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COS-5H

INSTALLATION AND OPERATION INSTRUCTIONS FOR SHIPBOARD USE

FSCM 07695

SANITATION CLASSIFIED NSF 4-1998

BLODGETT COMBI

www.blodgett.com

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PN R7354 Rev G (8/02)

SAFETY SUMMARY

The following are general safety precautions that are not related to any specific procedures and therefore do not appear elsewhere in this publication. These recommend precautions that personnel must understand and apply during many phases of operation and maintenance.

KEEP AWAY FROM LIVE CIRCUITS

Operating personnel must at all times observe all safety regulations. Do not replace components or make adjustments inside the equipment with the high voltage supply turned on. Under certain conditions, dangerous potentials may exist when the power control is in the off position, due to the charge retained in capacitors. To avoid casualties, always remove power and discharge and ground a circuit before touching it.

DO NOT SERVICE OR ADJUST ALONE

Under no circumstances should any person reach into or enter the enclosure for the purpose of servicing or adjusting the equipment except in the presence of someone who is capable of rendering aid.

RESUSCITATION

Personnel working with or near high voltages should be familiar with modern methods of resuscitation.

The following appear in the text of this volume, and are repeated here for emphasis.

WARNING:

Before performing any maintenance or replacing any component on this unit, disconnect oven from electrical source.

CHANGE RECORD

CHANGE NO.	DATE	TITLE/BRIEF DESCRIPTION	SIGNATURE OF VALIDATING OFCR.

LIST OF EFFECTIVE PAGES

Insert latest changed pages. Destroy superceded pages.

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DATE: 5 Mar 98

CERTIFICATION:

It is hereby certified that the technical manual provided under contract number XXX-XXX-XX-X-XXXX for COS-5H has been approved by the approval data shown above.

(Signed) _____
John Bardeau

(Title) VP Sales and Marketing
Blodgett Combi
55 Boyer Circle
Williston, VT 05495
FSCM 07695

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Maintenance

(Insert Classif. of TMDER Here and At Bottom of Page) CLASSIFICATION:

NAVSEA (USER) TECHNICAL MANUAL DEFICIENCY/EVALUATION REPORT (TMDER) (NAVSEA S0005--AA--GYD--030/TMMP & NAVSEAINST 4160.3)

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9. RECOMMENDED CHANGES TO PUBLICATION

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IMPORTANT

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 OR SERVICING THIS EQUIPMENT

FOR YOUR SAFETY

Do not store or use gasoline or other flammable vapors or liquids in the vicinity of this or any other appliance.

The information contained in this manual is important for the proper installation, use, and maintenance of this oven. Adherence to these procedures and instructions will result in satisfactory baking results and long, trouble free service. Please read this manual carefully and retain it for future reference.

Errors: Descriptive, typographic or pictorial errors are subject to correction. Specifications are subject to change without notice.

A PERSONAL WORD
FROM BLODGETT COMBI

Congratulations on your purchase of the BLODGETT Combi-Oven/Steamer. We firmly believe that your choice has been a wise one, and trust you will receive many years of excellent service from your new multi-purpose oven.

The Combi-Oven/Steamer concept offers completely new potential for cooking which minimizes shrinkage, while maintaining food's essential vitamins and valuable nutrients. In addition, you will find that cooking with the Combi-Oven/Steamer will save time, labor and extensive cleaning of both the kitchen and the appliance.

With the Combi-Oven/Steamer the quality, taste, consistency, and look of the food are improved, thus endorsing the policy to which we've always adhered: "For Better Cooking!"

Once you've had a chance to use your multi-purpose oven, please tell us, your dealer and colleagues about any creative and interesting applications you have discovered; exchange ideas with other users. Be sure to advise us or your dealer immediately should any mechanical or technical problems be encountered (...we're here to help!) and above all "Enjoy Cooking the BLODGETT Combi-Oven/Steamer Way!

BLODGETT COMBI®

Model:

Your Service Agency's Address:

Serial Number:

Your oven was installed by:

Your oven's installation was checked by:

Introduction

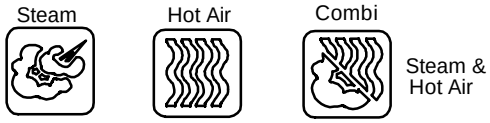
The Blodgett Combi-Oven/Steamer

For quite some time, commercial cooking equipment has remained more or less unchanged. There are kettles, deck ovens, the good old range with its legion of pots and many other extra appliances. The result: time expenditure, excessive manual work, and countless cleaning processes. The last few years have paved the way for a revolution in the equipment of restaurant and institutional kitchens.

The Blodgett Combi-Oven/Steamer offers a completely new method of cooking. With the Oven/Steamer you have the choice of **two cooking processes**: **Steam** and **Hot Air**, either...

- **Separately**
- **Combined, or**
- **In Sequence**

And for easy operation you can choose from three modes:



In the **Steam** mode you can:

steam	reheat	reconstitute
stew	thaw	simmer
blanch	preserve	braise
poach		

In the **Hot Air** mode you can

roast	bake
grill	gratinate
broil	

In the **Combination Steam and Hot Air** mode you can:

defrost	roast	rethermalize
reheat	bake	forced steaming

Not only that, you can use two or three functions in sequence during one cooking process. We call this:

- combi-steaming
- combi-roasting
- combi-baking

The combination of circulating hot air and steam in the space saving, high performance Combi-Oven/Steamer leads to improvements in the following areas:

- increased productivity in the kitchen
- a reduction in capital expenditures for multiple equipment replacement
- a wider range of menu choices
- a simplified cleaning process

The work process is simplified since products are prepared on or in steam table pans and trays. Food can be cooked, stored, and transported with the same pans. Small amounts of product can be processed efficiently; pre-cooked and convenience foods can be reheated within minutes. Many frozen foods can be processed without prethawing. This flexibility in preparation reduces the need for kettles and steam tables since there is no need for large amounts of food to be kept warm for long periods of time.

Today the improvement of food quality is more important than ever. Vegetables are cooked in the Blodgett Combi-Oven/Steamer without water at the optimal temperature of just under 212_F/100_C, maintaining valuable vitamins, minerals, nutrients and trace elements. Cooking meat in the Combi results in less shrinkage and a firmer, juicier product. The Blodgett Combi-Oven/Steamer is being used more and more for baking. Steam and Hot Air modes make it a general purpose baking appliance.

Description of the Combi-Oven/Steamer

ABOUT THE OVEN/STEAMER

Blodgett Combi-Oven/Steamers are quality produced using high-grade stainless steel with first class workmanship.

The high performance fresh steam generator with its control system makes it possible to enjoy all of the advantages of a high quality steamer at the flick of a switch. Fresh steam enters the oven cavity without pressure and is circulated at high speed. This process enables quick and gentle cooking and ensures high quality food while providing convenient working methods. The steam generator is completely automatic and protected from running dry.

The exhaust system is effective in all cooking modes and results in better quality foods and **no flavor transfer**. The fan, which is guarded against accidental finger contact, is driven by a quiet and powerful motor. The condenser draws out excess steam from the appliance. Condensation and waste water, which result during steaming and cleaning, are continuously drained.

The use of high quality insulation impedes excessive heat radiation and saves energy.

OVEN/STEAMER OPERATION

Ease of operation is guaranteed through the simple arrangement of the controls. Graphic symbols make the appliance easy for even inexperienced kitchen staff to operate. Steam, Hot Air and Combi modes can be selected with one switch. A fourth function on the mode selection switch, the Cool Down mode, allows the oven cavity to cool down rapidly with the door opened or closed.

Cleaning is kept to a minimum. The interior is sprayed with a self-acting cleaning solution which interacts with steam to easily remove crusts and stains. The oven is designed for easy care and is welded water tight so that the internal cooking cavity may be rinsed with a hose after the steam cleaning process.

Introduction

Oven Features

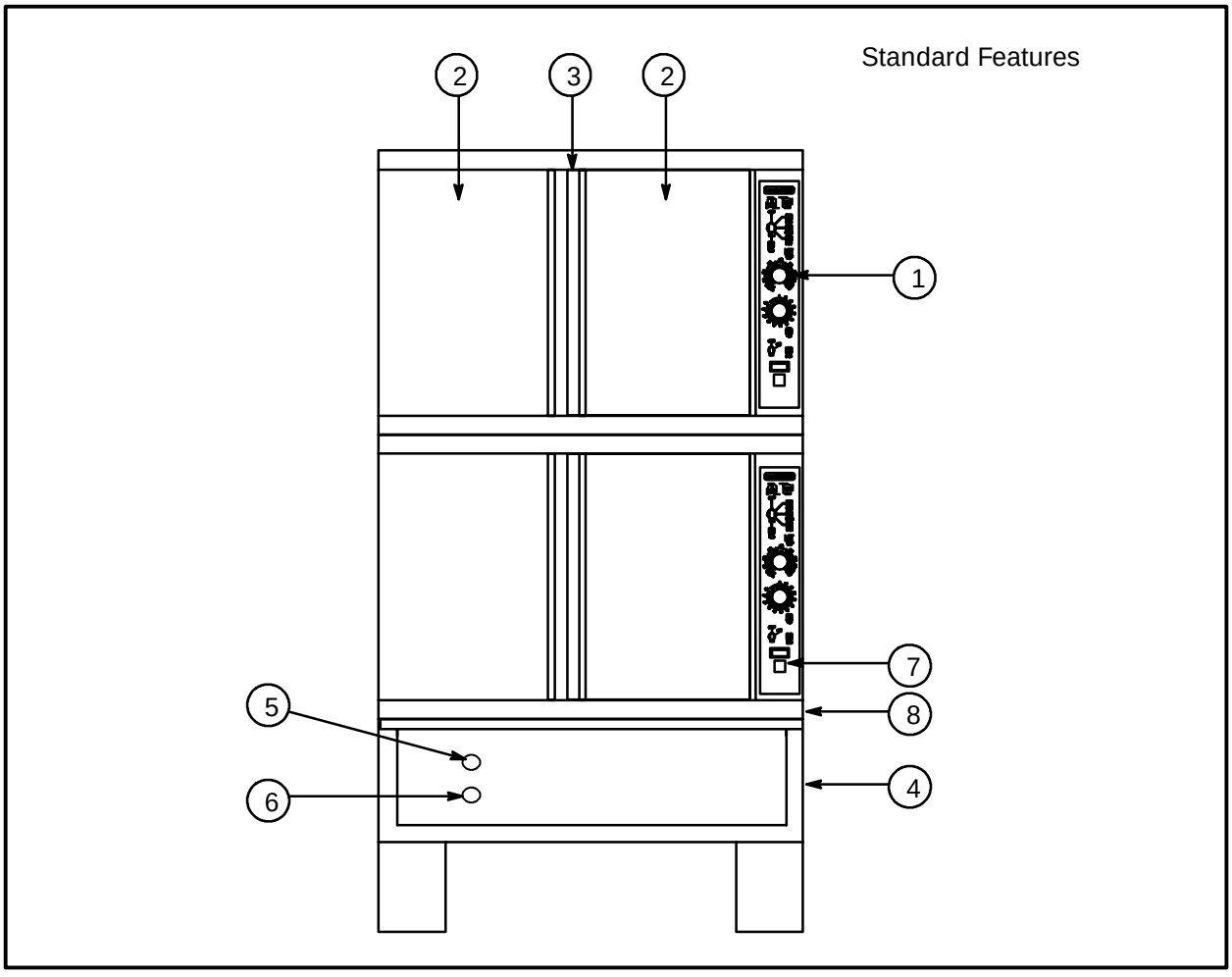


Figure 1

1	Control Panel
2	Oven Doors
3	Rotating Door Latch
4	Base Section

5	Deliming Inlet
6	Boiler Drain
7	Optional Meat Probe
8	Door Drip Pan

Installation

General Installation Information

The purpose of the installation section of this manual is to assist the designers and naval architects engineering the installation of a Blodgett Combi COS-5H Hatchable Combination Oven into a new or existing ship.

Blodgett Combi has developed the COS-5H to fit in the same footprint as a Blodgett Mark V convection Oven. The COS-5H Combination oven can be used as a convection oven, steamer, or in a "Combi" mode in which pulsed steam is combined with convection to provide faster cooking and increase the moisture content of cooked foods. Because of these features, the oven utilizes water for generating steam. The Combi is a multi-system cooking oven and is more complex than a convectional oven. Therefore, more attention has to be paid to the installation process than that of a convection oven.

The COS-5H requires the following support systems:

- **Power** 440 VAC, 3 phase, 60 amp service
- **Water** Potable, 40 to 50 psi
- **Drain** Atmospheric vented drain, 1" minimum diameter
- **Hood** Air venting required for steam removal

THE INSTALLATION INSTRUCTIONS CONTAINED HEREIN ARE FOR THE USE OF QUALIFIED INSTALLATION AND SERVICE PERSONNEL ONLY. INSTALLATION OR SERVICE BY OTHER THAN QUALIFIED PERSONNEL MAY RESULT IN DAMAGE TO THE OVEN AND/OR INJURY TO THE OPERATOR.

Qualified installation personnel are individuals, a firm, a corporation, or a company which either in person or through a representative are engaged in, and are responsible for:

- The installation of electrical wiring from the electric meter, main control box or service outlet to the electric appliance.

Qualified installation personnel must be experienced in such work, be familiar with all precautions required and have complied with all requirements of state or local authorities having jurisdiction.

Reference: *National Electrical Code, ANSI/NFPA 70–Latest Edition and/or Canadian Electrical Code CSA C22.1* as applicable.

This equipment is to be installed in compliance with the *Basic Plumbing Code of the Building Officials and Code Administrators International Inc. (BOCA) and the Food Service Sanitation Manual of the Food and Drug Administration (FDA)*.

Installation

Delivery and Location

DELIVERY AND LOCATION

The COS-5H hatchable combination oven is shipped fully assembled on a special vibration resistant pallet. In addition, the oven is mounted on two hardwood skids to facilitate removal from the pallet. These skids were designed to match the height of the separate installation base. This allows the assembled oven to be slid directly onto the base after the installation base is mounted in position and hard plumbed with potable water and electric power.

COS-5H dimensions:

Height	62.25” with legs 68.25” with 6” legs 64.75” with base
Width	38.12”
Depth	43”

The following clearances are required for the COS-5H:

Sides	0”
Rear	6”

UNPACKING

1. Remove the protective cover around the oven. Inspect the unit for visible damage.
2. Remove the bolts that lock the 2-1/2” x 4” hardwood skids to the pallet base.
3. Use a forklift to raise the oven assembly off the pallet. The skids can be left in position to assist in moving an assembled oven onto the installation base or discarded after the oven assembly is unbolted into separate components for passage through hatches.

ASSISTANCE

Blodgett Combi also provides engineering assistance when custom installation kits are required. Our goal is to ensure that each oven installation can be made in the most efficient and economical manner.

For further information, please contact the Blodgett Combi Engineering Department:

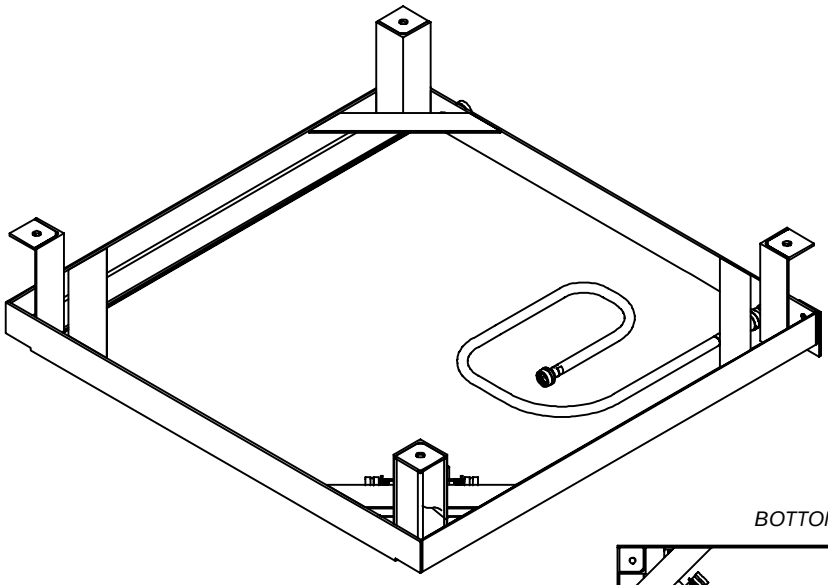
- **Phone** 802-860-3708
- **Fax** 802-860-3784
- **Email** wgoldm@maytag.com

Installation Base

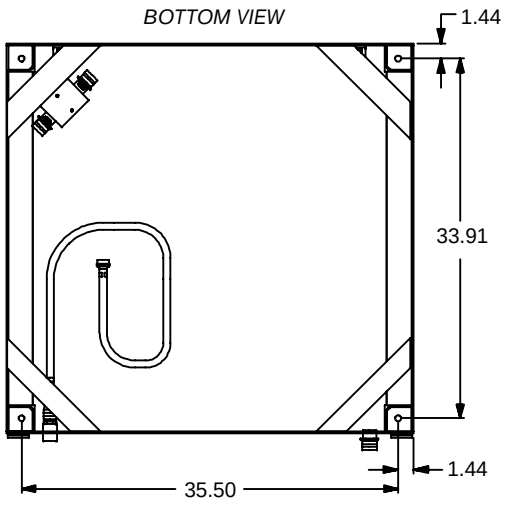
The Blodgett Combi COS-5H utilizes a stainless steel locking installation base. The base is available with or without legs. The installation base was designed to facilitate the installation process and to improve the access to the oven if and when major service is required.

Since the COS-5H is slightly narrower than the installation base, multiple bases can be installed side by side on the deck with no allowance for side clearance.

1. Secure the 2-1/2" high installation base using one of the following methods:
   2. Weld the base directly to the deck.
   3. Bolt the base to the deck.
4. Seal the base with an NSF approved sealant.



Base Shown Upside Down

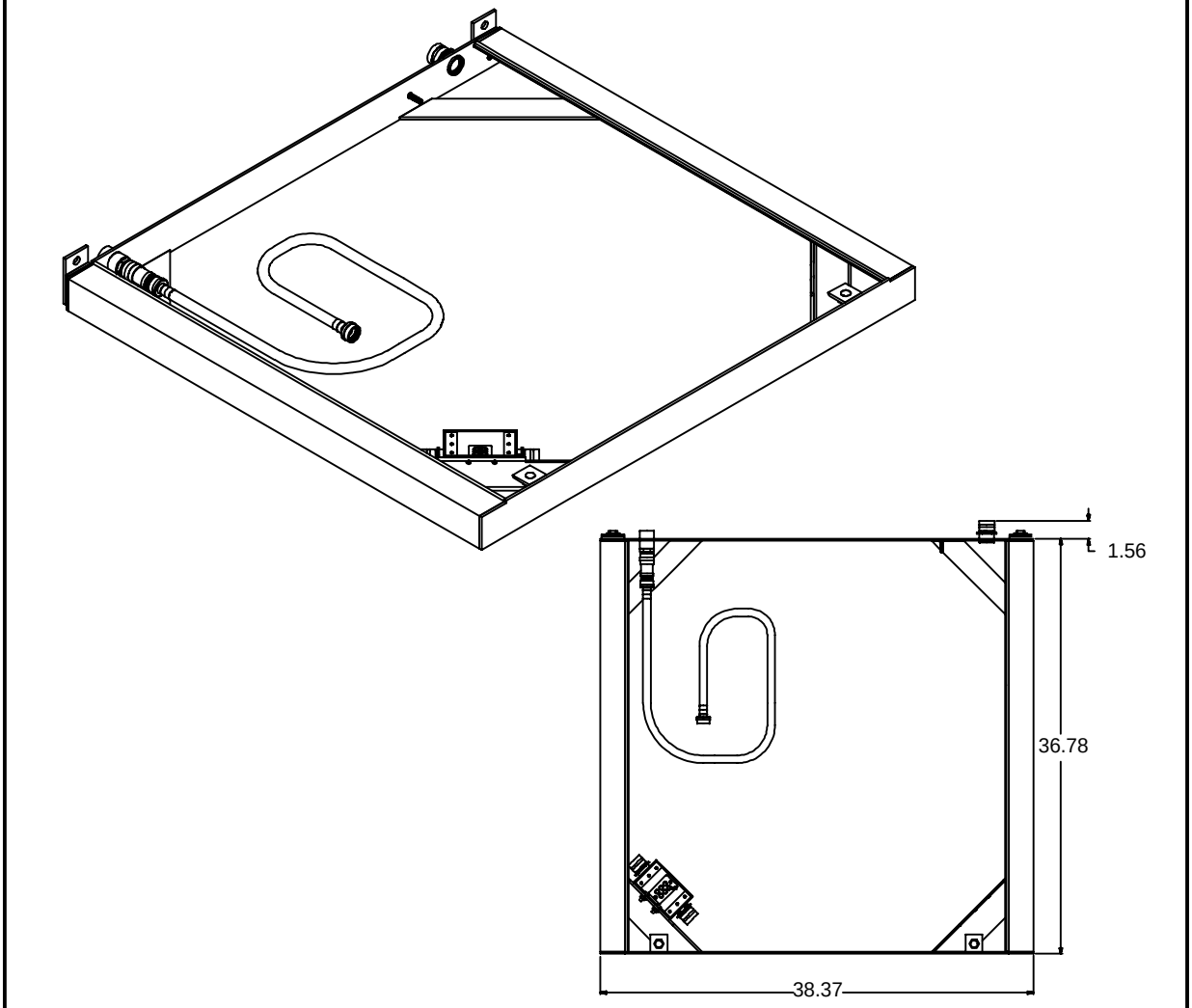


INSTALLATION BASE WITH LEGS

Figure 2

Installation

Installation Base



INSTALLATION BASE

Figure 3

Utility Connections

WATER CONNECTION

The oven requires access to potable water with a pressure of approximately 40 to 50 PSI.

1. The water is connected to the rear of the installation base at the 3/4” NPT female coupling.
2. The water is directed to the oven through an in-line pressure regulator and a flexible internal hose which connects to a fitting in the front of the oven.

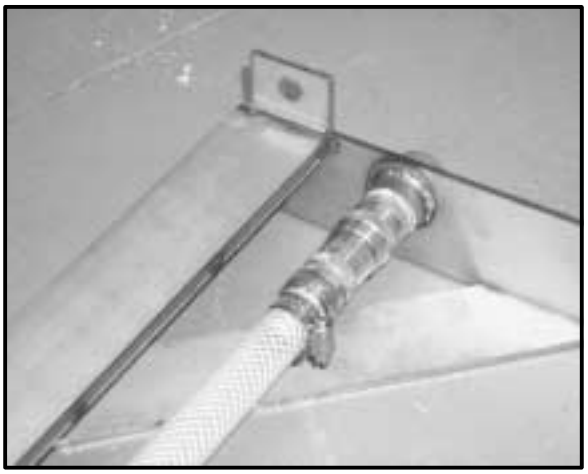


Figure 4

DRAIN CONNECTION

An open drain system utilizing a fixed funnel is recommended. For multiple oven installations, install a deck mounted sloping drain with individual funnels positioned to accept the drain outlets of the individual ovens.

ELECTRICAL CONNECTION

The power requirement of the oven is 440 volt, 3 phase, 60 amp service.

1. The electrical service is brought into the oven through the seal tight connector located on the rear of the installation base.
2. The power leads are brought into a splash proof terminal box located in the front of the installation base.
3. A grounding stud is supplied on the inside of the installation base. See Figure 5.

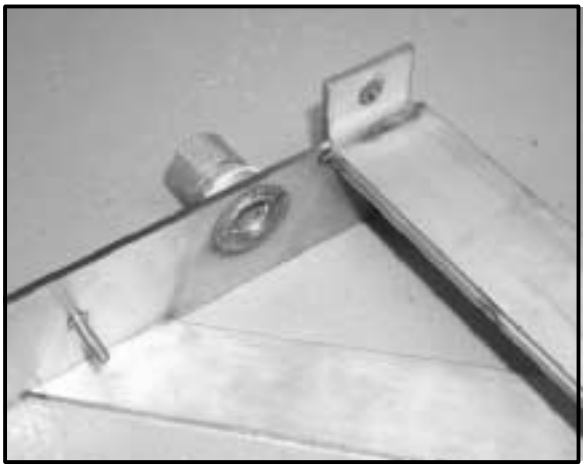


Figure 5

Installation

Oven Installation – No Dismantling Required

Use this procedure if the oven assembly does not have to be dismantled to bring it into the galley where the installation base has been fitted.

1. Slide the oven assembly on the shipping skids in front of the installation base.
2. Remove the two 1/2" bolts from the front of the installation base. See Figure 6.

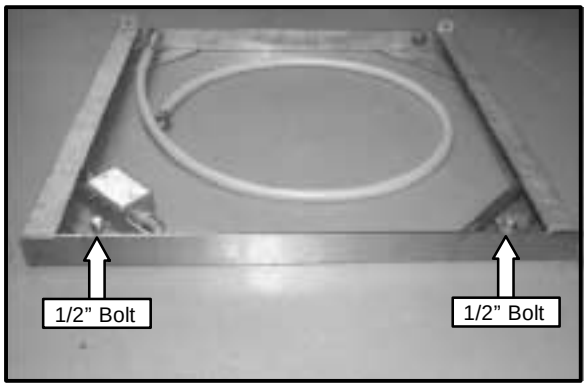


Figure 6

3. Unscrew the front panel from the oven base section. Leave the hoses connected to the front panel and the oven base section.
4. Remove the two bolts securing the skids to the front of the oven base section. See Figure 7.

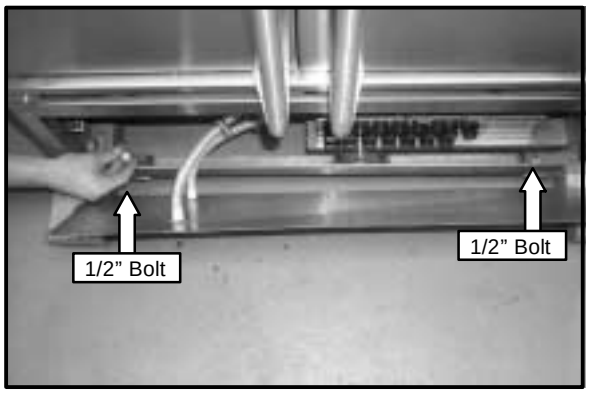


Figure 7

5. Remove the two bolts and angle plates securing the skids to the rear of the oven base section.

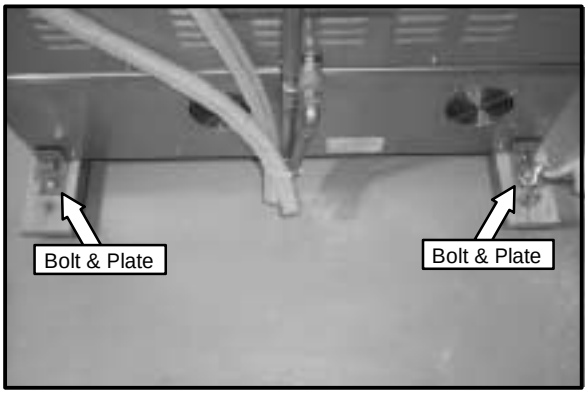


Figure 8

6. Move the oven assembly to the installation base as follows:
   1. Lubricate the top surface of the installation base with a little grease or silicone spray.
   2. Slide the oven assembly off the skids onto the tracks of the installation base.
   3. The locking pins on the rear of the oven base section will fit into and lock the base to the upright tabs attached to the installation base.
4. Reinstall the two bolts that were removed in Step 2, from the installation base through the oven base section into the installation base. See Figure 7 for installation location.
5. Hook up water and electrical connections to the oven base section. Apply NSF approved sealant to the cover of the splash proof terminal box.

Oven Installation – Some Dismantling Required

Use this procedure if the oven assembly will be dismantled to bring it into the galley where the installation base has been fitted.

The assembled oven consists of three sections:

- upper oven section
- lower oven section
- oven base section.

The oven base section consists of the major electrical components, steam generator, and the attachment components for mating the oven assembly to the installation base which is mounted directly to the deck. In order to dismantle the oven assembly, you will have to separate electrical wire harnesses and plumbing lines. We recommend that you tape both sides of each electrical and hose connection and mark them for easy identification during reassembly.

If you are installing more than one oven assembly, keep all hardware and panels associated with one oven assembly separate from the other oven assemblies. If the oven assembly has to be dismantled in order to fit through the hatches, use the following procedure:

OVEN DISMANTLING

1. Remove the racks from the inside of both the upper and lower oven sections. See Figure 9.

Figure 9

2. Remove the side support racks from the inside of both the upper and lower oven sections. See Figure 10.

Figure 10

Installation

Oven Installation – Some Dismantling Required

3. Remove the drip pan from the front of both ovens. See Figure 11.

Figure 11

4. Remove the locking tab plate above the control panel by removing the Phillips screw. See Figure 12. Do this to both the upper oven and the lower oven.

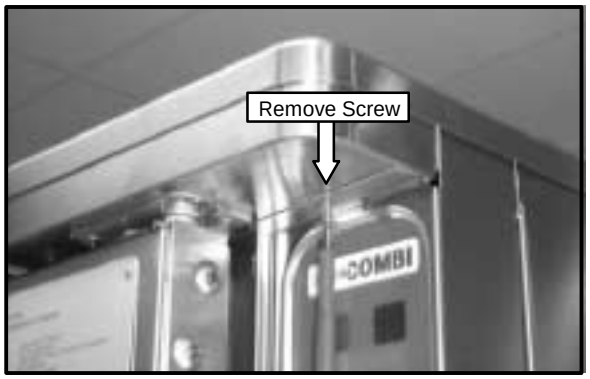


Figure 12

5. Remove the control panel cover by lifting and pulling the “D” handle toward you about 6”. See Figure 13. Do this to both the upper oven and the lower oven.

Figure 13

Oven Installation – Some Dismantling Required

6. Remove the right side rear panel by sliding it forward about an inch and then lifting the entire panel to free the retaining springs. See Figure 14. Do this to both the upper oven and the lower oven.

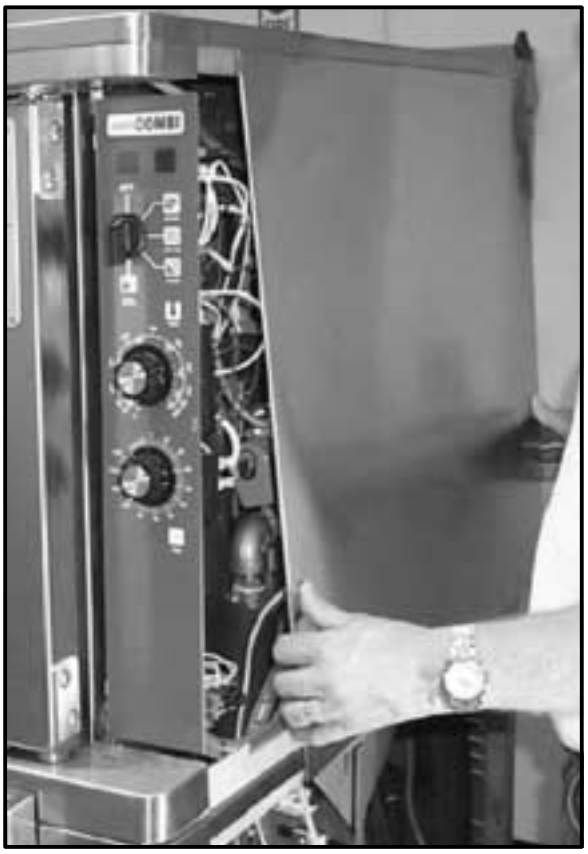


Figure 14

7. Remove the four screws holding the rear vertical duct on the rear of the oven. See Figure 15.

Figure 15

Installation

Oven Installation – Some Dismantling Required

8. Cut the wire tie holding the copper drain tubes together. Remove the five rubber drain hoses from the upper and lower sections. See Figure 16.

Figure 16

9. Disconnect the two orange hoses from the fitting on the rear body panel. See Figure 17. Both of these hoses have black foam insulation on them.

Figure 17

10. Disconnect the electrical wire harnesses (J1, J3, J7, and J8) that connect the upper oven section to the oven base section. See Figure 18. Mark connections prior to disconnecting for ease of re-assembly.

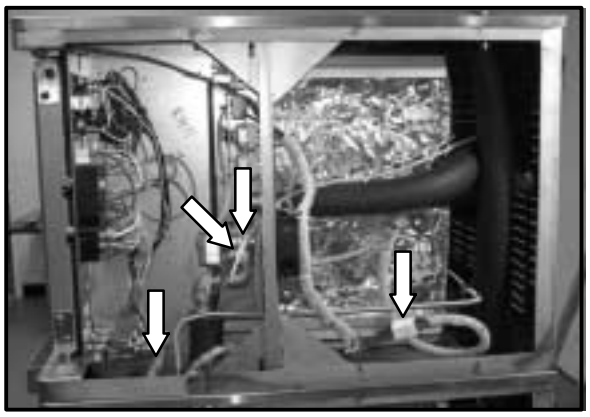


Figure 18

Oven Installation – Some Dismantling Required

11. Disconnect and remove the steam line to the upper oven section at locations shown in Figure 19. The top of the hose is secured with a band clamp. The bottom of the hose pulls out of the boiler in the oven base section. This orange hose has a black foam insulated cover around it. Remove hose with insulation from oven assembly.

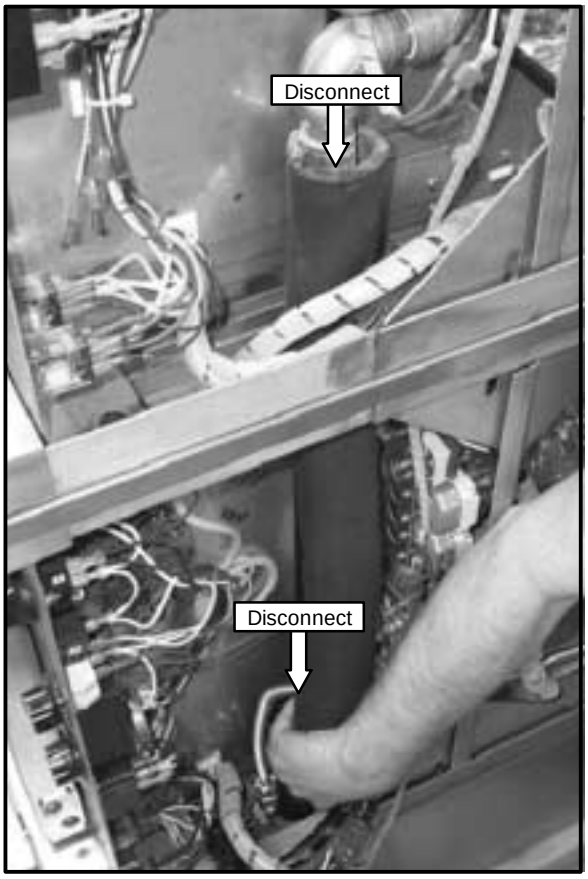


Figure 19

12. Remove the rear body panel on the lower oven section.

13. Remove the three bolts (1/2 inch diameter) that connect the top and lower oven sections together.

    Two bolts are located in the rear upper left and right corners of the lower oven section. These bolts can be accessed from the back of the lower oven section. See Figure 20.

    The third bolt is accessed from the right side of the lower oven section. It is located in the upper right hand corner. See Figure 21.

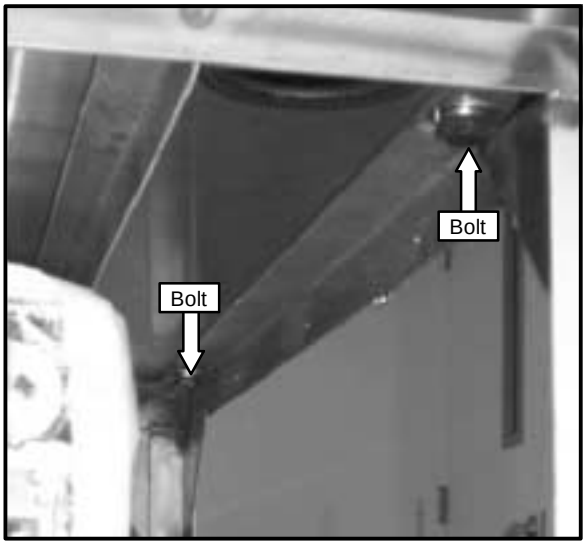


Figure 20

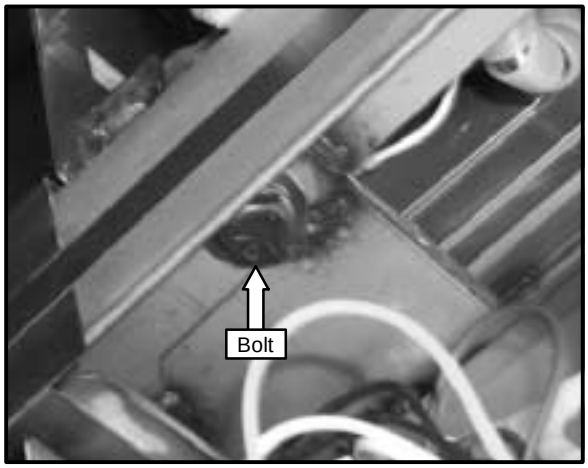


Figure 21

Installation

Oven Installation – Some Dismantling Required

14. Remove the upper oven section from atop the lower oven section. Use care not to chafe any of the harnesses that come from the base section. Use gloves to protect hands from any sharp edges.
15. Disconnect the electrical wire harnesses (J2, J4, J5, and J6) that connect the lower oven section to the oven base section. See Figure 22. Mark connections prior to disconnecting for ease of re-assembly.

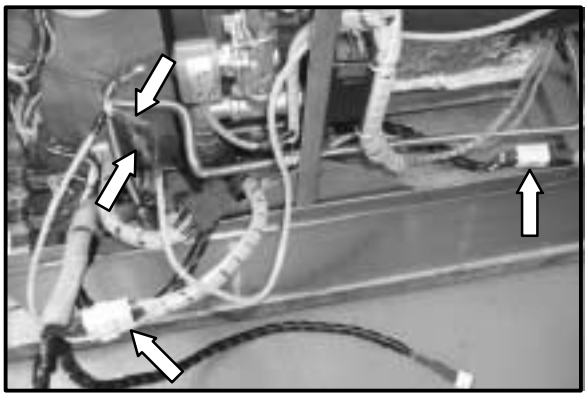


Figure 22

16. Disconnect and remove the steam line to the lower oven section. See Figure 23. The top of the hose is secured with a band clamp. The bottom of the hose pulls out of the boiler in the oven base section. This orange hose has a black foam insulated cover around it (shown with black foam insulation removed). Remove hose with insulation from oven assembly.

Figure 23

Oven Installation – Some Dismantling Required

17. Seal the outlets of the steam generator in the oven base section with the plastic caps provided with the installation kit. The caps will prevent water from splashing over the electrical equipment as the oven base section is tipped on it's side when passing through a hatch. See Figure 24. The oven base section should be tipped onto it's left side for passing through a hatch.

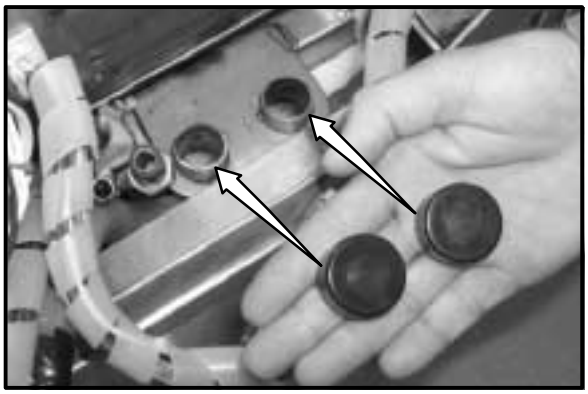


Figure 24

18. Remove the rear body panel from the oven base section. Unscrew the front panel from the oven base section. Leave the hoses connected to the front panel and the oven base section.
19. Remove the four bolts (1/2 inch diameter) that connect the lower oven section and oven base section together.

    Two bolts are located in the rear upper left and right corners of the oven base section. These bolts can be accessed from the back of the oven base section. See Figure 25 and Figure 26.

    The third bolt is accessed from the right side of the oven base section. It is located in the upper front right hand corner. See Figure 27.

    The fourth bolt is accessed from the left side of the oven base section. It is located in the upper front left hand corner. See Figure 28.
20. Remove the lower oven section from atop the oven base section. Use care not to chafe any of the harnesses that come from the base section. Use gloves to protect hands from any sharp edges.

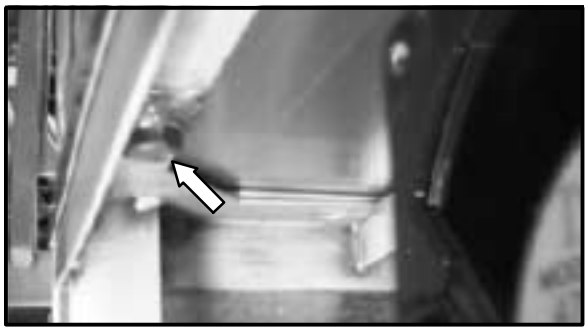


Figure 25

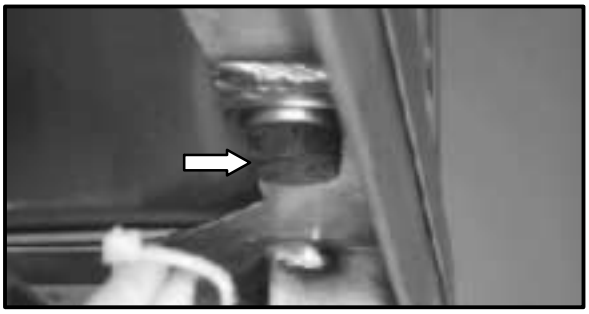


Figure 26

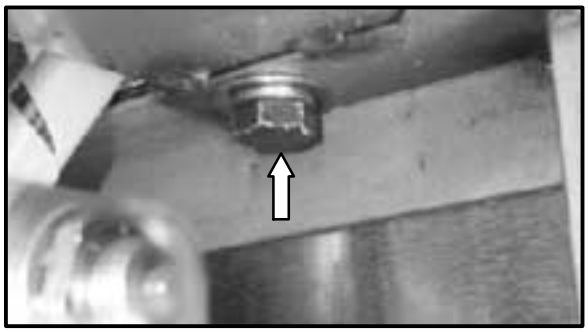


Figure 27

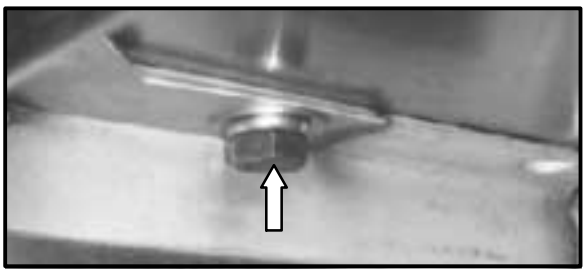


Figure 28

Installation

Oven Installation – Some Dismantling Required

OVEN RE-ASSEMBLY

After the installation base is secured in position, connected to potable water and electrical power, the oven sections may be assembled onto it. In galleys where ovens are located next to each other, the oven sections should be assembled prior to sliding the oven assembly into the final position on the installation base.

1. Remove the two 1/2” bolts from the front of the installation base. See Figure 29.

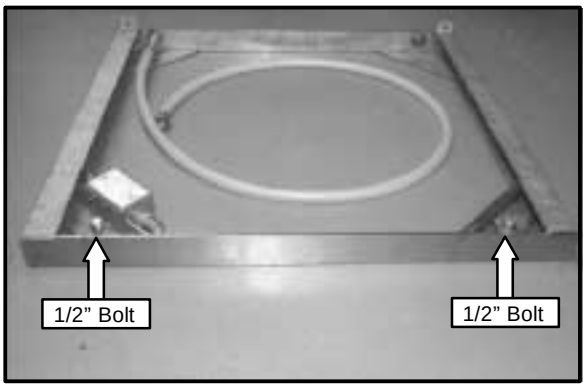


Figure 29

2. Lubricate the top surface of the installation base with a little grease or silicone spray. Position the oven base section onto the flat track surface of the installation base approximately 4” to 5”. Support the front of the oven base section with a piece of 2” pipe (2-3/8” OD approximately) by 39” (minimum) long.
3. Apply a 1/8 inch bead of clear silicone RTV to the perimeter of the top edge of the oven base section. Lift the lower oven section onto the oven base section. Use gloves to protect hands from any sharp edges.
4. Install the four bolts (1/2 inch diameter) that connect the lower oven section and oven base section together.

   Two nuts are located in the rear lower left and right corners of the lower oven section. These nuts can be accessed from the back of the oven base section. See Figure 25 and Figure 26 on page 17.

   The third nut is accessed from the right side of the oven base section. It is located in the lower front right hand corner of the lower oven section. See Figure 27 on page 17.

   The fourth nut is accessed from the left side of the oven base section. It is located in the lower front left hand corner of the lower oven section. See Figure 28 on page 17.
5. Remove the two plastic caps that were inserted onto the steam generator.

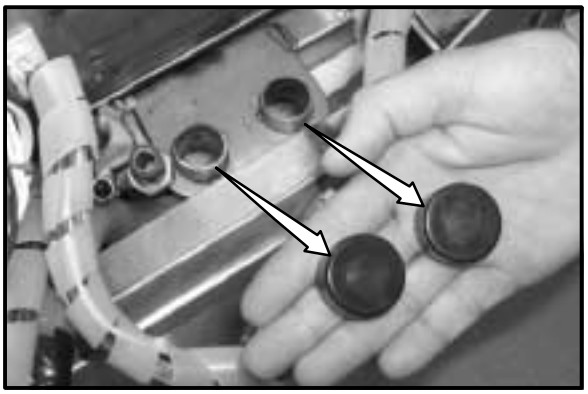


Figure 30

Oven Installation – Some Dismantling Required

6. Install and reconnect the steam line to the lower oven section. See Figure 31. Secure the top of the hose with a band clamp. Insert the bottom of the hose in the fitting on the steam generator in the oven base section. This orange hose has a black foam insulated cover around it (shown with black foam insulation removed).

Figure 31

7. Reconnect the electrical wire harnesses (J2, J4, J5, and J6) that connect the lower oven section to the oven base section.

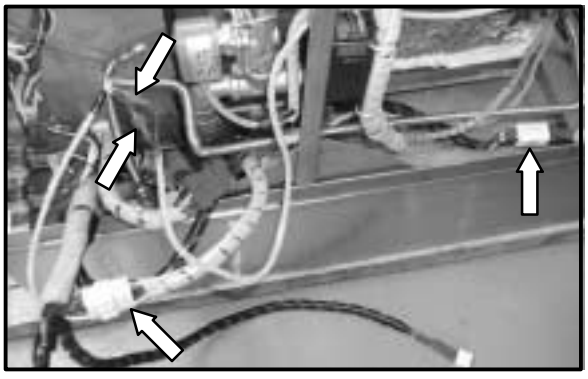


Figure 32

8. Install the rear body panel on the oven base section.

9. Apply a 1/8 inch bead of clear silicone RTV to the perimeter of the top edge of the lower oven section. Lift the upper oven section onto the lower oven section. Use gloves to protect hands from any sharp edges.

10. Install the three bolts (1/2 inch diameter) that connect the top and lower oven sections together.

    Two nuts are located in the rear lower left and right corners of the upper oven section. These nuts can be accessed from the back of the lower oven section. See Figure 33.

    The third nut is accessed from the right side of the lower oven section. It is located in the upper front right hand corner of the upper oven section. See Figure 34.

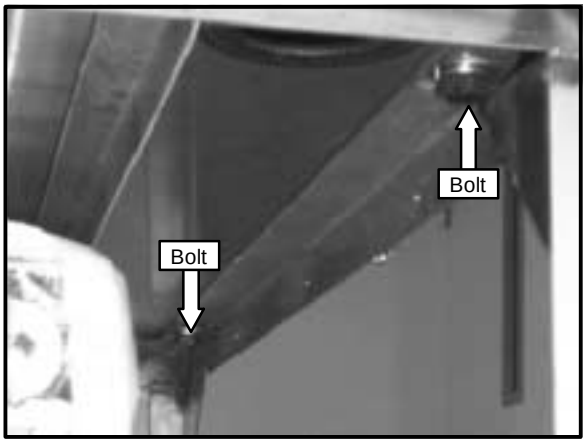


Figure 33

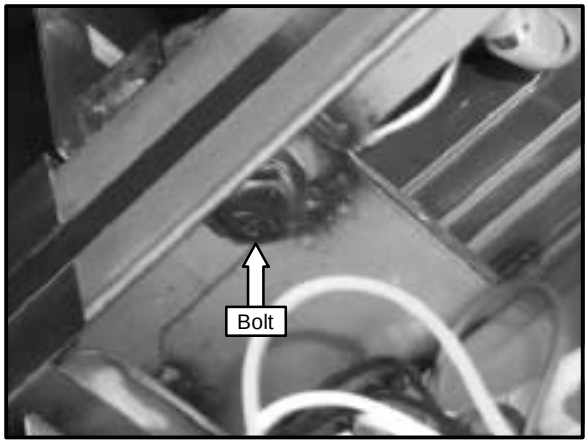


Figure 34

Installation

Oven Installation – Some Dismantling Required

11. Install the rear body panel on the lower oven section.
12. Install and reconnect the steam line to the upper oven section at locations shown in Figure 35. Secure the top of the hose with a band clamp. Insert the bottom of the hose in the fitting on the steam generator in the oven base section. This orange hose has a black foam insulated cover around it.

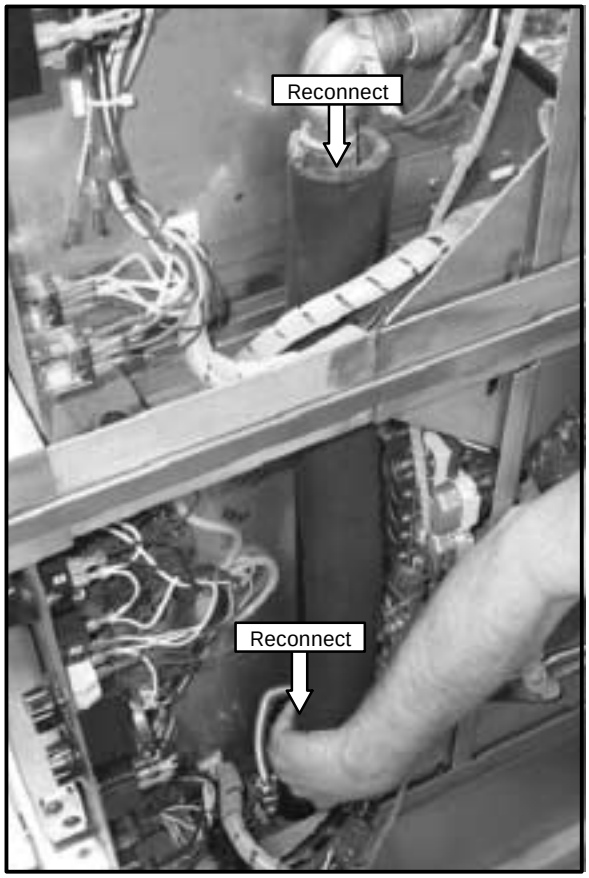


Figure 35

13. Reconnect three electrical wire harnesses (J1, J3, J7, and J8) that connect the upper oven section to the oven base section.

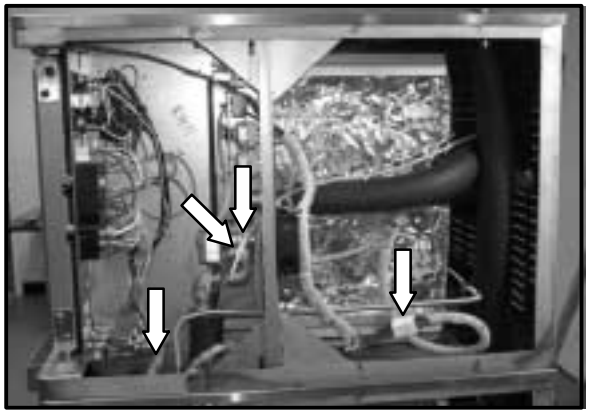


Figure 36

14. Reconnect the two orange hoses onto the fittings on the lower rear body panel. Assure that the foam insulation is also reinstalled.

Figure 37

Oven Installation – Some Dismantling Required

15. Reconnect the five rubber hoses to the upper and lower sections. Wire tie the three copper drain tubes together at location shown in Figure 38.

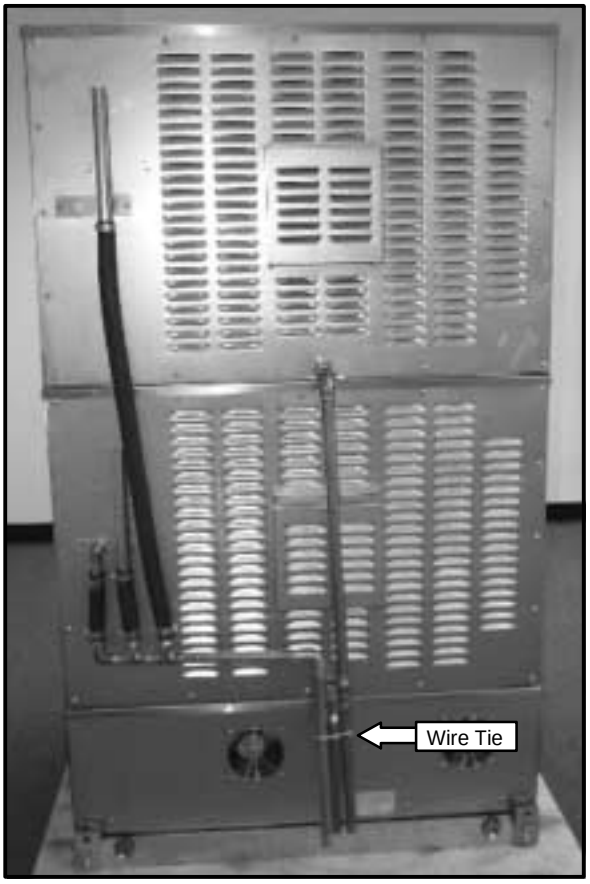


Figure 38

16. Reinstall the rear vertical duct to the rear of the oven stack with four screws. See Figure 39.
17. Review instructions in STEPS 1 thru 16 to ensure that all connections have been made properly, hoses are not kinked, and all electrical wire harnesses are routed correctly to prevent chafe or damage.
18. Complete the attached checklist document.
19. Replace oven electrical control panels on both upper and lower oven sections. See Figure 13 and Figure 14.
20. Slide the oven assembly back onto the installation base. The locking pins on the rear of the oven base section will fit into and lock the base to the upright tabs attached to the installation base. Install the two bolts (1/2 inch diameter) removed in STEP 1 (Figure 29), thru the oven base section and into the installation base. Insure that the drains from the upper and lower ovens and the orange hose and black hoses from the P2 stack tubes are located over the floor drain.
21. Hook up water and electrical connections to oven base section. Apply NSF approved sealant to cover of splash proof terminal box.

INSTALLATION COMPLETE. PROCEED WITH CHECK-OUT PROCEDURE.

Figure 39

Operation

Oven Startup and Shutdown

OVEN START-UP

1. Turn the mode switch to the desired mode, Steam, Hot Air, Combi, Cool Down.

STEAM MODE

1. Turn the mode switch selector knob to the Steam Position. The green “POWER” indicator lamp illuminates on the front control panel.
2. Steam fills the cavity and is controlled by a non-accessible internal thermostat.

Preheating for the STEAM mode

Before the first use of the appliance, daily or after the oven has been idle for 3 hours, preheat with the STEAM function until steam enters the oven cavity. The appliance can then be loaded.

HOT AIR MODE

1. Turn the mode selector switch to the Hot Air position. The green “POWER” indicator lamp illuminates on the front control panel.
2. Set the Hot Air thermostat to the desired temperature. The Thermostat lamp illuminates indicating the cavity temperature is below the desired set point.
3. When the cavity temperature reaches the desired set point, the temperature indicator lamp goes off.

Preheating for the HOT AIR mode

Always preheat the appliance prior to loading. Open the door and load the product quickly.

COMBI MODE

1. Turn the mode selector switch to the Combi position. The green “POWER” indicator lamp illuminates on the front control panel.
2. Set the Hot Air thermostat to the desired temperature.
3. The hot air thermostat lamp illuminates, indicating the cavity temperature is below the desired set point.
4. Once the cavity temperature reaches the desired set point, the temperature indicator lamp goes off.
5. The steam and hot air modes come on to satisfy the thermostat set points.

Preheating for the COMBI mode

Always preheat the appliance prior to loading. Open the door and load the product quickly.

COOL DOWN

1. Turn the mode selector switch to the Cool Down mode.
2. The convection blower comes on with the door open or closed.

OVEN SHUT DOWN

1. Turn the mode selector switch to the off position.

Optional Meat Probe

CONTROLS IDENTIFICATION

1. MEAT PROBE SWITCH

Controls power to the meat probe.

2. MEAT PROBE CONTROL

Use to set the desired probe temperature. Indicates the actual temperature of the product

3. MEAT PROBE CONNECTOR

Receptacle for the plug in meat probe.

NOTE: For sanitation it is recommended that the meat probe remain plugged into the front panel receptacle at all times.

OPERATION

Measuring the product core temperatures during long roasting periods is very practical. It is especially important for products such as Roast Beef to reach a specific internal temperature.

Place the probe through to the middle of the product's thickest section. Be sure the probe does not touch any bone and the tip is not in a fat pocket. These conditions can cause inaccurate readings.

1. Set the MODE SELECTOR Switch to the desired function.
2. Turn the MEAT PROBE Switch (1) to *ON*.
3. To set the desired core temperature press the blue SET BUTTON (4) on the MEAT PROBE CONTROL (2).

   Use the up arrow key (6) to increase the setpoint temperature. Use the down arrow key (5) to decrease the setpoint temperature.

   Press the set button again to store the setpoint.
4. Set the TIMER to *STAY ON*. The cooking process runs automatically.

   When the selected core temperature is reached, the buzzer will sound and the appliance shuts off automatically.

   The temperature and mode can be changed at any time during the process.
5. Shut the appliance off by setting all switches to *OFF*.

NOTE: When setting the internal temperature, be sure to allow for carry-over cooking after the roast is removed from the oven

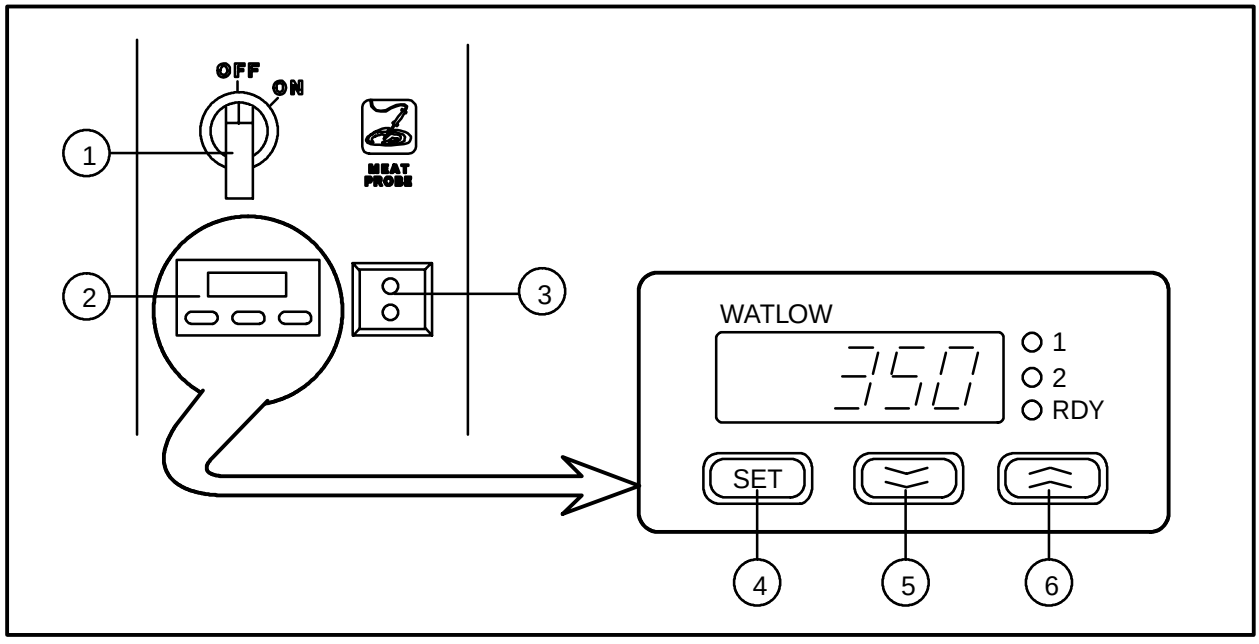


Figure 40

Operation

Standard Controls

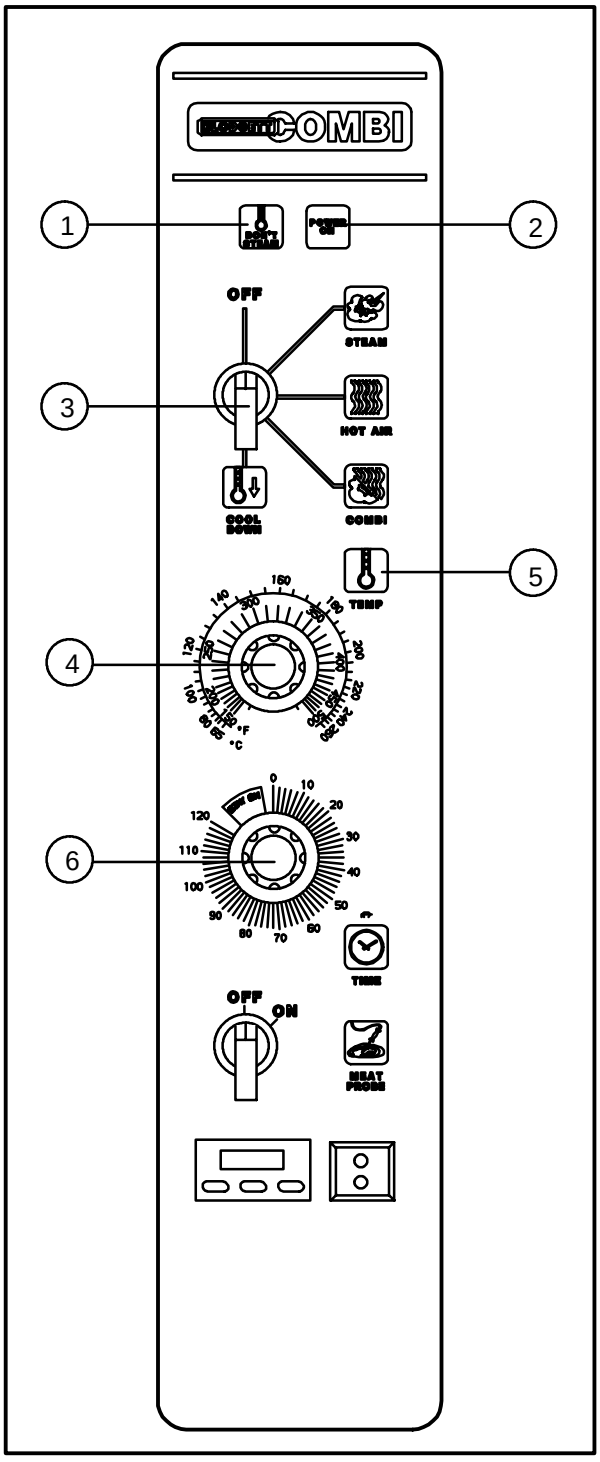


Figure 41

CONTROLS IDENTIFICATION

1. **DON'T STEAM LIGHT**

   Indicates the unit is too hot to operate in the steam mode. Place the unit in the Cool Down mode until the temperature is below 230_F (110_C). This light does not inhibit steam production.

2. **POWER ON LIGHT**

   Indicates the unit is in Steam, Hot Air or Combi.

3. **MODE SELECTOR SWITCH**

   Turns power to the oven on or off. Allows selection of Steam, Hot Air, Combi or Cool Down Modes.

4. **TEMPERATURE DIAL**

   Used to set desired cooking temperature.

5. **HEATING INDICATOR LIGHT**

   Lights when the Hot Air heating is in operation.

6. **TIMER DIAL**

   Used to set desired cooking time.

Standard Controls

OPERATION

1. Turn the MODE SELECTOR Switch (3) to the desired function.

   The POWER ON Light (2) illuminates.
2. Set the TIMER (6) for the desired cooking time or set it to *STAY ON*. The buzzer sound and the unit shuts off when the time has expired.
3. For the HOT AIR and COMBI modes, set the TEMPERATURE Dial (4) to the desired cook temperature. The HEATING INDICATOR Light (5) illuminates and stays lit until the desired temperature is reaches.
4. The selected mode operates automatically. The temperature, time and mode can be altered at any time during the cooking process. The operation can be stopped by the use of the Mode Selector Switch or by opening the door.
5. At the end of the specified time period, the buzzer sounds and the appliance will shut off automatically. Move the TIMER (6) to the *STAY ON* position to stop the buzzer and restart the unit.
6. To cool down the oven cavity, switch the MODE SELECTOR Switch (3) to COOL DOWN. In the Cool Down mode neither the temperature dial or the timer will be operational. The blower will function with the door open or closed.
7. The mode selector switch is also the main power switch. In the OFF position the appliance is not operational.

NOTE: Always disconnect the power supply before servicing the unit.

Cooking Guide

The Steam Mode

INFORMATION ABOUT THE STEAM MODE

How steaming works

This mode gently cooks food using non-pressurized steam. Fresh steam is directed into the oven from the generator. It is not necessary to add water to foods during the cooking process.

What can be steamed

Vegetables, side dishes, fish, meat, poultry, diet foods, garnishes, dumplings, casseroles, meat loaf, fruits, desserts and eggs.

How to operate the Steam mode

Simply turn the Mode Selector Switch to the STEAM position and set the Timer.

The advantages of steaming

Steaming is a well-known cooking process frequently used in restaurant and institutional kitchens. With this appliance it is now possible to enjoy the many advantages of steaming, some of which are:

- **Shorter Cooking Times**

  The continuous processing of large amounts of product is no problem and long cooking times are no longer necessary. Even with full loads, relatively shorter cooking time for food is needed.

- **High Quality Foods**

  With the useof steam, valuable taste and aroma are preserved since steamed foods retain their own natural taste. During the steaming process foods retain the nutrients and vitamins which are lost in water during boiling. Therefore, when compared, steamed foods have much better color than foods that have been boiled. Also, by using shallow containers the product is not layered as deeply and mushing is avoided.

- **Vitamin Retention**

  Vitamins are not destroyed. This is due to the shorter cooking times, the use of less or little water and the use of a low temperature; slightly less than 212_F/100_C.

- **Firmness**

  With the use of steam, overcooking is not a problem and firmness can be individually controlled.

- **Simultaneously Steaming Different Foods**

  There is no flavor transfer when cooking with the STEAM mode. For this reason, various types of food with different cooking times can be loaded or removed at any point during the cooking process.

The Steam Mode

TIPS AND PROCEDURES

Containers

Both solid and perforated steam table pans of varying sizes (full, half, and one-third size) may be used in the appliance. Small pans may be placed on wire racks.

Stocks for Sauces

When trays are used for cooking there is usually enough stock collected for making sauces. When using perforated pans, insert a solid pan in the bottom rack to collect the stock.

Seasoning

Since there is no liquid added during the steaming process, season using one of the following methods:

- **Season before cooking:** Sprinkle the spice mixture evenly over the food prior to cooking.
- **Oil seasoning after cooking:** Stir the oil mixture into the product. Steam again for two minutes in some cases.

Blanching and Prep Work

Large amounts of product can be blanched in a short amount of time. Trays should not be filled higher than 3 inches.

The STEAM mode is excellent for preparing vegetables for peeling.

Canning and Preserving

The diameter of the containers must not exceed 4-5 inches when canning.

Thawing

Thawing time is much shorter when using steam and produces higher quality food.

Reheating

The use of steam creates an even distribution of heat, which gives food better taste and retention of nutrients.

Foods are reheated in the trays in which they were cooked. Reheating times vary according to the height and content of the containers.

SAMPLE DISHES

Vegetables

Fresh and frozen vegetables may be steamed together. Frozen vegetables should be loosely scattered on the trays. Perforated trays shorten cooking time, although solid trays may be used.

Cooking times will vary depending on the quality of the vegetables. When steaming fresh vegetables, check the product $^3/_4$ of the way through the cooking period.

Steamed vegetables tend to soften after cooking. Since there is a delay between cooking and serving, it is best not to steam vegetables too soft. This is especially important for foods prepared for transport.

Rice and Potatoes

Rice requires the addition of water for steaming. Remember that the rice continues to swell after cooking; plan your quantities accordingly.

Always cook potatoes in perforated pans. Steam can permeate the potatoes better if they are quartered through the width and not the length.

Eggs

Eggs are inserted onto wire racks, either in the cardboard container or placed into perforated trays (there is no need to puncture them). Cooking eggs with the STEAM function saves work and results in less waste since steamed eggs do not break. Also, the degree of hardness can be controlled exactly. Begin timing when the oven window is misted over.

Fish

Fish can be steamed in trays without using extra stock. Use a 1 inch pan for fresh fish (Fillets). For larger or frozen pieces, use a 2 inch pan.

Poached fish can be prepared with aromatic herbs and vegetables in either solid or perforated pans. Steam without stock.

Shell fish can be steamed in perforated pans. Use a solid pan to catch drippings for stock.

Cooking Guide

The Hot Air Mode

INFORMATION ABOUT THE HOT AIR MODE

How cooking with hot air works

Hot air is circulated at high speed on all sides of the product, providing a concentrated cooking process. This function is extremely effective for intensive browning.

What can be cooked with hot air

Hot air can be used for all foods which need a short cooking time and intensive browning. For example: steaks, cutlets, fillets, breaded foods, and various baked foods. This function may also be used for au gratin.

COOKING WITH THE HOT AIR MODE

Temperatures

For intensive browning and crispy crusts, preheat the oven to the maximum temperature of 500_F/260_C. This is especially important when searing.

Performance

The charts showing performance examples (See Cooking Guide) are based on full capacity. Better results may be obtained by reducing product quantities.

Cooking Times

Due to the constant hot air circulation, this appliance cooks faster than conventional grills and deck ovens.

Cooking times will vary according to the quality, weight, and height of the product.

Trays or Racks?

This is a question of individual choice. Racks have the advantage of browning food on all sides; the underside of tightly packed foods may be lighter when using trays.

TIPS AND PROCEDURES

Loading the Oven

Place like sized product together on one rack. In order to ensure proper air circulation, racks and trays should not be crowded.

Oiling

The quality of some foods, such as steaks and breaded meats, can be enhanced by coating with oil or a paprika oil mixture.

Breaded Foods

The degree of browning is dependent on the amount of raw material in the breading. Oil can be used to intensify the browning. Press the breading firmly but don't overload the oven. Flouring seared foods is not recommended.

Baking

For baking, the Mode selector switch may be set to HOT AIR, STEAM, COMBI or any combination according to the type of product. Steam added to the baking process opens up a wide range of possibilities: such as hard crusts and good shine on certain types of breads. Here are some tips for baking:

- Preheat oven to the baking temperature.
- Baking temperatures can generally be set 50-75_F/20-25_C lower than with a conventional baking or roasting oven. When in doubt, lower the temperature.
- The baking time can be shorter than with conventional methods.
- Slightly reduce your quantities of mixtures with excessive moisture.
- Use deep trays for light mixtures in order to ensure undisturbed baking. Baking forms should not be higher than 3 inches.
- Cake forms (pans, tins, etc.), should be placed on racks.
- Distribute foods evenly when loading half loads.
- Use every second tier for baking bread, heavy mixtures (yeast doughs, etc.) and well filled forms.

The Combi Mode (Steam and Hot Air)

INFORMATION ABOUT THE COMBI (STEAM AND HOT AIR) MODE

How Combi Mode Works

With this function, the advantages of steam (short cooking time, less shrinkage) and hot air (intensive aroma, appetizing color) are combined. Steam and hot air circulate at high speeds, enveloping the product on all sides and providing an intensive cooking process.

What can be cooked in Combi mode?

All types of roasts, duckling, pork, beef, lamb, meat loaf, ground chuck foods, casseroles, poultry, stuffed vegetables, vegetables au gratin and yeast doughs.

The advantages of Combi mode?

- **Productivity**

  Previously, several different appliances, and multiple procedures, were necessary to combine heat andsteam preparation. Now all of these methods can be used without time wasting interruptions, with one appliance.

- **Less Shrinkage**

  The usual weight loss during roasting in conventional appliances can be reduced by approximately 13% of the original weight.

- **Juiciness and Crunchy Crusts**

  When used at the beginning of the cooking procedure, the searing action of steam instantly closes all pores. This reduces the loss of protein and meat juices. Therefore, products with long roasting times remain juicy. Foods retain their moisture and roasts develop a pleasing color as well as an appetizing crust. Meats have a pronounced roasted taste and burning of the surface is almost impossible.

COOKING IN THE COMBI MODE

The COMBI function can be used for the entire cooking process or for any portion of the cooking procedure you desire.

What do Combi-roasting, Combi-steaming and Combi-baking mean?

We have created these names since both modes, STEAM and HOT AIR, can be applied in any combination as follows:

- Together, as in the COMBI function.
- In sequence

  Example: first STEAM and then HOT AIR.

- Or in sequence and then in combination

  Example: first HOT AIR and then COMBI
  Or conversely: first COMBI and then HOT AIR.

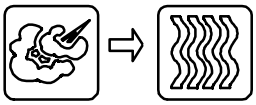
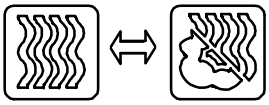
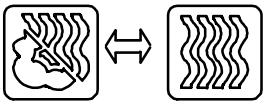
- Or all three functions in sequence

  Example: first STEAM, then HOT AIR, then COMBI.

For additional tips on when to use each of these Combi Modes see the “Summary of Functions” on the following page.

Cooking Guide

Summary of Functions

MODE SELECTION	COOKING METHODS	PRODUCTS
 Steam	Steaming, defrosting, thawing, re-heating-reconstituting, blanching, preserving, poaching, simmering, braising, stewing.	Convenience food, potatoes, rice, fresh or frozen vegetables, fresh or frozen fish, poultry, meat, fruit, eggs, puddings, casseroles.
 Hot Air	Roasting, grilling, baking, au gratin.	Roast beef, pork, veal, lamb, chicken, hamburger, fish, stuffed vegetables, toast, lasagne, potatoes, pies, shortbread, puff pastry, Danish and French pastry, bread.
 Combi	Combi-steaming, Combi-roasting, Combi-baking, defrosting-thawing, reheating-reconstituting.	Prime rib, whole bone ham, goose, turkey, fish, mutton, beef, pork roast, French pastry, bread, rolls, puff pastry, Danish pastry, convenience food.
 Steam Hot Air	Combi-steaming, Combi-braising, Combi-roasting, Combi-baking, *(Begin with steam, then with dry heat for crusting, browning, gratinating.)*	Stuffed peppers, gratinated vegetables, fennel, broccoli, cauliflower, rack of lamb, pork
 Hot Air Combi	Combi-steaming, Combi-roasting, Combi-baking, *(Start with dry heat, switch over to Combi for slow but gentle even browning, switch back and forth as necessary.)*	French pastry, puff pastry, yeast dough, turkey, duck, goose, lamb, stuffed vegetables.
 Combi Hot Air	Combi-braising, Combi-roasting, Combi-baking, *(Start with Combi, finish with dry heat for crusty, crisp, brown surface, switch back and forth as necessary.)*	Whole bone ham, ham in bread dough (English Ham), whole fillets of beef, pastry dough, yeast dough (bread, rolls).
 Steam Hot Air Combi	Combi-steaming, Combi-roasting, Combi-baking, *(For meats: sear pores closed with steam, then brown with dry heat, then switch between Combi and dry heat. For stuffed vegetables: steam first and switch between dry heat and Combi during the rest of the cooking process.)*	Veal, pork, beef, leg of lamb, goose, duck, turkey, prime rib, puddings, stuffed peppers; ideal for all products which need a humid cooking process.

General Tips and Procedures

USING RACKS

Use racks for roasts needing a longer roasting time, large roasts (pork, veal, beef, venison, lamb), searing, toast, au gratin, (chicken, duck, goose, legs, chops), cooking in containers, thawing, baking in tins, etc. When cooking in racks it is important to turn food products.

USING PANS

- **1 | Deep Steam Table Pan**

  For fried potatoes, hamburgers, au gratin, thawing, meat loaf, meat balls, fried, poached and steamed fish, baked goods, vegetable casseroles, duck and goose.

- **2 | Deep Steam Table Pan**

  For cabbage rolls, stuffed peppers, stews, rice, vegetables, sauerkraut, assorted fruits and compote. Also for collecting stock, preparing sauces, etc.

- **2½ | Deep Perforated Steam Table Pan**

  For vegetables without stock, side dishes (breads) and products with shorter cooking times.

- **4 | Deep Perforated Steam Table Pan**

  For vegetables (blanching spinach for example), potatoes, shelled or unshelled eggs.

- **6 | Deep Perforated Steam Table Pan**

  For potatoes.

COOKING TIMES

The length of the cooking process depends on the quality, weight and thickness of the food product.

TEMPERATURES

Typically, the longer the cooking process, the lower the temperature.

LOADING THE OVEN

To ensure that the product will brown on all sides, do not place foods too close together. Place the grain of meats parallel to the air stream (left to right). This ensures better absorption and shortens the cooking process. Place like sized pieces together on the same rack, smaller pieces cook more quickly.

Place the food in the appropriate pans/trays or distribute it on the racks. Insert racks and trays into the pan rack. It is recommended that the pan rack be loaded outside of the oven when processing large amounts of product. The pan rack for table models is well suited for this purpose; it allows for a higher hourly production and an efficient work sequence.

REMOVING THE PRODUCT

Turn the Mode Selector Switch to OFF before opening the appliance door.

NOTE: Open the door slowly after steaming! Hot Steam Will Be Present!

Cooking Guide

Suggested Times and Temperatures

NOTE: (All times and temperatures are estimates and should be verified in actual practice. Starting temperature of food, pan size/fullness and opening oven during cooking will affect cooking times.)

BAKED GOODS				
Menu Item	**Mode**	**Temp**	**Cooking Time**	**Comments**
Angelfood Cake	Hot air	325F/165C	50 min	Tube pans on wire racks
Apple Cinnamon Muffins	Hot air	350F/175C	20 min	See other muffin procedures
Apple Coffee Cake	Hot air	300F/150C	25 min	Also test in combi mode
Bear Claws	Combi	350F/175C	20 min	Also test in hot air
Biscuits	Hot air	325F/165C	15 min	Also test in combi mode @ 350F/175C
Bread Sticks (Soft Style, Raw Dough)	Combi	325F/165C	10 min	375F/190C for crispy style
Butter Sugar Cookies	Combi	300F/150C	10 min	Also try on hot air
Cake Layers	Hot air	300F/150C	25 min	Sheet pans
Carrot Cake Layers	Hot air	325F/165C	25 min	Sheet pans
Cheese Danish	Combi	350F/175C	20 min	Also test in hot air
Cheesecake	Combi	325F/165C	1 hr	
Cherry Crisp	Combi	325F/165C	30 min	2½" pan, uncovered
Cherry Pie	Hot air	350F/175C	40 min	Pie tins on wire rack
Cherry Strudel	Hot air	350F/175C	30 min	
Chocolate Brownies	Hot air	325F/165C	25 min	Sheet pans
Chocolate Chip Muffins	Hot air	350F/175C	20 min	See other muffin procedures
Cinnamon Raisin Biscuits	Hot air	325F/165C	15 min	Also try in combi mode
Cream Cheese Noodle Bake	Combi	300F/150C	40 min	2½" pan, uncovered
Dinner Rolls	Combi	325F/165C	20 min	Also test in hot air
Dutch Apple Pie	Combi	350F/175C	50 min	Pie tins on wire rack
French Bread	Combi	375F/190C	20 min	See hard roll procedure also
Hard Rolls	Combi	375F/190C 250F/120C 350F/175C	Preheat 5 min 15 min	Low temp stage produces better crust – can be eliminated – keep total time
Hot Seasoned Apples	Combi	250F/120C	15 min	2½" pan, uncovered
Indian Pudding	Steam	NA	35 min	2½" solid pan
Mile High Apple Pie	Hot air	350F/175C	50 min	Pie tins on wire racks

Suggested Times and Temperatures

BAKED GOODS				
Menu Item	**Mode**	**Temp**	**Cooking Time**	**Comments**
Muffins (Blueberry, Banana Nut)	Hot air	350F/175C	20 min	Preheat to 400F/205C, load oven, turn off for 6–8 min, then bake at indicated temperature
Oatmeal Raisin Cookies	Hot air	325F/165C	15 min	
Peanut Butter Choc. Chunk Cookies	Hot air	300F/150C	12 min	Higher temp for crispier cookie
Pecan Rolls	Combi	325/165C	20 min	Also test in hot air mode
Sour Cream Coffee Cake	Hot air	300F/150C	25 min	Also try in combi mode
Strawberry Rhubarb Pie	Hot air	350F/175C	50 min	Pie tins on wire rack
Sweet Rolls	Combi	325F/165C	20 min	Also try in hot air mode
White Chocolate Fudge Cookies	Hot air	300F/150C	15 min	
Whole Wheat Rolls	Combi	325F/165C	25 min	Also test on hot air

EGGS				
Menu Item	**Mode**	**Temp**	**Cooking Time**	**Comments**
Cheese Soufflé	Combi	350F/175C	30 min	2½“ solid pan
Chilean Cheese Quiche	Combi	325F/165C	40 min	2½“ solid pan
Egg Foo Yung	Steam	NA	15 min	2½“ solid pan
Hard Cooked Eggs	Steam	NA	15 min	Perforated steam pans or in cardboard flats on sheet pans
Mixed Vegetable Quiche	Combi	325F/165C	40 min	2½“ solid pan
Onion Cheese Quiche	Combi	325F/165C	40 min	2½“ solid pan
Spanish Omelet	Steam	NA	10 min	½“ size sheet pan, lined
Spinach Quiche	Combi	325F/165C	40 min	2½“ pan, uncovered

Cooking Guide

Suggested Times and Temperatures

PORK				
Menu Item	**Mode**	**Temp**	**Cooking Time**	**Comments**
Bacon Slices	Combi	325F/165C	15 min	Single layer on sheet pan
Bacon Slices	Combi	325F/165C	15 min	Single layers on sheet pan
Baked Ham	Combi	300F/150C	1 hr	Sheet pan
Baked Pork Chops	Combi	325F/165C	20 min	Single layer on sheet pan
BBQ Boneless Rib For Sandwich (Retherm)	Combi	250F/120C	15 min	Shingled on sheet pan
BBQ Pork For Sandwich (Boston Butts, Raw)	Combi	250F/120C	2 hrs	On sheet pan w/sauce
Bratwurst	Steam	NA	15 min	2½“ pan, uncovered
Canadian Bacon	Combi	400F/205C	5 min	Single layer on sheet pans
Grilled Butterflied Pork Chops	Combi	400F/205C	10 min	Oiled chops on sheet pan
Grilled Ham Slice	Combi	400F/205C	10 min	Cook on wire racks – preheat 450
Grilled Pork Cutlet	Combi	400F/205C	15 min	Single layer on sheet pan
Grilled Pork Tenderloin	Combi	400F/205C	15 min	Oiled wire rack
Italian Sausage	Combi	375F/190C	15 min	Sheet pan
Kielbasa For Sandwiches	Combi	375F/190C	15 min	Single layer on sheet pan
Knockwurst	Steam	NA	20 min	2½“ pan, uncovered
Pork Sausage Links	Combi	350F/175C	15 min	Single layer on sheet pan
Roast Pork (150_ Internal, Rest 20 Min)	Combi	300F/150C	50 min	Use sheet pan or wire rack
Sausage Patties	Combi	300F/150C	15 min	Steam for better yield (no color)

Suggested Times and Temperatures

STARCHES				
Menu Item	**Mode**	**Temp**	**Cooking Time**	**Comments**
Baked Beans	Combi	300F/150C	40 min	2½“ pan, uncovered
Baked Potato	Combi	400F/205C	45 min	On sheet pan, unwrapped
Baked Sweet Potatoes (Whole)	Combi	375F/190C	40 min	Sheet pan
Black Bean Enchilada	Combi	300F/150C	15 min	2½“ solid pan
Brown Rice	Steam	NA	30 min	2½“ pan, uncovered
Cheesy Rice Casserole	Combi	300F/150C	30 min	2½“ pan, uncovered
Chili Cornbread Casserole	Hot air	325F/165C	35 min	2½“ solid pan
Glazed Sweet Potatoes	Combi	300F/150C	30 min	2½“ solid pan
Hash Brown Potatoes	Combi	400F/205C	15 min	Oiled pan, brush tops w/oil
Lasagna	Combi	300F/150C	40 min	2½“ pan, uncovered
Macaroni & Cheese	Combi	275F/135C	40 min	2½“ solid pan
Parsley Potatoes	Steam	NA	25 min	2½“ solid pan
Pizza (Scratch Crust)	Combi	350F/175C	15 min	Sheet pan
Potato Puffs (Frozen)	Combi	375F/190C	20 min	Single layer on sheet pan
Rice	Steam	NA	25 min	2½“ pan, uncovered
Rice Pilaf	Steam	NA	25 min	2½“ solid pan
Rissole Potatoes	Combi	350F/175C	20 min	Single layer on sheet pan
Roast Potatoes	Combi	375F/190C	30 min	Single layer on sheet pan
Shells Florentine (Precooked Pasta W/Sauce)	Combi	275F/135C	30 min	2½“ pan, uncovered
Spaghetti (Retherm, W/Sauce)	Combi	250F/120C	15 min	2½“ pan, uncovered
Tri–Taters	Combi	375F/190C	20 min	
White & Wild Rice (Parboiled, Conditioned)	Steam	NA	30 min	2½“ pan, uncovered
Yorkshire Pudding	Hot air	350F/175C	30 min	2½“ solid pan

Cooking Guide

Suggested Times and Temperatures

BEEF				
Menu Item	**Mode**	**Temp**	**Cooking Time**	**Comments**
BBQ Beef For Sandwich (Raw Brisket)	Combi	250F/120C 375F/190C	90 min + 10 min	Cook with sauce @ low heat, raise temp to set glaze
Beef Sausage Links	Combi	350F/175C	15 min	May also be steamed
Beef–A–Roni (Precooked, Retherm)	Combi	260F/125C	20 min	2½“ pan, uncovered
Braised Beef W/Mushrooms	Combi	250F/120C	1 hr	2½“ pan, uncovered
Breakfast Steak	Combi	500F/260C	5 min	Brush w/butter, use oiled pan
Corned Beef Hash	Combi	250F/120C	25 min	2½“ solid pan
Grilled Flank Steak	Combi	500F/260C	10 min	Oil steak, cook on wire rack
Hamburger Pie	Combi	325F/165C	30 min	2½“ pan, uncovered
Hamburgers (Frozen Patties)	Combi	400F/205C	10 min	Perforated sheet pan preferred
Herbed Pot Roast	Combi	250F/120C	3 hrs	2½“ solid pan
Hot Dogs	Steam	NA	15 min	2½“ perforated pan
Italian Beef For Sandwich (Retherm)	Combi	275F/135C	20 min	2½“ solid pan
London Broil	Combi	500F/260C	15 min	Oiled steak, preheated racks
Marinated Sirloin Steak	Combi	500F/260C	10 min	Oiled sheet pan
Meatloaf	Combi	300F/150C	40 min	2½“ pan, uncovered
New York Strip	Combi	500F/260C	8 min	Oiled steaks on wire racks
Prime Rib (Rest Before Carving)	Combi	275F/135C	2 ½ hrs	Wire rack, check internal temp
Rib Eye Sandwich Steak	Combi	500F/260C	5 min	Brush w/melted butter, cook on wire racks, catch pan on bottom (preheat oven well)
Roast Beef	Combi	275F/135C	2 ½ hrs	Sheet pan or wire rack
Roast Beef Hash (Retherm)	Combi	250F/120C	25 min	2½“ solid pan
Salisbury Steak W/Gravy (Retherm)	Combi	250F/120C	20 min	2½“ solid pan
Teriyaki Steak	Combi	400F/205C	10 min	Single layer on sheet pan

Suggested Times and Temperatures

FISH				
Menu Item	**Mode**	**Temp**	**Cooking Time**	**Comments**
Baked Cod	Combi	375F/190C	10 min/in.	Single layer on sheet pan
Baked Sole	Combi	275F/190C	10 min	Flat filets on sheet pan
Cod Fish For Sandwich	Combi	350F/175C	10 min	Single layer on sheet pan
Grilled Yellow Fin Tuna	Combi	375F/190C	10 min/in	Sheet pan or wire rack
Rainbow Trout (Whole, Thawed)	Combi	375F/190C	15 min	Single layer on sheet pan
Salmon En Croute (Fillet In Puff Pastry)	Combi	375F/190C	20 min	Sheet pan
Steamed Clams	Steam	NA	10 min	Perforated pan
Stuffed Flounder	Combi	350F/175C	20 min	Single layer on sheet pan
Tuna Noodle Casserole	Combi	275F/135C	30 min	2½“ solid pan
Whole Lobsters – 1#	Steam	NA	15 min	Perforated pan

Cooking Guide

Suggested Times and Temperatures

POULTRY				
Menu Item	**Mode**	**Temp**	**Cooking Time**	**Comments**
Baked Chicken	Combi	375F/190C	35 min	Single layer on sheet pan
Baked Chicken Thighs	Combi	375F/190C	25 min	Single layer on sheet pan
BBQ Chicken (Sauced, Pieces)	Combi	325F/165C	35 min	Sheet pan
BBQ Turkey For Sandwich (Retherm)	Combi	250F/120C	15 min	Shingled in shallow layers
Chicken & Vegetable Stir Fry (Low Fat Version)	Combi	375F/190C	15 min	Toss raw ingredients w/oil, add sauce after cooking
Chicken / Mexican Quesadilla	Combi	300F/150C	30 min	2½“ perforated pan
Chicken Cordon Blue	Combi	375F/190C	20 min	Single layer on sheet pan
Chicken Kiev	Combi	375F/190C	20 min	Single layer on sheet pan
Chicken Parmesan	Combi	375F/190C	20 min	Single layer on sheet pan
Chicken Patties For Sandwiches (Frozen)	Combi	375F/190C	20 min	Single layer on sheet pan
Chicken Pot Pie	Combi	350F/175C	45 min	2½“ pan, uncovered
Chicken Tenders	Combi	400F/205C	15 min	Toss w/oil, cook on sheet pan
Chicken Tettrazini	Combi	275F/135C	30 min	2½“ pan, uncovered
Cornish Hens	Combi	375F/190C	25 min	Sheet pan
Grilled Marinated Chicken Breast	Combi	375F/190C	15 min	Single layer on sheet pan
Hot Turkey Sandwich (Retherm Sliced Turkey)	Combi	250F/120C	15 min	Shingled in shallow layers
Sherried Chicken	Combi	250F/120C	40 min	2½“ solid pan
Turkey W/Dressing (Portioned, Retherm)	Combi	250F/120C	15 min	2½“ pan, uncovered

Suggested Times and Temperatures

VEGETABLES				
Menu Item	**Mode**	**Temp**	**Cooking Time**	**Comments**
Asparagus	Steam	NA	10 min	2½“ perforated pan
Asparagus & Egg Au Gratin	Steam	NA	20 min	2½“ solid pan
Broccoli (Fresh Spears)	Steam	NA	12 min	Perforated pan
Broccoli Cheese Casserole	Combi	300F/150C	40 min	2½“ pan, uncovered
Cauliflower (Fresh Florets)	Steam	NA	12 min	2½“ perforated pan
Corn (Frozen Niblets)	Steam	NA	20 min	2½“ perforated pan
Corn On The Cob	Steam	NA	15 min	2½“ perforated pan
Fingerling Carrots	Steam	NA	15 min	2½“ perforated pan
French Cut Green Beans (Frozen)	Steam	NA	15 min	2½“ perforated pan
Garden Peas (Frozen)	Steam	NA	10 min	2½“ perforated pan
Glazed Carrots (Frozen W/ Sauce)	Steam	NA	15 min	2½“ pan, uncovered
Green Beans W/Water Chestnuts	Steam	NA	15 min	2½“ perforated pan
Italian Vegetables (Frozen)	Steam	NA	20 min	2½“ perforated pan
Mexican Corn (Frozen)	Steam	NA	20 min	2½“ perforated pan
Mixed Vegetables (Frozen)	Steam	NA	15 min	2½“ perforated pan
Pea Pods W/Water Chestnuts	Steam	NA	10 min	2½“ perforated pan
Peas & Mushrooms (Frozen)	Steam	NA	20 min	2½“ perforated pan
Ratatouille	Combi	300F/150C	20 min	Toss veg w/oil before cooking
Sliced Carrots (Raw)	Steam	NA	20 min	2½“ perforated pan
Spinach (Frozen)	Steam	NA	20 min	2½“ perforated pan
Sugar Snap Peas (Frozen, Seasoned)	Steam	NA	15 min	2½“ pan, uncovered
Vegetable Primavera Casserole	Combi	275F/135C	30 min	2½“ solid pan
Vegetarian Stir Fry (Low Fat Version)	Combi	375F/190C	10 min	Toss raw ingredients w/oil, add sauce after cooking
Vegetarian Stuffed Peppers	Combi	300F/150C	30 min	2½“ solid pan
Whole Green Beans	Steam	NA	15 min	2½“ perforated pan
Zucchini W/Basil	Steam	NA	10 min	2½“ perforated pan

Cooking Guide

Notes

Cleaning and Preventive Maintenance

CLEANING THE INTERIOR

Daily cleaning of the appliance is essential for sanitation, and to ensure against operational difficulties.

For difficult cleaning, allow the spray-on oven cleaner to work longer before rinsing.

1. **Cool the oven down** to 140_F/60_C or, if the oven has been idle, turn the steam mode on for 3 to 4 minutes in order to warm the oven surfaces.
2. Spray the interior of the oven with a cleaning solution.

   NOTE: Never spray water into the unit when the temperature is above 212_F. NEVER SPRAY WATER IN THE UNIT AFTER USING THE HOT AIR OR COMBI MODES.
3. Let the cleaner work for 10 to 20 minutes with the oven off. For difficult, baked on grease, etc. allow to work over night.
4. Set the timer for 15 to 20 minutes.
5. Set the mode selector switch to Steam. This will soften all burned on residue.
6. Rinse the oven interior with water (a hose may be used, but take care that only the oven's interior cavity is sprayed with water).
7. Set the mode selector to steam for another five minutes to flush out the oven interior and remove all detergent residue.

NOTE: The oven cavity should never be scoured or scraped.

On stainless interiors, deposits of baked on splatter, oil, grease or light discoloration may be removed with a good non toxic industrial stainless steel cleaner. Apply cleaners when the oven is cold and always rub with the grain of the metal. The racks, rack supports and the blower wheel may be cleaned in the oven or by removing them from the oven and soaking them in a solution of ammonia and water.

NOTE: DO NOT use corrosive cleaners on the Oven/Steamer.

CLEANING THE EXTERIOR

Oven exteriors may be cleaned and kept in good condition with a light oil. Saturate a cloth and wipe the oven when it is cold; wipe dry with a clean cloth.

NOTE: The outside of the appliance is not to be sprayed with water.

PREVENTIVE MAINTENANCE

The best preventive maintenance measures are the proper initial installation of the equipment and a program for cleaning the oven routinely. The Oven/Steamer requires no lubrication. Contact the factory, the factory representative or a local Blodgett Combi service company to perform maintenence and repairs should they be required.

⚠ WARNING!!

Disconnect appliance from power supply before servicing or cleaning.

Maintenance

Decalcification

The oven should be delimed on a monthly basis regardless of water quality or usage. Use the following procedure to delime the boiler.

1. Turn the Mode Selection Switch to the STEAM mode. Wait until steam is produced. This will ensure that the water in the steam generator is hot.
2. Turn the Mode Selection Switch to OFF.
3. In the deliming bottle included with the oven, mix together 12 oz. of deliming solution to 2 gallons of warm water.

   NOTE: These volumes are approximate. You may need slightly more or less hot water depending on your site.
4. Place the deliming bottle on the floor in front of the oven. Connect the tubing from the deliming bottle to the top deliming valve on the oven base section.
5. Pump the entire solution in the deliming bottle into the boiler. Disconnect the tubing from the top deliming valve. Allow the solution to stand in the boiler for 30 minutes.
6. Disconnect the tubing from the deliming bottle at the joint. Place a container capable of holding six gallons in front of the oven.
7. Insert the end of the tubing disconnected from the deliming bottle into the container. Connect the other end of the tubing to the bottom deliming valve and drain the boiler entirely. Dispose of the solution.
8. Disconnect the tubing from the bottom deliming valve and reassemble to the deliming bottle. Refill the deliming bottle with fresh water. Connect the tubing from the deliming bottle to the top deliming valve on the oven base section.
9. Pump the entire solution in the deliming bottle into the boiler. Disconnect the tubing from the top deliming valve.
10. Disconnect the tubing from the deliming bottle at the joint. Place a container capable of holding six gallons in front of the oven.
11. Insert the end of the tubing disconnected from the deliming bottle into the container. Connect the other end of the tubing to the bottom deliming valve and drain the boiler entirely. Dispose of the solution.
12. Repeat STEPS 8 thru 11.
13. Disconnect the tubing from the bottom deliming valve and reassemble to the deliming bottle.

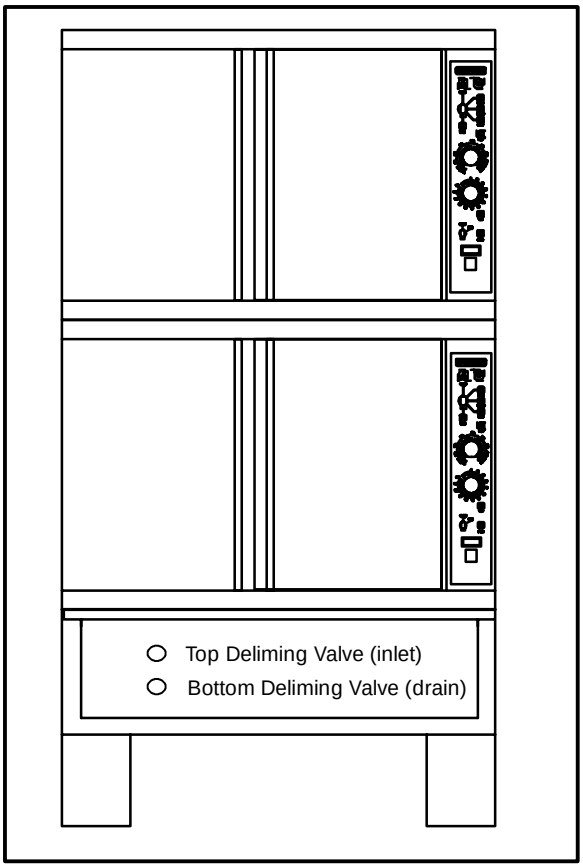


Figure 42

Troubleshooting Information

How to Use this Trouble Shooting Section

The trouble shooting section in this book is divided into the following :

1. **Component Identification** – pages 44 to 46. This section lists all the electrical components with a description, location, and resistance reading where applicable.
2. **Sequence of Operation** – pages 47 to 52. These pages walk you through the operating modes of the oven from power in , threw all junctions, to the end of the circuit. The operating modes are Cool Down, Hot Air, & STEAM. When using this section, reference a schematic set for the appropriate mode, so you can follow the power flow.
3. **Schematics** – pages 53 to 61. There are 4 sets of schematics, consisting of 3 pages each. The schematics are broken down into 3 pages. Each page represents a section of the COS5H oven: Top Oven Section, Bottom Oven Section, and Base Section. All components show in a section on a schematic are physically located within that section in the oven. Three schematic sets are high lighted. They represent different functions of the oven: Cool Down, Hot Air, and Steam. The last set of schematics is a none highlighted schematic.
4. **Trouble Shooting** – pages 65 to 72. By observing different lights and switch functions you can isolate a possible defective component. This section walks you through possible problems and solutions.
5. **Harnesses** – page 73. On the schematics connects are indicated between different oven sections for electrical connections. This diagram shows you the connectors and there location in reference to the COS5H oven.

When trouble shooting the COS5H oven always trouble shoot in the following secquence: COOL DOWN,HOTAIR,STEAM and then COMBI. In order to trouble shoot the COS5H oven you must understand how the oven operates. If you do not understand how the COS5H oven operates, use the Sequence of Operation and a high lighted schematic to “walk” yourself though a given sequence. Then refer to the Trouble Shooting section.

Maintenance

Component Indentification

NOTE: In aphabetical order by componant identification on schematic

NOTE: If identical componants are located in the bottom slide out tray, the left hand componant is for the bottom oven and the right hand component is for the top.

CF-1 & CF-2 – cooling fans located in the rear left hand side of the base section. Coil resistance is approximately 500 ohms.

Convection Motor – 3 phase 480 volt motor. Rotation when viewed from the cooking chamber must be "Clockwise". The motor has an internal centrifugal switch and a internal self–resetting thermal overload (trip temperature is 250F). The running amperage is .5 amps. (If the motor fails, remove as an assembly from the interior of the cooking compartment.) The winding resistance is approximately 85 ohms.

Cooling fan – cooling fans located behind each slide out control panel. Coil resistance is approximately 247 ohms for the top white cooling fan. The black cooling fan is approximately 500 ohms.

Don't Steam (H2) – light on the slide out control panel which tells you the cooking compartment temperature is above 230F. (This light does not affect the operation of the oven.)

Door switch (S2)– the door switch is a magnetic switch and is located in the center of the oven liner above the door handle. There is an access plate with 4 philps screws.

F-3 – cooking compartment high limt. This is a capilary type thermostat and has a manual reset button. The thermostats are located behind the slide out control panel. The thermostat opens at 662F.

F-6 – boiler high limit. This is a capilary type high limit and has a manual reset button. The thermostats are located in the bottom slide out tray on the right hand side. The thermostat opens at 275F.

F-7 – electrical compartment high limit capilary thermostat. This thermostat has multiple contacts; terminals 21 to 24 close at 140F and activate cooling fans behind the slide out control panel; terminals 31 to 32 opens at 194F and shuts down the oven because the electrical compartment is too hot.

Fill solenoid (Y2) – used to fill the boiler and is to the right of the boiler in the base section. The coil resistance is approximately 1850 ohms. (Underneath the base section in series with the water line is a water restrictor, if you have no water, verify water is "on" and then check the water restrictor.

Float – this is a ball type float inside the center of the steam generator. It has a single interior reed switch which is activated by a magnetic ball. In the "down" position the reed switch is "closed". In order to remove this assembly the bottom slide tray must be moved forward.

Fuses – 15 fuses (total). 20 amp fuses: F11 thru F13, F20 thru F28. These fuses are for the hot air and steam elements, 2 amp fuses: F14 thru F16. These fuses are for the control circuit and fuse the transformer. The primary side of your transformer is approximately 2.2 ohms and the secondary is approximately .7 ohms. See fuse diagram on page 73 for fuse locations. All the fuses are in the base section.

Hot air elements – each cooking compartment has (3) 10kw (kilowatt) elements. The resistance on a element is approximately 70 ohms. The resistance across 2 poles of a contactor is approximately 46 ohms.

Hot Air Thermostat – a solid state thermostat used for controlling hot air temperature only from 150F to 500F. The controller uses a thermistor to sense temperature which is in the upper right hand side of the cooking comparment. At room temperature it is 100K (100,000) ohms. At 350F the thermistor is 1000 ohms.

Hot air (H5) – red indicator light to the right of the hot air thermostat. It is "ON" when the hot air thermstat is calling for heat.

K1-A, K1-B Hot air contactor – a solid state contactor located in the bottom slide out tray to the left of the boiler. The solid state contactors have a LED on them which indicates the coil has power.

K1-A & K1-B Motor Contactor – these are the contactors for the 3ph convection motors located in the cooking compartment. The contactors are located in the base section on the left hand, front side. The coil resistance (between A1 & A2) is approximately 500+ ohms

K3-1 & K3-2 Steam contactors– a solid contactor located in the base section to the left of the boiler. The contactor turns on the steam elements for the boiler. The solid state contactors have a LED on them which indicates the coil has power.

Component Identification

Motor centrifugal switch (CS1) – internal switch which close with rotation of the motor.

Mode Switch (S1) – multi-position switch located on the slide out control panel which is used to select operation modes.

P2-A (P-2-B) – this is a electronic control board (2) which controls (or cycles) the steam contactors. This board, opens and closes terminals 6 & 7. It has a probe (thermistor) which is connected to terminals 4 & 5. The board will not work if the probe is bad. The P2 boards is located in the base section, above the fuses and sit in a gray stand-off tray.

P4 Quench thermostat (2) (optional) – this is an adjustable capillary thermostat which is located behind the slide out control panels (top and bottom oven section). This is an adjustable thermostat which is used to cool down the drain and is normally set for approximately 180F.

PKZM-A (PKZM B) Motor Protector – these are contactors that fuse the convection motors. The motor protectors are located in the base section on the left hand, front side. They have a manual reset (black button) which must be reset if it trips. Refer to Convection motor for more information.

Power on (H4) – light indicates the mode switch is Steam, Hot Air, or Combi and power is being supplied to the slide out control panel.

Probe – this is a thermister probe (2) which connect to the P2-A & P2-B. The probe is located in a hose on the right hand side, rear of each oven section (top & bottom). To check the probe, it must be unplugged from appropriate P2 board, terminals 4 & 5. The resistance of the probe (thermisters) at room temperature is approximately 30K ohms and at 212F is approximately 2000 ohms.

Relays – (R1,R2,R5,R6) all are single pole, double throw relays with a 208v coil. The coil terminals are 7 & 8. The coil resistance is approximately 15.6K ohms.

R1 – terminals 6 to 3: used to power up fill solenoid, terminals 6 to 1: turns power on /off to main steam circuit

R2 – terminals 6 to 1: used to power float. When open, prevents power been chattered to float

R5 – terminals 6 to 1: used only with a meat probe to shut off the oven when the meat probe controller is satisfied. If you do not have a meat probe controller this is a SPARE RELAY.

R6 – terminals 6 to 3: used to turn on or open the steam solenoid

Steam Solenoid (2) – the steam solenoids are located behind the top & bottom oven section control panel. The resistance of the coil is approximately 380 ohms.

T1 BZR (2) – the buzzer is located behind the top & bottom oven section control panel and is powered up when the timer is in the “O” position. The resistance is approximately 2700 ohms.

Timer (S4) – timer located on the slide out control panel. It can be set in the “STAY ON” mode or set to a timed cooking position. (NOTE: it is possible to set the time in a “dead spot”

Timing Modual (180 seconds “on” / 10 seconds “off”) – this is a solid state timing device. The “off” cycle allows for a true flat water level check for the float in the boiler. The timing modual is located above the fuses on the left hand side in the base section.

Too Hot For Steam Thermostate (P1) – a multicontact capilary thermostat which is located behind the slide out control panels. The capilary tube is located in the cooking comparment: terminals 31 to 34 close above 230_F and turn on the “Don’t Steam” light. (This thermostat does not affect the operation of the oven.)

Component Identification

Y3-A (Y3-B) Quench solenoid (optional) – this solenoid is located in the base section to the left of the boiler. The solenoid has (2) metal water lines connected to it which independantly connect to the drains of the top and bottom oven sections. The quench solenoids are control by a capilary type thermostat called P4 Quench thermostat. The bulb for this thermostat is located in back, center, rear of each oven section (top & bottom) in the drain.

150V Transformer – this is a 440 to 220 volt step down transformer for the control circuit. The transformer is located in the base section and is located behind the boiler. The primary resistance is approximately 2.2 ohms and the secondary resistance is approximately .7 ohms.

2 Sec Delay (TDR-2) – this is a solid state device which when powered up, does not allow power to flow for 2 seconds once power is initially applied. This component is located in the base section, above the fuses on the left hand side.

Sequence of Operation

TOP OVEN SECTION -- COOL DOWN

NOTE: Electricity flows through these components in the order listed.

1. Terminal block L1, L2, L3 (440V/3ph)
2. Power is supplied to the transformer 2 amp input fuses (F14 & F15)
3. Transformer (step down 440V to 220V)
4. Plug connector 12 (J3)
5. Secondary 1 amp transformer fuse (F16)
6. Plug connector terminal 9 (J3)
7. Electrical compartment high limit (F7) terminals 21 to 24 (closed above 150_F or 66_C)
8. Electrical compartment cooling fan (CF)
9. Plug connector terminal 21 (J9)
10. Mode selector switch terminal 21 to 24
11. Plug connector terminal 11 (J9)
12. Plug connector terminal 6 (J3)
13. Plug connector terminal 1 (J3)
14. Motor contactor (K1-A) terminal A1 to A2
15. Power in L1, L2 & L3 (440V/3ph) motor contactor (K1-A)
16. Motor protector (PKZM-A)
17. Plug connector terminal 1, 2 & 3 (J1)
18. Convection motor

TOP OVEN SECTION -- HOT AIR

NOTE: Electricity flows through these components in the order listed.

1. Terminal block L1, L2, L3 (440V/3ph)
2. Power is supplied to the transformer 2 amp input fuses (F14 & F15)
3. Transformer (step down 440V to 220V)
4. Plug connector 12 (J3)
5. Secondary 2 amp transformer fuse (F16)
6. Plug connector terminal 9 (J4)
7. Plug connector terminal 9 (J3)
8. Electrical compartment high limit (F7) terminals 21 to 24 (closed above 150_F or 66_C)
9. Electrical compartment cooling fan (CF)
10. Electrical compartment high limit (F3) terminals 1 to 2
11. Electrical compartment high limit (F7) terminals 31 to 32
12. Plug connector terminal 2 (J9)
13. Mode selector switch (S1) terminal 9 to 10
14. Power ON light (H4)
15. Plug connecter terminal 5 (J9)
16. Door switch (S2)
17. Plug connector terminal 13 (J9)
18. Meat probe relay (R5) terminal 6 to 1
19. Timer (S4) terminals 4 to 6 or Timer (S4) terminal 4 to 5 if timer is timed out
20. Buzzer (T1)
21. Plug connector terminal 11 (J9)
22. Plug connector terminal 1 (J3)
23. Motor contactor (K1-A) terminal A1 to A2
24. Power in L1, L2 & L3 (440V/3ph) motor contactor (K1-A)
25. Motor protector (PKZM-A)
26. Plug connector terminal 1, 2 & 3 (J1)
27. Convection motor

Maintenance

Sequence of Operation

TOP OVEN SECTION -- HOT AIR (continued)

28. Mode selector switch (S1) terminal 11 to 12
29. Hot air thermostat (P5) C to L1
30. Hot air thermostat (P5) COM to NO
31. Hot air light (H5)
32. Plug connector terminal 10 (J9)
33. Motor centrifugal switch (CS1)
34. Plug connector terminal 7 (J3)
35. Hot air contactor (K2-A) terminal A1 to A2
36. Power in L1, L2 & L3 (440V/3ph)
37. 20 amp fuse F26, F27 & F28
38. Hot air contactor (K2-A) L1, L2 & L3 to T1, T2 & T3
39. T1 to plug connector 4 & 5 (J1)
40. T2 to plug connector 6 & 7 (J1)
41. T3 to plug connector 8 & 9 (J1)
42. Hot air elements

TOP OVEN SECTION -- STEAM

NOTE: Electricity flows through these components in the order listed.

1. Terminal block L1, L2, L3 (440V/3ph)
2. Power is supplied to the transformer 2 amp input fuses (F14 & F15)
3. Transformer (step down 440V to 220V)
4. Plug connector 12 (J3)
5. Secondary 2 amp transformer fuse (F16)
6. Plug connector terminal 9 (J3)
7. Plug connector terminal 21 (J9)
8. Mode selector switch (S1) 5 to 6
9. Plug connector terminal 24 (J9) see step 43
10. Plug connector terminal 10 (J3) cooling fans
11. Electrical compartment high limit (F7) terminals 21 to 24 (closed above 150_F or 66_C)
12. Electrical compartment cooling fan (CF)
13. Cavity high limit (F3) terminals 1 to 2 (opens at 662_F or 350_C)
14. Electrical compartment high limit (F7) terminals 31 to 32 (opens at 194_F or 90_C)
15. Plug connector terminal 2 (J9)
16. Mode selector switch (S1) terminal 3 to 4
17. Power ON light (H4)
18. Plug connector terminal 5 (J9)
19. Door switch (S2)
20. Plug connector terminal 13 (J9)
21. Meat probe relay (R5) terminal 6 to 1
22. Timer (S4) terminals 4 to 6 (if timer is in operating position)
23. Timer (S4) terminals 4 to 5 (if timer is timed out to zero position
24. Buzzer (T1 BZR)
25. Plug connector terminal 11 (J9)
26. Plug connector terminal 1 (J3)
27. Motor contactor (K1-A) terminal A1 to A2
28. Power in L1, L2 & L3 (440V/3ph) motor contactor (K1-A)
29. Motor protector (PKZM-A)
30. Plug connector terminal 1, 2 & 3 (J1)

TOP OVEN SECTION -- STEAM (continued)

31. Convection motor (motors have self resetting internal thermal overload switch 293_F or 145_C)
32. Mode selector switch (S1) terminal 7 to 8
33. Plug connector terminal 19 (J9)
34. Too hot to steam thermostat (P1) terminals 31 to 34 (closes at 230_F or 110_C)
35. Mode selector switch (S1) terminal 1 to 2
36. Relay (R1) terminal 6 to 3 (closes when steam control board P2 calls for steam)
37. Plug connector terminal 22 (J9)
38. Steam solenoid (Y4)
39. Plug connector terminal 6 (J9)
40. Plug connector terminal 4 (J3)
41. Steam control board (P2) terminal 10 to 8
42. Plug connector terminal 5 (J3) not used
43. Plug connector terminal 10 (J3) and 10 (J4)
44. Rear cooling fans (CF1 and CF2)
45. Relay (R2) terminal terminals 6 to 1
46. Float (one internal reed switch, closed in the down position)
47. Relay (R6) coil terminals 7 to 8
48. Relay (R1) terminals 6 to 3
49. Fill solenoid

    NOTE: Relay (R1) terminal 6 to 1 (opens when float is calling for water)
50. 2 second delay (TDR-1)
51. Timing module terminals 3 to 1 (repeating cycle 180 seconds closed / 15 seconds open for flat water check)
52. Relay (R2) coil terminals 7 to 8 (with no power, terminals 6 to 1 supplies power to float)
53. Steam generator high limit (F6-1) terminal 11 to 12
54. Steam generator high limit (F6-2) terminal 11 to 12
55. Steam control board (P2) terminal 7 to 6
56. Plug connector terminal 8 (J3)
57. Plug connector terminal 4 (J9)
58. Relay (R6) terminal 7 to 8 (opens steam solenoid)
59. Steam contactor (K3-1) terminal A1 to A2
60. Power in L1, L2 & L3 (440V/3ph) to 20 amp fuses F20, F21 & F22
61. Steam contactor (K3-1) L1, L2 & L3
62. Steam elements

Sequence of Operation

BOTTOM OVEN SECTION -- COOL DOWN

NOTE: Electricity flows through these components in the order listed.

1. Terminal block L1, L2, L3 (440V/3ph)
2. Plug connector terminals 2 & 6 (J8)
3. Power is supplied to the transformer 1 amp input fuses (F14 & F15)
4. Plug connector terminals 1 & 5 (J8)
5. Transformer (step down 440V to 220V)
6. Plug connector 10 (J8)
7. Secondary 1 amp transformer fuse (F16)
8. Plug connector terminal 9 (J4)
9. Electrical compartment high limit (F7) terminals 21 to 24 (closed above 150_F or 66_C)
10. Electrical compartment cooling fan (CF)
11. Plug connector terminal 21 (J10)
12. Mode selector switch terminal 21 to 24
13. Plug connector terminal 11 (J10)
14. Plug connector terminal 6 (J4)
15. Plug connector terminal 1 (J4)
16. Motor contactor (K1-B) terminal A1 to A2
17. Power in L1, L2 & L3 (440V/3ph) motor contactor (K2-B)
18. Motor protector (PKZM-B)
19. Plug connector terminal 1, 2 & 3 (J2)
20. Convection motor

BOTTOM OVEN SECTION -- HOT AIR

NOTE: Electricity flows through these components in the order listed.

1. Terminal block L1, L2, L3 (440V/3ph)
2. Plug connector terminals 2 & 6 (J8)
3. Power is supplied to the transformer 1 amp input fuses (F14 & F15)
4. Plug connector terminals 1 & 5 (J8)
5. Transformer (step down 440V to 220V)
6. Plug connector 10 (J8)
7. Secondary 1 amp transformer fuse (F16)
8. Plug connector terminal 9 (J8)
9. Plug connector terminal 9 (J4)
10. Electrical compartment high limit (F7) terminals 21 to 24 (closed above 150_F or 66_C)
11. Electrical compartment cooling fan (CF)
12. Boiler high limit (F3) terminals 1 to 2
13. Electrical compartment high limit (F7) terminals 31 to 32
14. Plug connector terminal 2 (J10)
15. Mode selector switch (S1) terminal 9 to 10
16. Power ON light (H4)
17. Plug connecter terminal 5 (J10)
18. Electrical compartment cooling fan (CF)
19. Door switch (S2)
20. Plug connector terminal 13 (J10)
21. Meat probe relay (R5) terminal 6 to 1
22. Timer (S4) terminals 4 to 6 or Timer (S4) terminal 4 to 5 if timer is timed out
23. Buzzer (T1)
24. Plug connector terminal 11 (J10)
25. Plug connector terminal 6 (J4)
26. Plug connector terminal 1 (J4)
27. Motor contactor (K1-B) terminal A1 to A2
28. Power in L1, L2 & L3 (440V/3ph) motor contactor (K2-B)
29. Motor protector (PKZM-B)
30. Plug connector terminal 1, 2 & 3 (J2)
31. Convection motor
32. Mode selector switch (S1) terminal 11 to 12
33. Hot air thermostat (P5) C to L1

Sequence of Operation

BOTTOM OVEN SECTION -- HOT AIR (continued)

34. Hot air thermostat (P5) COM to NO
35. Hot air light (H5)
36. Plug connector terminal 10 (J10)
37. Motor centrifugal switch (CS1)
38. Plug connector terminal 7(J4)
39. Hot air contactor (K2-B) terminal A1 to A2
40. Power in L1, L2 & L3 (440V/3ph)
41. 20 amp fuse F23, F24 & F25
42. Hot air contactor (K2-B) L1, L2 & L3 to T1, T2 & T3
43. T1 to plug connector 4 & 5 (J2)
44. T2 to plug connector 6 & 7 (J2)
45. T3 to plug connector 8 & 9 (J2)
46. Hot air elements

BOTTOM OVEN SECTION -- STEAM

NOTE: Electricity flows through these components in the order listed.

1. Terminal block L1, L2, L3 (440V/3ph)
2. Power is supplied to the transformer 2 amp input fuses (F14 & F15)
3. Transformer (step down 440V to 220V)
4. Plug connector 12 (J4)
5. Secondary 2 amp transformer fuse (F16)
6. Plug connector terminal 9 (J4)
7. Plug connector terminal 21 (J9)
8. Mode selector switch (S1) 5 to 6
9. Plug connector terminal 24 (J9) see step 43
10. Plug connector terminal 10 (J4) cooling fans
11. Electrical compartment high limit (F7) terminals 21 to 24 (closed above 150_F or 66_C)
12. Electrical compartment cooling fan (CF)
13. Cavity high limit (F3) terminals 1 to 2 (opens at 662_F or 350_C)
14. Electrical compartment high limit (F7) terminals 31 to 32 (opens at 194_F or 90_C)
15. Plug connector terminal 2 (J9)
16. Mode selector switch (S1) terminal 3 to 4
17. Power ON light (H4)
18. Plug connector terminal 5 (J9)
19. Door switch (S2)
20. Plug connector terminal 13 (J9)
21. Meat probe relay (R5) terminal 6 to 1
22. Timer (S4) terminals 4 to 6 (if timer is in operating position)
23. Timer (S4) terminals 4 to 5 (if timer is timed out to zero position
24. Buzzer (T1 BZR)
25. Plug connector terminal 11 (J9)
26. Plug connector terminal 1 (J4)
27. Motor contactor (K1-A) terminal A1 to A2
28. Power in L1, L2 & L3 (440V/3ph) motor contactor (K1-A)
29. Motor protector (PKZM-A)
30. Plug connector terminal 1, 2 & 3 (J1)

Sequence of Operation

BOTTOM OVEN SECTION -- STEAM (continued)

31. Convection motor (motors have self resetting internal thermal overload switch 293_F or 145_C)
32. Mode selector switch (S1) terminal 7 to 8
33. Plug connector terminal 19 (J9)
34. Too hot to steam thermostat (P1) terminals 31 to 34 (closes at 230_F or 110_C)
35. Mode selector switch (S1) terminal 1 to 2
36. Relay (R1) terminal 6 to 3 (closes when steam control board P2 calls for steam)
37. Plug connector terminal 22 (J9)
38. Steam solenoid (Y4)
39. Plug connector terminal 6 (J9)
40. Plug connector terminal 4 (J4)
41. Steam control board (P2) terminal 10 to 8
42. Plug connector terminal 5 (J4) not used
43. Plug connector terminal 10 (J4) and 10 (J4)
44. Rear cooling fans (CF1 and CF2)
45. Relay (R2) terminal terminals 6 to 1
46. Float (one internal reed switch, closed in the down position)
47. Relay (R6) coil terminals 7 to 8
48. Relay (R1) terminals 6 to 3
49. Fill solenoid

    NOTE: Relay (R1) terminal 6 to 1 (opens when float is calling for water)
50. 2 second delay (TDR-1)
51. Timing module terminals 3 to 1 (repeating cycle 180 seconds closed / 15 seconds open for flat water check)
52. Relay (R2) coil terminals 7 to 8 (with no power, terminals 6 to 1 supplies power to float)
53. Steam generator high limit (F6-1) terminal 11 to 12
54. Steam generator high limit (F6-2) terminal 11 to 12
55. Steam control board (P2) terminal 7 to 6
56. Plug connector terminal 8 (J4)
57. Plug connector terminal 4 (J9)
58. Relay (R6) terminal 7 to 8 (opens steam solenoid)
59. Steam contactor (K3-1) terminal A1 to A2
60. Power in L1, L2 & L3 (440V/3ph) to 20 amp fuses F20, F21 & F22
61. Steam contactor (K3-1) L1, L2 & L3
62. Steam elements

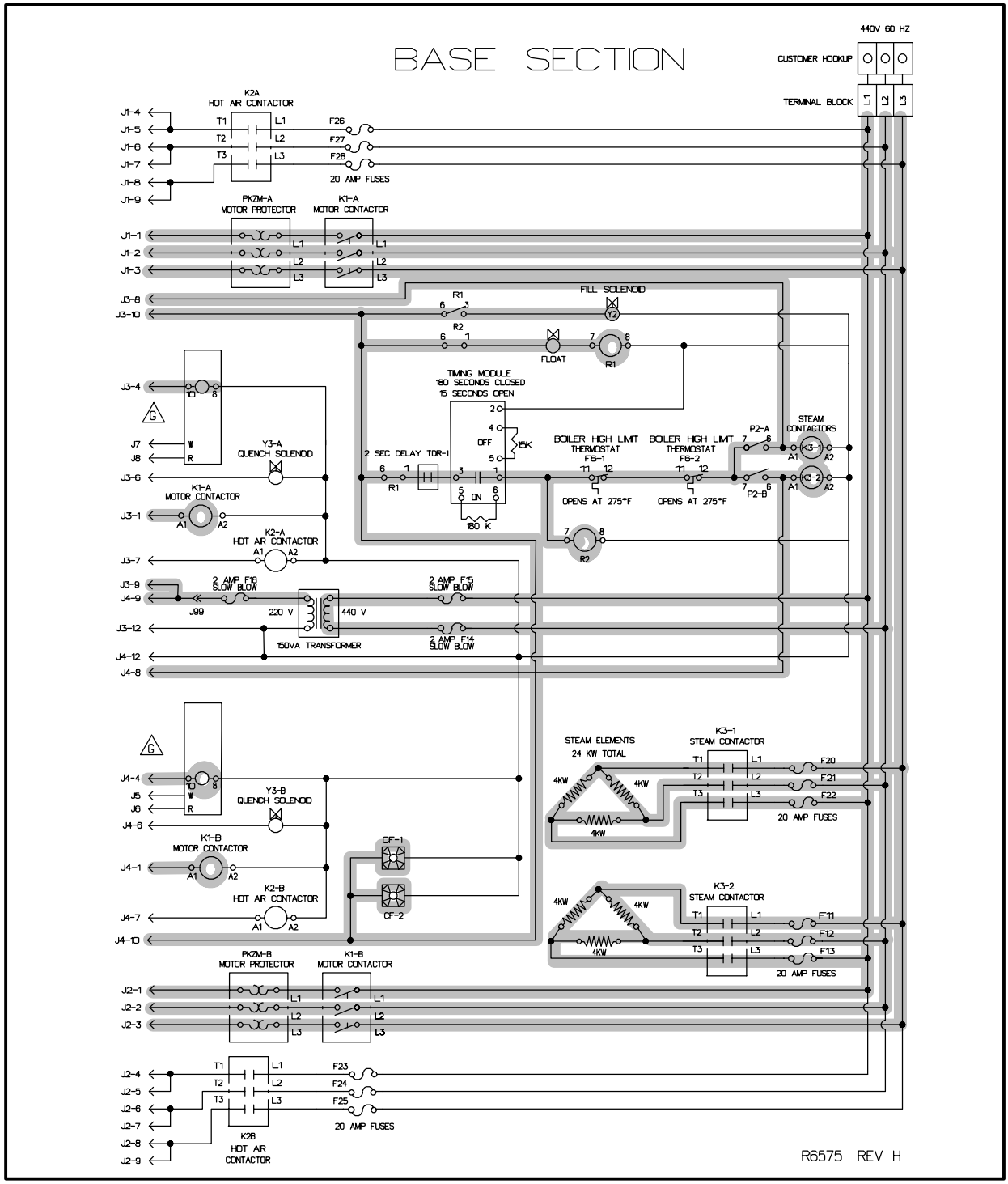

BASE SECTION
440V 60 HZ
CUSTOMER HOOKUP
TERMINAL BLOCK
L1
L2
L3
K2A
HOT AIR CONTACTOR
F26
F27
F28
20 AMP FUSES
PKZM-A
MOTOR PROTECTOR
K1-A
MOTOR CONTACTOR
FILL SOLENOID
Y2
R1
R2
FLOAT
TIMING MODULE
180 SECONDS CLOSED
15 SECONDS OPEN
2 SEC DELAY TDR-1
OFF
ON
15K
180 K
BOILER HIGH LIMIT
THERMOSTAT
F6-1
F6-2
OPENS AT 275°F
P2-A
P2-B
STEAM
CONTACTORS
K3-1
K3-2
Y3-A
QUENCH SOLENOID
K2-A
HOT AIR CONTACTOR
2 AMP F16
SLOW BLOW
J99
220 V
440 V
150VA TRANSFORMER
2 AMP F15
SLOW BLOW
2 AMP F14
SLOW BLOW
STEAM ELEMENTS
24 KW TOTAL
4KW
K3-1
STEAM CONTACTOR
F20
F21
F22
20 AMP FUSES
Y3-B
QUENCH SOLENOID
K1-B
MOTOR CONTACTOR
K2-B
HOT AIR CONTACTOR
CF-1
CF-2
K3-2
STEAM CONTACTOR
F11
F12
F13
20 AMP FUSES
PKZM-B
MOTOR PROTECTOR
K1-B
MOTOR CONTACTOR
F23
F24
F25
20 AMP FUSES
K2B
HOT AIR
CONTACTOR
R6575 REV H

Figure 43

Schematic – Steam

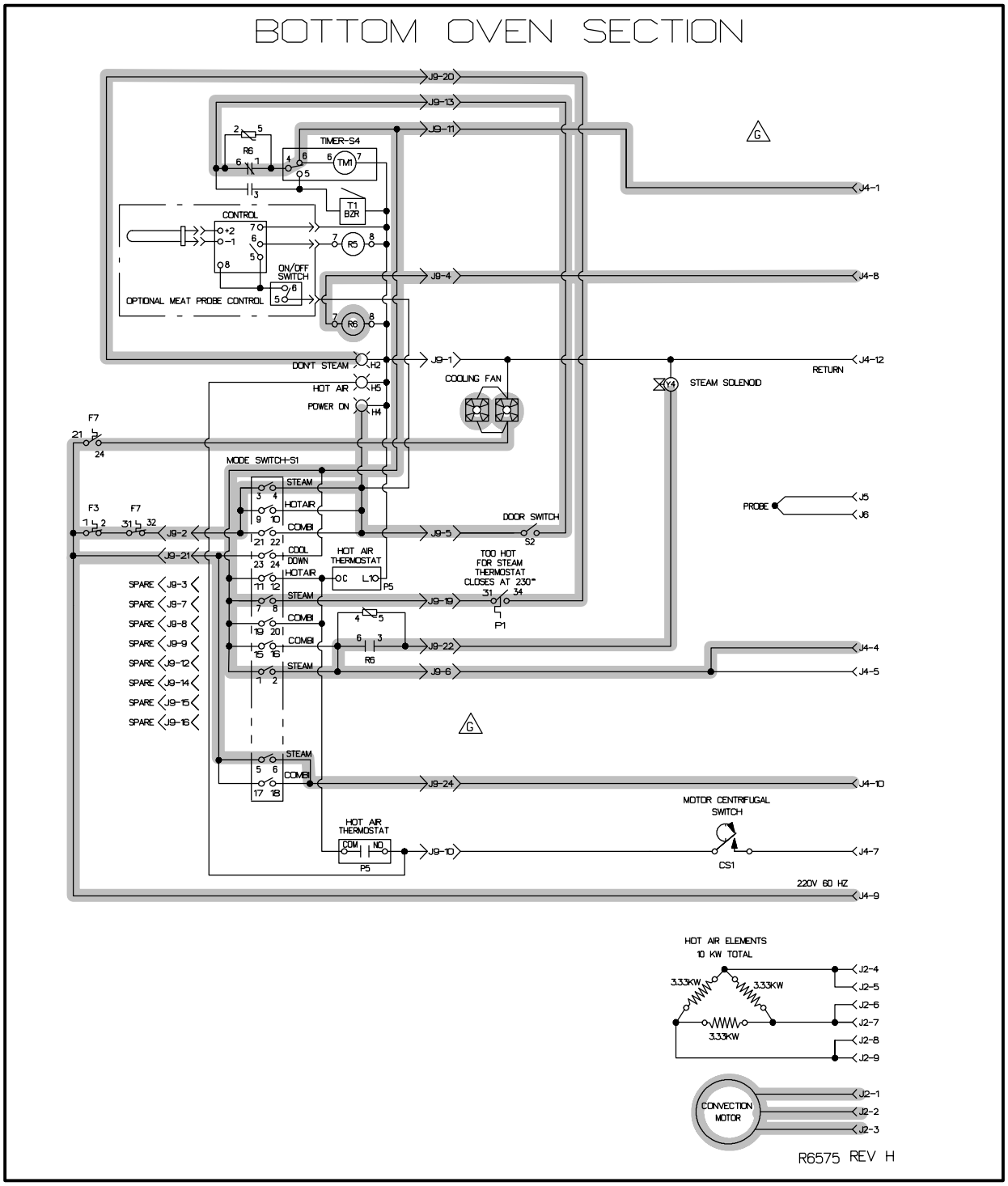


Figure 44

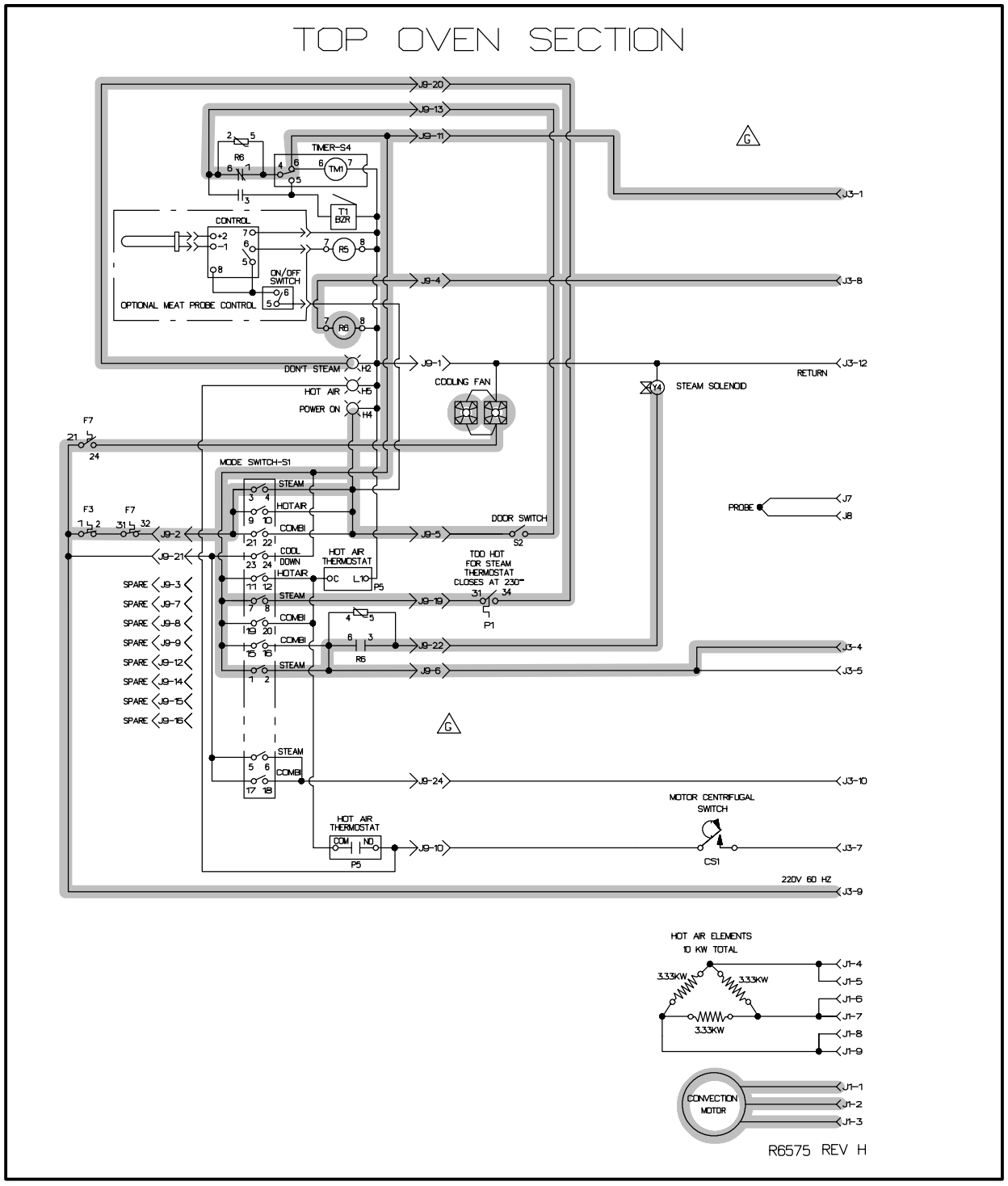

TOP OVEN SECTION
J9-20
J9-13
J9-11
TIMER-S4
TM1
R6
T1
BZR
CONTROL
R5
ON/OFF SWITCH
OPTIONAL MEAT PROBE CONTROL
R8
J9-4
J9-1
DON'T STEAM
H2
HOT AIR
H5
POWER ON
H4
COOLING FAN
STEAM SOLENOID
Y4
RETURN
J3-1
J3-8
J3-12
F7
MODE SWITCH-S1
STEAM
HOTAIR
COMBI
COOL DOWN
F3
J9-2
J9-21
DOOR SWITCH
S2
PROBE
J7
J8
J9-5
HOT AIR THERMOSTAT
OC
L10
P5
TOO HOT FOR STEAM THERMOSTAT CLOSES AT 230°
P1
J9-19
J9-22
J9-6
J3-4
J3-5
SPARE J9-3
SPARE J9-7
SPARE J9-8
SPARE J9-9
SPARE J9-12
SPARE J9-14
SPARE J9-15
SPARE J9-16
J9-24
J3-10
MOTOR CENTRIFUGAL SWITCH
CS1
J3-7
J9-10
220V 60 HZ
J3-9
HOT AIR ELEMENTS
10 KW TOTAL
3.33KW
J1-4
J1-5
J1-6
J1-7
J1-8
J1-9
CONVECTION MOTOR
J1-1
J1-2
J1-3
R6575 REV H

Figure 45

Schematic – Hot Air

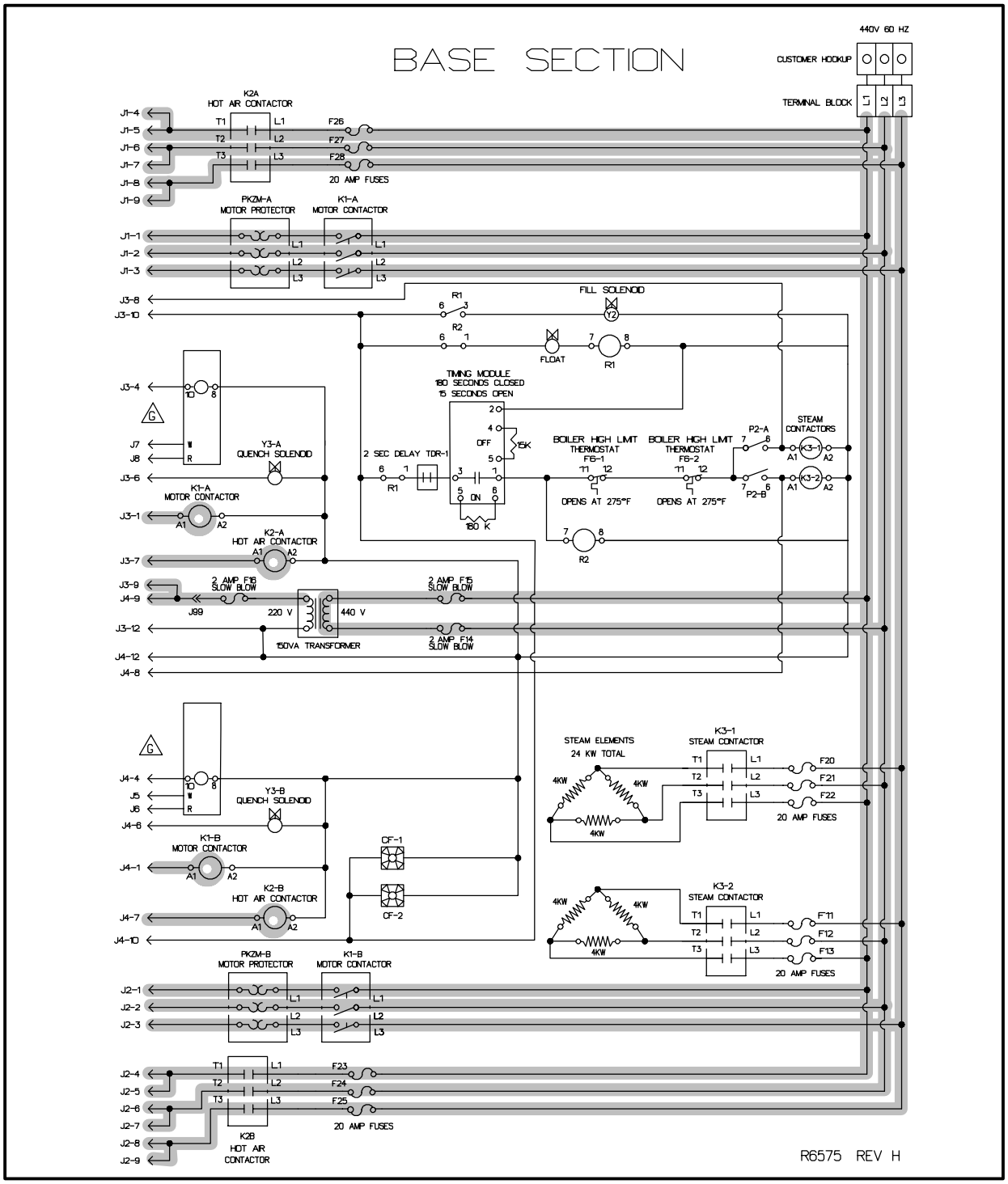


Figure 46

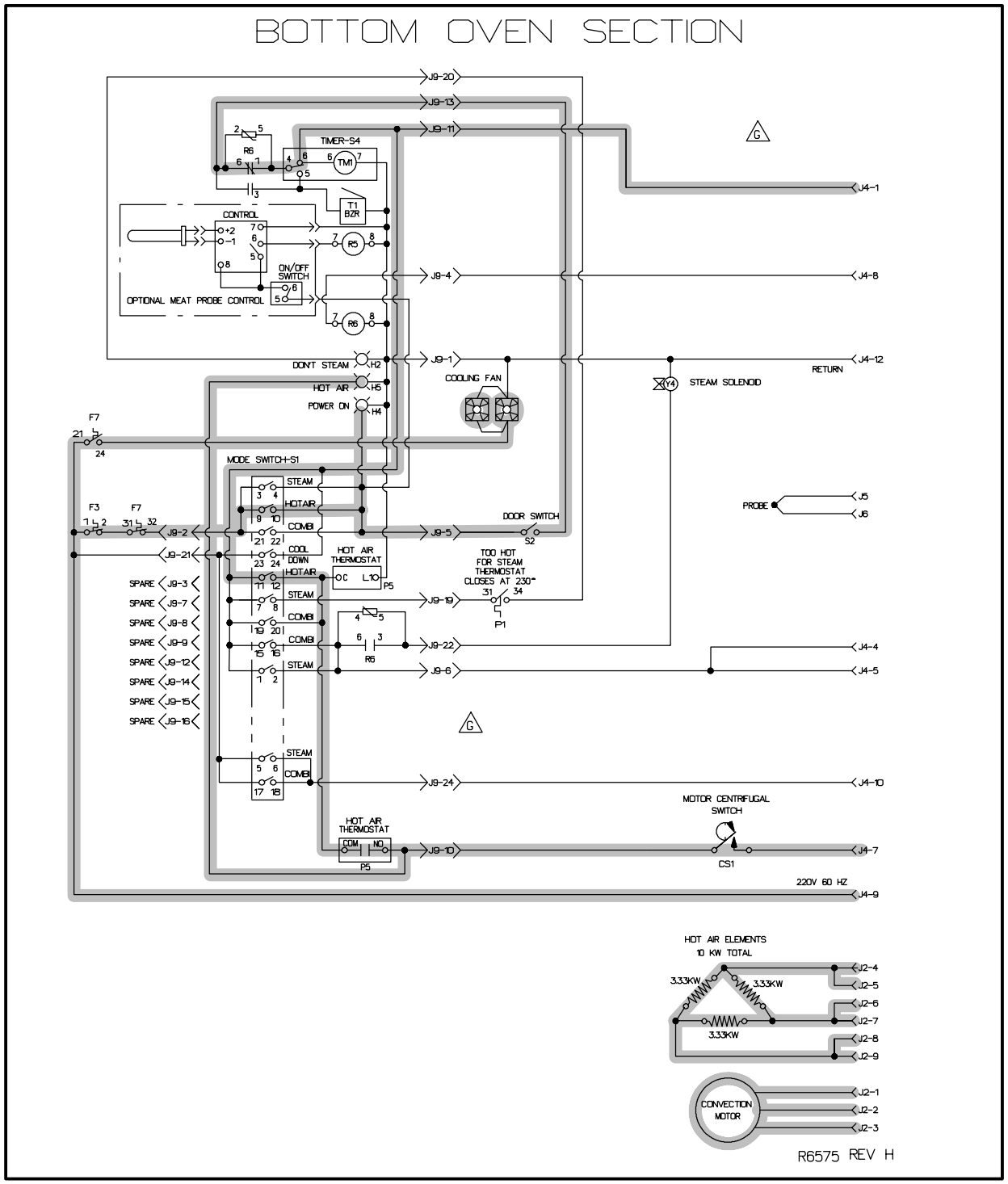

BOTTOM OVEN SECTION
J9-20
J9-13
J9-11
TIMER-S4
TM1
R6
T1
BZR
CONTROL
R5
ON/OFF SWITCH
OPTIONAL MEAT PROBE CONTROL
J9-4
R6
J9-1
DONT STEAM
H2
HOT AIR
H5
POWER ON
H4
COOLING FAN
STEAM SOLENOID
RETURN
J4-1
J4-8
J4-12
F7
F3
MODE SWITCH-S1
STEAM
HOTAIR
COMBI
COOL DOWN
HOTAIR
DOOR SWITCH
S2
PROBE
J5
J6
HOT AIR THERMOSTAT
P5
TOO HOT FOR STEAM THERMOSTAT CLOSES AT 230°
P1
J9-2
J9-21
J9-5
J9-19
J9-22
J9-6
J4-4
J4-5
SPARE J9-3
SPARE J9-7
SPARE J9-8
SPARE J9-9
SPARE J9-12
SPARE J9-14
SPARE J9-15
SPARE J9-16
J9-24
J4-10
MOTOR CENTRIFUGAL SWITCH
CS1
J9-10
J4-7
220V 60 HZ
J4-9
HOT AIR ELEMENTS
10 KW TOTAL
3.33KW
J2-4
J2-5
J2-6
J2-7
J2-8
J2-9
CONVECTION MOTOR
J2-1
J2-2
J2-3
R6575 REV H

Figure 47

Schematic – Hot Air

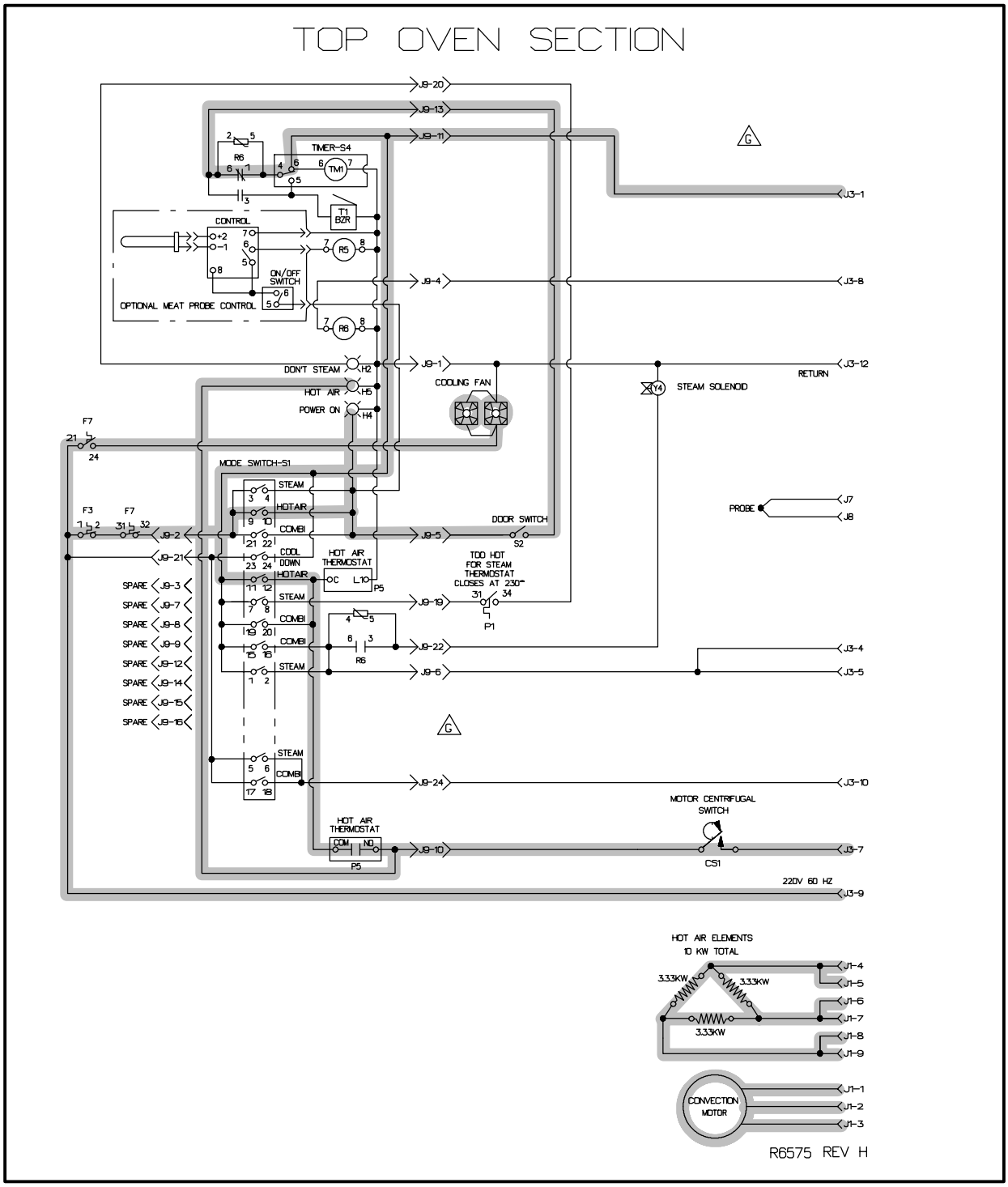


Figure 48

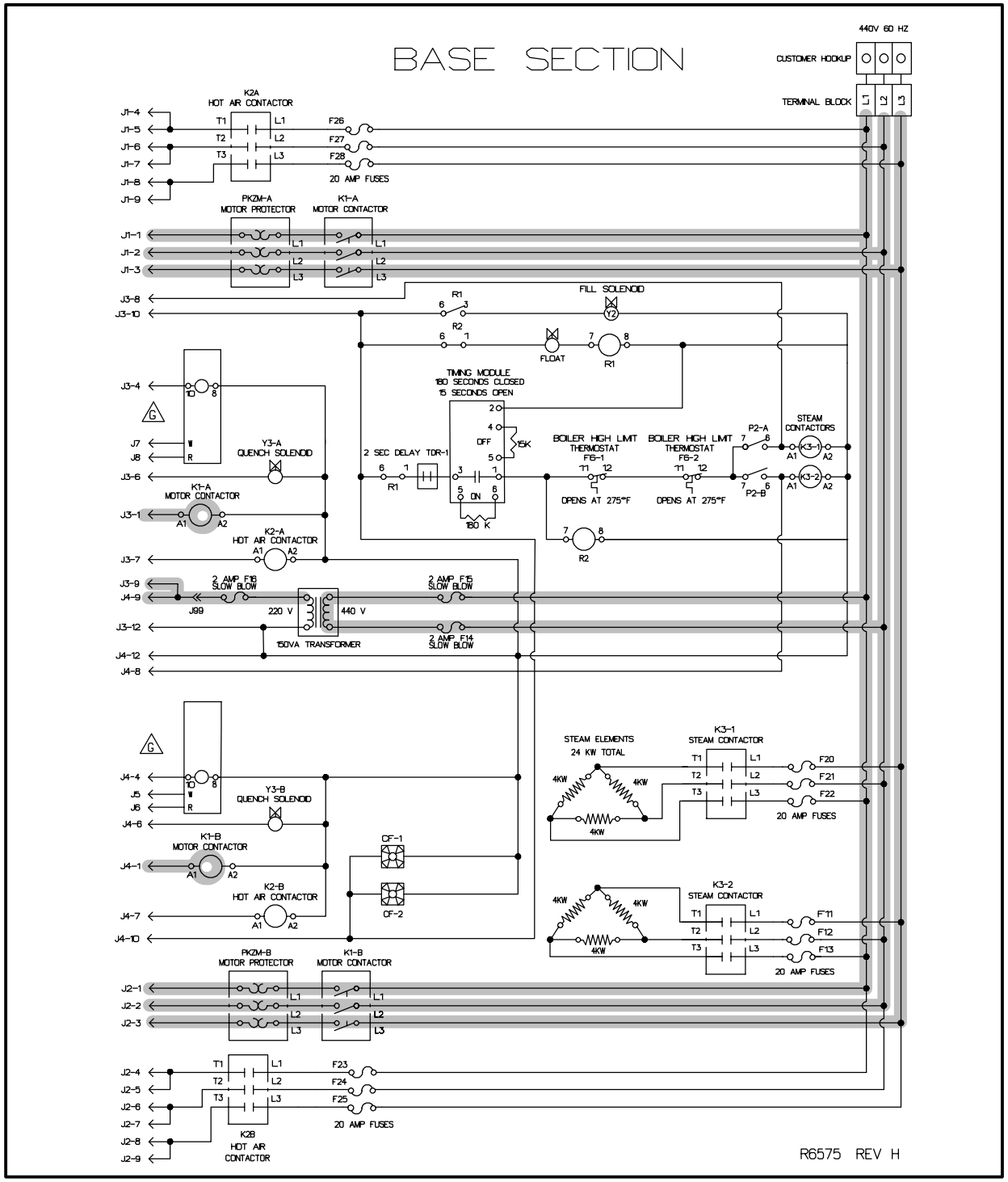

BASE SECTION
440V 60 HZ
CUSTOMER HOOKUP
TERMINAL BLOCK
L1
L2
L3
K2A
HOT AIR CONTACTOR
T1
T2
T3
L1
L2
L3
F26
F27
F28
20 AMP FUSES
J1-4
J1-5
J1-6
J1-7
J1-8
J1-9
PKZM-A
MOTOR PROTECTOR
K1-A
MOTOR CONTACTOR
J1-1
J1-2
J1-3
J3-8
J3-10
R1
R2
FILL SOLENOID
Y2
FLOAT
R1
TIMING MODULE
180 SECONDS CLOSED
15 SECONDS OPEN
2 SEC DELAY TDR-1
OFF
ON
15K
180 K
BOILER HIGH LIMIT
THERMOSTAT
F6-1
BOILER HIGH LIMIT
THERMOSTAT
F6-2
OPENS AT 275°F
OPENS AT 275°F
P2-A
P2-B
STEAM
CONTACTORS
K3-1
K3-2
A1
A2
J3-4
J7
J8
J3-6
J3-1
J3-7
Y3-A
QUENCH SOLENOID
K1-A
MOTOR CONTACTOR
K2-A
HOT AIR CONTACTOR
J3-9
J4-9
J3-12
J4-12
J4-8
2 AMP F16
SLOW BLOW
J99
220 V
440 V
150VA TRANSFORMER
2 AMP F15
SLOW BLOW
2 AMP F14
SLOW BLOW
J4-4
J5
J6
J4-6
J4-1
J4-7
J4-10
Y3-B
QUENCH SOLENOID
K1-B
MOTOR CONTACTOR
K2-B
HOT AIR CONTACTOR
CF-1
CF-2
STEAM ELEMENTS
24 KW TOTAL
4KW
K3-1
STEAM CONTACTOR
F20
F21
F22
20 AMP FUSES
K3-2
STEAM CONTACTOR
F11
F12
F13
20 AMP FUSES
PKZM-B
MOTOR PROTECTOR
K1-B
MOTOR CONTACTOR
J2-1
J2-2
J2-3
J2-4
J2-5
J2-6
J2-7
J2-8
J2-9
F23
F24
F25
20 AMP FUSES
K2B
HOT AIR
CONTACTOR
R6575 REV H

Figure 49

Schematic – Cool Down

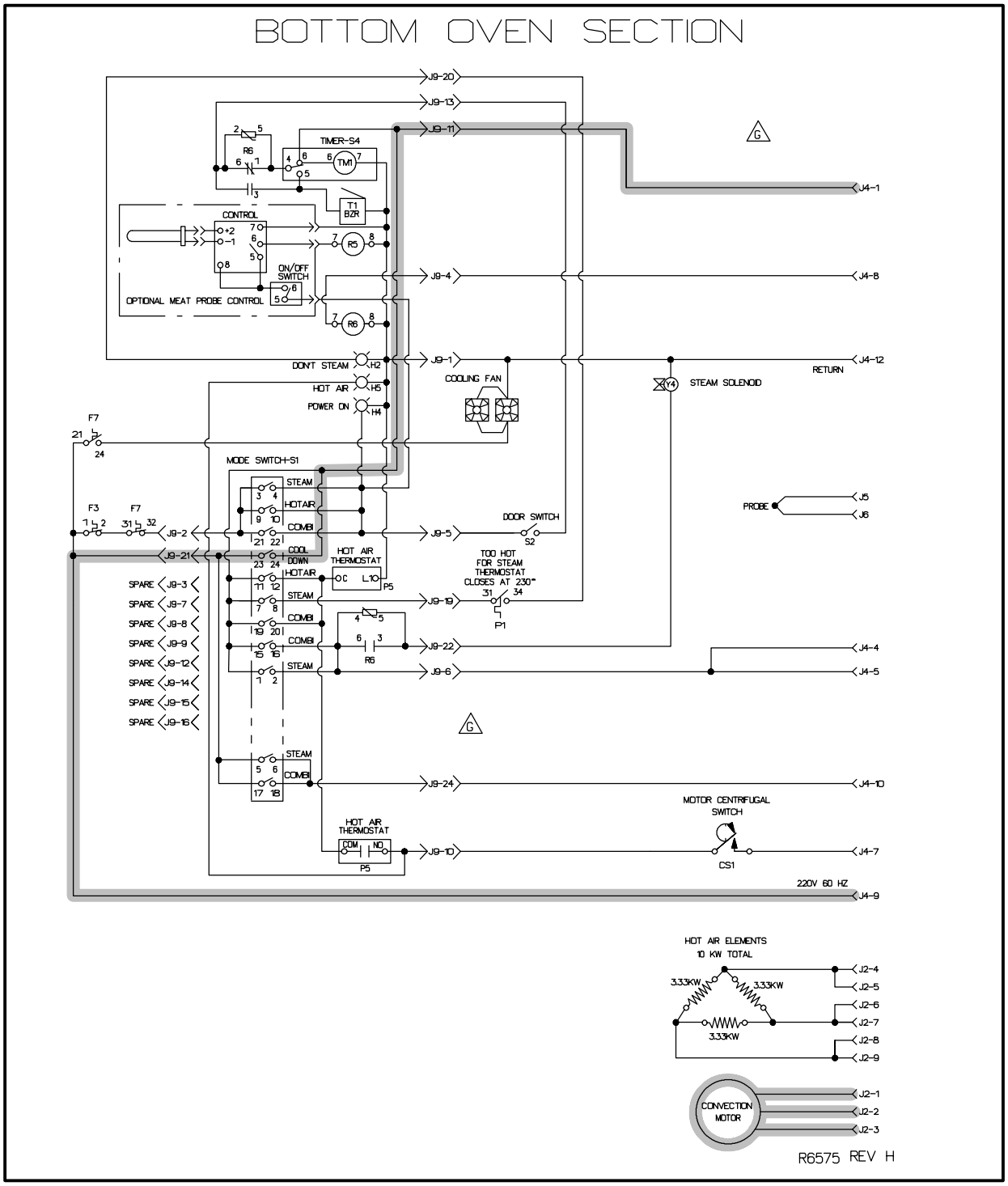


Figure 50

Schematic – Cool Down

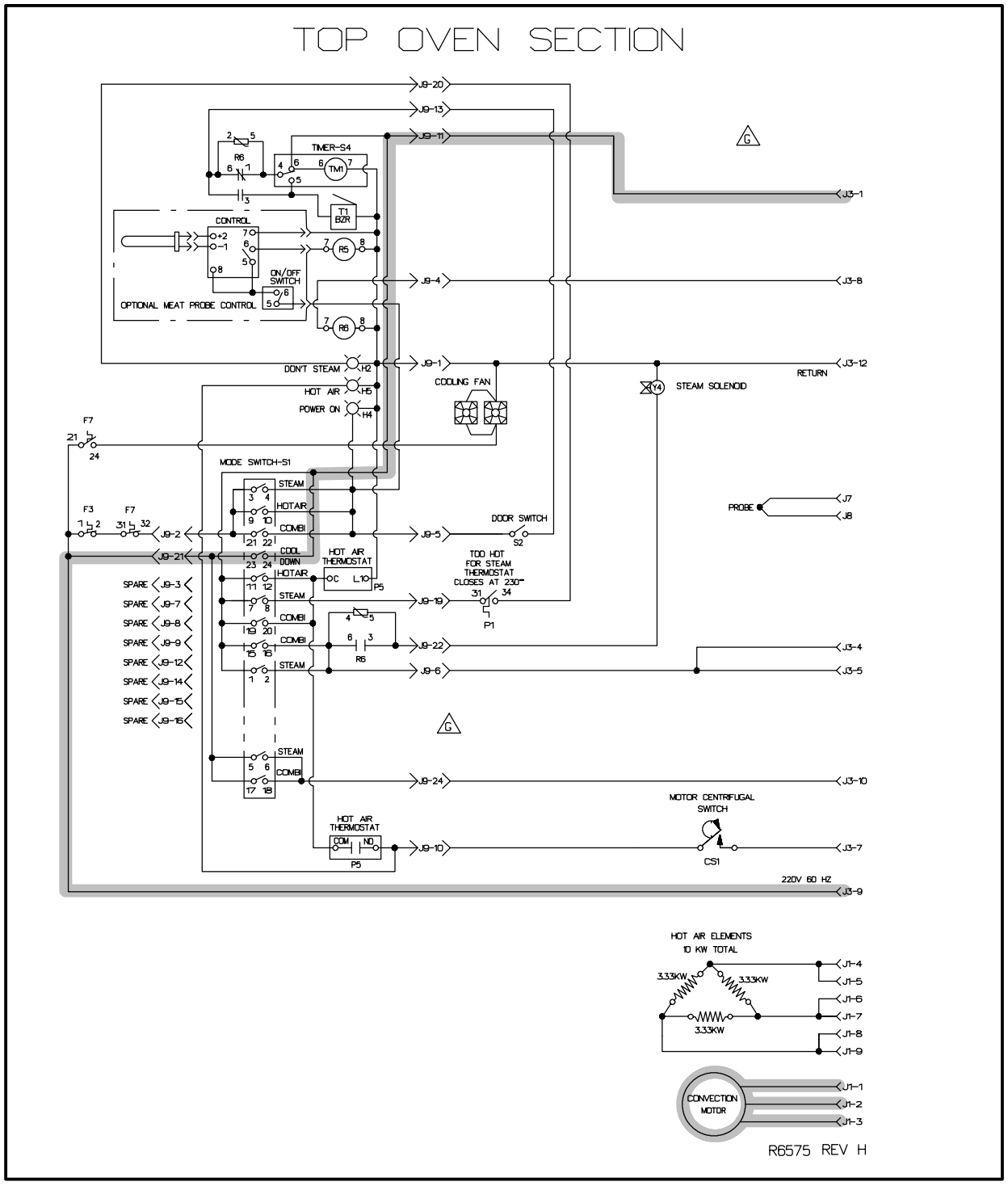


Figure 51

Schematic – Base Section

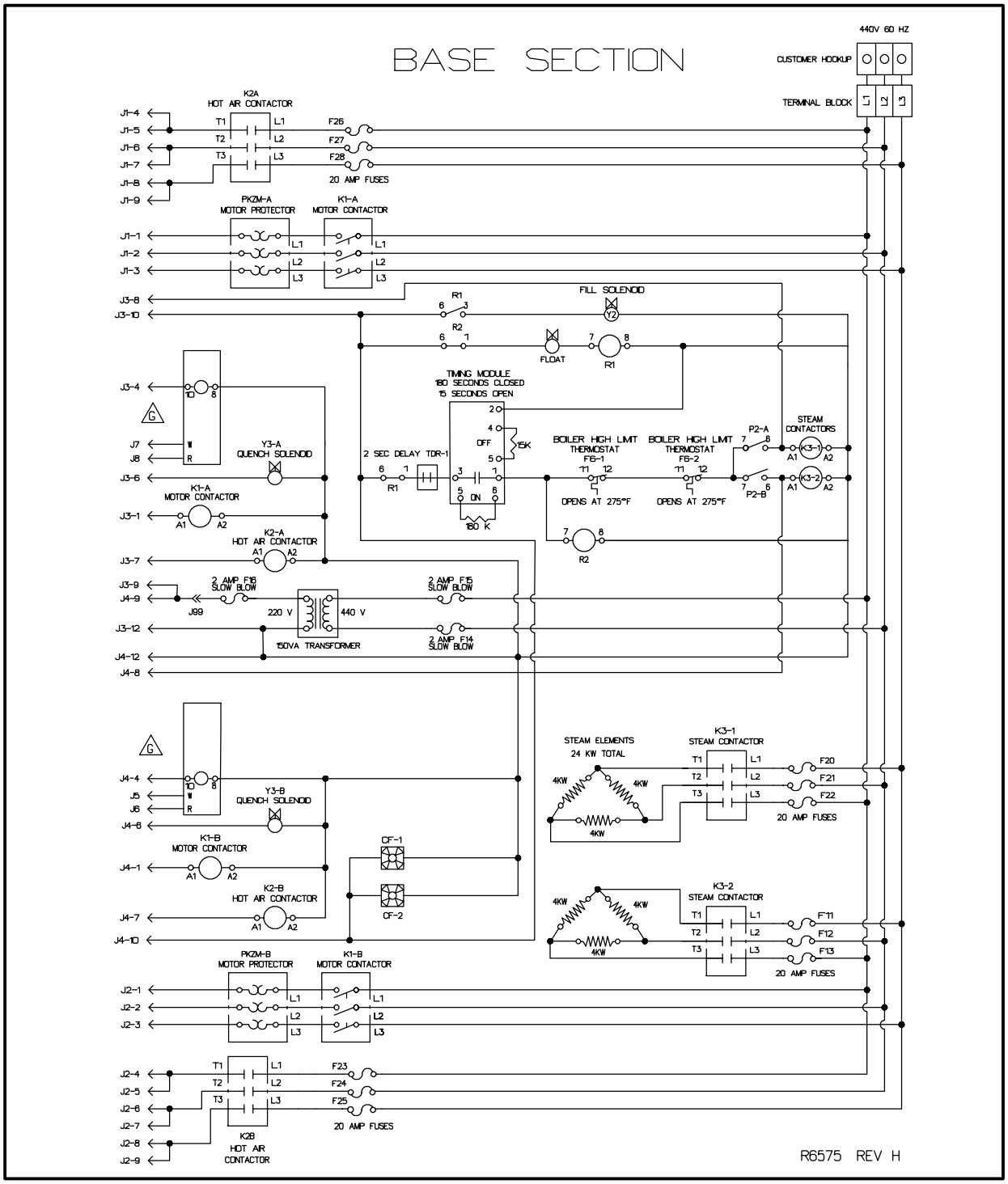


Figure 52

Schematic – Bottom Oven Section

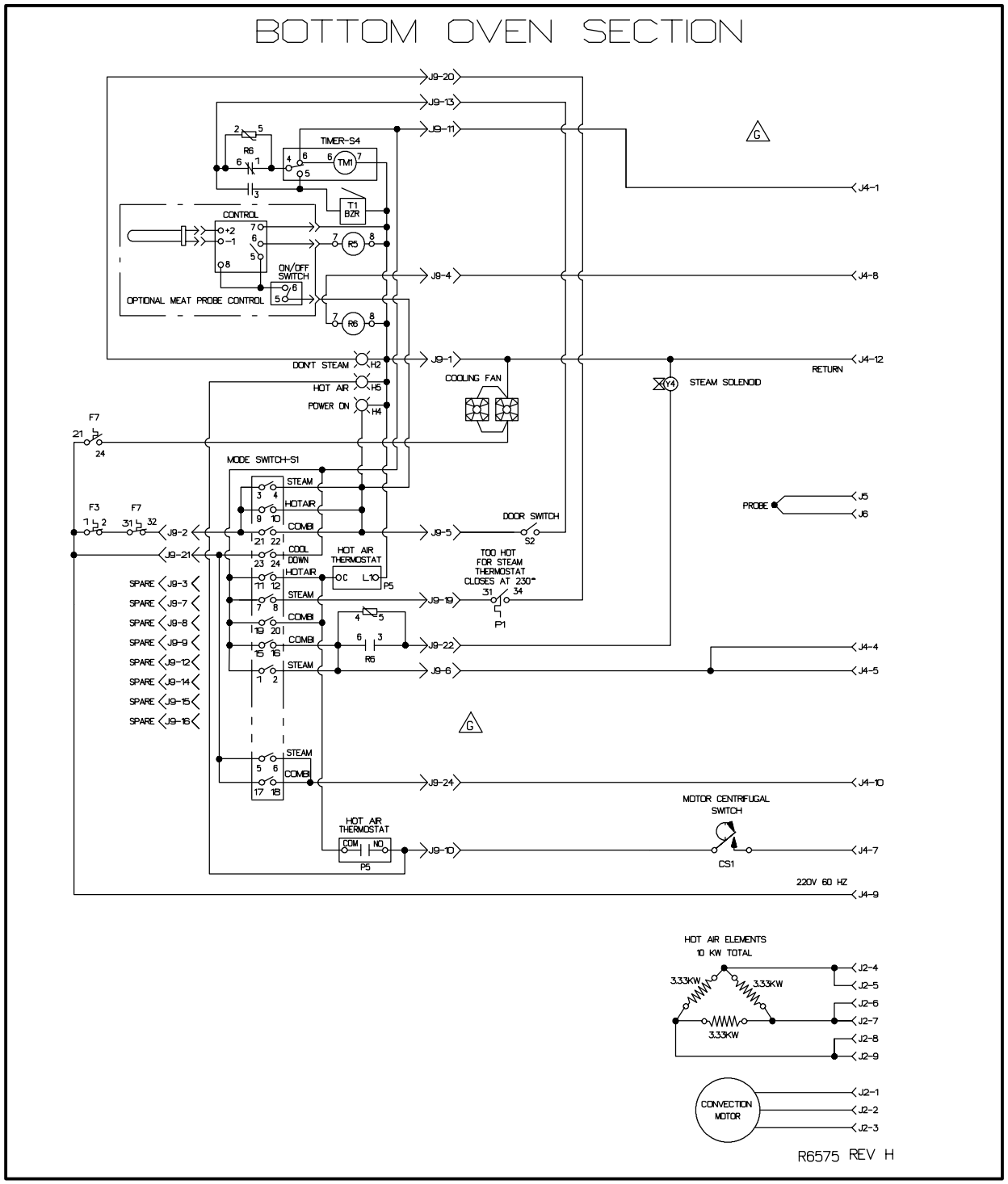


Figure 53

Schematic – Top Oven Section

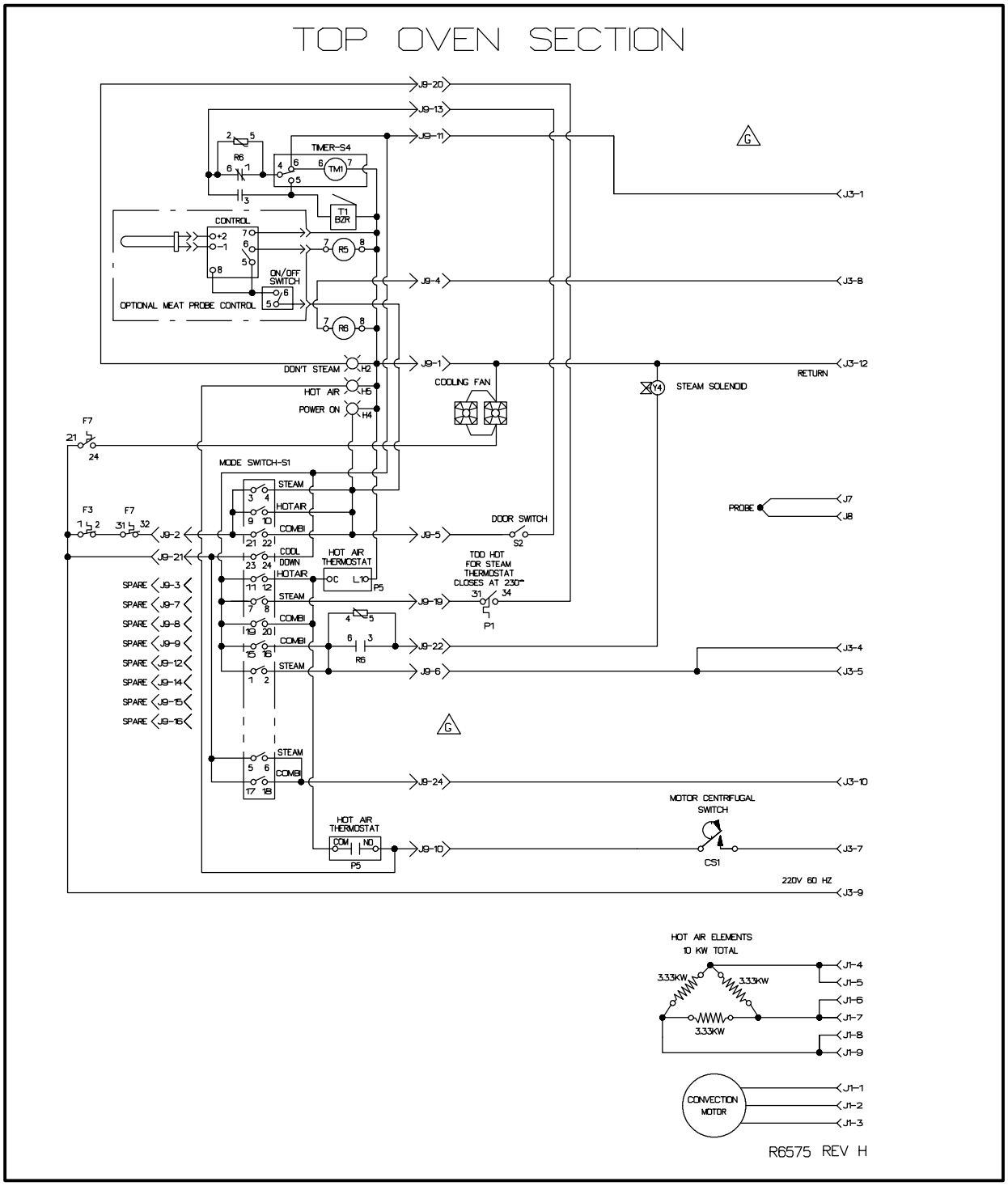


Figure 54

COOL DOWN MODE

POSSIBLE CAUSE(S)	SUGGESTED REMEDY
SYMPTOM: Motor doesn't run in cool down.	
S Blown 2 amp input fuses, (F14 or F15 to transformer.	S Remove and check fuses. Determine cause of circuit overload. *(Note: the fuses are slow blow fuses.)*
S Transformer is defective	S Verify input to transformer. Check transformer coils. Approximately 2.2 ohms primary / .7 ohms secondary. Replace if necessary.
S Blown 2 amp secondary fuse (F16).	S Remove and check fuse. Determine the cause of circuit overload. *(Note: the fuses are slow blow fuses.)*
S Mode selector switch (S1) is not closing between 23 & 24.	S Check closing of switch with meter. Replace if needed.
S Motor contactor is not pulling in. (K1-A for top oven section) (K1-B) for bottom oven section)	S Verify voltage to coil A1 to A2 of motor contactor. (Coil resistance is 500+ ohms) Replace if defective.
S Motor protector has tripped. (PKZM-A for top oven section) (PKZM-B for bottom oven section)	S Motor protector is defective or see "Convection Motors Run Intermittently" below.
S Convection motor is bad.	S Check windings of coil motor. Resistance of windings is approximately 85 ohms. Running current .5 amps.
SYMPTOM: Convection motor runs intermittently.	
S Thermal overload on motor (M1) is opening and closing (automatically resets when cooled).	S Check current draw. See if motor seal is out of alignment. (Requires removal of blower wheel.) Adjust seal if needed. Evaluate motor. Replace if defective.

Maintenance

Troubleshooting

HOT AIR MODE

NOTE: Confirm cool down works before proceeding with hot air.

POSSIBLE CAUSE(S)	SUGGESTED REMEDY
SYMPTOM: Mode switch is in the hot air position but no control panel lights are on.	
S Cavity high limit (F3) is open. (opens at 662_F)	S Hot air thermistor is out of tolerance. Unplug from thermostat and check resistance. (Use ohm chart) Replace if needed.
	S Defective hot air thermostat. Replace
	S Cavity high limit is defective. Replace
S Electrical compartment high limit (F7) terminals 31 & 32 are open.	S (F7) terminals 31 & 32 should be closed below 230_F. Replace if open
S Electrical compartment cooling fan is not running causing hi limit (F7) to trip.	S Electrical compartment high limit (F7) terminals 21 & 24 should be closed above 150_F. Replace if not closed.
	S Check windings on fan (500+ ohms coil resistance) if open, replace.
S Power on light (H4) has 220V but is not lit. *NOTE: All indicator lights are neon lights. They have infinite resistance.*	S Replace light (H5)
SYMPTOM: Hot air temperature light (H5) will not come on but power on light (H4) is lit.	
S Oven is up to temperature.	S Everything is OK.
S Mode selector switch (S1) is not closed between terminals 9 & 10.	S Defective mode selector switch (S1). Replace switch.
S Door switch (S2) is not closing.	S Proximity door switch (S2) is not engaging. Remove access plate & inspect. Replace if defective.
S Relay (R5) is open.	S Optional meat probe control has reached temperature and shut off oven by supplying 220V to terminals 7 & 8 on (R5).
	S Relay (R5) is defective. Replace
S Timer (S4) has timed out to zero minute position.	S Reset timer to a timed position or fully into the stay on position if continued operation is desired.
S Defective timer (S4).	S Replace timer (S4). Verify voltage 220V is present on terminals 6 & 7 before replacement.

HOT AIR MODE (continued)

POSSIBLE CAUSE(S)	SUGGESTED REMEDY
SYMPTOM: Hot air temperature light (H5) will not come on but power on light (H4) is lit. (continued)	
S Hot air thermostat (P5) is not getting 220V at inputs L1 and C.	S Check wire connections.
S Hot air thermostat (P5) is getting voltage 220V to inputs but has no 220V to terminal "NO" and common.	S Hot air thermistor probe is bad or out of tolerance. Replace if needed. 77 = 100,000 212 = 6,780 347 = 1,070.
	S Defective hot air temperature control (P5). Replace.
SYMPTOM: No heat in Hot Air Mode but hot air (H5) and power light (H4) are both on.	
S Motor is running and the centrifugal switch is open.	S OHM out switch (red wires in motor) while motor is running, if it is open, remove motor and inspect centrifugal switch through access plate for loose or disconnected wires. Replace if defective.
S Input fuses to K2-A (F26, F27 or F28) are blown. (K2-A (F26, F27 or F28 for top oven) (K2-B (F23, F24 or F25 for bottom oven)	S Replace if needed. Inspect appropriate hot air contactor (K2-A or K2-B) & elements for cause of overload.
S Hot air contactor (K2-A) does not pull in.	S Verify 220V to coil. Replace if needed. *NOTE: Hot air contactors are solid state relays (SSR). The coils have an LED which is lit when the coil has power. Look for the reflection of the LEDs on the stainless top of the bottom tray.*
S Contactor is energized 220V at coil but no heat. (K-2A for top oven) (K-2B for bottom oven)	S Contactor is not closing on one or more poles. Replace. S Hot air elements are open. Replace as needed.
SYMPTOM: Oven appears to be working properly, but the bake pattern has changed or is uneven.	
S One or more hot air elements are open.	S Check continuity of elements. Replace as needed.

Troubleshooting

STEAM MODE

NOTE: Confirm cool down and hot air modes work before continuing. By checking hot air mode first, you have trouble shot all common components in both the hot air and steam mode up to and through the timer (S4).

POSSIBLE CAUSE(S)	SUGGESTED REMEDY
SYMPTOM: Mode switch is in the steam mode position but power light is off.	
S Mode selector switch (S1) is not closed between terminals 3 & 4.	S Defective mode selector switch (S1). Replace mode switch.
SYMPTOM: Steam generator overfills.	
S Ball float is dirty and is stuck in the open position S Relay R1 terminals 6 to 3 are stuck closed S Solenoid is not closing completely.	S Ohm out the ball float. In the full position, the float should read “open”. (Remove wires on relay 2 (terminal 1) and relay 1 (terminal 7), and ohm wires.) If the steam generator has not been delimed lately, refer to the deliming instructions, and delime the steam generator. The ball float may be hanging up due to mineral deposits.The ball float may have to be removed. This will require the bottom tray to be slide forward to access the float assembly. S Verify there is no power to the coil of relay R1 (terminals 7 to 8). Ohm between contacts 6 to 3. Replace R1. S Replace solenoid. (With a leaking solenoid, the oven will overfill in any mode switch position.)

STEAM MODE (continued)

POSSIBLE CAUSE(S)	SUGGESTED REMEDY
SYMPTOM: Mode switch is in the steam mode, power on light is on, but no steam. (*Review Figure 55 and the logic description on the following page to undertand how the fill circuit works.)*	
S High limit (F6-1 or F6-2) has tripped.	S Verify both high limits are closed, F6-1 & F6 -2. Press the red button to reset. (Multiple resetting of the High limits will weaken the high limit and cause pemature tripping.) Continue with trouble shooting sequence to determine cause of tripping.
S Steam generator is empty.	S To check the steam generator, open the bottom deliming port by lightly pressing the interior plunger with a small screwdriver. If empty check that the water to the unit is turned on.
S R1 relay is not closing.	S Verify power to coil (terminal 6 to 7). Coil resistance is approximately 15.3K ohms. Replace if needed.
S R2 relay is not closing.	S Check power to coil on relay R2 (terminals 7 & 8). Coil resistance is approximately 15.3K ohms. With power to coil, 6 to 1 should be closed. Replace relay if needed.
S Reed switch in the float assembly has failed.	S Ohm out the float by removing the wires on terminals 7 on relay R2 and 1 on relay R1. Ohm out the 2 wires you removed. Replace if needed.
S The solenoid coil is bad.	S The resistance of the coil is approximately 1880 ohms. Replace if needed.
S Mode selector switch is not closed.	S Verify power in on relay R1 or R2 terminal 6. If no power, verify the mode selector switch terminals 5 to 6 are closed. Replace switch.
S R2 has no power to coil.	S TDR-1 (2 sec delay) has failed. Verify power in on “INPUT” & power TDR-1 (2 sec delay) has failed. Verify power in on “INPUT” & power out on “OUTPUT”.
	S TDR-2 (timing module) has failed. Verify power in on terminal #3 & power out on terminal #1 “OUTPUT”.

Troubleshooting

STEAM MODE (continued)

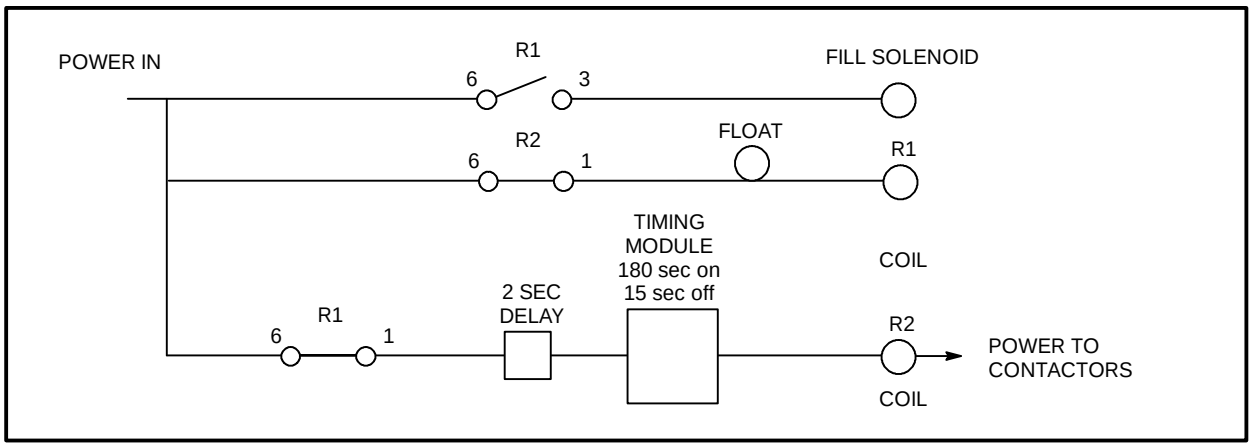


Figure 55

Power flows through relay R1 terminals 6 to 1 and then stops because of the 2 second delay. If water is low the ball float is down and the interior reed switch is “closed”. Power flows through relay R2 terminals 6 to 1, then through the float and to the coil of relay R1. This opens terminals 6 to1 of relay R1 and no power can reach the contactors. At the same time, terminals 6 to 3 close on relay R1. This activates the fill solenoid and the oven fills until the steam generator is full. Once full, the reed switch inside the float opens, disconnecting power to the coil of relay R1.Terminals 6 to 1 now close on relay R1. After the 2 second delay, power is supplied to the timing module and then to the coil of R2 relay. Terminals 6 to 1 open on relay R2. This shuts off power to the float so the reed switch contacts don’t chatter with power to them. After 180 seconds, the timing module shuts off, and the contactors have no power. R2 relay coil now has no power and terminals 6 to 1 close. Since the timing module is off, then water stops boiling. The float looks at a true water level and fills if needed.

STEAM MODE (continued)

POSSIBLE CAUSE(S)	SUGGESTED REMEDY
SYMPTOM: Steam generator is full, but no steam.	
S P2 steam board is not working.	S Remove the wires for the sensing thermistor on terminals 4 & 5. At room temperature the thermistor resistance is approximately 32K to 36K ohms. If the thermistor checks OK, remove the wires from terminals 6 and 7. Jumper these wires together. If the oven starts to steam, replace P2 board. (P2-A is the bottom oven and P2-B is the top oven.)
S Solid state Relay has failed.	S Solid state relays have a LED on them which is “ON” when there is power to the coil. Look at the top of the bottom pull out tray for the reflection of the LED on the stainless. Check current draw on the elements. Replace if needed.
S Steam generator elements are open.	S The elements have failed due to dry firing of the steam generator. Check resistance across the outputs of the Solid state relays or the resistance of the individual elements.
S The steam solenoid is not closing.	S The approximate resistance of the steam solenoid coil is 457 ohms. (The steam solenoid can be rebuilt. The coil kit and a diaphragm kit can be purchased through Blodgett.)
S Oven steams all the time.	S The diaphragm inside the steam solenoid has failed. Replace or rebuild the steam solenoid.

Troubleshooting

COMBI MODE

NOTE: Confirm cool down, hot air and steam modes work before continuing. By confirming previous modes you have tested most of the components in Combi.

POSSIBLE CAUSE(S)	SUGGESTED REMEDY
SYMPTOM: Mode switch is in the Combi position but no control panel lights are on.	
S Mode selector switch (S1) terminals 21 & 22 are open.	S Replace switch.
SYMPTOM: Power light (H4) is on, hot air heat light (H5) is on and off, but no steam.	
S Mode selector switch (S1) terminals (15 & 16) or (17 & 18) are open.	S Replace switch.
SYMPTOM: Power light (H4) is on, steam works, but no hot air.	
S Mode selector switch (S1) terminals 19 & 20 are open.	S Replace switch.

Wire Harness and Plug Connector Designations

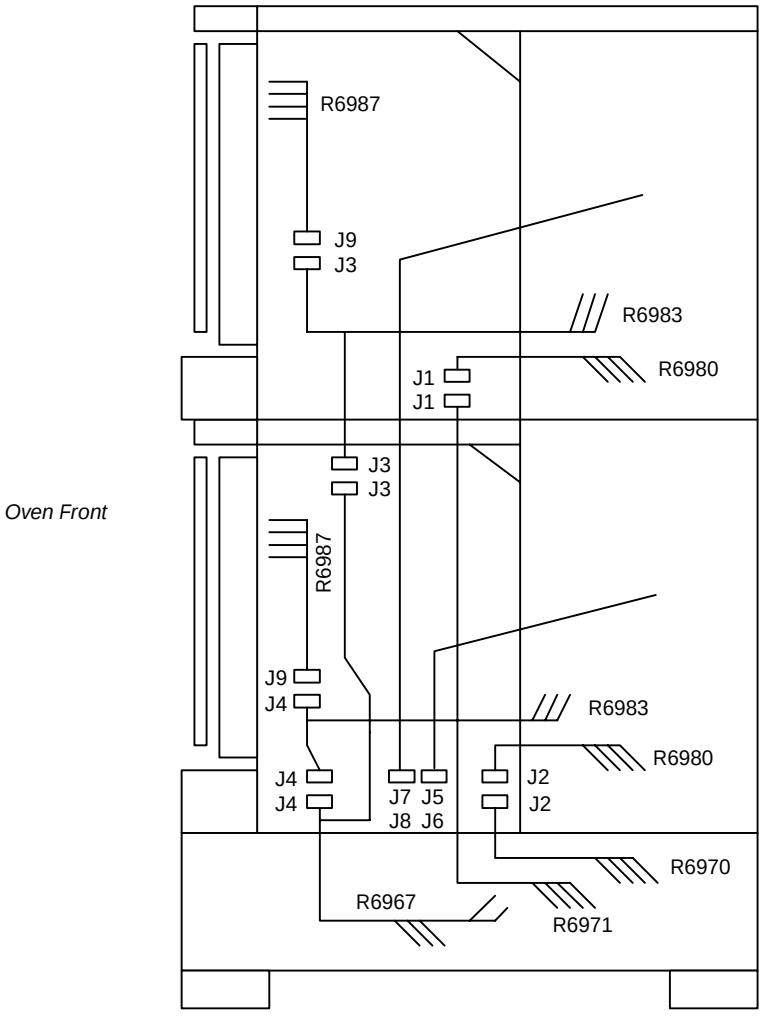


Figure 56