PS536
Gas & Electric
Domestic & Std. Export
ENGLISH/French/Spanish

Middleby Marshall®

P/N 44727
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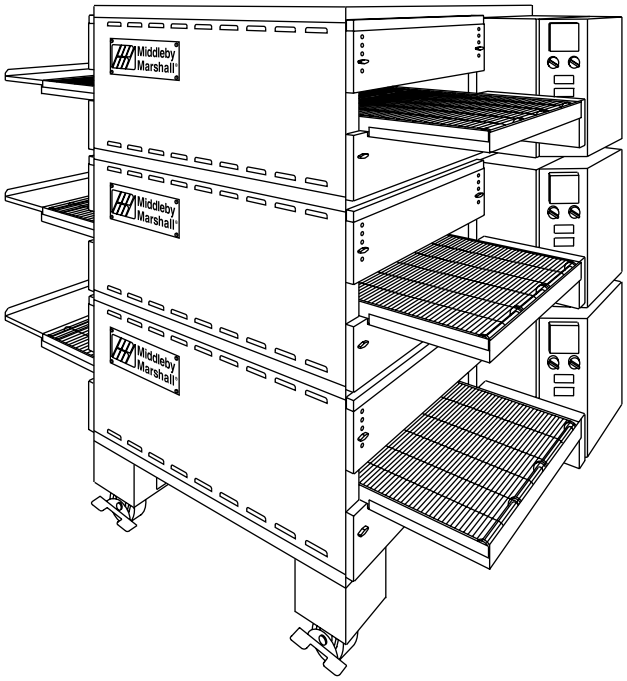

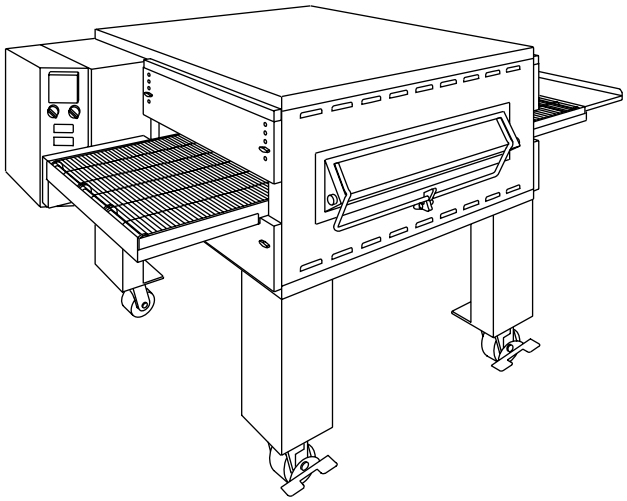

PS536 Gas and Electric Ovens

Models:

- PS536

Combinations:

- Single Oven
- Double Oven (Two-Stack)
- Triple Oven (Three-Stack)

OWNER'S OPERATING AND INSTALLATION MANUAL

for domestic and standard export ovens

PS536 GAS	
PS536 ELECTRIC 208/230V models	
PS536 ELECTRIC 380V models	--

Middleby Cooking Systems Group • 1400 Toastmaster Drive • Elgin, IL 60120 • (847)741-3300 • FAX (847)741-4406

ENGLISH

NOTICE:

This Owner's Operating and Installation Manual should be given to the user. The operator of the oven should be familiar with the functions and operation of the oven.

This manual must be kept in a prominent, easily reachable location near the oven.

Gas ovens are designed for use with EITHER natural gas OR liquid propane gas, as specified on the serial plate. Where permitted by local and national codes, the oven can be converted from natural gas to propane operation, or from propane to natural gas operation. This conversion requires the installation of the appropriate Middleby Marshall Gas Conversion Kit by an Authorized Service Agent.

It is suggested to obtain a service contract with a Middleby Marshall Authorized Service Agent.

WARNING

POST, IN A PROMINENT LOCATION, THE EMERGENCY TELEPHONE NUMBER OF YOUR LOCAL GAS SUPPLIER AND INSTRUCTIONS TO BE FOLLOWED IN THE EVENT YOU SMELL GAS.

Instructions to be followed in the event the user smells gas shall be obtained by consulting the local gas supplier. If the smell of gas is detected, immediately call the emergency phone number of your local Gas Company. They will have personnel and provisions available to correct the problem.

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

WARNING:

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.

IMPORTANT
An electrical wiring diagram for the oven is located inside the machinery compartment.

IMPORTANT
It is the customer's responsibility to report any concealed or non-concealed damage to the freight company. Retain all shipping materials until it is certain that the equipment has not suffered concealed shipping damage.

NOTICE: CONTACT YOUR MIDDLEBY MARSHALL AUTHORIZED SERVICE AGENT TO PERFORM MAINTENANCE AND REPAIRS. AN AUTHORIZED SERVICE AGENCY DIRECTORY IS SUPPLIED WITH YOUR OVEN.

NOTICE: Using any parts other than genuine Middleby Marshall factory manufactured parts relieves the manufacturer of all warranty and liability.

NOTICE: Middleby Marshall (Manufacturer) reserves the right to change specifications at any time.

NOTICE: The equipment warranty is not valid unless the oven is installed, started and demonstrated under the supervision of a factory certified installer.

Retain This Manual For Future Reference

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SECTION 1 - DESCRIPTION

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I. OVEN USES

PS536 Ovens can be used to bake and/or cook a wide variety of food products, such as pizza, pizza-type products, cookies, sandwiches and others.

II. OVEN COMPONENTS - see Figure 1-1.

A. Window (on ovens so equipped): Allows the user to see and access food products inside the baking chamber.

B. Conveyor Exit Tray: Prevents food products from falling off the end of the moving conveyor.

C. Eyebrows (on ovens so equipped): Can be adjusted to various heights to prevent heat loss into the environment.

D. End Plugs: Allow access to the oven's interior.

E. Control Panel: Location of the operating controls for the oven. Refer to Section 3, Operation, for details.

F. Machinery Compartment Access Panel: Allows access to the oven's interior components. No user-servicable parts are located inside the machinery compartment.

G. Serial Plate: Provides specifications for the oven that affect installation and operation. Refer to Section 2, Installation, for details.

H. Conveyor Drive Motor: Moves the conveyor.

I. Crumb Pans: Catch crumbs and other material that drop through the conveyor belt. One crumb pan is located underneath each end of the conveyor.

J. Conveyor: Moves the food product through the oven.

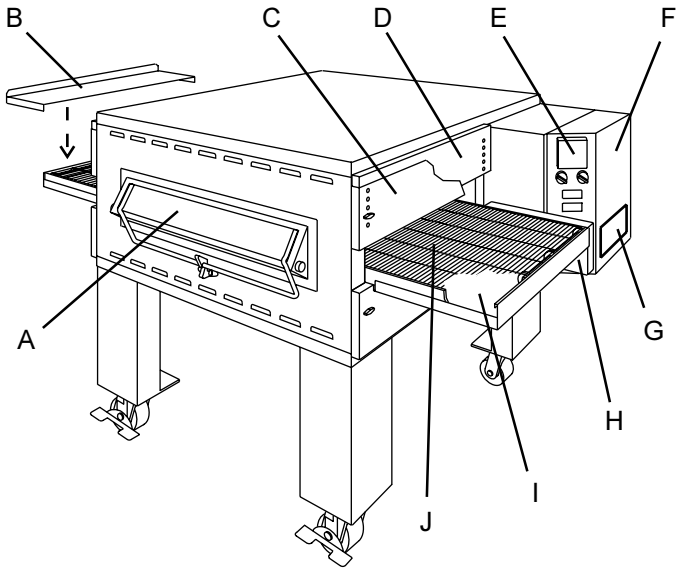
Not Shown:

K. Gas Burner (gas ovens) or Heating Elements (electric ovens): Heat(s) air, which is then projected to the air fingers by the blowers.

L. Blowers: Fans that project hot air from the gas burner or heating elements to the air fingers.

M. Air Fingers: Project streams of hot air onto the food product.

Fig. 1-1 - Oven Components



III. OVEN SPECIFICATIONS

Table 1-1: Dimensions

Overall Height:	single oven with 17-1/2" (446mm) legs	43-1/2" (1105mm)
	double oven with 17-1/2" (446mm) legs	63" (1600mm)
	triple oven with 6" (152mm) legs	71" (1803mm)
Overall Depth:	without front window	39-3/4" (1010mm)
	with front window	43" (1092mm)
Overall Length:	without exit tray installed	60" (1524mm)
	with exit tray installed	68-1/4" (1734mm)
Baking Chamber Length		36" (914mm)
Conveyor Width:	Single Belt	20" (508mm)
	Split Belt	2 x 9-1/2" (241mm)
Conveyor Length		60" (1524mm)
Recommended Minimum Clearances:		
Rear of oven to wall		3" (76mm)
Control end of conveyor to wall		18" (457mm)
Non-control end of oven to wall		3" (76mm)

Table 1-2: General specifications (per oven cavity)

Weight		400 lbs. (182kg)
Rated Heat Input:	Natural gas ovens	50,000 BTU (12,600 kcal, 14.65 kW/hr.)
	Propane ovens	45,000 BTU (11,340 kcal, 13.19 kW/hr.)
	Electric ovens	16kW
Operating Temperature		200-600°F (93-316°C)
Warmup Time		25 minutes

Table 1-3: Electrical specifications for electric ovens (per oven cavity)

Main Blower Voltage	Control Circuit Voltage	Phase	Freq.	Current Draw L1	L2	L3	N	kW Rating	Poles	Wires
208V	120V conv. speed control, drive motor, contactor, & temp. control; all others 208V	3 Ph	60 Hz	50A	50A	50A	--	16.0 kW at 208V	4 Pole	4 Wire (3 hot, 1 gnd)
230V	120V conv. speed control, drive motor, contactor, & temp. control; all others 230V	3 Ph	60 Hz	45A	45A	45A	--	16.0 kW at 230V	4 Pole	4 Wire (3 hot, 1 gnd)
380V *	120V conv. speed control, drive motor, contactor, & temp. control; 380V heating elements; all others 240V	3 Ph	50 Hz	25A	25A	28A	5A	16.0 kW at 380V	4 Pole	5 Wire (3 hot, 1 neutral, 1 gnd)

** 380V model is not approved by ETL or ETL.*

Table 1-4: Electrical specifications for gas ovens (per oven cavity)

Main Blower Voltage	Control Circuit Voltage	Phase	Freq.	Current Draw	Poles	Wires
208/240V	120V conv. speed control, drive motor, contactor, & temp. control; all others as per line (208/240V)	1 Ph	60 Hz	6A	3 Pole	4 Wire (2 hot, 1 neut, 1 gnd)

Table 1-5: Gas orifice and pressure specifications (per oven cavity)

Gas Type	Main Orifice I.D.	Pilot Orifice I.D.	Supply (Inlet) Pressure	Orifice (Manifold) Pressure
Natural	0.0935" (2.3749mm, #42 drill)	0.018" (0.46mm)	4-7" W.C. (9.95-17.4mbar) *	3.5" W.C. (8.7mbar)
Propane	0.0520" (1.3208mm, #55 drill)	0.018" (0.46mm)	11-14" W.C. (27.4-34.9mbar) *	10.5" W.C. (24.9mbar)

* *The gas supply pressures shown are for ovens installed in North America. The required gas supply pressures of other locations are dependent on the local gas type and on all applicable local codes.*

IMPORTANT

Additional electrical information is provided on the oven's serial plate, and on the wiring diagram inside the machinery compartment.

SECTION 2 - INSTALLATION

WARNING - For gas ovens, after any conversions, readjustments, or service work on the oven:

- **Perform a gas leak test.**
- **Test for correct air supply.**
- **Test for proper combustion and gas supply.**
- **Check that the ventilation system is in operation.**

WARNING

For electric ovens, after any conversions, readjustments, or service work on the oven, check that the ventilation system (if so equipped) is in operation.

WARNING

Keep the appliance area free and clear of combustibles.

WARNING

The oven must be installed on an even (level) non-flammable flooring and any adjacent walls must be non-flammable. Recommended minimum clearances are specified in the *Description* section of this Manual.

WARNING

Do not obstruct the flow of combustion and ventilation air to and from your oven. There must be no obstructions around or underneath the oven. Constructional changes to the area where the oven is installed shall not affect the air supply to the oven.

CAUTION

For additional installation information, contact your local Authorized Service Agent.

NOTE

There must be adequate clearance between the oven and combustible construction. Clearance must also be provided for servicing and for proper operation.

NOTE

An electrical wiring diagram for the oven is located inside the machinery compartment.

NOTE

All aspects of the oven installation, including placement, utility connections, and ventilation requirements, must conform with any applicable local, national, or international codes. These codes supercede the requirements and guidelines provided in this manual.

NOTE

In the USA, the oven installation must conform with local codes. In the absence of local codes, gas oven installations must conform with the National Fuel Gas Code, ANSI Z223.1. Gas and electric ovens, when installed, must be electrically grounded in accordance with local codes, or in the absence of local codes, with the National Electrical Code (NEC), or ANSI/NFPA70.

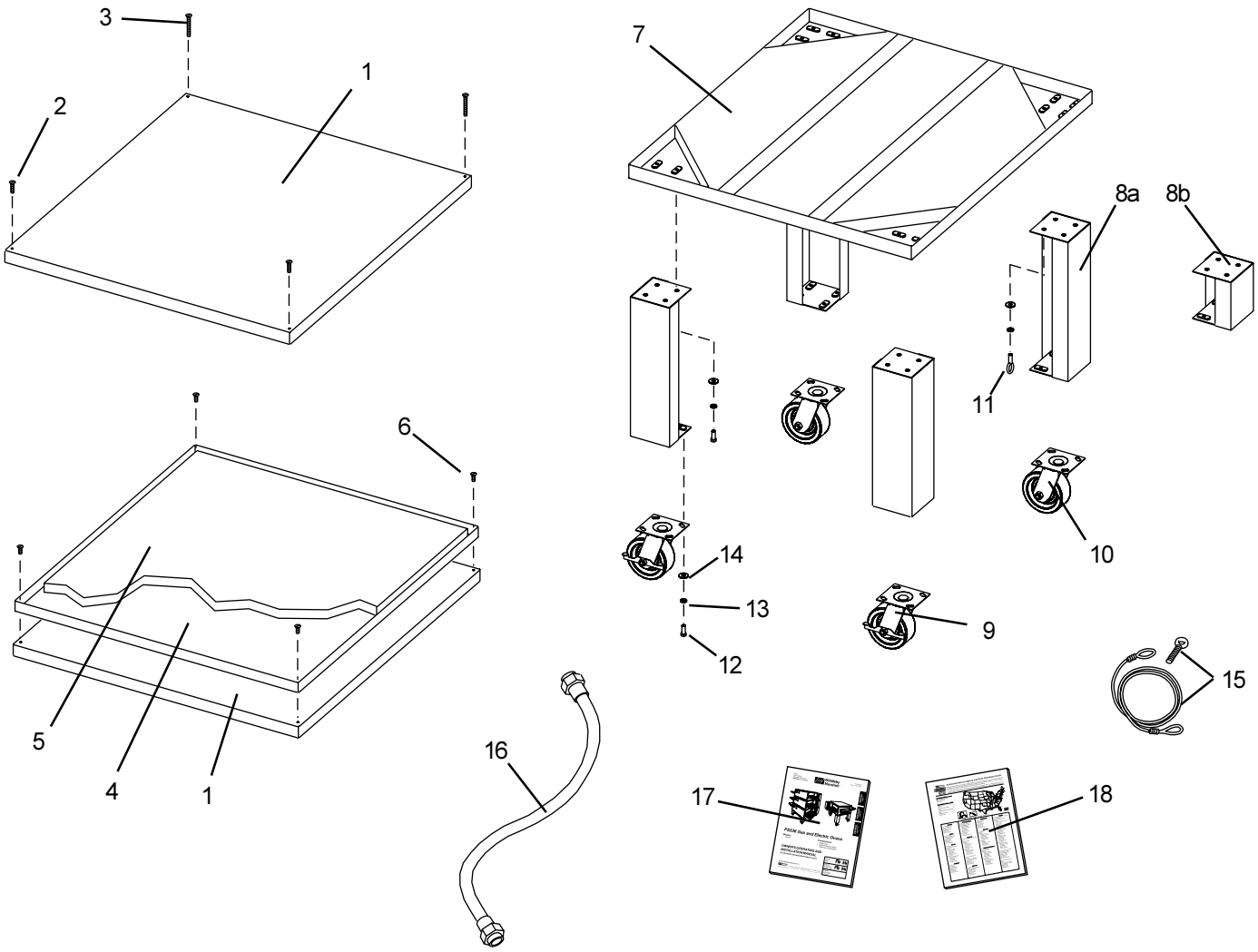
NOTE

In Canada, the oven installation must conform with local codes. In the absence of local codes, gas oven installations must conform with the Natural Gas Installation Code, CAN/CGA-B149.1, or the Propane Gas Installation Code, CAN/CGA-B149.2, as applicable. Gas and electric ovens, when installed, must be electrically grounded in accordance with local codes, or in the absence of local codes, with the Canadian Electrical Code CSA C22.2.

NOTE

In Australia, the oven installation must conform with any requirements of the appropriate statutory authority. Gas oven installtions must conform with AGA Code, AG601.

Figure 2-1 - Installation Kit



I. INSTALLATION KIT - see Figure 2-1

Item	Qty. Single Oven	Qty. Double Oven	Qty. Triple Oven	Part No.	Description
1	1	2	3	42882	Top panel
2	2	2	2	220352	Screw, pan head #10 x 1" (top panel - front)
3	2	2	2	3A80A8801	Screw, pan head #10 x 2" (top panel - rear)
4	--	1	2	44837	Stacking panel
5	--	1	2	44918	Insulation, stacking panel, pre-cut
6	--	4	8	4111A8815	Screw, hex head #10-32 x 1/2" (stacking panels)
7	1	1	1	42893	Base pad
8a	4	4	--	42890	17-1/2" (445mm) leg extension, for single and double ovens
8b	--	--	4	44799	6" (152mm) leg extension, for triple ovens
9	2	2	2	22290-0009	Caster, with flat plate and brake
10	2	2	2	22290-0010	Caster, with flat plate (no brake)
11	1	1	1	21392-0004	Eyebolt, 3/4"
12	31	31	31	220373	Hex bolt, 3/8"-16 x 1"
13	32	32	32	21416-0001	Flat washer, 3/8"
14	32	32	32	21422-0001	Lockwasher, 3/8"
15	1	1	1	22450-0228	Restraint cable assembly
16	1	2	3	22361-0001	Gas hose
16	1	1	1	44727	*Owner's Operating Manual,* PS536 Gas and Electric Ovens
17	1	1	1	1002040	*Middleby Marshall Authorized Service Agency Listing*

ENGLISH

II. VENTILATION SYSTEM

IMPORTANT

Where national or local codes require the installation of fire suppression equipment or other supplementary equipment, DO NOT mount the equipment directly to the oven.

MOUNTING SUCH EQUIPMENT ON THE OVEN MAY:

- ***VOID AGENCY CERTIFICATIONS***
- ***RESTRICT SERVICE ACCESS***
- ***LEAD TO INCREASED SERVICE EXPENSES FOR THE OWNER***

A. Requirements

CAUTION

Gas oven installations REQUIRE a mechanically driven ventilation system with electrical exhaust air sensing control.

A mechanically driven ventilation system is STRONGLY RECOMMENDED for electric oven installations.

PROPER VENTILATION OF THE OVEN IS THE RESPONSIBILITY OF THE OWNER.

B. Recommendations

NOTE THAT THE HOOD DIMENSIONS SHOWN IN FIGURE 2-2 ARE RECOMMENDATIONS ONLY. LOCAL, NATIONAL AND INTERNATIONAL CODES MUST BE FOLLOWED WHEN INSTALLING THE VENTILATION SYSTEM. ANY APPLICABLE CODES SUPERSEDE THE RECOMMENDATIONS SHOWN IN THIS MANUAL.

The rate of air flow exhausted through the ventilation system may vary depending on the oven configuration and hood design. Consult the hood manufacturer or ventilation engineer for these specifications.

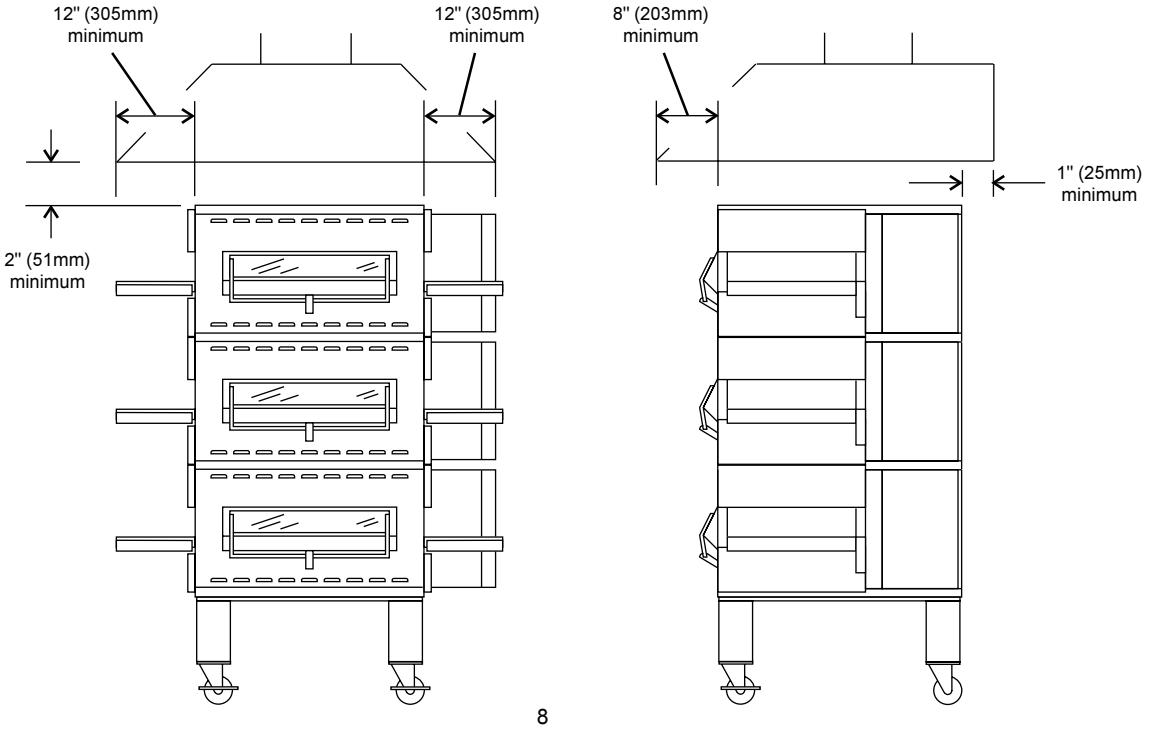
To avoid a negative pressure condition in the kitchen area, return air must be brought back to replenish the air that was exhausted. A negative pressure in the kitchen can cause heat-related problems to the oven components as if there were no ventilation at all. The best method of supplying return air is through the heating, ventilation and air conditioning (HVAC) system. Through the HVAC system, the air can be temperature-controlled for summer and winter. Return air can also be brought in directly from outside the building, but detrimental effects can result from extreme seasonal hot and cold temperatures from the outdoors.

NOTE: *Return air from the mechanically driven system must not blow at the opening of the baking chamber. Poor oven baking performance will result.*

C. Other ventilation concerns

- Special locations, conditions, or problems may require the services of a ventilation engineer or specialist.
- Inadequate ventilation can inhibit oven performance.
- It is recommended that the ventilation system and duct work be checked at prevailing intervals as specified by the hood manufacturer and/or HVAC engineer or specialist.

Fig. 2-2 - Ventilation System



III. ASSEMBLY

A. Top Panel and Base Pad Assembly

1. Install the four leg extensions onto the base pad using the 3/8"-16x1" screws, 3/8" flat washers, and 3/8" lockwashers supplied in the Base Pad Kit. See Figure 2-3. Check that the finished sides of each leg extension face OUTWARDS.

   One rear leg should be attached using three 3/8"-16 x 1" screws and the 3/4" eyebolt, as shown in Figure 2-3. This eyebolt acts as the anchor point for the restraint cable assembly (see Part C, Restraint Cable Installation).

2. Install one caster onto each leg extension, as shown in Figure 2-4. Use the 3/8"-16x1" screws, 3/8" flat washers, and 3/8" lockwashers supplied in the Installation Kit. The locking casters should be installed at the FRONT of the oven. The non-locking casters should be installed at the REAR of the oven.

3. Install the top panel in place on the top oven cavity using the screws included in the base pad kit, as shown in Figure 2-4.

4. Install the lower oven cavity onto the base pad. Check that the eyebolt welded onto the pad faces the rear of the oven.

Figure 2-3 - Leg extension and casters installation

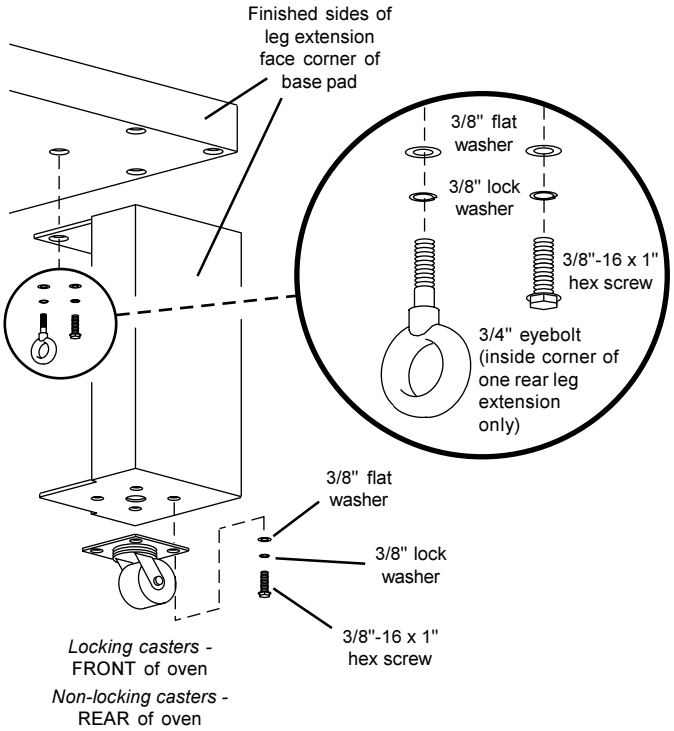
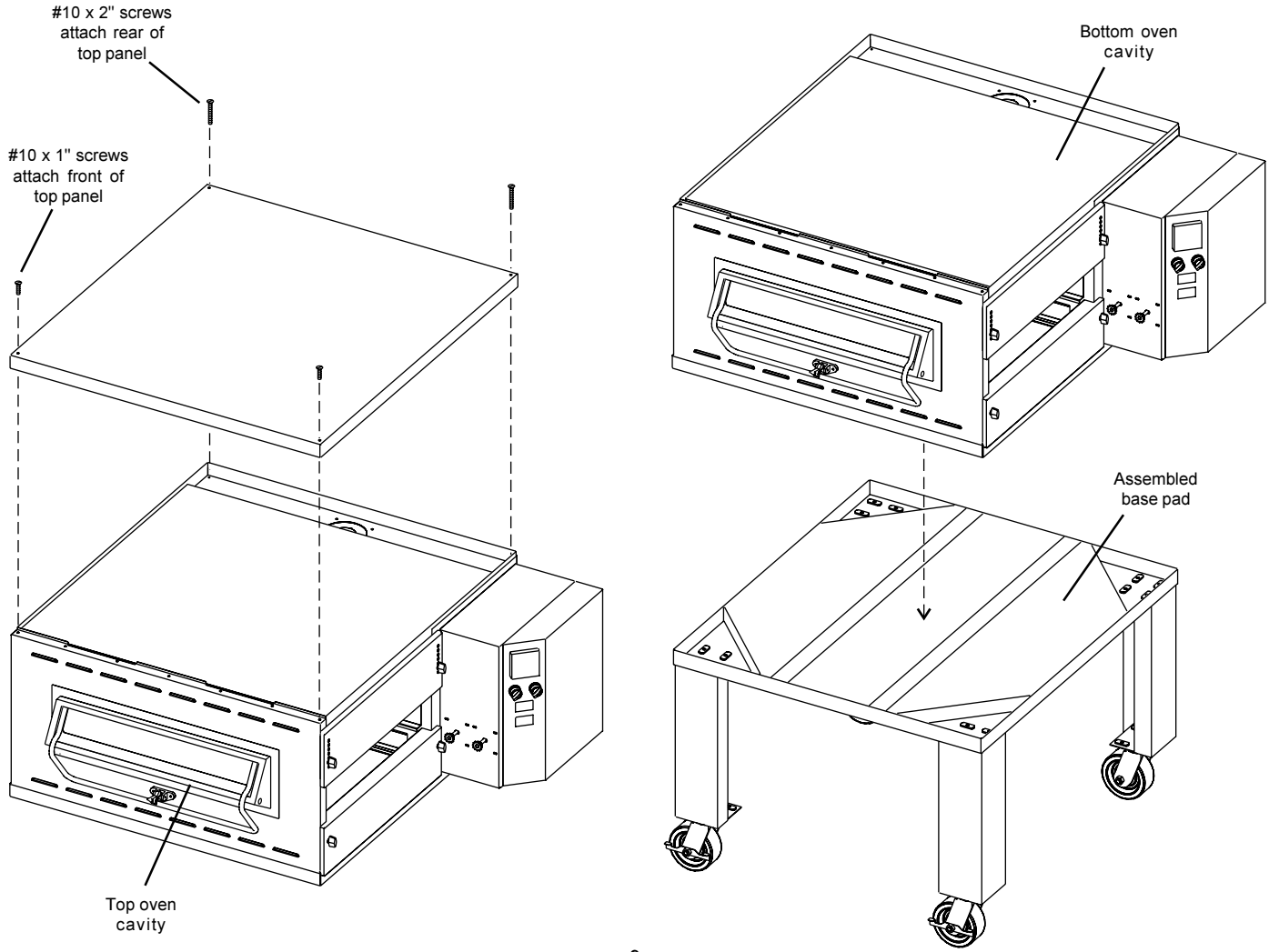


Figure 2-4 - Top panel and base pad installation



B. Stacking

For single ovens, skip ahead to Part C, Restraint Cable Installation. For double or triple ovens, continue on to Step 1, below.

1. Assemble the stacking spacer(s) as shown in Figure 2-5. One spacer assembly is supplied for a double oven, while two are supplied for a triple oven.
2. Place one of the assembled spacers on top of the lower oven cavity, making sure that the insulation faces up.
3. Place the center oven cavity (for triple ovens) or the top oven cavity (for double ovens) on top of the spacer. Check that all four sides of the spacer overlap the base of the oven, and that the oven is level and firmly seated. See Figure 2-6.
4. For triple ovens, repeat Steps 2 and 3 to install the top oven cavity.

Figure 2-5 - Assembling the stacking spacers

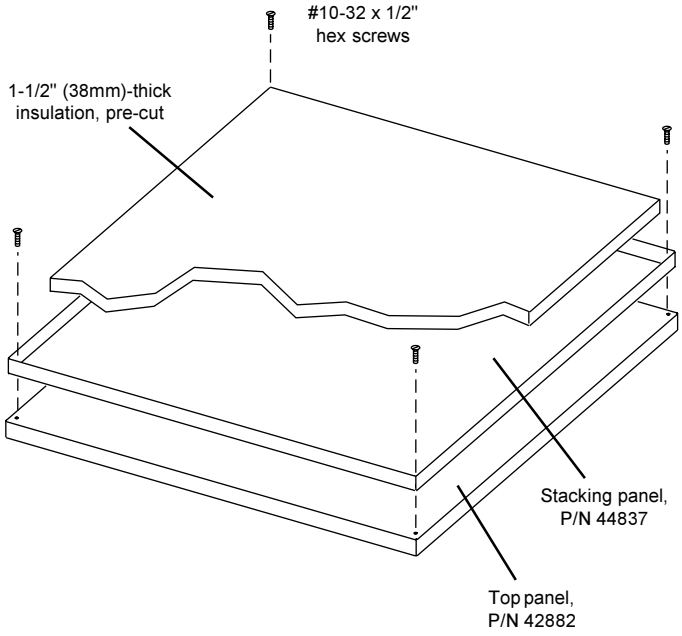
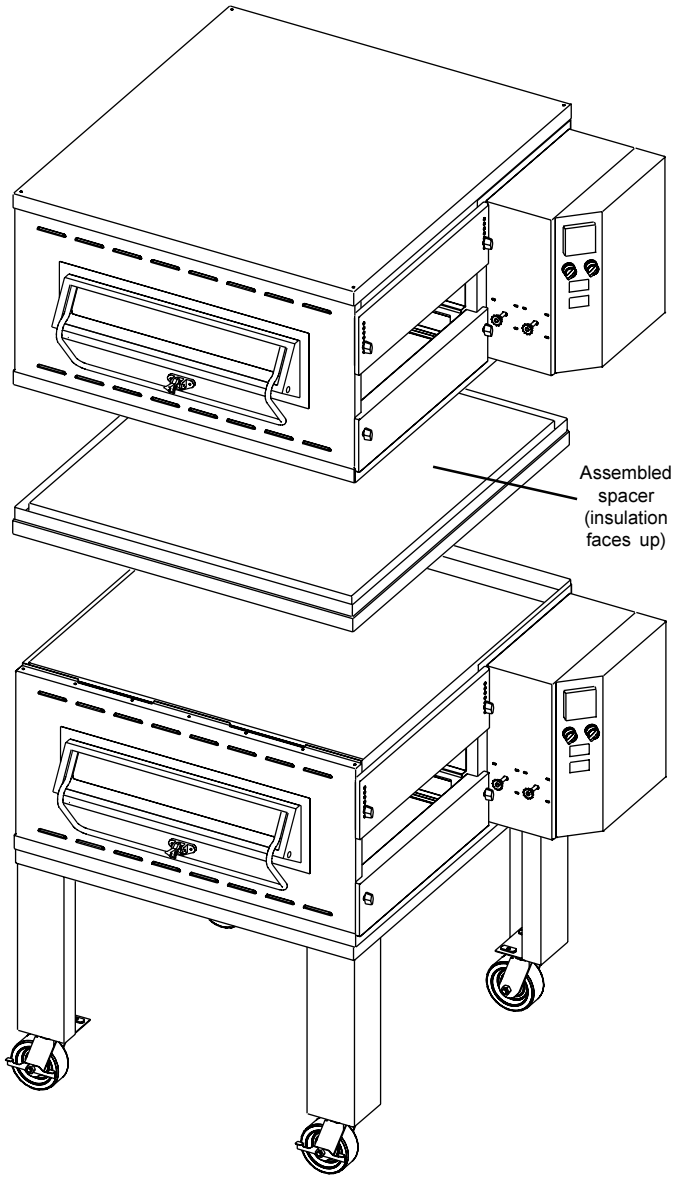


Figure 2-6 - Stacking

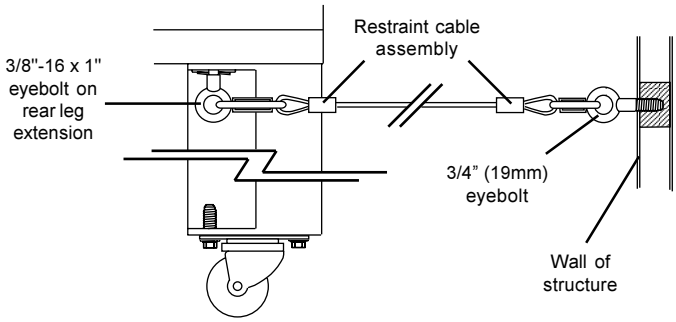


C. Restraint Cable Installation

Because the oven is equipped with casters, a restraint cable assembly must be installed to limit the movement of the appliance without depending on the connector and the quick disconnect device or its associated piping. One end of the cable is anchored to the eyebolt on one of the rear leg extensions, while the other is anchored to the wall. See Figure 2-7.

After connecting the restraint cable, move the oven to its final location. Then, lock the two front casters.

Figure 2-7 - Installing the Restraint Cable



D. Conveyor Installation

1. Unfold the conveyor frame so that it lies flat on the floor. As you unfold the frame, check that the locator pins shown in Figure 2-8 lock into the slots on the bracket.
2. Refer to Figure 2-8. Note the locations of the four tensioning screws (2 per side) in the slotted holes on the brackets. Loosen these screws to allow the conveyor to be properly tensioned.
3. Lift the conveyor belt away from the frame, as shown in Figure 2-8, to check the belt tension. The belt should lift between 1-2" (25-50mm).

   If it is necessary to adjust the belt tension, gently push the two conveyor frame sections closer together, or further apart, as required. Then, re-check the tension of the conveyor belt. Repeat this step as necessary until the proper belt tension is achieved.
4. When the belt tension is correctly adjusted, tighten the two tensioning screws on each side of the conveyor frame. This fastens the two frame sections together at the correct belt tension.
5. If it is necessary to add or remove conveyor links to achieve the correct tension, OR if it is necessary to reverse the conveyor belt for correct orientation, the belt will need to be removed from the conveyor frame. If this is necessary, perform the following procedure:
   a. Remove the master links using long-nose pliers. Then, roll up the belt along the length of the conveyor frame.
   b. Add or remove belt links as necessary to achieve the correct belt tension.
   c. Replace the belt on the conveyor frame. Check the following:
      - The conveyor belt links must be oriented as shown in Figure 2-9.
      - The smooth side of the conveyor belt must face UP.
   d. Connect the inside master links. Check that the links are oriented as shown in Figure 2-9.
   e. Connect the outside master links. Note that the outside master links each have an open hook on one side. This hook aligns with the hooks along the sides of the other conveyor links. See Figure 2-9.

Figure 2-8 - Assembling and tensioning the conveyor

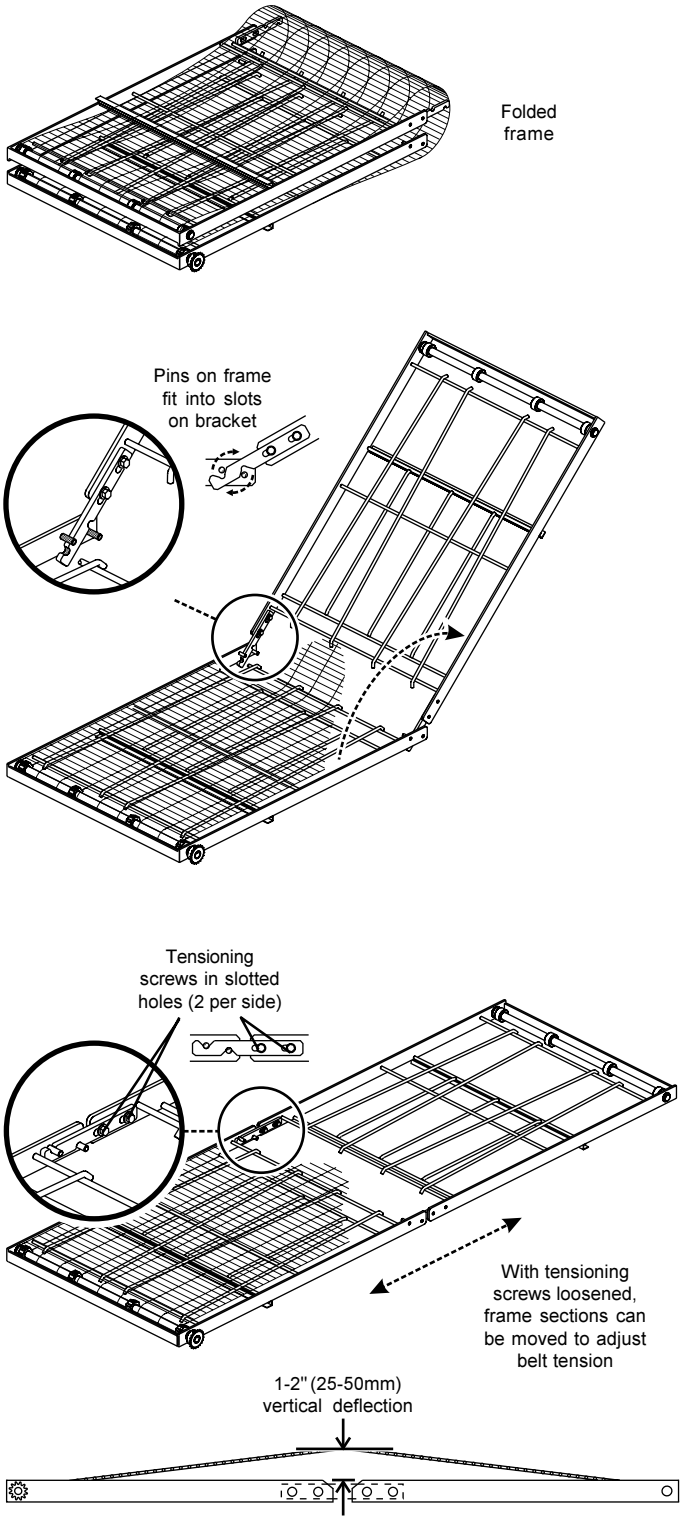
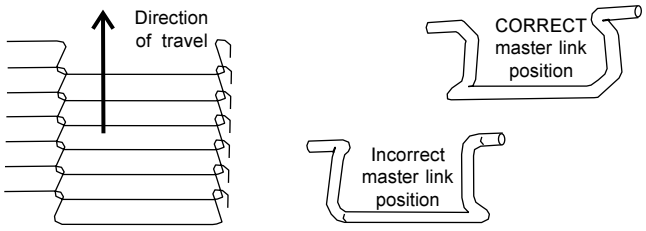


Figure 2-9 - Conveyor and Master Link Orientation



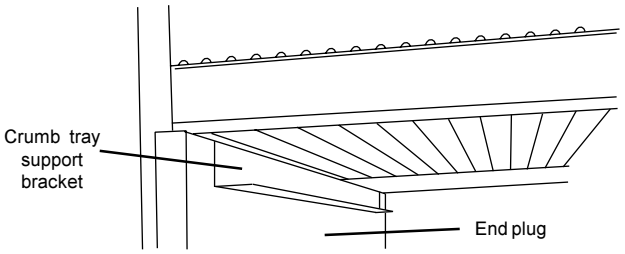
6. Lift the conveyor and position it in the oven. The conveyor can only be installed from the end of the oven with the drive motor.

7. Continue moving the conveyor into the oven until the conveyor frame is positioned properly. The inside supports for the crumb trays should rest firmly against the lower end plugs, as shown in Figure 2-10.

8. When the conveyor is positioned properly, check for freedom of movement of the conveyor belt by pulling it for about 2-3 feet (60 to 90 cm) with your fingers. The conveyor must move freely.

9. Install the drive chain between the conveyor drive sprocket and the motor sprocket. To install the chain, it will be necessary to lift the drive end of the conveyor slightly.

Figure 2-10 - Conveyor placement



V. FINAL ASSEMBLY

1. Install the conveyor drive motor cover as shown in Figure 2-11.

2. Install the crumb trays as shown in Figure 2-11. First, place the inside edge of each tray onto its support bracket. Then, hook the outside edge of the tray over the end of the conveyor frame.

   Note that crumb trays for the lower (or a single) oven are solid, while those for all upper ovens have perforated openings, as shown in Figure 2-12.

3. Press the conveyor exit tray down over the edge of the conveyor frame at the exit end of the oven. See Figure 2-11.

Figure 2-11 - Final assembly

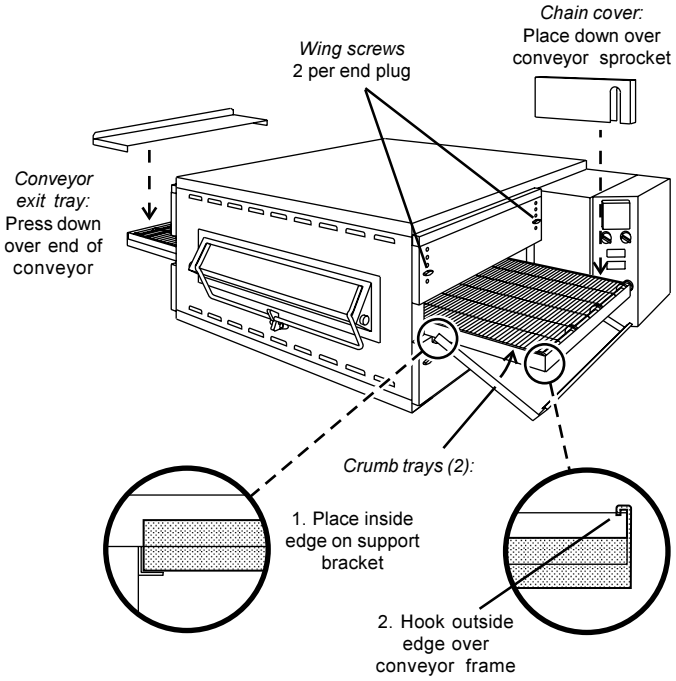
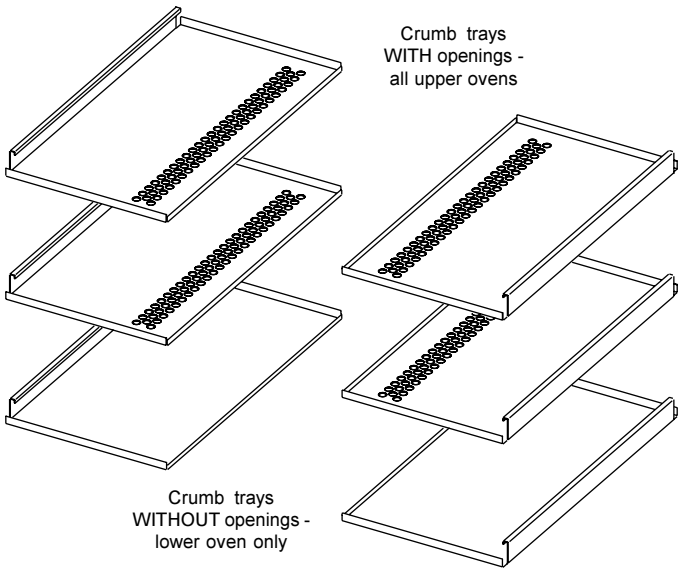


Figure 2-12 - Crumb trays



VI. ELECTRICAL SUPPLY

WARNING

Authorized supplier personnel normally accomplish the connections for the ventilation system, electric supply, and gas supply, as arranged by the customer. Following these connections, the factory-authorized installer can perform the initial startup of the oven.

NOTE: *The electric supply installation must satisfy the requirements of the appropriate statutory authority, such as the National Electrical Code (NEC), ANSI/NFPA70, (U.S.A.); the Canadian Electrical Code, CSA C22.2; the Australian Code, AG601; or other applicable regulations.*

NOTE: *The electric supply connection must meet all national and local electrical code requirements.*

Check the oven serial plate before making any electric supply connections. Electric supply connections must agree with data on the oven serial plate. The location of the serial plate is shown in Figure 1-1 (in Section 1, Description).

A fused disconnect switch or a main circuit breaker (customer furnished) MUST be installed in the electric supply line for each oven cavity. It is recommended that this switch/circuit breaker have lockout/tagout capability.

The supply conductors must be of the size and material (copper) recommended. Refer to the wiring diagram inside the machinery compartment of the oven. Electrical specifications are also listed on the oven's serial plate and in Tables 1-3 and 1-4, Electrical Specifications (in Section 1, Description).

The oven requires a ground connection to the oven ground screw located in the electrical junction box. (The box is shown in Figure 2-13.) If necessary, have the electrician supply the ground wire. *Do NOT use the wiring conduit or other piping for ground connections!*

A. Additional Information - Gas Ovens

All electric supply connections are made at the terminal block located in the electrical junction box, shown in Figure 2-13. The power lines then connect to the oven circuits through a safety switch located inside the machinery compartment. This switch interrupts electric power to the oven when the Machinery Compartment Access Panel is opened.

B. Additional Information - Electric Ovens

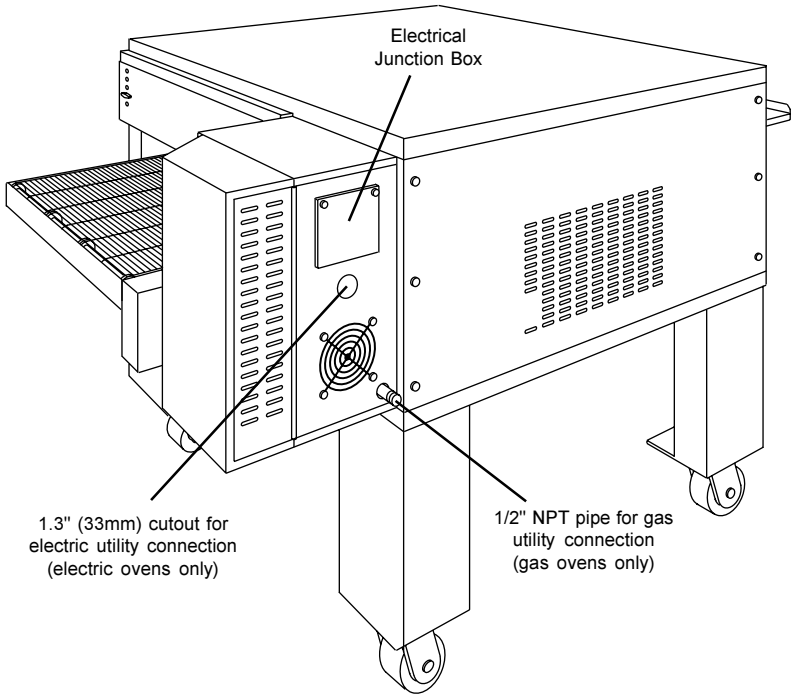
A 1.3" (33mm) dia. cutout in the back wall of the machinery compartment provides access to the electrical supply connections. The actual wiring connections are made at the terminal block located in the electrical junction box.

Using flexible cables for the electric power supply conductors requires a 1.3" (33mm) strain-relief fitting (not furnished with the oven) to enable safe access to the terminal block.

C. Connection

Refer to the wiring diagram inside the machinery compartment of the oven to determine the correct connections for the electrical supply lines. Connect the supply as indicated on the wiring diagram.

Figure 2-13 - Utility connection locations



VII. GAS SUPPLY

CAUTION

DURING PRESSURE TESTING NOTE ONE OF THE FOLLOWING:

1. The oven and its individual shutoff valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressure in excess of 1/2 psi (3.45 kPa).

2. The oven must be isolated from the gas supply piping system by closing its individual manual shutoff valve during any pressure testing of the gas supply piping system at test pressure equal to or less than 1/2 psi (3.45 kPa).

3. If incoming pressure is over 14" W.C. (35mbar), a separate regulator MUST be installed in the line BEFORE the individual shutoff valve for the oven.

WARNING: **To prevent damage to the control valve regulator during initial turn- on of gas, it is very important to open the manual shutoff valve very slowly.**

After the initial gas turn-on, the manual shutoff valve must remain open except during pressure testing as outlined in the above steps or when necessary during service maintenance.

ENGLISH

A. Gas Utility Rough-In Recommendations

The following gas system specifications are STRONGLY RECOMMENDED. Deviating from these recommendations may affect the baking performance of the oven.

Gas Meter - 650 cfh meter

Gas Line

- DEDICATED LINE from the gas meter to the oven
- 2" (50.8mm) pipe for natural gas
- 1-1/2" (38.1mm) pipe for propane
- Maximum length: 200' (61m). Each 90° elbow equals 7' (2.13m) of pipe.

B. Connection

Check the oven's gas supply requirements before making the gas utility connection. Gas supply requirements are listed on the oven's serial plate and in Table 1-5, Gas Orifice and Pressure Specifications (in Section 1, Description).

Check the serial plate to determine the type of gas (Propane or Natural) to be used with the oven.

Refer to the instructions in the gas hose package (included in the Installation Kit) before connecting the gas line. One gas line connection method is shown in Figure 2-14; however, compliance with the applicable standards and regulations is mandatory.

Inlet and regulated gas pressure readings can be taken using a "U" tube manometer at the tap locations shown in Figure 2-15.

NOTE

In the USA, the installation must conform with local codes, or in the absence of local codes, with the National Fuel Gas Code, ANSI Z223.1.

In Canada, the installation must conform with local codes, or in the absence of local codes, with the Natural Gas Installation Code, CAN/CGA-B 149.1, or the Propane Installation Code, CAN/CGA-B 149.2, as applicable.

In Australia, the installation must conform with AGA Code AG601 and with any requirements of the appropriate statutory authority.

Certain safety code requirements exist for the installation of gas ovens; refer to the beginning of Section 2 for a list of the installation standards. In addition, because the oven is equipped with casters, the gas line connection shall be made with:

- A connector that complies with the Standard for Connectors for Movable Gas Appliances, ANSI Z21.69 (in USA), or Connectors for Movable Gas Appliances, CAN/CGA-6.16 (in Canada), AND
- A quick-disconnect device that complies with the Standard for Quick-Disconnect Devices for Use With Gas Fuel, ANSI Z21.41 (in USA.), or, if applicable, Quick-Disconnect Devices for Use With Gas Fuel, CAN1-6.9 (in Canada).

C. Gas Conversion

Where permitted by local and national codes, it is possible to convert ovens from natural to propane gas, or from propane to natural gas. Use the appropriate Middleby Marshall Gas Conversion Kit for the specific oven model.

CAUTION

The terms of the oven's warranty require all start-ups, conversions and service work to be performed by a Middleby Marshall Authorized Service Agent.

Figure 2-14 - Flexible Gas Hose Installation

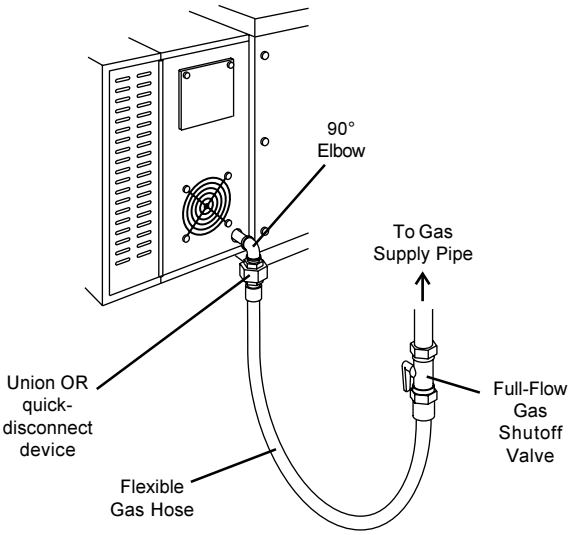
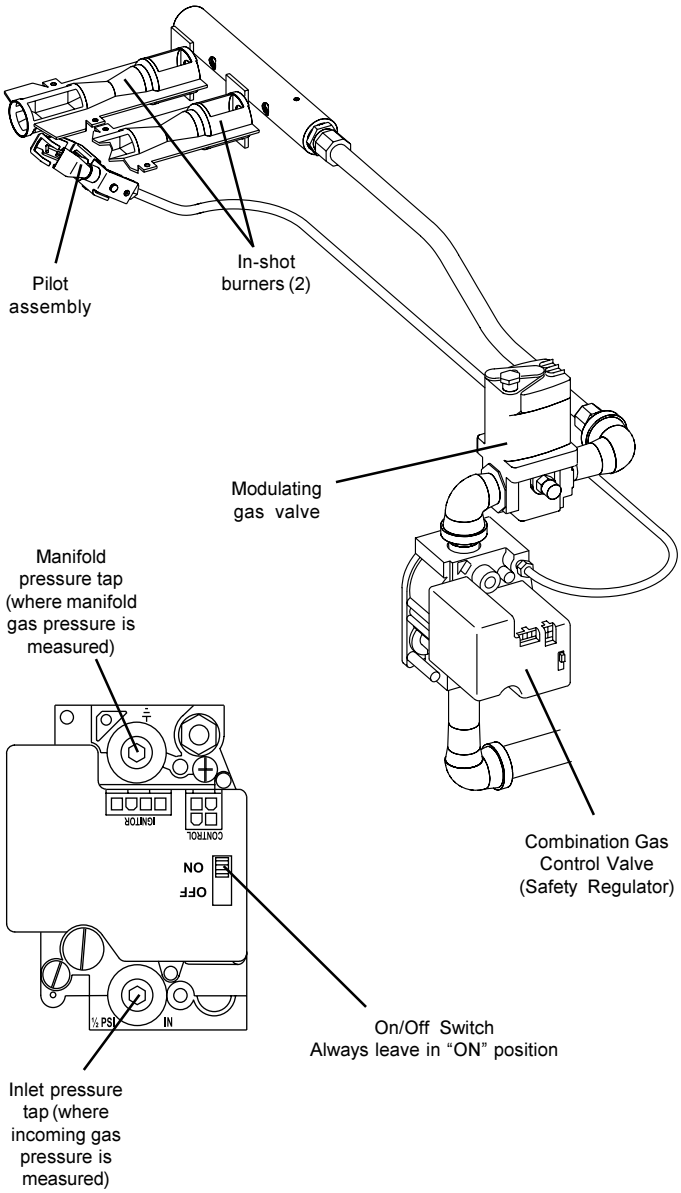


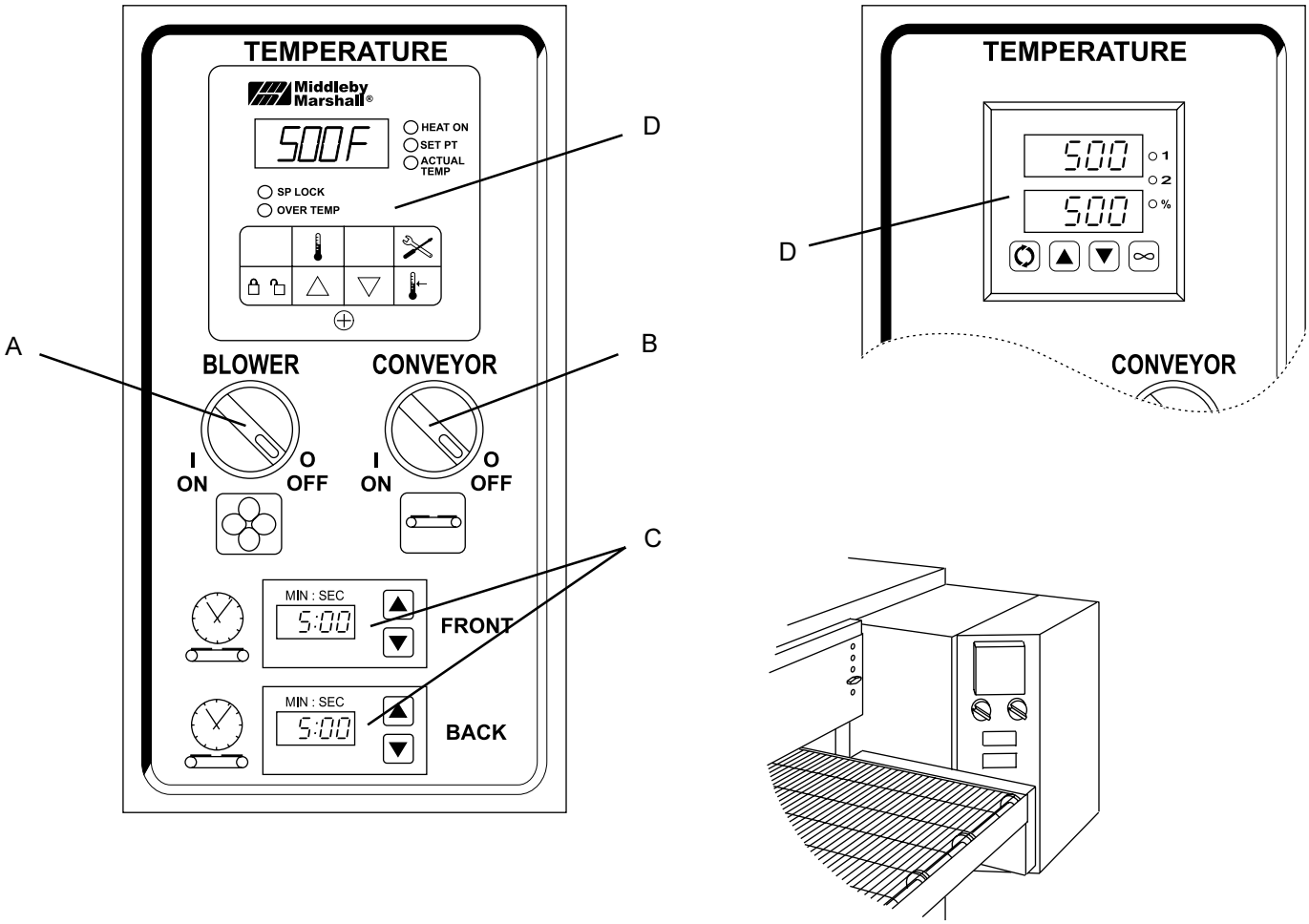
Figure 2-15 - Gas Burner and Piping Assembly



SECTION 3 - OPERATION

I. LOCATION AND DESCRIPTION OF CONTROLS

Fig. 3-1 - Control Panel



A. **"BLOWER" Switch:** Turns the blowers and cooling fans on and off. When set to the "ON" (I) position, it also allows the burner (gas ovens) or heating elements (electric ovens) to activate. Activation is determined by the settings on the Digital Temperature Controller.

B. **"CONVEYOR" Switch:** Turns the conveyor drive motor on and off.

C. **Conveyor Speed Controller:** Adjusts and displays the bake time. Single-belt ovens have one controller. Split belt ovens have one controller for each conveyor belt, labeled "FRONT" and "BACK."

D. **Digital Temperature Controller:** Continuously monitors the oven temperature. Settings on the Digital Temperture Controller control the activation of the burner or heating elements. Keypad controls allow the operator to select the cooking temperature and monitor oven operation.

Note that two different models of Digital Temperature Controller are used on PS536 ovens. This section provides instructions specific to each controller.

NOT SHOWN:

E. **Machinery Compartment Access Panel Safety Switch:** Disconnects electrical power to the controls and the blowers when the machinery compartment access panel is opened. The panel should only be opened by authorized service personnel.

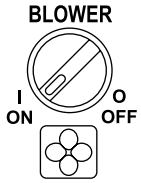
ENGLISH

II. NORMAL OPERATION - STEP-BY-STEP

A. DAILY STARTUP PROCEDURE

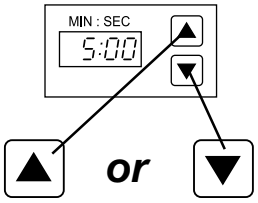
1. Check that the circuit breaker/fused disconnect is in the on position. Check that the window (if so equipped) is closed.

2. Turn the "BLOWER" (⁂) switch to the “ON” ("I") position.

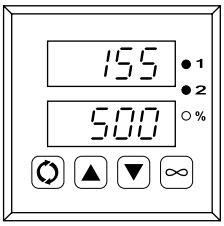


3. Turn the "CONVEYOR" (▭) switch to the “ON” ("I") position.

4. If necessary, adjust the conveyor speed setting by pressing the ▲ or ▼ pushbuttons on the conveyor speed controller to change the displayed bake time.

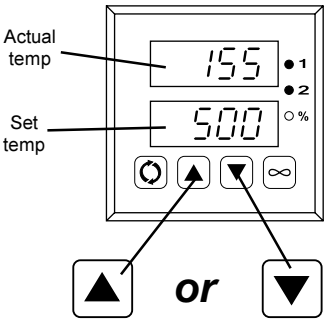


If the oven uses this Digital Temperature Controller:



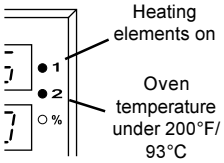
5a. Press the ▲ or ▼ pushbuttons on the digital temperature controller to adjust the set temperature, if necessary.

Note that the set temperature is shown in the lower window of the display, while the actual oven temperature is shown in the upper window.



6a. Check that the "1" light illuminates. This shows that the burner or heating elements have been turned on.

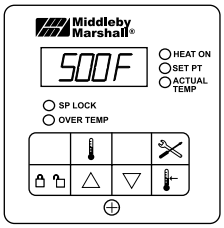
The "2" light will illuminate while the oven heats to its minimum normal operating temperature of 200°F/93°C.



7a. Wait for the oven to heat to the set point temperature. Higher set point temperatures will require a longer wait. The oven can reach a temperature of 500°F (232°C) in approximately 15 minutes.

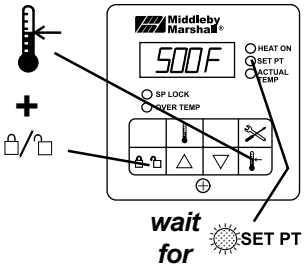
8a. Allow the oven to preheat for 10 minutes after it has reached the set point temperature.

If the oven uses this Digital Temperature Controller:

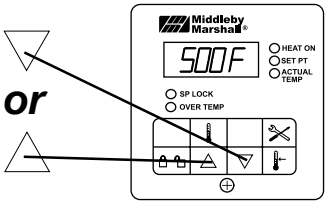


5b. Adjust the temperature controller to a desired set temperature, if necessary.

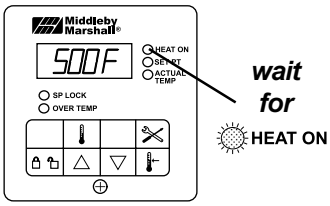
- Press the Set Point and Unlock keys at the same time. Wait for the "SET PT" light to turn on.



- Press the Up Arrow and Down Arrow Keys as necessary to adjust the setpoint.

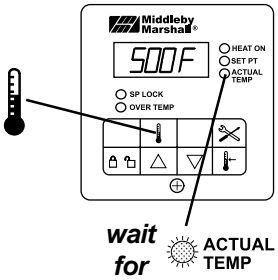


6b. Check that the "HEAT ON" light illuminates. This shows that the burner or heating elements have been turned on.



7b. Wait for the oven to heat to the setpoint temperature. Higher setpoint temperatures will require a longer wait. The oven can reach a temperature of 500°F (232°C) in approximately 5 minutes.

8b. *(Optional)* Press the Temperature key to show the Actual Temperature in the display, and wait for the "ACTUAL TEMP" light to turn on. This allows you to monitor the oven temperature as it rises to the setpoint.

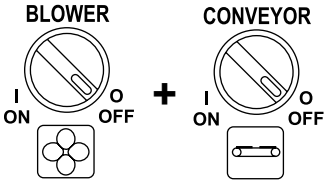


9b. Allow the oven to preheat for 10 minutes after it has reached the set point temperature.

B. DAILY SHUTDOWN PROCEDURE

1. Turn the "BLOWER" and "CONVEYOR" switches to the "OFF" ("O") position. Open the window (if so equipped) to allow the oven to cool faster.

   Note that the blowers will remain in operation until the oven has cooled to below 200°F (93°C).



3. After the oven has cooled and the blowers are off, switch the circuit breaker/fused disconnect to the off position.

IMPORTANT

On gas ovens, if the "HEAT ON" light will not illuminate, OR if the oven does not heat, the gas burner may not have lit. Turn the "BLOWER" and "CONVEYOR" switches to the "OFF" ("O") position. Wait for AT LEAST FIVE MINUTES before restarting the oven. Then, repeat the Daily Startup procedure.

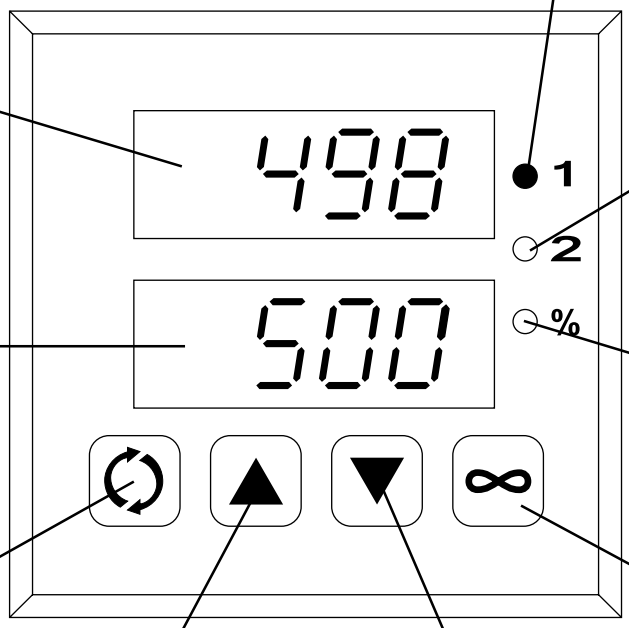
CAUTION

In case of power failure, turn all switches to the “OFF” ("O") position, open the oven window (if so equipped), and remove the product. After the power has been restored, perform the normal startup procedure. IF THE OVEN WAS SWITCHED OFF FOR LESS THAN 5 MINUTES, WAIT FOR AT LEAST FIVE MINUTES BEFORE RESTARTING THE OVEN.

No attempt should be made to operate the oven during a power failure. In gas ovens, the burner will not operate and gas will not flow through the burner without electric power.

III. QUICK REFERENCE: DIGITAL TEMPERATURE CONTROLLERS

ENGLISH



● 1 light
Illuminates when the burner or heating elements are on. This light will flicker during normal operation after the oven reaches the set point temperature.

● 2 light
Illuminates when oven temperature is ***EITHER*** below 200°F/93°C ***OR*** above 600°F/316°C.

Upper display
Shows the actual oven temperature.

Lower display
Shows the set point temperature.

Percent indicator light
Service use only.

Advance key
Service use only.

Infinity key
Service use only.

Up Arrow key
Increases the set point temperature. Press the key once to change the set point by one degree. Hold the key down for larger changes.

Down Arrow key
Decreases the set point temperature. Press the key once to change the set point by one degree. Hold the key down for larger changes.

ENGLISH

Display
Shows the Set Point or the Actual Temperature in degrees Fahrenheit (F) or Celsius (C).

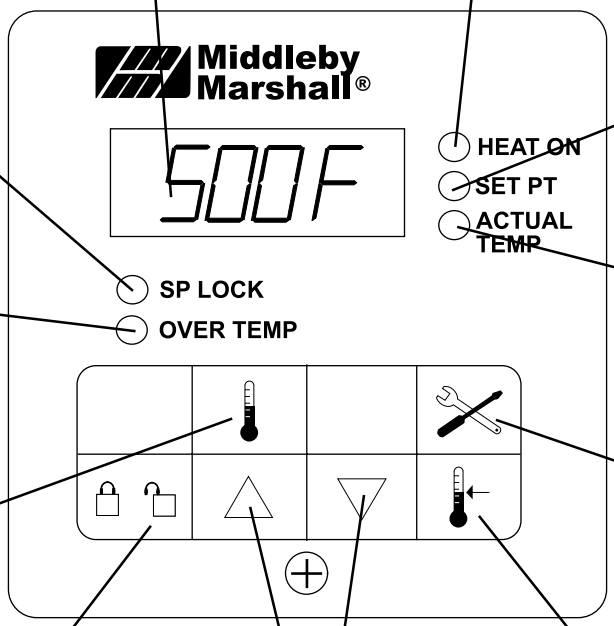
"HEAT ON" Light
Lights when the burner or heating elements, as appropriate for the oven model, are in operation.

"SP LOCK" Light
Lights when the set point is locked out from changes. This setting can only be changed by service personnel.

"SET PT" (setpoint) Light
Lights when the set point is shown in the display.

OVERTEMP Light
Lights when the oven temperature is greater than 650°F (343°C). Refer to Quick Reference: Troubleshooting in this section.

"ACTUAL TEMP" Light
Lights when the Actual Temperature is shown in the display.



Temperature Key
Press this key once to view the Actual Temperature in the Display.

Service Key
Service use only.

Unlock Key
Press this key together with the Set Point Key to allow the Set Point to be changed. Changes can only be made for 60 seconds.

Up Arrow and Down Arrow Keys
Press these keys to adjust the Set Point up or down. If the Set Point will not change, refer to Set Point Key and Unlock Key in this section.

Set Point Key
Press this key together with the Unlock Key to allow the Set Point to be changed. Changes can only be made for 60 seconds.

ENGLISH

IV. QUICK REFERENCE: TROUBLESHOOTING

SYMPTOM	PROBLEM	SOLUTION
 ● 2 *light illuminates after oven has been operating normally*	The oven temperature is in excess of 600°F (316°C). If the oven is left in operation, the temperature may rise to 650°F (343°C) and cause a shutdown.	• Turn the oven off according to the Daily Shutdown Procedure. • Allow the oven to cool. Regardless of the time that is required for the oven to cool, wait for AT LEAST FIVE MINUTES before restarting the oven. • Repeat the Daily Startup Procedure.
 *Oven shuts down completely during operation*  OVERTEMP *light is lit, oven will not heat*	The oven temperature exceeded 650°F (343°C), and the oven was automatically shut down.	• Turn the oven off according to the Daily Shutdown Procedure. Contact your Middleby Marshall Authorized Service Agent to determine and correct the cause of the condition to prevent damage to the oven.
 *Oven shuts down shortly after it is turned on (gas ovens only)*	The gas burner did not light within 90 seconds of turning the "BLOWER" (⊛) Switch to the “ON” ("I") position. This engages a safety lockout mode.	• Turn the "BLOWER" (⊛) and "CONVEYOR" (▭)switches to the "OFF" ("O") position. • Wait for AT LEAST FIVE MINUTES before restarting the oven. • Repeat the Daily Startup procedure.
 rSEt *appears in display, oven is not heating*	The oven did not reach 200°F (93°C) within 15 minutes of startup, and has stopped heating.	• Turn the "BLOWER" (⊛) and "CONVEYOR" (▭)switches to the "OFF" ("O") position. • Wait for AT LEAST FIVE MINUTES before restarting the oven. • Repeat the Daily Startup procedure.
Oven will not turn on at all	Electrical power may not be reaching the oven, or the controls may be set incorrectly.	• Check that the circuit breaker/fused disconnect is turned on. • Check that the "BLOWER" (⊛) Switch is in the “ON” ("I") position. The burner cannot engage until the blowers are in operation.
Oven will not heat	Controls may be set incorrectly.	• Check that the Set Point is correctly set. • Check that the "BLOWER" (⊛) Switch is in the “ON” ("I") position. • If the oven still will not heat, turn the oven off according to the instructions in the Daily Shutdown Procedure. • Wait for AT LEAST FIVE MINUTES before restarting the oven. • Repeat the Daily Startup Procedure. Check that the Set Point is above 200°F (93°C).
Oven is operating, but little or no air is blowing from air fingers	Air fingers may have been reassembled incorrectly after cleaning.	• Turn the oven off according to the Daily Shutdown Procedure. • Refer to Section 4, Maintenance, for instructions on reassembling the air fingers.
	Blower belt may be broken.	• Turn the oven off according to the Daily Shutdown Procedure. Contact your Middleby Marshall Authorized Service Agent to correct the problem.
Conveyor moves with a jerky motion, or will not move at all	Conveyor may be jammed on an object in the oven, or conveyor belt or drive chain may be overtightened.	• Turn the oven off according to the Daily Shutdown Procedure. • Check if the conveyor is blocked by an object inside the oven. • Check that the conveyor drive chain is not overtightened. • Refer to Section 4, Maintenance, for instructions on checking the conveyor belt tension.
Food products are overcooked or undercooked	Controls may be set incorrectly.	• Check that the set temperature and bake time settings are correct.

IF THESE STEPS FAIL TO RESOLVE THE PROBLEM, CONTACT YOUR LOCAL MIDDLEBY MARSHALL AUTHORIZED SERVICE AGENT. A SERVICE AGENCY DIRECTORY IS SUPPLIED WITH YOUR OVEN.

SECTION 4 - MAINTENANCE

ENGLISH

WARNING

Before ANY cleaning or servicing of the oven, perform the following procedure:

1. Switch off the oven and allow it to cool. Do NOT service the oven while it is warm.
2. Turn off the electric supply circuit breaker(s) and disconnect the electric supply to the oven.
3. If it is necessary to move a gas oven for cleaning or servicing, disconnect the gas supply before moving the oven.

When all cleaning and servicing is complete:

1. If the oven was moved for servicing, return the oven to its original location.
2. For gas ovens, reconnect the gas supply.
3. Reconnect the electrical supply.
4. If the restraint cable was disconnected to clean or service the oven, reconnect it at this time.
5. For gas ovens, turn on the full-flow gas safety valve. Test the gas line connections for leaks using approved leak test substances or thick soap suds.
6. Turn on the electric supply circuit breaker(s).
7. Perform the normal startup procedure.

WARNING

Possibility of injury from moving parts and electrical shock exists in this oven. Switch off and lockout/tagout the electric supply BEFORE beginning to disassemble, clean, or service any oven. Never disassemble or clean an oven with the BLOWER switch or any other circuit of the oven switched on.

CAUTION

NEVER use a water hose or pressurized steam-cleaning equipment when cleaning this oven. DO NOT use excessive amounts of water, to avoid saturating the oven insulation. DO NOT use a caustic oven cleaner, which can damage the bake chamber surfaces.

NOTE

ANY replacement parts that require access to the interior of the oven may ONLY be replaced by a Middleby Marshall Authorized Service Agent. It is also strongly recommended that the 3-Month Maintenance and 6-Month Maintenance procedures in this section be performed ONLY by a Middleby Marshall Authorized Service Agent.

I. MAINTENANCE - DAILY

A. Check that the oven is cool and the power is disconnected, as described in the warning at the beginning of this Section.

B. Clean ALL of the cooling fan grills and vent openings with a stiff nylon brush. Refer to Figure 4-1 for the locations of the grills and vents.

C. Clean the outside of the oven with a soft cloth and mild detergent.

D. Check that ALL cooling fans are operating properly.

CAUTION

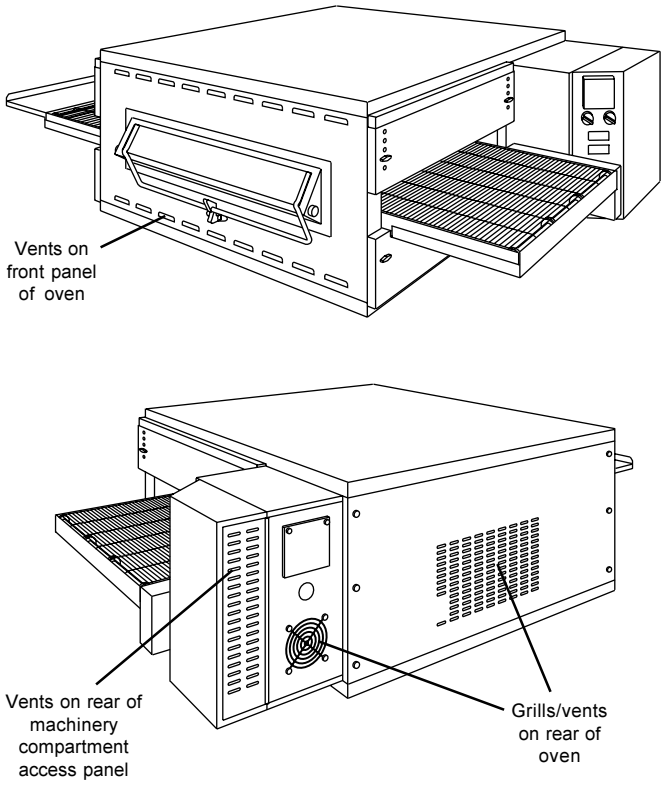
If a cooling fan is not operating correctly, it must be replaced IMMEDIATELY. Operating the oven without adequate cooling can seriously damage the oven's internal components.

E. Clean the conveyor belts with a stiff nylon brush. This is more easily accomplished by allowing the conveyor to run while you stand at the exit end of the conveyor. Then, brush the crumbs off the conveyor as it moves.

F. Remove and clean the crumb trays. Be sure to replace the trays in the same positions from which they were removed, because they are NOT identical. Refer to Figure 2-12 (in Section 2, Installation).

G. Clean the window (if so equipped) in place.

Figure 4-1 -Cooling Vents and Grills



II. MAINTENANCE - MONTHLY

A. Check that the oven is cool and the power is disconnected, as described in the warning at the beginning of this Section.

B. Refer to Part D, Conveyor Installation, in the Installation section of this Manual. Then, remove the following components from the oven:
- Conveyor exit tray
- Crumb trays
- Chain cover
- End plugs
- Conveyor assembly

C. Slide the air fingers and blank plates out of the oven, as shown in Figure 4-2. AS EACH FINGER OR PLATE IS REMOVED, WRITE A "LOCATION CODE" ON IT WITH A MARKER to make sure that it can be reinstalled correctly.

Example of markings:

(Top Row)	**T1**	**T2**	**T3**	**T4**
(Bottom Row)	**B1**	**B2**	**B3**	**B4**

D. Disassemble the air fingers. See Figure 4-3. AS EACH FINGER IS DISASSEMBLED, WRITE THE "LOCATION CODE" FOR THE FINGER ON ALL THREE OF ITS PIECES. This will help you in correctly reassembling the air fingers.

CAUTION

Incorrect reassembly of the air fingers will change the baking properties of the oven.

E. Clean the air finger components and the interior of the baking chamber using a vacuum cleaner and a damp cloth. Refer to the boxed warnings at the beginning of this Section for cleaning precautions.

F. Reassemble the air fingers. Then, replace them in the oven, using the "location code" as a guide.

G. Install the end plugs on the oven. Then, reinstall the conveyor.

I. Reattach the drive chain. Replace the chain cover.

J. Check the tension of the conveyor belt as shown in Figure 2-9 (in Section 2, Installation). The belt should lift between 1-2" (25-50mm). If necessary, adjust the belt tension using the procedure in Part D (Conveyor Installation) in the Installation section of this Manual.

K. Replace the crumb trays and exit tray onto the oven.

III. MAINTENANCE - EVERY 3 MONTHS

A. Check that the oven is cool and the power is disconnected, as described in the warning at the beginning of this Section.

B. Open the machinery compartment access panel. Vacuum the inside of the compartment using a shop vacuum.

C. Tighten all electrical control terminal screws.

D. **Split Belt Disassembly and Cleaning**

For split belt ovens ONLY, disassemble, clean and lubricate the conveyor shaft components as described below.

1. Refer to Part D, Conveyor Installation, in the Installation section of this Manual. Then, remove the following components from the oven:
   - Conveyor exit tray
   - Crumb trays
   - Chain cover
   - End plugs
   - Conveyor assembly
2. Remove the master links from each conveyor belt. Then, roll the belts up along the length of the conveyor to remove them from the frame.

Figure 4-2 - Removing Air Fingers and Plates

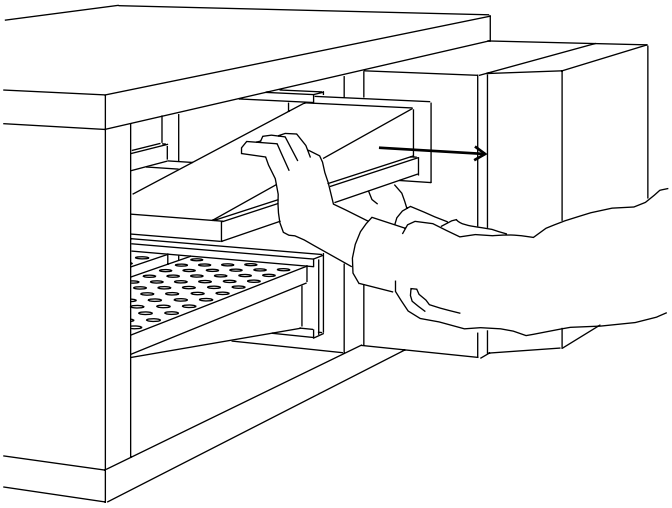
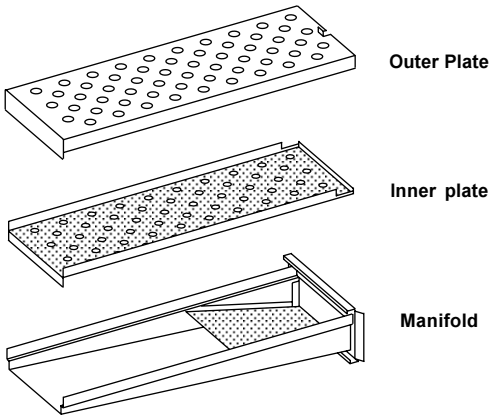


Figure 4-3 - Disassembling the Air Fingers



3. Disassemble and clean the drive and idler shafts using the following procedure.
   a. Loosen (DO NOT REMOVE) the set screw on the outer drive sprocket. Then, slide the drive sprocket off the end of the drive shaft. See Figure 4-4.
   b. Loosen (DO NOT REMOVE) the set screws on all four steel spacers (2 per shaft), AND on all twelve conveyor belt sprockets (6 per shaft).
   c. Gently work the shaft sections out of the conveyor frame, removing the conveyor belt sprockets as necessary. See Figures 4-4 and 4-5.
   d. Slide the two sections of each shaft apart.
   e. Clean all of the shaft components thoroughly using a rag. Then, lubricate each solid inner shaft, AND the interiors of each hollow shaft, using an FDA-approved light food-grade lubricant. DO NOT lubricate the shafts using WD40 or a similar product. This can cause the shafts to wear rapidly.
   f. Slide the hollow shaft sections over the solid inner shafts. Check that the hollow section that has a drive sprocket attached is placed at the end of the the drive shaft.
   g. Slide the reassembled shafts into the conveyor frame. As the shafts are replaced, slide the steel spacers and conveyor belt sprockets onto the shafts. Refer to Figures 4-4 and 4-5.
   h. After the shafts are properly aligned, position the steel spacers against the ends of the bushings on the conveyor frame. Tighten the set screws on the spacers to hold them in place. Leave the conveyor belt sprockets loose at this time.
   i. Replace the outer drive sprocket. Tighten its set screw to hold it in place.
   j. Refer to Part D, Conveyor Installation, in the Installation section of this Manual to replace the conveyor belt. As you replace the belt, position the conveyor belt sprockets.
   k. After the belt is in place and the sprockets are correctly positioned, tighten the set screws to hold the sprockets in place.
4. Reinstall the end plugs and conveyor onto the oven.
5. Reattach the drive chains. Replace the chain cover.
7. Check the tension of the conveyor belt as shown in Figure 2-9 (in Section 2, Installation). The belt should lift between 1-2" (25-50mm). If necessary, adjust the belt tension using the procedure in Part D (Conveyor Installation) in the Installation section of this Manual.
8. Replace the crumb trays and exit tray onto the oven.

Figure 4-5 - Disassembling the drive shaft

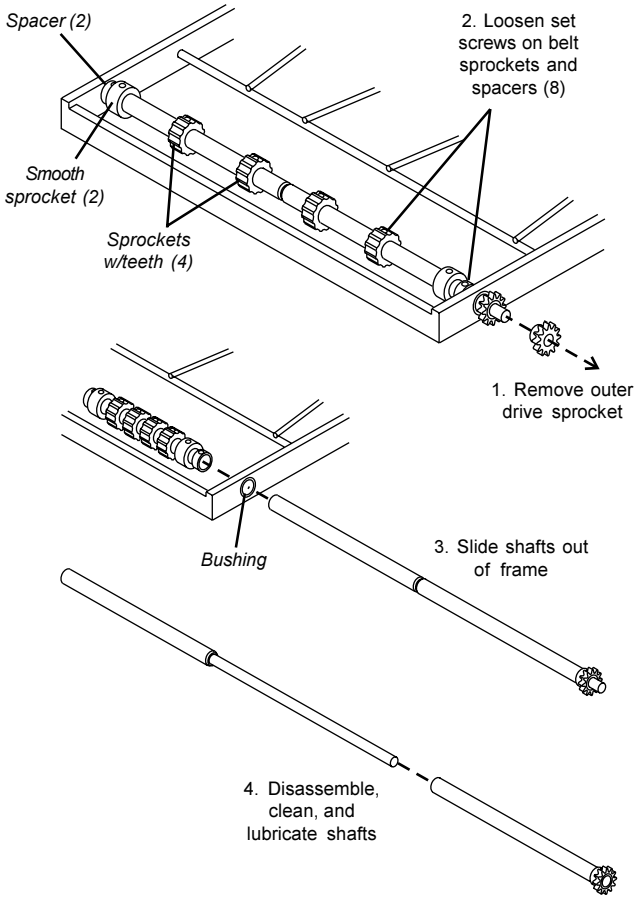
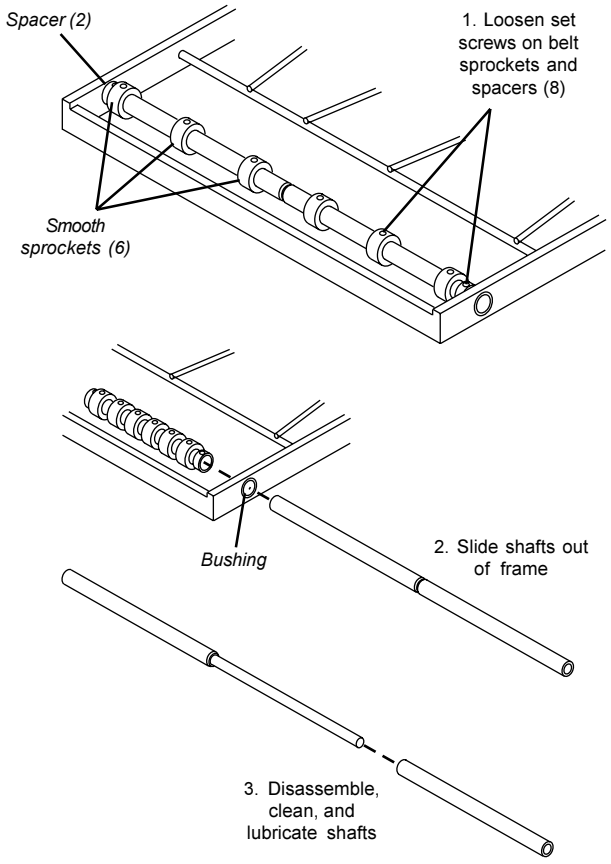


Figure 4-5 - Disassembling the idler shaft



E. Blower Belt

1. Remove the six screws shown in Figure 4-6. Then, remove the rear panel from the oven.
2. Check the blower belt for the proper 1/4" (6.4mm) deflection at the center, and for cracking or excessive wear. See Figure 4-6. Overtightening the belt will cause premature bearing failure and possible vibrations. A loose belt may also cause vibrations.
3. If necessary, adjust the tension of the belt by loosening the four motor mounting bolts. Reposition the motor as neccessary until the correct 1/4" (6.4mm) deflection is reached, then tighten the bolts.

F. Lubricating the Blower Fan Bearings

1. Use a grease gun to lubricate the main blower fan shaft bearings, as shown in Figure 4-6.

   When lubricating the bearings:

   - Use a high-quality NLGI #2, lithium soap grease with petroleum oil, such as Middleby P/N 17110-0015.
   - Add the grease slowly until a small bead of grease is present at the seals. AVOID OVERGREASING. Excessive greasing may cause harm to the bearing.
2. Manually turn the blower shaft by pulling on the belt to purge the grease. Wipe off any excess grease.
3. Replace the rear panel onto the oven.

IV. MAINTENANCE - EVERY 6 MONTHS

A. Check that the oven is cool and the power is disconnected, as described in the warning at the beginning of this Section.

B. Check for excessive wear on the conveyor drive motor brushes. The brushes should be replaced if they have worn to less than 1/4" (6.4mm) in length. Be sure to replace the brushes in exactly the same position.

C. For gas ovens, inspect and clean the burner nozzle and the spark electrode assembly.

D. Check the conveyor drive shaft bushings and spacers. Replace the components if they are worn.

V. KEY SPARE PARTS KIT - Available separately. See Figure 4-7.

Item	*Qty.*	*Part No.*	*Description*
1	1	44695	Conveyor Drive Motor w/Pickup Assy.
2	2	30153	Drive Motor Brushes
3	1	37337	Kit, Conveyor Speed Controller
4	1	33985	Kit, Thermocouple
5	1	44687	Motor, Blower
6	1	44685	Belt, Blower
7	1	33983	High Limit Control Module, 230V
8	1	97525	Axial Cooling Fan, 230V
9	1	39530	Air Switch, 230V
ELECTRIC OVENS ONLY:			
10	1	44585	Relay and Heat Sink Assembly
11a	1	43094	Heating Element, 208V 8 kW
11b	1	44800	Heating Element, 230V 8 kW
11c	1	45281	Heating Element, 380V 8 kW
12	3	44701	Fuse, 60A
13	1	44783	Kit, Digital Temperature Controller
GAS OVENS ONLY:			
14	1	36939	Kit, Digital Temperature Controller
15	1	44802	Pilot Assembly
16	1	41647	Modulating Gas Valve, 1/2"
17	1	31651	Amplifier Board
18	1	44801	Combination Gas Control Valve

Figure 4-6 - Rear panel access

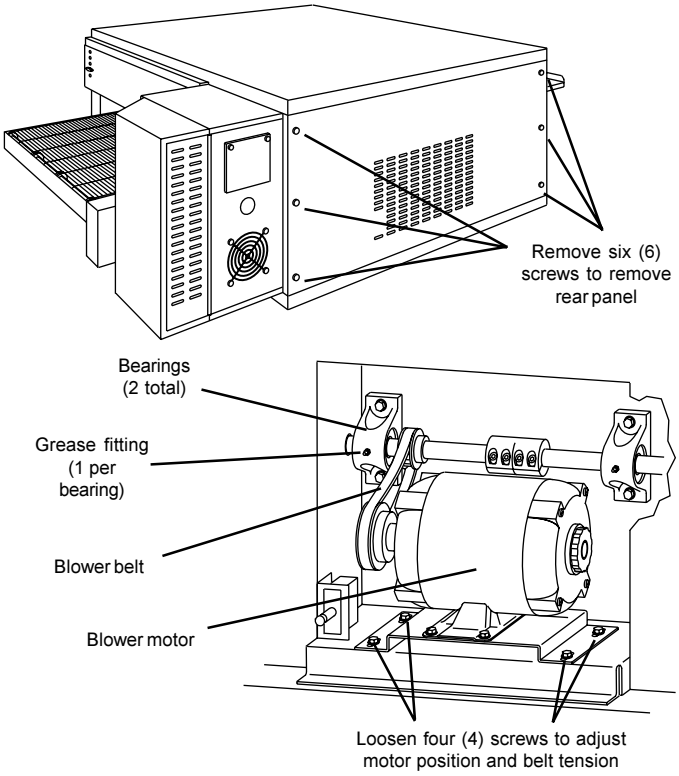
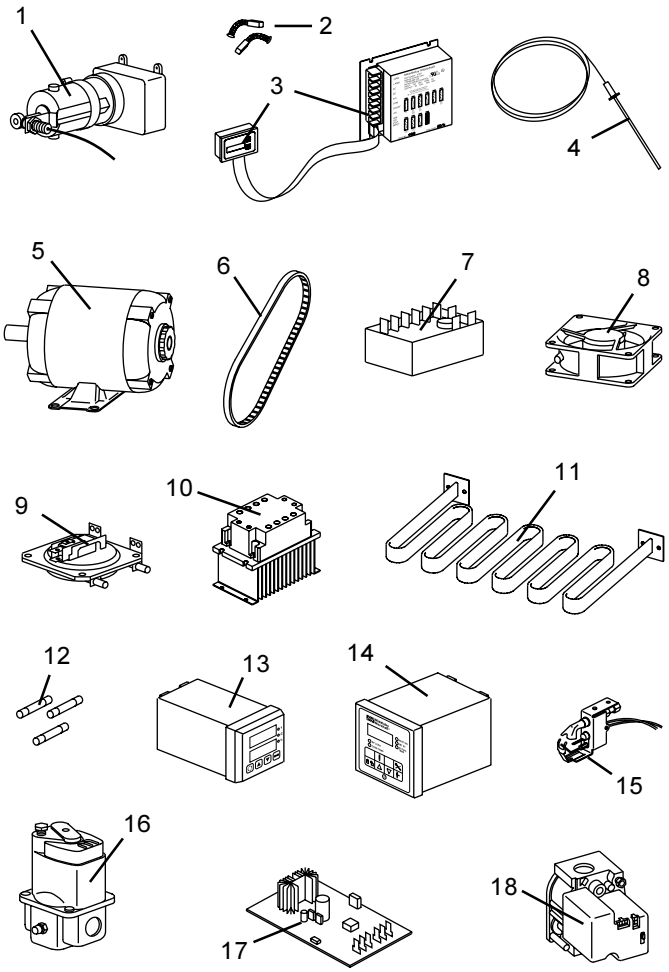
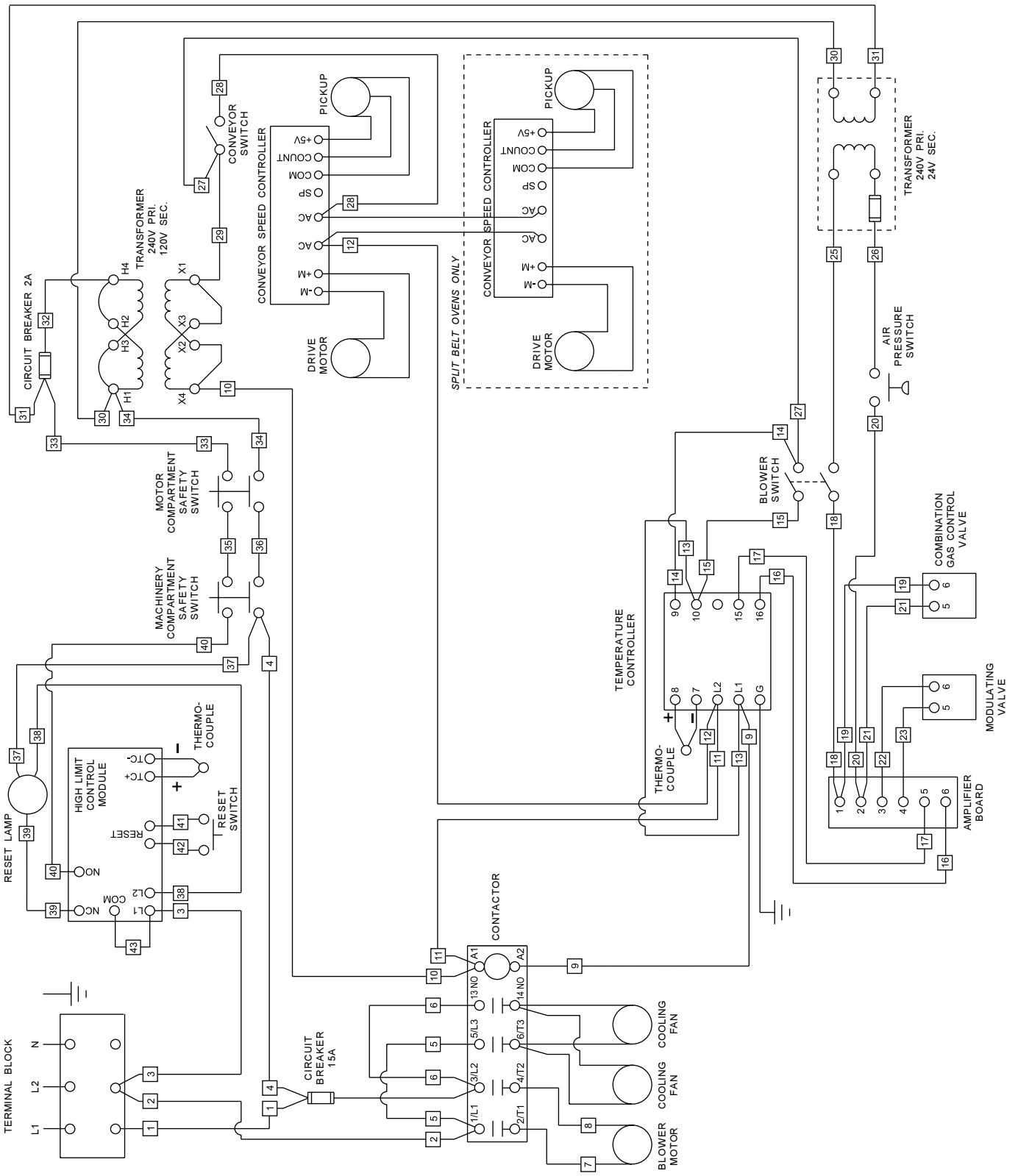


Fig. 4-7 - Key Spare Parts Kit



SECTION 5 - ELECTRICAL WIRING DIAGRAMS

Fig. 5-1 - Wiring diagram, PS536 Gas Oven
208/230V, 60 Hz, 1 Ph



IMPORTANT

An electrical wiring diagram for the oven is also located inside the machinery compartment.

ENGLISH

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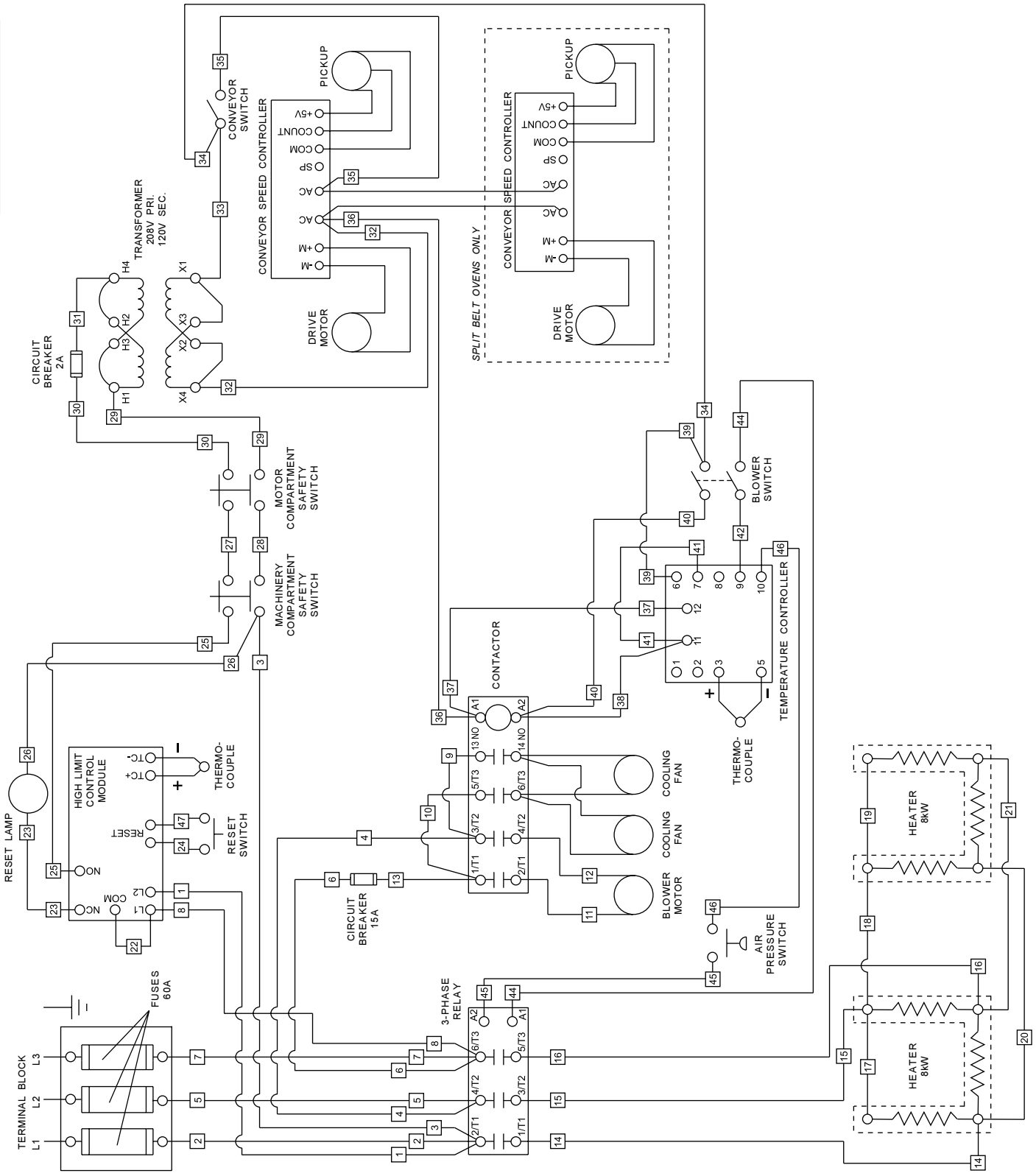
Fig. 5-2 - Wiring diagram, PS536 Electric Oven
208/230V, 60 Hz, 3 Ph

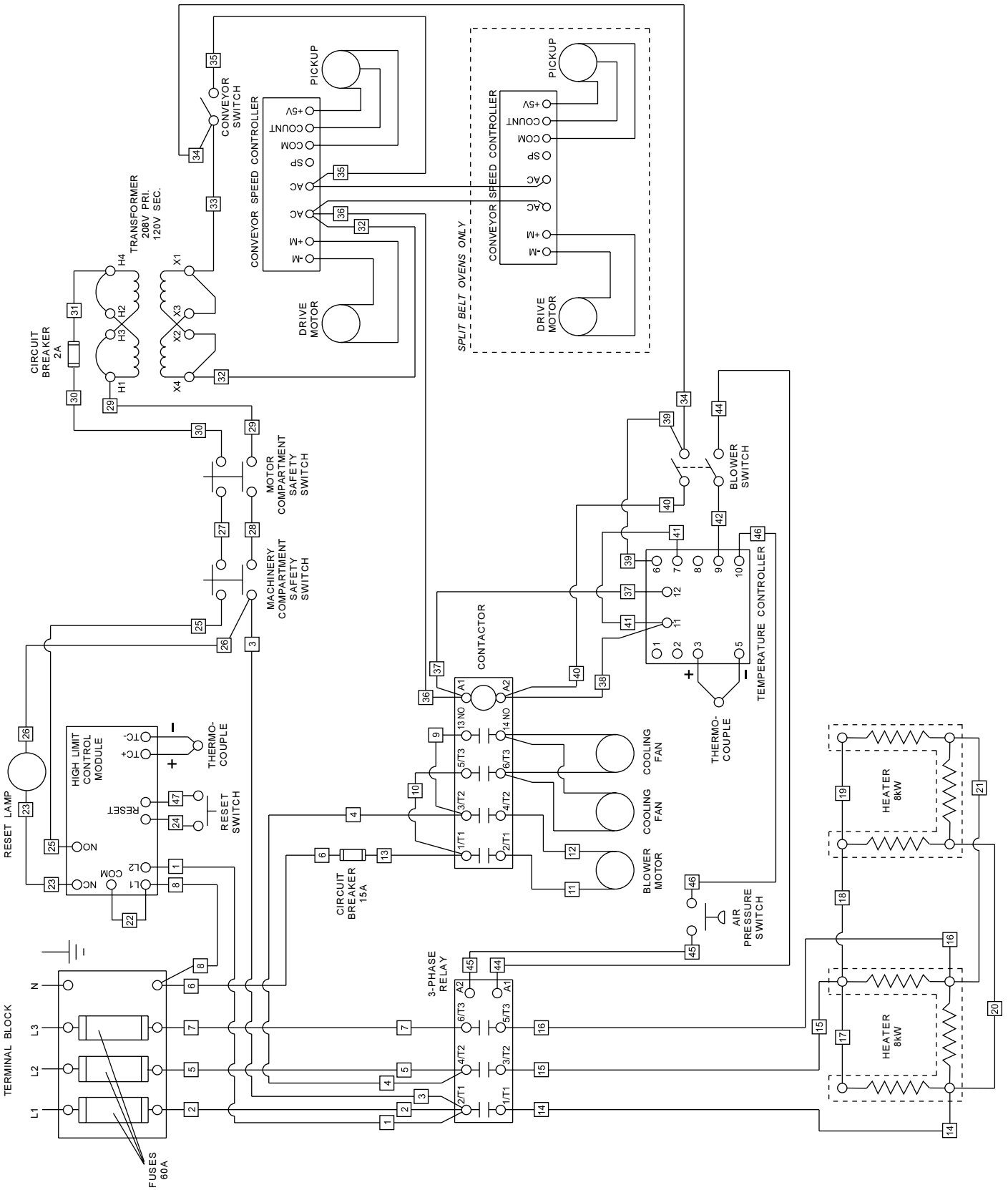


IMPORTANT

An electrical wiring diagram for the oven is also located inside the machinery compartment.

ENGLISH

Fig. 5-2 - Wiring diagram, PS536 Electric Oven
380V, 50 Hz, 3 Ph



IMPORTANT

An electrical wiring diagram for the oven is also located inside the machinery compartment.

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