

Lincoln Aperion 24 Impinger® Conveyor Oven

Service Manual

FOR 60 HZ

Models:

1624, 2024, 2424, 2824 series ovens



⚠ Warning

Post in a prominent location, instructions to be followed in the event the user smell gas. This information shall be obtained by consulting your local gas supplier.

FOR YOUR SAFETY

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

⚠ 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.

⚠ Caution

Read this instruction before operating this equipment.

Safety Notices

DEFINITIONS

DANGER

Indicates a hazardous situation that, if not avoided, will result in death or serious injury. This applies to the most extreme situations.

Warning

Indicates a hazardous situation that, if not avoided, could result in death or serious injury.

Caution

Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

Notice

Indicates information considered important, but not hazard-related (e.g. messages relating to property damage).

NOTE: Indicates useful, extra information about the procedure you are performing.

Read These Before Proceeding:

DANGER

Do not install or operate equipment that has been misused, abused, neglected, damaged, or altered/modified from that of original manufactured specifications.

Important

Read these instructions for use carefully so as to familiarize yourself with the appliance before connecting it to its gas container. Keep these instructions for future reference.

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.

Warning

Authorized Service Representatives are obligated to follow industry standard safety procedures, including, but not limited to, local/national regulations for disconnection / lock out / tag out procedures for all utilities including electric, gas, water and steam.

Warning

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision concerning use of the appliance by a person responsible for their safety. Do not allow children to play with this appliance.

Warning

This equipment is intended for indoor use only. Do not install or operate this equipment in outdoor areas.

Warning

Do not use electrical appliances or accessories other than those supplied by the manufacturer.

FOR YOUR SAFETY

Do Not Store Or Use Gasoline Or Other Flammable Vapors Or Liquids In The Vicinity Of This Or Any Other Appliance.

Warning

Never use a high-pressure water jet for cleaning or hose down or flood interior or exterior of units with water. Do not use power cleaning equipment, steel wool, scrapers or wire brushes on stainless steel or painted surfaces.

Caution

Maintenance and servicing work other than cleaning as described in this manual must be done by authorized service personnel.

Caution

Improper cleaning of oven could damage catalyst(s) in ventless models and will void unit warranty.

NOTE: Proper installation, care and maintenance are essential for maximum performance and trouble-free operation of your equipment. Visit our website www.wbtkitchen.com for manual updates, translations, or contact information for service agents in your area.

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Section 1

General Information

Purchaser's Responsibility

It is the responsibility of the purchaser:

1. To see that the gas and electric services for the oven are installed on site in accordance with the manufacturer's specification.
2. To unload, uncrate, and install the oven in its proper location; in accordance with this installation/operation manual.
3. To see that the gas and electric services are connected properly by a qualified installer of your choice. For installation in the State of Massachusetts: Installation of this oven must be performed by a licensed plumber or gas fitter. All such connections must be in accordance with applicable code requirements. Refer to "Installation Requirements" section for specific information.
4. To arrange for inspection and operation check-out by an Authorized Service Technician as described below:

Do not attempt to operate the oven until connection of utility service has been fully inspected by a Factory Authorized Servicer or a Lincoln Foodservice Products, LLC Service Representative. This service is required by Lincoln Foodservice Products, LLC in order to assist the purchaser in proper start-up of the oven on site. Please note the specific details on the Warranty Policy and make sure that all connections are made to the proper utility services.

The warranty shall not apply if the oven(s) are started up and operated prior to the utilities and oven being inspected and check-out made by a Factory Authorized Servicer or a Lincoln Foodservice Products, LLC Service Representative.

ADDITIONAL REQUIREMENTS

- Obtain from your local gas provider and post in a prominent location instructions to be followed in the event gas odors are detected.
- It is required that the oven be placed under a ventilation hood to provide for adequate air supply and ventilation, unless the oven is a "ventless" model.
- Minimum clearances must be maintained from all walls and combustible materials. See "Spacing Requirements" section for more information.
- Keep the oven free and clear of combustible material.
- Adequate clearance for air openings to the combustion control chamber on the right side of the oven is required.
- Do not obstruct the ventilation holes in the control panels, as these provide the combustion air for the burner and cooling air for the controls.
- The oven is to be operated only on the type of gas and/or electricity as shown on the specification plate.
- The power burner will not operate and gas will not flow through the burner without electrical power.
- This manual should be retained for future reference.
- The electrical wiring diagram is located under the control box covers.

IN AUSTRALIA: Refer to Standard AS 5601. This standard specifies the requirements for piping, flues, ventilation and appliance installation associated with use of or intended use of fuel gases. The requirements of AS 5601 are to be used in conjunction with, but do not take precedence over, any statutory regulations that may apply in any area.

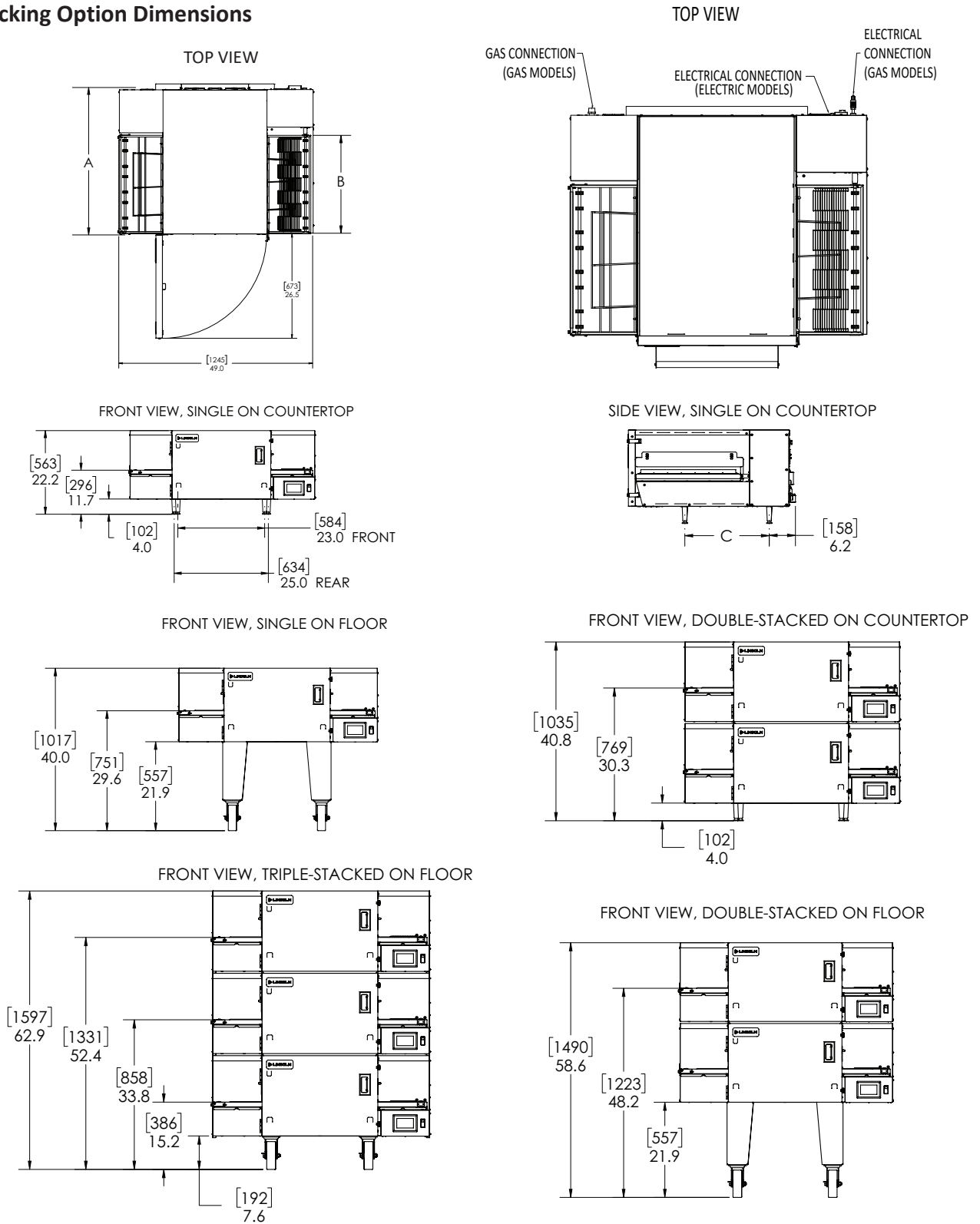
All ovens require separate service and dedicated neutral.

Gas Pressure Conversion

Inches of Water Column	kPa	m-Bar	Millimeters of Water Column
3.5	0.87	8.70	88.9
4.5	1.12	11.2	114.3
7	1.74	17.40	177.8
8	1.99	19.90	203.2
9.2	2.29	22.90	233.7
10	2.48	24.87	254.0
10.5	2.61	26.11	266.7
11	2.73	27.36	279.4
14	3.48	34.81	355.6
14.5	3.61	36.05	368.3

Section 2 Installation

Stacking Option Dimensions



See Page 8 for Model Dimensions and Permitted Stacking Configurations

Model Dimensions

MODEL	DIMENSION					
	A- Model Depth		B - Conveyor Width		C - Leg Spacing, side	
	inch	mm	inch	mm	inch	mm
1624	31-3/4	807	16-3/4	425	16-9/16	421
2024	35-3/4	908	20-3/4	527	20	508
2424	39-3/4	1,010	24-3/4	629	20	508
2824	43-3/4	1,111	28-3/4	730	20	508

Permitted Stacking Configurations

Oven Model	Under Exhaust Hood?	Supporting Surface is:	Single Oven	Double Stacked	Triple Stacked
##24-&UV	No	Floor	√		
##24-&UV	Yes	Floor	√	√	√
##24-&UH	Yes	Floor	√	√	√
##24-GU*	Yes	Floor	√	√	√
##24-&UV	No	Counter	√		
##24-&UH	Yes	Counter	√	√	
##24-GU*	Yes	Counter	√		

- 16/20/24/28

& - S/L

* - N/P

Utility Specifications

Electric Ovens

Region	Phase	Configuration	Voltage (VAC)	Current (A)	Power (kW)	Frequency (Hz)	Recommended Electrical Specification	Circuit Breaker Rating (A)
US/Canada	3	##24-SU	208 - 240	38.5 - 44.3	13.9 - 18.5	60	4 Wire, 3 Poles + G	50/60
	3	XX24-LU	208 - 240	26 - 29.9	9.4 - 12.5	60	4 Wire, 3 Poles + G	35/40
US	1	XX24-LU	208 - 240	37 - 42.5w	7.7 - 10.2	60	3 Wire, 2 Poles + G	50
Canada	1	XX24-LU	208 - 240	37 - 42.5	7.7 - 10.2	60	3 Wire, 2 Poles + G	50/60

- 16, 20, 24, 28

XX - 16, 20, 24

Gas Ovens

Region	Configuration	Fuel	Max Input Rate	Burner Pressure	Voltage	Current	Phase	Frequency	Electrical Input Configuration
US/Canada	##24-GUP	LP Gas	60,000 BTU/hr	10" W.C.	120 VAC	9 A	1	60 Hz	3 Wire, L + N + G
	##24-GUN	Natural Gas	60,000 BTU/hr	4" W.C.	120 VAC	9 A	1	60 Hz	3 Wire, L + N + G

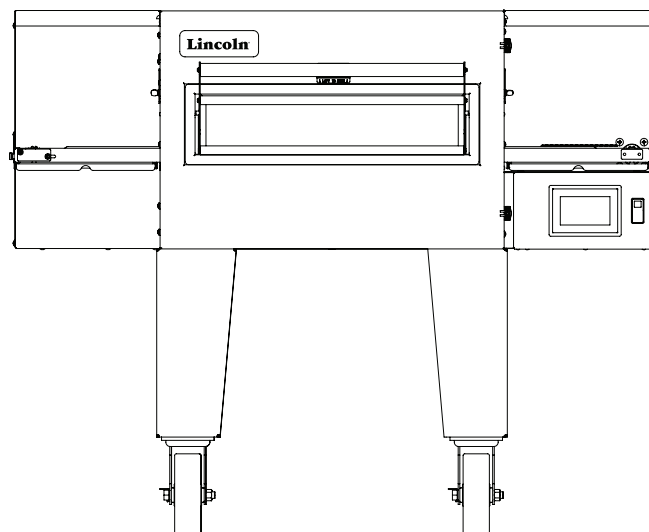
** NOTE: For proper operation, the gas valve requires a nominal inlet pressure of 7 inches of H₂O for natural gas and 11 inches of H₂O column for L.P gas. A minimum inlet pressure of 1.0 inch of H₂O column above the manifold setting (NAT. manifold 4" H₂O, L.P manifold 10" H₂O) must be maintained with no pressure drop from the no load to full load condition. The maximum inlet pressure must be maintained at or below 1/2 PSIG (14.5 inches H₂O column). Refer to the chart in Section 1 for pressure conversions.

All ovens require separate service and dedicated neutral.

Notice

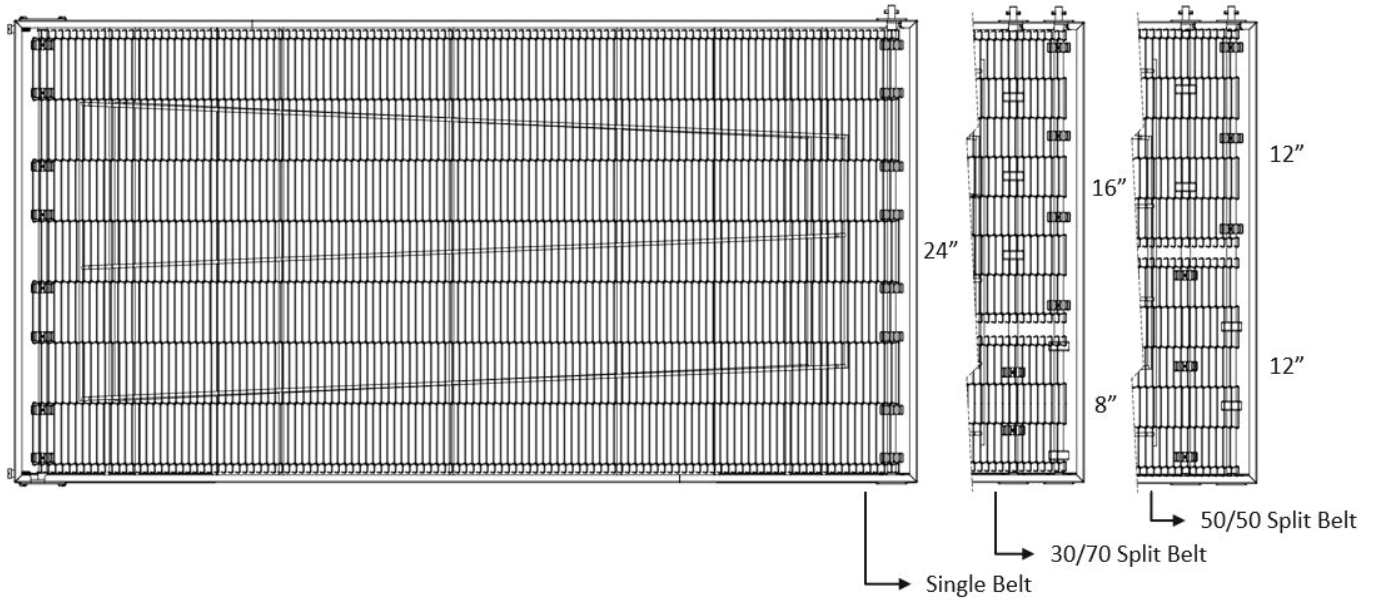
Do not install the (these) oven(s) in any area with an ambient temperature in excess of 95°F / 35°C. Doing so will cause damage to the unit.

Optional Half Pass Window

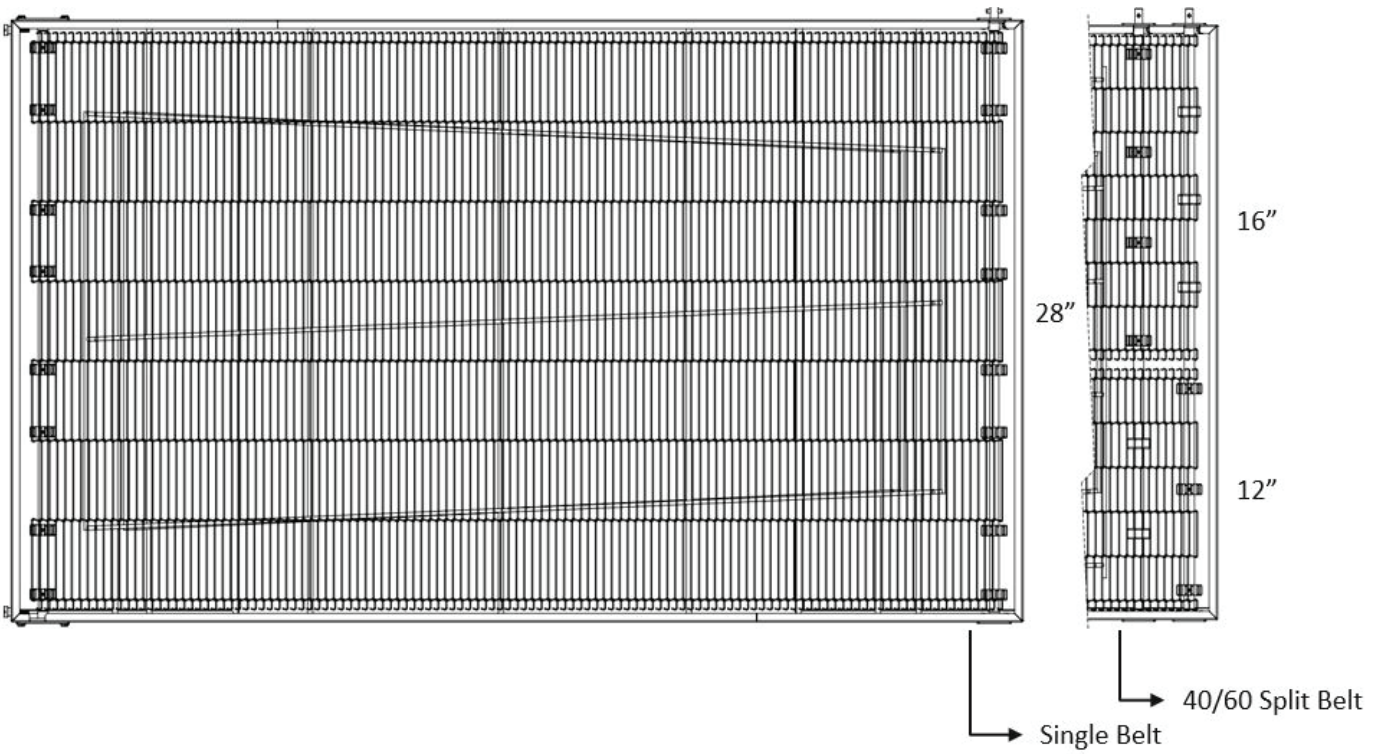


Optional Split Belt Conveyor

2424



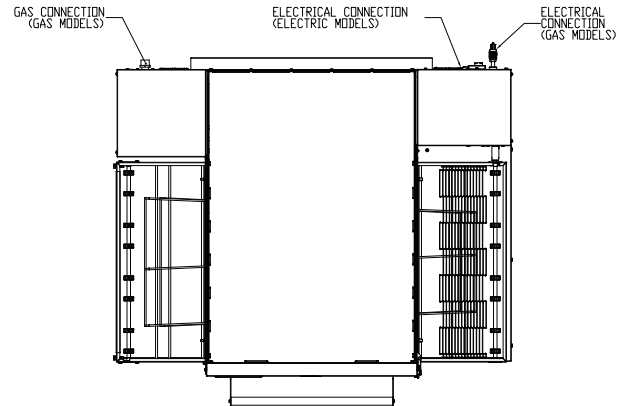
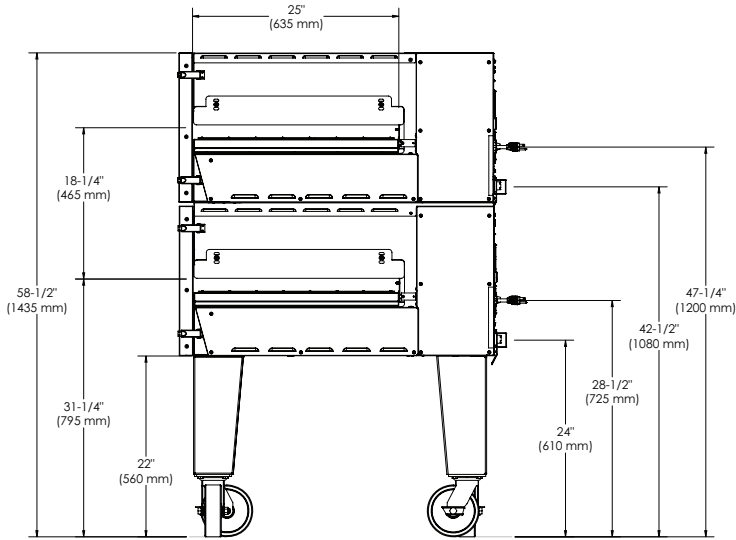
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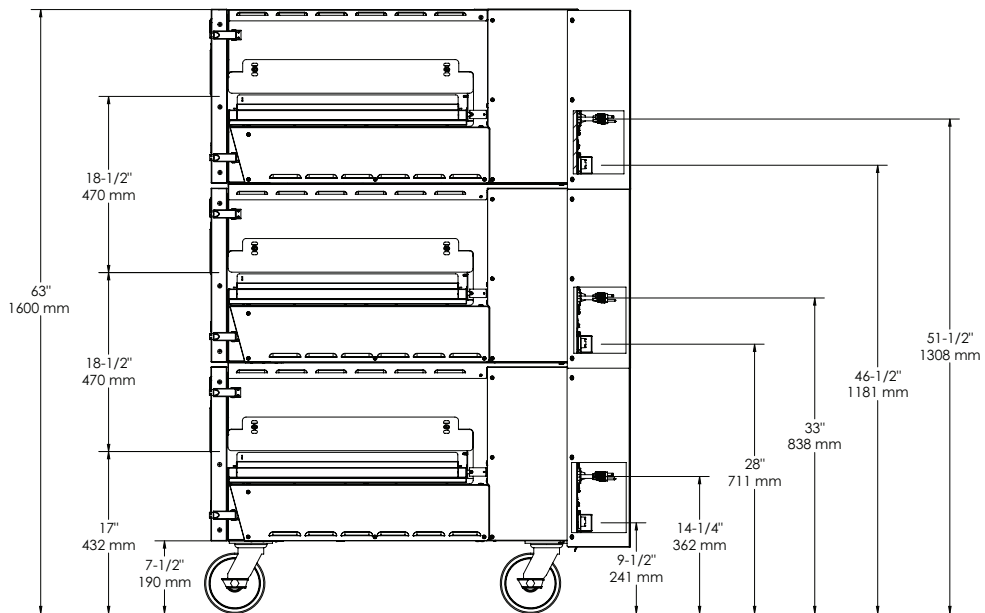
Gas Unit Connection Locations

2424 GAS DOUBLE STACK SIDE VIEW

TOP VIEW

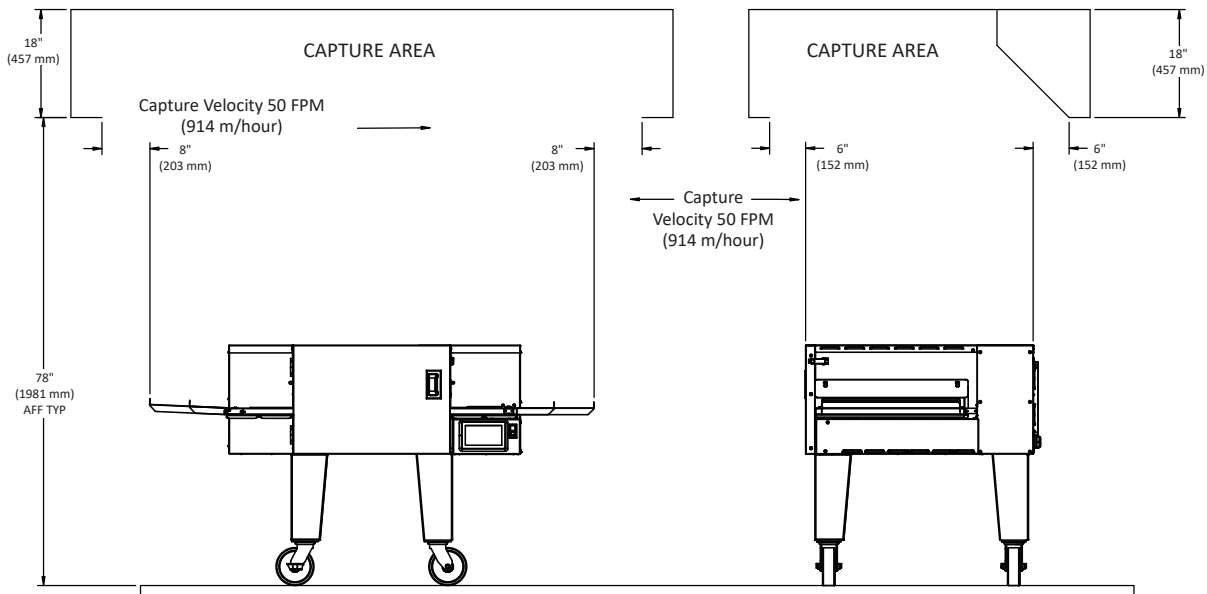


2424 GAS TRIPLE STACK SIDE VIEW



NOTE: All 4 SIDE VIEWS APPLY TO BOTH GAS AND ELECTRIC UNITS (WITH THE EXCEPTION OF THE GAS CONNECTION LOCATION DIMENSIONS).

Canopy Ventilation Recommendations



AFF = Above Finished Floor

NOTE: The drawing shown is a typical installation and is intended to be a guideline. Hood dimensions and the positioning of the hood over the oven will vary with hood manufacturers.

A smoke candle test is performed at Start-Up Checkout to verify proper hood operation. Refer to page 19.

NOTE: Lincoln can provide oven spec sheets that show the dimensions of the oven, kW or BTU ratings and other information that will be useful to both the ventilation hood supplier and the HVAC contractor.

VENTILATION REQUIREMENTS

A VENT IS REQUIRED: Local codes prevail. These are the “authority having jurisdiction” as stated by the NATIONAL FIRE PROTECTION ASSOCIATION, INC. in NFPA 96 latest edition. In addition, to be in compliance with the NFPA 54 Section 10.3.5.2, this unit must be installed with a ventilation hood interlock that prevents the unit from operating when the ventilation hood is off. For further ventilation information, see Ventilation Guidelines.

Ventilation Guidelines

Aperion Electric ventless models are permitted for ventless operation due to included catalysts, which limit the emission of grease laden air to below 5mg/ m3. The Aperion Electric ovens have been tested in accordance with UL710B & EPA-202 and are listed by UL to the KNLZ category. These ventless ovens should only be used for reheating purposes and should not be used to cook raw animal proteins, doing so may cause the appliance to exceed allowable grease laden air limits and/or cause damage to the catalysts. When permitted by local code(s) and used with appropriate food

products, Lincoln “ventless” ovens are not required to be installed under a ventilation hood.

For gas ovens, a ventilation hood is also required to remove the products of combustion. The hood and HVAC installation must meet local codes to gain approval by the authority having jurisdiction. Requirements may vary throughout the country depending on the location by city, county, and state. Obtain information from the authority having jurisdiction to determine the requirements for your installation. Obtain information and review copies of codes or documents that will be used to inspect and approve your installation. Your ventilation hood supplier and HVAC contractor should be contacted to provide guidance. A properly engineered and installed ventilation hood and HVAC system will expedite approval and reduce oven maintenance costs. Proper ventilation is the oven owner’s responsibility.

The ventilation hood must operate in harmony with the building HVAC system. It typically requires between 750 and 2500 CFM (1274 and 4248 m³/hour) exhaust. (The “Efficiency” of various hood designs makes it necessary to specify such a wide range of ventilator flow.) Make up air must be supplied by either a hood design or the HVAC system. This will vary with hoods from various manufacturers.

Notice

Prevent airflow through the cooking tunnel. Air must NOT be directed onto the oven front or at side of cooking area or rear of oven.

Installation Requirements

⚠ DANGER

All utility connections and fixtures must be maintained in accordance with local and national codes.

GAS CODE REQUIREMENTS

⚠ Warning

A manual shut-off valve must be installed in the gas supply (service) line upstream of this appliance so that the test plug is on the oven side of the valve.

Safe and satisfactory operation of this oven depends to a great extent upon its proper installation, and it should be installed, as applicable in accordance with the National Fuel Gas Codes, ANSI Z223.1/NFPA 54, latest version, manufacturers’ installation instructions, local municipal building codes, and ISO 203-1.

1. The oven and its individual shut off valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 psig (3.45 kPa).
2. The oven must be isolated from the gas supply piping system by closing its individual manual shutoff valve during any pressure testing of the gas supply system at test pressures equal to or less than 1/2 psig (3.45 kPa).

IN MASSACHUSETTS: The minimum length of a flexible gas supply hose is thirty-six (36") inches.

IN CANADA: The installation of these appliances is to be in accordance with CSA B.149.1 latest version – Natural Gas and Propane Installation Code – and/or local codes.

IN AUSTRALIA: To be installed in accordance with AS 5601-2004 and 4563-2004 Gas Installation Code.

ELECTRICAL CODE REQUIREMENTS

⚠ Warning

This appliance must be properly grounded at time of installation. Failure to ensure that this equipment is properly grounded can result in electrocution, dismemberment or fatal injury.

When installed, this appliance must be electrically grounded and its installation must comply with the National Electric Code, ANSI-NFPA 70, latest edition, the manufacturers’ installation instructions, and applicable local municipal building codes.

IN CANADA: All electrical connections are to be made in accordance with CSA C22.2 latest version – Canadian Electrical Code and/or local codes.

ALL OTHER COUNTRIES: Local gas and/or electrical codes will prevail.

1. Strain Relief is provided with each oven. International Dealer/Distributors provide applicable power cord/plug for each customer.
2. All pole disconnection switch must have 3 mm open contact distance.
3. To prevent electrical shock, an equal potential bonding ground lug is provided in the back. This allows the oven to be connected to an external bonding system.
4. If used as double stack or triple stack and each oven has its own disconnection switch, all switches should be close together.

SPACING REQUIREMENTS

⚠ Caution

Oven must be operated on an approved base only.

GAS OVENS	Minimum Clearances to combustile construction		Minimum Clearances to non-combustible construction	
	Sides	Back	Sides	Back
Triple Stacked	10"	0"*	6"	0"*
Double Stacked	10"	3"	6"	3"
Single	4"	3"	4"	3"

ELECTRIC OVENS	Minimum Clearances to combustile and non-combustible construction	
	Sides	Back
Triple Stacked	6"	0"*
Double Stacked	6"	3"
Single Stacked	4"	3"

* Recommended for optimal cooling

Note: When triple stacked the ovens must be fitted with heat shields at the rear, which contact the back wall.

NOTE: These ovens in all stacking configurations, gas and electric, are certified for use over combustile floors.

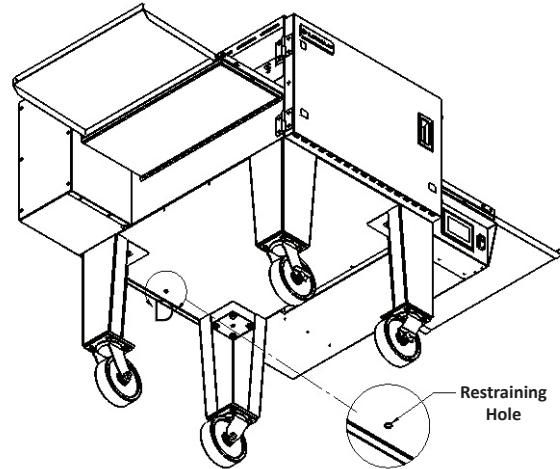
FOR GAS OVENS ONLY: for double stacked and single configurations, the back clearance specified is measured to the rear most exterior wall of the oven (not to the gas train).

FOR PERMANENTLY INSTALLED OVENS: A permanently installed (unmovable) oven requires a minimum of 4"(1219.2 mm) clearance on the right-hand side to allow for conveyor removal, cleaning, and servicing.

NOTE: Do not install this (these) oven(s) in any area with an ambient temperature in excess of 95°F/35°C. Doing so will cause damage to the unit.

RESTRAINT REQUIREMENT – OVEN(S) ON CASTERS

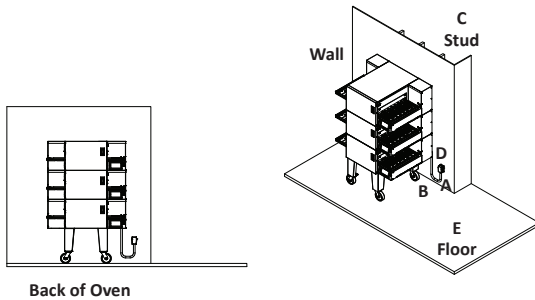
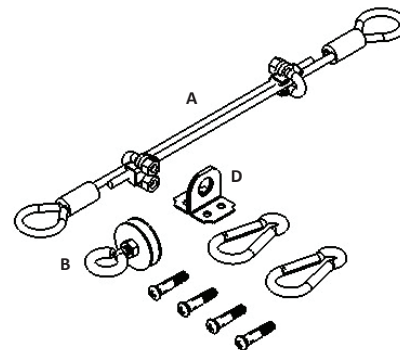
- The installation shall be made with a gas connector that complies with the local codes for Connectors for Movable Gas Appliances, ANSI Z21.69 • CSA 6.16 latest version, and a quick disconnect device that complies with the local codes for Quick Disconnect Devices for Use with Gas Fuel, ANSI Z21.41 • CSA 6.9 latest version.
- The installation of the restraint must limit the movement of the oven(s) without depending on the connector, the quick disconnect device or its associated piping to limit the oven movement.
- If the restraint must be disconnected during maintenance or cleaning, it must be reconnected after the oven has been returned to its originally installed position.



Procedure

1. Secure anchor wall/floor mount bracket “D” to wall stud “C” or floor “E”.
2. Secure eye bolt “B” into threaded hole located in the oven bottom (See drawing below).
3. Attach restraint cable “A” with supplied carabiners to both the eye bolt “B” and wall/floor bracket “D”.
4. Adjust/shorten restraint cable to limit oven movement.

NOTE: Installation point is the same for single, double, or triple-stacked ovens.



Installation

The instructions that follow are intended as a guide for preparing for the installation of the Lincoln Aperion Impinger® oven. First and foremost, each crate should be examined before signing the Bill of Lading to report any visible damage by the trucker in transit, and to account for the proper number of crates.

IF THERE IS APPARENT DAMAGE:

UNITED STATES AND CANADA: Arrangements should be made to file a claim against the carrier, as Interstate Commerce Regulations require that the consignee initiate a claim.

ALL SHIPMENTS TO OTHER COUNTRIES: Freight terms will be developed and extended on an individual basis.

Proper and secure storage facilities should be arranged for the oven(s). If necessary, protect it from outdoor or damp conditions at all times before installation.

PACKING AND WEIGHTS

All uncrated components of the Lincoln Aperion Impinger® oven will pass through a 30" (762 mm) wide door. The Impinger® Conveyor Oven model weight are the following:

1624 – 330lbs

2024 – 380lbs

2424 – 430lbs

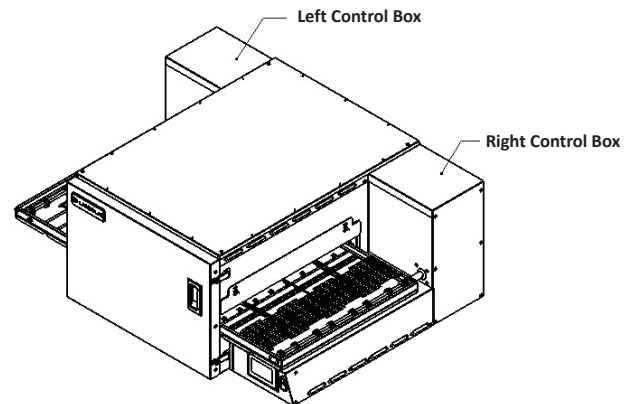
2824 – 480lbs

UNCRATING

When you have all the crates unloaded, open the crates and remove the plastic covers. Inspect at once for concealed damage. If anything appears to be damaged, contact the appropriate persons immediately to file a damage claim. After completing this inspection, finish unpacking the oven and all other components. Be sure to remove the packing cardboard from the plenum shroud. Move all components inside near the area where they will be assembled in the order in which they will be assembled.

Installation of Aperion Oven

1. Using multiple people, a crane, or forklift remove the oven from the crate carefully. (Caution) Do not lift from the Left and Right Control Boxes.

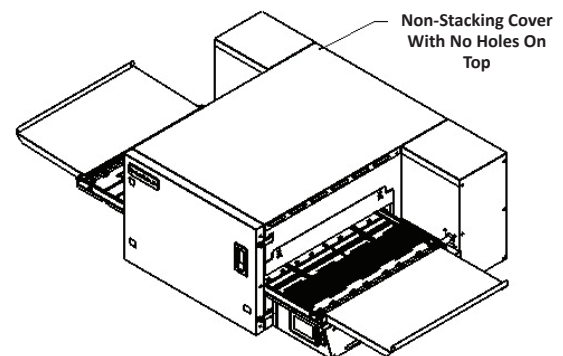


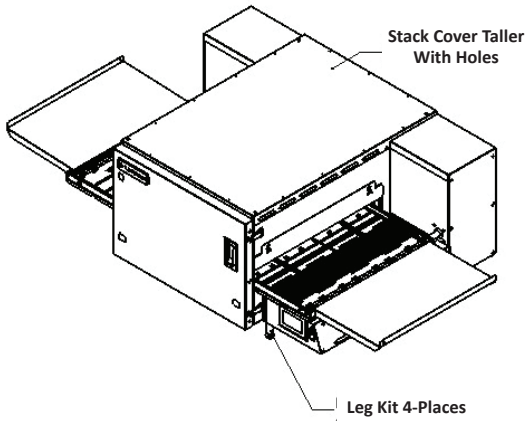
2. Remove Front Door, Upper and Lower Fingers and Conveyor Assembly from the Top Unit. Removal of these items will make the installation of the Top Unit on the Bottom Unit easier to place.
3. Place the oven on temporary blocks

For Countertop Installation

NOTE: Electric ovens on top of a countertop are permitted to be single or double stack configurations. Gas ovens on top of a countertop are permitted for single oven configuration.

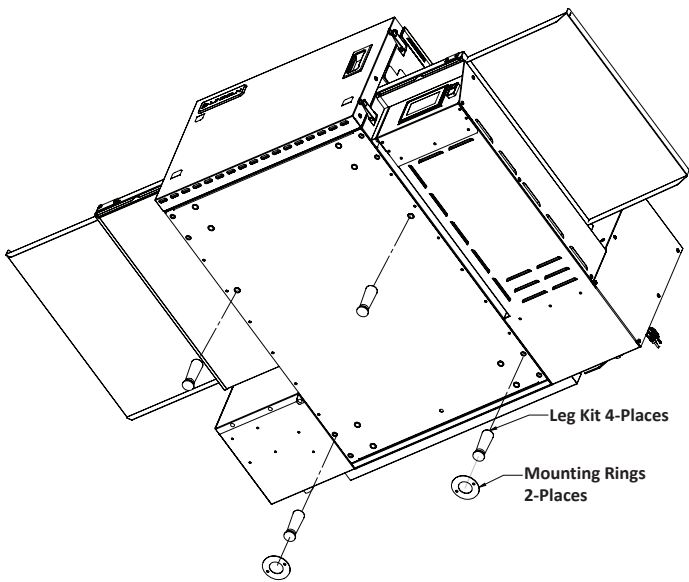
1. If oven is being placed on a countertop, use the Leg Kit with Mounting Rings on the Rear Legs of the Unit.
2. If Stacking Option is being used, ensure the Leg Kits are on the Bottom unit. The Bottom Unit will have the Stack Top Cover Option installed.



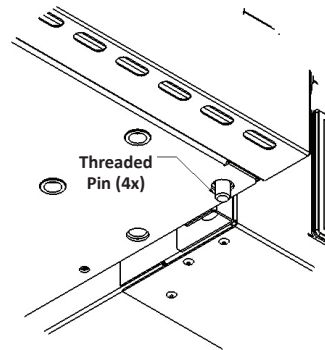


- Position the oven on the countertop and carefully mark the position of the Rear Legs. Remove the oven from the countertop and position the mounting rings so that the large (center) hole is where the legs of the oven were marked. Mark the position of the two small holes and remove the mounting rings.

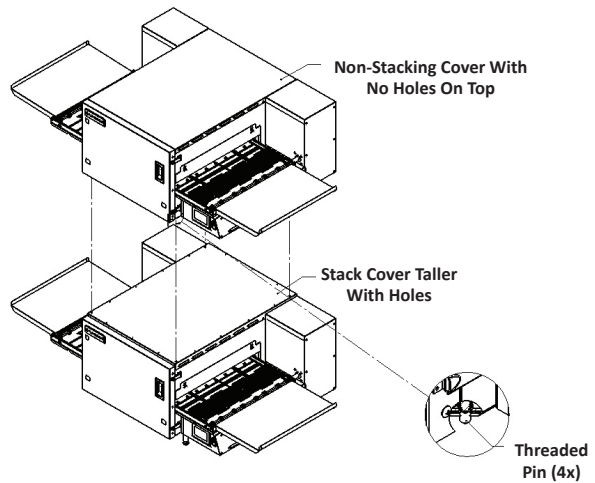
When installing on a heavy stainless steel or wood countertop, use appropriate rivets or screws for your installation. Use a 0.218" diameter drill (7/32") and drill at least 1/2" into a wood countertop or all the way through a steel countertop. Install the Mounting Rings to locate, so that the rear legs are in the large holes in the Mounting Ring.



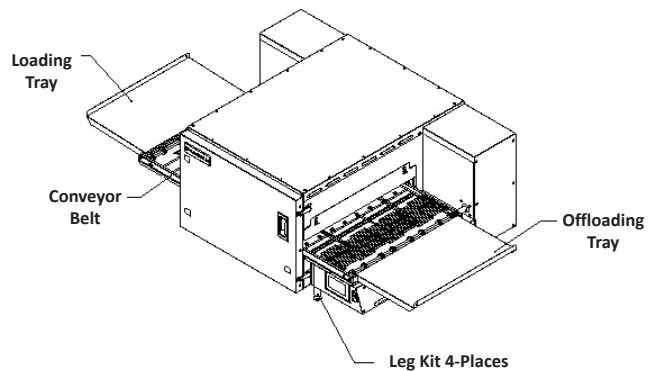
- To add a Top Unit to the Stack Assembly. Ensure that the Threaded Pins are installed at the corners of the bottom of the Top Unit.



- Using caution, lower the Top Unit using a portable crane or forklift, onto the Bottom Unit by lining up the Threaded Pins to the holes on the Bottom Unit.

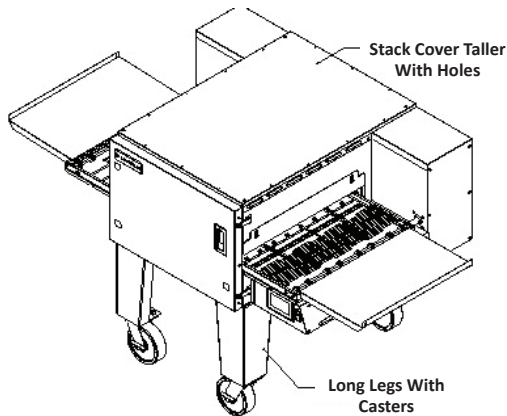
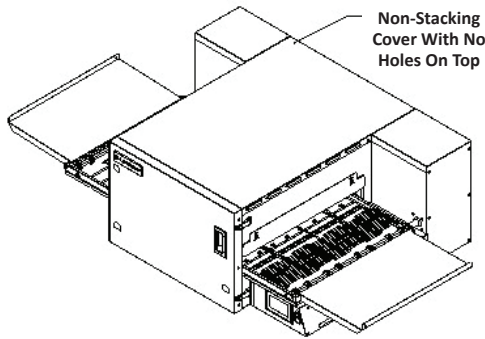


- Once the units are in place, re-install the Finger Assemblies.
- Install the Conveyor Belt assembly.
- Install Front Door.
- Install Loading and Offloading Trays (Loading Tray Marked with I, Offloading Tray Marked II).



For Floor Installation

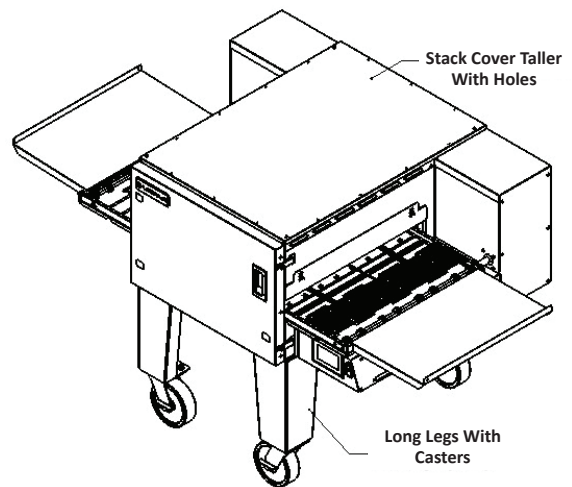
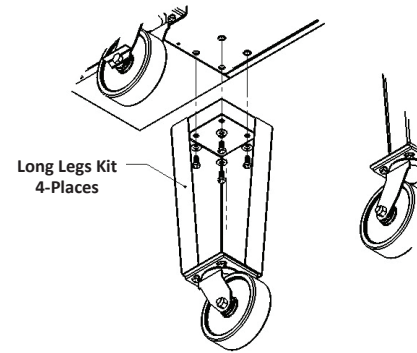
1. When placing the Oven on the floor, use the Long Leg Kit with Casters on the Bottom Unit. If Stacking Option is being used, ensure the Long Leg Kits are on the Bottom unit. The Bottom Unit will have the Stack Top Cover Option installed.



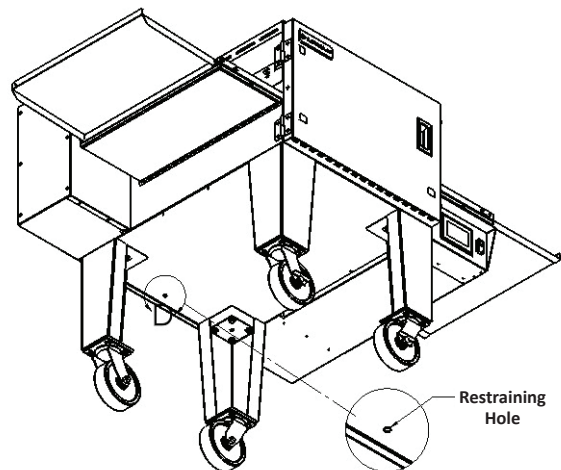
2. Remove Front Door, Upper and Lower Fingers and Conveyor Assembly from the Top and Bottom Units. The removal of these items will make the installation of the Top Unit on the Bottom Unit easier to place.

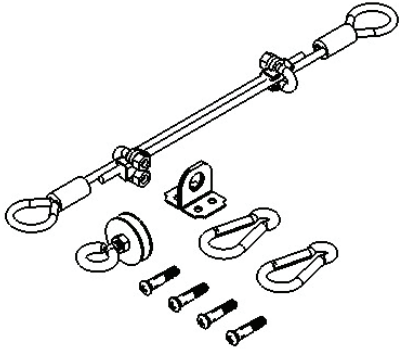
NOTE: Only single and double stack configurations are permitted to use the long leg kit.

3. With the Bottom Unit on blocks, connect the Long Leg Kit to the bottom of the Bottom Unit in 4 places.

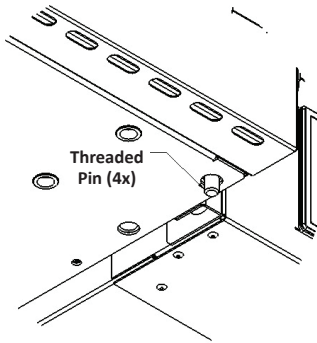


4. When using the Long Legs, the Unit must be restrained. Adjust and trim the Adjustable Restraining Cable Kit to secure the Unit to the wall or floor. Ensure that the Cable is short enough to limit the Oven Unit movement.

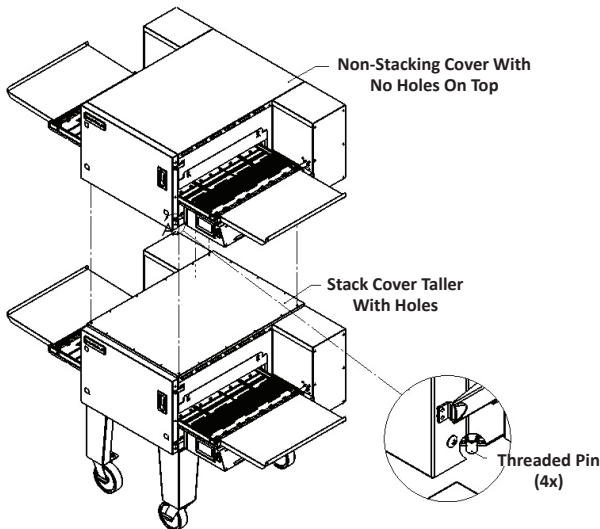




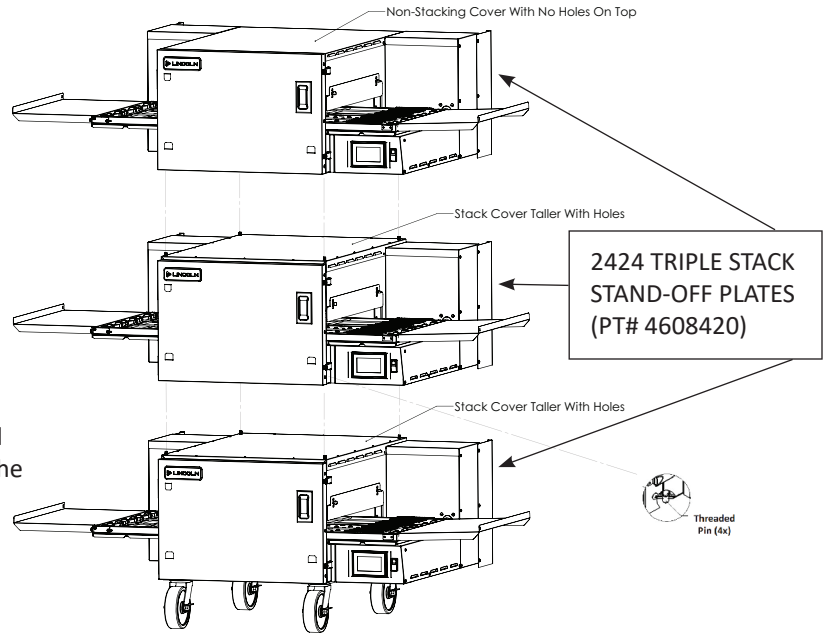
5. To add a Top Unit to the Stack Assembly. The Threaded Pins are pre-installed at the corners of the bottom of the Top Unit.



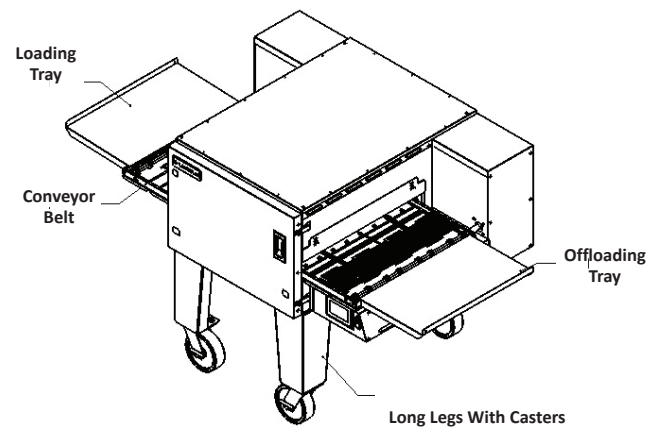
6. Using Caution, lower the Top Unit using a portable crane or forklift, onto the Bottom Unit by lining up the Threaded Pins to the holes on the Bottom Unit.



7. If triple stacking is required, Bottom and Middle Unit should have taller stack cover with holes. Top Unit should have non-stacking cover with no holes on top. The heat shields supplied in the Triple Stacking kit should be added to left and right Control Boxes on all three units.



- 8. Once the units are in place, re-install the Finger Assemblies.
- 9. Install the Conveyor Belt assembly.
- 10. Install Front Door.
- 11. Install Loading and Offloading Trays (Loading Tray Marked with I, Offloading Tray Marked II).



Start-Up Checkout

You are now ready for the services to be connected. This should be done by a qualified plumber, electrician, or installer of your choice. For installation in the state of Massachusetts: installation of this oven must be performed by a licensed plumber or gas fitter. Refer to Utility Specifications and Installation Requirements sections for additional information.

Important

The manual shut-off valve must be installed so that the test plug is on the oven side of the valve.

Start-Up Procedures

SMOKE CANDLE TEST – VENTILATION SYSTEM VERIFICATION

Performance will be evaluated during Start-up Checkout by conducting a smoke candle test. The hood must capture all smoke from the oven. This is required to assure proper performance of the oven and to eliminate additional service calls that occur when ambient temperatures are too high. In all cases, the ambient temperature around the oven must be less than 95°F/35°C when the oven is operating. In certain localities, other chemical or gaseous methods of detecting adequate capture will be the requirement to meet the local code authority.

Oven Setup for this Test:

- This test is to be done on the bottom oven of a multiple oven system, or a single oven.
- The conveyor must be off.
- The oven temperature must be set and operating at 550°F/288°C.

Test Procedure:

NOTE: Use Lincoln Smoke Candle #369361 (in Australia, an alternate method of coloring the air may be used).

1. Wear heat resistant gloves to prevent burns to your hands.
2. Put the smoke candle in a cake pan approximately 8 inches (200 mm) x 8 inches (200 mm) x 2 inches (50 mm) deep or equivalent.
3. Light the fuse of the smoke candle and immediately put the pan and candle into the center of the oven cavity, on the conveyor belt. (Close the access window or door.)
4. Observe the smoke pattern coming out of the oven openings and the collection of this smoke by the ventilation system.
5. The ventilation system must capture all the smoke from the oven.

Installation Checklist

DANGER

Check all wiring connections, including factory terminals, before operation. Connections can become loose during shipment and installation.

Warning

On completion of any installation or service work, test for gas leaks before returning the equipment into service. Never use matches, candles, or any other ignition source to check for leaks. If gas odors are detected, shut off the gas supply to the appliance at the main shut-off valve and immediately contact the local gas company or an authorized service agency for service.

DO NOT ATTEMPT TO OPERATE THE OVEN until connection of utility service and installation has been fully inspected (START-UP CHECKOUT) by a Factory Authorized Servicer or a Lincoln Foodservice Products, LLC Service Representative. This service is required by Lincoln Foodservice Products, LLC in order to insure the oven(s) is properly installed and in working order. The warranty becomes effective upon verification of proper installation.

The warranty shall not apply if the oven is started up and operated prior to the “START-UP CHECKOUT” being performed by a Factory Authorized Servicer or a Lincoln Foodservice Products, LLC Service Representative.

CHECKLIST

- Are the correct clearances maintained?
- Does the ventilation system meet the requirements?
- Are the legs and caster securely fastened?
- Is the unit level?
- Has the restraint been installed to prevent uncontrolled movement?
- Have all electrical connections been made and the unit is grounded?
- Does each oven have a separate disconnect switch?
- Have all wiring connections including the factory connections been checked?
- Has the supply voltage been tested and verified it matches the name plate voltage?
- Has a shutoff valve been installed in the gas line ahead of the unit?
- Has the manifold gas pressure been set to match the rating on the nameplate?
- Have all gas connections been tested for leaks?
- Are the retaining brackets and finger assemblies correctly installed and positioned?
- Is the belt tension correct?
- Have access panels been installed and secured?
- Has a smoke candle test been performed?
- Has the unit been tested for correct operation?
- Has the owner been instructed in the correct operation of the unit?
- Has this manual been given to the store owner?

Section 3

Sequence of Operations

2424 Lincoln Electric Domestic Sequence of operations

Unit plugged into power

- 10A fuse F1 energized with L1, and 10A fuse F2 energized with L3
- Safety Contactor (K1) engaged/energized (if oven high limit capillary and both component high limits are not tripped and the 30A circuit breaker is in the ON position)
- Oven High Limit Capillary Thermostat (SW3) energized with L3
- Component High Limit Thermostats (SW4, SW5) energized with L3
- Circuit Breaker (CB1) energized with L3
- All three SSRs are energized with L1, L2, L3 power
- Motor Driver E3 and E4 energized with L1 and L3 power
- Dual Voltage Board (E5) energized with L1 and L3 power
- 24VDC Power Supply energized with L1 and L3 power
- DC 4A fuse (F3) energized with 24VDC, which protects the DC components: Cooling Fans, UI, IO board and the optional Stepper Motor Driver
- Power Switch (SW1) input energized with 24VDC
- Cooling Fan Thermostat (SW2) energized with 24VDC

Power Switch turned ON

- IO Board (E2) energized with 24VDC
- IO Board boots up UI (E1)
- UI initiates with Welbilt BOOT screen
- UI Loads to Home Screen after a small delay in time
- Optional Stepper Motor Driver (E6) energized with 24VDC
- Cooling Fans M5 through M9 are energized with 24VDC
- Main Blower Motors M1 and M2 are energized (after the IO board sends the start command to the Motor Drivers)

1. Press and Go Selected

- UI displays Recipes

1.1 Recipe Selected

- Unit enters pre-heating mode
- Motor blowers ramp up to pre-heat speed (50%)
- Conveyor belt is STOPPED (does not move until the oven reaches the set point temperature)
- Call for heat sent to SSRs: all elements are energized

1.2 Once Pre-Heating is complete, Recipe Mode is engaged

- Oven will ramp up to recipe upper and lower motor speed set points (%)
- Oven will maintain temperature set point
- Conveyor belt will START moving according to pre-set Recipe cook time speed (when the oven reaches the set point temperature, the conveyor belt will start to move)
- If the oven has a split belt configuration, the display will show the parameters for both belts

1.3 Eco Mode Button: temperature set point will be maintained, but blower motor speed will be set to 40% and the conveyor belt will STOP

2. Chef Mode (Manual Mode) selected

2.1 Enter temperature set point

2.2 Enter upper and lower motor speed (%)

2.3 Enter cook time (min:sec)

2.4 In this mode, temperature and motor speed values will change automatically when on this screen, but these set points can be saved into a recipe when the save button is pressed

2.5 Save button pressed

- Select recipe
- Change icon or color if applicable
- Press the save button

2424 Lincoln Gas Domestic Sequence of operations

Unit plugged into power

- 15A fuse (F1) energized with L
- SSR (L1) energized with L
- Motor Driver E3 and E4 energized with N
- 24VAC Transformer (XR) energized with N
- Temperature Regulation Valve (V2) energized with N
- Ignition Module (IM) energized with N
- Combustion Fan Motor (M10) energized with N
- 24VDC Power Supply energized with L and N Power
- DC 4A fuse (F2) energized with 24VDC, which protects the DC components: Cooling Fans, UI, IO board and the optional Stepper Motor Driver.
- Power Switch (SW1) input energized with 24VDC
- Cooling Fan Thermostat (TH1) energized with 24VDC

Power Switch turned ON

- IO Board (E2) energized with 24VDC
- IO Board boots up UI (E1)
- UI initiates with Welbilt BOOT screen
- UI Loads to Home Screen after a small delay in time
- Optional Stepper Motor Driver (E5) energized with 24VDC
- Cooling Fans M5 through M9 are energized with 24VDC
- SSR input energized with 24VDC
- Motor Driver E3 and E4 energized with L
- Main Blower Motors M1 and M2 are energized (after the IO board sends the start command to the Motor Drivers)
- IO Board (E2) on-board SSR energized with L
- Component High Limit Thermostats (TH3, TH4) energized with L
- Oven High Limit Capillary Thermostat (TH2) energized with L
- Combustion Fan Motor (M10) centrifugal switch energized with L
- Combustion Fan Motor (M10) energized with L
- 24VAC Transformer (XR) energized with L (if the oven high limit capillary and both component high limits are not tripped, and if the centrifugal switch closes)
- Relay (K) coil energized with 24VAC

- Ignition Module (IM) energized with L and with 24VAC (if the oven high limit capillary and both component high limits are not tripped, and if the centrifugal switch closes)
- The Ignition Module operates on both 24VAC and 120VAC. When the module is energized by 24VAC from the Transformer, 120VAC is switched by the Ignition Module to the Hot Surface Ignitor (HSI) for 45 seconds for the ignitor to warm up. The ignitor glows red, 24VAC is switched to the Dual Safety Valve (V1), which opens, and ignition should then occur.

1. Press and Go Selected

- UI displays Recipes

1.1 Recipe Selected

- Unit enters pre-heating mode
- Motor blowers ramp up to pre-heat speed (50%)
- Conveyor belt is STOPPED (does not move until the oven reaches the set point temperature)
- Call for heat sent to the Temperature Regulation Valve (V2): high fire mode

1.2 Once Pre-Heating is complete, Recipe Mode is engaged

- Oven will ramp up to recipe upper and lower motor speed set points (%)
- Oven will maintain temperature set point
- Conveyor belt will START moving according to pre-set Recipe cook time speed (when the oven reaches the set point temperature, the conveyor belt will start to move)
- If the oven has a split belt configuration, the display will show the parameters for both belts

1.3 Eco Mode Button: temperature set point will be maintained, but blower motor speed will be set to 40% and the conveyor belt will STOP

2. Chef Mode (Manual Mode) selected

2.1 Enter temperature set point

2.2 Enter upper and lower motor speed (%)

2.3 Enter cook time (min:sec)

2.4 In this mode, temperature and motor speed values will change automatically when on this screen, but these set points can be saved into a recipe when the save button is pressed

2.5 Save button pressed

- Select recipe
- Change icon or color if applicable
- Press the save button

Section 4 Maintenance

Operator Maintenance

DANGER

Disconnect power supply before servicing or cleaning this oven. Safeguard power so it cannot be accidentally restored. Failure to do so could result in dismemberment, electrocution, or fatal injury.

This Lincoln oven was designed and engineered for maximum durability and performance with minimum maintenance. There is no lubrication required.

However, to achieve the maximum efficiency of the oven, it is necessary to keep it clean. For cleaning instructions, see below. The frequency listed is only the factory's minimum recommendations. Your use and type of products should be used to guide the frequency of cleaning.

If the oven fails to operate, check the circuit breaker and gas valve (for Natural Gas and LP Gas models) to be sure they are turned on. Also, check the On/Off switch and fuses in the control box prior to calling the Factory Authorized Servicer. The name and phone number of the Factory Authorized Servicer should be on the oven or contact Lincoln Technical Support at 1-844-724-2273 for the name of the nearest Factory Authorized Service provider.

CLEANING INSTRUCTIONS

The Lincoln Aperion Impinger® oven contains electrical components. Before cleaning the oven, switch off and disconnect the oven from the electrical supply.

NOTE: Ensure that the oven is cool before disconnecting power supply for cleaning. Pre-opening is an ideal time to inspect and clean your oven.

No electrical components should be subjected to moisture. It is, therefore, important that the oven is wiped down carefully. NEVER throw buckets of water over or into the oven cavity or subject it to pressure washing from a hose or pressure spray. If water or other liquid is spilled in the oven, make sure that none has entered the plenum or control box area before turning the oven on. If in doubt, call your service provider.

Caution

Oven must be cool. Do not use power cleaning equipment, steel wool, or wire brushes on stainless steel surfaces.

Notice

Do not use caustic or alkaline cleaners on interior of units or on catalyst(s) of ventless ovens. These cleaners can damage the finished surfaces of the unit interior and exterior. Lincoln Oven Cleaner and Protector has been developed specifically for use on this oven and is recommended for daily and weekly cleaning.

Daily Cleaning

1. Clean exterior surfaces of the oven by wiping down with Lincoln Oven Cleaner or a mild detergent and clean water, or a commercial stainless cleaner.
2. Remove and clean crumb pans from below conveyor assembly and conveyor end stops or optional entry/exit shelves with Lincoln oven cleaner and rinse with clean water.
3. Clean the interior by sweeping up loose particles, then wipe with Lincoln oven cleaner and rinse with clean water.
4. Clean the conveyor belt by wiping with a clean cloth or nylon bristle brush (ensure oven belt is cool to touch if using a brush to avoid melting bristles).

Caution

Do not spray chemicals or cleaning liquids directly on catalyst(s) in ventless ovens. Clean catalyst(s) with a water-dampened clean cloth only. The catalyst(s) must be kept clean and unobstructed to be effective.

Warning

When using cleaning solutions, be sure they meet local and national health standards.

Weekly Cleaning

5. Remove oven door by unfastening the latching mechanism on the right side of door (facing oven). Hold door from bottom and right side and lift carefully to disengage the hinges. Clean all exterior surfaces of door and pass through window if applicable with Lincoln Oven Cleaner and rinse with clean water.
6. Remove conveyor, disassemble and clean with Lincoln Oven Cleaner. Rinse with clean water and allow to dry before reinstalling.
7. Remove fingers, disassemble and clean with Lincoln Oven Cleaner. Rinse with clean water and allow to dry. Do not allow housings to soak in water for a prolonged time.
8. Clean fan air intakes at rear of oven and in control box with damp cloth to remove dust and any grease build-up.

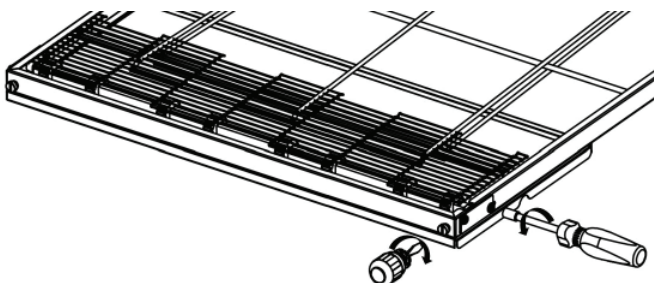
NOTE: Be sure to clean and inspect your kitchen ventilation hood (if equipped), in accordance with the ventilation hood manufacturer's specifications.

Conveyor Removal

1. Remove oven door by unfastening the latching mechanism on the right side of door (facing oven). Hold door from bottom and right side and lift carefully to disengage the hinges. Set aside for cleaning.
2. Pull conveyor out from baking chamber by lifting upward and then forward.
3. Set on table or 3 compartment sink for cleaning.
4. Re-install in reverse order.

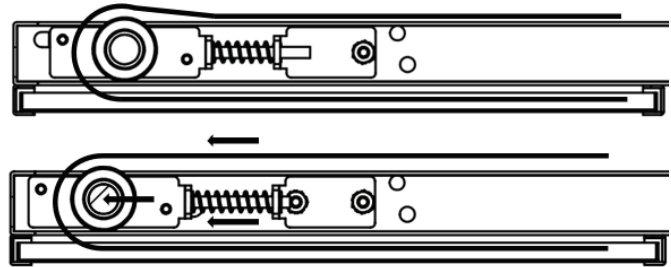
Single Belt Conveyor Tightening

1. Remove the conveyor.
2. Loosen the two screws on the adjuster clamp on both sides of the conveyor.
3. Tighten the belt to the desired tension using the two thumb screws.
4. Tighten the screws on the adjuster clamps to lock the belt tension.



Split Belt Conveyor Tightening

Split belts are equipped with springs to automatically tighten the belt to the desired tension.



Finger Removal

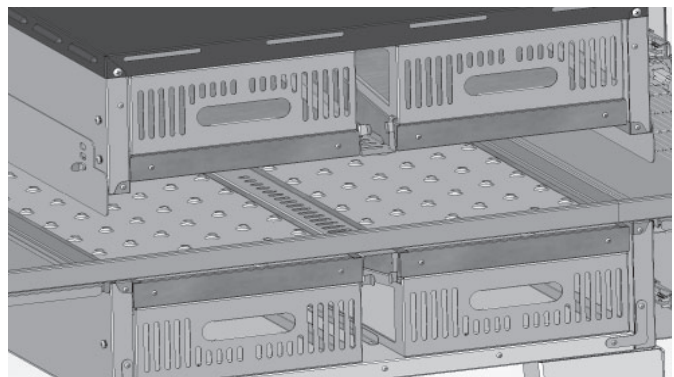
⚠ Caution

Oven must be cool to prevent burns. Use protective gloves to avoid cuts from edges.

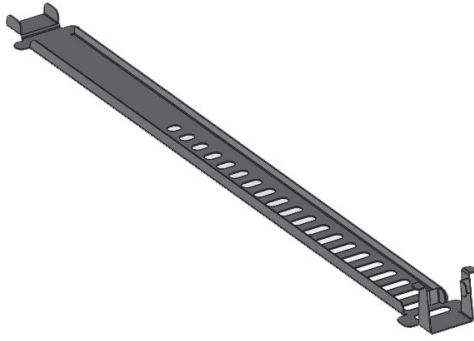
The Lincoln Aperion Impinger® oven comes with 4 identical finger assemblies comprising a housing and cover and 2 identical baffles that are located between the top and bottom housings. Housings, covers and baffles are interchangeable. There are 2 top and 2 bottom housings – see diagrams below.

1. OpenDoor.

NOTE: Door may be removed by lifting from hinges – see instructions under weekly cleaning.

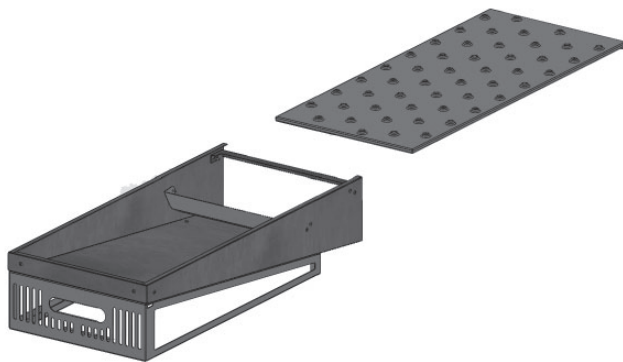


2. Remove top and bottom air return baffles by pinching the retaining arms slightly together and pulling down (top baffle) or up (bottom baffle).



Air Return Baffle x 2

- 3. Remove top 2 housings first, then bottom 2 housings.



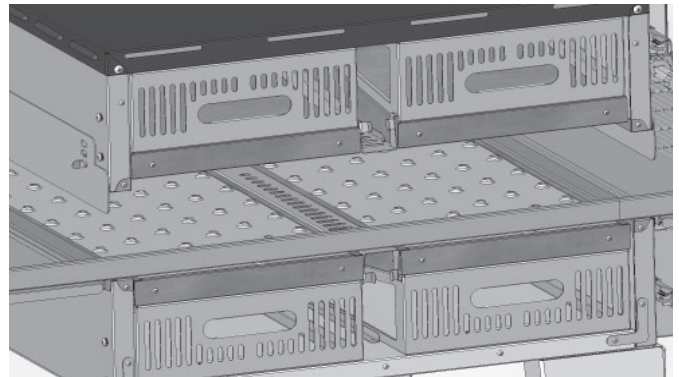
Bottom Finger Assembly

- 4. Disassemble fingers by sliding cover off the housing.
NOTE: Components are tight fitting. Use gloves to protect your hands when disassembling fingers.



Finger Housing x 4

- 5. Re-assemble and re-install in reverse order. Ensure return air baffles are installed between top and bottom finger assemblies.



Preventive Maintenance

Although this oven has been designed to be as trouble-free as possible, periodic preventive maintenance is essential to maintain peak performance. It is necessary to keep the motors, fans, and electronic controls free of dirt, dust and grease build-up to ensure proper cooling. Overheating is detrimental to the life of all components mentioned. The periodic intervals for preventive cleaning may vary greatly depending on the environment in which the oven is operating. You must discuss the need for preventive maintenance with your Factory Authorized Servicer to establish a proper program. If there are any questions that the service agency cannot answer, please contact the Lincoln Technical Service Department at 1-844-724-2273.

Section 5 Troubleshooting

General Issues

Problem	Cause	Correction	APPLICABLE FOR GAS UNITS	APPLICABLE FOR ELECTRIC UNITS
User Interface (UI) / touchscreen blank	Oven not plugged in / panel breaker tripped	Check panel breaker and plug Ensure input voltage is within specifications	X	X
	Fuses / fuse holder	Check AC fuses on back panel, replace if necessary	X	X
		Check DC fuse located inside the control box (close to the power supply), replace if necessary		
		Inspect fuse holders for cracks and replace if needed		
	Wiring Issue	Inspect UI cable for damage	X	X
		Unplug and plug the UI cable back in		
		Replace UI cable		
	UI	Check for cracks or damaged screen	X	X
		Check cable connection to UI for fit		
		Install new UI with correct software revision		
	Power switch	Check continuity through switch. Check for incoming 24VDC on terminals. Replace if needed.	X	X
	DC power supply	Check for steady 120VAC input between white (N) and black (L) wires, at the N and L power supply terminals	X	
		Check for steady 208-240VAC input between blue (N) and black (L) wires, at the N and L power supply terminals		X
Check for steady 24VDC output between red (+V) and black (-V) wires, at the +V and -V power supply terminals		X	X	
Check for physical damage on the power supply circuit board. Replace if needed		X	X	
IO board	Check for 24VDC input on black (-V) and red (+V) wires	X	X	
	Check cable connection to UI for fit			
	Inspect IO board for damage and replace if needed			
User Interface (UI) / touchscreen locked up, frozen, nonresponsive to touch	Software issue	Turn OFF the unit using the power switch, turn the unit back ON after 30 seconds.	X	X
	Damaged or cracked touchscreen	Install new UI with correct software revision		
Unable to read USB	Faulty flash drive	Retry with known good quality flash drive	X	X
	Incorrect USB format	Make sure flash drive is formatted using FAT32		
	USB cable disconnected	Check if USB connector is seated properly		
	User Interface (UI)	Check for cracks or damaged screen		
Check cable connection to UI for fit				
Install new UI with correct software revision if needed				

Problem	Cause	Correction	APPLICABLE FOR GAS UNITS	APPLICABLE FOR ELECTRIC UNITS	
Unable to load USB files	Faulty flash drive	Retry with known good quality flash drive	X	X	
	Files on flash drive incorrect or corrupt	Delete all files on flash drive and reload updated files			
	Faulty USB socket	Inspect USB socket for damage and replace if needed			
Conveyor does not move	Temperature set point has not been reached	If using the Press & Go menu recipes, wait until UI displays the "Ready" status message	X	X	
	Coupling loose or disconnected	Tighten set screw on coupling	X	X	
	Belt link loose or disconnected	Replace belt link	X	X	
	Conveyor has stretched from use	Use thumb screws to tighten belt Remove adequate number of links to tight the belt	X	X	
	Incorrectly installed	Verify conveyor belt orientation. Shaft should be inserted into motor coupling	X	X	
	Software issue		Turn OFF the unit using the power switch, turn the unit back ON after 30 seconds.	X	X
			Go to Manual Mode and change belt speed		
	Failed or failing conveyor stepper motor		Check for resistance on red and blue and again at yellow and white. Resistance should be $.65\Omega (\pm 10\%)$.	X	X
			Check for opens, shorts or grounds		
			Change conveyor belt direction in the UI's Settings Menu		
	IO board and/or built-in motor drive		Check for 24VDC input on black (-V) and red (+V) wires	X	X
			Check wires are connected properly		
			Inspect IO board for damage and replace if needed		
Optional stepper motor drive (STR8)		Check LEDs to identify alarm codes. Faults disable the motor and can be cleared by cycling power to the drive.	X	X	
		Try the built-in self test. Anytime switch 8 is moved to the ON position, the drive will automatically rotate the motor back and forth, two turns in each direction. This feature can be used to confirm the motor is correctly wired, selected and operational.			
		Check for 24VDC input on black (-V) and red (+V) wires			
		Check wires are connected properly			
		Inspect stepper motor drive for damage and replace if needed			

Problem	Cause	Correction	APPLICABLE FOR GAS UNITS	APPLICABLE FOR ELECTRIC UNITS
Unable to reach or maintain temperature	Oven high limit capillary thermostat tripped No heat	Turn the power switch OFF and wait for the machine to cooldown (this may take upwards of one hour). Inspect the thermostat connections for damage. Check for voltage on both sides of switch. Terminals are normally closed. If open, reset the high limit capillary thermostat located on the machine rear panel. Turn the power switch ON. Check that both blower motors are ON. If the condition persists, replace the high limit capillary thermostat.	X	X
	Component high limit thermostat tripped (in left tower or right tower) No heat	Turn the power switch OFF and wait for the machine to cooldown (this may take upwards of one hour). Turn the power switch ON and select a recipe. Inspect the component high limit thermostat (in left tower and right tower) connections for damage Check if cooling fans are working properly. If the condition persists, replace the component high limit thermostat.	X	X
	Circuit breaker at the back of the oven tripped Contactor disengaged (No heat)	Reset circuit breaker at the back of the oven. If circuit breaker trips again there is an overload on one of the SSR branches or the dual voltage board is malfunctioning (not regulating the heating element current) Measure SSRs output current. Inspect SSRs for damage. Replace if needed. Measure heating elements resistance, make sure it is within specifications: approx. 5.4 Ω in each branch, for example; between wires 7 and 8 (branch 1), between wires 9 and 10 (branch 2) and between wires 11 and 12 (branch 3). Inspect heating elements for damage, replace if needed.		X
Blower motors not running (no air noise)		Turn OFF the unit using the power switch, turn the unit back ON after 30 seconds.		
		Access the UI Diagnostics Screen. Enter Service Password. Review current alarms/alarm history	X	X
		Access the UI Settings Screen. Enter Service Password. Select the Calibration screen and then select the Fan Test screen. Turn motor OFF and then ON. Check RPM values are not "0". Check for alarm codes (Status Code)		X

Problem	Cause	Correction	APPLICABLE FOR GAS UNITS	APPLICABLE FOR ELECTRIC UNITS
Unable to reach or maintain temperature cont.	Blower motors not running (no air noise) cont.	Check motor drive is powered. Check the motor drive status led codes. Confirm there are no alarm codes	X	X
		Check if motor attempts to move		
		Check wires are connected properly		
		WITH OVEN UNPLUGGED: Check for opens, shorts or grounds. Turn fan blade to check for locked rotor.		
		Check motor resistance: 9.72Ω		
Incorrect model selected in UI	Turn OFF the unit using the power switch, turn the unit back ON after 30 seconds. The model displayed in the UI initialization screen should be 2424. If it isn't go to UI settings and select the correct model.	Check motor drives DIP switch configuration: Upper drive: switch 2 "ON" Lower drive: switch 1 and 2 "ON" Replace motor drive	X	X
		Verify both thermocouples are connected to the IO board		
Defective thermocouple/ thermocouple wiring	Inspect the thermocouple wires and connectors. Check wires are not cut or disconnected	Check resistance for open probe. Resistance: 7Ω - 14Ω	X	X
		Check DC voltage between red and yellow wires. Use chart based on 72°F ambient temperature to verify proper reading: 0.8mV @ 72°F / 2.8mV @ 200°F / 4.0mV @ 250°F / 5.1mV @ 300°F / 6.0mV @ 350°F / 7.1mV @ 400°F / 8.2mV @ 450°F / 9.3mV @ 500°F / 10.4mV @ 550°F / 11.5mV @ 600°F		
		Check for opens, shorts or grounds		
		Check for steady 208-240VAC input between PIN1 and PIN3 (3-position connector)		
Dual voltage board	Check for 3.3VDC-5VDC output from IO board to dual voltage board (when there is a call for heat)	Check SSRs LEDs are turning ON and OFF continuously when there is a call for heat		X
		Check DIP switch configuration: switch 3 and 2 "OFF" and switch 1 "ON"		
		Check for physical damage on the circuit board. Replace if needed		
		Check make up air from ventilation hood or air conditioning vents are directed away from the oven		
Kitchen ventilation affecting temperatures			X	X
Possible incorrect temperature calibration		Check calibration and re-calibrate unit if needed	X	X

Problem	Cause	Correction	APPLICABLE FOR GAS UNITS	APPLICABLE FOR ELECTRIC UNITS
No low flame present	Gas supply	Check for adequate gas supply to oven	X	
	Manual gas shut off valve	Check to see that the manual gas shut off valve is open. Also check flexible gas line connection for any damage.	X	
	Solid State Relay (SSR)	Check wires are connected properly	X	
		With the power switch ON, check for 24VDC supplied at the SSR input terminals (A1 and A2 terminals). If no voltage is present, trace wiring back to the power switch. If voltage is present, check for 120VAC supplied to the SSR L1 terminal. If no voltage is present, trace wiring back to fuse F1. If voltage is present, check for 120VAC supplied to the SSR T1 terminal. If there is voltage at the input (A1 and A2 terminals) but not voltage at the SSR T1 terminal, replace SSR.		
		Inspect SSR for damage and replace if needed		
	Oven High Limit Capillary Thermostat (TH2) Component High Limit Thermostats (TH3, TH4)	Refer to the problem: Unable to reach or maintain temperature, and the causes: • Oven high limit capillary thermostat tripped • Component high limit thermostat tripped	X	
Combustion fan motor not running	Turn OFF the unit using the power switch, turn the unit back ON after 30 seconds	X		
	Check for 120VAC between wire #11 (L) and wire #17 (N) at the 6-pin connector			
	Check wires are connected properly WITH OVEN UNPLUGGED: Check for opens, shorts or grounds. Turn fan blade to check for locked rotor.			
Centrifugal switch of combustion fan motor open	Check for 120VAC at wire #10 (input to centrifugal switch, located at 6-pin connector) to neutral. If no voltage is present, trace wiring passing through TH2, TH3 and TH4, until it reaches the SSR. If voltage is present, check for 120VAC at wire #12 (output of centrifugal switch) to neutral. If no voltage is present at wire #12, and the motor is running, replace the combustion fan motor.	X		

Problem	Cause	Correction	APPLICABLE FOR GAS UNITS	APPLICABLE FOR ELECTRIC UNITS
No low flame present cont.	Transformer	Check for 120VAC supplied to the transformer primary. If no voltage is present, trace wiring passing through the centrifugal switch, TH2, TH3 and TH4, until it reaches the SSR. If voltage is present, check for 24VAC at transformer secondary. If there is primary voltage but no secondary voltage, replace transformer.	X	
	Ignition module in lockout/not working	<p>Six seconds after the gas valve opens, ignition must occur. If flame is not detected, the ignition control will shut off and lock out. To reset the ignition control, turn off the power switch for 45 seconds, then turn the switch on to re-try ignition.</p> <p>Verify wires are connected properly. Check the ignition module grounding, make sure connections are clean and tight.</p> <p>Check for 24VAC at ignition module terminals marked "24V" and "24V(GND)". If no voltage is present, trace wiring back to transformer.</p> <p>Check for 120VAC to ignition module from terminal "L1" to "L2" (neutral). If no voltage is present, trace wiring back to SSR.</p> <p>When 24VAC is supplied to the ignition module, the ignition module switches 120VAC to the hot surface igniter for approx. 45 seconds. If 24VAC and 120VAC are supplied to the module, but there is no voltage at the hot surface igniter, replace the ignition module.</p> <p>After the hot surface igniter pre-heat, the ignition module will switch 24VAC to the dual safety valve for 6 seconds. Check for 24VAC output from the module across terminals marked "VALVE" and "VALVE GND". If no voltage is present, replace the module.</p>	X	
	Hot Surface Igniter	<p>Check hot surface igniter cold resistance: 40-100 Ω</p> <p>If 120VAC is present at the hot surface igniter terminals, visually check to see if the igniter is heating (it may be viewed through the port in the end of burner tube). The igniter should glow bright red. If the igniter does not heat, replace the hot surface igniter.</p>	X	
	Dual Safety Valve	<p>Check for 24VAC supplied to the dual safety valve</p> <p>Check for opens or shorts in the operating coil</p>	X	

Problem	Cause	Correction	APPLICABLE FOR GAS UNITS	APPLICABLE FOR ELECTRIC UNITS
No low flame present cont.	Dual Safety Valve cont.	When 24VAC is supplied to the valve, the valve should open. Check for gas pressure at the manifold tap located just before the burner. If there is no pressure, check the incoming gas supply to be sure all manual valves are open and flexible gas hose is properly connected. If gas is present, and the valve is energized, but there is no gas pressure at the burner manifold, replace the gas valve.	X	
	Flame sensing circuit	<p>Make sure L1 and L2 at the ignition module are not reversed; this would prevent flame detection.</p> <p>The ignition control requires a minimum of 0.8 DC microamps to prove flame. To check flame sensing operation, connect a digital multimeter (capable of measuring DC microamps) in series between the "ground" terminal on the ignition module and the ground lead. NOTE: This is a current measurement, and the meter must be connected in series. If these readings are not achieved, replace hot surface igniter. NOTE: The DC microamp test must be conducted with the oven in low flame (bypass) operation. Set the temperature control to the lowest setting</p>	X	
Low flame is ON, but no main/high flame present	IO board	Check for 24VDC input on black (-V) and red (+V) wires	X	
		Check wires are connected properly in the IO board SSR connector (J501). Check for 120VAC between PIN 2 (Wire #2) and neutral. If no voltage is present at wire #2, trace the wiring back to the drives.		
		Check for 120VAC between PIN 3 (Wire #3) and neutral when there is a call for heat. If no voltage is present at wire #3 when there is a call for heat, replace the IO board.		
	Defective thermocouple/ thermocouple wiring	Inspect IO board for damage and replace if needed	X	
Temperature Regulation Valve	Refer to the problem: Unable to reach or maintain temperature, and the cause: Defective thermocouple/ thermocouple wiring	X		
	Check for 120VAC supplied to the temperature regulation valve, when there is a call for heat.	X		

Problem	Cause	Correction	APPLICABLE FOR GAS UNITS	APPLICABLE FOR ELECTRIC UNITS
Low flame is ON, but no main/high flame present cont.	Temperature Regulation Valve cont.	If voltage is present, listen/or feel if the valve opens and closes. To feel the operation of the valve put an insulated screwdriver on the body of the valve. If the valve is opening and closing the vibration will be felt.	X	
		Check for opens or shorts in the operating coil		
		Check for proper gas pressure at the oven manifold		
		Replace temperature regulation valve as needed		
Uneven heating	Fingers incorrectly installed	Make sure fingers are installed correctly	X	X
	Door not closed or does not seal properly	Verify door is closed correctly. Check latches and hinges. Check if there is excessive gap between door and cavity	X	X
	Air return bracket missing or unseated	Verify if air return bracket is present and installed correctly	X	X
	Incorrect upper and/or lower fan speed	Make sure both upper and lower blower motors are operating correctly	X	X
Overcooked or undercooked product	Incorrect temperature setting	Make sure oven temperature calibration is correct	X	X
	Incorrect upper and/or lower fan speed	Make sure both upper and lower blower motors are operating correctly	X	X
	Incorrect conveyor belt speed	Make sure the conveyor belt is properly calibrated	X	X
	Defective thermocouple/ thermocouple wiring	Refer to the problem: Unable to reach or maintain temperature, and the cause: Defective thermocouple/ thermocouple wiring	X	X
No component box cooling	DC power supply	Check for steady 120VAC input between white (N) and black (L) wires, at the N and L power supply terminals	X	
		Check for steady 208-240VAC input between blue (N) and black (L) wires, at the N and L power supply terminals		X
		Check for steady 24VDC output between red (+V) and black (-V) wires, at the +V and -V power supply terminals	X	X
		Check for physical damage on the power supply circuit board. Replace if needed	X	X
	Fuse / fuse holder	Replace DC fuse located inside the control box (close to the power supply)	X	X
		Inspect fuse holder for cracks and replace if needed		
	Power switch	Check continuity through switch. Check for incoming 24VDC on terminals. Replace if needed.	X	X
	Cooling fan(s)	Check for 24VDC to fan(s)	X	X
		Check fans for opens, shorts or grounds		
		WITH OVEN UNPLUGGED: Turn fan blade to check for locked rotor		

Problem	Cause	Correction	APPLICABLE FOR GAS UNITS	APPLICABLE FOR ELECTRIC UNITS
No automatic control box cooling	Cooling fan thermostat	Check the cooling fan thermostat (thermostat closes at 120°F and opens at 100°F). With the cooling fan thermostat preheated, check for continuity. If switch is open, replace it.	X	X
		With the power switch OFF, check for 24VDC between the thermostat terminal (where wire #36 is connected) and -V (power supply). If no voltage is present, trace wiring back to fuse F2.		
	Cooling fan(s)	With the power switch ON, check for 24VDC to fan(s). If voltage is not present, trace wiring back to the power switch. Check fans for opens, shorts or grounds WITH OVEN UNPLUGGED: Turn fan blade to check for locked rotor	X	X

User Interface Alarm Messages

USER INTERFACE (TOUCHSCREEN) ALARM MESSAGE	CAUSE	CORRECTION	MOTOR DRIVE STATUS LED	APPLICABLE FOR GAS UNITS	APPLICABLE FOR ELECTRIC UNITS
"Err" in the set point temperature field (manual or recipe mode)	One or two thermocouples disconnected/damaged	Verify both thermocouples are connected to the IO Board	NA	X	X
"TC#1 and TC#2 Error"		Inspect the thermocouple wires and connectors to verify wires are not cut or disconnected Automatic recovery when fault condition is removed			
"TC#1 Error"					
"TC#2 Error "					
"Upper Blower SC: 0x01" --OR-- "Lower Blower SC: 0x01"	Upper or lower motor phase to phase short circuit	Turn OFF the unit using the power switch, turn the unit back ON after 30 seconds. Disconnect unit from main power input (unplug unit). Check for motor phase to phase shorts. Inspect wires. Replace motor drive	Red 1 Sec ON/OFF	X	X
"Upper Blower OC: 0x02 (Warning)" --OR-- "Lower Blower OC: 0x02 (Warning)"	Upper or lower motor current overload (120% of full load) *The motor speed is reduced to maintain the current limit	Check door is closed correctly. Check latches and hinges	Red ON continuously	X	X
		Make sure fingers are installed correctly			
		Turn OFF the unit using the power switch, turn the unit back ON after 30 seconds.			
		If motor is making excessive noise or vibrating excessively, replace motor assembly. Replace motor drive			

USER INTERFACE (TOUCHSCREEN) ALARM MESSAGE	CAUSE	CORRECTION	MOTOR DRIVE STATUS LED	APPLICABLE FOR GAS UNITS	APPLICABLE FOR ELECTRIC UNITS
"Upper Blower OC: 0x03" --OR-- "Lower Blower OC: 0x03"	Upper or lower motor current overload (drive/motor in overload for greater than 6 seconds)	<p>Check door is closed correctly. Check latches and hinges</p> <p>Make sure fingers are installed correctly</p> <p>Turn OFF the unit using the power switch, turn the unit back ON after 30 seconds.</p> <p>If motor is making excessive noise or vibrating excessively, replace motor assembly.</p> <p>WITH OVEN UNPLUGGED: Turn fan blade to check for locked rotor.</p> <p>Replace motor drive</p>	Red 0.25 Sec ON/OFF	X	X
"Upper Blower UV: 0x04" --OR-- "Lower Blower UV: 0x04"	Upper or lower drive undervoltage (line voltage less than 75VAC)	<p>Ensure input voltage is within specifications</p> <p>Verify the 115VAC jumper is placed in the drive</p> <p>Automatic recovery when the line voltage is re-established</p>	Red/Yellow 0.25 Sec ON/OFF	X	
	Upper or lower drive undervoltage (line voltage less than 151VAC)	<p>Ensure input voltage is within specifications</p> <p>Automatic recovery when the line voltage is greater than 174VAC</p>			X
"Upper Blower OV: 0x06" --OR-- "Lower Blower OV: 0x06 "	Upper or lower drive overvoltage (line voltage greater than 141VAC)	<p>Ensure input voltage is within specifications</p> <p>Automatic recovery when the line voltage is re-established</p>	Red/Yellow 1 Sec ON/OFF	X	
	Upper or lower drive overvoltage (line voltage greater than 283VAC)	<p>Ensure input voltage is within specifications</p> <p>Verify the 115VAC jumper is NOT placed in the drive</p> <p>Automatic recovery when the line voltage is less than 265VAC</p>			X
"Upper Blower Communication Error" --OR-- "Lower Blower Communication Error"	Modbus communication error	<p>Make sure all communication cables are plugged in</p> <p>Unplug and plug the communication cables back in</p> <p>Verify cables are not cut or damaged</p> <p>Inspect drive's RJ45 jacks. Verify jacks are not damaged, dirty or loose</p> <p>Replace communication cables</p> <p>Automatic recovery when fault condition is removed</p>	Green/Red 1 Sec ON/OFF	X	X

USER INTERFACE (TOUCHSCREEN) ALARM MESSAGE	CAUSE	CORRECTION	MOTOR DRIVE STATUS LED	APPLICABLE FOR GAS UNITS	APPLICABLE FOR ELECTRIC UNITS
"Upper Blower Motor Phase loss (0 RPM)" --OR-- "Lower Blower Motor Phase loss (0 RPM)"	Upper or lower motor phase disconnected	Check motor is connected to drive Inspect motor wires and connectors for damage Check for opens, shorts or grounds Turn OFF the unit using the power switch, turn the unit back ON after 30 seconds. Replace motor drive	Yellow Blinking rapidly	X	X
"Upper Blower Motor Failure (Low RPM)" --OR-- "Lower Blower Motor Failure (Low RPM)"	Upper or lower motor not moving	Turn OFF the unit using the power switch, turn the unit back ON after 30 seconds. Access the UI Settings Screen. Enter the service password. Select the Calibration screen and then select the Fan Test screen. Turn the motor OFF and then ON. Verify RPM values are not "0". Verify if there are other alarm messages. Verify the motor drives status led code, as a Blower Motor Failure Alarm is usually linked to a drive failure. Check for opens, shorts or grounds Replace motor drive	NA	X	X
"Thermal Error"	High temperature limit tripped in component compartment or cooking cavity, or combustion blower fan failure, resulting in no heat condition	Turn the power switch OFF and wait for the machine to cooldown (this may take upwards of one hour). Reset the high limit capillary thermostat located on the machine rear panel. Inspect the high limits (oven and component) and combustion blower fan connections for damage. Turn the power switch ON. Check the combustion blower motor is ON. Check that both main blower motors are ON. Check if cooling fans are working properly. If the condition persists, replace the oven high limit capillary or component high limits. Check the general issues troubleshooting section for more information.	NA	X	

USER INTERFACE (TOUCHSCREEN) ALARM MESSAGE	CAUSE	CORRECTION	MOTOR DRIVE STATUS LED	APPLICABLE FOR GAS UNITS	APPLICABLE FOR ELECTRIC UNITS
"Thermal Error" cont.	High temperature limit tripped in component compartment or cooking cavity, or the circuit breaker tripped, resulting in no heat condition	Turn the power switch OFF and wait for the machine to cooldown (this may take upwards of one hour). Reset the high limit capillary thermostat located on the machine rear panel. Reset circuit breaker at the back of the oven. Inspect the high limits (oven and component) and circuit breaker connections for damage. Turn the power switch ON. Check that both main blower motors are ON. Check if cooling fans are working properly. If the condition persists, replace the oven high limit capillary or component high limits. Check the general issues troubleshooting section for more information.	NA		X
"IO Software Inapplicable (Minimum 130)"	Incorrect IO software revision installed	Turn OFF the unit using the power switch, turn the unit back ON after 30 seconds.	NA	X	X
		If the condition persists, replace the IO Board with one programmed with the correct software revision			

Section 6 Operation and Programming



Introduction

This section will guide you on the operation of the easyTouch controls on your new Lincoln Aperion Impinger® oven.

Startup

1. Ensure that your oven is connected to an electrical supply. Move the On/Off switch to the ON position
 - The display screen will energize and show the Lincoln oven model number, current software version and serial number (Figure 1). This screen will transition after a few seconds to the Home Screen.



Figure 1

NOTE: Electric oven will not start pre-heating until you have selected a recipe. Gas Ovens will begin heating and circulating air after powering on.

2. The **Home screen** displays 4 buttons: **Press & Go**, which takes you to the Recipes screen; **Manual mode**; the **Settings** screen; and the **Diagnostics** button, which provides basic information about your oven. (Figure 2)

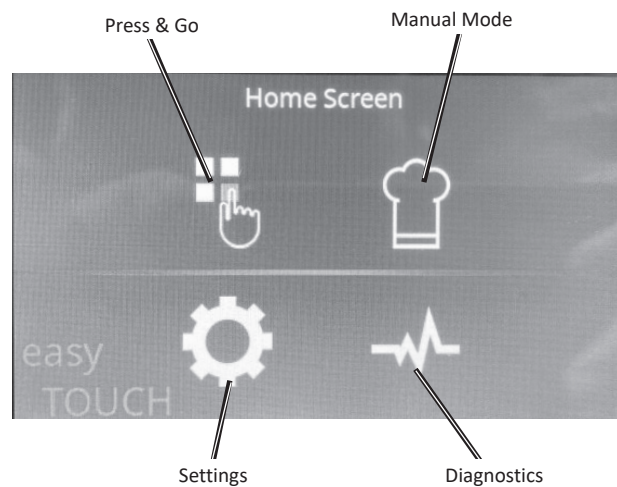


Figure 2

RECIPE SELECTION (PRESS & GO BUTTON)

1. Touch the Press & Go button to display the 20 pre-set recipes. Press any of the numbered buttons or images to select the recipe. (Figure 3 and Figure 4)
 - A. The display screen will change to show the settings for the recipe selected.

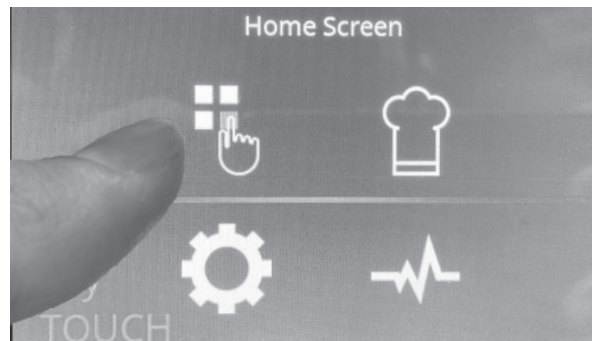


Figure 3

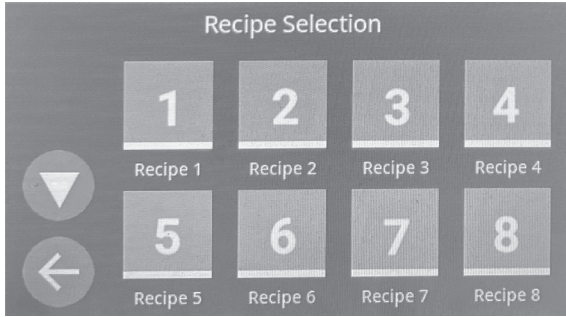


Figure 4

- The oven is now in pre-heat mode (Figure 5) and the oven heaters will start-up. The temperature settings appear on the screen. You will see the temperature of the oven and the temperature increasing up to the set-point. **The conveyor does not move in pre-heat mode.**



Figure 5

When the oven reaches the set-point temperature, the conveyor belt will start to move. The display will show the selected set-point temperature, fan speeds, and cook time (Figure 6). If the oven has a split belt configuration, the display will show the selected set-point temperature, fan speeds and cook time for both belts (Figure 6a).

- Oven Soak – allow the oven cavity to soak for an additional 5-10 minutes before loading food.
- Load Food – The oven is now ready for cooking. Please use the proper equipment to load and unload food from the conveyor. The conveyor will be hot to the touch. Pans or trays exiting the oven will be VERY HOT and are a burn hazard. Please use an oven mitt, pan gripper or other utensil to remove.



Figure 6



Figure 6a

ECO MODE

Eco mode allows the operator to save energy by stopping the conveyor belt and reducing fan speed, while maintaining oven temperature. Immediate cooking after disengaging ECO mode is possible.

- Press the Leaf button on upper left side of the Recipe - Ready screen (Figure 7). The screen will change to Eco Mode (see Figure 8). The conveyor will stop moving while the temperature in the cavity should remain unchanged.
- To re-start the conveyor, press the X button on the Eco Mode screen and the Recipe screen will re-appear.



Figure 7



Figure 8

MANUAL MODE

Manual mode allows the operator to change the temperature, upper and lower fan speeds, and cook time to revise or create a new recipe.

CHANGING TEMPERATURE, COOK TIME (BELT SPEED), AND FAN SPEED

1. Press the Chef's Hat or Manual mode button on the Home screen. (Figure 9 and Figure 10)

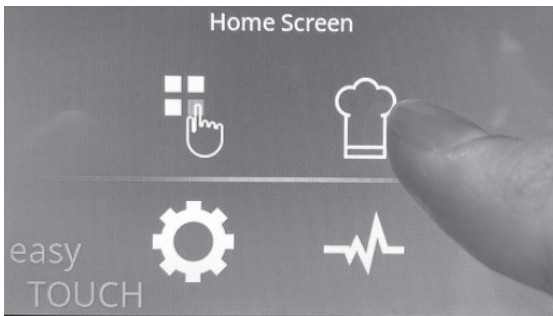


Figure 9



Figure 10

2. **Set Temperature:** Press the temperature value to change temperature. Touch the numbers to correspond to the temperature required. Press 2-5-0 for 250 degrees and then touch the check mark to save the new temperature or X to return to the original setting. (Figure 11)



Figure 11

3. **Set Cook Time:** Press the cook time value to change cook time. Touch the numbers to correspond to the cook time required. Press 0-2-0-0 for 2 minutes and then touch the check mark to save the new cook time or X to return to the original setting. (Figure 12 and Figure 13)

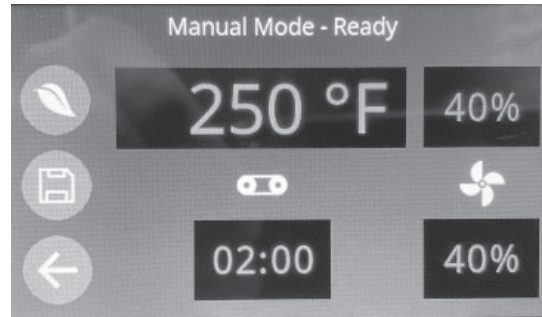


Figure 12



Figure 13

4. **Set Fan Speeds:** Press the top fan value to set the upper fan speed. Press 4-0 for 40% fan speed and then touch the check mark to save the new upper fan speed or X to return to the original setting. Press the lower fan value to set the lower fan speed. Press 4-0 for 40% fan speed and then touch the check mark to save the new lower fan speed or X to return to the original setting. (Figure 14 and Figure 15)

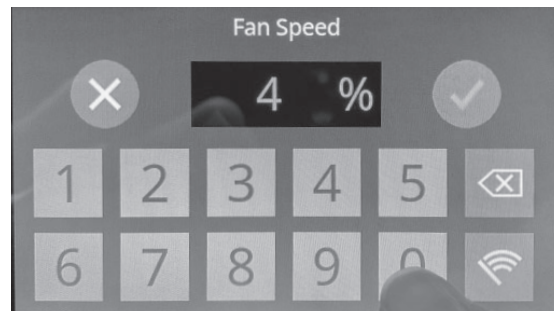


Figure 14

5. You can return to the Home screen at any time by pressing the Back button or arrow on the lower left of the screen. (Figure 15)


6. **Save Recipe:** Press the Save icon  in the Manual Mode Screen (Figure 15). You will be asked to enter a password (Figure 16). The password is 4-5-8-7-5-6. The screen will transition to a numbered screen (Figure 17). Select the Recipe you would like to update and press the check mark. The icon and border color can be changed by selecting the Change Icon and/or Change Color buttons (). Press the check mark to save the recipe. The screen will transition to Figure 19.



Figure 15

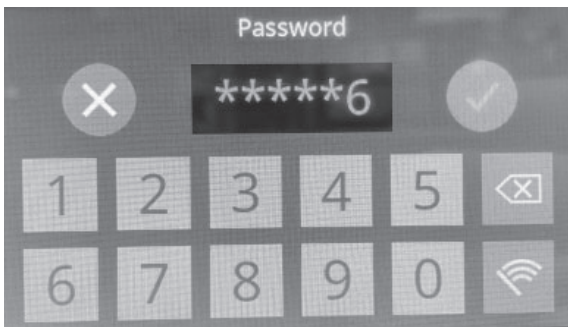


Figure 16



Figure 17



Figure 18

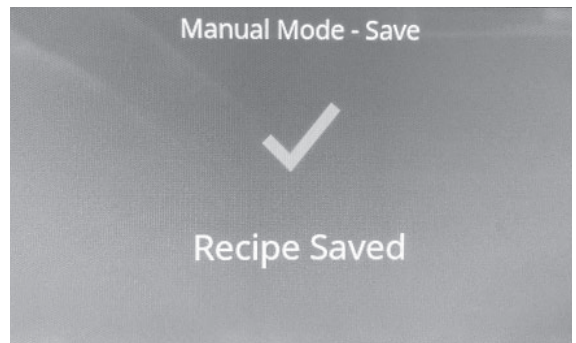


Figure 19

SETTINGS MODE 

Settings mode allows the operator to change the oven settings such as Temperature unit of measure or Belt direction. The factory temperature unit of measure is Fahrenheit.

1. Press the Cog or Settings mode button on the Home screen. (Figure 20 and Figure 21)

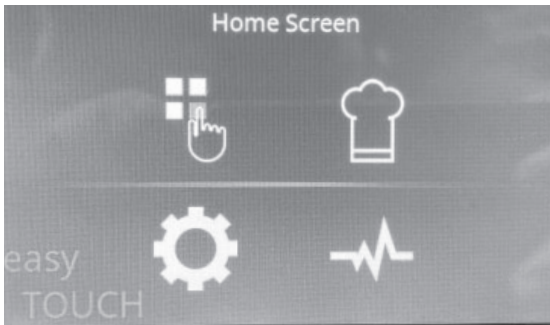


Figure 20

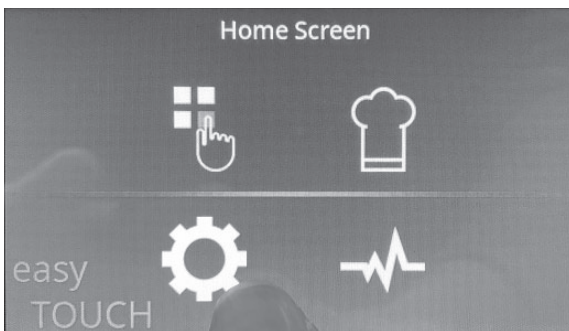


Figure 21

2. Enter the password by touching the numbers on the password screen. The password is: 4-5-8-7-5-6. This password is pre-set at the factory and is not changeable. (Figure 22)

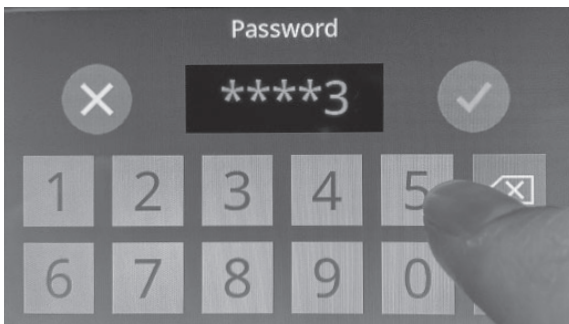


Figure 22

3. Temperature Unit of Measure - Touch the white circle in the oval button on the Settings display that shows the temperature measure. The Fahrenheit or Celsius symbol will change to correspond to the desired temperature unit of measure. (Figure 23)

4. Belt Direction - Touch the white circle in the oval button on the Settings display that looks like a mini conveyor. The mini conveyor will change to correspond to the desired belt direction. The new belt direction is now set.

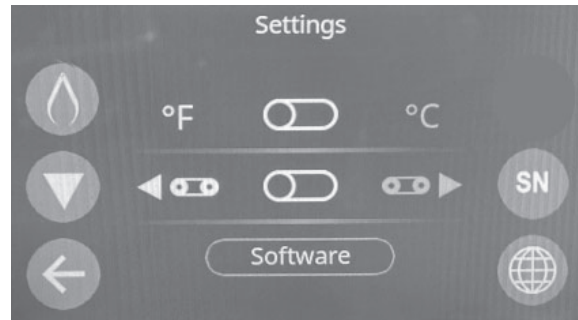


Figure 23

5. Software Update - Press the "Software" button highlighted below in (Figure 24) to update the UI to the newest version.

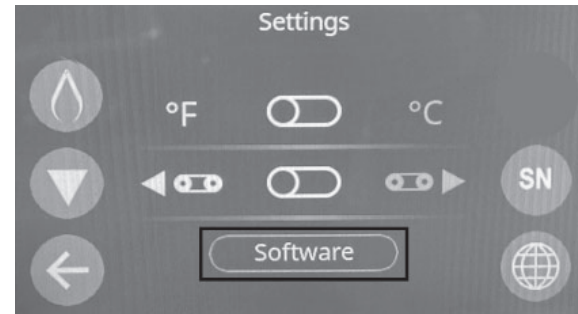


Figure 24

To perform an update, a USB drive containing the update must be plugged into the back of the touch screen. If a USB drive is not plugged in, or if the drive does not contain the files for a software update, the screen below will display once the "Software" button is pressed. (Figure 25).

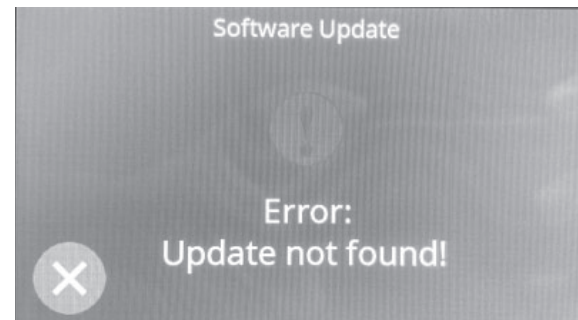



Figure 25

Once a USB drive with the correct files is plugged in and the “Software” button is pressed, the following screen will appear. To proceed with the update, press the “checkmark” button. To cancel the update, press the “X” button. (Figure 26).



Figure 26

- 7. Display Language - From the main settings screen, press the  highlighted below in (Figure 29) to change the display language in the UI. (Figure 30)

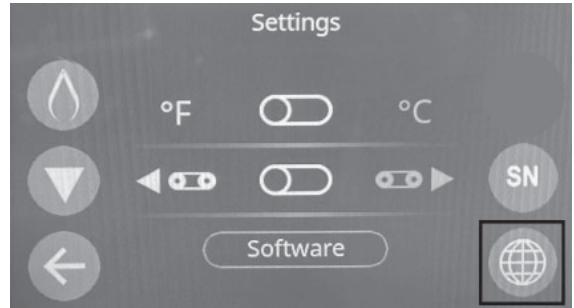


Figure 29

- 6. Serial Number – From the main settings screen, press the “SN” button highlighted below in (Figure 27) to change the serial number.

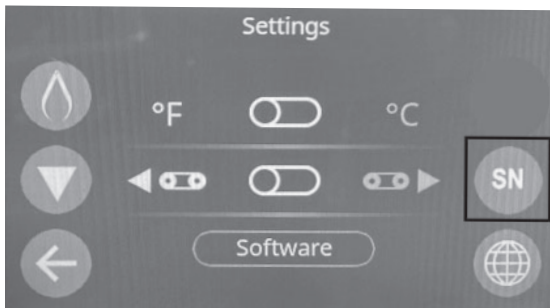



Figure 27

Enter the serial number by touching the numbered buttons

on the screen. Press the  button to change the serial number or “X” to return to the previous setting.

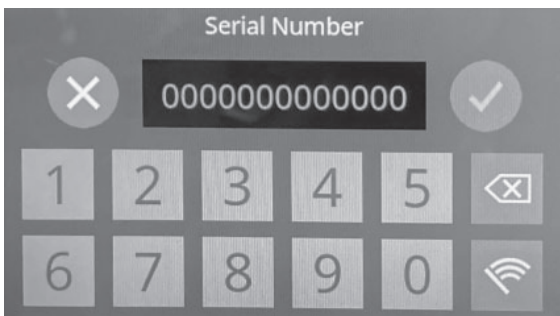


Figure 28

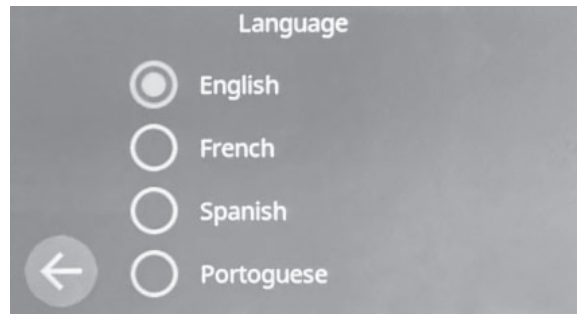


Figure 30

- 8. Model Selection – From the settings main menu, Press the “▼” as highlighted in (Figure 31) below.

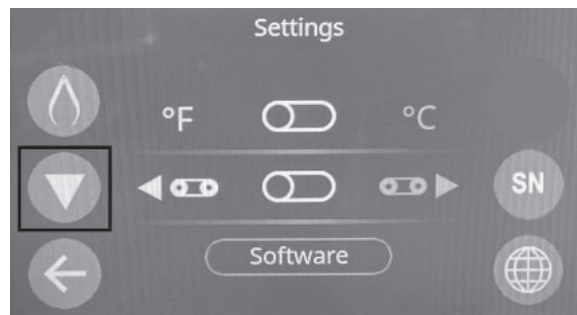


Figure 31

The model setup screen is used to select which Lincoln oven the UI should be configured for. This should be set to “2424” as shown below. Beside the model selected is the split belt toggle. This should be set to “x2” if the oven is in a split belt configuration. **This should be configured immediately on the first startup and after any UI updates. (Figure 32)**

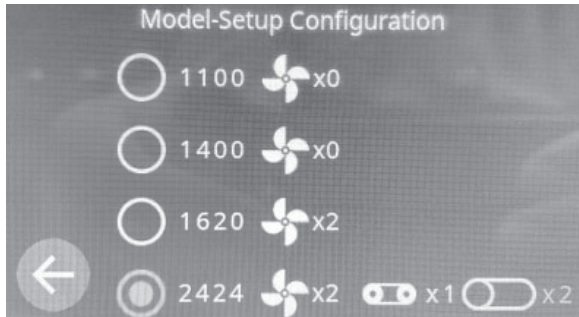


Figure 32

- Temperature Calibration – From the settings main menu click the temperature calibration button, highlighted below in (Figure 33).

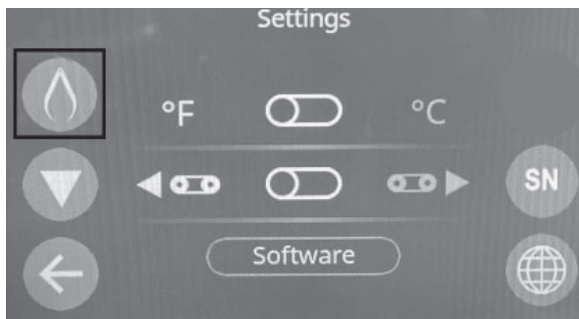


Figure 33

In the temperature calibration screen the upper and lower fan speed are set to 100% and the set point temperature to 500°F. Once the oven has reached the set point temperature, wait 5-10 minutes to allow the temperature to stabilize.

Measure the temperature inside the cavity with a probe and a thermometer. Place the probe 10" in from either side, centered from front to back. Use the “▲” and “▼” buttons to match the temperature displayed on the screen to the temperature shown on the thermometer. (Figure 34).

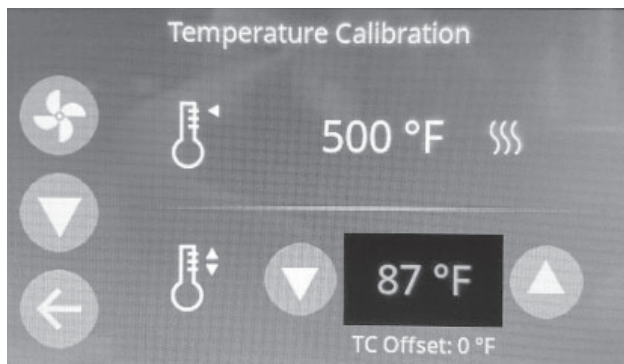


Figure 34

- Fan Test – From the temperature calibration screen,

press the fan test button, highlighted in (Figure 35) below.

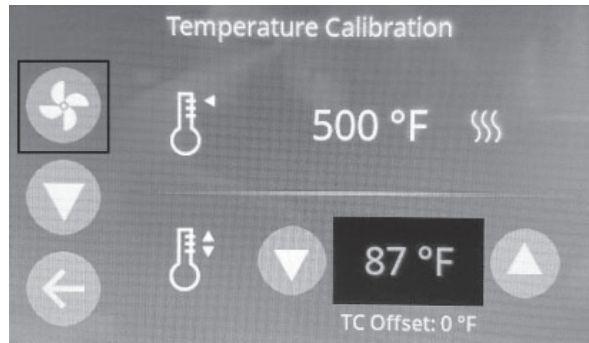


Figure 35

The fan test screen sets the upper and lower blower fan speed to 50%. In (Figure 36) as shown below, the upper blower fan is turned off and the lower blower fan is turned on. The RPM, Current, Voltage, and Status code should be like the upper blower values when turned off and like the lower blower values when turned on.

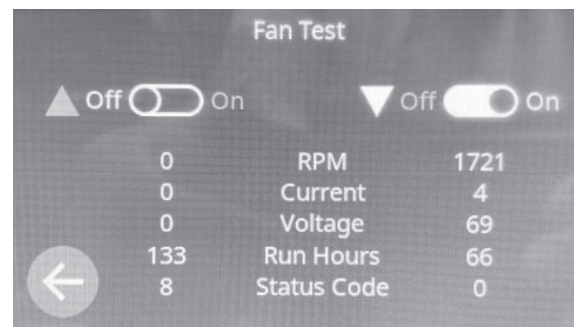


Figure 36

- Conveyor Belt Calibration - From the temperature calibration screen press the “▼” button as highlighted below in (Figure 37).

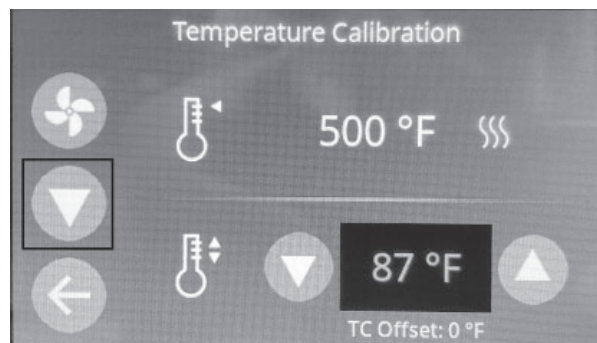


Figure 37

In manual mode, set the conveyor belt speed to 05:00. Measure how long it takes for the belt to travel from one side of the cavity to the other. Use the “▼” and “▲” to set the calibration factor according to the table below and reference (Figure 38).

Measured Time	Calibration Value
4:30	0.900
4:35	0.915
4:40	0.935
4:45	0.950
4:50	0.970
4:55	0.985
5:00	1.000
5:05	1.015
5:10	1.030
5:15	1.050
5:20	1.065
5:25	1.085
5:30	1.100



Figure 38

12. Conveyor Length Setting – From the conveyor belt calibration screen, press the “▼” as highlighted below in (Figure 39).



Figure 39

The screen as shown below in (Figure 40), is used to set the exterior cavity length. The exterior cavity length of the 2424 is 26” so this value should be set to 26”.

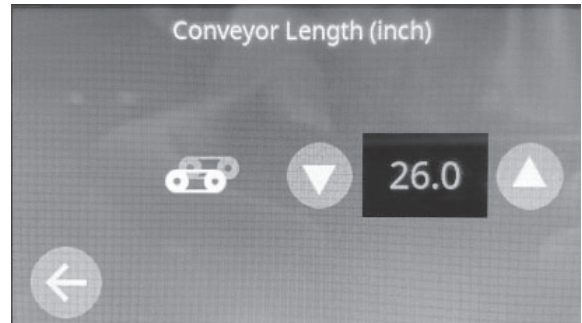


Figure 40

13. Gear Ratio – From the conveyor length screen, press the “▼” as highlighted below in (Figure 41).



Figure 41

This setting corresponds to the gear ratio between the stepper motor and the conveyor belt. For the 2424, this should be set to 1.000. This value can be changed using the “▲” and “▼” buttons.



Figure 42

DIAGNOSTICS MODE 

Diagnostics mode allows the operator to view basic information about your oven including software revisions and temperature offsets.

1. Press the Diagnostics button on the Home screen to access this mode. (Figure 24)

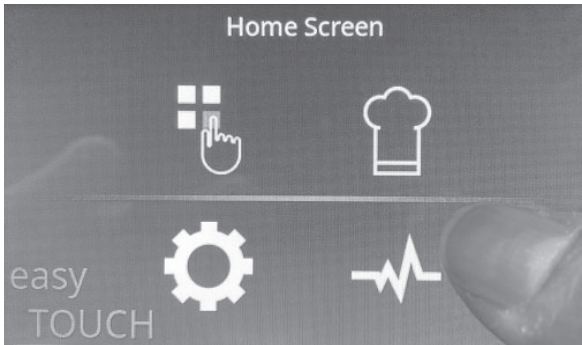


Figure 43

2. You will be prompted to enter a password (Figure 44) The password is 4-5-8-7-5-6. After entering the password, you will see the following screen (Figure 45).

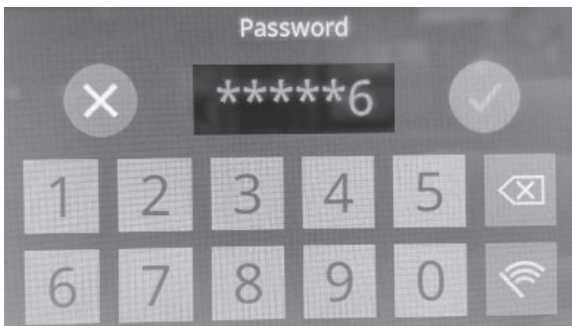


Figure 44

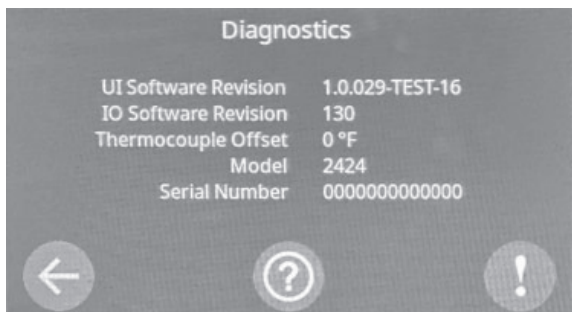



Figure 45

3. Press  button to view the appliance error history. This screen (Figure 46) will show the last 64 errors that have occurred on the oven.

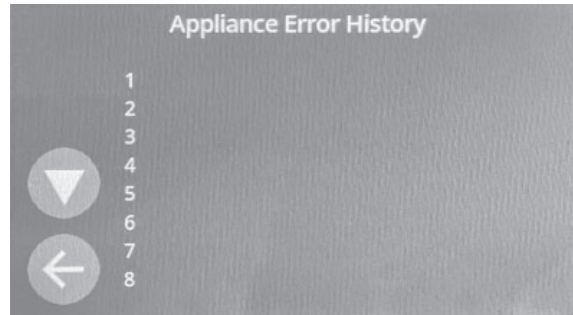



Figure 46

4. Press  button to view the error descriptions. This screen (Figure 47) will display an explanation for all possible errors on the oven and show some basic troubleshooting steps in case any of the errors are encountered during use.

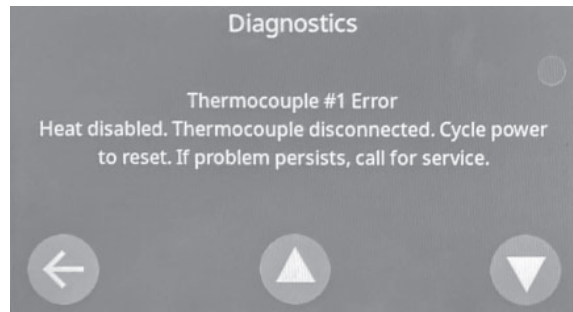


Figure 47

Oven Shut Down

1. To shut down your oven, press the Back Button to return to the Home screen. The conveyor should stop moving; however, the fans will continue to run if the oven is hot. (Figure 26)

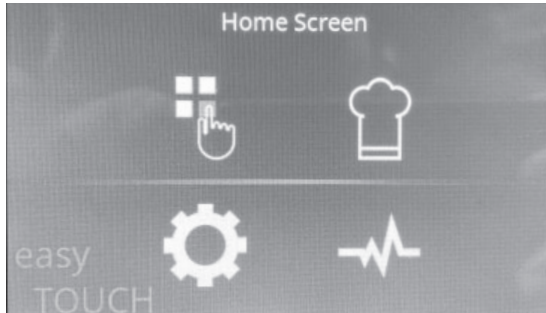


Figure 48

2. Turn OFF the On/Off switch. (Figure 27)
Your oven is now turned off. Please keep the oven connected to an electrical source to enable the cooling fans to continue to operate to cool down the oven. The fans could run for up to an hour after turning off the oven to cool the oven and protect critical components.



Figure 49

Section 7

Removal, Installation & Adjustments

Solid State Relay - Replacement

1. Shut off power at main breaker.
2. Unplug power cord from power supply.
3. Remove conveyor assembly.
4. Remove front control box cover.
5. Mark all wire leads for reassembly.
6. Remove plastic cover on solid state relay and disconnect all leads on solid state relay.
7. Remove two screws that hold the solid-state relay in place. Remove solid-state relay.
8. Remove protective tape from bottom heat sink of new solid-state relay.
9. Reassemble in reverse order.
10. Check oven for proper operation.

Blower Motor Driver – Replacement

1. Shut off power at main breaker.
2. Unplug power cord from power supply.
3. Remove conveyor assembly.
4. Remove front and rear control box covers.
5. Mark all wire leads for reassembly and disconnect all wire leads to motor driver.
6. Remove four nuts that hold the motor driver in place. Remove motor driver.
7. For upper fan motor in right control tower, inspect DIP switch on new motor driver and be sure that only DIP switch 2 is in the (ON) position. DIP switches 1, 3 and 4 will be set to (OFF).
8. For lower fan motor in left control tower, inspect DIP switch on new motor driver and be sure that DIP switches 1 and 2 are in the (ON) position. DIP switches 3 and 4 will be set to (OFF).
9. For upper and lower fan motors in right and left control tower, inspect 115VAC jumper blades on new motor drivers, and make sure the jumper is installed in the drivers used in gas domestic units (120VAC), and that the jumper is NOT installed in the drivers used in electric units (208-240VAC)
10. Reassemble in reverse order.
11. Check oven for proper operation.

I/O Board – Replacement

1. Shut off power at main breaker.
2. Unplug power cord from power supply.
3. Remove conveyor assembly.
4. Remove front control box cover.
5. Mark all wire leads for reassembly and disconnect all wire leads to I/O board.
6. Remove I/O board from the six snap in connectors.
7. Reassemble in reverse order.
8. Check oven for proper operation.

24 Volt Power Supply – Replacement

1. Shut off power at main breaker.
2. Unplug power cord from power supply.
3. Remove conveyor assembly.
4. Remove front control box cover.
5. Mark all wire leads for reassembly and disconnect wire leads to power supply.
6. Remove two screws that hold power supply in place. Remove power supply.
7. Reassemble in reverse order.
8. Check oven for proper operation.

Conveyor Motor Driver - Replacement

Shut off power at main breaker and shut off gas:

1. Remove conveyor assembly.
2. Remove control box cover and front panel.
3. Disconnect all wires and mark for reassembly.
4. Remove two (2) screws that hold conveyor motor driver in place. Remove conveyor motor driver.
5. Reassemble in reverse order and check system operation.

Conveyor Motor Driver - LED Flash Code

In the event of a drive fault or alarm the green light will flash one or two times followed by a series of red flashes the pattern will repeat until the alarm is cleared.

Conveyor Motor Driver - Dip Switches Configuration

The optional stepper controller will have several dip switches on it. When replacing this controller makes sure the following switches are in the proper sequence.

Switch 1, 2, 5, 7, and 8 are off.
 Switch 3, 4, and 6 are on.
 The rotary switch is set to 9.

When switch eight is moved to the on position the drive will automatically rotate the motor back and forth two turns in each direction this feature can be used to confirm the motor is correctly wired, selected and operational.

LED Flash Code	Description
One solid green light	No alarm, motor disabled
Green light flashing	No alarm, motor enabled.
Red light flashing	Configuration or memory error; contact the factory for assistance.
One green light followed by 4 red flashes	Power supply voltage too high fault.
One green light followed by 5 red flashes	Overcurrent / short circuit fault.
One green light followed by 6 red flashes	Open motor winding fault.
Two green flashes followed by 3 red flashes	Internal voltage out of range fault.
Two green flashes followed by 4 red flashes	Power supply voltage too low alarm.

Dual Voltage Control Board – Replacement

1. Shut off power at main breaker.
2. Unplug power cord from power supply.
3. Remove conveyor assembly.
4. Remove front control box cover.
5. Mark all wire leads for reassembly and disconnect wire leads to the dual voltage control board.
6. Remove dual voltage control board from four snap in connectors.
7. Check position of DIP switches: switch 1 “ON” and switches 2 and 3 “OFF.
8. Reassemble in reverse order.
9. Check oven for proper operation.

Cooling Fan – Replacement

1. Shut off power at main breaker.
2. Unplug power cord from power supply.
3. Remove conveyor assembly, if needed.
4. Remove appropriate control box cover
5. Mark all wire leads for reassembly and disconnect wire leads to the cooling fan.
6. Note: direction of old fan before removing.
7. Remove four screws that hold cooling fan in place. Remove cooling fan.
8. Reassemble in reverse order.
9. Check oven for proper operation.

Heating Element – Replacement

1. Shut off power at main breaker.
2. Unplug power cord from power supply.
3. Remove sixteen screws at rear panel and remove rear panel.
4. Remove twenty-seven screws to heating element assembly. Remove element assembly.
5. Mark all wire leads for reassembly and disconnect wire leads.
6. Remove six screws that hold heating element in place. Remove heating element.
7. Reassemble in reverse order.
8. Check oven for proper operation.

Fan Motor – Replacement

1. Shut off power at main breaker.
2. Unplug power cord from power supply.
3. Remove appropriate control tower cover.
4. Mark all wire leads for reassembly and disconnect wire leads.
5. Remove four screws that hold fan motor in place. Remove fan motor.
6. Reassemble in reverse order. (For fan in left control tower, be sure that the open end of fan motor assembly is facing upward upon installation. For fan in right control tower, open end of fan motor assembly will face downward.)
7. Check oven for proper operation.

Contactor – Replacement

1. Shut off power at main breaker.
2. Unplug power cord from power supply.
3. Remove right control tower cover.
4. Remove five screws that hold service panel in place.
5. Mark all wire leads for reassembly and disconnect wire leads.
6. Remove contactor from DIN rail.
7. Reassemble in reverse order.
8. Check oven for proper operation.

Circuit Breaker – Replacement

1. Shut off power at main breaker.
2. Unplug power cord from power supply.
3. Remove right control tower cover.
4. Remove five screws that hold service panel in place.
5. Mark all wire leads for reassembly and disconnect wire leads.
6. Remove four screws that hold circuit breaker in place. Remove circuit breaker.
7. Reassemble in reverse order.
8. Check oven for proper operation.

Conveyor Motor – Replacement

1. Shut off power at main breaker.
2. Unplug power cord from power supply.
3. Remove conveyor assembly.
4. Remove right control tower cover.
5. Remove coupling from motor.
6. Mark all wire leads for reassembly and disconnect wire leads.
7. Remove four screws that hold conveyor motor in place. Remove conveyor motor.
8. Reassemble in reverse order.
9. Install coupling on to new motor.
10. Check oven for proper operation.

Touchscreen – Replacement

1. Shut off power at main breaker.
2. Unplug power cord from power supply.
3. Remove conveyor assembly.
4. Remove front control box cover.
5. Mark all wire leads for reassembly and disconnect wire leads.
6. Remove six screws that hold touchscreen in place. Remove touchscreen.
7. Reassembly in reverse order.
8. Check oven for proper operation.

On/Off Switch – Replacement

1. Shut off power at main breaker.
2. Unplug power cord from power supply.
3. Remove conveyor assembly.
4. Remove front control box cover.
5. Mark all wire leads for reassembly and disconnect wire leads.
6. Depress spring clips on top and bottom of on/off switch. Remove on/off switch.
7. Reassemble in reverse order.
8. Check oven for proper operation.

NOTE: Make sure switch housing is fully seated in control box housing.

Fuse Holder - Replacement

1. Shut off power at main breaker.
2. Unplug power cord from power supply.
3. Remove the front control tower cover.
4. Mark all wire leads for reassembly and disconnect wire leads.
5. Remove nut on backside of desired fuse holder. Remove fuse holder.
6. Reassembly in reverse order.
7. Check oven for proper operation.

USB Socket – Replacement

1. Shut off power at main breaker.
2. Unplug power cord from power supply.
3. Remove right control tower cover.
4. Mark all wire leads for reassembly and disconnect wire leads.
5. Remove nut on backside of USB socket. Remove USB socket.
6. Reassemble in reverse order.
7. Check oven for proper operation.

Terminal Block – Replacement

1. Shut off power at main breaker.
2. Unplug power cord from power supply.
3. Remove right control tower cover.
4. Remove five screws that hold service panel in place.
5. Mark all leads for reassembly and disconnect wire leads.
6. Remove terminals from DIN rail, using a flat screwdriver.
7. Reassemble in reverse order.
8. Check oven for proper operation.

Alarm – Replacement

1. Shut off power at main breaker.
2. Unplug power cord from power supply.
3. Remove right control tower cover.
4. Remove five screws that hold service panel in place.
5. Mark all leads for reassembly and disconnect wire leads.
6. Remove nut on frontside of alarm. Remove alarm.
7. Reassemble in reverse order.
8. Check oven for proper operation.

Cooling Fan Thermostat – Replacement

1. Shut off power at main breaker.
2. Unplug power cord from power supply.
3. Remove right control tower cover.
4. Mark all leads for reassembly and disconnect wire leads.
5. Remove two screws that hold cooling fan thermostat in place. Remove thermostat.
6. Reassemble in reverse order.
7. Check oven for proper operation.

Cavity Hi-Limit – Replacement

1. Shut off power at main breaker.
2. Unplug power cord from power supply.
3. Remove sixteen screws at rear panel and remove rear panel.
4. Remove twenty-seven screws to heating element assembly. Remove element assembly.
5. Remove two screws to cavity hi-limit cover. Remove cover.
6. Remove the hi-limit bulb from the cover.
7. Push the hi-limit bulb into the right control tower.
8. Remove cover and nut on frontside of hi-limit body.
9. Reassemble in reverse order.
10. Check oven for proper operation.

Control Box Hi-Limit – Replacement

1. Shut off power at main breaker.
2. Unplug power cord from power supply.
3. Remove appropriate control tower cover.
4. Remove two screws that hold hi limit in place. Remove the hi limit.
5. Reassemble in reverse order.
6. Check oven for proper operation.

Thermocouple – Replacement

1. Shut off power at main breaker.
2. Unplug power cord from power supply.
3. For right side thermocouple, remove right side control tower cover and front cover.
4. For left side thermocouple, remove left side control tower cover.
5. Remove two screws that hold thermocouple in place. Remove the thermocouple.
6. Reassemble in reverse order.
7. Check oven for proper operation.

Conveyor Belt – Replacement

1. Remove conveyor assembly from oven cavity and place on flat work surface.
2. Remove four connecting links from conveyor belt. Remove conveyor belt.
3. Reassemble in reverse order.
4. Check conveyor for proper operation.

Conveyor Bearings – Replacement

1. Remove conveyor assembly from oven cavity and place on flat work surface.
2. Remove four connecting links from conveyor belt. Remove conveyor belt.
3. Remove two screws on each end of appropriate shaft. Remove shaft.
4. Remove bearings from shaft.
5. Reassemble in reverse order.
6. Check conveyor for proper operation.

Conveyor Shaft – Replacement

1. Remove conveyor assembly from oven cavity and place on flat work surface.
2. Remove four connecting links from conveyor belt. Remove conveyor belt.
3. Remove two screws on each end of appropriate shaft. Remove shaft.
4. Reassemble in reverse order.
5. Check conveyor for proper operation.

Conveyor Sprocket – Replacement

1. Remove conveyor assembly from oven cavity and place on flat work surface.
2. Remove four connecting links from conveyor belt. Remove conveyor belt.
3. Remove two screws on each end of appropriate shaft. Remove shaft.
4. Remove sprocket from shaft.
5. Reassemble in reverse order.
6. Check conveyor for proper operation.

4A DC Circuit Fuse - Replacement

1. Shut off power at main breaker.
2. Unplug power cord from power supply.
3. Remove conveyor assembly.
4. Remove front control box cover.
5. Remove fuse from fuse holder.
6. Replace fuse.
7. Reassemble in reverse order.
8. Check oven for proper operation.

Ignition Control - Replacement

1. Shut off power at main breaker.
2. Unplug power cord from power supply.
3. Remove left side control tower cover.
4. Disconnect wires from plug-in terminal strip, note wire numbers and location.
5. Remove four nuts that hold the ignition module in place.
6. Reassemble in reverse order. Check system operation.

Gas Valve - Replacement And Adjustment

1. Shut off power at main breaker and shut off gas.
2. Remove left side control tower cover.
3. Disconnect the gas piping from the back of the unit.
4. Disconnect wiring from the gas valve and mark for reassembly.
5. Remove the four (4) lock nuts from the manifold mounting bracket connecting to the Burner.
6. Loosen the bulkhead bolt and nut.
7. Remove the gas train assembly.
8. Valve Removal
 - a. For the bypass valve, remove the pilot tube and remove the valve from the manifold side.
 - b. For the pressure valve, remove the inlet pipe and elbow and remove the valve.
9. Reassemble in reverse order (check all pipe fittings for leaks).
10. Check and adjust manifold pressure. Remove pressure tap located in gas piping above the gas valve prior to the burner orifice and install manometer. Adjustment screw is located on the front of the valve. Remove plastic cap and adjust as needed: 3.5" W.C. for natural gas, 10" W.C. for LP.
11. Reassemble in reverse order and check for leaks around cover.

HSI - Replacement

Shut off power at main breaker and shut off gas:

1. Remove appropriate control box cover.
2. Disconnect wires from burner control then remove the gas valve and piping.
3. Remove three (3) mounting screws and remove burner venturi.
4. Remove mounting nut and remove hot surface igniter assembly.
5. Reassemble in reverse order and check system operation.
6. Check all gas line fittings for leaks.

Temperature Regulating Valve - Replacement

Shut off power at main breaker and shut off gas:

1. Remove appropriate control box cover.
2. Remove bypass tube from burner manifold.
3. Remove wiring from valve and mark for reassembly.
4. Remove four mounting nuts from burner manifold and disconnect pipe union.
5. Remove temperature regulation valve and piping from oven.
6. Reassemble in reverse order. Check all gas line fittings for leaks.

Burner Blower Motor - Replacement

Shut off power at main breaker:

1. Shut off power at main breaker.
2. Unplug power cord from power supply.
3. Remove left side control tower cover.
4. Unplug motor connector.
5. Remove three (3) screws from blower tube at burner housing.
6. Remove air shutter assembly from old motor for installation on new motor assembly.
7. Reassemble in reverse order and check system operation.

NOTE: Check air shutter at approximately $\frac{1}{2}$ open and adjust to get a blue flame with an occasional tip of yellow under high flame. A view port in the burner assembly should be used to observe flame.

Burner Transformer - Replacement

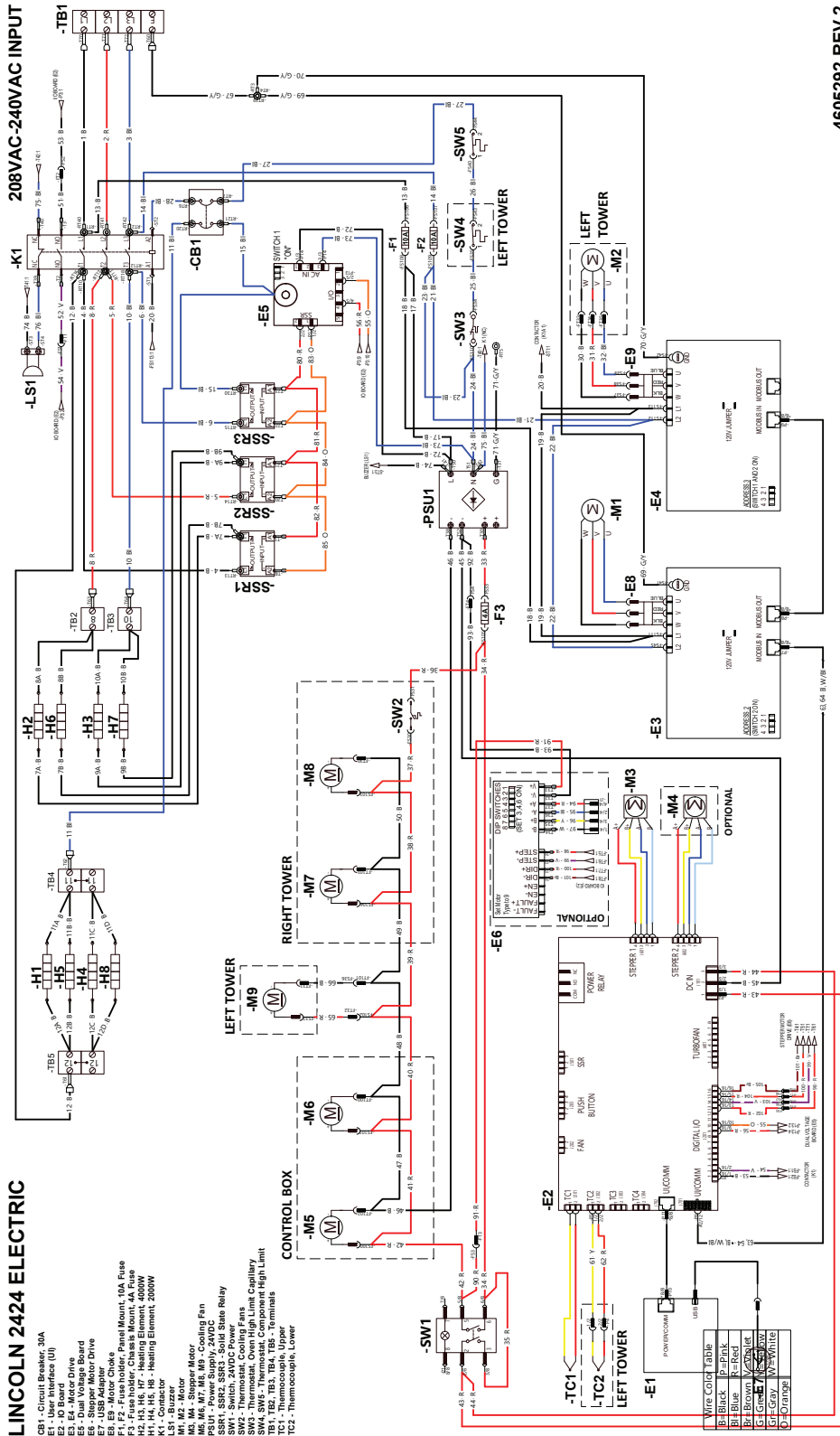
Shut off power at main breaker:

1. Remove appropriate control box cover.
2. Remove two (2) mounting screws from transformer base, wiring and mark for reassembly, and remove transformer.
3. Reassemble in reverse order and check system operation.

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Section 8 Diagrams

Wiring Schematics



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