

SECTION 1

DESCRIPTION

CTX Hearth Bake (HB) Series ovens are:

- Electrically powered
- Conveyorized
- Zone heated by infrared panels
- Electronically controlled by a microprocessor

CTX Hearth Bake Oven Models:

- HB4 (Hearth Bake 4) - One deck with a 50" (1270mm) long oven chamber. The oven chamber has six infrared heat emitters. Three infrared emitters are located above and three emitters located below the conveyor.
- HB6 (Hearth Bake 6) - One deck with a 74" (2175mm) long oven chamber. The oven chamber has twelve infrared heat emitters. Six infrared emitters are located above and six emitters located below the conveyor.

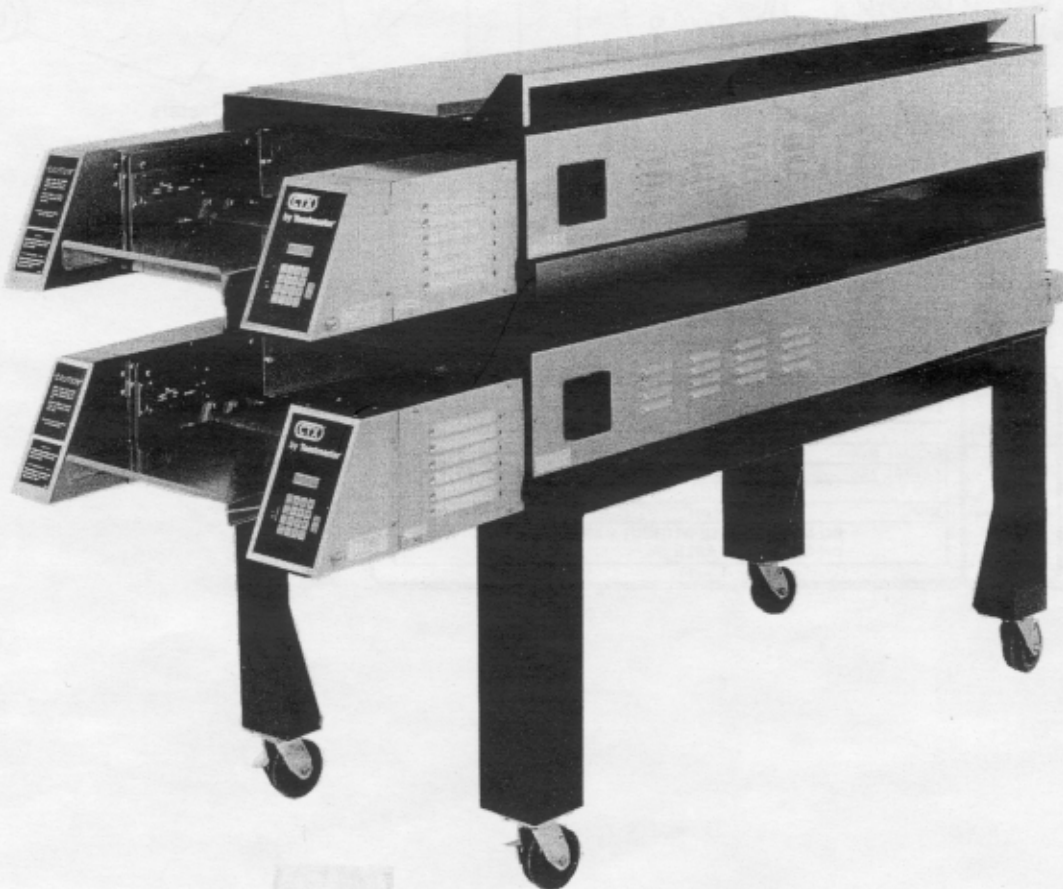
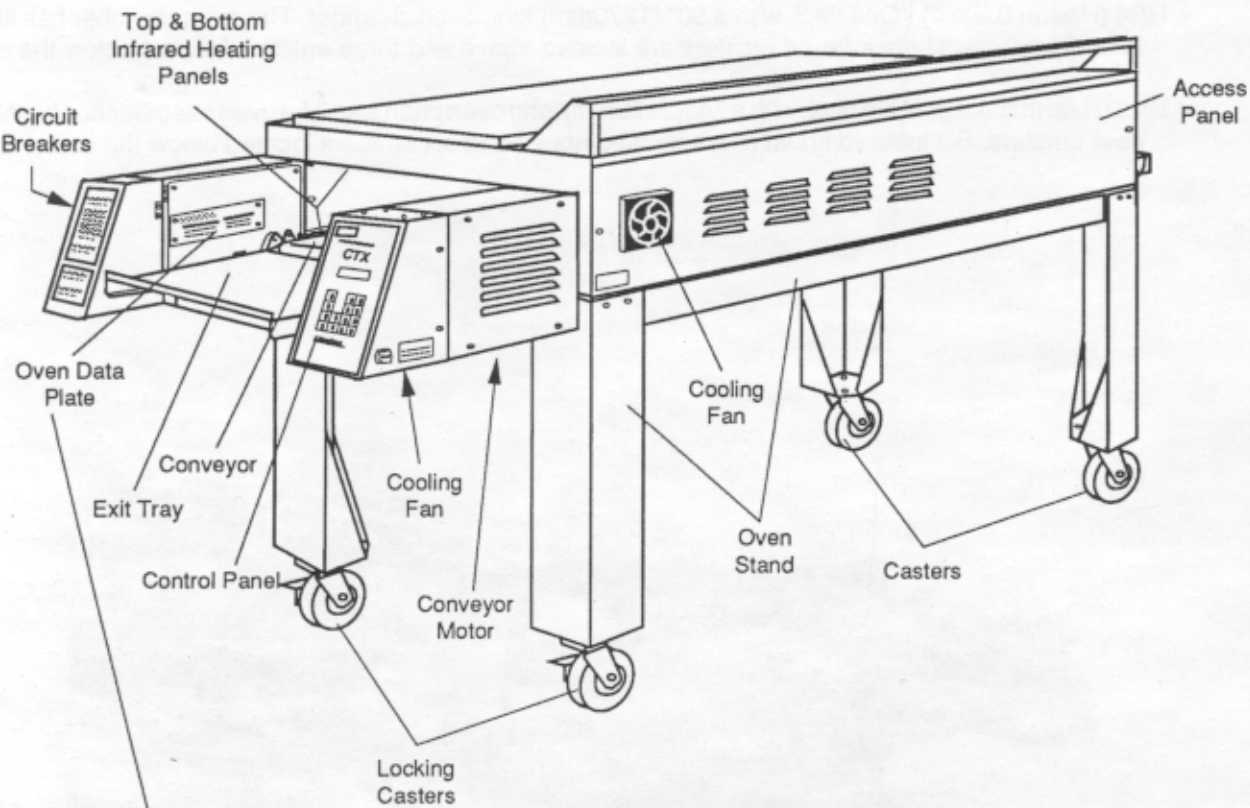


Figure 1-1
HB Series Oven

A. Component Location



415	Toastmaster®/ (CTX)				A MIDDLEBY COMPANY	
	MODEL NO.				1 PH	3 PH
	SERIAL NO.		MAXIMUM AMPS			
	VOLTS		HZ			
	KW		PH		F/N	
	DO NOT OPERATE WITHOUT BASE MODEL OR ON METAL TABLE					

3101/000

Figure 1-2
Component Location

B. Component Function**1. Oven Deck (Chamber)**

Each HB (Hearth Bake) Series oven contains one oven deck (chamber).

2. Single and Stacked Ovens

The HB Series ovens are available as either single ovens or up to three ovens stacked. Each oven contains one deck (oven chamber) and is mounted on a stand. A 36" (914mm) high stand is used when mounting one oven and a 24" (609mm) high stand is used when mounting two or three ovens.

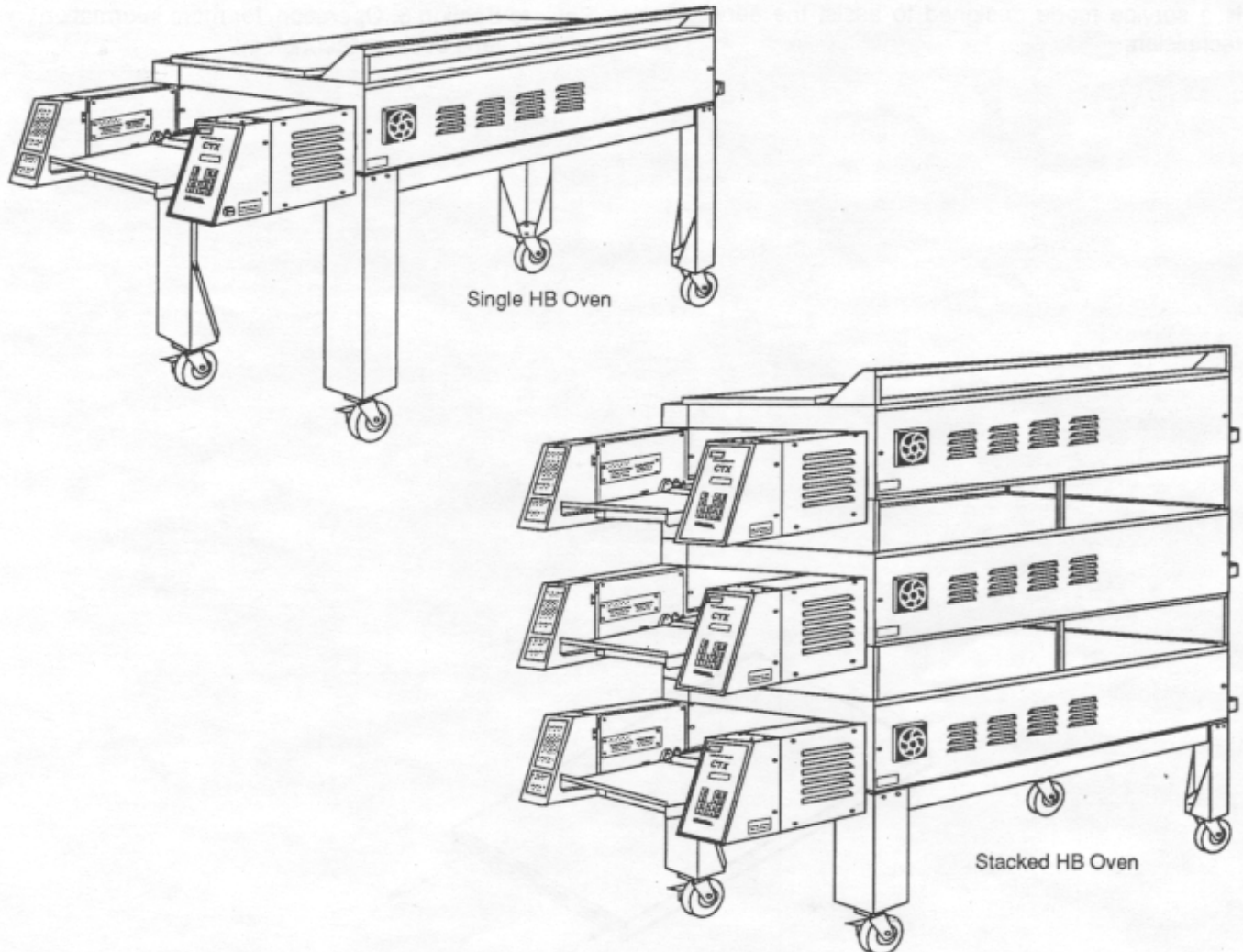


Figure 1-3
Single and Stacked Ovens

SECTION 1 - DESCRIPTION

3. Microprocessor Control

Each oven is individually controlled by a programmable microprocessor. The microprocessor controls all functions of the oven. Cooking temperatures can be set from 200°F to 750°F (93°C to 398°C) in the bottom zone(s) and can be set from 200°F to 900°F (93°C to 482°C) in the top zone(s). Cooking times (conveyor speed) can be set from 1.5 to 240.0 minutes for the HB4 oven and 2.0 to 240.0 minutes for the HB6 oven. The ovens feature a self-cleaning mode, a programmable ON/OFF timing mode, and an energy conserving standby mode. Also included is a service mode designed to assist the service technician.

4. Infrared Heating Panels

Patented heating panels are positioned above and below the conveyor belt of each oven deck (chamber). When energized these panels emit infrared waves. These waves do not heat the air through which they pass. Instead the waves are absorbed by the outer surface of the product being transported through the oven on the conveyor belt. Using this application food is placed on the conveyor and the unique properties of the infrared waves cause it to cook from the outside to the center in traditional fashion.

Refer to Section 3, Operation, for more information on HB ovens cooking technology.

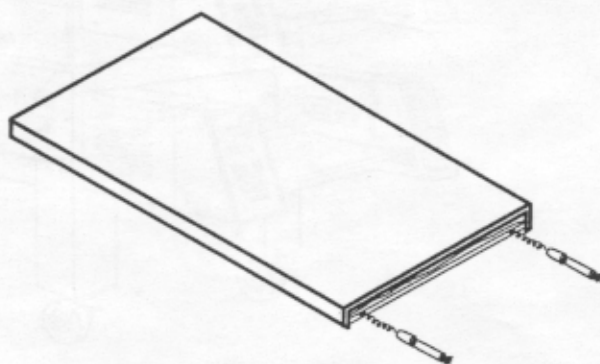


Figure 1-4
Infrared Heating Panel

5. Heat Zones

The heat zones refer to individual areas of heat control within a cooking deck (chamber). Each oven contains three possible zones and in each of these zones the top and bottom temperatures can be set separately.

Refer to Section 3, Operation for further explanation of heat zones and oven modes.

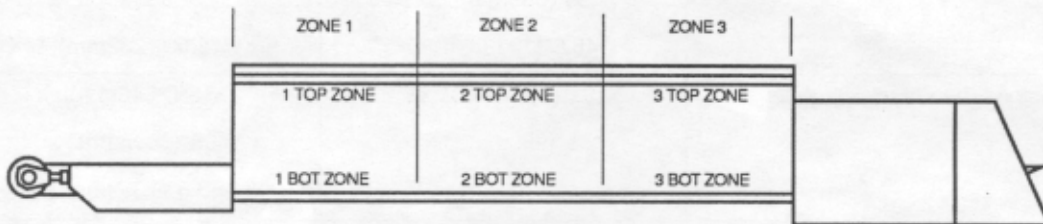


Figure 1-5
Heat Zones

6. Conveyor

The conveyor is used to convey the product through the oven deck (chamber). The conveyor is made up of a frame and a wire belt. The conveyor is controlled by the microprocessor and can travel at speeds from 2.0 to 240 minutes on HB6 ovens and from 1.5 to 240 minutes on HB4 ovens. The speed of the conveyor determines how long the product will be in the cooking chamber which is the cooking time.

Conveyor width for all models is 18" (457mm).

SECTION 1 - DESCRIPTION

C. Oven Specifications

NOTICE

CTX (Manufacturer) reserves the right to change specifications and product design without notice. Such revisions do not entitle the buyer to corresponding changes, improvements, additions or replacements for previously purchased equipment.

Specification Chart

	HB4	HB6
Conveyor Belt Width	18"(457mm)	18"(457mm)
Heating Zone (Chamber) Length	50"(1270mm)	74"(1880mm)
Oven Chamber Dimensions	50"(1270mm)L x 22.5"(572mm)W x 5.5"(140mm)H	74"(1880mm)L x 22.5"(572mm)W x 5.5"(140mm)H
Conveyor Baking Area	6.25 sq. ft.(0.58 sq. m.)	9.25 sq. ft.(0.86 sq. m.)
Overall Dimensions-Single deck 36" on base	92"(2337mm)L x 35"(889mm)D x 48.5"(1232mm)H	116"(2946mm)L x 35"(889mm)D x 48.5"(1232mm)H
Overall Dimensions-Two stacked decks on 24" base	92"(2337mm)L x 35"(889mm)D x 53.5"(1359mm)H	116"(2946mm)L x 35"(889mm)D x 53.5"(1359mm)H
Overall Dimensions-Three stacked decks	92"(2337mm)L x 35"(889mm)D x 70.5"(1791mm)H	116"(2946mm)L x 35"(889mm)D x 70.5"(1791mm)H
Net Weight of Single Unit	500 lbs.(227 kg)	790 lbs.(358 kg)
Shipping Weight - Single Unit	600 lbs.(272 kg)	1000 lbs.(454 kg)
Shipping Weight - 36" Base for Single Unit	190 lbs.(86 kg)	150 lbs.(68 kg)
Shipping Weight - 24" Base for Stacked Units	160 lbs.(73 kg)	130 lbs.(59 kg)
Shipping Dimensions	125"(3175mm)L x 30"(762mm)D x 38"(965mm)H	126"(3200mm)L x 23"(584mm)D x 45"(1143mm)H
Average Operating kw	6.45 kw	9.03 kw
Allowable Temperature Ranges	200°F - 950°F(93°C - 509°C)	200°F - 950°F(93°C - 509°C)
Electric Conduit Knockout Size	1-3/8"(35mm), 1-3/4"(45mm) or 2"(51mm)	1-3/8"(35mm), 1-3/4"(45mm) or 2"(51mm)
Conveyor Drive System	Solid state variable speed control. 208/230 VAC supply voltage converted to direct current through microprocessor for motor and speed control.	
Cook Time	HB6 adjustable from 2.0 to 240.0 minutes HB4 adjustable from 1.5 to 240.0 minutes	
Insulation	3"(76mm) on all 4 sides.	
Heat Source	Infrared heat emitters 6 emitters/oven 3 emitters above each conveyor 3 emitters below each conveyor	Infrared heat emitters 12 emitters/oven 6 emitters above each conveyor 6 emitters below each conveyor
Oven Chamber Steel	Welded and reinforced 14 gauge aluminized steel.	
Outer Body Steel	16 gauge stainless steel.	

OVEN ELECTRICAL SPECIFICATION CHART

NOTE: Separate ground wire must be supplied with each oven, conduit may not be used as ground.

NOTE: Separate circuit breaker must be supplied for each oven.

HB4 OVEN ELECTRICAL SPECIFICATION CHART									
Voltage	Phase	kw	Amp Loading			Minimum Supply Wire Gauge*			Breaker Amp Rating
			L1	L2	L3	AWG	IWG	MWG	
208 VAC	3	15.0	35.0	44.0	44.0	8	9	35	60
208 VAC	1	15.0	72.0	72.0		4	5	50	90
230 VAC	3	18.3	42.0	49.0	49.0	8	9	35	70
230 VAC	1	18.3	80.0	80.0		4	5	50	100
HB4Y HIGH VOLTAGE OVEN ELECTRICAL SPECIFICATION CHART									
Voltage	Phase	kw	Amp Loading			Minimum Supply Wire Gauge*			Breaker Amp Rating
			L1	L2	L3	AWG	IWG	MWG	
380 VAC	3	16.5	25.0	27.5	25.0	8	9	35	50
415 VAC	3	20.1	27.5	30.0	27.0	8	9	35	50
HB6 OVEN ELECTRICAL SPECIFICATION CHART									
Voltage	Phase	kw	Amp Loading			Minimum Supply Wire Gauge*			Breaker Amp Rating
			L1	L2	L3	AWG	IWG	MWG	
208 VAC	3	21.0	63.0	50.0	63.0	6	8	40	80
208 VAC	1	21.0	101.0	101.0		3	4	50	125
230 VAC	3	25.7	70.0	55.0	70.0	4	5	50	90
230 VAC	1	25.7	112.0	112.0		3	4	60	125
HB6Y HIGH VOLTAGE OVEN ELECTRICAL SPECIFICATION CHART									
Voltage	Phase	kw	Amp Loading			Minimum Supply Wire Gauge*			Breaker Amp Rating
			L1	L2	L3	AWG	IWG	MWG	
380 VAC	3	21.0	28.0	30.0	33.0	8	9	35	50
415 VAC	3	25.7	31.0	34.0	37.0	8	9	35	60
* Provided for reference only. Consult national or local electrical codes. Supply wire must be rated minimum 90°C (194°F).									

SECTION 1 - DESCRIPTION

D. Dimension Drawings

1. Dimension drawing of HB4 Oven

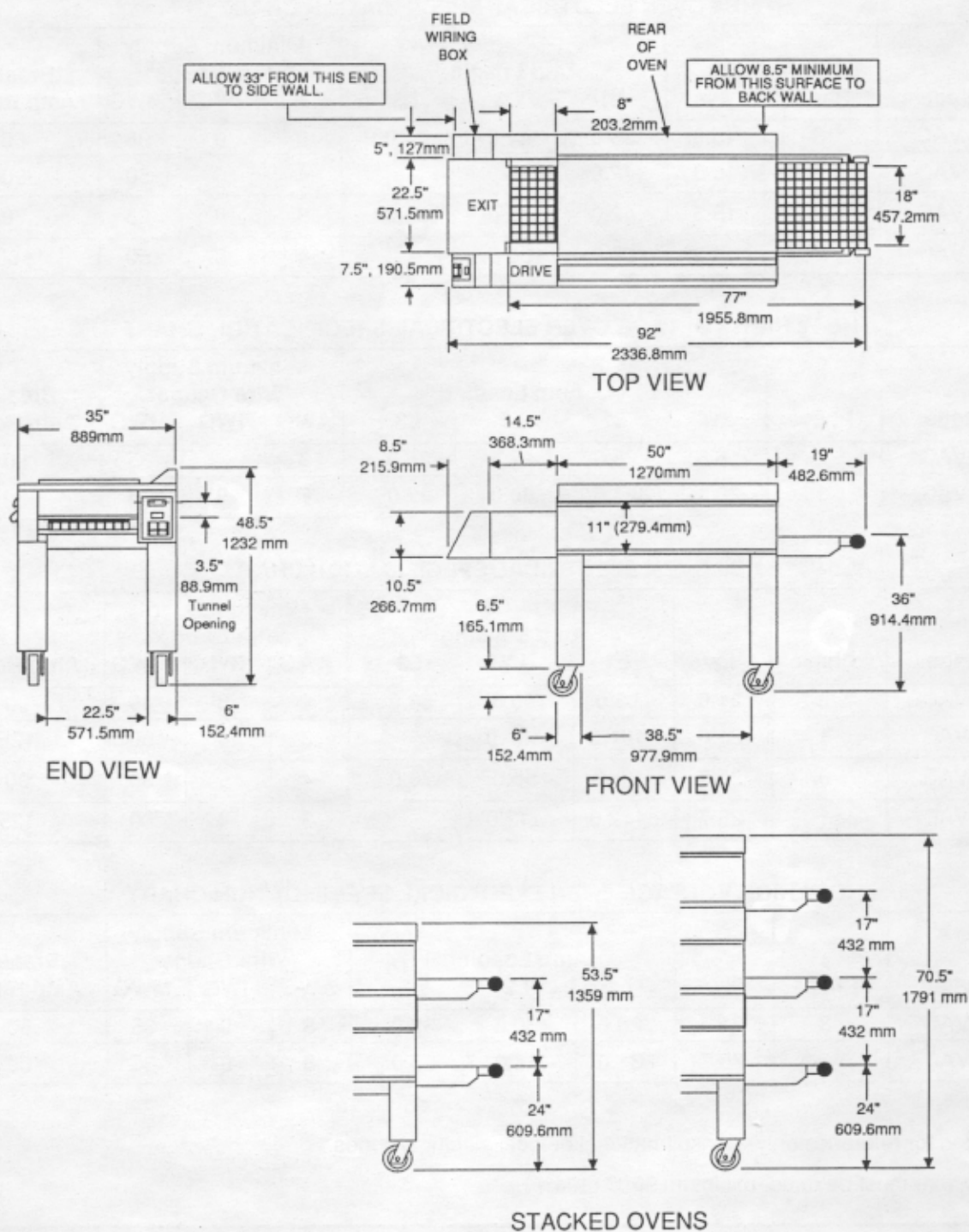


Figure 1-6
HB4 Oven

2. Dimension drawing of HB6 oven.

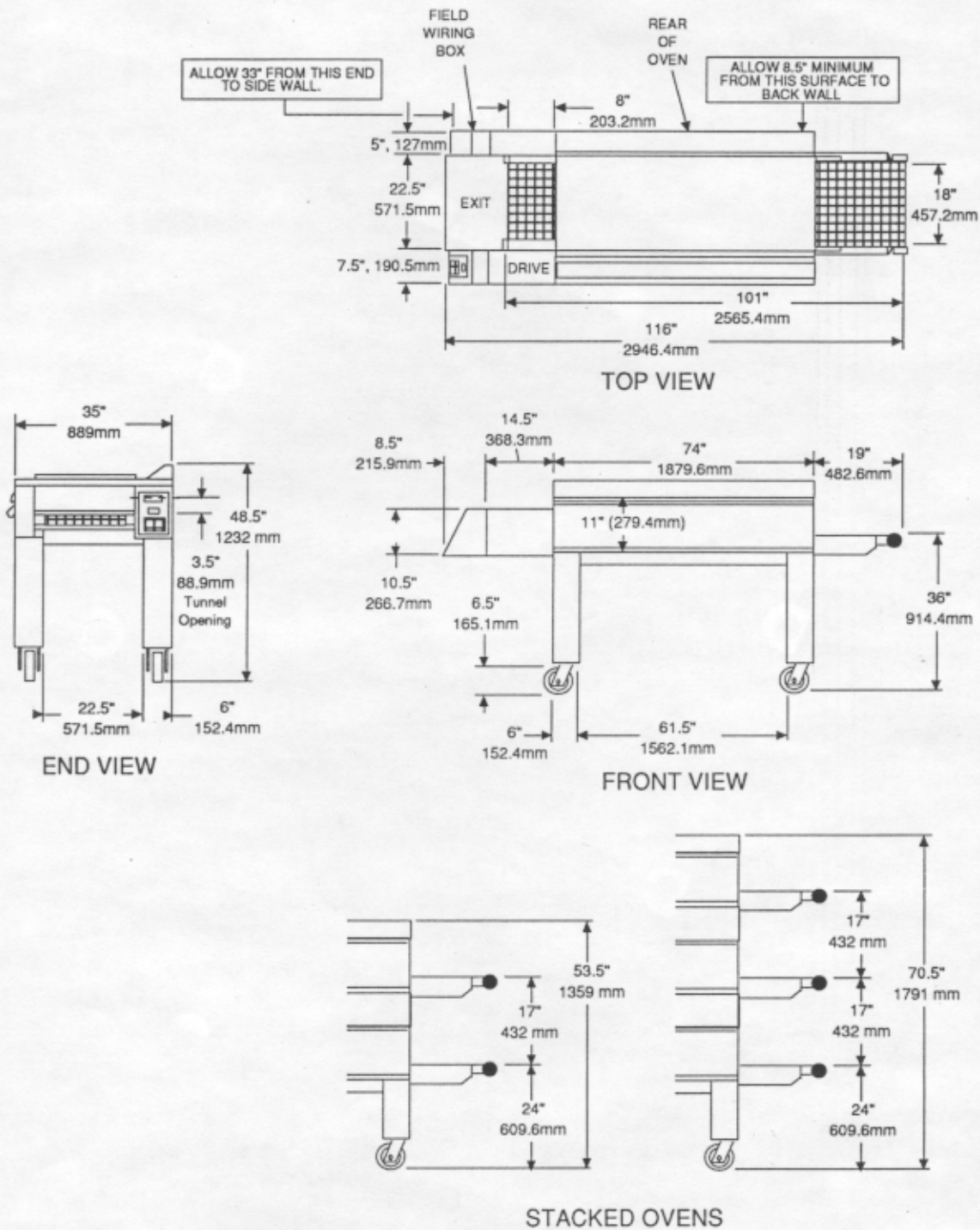


Figure 1-7
HB6 Oven

SECTION 2

INSTALLATION

A. Inspect for Shipping Damage

All shipping containers should be examined for damage before and during unloading. This equipment was carefully inspected and packaged at the factory. The freight carrier has assumed responsibility for its safe transit and delivery. **If equipment is received in damaged condition, either apparent or concealed, a claim must be made with the delivering carrier.**

1. Cut the bands holding the protective shipping carton to the skid. Carefully remove cardboard carton. Next, cut the bands securing oven to wooden crate.
2. Apparent Damage or Loss - If damage or loss is apparent it must be noted on the freight bill or express receipt at the time of delivery, and it must be signed by the carrier's agent (driver). If this is not done, the carrier may refuse the claim. The carrier will supply the necessary claim forms.
3. Concealed Damage or Loss - If damage or loss is not apparent until after equipment is uncrated, a request for inspection of concealed damage must be made with carrier within 15 days. The carrier will make an inspection and will supply necessary claim forms. Be certain to retain all contents plus external and internal packaging/crating materials for inspection.

B. Placement of Oven

Some very important considerations must be made when choosing the place where the oven is to operate.

1. This oven is conveyORIZED and operates continuously. It should be placed so it fits into the "flow" of the operation.
2. Drafts entering the oven chambers can cause inconsistent cooking results. Check the area surrounding the oven and eliminate sources of drafts such as open windows or doors and fans or other appliances that cause air circulation.
3. Oven should be positioned so hot air from another piece of equipment cannot enter oven cooling fan air intake on oven front. Serious problems could occur.

NOTE: To validate a new oven(s) warranty a certified CTX installer must supervise Steps C thru I of installation. This service is included in the cost of a new oven as long as installation is performed during normal working hours 7 AM to 5 PM, Monday thru Friday and completed during one trip. All overtime and additional trip costs are the responsibility of the buyer.

NOTE: Customer must supply (2) two able bodied laborers to assist Certified Installer during final installation.

C. Unpacking Oven

The oven components should be moved as close as possible to final location before being assembled/stacked. The oven setting on its bottom, requires door openings wider than 36" (914mm). When placed on its back, an oven unit will pass through an opening as

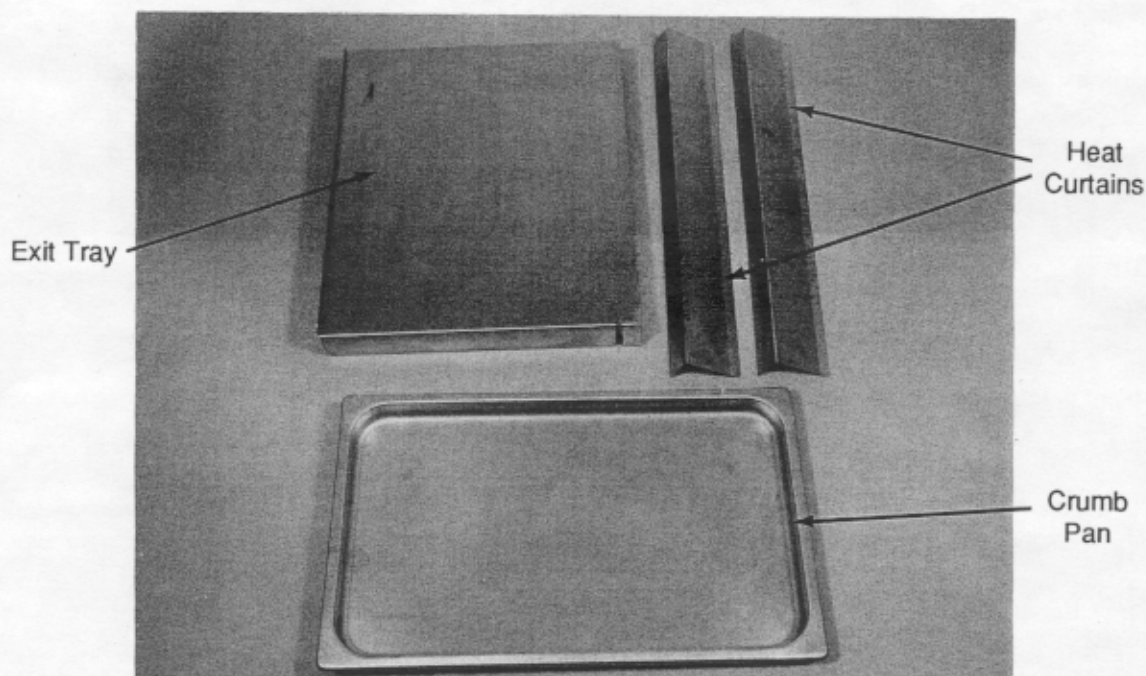


Figure 2-1

SECTION 2 - INSTALLATION

narrow as 28"(711mm).

Tied down to the entrance end of conveyor is a box containing accessory parts. See Figure 2-1. Save these parts for final assembly.

D. Items For Stacking Oven(s)

The following items will be supplied by the Certified Installer for stacking the oven(s).

Quantity	Description
2	2" x 4" x 4' Board
2	4" x 4" x 4' Board
2	4" x 4" x 7' Board
2	Genie M5 Lift

E. Base Section Assembly (Refer to Figure 6-9)

1. Locate the carton containing the oven base. Remove and inventory the contents. Refer to Figure 6-9. Also included with each base is an

insulated top panel and raceway baffle.

2. Assemble base as shown in Figure 6-9.

3. Attach four casters to four legs. There are two locking casters and two non-locking casters. Assemble the two locking casters (Item 8) as shown in Figure 6-9. The side where the locking casters are installed is the front of the stand.

F. Mounting Raceway Baffle and Top Insulated Panel Supplied With Base Assembly.

NOTE: Before stacking single oven onto base or stacking two or more ovens it is advised to install wire raceway baffle and top insulated panel on top oven to be stacked.

1. Install the raceway baffle to top oven using four 8-32 x 3/8" screws and four washers. Mount two standoffs, one at each end of baffle using 8-32 x 3/8" screws as shown in Figure 2-2.

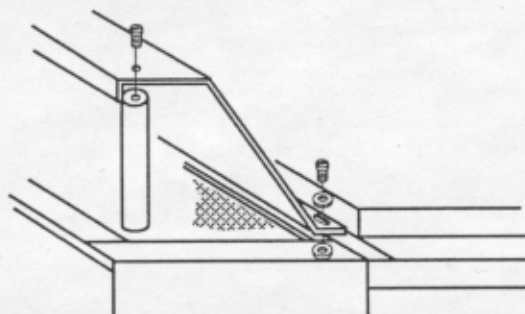
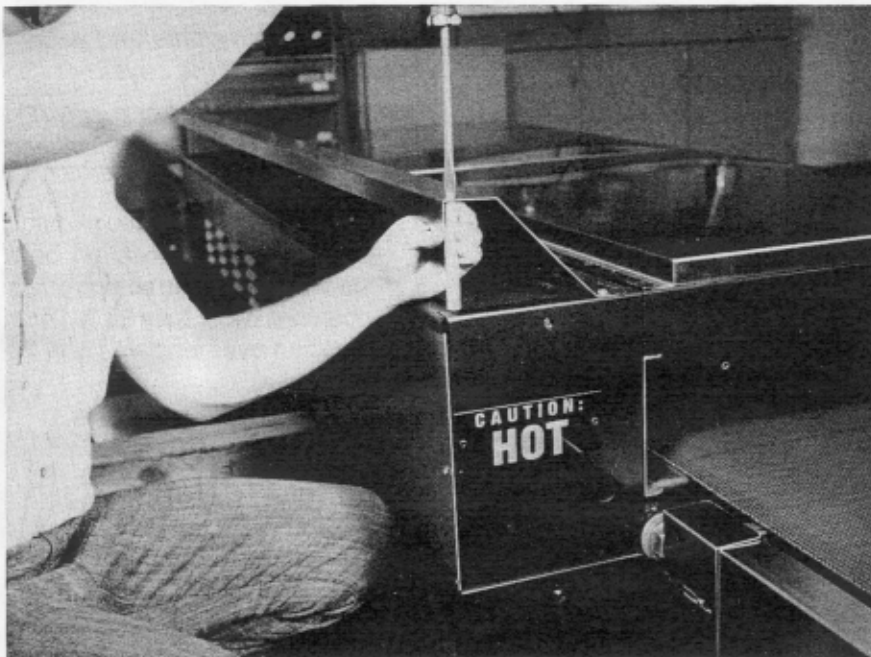


Figure 2-2
Installing Raceway Baffle

2. Mount insulated top panel(s) by slipping panel lip into groove on top of oven as shown in Figure 2-3.
NOTE: The Model HB4 has one top panel and the Model HB6 has two top panels.

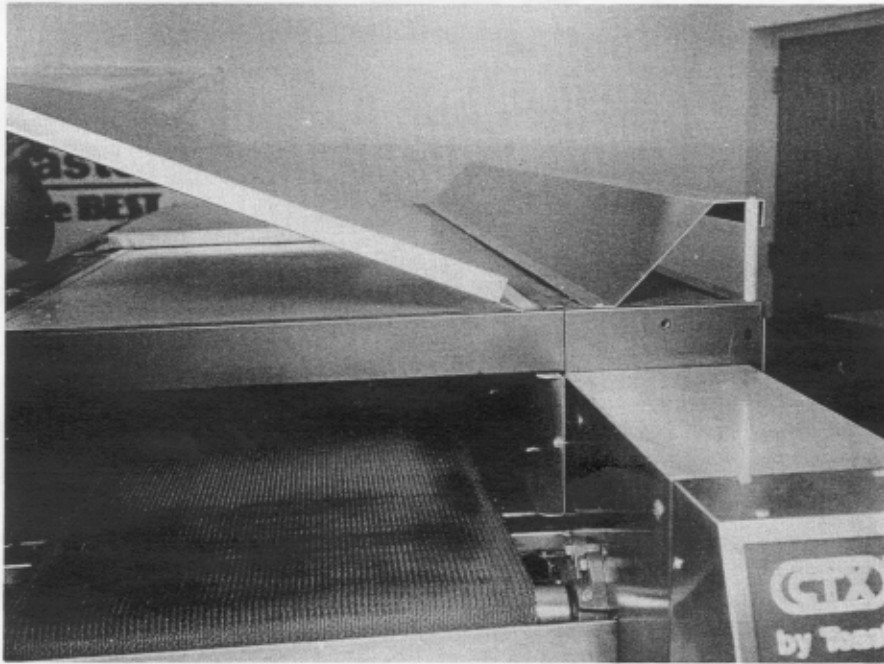


Figure 2-3
Installing Top Panel

3. Rear lip is secured using two 8-32 x 3/8" screws per each of 2 panels on an HB6 and four screws on the single HB4 panel.

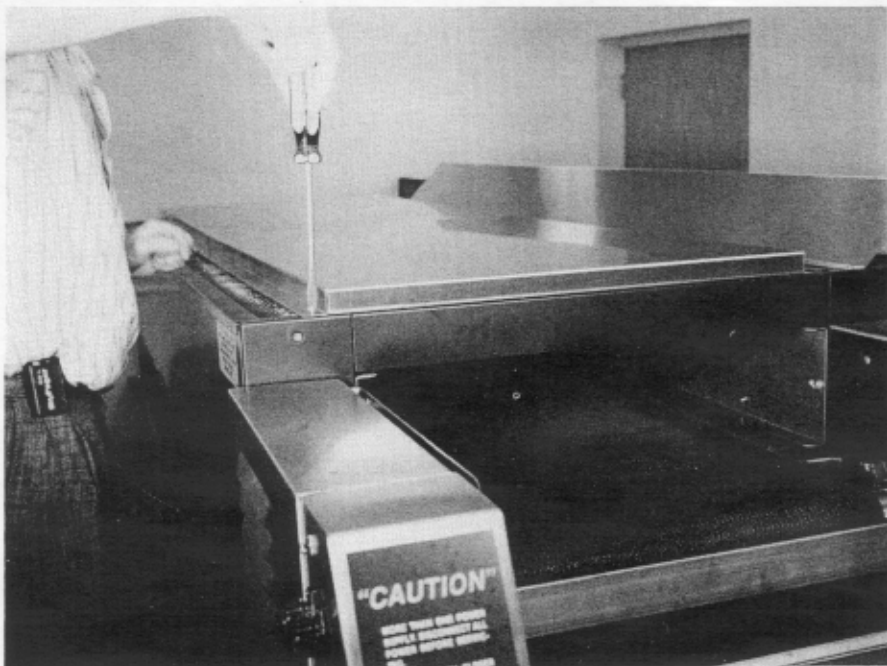


Figure 2-4

SECTION 2 - INSTALLATION

G. Mounting Single Oven Onto Base Assembly

NOTE: This mounting procedure is for both the HB4 and the HB6. The only difference in the oven stands is the length of the top frame assembly.

1. Position the two 4" x 4" x 7' boards between oven and crate, as shown in Figure 2-5, so that 2' extends on each side of oven.

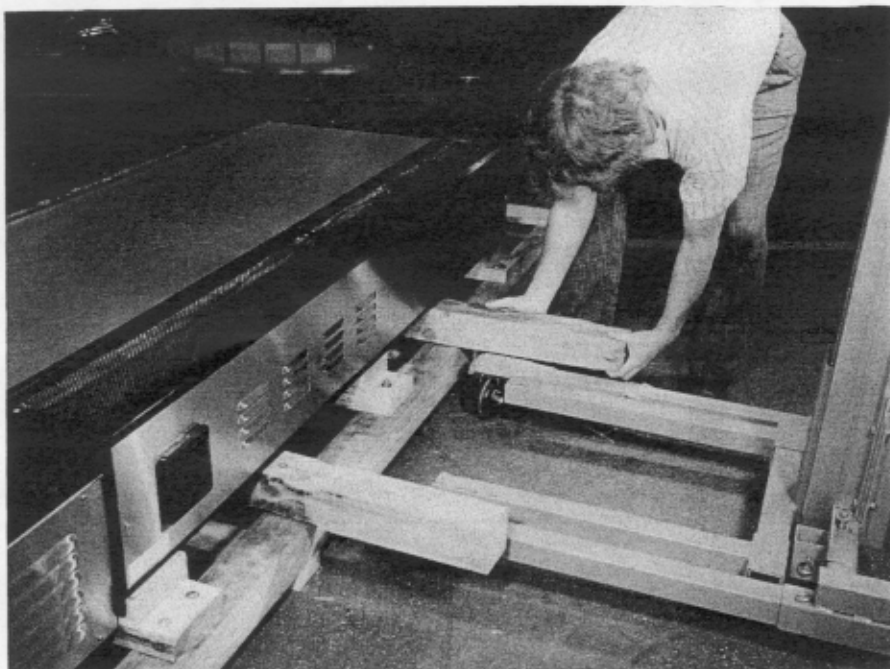


Figure 2-5

2. Position Genie Lifts between 4" x 4" x 7" boards at front and rear of oven. Lift the two 4" x 4" x 7' boards as shown in Figure 2-6 and place a 2" x 4" x 4' across the Genie Lift forks and under the two 4" x 4" x 7' boards.

IMPORTANT: Lift oven from the bottom only. **DO NOT** lift the oven using the conveyor supports as handles. **DAMAGE WILL RESULT.**

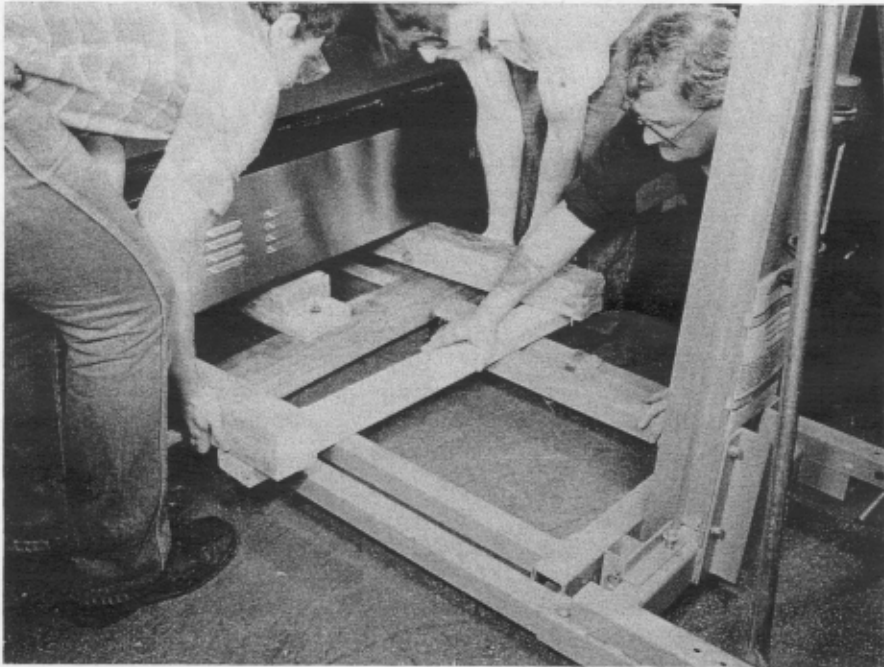


Figure 2-6

SECTION 2 - INSTALLATION

3. Elevate the oven high enough to position base under oven. Position base under oven and lower oven on base. Remove Genie Lifts.

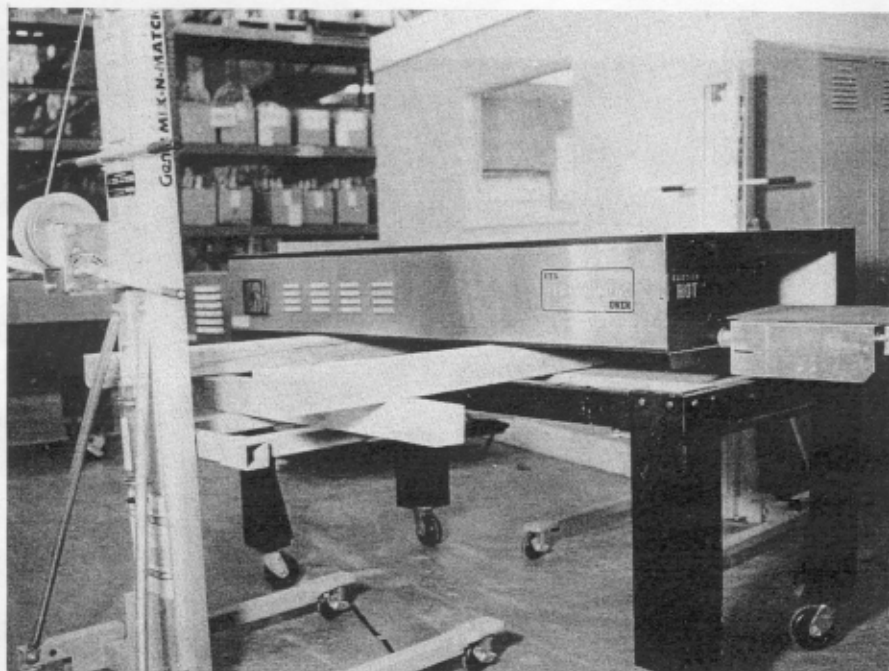


Figure 2-7

4. Position Genie Lifts at each end of oven so that forks are in each corner of oven chamber opening. Lift oven 2" and remove 4" x 4" x 7" boards.

WARNING: DO NOT lift the oven using the conveyor supports as **DAMAGE WILL RESULT**

5. Center oven onto base. Use two 3/8-16 x 1" bolts to secure oven to base at exit and entrance ends.

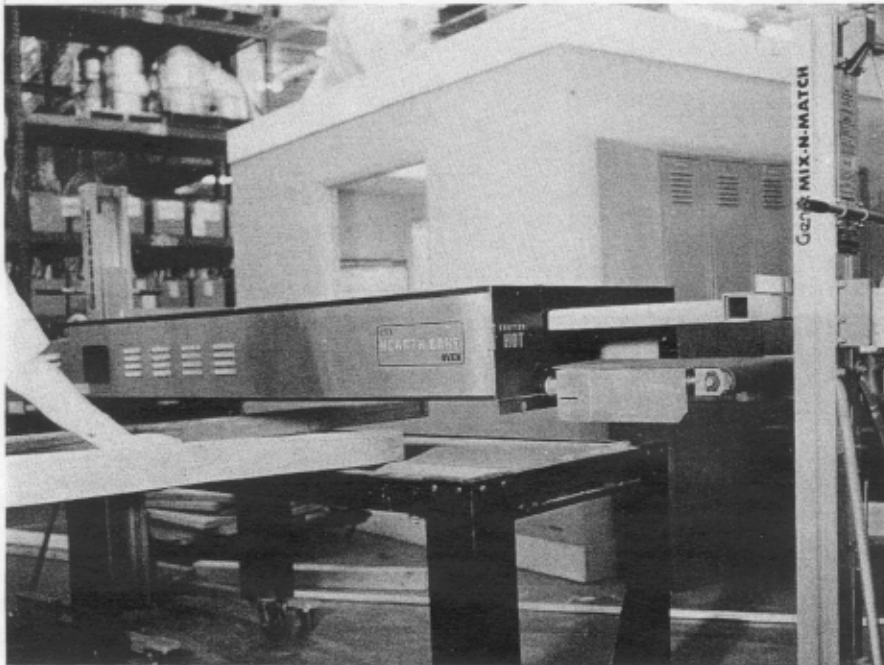


Figure 2-8

SECTION 2 - INSTALLATION

H. Stacking and Mounting Two or Three Ovens

WARNING:

The HB oven is designed to be stacked only three high. Stacking more than three ovens will void warranty of all ovens.

1. Place stacking bracket(s) on floor with a 4" x 4" x 4' board under each end lip to elevate frame 4" from floor.
2. Follow same procedure as in Step G to mount oven onto stacking bracket.
3. Slide 4" x 4" x 7' boards under and through center of stacking bracket frame. Place Genie Lift at each side with a 2" x 4" x 4' across end of forks. Place forks of Genie Lift under 4" x 4" x 7' boards as shown.



Figure 2-9

4. Lift oven high enough so lower oven can be positioned underneath. Lower oven onto bottom oven. Remove 4" x 4" x 7' boards from between the bracket.

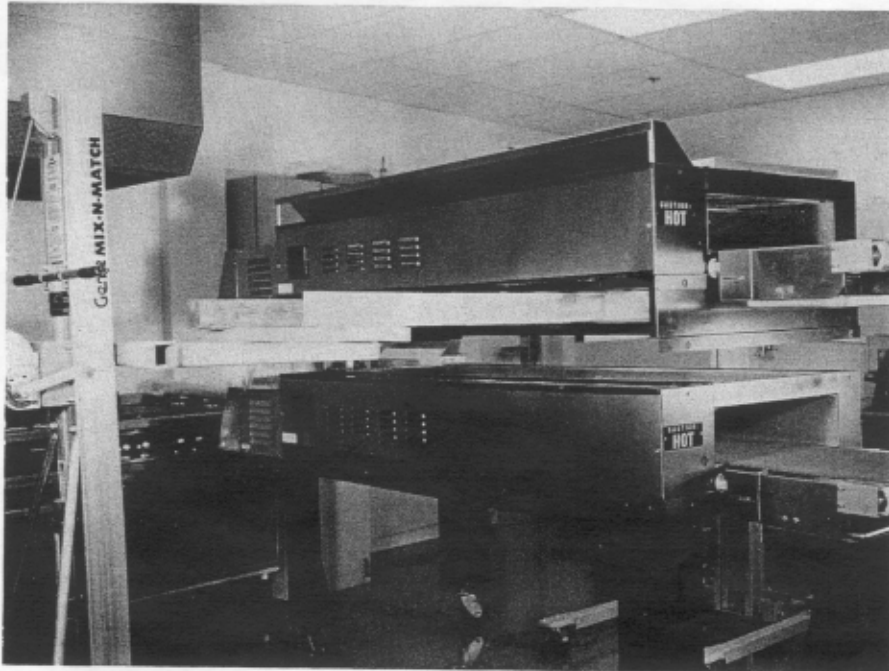


Figure 2-10

I. Loose Part Installation

1. Install the curtains as shown in Figure 2-12. the curtains must be placed at each end of the oven to keep out drafts. The curtains slide easily into place above each tunnel entrance and exit.



Figure 2-12

SECTION 2 - INSTALLATION

2. The stainless steel exit shelf mounts to the exit end of oven. To install place slotted end of shelf over inner cross bar found at end of conveyor. This shelf provides a landing zone for the cooked product.



Figure 2-13

3. Install the crumb pan at the entrance end of the oven. Slide the crumb pan under the conveyor belt and onto the angles of the entrance end frame assembly.

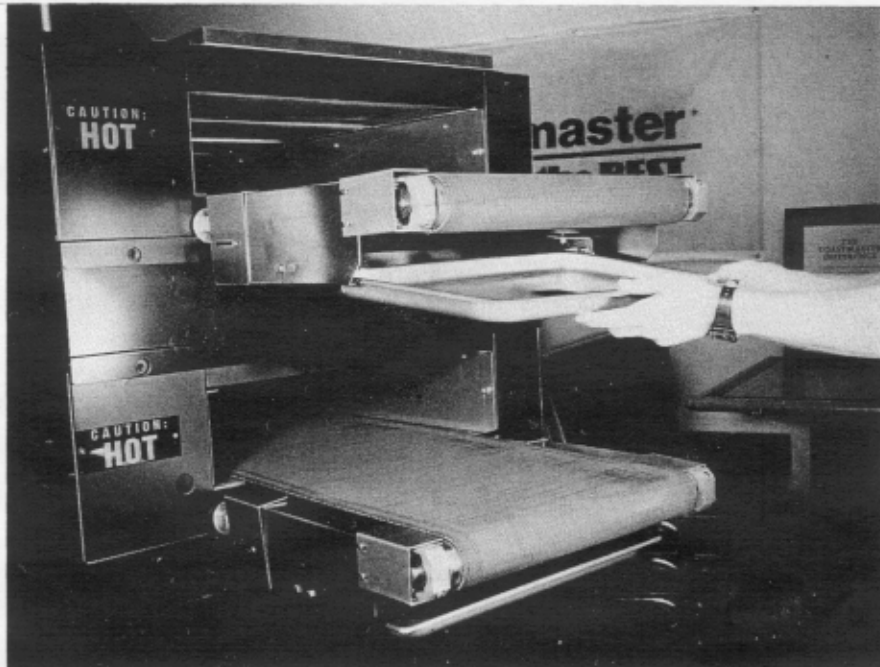


Figure 2-14

J. Electrical Connection

All wiring and electrical connections required for the oven(s) must be performed by a certified electrician. Each oven must be wired according to the electrical specification for the oven rating. See chart below and electrical schematic in Section 7 and schematics furnished with the oven.

CTX Models HB4 & HB6 ovens are dual voltage rated and can be connected to either 240 or 208 VAC, 50/60 Hz, 1 or 3 phase power supply. Export units are available in 380 or 415 VAC, 50/60 Hz, 3 phase.

To connect wiring, remove the two screws on the left edge of the circuit breaker panel. The circuit breaker box is hinged and will swing open. A 1-3/8" (35mm), 1-3/4" (45mm) and 2" (51mm) conduit knockout (See Figure 2-15) is provided to the left of the circuit breakers on louvered panel.

If local codes allow, we recommend that flexible conduit be used for final connection as the oven assembly is on casters and the use of flexible conduit will allow movement for cleaning.

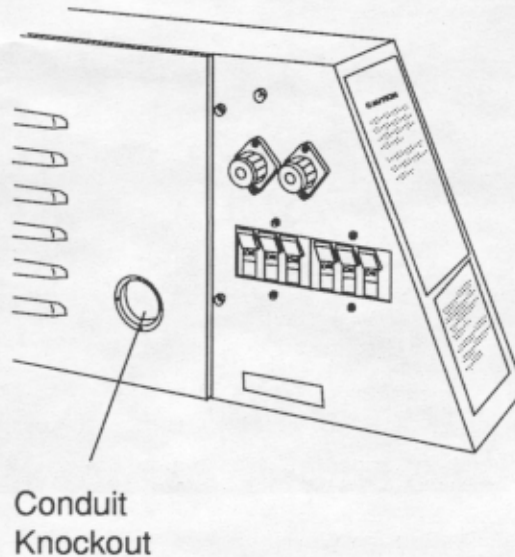


Figure 2-15
Breaker Box

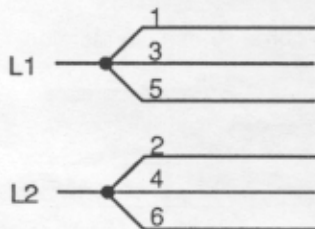
OVEN ELECTRICAL SPECIFICATION CHART

NOTE: Separate ground wire must be supplied with each oven, conduit may not be used as ground.

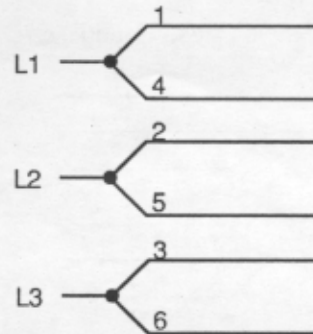
NOTE: Separate circuit breaker must be supplied for each oven.

HB4 OVEN ELECTRICAL SPECIFICATION CHART									
Voltage	Phase	kw	Amp Loading			Minimum Supply Wire Gauge*			Breaker Amp Rating
			L1	L2	L3	AWG	IWG	MWG	
208 VAC	3	15.0	35.0	44.0	44.0	8	9	35	60
208 VAC	1	15.0	72.0	72.0		4	5	50	90
230 VAC	3	18.3	42.0	49.0	49.0	8	9	35	70
230 VAC	1	18.3	80.0	80.0		4	5	50	100

HB4 Single Phase Connection



HB4 Three Phase Connection

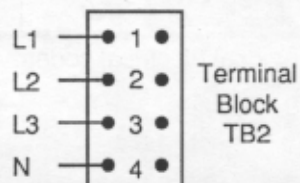


HB4Y HIGH VOLTAGE OVEN ELECTRICAL SPECIFICATION CHART									
Voltage	Phase	kw	Amp Loading			Minimum Supply Wire Gauge*			Breaker Amp Rating
			L1	L2	L3	AWG	IWG	MWG	
380 VAC	3	16.5	25.0	27.5	25.0	8	9	35	50
415 VAC	3	20.1	27.5	30.0	27.0	8	9	35	50

* Provided for reference only. Consult national or local electrical codes.

Supply wire must be rated minimum 90°C (194°F).

HB4Y (High Voltage Export) 3 Ph Connection



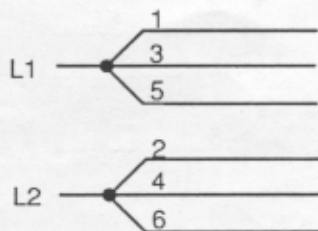
OVEN ELECTRICAL SPECIFICATION CHART CONTINUED

NOTE: Separate ground wire must be supplied with each oven, conduit may not be used as ground.

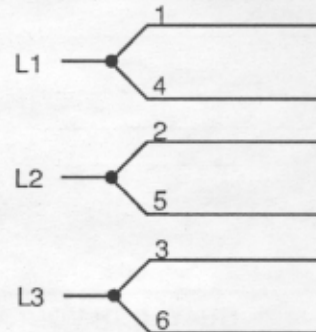
NOTE: Separate circuit breaker must be supplied for each oven.

HB6 OVEN ELECTRICAL SPECIFICATION CHART									
Voltage	Phase	kw	Amp Loading			Minimum Supply Wire Gauge*			Breaker Amp Rating
			L1	L2	L3	AWG	IWG	MWG	
208 VAC	3	21.0	63.0	50.0	63.0	6	8	40	80
208 VAC	1	21.0	101.0	101.0		3	4	50	125
230 VAC	3	25.7	70.0	55.0	70.0	4	5	50	90
230 VAC	1	25.7	112.0	112.0		3	4	60	125

HB6 Single Phase Connection



HB6 Three Phase Connection

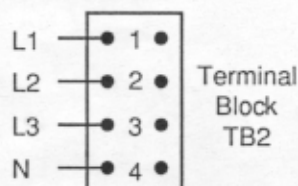


HB6Y HIGH VOLTAGE OVEN ELECTRICAL SPECIFICATION CHART									
Voltage	Phase	kw	Amp Loading			Minimum Supply Wire Gauge*			Breaker Amp Rating
			L1	L2	L3	AWG	IWG	MWG	
380 VAC	3	21.0	28.0	30.0	33.0	8	9	35	50
415 VAC	3	25.7	31.0	34.0	37.0	8	9	35	60

* Provided for reference only. Consult national or local electrical codes.

Supply wire must be rated minimum 90°C (194°F).

HB6Y (High Voltage Export) 3 Ph Connection



SECTION 3

OPERATION

NOTE: HB ovens have been manufactured with non-MenuSelect and with MenuSelect™ controls. The Operation Section covers both types of controllers as shown in the following Operation Section Outline.

- A. Location of Controls -- Applies to both MenuSelect and non-MenuSelect controls.
- B. MenuSelect™ Control Operation and Programming.
- C. Non-MenuSelect Control Operation and Programming.
- D. Cooking in an HB oven. -- Applies to both MenuSelect and non-MenuSelect controls.

A. LOCATION OF CONTROLS

1. Operation Controls

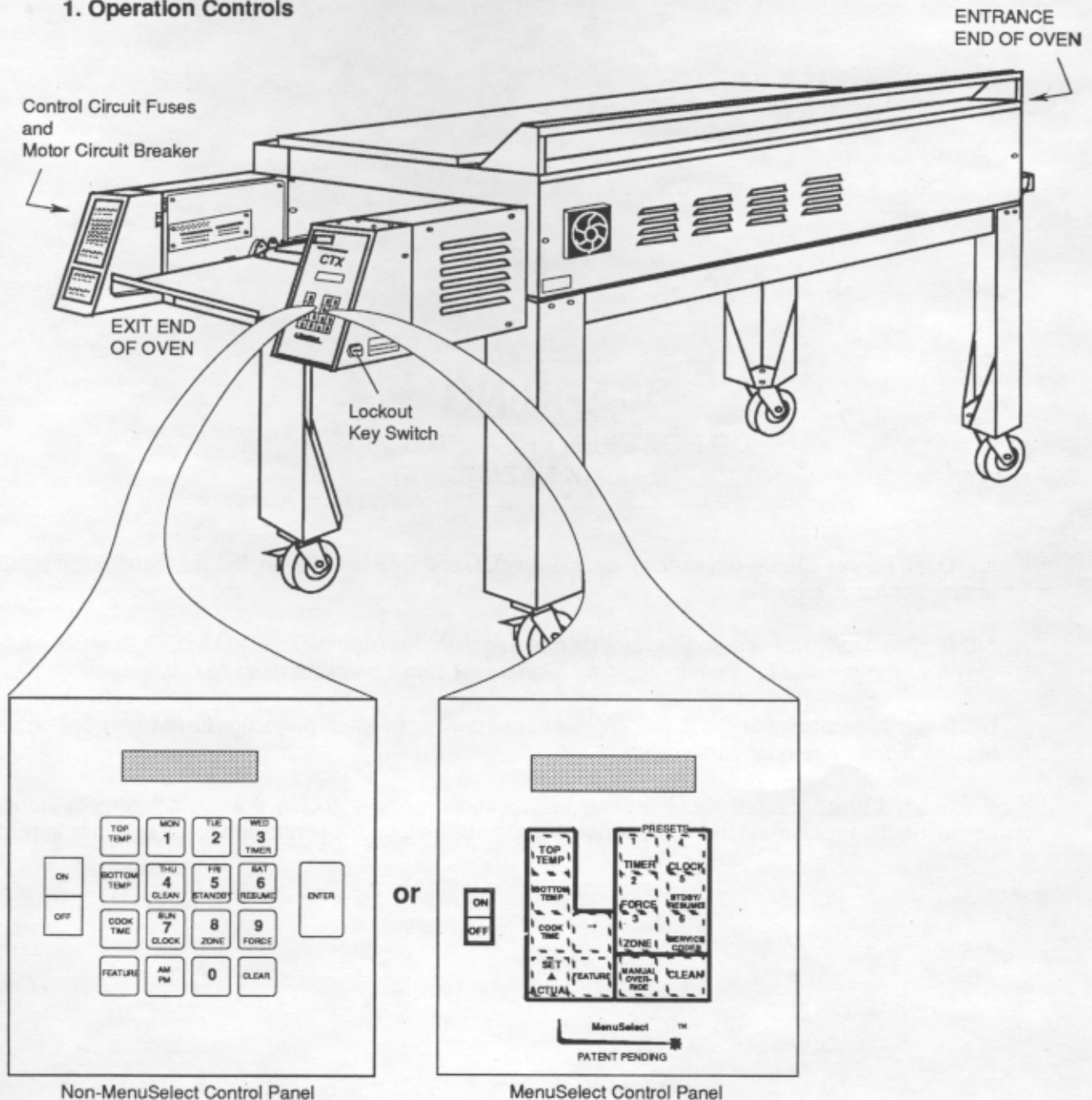
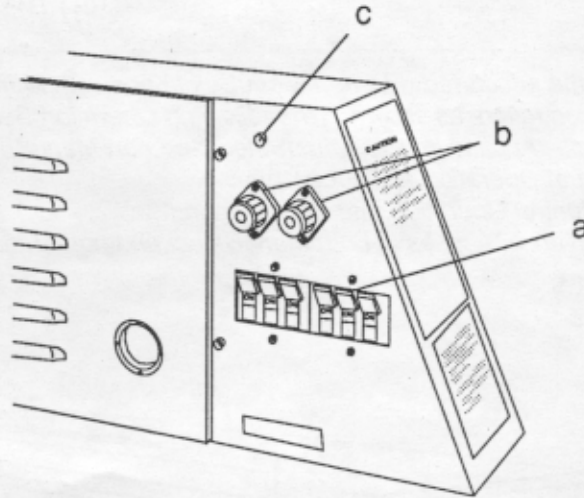


Figure 3-1
Operating Controls

SECTION 3 - OPERATION

2. Electric Panel Controls



**Figure 3-2
Breaker Box**

WARNING

**DO NOT OPEN BREAKER BOX -
SHOCK HAZARD.**

a. **Oven Power Circuit Breaker(s):** turns power ON and OFF to the oven. Breakers should be left ON unless service is required.

NOTE: The cooling fan is controlled by a thermal switch that will turn the fan ON and OFF even if the oven isn't running. In order for the fan to run the oven power circuit breakers must be ON.

b. **Fuseholders:** contain SC15 (15 amp) fuses and provide overload protection for the two transformers and the high limit temperature control.

c. **Reset Buttons:** small circuit breaker for the conveyor drive motor. If an object jams or stops a conveyor, the breaker will trip and a button will pop out 1/4". After clearing jam press button in to reset.

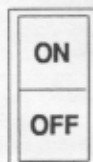
B. MENUSELECT CONTROL OPERATION & PROGRAMMING

NOTE: FOR NON MENUSELECT OPERATION GO TO PAGE 42.

1. Function of Controls

The oven operating controls are located at the exit end of the oven. They all relate to the controller for programming and for operating the oven. The control panel consists of an ON/OFF switch, a keypad with multi-function keys and a liquid crystal display. A key-operated programming lockout switch is located on the side of the control box. The letter callouts in Figure 3-3 coincide with the following list which explains the keypad.

The following information provides a basic description of the oven controls, their location and the function they perform. Refer to Figure 3-3.

A. POWER ON/OFF

- Used to turn oven ON and OFF

NOTE: The POWER circuit breakers should be left on at all times except in case of an emergency or if service procedures are being performed. The cooling fan is controlled by a temperature switch that will turn the fan ON and OFF even if the oven isn't running. In order for the fan to operate the POWER circuit breaker(s) must be ON.

B. TOP TEMPERATURE

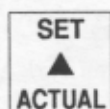
- used to display actual temperature of the top zone(s) when used in conjunction with the SET/ACTUAL key.
- used to display set temperature of the top zone(s) during operation.
- used to change set temperature of the top zone(s) during programming.

C. BOTTOM TEMPERATURE

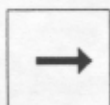
- used to display actual temperature of the bottom zone(s) when used in conjunction with the SET/ACTUAL key.
- used to display set temperature of the bottom zone(s) during operation.
- used to change set temperature of the bottom zone(s) during programming.

D. COOK TIME

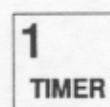
- used to display and/or change cook time setpoint of a preset menu.

E. SET/ACTUAL and "▲" key

- used to display actual temperature of either the top zone(s) or bottom zone(s) when used in conjunction with the TOP or BOTTOM TEMP keys.
- used when programming to increase one number at a time 0 to 9 and then roll over to 0.

F. "→" Cursor key

- used to move the cursor to the next digit from left to right.

G. Preset Menu Keys 1-6

thru



- used to operate or program oven in one of six preset menu modes.
- **NOTE:** In the event of a power failure the oven will default back to the previously used preset menu when power is restored. Always check that the oven is in the desired mode when the power is restored.

H. MANUAL OVERRIDE

- used to override preset menu setting and operate oven at any desired temperature and cook time.

SECTION 3 - OPERATION

I. CLEAN

- used to enter the self-cleaning mode of oven.

CLEAN

J. FEATURE

- used to initiate features. Pressed previous to entering a feature (TIMER, FORCE, ZONE, CLOCK, STDBY/RESUME or SERVICE CODES).

FEATURE

K. TIMER

- used to set ON/OFF times for automatic timing.

1
TIMER

L. FORCE

- used to take a deck out of timing (auto) mode or cleaning mode.

2
FORCE

M. ZONE

- used to set oven in Multi-zone (3 top and 3 bottom zones) or Top-bottom Mode (one top and one bottom zone).

3
ZONE

N. CLOCK

- used to set the oven clock.

4
CLOCK

O. STDBY/RESUME

- used to enter and exit 25% reduced power standby mode.

5
STDBY/
RESUME

P. SERVICE CODES

- used to access service modes.

6
SERVICE
CODES

Q. Lockout Key Switch

- used to lockout the preset menu select programmability when the key is in the vertical position.

R. Display. Provides readout of data including:

- Data being entered
- Set cook times
- Error and service information
- Oven status
- Set and actual temperatures

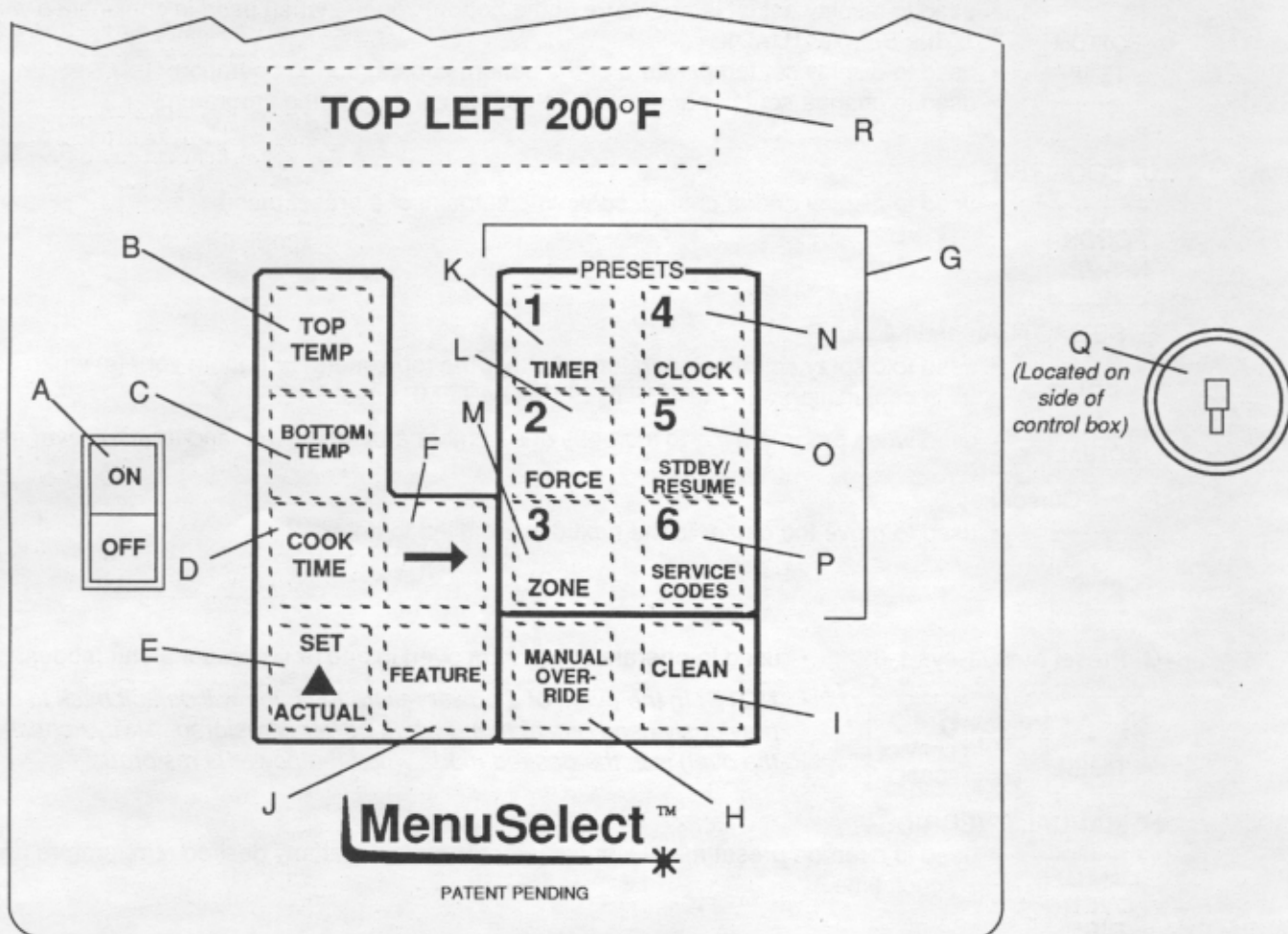


Figure 3-3

2. OPERATION of the HB4 and the HB6 MenuSelect Control Ovens

a. Turn Oven Deck ON

1. Turn ON main disconnect switch at the wall box.
2. Turn ON oven deck power circuit breakers located at the front electric panel.
3. Turn keypad ON/OFF switch ON.

NOTE: If oven is programmed for automatic timing, turn keypad ON/OFF switch to ON and oven will automatically turn ON and OFF at the set times. Keypad ON/OFF switch must remain ON for timed operation.

b. Preset Menu Select Operation

Step

Press Key

Display Reads

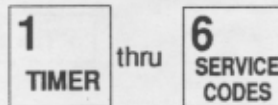
P - - # (HEATING)

The preset menu that was being used when the oven was turned OFF.

P - - # (HEATING)

Oven deck is ready for cooking when "READY" is displayed.

1. Press desired preset menu #



c. View Actual Temperatures in Multi-Zone (3 top zones and 3 bottom zones) Mode

NOTE: To view actual temperature when in the Top-bot Mode (one top zone and one bottom zone) press the TOP TEMP and BOTTOM TEMP keys once only, which will eliminate Steps 3, 4, 8 & 9.

NOTE: To view actual temperature the SET/ACTUAL key must be pressed while the P - - # is displayed.

Step

Press Key

Display Reads

P - - # (READY, HEATING or COOLING)

READY = Oven at set temperature

HEATING = Oven heating up to set temperature

COOLING = Oven cooling down to set temperature

P - - # (READY, HEATING or COOLING)

- 1.



2. View 1 Top temperature



1 TOP: 325°F

Top Temp 325°F

For Top-bot Mode

3. View 2 Top temperature



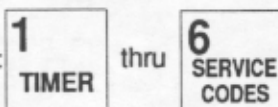
2 TOP: 350°F

4. View 3 Top temperature



3 TOP: 375°F

5. Wait 10 seconds or press any key:



P - - # (READY, HEATING or COOLING)

- 6.



P - - # (READY, HEATING or COOLING)

7. View 1 Bottom temperature



1 BOT: 300°F

Bot Temp 300°F

For Top-bot Mode

8. View 2 Bottom temperature



2 BOT: 325°F

9. View 3 Bottom temperature



3 BOT: 350°F

SECTION 3 - OPERATION

d. View Set Temperatures in Multi-Zone (3 top zones and 3 bottom zones) Mode

NOTE: To view set temperature when in the Top-bot Mode (one top zone and one bottom zone) press the TOP TEMP and BOTTOM TEMP keys once only, which will eliminate Steps 2, 3, 5 & 6.

<u>Step</u>	<u>Press Key</u>	<u>Display Reads</u>
1. View 1 Top temperature	TOP TEMP	P - - # (READY, HEATING or COOLING) 1 TOP: 325°F Top Temp 325°F For Top-bot Mode
2. View 2 Top temperature	TOP TEMP	2 TOP: 350°F
3. View 3 Top temperature	TOP TEMP	3 TOP: 375°F
4. View 1 Bottom temperature	BOTTOM TEMP	1 BOT: 300°F Bot Temp 300°F For Top-bot Mode
5. View 2 Bottom temperature	BOTTOM TEMP	2 BOT: 325°F
6. View 3 Bottom temperature	BOTTOM TEMP	3 BOT: 350°F

e. Viewing COOKTIME

<u>Step</u>	<u>Press Key</u>	<u>Display Reads</u>
1. View cooktime	COOK TIME	P - - # (READY, HEATING or COOLING) Minutes (001.5 to 240.0) Cooktime: 010.0

f. Viewing CLOCK Feature

<u>Step</u>	<u>Press Key</u>	<u>Display Reads</u>
1.	FEATURE	P - - # (READY, HEATING or COOLING) SET FEATURE
2. View clock time	4 CLOCK	10:00AM MON

g. Viewing ZONE Feature

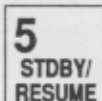
<u>Step</u>	<u>Press Key</u>	<u>Display Reads</u>
1.	FEATURE	P - - # (READY, HEATING or COOLING) SET FEATURE
2. View zone mode setting	3 ZONE	Multi-Zone or Top-bot Zones

h. Viewing TIMER Feature

<u>Step</u>	<u>Press Key</u>	<u>Display Reads</u>
1.		P -- # (READY, HEATING or COOLING) SET FEATURE
2. View timer setting		11:00AM MON On Continue pressing TIMER to view the On and Off times for each day of the week.

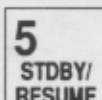
i. Put Oven Deck In Standby Mode

This feature allows a deck to be put into an energy conserving standby mode which reduces the temperature of the deck(s) by 25%.

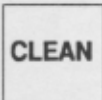
<u>Step</u>	<u>Press Key</u>	<u>Display Reads</u>
1		P -- # (READY, HEATING or COOLING) SET FEATURE
2		P -- # Standby Wait 10 seconds

j. Resume Normal Operation From Standby

This feature is used to return a deck to normal operation from the "standby" mode.

<u>Step</u>	<u>Press Key</u>	<u>Display Reads</u>
1		P -- # Standby SET FEATURE
2		P -- # (READY, HEATING or COOLING)

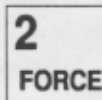
k. Cleaning Operation

<u>Step</u>	<u>Press Key</u>	<u>Display Reads</u>
1. Start cleaning operation		P -- # (READY, HEATING or COOLING) CLEANING

(Press and hold for 2 seconds)

Machine will remain in cleaning mode for 60 minutes.

Cancel Cleaning Operation

1.		SET FEATURE
2. Cancel cleaning		P -- # (READY, HEATING or COOLING)

Oven deck will return to preset menu that was used previous to cleaning.

3. PROGRAMMING the HB4 and the HB6 MenuSelect Control Ovens

The oven has six zones as shown in Figure 3-4.

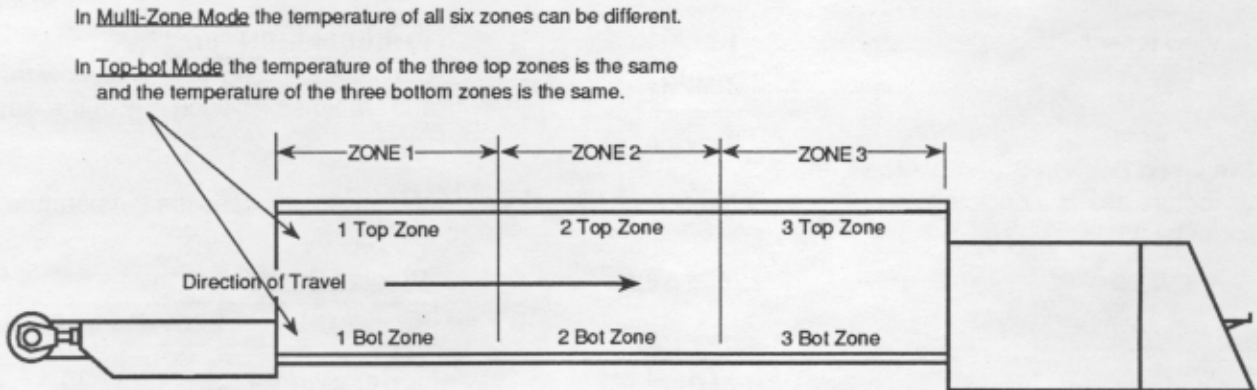


Figure 3-4

The oven controller controls all functions of the oven. To operate the oven the controllers must be programmed. The following pages contain a step by step "hands on" programming exercise. We invite you to actually program your oven by following the examples.

NOTE: This exercise assumes first time start after installation. Programming from factory is 200°F (93°C) temperature settings and 2 minute cooktimes.

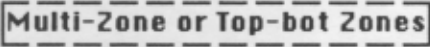
a. Turn Oven Deck ON

1. Turn ON the main disconnect switch at the wall box.
2. Turn ON the POWER circuit breaker(s) at the left of the bottom electrical panel. You will hear an audible BEEP signal. Display will read Oven Off.
3. Place the key into the slot in the control board located on the right side of keypad and turn it to the horizontal position.
4. Press keypad ON/OFF switch to ON position. Oven will startup in a preset default mode of 200°F (93°C) for top and bottom zones and at a 2 minute cook time. Control will display P - - # (READY, HEATING or COOLING)*. You are now ready to proceed with programming.

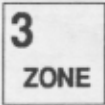
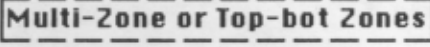
* READY = Oven at set temperature
HEATING = Oven heating up to set temperature
COOLING = Oven cooling down to set temperature

b. Set the Oven Deck Into the Multi-Zone Mode or Top-bot Zone Mode

The Multi-Zone Mode has 6 zone setpoint temperatures. The Top-bot Mode sets the top 3 zone temperatures the same and the bottom 3 zone temperatures the same. Step c will set the Multi-Zone temperatures and Step d will set the Top-bot Mode zones.

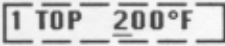
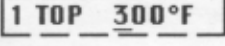
<u>Step</u>	<u>Press Key</u>	<u>Display Reads</u>
1		
2		

NOTE: To toggle between "Multi-Zone" and "Top-bot Zones" do the following:

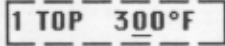
3		
4		

c. Setting Preset MenuSelect Temperatures and Cook Time in Multi-Zone (6 zone set point temperatures).

The MenuSelect controls the cooking time (HB4 = 1.5 to 240.0 minutes and HB6I = 2.0 to 240.0 minutes) and temperature (200°F [93°C] to 950°F [509°C] for the top zones and 200°F [93°C] to 750°F [398°C]). The MenuSelect control must be programmed to cook your products. The control is equipped with 6 preset menu keys. Each of these keys can be programmed to control the cooking time and temperature for an individual product. The following pages contain a step-by-step "hands on" programming exercise. You can actually program your oven by using the examples.

<u>Step</u>	<u>Press Key</u>	<u>Display Reads</u>
1. Select preset menu key to be programmed	 thru 	
2. View "1 Top" temperature setpoint		
3. Enter new "1 Top" temperature setpoint		

Flashing digit will increase one number at a time 0 to 9 and then roll over to 0. Set the digits to your desired top temperature.

	 (example only)
---	---

Pressing the cursor key will move the cursor left to right to the digit to be changed. The digit will start flashing and can then be changed using the "▲" key.

SECTION 3 - OPERATION

4. View "2 Top" temperature setpoint

TOP
TEMP

2 TOP 200°F
5. Enter new "2 Top" temperature setpoint using the same method as in Step 3.
6. View "3 Top" temperature setpoint

TOP
TEMP

3 TOP 200°F
7. Enter new "3 Top" temperature setpoint using the same method as in Step 3.
8. Continue to bottom temperatures

BOTTOM
TEMP

P - - # (READY, HEATING or COOLING)
9. View "1 Bottom" temperature setpoint

BOTTOM
TEMP

1 BOT 200°F
10. Enter new "1 Bottom" temperature setpoint using the same method as in Step 3.
11. View "2 Bottom" temperature setpoint

BOTTOM
TEMP

2 BOT 200°F
12. Enter new "2 Bottom" temperature setpoint using the same method as in Step 3.
13. View "3 Bottom" temperature setpoint

BOTTOM
TEMP

3 BOT 200°F
14. Enter new "3 Bottom" temperature setpoint using the same method as in Step 3.
15. Continue on to set cooktime

COOK
TIME

P - - # (READY, HEATING or COOLING)
16. View cook time setpoint

COOK
TIME

Minutes (001.5 to 240.0)
Cooktime: 002.0
17. Enter new cook time setpoint

→

Cooktime: 010.0
- SET
▲
ACTUAL

Set all digit values. Wait 5 seconds or press any key except "▲" or "→" and new displayed digits will be entered into memory. When all preset keys have been programmed with new temperature and cook time oven will then operate with MenuSelect preset values.

d. Setting Preset MenuSelect Temperatures and Cook Time in Top-bot Mode (3 top zones the same and 3 bottom zones the same).

NOTE: If the 3 top and/or 3 bottom zones have been set unequal in the Multi-Zone Mode and the deck is changed to the Top-bot Mode the display will read "Zones Unequal", "Reenter Settings". Enter a new top and/or bottom temperature and the temperatures will be the same.

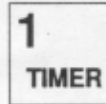
Step	Press Key	Display Reads
1. Select preset menu key to be programmed	1 TIMER thru 6 SERVICE CODES	P - - # (READY, HEATING or COOLING)
2. View top temperature setpoint	TOP TEMP	TOP TEMP 200°F
3. Enter new top temperature setpoint	→	TOP TEMP 200°F
	SET ▲ ACTUAL	TOP TEMP 250°F
		Pressing the cursor key will move the cursor left to right to the digit to be changed. The digit will start flashing.
		Flashing digit will increase one number at a time 0 to 9 and then roll over to 0. Set the digits to your desired top temperature.
4. Continue to bottom temperature	BOTTOM TEMP	P - - # (READY, HEATING or COOLING)
5. View bottom temperature setpoint	BOTTOM TEMP	BOT TEMP 200°F
6. Enter new bottom temperature setpoint	→	BOT TEMP 200°F
	SET ▲ ACTUAL	BOT TEMP 270°F
7. Continue on to set cooktime	COOK TIME	P - - # (READY, HEATING or COOLING)
		Minutes (001.5 to 240.0)
8. View cook time setpoint	COOK TIME	Cooktime: 002.0
9. Enter new cook time setpoint	→	Cooktime: 010.0
	SET ▲ ACTUAL	Set digits. Wait 5 seconds or press any key except "▲" or "→" and new displayed digits will be entered into memory. When all preset keys have been programmed with new temperature and cook time oven will then operate with MenuSelect preset values.

SECTION 3 - OPERATION

e. Set the Timer

The timer can be set to turn the oven ON and OFF automatically. The timer cycle runs for seven days and then repeats itself. The times set for the oven to turn ON can be the same or different for each day as can the times set for the oven to turn OFF. The timer program allows only one ON and one OFF per 24 hour day, midnight to midnight. Refer to next page for a chart to assist in choosing ON/OFF times.

When using the timer you must program every day of the week. If there is a day you do not want the oven to turn ON you can program it to come On for one minute only.

<u>Step</u>	<u>Press Key</u>	<u>Display Reads</u>
1		SET FEATURE
2		00:00AM MON On
3		10:00AM MON On
4		10:00AM MON On
5		Continue setting "ON" time by pressing "→" to move to the next digit and then press "▲" to change the value of the digit.
6		00:00AM MON Off
7		Set "OFF" time using the same method used to set the "ON" time. Be sure the AM/PM is set correctly. The oven is now set to turn ON and OFF at the set times on MONDAY. You are now ready to proceed to Tuesday.
8		00:00AM TUE On
9		When every day of the week has been programmed wait 10 seconds and new times will be entered into memory.

The oven is now programmed for automatic timing. When in the timing mode DO NOT use the ON/OFF switch to turn the oven ON and OFF; the switch must remain ON for timing mode operation. When the timer cycles the oven OFF the display will read "Timing". When the timer cycles the oven ON again the operational status display will resume.

As stated earlier the timer program only allows one ON and OFF cycle per 24 hour day, midnight to midnight. When choosing your ON and OFF times use the following chart. When you plot your chosen times you will know immediately if there is a time conflict. It also provides reference while you are setting the timer. **Important: OFF times cannot fall into the AM hours of the next day.**

		Midnight											Noon											Midnight										
		AM											PM																					
Key	Day	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	11:59								
[1]	Monday												*8:00-ON											*9:00-OFF										
[2]	Tuesday																																	
[3]	Wednesday																																	
[4]	Thursday																																	
[5]	Friday																																	
[6]	Saturday																																	
[7]	Sunday																																	

*Example ONLY.

f. Force Out of Automatic Timing

The FORCE feature allows you to remove the oven from the automatic "Timing" mode and turn it ON without changing the timer settings. When in normal operational mode FORCE has no effect.

<u>Step</u>	<u>Press Key</u>	<u>Display Reads</u>
		TIMING
1	FEATURE	SET FEATURE
2	2 FORCE	P - - # (READY, HEATING or COOLING)
Oven will return to the preset menu # that was used previous to timing.		
3	1 TIMER thru 6 SERVICE CODES	P - - # (READY, HEATING or COOLING)

To change preset menu #

NOTE: These steps can also be used to force out of automatic cleaning.

To return the oven to the automatic "Timing" mode, press ON/OFF switch to OFF then ON.

SECTION 3 - OPERATION

g. Setting the Clock

The clock contains hour, minute and day of the week. It should be set accurately to assure proper operation of the oven.

<u>Step</u>		<u>Press Key</u>	<u>Display Reads</u>
1	FEATURE	SET FEATURE	
2	4 CLOCK	00:00AM MON	
3	→	00:00AM MON	
4		Continue setting time by pressing "→" to move to the next digit and then press "▲" to change the value of the digit.	
5	Wait 10 seconds		

h. Manual Override Operation

This feature is used to operate a deck manually. The deck is taken out of the menu select mode by entering new parameters and is returned to the menu select mode without saving the parameters.

<u>Step</u>	<u>Press Key</u>	<u>Display Reads</u>
1	MANUAL OVER- RIDE	P - - # (READY, HEATING or COOLING)
		P - - # (Flashing)

Set oven deck temperature and cooktime as in Steps C or D.
Oven deck will function as set but settings will not be saved.

Cancel Override Operation

<u>Step</u>	<u>Press Key</u>	<u>Display Reads</u>
1	1 TIMER thru 6 SERVICE CODES	P - - # (Flashing)
		P - - # (READY, HEATING or COOLING)

i. Fahrenheit or Centigrade

This feature is used to change the display to read in either Fahrenheit (°F) or Centigrade (°C).

<u>Step</u>	<u>Press Key</u>	<u>Display Reads</u>
1	FEATURE	SET FEATURE
2	6 SERVICE CODES	SERVICE CODE 00
3	SET ▲ ACTUAL Press eight times	SERVICE CODE 80
4	6 SERVICE CODES	Deg F or Deg C
5	SET ▲ ACTUAL Press to change to either °F or °C	Deg F or Deg C
6	FEATURE Press twice to exit to normal operation status display	

j. Error Codes

NOTE: An authorized CTX service representative must be contacted for any failures that cannot be remedied by reprogramming.

CAUTION: Do not remove access panel at rear of control compartment. High voltage exists inside compartment which can cause serious injury or death.

DISPLAYED ERROR CODE	EXPLANATION	CORRECTIVE ACTION
OVER TEMP SHUTDOWN Zone: #	<u>1 - Over Temperature Error</u> This occurs if at least one zone's actual temperature exceeds the maximum allowed temperature of 980°F (526°C).	Call your local authorized service agent.
EXT. AMB SHUTDOWN	<u>2 - External Ambient Error</u> This occurs if the external ambient temperature exceeds 150°F (65°C).	Temperature of area surrounding oven must be reduced.
INT. AMB SHUTDOWN	<u>3 - Internal Ambient Error</u> This occurs if the internal ambient temperature exceeds 150°F (65°C).	Check axial cooling fan at lower front of oven for proper operation and cleanliness. If fan is not running call your local authorized service agent.
MOTOR JAMMED	<u>4 - Conveyor Jammed</u> Conveyor stopped when speed setting is between 1 and 240 minutes.	Clear item that is jamming conveyor. If conveyor still does not operate call your local authorized service agent.
MOTOR RUNAWAY	<u>5 - Conveyor Runaway</u> Conveyor runs full speed.	Check for proper speed setting. If speed setting is correct call your local authorized service agent.

SECTION 3 - OPERATION

C. NON-MENUSELECT CONTROL OPERATION AND PROGRAMMING

1. Control Panel - Operating Controls. The list of controls is on the following page.

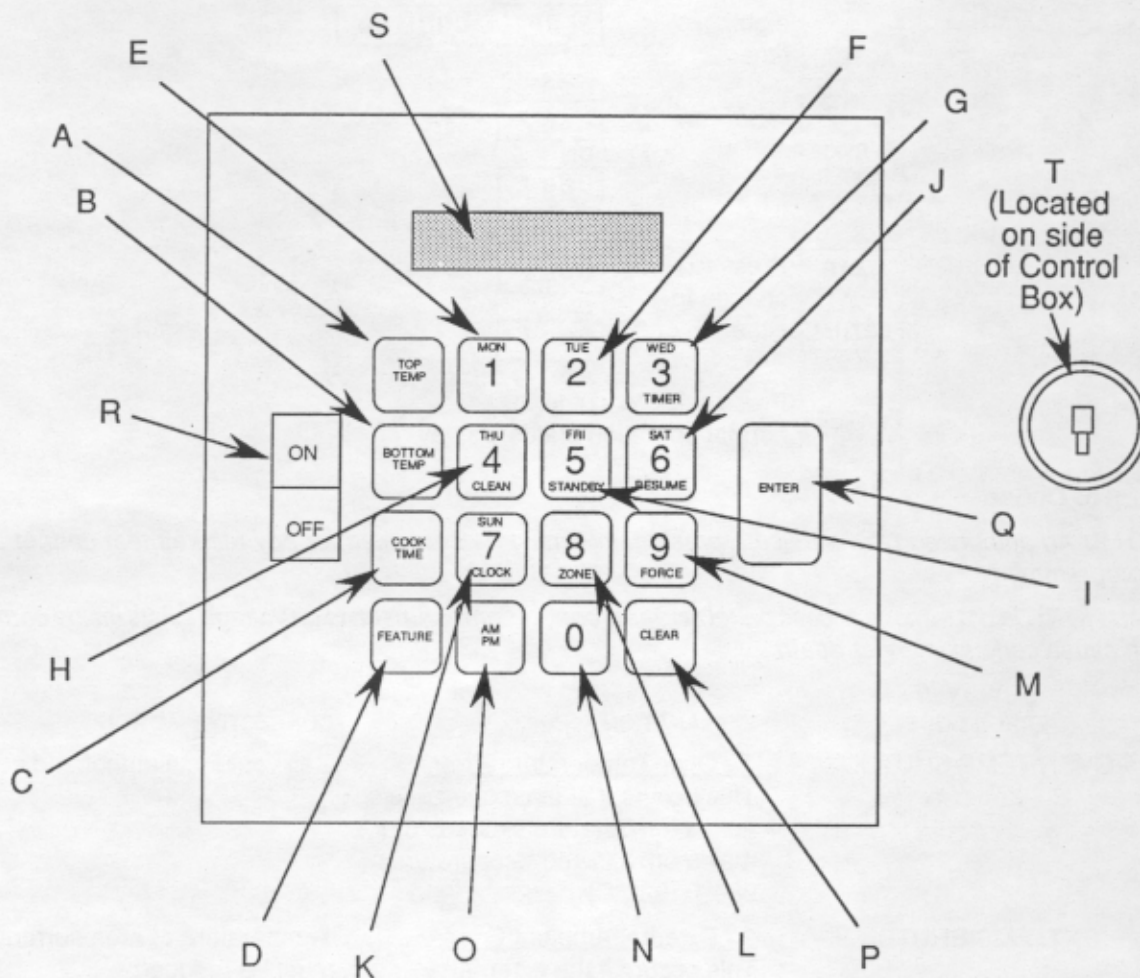


Figure 3-5
Non-MenuSelect Control Panel

The basic oven operating controls are in the control panel faceplate located at the exit end of the oven. The controls all relate to the controller for programming and for operating the oven.

The control panel consists of an ON/OFF switch, a keypad with multi-function keys, a liquid crystal display, and a key-operated ENTER key lockout switch. The letter callouts in Figure 3-5 coincide with the following list which explains the keypad and provides explanations of various terms, symbols, status messages and states of the oven.

Explanation of Controls (keyed to Figure 3-5)

A. TOP TEMP

Used to set or change temperature settings of the top zone(s).

B. BOTTOM TEMP

Used to set or change temperature settings of the bottom zone(s).

C. COOK TIME

Used to set or view cooktime (conveyor belt speed).

D. FEATURE

Used to initiate the special features listed below the numbers on the key pad. When FEATURE is pressed, it must be followed by pressing another key pad.

E. MON

Monday

1

One

F. TUE

Tuesday

2

Two

G. WED

Wednesday

3

Three

TIMER

Used to set automatic timing for ON/OFF

H. THU

Thursday

4

Four

CLEAN

Used to start self-cleaning cycle

I. FRI

Friday

5

Five

STANDBY

Used to enter 25% reduced power standby mode

J. SAT

Saturday

6

Six

RESUME

Returns to full power mode. Exits from standby.

K. SUN

Sunday

7

Seven

CLOCK

Used to set the oven's clock

L. 8

Eight

ZONE

Used to set oven in Top/Bottom Mode or Multi-Zone Mode

M. 9

Nine

FORCE

Used to take a deck out of timing (auto) mode

N. 0

Zero

SECTION 3 - OPERATION

- | | |
|-----------|--|
| O. AM/PM | Used when setting clock and timer to change display indication from AM to PM or vice-versa |
| P. CLEAR | Used to clear data entered |
| Q. ENTER | Completes key sequence by entering data |
| R. ON/OFF | Switch used to turn oven ON and OFF manually, it supplies power to the microprocessor which controls all oven functions. |

NOTE: The POWER circuit breaker(s) should be left on at all times except in case of an emergency or if service procedures are being performed. The cooling fan is controlled by a temperature switch that will turn the fan ON and OFF even if the oven isn't running. In order for the fan to operate the oven POWER circuit breakers must be ON.

- | | |
|---|---|
| S. DISPLAY | Liquid crystal type (LCD) - provides readout of data being entered, data already entered, functions monitored, oven status and service information |
| T. LOCKOUT KEY SWITCH
See Figure 3-1 | Locks out the ENTER key to prevent unauthorized personnel from changing setting. The Lockout Switch is key operated and locks out the ENTER key so temperatures and times cannot be changed by unauthorized personnel. To make changes, insert key and turn to the vertical position. The ENTER key is now unlocked and new data can be entered. When data entry is complete turn the key back to the horizontal position and remove. The ENTER key is once again locked and the oven will operate according to the data entered. |

2. Modes

The oven can be operated in one of two modes. Before the oven is programmed it must be decided whether to operate the oven in the MULTI-ZONE mode or the TOP-BOTTOM ZONE.

- a. The MULTI-ZONE mode has three distinct zones, with separate control of the top and bottom temperatures of each zone.

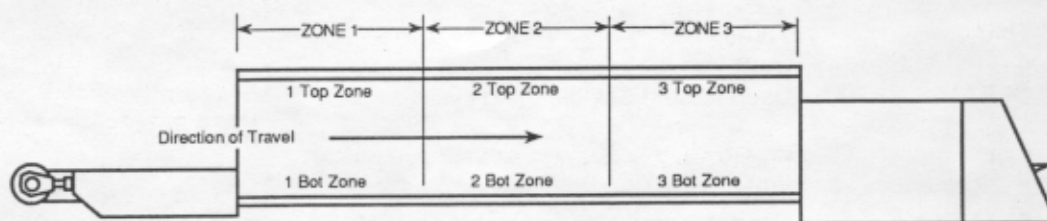


Figure 3-6
Multi-Zone

- b. The TOP-BOTTOM ZONE is a single zone in the oven with all top temperatures the same and all bottom temperatures the same.

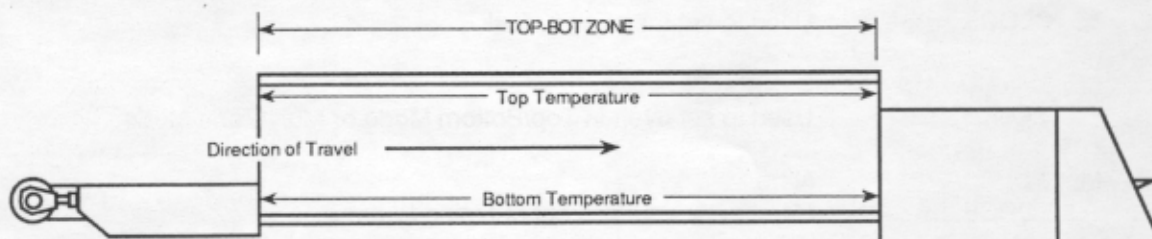


Figure 3-7
TOP-BOT Zone

3. Displays

Symbols used in this manual:

- " " Indicates information depicted on the liquid crystal display.
- [] Indicates a specific key pad of the keyboard.

a. Status Display

The status display is the information that is constantly displayed during normal operation. The displayed information cycles through the current operational state and temperature settings of each deck. The status display cycle begins immediately when the oven is turned ON.

Following is the order in which the information is displayed:

Multi-Zone Mode

1. Top Left Temperature
 2. Bottom Left Temperature
 3. Top Center Temperature
 4. Bottom Center Temperature
 5. Top Right Temperature
 6. Bottom Right Temperature
 7. Cooktime
 8. Heating or Ready or Cooling
- Cycle now repeats, starting with Top Left Temperature again.

Top/Bottom Mode

1. Top Temperature
 2. Bottom Temperature
 3. Cooktime
 4. Heating or Ready or Cooling
- Cycle now repeats, starting with Top Temperature again.

b. Operational States

- **OFF** - Indicates main circuit breaker is ON but the ON/OFF switch is OFF. This is the normal method of turning OFF the oven if the automatic timer has not been set

"OFF"

NOTE: Circuit breaker must always remain ON.

- **Heating** - Indicates oven is ON and heating

"Heating"

- **Ready** - Indicates set temperatures have been attained.

"Ready"

- **Cooling** - Indicates zone(s) have turned OFF or have been reset to a cooler temperature and the oven is cooling.

"Cooling"

SECTION 3 - OPERATION

- **Timing** - Indicates that automatic timer has turned over OFF.
"Timing"
- **Cleaning** - Indicates self-cleaning cycle selectively started.
"Cleaning"
- **Mode Change** - When changing from a Multi-Zone to a Top/Bottom mode the controller will immediately beep once and the display will show "Zones Unequal". This is a reminder that the temperatures either top or bottom are different.

"Reenter Temperature" will be displayed, you must reenter a new temperature for the top and a new temperature for the bottom. Because of this new setting in this mode the controller will be controlling the temperatures for the entire top and the entire bottom. See Programming for more information.

c. Failure States

There are two failure states that affect the operation of the oven. In the event that either failure state should occur contact your local authorized factory service agency immediately.

OVERTEMPERATURE SHUTDOWN

"Over Temperature Shutdown" indicates that temperature has exceeded either 950°F (509°C) in any Top Zone or 850°F (454°C) in any Bottom Zone. The oven will automatically shut down, while keeping the conveyor belt moving until the overheater zone cools. Once the zone cools adequately, the oven can be reset by turning it OFF and back ON.

The following sequence of events will occur and remain constant until manually corrected by operator.

- | | |
|--|--|
| 1. Oven sounds two audible BEEPS. | |
| 2. "Overtemp shtdn" will be displayed. | Indicates failure state. |
| 3. "Zone: X" will be displayed. | Indicates zone where failure occurred. |

AMBIENT SHUTDOWN

Indicates that the ambient temperature in the control compartment has reached 140°F (60°C) and oven has been automatically shut down.

Sequence of events:

- | | |
|---|--|
| 1. Oven sounds two audible BEEPS | Indicates failure state. |
| 2. INT or EXT AMB Shutdown will be displayed until problem is fixed | Indicates if its INT (Internal) Temp (MCP Board) or EXT (External) Temp (Distribution Board). Both have 140°F (60°C) safety thermostats. |

- This failure state is generally caused by:
1. Reduced air flow through the control compartment, usually due to obstruction of the cooling fan air intake or the foam filter pad.
 2. Extremely hot ambient air outside the oven being drawn into the cooling fan air inlet.
 3. Failure of the cooling fan itself.

Corrective Steps:

1. Turn oven OFF and allow oven to cool down.
2. Check air intake and remove obstructions. Snap off the plastic grill and thoroughly clean (and dry) the foam filter and replace.
3. Be sure hot air expelled from another appliance is not entering the cooling fan air inlet.
4. Turn oven back ON.
5. Observe if cooling fan is running. If the fan does not run, turn oven OFF and call authorized service agency.

NOTE: Cooling fan operation is controlled by a thermal switch. It does not necessarily run all the time the oven is operating. If the oven has been allowed to cool sufficiently the fan may not start immediately when the oven is turned back ON.

d. Error Messages

The following messages may appear in the display:

1. **Ambient hi** - Indicates that the ambient temperature in the control compartment has reached 135°F (57°C). Fan and air inlet should be checked for operation or obstruction.
2. **Error detected** - Controller perceives error. Use the ON/OFF switch to clear the controller. Press OFF and then ON. If error continues call authorized service agency for repairs.
3. **Illegal srv code** - This indicates that an invalid service code has been entered.
4. **Illegal temp** - Indicates that the set temperature is not within the allowable range of 200°F (93°C) to 950°F (510°C).
5. **Illegal time** - Indicates that the time being set is not a valid time.
6. **Invalid setup** - Indicates that you have attempted to program the controller to turn both decks OFF at the same time. Refer to Step 12, Section 3.
Use ON/OFF switch to turn both decks OFF.
7. **Memory loss** - Indicates that all settings have been lost.
8. **Re-enter settings** - Re-enter all settings:
 - Upper and lower temperatures.
 - Upper and lower cooktimes.
 - Clock settings.
 - Timer settings (If using this feature).

SECTION 3 - OPERATION

4. HB Oven Non-MenuSelect Programming

The microprocessor controls all functions of the oven. To operate the oven you must first program the microprocessor. The following pages contain a step by step "hands on" programming exercise. We invite you to actually program your oven by following the examples.

NOTE: This exercise assumes first time start after installation. Programming from factory is 200°F (93°C) temperature settings and 10 minute cooktimes.

a. Turn Oven ON

1. Turn ON the main disconnect switch at the wall box.
2. Turn ON the POWER circuit breaker(s) at the left of the bottom electrical panel. You will hear an audible BEEP signal. Display will read "Oven Off".
3. Place the key into the slot in the control board just below the keypad faceplate and turn it to the vertical position.
4. Press ON/OFF switch to ON position. You are now ready to proceed with programming.

b. Set the Oven Into the Multi-Zone Mode

Example: To check what mode the oven is in and then change to the Multi-Zone if necessary.

Step	Press Key	Display Reads
1	[FEATURE]	
2	[8/Zone]	
3	[ENTER]	"Multi-Zone" or "Top-Bot Mode"
• If the display reads "Multi-Zone" you can continue on to "c. Setting Temperatures in all three zones (Multi-Zone)". • If the display reads "Top-Bot Mode" you can change it to "Multi-Zone" by:		
4	[FEATURE]	
5	[8/Zone]	
6	[ENTER]	"Multi-Zone"

c. Setting Temperature in all Three Zones (Multi-Zone)

Example: Set the 3 zones for - 1 Top 600°F, 2 Top 650°F, 3 Top 650°F, 1 Bot 500°F, 2 Bot 550°F, 3 Bot 550°F.

Step	Press Key	Display Reads
1	[TOP TEMP]	"1 Top XXX°F"
2	[6] [0] [0]	"1 Top 600°F"
3	[ENTER]	"2 Top XXX°F"
4	[6] [5] [0]	"2 Top 650°F"
5	[ENTER]	"3 Top XXX°F"
6	[6] [5] [0]	"3 Top 650°F"
7	[ENTER]	"Heating" or "Cooling"
8	[BOTTOM TEMP]	"1 Bot XXX°F"
9	[5] [0] [0]	"1 Bot 500°F"
10	[ENTER]	"2 Bot XXX°F"
11	[5] [5] [0]	"2 Bot 550°F"
12	[ENTER]	"3 Bot XXX°F"
13	[5] [5] [0]	"3 Bot 550°F"
14	[ENTER]	"Heating" or "Cooling"

"Heating" will be displayed if the oven chamber temperature is below the new set temperature. "Cooling" will be displayed if the oven chamber temperature is above the new set temperature.

d. Setting the Oven into the Top-Bottom Mode

Example: To check what mode the oven is in and then change to the Top-Bot mode if necessary.

Step	Press Key	Display Reads
1	[FEATURE]	
2	[8/Zone]	
3	[ENTER]	"Multi-Zone" or "Top-Bot Mode"

- If the display reads "Top-Bot Mode" you can continue on to "e. Setting Temperatures in Top-Bot Mode".
- If the display reads "Multi-Zone" you can change it to "Top-Bot Mode" by:

4	[FEATURE]	
5	[8/Zone]	
6	[ENTER]	"Top-Bot Mode"

NOTE: At this point the display may read "Zones Unequal". This means the zones were previously programmed in "Multi-Zone". To correct this follow the procedure below to set the Top-bottom Temperatures.

e. Setting Temperatures in TOP-BOTTOM Zone.

Example: Set zone for - Top 600°F, Bottom 500°F.

Step	Press Key	Display Reads
1	[TOP TEMP]	" Top Temp XXX°F"
2	[6] [0] [0]	" Top Temp 600°F"
3	[ENTER]	"Heating" or "Cooling"
4	[BOTTOM TEMP]	"Bot Temp XXX°F"
5	[5] [0] [0]	"Bot Temp 500°F"
6	[ENTER]	"Heating" or "Cooling"

SECTION 3 - OPERATION

f. Setting the Cooktime (In any mode: Multi-zone or Top-Bot).

Example: From XX.X minutes to 6.3 minutes.

Step	Press Key	Display Reads
1	[COOKTIME]	"XX.X min"
2	[6] [3]	"6.3 min"
3	[ENTER]	"Heating", "Ready", or "Cooling"

g. Set the Clock

The clock contains the hour, minute and day of the week. It should be set accurately to assure proper operation of the oven.

Example: Set the clock to 9:15 p.m. Wednesday.

Step	Press Key	Display Reads
1	[FEATURE]	"Set Feature 0"
2	[7 (CLOCK)]	"Set Feature 7"
3	[ENTER]	"Time now: 00:00 a.m."
4	[9] [1] [5]	"Time now: 9:15 a.m."
5	[AM/PM]	"Time now: 9:15 p.m."
6	[ENTER]	"Day: "
7	[3 (WED)]	"Day: Wednesday"
8	[ENTER]	Exits to status display

h. Set the Timer

The timer can be set to turn the oven ON and OFF automatically. The timer cycle runs for seven days and then repeats itself. The times set for the oven to turn ON can be the same or different for each day as can the times set for the oven to turn OFF. The timer also allows days to be skipped. On these days the oven will not turn ON and OFF.

The timer program allows only one ON and one OFF per 24 hour day, midnight to midnight. For this reason OFF times must all occur before midnight or all occur after midnight.

Example: Set the oven to turn ON at 8:00 a.m. and turn OFF at 5:00 p.m. on Monday.

Step	Press Key	Display Reads
		Status Display
1	[FEATURE]	"Set Feature 0"
2	[3 (TIMER)]	"Set Feature 3"
3	[ENTER]	"What Day? "
4	[1 (MON)]	"On MON 0:00 a.m."
5	[8] [0] [0]	"On MON 8:00 a.m."

The oven will be turned ON on Monday at 8:00 a.m.

6	[ENTER]	"Off MON 0:00 a.m."
7	[5] [0] [0]	"Off MON 5:00 a.m."
8	[AM/PM]	"Off MON 5:00 p.m."
9	[ENTER]	"What Day? "

The oven will be turned OFF on Monday at 5:00 p.m.

The oven is now set to turn ON at 8:00 a.m. and OFF at 5:00 p.m. on Mondays. You are now ready to proceed to Tuesday. In order to set automatic ON/OFF times for Tuesday through Sunday you must repeat Step 4 through 9 for each day. Be sure to press the appropriate keypad for each succeeding day in Step 4.

Different times can be set for each day simply by pressing the appropriate digits in Steps 5 and 8 for the times desired.

NOTE: When using the timer you must program every day of the week. If there is a day you do not want the oven to turn ON you can program it to come ON for one minute only.

After setting ON/OFF times for Sunday you will press [ENTER], then [ENTER] again as the last step. This will exit the timer setting mode and return to the operational status display.

The oven is now programmed for automatic timing. **DO NOT** use the ON/OFF switch to turn the oven ON and OFF. When the timer cycles the oven OFF the display will read "Timing". When the timer cycles the oven ON again the operational status display will resume.

As stated earlier the timer program only allows one ON and OFF cycle per 24 hour day, midnight to midnight. When choosing your ON and OFF times use the following chart. When you plot your chosen times you will know immediately if there is a time conflict. It also provides reference while you are setting the timer.

		Midnight											Noon											Midnight										
Key	Day	AM											PM																					
		12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	11:59								
[1]	Monday	*8:00-ON											*9:00-OFF																					
[2]	Tuesday																																	
[3]	Wednesday																																	
[4]	Thursday																																	
[5]	Friday																																	
[6]	Saturday																																	
[7]	Sunday																																	

*Example ONLY.

Remember, OFF times after midnight fall into the A.M. hours of the next day. When you complete the chart be sure you have only two times (one ON and one OFF) per day. Re-adjust schedule if necessary.

If you choose not to use the automatic timing feature you must turn the oven ON and OFF manually using the ON/OFF switch on the control panel. To be sure the timing feature does not affect the oven during normal operation you must go through the timer setting procedure for each day and clear all time data. In effect you are skipping all seven days.

SECTION 3 - OPERATION

I. Force Out of Automatic Timing

The FORCE feature allows you to remove the oven from the automatic "Timing" mode and run it without changing the timer settings.

Example:

Step	Press Key	Display Reads
		"Timing"
1	[FEATURE]	"Set Feature 0"
2	[9 (FORCE)]	"Set Feature 9"
3	[ENTER]	Exits to Status Display

NOTE: These steps can also be used to force out of automatic cleaning.

To return the oven to the automatic "Timing mode, press ON/OFF switch to OFF then ON.

j. Put Oven in Standby Mode

This feature allows oven to be put into an energy conserving standby mode which reduces the temperature of the oven by 25%.

Example: Set oven to "standby".

Step	Press Key	Display Reads
		Status Display
1	[FEATURE]	"Set Feature 0"
2	[5 (STANDBY)]	"Set Feature 5"
3	[ENTER]	Exits to Status Display which shows oven in "standby".

k. Resume Normal Operation From Standby

This feature is used to return an oven to normal operation from the "standby" mode.

Example: Resume normal operation of oven.

Step	Press Key	Display Reads
		Status Display
1	[FEATURE]	"Set Feature 0"
2	[6 (RESUME)]	"Set Feature 6"
3	[ENTER]	Exits to Status Display which shows oven in normal operation.

I. Cleaning Cycle

The CLEAN feature is used to place the oven into self-cleaning. When activated the oven will heat to 800°F (426°C) for one hour. At the end of the cycle the oven will automatically return to the operational state that preceded the "clean" cycle. Oven(s) are programmed to shut OFF (timing Mode) during the CLEAN cycle the CLEAN Mode will override program and continue at 800°F (426°C) for the full 60 minutes. Oven will then shut OFF in Timing Mode.

Example: Start the Cleaning Cycle

Step	Press Key	Display Reads
		Status Display
1	[FEATURE]	"Set Feature 0"
2	[4 (CLEAN)]	"Set Feature 4"
3	[ENTER]	"Cleaning"
		This will be displayed during the cleaning cycle. At the end of the cleaning cycle it will exit to the Status Display of "Timing".

Example: Interrupt the Cleaning Cycle

The cleaning cycle can be interrupted using the ON/OFF switch or the steps below.

Step	Press Key	Display Reads
		"Cleaning"
1	[FEATURE]	"Set Feature"
2	[9/Force On]	"Set Feature 9"
3	[ENTER]	"Cooling" Display will read "Cooling" until temperature falls back to $\pm 30^{\circ}\text{F}$ ($\pm 16^{\circ}\text{C}$) of set temperature and then the display will read "Ready".

m. Fahrenheit or Centigrade (Service Code 80)

This feature is used to change the display to read in either Fahrenheit ($^{\circ}\text{F}$) or Centigrade ($^{\circ}\text{C}$).

Step	Press Key	Display Reads
		Status Display
1	[FEATURE]	"Set Feature 0"
2	[6] [2] [8] [5] [0]	"Set Feature 62850"
3	[ENTER]	"Service Code: 0"
4	[8] [0]	"Service Code: 80"
5	[ENTER]	"1=C 0=F Deg F"
		"1=C 0=F Deg C"

Press "1" for all temperature readings to be displayed in Centigrade. Press "0" for all temperature readings to be displayed in Fahrenheit. Press "ENTER" twice to exit service mode and return to status display.

D. Cooking in an HB Oven equipped with either a MenuSelect or non-MenuSelect controller

Before you begin to cook with your new oven you must understand the differences between cooking in it and cooking in more conventional ovens. You will produce better results if you understand the technology and follow the "rules".

1. Infrared Cooking Technology

The technology of infrared cooking used in the CTX ovens was first introduced in 1969. Each deck is fitted with patented infrared emitting heat panels (heating elements). These elements form the top and bottom surfaces of each oven chamber.

The elements emit infrared "longwaves" which are absorbed by almost all matter in varying degrees. Absorption of these waves by an object causes molecular agitation which causes friction which generates heat. In this instance the object is food and the heat generated is used to cook the food. Infrared waves penetrate the outer surfaces of the food where they are absorbed by virtually all ingredients plus the container in which the food is placed. As a result, food cooks from the outside toward the center in very traditional fashion.

Infrared waves, unlike conventional heat sources, do not heat the air through which they pass, nor do they create any air currents in the oven chamber to dry out the food product. If there is no food product in the oven the infrared waves are absorbed by the heating elements located opposite. These unique properties translate into less food waste, a more moist product and excellent energy efficiency.

2. Heat Zoning (Using Multi-Zone Mode)

Each oven chamber (deck) can be divided into three heat zones each with top and bottom directional heat capability. The microprocessor accurately controls each zone temperature and cooking time for each chamber (deck).

Individually controlled heat zones, top and bottom directional heat intensity and accurate cook times (conveyor speed) mean the food product can be cooked according to its specific cooking profile. Very moist product will usually take a higher Zone 1 temperature, a medium Zone 2 temperature and a lower Zone 3 temperature. Conversely, drier surface foods or partially cooked products usually require a lower Zone 1 temperature, a medium Zone 2 temperature, and a higher Zone 3 temperature.

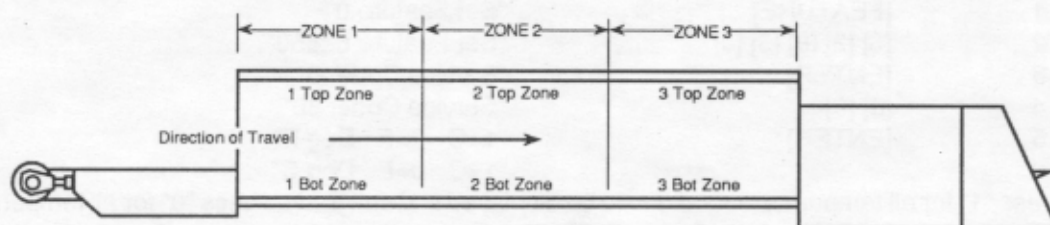


Figure 3-8
Heat Zones

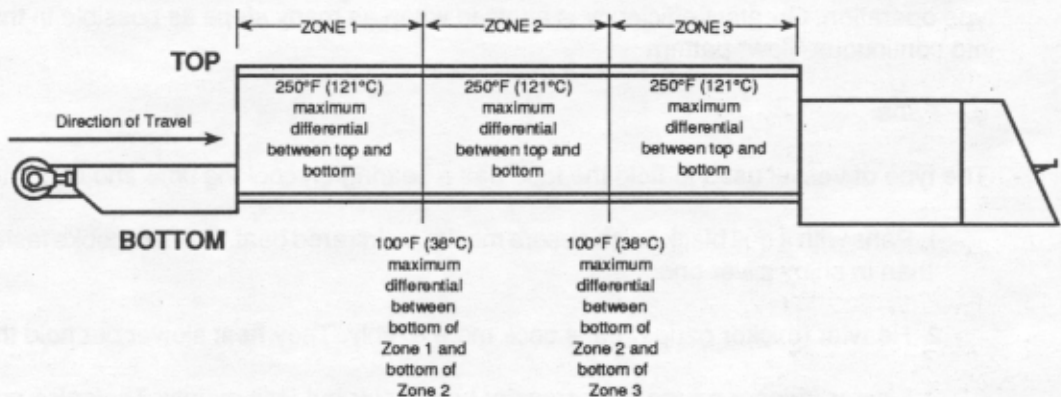
3. Multi-Zone Temperature Setting Variations and Guidelines

MULTI-ZONE TEMPERATURE SETTING GUIDELINES

Food product tests and field experience indicate that when temperature settings in each zone of the Hearth Bake cooking deck are set in such a way that the temperature differential between each zone and between the top and bottom of each zone exceeds certain maximums that food product inconsistency can result.

In order to insure food product it is recommended in most operations, that cooking temperatures of each zone be set at temperature combinations that fall within the maximum temperature differentials specified below.

MAXIMUM SETTING ON ANY TOP ZONE - 900°F (no maximum temperature differentials between top zones)



MAXIMUM SETTING ON ANY BOTTOM ZONE - 750°F

Figure 3-9
Multi-Zone Temperature Setting Variations

The ideal temperature recommended for most products falls within these maximums. Certain speciality products or products of special formulations may require unusual temperature settings that exceed these recommended maximums. In such cases, it is recommended that these unusual temperature requirements be reviewed with a food technician to insure that your Hearth Bake operates at its highest level of performance.

MULTI-ZONE TEMPERATURE SETTING GUIDELINES

Zone 1

The first zone (Zone 1) is usually the high temperature bring-up zone which quickly brings the food up to its desired cooking temperature

Zone 2

The second zone (Zone 2) is the precise cooking zone which maintains the exact cooking temperature for the product.

Zone 3

The third zone (Zone 3) is the finishing zone which brings the food gently to the desired serving temperature.

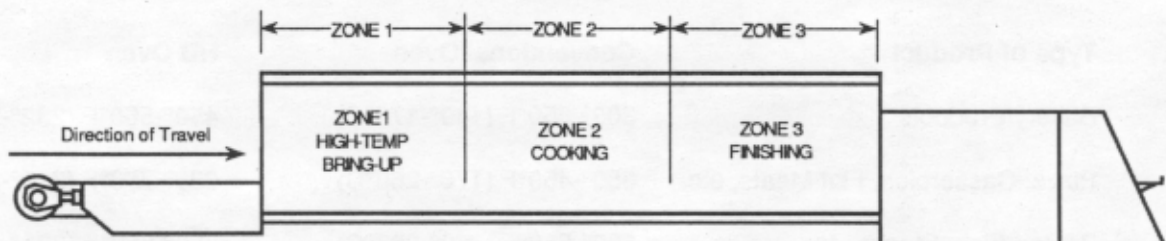


Figure 3-10
Multi-Zone Temperature Setting Guidelines

SECTION 3 - OPERATION

4. General "Rules of Thumb"

Cooking in an HB infrared conveyor oven is different than cooking in any other type of oven including microwave ovens. Because of these differences there are some "rules" that must be considered.

a. Leavening Agents

Products with a biological leavening agent (yeast) can take a higher entrance zone temperature while products with a chemical leavening agent (baking powder) require a lower entrance zone temperature.

b. Continuous "Flow" Operation

HB ovens perform best in a continuous type of operating environment. They are not well suited to a batch type operation. Greatest efficiency is attained when as many steps as possible in the operation are put into continuous "flow" pattern.

c. Pans

The type of vessel used to hold the food has a bearing on cooking time and consistency of results.

1. Pans with a dull black finish absorb maximum infrared heat. Product cooks faster in dull black pans than in shiny silver ones.
2. Heavier (thicker gauge) pans cook more evenly. They heat slower but hold their heat longer.
3. Lighter (thinner gauge) pans transfer heat faster but less evenly. They also cool faster.
4. Aluminum pans distribute heat more evenly than steel pans.

d. Product

Best results are obtained when product entering the oven is consistent.

1. Food portions entering the oven should all be approximately the same temperature. When food portions entering the oven vary in temperature, the temperature of those portions coming out of the oven, though cooked, will also vary.
2. Product size should be the same. If product is 1/2" thick one time and 3/4" thick the next, cooking results will be different.
3. Product loading density also affects results. If portion size and pan size are the same, two portions per pan will cook differently than ten portions per pan.

e. Cooking Temperatures

Because infrared waves do not heat the air in the oven chamber the temperature settings and readings are surface temperatures of the infrared heat panels themselves. For this reason temperature settings will be higher than those for a conventional oven.

Type of Product	Conventional Oven	HB Oven
Bakery Products	300°-350°F (149°-176°C)	450°-550°F (232°-287°C)
Pizza, Casseroles, Flat Meats, etc.	350°-450°F (176°-260°C)	600°-750°F (315°-398°C)
Broiled Fish, Steaks, etc.	500°-550°F (260°-287°C)	750°-850°F (398°-454°C)

5. Cooking Trials

The purpose of conducting cooking trials is to determine the exact temperature settings and cooking time(s) needed to produce best results with your specific product(s). The fastest and easiest way to conduct these trials is to start with settings already established for product(s) similar to yours. The following table provides average time and temperature settings for a wide variety of products. We recommend they be used as beginning set points for your tests. Please note that two sets of times and temperatures are given; one set for model HB4 and one set for model HB6. Be sure to use the appropriate settings for your oven model.

Testing can be completed easier and faster and with less confusion if you keep accurate records of each test. To assist you we have included a sample product test form that you can copy.

Choose your first product for test and look it up in the table on the following pages. Now program the oven with the temperatures and cooktimes shown.

NOTE: If you are starting the oven from "cold" please allow 45 minutes heat up time. The elements cycle after approximately 15 minutes, however, additional time is needed for the oven chamber(s) to become stabilized and evenly saturated with heat.

Begin your first trial run. Examine the finished product and evaluate it based on the following guidelines.

RESULTS	SOLUTION
Outside too dark or burned	Reduce Temperatures
Outside too light or not cooked	Increase Temperatures
Inside Overdone or dried out	Shorten Cooking Time
Inside Underdone or raw	Lengthen Cooking Time

NOTE: Sometimes an increase in temperature may require a corresponding decrease in cooking time. Conversely a decrease in temperature may require a corresponding increase in cooking time.

After evaluating the results, make the indicated time/temperature setting adjustments and allow about 15 minutes for the oven to stabilize at the new temperature settings. It may be necessary to run several tests before you obtain the exact results you want. Be sure to document each test in the "Product Test Record" below so you can ultimately produce a cooking chart for your specific items.

SECTION 3 - OPERATION

PRODUCT TEST RECORD

Product: _____

Oven Model Number: _____ Date: _____

Data	Test No.1	2	3	4	5	6
Entrance Zone Temperatures Top/Bottom	____/____	____/____	____/____	____/____	____/____	____/____
Exit Zone Temperatures Top/Bottom	____/____	____/____	____/____	____/____	____/____	____/____
Cook Time						
Product State (Frozen, raw, refrigerated, etc.)						
Product Weight (Oz.)						
Container Type						
Container Size						
Internal Temperature (Start)						
Internal Temperature (Finish)						
Comments						

HEARTHBAKE TIME AND TEMPERATURES GUIDE

Product	Zone Temperatures			Cook Time (Minutes)	Pan Type and Size	Amount (Weight or Count)	State
	Entrance Top/Bott	Center Top/Bott	Exit Top/Bott				
Fish & Seafood							
Filet of Sole	850/500°F 454/260°C	800/550°F 426/267°C	800/600°F 426/315°C	5.0	Alum 7" x 9"	6 oz.	Fresh
Lobster Tail	850/600°F 454/315°C	800/550°F 426/287°C	800/500°F 426/260°C	7.0	Ovenable	9 oz.	Fresh
Sea Scallops	850/500°F 454/260°C	800/550°F 426/287°C	800/600°F 426/315°C	5.0	Alum 7" x 9"	6 oz.	Fresh
Shrimp Scampi	850/500°F 454/260°C	800/550°F 426/287°C	800/600°F 426/315°C	5.0	Alum 7" x 9"	6 oz.	Fresh
Snow Crab	850/600°F 454/315°C	800/550°F 426/287°C	800/500°F 426/260°C	5.0	Alum 7" x 9"	8 oz.	Fresh
Stuffed Flounder	850/600°F 454/315°C	800/550°F 426/287°C	800/500°F 426/260°C	8.5	Alum 7" x 9"	12 oz.	Fresh
White Fish Fillet	850/600°F 454/315°C	800/550°F 426/287°C	800/500°F 426/260°C	7.0	Alum 7" x 9"	9 oz.	Fresh
Whole Trout	850/500°F 454/260°C	800/550°F 426/287°C	800/600°F 426/315°C	7.0	Alum 7" x 9"	10 oz.	Fresh
Pizza							
Deep Dish	850/500°F 454/260°C	750/525°F 398/274°C	650/550°F 343/287°C	12.0	Blk Deep Pan	Any	Fresh
Calzone	850/500°F 454/260°C	750/525°F 398/274°C	650/550°F 343/287°C	6.0	On Belt		Fresh
Thick Crust	850/550°F 454/287°C	800/575°F 426/301°C	750/600°F 398/315°C	5.5	On Belt	Any	Fresh
Thin Crust	850/500°F 454/260°C	800/525°F 426/274°C	750/550°F 398/287°C	6.0	On Belt	Any	Fresh
Thin Crust	850/500°F 454/260°C	800/525°F 426/274°C	750/550°F 398/287°C	4.0	On Belt	Any	Pre-bake Shell
Pork							
Pork Chop	800/500°F 426/260°C	700/525°F 370/274°C	650/550°F 343/287°C	13.0	Alum 18" x 26"	4 oz.	Refrigerated
Spare Ribs	700/500°F 370/260°C	600/525°F 315/274°C	500/550°F 260/287°C	45.0	Alum 18" x 26"	2-1/2 lb.	Refrigerated
Poultry							
Chicken Cordon Bleu	800/500°F 426/260°C	700/525°F 370/274°C	650/550°F 343/287°C	13.0	Alum 18" x 26"	6 oz.	Refrigerated
Chicken Pieces	800/500°F 426/260°C	700/525°F 370/274°C	650/550°F 343/287°C	13.0	Alum 18" x 26"	10 lb.	Refrigerated
Half Chicken	800/500°F 426/260°C	700/525°F 370/274°C	650/500°F 343/260°C	22.0	Alum 18" x 26"	1-1/4 lb.	Refrigerated
Whole Chicken	750/500°F 398/260°C	700/525°F 370/274°C	650/550°F 343/287°C	30.0	Alum 18" x 26"	2-3/4 lb.	Refrigerated

SECTION 3 - OPERATION

Product	Zone Temperatures			Cook Time (Minutes)	Pan Type and Size	Amount (Weight or Count)	State
	Entrance Top/Bott	Center Top/Bott	Exit Top/Bott				
Breakfast Foods							
Bacon	750/500°F 398/260°C	700/550°F 370/287°C	650/550°F 343/287°C	7.0	Alum 18" x 26"	2 lb.	Refrigerated
Biscuits	700/500°F 370/260°C	600/550°F 315/287°C	550/550°F 301/287°C	5.5	Alum 18" x 26"	3"	Fresh
Egg Patty	700/500°F 370/260°C	600/550°F 315/287°C	550/550°F 301/287°C	4.0	Alum 6"	2 eggs	Fresh
Fried Eggs	700/500°F 370/260°C	600/550°F 315/287°C	550/550°F 301/287°C	4.0	Alum 6"	2 eggs	Fresh
Puffy Omelet	600/500°F 315/260°C	600/550°F 315/287°C	550/550°F 301/287°C	6.0	Alum 9" Skillet	6 oz.	Fresh
Quiche	650/500°F 343/260°C	600/500°F 315/260°C	550/550°F 301/287°C	20.0	Dark Alum 10"	24 oz.	Fresh
Sausage, Link	750/500°F 398/260°C	700/550°F 370/287°C	650/550°F 343/287°C	5.0	Alum 1/2 size	1-1/2 oz.	Refrigerated
Sausage, Patty	750/500°F 398/260°C	700/550°F 370/287°C	650/550°F 343/287°C	4.0	Alum 1/2 size	1-1/2 oz.	Refrigerated
Sausage, Patty	750/500°F 398/260°C	700/550°F 370/287°C	650/550°F 343/287°C	4.0	Alum 1/2 size	1-1/2 oz.	Refrigerated
Casseroles							
Enchiladas	850/500°F 454/260°C	750/525°F 398/274°C	700/550°F 370/287°C	7.0	Oven China 10"	12 oz.	Refrigerated
Lasagna	850/525°F 454/274°C	750/550°F 398/287°C	700/575°F 370/301°C	9.0	Oven China 6" x 9"	12 oz.	Refrigerated
Macaroni & Cheese	600/450°F 315/232°C	550/500°F 287/260°C	500/525°F 260/274°C	20.0	Stainless 12" x 20"	10 lb.	Refrigerated
Pasta & Sauce	850/525°F 454/274°C	750/550°F 398/287°C	700/575°F 370/301°C	7.0	Oven China 6" x 9"	12 oz.	Refrigerated
Cookies							
Bar Cookies	700/500°F 370/260°C	550/525°F 287/274°C	500/550°F 260/287°C	12.0	Alum 18" x 26"	1"	Fresh
Brownies	700/500°F 370/260°C	550/525°F 287/274°C	500/550°F 260/287°C	12.0	Alum 18" x 26"	1lb.	Fresh
Chocolate Chip	700/475°F 370/246°C	550/500°F 287/260°C	500/525°F 260/274°C	6.0	Alum 18" x 26"	3/4 oz..	Fresh
Chocolate Chip	700/475°F 370/246°C	550/500°F 287/260°C	500/525°F 260/274°C	7.0	Alum 18" x 26"	1-1/2 oz..	Fresh
Macaroons	600/450°F 315/232°C	550/475°F 287/246°C	450/500°F 232/260°C	12.0	Alum 18" x 26"	1 oz..	Fresh
Macaroons	600/450°F 315/232°C	550/475°F 287/246°C	450/500°F 232/260°C	12.0	Alum 18" x 26"	1 oz..	Fresh
Oatmeal	700/475°F 370/246°C	500/500°F 260/260°C	500/525°F 260/274°C	7.0	Alum 18" x 26"	1-1/2 oz.	Fresh

Product	Zone Temperatures			Cook Time (Minutes)	Pan Type and Size	Amount (Weight or Count)	State
	Entrance Top/Bott	Center Top/Bott	Exit Top/Bott				
Desserts							
Baked Apple	750/500°F 398/260°C	550/525°F 287/274°C	500/550°F 260/287°C	20.0	s.s. 12" x 20"	12 apples	Fresh
Baked Custard	600/500°F 315/260°C	500/500°F 260/260°C	450/500°F 232/260°C	30.0	s.s. 12" x 20"	3 oz.	Fresh
Cream Puffs	475/400°F 246/204°C	500/400°F 260/204°C	525/400°F 274/204°C	35.0	Alum 1/2 size	2 oz.	Fresh
Fruit Pie	650/450°F 343/232°C	550/475°F 287/246°C	450/500°F 232/260°C	30.0	10" Pie	26 oz.	Fresh
Fruit Pie	650/450°F 343/232°C	500/475°F 260/246°C	450/500°F 232/260°C	45.0	10" Pie	32 oz.	Fresh
Layer Cake	700/450°F 370/232°C	550/475°F 287/246°C	500/500°F 260/260°C	15.0	Alum 1/2 size	3 lb.	Fresh
Meringue Pie	700/500°F 370/260°C	600/525°F 315/274°C	500/550°F 260/287°C	5.0	10" Pie	26 oz.	Fresh
Puff Pastry Shell	700/450°F 370/232°C	550/475°F 287/246°C	500/500°F 260/260°C	18.0	Alum 1/2 size	4 oz.	Thawed
Appetizers							
Nachos	750/500°F 398/260°C	700/500°F 370/260°C	650/500°F 343/260°C	2.0	Alum 10"	6-8 oz.	Fresh
Oysters Rockefeller	800/500°F 426/260°C	700/500°F 370/260°C	600/500°F 315/260°C	2.5	Alum 10"	6-8 oz.	Fresh
Potato Skins	750/500°F 398/260°C	700/500°F 370/260°C	650/500°F 343/260°C	2.0	Alum 10"	8 skins	Refrigerated
Rumaki	800/500°F 426/260°C	700/500°F 370/260°C	600/500°F 315/260°C	7.0	Alum 10"	1 oz. each	Fresh
Seafood Kabob	850/500°F 454/260°C	750/500°F 398/260°C	650/500°F 343/260°C	5.0	Alum 6"	4-6 oz.	Refrigerated
Baked Goods							
Bagels	700/450°F 370/232°C	550/500°F 287/260°C	500/550°F 260/287°C	7.0	Alum 18" x 26"	3 oz.	Fresh
Bread Sticks	850/600°F 454/315°C	800/575°F 426/301°C	700/550°F 370/287°C	5.0	Alum 18" x 26"	2 oz.	Thawed
Brown & Serve Rolls	650/450°F 343/232°C	550/500°F 287/260°C	500/500°F 260/260°C	2.0	Alum 18" x 26"	1 oz.	Thawed
Corn Bread	600/500°F 315/260°C	650/500°F 343/260°C	700/500°F 370/260°C	12.0	Alum 18" x 26"	5 lbs.	Fresh
Dinner Rolls Proofed	700/500°F 370/260°C	550/500°F 287/260°C	500/500°F 260/260°C	9.0	Alum 18" x 26"	2 oz.	Thawed/
Fresh Bread	700/475°F 370/246°C	675/525°F 357/274°C	650/550°F 343/287°C	10.0	Alum 1/2 Sheet	1 lb.	Fresh
Garlic Bread	750/450°F 398/232°C	650/500°F 343/260°C	600/500°F 315/260°C	2.0	Alum 1/2 size	1"	Fresh

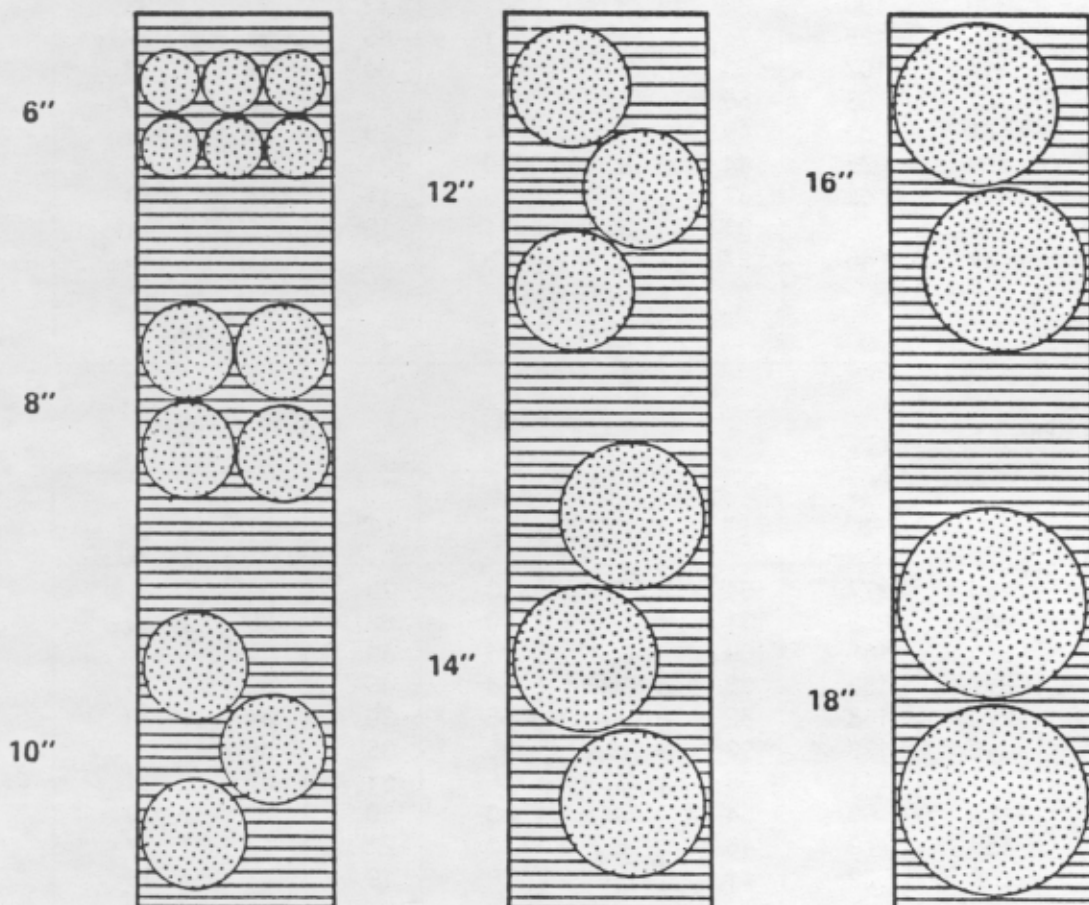
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Product	Zone Temperatures			Cook Time (Minutes)	Pan Type and Size	Amount (Weight or Count)	State
	Entrance Top/Bott	Center Top/Bott	Exit Top/Bott				
Muffins	500/500°F 260/260°C	600/500°F 315/260°C	700/500°F 370/260°C	9.0	Dark Alum 12 cup	3 oz.	Fresh
Popovers	475/400°F 246/204°C	500/400°F 260/204°C	525/400°F 274/204°C	35.0	Dark Alum 12 cup	3 oz.	Fresh
Soft Pretzels	750/500°F 398/260°C	650/500°F 343/260°C	600/550°F 315/287°C	5.5	Alum 1/2 size	2 oz.	Thawed
Toast	750/450°F 398/232°C	650/500°F 343/260°C	600/500°F 315/260°C	2.0	None	Slice	Fresh
Beef							
Beef Ribs (Finish)	800/500°F 454/260°C	750/500°F 398/260°C	700/500°F 370/260°C	8.0	Alum 1/2 size	8 ribs	Refrigerated Precooked
Hamburger 4/1	800/500°F 454/260°C	800/500°F 454/260°C	700/500°F 370/260°C	6.0	Alum 1/2 size	4 oz.	Fresh
Hamburger 4/1	800/500°F 454/260°C	800/500°F 454/260°C	700/500°F 370/260°C	5.0	Alum 1/2 size	4 oz.	Frozen
Hamburger 2/1	800/500°F 454/260°C	800/500°F 454/260°C	700/500°F 370/260°C	7.0	Stainless 4" x 7"	8 oz.	Fresh
Liver & Onions	750/500°F 398/260°C	700/500°F 370/260°C	600/500°F 315/260°C	10.0	Alum 18" x 26"	4 oz.	Fresh
Meatballs	800/500°F 454/260°C	750/500°F 398/260°C	700/500°F 370/260°C	8.0	Alum 1/2 size	2 oz.	Refrigerated
Rib Eye Steak	800/500°F 454/260°C	800/500°F 454/260°C	700/500°F 370/260°C	7.5	Stainless 4" x 7"	10 oz.	Fresh
Salisbury Steak	800/550°F 454/287°C	800/550°F 454/287°C	750/550°F 398/287°C	7.0	Alum 18" x 26"	4 oz.	Fresh
Strip Steak	800/500°F 454/260°C	800/500°F 454/260°C	700/500°F 370/260°C	6.0	Stainless 4" x 7"	8 oz.	Fresh
Strip Steak	800/500°F 454/260°C	800/500°F 454/260°C	700/500°F 370/260°C	7.5	Stainless 4" x 7"	12 oz.	Fresh
Tenderloin, Whole	800/500°F 454/260°C	750/500°F 398/260°C	650/500°F 343/260°C	12.0	Alum 1/2 size	4 lb.	Fresh

7. Loading the Conveyor

Achieving maximum production is dependent on proper utilization of the conveyor belt. Depending on size, pans can be placed on the conveyor belt in a variety of configurations to best use the space available.

The following illustrations show placement of various size round pans to achieve maximum production rates. Pans in other sizes or shapes will require different placement. You will have to determine the best placement configuration for your pans. **Do not place pans off the edge of the belt or allow them to overhang.**



Production output for any pan size can be easily calculated using the following formula:

$$\begin{array}{ccccccc} \text{Length} & & & & & & \text{Hourly} \\ \text{of Oven} & & \text{Cooktime} & & \text{Pan Length} & & \text{Production} \\ \text{Chamber} & + & (\text{Min.}) & + & (\text{Inches}) & \times & \text{Rate per} \\ (\text{Inches}) & & & & & \text{60 Min.} & \text{Conveyor} \\ & & & & & \text{Per Hour} & \\ & & & & & = & \end{array}$$

This formula is based on a succession of single pans being placed on the belt. No consideration is given to multiple pans across the 18" wide belt nor to staggered loading. The hourly production rate obtained by the above calculation must be multiplied by a factor equal to the number of pans placed across the belt.

SECTION 3 - OPERATION

8. Production Capacity Charts

The production output figures shown below are based on using round pans in the various sizes (diameters) shown. The figures reflect output from one conveyor only.

Model HB4

COOK TIME	6"	8"	9"	10"	12"	14"	16"	18"
4 min.	375	187	111	106	76	53	46	41
5 min.	300	150	88	85	61	42	37	33
6 min.	250	125	74	71	51	35	31	27
7 min.	214	107	63	61	43	30	26	23
8 min.	187	93	55	53	38	26	23	20
9 min.	166	83	49	47	34	23	20	18
10 min.	150	75	44	42	30	21	18	16
12 min.	125	62	37	35	25	17	15	13
14 min.	107	53	31	30	21	15	13	11
16 min.	93	46	27	26	19	13	11	10

Model HB6

COOK TIME	6"	8"	9"	10"	12"	14"	16"	18"
4 min.	555	277	164	158	113	79	69	61
5 min.	443	222	131	126	90	63	55	49
6 min.	370	185	109	105	75	52	46	41
7 min.	317	158	93	90	64	45	39	35
8 min.	277	138	82	79	56	39	34	30
9 min.	246	123	93	70	50	35	30	27
10 min.	221	111	65	63	45	31	27	24
12 min.	185	92	54	52	39	26	23	20
14 min.	158	79	46	45	32	22	19	17
16 min.	138	69	41	39	28	19	17	15