean cloth, or a clean paper towel to handle.

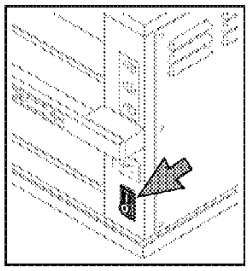


RESTORE:

7. Using clean gloves, a clean cloth, or a clean paper towel, reinstall or insert the replacement Emitter into the rear socket first and then gently push inward until the front of the bulb can be inserted into the front socket.
8. Slide the IR glass frame assembly into the liner deck assembly.
9. Replace the frame support angles on the front and back and secure them with their screws.
10. If removed, reinstall and reconnect the Menu Bar.
11. Restore power to the unit and test for proper function.

CONTROL COMPARTMENT COMPONENTS – STANDALONE & KITCHEN MINDER MODELS (ONLY)

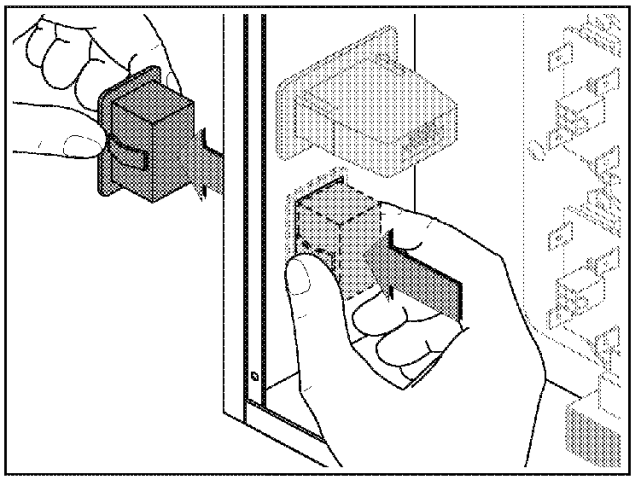
POWER SWITCH



The Power Switch is located on the Control Panel on the face of the unit. It is accessed from inside the control compartment.

TOOLS REQUIRED:
Phillips screwdriver

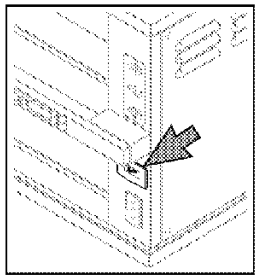
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. From inside the control compartment, mark and disconnect all wires connected to the Power Switch.
4. The Power Switch is secured to the unit with spring clips and a spacer. Depress the spring clips and slide the switch from the unit.



RESTORE:

5. Install the replacement Power Switch by sliding it into its position in the unit until secured with its spring clips.
6. Reattach the Power Switch wires.
7. Replace the Control Side Cover and secure with its screws.
8. Restore power to the unit and test for proper function.

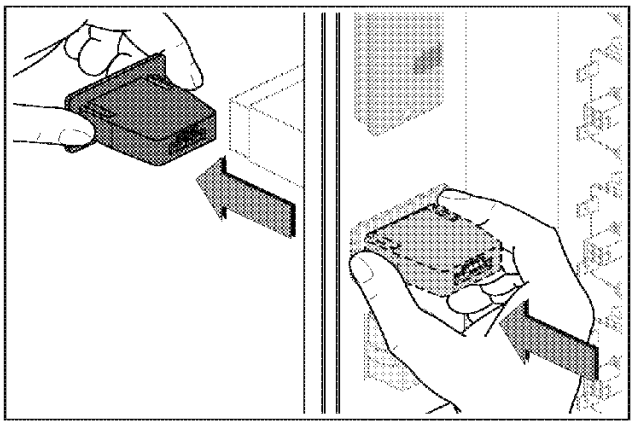
USB ADAPTER



The USB Adapter is used to program the Controller when it is replaced or when the current recipes are corrupted. It is located on the Control Panel. It is accessed from inside the control compartment.

TOOLS REQUIRED: Phillips screwdriver

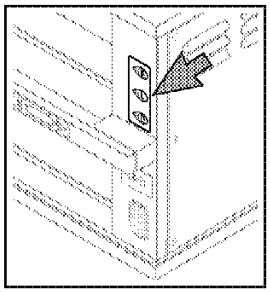
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. From inside the control compartment, unplug the molex connector from the rear of the USB port.
4. The USB Adapter is secured to the unit with prongs and a spacer. Depress the two (2) prongs securing the USB Adapter to the unit, and pull through the face of the unit.



RESTORE:

5. Install the replacement USB Adapter by sliding it into its position in the unit until secured with its prongs.
6. Reattach the USB Adapter molex connector.
7. Replace the Control Side Cover and secure with its screws.
8. Restore power to the unit and test for proper function.

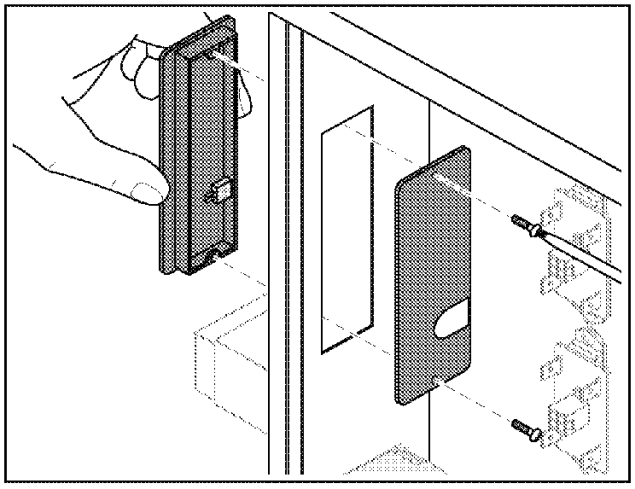
DAYPART SWITCH



The Daypart Switch is used to control the temperatures of various food products, up to three different time periods a day. It is located on the Control Panel and is accessed from inside the control compartment.

TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. From inside the control compartment, unplug the molex connector from the rear of the Daypart Switch.
4. The Daypart Switch is secured to the unit with its rear cover. Remove and retain the three (3) screws securing the Daypart Switch rear cover, then remove the switch and rear cover.

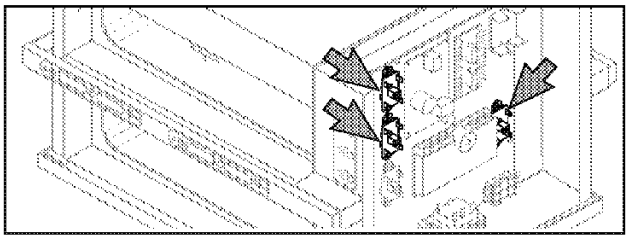


RESTORE:

5. Insert the replacement Daypart Switch into the unit and secure in place with its rear cover and screws.
6. Attach the molex connector to the replacement Daypart Switch.
7. Replace the Control Side Cover and secure with its screws.
8. Restore power to the unit and test for proper function.

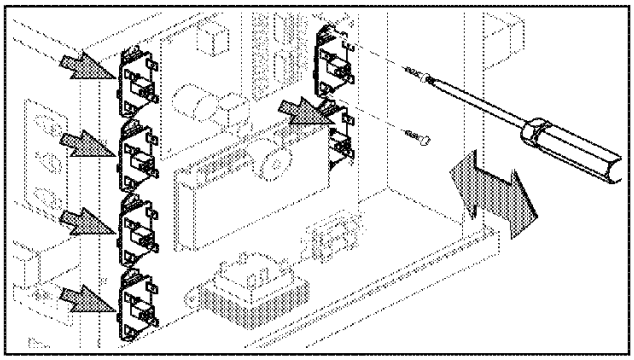
RELAYS (Smart Power Modules)

The Relays control the Emitters (IR Bulbs) and Heat Elements. Each unit has several (depending on model) and are located inside the control compartment.



TOOLS REQUIRED: Phillips screwdriver; Heat transfer compound

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect all wires and molex plug to the affected Relay.
4. Remove and retain the screws securing the affected Relay to the unit.
5. Remove the affected Relay and clean the mounting surface of any residual heat transfer compound.



RESTORE:

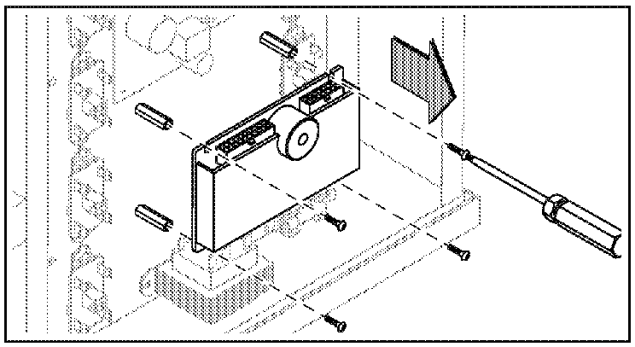
6. Apply heat transfer compound to the mounting surface of the replacement Relay.
7. Install the replacement Relay and secure with its screws.
8. Reconnect the Relay wires and plug.
9. Replace the Control Side Cover and secure with its screws.
10. Restore power to the unit and test for proper function.

CONTROLLER

The Controller is used to control the Relays and RTD Sensors. It is located inside the control compartment.

TOOLS REQUIRED: Phillips screwdriver; #1 precision screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Disconnect the two (2) molex connectors connected to the Controller.
4. Using a small Phillips screwdriver or #1 precision screwdriver, remove and retain the four (4) screws securing the Controller to the unit.
5. Maintaining the spacers on the studs, remove the Controller.



RESTORE:

6. Install the replacement Controller on its studs and secure with its screws.
7. Reconnect the two (2) molex connectors.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

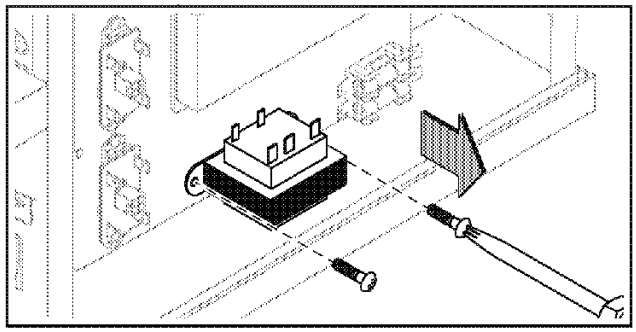
NOTE: To program the new Controller, see programming instructions located the "WEBSITE PROGRAMMING" section of this manual.

TRANSFORMER

The Transformer is used to step-down power to 12 VAC for the Controller. It is located inside the control compartment.

TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the spade connectors connected to the Transformer.
4. Remove and retain the two (2) screws securing the Transformer to the unit and remove the Transformer.



RESTORE:

5. Install the replacement Transformer and secure with its screws.
6. Reconnect the spade connectors.
7. Replace the Control Side Cover and secure with its screws.
8. Restore power to the unit and test for proper function.

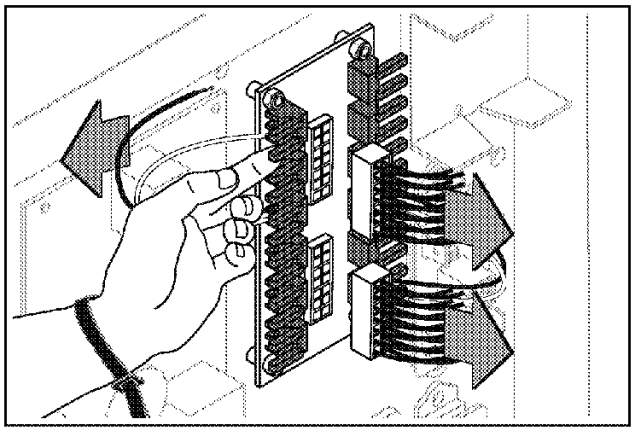
RTD BOARD

The RTD Board controls the RTD Sensors. It is located inside the control compartment.

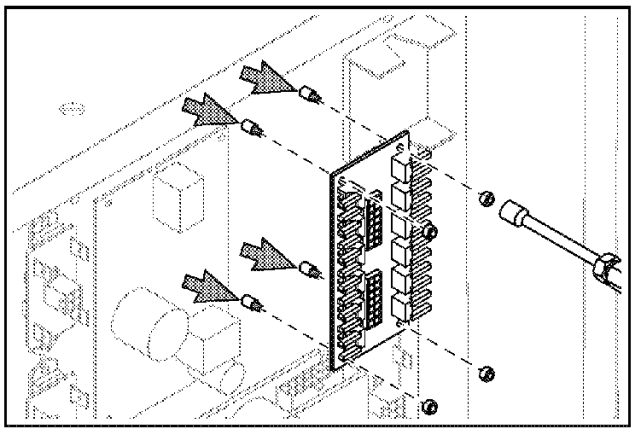
TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect all wires and the molex plug to the RTD Board.

NOTE: The use of an ESD Wrist Strap is strongly recommended. Follow ESD procedures on page 11.



4. Remove and retain the four (4) 1/4" nuts securing the affected RTD Board to the unit.
5. Maintaining the spacers on the studs, remove the RTD Board.



RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement RTD Board and secure with its screws.
7. Reconnect the RTD Board wires and plug.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

FUSES AND FUSE HOLDER

The Fuses and Fuse Holder serve as a circuit interrupter from the main power input. They are located inside the control compartment.

TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.

FOR FUSE REPLACEMENT:

3. Remove the fuses and test with an ohm meter.
4. Replace the fuse(s) with correctly rated fuse(s):

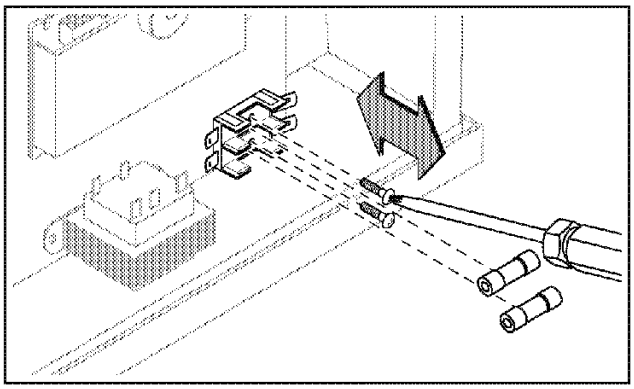
Models 2x2, 2x3, 2x4, 4x2	12 Amp
Model 3x4	16 Amp

NOTE: Replacing fuse(s) with an incorrect rating can cause nuisance blowing if rating is too low, or a loss of circuit protection if too high. Damage to the equipment and risk of fire may result. Replace fuse(s) with correctly rated fuse(s) only.

5. Replace the Control Side Cover and secure with its screws.
6. Restore power to the unit and test for proper function.

FOR FUSE HOLDER REPLACEMENT:

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Disconnect the spade connectors connected to the Fuse Holder.
4. Remove and retain the screws securing the Fuse Holder to the unit and remove the Fuse Holder.



RESTORE:

5. Install the replacement Fuse Holder and secure with its screws.
6. Reconnect the spade connectors.
7. INSTALL CORRECTLY RATED FUSES ONLY! Damage to the equipment and/or risk of fire may result if installing fuses with incorrect ratings.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

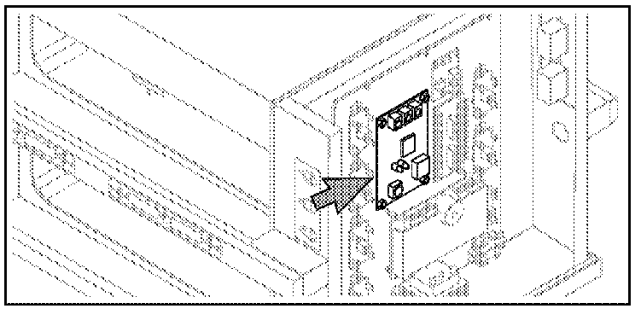
CONTROL COMPARTMENT COMPONENTS – KITCHEN MINDER MODEL (ONLY)

NOTE: The following components are installed, in addition to all previously listed control compartment components, in the Kitchen Minder model of the IRHS.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

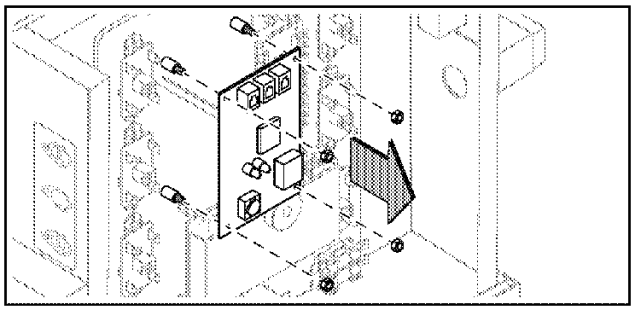
KITCHEN MINDER MASTER BOARD (if installed)

If Kitchen Minder is installed in the unit, the Kitchen Minder Master Board is located behind the Control Side Cover.



TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the lines connected to the Master Board.
4. Remove and retain the four (4) 1/4" nuts securing the affected Master Board to the unit.
5. Maintaining the spacers on the studs, remove the Master Board.



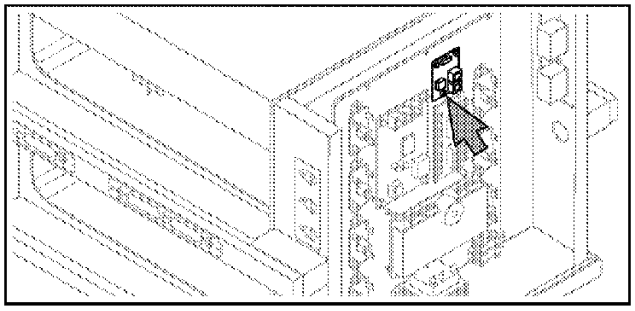
RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement Master Board on its studs and secure with its screws.
7. Reconnect the lines.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

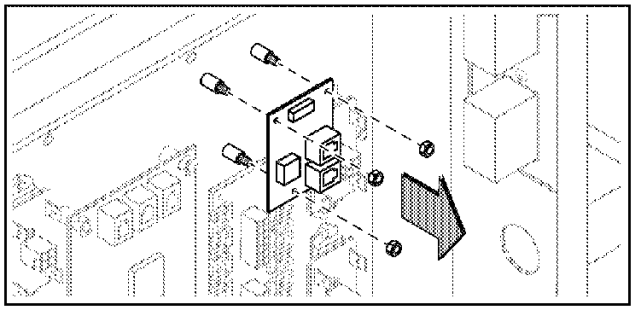
KITCHEN MINDER ADAPTER BOARD (if installed)

If Kitchen Minder is installed in the unit, the Kitchen Minder Adapter Board is located behind the Control Side Cover.



TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the line and molex plug connected to the Adapter Board.
4. Remove and retain the three (3) 1/4" nuts securing the Adapter Board to the unit.
5. Maintaining the spacers on the studs, remove the Adapter Board.

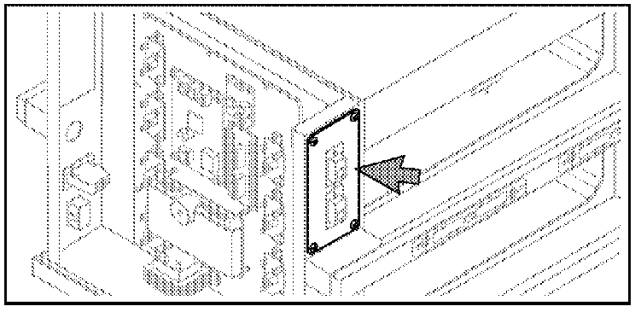


RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement Adapter Board on its studs and secure with its screws.
7. Reconnect the line and molex plug to the Adapter Board.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

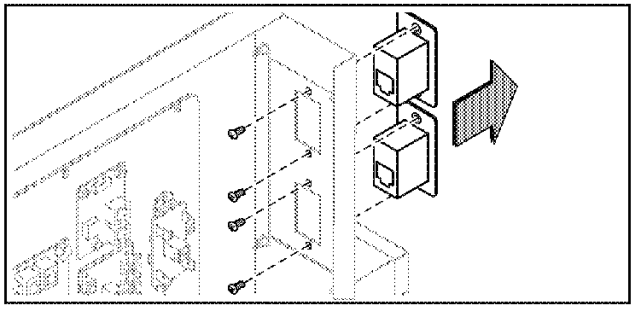
MOUNTING PLATE (If installed)

If Kitchen Minder is installed in the unit, the Mounting Plate is located in the rear control panel. The Mounting Plate holds the Couplers. The type depends on the specific model: Domestic (2-Hole) and CE (2-Hole or 3-Hole).

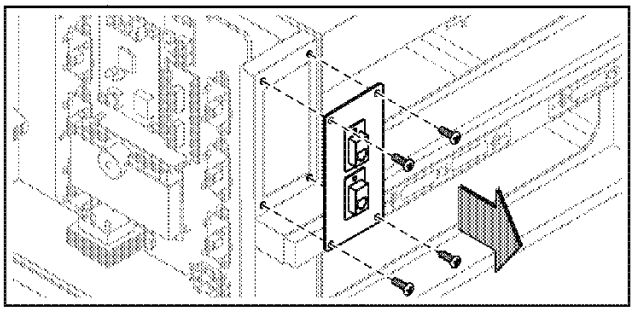


TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect any communication lines attached to both sides of the Couplers contained in the Mounting Plate.
4. **If intending to retain and reuse the existing Couplers,** remove and retain the Couplers and their mounting screws (two per coupler).



5. Remove and retain the four (4) screws securing the Mounting Plate to the rear control panel.

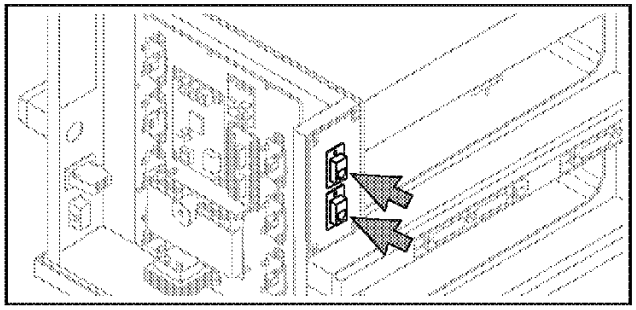


RESTORE:

6. Install the replacement Mounting Plate in the rear control panel and secure with its screws.
7. If necessary, reinstall the Couplers into the Mounting Plate with their screws.
8. Reconnect the communication lines to the Couplers.
9. Replace the Control Side Cover and secure with its screws.
10. Restore power to the unit and test for proper function.

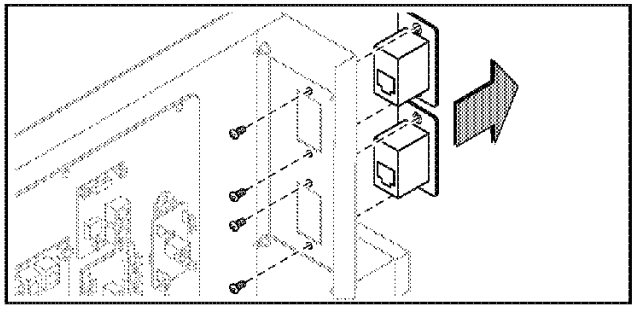
COUPLERS (If installed)

If Kitchen Minder is installed in the unit, the Couplers are located in the Mounting Plate on the rear Control Panel. Couplers are the connection point between the Master and Satellite Kitchen Minder units allowing them to be connected and communicate. The quantity varies depending on the specific model – two (2; one RJ45 and one RJ12) in the Domestic model or three (3; all CAT5/RJ45) in the CE model.



TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the affected Coupler line(s).
4. Remove and retain the two (2) small screws that attach each Coupler to the Mounting Plate.



RESTORE:

5. Insert the replacement Coupler(s) and attach with its screws.
6. Reconnect the Coupler line(s).
7. Replace the Control Side Cover and secure with its screws.
8. Restore power to the unit and test for proper function.

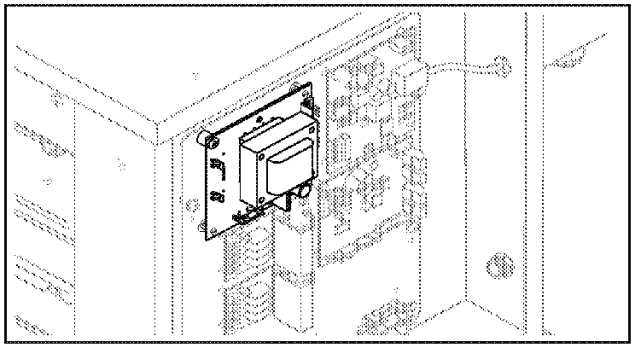
CONTROL COMPARTMENT COMPONENTS – VISOR MODEL (ONLY)

NOTE: All previously listed control compartment components (Standalone and Kitchen Minder models) are NOT INSTALLED in the VISOR models of the IRHS.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

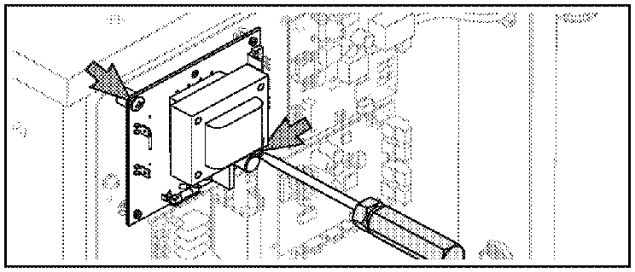
12V POWER CONTROL BOARD

If VISOR is installed in the unit, the 12V Power Control Board is located on the VISOR Control Panel inside the control compartment.

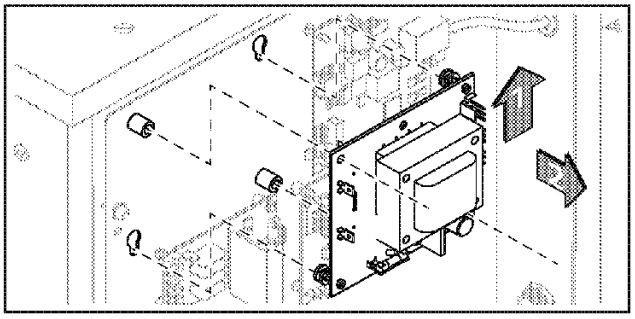


TOOLS REQUIRED: Phillips screwdriver; ESD strap; Needle-nose pliers

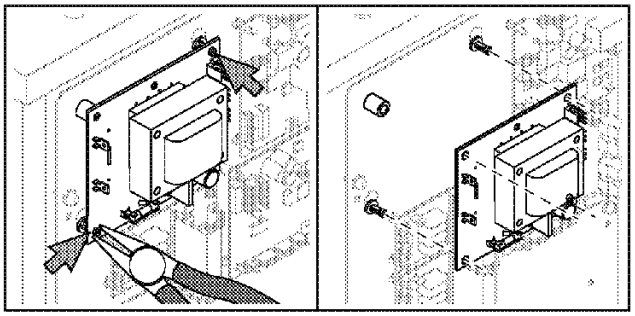
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the spade and molex connectors that are connected to the 12V Power Control Board.
4. Remove and retain the two (2) screws securing the 12V Power Control Board to the unit.



5. Leaving them in place, use the two (2) nylon PC lock-in supports to slide the 12V Power Control Board off of the control panel. If the PC lock-in supports are being reused on the replacement 12V Power Control Board, use needle-nose pliers to squeeze the PC lock-in supports and slide out of the 12V Power Control Board. The nylon screw stubs will remain in place.



OR



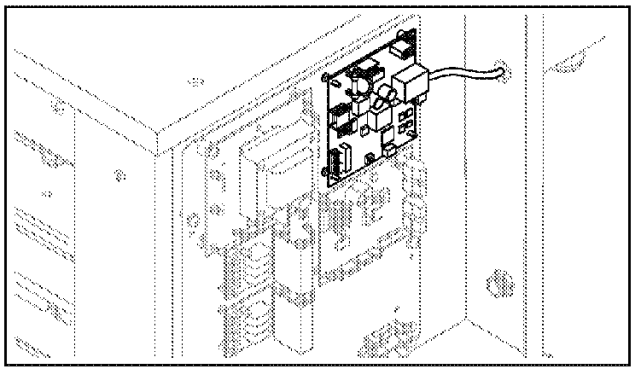
RESTORE:

6. If necessary, install two (2) nylon PC lock-in supports in the 12V Power Control Board.
7. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement 12V Power Control Board, with its PC lock-in supports, by sliding into the keyholes in the control panel and secure in place with its screws.
8. Reconnect the spade and molex connectors.
9. Replace the Control Side Cover and secure with its screws.
10. Restore power to the unit and test for proper function.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

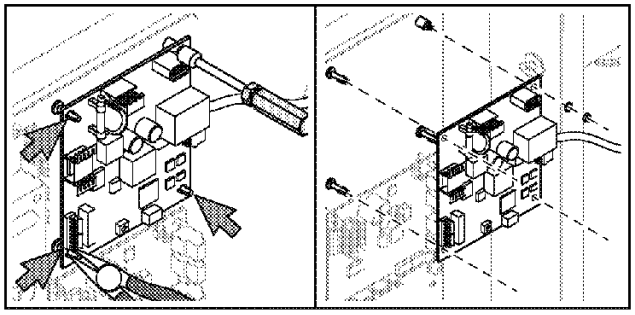
POWER CONTROL BOARD – ACM

If VISOR is installed in the unit, the ACM Power Control Board is located on the VISOR Control Panel inside the control compartment.



TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket; Needle-nose pliers

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the connectors and data line that are connected to the ACM Power Control Board.
4. Remove and retain the 1/4" nut securing the ACM Power Control Board to the unit.
5. Squeeze each of the three (3) nylon PC lock-in supports with needle-nose pliers to release the ACM Power Control Board off of the control panel. The nylon supports and nut stub will remain in place.



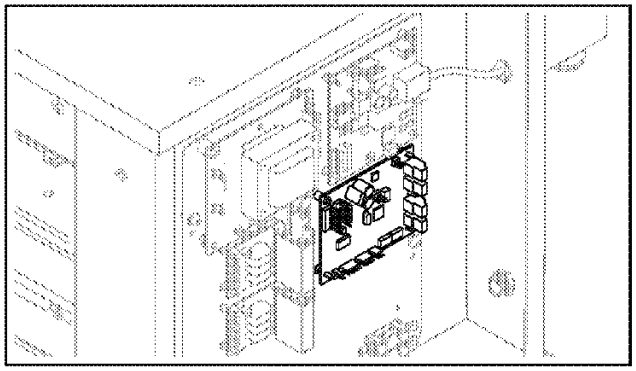
RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement ACM Power Control Board onto its nylon PC lock-in supports and secure in place with its nut.
7. Reconnect the spade and molex connectors.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

POWER CONTROL BOARD – 103M

If VISOR is installed in the unit, the ACM Power Control Board is located on the VISOR Control Panel inside the control compartment. The quantity varies depending on the specific model.

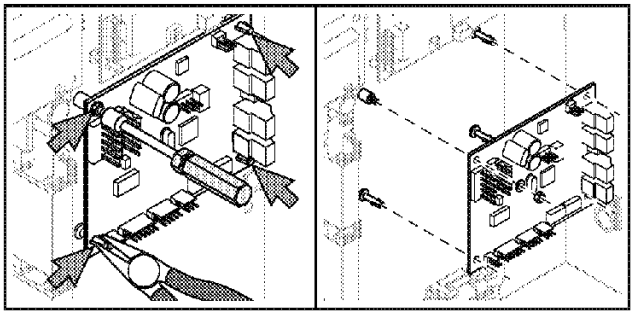


TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket; Needle-nose pliers

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the connectors that are connected to the 103M Power Control Board.

NOTE: The use of an ESD Wrist Strap is strongly recommended. Follow ESD procedures on page 11.

4. Remove and retain the 1/4" nut and its nylon spacer securing the 103M Power Control Board to the unit.
5. Squeeze each of the three (3) nylon PC lock-in supports with needle-nose pliers to release the 103M Power Control Board off of the control panel. The nylon supports and nut stub remain in place.



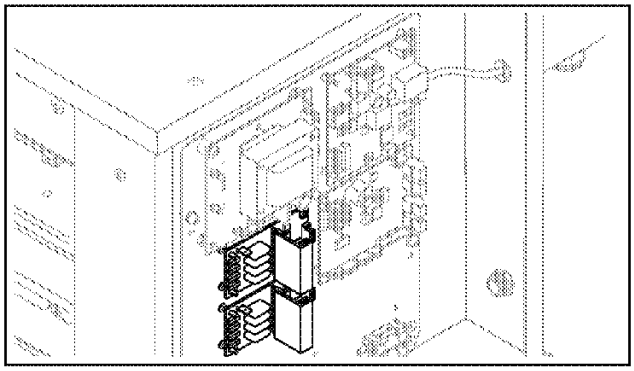
RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement 103M Power Control Board onto its nylon PC lock-in supports and secure in place with its nut and nylon spacer.
7. Reconnect the spade and molex connectors.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

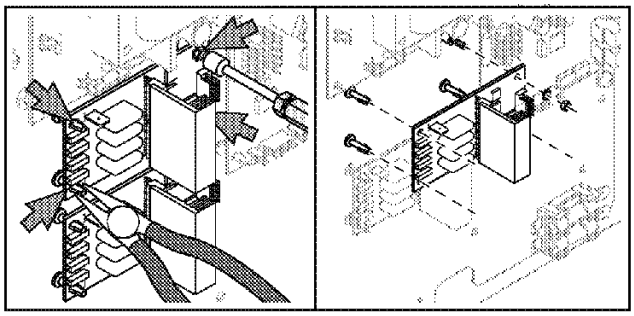
POWER CONTROL BOARD – TRIAC DRIVE

If VISOR is installed in the unit, the Triac Drive Power Control Board is located on the VISOR Control Panel inside the control compartment. The quantity varies depending on the specific model.



TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket; Needle-nose pliers

1. Place the unit's Power Switch in the "OFF" position and follow the proper lockout/tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the connectors that are connected to the Triac Drive Power Control Board.
4. Remove and retain the 1/4" nut and nylon spacer securing the Triac Drive Power Control Board to the unit.
5. Squeeze each of the three (3) nylon PC lock-in supports with needle-nose pliers to release the Triac Drive Power Control Board off of the control panel. The nylon supports and nut stub will remain in place.

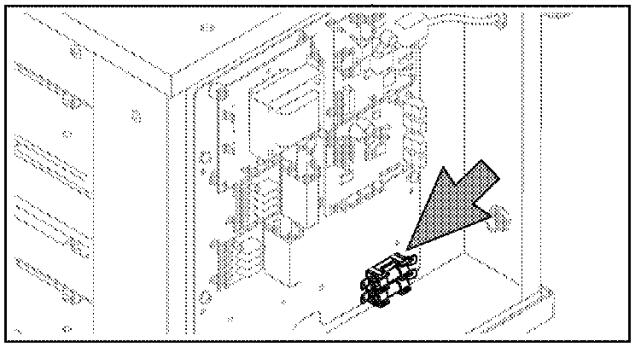


RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement Triac Drive Power Control Board onto its nylon PC lock-in supports and secure in place with its nut.
7. Reconnect the spade and molex connectors.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

FUSE HOLDER AND FUSES

The Fuses and Fuse Holder serve as a circuit interrupter from the main power input. They are located on the VISOR Control Panel, inside the control compartment.

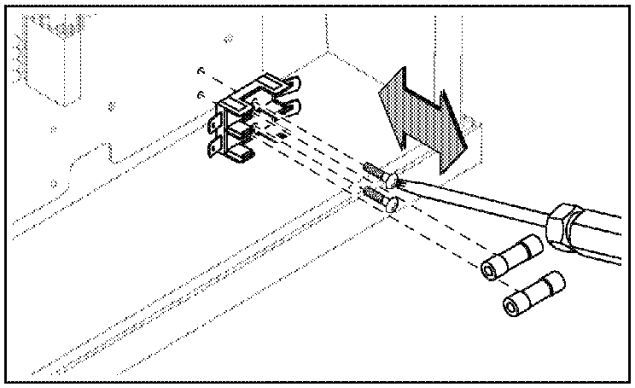


TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.

FOR FUSE HOLDER REPLACEMENT

3. Disconnect the spade connectors connected to the Fuse Holder.
4. Remove and retain the screws securing the Fuse Holder to the unit and remove the Fuse Holder.



RESTORE:

5. Install the replacement Fuse Holder and secure with its screws.
6. Reconnect the spade connectors.
7. INSTALL CORRECTLY RATED FUSES ONLY!

NOTE: Replacing fuse(s) with an incorrect rating can cause nuisance blowing if rating is too low, or a loss of circuit protection if too high. Damage to the equipment and risk of fire may result.

8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

FOR FUSE REPLACEMENT

3. Remove the fuses and test with an ohm meter.

RESTORE:

4. Replace the fuse(s) with correctly rated fuse(s):

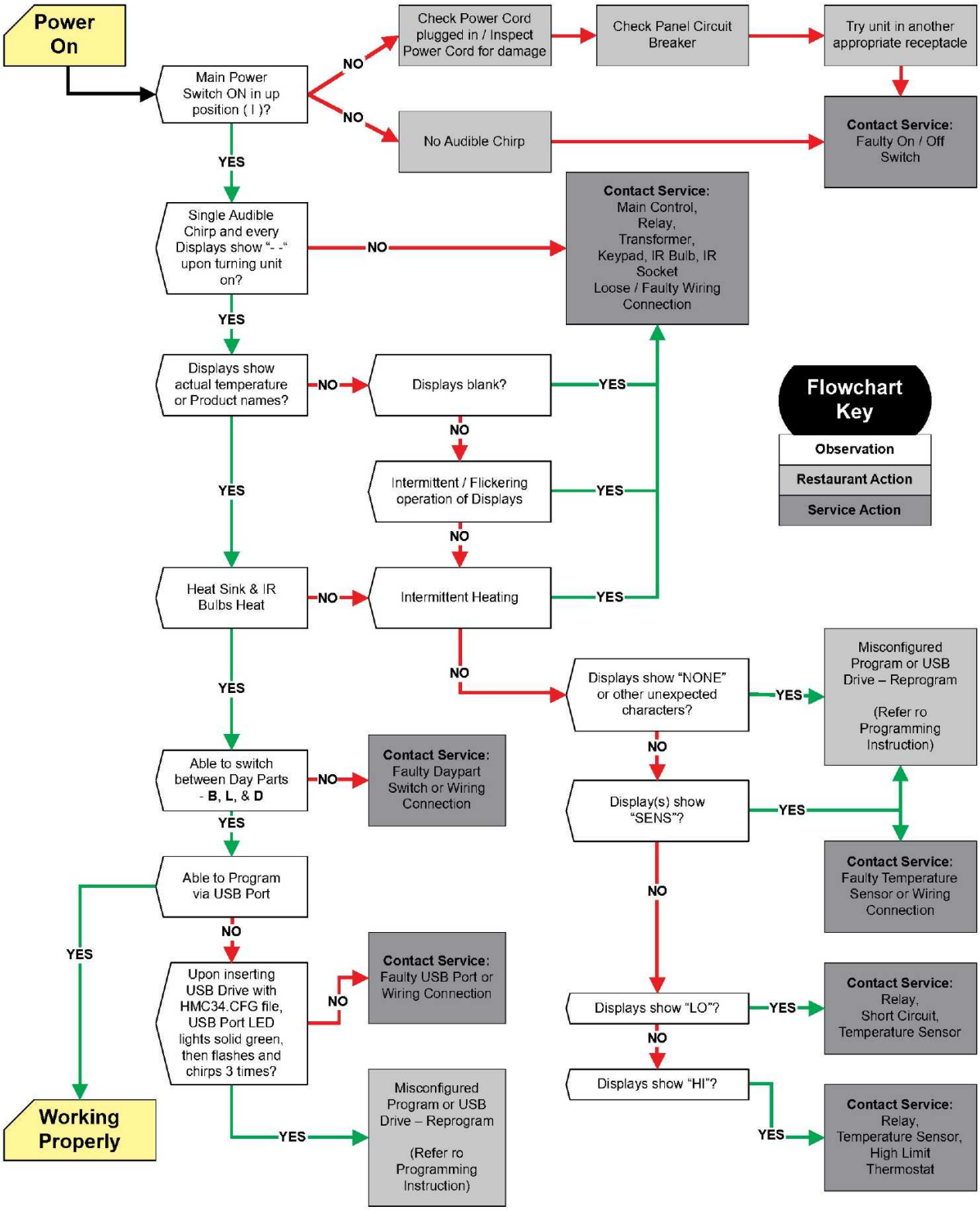
Models 2x2, 2x3, 2x4, 4x2	12 Amp
Model 3x4	16 Amp

NOTE: Replacing fuse(s) with an incorrect rating can cause nuisance blowing if rating is too low, or a loss of circuit protection if too high. Damage to the equipment and risk of fire may result.

5. Replace the Control Side Cover and secure with its screws.
6. Restore power to the unit and test for proper function.

TROUBLESHOOTING & DIAGNOSTICS

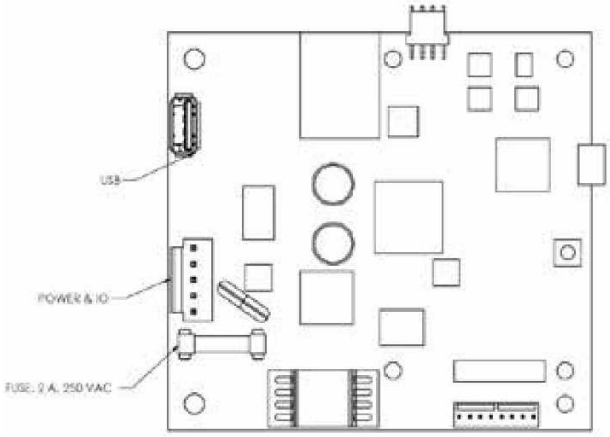
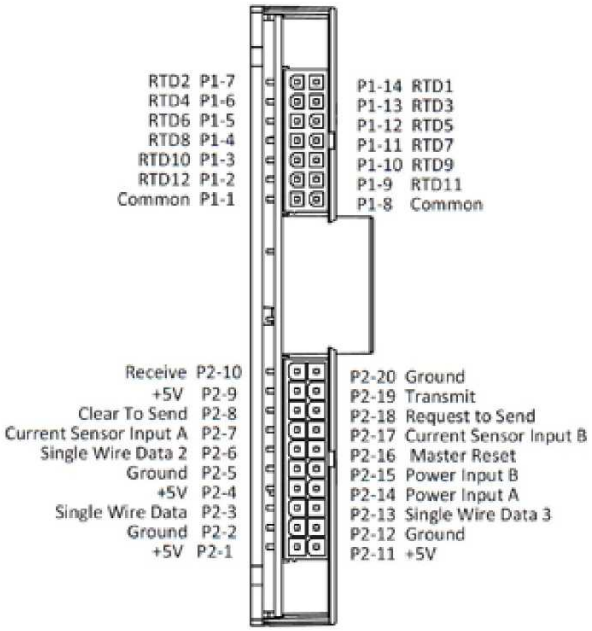
IRHS TROUBLESHOOTING FLOW CHART

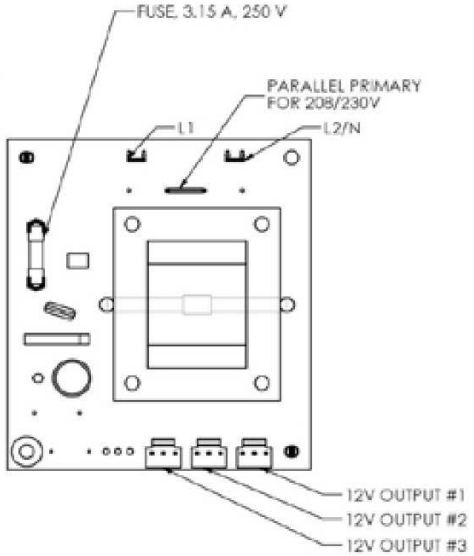
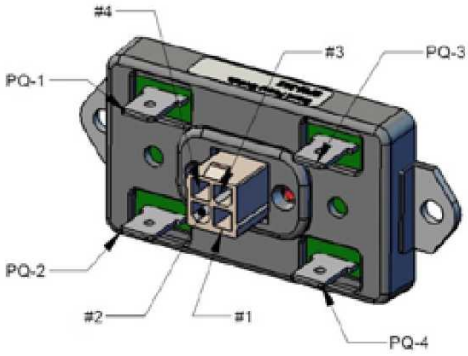


IRHS TROUBLESHOOTING GUIDE

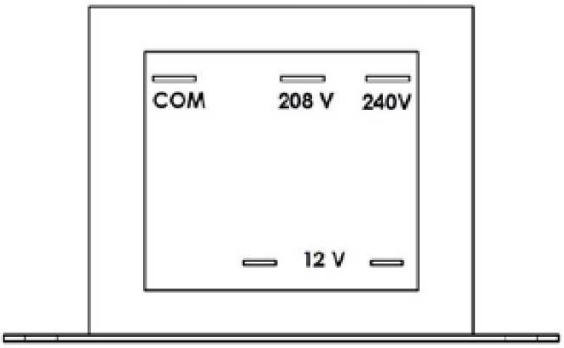
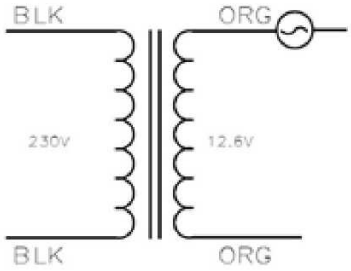
COMPONENT CHECK	STATE		POSSIBLE CONDITIONS	SOLUTION(S)
Unit Powered?			Unplugged	Plug Power Cord into correct receptacle
			Power Cord damaged	Repair/Replace Power Cord
			Circuit Breaker tripped	Reset panel breaker
			Faulty receptacle	Replace receptacle
			Fuse	Replace Fuse
			Wiring/Connectors	Trace and repair wiring
			On/Off Switch	Replace On/Off Switch
Timer (Menu) Bar Displays	Blank?	Both Bars	Transformer	Replace Transformer
			Controller	Replace Controller
			Keypad Display	Replace Keypad Display
			Wiring/Connectors	Trace and repair wiring
		Rear Bar Only	Wiring/Connectors	Trace and repair wiring
			IR Relay	Replace faulty relay
		Individual Keypad	Wiring/Connectors	Trace and repair wiring
			Keypad Display	Replace Keypad Display
	Showing Error Code	"SENS" or "HIGH"	RTD	Replace RTD (Temperature) Sensor
			RTD Board	Replace RTD Board
			Programming	Reprogram the unit
		"LOW"	RTD	Replace RTD (Temperature) Sensor
			RTD Board	Replace RTD Board
			Programming	Reprogram the unit
			High Limit Switch	Allow unit to cool and switch reset
				Replace High Limit Swith
		"BULB"	Wiring/Connectors	Trace and repair wiring
			IR Relay	Replace faulty relay
			Emitter (IR Bulb)	Replace Emitter (IR Bulb)
			Emitter Socket	Replace Emitter (IR Bulb) Socket
HeatSink (Bottom) Heating?			Programming	Reprogram the unit
			Controller	Replace Controller
			Heat Relay	Replace faulty relay
			RTD	Replace RTD (Temperature) Sensor
			RTD Board	Replace RTD Board
			Heat Element	Replace Heat Element
			High Limit Switch	Allow unit to cool and switch reset
				Replace High Limit Swith
			Wiring/Connectors	Trace and repair wiring
Emitters (IR Bulbs)	Not Operating?		Programming	Reprogram the unit
			Controller	Replace Controller
			Emitter (IR Bulb)	Replace Emitter (IR Bulb)
	Operating?		Glass Assembly cleanliness	Clean Glass Assembly
				Check Glass Assembly for damage/defect
			Lid usage	Ensure proper lid for product is used
Programming			USB Drive	Ensure USB drive is blank and download recipes
				Replace USB drive
			Website Programming	Reprogram the unit
			USB Port	Replace USB Port
			Wiring/Connectors	Trace and repair wiring
			Controller	Replace Controller
Daypart Switch			Heat Relay	Replace faulty relay
			Controller	Replace Controller
			Daypart Switch	Replace Daypart Switch
Lids/Pans			Proper fit	Verify proper proper lid and pan installation
			Glass Assembly	Check Glass Assembly for damage/defect
				Ensure Glass Assembly is correctly installed
			Non-Duke parts	Verify OEM information (packaging/labeling)

IRHS COMPONENT TECHNICAL SPECIFICATIONS

PART NO.	DESCRIPTION	SPECIFICATIONS
166112	ACM, Power Control Board (VISOR-only)	
166080	**Controller**; Renau HMC-34	
166017	**Emitter, IRHS**; 208 VAC	• 208 VAC; 340 (170 x 2) W (± 3%)
166018	**Emitter, IRHS**; 240 VAC	• 240 VAC; 340 (170 x 2) W (± 3%)
166004	**Heat Element**; 2-Wide, 208 VAC	• 208 VAC; 300 W
166005	**Heat Element**; 2-Wide, 240 VAC	• 240 VAC; 300 W
166007	**Heat Element**; 3-Wide, 208 VAC	• 208 VAC; 450 W
166008	**Heat Element**; 3-Wide, 240 VAC	• 240 VAC; 450 W
166009	**Heat Element**; 4-Wide, 208 VAC	• 208 VAC; 300 W
166010	**Heat Element**; 4-Wide, 240 VAC	• 240 VAC; 300 W

PART NO.	DESCRIPTION	SPECIFICATIONS
166082	**Keypad Display;** Up/Down *(all configurations)*	• Input: 5 VDC • Pins: — Pin #1: GND — Pin #2: 5 VDC — Pin #3: Data In — Pin #4: Data Out
166083	**Keypad Display**; Up/Up *(only with 3x4 configurations)*	
166111	Modular Jack (VISOR-only)	• 1.5 A; 125 VDC • Torque: 12 Kgf/cm • CAT 5 • IP67
120011	Power Control Board (VISOR-only)	• Primary 208/230 VAC; Secondary: 12 VAC 
157830	Relay, Smart Power Module	• Max. Load Current: 20 Arms. Heat sinking required. • Operating Voltage: 24-250 Vrms • Input : 5V TTL 

Connector PIN Data	
PQ-1	LOAD1-1
PQ-2	LOAD1-2
PQ-3	LOAD2-1
PQ-4	LOAD2-2
#1	+5V DC
#2	GND
#3	1-wire network IN
#4	1-wire network OUT

PART NO.	DESCRIPTION	SPECIFICATIONS
158279	RTD Sensor	• Temperature Range: -65°F to 260°F
158312	Thermostat, High Limit	• Opens @ 300°F; Closes @ 270°F
155749	**Transformer;** 208/240 VAC	• Primary: 208/240 VAC; Secondary: 12 VAC 
156838	**Transformer;** 230 VAC	• Input: 230 VAC; 50/60 Hz; Output: 12.6 V @ 2.38 A 

OPERATIONS

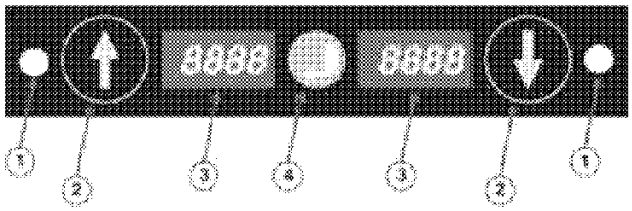
OPERATING PROCEDURES

- Ensure proper pan covers are inserted into the correct location for broiled products.
- Upon turning ON, allow the unit to heat until the menu bars display the pre-programmed product names. This does not occur before reaching proper temperature.

NOTE: If the menu bars display temperature at any time after the preheat period, discontinue use of the affected pan location(s) until the unit can be serviced.

OPERATIONS

Menu Bar Components

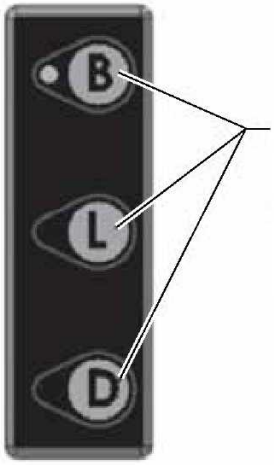


1. **Status LEDs.** Used for indicating status of pan.
   a. GREEN: Menu is Active – product in pan (use first)
   b. FLASHING GREEN: Cook Warning Time reached (cook more product) or keypad in edit (programming) mode
   c. NON-ILLUMINATED: Menu is inactive – no product in pan
2. **Arrow Buttons:**
   a. Used for starting/stopping/resetting the menu.
   b. Used to access Menu Mode.
   c. Indicate which pan the adjacent status LED and pan display are linked to.
3. **LED Displays:**
   a. Displays product name and hold time remaining (alternates between the two when the Menu is active).
   b. Once to temperature, product names can be viewed on the displays. Additional settings such as "LINK", "TIME", and "TEMP" can be viewed two different ways:
      1) Manually accessing Menu Mode through Menu Bars.
      2) Uploading unit settings from the IRHS to a USB Drive and viewing via the Internet. This is accomplished by using the same website used to download recipes.
4. **ENTER Button**. Used to access Menu Mode.

Changing Dayparts

There are two methods for selecting Dayparts:

1. Select the appropriate Daypart Button to switch between breakfast, lunch, and dinner menus. If necessary, the three (3) parts can be programmed for any three separate time periods – not just "breakfast", "lunch", and/or "dinner" menus.



PUSH BUTTONS TO CHANGE DAYPART MENU – CORRESPONDING LED WILL TURN ON (BREAKFAST SHOWN)

2. Via Menu Bar:

a. Enter Menu Mode by pressing and holding the ENTER button "↵" for three (3) seconds.

b. Status LED flashes, "**MENU**" is displayed on left Display, and either "**UP**" or "**DOWN**" is displayed on the right display – indicating which pan location information will be displayed/controlled.



c. After selecting the UP or DOWN Arrow, press the ENTER Button "↵" to accept.

d. Status LED stops flashing and "**MEAL ↵ SET1**" appears on the Display.



e. Press the ENTER button again. Status LED flashes indicating Menu Mode.

f. Use the arrow buttons to scroll to desired Daypart ("**MEAL ↵ SET1**", "**MEAL ↵ SET2**", or "**MEAL ↵ SET3**") and press the ENTER button to accept.



g. Status LED stops flashing, "**UPDATING**" is displayed for a few seconds, and then the desired Daypart ("**MEAL ↵ SETx**") is displayed.





h. Press the UP arrow button one last time to scroll to "**EXIT**" and press the ENTER button "↵" to exit Menu Mode.



Display Link, Hold Time, or Temperature

1. Enter Menu Mode by pressing and holding the ENTER button "↵" for three (3) seconds.
2. Status LED flashes, "**MENU**" is displayed on left Display, and either "**UP**" or "**DOWN**" is displayed on the right display – indicating which pan location information will be displayed/controlled.



3. After selecting the UP or DOWN arrow, press the ENTER Button "↵" to accept.
4. Status LED stops flashing and "**MEAL ↵ SET1**" appears on the Display.



5. Press the ENTER button "↵" again. Status LED flashes indicating edit mode.
6. Press the UP arrow button repeatedly to scroll up or down through "**LINK**", "**TIME**", and "**TEMP**". The DOWN arrow button can be used to cycle the opposite direction.



This indicates product named **BURG** is linked pan locations



This indicates the hold time for BURG



This indicates the Heat Sink Temperature for BURG

7. Press the UP arrow button one last time to scroll to "**EXIT**" and press the ENTER button "↵" to exit Menu Mode.



DIAGNOSTICS

Checking Heat Sink Temperature

- A surface temperature probe can be used to check the temperature of the heat sink surface.
- No pans should be in wells during the pre-heat and temperature check period. Pre-heat the holding unit for 30 minutes before taking any temperature readings.
- Ensure the pan location being measured is not in a hold cycle mode (timing down).
- Locate the surface temperature probe in the geometric center of the desired pan location. Make sure the probe is making good contact with the surface while taking readings.
- The temperature control will exhibit a swing in temperature as the control cycles on and off while regulating to the set point temperature. The average of several readings taken should be +/- 5°F from the set point.
- Compare the measured temperature to the programmed heat sink set point (TEMP) for the specified pan location.

Checking IR Bulb Function

- IR bulbs are either ON or OFF.
- Select an arrow to initiate a hold cycle.
- After heat up is complete (display will show product names), visually confirm the IR bulb comes on.

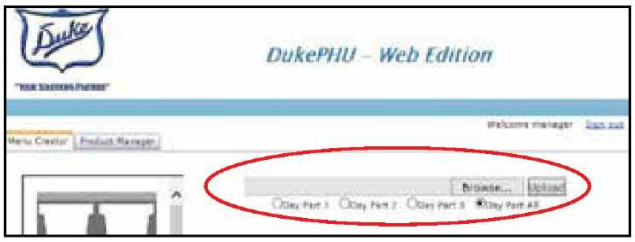
Checking Product Settings (via USB file)

1. Turn the IRHS on and wait for temperature or product names to display.
2. Insert a **blank** USB drive (any size) into the USB port. The USB port LED will light solid green and a single chirp should be heard.
3. The display will go blank and the USB port LED will begin flashing green.
4. A second chirp should be heard, then the USB port LED will return to solid green indicating that the file has successfully uploaded from the IRHS to the USB drive.
5. Remove the USB drive from the port.
6. To view the settings file on the Internet, log onto the same website used to download recipes:

   www.dukemfg.info/bkirhs

   User Name: "**manager**"

   Password: "**password**" (case sensitive)



Error Codes

The RTD Board performs a routine, internal check after turning the unit on to validate the unit is sensing temperature and heating properly. In the event of a problem, an error will display on the Menu Bar:

"BULB" – IR Bulb Circuit Fault

Indicates a fault with a specified IR Bulb circuit. The affected pan location is not available for timing product and a qualified service technician should be contacted to identify the cause of the fault.

"LOW" – Under-Temperature Fault

Indicates a fault with a heating circuit component. The display will show "**LOW**" if the temperature stays 10°F below the set point temperature for 30 minutes. The affected pan location is not available for timing product and a qualified service technician should be contacted to identify the cause of the fault.

"HIGH" – Over-Temperature Fault

Indicates a fault with a heating circuit component. The display will show "**HIGH**" if the temperature stays 10°F above the set point temperature for 30 minutes. The affected pan location is not available for timing product and a qualified service technician should be contacted to identify the cause of the fault.

"SENS" – Sensor Fault

May indicate the unit has been programmed improperly (i.e., loading a 2x4 product configuration file into a 2x2 unit). An attempt to properly reprogram the unit should be made.

May indicate a fault with a heat sink temperature sensor. The affected pan location is not available for timing product and a qualified service technician should be contacted to identify the cause of the fault.

Temperature Check Procedure

1. **No pans should be in wells during the pre-heat and temperature check.** Pre-heat the warmer for 30 minutes before taking any temperature readings. Do not take readings unless the cavity has been empty for 30 minutes. This will allow the temperature to stabilize and will prevent false readings.
2. A digital temperature meter that has been calibrated must be used to get an accurate temperature reading. Use a thermocouple surface temperature probe to measure temperatures.
3. The heating well should be cleaned and empty before the temperature is checked. Avoid any air drafts that might flow through the cavity.
4. Locate the surface temperature probe on the bottom of the first cavity as shown for the cabinet size.
5. All temperature controls exhibit a swing in temperature as the control cycles on and off while regulating to the set point. The correct calibration temperature is the average of several readings taken over a period of 20 minutes after the warmer has been pre-heated. The average temperature should be ± 5°F from the set point.

CLEANING & ROUTINE MAINTENANCE

CLEANING

IF DAILY CLEANING IS PERFORMED ROUTINELY, DEEPER, MORE AGGRESSIVE, CLEANING METHODS CAN BE AVOIDED. OVER LONGER PERIODS OF TIME, FRIED FOOD PRODUCTS CAN ACCUMULATE AND BAKE ON SURFACES OF THE COMPARTMENTS.

Cleaning solutions need to be alkaline based or non-chloride cleaners. Any cleaner containing chlorides will damage the protective film of the stainless steel. Chlorides are also commonly found in hard water, salts and household and industrial cleaners. If cleaners containing chlorides are used, be sure to rinse repeatedly and dry thoroughly upon completion.

WARNING: NEVER USE AN ACID BASED CLEANING SOLUTION!

MANY FOOD PRODUCTS HAVE AN ACIDIC CONTENT WHICH CAN DETERIORATE THE FINISH. BE SURE TO CLEAN ALL FOOD PRODUCTS FROM ANY STAINLESS STEEL SURFACE. COMMON ITEMS INCLUDE, TOMATOES, PEPPERS AND OTHER VEGETABLES.

Routine cleaning of stainless steel can be done with soap and water. Extreme stains or grease should be cleaned with a non-abrasive cleaner and plastic scrub pad. It is always good to rub with the grain of the steel.

Early signs of stainless steel breakdown can consist of small pits and cracks. If this has begun, clean thoroughly and start to apply stainless steel cleaners in attempt to restore and preserve the finish of the steel's protective layer.

RECOMMENDED SUPPLIES

- Cleaning Towels
- Non-Scratch Scrub Pad
- SYR Cleaning Brush Tool
- Kay Super Concentrate Degreaser
- Kay-5® Sanitizer/Cleaner, or compatible sanitizer

DAILY INSPECTION CHECKLIST

Inspect glass daily for chips, cracks, or breaking. Discard all food and notify manager if any chips, cracks, or broken glass are found. Do not use equipment. All glass must be in good condition before using equipment to hold food.

- Make sure the unit is free of any grease or visible food soils.
- Make sure the exterior of the unit is free of smudges or soil.
- Make sure the unit holding pans are free of damage and any food soil residue.

DAILY CLEANING PROCEDURES

Never use a high-pressure water wash for this cleaning procedure as water can damage electrical components.

1. Turn unit off, unplug, and allow to cool for at least 10 minutes.
2. Remove all holding pans and covers. Wash, rinse, and sanitize at the 3-compartment sink.
3. Allow to air dry.
4. Fully clean all the heat sink surfaces. Spray the cleaning brush tool with degreaser and use as shown – gently sliding in and out of each compartment.

   NOTE: NEVER USE STEEL PADS, WIRE BRUSHES, OR SCRAPERS!



5. Fully clean upper glass surfaces by hand. Spray a cleaning towel, or non-scratch scrub pad when necessary, with soapy solution degreaser.

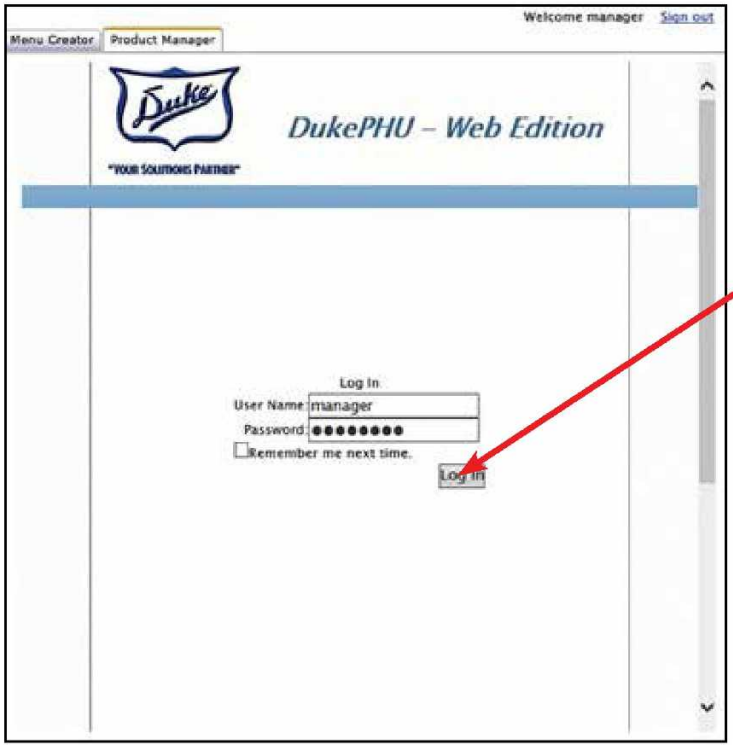
   NOTE: Never spray cleaning solution directly onto the cabinet.

6. Use sanitizer-soaked towels to wipe out all interior compartments on the unit. Wipe the top compartments first, then the remaining levels from top to bottom.

   IMPORTANT: Use clean, sanitizer-soaked towels (towels must be wrung out so that they are damp and not dripping, dripping towels may harm the unit)

WEBSITE PROGRAMMING

1.



Log on.

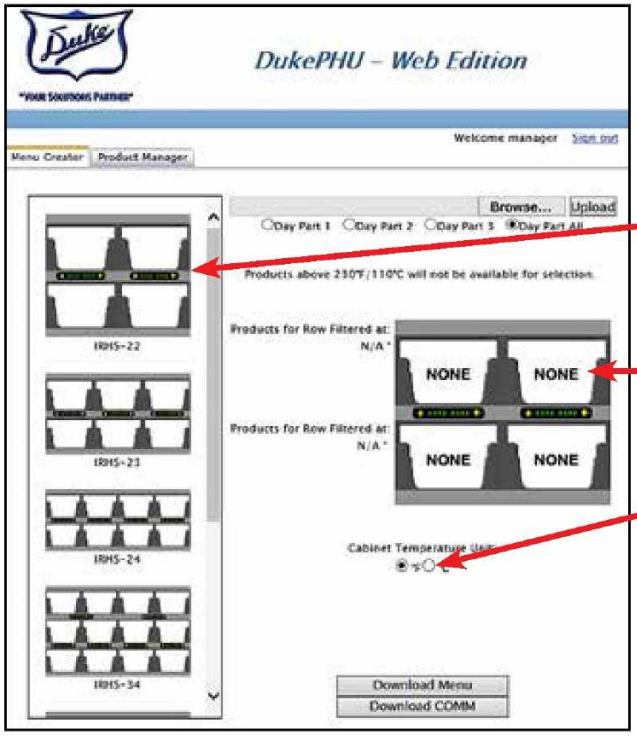
www.dukemfg.info/bkirhs

User Name: **manager**

Password: **password**

(case sensitive)

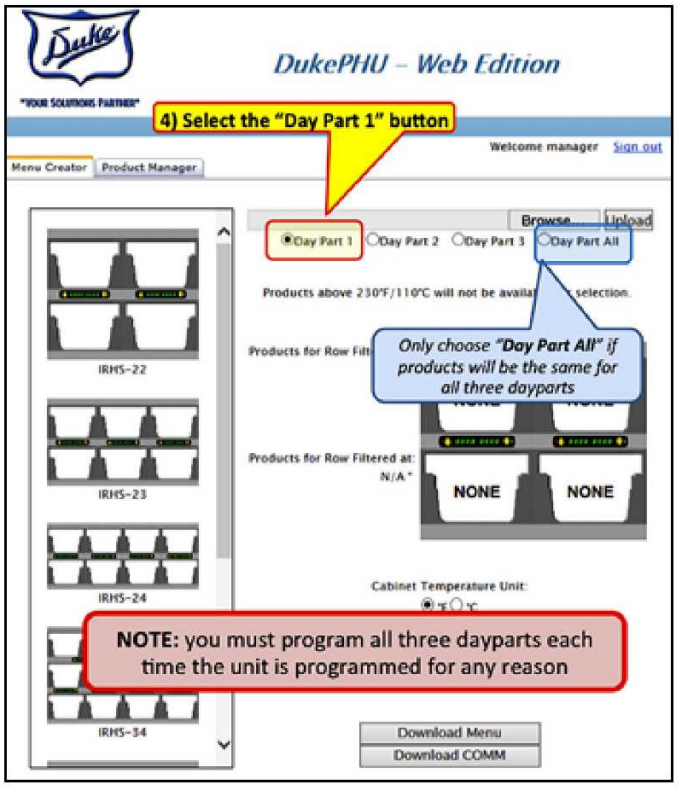
2.



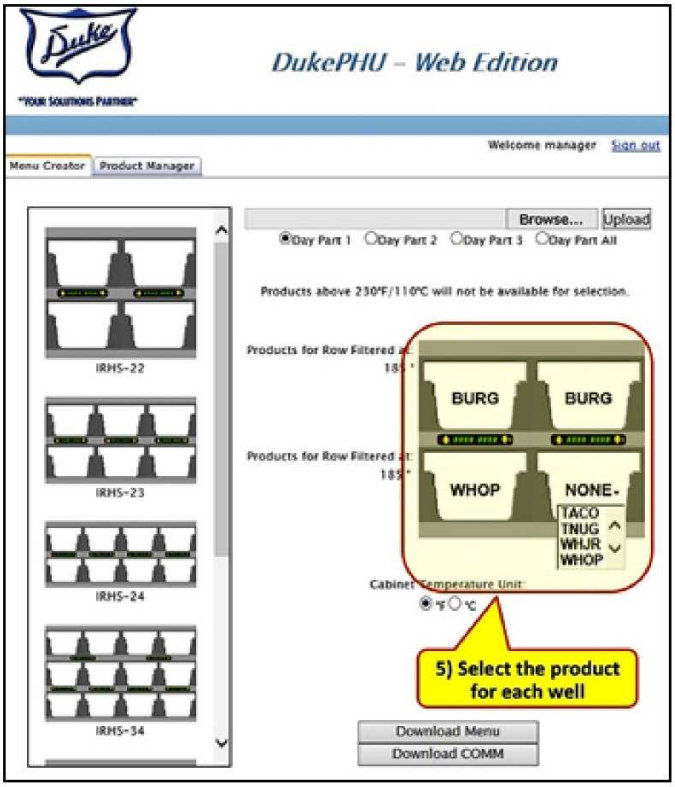
NOTE: When you first log onto this page, you must:

1) Select the desired equipment configuration on the left, before it will…
2) …show up on the right side in order to be programmed.
3) If necessary, change the Cabinet Temperature Unit to "°C" (Celsius)

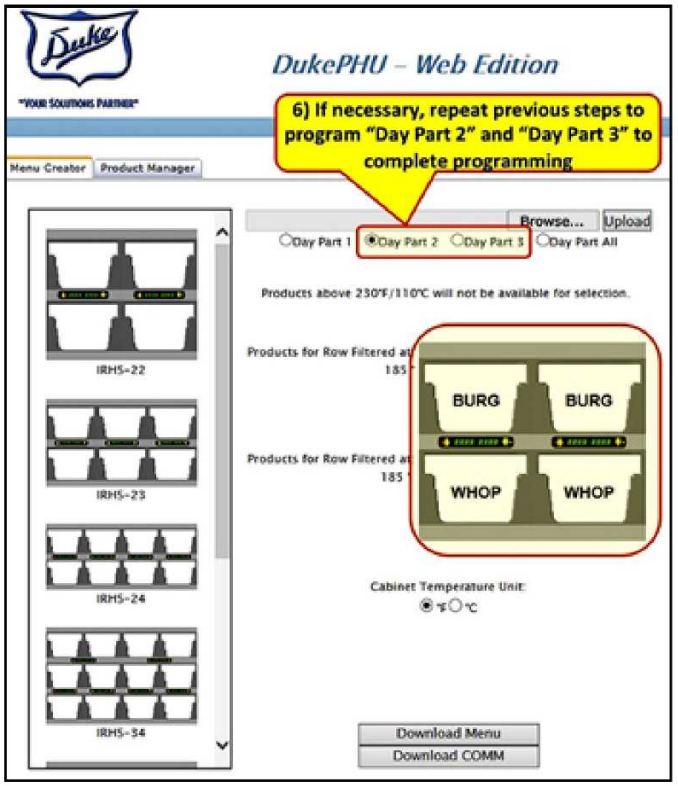
3.


DukePHU – Web Edition
4) Select the "Day Part 1" button
Only choose "Day Part All" if products will be the same for all three dayparts
NOTE: you must program all three dayparts each time the unit is programmed for any reason
Download Menu
Download COMM

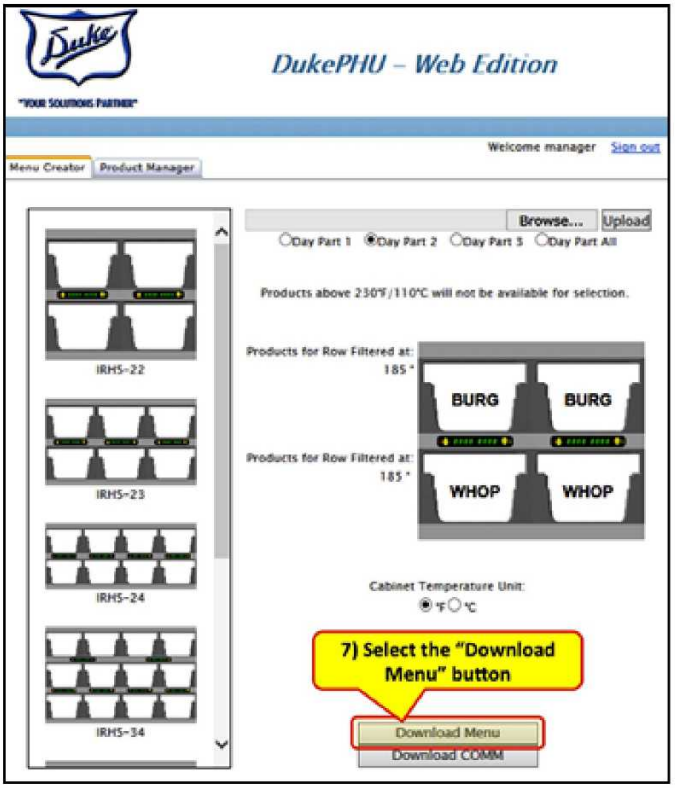
4.


DukePHU – Web Edition
BURG
BURG
WHOP
NONE
TACO
TNUG
WHJR
WHOP
5) Select the product for each well
Download Menu
Download COMM

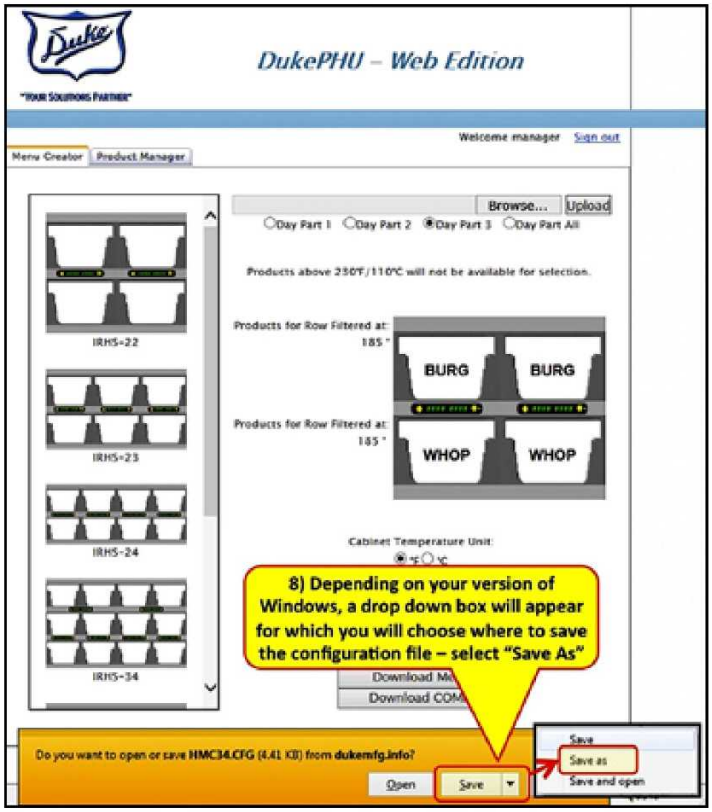
5.


DukePHU – Web Edition
6) If necessary, repeat previous steps to program "Day Part 2" and "Day Part 3" to complete programming
BURG
BURG
WHOP
WHOP
Download Menu
Download COMM

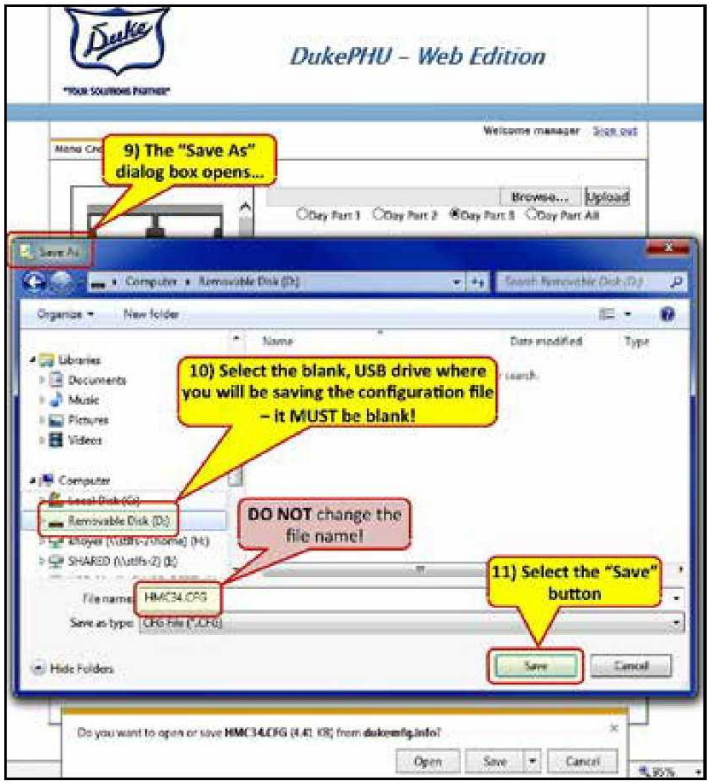
6.


DukePHU – Web Edition
BURG
BURG
WHOP
WHOP
7) Select the "Download Menu" button
Download Menu
Download COMM

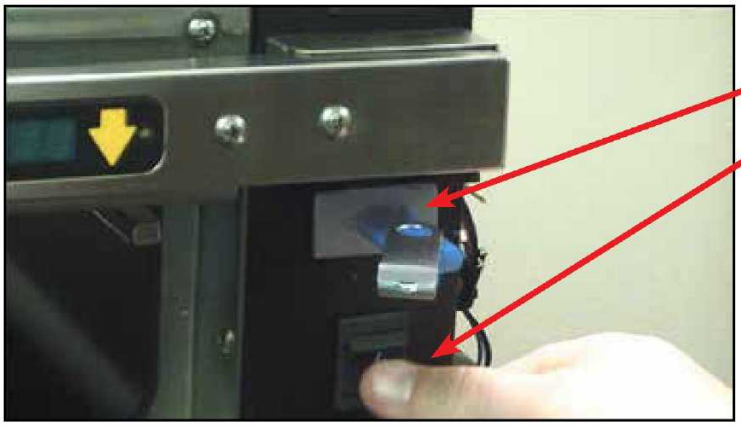
7.


DukePHU – Web Edition
Welcome manager Sign out
Menu Creator
Product Manager
Browse...
Upload
Day Part 1
Day Part 2
Day Part 3
Day Part All
Products above 230°F/110°C will not be available for selection.
Products for Row Filtered at: 185°
BURG
BURG
Products for Row Filtered at: 185°
WHOP
WHOP
IRHS-22
IRHS-23
IRHS-24
IRHS-34
Cabinet Temperature Unit:
8) Depending on your version of Windows, a drop down box will appear for which you will choose where to save the configuration file – select "Save As"
Download M
Download COM
Do you want to open or save HMC34.CFG (4.41 KB) from dukemfg.info?
Open
Save
Save
Save as
Save and open

8.

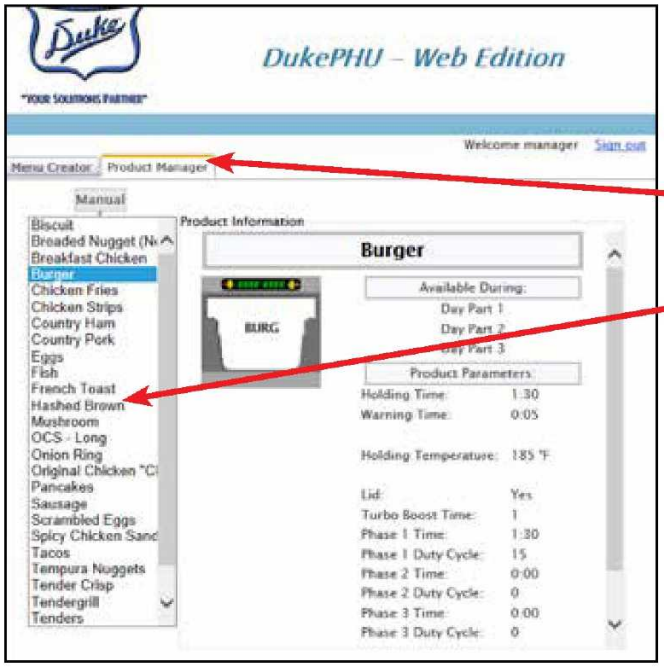

DukePHU – Web Edition
Welcome manager Sign out
9) The "Save As" dialog box opens...
Browse...
Upload
Day Part 1
Day Part 2
Day Part 3
Day Part All
Save As
Computer
Removable Disk (D:)
Organize
New folder
Name
Date modified
Type
Libraries
Documents
Music
Pictures
Videos
Computer
Removable Disk (D:)
10) Select the blank, USB drive where you will be saving the configuration file – it MUST be blank!
DO NOT change the file name!
File name: HMC34.CFG
Save as type:
11) Select the "Save" button
Hide Folders
Save
Cancel
Do you want to open or save HMC34.CFG (4.41 KB) from dukemfg.info?
Open
Save
Cancel

Unit Programming Instructions



1) Power off the unit.
2) Insert the flash drive into the USB slot.
3) Power on the unit.
4) The program will automatically be installed. *The unit will chirp a few times, the Emitters will cycle, and the display shows different displays while programming is in progress*
5) Programming is complete when Menu Bar indicates the updated products and/or temperatures in all displays.

Product Manager Tab

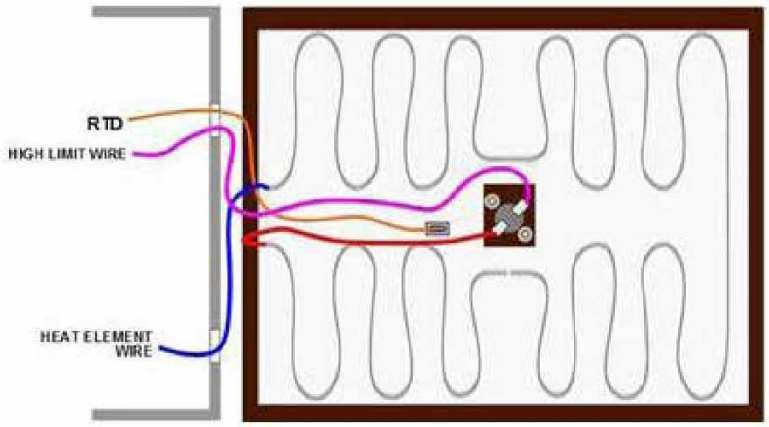


Select this tab...

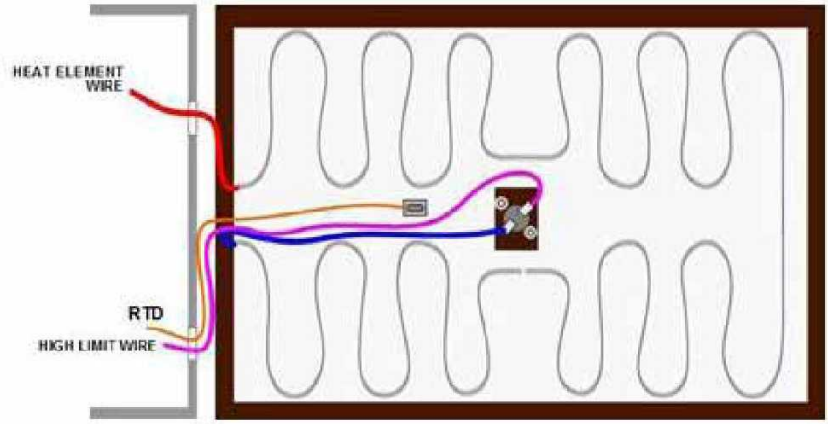
...and then a product on the left side of the screen to view hold settings for various products.

IRHS DECK WIRING

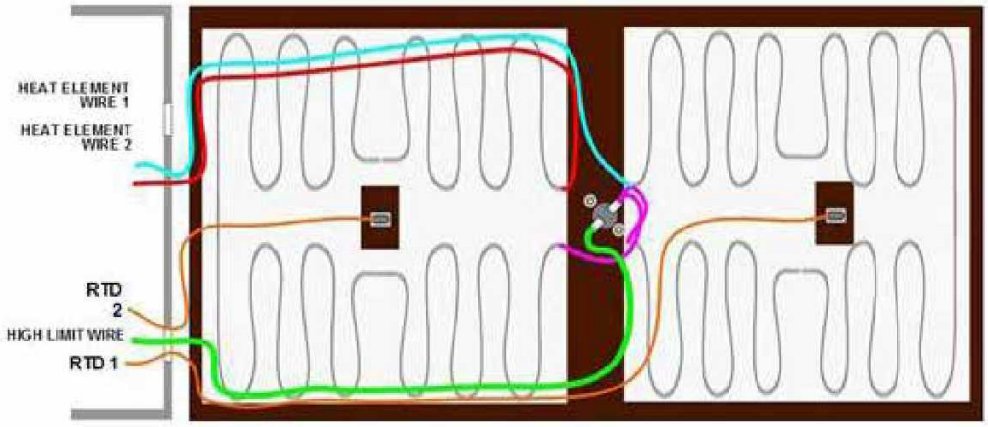
2 WIDE, LEFT SIDE CONTROL



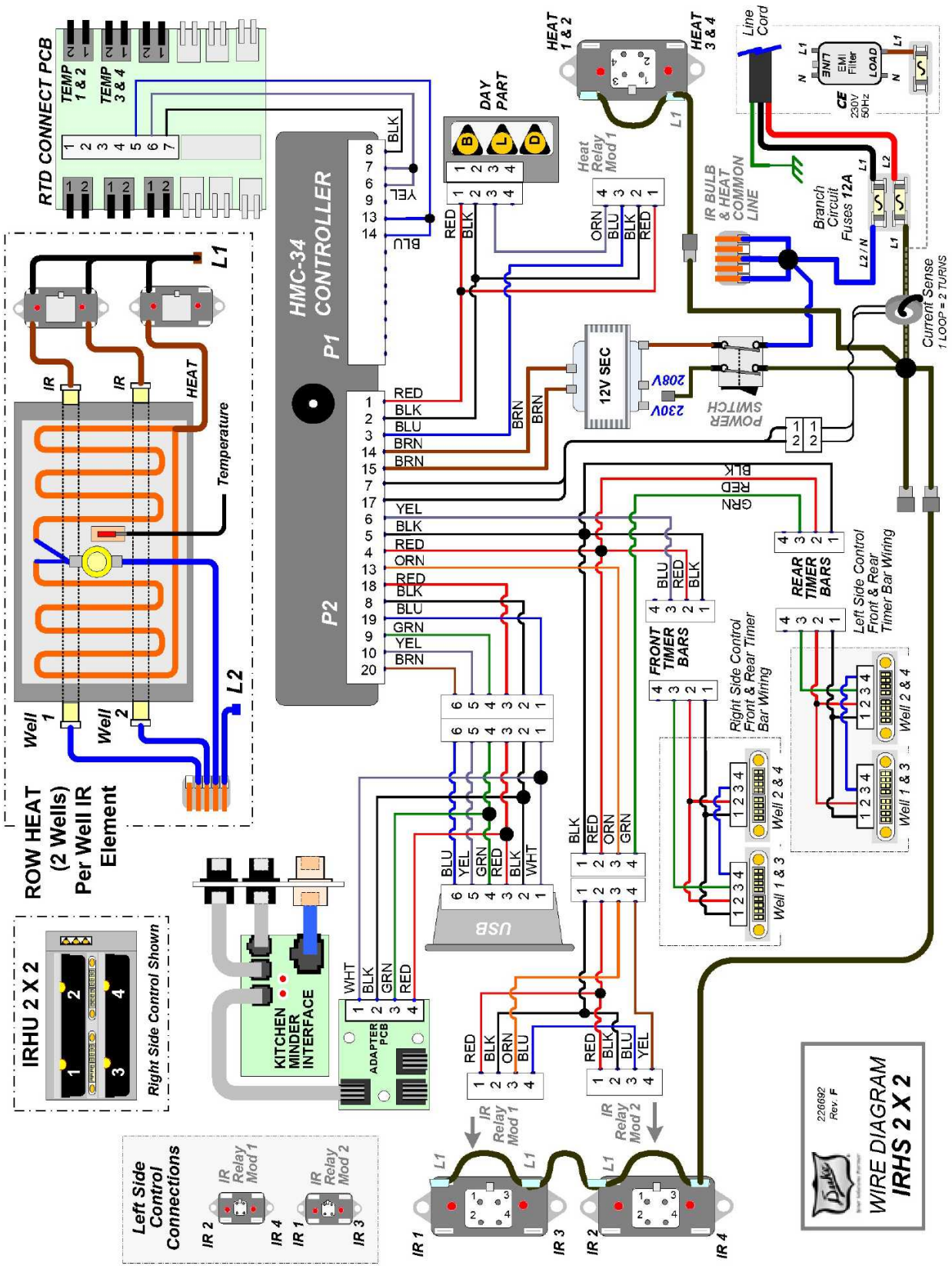
3 WIDE, RIGHT SIDE CONTROL



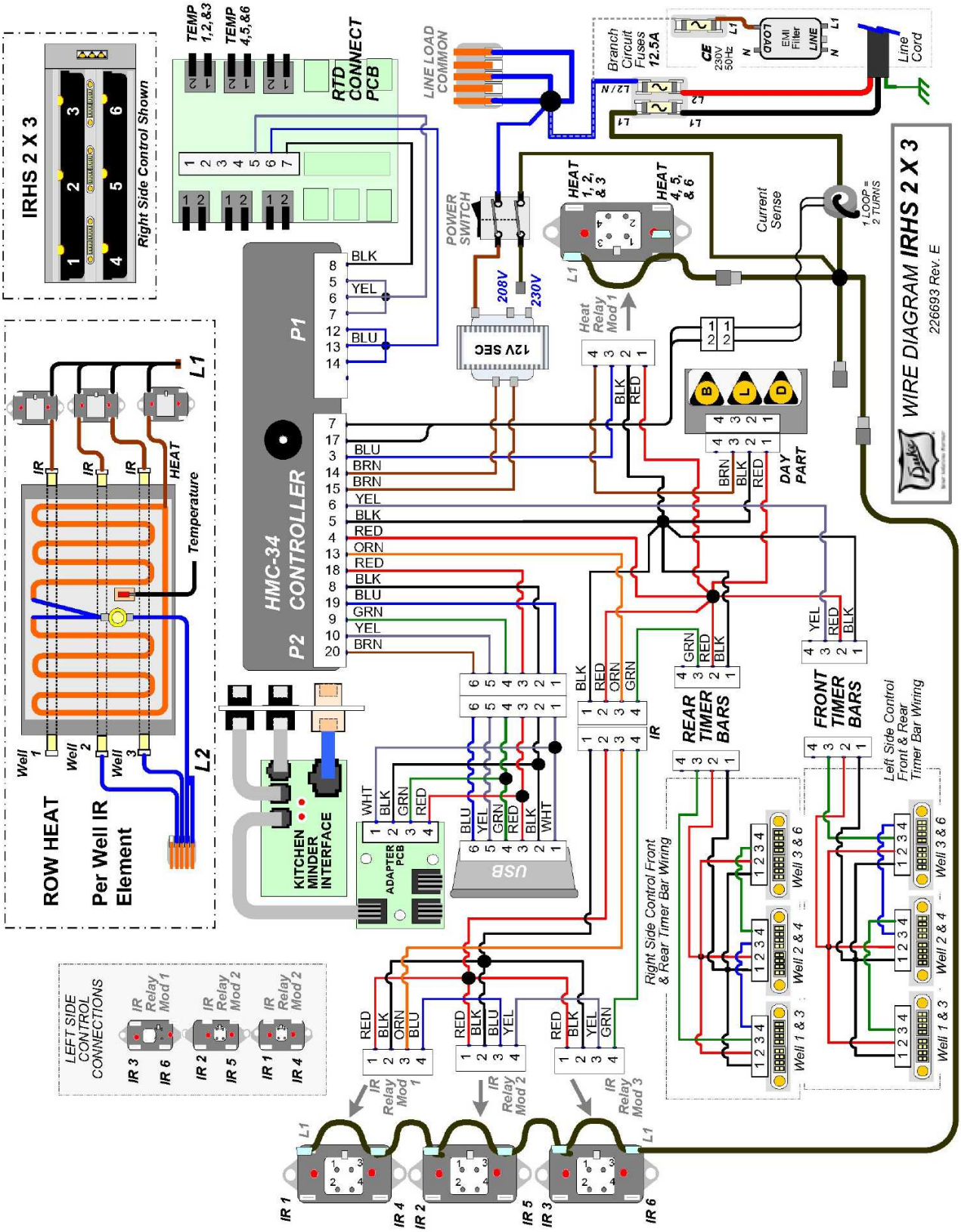
4 WIDE, RIGHT SIDE CONTROL



IRHS22 WIRING DIAGRAM



IRHS23 WIRING DIAGRAM



E-MAIL 2

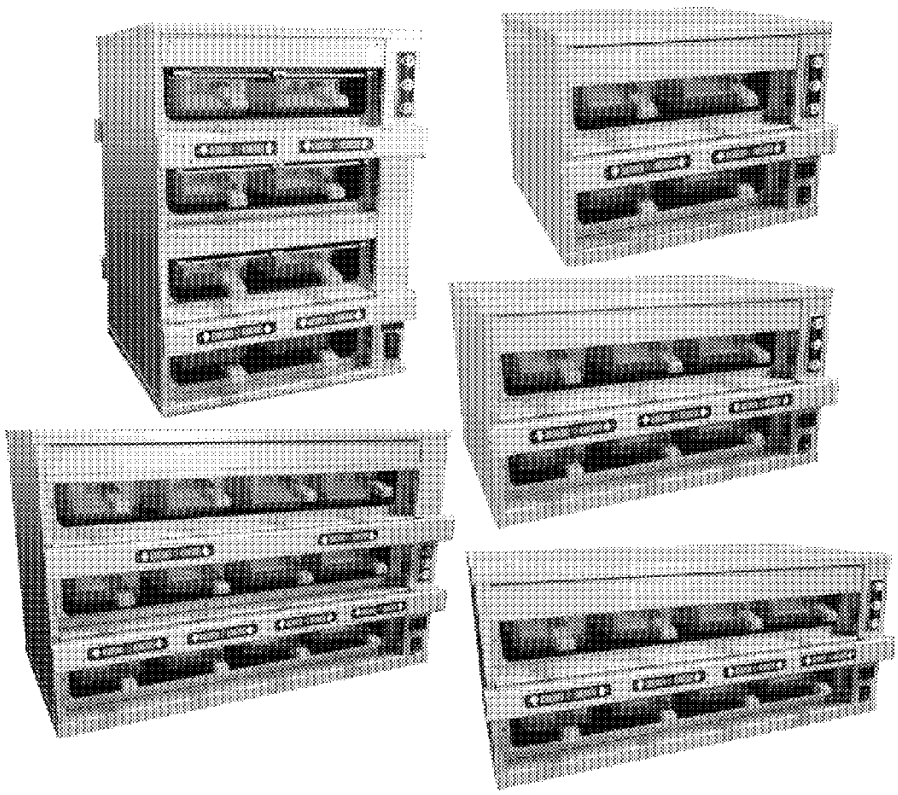
From: Scotty Loyd [/O=DUKEMFGCO/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=SCOTTY LOYD]
Sent: 2/3/2015 6:54:35 PM
To: larrys@commercialkitchen.com
Subject: @ your request
Attachments: SM-PH-IH-0003 Infrared Heatsink Holding Unit.pdf

Your Solutions Partner

Service Manual

INFRARED HEATSINK™ HOLDING UNIT

Includes Standalone, Kitchen Minder and VISOR models



MODELS
IRHS22
IRHS23
IRHS24
IRHS34
IRHS42

Please read this manual completely before attempting to install, operate or service this equipment.

This document is prepared for trained Duke service technicians. It is not to be used by anyone not properly qualified to perform these procedures.

This Service Manual is not all encompassing. If you have not been trained on servicing this product, be sure to read the manual completely before attempting servicing. Be sure all necessary tools, test equipment, and skills are available. Those procedures for which you do not have the proper skills and test equipment must be performed only by a qualified Duke trained service technician.

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Duke Manufacturing Co.

2305 North Broadway • St. Louis, MO 63102-1405
Phone: 314-231-1130 • Toll Free: 1-800-735-3853 • Fax: 314-231-5074
service-dispatch@dukemfg.com • www.dukemfg.com

IMPORTANT WARNING AND SAFETY INFORMATION

READ THIS MANUAL THOROUGHLY BEFORE OPERATING, INSTALLING OR PERFORMING MAINTENANCE ON THE EQUIPMENT.

⚠ WARNING READ THIS MANUAL THOROUGHLY BEFORE OPERATING, INSTALLING OR PERFORMING MAINTENANCE ON THE EQUIPMENT

⚠ WARNING FAILURE TO FOLLOW INSTRUCTIONS IN THIS MANUAL CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.

⚠ WARNING DO NOT USE OR STORE GASOLINE OR OTHER FLAMMABLE VAPORS OR LIQUIDS IN THE VICINITY OF THIS OR ANY OTHER APPLIANCE.

⚠ WARNING DO NOT OPERATE THIS EQUIPMENT WITHOUT PROPERLY PLACING AND SECURING ALL COVER AND ACCESS PANELS.

⚠ WARNING IMPROPER INSTALLATION, ADJUSTMENT, ALTERATION, SERVICE OR MAINTENANCE CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH. READ THE INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS THOROUGHLY BEFORE INSTALLING THIS EQUIPMENT.

FOR YOUR SAFETY

Electricity and water do not mix. Unplug the unit before cleaning. If repairs are required, use a qualified service agent. While repairs are being made, be sure the unit is not plugged in. Do not store highly combustible substances on or near the unit. Be sure the compressor compartment has adequate ventilation.

CAUTION

Observe the following:

- Provide and maintain adequate minimum clearances from all walls and combustible materials.
- Provide and maintain adequate clearance for air openings.
- Keep the equipment area free and clear of combustible material.
- Operate equipment only on the type of electricity indicated on the specification plate.
- Retain this manual for future reference.

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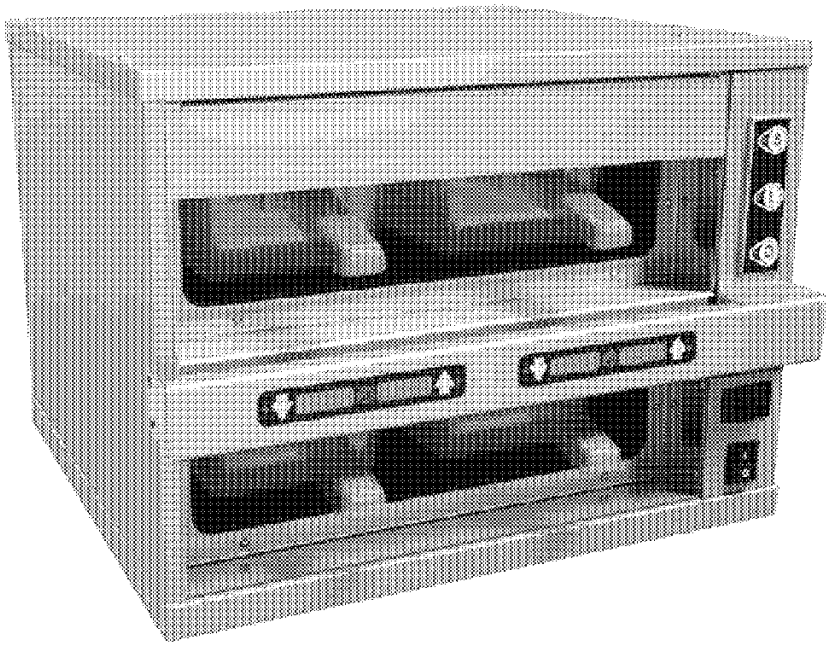
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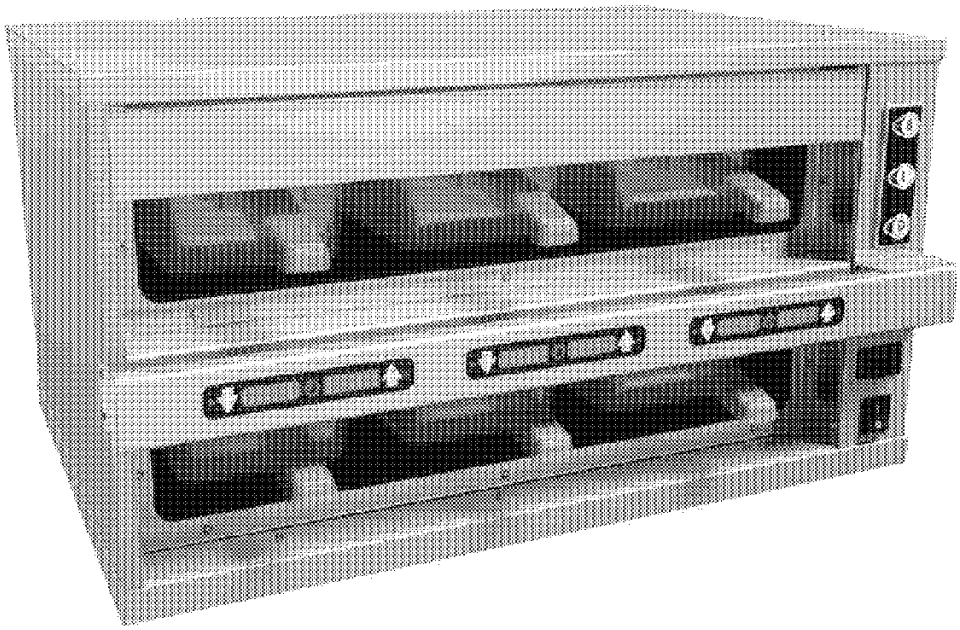
SPECIFICATIONS

IRHS22



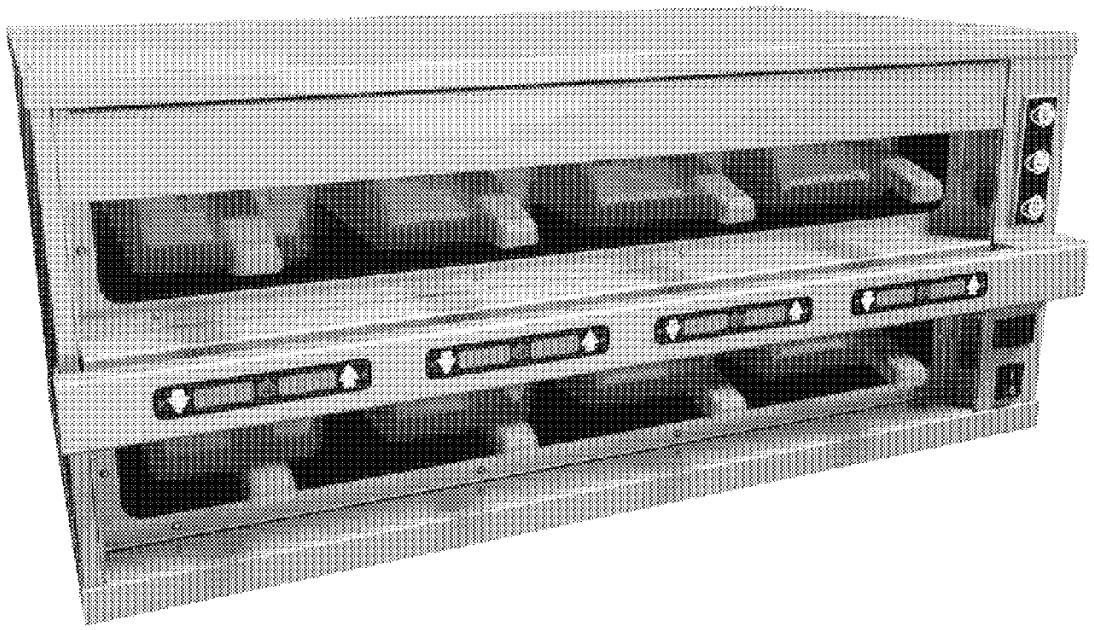
			Before Serial# 10140480 (10/1/14)			*As of Serial# 10140480*		
		Shipping Weight	125 lbs / 56.7 kg			110 lbs / 49.9 kg		
Model	**Electrical**	**Plug**	**H**	**W**	**D**	**H**	**W**	**D**
IRHS22-208	208V ~ 12 A, 50/60 Hz	NEMA 6-15P	14.4 in / 36.6 cm	19.3 in / 49.0 cm	20.1 in / 51.1 cm	13.3 in / 33.8 cm	19.3 in / 49.0 cm	20.1 in / 51.1 cm
IRHS22-230	230V ~ 12 A, 50/60 Hz	SHUKO, 16 AMP (*as of 11/3/14*) IEC, 16 AMP						
IRHS22-240	240V ~ 12 A, 50/60 Hz	NEMA 6-15P						

IRHS23



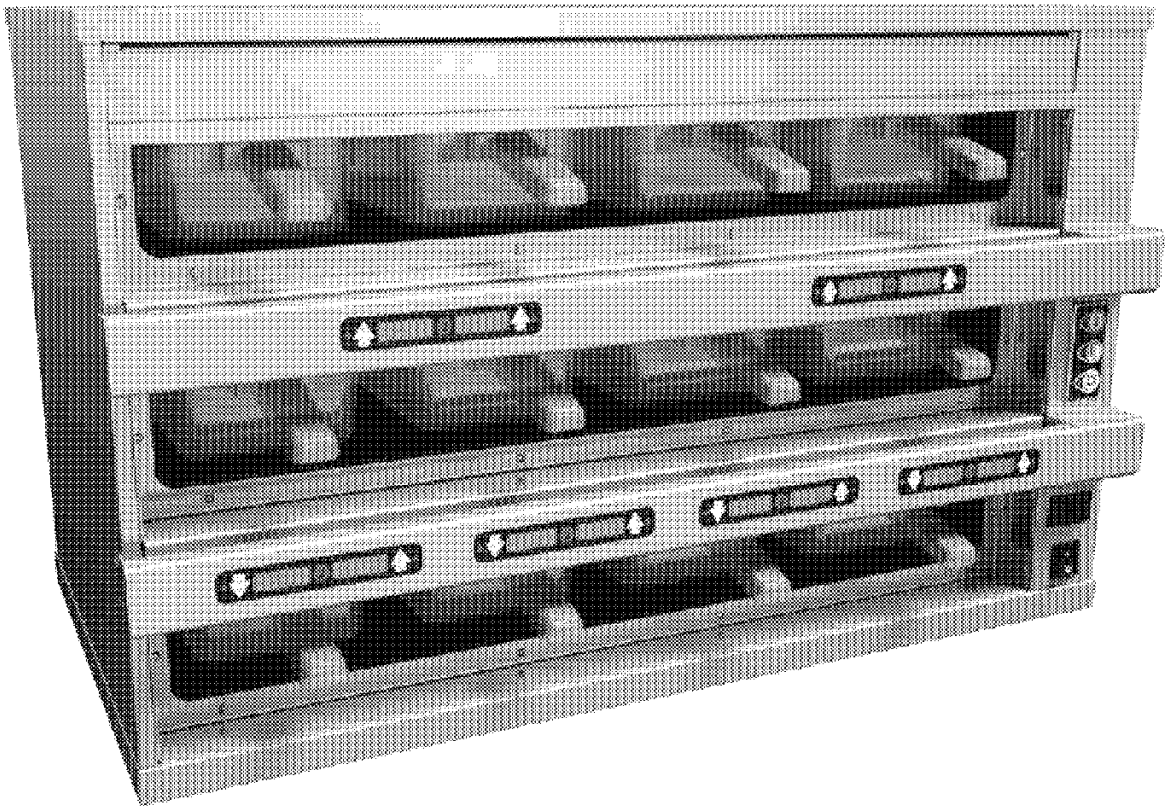
			Up to Serial# 101413198 (10/20/14)			*After SN# 101413198*		
		Shipping Weight	160 lbs / 72.6 kg			143 lbs / 64.9 kg		
Model	**Electrical**	**Plug**	**H**	**W**	**D**	**H**	**W**	**D**
IRHS23-208	208V ~ 12 A, 50/60 Hz	NEMA 6-15P	14.4 in / 36.6 cm	26.4 in / 67.1 cm	20.1 in / 51.1 cm	13.3 in / 33.8 cm	26.4 in / 67.1 cm	20.1 in / 51.1 cm
IRHS23-230	230V ~ 12 A, 50/60 Hz	SHUKO, 16 AMP (*as of 11/3/14*) IEC, 16 AMP						
IRHS23-240	240V ~ 12 A, 50/60 Hz	NEMA 6-15P						

IRHS24



			Before Serial# 10140545 (10/3/14)			*As of Serial# 10140545*		
		Shipping Weight	195 lbs / 88.4 kg			181 lbs / 82.1 kg		
Model	**Electrical**	**Plug**	**H**	**W**	**D**	**H**	**W**	**D**
IRHS24-208	208V ~ 12 A, 50/60 Hz	NEMA 6-15P	14.4 in / 36.6 cm	33.4 in / 84.8 cm	20.1 in / 51.1 cm	13.3 in / 33.8 cm	33.4 in / 84.8 cm	20.1 in / 51.1 cm
IRHS24-230	230V ~ 12 A, 50/60 Hz	SHUKO, 16 AMP / (*as of 11/3/14*) IEC, 16 AMP						
IRHS24-240	240V ~ 12 A, 50/60 Hz	NEMA 6-15P						

IRHS34



			Before Serial# 10140032 (10/1/14)			*As of Serial# 10140032*		
		Shipping Weight	275 lbs / 124.7 kg			243 lbs / 110.2 kg		
Model	**Electrical**	**Plug**	**H**	**W**	**D**	**H**	**W**	**D**
IRHS34-208	208V ~ 16 A, 50/60 Hz	NEMA 6-20P	20.9 in / 53.1 cm	33.4 in / 84.8 cm	20.1 in / 51.1 cm	19.3 in / 49.0 cm	33.4 in / 84.8 cm	20.1 in / 51.1 cm
IRHS34-230	230V ~ 16 A, 50/60 Hz	SHUKO, 16 AMP (*as of 11/3/14*) IEC, 16 AMP						
IRHS34-240	240V ~ 16 A, 50/60 Hz	NEMA 6-20P						

IRHS42



		Shipping Weight	187 lbs / 84.8 kg		
Model	**Electrical**	**Plug**	**H**	**W**	**D**
IRHS42-208	208V ~ 12 A, 50/60 Hz	NEMA 6-15P	25.3 in / 64.3 cm	19.3 in / 49.0 cm	20.1 in / 51.1 cm
IRHS42-230	230V ~ 12 A, 50/60 Hz	SHUKO, 16 AMP (*as of 11/3/14*) IEC, 16 AMP			
IRHS42-240	240V ~ 12 A, 50/60 Hz	NEMA 6-15P			

REMOVAL AND REPLACEMENT OF PARTS

EQUIPMENT USED IN THESE INSTRUCTIONS

- Phillips screwdriver
- #1 precision screwdriver
- Flat-head screwdriver
- Needle-nose pliers
- 11/16" open-end wrench
- 11/32" nut driver or socket
- 1/4" nut driver or socket
- Tie wraps
- ESD Wrist Strap
- Aluminum tape
- Ohmmeter
- Heat transfer compound
- Clean gloves/cloths/towels

ELECTRICAL LOCKOUT/TAGOUT PROCEDURE

WARNING

BEFORE PERFORMING ANY SERVICE THAT INVOLVES ELECTRICAL CONNECTION OR DISCONNECTION AND/OR EXPOSURE TO ELECTRICAL COMPONENTS, ALWAYS FOLLOW THE ELECTRICAL LOCKOUT/TAGOUT PROCEDURE. DISCONNECT ALL CIRCUITS. FAILURE TO COMPLY CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.

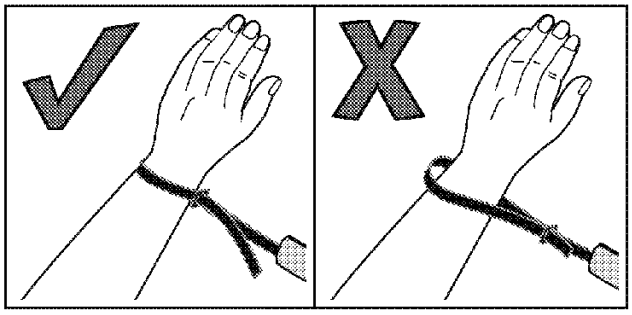
The Electrical LOCKOUT/TAGOUT Procedure is used to protect personnel working on an electrical appliance. Before performing any maintenance or service that requires exposure to electrical components, follow these steps:

1. In electrical box, place appliance circuit breaker into OFF position.
2. Place a lock or other device on electrical box cover to prevent someone from placing circuit breaker ON.
3. Place a tag on electrical box cover to indicate that appliance has been disconnected for service and power should not be restored until tag is removed by maintenance personnel.
4. Disconnect appliance power cord from electrical outlet.
5. Place a tag on the cord to indicate that unit has been disconnected for service and power should not be restored until tag is removed.

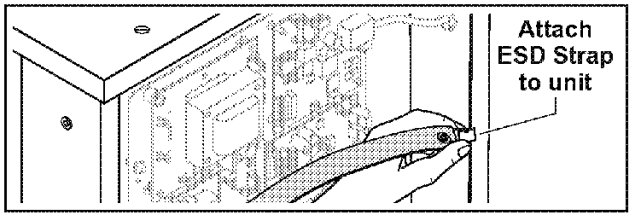
ESD WRIST STRAP

Electrostatic Discharge (ESD) is one of the biggest dangers to components in electronic devices. An ESD wrist strap allows any accumulated static charge to disperse safely through its cable, rather than through static-sensitive components such as unit computer-related components.

1. Place the ESD wrist strap around your wrist. The wrist strap should be next to your skin, so it needs to be placed under any clothes.
2. Tighten the wrist strap so that the attached metal plate maintains good contact with your skin. Do not over tighten as the wrist strap should not be uncomfortable.



3. Connect the cable to the wrist strap if it is disconnected. The cable should be securely clipped in place to maintain a good connection.
4. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
5. Connect the alligator clip on the other end of the cable to a metal surface on the unit. This creates a path through which any built-up static charge can safely flow without causing any damage. A built-in high value resistor ensures the charge leaks away in a controlled manner, and protects the user.



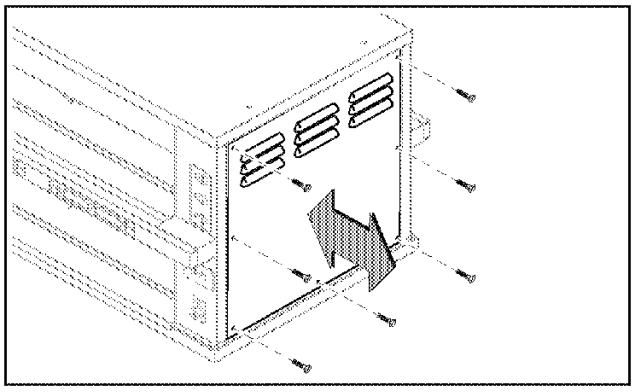
DECK ASSEMBLY COMPONENTS

MENU BARS

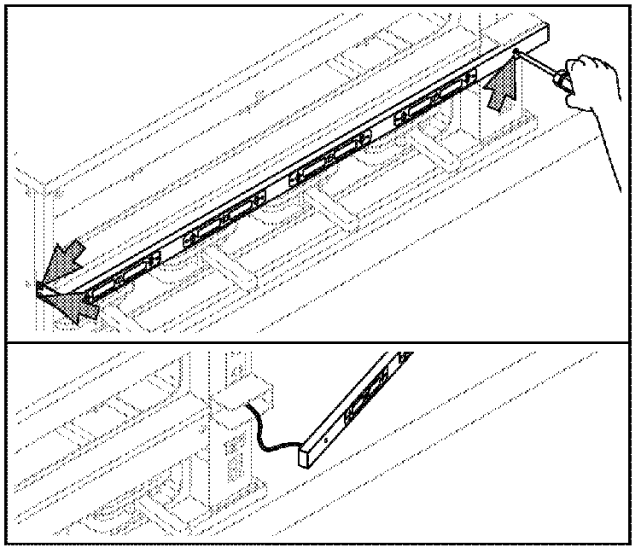
The Menu Bars hold the Keypad Displays that control and monitor the performance of each heating well. The quantity varies (depending on model) and are located on the front and back faces of the unit.

TOOLS REQUIRED: Phillips screwdriver; Flat-head screwdriver

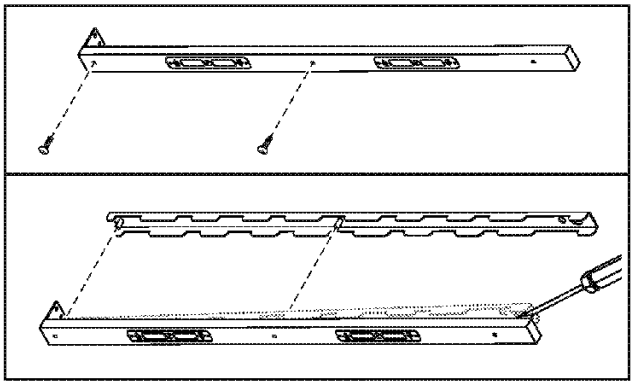
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.



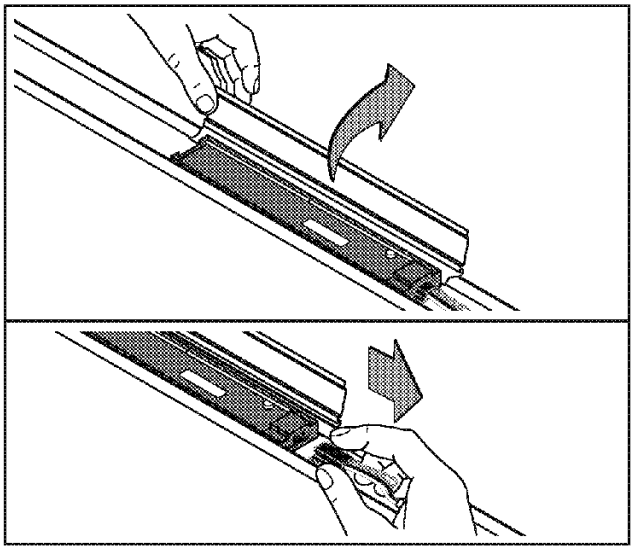
3. Remove and retain screws of the affected Menu Bar and pull away from the face of the unit. It is not necessary, but recommended, to completely remove the Menu Bar from the unit.



4. Mark and disconnect the affected Menu Bar's molex connector inside the control compartment.
5. If it is necessary to reuse the existing Keypad Displays in a replacement Menu Bar:
   a. Remove and retain the two (2) screws securing the Menu Bar Back Channel and pry out of the former Menu Bar.

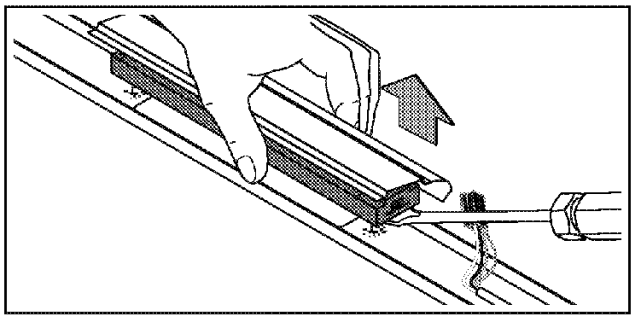


   b. A Keypad Spacer is attached to the rear of each Keypad Display with double-sided tape. Carefully pry off and remove the Keypad Spacer from the affected Keypad Display(s). This will free-up the Menu Bar Harness.

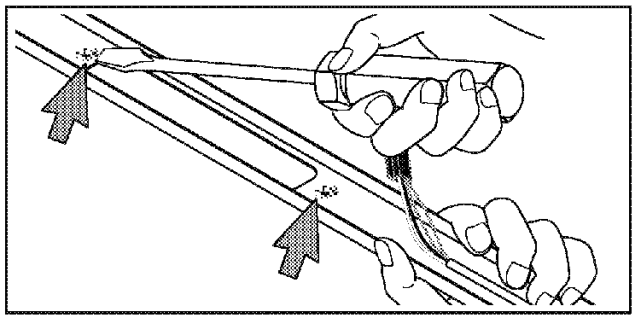


c. Disconnect the affected Keypad Display(s) electrical connector from the Menu Bar Harness.

d. The Keypad Displays are attached to the Menu Bar with double-sided glue dots. Carefully pry off and remove the affected Keypad Display from the Menu Bar.

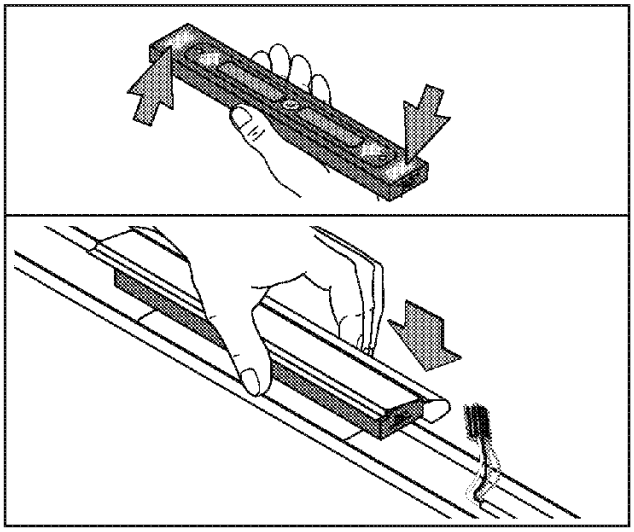


e. Carefully scrape any remaining adhesive residue from the inside of the Menu Bar.



RESTORE

6. Carefully place the Keypad Displays in place on the interior side of the replacement Menu Bar. If reusing the Keypad Displays, it may be necessary to use additional double-sided tape to secure the Keypad Displays to the Menu Bar.



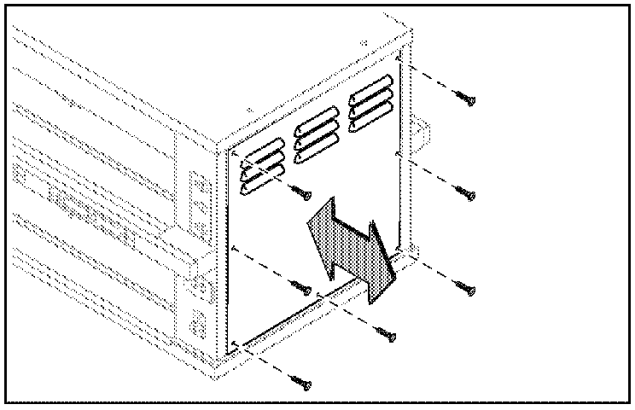
7. Connect the replacement Menu Bar Harness' molex connector in the control compartment.
8. Replace the Keypad Spacer, over the Menu Bar Harness, to the rear of the Keypad Display(s).
9. Reinstall Menu Bar Back Channel using its screws.
10. Reinstall the Menu Bar using its screws.
11. Replace the Control Side Cover and secure with its screws.
12. Restore power to the unit and test for proper function.

KEYPAD DISPLAYS

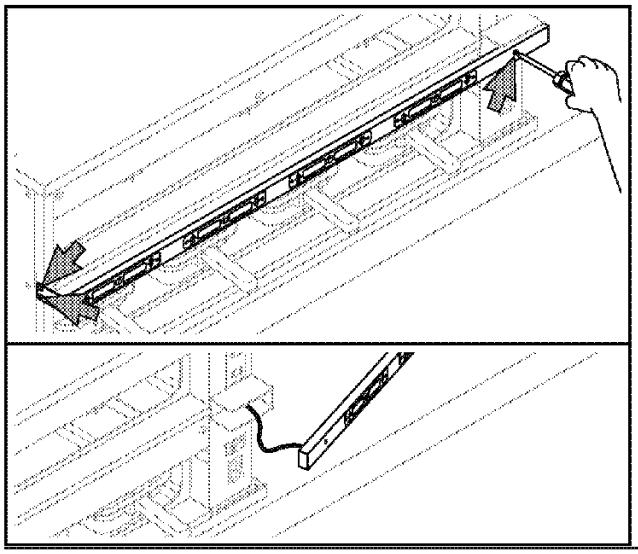
The Keypad Displays control and monitor the performance of each heating well. They are located inside of the Menu Bar(s) and the quantity varies (depending on model).

TOOLS REQUIRED: Phillips screwdriver; Flat-head screwdriver

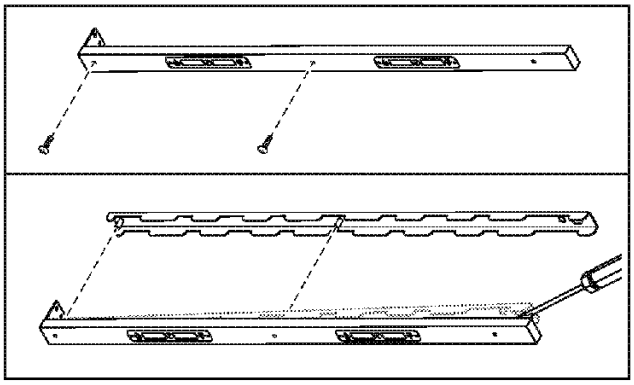
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.



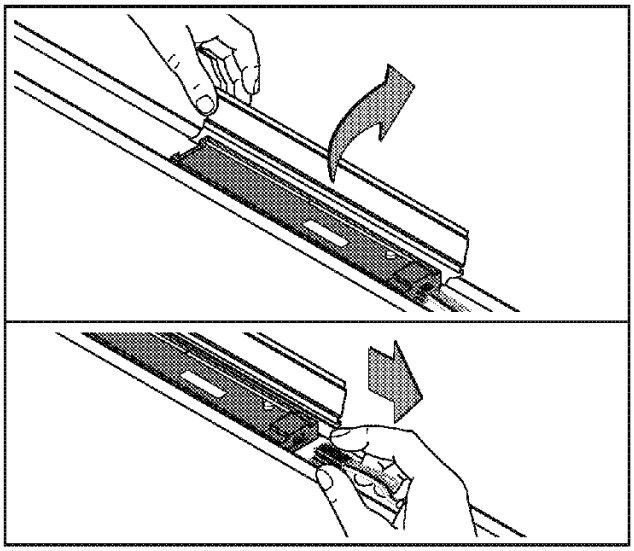
3. Disconnect the affected Menu Bar's molex connector inside the control compartment.
4. Remove and retain screws of the Menu Bar containing the affected Keypad Display and pull away from the face of the unit. It is not necessary, but recommended, to completely remove the Menu Bar from the unit.



5. Remove and retain the screws securing the Menu Bar Back Channel from the front of the Menu Bar and pry out of the Menu Bar.

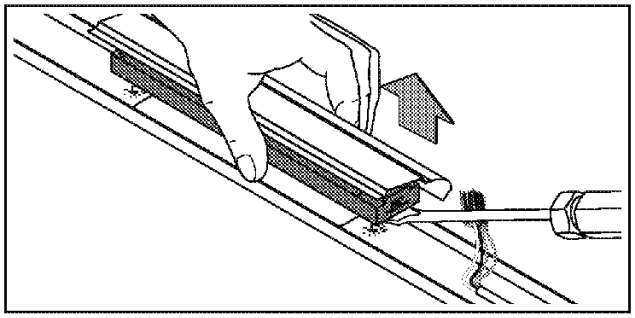


6. A Keypad Spacer is attached to the rear of each Keypad Display with double-sided tape. Carefully pry off and remove the Keypad Spacer from the affected Keypad Display(s). This will free-up the Menu Bar Harness.

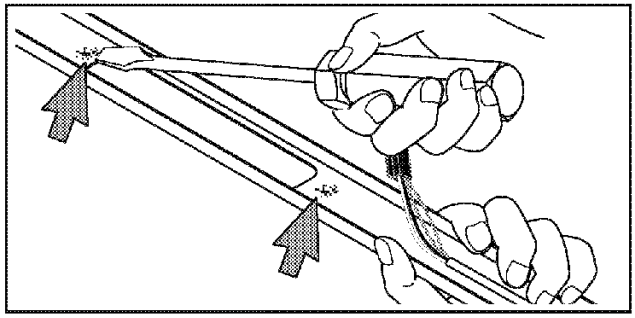


7. Disconnect the affected Keypad Display(s) electrical connector from the Menu Bar Harness.

8. The Keypad Displays are attached to the Menu Bar with double-sided glue dots. Carefully pry off and remove the affected Keypad Display from the Menu Bar.

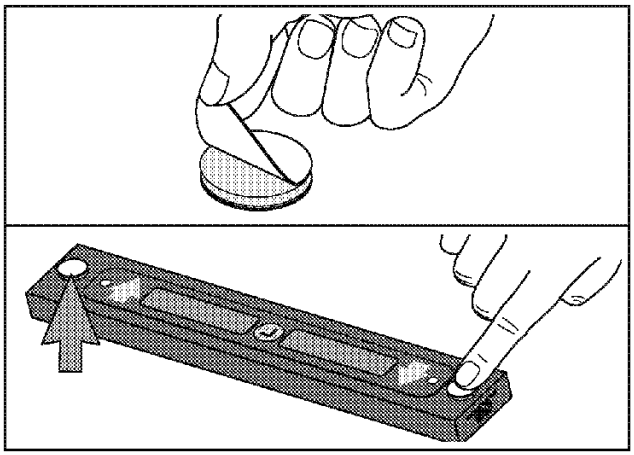


9. Carefully scrape any remaining adhesive residue from the inside of the Menu Bar.

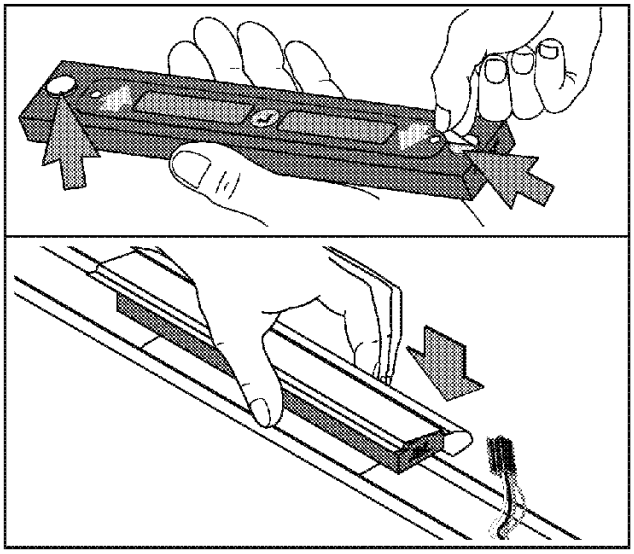


RESTORE:

10. Peel off the adhesive cover from the glue dots and place on the replacement Keypad Display.



11. Peel off the other adhesive cover from the glue dots and carefully position the replacement Keypad Display in place on the interior side of the Menu Bar.



12. Reconnect the affected Keypad Display(s) electrical connector to the Menu Bar Harness.

13. Replace the Keypad Spacer, over the Menu Bar Harness, to the rear of the Keypad Display(s).

14. Reinstall the Menu Bar Back Channel using its screws.

15. Reinstall the Menu Bar using its screws.

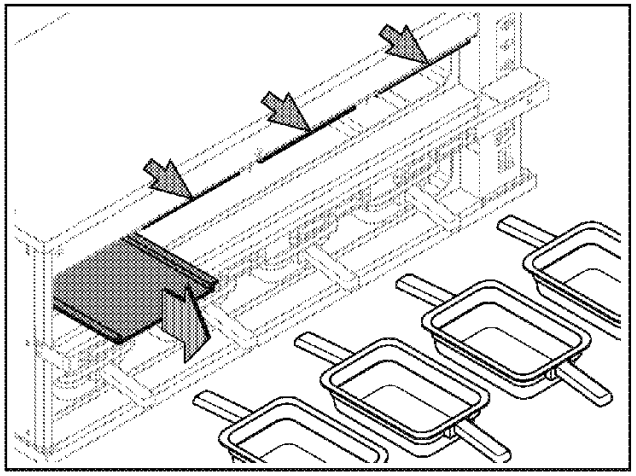
16. Restore power to the unit and test for proper function.

RTD (TEMPERATURE) SENSORS

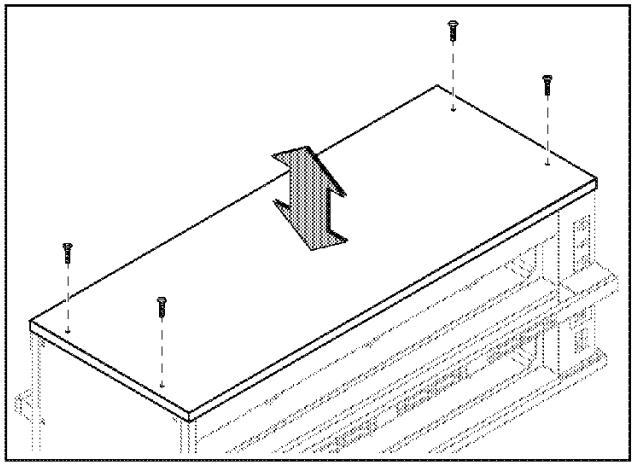
The RTD Sensors monitor the temperature of the heating wells. They are affixed to the bottom-center of each Heat Element, and the quantity varies (depending on model).

TOOLS REQUIRED: Phillips screwdriver; Aluminum tape; Tie wraps

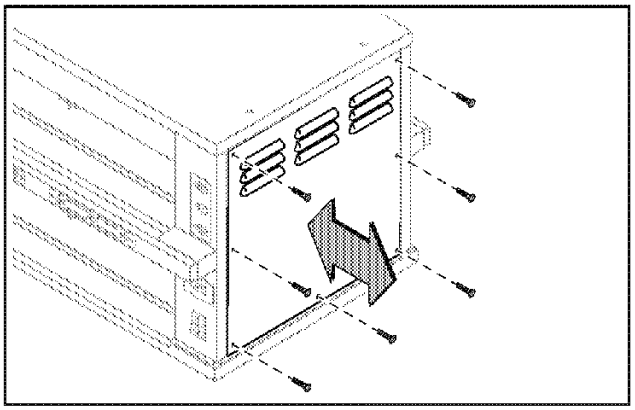
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove any pans and covers on the level(s) being removed.



3. Remove and retain the screws securing the Top Panel and remove the cover.

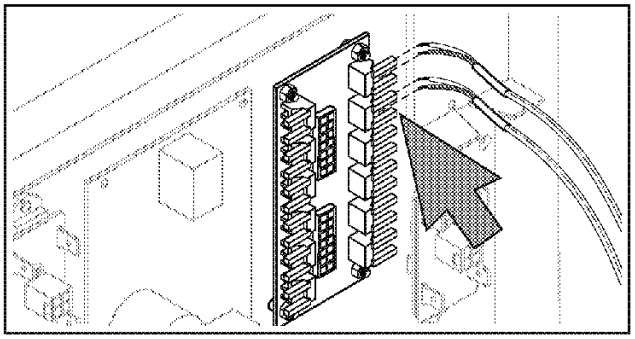


4. Remove and retain the screws securing the Control Side Cover and remove the cover.

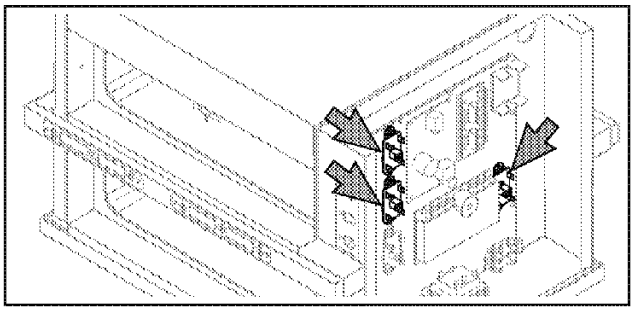


NOTE: If the RTD Sensor to be replaced is on a lower level, start from the top and repeat the following four steps for each level above the desired level.

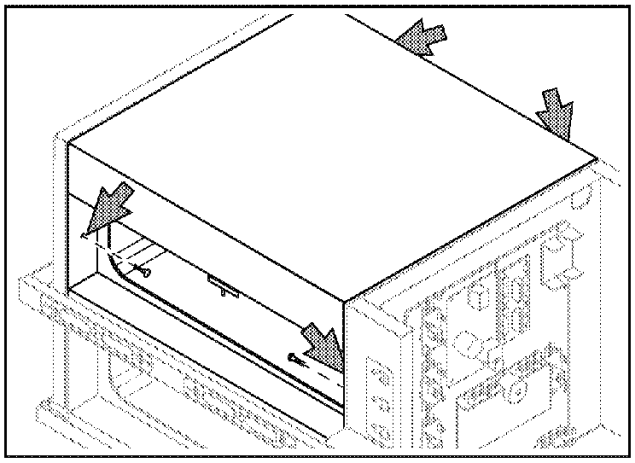
5. Mark, remove the tie wraps, and disconnect the wires for the RTD Sensors from the RTD board in the Control Compartment.



6. Mark, remove the tie wraps, and disconnect the wires for the Emitter (IR Bulb) Sockets and Heat Elements from the Relays in the Control Compartment.

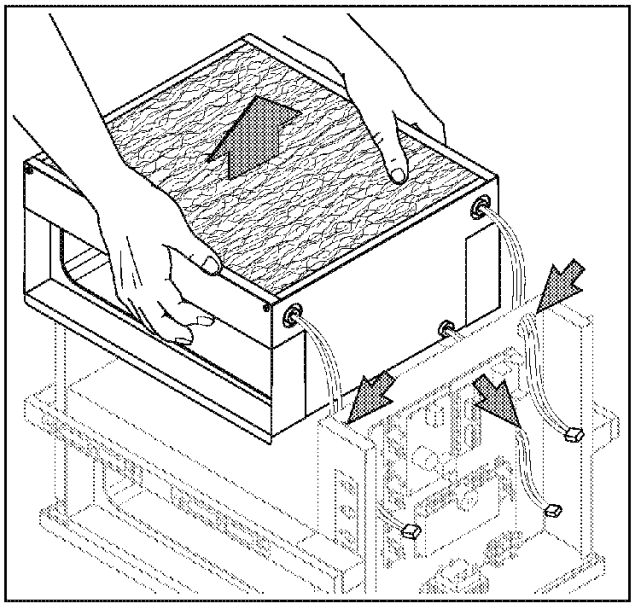


7. Remove the four (4) screws (2 in front, 2 in back) securing the liner deck assembly to the unit.



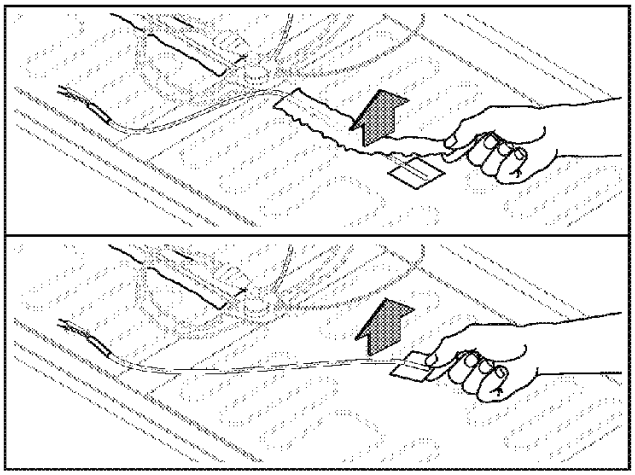
8. Carefully lift the entire liner deck assembly out through the top of the unit. This may require two people, depending on the location of the IRHS unit. Though not required to do so, removing the level's IR glass frame assembly (instructions are contained in the Emitter instructions) will lighten the weight of the liner deck assembly and make it easier for one person to accomplish this task if the IRHS is located in an elevated location or has limited access.

NOTE: It will be necessary to feed the RTD Sensor, Emitter, and Heat Element wires through the control compartment bushings. Take caution not to damage any of the wires.



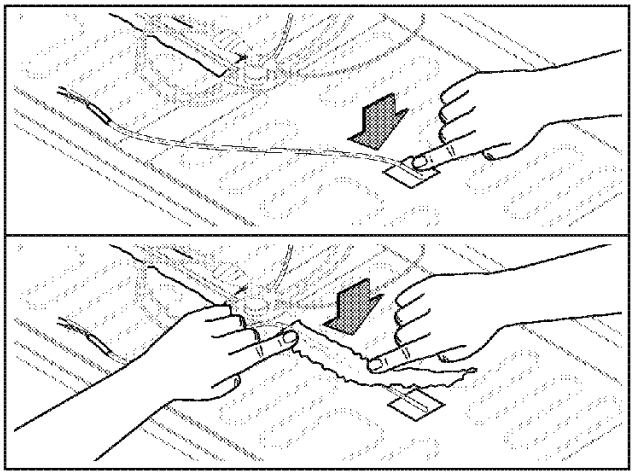
9. Invert the liner deck assembly upside-down, then remove and retain the insulation.

10. The RTD Sensor is attached to the heat element with double-sided adhesive tape and covered with aluminum tape. Carefully pry off and remove the affected RTD Sensor from the Heat Element.



RESTORE:

11. Peel off the adhesive tape cover from the replacement RTD Sensor and press in place on the heat element. Replace aluminum tape cover.



12. Feed the Heat Element and RTD Sensor wires in the direction of and through the control compartment bushings and replace the insulation.

13. Invert the liner deck assembly right-side up. While feeding the RTD Sensor, Emitter, and Heat Element wires through the appropriate control compartment bushings, carefully slide the liner deck assembly into the unit, taking caution not to damage any of the wires.

NOTE: This may require two people, depending on the location of the IRHS unit.

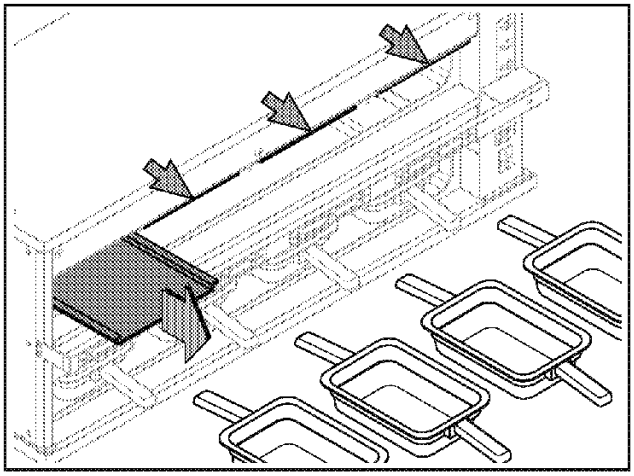
14. Reconnect and tie wrap all previously disconnected wires and connectors in the control compartment.
15. Replace the Control Side Cover and secure with its screws.
16. Replace the Top Panel and secure with its screws.
17. Restore power to the unit and test for proper function.

HIGH LIMIT THERMOSTATS

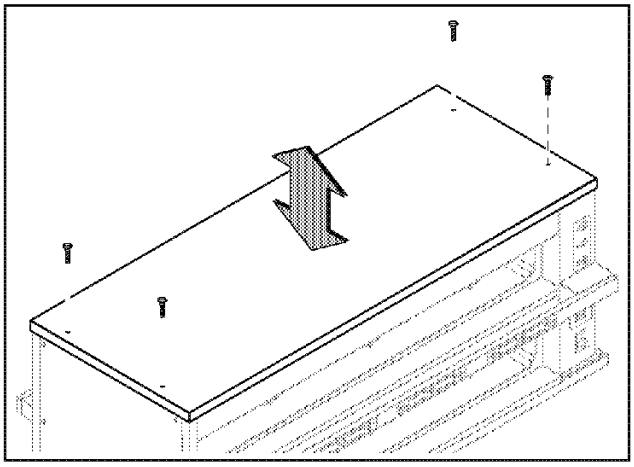
The High Limit Thermostats monitor well temperatures and serves as an emergency circuit interrupter in case of inadvertent overheating. There is one per level, and are affixed to the bottom-center of each heat sink.

TOOLS REQUIRED: Phillips screwdriver; Heat transfer compound; Tie wraps

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove any pans and covers on the level(s) being removed.

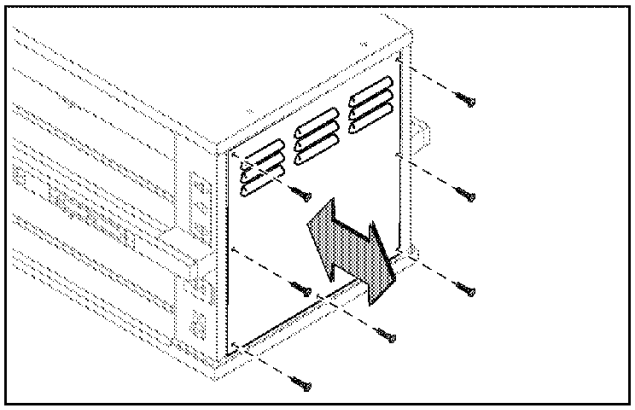


3. Remove and retain the screws securing the Top Panel and remove the cover.

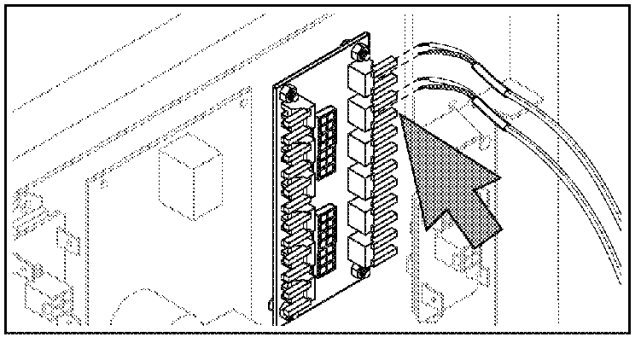


4. Remove and retain the screws securing the Control Side Cover and remove the cover.

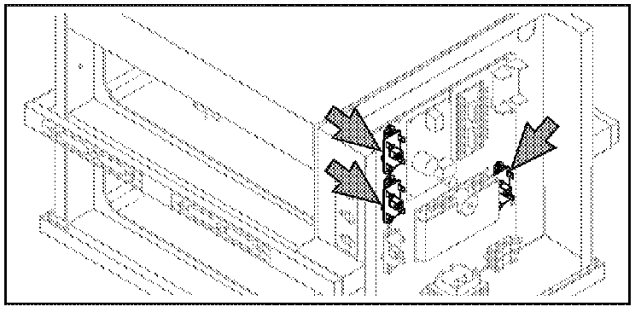
NOTE: If the High Limit Thermostat to be replaced is on a lower level, start from the top and repeat the following four steps for each level above the desired level.



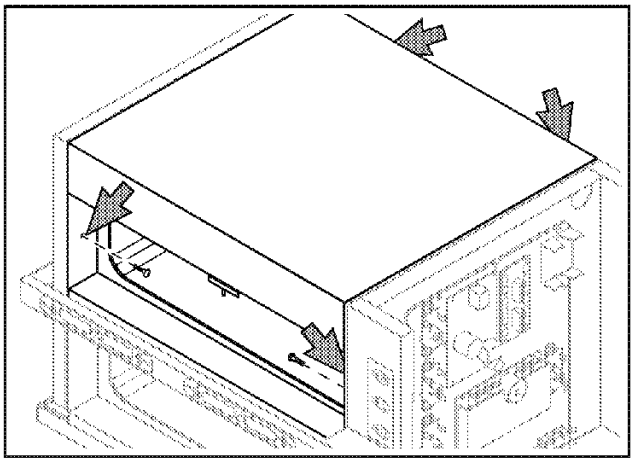
5. Mark, remove the tie wraps, and disconnect the wires for the RTD Sensors from the RTD board in the Control Compartment.



6. Mark, remove the tie wraps, and disconnect the wires for the Emitter (IR Bulb) Sockets and Heat Elements from the Relays in the Control Compartment.

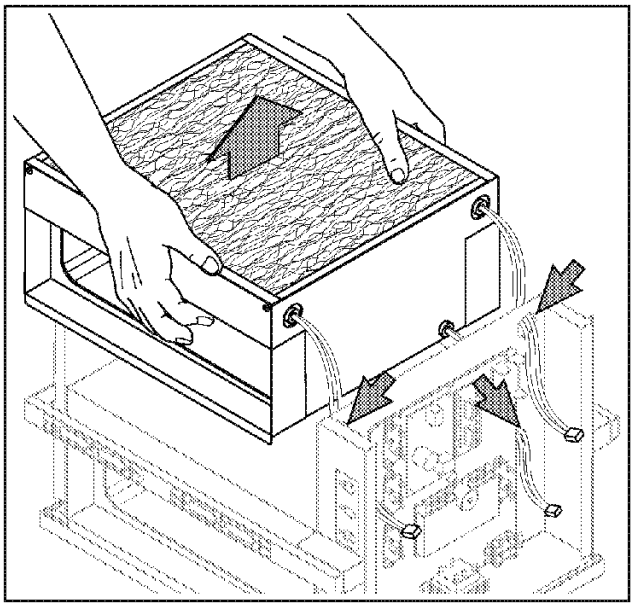


7. Remove the four (4) screws (2 in front, 2 in back) securing the liner deck assembly to the unit.



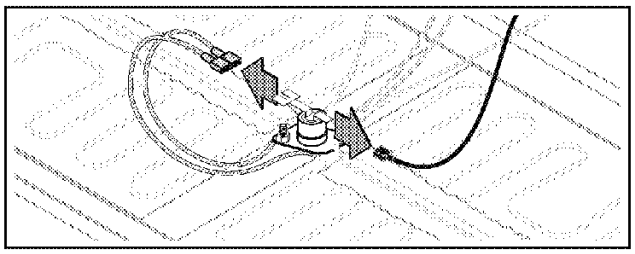
8. Carefully lift the entire liner deck assembly out through the top of the unit. This may require two people, depending on the location of the IRHS unit. Though not required to do so, removing the level's IR glass frame assembly (instructions are contained in the Emitter instructions) will lighten the weight of the liner deck assembly and make it easier for one person to accomplish this task if the IRHS is located in an elevated location or has limited access.

NOTE: It will be necessary to feed the RTD Sensor, Emitter, and Heat Element wires through the control compartment bushings. Take caution not to damage any of the wires.

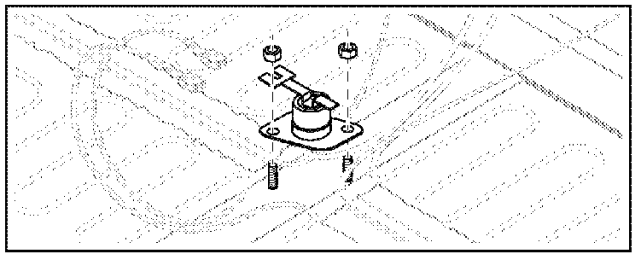


9. Invert the liner deck assembly upside-down, then remove and retain the insulation.

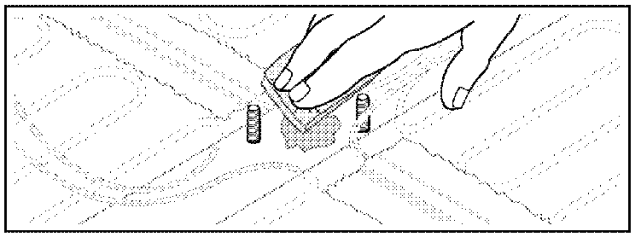
10. Mark and disconnect the spade terminals for the affected High Limit Thermostat.



11. Remove and retain the two (2) 11/32" nuts securing the High Limit Thermostat to the heat sink and remove the High Limit Thermostat.

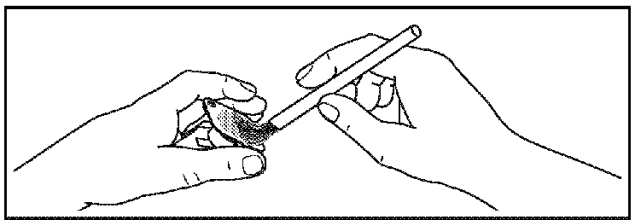


12. Clean the mounting surface of any residual heat transfer compound.



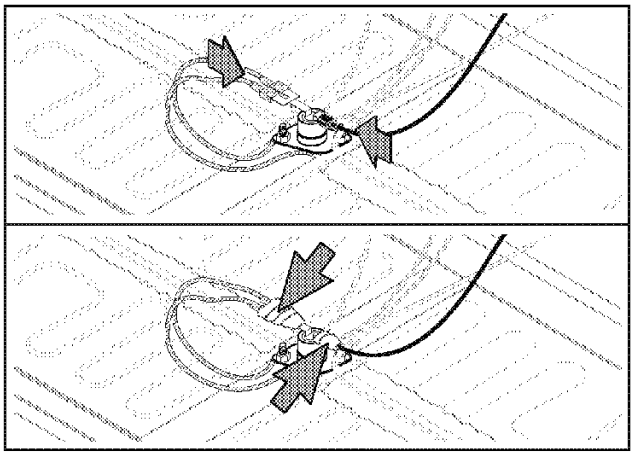
RESTORE:

13. Apply heat transfer compound to the mounting surface of the replacement High Limit Thermostat.



14. Install the replacement High Limit Thermostat and secure with its nuts.

15. Reattach the High Limit Thermostat spade terminals. Be sure to reapply the tape that helps secure the spade terminals to the High Limit Thermostat.



16. Feed the Heat Element and RTD Sensor wires in the direction of and through the control compartment bushings and replace the insulation.

17. Invert the liner deck assembly right-side up. While feeding the RTD Sensor, Emitter, and Heat Element wires through the appropriate control compartment bushings, carefully slide the liner deck assembly into the unit, taking caution not to damage any of the wires.

NOTE: This may require two people, depending on the location of the IRHS unit.

18. Reconnect and tie wrap all previously disconnected wires and connectors in the control compartment.

19. Replace the Control Side Cover and secure with its screws.

20. Replace the Top Panel and secure with its screws.

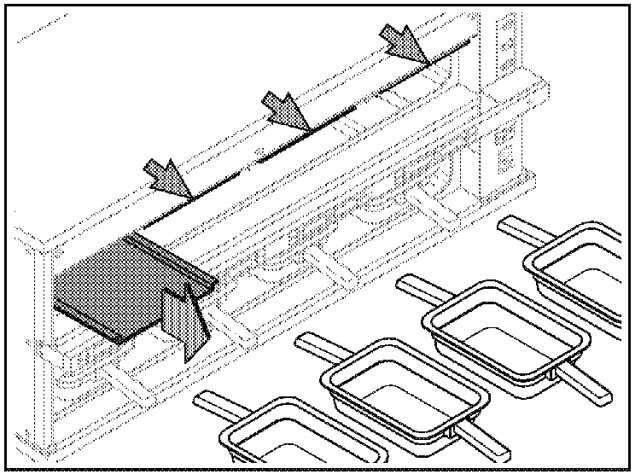
21. Restore power to the unit and test for proper function.

HEAT ELEMENTS

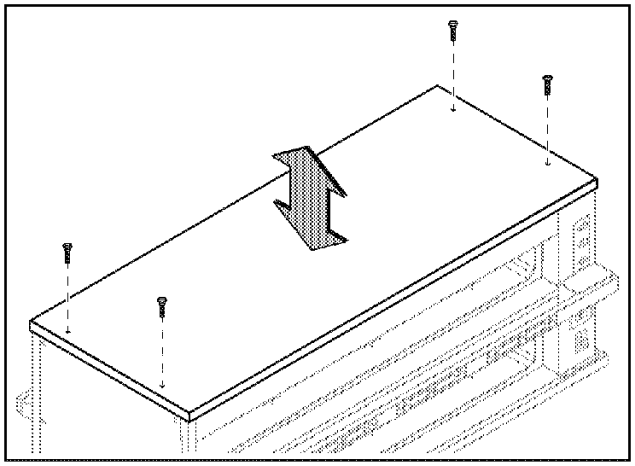
The Heat Elements provide the heating required to keep the heating wells at proper operating temperatures. The quantity varies depending on model and are affixed to the bottom of each Heat Sink.

TOOLS REQUIRED: Phillips screwdriver; 11/32" nut driver or socket; Heat transfer compound; Tie wraps

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove any pans and covers on the level(s) being removed.

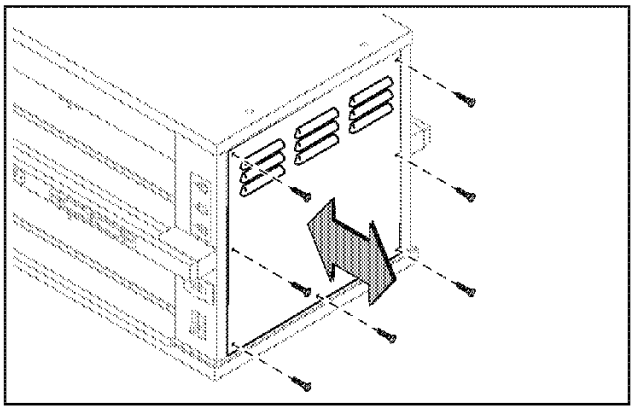


3. Remove and retain the screws securing the Top Panel and remove the cover.

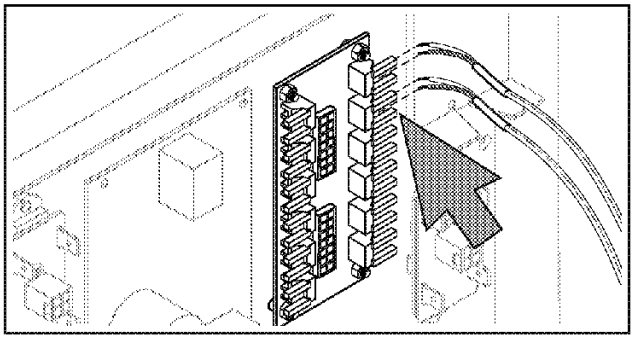


4. Remove and retain the screws securing the Control Side Cover and remove the cover.

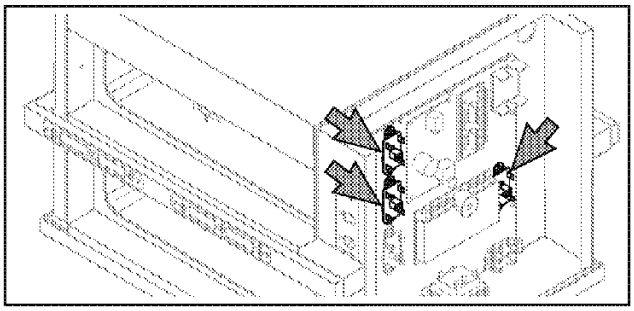
NOTE: If the Heat Element to be replaced is on a lower level, start from the top and repeat the following four steps for each level above the desired level.



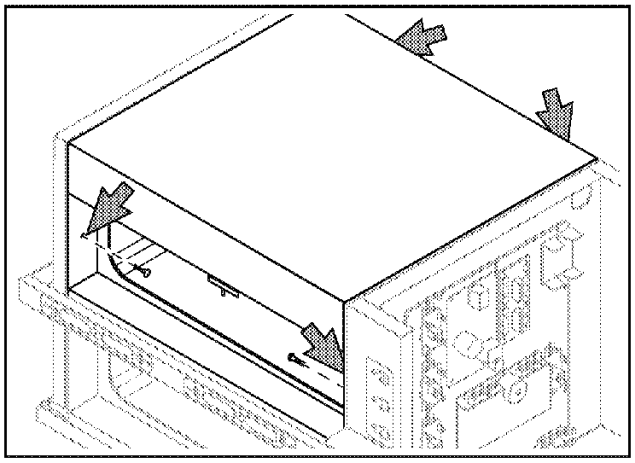
5. Mark, remove the tie wraps, and disconnect the wires for the RTD Sensors from the RTD board in the Control Compartment.



6. Mark, remove the tie wraps, and disconnect the wires for the Emitter (IR Bulb) Sockets and Heat Elements from the Relays in the Control Compartment.



7. Remove the four (4) screws (2 in front, 2 in back) securing the liner deck assembly to the unit.

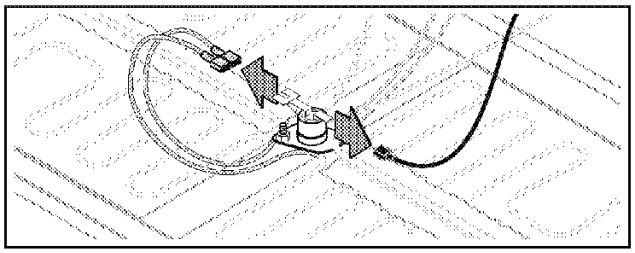


8. Carefully lift the entire liner deck assembly out through the top of the unit. This may require two people, depending on the location of the IRHS unit. Though not required to do so, removing the level's IR glass frame assembly (instructions are contained in the Emitter instructions) will lighten the weight of the liner deck assembly and make it easier for one person to accomplish this task if the IRHS is located in an elevated location or has limited access.

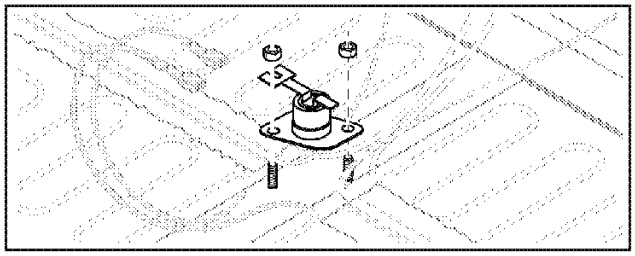
NOTE: It will be necessary to feed the RTD Sensor, Emitter, and Heat Element wires through the control compartment bushings. Take caution not to damage any of the wires.

9. Invert the liner deck assembly upside-down, then remove and retain the insulation.

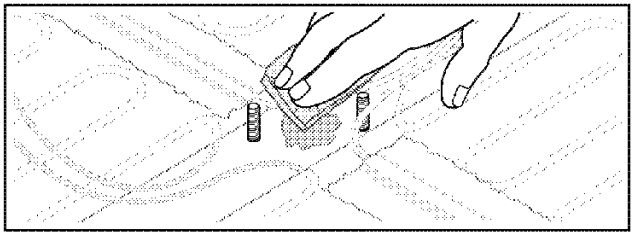
10. Mark and disconnect the spade terminals for the level's High Limit Thermostat.



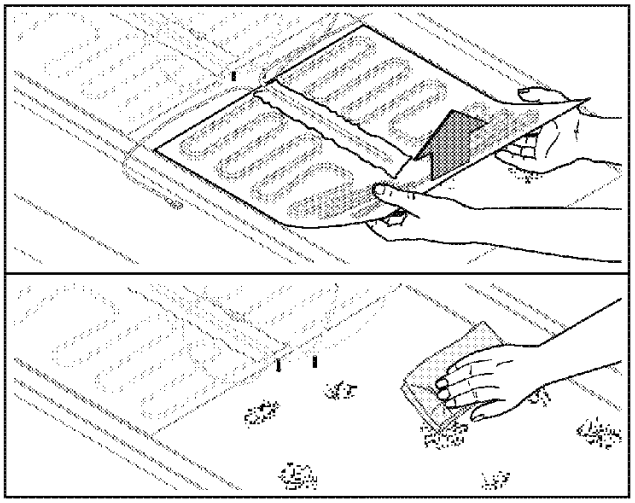
11. Remove and retain the two (2) 11/32" nuts securing the High Limit Thermostat to the heat sink and remove the High Limit Thermostat.



12. Clean the mounting surface of any residual heat transfer compound.

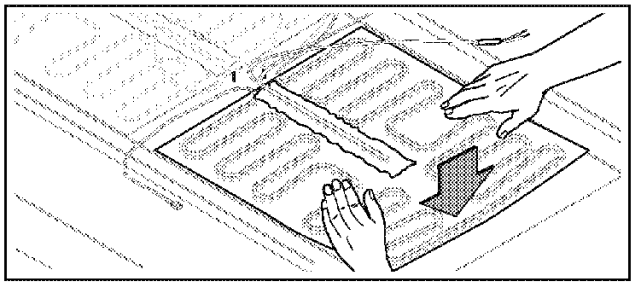


13. Remove the affected Heat Element by peeling off from the heat sink. Ensure any excess tape and/ or adhesive is removed.



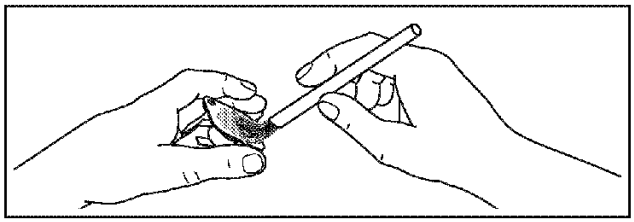
NOTE: The replacement Heat Element will come with a new RTD Sensor attached, so retaining the existing RTD Sensor is unnecessary.

14. Peel the adhesive tape cover off the replacement Heat Element and press in place on the heat sink, ensuring all air bubbles are smoothed out.



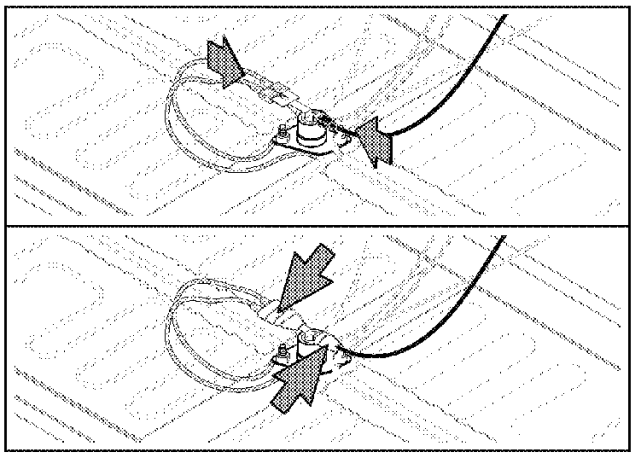
RESTORE:

15. Apply heat transfer compound to the mounting surface of the High Limit Thermostat.



16. Reinstall the High Limit Thermostat and secure with its nuts.

17. Reattach the High Limit Thermostat spade terminals. Be sure to reapply the tape that helps secure the spade terminals to the High Limit Thermostat.



18. Feed the Heat Element and RTD Sensor wires in the direction of and through the control compartment bushings and replace the insulation.

19. Invert the liner deck assembly right-side up. While feeding the RTD Sensor, Emitter, and Heat Element wires through the appropriate control compartment bushings, carefully slide the liner deck assembly into the unit, taking caution not to damage any of the wires.

NOTE: This may require two people, depending on the location of the IRHS unit.

20. Reconnect and tie wrap all previously disconnected wires and connectors in the control compartment.

21. Replace the Control Side Cover and secure with its screws.

22. Replace the Top Panel and secure with its screws.

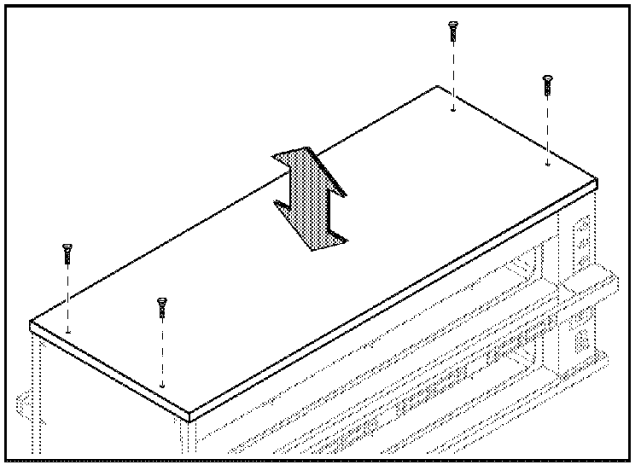
23. Restore power to the unit and test for proper function.

EMITTER (IR BULB) SOCKETS

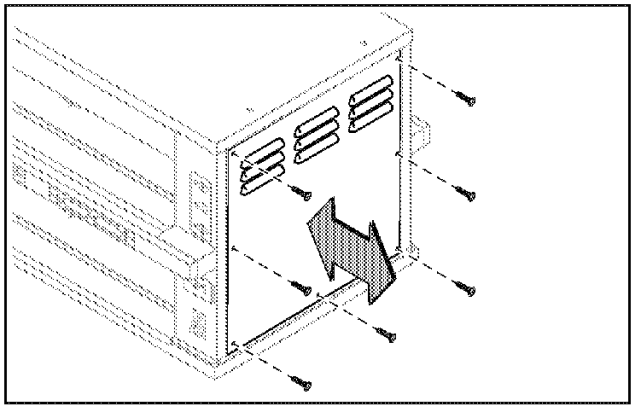
The Emitter Sockets hold and provide power to the Emitters. There are two (2: 1 front, 1 back) at the top of each heating well.

TOOLS REQUIRED: Phillips screwdriver; clean gloves/ cloths/towels; 11/16" open-end wrench; Tie wraps

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove all pans and covers from the liner deck assembly, and levels above where the affected Emitter Socket is to be replaced.
3. Remove and retain the screws securing the Top Panel and remove the cover.

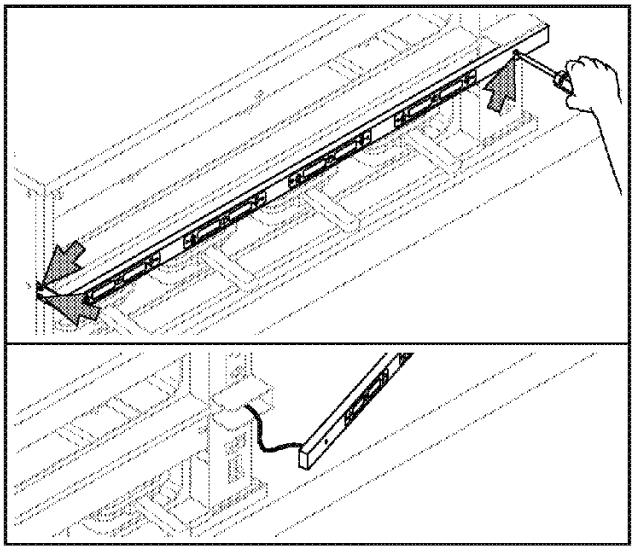


4. Remove and retain the screws securing the Control Side Cover and remove the cover.

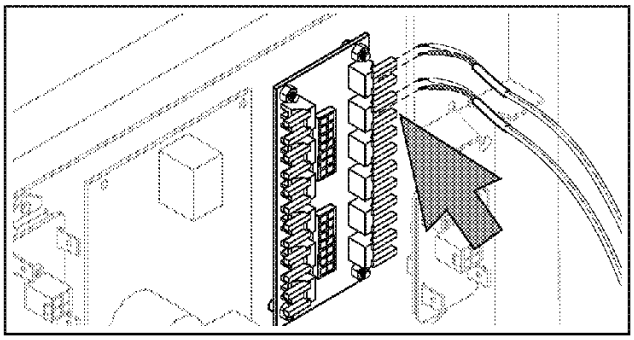


If the Emitter Socket to be replaced is on a lower level (not for top level replacement), starting from the second level, repeat the following five steps for each level above the desired repair level:

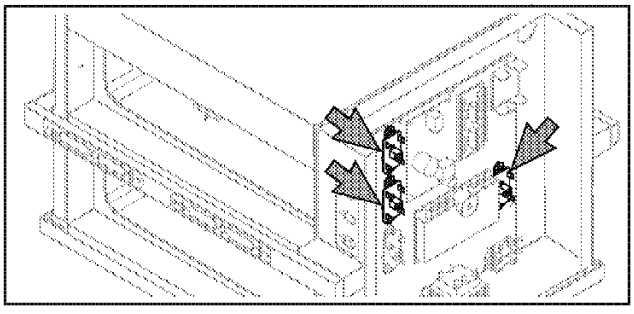
a. Remove and retain the screws securing the appropriate Menu Bar(s) and move to one side. It is not necessary, but recommended, to completely remove the Menu Bar from the unit. Menu Bar instructions are contained in this manual.



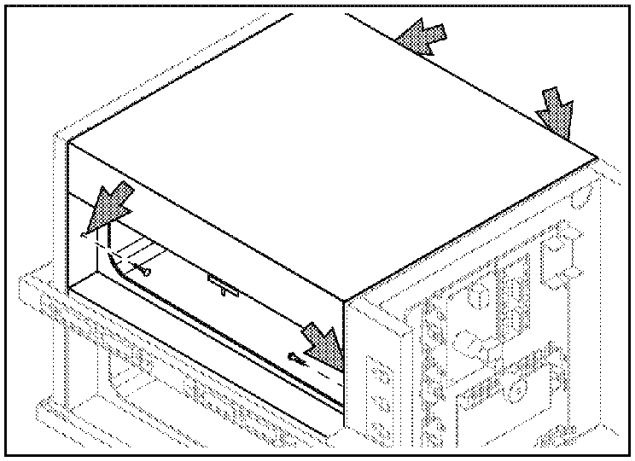
b. Mark, remove the tie wraps, and disconnect the wires for the RTD Sensors from the RTD board in the Control Compartment.



c. Mark, remove the tie wraps, and disconnect the wires for the Emitter (IR Bulb) Sockets and Heat Elements from the Relays in the Control Compartment.

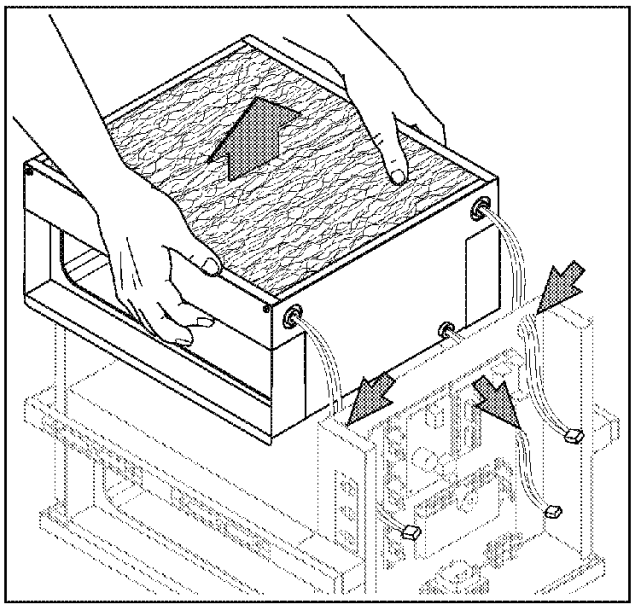


d. Remove the four (4) screws (2 in front, 2 in back) securing the liner deck assembly to the unit.



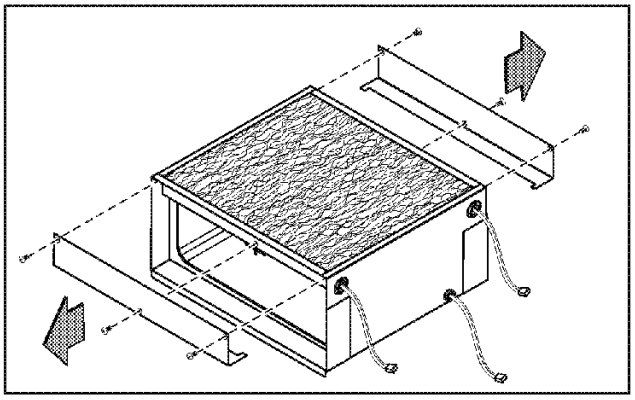
e. Carefully lift the entire liner deck assembly out through the top of the unit. This may require two people, depending on the location of the IRHS unit. Though not required to do so, removing the level's IR glass frame assembly (instructions are contained in the Emitter instructions) will lighten the weight of the liner deck assembly and make it easier for one person to accomplish this task if the IRHS is located in an elevated location or has limited access.

NOTE: It will be necessary to feed the RTD Sensor, Emitter, and Heat Element wires through the control compartment bushings. Take caution not to damage any of the wires.



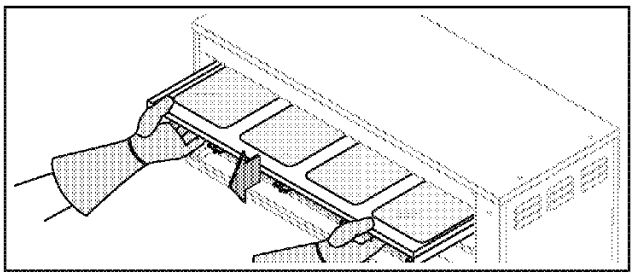
You will now have access to remove the nut securing socket in place.

5. Each liner deck's frame support angles (front and back) support the IR glass frame assembly in place. Remove and retain the screws securing the frame support angle on the row where the affected Socket is to be replaced and remove the frame support angle. Repeat for the other side of the liner deck assembly. Be careful to support and not let the IR glass frame assembly fall and damage the heat sink.



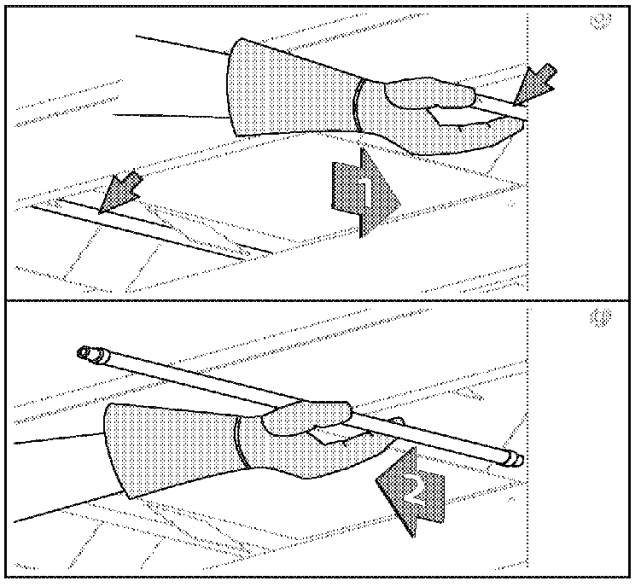
6. Slide the IR glass frame assembly out of the liner deck assembly below the Socket to be replaced.

NOTE: Make sure the glass has cooled off sufficiently to avoid burns to bare skin. Use gloves if necessary.

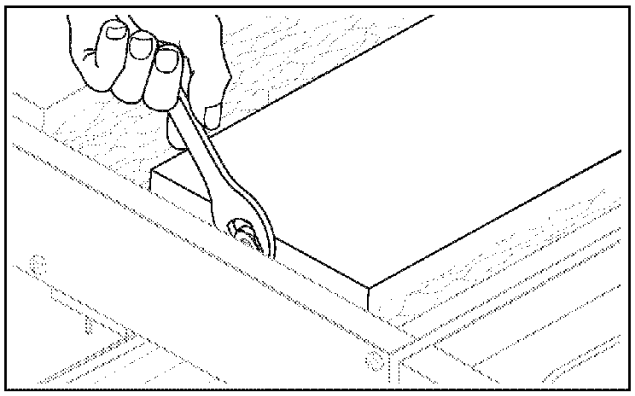


7. The Emitter Sockets are spring-loaded. Push the Emitter (IR Bulb) towards the rear socket until the Emitter is free from the front socket and carefully remove.

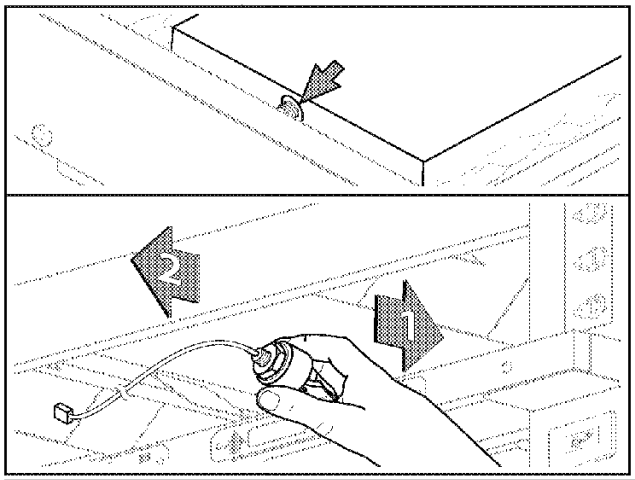
NOTE: DO NOT TOUCH THE EMITTER WITH BARE HANDS! The oil on human skin will shorten the life of the Emitters. If the Emitter is to be reused, use clean gloves, a clean cloth, or a clean paper towel to handle.



8. Mark and disconnect the faulty Emitter Socket's wires from the Relay in the control compartment.
9. Using an 11/16" open-end wrench, remove the nut securing the socket in place.



10. From the bulb side of the affected Socket, pull the Socket and its wires through its mounting hole.



RESTORE:

11. Install the replacement Emitter Socket into its mounting hole and secure with its nut.
12. Using clean gloves, a clean cloth, or a clean paper towel, reinstall or insert the replacement Emitter into the rear socket first and then gently push inward until the front of the bulb can be inserted into the front socket.
13. Slide the IR glass frame assembly into the liner deck assembly.
14. Replace the frame support angles on the front and back and secure them with their screws.
15. If other liner deck assemblies were removed, starting with the lowest, feed their RTD Sensor, Emitter, and Heat Element wires through the appropriate control compartment bushings, and carefully slide the liner deck assemblies into the unit, taking caution not to damage any of the wires. Replace any moved/removed insulation.

NOTE: This may require two people, depending on the location of the IRHS unit.

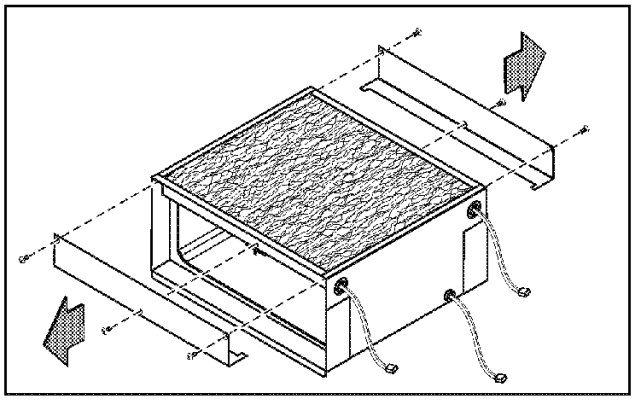
16. If other liner deck assemblies were removed, reinstall their Menu Bar(s).
17. Reconnect and tie wrap all previously disconnected wires and connectors in the control compartment.
18. Replace the Control Side Cover and secure with its screws.
19. Replace the Top Panel and secure with its screws.
20. Restore power to the unit and test for proper function.

EMITTERS (IR BULBS)

The Emitters heat the top of each well. The quantity varies (depending on model) and are held in place by two Emitter Sockets at the top of each heating well.

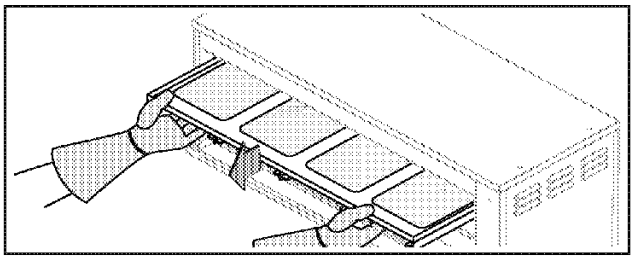
TOOLS REQUIRED: Phillips screwdriver; clean gloves/ cloths/towels; Tie wraps

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove all pans and covers from the liner deck assembly where the affected Emitter is to be replaced.
3. If the Emitter to be replaced is on a lower level (not for top level replacement), remove and retain the screws securing the appropriate Menu Bar(s) and move to one side. It is not necessary, but recommended, to completely remove the Menu Bar from the unit. Menu Bar instructions are contained in this manual.
4. The liner deck assembly's frame support angles (front and back) support the IR glass frame assembly in place. Remove and retain the screws securing the frame support angle on the row where the affected Emitter is to be replaced and remove the frame support angle. Repeat for the other side of the liner deck assembly. Be careful to support and not let the IR glass frame assembly fall and damage the heat sink.



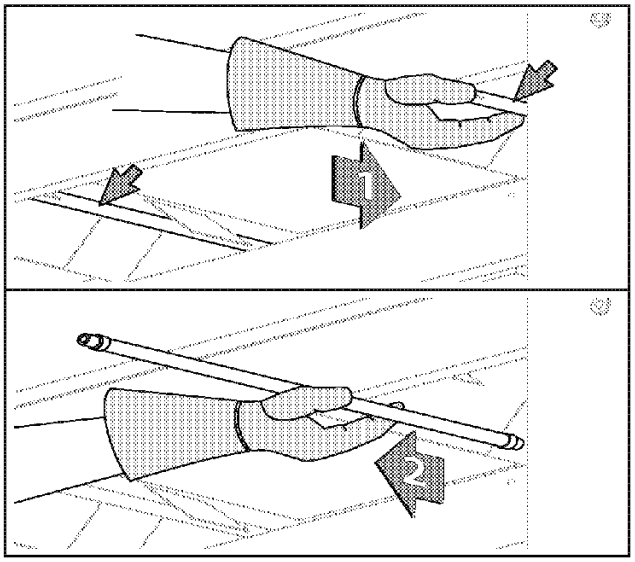
5. Slide the IR glass frame assembly out of the liner deck assembly below the Emitter to be replaced.

NOTE: Make sure the glass has cooled off sufficiently to avoid burns to bare skin. Use gloves if necessary.



6. The Emitter Sockets are spring-loaded. Push the Emitter towards the rear socket until the Emitter is free from the front socket and carefully remove.

NOTE: DO NOT TOUCH THE EMITTER WITH BARE HANDS! The oil on human skin will shorten the life of the Emitters. If the Emitter is to be reused, use clean gloves, a clean cloth, or a clean paper towel to handle.

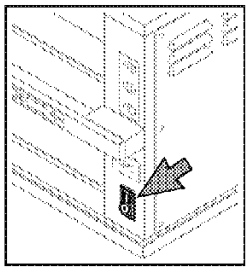


RESTORE:

7. Using clean gloves, a clean cloth, or a clean paper towel, reinstall or insert the replacement Emitter into the rear socket first and then gently push inward until the front of the bulb can be inserted into the front socket.
8. Slide the IR glass frame assembly into the liner deck assembly.
9. Replace the frame support angles on the front and back and secure them with their screws.
10. If removed, reinstall and reconnect the Menu Bar.
11. Restore power to the unit and test for proper function.

CONTROL COMPARTMENT COMPONENTS – STANDALONE & KITCHEN MINDER MODELS (ONLY)

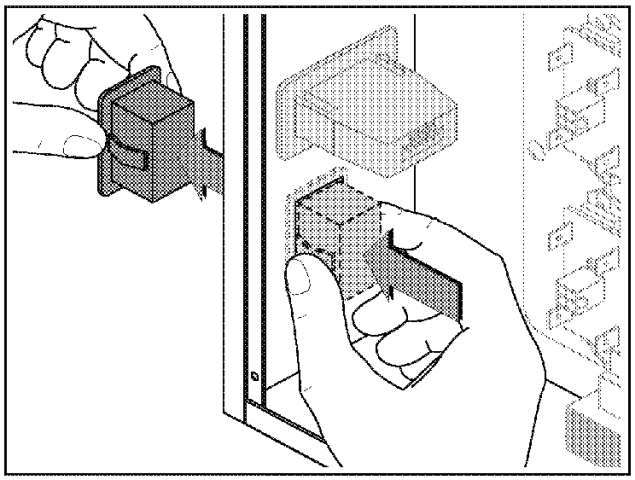
POWER SWITCH



The Power Switch is located on the Control Panel on the face of the unit. It is accessed from inside the control compartment.

TOOLS REQUIRED:
Phillips screwdriver

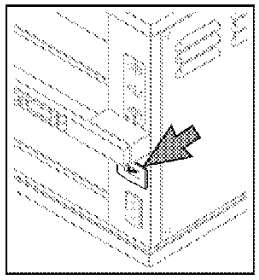
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. From inside the control compartment, mark and disconnect all wires connected to the Power Switch.
4. The Power Switch is secured to the unit with spring clips and a spacer. Depress the spring clips and slide the switch from the unit.



RESTORE:

5. Install the replacement Power Switch by sliding it into its position in the unit until secured with its spring clips.
6. Reattach the Power Switch wires.
7. Replace the Control Side Cover and secure with its screws.
8. Restore power to the unit and test for proper function.

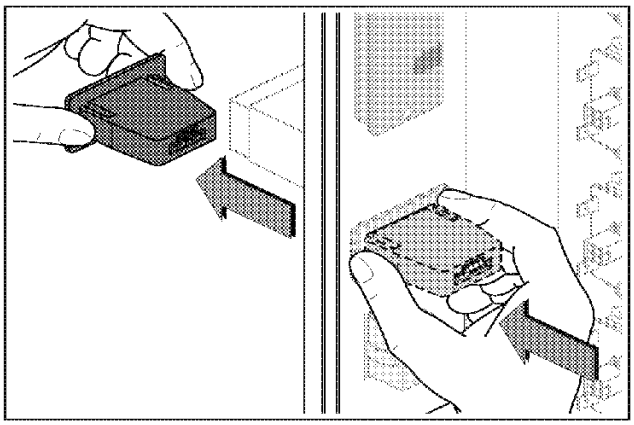
USB ADAPTER



The USB Adapter is used to program the Controller when it is replaced or when the current recipes are corrupted. It is located on the Control Panel. It is accessed from inside the control compartment.

TOOLS REQUIRED: Phillips screwdriver

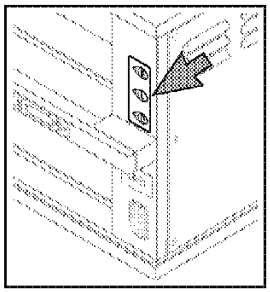
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. From inside the control compartment, unplug the molex connector from the rear of the USB port.
4. The USB Adapter is secured to the unit with prongs and a spacer. Depress the two (2) prongs securing the USB Adapter to the unit, and pull through the face of the unit.



RESTORE:

5. Install the replacement USB Adapter by sliding it into its position in the unit until secured with its prongs.
6. Reattach the USB Adapter molex connector.
7. Replace the Control Side Cover and secure with its screws.
8. Restore power to the unit and test for proper function.

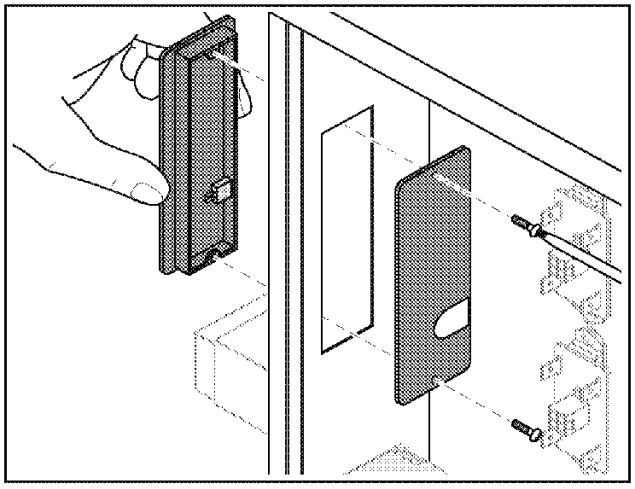
DAYPART SWITCH



The Daypart Switch is used to control the temperatures of various food products, up to three different time periods a day. It is located on the Control Panel and is accessed from inside the control compartment.

TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. From inside the control compartment, unplug the molex connector from the rear of the Daypart Switch.
4. The Daypart Switch is secured to the unit with its rear cover. Remove and retain the three (3) screws securing the Daypart Switch rear cover, then remove the switch and rear cover.

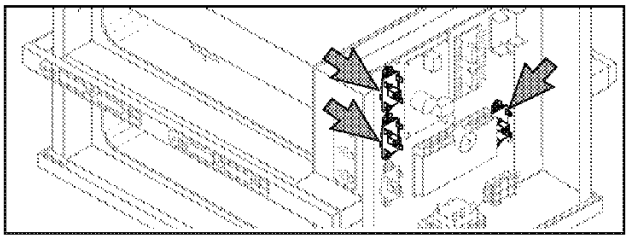


RESTORE:

5. Insert the replacement Daypart Switch into the unit and secure in place with its rear cover and screws.
6. Attach the molex connector to the replacement Daypart Switch.
7. Replace the Control Side Cover and secure with its screws.
8. Restore power to the unit and test for proper function.

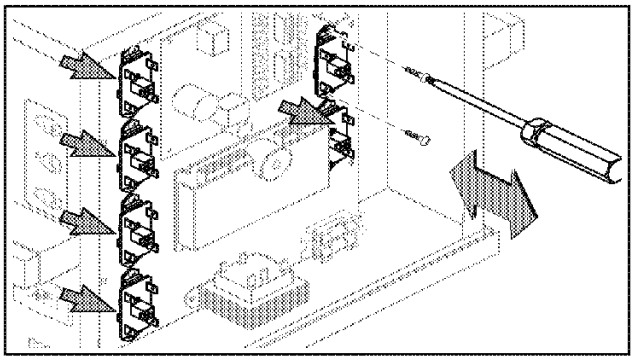
RELAYS (Smart Power Modules)

The Relays control the Emitters (IR Bulbs) and Heat Elements. Each unit has several (depending on model) and are located inside the control compartment.



TOOLS REQUIRED: Phillips screwdriver; Heat transfer compound

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect all wires and molex plug to the affected Relay.
4. Remove and retain the screws securing the affected Relay to the unit.
5. Remove the affected Relay and clean the mounting surface of any residual heat transfer compound.



RESTORE:

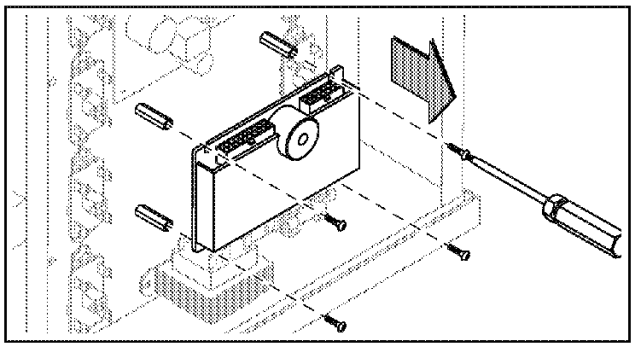
6. Apply heat transfer compound to the mounting surface of the replacement Relay.
7. Install the replacement Relay and secure with its screws.
8. Reconnect the Relay wires and plug.
9. Replace the Control Side Cover and secure with its screws.
10. Restore power to the unit and test for proper function.

CONTROLLER

The Controller is used to control the Relays and RTD Sensors. It is located inside the control compartment.

TOOLS REQUIRED: Phillips screwdriver; #1 precision screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Disconnect the two (2) molex connectors connected to the Controller.
4. Using a small Phillips screwdriver or #1 precision screwdriver, remove and retain the four (4) screws securing the Controller to the unit.
5. Maintaining the spacers on the studs, remove the Controller.



RESTORE:

6. Install the replacement Controller on its studs and secure with its screws.
7. Reconnect the two (2) molex connectors.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

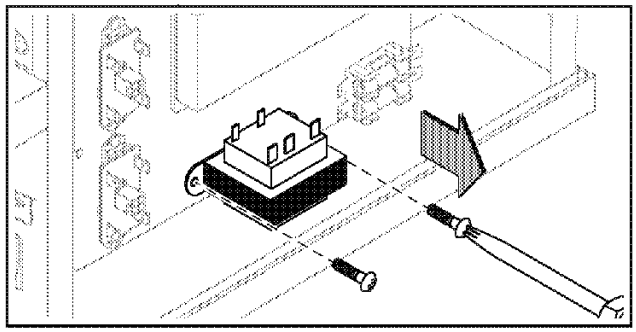
NOTE: To program the new Controller, see programming instructions located the "WEBSITE PROGRAMMING" section of this manual.

TRANSFORMER

The Transformer is used to step-down power to 12 VAC for the Controller. It is located inside the control compartment.

TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the spade connectors connected to the Transformer.
4. Remove and retain the two (2) screws securing the Transformer to the unit and remove the Transformer.



RESTORE:

5. Install the replacement Transformer and secure with its screws.
6. Reconnect the spade connectors.
7. Replace the Control Side Cover and secure with its screws.
8. Restore power to the unit and test for proper function.

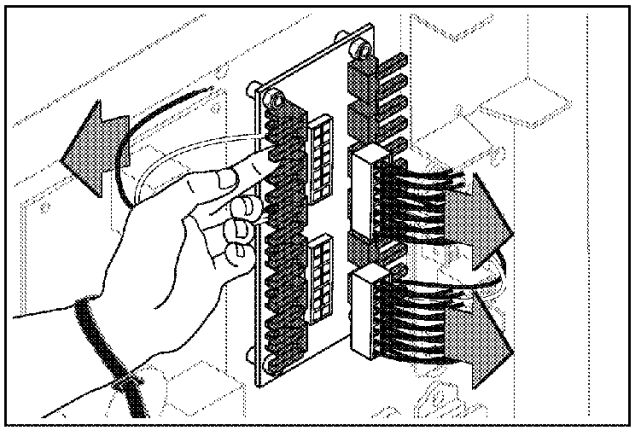
RTD BOARD

The RTD Board controls the RTD Sensors. It is located inside the control compartment.

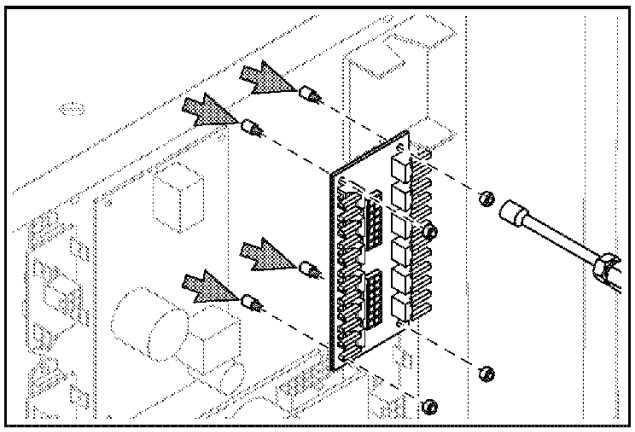
TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect all wires and the molex plug to the RTD Board.

NOTE: The use of an ESD Wrist Strap is strongly recommended. Follow ESD procedures on page 11.



4. Remove and retain the four (4) 1/4" nuts securing the affected RTD Board to the unit.
5. Maintaining the spacers on the studs, remove the RTD Board.



RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement RTD Board and secure with its screws.
7. Reconnect the RTD Board wires and plug.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

FUSES AND FUSE HOLDER

The Fuses and Fuse Holder serve as a circuit interrupter from the main power input. They are located inside the control compartment.

TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.

FOR FUSE REPLACEMENT:

3. Remove the fuses and test with an ohm meter.
4. Replace the fuse(s) with correctly rated fuse(s):

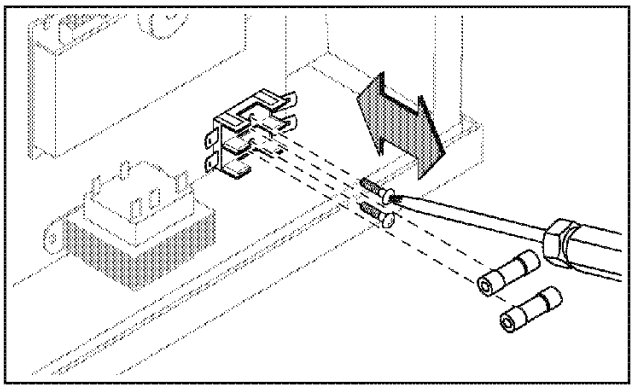
Models 2x2, 2x3, 2x4, 4x2	12 Amp
Model 3x4	16 Amp

NOTE: Replacing fuse(s) with an incorrect rating can cause nuisance blowing if rating is too low, or a loss of circuit protection if too high. Damage to the equipment and risk of fire may result. Replace fuse(s) with correctly rated fuse(s) only.

5. Replace the Control Side Cover and secure with its screws.
6. Restore power to the unit and test for proper function.

FOR FUSE HOLDER REPLACEMENT:

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Disconnect the spade connectors connected to the Fuse Holder.
4. Remove and retain the screws securing the Fuse Holder to the unit and remove the Fuse Holder.



RESTORE:

5. Install the replacement Fuse Holder and secure with its screws.
6. Reconnect the spade connectors.
7. INSTALL CORRECTLY RATED FUSES ONLY! Damage to the equipment and/or risk of fire may result if installing fuses with incorrect ratings.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

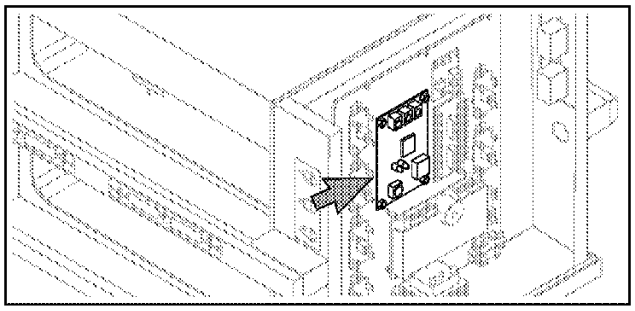
CONTROL COMPARTMENT COMPONENTS – KITCHEN MINDER MODEL (ONLY)

NOTE: The following components are installed, in addition to all previously listed control compartment components, in the Kitchen Minder model of the IRHS.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

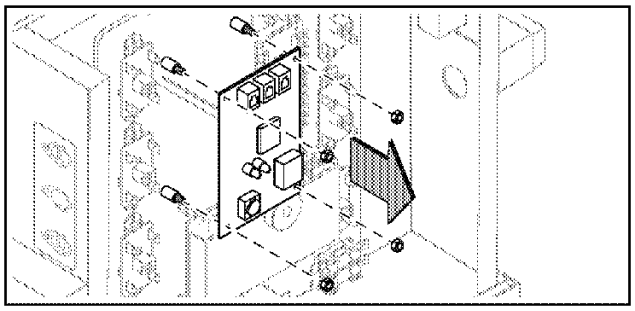
KITCHEN MINDER MASTER BOARD (If installed)

If Kitchen Minder is installed in the unit, the Kitchen Minder Master Board is located behind the Control Side Cover.



TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the lines connected to the Master Board.
4. Remove and retain the four (4) 1/4" nuts securing the affected Master Board to the unit.
5. Maintaining the spacers on the studs, remove the Master Board.



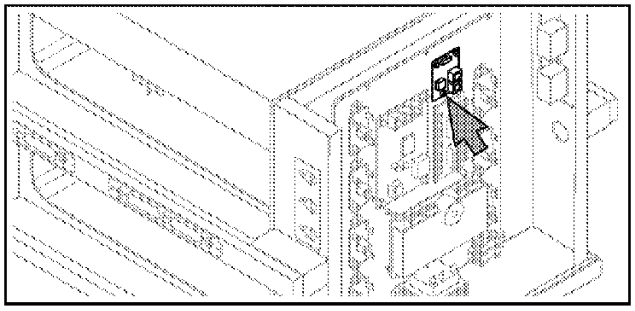
RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement Master Board on its studs and secure with its screws.
7. Reconnect the lines.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

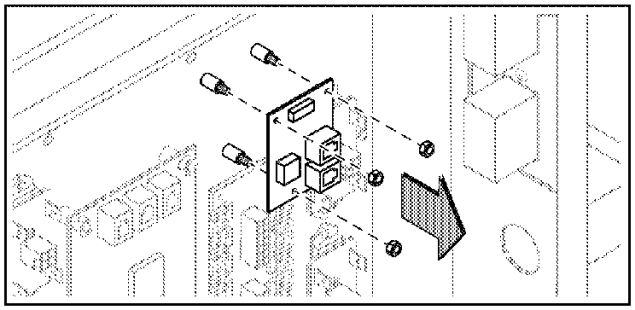
KITCHEN MINDER ADAPTER BOARD (if installed)

If Kitchen Minder is installed in the unit, the Kitchen Minder Adapter Board is located behind the Control Side Cover.



TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the line and molex plug connected to the Adapter Board.
4. Remove and retain the three (3) 1/4" nuts securing the Adapter Board to the unit.
5. Maintaining the spacers on the studs, remove the Adapter Board.

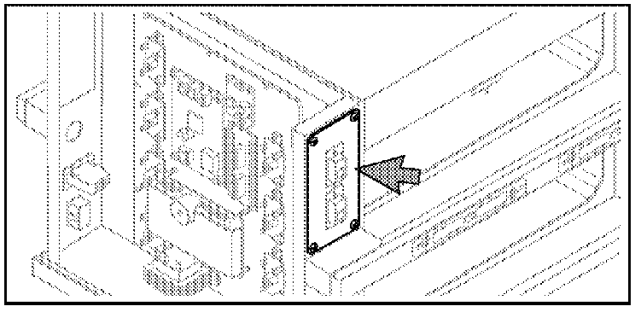


RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement Adapter Board on its studs and secure with its screws.
7. Reconnect the line and molex plug to the Adapter Board.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

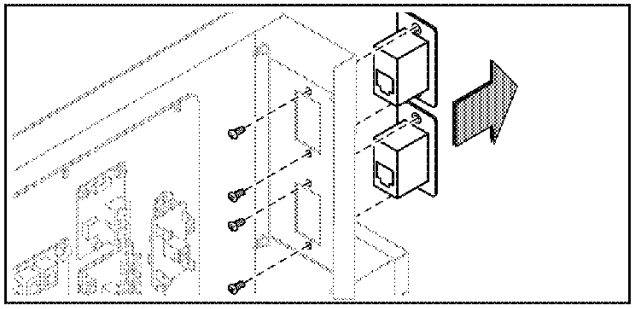
MOUNTING PLATE (If installed)

If Kitchen Minder is installed in the unit, the Mounting Plate is located in the rear control panel. The Mounting Plate holds the Couplers. The type depends on the specific model: Domestic (2-Hole) and CE (2-Hole or 3-Hole).

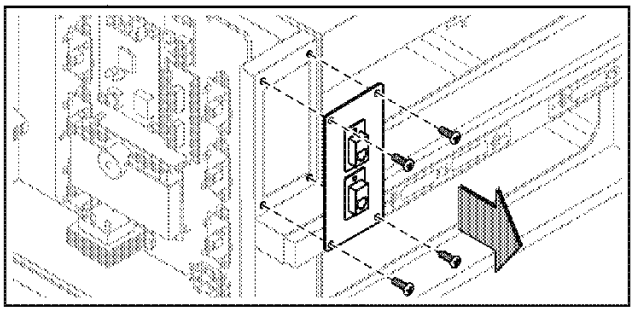


TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect any communication lines attached to both sides of the Couplers contained in the Mounting Plate.
4. **If intending to retain and reuse the existing Couplers,** remove and retain the Couplers and their mounting screws (two per coupler).



5. Remove and retain the four (4) screws securing the Mounting Plate to the rear control panel.

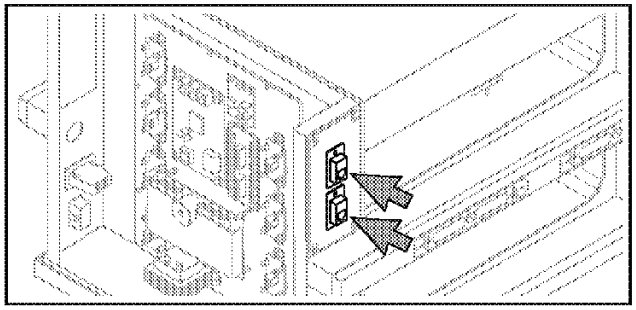


RESTORE:

6. Install the replacement Mounting Plate in the rear control panel and secure with its screws.
7. If necessary, reinstall the Couplers into the Mounting Plate with their screws.
8. Reconnect the communication lines to the Couplers.
9. Replace the Control Side Cover and secure with its screws.
10. Restore power to the unit and test for proper function.

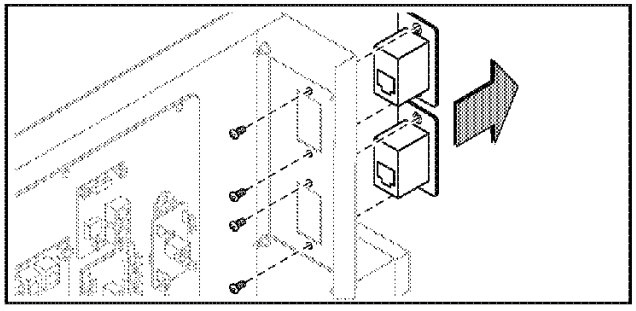
COUPLERS (If installed)

If Kitchen Minder is installed in the unit, the Couplers are located in the Mounting Plate on the rear Control Panel. Couplers are the connection point between the Master and Satellite Kitchen Minder units allowing them to be connected and communicate. The quantity varies depending on the specific model – two (2; one RJ45 and one RJ12) in the Domestic model or three (3; all CAT5/RJ45) in the CE model.



TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the affected Coupler line(s).
4. Remove and retain the two (2) small screws that attach each Coupler to the Mounting Plate.



RESTORE:

5. Insert the replacement Coupler(s) and attach with its screws.
6. Reconnect the Coupler line(s).
7. Replace the Control Side Cover and secure with its screws.
8. Restore power to the unit and test for proper function.

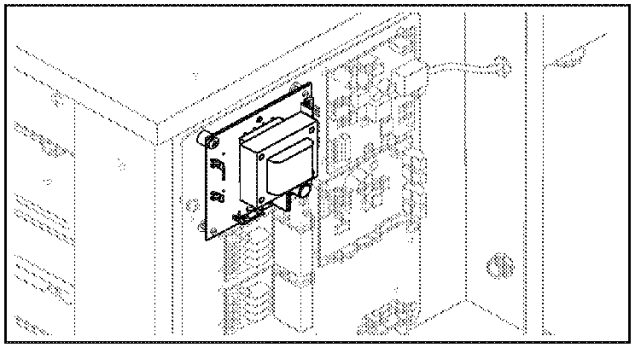
CONTROL COMPARTMENT COMPONENTS – VISOR MODEL (ONLY)

NOTE: All previously listed control compartment components (Standalone and Kitchen Minder models) are NOT INSTALLED in the VISOR models of the IRHS.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

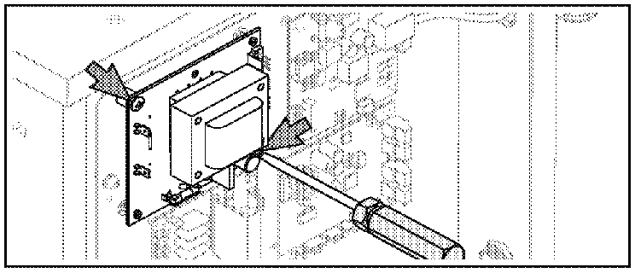
12V POWER CONTROL BOARD

If VISOR is installed in the unit, the 12V Power Control Board is located on the VISOR Control Panel inside the control compartment.

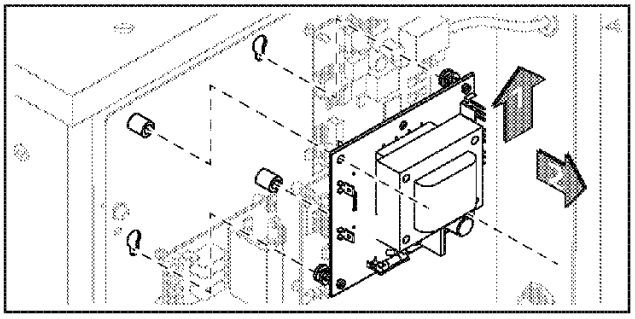


TOOLS REQUIRED: Phillips screwdriver; ESD strap; Needle-nose pliers

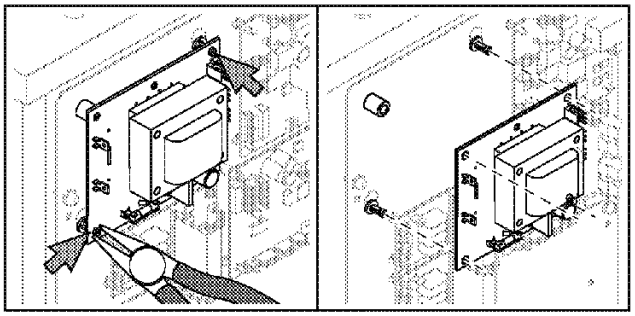
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the spade and molex connectors that are connected to the 12V Power Control Board.
4. Remove and retain the two (2) screws securing the 12V Power Control Board to the unit.



5. Leaving them in place, use the two (2) nylon PC lock-in supports to slide the 12V Power Control Board off of the control panel. If the PC lock-in supports are being reused on the replacement 12V Power Control Board, use needle-nose pliers to squeeze the PC lock-in supports and slide out of the 12V Power Control Board. The nylon screw stubs will remain in place.



OR



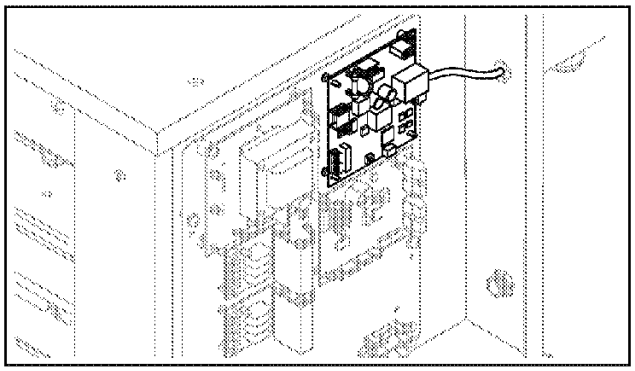
RESTORE:

6. If necessary, install two (2) nylon PC lock-in supports in the 12V Power Control Board.
7. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement 12V Power Control Board, with its PC lock-in supports, by sliding into the keyholes in the control panel and secure in place with its screws.
8. Reconnect the spade and molex connectors.
9. Replace the Control Side Cover and secure with its screws.
10. Restore power to the unit and test for proper function.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

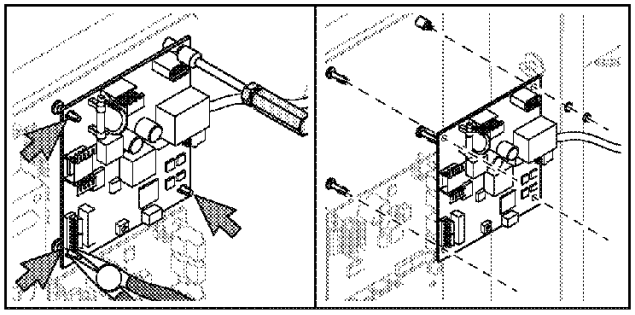
POWER CONTROL BOARD – ACM

If VISOR is installed in the unit, the ACM Power Control Board is located on the VISOR Control Panel inside the control compartment.



TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket; Needle-nose pliers

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the connectors and data line that are connected to the ACM Power Control Board.
4. Remove and retain the 1/4" nut securing the ACM Power Control Board to the unit.
5. Squeeze each of the three (3) nylon PC lock-in supports with needle-nose pliers to release the ACM Power Control Board off of the control panel. The nylon supports and nut stub will remain in place.



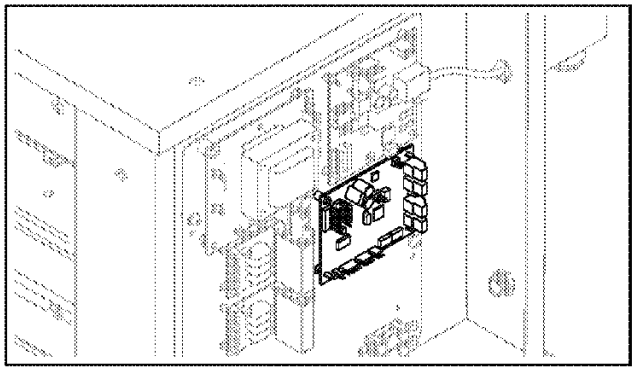
RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement ACM Power Control Board onto its nylon PC lock-in supports and secure in place with its nut.
7. Reconnect the spade and molex connectors.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

POWER CONTROL BOARD – 103M

If VISOR is installed in the unit, the ACM Power Control Board is located on the VISOR Control Panel inside the control compartment. The quantity varies depending on the specific model.

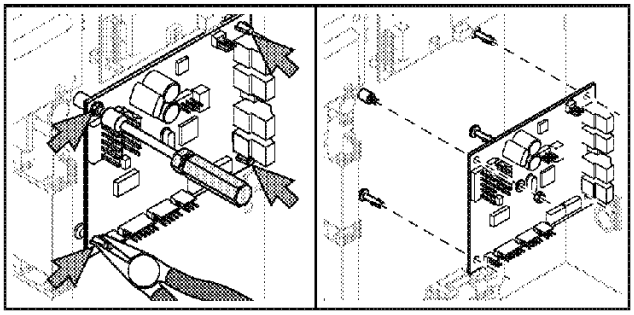


TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket; Needle-nose pliers

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the connectors that are connected to the 103M Power Control Board.

NOTE: The use of an ESD Wrist Strap is strongly recommended. Follow ESD procedures on page 11.

4. Remove and retain the 1/4" nut and its nylon spacer securing the 103M Power Control Board to the unit.
5. Squeeze each of the three (3) nylon PC lock-in supports with needle-nose pliers to release the 103M Power Control Board off of the control panel. The nylon supports and nut stub remain in place.



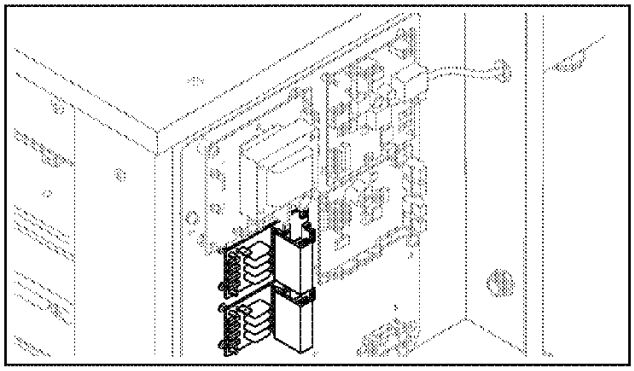
RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement 103M Power Control Board onto its nylon PC lock-in supports and secure in place with its nut and nylon spacer.
7. Reconnect the spade and molex connectors.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

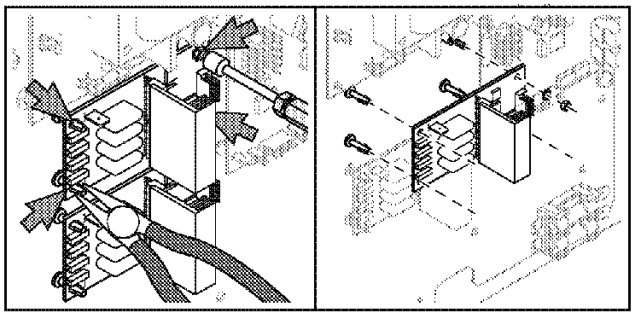
POWER CONTROL BOARD – TRIAC DRIVE

If VISOR is installed in the unit, the Triac Drive Power Control Board is located on the VISOR Control Panel inside the control compartment. The quantity varies depending on the specific model.



TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket; Needle-nose pliers

1. Place the unit's Power Switch in the "OFF" position and follow the proper lockout/tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the connectors that are connected to the Triac Drive Power Control Board.
4. Remove and retain the 1/4" nut and nylon spacer securing the Triac Drive Power Control Board to the unit.
5. Squeeze each of the three (3) nylon PC lock-in supports with needle-nose pliers to release the Triac Drive Power Control Board off of the control panel. The nylon supports and nut stub will remain in place.

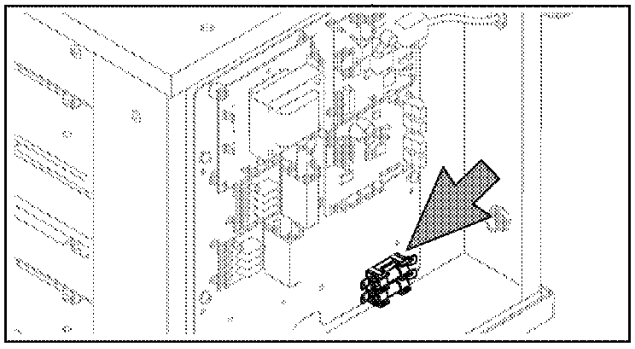


RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement Triac Drive Power Control Board onto its nylon PC lock-in supports and secure in place with its nut.
7. Reconnect the spade and molex connectors.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

FUSE HOLDER AND FUSES

The Fuses and Fuse Holder serve as a circuit interrupter from the main power input. They are located on the VISOR Control Panel, inside the control compartment.

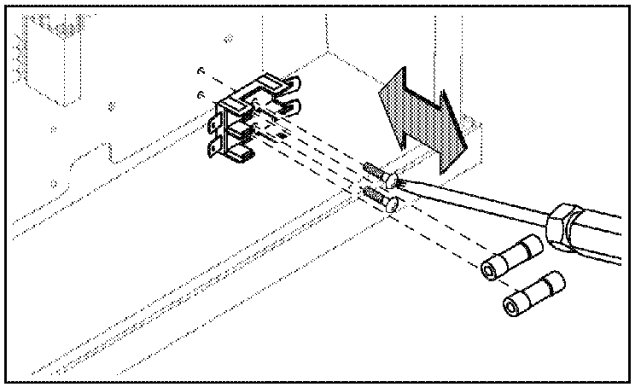


TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.

FOR FUSE HOLDER REPLACEMENT

3. Disconnect the spade connectors connected to the Fuse Holder.
4. Remove and retain the screws securing the Fuse Holder to the unit and remove the Fuse Holder.



RESTORE:

5. Install the replacement Fuse Holder and secure with its screws.
6. Reconnect the spade connectors.
7. INSTALL CORRECTLY RATED FUSES ONLY!

NOTE: Replacing fuse(s) with an incorrect rating can cause nuisance blowing if rating is too low, or a loss of circuit protection if too high. Damage to the equipment and risk of fire may result.

8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

FOR FUSE REPLACEMENT

3. Remove the fuses and test with an ohm meter.

RESTORE:

4. Replace the fuse(s) with correctly rated fuse(s):

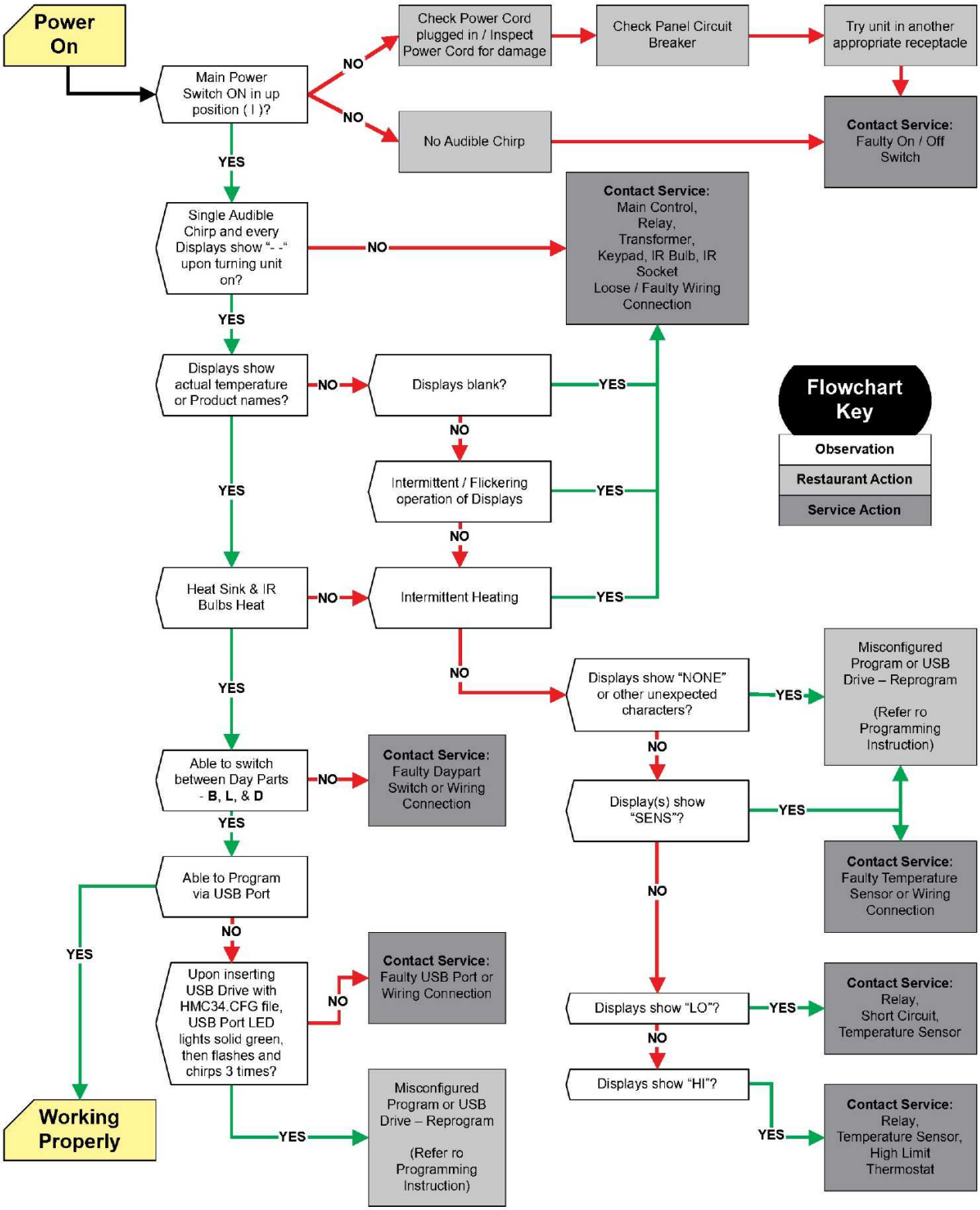
Models 2x2, 2x3, 2x4, 4x2	12 Amp
Model 3x4	16 Amp

NOTE: Replacing fuse(s) with an incorrect rating can cause nuisance blowing if rating is too low, or a loss of circuit protection if too high. Damage to the equipment and risk of fire may result.

5. Replace the Control Side Cover and secure with its screws.
6. Restore power to the unit and test for proper function.

TROUBLESHOOTING & DIAGNOSTICS

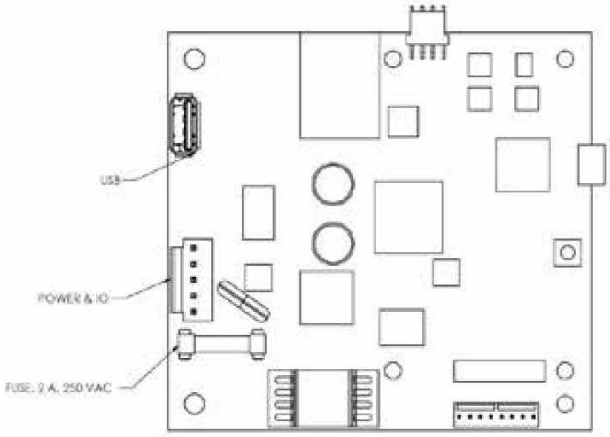
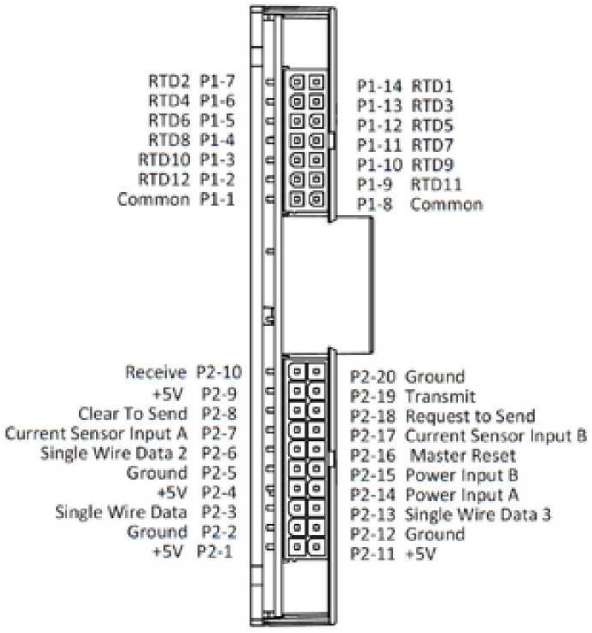
IRHS TROUBLESHOOTING FLOW CHART

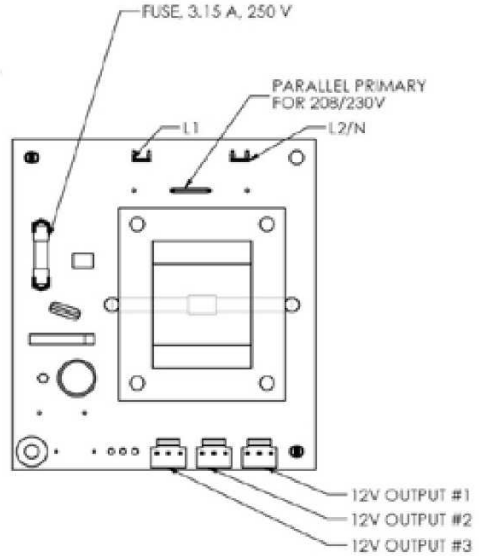
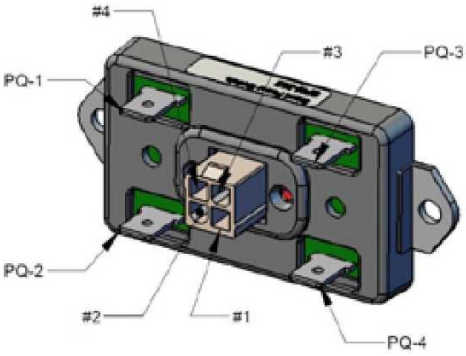


IRHS TROUBLESHOOTING GUIDE

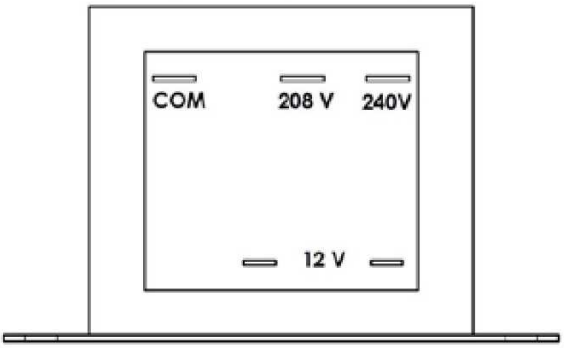
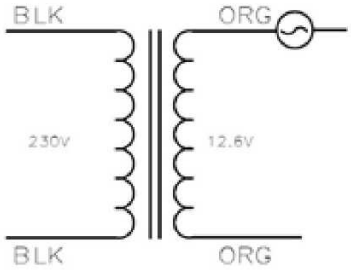
COMPONENT CHECK	STATE		POSSIBLE CONDITIONS	SOLUTION(S)
Unit Powered?			Unplugged	Plug Power Cord into correct receptacle
			Power Cord damaged	Repair/Replace Power Cord
			Circuit Breaker tripped	Reset panel breaker
			Faulty receptacle	Replace receptacle
			Fuse	Replace Fuse
			Wiring/Connectors	Trace and repair wiring
			On/Off Switch	Replace On/Off Switch
Timer (Menu) Bar Displays	Blank?	Both Bars	Transformer	Replace Transformer
			Controller	Replace Controller
			Keypad Display	Replace Keypad Display
			Wiring/Connectors	Trace and repair wiring
		Rear Bar Only	Wiring/Connectors	Trace and repair wiring
			IR Relay	Replace faulty relay
		Individual Keypad	Wiring/Connectors	Trace and repair wiring
			Keypad Display	Replace Keypad Display
	Showing Error Code	"SENS" or "HIGH"	RTD	Replace RTD (Temperature) Sensor
			RTD Board	Replace RTD Board
			Programming	Reprogram the unit
		"LOW"	RTD	Replace RTD (Temperature) Sensor
			RTD Board	Replace RTD Board
			Programming	Reprogram the unit
			High Limit Switch	Allow unit to cool and switch reset
				Replace High Limit Swith
		"BULB"	Wiring/Connectors	Trace and repair wiring
			IR Relay	Replace faulty relay
			Emitter (IR Bulb)	Replace Emitter (IR Bulb)
			Emitter Socket	Replace Emitter (IR Bulb) Socket
HeatSink (Bottom) Heating?			Programming	Reprogram the unit
			Controller	Replace Controller
			Heat Relay	Replace faulty relay
			RTD	Replace RTD (Temperature) Sensor
			RTD Board	Replace RTD Board
			Heat Element	Replace Heat Element
			High Limit Switch	Allow unit to cool and switch reset
				Replace High Limit Swith
			Wiring/Connectors	Trace and repair wiring
Emitters (IR Bulbs)	Not Operating?		Programming	Reprogram the unit
			Controller	Replace Controller
			Emitter (IR Bulb)	Replace Emitter (IR Bulb)
	Operating?		Glass Assembly cleanliness	Clean Glass Assembly
				Check Glass Assembly for damage/defect
			Lid usage	Ensure proper lid for product is used
Programming			USB Drive	Ensure USB drive is blank and download recipes
				Replace USB drive
			Website Programming	Reprogram the unit
			USB Port	Replace USB Port
			Wiring/Connectors	Trace and repair wiring
			Controller	Replace Controller
Daypart Switch			Heat Relay	Replace faulty relay
			Controller	Replace Controller
			Daypart Switch	Replace Daypart Switch
Lids/Pans			Proper fit	Verify proper proper lid and pan installation
			Glass Assembly	Check Glass Assembly for damage/defect
				Ensure Glass Assembly is correctly installed
			Non-Duke parts	Verify OEM information (packaging/labeling)

IRHS COMPONENT TECHNICAL SPECIFICATIONS

PART NO.	DESCRIPTION	SPECIFICATIONS
166112	ACM, Power Control Board (VISOR-only)	
166080	**Controller**; Renau HMC-34	
166017	**Emitter, IRHS**; 208 VAC	• 208 VAC; 340 (170 x 2) W (± 3%)
166018	**Emitter, IRHS**; 240 VAC	• 240 VAC; 340 (170 x 2) W (± 3%)
166004	**Heat Element**; 2-Wide, 208 VAC	• 208 VAC; 300 W
166005	**Heat Element**; 2-Wide, 240 VAC	• 240 VAC; 300 W
166007	**Heat Element**; 3-Wide, 208 VAC	• 208 VAC; 450 W
166008	**Heat Element**; 3-Wide, 240 VAC	• 240 VAC; 450 W
166009	**Heat Element**; 4-Wide, 208 VAC	• 208 VAC; 300 W
166010	**Heat Element**; 4-Wide, 240 VAC	• 240 VAC; 300 W

<table>
<tr><th>PART NO.</th><th>DESCRIPTION</th><th>SPECIFICATIONS</th></tr>
<tr><td>166082</td><td>Keypad Display; Up/Down
(all configurations)</td><td rowspan="2">• Input: 5 VDC
• Pins:
— Pin #1: GND
— Pin #2: 5 VDC
— Pin #3: Data In
— Pin #4: Data Out</td></tr>
<tr><td>166083</td><td>Keypad Display; Up/Up
(only with 3x4 configurations)</td></tr>
<tr><td>166111</td><td>Modular Jack (VISOR-only)</td><td>• 1.5 A; 125 VDC
• Torque: 12 Kgf/cm
• CAT 5
• IP67</td></tr>
<tr><td>120011</td><td>Power Control Board
(VISOR-only)</td><td>• Primary 208/230 VAC; Secondary: 12 VAC

</td></tr>
<tr><td>157830</td><td>Relay, Smart Power Module</td><td>• Max. Load Current: 20 Arms. Heat sinking required.
• Operating Voltage: 24-250 Vrms
• Input : 5V TTL


<table>
<tr><th colspan="2">Connector PIN Data</th></tr>
<tr><td>PQ-1</td><td>LOAD1-1</td></tr>
<tr><td>PQ-2</td><td>LOAD1-2</td></tr>
<tr><td>PQ-3</td><td>LOAD2-1</td></tr>
<tr><td>PQ-4</td><td>LOAD2-2</td></tr>
<tr><td>#1</td><td>+5V DC</td></tr>
<tr><td>#2</td><td>GND</td></tr>
<tr><td>#3</td><td>1-wire network IN</td></tr>
<tr><td>#4</td><td>1-wire network OUT</td></tr>
</table></td></tr>
</table>

PART NO.	DESCRIPTION	SPECIFICATIONS
158279	RTD Sensor	• Temperature Range: -65°F to 260°F
158312	Thermostat, High Limit	• Opens @ 300°F; Closes @ 270°F
155749	**Transformer;** 208/240 VAC	• Primary: 208/240 VAC; Secondary: 12 VAC 
156838	**Transformer;** 230 VAC	• Input: 230 VAC; 50/60 Hz; Output: 12.6 V @ 2.38 A 

OPERATIONS

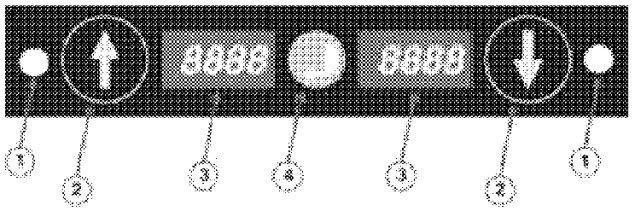
OPERATING PROCEDURES

- Ensure proper pan covers are inserted into the correct location for broiled products.
- Upon turning ON, allow the unit to heat until the menu bars display the pre-programmed product names. This does not occur before reaching proper temperature.

NOTE: If the menu bars display temperature at any time after the preheat period, discontinue use of the affected pan location(s) until the unit can be serviced.

OPERATIONS

Menu Bar Components

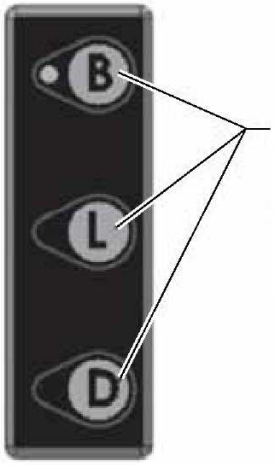


1. **Status LEDs.** Used for indicating status of pan.
   a. GREEN: Menu is Active – product in pan (use first)
   b. FLASHING GREEN: Cook Warning Time reached (cook more product) or keypad in edit (programming) mode
   c. NON-ILLUMINATED: Menu is inactive – no product in pan
2. **Arrow Buttons:**
   a. Used for starting/stopping/resetting the menu.
   b. Used to access Menu Mode.
   c. Indicate which pan the adjacent status LED and pan display are linked to.
3. **LED Displays:**
   a. Displays product name and hold time remaining (alternates between the two when the Menu is active).
   b. Once to temperature, product names can be viewed on the displays. Additional settings such as "LINK", "TIME", and "TEMP" can be viewed two different ways:
      1) Manually accessing Menu Mode through Menu Bars.
      2) Uploading unit settings from the IRHS to a USB Drive and viewing via the Internet. This is accomplished by using the same website used to download recipes.
4. **ENTER Button**. Used to access Menu Mode.

Changing Dayparts

There are two methods for selecting Dayparts:

1. Select the appropriate Daypart Button to switch between breakfast, lunch, and dinner menus. If necessary, the three (3) parts can be programmed for any three separate time periods – not just "breakfast", "lunch", and/or "dinner" menus.



PUSH BUTTONS TO CHANGE DAYPART MENU – CORRESPONDING LED WILL TURN ON (BREAKFAST SHOWN)

2. Via Menu Bar:

a. Enter Menu Mode by pressing and holding the ENTER button "↵" for three (3) seconds.

b. Status LED flashes, "**MENU**" is displayed on left Display, and either "**UP**" or "**DOWN**" is displayed on the right display – indicating which pan location information will be displayed/controlled.



c. After selecting the UP or DOWN Arrow, press the ENTER Button "↵" to accept.

d. Status LED stops flashing and "**MEAL ↵ SET1**" appears on the Display.



e. Press the ENTER button again. Status LED flashes indicating Menu Mode.

f. Use the arrow buttons to scroll to desired Daypart ("**MEAL ↵ SET1**", "**MEAL ↵ SET2**", or "**MEAL ↵ SET3**") and press the ENTER button to accept.



g. Status LED stops flashing, "**UPDATING**" is displayed for a few seconds, and then the desired Daypart ("**MEAL ↵ SETx**") is displayed.





h. Press the UP arrow button one last time to scroll to "**EXIT**" and press the ENTER button "↵" to exit Menu Mode.



Display Link, Hold Time, or Temperature

1. Enter Menu Mode by pressing and holding the ENTER button "↵" for three (3) seconds.
2. Status LED flashes, "**MENU**" is displayed on left Display, and either "**UP**" or "**DOWN**" is displayed on the right display – indicating which pan location information will be displayed/controlled.



3. After selecting the UP or DOWN arrow, press the ENTER Button "↵" to accept.
4. Status LED stops flashing and "**MEAL ↵ SET1**" appears on the Display.



5. Press the ENTER button "↵" again. Status LED flashes indicating edit mode.
6. Press the UP arrow button repeatedly to scroll up or down through "**LINK**", "**TIME**", and "**TEMP**". The DOWN arrow button can be used to cycle the opposite direction.



This indicates product named **BURG** is linked pan locations



This indicates the hold time for BURG



This indicates the Heat Sink Temperature for BURG

7. Press the UP arrow button one last time to scroll to "**EXIT**" and press the ENTER button "↵" to exit Menu Mode.



DIAGNOSTICS

Checking Heat Sink Temperature

- A surface temperature probe can be used to check the temperature of the heat sink surface.
- No pans should be in wells during the pre-heat and temperature check period. Pre-heat the holding unit for 30 minutes before taking any temperature readings.
- Ensure the pan location being measured is not in a hold cycle mode (timing down).
- Locate the surface temperature probe in the geometric center of the desired pan location. Make sure the probe is making good contact with the surface while taking readings.
- The temperature control will exhibit a swing in temperature as the control cycles on and off while regulating to the set point temperature. The average of several readings taken should be +/- 5°F from the set point.
- Compare the measured temperature to the programmed heat sink set point (TEMP) for the specified pan location.

Checking IR Bulb Function

- IR bulbs are either ON or OFF.
- Select an arrow to initiate a hold cycle.
- After heat up is complete (display will show product names), visually confirm the IR bulb comes on.

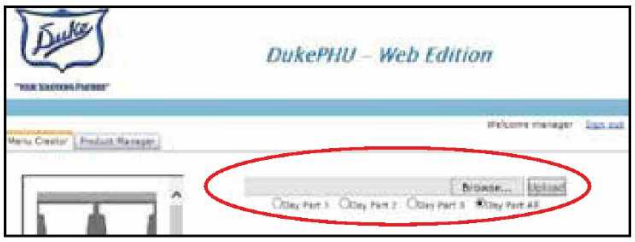
Checking Product Settings (via USB file)

1. Turn the IRHS on and wait for temperature or product names to display.
2. Insert a **blank** USB drive (any size) into the USB port. The USB port LED will light solid green and a single chirp should be heard.
3. The display will go blank and the USB port LED will begin flashing green.
4. A second chirp should be heard, then the USB port LED will return to solid green indicating that the file has successfully uploaded from the IRHS to the USB drive.
5. Remove the USB drive from the port.
6. To view the settings file on the Internet, log onto the same website used to download recipes:

   www.dukemfg.info/bkirhs

   User Name: "**manager**"

   Password: "**password**" (case sensitive)



Error Codes

The RTD Board performs a routine, internal check after turning the unit on to validate the unit is sensing temperature and heating properly. In the event of a problem, an error will display on the Menu Bar:

"BULB" – IR Bulb Circuit Fault

Indicates a fault with a specified IR Bulb circuit. The affected pan location is not available for timing product and a qualified service technician should be contacted to identify the cause of the fault.

"LOW" – Under-Temperature Fault

Indicates a fault with a heating circuit component. The display will show "**LOW**" if the temperature stays 10°F below the set point temperature for 30 minutes. The affected pan location is not available for timing product and a qualified service technician should be contacted to identify the cause of the fault.

"HIGH" – Over-Temperature Fault

Indicates a fault with a heating circuit component. The display will show "**HIGH**" if the temperature stays 10°F above the set point temperature for 30 minutes. The affected pan location is not available for timing product and a qualified service technician should be contacted to identify the cause of the fault.

"SENS" – Sensor Fault

May indicate the unit has been programmed improperly (i.e., loading a 2x4 product configuration file into a 2x2 unit). An attempt to properly reprogram the unit should be made.

May indicate a fault with a heat sink temperature sensor. The affected pan location is not available for timing product and a qualified service technician should be contacted to identify the cause of the fault.

Temperature Check Procedure

1. **No pans should be in wells during the pre-heat and temperature check.** Pre-heat the warmer for 30 minutes before taking any temperature readings. Do not take readings unless the cavity has been empty for 30 minutes. This will allow the temperature to stabilize and will prevent false readings.
2. A digital temperature meter that has been calibrated must be used to get an accurate temperature reading. Use a thermocouple surface temperature probe to measure temperatures.
3. The heating well should be cleaned and empty before the temperature is checked. Avoid any air drafts that might flow through the cavity.
4. Locate the surface temperature probe on the bottom of the first cavity as shown for the cabinet size.
5. All temperature controls exhibit a swing in temperature as the control cycles on and off while regulating to the set point. The correct calibration temperature is the average of several readings taken over a period of 20 minutes after the warmer has been pre-heated. The average temperature should be ± 5°F from the set point.

CLEANING & ROUTINE MAINTENANCE

CLEANING

IF DAILY CLEANING IS PERFORMED ROUTINELY, DEEPER, MORE AGGRESSIVE, CLEANING METHODS CAN BE AVOIDED. OVER LONGER PERIODS OF TIME, FRIED FOOD PRODUCTS CAN ACCUMULATE AND BAKE ON SURFACES OF THE COMPARTMENTS.

Cleaning solutions need to be alkaline based or non-chloride cleaners. Any cleaner containing chlorides will damage the protective film of the stainless steel. Chlorides are also commonly found in hard water, salts and household and industrial cleaners. If cleaners containing chlorides are used, be sure to rinse repeatedly and dry thoroughly upon completion.

WARNING: NEVER USE AN ACID BASED CLEANING SOLUTION!

MANY FOOD PRODUCTS HAVE AN ACIDIC CONTENT WHICH CAN DETERIORATE THE FINISH. BE SURE TO CLEAN ALL FOOD PRODUCTS FROM ANY STAINLESS STEEL SURFACE. COMMON ITEMS INCLUDE, TOMATOES, PEPPERS AND OTHER VEGETABLES.

Routine cleaning of stainless steel can be done with soap and water. Extreme stains or grease should be cleaned with a non-abrasive cleaner and plastic scrub pad. It is always good to rub with the grain of the steel.

Early signs of stainless steel breakdown can consist of small pits and cracks. If this has begun, clean thoroughly and start to apply stainless steel cleaners in attempt to restore and preserve the finish of the steel's protective layer.

RECOMMENDED SUPPLIES

- Cleaning Towels
- Non-Scratch Scrub Pad
- SYR Cleaning Brush Tool
- Kay Super Concentrate Degreaser
- Kay-5® Sanitizer/Cleaner, or compatible sanitizer

DAILY INSPECTION CHECKLIST

Inspect glass daily for chips, cracks, or breaking. Discard all food and notify manager if any chips, cracks, or broken glass are found. Do not use equipment. All glass must be in good condition before using equipment to hold food.

- Make sure the unit is free of any grease or visible food soils.
- Make sure the exterior of the unit is free of smudges or soil.
- Make sure the unit holding pans are free of damage and any food soil residue.

DAILY CLEANING PROCEDURES

Never use a high-pressure water wash for this cleaning procedure as water can damage electrical components.

1. Turn unit off, unplug, and allow to cool for at least 10 minutes.
2. Remove all holding pans and covers. Wash, rinse, and sanitize at the 3-compartment sink.
3. Allow to air dry.
4. Fully clean all the heat sink surfaces. Spray the cleaning brush tool with degreaser and use as shown – gently sliding in and out of each compartment.

   NOTE: NEVER USE STEEL PADS, WIRE BRUSHES, OR SCRAPERS!



5. Fully clean upper glass surfaces by hand. Spray a cleaning towel, or non-scratch scrub pad when necessary, with soapy solution degreaser.

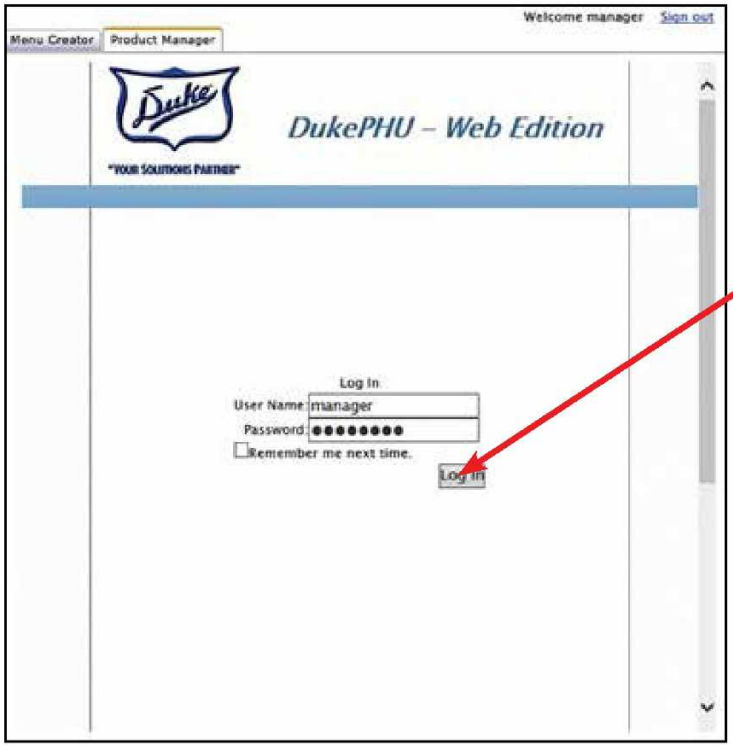
   NOTE: Never spray cleaning solution directly onto the cabinet.

6. Use sanitizer-soaked towels to wipe out all interior compartments on the unit. Wipe the top compartments first, then the remaining levels from top to bottom.

   IMPORTANT: Use clean, sanitizer-soaked towels (towels must be wrung out so that they are damp and not dripping, dripping towels may harm the unit)

WEBSITE PROGRAMMING

1.



Log on.

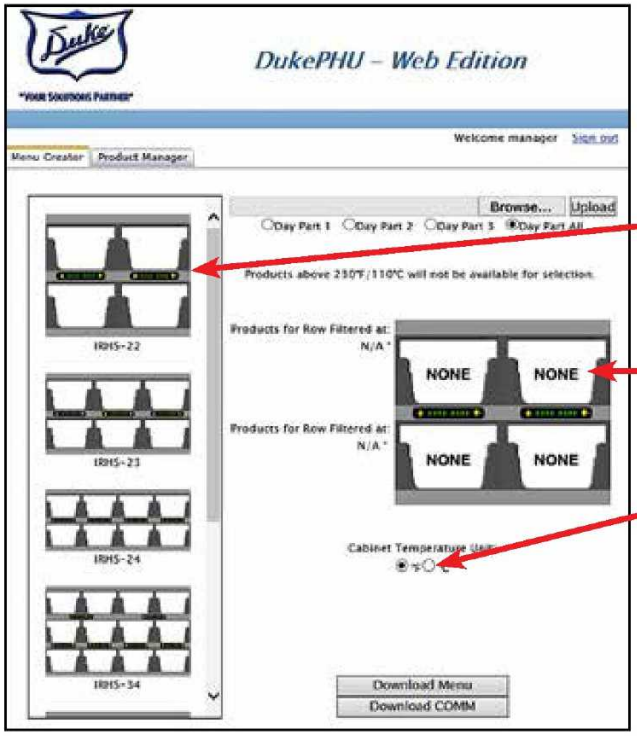
www.dukemfg.info/bkirhs

User Name: **manager**

Password: **password**

(case sensitive)

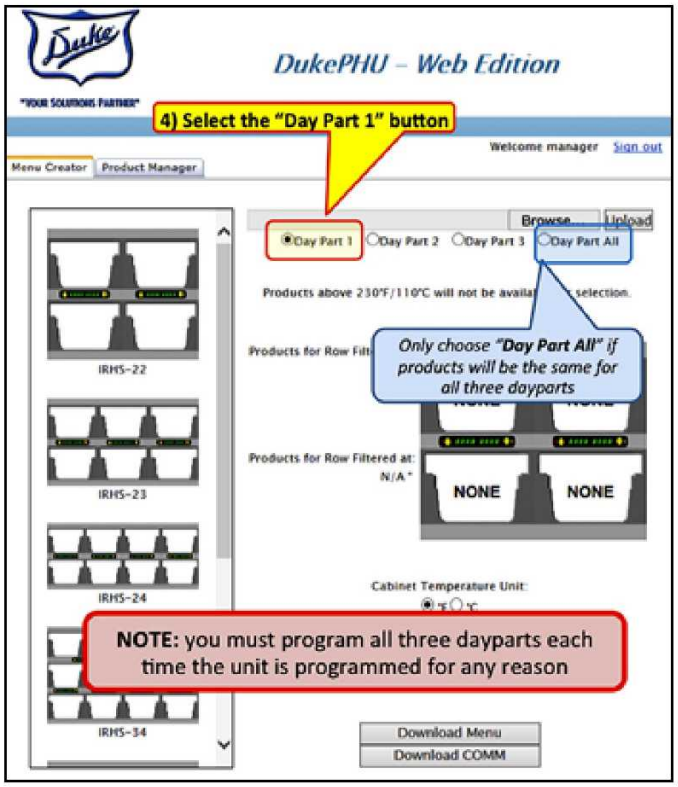
2.



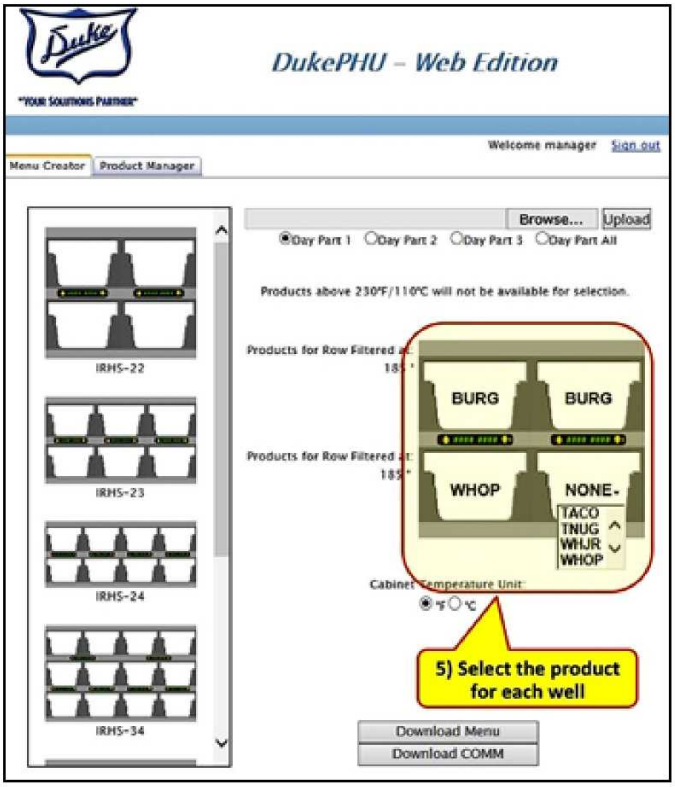
NOTE: When you first log onto this page, you must:

1) Select the desired equipment configuration on the left, before it will…
2) …show up on the right side in order to be programmed.
3) If necessary, change the Cabinet Temperature Unit to "°C" (Celsius)

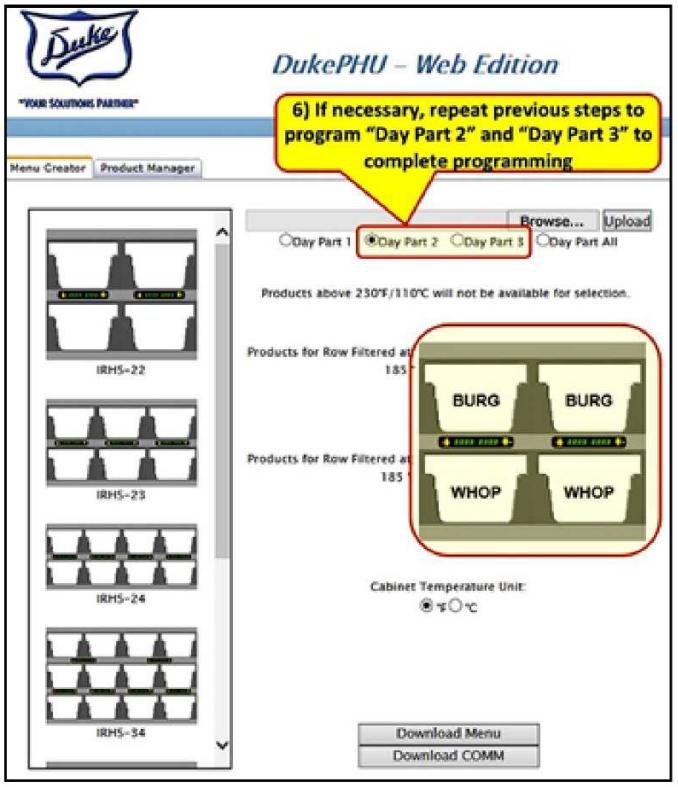
3.


DukePHU – Web Edition
4) Select the "Day Part 1" button
Only choose "Day Part All" if products will be the same for all three dayparts
NOTE: you must program all three dayparts each time the unit is programmed for any reason
Download Menu
Download COMM

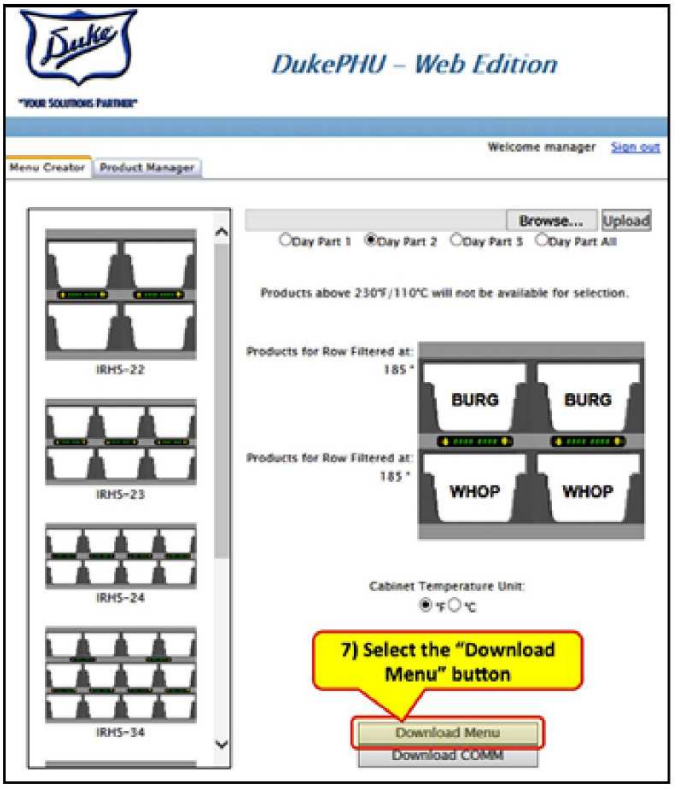
4.


DukePHU – Web Edition
BURG
BURG
WHOP
NONE
TACO
TNUG
WHJR
WHOP
5) Select the product for each well
Download Menu
Download COMM

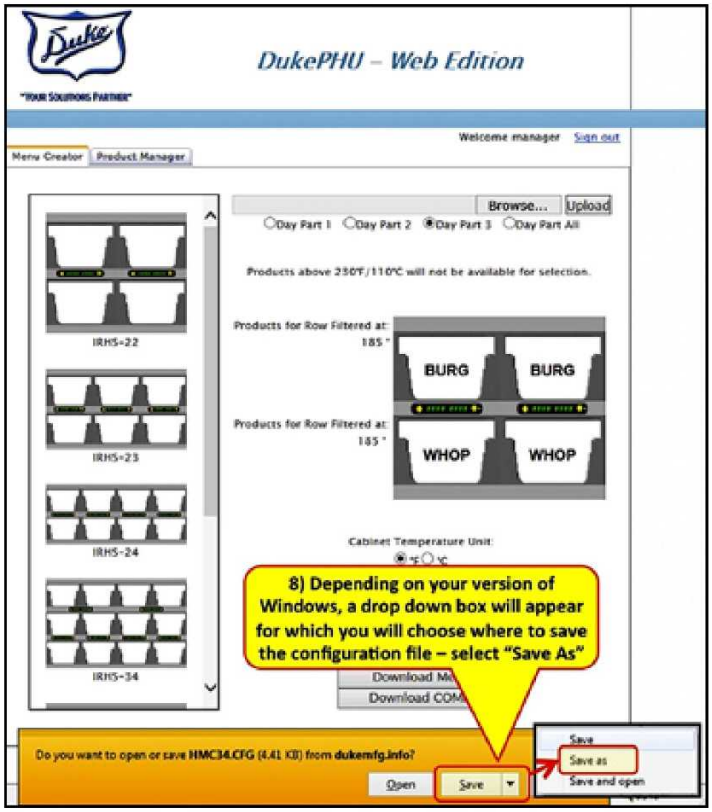
5.


DukePHU – Web Edition
6) If necessary, repeat previous steps to program "Day Part 2" and "Day Part 3" to complete programming
BURG
BURG
WHOP
WHOP
Download Menu
Download COMM

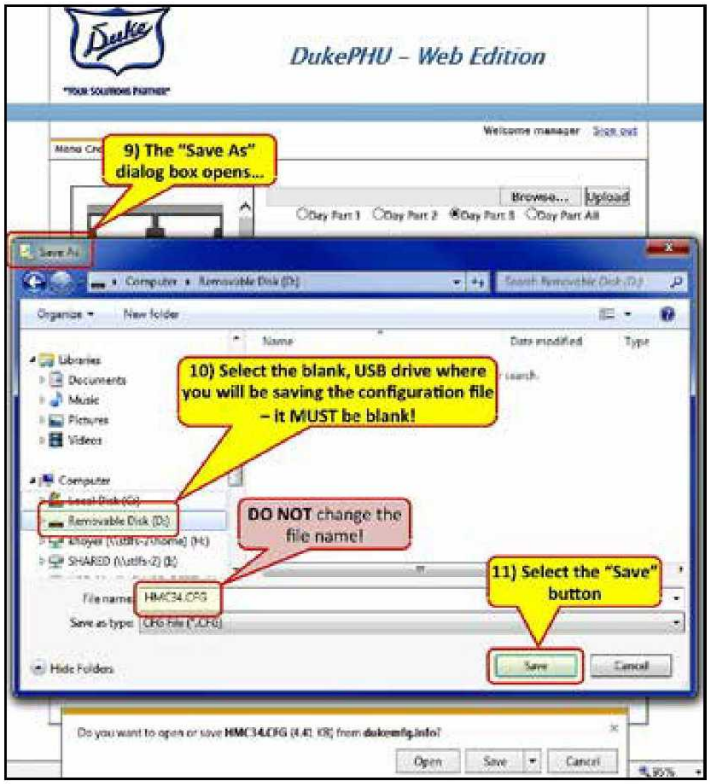
6.


DukePHU – Web Edition
BURG
BURG
WHOP
WHOP
7) Select the "Download Menu" button
Download Menu
Download COMM

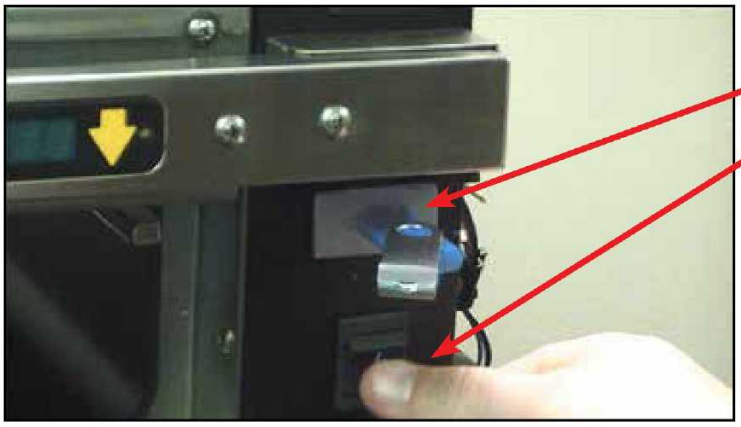
7.


DukePHU – Web Edition
Welcome manager Sign out
Menu Creator
Product Manager
Browse...
Upload
Day Part 1
Day Part 2
Day Part 3
Day Part All
Products above 230°F/110°C will not be available for selection.
Products for Row Filtered at: 185°
BURG
BURG
Products for Row Filtered at: 185°
WHOP
WHOP
IRHS-22
IRHS-23
IRHS-24
IRHS-34
Cabinet Temperature Unit:
8) Depending on your version of Windows, a drop down box will appear for which you will choose where to save the configuration file – select "Save As"
Download M
Download COM
Do you want to open or save HMC34.CFG (4.41 KB) from dukemfg.info?
Open
Save
Save
Save as
Save and open

8.

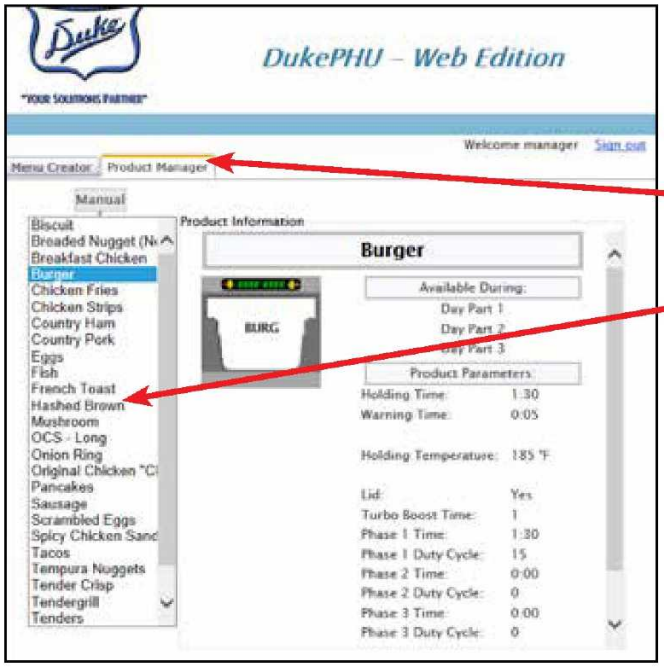

DukePHU – Web Edition
Welcome manager Sign out
9) The "Save As" dialog box opens...
Browse...
Upload
Day Part 1
Day Part 2
Day Part 3
Day Part All
Save As
Computer
Removable Disk (D:)
Organize
New folder
Name
Date modified
Type
Libraries
Documents
Music
Pictures
Videos
Computer
Removable Disk (D:)
10) Select the blank, USB drive where you will be saving the configuration file – it MUST be blank!
DO NOT change the file name!
File name: HMC34.CFG
Save as type:
11) Select the "Save" button
Hide Folders
Save
Cancel
Do you want to open or save HMC34.CFG (4.41 KB) from dukemfg.info?
Open
Save
Cancel

Unit Programming Instructions



1) Power off the unit.
2) Insert the flash drive into the USB slot.
3) Power on the unit.
4) The program will automatically be installed. *The unit will chirp a few times, the Emitters will cycle, and the display shows different displays while programming is in progress*
5) Programming is complete when Menu Bar indicates the updated products and/or temperatures in all displays.

Product Manager Tab

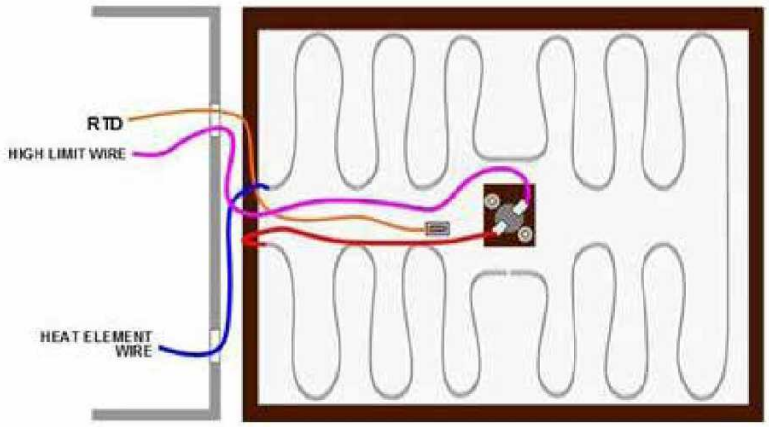


Select this tab...

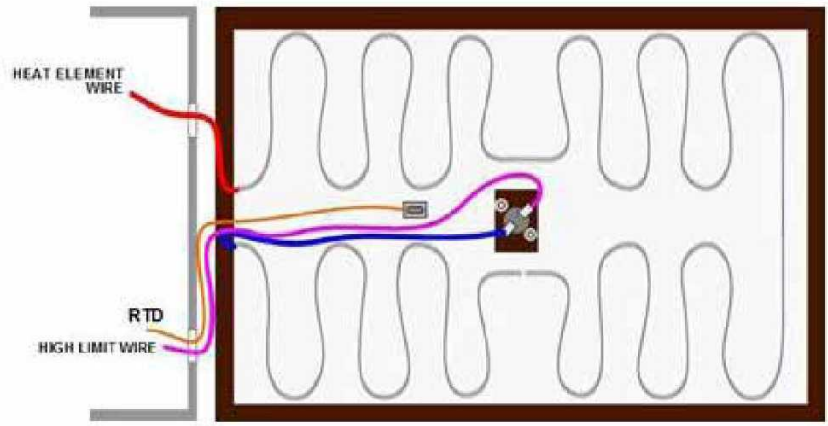
...and then a product on the left side of the screen to view hold settings for various products.

IRHS DECK WIRING

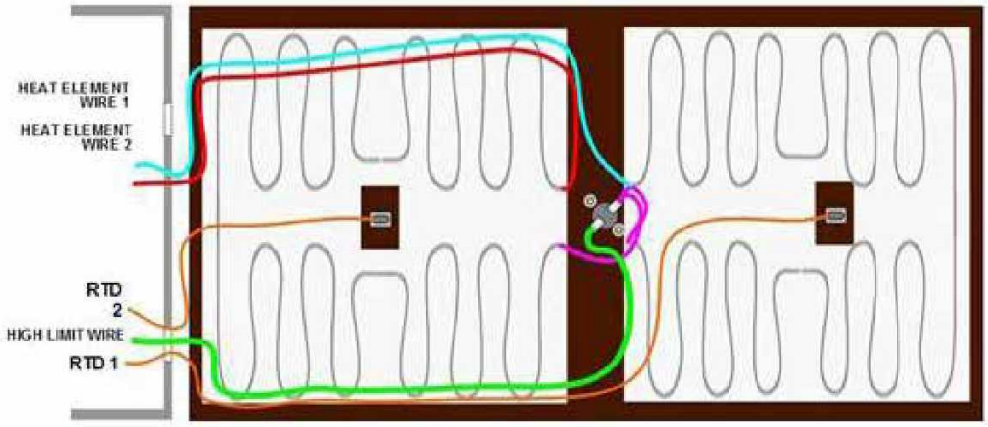
2 WIDE, LEFT SIDE CONTROL



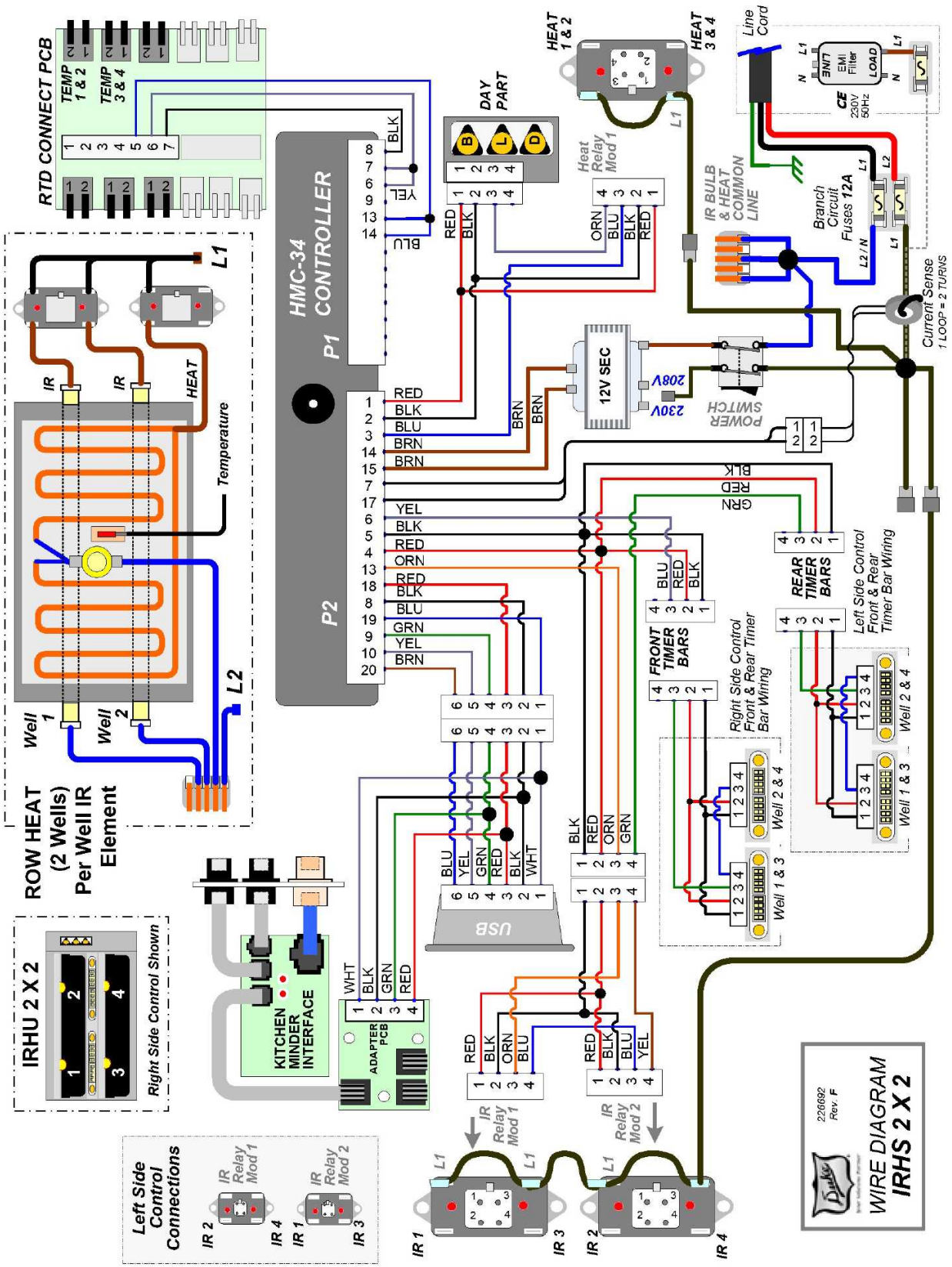
3 WIDE, RIGHT SIDE CONTROL



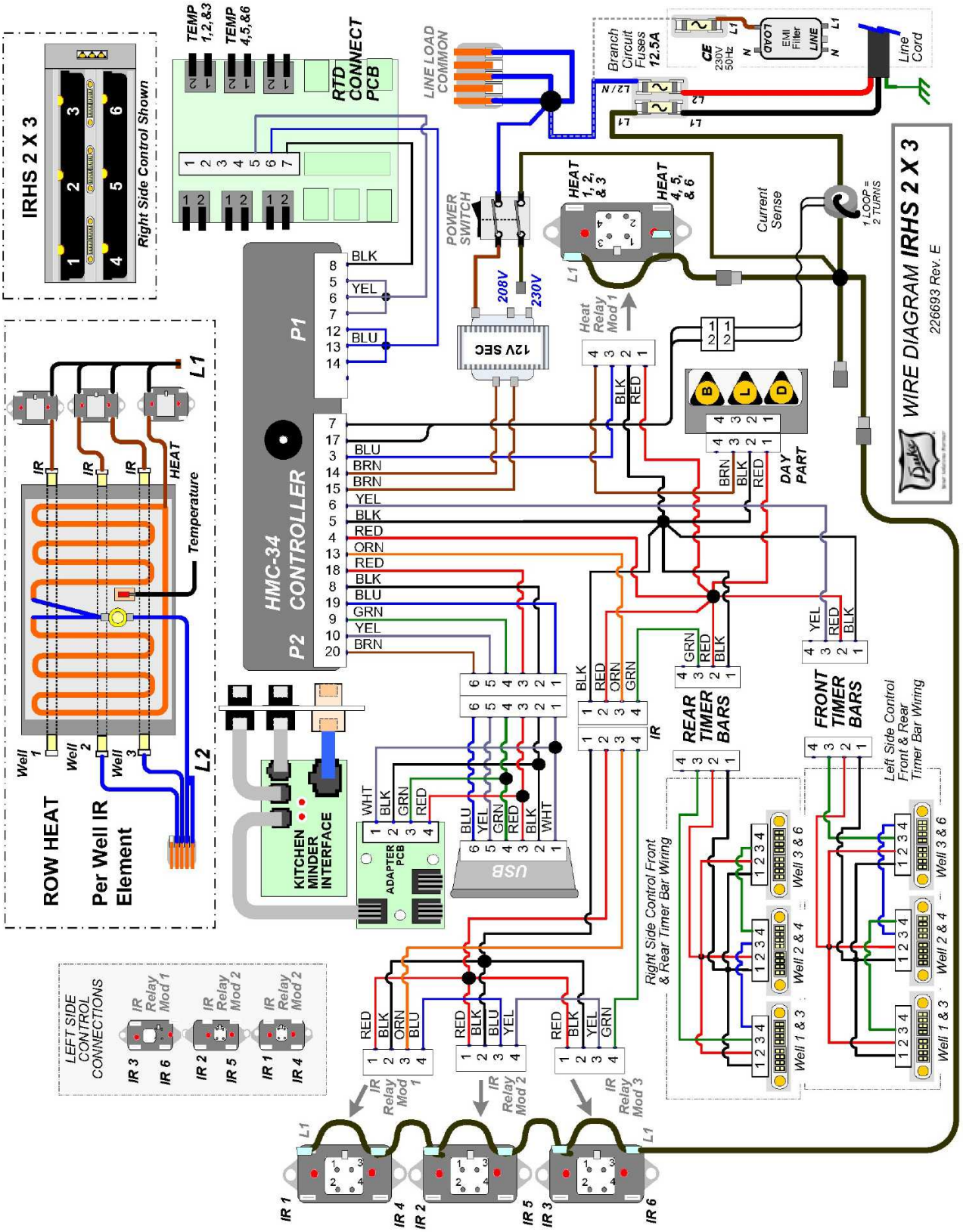
4 WIDE, RIGHT SIDE CONTROL



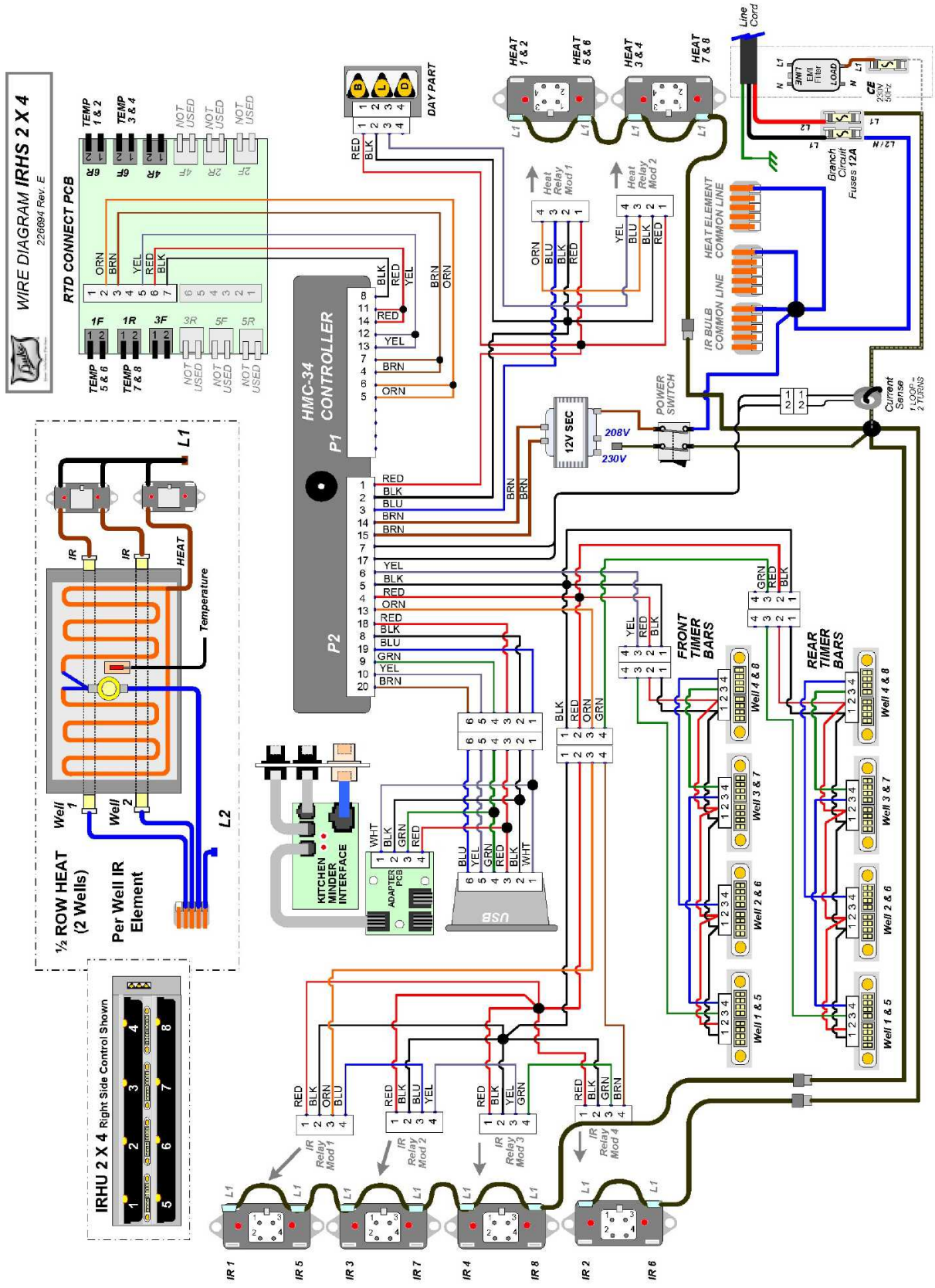
IRHS22 WIRING DIAGRAM



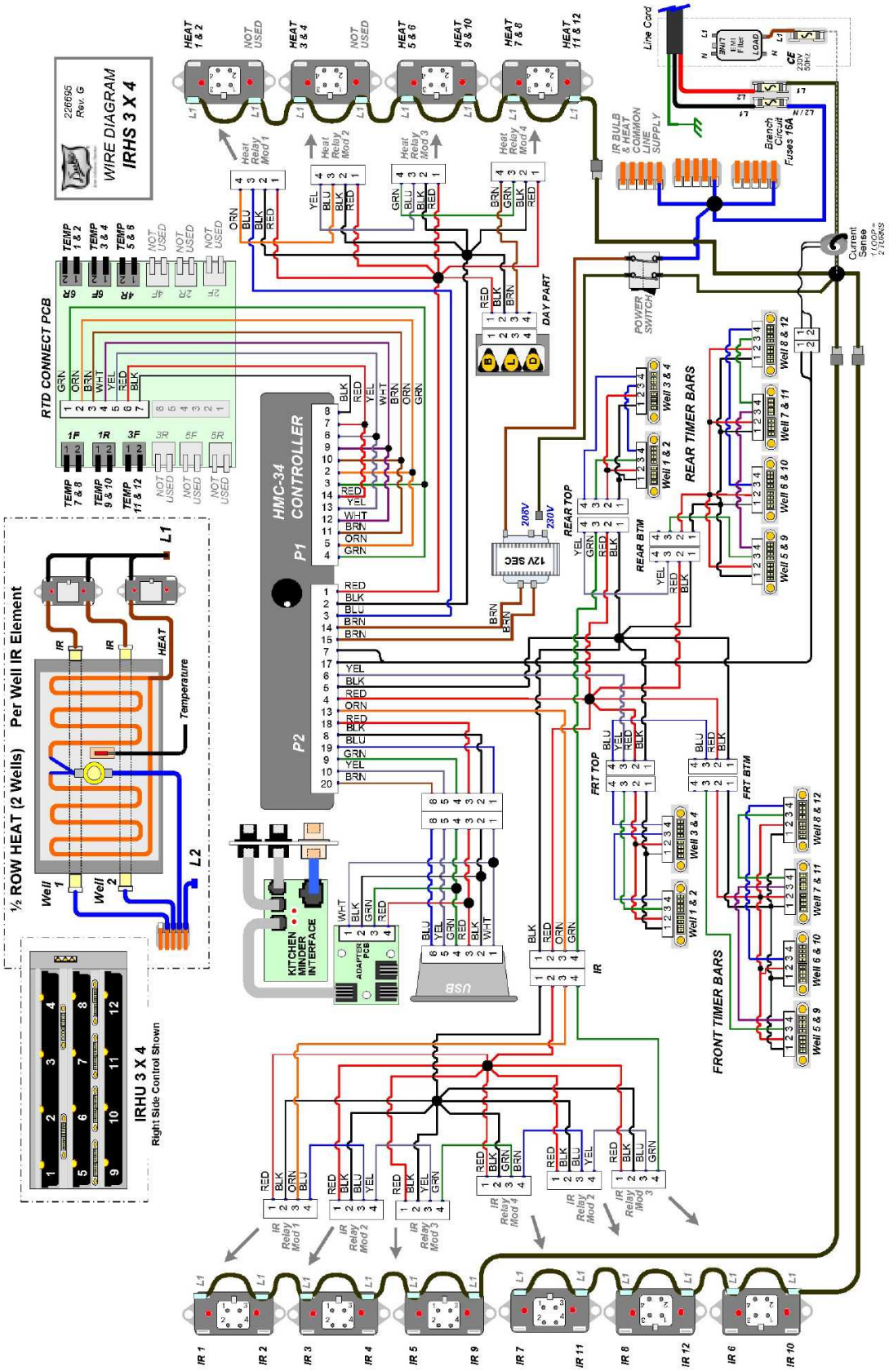
IRHS23 WIRING DIAGRAM



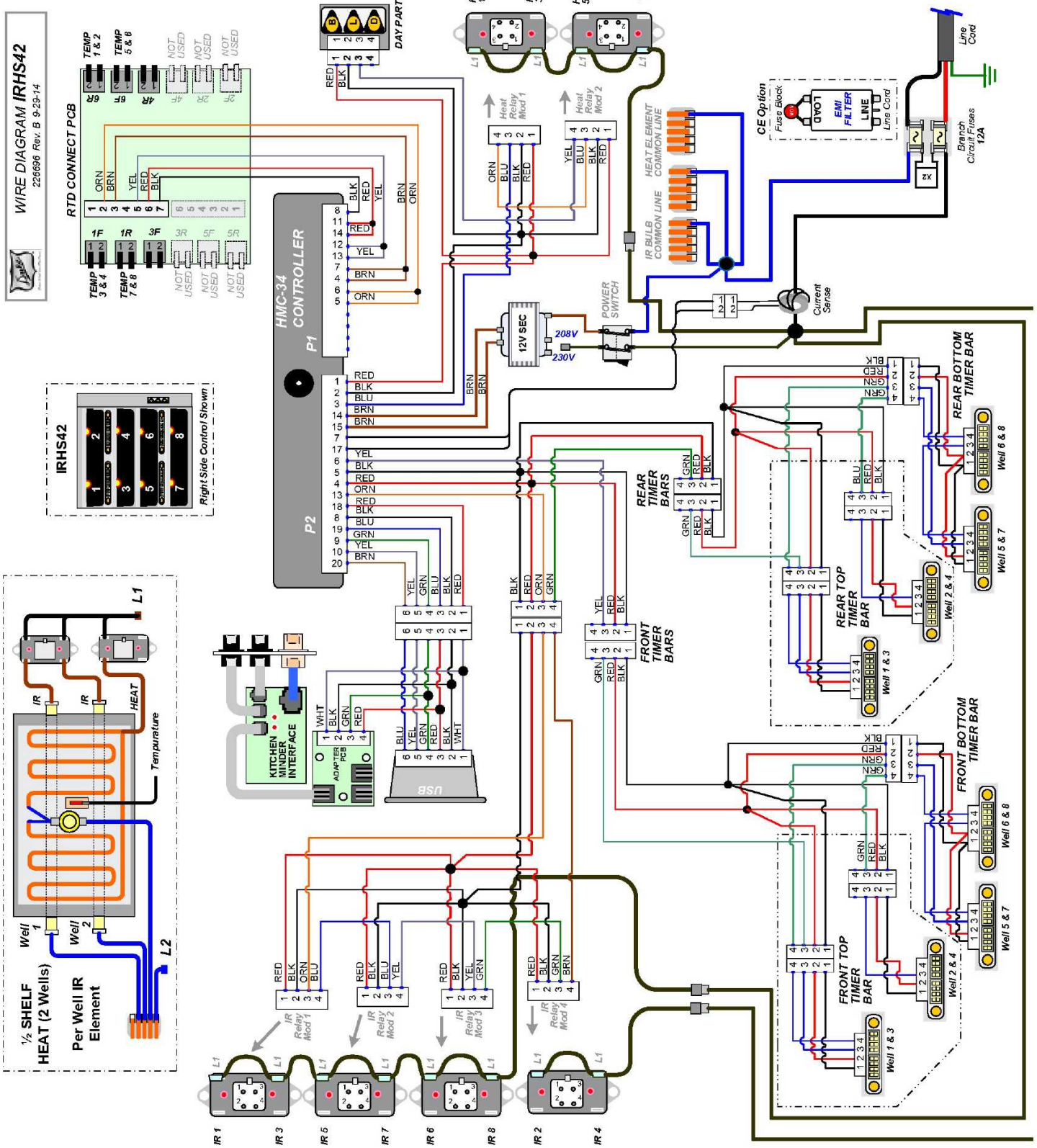
IRHS24 WIRING DIAGRAM



IRHS34 WIRING DIAGRAM



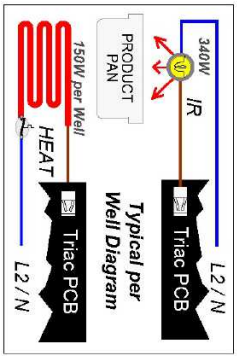
IRHS42 WIRING DIAGRAM

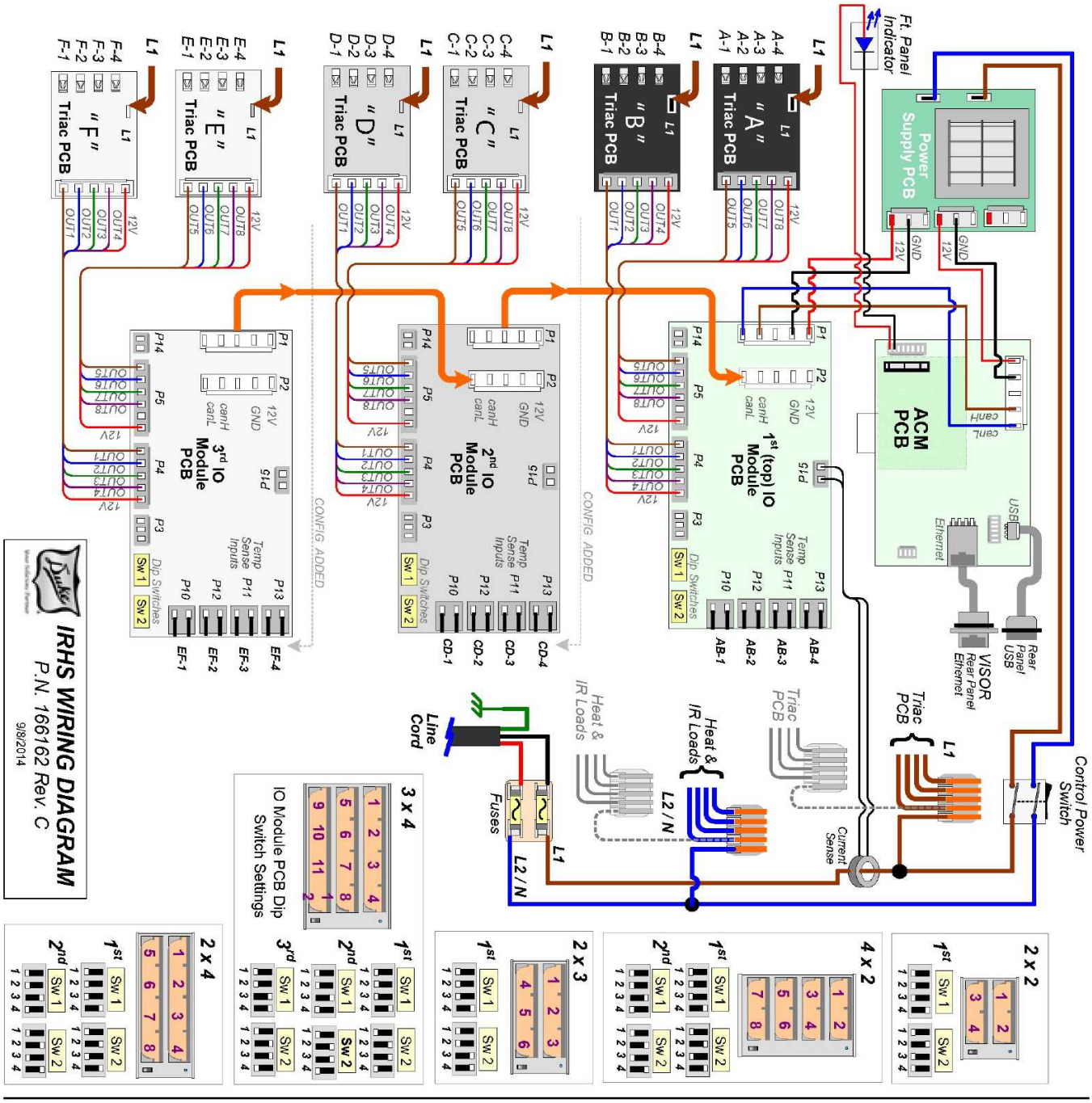


VISOR INTERFACE CABLE WIRING DIAGRAM

Heat & IR Load Connections

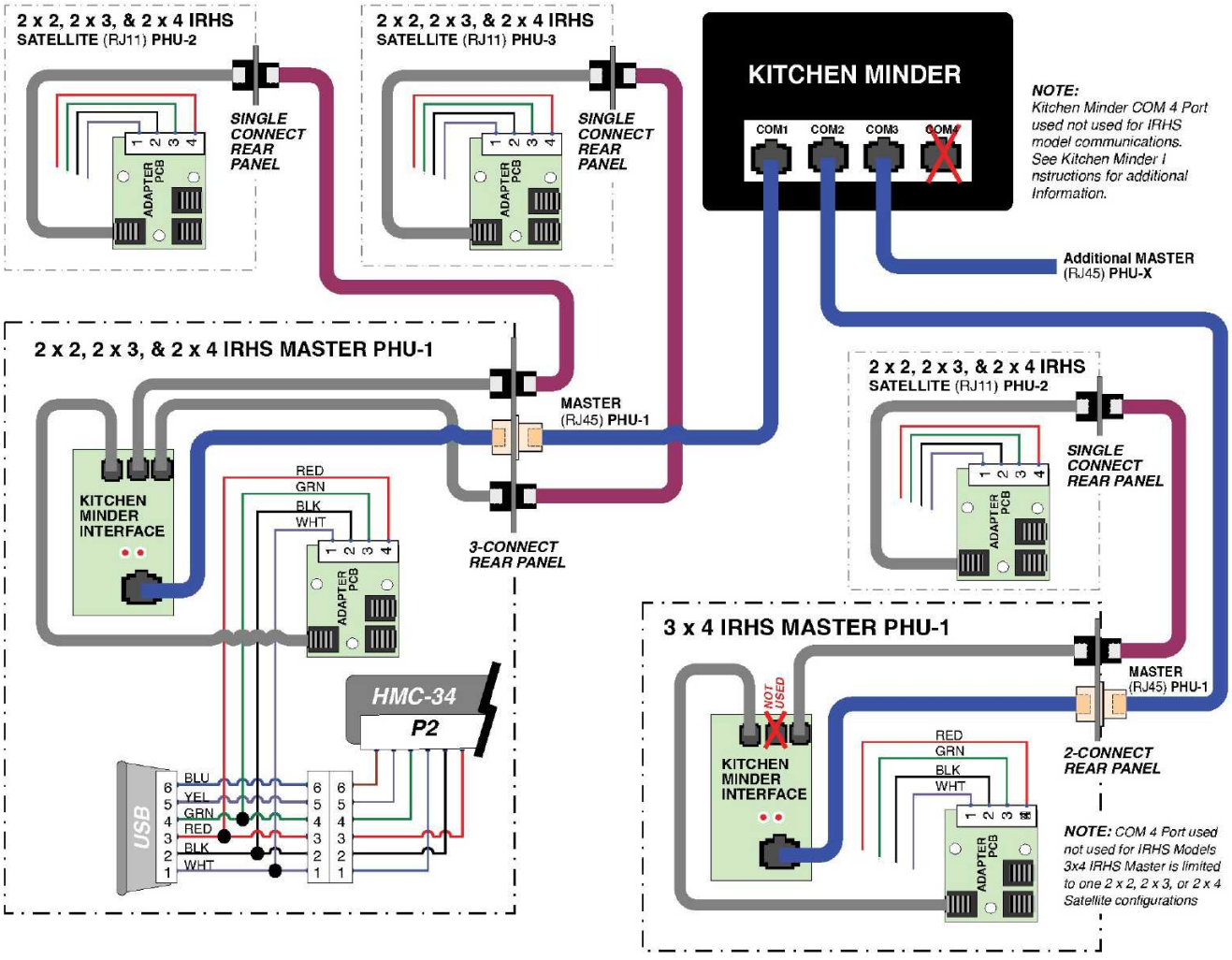
2 x 2	Heat	IR Bulb	Temp.
Well 1	B-1	A-1	AB-1
Well 2		A-2	
Well 3	B-3	A-3	AB-3
Well 4		A-4	
4 x 2	**Heat**	**IR Bulb**	**Temp.**
Well 1	B-1	A-1	AB-1
Well 2		A-2	
Well 3	B-3	A-3	AB-3
Well 4		A-4	
Well 5	D-1	C-1	CD-1
Well 6		C-2	
Well 7	D-3	C-3	CD-3
Well 8		C-4	
2 x 3	**Heat**	**IR Bulb**	**Temp.**
Well 1	B-1	A-1	AB-1
Well 2		A-2	
Well 3		A-3	
Well 4	B-3	A-4	AB-3
Well 5		B-2	
Well 6		B-4	
2 x 4	**Heat**	**IR Bulb**	**Temp.**
Well 1	B-1	A-1	AB-1
Well 2		A-2	
Well 3		A-3	
Well 4	B-3	A-4	AB-3
Well 5		B-2	
Well 6		B-4	
3 x 4	**Heat**	**IR Bulb**	**Temp.**
Well 1	B-1	A-1	AB-1
Well 2		A-2	
Well 3	B-3	A-3	AB-3
Well 4		A-4	
Well 5	D-1	C-1	CD-1
Well 6		C-2	
Well 7	D-3	C-3	CD-3
Well 8		C-4	
Well 9	F-1	E-1	EF-1
Well 10		E-2	
Well 11	F-3	E-3	EF-3
Well 12		E-4	





KITCHEN MINDER CONNECTIONS
(OPTIONAL UPGRADE; NOT AVAILABLE ON STANDALONE UNIT)

MASTER	SATELLITE 1	SATELLITE 2
IRHS22 (2X2)	2X2. 2X3, 2X4, 4X2	2X2. 2X3, 2X4, 4X2
IRHS23 (2X3)	2X2. 2X3, 2X4, 4X2	2X2. 2X3, 2X4, 4X2
IRHS24 (2X4)	2X2. 2X3, 2X4, 4X2	2X2. 2X3, 2X4, 4X2
IRHS34 (3X4)	NOT AVAILABLE	2X2. 2X3, 2X4
IRHS42 (4X2)	2X2. 2X3, 2X4, 4X2	2X2. 2X3, 2X4, 4X2



NOTES

CUSTOMER ASSISTANCE

To aid in reporting this unit in case of loss or theft, please record below the model number and serial number located on the unit. We also suggest you record all the information listed and retain for future reference.

MODEL NUMBER:	**SERIAL NUMBER:**
DATE OF PURCHASE:	
DEALER:	**TELEPHONE:**
SERVICER:	**TELEPHONE:**

FOR WARRANTY, PARTS & SERVICE:

DUKE CORPORATE,
CANADA, LATIN AMERICA

2305 N. Broadway
St. Louis, MO 63102
Phone: 314-231-1130
Toll Free: 800-735-3853
Fax: 314-231-2460
service-dispatch@dukemfg.com

DUKE ASIA PACIFIC

Duke Manufacturing
No.3 Building
Lane 28, Yu Lv Road
Malu Town, Jiading District
Shanghai 201801, China
Phone: +86 21 59153525 / 59153526
Fax: +86 21 33600628
service.asiapac@dukemfg.com

DUKE EMEA - EUROPE,
MIDDLE EAST, AFRICA, RUSSIA

Duke Manufacturing CR, s.r.o.
Na Dlouhem 86
Jazlovice, Ricany
Building number DC 4 on the
ProLogis Park Prague D1 West
Prague 251 01
Czech Republic
Phone: +420 323 608 193
Fax: +420 323 608 144
service.emea@dukemfg.com

DUKE EMEA – UK, IRELAND

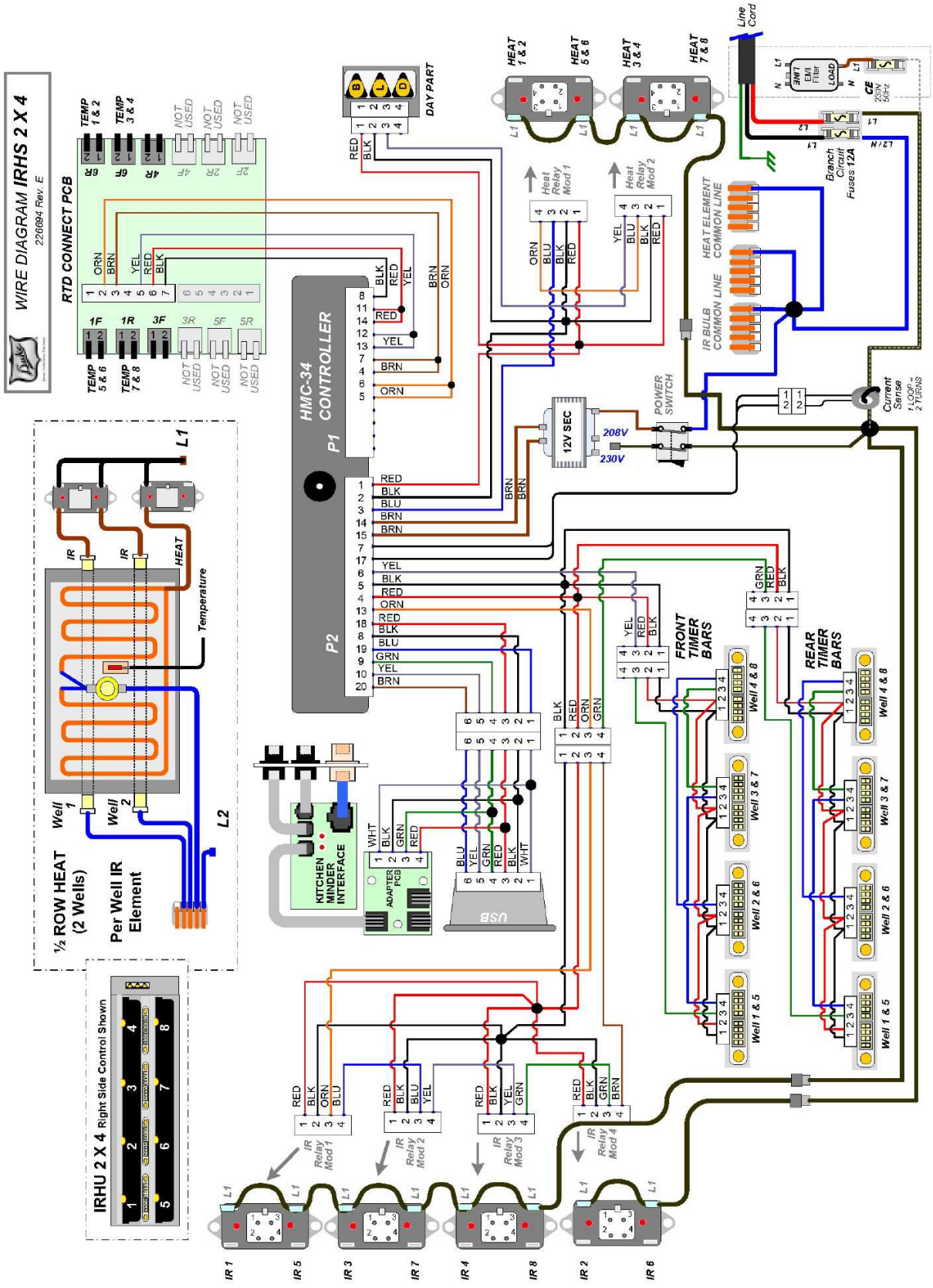
Phone: +44 (0) 1395 234140
Fax: +44 (0) 1395 234154
service.emea@dukemfg.com

TO ACCESS INTERNET: www.dukemfg.com

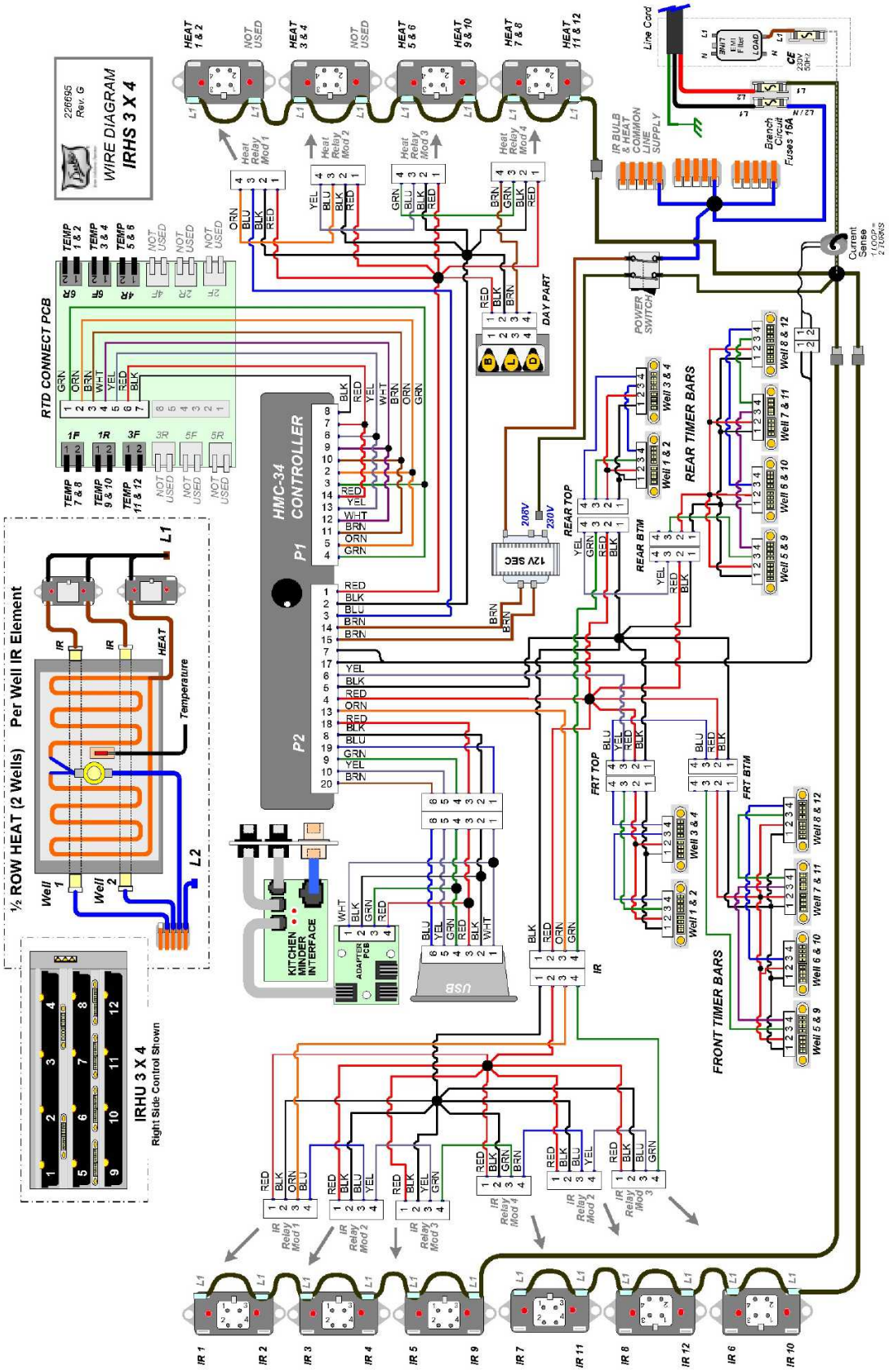
Please provide the following information when you write or call: model number, serial number, date of purchase, your complete mailing address (including zip code), and description of the problem.


Duke
Your Solutions Partner

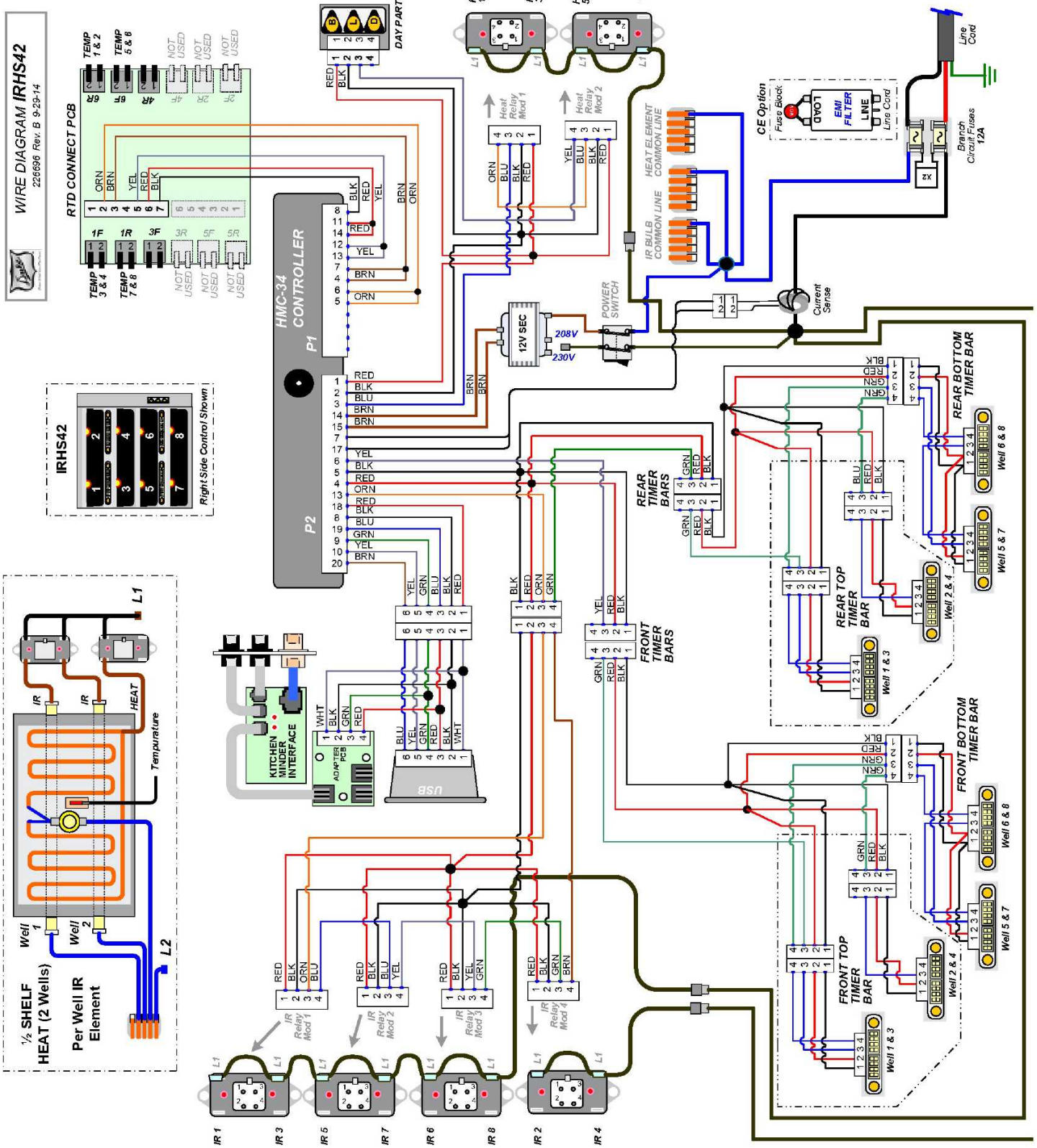
IRHS24 WIRING DIAGRAM



IRHS34 WIRING DIAGRAM



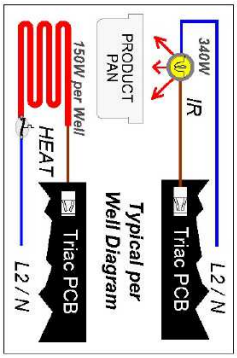
IRHS42 WIRING DIAGRAM

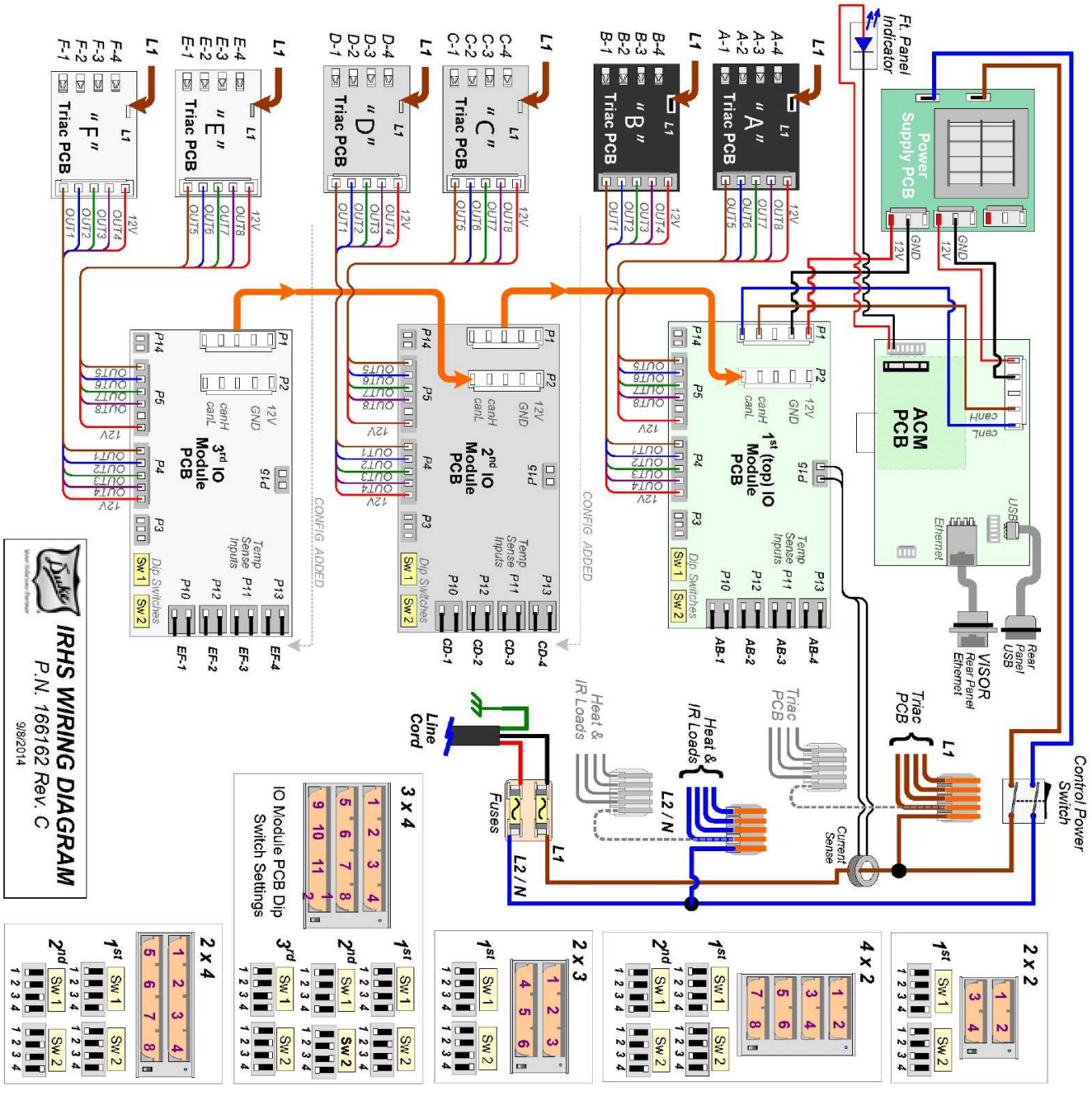


VISOR INTERFACE CABLE WIRING DIAGRAM

Heat & IR Load Connections

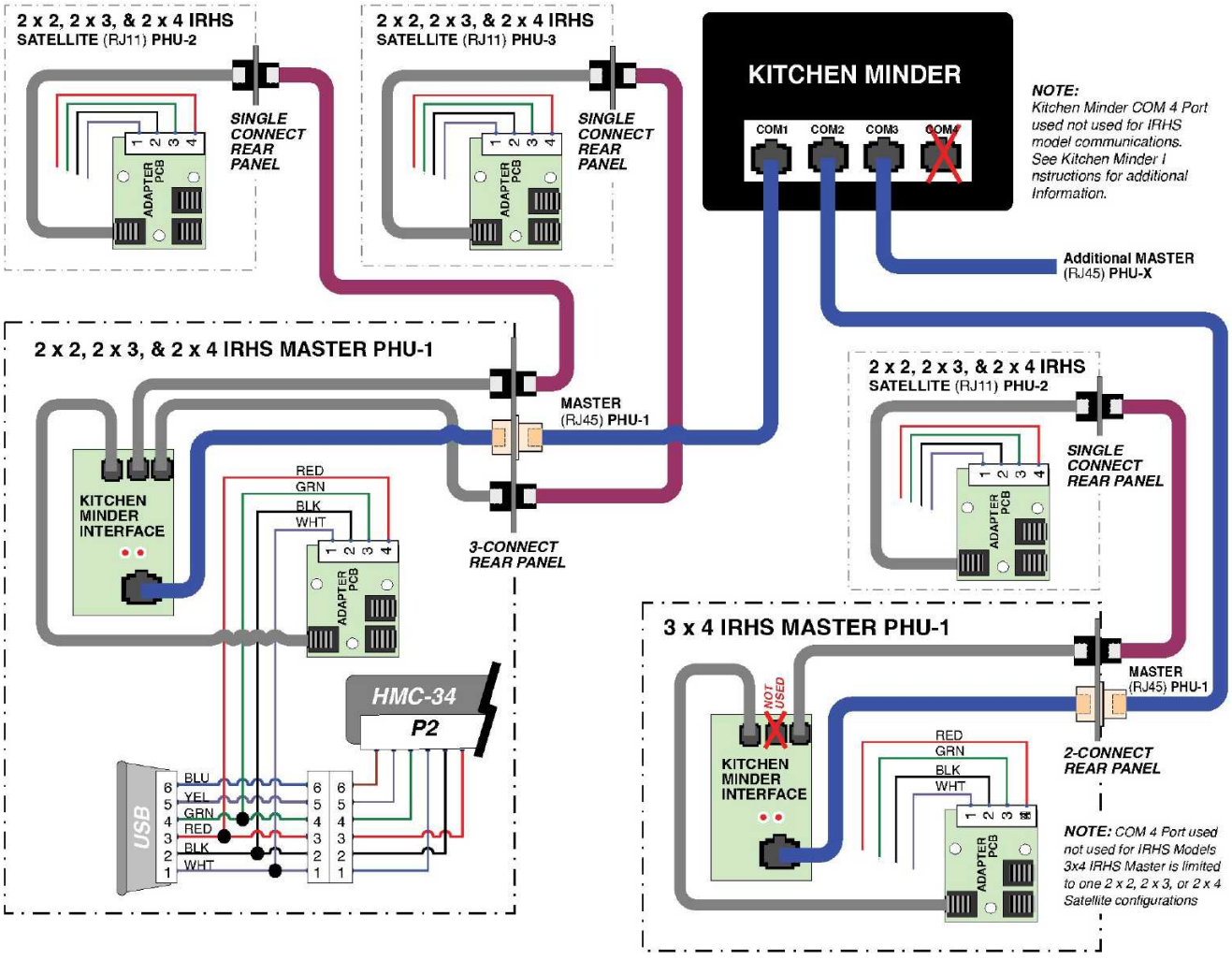
2 x 2	Heat	IR Bulb	Temp.
Well 1	B-1	A-1	AB-1
Well 2		A-2	
Well 3	B-3	A-3	AB-3
Well 4		A-4	
4 x 2	**Heat**	**IR Bulb**	**Temp.**
Well 1	B-1	A-1	AB-1
Well 2		A-2	
Well 3	B-3	A-3	AB-3
Well 4		A-4	
Well 5	D-1	C-1	CD-1
Well 6		C-2	
Well 7	D-3	C-3	CD-3
Well 8		C-4	
2 x 3	**Heat**	**IR Bulb**	**Temp.**
Well 1	B-1	A-1	AB-1
Well 2		A-2	
Well 3		A-3	
Well 4	B-3	A-4	AB-3
Well 5		B-2	
Well 6		B-4	
2 x 4	**Heat**	**IR Bulb**	**Temp.**
Well 1	B-1	A-1	AB-1
Well 2		A-2	
Well 3		A-3	
Well 4	B-3	A-4	AB-3
Well 5		B-2	
Well 6		B-4	
3 x 4	**Heat**	**IR Bulb**	**Temp.**
Well 1	B-1	A-1	AB-1
Well 2		A-2	
Well 3	B-3	A-3	AB-3
Well 4		A-4	
Well 5	D-1	C-1	CD-1
Well 6		C-2	
Well 7	D-3	C-3	CD-3
Well 8		C-4	
Well 9	F-1	E-1	EF-1
Well 10		E-2	
Well 11	F-3	E-3	EF-3
Well 12		E-4	





KITCHEN MINDER CONNECTIONS
(OPTIONAL UPGRADE; NOT AVAILABLE ON STANDALONE UNIT)

MASTER	SATELLITE 1	SATELLITE 2
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IRHS23 (2X3)	2X2. 2X3, 2X4, 4X2	2X2. 2X3, 2X4, 4X2
IRHS24 (2X4)	2X2. 2X3, 2X4, 4X2	2X2. 2X3, 2X4, 4X2
IRHS34 (3X4)	NOT AVAILABLE	2X2. 2X3, 2X4
IRHS42 (4X2)	2X2. 2X3, 2X4, 4X2	2X2. 2X3, 2X4, 4X2



NOTES

CUSTOMER ASSISTANCE

To aid in reporting this unit in case of loss or theft, please record below the model number and serial number located on the unit. We also suggest you record all the information listed and retain for future reference.

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DUKE ASIA PACIFIC

Duke Manufacturing
No.3 Building
Lane 28, Yu Lv Road
Malu Town, Jiading District
Shanghai 201801, China
Phone: +86 21 59153525 / 59153526
Fax: +86 21 33600628
service.asiapac@dukemfg.com

DUKE EMEA - EUROPE,
MIDDLE EAST, AFRICA, RUSSIA

Duke Manufacturing CR, s.r.o.
Na Dlouhem 86
Jazlovice, Ricany
Building number DC 4 on the
ProLogis Park Prague D1 West
Prague 251 01
Czech Republic
Phone: +420 323 608 193
Fax: +420 323 608 144
service.emea@dukemfg.com

DUKE EMEA – UK, IRELAND

Phone: +44 (0) 1395 234140
Fax: +44 (0) 1395 234154
service.emea@dukemfg.com

TO ACCESS INTERNET: www.dukemfg.com

Please provide the following information when you write or call: model number, serial number, date of purchase, your complete mailing address (including zip code), and description of the problem.


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E-MAIL 3

From: Kathy Veder [/O=DUKEMFGCO/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=KATHY VEDER604]
Sent: 2/27/2015 1:30:10 PM
To: Bettiga, John <jbettiga@wbhq.com> (jbettiga@wbhq.com) [jbettiga@wbhq.com]
CC: Shane Malley (smalley@dukemfg.com) [smalley@dukemfg.com]; Ron Kieffer [rkieffer@dukemfg.com]
Subject: FW: Quote Info
Attachments: 156237 FWM3 Manual Renau.pdf; SM-PH-IH-0003 Infrared Heatsink Holding Unit.pdf

John,
Attached are the manuals – will work on parts lists.

Thanks,
Have a fab Friday!
Kathy

Kathy Veder, CFSP
VP Strategic National Accounts
Duke Manufacturing
314.239.6266
kveder@dukemfg.com

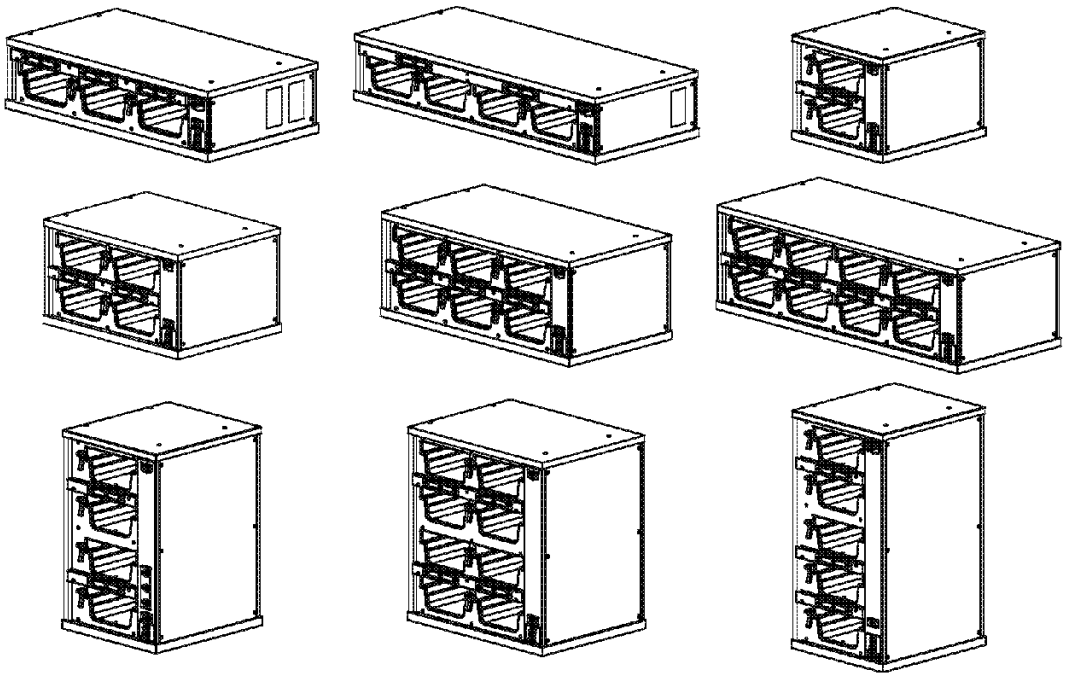
Your Solutions Partner

Installation and Operation Manual

PRODUCT HOLDING CABINET

MODELS

FWM3-13
FWM3-14
FWM3-21
FWM3-22
FWM3-23
FWM3-24
FWM3-41
FWM3-42
FWM3-51



Please read this manual completely before attempting to install, operate or service this equipment

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Duke Manufacturing Co.

2305 N. Broadway
St. Louis, MO 63102
Phone: 314-231-1130
Toll Free: 1-800-735-3853
Fax: 314-231-5074

www.dukemfg.com

P/N 156237T
08/18/2014

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ELECTRICAL WARNINGS

THIS MANUAL HAS BEEN PREPARED FOR PERSONNEL QUALIFIED TO INSTALL ELECTRICAL EQUIPMENT, WHO SHOULD PERFORM THE INITIAL FIELD STARTUP AND ADJUSTMENTS OF THE EQUIPMENT COVERED BY THIS MANUAL.

READ THIS MANUAL THOROUGHLY BEFORE OPERATING, INSTALLING OR PERFORMING MAINTENANCE ON THE EQUIPMENT.

⚠WARNING: Failure to follow all the instructions in this manual can cause property damage, injury or death.

⚠WARNING: Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death.

⚠WARNING: (US/CAN ONLY) Electrical connections should be performed only by a certified professional.

⚠WARNING: Electrical and grounding connections must comply with the applicable portions of the National Electric Code and/or all local electric codes. Failure to comply with this procedure can cause property damage, injury or death.

⚠WARNING: Before connecting the unit to the electrical supply, verify that the electrical and grounding connections comply with the applicable portions of the National Electric Code and/or other local electrical codes. Failure to comply with this procedure can cause property damage, injury or death.

⚠WARNING: Before connecting the unit to the electrical supply, verify that the electrical connection agrees with the specifications on the data plate. Failure to comply with this procedure can cause property damage, injury or death.

⚠WARNING: UL73 grounding instructions: This appliance must be connected to a grounded, metal, permanent wiring system. Or an equipment-grounding conductor must be run with the circuit conductors and connected to the equipment-grounding terminal or lead on the appliance. Failure to comply with this procedure can cause property damage, injury or death.

⚠WARNING : Appliances equipped with a flexible electric supply cord, are provided with a three-prong grounding plug. It is imperative that this plug be connected into a properly grounded three-prong receptacle. Failure to comply with this procedure can cause property damage, injury or death.

⚠WARNING: If the receptacle is not the proper grounding type, contact an electrician. Do not remove the grounding prong from the plug. Failure to comply with this procedure can cause property damage, injury or death.

⚠WARNING: **Before performing any service that involves electrical connection or disconnection and/or exposure to electrical components, always perform the Electrical LOCKOUT/TAGOUT Procedure. Disconnect all circuits. Failure to comply with this procedure can cause property damage, injury or death.**

⚠WARNING: **Before removing any sheet metal panels or servicing this equipment, always perform the Electrical LOCKOUT/TAGOUT Procedure. Be sure all circuits are disconnected. Failure to comply with this procedure can cause property damage, injury or death.**

⚠WARNING: **Do not operate this equipment without properly placing and securing all covers and access panels. Failure to comply with this procedure can cause property damage, injury or death.**

⚠WARNING: **For your safety, do not use or store gasoline or other flammable vapors or liquids in the vicinity of this or any other appliance. Failure to comply can cause property damage, injury or death.**

⚠WARNING: **In the event of a power failure, do not attempt to operate this appliance. Failure to comply can cause property damage, injury or death.**

⚠WARNING: **This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure they do not play with the appliance.**

CAUTION

Observe the following:

- Minimum clearances must be maintained from all walls and combustible materials.
- Keep the equipment area free and clear of combustible material.
- Maintain adequate clearance for air openings.
- Operate equipment only on the type of electricity indicated on the data sticker.
- Retain this manual for future reference.

MANUFACTURER'S INTRODUCTION

The Duke Product Holding Unit was developed for extended food-holding capabilities to provide consistently high, "just cooked" food quality.

The Duke Product Holding Unit utilizes Duke's patented "heat sink" holding technology that provides even heat distribution to food pans through the bottom and sides. This allows pre-cooked foods to be held for extended periods without noticeable degradation of quality, reducing food scrap/waste.

The self contained, individually formed, sealed compartments of the Duke Product Holding Unit eliminates food odor and taste transfer. Because the compartments are sealed and formed to the shape of the pan, no disassembly is required for cleaning and product changes.

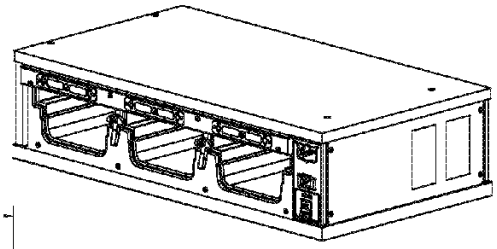
The unique design of the Duke Product Holding Unit allows single temperature operation for all existing product groups. This 180°F(82°C) approved temperature is preset at the factory. This reduces the likelihood of inconsistent performance between restaurant locations.

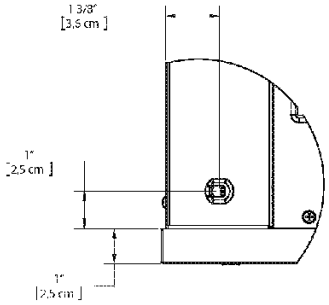
The Duke Product Holding Cabinet was also designed to rethermalize food product. A thermostat setting of 180°F(82°C) minimum is required for re-thermalization. To comply with sanitation requirements do not set the temperature control lower than 180°F(82°C) or equivalent.

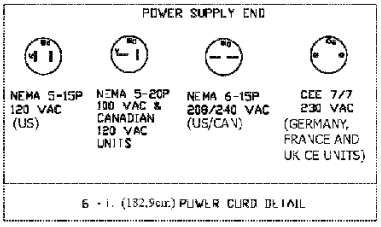
NOTICE: Only qualified service persons should modify control temperature presets.

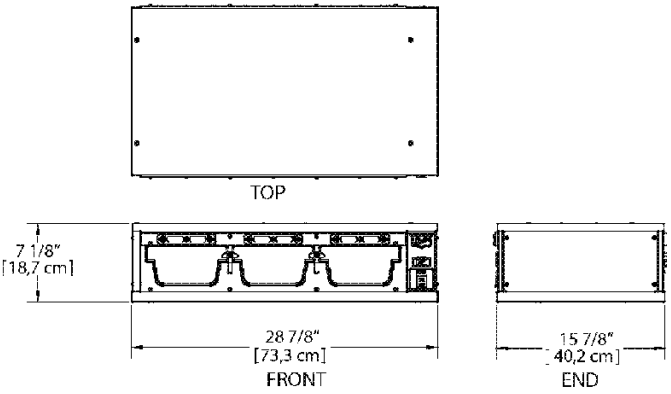
SPECIFICATIONS

MODEL FWM3-13					
MODEL	SHIPPING WEIGHT	AC Voltage (V ~)	Watts (W)	Amps (A)	FREQUENCY (Hz)
FWM3-13-100	75 lbs (34,1Kg)	100	600	6.0 (6,0)	60
FWM3-13-120	75 lbs (34,1Kg)	120	600	5.0 (5,0)	60
FWM3-13-208	75 lbs (34,1Kg)	208	900	4.0 (4,0)	60
FWM3-13-230	75 lbs (34,1Kg)	230	900	4.0 (4,0)	50
FWM3-13-240	75 lbs (34,1Kg)	240	900	4.0 (4,0)	60



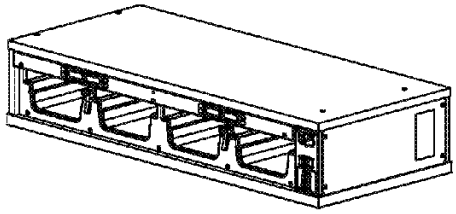


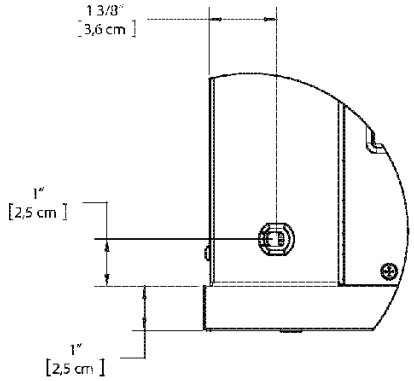


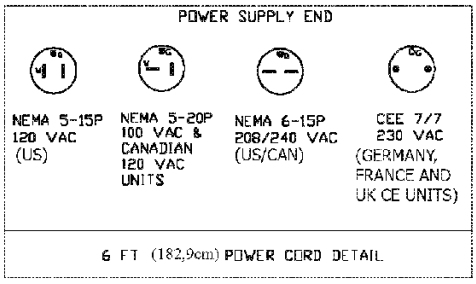


Compliance Declaration		
	Standard: UL197	File: KNGT.E17421
	Standard: CSA-C22.2 No. 109	File: KNGT7.E17421
	Standard: ANSI / NSF 4	File: TSQT.E157479
CE	Directive 2006/95/EC: EN60335 -1:2002, A1. A2, A11, A12 EN 60335-2-49:2003	Directive 89/336/EEC and 2004/108/EC: EN61000-3-2 EN 55014-1 EN61000-3-3 EN55014-2
	WEEE RoHS Directive 2002/96/EC	

MODEL FWM3-14					
MODEL	SHIPPING WEIGHT	AC Voltage (V ~)	Watts (W)	Amps (A)	FREQUENCY (Hz)
FWM3-14-100	111 lbs (50,5Kg)	100	800	8.0 (8,0)	60
FWM3-14-120	111 lbs (50,5Kg)	120	800	7.0 (7,0)	60
FWM3-14-208	111 lbs (50,5Kg)	208	1200	6.0 (6,0)	60
FWM3-14-230	111 lbs (50,5Kg)	230	1200	5.0 (5,0)	50
FWM3-14-240	111 lbs (50,5Kg)	240	1200	5.0 (5,0)	60

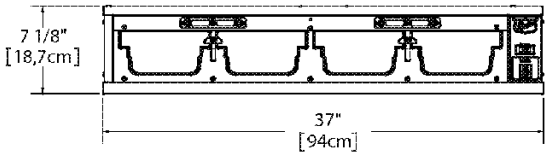




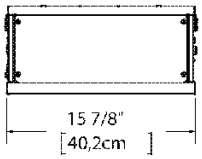




TOP



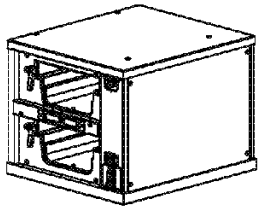
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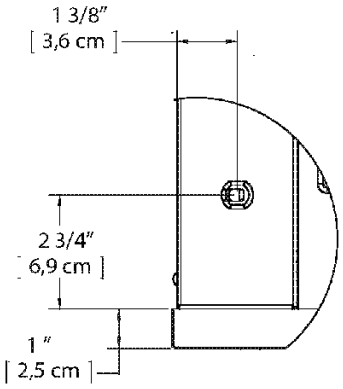


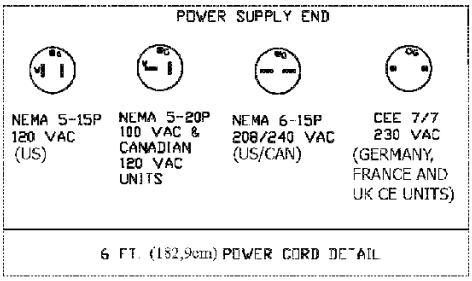
END

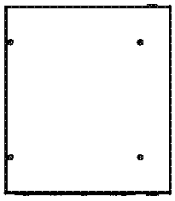
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	Standard: CSA-C22.2 No. 109	File: KNGT7.E17421
	Standard: ANSI / NSF 4	File: TSQT.E157479
CE	Directive 2006/95/EC: EN60335-1:2002, A1, A2, A11, A12 EN 60335-2-49:2003	Directive 89/336/EEC and 2004/108/EC: EN61000-3-2 EN 55014-1 EN61000-3-3 EN55014-2
	WEEE RoHS Directive 2002/96/EC	

MODEL FWM3-21					
MODEL	SHIPPING WEIGHT	AC Voltage (V ~)	Watts (W)	Amps (A)	FREQUENCY (Hz)
FWM3-21-100	67 lbs (30,5Kg)	100	400	4.0 (4,0)	60
FWM3-21-120	67 lbs (30,5Kg)	120	400	4.0 (4,0)	60
FWM3-21-208	67 lbs (30,5Kg)	208	600	3.0 (3,0)	60
FWM3-21-230	67 lbs (30,5Kg)	230	600	3.0 (3,0)	50
FWM3-21-240	67 lbs (30,5Kg)	240	600	3.0 (3,0)	60

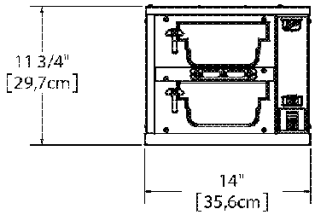




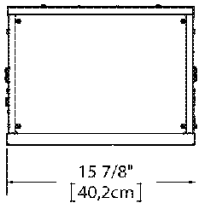




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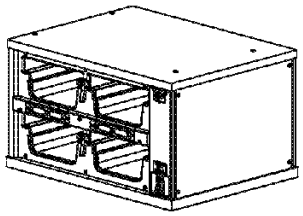
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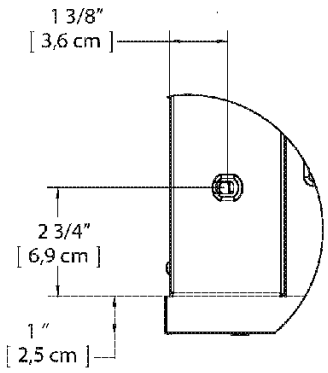


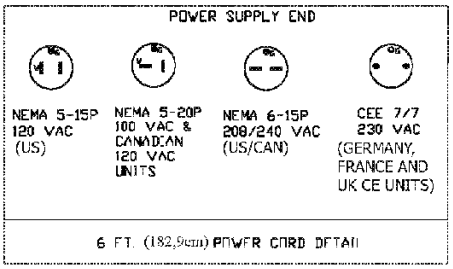
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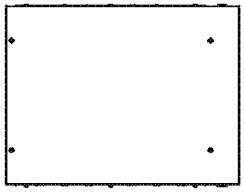
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	Standard: ANSI / NSF 4	File: TSQT.E157479
CE	Directive 2006/95/EC: EN60335 -1:2002, A1. A2, A11, A12 EN 60335-2-49:2003	Directive 89/336/EEC and 2004/108/EC: EN61000-3-2 EN 55014-1 EN61000-3-3 EN55014-2
	WEEE RoHS Directive 2002/96/EC	

MODEL FWM3-22					
MODEL	SHIPPING WEIGHT	AC Voltage (V ~)	Watts (W)	Amps (A)	FREQUENCY (Hz)
FWM3-22-100	91 lbs (41,4Kg)	100	800	8.0 (8,0)	60
FWM3-22-120	91 lbs (41,4Kg)	120	800	7.0 (7,0)	60
FWM3-22-208	91 lbs (41,4Kg)	208	1200	6.0 (6,0)	60
FWM3-22-230	91 lbs (41,4Kg)	230	1200	5.0 (5,0)	50
FWM3-22-240	91 lbs (41,4Kg)	240	1200	5.0 (5,0)	60

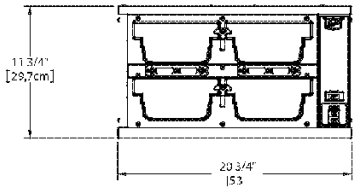




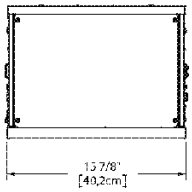




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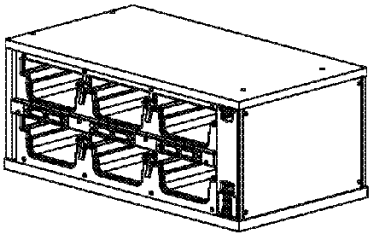
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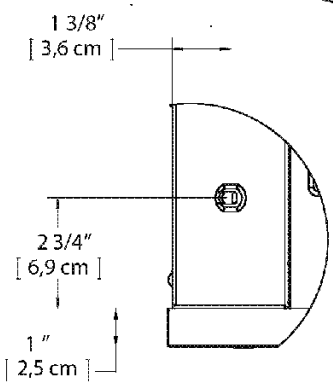


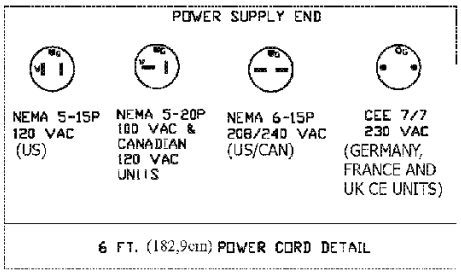
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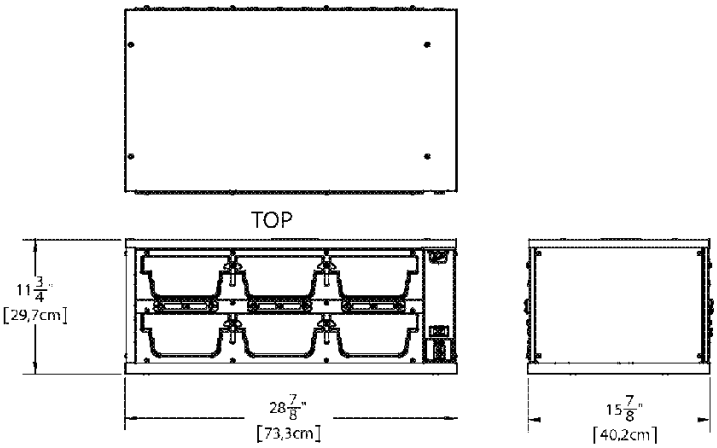
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CE	Directive 2006/95/EC: EN60335 -1:2002, A1, A2, A11. A12 EN 60335-2-49:2003	Directive 89/336/EEC and 2004/108/EC: EN61000-3-2 EN 55014-1 EN61000-3-3 EN55014-2
	WEEE RoHS Directive 2002/96/EC	

MODEL FWM3-23					
MODEL	SHIPPING WEIGHT	AC Voltage (V ~)	Watts (W)	Amps (A)	FREQUENCY (Hz)
FWM3-23-100	113 lbs (51,4Kg)	100	1200	12.0 (12,0)	60
FWM3-23-120	113 lbs (51,4Kg)	120	1200	10.0 (10,0)	60
FWM3-23-208	113 lbs (51,4Kg)	208	1800	9.0 (9,0)	60
FWM3-23-230	113 lbs (51,4Kg)	230	1800	8.0 (8,0)	50
FWM3-23-240	113 lbs (51,4Kg)	240	1800	8.0 (8,0)	60



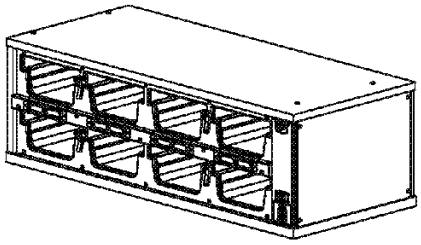


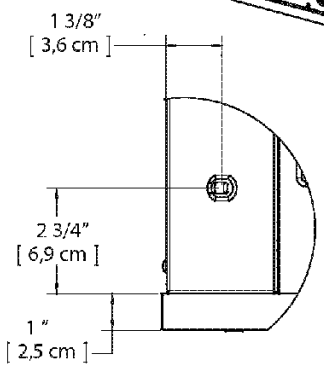


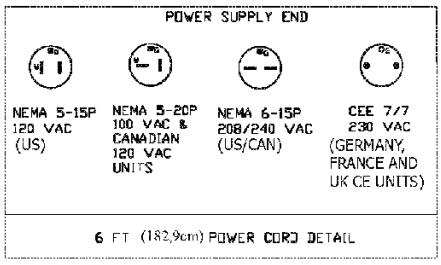


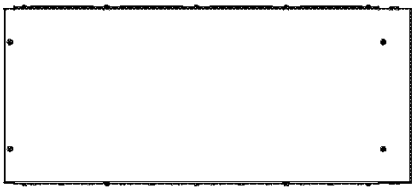
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CE	Directive 2006/95/EC: EN60335-1:2002, A1, A2, A11, A12 EN 60335-2-49:2003	Directive 89/336/EEC and 2004/108/EC: EN61000-3-2 EN 55014-1 EN61000-3-3 EN55014-2
	WEEE RoHS Directive 2002/96/EC	

MODEL FWM3-24					
MODEL	SHIPPING WEIGHT	AC Voltage (V ~)	Watts (W)	Amps (A)	FREQUENCY (Hz)
FWM3-24-100	141 lbs (69,1Kg)	100	1600	16.0 (16,0)	60
FWM3-24-120	141 lbs (69,1Kg)	120	1600	13.0 (13,0)	60
FWM3-24-208	141 lbs (69,1Kg)	208	2400	12.0 (12,0)	60
FWM3-24-230	141 lbs (69,1Kg)	230	2400	10.0 (10,0)	50
FWM3-24-240	141 lbs (69,1Kg)	240	2400	10.0 (10,0)	60

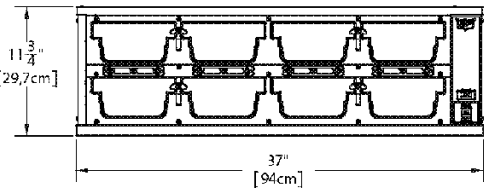




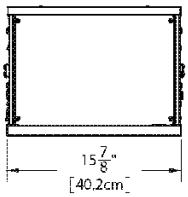




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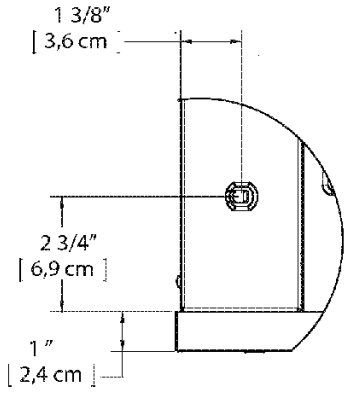
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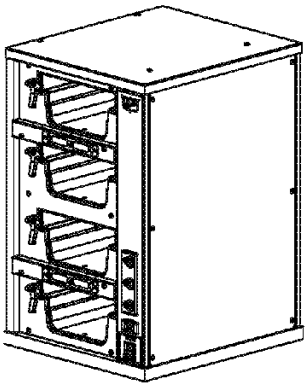


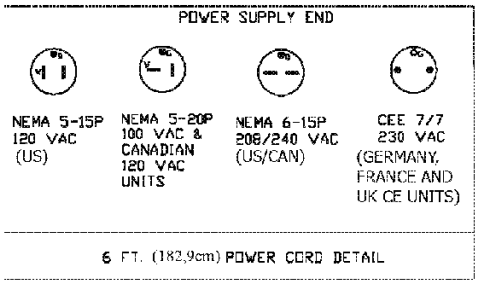
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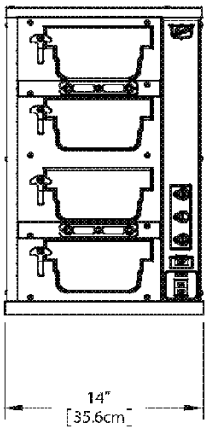
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CE	Directive 2006/95/EC: EN60335 -1:2002, A1. A2, A11, A12 EN 60335-2-49:2003	Directive 89/336/EEC and 2004/108/EC: EN61000-3-2 EN 55014-1 EN61000-3-3 EN55014-2
	WEEE RoHS Directive 2002/96/EC	

MODEL FWM3-41					
MODEL	SHIPPING WEIGHT	AC Voltage (V ~)	Watts (W)	Amps (A)	FREQUENCY (Hz)
FWM3-41-100	100 lbs (45Kg)	100	800	8.0 (8,0)	60
FWM3-41-120	100 lbs (45Kg)	120	800	7.0 (7,0)	60
FWM3-41-208	100 lbs (45Kg)	208	1200	6.0 (6,0)	60
FWM3-41-230	100 lbs (45Kg)	230	1200	5.0 (5,0)	50
FWM3-41-240	100 lbs (45Kg)	240	1200	5.0 (5,0)	60

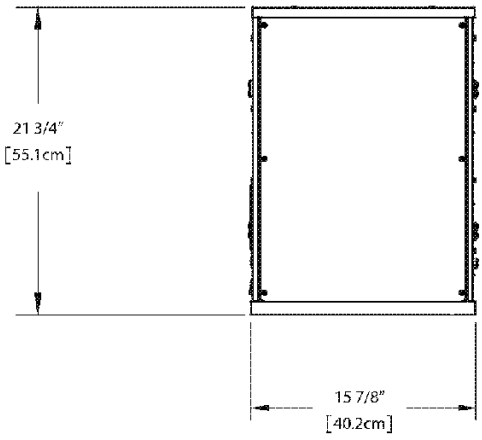




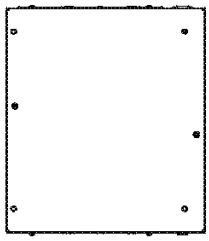




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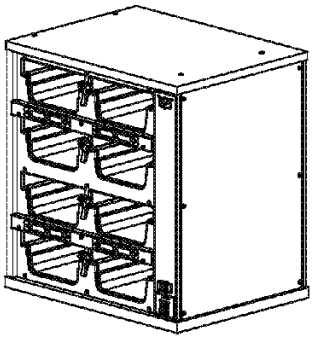
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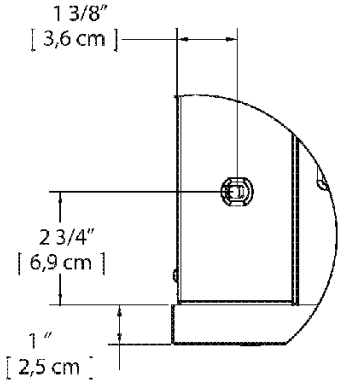


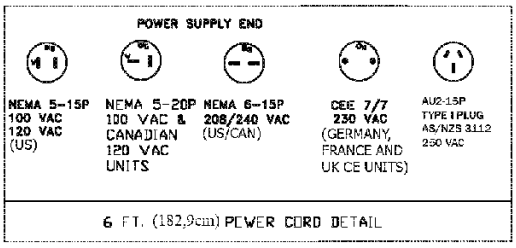
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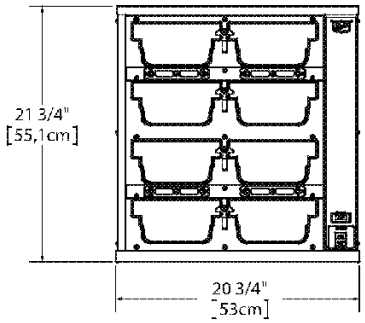
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	WEEE RoHS Directive 2002/96/EC	

MODEL FWM3-42					
MODEL	SHIPPING WEIGHT	AC Voltage (V ~)	Watts (W)	Amps (A)	FREQUENCY (Hz)
FWM3-42-100	145 lbs (65,8Kg)	100	1600	16.0 (16,0)	60
FWM3-42-120	145 lbs (65,8Kg)	120	1600	13.0 (13,0)	60
FWM3-42-208	145 lbs (65,8Kg)	208	2400	12.0 (12,0)	60
FWM3-42-230	145 lbs (65,8Kg)	230	2400	10.0 (10,0)	50
FWM3-42-240	145 lbs (65,8Kg)	240	2400	10.0 (10,0)	60

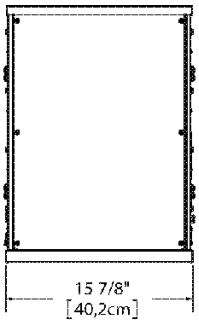




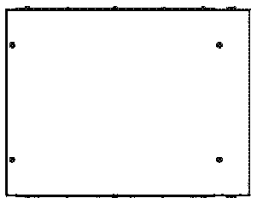




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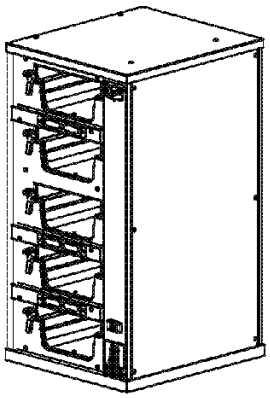
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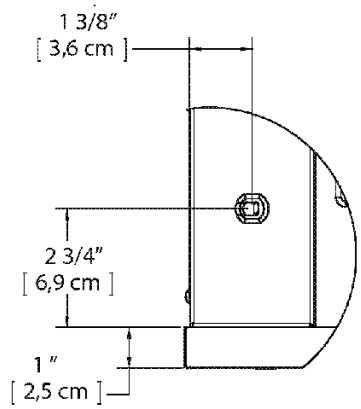


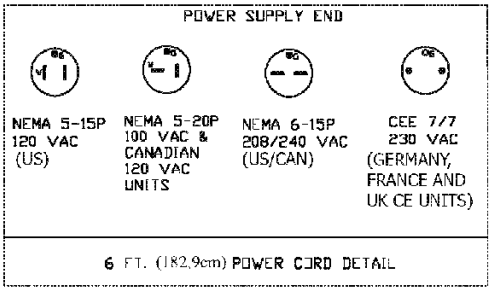
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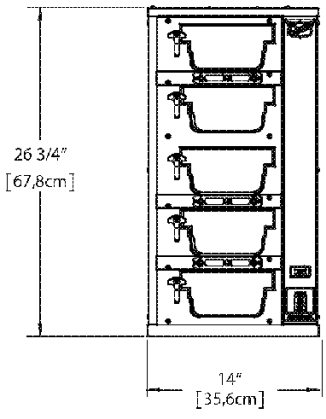
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	WEEE RoHS Directive 2002/96/EC	

MODEL FWM3-51					
MODEL	SHIPPING WEIGHT	AC Voltage (V ~)	Watts (W)	Amps (A)	FREQUENCY (Hz)
FWM3-51-100	125 lbs (56,8Kg)	100	1000	10.0 (10,0)	60
FWM3-51-120	125 lbs (56,8Kg)	120	1000	8.0 (8,0)	60
FWM3-51-208	125 lbs (56,8Kg)	208	1500	7.0 (7,0)	60
FWM3-51-230	125 lbs (56,8Kg)	230	1500	7.0 (7,0)	50
FWM3-51-240	125 lbs (56,8Kg)	240	1500	6.0 (6,0)	60

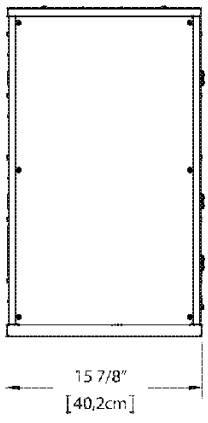




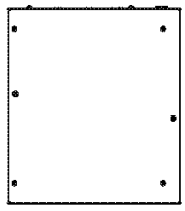




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Compliance Declaration		
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	Standard: CSA-C22.2 No. 109	File: KNGT7.E17421
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CE	Directive 2006/95/EC: EN60335 -1:2002, A1. A2, A11, A12 EN 60335-2-49:2003	Directive 89/336/EEC and 2004/108/EC: EN61000-3-2 EN 55014-1 EN61000-3-3 EN55014-2
	WEEE RoHS Directive 2002/96/EC	

INSTALLATION INSTRUCTIONS

UNPACKING UNIT

1. Inspect the shipping carton and/or container, carefully noting any exterior damage on the delivery receipt.
2. Contact the carrier immediately and file a damage claim with them. Save all packing materials when filing a claim. Freight damage claims are the responsibility of the purchaser and are not covered by the warranty.
3. Unpack and Inspect the unit for damage.
4. Report any dents or breakage to the source of purchase immediately.

CAUTION: Do not attempt to use unit if damaged.

5. Remove all materials from the unit interior.
6. If the unit has been stored in extremely cold area, wait a few hours before connecting the power.

INSTALLATION CODES AND STANDARDS

In the United States, the PHU must be installed in accordance with the following:

1. State and local codes.
2. National Electrical Code (ANSI/NFPA No. 70, latest edition) available from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.
3. Vapor Removal from Cooking Equipment, (NFPA-96, latest edition) available from NFPA.

In Canada, the PHU must be installed in accordance with the following:

1. Local codes.
2. Canadian Electrical Code (CSA C22.2 No. 3, latest edition) available from the Canadian Standards Association, 5060 Spectrum Way, Mississauga, Ontario, Canada L4W 5N6.

For CE Units, the PHU must be installed in accordance with the following:

1. Local codes.
2. European (IEC/CENELEC) Electrical Code

UNIT PLACEMENT

- Do not install the unit next to or above heat sources, such as oven or deep fat fryer.
- Install the unit on a level countertop surface.
- The power outlet should be located so that plug is accessible when the unit is in place.
- The FWM is designed for access from either side.
- Operate the unit according the Operation Instructions provided in this manual.

Clearance Requirements

CLEARANCE REQUIREMENT	CLEARANCE IN INCHES
Top	0
Right Side	0
Left Side	0
Bottom	0
Rear	OPEN

- Proper airflow around the unit cools its electrical components. With restricted airflow, the unit may not operate properly and life of the electrical parts is reduced.

⚠ WARNING: To avoid risk of electrical shock or death, this unit must be grounded and plug must not be altered.

⚠ WARNING: Before connecting the unit to the electrical supply, verify that the electrical connection agrees with the specifications on the data plate. Failure to comply with this procedure can cause property damage, injury or death.

EARTHING INSTRUCTIONS

THE UNIT MUST BE GROUNDED. Grounding reduces risk of electric shock by providing an escape wire for the electric current if an electrical short occurs. This unit is equipped with a cord having a grounding wire with a grounding plug. The plug must be plugged into a receptacle that is properly installed and grounded.

Consult a qualified electrician or service agent if grounding instructions are not completely understood, or if doubt exists as to whether the oven is properly grounded.

DO NOT USE AN EXTENSION CORD. If the product power cord is too short, have a qualified electrician install a three-slot receptacle (or the country specific receptacle for International Units). This unit should be plugged into a separate circuit with the electrical rating as provided on the product data plate.

EXTERNAL EQUIPOTENTIAL BONDING TERMINAL (EXPORT ONLY)

This equipment has supplemental bonding terminal. The terminal provides an external bonding connection used in addition to the earthing prong on the plug. The terminal provides a connection for bonding to the equipment enclosure. The external equipotential bonding terminal is located on the rear outside surface of the oven, the terminal is marked with this symbol.



NOTICE: If the supply cord is damaged, it must be replaced by a special cord assembly available from Duke Manufacturing Co. or its service agent.

NOTICE: Refer to the specifications data plate when ordering or replacing a cord set.

STACKING UNITS

⚠ WARNING: TIP HAZARD! Do not stack FWM3-42 units.

⚠ WARNING: TIP HAZARD! Do not exceed two holding cabinets per stack.

⚠ WARNING: Do not place holding cabinet stacks on surfaces that may easily tip over.

The FWM3-24 Product Holding Cabinet is designed to allow limited stacking capabilities. Use these procedures to stack FWM3-24 models.

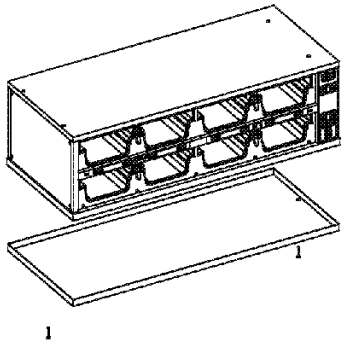


Figure 1: Removal of Base Pan

1. Remove the Base Pan from all FWM3-24s to stacked, except the bottom unit. The pan is held in place by two screws on the bottom of each unit.

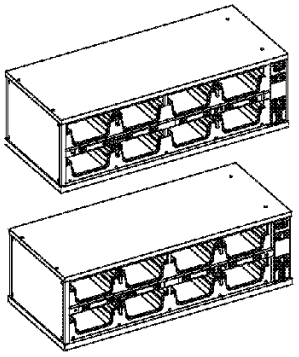


Figure 2: Placement of Bottom Unit

2. Place bottom unit into its final position then stack the next unit on top. The top of the lower holding cabinet rests inside of the base of the upper unit.

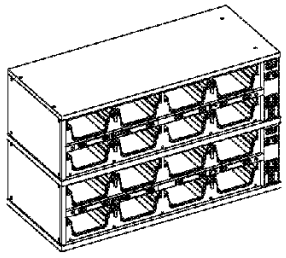
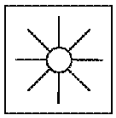


Figure 3: FWM3-24 In Stacked Arrangement

OPERATION

The following procedures must be performed on a daily basis.



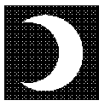
OPENING CHECKLIST

1. Ensure proper Pan Covers are inserted into the correct locations for fried and broiled products.
2. Place the Power Switch, located on the front of the Product Holding Unit, in the ON position.
3. Allow the Product Holding Cabinet to heat for at least 20 min. or until the temperature disappears and the menu bars display the pre-programmed product names: "EGGS", "FISH", "----" or "EMTY" (no product).



OPERATION INSTRUCTIONS AND ADJUSTMENTS

1. If the menu bars display temperature at any time during operation of the Product Holding Cabinet, discontinue use of the affected shelf until the cabinet is serviced.
2. Refer to the **KEYPAD PROGRAMMING** section of the manual for instructions on using and programming the keypad.



CLOSING CHECKLIST

1. Place the Power Switch in its OFF position.
2. Remove all pans and pan covers.
3. Allow the cabinet to cool for approximately 30 minutes.
4. Refer to the **CLEANING INSTRUCTIONS** section of the manual for proper care and cleaning of the cabinet.

⚠WARNING: Electrical Shock Hazard, unplug the cabinet before cleaning it.

⚠WARNING: Do not wash with water jet or hose.

⚠WARNING: Bottom and sides of warmer wells are very hot and cool slowly.

CAUTION: Do not use caustic cleaners, acids, ammonia products or abrasive cleaners or abrasive cloths. These can damage the stainless steel and plastic surfaces.



CLEANING INSTRUCTIONS

1. Wipe down the interior and exterior of the Product Holding Cabinet with warm water and mild detergent using a soft cloth. Do not use excessive amounts of water.
2. Clean pans and pan covers using mild detergent and warm water.
3. Ensure all soap is rinsed from plastic pans and pan covers.

STAINLESS STEEL CARE

Cleaning

Stainless steel contains 70-80% iron, which will rust if not properly maintained. It also contains 12-30% chromium, which forms an invisible passive, protective film that shields against corrosion. If the film remains intact, the stainless steel will remain intact. However, if the film is damaged, the stainless steel can break down and rust. To prevent stainless steel breakdown, follow these steps:

CAUTION: Never use any metal tools. Scrapers, files, wire brushes or scouring pads (except for stainless steel scouring pads) will mar the surface.

CAUTION: Never use steel wool, which will leave behind particles that rust.

CAUTION: Never use acid-based or chloride-containing cleaning solutions, which will break down the protective film.

CAUTION: Never rub in a circular motion.

CAUTION: Never leave any food products or

salt on the surface. Many foods are acidic. Salt contains chloride.

For routine cleaning, use warm water, mild soap or detergent and a sponge or soft cloth.

For heavy-duty cleaning, use warm water, a degreaser and a plastic, stainless steel or Scotch-Brite pad.

Always rinse thoroughly. Always rub gently in the direction of the steel grain.

Preserving & Restoring

Special stainless steel polishing cleaners can preserve and restore the protective film.

Preserve the life of stainless steel with a regular application of a high quality stainless steel polishing cleaner as a final step to daily cleaning.

If signs of breakdown appear, restore the stainless steel surface. First, thoroughly clean, rinse and dry the surface. Then, on a daily basis, apply a high-quality stainless steel polish according to manufacturer's instructions.

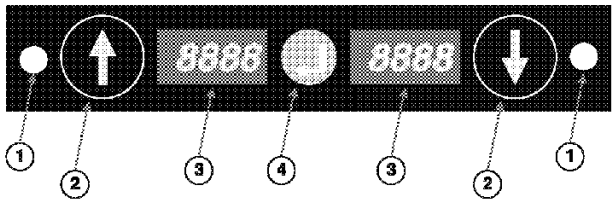
Heat Tint

Darkened areas, called heat tint, may appear on stainless steel exposed to excessive heat, which causes the protective film to thicken. It is unsightly but is not a sign of permanent damage.

To remove heat tint, follow the routine cleaning procedure. Stubborn heat tint will require heavy-duty cleaning.

To reduce heat tint, limit the exposure of equipment to excessive heat.

KEYPAD PROGRAMMING



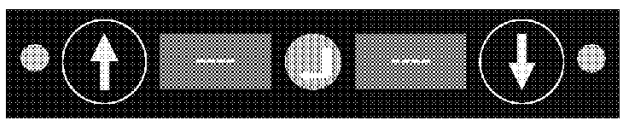
1. Status LEDs: Used for indicating status of pan.
    a. Non-Illuminated
        I. Timer is Inactive - no product in pan,

        OR

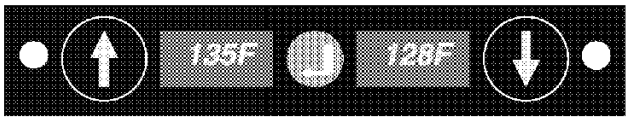
        II. Timer is Active - product in pan – use pan with GREEN STATUS LED first.
    b. Green = Timer is Active - product in pan (use first)
    c. Flashing Green = Cook Warning Time reached (cook more product) or keyboard in EDIT MODE (programming).
2. Arrow Buttons
    a. Used for Starting/Stopping/Resetting Timer.
    b. Used for Programming.
    c. Indicate which pan the adjacent Status LED and Pan Display are linked to (i.e. Status LED and Pan Display on left side of keyboard are linked to the pan above the keyboard and the Status LED and Pan Display on right side of keyboard are linked to the pan below).
3. Pan Display
    a. Displays Product Name and Hold Time Remaining (alternates between the two when Timer is active).
4. Enter Button
    a. Used for Time Decrement and Programming.

Power Up

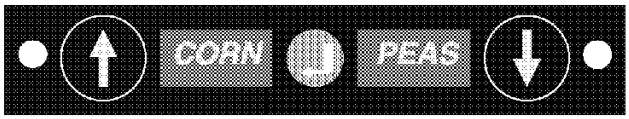
1. Place the Power Switch in the ON position. Software initializes at startup.



2. Until warmer reaches preprogrammed operating temperature, all displays will show actual temperature.



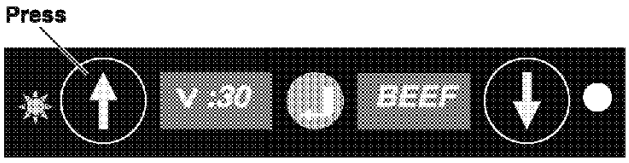
3. When the set point is reached, Product Name appears on all Pan Displays.



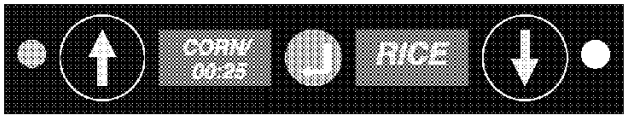
Note: For these instructions only the pertinent keypads will be shown, for simplicity, and not the warmer or pans. It is implied that a product pan is located above and below each keypad.

Timer Operation

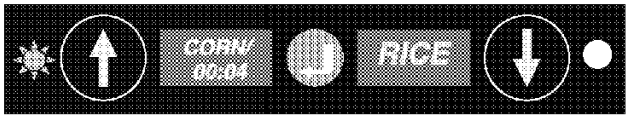
1. Press Arrow Button that corresponds to pan the product is in. (In this example, there is product in pan above keypad).



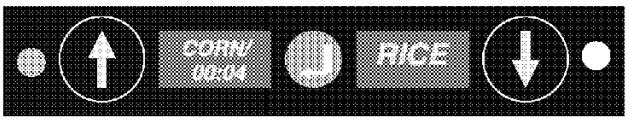
2. Status LED turns GREEN (unless same product present in another pan, then Status LED will remain non-illuminated) and Pan Display alternately shows Time Remaining and Product Name.



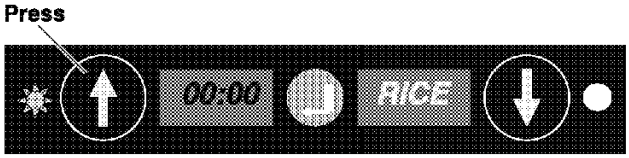
3. At t=cook time (set to 4 minutes) the Status LED begins FLASHING, alarm sounds and Display alternately flashes Time Remaining and Product Name.



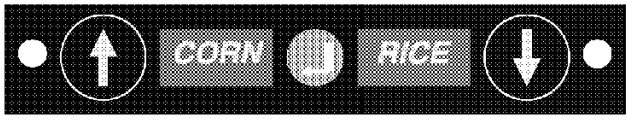
4. Push Arrow Button to silence alarm – Status LED remains GREEN and stops flashing.



5. At t=0, alarm sounds, Status LED is FLASHING and "00:00" is FLASHING in the Display. **Discard product in pan**. Press corresponding Arrow Button to silence alarm and reset timer.



6. Status LED becomes non-illuminated and Display shows Product Name only. The pan is ready for more product.



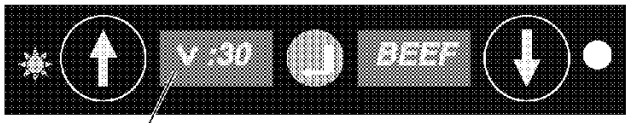
Note: To reset the time when product is depleted, press and release the corresponding arrow key. The status LED will become non-illuminated any status LED on the same product will turn green, indicating use first.

Time Decrement

This program is used to alter Hold Time when introducing a product from another warming unit.

Example: Transfer CORN from another warmer with 19 minutes left on Hold Time.

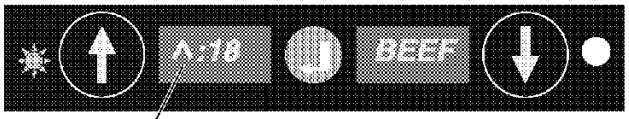
1. Press and hold the Arrow Button corresponding to the pan that's being edited for three seconds. The display will appear as shown below with a FLASHING Status LED and a down arrow in the Display indicating the timer is in decrement mode.



"V" denotes timer is in decrement mode

2. Repeatedly pressing the Arrow Button decrements time by one minute per depression.
3. Holding down the button continuously will count the time down.
4. To increment time, press the Enter Button. The arrow on display will point up to denote incrementing time as shown below.
5. Repeatedly pressing the Arrow Button increments time by one minute per depression.

6. Holding down the button continuously will speed the time up.



"^" denotes timer is in increment mode

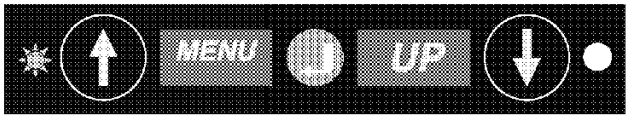
7. When the proper time is reached on the Display release the Arrow Button and after 5 seconds unit will accept new time and return to normal operation.

Menu Mode

This option is used to change Meal Set and view, Linking, Hold Time and Hold Temp.

Enter Menu Mode

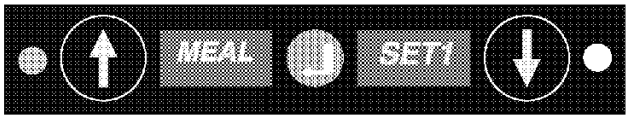
1. Press and hold the Enter Button for three seconds. Status LED FLASHES GREEN and "MENU" is displayed on left Display and "UP" is displayed on right, indicating upper well information will be displayed.
2. To view lower well information press the Down Arrow Button – "DOWN" will appear in the right Display. FLASHING Status LED will be present on side of keypad corresponding to well being viewed.
3. Press the Enter Button to accept.



Change Meal Set

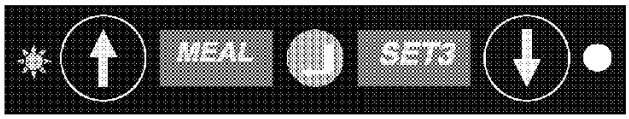
Note: The Meal Set can be changed globally from any keyboard.

1. Status LED stops flashing and "MEAL" "SET1" appears on the Display.



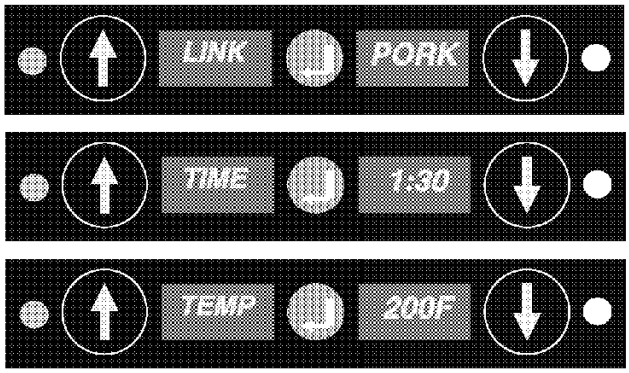
2. Press the Enter Button again. Status LED FLASHES indicating edit mode.

3. Use the Arrow Buttons to scroll to desired Meal Set and press the Enter Button to accept. Status LED stops flashing and desired Meal Set is displayed.



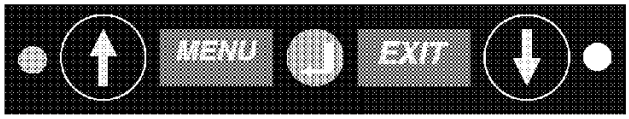
Display Link, Hold Time & Temperature

Press Arrow Button repeatedly to scroll through Link, Time and Temperature settings.

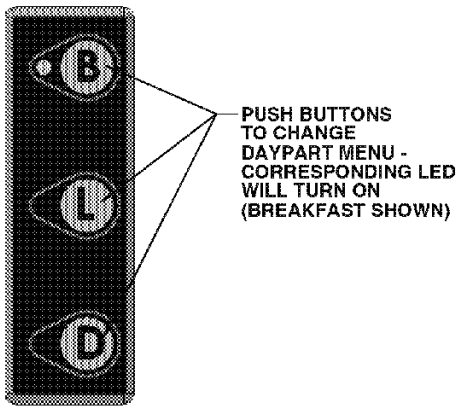


Exit Menu Mode

Scroll to EXIT and press the Enter Button to exit menu mode.



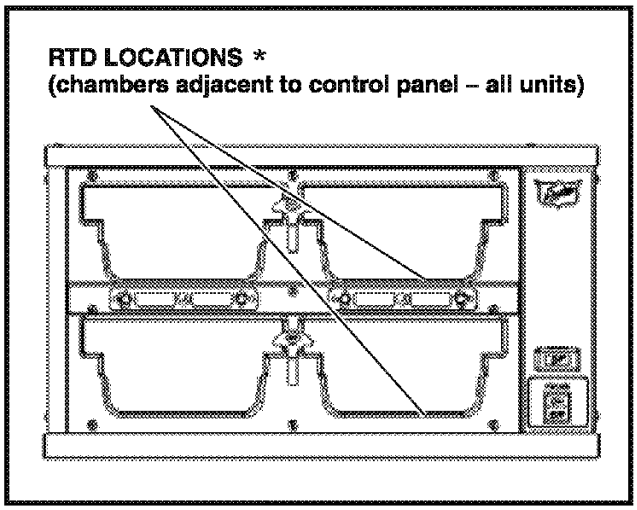
DAYPART PROGRAMMING (OPTION)



TROUBLESHOOTING

There are no user serviceable parts on the Duke Product Holding Cabinet. If a malfunction occurs, ensure unit is plugged in then check all switches and circuit breakers. If the malfunction still exists, contact your Duke Manufacturing Company authorized service agent or call 1-800-735-3853.

ELECTRONIC CONTROL FAULT INDICATIONS



* See 5X1 wiring digram for 5X1 RTD Locations.

The keypad display provides an indication to alert the operator to failures in the heater circuit. The possible fault conditions are as follows:

1. **Over-Temperature Fault** - An over-temperature fault occurs when the control senses that the shelf temperature is higher than the specified factory preset temperature for thirty minutes. This occurs when the power is not removed from the heating element after the shelf has achieved the preset temperature. The auxiliary thermostat prevents the temperature from exceeding safe levels by regulating the temperature to a maximum of 250°F. If this occurs, "HI" will appear on the keypad; the affected unit should not be used until the cause of the fault is corrected by a qualified service technician.
2. **Under-Temperature Fault** - An under-temperature fault occurs when the control senses that the shelf temperature is lower than the specified factory preset temperature for more than thirty minutes continuously. This occurs when heating element circuit opens or the RTD Feedback signal is faulty. If this occurs, "LO" will appear on the keypad and the affected unit should not be used until the cause of the fault is corrected by a qualified service technician.
3. **Sensor Fault** – If it any time during normal operation "SENS" is displayed on the keypad: discontinue operation and contact qualified service technician.

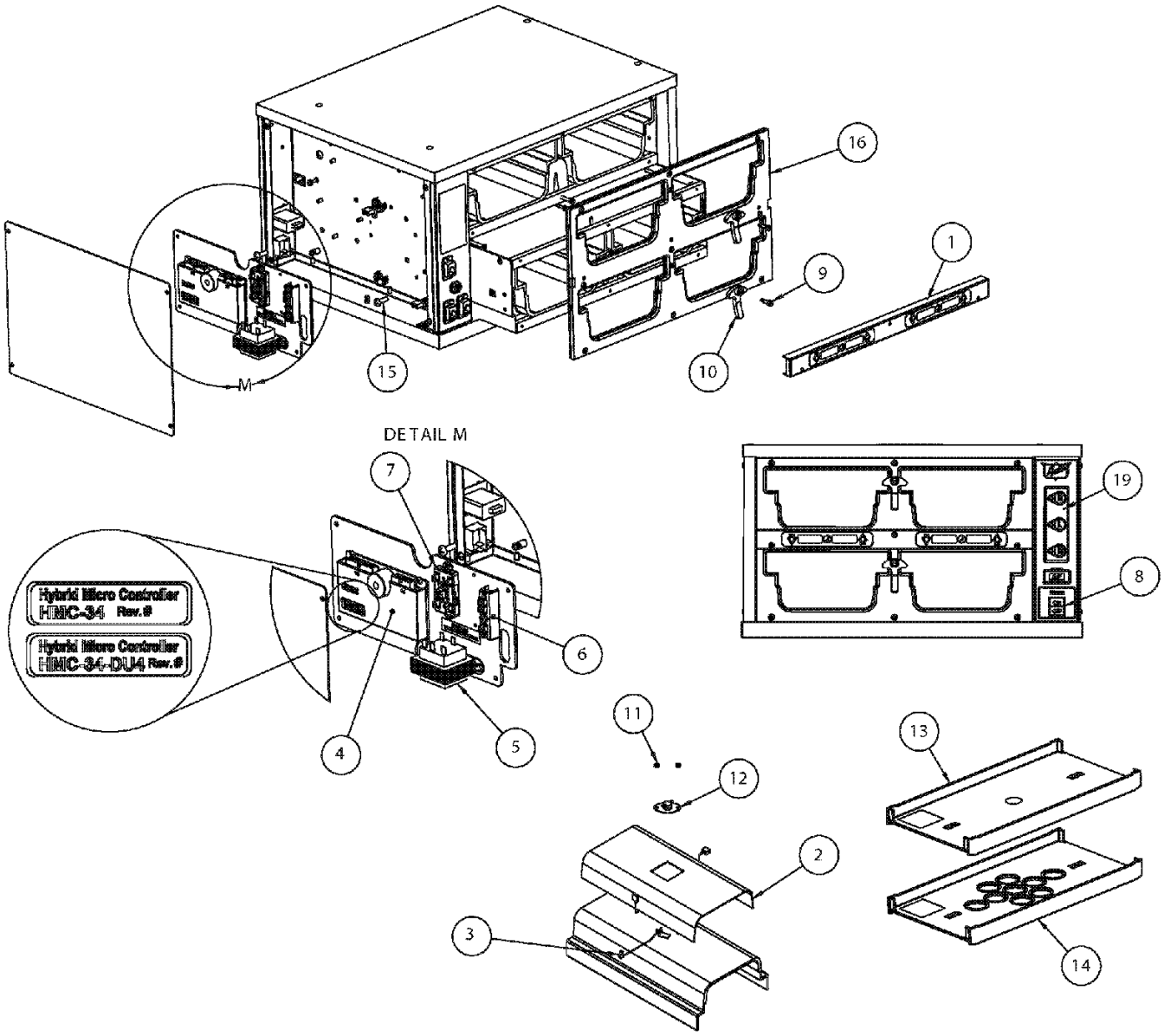
TEMPERATURE CHECK PROCEDURE

1. A digital temperature meter that has been calibrated must be used to get an accurate temperature reading. Use a thermocouple surface temperature probe to measure temperatures.
2. **No pans should be in wells during the pre-heat and temperature check.** Pre-heat the warmer for 30 minutes before taking any temperature readings. Do not take readings unless the cavity has been empty for 30 minutes. This will allow the temperature to stabilize and will prevent false readings.
3. The warmer cavity should be cleaned and empty before the temperature is checked. Avoid any air drafts that might flow through the cavity.
4. Locate the surface temperature probe on the bottom of the first cavity in the geometric center. The first cavity is the one closest to the control panel (see figure). Make sure the probe is making good contact with the surface while taking readings.
5. All temperature controls exhibit a swing in temperature as the control cycles on and off while regulating to the set point. The correct calibration temperature is the average of several readings taken over a period of 20 minutes after the warmer has been pre-heated. The average temperature should be ± 5°F from the set point.

SERVICE HOT-LINE

Check the display for fault messages. Perform the Temperature Check Procedure in this manual. Make note of the findings. Please, have this data handy before calling the Duke troubleshooting Hot Line listed above. For optimum support, please be near the suspect units with a cordless phone, if available, when calling our Technicians.

PARTS LISTS AND ILLUSTRATIONS



PARTS LISTS AND ILLUSTRATIONS (CONTINUED)

Locator	P/N	Description	FWM3 1X3	FWM3 1X4	FWM3 2X1	FWM3 2X2	FWM3 2X3	FWM3 2X4	FWM3 4X1	FWM3 4X2	FWM3 5X1
1	157828	KEYPAD			1 or 2	2 or 4	3 or 6	4 or 8	2 Or 4	4 or 8	3 or 6
	156292	KEYPAD – DOWN ARROWS ONLY	3	2							
	160585	KEYPAD – DOWN ONLY REAR	3	2							
2*	See Note	ELEMENT FOIL HEAT	3	4	2	4	6	8	4	8	5
3	155750	RTD 1K OHM THIN	1	1	1 or 2	2	2	2 or 4	4	4	2
4	600193	STANDARD CONTROL KIT	1	1	1	1	1	1	1	1	1
5	155749	TRANSFORMER, 208/240 VAC	1	1	1	1	1	1	1	1	1
	156838	TRANSFORMER, 230 VAC									
	156316	TRANSFORMER, 120 VAC									
	160840	TRANSFORMER 10 VAC/230 VAC (AUS/NZ) (Rev M or Older)									
6	157743	TERMINAL BLOCK	1	1	1	1	1	1	1	1	1
7	157830	RELAY, SMART POWER MODULE	1	1	1	1	1	1 or 2	2	2	1
8	600261	SWITCH, LIGHTED, DPST, 250V 16A, 250V	1	1	1	1	1	1	1	1	1
	600228	SWITCH, LIGHTED, DPST, 125V 20A, 120V									
9	156288	SCREW, SHOULDER	4	4	4	4	8	8	8	8	10
10	156285	LATCH, PAN	4	4	4	4	8	8	8	8	10
11	155680	NUT #8-32 KEPS	2	2	4	4	4	4	8	8	4
12	155753	THERMOSTAT AUXILIARY	1	1	2	2	2	2 or 4	4	4	2
13	155876	LID,FOODWARMER SOLID (BROILED)(BLACK)	AR	AR	AR	AR	AR	AR	AR	AR	AR
14	155873	LID,FOODWARMER VENTED (FRIED)(GRAY)	AR	AR	AR	AR	AR	AR	AR	AR	AR
15	0653638	SCREW, 1/4-20 X 3/4	4	4	8	8	8	8	16	16	20
16	157506	FACE PLATE w/GASKET, FWM3-13	2								
	156354	FACE PLATE w/GASKET, FWM3-14		2							
	157859	FACE PLATE w/GASKET, FRONT, FWM3-21			1						
	157860	FACE PLATE w/GASKET, REAR, FWM3-21			1						
	156485	FACE PLATE w/GASKET, FWM3-22				2					
	156558	FACE PLATE w/GASKET, FWM3-23					2				
	157960	FACE PLATE w/GASKET, FWM3-24						2			
	160469	FACE PLATE w/GASKET, FRONT FWM3-41							2		
	160470	FACE PLATE w/GASKET, REAR FWM3-41							2		
	156548	FACE PLATE w/GASKET, FWM3-42								2	
	156166	FACE PLATE w/GASKET, REAR, FWM3-51									1
	156165	FACE PLATE w/GASKET, FRONT, FWM3-51									1

PARTS LISTS AND ILLUSTRATIONS (CONTINUED)

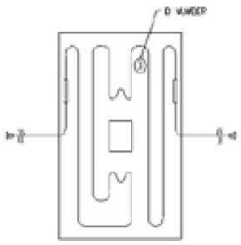
Locator	P/N	Description	FWM3 1X3	FWM3 1X4	FWM3 2X1	FWM3 2X2	FWM3 2X3	FWM3 2X4	FWM3 4X1	FWM3 4X2	FWM3 5X1
17**	156603	CORD, NEMA 5-15P, 120V	1	1	1	1	1	1		1	1
	156621	CORD, NEMA 5-20P, 120V, CANADIAN FWM3-24,-42									
	156624	CORD, NEMA 6-15P, 208/240V									
	156631	CORD, 230V CE									
	156640	CORD, AU2-15P, AS/NZS 3112									
	175887	CORD, AUS/NZ									
18***	157964	FILTER, 10A	1	1	1	1	1	1		1	1
19	157916	SWITCH, DAYPART (Option)			1	1	1	1		1	1
20**	157868	REMOVABLE COVER 2X1 (OPTION)			1						
	157962	REMOVABLE COVER 2X2 (OPTION)				1					
	157840	REMOVABLE COVER 2X3 (OPTION)					1				
	160515	REMOVABLE COVER 2X4 (OPTION)						1			
	160410	REMOVABLE COVER 4X2 (OPTION)								1	
	160516	REMOVABLE COVER 5X1 (OPTION)									1
21**	157841	SCREW, 8-32 X 3/8" KNURL THUMB (FOR REMOVABLE COVER OPTION)			4	4	4	6		6	6
22**	156218	USB FLASH DRIVE	1	1	1	1	1	1	1	1	1

* SEE SERVICE LABEL BELOW
** NOT SHOWN
*** CE ONLY

Model FWM	100V		120V		208V		220V		230V		240V	
	Part No.	ID No.	Part No.	ID No.	Part No.	ID No.	Part No.	ID No.	Part No.	ID No.	Part No.	ID No.
FWM3-13*			156564	9	156301	3			156611	12	156565	10
FWM3-14*	157520	15	156566	11	155752	1			156318	5	155755	2
FWM3-21*	157906	29	160464	33	157907	30			157908	31	157909	32
FWM3-22*	156994	14	156483	6	156539	7	160820	40	156632	13	156540	8
FWM3-23*			156564	9	156301	3			156611	12	156565	10
FWM3-24*	157520	15	156566	11	155752	1			156318	5	155755	2
FWM3-34*					156856	26			157887	27	157887	27
FWM3-41*	157906	29	160464	33	157907	30			157908	31	157909	32
FWM3-42*	156994	14	156483	6	156539	7			156632	13	156540	8
FWM3-51* Upper 3	157558	16	156564	9	156301	3			156611	12	156565	10
FWM3-51* Lower 2	156994	14	156483	6	156539	7			156632	13	156540	8
FWM34-42*			157428	24	157748	19	160819	39	157749	20	160821	41
FWM34-43*					157736	17			157737	18		
FWM34-15*			160671	34	160815	35	160816	36	160817	37	160818	38
FWM34-22*			157428	24	157748	19			157749	20	160821	41
FWM34-23*			157418	21	157736	17			157737	18		
FWM34-32*			157428	24	157748	19	160819	39	157749	20	160821	41
FWM34-24*			157816	22	157817	23			157818	25		
FWM6-42* Upper 2			156483	6	156539	7	160820	40	156632	13	156540	8
FWM6-42* Lower 2			157428	24	157748	19	160819	39	157749	20	160821	41
FWM3-24*Z	156994	14	156483	6	156539	7	160820	40	156632	13	156540	8

* DENOTES XXX-YYY WHERE XXX IS CUSTOMER CODE AND YYY IS VOLTAGE

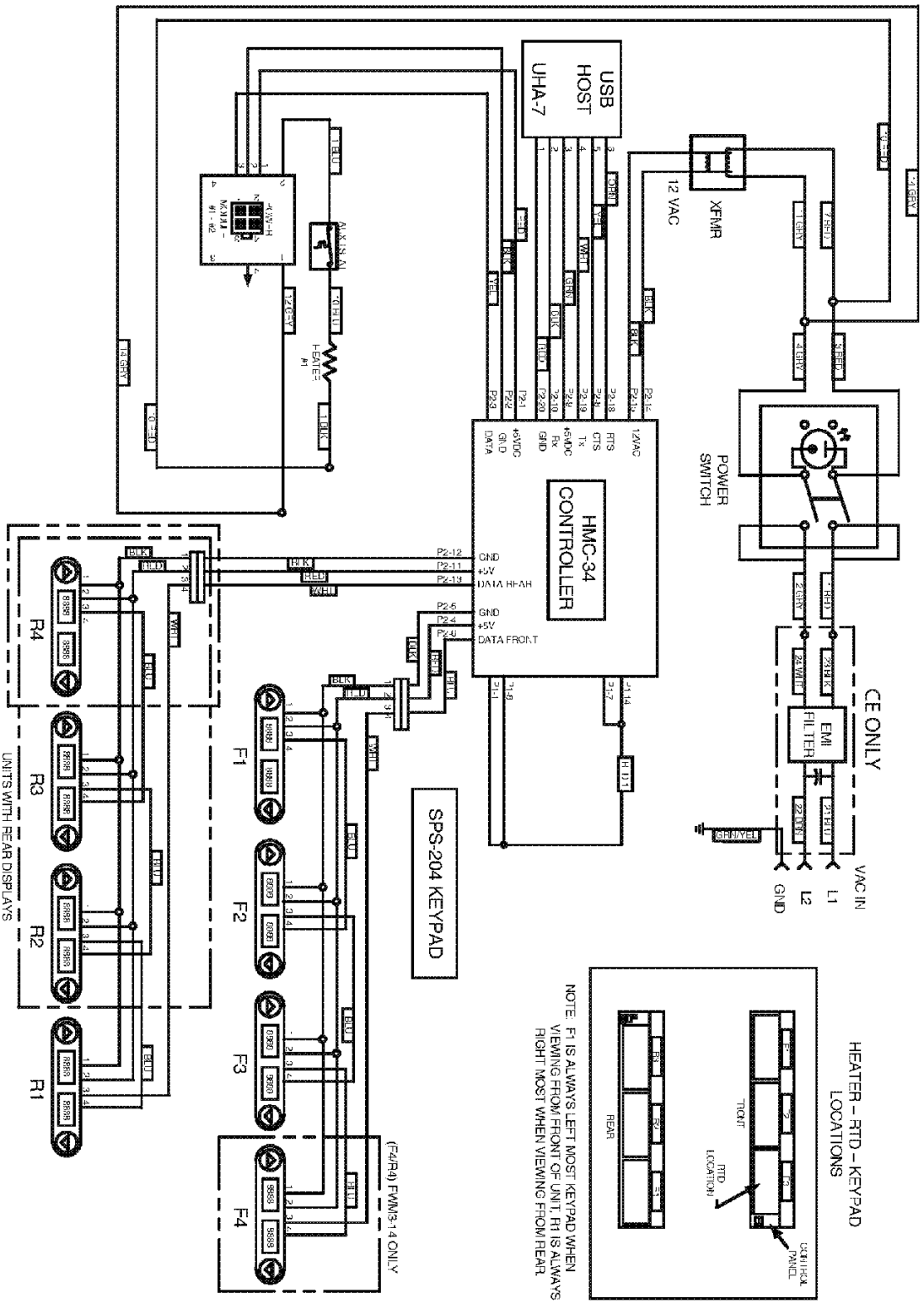
CAUTION!
THE WARMER WELLS HAVE DIFFERENT HEATER ELEMENTS FOR EACH CONFIGURATION.



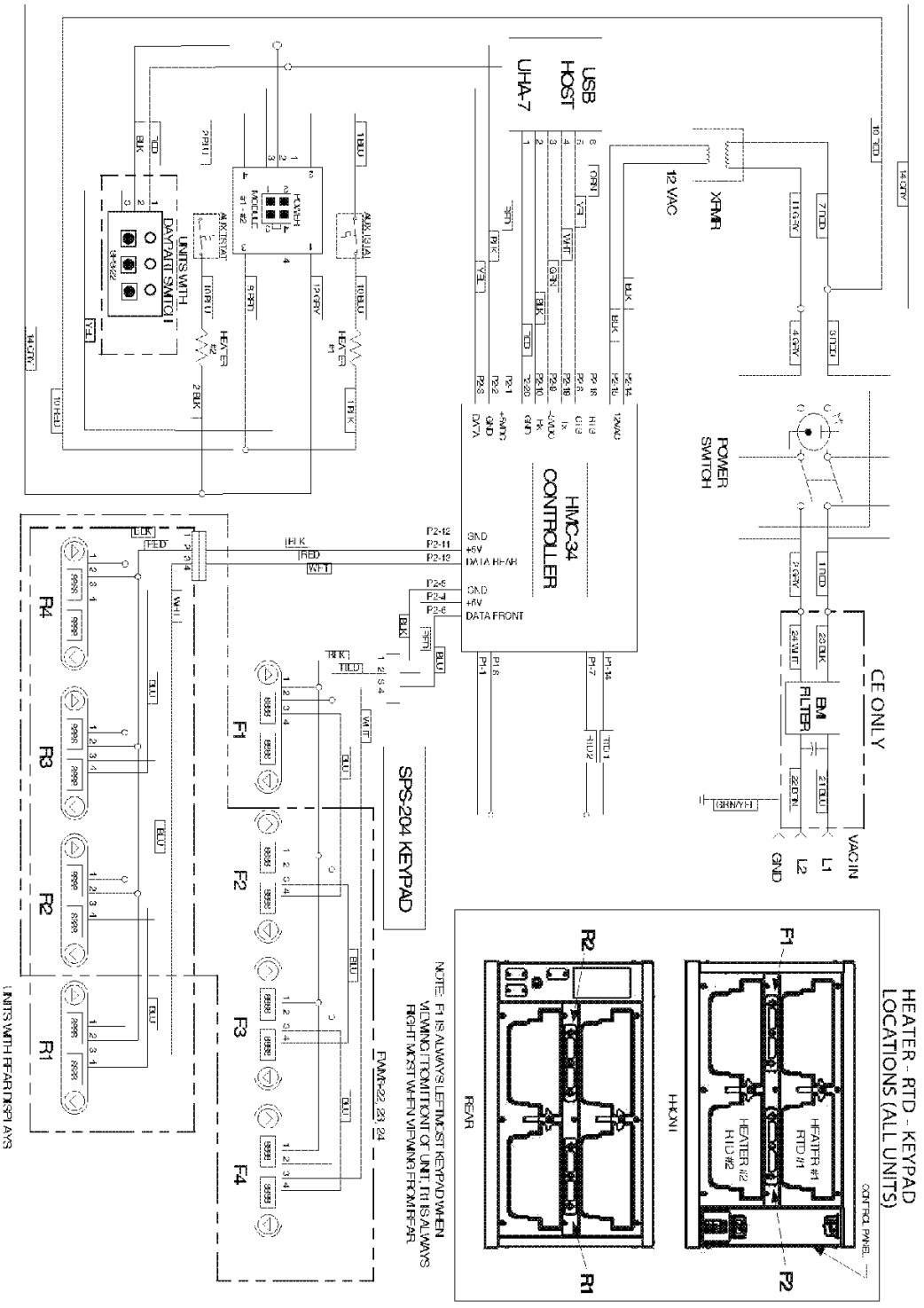
CAUTION!
VERIFY HEATER ELEMENT ID NUMBER BEFORE REPLACEMENT.

156911 Rev. T

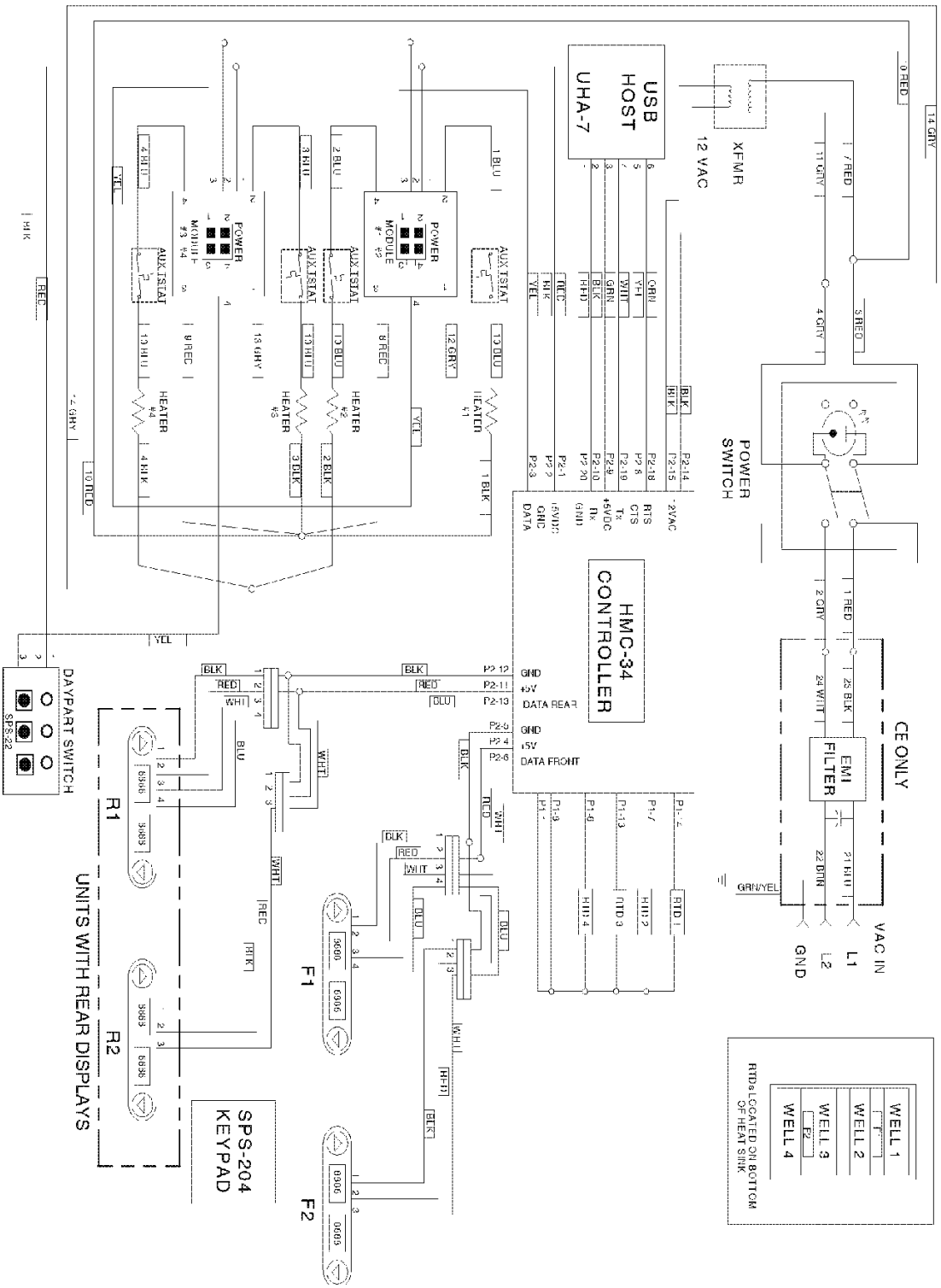
WIRING SCHEMATICS



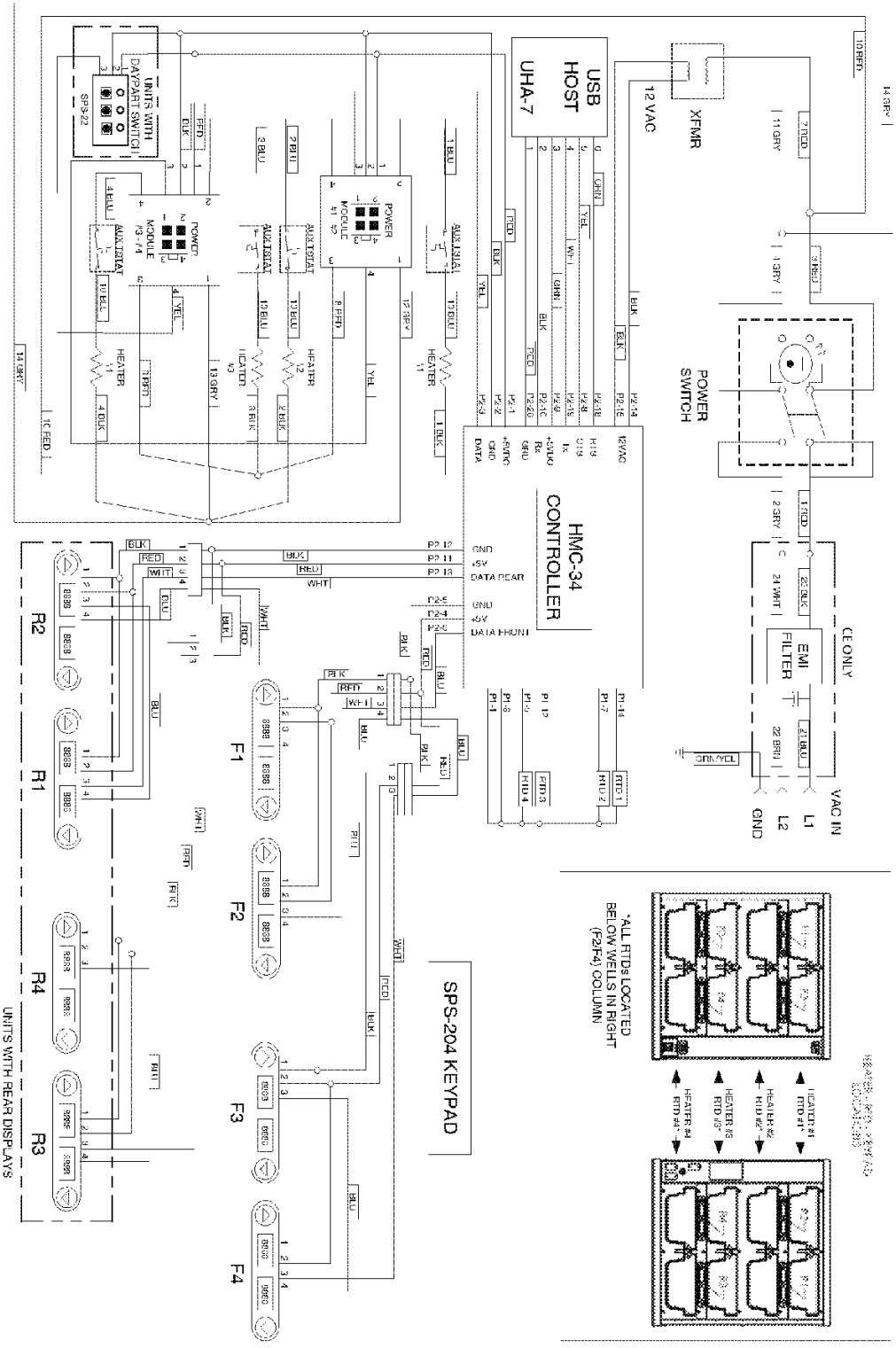
FWM 1-HIGH Internal Wiring Schematic



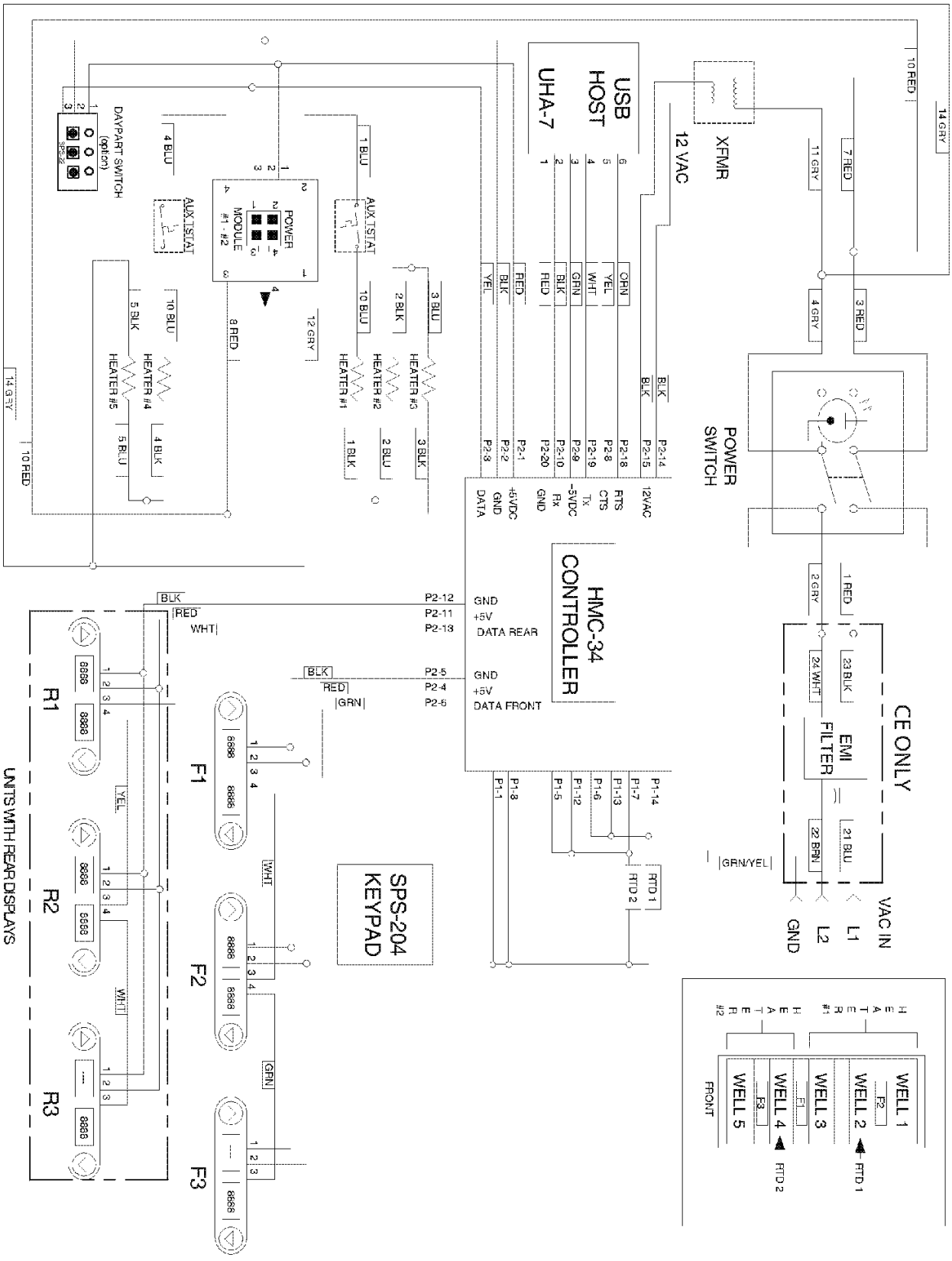
FWM 2-HIGH Internal Wiring Schematic



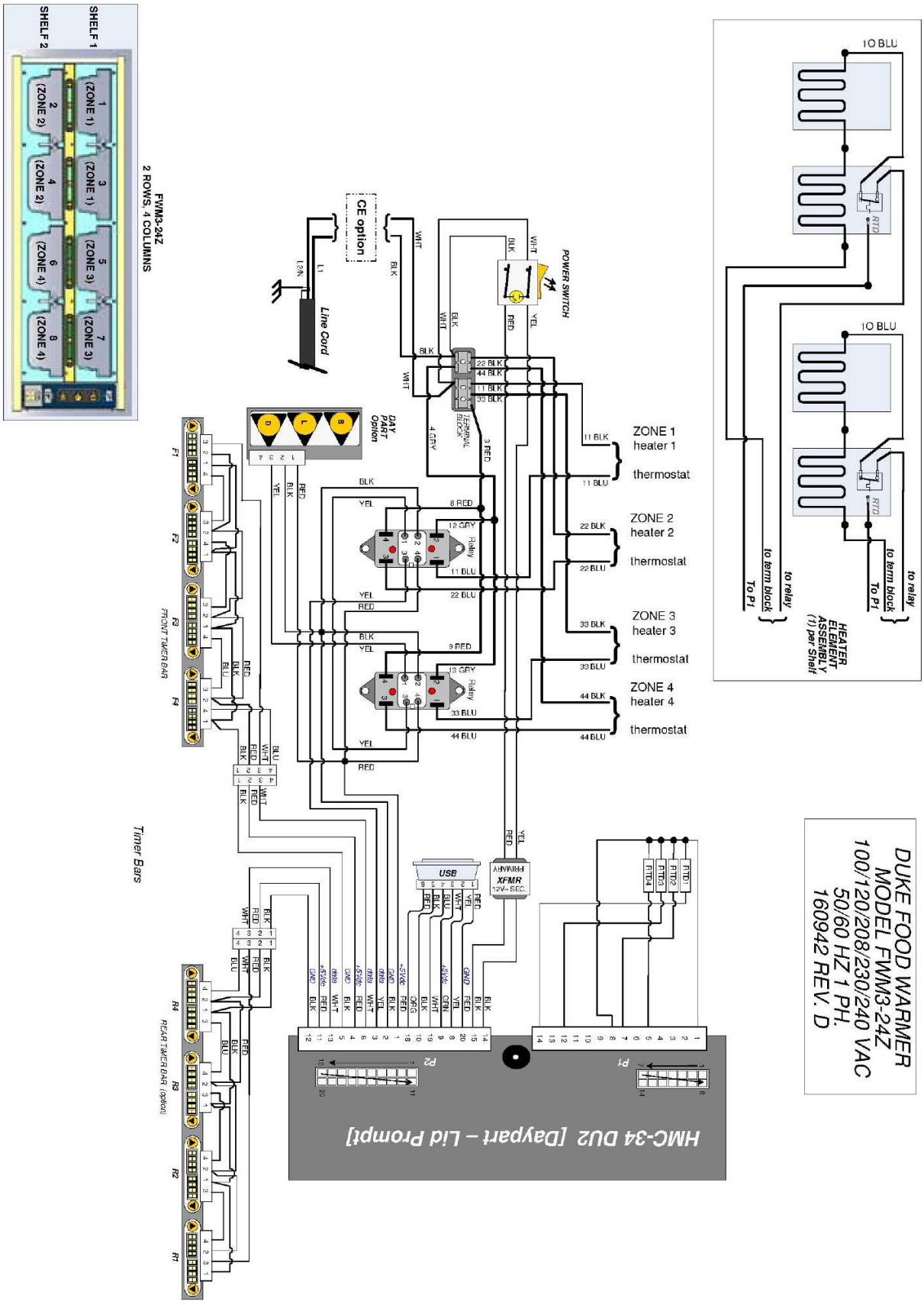
FWM 4x1 Internal Wiring Schematic



FWM 4x2 Internal Wiring Schematic



FWM 5x1Internal Wiring Schematic

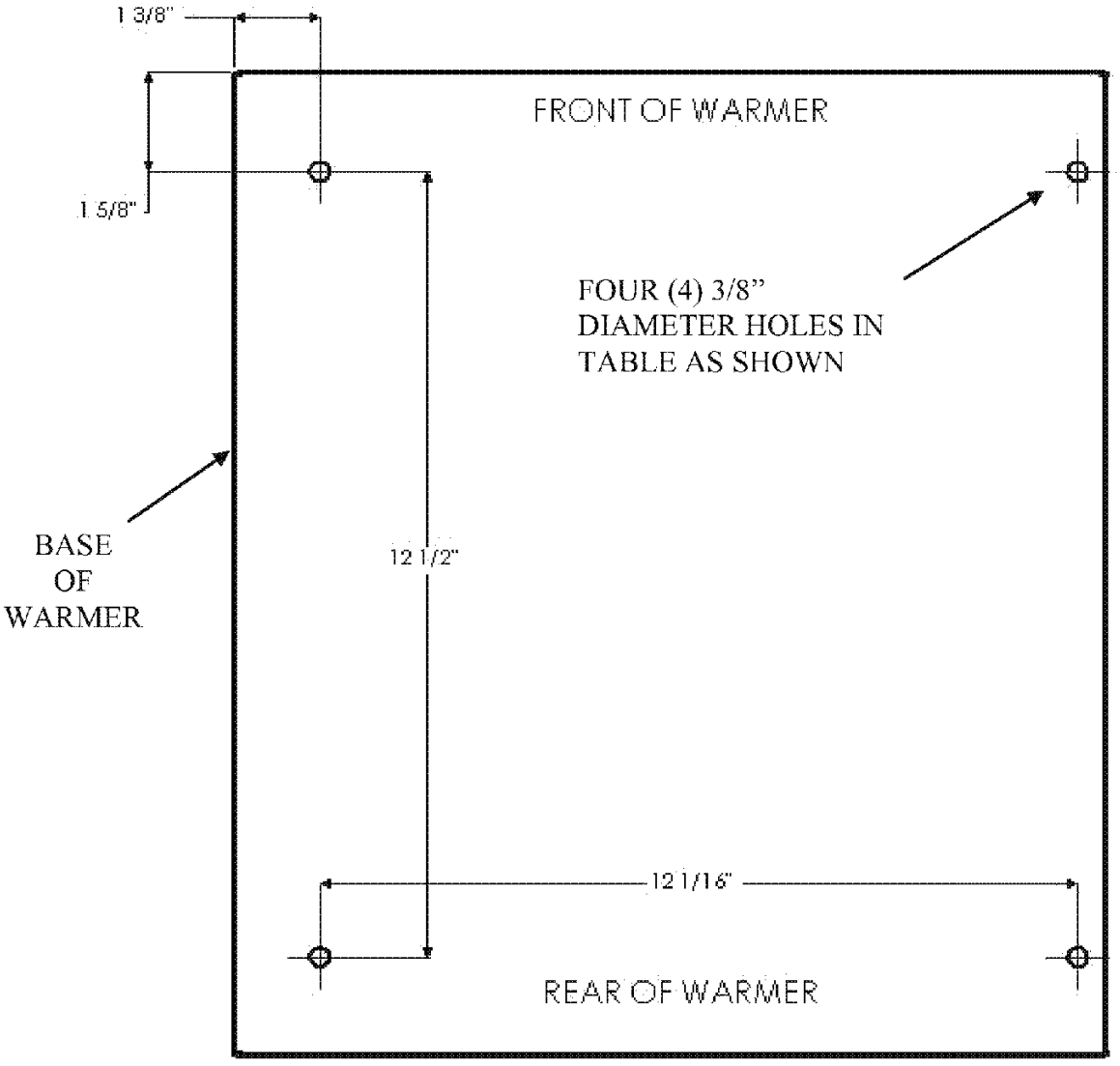


FWM 3-24Z Internal Wiring Schematic

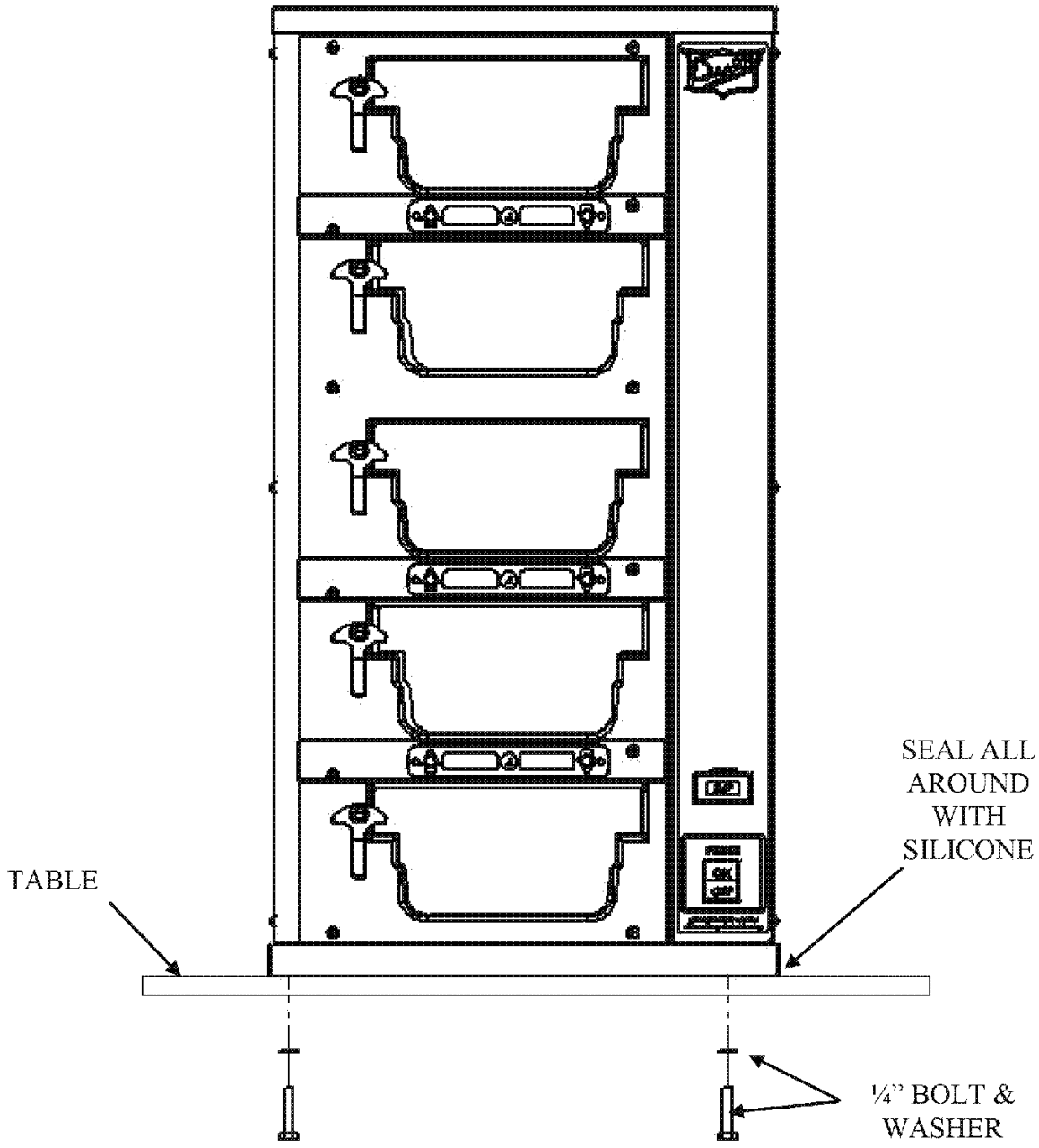
TABLE MOUNTING (5X1)

HOLE LOCATIONS

For securing unit to table top, refer to the figure below which shows the foot print of the Duke 5X1 Food Warmer and location of the four 3/8 dia. mounting holes in base plate of unit. Position warmer on table and align holes with holes in bottom of warmer. Attach warmer to table using ¼" bolts and washers, provided, as shown on next page. Seal all around base of warmer with Silicone. (Note: Be sure to allow sufficient clearance around base of warmer to rim of table)



ATTACHING UNIT TO TABLE





Your Solutions Partner

Duke Manufacturing Co.

2305 N. Broadway
St. Louis, MO 63102
Phone: 314-231-1130
Toll Free: 1-800-735-3853
Fax: 314-231-5074

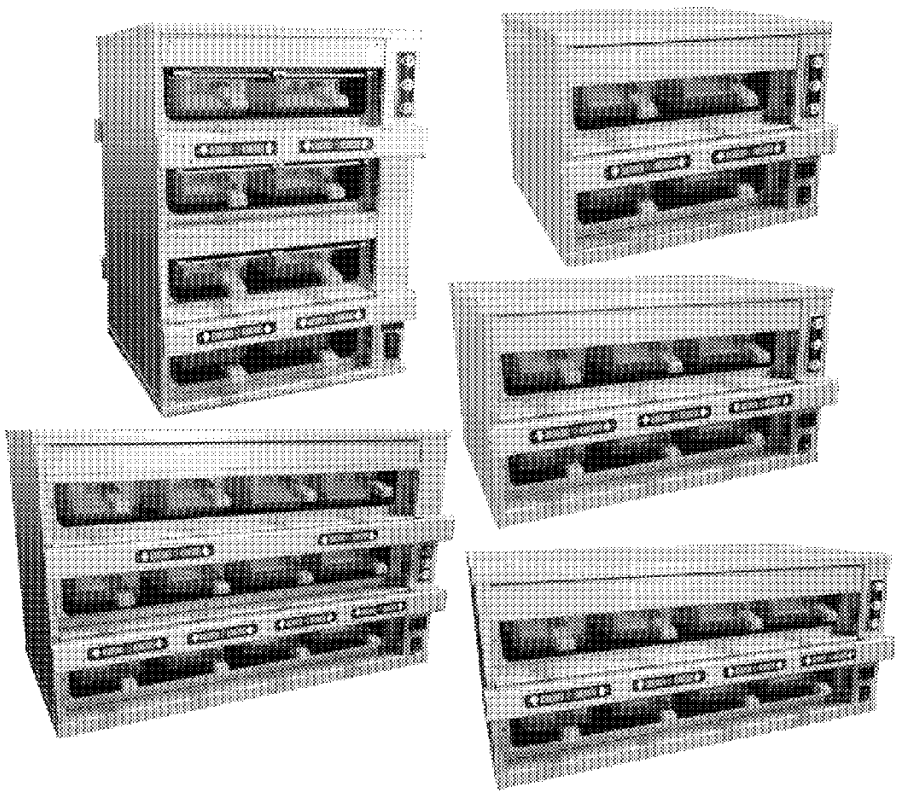
www.dukemfg.com

Your Solutions Partner

Service Manual

INFRARED HEATSINK™ HOLDING UNIT

Includes Standalone, Kitchen Minder and VISOR models



MODELS
IRHS22
IRHS23
IRHS24
IRHS34
IRHS42

Please read this manual completely before attempting to install, operate or service this equipment.

This document is prepared for trained Duke service technicians. It is not to be used by anyone not properly qualified to perform these procedures.

This Service Manual is not all encompassing. If you have not been trained on servicing this product, be sure to read the manual completely before attempting servicing. Be sure all necessary tools, test equipment, and skills are available. Those procedures for which you do not have the proper skills and test equipment must be performed only by a qualified Duke trained service technician.

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Duke Manufacturing Co.

2305 North Broadway • St. Louis, MO 63102-1405
Phone: 314-231-1130 • Toll Free: 1-800-735-3853 • Fax: 314-231-5074
service-dispatch@dukemfg.com • www.dukemfg.com

IMPORTANT WARNING AND SAFETY INFORMATION

READ THIS MANUAL THOROUGHLY BEFORE OPERATING, INSTALLING OR PERFORMING MAINTENANCE ON THE EQUIPMENT.

⚠ WARNING READ THIS MANUAL THOROUGHLY BEFORE OPERATING, INSTALLING OR PERFORMING MAINTENANCE ON THE EQUIPMENT

⚠ WARNING FAILURE TO FOLLOW INSTRUCTIONS IN THIS MANUAL CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.

⚠ WARNING DO NOT USE OR STORE GASOLINE OR OTHER FLAMMABLE VAPORS OR LIQUIDS IN THE VICINITY OF THIS OR ANY OTHER APPLIANCE.

⚠ WARNING DO NOT OPERATE THIS EQUIPMENT WITHOUT PROPERLY PLACING AND SECURING ALL COVER AND ACCESS PANELS.

⚠ WARNING IMPROPER INSTALLATION, ADJUSTMENT, ALTERATION, SERVICE OR MAINTENANCE CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH. READ THE INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS THOROUGHLY BEFORE INSTALLING THIS EQUIPMENT.

FOR YOUR SAFETY

Electricity and water do not mix. Unplug the unit before cleaning. If repairs are required, use a qualified service agent. While repairs are being made, be sure the unit is not plugged in. Do not store highly combustible substances on or near the unit. Be sure the compressor compartment has adequate ventilation.

CAUTION

Observe the following:

- Provide and maintain adequate minimum clearances from all walls and combustible materials.
- Provide and maintain adequate clearance for air openings.
- Keep the equipment area free and clear of combustible material.
- Operate equipment only on the type of electricity indicated on the specification plate.
- Retain this manual for future reference.

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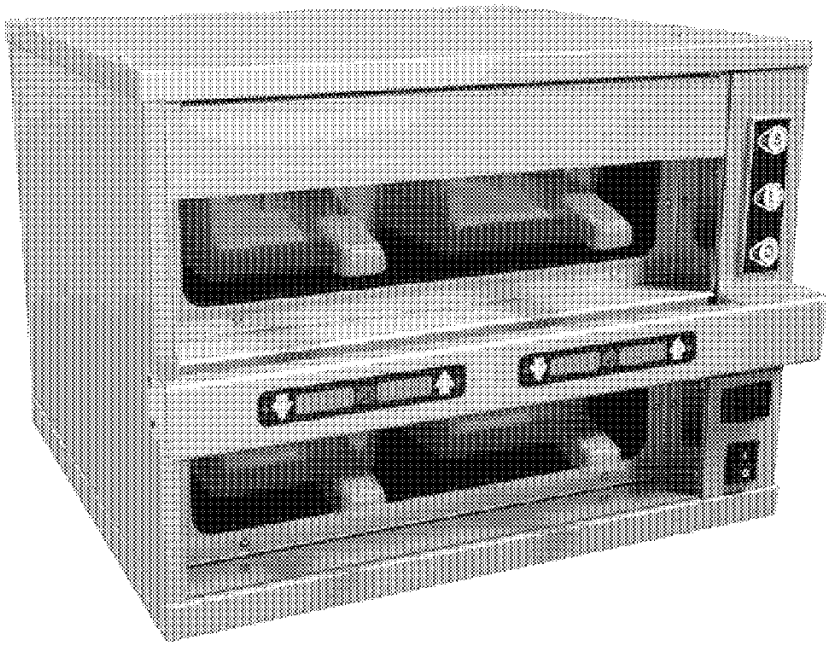
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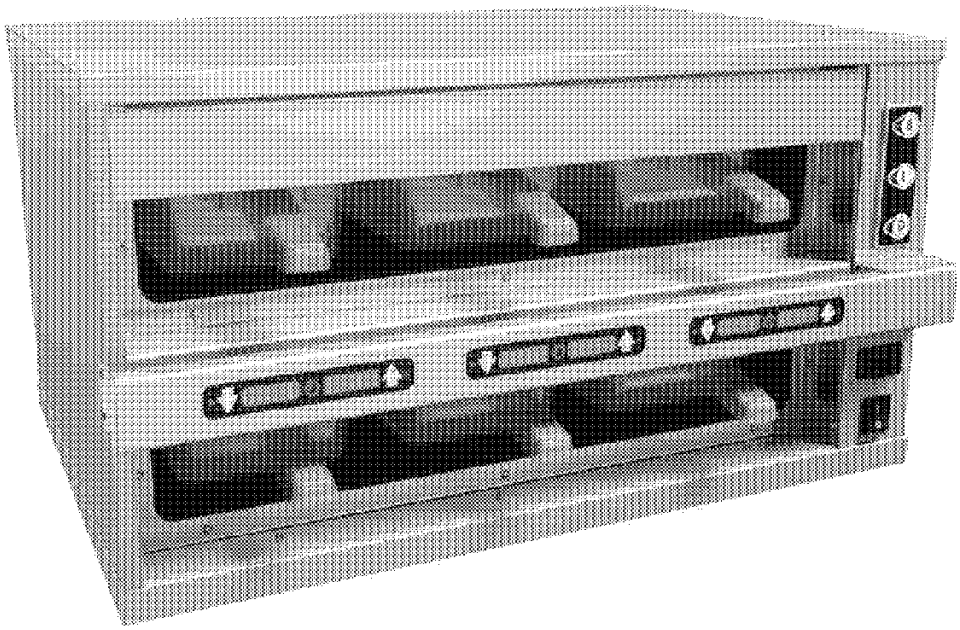
SPECIFICATIONS

IRHS22



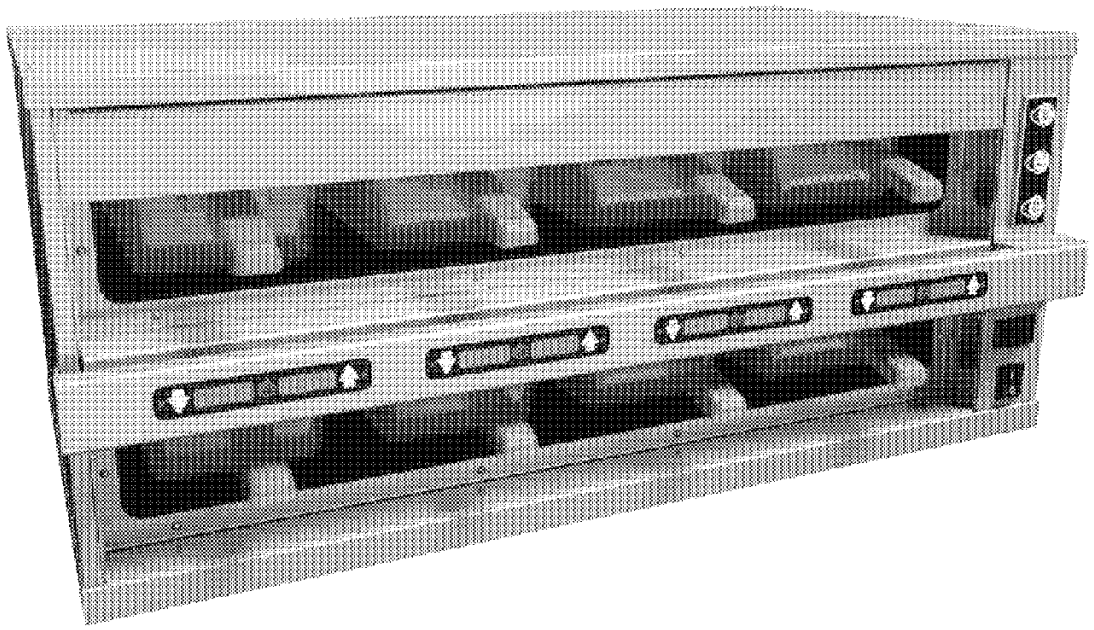
			Before Serial# 10140480 (10/1/14)			*As of Serial# 10140480*		
		Shipping Weight	125 lbs / 56.7 kg			110 lbs / 49.9 kg		
Model	**Electrical**	**Plug**	**H**	**W**	**D**	**H**	**W**	**D**
IRHS22-208	208V ~ 12 A, 50/60 Hz	NEMA 6-15P	14.4 in / 36.6 cm	19.3 in / 49.0 cm	20.1 in / 51.1 cm	13.3 in / 33.8 cm	19.3 in / 49.0 cm	20.1 in / 51.1 cm
IRHS22-230	230V ~ 12 A, 50/60 Hz	SHUKO, 16 AMP (*as of 11/3/14*) IEC, 16 AMP						
IRHS22-240	240V ~ 12 A, 50/60 Hz	NEMA 6-15P						

IRHS23



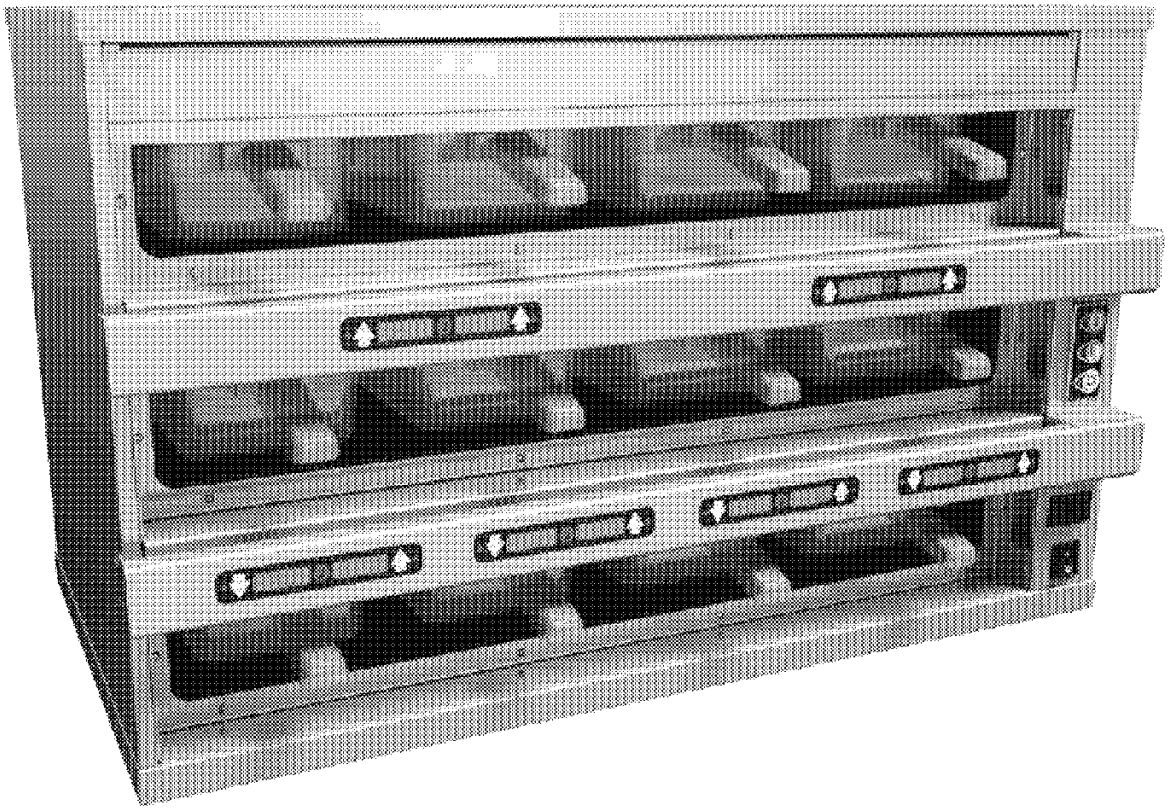
			Up to Serial# 101413198 (10/20/14)			*After SN# 101413198*		
		Shipping Weight	160 lbs / 72.6 kg			143 lbs / 64.9 kg		
Model	**Electrical**	**Plug**	**H**	**W**	**D**	**H**	**W**	**D**
IRHS23-208	208V ~ 12 A, 50/60 Hz	NEMA 6-15P	14.4 in / 36.6 cm	26.4 in / 67.1 cm	20.1 in / 51.1 cm	13.3 in / 33.8 cm	26.4 in / 67.1 cm	20.1 in / 51.1 cm
IRHS23-230	230V ~ 12 A, 50/60 Hz	SHUKO, 16 AMP (*as of 11/3/14*) IEC, 16 AMP						
IRHS23-240	240V ~ 12 A, 50/60 Hz	NEMA 6-15P						

IRHS24



			Before Serial# 10140545 (10/3/14)			*As of Serial# 10140545*		
		Shipping Weight	195 lbs / 88.4 kg			181 lbs / 82.1 kg		
Model	**Electrical**	**Plug**	**H**	**W**	**D**	**H**	**W**	**D**
IRHS24-208	208V ~ 12 A, 50/60 Hz	NEMA 6-15P	14.4 in / 36.6 cm	33.4 in / 84.8 cm	20.1 in / 51.1 cm	13.3 in / 33.8 cm	33.4 in / 84.8 cm	20.1 in / 51.1 cm
IRHS24-230	230V ~ 12 A, 50/60 Hz	SHUKO, 16 AMP / (*as of 11/3/14*) IEC, 16 AMP						
IRHS24-240	240V ~ 12 A, 50/60 Hz	NEMA 6-15P						

IRHS34



			Before Serial# 10140032 (10/1/14)			*As of Serial# 10140032*		
		Shipping Weight	275 lbs / 124.7 kg			243 lbs / 110.2 kg		
Model	**Electrical**	**Plug**	**H**	**W**	**D**	**H**	**W**	**D**
IRHS34-208	208V ~ 16 A, 50/60 Hz	NEMA 6-20P	20.9 in / 53.1 cm	33.4 in / 84.8 cm	20.1 in / 51.1 cm	19.3 in / 49.0 cm	33.4 in / 84.8 cm	20.1 in / 51.1 cm
IRHS34-230	230V ~ 16 A, 50/60 Hz	SHUKO, 16 AMP (*as of 11/3/14*) IEC, 16 AMP						
IRHS34-240	240V ~ 16 A, 50/60 Hz	NEMA 6-20P						

IRHS42



		Shipping Weight	187 lbs / 84.8 kg		
Model	**Electrical**	**Plug**	**H**	**W**	**D**
IRHS42-208	208V ~ 12 A, 50/60 Hz	NEMA 6-15P	25.3 in / 64.3 cm	19.3 in / 49.0 cm	20.1 in / 51.1 cm
IRHS42-230	230V ~ 12 A, 50/60 Hz	SHUKO, 16 AMP (*as of 11/3/14*) IEC, 16 AMP			
IRHS42-240	240V ~ 12 A, 50/60 Hz	NEMA 6-15P			

REMOVAL AND REPLACEMENT OF PARTS

EQUIPMENT USED IN THESE INSTRUCTIONS

- Phillips screwdriver
- #1 precision screwdriver
- Flat-head screwdriver
- Needle-nose pliers
- 11/16" open-end wrench
- 11/32" nut driver or socket
- 1/4" nut driver or socket
- Tie wraps
- ESD Wrist Strap
- Aluminum tape
- Ohmmeter
- Heat transfer compound
- Clean gloves/cloths/towels

ELECTRICAL LOCKOUT/TAGOUT PROCEDURE

WARNING

BEFORE PERFORMING ANY SERVICE THAT INVOLVES ELECTRICAL CONNECTION OR DISCONNECTION AND/OR EXPOSURE TO ELECTRICAL COMPONENTS, ALWAYS FOLLOW THE ELECTRICAL LOCKOUT/TAGOUT PROCEDURE. DISCONNECT ALL CIRCUITS. FAILURE TO COMPLY CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.

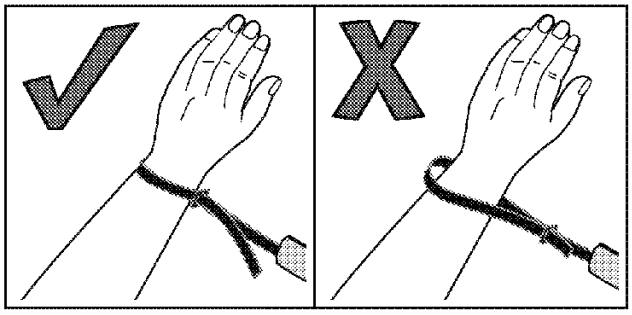
The Electrical LOCKOUT/TAGOUT Procedure is used to protect personnel working on an electrical appliance. Before performing any maintenance or service that requires exposure to electrical components, follow these steps:

1. In electrical box, place appliance circuit breaker into OFF position.
2. Place a lock or other device on electrical box cover to prevent someone from placing circuit breaker ON.
3. Place a tag on electrical box cover to indicate that appliance has been disconnected for service and power should not be restored until tag is removed by maintenance personnel.
4. Disconnect appliance power cord from electrical outlet.
5. Place a tag on the cord to indicate that unit has been disconnected for service and power should not be restored until tag is removed.

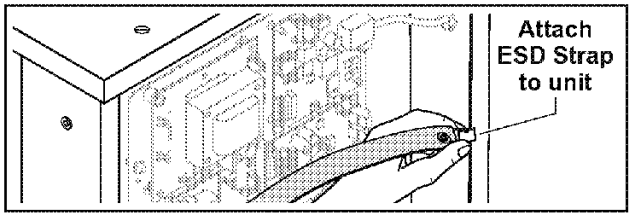
ESD WRIST STRAP

Electrostatic Discharge (ESD) is one of the biggest dangers to components in electronic devices. An ESD wrist strap allows any accumulated static charge to disperse safely through its cable, rather than through static-sensitive components such as unit computer-related components.

1. Place the ESD wrist strap around your wrist. The wrist strap should be next to your skin, so it needs to be placed under any clothes.
2. Tighten the wrist strap so that the attached metal plate maintains good contact with your skin. Do not over tighten as the wrist strap should not be uncomfortable.



3. Connect the cable to the wrist strap if it is disconnected. The cable should be securely clipped in place to maintain a good connection.
4. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
5. Connect the alligator clip on the other end of the cable to a metal surface on the unit. This creates a path through which any built-up static charge can safely flow without causing any damage. A built-in high value resistor ensures the charge leaks away in a controlled manner, and protects the user.



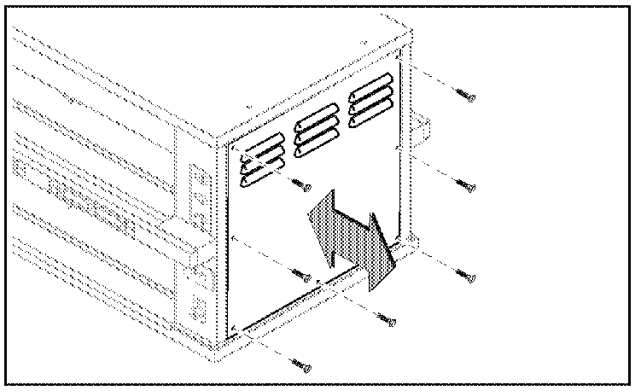
DECK ASSEMBLY COMPONENTS

MENU BARS

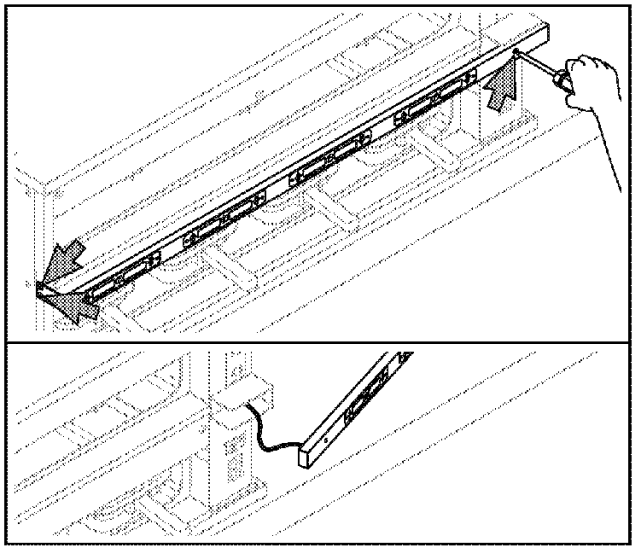
The Menu Bars hold the Keypad Displays that control and monitor the performance of each heating well. The quantity varies (depending on model) and are located on the front and back faces of the unit.

TOOLS REQUIRED: Phillips screwdriver; Flat-head screwdriver

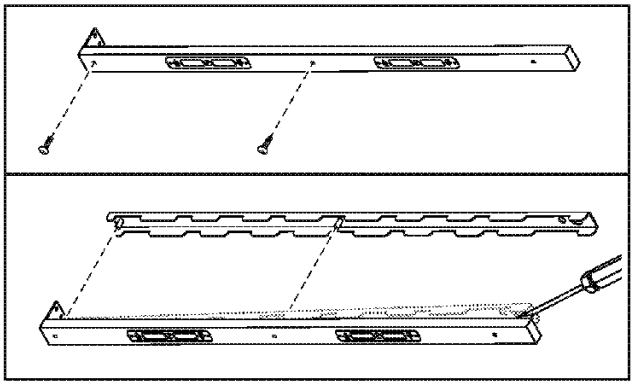
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.



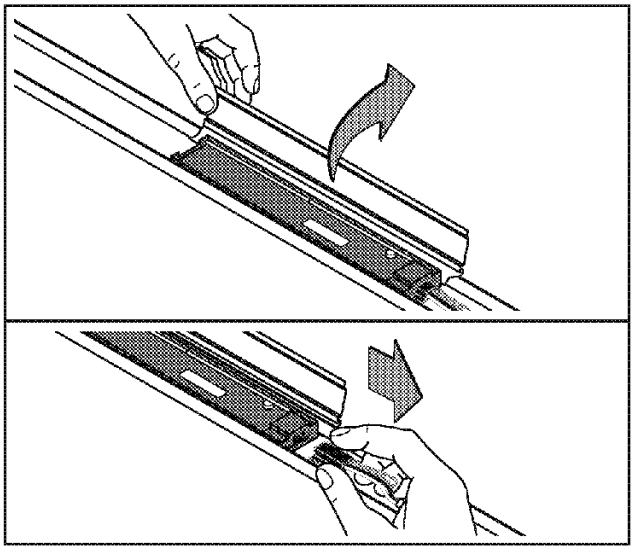
3. Remove and retain screws of the affected Menu Bar and pull away from the face of the unit. It is not necessary, but recommended, to completely remove the Menu Bar from the unit.



4. Mark and disconnect the affected Menu Bar's molex connector inside the control compartment.
5. If it is necessary to reuse the existing Keypad Displays in a replacement Menu Bar:
   a. Remove and retain the two (2) screws securing the Menu Bar Back Channel and pry out of the former Menu Bar.

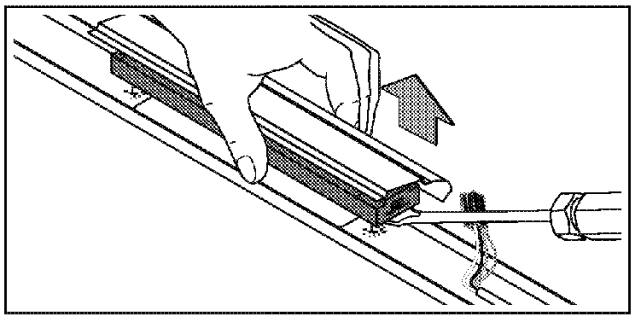


   b. A Keypad Spacer is attached to the rear of each Keypad Display with double-sided tape. Carefully pry off and remove the Keypad Spacer from the affected Keypad Display(s). This will free-up the Menu Bar Harness.

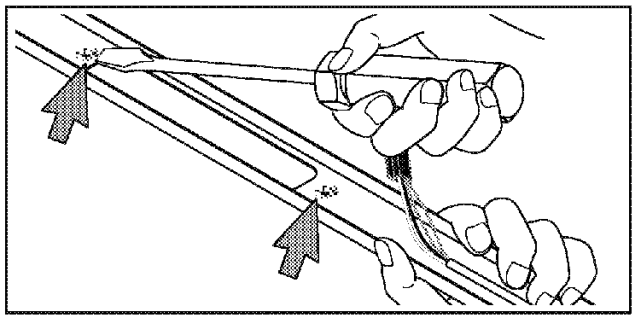


c. Disconnect the affected Keypad Display(s) electrical connector from the Menu Bar Harness.

d. The Keypad Displays are attached to the Menu Bar with double-sided glue dots. Carefully pry off and remove the affected Keypad Display from the Menu Bar.

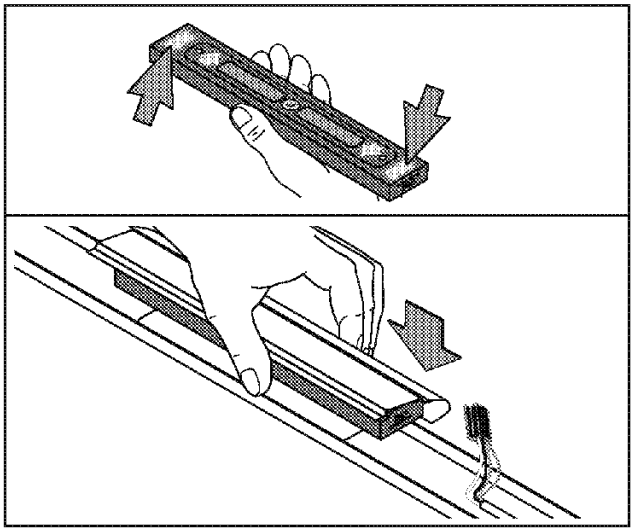


e. Carefully scrape any remaining adhesive residue from the inside of the Menu Bar.



RESTORE

6. Carefully place the Keypad Displays in place on the interior side of the replacement Menu Bar. If reusing the Keypad Displays, it may be necessary to use additional double-sided tape to secure the Keypad Displays to the Menu Bar.



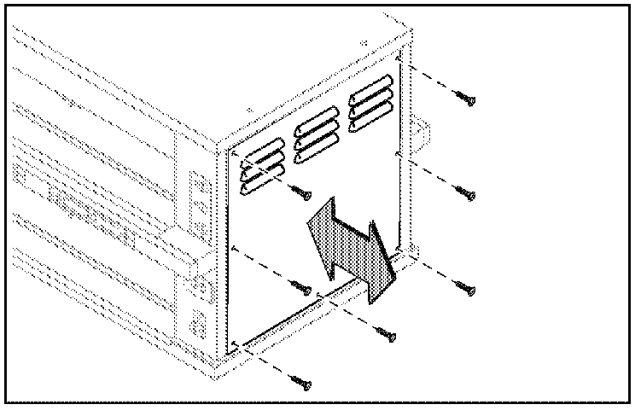
7. Connect the replacement Menu Bar Harness' molex connector in the control compartment.
8. Replace the Keypad Spacer, over the Menu Bar Harness, to the rear of the Keypad Display(s).
9. Reinstall Menu Bar Back Channel using its screws.
10. Reinstall the Menu Bar using its screws.
11. Replace the Control Side Cover and secure with its screws.
12. Restore power to the unit and test for proper function.

KEYPAD DISPLAYS

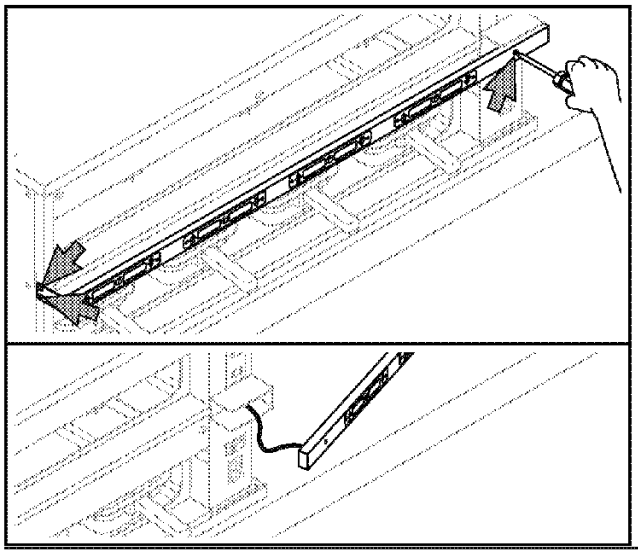
The Keypad Displays control and monitor the performance of each heating well. They are located inside of the Menu Bar(s) and the quantity varies (depending on model).

TOOLS REQUIRED: Phillips screwdriver; Flat-head screwdriver

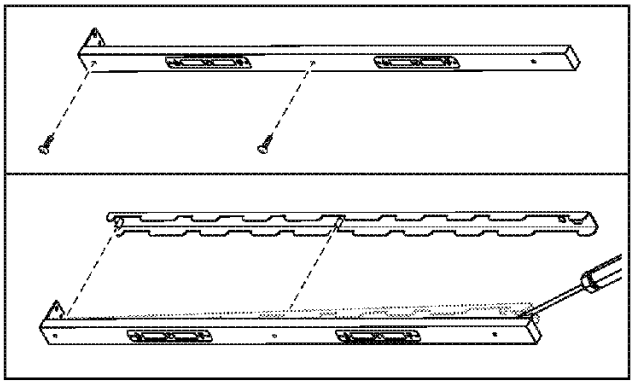
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.



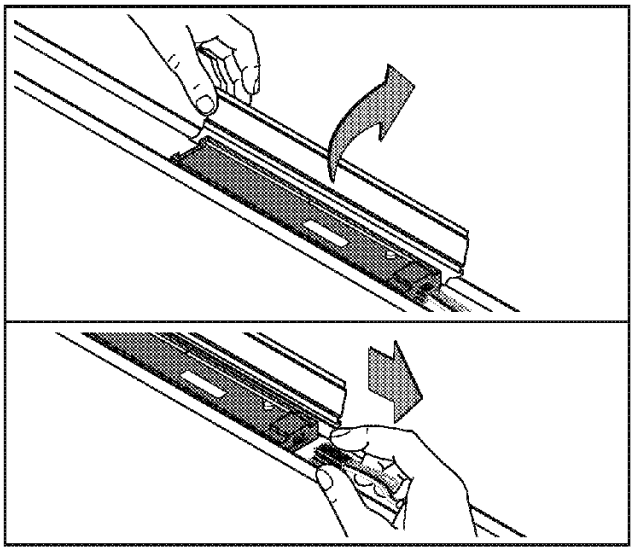
3. Disconnect the affected Menu Bar's molex connector inside the control compartment.
4. Remove and retain screws of the Menu Bar containing the affected Keypad Display and pull away from the face of the unit. It is not necessary, but recommended, to completely remove the Menu Bar from the unit.



5. Remove and retain the screws securing the Menu Bar Back Channel from the front of the Menu Bar and pry out of the Menu Bar.

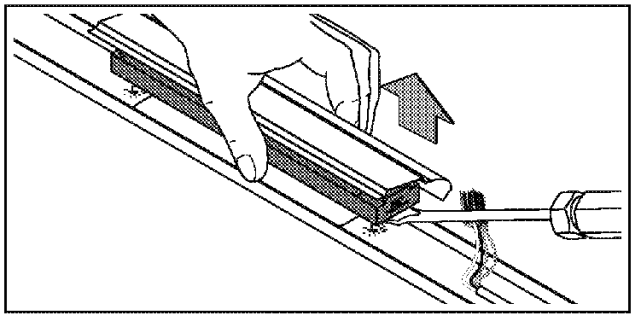


6. A Keypad Spacer is attached to the rear of each Keypad Display with double-sided tape. Carefully pry off and remove the Keypad Spacer from the affected Keypad Display(s). This will free-up the Menu Bar Harness.

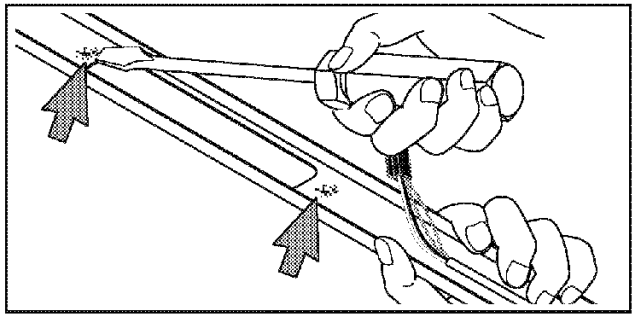


7. Disconnect the affected Keypad Display(s) electrical connector from the Menu Bar Harness.

8. The Keypad Displays are attached to the Menu Bar with double-sided glue dots. Carefully pry off and remove the affected Keypad Display from the Menu Bar.

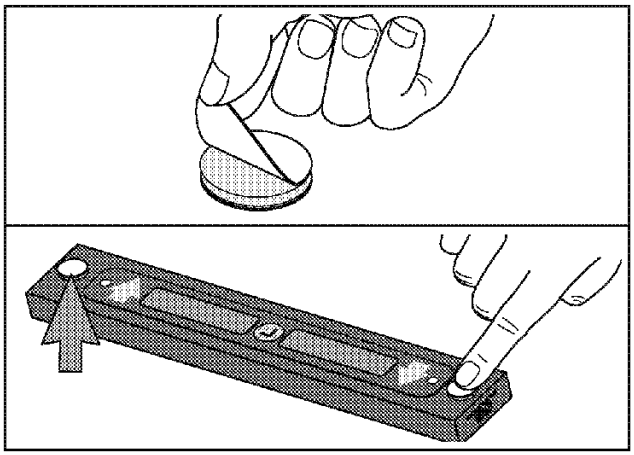


9. Carefully scrape any remaining adhesive residue from the inside of the Menu Bar.

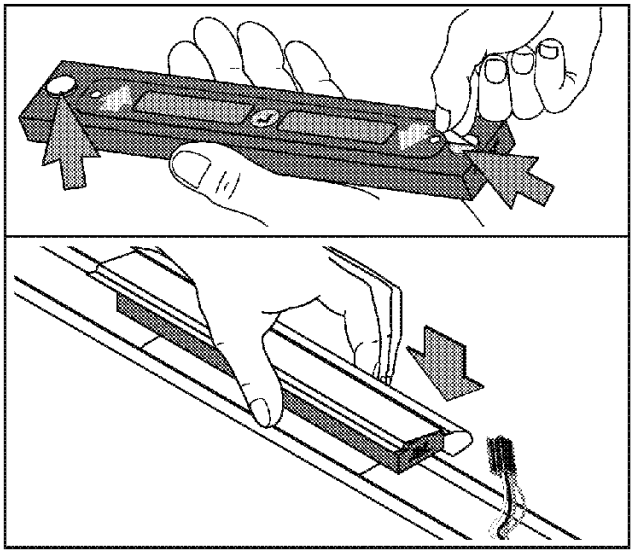


RESTORE:

10. Peel off the adhesive cover from the glue dots and place on the replacement Keypad Display.



11. Peel off the other adhesive cover from the glue dots and carefully position the replacement Keypad Display in place on the interior side of the Menu Bar.



12. Reconnect the affected Keypad Display(s) electrical connector to the Menu Bar Harness.

13. Replace the Keypad Spacer, over the Menu Bar Harness, to the rear of the Keypad Display(s).

14. Reinstall the Menu Bar Back Channel using its screws.

15. Reinstall the Menu Bar using its screws.

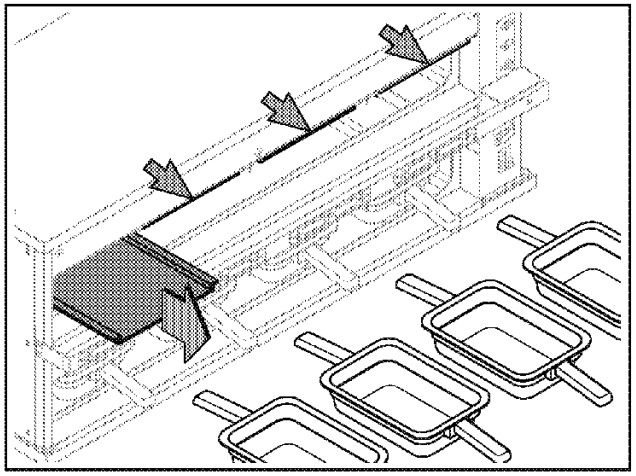
16. Restore power to the unit and test for proper function.

RTD (TEMPERATURE) SENSORS

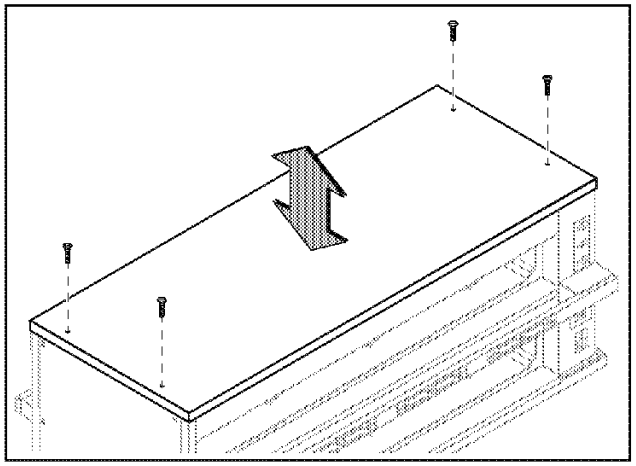
The RTD Sensors monitor the temperature of the heating wells. They are affixed to the bottom-center of each Heat Element, and the quantity varies (depending on model).

TOOLS REQUIRED: Phillips screwdriver; Aluminum tape; Tie wraps

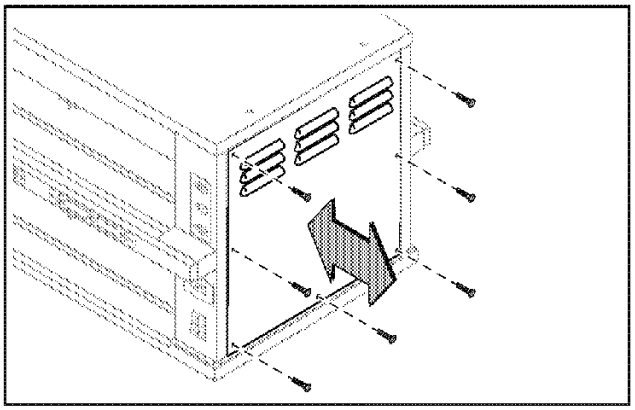
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove any pans and covers on the level(s) being removed.



3. Remove and retain the screws securing the Top Panel and remove the cover.

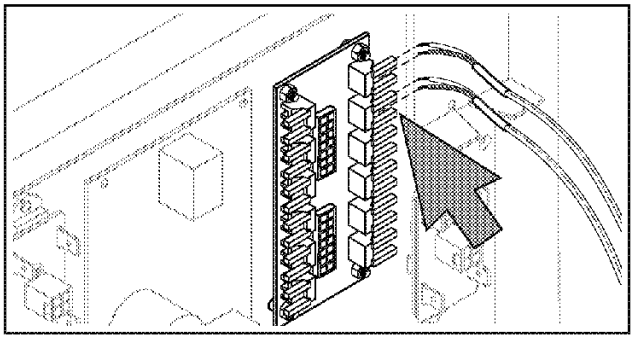


4. Remove and retain the screws securing the Control Side Cover and remove the cover.

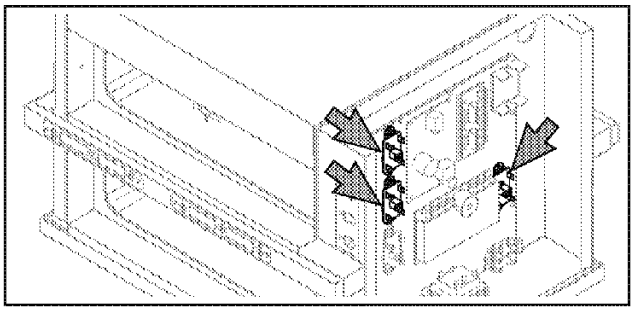


NOTE: If the RTD Sensor to be replaced is on a lower level, start from the top and repeat the following four steps for each level above the desired level.

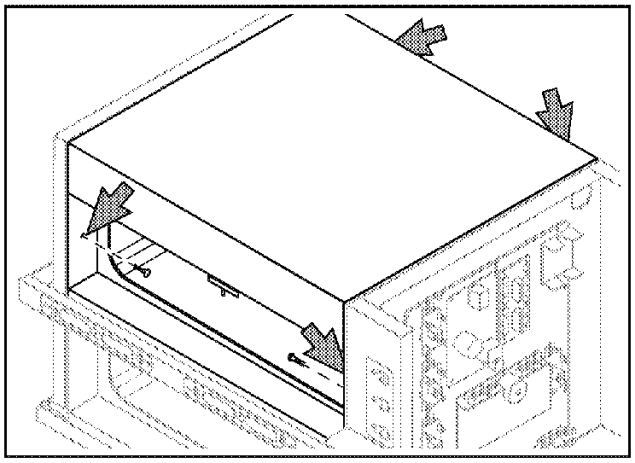
5. Mark, remove the tie wraps, and disconnect the wires for the RTD Sensors from the RTD board in the Control Compartment.



6. Mark, remove the tie wraps, and disconnect the wires for the Emitter (IR Bulb) Sockets and Heat Elements from the Relays in the Control Compartment.

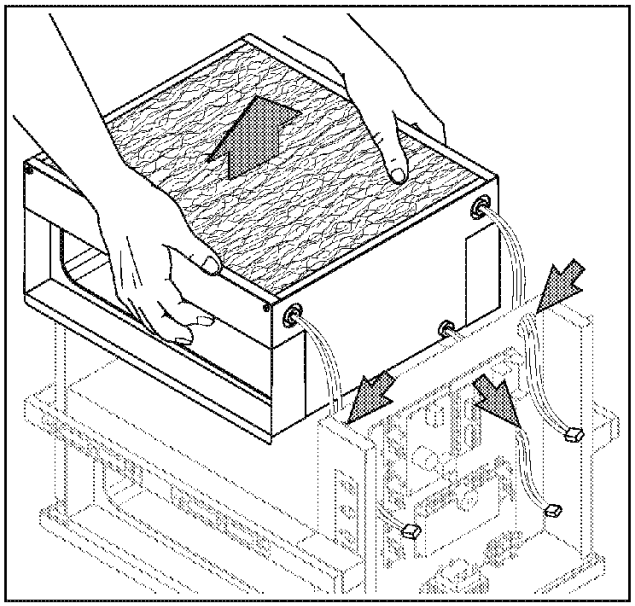


7. Remove the four (4) screws (2 in front, 2 in back) securing the liner deck assembly to the unit.



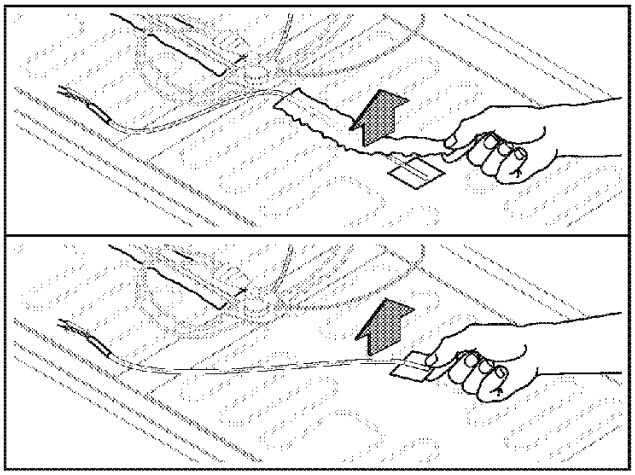
8. Carefully lift the entire liner deck assembly out through the top of the unit. This may require two people, depending on the location of the IRHS unit. Though not required to do so, removing the level's IR glass frame assembly (instructions are contained in the Emitter instructions) will lighten the weight of the liner deck assembly and make it easier for one person to accomplish this task if the IRHS is located in an elevated location or has limited access.

NOTE: It will be necessary to feed the RTD Sensor, Emitter, and Heat Element wires through the control compartment bushings. Take caution not to damage any of the wires.



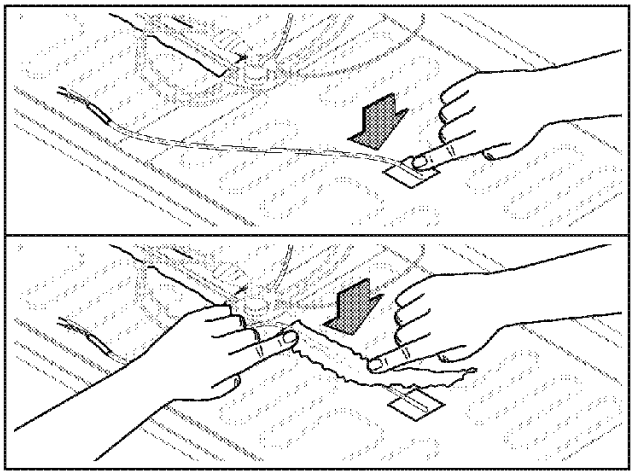
9. Invert the liner deck assembly upside-down, then remove and retain the insulation.

10. The RTD Sensor is attached to the heat element with double-sided adhesive tape and covered with aluminum tape. Carefully pry off and remove the affected RTD Sensor from the Heat Element.



RESTORE:

11. Peel off the adhesive tape cover from the replacement RTD Sensor and press in place on the heat element. Replace aluminum tape cover.



12. Feed the Heat Element and RTD Sensor wires in the direction of and through the control compartment bushings and replace the insulation.

13. Invert the liner deck assembly right-side up. While feeding the RTD Sensor, Emitter, and Heat Element wires through the appropriate control compartment bushings, carefully slide the liner deck assembly into the unit, taking caution not to damage any of the wires.

NOTE: This may require two people, depending on the location of the IRHS unit.

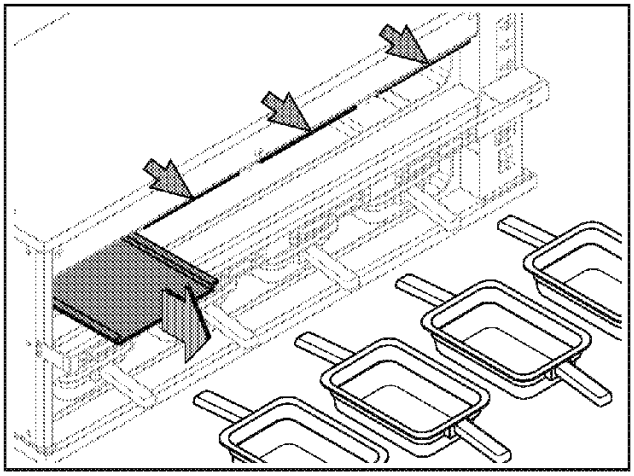
14. Reconnect and tie wrap all previously disconnected wires and connectors in the control compartment.
15. Replace the Control Side Cover and secure with its screws.
16. Replace the Top Panel and secure with its screws.
17. Restore power to the unit and test for proper function.

HIGH LIMIT THERMOSTATS

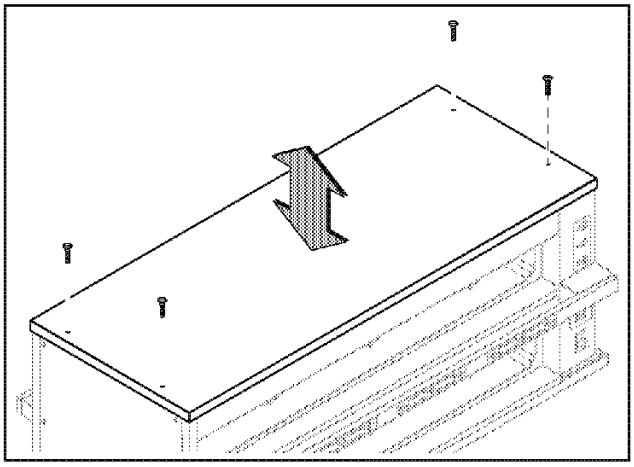
The High Limit Thermostats monitor well temperatures and serves as an emergency circuit interrupter in case of inadvertent overheating. There is one per level, and are affixed to the bottom-center of each heat sink.

TOOLS REQUIRED: Phillips screwdriver; Heat transfer compound; Tie wraps

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove any pans and covers on the level(s) being removed.

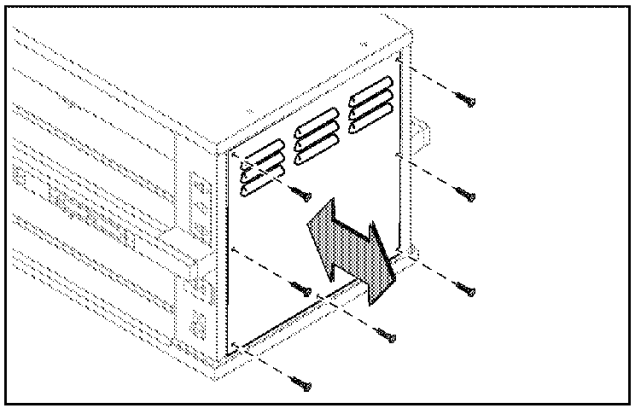


3. Remove and retain the screws securing the Top Panel and remove the cover.

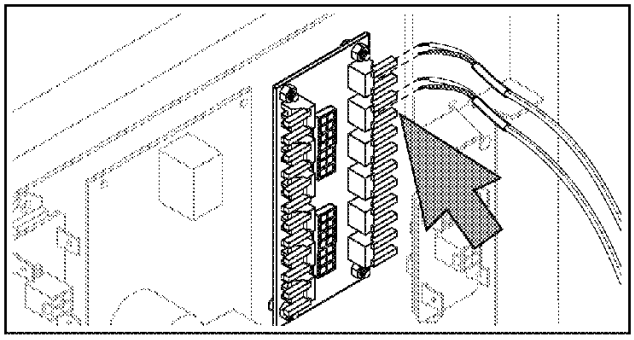


4. Remove and retain the screws securing the Control Side Cover and remove the cover.

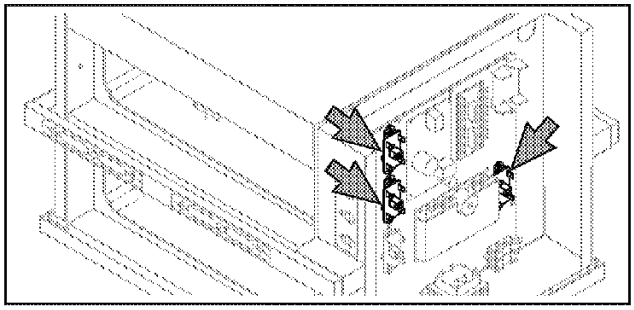
NOTE: If the High Limit Thermostat to be replaced is on a lower level, start from the top and repeat the following four steps for each level above the desired level.



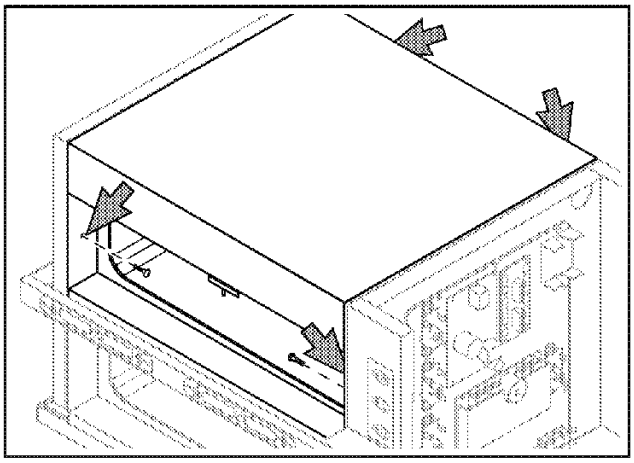
5. Mark, remove the tie wraps, and disconnect the wires for the RTD Sensors from the RTD board in the Control Compartment.



6. Mark, remove the tie wraps, and disconnect the wires for the Emitter (IR Bulb) Sockets and Heat Elements from the Relays in the Control Compartment.

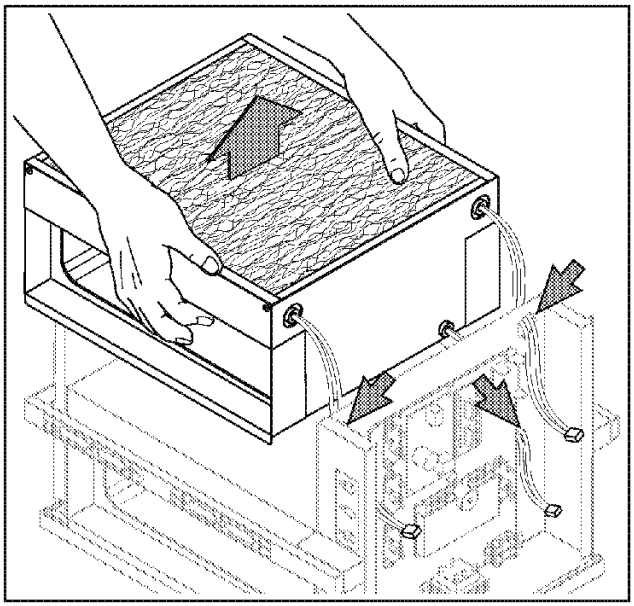


7. Remove the four (4) screws (2 in front, 2 in back) securing the liner deck assembly to the unit.



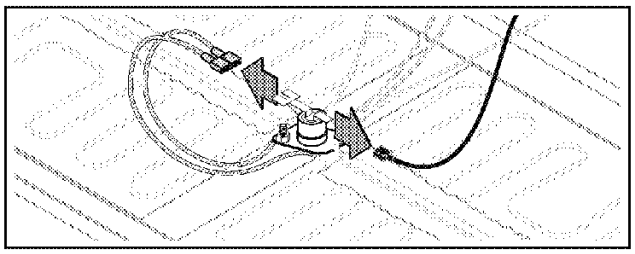
8. Carefully lift the entire liner deck assembly out through the top of the unit. This may require two people, depending on the location of the IRHS unit. Though not required to do so, removing the level's IR glass frame assembly (instructions are contained in the Emitter instructions) will lighten the weight of the liner deck assembly and make it easier for one person to accomplish this task if the IRHS is located in an elevated location or has limited access.

NOTE: It will be necessary to feed the RTD Sensor, Emitter, and Heat Element wires through the control compartment bushings. Take caution not to damage any of the wires.

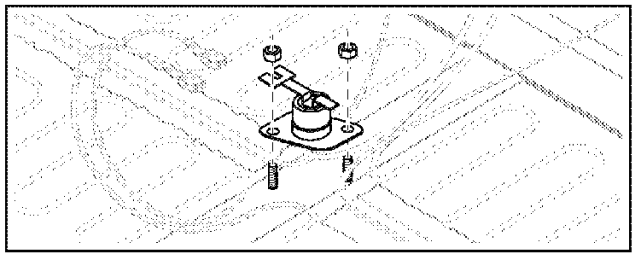


9. Invert the liner deck assembly upside-down, then remove and retain the insulation.

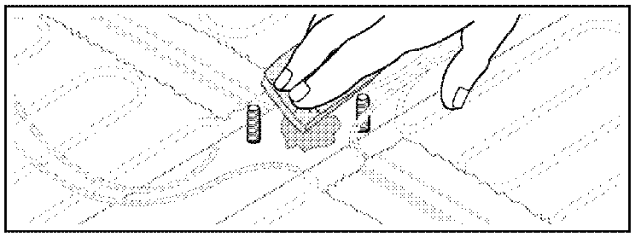
10. Mark and disconnect the spade terminals for the affected High Limit Thermostat.



11. Remove and retain the two (2) 11/32" nuts securing the High Limit Thermostat to the heat sink and remove the High Limit Thermostat.

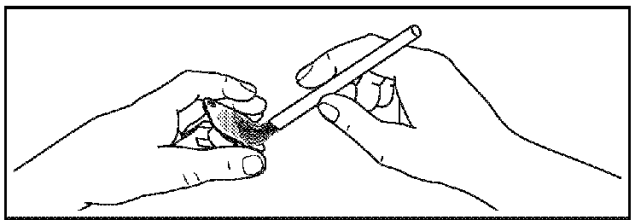


12. Clean the mounting surface of any residual heat transfer compound.



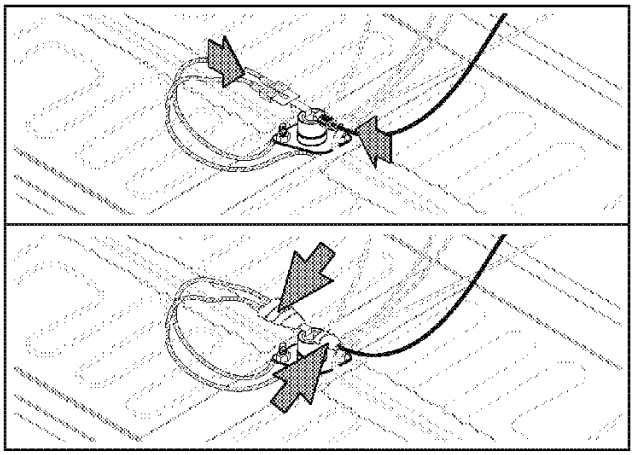
RESTORE:

13. Apply heat transfer compound to the mounting surface of the replacement High Limit Thermostat.



14. Install the replacement High Limit Thermostat and secure with its nuts.

15. Reattach the High Limit Thermostat spade terminals. Be sure to reapply the tape that helps secure the spade terminals to the High Limit Thermostat.



16. Feed the Heat Element and RTD Sensor wires in the direction of and through the control compartment bushings and replace the insulation.

17. Invert the liner deck assembly right-side up. While feeding the RTD Sensor, Emitter, and Heat Element wires through the appropriate control compartment bushings, carefully slide the liner deck assembly into the unit, taking caution not to damage any of the wires.

NOTE: This may require two people, depending on the location of the IRHS unit.

18. Reconnect and tie wrap all previously disconnected wires and connectors in the control compartment.

19. Replace the Control Side Cover and secure with its screws.

20. Replace the Top Panel and secure with its screws.

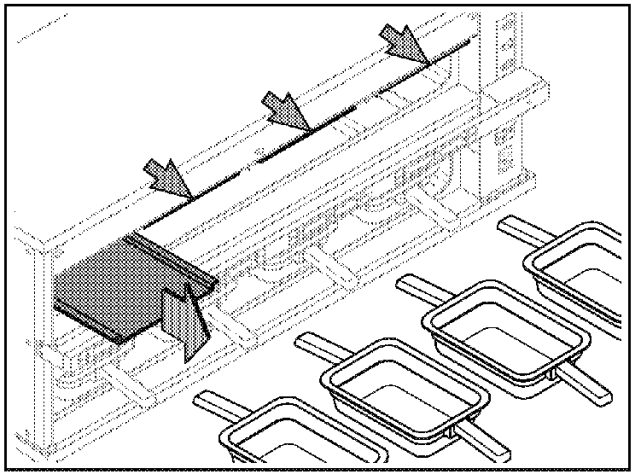
21. Restore power to the unit and test for proper function.

HEAT ELEMENTS

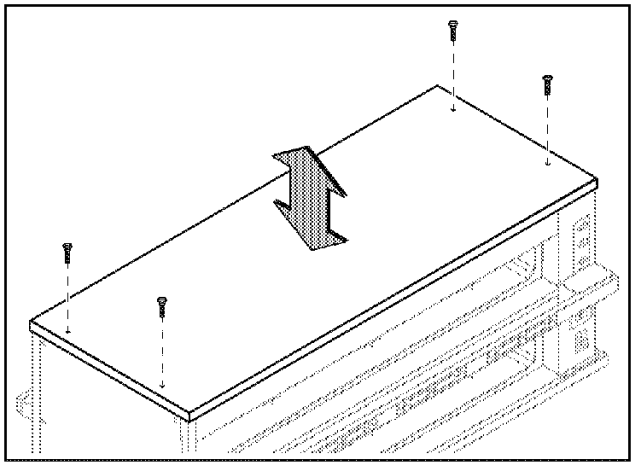
The Heat Elements provide the heating required to keep the heating wells at proper operating temperatures. The quantity varies depending on model and are affixed to the bottom of each Heat Sink.

TOOLS REQUIRED: Phillips screwdriver; 11/32" nut driver or socket; Heat transfer compound; Tie wraps

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove any pans and covers on the level(s) being removed.

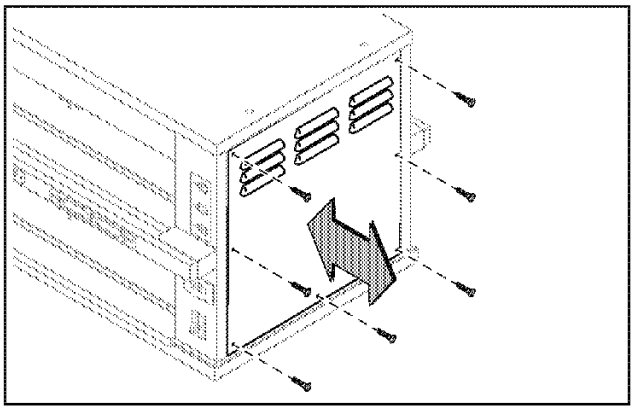


3. Remove and retain the screws securing the Top Panel and remove the cover.

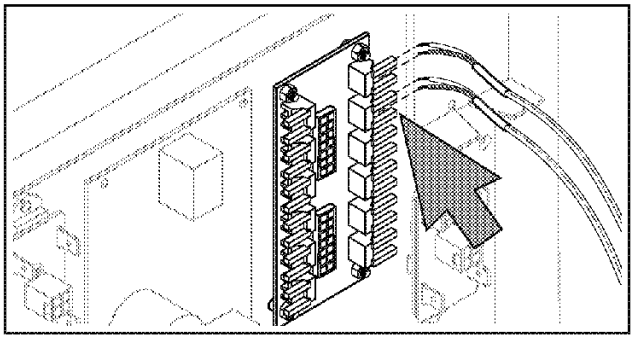


4. Remove and retain the screws securing the Control Side Cover and remove the cover.

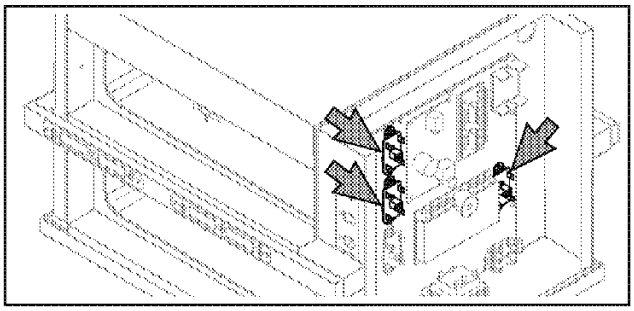
NOTE: If the Heat Element to be replaced is on a lower level, start from the top and repeat the following four steps for each level above the desired level.



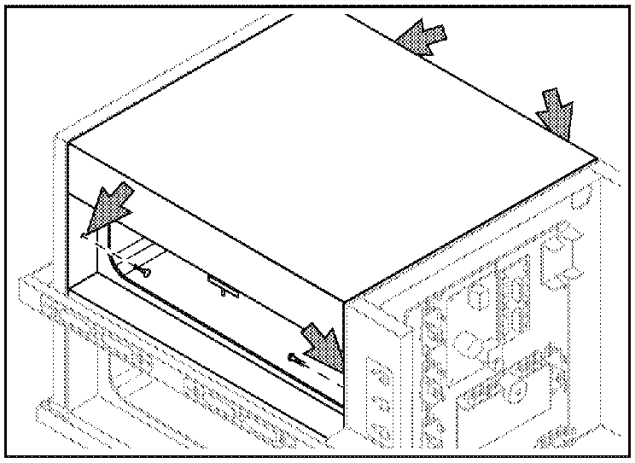
5. Mark, remove the tie wraps, and disconnect the wires for the RTD Sensors from the RTD board in the Control Compartment.



6. Mark, remove the tie wraps, and disconnect the wires for the Emitter (IR Bulb) Sockets and Heat Elements from the Relays in the Control Compartment.



7. Remove the four (4) screws (2 in front, 2 in back) securing the liner deck assembly to the unit.

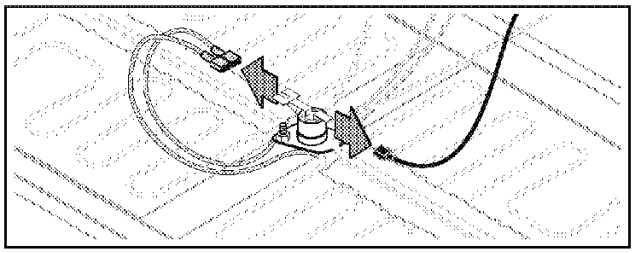


8. Carefully lift the entire liner deck assembly out through the top of the unit. This may require two people, depending on the location of the IRHS unit. Though not required to do so, removing the level's IR glass frame assembly (instructions are contained in the Emitter instructions) will lighten the weight of the liner deck assembly and make it easier for one person to accomplish this task if the IRHS is located in an elevated location or has limited access.

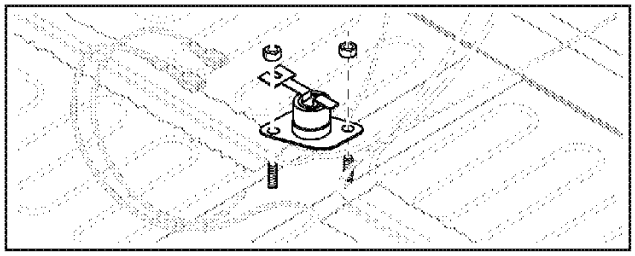
NOTE: It will be necessary to feed the RTD Sensor, Emitter, and Heat Element wires through the control compartment bushings. Take caution not to damage any of the wires.

9. Invert the liner deck assembly upside-down, then remove and retain the insulation.

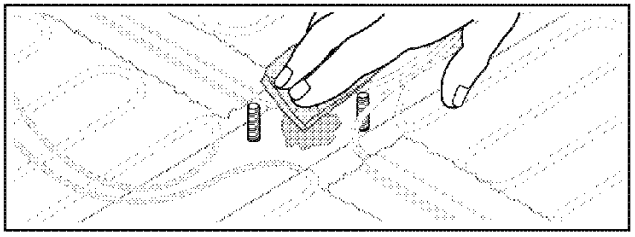
10. Mark and disconnect the spade terminals for the level's High Limit Thermostat.



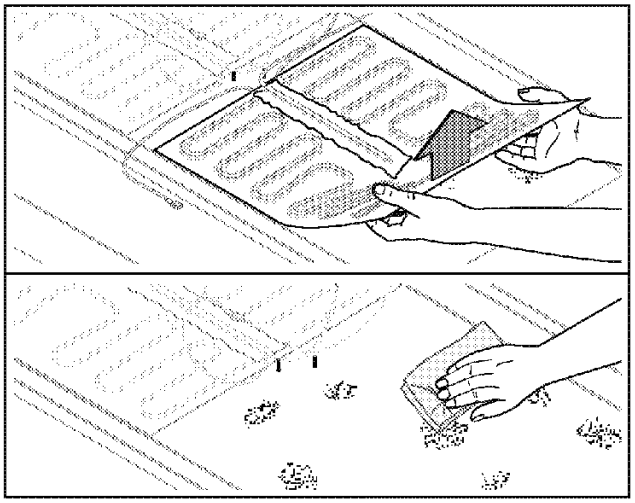
11. Remove and retain the two (2) 11/32" nuts securing the High Limit Thermostat to the heat sink and remove the High Limit Thermostat.



12. Clean the mounting surface of any residual heat transfer compound.

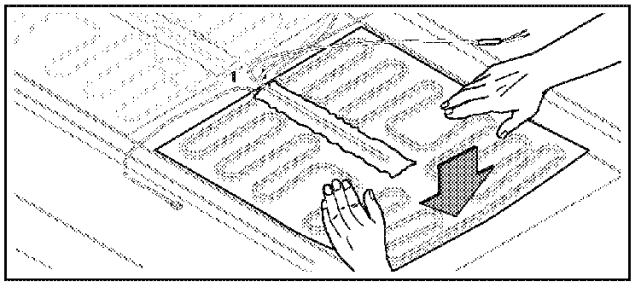


13. Remove the affected Heat Element by peeling off from the heat sink. Ensure any excess tape and/ or adhesive is removed.



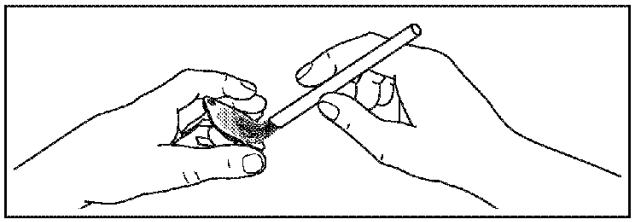
NOTE: The replacement Heat Element will come with a new RTD Sensor attached, so retaining the existing RTD Sensor is unnecessary.

14. Peel the adhesive tape cover off the replacement Heat Element and press in place on the heat sink, ensuring all air bubbles are smoothed out.



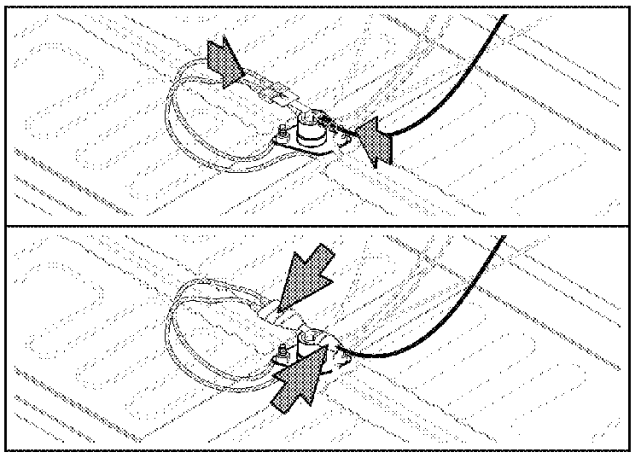
RESTORE:

15. Apply heat transfer compound to the mounting surface of the High Limit Thermostat.



16. Reinstall the High Limit Thermostat and secure with its nuts.

17. Reattach the High Limit Thermostat spade terminals. Be sure to reapply the tape that helps secure the spade terminals to the High Limit Thermostat.



18. Feed the Heat Element and RTD Sensor wires in the direction of and through the control compartment bushings and replace the insulation.

19. Invert the liner deck assembly right-side up. While feeding the RTD Sensor, Emitter, and Heat Element wires through the appropriate control compartment bushings, carefully slide the liner deck assembly into the unit, taking caution not to damage any of the wires.

NOTE: This may require two people, depending on the location of the IRHS unit.

20. Reconnect and tie wrap all previously disconnected wires and connectors in the control compartment.

21. Replace the Control Side Cover and secure with its screws.

22. Replace the Top Panel and secure with its screws.

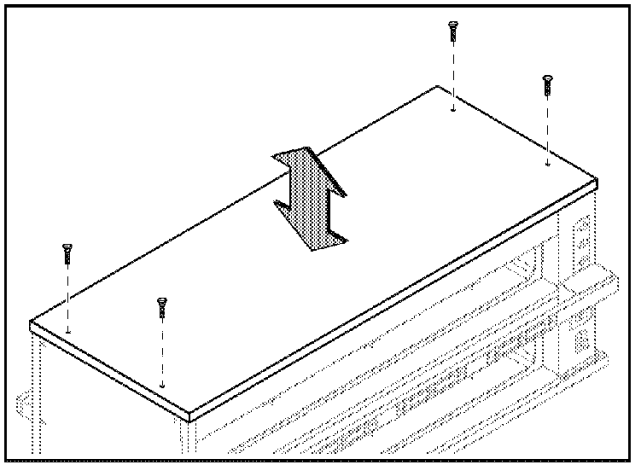
23. Restore power to the unit and test for proper function.

EMITTER (IR BULB) SOCKETS

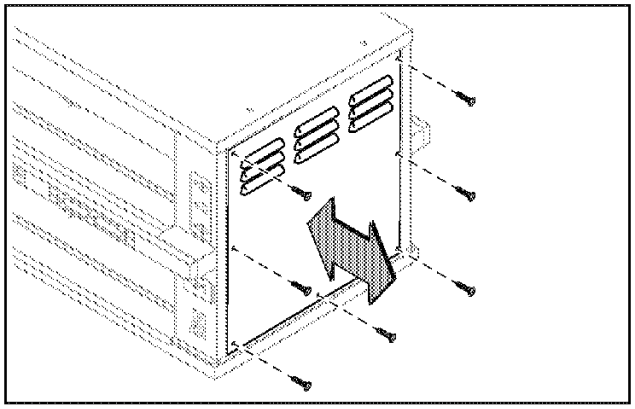
The Emitter Sockets hold and provide power to the Emitters. There are two (2: 1 front, 1 back) at the top of each heating well.

TOOLS REQUIRED: Phillips screwdriver; clean gloves/ cloths/towels; 11/16" open-end wrench; Tie wraps

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove all pans and covers from the liner deck assembly, and levels above where the affected Emitter Socket is to be replaced.
3. Remove and retain the screws securing the Top Panel and remove the cover.

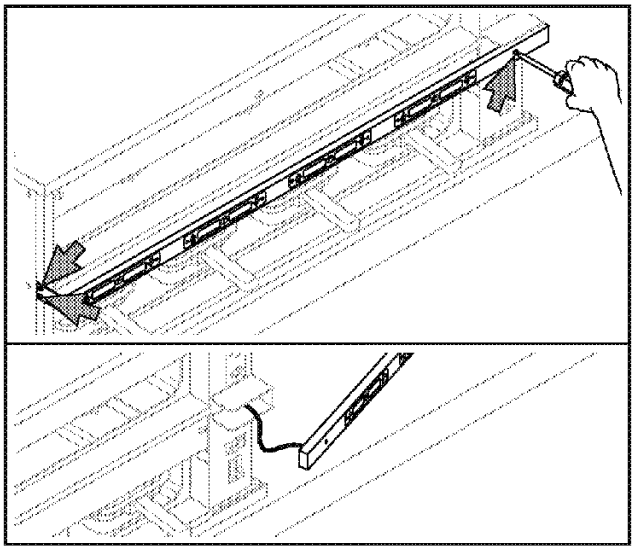


4. Remove and retain the screws securing the Control Side Cover and remove the cover.

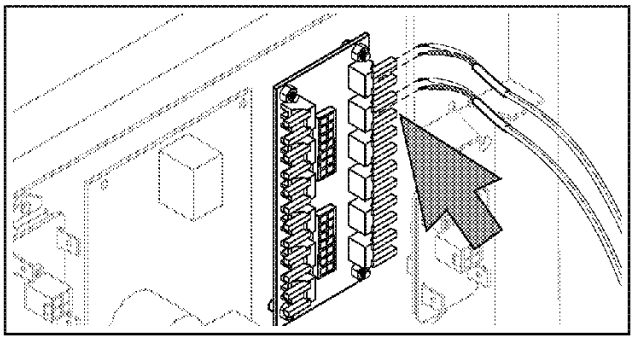


If the Emitter Socket to be replaced is on a lower level (not for top level replacement), starting from the second level, repeat the following five steps for each level above the desired repair level:

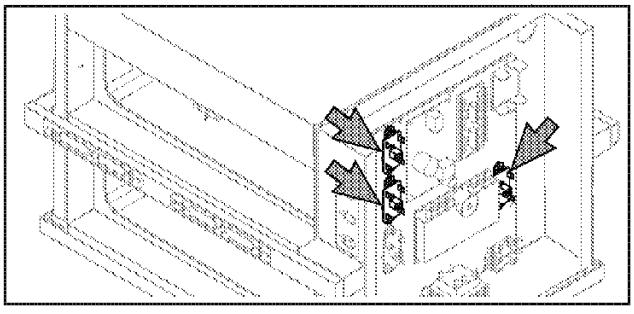
a. Remove and retain the screws securing the appropriate Menu Bar(s) and move to one side. It is not necessary, but recommended, to completely remove the Menu Bar from the unit. Menu Bar instructions are contained in this manual.



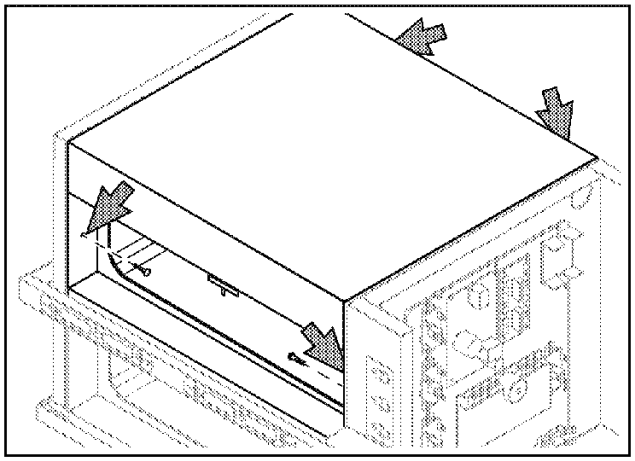
b. Mark, remove the tie wraps, and disconnect the wires for the RTD Sensors from the RTD board in the Control Compartment.



c. Mark, remove the tie wraps, and disconnect the wires for the Emitter (IR Bulb) Sockets and Heat Elements from the Relays in the Control Compartment.

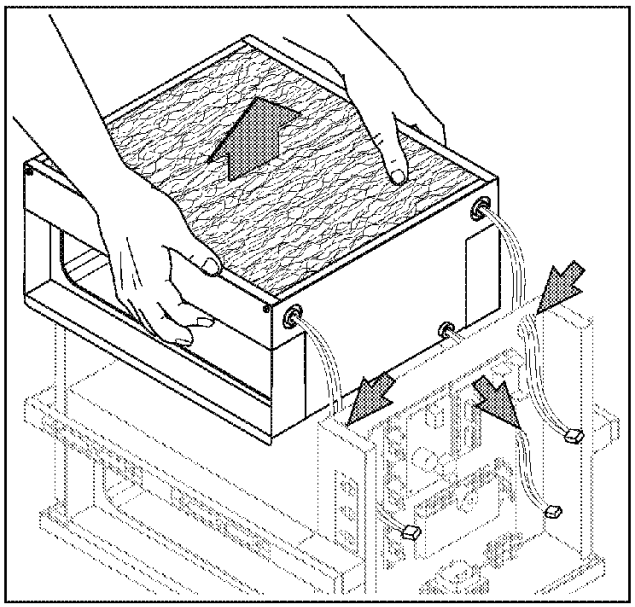


d. Remove the four (4) screws (2 in front, 2 in back) securing the liner deck assembly to the unit.



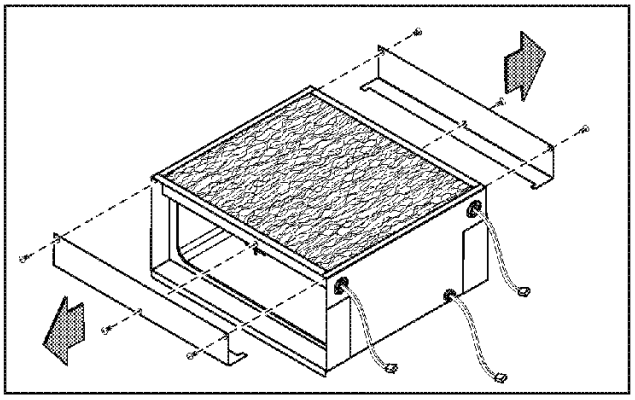
e. Carefully lift the entire liner deck assembly out through the top of the unit. This may require two people, depending on the location of the IRHS unit. Though not required to do so, removing the level's IR glass frame assembly (instructions are contained in the Emitter instructions) will lighten the weight of the liner deck assembly and make it easier for one person to accomplish this task if the IRHS is located in an elevated location or has limited access.

NOTE: It will be necessary to feed the RTD Sensor, Emitter, and Heat Element wires through the control compartment bushings. Take caution not to damage any of the wires.



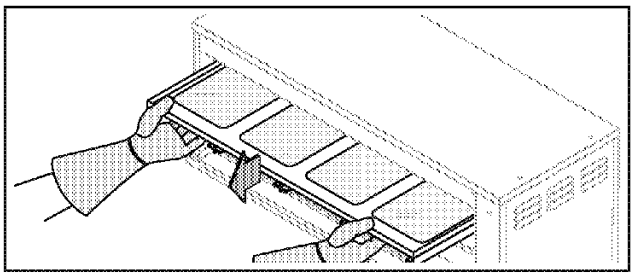
You will now have access to remove the nut securing socket in place.

5. Each liner deck's frame support angles (front and back) support the IR glass frame assembly in place. Remove and retain the screws securing the frame support angle on the row where the affected Socket is to be replaced and remove the frame support angle. Repeat for the other side of the liner deck assembly. Be careful to support and not let the IR glass frame assembly fall and damage the heat sink.



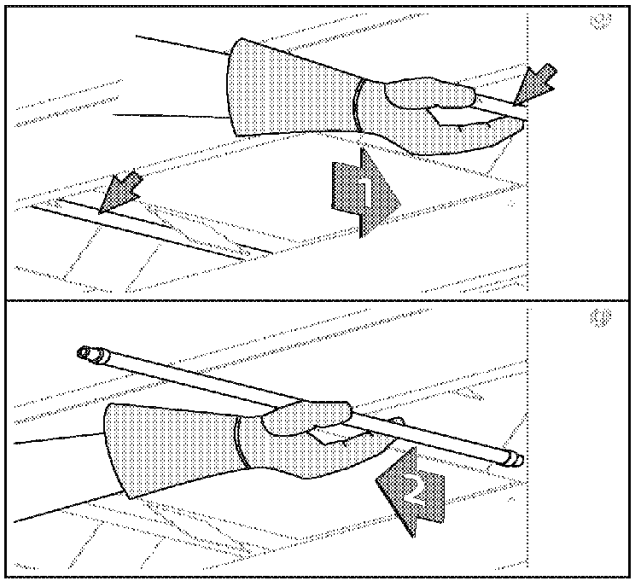
6. Slide the IR glass frame assembly out of the liner deck assembly below the Socket to be replaced.

NOTE: Make sure the glass has cooled off sufficiently to avoid burns to bare skin. Use gloves if necessary.

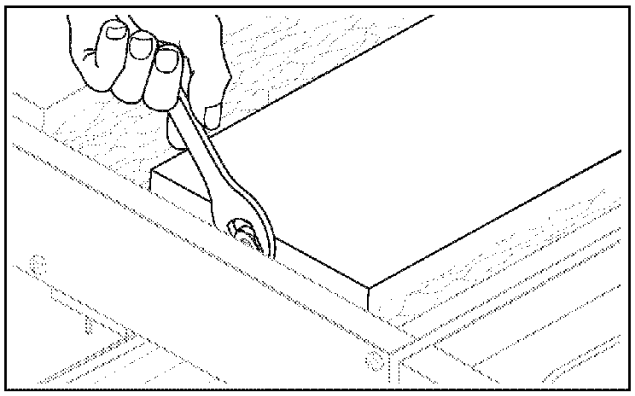


7. The Emitter Sockets are spring-loaded. Push the Emitter (IR Bulb) towards the rear socket until the Emitter is free from the front socket and carefully remove.

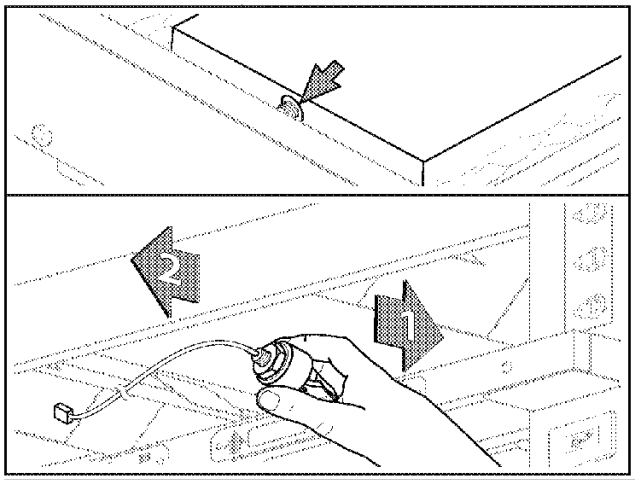
NOTE: DO NOT TOUCH THE EMITTER WITH BARE HANDS! The oil on human skin will shorten the life of the Emitters. If the Emitter is to be reused, use clean gloves, a clean cloth, or a clean paper towel to handle.



8. Mark and disconnect the faulty Emitter Socket's wires from the Relay in the control compartment.
9. Using an 11/16" open-end wrench, remove the nut securing the socket in place.



10. From the bulb side of the affected Socket, pull the Socket and its wires through its mounting hole.



RESTORE:

11. Install the replacement Emitter Socket into its mounting hole and secure with its nut.
12. Using clean gloves, a clean cloth, or a clean paper towel, reinstall or insert the replacement Emitter into the rear socket first and then gently push inward until the front of the bulb can be inserted into the front socket.
13. Slide the IR glass frame assembly into the liner deck assembly.
14. Replace the frame support angles on the front and back and secure them with their screws.
15. If other liner deck assemblies were removed, starting with the lowest, feed their RTD Sensor, Emitter, and Heat Element wires through the appropriate control compartment bushings, and carefully slide the liner deck assemblies into the unit, taking caution not to damage any of the wires. Replace any moved/removed insulation.

NOTE: This may require two people, depending on the location of the IRHS unit.

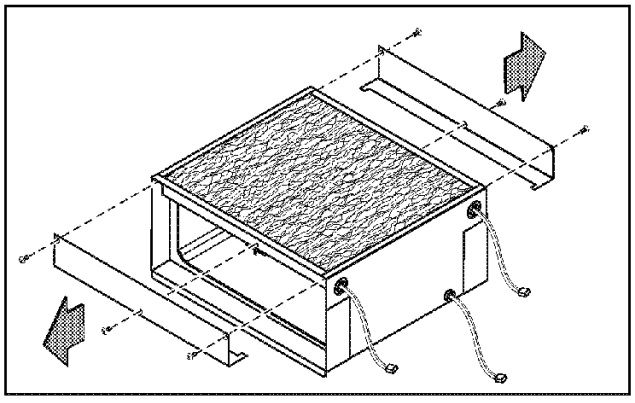
16. If other liner deck assemblies were removed, reinstall their Menu Bar(s).
17. Reconnect and tie wrap all previously disconnected wires and connectors in the control compartment.
18. Replace the Control Side Cover and secure with its screws.
19. Replace the Top Panel and secure with its screws.
20. Restore power to the unit and test for proper function.

EMITTERS (IR BULBS)

The Emitters heat the top of each well. The quantity varies (depending on model) and are held in place by two Emitter Sockets at the top of each heating well.

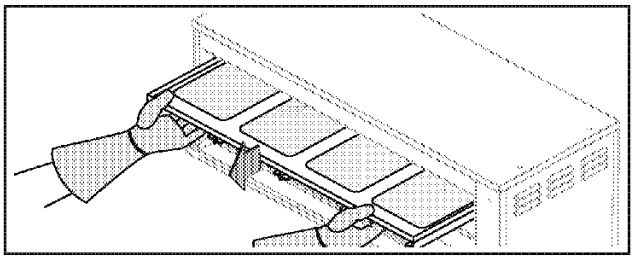
TOOLS REQUIRED: Phillips screwdriver; clean gloves/ cloths/towels; Tie wraps

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove all pans and covers from the liner deck assembly where the affected Emitter is to be replaced.
3. If the Emitter to be replaced is on a lower level (not for top level replacement), remove and retain the screws securing the appropriate Menu Bar(s) and move to one side. It is not necessary, but recommended, to completely remove the Menu Bar from the unit. Menu Bar instructions are contained in this manual.
4. The liner deck assembly's frame support angles (front and back) support the IR glass frame assembly in place. Remove and retain the screws securing the frame support angle on the row where the affected Emitter is to be replaced and remove the frame support angle. Repeat for the other side of the liner deck assembly. Be careful to support and not let the IR glass frame assembly fall and damage the heat sink.



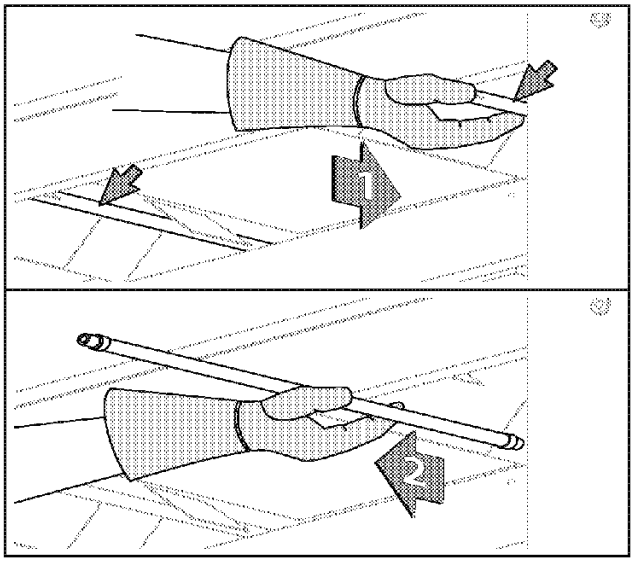
5. Slide the IR glass frame assembly out of the liner deck assembly below the Emitter to be replaced.

NOTE: Make sure the glass has cooled off sufficiently to avoid burns to bare skin. Use gloves if necessary.



6. The Emitter Sockets are spring-loaded. Push the Emitter towards the rear socket until the Emitter is free from the front socket and carefully remove.

NOTE: DO NOT TOUCH THE EMITTER WITH BARE HANDS! The oil on human skin will shorten the life of the Emitters. If the Emitter is to be reused, use clean gloves, a clean cloth, or a clean paper towel to handle.

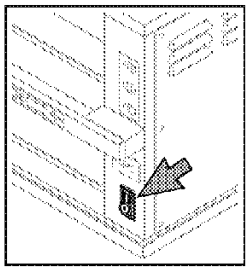


RESTORE:

7. Using clean gloves, a clean cloth, or a clean paper towel, reinstall or insert the replacement Emitter into the rear socket first and then gently push inward until the front of the bulb can be inserted into the front socket.
8. Slide the IR glass frame assembly into the liner deck assembly.
9. Replace the frame support angles on the front and back and secure them with their screws.
10. If removed, reinstall and reconnect the Menu Bar.
11. Restore power to the unit and test for proper function.

CONTROL COMPARTMENT COMPONENTS – STANDALONE & KITCHEN MINDER MODELS (ONLY)

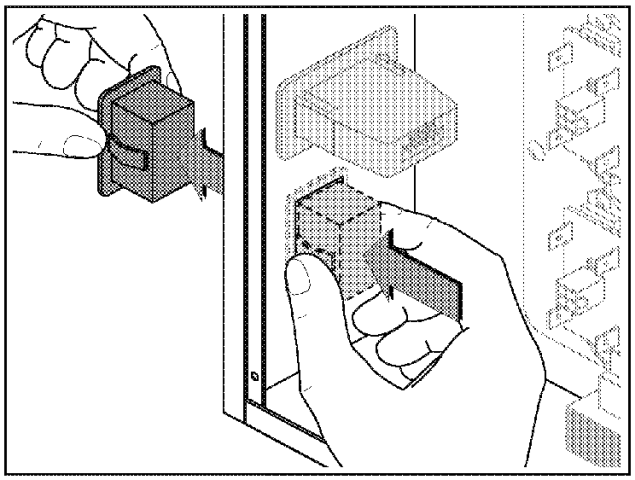
POWER SWITCH



The Power Switch is located on the Control Panel on the face of the unit. It is accessed from inside the control compartment.

TOOLS REQUIRED:
Phillips screwdriver

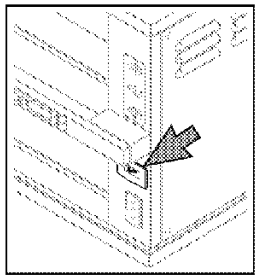
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. From inside the control compartment, mark and disconnect all wires connected to the Power Switch.
4. The Power Switch is secured to the unit with spring clips and a spacer. Depress the spring clips and slide the switch from the unit.



RESTORE:

5. Install the replacement Power Switch by sliding it into its position in the unit until secured with its spring clips.
6. Reattach the Power Switch wires.
7. Replace the Control Side Cover and secure with its screws.
8. Restore power to the unit and test for proper function.

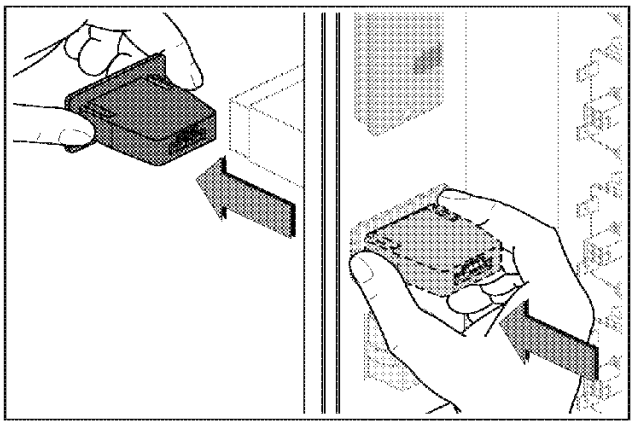
USB ADAPTER



The USB Adapter is used to program the Controller when it is replaced or when the current recipes are corrupted. It is located on the Control Panel. It is accessed from inside the control compartment.

TOOLS REQUIRED: Phillips screwdriver

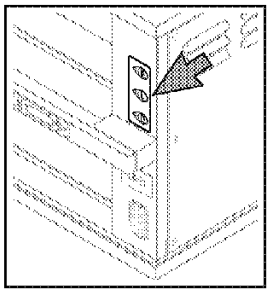
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. From inside the control compartment, unplug the molex connector from the rear of the USB port.
4. The USB Adapter is secured to the unit with prongs and a spacer. Depress the two (2) prongs securing the USB Adapter to the unit, and pull through the face of the unit.



RESTORE:

5. Install the replacement USB Adapter by sliding it into its position in the unit until secured with its prongs.
6. Reattach the USB Adapter molex connector.
7. Replace the Control Side Cover and secure with its screws.
8. Restore power to the unit and test for proper function.

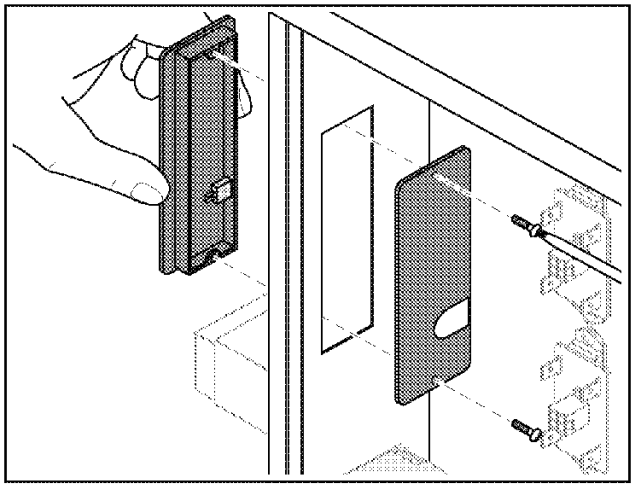
DAYPART SWITCH



The Daypart Switch is used to control the temperatures of various food products, up to three different time periods a day. It is located on the Control Panel and is accessed from inside the control compartment.

TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. From inside the control compartment, unplug the molex connector from the rear of the Daypart Switch.
4. The Daypart Switch is secured to the unit with its rear cover. Remove and retain the three (3) screws securing the Daypart Switch rear cover, then remove the switch and rear cover.

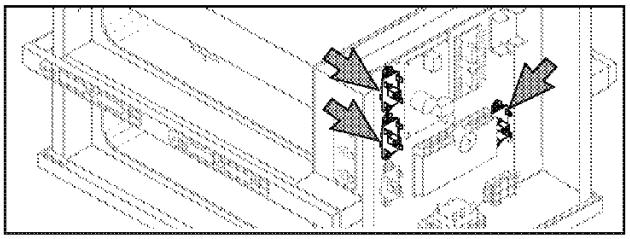


RESTORE:

5. Insert the replacement Daypart Switch into the unit and secure in place with its rear cover and screws.
6. Attach the molex connector to the replacement Daypart Switch.
7. Replace the Control Side Cover and secure with its screws.
8. Restore power to the unit and test for proper function.

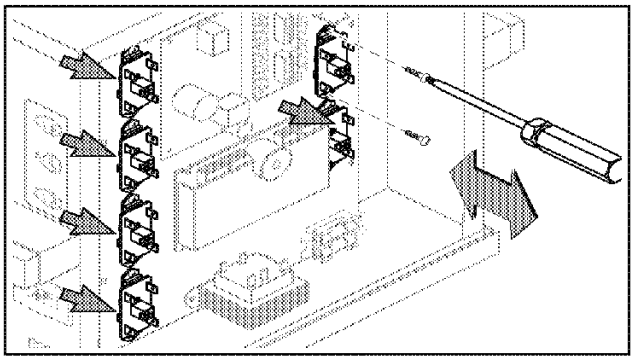
RELAYS (Smart Power Modules)

The Relays control the Emitters (IR Bulbs) and Heat Elements. Each unit has several (depending on model) and are located inside the control compartment.



TOOLS REQUIRED: Phillips screwdriver; Heat transfer compound

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect all wires and molex plug to the affected Relay.
4. Remove and retain the screws securing the affected Relay to the unit.
5. Remove the affected Relay and clean the mounting surface of any residual heat transfer compound.



RESTORE:

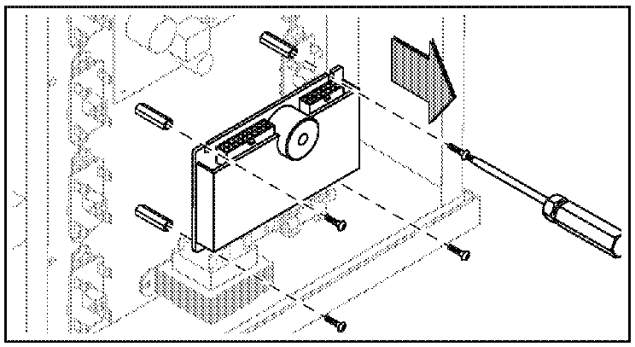
6. Apply heat transfer compound to the mounting surface of the replacement Relay.
7. Install the replacement Relay and secure with its screws.
8. Reconnect the Relay wires and plug.
9. Replace the Control Side Cover and secure with its screws.
10. Restore power to the unit and test for proper function.

CONTROLLER

The Controller is used to control the Relays and RTD Sensors. It is located inside the control compartment.

TOOLS REQUIRED: Phillips screwdriver; #1 precision screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Disconnect the two (2) molex connectors connected to the Controller.
4. Using a small Phillips screwdriver or #1 precision screwdriver, remove and retain the four (4) screws securing the Controller to the unit.
5. Maintaining the spacers on the studs, remove the Controller.



RESTORE:

6. Install the replacement Controller on its studs and secure with its screws.
7. Reconnect the two (2) molex connectors.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

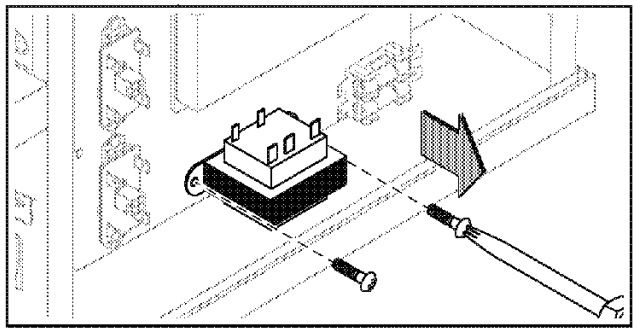
NOTE: To program the new Controller, see programming instructions located the "WEBSITE PROGRAMMING" section of this manual.

TRANSFORMER

The Transformer is used to step-down power to 12 VAC for the Controller. It is located inside the control compartment.

TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the spade connectors connected to the Transformer.
4. Remove and retain the two (2) screws securing the Transformer to the unit and remove the Transformer.



RESTORE:

5. Install the replacement Transformer and secure with its screws.
6. Reconnect the spade connectors.
7. Replace the Control Side Cover and secure with its screws.
8. Restore power to the unit and test for proper function.

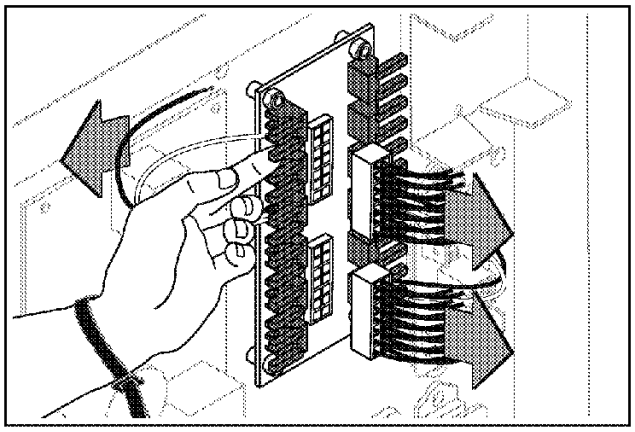
RTD BOARD

The RTD Board controls the RTD Sensors. It is located inside the control compartment.

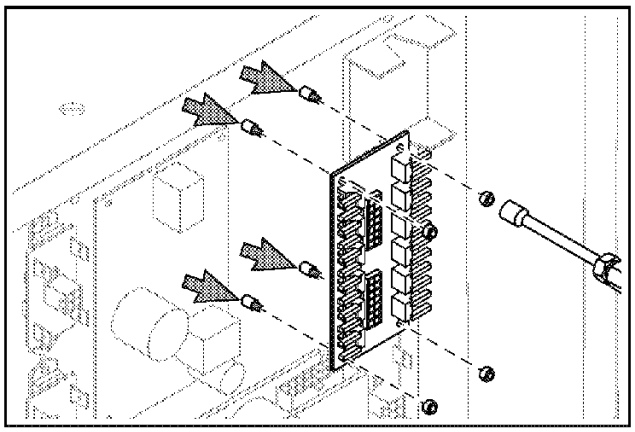
TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect all wires and the molex plug to the RTD Board.

NOTE: The use of an ESD Wrist Strap is strongly recommended. Follow ESD procedures on page 11.



4. Remove and retain the four (4) 1/4" nuts securing the affected RTD Board to the unit.
5. Maintaining the spacers on the studs, remove the RTD Board.



RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement RTD Board and secure with its screws.
7. Reconnect the RTD Board wires and plug.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

FUSES AND FUSE HOLDER

The Fuses and Fuse Holder serve as a circuit interrupter from the main power input. They are located inside the control compartment.

TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.

FOR FUSE REPLACEMENT:

3. Remove the fuses and test with an ohm meter.
4. Replace the fuse(s) with correctly rated fuse(s):

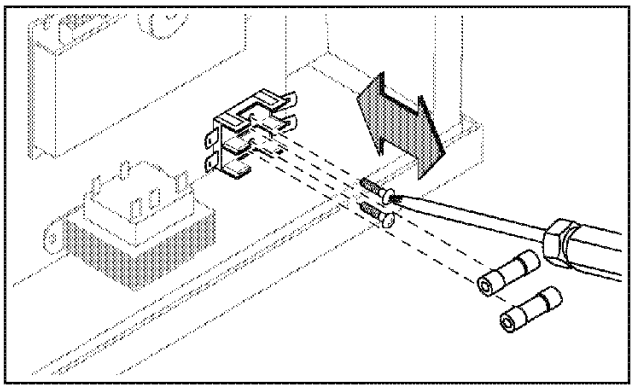
Models 2x2, 2x3, 2x4, 4x2	12 Amp
Model 3x4	16 Amp

NOTE: Replacing fuse(s) with an incorrect rating can cause nuisance blowing if rating is too low, or a loss of circuit protection if too high. Damage to the equipment and risk of fire may result. Replace fuse(s) with correctly rated fuse(s) only.

5. Replace the Control Side Cover and secure with its screws.
6. Restore power to the unit and test for proper function.

FOR FUSE HOLDER REPLACEMENT:

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Disconnect the spade connectors connected to the Fuse Holder.
4. Remove and retain the screws securing the Fuse Holder to the unit and remove the Fuse Holder.



RESTORE:

5. Install the replacement Fuse Holder and secure with its screws.
6. Reconnect the spade connectors.
7. INSTALL CORRECTLY RATED FUSES ONLY! Damage to the equipment and/or risk of fire may result if installing fuses with incorrect ratings.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

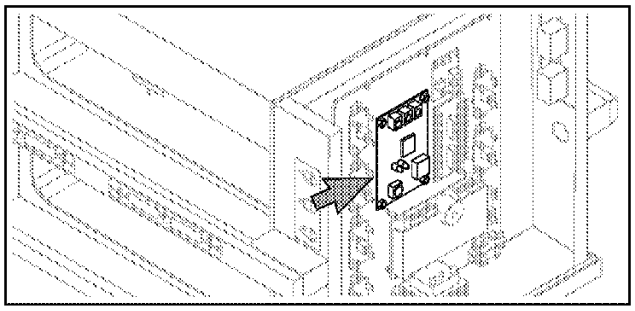
CONTROL COMPARTMENT COMPONENTS – KITCHEN MINDER MODEL (ONLY)

NOTE: The following components are installed, in addition to all previously listed control compartment components, in the Kitchen Minder model of the IRHS.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

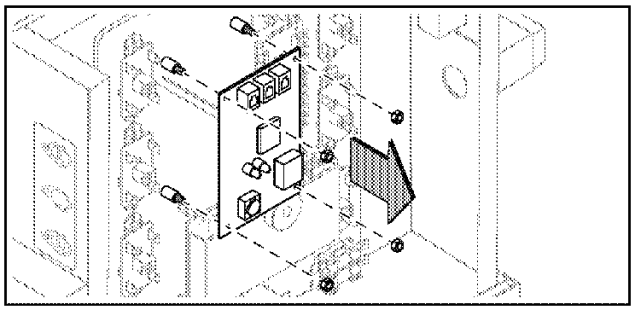
KITCHEN MINDER MASTER BOARD (if installed)

If Kitchen Minder is installed in the unit, the Kitchen Minder Master Board is located behind the Control Side Cover.



TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the lines connected to the Master Board.
4. Remove and retain the four (4) 1/4" nuts securing the affected Master Board to the unit.
5. Maintaining the spacers on the studs, remove the Master Board.



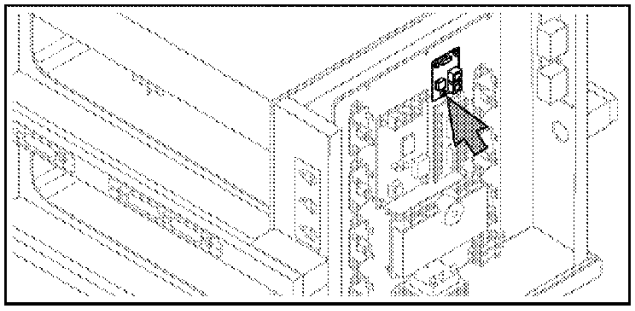
RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement Master Board on its studs and secure with its screws.
7. Reconnect the lines.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

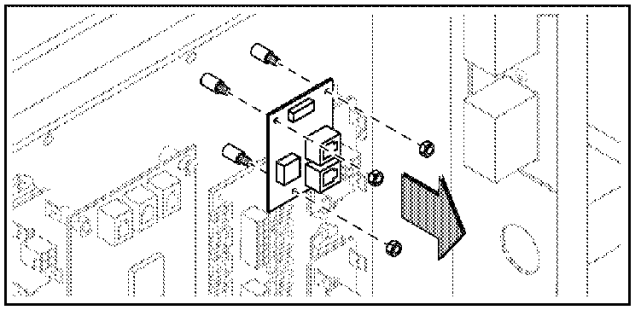
KITCHEN MINDER ADAPTER BOARD (if installed)

If Kitchen Minder is installed in the unit, the Kitchen Minder Adapter Board is located behind the Control Side Cover.



TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the line and molex plug connected to the Adapter Board.
4. Remove and retain the three (3) 1/4" nuts securing the Adapter Board to the unit.
5. Maintaining the spacers on the studs, remove the Adapter Board.

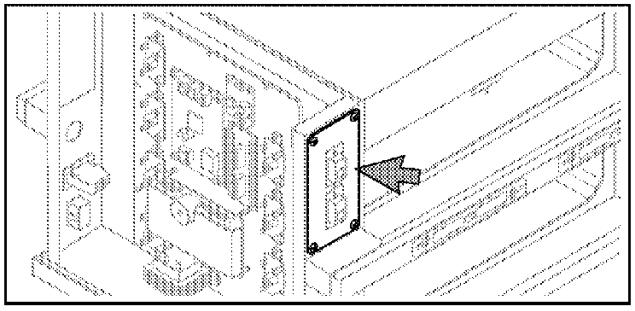


RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement Adapter Board on its studs and secure with its screws.
7. Reconnect the line and molex plug to the Adapter Board.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

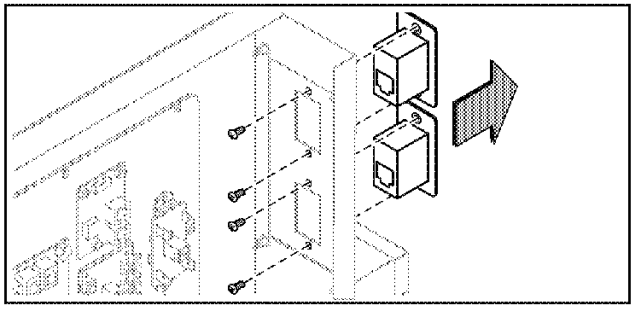
MOUNTING PLATE (If installed)

If Kitchen Minder is installed in the unit, the Mounting Plate is located in the rear control panel. The Mounting Plate holds the Couplers. The type depends on the specific model: Domestic (2-Hole) and CE (2-Hole or 3-Hole).

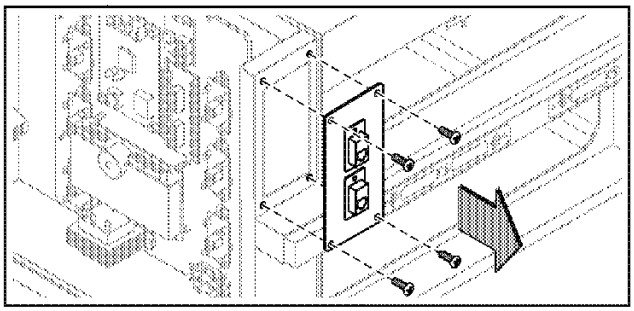


TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect any communication lines attached to both sides of the Couplers contained in the Mounting Plate.
4. **If intending to retain and reuse the existing Couplers,** remove and retain the Couplers and their mounting screws (two per coupler).



5. Remove and retain the four (4) screws securing the Mounting Plate to the rear control panel.

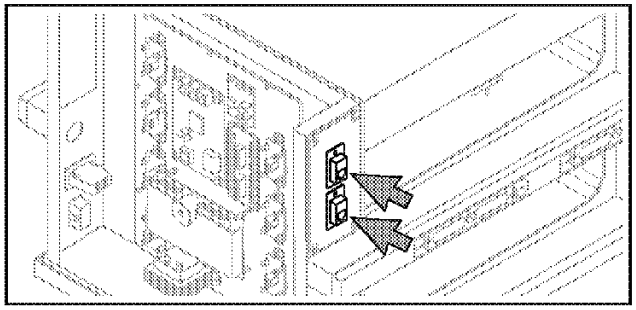


RESTORE:

6. Install the replacement Mounting Plate in the rear control panel and secure with its screws.
7. If necessary, reinstall the Couplers into the Mounting Plate with their screws.
8. Reconnect the communication lines to the Couplers.
9. Replace the Control Side Cover and secure with its screws.
10. Restore power to the unit and test for proper function.

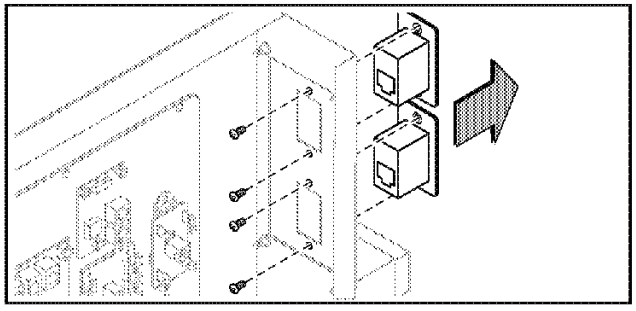
COUPLERS (If installed)

If Kitchen Minder is installed in the unit, the Couplers are located in the Mounting Plate on the rear Control Panel. Couplers are the connection point between the Master and Satellite Kitchen Minder units allowing them to be connected and communicate. The quantity varies depending on the specific model – two (2; one RJ45 and one RJ12) in the Domestic model or three (3; all CAT5/RJ45) in the CE model.



TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the affected Coupler line(s).
4. Remove and retain the two (2) small screws that attach each Coupler to the Mounting Plate.



RESTORE:

5. Insert the replacement Coupler(s) and attach with its screws.
6. Reconnect the Coupler line(s).
7. Replace the Control Side Cover and secure with its screws.
8. Restore power to the unit and test for proper function.

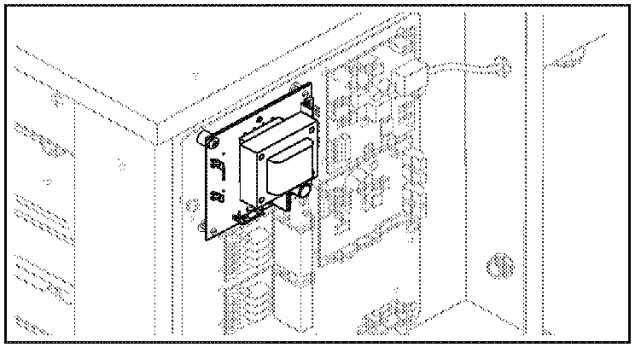
CONTROL COMPARTMENT COMPONENTS – VISOR MODEL (ONLY)

NOTE: All previously listed control compartment components (Standalone and Kitchen Minder models) are NOT INSTALLED in the VISOR models of the IRHS.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

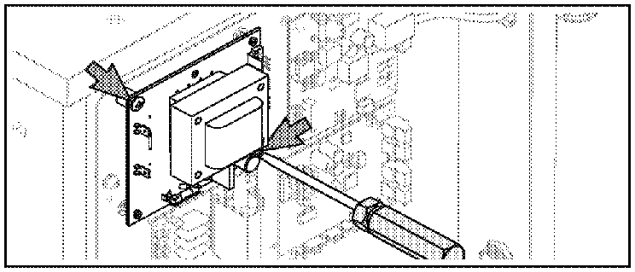
12V POWER CONTROL BOARD

If VISOR is installed in the unit, the 12V Power Control Board is located on the VISOR Control Panel inside the control compartment.

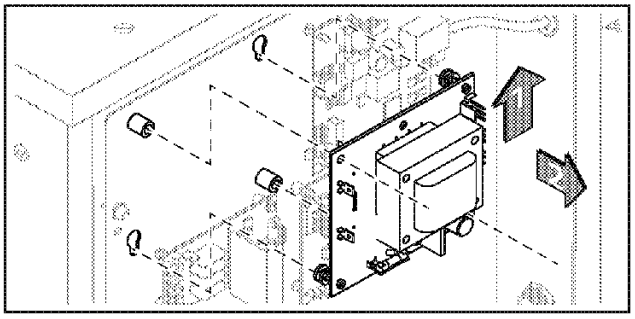


TOOLS REQUIRED: Phillips screwdriver; ESD strap; Needle-nose pliers

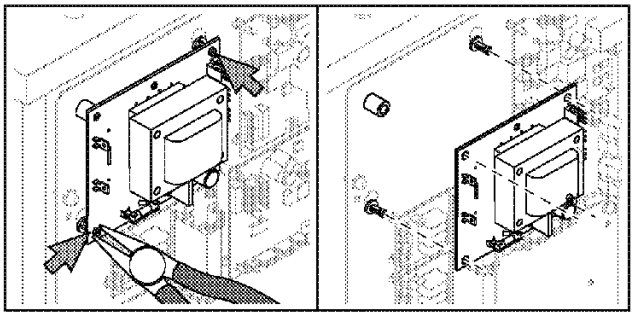
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the spade and molex connectors that are connected to the 12V Power Control Board.
4. Remove and retain the two (2) screws securing the 12V Power Control Board to the unit.



5. Leaving them in place, use the two (2) nylon PC lock-in supports to slide the 12V Power Control Board off of the control panel. If the PC lock-in supports are being reused on the replacement 12V Power Control Board, use needle-nose pliers to squeeze the PC lock-in supports and slide out of the 12V Power Control Board. The nylon screw stubs will remain in place.



OR



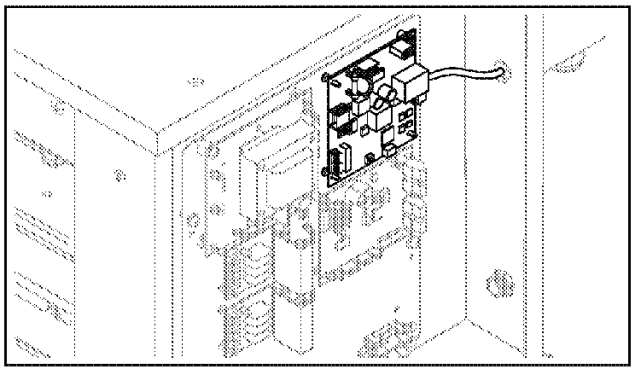
RESTORE:

6. If necessary, install two (2) nylon PC lock-in supports in the 12V Power Control Board.
7. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement 12V Power Control Board, with its PC lock-in supports, by sliding into the keyholes in the control panel and secure in place with its screws.
8. Reconnect the spade and molex connectors.
9. Replace the Control Side Cover and secure with its screws.
10. Restore power to the unit and test for proper function.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

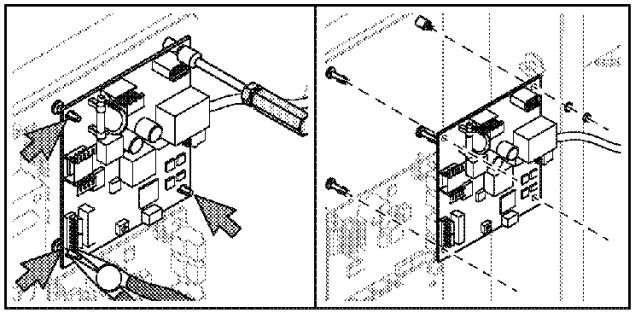
POWER CONTROL BOARD – ACM

If VISOR is installed in the unit, the ACM Power Control Board is located on the VISOR Control Panel inside the control compartment.



TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket; Needle-nose pliers

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the connectors and data line that are connected to the ACM Power Control Board.
4. Remove and retain the 1/4" nut securing the ACM Power Control Board to the unit.
5. Squeeze each of the three (3) nylon PC lock-in supports with needle-nose pliers to release the ACM Power Control Board off of the control panel. The nylon supports and nut stub will remain in place.



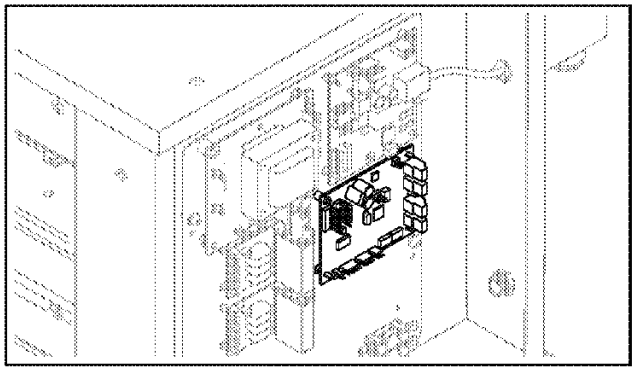
RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement ACM Power Control Board onto its nylon PC lock-in supports and secure in place with its nut.
7. Reconnect the spade and molex connectors.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

POWER CONTROL BOARD – 103M

If VISOR is installed in the unit, the ACM Power Control Board is located on the VISOR Control Panel inside the control compartment. The quantity varies depending on the specific model.

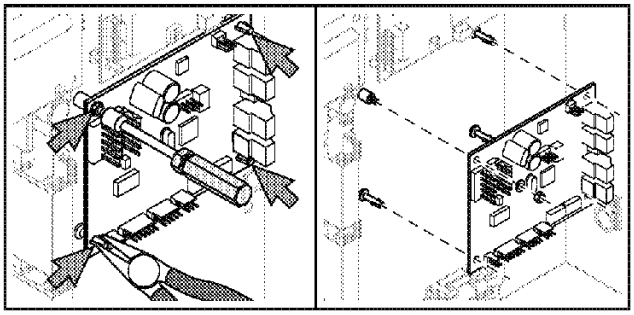


TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket; Needle-nose pliers

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the connectors that are connected to the 103M Power Control Board.

NOTE: The use of an ESD Wrist Strap is strongly recommended. Follow ESD procedures on page 11.

4. Remove and retain the 1/4" nut and its nylon spacer securing the 103M Power Control Board to the unit.
5. Squeeze each of the three (3) nylon PC lock-in supports with needle-nose pliers to release the 103M Power Control Board off of the control panel. The nylon supports and nut stub remain in place.



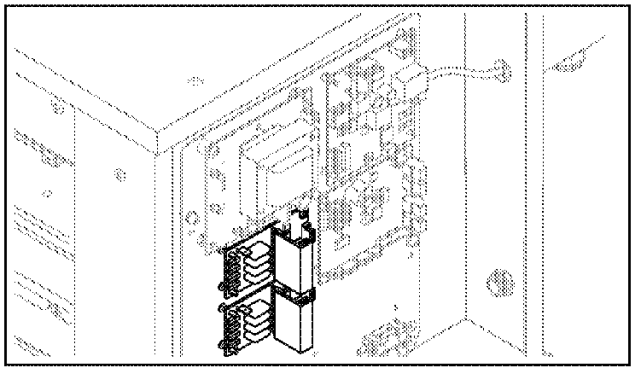
RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement 103M Power Control Board onto its nylon PC lock-in supports and secure in place with its nut and nylon spacer.
7. Reconnect the spade and molex connectors.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

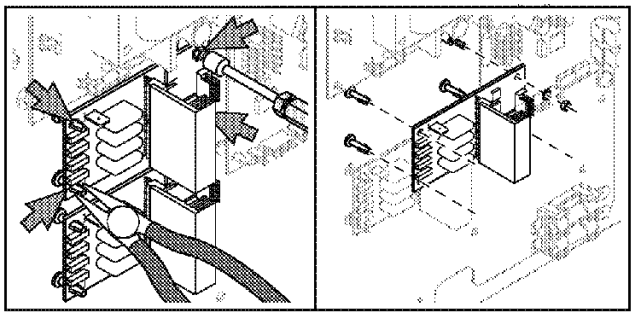
POWER CONTROL BOARD – TRIAC DRIVE

If VISOR is installed in the unit, the Triac Drive Power Control Board is located on the VISOR Control Panel inside the control compartment. The quantity varies depending on the specific model.



TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket; Needle-nose pliers

1. Place the unit's Power Switch in the "OFF" position and follow the proper lockout/tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the connectors that are connected to the Triac Drive Power Control Board.
4. Remove and retain the 1/4" nut and nylon spacer securing the Triac Drive Power Control Board to the unit.
5. Squeeze each of the three (3) nylon PC lock-in supports with needle-nose pliers to release the Triac Drive Power Control Board off of the control panel. The nylon supports and nut stub will remain in place.

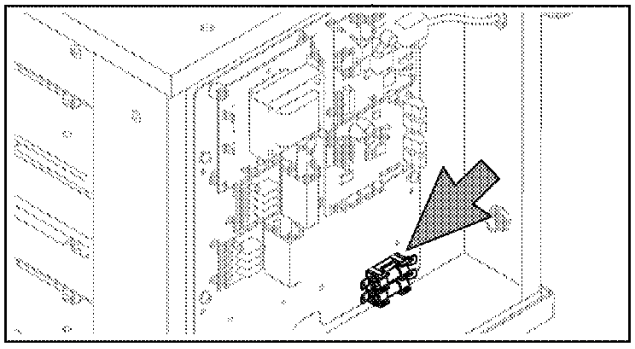


RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement Triac Drive Power Control Board onto its nylon PC lock-in supports and secure in place with its nut.
7. Reconnect the spade and molex connectors.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

FUSE HOLDER AND FUSES

The Fuses and Fuse Holder serve as a circuit interrupter from the main power input. They are located on the VISOR Control Panel, inside the control compartment.

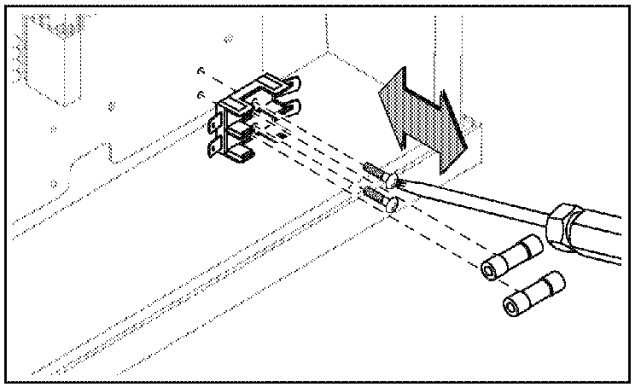


TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.

FOR FUSE HOLDER REPLACEMENT

3. Disconnect the spade connectors connected to the Fuse Holder.
4. Remove and retain the screws securing the Fuse Holder to the unit and remove the Fuse Holder.



RESTORE:

5. Install the replacement Fuse Holder and secure with its screws.
6. Reconnect the spade connectors.
7. INSTALL CORRECTLY RATED FUSES ONLY!

NOTE: Replacing fuse(s) with an incorrect rating can cause nuisance blowing if rating is too low, or a loss of circuit protection if too high. Damage to the equipment and risk of fire may result.

8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

FOR FUSE REPLACEMENT

3. Remove the fuses and test with an ohm meter.

RESTORE:

4. Replace the fuse(s) with correctly rated fuse(s):

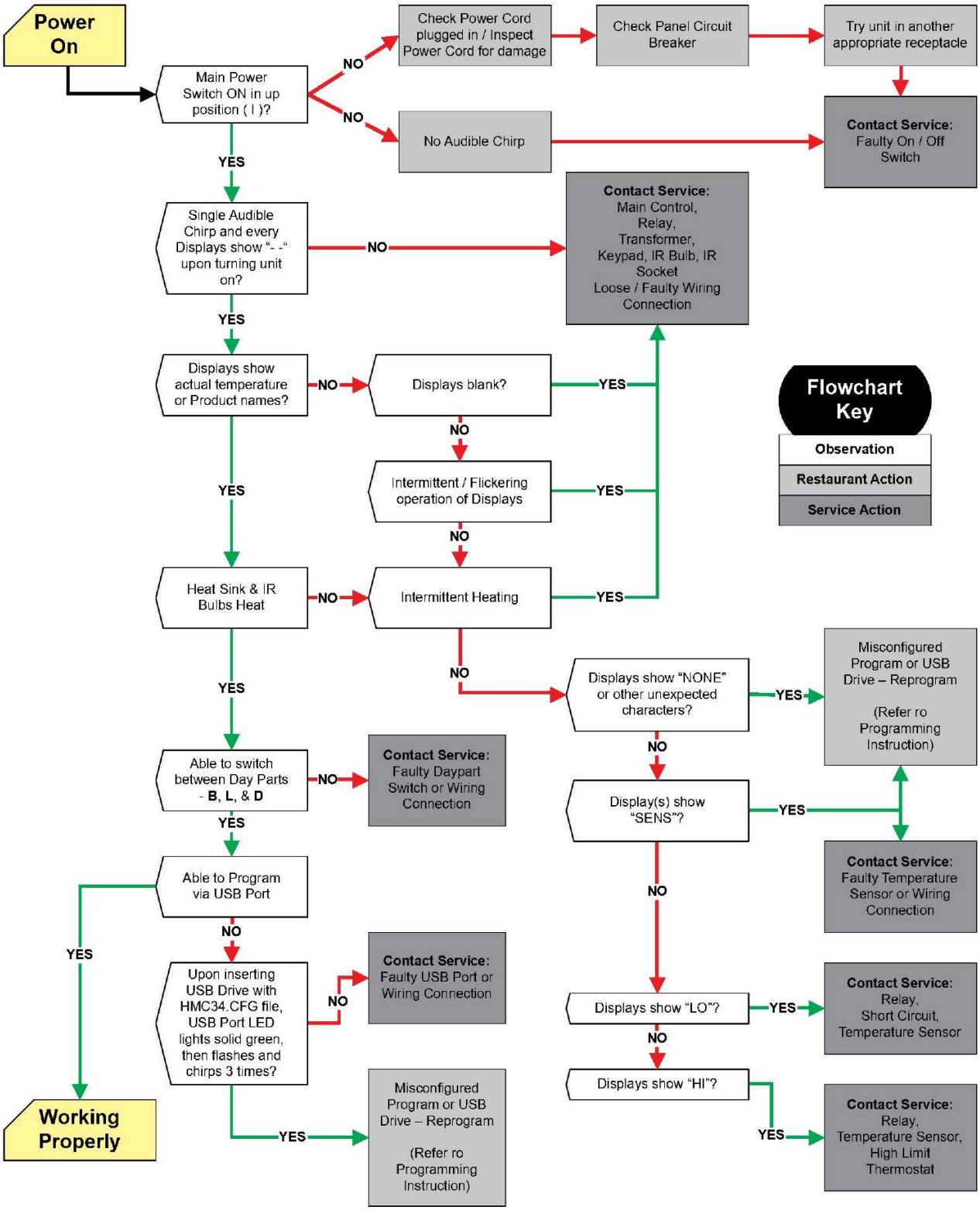
Models 2x2, 2x3, 2x4, 4x2	12 Amp
Model 3x4	16 Amp

NOTE: Replacing fuse(s) with an incorrect rating can cause nuisance blowing if rating is too low, or a loss of circuit protection if too high. Damage to the equipment and risk of fire may result.

5. Replace the Control Side Cover and secure with its screws.
6. Restore power to the unit and test for proper function.

TROUBLESHOOTING & DIAGNOSTICS

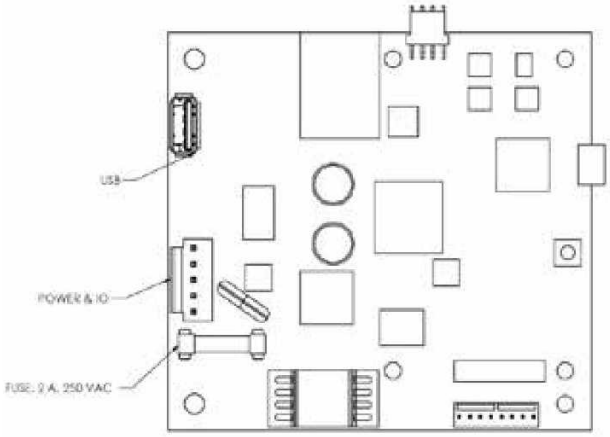
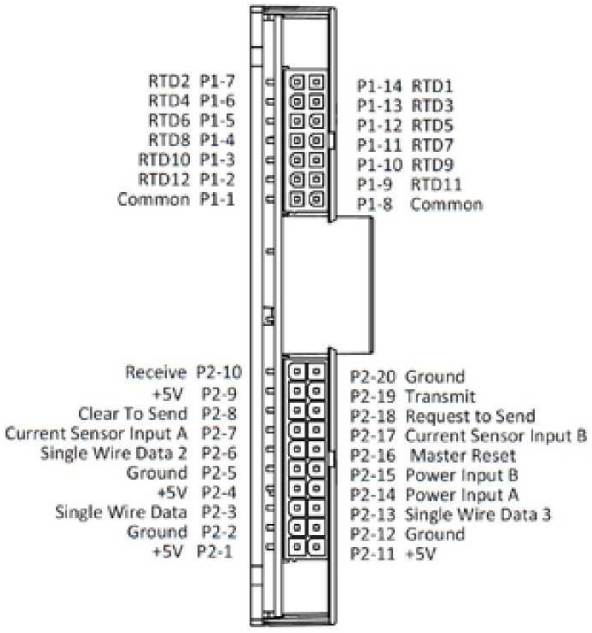
IRHS TROUBLESHOOTING FLOW CHART

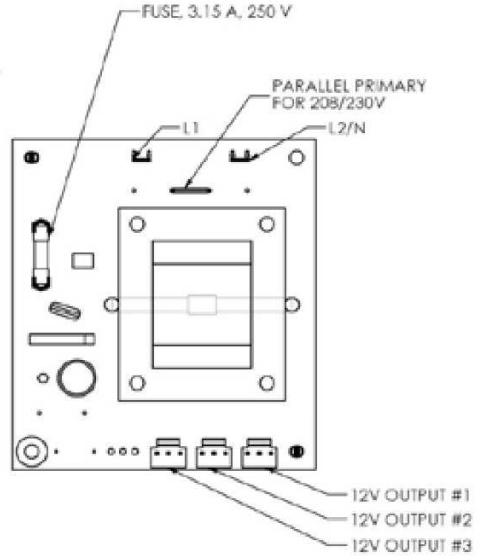
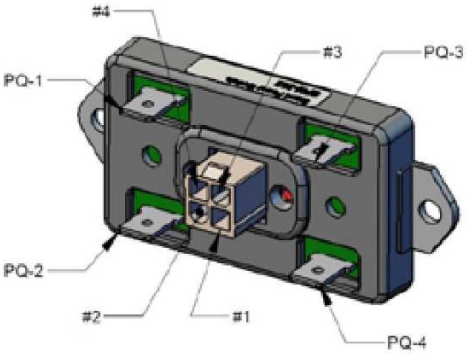


IRHS TROUBLESHOOTING GUIDE

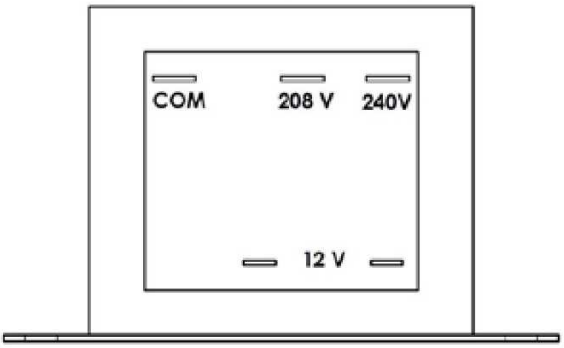
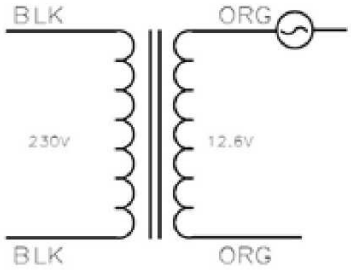
COMPONENT CHECK	STATE		POSSIBLE CONDITIONS	SOLUTION(S)
Unit Powered?			Unplugged	Plug Power Cord into correct receptacle
			Power Cord damaged	Repair/Replace Power Cord
			Circuit Breaker tripped	Reset panel breaker
			Faulty receptacle	Replace receptacle
			Fuse	Replace Fuse
			Wiring/Connectors	Trace and repair wiring
			On/Off Switch	Replace On/Off Switch
Timer (Menu) Bar Displays	Blank?	Both Bars	Transformer	Replace Transformer
			Controller	Replace Controller
			Keypad Display	Replace Keypad Display
			Wiring/Connectors	Trace and repair wiring
		Rear Bar Only	Wiring/Connectors	Trace and repair wiring
			IR Relay	Replace faulty relay
		Individual Keypad	Wiring/Connectors	Trace and repair wiring
			Keypad Display	Replace Keypad Display
	Showing Error Code	"SENS" or "HIGH"	RTD	Replace RTD (Temperature) Sensor
			RTD Board	Replace RTD Board
			Programming	Reprogram the unit
		"LOW"	RTD	Replace RTD (Temperature) Sensor
			RTD Board	Replace RTD Board
			Programming	Reprogram the unit
			High Limit Switch	Allow unit to cool and switch reset
				Replace High Limit Swith
		"BULB"	Wiring/Connectors	Trace and repair wiring
			IR Relay	Replace faulty relay
			Emitter (IR Bulb)	Replace Emitter (IR Bulb)
			Emitter Socket	Replace Emitter (IR Bulb) Socket
HeatSink (Bottom) Heating?			Programming	Reprogram the unit
			Controller	Replace Controller
			Heat Relay	Replace faulty relay
			RTD	Replace RTD (Temperature) Sensor
			RTD Board	Replace RTD Board
			Heat Element	Replace Heat Element
			High Limit Switch	Allow unit to cool and switch reset
				Replace High Limit Swith
			Wiring/Connectors	Trace and repair wiring
Emitters (IR Bulbs)	Not Operating?		Programming	Reprogram the unit
			Controller	Replace Controller
			Emitter (IR Bulb)	Replace Emitter (IR Bulb)
	Operating?		Glass Assembly cleanliness	Clean Glass Assembly
				Check Glass Assembly for damage/defect
			Lid usage	Ensure proper lid for product is used
Programming			USB Drive	Ensure USB drive is blank and download recipes
				Replace USB drive
			Website Programming	Reprogram the unit
			USB Port	Replace USB Port
			Wiring/Connectors	Trace and repair wiring
			Controller	Replace Controller
Daypart Switch			Heat Relay	Replace faulty relay
			Controller	Replace Controller
			Daypart Switch	Replace Daypart Switch
Lids/Pans			Proper fit	Verify proper proper lid and pan installation
			Glass Assembly	Check Glass Assembly for damage/defect
				Ensure Glass Assembly is correctly installed
			Non-Duke parts	Verify OEM information (packaging/labeling)

IRHS COMPONENT TECHNICAL SPECIFICATIONS

PART NO.	DESCRIPTION	SPECIFICATIONS
166112	ACM, Power Control Board (VISOR-only)	
166080	**Controller**; Renau HMC-34	
166017	**Emitter, IRHS**; 208 VAC	• 208 VAC; 340 (170 x 2) W (± 3%)
166018	**Emitter, IRHS**; 240 VAC	• 240 VAC; 340 (170 x 2) W (± 3%)
166004	**Heat Element**; 2-Wide, 208 VAC	• 208 VAC; 300 W
166005	**Heat Element**; 2-Wide, 240 VAC	• 240 VAC; 300 W
166007	**Heat Element**; 3-Wide, 208 VAC	• 208 VAC; 450 W
166008	**Heat Element**; 3-Wide, 240 VAC	• 240 VAC; 450 W
166009	**Heat Element**; 4-Wide, 208 VAC	• 208 VAC; 300 W
166010	**Heat Element**; 4-Wide, 240 VAC	• 240 VAC; 300 W

<table>
<tr><th>PART NO.</th><th>DESCRIPTION</th><th>SPECIFICATIONS</th></tr>
<tr><td>166082</td><td>Keypad Display; Up/Down
(all configurations)</td><td rowspan="2">• Input: 5 VDC
• Pins:
— Pin #1: GND
— Pin #2: 5 VDC
— Pin #3: Data In
— Pin #4: Data Out</td></tr>
<tr><td>166083</td><td>Keypad Display; Up/Up
(only with 3x4 configurations)</td></tr>
<tr><td>166111</td><td>Modular Jack (VISOR-only)</td><td>• 1.5 A; 125 VDC
• Torque: 12 Kgf/cm
• CAT 5
• IP67</td></tr>
<tr><td>120011</td><td>Power Control Board
(VISOR-only)</td><td>• Primary 208/230 VAC; Secondary: 12 VAC

</td></tr>
<tr><td>157830</td><td>Relay, Smart Power Module</td><td>• Max. Load Current: 20 Arms. Heat sinking required.
• Operating Voltage: 24-250 Vrms
• Input : 5V TTL


<table>
<tr><th colspan="2">Connector PIN Data</th></tr>
<tr><td>PQ-1</td><td>LOAD1-1</td></tr>
<tr><td>PQ-2</td><td>LOAD1-2</td></tr>
<tr><td>PQ-3</td><td>LOAD2-1</td></tr>
<tr><td>PQ-4</td><td>LOAD2-2</td></tr>
<tr><td>#1</td><td>+5V DC</td></tr>
<tr><td>#2</td><td>GND</td></tr>
<tr><td>#3</td><td>1-wire network IN</td></tr>
<tr><td>#4</td><td>1-wire network OUT</td></tr>
</table></td></tr>
</table>

PART NO.	DESCRIPTION	SPECIFICATIONS
158279	RTD Sensor	• Temperature Range: -65°F to 260°F
158312	Thermostat, High Limit	• Opens @ 300°F; Closes @ 270°F
155749	**Transformer;** 208/240 VAC	• Primary: 208/240 VAC; Secondary: 12 VAC 
156838	**Transformer;** 230 VAC	• Input: 230 VAC; 50/60 Hz; Output: 12.6 V @ 2.38 A 

OPERATIONS

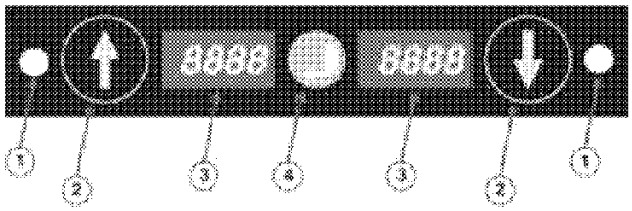
OPERATING PROCEDURES

- Ensure proper pan covers are inserted into the correct location for broiled products.
- Upon turning ON, allow the unit to heat until the menu bars display the pre-programmed product names. This does not occur before reaching proper temperature.

NOTE: If the menu bars display temperature at any time after the preheat period, discontinue use of the affected pan location(s) until the unit can be serviced.

OPERATIONS

Menu Bar Components

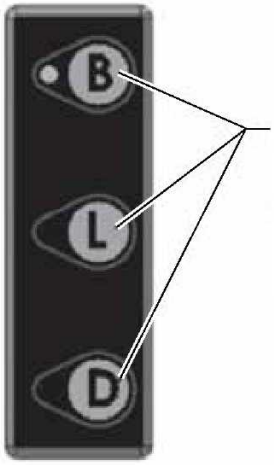


1. **Status LEDs.** Used for indicating status of pan.
   a. GREEN: Menu is Active – product in pan (use first)
   b. FLASHING GREEN: Cook Warning Time reached (cook more product) or keypad in edit (programming) mode
   c. NON-ILLUMINATED: Menu is inactive – no product in pan
2. **Arrow Buttons:**
   a. Used for starting/stopping/resetting the menu.
   b. Used to access Menu Mode.
   c. Indicate which pan the adjacent status LED and pan display are linked to.
3. **LED Displays:**
   a. Displays product name and hold time remaining (alternates between the two when the Menu is active).
   b. Once to temperature, product names can be viewed on the displays. Additional settings such as "LINK", "TIME", and "TEMP" can be viewed two different ways:
      1) Manually accessing Menu Mode through Menu Bars.
      2) Uploading unit settings from the IRHS to a USB Drive and viewing via the Internet. This is accomplished by using the same website used to download recipes.
4. **ENTER Button**. Used to access Menu Mode.

Changing Dayparts

There are two methods for selecting Dayparts:

1. Select the appropriate Daypart Button to switch between breakfast, lunch, and dinner menus. If necessary, the three (3) parts can be programmed for any three separate time periods – not just "breakfast", "lunch", and/or "dinner" menus.



PUSH BUTTONS TO CHANGE DAYPART MENU – CORRESPONDING LED WILL TURN ON (BREAKFAST SHOWN)

2. Via Menu Bar:

a. Enter Menu Mode by pressing and holding the ENTER button "↵" for three (3) seconds.

b. Status LED flashes, "**MENU**" is displayed on left Display, and either "**UP**" or "**DOWN**" is displayed on the right display – indicating which pan location information will be displayed/controlled.



c. After selecting the UP or DOWN Arrow, press the ENTER Button "↵" to accept.

d. Status LED stops flashing and "**MEAL ↵ SET1**" appears on the Display.



e. Press the ENTER button again. Status LED flashes indicating Menu Mode.

f. Use the arrow buttons to scroll to desired Daypart ("**MEAL ↵ SET1**", "**MEAL ↵ SET2**", or "**MEAL ↵ SET3**") and press the ENTER button to accept.



g. Status LED stops flashing, "**UPDATING**" is displayed for a few seconds, and then the desired Daypart ("**MEAL ↵ SETx**") is displayed.





h. Press the UP arrow button one last time to scroll to "**EXIT**" and press the ENTER button "↵" to exit Menu Mode.



Display Link, Hold Time, or Temperature

1. Enter Menu Mode by pressing and holding the ENTER button "↵" for three (3) seconds.
2. Status LED flashes, "**MENU**" is displayed on left Display, and either "**UP**" or "**DOWN**" is displayed on the right display – indicating which pan location information will be displayed/controlled.



3. After selecting the UP or DOWN arrow, press the ENTER Button "↵" to accept.
4. Status LED stops flashing and "**MEAL ↵ SET1**" appears on the Display.



5. Press the ENTER button "↵" again. Status LED flashes indicating edit mode.
6. Press the UP arrow button repeatedly to scroll up or down through "**LINK**", "**TIME**", and "**TEMP**". The DOWN arrow button can be used to cycle the opposite direction.



This indicates product named **BURG** is linked pan locations



This indicates the hold time for BURG



This indicates the Heat Sink Temperature for BURG

7. Press the UP arrow button one last time to scroll to "**EXIT**" and press the ENTER button "↵" to exit Menu Mode.



DIAGNOSTICS

Checking Heat Sink Temperature

- A surface temperature probe can be used to check the temperature of the heat sink surface.
- No pans should be in wells during the pre-heat and temperature check period. Pre-heat the holding unit for 30 minutes before taking any temperature readings.
- Ensure the pan location being measured is not in a hold cycle mode (timing down).
- Locate the surface temperature probe in the geometric center of the desired pan location. Make sure the probe is making good contact with the surface while taking readings.
- The temperature control will exhibit a swing in temperature as the control cycles on and off while regulating to the set point temperature. The average of several readings taken should be +/- 5°F from the set point.
- Compare the measured temperature to the programmed heat sink set point (TEMP) for the specified pan location.

Checking IR Bulb Function

- IR bulbs are either ON or OFF.
- Select an arrow to initiate a hold cycle.
- After heat up is complete (display will show product names), visually confirm the IR bulb comes on.

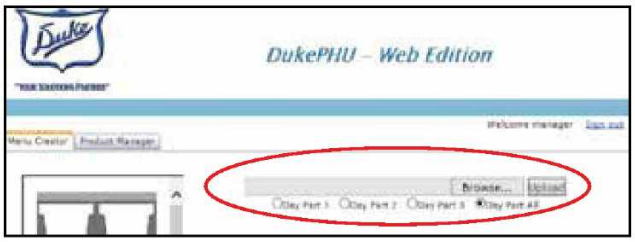
Checking Product Settings (via USB file)

1. Turn the IRHS on and wait for temperature or product names to display.
2. Insert a **blank** USB drive (any size) into the USB port. The USB port LED will light solid green and a single chirp should be heard.
3. The display will go blank and the USB port LED will begin flashing green.
4. A second chirp should be heard, then the USB port LED will return to solid green indicating that the file has successfully uploaded from the IRHS to the USB drive.
5. Remove the USB drive from the port.
6. To view the settings file on the Internet, log onto the same website used to download recipes:

   www.dukemfg.info/bkirhs

   User Name: "**manager**"

   Password: "**password**" (case sensitive)



Error Codes

The RTD Board performs a routine, internal check after turning the unit on to validate the unit is sensing temperature and heating properly. In the event of a problem, an error will display on the Menu Bar:

"BULB" – IR Bulb Circuit Fault

Indicates a fault with a specified IR Bulb circuit. The affected pan location is not available for timing product and a qualified service technician should be contacted to identify the cause of the fault.

"LOW" – Under-Temperature Fault

Indicates a fault with a heating circuit component. The display will show "**LOW**" if the temperature stays 10°F below the set point temperature for 30 minutes. The affected pan location is not available for timing product and a qualified service technician should be contacted to identify the cause of the fault.

"HIGH" – Over-Temperature Fault

Indicates a fault with a heating circuit component. The display will show "**HIGH**" if the temperature stays 10°F above the set point temperature for 30 minutes. The affected pan location is not available for timing product and a qualified service technician should be contacted to identify the cause of the fault.

"SENS" – Sensor Fault

May indicate the unit has been programmed improperly (i.e., loading a 2x4 product configuration file into a 2x2 unit). An attempt to properly reprogram the unit should be made.

May indicate a fault with a heat sink temperature sensor. The affected pan location is not available for timing product and a qualified service technician should be contacted to identify the cause of the fault.

Temperature Check Procedure

1. **No pans should be in wells during the pre-heat and temperature check.** Pre-heat the warmer for 30 minutes before taking any temperature readings. Do not take readings unless the cavity has been empty for 30 minutes. This will allow the temperature to stabilize and will prevent false readings.
2. A digital temperature meter that has been calibrated must be used to get an accurate temperature reading. Use a thermocouple surface temperature probe to measure temperatures.
3. The heating well should be cleaned and empty before the temperature is checked. Avoid any air drafts that might flow through the cavity.
4. Locate the surface temperature probe on the bottom of the first cavity as shown for the cabinet size.
5. All temperature controls exhibit a swing in temperature as the control cycles on and off while regulating to the set point. The correct calibration temperature is the average of several readings taken over a period of 20 minutes after the warmer has been pre-heated. The average temperature should be ± 5°F from the set point.

CLEANING & ROUTINE MAINTENANCE

CLEANING

IF DAILY CLEANING IS PERFORMED ROUTINELY, DEEPER, MORE AGGRESSIVE, CLEANING METHODS CAN BE AVOIDED. OVER LONGER PERIODS OF TIME, FRIED FOOD PRODUCTS CAN ACCUMULATE AND BAKE ON SURFACES OF THE COMPARTMENTS.

Cleaning solutions need to be alkaline based or non-chloride cleaners. Any cleaner containing chlorides will damage the protective film of the stainless steel. Chlorides are also commonly found in hard water, salts and household and industrial cleaners. If cleaners containing chlorides are used, be sure to rinse repeatedly and dry thoroughly upon completion.

WARNING: NEVER USE AN ACID BASED CLEANING SOLUTION!

MANY FOOD PRODUCTS HAVE AN ACIDIC CONTENT WHICH CAN DETERIORATE THE FINISH. BE SURE TO CLEAN ALL FOOD PRODUCTS FROM ANY STAINLESS STEEL SURFACE. COMMON ITEMS INCLUDE, TOMATOES, PEPPERS AND OTHER VEGETABLES.

Routine cleaning of stainless steel can be done with soap and water. Extreme stains or grease should be cleaned with a non-abrasive cleaner and plastic scrub pad. It is always good to rub with the grain of the steel.

Early signs of stainless steel breakdown can consist of small pits and cracks. If this has begun, clean thoroughly and start to apply stainless steel cleaners in attempt to restore and preserve the finish of the steel's protective layer.

RECOMMENDED SUPPLIES

- Cleaning Towels
- Non-Scratch Scrub Pad
- SYR Cleaning Brush Tool
- Kay Super Concentrate Degreaser
- Kay-5® Sanitizer/Cleaner, or compatible sanitizer

DAILY INSPECTION CHECKLIST

Inspect glass daily for chips, cracks, or breaking. Discard all food and notify manager if any chips, cracks, or broken glass are found. Do not use equipment. All glass must be in good condition before using equipment to hold food.

- Make sure the unit is free of any grease or visible food soils.
- Make sure the exterior of the unit is free of smudges or soil.
- Make sure the unit holding pans are free of damage and any food soil residue.

DAILY CLEANING PROCEDURES

Never use a high-pressure water wash for this cleaning procedure as water can damage electrical components.

1. Turn unit off, unplug, and allow to cool for at least 10 minutes.
2. Remove all holding pans and covers. Wash, rinse, and sanitize at the 3-compartment sink.
3. Allow to air dry.
4. Fully clean all the heat sink surfaces. Spray the cleaning brush tool with degreaser and use as shown – gently sliding in and out of each compartment.

   NOTE: NEVER USE STEEL PADS, WIRE BRUSHES, OR SCRAPERS!



5. Fully clean upper glass surfaces by hand. Spray a cleaning towel, or non-scratch scrub pad when necessary, with soapy solution degreaser.

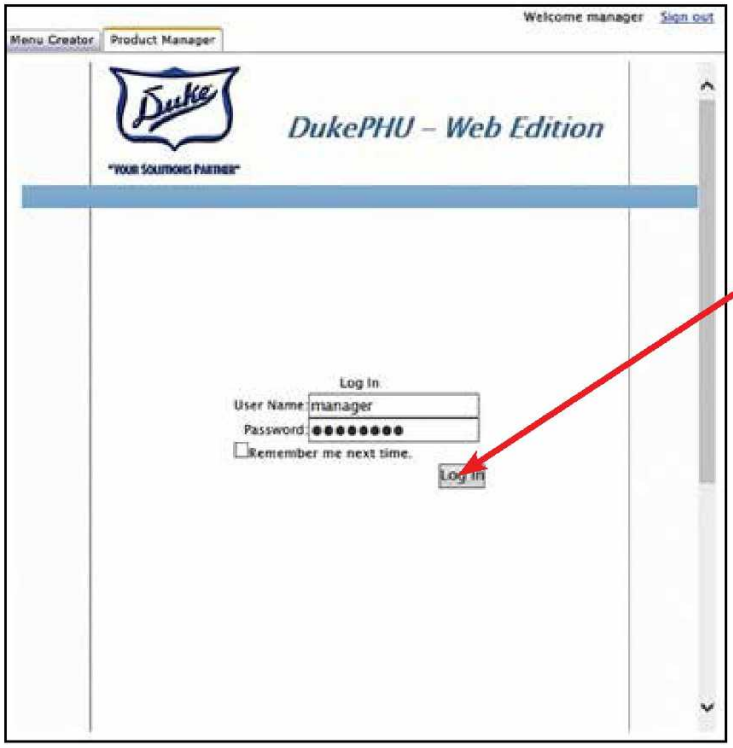
   NOTE: Never spray cleaning solution directly onto the cabinet.

6. Use sanitizer-soaked towels to wipe out all interior compartments on the unit. Wipe the top compartments first, then the remaining levels from top to bottom.

   IMPORTANT: Use clean, sanitizer-soaked towels (towels must be wrung out so that they are damp and not dripping, dripping towels may harm the unit)

WEBSITE PROGRAMMING

1.



Log on.

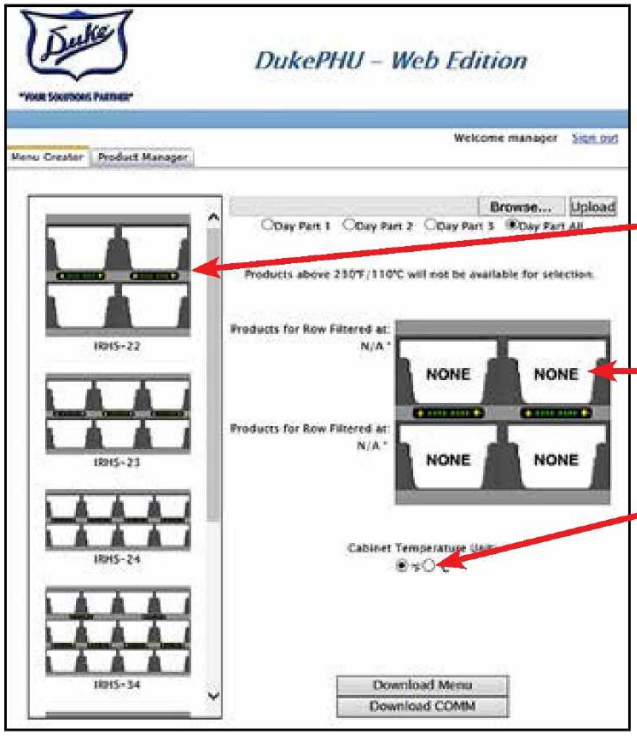
www.dukemfg.info/bkirhs

User Name: **manager**

Password: **password**

(case sensitive)

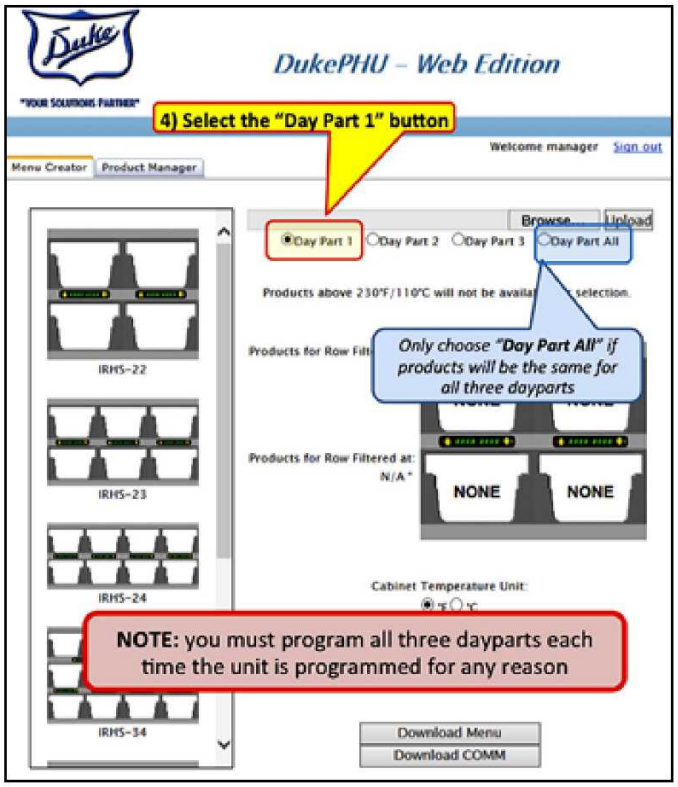
2.



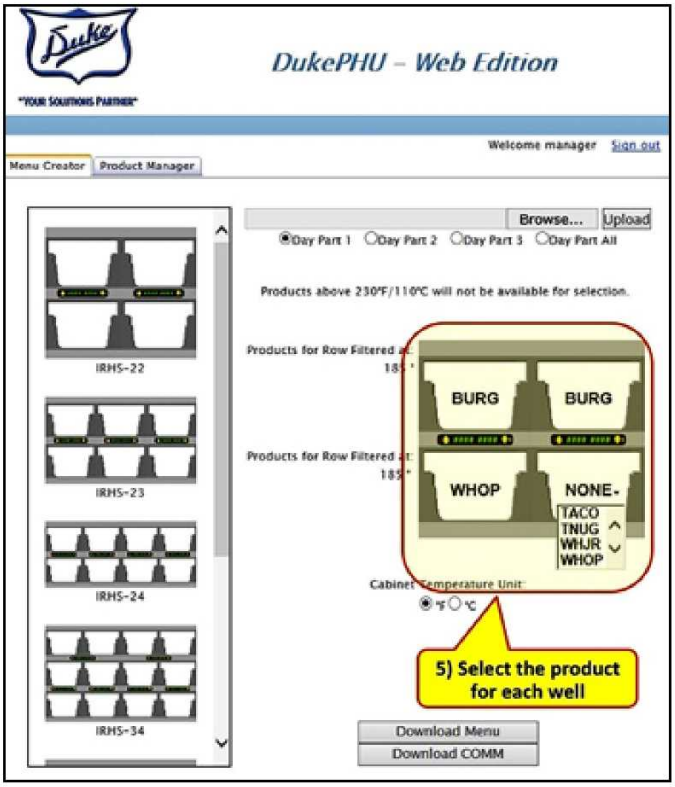
NOTE: When you first log onto this page, you must:

1) Select the desired equipment configuration on the left, before it will…
2) …show up on the right side in order to be programmed.
3) If necessary, change the Cabinet Temperature Unit to "°C" (Celsius)

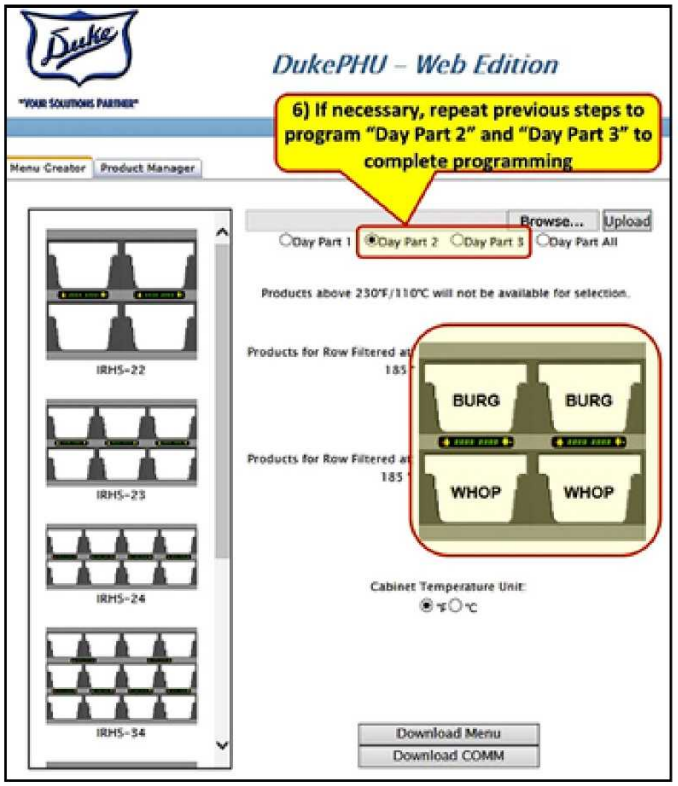
3.


DukePHU – Web Edition
4) Select the "Day Part 1" button
Only choose "Day Part All" if products will be the same for all three dayparts
NOTE: you must program all three dayparts each time the unit is programmed for any reason
Download Menu
Download COMM

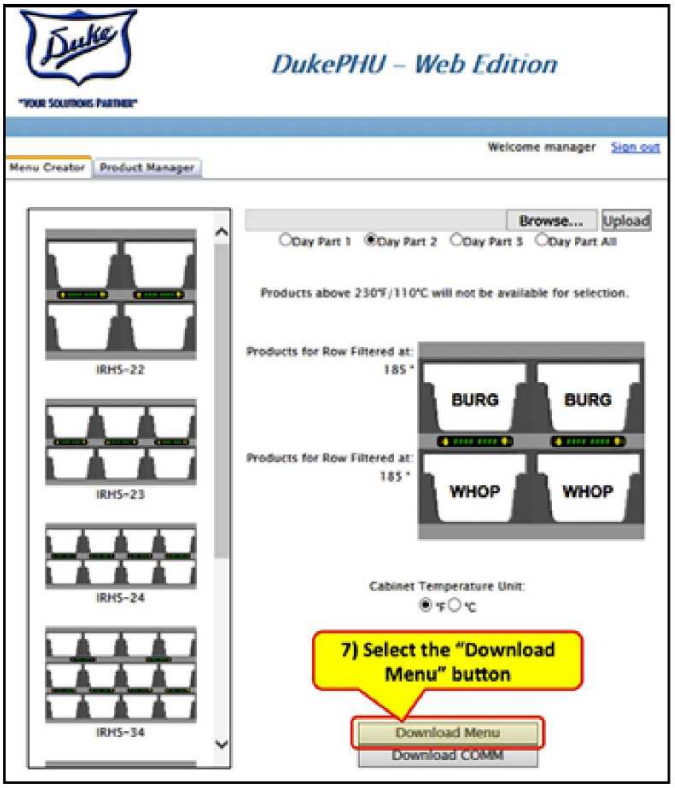
4.


DukePHU – Web Edition
BURG
BURG
WHOP
NONE
TACO
TNUG
WHJR
WHOP
5) Select the product for each well
Download Menu
Download COMM

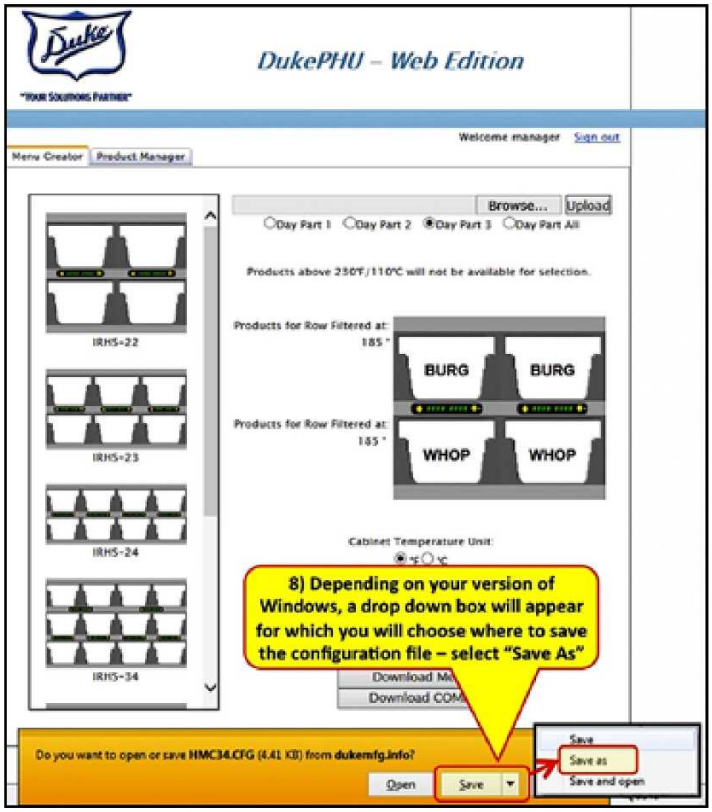
5.


DukePHU – Web Edition
6) If necessary, repeat previous steps to program "Day Part 2" and "Day Part 3" to complete programming
BURG
BURG
WHOP
WHOP
Download Menu
Download COMM

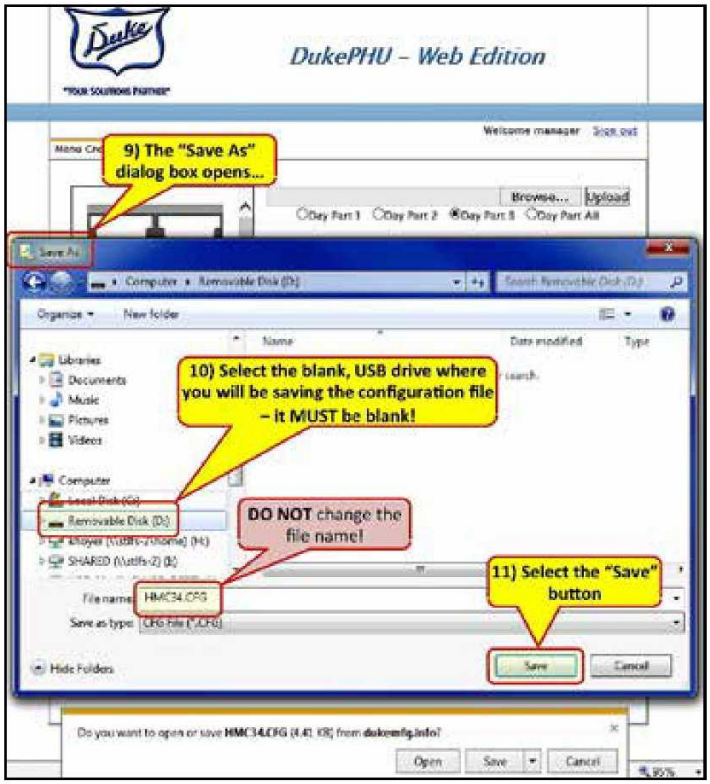
6.


DukePHU – Web Edition
BURG
BURG
WHOP
WHOP
7) Select the "Download Menu" button
Download Menu
Download COMM

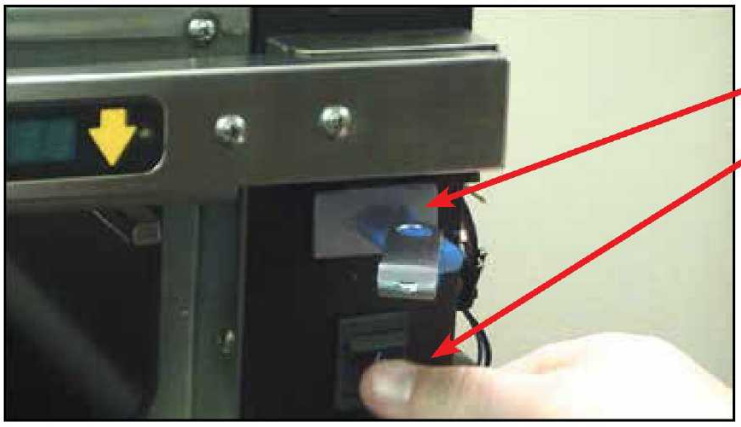
7.


DukePHU – Web Edition
Welcome manager Sign out
Menu Creator
Product Manager
Browse...
Upload
Day Part 1
Day Part 2
Day Part 3
Day Part All
Products above 230°F/110°C will not be available for selection.
Products for Row Filtered at: 185°
BURG
BURG
Products for Row Filtered at: 185°
WHOP
WHOP
IRHS-22
IRHS-23
IRHS-24
IRHS-34
Cabinet Temperature Unit:
8) Depending on your version of Windows, a drop down box will appear for which you will choose where to save the configuration file – select "Save As"
Download M
Download COM
Do you want to open or save HMC34.CFG (4.41 KB) from dukemfg.info?
Open
Save
Save
Save as
Save and open

8.

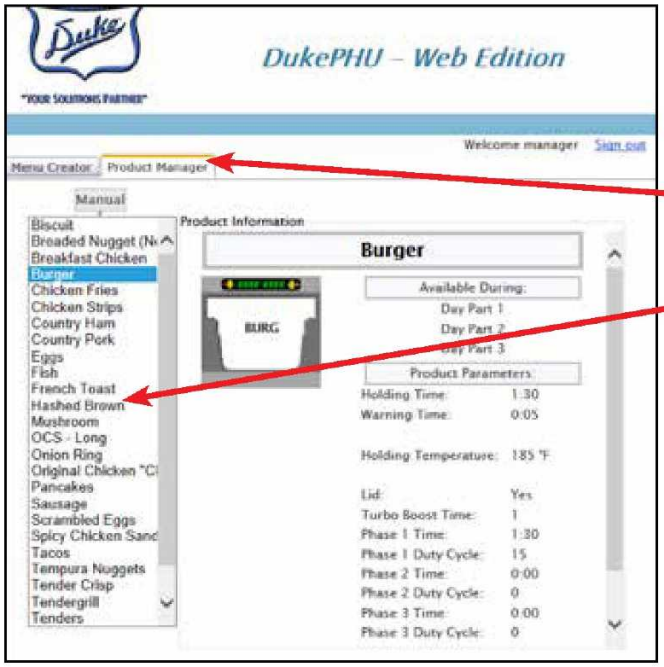

DukePHU – Web Edition
Welcome manager Sign out
9) The "Save As" dialog box opens...
Browse...
Upload
Day Part 1
Day Part 2
Day Part 3
Day Part All
Save As
Computer
Removable Disk (D:)
Organize
New folder
Name
Date modified
Type
Libraries
Documents
Music
Pictures
Videos
Computer
Removable Disk (D:)
10) Select the blank, USB drive where you will be saving the configuration file – it MUST be blank!
DO NOT change the file name!
File name: HMC34.CFG
Save as type:
11) Select the "Save" button
Hide Folders
Save
Cancel
Do you want to open or save HMC34.CFG (4.41 KB) from dukemfg.info?
Open
Save
Cancel

Unit Programming Instructions



1) Power off the unit.
2) Insert the flash drive into the USB slot.
3) Power on the unit.
4) The program will automatically be installed. *The unit will chirp a few times, the Emitters will cycle, and the display shows different displays while programming is in progress*
5) Programming is complete when Menu Bar indicates the updated products and/or temperatures in all displays.

Product Manager Tab

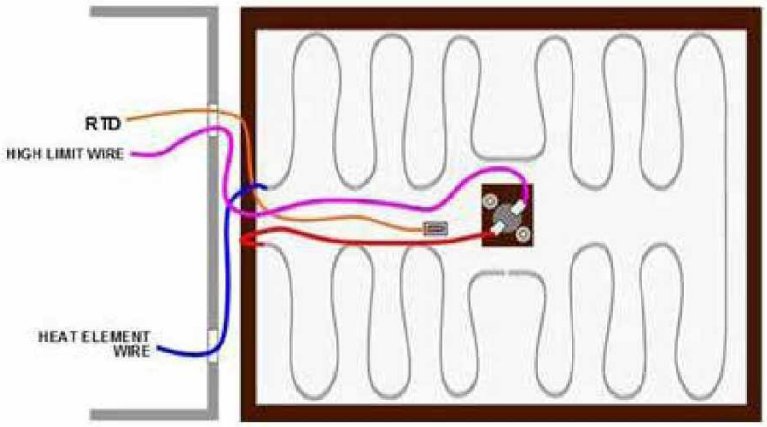


Select this tab…

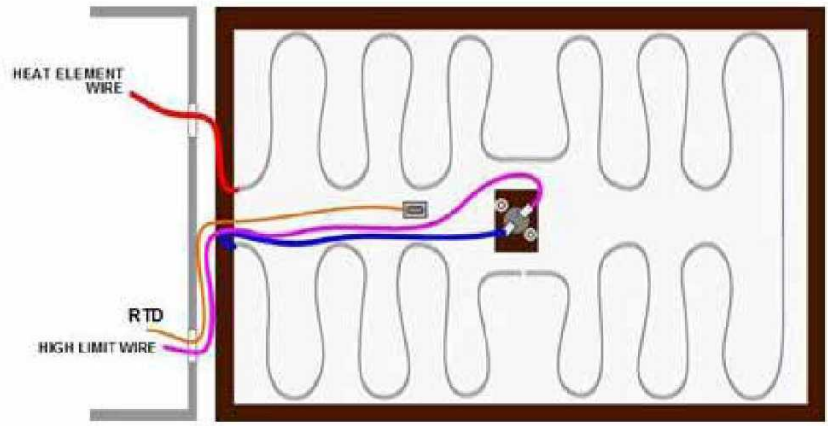
…and then a product on the left side of the screen to view hold settings for various products.

IRHS DECK WIRING

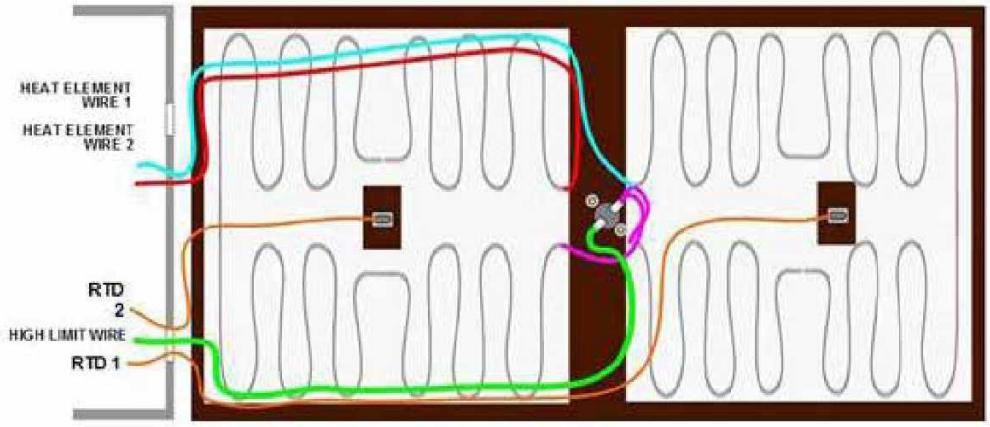
2 WIDE, LEFT SIDE CONTROL



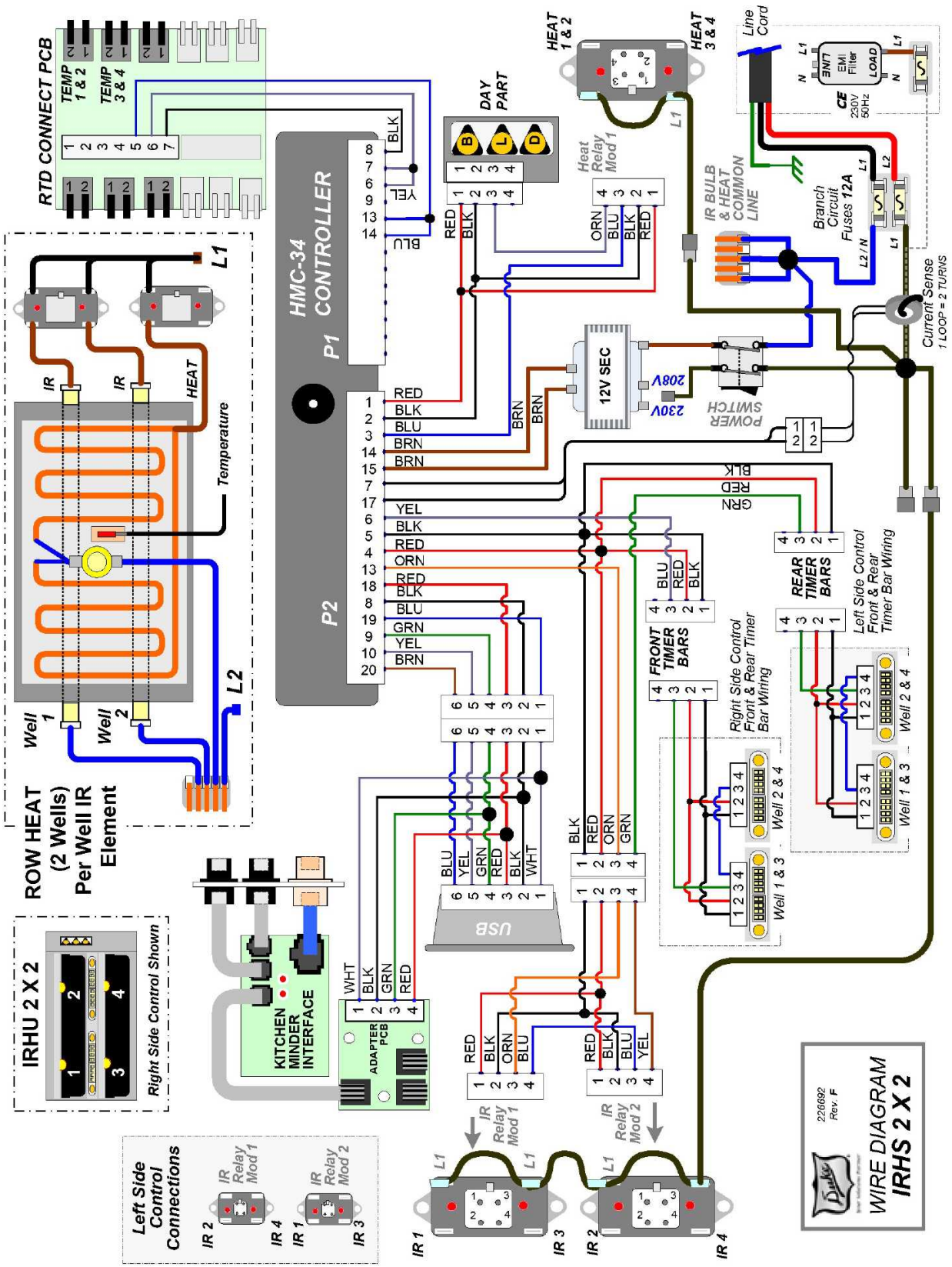
3 WIDE, RIGHT SIDE CONTROL



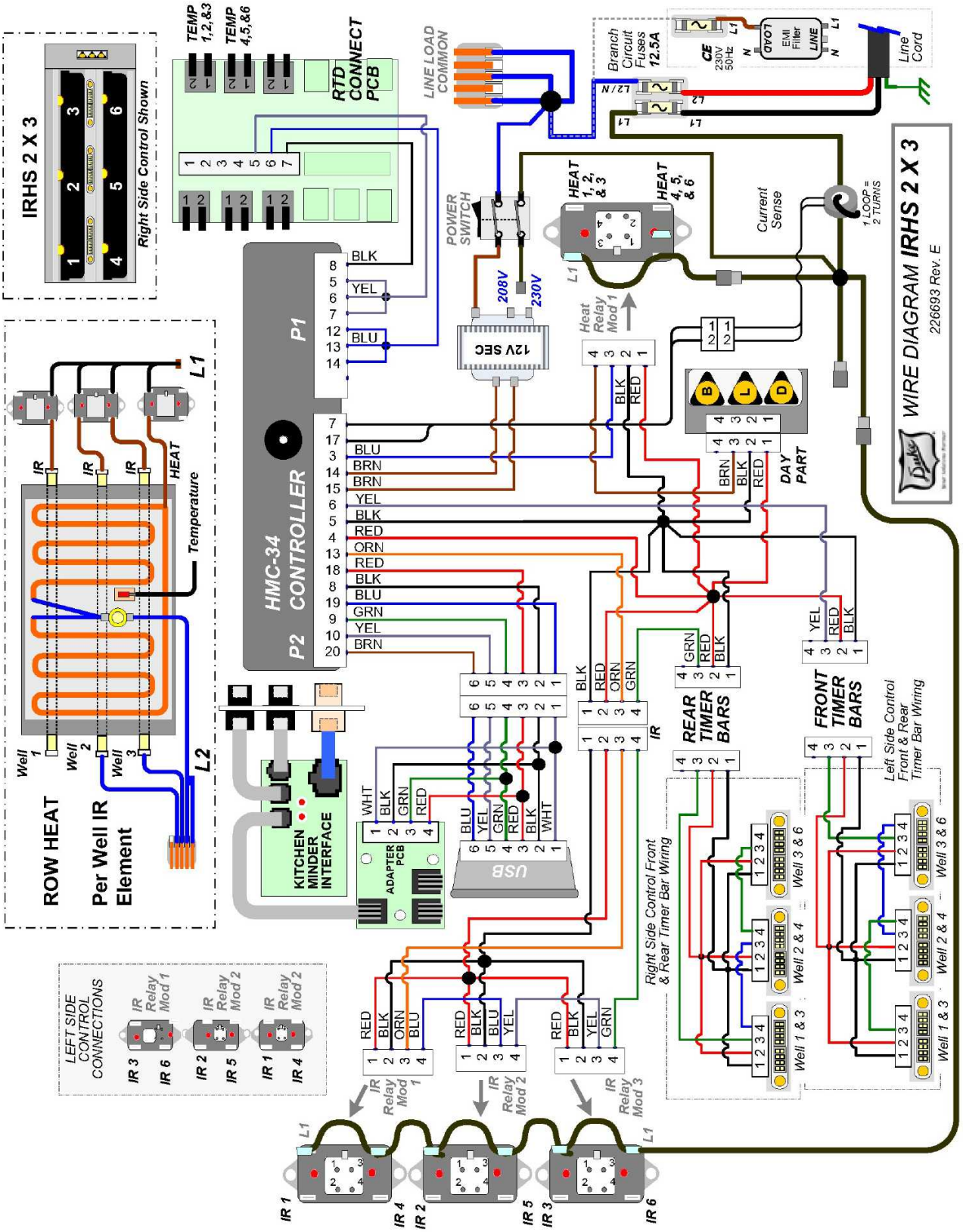
4 WIDE, RIGHT SIDE CONTROL



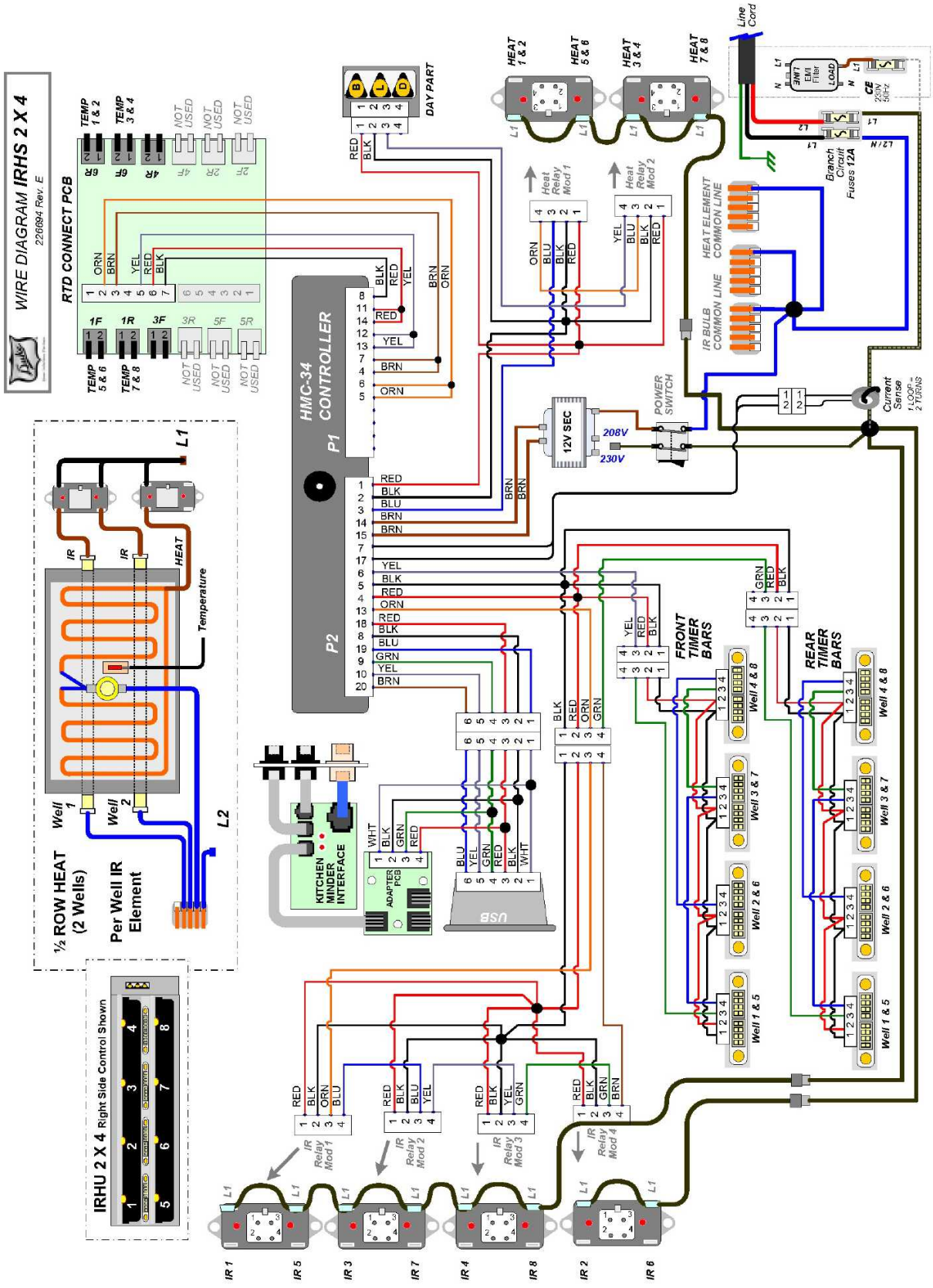
IRHS22 WIRING DIAGRAM



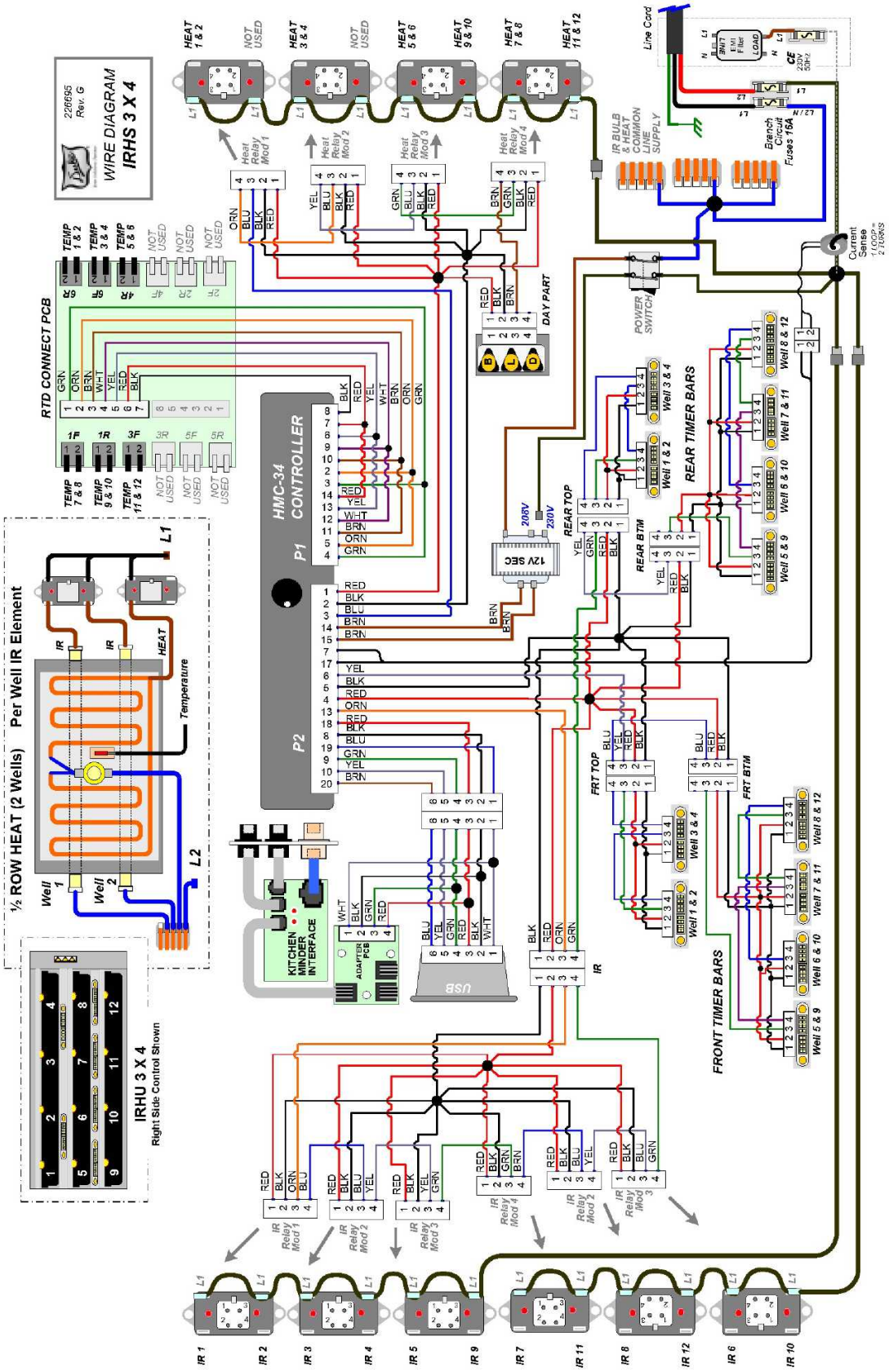
IRHS23 WIRING DIAGRAM



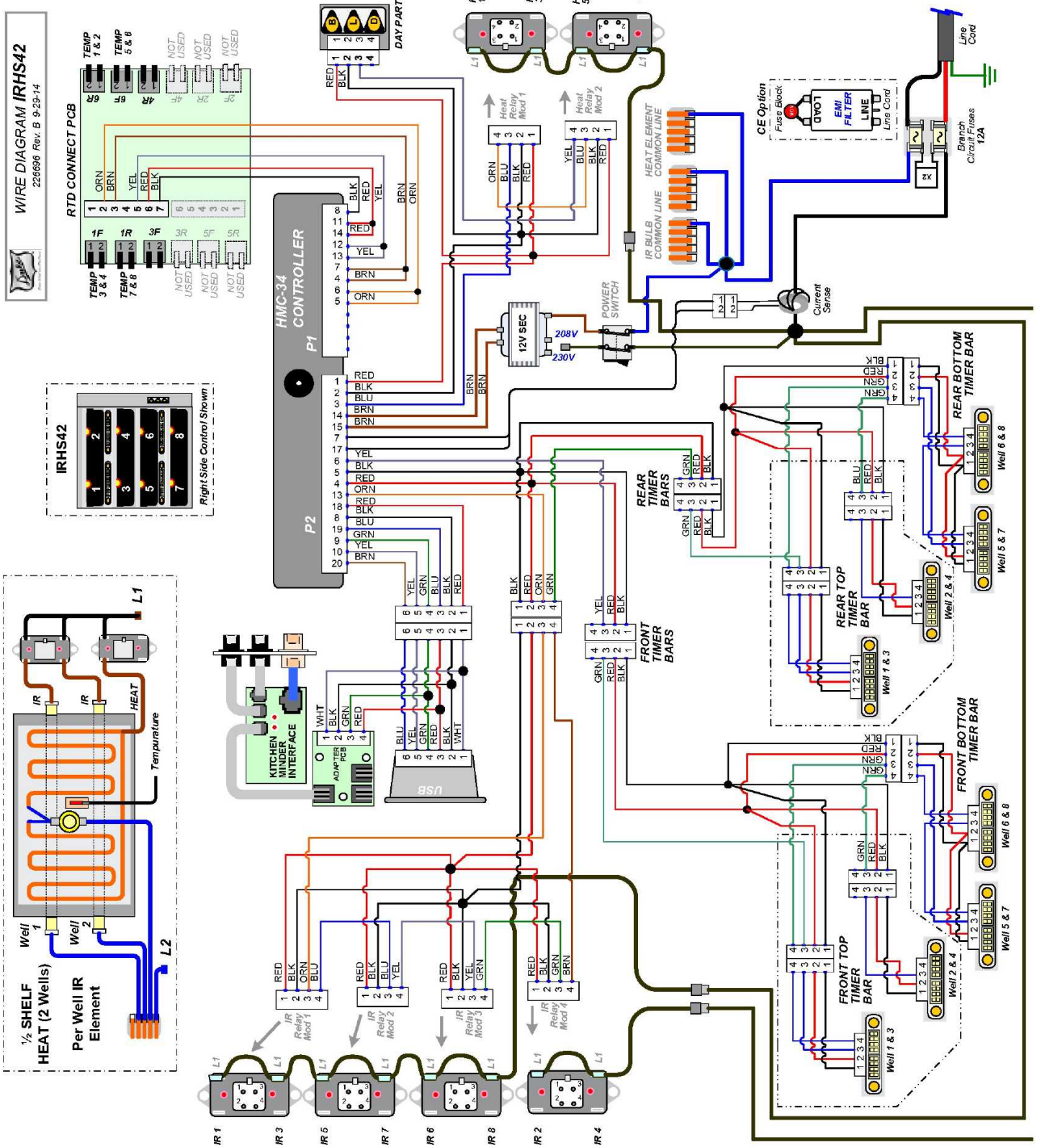
IRHS24 WIRING DIAGRAM



IRHS34 WIRING DIAGRAM



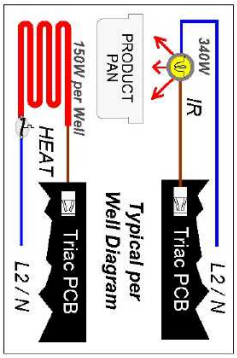
IRHS42 WIRING DIAGRAM

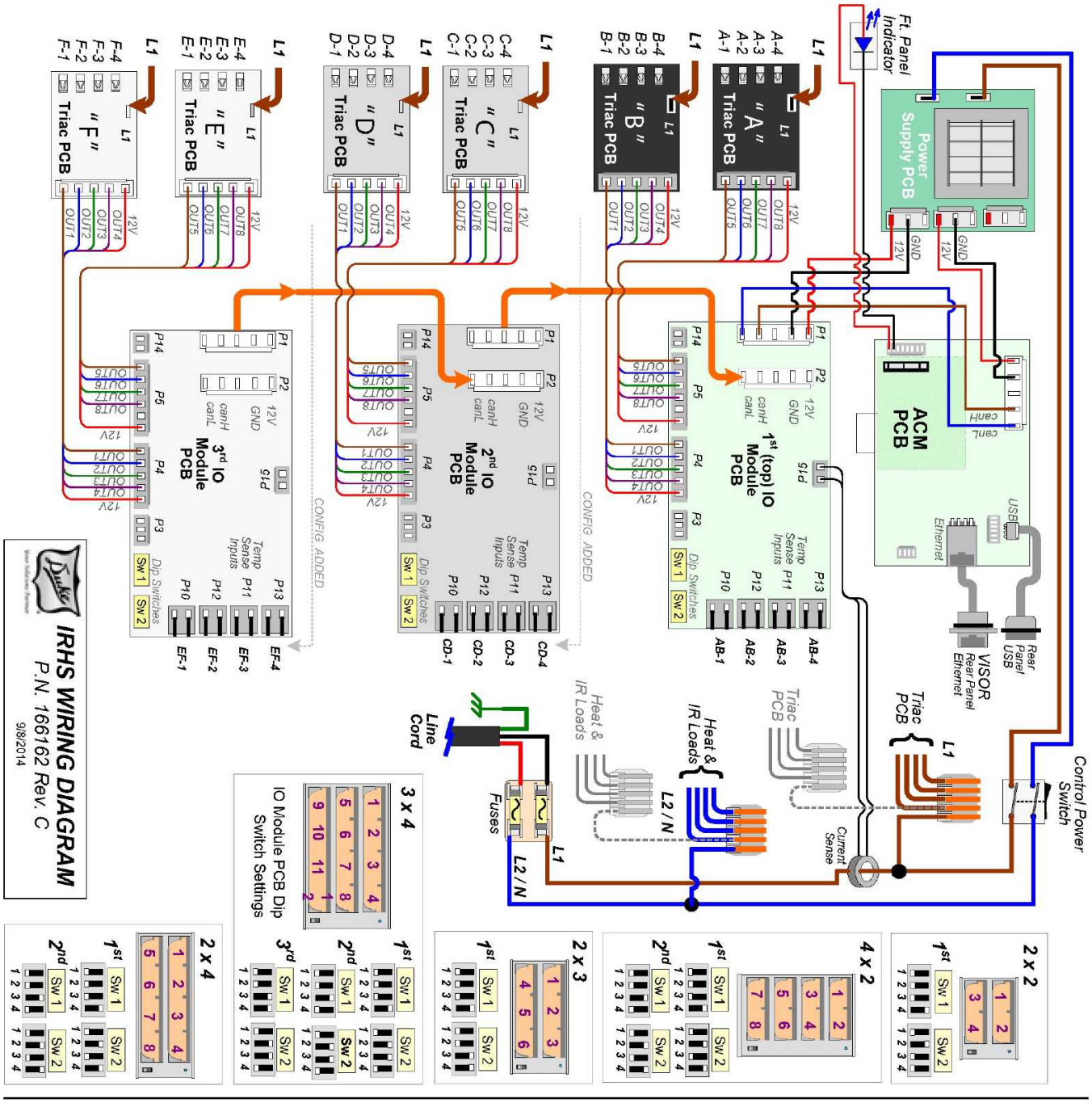


VISOR INTERFACE CABLE WIRING DIAGRAM

Heat & IR Load Connections

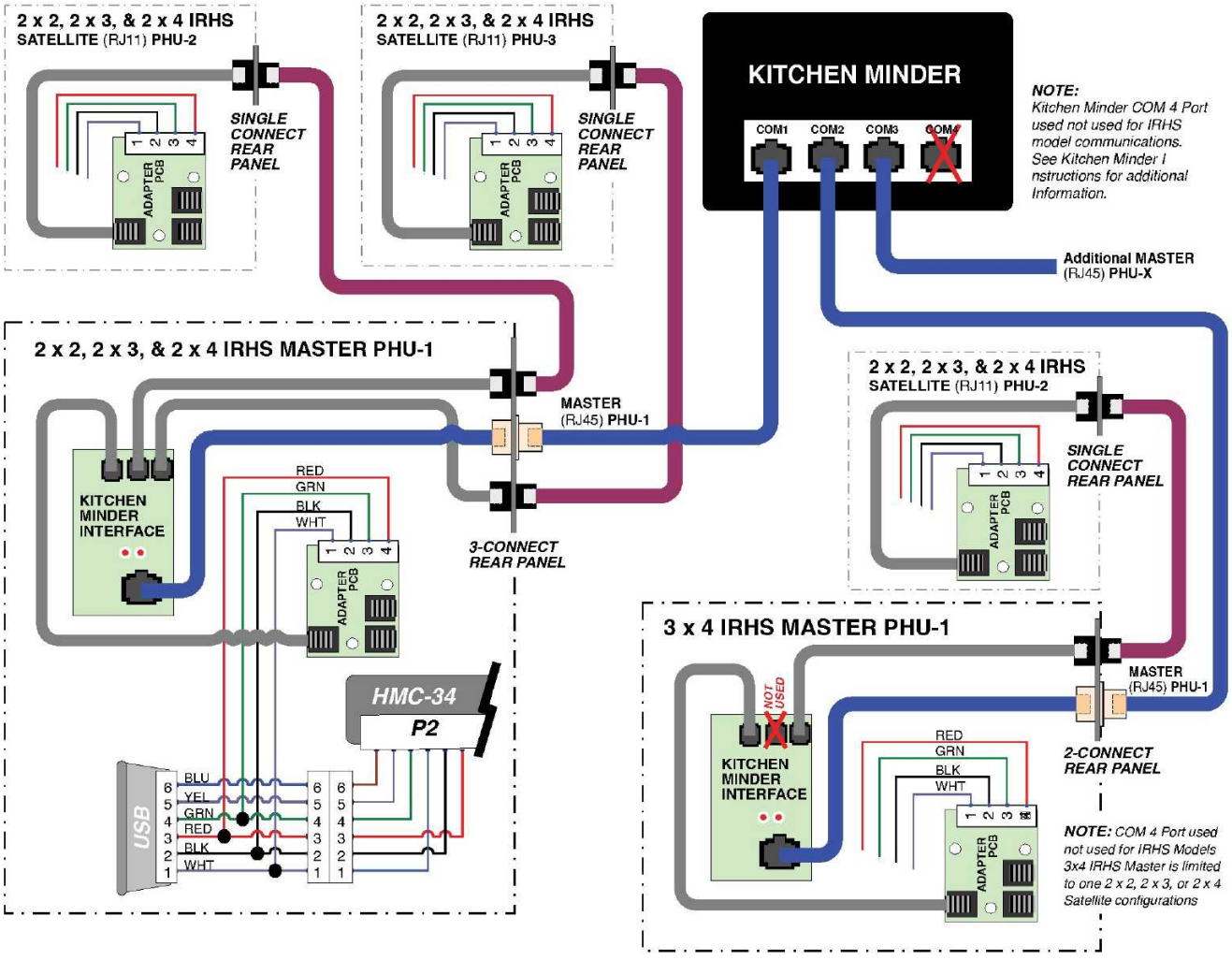
2 x 2	Heat	IR Bulb	Temp.
Well 1	B-1	A-1	AB-1
Well 2		A-2	
Well 3	B-3	A-3	AB-3
Well 4		A-4	
4 x 2	**Heat**	**IR Bulb**	**Temp.**
Well 1	B-1	A-1	AB-1
Well 2		A-2	
Well 3	B-3	A-3	AB-3
Well 4		A-4	
Well 5	D-1	C-1	CD-1
Well 6		C-2	
Well 7	D-3	C-3	CD-3
Well 8		C-4	
2 x 3	**Heat**	**IR Bulb**	**Temp.**
Well 1	B-1	A-1	AB-1
Well 2		A-2	
Well 3		A-3	
Well 4	B-3	A-4	AB-3
Well 5		B-2	
Well 6		B-4	
2 x 4	**Heat**	**IR Bulb**	**Temp.**
Well 1	B-1	A-1	AB-1
Well 2		A-2	
Well 3	B-3	A-3	AB-3
Well 4		A-4	
Well 5	B-3	B-2	AB-3
Well 6		B-4	
3 x 4	**Heat**	**IR Bulb**	**Temp.**
Well 1	B-1	A-1	AB-1
Well 2		A-2	
Well 3	B-3	A-3	AB-3
Well 4		A-4	
Well 5	D-1	C-1	CD-1
Well 6		C-2	
Well 7	D-3	C-3	CD-3
Well 8		C-4	
Well 9	F-1	E-1	EF-1
Well 10		E-2	
Well 11	F-3	E-3	EF-3
Well 12		E-4	





KITCHEN MINDER CONNECTIONS
(OPTIONAL UPGRADE; NOT AVAILABLE ON STANDALONE UNIT)

MASTER	SATELLITE 1	SATELLITE 2
IRHS22 (2X2)	2X2. 2X3, 2X4, 4X2	2X2. 2X3, 2X4, 4X2
IRHS23 (2X3)	2X2. 2X3, 2X4, 4X2	2X2. 2X3, 2X4, 4X2
IRHS24 (2X4)	2X2. 2X3, 2X4, 4X2	2X2. 2X3, 2X4, 4X2
IRHS34 (3X4)	NOT AVAILABLE	2X2. 2X3, 2X4
IRHS42 (4X2)	2X2. 2X3, 2X4, 4X2	2X2. 2X3, 2X4, 4X2



NOTES

CUSTOMER ASSISTANCE

To aid in reporting this unit in case of loss or theft, please record below the model number and serial number located on the unit. We also suggest you record all the information listed and retain for future reference.

MODEL NUMBER:	**SERIAL NUMBER:**
DATE OF PURCHASE:	
DEALER:	**TELEPHONE:**
SERVICER:	**TELEPHONE:**

FOR WARRANTY, PARTS & SERVICE:

DUKE CORPORATE,
CANADA, LATIN AMERICA

2305 N. Broadway
St. Louis, MO 63102
Phone: 314-231-1130
Toll Free: 800-735-3853
Fax: 314-231-2460
service-dispatch@dukemfg.com

DUKE ASIA PACIFIC

Duke Manufacturing
No.3 Building
Lane 28, Yu Lv Road
Malu Town, Jiading District
Shanghai 201801, China
Phone: +86 21 59153525 / 59153526
Fax: +86 21 33600628
service.asiapac@dukemfg.com

DUKE EMEA - EUROPE,
MIDDLE EAST, AFRICA, RUSSIA

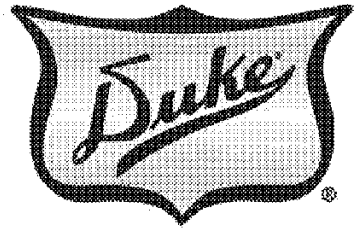
Duke Manufacturing CR, s.r.o.
Na Dlouhem 86
Jazlovice, Ricany
Building number DC 4 on the
ProLogis Park Prague D1 West
Prague 251 01
Czech Republic
Phone: +420 323 608 193
Fax: +420 323 608 144
service.emea@dukemfg.com

DUKE EMEA – UK, IRELAND

Phone: +44 (0) 1395 234140
Fax: +44 (0) 1395 234154
service.emea@dukemfg.com

TO ACCESS INTERNET: www.dukemfg.com

Please provide the following information when you write or call: model number, serial number, date of purchase, your complete mailing address (including zip code), and description of the problem.


Duke
Your Solutions Partner

E-MAIL 4

From: Ron Kieffer [/O=DUKEMFGCO/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=RON KIEFFER]
Sent: 4/10/2015 6:03:07 PM
To: tina.reese@nacps.com
Subject: Quality Dining
Attachments: FHU Recommended Stock List.xlsx; IRHS Commercial Appliance.xlsx; SM-BK-FR-0004 Fry Holding Unit (FHU and FHUAS).pdf; SM-PH-IH-0003 Infrared Heatsink Holding Unit.pdf

Tina,
Quality Dining is asking us to recommend a Service Company for them to use for parts and service support for their Duke products, specifically a Forced air Fry Holding unit and IRHS Product Holding unit. I would like to recommend that they use Commercial Appliance.
Here are a list of the restaurants in your markets, and attached are the parts stocking recommendations. Along with the manuals.
Could you please let me know if you would be OK with stocking these parts and supporting these restaurants?
Thanks,
Ron Kieffer
Service Director
Duke Manufacturing Co.

Bill To Name	Ship To	City	State/Prov
BravoKilo, Inc.	Burger King 13844	Orlando	FL
BravoKilo, Inc.	Burger King 4981	Orlando	FL
BravoKilo, Inc.	Burger King 100	Orlando	FL
BravoKilo, Inc.	Burger King 1965	Orlando	FL
BravoKilo, Inc.	Burger King 1981	Orlando	FL
BravoKilo, Inc.	Burger King 2349	Sebring	FL
BravoKilo, Inc.	Burger King 2503	Orlando	FL
BravoKilo, Inc.	Burger King 2503	Plant City	FL
BravoKilo, Inc.	Burger King 2620	Orlando	FL
BravoKilo, Inc.	Burger King 2816	Clearwater	FL
BravoKilo, Inc.	Burger King 2972	Orlando	FL
BravoKilo, Inc.	Burger King 3006	Orlando	FL
BravoKilo, Inc.	Burger King 3131	Orlando	FL
BravoKilo, Inc.	Burger King 3363	Orlando	FL
BravoKilo, Inc.	Burger King 4010	Orlando	FL
BravoKilo, Inc.	Burger King 4981	Orlando	FL
BravoKilo, Inc.	Burger King 5400	Orlando	FL
BravoKilo, Inc.	Burger King 6871	Orlando	FL
BravoKilo, Inc.	Burger King 6978	Tampa	FL
BravoKilo, Inc.	Burger King 8324	Orlando	FL
BravoKilo, Inc.	Burger King 85	Orlando	FL
BravoKilo, Inc.	Burger King 88	Tampa	FL
BravoKilo, Inc.	Burger King 98	Orlando	FL
BravoKilo, Inc.	Burger King 99	Orlando	FL

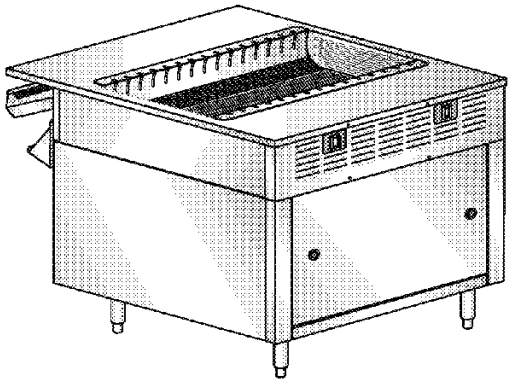
	B	C	D	E	F
2	**Duke Manufacturing's FHU Stock List**				
3					
4	Part#	Description	Recommended Qty.	Minimum Qty.	LIST PRICE EACH
5					
6	225428	CONTROLLER, FRY STATION, BK	1		$194.12
7	225425	DC Power Supply, Fry Station, BK	1		$204.46
8	600373	SSR,25A 3-30VDC TRIGGER	1		$37.60
9	225427	CONTACTOR,BK EXP	1		$110.76
10	E050423	KIT, RH LTG FAN/HTR, FHU	1		$879.48
11	E050422	KIT, LH LTG FAN/HTR, FHU	1		$879.48
12	225424	SWITCH, SPDT 15 AMP, 3.5 OPERATING	1		$59.40
13	225435	TYPE K THERMO COUPLE, FRY	1		$99.12
14					
15	**Obtain and Maintain Inventory**. This stocking list, based on national sales data is to help				
16	insure the prompt and effective handling of your equipment repairs. This is a minimum list, you				
17	will most likely have to adjust this list to properly service the customer.				

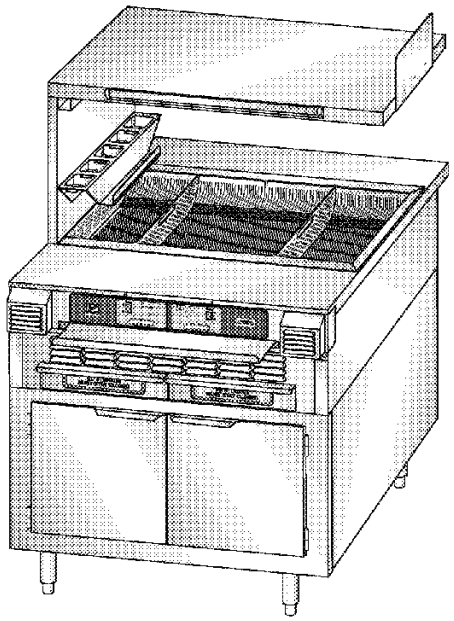
	A	B	C	D	E
1		**IRHS**			
2	Part #	Description	List Price	Qty	
3	166082	RENAU SPS-204 (UP/DOWN)	$ 272.86	1	
4	158312	THERMOSTAT,HI-LIMIT 300 DEG FOR	$ 13.60	1	
5	166015	SOCKET, EMITTER STRIPPED	$ 10.78	1	
6	166083	RENAU SPS-204 (UP/UP)	$ 276.90	1	
7	1030-2915	KIT, IRHS CONTROL SERVICE REPLACEMENT HMC-34-DU7	$ 543.18	2	
8	166030	FUSE, 500V 3AB FAST 16 AMP	$ 9.66	4	
9	120103	FUSE, MOD CTRL TSC	$ 26.26	2	
10	166081	RENAU SPM-202	$ 162.86	1	
11	157916	SWITCH,VERTICAL RENAU DAYPART	$ 81.60	1	
12	157886	SWITCH,NON-LIT 20A DPST HI-TEMP,	$ 15.58	1	
13	166017	EMITTER 340W-208V	$ 107.50	1	
14	166009	HEATER, IRHS 4 WIDE 300W - 208V	$ 97.30	1	
15	155749	TRANSFORMER, 20VA 208/240VAC-12VAC	$ 22.28	1	

Service Manual

Your Solutions Partner

FRY HOLDING UNIT (FHU & FHUAS)





MODELS

FHU1

FHU2

FHUAS2

Please read this manual completely before attempting to install, operate or service this equipment.

This document is prepared for trained Duke service technicians. It is not to be used by anyone not properly qualified to perform these procedures.

This Service Manual is not all encompassing. If you have not been trained on servicing this product, be sure to read the manual completely before attempting servicing. Be sure all necessary tools, test equipment, and skills are available. Those procedures for which you do not have the proper skills and test equipment must be performed only by a qualified Duke trained service technician.

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Duke Manufacturing Co.

2305 N. Broadway
St. Louis, MO 63102
Phone: 314-231-1130
Toll Free: 1-800-735-3853
Fax: 314-231-5074
www.dukemfg.com

IMPORTANT WARNING AND SAFETY INFORMATION

THIS MANUAL HAS BEEN PREPARED FOR PERSONNEL QUALIFIED TO INSTALL ELECTRICAL EQUIPMENT, WHO SHOULD PERFORM THE INITIAL FIELD STARTUP AND ADJUSTMENTS OF THE EQUIPMENT COVERED BY THIS MANUAL.

READ THIS MANUAL THOROUGHLY BEFORE OPERATING, INSTALLING OR PERFORMING MAINTENANCE ON THE EQUIPMENT.

⚠ WARNING FAILURE TO FOLLOW ALL THE INSTRUCTIONS IN THIS MANUAL CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.

⚠ WARNING IMPROPER INSTALLATION, ADJUSTMENT, ALTERATION, SERVICE OR MAINTENANCE CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.

⚠ WARNING ELECTRICAL CONNECTIONS SHOULD BE PERFORMED ONLY BY A CERTIFIED PROFESSIONAL.

⚠ WARNING ELECTRICAL AND GROUNDING CONNECTIONS MUST COMPLY WITH THE APPLICABLE PORTIONS OF THE NATIONAL ELECTRIC CODE AND/OR ALL LOCAL ELECTRIC CODES. FAILURE TO COMPLY WITH THIS PROCEDURE CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.

⚠ WARNING BEFORE CONNECTING THE UNIT TO THE ELECTRICAL SUPPLY, VERIFY THAT THE ELECTRICAL AND GROUNDING CONNECTIONS COMPLY WITH THE APPLICABLE PORTIONS OF THE NATIONAL ELECTRIC CODE AND/OR OTHER LOCAL ELECTRICAL CODES. FAILURE TO COMPLY WITH THIS PROCEDURE CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.

⚠ WARNING BEFORE CONNECTING THE UNIT TO THE ELECTRICAL SUPPLY, VERIFY THAT THE ELECTRICAL CONNECTION AGREES WITH THE SPECIFICATIONS ON THE DATA PLATE. FAILURE TO COMPLY WITH THIS PROCEDURE CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.

⚠ WARNING UL73 GROUNDING INSTRUCTIONS: THIS APPLIANCE MUST BE CONNECTED TO A GROUNDED, METAL, PERMANENT WIRING SYSTEM. OR AN EQUIPMENT-GROUNDING CONDUCTOR MUST BE RUN WITH THE CIRCUIT CONDUCTORS AND CONNECTED TO THE EQUIPMENT-GROUNDING TERMINAL OR LEAD ON THE APPLIANCE. FAILURE TO COMPLY WITH THIS PROCEDURE CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.

⚠ WARNING APPLIANCES EQUIPPED WITH A FLEXIBLE ELECTRIC SUPPLY CORD, ARE PROVIDED WITH A THREE-PRONG GROUNDING PLUG. IT IS IMPERATIVE THAT THIS PLUG BE CONNECTED INTO A PROPERLY GROUNDED THREE-PRONG RECEPTACLE. FAILURE TO COMPLY WITH THIS PROCEDURE CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.

⚠ WARNING IF THE RECEPTACLE IS NOT THE PROPER GROUNDING TYPE, CONTACT AN ELECTRICIAN. DO NOT REMOVE THE GROUNDING PRONG FROM THE PLUG. FAILURE TO COMPLY WITH THIS PROCEDURE CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.

⚠ WARNING BEFORE PERFORMING ANY SERVICE THAT INVOLVES ELECTRICAL CONNECTION OR DISCONNECTION AND/OR EXPOSURE TO ELECTRICAL COMPONENTS, ALWAYS PERFORM THE ELECTRICAL LOCKOUT/TAGOUT PROCEDURE. DISCONNECT ALL CIRCUITS. FAILURE TO COMPLY WITH THIS PROCEDURE CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.

⚠ WARNING BEFORE REMOVING ANY SHEET METAL PANELS OR SERVICING THIS EQUIPMENT, ALWAYS PERFORM THE ELECTRICAL LOCKOUT/TAGOUT PROCEDURE. BE SURE ALL CIRCUITS ARE DISCONNECTED. FAILURE TO COMPLY WITH THIS PROCEDURE CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.

⚠ WARNING DO NOT OPERATE THIS EQUIPMENT WITHOUT PROPERLY PLACING AND SECURING ALL COVERS AND ACCESS PANELS. FAILURE TO COMPLY WITH THIS PROCEDURE CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.

⚠ WARNING DO NOT USE OR STORE GASOLINE OR OTHER FLAMMABLE VAPORS OR LIQUIDS IN THE VICINITY OF THIS OR ANY OTHER APPLIANCE. FAILURE TO COMPLY CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.

⚠ WARNING IN THE EVENT OF A POWER FAILURE, DO NOT ATTEMPT TO OPERATE THIS APPLIANCE. FAILURE TO COMPLY CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.

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INTRODUCTION

INSTALLATION

For detailed installation instructions, refer to the Owner's Manual

OPERATION

For specific operating instructions, refer to the Owner's Manual

CLEANING

For specific instructions, refer to the Owner's Manual

SEQUENCE OF OPERATION

For specific instructions, refer to the Owner's Manual

TOOLS

- Standard set of hand tools.
- VOM with AC current tester. (Any quality VOM or DVM with a sensitivity of at least 20,000 Ohms per Volt can be used.)

SPECIFICATIONS

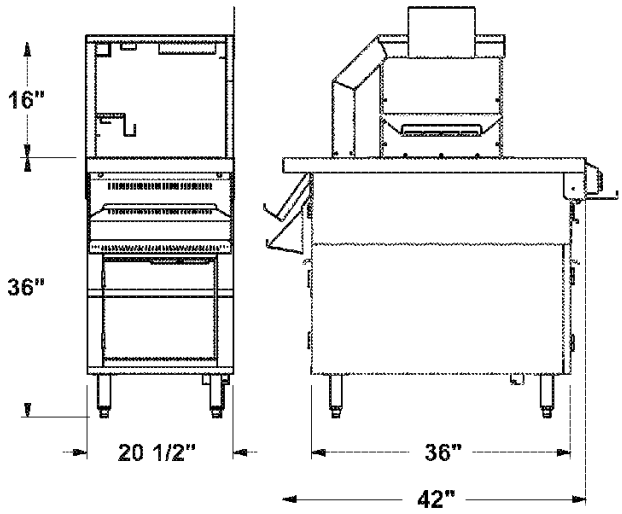
US and Foreign Patent(s) Pending

ELECTRICAL SPECIFICATIONS

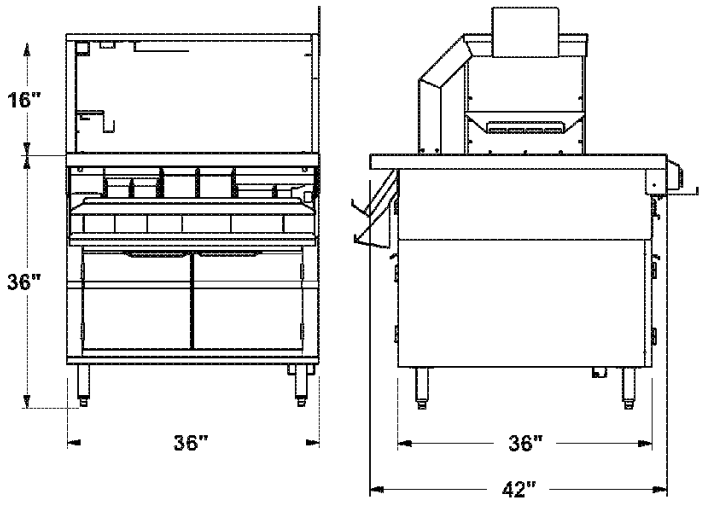
MODEL	AC VOLTAGE	HZ	PHASE	AMPERAGE (MAX.)	UNIT WT.	SHIPPING WT.
FHU1	208/230/240	50/60	1	18	310 lbs / 141 kg	370 lbs / 168 kg
	200	50/60	1	24		
FHU2	208/230/240	50/60	1	36	525 lbs / 238 kg	585 lbs / 265 kg
	200	50/60	1	48		
FHUAS2	120	60	1	32	310 lbs / 141 kg	370 lbs / 168 kg
	230	50	1	15		

DIMENSIONS

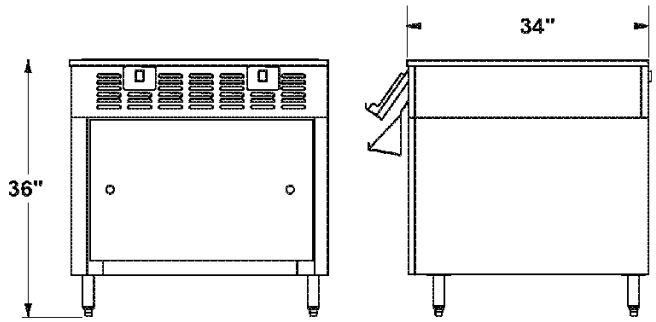
FHU1



FHU2



FHUAS



REMOVAL AND REPLACEMENT OF PARTS

ELECTRICAL LOCKOUT/TAGOUT PROCEDURE

WARNING

BEFORE PERFORMING ANY SERVICE THAT INVOLVES ELECTRICAL CONNECTION OR DISCONNECTION AND/OR EXPOSURE TO ELECTRICAL COMPONENTS, ALWAYS FOLLOW THE ELECTRICAL LOCKOUT/TAGOUT PROCEDURE. DISCONNECT ALL CIRCUITS. FAILURE TO COMPLY CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.

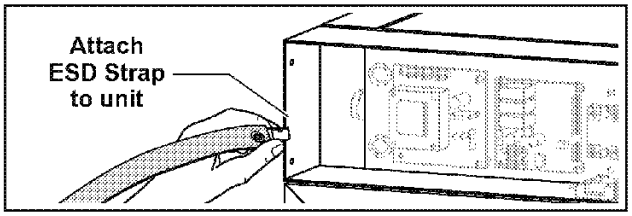
The Electrical LOCKOUT/TAGOUT Procedure is used to protect personnel working on an electrical appliance. Before performing any maintenance or service that requires exposure to electrical components, follow these steps:

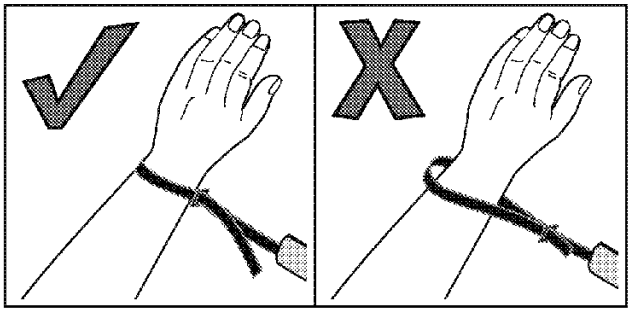
1. In electrical box, place appliance circuit breaker into OFF position.
2. Place a lock or other device on the electrical box cover to prevent someone from placing the circuit breaker ON.
3. Place a tag on electrical box cover to indicate that appliance has been disconnected for service and power should not be restored until tag is removed by maintenance personnel.
4. Disconnect the appliance power cord from the electrical outlet.
5. Place a tag on the cord to indicate that unit has been disconnected for service and power should not be restored until tag is removed.

ESD WRIST STRAP

An ESD Wrist Strap is required when replacing certain components.

1. Place both of the unit's power ON/OFF Switches in the "OFF" position and follow the proper LOCKOUT/TAGOUT Procedure.
2. Remove and retain the screws securing the Control Panel to the unit.
3. Tilt the Control Panel down and away from unit far enough to access the component(s).
4. Depending on the component being replaced, properly connect the ESD Wrist Strap to the unit or Control Panel and secure it properly on the wrist.





NOTE: THE FOLLOWING INSTRUCTIONS ARE WRITTEN FOR THE FHU2 MODEL. APPROPRIATE MODIFICATIONS ARE REQUIRED FOR SERVICING THE FHU1 ("THE MINI") MODEL, WHICH IS HALF (1/2) THE SIZE OF THE FHU2.

FHU ELECTRICAL COMPONENTS

AC INPUT VOLTAGE WIRING CONNECTIONS

The AC Input Voltage Wiring Connections are located behind the Lower Electrical Chase Cover. They control the power to all of the AC-powered equipment (lights, microwave, etc.) in the Fry Holding Unit (FHU), Overhead Refrigerated Merchandiser (OHRM), and/or Burger Station.

NOTE: The FHU Electrical Chase Wiring Diagram is located on page 34.

1. Place both of the unit's power ON/OFF Switches in the "OFF" position and follow the proper LOCKOUT/TAGOUT Procedure.
2. To access the incoming power supply terminal block, open the control side cabinet doors.
3. Remove and retain the screws securing the Lower Electrical Chase Cover and remove the cover from the unit.
4. Use a voltmeter to check for the presence of voltage.
5. With AC power removed and LOCKOUT/TAGOUT Procedure applied, ensure that the contacts on the connect block are properly torqued as follows:

   Center Terminal Blocks: 35 lb-in

   Outer Terminal Blocks (varies depending on wire size):

MAIN (1)	lb-in	N.m.
#3 – 2 AWG	50	5.6
#6 – 4	45	5.1
#8	40	4.5
#14 – 10	35	4.0
BRANCH (4)	**lb-in**	**N.m.**
#18 – 10 AWG	7	0.8

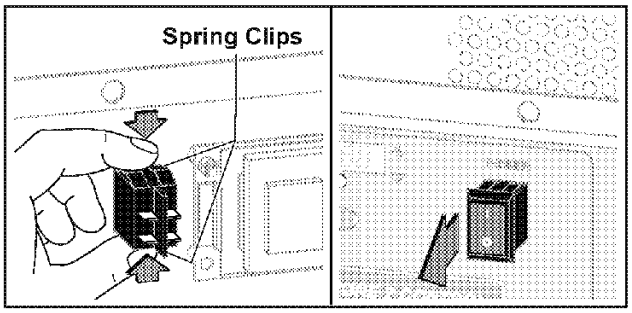
6. Reinstall the Lower Electrical Chase Cover by reversing the previous steps.
7. Close the control side cabinet doors.
8. Restore power to the unit and test for proper function.

POWER ON/OFF SWITCHES

There are two (2) Power ON/OFF Switches, one for each zone, located on the Control Panel.

1. Place both of the unit's power ON/OFF Switches in the "OFF" position and follow the proper LOCKOUT/TAGOUT Procedure.
2. Remove and retain the screws securing the Control Panel to the Control Compartment.
3. Tilt the Control Panel down and away from unit far enough to access the Power ON/OFF Switch.

   NOTE: Removing the crumb trays will allow for greater access.
4. Mark and disconnect wires to the affected Power ON/OFF Switch.
5. The Power ON/OFF Switch is secured to the Control Panel with spring clips. Depress the spring clips and slide the switch from the Control Panel.



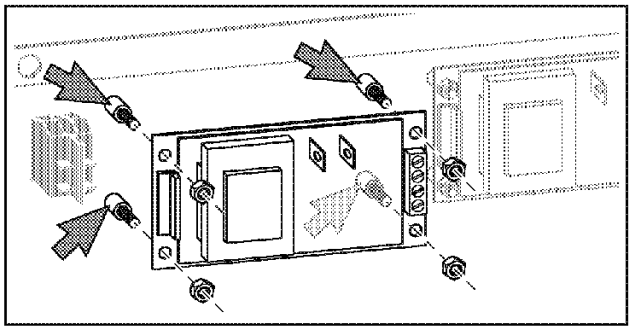
6. Install the replacement Power ON/OFF Switch by sliding it into its position in the Control Panel until secured with its spring clips. If necessary, repeat for the other switch.
7. Reattach the Power ON/OFF Switch wires.
8. Replace the Control Panel by tilting the panel inward and lifting up and securing with its screws.
9. Restore power to the unit and test for proper function.

CONTROLLERS

There are two Controllers, one for each zone. They control the Solid State Relays and are operated from the Control Panel on the control side of the unit. They are located on the interior side of the Control Panel.

1. Place both of the unit's power ON/OFF Switches in the "OFF" position and follow the proper LOCKOUT/TAGOUT Procedure.
2. Remove and retain the screws securing the Control Panel to the Control Compartment.
3. Tilt the Control Panel down and away from unit far enough to access the Controller(s).

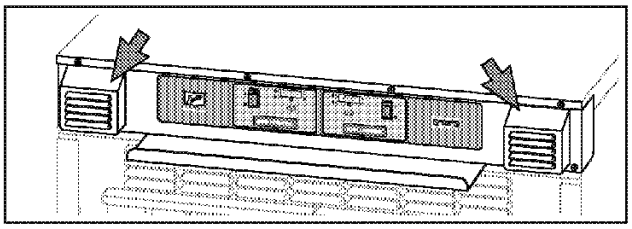
   NOTE: Removing the crumb trays will allow for greater access.
4. Using an ESD Strap (including remaining steps), mark and disconnect the wires to the affected Controller(s).
5. Remove and retain the 4 hex nuts securing the Controller(s) to the Control Panel.



6. Retain spacers on studs.
7. Install the replacement Controller by setting into place and securing with its nuts.
8. Reconnect the Controller wires.
9. Replace the Control Panel by tilting the panel inward and lifting up and securing with its screws.
10. Restore power to the unit and test for proper function.

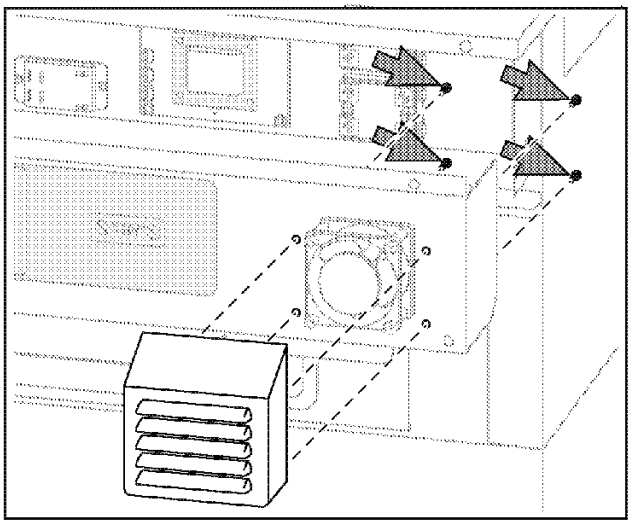
COOLING FANS

There are two Cooling Fans. They provide ventilation to the electrical components in the Control Compartment and are located at each end of the Control Panel on the control side of the unit.



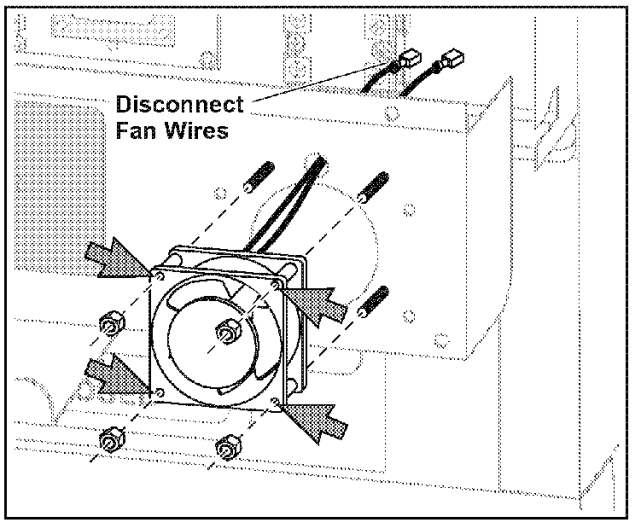
1. Place both of the unit's power ON/OFF Switches in the "OFF" position and follow the proper LOCKOUT/TAGOUT Procedure.
2. Remove and retain the screws securing the Control Panel to the Control Compartment.
3. Tilt the Control Panel down and away from unit far enough to access the affected Cooling Fan(s).

   NOTE: Removing the crumb trays will allow for greater access.
4. Remove and retain the 4 screws securing the affected Cooling Fan Louvered Housing to the Control Panel.

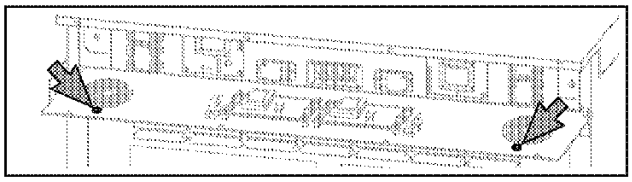


5. Mark and disconnect the wires to the affected Cooling Fan(s).

6. Remove and retain the four (4) 5/16" hex nuts securing each Cooling Fan to the Control Panel.



7. Remove and retain the Control Panel wire bushing to allow the wires to be pulled through the opening.



8. Install the replacement Cooling Fan(s) into place by pulling its wires through the Control Panel opening, reinstalling the wire bushing, reconnecting its wires, and securing it in place with its screws.

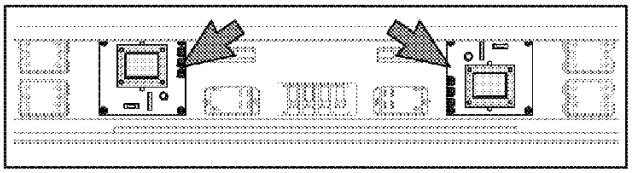
9. Reinstall the Cooling Fan Louvered Housing and secure with its screws.

10. Replace the Control Panel by tilting the panel inward and lifting up and securing with its screws.

11. Restore power to the unit and test for proper function.

DC POWER SUPPLIES

There are two DC Power Supplies, one for each zone. They provide DC power to the Heater Fans and are located inside the Control Compartment.



1. Place both of the unit's power ON/OFF Switches in the "OFF" position and follow the proper LOCKOUT/TAGOUT Procedure.

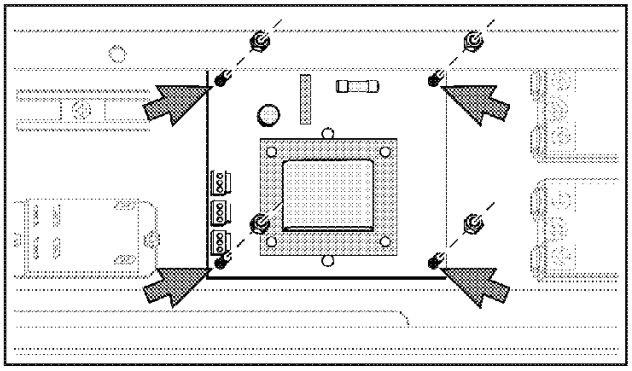
2. Remove and retain the screws securing the Control Panel to the Control Compartment.

3. Tilt the Control Panel down and away from unit far enough to access the DC Power Supplies.

   NOTE: Removing the crumb trays will allow for greater access.

4. Using an ESD Strap (including remaining steps), mark and disconnect all wires and plugs attached to the affected DC Power Supply.

5. Remove and retain the four (4) 5/16" hex nuts securing the affected DC Power Supply to the Control Compartment and remove the DC Power Supply from the unit.



6. Retain spacers on studs.

7. Install the replacement DC Power Supply by setting into place and securing with its screws.

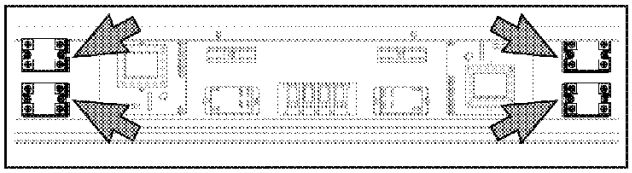
8. Reconnect the DC Power Supply wires and plugs.

9. Replace the Control Panel by tilting the panel inward and lifting up and securing with its screws.

10. Restore power to the unit and test for proper function.

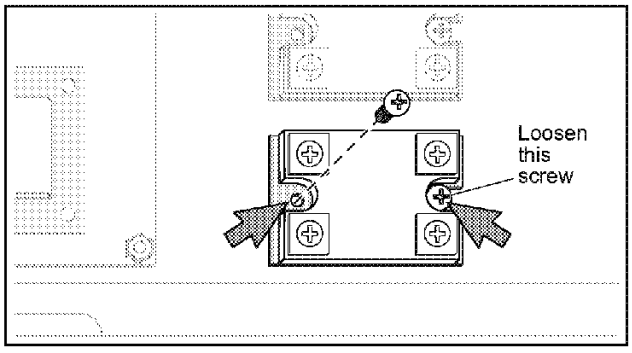
SOLID STATE RELAYS (HEAT RELAYS)

There are four Solid State Relays ("Heat Relays"), two for each zone. They control power to the heating elements and are located inside the Control Compartment.



1. Place both of the unit's power ON/OFF Switches in the "OFF" position and follow the proper LOCKOUT/TAGOUT Procedure.
2. Remove and retain the screws securing the Control Panel to the Control Compartment.
3. Tilt the Control Panel down and away from unit far enough to access the Solid State Relays.

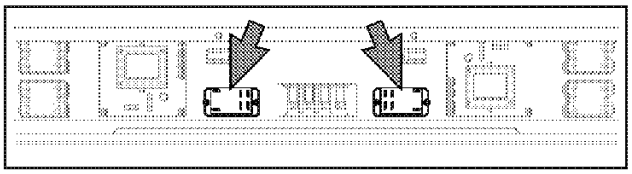
   NOTE: Removing the crumb trays will allow for greater access.
4. Mark and disconnect all wires and plugs attached to the affected Solid State Relay(s).
5. Loosen the right side screw (it's slotted) and remove and retain the left side screw for each affected Solid State Relay.



6. Remove the affected Solid State Relay(s) and clean the mounting surface of any residual heat transfer compound.
7. Apply heat transfer compound to the mounting surface of the replacement Solid State Relay(s).
8. Install the replacement Solid State Relay(s) and secure with its screws.
9. Reconnect the Solid State Relay wires and plugs.
10. Replace the Control Panel by tilting the panel inward and lifting up and securing with its screws.
11. Restore power to the unit and test for proper function.

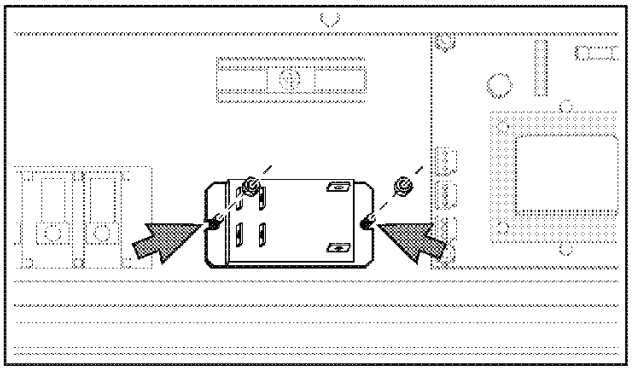
CONTACTORS (POWER RELAYS)

There are two Contactors ("Power Relays"), one for each zone. They serve to interrupt power to the unit when the crumb tray is removed and are located inside the Control Compartment.



1. Place both of the unit's power ON/OFF Switches in the "OFF" position and follow the proper LOCKOUT/TAGOUT Procedure.
2. Remove and retain the screws securing the Control Panel to the Control Compartment.
3. Tilt the Control Panel down and away from unit far enough to access the Contactors.

   NOTE: Removing the crumb trays will allow for greater access.
4. Mark and disconnect all wires attached to the affected Contactor(s).
5. Remove and retain the two (2) 5/16" hex nuts securing each affected Contactor to the Control Compartment.



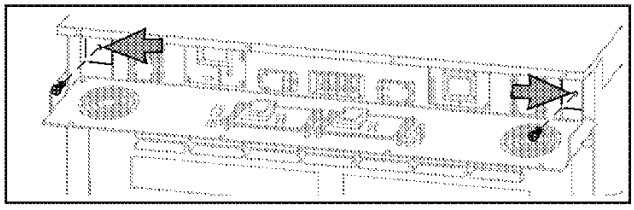
6. Remove the affected Contactor(s).
7. Install the replacement Contactor(s) and secure with its hex nuts.
8. Reconnect all of the Contactor wires.
9. Replace the Control Panel by tilting the panel inward and lifting up and securing with its screws.
10. Restore power to the unit and test for proper function.

CONTROL COMPARTMENT

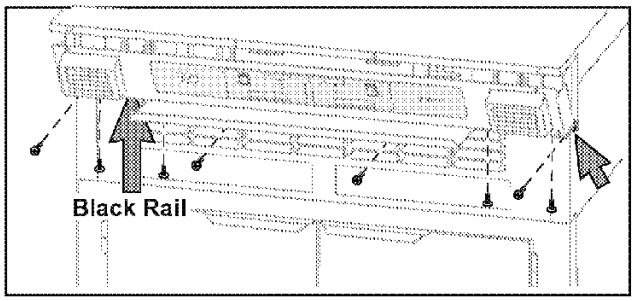
The Control Compartment is located on the control side (front) of the unit, behind the Control Panel. It provides access to the control side Heater/Fan Assembly and contains the Power ON/OFF Switches, Cooling Fans, DC Power Supplies, Controllers, Contactors (Power Relays), and Solid State (Heat) Relays.

1. Place both of the unit's power ON/OFF Switches in the "OFF" position and follow the proper LOCKOUT/TAGOUT Procedure.
2. Remove and retain the screws securing the Control Panel to the Control Compartment.
3. Tilt the panel down and away from unit far enough to access the wiring harnesses and components.

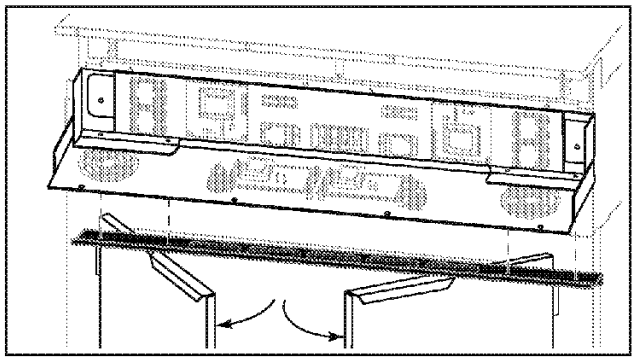
   NOTE: Removing the crumb trays will allow for greater access.
4. Disconnect all molex plugs.
5. Cut all zip ties to release the compartment wires.
6. Mark and disconnect line voltage and ground wires to the terminal block.
7. Mark and disconnect the Thermocouple wires.
8. Remove and retain the screws securing the four (4) bushing covers (two towards each end).



9. Remove and retain the eight (8) screws along the bottom of the black rail that secures the black rail to the unit and Control Compartment.



10. Slide out the black rail that supports and holds the Control Compartment in the unit.
11. Remove the Control Compartment from the unit. If necessary, use partially opened cabinet doors as a place to help support it.

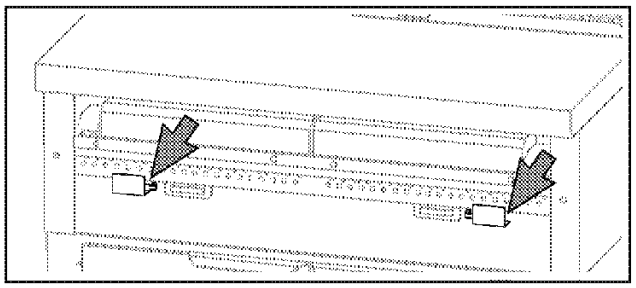


12. Replace the Control Compartment and black rail under the Control Compartment, securing with its screws.
13. Reattach all previously disconnected Control Compartment molex plugs and spade terminals.

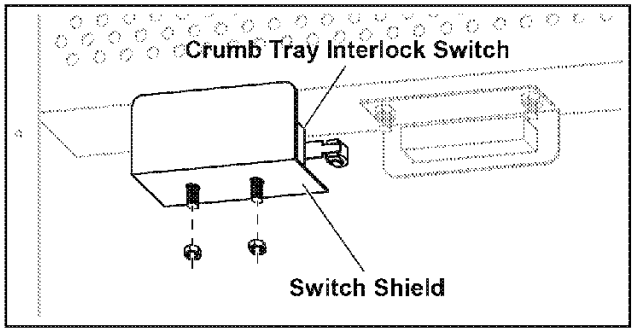
    NOTE: The terminal block connections in the Control Compartment must be torqued to 30 in-lb.
14. Tilt the Control Panel into place and secure with its screws.
15. Restore power to the unit and test for proper function.

CRUMB TRAY INTERLOCK SWITCHES

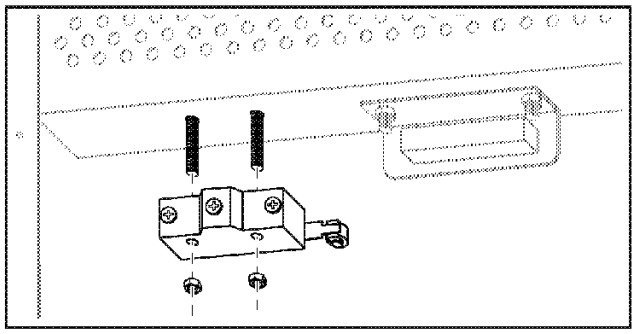
There are two Crumb Tray Interlock Switches, one for each tray. They prevent power from reaching the heaters or fans while the tray is removed from the unit and are located at the rear end of each tray, inside and above each rear Access Panel.



1. Place both of the unit's power ON/OFF Switches in the "OFF" position and follow the proper LOCKOUT/TAGOUT Procedure.
2. The Carton Shelf is mounted with three keyholes. Lift the shelf up to disengage the studs and remove from the unit.
3. Remove the affected Interlock Switch's crumb tray from the unit.
4. Remove the screws and hex nuts (under lip of unit) that secure the Upper Rear Panel to the back of unit and remove from the unit.
5. Open the rear cabinet doors of the unit.
6. On the horizontal surface behind and above the door, locate the appropriate Access Panel.
7. Remove and retain the sixteen (16) 9mm nuts securing the appropriate Access Panel and remove from the unit.
8. Remove and retain the two (2) 1/4" (6 or 7 mm) hex nuts that secure the switch shield and remove the shield.



9. Mark and disconnect the wiring to the affected Crumb Tray Interlock Switch.
10. Remove and retain the two (2) 1/4" (6 or 7 mm) hex nuts that secure the Crumb Tray Interlock Switch to the unit and remove the switch.



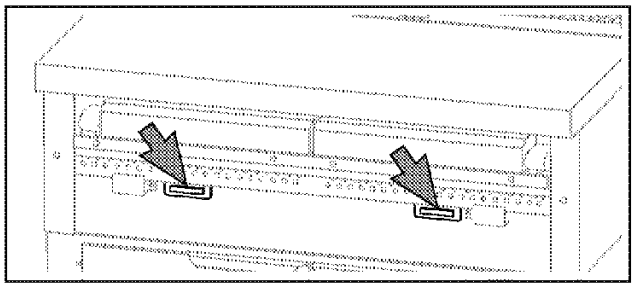
11. Install the replacement Crumb Tray Interlock Switch and its shield with their hex nuts.
12. Reinstall the Access Panel by reversing the previous steps.

    IMPORTANT: Access Panels must be reinstalled correctly to ensure proper air flow to the product.

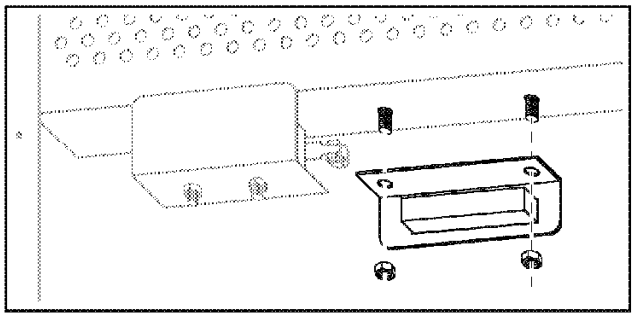
13. Reinstall the Upper Rear Panel by reversing the previous steps.
14. Replace the crumb tray.
15. Reinstall the Carton Shelf by reversing the previous steps.
16. Restore power to the unit and test for proper function.

CRUMB TRAY MAGNETS

There are two Crumb Tray Magnets, one for each tray. They help secure the crumb tray in the unit while operating and are located at the rear end of each tray, behind the Upper Rear Panel.



1. Place both of the unit's power ON/OFF Switches in the "OFF" position and follow the proper LOCKOUT/TAGOUT Procedure.
2. The Carton Shelf is mounted with three keyholes. Lift the shelf up to disengage the studs and remove from the unit.
3. Remove the affected Magnet's tray from the unit.
4. Remove the screws that secure the Upper Rear Panel to the back of the unit.
5. Remove and retain the two (2) 5/16" (8 mm) hex nuts that secure the affected Crumb Tray Magnet to the unit.



6. Install the replacement Crumb Tray Magnet and secure with its hex nuts.
7. Reinstall the Upper Rear Panel by reversing the previous steps.
8. Replace the crumb tray.
9. Reinstall the Carton Shelf by reversing the previous steps.
10. Restore power to the unit and test for proper function.

THERMOCOUPLES

There are four Thermocouples, one for each Heater/Fan Assembly. They independently monitor the temperature in the wells while in operation and are located above each Heater/Fan Assembly (two front, two back).

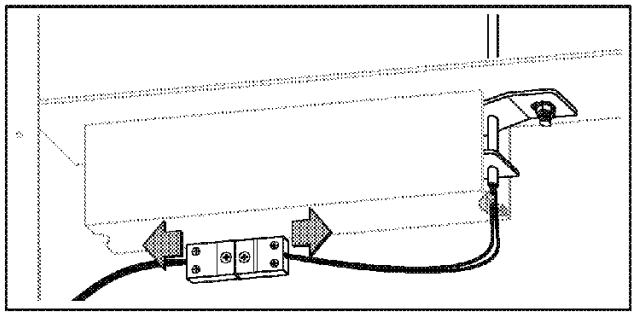
1. Place both of the unit's power ON/OFF Switches in the "OFF" position and follow the proper lockout/tagout procedures.
2. **(For Control side Thermocouples)** Remove the affected magnet's crumb tray from the unit.

   (For Rear Side Thermocouples):

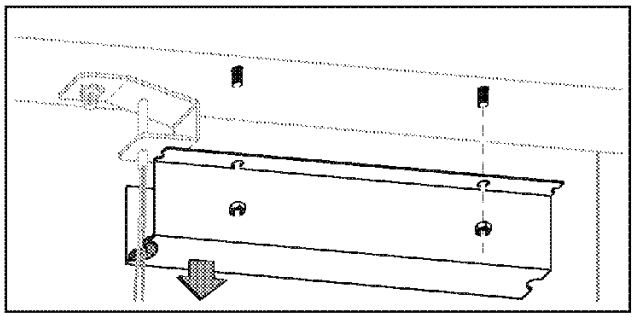
   a. Remove the affected magnet's crumb tray from the unit.

   b. The Carton Shelf is mounted with three keyholes. Lift the shelf up to disengage the studs and remove from the unit.

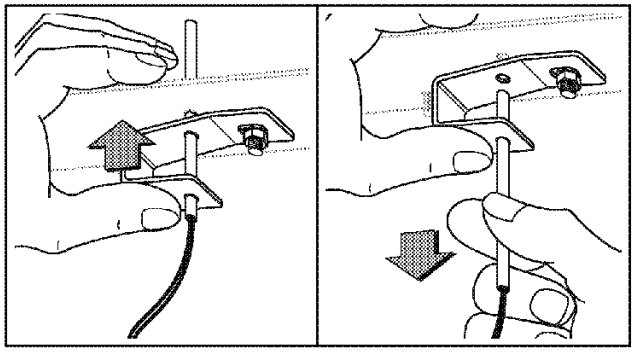
   c. Remove the screws and hex nuts (under the lip of the unit) that secure the Upper Rear Panel to the back of the unit and remove from the unit.
3. Open cabinet doors on the appropriate side of the unit.
4. On the horizontal surface behind and above the door, locate the appropriate Access Panel.
5. Remove and retain the sixteen (16) 9 mm hex nuts securing the appropriate Access Panel and remove from the unit.
6. Disconnect the appropriate Thermocouple connector.



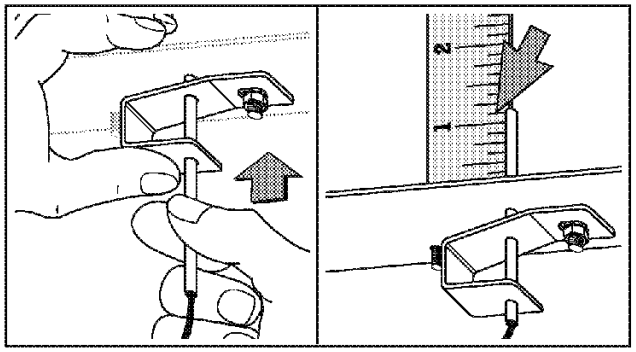
7. Remove and retain the two (2) 3/8" hex nuts securing the Thermocouple switch guard and remove from unit.



8. Compress the bracket to release the tension and carefully pull out the effected Thermocouple. **NOTE:** it is not necessary to remove the bracket.



9. Insert the replacement Thermocouple into the bracket. Make sure the Thermocouple extends 1-1/8" (28.6 mm) above the panel.



10. Reinstall Thermocouple switch guard with its hex nuts.
11. Reconnect the Thermocouple connector.
12. Reinstall the Access Panel.

    IMPORTANT: Access Panels must be reinstalled correctly to ensure proper air flow to the product.

13. Replace the crumb tray; and if removed, the Upper Rear Panel and Carton Shelf.
14. Restore power to the unit and test for proper function.

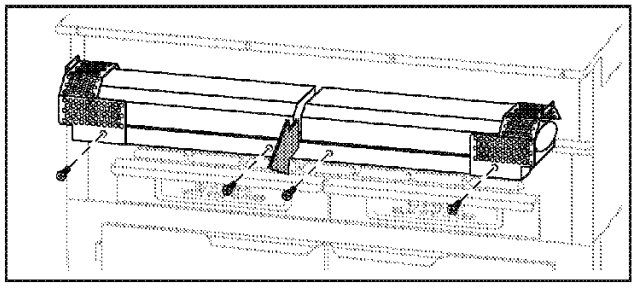
HEATER/FAN ASSEMBLIES (CONTROL SIDE)

There are two control side Heater/Fan Assemblies, one for each side of the unit. They provide heated air flow over the products while operating and are located behind the Control Compartment.

1. Place both of the unit's power ON/OFF Switches in the "OFF" position and follow the proper LOCKOUT/TAGOUT Procedure.
2. Remove and retain the screws securing the Control Panel to the Control Compartment.
3. Tilt the Control Panel down and away from unit far enough to access the wiring harnesses and components.

   NOTE: Removing the crumb trays will allow for greater access.

4. Disconnect all molex plugs.
5. Cut all zip ties to release the compartment wires.
6. Mark and disconnect line voltage and ground wires to the terminal block.
7. Mark and disconnect the Thermocouple wires.
8. Remove and retain the four (4) bushing covers (two towards each end).
9. Remove and retain the eight (8) screws along the bottom of the black rail that secures the black rail to the unit and Control Compartment.
10. Slide out the black rail that supports and holds the Control Compartment in the unit.
11. Remove the Control Compartment from the unit. If necessary, use partially opened cabinet doors as a place to help support it.
12. Remove the four (4) screws securing the Fan Base to the unit.



13. Slide the Heater/Fan Assembly with its Fan Base out enough to access electrical connections.

14. Depending on Heater model:

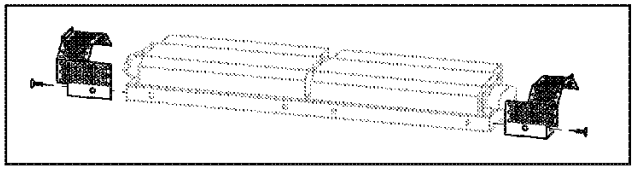
    a. (Coil-style Heater) Mark and disconnect the two (2) fan molex plugs and four (4) heater spade terminals.

    b. (Calrod-style Heater) Mark and disconnect the two (2) fan molex plugs, two (2) heater spade terminals, and two (2) High Limit Thermostat spade terminals.

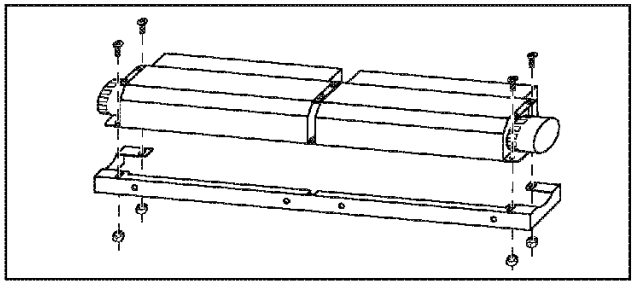
15. Remove the Heater/Fan Assembly from the unit.

16. Cut the tie wrap securing the motor guard to the affected end(s).

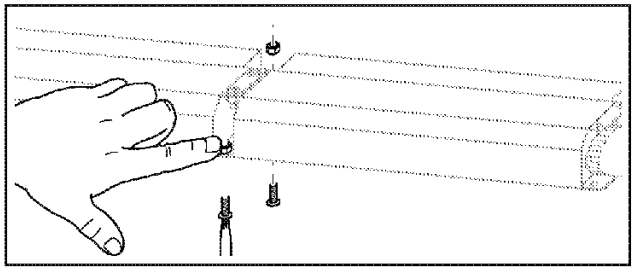
17. Remove and retain the screw securing the motor guard to the affected end(s).



18. Remove and retain the four (4) 11/32" (9mm) hex nuts/bolts securing the Fan Base to the assembly.

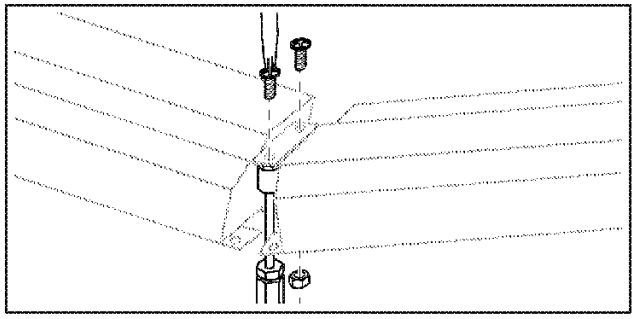


19. Remove and retain the two (2) bottom 11/32" (9mm) hex nuts/bolts holding the two (2) Heater/Fans together. May need to use a finger or screwdriver to assist in holding the hex nut.



20. With the two top hex nuts/bolts still installed, slightly separate, at an angle, the two Heater/Fans to allow for access to the two hex nuts/screws.

21. Remove and retain the remaining two (2) top 11/32" (9mm) hex nuts/screws holding the two (2) Heater/Fans together.



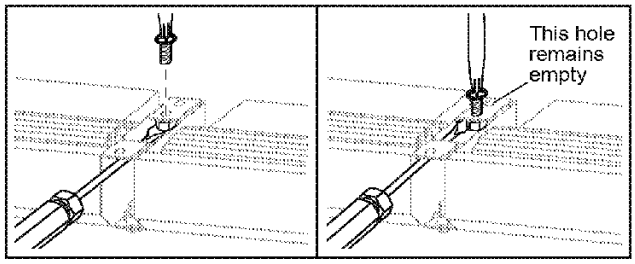
22. Install the replacement Heater/Fan by first reconnecting the two (2) top hex nuts/bolts securing the two Heater/Fans together, with the Heater/Fans at an angle.

    NOTE: Torque to 18-20 in-lb.

23. Reinstall the bottom rear hex nut/bolt. Due to the space between the Heater/Fans, you may need to use a flathead screwdriver to hold up the hex nut while inserting and securing the bolt, then use the screwdriver as a wedge to prevent the hex nut from spinning.

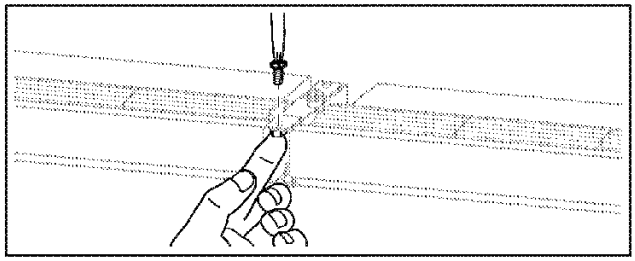
    NOTE 1: Torque to 18-20 in-lb.

    NOTE 2: There is one empty hole that is not used.



24. Reinstall the bottom front hex nut/bolt. Due to the space between the Heater/Fans, you may need to use a finger to hold up the hex nut while inserting and securing the bolt.

    NOTE: Torque to 18-20 in-lb.



25. Reinstall the reassembled Heater/Fan Assembly and fan guards into the fan base and unit by reversing the previous steps.

    NOTE: it is very important that all nuts and screws are tightened to avoid rattling.

26. Insert the replacement Heater/Fan Assembly into position in the unit.

27. Reattach all previously disconnected Heater/Fan Assembly molex plugs and spade terminals.

28. Replace the Control Compartment and black rail under the Control Compartment, securing with its screws.

29. Reattach all previously disconnected Control Compartment molex plugs and spade terminals.

    NOTE: The terminal block connections in the Control Compartment must be torqued to 30 in-lb.

30. Tilt the Control Panel into place and secure into place with its screws.

31. Restore power to the unit and test for proper function.

HEATER/FAN ASSEMBLIES (REAR SIDE)

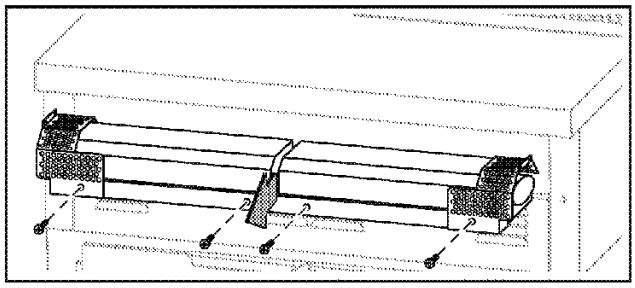
There are two rear side Heater/Fan Assemblies, one for each side of the unit. They provide heated air flow over the products while operating and are located behind the Upper Rear Panel.

1. Place both of the unit's power ON/OFF Switches in the "OFF" position and follow the proper LOCKOUT/TAGOUT Procedure.

2. The Carton Shelf is mounted with three (3) keyholes. Lift the shelf up to disengage the studs and remove from the unit.

3. Remove the screws and hex nuts (under lip of unit) that secure the Upper Rear Panel to the back of unit and remove from the unit.

4. Remove and retain the 4 screws securing the Fan Base to the unit.



5. Slide the entire Heater/Fan assembly with its Fan Base out enough to access electrical connections.

6. Depending on Heater model:

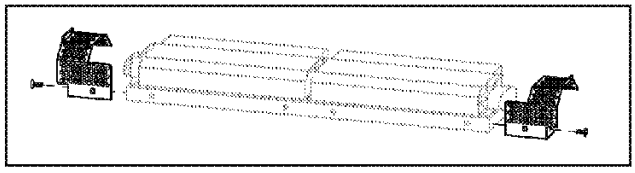
    a. (Coil-style Heater) Mark and disconnect the two (2) fan molex plugs and four (4) heater spade terminals.

    b. (Calrod-style Heater) Mark and disconnect the two (2) fan molex plugs, two (2) heater spade terminals, and two (2) High Limit Thermostat spade terminals.

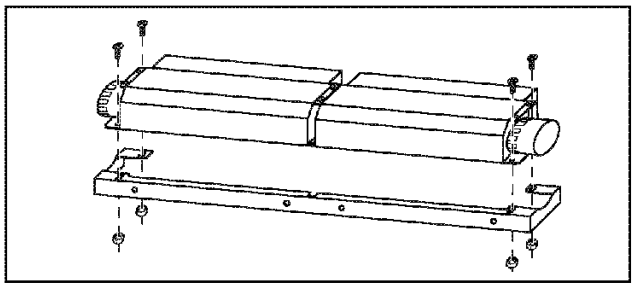
7. Remove the Heater/Fan Assembly from the unit.

8. Cut the tie wrap securing the motor guard to the affected end(s).

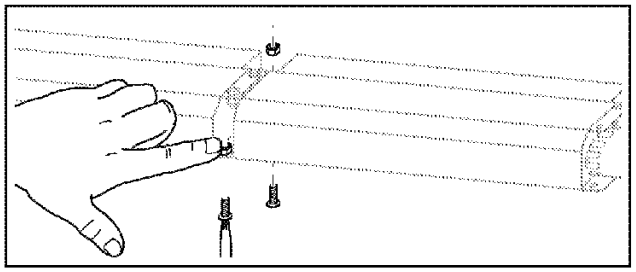
9. Remove and retain the screw securing the motor guard to the affected end(s).



10. Remove and retain the four (4) 11/32" (9mm) hex nuts/bolts securing the Fan Base to the assembly.

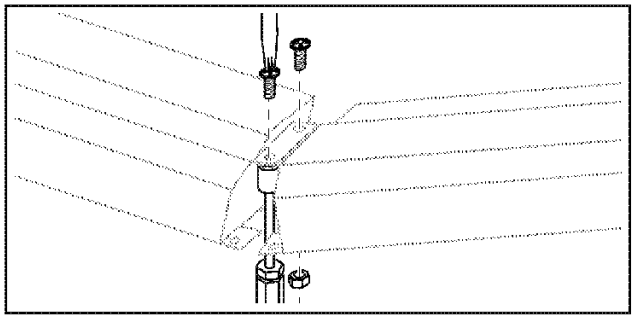


11. Remove and retain the two (2) bottom 11/32" (9mm) hex nuts/bolts holding the two (2) Heater/Fans together. May need to use a finger or screwdriver to assist in holding the hex nut.



12. With the two (2) top hex nuts/bolts still installed, slightly separate, at an angle, the two (2) Heater/Fans to allow for access to the two (2) hex nuts/screws.

13. Remove and retain the remaining two (2) top 11/32" (9mm) hex nuts/screws holding the two (2) Heater/Fans together.



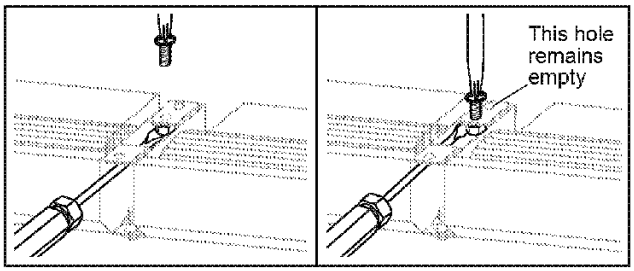
14. Install the replacement Heater/Fan by first reconnecting the two (2) top hex nuts/bolts securing the two (2) Heater/Fans together, with the Heater/Fans at an angle.

    NOTE: Torque to 18-20 in-lb.

15. Reinstall the rear bottom hex nut/bolt. Due to the space between the Heater/Fans, you may need to use a flathead screwdriver to hold up the hex nut while inserting and securing the bolt, then use the screwdriver as a wedge to prevent the hex nut from spinning.

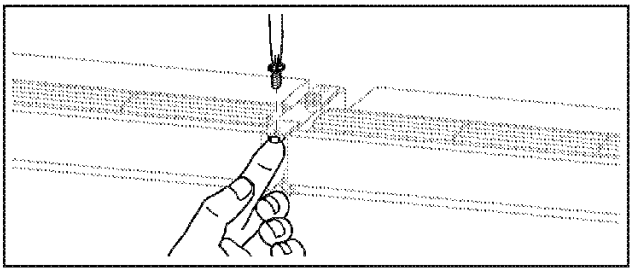
    NOTE 1: Torque to 18-20 in-lb.

    NOTE 2: There is one empty hole that is not used (see illustration).



16. Reinstall the front bottom hex nut/bolt. Due to the space between the Heater/Fans, you may need to use a finger to hold up the hex nut while inserting and securing the bolt.

    NOTE: Torque to 18-20 in-lb.



17. Reinstall the reassembled Heater/Fan Assembly and Motor Guards into the Fan Base and unit by reversing the previous steps.

    NOTE: it is very important that all nuts and screws are tightened to avoid rattling.

18. Insert the replacement Heater/Fan Assembly into position in the unit.

19. Reattach all previously disconnected molex plugs and spade terminals.

20. Secure the replacement Heater/Fan Assembly in the unit with its screws.

21. Reinstall the Upper Rear Panel by reversing the previous steps.

22. Reinstall the Carton Shelf by reversing the previous steps.

23. Restore power to the unit and test for proper function.

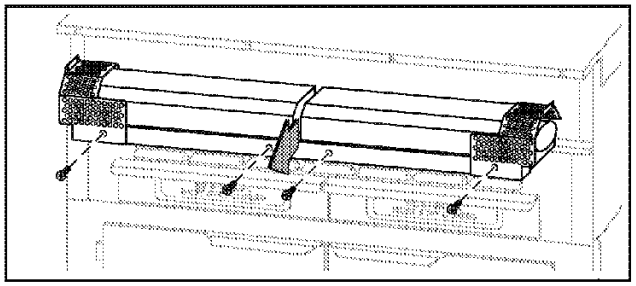
CALROD HEATERS (CONTROL SIDE)

NOTE: This section is only applicable if Calrod-style heaters are installed in the unit.

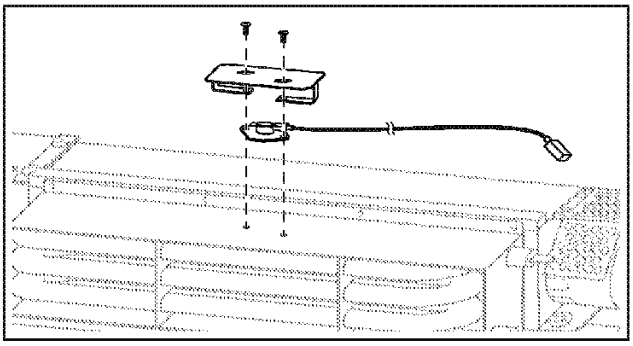
There are two control side Calrod Heaters, one for each side of the unit. They provide the heat that is blown by the Fan Assembly over the products while operating. They are attached to the Fan Assembly and are located behind the Control Compartment.

1. Place both of the unit's power ON/OFF Switches in the "OFF" position and follow the proper LOCKOUT/TAGOUT Procedure.
2. Remove and retain the screws securing the Control Panel to the Control Compartment.
3. Tilt the Control Panel down and away from unit far enough to access the wiring harnesses and components.

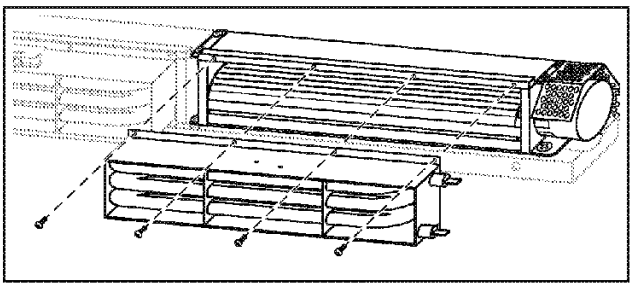
   NOTE: Removing the crumb trays will allow for greater access.
4. Disconnect all molex plugs.
5. Cut all zip ties to release the compartment wires.
6. Mark and disconnect line voltage and ground wires to the terminal block.
7. Mark and disconnect the Thermocouple wires.
8. Remove and retain the four (4) bushing covers (two towards each end).
9. Remove and retain the eight (8) screws along the bottom of the black rail that secures the black rail to the unit and Control Compartment.
10. Slide out the black rail that supports and holds the Control Compartment in the unit.
11. Remove the Control Compartment from the unit. If necessary, use partially opened cabinet doors as a place to help support it.
12. Remove the four (4) screws securing Fan Base to unit.



13. Slide the entire Heater/Fan Assembly, with its Fan Base, out enough to access electrical connections.
14. For the affected heater, mark and disconnect the two (2) heater spade terminals and two (2) High Limit Thermostat spade terminals.
15. Remove and retain the High Limit Thermostat, thermostat guard and jumper wire.



16. Remove and retain the four (4) screws securing the Calrod Heater to the Fan Assembly.



17. Attach the replacement Calrod Heater to the Fan Assembly with its screws.

    NOTE: it is very important that all screws are tightened to avoid rattling.
18. Apply heat transfer compound to the mounting surface of the High Limit Thermostat.
19. Reinstall the High Limit Thermostat, thermostat guard and jumper wire.
20. Insert Heater/Fan Assembly into position in the unit.
21. Reattach all previously disconnected molex plugs and spade terminals.
22. Replace the Control Compartment and black rail under the Control Compartment, securing with its screws.
23. Reattach all previously disconnected Control Compartment molex plugs and spade terminals.

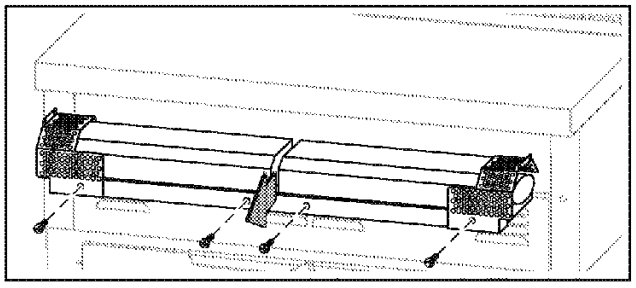
    NOTE: The terminal block connections in the Control Compartment must be torqued to 30 in-lb.
24. Tilt the Control Panel into place and secure into place with its screws.
25. Restore power to the unit and test for proper function.

CALROD HEATERS (REAR SIDE)

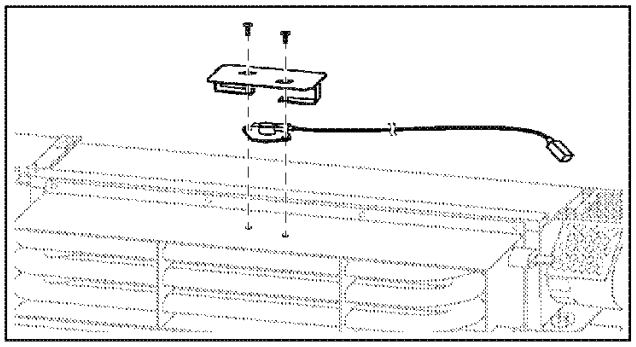
NOTE: This section is only applicable if Calrod-style heaters are installed in the unit.

There are two rear side Calrod Heaters, one for each side of the unit. They provide the heat that is blown by the Fan Assembly over the products while operating. They are attached to the Fan Assembly and are located behind the Upper Rear Panel.

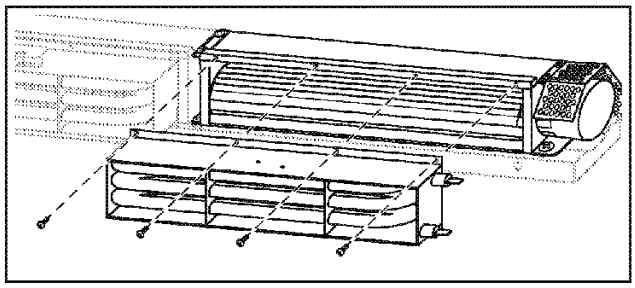
1. Place both of the unit's power ON/OFF Switches in the "OFF" position and follow the proper LOCKOUT/TAGOUT Procedure.
2. The Carton Shelf is mounted with three (3) keyholes. Lift the shelf up to disengage the studs and remove from the unit.
3. Remove the screws and hex nuts (under lip of unit) that secure the Upper Rear Panel to the back of unit and remove from the unit.
4. Remove and retain the four (4) screws securing the Fan Base to the unit.



5. Slide the entire Heater/Fan Assembly, with its Fan Base, out enough to access electrical connections.
6. For the affected heater, mark and disconnect the two (2) heater spade terminals and two (2) High Limit Thermostat spade terminals.
7. Remove and retain the High Limit Thermostat, thermostat guard, and jumper wire.



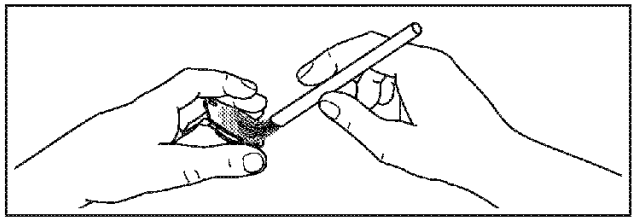
8. Remove and retain the four (4) screws securing the Calrod Heater to the Fan Assembly.



9. Attach the replacement Calrod Heater to the Fan Assembly with its screws.

   NOTE: It is very important that all screws are tightened to avoid rattling.

10. Apply heat transfer compound to the mounting surface of the High Limit Thermostat.



11. Reinstall the High Limit Thermostat, thermostat guard and jumper wire.
12. Insert Heater/Fan Assembly into position in the unit.
13. Reattach all previously disconnected molex plugs and spade terminals.
14. Secure the replacement Heater/Fan Assembly in the unit with its screws.
15. Reinstall the Upper Rear Panel by reversing the previous steps.
16. Reinstall the Carton Shelf by reversing the previous steps.
17. Restore power to the unit and test for proper function.

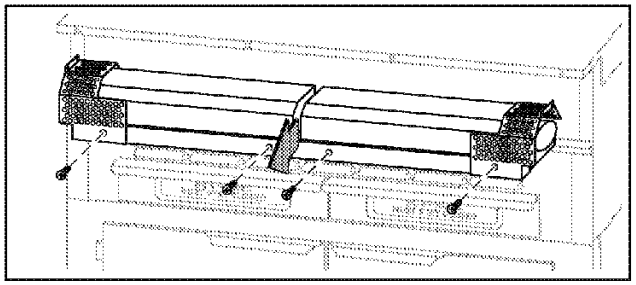
FAN ASSEMBLIES (CONTROL SIDE w/CALROD HEATERS)

NOTE: This section is only applicable if Calrod-style heaters are installed in the unit.

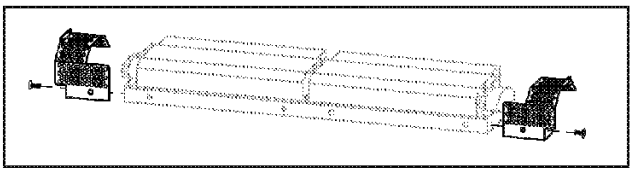
There are two control side Fan Assemblies, one for each side of the unit. They blow the heat generated by the Calrod Heaters over the products while operating. They are attached to the Calrod Heaters and are located behind the Control Compartment.

1. Place both of the unit's power ON/OFF Switches in the "OFF" position and follow the proper LOCKOUT/TAGOUT Procedure.
2. Remove and retain the screws securing the Control Panel to the Control Compartment.
3. Tilt the Control Panel down and away from unit far enough to access the wiring harnesses and components.

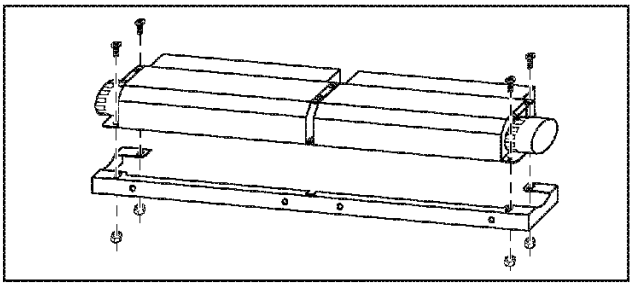
   NOTE: Removing the crumb trays will allow for greater access.
4. Disconnect all molex plugs.
5. Cut all zip ties to release the compartment wires.
6. Mark and disconnect line voltage and ground wires to the terminal block.
7. Mark and disconnect the Thermocouple wires.
8. Remove and retain the four (4) bushing covers (two towards each end).
9. Remove and retain the eight (8) screws along the bottom of the black rail that secures the black rail to the unit and Control Compartment.
10. Slide out the black rail that supports and holds the Control Compartment in the unit.
11. Remove the Control Compartment from the unit. If necessary, use partially opened cabinet doors as a place to help support it.
12. Remove the four (4) screws securing the Fan Base to the unit.



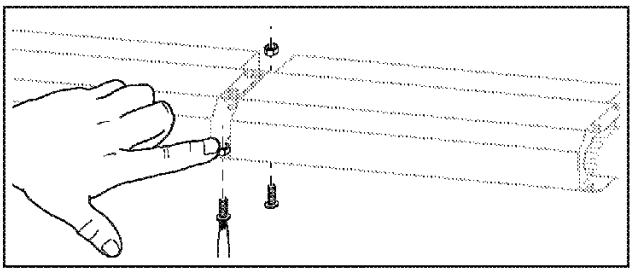
13. Slide the entire Heater/Fan Assembly, with its Fan Base, out enough to access electrical connections.
14. For the affected fan, mark and disconnect the fan molex plug, two (2) heater spade terminals, and two (2) High Limit Thermostat spade terminals.
15. Remove the Heater/Fan Assembly from the unit.
16. Cut the tie wrap securing the motor guard to the affected end(s).
17. Remove and retain the screw securing the motor guard to the affected end(s).



18. Remove and retain the four (4) 11/32" (9mm) hex nuts/ bolts securing the Fan Base to the assembly.

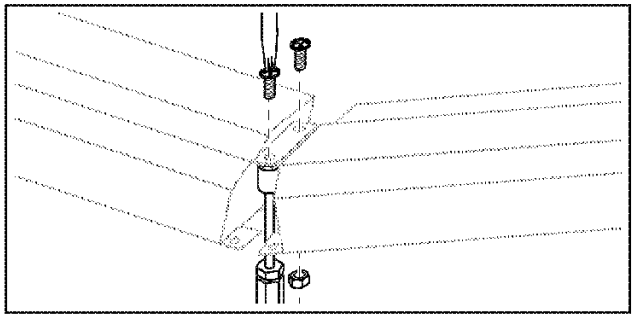


19. Remove and retain the two (2) bottom 11/32" (9mm) hex nuts/bolts holding the two (2) Heater/Fans together. May need to use a finger or screwdriver to assist in holding the hex nut.

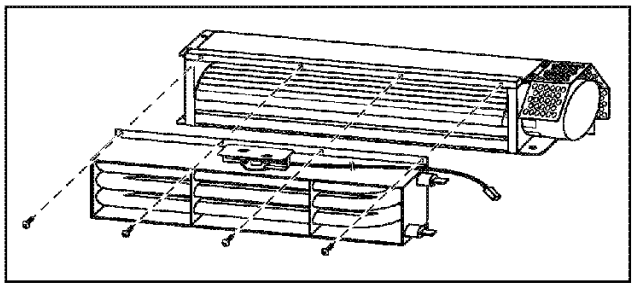


20. With the two (2) top hex nuts/bolts still installed, slightly separate, at an angle, the two Heater/Fans to allow for access to the two hex nuts/screws.

21. Remove and retain the remaining two (2) top 11/32" (9mm) hex nuts/screws holding the two (2) Heater/Fans together.



22. Remove and retain the four (4) screws securing the Calrod Heater to the affected Fan Assembly.



23. Attach the replacement Fan Assembly to the Calrod Heater with its screws.

    NOTE: it is very important that all screws are tightened to avoid rattling.

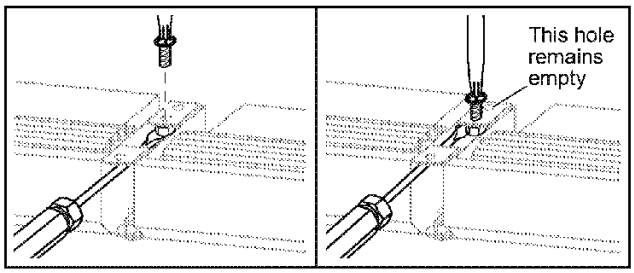
24. Reconnect the two Heater/Fan Assemblies by first reconnecting the two (2) top hex nuts/bolts securing the two Heater/Fans together, with the Heater/Fans at an angle.

    NOTE: Torque to 18-20 in-lb.

25. Reinstall the rear bottom hex nut/bolt. Due to the space between the Heater/Fans, you may need to use a flathead screwdriver to hold up the hex nut while inserting and securing the bolt, then use the screwdriver as a wedge to prevent the hex nut from spinning.

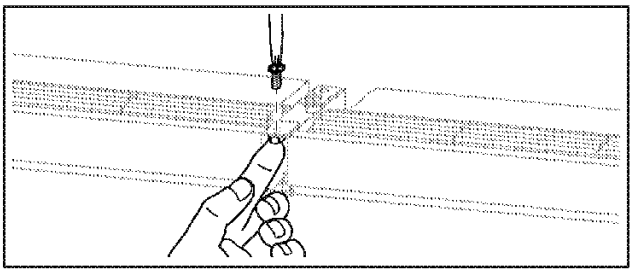
    NOTE 1: Torque to 18-20 in-lb.

    NOTE 2: There is one empty hole that is not used.



26. Reinstall the front bottom hex nut/bolt. Due to the space between the Heater/Fans, you may need to use a finger to hold up the hex nut while inserting and securing the bolt.

    NOTE: Torque to 18-20 in-lb.



    NOTE: Torque to 18-20 in-lb.

27. Reinstall the reassembled Heater/Fan Assembly and fan guards into the Fan Base and unit by reversing the previous steps.

    NOTE: it is very important that all nuts and screws are tightened, and zip tie installed, to avoid rattling.

28. Insert the Heater/Fan Assembly into position in the unit.

29. Reattach all previously disconnected Heater/Fan Assembly molex plugs and spade terminals.

30. Replace the Control Compartment and black rail under the Control Compartment, securing with its screws.

31. Reattach all previously disconnected Control Compartment molex plugs and spade terminals.

    NOTE: The terminal block connections in the Control Compartment must be torqued to 30 in-lb.

32. Tilt the Control Panel into place and secure into place with its screws.

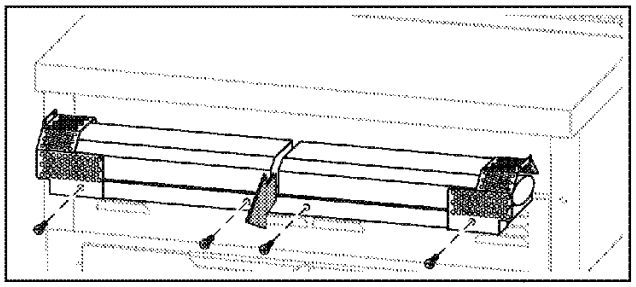
33. Restore power to the unit and test for proper function.

FAN ASSEMBLIES (REAR SIDE w/CALROD HEATERS)

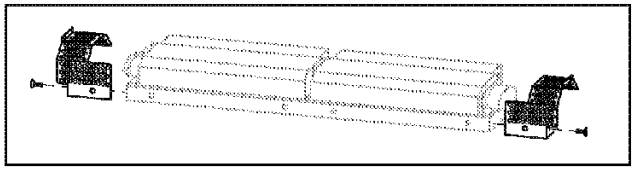
NOTE: This section is only applicable if Calrod-style heaters are installed in the unit.

There are two rear side Fan Assemblies, one for each side of the unit. They blow the heat generated by the Calrod Heaters over the products while operating. They are attached to the Calrod Heaters and are located behind the Upper Rear Panel.

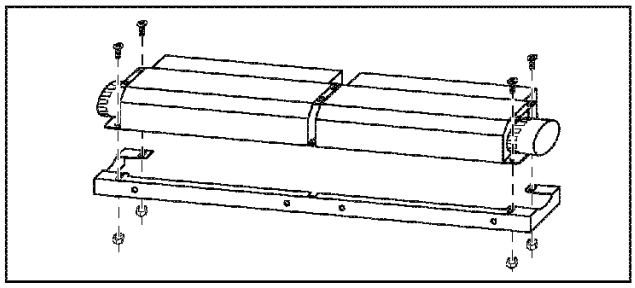
1. Place both of the unit's power ON/OFF Switches in the "OFF" position and follow the proper LOCKOUT/TAGOUT Procedure.
2. The Carton Shelf is mounted with three (3) keyholes. Lift the shelf up to disengage the studs and remove from the unit.
3. Remove the screws and hex nuts (under lip of unit) that secure the Upper Rear Panel to the back of unit and remove from the unit.
4. Remove and retain the four (4) screws securing the Fan Base to the unit.



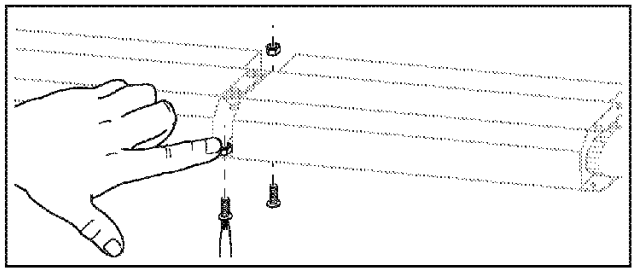
5. Slide the entire Heater/Fan Assembly with its Fan Base out enough to access electrical connections.
6. Mark and disconnect the two (2) fan molex plugs, two (2) heater spade terminals, and two (2) High Limit Thermostat spade terminals.
7. Remove the Heater/Fan Assembly from the unit.
8. Cut the tie wrap securing the motor guard to the affected end(s).
9. Remove and retain the screw securing the motor guard to the affected end(s).



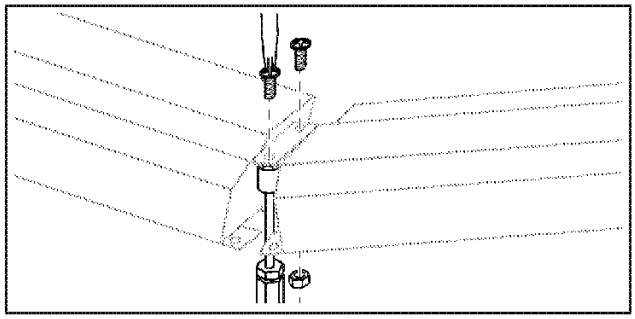
10. Remove and retain the four (4) 11/32" (9mm) hex nuts/bolts securing the Fan Base to the assembly.



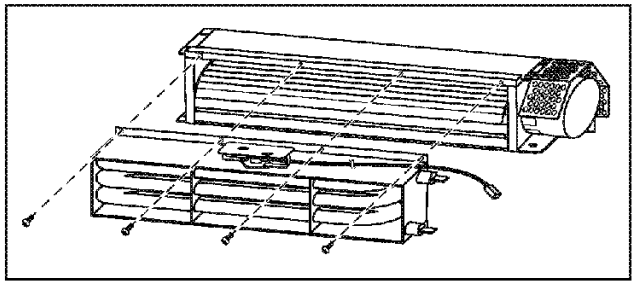
11. Remove and retain the two (2) bottom 11/32" (9mm) hex nuts/bolts holding the two (2) Heater/Fans together. May need to use a finger or screwdriver to assist in holding the hex nut.



12. With the two (2) top hex nuts/bolts still installed, slightly separate, at an angle, the two (2) Heater/Fans to allow for access to the two (2) hex nuts/screws.
13. Remove and retain the remaining two (2) top 11/32" (9mm) hex nuts/screws holding the two (2) Heater/Fans together.



14. Remove and retain the four (4) screws securing the Calrod Heater to the affected Fan Assembly.



15. Attach the replacement Fan Assembly to the Calrod Heater with its screws.

    NOTE: it is very important that all screws are tightened to avoid rattling.

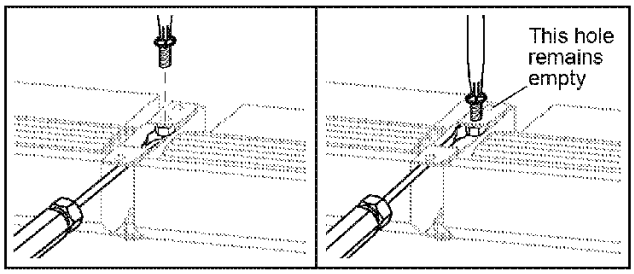
16. Reconnect the two Heater/Fan Assemblies by first reconnecting the two (2) top hex nuts/bolts securing the two Heater/Fans together, with the Heater/Fans at an angle.

    NOTE: Torque to 18-20 in-lb.

17. Reinstall the rear bottom hex nut/bolt. Due to the space between the Heater/Fans, you may need to use a flathead screwdriver to hold up the hex nut while inserting and securing the bolt, then use the screwdriver as a wedge to prevent the hex nut from spinning.

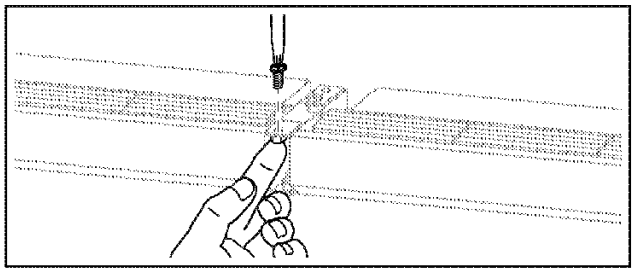
    NOTE 1: Torque to 18-20 in-lb.

    NOTE 2: There is one empty hole that is not used.



18. Reinstall the front bottom hex nut/bolt. Due to the space between the Heater/Fans, you may need to use a finger to hold up the hex nut while inserting and securing the bolt.

    NOTE: Torque to 18-20 in-lb.



19. Reinstall the reassembled Heater/Fan Assembly and motor guards into the Fan Base and unit by reversing the previous steps.

    NOTE: it is very important that all nuts and screws are tightened, and zip tie installed, to avoid rattling.

20. Insert the Heater/Fan Assembly into position in the unit.

21. Reattach all previously disconnected molex plugs and spade terminals.

22. Secure the Heater/Fan Assembly in the unit with its screws.

23. Reinstall the Upper Rear Panel by reversing the previous steps.

24. Reinstall the Carton Shelf by reversing the previous steps.

25. Restore power to the unit and test for proper function.

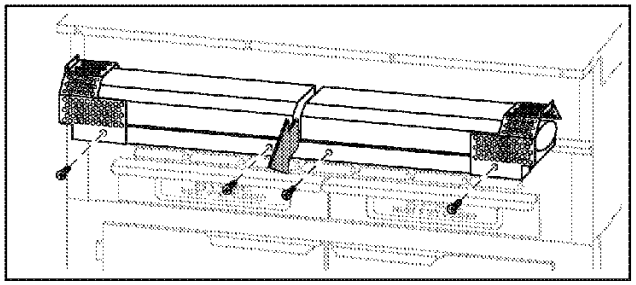
HIGH LIMIT THERMOSTATS (CONTROL SIDE w/CALROD-STYLE HEATER)

NOTE: This section is only applicable if Calrod-style heaters are installed in the unit.

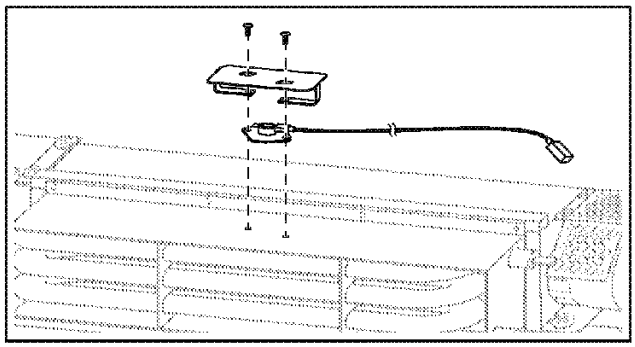
There are two control side High Limit Thermostats, one for each side of the unit. They monitor the Calrod Heater temperature and serve as a circuit interrupter in case of Calrod Heater overheating. They are attached to each Calrod Heater behind the Control Compartment.

1. Place both of the unit's power ON/OFF Switches in the "OFF" position and follow the proper LOCKOUT/TAGOUT Procedure.
2. Remove and retain the screws securing the Control Panel cover to the Control Compartment.
3. Tilt the Control Panel down and away from unit far enough to access the wiring harnesses and components.

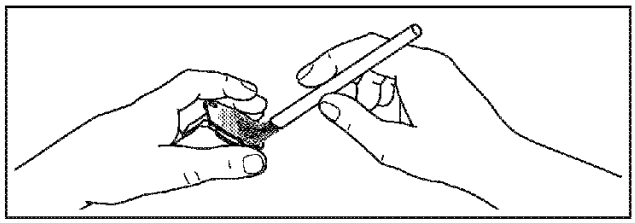
   NOTE: Removing the crumb trays will allow for greater access.
4. Disconnect all molex plugs.
5. Cut all zip ties to release the compartment wires.
6. Mark and disconnect line voltage and ground wires to the terminal block.
7. Mark and disconnect the Thermocouple wires.
8. Remove and retain the four (4) bushing covers (two towards each end).
9. Remove and retain the eight (8) screws along the bottom of the black rail that secures the black rail to the unit and Control Compartment.
10. Slide out the black rail that supports and holds the Control Compartment in the unit.
11. Remove the Control Compartment from the unit. If necessary, use partially opened cabinet doors as a place to help support it.
12. Remove the four (4) screws securing the Fan Base to the unit.



13. Slide the entire Heater/Fan Assembly, with its Fan Base, out enough to access the High Limit Thermostat.
14. Mark and disconnect the two (2) spade terminals to the affected High Limit Thermostat(s).
15. Remove the affected High Limit Thermostat(s), retain the Thermostat guard(s) and clean the mounting surface of any residual heat transfer compound.



16. Apply heat transfer compound to the mounting surface of the replacement High Limit Thermostat(s).



17. Attach the replacement High Limit Thermostat(s) and Thermostat guards to Calrod Heater(s) with its screws.

    NOTE: it is very important that all screws are tightened to avoid rattling.
18. Insert Heater/Fan Assembly into position in the unit.
19. Reattach all previously disconnected molex plugs, spade terminals, and jumper wire.
20. Replace the Control Compartment and black rail under the Control Compartment, securing with its screws.
21. Reattach all previously disconnected Control Compartment molex plugs and spade terminals.

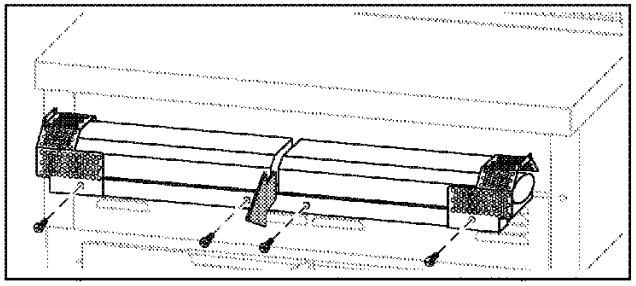
    NOTE: The terminal block connections in the Control Compartment must be torqued to 30 in-lb.
22. Tilt the Control Panel into place and secure into place with its screws.
23. Restore power to the unit and test for proper function.

HIGH LIMIT THERMOSTATS (REAR SIDE w/CALROD-STYLE HEATER)

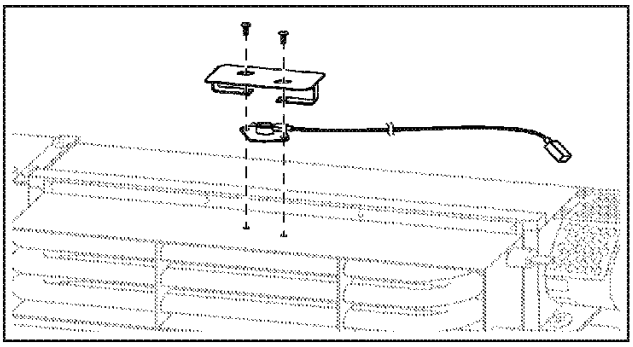
NOTE: This section is only applicable if Calrod-style heaters are installed in the unit.

There are two rear side High Limit Thermostats, one for each side of the unit. They monitor the Calrod Heater temperature and serve as a circuit interrupter in case of Calrod Heater overheating. They are attached to each Calrod Heater behind the Upper Rear Panel.

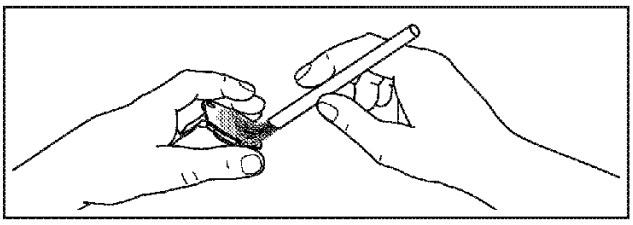
1. Place both of the unit's power ON/OFF Switches in the "OFF" position and follow the proper LOCKOUT/TAGOUT Procedure.
2. The Carton Shelf is mounted with three (3) keyholes. Lift the shelf up to disengage the studs and remove from the unit.
3. Remove the screws and hex nuts (under lip of unit) that secure the Upper Rear Panel to the back of unit and remove from the unit.
4. Remove and retain the four (4) screws securing the Fan Base to the unit.



5. Slide the entire Heater/Fan Assembly, with its Fan Base, out enough to access the High Limit Thermostat.
6. Mark and disconnect the two (2) spade terminals to the affected High Limit Thermostat(s).
7. Remove the affected High Limit Thermostat(s), retain the Thermostat guard(s) and clean the mounting surface of any residual heat transfer compound.



8. Apply heat transfer compound to the mounting surface of the replacement High Limit Thermostat(s).



9. Attach the replacement High Limit Thermostat(s) and Thermostat guard(s) to the Calrod Heater(s) with its screws.

   NOTE: it is very important that all screws are tightened to avoid rattling.

10. Insert Heater/Fan Assembly into position in the unit.
11. Reattach all previously disconnected spade terminals.
12. Secure Heater/Fan Assembly in the unit with its screws.
13. Reinstall the Upper Rear Panel by reversing the previous steps.
14. Reinstall the Carton Shelf by reversing the previous steps.
15. Restore power to the unit and test for proper function.

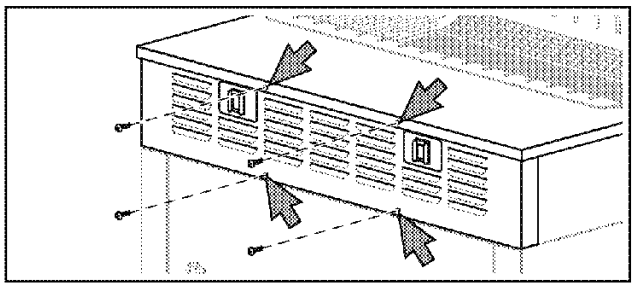
FHUAS ELECTRICAL COMPONENTS

POWER ON/OFF SWITCHES

There are two (2) Power ON/OFF Switches, located on the Front Housing panel.

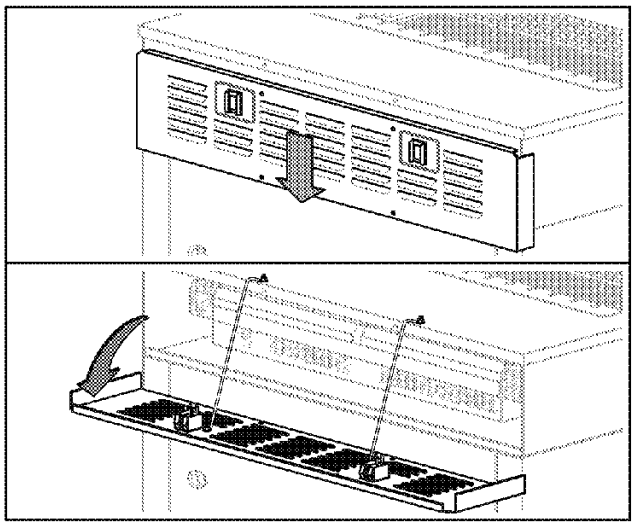
TOOLS REQUIRED: Phillips screwdriver

1. Place both of the unit's Power ON/OFF Switches in the "OFF" position and follow the proper lockout/tagout procedures.
2. Remove and retain the four (4) screws securing the Front Housing panel to the unit.

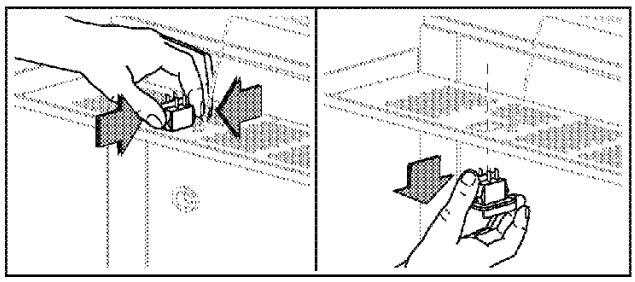


3. Slide down and tilt out the Front Housing panel away from unit.

   NOTE: The Front Housing panel is attached to the unit with two (2) 8-inch lanyards that are designed to support the weight of the panel. These do not need to be removed for these instructions.



4. Mark and disconnect the four (4) spade terminals to the affected Power ON/OFF Switch.
5. The Power ON/OFF Switch is secured to the Front Housing with spring clips. Depress the spring clips and slide the switch from the Front Housing.



RESTORE:

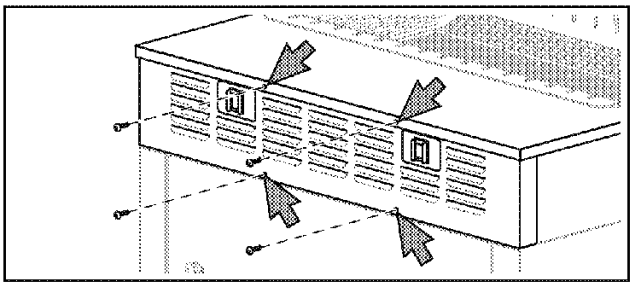
6. Install the replacement Power ON/OFF Switch by sliding it into its position in the Front Housing panel until secured with its spring clips.
7. Reattach the Power ON/OFF Switch spade terminals.
8. Replace the Front Housing by tilting the panel inward and lifting up and securing with its screws.
9. Restore power to the unit and test for proper function.

CAPACITORS

There are two (2) Capacitors, one for each fan. They are located directly behind the Front Housing panel, attached to the Fan Bracket on the front of the Heater/Fan Assembly. It is used to keep the *Fan* running more efficiently.

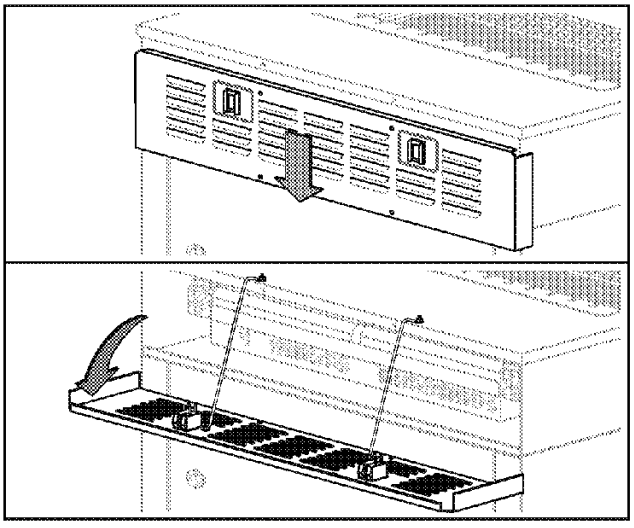
TOOLS REQUIRED: Phillips screwdriver, 1/2-inch wrench

1. Place both of the unit's Power ON/OFF Switches in the "OFF" position and follow the proper lockout/tagout procedures.
2. Remove and retain the four (4) screws securing the Front Housing panel to the unit.

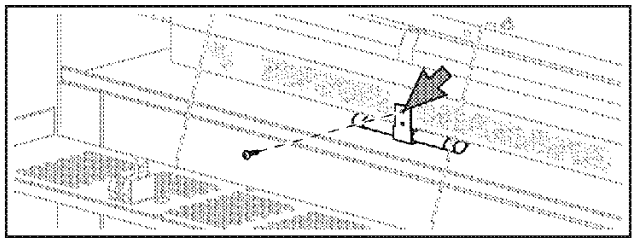


3. Slide down and tilt out the Front Housing away from unit.

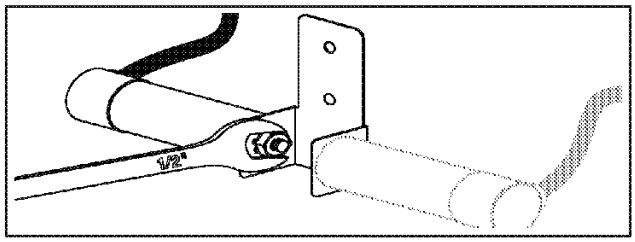
   NOTE: The Front Housing panel is attached to the unit with two (2) 8-inch lanyards that are designed to support the weight of the panel. These do not need to be removed for these instructions.



4. Remove and retain the single screw securing the Capacitor Bracket to the Fan Bracket.



5. Mark and disconnect the affected Capacitor's two (2) power wires from its wiring harness.
6. Safely discharge the capacitor.
7. Using a 1/2-inch wrench, remove and retain the 1/2-inch hex nut securing the affected Capacitor to the Capacitor Bracket.



RESTORE:

8. Install the replacement Capacitor to the Capacitor Bracket by securing it with its hex nut.
9. Reattach the Capacitor wires to its wiring harness.
10. Secure the Capacitor Bracket to the Fan Bracket with its screw.
11. Replace the Front Housing by tilting the panel inward and lifting up and securing with its screws.
12. Restore power to the unit and test for proper function.

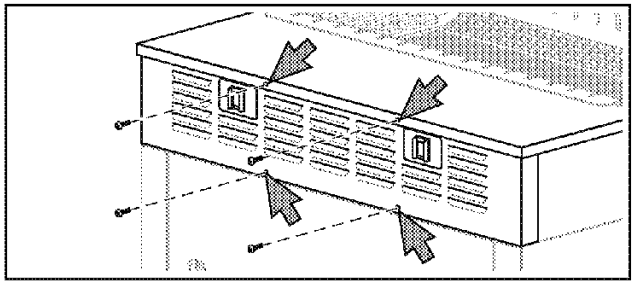
FANS

There are two (2) Fans, one for each side (channel) of the unit. They are part of the Return Box Assembly, directly behind the Front Housing panel. They blow the heat generated by the *Heaters* over the products while operating.

TOOLS REQUIRED: Phillips screwdriver; precision screwdriver; 11/32-inch Nut Driver; Flathead Screwdriver, zip ties

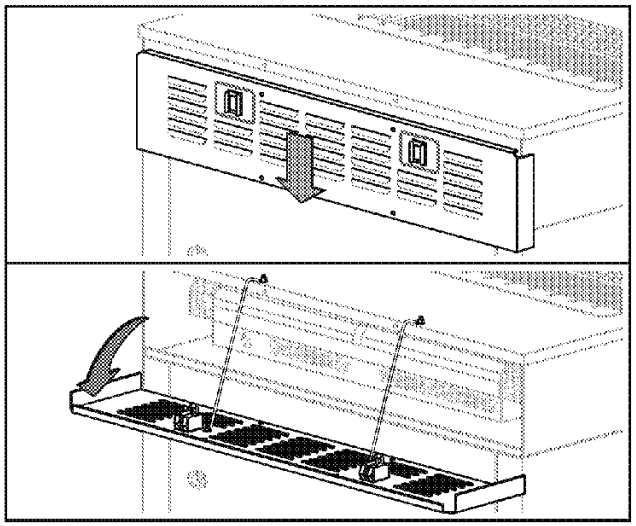
1. Place both of the unit's Power ON/OFF Switches in the "OFF" position and follow the proper lockout/tagout procedures.

2. Remove and retain the four (4) screws securing the Front Housing panel to the unit.

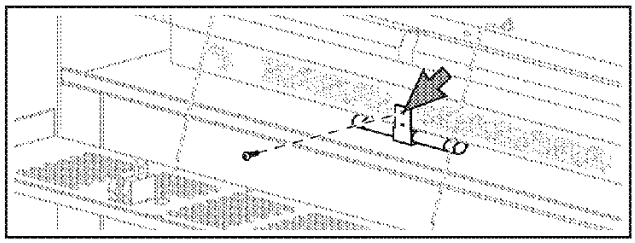


3. Slide down and tilt out the Front Housing away from unit.

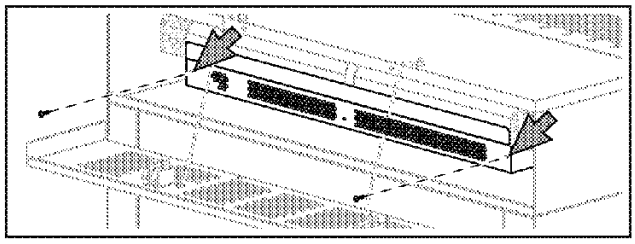
   NOTE: The Front Housing panel is attached to the unit with two (2) 8-inch lanyards that are designed to support the weight of the panel. These do not need to be removed for these instructions.



4. Remove and retain the single screw securing the Capacitor Bracket to the Fan Bracket.

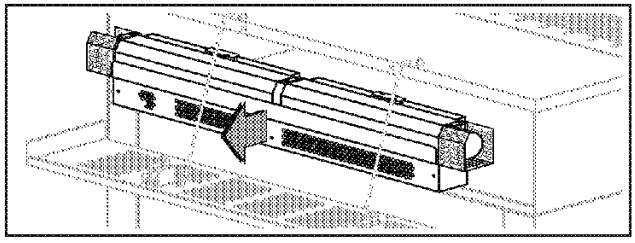


5. Remove the two (2) screws securing the Fan Bracket to the unit.



6. Carefully slide the entire Heater/Fan Assembly out enough to access its electrical connections.

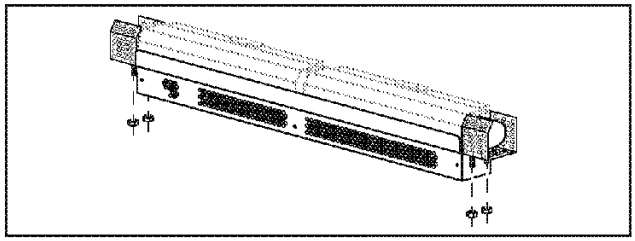
   NOTE: It will be easier to disconnect the entire Heater/Fan Assembly in order to successfully remove and replace a fan.



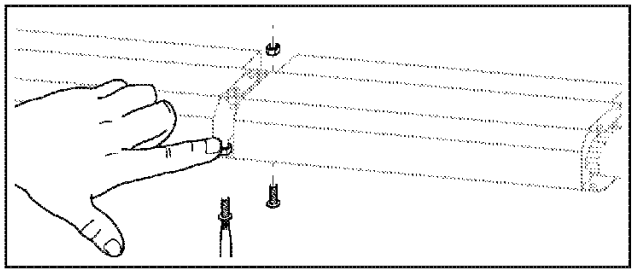
7. At each end of the Heater/Fan Assembly, note the location of and then cut the existing tie wraps, then mark and disconnect the black (High Limit Thermostat), white (Heater), and Fan (black with 5 separate leads) from their power harnesses. The fan leads are secured to its harness with a small precision screwdriver.

8. Remove the Heater/Fan Assembly from the unit.

9. At each end of the Heater/Fan Assembly, remove and retain the two (2) 11/32-inch hex nuts securing each Fan Bracket and Motor Guard to the Heater/Fan Assembly.

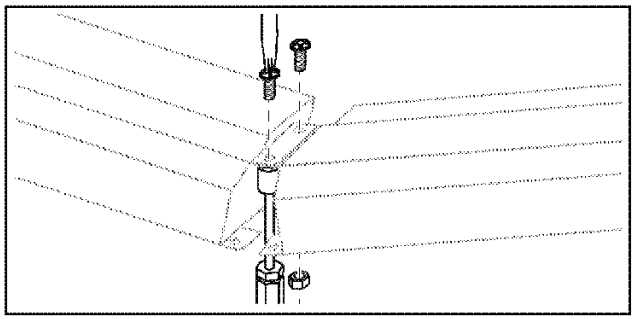


10. Remove and retain the two (2) bottom 11/32-inch hex nuts/bolts holding the two (2) Heater/Fans together. It may be required to use a finger or tool to assist in holding the hex nut.

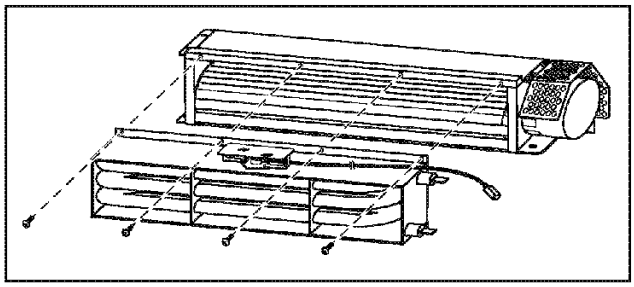


11. With the two (2) top hex nuts/bolts still installed, slightly separate, at an angle, the two (2) Heater/Fans to allow for access to the two (2) hex nuts/screws.

12. Remove and retain the remaining two (2) top 11/32-inch hex nuts/screws holding the two (2) Heater/Fans together.



13. Remove and retain the four (4) screws securing the Calrod Heater to the affected Fan.



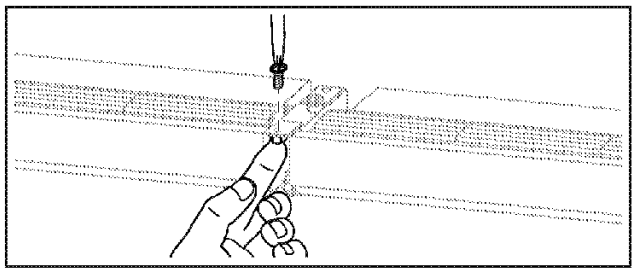
RESTORE:

14. Attach the replacement Fan to the Calrod Heater with its screws.

    NOTE: It is very important that all screws are tightened to avoid rattling.

15. Reconnect the two (2) Heater/Fan Assemblies by first reconnecting the two (2) top hex nuts/bolts securing the two (2) Heater/Fans together, with the Heater/Fans at an angle.

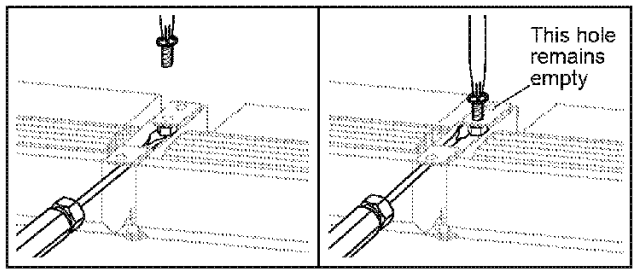
    NOTE: Torque to 18-20 in-lb.



16. Reinstall the front bottom hex nut/bolt. Due to the space between the Heater/Fans, you may need to use a flathead screwdriver to hold up the hex nut while inserting and securing the bolt, then use the screwdriver as a wedge to prevent the hex nut from spinning.

    NOTE 1: Torque to 18-20 in-lb.

    NOTE 2: There is one empty hole that is not used.



17. Reinstall the rear bottom hex nut/bolt. Due to the space between the Heater/Fans, you may need to use a finger to hold up the hex nut while inserting and securing the bolt.

    NOTE: Torque to 18-20 in-lb.

18. Reinstall the reassembled Heater/Fan Assembly to the Fan Bracket and Motor Guard by reversing the previous steps.

    NOTE: It is very important that all nuts and screws are tightened and the zip tie is reinstalled to avoid rattling.

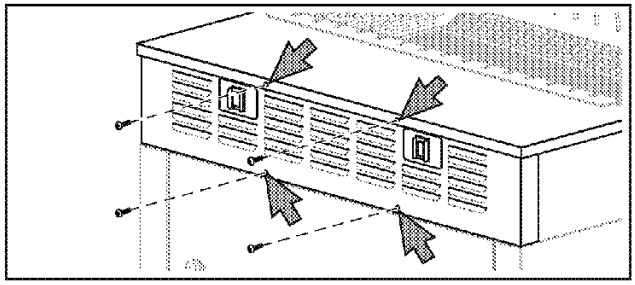
19. Reattach the Fan, Heater, and High Limit Thermostat wires to their respective wiring harnesses.
20. Carefully insert the Heater/Fan Assembly into position in the unit.
21. Reinstall the two (2) screws securing the Fan Bracket to the unit.
22. Secure the Capacitor Bracket to the Fan Bracket with its screw.
23. Replace the Front Housing by tilting the panel inward and lifting up and securing with its screws.
24. Restore power to the unit and test for proper function.

HEATERS

There are two (2) Heaters, one for each side (channel) of the unit. They are part of the Return Box Assembly, directly behind the Front Housing panel. They generate the heat that is blown by the *Fan* over the products while operating.

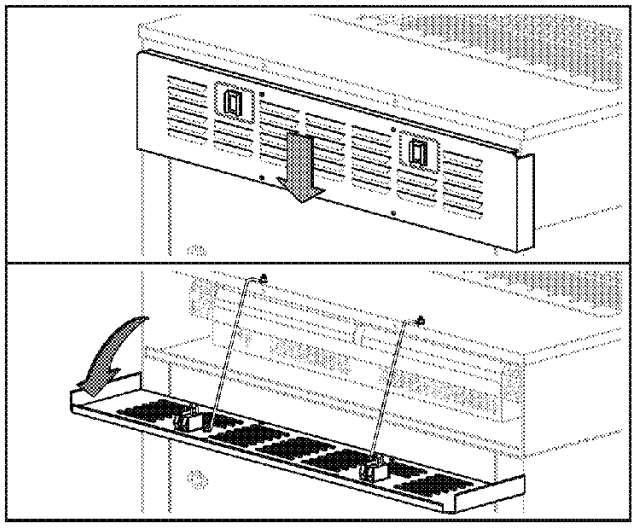
TOOLS REQUIRED: Phillips screwdriver; Heat Transfer compound

1. Place both of the unit's Power ON/OFF Switches in the "OFF" position and follow the proper lockout/tagout procedures.
2. Remove and retain the four (4) screws securing the Front Housing panel to the unit.

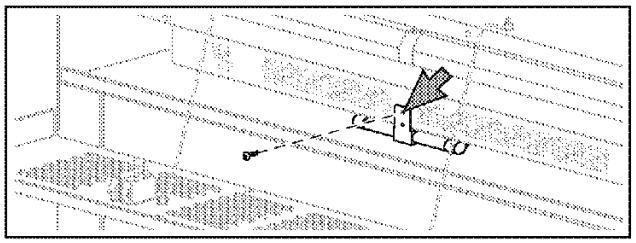


3. Slide down and tilt out the Front Housing away from unit.

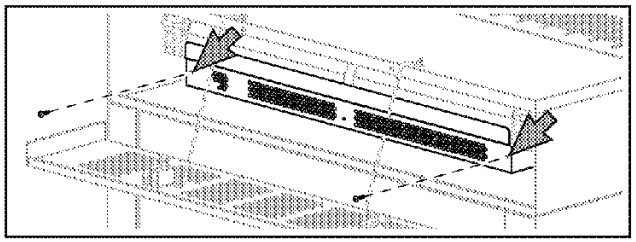
   NOTE: The Front Housing panel is attached to the unit with two (2) 8-inch lanyards that are designed to support the weight of the panel. These do not need to be removed for these instructions.



4. Remove and retain the single screw securing the Capacitor Bracket to the Fan Bracket.

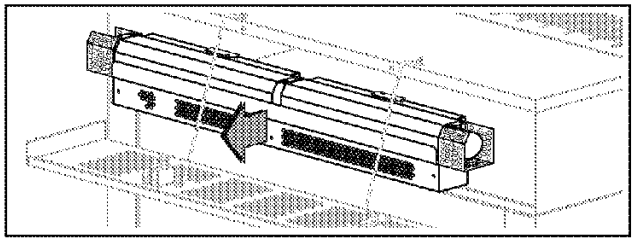


5. Remove the two (2) screws securing the Fan Bracket to the unit.



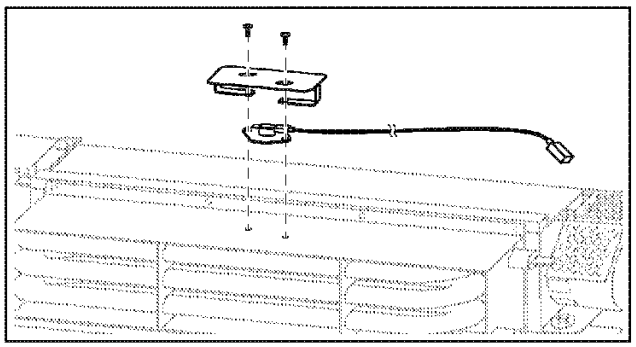
6. Carefully slide the entire Heater/Fan Assembly out enough to access its electrical connections.

   NOTE: It is not required, but perfectly OK, if desired, to remove the entire Heater/Fan Assembly from the unit.

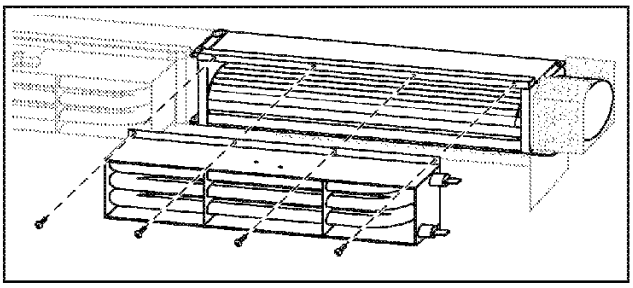


7. At the end of the Heater/Fan Assembly with the affected Heater, note the location of and cut any necessary tie wraps; then mark and disconnect the white (Heater) power wires, the two (2) heater spade terminals, and two (2) High Limit Thermostat spade terminals.

8. Remove and retain the High Limit Thermostat, thermostat guard, and jumper wire from the affected Heater.



9. Remove and retain the four (4) screws securing the Heater to the Fan.

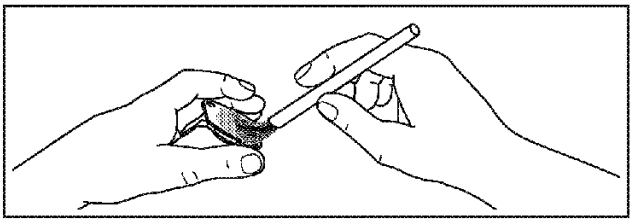


RESTORE:

10. Attach the replacement Heater to the Fan with its screws.

    NOTE: It is very important that all screws are tightened to avoid rattling.

11. After applying heat transfer compound to the High Limit Thermostat, reattach the High Limit Thermostat, thermostat guard, and jumper wire to the replacement Heater.



12. Reattach the Fan, Heater, and High Limit Thermostat wires to their respective wiring harnesses.

13. Carefully reinsert the Heater/Fan Assembly into position in the unit.

14. Reinstall the two (2) screws securing the Fan Bracket to the unit.

15. Secure the Capacitor Bracket to the Fan Bracket with its screw.

16. Replace the Front Housing by tilting the panel inward and lifting up and securing with its screws.

17. Restore power to the unit and test for proper function.

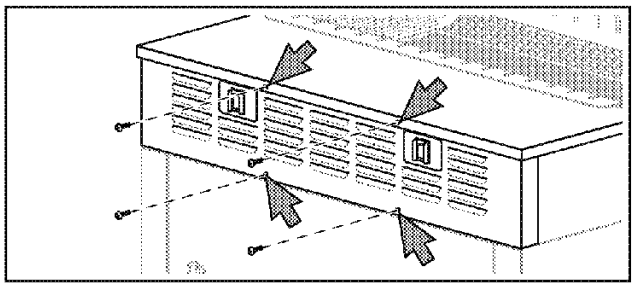
HIGH LIMIT THERMOSTATS

There are two (2) *High Limit Thermostats*, one for each side (channel) of the unit. They are attached to top of each *Heater* as part of the Return Box Assembly. They monitor the *Heater* temperature and serve as a circuit interrupter in case of *Heater* overheating.

TOOLS REQUIRED: Phillips screwdriver, Heat Transfer compound

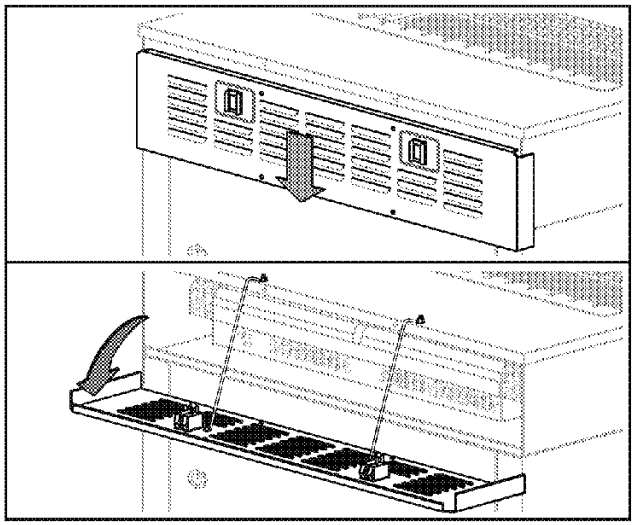
1. Place both of the unit's Power ON/OFF Switches in the "OFF" position and follow the proper lockout/tagout procedures.

2. Remove and retain the four (4) screws securing the Front Housing panel to the unit.

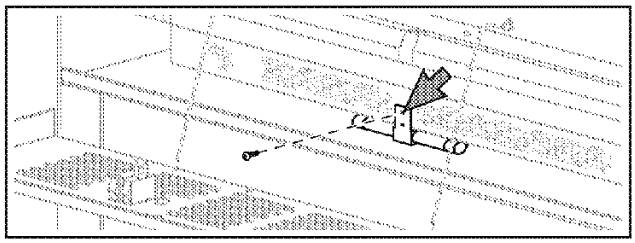


3. Slide down and tilt out the Front Housing away from unit.

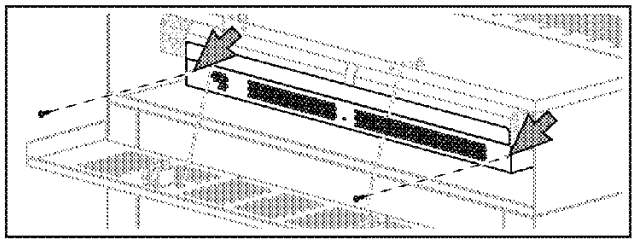
   NOTE: The Front Housing panel is attached to the unit with two (2) 8-inch lanyards that are designed to support the weight of the panel. These do not need to be removed for these instructions.



4. Remove and retain the single screw securing the Capacitor Bracket to the Fan Bracket.

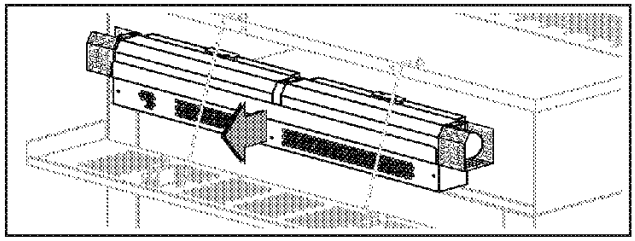


5. Remove the two (2) screws securing the Fan Bracket to the unit.



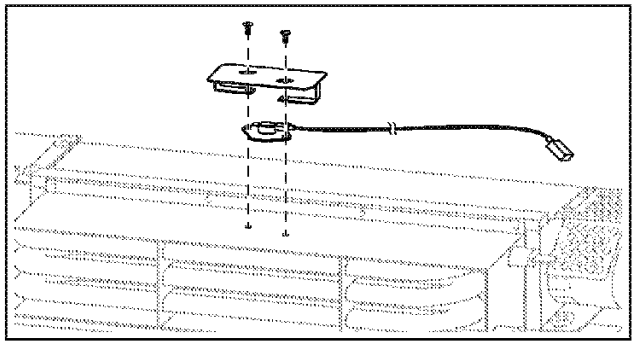
6. Carefully slide the entire Heater/Fan Assembly out enough to access its electrical connections.

   NOTE: It will be easier to disconnect the entire Heater/ Fan Assembly in order to successfully remove and replace a fan.



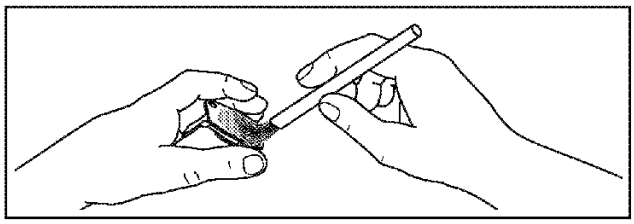
7. Mark and disconnect the two (2) spade terminals to the affected High Limit Thermostat.

8. Remove the affected High Limit Thermostat and its thermostat guard and clean the mounting surface of any residual heat transfer compound.



RESTORE:

9. Apply heat transfer compound to the mounting surface of the replacement High Limit Thermostat.



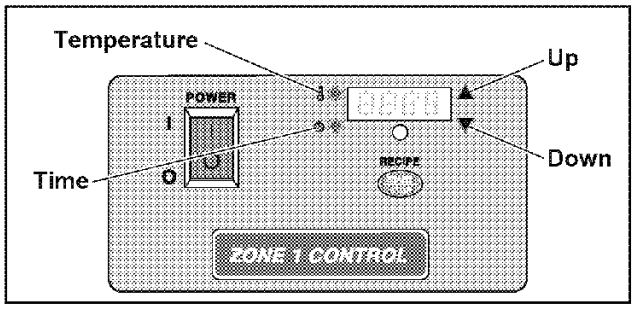
10. Attach the replacement High Limit Thermostat and thermostat guards to the Heater with its screws.

    NOTE: It is very important that all screws are tightened to avoid rattling.

11. Reattach all previously disconnected spade terminals.
12. Carefully reinsert the Heater/Fan Assembly into position in the unit.
13. Reinstall the two (2) screws securing the Fan Bracket to the unit.
14. Secure the Capacitor Bracket to the Fan Bracket with its screw.
15. Replace the Front Housing by tilting the panel inward and lifting up and securing with its screws.
16. Restore power to the unit and test for proper function.

FHU PROGRAMMING INSTRUCTIONS

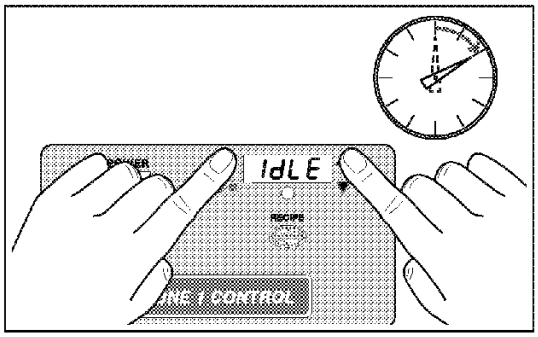
The control contains 4 recipes (r1, r2, r3, and r4), each recipe contains 28 parameters. The parameters in each recipe (Default recipe = r1) can be viewed and/or changed via the control keys:



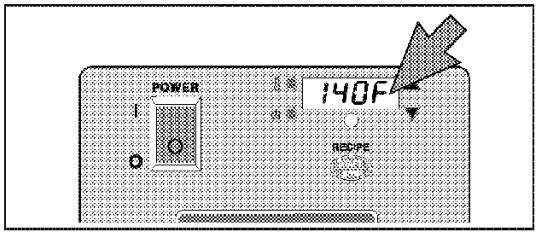
PROGRAMMING AND DISPLAYING PARAMETERS (FOUR RECIPES)

1. Upon power-up, the display will briefly show the model and version number of the control. After this short display, the control will then display "IdLE" indicating that the control is running in idle mode of the current default recipe or static condition.

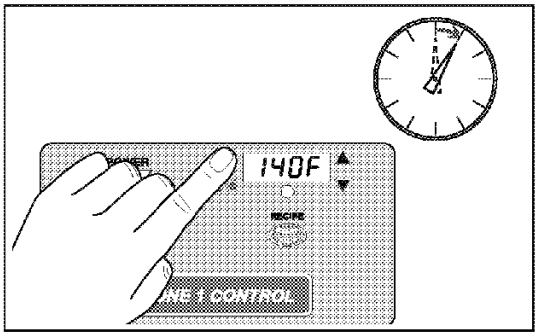
2. From "IdLE" press and hold the "Temperature" and "Up" keys for 10 seconds.



Display will then show the current temperatures.

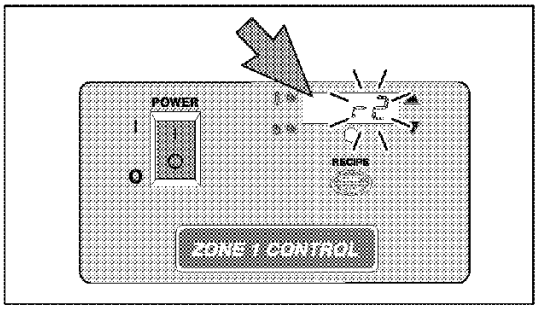


3. Enter program mode by pressing and holding the "Temp" key for 5 seconds.

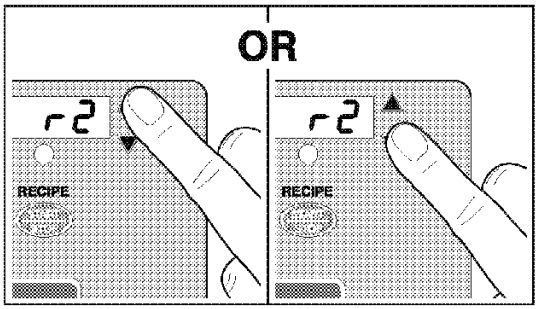


The display then indicates the currently selected recipe.

a. Example: When the current recipe is 2, the display shows "r 2" flashing.

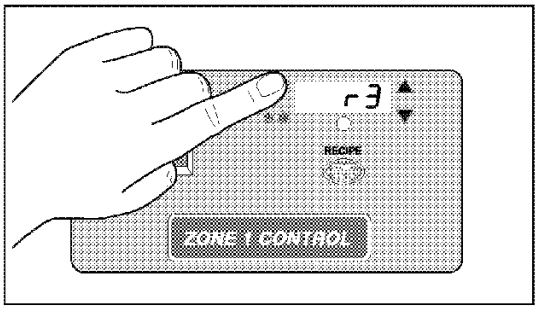


b. The current recipe can be changed by pressing the "Up" or "Down" key.

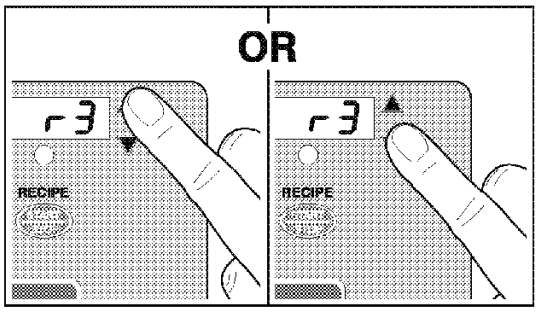


c. The parameters for the selected recipe can then be viewed and changed.

4. Pressing the "Temp" key steps through the parameters.

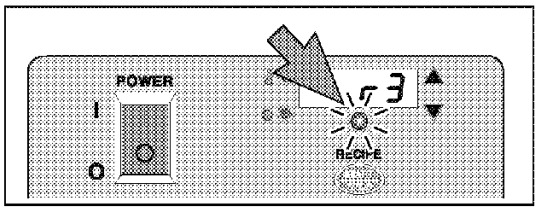


a. Change a parameter by pressing the "Up" or "Down" key.

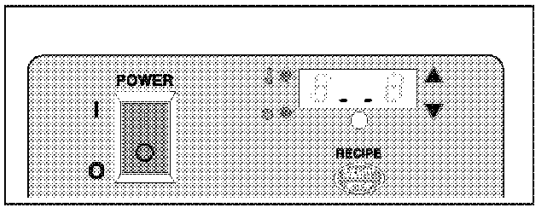


Parameters are displayed flashing in the order shown in the table at the end of this section.

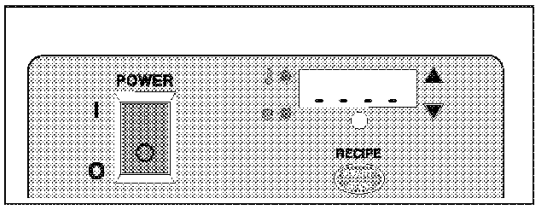
b. Zones will be indicated by flashing the heat LED as it currently does (one quick flash for zone 1 and two quick flashes for zone 2).



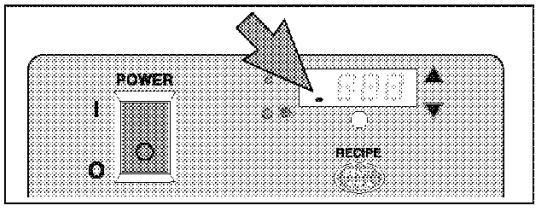
c. While displaying offset temperatures, digit 2 and 3 decimal points will illuminate.



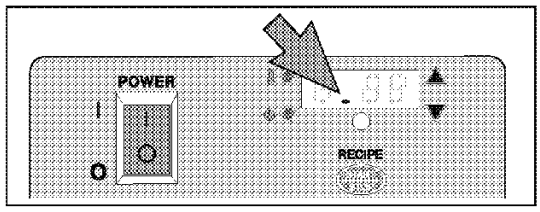
d. While displaying idle parameters, all 4 decimal points will illuminate.



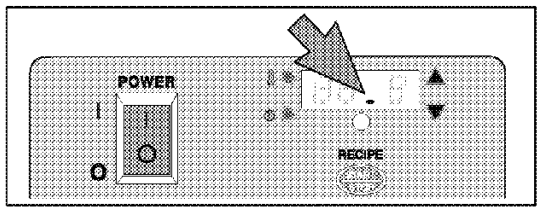
e. While displaying stage 1, only digit 1 (far left) decimal point will illuminate.



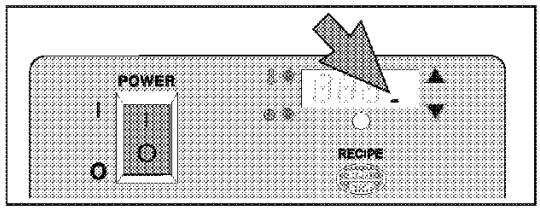
f. While displaying stage 2, digit 2 decimal point will illuminate.



g. While displaying stage 3, digit 3 decimal point will illuminate.



h. While displaying stage 4, digit 4 decimal point will illuminate.



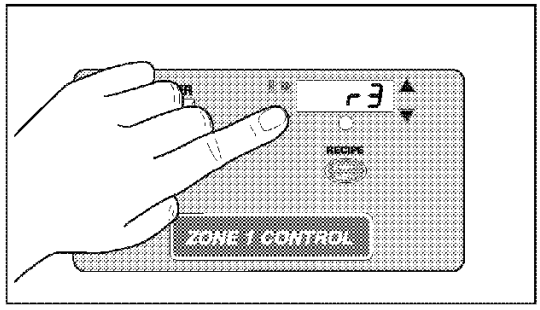
i. The decimal point indicators will not flash to help avoid misinterpretation.

j. The speed parameters will be in 1% increments from 0 to 100. Values will be stored when stepping to the next item.

k. Stepping after the last item will go back to the current recipe number display. One can then select a new recipe for viewing or changing.

l. Exit the program mode at any time by pressing the "Time" key.

NOTE: The recipe just displayed or changed will be the active recipe.



Other changes:

A. When changing a parameter, the flashing will stop and restart 1 second after last change.

B. There is a second acceleration (at least 10X faster) when holding the up or down key for setting a parameter. The second acceleration takes place after 5 seconds of initial acceleration.

C. The "Dual Heater Staged Cooking EEPROM Setup Utility" has been updated to incorporate the 4 recipes above.

PROGRAMMING PARAMETERS

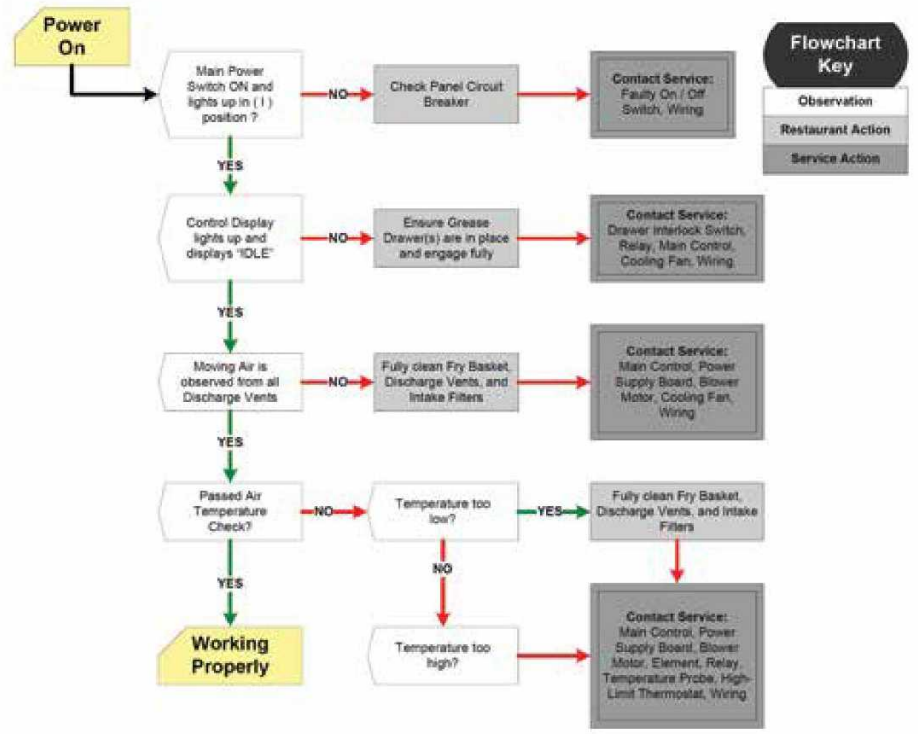
Item	Zone/Stage	LED Display	Allowable Range	Default
1.	Zone 1 Max Fan Speed	S L 7 0	0 – 99%	70%
2.	Zone 2 Max Fan Speed	S L 7 0	0 – 99%	70%
3.	Zone 1 temperature offset	_ _.0.˙F	0°F – 150°F	0
4.	Zone 2 temperature offset	_ _.0.˙F	0°F – 150°F	0
5.	Zone 1 idle temperature set point	1.9.5.˙F.	100°F – 250°F	195°F
6.	Zone 1 idle fan speed	S._.5.0.	0 – 100%	50%
7.	Zone 2 idle temperature set point	1.9.5.˙F.	100°F – 250°F	195°F
8.	Zone 2 idle fan speed	S._.5.0.	0 – 100%	50%
9.	Stage 1 time	_.0:1 4	* 0 min – 9h:59m	14 min
10.	Stage 1 Zone 1 temperature set point	1.9 5˙F	100°F – 250°F	195°F
11.	Stage 1 Zone 1 fan speed	S._.5.0	0 – 100%	50%
12.	Stage 1 Zone 2 temperature set point	1.9 5˙F	100°F – 250°F	195°F
13.	Stage 1 Zone 2 fan speed	S._.5.0	0 – 100%	50%
14.	Stage 2 time	_0.:0 0	* 0 min – 9h:59m	0
15.	Stage 2 Zone 1 temperature set point	1 0.0˙F	100°F – 250°F	100°F
16.	Stage 2 Zone 1 fan speed	S_. 5 0	0 – 100%	50%
17.	Stage 2 Zone 2 temperature set point	1 0.0˙F	100°F – 250°F	100°F
18.	Stage 2 Zone 2 fan speed	S_. 5 0	0 – 100%	50%
19.	Stage 3 time	_0:0.0	* 0 min – 9h:59m	0
20.	Stage 3 Zone 1 temperature set point	1 0 0.˙F	100°F – 250°F	100°F
21.	Stage 3 Zone 1 fan speed	S_ 5.0	0 – 100%	50%
22.	Stage 3 Zone 2 temperature set point	1 0 0.˙F	100°F – 250°F	100°F
23.	Stage 3 Zone 2 fan speed	S_ 5.0	0 – 100%	50%
24.	Stage 4 time	_0:0 0.	* 0 min – 9h:59m	0
25.	Stage 4 Zone 1 temperature set point	1 0 0˙F.	100°F – 250°F	100°F
26.	Stage 4 Zone 1 fan speed	S_ 5 0.	0 – 100%	50%
27.	Stage 4 Zone 2 temperature set point	1 0 0˙F.	100°F – 250°F	100°F
28.	Stage 4 Zone 2 fan speed	S_ 5 0	0 – 100%	50%

* The total time for stages 1 thru 4 is 9hr:59min. When entering a time, the max time for a stage will be limited by the sum. For example, if stage 1 is 5 hours, and stages 3 and 4 are 0; when entering time into stage 2, the time will top out at 4hr:59min, then go to 0.

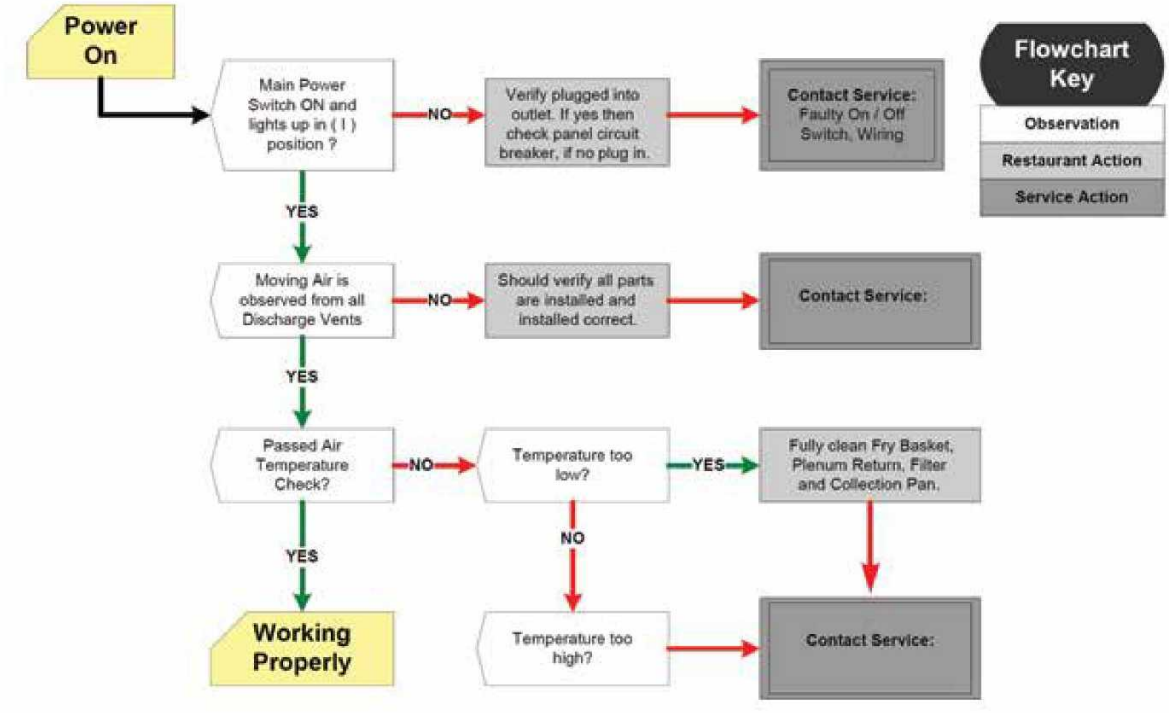
FHU TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Switches ON, No Display or Lights Both Zones	No Power to Unit	Check Supply Breaker
	Faulty Wiring	Repair Faulty Wiring
Switch ON, Switch Lit, No Display, One Zone	Faulty Power Relay	Replace Relay
	Faulty Wiring	Repair Faulty Wiring
	Faulty Power Switch	Replace Switch
	Crumb Tray not in Place	Insert Crumb Tray Fully
	Faulty Interlock Switch	Replace Interlock Switch
	Faulty Controller	Replace Controller
No Heat, Controller Calling for Heat, One Zone, Front or Rear	Faulty Heat Relay	Replace Relay
	Faulty Fan/Heater	Replace Fan/Heater
	Faulty Wiring	Repair Faulty Wiring
	Faulty Thermocouple	Replace Thermocouple
No Heat, Controller Calling for Heat, One Zone, Both Front and Rear	Faulty Controller	Replace Controller
No Blower, Controller Calling for Heat, One Zone, Front or Rear	Faulty Wiring	Repair Faulty Wiring
	Faulty Fan/Heater	Replace Fan/Heater
No Blower, Controller Calling for Heat, One Zone, Both Front and Rear	Faulty 24V PC Power Board	Replace 24V PC Power Board
	Faulty Wiring	Repair Faulty Wiring
	Faulty Controller	Replace Controller
Cooling Fan not Turning	Faulty Cooling Fan	Replace Cooling Fan
	Faulty Wiring	Repair Faulty Wiring
Temperature too High	Faulty Heat Relay	Replace Relay
	Faulty Controller	Replace Controller
	Faulty Thermocouple	Replace Thermocouple
Temperature too Low	Faulty Heat Relay	Replace Relay
	Faulty Controller	Replace Controller
	Faulty Thermocouple	Replace Thermocouple

FHU TROUBLESHOOTING GUIDE

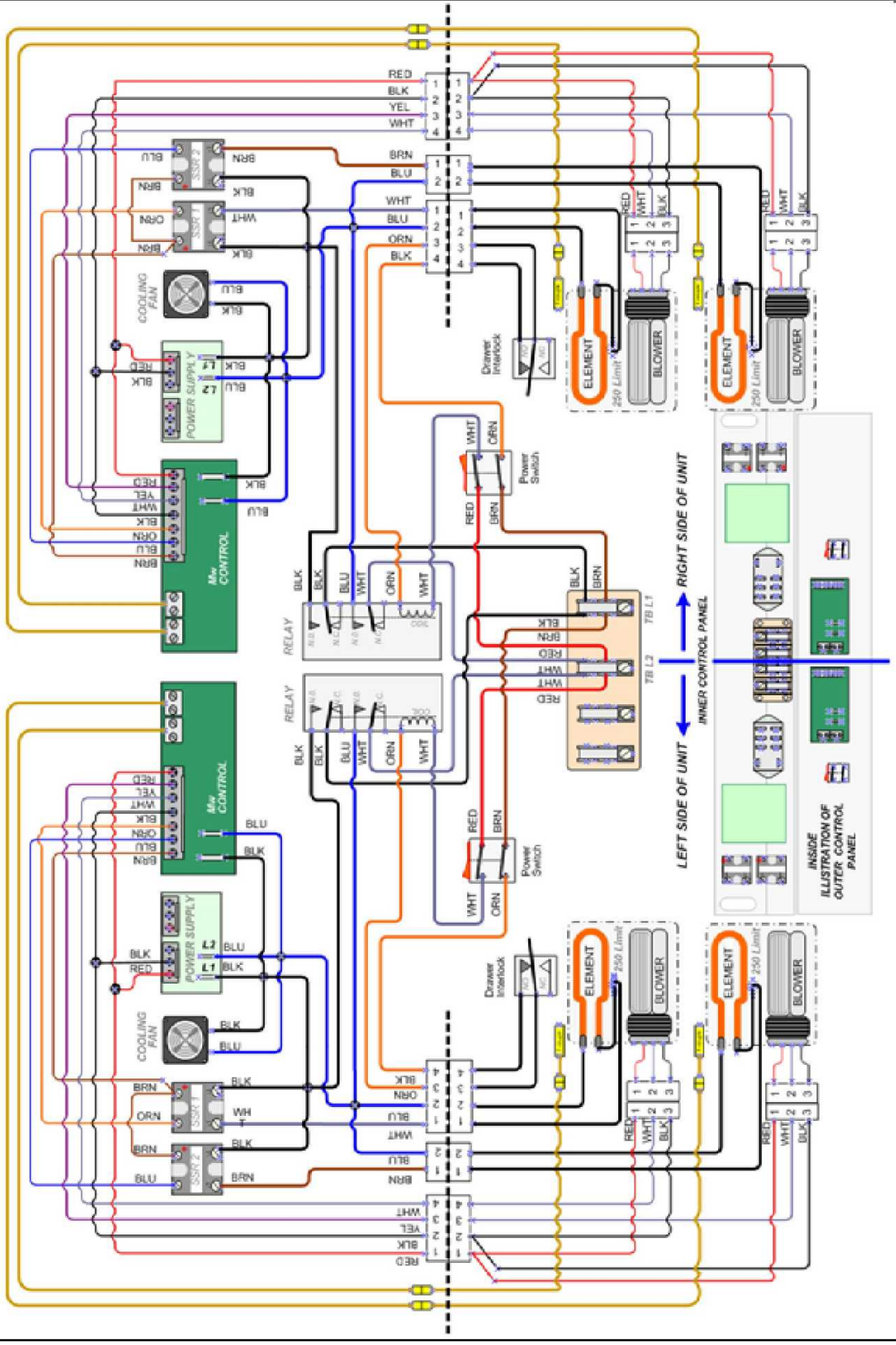


FHUAS TROUBLESHOOTING GUIDE

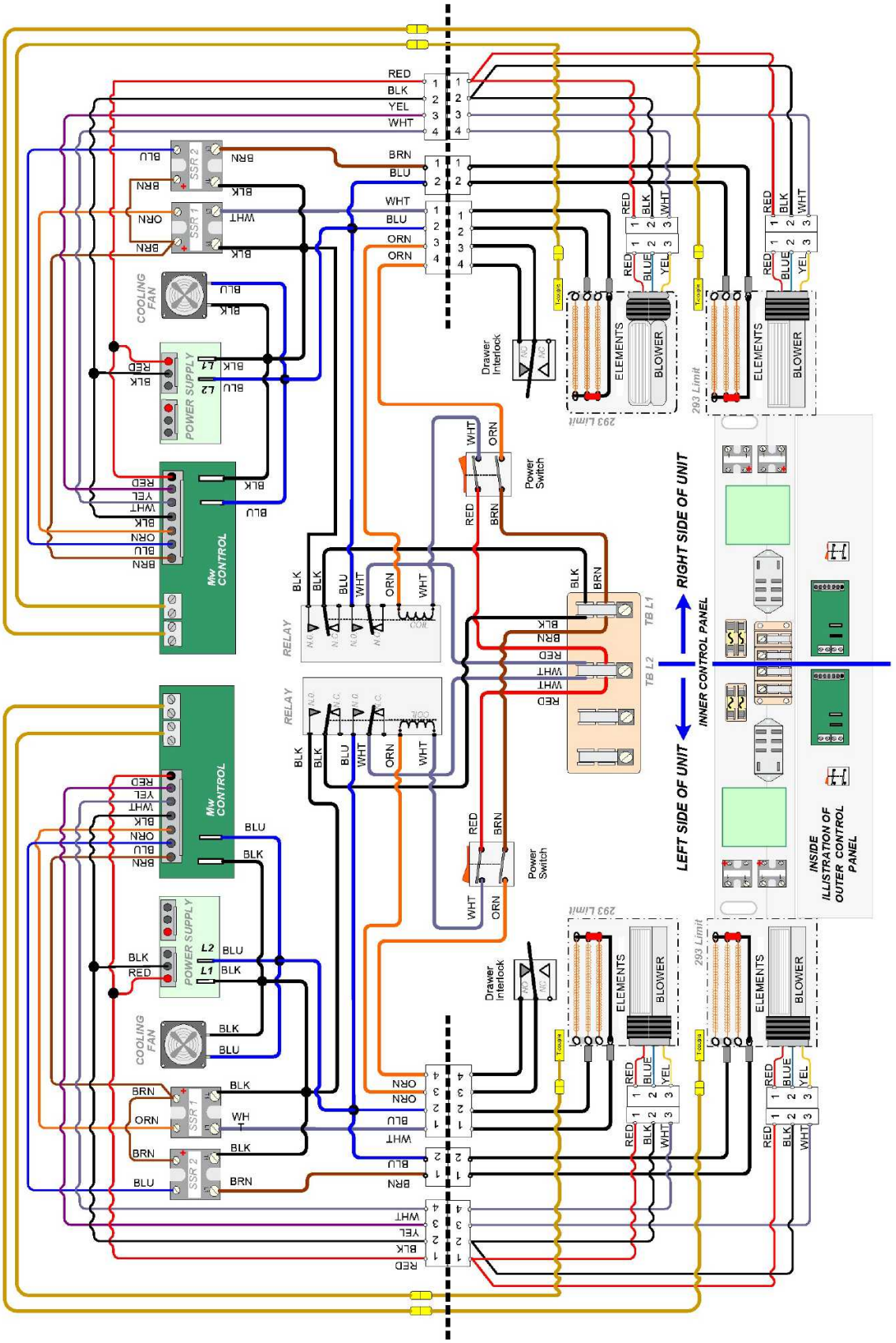


WIRING DIAGRAMS

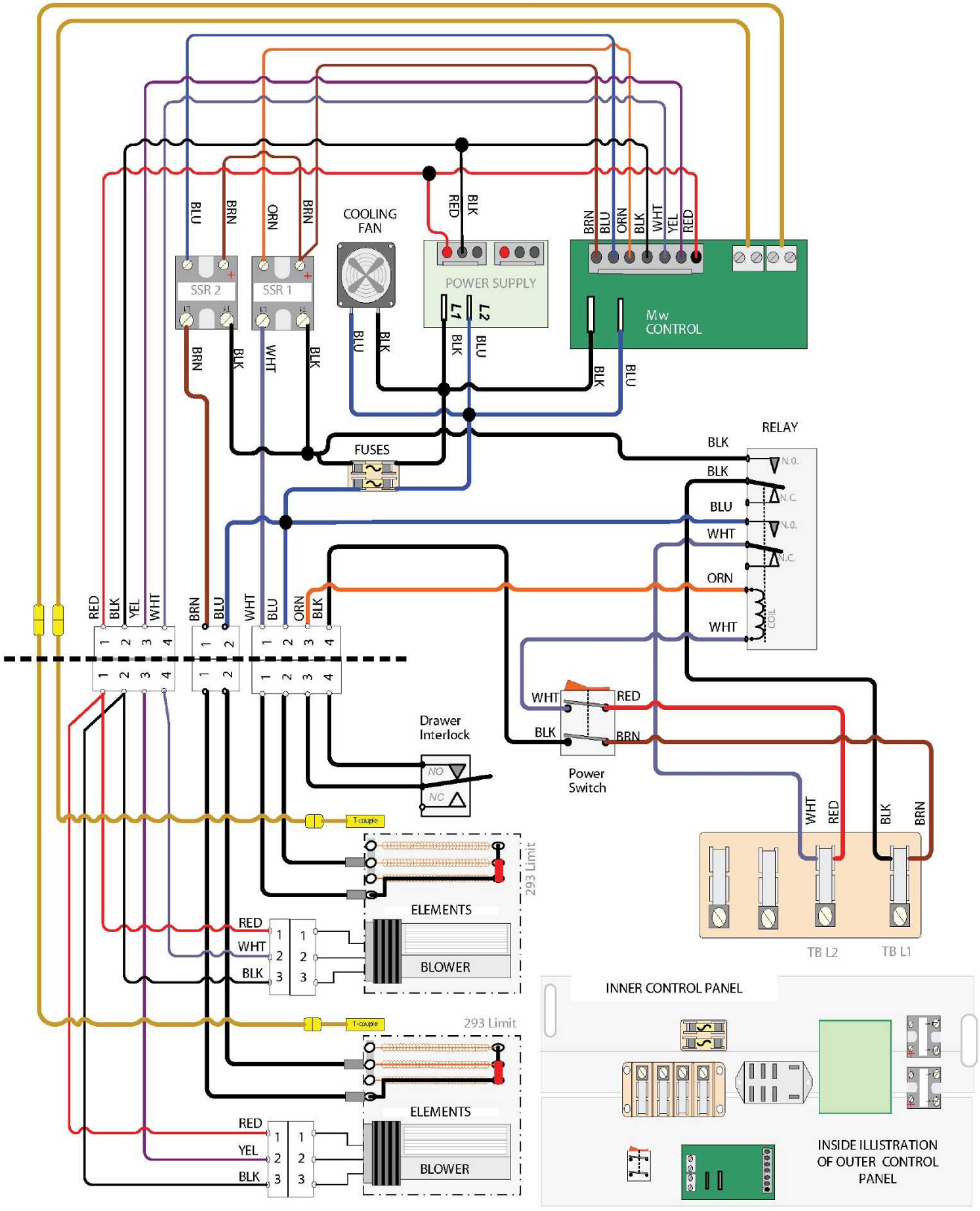
FHU2 WITH CALROD HEATERS (229818, Rev. G)



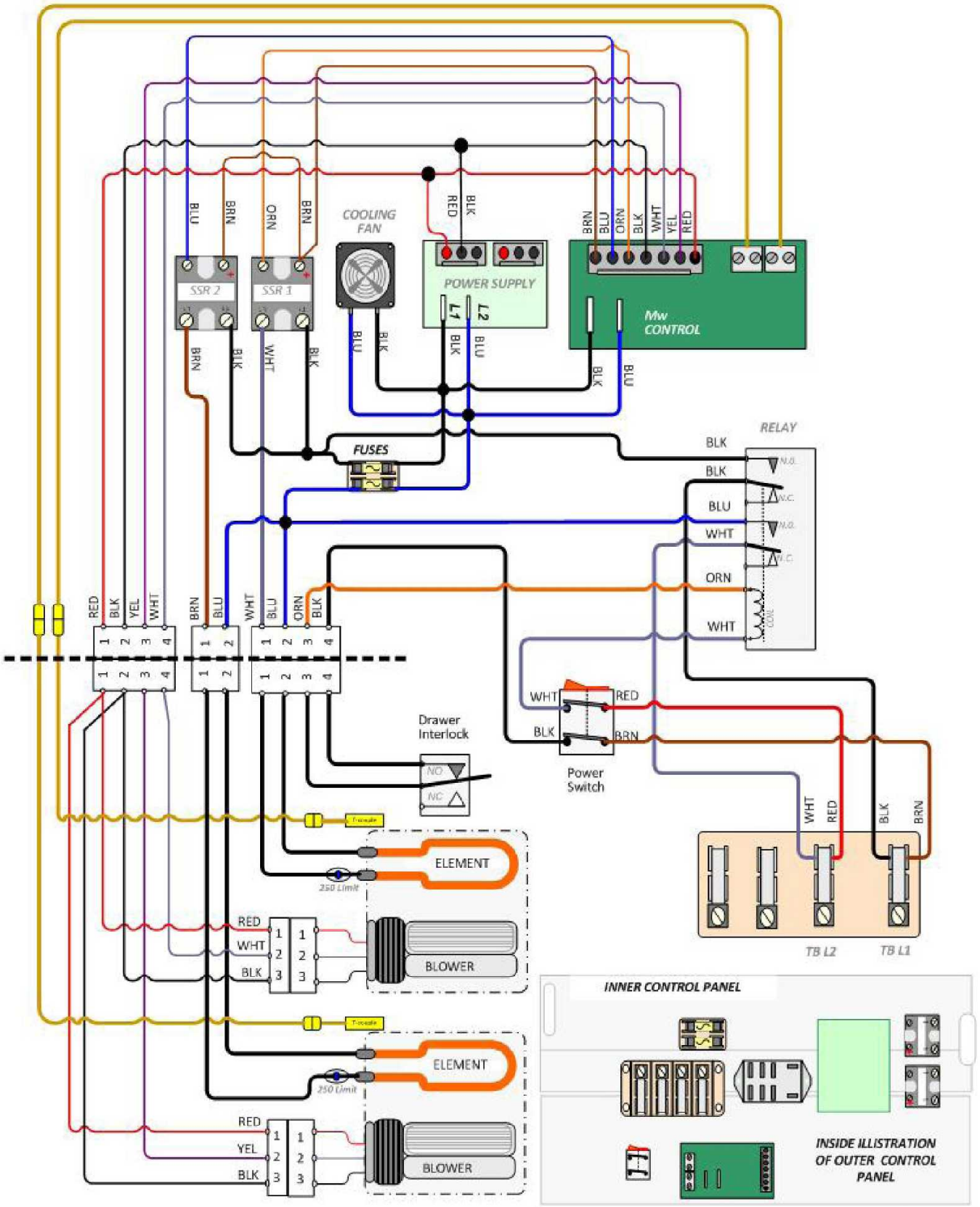
FHU2 WITH COIL HEATERS (229818, Rev. E)



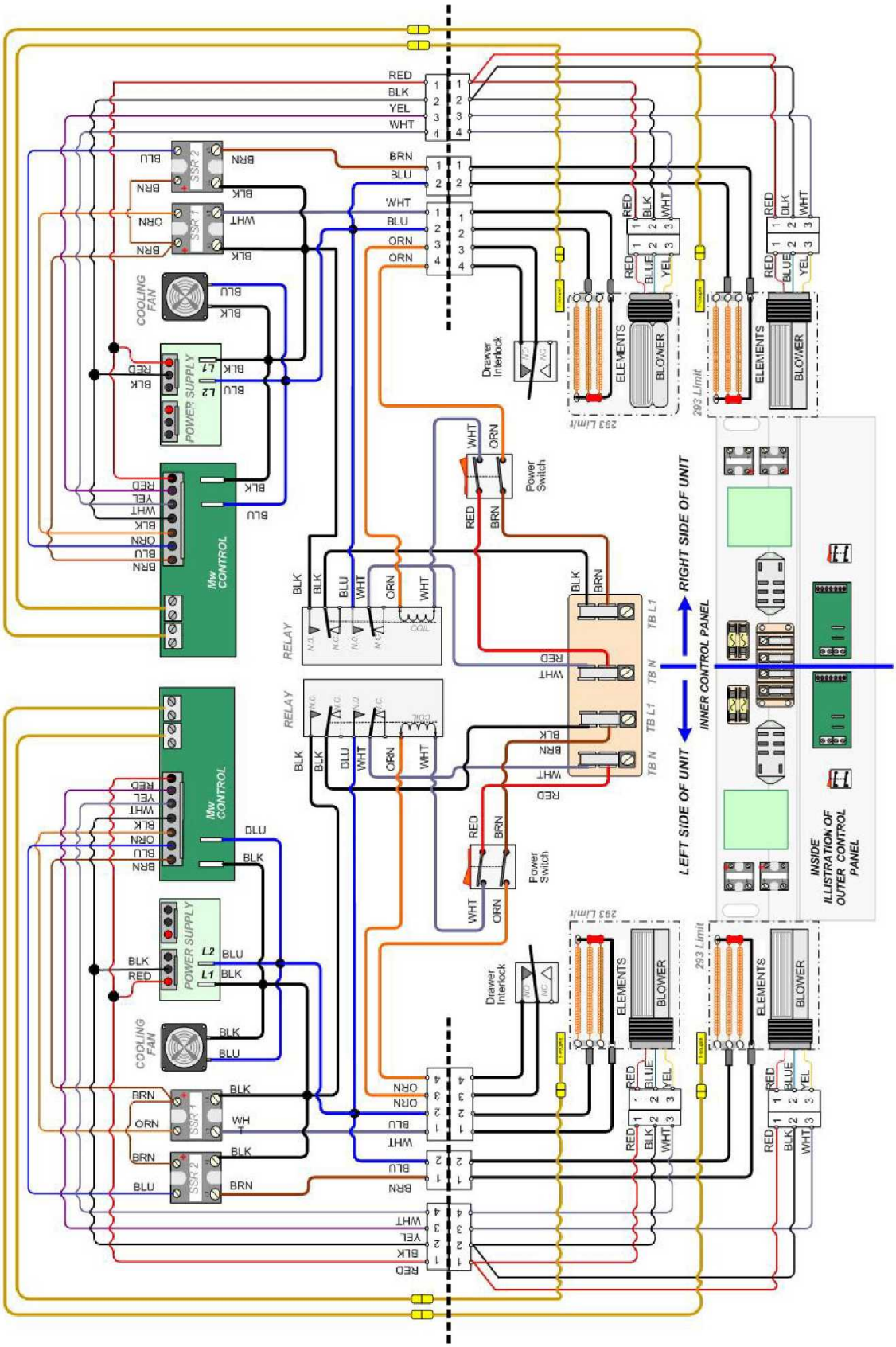
FHU1 WITH COIL HEATER (229817)



FHU1 WITH CALROD HEATER (229817, Rev. B)

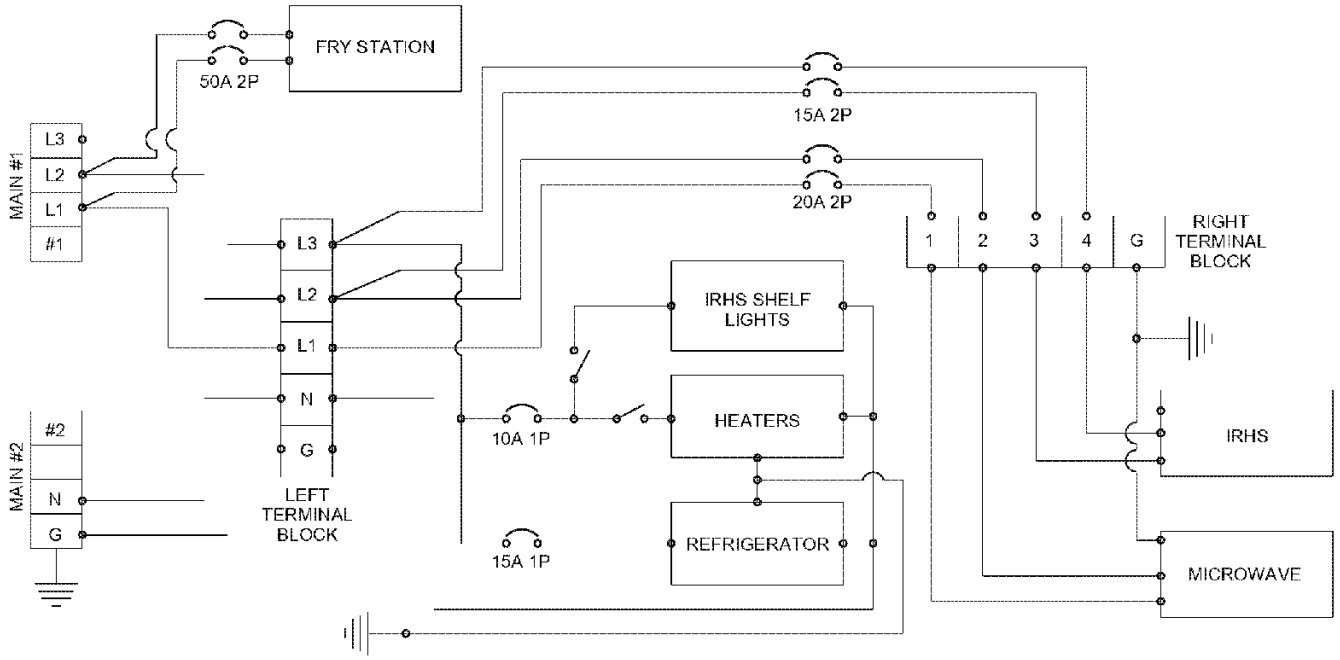


FHU2 WITH COIL HEATERS, FOR EMEA (229836)

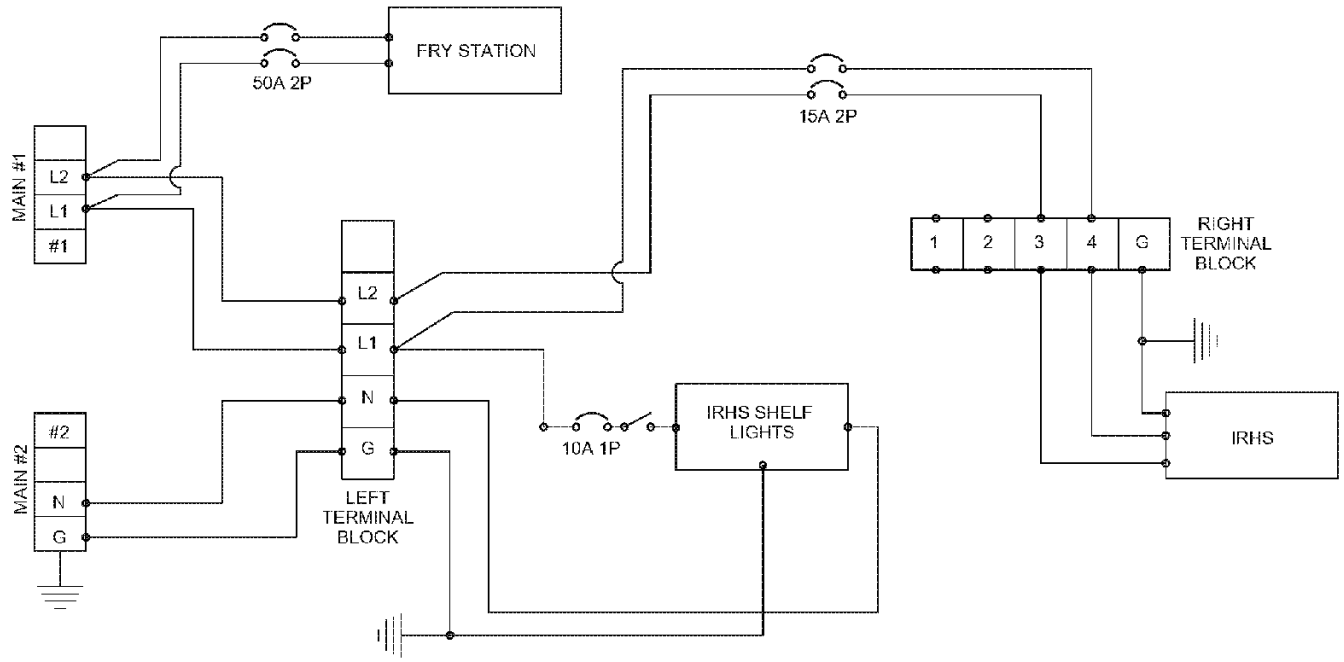


ELECTRICAL CHASE

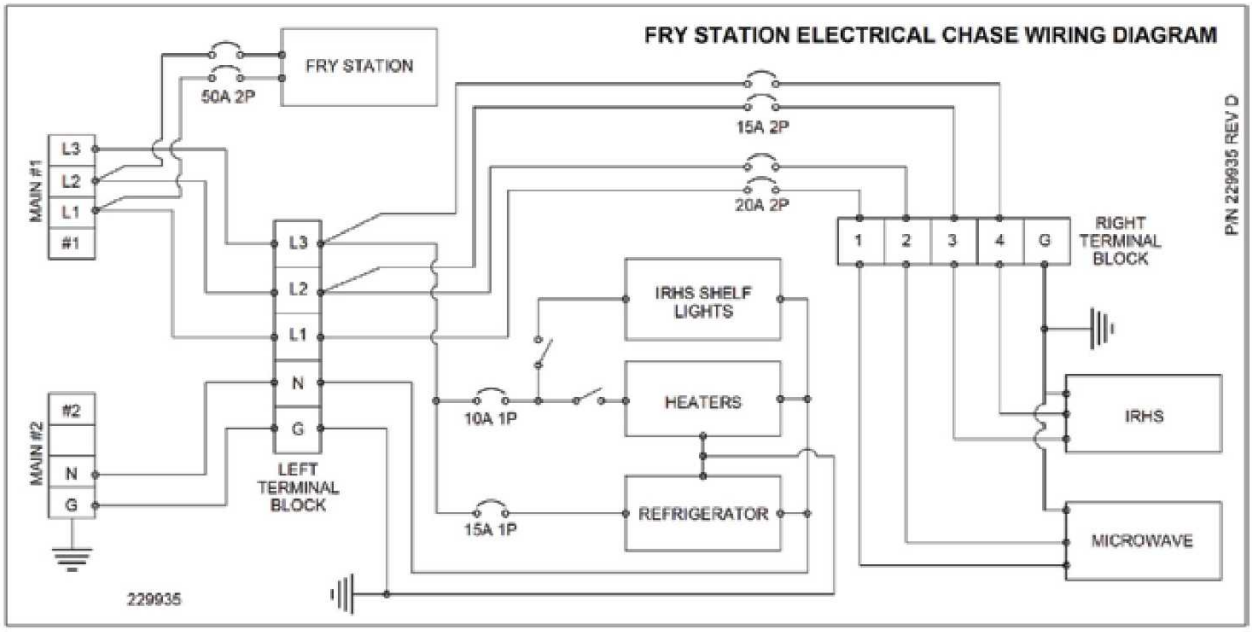
FHU2 ELECTRICAL CHASE, INLINE (229935, Rev. D)



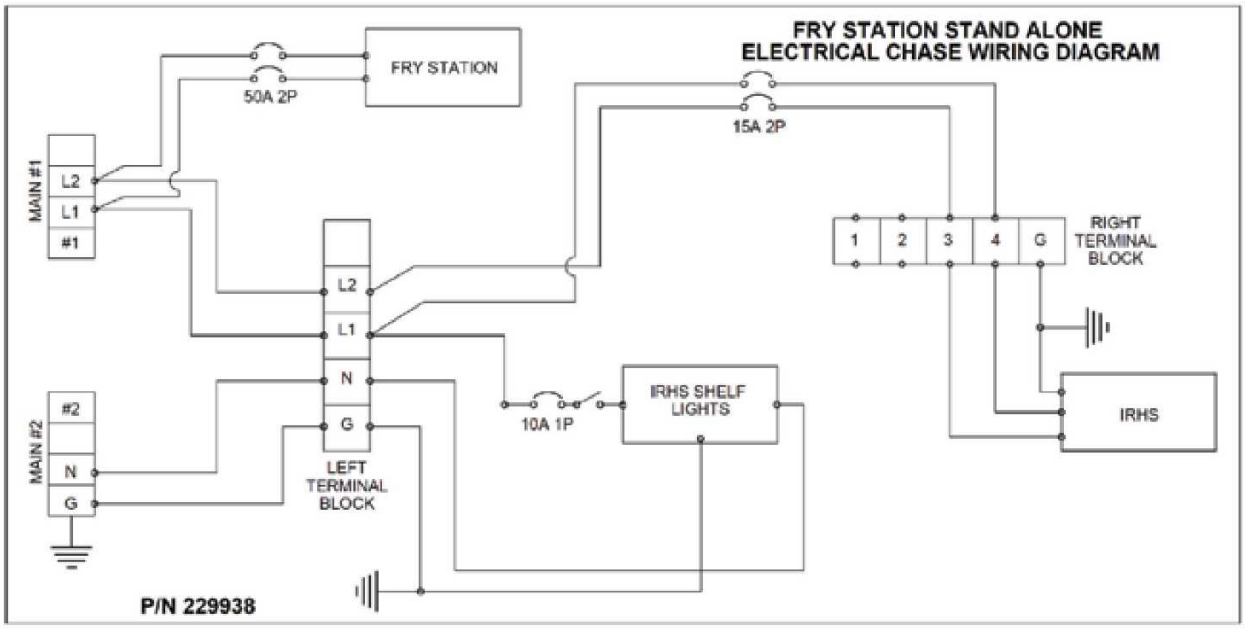
FHU2 ELECTRICAL CHASE, STANDALONE (229938, Rev. B)



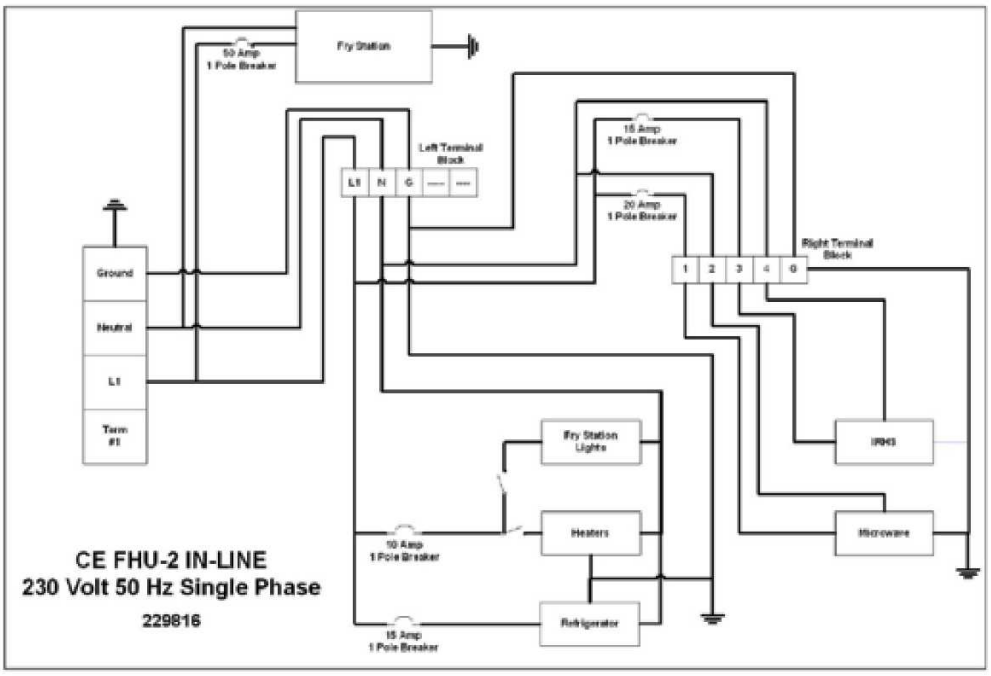
FHU2 Electrical Chase, Inline (229935)



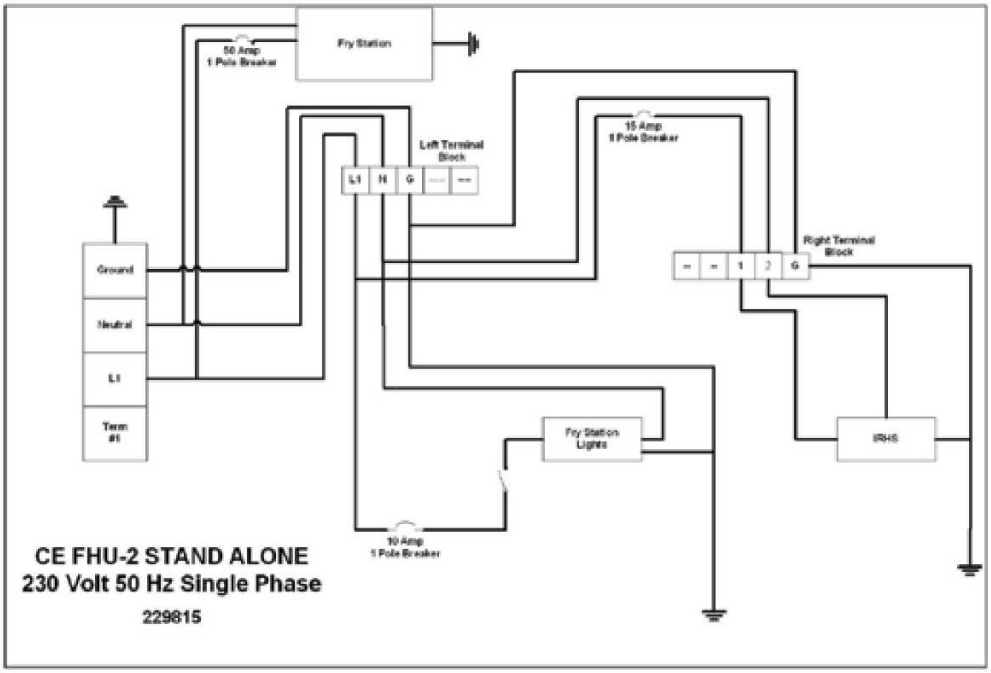
FHU2 Electrical Chase, Standalone (229938)



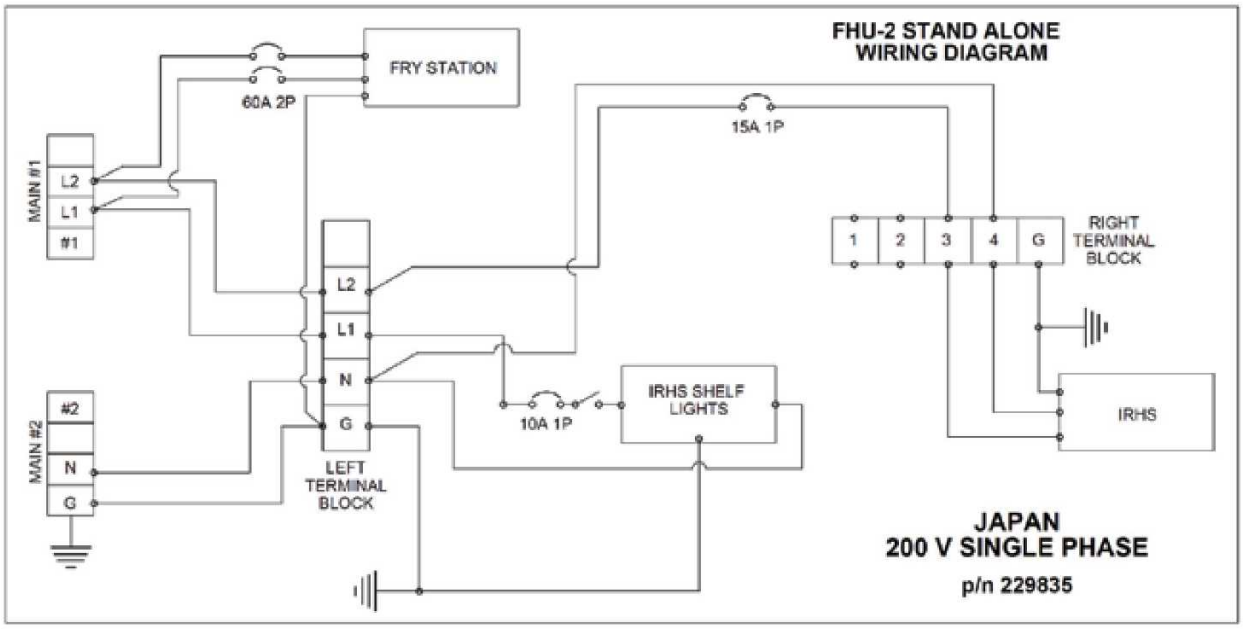
FHU2 (CE) Electrical Chase, Inline (229816)



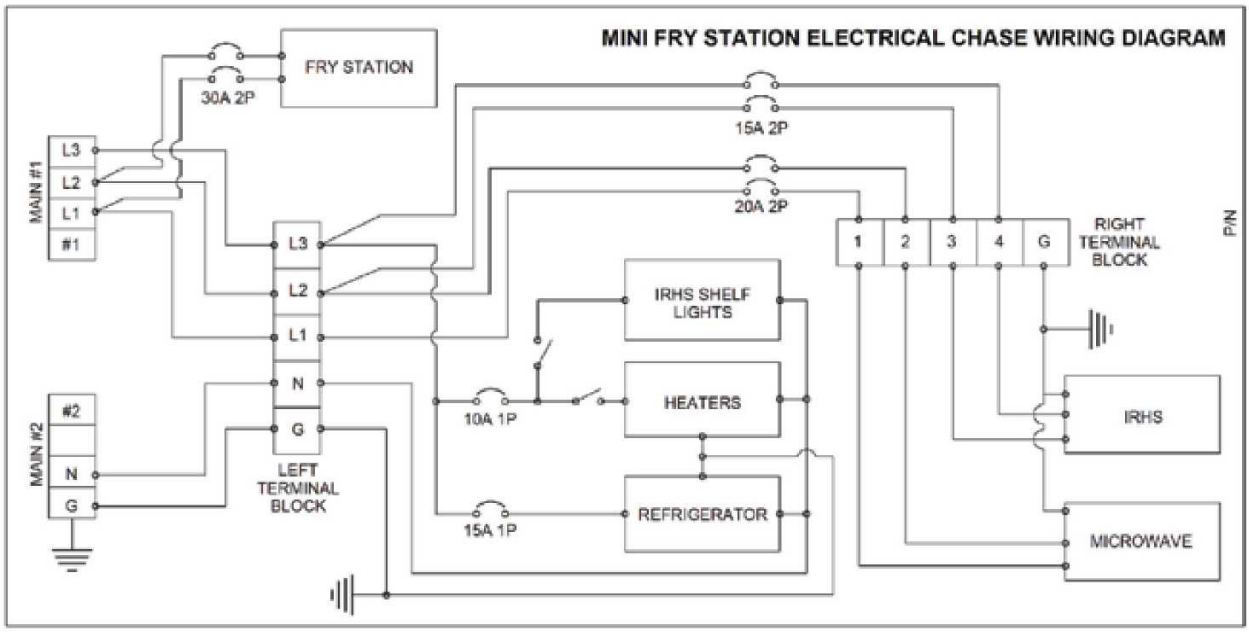
FHU2 (CE) Electrical Chase, Standalone (229815)



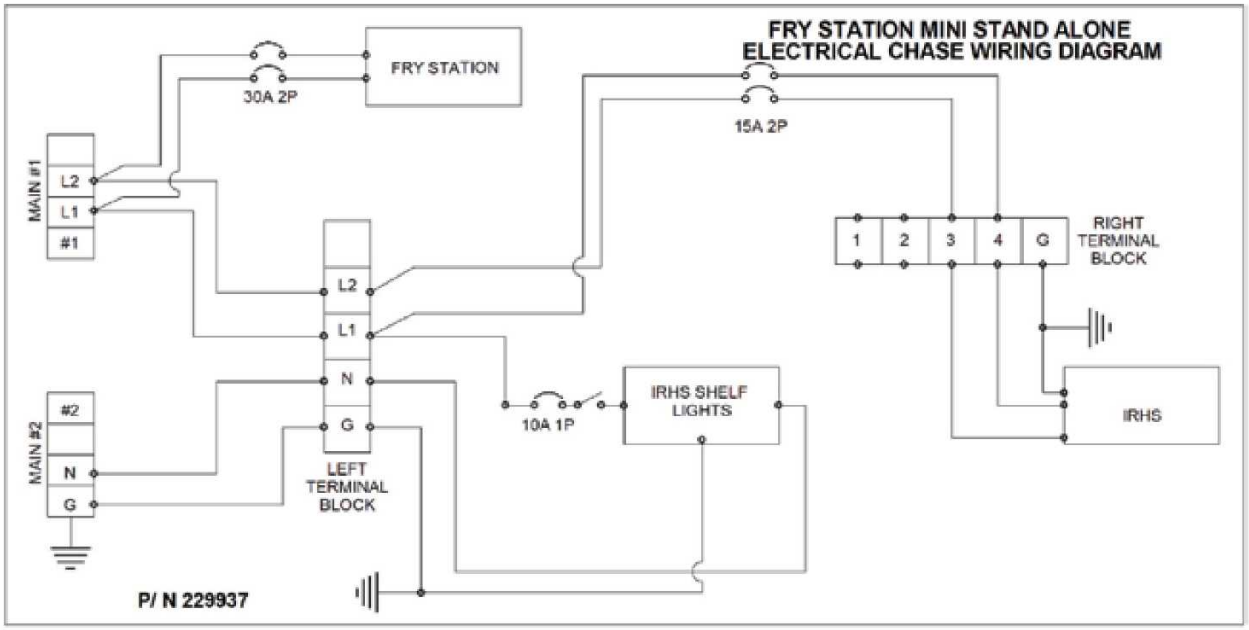
FHU2 (Japan) Electrical Chase, Standalone (229835)



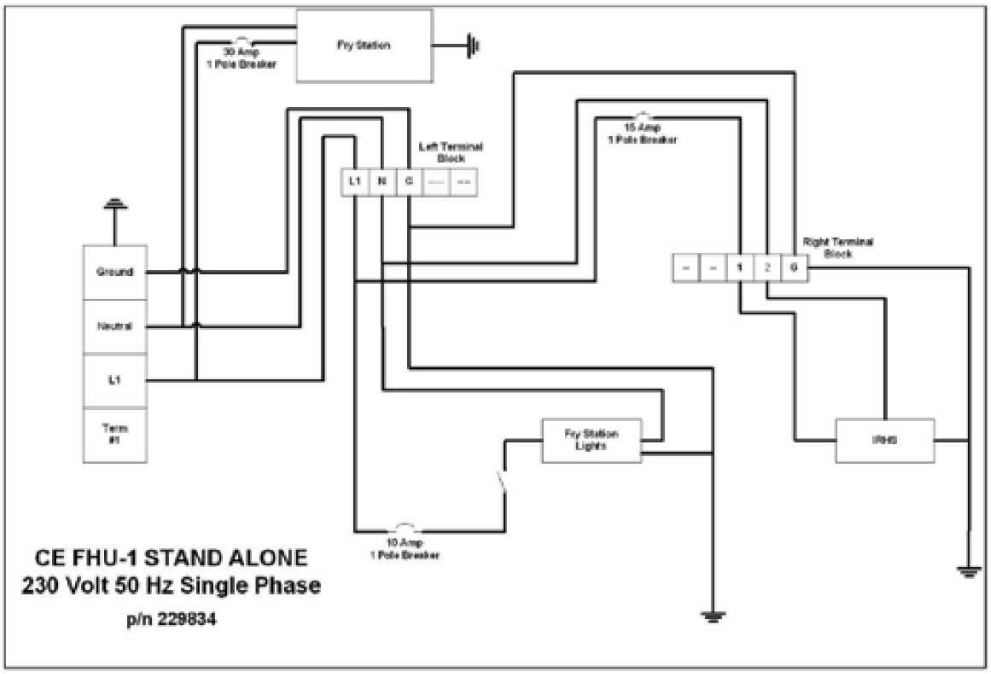
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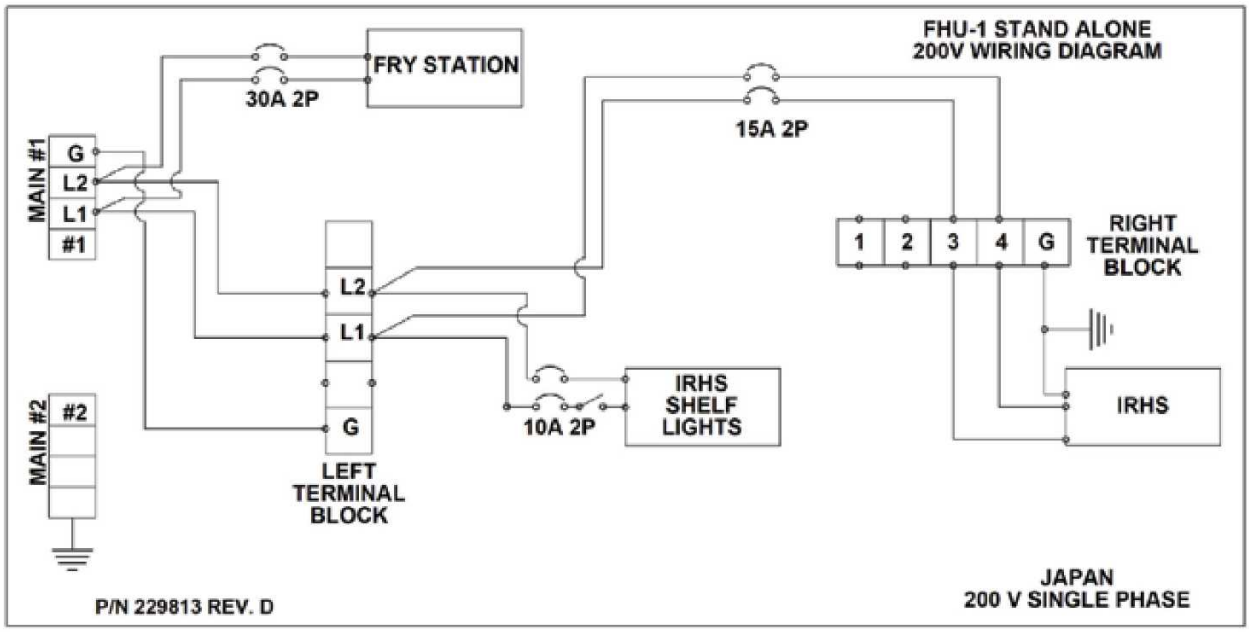
FHU1 Electrical Chase, Standalone (229937)



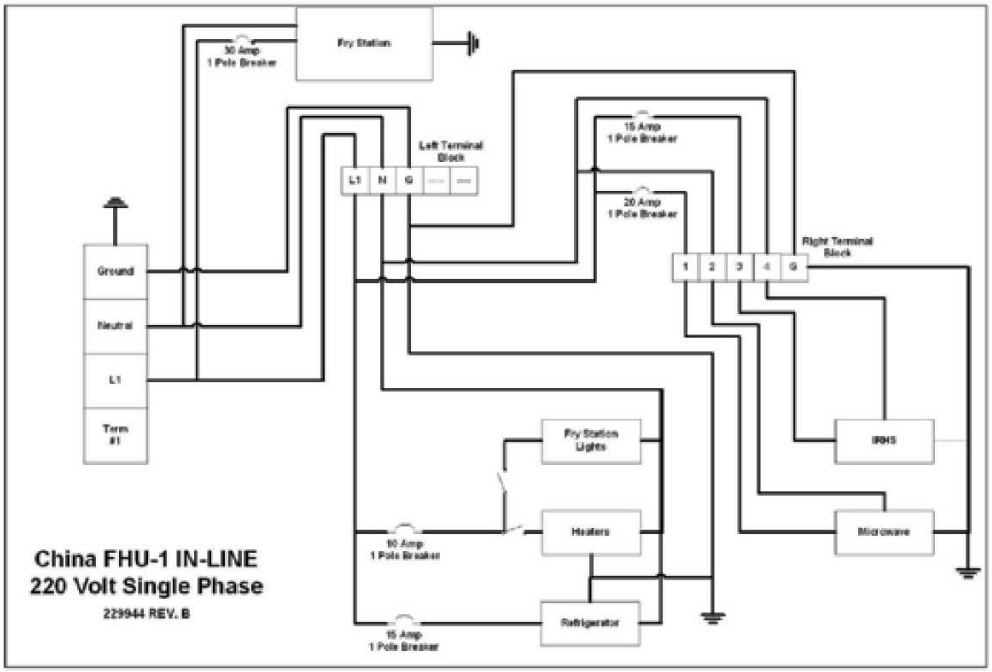
FHU1 (CE) Electrical Chase, Standalone (229834)



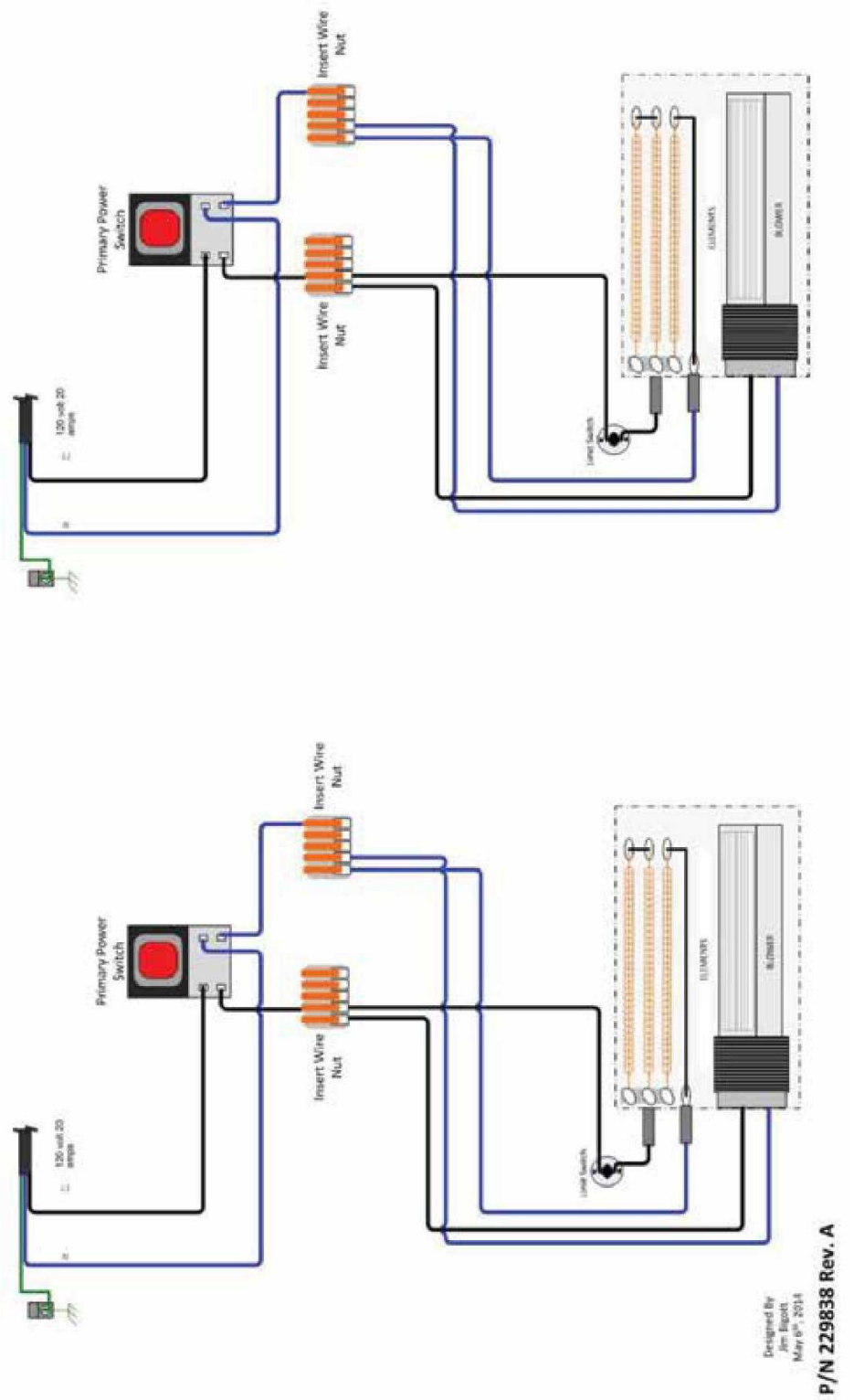
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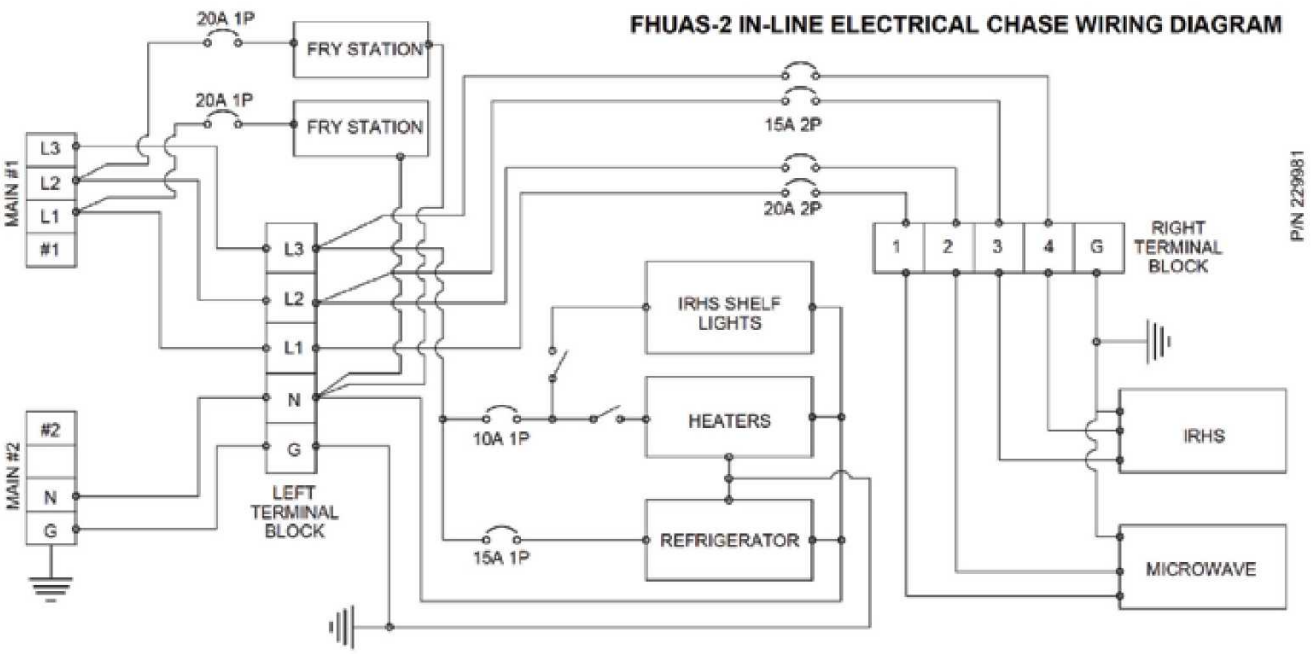
FHU1 (China) Electrical Chase, Inline (229944)



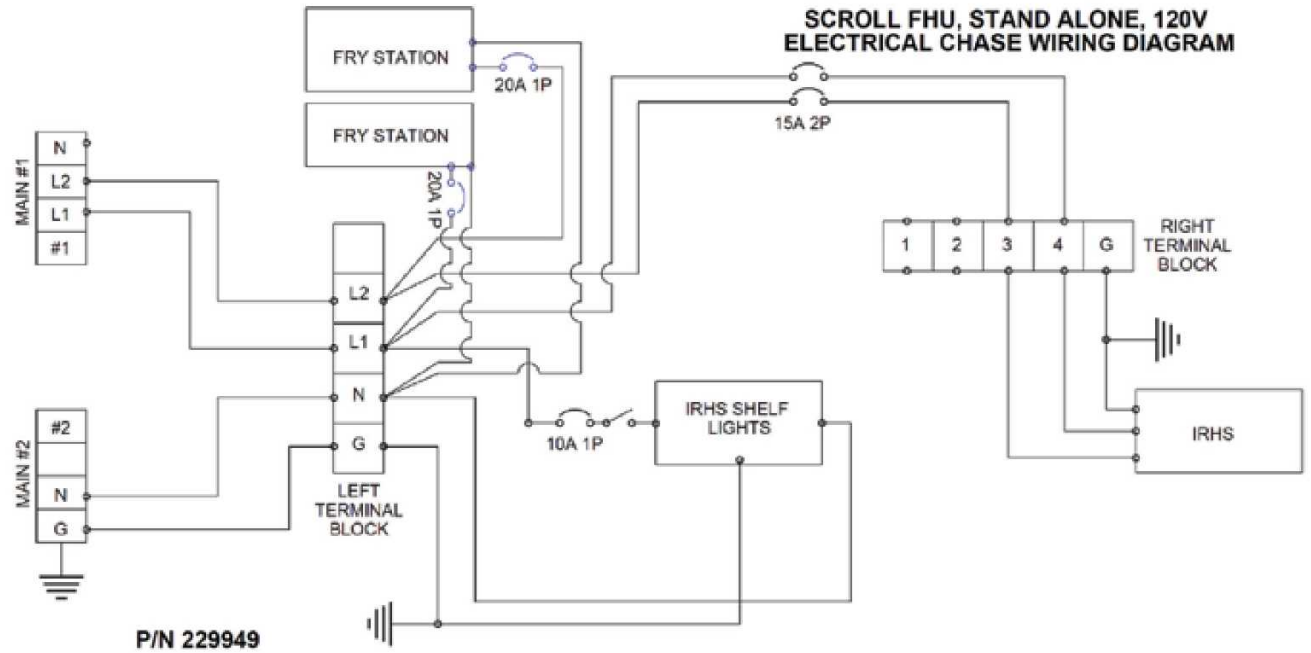
FHUAS (229838, Rev A)



FHUAS Electrical Chase, Inline (229981)



FHUAS Electrical Chase, Standalone (229949)



NOTES

NOTES

CUSTOMER ASSISTANCE

To aid in reporting this unit in case of loss or theft, please record below the model number and serial number located on the unit. We also suggest you record all the information listed and retain for future reference.

MODEL NUMBER:	SERIAL NUMBER:
DATE OF PURCHASE:	
DEALER:	TELEPHONE:
SERVICER:	TELEPHONE:

FOR WARRANTY, PARTS & SERVICE:

DUKE CORPORATE, CANADA, LATIN AMERICA

2305 N. Broadway
St. Louis, MO 63102
Phone: 314-231-1130
Toll Free: 800-735-3853
Fax: 314-231-2460
service-dispatch@dukemfg.com

DUKE ASIA PACIFIC

Duke Manufacturing
No.3 Building
Lane 28, Yu Lv Road
Malu Town, Jiading District
Shanghai 201801, China
Phone: +86 21 59153525 / 59153526
Fax: +86 21 33600628
service.asiapac@dukemfg.com

DUKE EMEA - EUROPE, MIDDLE EAST, AFRICA, RUSSIA

Duke Manufacturing CR, s.r.o.
Na Dlouhem 86
Jazlovice, Ricany
Building number DC 4 on the
ProLogis Park Prague D1 West
Prague 251 01
Czech Republic
Phone: +420 323 608 193
Fax: +420 323 608 144
service.emea@dukemfg.com

DUKE EMEA – UK, IRELAND

Phone: +44 (0) 1395 234140
Fax: +44 (0) 1395 234154
service.emea@dukemfg.com

TO ACCESS INTERNET: www.dukemfg.com

Please provide the following information when you write or call: model number, serial number, date of purchase, your complete mailing address (including zip code), and description of the problem.

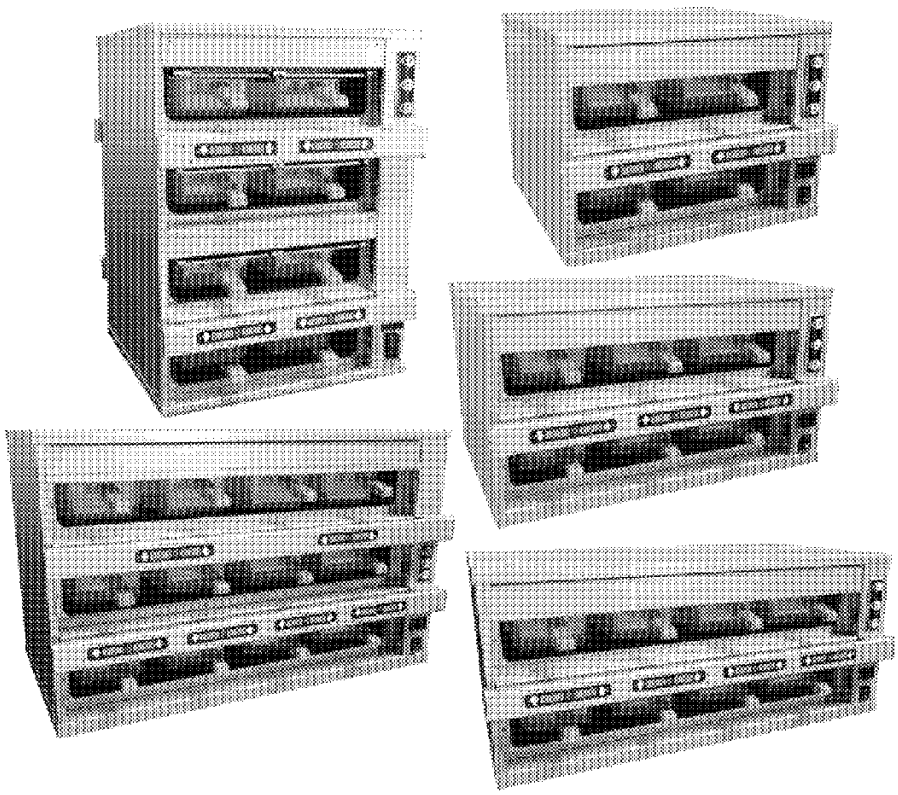

Duke
Your Solutions Partner

Your Solutions Partner

Service Manual

INFRARED HEATSINK™ HOLDING UNIT

Includes Standalone, Kitchen Minder and VISOR models



MODELS
IRHS22
IRHS23
IRHS24
IRHS34
IRHS42

Please read this manual completely before attempting to install, operate or service this equipment.

This document is prepared for trained Duke service technicians. It is not to be used by anyone not properly qualified to perform these procedures.

This Service Manual is not all encompassing. If you have not been trained on servicing this product, be sure to read the manual completely before attempting servicing. Be sure all necessary tools, test equipment, and skills are available. Those procedures for which you do not have the proper skills and test equipment must be performed only by a qualified Duke trained service technician.

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Duke Manufacturing Co.

2305 North Broadway • St. Louis, MO 63102-1405
Phone: 314-231-1130 • Toll Free: 1-800-735-3853 • Fax: 314-231-5074
service-dispatch@dukemfg.com • www.dukemfg.com

IMPORTANT WARNING AND SAFETY INFORMATION

READ THIS MANUAL THOROUGHLY BEFORE OPERATING, INSTALLING OR PERFORMING MAINTENANCE ON THE EQUIPMENT.

⚠ WARNING READ THIS MANUAL THOROUGHLY BEFORE OPERATING, INSTALLING OR PERFORMING MAINTENANCE ON THE EQUIPMENT

⚠ WARNING FAILURE TO FOLLOW INSTRUCTIONS IN THIS MANUAL CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.

⚠ WARNING DO NOT USE OR STORE GASOLINE OR OTHER FLAMMABLE VAPORS OR LIQUIDS IN THE VICINITY OF THIS OR ANY OTHER APPLIANCE.

⚠ WARNING DO NOT OPERATE THIS EQUIPMENT WITHOUT PROPERLY PLACING AND SECURING ALL COVER AND ACCESS PANELS.

⚠ WARNING IMPROPER INSTALLATION, ADJUSTMENT, ALTERATION, SERVICE OR MAINTENANCE CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH. READ THE INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS THOROUGHLY BEFORE INSTALLING THIS EQUIPMENT.

FOR YOUR SAFETY

Electricity and water do not mix. Unplug the unit before cleaning. If repairs are required, use a qualified service agent. While repairs are being made, be sure the unit is not plugged in. Do not store highly combustible substances on or near the unit. Be sure the compressor compartment has adequate ventilation.

CAUTION

Observe the following:

- Provide and maintain adequate minimum clearances from all walls and combustible materials.
- Provide and maintain adequate clearance for air openings.
- Keep the equipment area free and clear of combustible material.
- Operate equipment only on the type of electricity indicated on the specification plate.
- Retain this manual for future reference.

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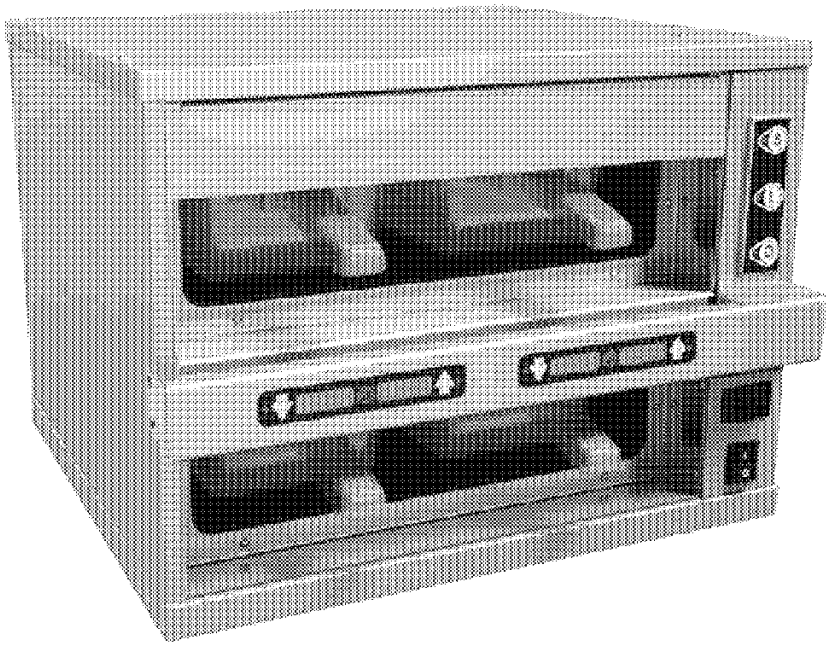
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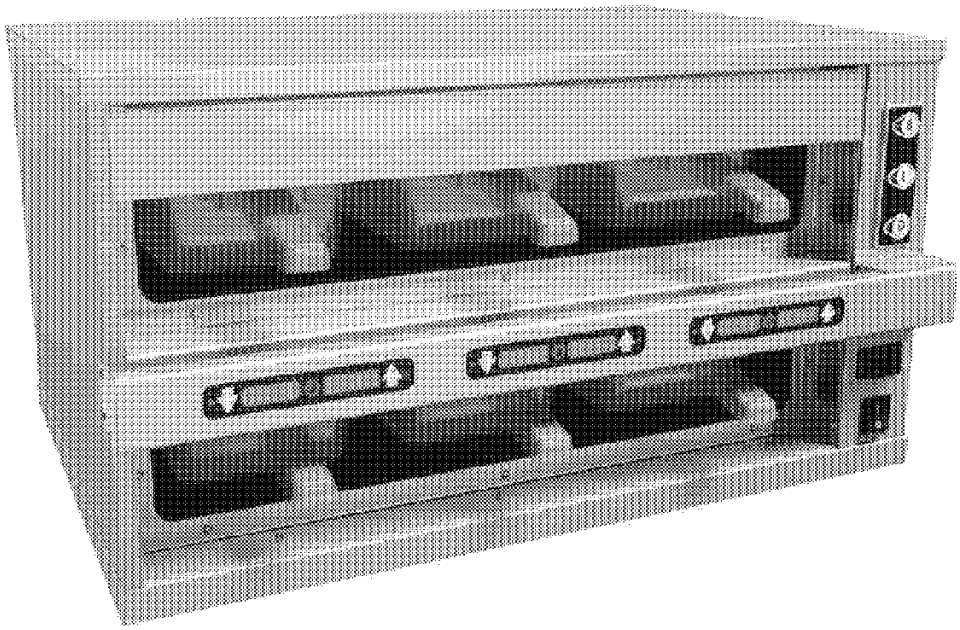
SPECIFICATIONS

IRHS22



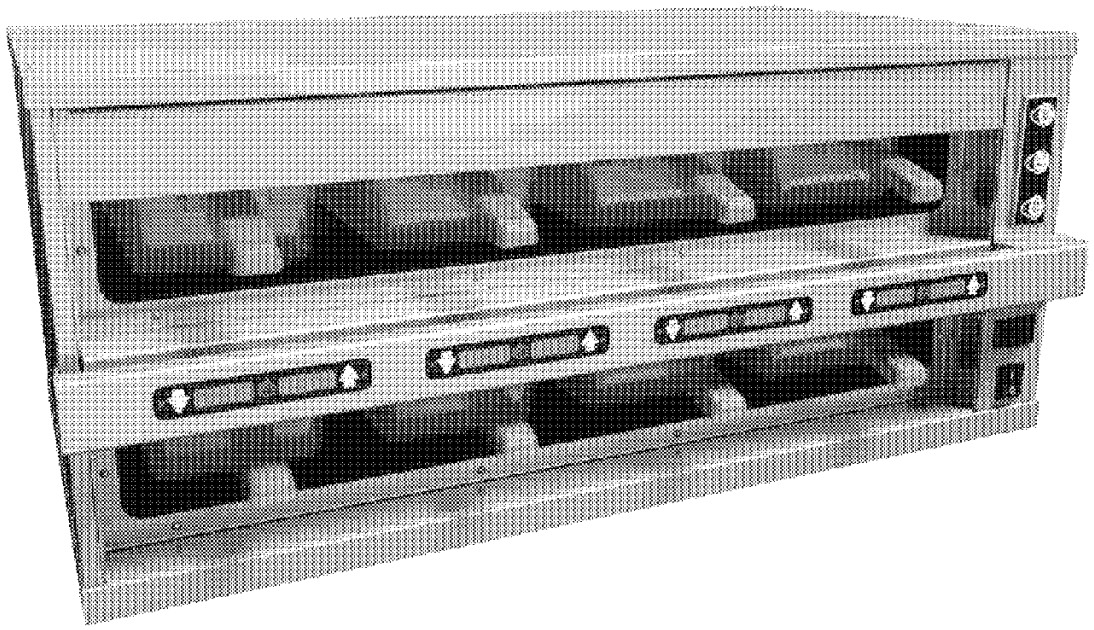
			Before Serial# 10140480 (10/1/14)			*As of Serial# 10140480*		
		Shipping Weight	125 lbs / 56.7 kg			110 lbs / 49.9 kg		
Model	**Electrical**	**Plug**	**H**	**W**	**D**	**H**	**W**	**D**
IRHS22-208	208V ~ 12 A, 50/60 Hz	NEMA 6-15P	14.4 in / 36.6 cm	19.3 in / 49.0 cm	20.1 in / 51.1 cm	13.3 in / 33.8 cm	19.3 in / 49.0 cm	20.1 in / 51.1 cm
IRHS22-230	230V ~ 12 A, 50/60 Hz	SHUKO, 16 AMP (*as of 11/3/14*) IEC, 16 AMP						
IRHS22-240	240V ~ 12 A, 50/60 Hz	NEMA 6-15P						

IRHS23



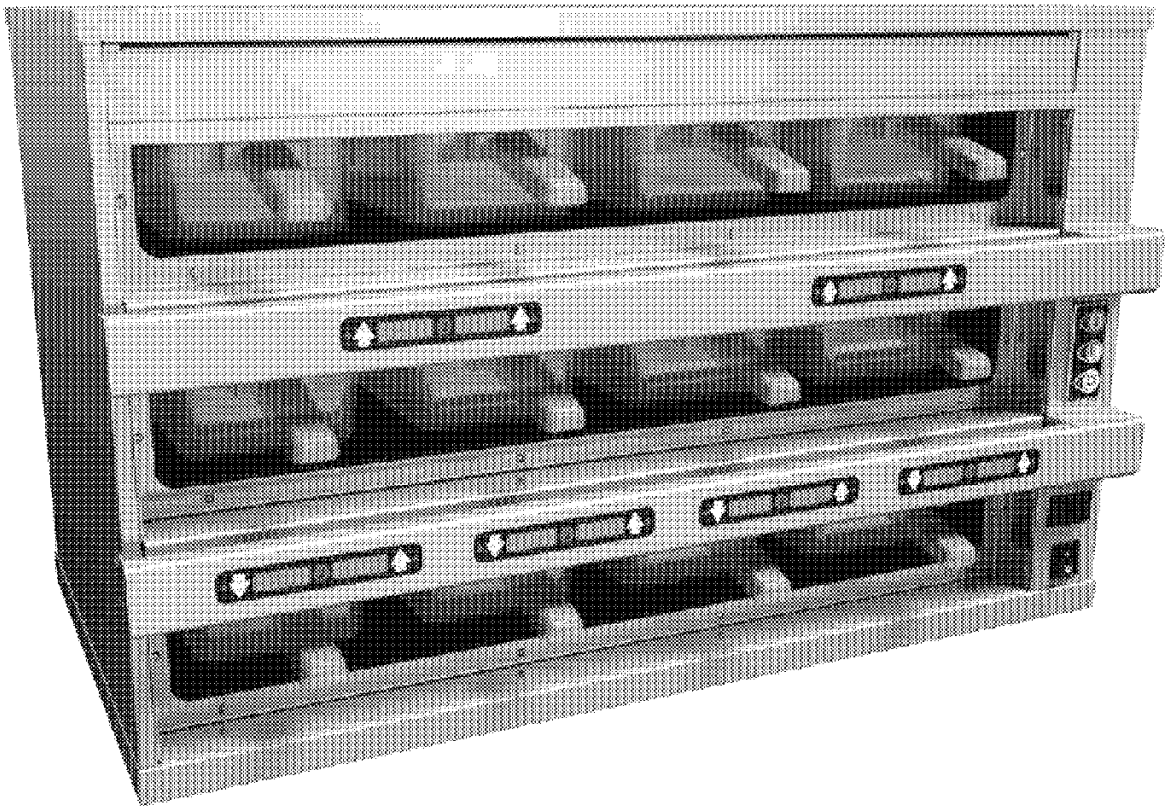
			Up to Serial# 101413198 (10/20/14)			*After SN# 101413198*		
		Shipping Weight	160 lbs / 72.6 kg			143 lbs / 64.9 kg		
Model	**Electrical**	**Plug**	**H**	**W**	**D**	**H**	**W**	**D**
IRHS23-208	208V ~ 12 A, 50/60 Hz	NEMA 6-15P	14.4 in / 36.6 cm	26.4 in / 67.1 cm	20.1 in / 51.1 cm	13.3 in / 33.8 cm	26.4 in / 67.1 cm	20.1 in / 51.1 cm
IRHS23-230	230V ~ 12 A, 50/60 Hz	SHUKO, 16 AMP (*as of 11/3/14*) IEC, 16 AMP						
IRHS23-240	240V ~ 12 A, 50/60 Hz	NEMA 6-15P						

IRHS24



			Before Serial# 10140545 (10/3/14)			*As of Serial# 10140545*		
		Shipping Weight	195 lbs / 88.4 kg			181 lbs / 82.1 kg		
Model	**Electrical**	**Plug**	**H**	**W**	**D**	**H**	**W**	**D**
IRHS24-208	208V ~ 12 A, 50/60 Hz	NEMA 6-15P	14.4 in / 36.6 cm	33.4 in / 84.8 cm	20.1 in / 51.1 cm	13.3 in / 33.8 cm	33.4 in / 84.8 cm	20.1 in / 51.1 cm
IRHS24-230	230V ~ 12 A, 50/60 Hz	SHUKO, 16 AMP / (*as of 11/3/14*) IEC, 16 AMP						
IRHS24-240	240V ~ 12 A, 50/60 Hz	NEMA 6-15P						

IRHS34



			Before Serial# 10140032 (10/1/14)			*As of Serial# 10140032*		
		Shipping Weight	275 lbs / 124.7 kg			243 lbs / 110.2 kg		
Model	**Electrical**	**Plug**	**H**	**W**	**D**	**H**	**W**	**D**
IRHS34-208	208V ~ 16 A, 50/60 Hz	NEMA 6-20P	20.9 in / 53.1 cm	33.4 in / 84.8 cm	20.1 in / 51.1 cm	19.3 in / 49.0 cm	33.4 in / 84.8 cm	20.1 in / 51.1 cm
IRHS34-230	230V ~ 16 A, 50/60 Hz	SHUKO, 16 AMP (*as of 11/3/14*) IEC, 16 AMP						
IRHS34-240	240V ~ 16 A, 50/60 Hz	NEMA 6-20P						

IRHS42



		Shipping Weight	187 lbs / 84.8 kg		
Model	**Electrical**	**Plug**	**H**	**W**	**D**
IRHS42-208	208V ~ 12 A, 50/60 Hz	NEMA 6-15P	25.3 in / 64.3 cm	19.3 in / 49.0 cm	20.1 in / 51.1 cm
IRHS42-230	230V ~ 12 A, 50/60 Hz	SHUKO, 16 AMP (*as of 11/3/14*) IEC, 16 AMP			
IRHS42-240	240V ~ 12 A, 50/60 Hz	NEMA 6-15P			

REMOVAL AND REPLACEMENT OF PARTS

EQUIPMENT USED IN THESE INSTRUCTIONS

- Phillips screwdriver
- #1 precision screwdriver
- Flat-head screwdriver
- Needle-nose pliers
- 11/16" open-end wrench
- 11/32" nut driver or socket
- 1/4" nut driver or socket
- Tie wraps
- ESD Wrist Strap
- Aluminum tape
- Ohmmeter
- Heat transfer compound
- Clean gloves/cloths/towels

ELECTRICAL LOCKOUT/TAGOUT PROCEDURE

WARNING

BEFORE PERFORMING ANY SERVICE THAT INVOLVES ELECTRICAL CONNECTION OR DISCONNECTION AND/OR EXPOSURE TO ELECTRICAL COMPONENTS, ALWAYS FOLLOW THE ELECTRICAL LOCKOUT/TAGOUT PROCEDURE. DISCONNECT ALL CIRCUITS. FAILURE TO COMPLY CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.

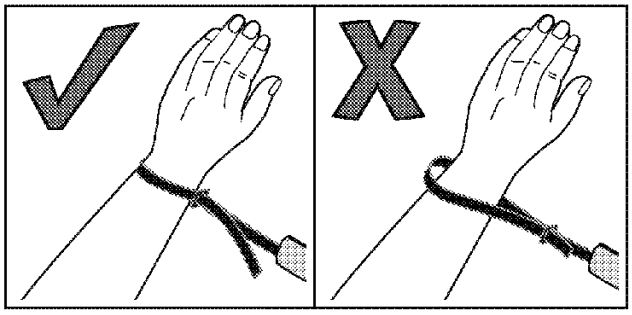
The Electrical LOCKOUT/TAGOUT Procedure is used to protect personnel working on an electrical appliance. Before performing any maintenance or service that requires exposure to electrical components, follow these steps:

1. In electrical box, place appliance circuit breaker into OFF position.
2. Place a lock or other device on electrical box cover to prevent someone from placing circuit breaker ON.
3. Place a tag on electrical box cover to indicate that appliance has been disconnected for service and power should not be restored until tag is removed by maintenance personnel.
4. Disconnect appliance power cord from electrical outlet.
5. Place a tag on the cord to indicate that unit has been disconnected for service and power should not be restored until tag is removed.

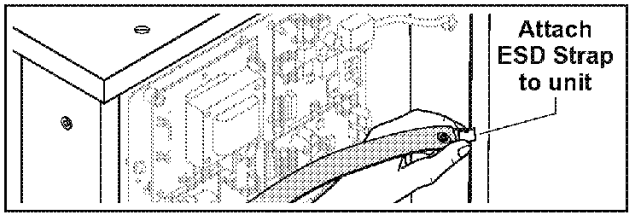
ESD WRIST STRAP

Electrostatic Discharge (ESD) is one of the biggest dangers to components in electronic devices. An ESD wrist strap allows any accumulated static charge to disperse safely through its cable, rather than through static-sensitive components such as unit computer-related components.

1. Place the ESD wrist strap around your wrist. The wrist strap should be next to your skin, so it needs to be placed under any clothes.
2. Tighten the wrist strap so that the attached metal plate maintains good contact with your skin. Do not over tighten as the wrist strap should not be uncomfortable.



3. Connect the cable to the wrist strap if it is disconnected. The cable should be securely clipped in place to maintain a good connection.
4. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
5. Connect the alligator clip on the other end of the cable to a metal surface on the unit. This creates a path through which any built-up static charge can safely flow without causing any damage. A built-in high value resistor ensures the charge leaks away in a controlled manner, and protects the user.



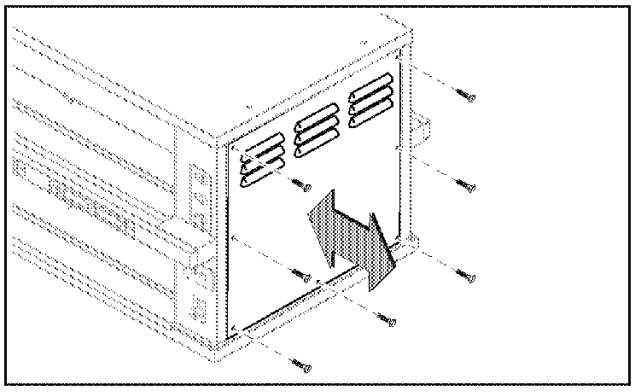
DECK ASSEMBLY COMPONENTS

MENU BARS

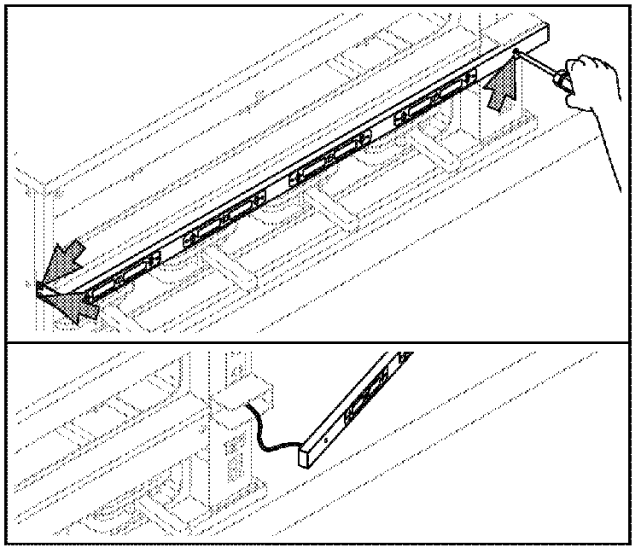
The Menu Bars hold the Keypad Displays that control and monitor the performance of each heating well. The quantity varies (depending on model) and are located on the front and back faces of the unit.

TOOLS REQUIRED: Phillips screwdriver; Flat-head screwdriver

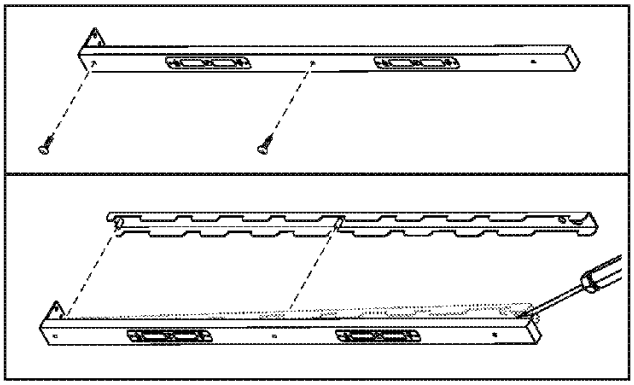
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.



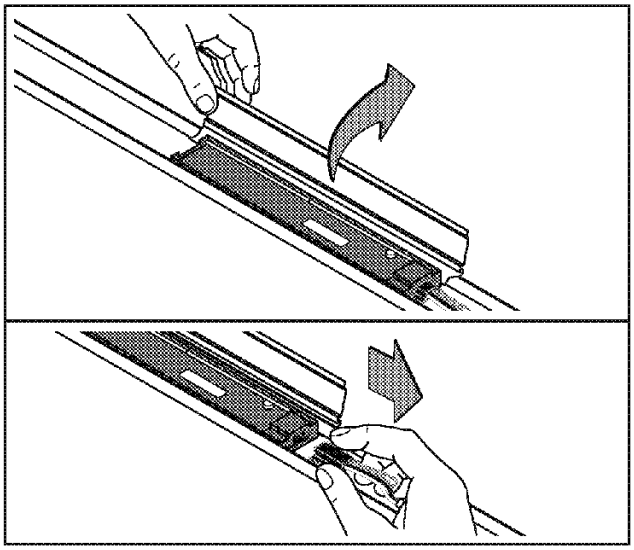
3. Remove and retain screws of the affected Menu Bar and pull away from the face of the unit. It is not necessary, but recommended, to completely remove the Menu Bar from the unit.



4. Mark and disconnect the affected Menu Bar's molex connector inside the control compartment.
5. If it is necessary to reuse the existing Keypad Displays in a replacement Menu Bar:
   a. Remove and retain the two (2) screws securing the Menu Bar Back Channel and pry out of the former Menu Bar.

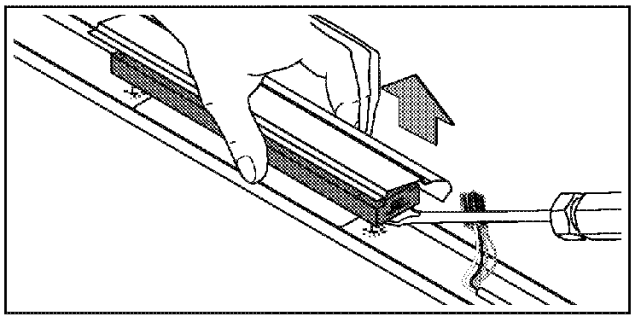


   b. A Keypad Spacer is attached to the rear of each Keypad Display with double-sided tape. Carefully pry off and remove the Keypad Spacer from the affected Keypad Display(s). This will free-up the Menu Bar Harness.

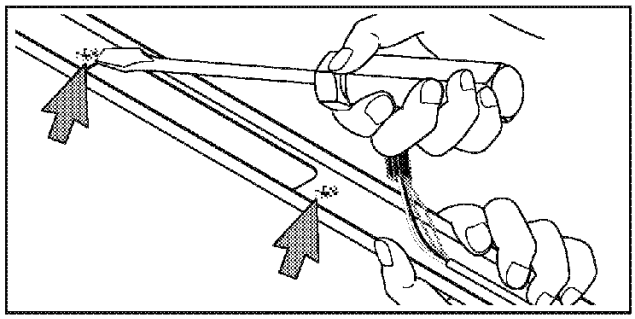


c. Disconnect the affected Keypad Display(s) electrical connector from the Menu Bar Harness.

d. The Keypad Displays are attached to the Menu Bar with double-sided glue dots. Carefully pry off and remove the affected Keypad Display from the Menu Bar.

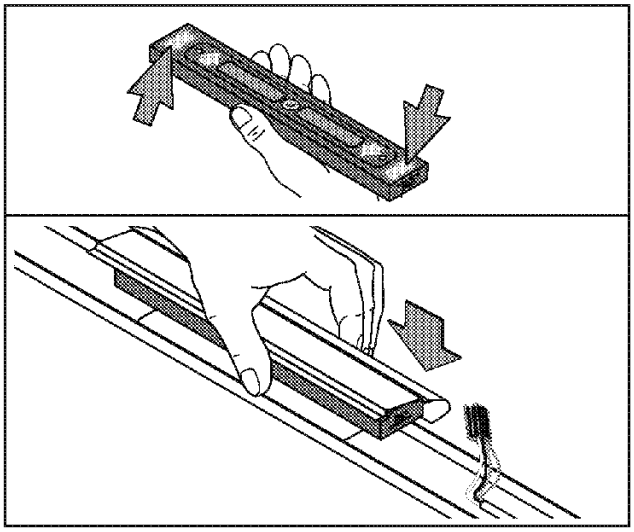


e. Carefully scrape any remaining adhesive residue from the inside of the Menu Bar.



RESTORE

6. Carefully place the Keypad Displays in place on the interior side of the replacement Menu Bar. If reusing the Keypad Displays, it may be necessary to use additional double-sided tape to secure the Keypad Displays to the Menu Bar.



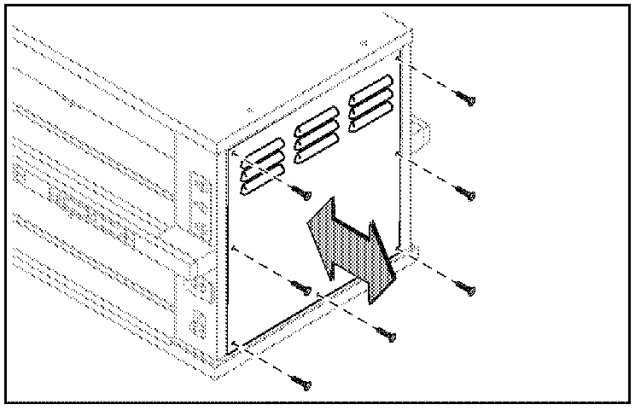
7. Connect the replacement Menu Bar Harness' molex connector in the control compartment.
8. Replace the Keypad Spacer, over the Menu Bar Harness, to the rear of the Keypad Display(s).
9. Reinstall Menu Bar Back Channel using its screws.
10. Reinstall the Menu Bar using its screws.
11. Replace the Control Side Cover and secure with its screws.
12. Restore power to the unit and test for proper function.

KEYPAD DISPLAYS

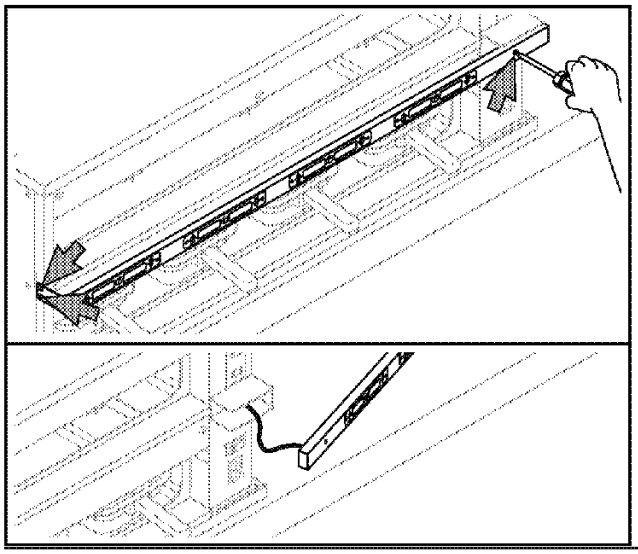
The Keypad Displays control and monitor the performance of each heating well. They are located inside of the Menu Bar(s) and the quantity varies (depending on model).

TOOLS REQUIRED: Phillips screwdriver; Flat-head screwdriver

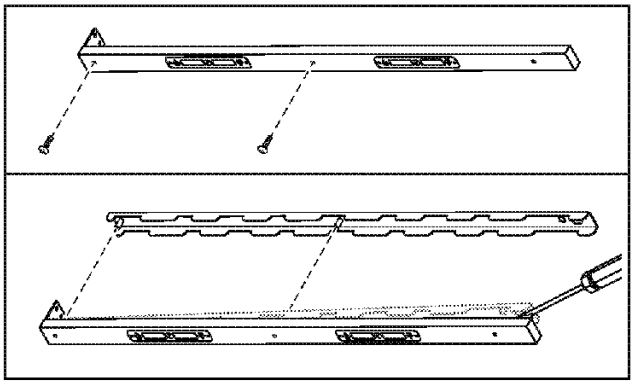
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.



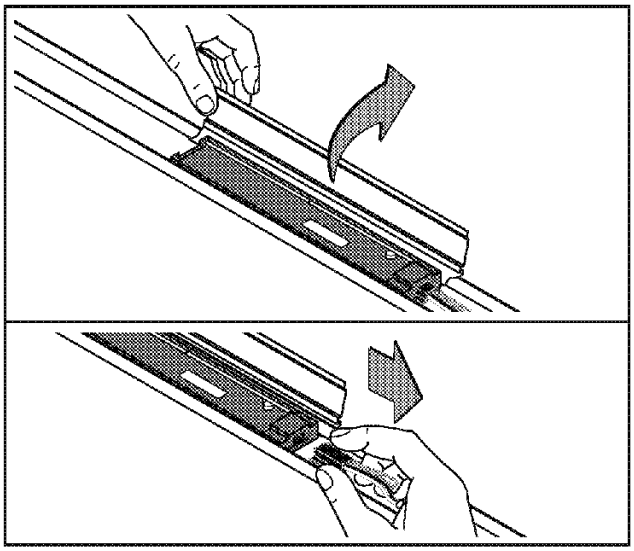
3. Disconnect the affected Menu Bar's molex connector inside the control compartment.
4. Remove and retain screws of the Menu Bar containing the affected Keypad Display and pull away from the face of the unit. It is not necessary, but recommended, to completely remove the Menu Bar from the unit.



5. Remove and retain the screws securing the Menu Bar Back Channel from the front of the Menu Bar and pry out of the Menu Bar.

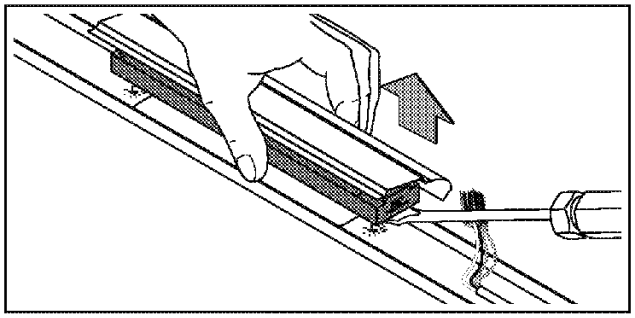


6. A Keypad Spacer is attached to the rear of each Keypad Display with double-sided tape. Carefully pry off and remove the Keypad Spacer from the affected Keypad Display(s). This will free-up the Menu Bar Harness.

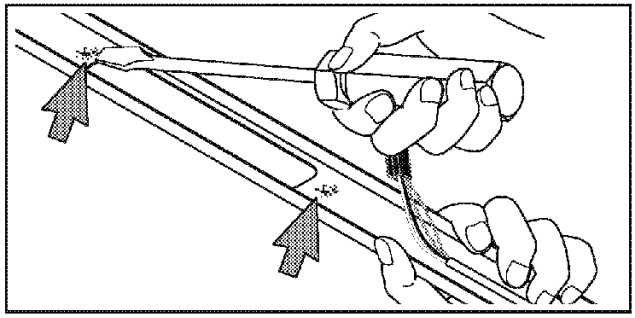


7. Disconnect the affected Keypad Display(s) electrical connector from the Menu Bar Harness.

8. The Keypad Displays are attached to the Menu Bar with double-sided glue dots. Carefully pry off and remove the affected Keypad Display from the Menu Bar.

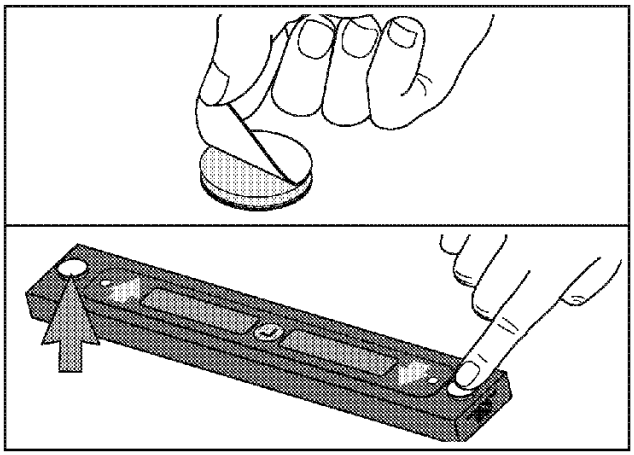


9. Carefully scrape any remaining adhesive residue from the inside of the Menu Bar.

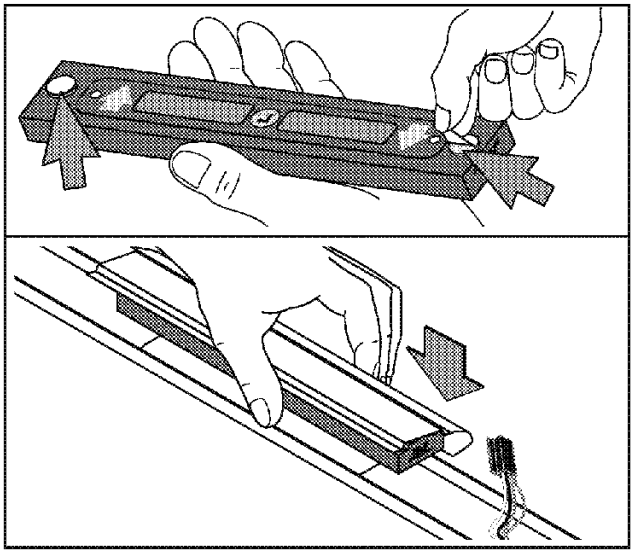


RESTORE:

10. Peel off the adhesive cover from the glue dots and place on the replacement Keypad Display.



11. Peel off the other adhesive cover from the glue dots and carefully position the replacement Keypad Display in place on the interior side of the Menu Bar.



12. Reconnect the affected Keypad Display(s) electrical connector to the Menu Bar Harness.

13. Replace the Keypad Spacer, over the Menu Bar Harness, to the rear of the Keypad Display(s).

14. Reinstall the Menu Bar Back Channel using its screws.

15. Reinstall the Menu Bar using its screws.

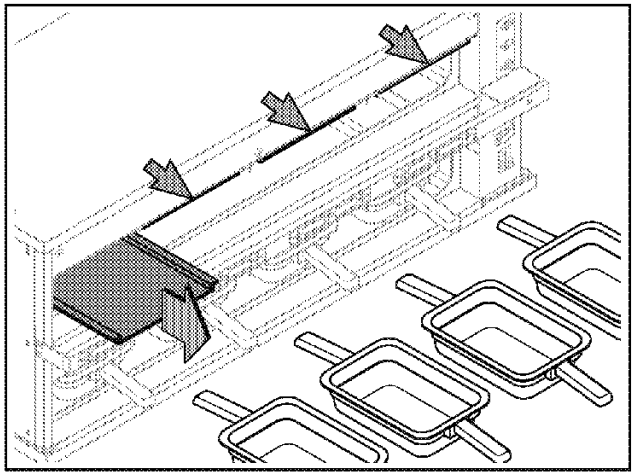
16. Restore power to the unit and test for proper function.

RTD (TEMPERATURE) SENSORS

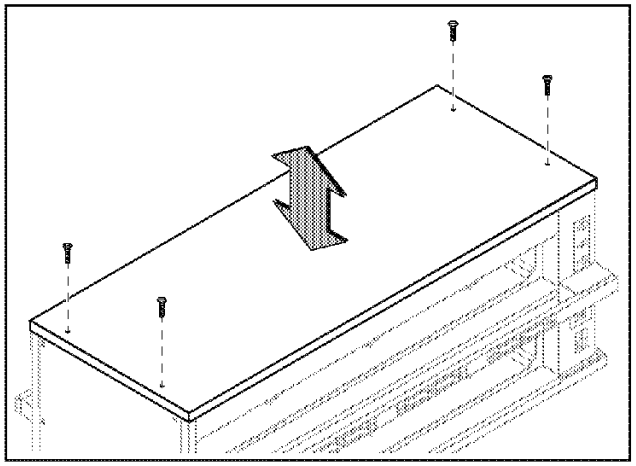
The RTD Sensors monitor the temperature of the heating wells. They are affixed to the bottom-center of each Heat Element, and the quantity varies (depending on model).

TOOLS REQUIRED: Phillips screwdriver; Aluminum tape; Tie wraps

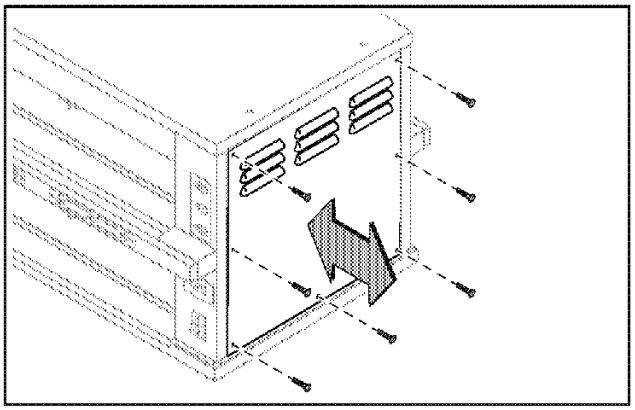
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove any pans and covers on the level(s) being removed.



3. Remove and retain the screws securing the Top Panel and remove the cover.

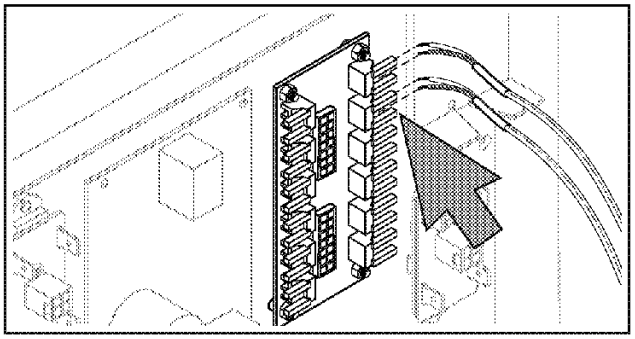


4. Remove and retain the screws securing the Control Side Cover and remove the cover.

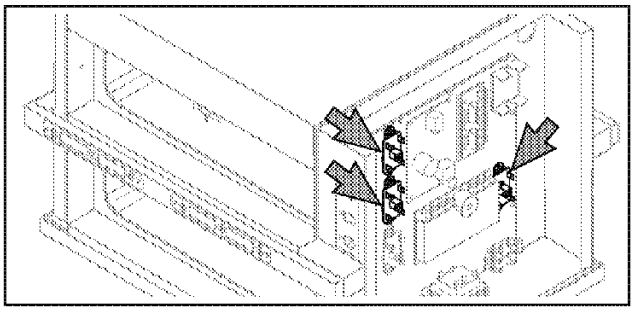


NOTE: If the RTD Sensor to be replaced is on a lower level, start from the top and repeat the following four steps for each level above the desired level.

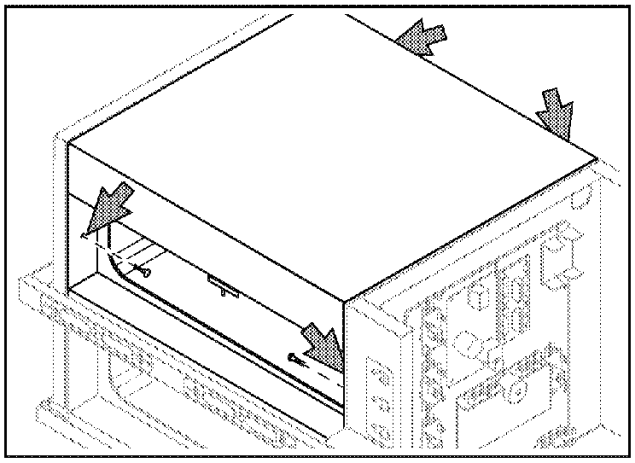
5. Mark, remove the tie wraps, and disconnect the wires for the RTD Sensors from the RTD board in the Control Compartment.



6. Mark, remove the tie wraps, and disconnect the wires for the Emitter (IR Bulb) Sockets and Heat Elements from the Relays in the Control Compartment.

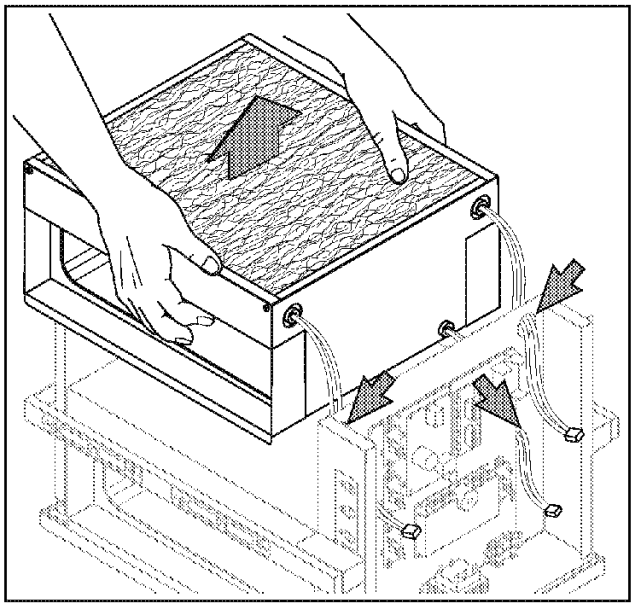


7. Remove the four (4) screws (2 in front, 2 in back) securing the liner deck assembly to the unit.



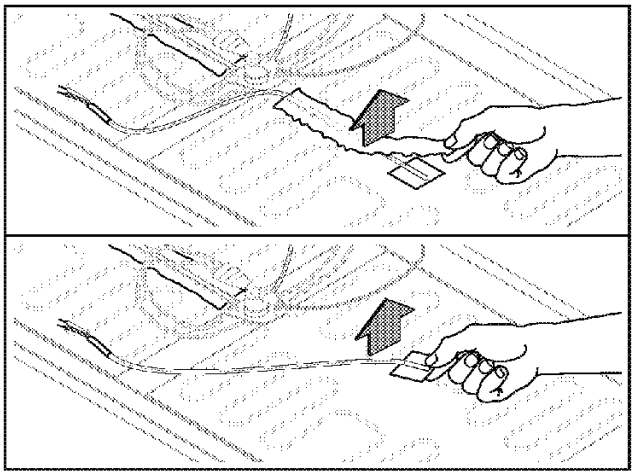
8. Carefully lift the entire liner deck assembly out through the top of the unit. This may require two people, depending on the location of the IRHS unit. Though not required to do so, removing the level's IR glass frame assembly (instructions are contained in the Emitter instructions) will lighten the weight of the liner deck assembly and make it easier for one person to accomplish this task if the IRHS is located in an elevated location or has limited access.

NOTE: It will be necessary to feed the RTD Sensor, Emitter, and Heat Element wires through the control compartment bushings. Take caution not to damage any of the wires.



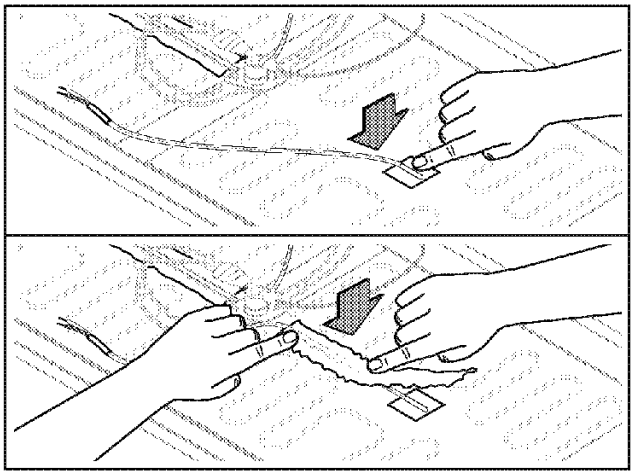
9. Invert the liner deck assembly upside-down, then remove and retain the insulation.

10. The RTD Sensor is attached to the heat element with double-sided adhesive tape and covered with aluminum tape. Carefully pry off and remove the affected RTD Sensor from the Heat Element.



RESTORE:

11. Peel off the adhesive tape cover from the replacement RTD Sensor and press in place on the heat element. Replace aluminum tape cover.



12. Feed the Heat Element and RTD Sensor wires in the direction of and through the control compartment bushings and replace the insulation.

13. Invert the liner deck assembly right-side up. While feeding the RTD Sensor, Emitter, and Heat Element wires through the appropriate control compartment bushings, carefully slide the liner deck assembly into the unit, taking caution not to damage any of the wires.

NOTE: This may require two people, depending on the location of the IRHS unit.

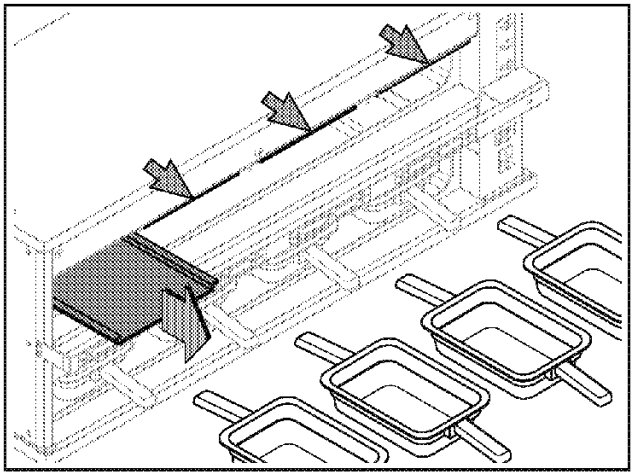
14. Reconnect and tie wrap all previously disconnected wires and connectors in the control compartment.
15. Replace the Control Side Cover and secure with its screws.
16. Replace the Top Panel and secure with its screws.
17. Restore power to the unit and test for proper function.

HIGH LIMIT THERMOSTATS

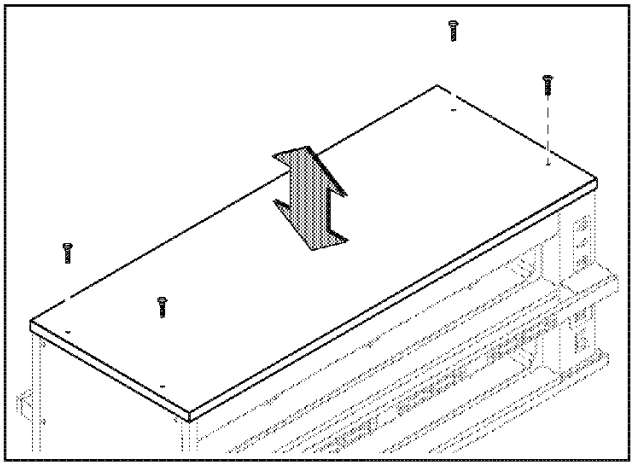
The High Limit Thermostats monitor well temperatures and serves as an emergency circuit interrupter in case of inadvertent overheating. There is one per level, and are affixed to the bottom-center of each heat sink.

TOOLS REQUIRED: Phillips screwdriver; Heat transfer compound; Tie wraps

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove any pans and covers on the level(s) being removed.

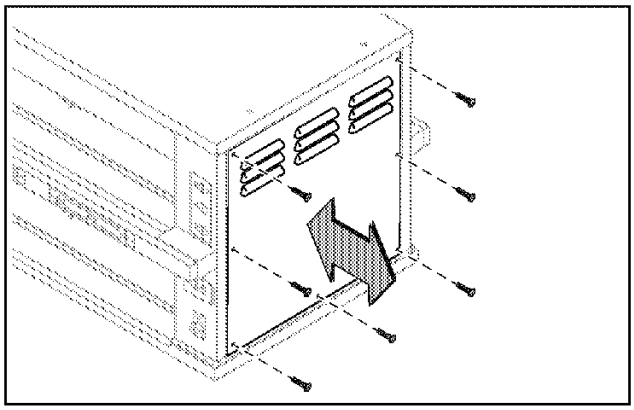


3. Remove and retain the screws securing the Top Panel and remove the cover.

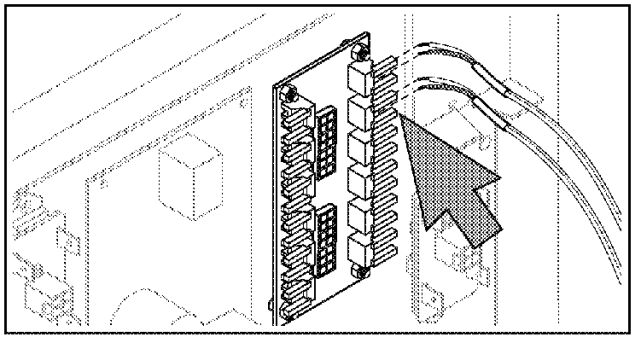


4. Remove and retain the screws securing the Control Side Cover and remove the cover.

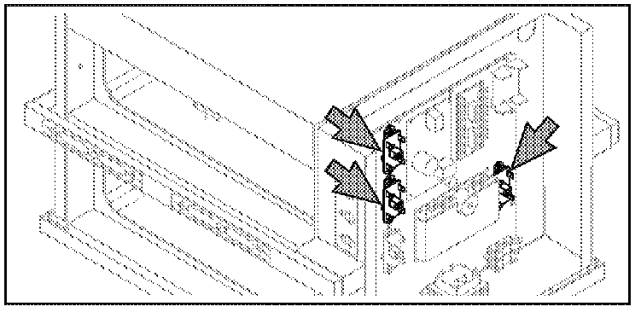
NOTE: If the High Limit Thermostat to be replaced is on a lower level, start from the top and repeat the following four steps for each level above the desired level.



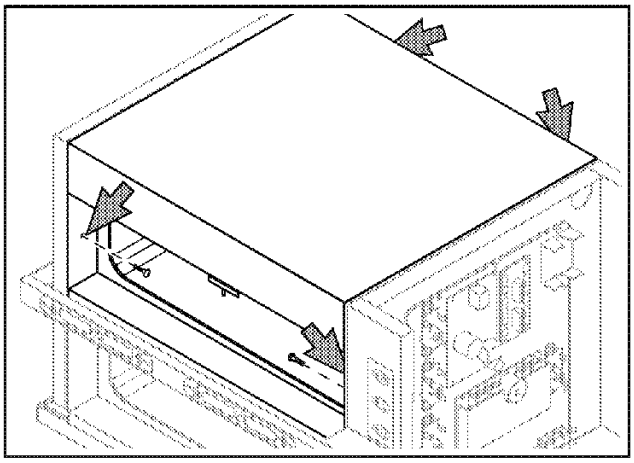
5. Mark, remove the tie wraps, and disconnect the wires for the RTD Sensors from the RTD board in the Control Compartment.



6. Mark, remove the tie wraps, and disconnect the wires for the Emitter (IR Bulb) Sockets and Heat Elements from the Relays in the Control Compartment.

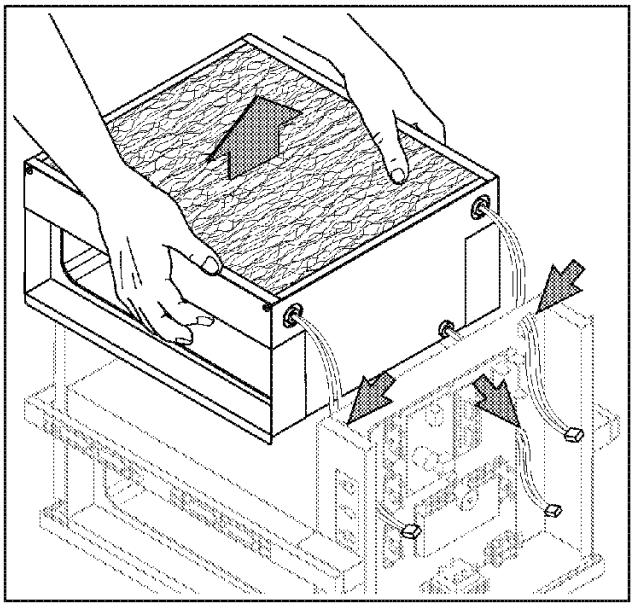


7. Remove the four (4) screws (2 in front, 2 in back) securing the liner deck assembly to the unit.



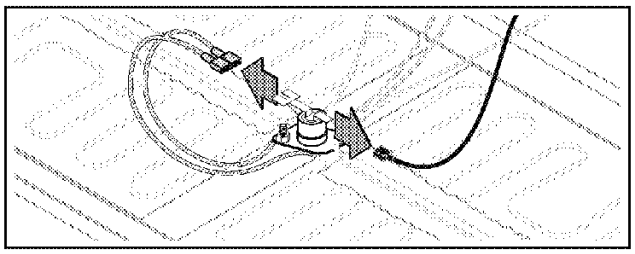
8. Carefully lift the entire liner deck assembly out through the top of the unit. This may require two people, depending on the location of the IRHS unit. Though not required to do so, removing the level's IR glass frame assembly (instructions are contained in the Emitter instructions) will lighten the weight of the liner deck assembly and make it easier for one person to accomplish this task if the IRHS is located in an elevated location or has limited access.

NOTE: It will be necessary to feed the RTD Sensor, Emitter, and Heat Element wires through the control compartment bushings. Take caution not to damage any of the wires.

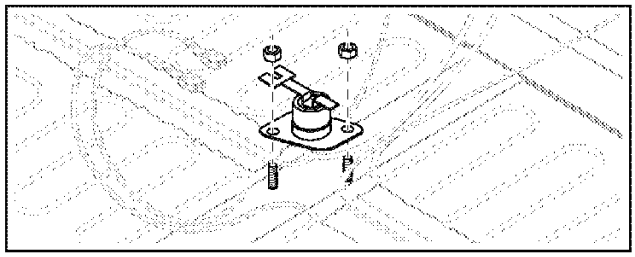


9. Invert the liner deck assembly upside-down, then remove and retain the insulation.

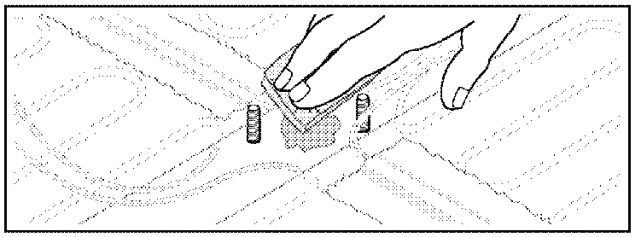
10. Mark and disconnect the spade terminals for the affected High Limit Thermostat.



11. Remove and retain the two (2) 11/32" nuts securing the High Limit Thermostat to the heat sink and remove the High Limit Thermostat.

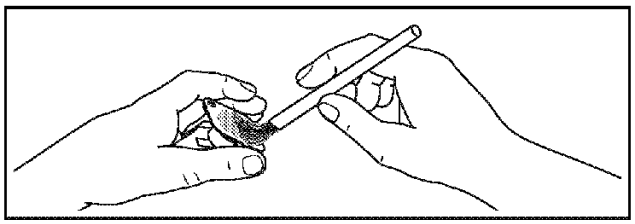


12. Clean the mounting surface of any residual heat transfer compound.



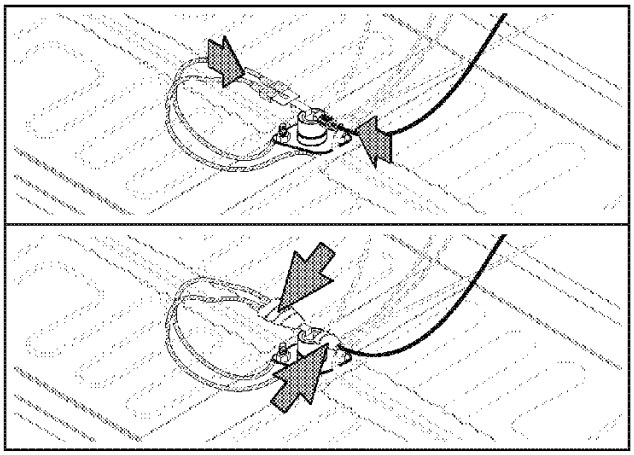
RESTORE:

13. Apply heat transfer compound to the mounting surface of the replacement High Limit Thermostat.



14. Install the replacement High Limit Thermostat and secure with its nuts.

15. Reattach the High Limit Thermostat spade terminals. Be sure to reapply the tape that helps secure the spade terminals to the High Limit Thermostat.



16. Feed the Heat Element and RTD Sensor wires in the direction of and through the control compartment bushings and replace the insulation.

17. Invert the liner deck assembly right-side up. While feeding the RTD Sensor, Emitter, and Heat Element wires through the appropriate control compartment bushings, carefully slide the liner deck assembly into the unit, taking caution not to damage any of the wires.

NOTE: This may require two people, depending on the location of the IRHS unit.

18. Reconnect and tie wrap all previously disconnected wires and connectors in the control compartment.

19. Replace the Control Side Cover and secure with its screws.

20. Replace the Top Panel and secure with its screws.

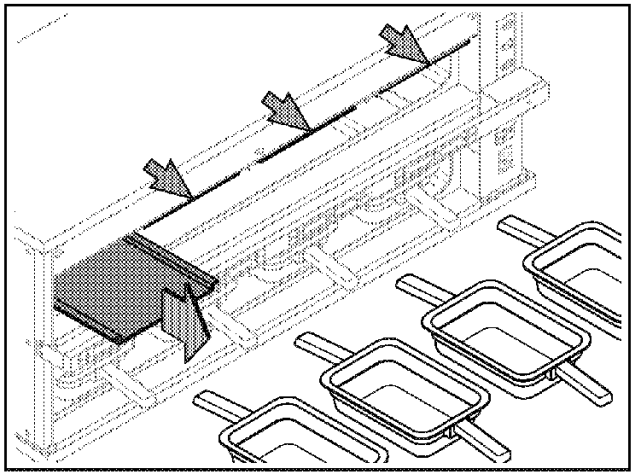
21. Restore power to the unit and test for proper function.

HEAT ELEMENTS

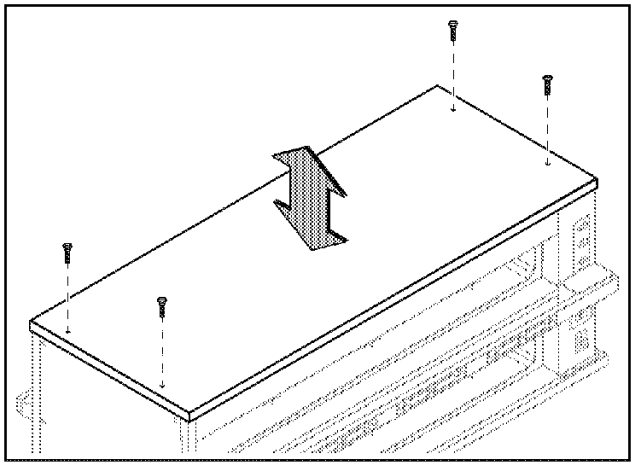
The Heat Elements provide the heating required to keep the heating wells at proper operating temperatures. The quantity varies depending on model and are affixed to the bottom of each Heat Sink.

TOOLS REQUIRED: Phillips screwdriver; 11/32" nut driver or socket; Heat transfer compound; Tie wraps

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove any pans and covers on the level(s) being removed.

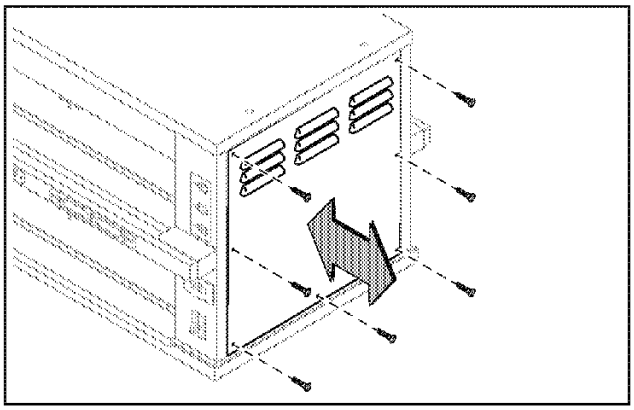


3. Remove and retain the screws securing the Top Panel and remove the cover.

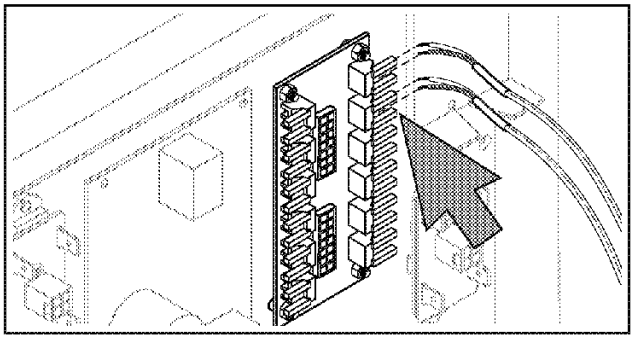


4. Remove and retain the screws securing the Control Side Cover and remove the cover.

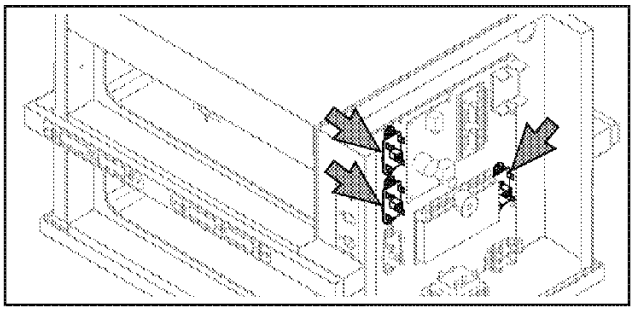
NOTE: If the Heat Element to be replaced is on a lower level, start from the top and repeat the following four steps for each level above the desired level.



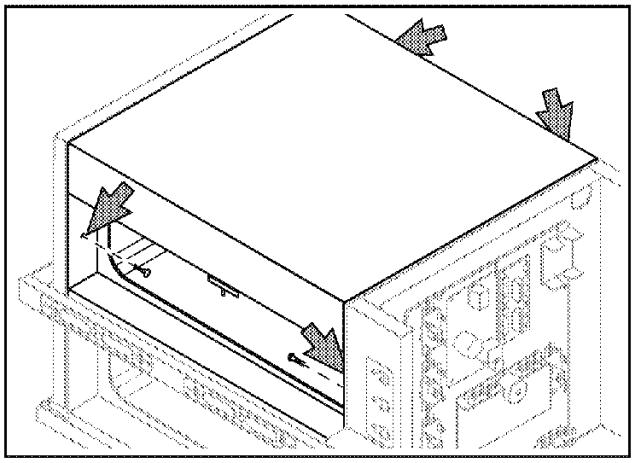
5. Mark, remove the tie wraps, and disconnect the wires for the RTD Sensors from the RTD board in the Control Compartment.



6. Mark, remove the tie wraps, and disconnect the wires for the Emitter (IR Bulb) Sockets and Heat Elements from the Relays in the Control Compartment.



7. Remove the four (4) screws (2 in front, 2 in back) securing the liner deck assembly to the unit.

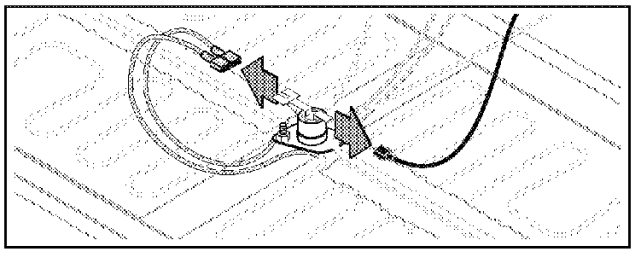


8. Carefully lift the entire liner deck assembly out through the top of the unit. This may require two people, depending on the location of the IRHS unit. Though not required to do so, removing the level's IR glass frame assembly (instructions are contained in the Emitter instructions) will lighten the weight of the liner deck assembly and make it easier for one person to accomplish this task if the IRHS is located in an elevated location or has limited access.

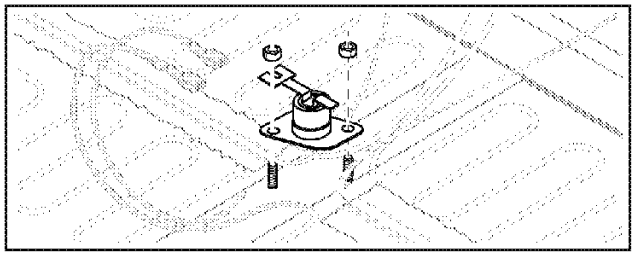
NOTE: It will be necessary to feed the RTD Sensor, Emitter, and Heat Element wires through the control compartment bushings. Take caution not to damage any of the wires.

9. Invert the liner deck assembly upside-down, then remove and retain the insulation.

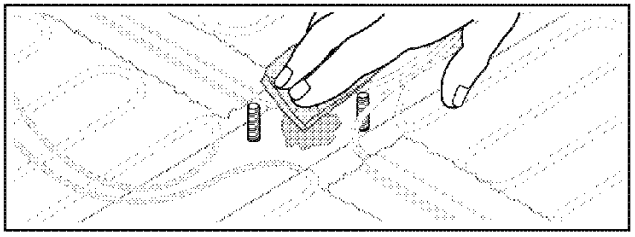
10. Mark and disconnect the spade terminals for the level's High Limit Thermostat.



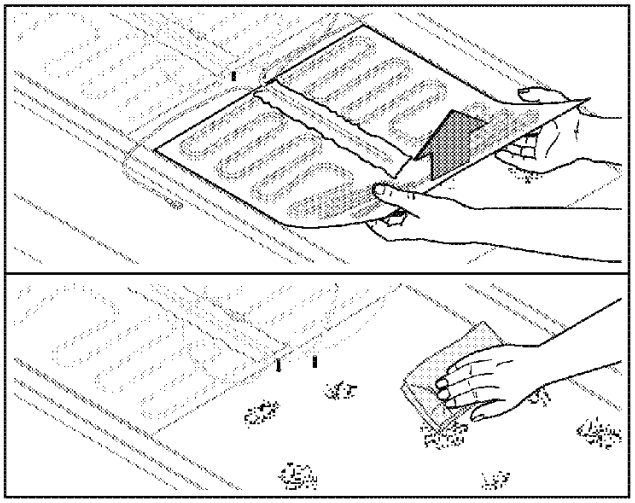
11. Remove and retain the two (2) 11/32" nuts securing the High Limit Thermostat to the heat sink and remove the High Limit Thermostat.



12. Clean the mounting surface of any residual heat transfer compound.

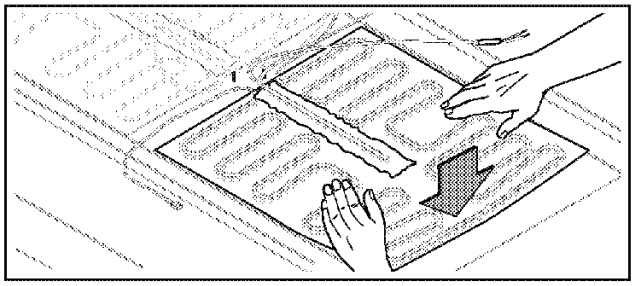


13. Remove the affected Heat Element by peeling off from the heat sink. Ensure any excess tape and/ or adhesive is removed.



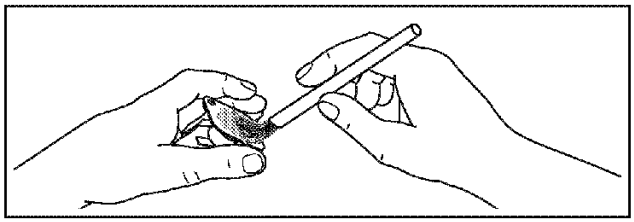
NOTE: The replacement Heat Element will come with a new RTD Sensor attached, so retaining the existing RTD Sensor is unnecessary.

14. Peel the adhesive tape cover off the replacement Heat Element and press in place on the heat sink, ensuring all air bubbles are smoothed out.



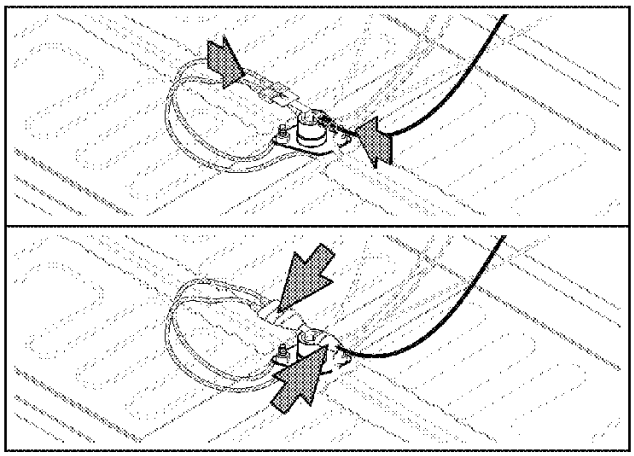
RESTORE:

15. Apply heat transfer compound to the mounting surface of the High Limit Thermostat.



16. Reinstall the High Limit Thermostat and secure with its nuts.

17. Reattach the High Limit Thermostat spade terminals. Be sure to reapply the tape that helps secure the spade terminals to the High Limit Thermostat.



18. Feed the Heat Element and RTD Sensor wires in the direction of and through the control compartment bushings and replace the insulation.

19. Invert the liner deck assembly right-side up. While feeding the RTD Sensor, Emitter, and Heat Element wires through the appropriate control compartment bushings, carefully slide the liner deck assembly into the unit, taking caution not to damage any of the wires.

NOTE: This may require two people, depending on the location of the IRHS unit.

20. Reconnect and tie wrap all previously disconnected wires and connectors in the control compartment.

21. Replace the Control Side Cover and secure with its screws.

22. Replace the Top Panel and secure with its screws.

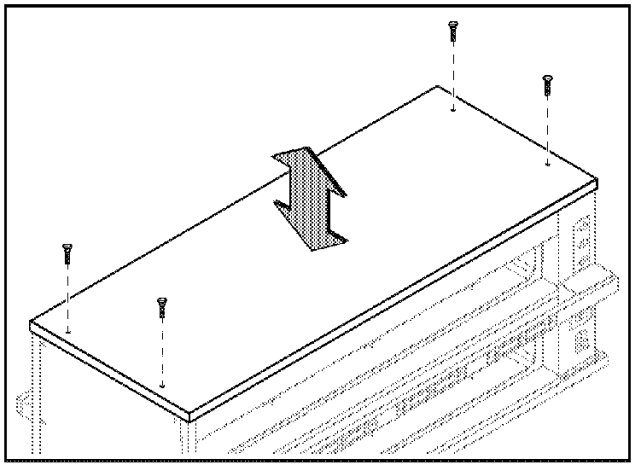
23. Restore power to the unit and test for proper function.

EMITTER (IR BULB) SOCKETS

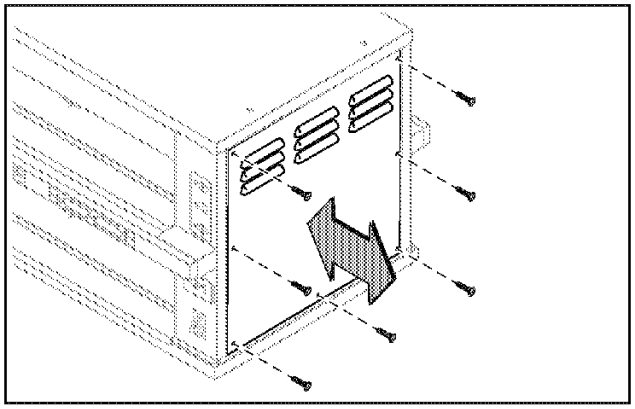
The Emitter Sockets hold and provide power to the Emitters. There are two (2: 1 front, 1 back) at the top of each heating well.

TOOLS REQUIRED: Phillips screwdriver; clean gloves/ cloths/towels; 11/16" open-end wrench; Tie wraps

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove all pans and covers from the liner deck assembly, and levels above where the affected Emitter Socket is to be replaced.
3. Remove and retain the screws securing the Top Panel and remove the cover.

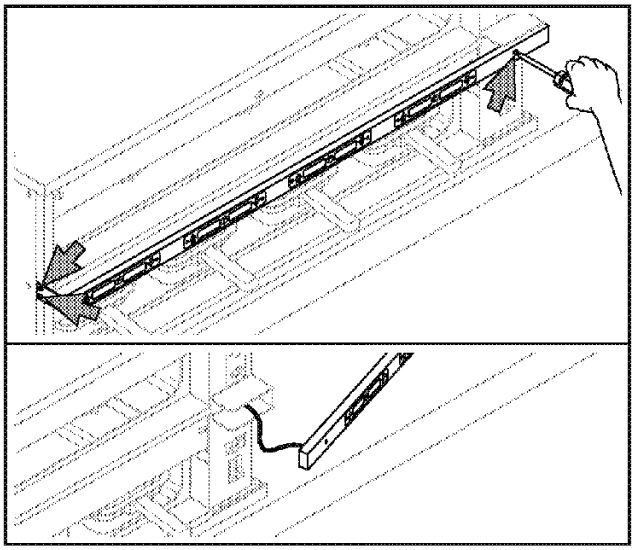


4. Remove and retain the screws securing the Control Side Cover and remove the cover.

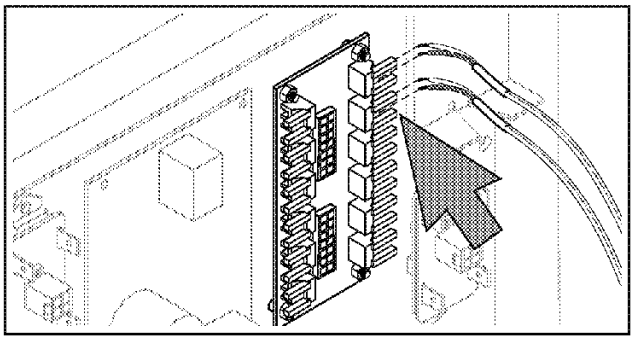


If the Emitter Socket to be replaced is on a lower level (not for top level replacement), starting from the second level, repeat the following five steps for each level above the desired repair level:

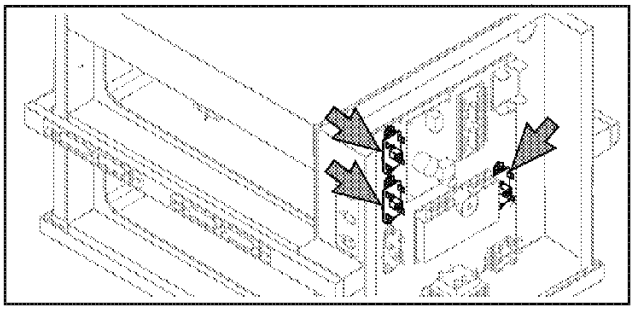
a. Remove and retain the screws securing the appropriate Menu Bar(s) and move to one side. It is not necessary, but recommended, to completely remove the Menu Bar from the unit. Menu Bar instructions are contained in this manual.



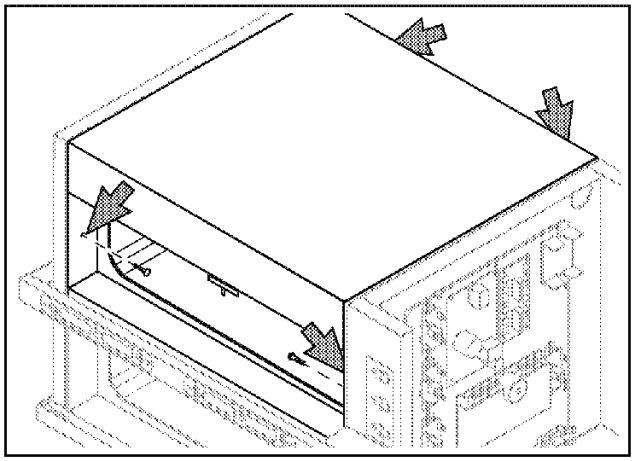
b. Mark, remove the tie wraps, and disconnect the wires for the RTD Sensors from the RTD board in the Control Compartment.



c. Mark, remove the tie wraps, and disconnect the wires for the Emitter (IR Bulb) Sockets and Heat Elements from the Relays in the Control Compartment.

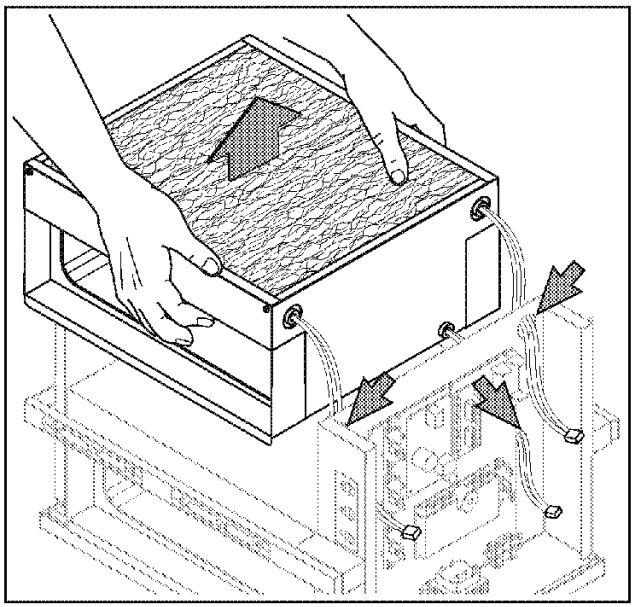


d. Remove the four (4) screws (2 in front, 2 in back) securing the liner deck assembly to the unit.



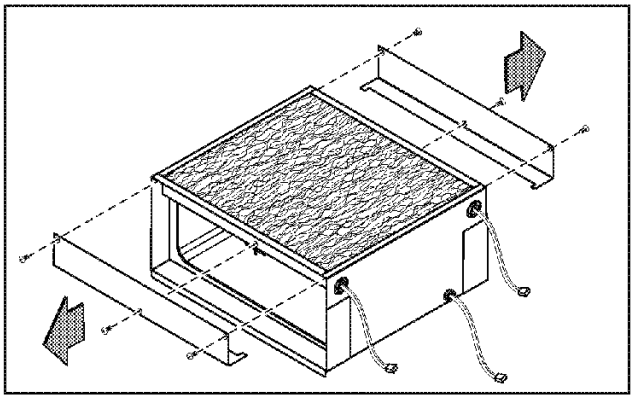
e. Carefully lift the entire liner deck assembly out through the top of the unit. This may require two people, depending on the location of the IRHS unit. Though not required to do so, removing the level's IR glass frame assembly (instructions are contained in the Emitter instructions) will lighten the weight of the liner deck assembly and make it easier for one person to accomplish this task if the IRHS is located in an elevated location or has limited access.

NOTE: It will be necessary to feed the RTD Sensor, Emitter, and Heat Element wires through the control compartment bushings. Take caution not to damage any of the wires.



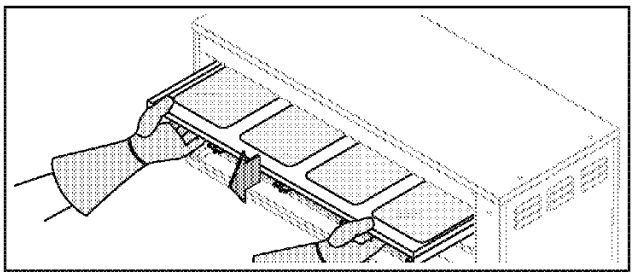
You will now have access to remove the nut securing socket in place.

5. Each liner deck's frame support angles (front and back) support the IR glass frame assembly in place. Remove and retain the screws securing the frame support angle on the row where the affected Socket is to be replaced and remove the frame support angle. Repeat for the other side of the liner deck assembly. Be careful to support and not let the IR glass frame assembly fall and damage the heat sink.



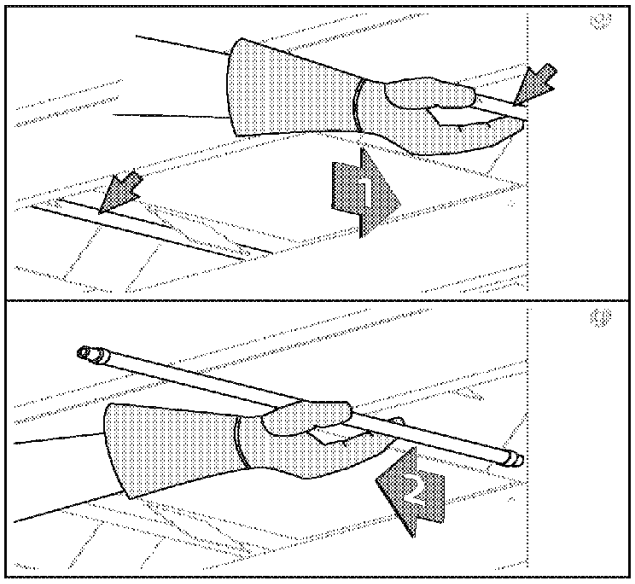
6. Slide the IR glass frame assembly out of the liner deck assembly below the Socket to be replaced.

NOTE: Make sure the glass has cooled off sufficiently to avoid burns to bare skin. Use gloves if necessary.

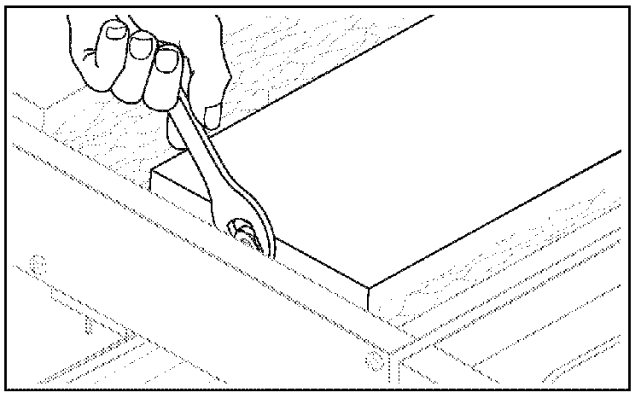


7. The Emitter Sockets are spring-loaded. Push the Emitter (IR Bulb) towards the rear socket until the Emitter is free from the front socket and carefully remove.

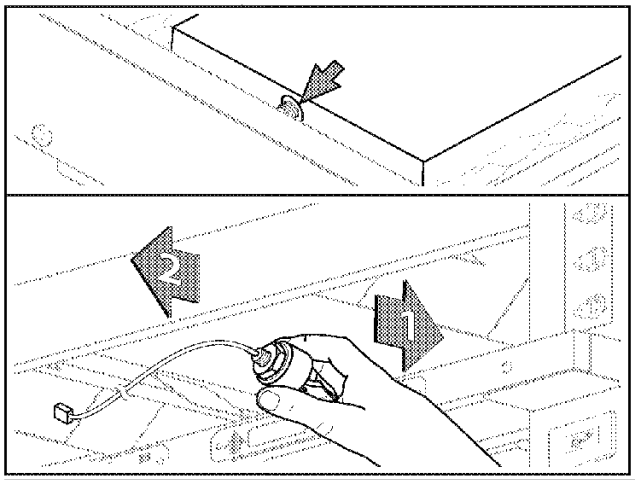
NOTE: DO NOT TOUCH THE EMITTER WITH BARE HANDS! The oil on human skin will shorten the life of the Emitters. If the Emitter is to be reused, use clean gloves, a clean cloth, or a clean paper towel to handle.



8. Mark and disconnect the faulty Emitter Socket's wires from the Relay in the control compartment.
9. Using an 11/16" open-end wrench, remove the nut securing the socket in place.



10. From the bulb side of the affected Socket, pull the Socket and its wires through its mounting hole.



RESTORE:

11. Install the replacement Emitter Socket into its mounting hole and secure with its nut.
12. Using clean gloves, a clean cloth, or a clean paper towel, reinstall or insert the replacement Emitter into the rear socket first and then gently push inward until the front of the bulb can be inserted into the front socket.
13. Slide the IR glass frame assembly into the liner deck assembly.
14. Replace the frame support angles on the front and back and secure them with their screws.
15. If other liner deck assemblies were removed, starting with the lowest, feed their RTD Sensor, Emitter, and Heat Element wires through the appropriate control compartment bushings, and carefully slide the liner deck assemblies into the unit, taking caution not to damage any of the wires. Replace any moved/removed insulation.

NOTE: This may require two people, depending on the location of the IRHS unit.

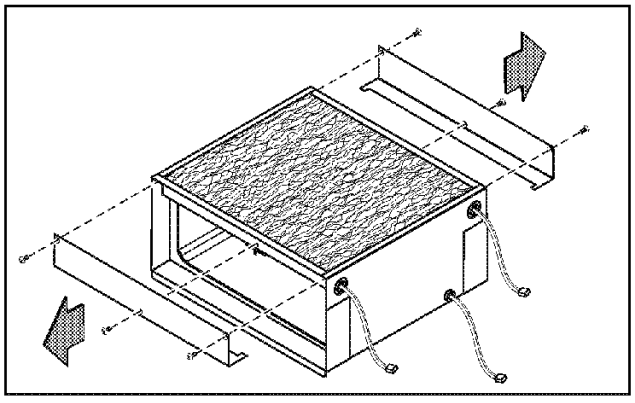
16. If other liner deck assemblies were removed, reinstall their Menu Bar(s).
17. Reconnect and tie wrap all previously disconnected wires and connectors in the control compartment.
18. Replace the Control Side Cover and secure with its screws.
19. Replace the Top Panel and secure with its screws.
20. Restore power to the unit and test for proper function.

EMITTERS (IR BULBS)

The Emitters heat the top of each well. The quantity varies (depending on model) and are held in place by two Emitter Sockets at the top of each heating well.

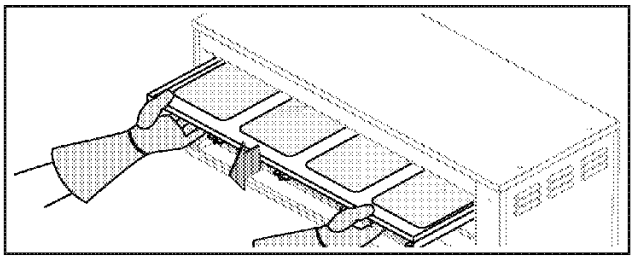
TOOLS REQUIRED: Phillips screwdriver; clean gloves/ cloths/towels; Tie wraps

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove all pans and covers from the liner deck assembly where the affected Emitter is to be replaced.
3. If the Emitter to be replaced is on a lower level (not for top level replacement), remove and retain the screws securing the appropriate Menu Bar(s) and move to one side. It is not necessary, but recommended, to completely remove the Menu Bar from the unit. Menu Bar instructions are contained in this manual.
4. The liner deck assembly's frame support angles (front and back) support the IR glass frame assembly in place. Remove and retain the screws securing the frame support angle on the row where the affected Emitter is to be replaced and remove the frame support angle. Repeat for the other side of the liner deck assembly. Be careful to support and not let the IR glass frame assembly fall and damage the heat sink.



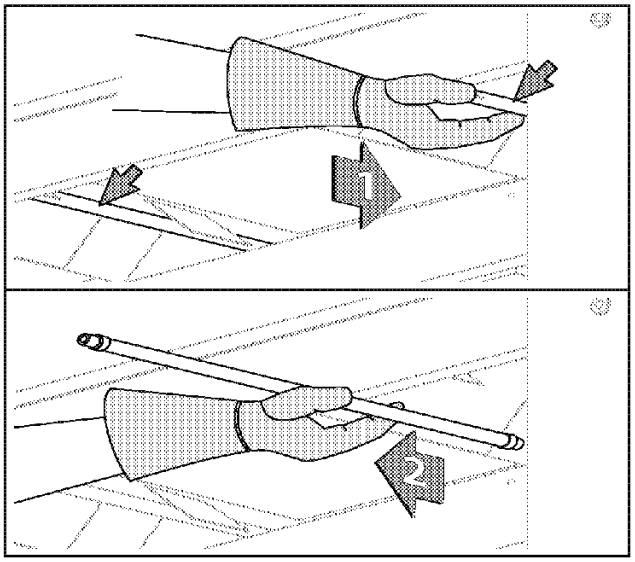
5. Slide the IR glass frame assembly out of the liner deck assembly below the Emitter to be replaced.

NOTE: Make sure the glass has cooled off sufficiently to avoid burns to bare skin. Use gloves if necessary.



6. The Emitter Sockets are spring-loaded. Push the Emitter towards the rear socket until the Emitter is free from the front socket and carefully remove.

NOTE: DO NOT TOUCH THE EMITTER WITH BARE HANDS! The oil on human skin will shorten the life of the Emitters. If the Emitter is to be reused, use clean gloves, a clean cloth, or a clean paper towel to handle.

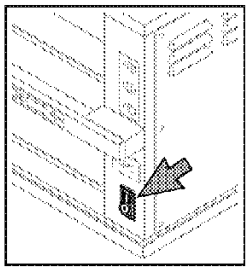


RESTORE:

7. Using clean gloves, a clean cloth, or a clean paper towel, reinstall or insert the replacement Emitter into the rear socket first and then gently push inward until the front of the bulb can be inserted into the front socket.
8. Slide the IR glass frame assembly into the liner deck assembly.
9. Replace the frame support angles on the front and back and secure them with their screws.
10. If removed, reinstall and reconnect the Menu Bar.
11. Restore power to the unit and test for proper function.

CONTROL COMPARTMENT COMPONENTS – STANDALONE & KITCHEN MINDER MODELS (ONLY)

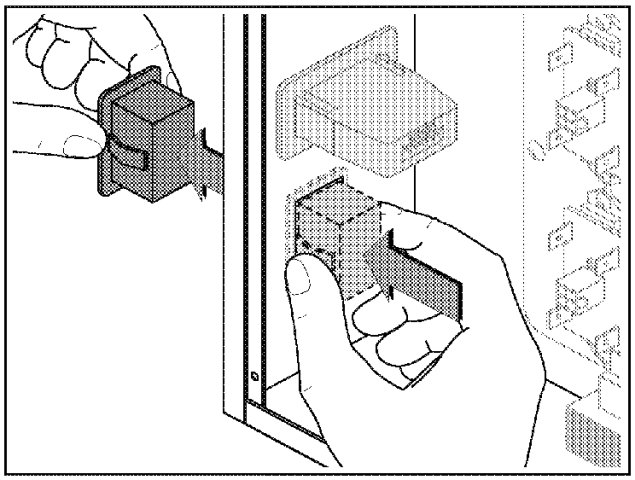
POWER SWITCH



The Power Switch is located on the Control Panel on the face of the unit. It is accessed from inside the control compartment.

TOOLS REQUIRED:
Phillips screwdriver

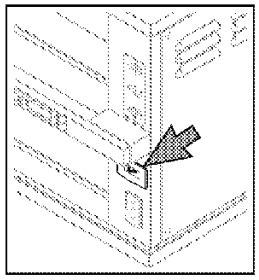
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. From inside the control compartment, mark and disconnect all wires connected to the Power Switch.
4. The Power Switch is secured to the unit with spring clips and a spacer. Depress the spring clips and slide the switch from the unit.



RESTORE:

5. Install the replacement Power Switch by sliding it into its position in the unit until secured with its spring clips.
6. Reattach the Power Switch wires.
7. Replace the Control Side Cover and secure with its screws.
8. Restore power to the unit and test for proper function.

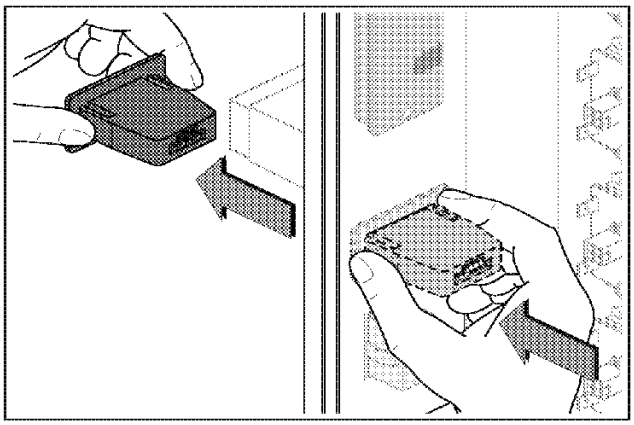
USB ADAPTER



The USB Adapter is used to program the Controller when it is replaced or when the current recipes are corrupted. It is located on the Control Panel. It is accessed from inside the control compartment.

TOOLS REQUIRED: Phillips screwdriver

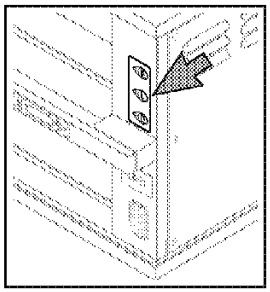
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. From inside the control compartment, unplug the molex connector from the rear of the USB port.
4. The USB Adapter is secured to the unit with prongs and a spacer. Depress the two (2) prongs securing the USB Adapter to the unit, and pull through the face of the unit.



RESTORE:

5. Install the replacement USB Adapter by sliding it into its position in the unit until secured with its prongs.
6. Reattach the USB Adapter molex connector.
7. Replace the Control Side Cover and secure with its screws.
8. Restore power to the unit and test for proper function.

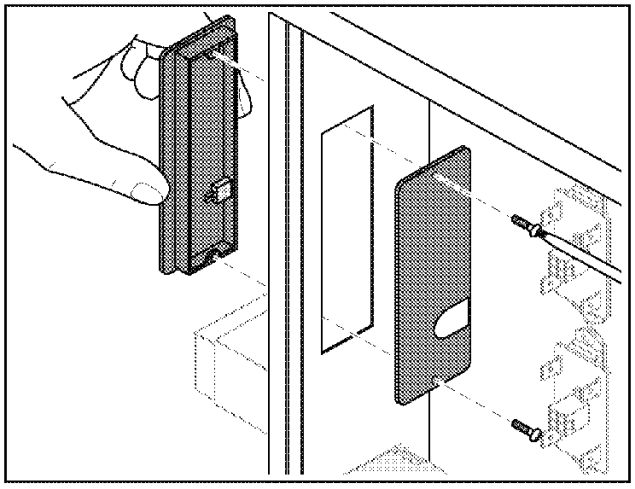
DAYPART SWITCH



The Daypart Switch is used to control the temperatures of various food products, up to three different time periods a day. It is located on the Control Panel and is accessed from inside the control compartment.

TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. From inside the control compartment, unplug the molex connector from the rear of the Daypart Switch.
4. The Daypart Switch is secured to the unit with its rear cover. Remove and retain the three (3) screws securing the Daypart Switch rear cover, then remove the switch and rear cover.

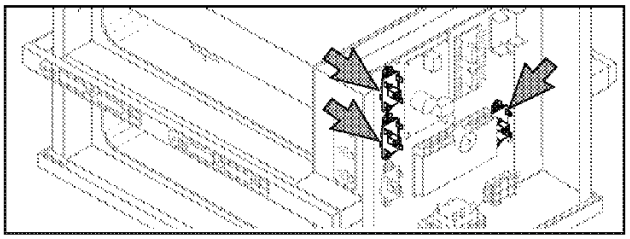


RESTORE:

5. Insert the replacement Daypart Switch into the unit and secure in place with its rear cover and screws.
6. Attach the molex connector to the replacement Daypart Switch.
7. Replace the Control Side Cover and secure with its screws.
8. Restore power to the unit and test for proper function.

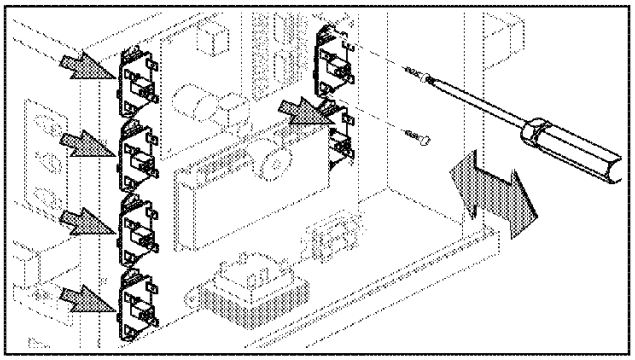
RELAYS (Smart Power Modules)

The Relays control the Emitters (IR Bulbs) and Heat Elements. Each unit has several (depending on model) and are located inside the control compartment.



TOOLS REQUIRED: Phillips screwdriver; Heat transfer compound

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect all wires and molex plug to the affected Relay.
4. Remove and retain the screws securing the affected Relay to the unit.
5. Remove the affected Relay and clean the mounting surface of any residual heat transfer compound.



RESTORE:

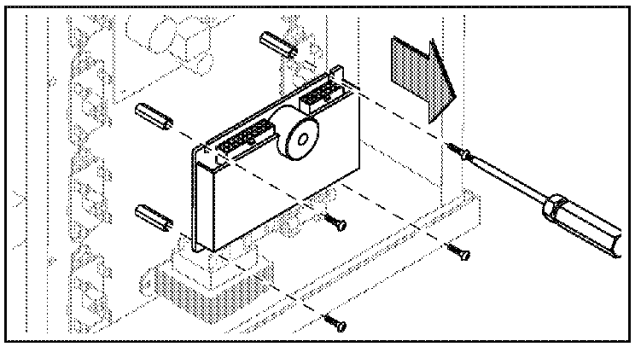
6. Apply heat transfer compound to the mounting surface of the replacement Relay.
7. Install the replacement Relay and secure with its screws.
8. Reconnect the Relay wires and plug.
9. Replace the Control Side Cover and secure with its screws.
10. Restore power to the unit and test for proper function.

CONTROLLER

The Controller is used to control the Relays and RTD Sensors. It is located inside the control compartment.

TOOLS REQUIRED: Phillips screwdriver; #1 precision screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Disconnect the two (2) molex connectors connected to the Controller.
4. Using a small Phillips screwdriver or #1 precision screwdriver, remove and retain the four (4) screws securing the Controller to the unit.
5. Maintaining the spacers on the studs, remove the Controller.



RESTORE:

6. Install the replacement Controller on its studs and secure with its screws.
7. Reconnect the two (2) molex connectors.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

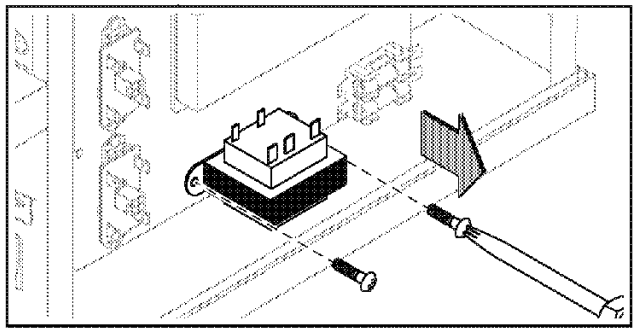
NOTE: To program the new Controller, see programming instructions located the "WEBSITE PROGRAMMING" section of this manual.

TRANSFORMER

The Transformer is used to step-down power to 12 VAC for the Controller. It is located inside the control compartment.

TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the spade connectors connected to the Transformer.
4. Remove and retain the two (2) screws securing the Transformer to the unit and remove the Transformer.



RESTORE:

5. Install the replacement Transformer and secure with its screws.
6. Reconnect the spade connectors.
7. Replace the Control Side Cover and secure with its screws.
8. Restore power to the unit and test for proper function.

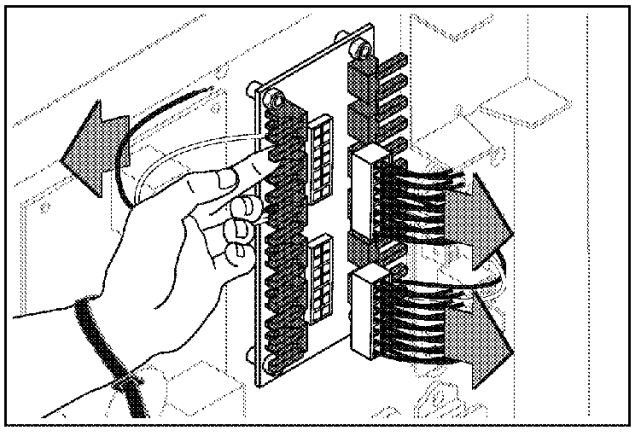
RTD BOARD

The RTD Board controls the RTD Sensors. It is located inside the control compartment.

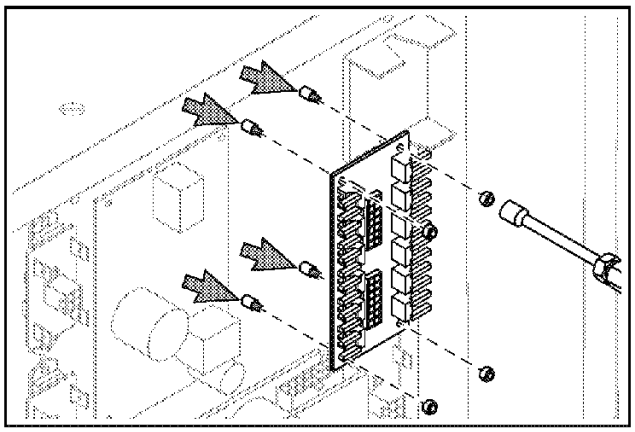
TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect all wires and the molex plug to the RTD Board.

NOTE: The use of an ESD Wrist Strap is strongly recommended. Follow ESD procedures on page 11.



4. Remove and retain the four (4) 1/4" nuts securing the affected RTD Board to the unit.
5. Maintaining the spacers on the studs, remove the RTD Board.



RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement RTD Board and secure with its screws.
7. Reconnect the RTD Board wires and plug.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

FUSES AND FUSE HOLDER

The Fuses and Fuse Holder serve as a circuit interrupter from the main power input. They are located inside the control compartment.

TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.

FOR FUSE REPLACEMENT:

3. Remove the fuses and test with an ohm meter.
4. Replace the fuse(s) with correctly rated fuse(s):

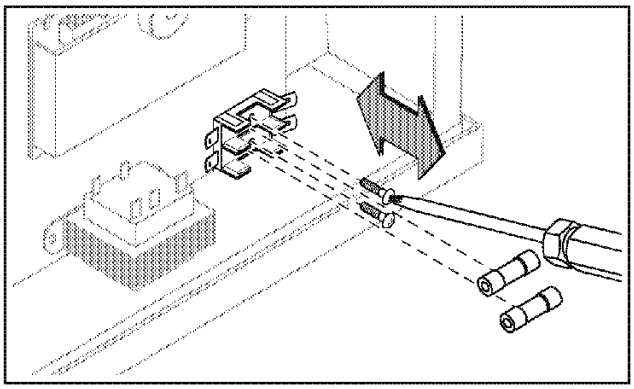
Models 2x2, 2x3, 2x4, 4x2	12 Amp
Model 3x4	16 Amp

NOTE: Replacing fuse(s) with an incorrect rating can cause nuisance blowing if rating is too low, or a loss of circuit protection if too high. Damage to the equipment and risk of fire may result. Replace fuse(s) with correctly rated fuse(s) only.

5. Replace the Control Side Cover and secure with its screws.
6. Restore power to the unit and test for proper function.

FOR FUSE HOLDER REPLACEMENT:

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Disconnect the spade connectors connected to the Fuse Holder.
4. Remove and retain the screws securing the Fuse Holder to the unit and remove the Fuse Holder.



RESTORE:

5. Install the replacement Fuse Holder and secure with its screws.
6. Reconnect the spade connectors.
7. INSTALL CORRECTLY RATED FUSES ONLY! Damage to the equipment and/or risk of fire may result if installing fuses with incorrect ratings.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

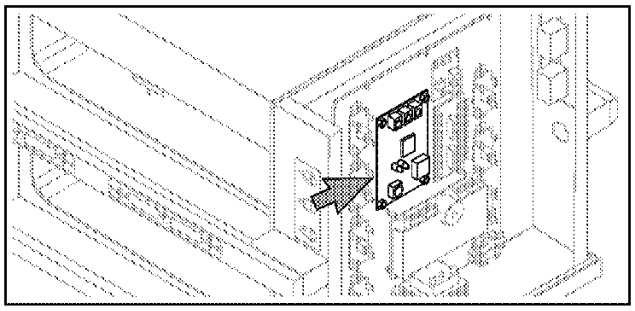
CONTROL COMPARTMENT COMPONENTS – KITCHEN MINDER MODEL (ONLY)

NOTE: The following components are installed, in addition to all previously listed control compartment components, in the Kitchen Minder model of the IRHS.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

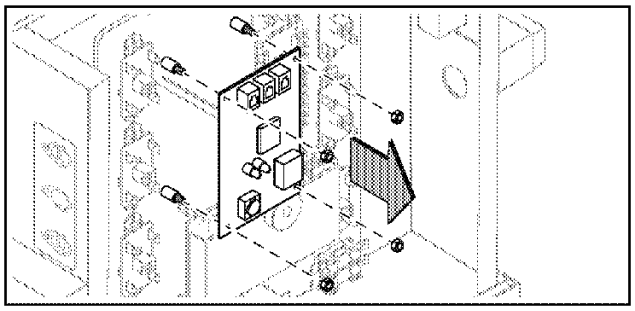
KITCHEN MINDER MASTER BOARD (If installed)

If Kitchen Minder is installed in the unit, the Kitchen Minder Master Board is located behind the Control Side Cover.



TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the lines connected to the Master Board.
4. Remove and retain the four (4) 1/4" nuts securing the affected Master Board to the unit.
5. Maintaining the spacers on the studs, remove the Master Board.



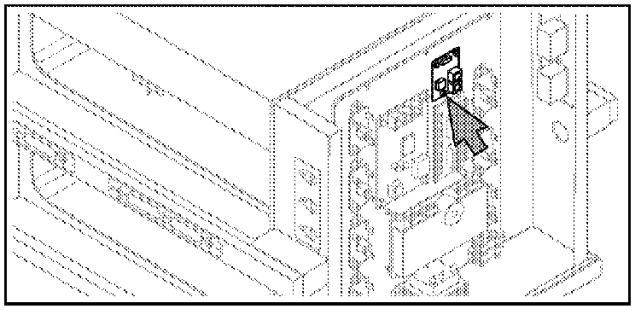
RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement Master Board on its studs and secure with its screws.
7. Reconnect the lines.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

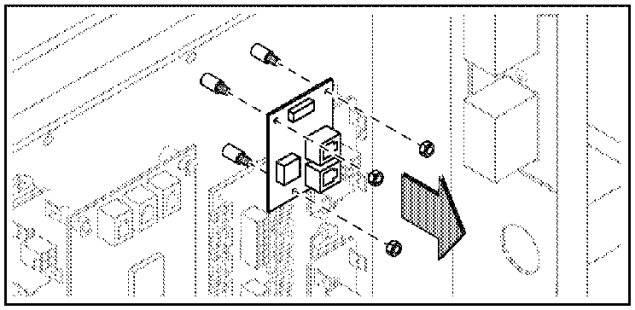
KITCHEN MINDER ADAPTER BOARD (if installed)

If Kitchen Minder is installed in the unit, the Kitchen Minder Adapter Board is located behind the Control Side Cover.



TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the line and molex plug connected to the Adapter Board.
4. Remove and retain the three (3) 1/4" nuts securing the Adapter Board to the unit.
5. Maintaining the spacers on the studs, remove the Adapter Board.

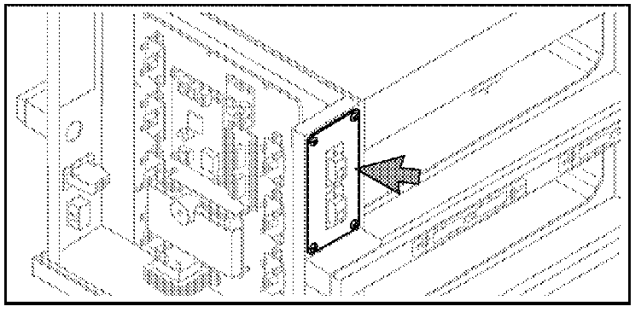


RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement Adapter Board on its studs and secure with its screws.
7. Reconnect the line and molex plug to the Adapter Board.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

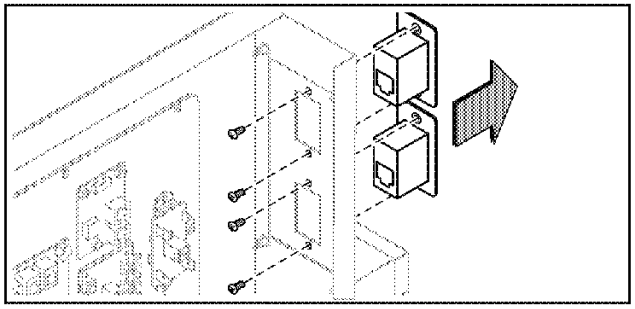
MOUNTING PLATE (If installed)

If Kitchen Minder is installed in the unit, the Mounting Plate is located in the rear control panel. The Mounting Plate holds the Couplers. The type depends on the specific model: Domestic (2-Hole) and CE (2-Hole or 3-Hole).

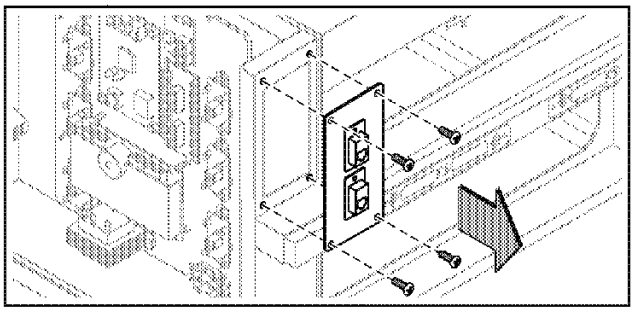


TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect any communication lines attached to both sides of the Couplers contained in the Mounting Plate.
4. **If intending to retain and reuse the existing Couplers,** remove and retain the Couplers and their mounting screws (two per coupler).



5. Remove and retain the four (4) screws securing the Mounting Plate to the rear control panel.

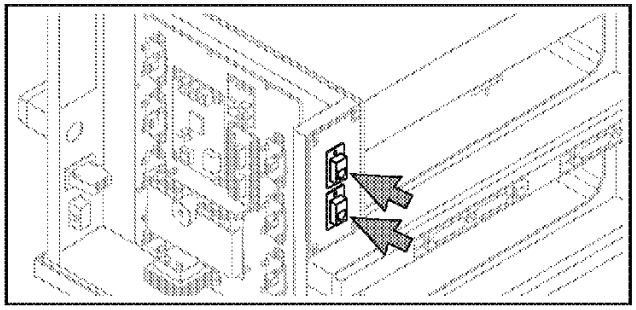


RESTORE:

6. Install the replacement Mounting Plate in the rear control panel and secure with its screws.
7. If necessary, reinstall the Couplers into the Mounting Plate with their screws.
8. Reconnect the communication lines to the Couplers.
9. Replace the Control Side Cover and secure with its screws.
10. Restore power to the unit and test for proper function.

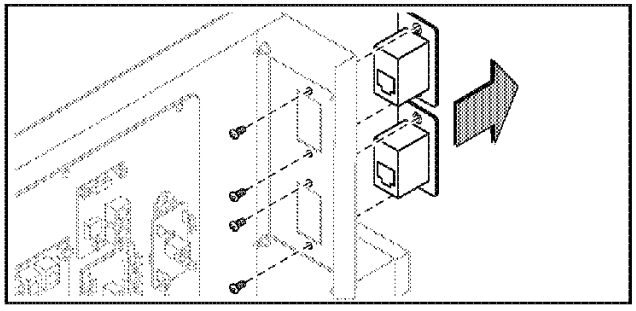
COUPLERS (If installed)

If Kitchen Minder is installed in the unit, the Couplers are located in the Mounting Plate on the rear Control Panel. Couplers are the connection point between the Master and Satellite Kitchen Minder units allowing them to be connected and communicate. The quantity varies depending on the specific model – two (2; one RJ45 and one RJ12) in the Domestic model or three (3; all CAT5/RJ45) in the CE model.



TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the affected Coupler line(s).
4. Remove and retain the two (2) small screws that attach each Coupler to the Mounting Plate.



RESTORE:

5. Insert the replacement Coupler(s) and attach with its screws.
6. Reconnect the Coupler line(s).
7. Replace the Control Side Cover and secure with its screws.
8. Restore power to the unit and test for proper function.

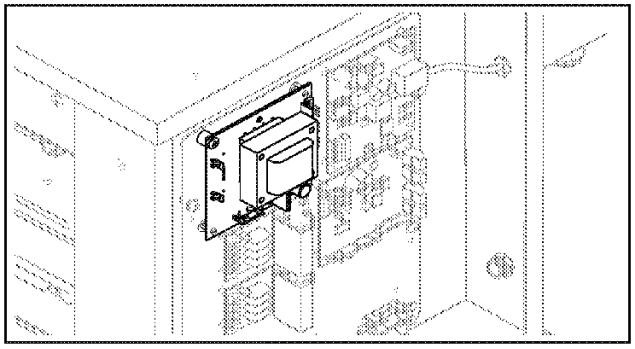
CONTROL COMPARTMENT COMPONENTS – VISOR MODEL (ONLY)

NOTE: All previously listed control compartment components (Standalone and Kitchen Minder models) are NOT INSTALLED in the VISOR models of the IRHS.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

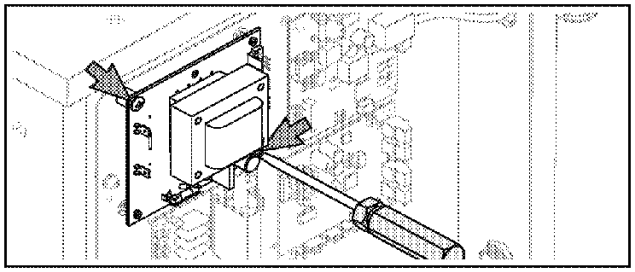
12V POWER CONTROL BOARD

If VISOR is installed in the unit, the 12V Power Control Board is located on the VISOR Control Panel inside the control compartment.

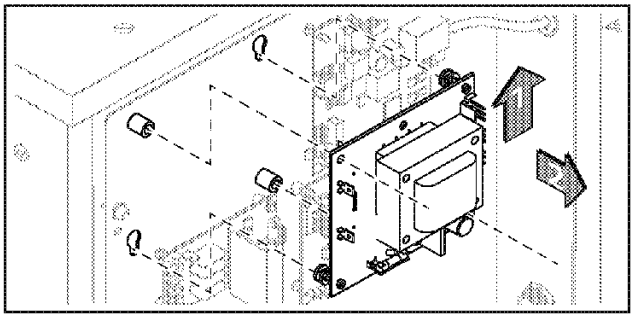


TOOLS REQUIRED: Phillips screwdriver; ESD strap; Needle-nose pliers

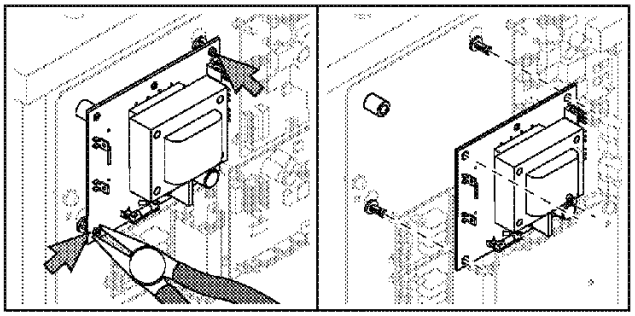
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the spade and molex connectors that are connected to the 12V Power Control Board.
4. Remove and retain the two (2) screws securing the 12V Power Control Board to the unit.



5. Leaving them in place, use the two (2) nylon PC lock-in supports to slide the 12V Power Control Board off of the control panel. If the PC lock-in supports are being reused on the replacement 12V Power Control Board, use needle-nose pliers to squeeze the PC lock-in supports and slide out of the 12V Power Control Board. The nylon screw stubs will remain in place.



OR



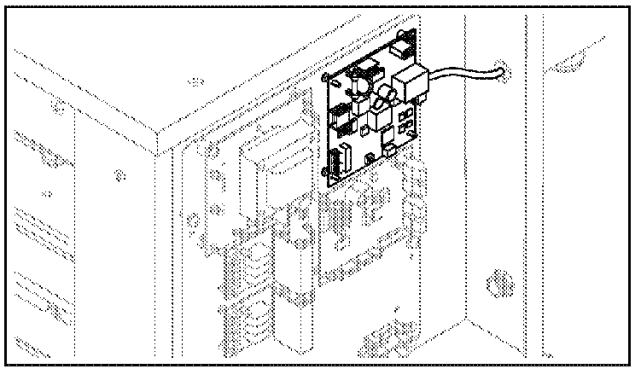
RESTORE:

6. If necessary, install two (2) nylon PC lock-in supports in the 12V Power Control Board.
7. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement 12V Power Control Board, with its PC lock-in supports, by sliding into the keyholes in the control panel and secure in place with its screws.
8. Reconnect the spade and molex connectors.
9. Replace the Control Side Cover and secure with its screws.
10. Restore power to the unit and test for proper function.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

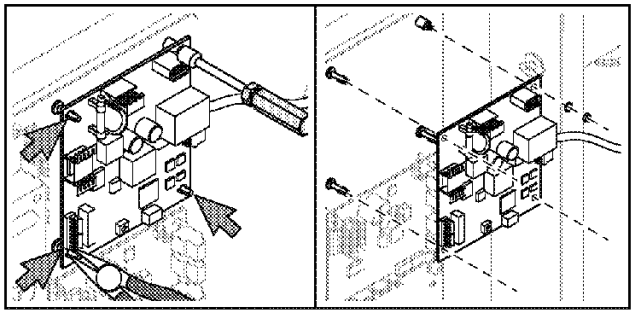
POWER CONTROL BOARD – ACM

If VISOR is installed in the unit, the ACM Power Control Board is located on the VISOR Control Panel inside the control compartment.



TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket; Needle-nose pliers

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the connectors and data line that are connected to the ACM Power Control Board.
4. Remove and retain the 1/4" nut securing the ACM Power Control Board to the unit.
5. Squeeze each of the three (3) nylon PC lock-in supports with needle-nose pliers to release the ACM Power Control Board off of the control panel. The nylon supports and nut stub will remain in place.



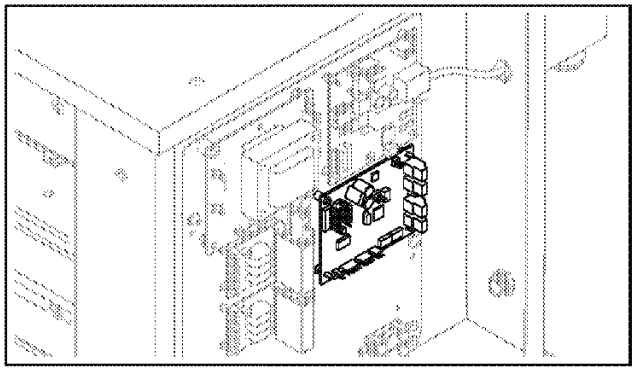
RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement ACM Power Control Board onto its nylon PC lock-in supports and secure in place with its nut.
7. Reconnect the spade and molex connectors.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

POWER CONTROL BOARD – 103M

If VISOR is installed in the unit, the ACM Power Control Board is located on the VISOR Control Panel inside the control compartment. The quantity varies depending on the specific model.

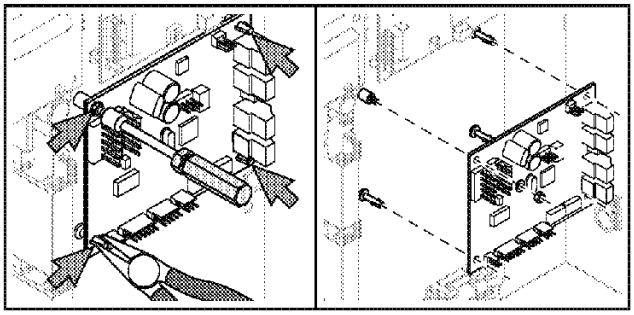


TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket; Needle-nose pliers

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the connectors that are connected to the 103M Power Control Board.

NOTE: The use of an ESD Wrist Strap is strongly recommended. Follow ESD procedures on page 11.

4. Remove and retain the 1/4" nut and its nylon spacer securing the 103M Power Control Board to the unit.
5. Squeeze each of the three (3) nylon PC lock-in supports with needle-nose pliers to release the 103M Power Control Board off of the control panel. The nylon supports and nut stub remain in place.



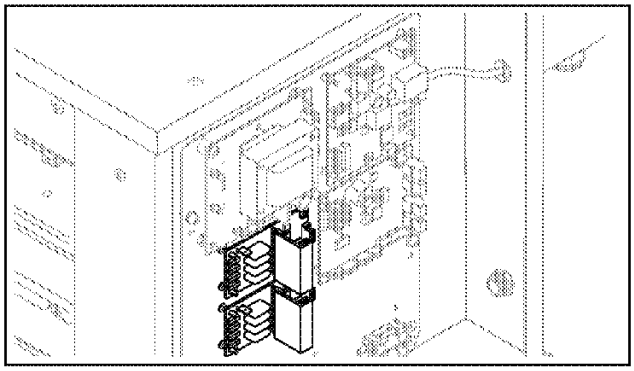
RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement 103M Power Control Board onto its nylon PC lock-in supports and secure in place with its nut and nylon spacer.
7. Reconnect the spade and molex connectors.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

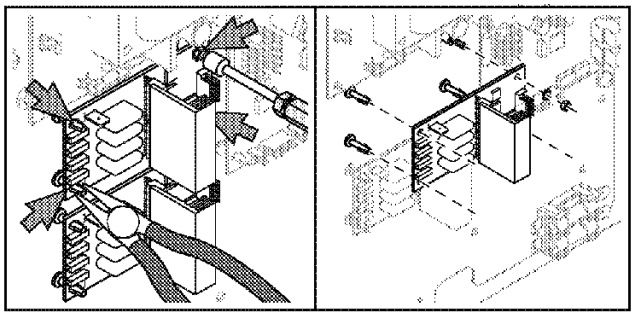
POWER CONTROL BOARD – TRIAC DRIVE

If VISOR is installed in the unit, the Triac Drive Power Control Board is located on the VISOR Control Panel inside the control compartment. The quantity varies depending on the specific model.



TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket; Needle-nose pliers

1. Place the unit's Power Switch in the "OFF" position and follow the proper lockout/tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the connectors that are connected to the Triac Drive Power Control Board.
4. Remove and retain the 1/4" nut and nylon spacer securing the Triac Drive Power Control Board to the unit.
5. Squeeze each of the three (3) nylon PC lock-in supports with needle-nose pliers to release the Triac Drive Power Control Board off of the control panel. The nylon supports and nut stub will remain in place.

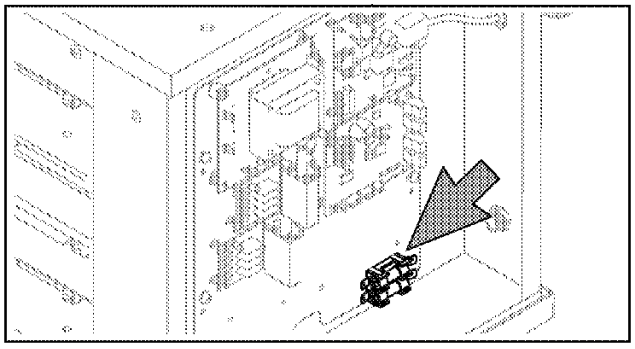


RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement Triac Drive Power Control Board onto its nylon PC lock-in supports and secure in place with its nut.
7. Reconnect the spade and molex connectors.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

FUSE HOLDER AND FUSES

The Fuses and Fuse Holder serve as a circuit interrupter from the main power input. They are located on the VISOR Control Panel, inside the control compartment.

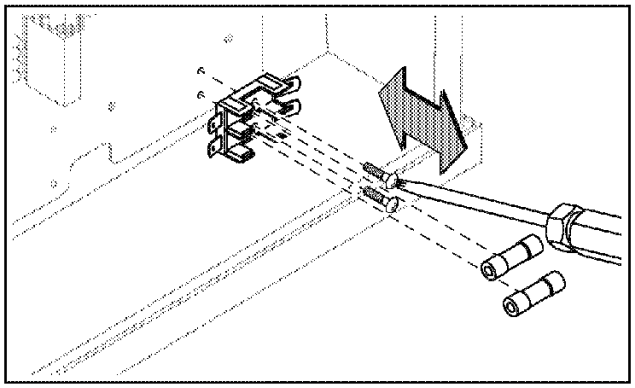


TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.

FOR FUSE HOLDER REPLACEMENT

3. Disconnect the spade connectors connected to the Fuse Holder.
4. Remove and retain the screws securing the Fuse Holder to the unit and remove the Fuse Holder.



RESTORE:

5. Install the replacement Fuse Holder and secure with its screws.
6. Reconnect the spade connectors.
7. INSTALL CORRECTLY RATED FUSES ONLY!

NOTE: Replacing fuse(s) with an incorrect rating can cause nuisance blowing if rating is too low, or a loss of circuit protection if too high. Damage to the equipment and risk of fire may result.

8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

FOR FUSE REPLACEMENT

3. Remove the fuses and test with an ohm meter.

RESTORE:

4. Replace the fuse(s) with correctly rated fuse(s):

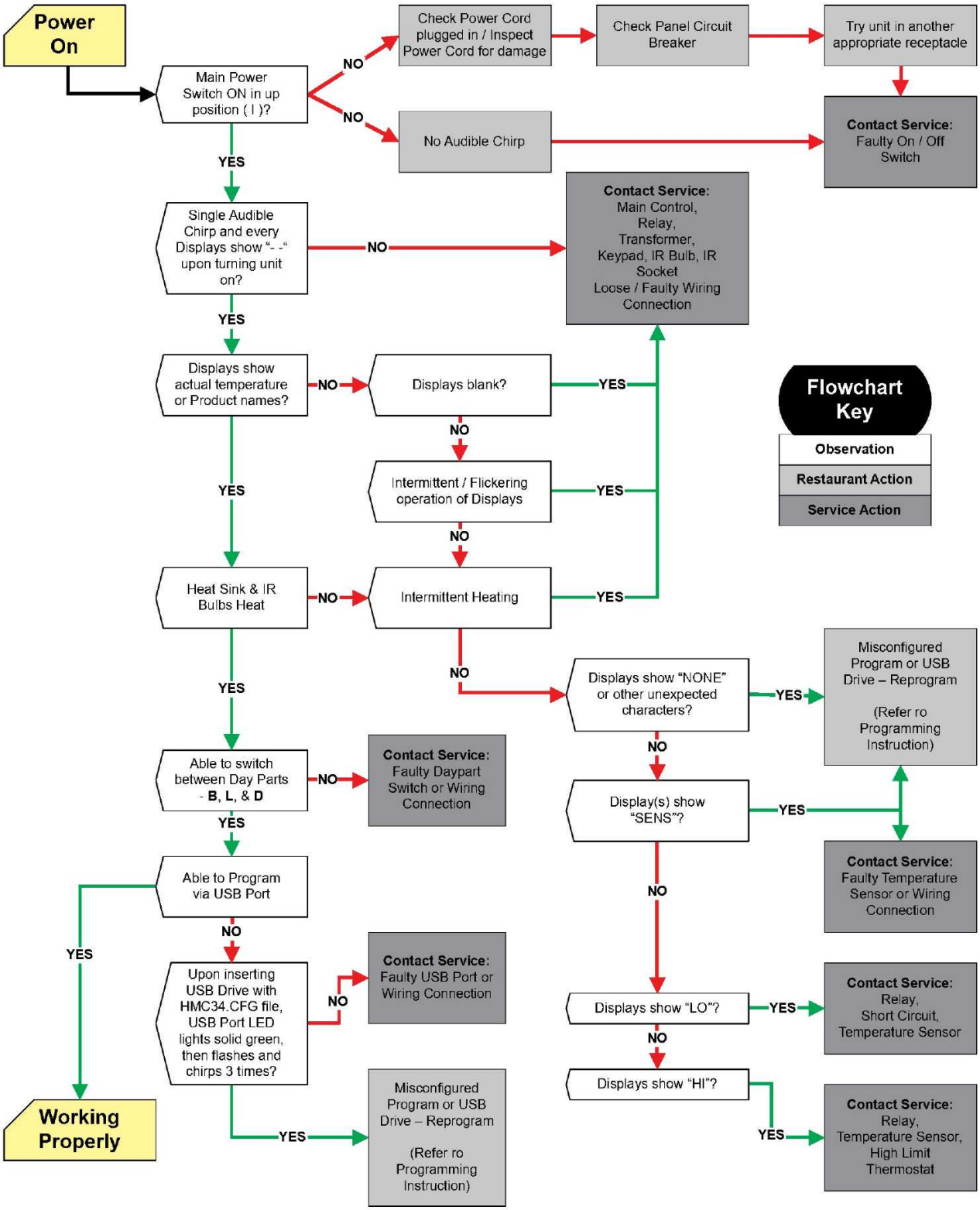
Models 2x2, 2x3, 2x4, 4x2	12 Amp
Model 3x4	16 Amp

NOTE: Replacing fuse(s) with an incorrect rating can cause nuisance blowing if rating is too low, or a loss of circuit protection if too high. Damage to the equipment and risk of fire may result.

5. Replace the Control Side Cover and secure with its screws.
6. Restore power to the unit and test for proper function.

TROUBLESHOOTING & DIAGNOSTICS

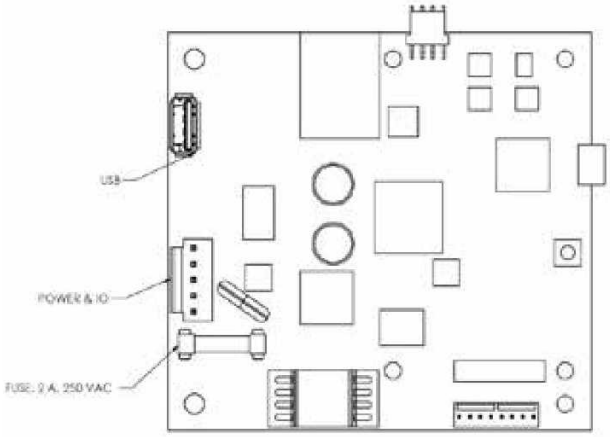
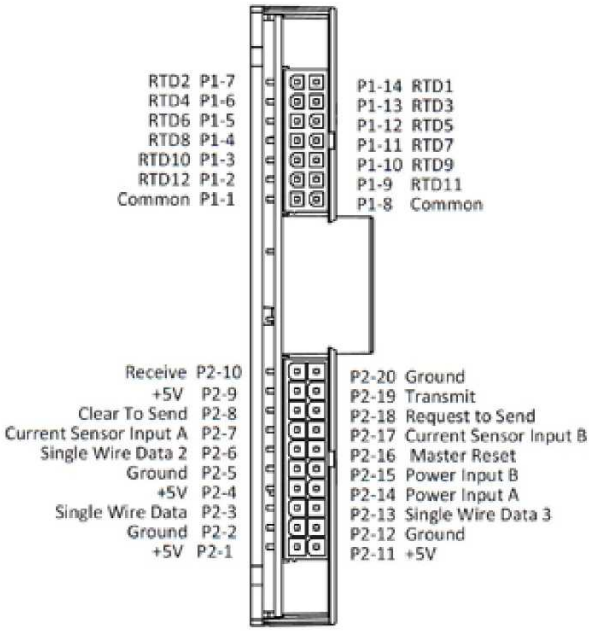
IRHS TROUBLESHOOTING FLOW CHART

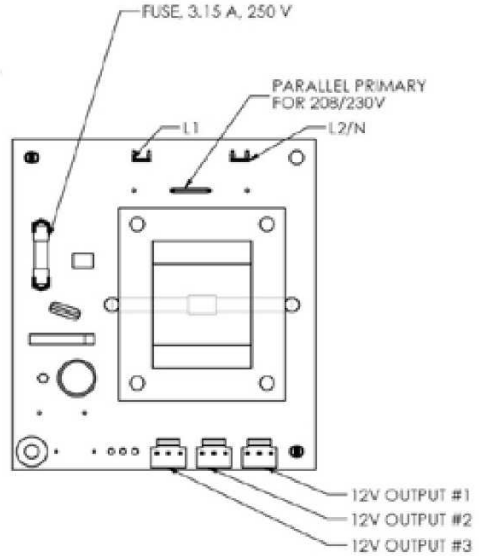
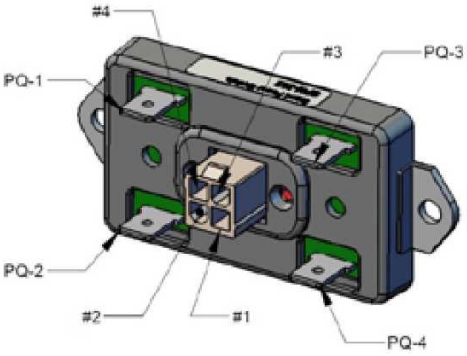


IRHS TROUBLESHOOTING GUIDE

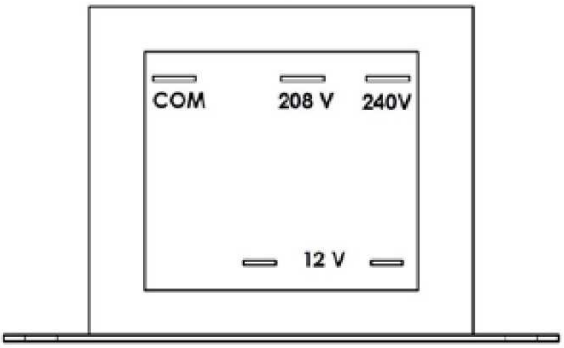
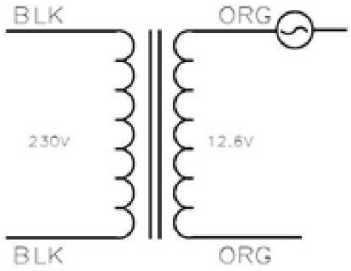
COMPONENT CHECK	STATE		POSSIBLE CONDITIONS	SOLUTION(S)
Unit Powered?			Unplugged	Plug Power Cord into correct receptacle
			Power Cord damaged	Repair/Replace Power Cord
			Circuit Breaker tripped	Reset panel breaker
			Faulty receptacle	Replace receptacle
			Fuse	Replace Fuse
			Wiring/Connectors	Trace and repair wiring
			On/Off Switch	Replace On/Off Switch
Timer (Menu) Bar Displays	Blank?	Both Bars	Transformer	Replace Transformer
			Controller	Replace Controller
			Keypad Display	Replace Keypad Display
			Wiring/Connectors	Trace and repair wiring
		Rear Bar Only	Wiring/Connectors	Trace and repair wiring
			IR Relay	Replace faulty relay
		Individual Keypad	Wiring/Connectors	Trace and repair wiring
			Keypad Display	Replace Keypad Display
	Showing Error Code	"SENS" or "HIGH"	RTD	Replace RTD (Temperature) Sensor
			RTD Board	Replace RTD Board
			Programming	Reprogram the unit
		"LOW"	RTD	Replace RTD (Temperature) Sensor
			RTD Board	Replace RTD Board
			Programming	Reprogram the unit
			High Limit Switch	Allow unit to cool and switch reset
				Replace High Limit Swith
		"BULB"	Wiring/Connectors	Trace and repair wiring
			IR Relay	Replace faulty relay
			Emitter (IR Bulb)	Replace Emitter (IR Bulb)
			Emitter Socket	Replace Emitter (IR Bulb) Socket
HeatSink (Bottom) Heating?			Programming	Reprogram the unit
			Controller	Replace Controller
			Heat Relay	Replace faulty relay
			RTD	Replace RTD (Temperature) Sensor
			RTD Board	Replace RTD Board
			Heat Element	Replace Heat Element
			High Limit Switch	Allow unit to cool and switch reset
				Replace High Limit Swith
			Wiring/Connectors	Trace and repair wiring
Emitters (IR Bulbs)	Not Operating?		Programming	Reprogram the unit
			Controller	Replace Controller
			Emitter (IR Bulb)	Replace Emitter (IR Bulb)
	Operating?		Glass Assembly cleanliness	Clean Glass Assembly
				Check Glass Assembly for damage/defect
			Lid usage	Ensure proper lid for product is used
Programming			USB Drive	Ensure USB drive is blank and download recipes
				Replace USB drive
			Website Programming	Reprogram the unit
			USB Port	Replace USB Port
			Wiring/Connectors	Trace and repair wiring
			Controller	Replace Controller
Daypart Switch			Heat Relay	Replace faulty relay
			Controller	Replace Controller
			Daypart Switch	Replace Daypart Switch
Lids/Pans			Proper fit	Verify proper proper lid and pan installation
			Glass Assembly	Check Glass Assembly for damage/defect
				Ensure Glass Assembly is correctly installed
			Non-Duke parts	Verify OEM information (packaging/labeling)

IRHS COMPONENT TECHNICAL SPECIFICATIONS

PART NO.	DESCRIPTION	SPECIFICATIONS
166112	ACM, Power Control Board (VISOR-only)	
166080	**Controller**; Renau HMC-34	
166017	**Emitter, IRHS**; 208 VAC	• 208 VAC; 340 (170 x 2) W (± 3%)
166018	**Emitter, IRHS**; 240 VAC	• 240 VAC; 340 (170 x 2) W (± 3%)
166004	**Heat Element**; 2-Wide, 208 VAC	• 208 VAC; 300 W
166005	**Heat Element**; 2-Wide, 240 VAC	• 240 VAC; 300 W
166007	**Heat Element**; 3-Wide, 208 VAC	• 208 VAC; 450 W
166008	**Heat Element**; 3-Wide, 240 VAC	• 240 VAC; 450 W
166009	**Heat Element**; 4-Wide, 208 VAC	• 208 VAC; 300 W
166010	**Heat Element**; 4-Wide, 240 VAC	• 240 VAC; 300 W

<table>
<tr><th>PART NO.</th><th>DESCRIPTION</th><th>SPECIFICATIONS</th></tr>
<tr><td>166082</td><td>Keypad Display; Up/Down
(all configurations)</td><td rowspan="2">• Input: 5 VDC
• Pins:
— Pin #1: GND
— Pin #2: 5 VDC
— Pin #3: Data In
— Pin #4: Data Out</td></tr>
<tr><td>166083</td><td>Keypad Display; Up/Up
(only with 3x4 configurations)</td></tr>
<tr><td>166111</td><td>Modular Jack (VISOR-only)</td><td>• 1.5 A; 125 VDC
• Torque: 12 Kgf/cm
• CAT 5
• IP67</td></tr>
<tr><td>120011</td><td>Power Control Board
(VISOR-only)</td><td>• Primary 208/230 VAC; Secondary: 12 VAC

</td></tr>
<tr><td>157830</td><td>Relay, Smart Power Module</td><td>• Max. Load Current: 20 Arms. Heat sinking required.
• Operating Voltage: 24-250 Vrms
• Input : 5V TTL


<table>
<tr><th colspan="2">Connector PIN Data</th></tr>
<tr><td>PQ-1</td><td>LOAD1-1</td></tr>
<tr><td>PQ-2</td><td>LOAD1-2</td></tr>
<tr><td>PQ-3</td><td>LOAD2-1</td></tr>
<tr><td>PQ-4</td><td>LOAD2-2</td></tr>
<tr><td>#1</td><td>+5V DC</td></tr>
<tr><td>#2</td><td>GND</td></tr>
<tr><td>#3</td><td>1-wire network IN</td></tr>
<tr><td>#4</td><td>1-wire network OUT</td></tr>
</table></td></tr>
</table>

PART NO.	DESCRIPTION	SPECIFICATIONS
158279	RTD Sensor	• Temperature Range: -65°F to 260°F
158312	Thermostat, High Limit	• Opens @ 300°F; Closes @ 270°F
155749	**Transformer;** 208/240 VAC	• Primary: 208/240 VAC; Secondary: 12 VAC 
156838	**Transformer;** 230 VAC	• Input: 230 VAC; 50/60 Hz; Output: 12.6 V @ 2.38 A 

OPERATIONS

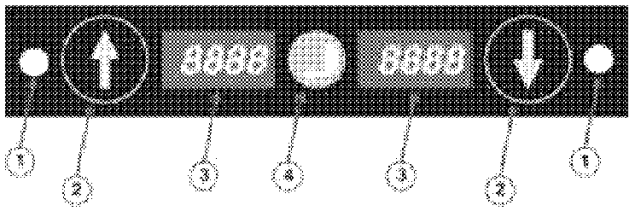
OPERATING PROCEDURES

- Ensure proper pan covers are inserted into the correct location for broiled products.
- Upon turning ON, allow the unit to heat until the menu bars display the pre-programmed product names. This does not occur before reaching proper temperature.

NOTE: If the menu bars display temperature at any time after the preheat period, discontinue use of the affected pan location(s) until the unit can be serviced.

OPERATIONS

Menu Bar Components

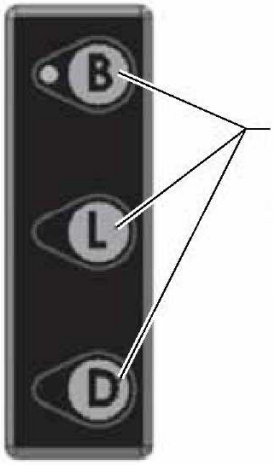


1. **Status LEDs.** Used for indicating status of pan.
   a. GREEN: Menu is Active – product in pan (use first)
   b. FLASHING GREEN: Cook Warning Time reached (cook more product) or keypad in edit (programming) mode
   c. NON-ILLUMINATED: Menu is inactive – no product in pan
2. **Arrow Buttons:**
   a. Used for starting/stopping/resetting the menu.
   b. Used to access Menu Mode.
   c. Indicate which pan the adjacent status LED and pan display are linked to.
3. **LED Displays:**
   a. Displays product name and hold time remaining (alternates between the two when the Menu is active).
   b. Once to temperature, product names can be viewed on the displays. Additional settings such as "LINK", "TIME", and "TEMP" can be viewed two different ways:
      1) Manually accessing Menu Mode through Menu Bars.
      2) Uploading unit settings from the IRHS to a USB Drive and viewing via the Internet. This is accomplished by using the same website used to download recipes.
4. **ENTER Button**. Used to access Menu Mode.

Changing Dayparts

There are two methods for selecting Dayparts:

1. Select the appropriate Daypart Button to switch between breakfast, lunch, and dinner menus. If necessary, the three (3) parts can be programmed for any three separate time periods – not just "breakfast", "lunch", and/or "dinner" menus.



PUSH BUTTONS TO CHANGE DAYPART MENU – CORRESPONDING LED WILL TURN ON (BREAKFAST SHOWN)

2. Via Menu Bar:

a. Enter Menu Mode by pressing and holding the ENTER button "↵" for three (3) seconds.

b. Status LED flashes, "**MENU**" is displayed on left Display, and either "**UP**" or "**DOWN**" is displayed on the right display – indicating which pan location information will be displayed/controlled.



c. After selecting the UP or DOWN Arrow, press the ENTER Button "↵" to accept.

d. Status LED stops flashing and "**MEAL ↵ SET1**" appears on the Display.



e. Press the ENTER button again. Status LED flashes indicating Menu Mode.

f. Use the arrow buttons to scroll to desired Daypart ("**MEAL ↵ SET1**", "**MEAL ↵ SET2**", or "**MEAL ↵ SET3**") and press the ENTER button to accept.



g. Status LED stops flashing, "**UPDATING**" is displayed for a few seconds, and then the desired Daypart ("**MEAL ↵ SETx**") is displayed.





h. Press the UP arrow button one last time to scroll to "**EXIT**" and press the ENTER button "↵" to exit Menu Mode.



Display Link, Hold Time, or Temperature

1. Enter Menu Mode by pressing and holding the ENTER button "↵" for three (3) seconds.
2. Status LED flashes, "**MENU**" is displayed on left Display, and either "**UP**" or "**DOWN**" is displayed on the right display – indicating which pan location information will be displayed/controlled.



3. After selecting the UP or DOWN arrow, press the ENTER Button "↵" to accept.
4. Status LED stops flashing and "**MEAL ↵ SET1**" appears on the Display.



5. Press the ENTER button "↵" again. Status LED flashes indicating edit mode.
6. Press the UP arrow button repeatedly to scroll up or down through "**LINK**", "**TIME**", and "**TEMP**". The DOWN arrow button can be used to cycle the opposite direction.



This indicates product named **BURG** is linked pan locations



This indicates the hold time for BURG



This indicates the Heat Sink Temperature for BURG

7. Press the UP arrow button one last time to scroll to "**EXIT**" and press the ENTER button "↵" to exit Menu Mode.



DIAGNOSTICS

Checking Heat Sink Temperature

- A surface temperature probe can be used to check the temperature of the heat sink surface.
- No pans should be in wells during the pre-heat and temperature check period. Pre-heat the holding unit for 30 minutes before taking any temperature readings.
- Ensure the pan location being measured is not in a hold cycle mode (timing down).
- Locate the surface temperature probe in the geometric center of the desired pan location. Make sure the probe is making good contact with the surface while taking readings.
- The temperature control will exhibit a swing in temperature as the control cycles on and off while regulating to the set point temperature. The average of several readings taken should be +/- 5°F from the set point.
- Compare the measured temperature to the programmed heat sink set point (TEMP) for the specified pan location.

Checking IR Bulb Function

- IR bulbs are either ON or OFF.
- Select an arrow to initiate a hold cycle.
- After heat up is complete (display will show product names), visually confirm the IR bulb comes on.

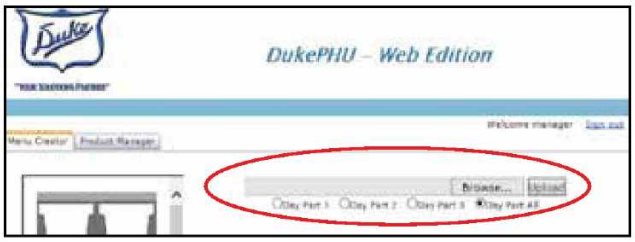
Checking Product Settings (via USB file)

1. Turn the IRHS on and wait for temperature or product names to display.
2. Insert a **blank** USB drive (any size) into the USB port. The USB port LED will light solid green and a single chirp should be heard.
3. The display will go blank and the USB port LED will begin flashing green.
4. A second chirp should be heard, then the USB port LED will return to solid green indicating that the file has successfully uploaded from the IRHS to the USB drive.
5. Remove the USB drive from the port.
6. To view the settings file on the Internet, log onto the same website used to download recipes:

   www.dukemfg.info/bkirhs

   User Name: "**manager**"

   Password: "**password**" (case sensitive)



Error Codes

The RTD Board performs a routine, internal check after turning the unit on to validate the unit is sensing temperature and heating properly. In the event of a problem, an error will display on the Menu Bar:

"BULB" – IR Bulb Circuit Fault

Indicates a fault with a specified IR Bulb circuit. The affected pan location is not available for timing product and a qualified service technician should be contacted to identify the cause of the fault.

"LOW" – Under-Temperature Fault

Indicates a fault with a heating circuit component. The display will show "**LOW**" if the temperature stays 10°F below the set point temperature for 30 minutes. The affected pan location is not available for timing product and a qualified service technician should be contacted to identify the cause of the fault.

"HIGH" – Over-Temperature Fault

Indicates a fault with a heating circuit component. The display will show "**HIGH**" if the temperature stays 10°F above the set point temperature for 30 minutes. The affected pan location is not available for timing product and a qualified service technician should be contacted to identify the cause of the fault.

"SENS" – Sensor Fault

May indicate the unit has been programmed improperly (i.e., loading a 2x4 product configuration file into a 2x2 unit). An attempt to properly reprogram the unit should be made.

May indicate a fault with a heat sink temperature sensor. The affected pan location is not available for timing product and a qualified service technician should be contacted to identify the cause of the fault.

Temperature Check Procedure

1. **No pans should be in wells during the pre-heat and temperature check.** Pre-heat the warmer for 30 minutes before taking any temperature readings. Do not take readings unless the cavity has been empty for 30 minutes. This will allow the temperature to stabilize and will prevent false readings.
2. A digital temperature meter that has been calibrated must be used to get an accurate temperature reading. Use a thermocouple surface temperature probe to measure temperatures.
3. The heating well should be cleaned and empty before the temperature is checked. Avoid any air drafts that might flow through the cavity.
4. Locate the surface temperature probe on the bottom of the first cavity as shown for the cabinet size.
5. All temperature controls exhibit a swing in temperature as the control cycles on and off while regulating to the set point. The correct calibration temperature is the average of several readings taken over a period of 20 minutes after the warmer has been pre-heated. The average temperature should be ± 5°F from the set point.

CLEANING & ROUTINE MAINTENANCE

CLEANING

IF DAILY CLEANING IS PERFORMED ROUTINELY, DEEPER, MORE AGGRESSIVE, CLEANING METHODS CAN BE AVOIDED. OVER LONGER PERIODS OF TIME, FRIED FOOD PRODUCTS CAN ACCUMULATE AND BAKE ON SURFACES OF THE COMPARTMENTS.

Cleaning solutions need to be alkaline based or non-chloride cleaners. Any cleaner containing chlorides will damage the protective film of the stainless steel. Chlorides are also commonly found in hard water, salts and household and industrial cleaners. If cleaners containing chlorides are used, be sure to rinse repeatedly and dry thoroughly upon completion.

WARNING: NEVER USE AN ACID BASED CLEANING SOLUTION!

MANY FOOD PRODUCTS HAVE AN ACIDIC CONTENT WHICH CAN DETERIORATE THE FINISH. BE SURE TO CLEAN ALL FOOD PRODUCTS FROM ANY STAINLESS STEEL SURFACE. COMMON ITEMS INCLUDE, TOMATOES, PEPPERS AND OTHER VEGETABLES.

Routine cleaning of stainless steel can be done with soap and water. Extreme stains or grease should be cleaned with a non-abrasive cleaner and plastic scrub pad. It is always good to rub with the grain of the steel.

Early signs of stainless steel breakdown can consist of small pits and cracks. If this has begun, clean thoroughly and start to apply stainless steel cleaners in attempt to restore and preserve the finish of the steel's protective layer.

RECOMMENDED SUPPLIES

- Cleaning Towels
- Non-Scratch Scrub Pad
- SYR Cleaning Brush Tool
- Kay Super Concentrate Degreaser
- Kay-5® Sanitizer/Cleaner, or compatible sanitizer

DAILY INSPECTION CHECKLIST

Inspect glass daily for chips, cracks, or breaking. Discard all food and notify manager if any chips, cracks, or broken glass are found. Do not use equipment. All glass must be in good condition before using equipment to hold food.

- Make sure the unit is free of any grease or visible food soils.
- Make sure the exterior of the unit is free of smudges or soil.
- Make sure the unit holding pans are free of damage and any food soil residue.

DAILY CLEANING PROCEDURES

Never use a high-pressure water wash for this cleaning procedure as water can damage electrical components.

1. Turn unit off, unplug, and allow to cool for at least 10 minutes.
2. Remove all holding pans and covers. Wash, rinse, and sanitize at the 3-compartment sink.
3. Allow to air dry.
4. Fully clean all the heat sink surfaces. Spray the cleaning brush tool with degreaser and use as shown – gently sliding in and out of each compartment.

   NOTE: NEVER USE STEEL PADS, WIRE BRUSHES, OR SCRAPERS!



5. Fully clean upper glass surfaces by hand. Spray a cleaning towel, or non-scratch scrub pad when necessary, with soapy solution degreaser.

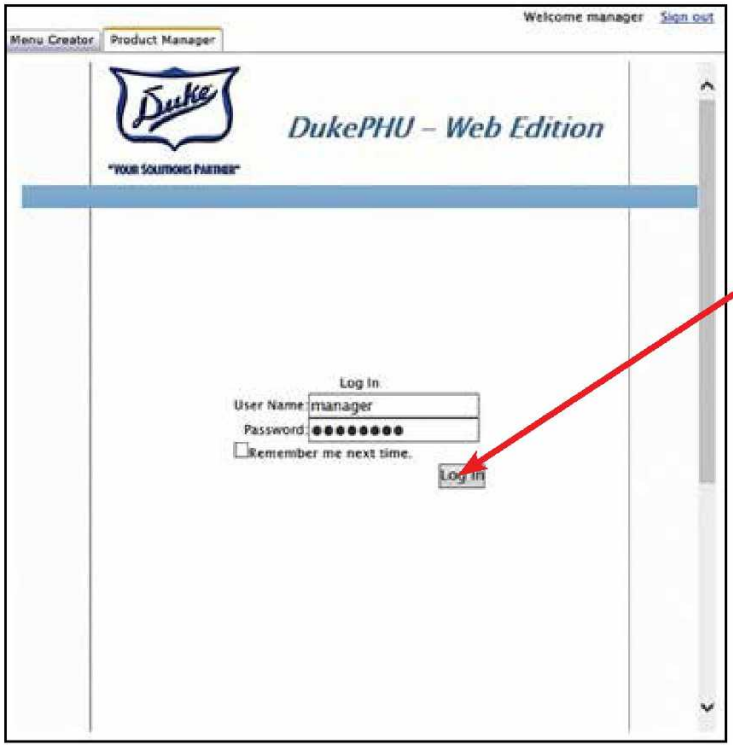
   NOTE: Never spray cleaning solution directly onto the cabinet.

6. Use sanitizer-soaked towels to wipe out all interior compartments on the unit. Wipe the top compartments first, then the remaining levels from top to bottom.

   IMPORTANT: Use clean, sanitizer-soaked towels (towels must be wrung out so that they are damp and not dripping, dripping towels may harm the unit)

WEBSITE PROGRAMMING

1.



Log on.

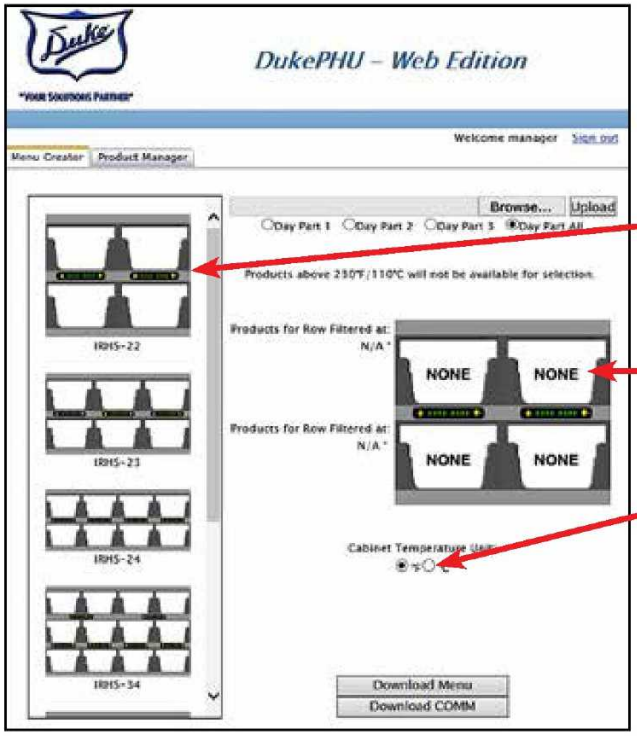
www.dukemfg.info/bkirhs

User Name: **manager**

Password: **password**

(case sensitive)

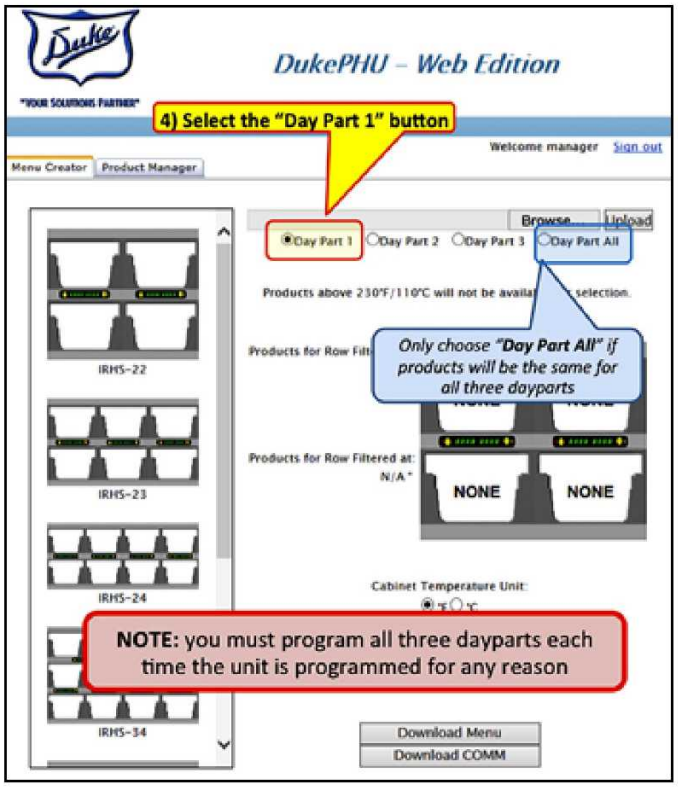
2.



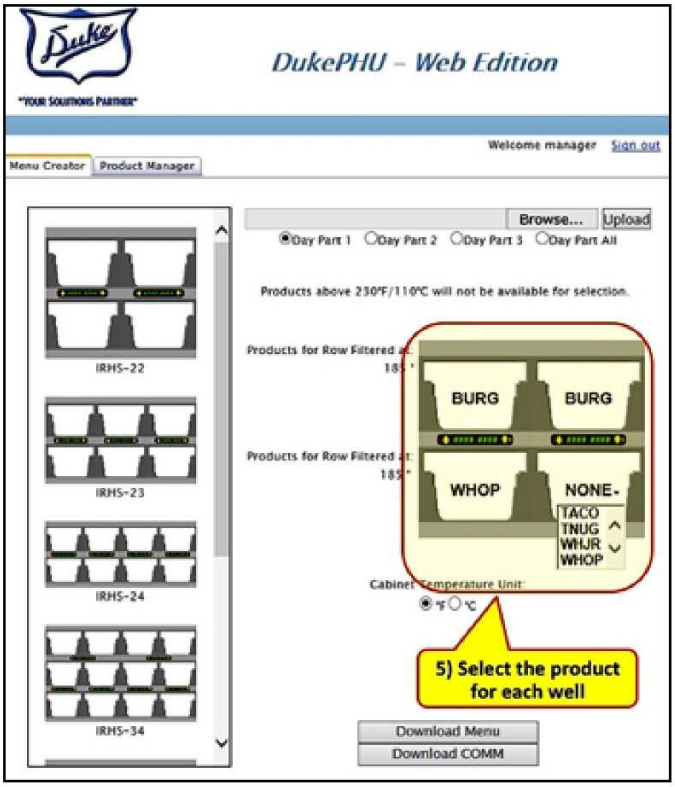
NOTE: When you first log onto this page, you must:

1) Select the desired equipment configuration on the left, before it will…
2) …show up on the right side in order to be programmed.
3) If necessary, change the Cabinet Temperature Unit to "°C" (Celsius)

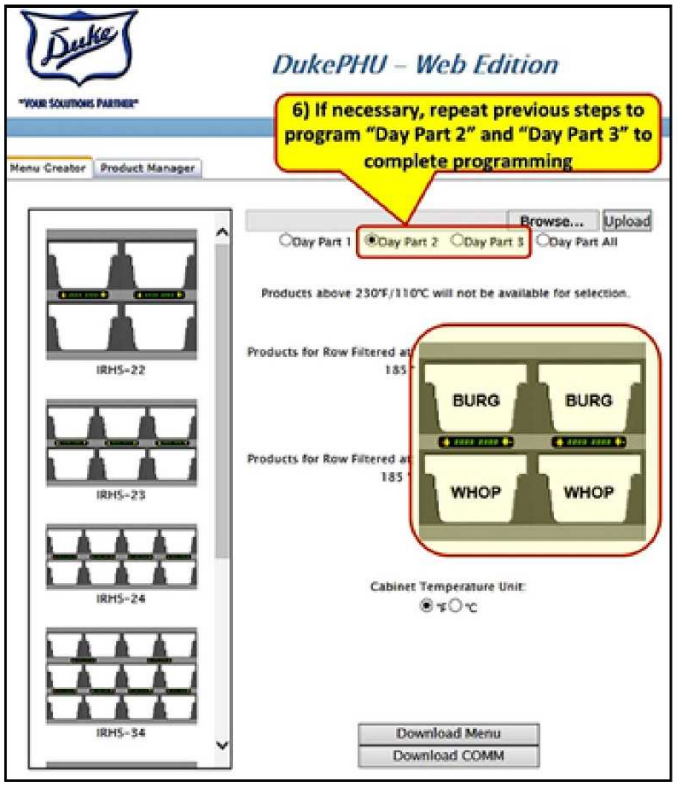
3.


DukePHU – Web Edition
4) Select the "Day Part 1" button
Only choose "Day Part All" if products will be the same for all three dayparts
NOTE: you must program all three dayparts each time the unit is programmed for any reason
Download Menu
Download COMM

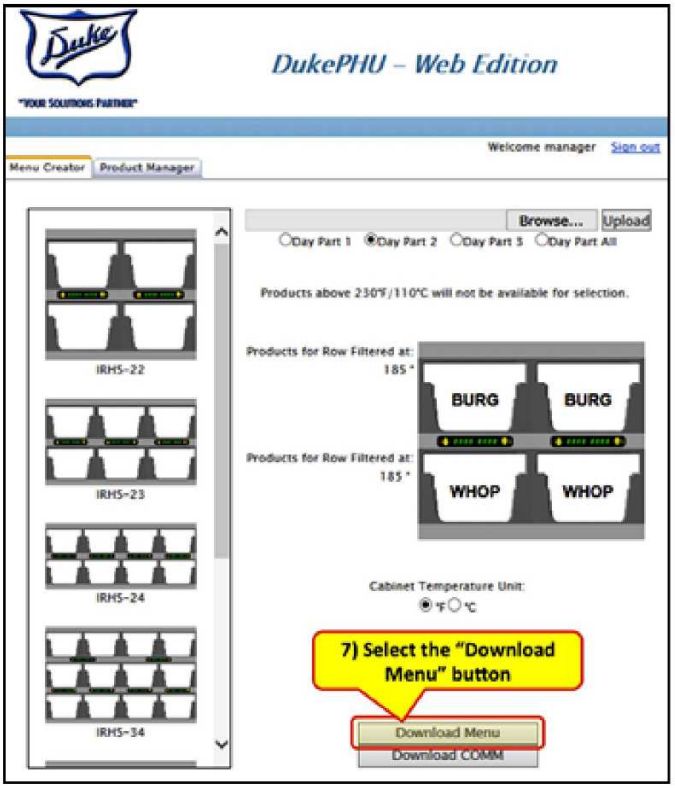
4.


DukePHU – Web Edition
BURG
BURG
WHOP
NONE
TACO
TNUG
WHJR
WHOP
5) Select the product for each well
Download Menu
Download COMM

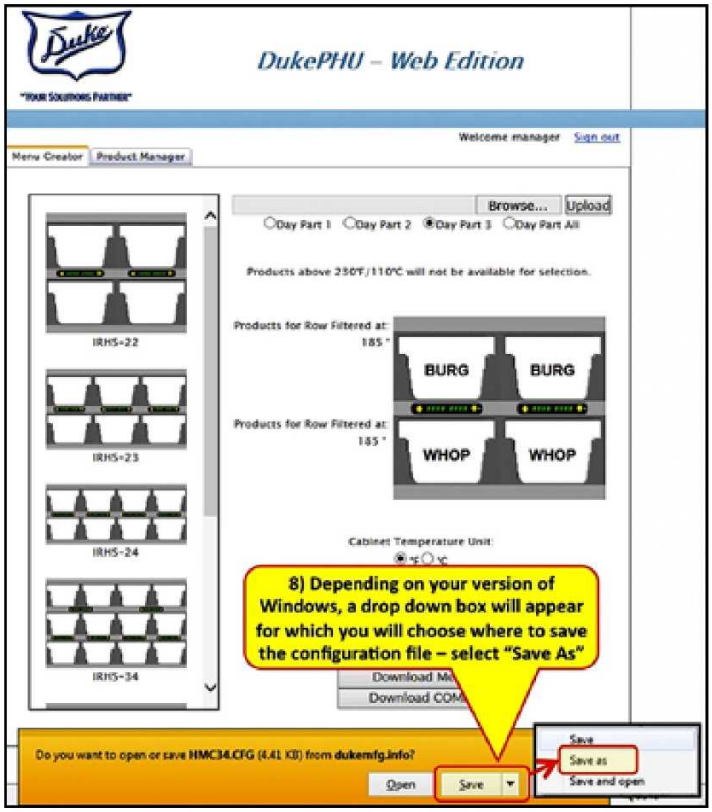
5.


DukePHU – Web Edition
6) If necessary, repeat previous steps to program "Day Part 2" and "Day Part 3" to complete programming
BURG
BURG
WHOP
WHOP
Download Menu
Download COMM

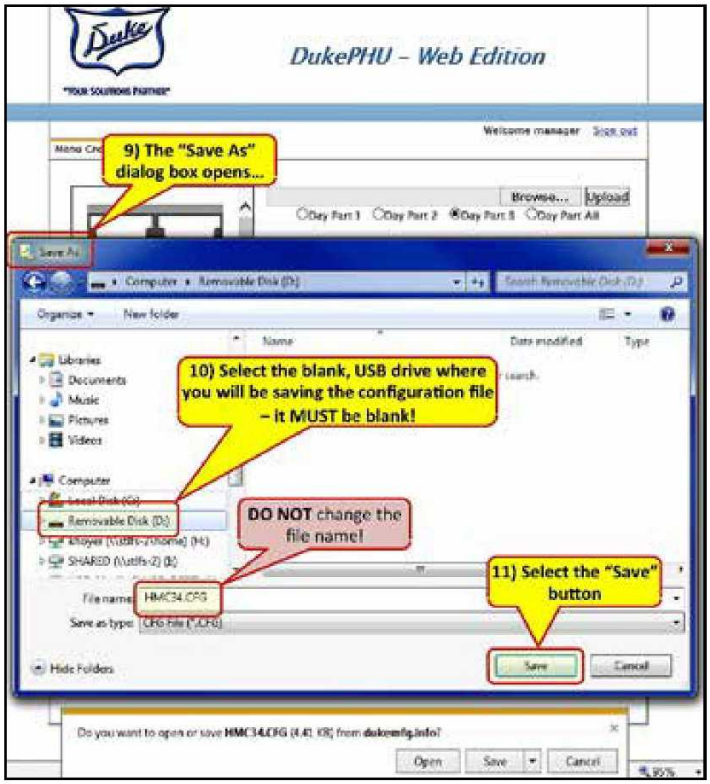
6.


DukePHU – Web Edition
BURG
BURG
WHOP
WHOP
7) Select the "Download Menu" button
Download Menu
Download COMM

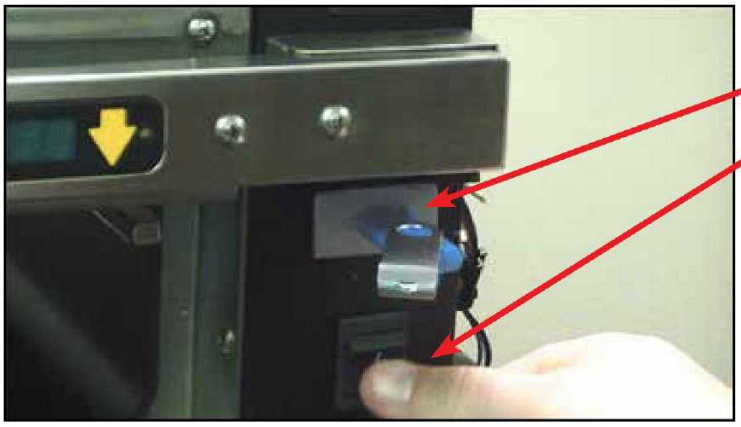
7.


DukePHU – Web Edition
Welcome manager Sign out
Menu Creator
Product Manager
Browse...
Upload
Day Part 1
Day Part 2
Day Part 3
Day Part All
Products above 230°F/110°C will not be available for selection.
Products for Row Filtered at: 185°
BURG
BURG
Products for Row Filtered at: 185°
WHOP
WHOP
IRHS-22
IRHS-23
IRHS-24
IRHS-34
Cabinet Temperature Unit:
8) Depending on your version of Windows, a drop down box will appear for which you will choose where to save the configuration file – select "Save As"
Download M
Download COM
Do you want to open or save HMC34.CFG (4.41 KB) from dukemfg.info?
Open
Save
Save
Save as
Save and open

8.

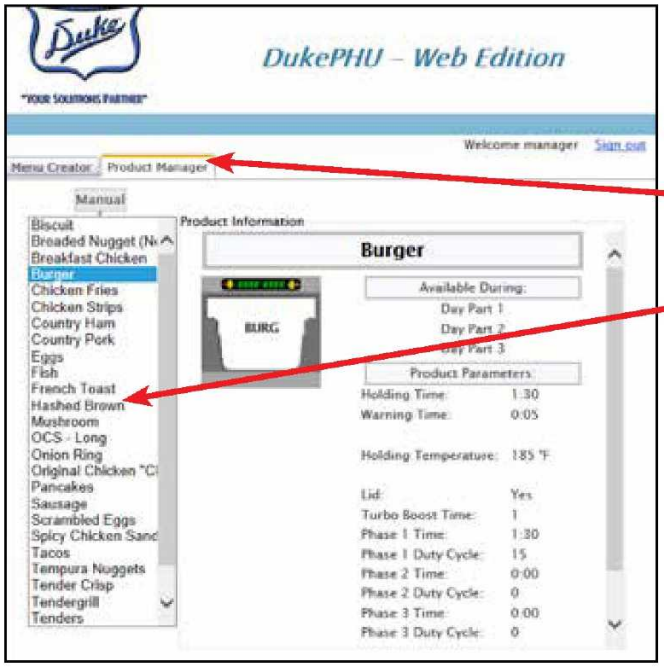

DukePHU – Web Edition
Welcome manager Sign out
9) The "Save As" dialog box opens...
Browse...
Upload
Day Part 1
Day Part 2
Day Part 3
Day Part All
Save As
Computer
Removable Disk (D:)
Organize
New folder
Name
Date modified
Type
Libraries
Documents
Music
Pictures
Videos
Computer
Removable Disk (D:)
10) Select the blank, USB drive where you will be saving the configuration file – it MUST be blank!
DO NOT change the file name!
File name: HMC34.CFG
Save as type:
11) Select the "Save" button
Hide Folders
Save
Cancel
Do you want to open or save HMC34.CFG (4.41 KB) from dukemfg.info?
Open
Save
Cancel

Unit Programming Instructions



1) Power off the unit.
2) Insert the flash drive into the USB slot.
3) Power on the unit.
4) The program will automatically be installed. *The unit will chirp a few times, the Emitters will cycle, and the display shows different displays while programming is in progress*
5) Programming is complete when Menu Bar indicates the updated products and/or temperatures in all displays.

Product Manager Tab

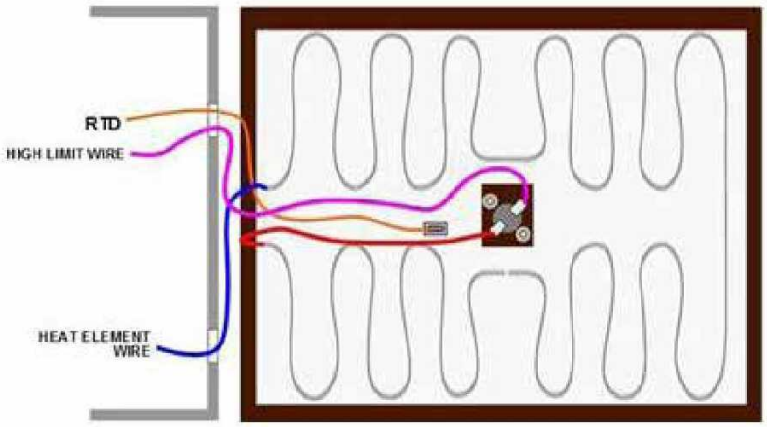


Select this tab...

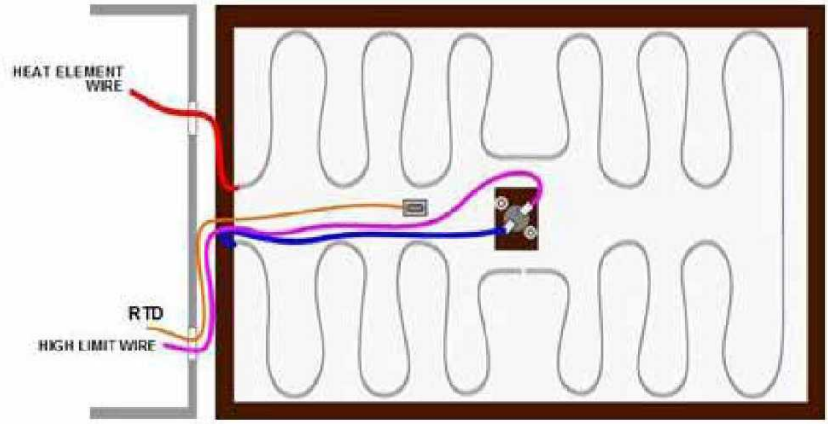
...and then a product on the left side of the screen to view hold settings for various products.

IRHS DECK WIRING

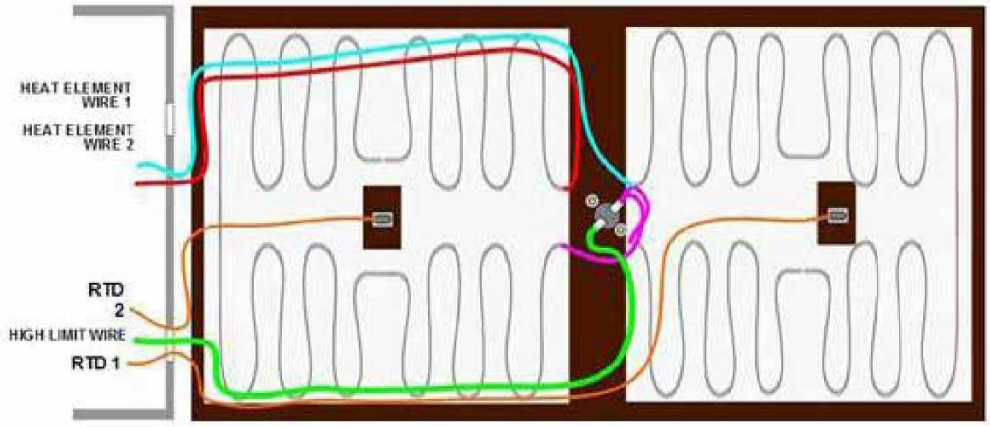
2 WIDE, LEFT SIDE CONTROL



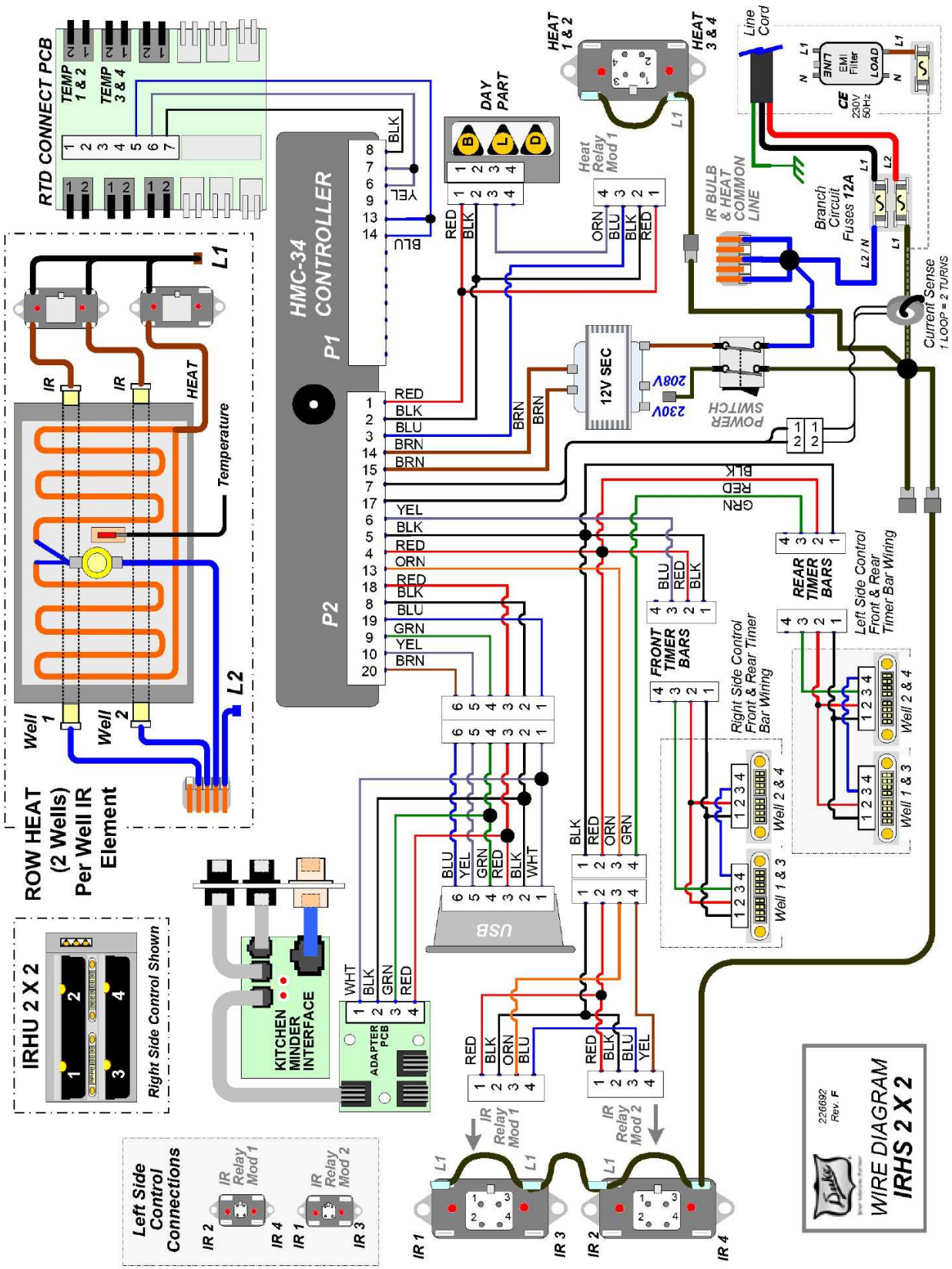
3 WIDE, RIGHT SIDE CONTROL



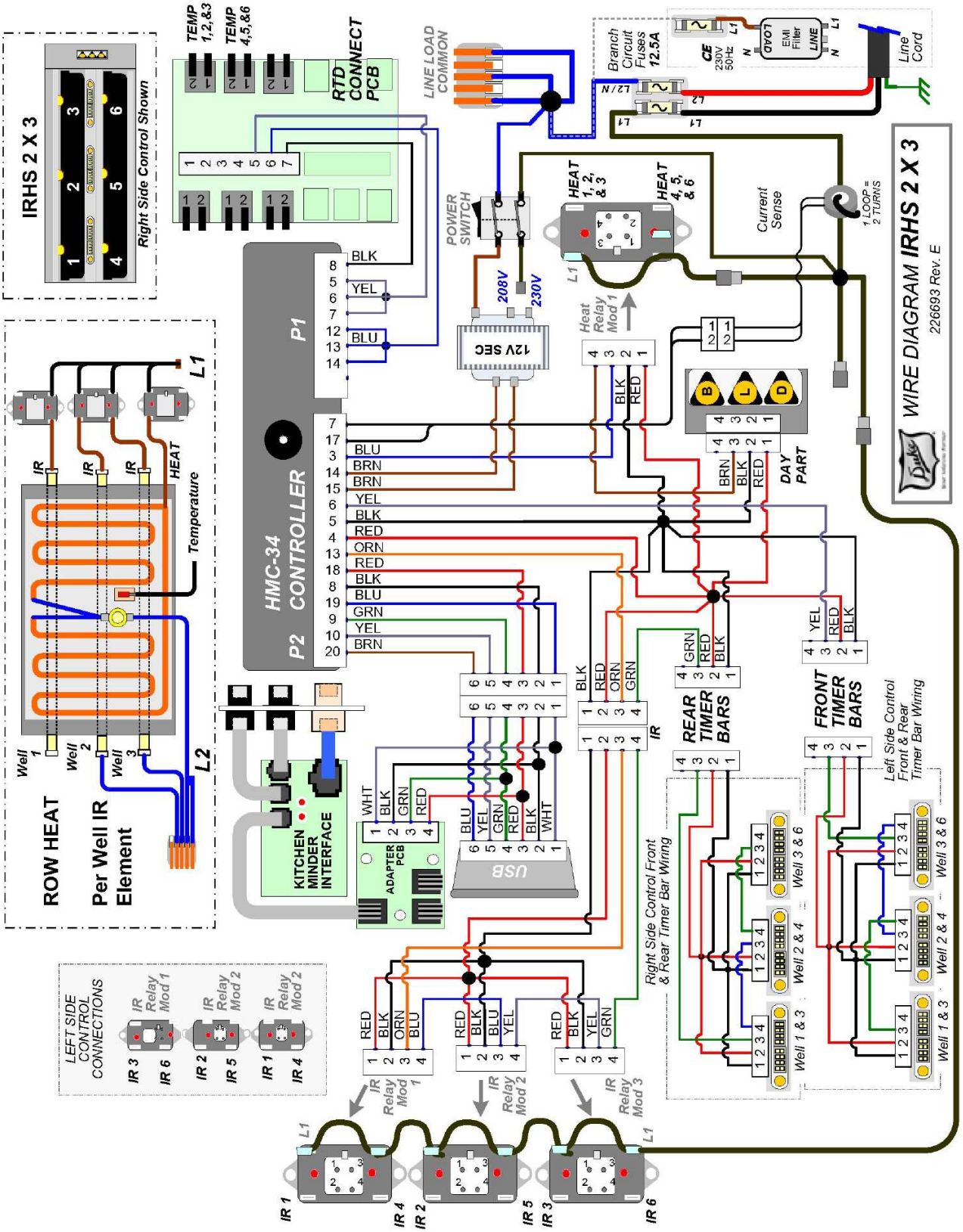
4 WIDE, RIGHT SIDE CONTROL



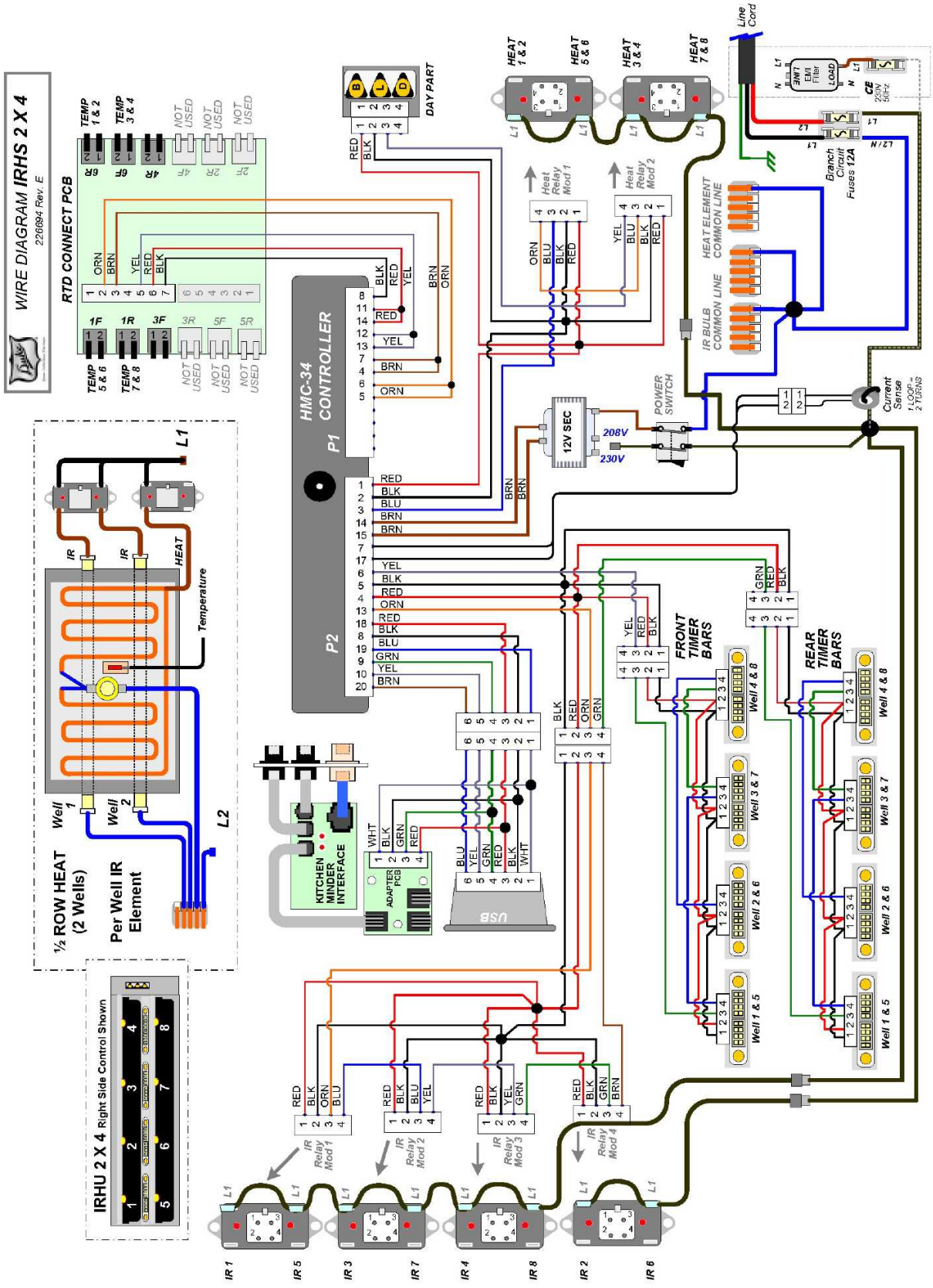
IRHS22 WIRING DIAGRAM



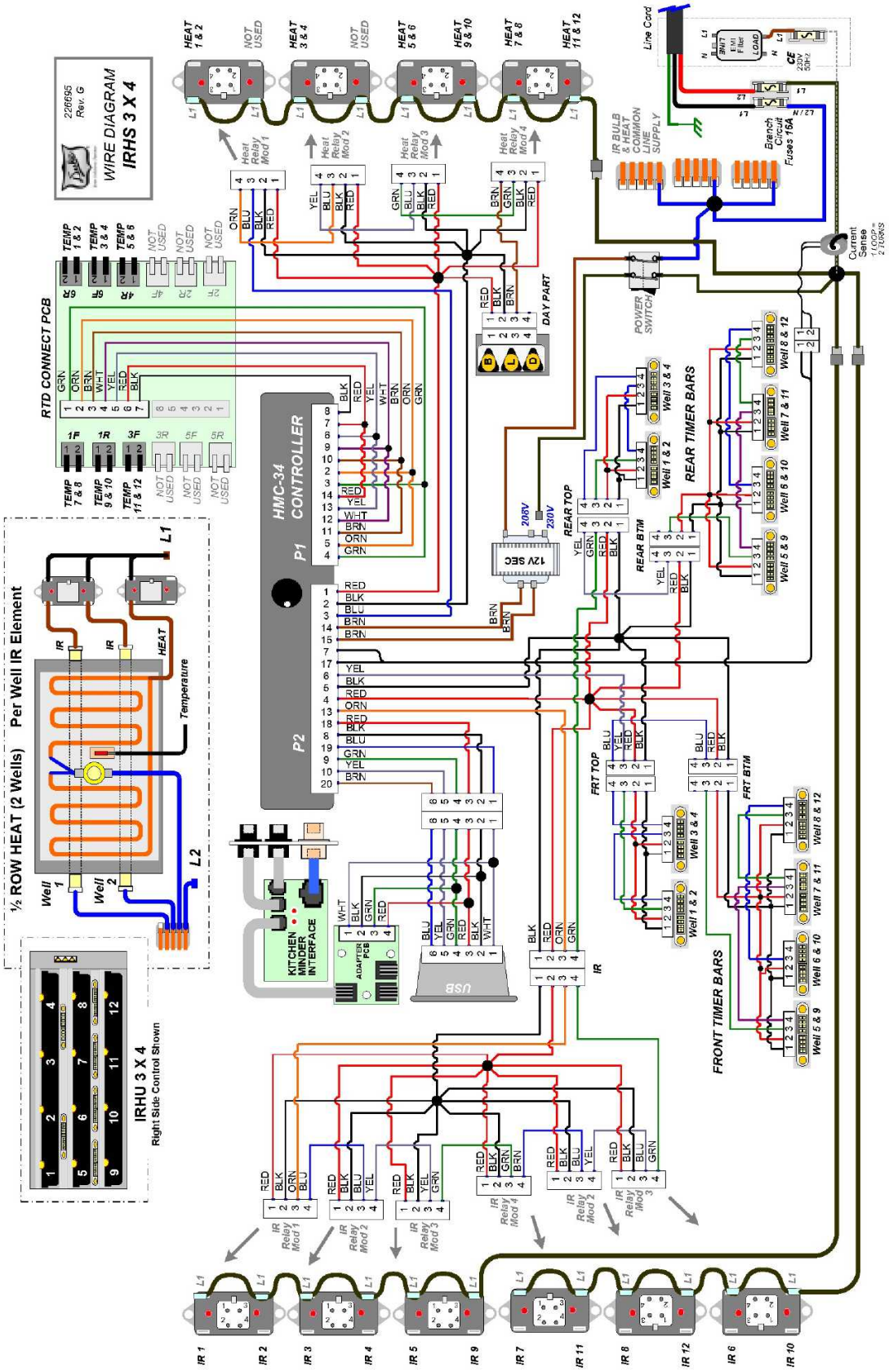
IRHS23 WIRING DIAGRAM



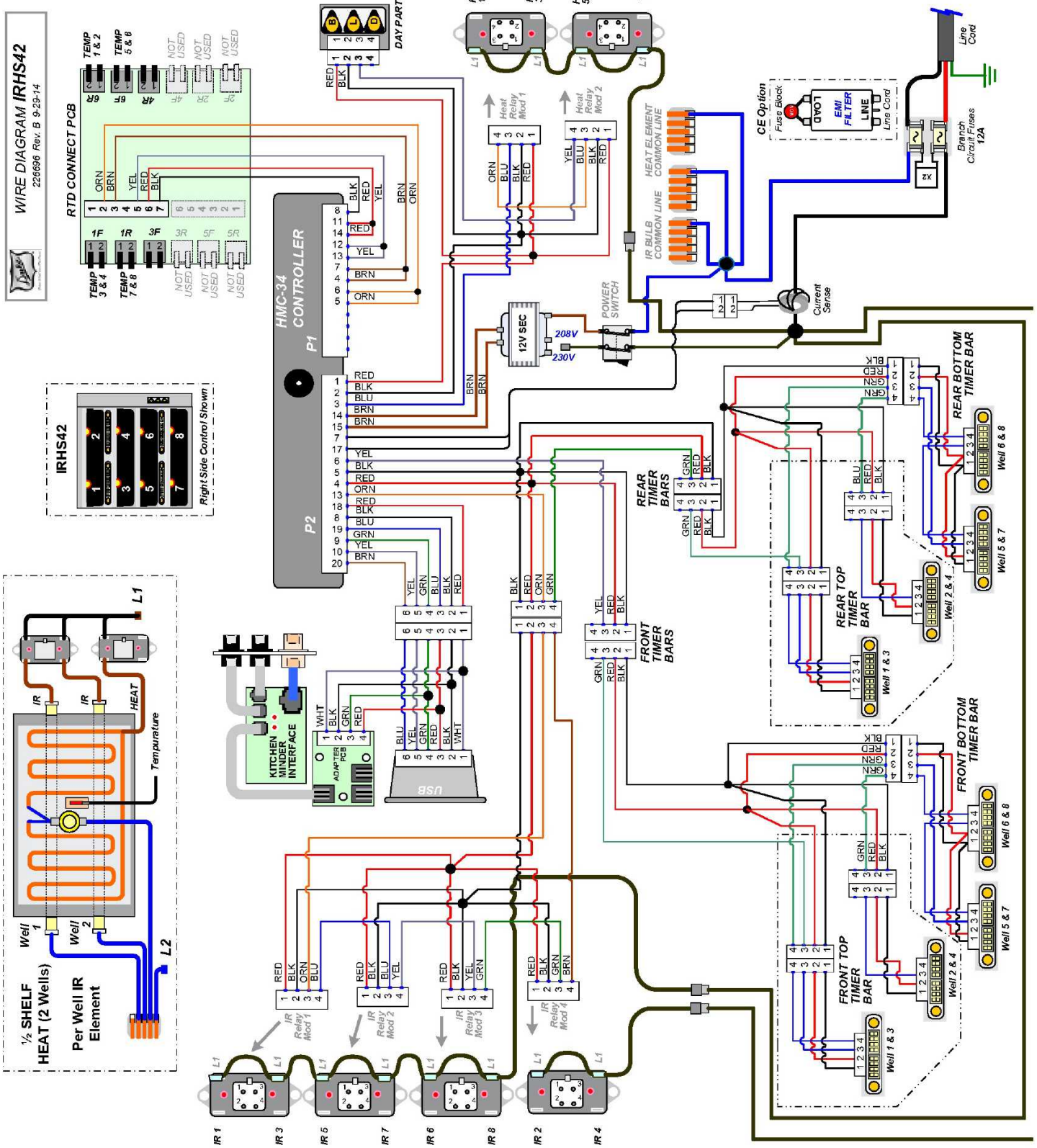
IRHS24 WIRING DIAGRAM



IRHS34 WIRING DIAGRAM



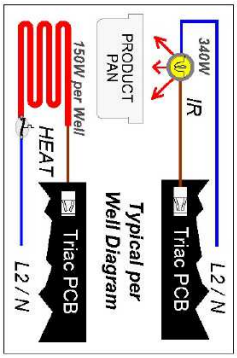
IRHS42 WIRING DIAGRAM

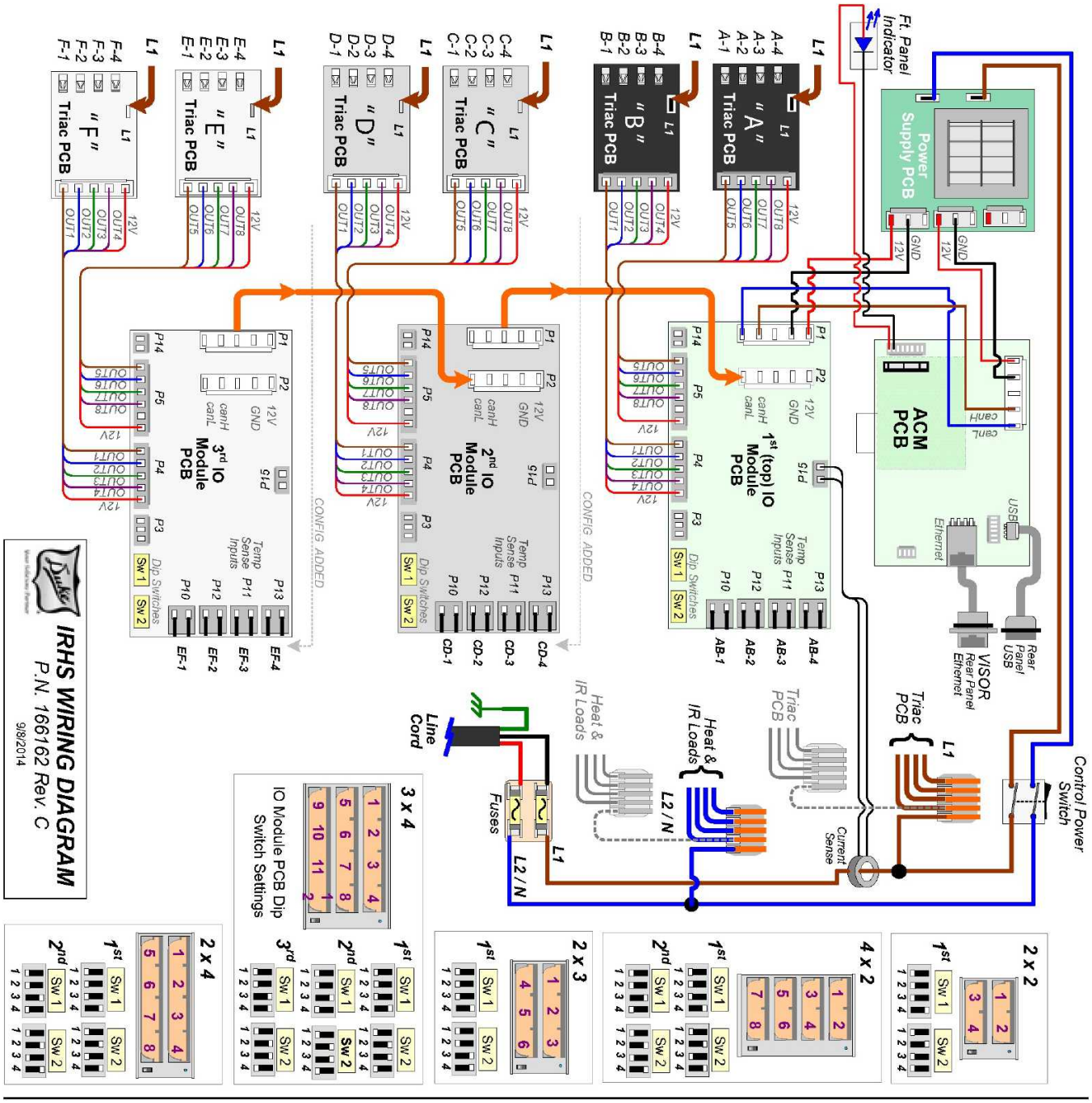


VISOR INTERFACE CABLE WIRING DIAGRAM

Heat & IR Load Connections

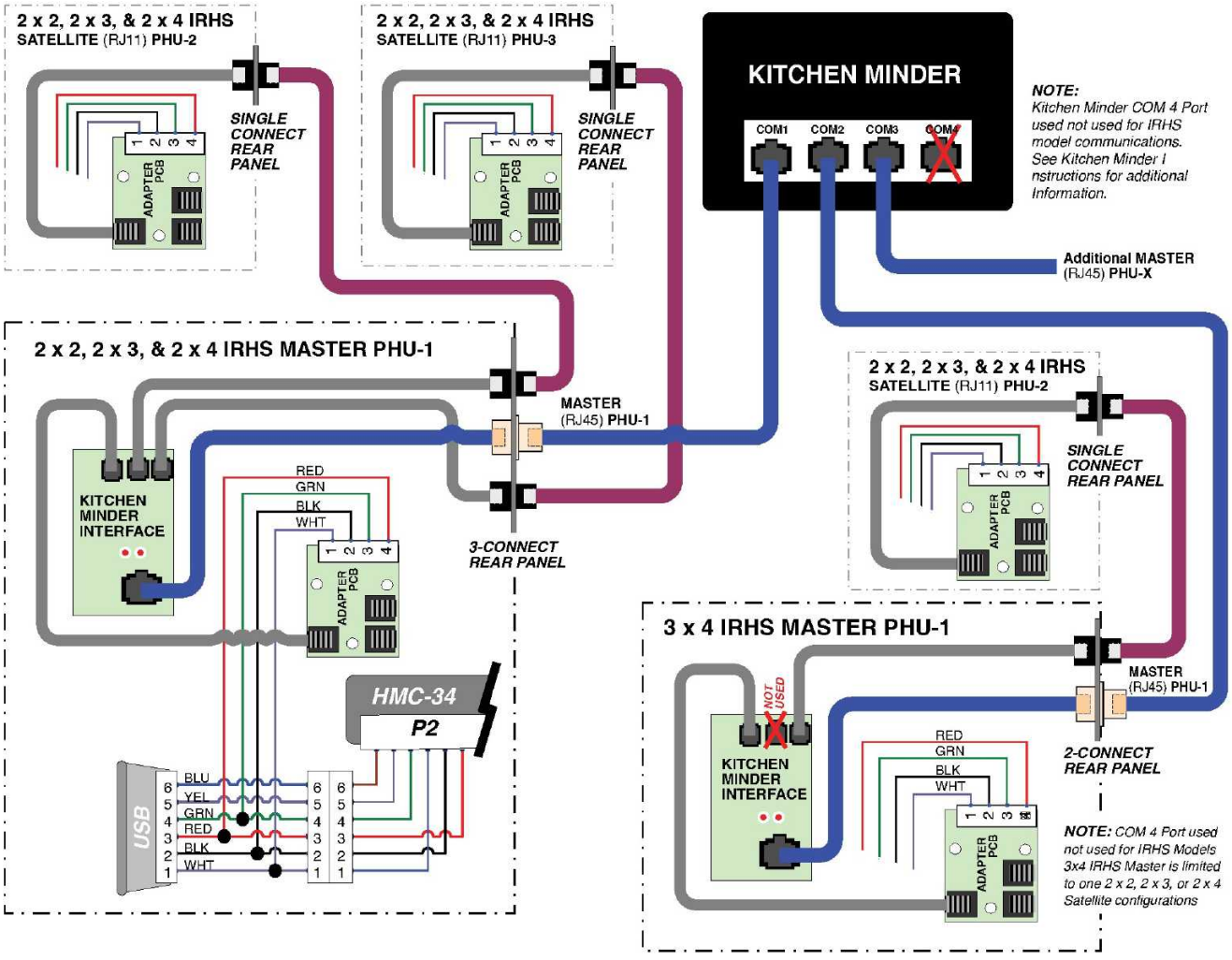
2 x 2	Heat	IR Bulb	Temp.
Well 1	B-1	A-1	AB-1
Well 2		A-2	
Well 3	B-3	A-3	AB-3
Well 4		A-4	
4 x 2	**Heat**	**IR Bulb**	**Temp.**
Well 1	B-1	A-1	AB-1
Well 2		A-2	
Well 3	B-3	A-3	AB-3
Well 4		A-4	
Well 5	D-1	C-1	CD-1
Well 6		C-2	
Well 7	D-3	C-3	CD-3
Well 8		C-4	
2 x 3	**Heat**	**IR Bulb**	**Temp.**
Well 1	B-1	A-1	AB-1
Well 2		A-2	
Well 3		A-3	
Well 4	B-3	A-4	AB-3
Well 5		B-2	
Well 6		B-4	
2 x 4	**Heat**	**IR Bulb**	**Temp.**
Well 1	B-1	A-1	AB-1
Well 2		A-2	
Well 3		A-3	
Well 4	B-3	A-4	AB-3
Well 5		B-2	
Well 6		B-4	
3 x 4	**Heat**	**IR Bulb**	**Temp.**
Well 1	B-1	A-1	AB-1
Well 2		A-2	
Well 3		A-3	
Well 4	B-3	A-4	AB-3
Well 5		C-1	
Well 6	D-1	C-2	CD-1
Well 7		C-3	
Well 8	D-3	C-4	CD-3
Well 9	F-1	E-1	EF-1
Well 10		E-2	
Well 11		E-3	
Well 12	F-3	E-4	EF-3





KITCHEN MINDER CONNECTIONS
(OPTIONAL UPGRADE; NOT AVAILABLE ON STANDALONE UNIT)

MASTER	SATELLITE 1	SATELLITE 2
IRHS22 (2X2)	2X2. 2X3, 2X4, 4X2	2X2. 2X3, 2X4, 4X2
IRHS23 (2X3)	2X2. 2X3, 2X4, 4X2	2X2. 2X3, 2X4, 4X2
IRHS24 (2X4)	2X2. 2X3, 2X4, 4X2	2X2. 2X3, 2X4, 4X2
IRHS34 (3X4)	NOT AVAILABLE	2X2. 2X3, 2X4
IRHS42 (4X2)	2X2. 2X3, 2X4, 4X2	2X2. 2X3, 2X4, 4X2



NOTES

CUSTOMER ASSISTANCE

To aid in reporting this unit in case of loss or theft, please record below the model number and serial number located on the unit. We also suggest you record all the information listed and retain for future reference.

MODEL NUMBER:	**SERIAL NUMBER:**
DATE OF PURCHASE:	
DEALER:	**TELEPHONE:**
SERVICER:	**TELEPHONE:**

FOR WARRANTY, PARTS & SERVICE:

DUKE CORPORATE,
CANADA, LATIN AMERICA

2305 N. Broadway
St. Louis, MO 63102
Phone: 314-231-1130
Toll Free: 800-735-3853
Fax: 314-231-2460
service-dispatch@dukemfg.com

DUKE ASIA PACIFIC

Duke Manufacturing
No.3 Building
Lane 28, Yu Lv Road
Malu Town, Jiading District
Shanghai 201801, China
Phone: +86 21 59153525 / 59153526
Fax: +86 21 33600628
service.asiapac@dukemfg.com

DUKE EMEA - EUROPE,
MIDDLE EAST, AFRICA, RUSSIA

Duke Manufacturing CR, s.r.o.
Na Dlouhem 86
Jazlovice, Ricany
Building number DC 4 on the
ProLogis Park Prague D1 West
Prague 251 01
Czech Republic
Phone: +420 323 608 193
Fax: +420 323 608 144
service.emea@dukemfg.com

DUKE EMEA – UK, IRELAND

Phone: +44 (0) 1395 234140
Fax: +44 (0) 1395 234154
service.emea@dukemfg.com

TO ACCESS INTERNET: www.dukemfg.com

Please provide the following information when you write or call: model number, serial number, date of purchase, your complete mailing address (including zip code), and description of the problem.


Duke
Your Solutions Partner

E-MAIL 5

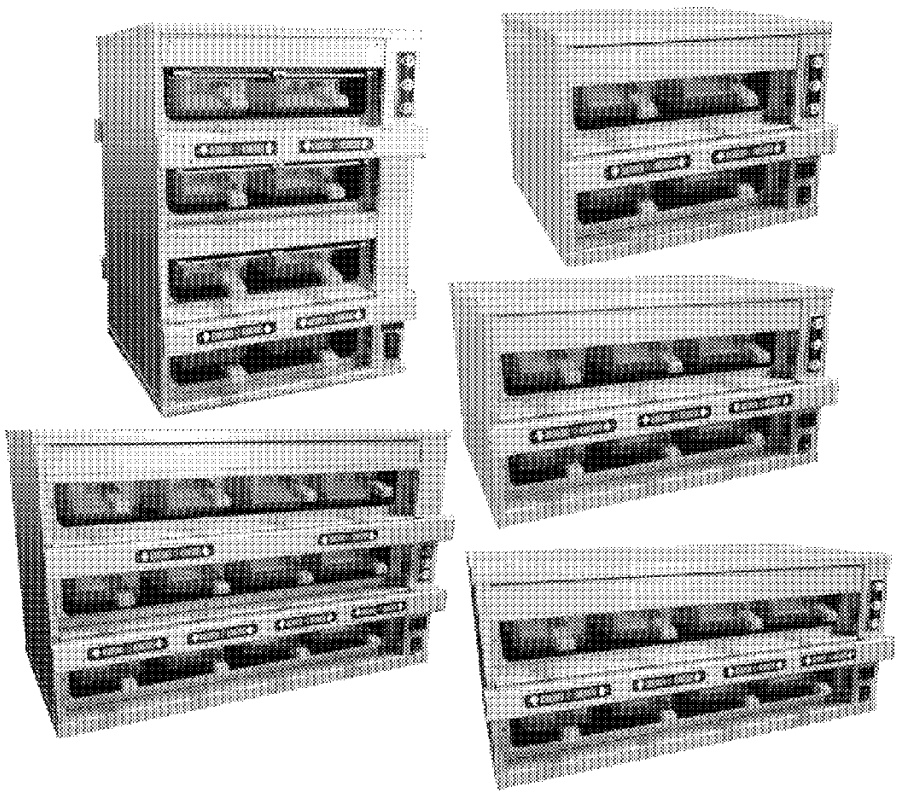
From: Scotty Loyd [/O=DUKEMFGCO/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=SCOTTY LOYD]
Sent: 5/8/2015 1:50:06 PM
To: Keith Feldman [keithf@fastservinc.com]
Subject: per your wishes...
Attachments: SM-PH-IH-0003 Infrared Heatsink Holding Unit.pdf

Your Solutions Partner

Service Manual

INFRARED HEATSINK™ HOLDING UNIT

Includes Standalone, Kitchen Minder and VISOR models



MODELS
IRHS22
IRHS23
IRHS24
IRHS34
IRHS42

Please read this manual completely before attempting to install, operate or service this equipment.

This document is prepared for trained Duke service technicians. It is not to be used by anyone not properly qualified to perform these procedures.

This Service Manual is not all encompassing. If you have not been trained on servicing this product, be sure to read the manual completely before attempting servicing. Be sure all necessary tools, test equipment, and skills are available. Those procedures for which you do not have the proper skills and test equipment must be performed only by a qualified Duke trained service technician.

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Duke Manufacturing Co.

2305 North Broadway • St. Louis, MO 63102-1405
Phone: 314-231-1130 • Toll Free: 1-800-735-3853 • Fax: 314-231-5074
service-dispatch@dukemfg.com • www.dukemfg.com

IMPORTANT WARNING AND SAFETY INFORMATION

READ THIS MANUAL THOROUGHLY BEFORE OPERATING, INSTALLING OR PERFORMING MAINTENANCE ON THE EQUIPMENT.

⚠ WARNING READ THIS MANUAL THOROUGHLY BEFORE OPERATING, INSTALLING OR PERFORMING MAINTENANCE ON THE EQUIPMENT

⚠ WARNING FAILURE TO FOLLOW INSTRUCTIONS IN THIS MANUAL CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.

⚠ WARNING DO NOT USE OR STORE GASOLINE OR OTHER FLAMMABLE VAPORS OR LIQUIDS IN THE VICINITY OF THIS OR ANY OTHER APPLIANCE.

⚠ WARNING DO NOT OPERATE THIS EQUIPMENT WITHOUT PROPERLY PLACING AND SECURING ALL COVER AND ACCESS PANELS.

⚠ WARNING IMPROPER INSTALLATION, ADJUSTMENT, ALTERATION, SERVICE OR MAINTENANCE CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH. READ THE INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS THOROUGHLY BEFORE INSTALLING THIS EQUIPMENT.

FOR YOUR SAFETY

Electricity and water do not mix. Unplug the unit before cleaning. If repairs are required, use a qualified service agent. While repairs are being made, be sure the unit is not plugged in. Do not store highly combustible substances on or near the unit. Be sure the compressor compartment has adequate ventilation.

CAUTION

Observe the following:

- Provide and maintain adequate minimum clearances from all walls and combustible materials.
- Provide and maintain adequate clearance for air openings.
- Keep the equipment area free and clear of combustible material.
- Operate equipment only on the type of electricity indicated on the specification plate.
- Retain this manual for future reference.

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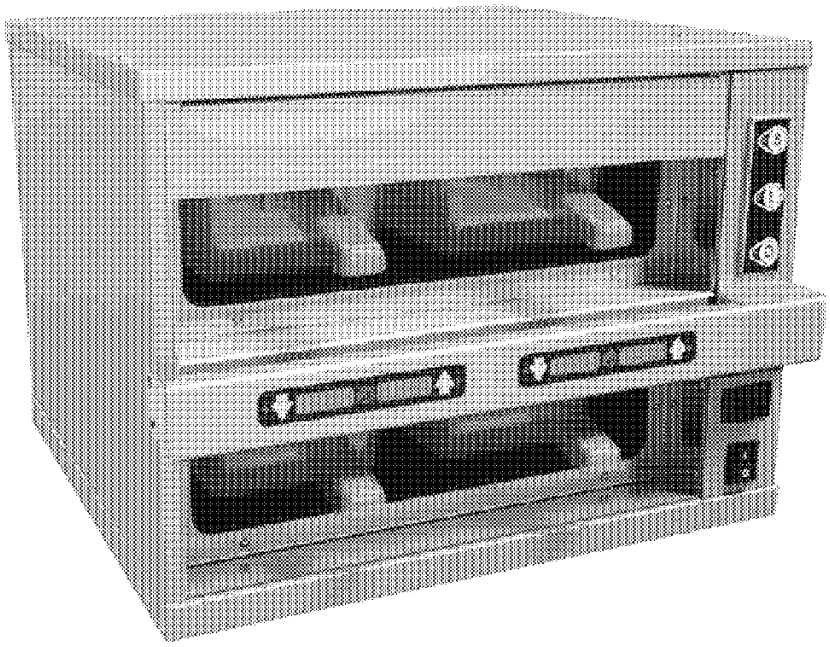
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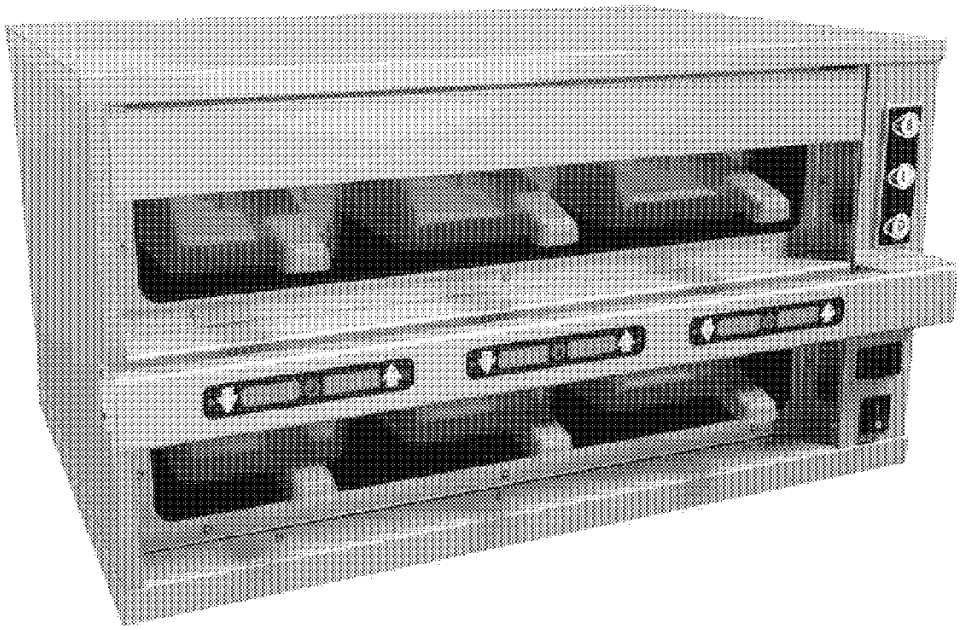
SPECIFICATIONS

IRHS22



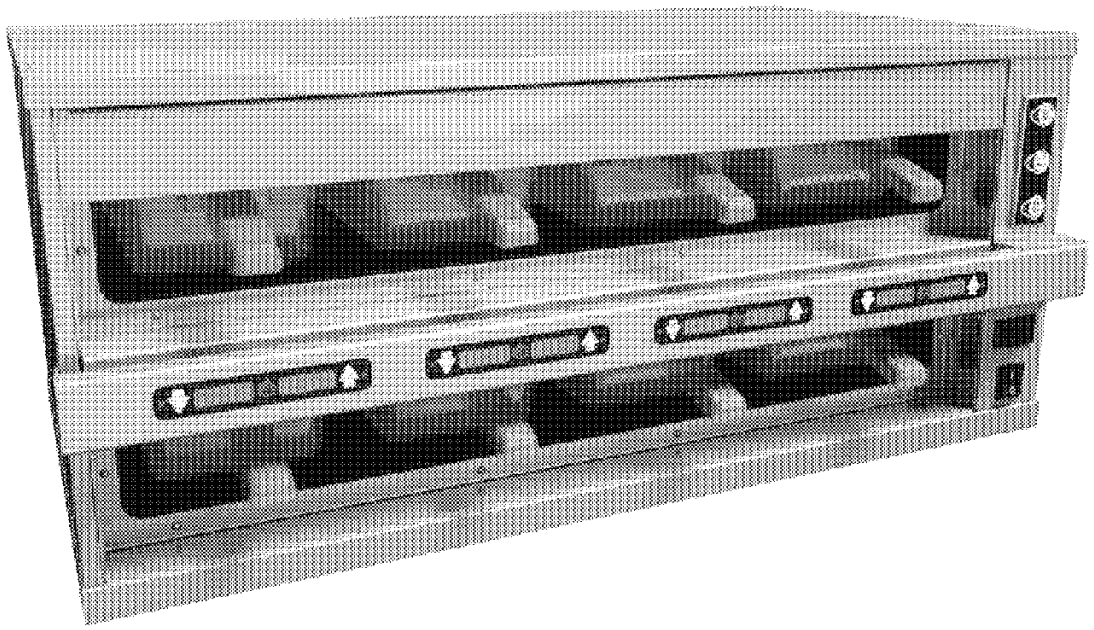
			Before Serial# 10140480 (10/1/14)			*As of Serial# 10140480*		
		Shipping Weight	125 lbs / 56.7 kg			110 lbs / 49.9 kg		
Model	**Electrical**	**Plug**	**H**	**W**	**D**	**H**	**W**	**D**
IRHS22-208	208V ~ 12 A, 50/60 Hz	NEMA 6-15P	14.4 in / 36.6 cm	19.3 in / 49.0 cm	20.1 in / 51.1 cm	13.3 in / 33.8 cm	19.3 in / 49.0 cm	20.1 in / 51.1 cm
IRHS22-230	230V ~ 12 A, 50/60 Hz	SHUKO, 16 AMP (*as of 11/3/14*) IEC, 16 AMP						
IRHS22-240	240V ~ 12 A, 50/60 Hz	NEMA 6-15P						

IRHS23



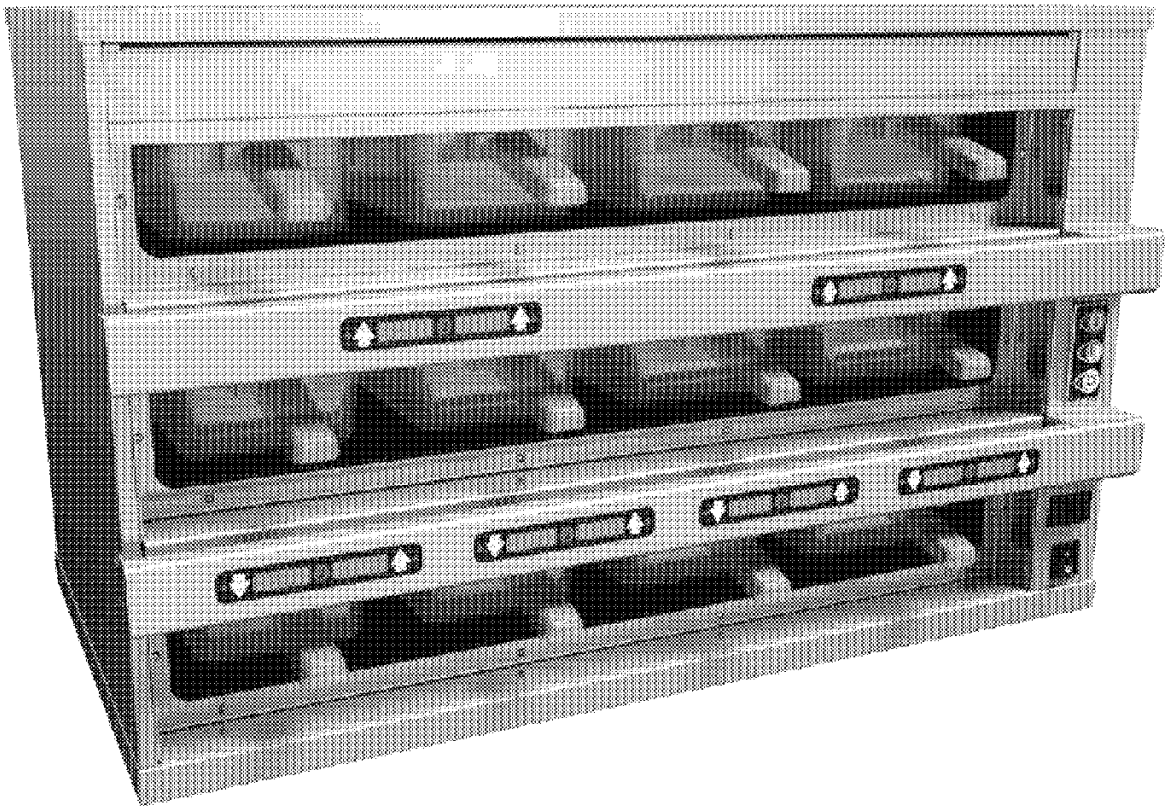
			Up to Serial# 101413198 (10/20/14)			*After SN# 101413198*		
		Shipping Weight	160 lbs / 72.6 kg			143 lbs / 64.9 kg		
Model	**Electrical**	**Plug**	**H**	**W**	**D**	**H**	**W**	**D**
IRHS23-208	208V ~ 12 A, 50/60 Hz	NEMA 6-15P	14.4 in / 36.6 cm	26.4 in / 67.1 cm	20.1 in / 51.1 cm	13.3 in / 33.8 cm	26.4 in / 67.1 cm	20.1 in / 51.1 cm
IRHS23-230	230V ~ 12 A, 50/60 Hz	SHUKO, 16 AMP (*as of 11/3/14*) IEC, 16 AMP						
IRHS23-240	240V ~ 12 A, 50/60 Hz	NEMA 6-15P						

IRHS24



			Before Serial# 10140545 (10/3/14)			*As of Serial# 10140545*		
		Shipping Weight	195 lbs / 88.4 kg			181 lbs / 82.1 kg		
Model	**Electrical**	**Plug**	**H**	**W**	**D**	**H**	**W**	**D**
IRHS24-208	208V ~ 12 A, 50/60 Hz	NEMA 6-15P	14.4 in / 36.6 cm	33.4 in / 84.8 cm	20.1 in / 51.1 cm	13.3 in / 33.8 cm	33.4 in / 84.8 cm	20.1 in / 51.1 cm
IRHS24-230	230V ~ 12 A, 50/60 Hz	SHUKO, 16 AMP / (*as of 11/3/14*) IEC, 16 AMP						
IRHS24-240	240V ~ 12 A, 50/60 Hz	NEMA 6-15P						

IRHS34



			Before Serial# 10140032 (10/1/14)			*As of Serial# 10140032*		
		Shipping Weight	275 lbs / 124.7 kg			243 lbs / 110.2 kg		
Model	**Electrical**	**Plug**	**H**	**W**	**D**	**H**	**W**	**D**
IRHS34-208	208V ~ 16 A, 50/60 Hz	NEMA 6-20P	20.9 in / 53.1 cm	33.4 in / 84.8 cm	20.1 in / 51.1 cm	19.3 in / 49.0 cm	33.4 in / 84.8 cm	20.1 in / 51.1 cm
IRHS34-230	230V ~ 16 A, 50/60 Hz	SHUKO, 16 AMP (*as of 11/3/14*) IEC, 16 AMP						
IRHS34-240	240V ~ 16 A, 50/60 Hz	NEMA 6-20P						

IRHS42



		Shipping Weight	187 lbs / 84.8 kg		
Model	**Electrical**	**Plug**	**H**	**W**	**D**
IRHS42-208	208V ~ 12 A, 50/60 Hz	NEMA 6-15P	25.3 in / 64.3 cm	19.3 in / 49.0 cm	20.1 in / 51.1 cm
IRHS42-230	230V ~ 12 A, 50/60 Hz	SHUKO, 16 AMP (*as of 11/3/14*) IEC, 16 AMP			
IRHS42-240	240V ~ 12 A, 50/60 Hz	NEMA 6-15P			

REMOVAL AND REPLACEMENT OF PARTS

EQUIPMENT USED IN THESE INSTRUCTIONS

- Phillips screwdriver
- #1 precision screwdriver
- Flat-head screwdriver
- Needle-nose pliers
- 11/16" open-end wrench
- 11/32" nut driver or socket
- 1/4" nut driver or socket
- Tie wraps
- ESD Wrist Strap
- Aluminum tape
- Ohmmeter
- Heat transfer compound
- Clean gloves/cloths/towels

ELECTRICAL LOCKOUT/TAGOUT PROCEDURE

WARNING

BEFORE PERFORMING ANY SERVICE THAT INVOLVES ELECTRICAL CONNECTION OR DISCONNECTION AND/OR EXPOSURE TO ELECTRICAL COMPONENTS, ALWAYS FOLLOW THE ELECTRICAL LOCKOUT/TAGOUT PROCEDURE. DISCONNECT ALL CIRCUITS. FAILURE TO COMPLY CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.

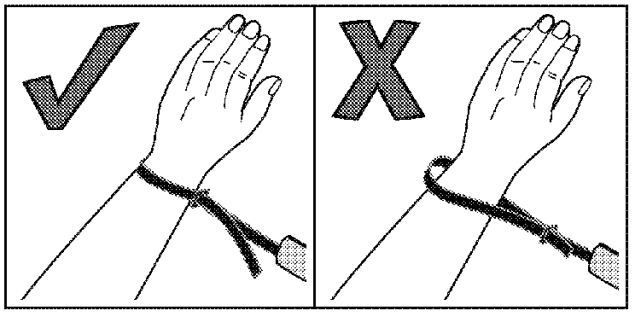
The Electrical LOCKOUT/TAGOUT Procedure is used to protect personnel working on an electrical appliance. Before performing any maintenance or service that requires exposure to electrical components, follow these steps:

1. In electrical box, place appliance circuit breaker into OFF position.
2. Place a lock or other device on electrical box cover to prevent someone from placing circuit breaker ON.
3. Place a tag on electrical box cover to indicate that appliance has been disconnected for service and power should not be restored until tag is removed by maintenance personnel.
4. Disconnect appliance power cord from electrical outlet.
5. Place a tag on the cord to indicate that unit has been disconnected for service and power should not be restored until tag is removed.

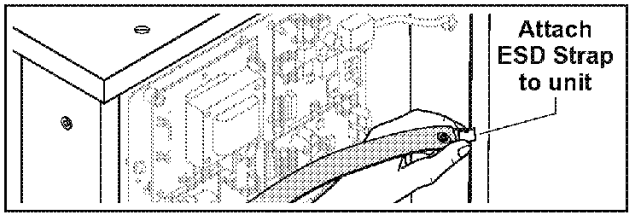
ESD WRIST STRAP

Electrostatic Discharge (ESD) is one of the biggest dangers to components in electronic devices. An ESD wrist strap allows any accumulated static charge to disperse safely through its cable, rather than through static-sensitive components such as unit computer-related components.

1. Place the ESD wrist strap around your wrist. The wrist strap should be next to your skin, so it needs to be placed under any clothes.
2. Tighten the wrist strap so that the attached metal plate maintains good contact with your skin. Do not over tighten as the wrist strap should not be uncomfortable.



3. Connect the cable to the wrist strap if it is disconnected. The cable should be securely clipped in place to maintain a good connection.
4. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
5. Connect the alligator clip on the other end of the cable to a metal surface on the unit. This creates a path through which any built-up static charge can safely flow without causing any damage. A built-in high value resistor ensures the charge leaks away in a controlled manner, and protects the user.



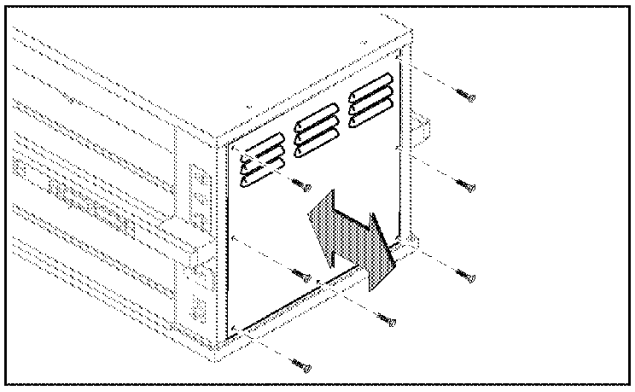
DECK ASSEMBLY COMPONENTS

MENU BARS

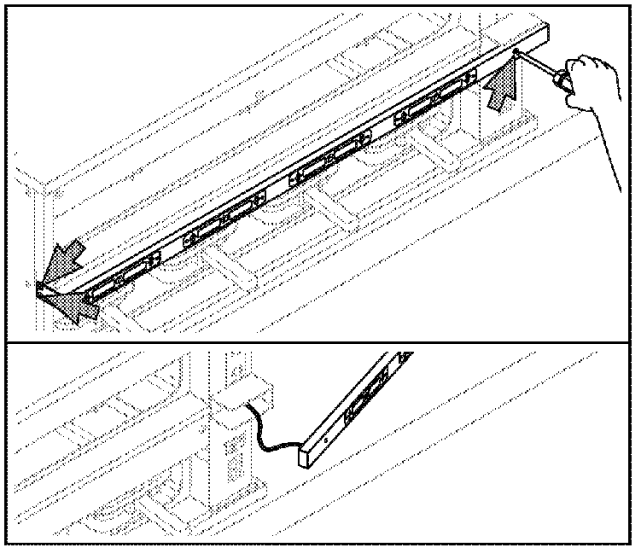
The Menu Bars hold the Keypad Displays that control and monitor the performance of each heating well. The quantity varies (depending on model) and are located on the front and back faces of the unit.

TOOLS REQUIRED: Phillips screwdriver; Flat-head screwdriver

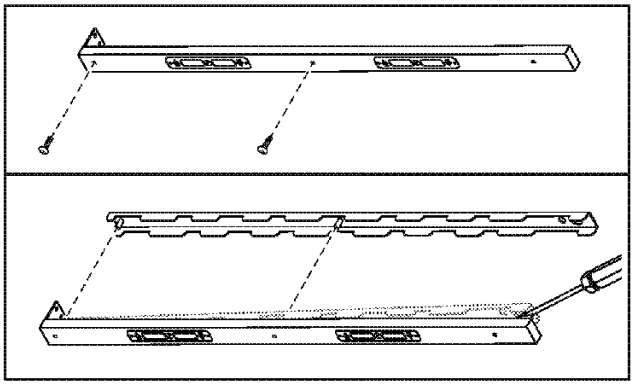
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.



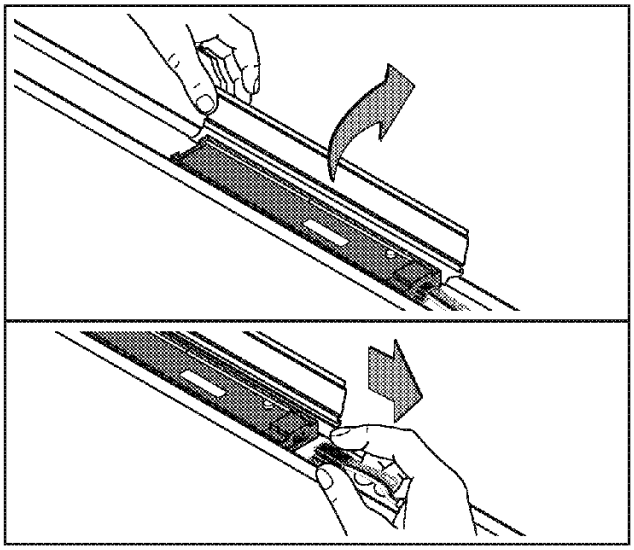
3. Remove and retain screws of the affected Menu Bar and pull away from the face of the unit. It is not necessary, but recommended, to completely remove the Menu Bar from the unit.



4. Mark and disconnect the affected Menu Bar's molex connector inside the control compartment.
5. If it is necessary to reuse the existing Keypad Displays in a replacement Menu Bar:
   a. Remove and retain the two (2) screws securing the Menu Bar Back Channel and pry out of the former Menu Bar.

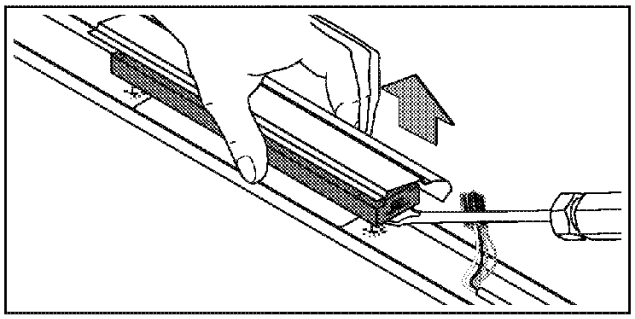


   b. A Keypad Spacer is attached to the rear of each Keypad Display with double-sided tape. Carefully pry off and remove the Keypad Spacer from the affected Keypad Display(s). This will free-up the Menu Bar Harness.

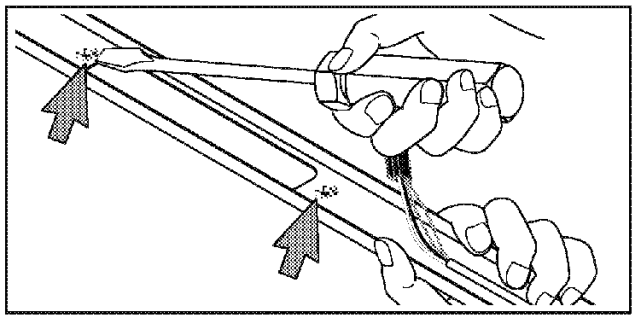


c. Disconnect the affected Keypad Display(s) electrical connector from the Menu Bar Harness.

d. The Keypad Displays are attached to the Menu Bar with double-sided glue dots. Carefully pry off and remove the affected Keypad Display from the Menu Bar.

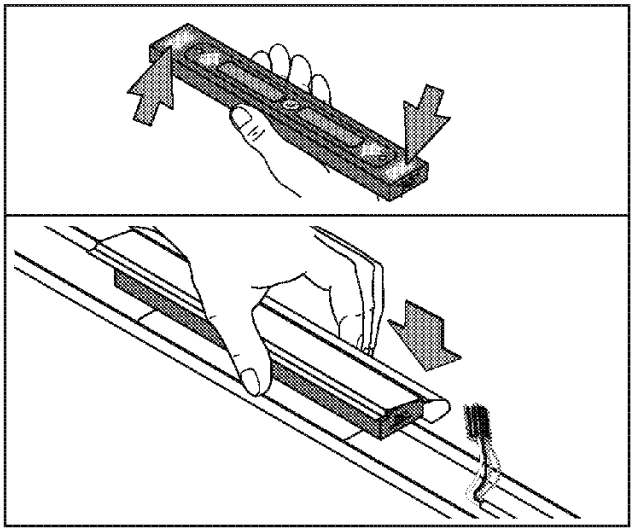


e. Carefully scrape any remaining adhesive residue from the inside of the Menu Bar.



RESTORE

6. Carefully place the Keypad Displays in place on the interior side of the replacement Menu Bar. If reusing the Keypad Displays, it may be necessary to use additional double-sided tape to secure the Keypad Displays to the Menu Bar.



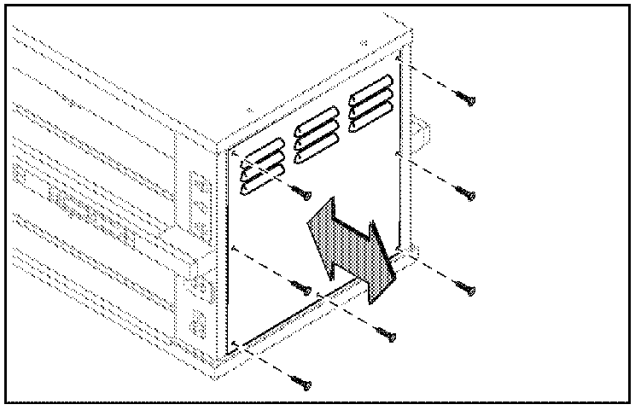
7. Connect the replacement Menu Bar Harness' molex connector in the control compartment.
8. Replace the Keypad Spacer, over the Menu Bar Harness, to the rear of the Keypad Display(s).
9. Reinstall Menu Bar Back Channel using its screws.
10. Reinstall the Menu Bar using its screws.
11. Replace the Control Side Cover and secure with its screws.
12. Restore power to the unit and test for proper function.

KEYPAD DISPLAYS

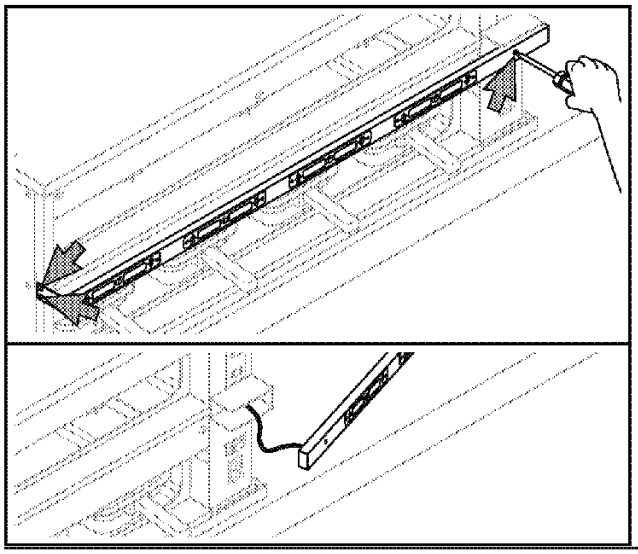
The Keypad Displays control and monitor the performance of each heating well. They are located inside of the Menu Bar(s) and the quantity varies (depending on model).

TOOLS REQUIRED: Phillips screwdriver; Flat-head screwdriver

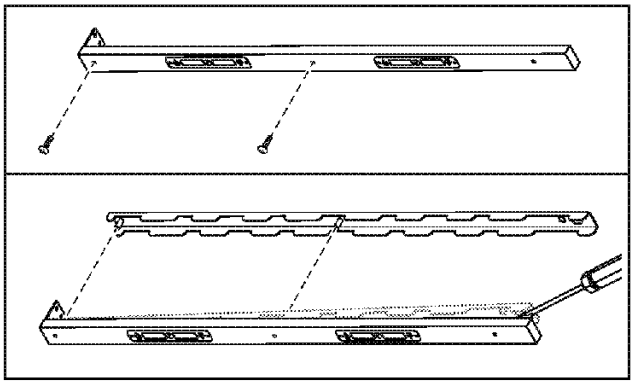
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.



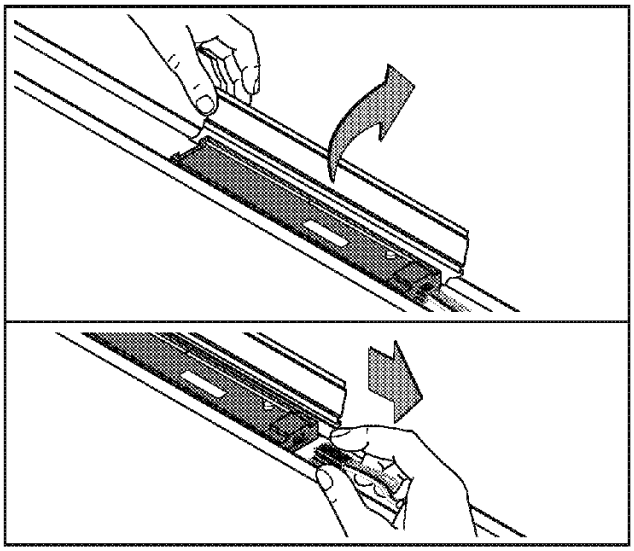
3. Disconnect the affected Menu Bar's molex connector inside the control compartment.
4. Remove and retain screws of the Menu Bar containing the affected Keypad Display and pull away from the face of the unit. It is not necessary, but recommended, to completely remove the Menu Bar from the unit.



5. Remove and retain the screws securing the Menu Bar Back Channel from the front of the Menu Bar and pry out of the Menu Bar.

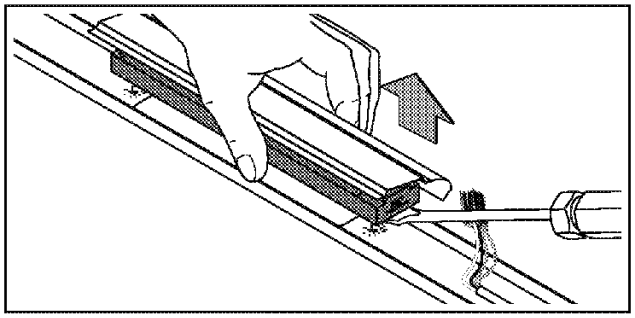


6. A Keypad Spacer is attached to the rear of each Keypad Display with double-sided tape. Carefully pry off and remove the Keypad Spacer from the affected Keypad Display(s). This will free-up the Menu Bar Harness.

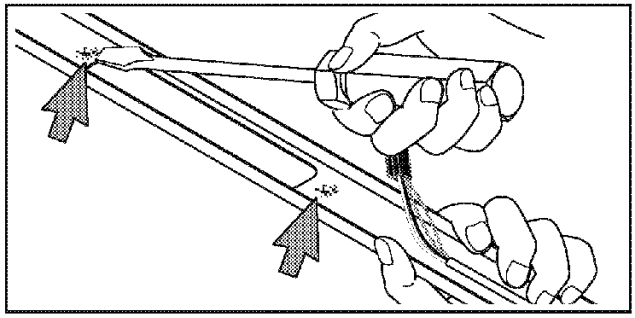


7. Disconnect the affected Keypad Display(s) electrical connector from the Menu Bar Harness.

8. The Keypad Displays are attached to the Menu Bar with double-sided glue dots. Carefully pry off and remove the affected Keypad Display from the Menu Bar.

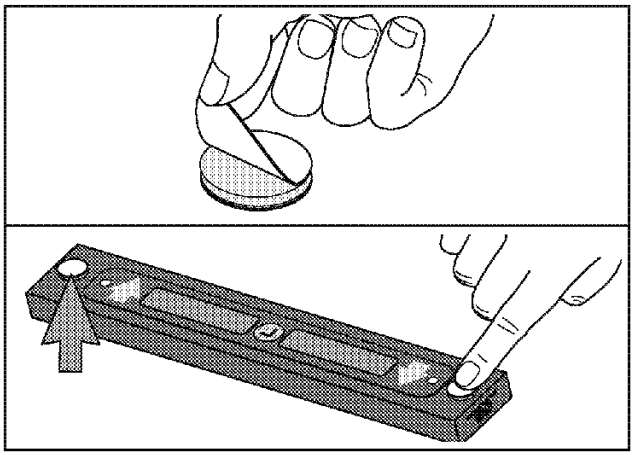


9. Carefully scrape any remaining adhesive residue from the inside of the Menu Bar.

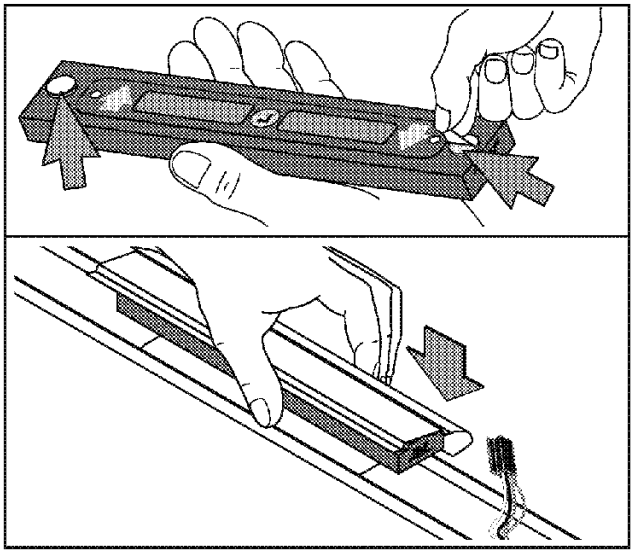


RESTORE:

10. Peel off the adhesive cover from the glue dots and place on the replacement Keypad Display.



11. Peel off the other adhesive cover from the glue dots and carefully position the replacement Keypad Display in place on the interior side of the Menu Bar.



12. Reconnect the affected Keypad Display(s) electrical connector to the Menu Bar Harness.

13. Replace the Keypad Spacer, over the Menu Bar Harness, to the rear of the Keypad Display(s).

14. Reinstall the Menu Bar Back Channel using its screws.

15. Reinstall the Menu Bar using its screws.

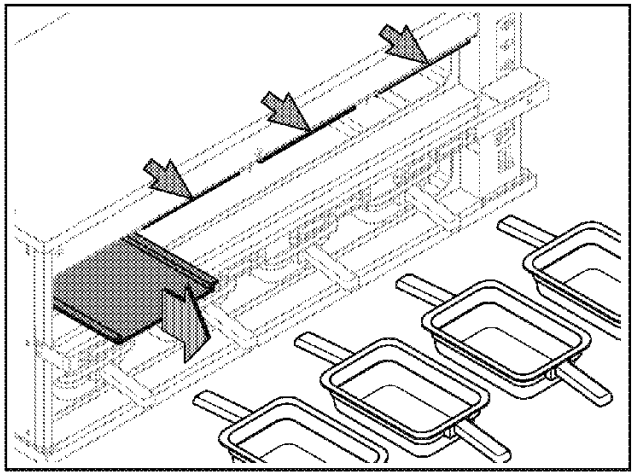
16. Restore power to the unit and test for proper function.

RTD (TEMPERATURE) SENSORS

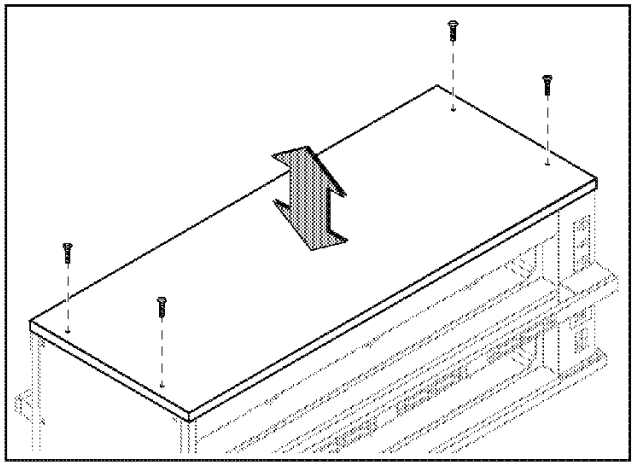
The RTD Sensors monitor the temperature of the heating wells. They are affixed to the bottom-center of each Heat Element, and the quantity varies (depending on model).

TOOLS REQUIRED: Phillips screwdriver; Aluminum tape; Tie wraps

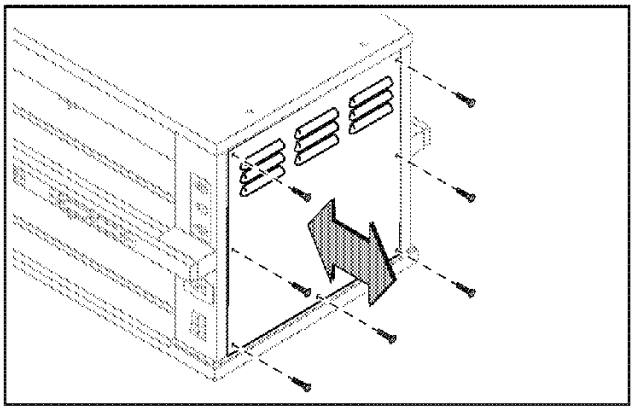
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove any pans and covers on the level(s) being removed.



3. Remove and retain the screws securing the Top Panel and remove the cover.

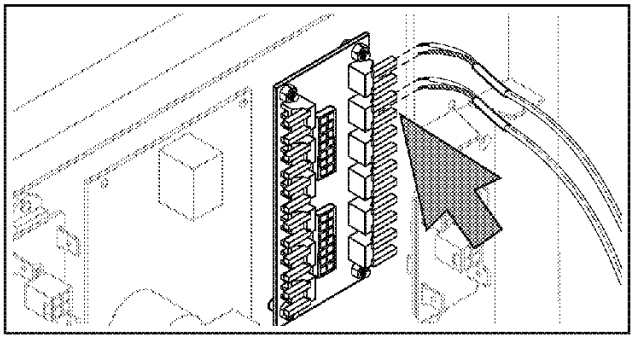


4. Remove and retain the screws securing the Control Side Cover and remove the cover.

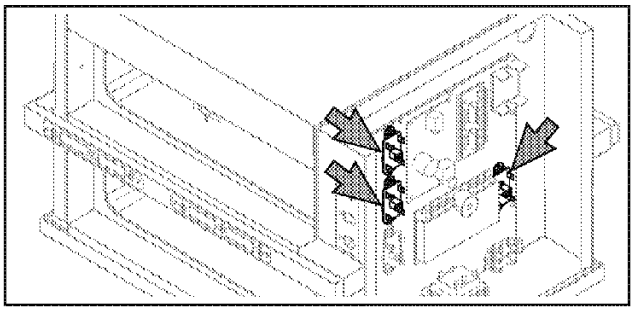


NOTE: If the RTD Sensor to be replaced is on a lower level, start from the top and repeat the following four steps for each level above the desired level.

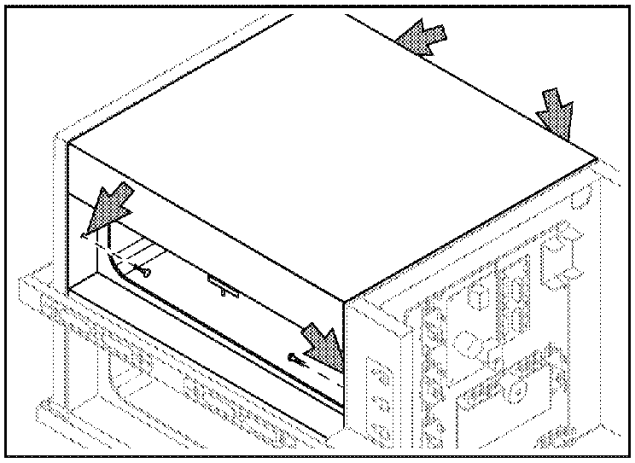
5. Mark, remove the tie wraps, and disconnect the wires for the RTD Sensors from the RTD board in the Control Compartment.



6. Mark, remove the tie wraps, and disconnect the wires for the Emitter (IR Bulb) Sockets and Heat Elements from the Relays in the Control Compartment.

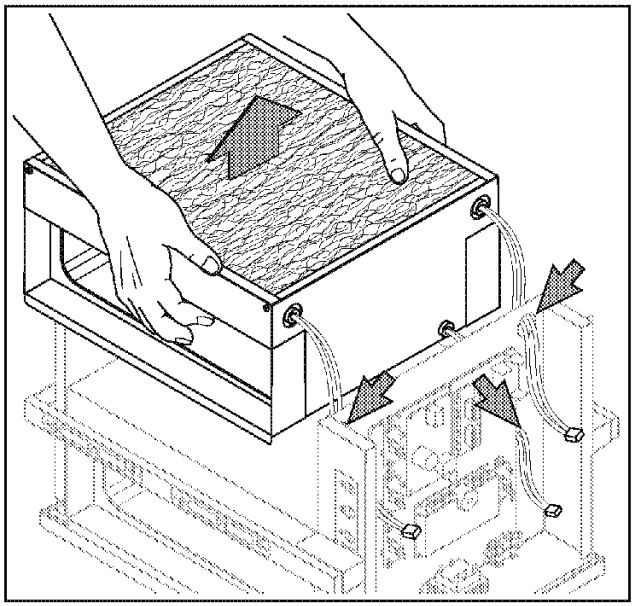


7. Remove the four (4) screws (2 in front, 2 in back) securing the liner deck assembly to the unit.



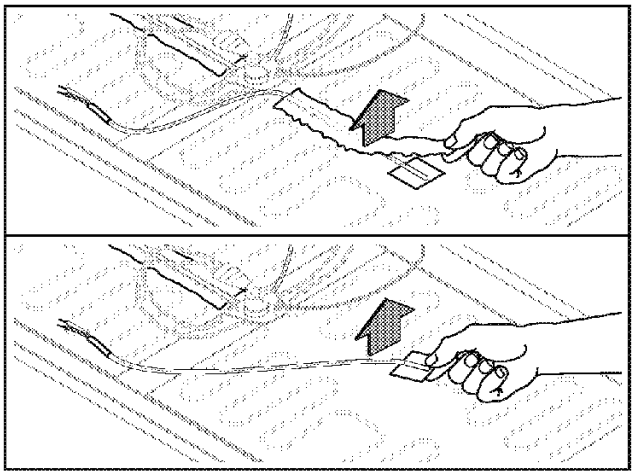
8. Carefully lift the entire liner deck assembly out through the top of the unit. This may require two people, depending on the location of the IRHS unit. Though not required to do so, removing the level's IR glass frame assembly (instructions are contained in the Emitter instructions) will lighten the weight of the liner deck assembly and make it easier for one person to accomplish this task if the IRHS is located in an elevated location or has limited access.

NOTE: It will be necessary to feed the RTD Sensor, Emitter, and Heat Element wires through the control compartment bushings. Take caution not to damage any of the wires.



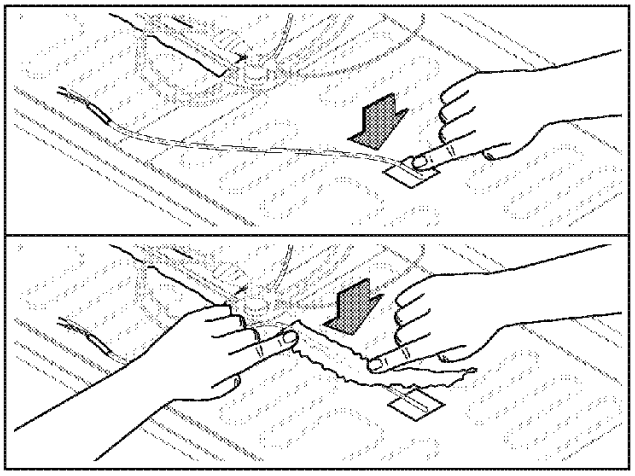
9. Invert the liner deck assembly upside-down, then remove and retain the insulation.

10. The RTD Sensor is attached to the heat element with double-sided adhesive tape and covered with aluminum tape. Carefully pry off and remove the affected RTD Sensor from the Heat Element.



RESTORE:

11. Peel off the adhesive tape cover from the replacement RTD Sensor and press in place on the heat element. Replace aluminum tape cover.



12. Feed the Heat Element and RTD Sensor wires in the direction of and through the control compartment bushings and replace the insulation.

13. Invert the liner deck assembly right-side up. While feeding the RTD Sensor, Emitter, and Heat Element wires through the appropriate control compartment bushings, carefully slide the liner deck assembly into the unit, taking caution not to damage any of the wires.

NOTE: This may require two people, depending on the location of the IRHS unit.

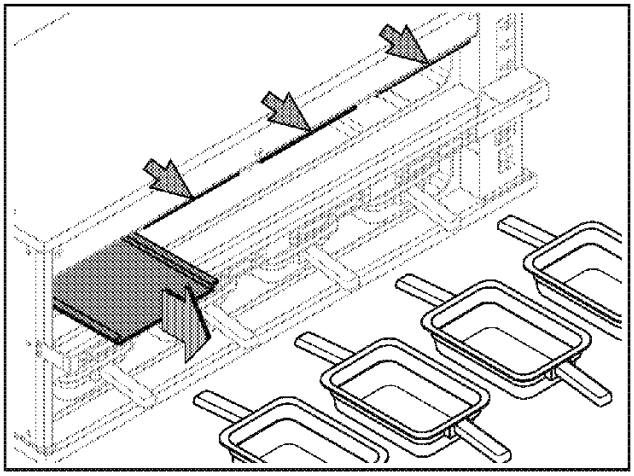
14. Reconnect and tie wrap all previously disconnected wires and connectors in the control compartment.
15. Replace the Control Side Cover and secure with its screws.
16. Replace the Top Panel and secure with its screws.
17. Restore power to the unit and test for proper function.

HIGH LIMIT THERMOSTATS

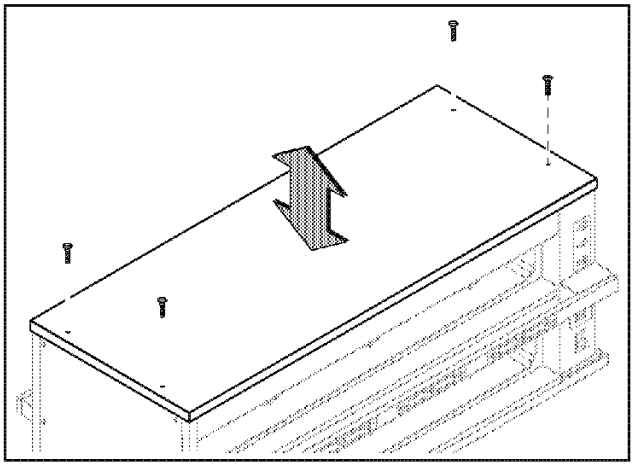
The High Limit Thermostats monitor well temperatures and serves as an emergency circuit interrupter in case of inadvertent overheating. There is one per level, and are affixed to the bottom-center of each heat sink.

TOOLS REQUIRED: Phillips screwdriver; Heat transfer compound; Tie wraps

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove any pans and covers on the level(s) being removed.

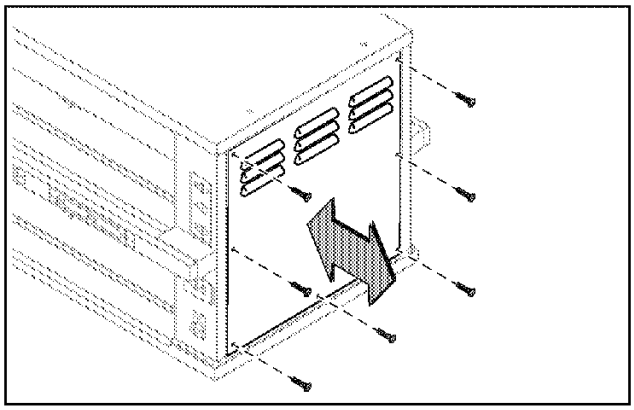


3. Remove and retain the screws securing the Top Panel and remove the cover.

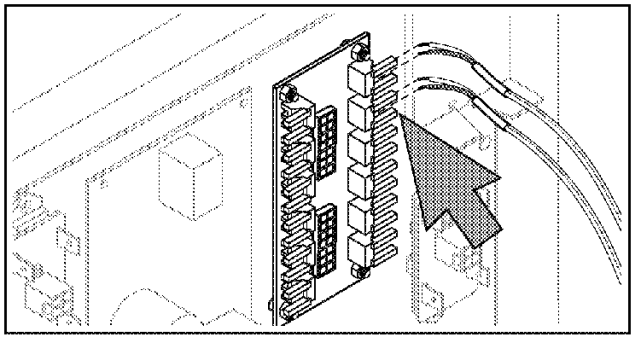


4. Remove and retain the screws securing the Control Side Cover and remove the cover.

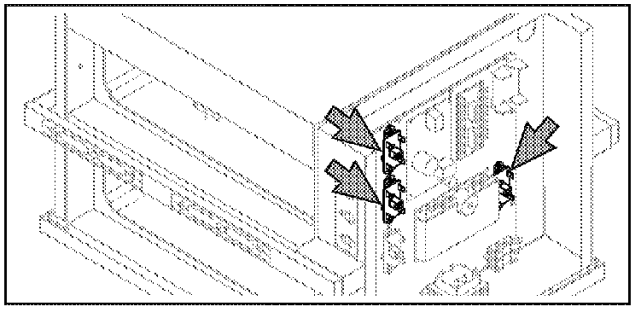
NOTE: If the High Limit Thermostat to be replaced is on a lower level, start from the top and repeat the following four steps for each level above the desired level.



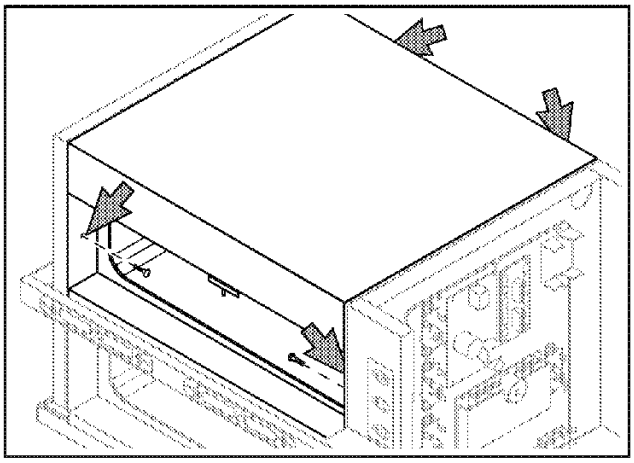
5. Mark, remove the tie wraps, and disconnect the wires for the RTD Sensors from the RTD board in the Control Compartment.



6. Mark, remove the tie wraps, and disconnect the wires for the Emitter (IR Bulb) Sockets and Heat Elements from the Relays in the Control Compartment.

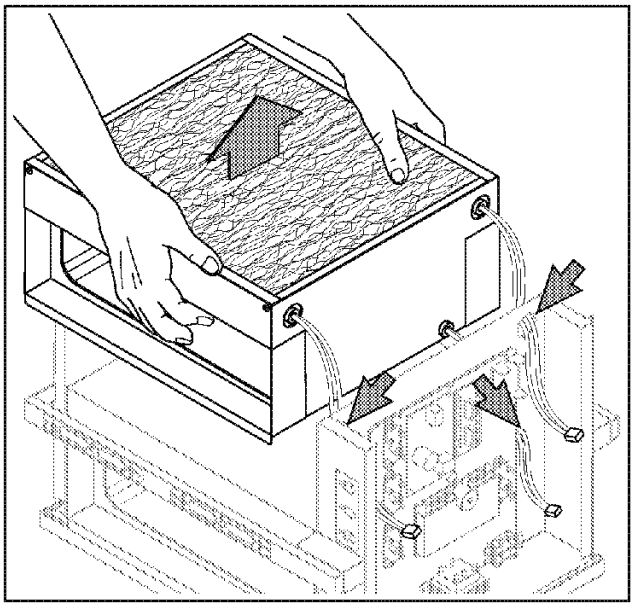


7. Remove the four (4) screws (2 in front, 2 in back) securing the liner deck assembly to the unit.



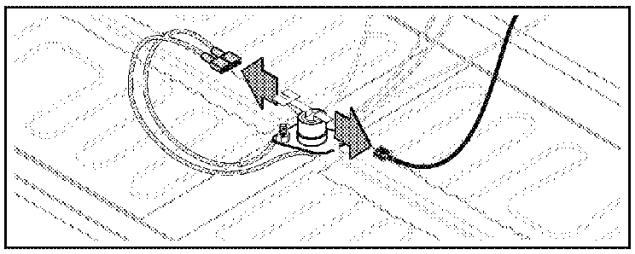
8. Carefully lift the entire liner deck assembly out through the top of the unit. This may require two people, depending on the location of the IRHS unit. Though not required to do so, removing the level's IR glass frame assembly (instructions are contained in the Emitter instructions) will lighten the weight of the liner deck assembly and make it easier for one person to accomplish this task if the IRHS is located in an elevated location or has limited access.

NOTE: It will be necessary to feed the RTD Sensor, Emitter, and Heat Element wires through the control compartment bushings. Take caution not to damage any of the wires.

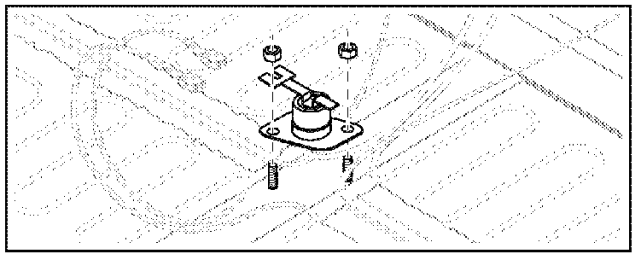


9. Invert the liner deck assembly upside-down, then remove and retain the insulation.

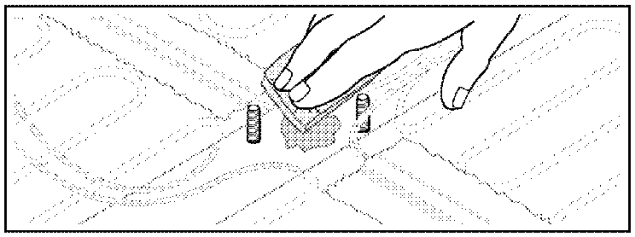
10. Mark and disconnect the spade terminals for the affected High Limit Thermostat.



11. Remove and retain the two (2) 11/32" nuts securing the High Limit Thermostat to the heat sink and remove the High Limit Thermostat.

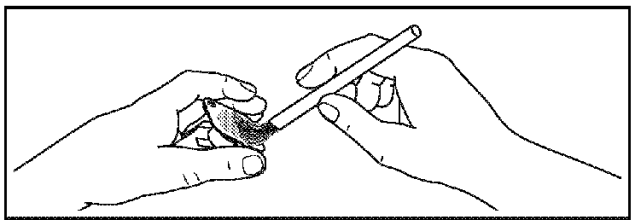


12. Clean the mounting surface of any residual heat transfer compound.



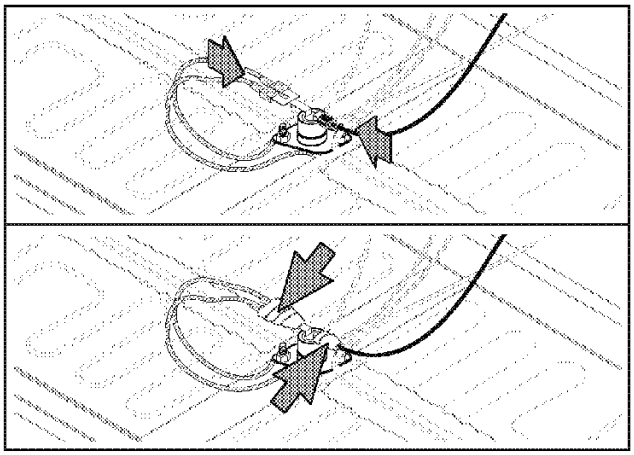
RESTORE:

13. Apply heat transfer compound to the mounting surface of the replacement High Limit Thermostat.



14. Install the replacement High Limit Thermostat and secure with its nuts.

15. Reattach the High Limit Thermostat spade terminals. Be sure to reapply the tape that helps secure the spade terminals to the High Limit Thermostat.



16. Feed the Heat Element and RTD Sensor wires in the direction of and through the control compartment bushings and replace the insulation.

17. Invert the liner deck assembly right-side up. While feeding the RTD Sensor, Emitter, and Heat Element wires through the appropriate control compartment bushings, carefully slide the liner deck assembly into the unit, taking caution not to damage any of the wires.

NOTE: This may require two people, depending on the location of the IRHS unit.

18. Reconnect and tie wrap all previously disconnected wires and connectors in the control compartment.

19. Replace the Control Side Cover and secure with its screws.

20. Replace the Top Panel and secure with its screws.

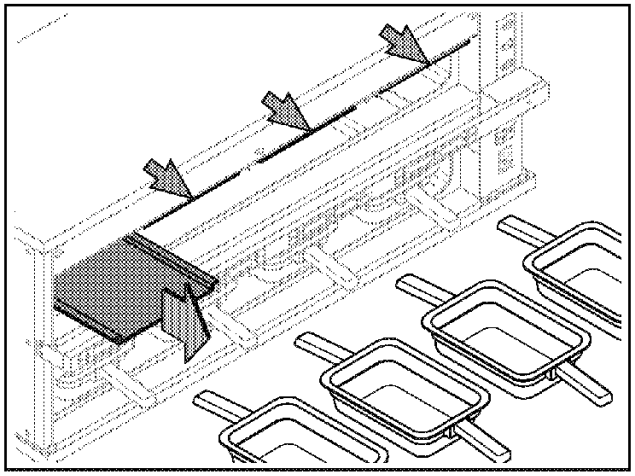
21. Restore power to the unit and test for proper function.

HEAT ELEMENTS

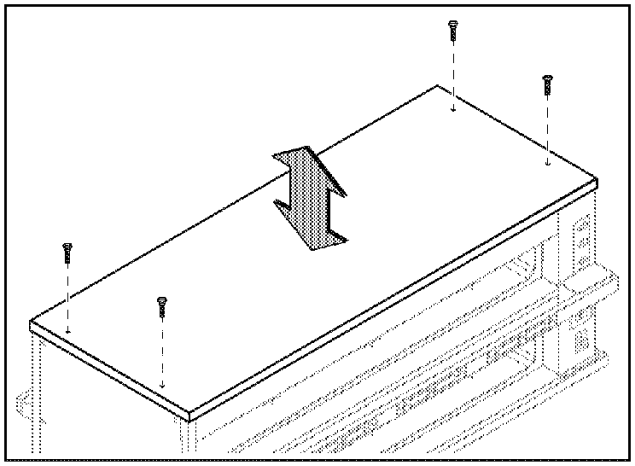
The Heat Elements provide the heating required to keep the heating wells at proper operating temperatures. The quantity varies depending on model and are affixed to the bottom of each Heat Sink.

TOOLS REQUIRED: Phillips screwdriver; 11/32" nut driver or socket; Heat transfer compound; Tie wraps

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove any pans and covers on the level(s) being removed.

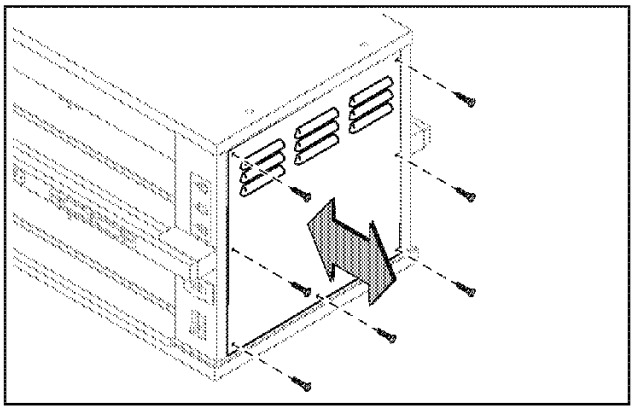


3. Remove and retain the screws securing the Top Panel and remove the cover.

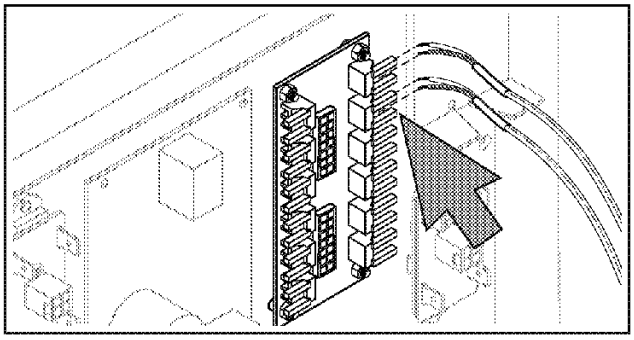


4. Remove and retain the screws securing the Control Side Cover and remove the cover.

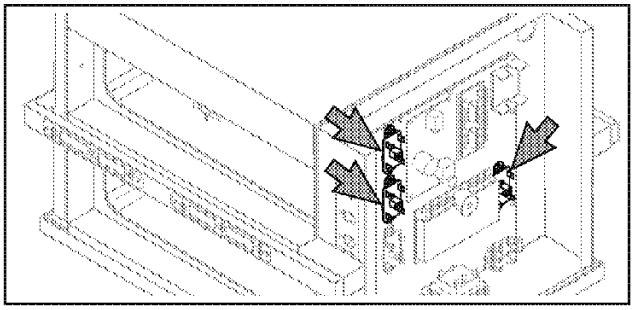
NOTE: If the Heat Element to be replaced is on a lower level, start from the top and repeat the following four steps for each level above the desired level.



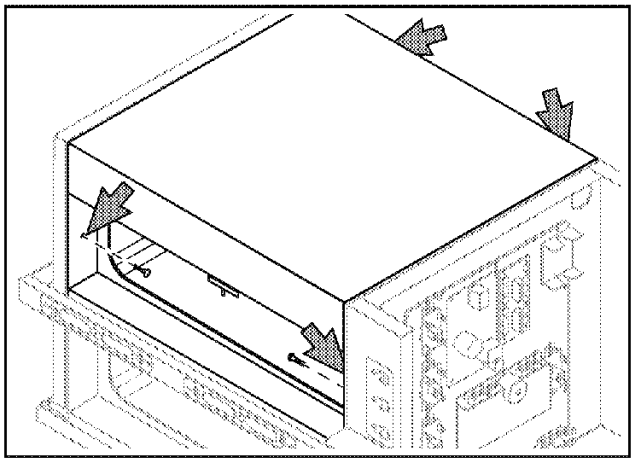
5. Mark, remove the tie wraps, and disconnect the wires for the RTD Sensors from the RTD board in the Control Compartment.



6. Mark, remove the tie wraps, and disconnect the wires for the Emitter (IR Bulb) Sockets and Heat Elements from the Relays in the Control Compartment.



7. Remove the four (4) screws (2 in front, 2 in back) securing the liner deck assembly to the unit.

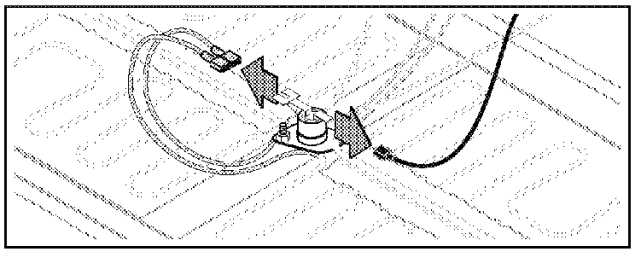


8. Carefully lift the entire liner deck assembly out through the top of the unit. This may require two people, depending on the location of the IRHS unit. Though not required to do so, removing the level's IR glass frame assembly (instructions are contained in the Emitter instructions) will lighten the weight of the liner deck assembly and make it easier for one person to accomplish this task if the IRHS is located in an elevated location or has limited access.

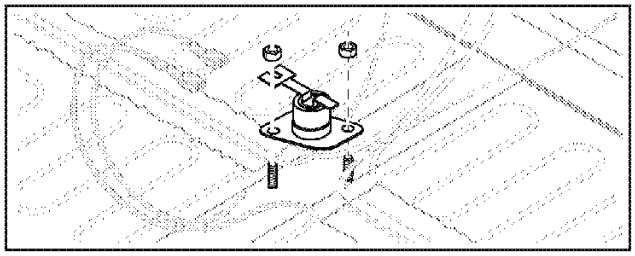
NOTE: It will be necessary to feed the RTD Sensor, Emitter, and Heat Element wires through the control compartment bushings. Take caution not to damage any of the wires.

9. Invert the liner deck assembly upside-down, then remove and retain the insulation.

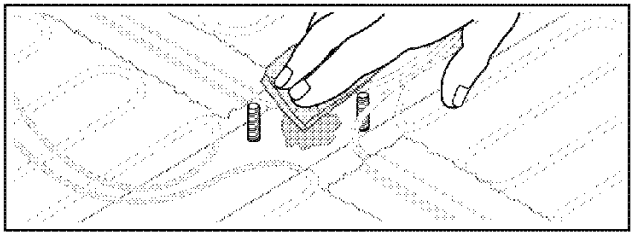
10. Mark and disconnect the spade terminals for the level's High Limit Thermostat.



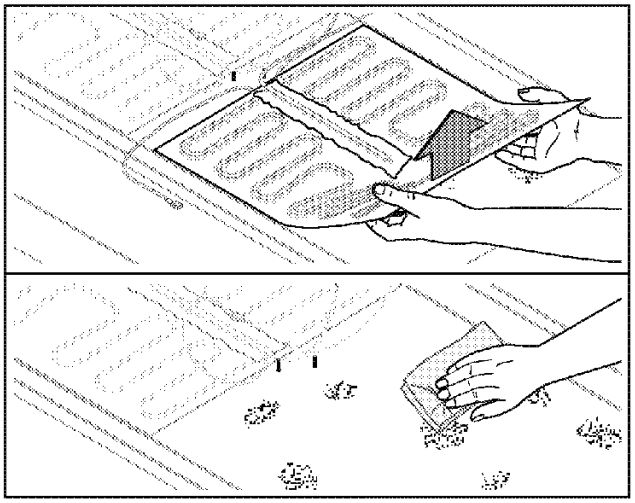
11. Remove and retain the two (2) 11/32" nuts securing the High Limit Thermostat to the heat sink and remove the High Limit Thermostat.



12. Clean the mounting surface of any residual heat transfer compound.

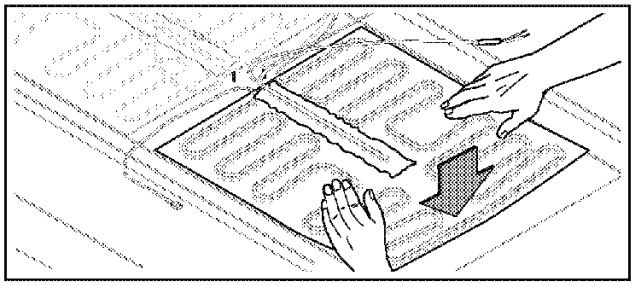


13. Remove the affected Heat Element by peeling off from the heat sink. Ensure any excess tape and/ or adhesive is removed.



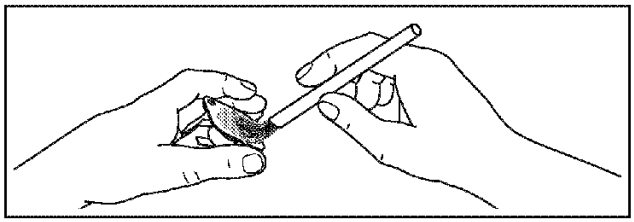
NOTE: The replacement Heat Element will come with a new RTD Sensor attached, so retaining the existing RTD Sensor is unnecessary.

14. Peel the adhesive tape cover off the replacement Heat Element and press in place on the heat sink, ensuring all air bubbles are smoothed out.



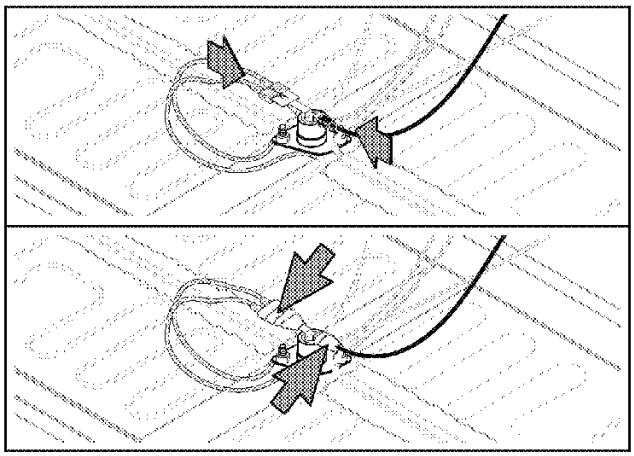
RESTORE:

15. Apply heat transfer compound to the mounting surface of the High Limit Thermostat.



16. Reinstall the High Limit Thermostat and secure with its nuts.

17. Reattach the High Limit Thermostat spade terminals. Be sure to reapply the tape that helps secure the spade terminals to the High Limit Thermostat.



18. Feed the Heat Element and RTD Sensor wires in the direction of and through the control compartment bushings and replace the insulation.

19. Invert the liner deck assembly right-side up. While feeding the RTD Sensor, Emitter, and Heat Element wires through the appropriate control compartment bushings, carefully slide the liner deck assembly into the unit, taking caution not to damage any of the wires.

NOTE: This may require two people, depending on the location of the IRHS unit.

20. Reconnect and tie wrap all previously disconnected wires and connectors in the control compartment.

21. Replace the Control Side Cover and secure with its screws.

22. Replace the Top Panel and secure with its screws.

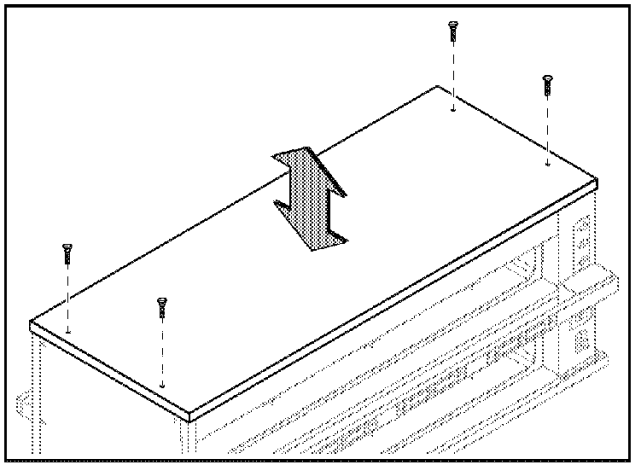
23. Restore power to the unit and test for proper function.

EMITTER (IR BULB) SOCKETS

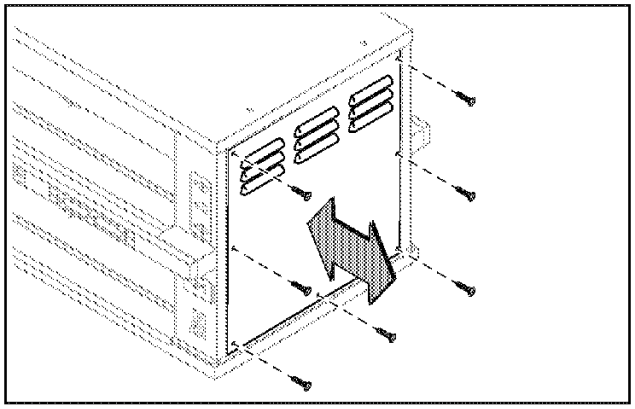
The Emitter Sockets hold and provide power to the Emitters. There are two (2: 1 front, 1 back) at the top of each heating well.

TOOLS REQUIRED: Phillips screwdriver; clean gloves/ cloths/towels; 11/16" open-end wrench; Tie wraps

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove all pans and covers from the liner deck assembly, and levels above where the affected Emitter Socket is to be replaced.
3. Remove and retain the screws securing the Top Panel and remove the cover.

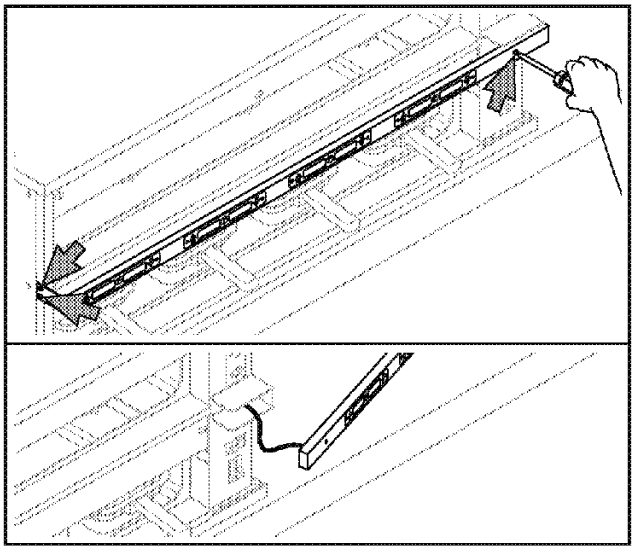


4. Remove and retain the screws securing the Control Side Cover and remove the cover.

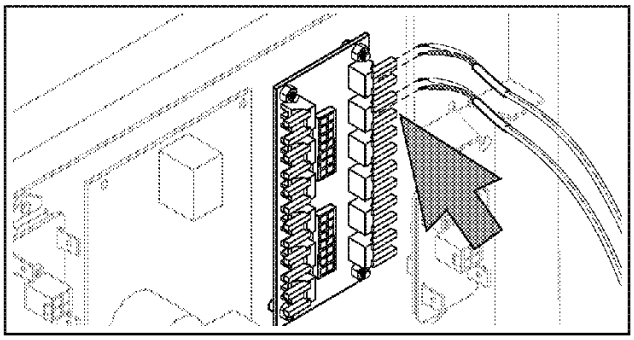


If the Emitter Socket to be replaced is on a lower level (not for top level replacement), starting from the second level, repeat the following five steps for each level above the desired repair level:

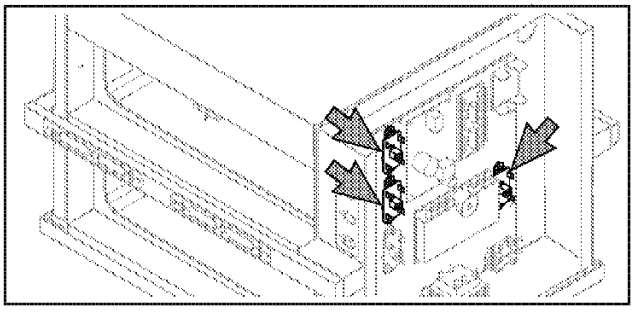
a. Remove and retain the screws securing the appropriate Menu Bar(s) and move to one side. It is not necessary, but recommended, to completely remove the Menu Bar from the unit. Menu Bar instructions are contained in this manual.



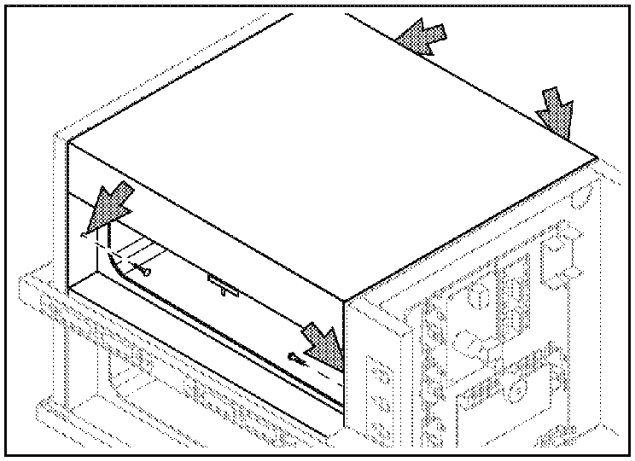
b. Mark, remove the tie wraps, and disconnect the wires for the RTD Sensors from the RTD board in the Control Compartment.



c. Mark, remove the tie wraps, and disconnect the wires for the Emitter (IR Bulb) Sockets and Heat Elements from the Relays in the Control Compartment.

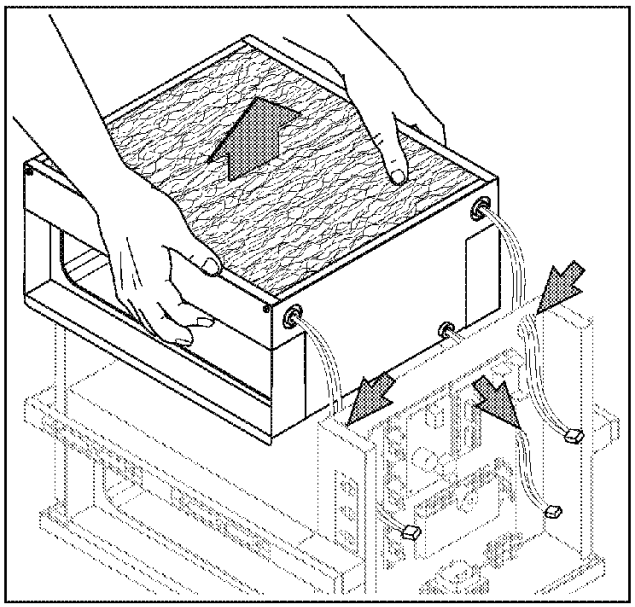


d. Remove the four (4) screws (2 in front, 2 in back) securing the liner deck assembly to the unit.



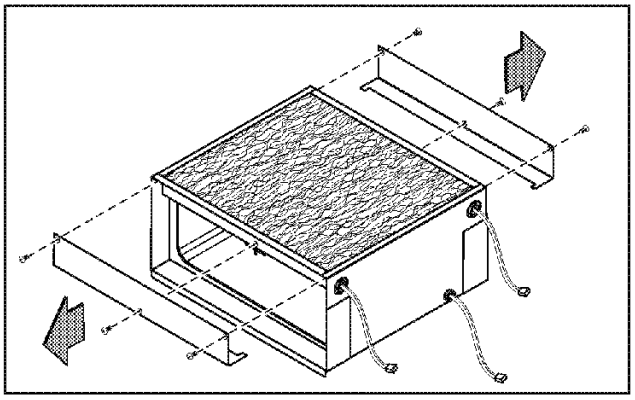
e. Carefully lift the entire liner deck assembly out through the top of the unit. This may require two people, depending on the location of the IRHS unit. Though not required to do so, removing the level's IR glass frame assembly (instructions are contained in the Emitter instructions) will lighten the weight of the liner deck assembly and make it easier for one person to accomplish this task if the IRHS is located in an elevated location or has limited access.

NOTE: It will be necessary to feed the RTD Sensor, Emitter, and Heat Element wires through the control compartment bushings. Take caution not to damage any of the wires.



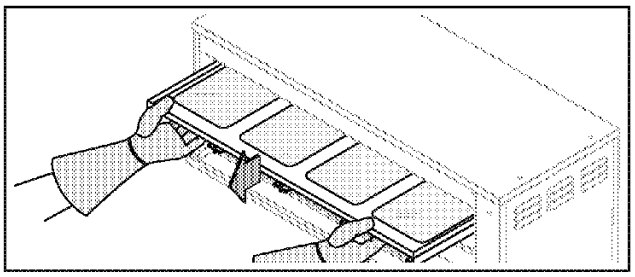
You will now have access to remove the nut securing socket in place.

5. Each liner deck's frame support angles (front and back) support the IR glass frame assembly in place. Remove and retain the screws securing the frame support angle on the row where the affected Socket is to be replaced and remove the frame support angle. Repeat for the other side of the liner deck assembly. Be careful to support and not let the IR glass frame assembly fall and damage the heat sink.



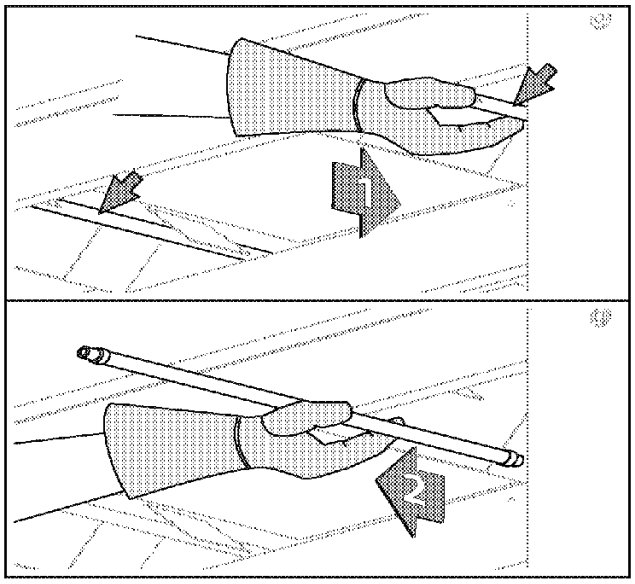
6. Slide the IR glass frame assembly out of the liner deck assembly below the Socket to be replaced.

NOTE: Make sure the glass has cooled off sufficiently to avoid burns to bare skin. Use gloves if necessary.

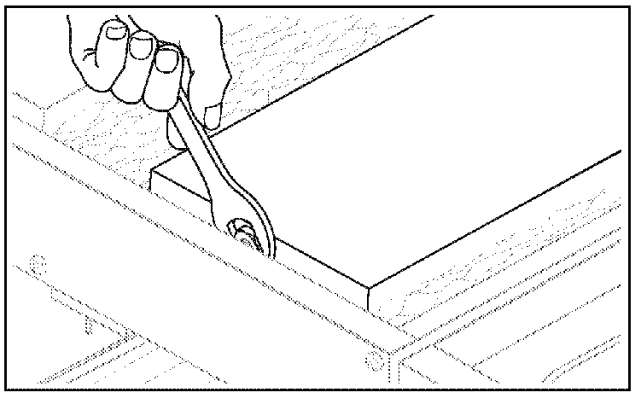


7. The Emitter Sockets are spring-loaded. Push the Emitter (IR Bulb) towards the rear socket until the Emitter is free from the front socket and carefully remove.

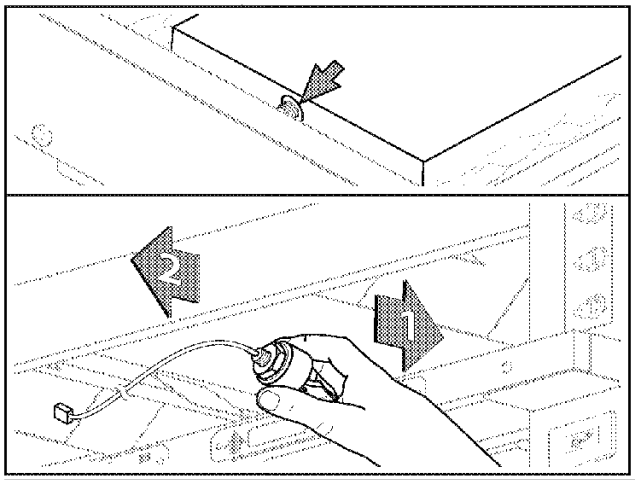
NOTE: DO NOT TOUCH THE EMITTER WITH BARE HANDS! The oil on human skin will shorten the life of the Emitters. If the Emitter is to be reused, use clean gloves, a clean cloth, or a clean paper towel to handle.



8. Mark and disconnect the faulty Emitter Socket's wires from the Relay in the control compartment.
9. Using an 11/16" open-end wrench, remove the nut securing the socket in place.



10. From the bulb side of the affected Socket, pull the Socket and its wires through its mounting hole.



RESTORE:

11. Install the replacement Emitter Socket into its mounting hole and secure with its nut.
12. Using clean gloves, a clean cloth, or a clean paper towel, reinstall or insert the replacement Emitter into the rear socket first and then gently push inward until the front of the bulb can be inserted into the front socket.
13. Slide the IR glass frame assembly into the liner deck assembly.
14. Replace the frame support angles on the front and back and secure them with their screws.
15. If other liner deck assemblies were removed, starting with the lowest, feed their RTD Sensor, Emitter, and Heat Element wires through the appropriate control compartment bushings, and carefully slide the liner deck assemblies into the unit, taking caution not to damage any of the wires. Replace any moved/removed insulation.

NOTE: This may require two people, depending on the location of the IRHS unit.

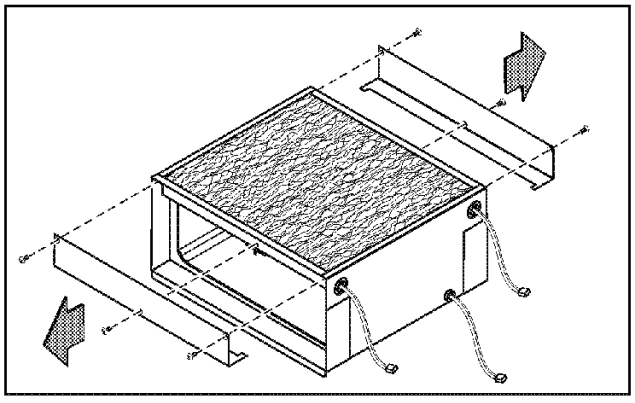
16. If other liner deck assemblies were removed, reinstall their Menu Bar(s).
17. Reconnect and tie wrap all previously disconnected wires and connectors in the control compartment.
18. Replace the Control Side Cover and secure with its screws.
19. Replace the Top Panel and secure with its screws.
20. Restore power to the unit and test for proper function.

EMITTERS (IR BULBS)

The Emitters heat the top of each well. The quantity varies (depending on model) and are held in place by two Emitter Sockets at the top of each heating well.

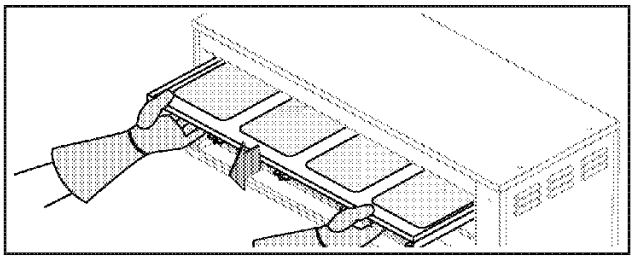
TOOLS REQUIRED: Phillips screwdriver; clean gloves/ cloths/towels; Tie wraps

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove all pans and covers from the liner deck assembly where the affected Emitter is to be replaced.
3. If the Emitter to be replaced is on a lower level (not for top level replacement), remove and retain the screws securing the appropriate Menu Bar(s) and move to one side. It is not necessary, but recommended, to completely remove the Menu Bar from the unit. Menu Bar instructions are contained in this manual.
4. The liner deck assembly's frame support angles (front and back) support the IR glass frame assembly in place. Remove and retain the screws securing the frame support angle on the row where the affected Emitter is to be replaced and remove the frame support angle. Repeat for the other side of the liner deck assembly. Be careful to support and not let the IR glass frame assembly fall and damage the heat sink.



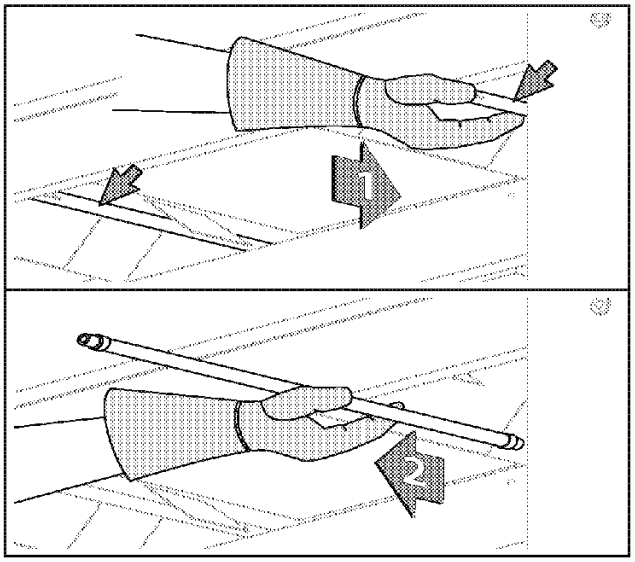
5. Slide the IR glass frame assembly out of the liner deck assembly below the Emitter to be replaced.

NOTE: Make sure the glass has cooled off sufficiently to avoid burns to bare skin. Use gloves if necessary.



6. The Emitter Sockets are spring-loaded. Push the Emitter towards the rear socket until the Emitter is free from the front socket and carefully remove.

NOTE: DO NOT TOUCH THE EMITTER WITH BARE HANDS! The oil on human skin will shorten the life of the Emitters. If the Emitter is to be reused, use clean gloves, a clean cloth, or a clean paper towel to handle.

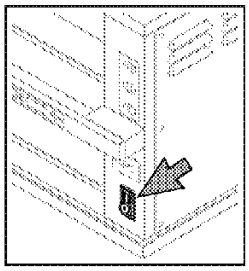


RESTORE:

7. Using clean gloves, a clean cloth, or a clean paper towel, reinstall or insert the replacement Emitter into the rear socket first and then gently push inward until the front of the bulb can be inserted into the front socket.
8. Slide the IR glass frame assembly into the liner deck assembly.
9. Replace the frame support angles on the front and back and secure them with their screws.
10. If removed, reinstall and reconnect the Menu Bar.
11. Restore power to the unit and test for proper function.

CONTROL COMPARTMENT COMPONENTS – STANDALONE & KITCHEN MINDER MODELS (ONLY)

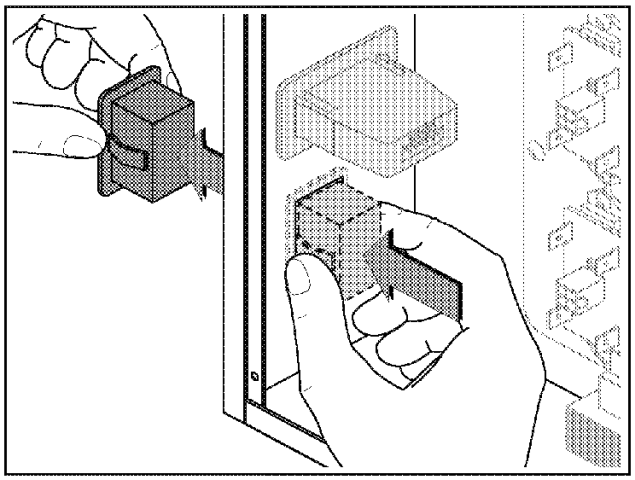
POWER SWITCH



The Power Switch is located on the Control Panel on the face of the unit. It is accessed from inside the control compartment.

TOOLS REQUIRED:
Phillips screwdriver

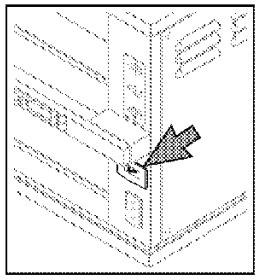
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. From inside the control compartment, mark and disconnect all wires connected to the Power Switch.
4. The Power Switch is secured to the unit with spring clips and a spacer. Depress the spring clips and slide the switch from the unit.



RESTORE:

5. Install the replacement Power Switch by sliding it into its position in the unit until secured with its spring clips.
6. Reattach the Power Switch wires.
7. Replace the Control Side Cover and secure with its screws.
8. Restore power to the unit and test for proper function.

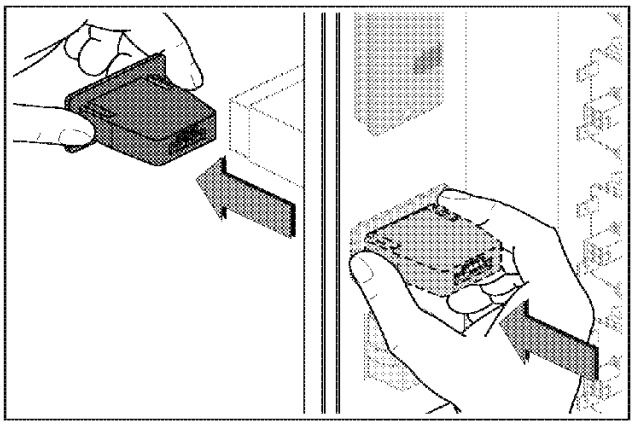
USB ADAPTER



The USB Adapter is used to program the Controller when it is replaced or when the current recipes are corrupted. It is located on the Control Panel. It is accessed from inside the control compartment.

TOOLS REQUIRED: Phillips screwdriver

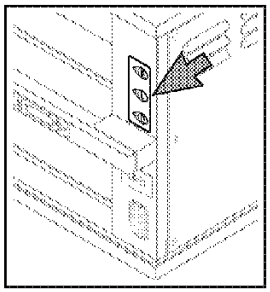
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. From inside the control compartment, unplug the molex connector from the rear of the USB port.
4. The USB Adapter is secured to the unit with prongs and a spacer. Depress the two (2) prongs securing the USB Adapter to the unit, and pull through the face of the unit.



RESTORE:

5. Install the replacement USB Adapter by sliding it into its position in the unit until secured with its prongs.
6. Reattach the USB Adapter molex connector.
7. Replace the Control Side Cover and secure with its screws.
8. Restore power to the unit and test for proper function.

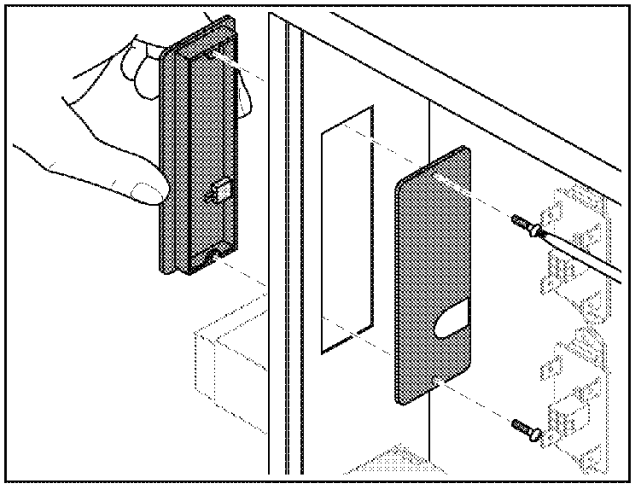
DAYPART SWITCH



The Daypart Switch is used to control the temperatures of various food products, up to three different time periods a day. It is located on the Control Panel and is accessed from inside the control compartment.

TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. From inside the control compartment, unplug the molex connector from the rear of the Daypart Switch.
4. The Daypart Switch is secured to the unit with its rear cover. Remove and retain the three (3) screws securing the Daypart Switch rear cover, then remove the switch and rear cover.

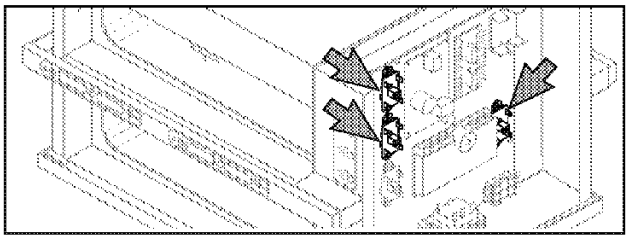


RESTORE:

5. Insert the replacement Daypart Switch into the unit and secure in place with its rear cover and screws.
6. Attach the molex connector to the replacement Daypart Switch.
7. Replace the Control Side Cover and secure with its screws.
8. Restore power to the unit and test for proper function.

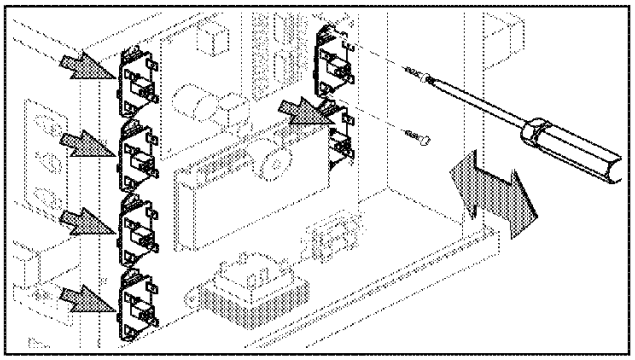
RELAYS (Smart Power Modules)

The Relays control the Emitters (IR Bulbs) and Heat Elements. Each unit has several (depending on model) and are located inside the control compartment.



TOOLS REQUIRED: Phillips screwdriver; Heat transfer compound

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect all wires and molex plug to the affected Relay.
4. Remove and retain the screws securing the affected Relay to the unit.
5. Remove the affected Relay and clean the mounting surface of any residual heat transfer compound.



RESTORE:

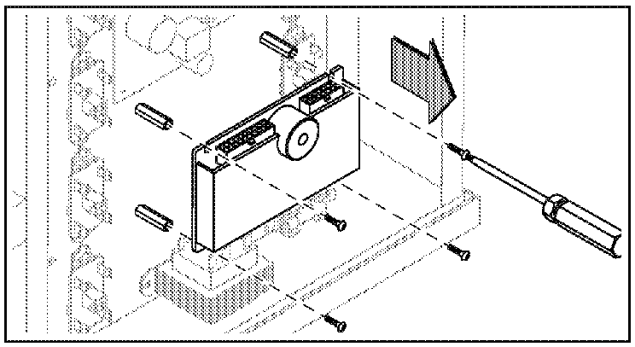
6. Apply heat transfer compound to the mounting surface of the replacement Relay.
7. Install the replacement Relay and secure with its screws.
8. Reconnect the Relay wires and plug.
9. Replace the Control Side Cover and secure with its screws.
10. Restore power to the unit and test for proper function.

CONTROLLER

The Controller is used to control the Relays and RTD Sensors. It is located inside the control compartment.

TOOLS REQUIRED: Phillips screwdriver; #1 precision screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Disconnect the two (2) molex connectors connected to the Controller.
4. Using a small Phillips screwdriver or #1 precision screwdriver, remove and retain the four (4) screws securing the Controller to the unit.
5. Maintaining the spacers on the studs, remove the Controller.



RESTORE:

6. Install the replacement Controller on its studs and secure with its screws.
7. Reconnect the two (2) molex connectors.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

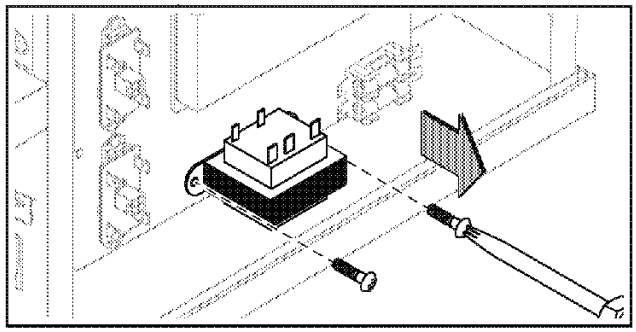
NOTE: To program the new Controller, see programming instructions located the "WEBSITE PROGRAMMING" section of this manual.

TRANSFORMER

The Transformer is used to step-down power to 12 VAC for the Controller. It is located inside the control compartment.

TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the spade connectors connected to the Transformer.
4. Remove and retain the two (2) screws securing the Transformer to the unit and remove the Transformer.



RESTORE:

5. Install the replacement Transformer and secure with its screws.
6. Reconnect the spade connectors.
7. Replace the Control Side Cover and secure with its screws.
8. Restore power to the unit and test for proper function.

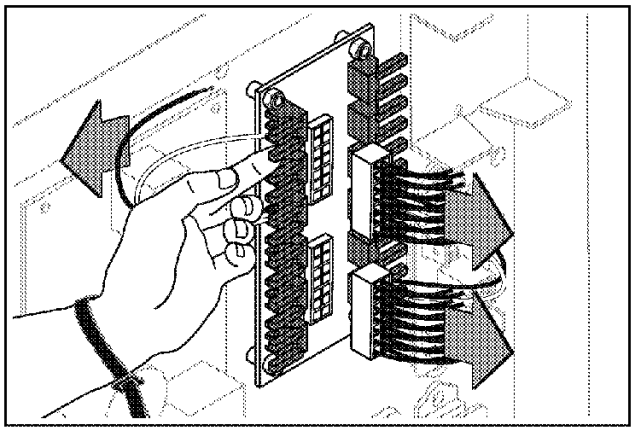
RTD BOARD

The RTD Board controls the RTD Sensors. It is located inside the control compartment.

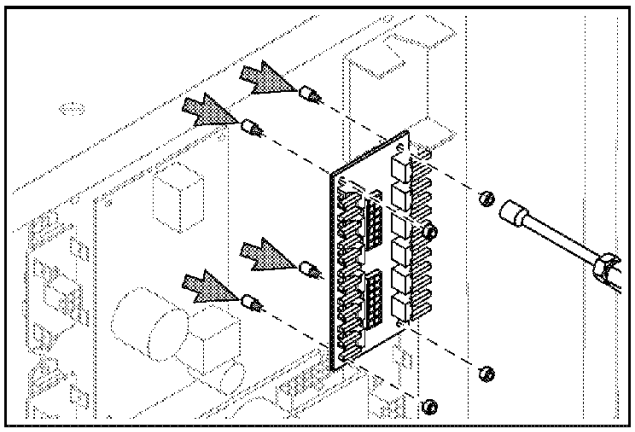
TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect all wires and the molex plug to the RTD Board.

NOTE: The use of an ESD Wrist Strap is strongly recommended. Follow ESD procedures on page 11.



4. Remove and retain the four (4) 1/4" nuts securing the affected RTD Board to the unit.
5. Maintaining the spacers on the studs, remove the RTD Board.



RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement RTD Board and secure with its screws.
7. Reconnect the RTD Board wires and plug.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

FUSES AND FUSE HOLDER

The Fuses and Fuse Holder serve as a circuit interrupter from the main power input. They are located inside the control compartment.

TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.

FOR FUSE REPLACEMENT:

3. Remove the fuses and test with an ohm meter.
4. Replace the fuse(s) with correctly rated fuse(s):

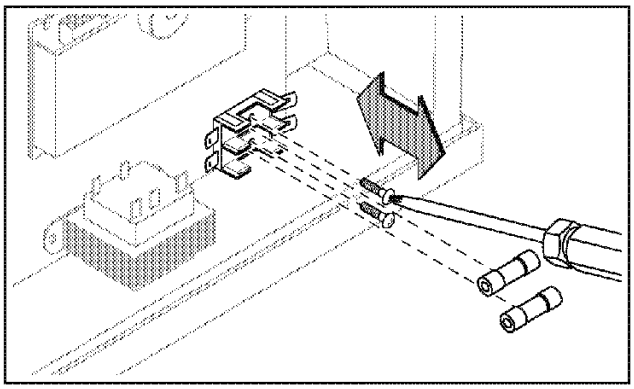
Models 2x2, 2x3, 2x4, 4x2	12 Amp
Model 3x4	16 Amp

NOTE: Replacing fuse(s) with an incorrect rating can cause nuisance blowing if rating is too low, or a loss of circuit protection if too high. Damage to the equipment and risk of fire may result. Replace fuse(s) with correctly rated fuse(s) only.

5. Replace the Control Side Cover and secure with its screws.
6. Restore power to the unit and test for proper function.

FOR FUSE HOLDER REPLACEMENT:

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Disconnect the spade connectors connected to the Fuse Holder.
4. Remove and retain the screws securing the Fuse Holder to the unit and remove the Fuse Holder.



RESTORE:

5. Install the replacement Fuse Holder and secure with its screws.
6. Reconnect the spade connectors.
7. INSTALL CORRECTLY RATED FUSES ONLY! Damage to the equipment and/or risk of fire may result if installing fuses with incorrect ratings.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

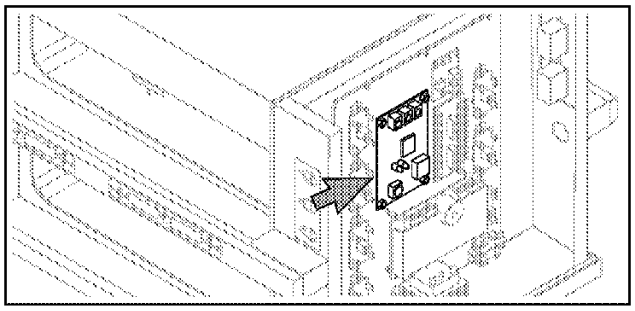
CONTROL COMPARTMENT COMPONENTS – KITCHEN MINDER MODEL (ONLY)

NOTE: The following components are installed, in addition to all previously listed control compartment components, in the Kitchen Minder model of the IRHS.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

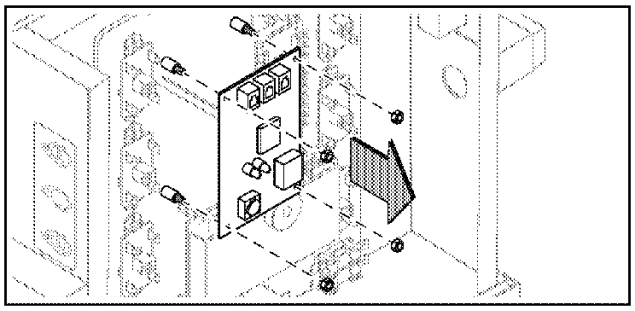
KITCHEN MINDER MASTER BOARD (if installed)

If Kitchen Minder is installed in the unit, the Kitchen Minder Master Board is located behind the Control Side Cover.



TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the lines connected to the Master Board.
4. Remove and retain the four (4) 1/4" nuts securing the affected Master Board to the unit.
5. Maintaining the spacers on the studs, remove the Master Board.



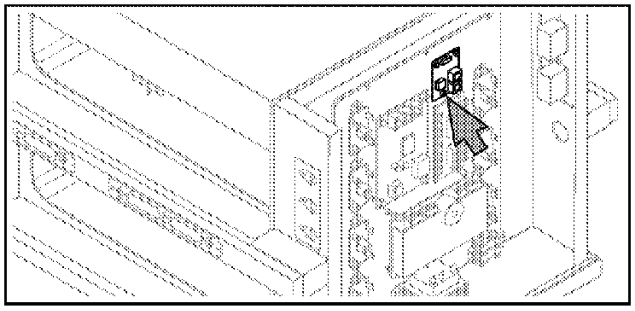
RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement Master Board on its studs and secure with its screws.
7. Reconnect the lines.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

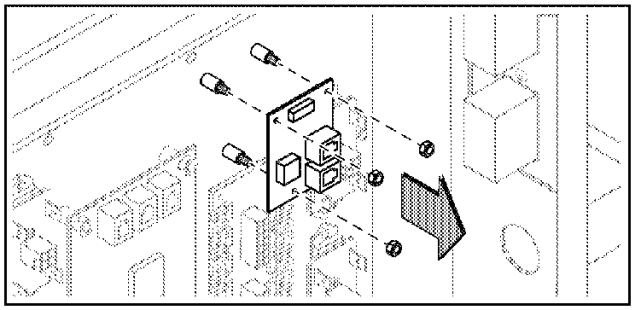
KITCHEN MINDER ADAPTER BOARD (if installed)

If Kitchen Minder is installed in the unit, the Kitchen Minder Adapter Board is located behind the Control Side Cover.



TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the line and molex plug connected to the Adapter Board.
4. Remove and retain the three (3) 1/4" nuts securing the Adapter Board to the unit.
5. Maintaining the spacers on the studs, remove the Adapter Board.

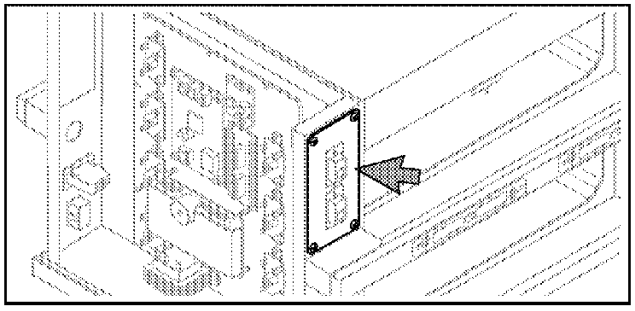


RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement Adapter Board on its studs and secure with its screws.
7. Reconnect the line and molex plug to the Adapter Board.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

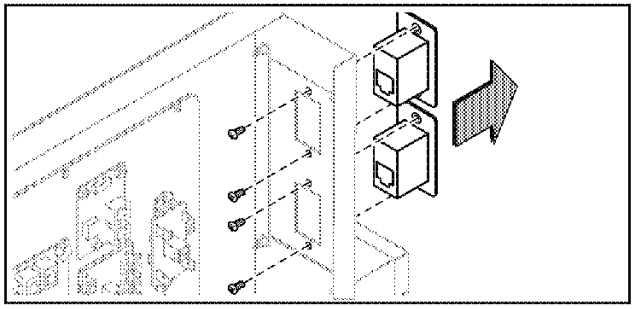
MOUNTING PLATE (If installed)

If Kitchen Minder is installed in the unit, the Mounting Plate is located in the rear control panel. The Mounting Plate holds the Couplers. The type depends on the specific model: Domestic (2-Hole) and CE (2-Hole or 3-Hole).

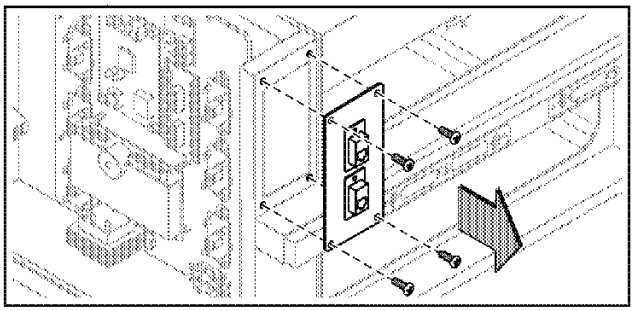


TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect any communication lines attached to both sides of the Couplers contained in the Mounting Plate.
4. **If intending to retain and reuse the existing Couplers,** remove and retain the Couplers and their mounting screws (two per coupler).



5. Remove and retain the four (4) screws securing the Mounting Plate to the rear control panel.

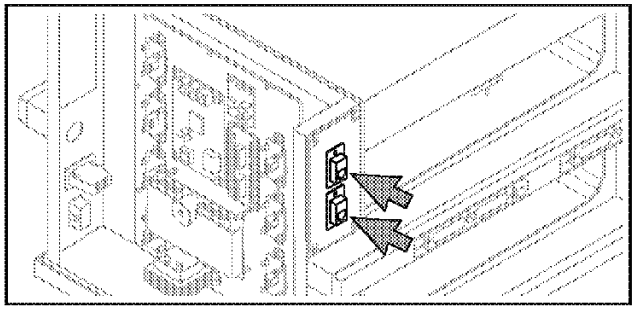


RESTORE:

6. Install the replacement Mounting Plate in the rear control panel and secure with its screws.
7. If necessary, reinstall the Couplers into the Mounting Plate with their screws.
8. Reconnect the communication lines to the Couplers.
9. Replace the Control Side Cover and secure with its screws.
10. Restore power to the unit and test for proper function.

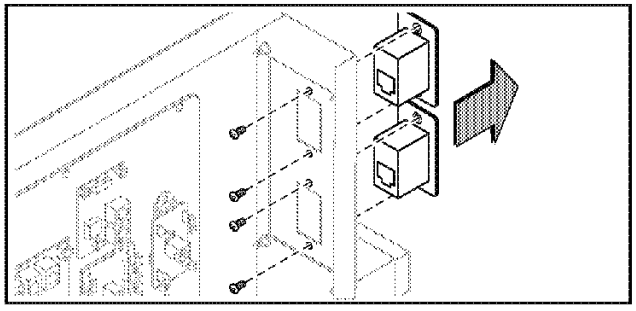
COUPLERS (If installed)

If Kitchen Minder is installed in the unit, the Couplers are located in the Mounting Plate on the rear Control Panel. Couplers are the connection point between the Master and Satellite Kitchen Minder units allowing them to be connected and communicate. The quantity varies depending on the specific model – two (2; one RJ45 and one RJ12) in the Domestic model or three (3; all CAT5/RJ45) in the CE model.



TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the affected Coupler line(s).
4. Remove and retain the two (2) small screws that attach each Coupler to the Mounting Plate.



RESTORE:

5. Insert the replacement Coupler(s) and attach with its screws.
6. Reconnect the Coupler line(s).
7. Replace the Control Side Cover and secure with its screws.
8. Restore power to the unit and test for proper function.

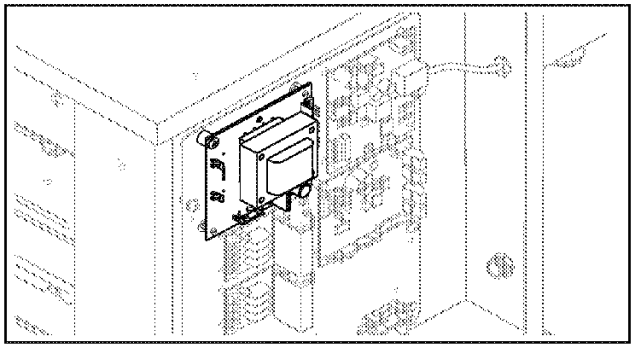
CONTROL COMPARTMENT COMPONENTS – VISOR MODEL (ONLY)

NOTE: All previously listed control compartment components (Standalone and Kitchen Minder models) are NOT INSTALLED in the VISOR models of the IRHS.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

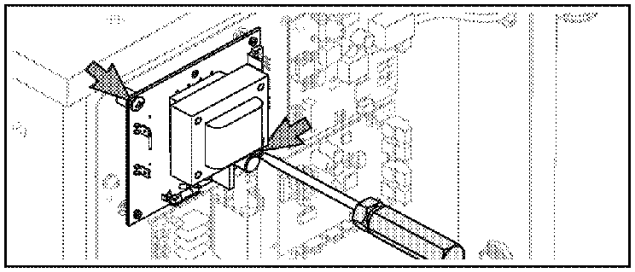
12V POWER CONTROL BOARD

If VISOR is installed in the unit, the 12V Power Control Board is located on the VISOR Control Panel inside the control compartment.

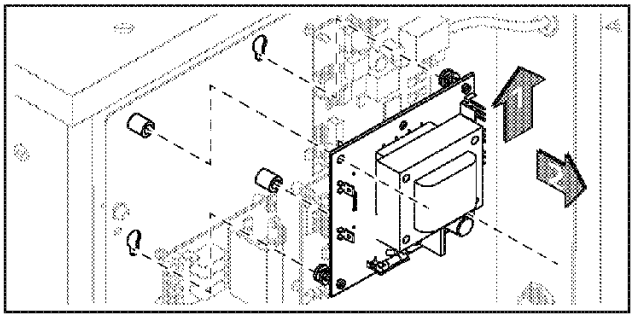


TOOLS REQUIRED: Phillips screwdriver; ESD strap; Needle-nose pliers

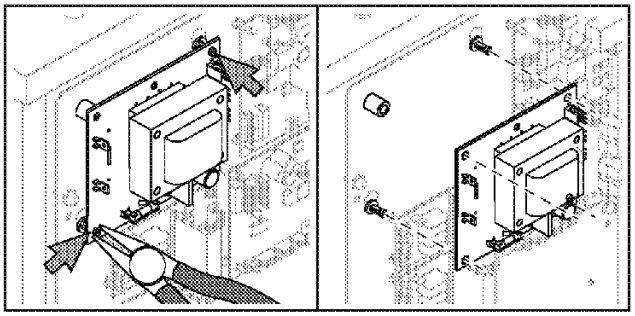
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the spade and molex connectors that are connected to the 12V Power Control Board.
4. Remove and retain the two (2) screws securing the 12V Power Control Board to the unit.



5. Leaving them in place, use the two (2) nylon PC lock-in supports to slide the 12V Power Control Board off of the control panel. If the PC lock-in supports are being reused on the replacement 12V Power Control Board, use needle-nose pliers to squeeze the PC lock-in supports and slide out of the 12V Power Control Board. The nylon screw stubs will remain in place.



OR



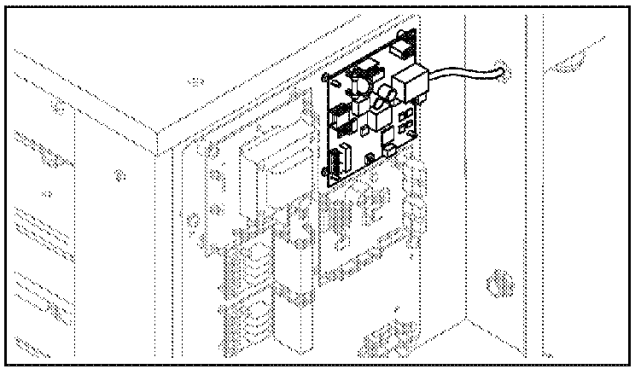
RESTORE:

6. If necessary, install two (2) nylon PC lock-in supports in the 12V Power Control Board.
7. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement 12V Power Control Board, with its PC lock-in supports, by sliding into the keyholes in the control panel and secure in place with its screws.
8. Reconnect the spade and molex connectors.
9. Replace the Control Side Cover and secure with its screws.
10. Restore power to the unit and test for proper function.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

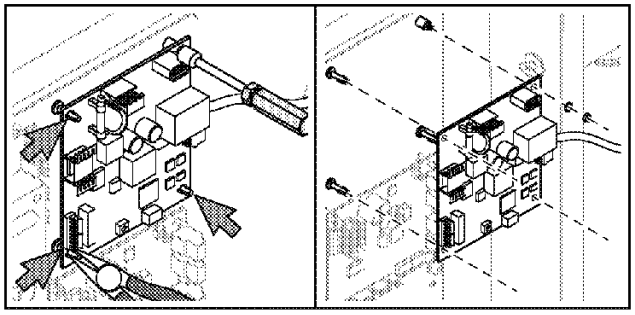
POWER CONTROL BOARD – ACM

If VISOR is installed in the unit, the ACM Power Control Board is located on the VISOR Control Panel inside the control compartment.



TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket; Needle-nose pliers

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the connectors and data line that are connected to the ACM Power Control Board.
4. Remove and retain the 1/4" nut securing the ACM Power Control Board to the unit.
5. Squeeze each of the three (3) nylon PC lock-in supports with needle-nose pliers to release the ACM Power Control Board off of the control panel. The nylon supports and nut stub will remain in place.



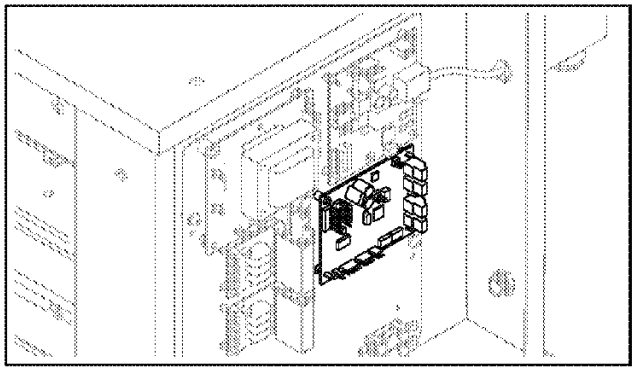
RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement ACM Power Control Board onto its nylon PC lock-in supports and secure in place with its nut.
7. Reconnect the spade and molex connectors.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

POWER CONTROL BOARD – 103M

If VISOR is installed in the unit, the ACM Power Control Board is located on the VISOR Control Panel inside the control compartment. The quantity varies depending on the specific model.

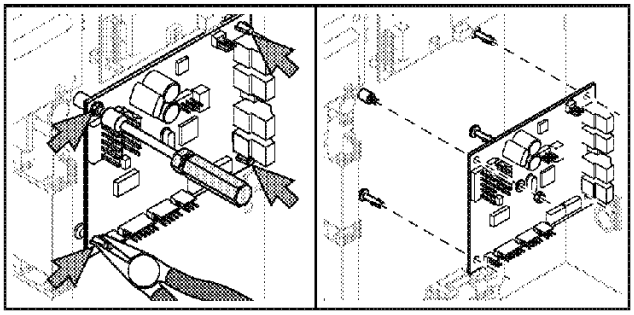


TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket; Needle-nose pliers

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the connectors that are connected to the 103M Power Control Board.

NOTE: The use of an ESD Wrist Strap is strongly recommended. Follow ESD procedures on page 11.

4. Remove and retain the 1/4" nut and its nylon spacer securing the 103M Power Control Board to the unit.
5. Squeeze each of the three (3) nylon PC lock-in supports with needle-nose pliers to release the 103M Power Control Board off of the control panel. The nylon supports and nut stub remain in place.



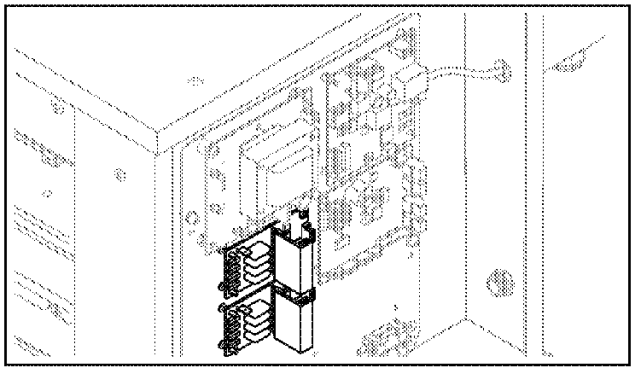
RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement 103M Power Control Board onto its nylon PC lock-in supports and secure in place with its nut and nylon spacer.
7. Reconnect the spade and molex connectors.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

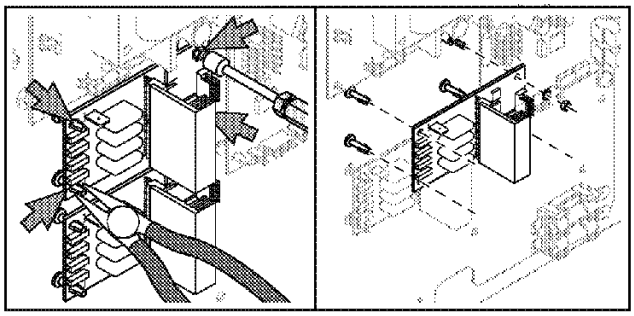
POWER CONTROL BOARD – TRIAC DRIVE

If VISOR is installed in the unit, the Triac Drive Power Control Board is located on the VISOR Control Panel inside the control compartment. The quantity varies depending on the specific model.



TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket; Needle-nose pliers

1. Place the unit's Power Switch in the "OFF" position and follow the proper lockout/tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the connectors that are connected to the Triac Drive Power Control Board.
4. Remove and retain the 1/4" nut and nylon spacer securing the Triac Drive Power Control Board to the unit.
5. Squeeze each of the three (3) nylon PC lock-in supports with needle-nose pliers to release the Triac Drive Power Control Board off of the control panel. The nylon supports and nut stub will remain in place.

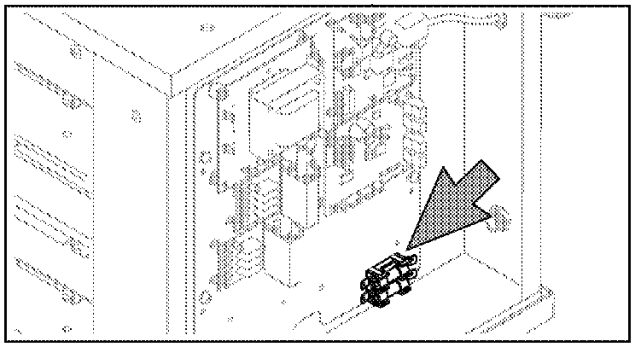


RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement Triac Drive Power Control Board onto its nylon PC lock-in supports and secure in place with its nut.
7. Reconnect the spade and molex connectors.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

FUSE HOLDER AND FUSES

The Fuses and Fuse Holder serve as a circuit interrupter from the main power input. They are located on the VISOR Control Panel, inside the control compartment.

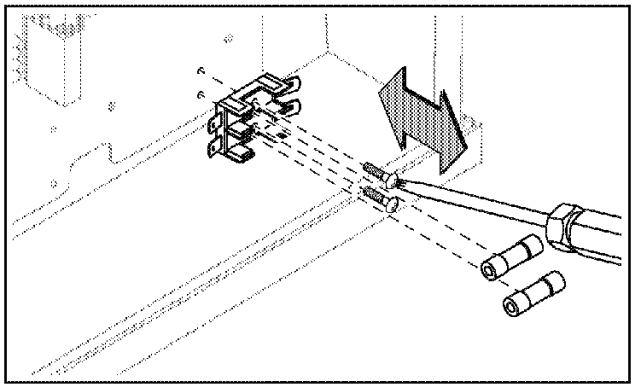


TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.

FOR FUSE HOLDER REPLACEMENT

3. Disconnect the spade connectors connected to the Fuse Holder.
4. Remove and retain the screws securing the Fuse Holder to the unit and remove the Fuse Holder.



RESTORE:

5. Install the replacement Fuse Holder and secure with its screws.
6. Reconnect the spade connectors.
7. INSTALL CORRECTLY RATED FUSES ONLY!

NOTE: Replacing fuse(s) with an incorrect rating can cause nuisance blowing if rating is too low, or a loss of circuit protection if too high. Damage to the equipment and risk of fire may result.

8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

FOR FUSE REPLACEMENT

3. Remove the fuses and test with an ohm meter.

RESTORE:

4. Replace the fuse(s) with correctly rated fuse(s):

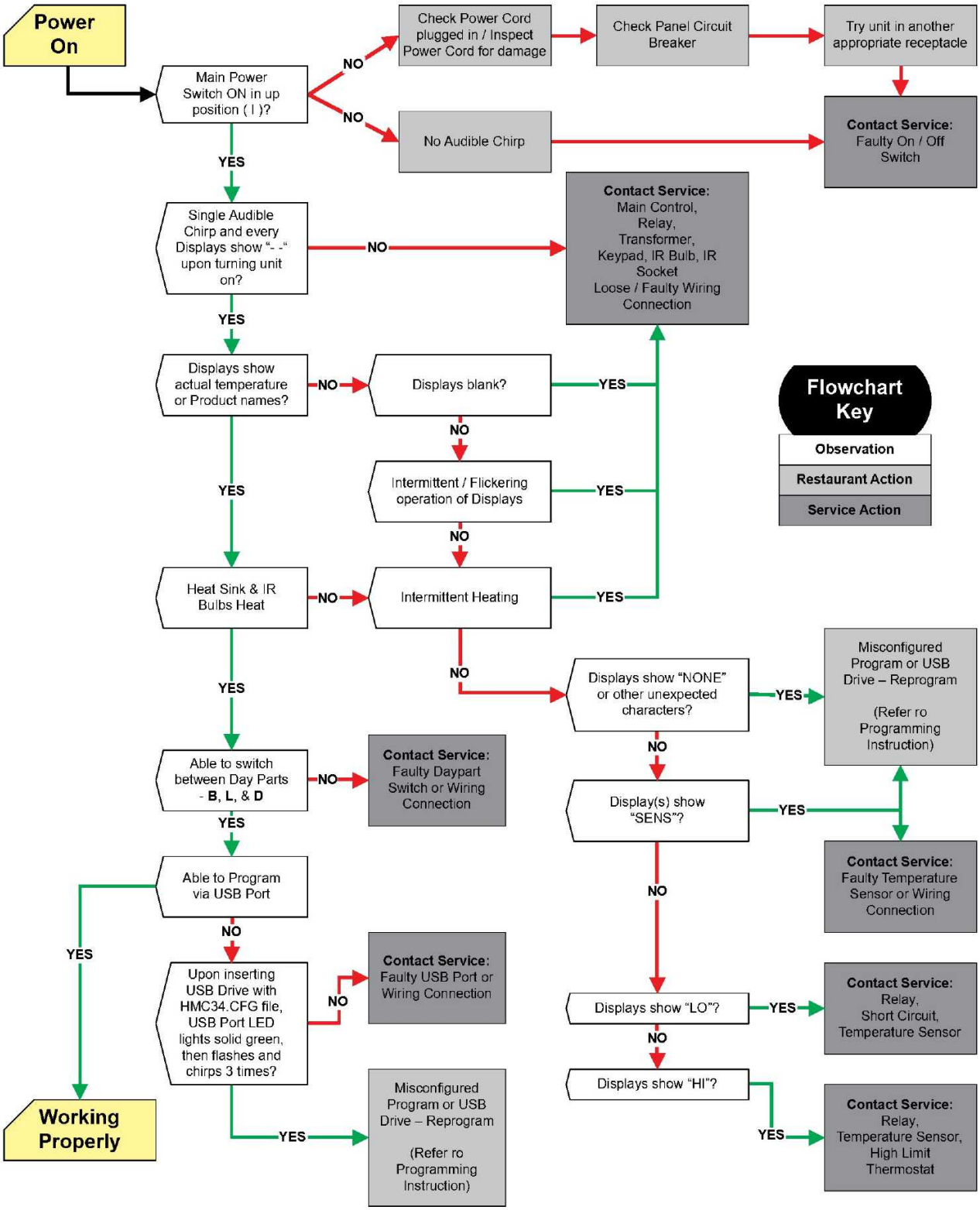
Models 2x2, 2x3, 2x4, 4x2	12 Amp
Model 3x4	16 Amp

NOTE: Replacing fuse(s) with an incorrect rating can cause nuisance blowing if rating is too low, or a loss of circuit protection if too high. Damage to the equipment and risk of fire may result.

5. Replace the Control Side Cover and secure with its screws.
6. Restore power to the unit and test for proper function.

TROUBLESHOOTING & DIAGNOSTICS

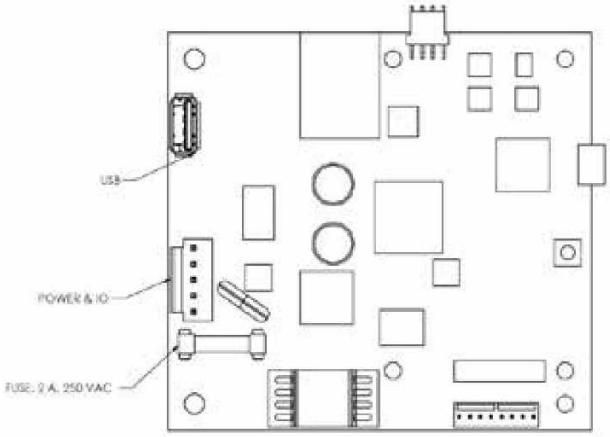
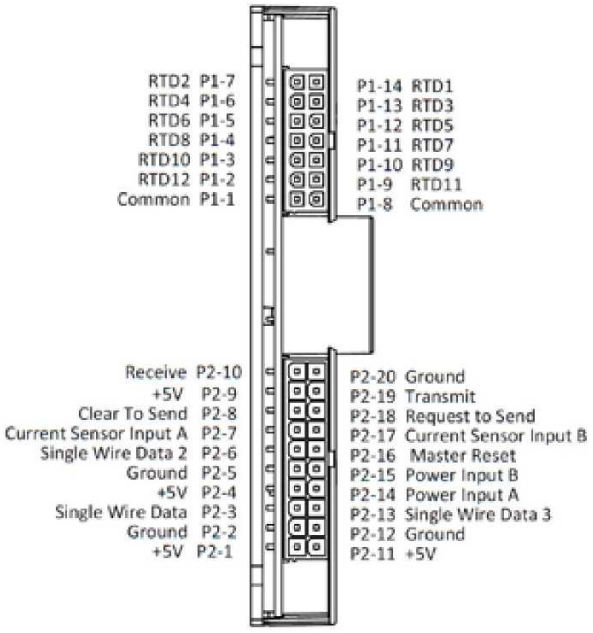
IRHS TROUBLESHOOTING FLOW CHART

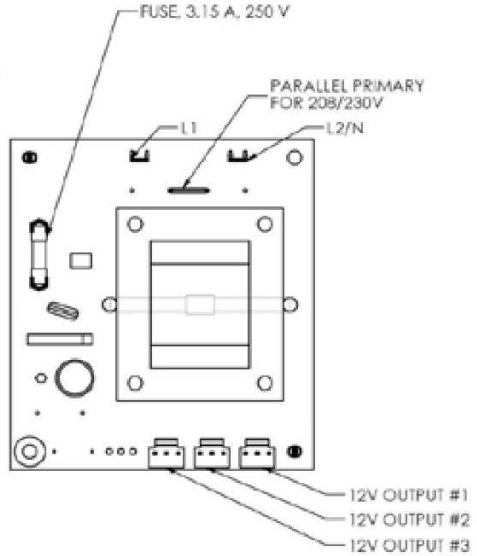
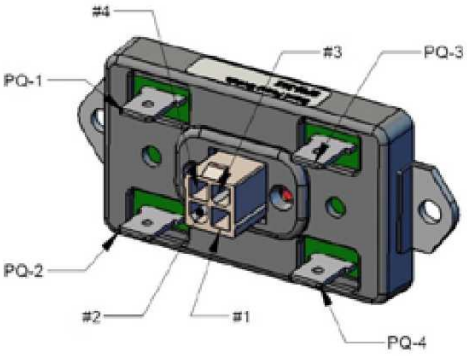


IRHS TROUBLESHOOTING GUIDE

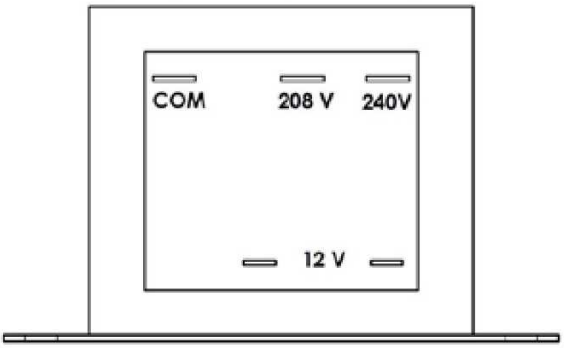
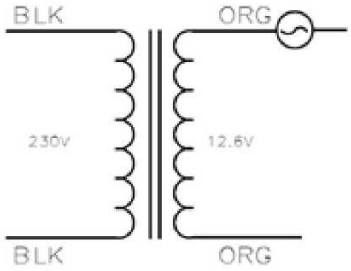
COMPONENT CHECK	STATE		POSSIBLE CONDITIONS	SOLUTION(S)
Unit Powered?			Unplugged	Plug Power Cord into correct receptacle
			Power Cord damaged	Repair/Replace Power Cord
			Circuit Breaker tripped	Reset panel breaker
			Faulty receptacle	Replace receptacle
			Fuse	Replace Fuse
			Wiring/Connectors	Trace and repair wiring
			On/Off Switch	Replace On/Off Switch
Timer (Menu) Bar Displays	Blank?	Both Bars	Transformer	Replace Transformer
			Controller	Replace Controller
			Keypad Display	Replace Keypad Display
			Wiring/Connectors	Trace and repair wiring
		Rear Bar Only	Wiring/Connectors	Trace and repair wiring
			IR Relay	Replace faulty relay
		Individual Keypad	Wiring/Connectors	Trace and repair wiring
			Keypad Display	Replace Keypad Display
	Showing Error Code	"SENS" or "HIGH"	RTD	Replace RTD (Temperature) Sensor
			RTD Board	Replace RTD Board
			Programming	Reprogram the unit
		"LOW"	RTD	Replace RTD (Temperature) Sensor
			RTD Board	Replace RTD Board
			Programming	Reprogram the unit
			High Limit Switch	Allow unit to cool and switch reset
				Replace High Limit Swith
		"BULB"	Wiring/Connectors	Trace and repair wiring
			IR Relay	Replace faulty relay
			Emitter (IR Bulb)	Replace Emitter (IR Bulb)
			Emitter Socket	Replace Emitter (IR Bulb) Socket
HeatSink (Bottom) Heating?			Programming	Reprogram the unit
			Controller	Replace Controller
			Heat Relay	Replace faulty relay
			RTD	Replace RTD (Temperature) Sensor
			RTD Board	Replace RTD Board
			Heat Element	Replace Heat Element
			High Limit Switch	Allow unit to cool and switch reset
				Replace High Limit Swith
			Wiring/Connectors	Trace and repair wiring
Emitters (IR Bulbs)	Not Operating?		Programming	Reprogram the unit
			Controller	Replace Controller
			Emitter (IR Bulb)	Replace Emitter (IR Bulb)
	Operating?		Glass Assembly cleanliness	Clean Glass Assembly
				Check Glass Assembly for damage/defect
			Lid usage	Ensure proper lid for product is used
Programming			USB Drive	Ensure USB drive is blank and download recipes
				Replace USB drive
			Website Programming	Reprogram the unit
			USB Port	Replace USB Port
			Wiring/Connectors	Trace and repair wiring
			Controller	Replace Controller
Daypart Switch			Heat Relay	Replace faulty relay
			Controller	Replace Controller
			Daypart Switch	Replace Daypart Switch
Lids/Pans			Proper fit	Verify proper proper lid and pan installation
			Glass Assembly	Check Glass Assembly for damage/defect
				Ensure Glass Assembly is correctly installed
			Non-Duke parts	Verify OEM information (packaging/labeling)

IRHS COMPONENT TECHNICAL SPECIFICATIONS

PART NO.	DESCRIPTION	SPECIFICATIONS
166112	ACM, Power Control Board (VISOR-only)	
166080	**Controller**; Renau HMC-34	
166017	**Emitter, IRHS**; 208 VAC	• 208 VAC; 340 (170 x 2) W (± 3%)
166018	**Emitter, IRHS**; 240 VAC	• 240 VAC; 340 (170 x 2) W (± 3%)
166004	**Heat Element**; 2-Wide, 208 VAC	• 208 VAC; 300 W
166005	**Heat Element**; 2-Wide, 240 VAC	• 240 VAC; 300 W
166007	**Heat Element**; 3-Wide, 208 VAC	• 208 VAC; 450 W
166008	**Heat Element**; 3-Wide, 240 VAC	• 240 VAC; 450 W
166009	**Heat Element**; 4-Wide, 208 VAC	• 208 VAC; 300 W
166010	**Heat Element**; 4-Wide, 240 VAC	• 240 VAC; 300 W

<table>
<tr><th>PART NO.</th><th>DESCRIPTION</th><th>SPECIFICATIONS</th></tr>
<tr><td>166082</td><td>Keypad Display; Up/Down
(all configurations)</td><td rowspan="2">• Input: 5 VDC
• Pins:
— Pin #1: GND
— Pin #2: 5 VDC
— Pin #3: Data In
— Pin #4: Data Out</td></tr>
<tr><td>166083</td><td>Keypad Display; Up/Up
(only with 3x4 configurations)</td></tr>
<tr><td>166111</td><td>Modular Jack (VISOR-only)</td><td>• 1.5 A; 125 VDC
• Torque: 12 Kgf/cm
• CAT 5
• IP67</td></tr>
<tr><td>120011</td><td>Power Control Board
(VISOR-only)</td><td>• Primary 208/230 VAC; Secondary: 12 VAC

</td></tr>
<tr><td>157830</td><td>Relay, Smart Power Module</td><td>• Max. Load Current: 20 Arms. Heat sinking required.
• Operating Voltage: 24-250 Vrms
• Input : 5V TTL


<table>
<tr><th colspan="2">Connector PIN Data</th></tr>
<tr><td>PQ-1</td><td>LOAD1-1</td></tr>
<tr><td>PQ-2</td><td>LOAD1-2</td></tr>
<tr><td>PQ-3</td><td>LOAD2-1</td></tr>
<tr><td>PQ-4</td><td>LOAD2-2</td></tr>
<tr><td>#1</td><td>+5V DC</td></tr>
<tr><td>#2</td><td>GND</td></tr>
<tr><td>#3</td><td>1-wire network IN</td></tr>
<tr><td>#4</td><td>1-wire network OUT</td></tr>
</table></td></tr>
</table>

PART NO.	DESCRIPTION	SPECIFICATIONS
158279	RTD Sensor	• Temperature Range: -65°F to 260°F
158312	Thermostat, High Limit	• Opens @ 300°F; Closes @ 270°F
155749	**Transformer;** 208/240 VAC	• Primary: 208/240 VAC; Secondary: 12 VAC 
156838	**Transformer;** 230 VAC	• Input: 230 VAC; 50/60 Hz; Output: 12.6 V @ 2.38 A 

OPERATIONS

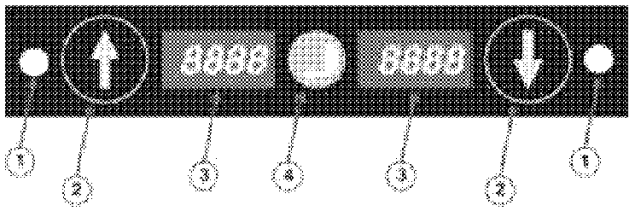
OPERATING PROCEDURES

- Ensure proper pan covers are inserted into the correct location for broiled products.
- Upon turning ON, allow the unit to heat until the menu bars display the pre-programmed product names. This does not occur before reaching proper temperature.

NOTE: If the menu bars display temperature at any time after the preheat period, discontinue use of the affected pan location(s) until the unit can be serviced.

OPERATIONS

Menu Bar Components

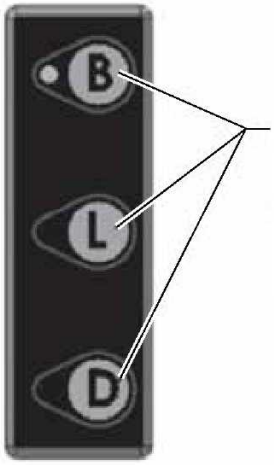


1. **Status LEDs.** Used for indicating status of pan.
   a. GREEN: Menu is Active – product in pan (use first)
   b. FLASHING GREEN: Cook Warning Time reached (cook more product) or keypad in edit (programming) mode
   c. NON-ILLUMINATED: Menu is inactive – no product in pan
2. **Arrow Buttons:**
   a. Used for starting/stopping/resetting the menu.
   b. Used to access Menu Mode.
   c. Indicate which pan the adjacent status LED and pan display are linked to.
3. **LED Displays:**
   a. Displays product name and hold time remaining (alternates between the two when the Menu is active).
   b. Once to temperature, product names can be viewed on the displays. Additional settings such as "LINK", "TIME", and "TEMP" can be viewed two different ways:
      1) Manually accessing Menu Mode through Menu Bars.
      2) Uploading unit settings from the IRHS to a USB Drive and viewing via the Internet. This is accomplished by using the same website used to download recipes.
4. **ENTER Button**. Used to access Menu Mode.

Changing Dayparts

There are two methods for selecting Dayparts:

1. Select the appropriate Daypart Button to switch between breakfast, lunch, and dinner menus. If necessary, the three (3) parts can be programmed for any three separate time periods – not just "breakfast", "lunch", and/or "dinner" menus.



PUSH BUTTONS TO CHANGE DAYPART MENU – CORRESPONDING LED WILL TURN ON (BREAKFAST SHOWN)

2. Via Menu Bar:

a. Enter Menu Mode by pressing and holding the ENTER button "↵" for three (3) seconds.

b. Status LED flashes, "**MENU**" is displayed on left Display, and either "**UP**" or "**DOWN**" is displayed on the right display – indicating which pan location information will be displayed/controlled.



c. After selecting the UP or DOWN Arrow, press the ENTER Button "↵" to accept.

d. Status LED stops flashing and "**MEAL ↵ SET1**" appears on the Display.



e. Press the ENTER button again. Status LED flashes indicating Menu Mode.

f. Use the arrow buttons to scroll to desired Daypart ("**MEAL ↵ SET1**", "**MEAL ↵ SET2**", or "**MEAL ↵ SET3**") and press the ENTER button to accept.



g. Status LED stops flashing, "**UPDATING**" is displayed for a few seconds, and then the desired Daypart ("**MEAL ↵ SETx**") is displayed.





h. Press the UP arrow button one last time to scroll to "**EXIT**" and press the ENTER button "↵" to exit Menu Mode.



Display Link, Hold Time, or Temperature

1. Enter Menu Mode by pressing and holding the ENTER button "↵" for three (3) seconds.
2. Status LED flashes, "**MENU**" is displayed on left Display, and either "**UP**" or "**DOWN**" is displayed on the right display – indicating which pan location information will be displayed/controlled.



3. After selecting the UP or DOWN arrow, press the ENTER Button "↵" to accept.
4. Status LED stops flashing and "**MEAL ↵ SET1**" appears on the Display.



5. Press the ENTER button "↵" again. Status LED flashes indicating edit mode.
6. Press the UP arrow button repeatedly to scroll up or down through "**LINK**", "**TIME**", and "**TEMP**". The DOWN arrow button can be used to cycle the opposite direction.



This indicates product named **BURG** is linked pan locations



This indicates the hold time for BURG



This indicates the Heat Sink Temperature for BURG

7. Press the UP arrow button one last time to scroll to "**EXIT**" and press the ENTER button "↵" to exit Menu Mode.



DIAGNOSTICS

Checking Heat Sink Temperature

- A surface temperature probe can be used to check the temperature of the heat sink surface.
- No pans should be in wells during the pre-heat and temperature check period. Pre-heat the holding unit for 30 minutes before taking any temperature readings.
- Ensure the pan location being measured is not in a hold cycle mode (timing down).
- Locate the surface temperature probe in the geometric center of the desired pan location. Make sure the probe is making good contact with the surface while taking readings.
- The temperature control will exhibit a swing in temperature as the control cycles on and off while regulating to the set point temperature. The average of several readings taken should be +/- 5°F from the set point.
- Compare the measured temperature to the programmed heat sink set point (TEMP) for the specified pan location.

Checking IR Bulb Function

- IR bulbs are either ON or OFF.
- Select an arrow to initiate a hold cycle.
- After heat up is complete (display will show product names), visually confirm the IR bulb comes on.

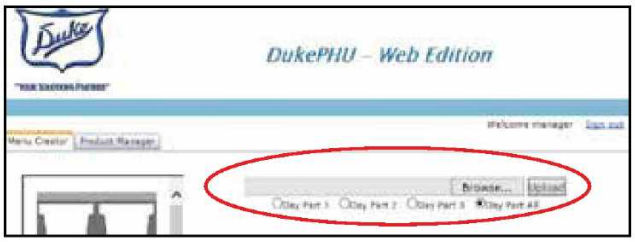
Checking Product Settings (via USB file)

1. Turn the IRHS on and wait for temperature or product names to display.
2. Insert a **blank** USB drive (any size) into the USB port. The USB port LED will light solid green and a single chirp should be heard.
3. The display will go blank and the USB port LED will begin flashing green.
4. A second chirp should be heard, then the USB port LED will return to solid green indicating that the file has successfully uploaded from the IRHS to the USB drive.
5. Remove the USB drive from the port.
6. To view the settings file on the Internet, log onto the same website used to download recipes:

   www.dukemfg.info/bkirhs

   User Name: "**manager**"

   Password: "**password**" (case sensitive)



Error Codes

The RTD Board performs a routine, internal check after turning the unit on to validate the unit is sensing temperature and heating properly. In the event of a problem, an error will display on the Menu Bar:

"BULB" – IR Bulb Circuit Fault

Indicates a fault with a specified IR Bulb circuit. The affected pan location is not available for timing product and a qualified service technician should be contacted to identify the cause of the fault.

"LOW" – Under-Temperature Fault

Indicates a fault with a heating circuit component. The display will show "**LOW**" if the temperature stays 10°F below the set point temperature for 30 minutes. The affected pan location is not available for timing product and a qualified service technician should be contacted to identify the cause of the fault.

"HIGH" – Over-Temperature Fault

Indicates a fault with a heating circuit component. The display will show "**HIGH**" if the temperature stays 10°F above the set point temperature for 30 minutes. The affected pan location is not available for timing product and a qualified service technician should be contacted to identify the cause of the fault.

"SENS" – Sensor Fault

May indicate the unit has been programmed improperly (i.e., loading a 2x4 product configuration file into a 2x2 unit). An attempt to properly reprogram the unit should be made.

May indicate a fault with a heat sink temperature sensor. The affected pan location is not available for timing product and a qualified service technician should be contacted to identify the cause of the fault.

Temperature Check Procedure

1. **No pans should be in wells during the pre-heat and temperature check.** Pre-heat the warmer for 30 minutes before taking any temperature readings. Do not take readings unless the cavity has been empty for 30 minutes. This will allow the temperature to stabilize and will prevent false readings.
2. A digital temperature meter that has been calibrated must be used to get an accurate temperature reading. Use a thermocouple surface temperature probe to measure temperatures.
3. The heating well should be cleaned and empty before the temperature is checked. Avoid any air drafts that might flow through the cavity.
4. Locate the surface temperature probe on the bottom of the first cavity as shown for the cabinet size.
5. All temperature controls exhibit a swing in temperature as the control cycles on and off while regulating to the set point. The correct calibration temperature is the average of several readings taken over a period of 20 minutes after the warmer has been pre-heated. The average temperature should be ± 5°F from the set point.

CLEANING & ROUTINE MAINTENANCE

CLEANING

IF DAILY CLEANING IS PERFORMED ROUTINELY, DEEPER, MORE AGGRESSIVE, CLEANING METHODS CAN BE AVOIDED. OVER LONGER PERIODS OF TIME, FRIED FOOD PRODUCTS CAN ACCUMULATE AND BAKE ON SURFACES OF THE COMPARTMENTS.

Cleaning solutions need to be alkaline based or non-chloride cleaners. Any cleaner containing chlorides will damage the protective film of the stainless steel. Chlorides are also commonly found in hard water, salts and household and industrial cleaners. If cleaners containing chlorides are used, be sure to rinse repeatedly and dry thoroughly upon completion.

WARNING: NEVER USE AN ACID BASED CLEANING SOLUTION!

MANY FOOD PRODUCTS HAVE AN ACIDIC CONTENT WHICH CAN DETERIORATE THE FINISH. BE SURE TO CLEAN ALL FOOD PRODUCTS FROM ANY STAINLESS STEEL SURFACE. COMMON ITEMS INCLUDE, TOMATOES, PEPPERS AND OTHER VEGETABLES.

Routine cleaning of stainless steel can be done with soap and water. Extreme stains or grease should be cleaned with a non-abrasive cleaner and plastic scrub pad. It is always good to rub with the grain of the steel.

Early signs of stainless steel breakdown can consist of small pits and cracks. If this has begun, clean thoroughly and start to apply stainless steel cleaners in attempt to restore and preserve the finish of the steel's protective layer.

RECOMMENDED SUPPLIES

- Cleaning Towels
- Non-Scratch Scrub Pad
- SYR Cleaning Brush Tool
- Kay Super Concentrate Degreaser
- Kay-5® Sanitizer/Cleaner, or compatible sanitizer

DAILY INSPECTION CHECKLIST

Inspect glass daily for chips, cracks, or breaking. Discard all food and notify manager if any chips, cracks, or broken glass are found. Do not use equipment. All glass must be in good condition before using equipment to hold food.

- Make sure the unit is free of any grease or visible food soils.
- Make sure the exterior of the unit is free of smudges or soil.
- Make sure the unit holding pans are free of damage and any food soil residue.

DAILY CLEANING PROCEDURES

Never use a high-pressure water wash for this cleaning procedure as water can damage electrical components.

1. Turn unit off, unplug, and allow to cool for at least 10 minutes.
2. Remove all holding pans and covers. Wash, rinse, and sanitize at the 3-compartment sink.
3. Allow to air dry.
4. Fully clean all the heat sink surfaces. Spray the cleaning brush tool with degreaser and use as shown – gently sliding in and out of each compartment.

   NOTE: NEVER USE STEEL PADS, WIRE BRUSHES, OR SCRAPERS!



5. Fully clean upper glass surfaces by hand. Spray a cleaning towel, or non-scratch scrub pad when necessary, with soapy solution degreaser.

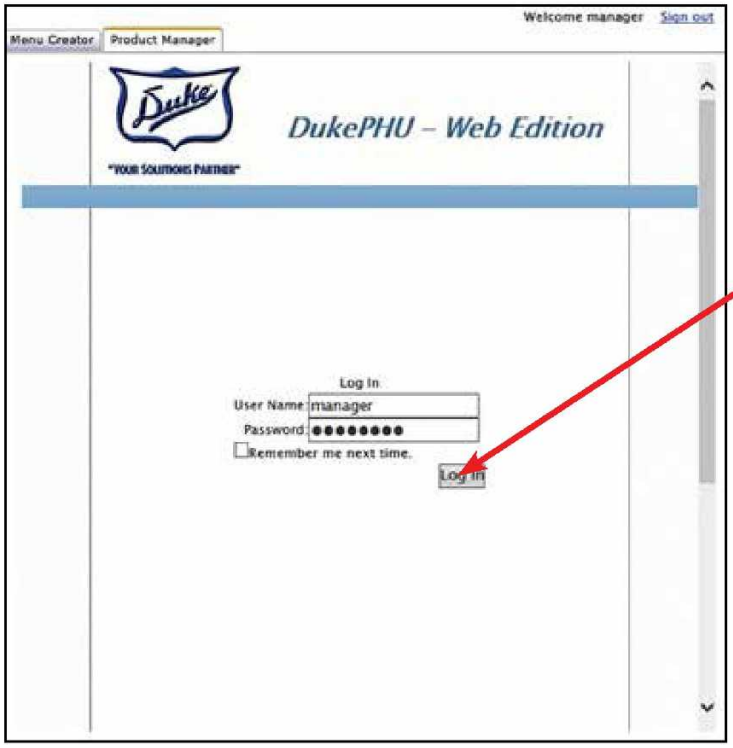
   NOTE: Never spray cleaning solution directly onto the cabinet.

6. Use sanitizer-soaked towels to wipe out all interior compartments on the unit. Wipe the top compartments first, then the remaining levels from top to bottom.

   IMPORTANT: Use clean, sanitizer-soaked towels (towels must be wrung out so that they are damp and not dripping, dripping towels may harm the unit)

WEBSITE PROGRAMMING

1.



Log on.

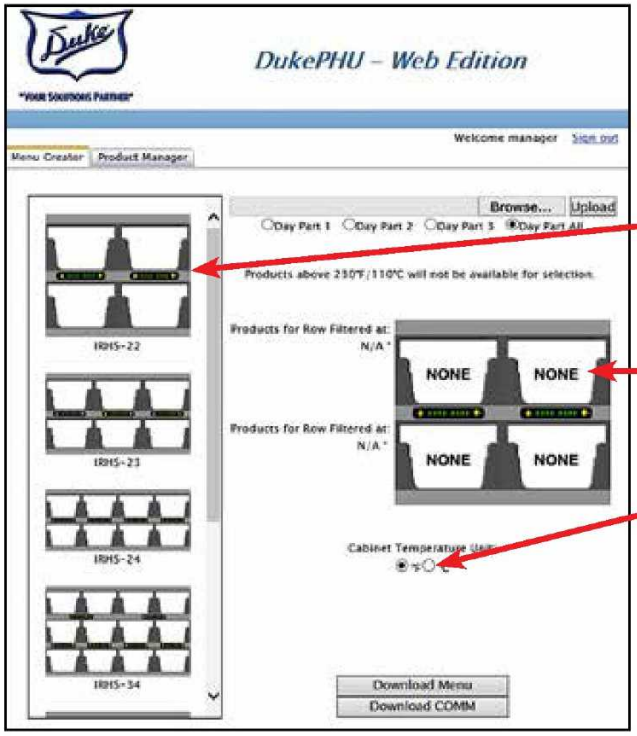
www.dukemfg.info/bkirhs

User Name: **manager**

Password: **password**

(case sensitive)

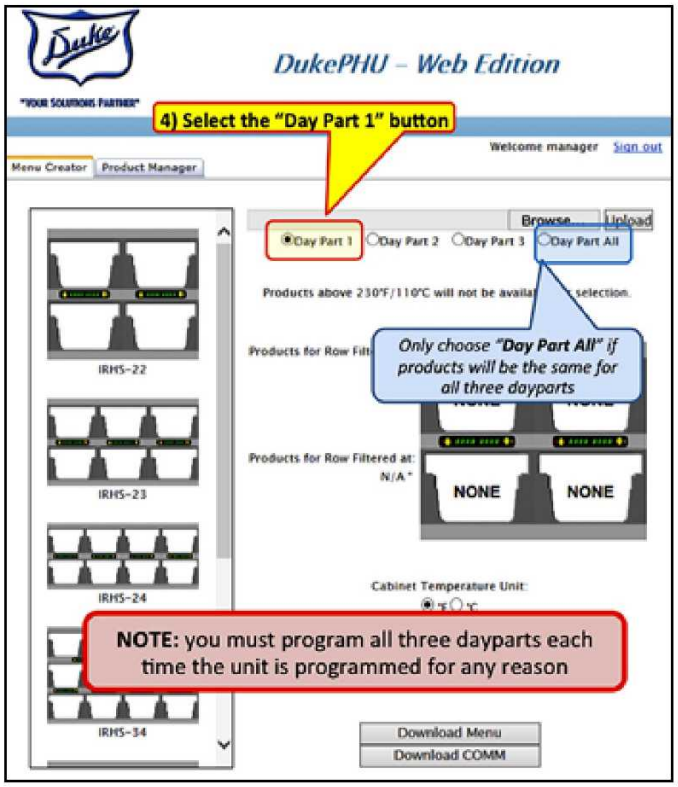
2.



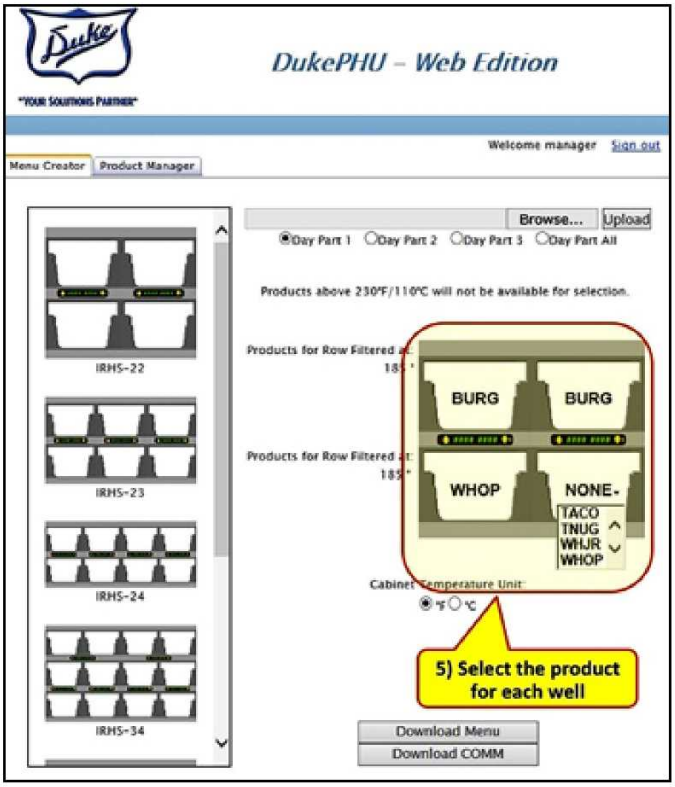
NOTE: When you first log onto this page, you must:

1) Select the desired equipment configuration on the left, before it will…
2) …show up on the right side in order to be programmed.
3) If necessary, change the Cabinet Temperature Unit to "°C" (Celsius)

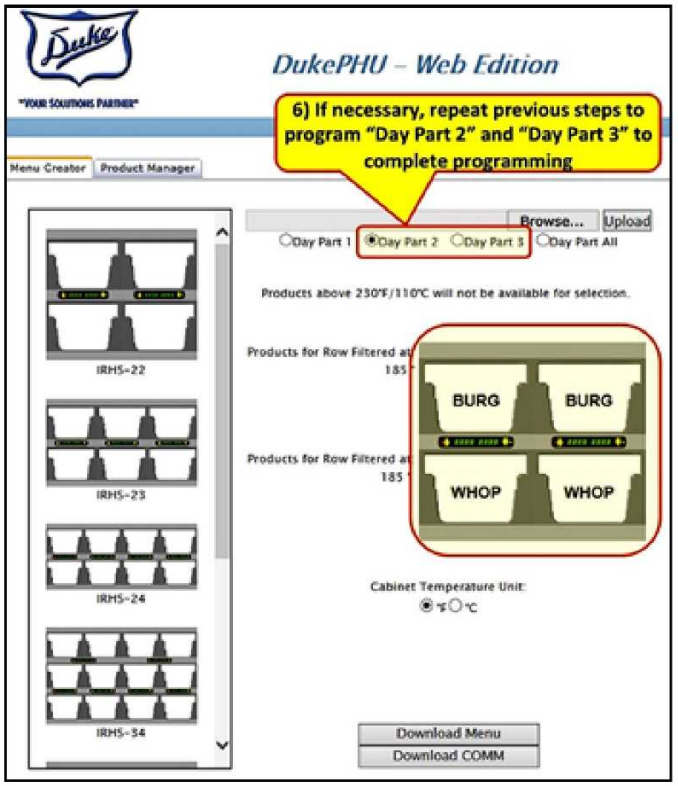
3.


DukePHU – Web Edition
4) Select the "Day Part 1" button
Only choose "Day Part All" if products will be the same for all three dayparts
NOTE: you must program all three dayparts each time the unit is programmed for any reason
Download Menu
Download COMM

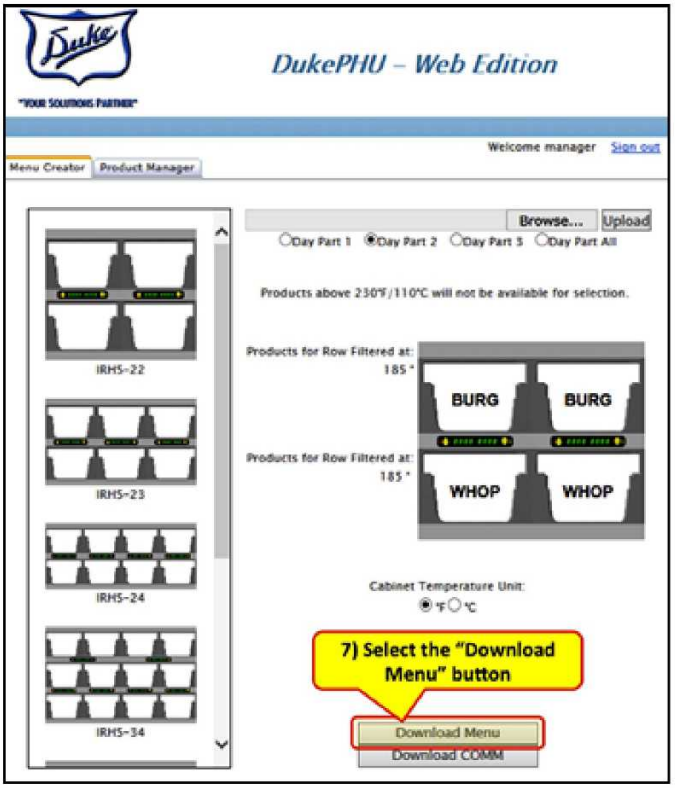
4.


DukePHU – Web Edition
BURG
BURG
WHOP
NONE
TACO
TNUG
WHJR
WHOP
5) Select the product for each well
Download Menu
Download COMM

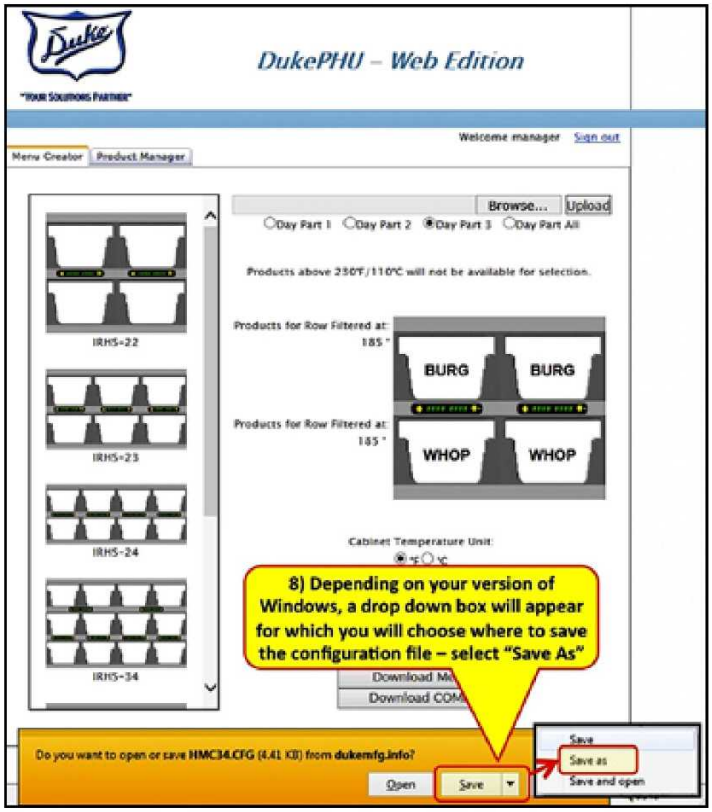
5.


DukePHU – Web Edition
6) If necessary, repeat previous steps to program "Day Part 2" and "Day Part 3" to complete programming
BURG
BURG
WHOP
WHOP
Download Menu
Download COMM

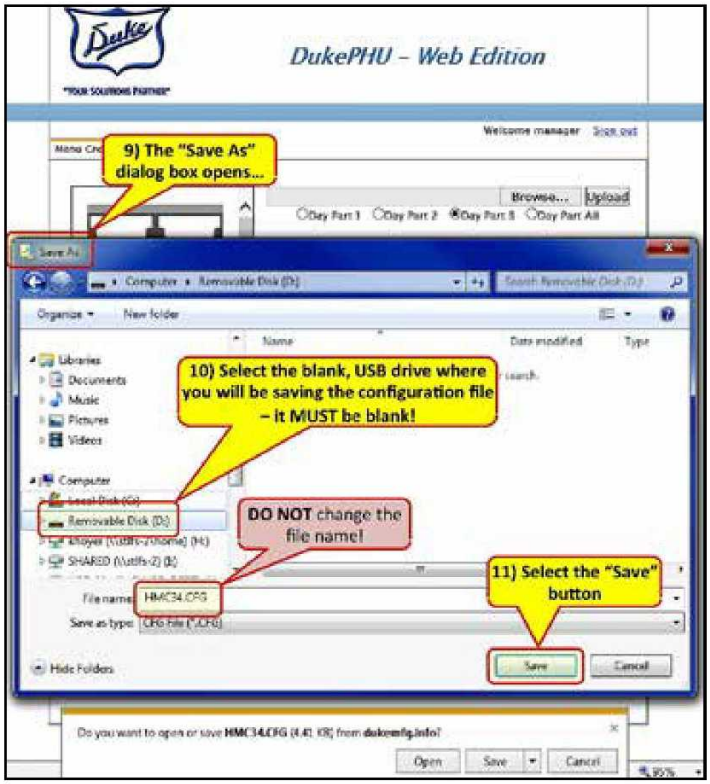
6.


DukePHU – Web Edition
BURG
BURG
WHOP
WHOP
7) Select the "Download Menu" button
Download Menu
Download COMM

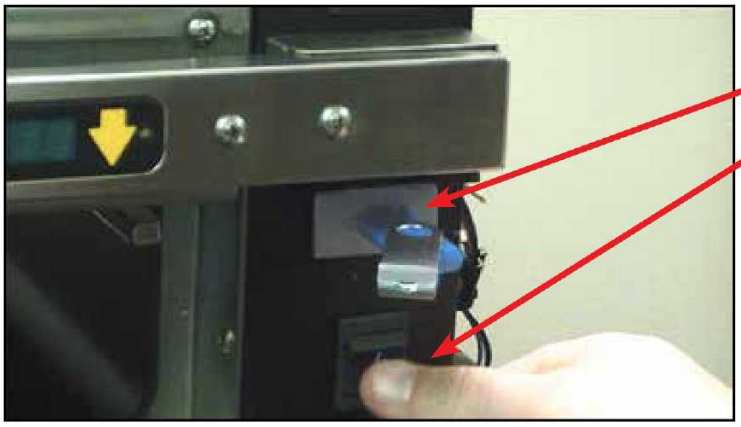
7.


DukePHU – Web Edition
Welcome manager Sign out
Menu Creator
Product Manager
Browse...
Upload
Day Part 1
Day Part 2
Day Part 3
Day Part All
Products above 230°F/110°C will not be available for selection.
Products for Row Filtered at: 185°
BURG
BURG
Products for Row Filtered at: 185°
WHOP
WHOP
IRHS-22
IRHS-23
IRHS-24
IRHS-34
Cabinet Temperature Unit:
8) Depending on your version of Windows, a drop down box will appear for which you will choose where to save the configuration file – select "Save As"
Download M
Download COM
Do you want to open or save HMC34.CFG (4.41 KB) from dukemfg.info?
Open
Save
Save
Save as
Save and open

8.

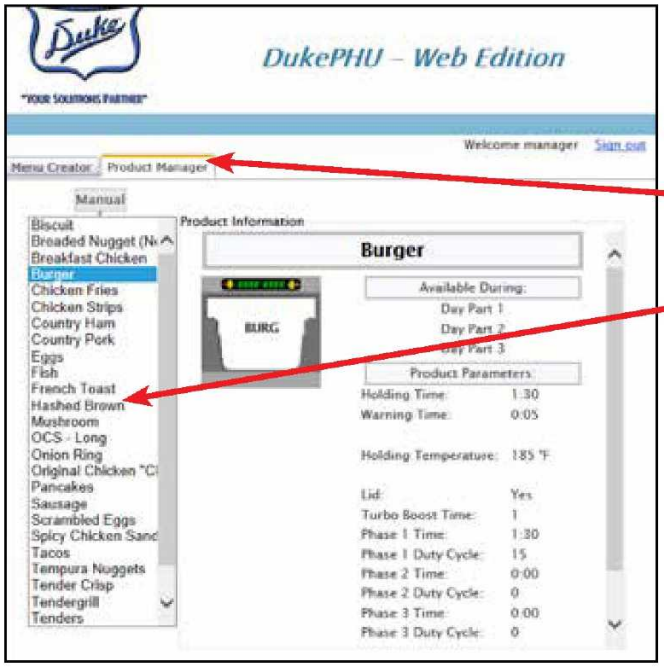

DukePHU – Web Edition
Welcome manager Sign out
9) The "Save As" dialog box opens...
Browse...
Upload
Day Part 1
Day Part 2
Day Part 3
Day Part All
Save As
Computer
Removable Disk (D:)
Organize
New folder
Name
Date modified
Type
Libraries
Documents
Music
Pictures
Videos
Computer
Removable Disk (D:)
10) Select the blank, USB drive where you will be saving the configuration file – it MUST be blank!
DO NOT change the file name!
File name: HMC34.CFG
Save as type:
11) Select the "Save" button
Hide Folders
Save
Cancel
Do you want to open or save HMC34.CFG (4.41 KB) from dukemfg.info?
Open
Save
Cancel

Unit Programming Instructions



1) Power off the unit.
2) Insert the flash drive into the USB slot.
3) Power on the unit.
4) The program will automatically be installed. *The unit will chirp a few times, the Emitters will cycle, and the display shows different displays while programming is in progress*
5) Programming is complete when Menu Bar indicates the updated products and/or temperatures in all displays.

Product Manager Tab

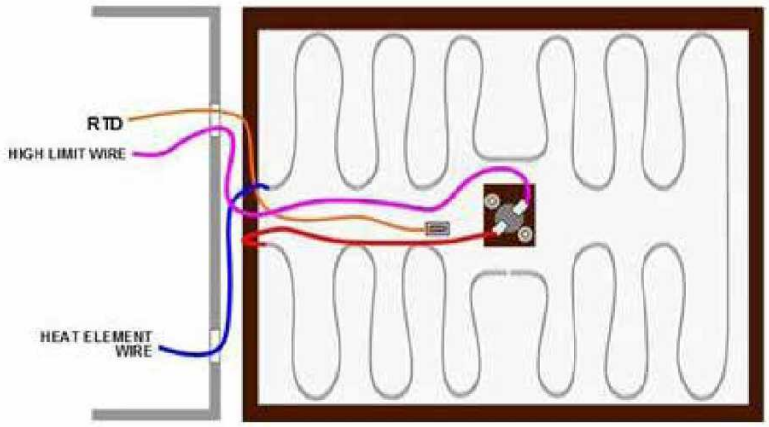


Select this tab...

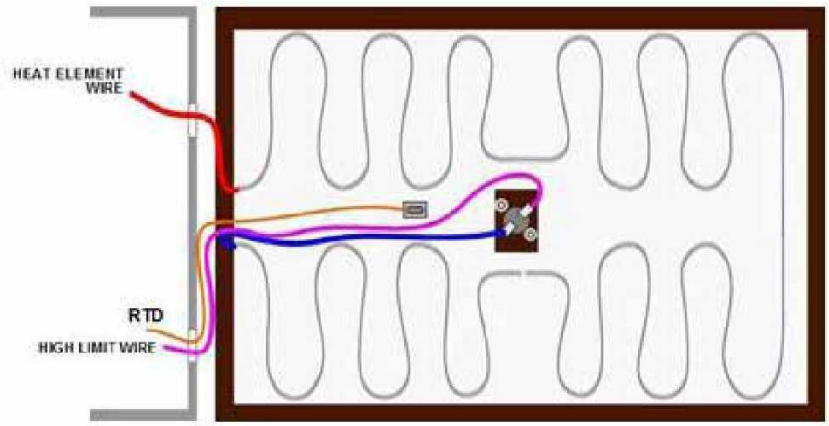
...and then a product on the left side of the screen to view hold settings for various products.

IRHS DECK WIRING

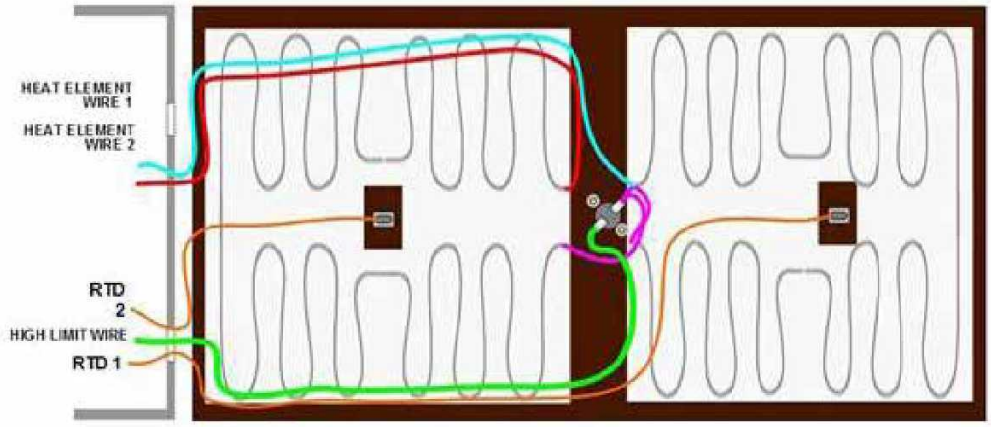
2 WIDE, LEFT SIDE CONTROL



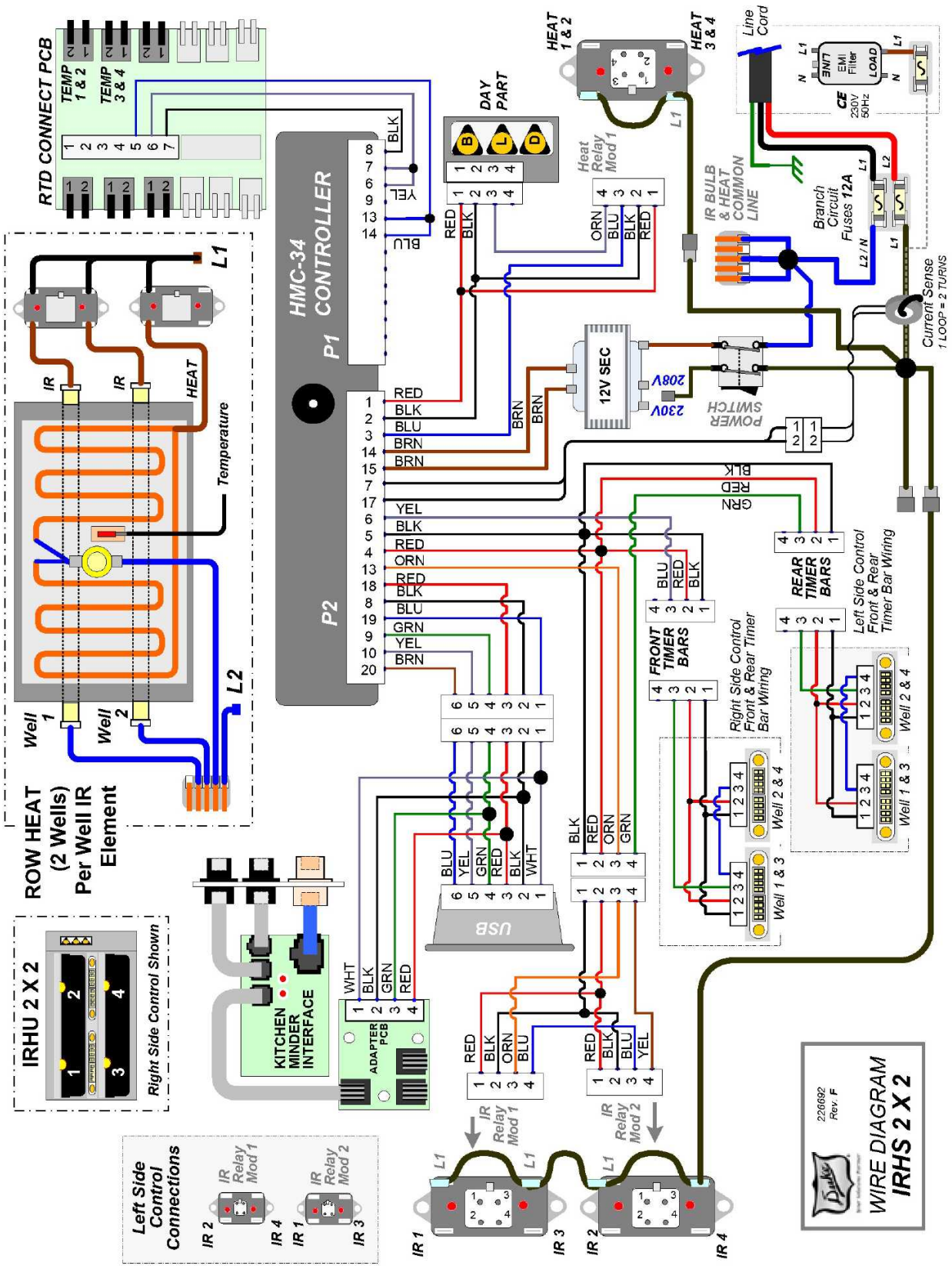
3 WIDE, RIGHT SIDE CONTROL



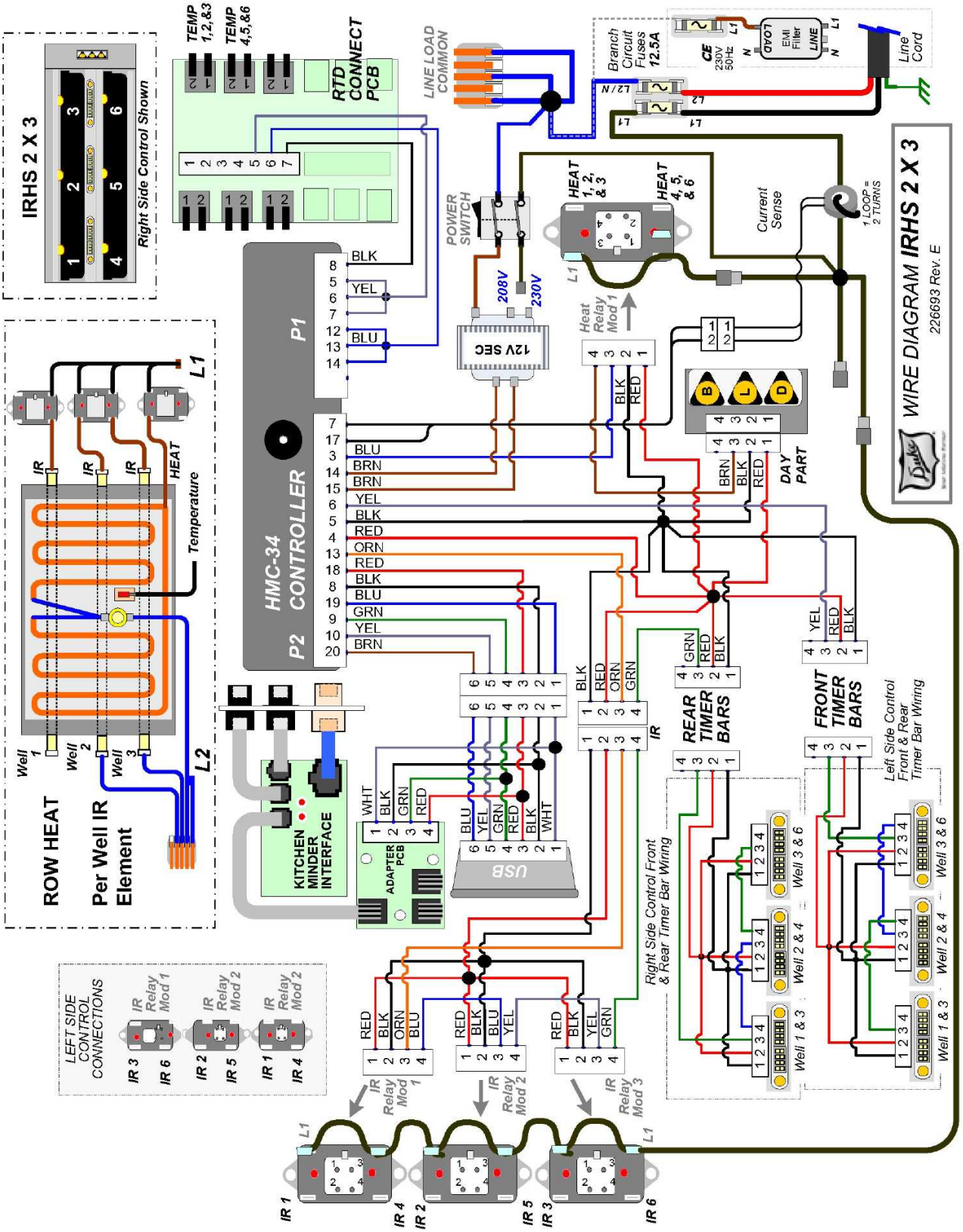
4 WIDE, RIGHT SIDE CONTROL



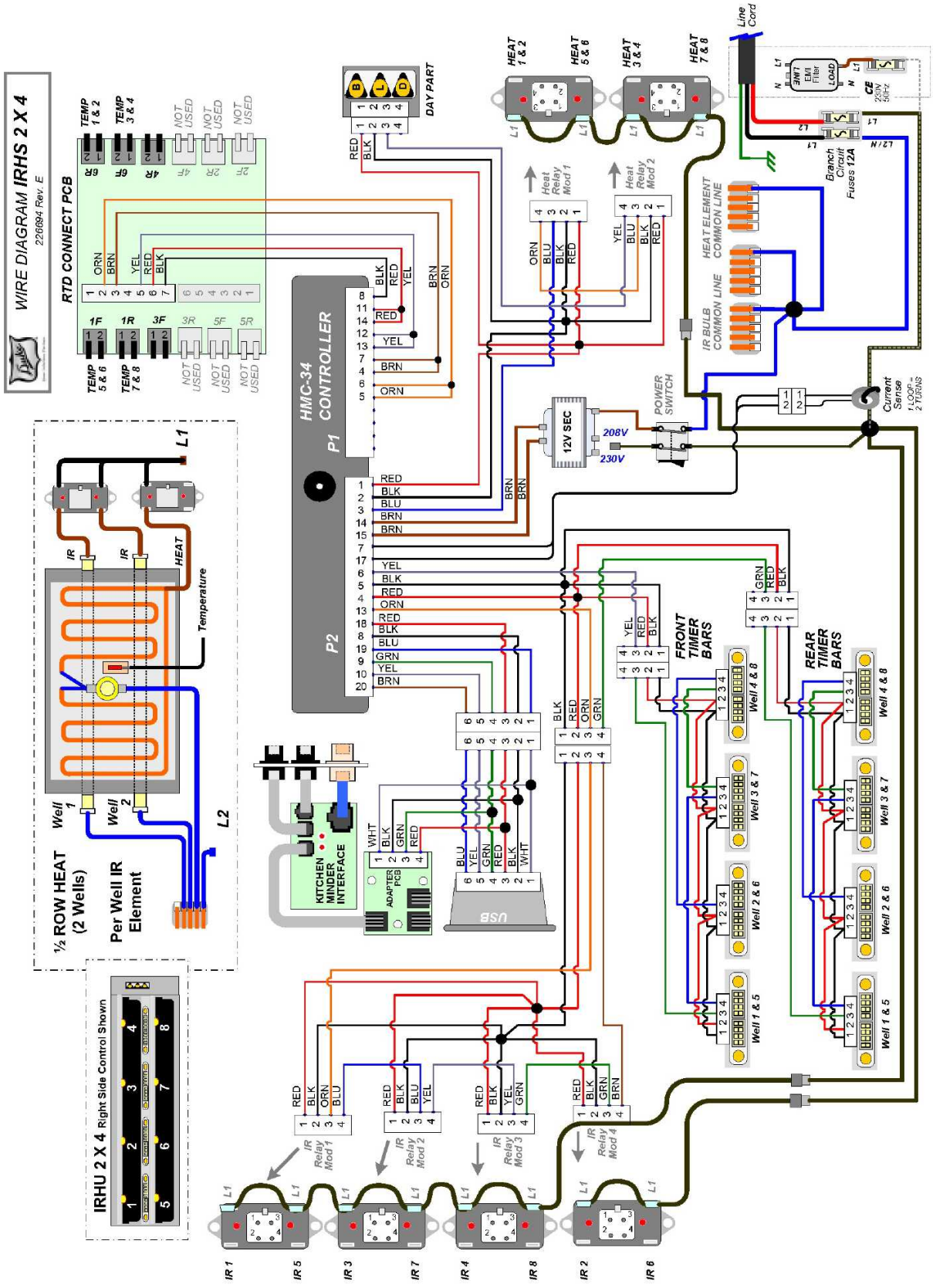
IRHS22 WIRING DIAGRAM



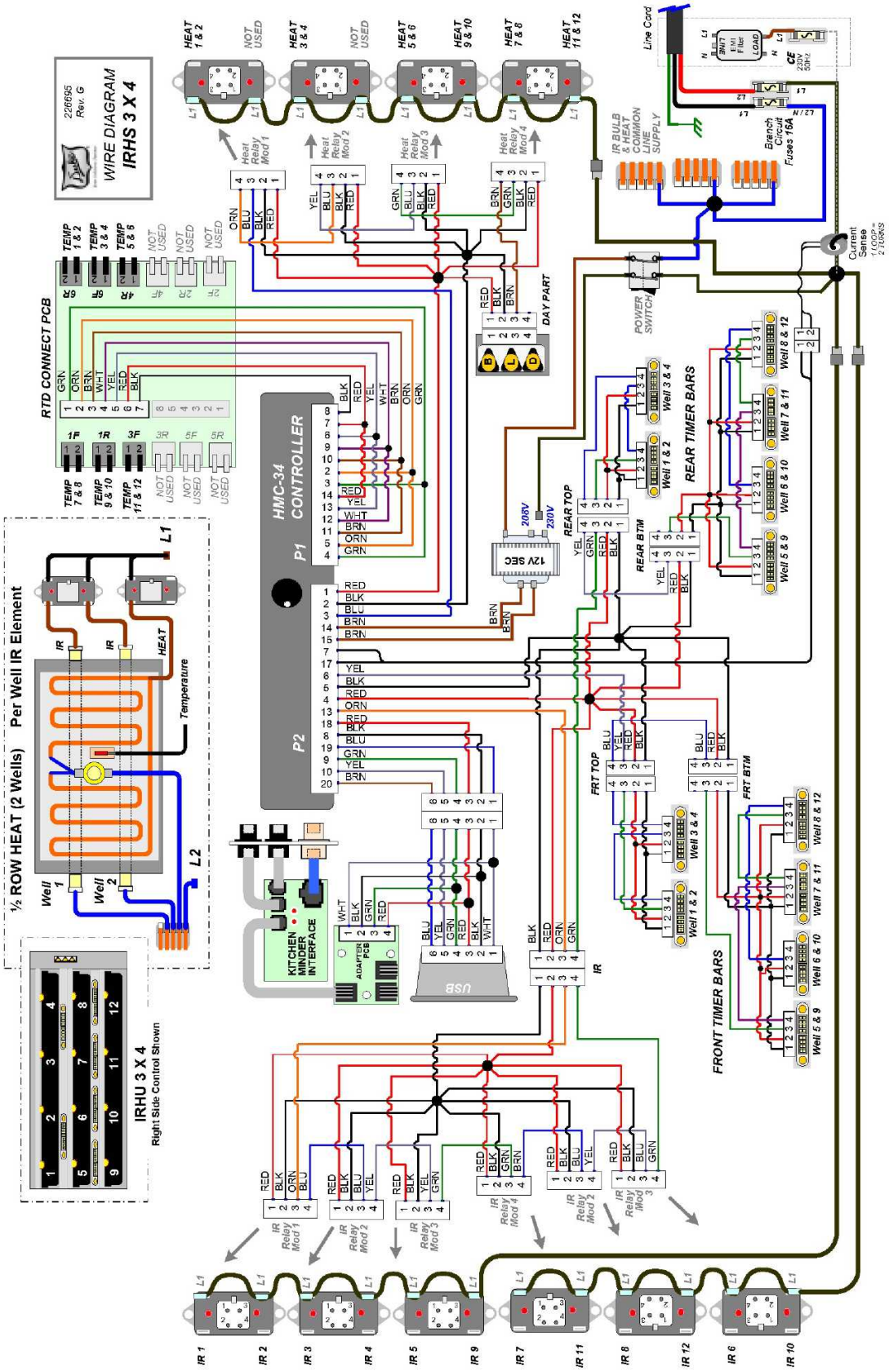
IRHS23 WIRING DIAGRAM



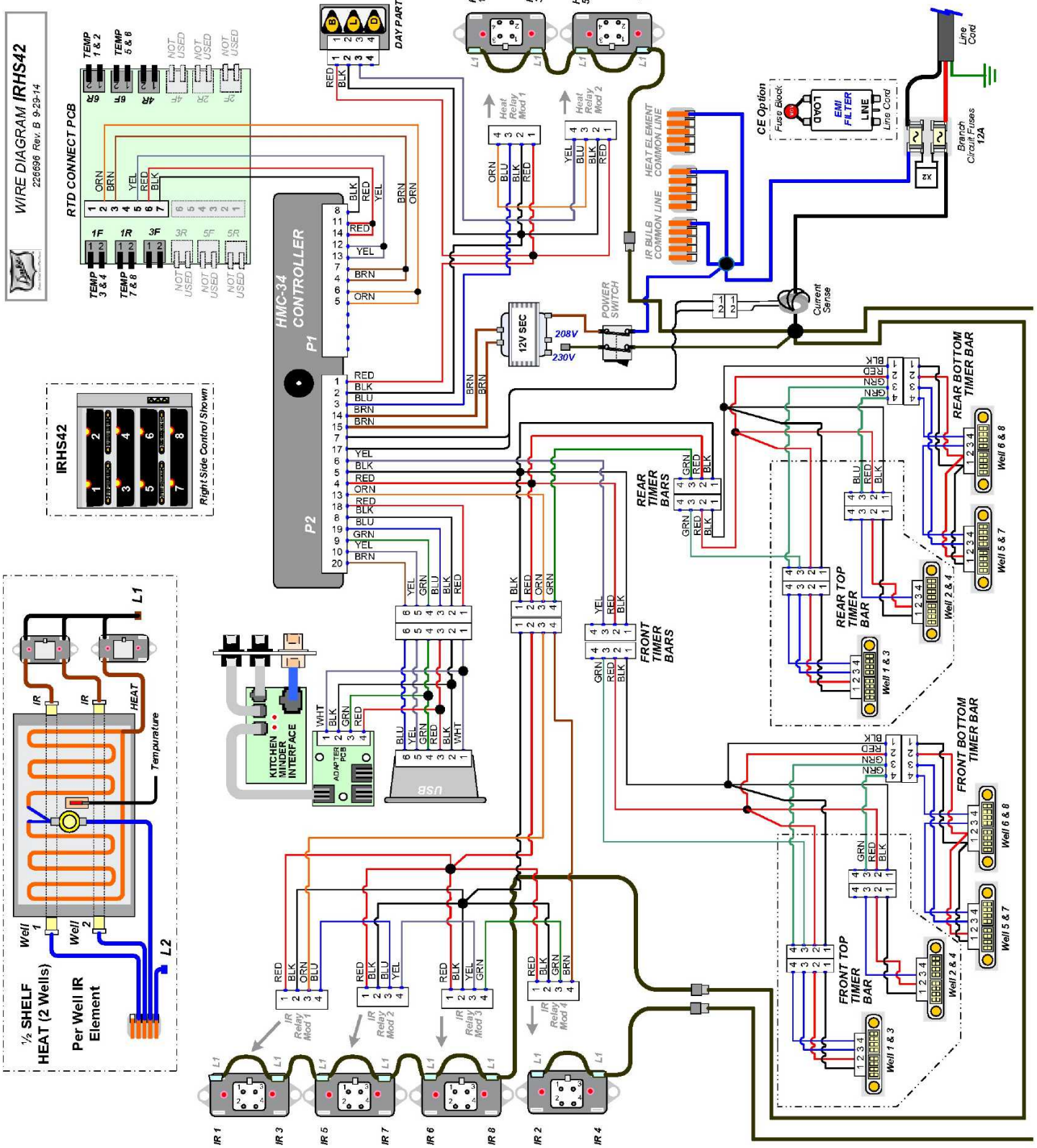
IRHS24 WIRING DIAGRAM



IRHS34 WIRING DIAGRAM



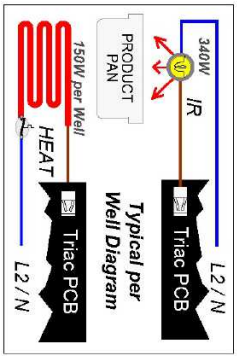
IRHS42 WIRING DIAGRAM

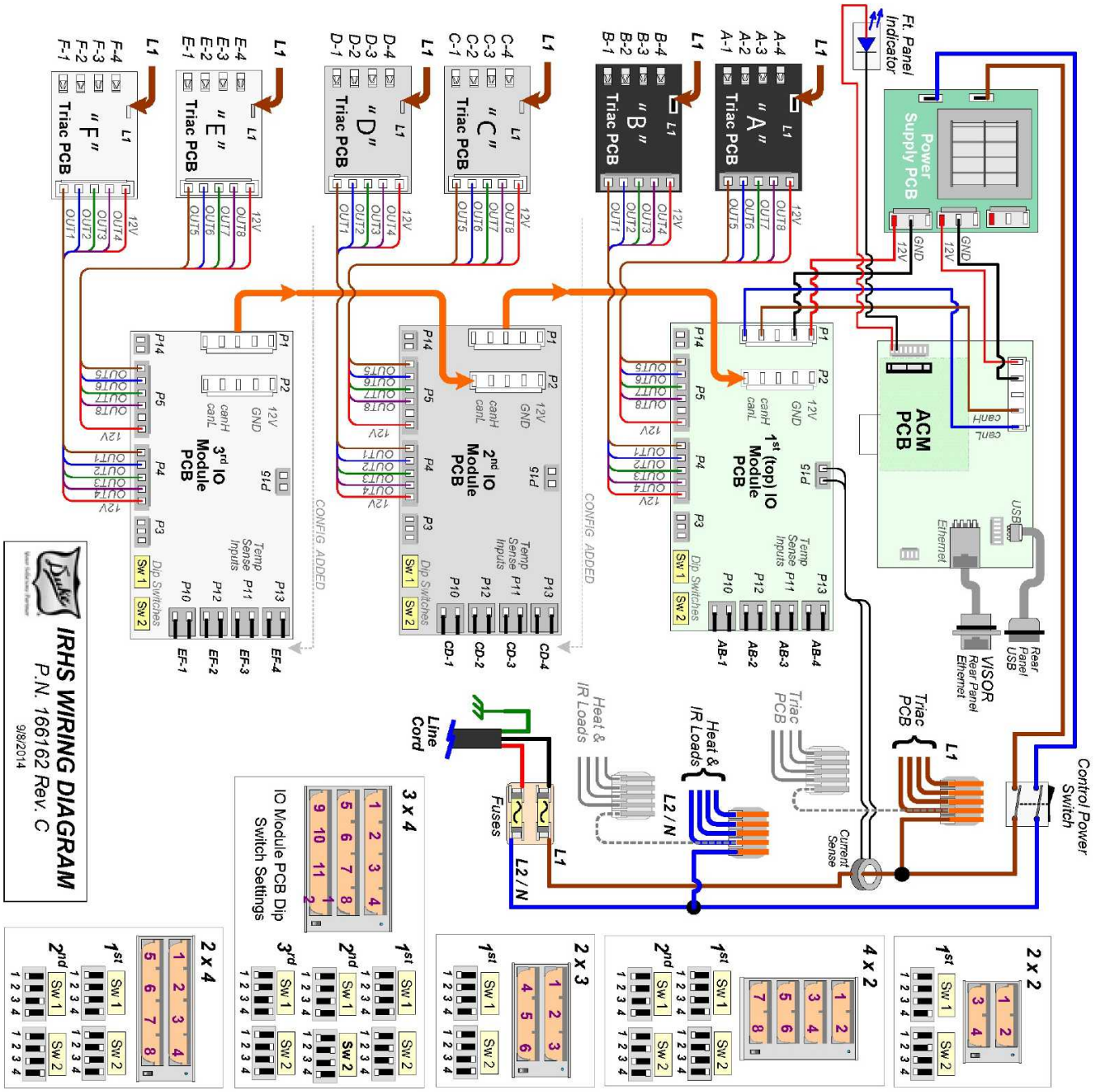


VISOR INTERFACE CABLE WIRING DIAGRAM

Heat & IR Load Connections

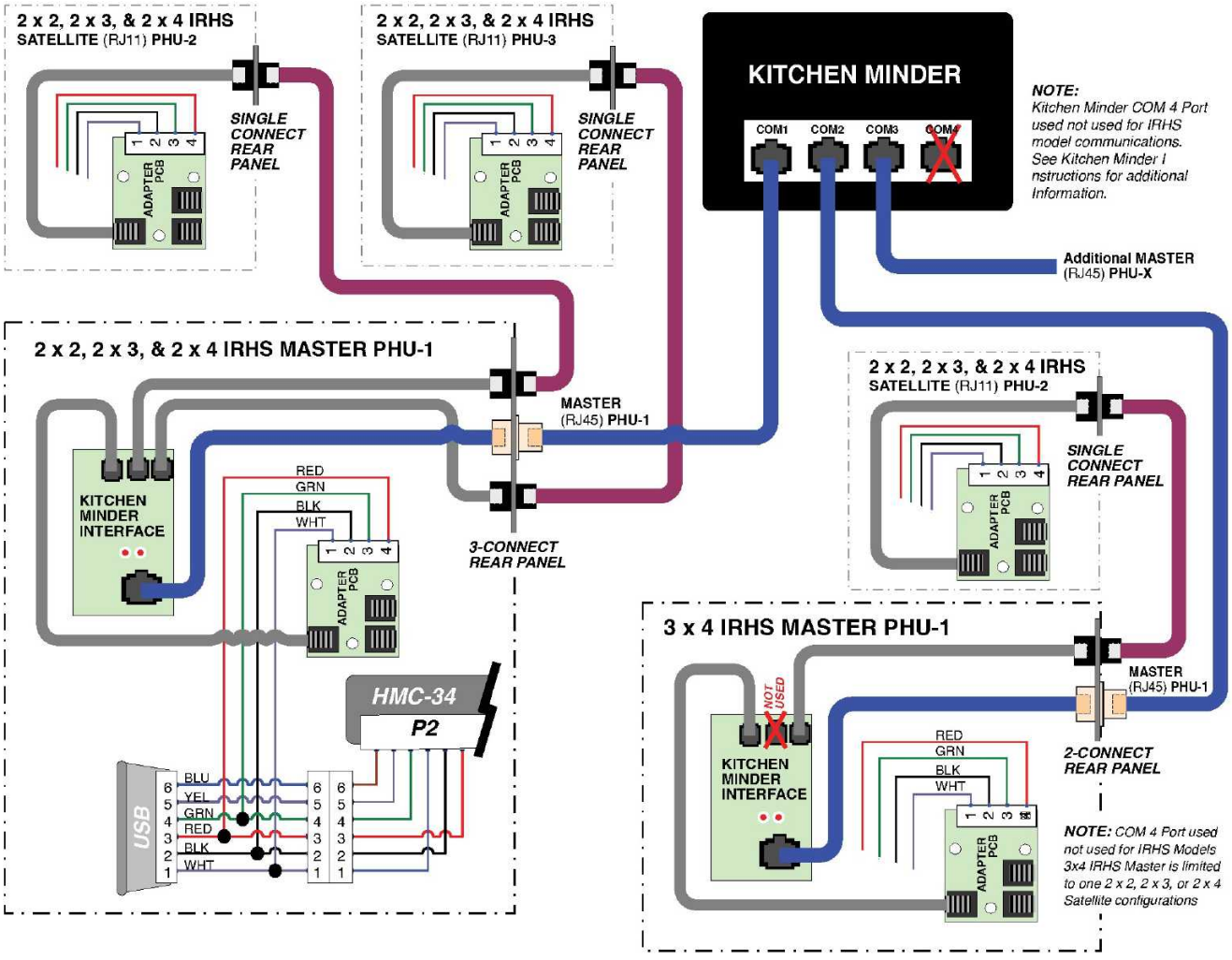
2 x 2	Heat	IR Bulb	Temp.
Well 1	B-1	A-1	AB-1
Well 2		A-2	
Well 3	B-3	A-3	AB-3
Well 4		A-4	
4 x 2	**Heat**	**IR Bulb**	**Temp.**
Well 1	B-1	A-1	AB-1
Well 2		A-2	
Well 3	B-3	A-3	AB-3
Well 4		A-4	
Well 5	D-1	C-1	CD-1
Well 6		C-2	
Well 7	D-3	C-3	CD-3
Well 8		C-4	
2 x 3	**Heat**	**IR Bulb**	**Temp.**
Well 1	B-1	A-1	AB-1
Well 2		A-2	
Well 3		A-3	
Well 4	B-3	A-4	AB-3
Well 5		B-2	
Well 6		B-4	
2 x 4	**Heat**	**IR Bulb**	**Temp.**
Well 1	B-1	A-1	AB-1
Well 2		A-2	
Well 3		A-3	
Well 4	B-3	A-4	AB-3
Well 5		B-2	
Well 6		B-4	
3 x 4	**Heat**	**IR Bulb**	**Temp.**
Well 1	B-1	A-1	AB-1
Well 2		A-2	
Well 3	B-3	A-3	AB-3
Well 4		A-4	
Well 5	D-1	C-1	CD-1
Well 6		C-2	
Well 7	D-3	C-3	CD-3
Well 8		C-4	
Well 9	F-1	E-1	EF-1
Well 10		E-2	
Well 11	F-3	E-3	EF-3
Well 12		E-4	





KITCHEN MINDER CONNECTIONS
(OPTIONAL UPGRADE; NOT AVAILABLE ON STANDALONE UNIT)

MASTER	SATELLITE 1	SATELLITE 2
IRHS22 (2X2)	2X2. 2X3, 2X4, 4X2	2X2. 2X3, 2X4, 4X2
IRHS23 (2X3)	2X2. 2X3, 2X4, 4X2	2X2. 2X3, 2X4, 4X2
IRHS24 (2X4)	2X2. 2X3, 2X4, 4X2	2X2. 2X3, 2X4, 4X2
IRHS34 (3X4)	NOT AVAILABLE	2X2. 2X3, 2X4
IRHS42 (4X2)	2X2. 2X3, 2X4, 4X2	2X2. 2X3, 2X4, 4X2



NOTES

CUSTOMER ASSISTANCE

To aid in reporting this unit in case of loss or theft, please record below the model number and serial number located on the unit. We also suggest you record all the information listed and retain for future reference.

MODEL NUMBER:	**SERIAL NUMBER:**
DATE OF PURCHASE:	
DEALER:	**TELEPHONE:**
SERVICER:	**TELEPHONE:**

FOR WARRANTY, PARTS & SERVICE:

DUKE CORPORATE,
CANADA, LATIN AMERICA

2305 N. Broadway
St. Louis, MO 63102
Phone: 314-231-1130
Toll Free: 800-735-3853
Fax: 314-231-2460
service-dispatch@dukemfg.com

DUKE ASIA PACIFIC

Duke Manufacturing
No.3 Building
Lane 28, Yu Lv Road
Malu Town, Jiading District
Shanghai 201801, China
Phone: +86 21 59153525 / 59153526
Fax: +86 21 33600628
service.asiapac@dukemfg.com

DUKE EMEA - EUROPE,
MIDDLE EAST, AFRICA, RUSSIA

Duke Manufacturing CR, s.r.o.
Na Dlouhem 86
Jazlovice, Ricany
Building number DC 4 on the
ProLogis Park Prague D1 West
Prague 251 01
Czech Republic
Phone: +420 323 608 193
Fax: +420 323 608 144
service.emea@dukemfg.com

DUKE EMEA – UK, IRELAND

Phone: +44 (0) 1395 234140
Fax: +44 (0) 1395 234154
service.emea@dukemfg.com

TO ACCESS INTERNET: www.dukemfg.com

Please provide the following information when you write or call: model number, serial number, date of purchase, your complete mailing address (including zip code), and description of the problem.


Duke
Your Solutions Partner

E-MAIL 6

From: Scotty Loyd [/O=DUKEMFGCO/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=SCOTTY LOYD]
Sent: 7/22/2015 7:24:07 PM
To: Kevin von-Moses [kevin.von-moses@servicesg.com]
Subject: RE: FW: Com File
Attachments: SM-PH-IH-0003 Infrared Heatsink Holding Unit.pdf

From: Kevin von-Moses [mailto:kevin.von-moses@servicesg.com]
Sent: Wednesday, July 22, 2015 2:00 PM
To: Scotty Loyd
Subject: Fwd: FW: Com File

Kevin E. vonMoses
(480) 772-0538 c

---------- Forwarded message ----------
From: **Kevin von-Moses** <kevin.von-moses@servicesg.com>
Date: Fri, Jul 10, 2015 at 9:55 AM
Subject: Re: FW: Com File
To: Jeffrey Tindall <jtindall@dukemfg.com>

7/10/2015-86301
Replaced USB port as suspected by Jeff as the fault to be dealt with, reloaded 2x3 software, rebooted and reloaded Kitchen Minder software. Unit reached 135 degrees and all bays illuminated 'LOW'.

Shut down, loaded C09 software and 2x3 software rebooted and reloaded Kitchen Minder software and unit again ran up to 135 degrees on all bays and Illuminated 'LOW' again.

These notes forwarded to Jeff Tindall of Duke for information and will return with Parts or recommendations at later date.

Okay... NOW what? I am at a loss for the next correct action.

Kevin E. vonMoses
(480) 772-0538 c

On Tue, Jul 7, 2015 at 2:12 PM, Jeffrey Tindall <jtindall@dukemfg.com> wrote:

Jeff Tindall
Duke Manufacturing

Technical Service Solutions
P: 800.735.3853 Ext. 1223
F: 314.231.2460
jtindall@dukemfg.com

From: Jeffrey Tindall
Sent: Tuesday, July 07, 2015 4:12 PM
To: 'kevin.don-moses@servicesg.com'
Subject: Com File

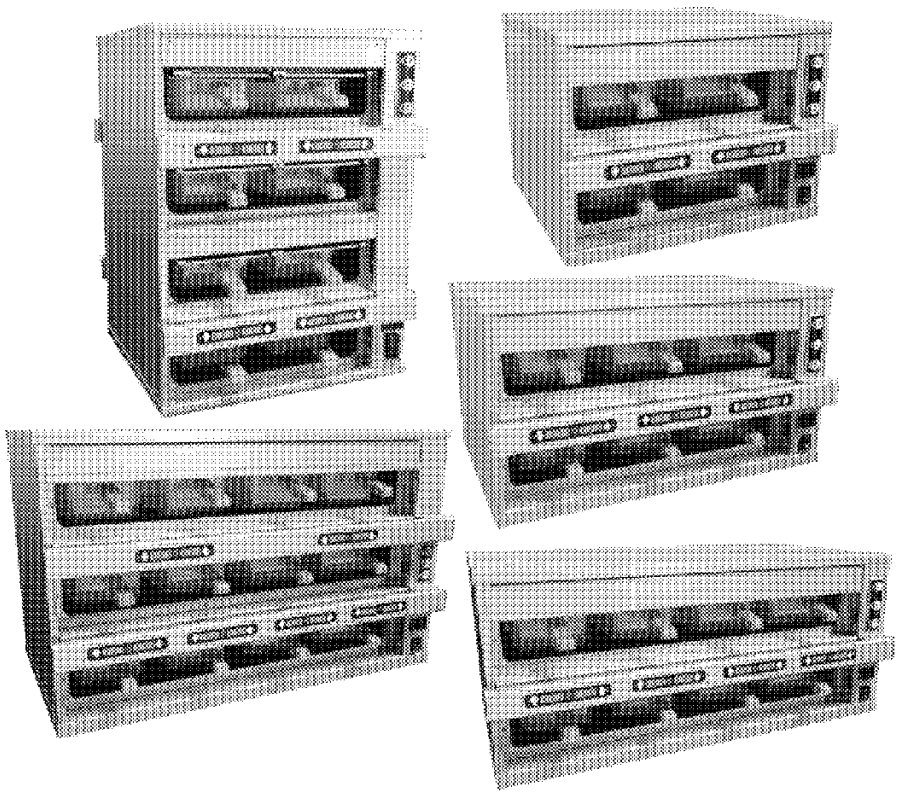
Jeff Tindall
Duke Manufacturing
Technical Service Solutions
P: 800.735.3853 Ext. 1223
F: 314.231.2460
jtindall@dukemfg.com

Your Solutions Partner

Service Manual

INFRARED HEATSINK™ HOLDING UNIT

Includes Standalone, Kitchen Minder and VISOR models



MODELS
IRHS22
IRHS23
IRHS24
IRHS34
IRHS42

Please read this manual completely before attempting to install, operate or service this equipment.

This document is prepared for trained Duke service technicians. It is not to be used by anyone not properly qualified to perform these procedures.

This Service Manual is not all encompassing. If you have not been trained on servicing this product, be sure to read the manual completely before attempting servicing. Be sure all necessary tools, test equipment, and skills are available. Those procedures for which you do not have the proper skills and test equipment must be performed only by a qualified Duke trained service technician.

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Duke Manufacturing Co.

2305 North Broadway • St. Louis, MO 63102-1405
Phone: 314-231-1130 • Toll Free: 1-800-735-3853 • Fax: 314-231-5074
service-dispatch@dukemfg.com • www.dukemfg.com

IMPORTANT WARNING AND SAFETY INFORMATION

READ THIS MANUAL THOROUGHLY BEFORE OPERATING, INSTALLING OR PERFORMING MAINTENANCE ON THE EQUIPMENT.

⚠ WARNING READ THIS MANUAL THOROUGHLY BEFORE OPERATING, INSTALLING OR PERFORMING MAINTENANCE ON THE EQUIPMENT

⚠ WARNING FAILURE TO FOLLOW INSTRUCTIONS IN THIS MANUAL CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.

⚠ WARNING DO NOT USE OR STORE GASOLINE OR OTHER FLAMMABLE VAPORS OR LIQUIDS IN THE VICINITY OF THIS OR ANY OTHER APPLIANCE.

⚠ WARNING DO NOT OPERATE THIS EQUIPMENT WITHOUT PROPERLY PLACING AND SECURING ALL COVER AND ACCESS PANELS.

⚠ WARNING IMPROPER INSTALLATION, ADJUSTMENT, ALTERATION, SERVICE OR MAINTENANCE CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH. READ THE INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS THOROUGHLY BEFORE INSTALLING THIS EQUIPMENT.

FOR YOUR SAFETY

Electricity and water do not mix. Unplug the unit before cleaning. If repairs are required, use a qualified service agent. While repairs are being made, be sure the unit is not plugged in. Do not store highly combustible substances on or near the unit. Be sure the compressor compartment has adequate ventilation.

CAUTION

Observe the following:

- Provide and maintain adequate minimum clearances from all walls and combustible materials.
- Provide and maintain adequate clearance for air openings.
- Keep the equipment area free and clear of combustible material.
- Operate equipment only on the type of electricity indicated on the specification plate.
- Retain this manual for future reference.

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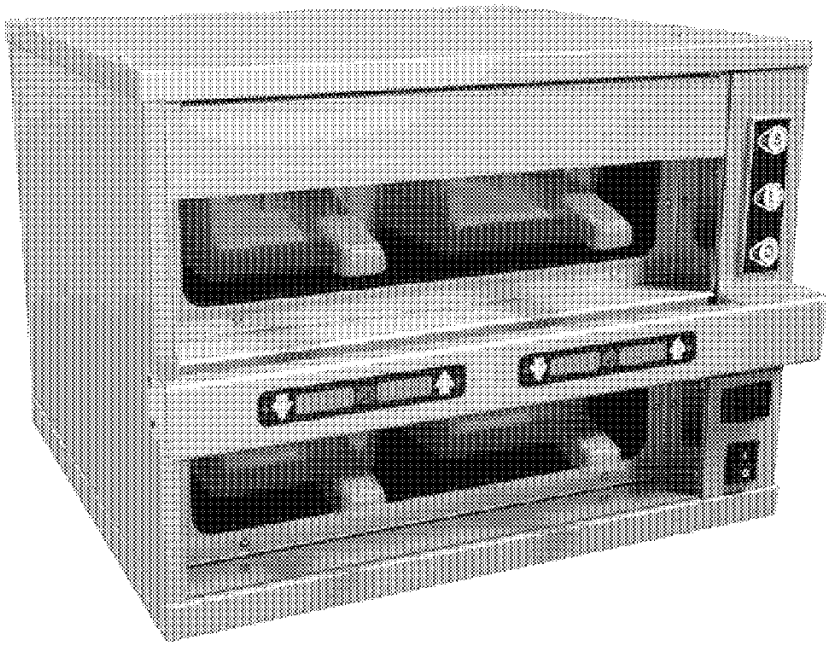
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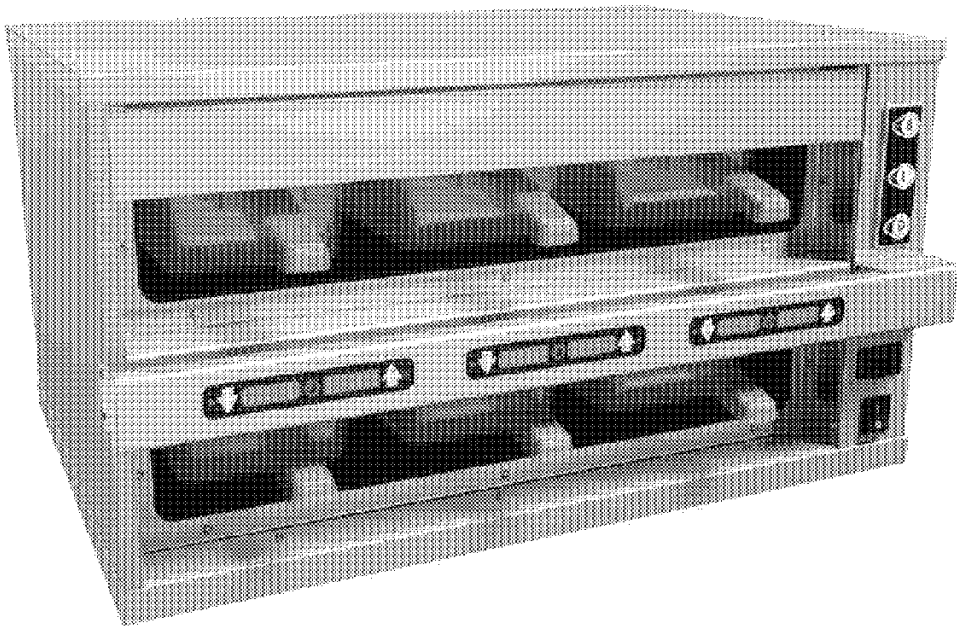
SPECIFICATIONS

IRHS22



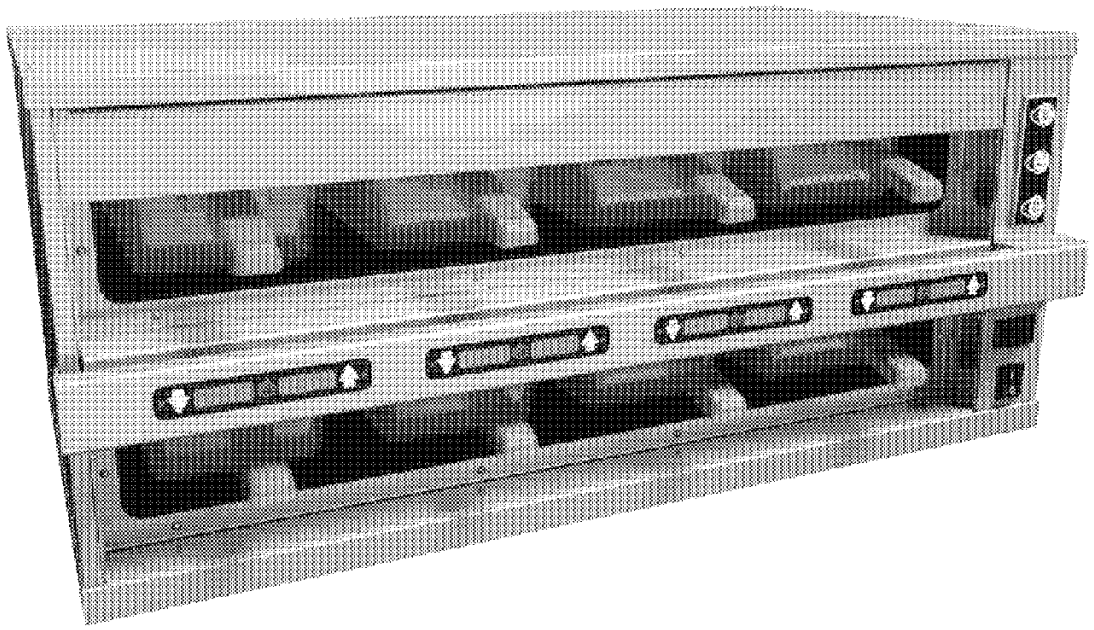
			Before Serial# 10140480 (10/1/14)			*As of Serial# 10140480*		
		Shipping Weight	125 lbs / 56.7 kg			110 lbs / 49.9 kg		
Model	**Electrical**	**Plug**	**H**	**W**	**D**	**H**	**W**	**D**
IRHS22-208	208V ~ 12 A, 50/60 Hz	NEMA 6-15P	14.4 in / 36.6 cm	19.3 in / 49.0 cm	20.1 in / 51.1 cm	13.3 in / 33.8 cm	19.3 in / 49.0 cm	20.1 in / 51.1 cm
IRHS22-230	230V ~ 12 A, 50/60 Hz	SHUKO, 16 AMP (*as of 11/3/14*) IEC, 16 AMP						
IRHS22-240	240V ~ 12 A, 50/60 Hz	NEMA 6-15P						

IRHS23



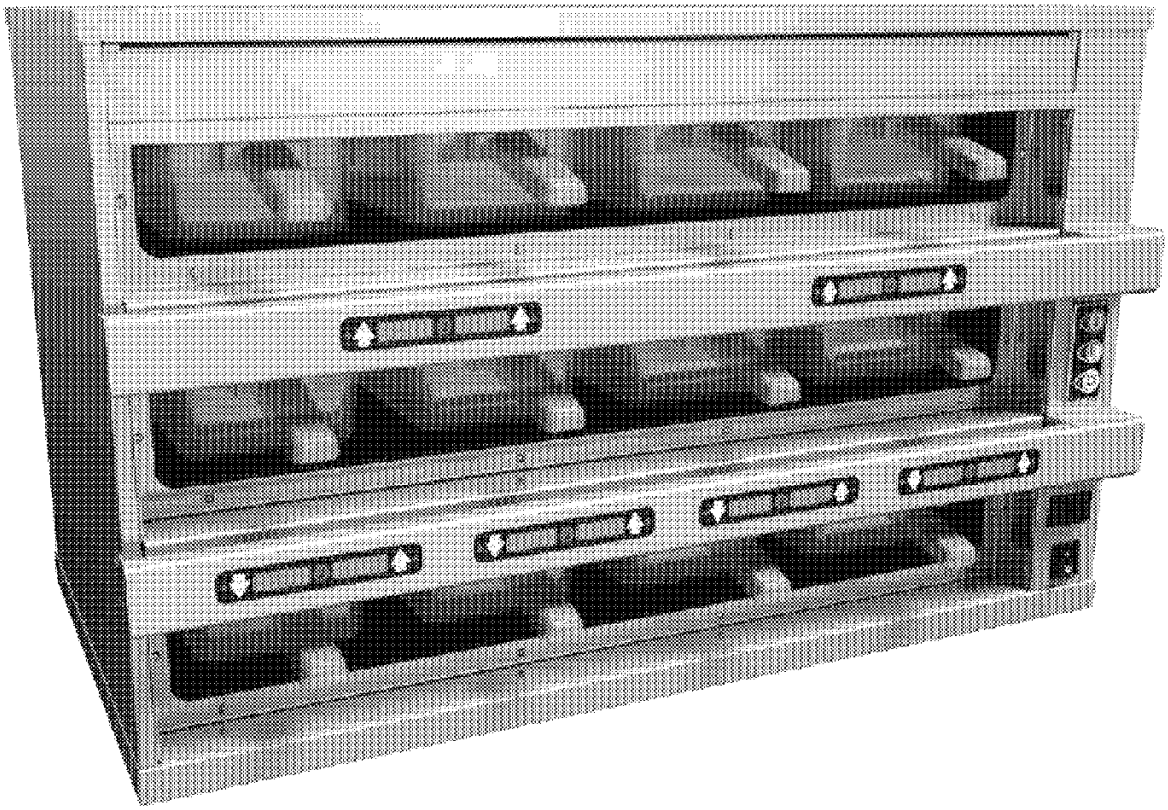
			Up to Serial# 101413198 (10/20/14)			*After SN# 101413198*		
		Shipping Weight	160 lbs / 72.6 kg			143 lbs / 64.9 kg		
Model	**Electrical**	**Plug**	**H**	**W**	**D**	**H**	**W**	**D**
IRHS23-208	208V ~ 12 A, 50/60 Hz	NEMA 6-15P	14.4 in / 36.6 cm	26.4 in / 67.1 cm	20.1 in / 51.1 cm	13.3 in / 33.8 cm	26.4 in / 67.1 cm	20.1 in / 51.1 cm
IRHS23-230	230V ~ 12 A, 50/60 Hz	SHUKO, 16 AMP (*as of 11/3/14*) IEC, 16 AMP						
IRHS23-240	240V ~ 12 A, 50/60 Hz	NEMA 6-15P						

IRHS24



			Before Serial# 10140545 (10/3/14)			*As of Serial# 10140545*		
		Shipping Weight	195 lbs / 88.4 kg			181 lbs / 82.1 kg		
Model	**Electrical**	**Plug**	**H**	**W**	**D**	**H**	**W**	**D**
IRHS24-208	208V ~ 12 A, 50/60 Hz	NEMA 6-15P	14.4 in / 36.6 cm	33.4 in / 84.8 cm	20.1 in / 51.1 cm	13.3 in / 33.8 cm	33.4 in / 84.8 cm	20.1 in / 51.1 cm
IRHS24-230	230V ~ 12 A, 50/60 Hz	SHUKO, 16 AMP / (*as of 11/3/14*) IEC, 16 AMP						
IRHS24-240	240V ~ 12 A, 50/60 Hz	NEMA 6-15P						

IRHS34



			Before Serial# 10140032 (10/1/14)			*As of Serial# 10140032*		
		Shipping Weight	275 lbs / 124.7 kg			243 lbs / 110.2 kg		
Model	**Electrical**	**Plug**	**H**	**W**	**D**	**H**	**W**	**D**
IRHS34-208	208V ~ 16 A, 50/60 Hz	NEMA 6-20P	20.9 in / 53.1 cm	33.4 in / 84.8 cm	20.1 in / 51.1 cm	19.3 in / 49.0 cm	33.4 in / 84.8 cm	20.1 in / 51.1 cm
IRHS34-230	230V ~ 16 A, 50/60 Hz	SHUKO, 16 AMP (*as of 11/3/14*) IEC, 16 AMP						
IRHS34-240	240V ~ 16 A, 50/60 Hz	NEMA 6-20P						

IRHS42



		Shipping Weight	187 lbs / 84.8 kg		
Model	**Electrical**	**Plug**	**H**	**W**	**D**
IRHS42-208	208V ~ 12 A, 50/60 Hz	NEMA 6-15P	25.3 in / 64.3 cm	19.3 in / 49.0 cm	20.1 in / 51.1 cm
IRHS42-230	230V ~ 12 A, 50/60 Hz	SHUKO, 16 AMP (*as of 11/3/14*) IEC, 16 AMP			
IRHS42-240	240V ~ 12 A, 50/60 Hz	NEMA 6-15P			

REMOVAL AND REPLACEMENT OF PARTS

EQUIPMENT USED IN THESE INSTRUCTIONS

- Phillips screwdriver
- #1 precision screwdriver
- Flat-head screwdriver
- Needle-nose pliers
- 11/16" open-end wrench
- 11/32" nut driver or socket
- 1/4" nut driver or socket
- Tie wraps
- ESD Wrist Strap
- Aluminum tape
- Ohmmeter
- Heat transfer compound
- Clean gloves/cloths/towels

ELECTRICAL LOCKOUT/TAGOUT PROCEDURE

WARNING

BEFORE PERFORMING ANY SERVICE THAT INVOLVES ELECTRICAL CONNECTION OR DISCONNECTION AND/OR EXPOSURE TO ELECTRICAL COMPONENTS, ALWAYS FOLLOW THE ELECTRICAL LOCKOUT/TAGOUT PROCEDURE. DISCONNECT ALL CIRCUITS. FAILURE TO COMPLY CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.

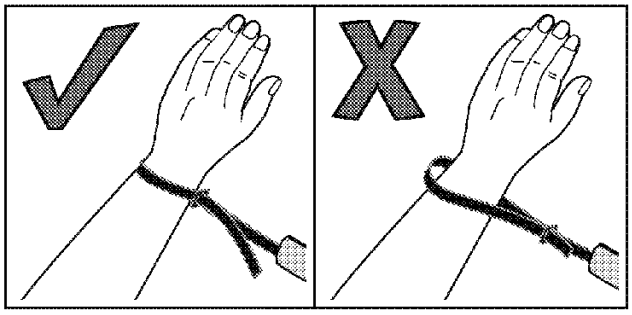
The Electrical LOCKOUT/TAGOUT Procedure is used to protect personnel working on an electrical appliance. Before performing any maintenance or service that requires exposure to electrical components, follow these steps:

1. In electrical box, place appliance circuit breaker into OFF position.
2. Place a lock or other device on electrical box cover to prevent someone from placing circuit breaker ON.
3. Place a tag on electrical box cover to indicate that appliance has been disconnected for service and power should not be restored until tag is removed by maintenance personnel.
4. Disconnect appliance power cord from electrical outlet.
5. Place a tag on the cord to indicate that unit has been disconnected for service and power should not be restored until tag is removed.

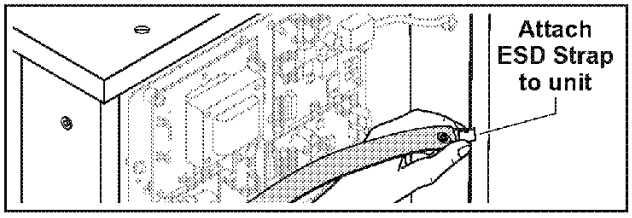
ESD WRIST STRAP

Electrostatic Discharge (ESD) is one of the biggest dangers to components in electronic devices. An ESD wrist strap allows any accumulated static charge to disperse safely through its cable, rather than through static-sensitive components such as unit computer-related components.

1. Place the ESD wrist strap around your wrist. The wrist strap should be next to your skin, so it needs to be placed under any clothes.
2. Tighten the wrist strap so that the attached metal plate maintains good contact with your skin. Do not over tighten as the wrist strap should not be uncomfortable.



3. Connect the cable to the wrist strap if it is disconnected. The cable should be securely clipped in place to maintain a good connection.
4. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
5. Connect the alligator clip on the other end of the cable to a metal surface on the unit. This creates a path through which any built-up static charge can safely flow without causing any damage. A built-in high value resistor ensures the charge leaks away in a controlled manner, and protects the user.



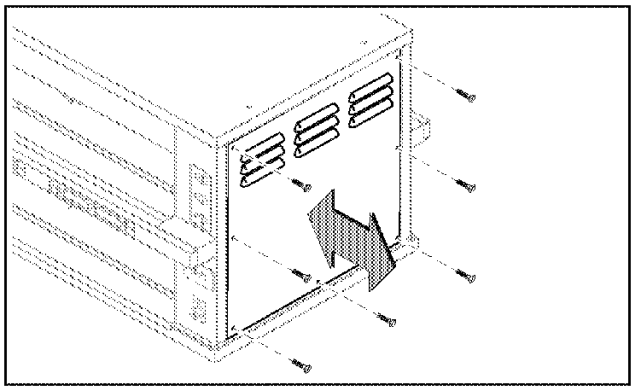
DECK ASSEMBLY COMPONENTS

MENU BARS

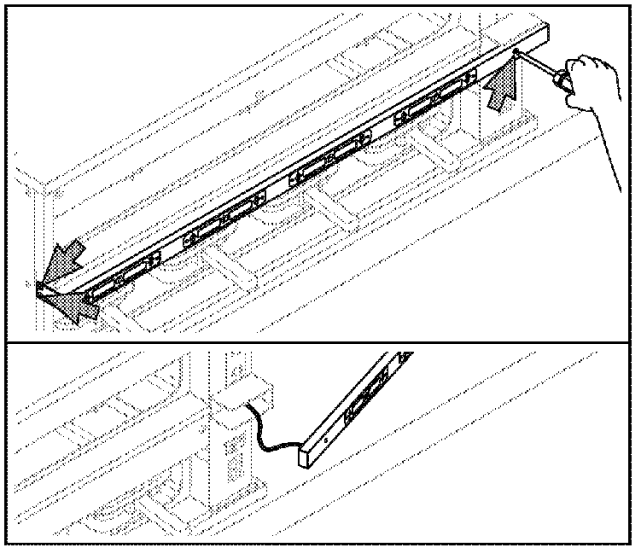
The Menu Bars hold the Keypad Displays that control and monitor the performance of each heating well. The quantity varies (depending on model) and are located on the front and back faces of the unit.

TOOLS REQUIRED: Phillips screwdriver; Flat-head screwdriver

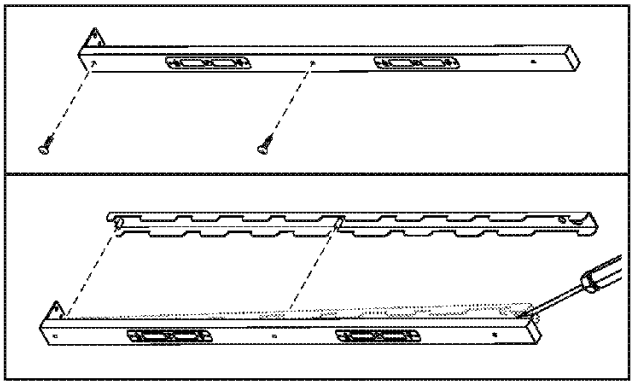
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.



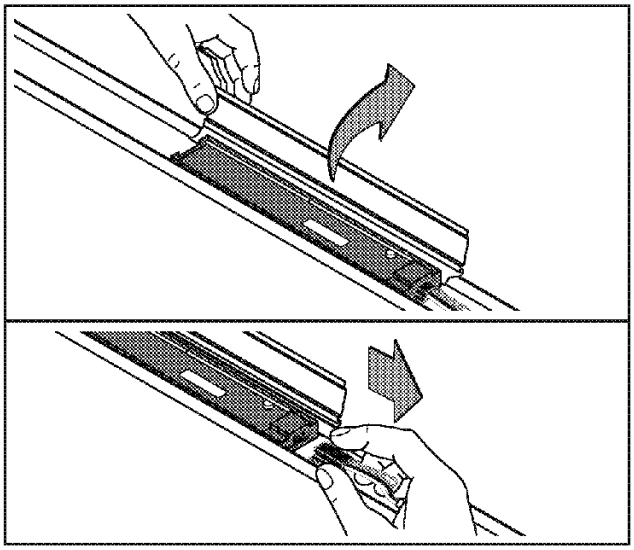
3. Remove and retain screws of the affected Menu Bar and pull away from the face of the unit. It is not necessary, but recommended, to completely remove the Menu Bar from the unit.



4. Mark and disconnect the affected Menu Bar's molex connector inside the control compartment.
5. If it is necessary to reuse the existing Keypad Displays in a replacement Menu Bar:
   a. Remove and retain the two (2) screws securing the Menu Bar Back Channel and pry out of the former Menu Bar.

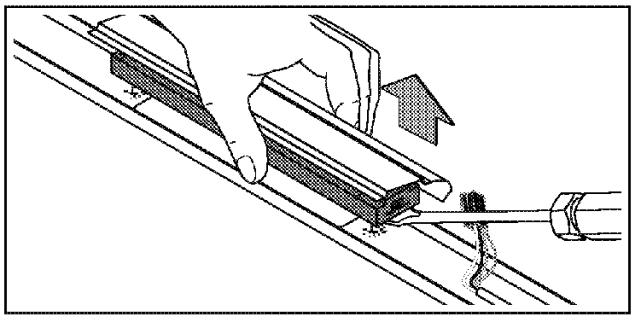


   b. A Keypad Spacer is attached to the rear of each Keypad Display with double-sided tape. Carefully pry off and remove the Keypad Spacer from the affected Keypad Display(s). This will free-up the Menu Bar Harness.

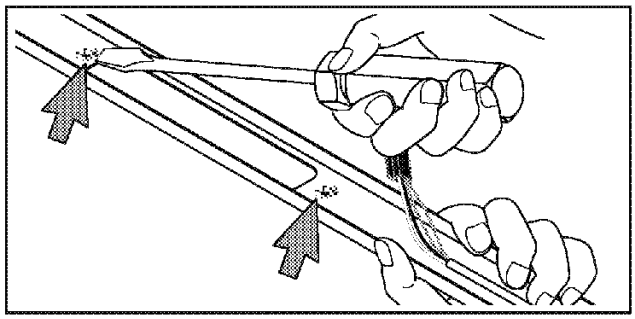


c. Disconnect the affected Keypad Display(s) electrical connector from the Menu Bar Harness.

d. The Keypad Displays are attached to the Menu Bar with double-sided glue dots. Carefully pry off and remove the affected Keypad Display from the Menu Bar.

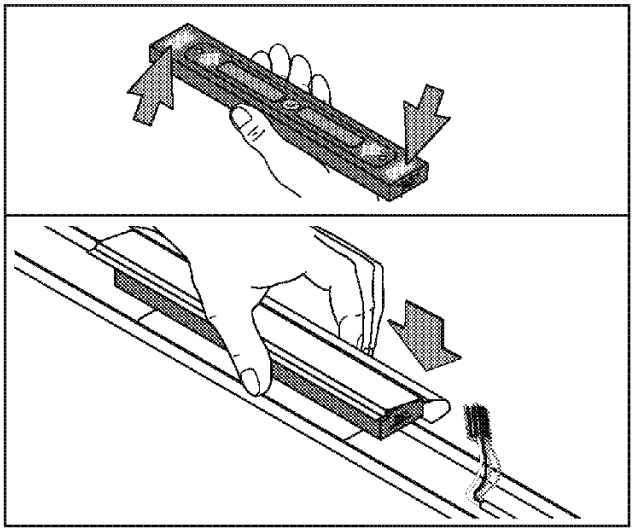


e. Carefully scrape any remaining adhesive residue from the inside of the Menu Bar.



RESTORE

6. Carefully place the Keypad Displays in place on the interior side of the replacement Menu Bar. If reusing the Keypad Displays, it may be necessary to use additional double-sided tape to secure the Keypad Displays to the Menu Bar.



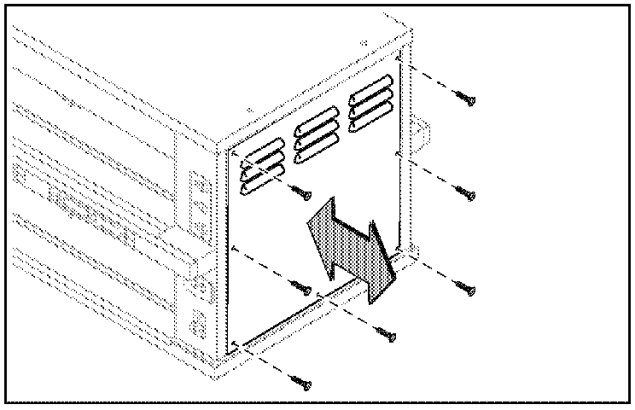
7. Connect the replacement Menu Bar Harness' molex connector in the control compartment.
8. Replace the Keypad Spacer, over the Menu Bar Harness, to the rear of the Keypad Display(s).
9. Reinstall Menu Bar Back Channel using its screws.
10. Reinstall the Menu Bar using its screws.
11. Replace the Control Side Cover and secure with its screws.
12. Restore power to the unit and test for proper function.

KEYPAD DISPLAYS

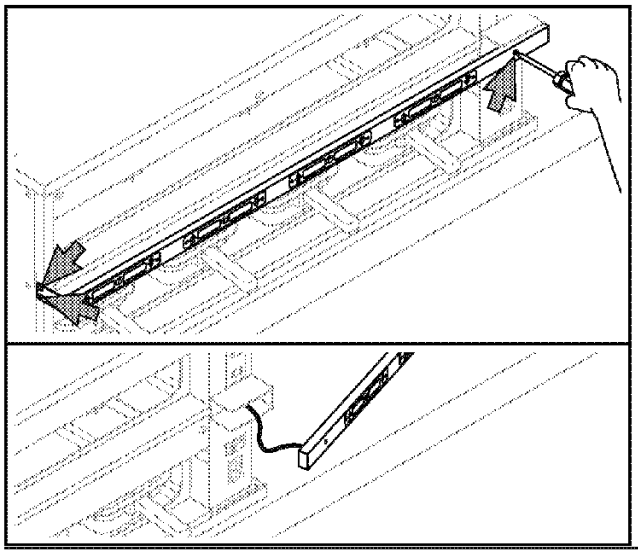
The Keypad Displays control and monitor the performance of each heating well. They are located inside of the Menu Bar(s) and the quantity varies (depending on model).

TOOLS REQUIRED: Phillips screwdriver; Flat-head screwdriver

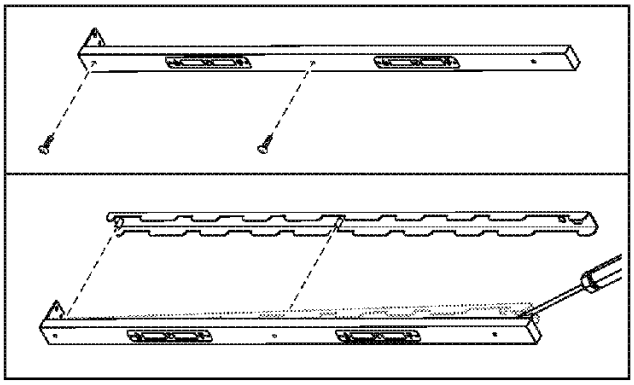
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.



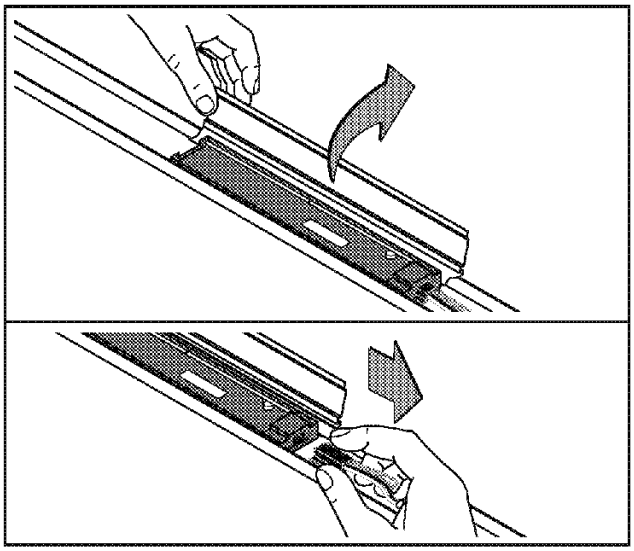
3. Disconnect the affected Menu Bar's molex connector inside the control compartment.
4. Remove and retain screws of the Menu Bar containing the affected Keypad Display and pull away from the face of the unit. It is not necessary, but recommended, to completely remove the Menu Bar from the unit.



5. Remove and retain the screws securing the Menu Bar Back Channel from the front of the Menu Bar and pry out of the Menu Bar.

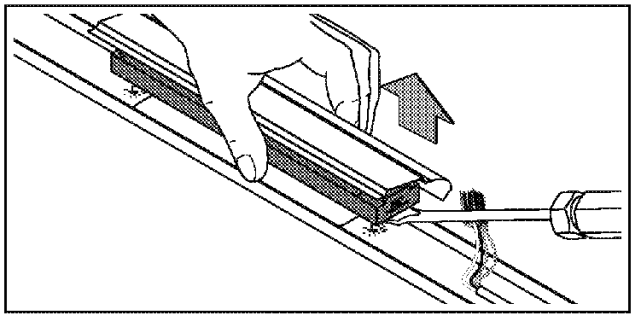


6. A Keypad Spacer is attached to the rear of each Keypad Display with double-sided tape. Carefully pry off and remove the Keypad Spacer from the affected Keypad Display(s). This will free-up the Menu Bar Harness.

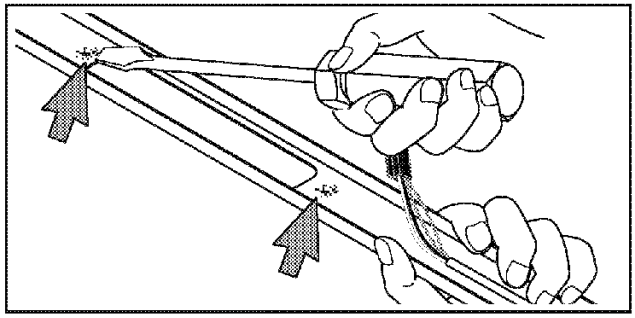


7. Disconnect the affected Keypad Display(s) electrical connector from the Menu Bar Harness.

8. The Keypad Displays are attached to the Menu Bar with double-sided glue dots. Carefully pry off and remove the affected Keypad Display from the Menu Bar.

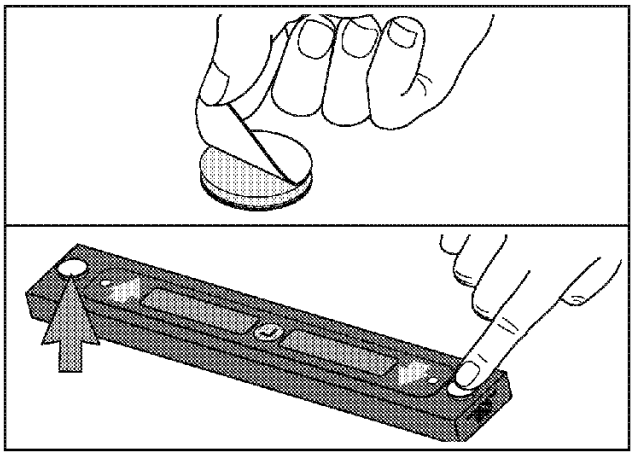


9. Carefully scrape any remaining adhesive residue from the inside of the Menu Bar.

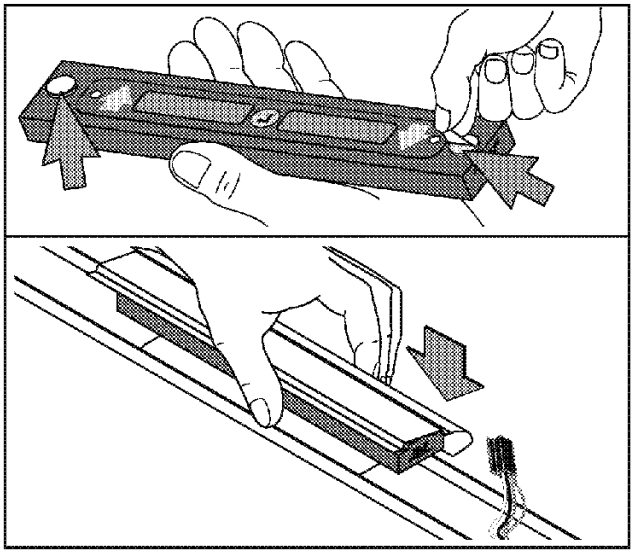


RESTORE:

10. Peel off the adhesive cover from the glue dots and place on the replacement Keypad Display.



11. Peel off the other adhesive cover from the glue dots and carefully position the replacement Keypad Display in place on the interior side of the Menu Bar.



12. Reconnect the affected Keypad Display(s) electrical connector to the Menu Bar Harness.

13. Replace the Keypad Spacer, over the Menu Bar Harness, to the rear of the Keypad Display(s).

14. Reinstall the Menu Bar Back Channel using its screws.

15. Reinstall the Menu Bar using its screws.

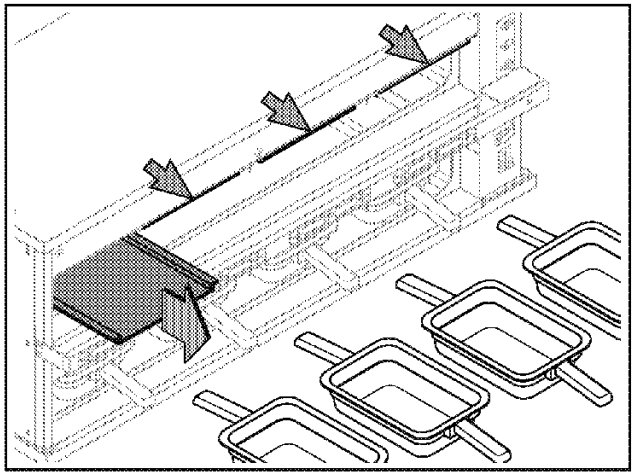
16. Restore power to the unit and test for proper function.

RTD (TEMPERATURE) SENSORS

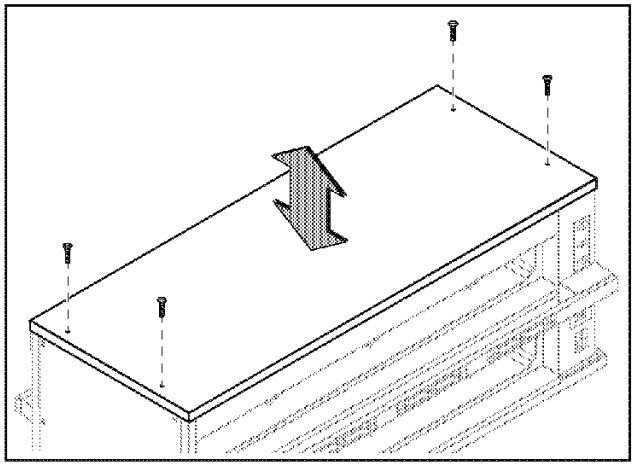
The RTD Sensors monitor the temperature of the heating wells. They are affixed to the bottom-center of each Heat Element, and the quantity varies (depending on model).

TOOLS REQUIRED: Phillips screwdriver; Aluminum tape; Tie wraps

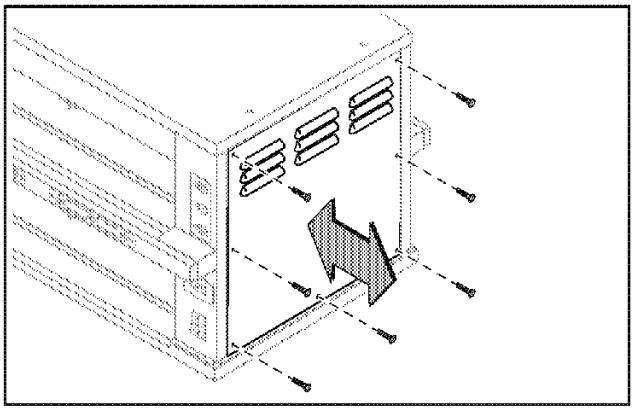
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove any pans and covers on the level(s) being removed.



3. Remove and retain the screws securing the Top Panel and remove the cover.

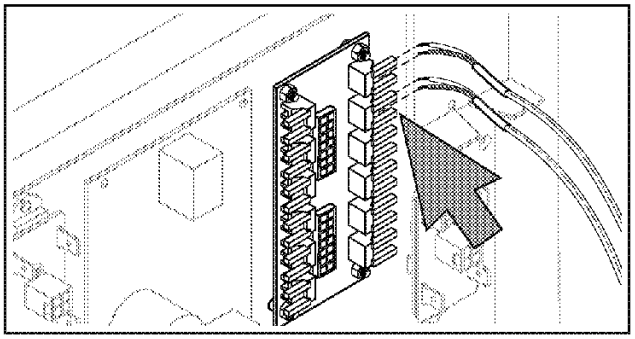


4. Remove and retain the screws securing the Control Side Cover and remove the cover.

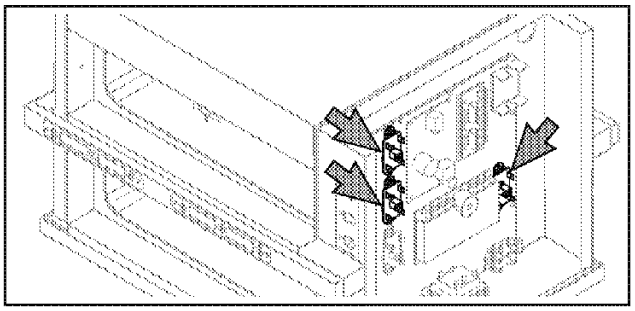


NOTE: If the RTD Sensor to be replaced is on a lower level, start from the top and repeat the following four steps for each level above the desired level.

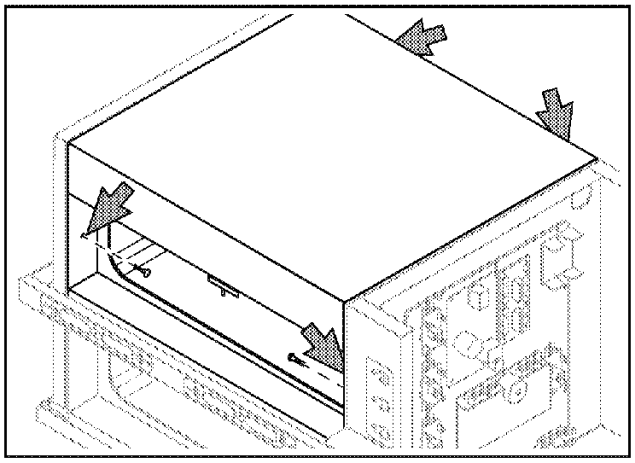
5. Mark, remove the tie wraps, and disconnect the wires for the RTD Sensors from the RTD board in the Control Compartment.



6. Mark, remove the tie wraps, and disconnect the wires for the Emitter (IR Bulb) Sockets and Heat Elements from the Relays in the Control Compartment.

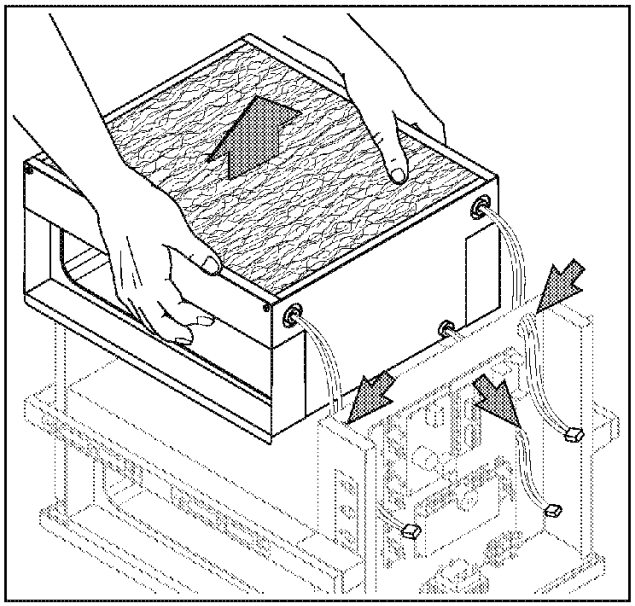


7. Remove the four (4) screws (2 in front, 2 in back) securing the liner deck assembly to the unit.



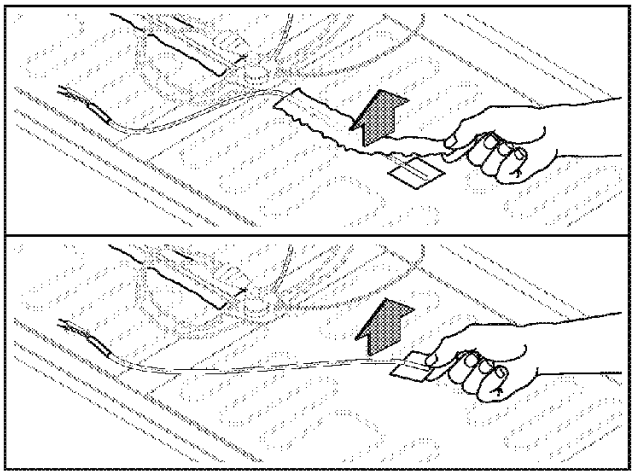
8. Carefully lift the entire liner deck assembly out through the top of the unit. This may require two people, depending on the location of the IRHS unit. Though not required to do so, removing the level's IR glass frame assembly (instructions are contained in the Emitter instructions) will lighten the weight of the liner deck assembly and make it easier for one person to accomplish this task if the IRHS is located in an elevated location or has limited access.

NOTE: It will be necessary to feed the RTD Sensor, Emitter, and Heat Element wires through the control compartment bushings. Take caution not to damage any of the wires.



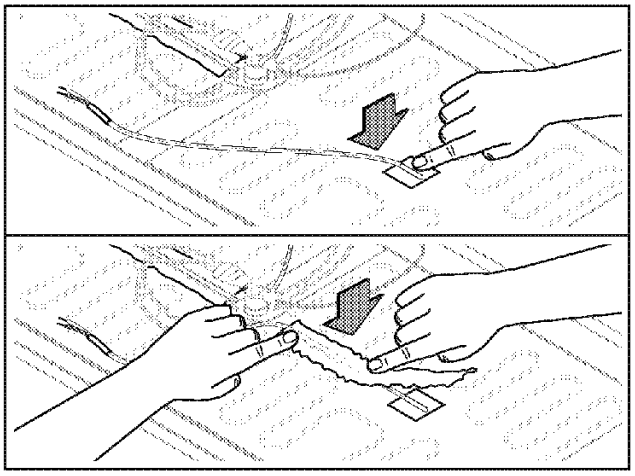
9. Invert the liner deck assembly upside-down, then remove and retain the insulation.

10. The RTD Sensor is attached to the heat element with double-sided adhesive tape and covered with aluminum tape. Carefully pry off and remove the affected RTD Sensor from the Heat Element.



RESTORE:

11. Peel off the adhesive tape cover from the replacement RTD Sensor and press in place on the heat element. Replace aluminum tape cover.



12. Feed the Heat Element and RTD Sensor wires in the direction of and through the control compartment bushings and replace the insulation.

13. Invert the liner deck assembly right-side up. While feeding the RTD Sensor, Emitter, and Heat Element wires through the appropriate control compartment bushings, carefully slide the liner deck assembly into the unit, taking caution not to damage any of the wires.

NOTE: This may require two people, depending on the location of the IRHS unit.

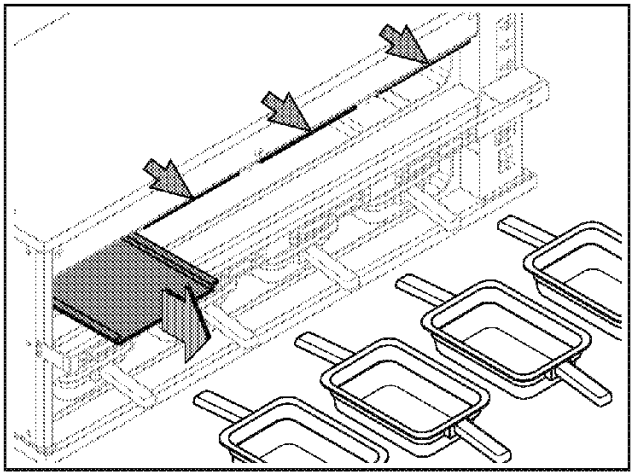
14. Reconnect and tie wrap all previously disconnected wires and connectors in the control compartment.
15. Replace the Control Side Cover and secure with its screws.
16. Replace the Top Panel and secure with its screws.
17. Restore power to the unit and test for proper function.

HIGH LIMIT THERMOSTATS

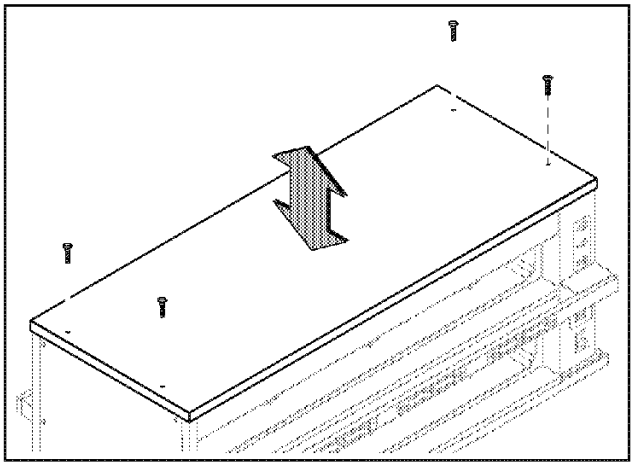
The High Limit Thermostats monitor well temperatures and serves as an emergency circuit interrupter in case of inadvertent overheating. There is one per level, and are affixed to the bottom-center of each heat sink.

TOOLS REQUIRED: Phillips screwdriver; Heat transfer compound; Tie wraps

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove any pans and covers on the level(s) being removed.

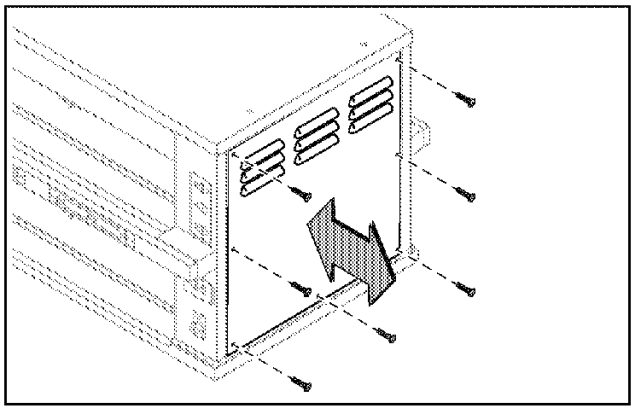


3. Remove and retain the screws securing the Top Panel and remove the cover.

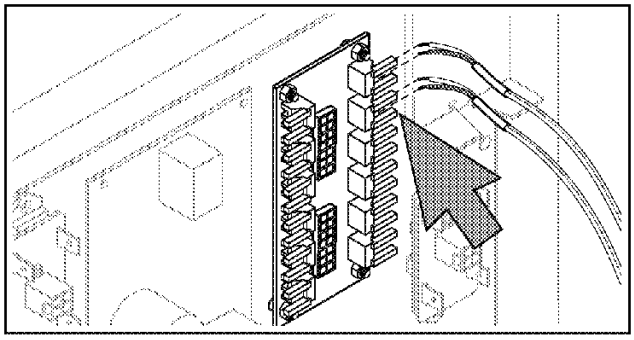


4. Remove and retain the screws securing the Control Side Cover and remove the cover.

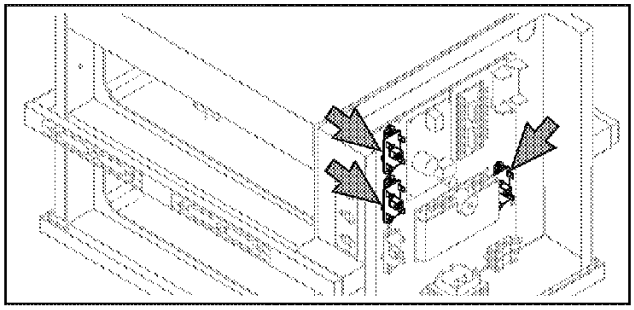
NOTE: If the High Limit Thermostat to be replaced is on a lower level, start from the top and repeat the following four steps for each level above the desired level.



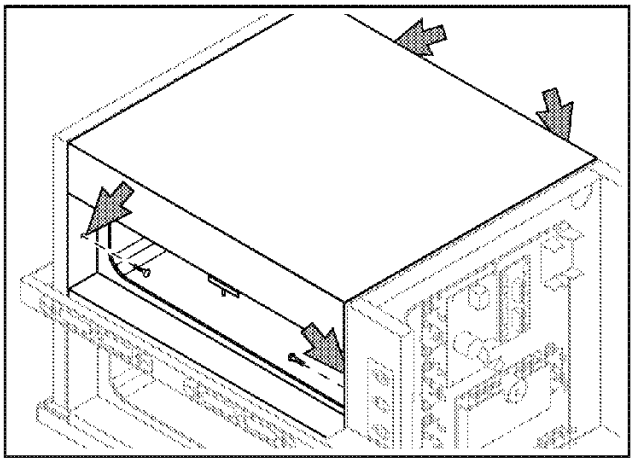
5. Mark, remove the tie wraps, and disconnect the wires for the RTD Sensors from the RTD board in the Control Compartment.



6. Mark, remove the tie wraps, and disconnect the wires for the Emitter (IR Bulb) Sockets and Heat Elements from the Relays in the Control Compartment.

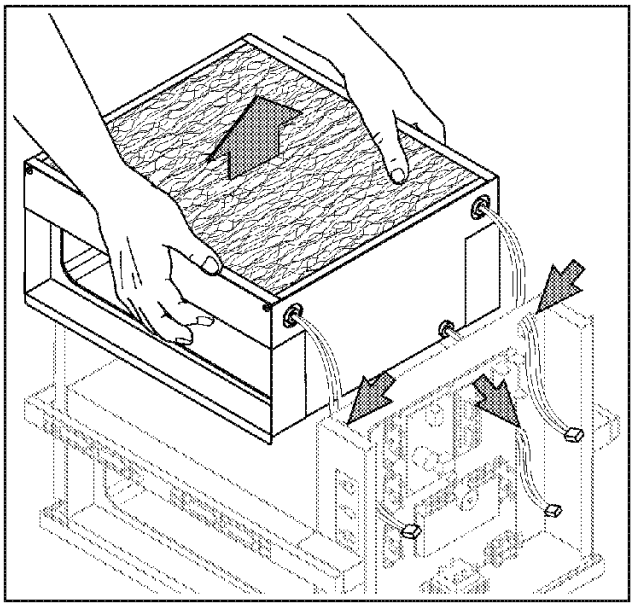


7. Remove the four (4) screws (2 in front, 2 in back) securing the liner deck assembly to the unit.



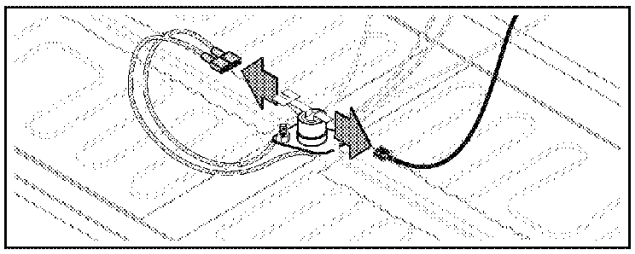
8. Carefully lift the entire liner deck assembly out through the top of the unit. This may require two people, depending on the location of the IRHS unit. Though not required to do so, removing the level's IR glass frame assembly (instructions are contained in the Emitter instructions) will lighten the weight of the liner deck assembly and make it easier for one person to accomplish this task if the IRHS is located in an elevated location or has limited access.

NOTE: It will be necessary to feed the RTD Sensor, Emitter, and Heat Element wires through the control compartment bushings. Take caution not to damage any of the wires.

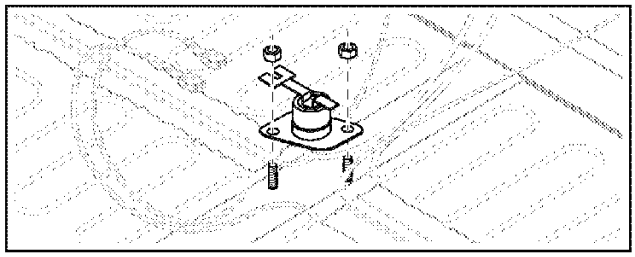


9. Invert the liner deck assembly upside-down, then remove and retain the insulation.

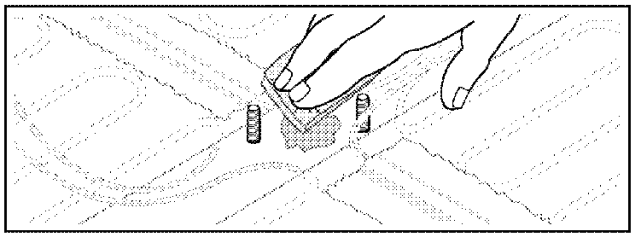
10. Mark and disconnect the spade terminals for the affected High Limit Thermostat.



11. Remove and retain the two (2) 11/32" nuts securing the High Limit Thermostat to the heat sink and remove the High Limit Thermostat.

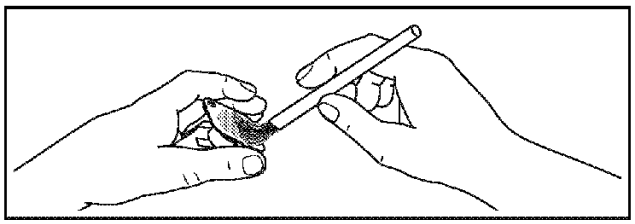


12. Clean the mounting surface of any residual heat transfer compound.



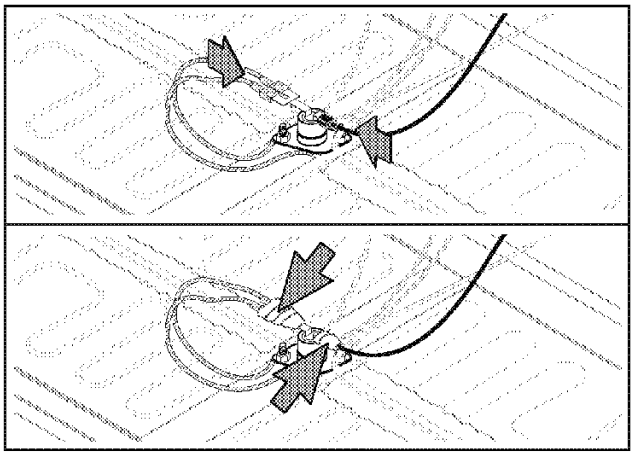
RESTORE:

13. Apply heat transfer compound to the mounting surface of the replacement High Limit Thermostat.



14. Install the replacement High Limit Thermostat and secure with its nuts.

15. Reattach the High Limit Thermostat spade terminals. Be sure to reapply the tape that helps secure the spade terminals to the High Limit Thermostat.



16. Feed the Heat Element and RTD Sensor wires in the direction of and through the control compartment bushings and replace the insulation.

17. Invert the liner deck assembly right-side up. While feeding the RTD Sensor, Emitter, and Heat Element wires through the appropriate control compartment bushings, carefully slide the liner deck assembly into the unit, taking caution not to damage any of the wires.

NOTE: This may require two people, depending on the location of the IRHS unit.

18. Reconnect and tie wrap all previously disconnected wires and connectors in the control compartment.

19. Replace the Control Side Cover and secure with its screws.

20. Replace the Top Panel and secure with its screws.

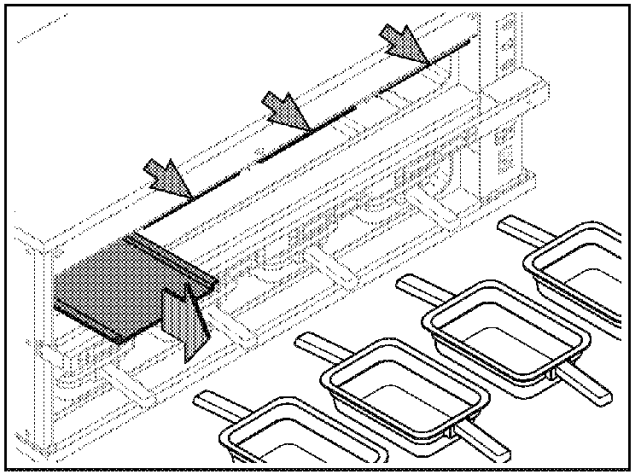
21. Restore power to the unit and test for proper function.

HEAT ELEMENTS

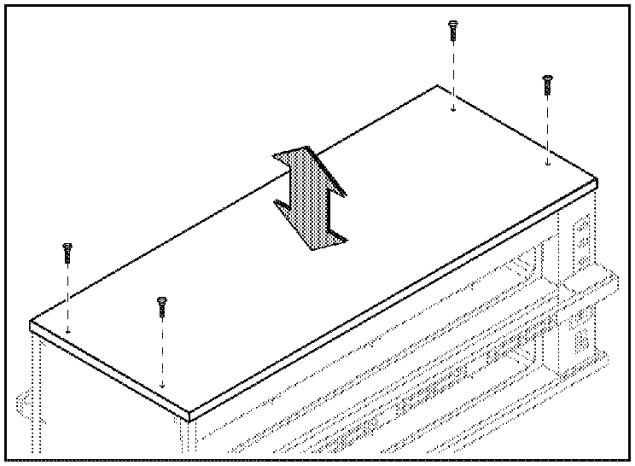
The Heat Elements provide the heating required to keep the heating wells at proper operating temperatures. The quantity varies depending on model and are affixed to the bottom of each Heat Sink.

TOOLS REQUIRED: Phillips screwdriver; 11/32" nut driver or socket; Heat transfer compound; Tie wraps

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove any pans and covers on the level(s) being removed.

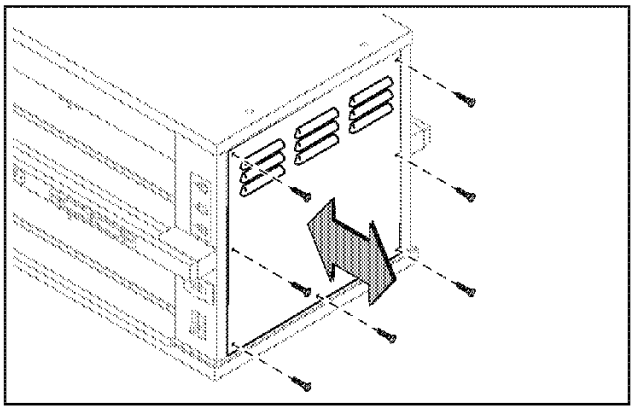


3. Remove and retain the screws securing the Top Panel and remove the cover.

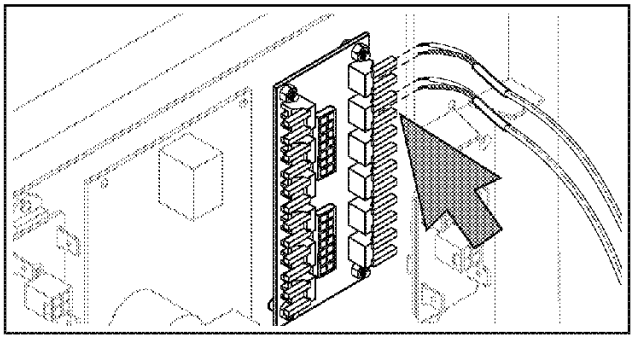


4. Remove and retain the screws securing the Control Side Cover and remove the cover.

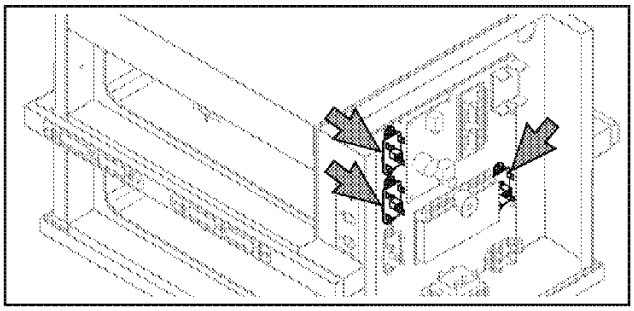
NOTE: If the Heat Element to be replaced is on a lower level, start from the top and repeat the following four steps for each level above the desired level.



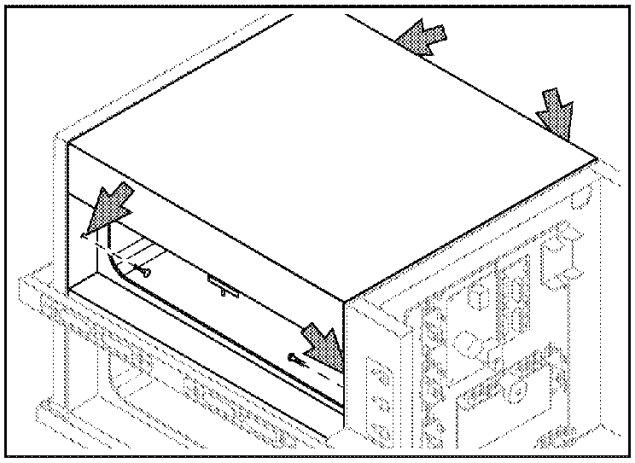
5. Mark, remove the tie wraps, and disconnect the wires for the RTD Sensors from the RTD board in the Control Compartment.



6. Mark, remove the tie wraps, and disconnect the wires for the Emitter (IR Bulb) Sockets and Heat Elements from the Relays in the Control Compartment.



7. Remove the four (4) screws (2 in front, 2 in back) securing the liner deck assembly to the unit.

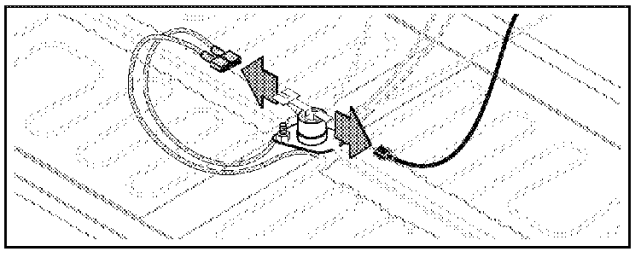


8. Carefully lift the entire liner deck assembly out through the top of the unit. This may require two people, depending on the location of the IRHS unit. Though not required to do so, removing the level's IR glass frame assembly (instructions are contained in the Emitter instructions) will lighten the weight of the liner deck assembly and make it easier for one person to accomplish this task if the IRHS is located in an elevated location or has limited access.

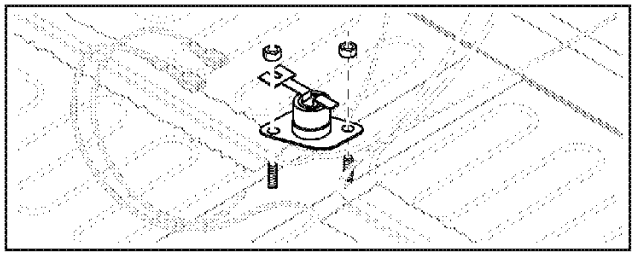
NOTE: It will be necessary to feed the RTD Sensor, Emitter, and Heat Element wires through the control compartment bushings. Take caution not to damage any of the wires.

9. Invert the liner deck assembly upside-down, then remove and retain the insulation.

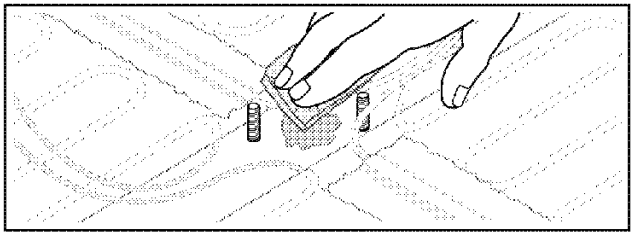
10. Mark and disconnect the spade terminals for the level's High Limit Thermostat.



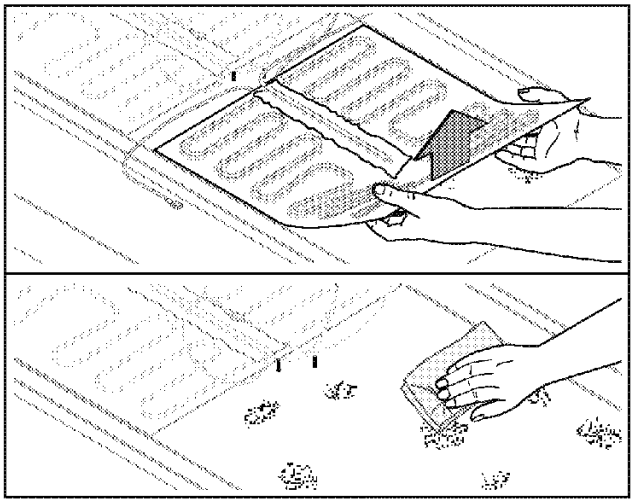
11. Remove and retain the two (2) 11/32" nuts securing the High Limit Thermostat to the heat sink and remove the High Limit Thermostat.



12. Clean the mounting surface of any residual heat transfer compound.

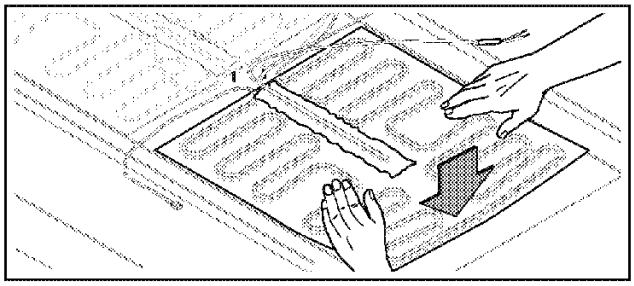


13. Remove the affected Heat Element by peeling off from the heat sink. Ensure any excess tape and/ or adhesive is removed.



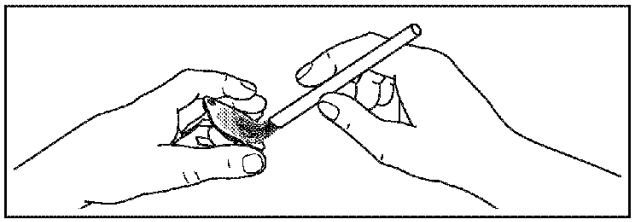
NOTE: The replacement Heat Element will come with a new RTD Sensor attached, so retaining the existing RTD Sensor is unnecessary.

14. Peel the adhesive tape cover off the replacement Heat Element and press in place on the heat sink, ensuring all air bubbles are smoothed out.



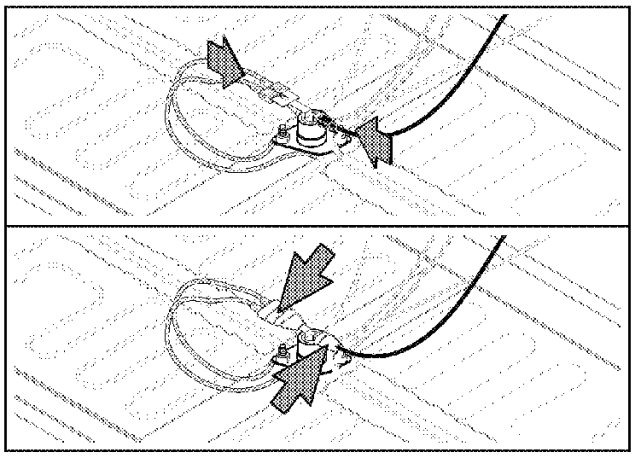
RESTORE:

15. Apply heat transfer compound to the mounting surface of the High Limit Thermostat.



16. Reinstall the High Limit Thermostat and secure with its nuts.

17. Reattach the High Limit Thermostat spade terminals. Be sure to reapply the tape that helps secure the spade terminals to the High Limit Thermostat.



18. Feed the Heat Element and RTD Sensor wires in the direction of and through the control compartment bushings and replace the insulation.

19. Invert the liner deck assembly right-side up. While feeding the RTD Sensor, Emitter, and Heat Element wires through the appropriate control compartment bushings, carefully slide the liner deck assembly into the unit, taking caution not to damage any of the wires.

NOTE: This may require two people, depending on the location of the IRHS unit.

20. Reconnect and tie wrap all previously disconnected wires and connectors in the control compartment.

21. Replace the Control Side Cover and secure with its screws.

22. Replace the Top Panel and secure with its screws.

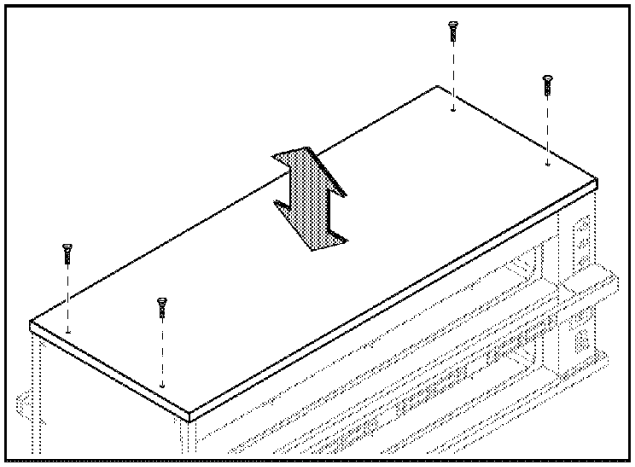
23. Restore power to the unit and test for proper function.

EMITTER (IR BULB) SOCKETS

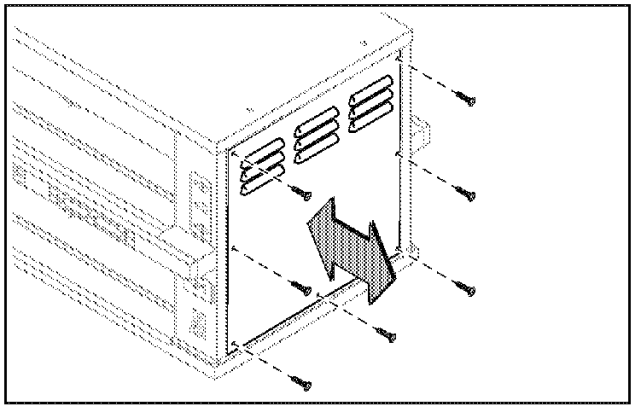
The Emitter Sockets hold and provide power to the Emitters. There are two (2: 1 front, 1 back) at the top of each heating well.

TOOLS REQUIRED: Phillips screwdriver; clean gloves/ cloths/towels; 11/16" open-end wrench; Tie wraps

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove all pans and covers from the liner deck assembly, and levels above where the affected Emitter Socket is to be replaced.
3. Remove and retain the screws securing the Top Panel and remove the cover.

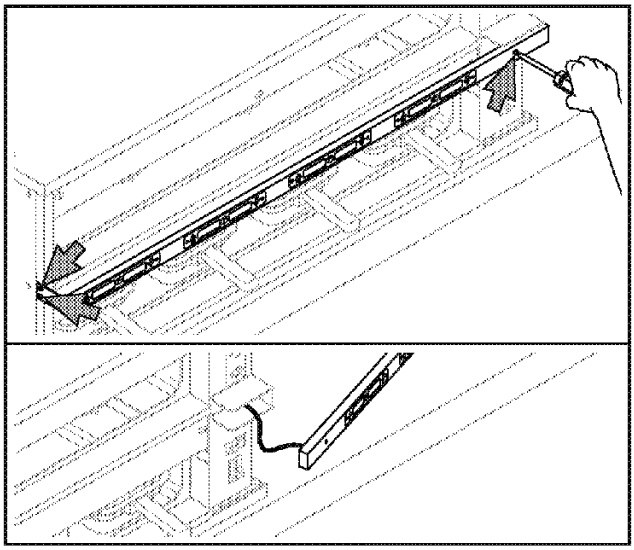


4. Remove and retain the screws securing the Control Side Cover and remove the cover.

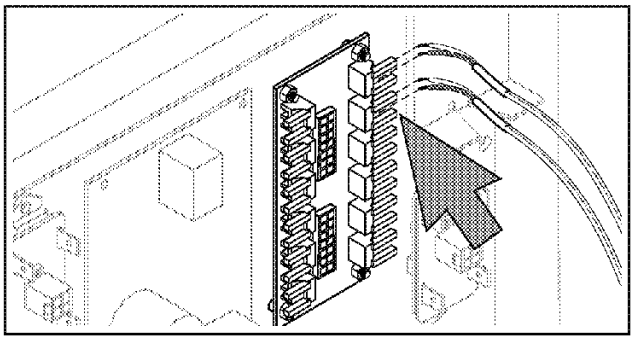


If the Emitter Socket to be replaced is on a lower level (not for top level replacement), starting from the second level, repeat the following five steps for each level above the desired repair level:

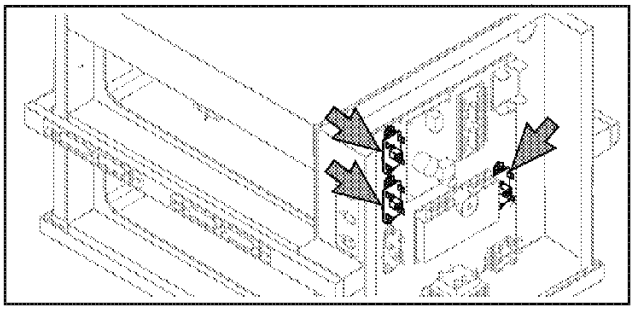
a. Remove and retain the screws securing the appropriate Menu Bar(s) and move to one side. It is not necessary, but recommended, to completely remove the Menu Bar from the unit. Menu Bar instructions are contained in this manual.



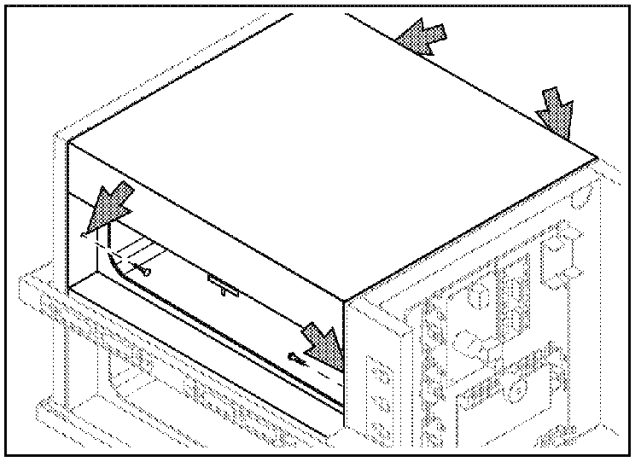
b. Mark, remove the tie wraps, and disconnect the wires for the RTD Sensors from the RTD board in the Control Compartment.



c. Mark, remove the tie wraps, and disconnect the wires for the Emitter (IR Bulb) Sockets and Heat Elements from the Relays in the Control Compartment.

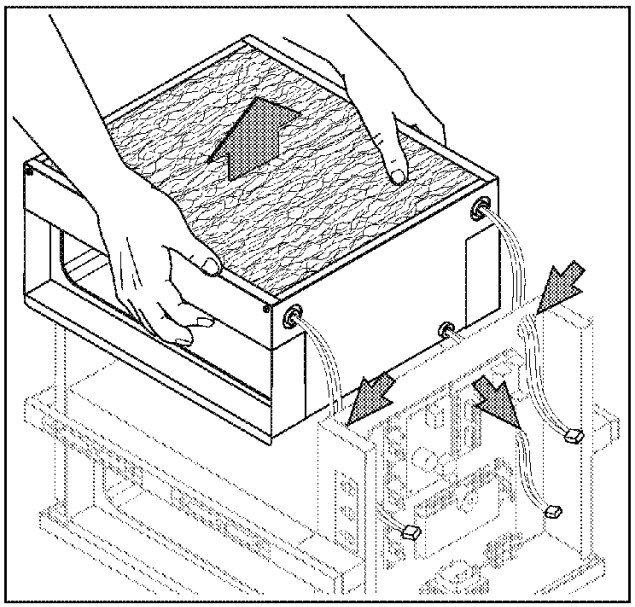


d. Remove the four (4) screws (2 in front, 2 in back) securing the liner deck assembly to the unit.



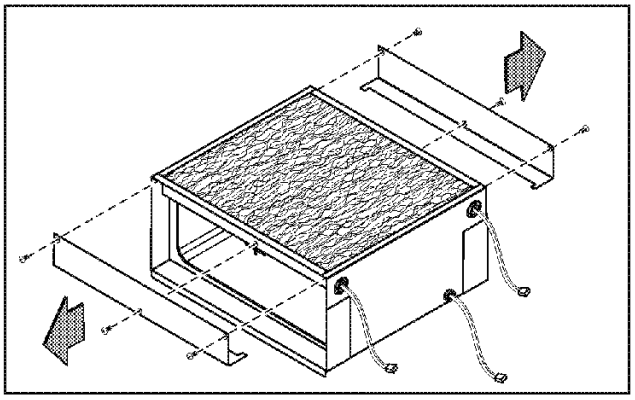
e. Carefully lift the entire liner deck assembly out through the top of the unit. This may require two people, depending on the location of the IRHS unit. Though not required to do so, removing the level's IR glass frame assembly (instructions are contained in the Emitter instructions) will lighten the weight of the liner deck assembly and make it easier for one person to accomplish this task if the IRHS is located in an elevated location or has limited access.

NOTE: It will be necessary to feed the RTD Sensor, Emitter, and Heat Element wires through the control compartment bushings. Take caution not to damage any of the wires.



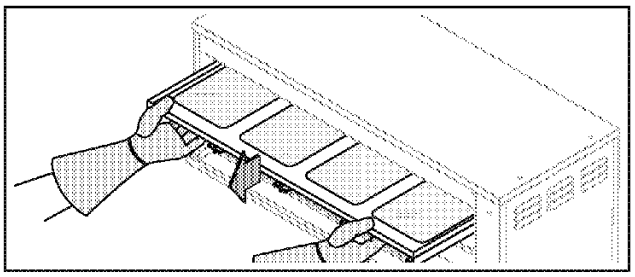
You will now have access to remove the nut securing socket in place.

5. Each liner deck's frame support angles (front and back) support the IR glass frame assembly in place. Remove and retain the screws securing the frame support angle on the row where the affected Socket is to be replaced and remove the frame support angle. Repeat for the other side of the liner deck assembly. Be careful to support and not let the IR glass frame assembly fall and damage the heat sink.



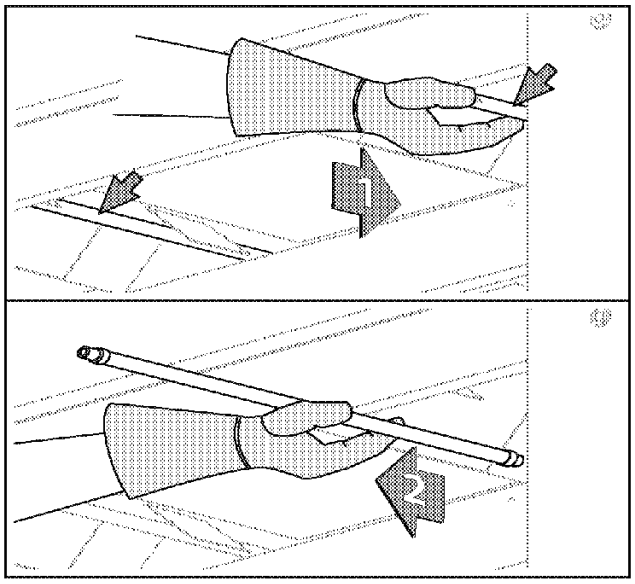
6. Slide the IR glass frame assembly out of the liner deck assembly below the Socket to be replaced.

NOTE: Make sure the glass has cooled off sufficiently to avoid burns to bare skin. Use gloves if necessary.

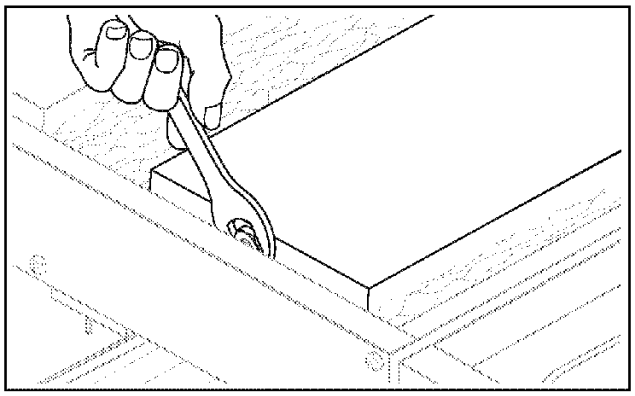


7. The Emitter Sockets are spring-loaded. Push the Emitter (IR Bulb) towards the rear socket until the Emitter is free from the front socket and carefully remove.

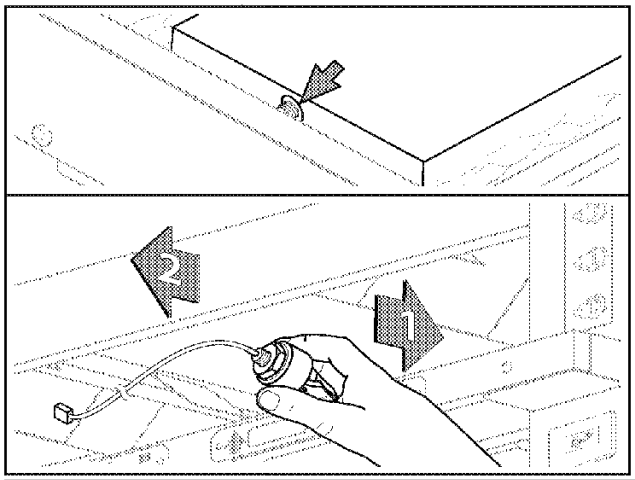
NOTE: DO NOT TOUCH THE EMITTER WITH BARE HANDS! The oil on human skin will shorten the life of the Emitters. If the Emitter is to be reused, use clean gloves, a clean cloth, or a clean paper towel to handle.



8. Mark and disconnect the faulty Emitter Socket's wires from the Relay in the control compartment.
9. Using an 11/16" open-end wrench, remove the nut securing the socket in place.



10. From the bulb side of the affected Socket, pull the Socket and its wires through its mounting hole.



RESTORE:

11. Install the replacement Emitter Socket into its mounting hole and secure with its nut.
12. Using clean gloves, a clean cloth, or a clean paper towel, reinstall or insert the replacement Emitter into the rear socket first and then gently push inward until the front of the bulb can be inserted into the front socket.
13. Slide the IR glass frame assembly into the liner deck assembly.
14. Replace the frame support angles on the front and back and secure them with their screws.
15. If other liner deck assemblies were removed, starting with the lowest, feed their RTD Sensor, Emitter, and Heat Element wires through the appropriate control compartment bushings, and carefully slide the liner deck assemblies into the unit, taking caution not to damage any of the wires. Replace any moved/removed insulation.

NOTE: This may require two people, depending on the location of the IRHS unit.

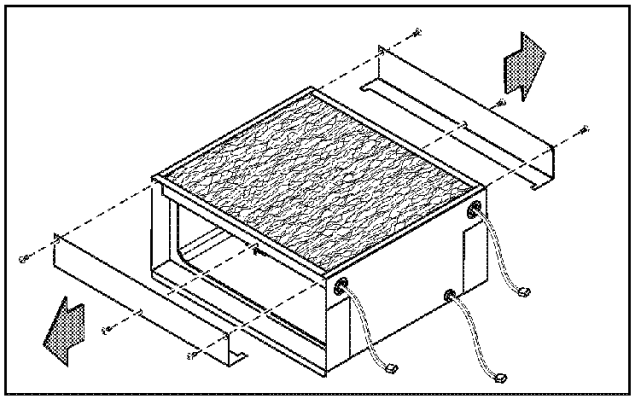
16. If other liner deck assemblies were removed, reinstall their Menu Bar(s).
17. Reconnect and tie wrap all previously disconnected wires and connectors in the control compartment.
18. Replace the Control Side Cover and secure with its screws.
19. Replace the Top Panel and secure with its screws.
20. Restore power to the unit and test for proper function.

EMITTERS (IR BULBS)

The Emitters heat the top of each well. The quantity varies (depending on model) and are held in place by two Emitter Sockets at the top of each heating well.

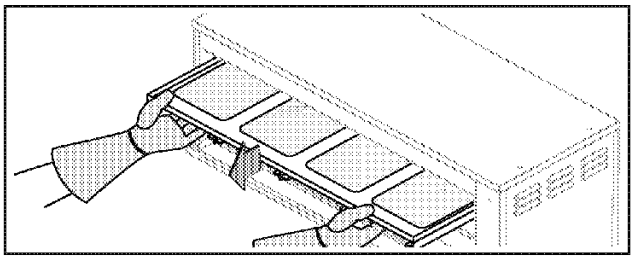
TOOLS REQUIRED: Phillips screwdriver; clean gloves/ cloths/towels; Tie wraps

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove all pans and covers from the liner deck assembly where the affected Emitter is to be replaced.
3. If the Emitter to be replaced is on a lower level (not for top level replacement), remove and retain the screws securing the appropriate Menu Bar(s) and move to one side. It is not necessary, but recommended, to completely remove the Menu Bar from the unit. Menu Bar instructions are contained in this manual.
4. The liner deck assembly's frame support angles (front and back) support the IR glass frame assembly in place. Remove and retain the screws securing the frame support angle on the row where the affected Emitter is to be replaced and remove the frame support angle. Repeat for the other side of the liner deck assembly. Be careful to support and not let the IR glass frame assembly fall and damage the heat sink.



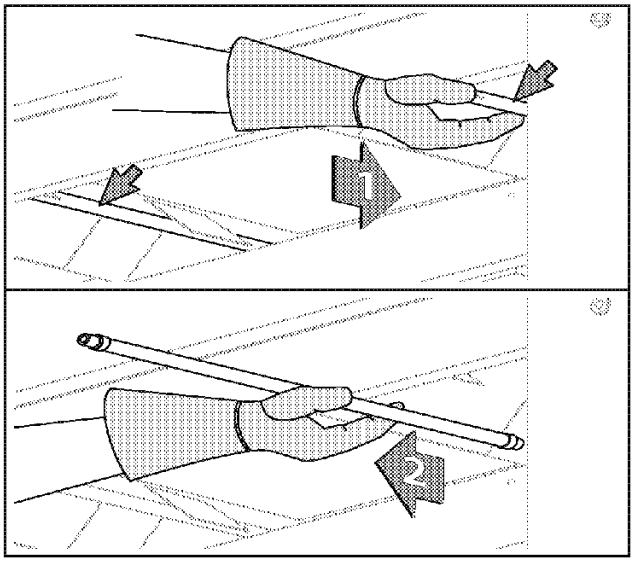
5. Slide the IR glass frame assembly out of the liner deck assembly below the Emitter to be replaced.

NOTE: Make sure the glass has cooled off sufficiently to avoid burns to bare skin. Use gloves if necessary.



6. The Emitter Sockets are spring-loaded. Push the Emitter towards the rear socket until the Emitter is free from the front socket and carefully remove.

NOTE: DO NOT TOUCH THE EMITTER WITH BARE HANDS! The oil on human skin will shorten the life of the Emitters. If the Emitter is to be reused, use clean gloves, a clean cloth, or a clean paper towel to handle.

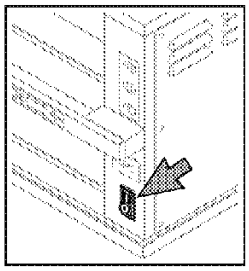


RESTORE:

7. Using clean gloves, a clean cloth, or a clean paper towel, reinstall or insert the replacement Emitter into the rear socket first and then gently push inward until the front of the bulb can be inserted into the front socket.
8. Slide the IR glass frame assembly into the liner deck assembly.
9. Replace the frame support angles on the front and back and secure them with their screws.
10. If removed, reinstall and reconnect the Menu Bar.
11. Restore power to the unit and test for proper function.

CONTROL COMPARTMENT COMPONENTS – STANDALONE & KITCHEN MINDER MODELS (ONLY)

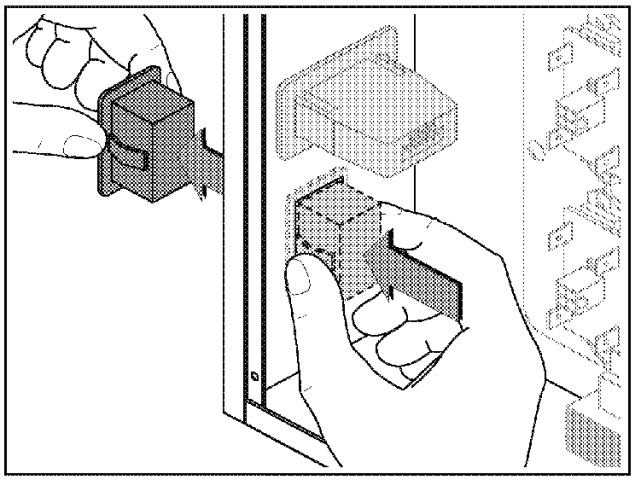
POWER SWITCH



The Power Switch is located on the Control Panel on the face of the unit. It is accessed from inside the control compartment.

TOOLS REQUIRED:
Phillips screwdriver

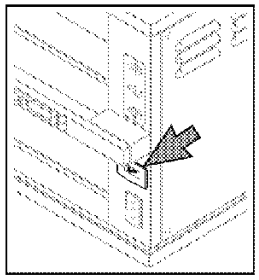
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. From inside the control compartment, mark and disconnect all wires connected to the Power Switch.
4. The Power Switch is secured to the unit with spring clips and a spacer. Depress the spring clips and slide the switch from the unit.



RESTORE:

5. Install the replacement Power Switch by sliding it into its position in the unit until secured with its spring clips.
6. Reattach the Power Switch wires.
7. Replace the Control Side Cover and secure with its screws.
8. Restore power to the unit and test for proper function.

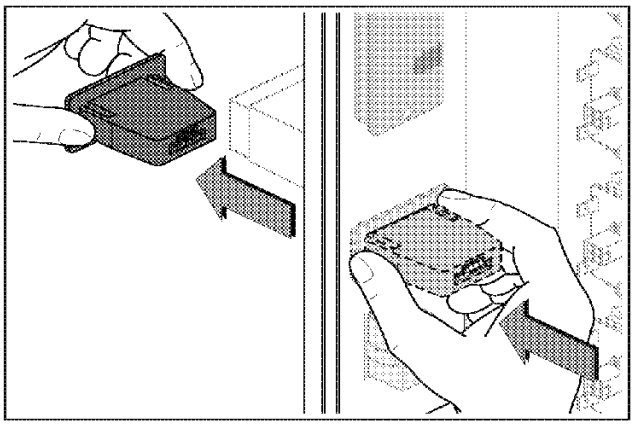
USB ADAPTER



The USB Adapter is used to program the Controller when it is replaced or when the current recipes are corrupted. It is located on the Control Panel. It is accessed from inside the control compartment.

TOOLS REQUIRED: Phillips screwdriver

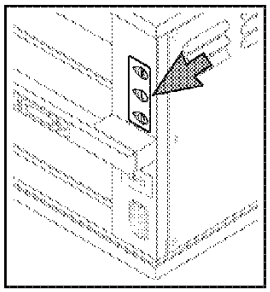
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. From inside the control compartment, unplug the molex connector from the rear of the USB port.
4. The USB Adapter is secured to the unit with prongs and a spacer. Depress the two (2) prongs securing the USB Adapter to the unit, and pull through the face of the unit.



RESTORE:

5. Install the replacement USB Adapter by sliding it into its position in the unit until secured with its prongs.
6. Reattach the USB Adapter molex connector.
7. Replace the Control Side Cover and secure with its screws.
8. Restore power to the unit and test for proper function.

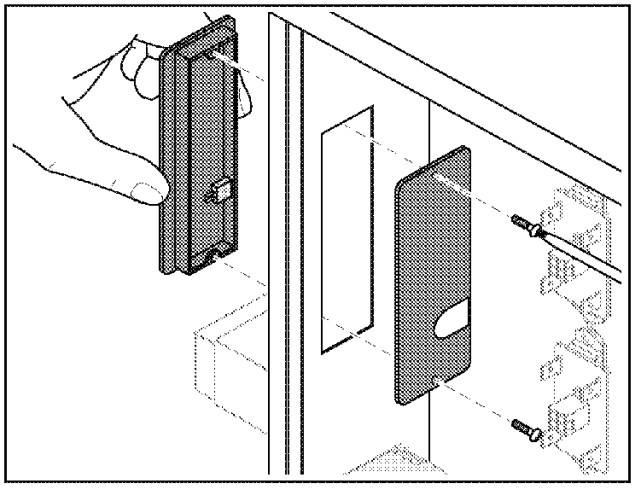
DAYPART SWITCH



The Daypart Switch is used to control the temperatures of various food products, up to three different time periods a day. It is located on the Control Panel and is accessed from inside the control compartment.

TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. From inside the control compartment, unplug the molex connector from the rear of the Daypart Switch.
4. The Daypart Switch is secured to the unit with its rear cover. Remove and retain the three (3) screws securing the Daypart Switch rear cover, then remove the switch and rear cover.

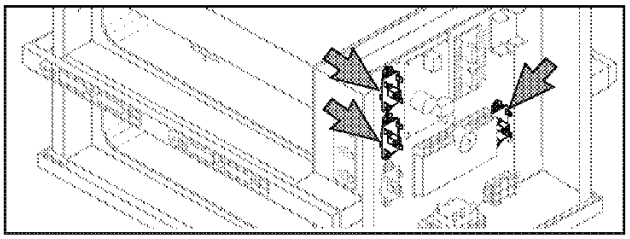


RESTORE:

5. Insert the replacement Daypart Switch into the unit and secure in place with its rear cover and screws.
6. Attach the molex connector to the replacement Daypart Switch.
7. Replace the Control Side Cover and secure with its screws.
8. Restore power to the unit and test for proper function.

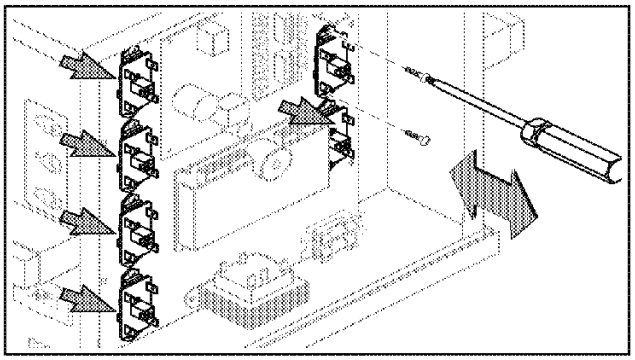
RELAYS (Smart Power Modules)

The Relays control the Emitters (IR Bulbs) and Heat Elements. Each unit has several (depending on model) and are located inside the control compartment.



TOOLS REQUIRED: Phillips screwdriver; Heat transfer compound

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect all wires and molex plug to the affected Relay.
4. Remove and retain the screws securing the affected Relay to the unit.
5. Remove the affected Relay and clean the mounting surface of any residual heat transfer compound.



RESTORE:

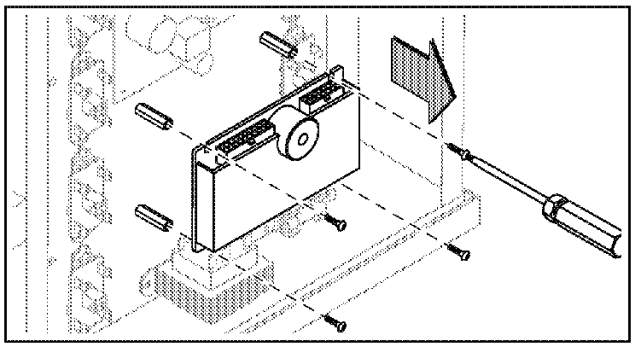
6. Apply heat transfer compound to the mounting surface of the replacement Relay.
7. Install the replacement Relay and secure with its screws.
8. Reconnect the Relay wires and plug.
9. Replace the Control Side Cover and secure with its screws.
10. Restore power to the unit and test for proper function.

CONTROLLER

The Controller is used to control the Relays and RTD Sensors. It is located inside the control compartment.

TOOLS REQUIRED: Phillips screwdriver; #1 precision screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Disconnect the two (2) molex connectors connected to the Controller.
4. Using a small Phillips screwdriver or #1 precision screwdriver, remove and retain the four (4) screws securing the Controller to the unit.
5. Maintaining the spacers on the studs, remove the Controller.



RESTORE:

6. Install the replacement Controller on its studs and secure with its screws.
7. Reconnect the two (2) molex connectors.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

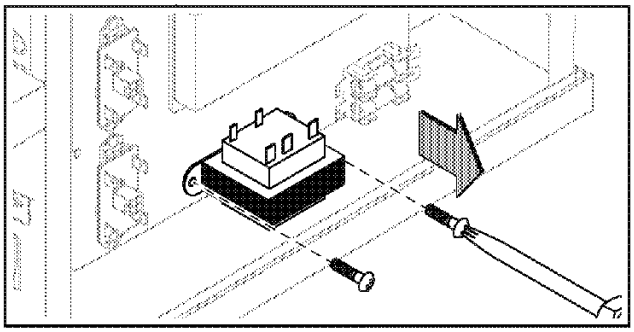
NOTE: To program the new Controller, see programming instructions located the "WEBSITE PROGRAMMING" section of this manual.

TRANSFORMER

The Transformer is used to step-down power to 12 VAC for the Controller. It is located inside the control compartment.

TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the spade connectors connected to the Transformer.
4. Remove and retain the two (2) screws securing the Transformer to the unit and remove the Transformer.



RESTORE:

5. Install the replacement Transformer and secure with its screws.
6. Reconnect the spade connectors.
7. Replace the Control Side Cover and secure with its screws.
8. Restore power to the unit and test for proper function.

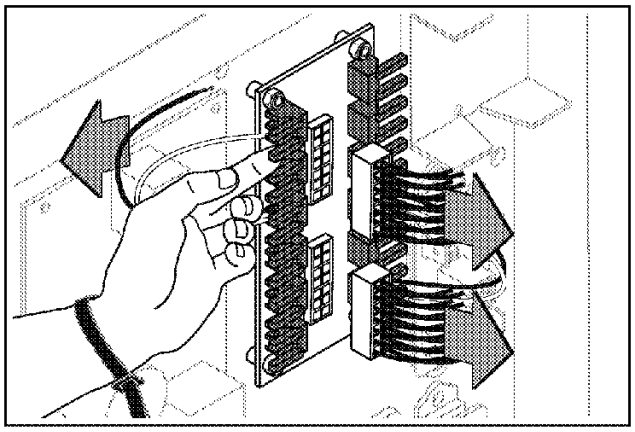
RTD BOARD

The RTD Board controls the RTD Sensors. It is located inside the control compartment.

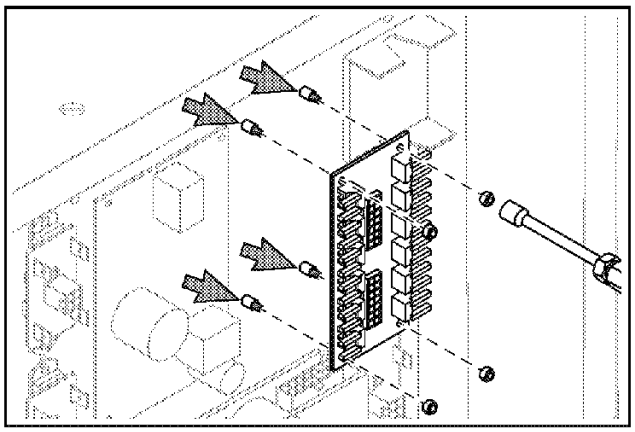
TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect all wires and the molex plug to the RTD Board.

NOTE: The use of an ESD Wrist Strap is strongly recommended. Follow ESD procedures on page 11.



4. Remove and retain the four (4) 1/4" nuts securing the affected RTD Board to the unit.
5. Maintaining the spacers on the studs, remove the RTD Board.



RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement RTD Board and secure with its screws.
7. Reconnect the RTD Board wires and plug.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

FUSES AND FUSE HOLDER

The Fuses and Fuse Holder serve as a circuit interrupter from the main power input. They are located inside the control compartment.

TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.

FOR FUSE REPLACEMENT:

3. Remove the fuses and test with an ohm meter.
4. Replace the fuse(s) with correctly rated fuse(s):

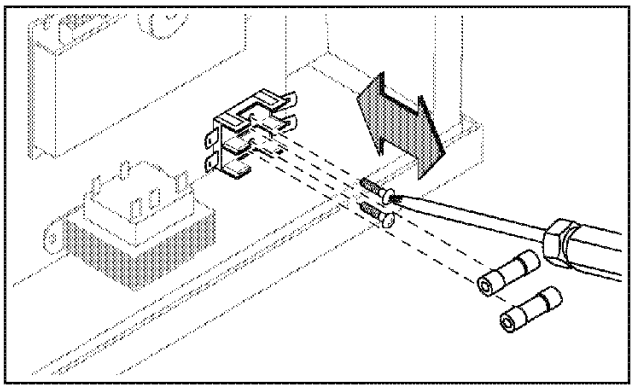
Models 2x2, 2x3, 2x4, 4x2	12 Amp
Model 3x4	16 Amp

NOTE: Replacing fuse(s) with an incorrect rating can cause nuisance blowing if rating is too low, or a loss of circuit protection if too high. Damage to the equipment and risk of fire may result. Replace fuse(s) with correctly rated fuse(s) only.

5. Replace the Control Side Cover and secure with its screws.
6. Restore power to the unit and test for proper function.

FOR FUSE HOLDER REPLACEMENT:

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Disconnect the spade connectors connected to the Fuse Holder.
4. Remove and retain the screws securing the Fuse Holder to the unit and remove the Fuse Holder.



RESTORE:

5. Install the replacement Fuse Holder and secure with its screws.
6. Reconnect the spade connectors.
7. INSTALL CORRECTLY RATED FUSES ONLY! Damage to the equipment and/or risk of fire may result if installing fuses with incorrect ratings.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

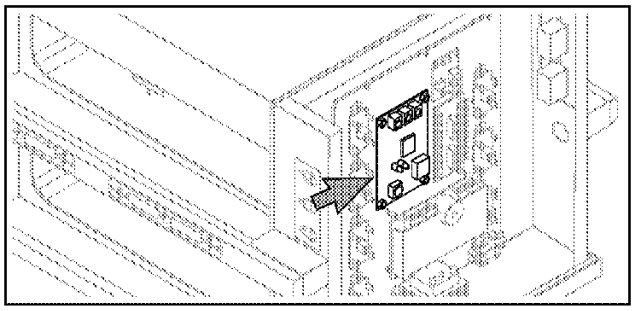
CONTROL COMPARTMENT COMPONENTS – KITCHEN MINDER MODEL (ONLY)

NOTE: The following components are installed, in addition to all previously listed control compartment components, in the Kitchen Minder model of the IRHS.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

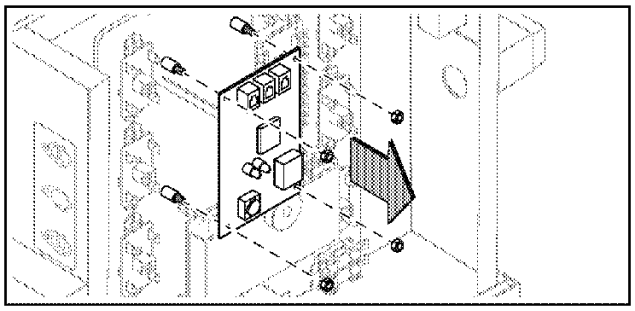
KITCHEN MINDER MASTER BOARD (if installed)

If Kitchen Minder is installed in the unit, the Kitchen Minder Master Board is located behind the Control Side Cover.



TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the lines connected to the Master Board.
4. Remove and retain the four (4) 1/4" nuts securing the affected Master Board to the unit.
5. Maintaining the spacers on the studs, remove the Master Board.



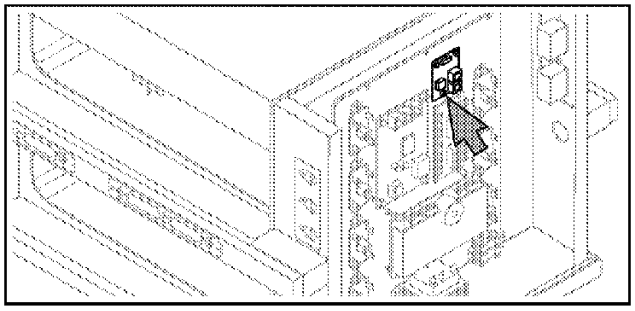
RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement Master Board on its studs and secure with its screws.
7. Reconnect the lines.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

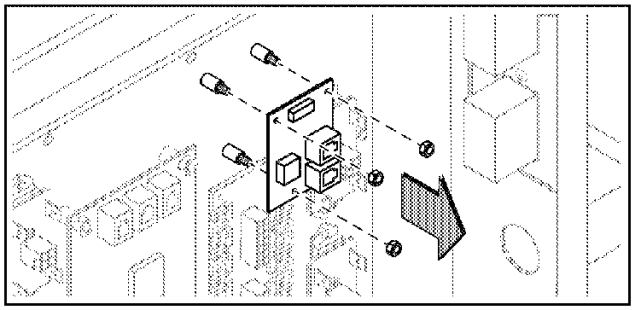
KITCHEN MINDER ADAPTER BOARD (if installed)

If Kitchen Minder is installed in the unit, the Kitchen Minder Adapter Board is located behind the Control Side Cover.



TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the line and molex plug connected to the Adapter Board.
4. Remove and retain the three (3) 1/4" nuts securing the Adapter Board to the unit.
5. Maintaining the spacers on the studs, remove the Adapter Board.

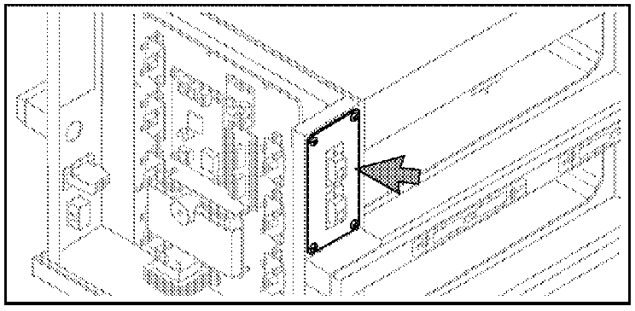


RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement Adapter Board on its studs and secure with its screws.
7. Reconnect the line and molex plug to the Adapter Board.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

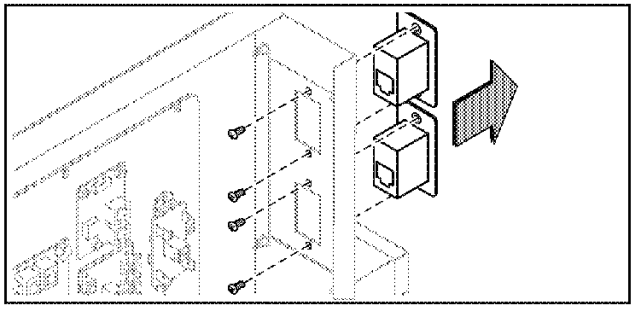
MOUNTING PLATE (If installed)

If Kitchen Minder is installed in the unit, the Mounting Plate is located in the rear control panel. The Mounting Plate holds the Couplers. The type depends on the specific model: Domestic (2-Hole) and CE (2-Hole or 3-Hole).

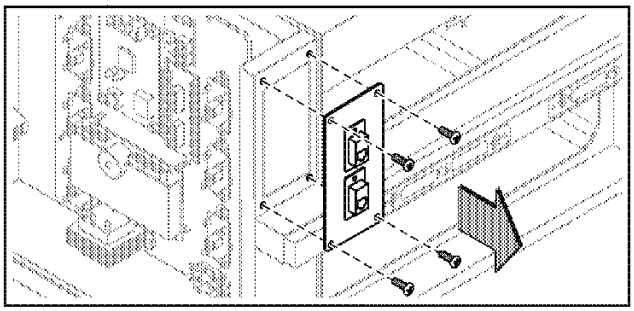


TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect any communication lines attached to both sides of the Couplers contained in the Mounting Plate.
4. **If intending to retain and reuse the existing Couplers,** remove and retain the Couplers and their mounting screws (two per coupler).



5. Remove and retain the four (4) screws securing the Mounting Plate to the rear control panel.

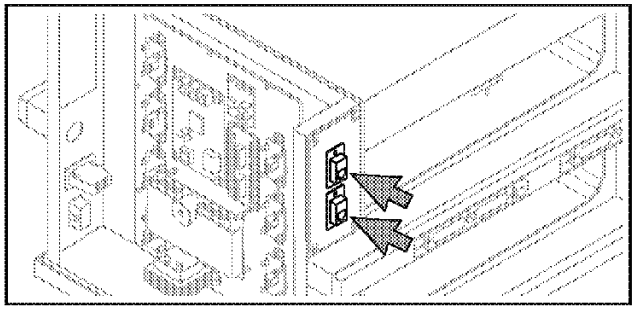


RESTORE:

6. Install the replacement Mounting Plate in the rear control panel and secure with its screws.
7. If necessary, reinstall the Couplers into the Mounting Plate with their screws.
8. Reconnect the communication lines to the Couplers.
9. Replace the Control Side Cover and secure with its screws.
10. Restore power to the unit and test for proper function.

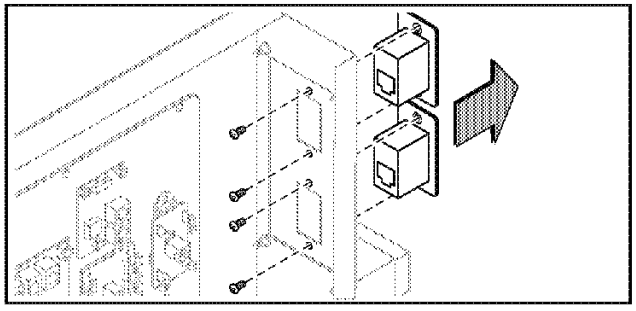
COUPLERS (If installed)

If Kitchen Minder is installed in the unit, the Couplers are located in the Mounting Plate on the rear Control Panel. Couplers are the connection point between the Master and Satellite Kitchen Minder units allowing them to be connected and communicate. The quantity varies depending on the specific model – two (2; one RJ45 and one RJ12) in the Domestic model or three (3; all CAT5/RJ45) in the CE model.



TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the affected Coupler line(s).
4. Remove and retain the two (2) small screws that attach each Coupler to the Mounting Plate.



RESTORE:

5. Insert the replacement Coupler(s) and attach with its screws.
6. Reconnect the Coupler line(s).
7. Replace the Control Side Cover and secure with its screws.
8. Restore power to the unit and test for proper function.

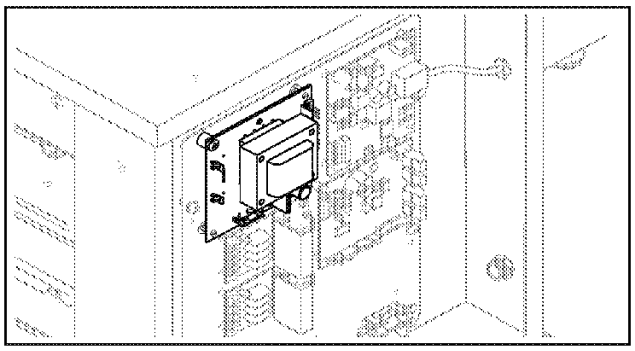
CONTROL COMPARTMENT COMPONENTS – VISOR MODEL (ONLY)

NOTE: All previously listed control compartment components (Standalone and Kitchen Minder models) are NOT INSTALLED in the VISOR models of the IRHS.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

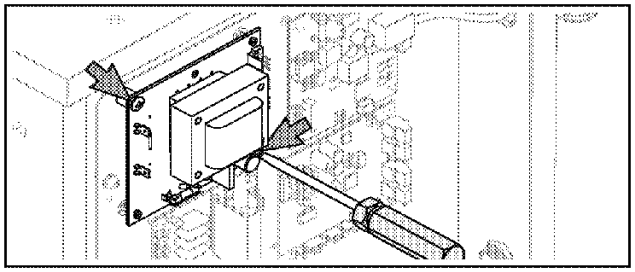
12V POWER CONTROL BOARD

If VISOR is installed in the unit, the 12V Power Control Board is located on the VISOR Control Panel inside the control compartment.

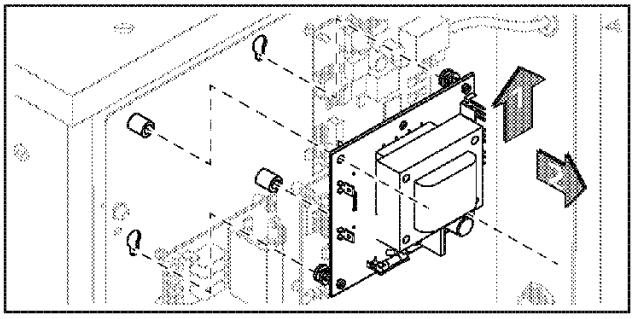


TOOLS REQUIRED: Phillips screwdriver; ESD strap; Needle-nose pliers

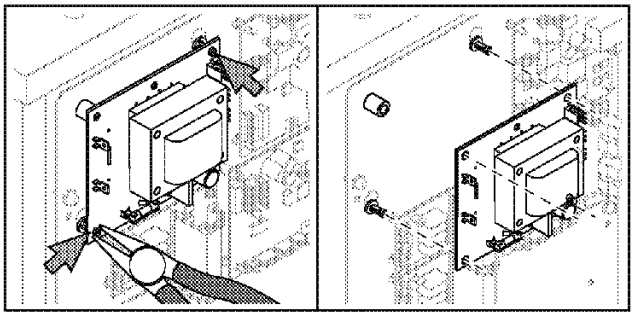
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the spade and molex connectors that are connected to the 12V Power Control Board.
4. Remove and retain the two (2) screws securing the 12V Power Control Board to the unit.



5. Leaving them in place, use the two (2) nylon PC lock-in supports to slide the 12V Power Control Board off of the control panel. If the PC lock-in supports are being reused on the replacement 12V Power Control Board, use needle-nose pliers to squeeze the PC lock-in supports and slide out of the 12V Power Control Board. The nylon screw stubs will remain in place.



OR



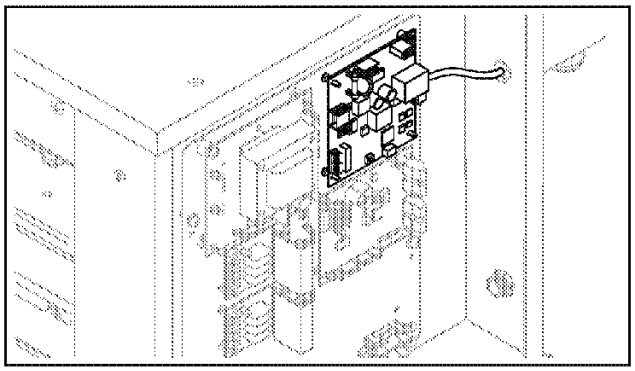
RESTORE:

6. If necessary, install two (2) nylon PC lock-in supports in the 12V Power Control Board.
7. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement 12V Power Control Board, with its PC lock-in supports, by sliding into the keyholes in the control panel and secure in place with its screws.
8. Reconnect the spade and molex connectors.
9. Replace the Control Side Cover and secure with its screws.
10. Restore power to the unit and test for proper function.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

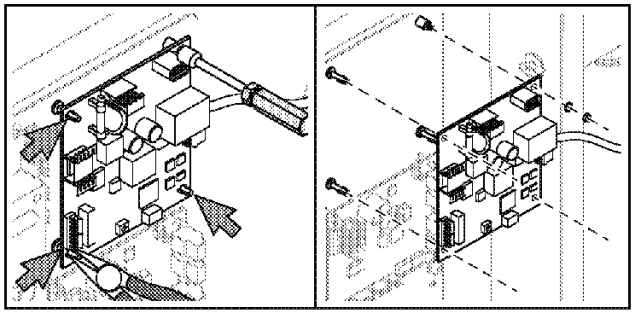
POWER CONTROL BOARD – ACM

If VISOR is installed in the unit, the ACM Power Control Board is located on the VISOR Control Panel inside the control compartment.



TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket; Needle-nose pliers

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the connectors and data line that are connected to the ACM Power Control Board.
4. Remove and retain the 1/4" nut securing the ACM Power Control Board to the unit.
5. Squeeze each of the three (3) nylon PC lock-in supports with needle-nose pliers to release the ACM Power Control Board off of the control panel. The nylon supports and nut stub will remain in place.



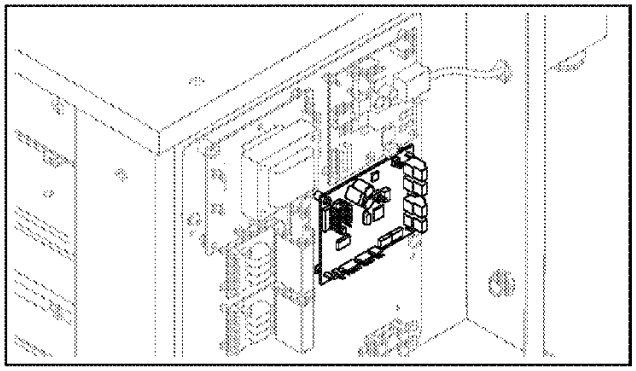
RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement ACM Power Control Board onto its nylon PC lock-in supports and secure in place with its nut.
7. Reconnect the spade and molex connectors.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

POWER CONTROL BOARD – 103M

If VISOR is installed in the unit, the ACM Power Control Board is located on the VISOR Control Panel inside the control compartment. The quantity varies depending on the specific model.

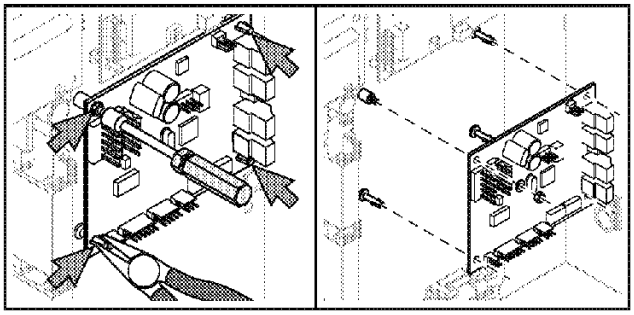


TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket; Needle-nose pliers

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the connectors that are connected to the 103M Power Control Board.

NOTE: The use of an ESD Wrist Strap is strongly recommended. Follow ESD procedures on page 11.

4. Remove and retain the 1/4" nut and its nylon spacer securing the 103M Power Control Board to the unit.
5. Squeeze each of the three (3) nylon PC lock-in supports with needle-nose pliers to release the 103M Power Control Board off of the control panel. The nylon supports and nut stub remain in place.



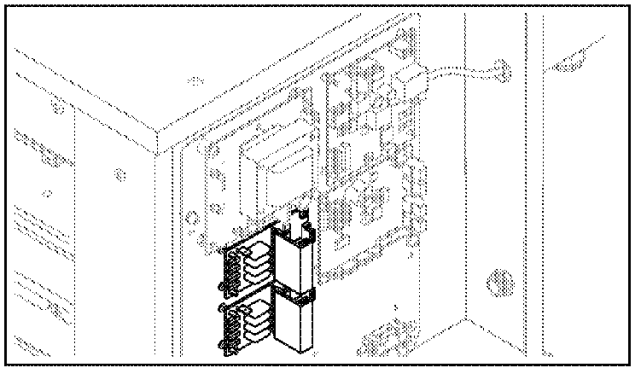
RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement 103M Power Control Board onto its nylon PC lock-in supports and secure in place with its nut and nylon spacer.
7. Reconnect the spade and molex connectors.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

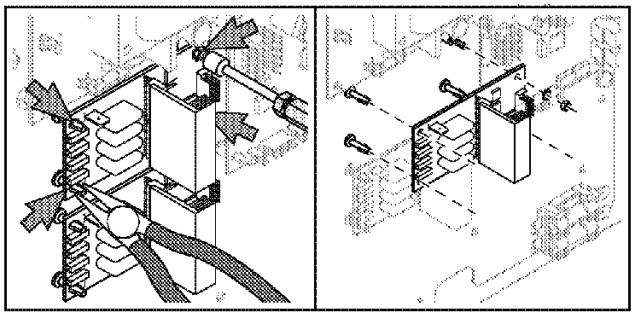
POWER CONTROL BOARD – TRIAC DRIVE

If VISOR is installed in the unit, the Triac Drive Power Control Board is located on the VISOR Control Panel inside the control compartment. The quantity varies depending on the specific model.



TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket; Needle-nose pliers

1. Place the unit's Power Switch in the "OFF" position and follow the proper lockout/tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the connectors that are connected to the Triac Drive Power Control Board.
4. Remove and retain the 1/4" nut and nylon spacer securing the Triac Drive Power Control Board to the unit.
5. Squeeze each of the three (3) nylon PC lock-in supports with needle-nose pliers to release the Triac Drive Power Control Board off of the control panel. The nylon supports and nut stub will remain in place.

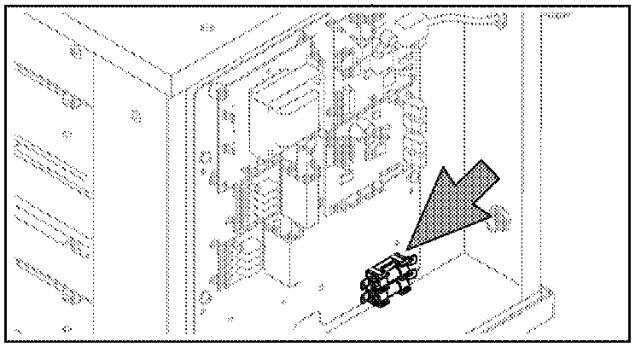


RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement Triac Drive Power Control Board onto its nylon PC lock-in supports and secure in place with its nut.
7. Reconnect the spade and molex connectors.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

FUSE HOLDER AND FUSES

The Fuses and Fuse Holder serve as a circuit interrupter from the main power input. They are located on the VISOR Control Panel, inside the control compartment.

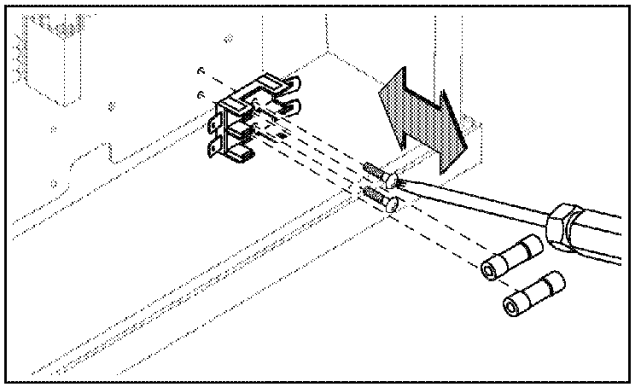


TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.

FOR FUSE HOLDER REPLACEMENT

3. Disconnect the spade connectors connected to the Fuse Holder.
4. Remove and retain the screws securing the Fuse Holder to the unit and remove the Fuse Holder.



RESTORE:

5. Install the replacement Fuse Holder and secure with its screws.
6. Reconnect the spade connectors.
7. INSTALL CORRECTLY RATED FUSES ONLY!

NOTE: Replacing fuse(s) with an incorrect rating can cause nuisance blowing if rating is too low, or a loss of circuit protection if too high. Damage to the equipment and risk of fire may result.

8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

FOR FUSE REPLACEMENT

3. Remove the fuses and test with an ohm meter.

RESTORE:

4. Replace the fuse(s) with correctly rated fuse(s):

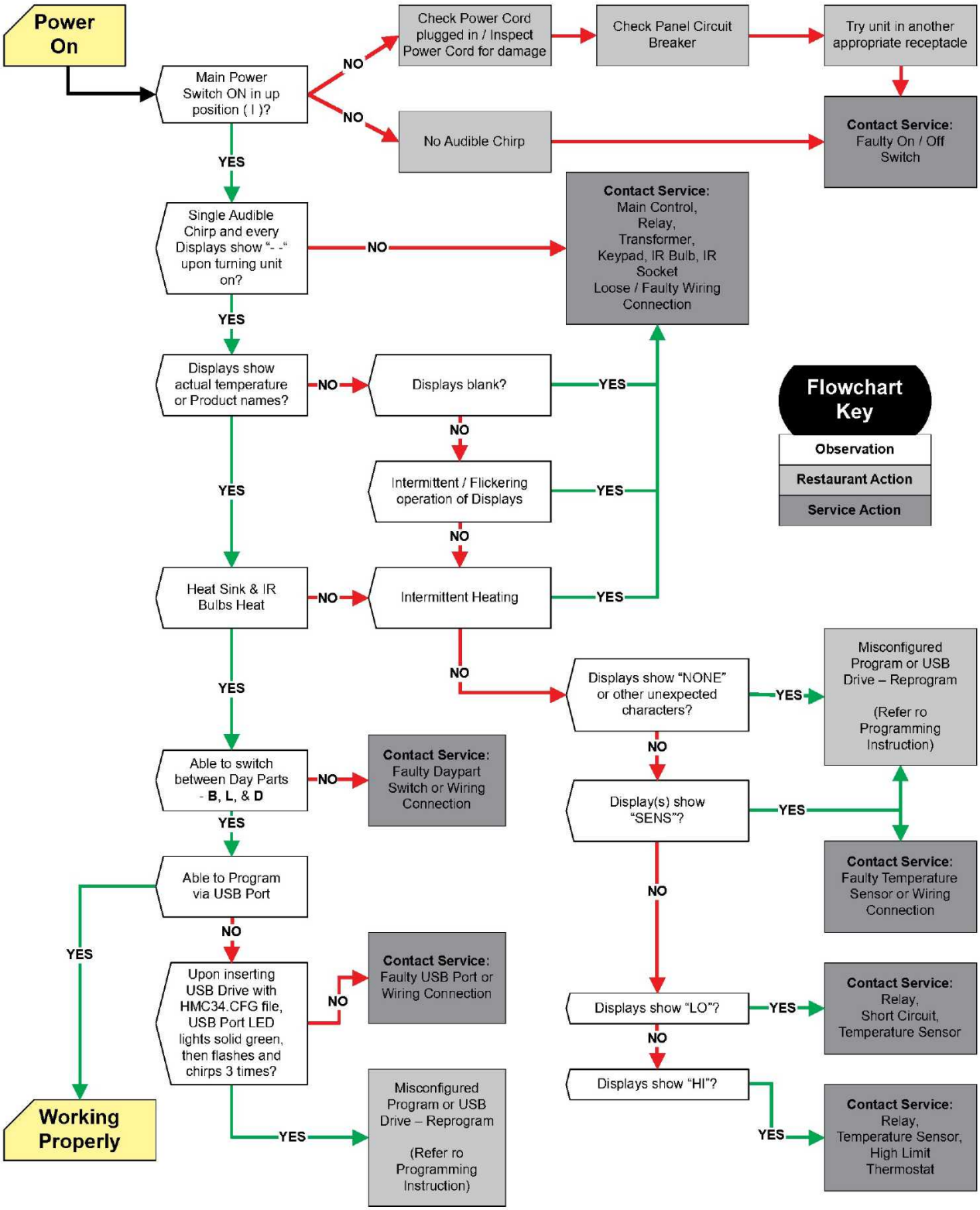
Models 2x2, 2x3, 2x4, 4x2	12 Amp
Model 3x4	16 Amp

NOTE: Replacing fuse(s) with an incorrect rating can cause nuisance blowing if rating is too low, or a loss of circuit protection if too high. Damage to the equipment and risk of fire may result.

5. Replace the Control Side Cover and secure with its screws.
6. Restore power to the unit and test for proper function.

TROUBLESHOOTING & DIAGNOSTICS

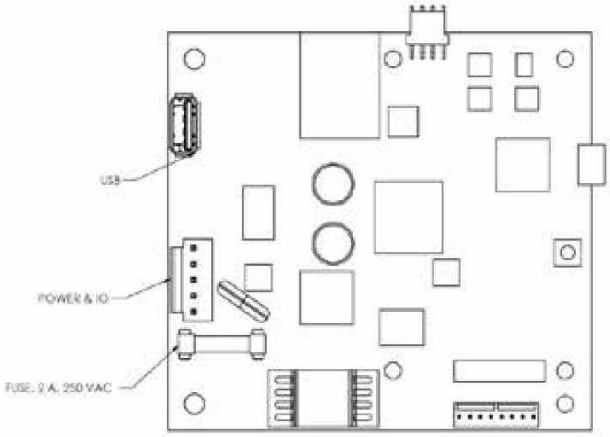
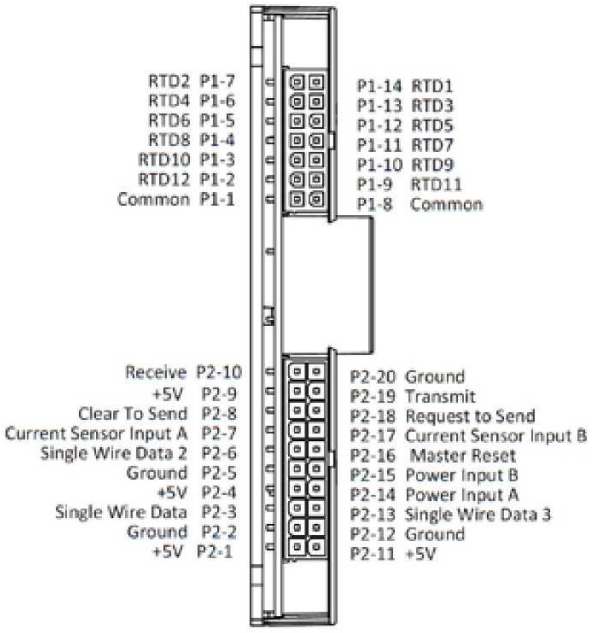
IRHS TROUBLESHOOTING FLOW CHART

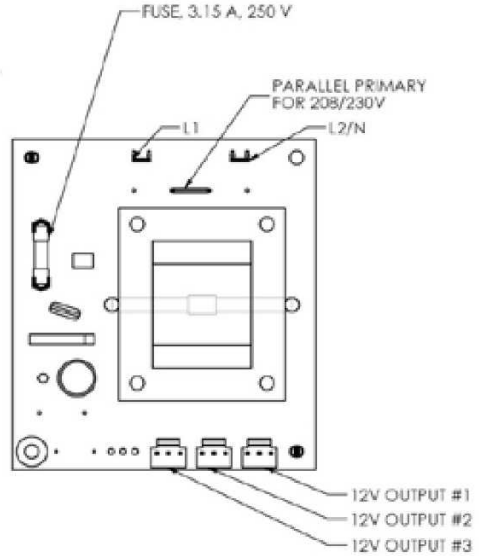
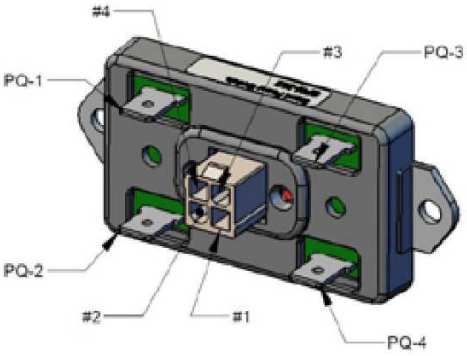


IRHS TROUBLESHOOTING GUIDE

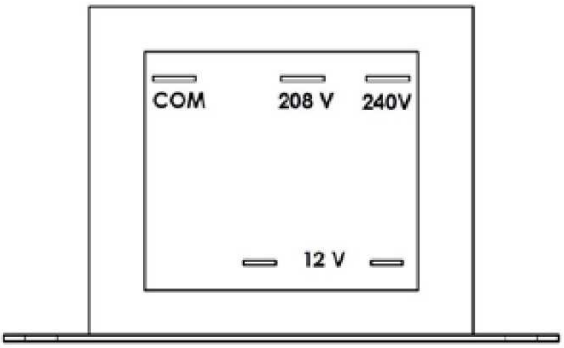
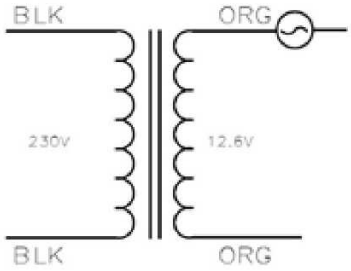
COMPONENT CHECK	STATE		POSSIBLE CONDITIONS	SOLUTION(S)
Unit Powered?			Unplugged	Plug Power Cord into correct receptacle
			Power Cord damaged	Repair/Replace Power Cord
			Circuit Breaker tripped	Reset panel breaker
			Faulty receptacle	Replace receptacle
			Fuse	Replace Fuse
			Wiring/Connectors	Trace and repair wiring
			On/Off Switch	Replace On/Off Switch
Timer (Menu) Bar Displays	Blank?	Both Bars	Transformer	Replace Transformer
			Controller	Replace Controller
			Keypad Display	Replace Keypad Display
			Wiring/Connectors	Trace and repair wiring
		Rear Bar Only	Wiring/Connectors	Trace and repair wiring
			IR Relay	Replace faulty relay
		Individual Keypad	Wiring/Connectors	Trace and repair wiring
			Keypad Display	Replace Keypad Display
	Showing Error Code	"SENS" or "HIGH"	RTD	Replace RTD (Temperature) Sensor
			RTD Board	Replace RTD Board
			Programming	Reprogram the unit
		"LOW"	RTD	Replace RTD (Temperature) Sensor
			RTD Board	Replace RTD Board
			Programming	Reprogram the unit
			High Limit Switch	Allow unit to cool and switch reset
				Replace High Limit Swith
		"BULB"	Wiring/Connectors	Trace and repair wiring
			IR Relay	Replace faulty relay
			Emitter (IR Bulb)	Replace Emitter (IR Bulb)
			Emitter Socket	Replace Emitter (IR Bulb) Socket
HeatSink (Bottom) Heating?			Programming	Reprogram the unit
			Controller	Replace Controller
			Heat Relay	Replace faulty relay
			RTD	Replace RTD (Temperature) Sensor
			RTD Board	Replace RTD Board
			Heat Element	Replace Heat Element
			High Limit Switch	Allow unit to cool and switch reset
				Replace High Limit Swith
			Wiring/Connectors	Trace and repair wiring
Emitters (IR Bulbs)	Not Operating?		Programming	Reprogram the unit
			Controller	Replace Controller
			Emitter (IR Bulb)	Replace Emitter (IR Bulb)
	Operating?		Glass Assembly cleanliness	Clean Glass Assembly
				Check Glass Assembly for damage/defect
			Lid usage	Ensure proper lid for product is used
Programming			USB Drive	Ensure USB drive is blank and download recipes
				Replace USB drive
			Website Programming	Reprogram the unit
			USB Port	Replace USB Port
			Wiring/Connectors	Trace and repair wiring
			Controller	Replace Controller
Daypart Switch			Heat Relay	Replace faulty relay
			Controller	Replace Controller
			Daypart Switch	Replace Daypart Switch
Lids/Pans			Proper fit	Verify proper proper lid and pan installation
			Glass Assembly	Check Glass Assembly for damage/defect
				Ensure Glass Assembly is correctly installed
			Non-Duke parts	Verify OEM information (packaging/labeling)

IRHS COMPONENT TECHNICAL SPECIFICATIONS

PART NO.	DESCRIPTION	SPECIFICATIONS
166112	ACM, Power Control Board (VISOR-only)	
166080	**Controller**; Renau HMC-34	
166017	**Emitter, IRHS**; 208 VAC	• 208 VAC; 340 (170 x 2) W (± 3%)
166018	**Emitter, IRHS**; 240 VAC	• 240 VAC; 340 (170 x 2) W (± 3%)
166004	**Heat Element**; 2-Wide, 208 VAC	• 208 VAC; 300 W
166005	**Heat Element**; 2-Wide, 240 VAC	• 240 VAC; 300 W
166007	**Heat Element**; 3-Wide, 208 VAC	• 208 VAC; 450 W
166008	**Heat Element**; 3-Wide, 240 VAC	• 240 VAC; 450 W
166009	**Heat Element**; 4-Wide, 208 VAC	• 208 VAC; 300 W
166010	**Heat Element**; 4-Wide, 240 VAC	• 240 VAC; 300 W

<table>
<tr><th>PART NO.</th><th>DESCRIPTION</th><th>SPECIFICATIONS</th></tr>
<tr><td>166082</td><td>Keypad Display; Up/Down
(all configurations)</td><td rowspan="2">• Input: 5 VDC
• Pins:
— Pin #1: GND
— Pin #2: 5 VDC
— Pin #3: Data In
— Pin #4: Data Out</td></tr>
<tr><td>166083</td><td>Keypad Display; Up/Up
(only with 3x4 configurations)</td></tr>
<tr><td>166111</td><td>Modular Jack (VISOR-only)</td><td>• 1.5 A; 125 VDC
• Torque: 12 Kgf/cm
• CAT 5
• IP67</td></tr>
<tr><td>120011</td><td>Power Control Board
(VISOR-only)</td><td>• Primary 208/230 VAC; Secondary: 12 VAC

</td></tr>
<tr><td>157830</td><td>Relay, Smart Power Module</td><td>• Max. Load Current: 20 Arms. Heat sinking required.
• Operating Voltage: 24-250 Vrms
• Input : 5V TTL


<table>
<tr><th colspan="2">Connector PIN Data</th></tr>
<tr><td>PQ-1</td><td>LOAD1-1</td></tr>
<tr><td>PQ-2</td><td>LOAD1-2</td></tr>
<tr><td>PQ-3</td><td>LOAD2-1</td></tr>
<tr><td>PQ-4</td><td>LOAD2-2</td></tr>
<tr><td>#1</td><td>+5V DC</td></tr>
<tr><td>#2</td><td>GND</td></tr>
<tr><td>#3</td><td>1-wire network IN</td></tr>
<tr><td>#4</td><td>1-wire network OUT</td></tr>
</table></td></tr>
</table>

PART NO.	DESCRIPTION	SPECIFICATIONS
158279	RTD Sensor	• Temperature Range: -65°F to 260°F
158312	Thermostat, High Limit	• Opens @ 300°F; Closes @ 270°F
155749	**Transformer;** 208/240 VAC	• Primary: 208/240 VAC; Secondary: 12 VAC 
156838	**Transformer;** 230 VAC	• Input: 230 VAC; 50/60 Hz; Output: 12.6 V @ 2.38 A 

OPERATIONS

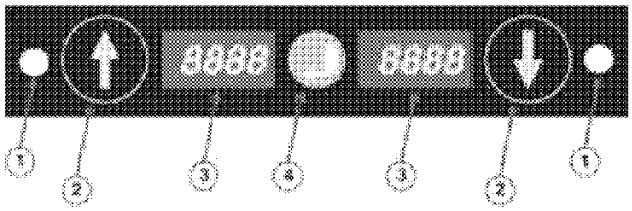
OPERATING PROCEDURES

- Ensure proper pan covers are inserted into the correct location for broiled products.
- Upon turning ON, allow the unit to heat until the menu bars display the pre-programmed product names. This does not occur before reaching proper temperature.

NOTE: If the menu bars display temperature at any time after the preheat period, discontinue use of the affected pan location(s) until the unit can be serviced.

OPERATIONS

Menu Bar Components

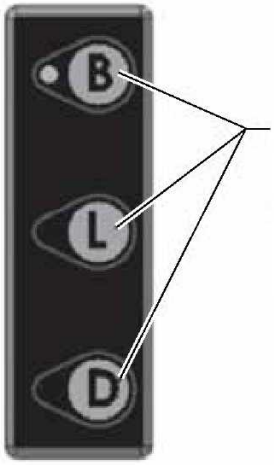


1. **Status LEDs.** Used for indicating status of pan.
   a. GREEN: Menu is Active – product in pan (use first)
   b. FLASHING GREEN: Cook Warning Time reached (cook more product) or keypad in edit (programming) mode
   c. NON-ILLUMINATED: Menu is inactive – no product in pan
2. **Arrow Buttons:**
   a. Used for starting/stopping/resetting the menu.
   b. Used to access Menu Mode.
   c. Indicate which pan the adjacent status LED and pan display are linked to.
3. **LED Displays:**
   a. Displays product name and hold time remaining (alternates between the two when the Menu is active).
   b. Once to temperature, product names can be viewed on the displays. Additional settings such as "LINK", "TIME", and "TEMP" can be viewed two different ways:
      1) Manually accessing Menu Mode through Menu Bars.
      2) Uploading unit settings from the IRHS to a USB Drive and viewing via the Internet. This is accomplished by using the same website used to download recipes.
4. **ENTER Button**. Used to access Menu Mode.

Changing Dayparts

There are two methods for selecting Dayparts:

1. Select the appropriate Daypart Button to switch between breakfast, lunch, and dinner menus. If necessary, the three (3) parts can be programmed for any three separate time periods – not just "breakfast", "lunch", and/or "dinner" menus.



PUSH BUTTONS TO CHANGE DAYPART MENU – CORRESPONDING LED WILL TURN ON (BREAKFAST SHOWN)

2. Via Menu Bar:

a. Enter Menu Mode by pressing and holding the ENTER button "↵" for three (3) seconds.

b. Status LED flashes, "**MENU**" is displayed on left Display, and either "**UP**" or "**DOWN**" is displayed on the right display – indicating which pan location information will be displayed/controlled.



c. After selecting the UP or DOWN Arrow, press the ENTER Button "↵" to accept.

d. Status LED stops flashing and "**MEAL ↵ SET1**" appears on the Display.



e. Press the ENTER button again. Status LED flashes indicating Menu Mode.

f. Use the arrow buttons to scroll to desired Daypart ("**MEAL ↵ SET1**", "**MEAL ↵ SET2**", or "**MEAL ↵ SET3**") and press the ENTER button to accept.



g. Status LED stops flashing, "**UPDATING**" is displayed for a few seconds, and then the desired Daypart ("**MEAL ↵ SETx**") is displayed.





h. Press the UP arrow button one last time to scroll to "**EXIT**" and press the ENTER button "↵" to exit Menu Mode.



Display Link, Hold Time, or Temperature

1. Enter Menu Mode by pressing and holding the ENTER button "↵" for three (3) seconds.
2. Status LED flashes, "**MENU**" is displayed on left Display, and either "**UP**" or "**DOWN**" is displayed on the right display – indicating which pan location information will be displayed/controlled.



3. After selecting the UP or DOWN arrow, press the ENTER Button "↵" to accept.
4. Status LED stops flashing and "**MEAL ↵ SET1**" appears on the Display.



5. Press the ENTER button "↵" again. Status LED flashes indicating edit mode.
6. Press the UP arrow button repeatedly to scroll up or down through "**LINK**", "**TIME**", and "**TEMP**". The DOWN arrow button can be used to cycle the opposite direction.



This indicates product named **BURG** is linked pan locations



This indicates the hold time for BURG



This indicates the Heat Sink Temperature for BURG

7. Press the UP arrow button one last time to scroll to "**EXIT**" and press the ENTER button "↵" to exit Menu Mode.



DIAGNOSTICS

Checking Heat Sink Temperature

- A surface temperature probe can be used to check the temperature of the heat sink surface.
- No pans should be in wells during the pre-heat and temperature check period. Pre-heat the holding unit for 30 minutes before taking any temperature readings.
- Ensure the pan location being measured is not in a hold cycle mode (timing down).
- Locate the surface temperature probe in the geometric center of the desired pan location. Make sure the probe is making good contact with the surface while taking readings.
- The temperature control will exhibit a swing in temperature as the control cycles on and off while regulating to the set point temperature. The average of several readings taken should be +/- 5°F from the set point.
- Compare the measured temperature to the programmed heat sink set point (TEMP) for the specified pan location.

Checking IR Bulb Function

- IR bulbs are either ON or OFF.
- Select an arrow to initiate a hold cycle.
- After heat up is complete (display will show product names), visually confirm the IR bulb comes on.

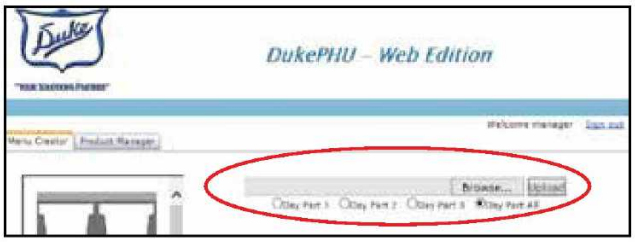
Checking Product Settings (via USB file)

1. Turn the IRHS on and wait for temperature or product names to display.
2. Insert a **blank** USB drive (any size) into the USB port. The USB port LED will light solid green and a single chirp should be heard.
3. The display will go blank and the USB port LED will begin flashing green.
4. A second chirp should be heard, then the USB port LED will return to solid green indicating that the file has successfully uploaded from the IRHS to the USB drive.
5. Remove the USB drive from the port.
6. To view the settings file on the Internet, log onto the same website used to download recipes:

   www.dukemfg.info/bkirhs

   User Name: "**manager**"

   Password: "**password**" (case sensitive)



Error Codes

The RTD Board performs a routine, internal check after turning the unit on to validate the unit is sensing temperature and heating properly. In the event of a problem, an error will display on the Menu Bar:

"BULB" – IR Bulb Circuit Fault

Indicates a fault with a specified IR Bulb circuit. The affected pan location is not available for timing product and a qualified service technician should be contacted to identify the cause of the fault.

"LOW" – Under-Temperature Fault

Indicates a fault with a heating circuit component. The display will show "**LOW**" if the temperature stays 10°F below the set point temperature for 30 minutes. The affected pan location is not available for timing product and a qualified service technician should be contacted to identify the cause of the fault.

"HIGH" – Over-Temperature Fault

Indicates a fault with a heating circuit component. The display will show "**HIGH**" if the temperature stays 10°F above the set point temperature for 30 minutes. The affected pan location is not available for timing product and a qualified service technician should be contacted to identify the cause of the fault.

"SENS" – Sensor Fault

May indicate the unit has been programmed improperly (i.e., loading a 2x4 product configuration file into a 2x2 unit). An attempt to properly reprogram the unit should be made.

May indicate a fault with a heat sink temperature sensor. The affected pan location is not available for timing product and a qualified service technician should be contacted to identify the cause of the fault.

Temperature Check Procedure

1. **No pans should be in wells during the pre-heat and temperature check.** Pre-heat the warmer for 30 minutes before taking any temperature readings. Do not take readings unless the cavity has been empty for 30 minutes. This will allow the temperature to stabilize and will prevent false readings.
2. A digital temperature meter that has been calibrated must be used to get an accurate temperature reading. Use a thermocouple surface temperature probe to measure temperatures.
3. The heating well should be cleaned and empty before the temperature is checked. Avoid any air drafts that might flow through the cavity.
4. Locate the surface temperature probe on the bottom of the first cavity as shown for the cabinet size.
5. All temperature controls exhibit a swing in temperature as the control cycles on and off while regulating to the set point. The correct calibration temperature is the average of several readings taken over a period of 20 minutes after the warmer has been pre-heated. The average temperature should be ± 5°F from the set point.

CLEANING & ROUTINE MAINTENANCE

CLEANING

IF DAILY CLEANING IS PERFORMED ROUTINELY, DEEPER, MORE AGGRESSIVE, CLEANING METHODS CAN BE AVOIDED. OVER LONGER PERIODS OF TIME, FRIED FOOD PRODUCTS CAN ACCUMULATE AND BAKE ON SURFACES OF THE COMPARTMENTS.

Cleaning solutions need to be alkaline based or non-chloride cleaners. Any cleaner containing chlorides will damage the protective film of the stainless steel. Chlorides are also commonly found in hard water, salts and household and industrial cleaners. If cleaners containing chlorides are used, be sure to rinse repeatedly and dry thoroughly upon completion.

WARNING: NEVER USE AN ACID BASED CLEANING SOLUTION!

MANY FOOD PRODUCTS HAVE AN ACIDIC CONTENT WHICH CAN DETERIORATE THE FINISH. BE SURE TO CLEAN ALL FOOD PRODUCTS FROM ANY STAINLESS STEEL SURFACE. COMMON ITEMS INCLUDE, TOMATOES, PEPPERS AND OTHER VEGETABLES.

Routine cleaning of stainless steel can be done with soap and water. Extreme stains or grease should be cleaned with a non-abrasive cleaner and plastic scrub pad. It is always good to rub with the grain of the steel.

Early signs of stainless steel breakdown can consist of small pits and cracks. If this has begun, clean thoroughly and start to apply stainless steel cleaners in attempt to restore and preserve the finish of the steel's protective layer.

RECOMMENDED SUPPLIES

- Cleaning Towels
- Non-Scratch Scrub Pad
- SYR Cleaning Brush Tool
- Kay Super Concentrate Degreaser
- Kay-5® Sanitizer/Cleaner, or compatible sanitizer

DAILY INSPECTION CHECKLIST

Inspect glass daily for chips, cracks, or breaking. Discard all food and notify manager if any chips, cracks, or broken glass are found. Do not use equipment. All glass must be in good condition before using equipment to hold food.

- Make sure the unit is free of any grease or visible food soils.
- Make sure the exterior of the unit is free of smudges or soil.
- Make sure the unit holding pans are free of damage and any food soil residue.

DAILY CLEANING PROCEDURES

Never use a high-pressure water wash for this cleaning procedure as water can damage electrical components.

1. Turn unit off, unplug, and allow to cool for at least 10 minutes.
2. Remove all holding pans and covers. Wash, rinse, and sanitize at the 3-compartment sink.
3. Allow to air dry.
4. Fully clean all the heat sink surfaces. Spray the cleaning brush tool with degreaser and use as shown – gently sliding in and out of each compartment.

   NOTE: NEVER USE STEEL PADS, WIRE BRUSHES, OR SCRAPERS!



5. Fully clean upper glass surfaces by hand. Spray a cleaning towel, or non-scratch scrub pad when necessary, with soapy solution degreaser.

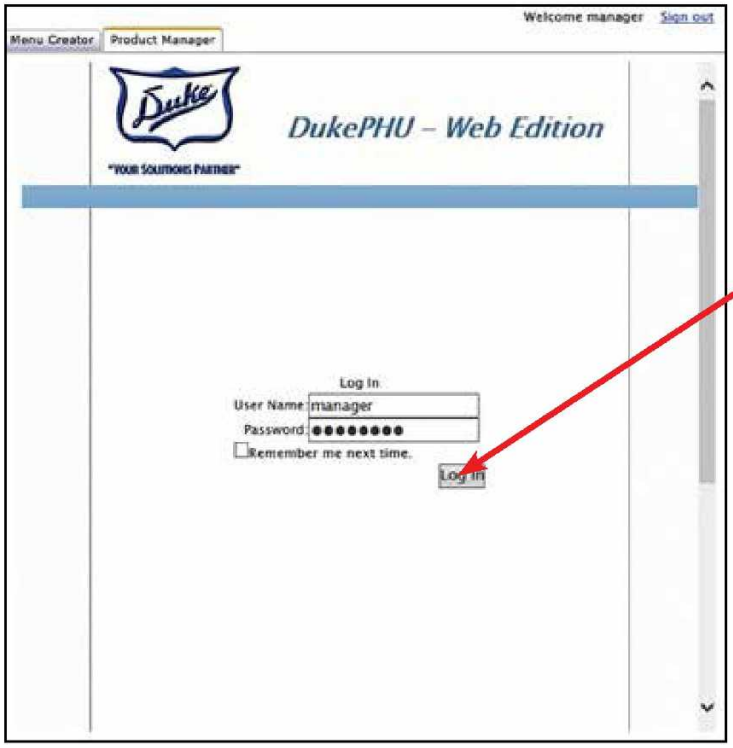
   NOTE: Never spray cleaning solution directly onto the cabinet.

6. Use sanitizer-soaked towels to wipe out all interior compartments on the unit. Wipe the top compartments first, then the remaining levels from top to bottom.

   IMPORTANT: Use clean, sanitizer-soaked towels (towels must be wrung out so that they are damp and not dripping, dripping towels may harm the unit)

WEBSITE PROGRAMMING

1.



Log on.

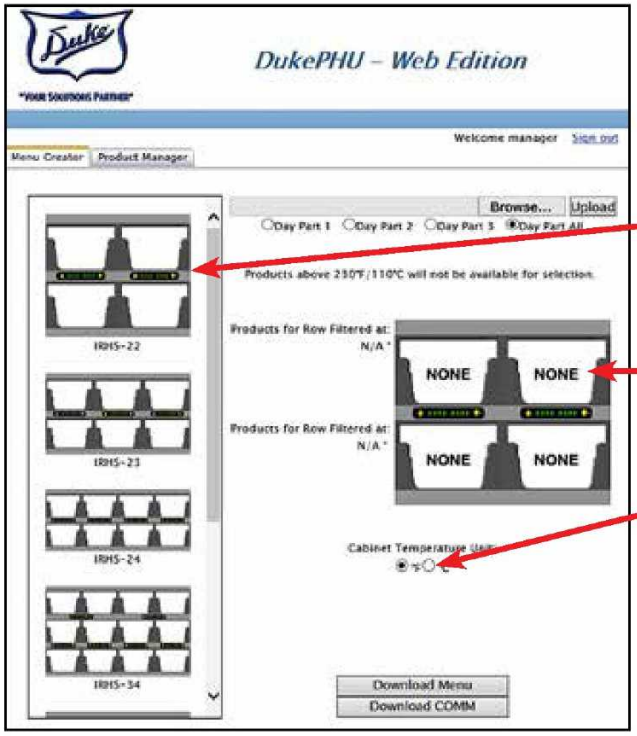
www.dukemfg.info/bkirhs

User Name: **manager**

Password: **password**

(case sensitive)

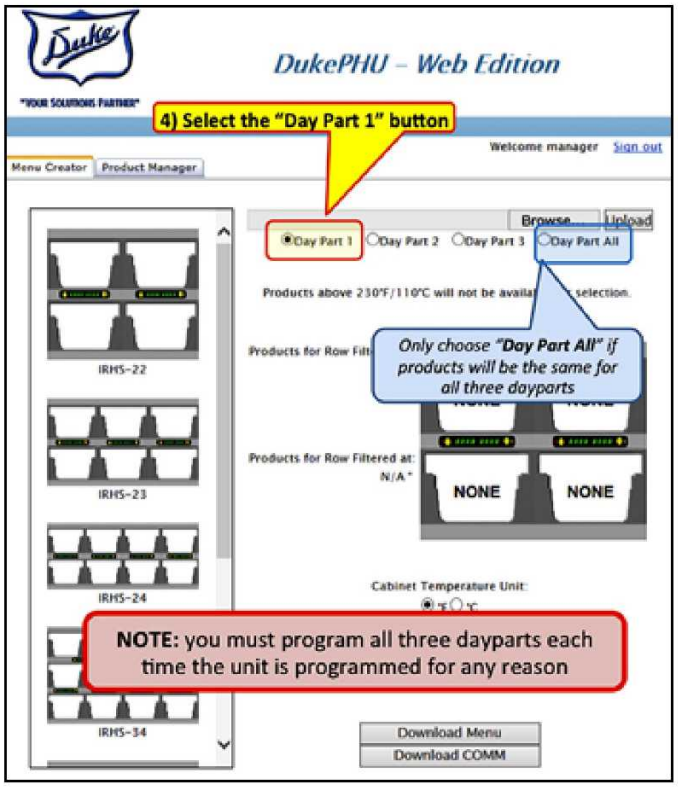
2.



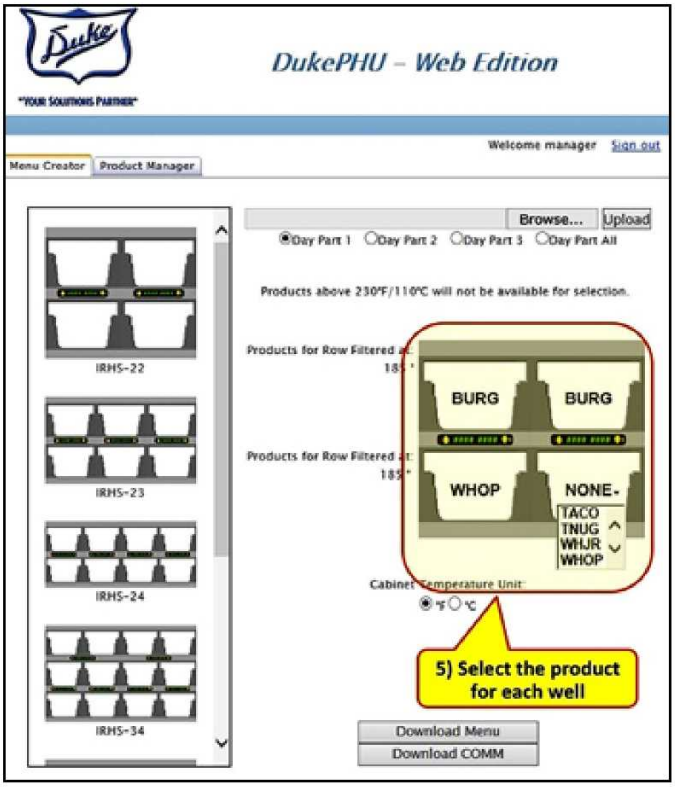
NOTE: When you first log onto this page, you must:

1) Select the desired equipment configuration on the left, before it will…
2) …show up on the right side in order to be programmed.
3) If necessary, change the Cabinet Temperature Unit to "°C" (Celsius)

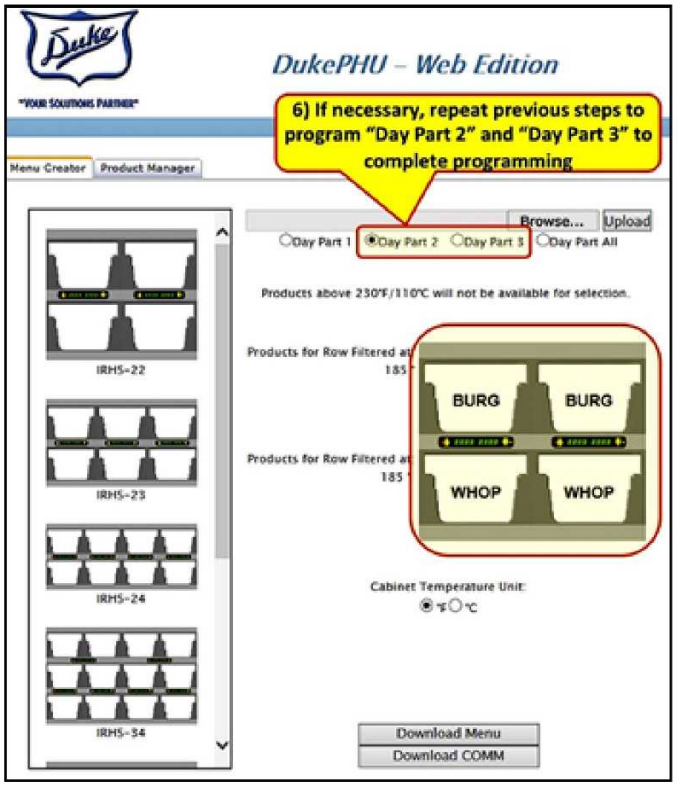
3.


DukePHU – Web Edition
4) Select the "Day Part 1" button
Only choose "Day Part All" if products will be the same for all three dayparts
NOTE: you must program all three dayparts each time the unit is programmed for any reason
Download Menu
Download COMM

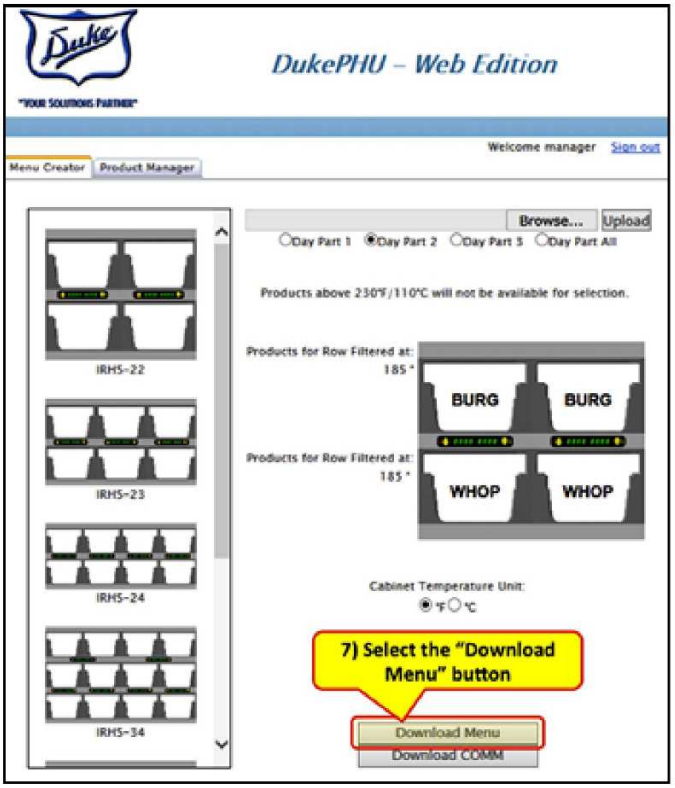
4.


DukePHU – Web Edition
BURG
BURG
WHOP
NONE
TACO
TNUG
WHJR
WHOP
5) Select the product for each well
Download Menu
Download COMM

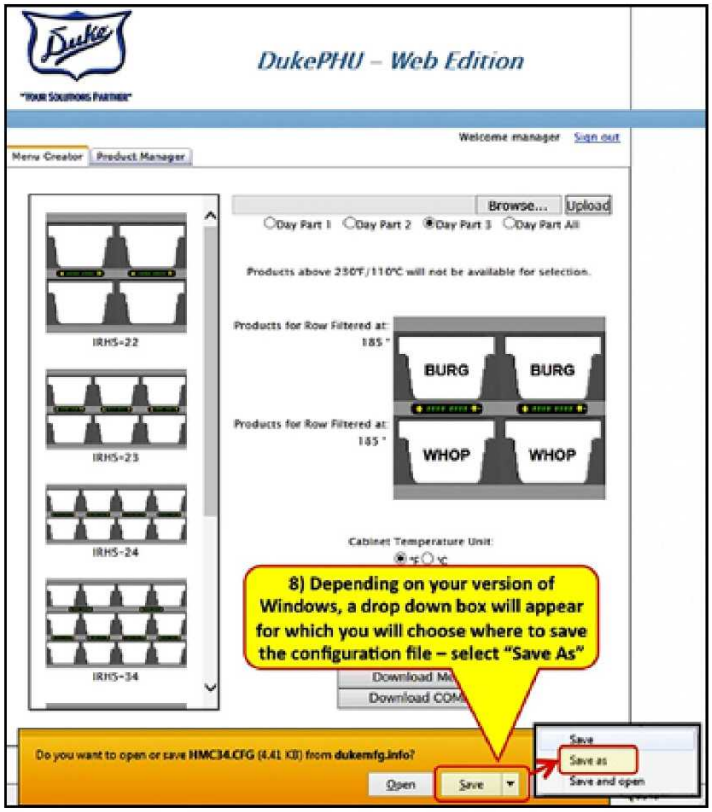
5.


DukePHU – Web Edition
6) If necessary, repeat previous steps to program "Day Part 2" and "Day Part 3" to complete programming
BURG
BURG
WHOP
WHOP
Download Menu
Download COMM

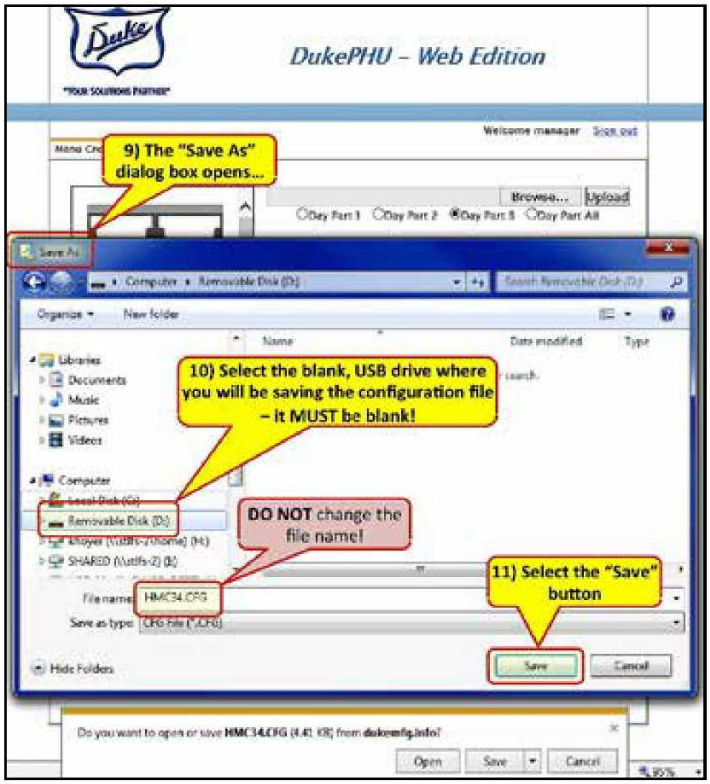
6.


DukePHU – Web Edition
BURG
BURG
WHOP
WHOP
7) Select the "Download Menu" button
Download Menu
Download COMM

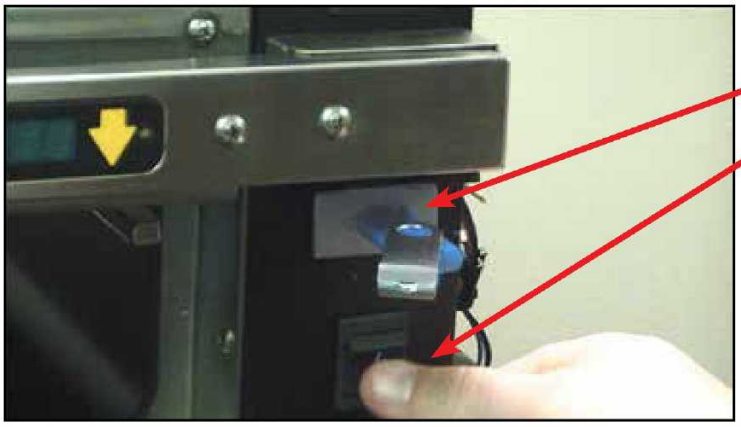
7.


DukePHU – Web Edition
Welcome manager Sign out
Menu Creator
Product Manager
Browse...
Upload
Day Part 1
Day Part 2
Day Part 3
Day Part All
Products above 230°F/110°C will not be available for selection.
Products for Row Filtered at: 185°
BURG
BURG
Products for Row Filtered at: 185°
WHOP
WHOP
IRHS-22
IRHS-23
IRHS-24
IRHS-34
Cabinet Temperature Unit:
8) Depending on your version of Windows, a drop down box will appear for which you will choose where to save the configuration file – select "Save As"
Download M
Download COM
Do you want to open or save HMC34.CFG (4.41 KB) from dukemfg.info?
Open
Save
Save
Save as
Save and open

8.

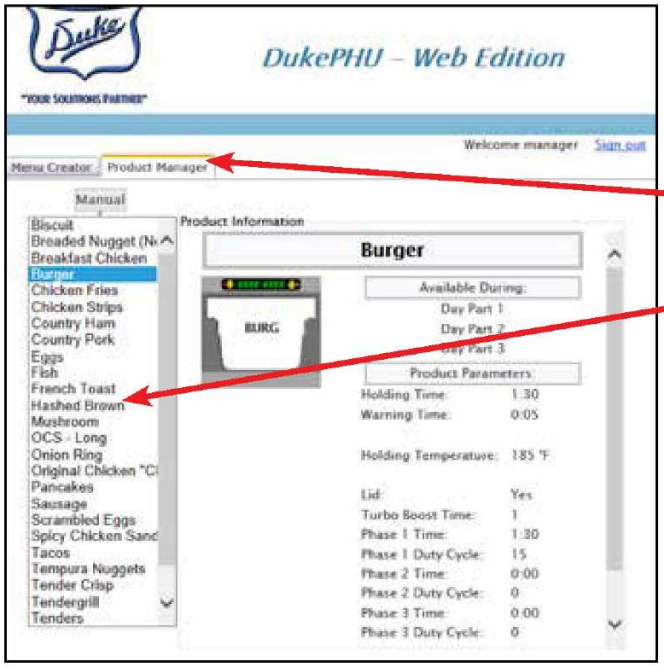

DukePHU – Web Edition
Welcome manager Sign out
9) The "Save As" dialog box opens...
Browse...
Upload
Day Part 1
Day Part 2
Day Part 3
Day Part All
Save As
Computer
Removable Disk (D:)
Organize
New folder
Name
Date modified
Type
Libraries
Documents
Music
Pictures
Videos
Computer
Removable Disk (D:)
10) Select the blank, USB drive where you will be saving the configuration file – it MUST be blank!
DO NOT change the file name!
File name: HMC34.CFG
Save as type:
11) Select the "Save" button
Hide Folders
Save
Cancel
Do you want to open or save HMC34.CFG (4.41 KB) from dukemfg.info?
Open
Save
Cancel

Unit Programming Instructions



1) Power off the unit.
2) Insert the flash drive into the USB slot.
3) Power on the unit.
4) The program will automatically be installed. *The unit will chirp a few times, the Emitters will cycle, and the display shows different displays while programming is in progress*
5) Programming is complete when Menu Bar indicates the updated products and/or temperatures in all displays.

Product Manager Tab

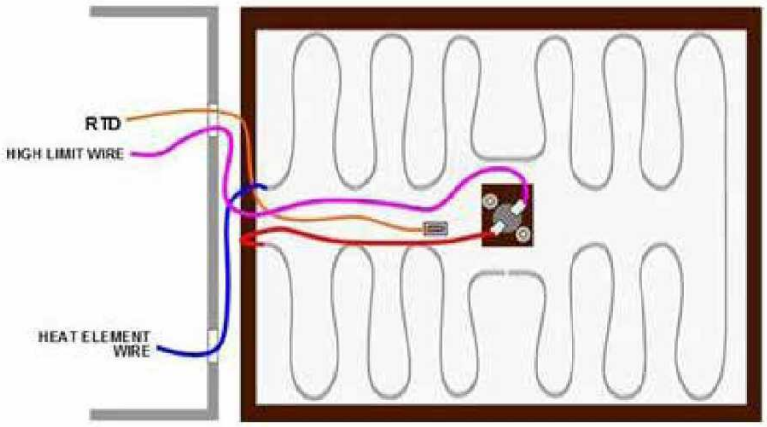


Select this tab...

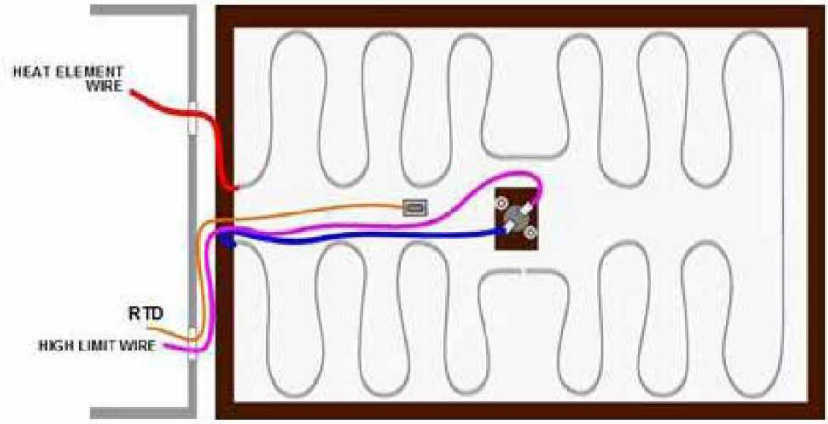
...and then a product on the left side of the screen to view hold settings for various products.

IRHS DECK WIRING

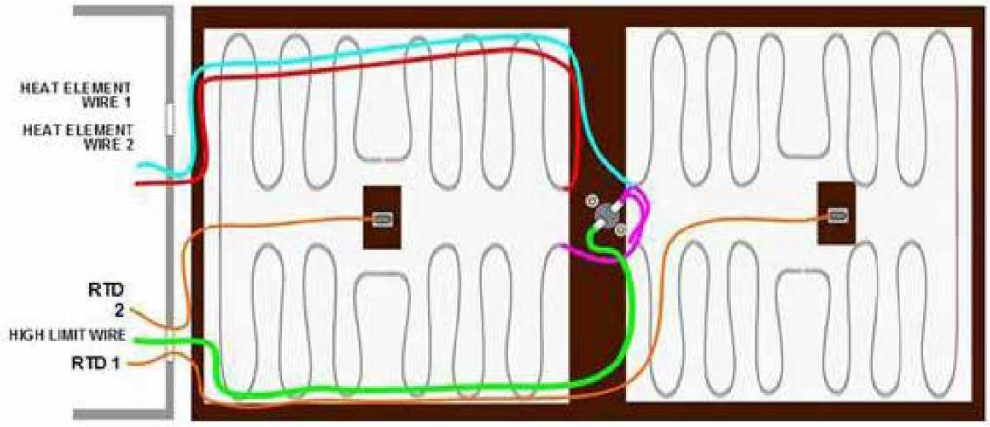
2 WIDE, LEFT SIDE CONTROL



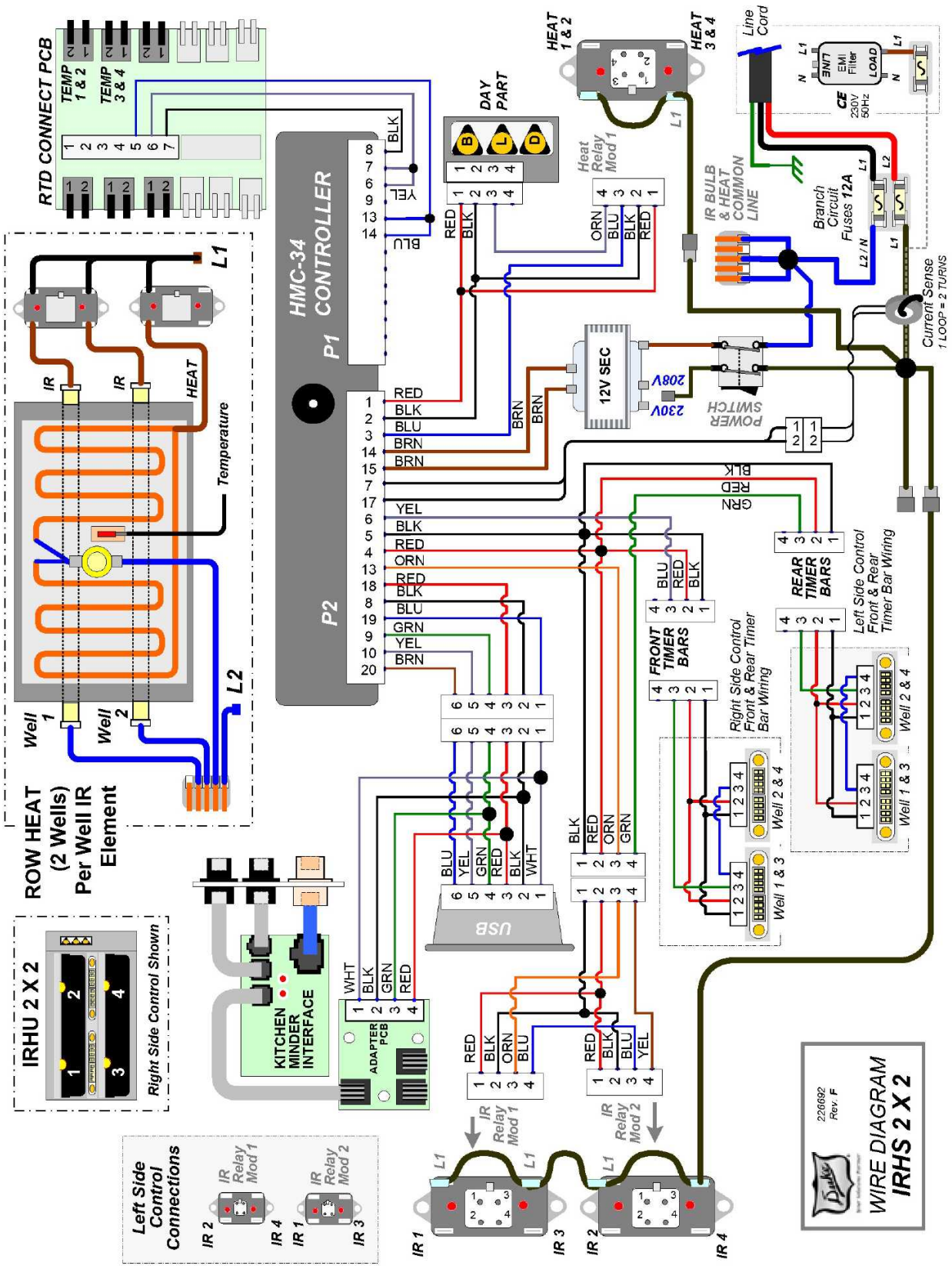
3 WIDE, RIGHT SIDE CONTROL



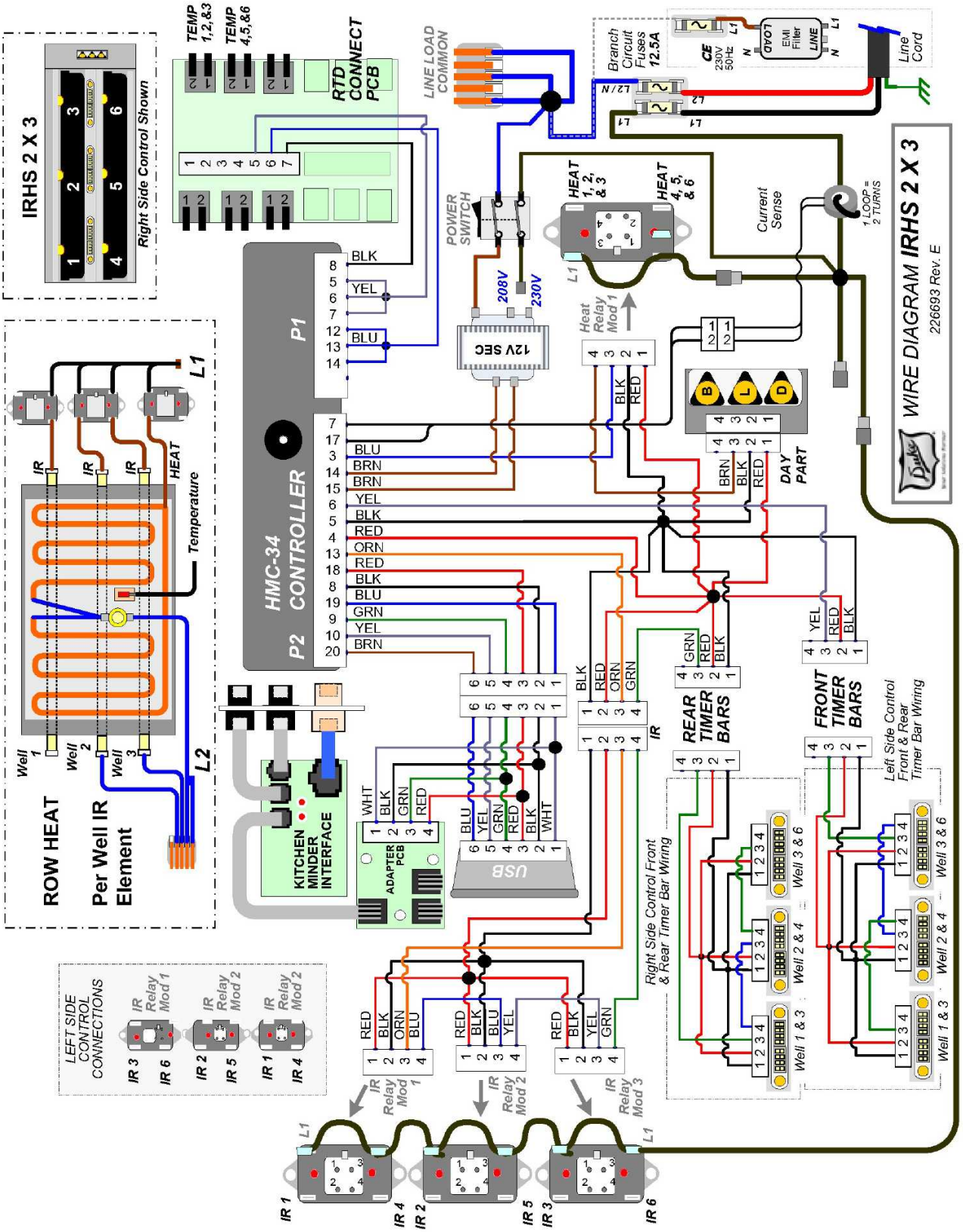
4 WIDE, RIGHT SIDE CONTROL



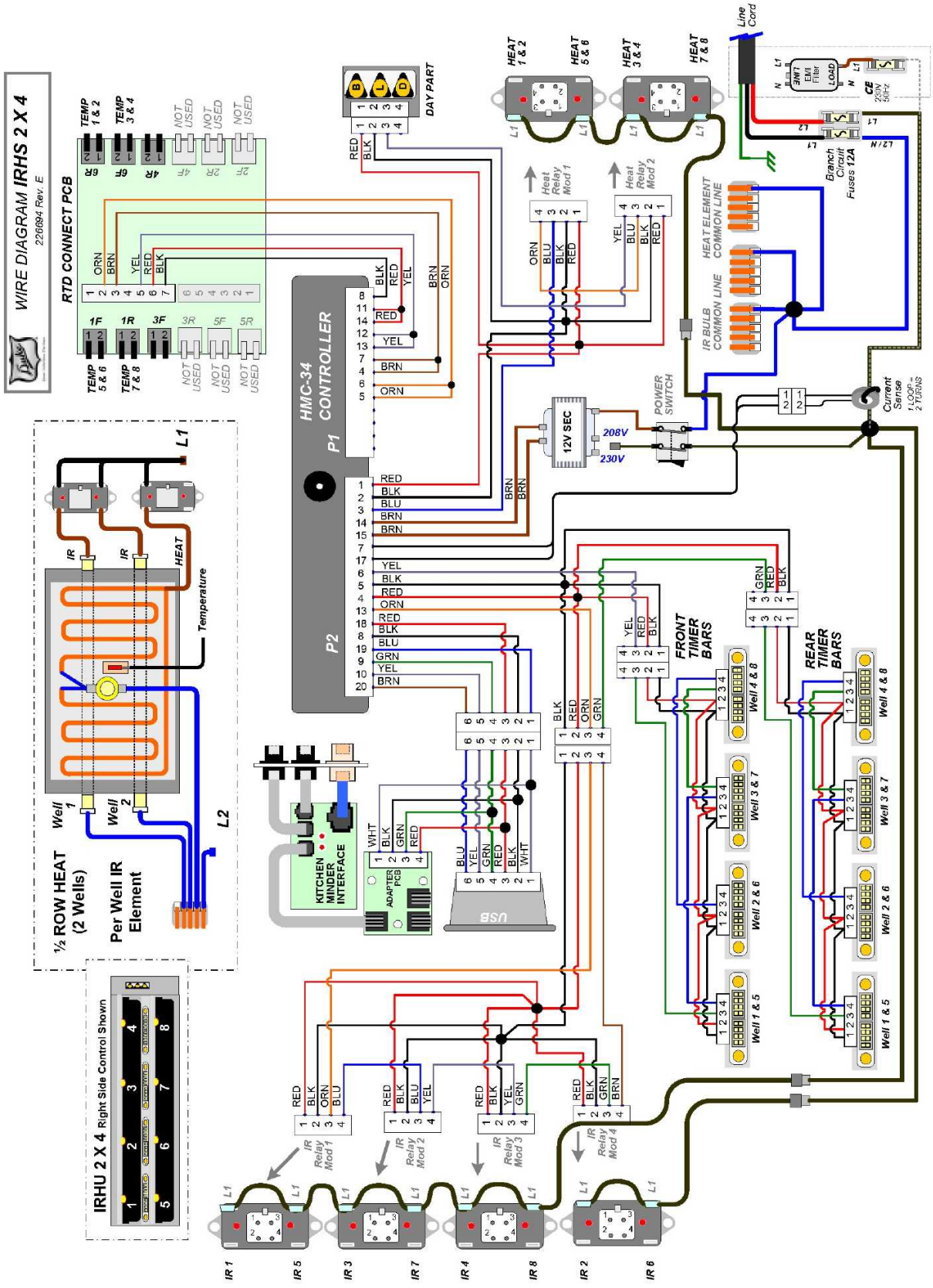
IRHS22 WIRING DIAGRAM



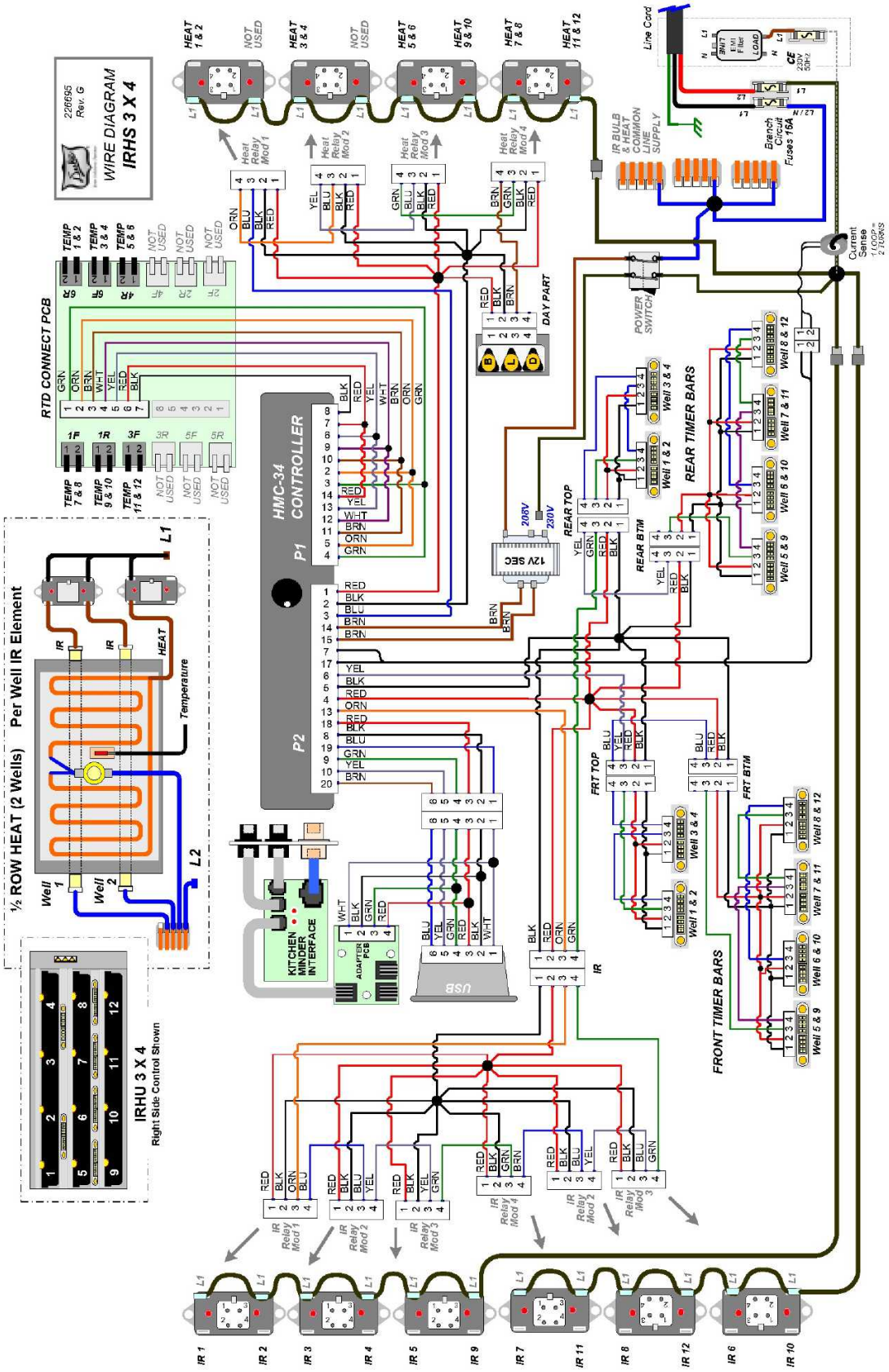
IRHS23 WIRING DIAGRAM



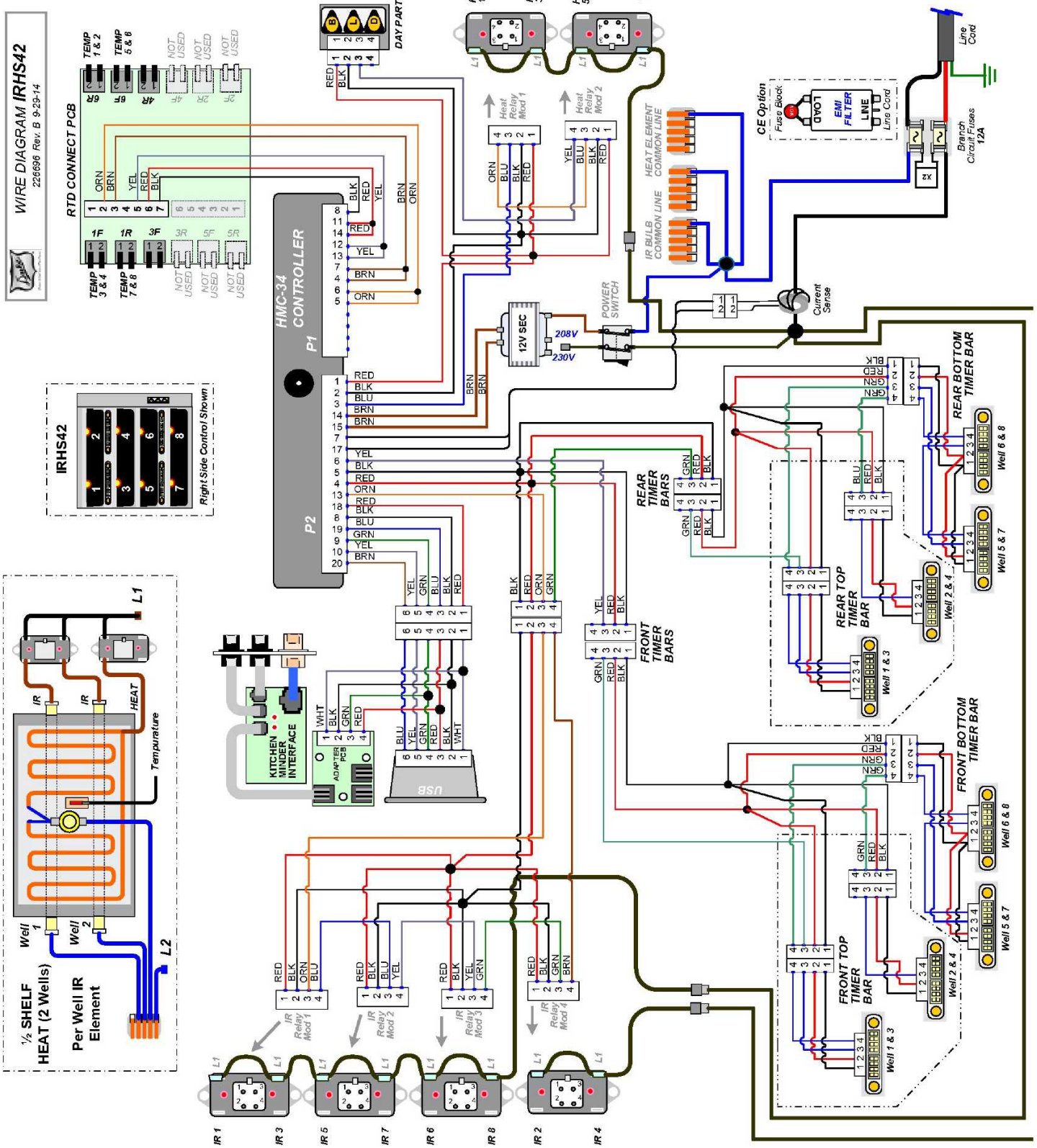
IRHS24 WIRING DIAGRAM



IRHS34 WIRING DIAGRAM



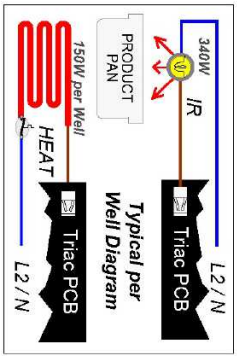
IRHS42 WIRING DIAGRAM

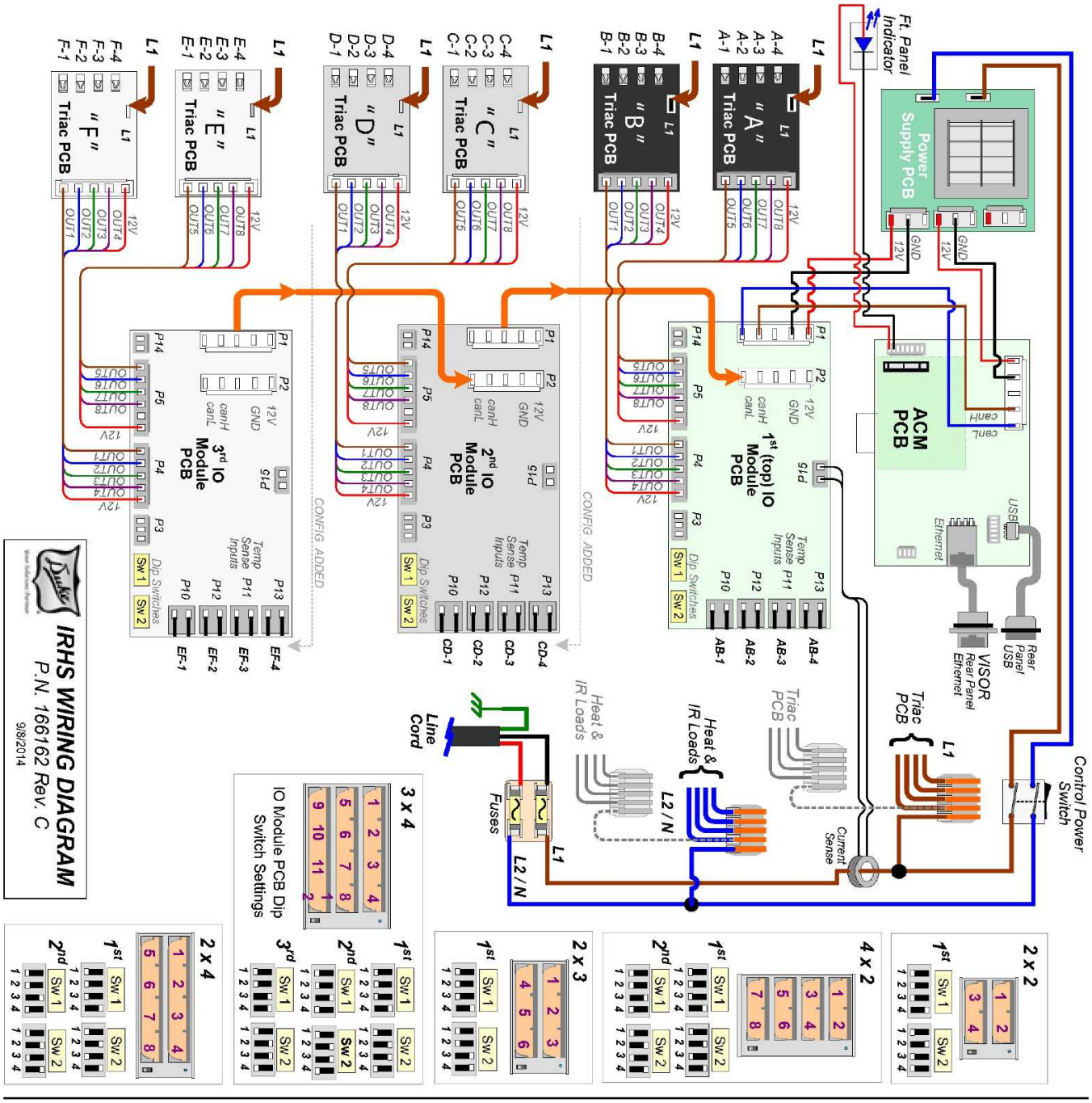


VISOR INTERFACE CABLE WIRING DIAGRAM

Heat & IR Load Connections

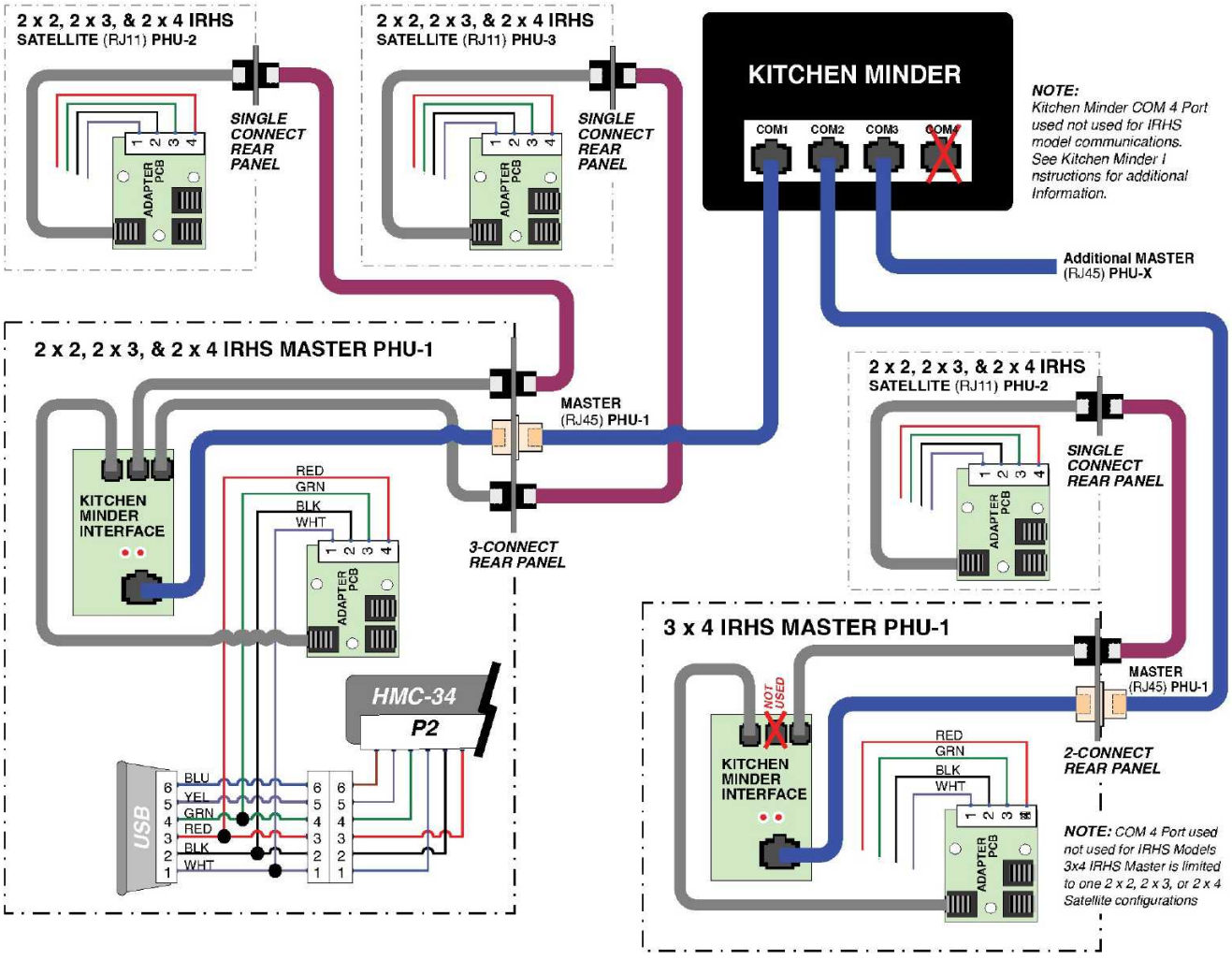
2 x 2	Heat	IR Bulb	Temp.
Well 1	B-1	A-1	AB-1
Well 2		A-2	
Well 3	B-3	A-3	AB-3
Well 4		A-4	
4 x 2	**Heat**	**IR Bulb**	**Temp.**
Well 1	B-1	A-1	AB-1
Well 2		A-2	
Well 3	B-3	A-3	AB-3
Well 4		A-4	
Well 5	D-1	C-1	CD-1
Well 6		C-2	
Well 7	D-3	C-3	CD-3
Well 8		C-4	
2 x 3	**Heat**	**IR Bulb**	**Temp.**
Well 1	B-1	A-1	AB-1
Well 2		A-2	
Well 3		A-3	
Well 4	B-3	A-4	AB-3
Well 5		B-2	
Well 6		B-4	
2 x 4	**Heat**	**IR Bulb**	**Temp.**
Well 1	B-1	A-1	AB-1
Well 2		A-2	
Well 3	B-3	A-3	AB-3
Well 4		A-4	
Well 5	B-3	B-2	AB-3
Well 6		B-4	
3 x 4	**Heat**	**IR Bulb**	**Temp.**
Well 1	B-1	A-1	AB-1
Well 2		A-2	
Well 3	B-3	A-3	AB-3
Well 4		A-4	
Well 5	D-1	C-1	CD-1
Well 6		C-2	
Well 7	D-3	C-3	CD-3
Well 8		C-4	
Well 9	F-1	E-1	EF-1
Well 10		E-2	
Well 11	F-3	E-3	EF-3
Well 12		E-4	





KITCHEN MINDER CONNECTIONS
(OPTIONAL UPGRADE; NOT AVAILABLE ON STANDALONE UNIT)

MASTER	SATELLITE 1	SATELLITE 2
IRHS22 (2X2)	2X2. 2X3, 2X4, 4X2	2X2. 2X3, 2X4, 4X2
IRHS23 (2X3)	2X2. 2X3, 2X4, 4X2	2X2. 2X3, 2X4, 4X2
IRHS24 (2X4)	2X2. 2X3, 2X4, 4X2	2X2. 2X3, 2X4, 4X2
IRHS34 (3X4)	NOT AVAILABLE	2X2. 2X3, 2X4
IRHS42 (4X2)	2X2. 2X3, 2X4, 4X2	2X2. 2X3, 2X4, 4X2



NOTES

CUSTOMER ASSISTANCE

To aid in reporting this unit in case of loss or theft, please record below the model number and serial number located on the unit. We also suggest you record all the information listed and retain for future reference.

MODEL NUMBER:	**SERIAL NUMBER:**
DATE OF PURCHASE:	
DEALER:	**TELEPHONE:**
SERVICER:	**TELEPHONE:**

FOR WARRANTY, PARTS & SERVICE:

DUKE CORPORATE,
CANADA, LATIN AMERICA

2305 N. Broadway
St. Louis, MO 63102
Phone: 314-231-1130
Toll Free: 800-735-3853
Fax: 314-231-2460
service-dispatch@dukemfg.com

DUKE ASIA PACIFIC

Duke Manufacturing
No.3 Building
Lane 28, Yu Lv Road
Malu Town, Jiading District
Shanghai 201801, China
Phone: +86 21 59153525 / 59153526
Fax: +86 21 33600628
service.asiapac@dukemfg.com

DUKE EMEA - EUROPE,
MIDDLE EAST, AFRICA, RUSSIA

Duke Manufacturing CR, s.r.o.
Na Dlouhem 86
Jazlovice, Ricany
Building number DC 4 on the
ProLogis Park Prague D1 West
Prague 251 01
Czech Republic
Phone: +420 323 608 193
Fax: +420 323 608 144
service.emea@dukemfg.com

DUKE EMEA – UK, IRELAND

Phone: +44 (0) 1395 234140
Fax: +44 (0) 1395 234154
service.emea@dukemfg.com

TO ACCESS INTERNET: www.dukemfg.com

Please provide the following information when you write or call: model number, serial number, date of purchase, your complete mailing address (including zip code), and description of the problem.


Duke
Your Solutions Partner

E-MAIL 7

From: Scotty Loyd [/O=DUKEMFGCO/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=SCOTTY LOYD]
Sent: 7/24/2015 5:16:58 PM
To: sarahcammilleri63013@gmail.com
CC: Sue Sciuto [ssciuto@dukemfg.com]
Subject: RE: IRHS
Attachments: SM-PH-IH-0003 Infrared Heatsink Holding Unit.pdf

---

From: Sue Sciuto
Sent: Friday, July 24, 2015 11:59 AM
To: Scotty Loyd
Subject: FW: IRHS

Scotty – See below. If you can answer these questions, can you please reply to Sarah?

Thanks
Sue

From: Sarah Cammilleri [mailto:sarahcammilleri63013@gmail.com]
Sent: Friday, July 24, 2015 11:15 AM
To: Sue Sciuto
Cc: James Cammilleri; Steven Vann
Subject: IRHS

Sue

Are there programming instructions for these IRHS units?

We installed last night , but couldn't find programming instructions, also I need to know what I need to order to hook these up to the kitchen minder for timing.

Also I need the diagram as to how the fry station and expo station is all suppose to be plugged in. We have power to everything because we plugged in seperetely but we believe it wasn't the correct way .

Please advise

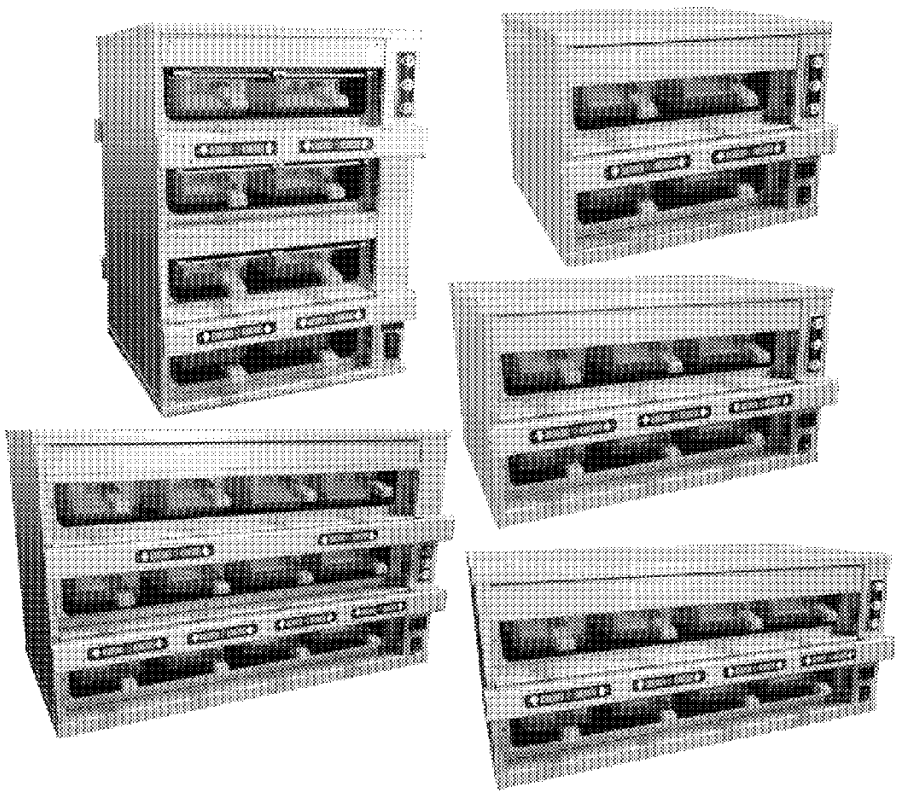
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Sarah Cammilleri
JSC Hamburg Operating Company LLC.
Franchisee Burger King 885,1798, 9096 &11420
sarahc@jscmanagementgroup.com 585.590.0137

Your Solutions Partner

Service Manual

INFRARED HEATSINK™ HOLDING UNIT

Includes Standalone, Kitchen Minder and VISOR models



MODELS
IRHS22
IRHS23
IRHS24
IRHS34
IRHS42

Please read this manual completely before attempting to install, operate or service this equipment.

This document is prepared for trained Duke service technicians. It is not to be used by anyone not properly qualified to perform these procedures.

This Service Manual is not all encompassing. If you have not been trained on servicing this product, be sure to read the manual completely before attempting servicing. Be sure all necessary tools, test equipment, and skills are available. Those procedures for which you do not have the proper skills and test equipment must be performed only by a qualified Duke trained service technician.

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Duke Manufacturing Co.

2305 North Broadway • St. Louis, MO 63102-1405
Phone: 314-231-1130 • Toll Free: 1-800-735-3853 • Fax: 314-231-5074
service-dispatch@dukemfg.com • www.dukemfg.com

IMPORTANT WARNING AND SAFETY INFORMATION

READ THIS MANUAL THOROUGHLY BEFORE OPERATING, INSTALLING OR PERFORMING MAINTENANCE ON THE EQUIPMENT.

⚠ WARNING READ THIS MANUAL THOROUGHLY BEFORE OPERATING, INSTALLING OR PERFORMING MAINTENANCE ON THE EQUIPMENT

⚠ WARNING FAILURE TO FOLLOW INSTRUCTIONS IN THIS MANUAL CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.

⚠ WARNING DO NOT USE OR STORE GASOLINE OR OTHER FLAMMABLE VAPORS OR LIQUIDS IN THE VICINITY OF THIS OR ANY OTHER APPLIANCE.

⚠ WARNING DO NOT OPERATE THIS EQUIPMENT WITHOUT PROPERLY PLACING AND SECURING ALL COVER AND ACCESS PANELS.

⚠ WARNING IMPROPER INSTALLATION, ADJUSTMENT, ALTERATION, SERVICE OR MAINTENANCE CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH. READ THE INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS THOROUGHLY BEFORE INSTALLING THIS EQUIPMENT.

FOR YOUR SAFETY

Electricity and water do not mix. Unplug the unit before cleaning. If repairs are required, use a qualified service agent. While repairs are being made, be sure the unit is not plugged in. Do not store highly combustible substances on or near the unit. Be sure the compressor compartment has adequate ventilation.

CAUTION

Observe the following:

- Provide and maintain adequate minimum clearances from all walls and combustible materials.
- Provide and maintain adequate clearance for air openings.
- Keep the equipment area free and clear of combustible material.
- Operate equipment only on the type of electricity indicated on the specification plate.
- Retain this manual for future reference.

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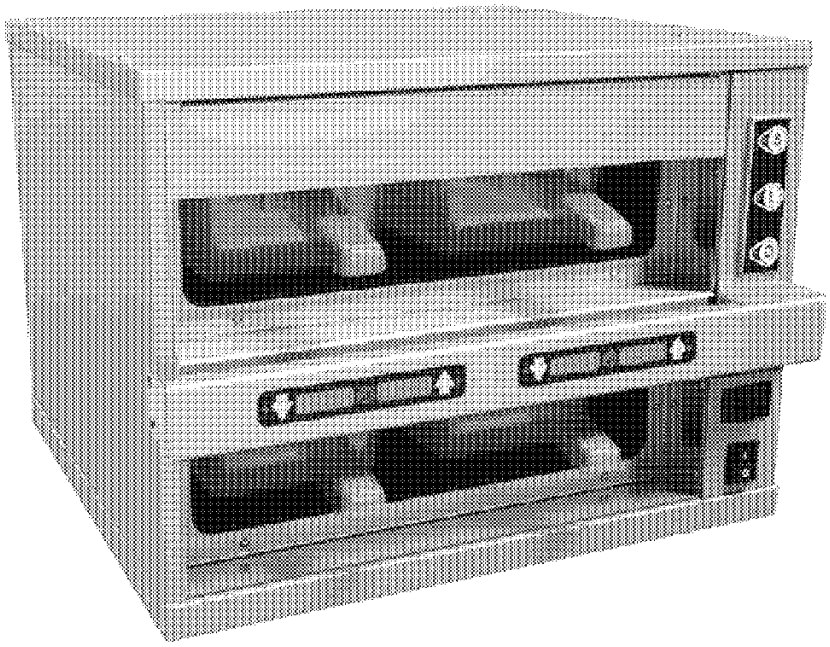
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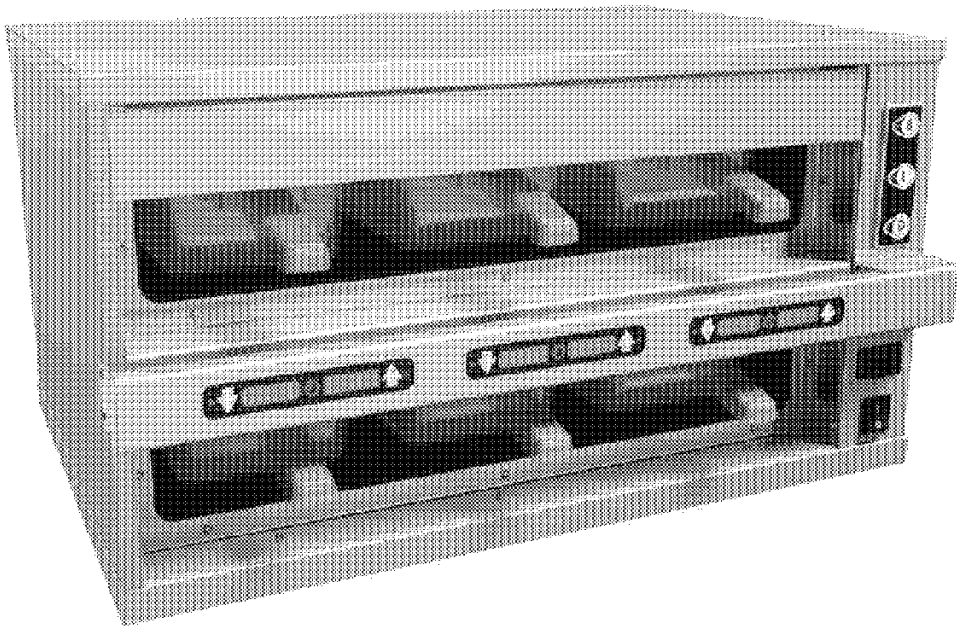
SPECIFICATIONS

IRHS22



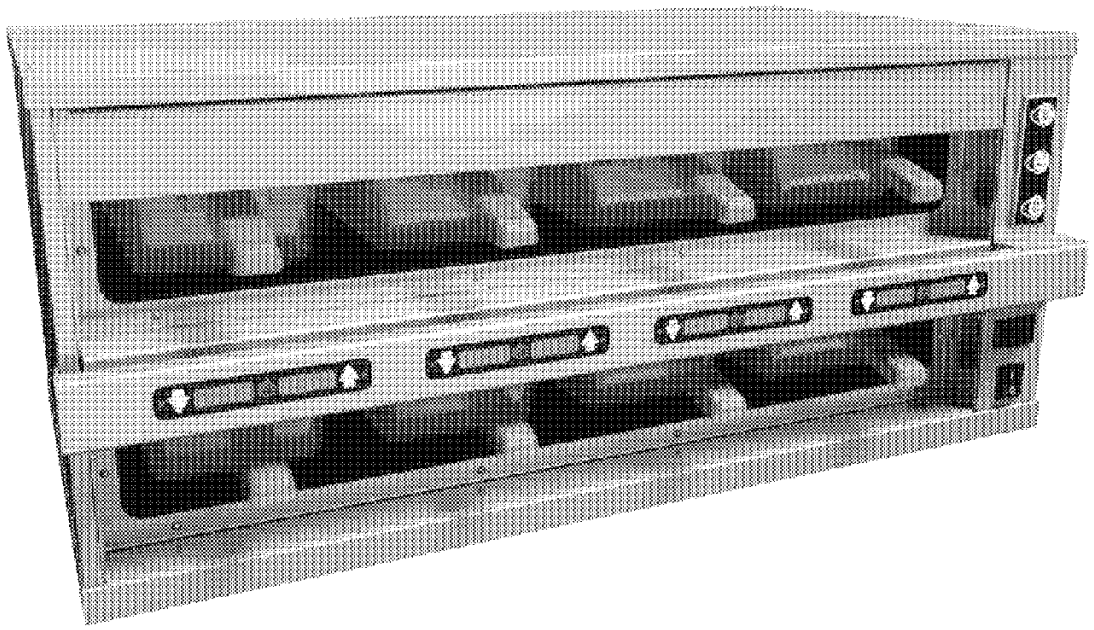
			Before Serial# 10140480 (10/1/14)			*As of Serial# 10140480*		
		Shipping Weight	125 lbs / 56.7 kg			110 lbs / 49.9 kg		
Model	**Electrical**	**Plug**	**H**	**W**	**D**	**H**	**W**	**D**
IRHS22-208	208V ~ 12 A, 50/60 Hz	NEMA 6-15P	14.4 in / 36.6 cm	19.3 in / 49.0 cm	20.1 in / 51.1 cm	13.3 in / 33.8 cm	19.3 in / 49.0 cm	20.1 in / 51.1 cm
IRHS22-230	230V ~ 12 A, 50/60 Hz	SHUKO, 16 AMP (*as of 11/3/14*) IEC, 16 AMP						
IRHS22-240	240V ~ 12 A, 50/60 Hz	NEMA 6-15P						

IRHS23



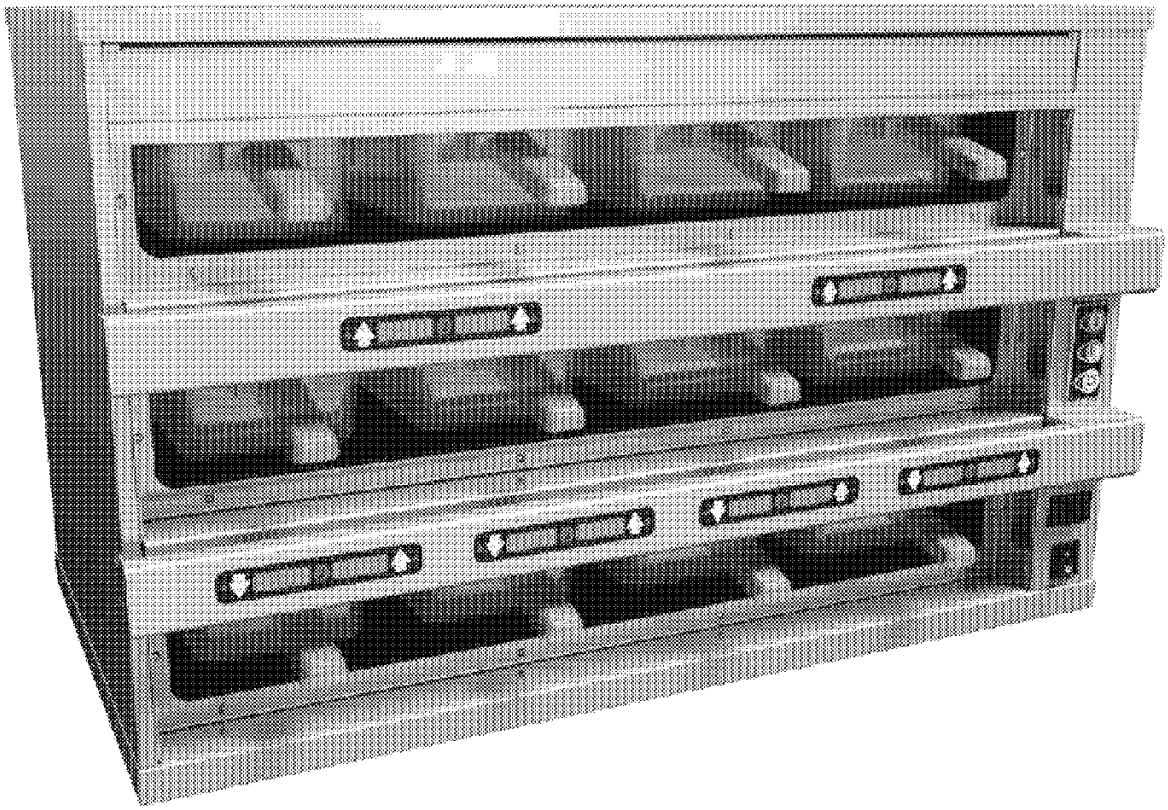
			Up to Serial# 101413198 (10/20/14)			*After SN# 101413198*		
		Shipping Weight	160 lbs / 72.6 kg			143 lbs / 64.9 kg		
Model	**Electrical**	**Plug**	**H**	**W**	**D**	**H**	**W**	**D**
IRHS23-208	208V ~ 12 A, 50/60 Hz	NEMA 6-15P	14.4 in / 36.6 cm	26.4 in / 67.1 cm	20.1 in / 51.1 cm	13.3 in / 33.8 cm	26.4 in / 67.1 cm	20.1 in / 51.1 cm
IRHS23-230	230V ~ 12 A, 50/60 Hz	SHUKO, 16 AMP (*as of 11/3/14*) IEC, 16 AMP						
IRHS23-240	240V ~ 12 A, 50/60 Hz	NEMA 6-15P						

IRHS24



			Before Serial# 10140545 (10/3/14)			*As of Serial# 10140545*		
		Shipping Weight	195 lbs / 88.4 kg			181 lbs / 82.1 kg		
Model	**Electrical**	**Plug**	**H**	**W**	**D**	**H**	**W**	**D**
IRHS24-208	208V ~ 12 A, 50/60 Hz	NEMA 6-15P	14.4 in / 36.6 cm	33.4 in / 84.8 cm	20.1 in / 51.1 cm	13.3 in / 33.8 cm	33.4 in / 84.8 cm	20.1 in / 51.1 cm
IRHS24-230	230V ~ 12 A, 50/60 Hz	SHUKO, 16 AMP (*as of 11/3/14*) IEC, 16 AMP						
IRHS24-240	240V ~ 12 A, 50/60 Hz	NEMA 6-15P						

IRHS34



			Before Serial# 10140032 (10/1/14)			*As of Serial# 10140032*		
		Shipping Weight	275 lbs / 124.7 kg			243 lbs / 110.2 kg		
Model	**Electrical**	**Plug**	**H**	**W**	**D**	**H**	**W**	**D**
IRHS34-208	208V ~ 16 A, 50/60 Hz	NEMA 6-20P	20.9 in / 53.1 cm	33.4 in / 84.8 cm	20.1 in / 51.1 cm	19.3 in / 49.0 cm	33.4 in / 84.8 cm	20.1 in / 51.1 cm
IRHS34-230	230V ~ 16 A, 50/60 Hz	SHUKO, 16 AMP (*as of 11/3/14*) IEC, 16 AMP						
IRHS34-240	240V ~ 16 A, 50/60 Hz	NEMA 6-20P						

IRHS42



		Shipping Weight	187 lbs / 84.8 kg		
Model	**Electrical**	**Plug**	**H**	**W**	**D**
IRHS42-208	208V ~ 12 A, 50/60 Hz	NEMA 6-15P	25.3 in / 64.3 cm	19.3 in / 49.0 cm	20.1 in / 51.1 cm
IRHS42-230	230V ~ 12 A, 50/60 Hz	SHUKO, 16 AMP (*as of 11/3/14*) IEC, 16 AMP			
IRHS42-240	240V ~ 12 A, 50/60 Hz	NEMA 6-15P			

REMOVAL AND REPLACEMENT OF PARTS

EQUIPMENT USED IN THESE INSTRUCTIONS

- Phillips screwdriver
- #1 precision screwdriver
- Flat-head screwdriver
- Needle-nose pliers
- 11/16" open-end wrench
- 11/32" nut driver or socket
- 1/4" nut driver or socket
- Tie wraps
- ESD Wrist Strap
- Aluminum tape
- Ohmmeter
- Heat transfer compound
- Clean gloves/cloths/towels

ELECTRICAL LOCKOUT/TAGOUT PROCEDURE

WARNING

BEFORE PERFORMING ANY SERVICE THAT INVOLVES ELECTRICAL CONNECTION OR DISCONNECTION AND/OR EXPOSURE TO ELECTRICAL COMPONENTS, ALWAYS FOLLOW THE ELECTRICAL LOCKOUT/TAGOUT PROCEDURE. DISCONNECT ALL CIRCUITS. FAILURE TO COMPLY CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.

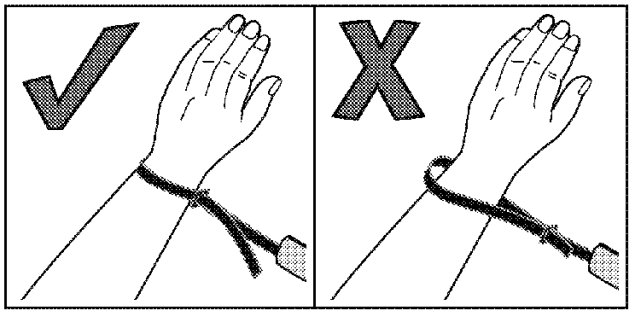
The Electrical LOCKOUT/TAGOUT Procedure is used to protect personnel working on an electrical appliance. Before performing any maintenance or service that requires exposure to electrical components, follow these steps:

1. In electrical box, place appliance circuit breaker into OFF position.
2. Place a lock or other device on electrical box cover to prevent someone from placing circuit breaker ON.
3. Place a tag on electrical box cover to indicate that appliance has been disconnected for service and power should not be restored until tag is removed by maintenance personnel.
4. Disconnect appliance power cord from electrical outlet.
5. Place a tag on the cord to indicate that unit has been disconnected for service and power should not be restored until tag is removed.

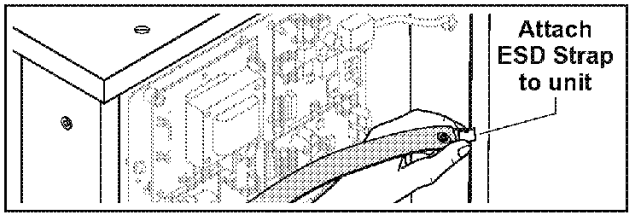
ESD WRIST STRAP

Electrostatic Discharge (ESD) is one of the biggest dangers to components in electronic devices. An ESD wrist strap allows any accumulated static charge to disperse safely through its cable, rather than through static-sensitive components such as unit computer-related components.

1. Place the ESD wrist strap around your wrist. The wrist strap should be next to your skin, so it needs to be placed under any clothes.
2. Tighten the wrist strap so that the attached metal plate maintains good contact with your skin. Do not over tighten as the wrist strap should not be uncomfortable.



3. Connect the cable to the wrist strap if it is disconnected. The cable should be securely clipped in place to maintain a good connection.
4. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
5. Connect the alligator clip on the other end of the cable to a metal surface on the unit. This creates a path through which any built-up static charge can safely flow without causing any damage. A built-in high value resistor ensures the charge leaks away in a controlled manner, and protects the user.



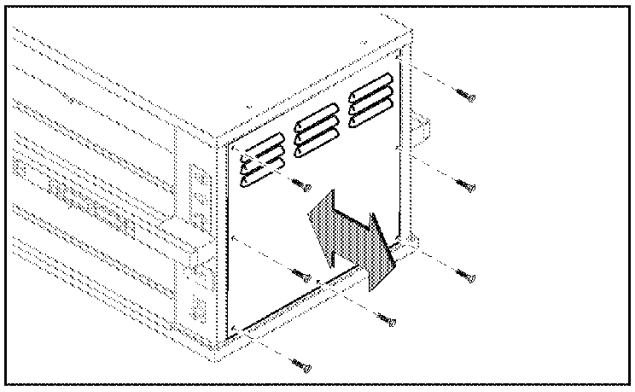
DECK ASSEMBLY COMPONENTS

MENU BARS

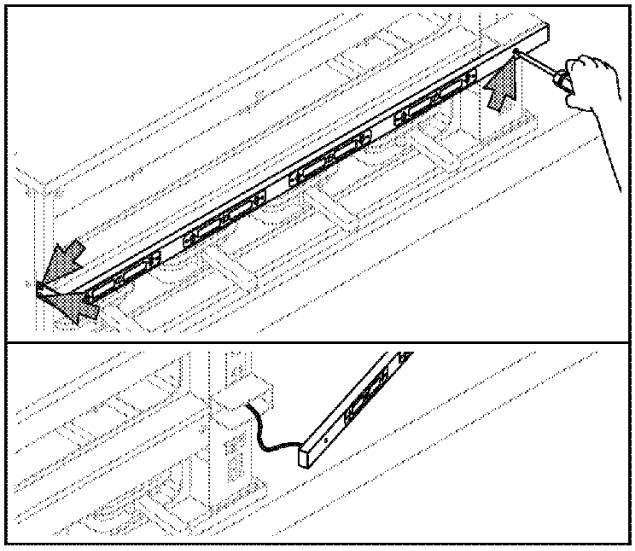
The Menu Bars hold the Keypad Displays that control and monitor the performance of each heating well. The quantity varies (depending on model) and are located on the front and back faces of the unit.

TOOLS REQUIRED: Phillips screwdriver; Flat-head screwdriver

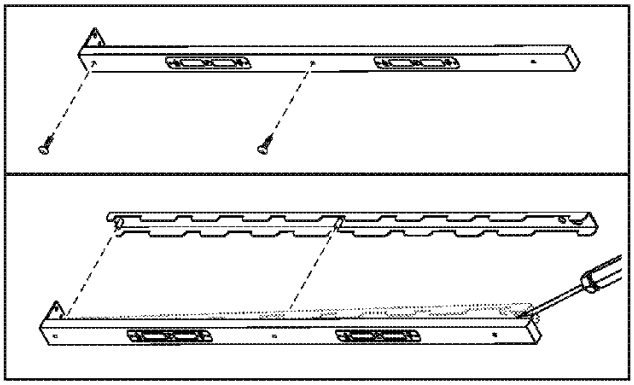
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.



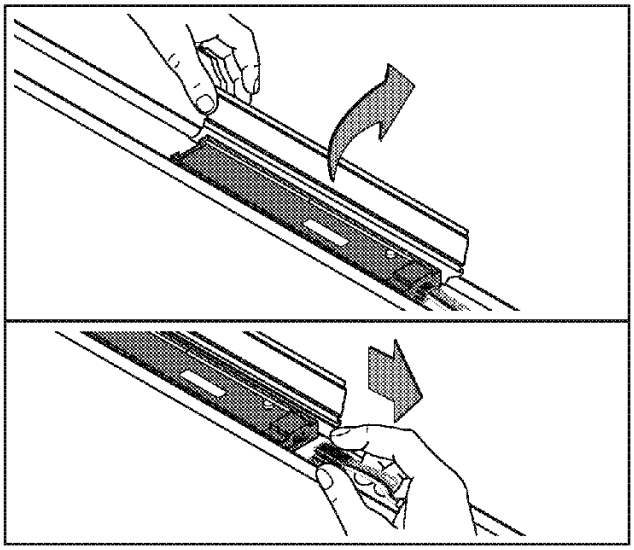
3. Remove and retain screws of the affected Menu Bar and pull away from the face of the unit. It is not necessary, but recommended, to completely remove the Menu Bar from the unit.



4. Mark and disconnect the affected Menu Bar's molex connector inside the control compartment.
5. If it is necessary to reuse the existing Keypad Displays in a replacement Menu Bar:
   a. Remove and retain the two (2) screws securing the Menu Bar Back Channel and pry out of the former Menu Bar.

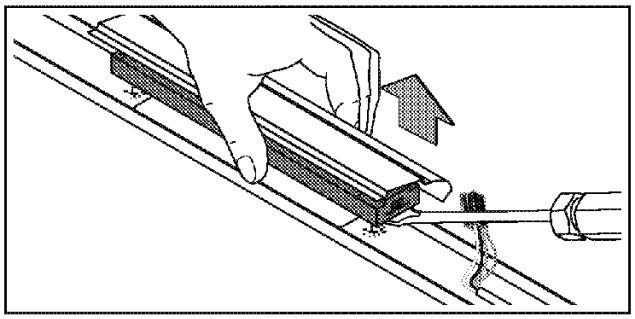


   b. A Keypad Spacer is attached to the rear of each Keypad Display with double-sided tape. Carefully pry off and remove the Keypad Spacer from the affected Keypad Display(s). This will free-up the Menu Bar Harness.

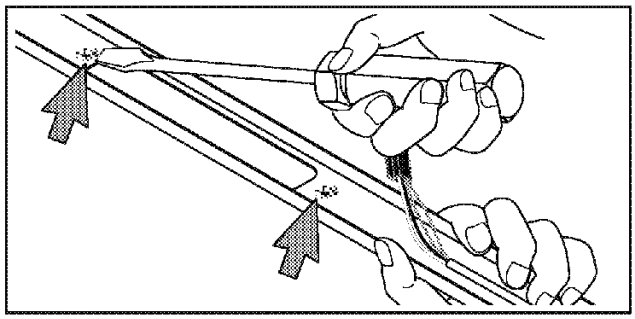


c. Disconnect the affected Keypad Display(s) electrical connector from the Menu Bar Harness.

d. The Keypad Displays are attached to the Menu Bar with double-sided glue dots. Carefully pry off and remove the affected Keypad Display from the Menu Bar.

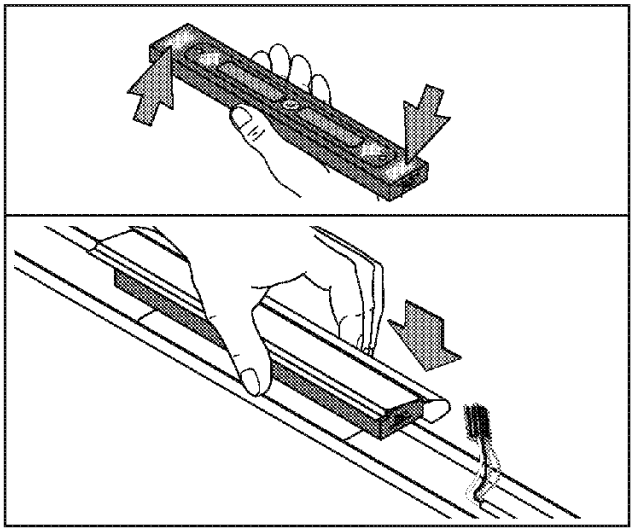


e. Carefully scrape any remaining adhesive residue from the inside of the Menu Bar.



RESTORE

6. Carefully place the Keypad Displays in place on the interior side of the replacement Menu Bar. If reusing the Keypad Displays, it may be necessary to use additional double-sided tape to secure the Keypad Displays to the Menu Bar.



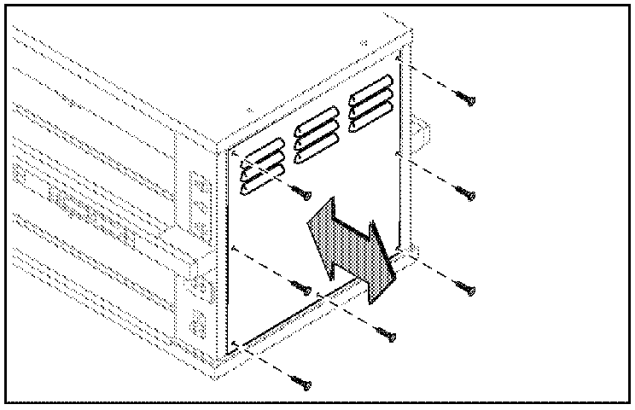
7. Connect the replacement Menu Bar Harness' molex connector in the control compartment.
8. Replace the Keypad Spacer, over the Menu Bar Harness, to the rear of the Keypad Display(s).
9. Reinstall Menu Bar Back Channel using its screws.
10. Reinstall the Menu Bar using its screws.
11. Replace the Control Side Cover and secure with its screws.
12. Restore power to the unit and test for proper function.

KEYPAD DISPLAYS

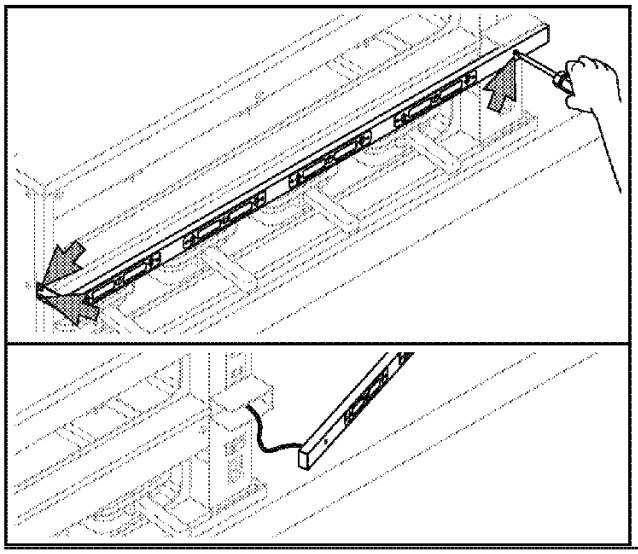
The Keypad Displays control and monitor the performance of each heating well. They are located inside of the Menu Bar(s) and the quantity varies (depending on model).

TOOLS REQUIRED: Phillips screwdriver; Flat-head screwdriver

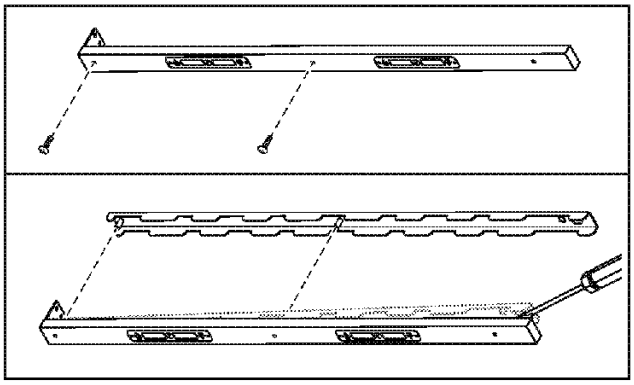
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.



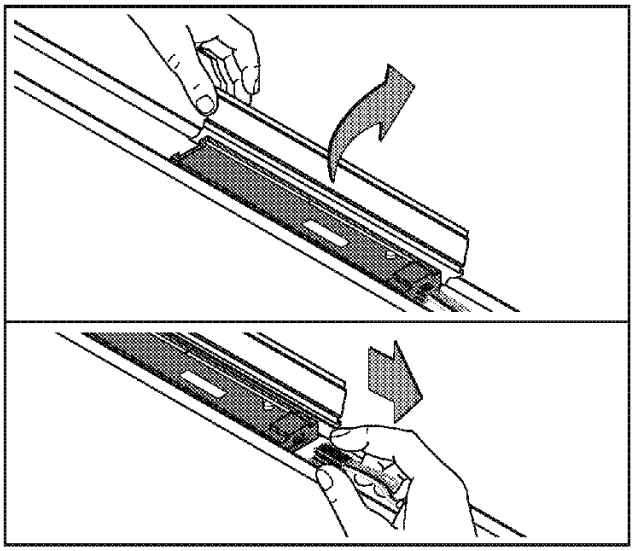
3. Disconnect the affected Menu Bar's molex connector inside the control compartment.
4. Remove and retain screws of the Menu Bar containing the affected Keypad Display and pull away from the face of the unit. It is not necessary, but recommended, to completely remove the Menu Bar from the unit.



5. Remove and retain the screws securing the Menu Bar Back Channel from the front of the Menu Bar and pry out of the Menu Bar.

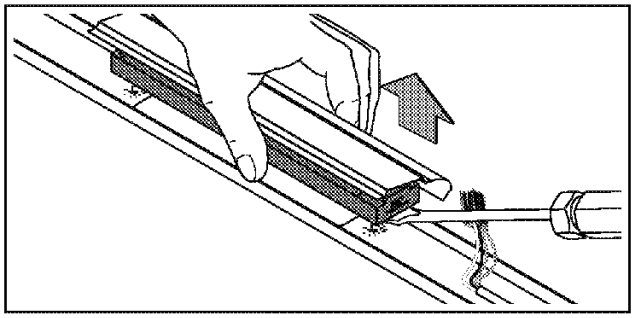


6. A Keypad Spacer is attached to the rear of each Keypad Display with double-sided tape. Carefully pry off and remove the Keypad Spacer from the affected Keypad Display(s). This will free-up the Menu Bar Harness.

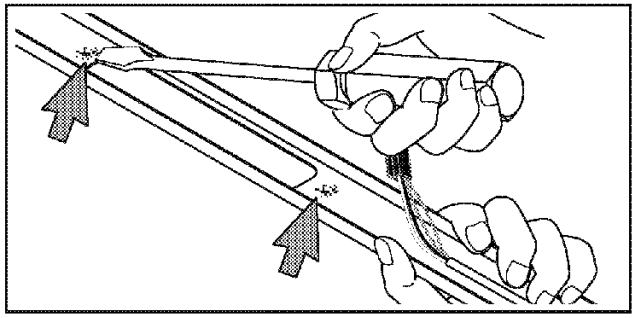


7. Disconnect the affected Keypad Display(s) electrical connector from the Menu Bar Harness.

8. The Keypad Displays are attached to the Menu Bar with double-sided glue dots. Carefully pry off and remove the affected Keypad Display from the Menu Bar.

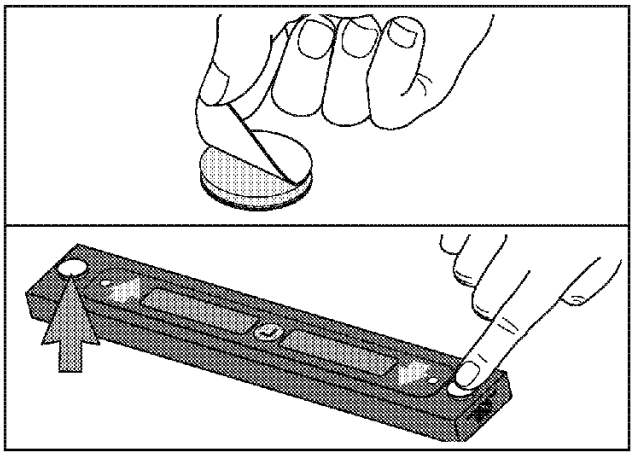


9. Carefully scrape any remaining adhesive residue from the inside of the Menu Bar.

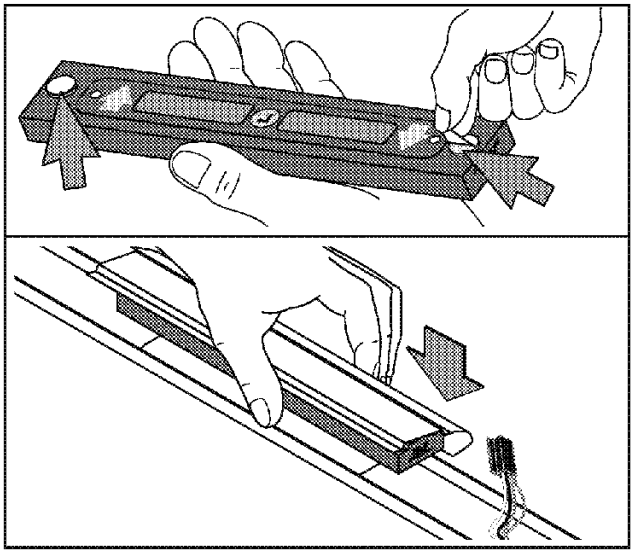


RESTORE:

10. Peel off the adhesive cover from the glue dots and place on the replacement Keypad Display.



11. Peel off the other adhesive cover from the glue dots and carefully position the replacement Keypad Display in place on the interior side of the Menu Bar.



12. Reconnect the affected Keypad Display(s) electrical connector to the Menu Bar Harness.

13. Replace the Keypad Spacer, over the Menu Bar Harness, to the rear of the Keypad Display(s).

14. Reinstall the Menu Bar Back Channel using its screws.

15. Reinstall the Menu Bar using its screws.

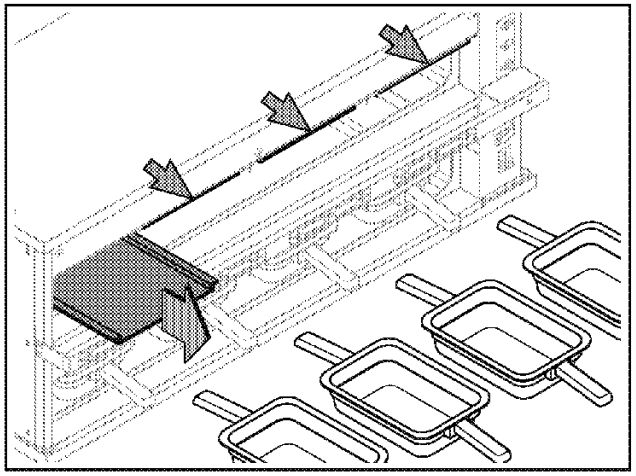
16. Restore power to the unit and test for proper function.

RTD (TEMPERATURE) SENSORS

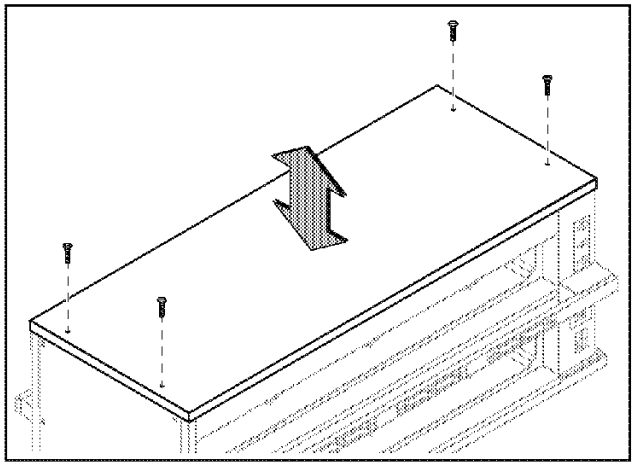
The RTD Sensors monitor the temperature of the heating wells. They are affixed to the bottom-center of each Heat Element, and the quantity varies (depending on model).

TOOLS REQUIRED: Phillips screwdriver; Aluminum tape; Tie wraps

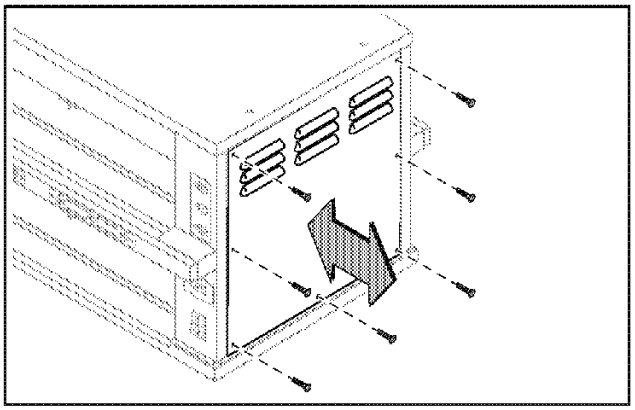
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove any pans and covers on the level(s) being removed.



3. Remove and retain the screws securing the Top Panel and remove the cover.

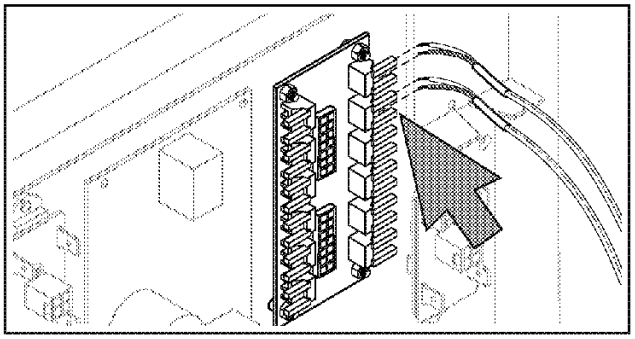


4. Remove and retain the screws securing the Control Side Cover and remove the cover.

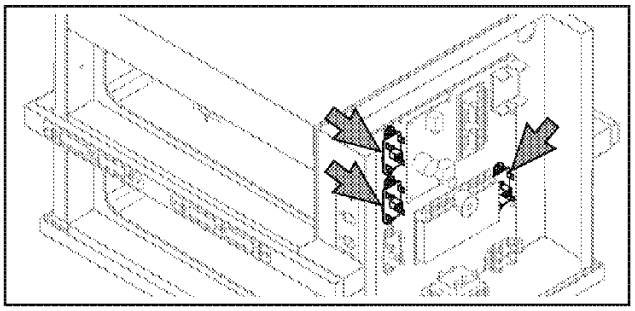


NOTE: If the RTD Sensor to be replaced is on a lower level, start from the top and repeat the following four steps for each level above the desired level.

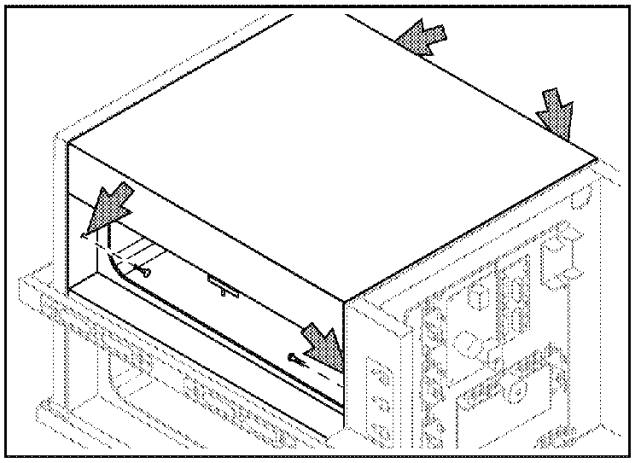
5. Mark, remove the tie wraps, and disconnect the wires for the RTD Sensors from the RTD board in the Control Compartment.



6. Mark, remove the tie wraps, and disconnect the wires for the Emitter (IR Bulb) Sockets and Heat Elements from the Relays in the Control Compartment.

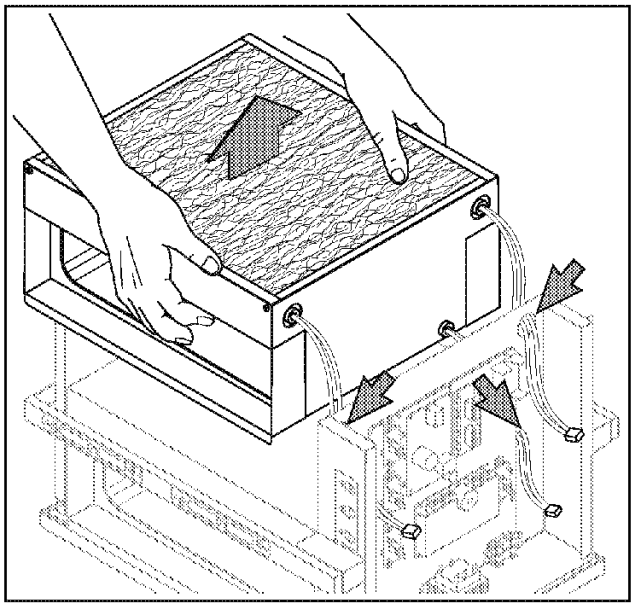


7. Remove the four (4) screws (2 in front, 2 in back) securing the liner deck assembly to the unit.



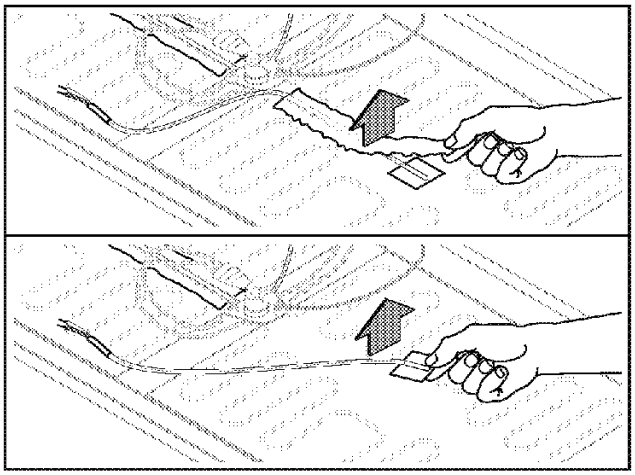
8. Carefully lift the entire liner deck assembly out through the top of the unit. This may require two people, depending on the location of the IRHS unit. Though not required to do so, removing the level's IR glass frame assembly (instructions are contained in the Emitter instructions) will lighten the weight of the liner deck assembly and make it easier for one person to accomplish this task if the IRHS is located in an elevated location or has limited access.

NOTE: It will be necessary to feed the RTD Sensor, Emitter, and Heat Element wires through the control compartment bushings. Take caution not to damage any of the wires.



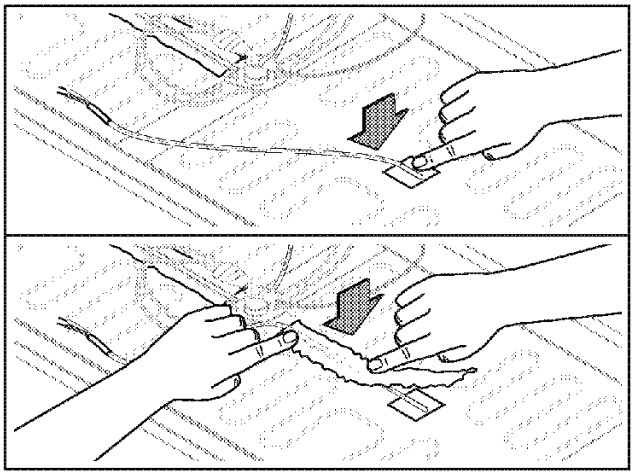
9. Invert the liner deck assembly upside-down, then remove and retain the insulation.

10. The RTD Sensor is attached to the heat element with double-sided adhesive tape and covered with aluminum tape. Carefully pry off and remove the affected RTD Sensor from the Heat Element.



RESTORE:

11. Peel off the adhesive tape cover from the replacement RTD Sensor and press in place on the heat element. Replace aluminum tape cover.



12. Feed the Heat Element and RTD Sensor wires in the direction of and through the control compartment bushings and replace the insulation.

13. Invert the liner deck assembly right-side up. While feeding the RTD Sensor, Emitter, and Heat Element wires through the appropriate control compartment bushings, carefully slide the liner deck assembly into the unit, taking caution not to damage any of the wires.

NOTE: This may require two people, depending on the location of the IRHS unit.

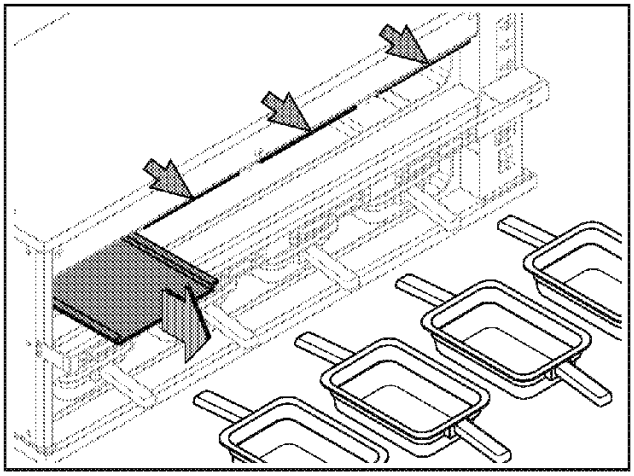
14. Reconnect and tie wrap all previously disconnected wires and connectors in the control compartment.
15. Replace the Control Side Cover and secure with its screws.
16. Replace the Top Panel and secure with its screws.
17. Restore power to the unit and test for proper function.

HIGH LIMIT THERMOSTATS

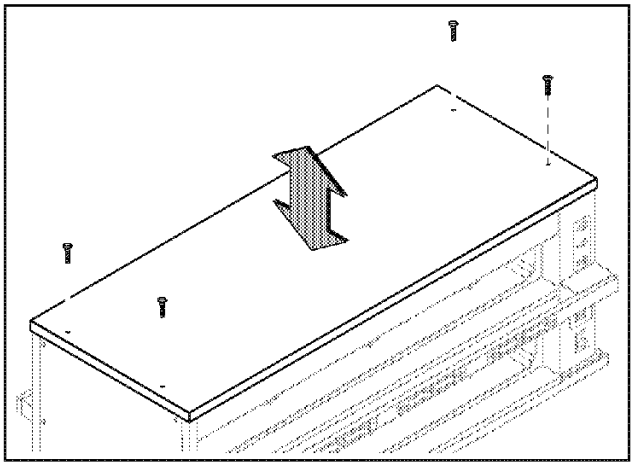
The High Limit Thermostats monitor well temperatures and serves as an emergency circuit interrupter in case of inadvertent overheating. There is one per level, and are affixed to the bottom-center of each heat sink.

TOOLS REQUIRED: Phillips screwdriver; Heat transfer compound; Tie wraps

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove any pans and covers on the level(s) being removed.

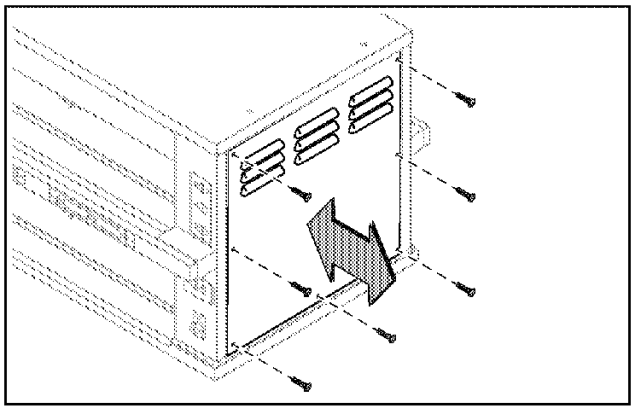


3. Remove and retain the screws securing the Top Panel and remove the cover.

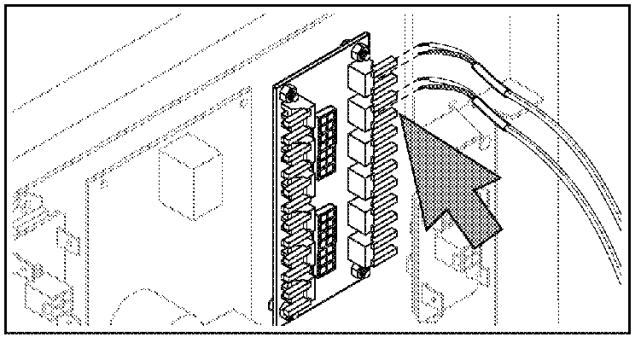


4. Remove and retain the screws securing the Control Side Cover and remove the cover.

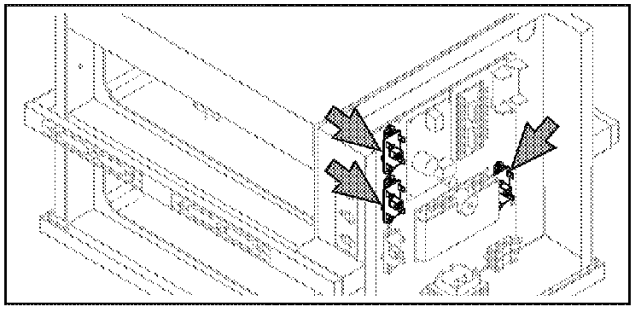
NOTE: If the High Limit Thermostat to be replaced is on a lower level, start from the top and repeat the following four steps for each level above the desired level.



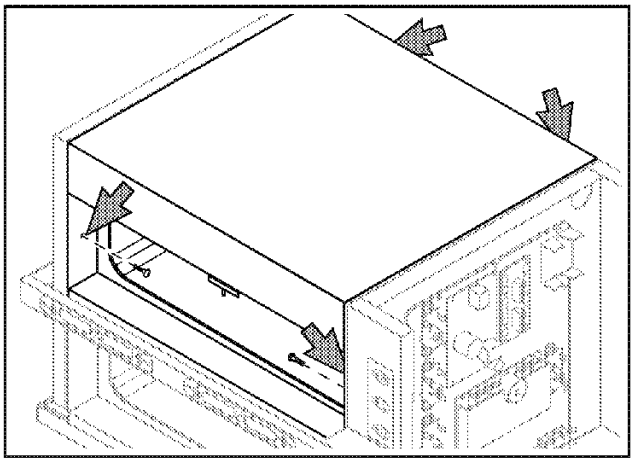
5. Mark, remove the tie wraps, and disconnect the wires for the RTD Sensors from the RTD board in the Control Compartment.



6. Mark, remove the tie wraps, and disconnect the wires for the Emitter (IR Bulb) Sockets and Heat Elements from the Relays in the Control Compartment.

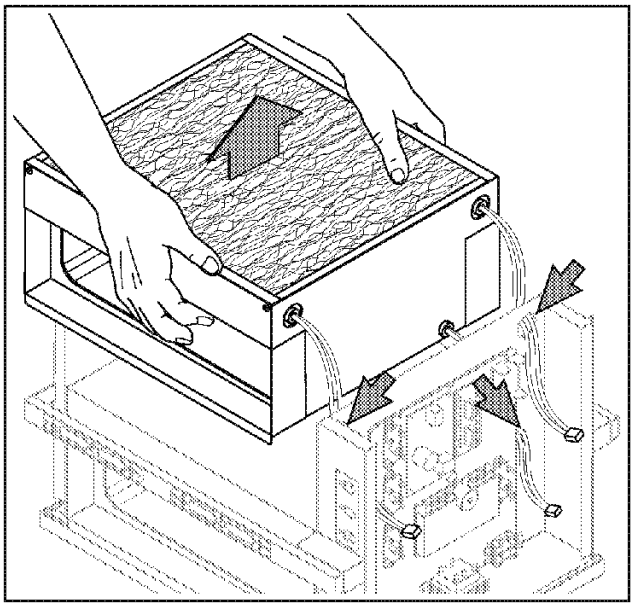


7. Remove the four (4) screws (2 in front, 2 in back) securing the liner deck assembly to the unit.



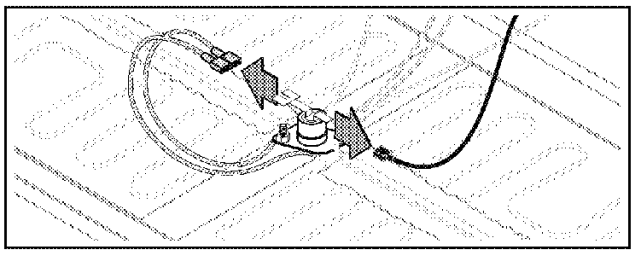
8. Carefully lift the entire liner deck assembly out through the top of the unit. This may require two people, depending on the location of the IRHS unit. Though not required to do so, removing the level's IR glass frame assembly (instructions are contained in the Emitter instructions) will lighten the weight of the liner deck assembly and make it easier for one person to accomplish this task if the IRHS is located in an elevated location or has limited access.

NOTE: It will be necessary to feed the RTD Sensor, Emitter, and Heat Element wires through the control compartment bushings. Take caution not to damage any of the wires.

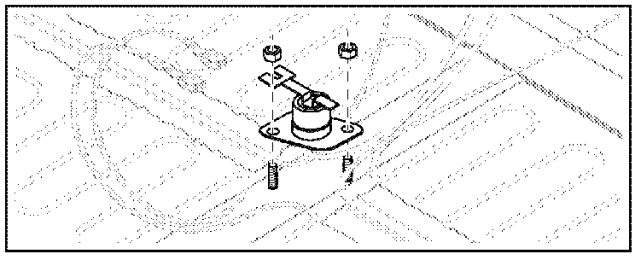


9. Invert the liner deck assembly upside-down, then remove and retain the insulation.

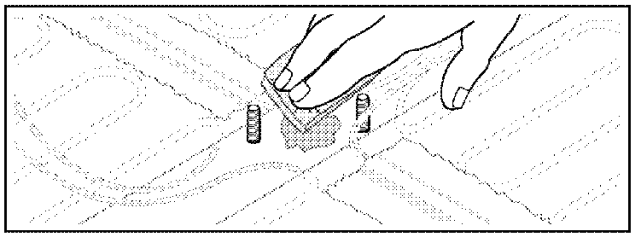
10. Mark and disconnect the spade terminals for the affected High Limit Thermostat.



11. Remove and retain the two (2) 11/32" nuts securing the High Limit Thermostat to the heat sink and remove the High Limit Thermostat.

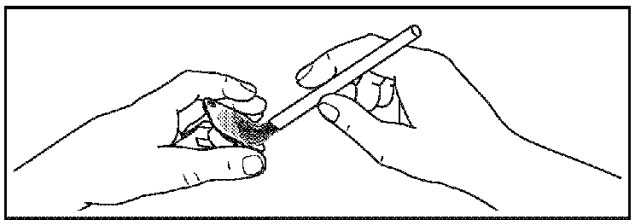


12. Clean the mounting surface of any residual heat transfer compound.



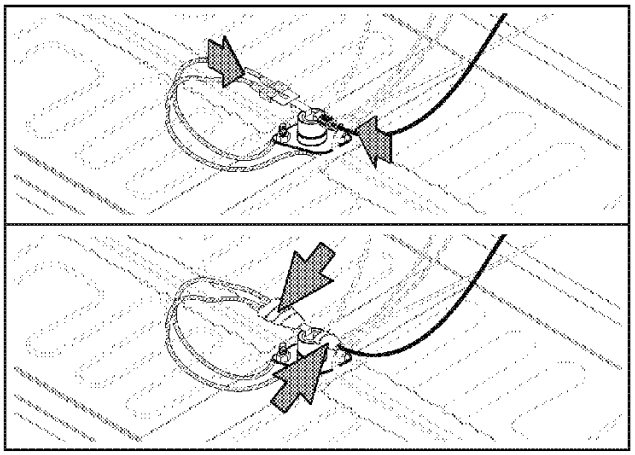
RESTORE:

13. Apply heat transfer compound to the mounting surface of the replacement High Limit Thermostat.



14. Install the replacement High Limit Thermostat and secure with its nuts.

15. Reattach the High Limit Thermostat spade terminals. Be sure to reapply the tape that helps secure the spade terminals to the High Limit Thermostat.



16. Feed the Heat Element and RTD Sensor wires in the direction of and through the control compartment bushings and replace the insulation.

17. Invert the liner deck assembly right-side up. While feeding the RTD Sensor, Emitter, and Heat Element wires through the appropriate control compartment bushings, carefully slide the liner deck assembly into the unit, taking caution not to damage any of the wires.

NOTE: This may require two people, depending on the location of the IRHS unit.

18. Reconnect and tie wrap all previously disconnected wires and connectors in the control compartment.

19. Replace the Control Side Cover and secure with its screws.

20. Replace the Top Panel and secure with its screws.

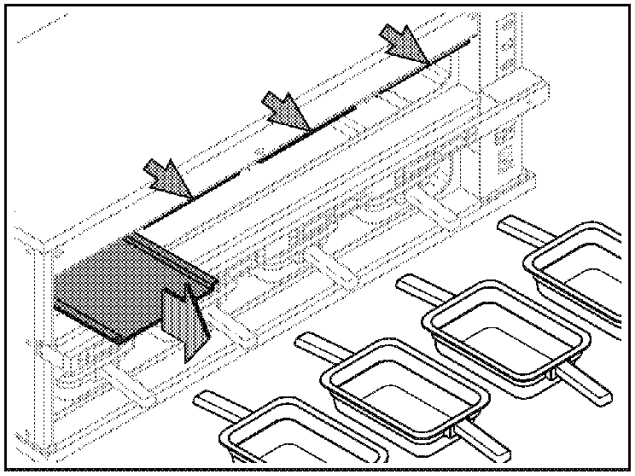
21. Restore power to the unit and test for proper function.

HEAT ELEMENTS

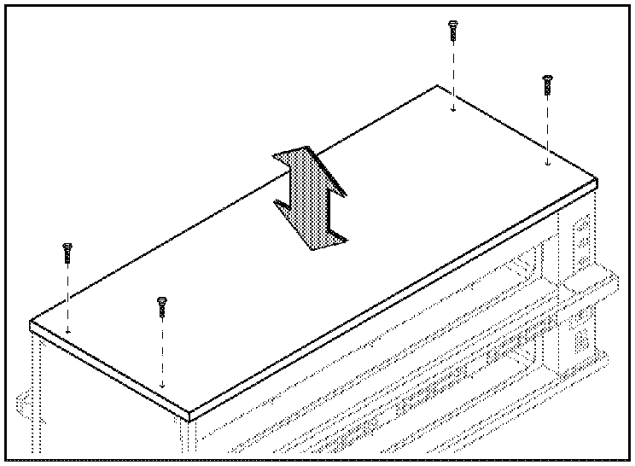
The Heat Elements provide the heating required to keep the heating wells at proper operating temperatures. The quantity varies depending on model and are affixed to the bottom of each Heat Sink.

TOOLS REQUIRED: Phillips screwdriver; 11/32" nut driver or socket; Heat transfer compound; Tie wraps

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove any pans and covers on the level(s) being removed.

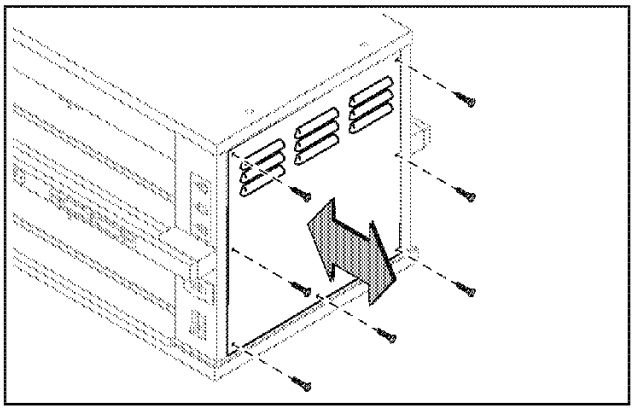


3. Remove and retain the screws securing the Top Panel and remove the cover.

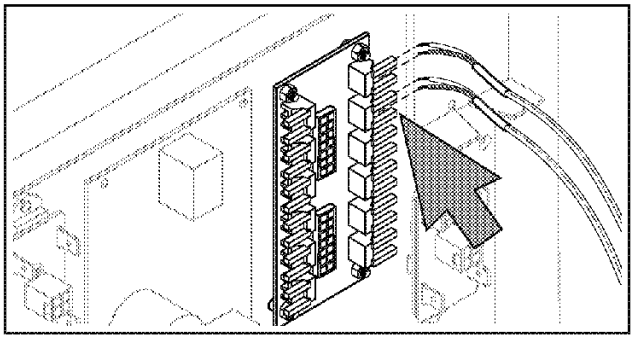


4. Remove and retain the screws securing the Control Side Cover and remove the cover.

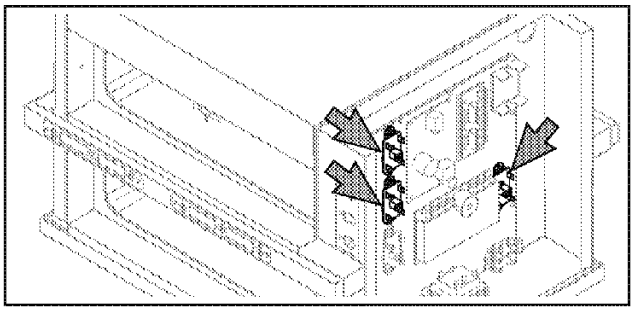
NOTE: If the Heat Element to be replaced is on a lower level, start from the top and repeat the following four steps for each level above the desired level.



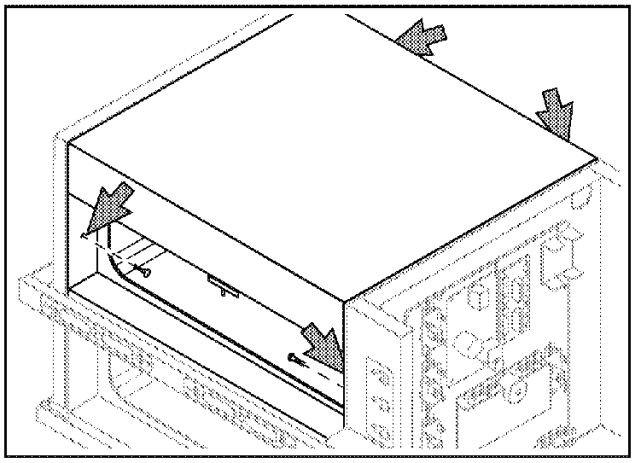
5. Mark, remove the tie wraps, and disconnect the wires for the RTD Sensors from the RTD board in the Control Compartment.



6. Mark, remove the tie wraps, and disconnect the wires for the Emitter (IR Bulb) Sockets and Heat Elements from the Relays in the Control Compartment.



7. Remove the four (4) screws (2 in front, 2 in back) securing the liner deck assembly to the unit.

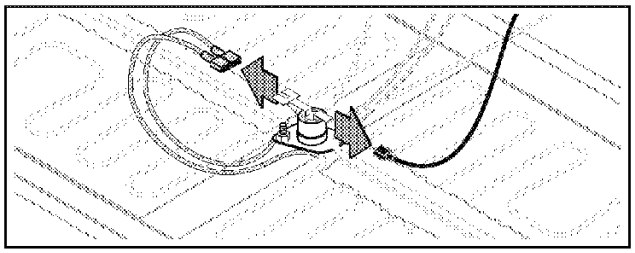


8. Carefully lift the entire liner deck assembly out through the top of the unit. This may require two people, depending on the location of the IRHS unit. Though not required to do so, removing the level's IR glass frame assembly (instructions are contained in the Emitter instructions) will lighten the weight of the liner deck assembly and make it easier for one person to accomplish this task if the IRHS is located in an elevated location or has limited access.

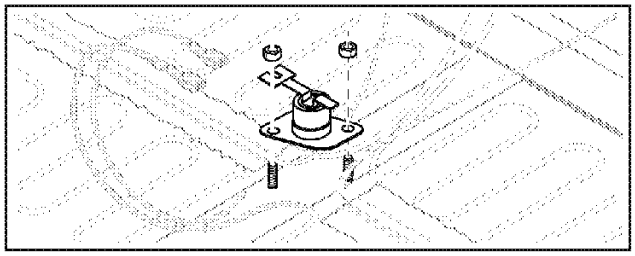
NOTE: It will be necessary to feed the RTD Sensor, Emitter, and Heat Element wires through the control compartment bushings. Take caution not to damage any of the wires.

9. Invert the liner deck assembly upside-down, then remove and retain the insulation.

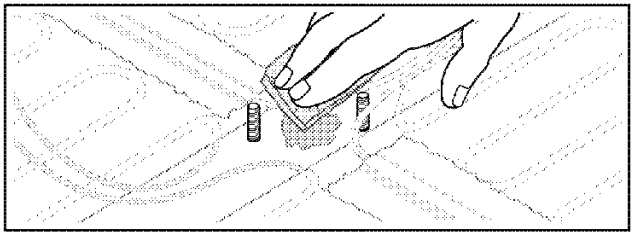
10. Mark and disconnect the spade terminals for the level's High Limit Thermostat.



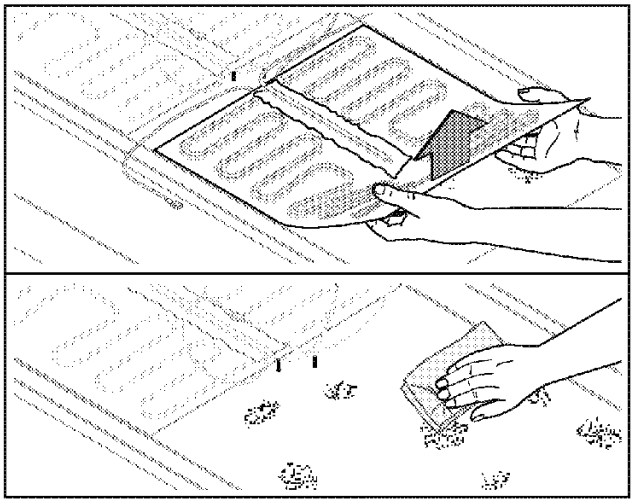
11. Remove and retain the two (2) 11/32" nuts securing the High Limit Thermostat to the heat sink and remove the High Limit Thermostat.



12. Clean the mounting surface of any residual heat transfer compound.

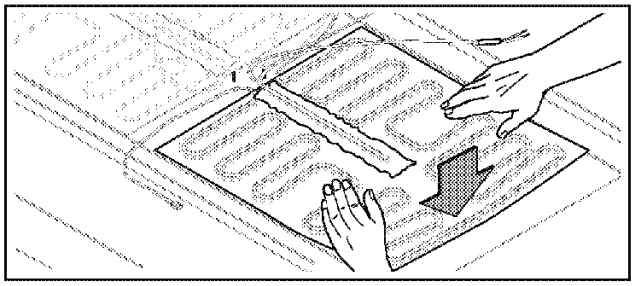


13. Remove the affected Heat Element by peeling off from the heat sink. Ensure any excess tape and/ or adhesive is removed.



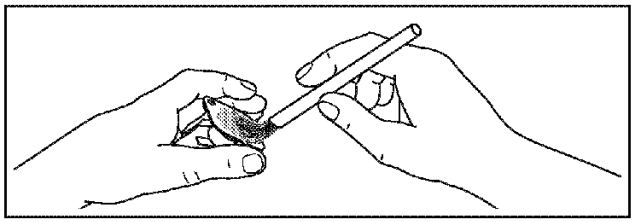
NOTE: The replacement Heat Element will come with a new RTD Sensor attached, so retaining the existing RTD Sensor is unnecessary.

14. Peel the adhesive tape cover off the replacement Heat Element and press in place on the heat sink, ensuring all air bubbles are smoothed out.



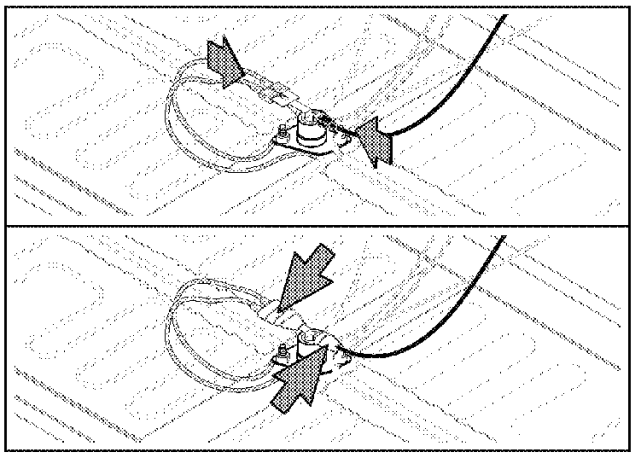
RESTORE:

15. Apply heat transfer compound to the mounting surface of the High Limit Thermostat.



16. Reinstall the High Limit Thermostat and secure with its nuts.

17. Reattach the High Limit Thermostat spade terminals. Be sure to reapply the tape that helps secure the spade terminals to the High Limit Thermostat.



18. Feed the Heat Element and RTD Sensor wires in the direction of and through the control compartment bushings and replace the insulation.

19. Invert the liner deck assembly right-side up. While feeding the RTD Sensor, Emitter, and Heat Element wires through the appropriate control compartment bushings, carefully slide the liner deck assembly into the unit, taking caution not to damage any of the wires.

NOTE: This may require two people, depending on the location of the IRHS unit.

20. Reconnect and tie wrap all previously disconnected wires and connectors in the control compartment.

21. Replace the Control Side Cover and secure with its screws.

22. Replace the Top Panel and secure with its screws.

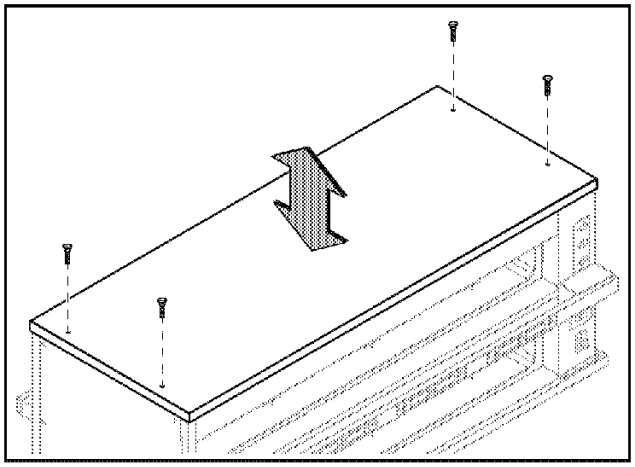
23. Restore power to the unit and test for proper function.

EMITTER (IR BULB) SOCKETS

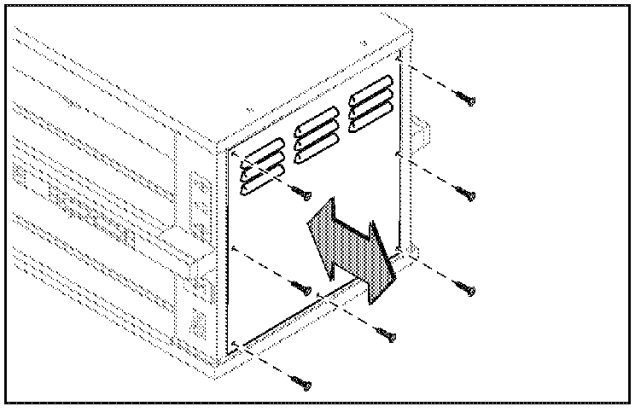
The Emitter Sockets hold and provide power to the Emitters. There are two (2: 1 front, 1 back) at the top of each heating well.

TOOLS REQUIRED: Phillips screwdriver; clean gloves/ cloths/towels; 11/16" open-end wrench; Tie wraps

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove all pans and covers from the liner deck assembly, and levels above where the affected Emitter Socket is to be replaced.
3. Remove and retain the screws securing the Top Panel and remove the cover.

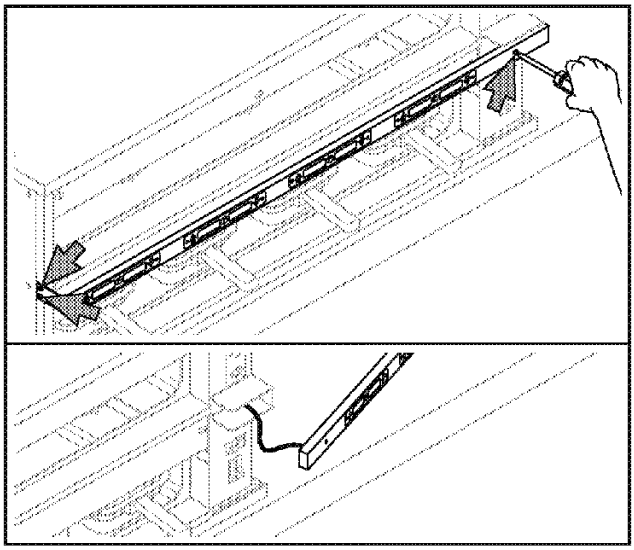


4. Remove and retain the screws securing the Control Side Cover and remove the cover.

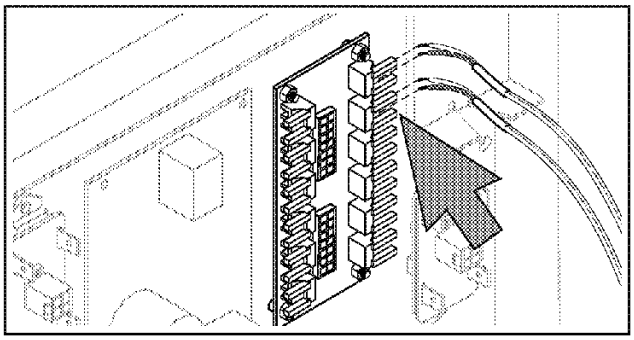


If the Emitter Socket to be replaced is on a lower level (not for top level replacement), starting from the second level, repeat the following five steps for each level above the desired repair level:

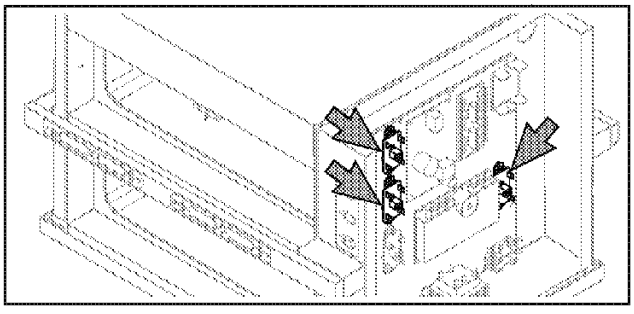
a. Remove and retain the screws securing the appropriate Menu Bar(s) and move to one side. It is not necessary, but recommended, to completely remove the Menu Bar from the unit. Menu Bar instructions are contained in this manual.



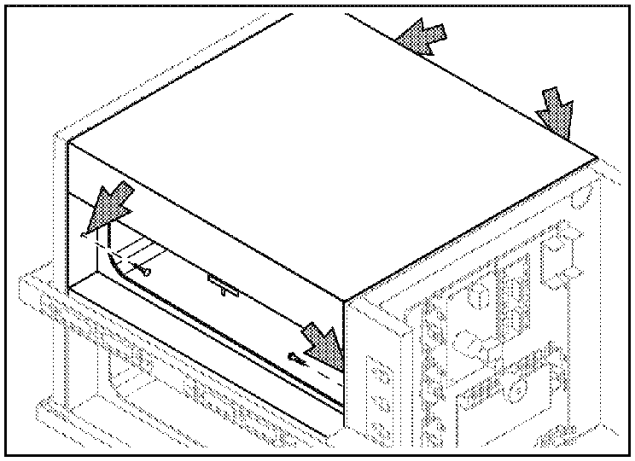
b. Mark, remove the tie wraps, and disconnect the wires for the RTD Sensors from the RTD board in the Control Compartment.



c. Mark, remove the tie wraps, and disconnect the wires for the Emitter (IR Bulb) Sockets and Heat Elements from the Relays in the Control Compartment.

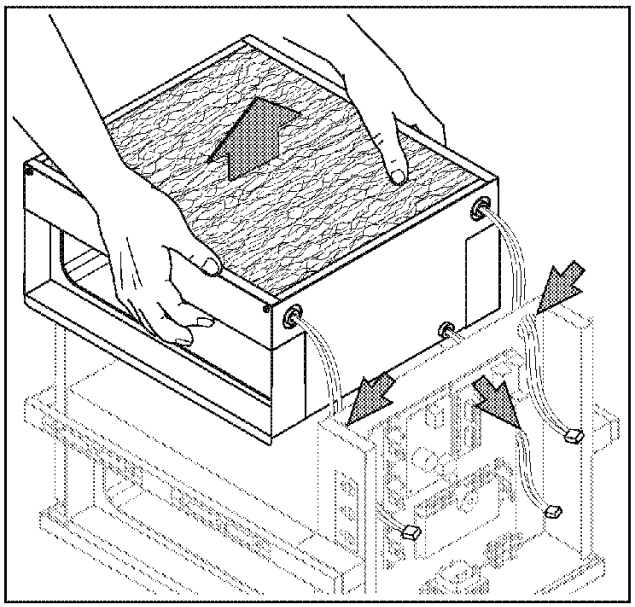


d. Remove the four (4) screws (2 in front, 2 in back) securing the liner deck assembly to the unit.



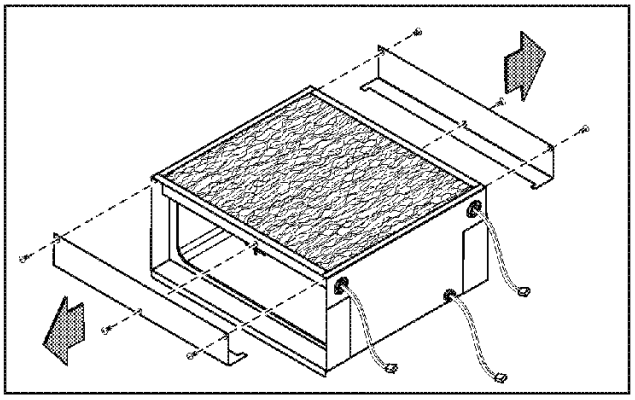
e. Carefully lift the entire liner deck assembly out through the top of the unit. This may require two people, depending on the location of the IRHS unit. Though not required to do so, removing the level's IR glass frame assembly (instructions are contained in the Emitter instructions) will lighten the weight of the liner deck assembly and make it easier for one person to accomplish this task if the IRHS is located in an elevated location or has limited access.

NOTE: It will be necessary to feed the RTD Sensor, Emitter, and Heat Element wires through the control compartment bushings. Take caution not to damage any of the wires.



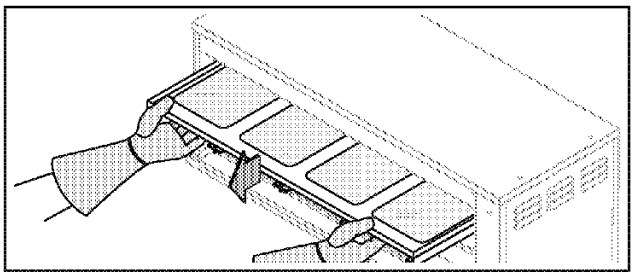
You will now have access to remove the nut securing socket in place.

5. Each liner deck's frame support angles (front and back) support the IR glass frame assembly in place. Remove and retain the screws securing the frame support angle on the row where the affected Socket is to be replaced and remove the frame support angle. Repeat for the other side of the liner deck assembly. Be careful to support and not let the IR glass frame assembly fall and damage the heat sink.



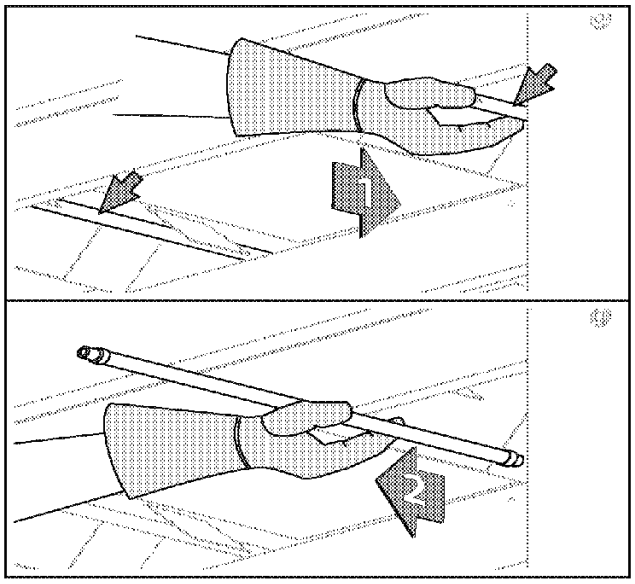
6. Slide the IR glass frame assembly out of the liner deck assembly below the Socket to be replaced.

NOTE: Make sure the glass has cooled off sufficiently to avoid burns to bare skin. Use gloves if necessary.

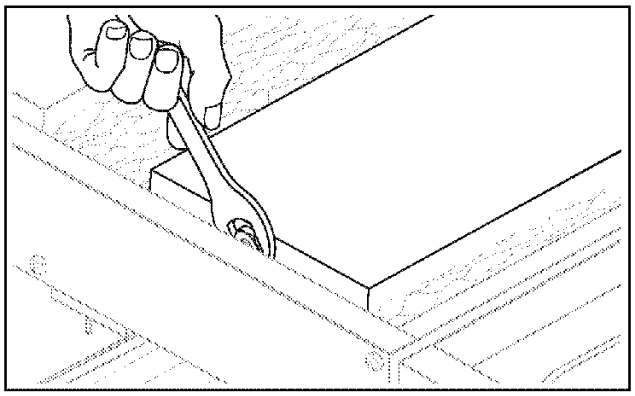


7. The Emitter Sockets are spring-loaded. Push the Emitter (IR Bulb) towards the rear socket until the Emitter is free from the front socket and carefully remove.

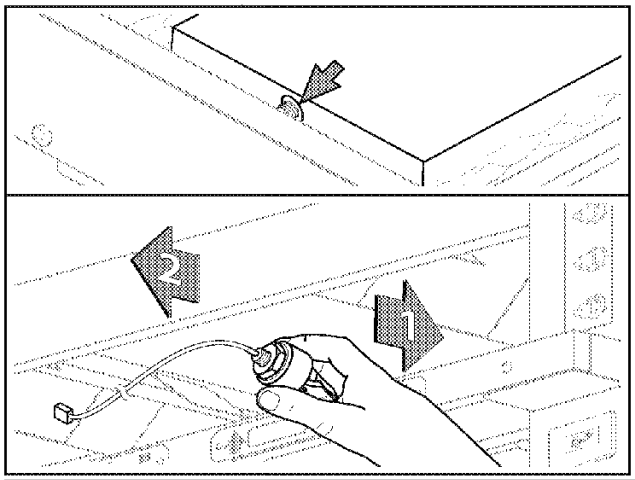
NOTE: DO NOT TOUCH THE EMITTER WITH BARE HANDS! The oil on human skin will shorten the life of the Emitters. If the Emitter is to be reused, use clean gloves, a clean cloth, or a clean paper towel to handle.



8. Mark and disconnect the faulty Emitter Socket's wires from the Relay in the control compartment.
9. Using an 11/16" open-end wrench, remove the nut securing the socket in place.



10. From the bulb side of the affected Socket, pull the Socket and its wires through its mounting hole.



RESTORE:

11. Install the replacement Emitter Socket into its mounting hole and secure with its nut.
12. Using clean gloves, a clean cloth, or a clean paper towel, reinstall or insert the replacement Emitter into the rear socket first and then gently push inward until the front of the bulb can be inserted into the front socket.
13. Slide the IR glass frame assembly into the liner deck assembly.
14. Replace the frame support angles on the front and back and secure them with their screws.
15. If other liner deck assemblies were removed, starting with the lowest, feed their RTD Sensor, Emitter, and Heat Element wires through the appropriate control compartment bushings, and carefully slide the liner deck assemblies into the unit, taking caution not to damage any of the wires. Replace any moved/removed insulation.

NOTE: This may require two people, depending on the location of the IRHS unit.

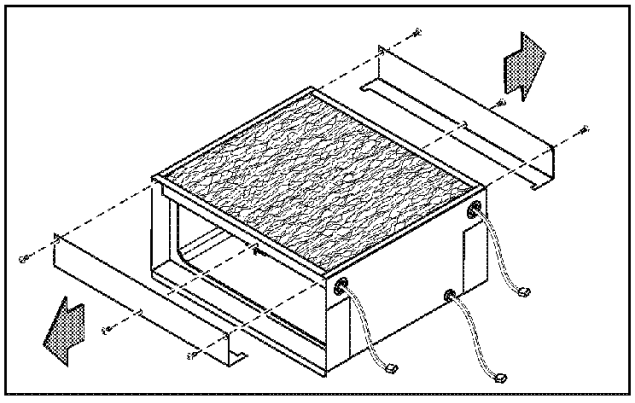
16. If other liner deck assemblies were removed, reinstall their Menu Bar(s).
17. Reconnect and tie wrap all previously disconnected wires and connectors in the control compartment.
18. Replace the Control Side Cover and secure with its screws.
19. Replace the Top Panel and secure with its screws.
20. Restore power to the unit and test for proper function.

EMITTERS (IR BULBS)

The Emitters heat the top of each well. The quantity varies (depending on model) and are held in place by two Emitter Sockets at the top of each heating well.

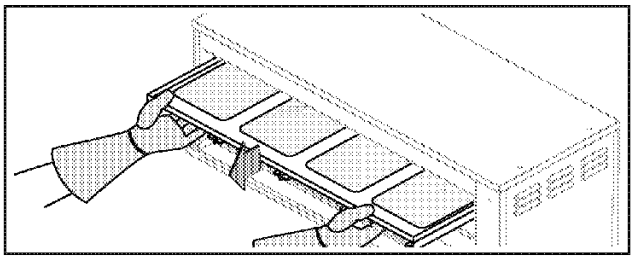
TOOLS REQUIRED: Phillips screwdriver; clean gloves/ cloths/towels; Tie wraps

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove all pans and covers from the liner deck assembly where the affected Emitter is to be replaced.
3. If the Emitter to be replaced is on a lower level (not for top level replacement), remove and retain the screws securing the appropriate Menu Bar(s) and move to one side. It is not necessary, but recommended, to completely remove the Menu Bar from the unit. Menu Bar instructions are contained in this manual.
4. The liner deck assembly's frame support angles (front and back) support the IR glass frame assembly in place. Remove and retain the screws securing the frame support angle on the row where the affected Emitter is to be replaced and remove the frame support angle. Repeat for the other side of the liner deck assembly. Be careful to support and not let the IR glass frame assembly fall and damage the heat sink.



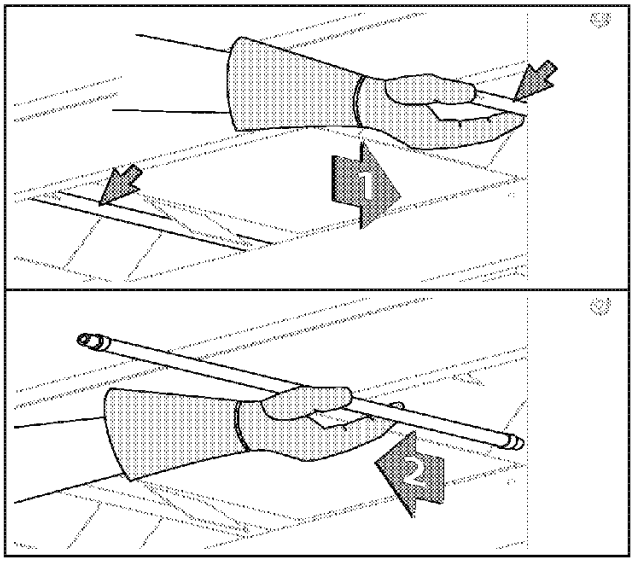
5. Slide the IR glass frame assembly out of the liner deck assembly below the Emitter to be replaced.

NOTE: Make sure the glass has cooled off sufficiently to avoid burns to bare skin. Use gloves if necessary.



6. The Emitter Sockets are spring-loaded. Push the Emitter towards the rear socket until the Emitter is free from the front socket and carefully remove.

NOTE: DO NOT TOUCH THE EMITTER WITH BARE HANDS! The oil on human skin will shorten the life of the Emitters. If the Emitter is to be reused, use clean gloves, a clean cloth, or a clean paper towel to handle.

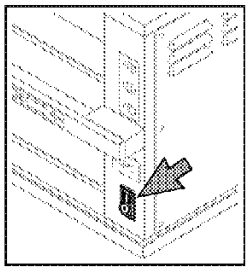


RESTORE:

7. Using clean gloves, a clean cloth, or a clean paper towel, reinstall or insert the replacement Emitter into the rear socket first and then gently push inward until the front of the bulb can be inserted into the front socket.
8. Slide the IR glass frame assembly into the liner deck assembly.
9. Replace the frame support angles on the front and back and secure them with their screws.
10. If removed, reinstall and reconnect the Menu Bar.
11. Restore power to the unit and test for proper function.

CONTROL COMPARTMENT COMPONENTS – STANDALONE & KITCHEN MINDER MODELS (ONLY)

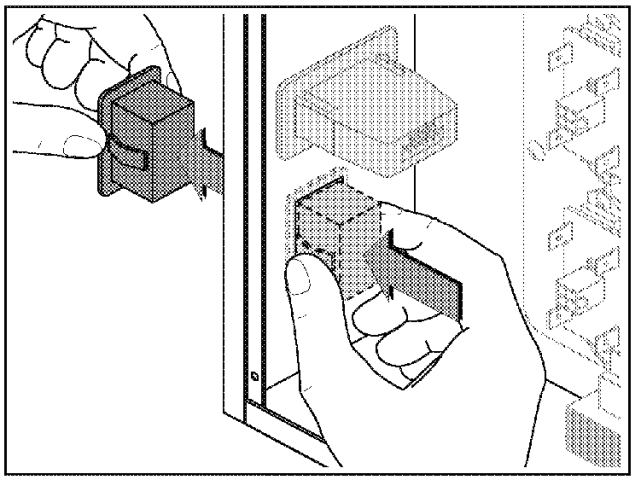
POWER SWITCH



The Power Switch is located on the Control Panel on the face of the unit. It is accessed from inside the control compartment.

TOOLS REQUIRED:
Phillips screwdriver

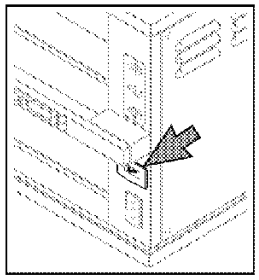
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. From inside the control compartment, mark and disconnect all wires connected to the Power Switch.
4. The Power Switch is secured to the unit with spring clips and a spacer. Depress the spring clips and slide the switch from the unit.



RESTORE:

5. Install the replacement Power Switch by sliding it into its position in the unit until secured with its spring clips.
6. Reattach the Power Switch wires.
7. Replace the Control Side Cover and secure with its screws.
8. Restore power to the unit and test for proper function.

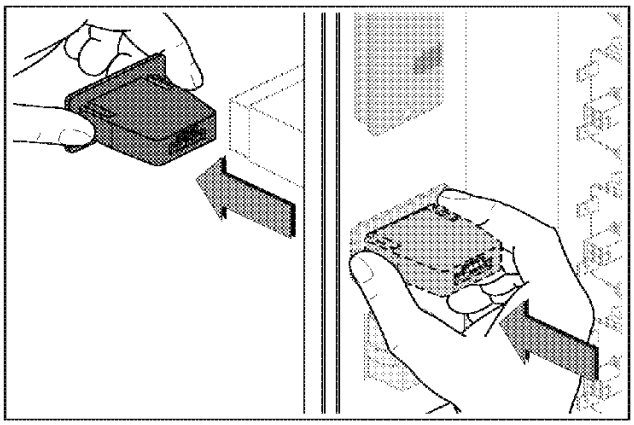
USB ADAPTER



The USB Adapter is used to program the Controller when it is replaced or when the current recipes are corrupted. It is located on the Control Panel. It is accessed from inside the control compartment.

TOOLS REQUIRED: Phillips screwdriver

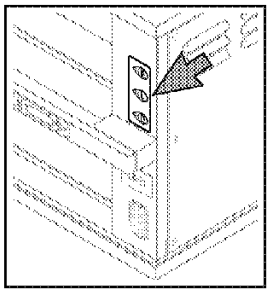
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. From inside the control compartment, unplug the molex connector from the rear of the USB port.
4. The USB Adapter is secured to the unit with prongs and a spacer. Depress the two (2) prongs securing the USB Adapter to the unit, and pull through the face of the unit.



RESTORE:

5. Install the replacement USB Adapter by sliding it into its position in the unit until secured with its prongs.
6. Reattach the USB Adapter molex connector.
7. Replace the Control Side Cover and secure with its screws.
8. Restore power to the unit and test for proper function.

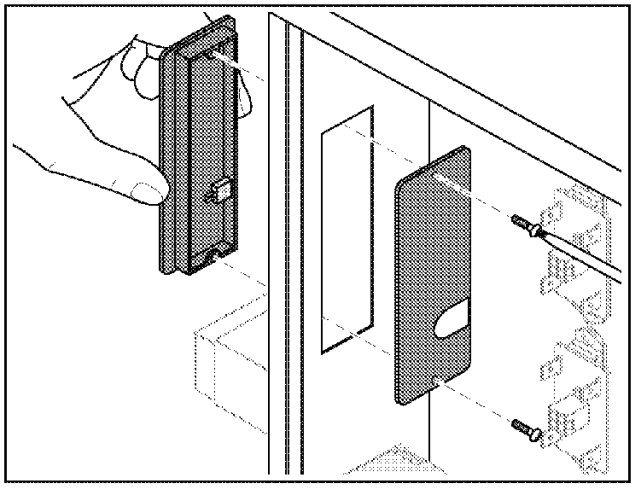
DAYPART SWITCH



The Daypart Switch is used to control the temperatures of various food products, up to three different time periods a day. It is located on the Control Panel and is accessed from inside the control compartment.

TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. From inside the control compartment, unplug the molex connector from the rear of the Daypart Switch.
4. The Daypart Switch is secured to the unit with its rear cover. Remove and retain the three (3) screws securing the Daypart Switch rear cover, then remove the switch and rear cover.

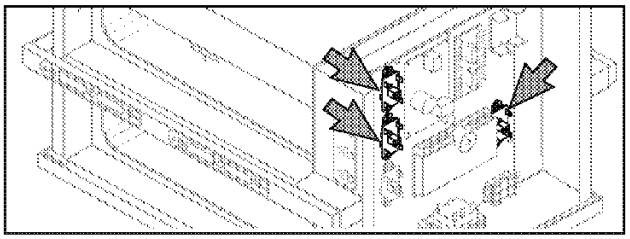


RESTORE:

5. Insert the replacement Daypart Switch into the unit and secure in place with its rear cover and screws.
6. Attach the molex connector to the replacement Daypart Switch.
7. Replace the Control Side Cover and secure with its screws.
8. Restore power to the unit and test for proper function.

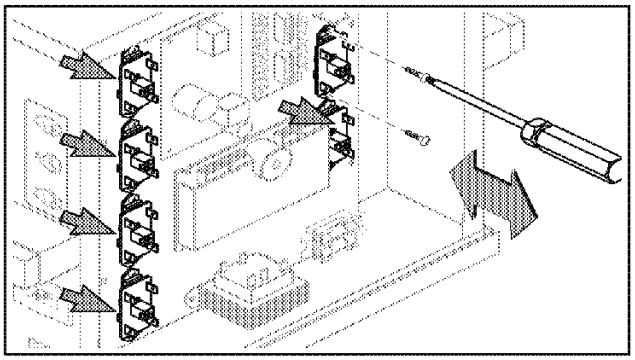
RELAYS (Smart Power Modules)

The Relays control the Emitters (IR Bulbs) and Heat Elements. Each unit has several (depending on model) and are located inside the control compartment.



TOOLS REQUIRED: Phillips screwdriver; Heat transfer compound

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect all wires and molex plug to the affected Relay.
4. Remove and retain the screws securing the affected Relay to the unit.
5. Remove the affected Relay and clean the mounting surface of any residual heat transfer compound.



RESTORE:

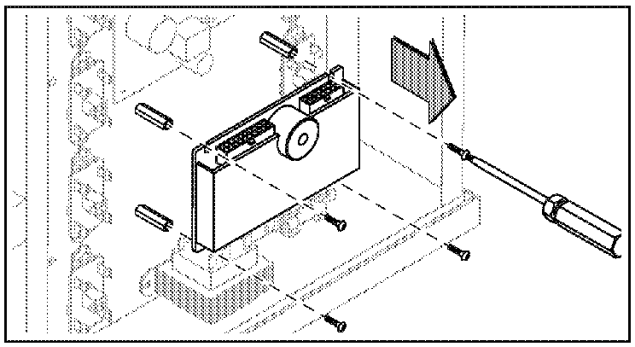
6. Apply heat transfer compound to the mounting surface of the replacement Relay.
7. Install the replacement Relay and secure with its screws.
8. Reconnect the Relay wires and plug.
9. Replace the Control Side Cover and secure with its screws.
10. Restore power to the unit and test for proper function.

CONTROLLER

The Controller is used to control the Relays and RTD Sensors. It is located inside the control compartment.

TOOLS REQUIRED: Phillips screwdriver; #1 precision screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Disconnect the two (2) molex connectors connected to the Controller.
4. Using a small Phillips screwdriver or #1 precision screwdriver, remove and retain the four (4) screws securing the Controller to the unit.
5. Maintaining the spacers on the studs, remove the Controller.



RESTORE:

6. Install the replacement Controller on its studs and secure with its screws.
7. Reconnect the two (2) molex connectors.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

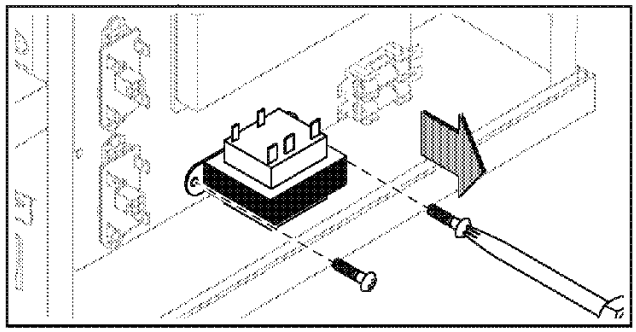
NOTE: To program the new Controller, see programming instructions located the "WEBSITE PROGRAMMING" section of this manual.

TRANSFORMER

The Transformer is used to step-down power to 12 VAC for the Controller. It is located inside the control compartment.

TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the spade connectors connected to the Transformer.
4. Remove and retain the two (2) screws securing the Transformer to the unit and remove the Transformer.



RESTORE:

5. Install the replacement Transformer and secure with its screws.
6. Reconnect the spade connectors.
7. Replace the Control Side Cover and secure with its screws.
8. Restore power to the unit and test for proper function.

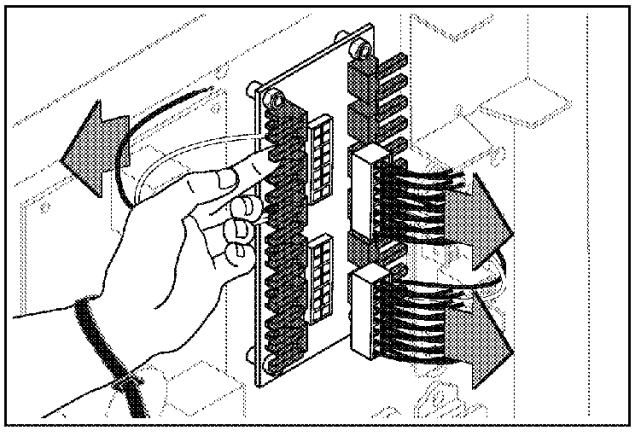
RTD BOARD

The RTD Board controls the RTD Sensors. It is located inside the control compartment.

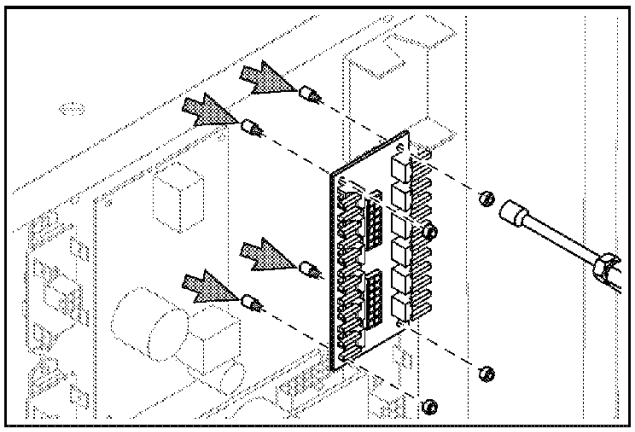
TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect all wires and the molex plug to the RTD Board.

NOTE: The use of an ESD Wrist Strap is strongly recommended. Follow ESD procedures on page 11.



4. Remove and retain the four (4) 1/4" nuts securing the affected RTD Board to the unit.
5. Maintaining the spacers on the studs, remove the RTD Board.



RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement RTD Board and secure with its screws.
7. Reconnect the RTD Board wires and plug.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

FUSES AND FUSE HOLDER

The Fuses and Fuse Holder serve as a circuit interrupter from the main power input. They are located inside the control compartment.

TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.

FOR FUSE REPLACEMENT:

3. Remove the fuses and test with an ohm meter.
4. Replace the fuse(s) with correctly rated fuse(s):

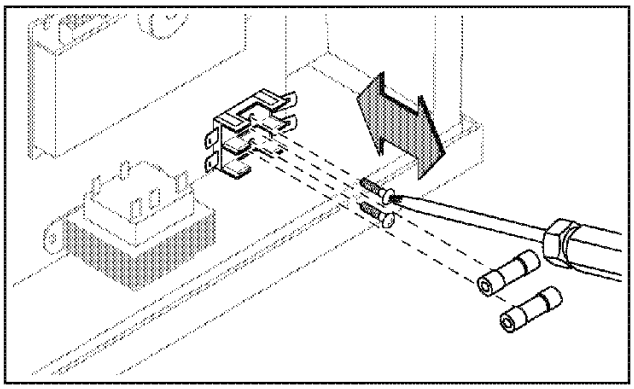
Models 2x2, 2x3, 2x4, 4x2	12 Amp
Model 3x4	16 Amp

NOTE: Replacing fuse(s) with an incorrect rating can cause nuisance blowing if rating is too low, or a loss of circuit protection if too high. Damage to the equipment and risk of fire may result. Replace fuse(s) with correctly rated fuse(s) only.

5. Replace the Control Side Cover and secure with its screws.
6. Restore power to the unit and test for proper function.

FOR FUSE HOLDER REPLACEMENT:

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Disconnect the spade connectors connected to the Fuse Holder.
4. Remove and retain the screws securing the Fuse Holder to the unit and remove the Fuse Holder.



RESTORE:

5. Install the replacement Fuse Holder and secure with its screws.
6. Reconnect the spade connectors.
7. INSTALL CORRECTLY RATED FUSES ONLY! Damage to the equipment and/or risk of fire may result if installing fuses with incorrect ratings.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

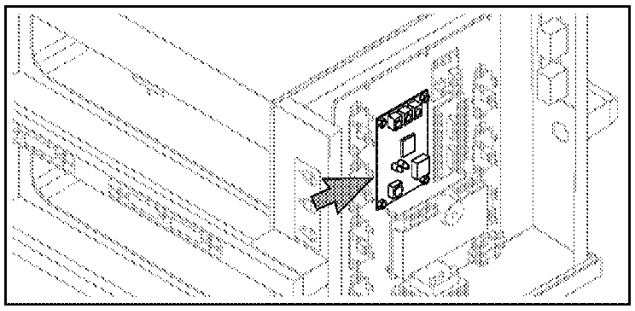
CONTROL COMPARTMENT COMPONENTS – KITCHEN MINDER MODEL (ONLY)

NOTE: The following components are installed, in addition to all previously listed control compartment components, in the Kitchen Minder model of the IRHS.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

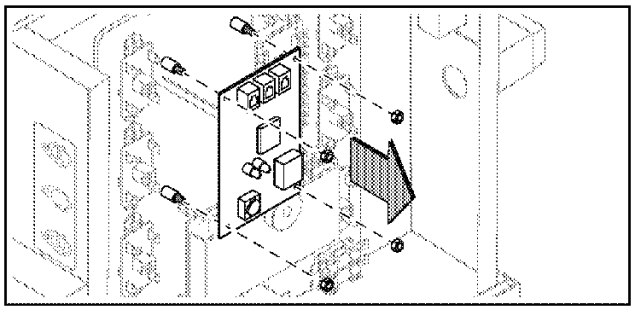
KITCHEN MINDER MASTER BOARD (If installed)

If Kitchen Minder is installed in the unit, the Kitchen Minder Master Board is located behind the Control Side Cover.



TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the lines connected to the Master Board.
4. Remove and retain the four (4) 1/4" nuts securing the affected Master Board to the unit.
5. Maintaining the spacers on the studs, remove the Master Board.



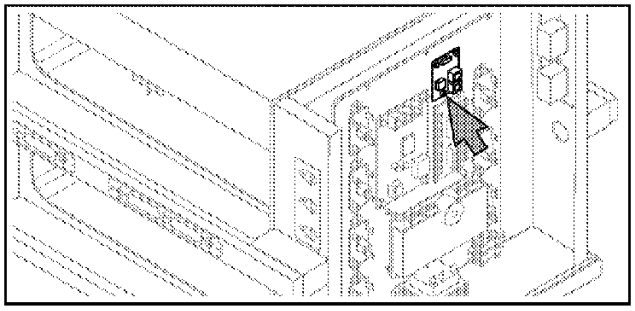
RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement Master Board on its studs and secure with its screws.
7. Reconnect the lines.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

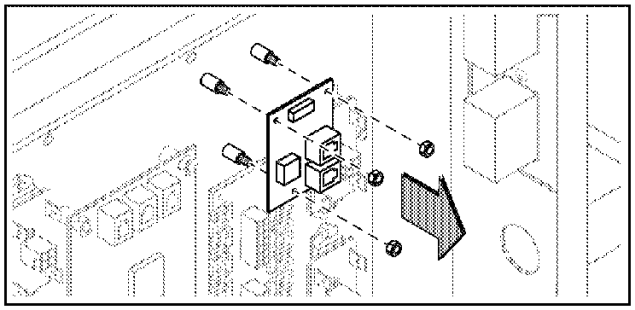
KITCHEN MINDER ADAPTER BOARD (if installed)

If Kitchen Minder is installed in the unit, the Kitchen Minder Adapter Board is located behind the Control Side Cover.



TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the line and molex plug connected to the Adapter Board.
4. Remove and retain the three (3) 1/4" nuts securing the Adapter Board to the unit.
5. Maintaining the spacers on the studs, remove the Adapter Board.

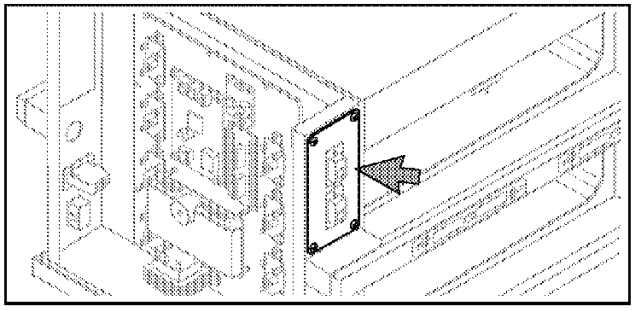


RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement Adapter Board on its studs and secure with its screws.
7. Reconnect the line and molex plug to the Adapter Board.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

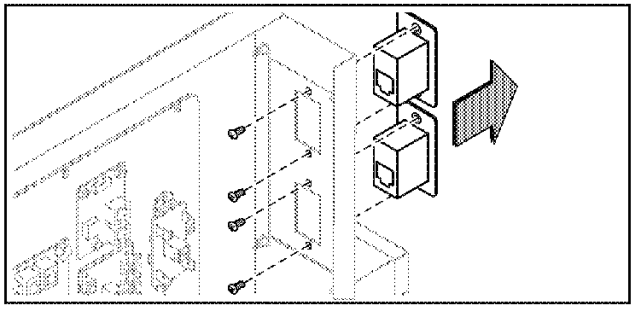
MOUNTING PLATE (If installed)

If Kitchen Minder is installed in the unit, the Mounting Plate is located in the rear control panel. The Mounting Plate holds the Couplers. The type depends on the specific model: Domestic (2-Hole) and CE (2-Hole or 3-Hole).

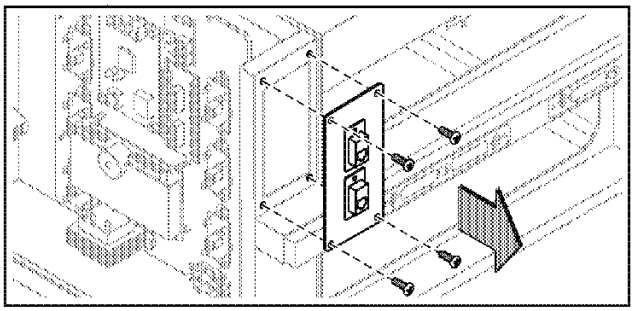


TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect any communication lines attached to both sides of the Couplers contained in the Mounting Plate.
4. **If intending to retain and reuse the existing Couplers,** remove and retain the Couplers and their mounting screws (two per coupler).



5. Remove and retain the four (4) screws securing the Mounting Plate to the rear control panel.

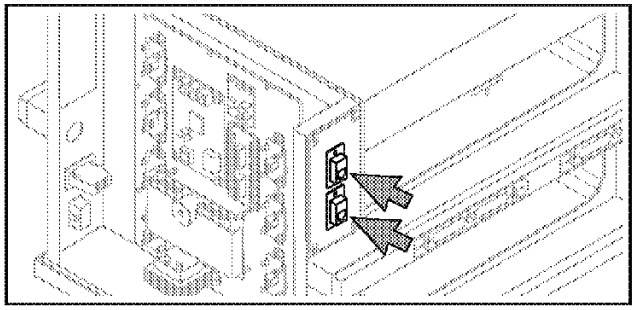


RESTORE:

6. Install the replacement Mounting Plate in the rear control panel and secure with its screws.
7. If necessary, reinstall the Couplers into the Mounting Plate with their screws.
8. Reconnect the communication lines to the Couplers.
9. Replace the Control Side Cover and secure with its screws.
10. Restore power to the unit and test for proper function.

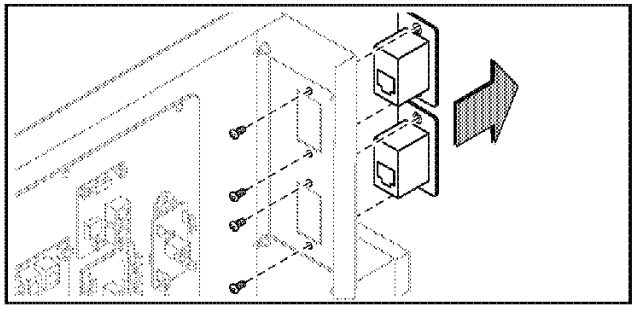
COUPLERS (If installed)

If Kitchen Minder is installed in the unit, the Couplers are located in the Mounting Plate on the rear Control Panel. Couplers are the connection point between the Master and Satellite Kitchen Minder units allowing them to be connected and communicate. The quantity varies depending on the specific model – two (2; one RJ45 and one RJ12) in the Domestic model or three (3; all CAT5/RJ45) in the CE model.



TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the affected Coupler line(s).
4. Remove and retain the two (2) small screws that attach each Coupler to the Mounting Plate.



RESTORE:

5. Insert the replacement Coupler(s) and attach with its screws.
6. Reconnect the Coupler line(s).
7. Replace the Control Side Cover and secure with its screws.
8. Restore power to the unit and test for proper function.

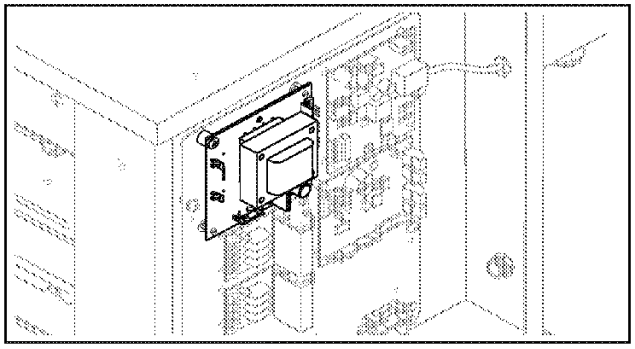
CONTROL COMPARTMENT COMPONENTS – VISOR MODEL (ONLY)

NOTE: All previously listed control compartment components (Standalone and Kitchen Minder models) are NOT INSTALLED in the VISOR models of the IRHS.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

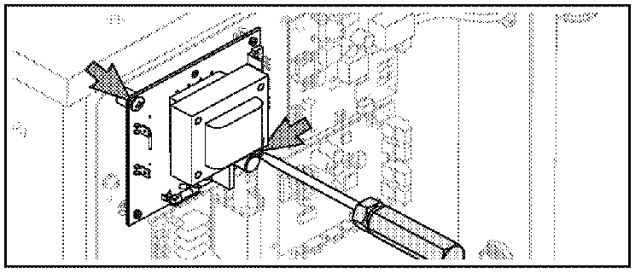
12V POWER CONTROL BOARD

If VISOR is installed in the unit, the 12V Power Control Board is located on the VISOR Control Panel inside the control compartment.

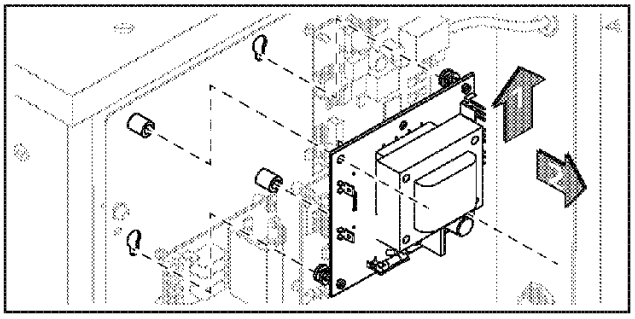


TOOLS REQUIRED: Phillips screwdriver; ESD strap; Needle-nose pliers

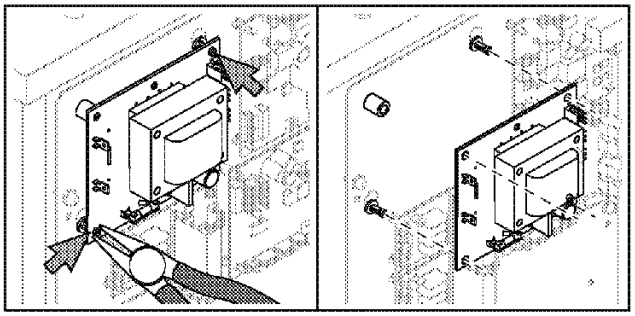
1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the spade and molex connectors that are connected to the 12V Power Control Board.
4. Remove and retain the two (2) screws securing the 12V Power Control Board to the unit.



5. Leaving them in place, use the two (2) nylon PC lock-in supports to slide the 12V Power Control Board off of the control panel. If the PC lock-in supports are being reused on the replacement 12V Power Control Board, use needle-nose pliers to squeeze the PC lock-in supports and slide out of the 12V Power Control Board. The nylon screw stubs will remain in place.



OR



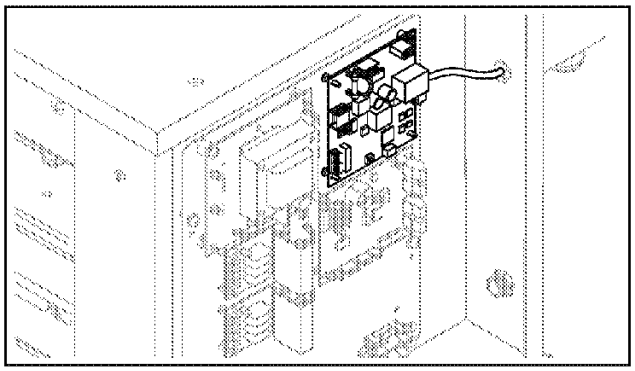
RESTORE:

6. If necessary, install two (2) nylon PC lock-in supports in the 12V Power Control Board.
7. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement 12V Power Control Board, with its PC lock-in supports, by sliding into the keyholes in the control panel and secure in place with its screws.
8. Reconnect the spade and molex connectors.
9. Replace the Control Side Cover and secure with its screws.
10. Restore power to the unit and test for proper function.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

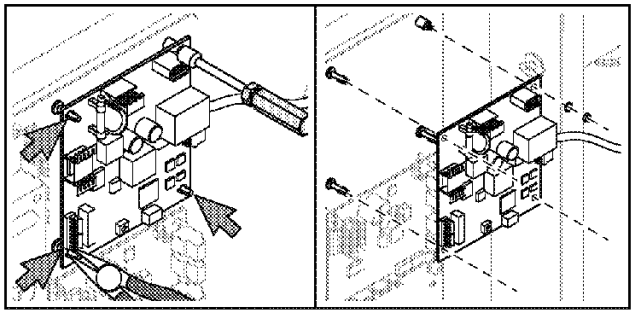
POWER CONTROL BOARD – ACM

If VISOR is installed in the unit, the ACM Power Control Board is located on the VISOR Control Panel inside the control compartment.



TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket; Needle-nose pliers

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the connectors and data line that are connected to the ACM Power Control Board.
4. Remove and retain the 1/4" nut securing the ACM Power Control Board to the unit.
5. Squeeze each of the three (3) nylon PC lock-in supports with needle-nose pliers to release the ACM Power Control Board off of the control panel. The nylon supports and nut stub will remain in place.



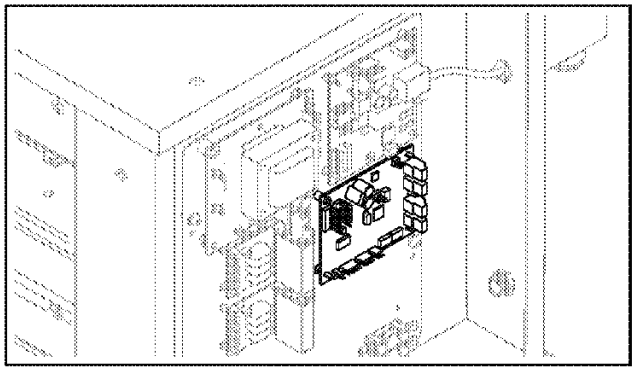
RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement ACM Power Control Board onto its nylon PC lock-in supports and secure in place with its nut.
7. Reconnect the spade and molex connectors.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

POWER CONTROL BOARD – 103M

If VISOR is installed in the unit, the ACM Power Control Board is located on the VISOR Control Panel inside the control compartment. The quantity varies depending on the specific model.

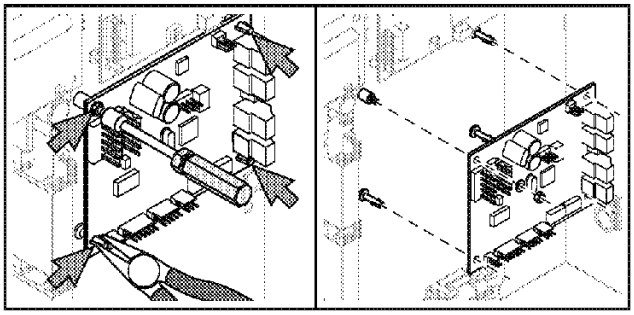


TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket; Needle-nose pliers

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the connectors that are connected to the 103M Power Control Board.

NOTE: The use of an ESD Wrist Strap is strongly recommended. Follow ESD procedures on page 11.

4. Remove and retain the 1/4" nut and its nylon spacer securing the 103M Power Control Board to the unit.
5. Squeeze each of the three (3) nylon PC lock-in supports with needle-nose pliers to release the 103M Power Control Board off of the control panel. The nylon supports and nut stub remain in place.



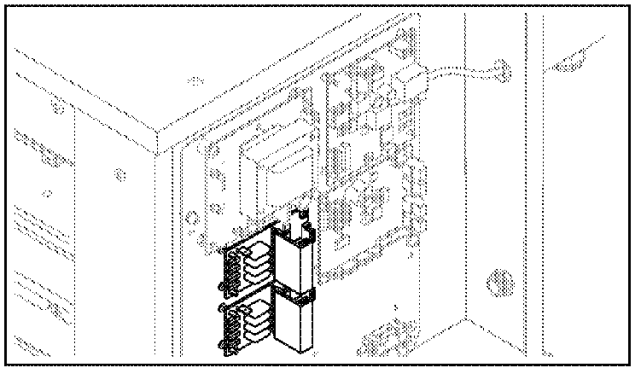
RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement 103M Power Control Board onto its nylon PC lock-in supports and secure in place with its nut and nylon spacer.
7. Reconnect the spade and molex connectors.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

NOTE: THE USE OF AN ESD WRIST STRAP IS STRONGLY RECOMMENDED. FOLLOW ESD PROCEDURES ON PAGE 11.

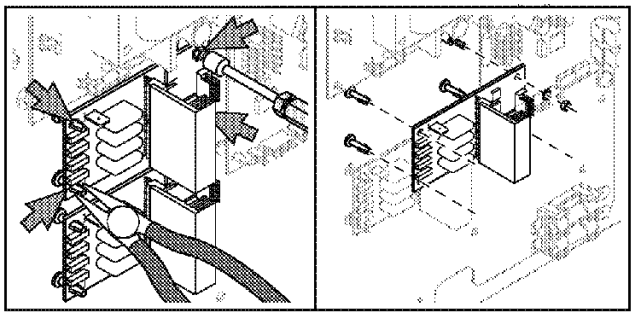
POWER CONTROL BOARD – TRIAC DRIVE

If VISOR is installed in the unit, the Triac Drive Power Control Board is located on the VISOR Control Panel inside the control compartment. The quantity varies depending on the specific model.



TOOLS REQUIRED: Phillips screwdriver; ESD strap; 1/4" nut driver or socket; Needle-nose pliers

1. Place the unit's Power Switch in the "OFF" position and follow the proper lockout/tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.
3. Mark and disconnect the connectors that are connected to the Triac Drive Power Control Board.
4. Remove and retain the 1/4" nut and nylon spacer securing the Triac Drive Power Control Board to the unit.
5. Squeeze each of the three (3) nylon PC lock-in supports with needle-nose pliers to release the Triac Drive Power Control Board off of the control panel. The nylon supports and nut stub will remain in place.

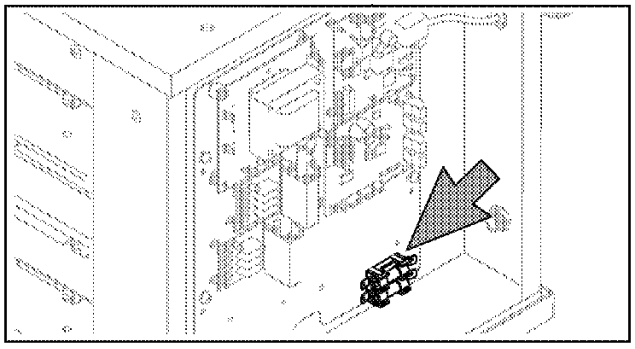


RESTORE:

6. Wearing the ESD Wrist Strap, and following ESD procedures, install the replacement Triac Drive Power Control Board onto its nylon PC lock-in supports and secure in place with its nut.
7. Reconnect the spade and molex connectors.
8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

FUSE HOLDER AND FUSES

The Fuses and Fuse Holder serve as a circuit interrupter from the main power input. They are located on the VISOR Control Panel, inside the control compartment.

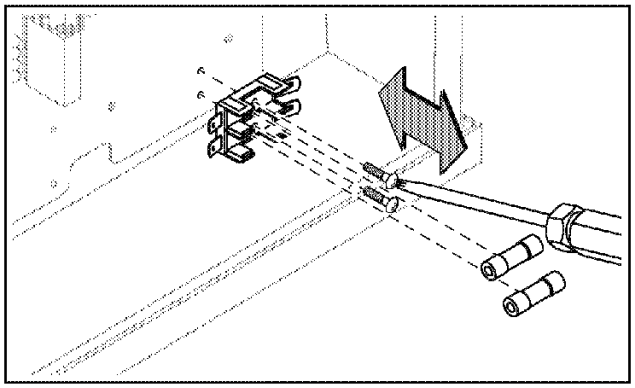


TOOLS REQUIRED: Phillips screwdriver

1. Place the unit's Power Switch in the OFF position and follow the proper Lockout/Tagout procedures.
2. Remove and retain the screws securing the Control Side Cover and remove the cover.

FOR FUSE HOLDER REPLACEMENT

3. Disconnect the spade connectors connected to the Fuse Holder.
4. Remove and retain the screws securing the Fuse Holder to the unit and remove the Fuse Holder.



RESTORE:

5. Install the replacement Fuse Holder and secure with its screws.
6. Reconnect the spade connectors.
7. INSTALL CORRECTLY RATED FUSES ONLY!

NOTE: Replacing fuse(s) with an incorrect rating can cause nuisance blowing if rating is too low, or a loss of circuit protection if too high. Damage to the equipment and risk of fire may result.

8. Replace the Control Side Cover and secure with its screws.
9. Restore power to the unit and test for proper function.

FOR FUSE REPLACEMENT

3. Remove the fuses and test with an ohm meter.

RESTORE:

4. Replace the fuse(s) with correctly rated fuse(s):

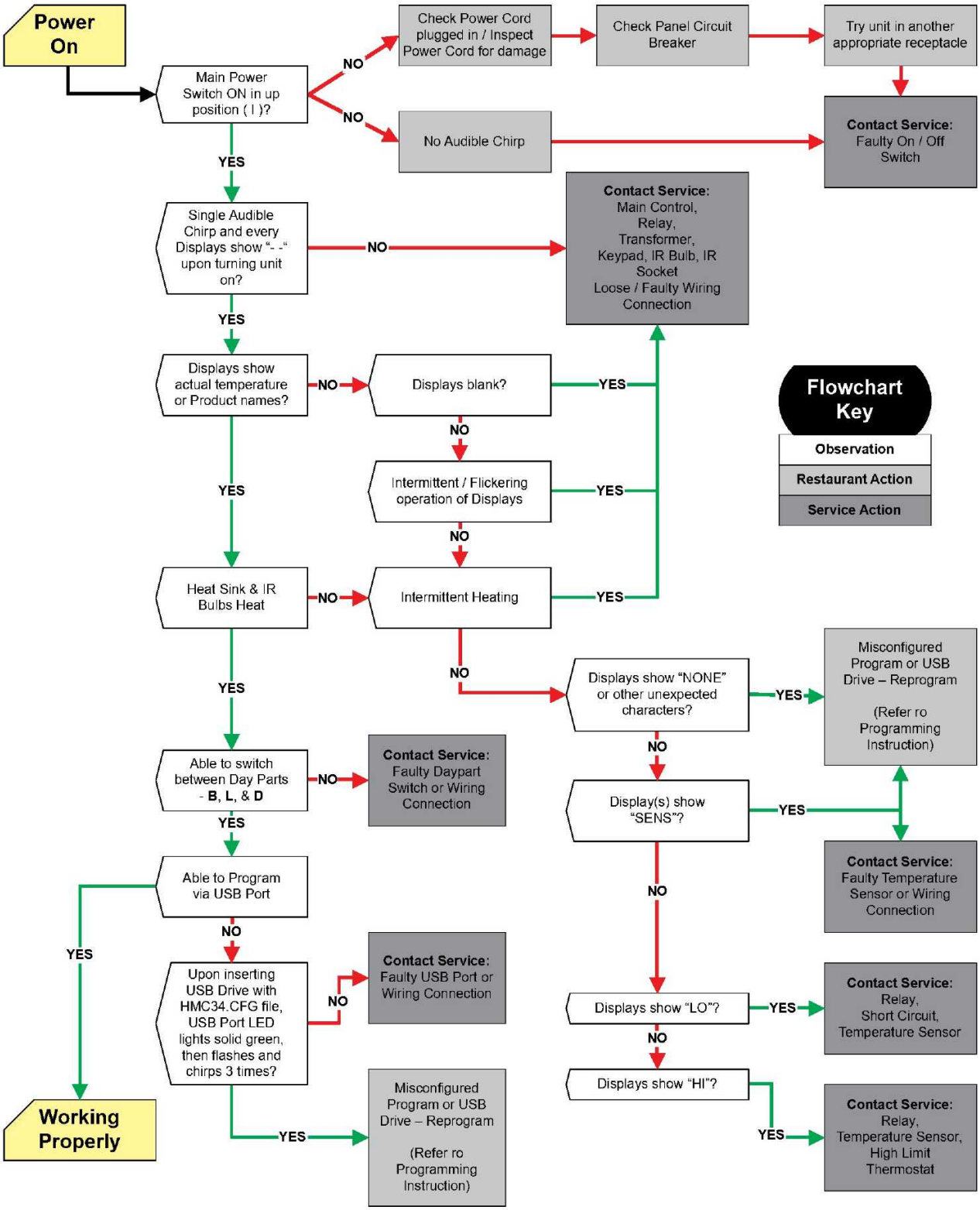
Models 2x2, 2x3, 2x4, 4x2	12 Amp
Model 3x4	16 Amp

NOTE: Replacing fuse(s) with an incorrect rating can cause nuisance blowing if rating is too low, or a loss of circuit protection if too high. Damage to the equipment and risk of fire may result.

5. Replace the Control Side Cover and secure with its screws.
6. Restore power to the unit and test for proper function.

TROUBLESHOOTING & DIAGNOSTICS

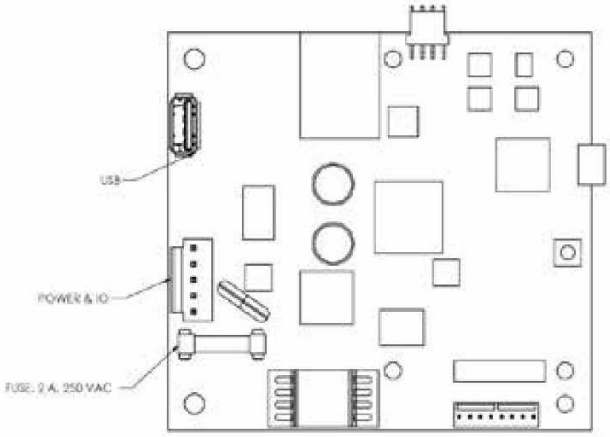
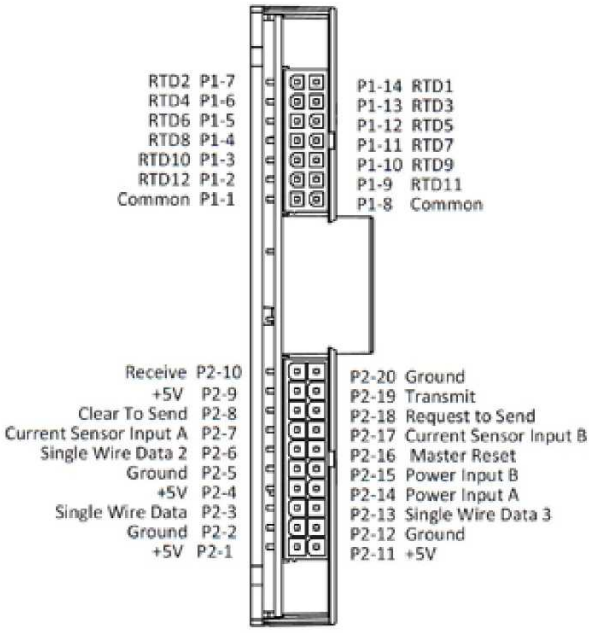
IRHS TROUBLESHOOTING FLOW CHART

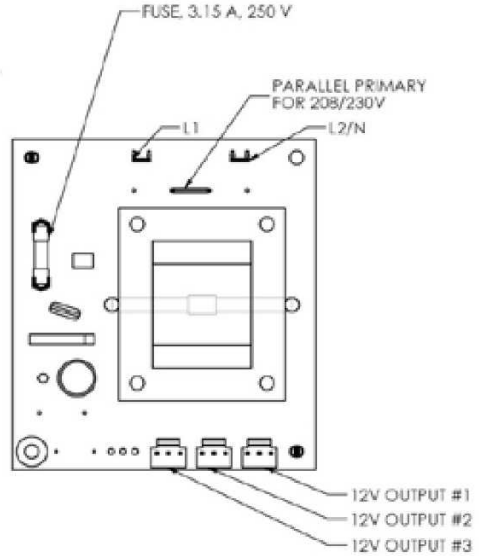
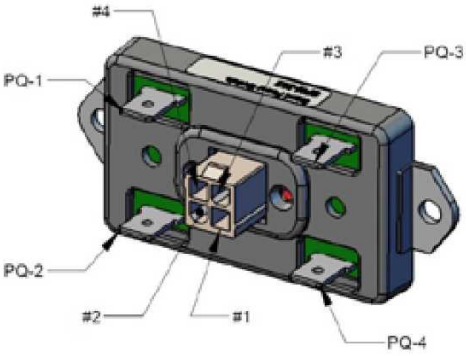


IRHS TROUBLESHOOTING GUIDE

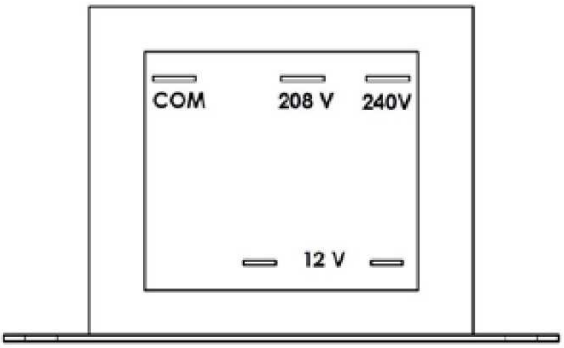
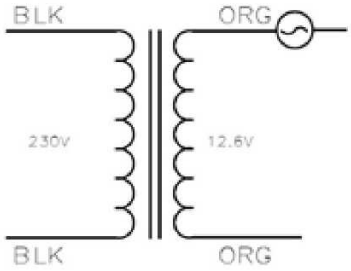
COMPONENT CHECK	STATE		POSSIBLE CONDITIONS	SOLUTION(S)
Unit Powered?			Unplugged	Plug Power Cord into correct receptacle
			Power Cord damaged	Repair/Replace Power Cord
			Circuit Breaker tripped	Reset panel breaker
			Faulty receptacle	Replace receptacle
			Fuse	Replace Fuse
			Wiring/Connectors	Trace and repair wiring
			On/Off Switch	Replace On/Off Switch
Timer (Menu) Bar Displays	Blank?	Both Bars	Transformer	Replace Transformer
			Controller	Replace Controller
			Keypad Display	Replace Keypad Display
			Wiring/Connectors	Trace and repair wiring
		Rear Bar Only	Wiring/Connectors	Trace and repair wiring
			IR Relay	Replace faulty relay
		Individual Keypad	Wiring/Connectors	Trace and repair wiring
			Keypad Display	Replace Keypad Display
	Showing Error Code	"SENS" or "HIGH"	RTD	Replace RTD (Temperature) Sensor
			RTD Board	Replace RTD Board
			Programming	Reprogram the unit
		"LOW"	RTD	Replace RTD (Temperature) Sensor
			RTD Board	Replace RTD Board
			Programming	Reprogram the unit
			High Limit Switch	Allow unit to cool and switch reset
				Replace High Limit Swith
		"BULB"	Wiring/Connectors	Trace and repair wiring
			IR Relay	Replace faulty relay
			Emitter (IR Bulb)	Replace Emitter (IR Bulb)
			Emitter Socket	Replace Emitter (IR Bulb) Socket
HeatSink (Bottom) Heating?			Programming	Reprogram the unit
			Controller	Replace Controller
			Heat Relay	Replace faulty relay
			RTD	Replace RTD (Temperature) Sensor
			RTD Board	Replace RTD Board
			Heat Element	Replace Heat Element
			High Limit Switch	Allow unit to cool and switch reset
				Replace High Limit Swith
			Wiring/Connectors	Trace and repair wiring
Emitters (IR Bulbs)	Not Operating?		Programming	Reprogram the unit
			Controller	Replace Controller
			Emitter (IR Bulb)	Replace Emitter (IR Bulb)
	Operating?		Glass Assembly cleanliness	Clean Glass Assembly
				Check Glass Assembly for damage/defect
			Lid usage	Ensure proper lid for product is used
Programming			USB Drive	Ensure USB drive is blank and download recipes
				Replace USB drive
			Website Programming	Reprogram the unit
			USB Port	Replace USB Port
			Wiring/Connectors	Trace and repair wiring
			Controller	Replace Controller
Daypart Switch			Heat Relay	Replace faulty relay
			Controller	Replace Controller
			Daypart Switch	Replace Daypart Switch
Lids/Pans			Proper fit	Verify proper proper lid and pan installation
			Glass Assembly	Check Glass Assembly for damage/defect
				Ensure Glass Assembly is correctly installed
			Non-Duke parts	Verify OEM information (packaging/labeling)

IRHS COMPONENT TECHNICAL SPECIFICATIONS

PART NO.	DESCRIPTION	SPECIFICATIONS
166112	ACM, Power Control Board (VISOR-only)	
166080	**Controller**; Renau HMC-34	
166017	**Emitter, IRHS**; 208 VAC	• 208 VAC; 340 (170 x 2) W (± 3%)
166018	**Emitter, IRHS**; 240 VAC	• 240 VAC; 340 (170 x 2) W (± 3%)
166004	**Heat Element**; 2-Wide, 208 VAC	• 208 VAC; 300 W
166005	**Heat Element**; 2-Wide, 240 VAC	• 240 VAC; 300 W
166007	**Heat Element**; 3-Wide, 208 VAC	• 208 VAC; 450 W
166008	**Heat Element**; 3-Wide, 240 VAC	• 240 VAC; 450 W
166009	**Heat Element**; 4-Wide, 208 VAC	• 208 VAC; 300 W
166010	**Heat Element**; 4-Wide, 240 VAC	• 240 VAC; 300 W

<table>
<tr><th>PART NO.</th><th>DESCRIPTION</th><th>SPECIFICATIONS</th></tr>
<tr><td>166082</td><td>Keypad Display; Up/Down
(all configurations)</td><td rowspan="2">• Input: 5 VDC
• Pins:
— Pin #1: GND
— Pin #2: 5 VDC
— Pin #3: Data In
— Pin #4: Data Out</td></tr>
<tr><td>166083</td><td>Keypad Display; Up/Up
(only with 3x4 configurations)</td></tr>
<tr><td>166111</td><td>Modular Jack (VISOR-only)</td><td>• 1.5 A; 125 VDC
• Torque: 12 Kgf/cm
• CAT 5
• IP67</td></tr>
<tr><td>120011</td><td>Power Control Board
(VISOR-only)</td><td>• Primary 208/230 VAC; Secondary: 12 VAC

</td></tr>
<tr><td>157830</td><td>Relay, Smart Power Module</td><td>• Max. Load Current: 20 Arms. Heat sinking required.
• Operating Voltage: 24-250 Vrms
• Input : 5V TTL


<table>
<tr><th colspan="2">Connector PIN Data</th></tr>
<tr><td>PQ-1</td><td>LOAD1-1</td></tr>
<tr><td>PQ-2</td><td>LOAD1-2</td></tr>
<tr><td>PQ-3</td><td>LOAD2-1</td></tr>
<tr><td>PQ-4</td><td>LOAD2-2</td></tr>
<tr><td>#1</td><td>+5V DC</td></tr>
<tr><td>#2</td><td>GND</td></tr>
<tr><td>#3</td><td>1-wire network IN</td></tr>
<tr><td>#4</td><td>1-wire network OUT</td></tr>
</table></td></tr>
</table>

PART NO.	DESCRIPTION	SPECIFICATIONS
158279	RTD Sensor	• Temperature Range: -65°F to 260°F
158312	Thermostat, High Limit	• Opens @ 300°F; Closes @ 270°F
155749	**Transformer;** 208/240 VAC	• Primary: 208/240 VAC; Secondary: 12 VAC 
156838	**Transformer;** 230 VAC	• Input: 230 VAC; 50/60 Hz; Output: 12.6 V @ 2.38 A 

OPERATIONS

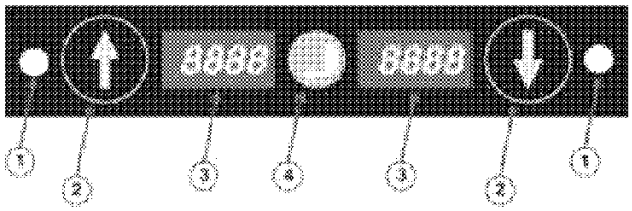
OPERATING PROCEDURES

- Ensure proper pan covers are inserted into the correct location for broiled products.
- Upon turning ON, allow the unit to heat until the menu bars display the pre-programmed product names. This does not occur before reaching proper temperature.

NOTE: If the menu bars display temperature at any time after the preheat period, discontinue use of the affected pan location(s) until the unit can be serviced.

OPERATIONS

Menu Bar Components

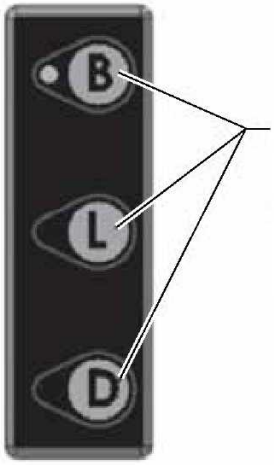


1. **Status LEDs.** Used for indicating status of pan.
   a. GREEN: Menu is Active – product in pan (use first)
   b. FLASHING GREEN: Cook Warning Time reached (cook more product) or keypad in edit (programming) mode
   c. NON-ILLUMINATED: Menu is inactive – no product in pan
2. **Arrow Buttons:**
   a. Used for starting/stopping/resetting the menu.
   b. Used to access Menu Mode.
   c. Indicate which pan the adjacent status LED and pan display are linked to.
3. **LED Displays:**
   a. Displays product name and hold time remaining (alternates between the two when the Menu is active).
   b. Once to temperature, product names can be viewed on the displays. Additional settings such as "LINK", "TIME", and "TEMP" can be viewed two different ways:
      1) Manually accessing Menu Mode through Menu Bars.
      2) Uploading unit settings from the IRHS to a USB Drive and viewing via the Internet. This is accomplished by using the same website used to download recipes.
4. **ENTER Button**. Used to access Menu Mode.

Changing Dayparts

There are two methods for selecting Dayparts:

1. Select the appropriate Daypart Button to switch between breakfast, lunch, and dinner menus. If necessary, the three (3) parts can be programmed for any three separate time periods – not just "breakfast", "lunch", and/or "dinner" menus.



PUSH BUTTONS TO CHANGE DAYPART MENU – CORRESPONDING LED WILL TURN ON (BREAKFAST SHOWN)

2. Via Menu Bar:

a. Enter Menu Mode by pressing and holding the ENTER button "↵" for three (3) seconds.

b. Status LED flashes, "**MENU**" is displayed on left Display, and either "**UP**" or "**DOWN**" is displayed on the right display – indicating which pan location information will be displayed/controlled.



c. After selecting the UP or DOWN Arrow, press the ENTER Button "↵" to accept.

d. Status LED stops flashing and "**MEAL ↵ SET1**" appears on the Display.



e. Press the ENTER button again. Status LED flashes indicating Menu Mode.

f. Use the arrow buttons to scroll to desired Daypart ("**MEAL ↵ SET1**", "**MEAL ↵ SET2**", or "**MEAL ↵ SET3**") and press the ENTER button to accept.



g. Status LED stops flashing, "**UPDATING**" is displayed for a few seconds, and then the desired Daypart ("**MEAL ↵ SETx**") is displayed.





h. Press the UP arrow button one last time to scroll to "**EXIT**" and press the ENTER button "↵" to exit Menu Mode.



Display Link, Hold Time, or Temperature

1. Enter Menu Mode by pressing and holding the ENTER button "↵" for three (3) seconds.
2. Status LED flashes, "**MENU**" is displayed on left Display, and either "**UP**" or "**DOWN**" is displayed on the right display – indicating which pan location information will be displayed/controlled.



3. After selecting the UP or DOWN arrow, press the ENTER Button "↵" to accept.
4. Status LED stops flashing and "**MEAL ↵ SET1**" appears on the Display.



5. Press the ENTER button "↵" again. Status LED flashes indicating edit mode.
6. Press the UP arrow button repeatedly to scroll up or down through "**LINK**", "**TIME**", and "**TEMP**". The DOWN arrow button can be used to cycle the opposite direction.



This indicates product named **BURG** is linked pan locations



This indicates the hold time for BURG



This indicates the Heat Sink Temperature for BURG

7. Press the UP arrow button one last time to scroll to "**EXIT**" and press the ENTER button "↵" to exit Menu Mode.



DIAGNOSTICS

Checking Heat Sink Temperature

- A surface temperature probe can be used to check the temperature of the heat sink surface.
- No pans should be in wells during the pre-heat and temperature check period. Pre-heat the holding unit for 30 minutes before taking any temperature readings.
- Ensure the pan location being measured is not in a hold cycle mode (timing down).
- Locate the surface temperature probe in the geometric center of the desired pan location. Make sure the probe is making good contact with the surface while taking readings.
- The temperature control will exhibit a swing in temperature as the control cycles on and off while regulating to the set point temperature. The average of several readings taken should be +/- 5°F from the set point.
- Compare the measured temperature to the programmed heat sink set point (TEMP) for the specified pan location.

Checking IR Bulb Function

- IR bulbs are either ON or OFF.
- Select an arrow to initiate a hold cycle.
- After heat up is complete (display will show product names), visually confirm the IR bulb comes on.

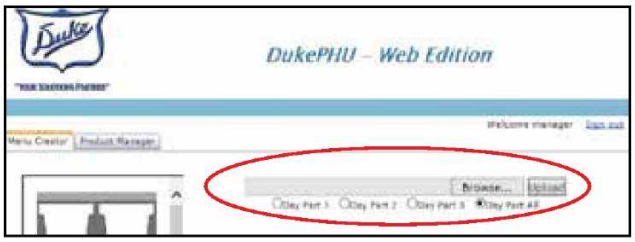
Checking Product Settings (via USB file)

1. Turn the IRHS on and wait for temperature or product names to display.
2. Insert a **blank** USB drive (any size) into the USB port. The USB port LED will light solid green and a single chirp should be heard.
3. The display will go blank and the USB port LED will begin flashing green.
4. A second chirp should be heard, then the USB port LED will return to solid green indicating that the file has successfully uploaded from the IRHS to the USB drive.
5. Remove the USB drive from the port.
6. To view the settings file on the Internet, log onto the same website used to download recipes:

   www.dukemfg.info/bkirhs

   User Name: "**manager**"

   Password: "**password**" (case sensitive)



Error Codes

The RTD Board performs a routine, internal check after turning the unit on to validate the unit is sensing temperature and heating properly. In the event of a problem, an error will display on the Menu Bar:

"BULB" – IR Bulb Circuit Fault

Indicates a fault with a specified IR Bulb circuit. The affected pan location is not available for timing product and a qualified service technician should be contacted to identify the cause of the fault.

"LOW" – Under-Temperature Fault

Indicates a fault with a heating circuit component. The display will show "**LOW**" if the temperature stays 10°F below the set point temperature for 30 minutes. The affected pan location is not available for timing product and a qualified service technician should be contacted to identify the cause of the fault.

"HIGH" – Over-Temperature Fault

Indicates a fault with a heating circuit component. The display will show "**HIGH**" if the temperature stays 10°F above the set point temperature for 30 minutes. The affected pan location is not available for timing product and a qualified service technician should be contacted to identify the cause of the fault.

"SENS" – Sensor Fault

May indicate the unit has been programmed improperly (i.e., loading a 2x4 product configuration file into a 2x2 unit). An attempt to properly reprogram the unit should be made.

May indicate a fault with a heat sink temperature sensor. The affected pan location is not available for timing product and a qualified service technician should be contacted to identify the cause of the fault.

Temperature Check Procedure

1. **No pans should be in wells during the pre-heat and temperature check.** Pre-heat the warmer for 30 minutes before taking any temperature readings. Do not take readings unless the cavity has been empty for 30 minutes. This will allow the temperature to stabilize and will prevent false readings.
2. A digital temperature meter that has been calibrated must be used to get an accurate temperature reading. Use a thermocouple surface temperature probe to measure temperatures.
3. The heating well should be cleaned and empty before the temperature is checked. Avoid any air drafts that might flow through the cavity.
4. Locate the surface temperature probe on the bottom of the first cavity as shown for the cabinet size.
5. All temperature controls exhibit a swing in temperature as the control cycles on and off while regulating to the set point. The correct calibration temperature is the average of several readings taken over a period of 20 minutes after the warmer has been pre-heated. The average temperature should be ± 5°F from the set point.

CLEANING & ROUTINE MAINTENANCE

CLEANING

IF DAILY CLEANING IS PERFORMED ROUTINELY, DEEPER, MORE AGGRESSIVE, CLEANING METHODS CAN BE AVOIDED. OVER LONGER PERIODS OF TIME, FRIED FOOD PRODUCTS CAN ACCUMULATE AND BAKE ON SURFACES OF THE COMPARTMENTS.

Cleaning solutions need to be alkaline based or non-chloride cleaners. Any cleaner containing chlorides will damage the protective film of the stainless steel. Chlorides are also commonly found in hard water, salts and household and industrial cleaners. If cleaners containing chlorides are used, be sure to rinse repeatedly and dry thoroughly upon completion.

WARNING: NEVER USE AN ACID BASED CLEANING SOLUTION!

MANY FOOD PRODUCTS HAVE AN ACIDIC CONTENT WHICH CAN DETERIORATE THE FINISH. BE SURE TO CLEAN ALL FOOD PRODUCTS FROM ANY STAINLESS STEEL SURFACE. COMMON ITEMS INCLUDE, TOMATOES, PEPPERS AND OTHER VEGETABLES.

Routine cleaning of stainless steel can be done with soap and water. Extreme stains or grease should be cleaned with a non-abrasive cleaner and plastic scrub pad. It is always good to rub with the grain of the steel.

Early signs of stainless steel breakdown can consist of small pits and cracks. If this has begun, clean thoroughly and start to apply stainless steel cleaners in attempt to restore and preserve the finish of the steel's protective layer.

RECOMMENDED SUPPLIES

- Cleaning Towels
- Non-Scratch Scrub Pad
- SYR Cleaning Brush Tool
- Kay Super Concentrate Degreaser
- Kay-5® Sanitizer/Cleaner, or compatible sanitizer

DAILY INSPECTION CHECKLIST

Inspect glass daily for chips, cracks, or breaking. Discard all food and notify manager if any chips, cracks, or broken glass are found. Do not use equipment. All glass must be in good condition before using equipment to hold food.

- Make sure the unit is free of any grease or visible food soils.
- Make sure the exterior of the unit is free of smudges or soil.
- Make sure the unit holding pans are free of damage and any food soil residue.

DAILY CLEANING PROCEDURES

Never use a high-pressure water wash for this cleaning procedure as water can damage electrical components.

1. Turn unit off, unplug, and allow to cool for at least 10 minutes.
2. Remove all holding pans and covers. Wash, rinse, and sanitize at the 3-compartment sink.
3. Allow to air dry.
4. Fully clean all the heat sink surfaces. Spray the cleaning brush tool with degreaser and use as shown – gently sliding in and out of each compartment.

   NOTE: NEVER USE STEEL PADS, WIRE BRUSHES, OR SCRAPERS!



5. Fully clean upper glass surfaces by hand. Spray a cleaning towel, or non-scratch scrub pad when necessary, with soapy solution degreaser.

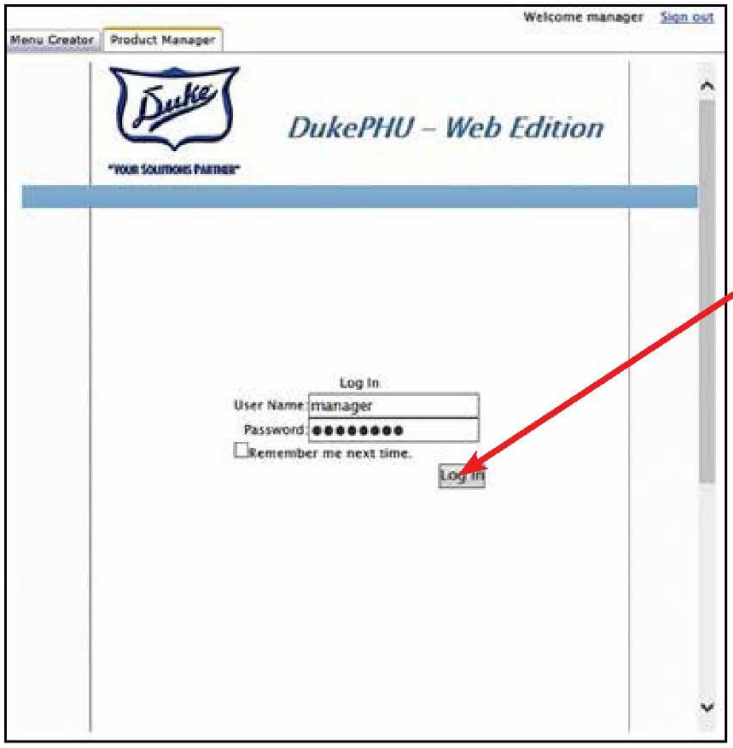
   NOTE: Never spray cleaning solution directly onto the cabinet.

6. Use sanitizer-soaked towels to wipe out all interior compartments on the unit. Wipe the top compartments first, then the remaining levels from top to bottom.

   IMPORTANT: Use clean, sanitizer-soaked towels (towels must be wrung out so that they are damp and not dripping, dripping towels may harm the unit)

WEBSITE PROGRAMMING

1.



Log on.

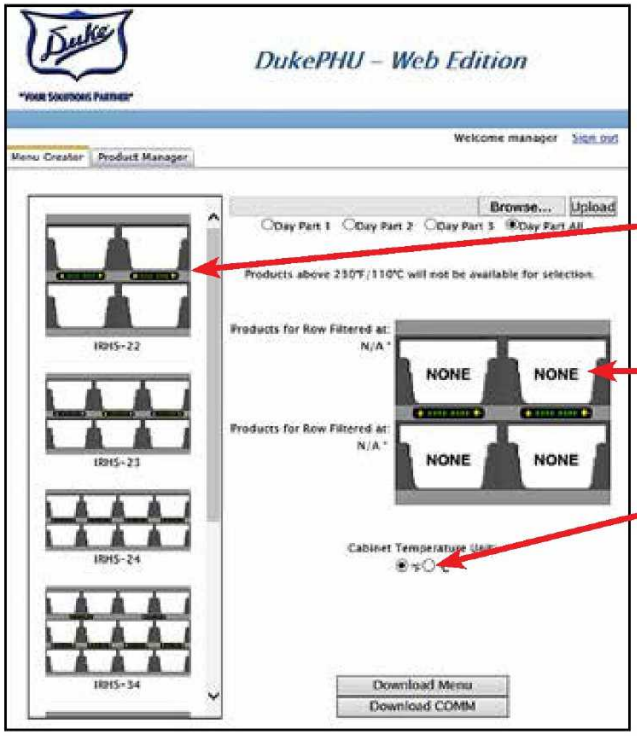
www.dukemfg.info/bkirhs

User Name: **manager**

Password: **password**

(case sensitive)

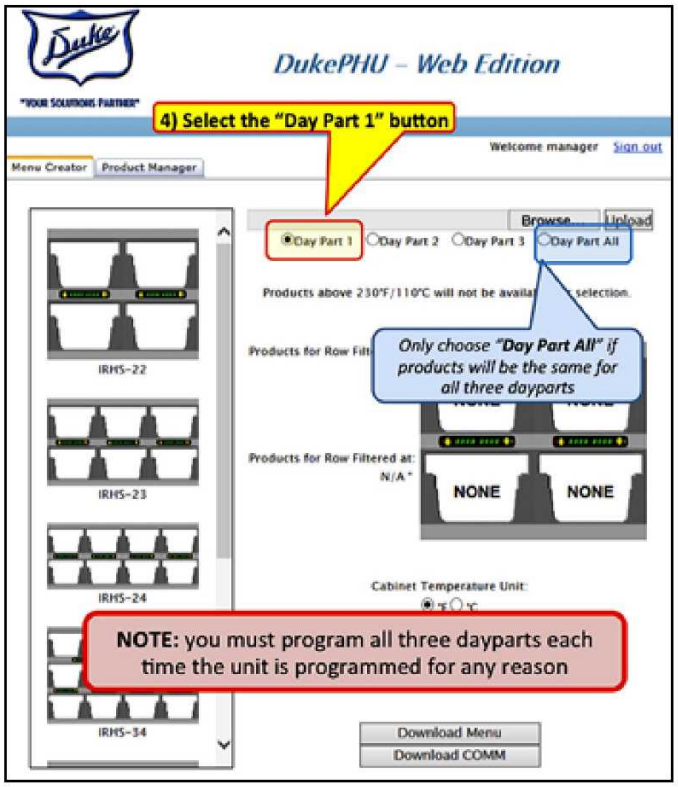
2.



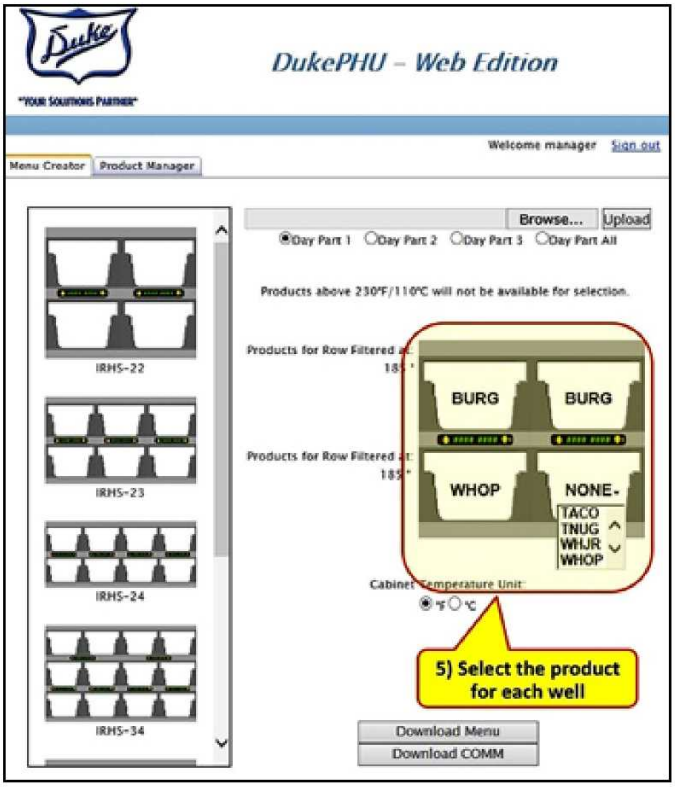
NOTE: When you first log onto this page, you must:

1) Select the desired equipment configuration on the left, before it will…
2) …show up on the right side in order to be programmed.
3) If necessary, change the Cabinet Temperature Unit to "°C" (Celsius)

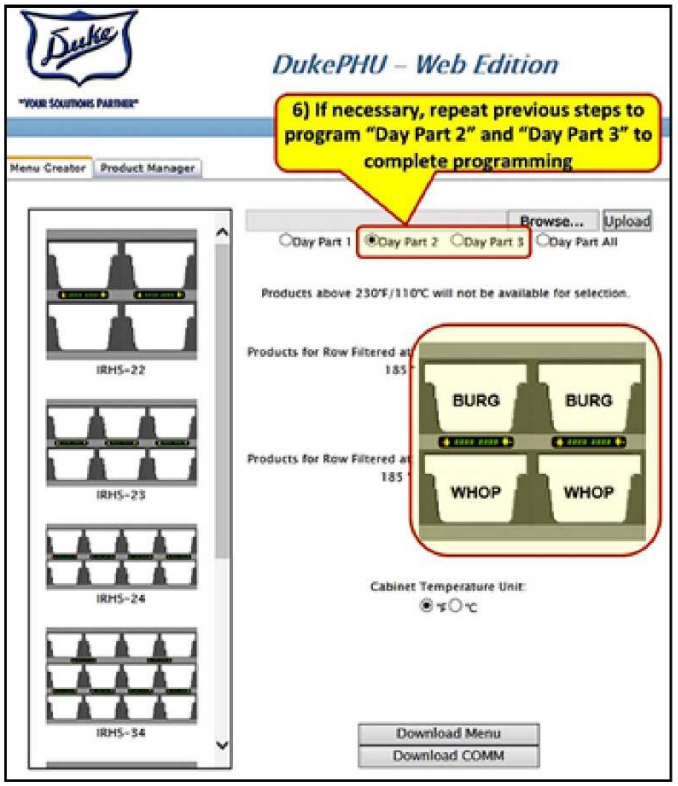
3.


DukePHU – Web Edition
4) Select the "Day Part 1" button
Only choose "Day Part All" if products will be the same for all three dayparts
NOTE: you must program all three dayparts each time the unit is programmed for any reason
Download Menu
Download COMM

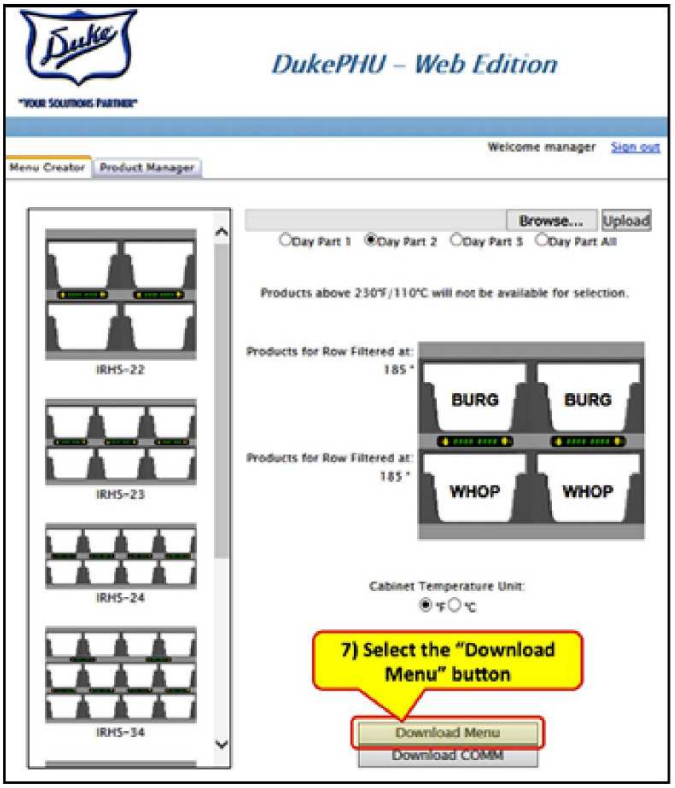
4.


DukePHU – Web Edition
BURG
BURG
WHOP
NONE
TACO
TNUG
WHJR
WHOP
5) Select the product for each well
Download Menu
Download COMM

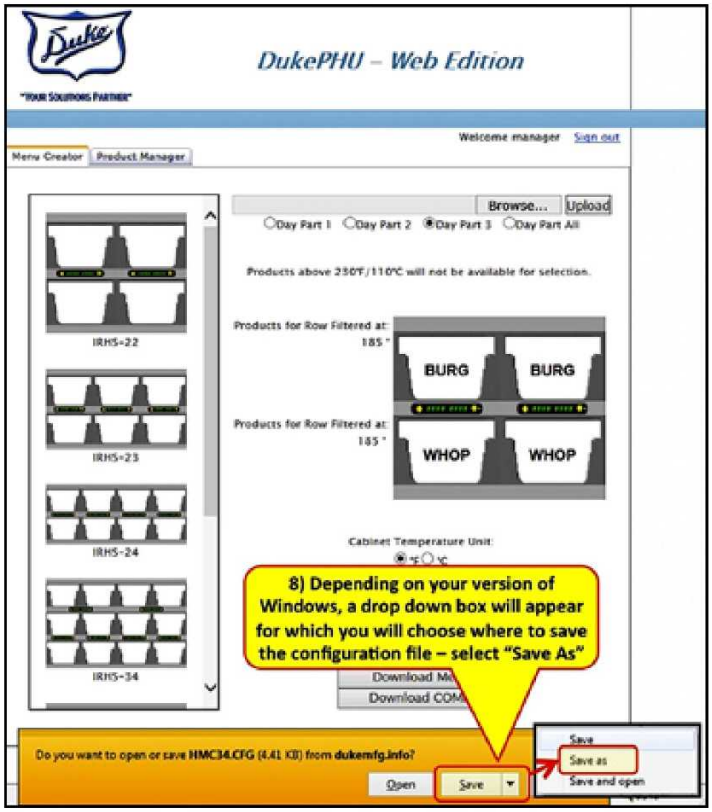
5.


DukePHU – Web Edition
6) If necessary, repeat previous steps to program "Day Part 2" and "Day Part 3" to complete programming
BURG
BURG
WHOP
WHOP
Download Menu
Download COMM

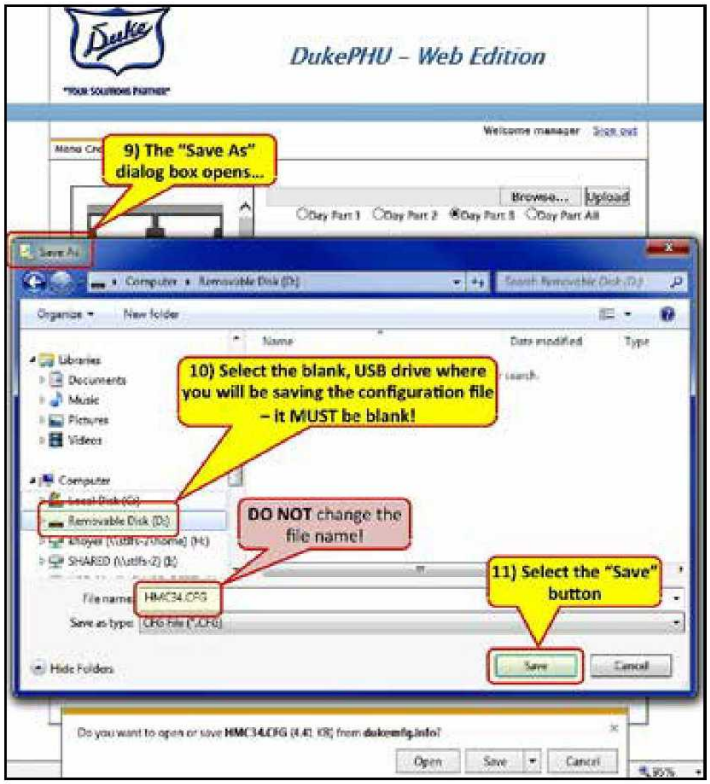
6.


DukePHU – Web Edition
BURG
BURG
WHOP
WHOP
7) Select the "Download Menu" button
Download Menu
Download COMM

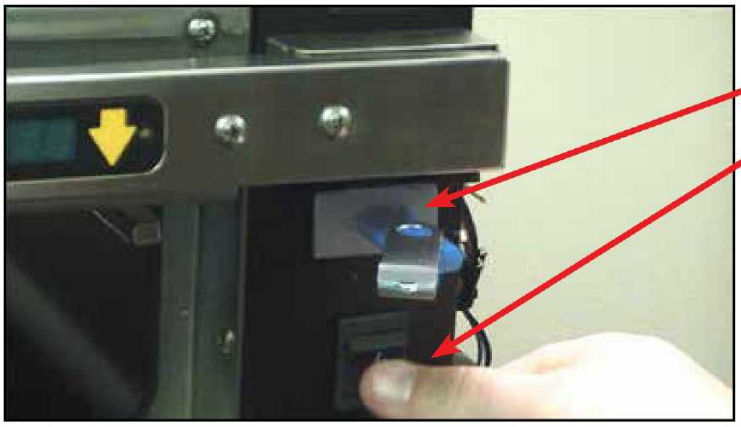
7.


DukePHU – Web Edition
Welcome manager Sign out
Menu Creator
Product Manager
Browse...
Upload
Day Part 1
Day Part 2
Day Part 3
Day Part All
Products above 230°F/110°C will not be available for selection.
Products for Row Filtered at: 185°
BURG
BURG
Products for Row Filtered at: 185°
WHOP
WHOP
IRHS-22
IRHS-23
IRHS-24
IRHS-34
Cabinet Temperature Unit:
8) Depending on your version of Windows, a drop down box will appear for which you will choose where to save the configuration file – select "Save As"
Download M
Download COM
Do you want to open or save HMC34.CFG (4.41 KB) from dukemfg.info?
Open
Save
Save
Save as
Save and open

8.

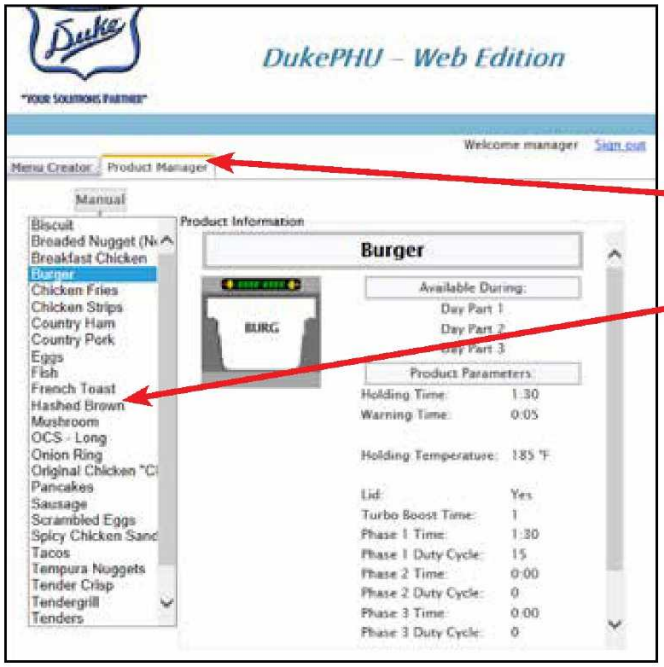

DukePHU – Web Edition
Welcome manager Sign out
9) The "Save As" dialog box opens...
Browse...
Upload
Day Part 1
Day Part 2
Day Part 3
Day Part All
Save As
Computer
Removable Disk (D:)
Organize
New folder
Name
Date modified
Type
Libraries
Documents
Music
Pictures
Videos
Computer
Removable Disk (D:)
10) Select the blank, USB drive where you will be saving the configuration file – it MUST be blank!
DO NOT change the file name!
File name: HMC34.CFG
Save as type:
11) Select the "Save" button
Hide Folders
Save
Cancel
Do you want to open or save HMC34.CFG (4.41 KB) from dukemfg.info?
Open
Save
Cancel

Unit Programming Instructions



1) Power off the unit.
2) Insert the flash drive into the USB slot.
3) Power on the unit.
4) The program will automatically be installed. *The unit will chirp a few times, the Emitters will cycle, and the display shows different displays while programming is in progress*
5) Programming is complete when Menu Bar indicates the updated products and/or temperatures in all displays.

Product Manager Tab

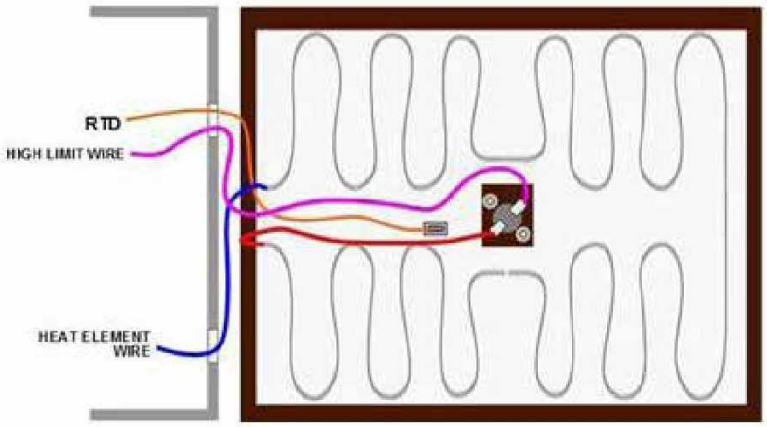


Select this tab...

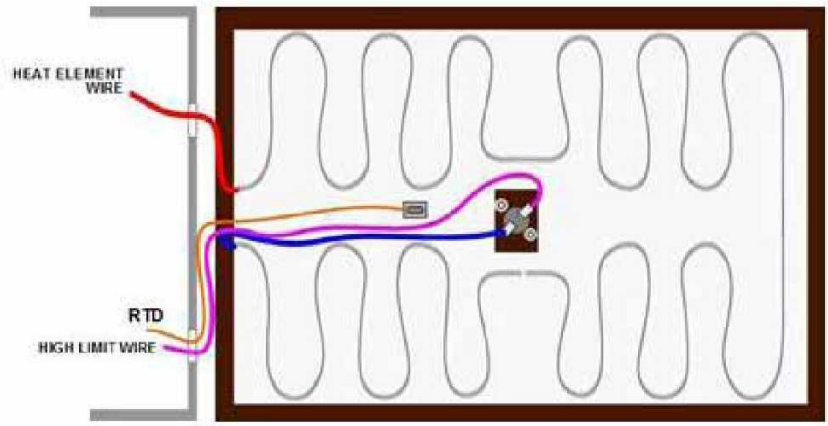
...and then a product on the left side of the screen to view hold settings for various products.

IRHS DECK WIRING

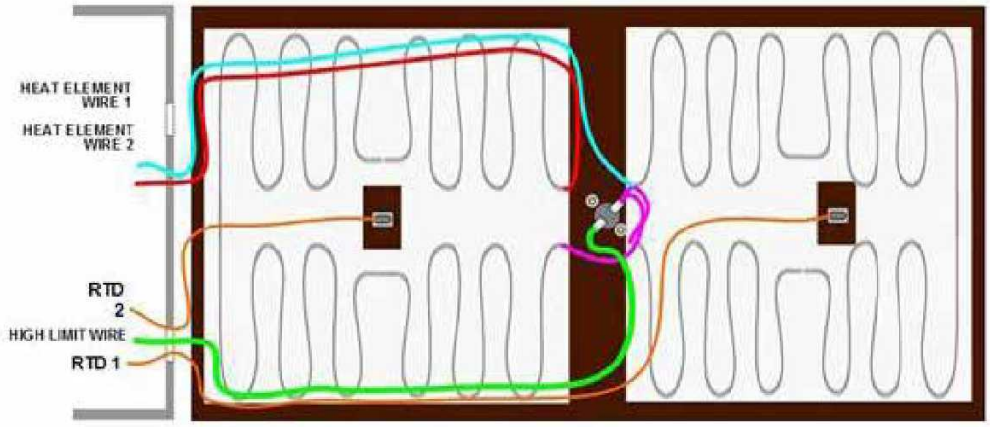
2 WIDE, LEFT SIDE CONTROL



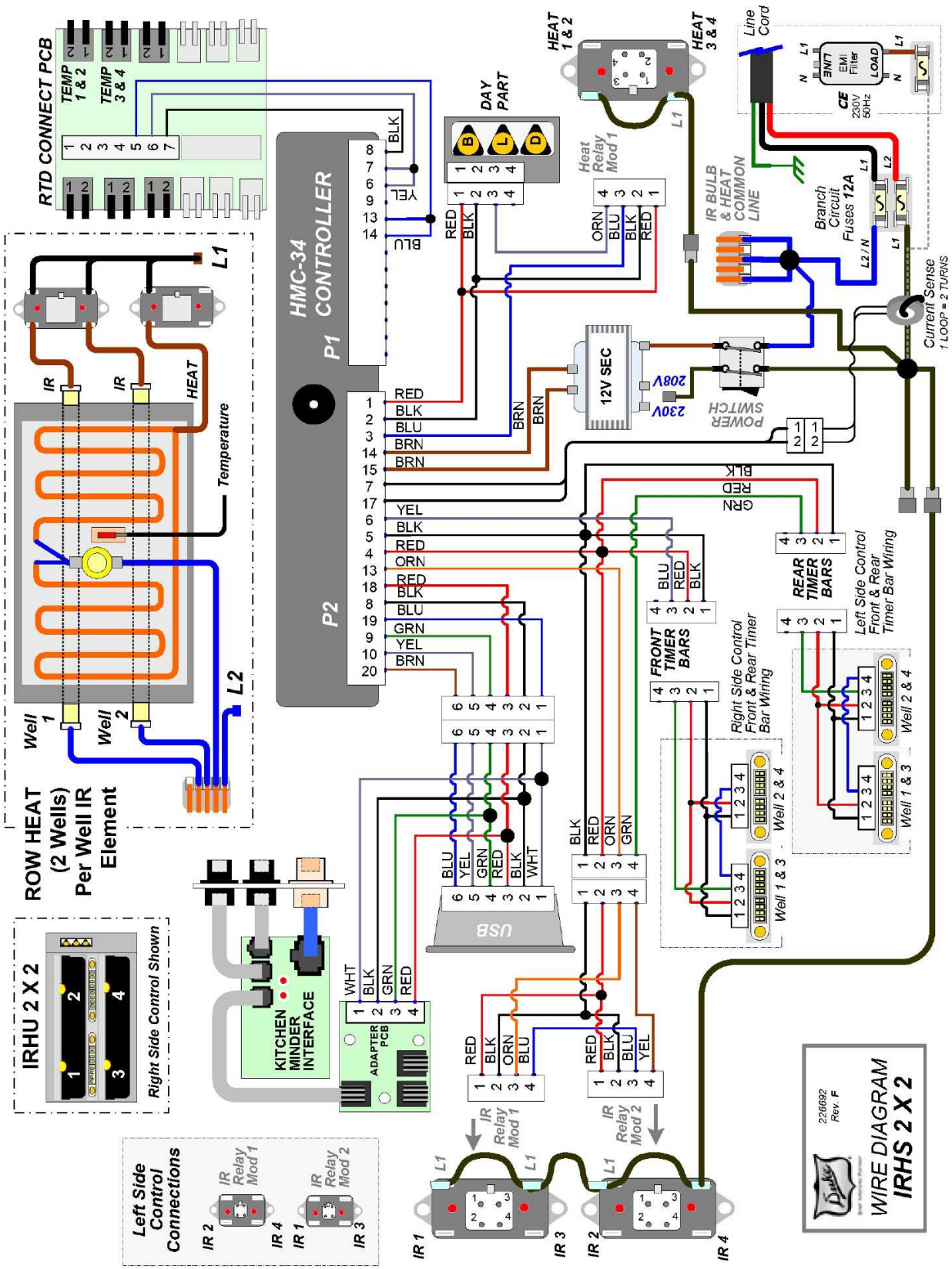
3 WIDE, RIGHT SIDE CONTROL



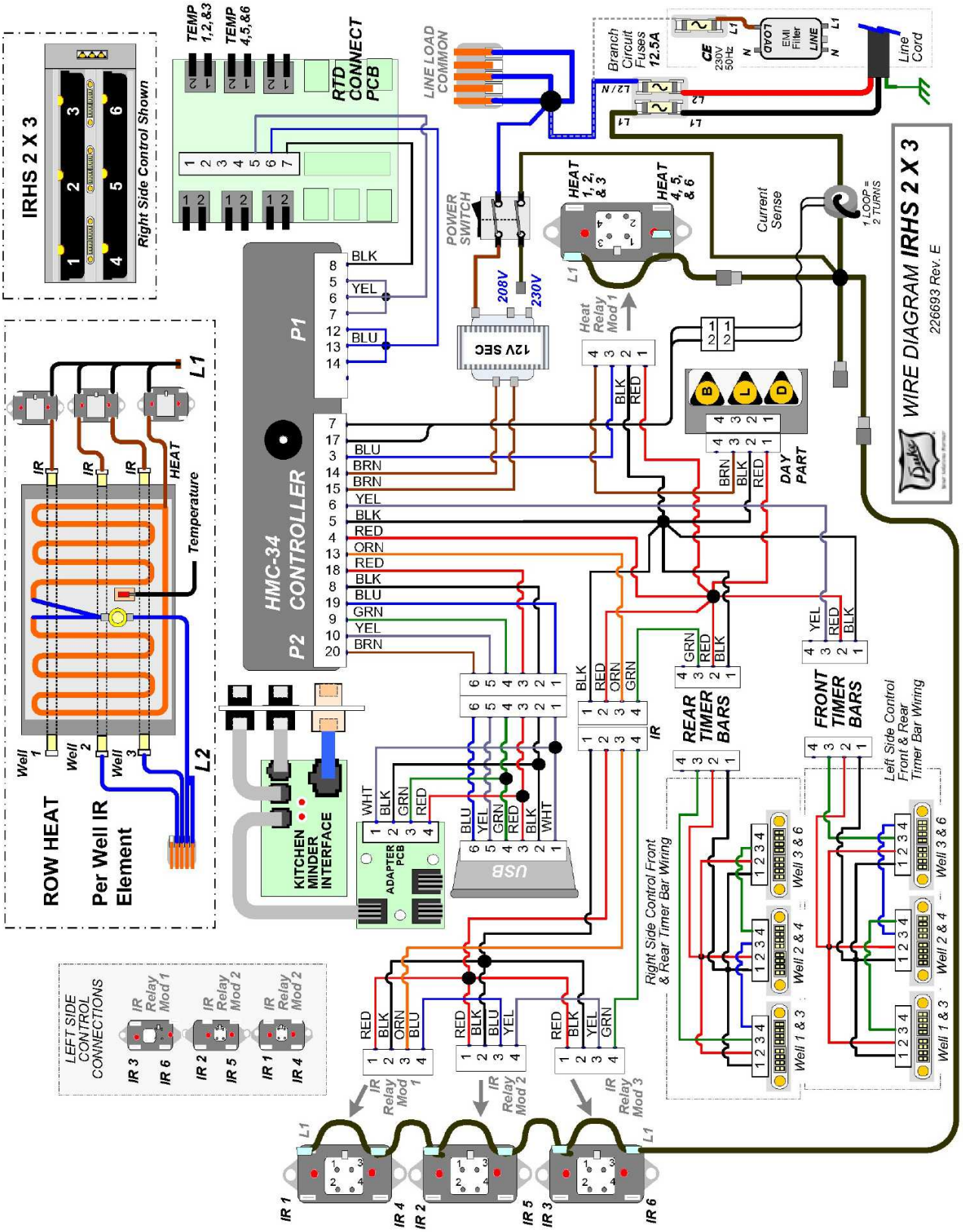
4 WIDE, RIGHT SIDE CONTROL



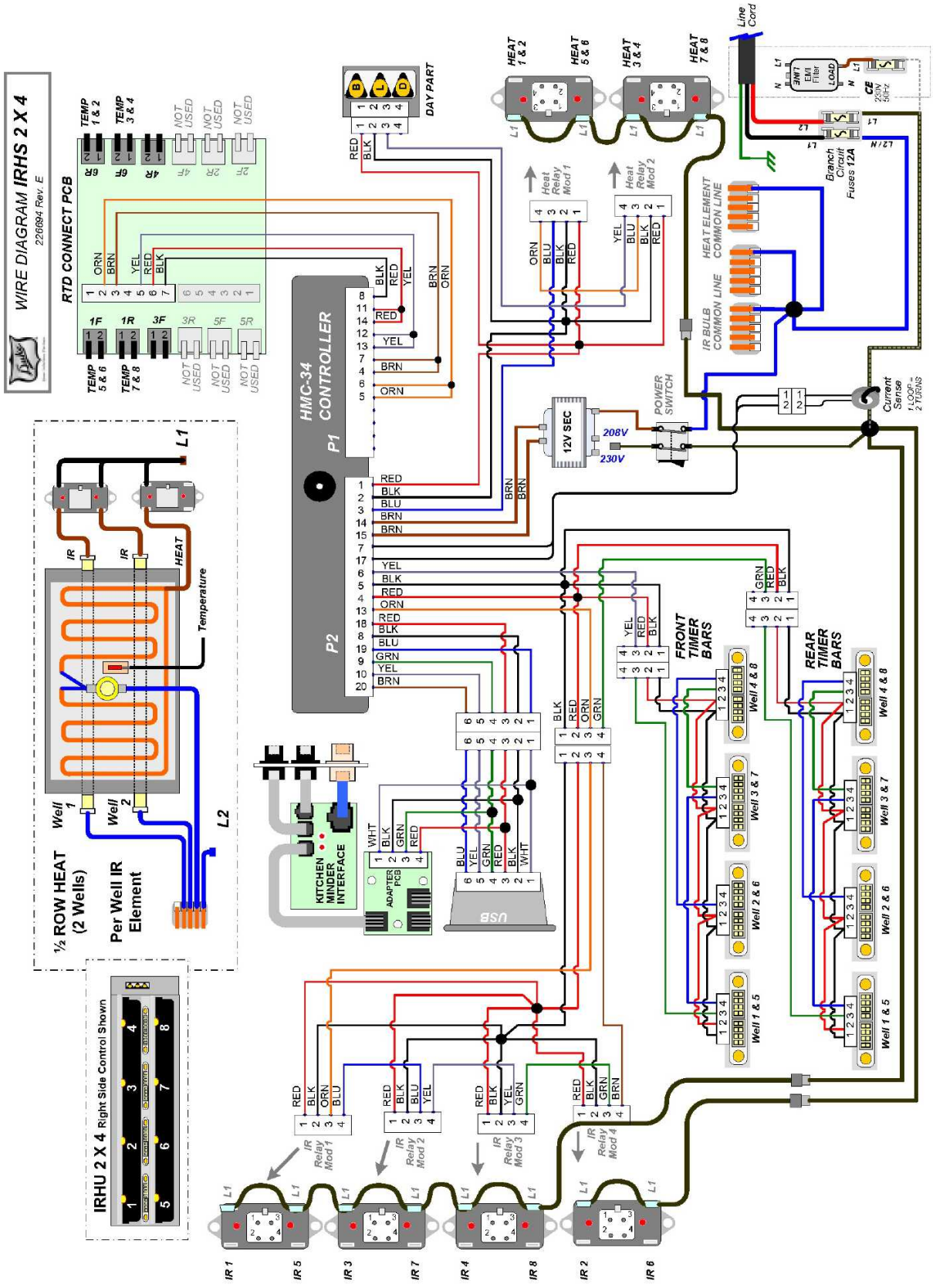
IRHS22 WIRING DIAGRAM



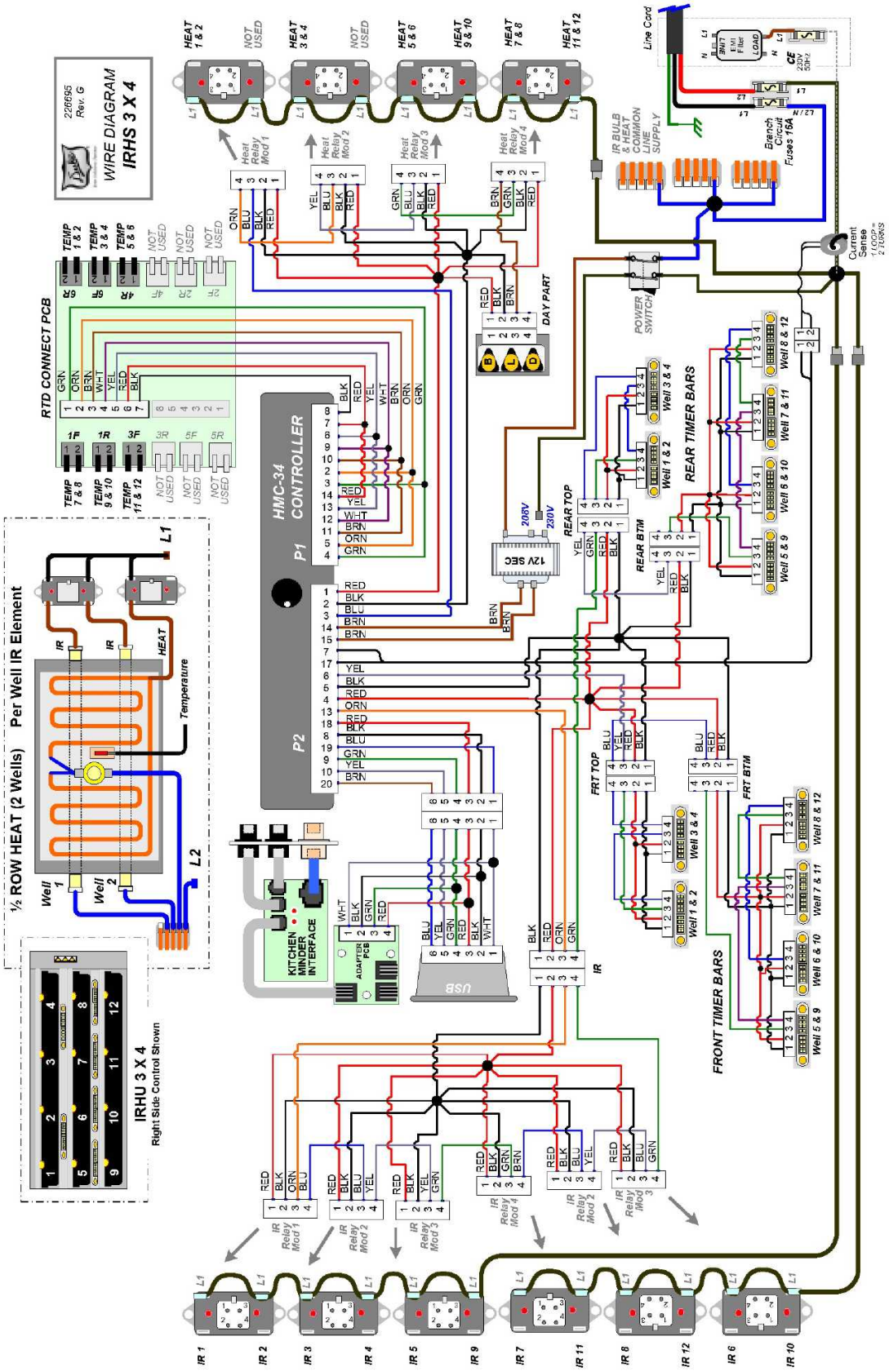
IRHS23 WIRING DIAGRAM



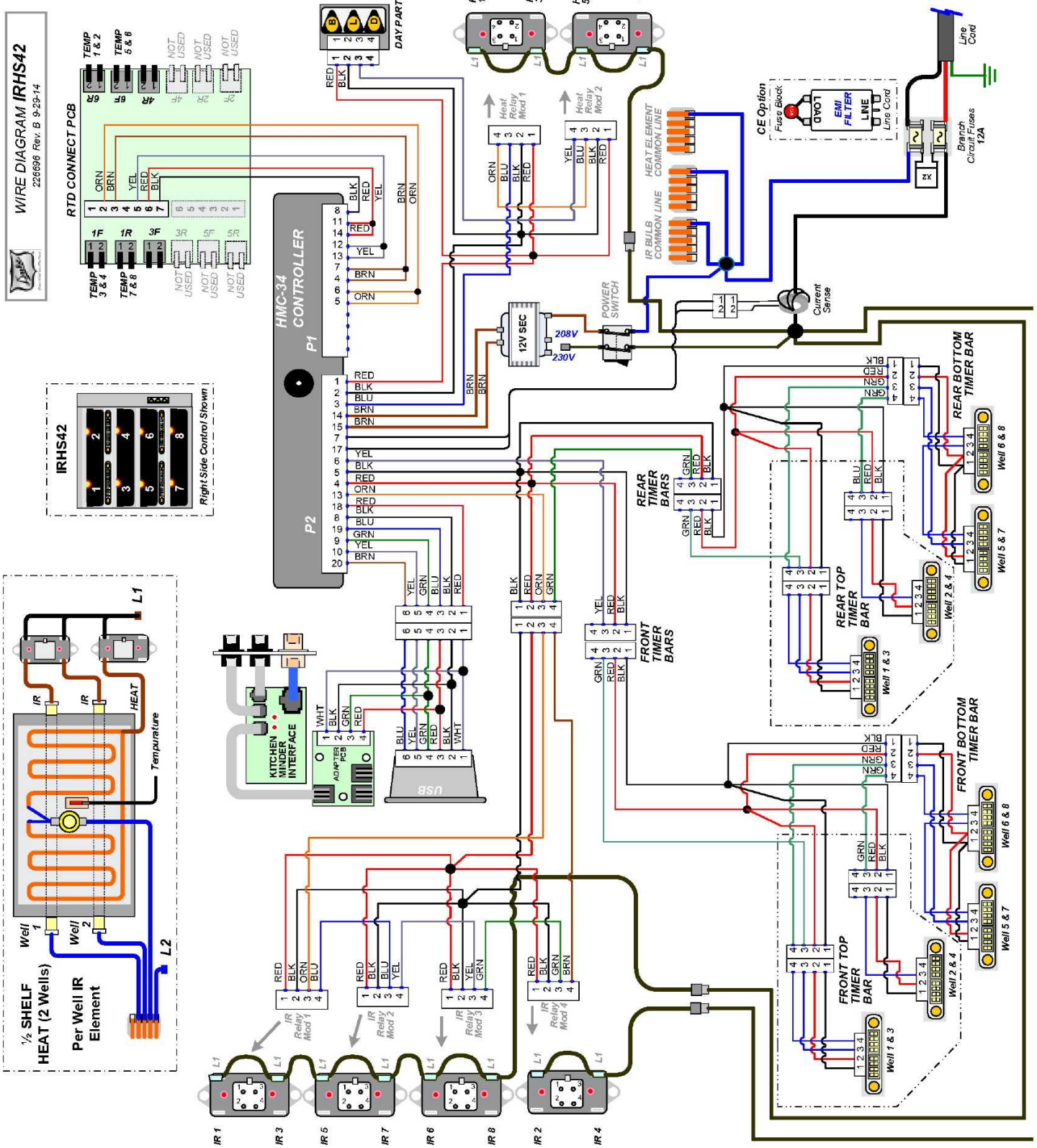
IRHS24 WIRING DIAGRAM



IRHS34 WIRING DIAGRAM



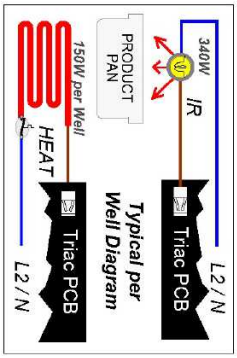
IRHS42 WIRING DIAGRAM

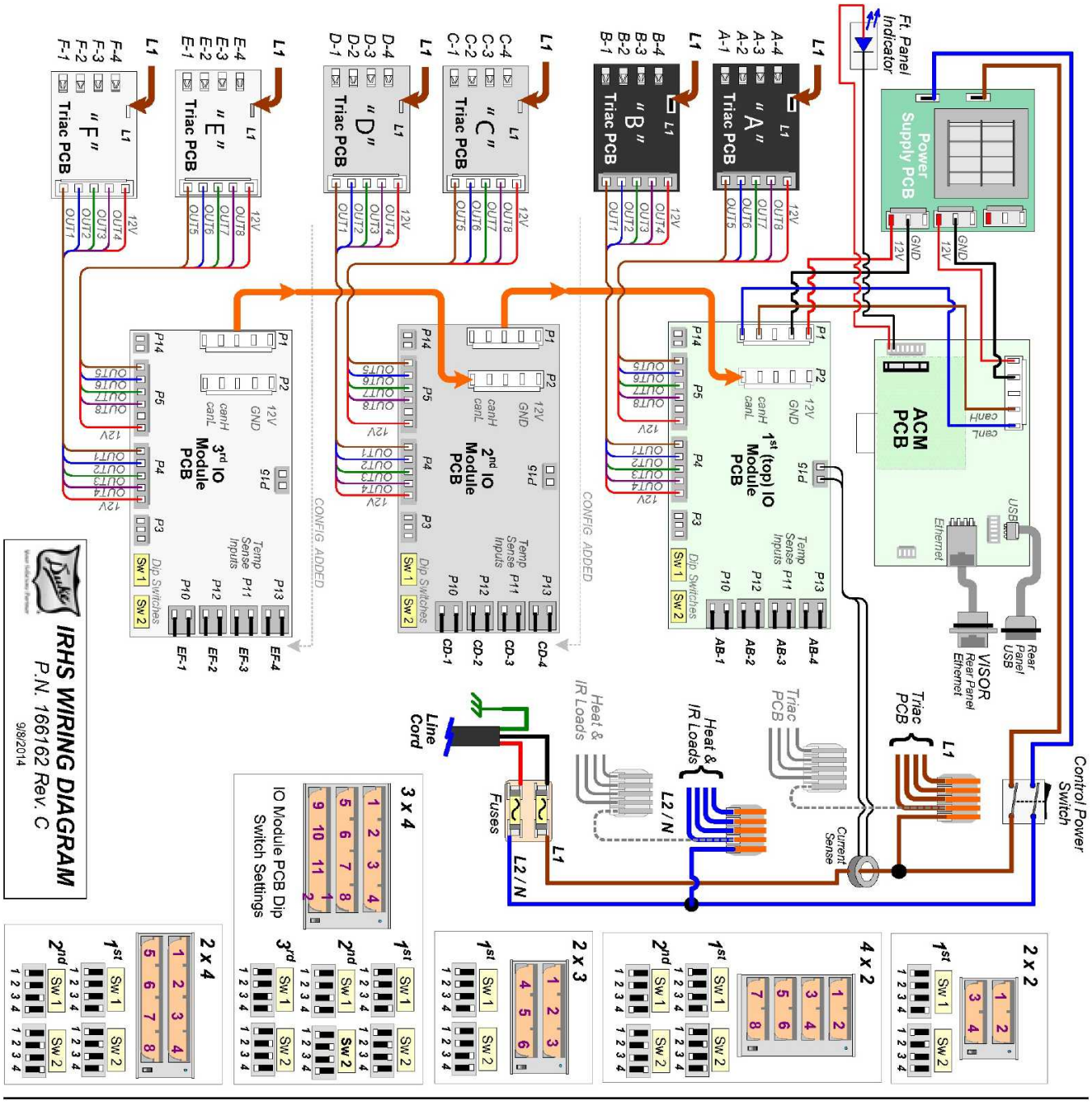


VISOR INTERFACE CABLE WIRING DIAGRAM

Heat & IR Load Connections

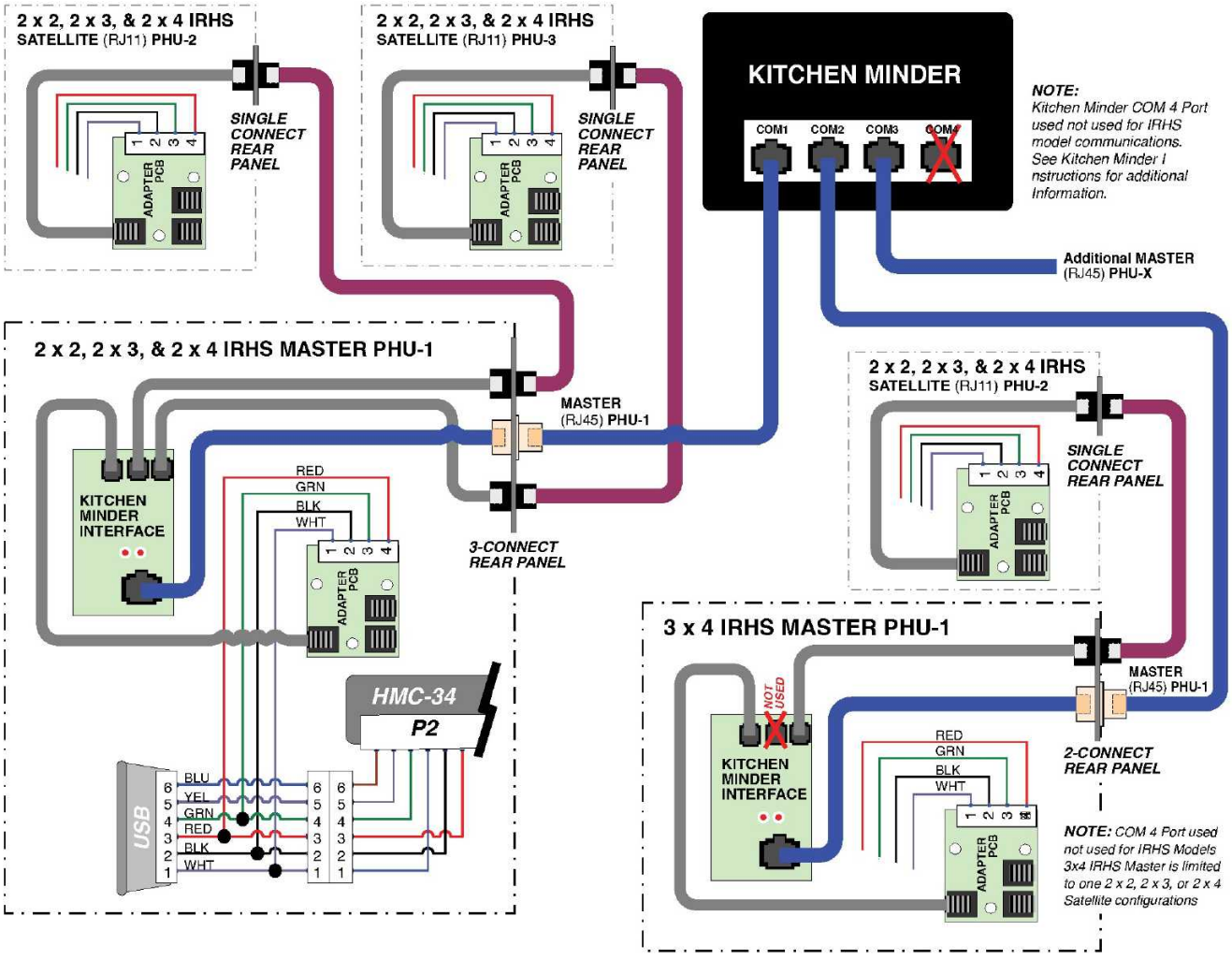
2 x 2	Heat	IR Bulb	Temp.
Well 1	B-1	A-1	AB-1
Well 2		A-2	
Well 3	B-3	A-3	AB-3
Well 4		A-4	
4 x 2	**Heat**	**IR Bulb**	**Temp.**
Well 1	B-1	A-1	AB-1
Well 2		A-2	
Well 3	B-3	A-3	AB-3
Well 4		A-4	
Well 5	D-1	C-1	CD-1
Well 6		C-2	
Well 7	D-3	C-3	CD-3
Well 8		C-4	
2 x 3	**Heat**	**IR Bulb**	**Temp.**
Well 1	B-1	A-1	AB-1
Well 2		A-2	
Well 3		A-3	
Well 4	B-3	A-4	AB-3
Well 5		B-2	
Well 6		B-4	
2 x 4	**Heat**	**IR Bulb**	**Temp.**
Well 1	B-1	A-1	AB-1
Well 2		A-2	
Well 3		A-3	
Well 4	B-3	A-4	AB-3
Well 5		B-2	
Well 6		B-4	
3 x 4	**Heat**	**IR Bulb**	**Temp.**
Well 1	B-1	A-1	AB-1
Well 2		A-2	
Well 3	B-3	A-3	AB-3
Well 4		A-4	
Well 5	D-1	C-1	CD-1
Well 6		C-2	
Well 7	D-3	C-3	CD-3
Well 8		C-4	
Well 9	F-1	E-1	EF-1
Well 10		E-2	
Well 11	F-3	E-3	EF-3
Well 12		E-4	





KITCHEN MINDER CONNECTIONS
(OPTIONAL UPGRADE; NOT AVAILABLE ON STANDALONE UNIT)

MASTER	SATELLITE 1	SATELLITE 2
IRHS22 (2X2)	2X2. 2X3, 2X4, 4X2	2X2. 2X3, 2X4, 4X2
IRHS23 (2X3)	2X2. 2X3, 2X4, 4X2	2X2. 2X3, 2X4, 4X2
IRHS24 (2X4)	2X2. 2X3, 2X4, 4X2	2X2. 2X3, 2X4, 4X2
IRHS34 (3X4)	NOT AVAILABLE	2X2. 2X3, 2X4
IRHS42 (4X2)	2X2. 2X3, 2X4, 4X2	2X2. 2X3, 2X4, 4X2



NOTES

CUSTOMER ASSISTANCE

To aid in reporting this unit in case of loss or theft, please record below the model number and serial number located on the unit. We also suggest you record all the information listed and retain for future reference.

MODEL NUMBER:	**SERIAL NUMBER:**
DATE OF PURCHASE:	
DEALER:	**TELEPHONE:**
SERVICER:	**TELEPHONE:**

FOR WARRANTY, PARTS & SERVICE:

DUKE CORPORATE,
CANADA, LATIN AMERICA

2305 N. Broadway
St. Louis, MO 63102
Phone: 314-231-1130
Toll Free: 800-735-3853
Fax: 314-231-2460
service-dispatch@dukemfg.com

DUKE ASIA PACIFIC

Duke Manufacturing
No.3 Building
Lane 28, Yu Lv Road
Malu Town, Jiading District
Shanghai 201801, China
Phone: +86 21 59153525 / 59153526
Fax: +86 21 33600628
service.asiapac@dukemfg.com

DUKE EMEA - EUROPE,
MIDDLE EAST, AFRICA, RUSSIA

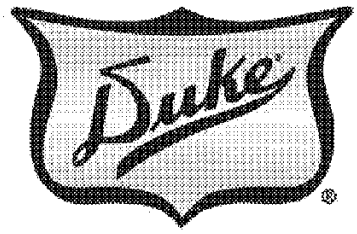
Duke Manufacturing CR, s.r.o.
Na Dlouhem 86
Jazlovice, Ricany
Building number DC 4 on the
ProLogis Park Prague D1 West
Prague 251 01
Czech Republic
Phone: +420 323 608 193
Fax: +420 323 608 144
service.emea@dukemfg.com

DUKE EMEA – UK, IRELAND

Phone: +44 (0) 1395 234140
Fax: +44 (0) 1395 234154
service.emea@dukemfg.com

TO ACCESS INTERNET: www.dukemfg.com

Please provide the following information when you write or call: model number, serial number, date of purchase, your complete mailing address (including zip code), and description of the problem.


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