

# INSTALLATION & OPERATING INSTRUCTIONS

for

## IMPINGER® LOW PROFILE CONVEYOR OVENS MODEL SERIES 1600 & 1600-000-A



TO BE SERVICED ONLY BY AUTHORIZED PERSONS



## IMPORTANT WARNING AND SAFETY INFORMATION

**FOR YOUR SAFETY, DO NOT STORE OR USE GASOLINE OR OTHER FLAMMABLE VAPORS OR LIQUIDS IN THE VICINITY OF THIS OR ANY OTHER APPLIANCE.**

**DO NOT SPRAY AEROSOLS IN THE VICINITY OF THIS APPLIANCE WHILE IT IS IN OPERATION.**

**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.**

- 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.
- Minimum clearances must be maintained from all walls and combustible materials. See "spacing instructions" for additional information.
- Keep the oven free and clear of combustible material.
- Adequate clearance for air openings to the combustion control chamber on both sides 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.

## 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 manufacturers 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 Page 8 for specific code references.
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 an **Authorized Service Technician** 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 and make certain connections are made to 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 an Authorized Service Technician or a Lincoln Foodservice Products, LLC Service Representative.**

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# IMPINGER® CONVEYOR OVENS – MODEL SERIES 1600

## UTILITY SPECIFICATIONS REQUIRED – ELECTRIC

Model	Energy	Power	Voltage	Current	Phase	Hz	Recommended Electrical Specifications	Agency Listing
***1621-xxx-E	Electric	29 kW	400/230 VAC	42 Amps	3	50 Hz	5 Wires, 3 Poles 1N-1G	F-G
1622	Electric	29 kW	120/208 VAC	81 Amps	3	60 Hz	5 Wires, 3 Poles 1N-1G	A-B-D-F
1623	Electric	29 kW	120/240 VAC	70 Amps	3	60 Hz	5 Wires, 3 Poles 1N-1G	A-B-D-F
1628-000-A	Electric	29 kW	380/220 VAC	44 Amps	3	50 Hz	5 Wires, 3 Poles 1N-1G	F
1629-000-A	Electric	29 kW	415/240 VAC	40 Amps	3	50 Hz	5 Wires, 3 Poles 1N-1G	F

## UTILITY SPECIFICATIONS REQUIRED – GAS

Model	Energy	Power	Voltage	Current	Phase	Hz	Recommended Electrical Specification	Gas	Agency Listing
1600	Nat. Gas	110,000 BTU	120 VAC	14 Amps	1	60 Hz	3 Wires, 1 Pole 1N-1G	****110,000 BTU at 7 in. H <sub>2</sub> O column	A-D-F
1601	L.P. Gas	110,000 BTU	120 VAC	14 Amps	1	60 Hz	3 Wires, 1 Pole 1N-1G	****110,000 BTU at 11 in. H <sub>2</sub> O column	A-F
***1633-xxx-E	Nat. Gas	32 kW	230 VAC	4 Amps	1	50 Hz	3 Wires, 1 Pole 1N-1G	32 kW/hr at 17.4 mB H <sub>2</sub> O column	F-G
***1634-xxx-E	L.P. Gas	32 kW	230 VAC	4 Amps	1	50 Hz	3 Wires, 1 Pole 1N-1G	32 kW/hr at 27.4 mB H <sub>2</sub> O column	F-G
1646	Nat. Gas	110,000 BTU	220/240 VAC	4 Amps	1	50 Hz	**3 Wires, 1 Pole 1N-1G	****110,000 BTU at 7in. H <sub>2</sub> O column	E-F
1647	L.P. Gas	110,000 BTU	220/240 VAC	4 Amps	1	50 Hz	**3 Wires, 1 Pole 1N-1G	****110,000 BTU at 7 in. H <sub>2</sub> O column	E-F
1650	Hong Kong TG	33 kW	240 VAC	5 Amps	1	50 Hz	3 Wires, 1 Pole 1N-1G	33 kW/hr at 10 mB H <sub>2</sub> O column	F
1651	Shangi TG	33 kW	240 VAC	5 Amps	1	50 Hz	3 Wires, 1 Pole 1N-1G	33 kW/hr at 10 mB H <sub>2</sub> O column	F
1652	Brazil TG	32 kW	120 VAC	14 Amps	1	60 Hz	3 Wires, 1 Pole 1N-1G	32 kW/hr at 9 mB H <sub>2</sub> O column	F
1600-000-A	Nat. Gas	110,000 BTU	120 VAC	14 Amps	1	60 Hz	3 Wires, 1 Pole 1N-1G	****110,000 BTU at 7 in. H <sub>2</sub> O column	A-D-F
1601-000-A	L.P. Gas	110,000 BTU	120 VAC	14 Amps	1	60 Hz	3 Wires, 1 Pole 1N-1G	****110,000 BTU at 11 in. H <sub>2</sub> O column	A-F
***1633-xxx-EA	Nat. Gas	110,000 BTU	230 VAC	4 Amps	1	50 Hz	3 Wires, 1 Pole 1N-1G	32 kW/hr at 17.4 mB H <sub>2</sub> O column	F-G
***1634-xxx-EA	L.P. Gas	110,000 BTU	230 VAC	4 Amps	1	50 Hz	3 Wires, 1 Pole 1N-1G	32 kW/hr at 27.4 mB H <sub>2</sub> O column	F-G

	A	B	C	D	E	F	G	H
Agency Listing	CSA	UL		MEA	AGA*	NSF	CE	

### Electrical Supply for Australia:

**Single Phase:** 240VAC, 50Hz / 20 Amp: one neutral & one earth/ground.

**Three Phase:** 240/415 VAC / 20 Amp; three active, one neutral & one earth/ground.

\* AGA Australian Gas Association

\*\* In Australia, use a 10 Amp General Purpose Outlet

\*\*\* Reference Model Key

All ovens require separate service and dedicated neutral.

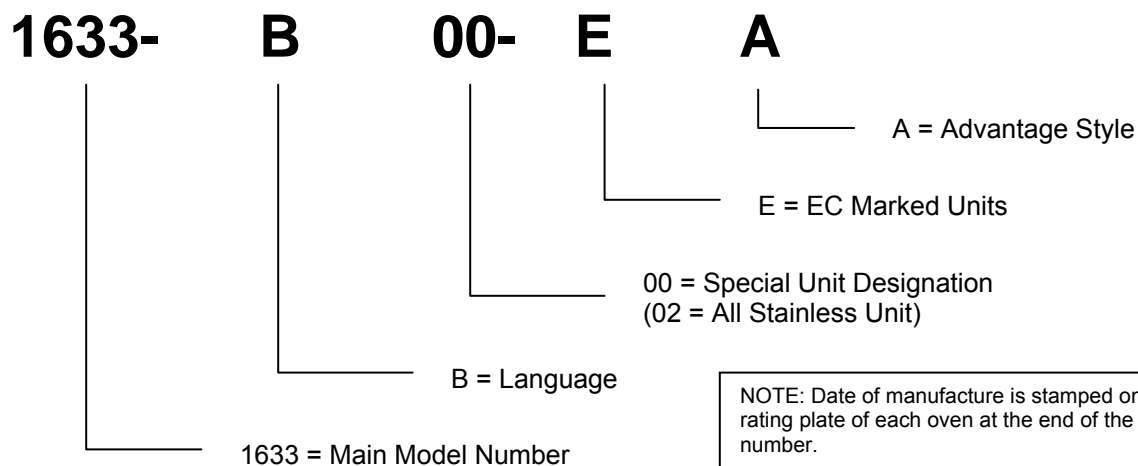
GAS PRESSURE CONVERSION CHART			
Inches of Water Column	Kpa	m-Bar	Millimeters of Water Column
3.5	0.87	8.70	88.9
4.5	1.12	11.2	114.3
7	1.74	17.40	177.8
10	2.48	24.87	254.0
10.5	2.61	26.11	266.7
11	2.73	27.36	279.4
14	3.48	34.81	355.6
14.5	3.61	36.05	368.3

\*\*\*\*NOTE: For proper operation, the gas valve requires a nominal inlet pressure of 7 inches H<sub>2</sub>O column for natural gas and 11 inches of H<sub>2</sub>O column for L.P. gas. A minimum inlet pressure of 1.0 inch of H<sub>2</sub>O above the manifold setting (NAT. manifold 3.5" H<sub>2</sub>O, L.P. manifold 10" H<sub>2</sub>O) 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 ½ PSIG (14.5 inches H<sub>2</sub>O column). Refer to the chart on the left for pressure conversions

## MODEL NUMBER KEY

	<u>COUNTRY</u>	<u>LANGUAGE</u>	<u>CODE</u>	<u>NOT USED</u>
1.	France	French	B	A
2.	Germany	German	C	I
3.	Italy	Italian	D	O
4.	Spain	Spanish	E	Q
5.	United Kingdom	English	F	
6.	Luxembourg	French	B	
7.	Portugal	Portuguese	H	
8.	Denmark	Danish	J	
9.	Belgium	Dutch / French	K	
10.	Netherlands	Dutch	L	
11.	Ireland	English	F	
12.	Greece	Greek	M	
13.	Austria	German	C	
14.	Finland	Finnish	N	
15.	Norway	Norwegian	P	
16.	Sweden	Swedish	R	

EXAMPLE: 1633-B00-EA



NOTE: Date of manufacture is stamped on the rating plate of each oven at the end of the serial number.

Example: XXX...01-96

## SPACING

The right and left side of the oven must have a minimum 3-inch (75mm) clearance from all surfaces. The oven rear, WITH COOLING DUCTS ATTACHED, requires no clearance. The front of the oven requires a minimum 36-inch (914.4mm) clearance from all surfaces. An 18-inch (457mm) clearance on both sides of the oven may be required for service accessibility. In case other cooking equipment is located on both sides of oven, a minimum 24-inch (609mm) clearance is required for that equipment.

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



**CAUTION:** Oven(s) must be operated on approved bases only.

## VENTILATION

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 below.

## VENTILATION GUIDELINES

A ventilation hood is required to remove heat and cooking odors. 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 2500 and 6000 CFM exhaust. (The “Efficiency” of various hood designs makes it necessary to specify such a wide range of ventilator CFM.) Make up air must be supplied by either a hood design or the HVAC system. This will vary with hoods from various manufacturers.



**CAUTION: 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.**

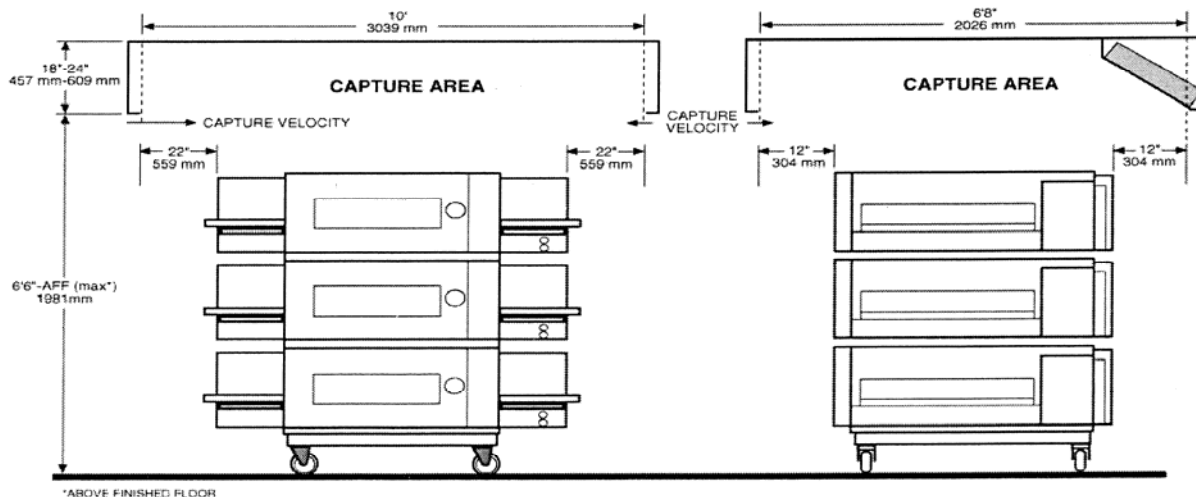
Performance will be evaluated during Start-up Checkout by conducting a smoke candle test. The hood must capture all smoke from the oven. This is required to assure proper performance of the oven and to eliminate additional service calls that occur when ambient temperatures are too high. In all cases, 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.

The drawing shown below is a typical installation and is intended to be a guideline. It is not a rigid specification. Hood dimensions and the positioning of the hood over the oven will vary with hood manufacturers.

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.

## CANOPY VENTILATION RECOMMENDATIONS

(Hood shown as dimensional for island mount-size reductions may be possible for wall mount units.)



## SMOKE CANDLE TEST – VENTILATION SYSTEM VERIFICATION

### OVEN SET-UP FOR THIS TEST:

1. This test is to be done on the bottom oven of a multiple oven system, or a single oven.
2. The conveyor must be off.
3. 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. Open the optional access window in the oven door, or insert candle through conveyor opening.
4. 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.)
5. Observe the smoke pattern coming out of the oven openings and the collection of this smoke by the ventilation system.

The ventilation system must capture all the smoke from the oven.

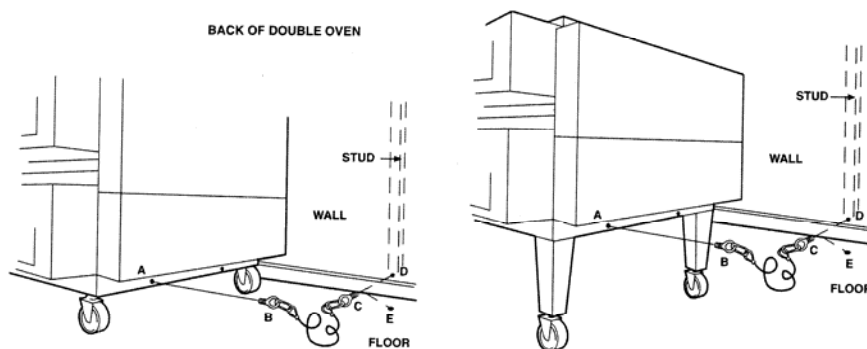
### RESTRAINT REQUIREMENT – GAS OVEN(S) ON CASTERS, U.S. AND AUSTRALIA

1. The installation shall be made with a gas connector that complies with the Standard for Connectors for Movable Gas Appliances, ANSI Z21.69 latest version, and a quick disconnect device that complies with the Standard for Quick Disconnect Devices for Use With Gas Fuel, ANSI Z21.42 latest version.

IN CANADA: The installation shall be made with gas connectors that comply with Canadian Code CSA 6.16 latest version and quick disconnects complying to Canadian Code CSA 6.9 latest version.

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

2. 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.
3. 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.



### OPERATIONS

1. Screw lifting eye "B" of cable assembly to hole "A".
2. Screw eye bolt "C" of cable assembly to stud in wall "D" or floor anchor "E".

NOTE: Installation point is the same for single, double or triple stack oven(s).

### GENERAL INFORMATION

The instructions that follow are intended as a guide for preparing for the installation of the Impinger® Conveyor Ovens, Series 1600.

First and foremost, each crate should be examined before signing the Bill of Lading to report any visible damage caused by the trucker in transit, and to account for the proper number of crates.

## UNLOADING

When the oven arrives it should consist of:

1. A crate containing oven body, conveyor, fingers, crumb pans, and pan stop. (Some models may have the conveyor packed separately.)
2. A package containing the stand and top.

It is recommended that you have a material-handling device available to unload.

**DO NOT LIFT EXCESSIVE WEIGHT!**

### 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.

### 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 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.

THE OVEN WILL CLEAR THROUGH A 30" (762 mm) DOORWAY BY USING THE FOLLOWING PROCEDURE:

1. Model 1600 Series
  - A. Remove conveyor; see page 19 for instructions. (Some units may have conveyor packed separately.)
  - B. Remove front doors by lifting the doors from the hinge plates.
  - C. Place oven front on a four-wheel moving dolly and it will clear a 30" (762 mm) doorway.

NOTE: Use care not to damage hinge plates on oven front.



**CAUTION: DO NOT LIFT BY EITHER OF THE CONTROL BOXES.**

## CODE REFERENCE



### **WARNING INT'L (CE):**

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.

## GAS CODE REFERENCE

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 and local municipal building codes.

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 ½ psig (3.45kPa).
2. The oven must be isolated from the gas supply piping system by closing its individual manual shut off valve during any pressure testing of the gas supply system at test pressures equal to or less than ½ psig (3.45kPa).

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 B149.1 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.



## **CODE REFERENCE (CONTINUED)**

### **ELECTRICAL CODE REFERENCE**

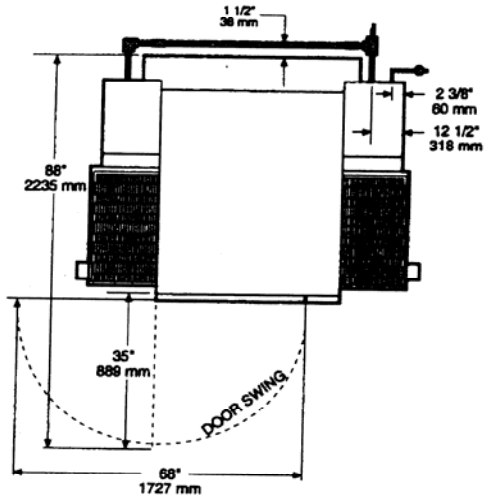
When installed, this appliance must be electrically grounded and its installation must comply with the National Electric Code, ANSI-NFPA 70, latest edition, the Manufacturers' Installation Instructions, and applicable local municipal building codes.

**IN CANADA:** All electrical connections are to be made in accordance with CSA C22.1 – Canadian Electrical Code and/or local codes.

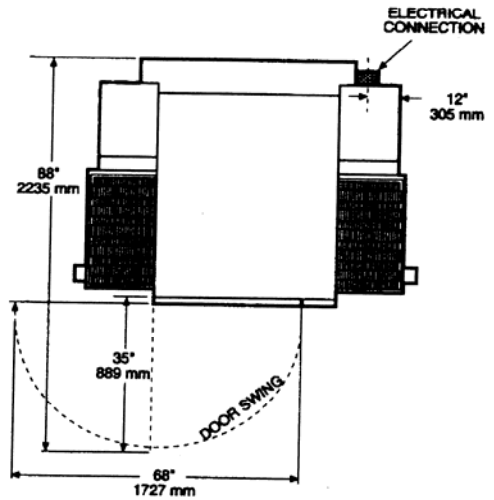
**ALL OTHER COUNTRIES:** Local gas and/or electrical codes will prevail.

1. Strain Relief is provided with each oven. International Dealer/Distributors provide applicable power cord/plug for each customer.
2. All pole disconnection switch 3mm 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 or triple stack and each oven has its own disconnection switch, all switches should be close together.

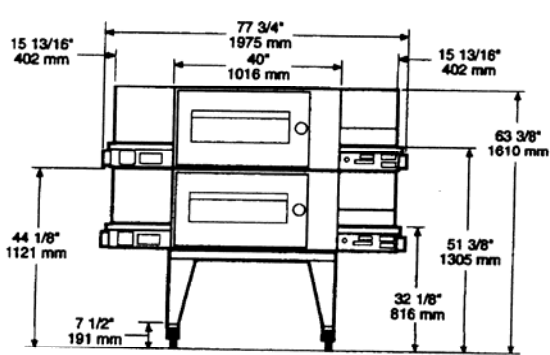
# EXTERIOR DIMENSIONS



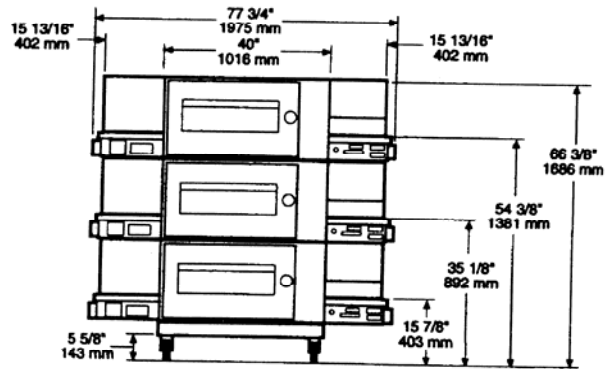
**TOP VIEW GAS**



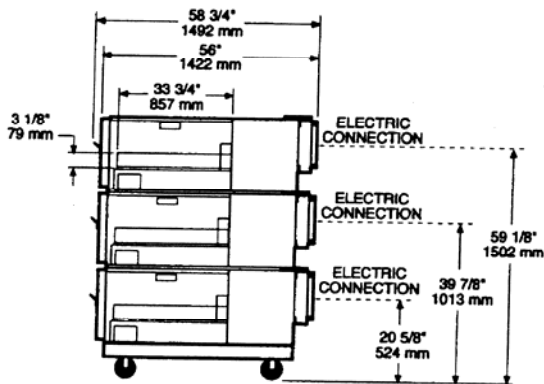
**TOP VIEW ELECTRIC**



**FRONT VIEW DOUBLE**



**FRONT VIEW TRIPLE**

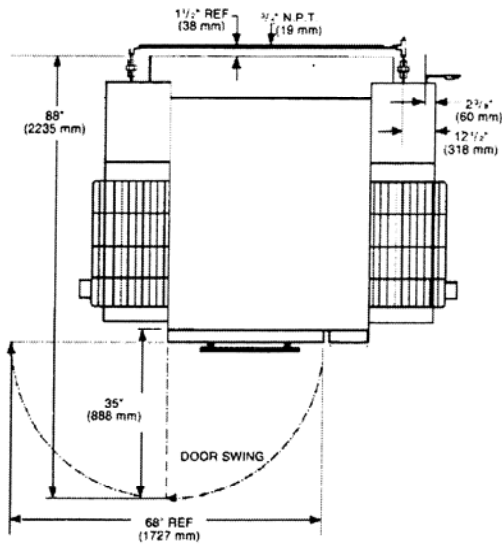


**SIDE VIEW TRIPLE**

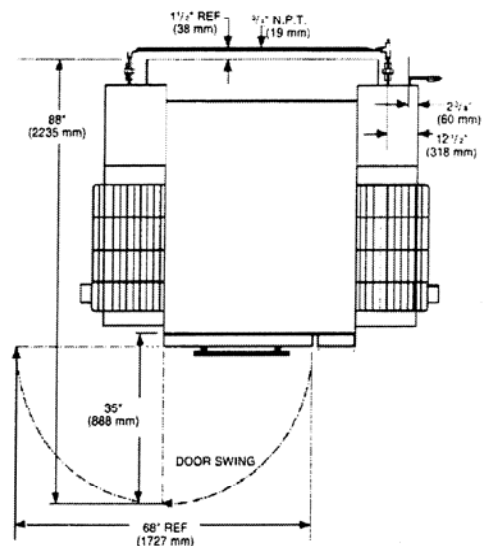
## SPECIFICATIONS

BODY: Stainless Steel  
 POWER: Gas and/or Electric  
 DB LEVEL: ≤ 77dba  
 OPERATING TEMPERATURE RANGE: 300°-600°F  
 (149°-316°C)

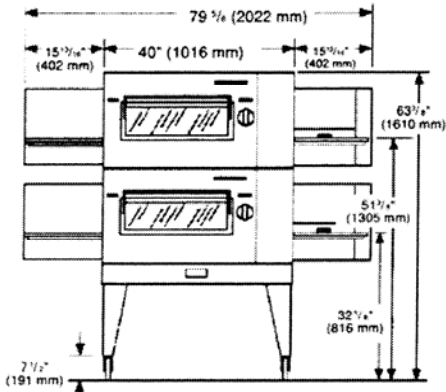
# EXTERIOR DIMENSIONS - 1600-000-A



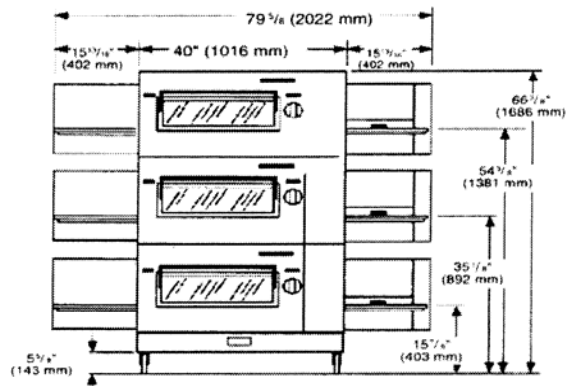
**TOP VIEW GAS**



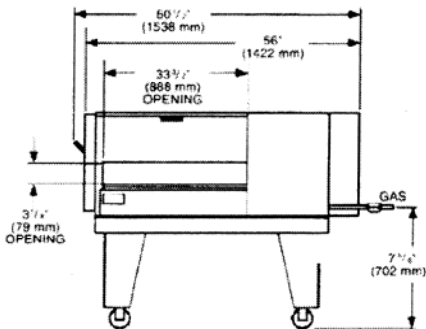
**TOP VIEW ELECTRIC**



**FRONT VIEW DOUBLE**

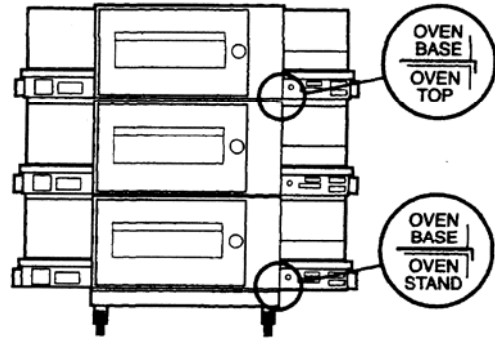
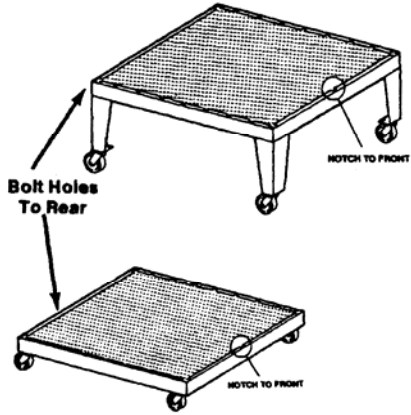


**FRONT VIEW TRIPLE**



<b>SPECIFICATIONS</b>	
BODY:	Stainless Steel
POWER:	Gas and/or Electric
DB LEVEL:	≤ 77dba
OPERATING TEMPERATURE RANGE:	300°-600°F (149°-316°C)

# ASSEMBLY INSTRUCTIONS

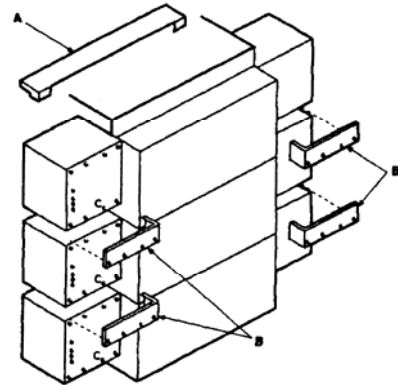
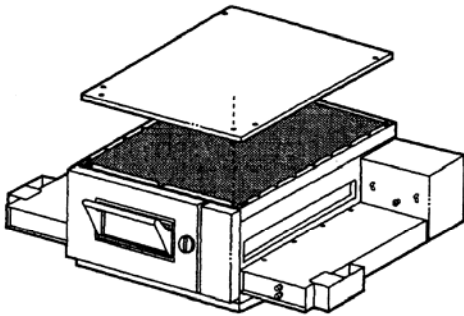


- Oven stand has a small notch (see figure above) to locate front of stand. Notch should be located under oven door when oven is placed on stand. Using a carpenter's level, level all four (4) sides of the stand. Also, bolt holes should be located at rear of stand.

NOTE: The oven top is packed with the oven stand. Remove top from stand before assembly.

- Remove the oven from the dolly and set it on the stand. Be sure that the oven sets squarely on the stand and is fully seated.

If you purchased a multiple oven, place the second and third ovens on top of the first. Be sure that they set on squarely and are fully seated.



- NOTE: When stacking ovens, remove the cover mounting screws to provide a flush fit.

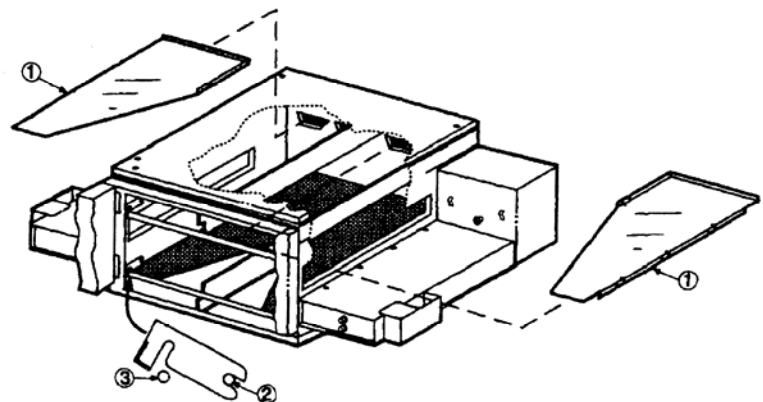
Install oven top with #8-32 screws provided.

- Install duct cover top cap (A), and right and left baffles (B) as shown. Use #8 screws provided.

- Before installing the finger supports in the oven(s), be sure all of the packing materials are removed from the plenum shroud.

Install air return baffles (1), two top and two bottom, as shown.

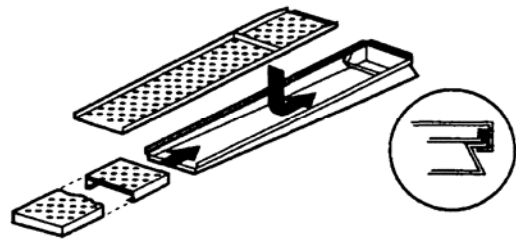
Install the finger supports by hooking the Rear Retaining Pin (2) and swinging the finger support into position (3) as shown to the right.



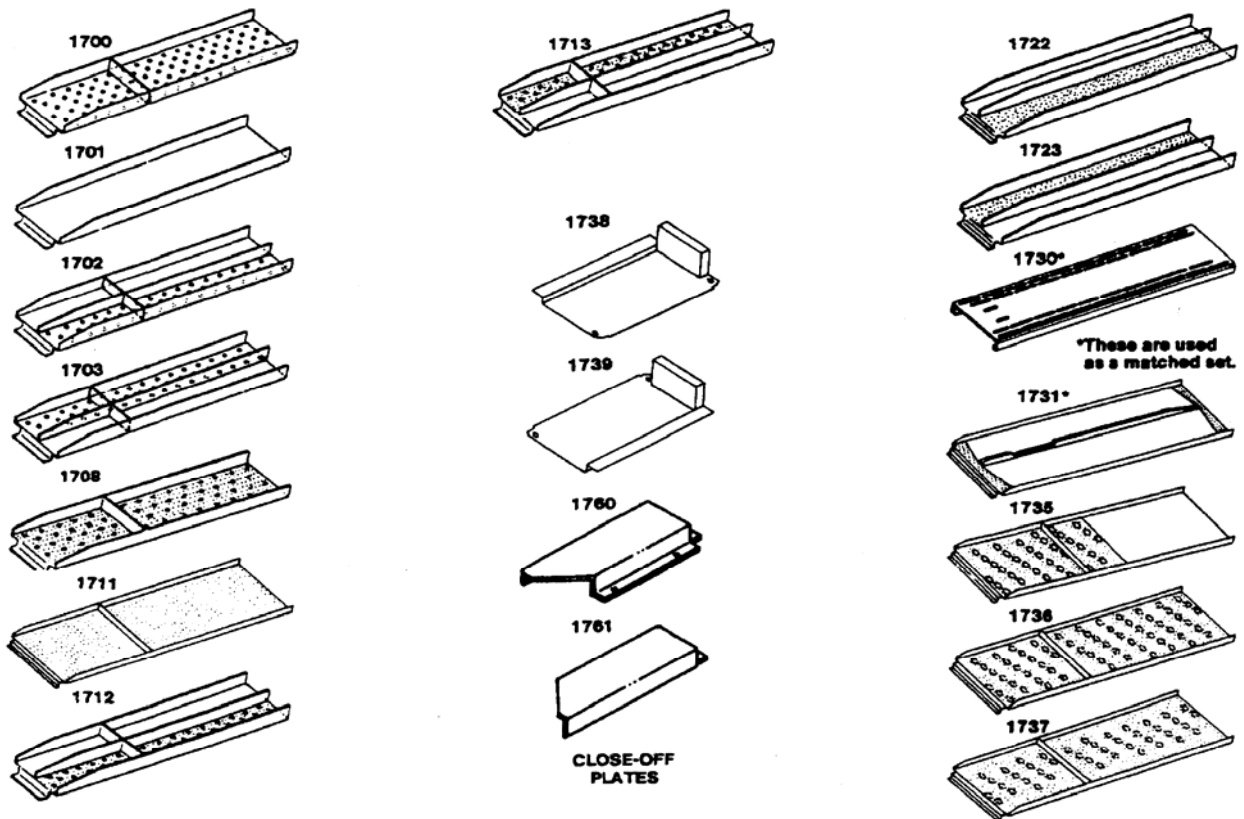
6. Assemble Fingers as shown to the right.

Insert columnating plate so the step goes under the lip of the finger housing and the plate lies flush with the housing side edge.

Install cover by sliding it on the small end of the finger housing.



## IMPINGER FINGER COLUMNATING PLATES



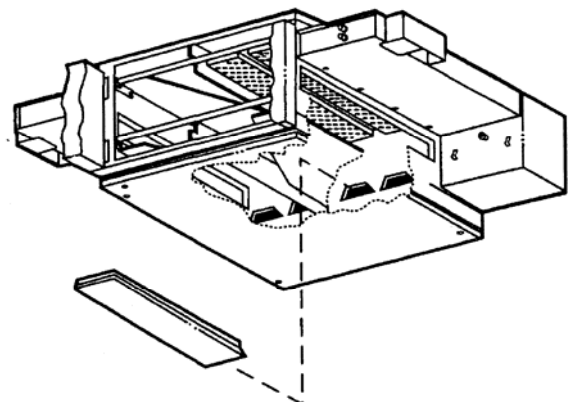
7. To install close-off plates, use close-off plate as a template and drill three (3) mounting holes. Use #29 drill. Use three (3) screws supplied to mount close-off plate.

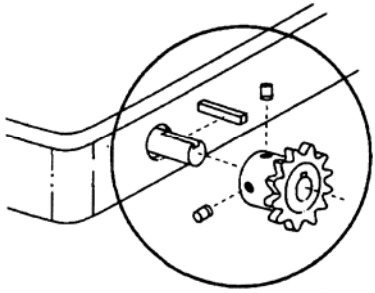
There are two styles of finger housings. Four (4) rights and four (4) lefts. The plenum has openings which dictate which style is used. Check each finger housing "Style" to determine which plenum opening will accept it.

Install assembled finger through door opening starting with lower left.

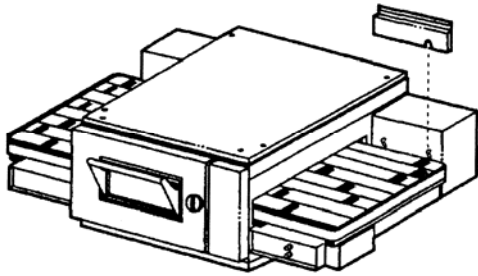
Install fingers in the oven by sliding it over the plenum flange and setting the front of the finger on the retaining bracket. Be sure that the finger sets squarely over the plenum flanges and the holes point in the proper direction. Top fingers point down, bottom fingers point up. Repeat until all eight (8) fingers are installed.

NOTE: The customer MUST tell you what position to place the assembled fingers in, for their application.

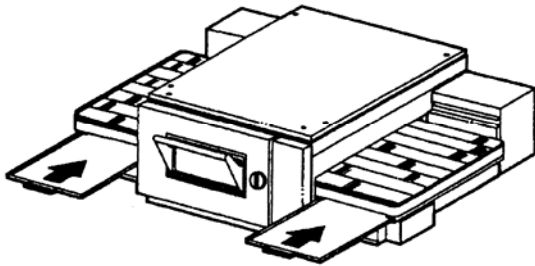




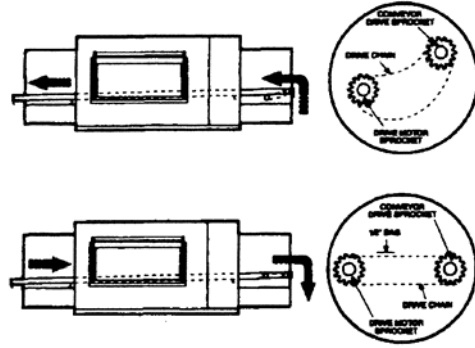
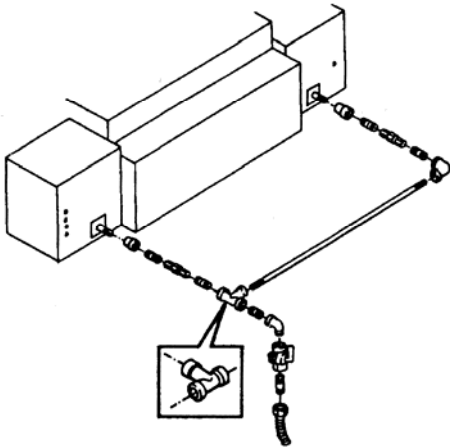
8. Install Conveyor Drive Sprocket on Conveyor Drive Shaft as shown. NOTE: Edge of Drive Sprocket should be flush with end of Drive Shaft.



10. Install Chain Guard Cover by sliding guard onto retaining clips.



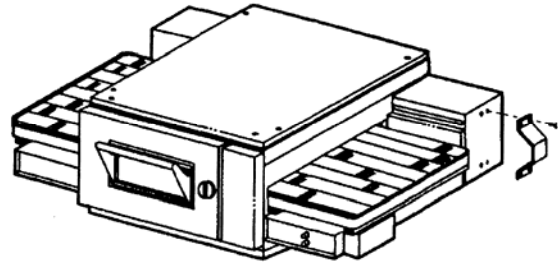
11. Slide the conveyor crumb pans into the rails on the under side of the conveyor.



9. Insert the conveyor through the opening in the right side. Sprocket should be to the right side of the conveyor.

Slide conveyor through the oven chamber until the locking bar on driving end of the conveyor is approximately 2"-3" (50.8 – 76.2 mm) into the oven chamber. Install drive chain by placing it over the drive sprocket and placing it over the conveyor sprocket.

Lift conveyor just enough to allow you to pull the conveyor to you until the locking bar is outside of the oven cavity. At the same time, push the conveyor downward so that the bar locks on the outside of the oven wall.



12. Electric Models 1622, 1623, 1628 and 1629 use control box standoffs that must be mounted to the left and right side of the control box as shown above.

You are now ready for services to be connected. This should be done by licensed electricians and plumbers. See "Specifications" on page 4 and "Code References" on Page 8.

13. The gas piping manifold kit should be installed as shown to the left.

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

The warranty shall not apply if the oven(s) are started up and operated prior to the “START-UP CHECKOUT” being performed by an Authorized Service Technician or a Lincoln Foodservice Products, LLC Service Representative.



**WARNING: ELECTRICAL GROUNDING INSTRUCTIONS  
MODEL 1600 AND 1601 ONLY**

This appliance is equipped with a three-prong (grounding) plug for your protection against shock hazard and should be plugged directly into a properly grounded three-prong receptacle. Do not cut or remove the grounding prong from this plug.



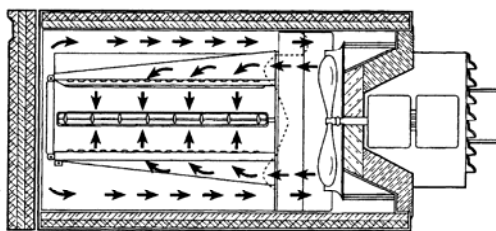
**WARNING: IF THE SUPPLY CORD APPEARS TO BE DAMAGED, DO NOT ATTEMPT TO OPERATE UNIT. CONTACT A SERVICE AGENT OR QUALIFIED ELECTRICIAN TO REPAIR.**

**IMPINGER CONVEYOR OVEN CONCEPTS**

The Impinger Conveyor Oven produced by Lincoln Foodservice Products, LLC utilizes a revolutionary cooking concept called “AIR IMPINGEMENT.” It provides exceptional baked food product quality in far less time than conventional devices on the market. The “AIR IMPINGEMENT” system directs a high velocity stream of heated air at the food product being baked. This blast effect penetrates the boundary layer of air encircling the product and heats the food more efficiently because the air concentrates heat on the product. Greater heat transfer rates, which result in products baking two to four times faster than conventional means, are possible with “AIR IMPINGEMENT.”

The “AIR IMPINGEMENT” process develops the high velocity air stream with a specially designed fan that draws super-heated air from a heat source (either gas or electric). This air is directed through a plenum chamber to patented “JET FINGERS” which have hundreds of focused jet ports that “IMPINGE” the heated air onto the product surface. The heated air is recycled to the heat source after striking the product, thus reducing energy consumption.

A variable speed conveyor system moves food products through the oven one after another to improve product flow during the cooking process. The “AIR IMPINGEMENT” process is tolerant enough for sensitive food products and effects proper crisping and even browning of such products as they pass through the oven, because air is the medium that heats the food product.

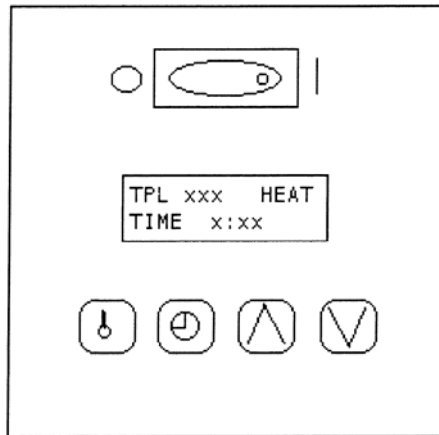


**INFORMATION ON USE OF OVEN**

As explained in “Concepts,” the Impinger Conveyor Oven functions by directing high velocity streams of heated air directly upon the food products. Because air is the heat source it is effective even on sensitive foods. Compared to conventional ovens and even convection ovens the cook time of products in the Impinger Conveyor Ovens can be as much as two (2) to four (4) times faster. Several factors may affect the cooking time of any special product such as: 1) oven temperature setting, 2) conveyor speed, 3) position of columnnating plates in the oven, and 4) adjustments of the two baffles on the conveyor openings.

We encourage you to experiment with the oven by trying different temperature settings and belt speeds. Also try to control the cooking of the product by rearranging the optional columnnating plates.

# PROGRAMMING DIGITAL ADVANTAGE 1600-000-A SERIES TOUCH PAD



TPL = Left Oven Temperature  
TPR = Right Oven Temperature  
HEAT = Will turn on and off to indicate when heat mode is cycling.

## INTRODUCTION: START-UP AND SHUTDOWN

For the operator, the panel has power-up, run, and program menu modes. To start the oven, turn the power switch "ON." To shut down the oven, turn the power switch "OFF."

## FRONT PANEL LAYOUT

The front panel contains four (4) momentary pushbuttons: TEMP, TIME, UP, and DOWN. There is a 2-line x 16-character VFD display.

## PROGRAM MODE

The program mode allows the operator to change the setpoint(s) of the oven temperature and the conveyor speed. To enter the PROGRAM MODE: Depress and hold the TEMP and TIME pushbuttons together for 5 seconds. The Run Mode display will clear and the word SETPOINT will appear. If no changes are made within 5 seconds the display will revert back to the previous settings.

There are two types of setpoints: TEMP and TIME. Press the TEMP or TIME key to choose the desired setpoint to change and then press the UP or DOWN keys to the desired setting. After 5 seconds these settings will remain in memory.

## TEMPERATURE SETPOINTS

For Low Profile Advantage ovens, there are two setpoints: LEFT OVEN and RIGHT OVEN. Press the TEMP button once to set the left oven temperature and press the TEMP button again to set the right oven temperature. Pressing the TEMP pushbutton, the display will show the current setting. Pressing the UP or DOWN pushbuttons will raise or lower the setpoint. In Fahrenheit, F mode, the temperature is adjusted in 5-degree increments. When in Centigrade, C mode, the temperature adjustment will be in 1-degree increments. Pressing and holding the UP or DOWN keys will allow the settings to "roll" at a much faster rate. When the desired temperature is indicated, release all keys. After 5 seconds the selected setpoints will be stored and remain in memory.

## TIME SETPOINT

There is one setpoint for the conveyor speed. The speed can be set as follows:

- 1:00 to 9:55 in 5 second increments
- 10:00 to 12:45 in 15 second increments
- 13:00 to 19:30 in 30 second increments
- 20:00 to 30:00 in 1 minute increments

The accuracy specification is +/- 3%.

## JUMPING BETWEEN MENUS

Pressing the TIME pushbutton while in the TEMP setting mode (and vice versa) will cause the menu selection to jump over to that mode.



## DIAGNOSTIC MESSAGES

The Digital Advantage Low Profile ovens have diagnostic messages within the control. Upon the unexpected event that there is a failure in the oven operation the following messages will appear in the control.

### OPEN PROBE

This occurs when there is no temperature signal being sent to the controller from the baking chamber.

### SHORTED PROBE

This occurs when a constant temperature signal (as opposed to the normal cyclical cavity temperature) is being sent to the controller from the baking chamber.

CAUTION: This message can also occur when there is no gas supply to the oven. If the oven does not detect a temperature fluctuation in 5 minutes the error message will appear. Be sure to check the gas valve and gas hose for proper connections.

### BELT JAM

This occurs when the conveyor motor fails.

## CONVEYOR

The conveyor for Digital Advantage Low Profile ovens has a different drive cog than the Full Featured Low Profile ovens. The drive cog on the conveyor for the Digital Advantage Low profile oven has a 15-tooth cog where all other Low Profile ovens have a 10-tooth cog.

CAUTION: On installations where a Digital Advantage Low Profile oven is stacked with a Full Featured Low Profile oven, THE CONVEYORS CANNOT BE INTERCHANGED. INTERCHANGING CONVEYORS WILL AFFECT COOKING TIMES.

The conveyor for the Digital Advantage Low Profile ovens will have a label to identify proper use.

**ADVANTAGE OVENS  
ONLY**

## REVERSING SWITCH

The Digital Advantage Low Profile oven has a belt direction reversing switch on the back of the oven.

## FUNCTIONS

### THERMAL CUT-OUT SWITCH

The Impinger Low Profile unit includes a “safety thermal cut-out switch” for your protection. This safety related device is designed to insure that the Impinger Low Profile unit will not overheat and damage the unit. In the unlikely event that the Impinger Low Profile unit would exceed the specified operating temperature range, the “safety thermal cut-out switch” will activate, thus blocking power to the Impinger Low Profile unit and causing it to turn off.



### **CAUTION:**

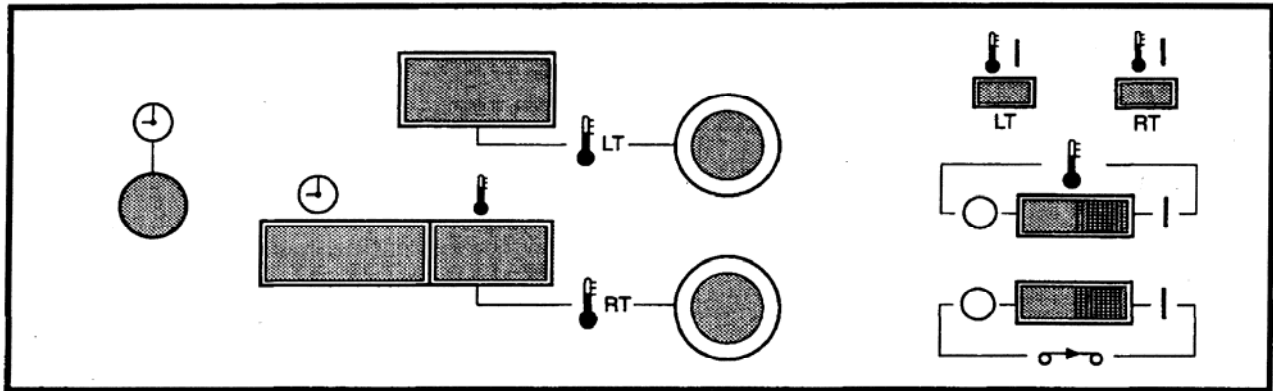
In order to avoid a hazard due to inadvertent resetting of the thermal cutout, this appliance must not be supplied through an external switching device, such as a timer or connected to a circuit that is regularly switched on and off by the utility.

## OVEN START-UP FOR 1600 SERIES OVENS

1. Push switches for the oven and conveyor to "ON." Light indicates heat sources are operating. If light or lights do not illuminate, turn switch off, wait 5 minutes and turn switch to "ON."  
NOTE: Models 1646 and 1647 have a "Burner Off" alarm and a Burner Reset Switch for each burner. The Push Button Switches are located on the outside rear of each burner compartment. If the alarm sounds or oven does not light, push the Reset Switch.
2. To set belt speed, slowly adjust knob to achieve desired belt speed. Allow 4 seconds for display to respond.
3. After preheat 20 to 30 minutes, adjust left or right oven temperatures to desired settings. Allow 10 minutes after adjustment for the oven to respond.

## OVEN SHUTDOWN

1. Push switches for conveyor and oven to the "OFF" position. The fan will continue to operate for approximately 20 minutes.



### CAUTION:

DO NOT WORKAROUND CONVEYOR BELT WITH LONG HAIR, LOOSE CLOTHING OR DANGLING JEWELRY. GETTING CAUGHT IN THE BELT COULD RESULT IN DISMEMBERMENT OR FATAL INJURY.

## OPERATOR MAINTENANCE



### WARNING - DANGER:

DISCONNECT POWER SUPPLY BEFORE SERVICING OR CLEANING THIS OVEN. SAFEGUARD POWER SO IT CAN BE ACCIDENTALLY RESTORED. FAILURE TO DO SO COULD RESULT IN DISMEMBERMENT, ELECTROCUTION, OR FATAL INJURY. THERE IS MORE THAN ONE POWER SUPPLY CONNECTION POINT WHEN OVENS ARE STACKED, SO MAKE SURE THAT ALL SWITCHES ARE IN "OFF" POSITION BEFORE CLEANING OR MAINTENANCE.

To maintain maximum efficiency of the oven, it is necessary to keep it clean and all louvers on the oven must be cleaned regularly. Oven use and type of product will actually determine the frequency of cleaning. The conveyor drive chain should be checked during the weekly cleaning cycle to see if it has become loose. Loose chain operation will DAMAGE the conveyor drive motor.

If the oven fails to operate, check the circuit breaker to be sure it is turned on. Also, check the fuses on the control panel to be sure that they are good before you call the Authorized Service Agency. The name and phone number of the Authorized Service Agency should be located at the bottom of the data plate.

## 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 debris to insure 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 Authorized Service Agent to establish a proper program. If there are any questions that the service agency cannot answer, please contact the Lincoln Foodservice Technical Service Department.

## CLEANING INSTRUCTIONS



### CAUTION:

**OVEN MUST BE COOL. DO NOT USE POWER CLEANING EQUIPMENT, STEEL WOOL OR WIRE BRUSHES ON STAINLESS STEEL SURFACES.**

### DAILY

1. Clean exterior surfaces of the oven by wiping down with a mild detergent and clean water or a commercial stainless cleaner.
2. Clean crumb pans and guards by washing with a mild detergent solution and rinsing with clean water.
3. Clean the interior by sweeping up all loose particles, then wash with a mild detergent solution and rinse with clean water.
4. Clean the conveyor belt by wiping with a cleaning cloth or brushing with a soft wire brush. Lincoln catalog #369217.

NOTE: DO NOT USE A CUASTIC OR AN ALKALINE BASE CLEANER ON INTERIOR OF THE OVEN. THIS WILL RUIN THE ALUMINIZED FINISH OF THE OVEN INTERIOR.

On the exterior of oven, deposits of baked-on splatter, oil, grease, or light discolorations may be removed with any of several commercial cleaners. Consult with your local supplier.



### CAUTION:

**WHEN USING CLEANING SOLUTIONS, BE SURE THEY MEET LOCAL AND NATIONAL HEALTH STANDARDS.**

### WEEKLY

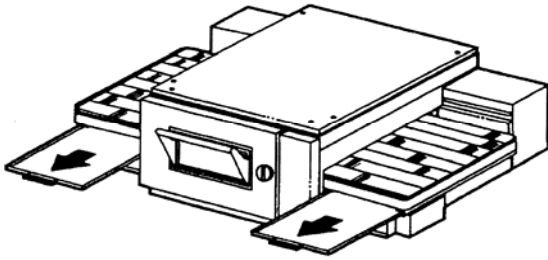
1. Remove fingers, disassemble and clean. See instructions below.
2. Remove conveyor, disassemble and clean. See instructions on page 19.

NOTE: Be sure to clean and inspect the ventilation hood, in accordance with the ventilation hood manufacturer's specifications.

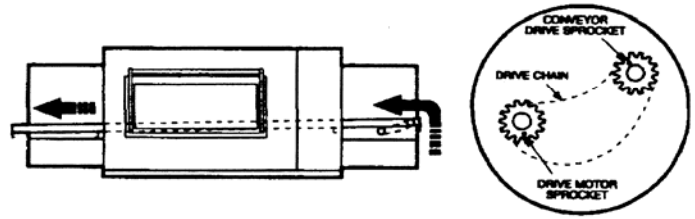
## FINGER REMOVAL AND DISASSEMBLY FOR CLEANING

1. Open door and remove upper fingers. Note any particular placement of fingers that you may have, such as fully closed, half-closed or fully open columnating plates.
2. Remove conveyor and then remove bottom fingers.
3. For finger disassembly, see page 13.
4. Reassemble fingers in reverse order with the step of the columnating plate facing downward so it fits under the lip of the finger housing.
5. Reinstall fingers in oven. Be sure that they are fully seated over the plenum flanges and the holes are pointing toward the conveyor.

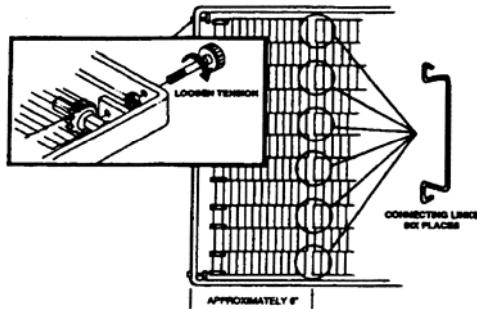
# CONVEYOR DISASSEMBLY FOR CLEANING



1. Remove chain guard cover and conveyor crumb pans.

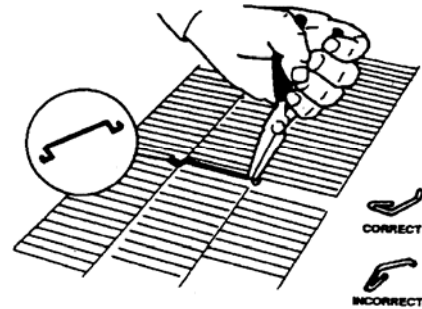


2. Lift right end of conveyor and push in approximately 3" (76 mm). Remove drive chain. Pull conveyor out the right end. Place on table or work surface.



3. Locate connecting links on the conveyor belt, turn belt to place the links on the top left end of the conveyor approximately 8" (203 mm) from the shaft.

Loosen jam nuts and unscrew the tension adjustment screws. Push the idler shaft against the conveyor support bars.



4. You can easily remove the connecting links by grasping them with a pair of pliers and slipping the eye of the connecting link over the wire of the other links. Also notice the direction of the opening on the other links. The belt will have to be reinstalled with the opening facing the same way.

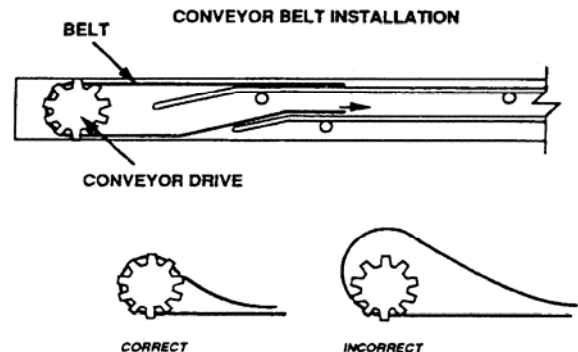
Carefully pull out the belt, rolling it up as you go. After you have it removed, it may be placed in a pan of detergent solution to soak. Rinse with clean water.

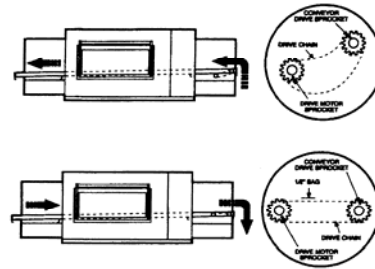
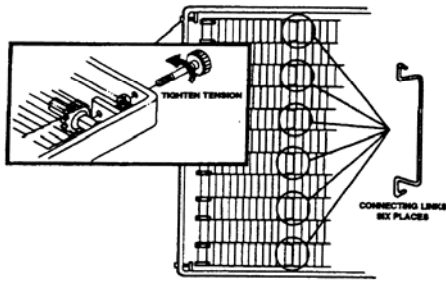
## REASSEMBLY

5. Put conveyor belt back on by setting the rolled belt to the left of the conveyor and thread approximately 2/3 of the belt over the bottom slider bed.

Put the loose end of the belt around the idler shaft and back on the conveyor. The belt must lay on top of the upper conveyor slider bed. NOTE: The belt should curl around the conveyor sprockets and lay flat on top of the sprockets.

If the belting does not curl around the sprockets and lay flat, remove the belting and turn the belting over. Reinstall.





- Pull all the slack belt through conveyor until both ends are on top of the conveyor on the left end.

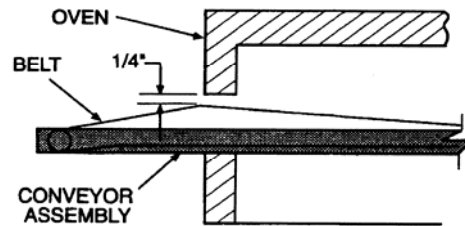
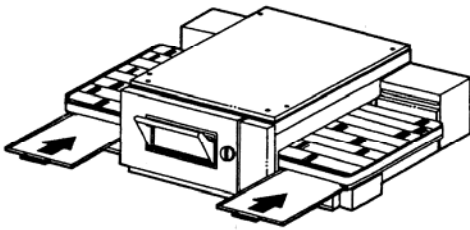
Re-connect conveyor belt by slipping the connecting links back in place.

Pull idler shaft toward the end of the conveyor and screw tension adjustment knobs back in. **DO NOT OVER TIGHTEN THE BELT!** Tighten the jam nuts against the adjustment plate.

- REINSTALL CONVEYOR IN OVEN:** Slide conveyor through the oven chamber until the locking belt on drive end of the conveyor is approximately 2"-3" (50.8 – 76.2 mm) into the oven chamber.

Install drive chain by placing it over the driving sprocket and placing it over the conveyor sprocket.

Lift conveyor just enough to allow you to pull the conveyor to you until the locking bar is outside of the oven cavity, at the same time push the conveyor downward so that the bar locks on the outside of the oven wall.



- Reinstall conveyor crumb pans and chain guard cover.

- Set tension on the conveyor belt. The belt should be able to be lifted enough to allow it to be 1/4" (6 mm) from the top of the conveyor opening on the oven. **DO NOT OVER TIGHTEN THE BELT!**



**CAUTION: BELT MAY BE HOT!**

### HOW TO OBTAIN SERVICE

If the oven fails to operate, check the circuit breaker to be sure it is turned on (on a gas oven check the manual gas valve to insure it is in the ON position), and check the fuses on the back of the oven to be sure that they are good before you call the Authorized Service Agency. The name and phone number of the Authorized Service Agency should be located on the oven or contact the factory at (260) 432-9511 for the name of the nearest Authorized Service Agency.

# APPENDIX A – LABEL DEFINITIONS



CAUTION HOT SURFACE



CLOCK, TIME SWITCH, TIMER



TRANSFORMER



DANGEROUS VOLTAGE



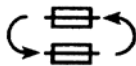
EQUIPOTENTIALITY GROUND



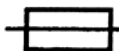
PROTECTIVE EARTH GROUND



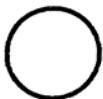
EARTH GROUND



CHANGE FUSES



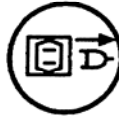
FUSE



POWER OFF



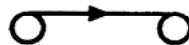
POWER ON



DISCONNECT POWER



TEMPERATURE, HEAT



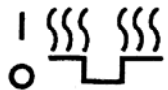
CONVEYOR



FAN



BURNER



HEAT CYCLE



READY, TIMER INDICATOR



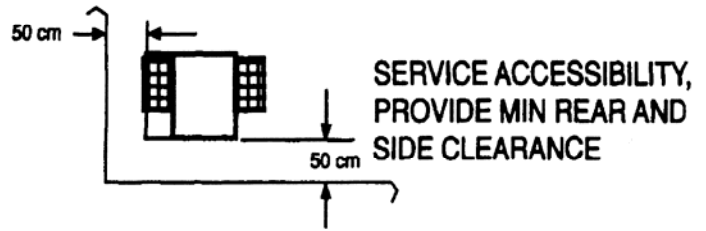
RESET



HIGH TEMPERATURE, HEAT

**APPENDIX A – LABEL DEFINITIONS (CONT'D)**

**A** AMPS



**V** VOLTS



ORIFICE - MAIN

**kW** KILOWATTS/HR



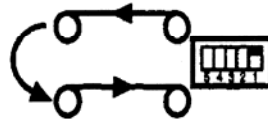
ORIFICE - LOW FIRE



TYPE OF GAS



AC



**MODEL SERIES 1600**

TO MOVE BELT DIRECTION MOVE SWITCH #1 TO NEXT POSITION



1/2 COOK TIME

**RT**

RIGHT



ALARM, BURNER FLAME OUT

**LT**

LEFT

## LIMITED WARRANTY FOR COMMERCIAL PRODUCTS

### LIMITED WARRANTY

Lincoln Foodservice Products, LLC ("Lincoln") warrants this product to be free from defects in material and workmanship for a period of one (1) year from the date of purchase.

During the warranty period, Lincoln shall, at Lincoln's option, repair, or replace parts determined by Lincoln to be defective in material or workmanship, and with respect to services, shall re-perform any defective portion of said services. The foregoing shall be the sole obligation of Lincoln under this Limited Warranty with respect to the equipment, products, and services. With respect to equipment, materials, parts and accessories manufactured by others, Lincoln's sole obligation shall be to use reasonable efforts to obtain the full benefit of the manufacturer's warranties. Lincoln shall have no liability, whether in contract, tort, negligence, or otherwise, with respect to non-Lincoln manufactured products.

### WHO IS COVERED

This Limited Warranty is available only to the original purchaser of the product and is not transferable.

### EXCLUSIONS FROM COVERAGE

- Repair or replacement of parts required because of misuse, improper care or storage, negligence, alteration, accident, use of incompatible supplies or lack of specified maintenance shall be excluded
- Normal maintenance items, including but not limited to, light bulbs, fuses, gaskets, O-rings, interior and exterior finishes, lubrication, conveyor belt, motor bushes, broken glass, etc. adjustments and calibrations for temperatures, speed and air flows
- Failures caused by improper or erratic voltages
- Improper or unauthorized repair
- Changes in adjustment and calibration after ninety (90) days from equipment installation date
- This Limited Warranty will not apply to any parts subject to damage beyond the control of Lincoln, or to equipment which has been subject to alteration, misuse or improper installation, accidents, damage in shipment, fire, floods, power changes, other hazards or acts of God that are beyond the control of Lincoln
- This Limited Warranty does not apply, and shall not cover any products or equipment manufactured or sold by Lincoln when such products or commercial equipment is installed or used in a residential or non-commercial application. Installations not within the applicable building or fire codes render this Limited Warranty and any responsibility or obligations associated therein null and void. This includes any damage, costs, or legal actions resulting from the installation of any Lincoln commercial cooking equipment in a non-commercial application or installation, where the equipment is being used for applications other than those approved for by Lincoln.

### LIMITATIONS OF LIABILITY

The preceding paragraphs set forth the exclusive remedy for all claims based on failure of, or defect in, products or services sold hereunder, whether the failure or defect arises before or during the warranty period, and whether a claim, however instituted, is based on contract, indemnity, warranty, tort (including negligence), strict liability, implied by statute, common-law or otherwise, and Lincoln its servants and agents shall not be liable for any claims for personal injuries, incidental or consequential damages or loss, howsoever caused. Upon the expiration of the warranty period, all such liability shall terminate. THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, WHETHER WRITTEN, ORAL, IMPLIED OR STATUTORY NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE SHALL APPLY. LINCOLN DOES NOT WARRANT ANY PRODUCTS OR SERVICES OF OTHERS.

### REMEDIES

The liability of Lincoln for breach of any warranty obligation hereunder is limited to: (i) the repair or replacement of the equipment on which the liability is based, or with respect to services, re-performance of the services; or (ii) at Lincoln's option, the refund of the amount paid for said equipment or services.

Any breach by Lincoln with respect to any item or unit of equipment or services shall be deemed a breach with respect to that item or unit or service only

### WARRANTY CLAIM PROCEDURE

Customer shall be responsible to:

- Immediately advise the Dealer or Lincoln's Authorized Service Agent of the equipment serial number and the nature of the problem.
- Verify the problem is a factory responsibility. Improper installation or misuse of equipment, are not covered under this Limited Warranty.
- Cooperate with the Service Agency so that warranty service may be completed during normal working hours.
- Travel Time not to exceed two hours and mileage not to exceed one hundred (100) miles.

### GOVERNING LAW

Limited Warranty shall be governed by the laws of the state of Delaware, USA, excluding their conflicts of law principles. The United Nations Convention on Contracts for the International Sale of Goods is hereby excluded in its entirety from application to this Limited Warranty

Lincoln Foodservice Products, LLC  
1111 North Hadley Road  
Fort Wayne, Indiana 46804  
USA  
www.lincolnfp.com



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