SECTION 2
INSTALLATION

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

NOTE
Wiring diagrams are contained in this manual (Section 5, "Electrical Schematics") and are also located inside the Machinery Compartment Access Panel.

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.

SECTION 2
INSTALLATION

I. INSTALLATION KIT

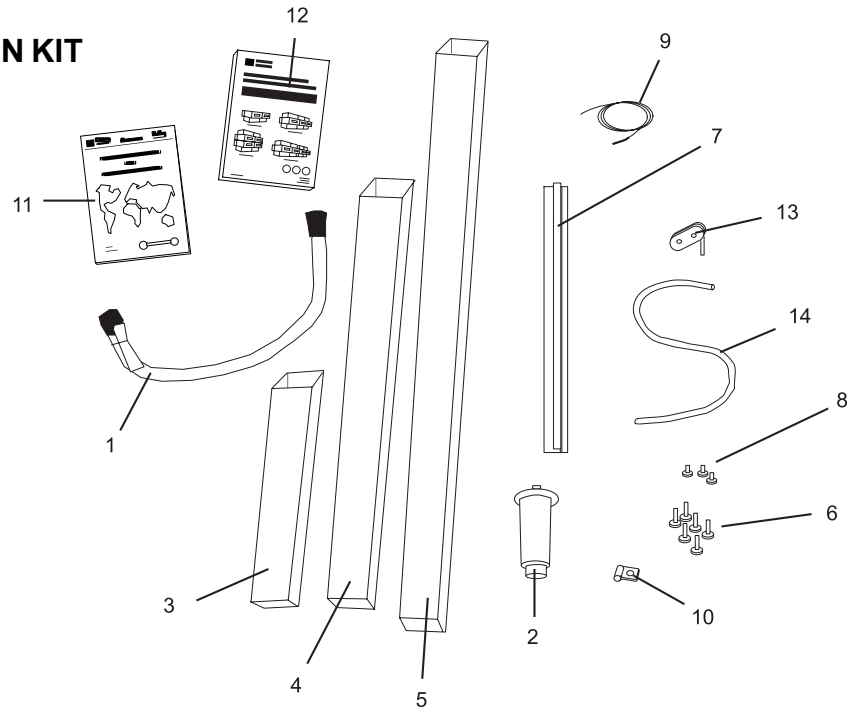


Fig. 2-1 - Installation Kit

Item	Part #	Description	*Tandem*	*Double Tandem*	*Tri Tandem*	*Quad Tandem*
1	22361-0001	Flexible Gas Hose	2	4	3	4
2	22450-0028	Adjustable Legs	8	8	12	16
3	30773	Flue Vent, 14"Lg.	2	-	-	-
4	30759	Flue Vent, 29-1/2"Lg.	-	2	3	4
5	30758	Flue Vent, 50" Lg.	-	2	-	-
6	21256-0008	Screw, 10-32 x 3/8	A/R	A/R	A/R	A/R
7	35000-1103 35000-1899	Conveyor End Stop - PS360 Conveyor End Stop - PS360WB	1	2	-	-
8	21292-0001	Scr, #2PT 10-16 x 3/4 Hx Wsh	A/R	A/R	A/R	A/R
9	33984	Thermocouple	2	4	3	4
10	27276-0001	Cable Clamp	2	4	3	4
11	1002040	Warranty, Parts & Serv. Dist.List	1	1	1	1
12	39223	Owners Operating and Installation Manual (English)	1	1	1	1
13	27126-0238	11 Piece Hex Key Set	1	1	1	1
14	31389	Silicone Tubing, 36” (914mm) L x 5/16” (8mm) ID x 7/16” (11mm) OD	2	4	3	4
-	35000-1454	Machinery Compartment Trim Strip	1	2	2	2
-	35000-1456	Front Gasket Spacer	2	4	4	4
-	35000-1457	Rear Gasket Spacer	2	4	4	4
-	37200-0013 32483	Baking Chamber Gasket and Frame - PS360 Baking Chamber Gasket and Frame - PS360WB	1	2	2	2

II. TRANSITION CHAMBER COMPONENTS (Quad Tandem Ovens Only)

Qty.	Part #	Description
1	48009-0025	Side Wall
1	35000-1748	Rear Support
2	35000-1749	Front Support
2	37000-0697 32455	Top Support Channel - PS360 Top Support Channel - PS360WB

Qty.	Part #	Description
1	37000-0696 32457	Floor Panel - PS360 Floor Panel - PS360WB
1	48009-0024 32456	Top Panel - PS360 Top Panel - PS360WB

III. 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

A mechanically driven ventilation system is required for the oven.

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 AND NATIONAL CODES WILL VARY, AND 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.

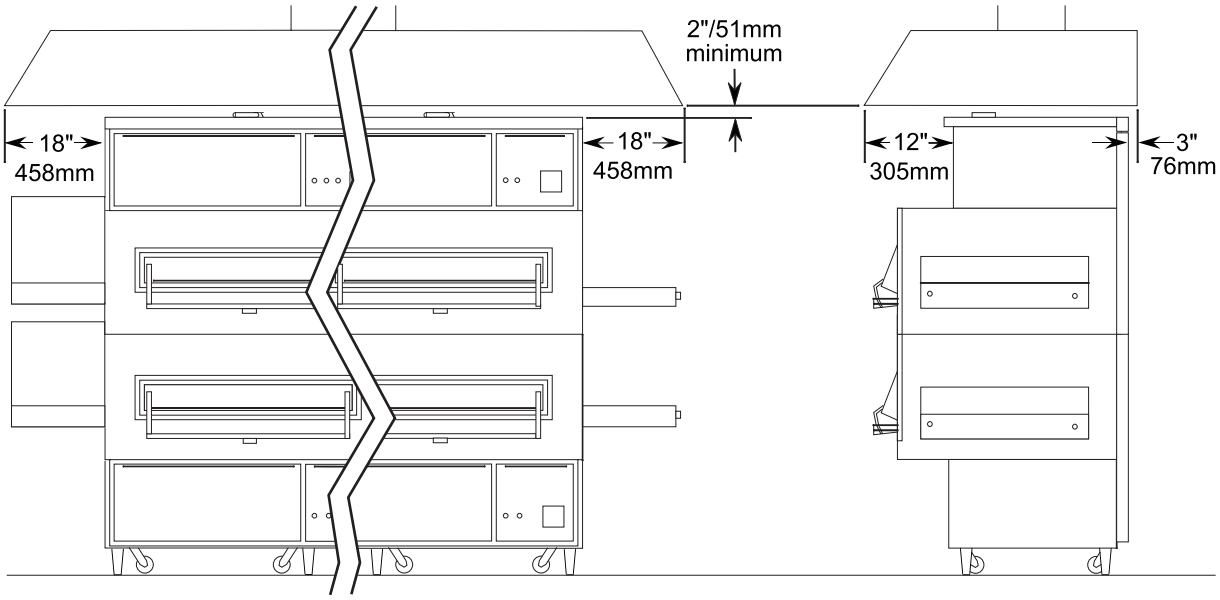
To avoid a negative pressure condition in the kitchen area, return air must be brought back to replenish the air that was exhausted. A negative pressure in the kitchen can cause heat- related problems to the oven components as if there were no ventilation at all. The best method of supplying return air 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



IV. THERMOCOUPLE INSTALLATION

1. Install the thermocouple sensing bulb into the correct hole in the rear of the oven, as shown in Figure 2-3.

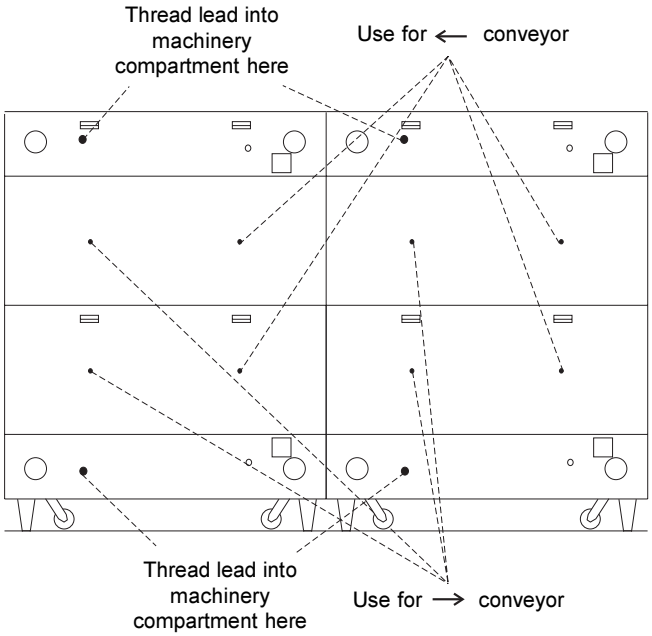


Figure 2-3
Thermocouple Installation Locations

2. Thread the thermocouple lead through the grommet and into the machinery compartment.
3. Remove the right-side access panel of the machinery compartment.
4. Thread the thermocouple lead through the side of the machinery compartment as shown in Figure 2-4, and into the electrical box (at the right-front of the machinery compartment).

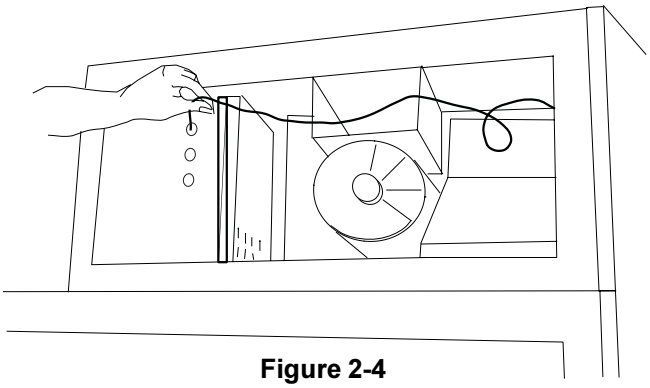


Figure 2-4
Placing the Thermocouple Leads

5. Connect the thermocouple leads to the temperature controller as shown in Figure 2-5.
6. Repeat Steps 1-5 for each of the other oven sections in the installation.

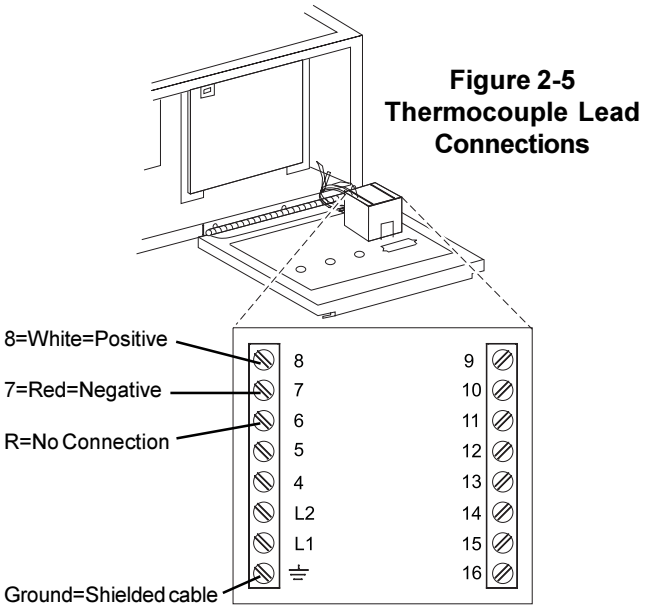


Figure 2-5
Thermocouple Lead Connections

V. ASSEMBLY

A. OVEN STAND

If the installation includes upper ovens mounted atop lower ovens, the ovens must be stacked before joining the tandem ovens together.

If the installation includes ovens that are to be mounted on stands, assemble the ovens to the stands before joining the ovens together. An exploded view of the stand is shown in Figure 2-6.

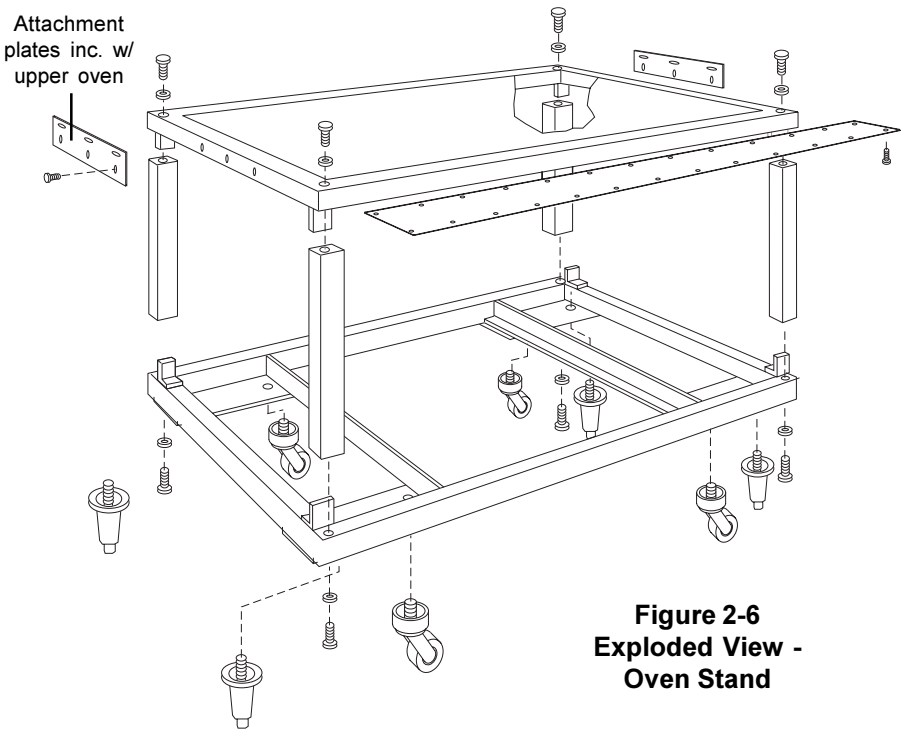


Figure 2-6
Exploded View - Oven Stand

B. JOINING THE OVEN BODIES

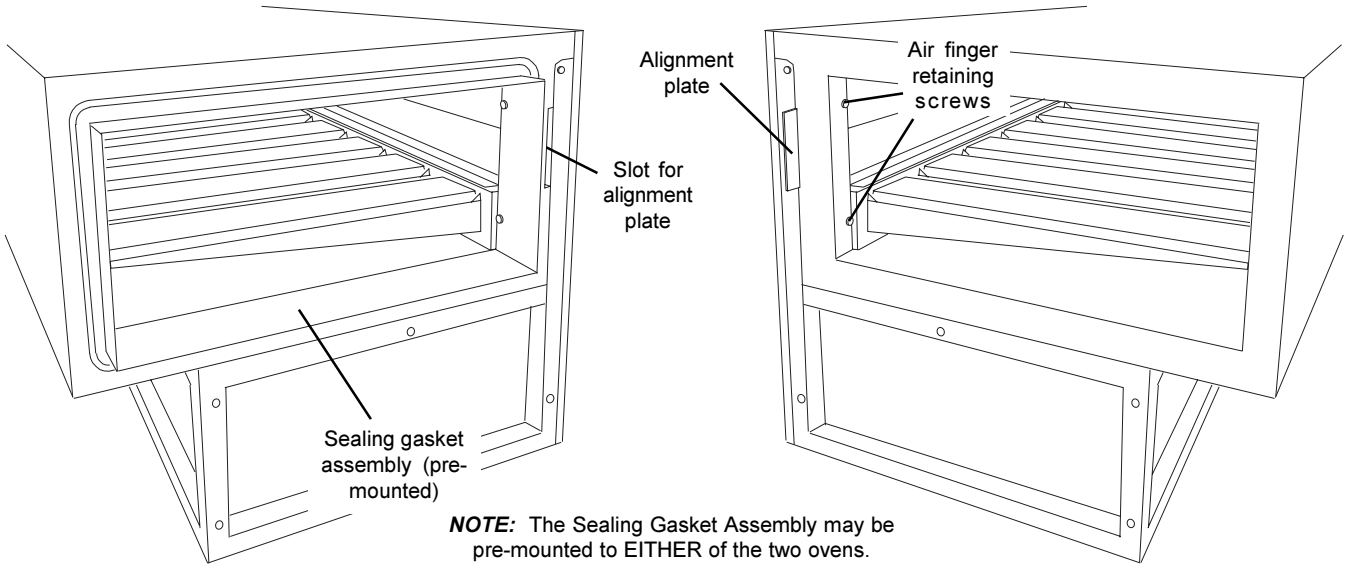
For TANDEM and DOUBLE TANDEM installations, perform Steps 1-8 in this section to join the ovens.

For TRI TANDEM installations, perform Steps 1-8 to join two of the ovens together, and ensure that they are level; then, repeat Steps 1-8 to join the third oven to the two that have already been assembled.

For QUAD TANDEM installations, perform Steps 1-8 for EACH PAIR of ovens, producing two sets of two joined ovens. Do not assemble the center bridge section at this time.

1. Determine the proper position of the ovens by referring to Figure 2-7. Then, move the ovens to their approximate final locations.
2. Check that the top and bottom air finger retaining screws are present *on all mating ends* of the oven sections. See Figure 2-7. The screws prevent the air fingers from sliding in between the oven sections.

Figure 2-7
Oven Positioning and Alignment



NOTE: The Sealing Gasket Assembly may be pre-mounted to EITHER of the two ovens.

3. Remove the rear axial cooling fans that are adjacent to the mating sides of the ovens. The fans may either be completely disconnected, or left attached by their wiring as shown in Figure 2-8.

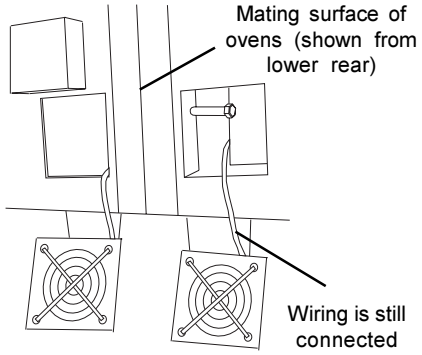


Figure 2-8 - Cooling Fan Removal

4. Insert three of the supplied 1/2 x 5" bolts through the holes in the frame of the right oven, pointing outward as shown in Figure 2-9. Then, slide the spacers into place on the bolts.

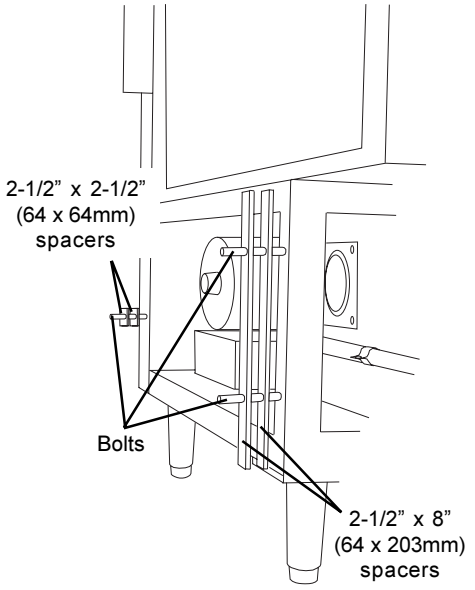


Figure 2-9 - Bolts and Spacers

5. Push the ovens together. Check that the mounting bolts, alignment plate, and sealing gasket are all properly aligned. See Figure 2-10.

6. Tighten all of the attaching bolts. Check that the mating edges of the ovens align properly. If gaps appear between the tops of the ovens, it will be necessary to loosen the connecting bolts and realign the ovens.

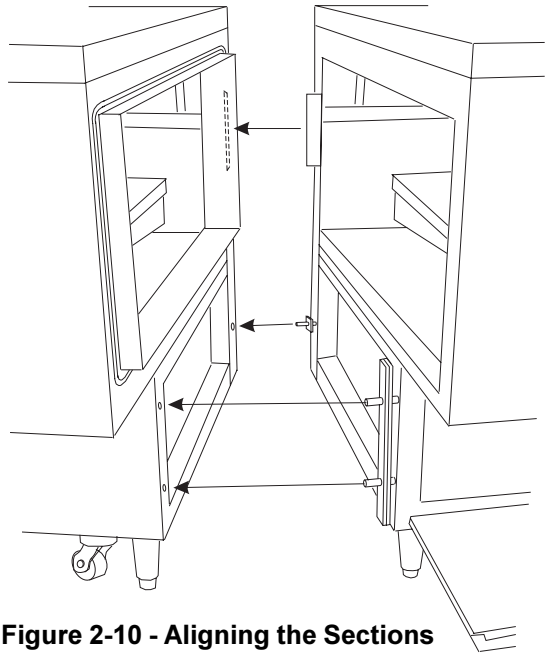
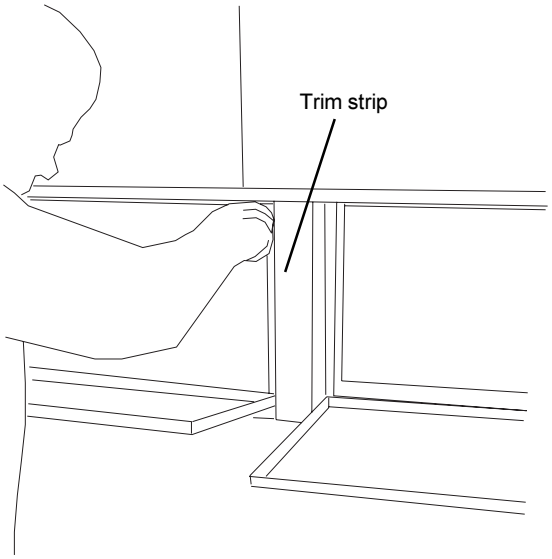


Figure 2-10 - Aligning the Sections

7. Attach the front trim strip between the two ovens, as shown in Figure 2-11.
8. Replace the rear axial cooling fans. See Figure 2-8.
9. Perform one of the following, as appropriate:
   - For PS360/360WB Tandem and Double Tandem installations, skip ahead to Part D, INSTALLING THE CONVEYOR FRAME AND BELT (Page 2-9).
   - For PS360/360WB Tri Tandem installations, perform Steps 1-8 again to attach the third oven to the two that have just been assembled. Then, skip ahead to Part D, INSTALLING THE CONVEYOR FRAME AND BELT (Page 2-9).
   - For PS360/360WB Quad Tandem installations, perform Steps 1-8 again to attach the two remaining ovens to each other. Then, continue on to Part C, INSTALLING THE CENTER TRANSITION.

Figure 2-11 - Trim Strip Installation



C. INSTALLING THE CENTER TRANSITION

1. Install the upper support channels to the two center ovens as shown in Figures 2-12 and 2-13.

Figure 2-12
Support Channel Installation - Lower Oven

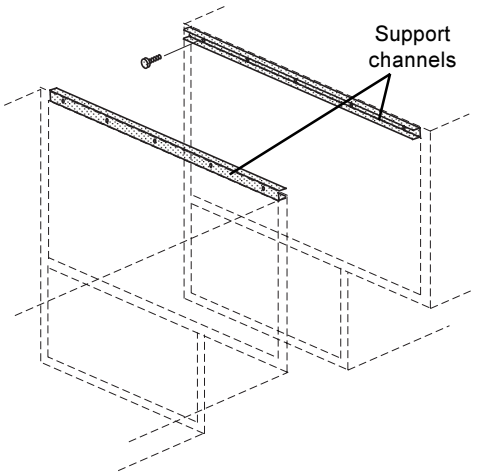
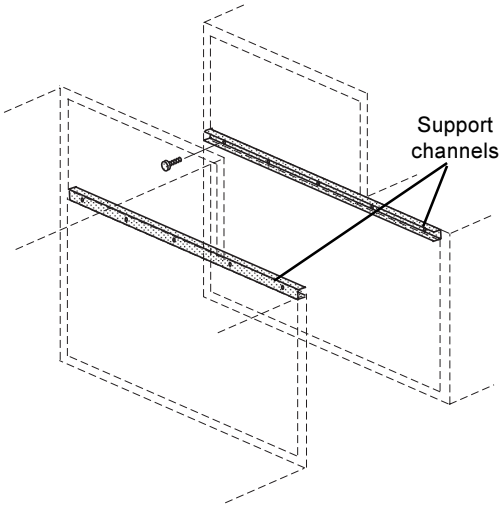


Figure 2-13
Support Channel Installation - Upper Oven



2. Align the two center ovens so that they are level and 20" (508mm) apart. Then, attach the two angled support brackets between the two center ovens, as shown in Figures 2-14 and 2-15.

   Note that a LOWER OVEN uses different support brackets for the front and rear, while an UPPER OVEN uses identical brackets on the front and rear.

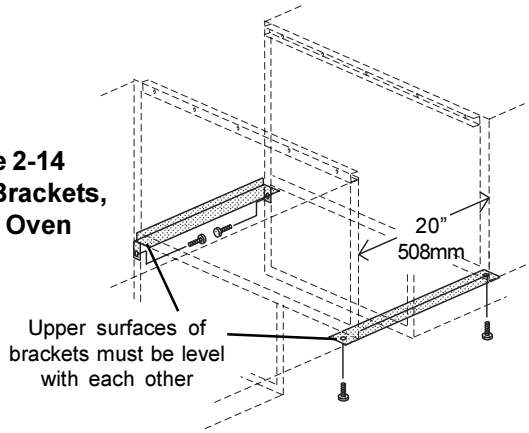


Figure 2-14 Support Brackets, Lower Oven

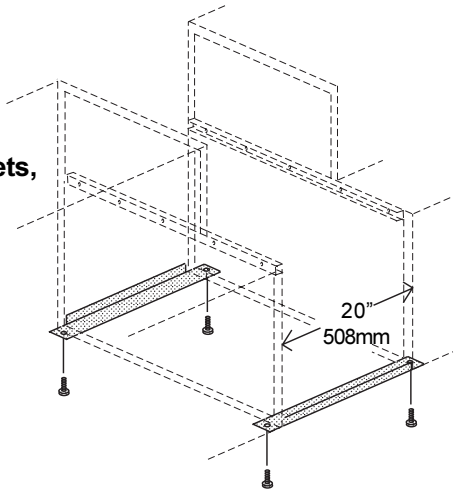


Figure 2-15 Support Brackets, Upper Oven

4. Place the transition floor panel into place atop the support brackets. See Figure 2-16.

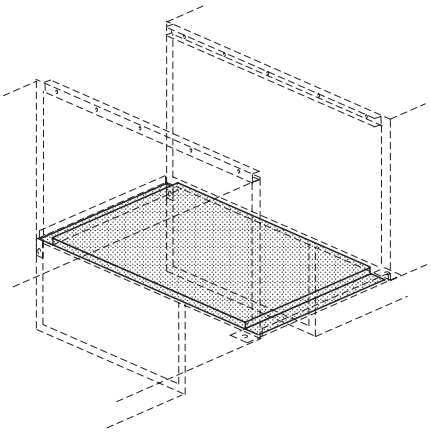


Figure 2-16 Floor Panel Installation

5. Install the transition (center) conveyor section, as shown in Figure 2-17. Align the conveyor section so that it extends the same distance into the two oven chambers.

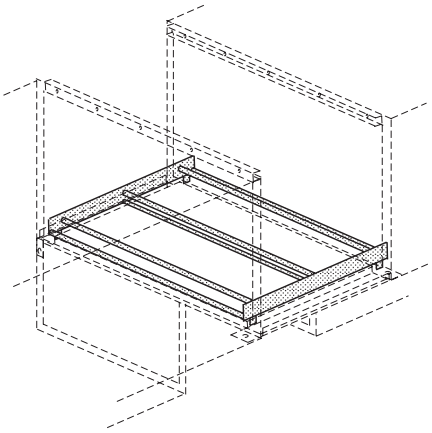


Figure 2-17 Installing the Frame

D. INSTALLING THE CONVEYOR FRAME AND BELT

FOR ALL TYPES OF OVENS, ENSURE THAT THE DRIVE SECTION/END OF THE CONVEYOR FRAME IS PLACED ON THE SAME END OF THE OVEN AS THE CONVEYOR DRIVE MOTOR.

1. Insert the conveyor frame into the oven as follows:

   For a TANDEM or DOUBLE TANDEM oven, slide one hinged conveyor frame section into each end of the oven. The two sections butt against each other at the gap between the two oven sections. See Figure 2-18.

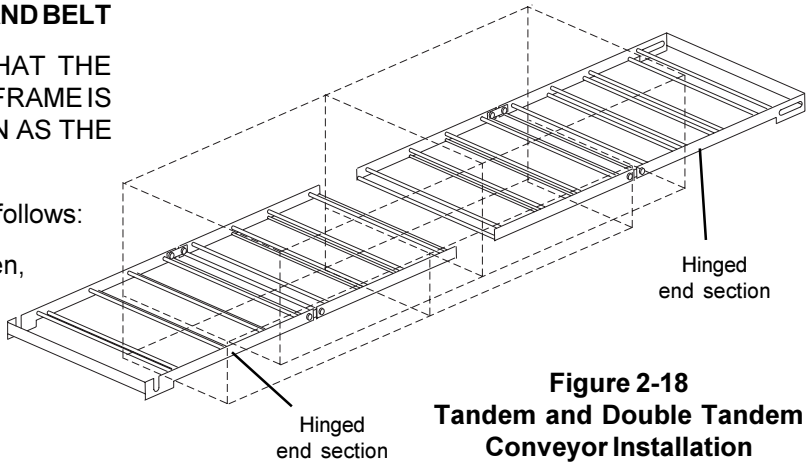


Figure 2-18
Tandem and Double Tandem Conveyor Installation

For TRI TANDEM ovens, slide one intermediate frame section into the oven (from either end). Center this section inside the oven. Then, slide one intermediate section and one end section of the frame into EACH END of the oven. All five sections should butt against each other. See Figure 2-19.

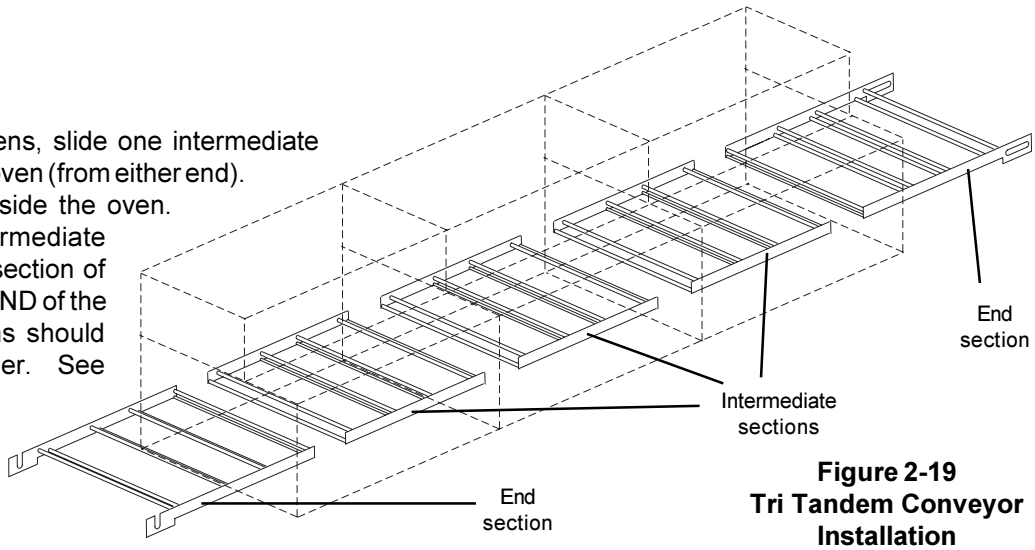


Figure 2-19
Tri Tandem Conveyor Installation

For QUAD TANDEM ovens, slide two intermediate sections and one end section of the frame into EACH END of the oven. Butt the two inner intermediate sections against the transition (center) frame section. The other frame sections should butt against each other. See Figure 2-20.

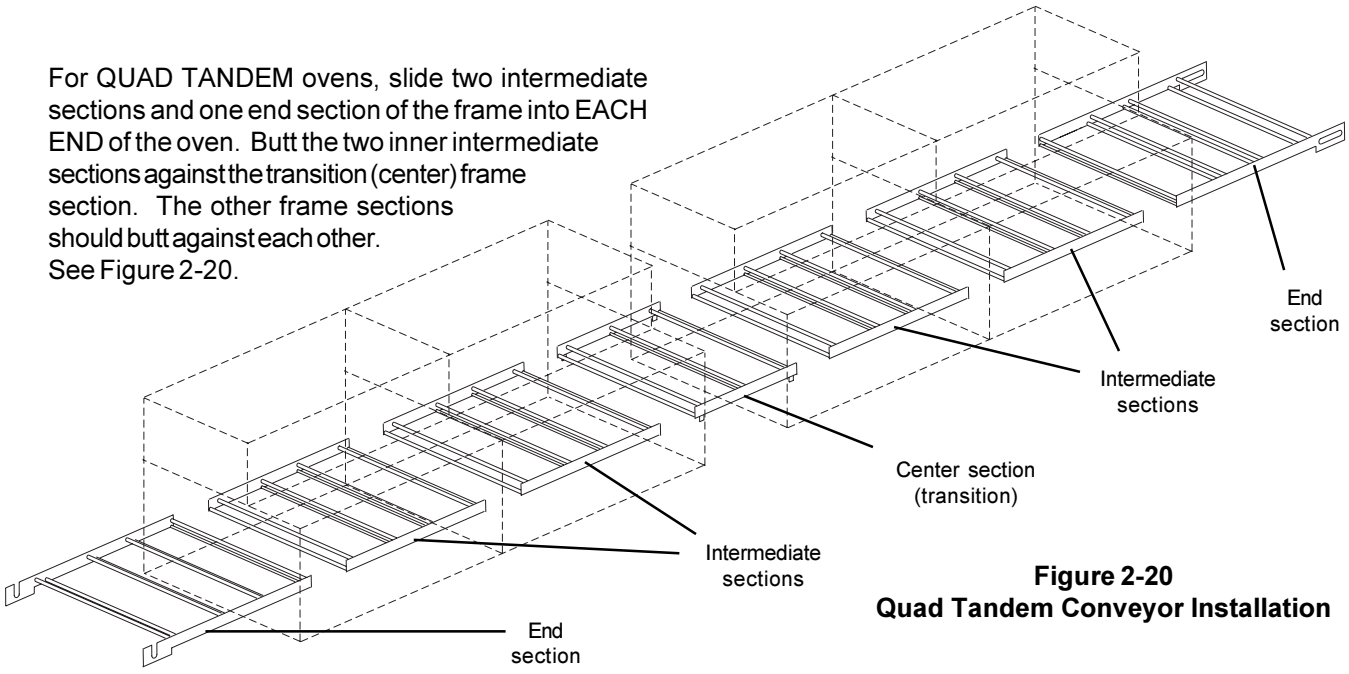


Figure 2-20
Quad Tandem Conveyor Installation

2. Slide the conveyor belt through the support rods underneath the frame, and thread it through the oven. Then, reach through the oven window and pull the free end of the belt through the oven so that it lies atop the conveyor frame.

   After the belt has been pulled through the oven, check the following:
   - The conveyor belt links must be oriented as shown in Figure 2-21.
   - The smooth side of the conveyor belt must face UP.

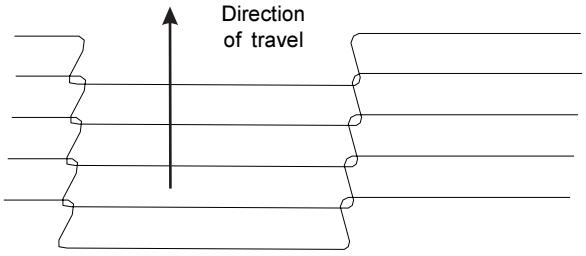


Figure 2-21 - Conveyor Link Orientation

3. Connect the inside master links. Check that the links are oriented as shown in Figure 2-22.

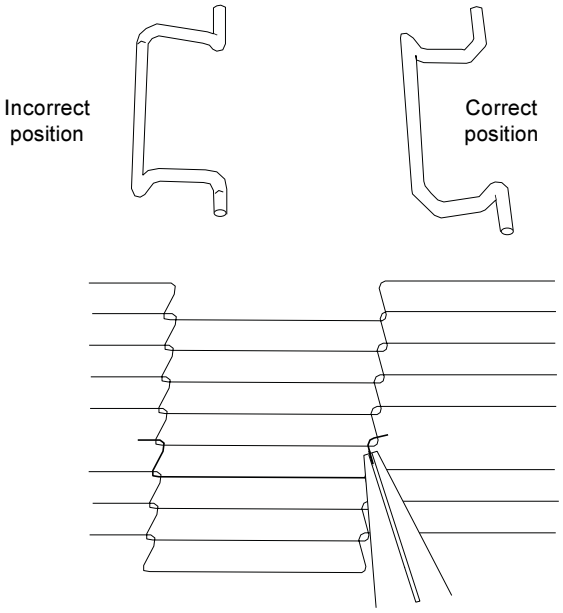


Figure 2-22 - Inside Master Links

4. 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 2-23.

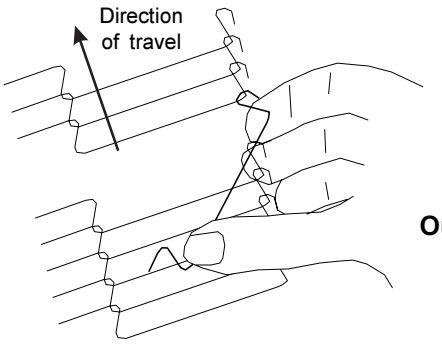
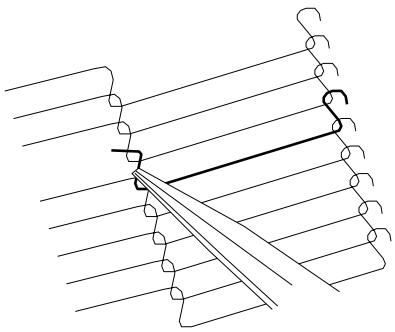


Figure 2-23 Outside Master Links



5. For a TANDEM, DOUBLE TANDEM, or TRI TANDEM oven installation, skip ahead to Step 9. For a QUAD TANDEM oven installation, continue on to Step 6.
6. Slide the top transition panel into place. Then, slide the two transition side panels into place. See Figure 2-24.
7. If the four latches are not already attached to the side and top transition panels, attach them in place as shown in Figure 2-24.
8. Fasten the latches on the side and top panels to hold the panels in place.

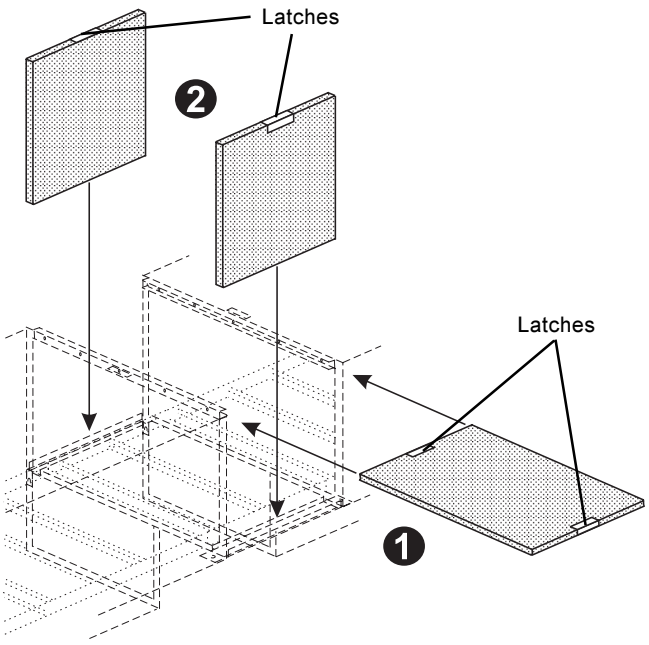


Figure 2-24 - Transition Section Final Assembly

9. LOOSELY attach the conveyor drive motor to the end wall of the oven, as shown in Figure 2-25.
10. Assemble the conveyor drive chain in place on the motor and conveyor drive sprockets.
11. Position the motor to adjust the tension of the drive chain. The deflection of the chain should be 3/4" (19mm). DO NOT OVERTIGHTEN THE DRIVE CHAIN. Then, tighten the motor in place.
12. Assemble the end plugs and motor housing onto the oven.
13. TANDEM AND DOUBLE TANDEM OVENS ONLY: Assemble the end stops, conveyor crumb trays, and conveyor extension covers onto the oven. These components are illustrated in Figure 1-1 (Page 1-2).

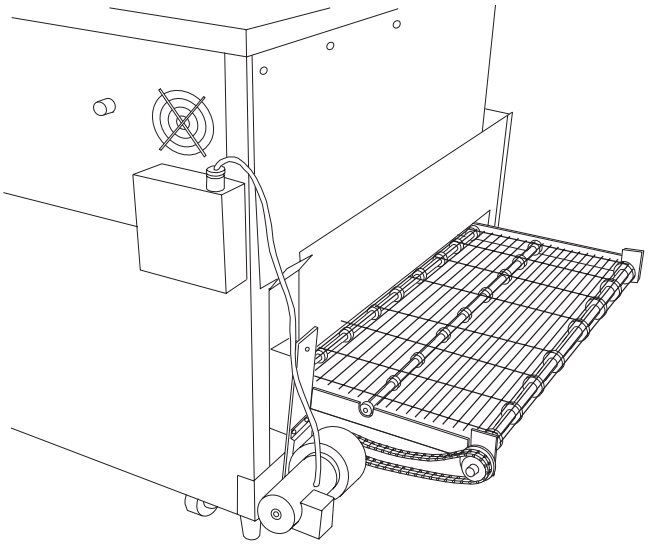


Figure 2-25
Conveyor Motor and Drive Chain Assembly

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 data plate before making any electric supply connections. Electric supply connections must agree with data on the oven data plate. See Figure 2-26.

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

The supply conductors must be of the size (#14 AWG, copper) recommended. Refer to the wiring diagrams in Section 5 of this manual.

All gas oven electric supply connections are made via the electrical junction box on the rear of the oven, shown in Figure 2-27. 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.

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

FOR DOMESTIC OVENS (WITHOUT EXTERNAL TRANSFORMERS):

In the junction box on the rear of the oven, connect one 208 - 240V supply line to the black wire and the other 208 - 240V supply line to the red wire. Connect the electric supply ground wire to the oven ground screw located in the junction box. If necessary, have the electrician supply the ground wire. *Do NOT use the wiring conduit or other piping for ground connections!*

FOR EXPORT OVENS (WITH EXTERNAL TRANSFORMERS):

First, position the transformer on the LEFT REAR wall of the oven (as space permits), and fasten it in place using the supplied mounting hardware.

Then, refer to the appropriate wiring diagram in Section 5 of this manual to determine the correct transformer connections for the supply lines. Connect the electric supply ground wire to the oven ground screw located in the junction box. If necessary, have the electrician supply the ground wire. *Do NOT use the wiring conduit or other piping for ground connections!*

Figure 2-26
Oven Data Plate

Middleby Marshall®

SUITABLE FOR INSTALLATION ON COMBUSTIBLE FLOORS ADJACENT TO COMBUSTIBLE AND NONCOMBUSTIBLE WALLS WITH THE FOLLOWING MINIMUM CLEARANCES: ZERO INCHES TO THE SIDE WALLS, ONE INCH TO THE BACK WALL.

INTENDED FOR OTHER THAN HOUSEHOLD USE
FOR INSTALLATION UNDER VENTILATING HOOD ONLY

MODEL NO. _____ SERIAL NO. _____
ID NO. _____ TYPE OF GAS _____
M J / h _____ GAS RATE _____
MAN. PRESS. _____ K P A _____ WIRE WITH GROUND
_____ VAC _____ AMPS _____ PHASE _____ HZ.

ELGIN, ILLINOIS, 60120, U.S.A.

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 over14" 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

Check the oven's gas supply requirements before making the gas utility connection. Gas supply requirements are listed on the oven's data plate (Figure 2-26) and in the Oven Specifications table (Page 1-1 of this manual).

Check the oven data plate (see Figure 2-26) 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 Base Pad Kit) before connecting the gas line. One gas line connection method is shown in Figure 2-28; 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 2-29.

One 90° elbow equals a 4' (1.22m) 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.

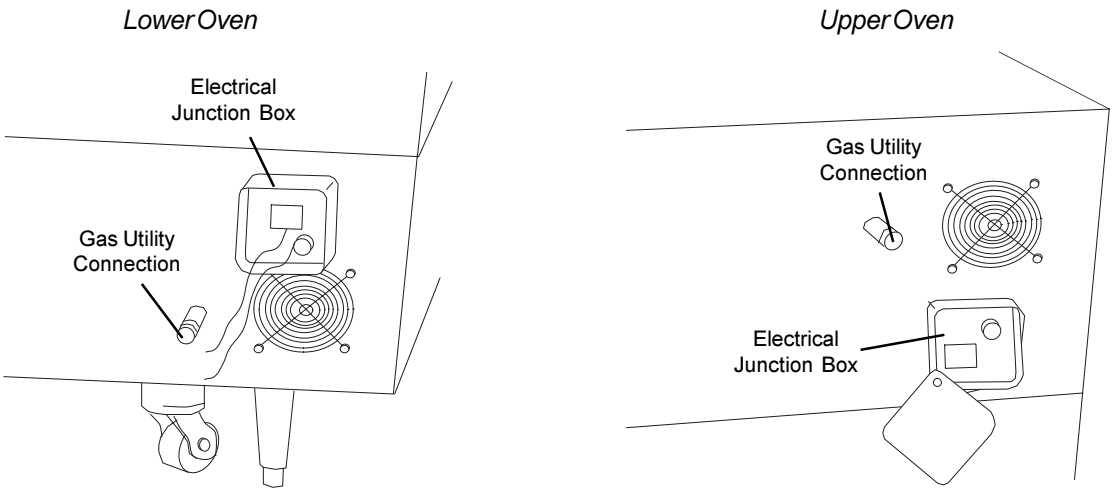
NOTE

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

Figure 2-27
Utility Connection Locations



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

It is possible to convert ovens from natural to propane gas, or from propane to natural gas, by changing the main and pilot orifices.

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

NOTE: *In Canada, to conform with the CAN/CGA-B149.2 propane installation code, the oven must be ordered propane. It may not be converted in the field.*

Figure 2-28
Flexible Gas Hose Installation

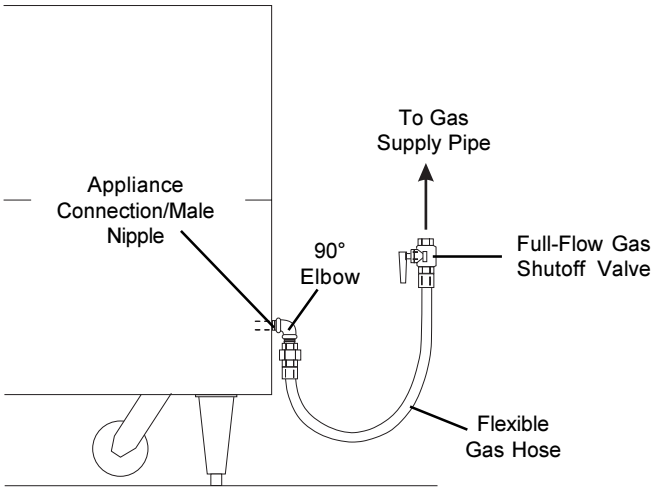


Figure 2-29
Gas Burner and Piping Assembly