PS314SBI
Gas and Electric (AGA/UL)
ENGLISH/French/Spanish

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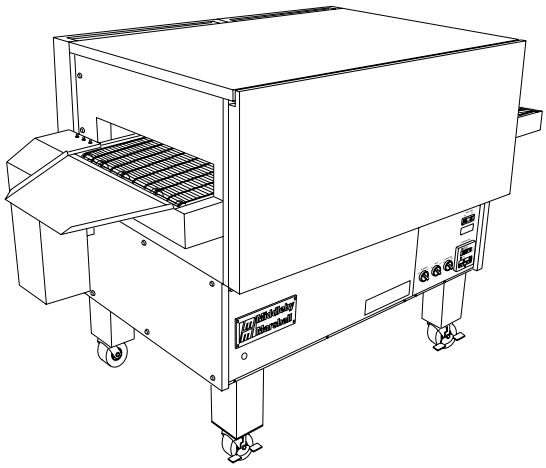

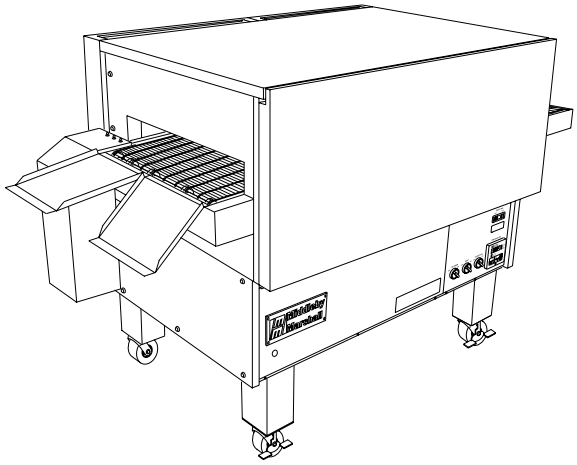

Model PS314SBI Gas and Electric Ovens

Models:
- PS314SBI

Combinations:
- Single Lower Oven

OWNER'S OPERATING & INSTALLATION MANUAL

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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ENGLISH

SECTION 1 - DESCRIPTION

ENGLISH

I. OVEN USES

The PS314SBI oven is optimized to melt cheese for use on sandwiches and other food products.

II. OVEN COMPONENTS - see Figure 1-1.

A. Conveyor Drive Motor: Moves the conveyor.

B. End Trays: Catch the food product as it exits the conveyor. End trays are available in single and double versions for the PS314SBI oven.

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

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

E,F. Cool Front and Rear Panels: Reduce direct user contact with the body of the oven.

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

H. Control Compartment Access Panel: Allows access to the control components. No user-servicable parts are located in the control compartment.

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

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

Not Shown:

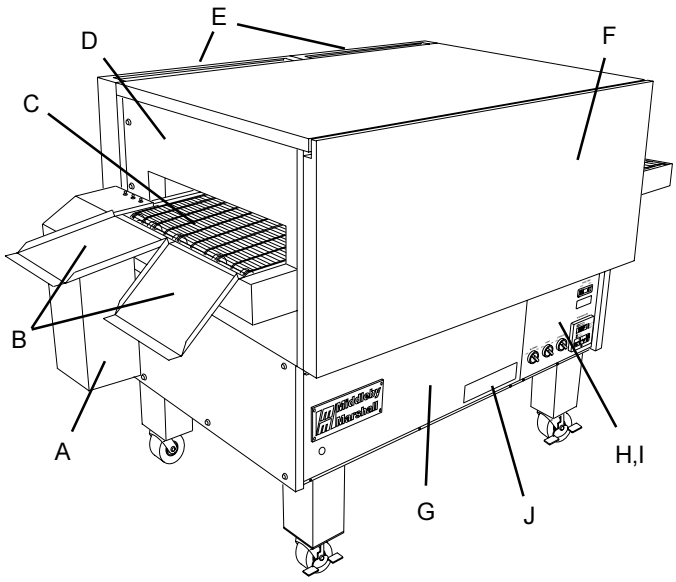
K. Crumb Pans: Catch crumbs and other material that drop through the conveyor belt. One crumb pan is located underneath each end of the conveyor.

L. Gas Burner: Gas ovens only. Heats air, which is then projected to the air fingers by the blowers.

M. Blowers: Project hot air to the air fingers.

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

Fig. 1-1 - PS314SBI Oven Components



III. OVEN SPECIFICATIONS

A. Dimensions

Overall Height - inc. top and 9"/229mm legs	54" (1372mm)
Overall Depth - inc. front and rear shrouds	
with single exit tray	38-1/2" (978mm)
with double exit trays	39-3/4" (1010mm)
Overall Length - inc. exit tray(s)	83-1/4" (2115mm)
Conveyor Width	24" (610mm)
Recommended Minimum Clearances	
Rear of oven (inc. rear shrouds) to wall	1" (25mm)
Conveyor extension (right) or end tray(s) (left) to wall	0" (0mm)

B. General specifications

Weight	1080 lbs. (497kg)
Shipping Weight	1370 lbs. (630kg)
Shipping Carton Vol.	105 ft.^{3}/2.98m^3
Rated Heat Input	
Gas	135,000 BTU (34,020kcal,40kw/hr)
Electric	26kw/hr.
Max. Op. Temp.	550°F/288°C
Air Blowers	2 blowers at 1550 ft.^{3} (43.9m^3)/min. at 1700 RPM, 0.88" (2.2cm) water static pressure
Air Jet Velocity (avg.)	2600 ft./min. (1320cm/sec.)
Warmup Time	15 minutes

C. Gas orifice and pressure specifications - for gas-fired ovens

Main orifice I.D.	*Pilot orifice I.D.*	*Bypass orifice I.D.*	*Supply (inlet) pressure*	*Manifold pressure*
Natural Gas				
0.219"	0.028"	0.065"/#53 drill	6-12" W.C.	3-1/2" W.C.
5.56mm	0.71mm	1.65mm	14.9-29.9mbar	8.7mbar
Propane				
0.134"	0.018"	0.034"/#62 drill	11-14" W.C.	10" W.C.
3.40mm	0.46mm	0.86mm	27.4-34.9mbar	24.9mbar

D. Electrical specifications - for gas-fired ovens

Main Blower Voltage	*Control Circuit Voltage*	*Phase*	*Freq.*	*Current Draw*	*Poles*	*Wires*
208-240V	120V	1 Ph	60Hz	10A	3 Pole	4 Wire (2 hot, 1 neut, 1 gnd)
208-240V (export)	120V (transformer)	1 Ph	50/60Hz	10A	2 Pole	3 Wire (2 hot, 1 gnd)
200-220V (export)	120V (transformer)	1 Ph	50/60Hz	10A	2 Pole	3 Wire (2 hot, 1 gnd)

E. Electrical specifications - for electrically-heated ovens

Main Blower Voltage	*Control Circuit Voltage*	*Phase*	*Freq.*	*Current Draw*	*kW Rating*	*Poles*	*Wires*
208-240V (with 3 Ph blower motors)	120V	3 Ph	60 Hz	67.3A at 208V 58.4A at 240V	26.0 kW at 208V 26.0 kW at 240V	4 Pole	5 Wire (3 hot, 1 neut, 1 gnd)
208-240V (with 1 Ph blower motors)	120V	3 Ph	60 Hz	67.3A at 208V 58.4A at 240V	26.0 kW at 208V 26.0 kW at 240V	4 Pole	5 Wire (3 hot, 1 neut, 1 gnd)
200-220V (export)	120V (transfomer)	3 Ph	50/60 Hz	67.3A at 208V 53.5A at 220V	24.3 kW at 208V 20.4 kW at 220V	3 Pole	4 Wire (3 hot, 1 gnd)
240V (export)	120V (transformer)	3 Ph	50/60 Hz	58.4A	26.0 kW	3 Pole	4 Wire (3 hot, 1 gnd)
380V (export)	120V (transformer)	3 Ph	50/60 Hz	36.8A	24.3 kW	3 Pole	4 Wire (3 hot, 1 gnd)
400-416V (export)	120V (transfomer)	3 Ph	50/60 Hz	33.8A	24.3 kW	3 Pole	4 Wire (3 hot, 1 gnd)
480V	120V (transformer)	3 Ph	60 Hz	29.2A	26.0 kW	3 Pole	4 Wire (3 hot, 1 gnd)

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

Keep the appliance area free and clear of combustibles.

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.

CAUTION

For additional installation information, refer to the following documents:

PS360 Pre-Installation Procedures Manual **(Middleby Marshall P/N 88210-0024)**
PS360 Installation Manual **(Middleby Marshall P/N 88210-0025)**

Or, 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 and national codes. These codes supercede the requirements and guidelines provided in this manual.

NOTE

In U.S.A., the oven installation must conform with local codes, or in the absence of local codes, with the National Fuel Gas Code, ANSI Z223.1. The oven, 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

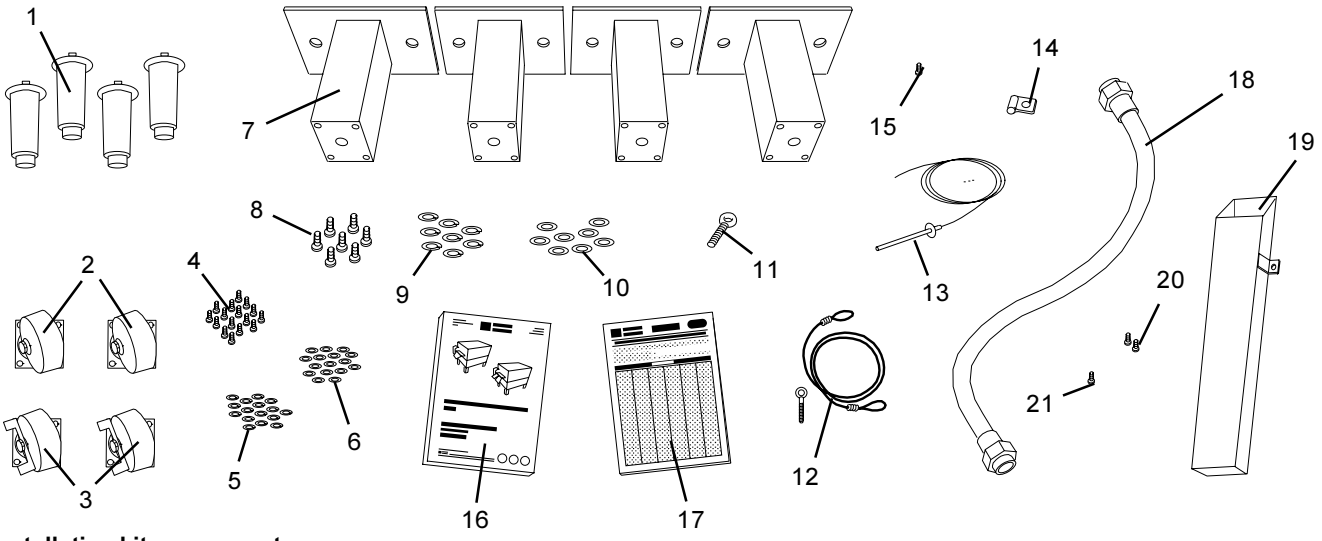
In Canada, the oven installation must conform with local codes, or in the absence of local codes, with the Natural Gas Installation Code, CAN/CGA-B149.1, or the Propane Gas Installation Code, CAN/CGA-B149.2, as applicable. The oven, when installed, must be electrically grounded in accordance with local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

NOTE

For Australian installation, the oven installation must conform with AGA Code, AG601, and with any requirements of the appropriate statutory authority.

I. INSTALLATION KIT

Fig. 2-1 - Installation Kit



A.Installation kit components

Item	*Description*	*Part Number*	*Qty.*
1	Legs, adjustable	22450-0028	4
2	Caster (Rear), Swivel	22290-0010	2
3	Caster (Front), Swivel, with brake	22290-0009	2
4	Screw, hex, 3/8-16 x 1"	220373	16
5	Lockwasher, 3/8"	21422-0001	16
6	Flat washer, 3/8"	21416-0001	16
7	Leg, 9" (229mm)	34684	4
8	Screw, hex, 3/4-10 x 2"	21321-0016	7
9	Lockwasher, 3/4"	21421-0003	8
10	Flat washer, 3/4"	21411-0019	8
11	Shoulder eyebolt, 3/4"-10 x 2"	42440	1
12	Restraint Cable Assembly	22450-0228	1

Item	*Description*	*Part Number*	*Qty.*
13	Thermocouple	33812-1	1
14	Cable Clamp	27276-0001	1
15	Screw, #10-32 x 3/8"	21256-0008	1
16	Model PS314SBI Owner's Operating and Installation Manual	42447	1
17	Authorized Service Agency Listing	1002040	1

B. Additional installation kit components for gas ovens

18	Gas hose, flexible	22361-0001	1
19	Flue vent, 14" (356mm)	30773	1
20	Screw, hex, #2PT 10-16 x 3/4" HWH	21292-0001	2
21	Screw, #10-32 x 3/8"	21256-0008	1

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

- *A mechanically driven ventilation system is <u>REQUIRED</u> for gas oven installations.*
- *A mechanically driven ventilation system is <u>STRONGLY RECOMMENDED</u> for electric oven installations.*

<u>PROPER VENTILATION OF THE OVEN IS THE RESPONSIBILITY OF THE OWNER.</u>

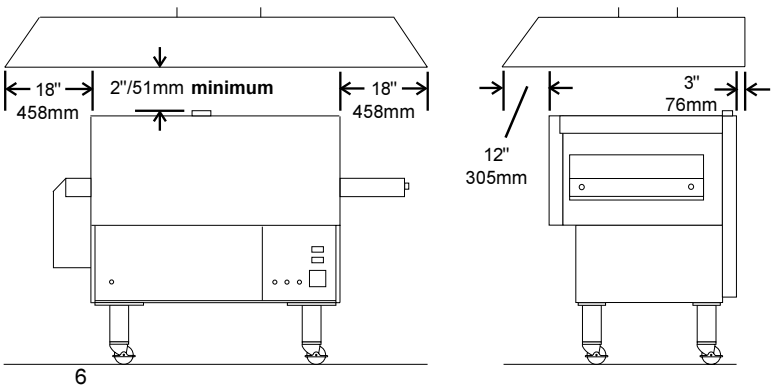
B. Recommendations

NOTE THAT THE HOOD DIMENSIONS SHOWN IN FIGURE 2-2 ARE <u>RECOMMENDATIONS ONLY</u>. LOCAL AND NATIONAL CODES MUST BE FOLLOWED WHEN INSTALLING THE VENTILATION SYSTEM. ANY APPLICABLE LOCAL AND NATIONAL 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

Fig. 2-2 - Ventilation System



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.

III. ASSEMBLY

A. Legs/Casters Installation

1. Move the oven to its final location using the casters that are pre-attached to the bottom panel.
2. Elevate the oven until its bottom surface is at least 18" (457mm) above the floor.
3. Remove the casters from the bottom of the oven. These casters are attached for pre-installation movement ONLY, and may not be left on the oven.
4. Attach one of the 9" (229mm) leg extensions to the REAR DRIVE-END (rear left) corner of the oven, as shown in Figure 2-3. On the OUTSIDE hole of the leg extension, use one 3/4"-10 hex screw, one 3/4" lockwasher, and one 3/4" flat washer. On the INSIDE hole of the leg extension, use the 3/4"-10 shoulder eyebolt (supplied in the Installation Kit) in place of the screw.
5. Attach the 3 remaining leg extensions using the remaining screws, lockwashers, and flat washers.
6. Attach EITHER the 6" (152mm) adjustable legs OR the casters to the bottom of the 9" leg extensions, as follows:
   - THE 6" (152mm) ADJUSTABLE LEGS may only be used if there is at least 24" (610mm) service access on ALL FOUR sides of the oven. To attach the adjustable legs, screw the threaded stud into the center hole of the leg extension. See Figure 2-4.
   - CASTERS may be used in all installations. To attach the casters, use the 3/8"-16 hex screws, 3/8" lockwashers, and 3/8" flat washers supplied in the Installation Kit. See Figure 2-4. The two locking casters should be installed at the front of the oven.
7. Lower the oven to the floor.
   - If the 6" (152mm) legs were used in the installation, adjust the "foot" section of each leg to level the oven.
   - If the casters were used in the installation, lock the front casters in place.

B. 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. Anchor one end of the cable to the eyebolt on the left rear leg extension. Anchor the opposite end to the wall as shown in Figure 2-5, using the eyebolt supplied with the restraint cable assembly.

Fig. 2-3 - Leg Extensions

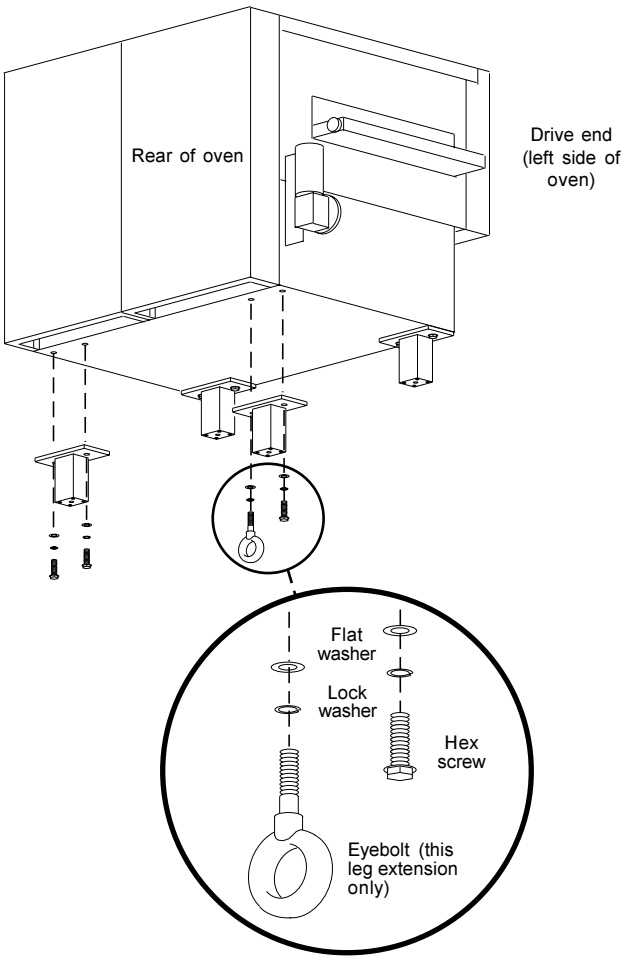


Fig. 2-4 - Adjustable Legs and Casters

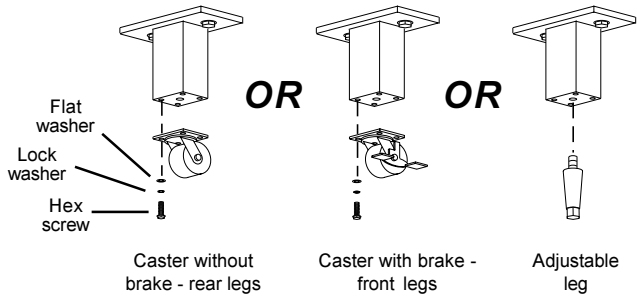
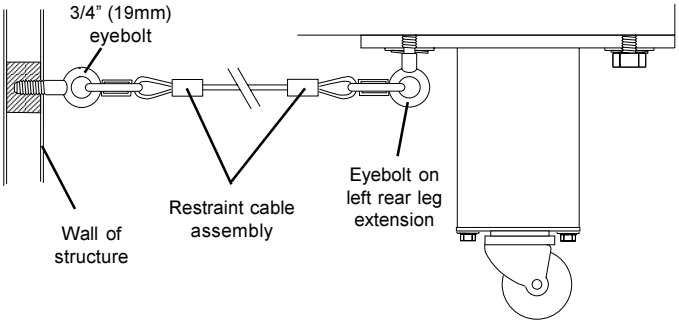


Fig. 2-5 - Installing the Restraint Cable



IV. THERMOCOUPLE INSTALLATION

1. Install the thermocouple sensing bulb into the hole in the rear of the oven, as shown in Figure 2-6. Fasten the thermocouple in place using the #10-32 x 3/8" screw supplied in the Installation Kit.
2. Thread the thermocouple lead(s) through the grommet and into the machinery compartment, as shown in Figure 2-6.
3. Remove the right-side access panel of the machinery compartment.
4. Thread the thermocouple lead(s) through the side of the machinery compartment as shown in Figure 2-7, and into the electrical box (at the right-front of the machinery compartment).
5. Connect the thermocouple leads to the temperature controller as shown in Figure 2-8.

V. CONVEYOR INSTALLATION

NOTE
The conveyor assembly MUST be inserted from the drive end of the oven.

1. Lift the conveyor and position it in the oven as shown in Figure 2-9.
2. Continue moving the conveyor into the oven until the lip on the bottom edge of the frame butts firmly against the end plug.

Figure 2-6 - Thermocouple Installation Location

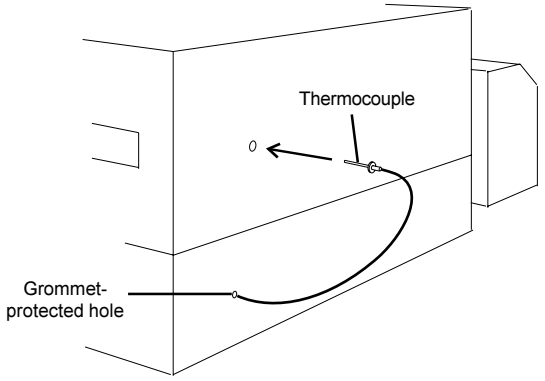


Figure 2-7 - Placing the Thermocouple Leads

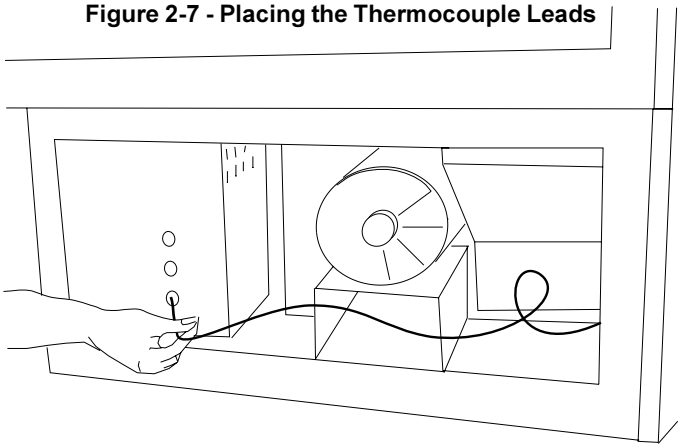


Figure 2-8 - Thermocouple Lead Connections

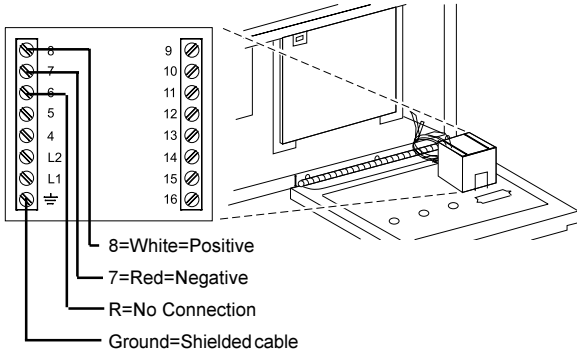
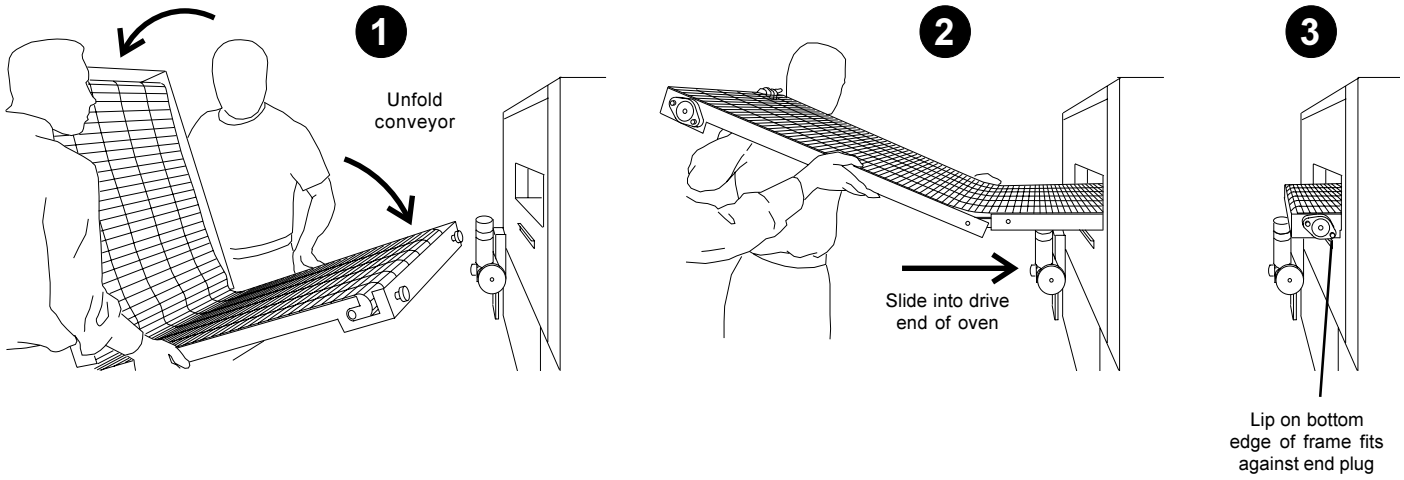


Figure 2-9 - Conveyor Installation



3. Install the drive chain between the conveyor drive sprocket and the motor sprocket as shown in Figure 2-10. Then, check the tension of the drive chain. The chain should have a 1/2" (13mm) deflection.

   If necessary, the motor can be repositioned to allow the chain to be installed, or to correct the tension of the chain after it is in place. To reposition the motor:

   - Loosen the two hex head screws that fasten the conveyor motor's mounting bracket to the oven. The screws are shown in Figure 2-10.
   - Raise or lower the motor slightly, as required. Tighten the two hex screws, and check the chain tension.
   - Repeat these steps as necessary until the drive chain has the correct 1/2" (13mm) deflection.

4. Check the tension of the conveyor belt at the IDLER (right) end of the conveyor, by lifting the center of the belt straight up with your fingers as shown in Figure 2-11. The belt should lift between 2-3" (50-75mm). DO NOT OVER-TIGHTEN THE CONVEYOR BELT.

   NOTE:
   If necessary, the belt tension can be adjusted by turning the conveyor adjustment screws, located at the idler (right) end of the conveyor. See Figure 2-11.

5. 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.

6. If necessary, links can be added to or removed from the conveyor belt to achieve the correct deflection of 2-3" (50-75mm). If links must be removed from the belt, it can be reattached to the conveyor as follows:

   a. The conveyor belt links must be oriented as shown in Figure 2-12.

   b. The smooth side of the conveyor belt must face UP.

   c. Connect the inside master links. Check that the links are oriented as shown in Figure 2-12.

   d. Connect the outside master links. Note that the outside master links have right and left sides. The right-side master link has an open hook facing you, as shown in Figure 2-12.

   e. Return to Step 4, above, to re-check the belt tension.

Figure 2-10 - Drive Motor and Drive Chain

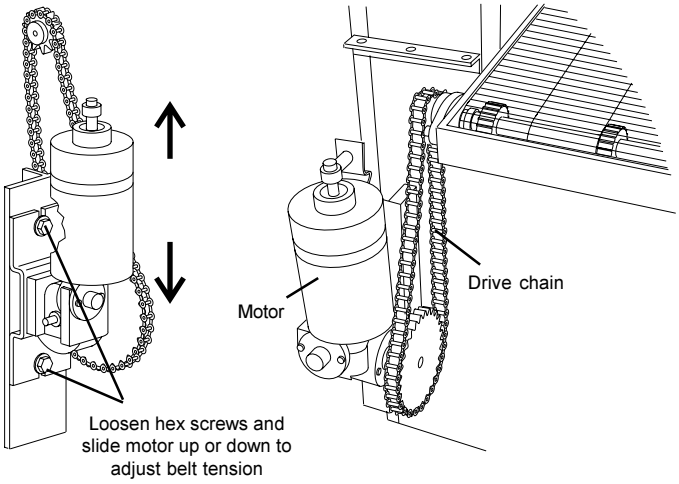


Figure 2-11 - Conveyor belt tension

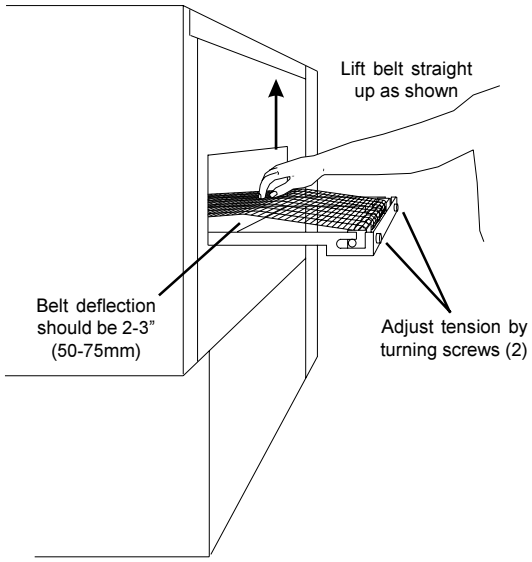
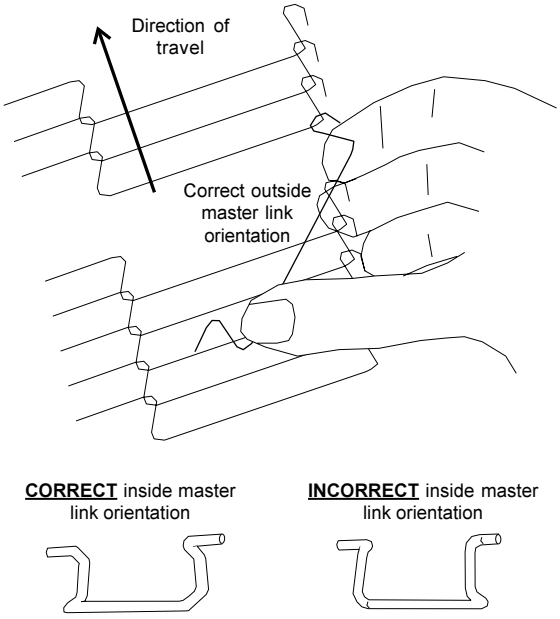


Figure 2-12 - Master link orientation



VI. FINAL ASSEMBLY

1. For gas ovens, attach the flue vent to the rear wall of the oven as shown in Figure 2-13. Use one #10-16 x 3/8" screw and two #10-32 x 3/4" screws. All three screws are provided in the Installation Kit.
2. Install the motor housing, and secure it in place with its five mounting screws. Two screws are located on the back wall of the oven, while three are located on the hanger bracket on the left end panel. See Figure 2-13.
3. Install the conveyor extension covers over the ends of the conveyor frame. See Figure 2-13.
4. Check that the cool panels are properly mounted, as shown in Figures 2-13 and 2-14. Slots on the back of the panels fit over the hangers on the walls of the oven. One cool panel is attached to the front of the oven, while two are attached to the rear.
5. Attach the exit tray(s) at the drive (left) end of the conveyor. See Figure 2-15.
6. Install the crumb trays underneath the conveyor as shown in Figure 2-15. First, place the inside edge of the tray onto the bracket attached to the end plug. Then, swing the outside edge of the tray up and into place.

Figure 2-13 - Final Assembly - Front

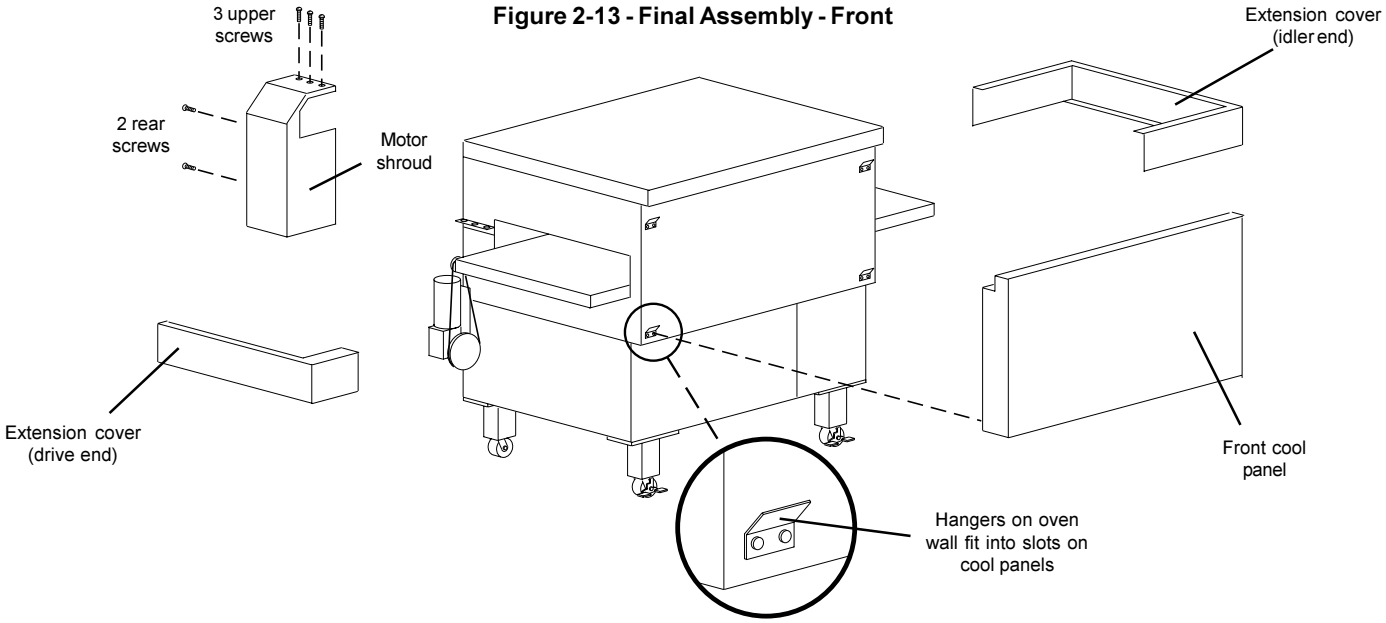


Figure 2-14 - Final Assembly - Rear

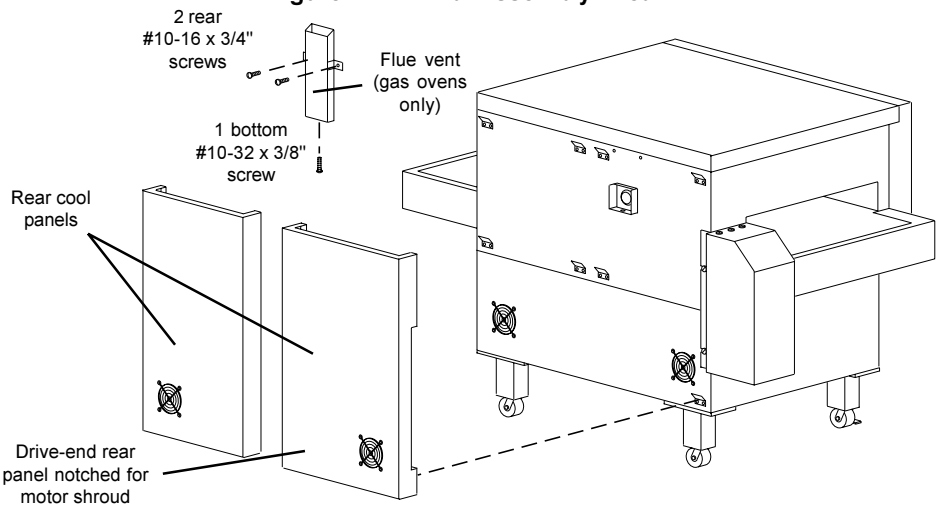
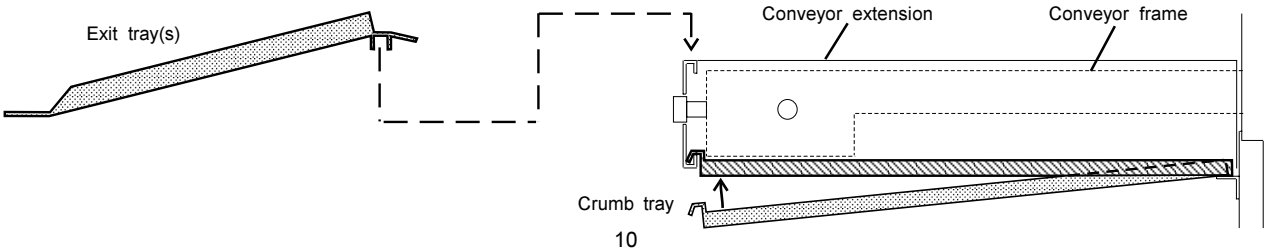


Figure 2-15 - Final Assembly - Exit Tray(s) and Crumb Trays



VII. ELECTRICAL SUPPLY (all ovens)

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.*

NOTE: *It may be necessary to temporarily remove the rear cool panels to connect the electrical supply.*

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 2-16.

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 or control compartment of the oven. Electrical specifications are also listed on the oven's serial plate (Figure 2-16) and in the Electrical Specifications tables (on Pages 4-5).

The oven requires a ground connection to the oven ground screw located in the electrical junction box. (The box is shown in Figure 2-17.) If necessary, have the electrician supply the ground wire. *Do NOT use the wiring conduit or other piping for ground connections!*

Figure 2-16 - Oven Serial Plate

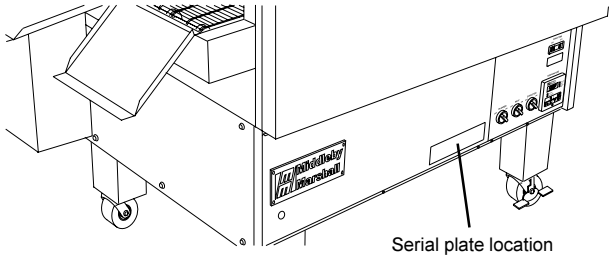
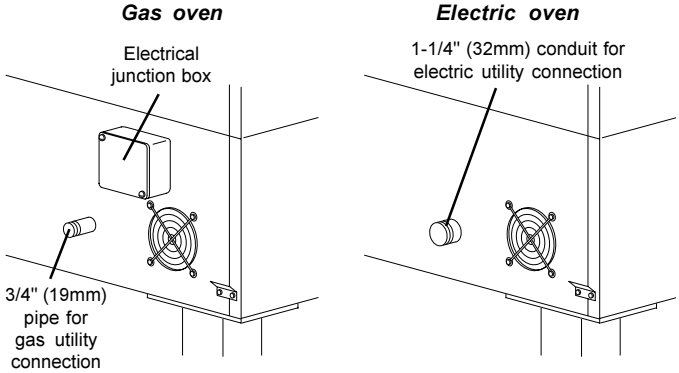


Figure 2-17 - Utility Connection Locations



CAUTION

Before connecting incoming power to the oven, measure the voltage of each input leg to neutral. The expected voltage is approximately 120V. ANY voltage reading exceeding 130V indicates that the supply has a "high" leg. CONNECTING A "HIGH" LEG TO THE OVEN VOIDS ALL OVEN WARRANTIES. Connecting a "high" leg to the black lead of the oven can severely damage the oven's electrical and electronic components.

CAUTION

DO NOT CONNECT BLACK WIRE TO HIGH LEG. VOLTAGE OF THE BLACK AND WHITE WIRES MUST BE NO HIGHER THAN 130 VAC.

A. Additional Information - Electric Ovens

For electric ovens, a 1-1/4" (32mm) dia. cutout in the back wall of the machinery compartment provides access for the electrical supply connections. See Figure 2-17. Using flexible cables for the electric power supply conductors requires a 1-1/4" (32mm) strain-relief fitting (not furnished with the oven) to enable safe access to the terminal block from which power is distributed to the oven.

B. Additional Information - Gas Ovens

All gas oven electric supply connections are made via the electrical junction box on the rear of the oven, shown in Figure 2-17. The power lines then connect to the oven circuits through the Machinery Compartment Access Panel Safety Switch. This switch interrupts electric power to the oven when the Machinery Compartment Access Panel is opened.

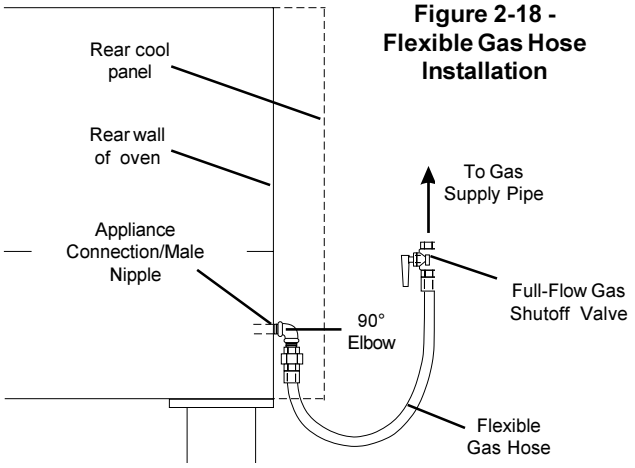
C. Additional Information - Ovens with External Transformers (export versions)

Position the transformer on the rear wall of the oven, on the same side as the control compartment, as space permits. Fasten it in place using the supplied mounting hardware.

D. Connection

Refer to the wiring diagram inside the machinery compartment or control compartment of the oven to determine the correct connections for the electrical supply lines. Connect the supply as indicated on the wiring diagram. Be sure to connect the electrical supply ground wire to the oven ground screw located in the junction box on the rear of the oven.

Figure 2-18 - Flexible Gas Hose Installation



VIII. GAS SUPPLY (gas ovens only)

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.

A. Connection

NOTE: *It may be necessary to temporarily remove the rear cool panels to connect the gas supply.*

Check the oven's gas supply requirements before making the gas utility connection. Gas supply requirements are listed on the oven's serial plate (Figure 2-16) and in the Gas Orifice and Pressure Specifications table (Page 4 of this manual).

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 2-18; however, compliance with the applicable standards and regulations is mandatory.

Inlet, regulated, and pilot gas pressure readings can be taken using a "U" tube manometer at the tap locations shown in Figure 2-19.

One 90° elbow equals a 7' (2.13m) length of pipe. The recommended pipe sizes are larger than usually required to eliminate any operation problems. It is much less expensive to make the initial installment large enough to do the job rather than redoing the job later.

NOTE: *The installation must conform with local codes or in the absence of local codes, with the National Fuel Gas Code, ANSI Z223.1-latest edition.*

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

CANADIAN:
CAN/CGA-B 149.1 Natural Gas Installation Code
CAN/CGA-B 149.2 Propane Installation Code

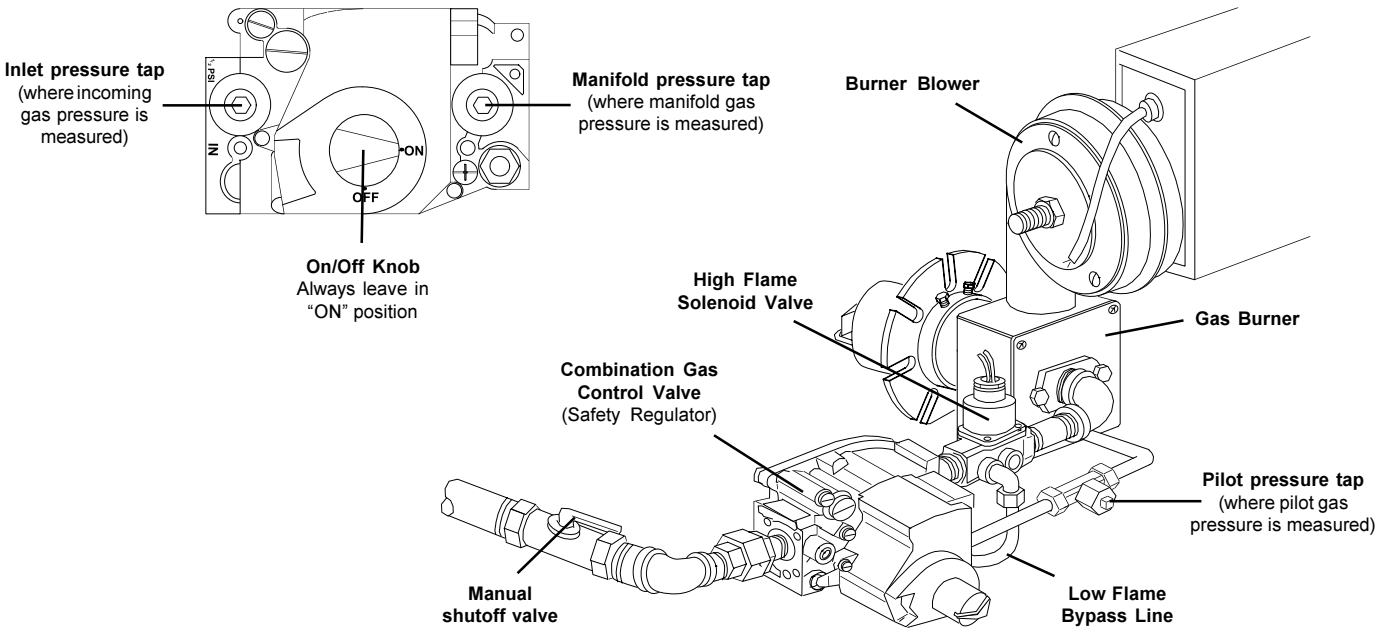
Certain safety code requirements exist for the installation of gas ovens; refer to the beginning of Section 2 for a list of the installation standards. In addition, because the oven is equipped with casters, the gas line connection shall be made with a connector that complies with the Standard for Connectors for Movable Gas Appliances, ANSI Z21.69 (in U.S.A.), or, if applicable, Connectors for Movable Gas Appliances, CAN/CGA-6.16 (in Canada), as well as a quick-disconnect device that complies with the Standard for Quick-Disconnect Devices for Use With Gas Fuel, ANSI Z21.41 (in U.S.A.), or, if applicable, Quick-Disconnect Devices for Use With Gas Fuel, CAN1-6.9 (in Canada).

B. 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.

WARNING
All installations, conversions and service work must be performed by an authorized service agent.

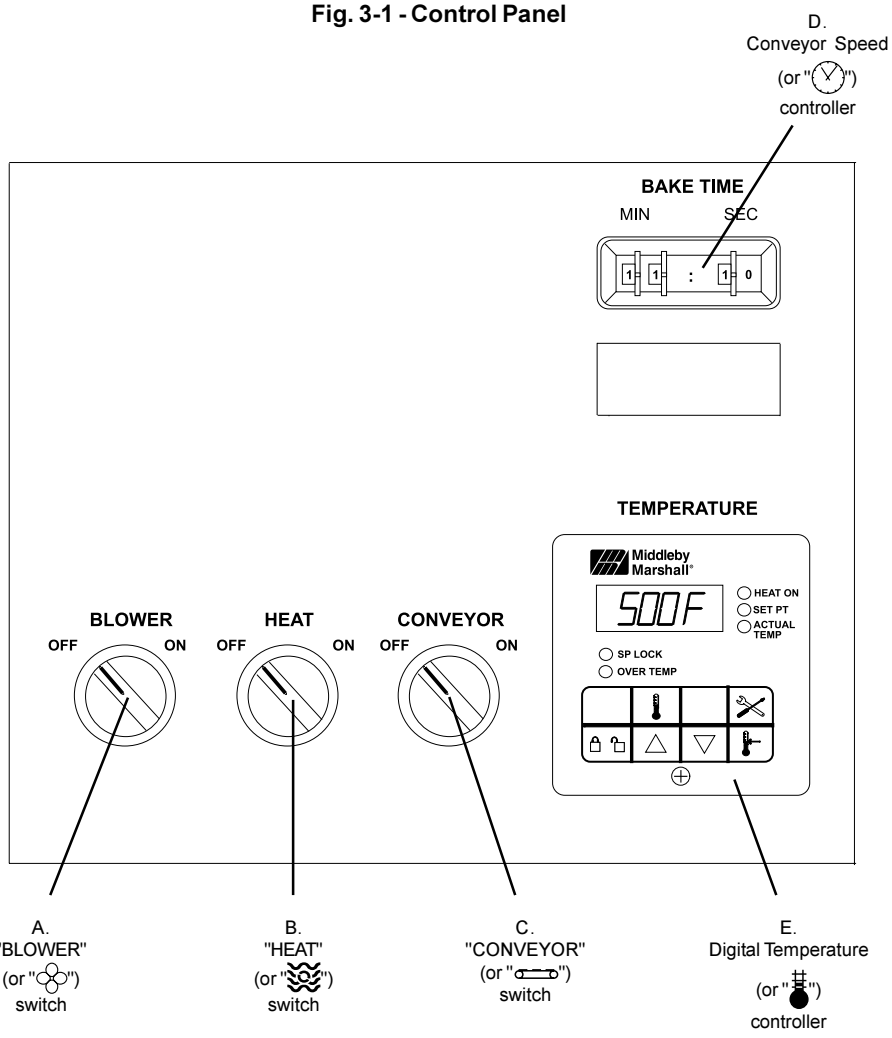
Figure 2-19 - Gas Burner and Piping Assembly



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. The HEAT Switch has no effect unless the BLOWER Switch is in the "ON" position.

B. **"HEAT" Switch:** Allows the gas burner to light. Activation of the gas burner is determined by the settings on the Digital Temperature Controller.

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

D. **Conveyor Speed Controller:** Adjusts and displays the bake time.

E. **Digital Temperature Controller:** Continuously monitors the oven temperature. Settings on the Digital Temperture Controller control the activation of the gas burner.

NOT SHOWN:

F. **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

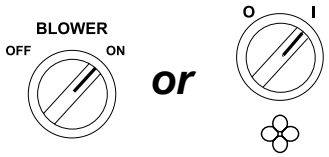
IMPORTANT

Bake time and temperature settings for the oven are preset at the factory to customer-approved settings. These settings should not be changed during normal operation.

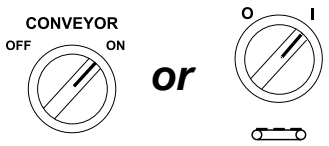
A. DAILY STARTUP PROCEDURE

1. Check that the circuit breaker/fused disconnect is in the on position. If the oven is equipped with a window, check that the window is closed.

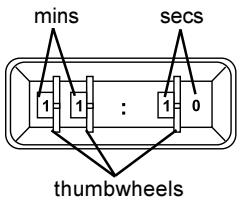
2. Turn the "BLOWER" (or) switch to the "ON" (or "I") position.



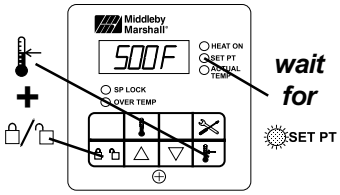
3. Turn the "CONVEYOR" (or) switch to the "ON" (or "I") position.



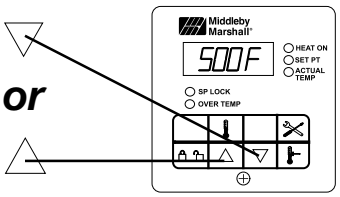
4. If necessary, adjust the conveyor speed setting by turning the three thumbwheels to change the displayed bake time.



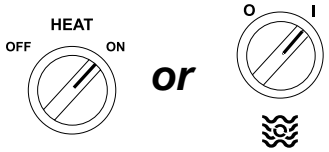
5. Adjust the temperature controller to a desired set temperature, if necessary.
   - Press the Set Point and Unlock keys at the same time. Wait for the "SET PT" light to turn on.

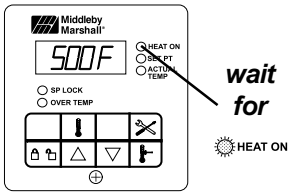


   - Press the Up Arrow and Down Arrow Keys as necessary to adjust the setpoint.



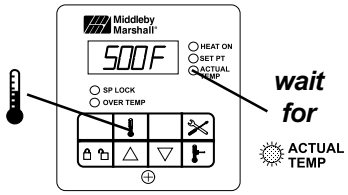
6. Turn the "HEAT" (or) switch to the "ON" (or "I") position, and wait for the "HEAT ON" light to turn on.





7. 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.

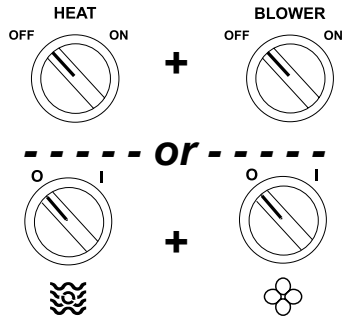
8. *(Optional)* Press the Temperature () key to show the Actual Temperature in the display, and wait for the "ACTUAL TEMP" light to turn on. This allows you to monitor the oven temperature as it rises to the setpoint.



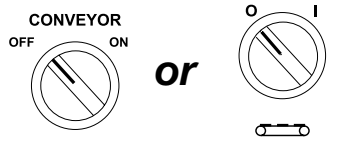
9. Allow the oven to preheat for 10 minutes after it has reached the set point temperature.

B. DAILY SHUTDOWN PROCEDURE

1. Turn the "HEAT" (or) and "BLOWER" (or) switches to the "OFF" (or "O") position. Note that the blowers will remain in operation until the oven has cooled to below 200°F (93°C).



2. Make certain that there are no products left on the conveyor inside the oven. Turn the "CONVEYOR" (or) switch to the "OFF" (or "O") position.



3. If the oven is equipped with a window, open the window to allow the oven to cool faster.

4. After the oven has cooled and the blowers have turned off, switch the circuit breaker/fused disconnect to the off position.

IMPORTANT

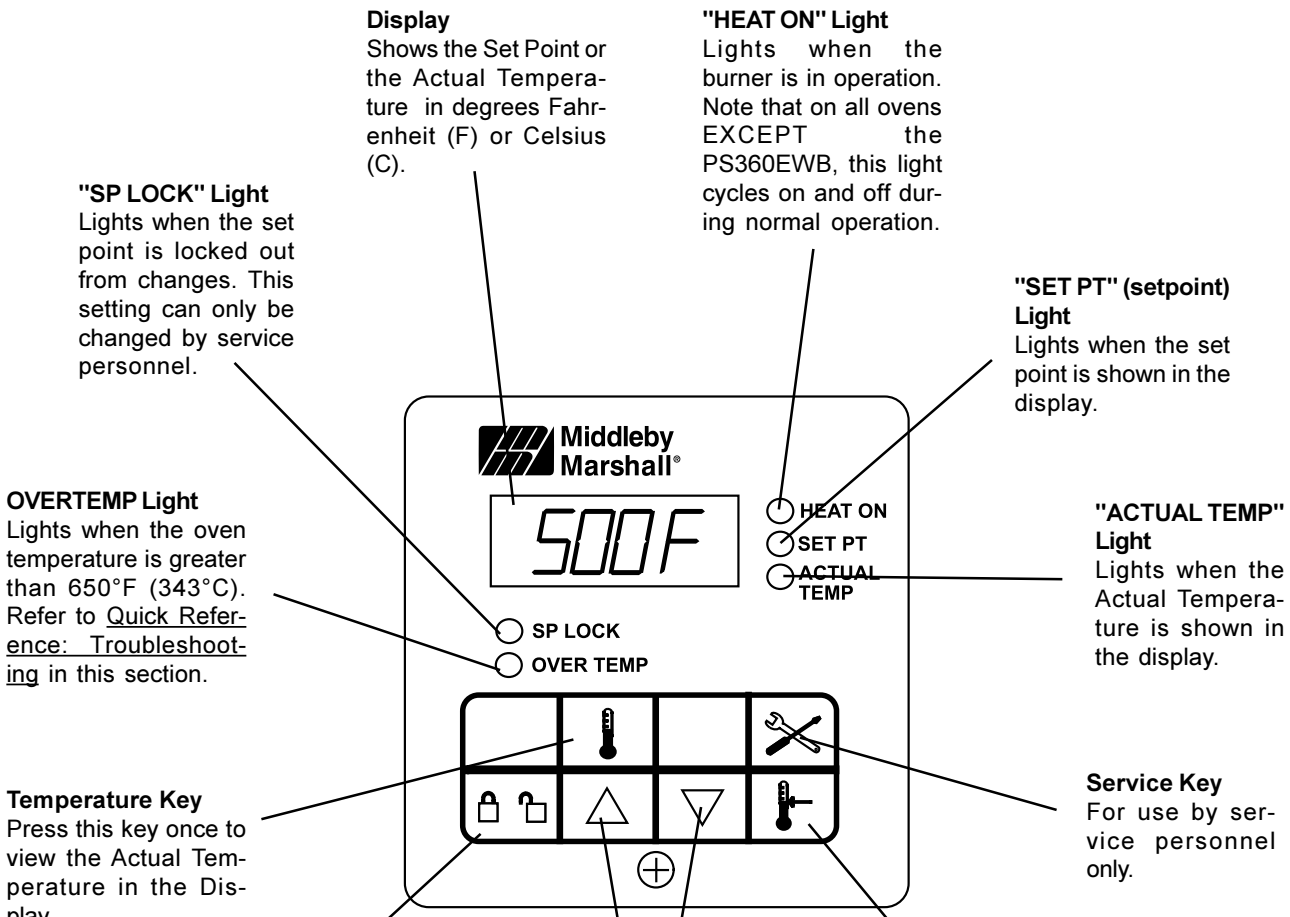
On gas ovens, if the "HEAT ON" light will not illuminate, OR if the oven does not heat, the gas burner may not have lit. Turn the "HEAT" (), "BLOWER" (), and "CONVEYOR" () switches to the "OFF" ("O") position. Wait for AT LEAST FIVE MINUTES before restarting the oven. Then, repeat the Daily Startup procedure.

CAUTION

In case of power failure, turn all switches to the "OFF" (or "O") position, open the oven window, and remove the product. After the power has been restored, perform the normal startup procedure.

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

III. QUICK REFERENCE: DIGITAL TEMPERATURE CONTROLLER



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

"HEAT ON" Light
Lights when the burner is in operation. Note that on all ovens EXCEPT the PS360EWB, this light cycles on and off during normal 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
For use by service personnel only.

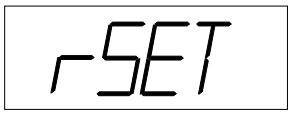
Unlock Key
Press this key together with the Set Point Key to allow the Set Point to be changed. Changes can only be made for 60 seconds.

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

V. QUICK REFERENCE: TROUBLESHOOTING

SYMPTOM	PROBLEM	SOLUTION
OVERTEMP *light is lit, food product is undercooked*	The oven temperature exceeded 650°F (343°C), and the burner was automatically shut down.	• Follow the procedures under Daily Shutdown Procedures in this section to shut down the oven. Contact your Middleby Marshall Authorized Service Agent to determine and correct the cause of the condition to prevent damage to the oven.
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" (or) Switch is in the “ON” (or "I") position. The burner cannot engage until the blowers are in operation.
Oven shuts down shortly after it is turned on	The gas burner did not light within 90 seconds of turning the "HEAT" (or) Switch to the “ON” (or "I") position. This automatically engages a safety lockout mode.	• Turn the "HEAT" (or), "BLOWER" (or), and "CONVEYOR" (or)switches to the "OFF" (or "O") position. • Wait for AT LEAST FIVE MINUTES before restarting the oven. • Repeat the Daily Startup procedure.
 *appears in display, oven is not heating*	The oven did not reach 200°F (93°C) within 15 minutes of startup, and the oven has stopped heating.	• Turn the "HEAT" (or), "BLOWER" (or), and "CONVEYOR" (or)switches to the "OFF" (or "O") position. • Wait for AT LEAST FIVE MINUTES before restarting the oven. • Repeat the Daily Startup procedure.
Oven will not heat	Controls may be set incorrectly.	• Check that the Set Point is correctly set. • Check that both the "BLOWER" ( ) and "HEAT" ( ) Switches are in the “ON” ("I") position. • If the oven still will not heat,turn the "HEAT" ( ), "BLOWER" ( ), and "CONVEYOR" ( )switches to the "OFF" ("O") position. • 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, and allow it to cool. Disconnect electrical power to the oven. • Refer to Section 4, Maintenance, for instructions on reassembling the air fingers.
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 tension may be incorrect.	• Turn the oven off, and allow it to cool. Disconnect electrical power to the oven. • Check if the conveyor is blocked by an object inside the oven. • Refer to Section 4, Maintenance, for instructions on checking the conveyor and drive chain 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

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 the oven for cleaning or servicing, disconnect the gas supply connection 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. For ovens with legs, adjust the legs so that they are seated properly on the floor. For ovens with casters, lock the front casters.
2. Reconnect the gas supply.
3. Reconnect the electrical supply.
4. Turn on the full-flow gas safety valve. Test the gas line connections for leaks using approved leak test substances or thick soap suds.
5. Turn on the electric supply circuit breaker(s).
6. 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 aluminized 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.

NOTE

It is strongly recommended that the 3-Month, 6-Month, and 12-Month Maintenance procedures in this section be performed ONLY by a Middleby Marshall Authorized Service Agent.

ENGLISH

I. MAINTENANCE - DAILY

1. Check that the oven is cool and the power is disconnected, as described in the warning on Page 17.
2. Clean the outside of the oven with a soft cloth and mild detergent.
3. Temporarily remove the rear cool panels.
4. 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.
5. 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.

6. Replace the rear cool panels.
7. Clean the conveyor belt 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.
8. 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.

II. MAINTENANCE - MONTHLY

NOTE: *When removing the conveyor, refer to the drawings on Pages 8-9 in the Installation section.*

1. Check that the oven is cool and the power is disconnected, as described in the warning on Page 17.
2. Remove the drive motor shroud and conveyor extension covers from the oven.
3. Disconnect the drive chain from the sprocket on the drive shaft of the conveyor. If two people are available, one person should lift the idler (right) end of the conveyor as the second person presses down on the drive (left) end. This will create enough slack in the chain to remove it.

   If this procedure will not free the chain, or if only one person is available, perform the following steps:
   - Loosen the two hex head screws that fasten the conveyor motor's mounting bracket to the oven. See Figure 2-10 (on Page 9).
   - Raise the motor to free the chain from the sprocket.
   - Disconnect the drive chain.
4. Slide the conveyor out of the oven.

   NOTE: *The conveyor can only be removed from the end of the oven with the drive motor (left end).*
5. Remove the end plugs from the oven. The end plugs are shown in Figure 1-1, on Page 4 of this Manual.
6. 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**	**T5**	**T6**
(Bottom Row)	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**

Figure 4-1 - Cooling Fan/Vent Locations

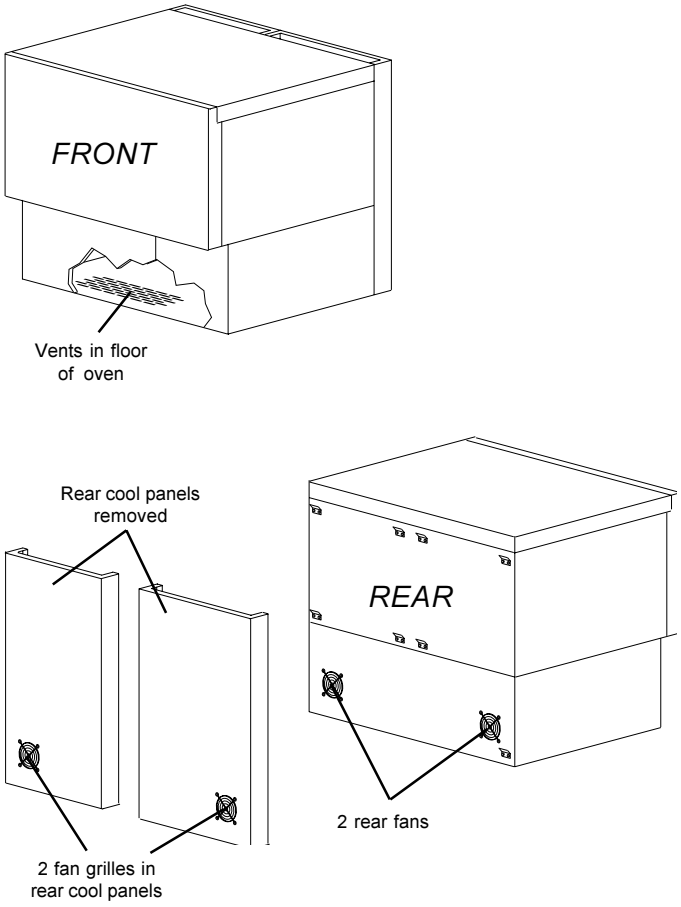
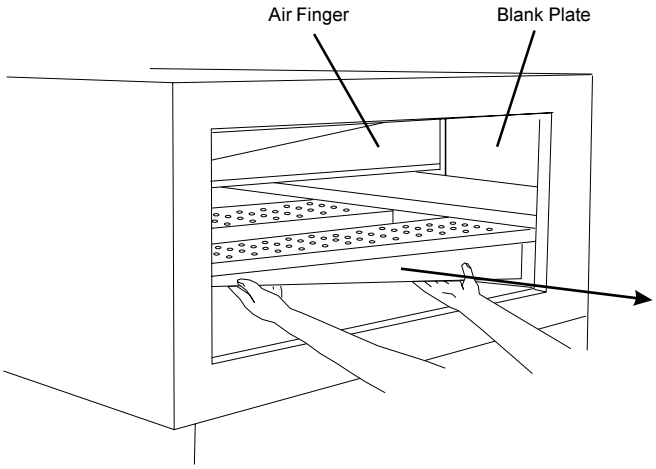


Figure 4-2 - Removing Air Fingers and Plates



7. Disassemble the air fingers as shown in 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.

8. 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 on Page 17 for cleaning precautions.
9. Reassemble the air fingers. Then, replace them in the oven, using the "location code" as a guide.
10. Replace the end plugs on the oven.
11. Reassemble the conveyor into the oven.
12. Reattach the drive chain. If the motor was repositioned to allow the chain to be removed, adjust the tension of the chain to the proper 1/2" (13mm) deflection. Refer to Step 3 of the Conveyor Installation instructions (on Page 9).
13. Check that the conveyor belt has the proper 2-3" (50-75mm) deflection. If it is necessary to adjust the tension of the belt, refer to Steps 4-6 of the Conveyor Installation instructions (on Page 9).
14. Replace the drive motor shroud and the conveyor extensions.

III. MAINTENANCE - EVERY 3 MONTHS

1. Check that the oven is cool and the power is disconnected, as described in the warning on Page 17.
2. Vacuum both of the blower motors, and their surrounding compartments, using a shop vacuum.
3. Tighten all electrical control terminal screws.

IV. MAINTENANCE - EVERY 6 MONTHS

1. Check that the oven is cool and the power is disconnected, as described in the warning on Page 17.
2. 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.
3. Clean and inspect the burner nozzle and electrode assembly.
4. Check (and clean, if necessary) the oven venting system, including the flue.
5. Check the conveyor drive shaft bushings and spacers. Replace the components if they are worn.

V. MAINTENANCE - EVERY 12 MONTHS

1. Remove the motor shroud and the drive-end conveyor extension cover.
2. Disconnect the drive chain as described in Step 3 of the Monthly Maintenance section (on Page 18).
3. Use a grease gun to lubricate the drive shaft bearings, as shown in Figure 4-4. 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.

Figure 4-3 - Disassembling the Air Fingers

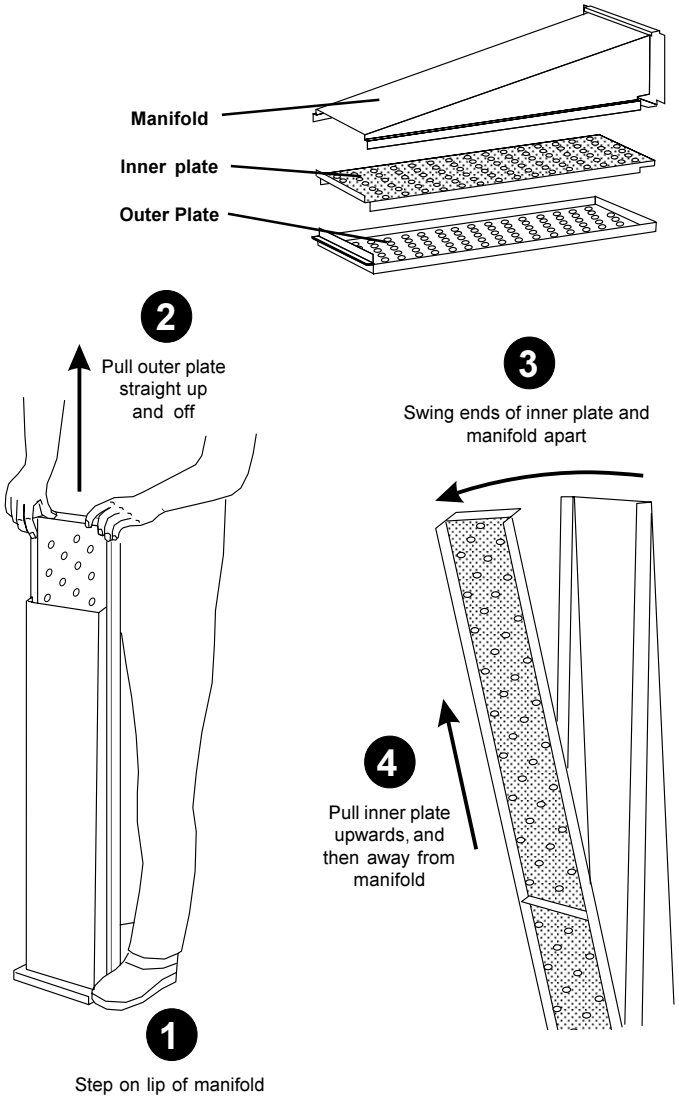
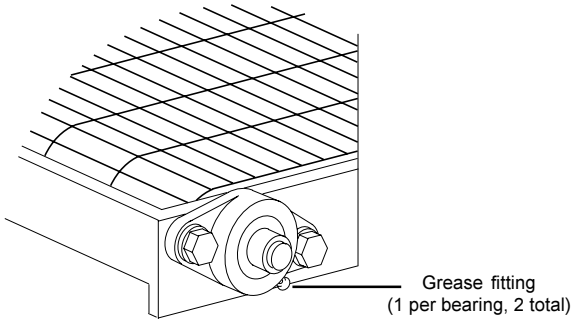


Figure 4-4 - Lubricating the Bearings



4. Manually turn the drive shaft by pulling on the conveyor belt to purge the grease.
5. Wipe off any excess grease on and around the bearings.
6. Reattach the drive chain. If the motor was repositioned to allow the chain to be removed, adjust the tension of the chain to the proper 1/2" (13mm) deflection. Refer to Step 3 of the Conveyor Installation instructions (on Page 9).
7. Replace the motor shroud and conveyor extension cover.

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VI. KEY SPARE PARTS KIT - Available separately. See Figure 4-5.

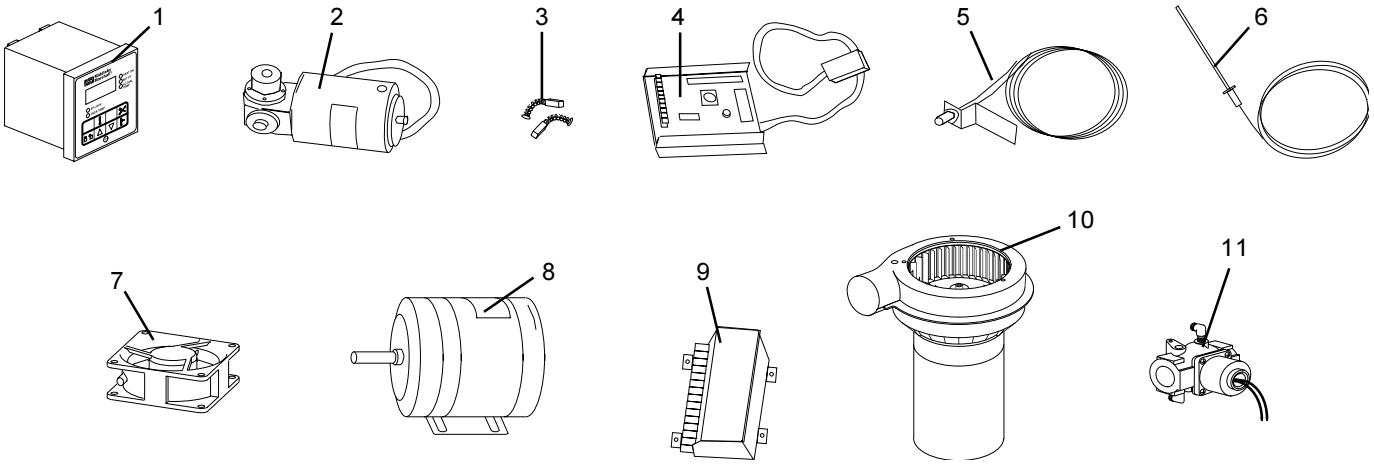
A. Key Spare Parts Kit components (all ovens)

Item		Description	Part Number
1	1	Kit, Digital Temperature Controller	36939
2	1	Conveyor Drive Motor	27384-0008
3	2	Brushes, Conveyor Drive Motor	22450-0052
4	1	Kit, Conveyor Speed Controller	42810-0133
5	1	Conveyor Control Pickup Assembly	27170-0263
6	1	Kit, Thermocouple	33984
7	1	Cooling Fan	27392-0002
8a	1	Blwr Mtr, 1 Ph, 1/3 HP	27381-0023
8b	1	Blower Motor, 3 Ph, 1/3 HP	27381-0024

B. Additional Key Spare Parts Kit components for gas ovens

Item		Description	Part Number
9	1	Kit, Ignition Module	42810-0114
10	1	Burner Blower/Motor Assembly	27170-0011
11	1	Solenoid Valve	28091-0017

Fig. 4-5 - Key Spare Parts Kit



IMPORTANT

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

Middleby Cooking Systems Group • 1400 Toastmaster Drive • Elgin, IL 60120 • USA • (847)741-3300 • FAX (847)741-4406
24-Hour Service Hotline: 1-(800)-238-8444
www.middleby.com

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