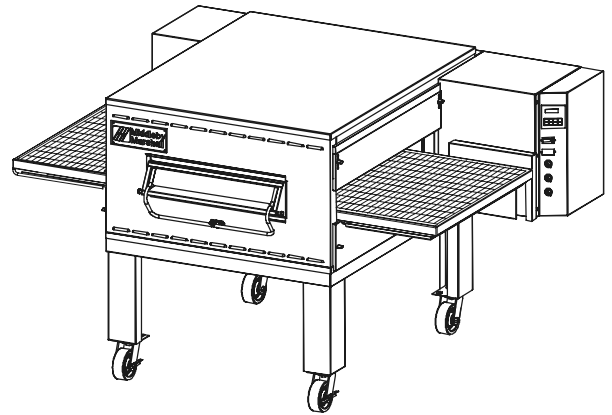
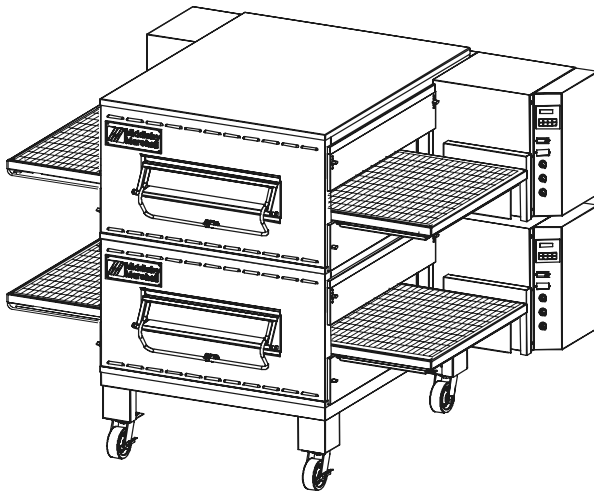


# *owner's operating & installation manual*

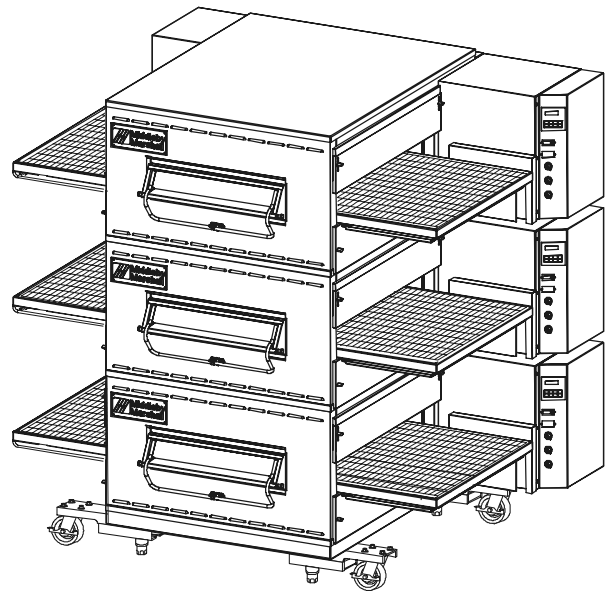
**PS540-Series OVENS  
Model PS540G**



PS540 (Single)



PS540 (Double)



PS540 (Triple)



**WARNING**  
**FOR YOUR SAFETY, DO NOT STORE OR USE  
GASOLINE OR OTHER FLAMMABLE VAPORS AND  
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, operation, and maintenance  
instructions thoroughly before installing or servicing this  
equipment.**

**WARNING**  
**POST, IN A PROMINENT LOCATION, THE EMERGENCY PHONE  
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 YOUR LOCAL GAS SUPPLIER. IF  
THE SMELL OF GAS IS DETECTED, IMMEDIATELY CALL THE EMERGENCY  
PHONE NUMBER OF YOUR LOCAL GAS SUPPLIER. THEY WILL HAVE THE  
PERSONNEL AND PROVISIONS AVAILABLE TO CORRECT THE PROBLEM.

**NOTICE**  
The warranty is *NOT VALID* **unless** the oven is installed, started, and  
demonstrated under the supervision of a factory-authorized installer.

**NOTICE**  
Contact your authorized Service Agency to perform maintenance and  
repairs. A 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.

**KEEP THIS MANUAL IN A VISIBLE LOCATION NEAR THE OVEN  
FOR FUTURE REFERENCE.**

**MIDDLEBY MARSHALL**  
**NO QUIBBLE LIMITED WARRANTY**  
**(U.S.A. ONLY)**

MIDDLEBY MARSHALL, HEREINAFTER REFERRED TO AS "THE SELLER", WARRANTS EQUIPMENT MANUFACTURED BY IT TO BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP FOR WHICH IT IS RESPONSIBLE. THE SELLER'S OBLIGATION UNDER THIS WARRANTY SHALL BE LIMITED TO REPLACING OR REPAIRING, AT SELLER'S OPTION, WITHOUT CHARGE, ANY PART FOUND TO BE DEFECTIVE AND ANY LABOR AND MATERIAL EXPENSE INCURRED BY SELLER IN REPAIRING OR REPLACING SUCH PART. SUCH WARRANTY SHALL BE LIMITED TO THE ORIGINAL PURCHASER ONLY AND SHALL BE EFFECTIVE FOR A PERIOD OF ONE YEAR FROM DATE OF ORIGINAL INSTALLATION, OR 18 MONTHS FROM DATE OF PURCHASE, WHICHEVER IS EARLIER, PROVIDED THAT TERMS OF PAYMENT HAVE BEEN FULLY MET.

This warranty is valid only if the equipment is installed, started, and demonstrated under the supervision of a factory-authorized installer.

Normal maintenance functions, including lubrication, cleaning, or customer abuse, are not covered by this **no quibble warranty**.

Seller shall be responsible only for repairs or replacements of defective parts performed by Seller's authorized service personnel. Authorized service agencies are located in principal cities throughout the contiguous United States, Alaska, and Hawaii. This warranty is valid in the 50 United States and is void elsewhere unless the product is purchased through Middleby International with warranty included.

***The foregoing warranty is exclusive and in lieu of all other warranties, expressed or implied. There are no implied warranties of merchantability or of fitness for a particular purpose.***

The foregoing shall be Seller's sole and exclusive obligation and Buyer's sole and exclusive remedy for any action, including breach of contract or negligence. In no event shall Seller be liable for a sum in excess of the purchase price of the item. Seller shall not be liable for any prospective or lost profits of Buyer.

***This warranty is effective on Middleby Marshall equipment sold on, or after, February 15, 1995.***

**MIDDLEBY MARSHALL INC.**  
**OVEN LIMITED WARRANTY**  
**(Non U.S.A.)**

The Seller warrants equipment manufactured by it to be free from defects in material and workmanship for which it is responsible. The Seller's obligation under this warranty shall be limited to replacing or repairing, at Seller's option, without charge, F.O.B. Seller's factory, any part found to be defective and any labor and material expense incurred by Seller in repairing or replacing such part. Such warranty is limited to a period of one year from date of original installation or 15 months from date of shipment from Seller's factory, whichever is earlier, provided that terms of payment have been fully met. All labor shall be performed during regular working hours. Overtime premium will be charged to the Buyer.

**This warranty is not valid unless equipment is installed, started, and demonstrated under the supervision of a factory-authorized installer.**

Normal maintenance functions, including lubrication, adjustment of airflow, thermostats, door mechanisms, microswitches, burners and pilot burners, and replacement of light bulbs, fuses and indicating lights, are not covered by warranty.

Any repairs or replacements of defective parts shall be performed by Seller's authorized service personnel. Seller shall not be responsible for any costs incurred if the work is performed by other than Seller's authorized service personnel.

When returning any part under warranty, the part must be intact and complete, without evidence of misuse or abuse, freight prepaid.

Seller shall not be liable for consequential damages of any kind which occur during the course of installation of equipment, or which result from the use or misuse by Buyer, its employees or others of the equipment supplied hereunder, and Buyer's sole and exclusive remedy against Seller for any breach of the foregoing warranty or otherwise shall be for the repair or replacement of the equipment or parts thereof affected by such breach.

The foregoing warranty shall be valid and binding upon Seller if and only if Buyer loads, operates and maintains the equipment supplied hereunder in accordance with the instruction manual provided to Buyer. Seller does not guarantee the process of manufacture by Buyer or the quality of product to be produced by the equipment supplied hereunder and Seller shall not be liable for any prospective or lost profits of Buyer.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESS AND IMPLIED WARRANTIES WHATSOEVER. SPECIFICALLY THERE ARE NO IMPLIED WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE.

The foregoing shall be Seller's sole and exclusive obligation and Buyer's sole and exclusive remedy for any action, whether in breach of contract or negligence. In no event shall seller be liable for a sum in excess of the purchase price of the item.

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### NOTE

Wiring Diagrams are in Section 7 of this Manual.  
The diagram for each oven is also on the lower  
inner surface of its Control Console.

## SECTION 1 DESCRIPTION

### I. MODEL IDENTIFICATION

The Middleby Marshall PS540-Series may be used either as a single oven or stacked for use as double or triple ovens. The major difference between the oven models in this series is the width of the conveyor.

A single PS540-Series Oven (Figure 1-1) is mounted on a base pad with legs and casters. A double oven (Figure 1-2) consists of two, *stacked*, single ovens. A triple oven (Figure 1-3) consists of three stacked single ovens. The lower oven is mounted on a base pad with short legs and casters.

On a double or triple oven, the ovens operate completely independent. All ovens use identical controls and components. One oven can be cleaned or serviced, while the others are operating.

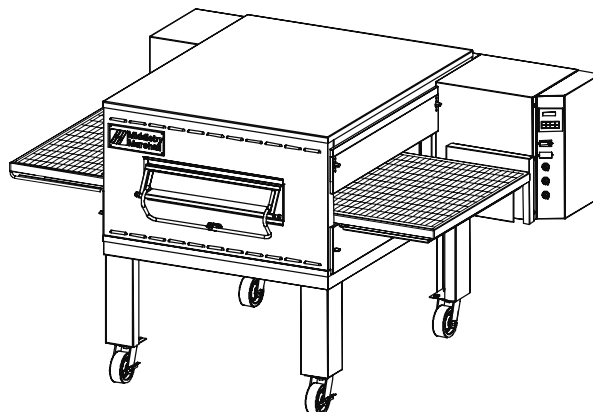


Figure 1-1. Single PS540 Oven

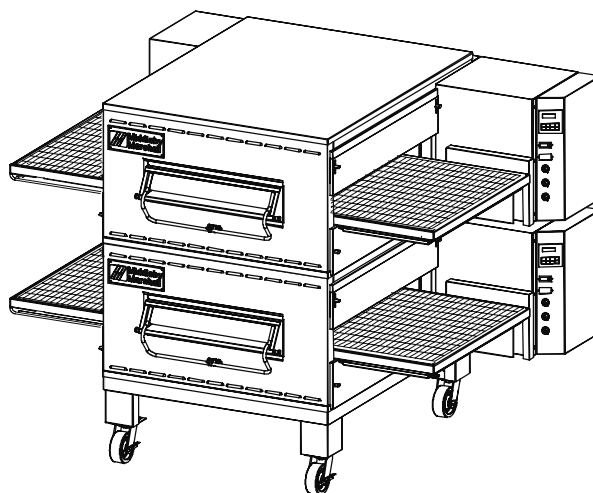


Figure 1-2. Double PS540 Oven

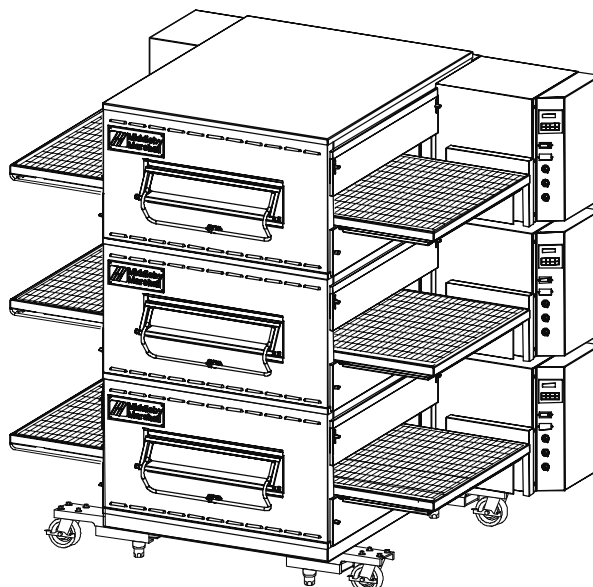


Figure 1-3. Triple PS540 Oven

**SECTION 1  
DESCRIPTION**

**PS540 SERIES OVEN SPECIFICATIONS**

Conveyor Belt Width	32" (813mm)	
Heating Zone Length	40-1/2" (1028mm)	
Baking Area Square Feet	9 sq. ft. (0.84 sq. m.)	
Overall Dimension Standard Single Oven w/Legs	80" (2032mm) L x 61-5/16" (1557mm) W x 47-5/16" (1202mm) H x	
Overall Dimension Double Oven	80" (2032mm) L x 61-5/16" (1557mm) W x 60-15/16" (1548mm) H x	
Overall Dimension Triple Oven	80" (2032mm) L x 61-5/16" (1557mm) W x 77-1/2" (1969mm) H x	
Weight of Single Oven	925 lb (419kg)	
Shipping Weight	1,100 lb (498.3kg)	
Shipping Cube	Approx. 132 ft <sup>3</sup> (3.74 m <sup>3</sup> )	
Operating Range	110,000 BTU/hr (116.0 MJ/h) (27,720 kcal) (32.2 kW/hr)	
Maximum Operating Temperature	550°F (287°C)	
Warm-up Time	10 min.	
Gas Oven Inlet Line Size	3/4" (19mm) ID for each oven	
Minimum Gas Meter Rating	450 cu.ft./hr. (12.74m <sup>3</sup> /h) for 1 to 2 ovens Add 180 cu.ft./hr (5.1m <sup>3</sup> /h) for each additional oven	
Minimum Gas Pipe Size Natural (must be dedicated line) Propane (must be dedicated line)	2" (51mm) ID for 1, 2, or 3 ovens 2" (51mm) ID for 1, 2, or 3 ovens	
Gas Pressure	Inlet Natural 1.13 kPa 6" to 12" Water Column (13.8 to 29.9 mbar) Propane 2.75 kPa 11.5" to 12" Water Column (28.7 to 29.9 mbar)	Test Power 0.87 kPa 2.39 kPa
Gas Valve	0.75" (19mm) ID full-flow, gas, shutoff valve installed in oven inlet gas line. A separate connection and valve must be provided for each oven.	
Recirculating Air Fan	One fan at 2300 RPM	
Air Velocity	3000 fpm (1524 cm/sec) (Average)	
Bake Time	3 min. 0 sec. Bake Time minimum 30 min. 0 sec. Bake Time maximum	

**SERIES PS540 ELECTRICAL SPECIFICATIONS**

Main Blower & Elements Voltage	Control Circuit Voltage	Phase	Frequency	Amperage Draw	Poles	Wires
208-240V	208-240V	1 Ph	50/60 Hz	4.1 Amp	3 Pole	3 Wire (2 hot, 1 grd)

**NOTE**

Wiring Diagrams are contained in Section 7 of this Manual and are also located inside the oven at the bottom of the Control Panel

**This Manual Must Be Kept For Future Reference**

## II. PRINCIPLE OF AIR FLOW

The fan-style blower draws air into the oven plenum where it is heated. The blower then pushes the hot air through the air fingers into the baking chamber. Each air finger contains an inner plate and outer plate that form the hot air into jets, distributing it across a conveyor belt on which the food product rides. Air is then pulled back into the blower and the process continues. The curving, black arrows of Figure 1-4 show this air flow.

### A. Heat Transfer and How It Works

1. Heat constantly moves from a warm object to a cold object. Heat moves using three different paths: Conduction; Radiation; and Convection.

**Conduction:** This path utilizes surface-to-surface contact. The pizza dough in contact with the pan is a good example of conduction.

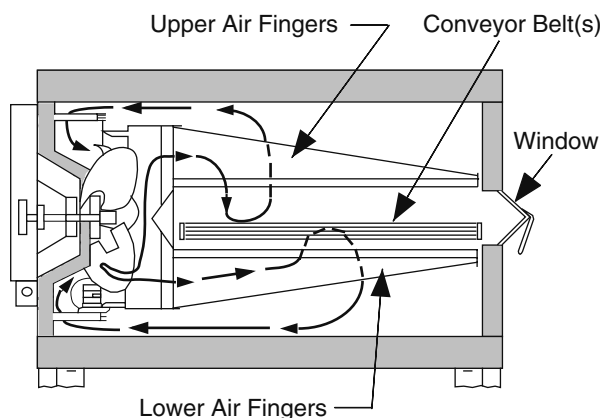
**Radiation:** This path has to do with objects radiating heat. Dark objects absorb heat whereas light or shiny objects

reflect more heat. This is the reason that the inside of a PS540-Series Oven is light in color: To reflect more heat back onto the food product.

**Convection:** This path has to do with moving a volume of air. It explains why hot air rises and cooler air replaces hot air. An industrial application of this principle is to incorporate a fan to force the hot air movement, which in turn increases the heat transfer to the food product.

Each PS540-Series Oven has a large fan-style blower to move the hot air through the air fingers and onto the product to cook/bake the food product most efficiently.

2. Temperature is the intensity of heat at the point where it is sensed. As discussed above, heat flows by conduction, radiation and convection. The speed at which the heat flows is determined by the temperature difference between the oven and the food product. The larger the difference, the faster the heat flows to the item that is being baked.



**Figure 1-4. PS540-Series Oven Air Flow**

# SECTION 1 DESCRIPTION

## II. PRINCIPLE OF AIR FLOW (Continued)

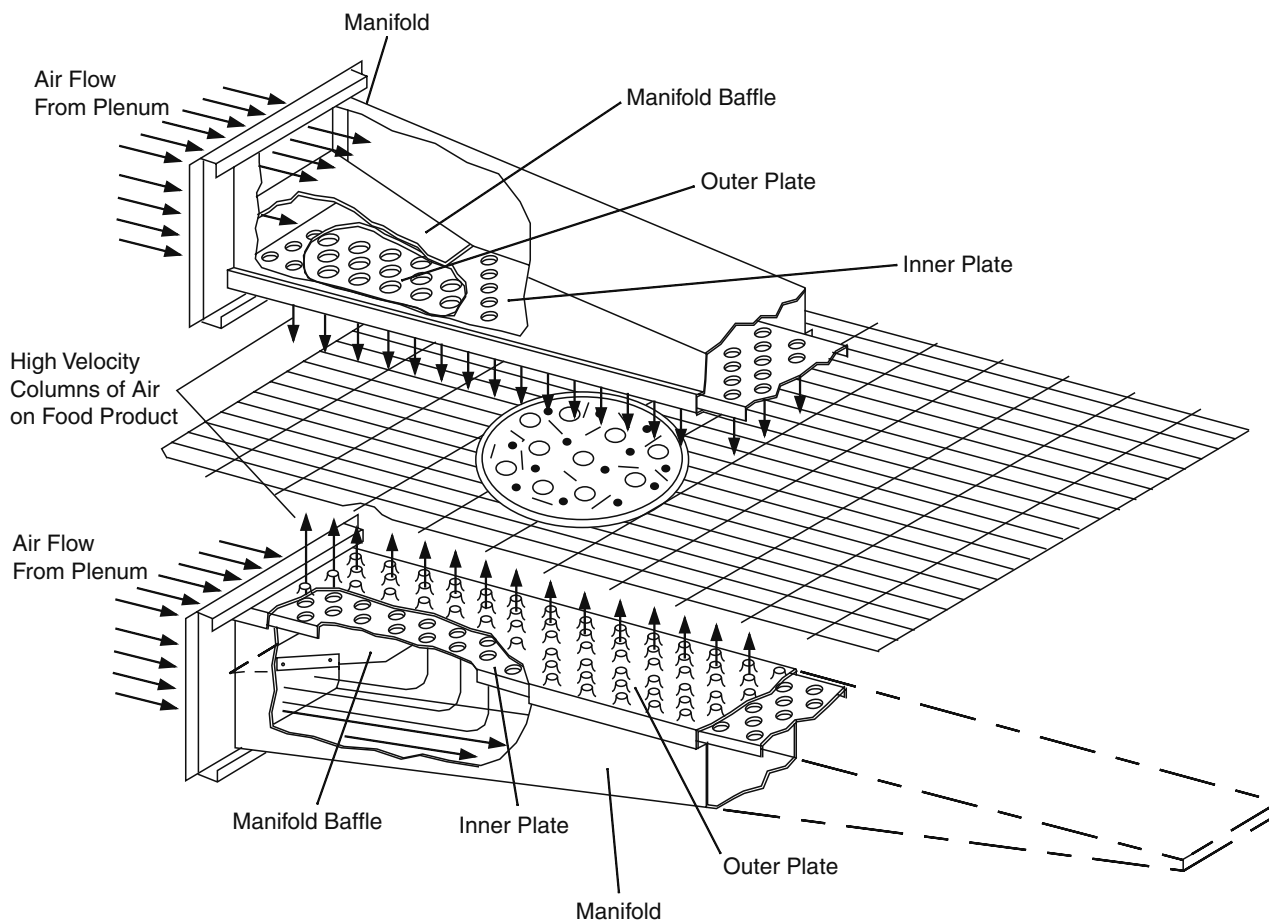
### B. Air Fingers

The PS540-Series Ovens are conveyorized ovens that employ vertical jets of hot air streaming from air fingers (Figure 1-5) to give uniform, intense heating. The vertical streams of hot air provide an exceptional heat transfer rate and generally bake faster and at lower temperatures than convection hot air or infrared heating ovens.

A PS540-Series Oven can accommodate up to four bottom air fingers and four top air fingers. Some PS540-

Series ovens used to bake pizza have four bottom fingers and two top fingers. For special product baking requirements, a number of other styles of fingers and finger arrangements are available from the factory.

**NOTE:** Some customers have a predetermined finger arrangement. If you have any questions pertaining to the finger arrangement, please call the factory.



**Figure 1-5. Air Fingers, Showing High-Velocity Columns of Air Formed During Passage Through the Inner Plate and Outer Plate to Heat the Food Product.**



III. COMPONENT FUNCTION (Figure 1-6)

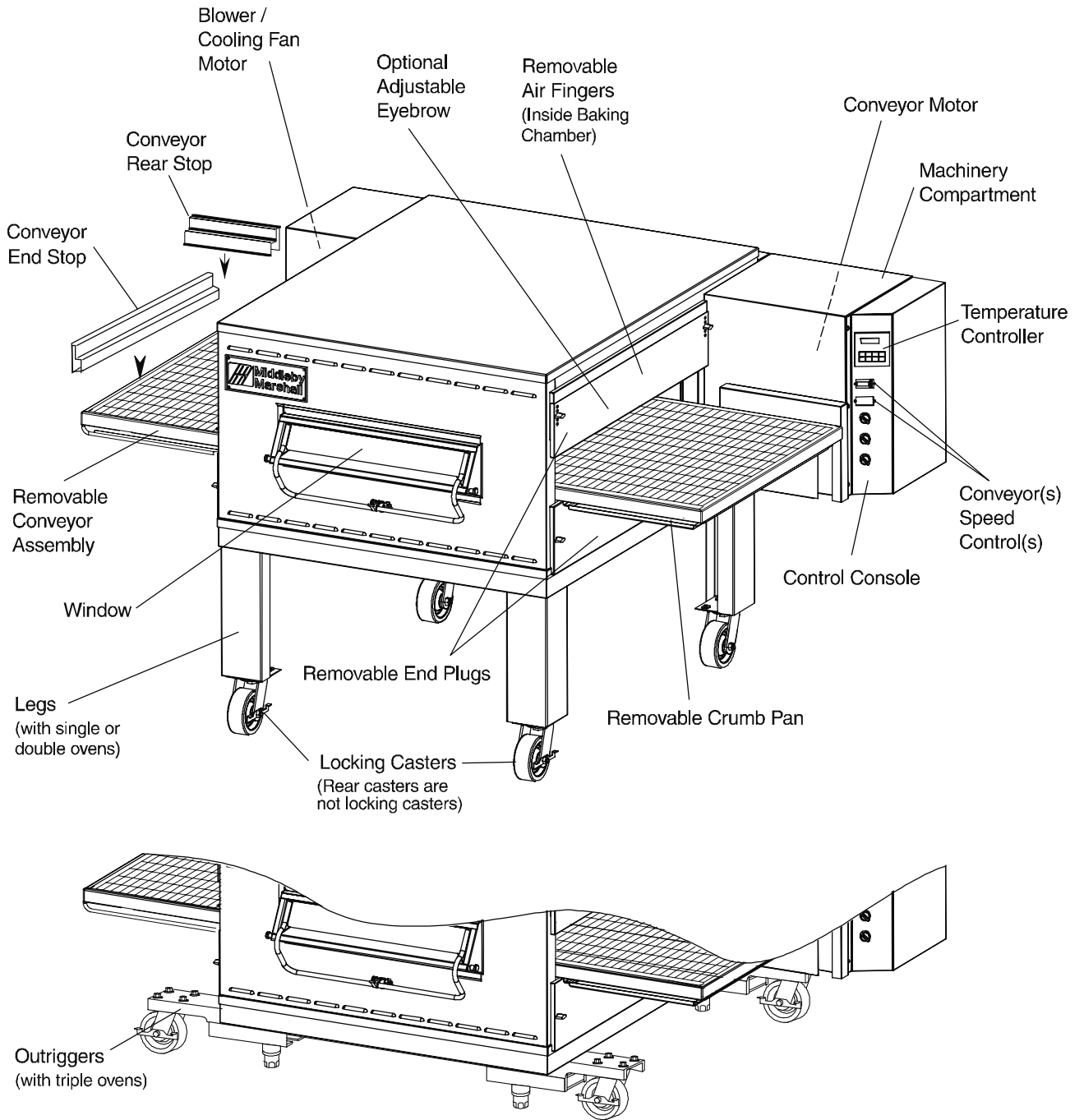


Figure 1-6. PS540-Series Oven Components Locations

## SECTION 1 DESCRIPTION

### III. COMPONENT FUNCTION

#### A. Conveyor Motor and Conveyor Belt

The conveyor belt is driven by a variable-speed electric motor (Figure 1-7) operating through a gear reducer. The motor speed is controlled by a digital control. The stainless-steel wire belt can travel in either direction at variable rates ranging from 3 minutes to 30 minutes; this is the time that a product can take to pass through the oven.

#### B. Blower Fan

The blower fan is located at the rear of the oven. This blower forces heated air through the air fingers. The BLOWER switch must be set to "ON" or "I" for oven warmup and baking.

#### C. Gas Burner

Turning the HEAT switch to "1" activates the oven purge circuit. After approximately 30 seconds, the solid-state ignition control lights a pilot burner by an electric spark. This system permits the main gas valve to open *only after* the lighting of the pilot burner is detected by the flame sensor.

If the pilot flame does not light or a loss of flame occurs, the main gas valve closes.

The main burner gas is extinguished when the HEAT switch is set to "OFF" or "O".

#### D. Window

A window on the front of the oven permits viewing the items being baked and provides access to the oven for items that do not require full baking time, such as sandwiches, cookies, small items, or cheese-melting processes.

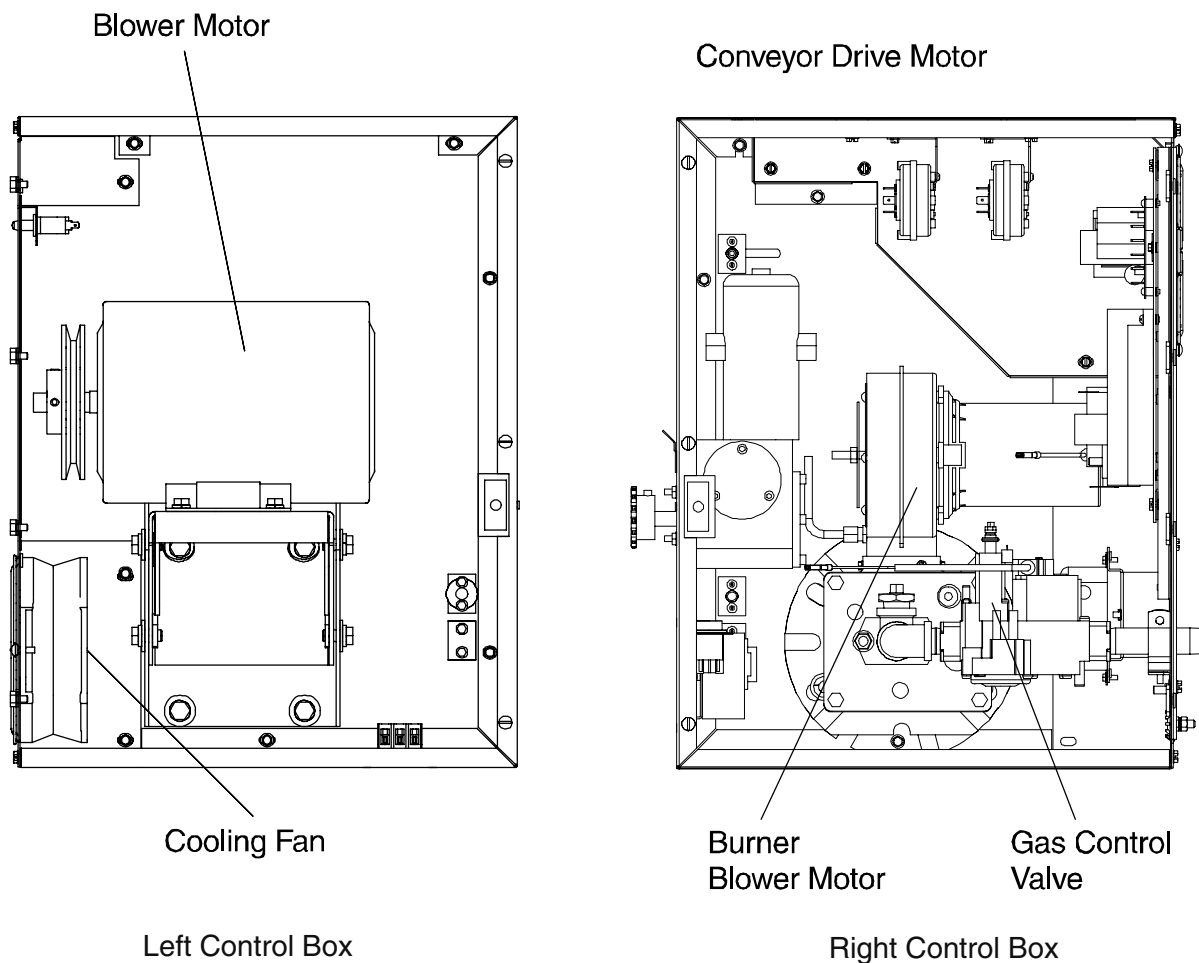
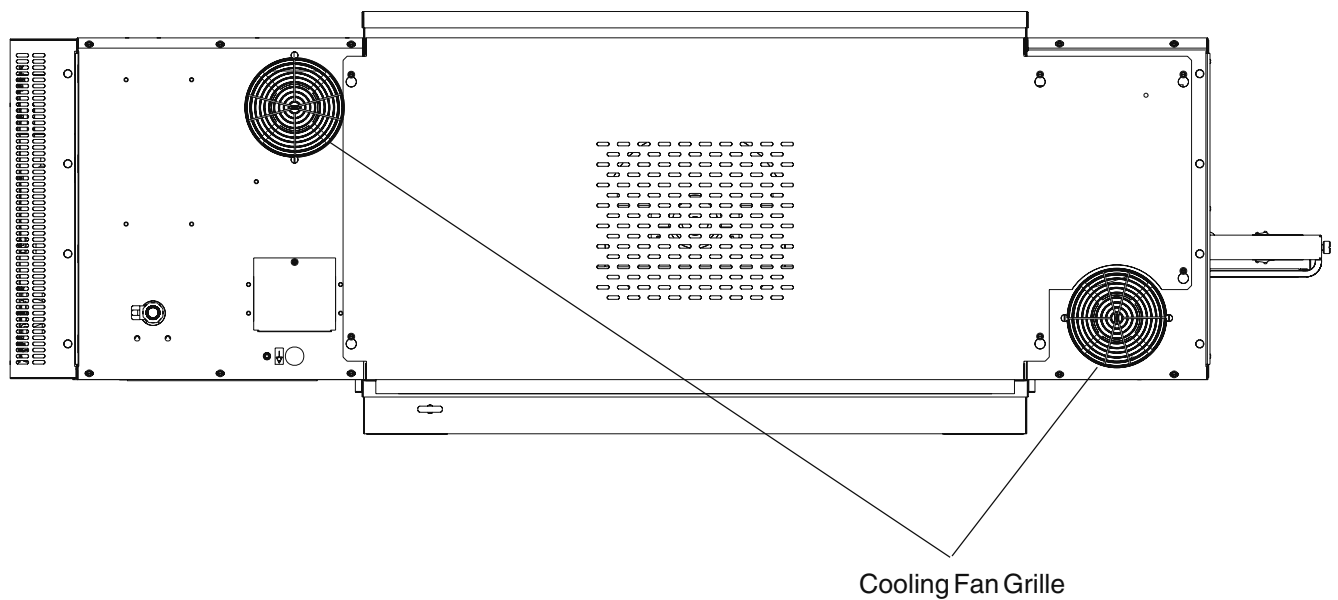


Figure 1-7. Machinery Compartment Components

**E. Cooling Fan — See Figure 1-8**

The cooling fans are located in the back of the oven. These cooling fans draw air through its grille, blowing it through the blower motor compartment and the control compartment into the oven top and exhausted out the front louvers.



**Figure 1-8. Cooling Fan**

# SECTION 1 DESCRIPTION

## F. Air Fingers and Blank Plates - See Figure 1-9

### F1. Air Fingers

An Air Finger Assembly is made up of three parts:

1. **Outer Plate** - The Outer Plate is the removable covering with tapered holes, which direct the air stream onto the product being baked.
2. **Inner Plate** - The perforated Inner Plate is vital in forming the unique air jets. It must be assembled into the manifold with its holes aligned with the holes of the outer plate.
3. **Manifold** - The Manifold is the assembly which slides on tracks into the oven plenum.

### F2. Blank Plates

1. **Blank Plates** - The Blank Plates are available to install on the plenum where an air finger is not required.

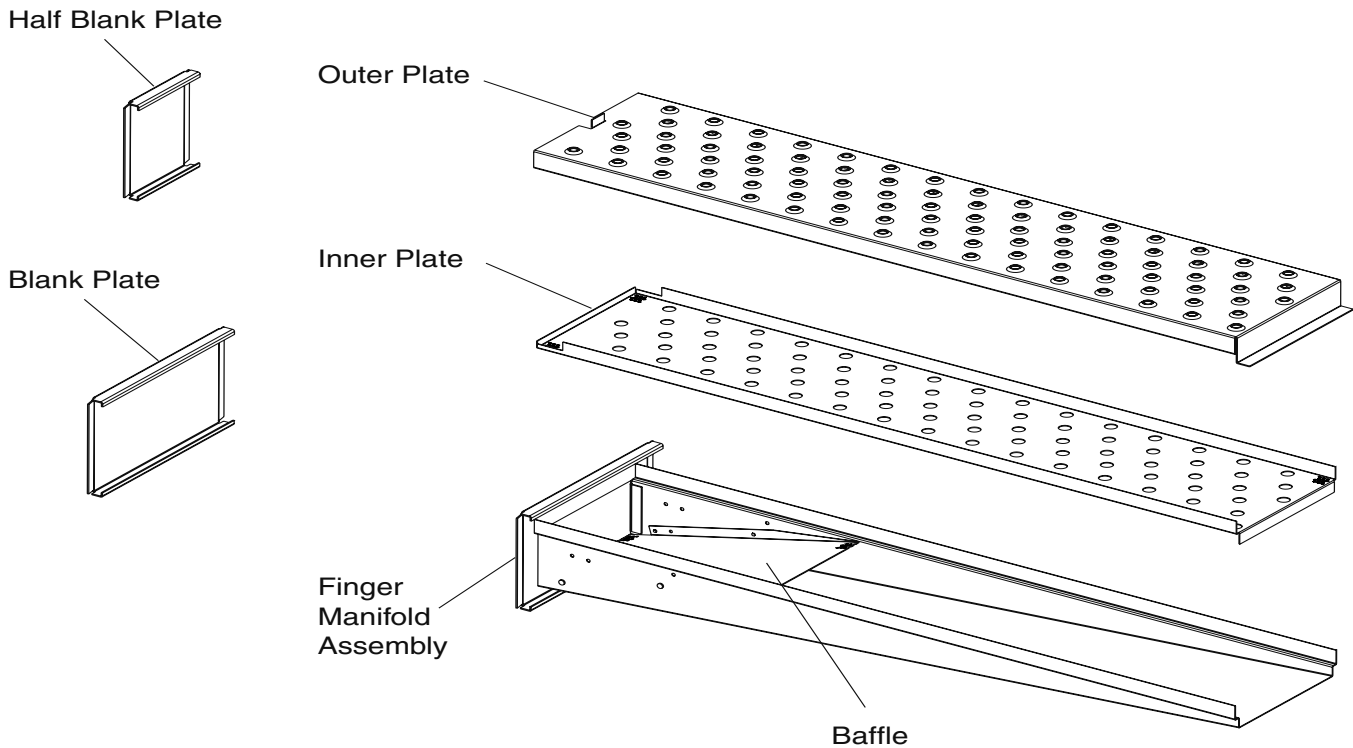


Figure 1-9. Blank Plates (two sizes) and an Air Finger.

## SECTION 2 INSTALLATION

**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 latest edition. 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 must be installed only by an authorised person in accordance with AS5601, local authority, gas, electricity, any applicable statutory regulations and manufacturer requirements.

### NOTE

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

### CAUTION

It is required that the oven be placed under a ventilation hood for adequate air supply and ventilation.

### CAUTION

Do not obstruct the flow of combustion and ventilation air to and from your oven. Do not obstruct the ventilation holes in the Control Panel.

### CAUTION

On ovens with the Machinery Drive Compartment located at the right end, a minimum clearance of 0" to a left side wall, 18" to a right side wall and 6" from a back wall to air openings at the rear of the oven must be maintained. On ovens with the machinery/drive compartment located at the left end, a minimum clearance of 0" to a right side wall, 18" to a left side wall and 6" from a back wall to air openings at the rear of the oven must be maintained.

For servicing and cleaning, a minimum of 18" clearance from all walls is recommended.

### I. UNLOADING

Your Middleby Marshall PS540-Series Oven is shipped partially assembled. It will arrive in a carton on a crate.

Carton size for a PS540-Series Oven is:

84" (2134mm) Long ×

58" (1473mm) Wide ×

44" (1118mm) High ×

The crate and carton must be examined before signing the Bill of Lading. Report any visible damage to the transport company, and check for the proper number of crates. If apparent damage is found, make arrangements to file a claim against the carrier. Surface Interstate Commerce Regulations (U.S.A.) require that the claim must be initiated by the consignee within 10 days from the date that the shipment is received.

A Pre-installation Procedures Manual (MMP/N 88910-0009) is attached to the exterior wall of the carton. This manual contains detailed instructions on unpacking and moving the oven(s) to the operating site. When the transport company notifies you of an impending delivery, arrange to have a forklift at your facility to unload the carton(s).

Instructions for stacking the ovens is continued in a separate manual used by Middleby Marshall Authorized Installers.

If you have a door wider than the carton, simply move the carton into your facility and arrange an appointment with your Middleby Marshall Authorized Installer.

If your door is narrower than the carton, then the oven will have to be unpacked. Follow the directions shown in the Pre-Installation Procedures Manual.

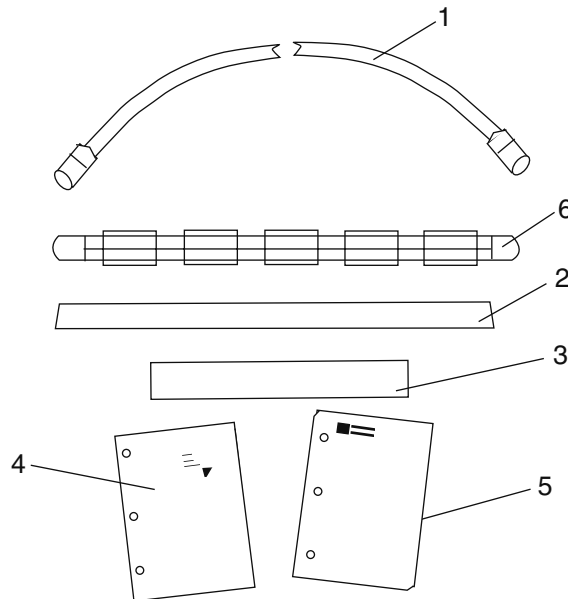
SECTION 2  
INSTALLATION

**PS540 OVEN INSTALLATION  
REQUIRED KITS AND EQUIPMENT**

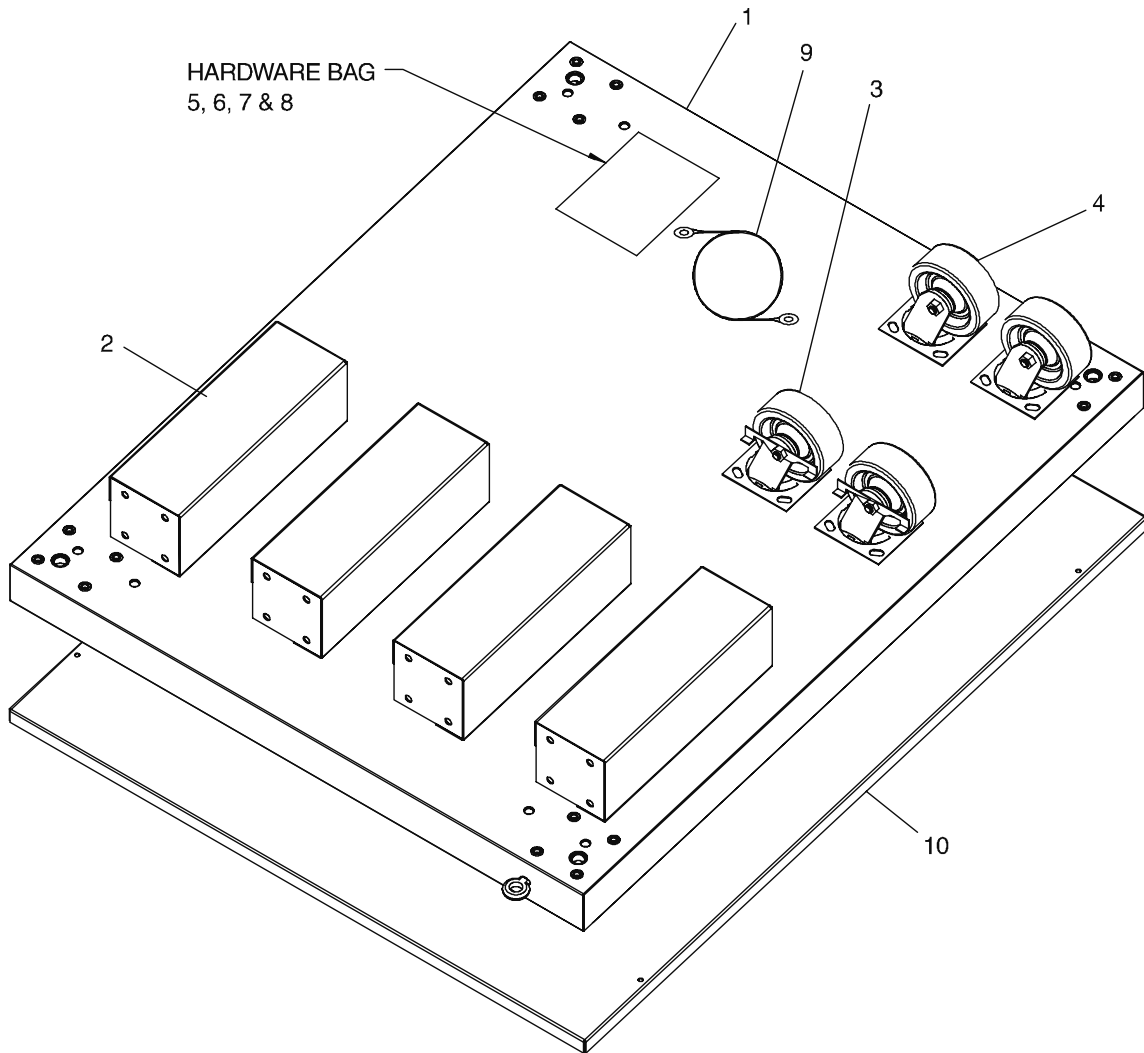
TYPE OF INSTALLATION	PS540 Gas Oven Installation Kit P/N 50663	PS540 Single Oven Option Base w/15" Legs, Casters & Top Kit P/N 34832	PS540 Double Oven Option Base w/6" Legs, Casters & Top Kit P/N 34833	PS540 Double Oven Option Base w/Casters & Top Kit P/N 34831	PS540 Triple Oven Option Base w/Casters & Top Kit P/N 51139
PS540 Single Gas Oven	1	1			
PS540 Double Gas Oven	2		1	1	
PS540 Triple Gas Oven	3				1

**PARTS LIST FOR SERIES PS540 GAS OVEN  
INSTALLATION KIT  
P/N 50633  
(Two required for double oven)  
(Three required for triple oven)**

ITEM NO.	QTY	PART NO.	DESCRIPTION
1	1	22361-0001	FLEXIBLE GAS HOSE
2	1	35000-1103	CONVEYOR END STOP
3	1	35900-0148	CONVEYOR LEFT REAR STOP
4	1	50664	SERIES PS540 OWNER/OPERATOR MANUAL
5	1	1002040	SERVICE AGENCY DIRECTORY
6	1	33900-0032	CONVEYOR WIRE BELT



**Figure 2-1. PS540-Series Gas Oven  
Installation Parts**

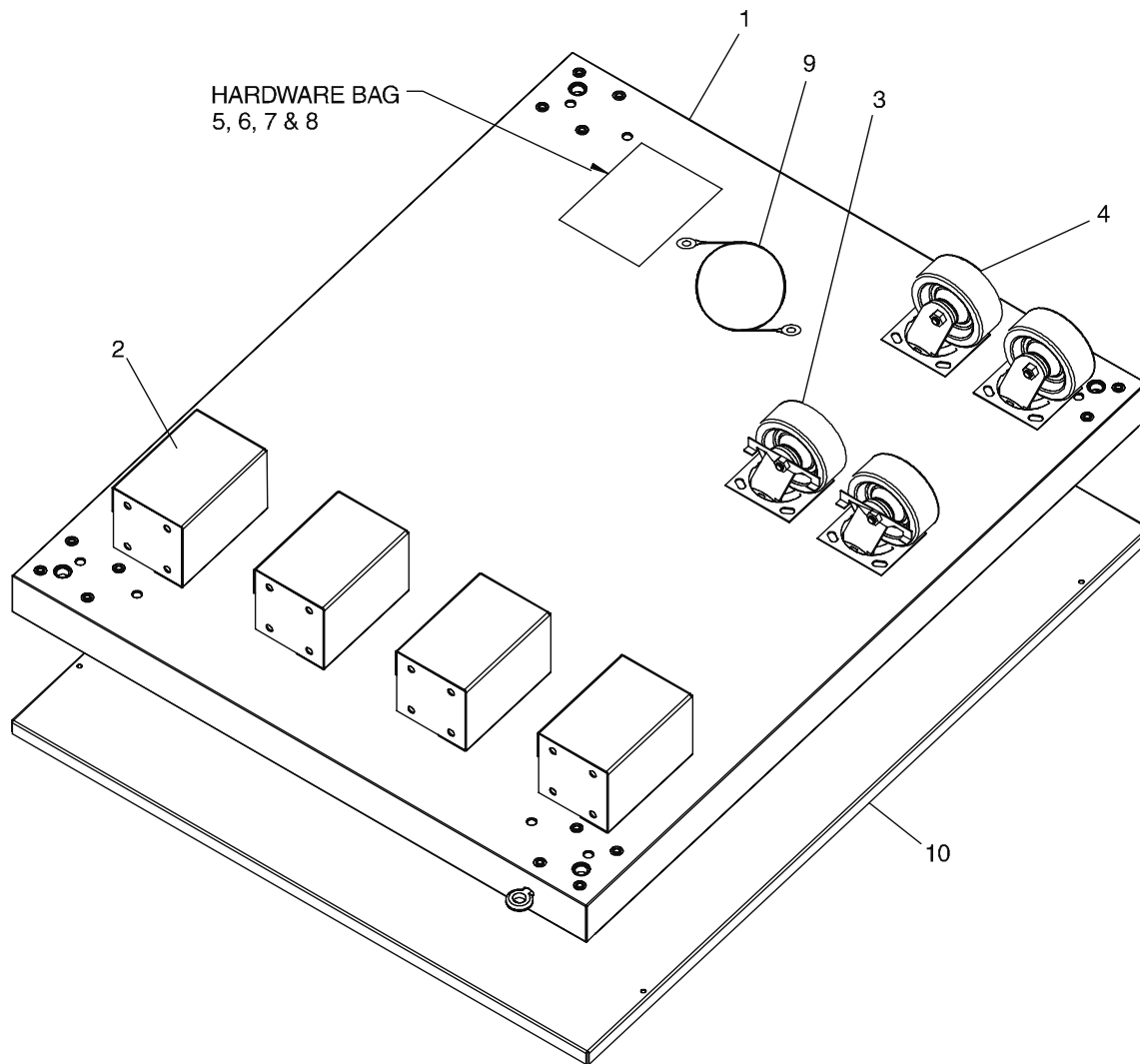


**Figure 2-2. Model PS540 Single Oven  
Option Base with Legs and Top**

**PARTS LIST FOR PS540 SERIES SINGLE OVEN OPTION - BASE w/15" LEGS & TOP  
P/N 34832**

ITEM NO.	QTY	PART NO.	DESCRIPTION
1	1	37900-0025	COMPLETE BASE WELDMENT
2	4	37900-0024	TOP PLATE, LEG WELDMENT
3	2	22290-0009	SWIVEL CASTER W/BRAKE FLAT PLATE
4	2	22290-0010	SWIVEL CASTER FLAT PLATE
5	32	220373	3/8"-16 x 1" HEX SCREW, SST
6	32	21416-0001	3/8" FLAT WASHER, SS
7	32	21422-0001	3/8" SPLIT LOCK WASHER, ZP
8	4	21256-0008	SCREWS FOR TOP 10-32 x 3/8" 18-8, SL TRUS S
9	1	22450-0228	RESTRAINT CABLE ASSEMBLY
10	1	33486	TOP COVER 304 PANEL

SECTION 2  
INSTALLATION

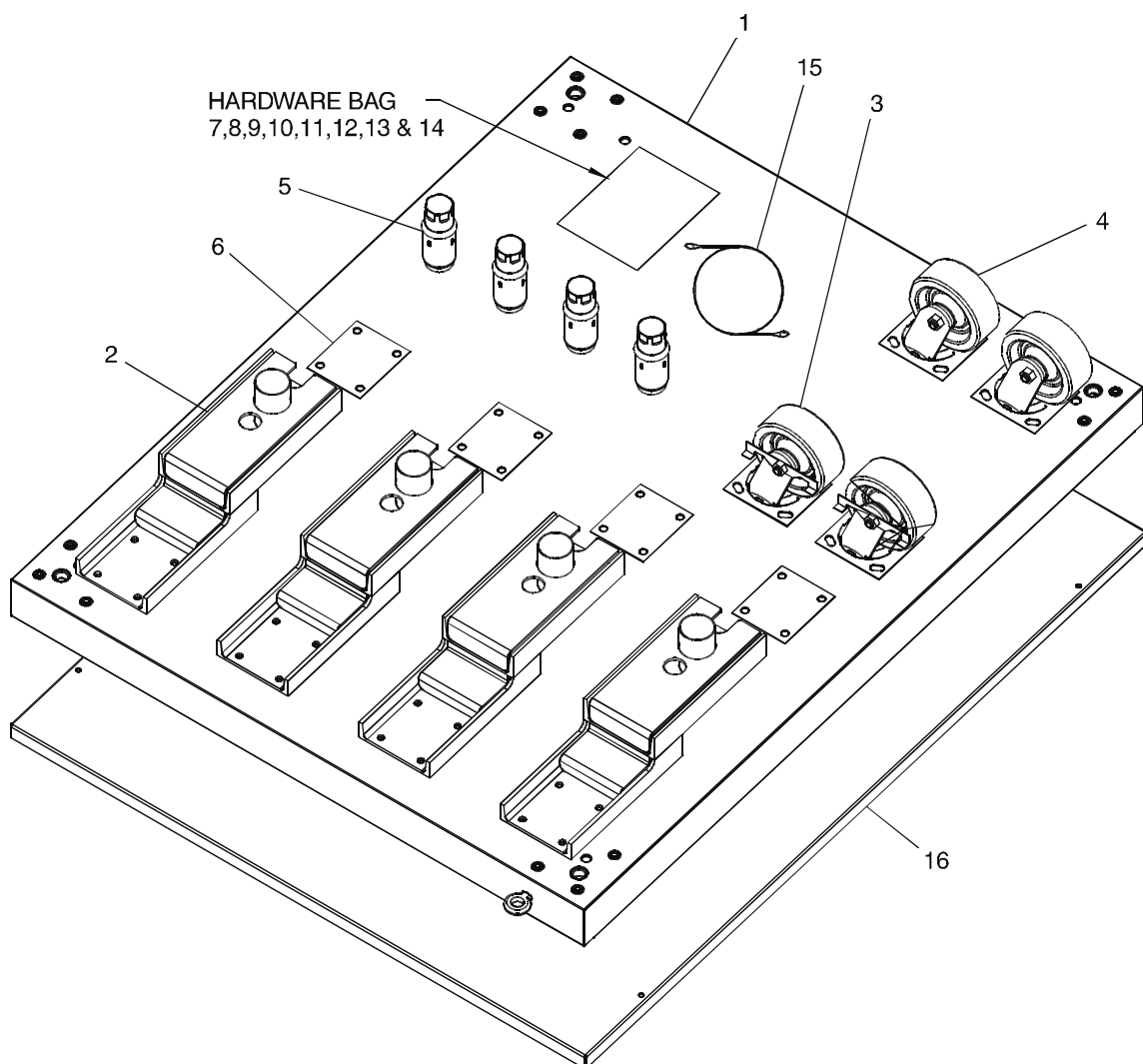


**Figure 2-3. Model PS540 Double Oven  
Option Base with Legs and Top**

**PARTS LIST FOR PS540 SERIES DOUBLE OVEN OPTION - BASE w/6" LEGS, CASTERS & TOP  
P/N 34833**

ITEM NO.	QTY	PART NO.	DESCRIPTION
1	1	37900-0025	COMPLETE BASE WELDMENT
2	4	37900-0102	TOP PLATE, LEG WELDMENT
3	2	22290-0009	SWIVEL CASTER W/BRAKE FLAT PLATE
4	2	22290-0010	SWIVEL CASTER FLAT PLATE
5	32	220373	3/8"-16 x 1" HEX SCREW, SST
6	32	21416-0001	3/8" FLAT WASHER, SS
7	32	21422-0001	3/8" SPLIT LOCK WASHER, ZP
8	4	21256-0008	SCREWS FOR TOP 10-32 x 3/8" 18-8, SL TRUS S
9	1	22450-0228	RESTRAINT CABLE ASSEMBLY
10	1	33486	TOP COVER 304 PANEL





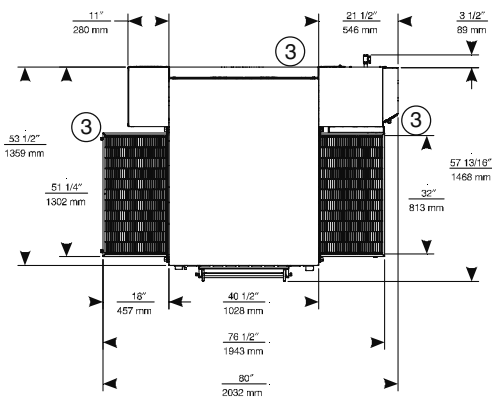
**Figure 2-4. Model PS540 Triple Oven  
Option Base with Outriggers and Top**

**PARTS LIST FOR PS540 SERIES TRIPLE OVEN OPTION - BASE w/CASTERS & TOP  
P/N 51139**

ITEM NO.	QTY	PART NO.	DESCRIPTION
1	1	54606	COMPLETE BASE WELDMENT
2	4	45209	QUAD OUTRIGGER WELDMENT
3	2	22290-0009	SWIVEL CASTER, W/BRAKE FLAT PLATE
4	2	22290-0010	SWIVEL CASTER, FLAT PLATE
5	4	45206	INSERT, QUAD ADJUSTMENT FOOT
6	4	45205	SPACER, QUAD CASTER
7	32	220373	3/8"-16 x 1" HEX BOLT, SST
8	32	21416-0001	3/8" FLAT WASHER, SS
9	32	21422-0001	3/8" SPLIT LOCK WASHER, ZP
10	16	21172-0004	3/8"-16 NYLON INSULATED LOCKNUT, ZC
11	8	21216-0018	1/2"-13 x 1-1/4" 18-8 HEX CAPSCREW
12	8	21416-0003	1/2" 18-8 FLAT WASHER
13	8	21426-0004	1/2" 18-8 LOCK WASHER
14	4	21256-0008	SCREWS FOR TOP 10-32 x 3/8" 18-8, SL TRUS S
15	1	22450-0228	RESTRAINT CABLE ASSEMBLY
16	1	33486	TOP COVER 304 PANEL

# SECTION 2 INSTALLATION

**Figure 2-5. MODEL PS540 SINGLE OVEN DIMENSIONS**



- ① GAS INLET
- ② ELECTRICAL JUNCTION BOX
- ③ RECOMMENDED MINIMUM CLEARANCES:  
Rear of Oven to Wall - 6" (150mm)  
Non-control End of Oven to Wall - 0"  
Control End of Oven to Wall - 0"

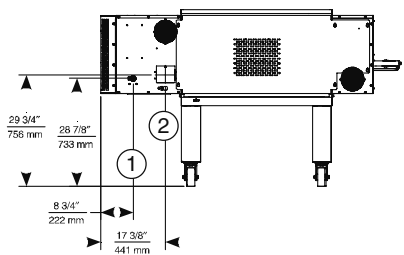
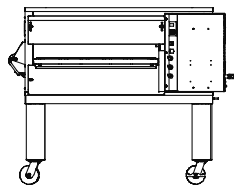
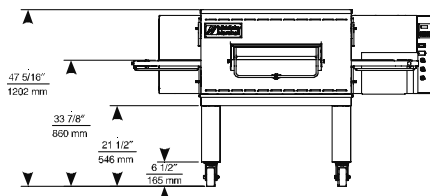
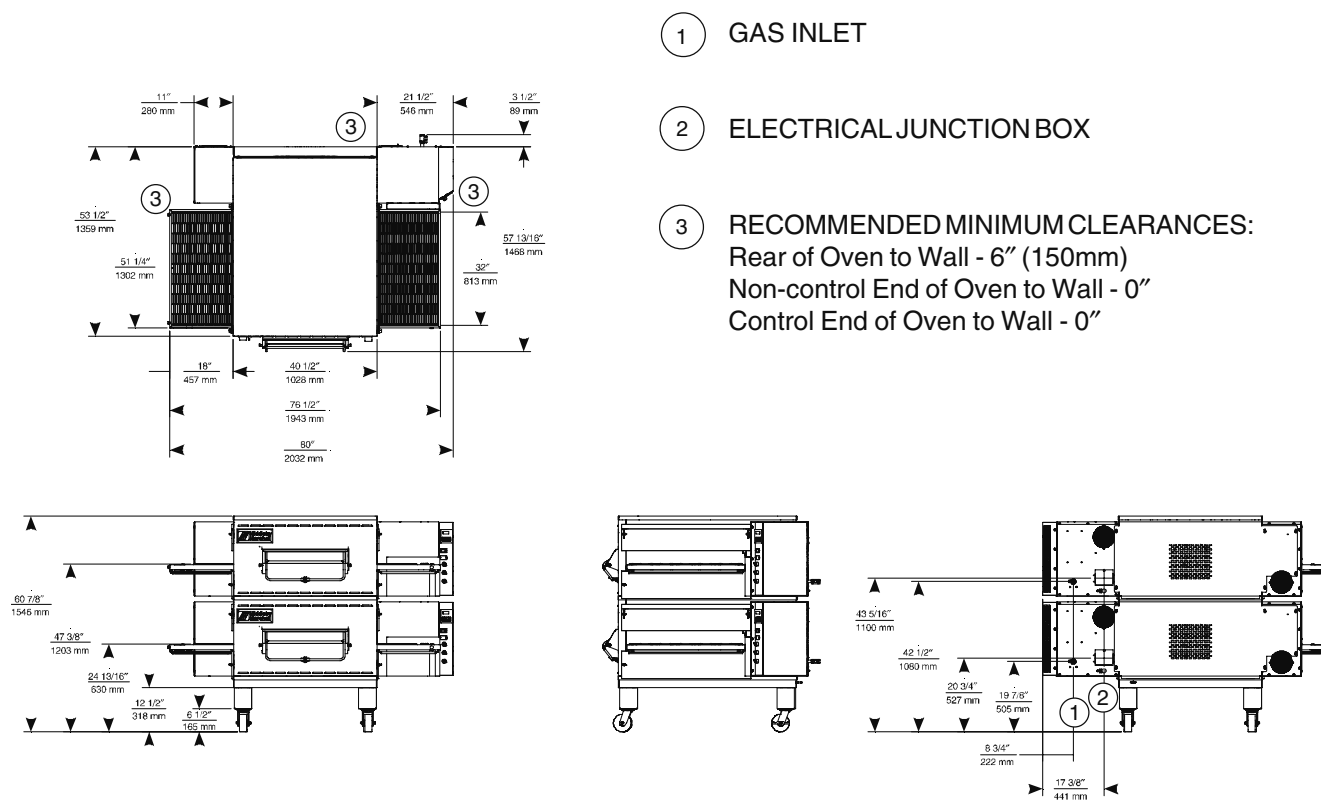


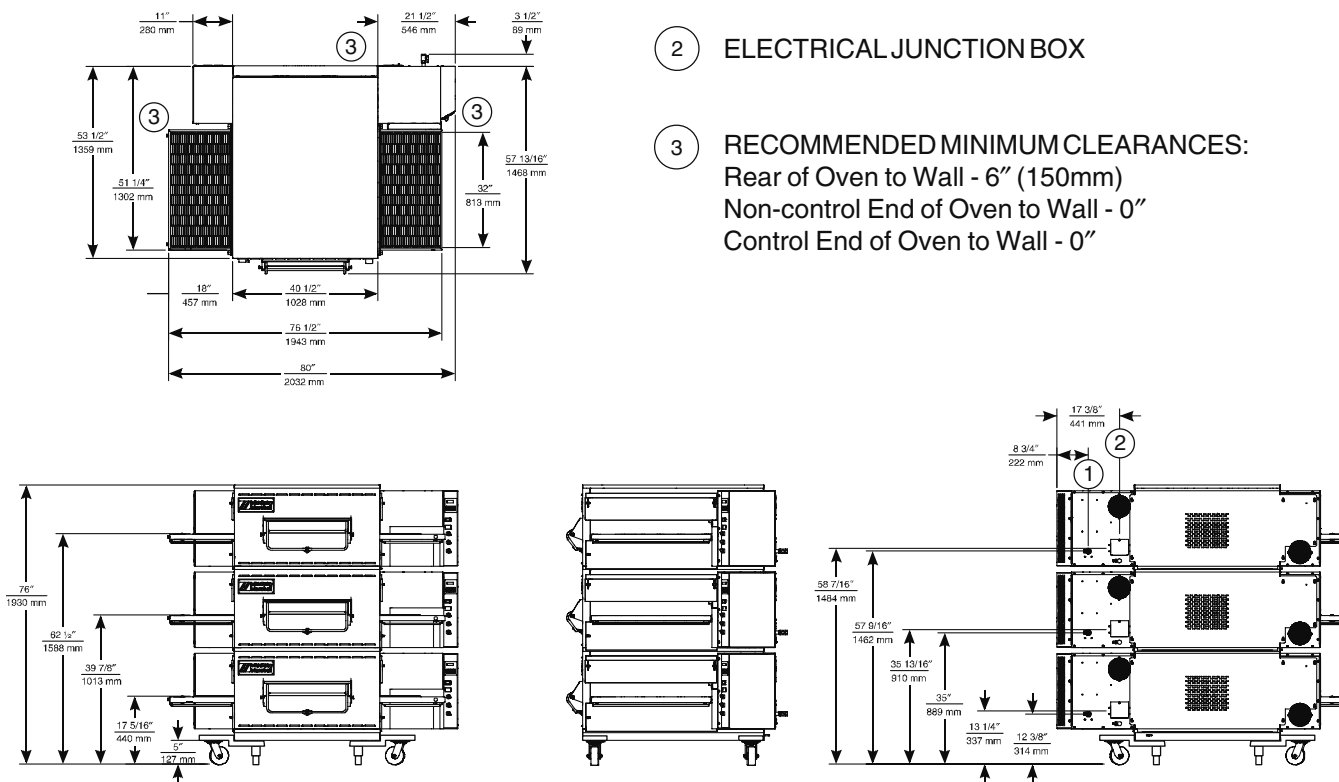
Figure 2-6. MODEL PS540 DOUBLE OVEN DIMENSIONS



**SECTION 2  
INSTALLATION**

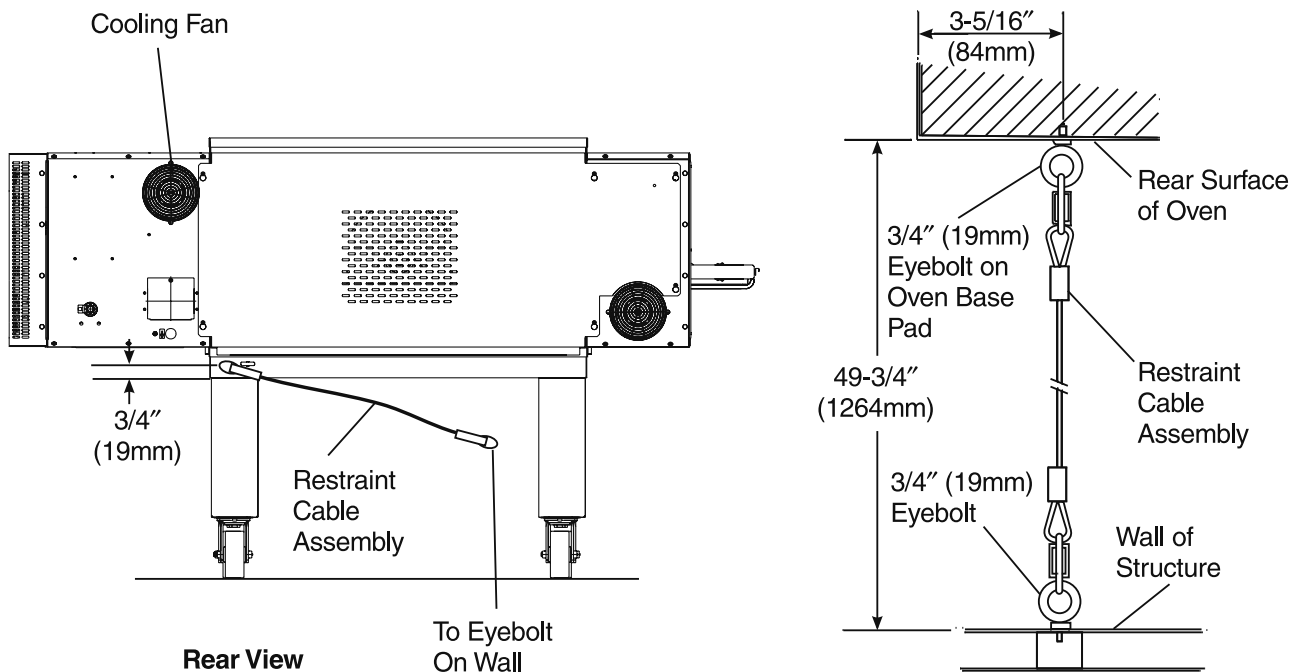
**Figure 2-7. MODEL TRIPLE OVEN DIMENSIONS**

- ① GAS INLET
- ② ELECTRICAL JUNCTION BOX
- ③ RECOMMENDED MINIMUM CLEARANCES:  
Rear of Oven to Wall - 6" (150mm)  
Non-control End of Oven to Wall - 0"  
Control End of Oven to Wall - 0"



**RESTRAINT CABLE INSTALLATION**

Install the restraint cable assembly on the oven, as shown in Figure 2-6.



**Figure 2-8. Restraint Cable Assembly Installation**

UTILITY ROUGH-IN DIMENSIONS AND POSITIONING  
FOR PS540-SERIES OVENS

**WARNING**  
DO NOT USE CONDUIT OR GAS LINE  
FOR GROUND CONNECTION.

**CAUTION**  
IT IS REQUIRED THAT THE OVEN BE  
PLACED UNDER A VENTILATION  
HOOD FOR ADEQUATE AIR SUPPLY  
AND VENTILATION.

ELECTRIC AND GAS SUPPLY TO BE  
PROVIDED BY CUSTOMER

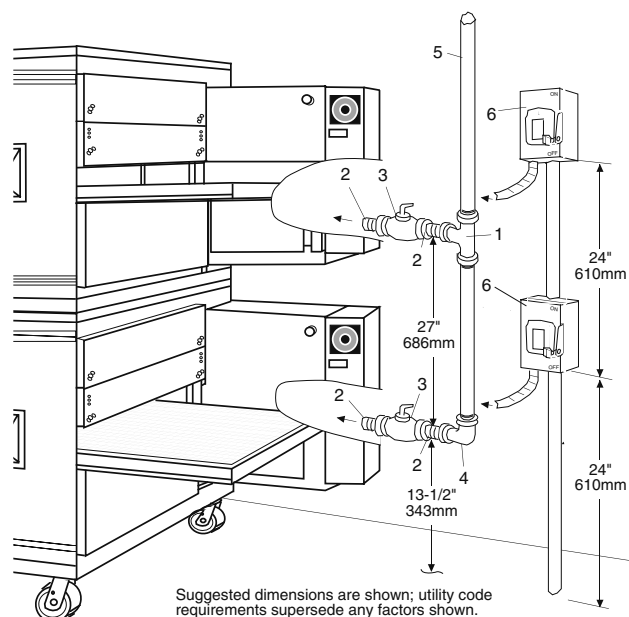


Figure 2-9. Typical PS540-Series Oven(s)  
Installation

**ELECTRICAL SAFETY SWITCH**

15 Amp circuit breaker / fused disconnect switch **with lockout/tagout electrical shutoff** for each oven. Wire each oven separately.

**ELECTRICAL SPECIFICATIONS**

**DOMESTIC or EXPORT:** 208-240V blower motor, 1 phase, 4.1 Amp draw, 50/60 Hz, 208-240V control circuit, 2 poles, 3-wire system per oven (2 hot, 1 grd).

Do **NOT** use conduit for ground.

**GAS RATING**

Model PS540 is 110,000 BTU/hour, 116.0 MJ/h (27,720 kcal), 32.2 kW/hr.

**MINIMUM GAS METER RATING**

450 ft<sup>3</sup>/hour (12.6 m<sup>3</sup>/h) for 1 or 2 ovens;  
Add 180 cu. ft./hr (5.1 m<sup>3</sup>/h) for each additional oven.

Minimum rating does *not* take other gas appliances into consideration. Gas consumption varies at each site. Total BTU/hr (kcal/hr) must be calculated during high flame operation for each appliance to determine if the meter needs to be larger.

**MINIMUM GAS PIPE SIZE**

**Natural:** 2" (51mm) ID for 1, 2, or 3 ovens with runs up to 200 ft. (61m).

**Must be a dedicated line.**

**Runs over 200 ft, (61m) consult factory.**

**Propane:** 2" (51mm) ID for 1, 2, or 3 ovens with runs up to 200 ft. (61m).

**Must be a dedicated line.**

**Runs over 200 ft, (61m) consult factory.**

**GAS SAFETY VALVE**

A 3/4" (19mm) ID (inner diameter) **full-flow**, gas shutoff valve. A separate connection and valve must be provided for each oven, as shown in Figure 2-9.

**REQUIRED GAS SUPPLY PRESSURE**

**Natural:** 6" to 12" water column (13.8 to 29.9 mbar)

**Propane:** 11.5" to 12" water column (28.7 to 29.9 mbar)

**SUGGESTED**

If space permits, electric and gas service should be located near the control console end of the oven(s) to allow convenient access to safety switches and valves.

**USER SUPPLIED ITEMS (Figure 2-9)**

ITEM	DESCRIPTION
1	2" (51mm) × 2" (51mm) × 3/4" (19mm) TEE
2	3/4" (19mm) × 3" (76mm) NIPPLE
3	3/4" (19mm) FULL FLOW GAS SHUTOFF VALVE
4	2" (51mm) × 3/4" (19mm) 90° REDUCER ELBOW
5	2" (51mm) ID GAS SUPPLY PIPE LINE - NATURAL GAS
6	15 AMP TOGGLE SWITCH - 2 POLE for GAS

## SECTION 2 INSTALLATION

### II. VENTILATION GUIDELINES

A mechanically driven ventilation system is required for the PS540 Series Middleby Marshall conveyORIZED gas ovens. The minimum hood canopy dimensions are outlined below.

Local codes and conditions vary greatly from one area to another and must be complied with. Following are the suggested requirements for good ventilation. Please remember these are recommendations or guidelines, you may have a special condition or problem that will require the services of a ventilation engineer or specialist. Proper ventilation is the oven owner's responsibility. Improper ventilation can inhibit oven performance. It is recommended that the ventilation and duct work be checked out every three months. Grease filters in the intake of the hood may be required by local codes.

### VENTILATION HOOD

The rate of air flow exhausted through the ventilation system is generally between 1400 and 2500 cu. ft./min. (40 and 70 m<sup>3</sup>/min), but may vary depending on the oven configuration and hood design. 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 system. Through this system, the air can be temperature controlled for summer and winter. Return air can be brought in directly from outside the building, but detrimental affects can result from either extreme seasonal hot and cold temperature from the outdoors.

**NOTE:** Return air from fan driven system within the hood must not blow at opening of bake chamber or poor oven baking performance will result.

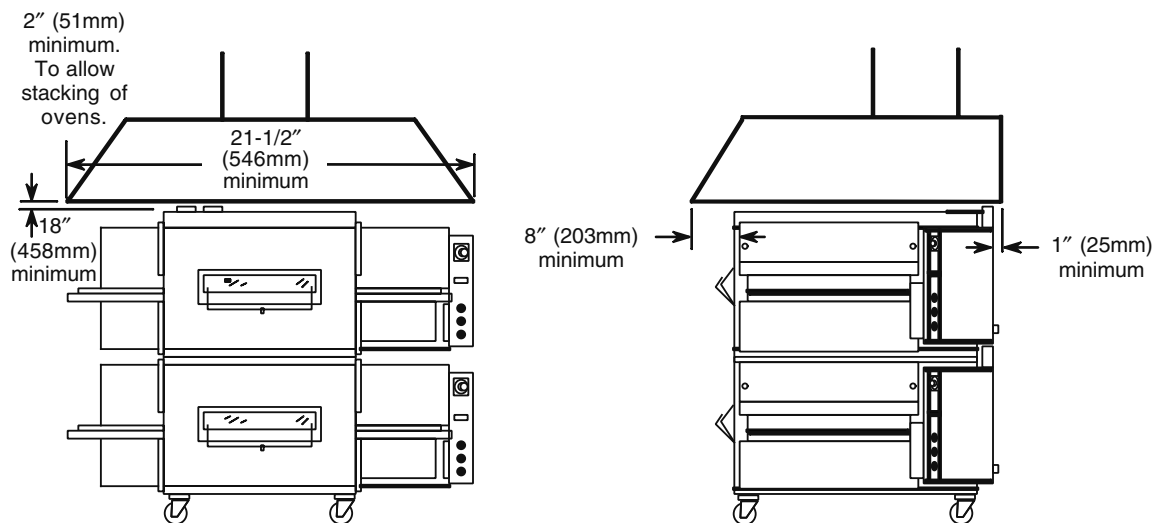


Figure 2-10. Vent Hood

### VENTILATION CAPTURE TEST

It is recommended that a 30 second smoke candle test be performed on your ventilation hood system. Follow the steps below to complete the ventilation smoke test.

All tests are to be done on single ovens or lower units of a double or triple oven. We recommend you wear protective gloves when performing this test. At no time should food be present when the smoke test is being conducted. Also check that no fire suppression system will be activated by the smoke.

1. Turn ventilation system on.
2. Turn oven(s) on and allow to heat up to customer's normal operating temperature, or a minimum of 480°F (248°C).
3. Turn conveyor off. Place a 30 second smoke candle in a pie or cake pan which is no higher than 3" (76mm).
4. Open the front oven window. Next, light the smoke candle in the pan and then slide the pan into the center of the bake chamber on the conveyor belt and close the window.
5. The ventilation hood should capture 90% to 100% of the smoke produced by the candle.

### III. ELECTRICAL CONNECTION INFORMATION FOR PS540-SERIES 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.

Check the oven data plate (Figure 2-11) before making any electric supply connections. Electric supply connections must agree with data on the oven data plate.

**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.

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 electric supply connection must meet all national and local electrical code requirements. Copper is the recommended material for the electrical supply conductors.

### IV. ELECTRIC SUPPLY FOR GAS-HEATED OVENS

Supply voltages for all gas ovens (except one 200 - 220V oven for export) can range from 208 to 240VAC, 1 phase. Ampere requirements for each oven can be handled via a fused disconnect switch or main circuit breaker.

**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.

The supply conductors must be of the size (#14 AWG, copper) recommended. (Refer to the wiring diagrams of Section 7.) All gas oven electric supply connections are made via the electrical junction box on the rear of the oven (Figure 2-12). The power lines then connect through an oven safety switch (on the control console door frame) to the oven circuits. Opening the door interrupts electric power to the oven.

**CAUTION**

Before connecting incoming power to the oven, measure the voltage of each input leg to neutral. The expected voltage is approximately 120 volts. Any voltage reading exceeding 130 volts 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

Contact an electrician or the electric power supply company to remove the 'high' leg from the electric supply line(s) to the oven.

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 supply neutral line to the white wire. Connect the electric supply ground wire to the oven ground screw located in the main junction box. If necessary, have the electrician supply the ground wire. *Do NOT use the wiring conduit or other piping for ground connections!*

**MIDDLEBY MARSHALL** ELGIN, ILLINOIS 60120, U.S.A.

SERIAL NO.   
Numero de serie

TYPE OF GAS   
Type de gaz

INPUT BTU PER HOUR MAXIMUM  
Chauffage maximum par heure, en BTU

MAN. PRESS.  IN. W.C.

VAC  AMPS  PHASE  Hz

WIRE WITH GROUND  
Cablage avec mise a la masse

SUITABLE FOR INSTALLATION ON COMBUSTIBLE FLOORS ADJACENT TO COMBUSTIBLE AND NON-COMBUSTIBLE WALLS WITH THE FOLLOWING MINIMUM CLEARANCES: INCHES TO LEFT SIDE, INCHES RIGHT SIDE & INCHES TO BACK WALLS. FOR INSTALLATION UNDER VENTILATION HOOD ONLY. INTENDED FOR OTHER THAN HOUSEHOLD USE.

ADAPTE POUR ETRE INSTALLE SUR DES PLACHERS INFLAMMABLES, ADJACENTS A DES MURS COMBUSTIBLES ET NON COMBUSTIBLES, EN RESPECTANT LES DEGAGEMENTS MINIMUM SUIVANTS PAROI GAUCHE:  POUCES PAROI DROITE:  POUCES AND PAROI ARRIERE:  POUCES POUR UNE INSTALLATION SOUS UNE HOTTE DE DEVAQUATION SEULEMENT. DESTINE A UN USAGE AUTRE QUE DOMESTIQUE.

ACCEPTED FOR USE  
CITY OF NEW YORK  
DEPARTMENT OF BUILDINGS  
MEA 308-54-E

46697 REV C

Figure 2-11. Typical Gas Oven Data Plate

## SECTION 2 INSTALLATION

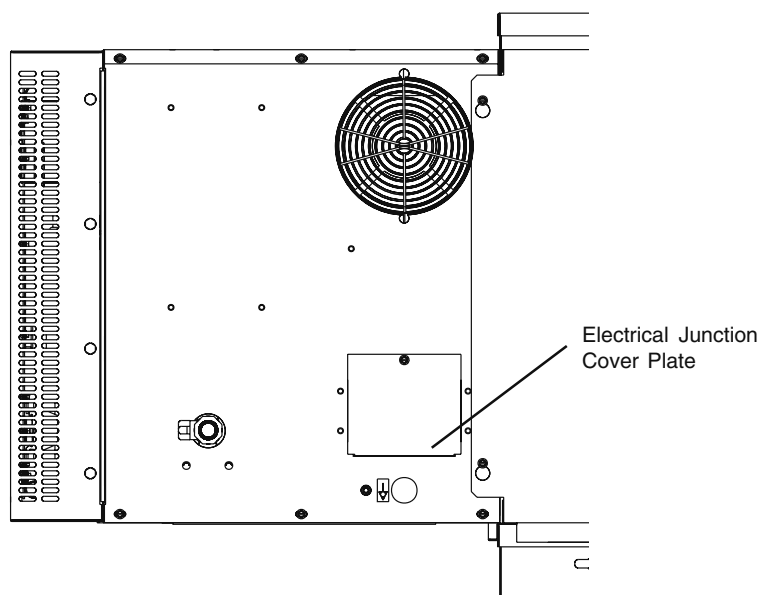


Figure 2-12. Junction Connection Box

### V. GAS SUPPLY FOR GAS HEATED OVENS

#### WARNING

During gas line pressure testing, observe the following precautions:

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 pressures in excess of 1/2 psig (3.45kPa).
2. The oven **MUST** be isolated from the gas supply piping system, by closing its individual shutoff valve, during any pressure testing of that system at test pressures equal to, or less than, 1/2 psig (3.45kPa).
3. If incoming gas line pressure exceeds 14" w.c. (35mbar), a separate regulator **MUST** be installed in the line on the inlet side of the safety valve for the oven.

#### CAUTION

To prevent damaging the control valve regulator of the oven during initial turn-on of gas, the individual shutoff valve **MUST** be opened **very slowly**. After initial turn-on of gas, the individual shutoff valve should remain open except during gas line pressure testing (refer to the preceding WARNING) and during necessary servicing and maintenance procedures.

Check the oven data plate (Figure 2-11) before making any gas supply line connections. The type of gas (natural or propane) being supplied to the oven must agree with data on the oven data plate.

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 a PS540-Series oven is equipped with casters for accessibility during servicing, 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, CAN6.9 (in Canada).

One gas line connection method is shown in Figure 2-13; however, the preceding requirements must be satisfied. The 90-degree elbow and the union shown in Figure 2-13 are not furnished; however, the flexible gas line is part of the installation kit.

On an oven equipped with casters, a cable restraint assembly must be installed to limit the movement of the appliance, without depending on the connector and quick-disconnect device or its associated gas line installation. The location where the Cable Restraint Assembly is to be attached to the oven is illustrated in Figure 2-8.



### A. 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 1-4. [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 2-18; however, compliance with the applicable standards and regulations is mandatory.

Inlet, regulated, and pilot gas pressure readings can be taken using a digital tube manometer at the tap location shown in Figure 2-19. Figure 2-19 shows the burner assembly and Figure 2-21 shows the gas valve.

**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.

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.), 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.).

### 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 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 Authorized Service Agent.*



### C. PS540 Propane Conversion

Two items have to be changed, to change the oven to LP:

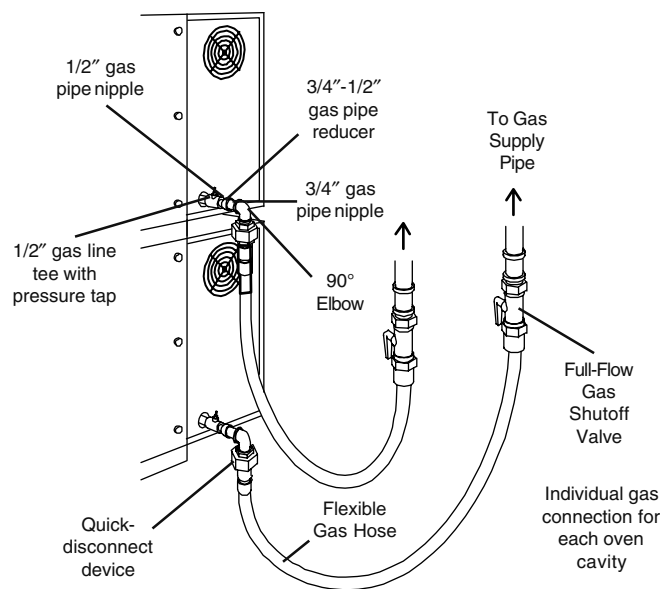
1. Replace main orifice.
2. Adjust main gas regulator per instructions below.

Disconnect the manifold union closest to the main burner, and remove the manifold assembly. Replace the main orifice.

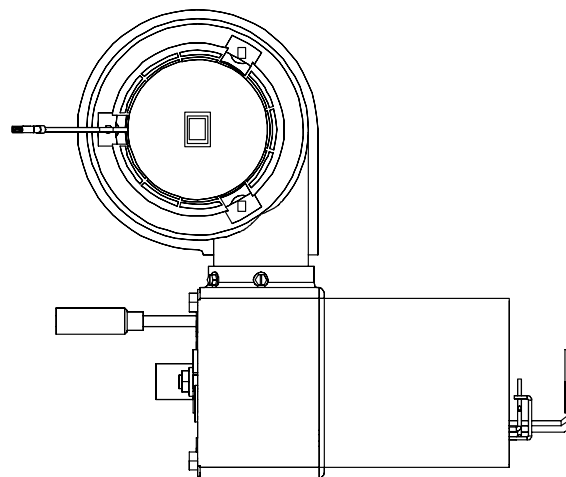
Replace the main orifice on the manifold assemblies with the LP units, and replace the manifold assembly.

### D. Adjusting the Maximum Pressure Setting

1. Disconnect pressure feedback connection (if applicable).
2. Connect a suitable pressure gauge to pipe line or to outlet pressure tap of gas control concerned, to measure burner pressure (measuring point must be as near to burner as possible).



**Figure 2-13. Flexible Gas Hose Installation**

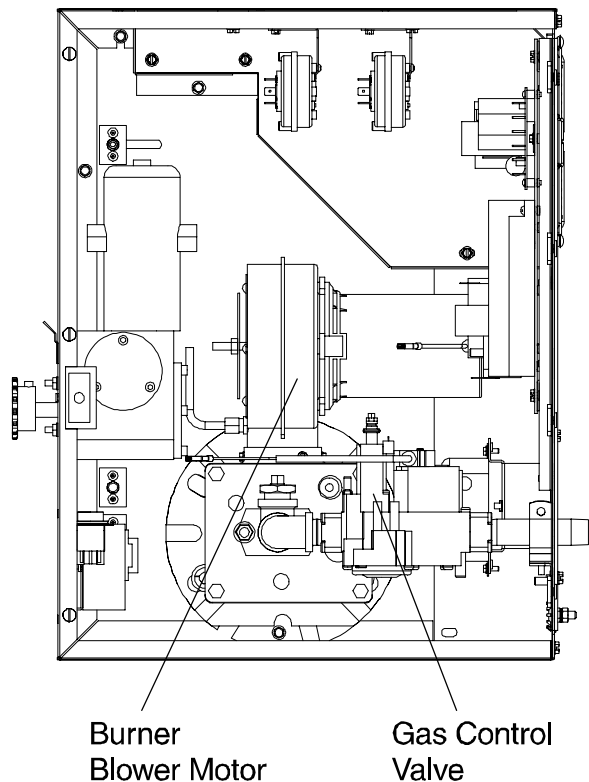


**Figure 2-14. Gas Burner Assembly**

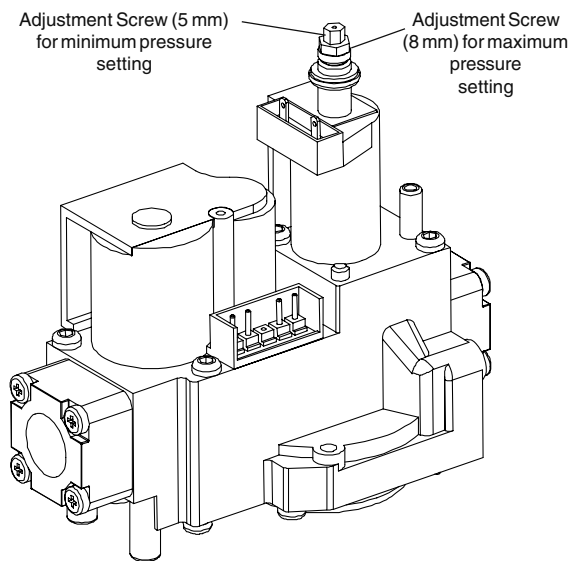
3. Make sure that the appliance is in operation and the Moduplus® coil is energized with maximum current.
4. If maximum rate pressure needs adjustment, use an 8 mm wrench to turn adjustment screw for maximum pressure setting (clockwise to increase or counter-clockwise to decrease pressure), until the desired maximum outlet pressure is obtained.
5. Disconnect electrical connection of the Moduplus®.
6. Check minimum pressure setting and readjust if necessary. (See [Adjusting Minimum Pressure Setting](#) for proper adjusting procedure.)
7. Reconnect pressure feedback connection (if applicable).
8. If minimum and maximum pressures are set, wire the Moduplus® in circuit.
9. Close pressure tap screw.

## SECTION 2 INSTALLATION

### Conveyor Drive Motor



**Figure 2-15. Burner Assembly**



**Figure 2-16. Gas Valve**

### E. Adjusting the Minimum Pressure Setting

1. Disconnect pressure feedback connection (if applicable).
2. Connect a suitable pressure gauge to pipe line or to outlet pressure tap of gas control concerned, to measure burner pressure (measuring point must be as near to burner as possible).
3. Disconnect electrical connection of the Moduplus®.
4. Energize operator, set control in operation and wait until an outlet pressure is recorded on pressure gauge.
5. If minimum rate pressure needs adjustment, use an 8 mm wrench to turn adjustment screw for minimum pressure setting (clockwise to increase or counter-clockwise to decrease pressure), until the desired minimum outlet pressure is obtained.
6. Check if main burner lights easily and reliable at minimum pressure.
7. Reconnect pressure feedback connection (if applicable).
8. Close pressure tap screw.

### F. Checkout

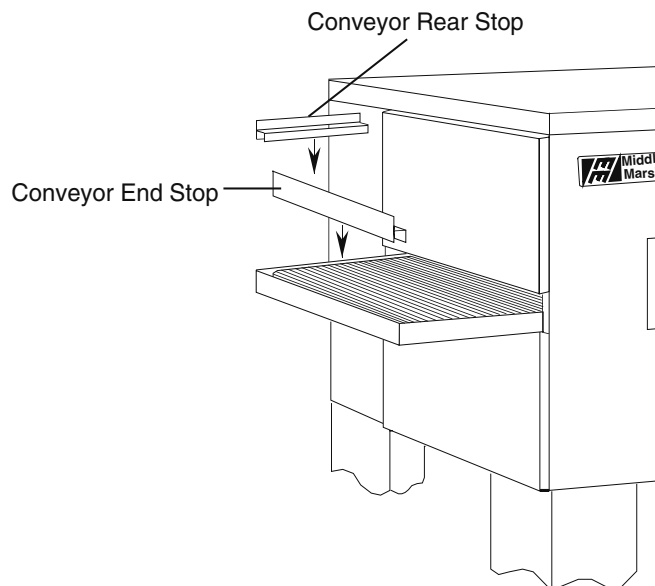
After any adjustment, set appliance in operation and observe through a component cycle to ensure that burner system components function correctly.

### Gs. Maintenance

It is recommended to check yearly the minimum and the maximum setting and readjust them if necessary.

## VI. CONVEYOR REAR STOP AND END STOP INSTALLATION

Locate the conveyor rear stop and end stop in the installation kit. Install the rear stop and end stop at the exit end of the oven. See Figure 2-17.



**Figure 2-17. Installing Rear and End Stops**

## SECTION 3 OPERATION

### I. CONTROL FUNCTIONS

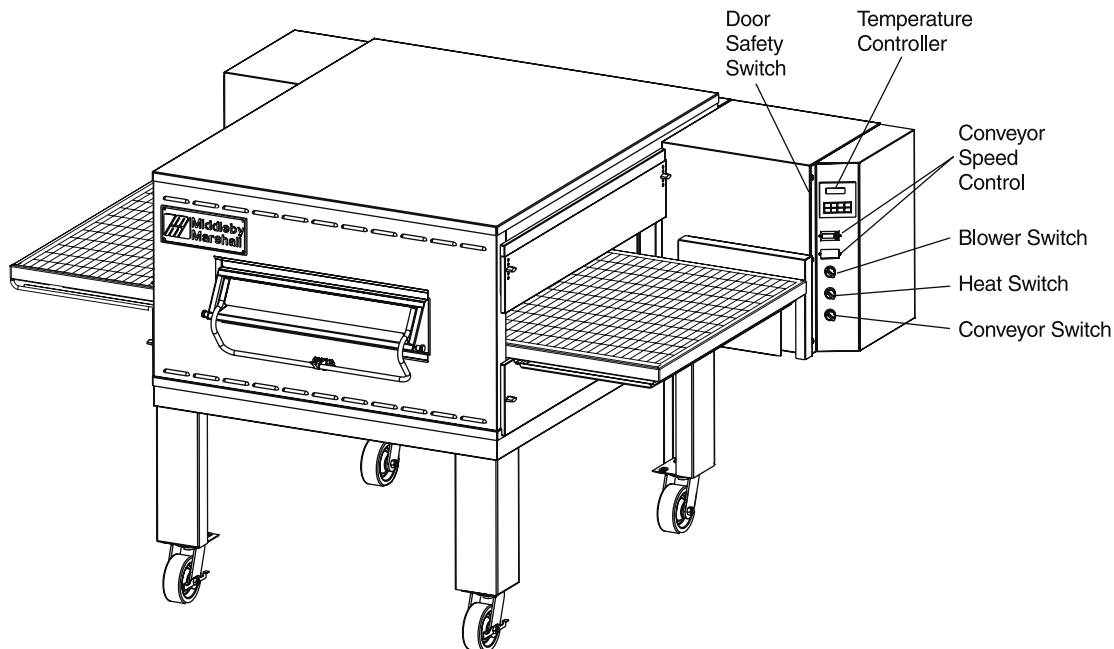


Figure 3-1. PS540-Series Oven Control Functions

#### **WARNING**

The burner cannot operate and gas cannot flow through the burner without electric power. Do NOT attempt to operate the oven during a power outage.

#### **WARNING**

A possibility of injury from rotating parts and electric shock exists in this oven. Never disassemble or clean the oven with the BLOWER switch or any other oven control turned "ON" or "I". Turn "OFF" or "O" and lockout or tagout all electric power to the oven before attempting to clean or service this oven.

## SECTION 3 OPERATION

### II. COMPONENT INFORMATION AND LOCATION (Figures 3-1 and 3-2)

#### A. Door Safety Switch

The Door Safety Switch is located at the lower left side of control panel opening. Opening the control panel door permits this switch to open, disconnecting power to all electrical controls.

#### CAUTION

Do NOT touch the wires going to this safety switch. Current is always present.

#### B. Blower Switch

The blower switch has two positions. The switch must be "ON" or "I" for the burner to come on and permit the oven to warm up. The fan circulates the air throughout the oven and must stay on during baking and during the cool down cycle above 200°F (93°C) to prevent blower bearing damage. To protect the blower motor and bearings a thermostatic override is built into the oven. If the temperature inside the oven is over 180°F (82°C) the main blower will continue to run after the blower switch is turned to the "OFF" or "O" position.

An air pressure switch monitors the air flow from the blower, acting as a safety interlock for the burner. The

burner cannot light, if the air switch does not sense air flow off the main blower fan.

#### C. Heat Switch

Turning the HEAT switch to "ON" or "I" will initially set up the oven purge circuit. After approximately 30 seconds, the burner lights. After the burner is lit, a flame sensor sends a signal to the ignition module to stop the spark. The burner will run unless the flame sensor does not detect a flame or the heat switch is turned to the "OFF" or "O" position.

The HEAT switch is in series with the burner blower motor centrifugal switch, the high-temperature safety switch, and the blower fan air pressure switch. All three safety switches must be closed for gas to flow and the burner to light.

#### D. Temperature Controller

The temperature controller is a solid-state, on/off type to maintain the operator-set temperature. The temperature controller continuously monitors the oven temperature and turns on the modulating solenoid valve in a gas-heated oven. The heat is on for the time required to maintain a constant oven temperature.

The temperature controller contains a low-limit switch which allows the oven to cool down to 200°F (93°C) before shutting off the blower. A high-limit indication (ALM 1) will appear on the display if the oven reaches 650°F (343°C).

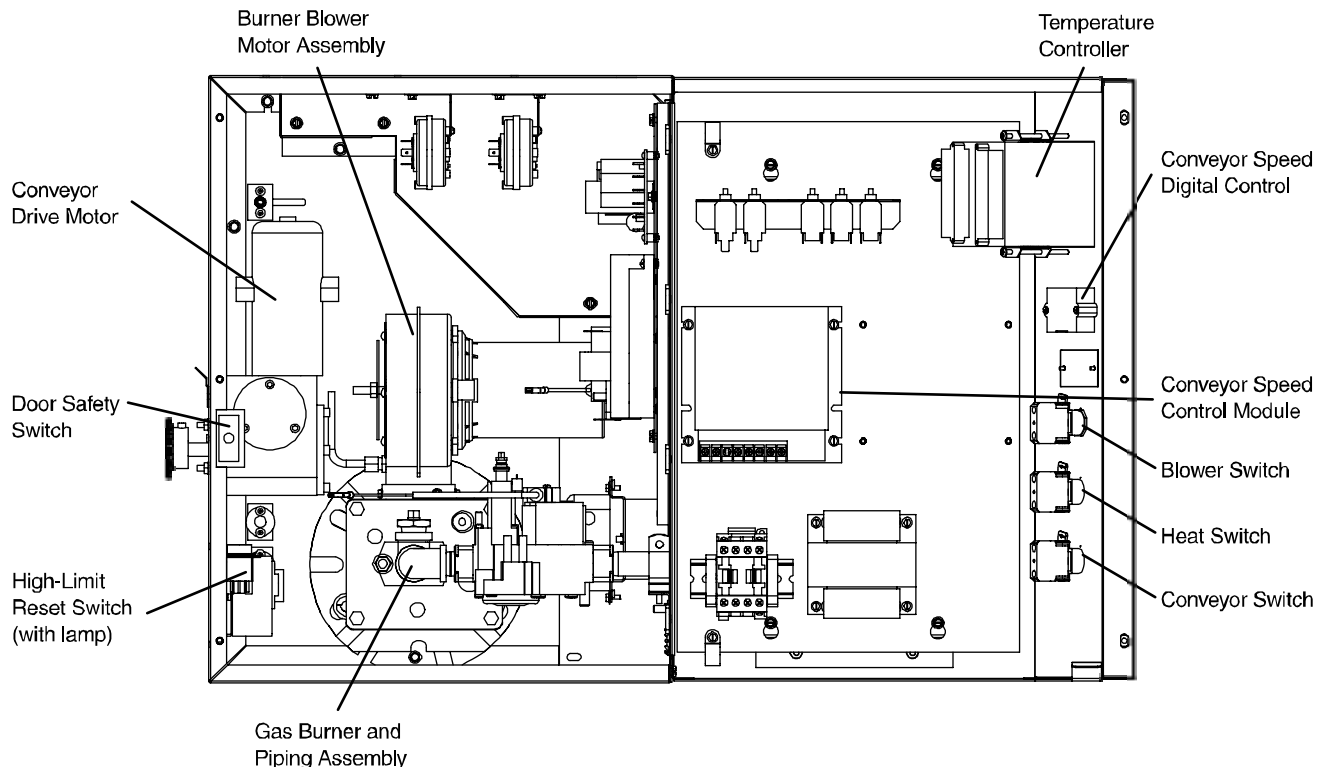


Figure 3-2. Interior View of Machinery Compartment and Control Console

**E. Conveyor**

The on-off switch for the conveyor motor is on the control panel. Also on the control panel is the digital conveyor speed control. The digital control can be adjusted from 3 min. to 30 min. bake time (conveyor speed). Refer to Figure 3-3.

Conveyor speed is measured by the amount of time it takes for an item to go through the bake chamber of the oven.

**MEASURING CONVEYOR SPEED.**

See Figures 3-4 and 3-5.

To check conveyor speed, place a product item at the entrance end of baking chamber as shown. Time how long it takes for the leading edge of the item to go from the entrance end of the baking chamber to the exit end. This should be the conveyor speed shown on the conveyor speed digital control.

**NOTE:** In Figures 3-4 and 3-5, the oven shown is with the conveyor running right to left.

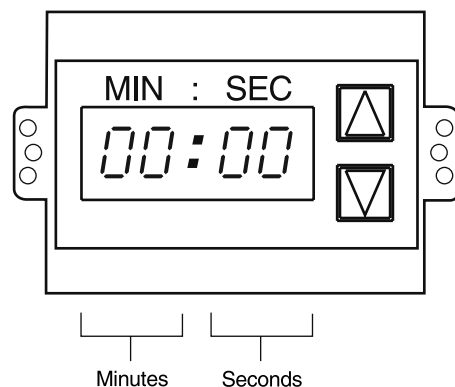
**WARNING**

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 power failure.

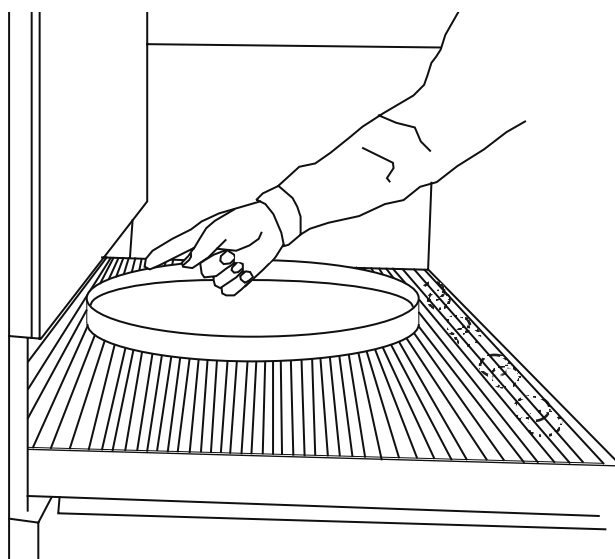
**WARNING**

Possibility of injury from rotating parts and electrical shock exist in this oven.

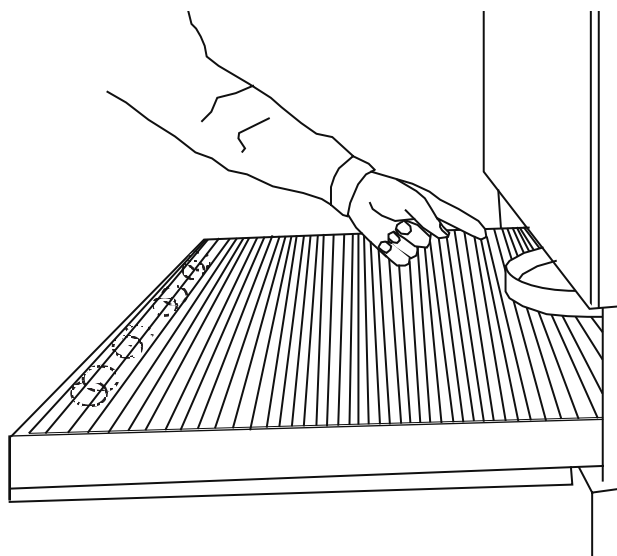
Never disassemble or clean the oven with the blower switch or any other part of the oven turned "ON" or "I". Turn "OFF" or "O" and lockout or tagout all electrical power to the oven before attempting to clean or service this oven.



**Figure 3-3. Conveyor Speed Digital Control**



**Figure 3-4. Product at entrance end of baking chamber – BEGINNING OF TIMING**



**Figure 3-5. Product at exit end of baking chamber – END OF TIMING**

## SECTION 3 OPERATION

### **WARNING**

**OVEN MUST BE KEPT CLEAR OF  
COMBUSTIBLES AT ALL TIMES.**

### III. STEP-BY-STEP OPERATION

**Control Panel** (On split belt ovens, two conveyor speed controls are mounted on the control panel.)

#### A. Startup Procedures

##### Initial Startup

Check that the full-flow gas shutoff valve is “on”. This valve is located outside the rear of the oven. See Figures 2-3, 2-4, and 2-5.

##### Daily Startup

1. Turn the BLOWER switch (Figure 3-6) to the “ON” or “I” position. This starts the main blower fan and the cooling fan. The blower circulates air through the air fingers and must stay on during the cooking or baking process.
2. Check to see if the cooling fan (see Figure 1-8) is operating when the blower switch (see Figure 3-6) is turned “ON” or “I”. The cooling fans cool the control components and burner blower motor. The cooling fan, located at the rear of the electrical control cabinet blows air into and through the cabinet. Air is exhausted through the front of the cabinet and also out the front of the oven. Refer to Daily Maintenance Section for fan intake checking procedure.

### **IMPORTANT NOTE**

The cooling fan operates when the BLOWER switch is turned “ON” or “I”. It must operate to keep the control console below 140°F (60°C).

3. Turn the CONVEYOR switch (Figure 3-6) to the “ON” or “I” position. This starts the conveyor belt moving through the oven. Set the conveyor speed for the desired baking time. Refer to the following Procedures E, F and G.
4. Set the temperature controller to the desired baking temperature. See section on bake times to determine desired temperature.

**NOTE:** For complete temperature controller operation instructions refer to Step C.

5. Turn the HEAT switch (Figure 3-6) to the “ON” or “I” position. This completes a circuit to supply electric power to the burner. When an oven that has not been in operation for approximately 1/2 hour is turned on, it goes through a 30-second purge cycle. The burner blower motor will not operate during the time the blower fan is purging the oven. After 30 seconds, the burner blower motor starts, which can be detected by feeling a slight vibration when touched. This permits the burner to light.

When in operation, the burner is either on low or high flame. Its flame-sensing electrode must be satisfied to keep the bypass and gas valves open. If for some reason the bypass flame is extinguished, the burner tries to relight for 90 seconds. If the burner flame does not relight in 90 seconds, the oven goes into automatic safety lockout.

To relight the oven, turn the HEAT switch to “OFF” or “O” for 5 minutes. Then, repeat the Oven Startup procedure.

6. Close front window.
7. Oven will reach a baking temperature of 600°F (315°C) in approximately 10 minutes. Allow the oven to cycle for 30 minutes after it has reached desired bake temperature. The oven is now ready for baking.

#### Power Failure

In case of power failure, turn off all switches; open oven window and remove product. After power has been reestablished follow normal startup procedure.

### **CAUTION**

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 power failure.

#### B. Shutdown Procedure

1. Turn the BLOWER and HEAT switches to “OFF” or “O”.

**NOTE:** The blowers will remain on until the oven temperature cools down to 200°F (93°C) at which time they will stop automatically.

2. Make certain that there are no products left on the conveyor inside the oven. Turn the CONVEYOR switch to “OFF” or “O”.
3. Turn off the main gas supply valve.
4. Open the oven window.

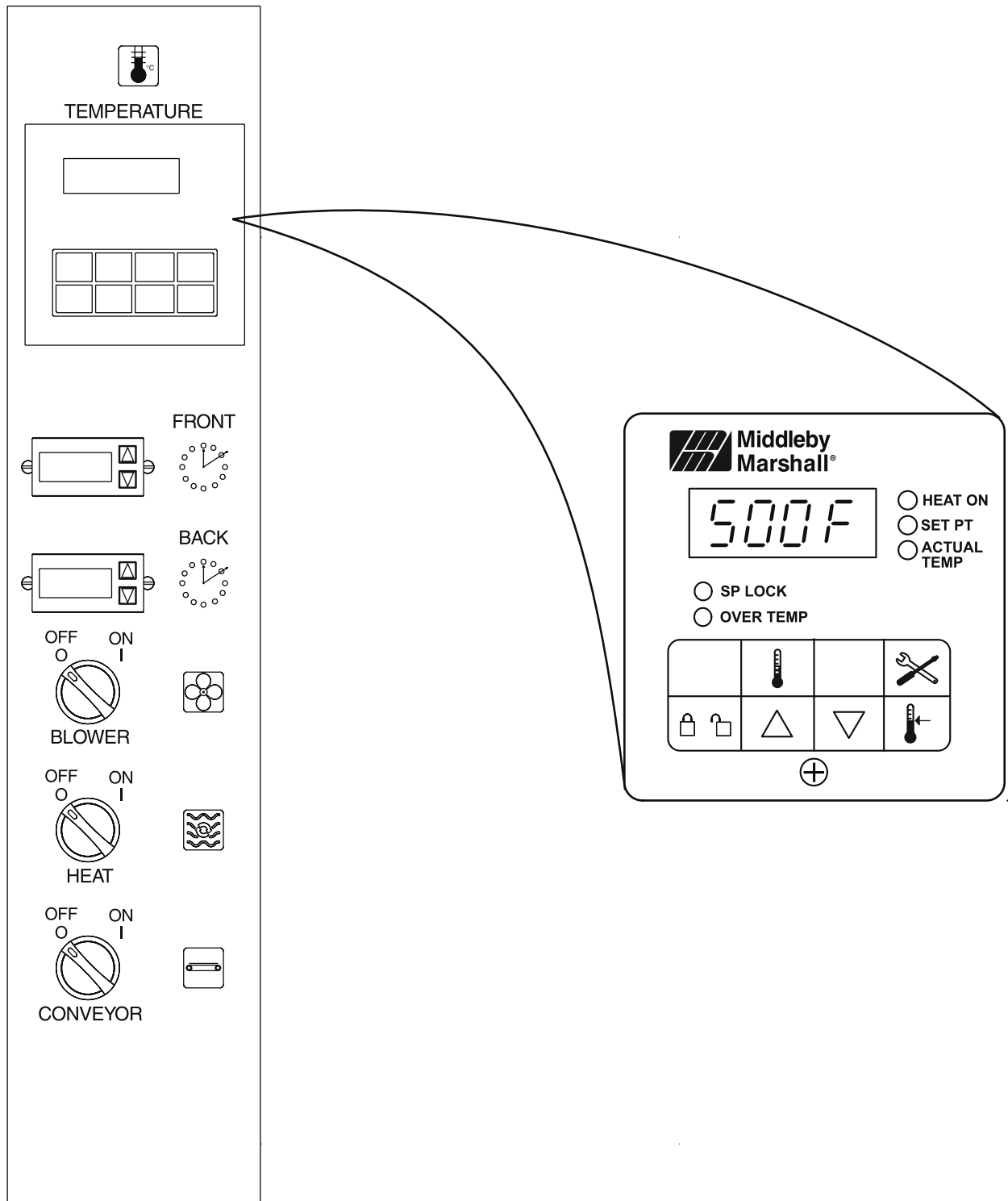


Figure 3-6. Control Panel

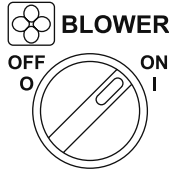
# SECTION 3 OPERATION

## II. NORMAL OPERATION - STEP-BY-STEP

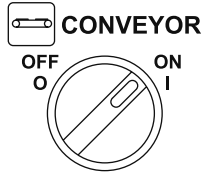
### A. Daily Startup Procedure

1. Check that the circuit breaker/fused disconnect is in the on position. Check that the window is closed.

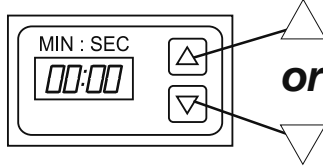
2. Turn the "BLOWER" (🌀) switch to the "ON" ("I") position.



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

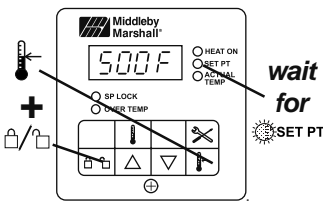


4. If necessary, adjust the conveyor speed setting by pressing the ▲ or ▼ pushbuttons on the conveyor speed controller to change the displayed bake time.

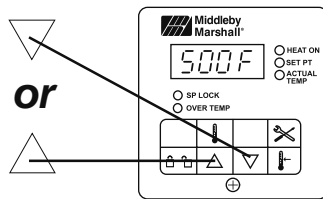


5. Adjust the temperature controller to a desired set temperature, if necessary.

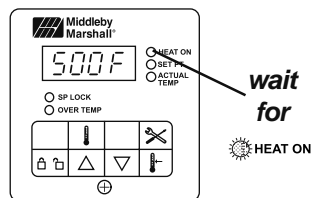
- Press the Set Point and Unlock keys at the same time. Wait for the "SET PT" light to turn on.



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

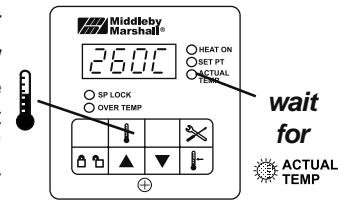


6. Turn the "HEAT" (🔥) switch to the "ON" ("I") position, and wait for the "HEAT ON" light to turn on.



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.

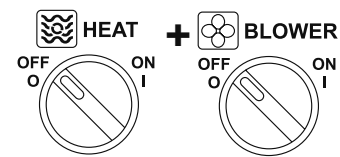
8. (Optional) Press the Temperature (🌡️) key to show the Actual Temperature in the display, and wait for the "ACTUAL TEMP" light to turn on. This allows you to monitor the oven temperature as it rises to the setpoint.



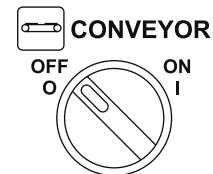
9. Allow the oven to preheat for 10 minutes after it has reached the set point temperature.

### B. DAILY SHUTDOWN PROCEDURE

1. Turn the "HEAT" (🔥) and "BLOWER" (🌀) switches to the "OFF" ("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" (🚚) switch to the "OFF" ("O") position.



3. Open the window to allow the oven to cool faster.

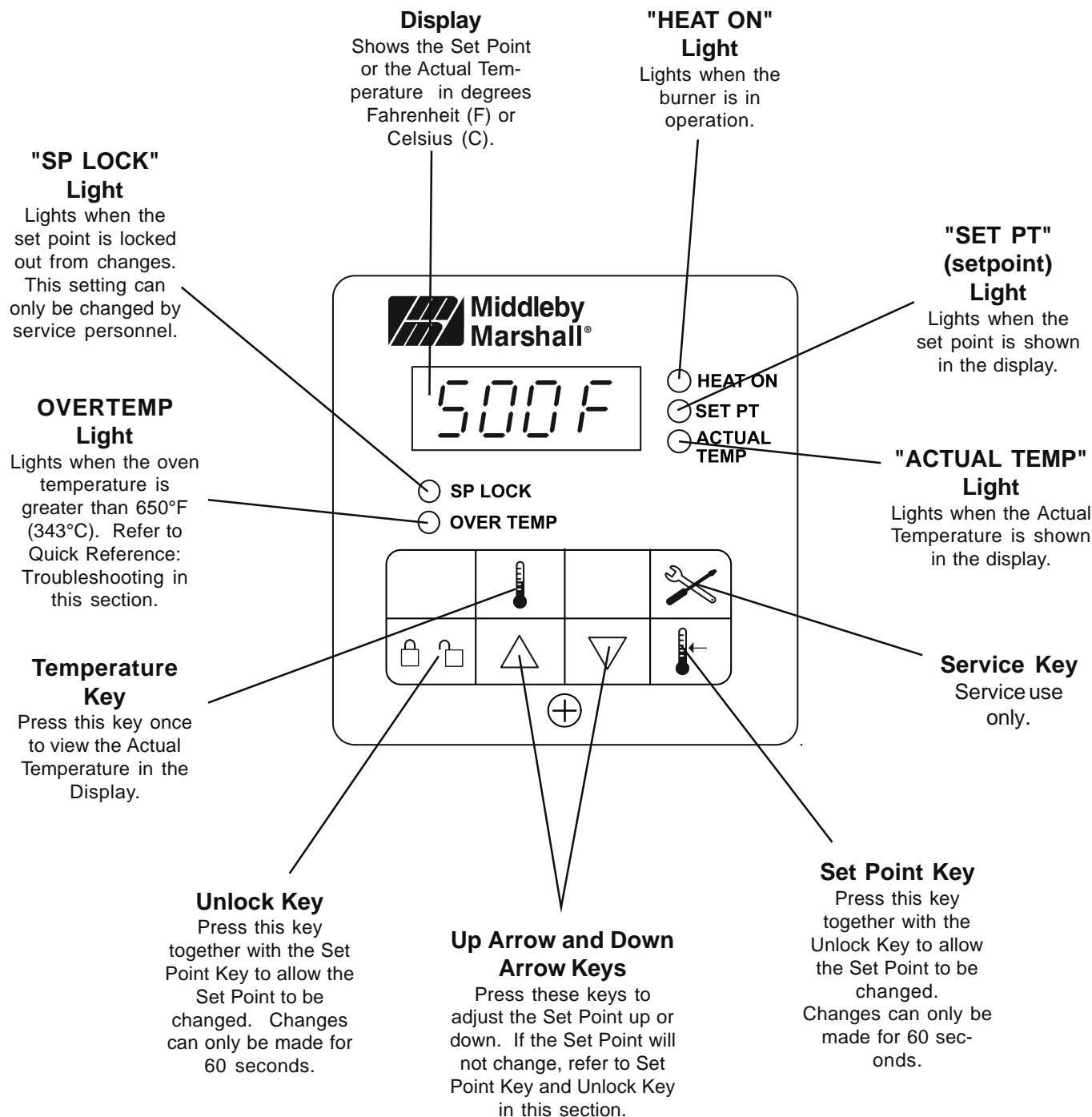
4. After the oven has cooled and the blowers have turned to the "OFF" or "O" position, switch the circuit breaker/fuse disconnect to the "OFF" or "O" position.

### CAUTION

In case of power failure, turn all switches to the "OFF" ("O") position, open the oven window, 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.



**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.**





SECTION 3  
OPERATION

IV. QUICK REFERENCE: TROUBLESHOOTING

SYMPTOM	PROBLEM	SOLUTION
 <b>OVERTEMP</b> <i>light is lit, food product is undercooked</i>	The oven temperature exceeded 650°F (343°C), and the burner was automatically shut down.	<ul style="list-style-type: none"> <li>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.</li> </ul>
<i>Oven will not turn on at all</i>	Electrical power may not be reaching the oven, or the controls may be set incorrectly.	<ul style="list-style-type: none"> <li>Check that the circuit breaker/fused disconnect is turned on.</li> <li>Check that the "BLOWER" (☼) Switch is in the "ON" ("I") position. The burner cannot engage until the blowers are in operation.</li> </ul>
<i>Oven shuts down shortly after it is turned on</i>	The gas burner did not light within 90 seconds of turning the "HEAT" (☼) Switch to the "ON" ("I") position. This automatically engages a safety lockout mode.	<ul style="list-style-type: none"> <li>Turn the "HEAT" (☼), "BLOWER" (☼), and "CONVEYOR" (☼) switches to the "OFF" ("O") position.</li> <li>Wait for AT LEAST FIVE MINUTES before restarting the oven.</li> <li>Repeat the Daily Startup procedure.</li> </ul>
 <i>appears in display, oven is not heating</i>	The oven did not reach 200°F (93°C) within 15 minutes of startup, and the oven has stopped heating.	<ul style="list-style-type: none"> <li>Turn the "HEAT" (☼), "BLOWER" (☼), and "CONVEYOR" (☼) switches to the "OFF" ("O") position.</li> <li>Wait for AT LEAST FIVE MINUTES before restarting the oven.</li> <li>Repeat the Daily Startup procedure.</li> </ul>
<i>Oven will not heat</i>	Controls may be set incorrectly.	<ul style="list-style-type: none"> <li>Check that the Set Point is correctly set.</li> <li>Check that both the "BLOWER" (☼) and "HEAT" (☼) Switches are in the "ON" ("I") position.</li> <li>If the oven still will not heat, turn the "HEAT" (☼), "BLOWER" (☼), and "CONVEYOR" (☼) switches to the "OFF" ("O") position.</li> <li>Wait for AT LEAST FIVE MINUTES before restarting the oven.</li> <li>Repeat the Daily Startup procedure. Check that the Set Point is above 200°F (93°C).</li> </ul>
<i>Oven is operating, but little or no air is blowing from air fingers</i>	Air fingers may have been reassembled incorrectly after cleaning.	<ul style="list-style-type: none"> <li>Turn the oven to the "OFF" or "O" position, and allow it to cool. Disconnect electrical power to the oven.</li> <li>Refer to Section 4, Maintenance, for instructions on reassembling the air fingers.</li> </ul>
<i>Conveyor moves with a jerky motion, or will not move at all</i>	Conveyor may be jammed on an object in the oven, or conveyor belt or drive chain tension may be incorrect.	<ul style="list-style-type: none"> <li>Turn the oven to the "OFF" or "O" position, and allow it to cool. Disconnect electrical power to the oven.</li> <li>Check if the conveyor is blocked by an object inside the oven.</li> <li>Refer to Section 4, Maintenance, for instructions on checking the conveyor and drive chain tension.</li> </ul>
<i>Food products are overcooked or undercooked.</i>	Controls may be set incorrectly.	<ul style="list-style-type: none"> <li>Check that the set temperature and bake time settings are correct.</li> </ul>

**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

Possibility of injury from rotating parts and electrical shock exist in this oven. Turn off and lockout or tagout electrical supply to oven(s) before attempting to disassemble, clean or service oven(s). Never disassemble or clean the oven with the blower switch or any other part of the oven turned on.

### WARNING

Before performing any maintenance work or cleaning, turn main power switch off.

### CAUTION

When cleaning do not use any abrasive cleaning materials or water spray, wipe clean only. Never use a water hose or pressurized steam cleaning equipment when cleaning this oven.

### NOTICE

If the oven is to be removed from its installed location for servicing, perform the following procedure:

1. Switch off the oven and allow it to cool. Do NOT service the oven while it is warm.
2. Shut off main manual gas valve and disconnect gas connector from oven.
3. Turn off main circuit breakers and disconnect connector from oven.
4. Turn the adjustable legs to put weight on the casters.
5. Move oven to desired location for servicing.
6. When servicing is complete, move oven to original location.
7. Adjust legs to level oven and take weight off casters.
8. Connect electrical and gas connectors to oven.
9. Turn on manual gas valve.
10. Turn on main circuit breakers.
11. Follow normal startup instructions.

## SECTION 4 MAINTENANCE

### I. MAINTENANCE - DAILY

#### A. Exterior

Everyday you should clean the outside of the oven with a soft cloth and mild detergent.

#### WARNING

Never use a water hose or pressurized steam cleaning equipment when cleaning the oven.

#### B. Cooling Fan

1. TWO COOLING FAN GRILLES AT THE REAR OF EACH OVEN CONTROL COMPARTMENT MUST BE CLEANED DAILY - Clean grilles with a stiff nylon type brush.

2. Check the air intake of the cooling fan daily. The best time to check is right after starting the oven.

#### IMPORTANT NOTE

The cooling fan operates when the blower switch is turned to "ON" ("I"). It must operate to keep the electrical control cabinet below 140°F (60°C).

#### WARNING

IF FAN BLADE IS NOT ROTATING, BROKEN, OR FAN ASSEMBLY IS MISSING FROM MAIN BLOWER MOTOR SHAFT, DO NOT OPERATE OVEN. REPLACE COOLING FAN BLADE BEFORE OPERATING OVEN. Serious damage could be done to the burner blower motor and/or solid-state electrical components if oven is operated while cooling fan is not running or vent grille is plugged.

3. Using a stiff nylon brush clean control compartment vent grille. Hot air from control compartment exits from this grille.

#### C. Conveyor Belt (Figure 4-2)

Everyday, just after starting the oven, stand at the unloading end of the conveyor, and with a brush, remove food particles (crumbs, etc.) clinging to the conveyor belt, brushing them into the crumb pan.

#### D. Crumb Pans (Figure 4-2)

Remove and clean the crumb pan at each end of the oven. Each crumb pan can be removed by sliding it out, as shown in Figure 4-2. Reinstall the crumb pans after cleaning.

#### E. Window

The window can be cleaned daily while it is in place.

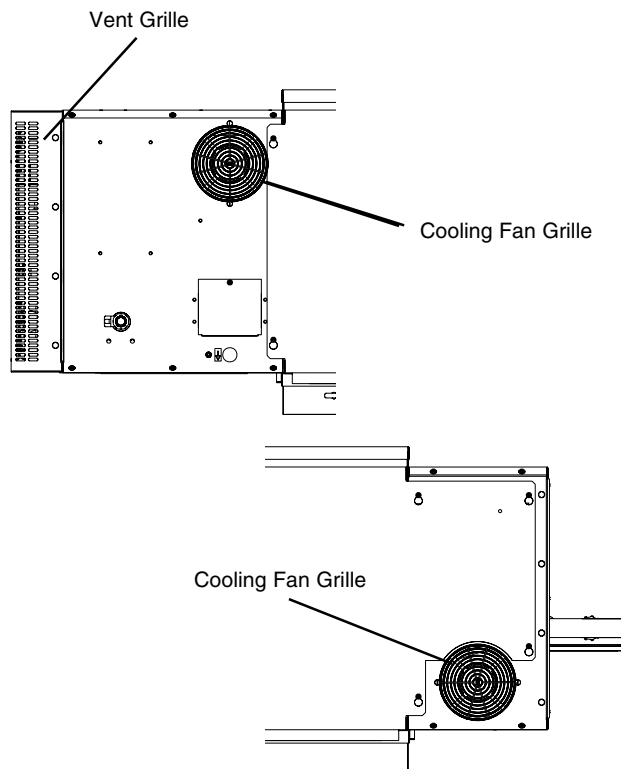


Figure 4-1. Oven Cooling Fans

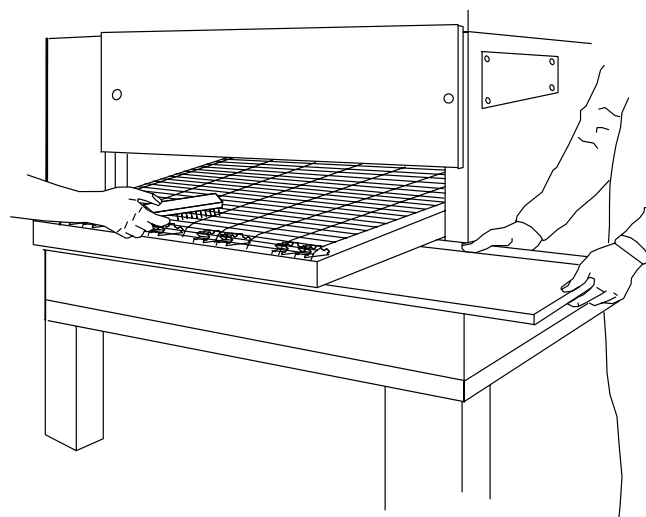


Figure 4-2. Conveyor Belt and Crumb Pan Cleaning

## II. MAINTENANCE - MONTHLY

When cleaning your Series PS540 Oven note the following:

### PRECAUTIONS-

1. Do not use excessive water or saturation of oven insulation will occur.
2. Do not use a caustic oven cleaner or the aluminized finger manifold surfaces will be severely damaged.

When cleaning your oven, first remove all heavy debris with a vacuum cleaner. Use a damp cloth for light cleaning. For heavier cleaning of baked on grease and carbon deposits use a non-caustic cleaner that will not react with the aluminized finger manifold surfaces.

You can order non-caustic cleaner from your local authorized Middleby Marshall Parts Distributor in the quantities listed below:

Part #	Quantity
27170-0244	Case of Quarts (6)
27170-0246	Case of Gallons (4)

### A. Removing Conveyor From Oven For Cleaning

1. Remove crumb pans as shown in Figure 4-2.
2. Remove upper and lower end plugs from each end of oven by removing the two wing screws from each end plug.
3. Remove the conveyor end stop and the conveyor rear stop (Figure 4-3).

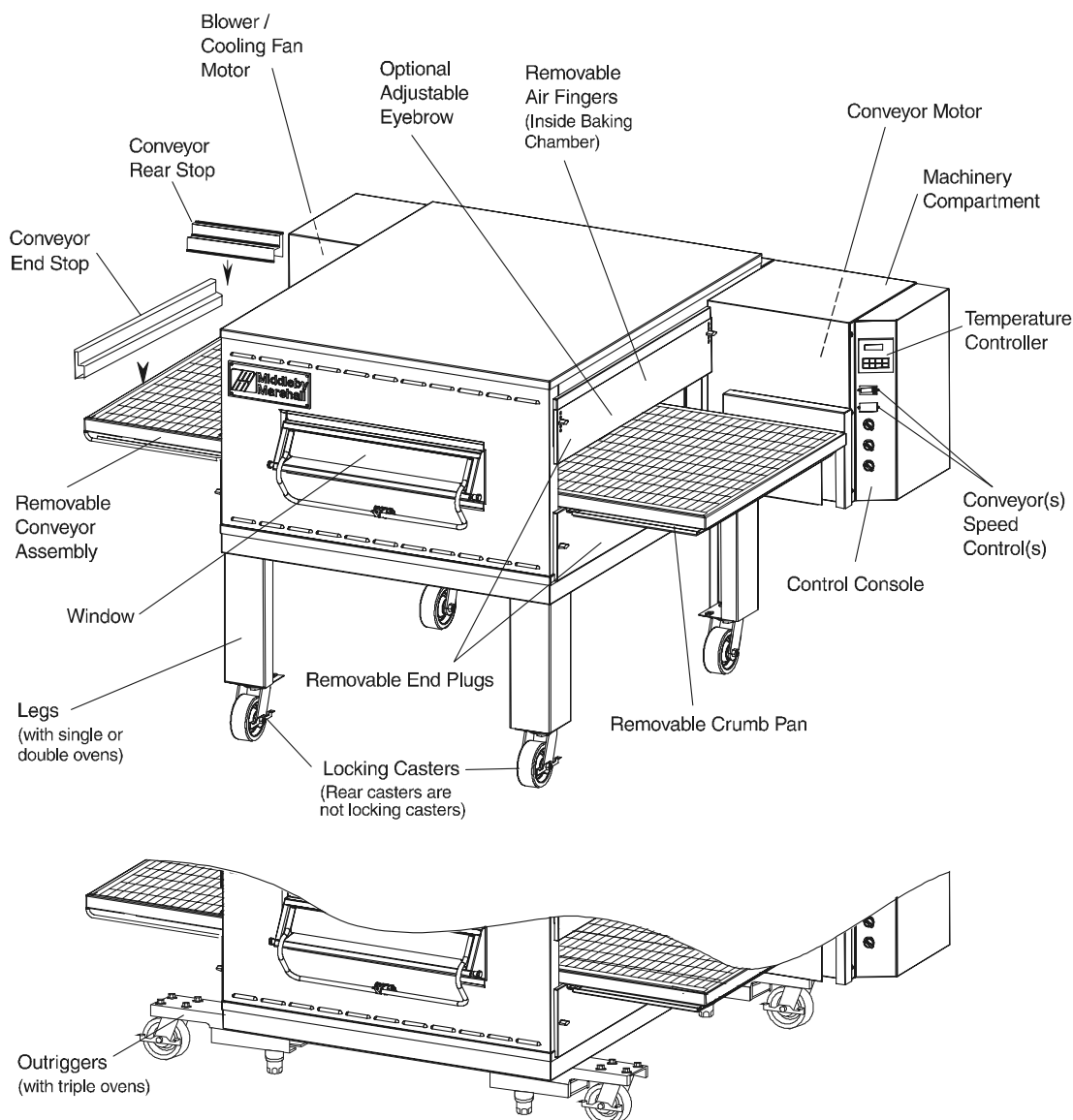


Figure 4-3.

## SECTION 4 MAINTENANCE

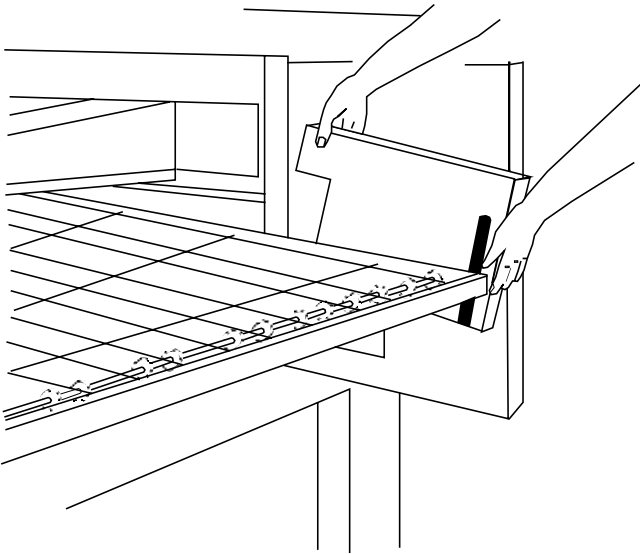


Figure 4-4.

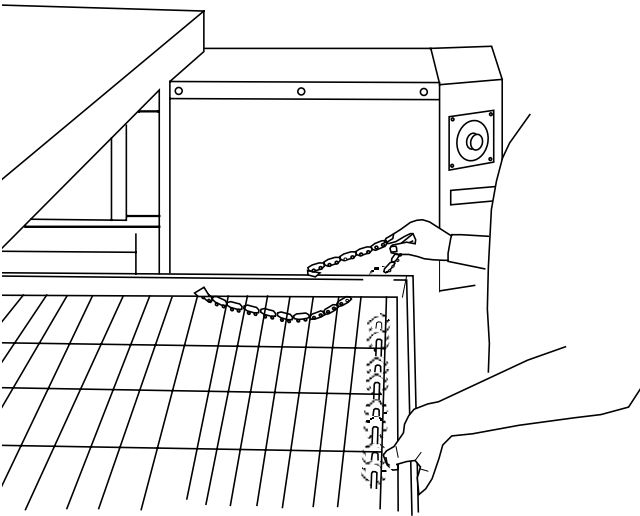


Figure 4-5.

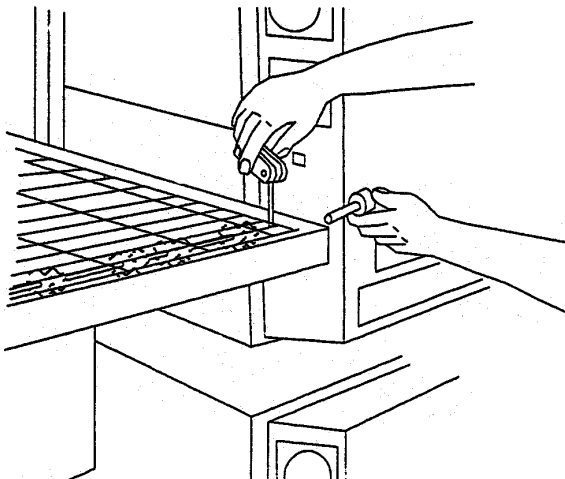


Figure 4-6.

4. Remove conveyor drive chain cover as shown.

5. Remove tension from drive chain by lifting and pushing the conveyor slightly into the oven. Remove drive chain from conveyor drive sprocket as shown.

**NOTE:** The split belt conveyor assembly can only be removed from the drive end of the oven.

6. Begin sliding conveyor out of the oven as shown.

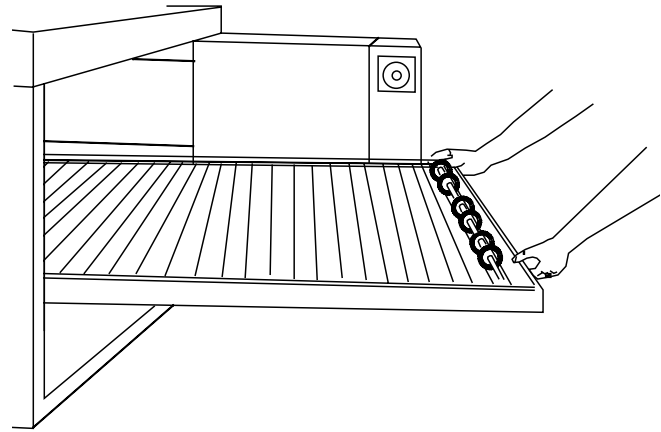


Figure 4-7.

7. Continue sliding the conveyor completely out of the oven, fold it in half and then place it to the side for cleaning. Be careful not to bump drive sprocket while handling conveyor or damage may result to drive shaft.

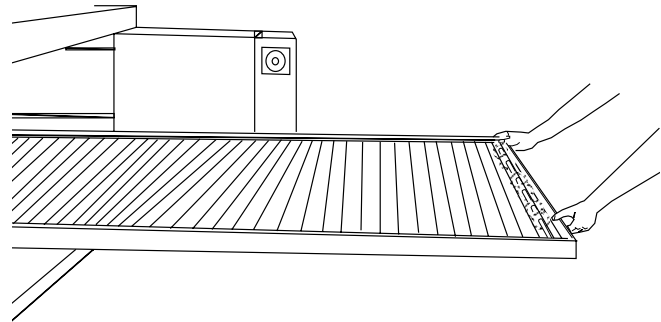


Figure 4-8.

### CAUTION

Be careful not to bump the drive sprocket while handling the conveyor, to avoid damaging the drive shaft.

**B. Air Fingers Disassembly For Cleaning**

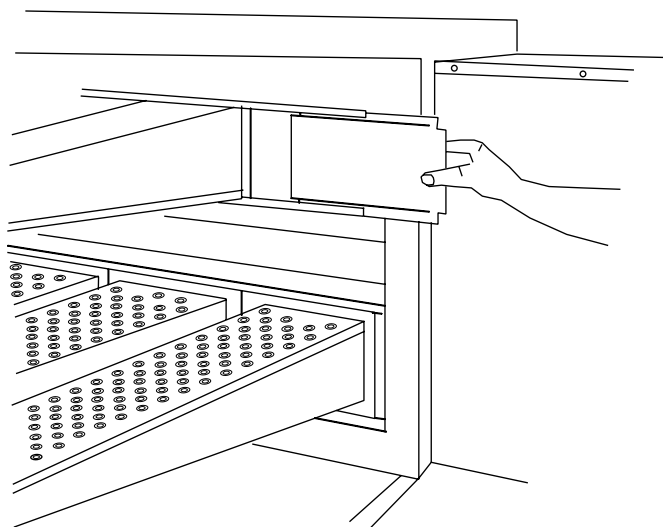
1. As the air fingers are removed use a felt pen to mark all parts of the fingers. This includes the finger manifold, inner plate and the outer plate (refer to Figure 1-9). If a blank or choke plate is used, mark that plate also. Fingers are marked in the order shown; as viewed from the front of the oven. (The marks for an upper oven should be preceded with a "U", example UB1, UT2, etc.)

**T1** **T2** **T3** **T4**

**B1** **B2** **B3** **B4**

**Standard Fingers**

2. Slide blank plates straight out.



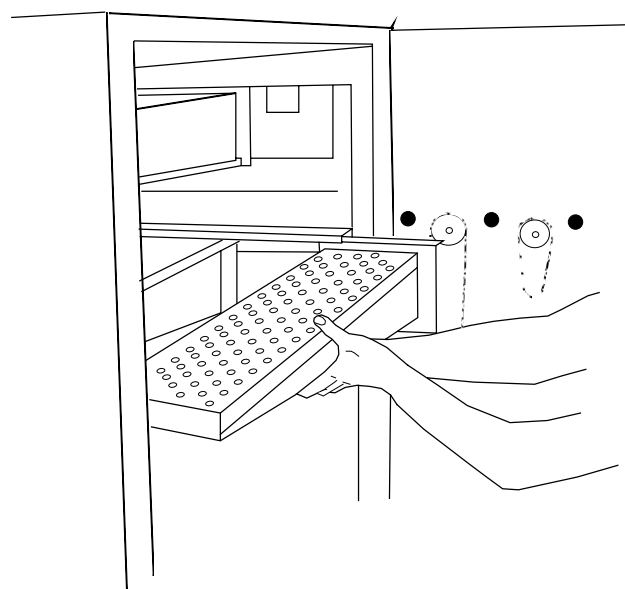
**Figure 4-9.**

3. Remove air fingers.

**NOTE:** Some oven users require a custom finger arrangement where the quantity of air fingers may vary.

You can remove top and bottom fingers and blank plates from each or either end. It is highly recommended that each finger be marked before removing so it is placed in exactly the same position when reassembled (refer to step 1).

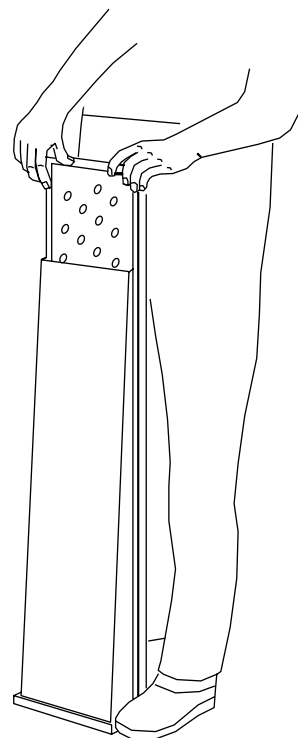
Remove the air fingers, pull the finger at the back side - pull straight out.



**Figure 4-10.**

4. With air fingers out, place them in an upright position to remove the outer plate.

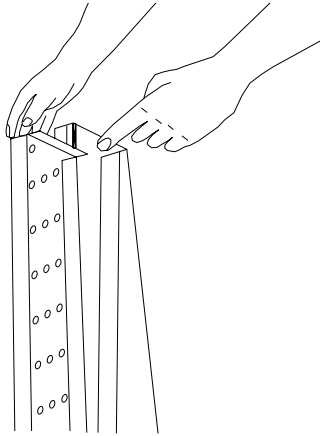
5. Gently step on the lip of the finger and pull the outer plate off.



**Figure 4-11.**

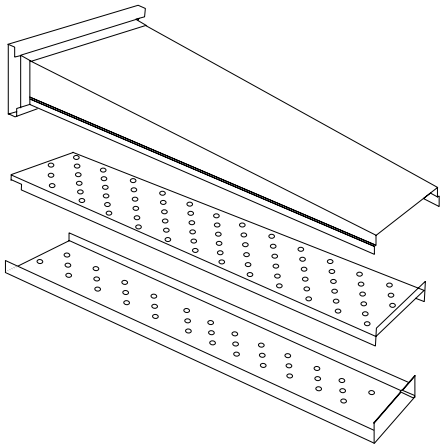
## SECTION 4 MAINTENANCE

6. To remove the inner plate, pull the plate out and then up.

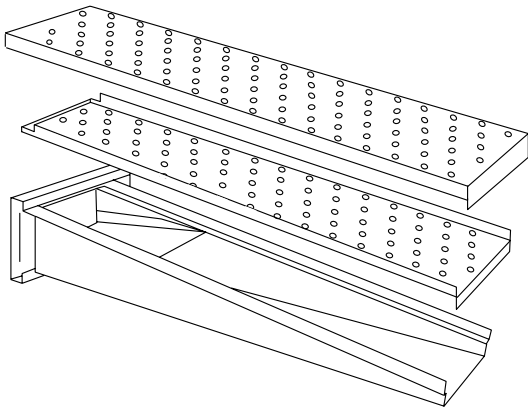


**Figure 4-12.**

7. The outer finger plate is stainless and may be cleaned by either soaking in a hot, strong detergent solution or using a caustic cleaner. The conveyor belt can also be cleaned in the same way.



**Figure 4-13. Standard Lower Finger**

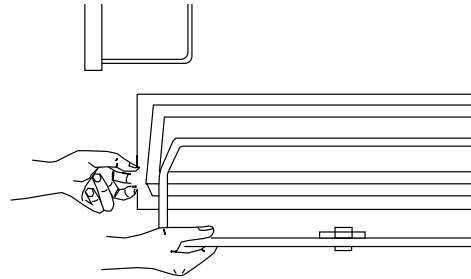


**Figure 4-14. Standard Upper Finger**

### C. Cleaning the Window

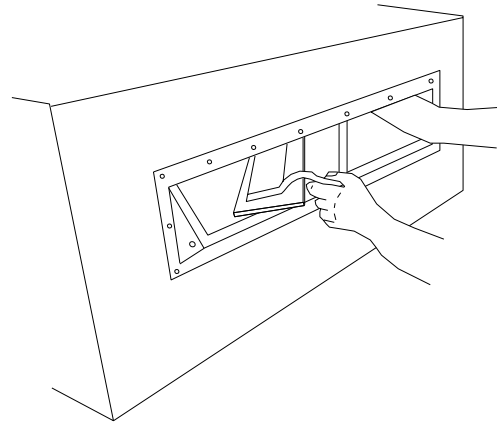
The window can be cleaned in place. If it needs a thorough cleaning it may have to be removed.

1. Remove the window by opening the window and unscrewing the window knobs from each end.



**Figure 4-15.**

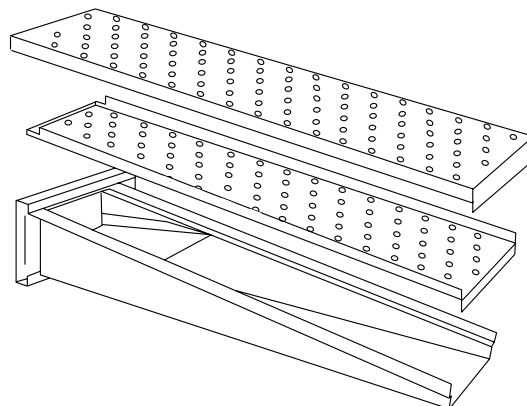
2. Push the window all the way inside the oven, making sure it is clear of the frame. Now, turn the window sideways while inside the oven and then remove it. This will avoid breaking the window.



**Figure 4-16.**

### D. Reassembly of Air Fingers

1. Air fingers are made up of one inner plate, one outer plate and the finger housing manifold. Be sure to match up the markings (T1, T2, T3, etc.) on all the parts of the air fingers as you are reassembling.

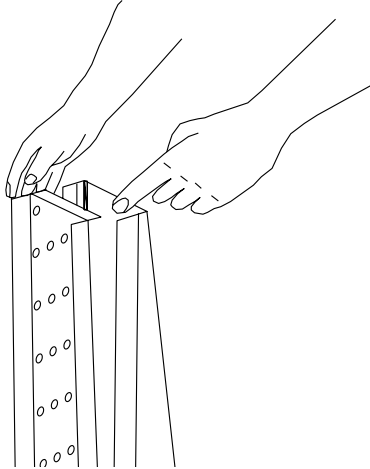


**Figure 4-17.**



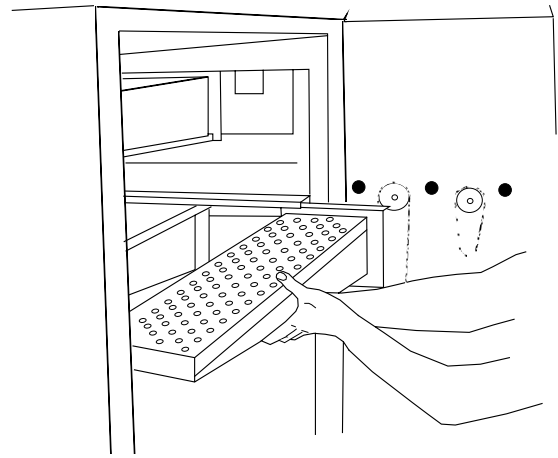
2. Reassemble the inner plate. Keep your fingers clear so you won't pinch them. The inner plate of a finger will only go in one way because of its design.

3. Replace the outer plate by placing your hands flat on the top of the plate and pushing down. Keep your fingers clear so you won't pinch them.



**Figure 4-18.**

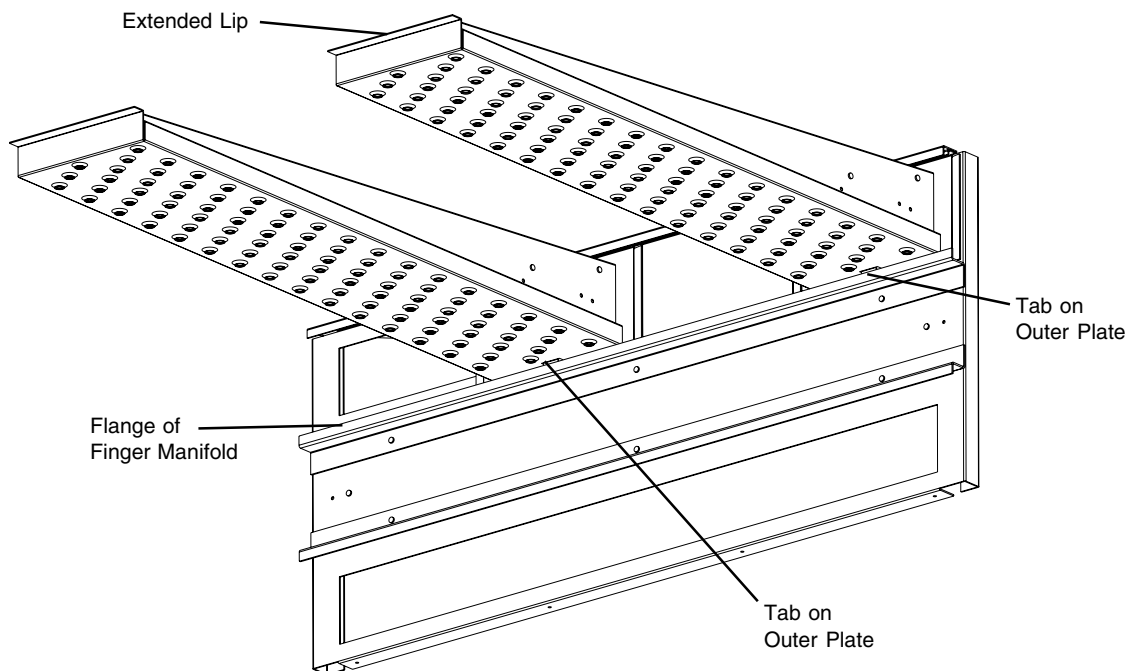
4. Replace the air fingers by pushing in at the back side. Remember to replace them according to the numbers marked on them when they were removed. They must go back in the same way they came out.



**Figure 4-19.**

**IMPORTANT:** Only M6 Fingers fit in the bottom row. All M3 and M1 finger cover plates have extended lips at front. This extended lip will not allow these fingers to be installed in the bottom row.

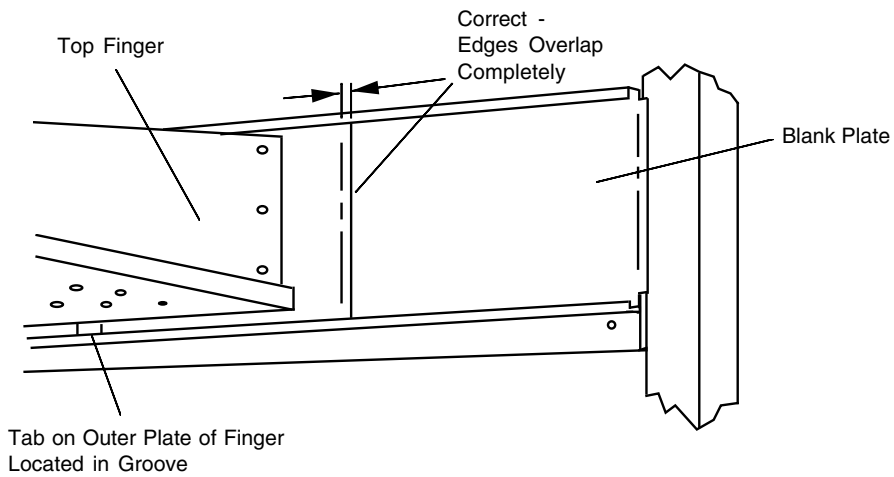
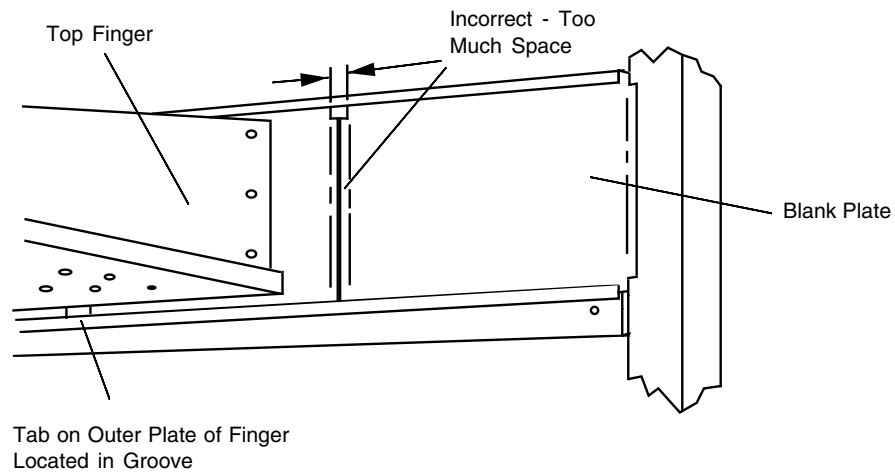
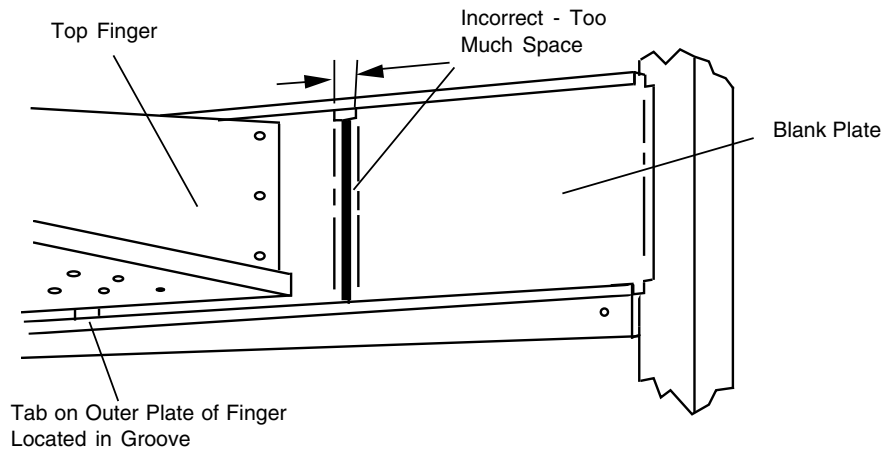
**IMPORTANT:** When inserting fingers the tab on the outer plate must be in the groove as shown in Figure 4-20. There is a blocking tab on the outside of the groove which will prevent inserting the finger in the groove if the outer plate is moved away from the flange of the finger manifold.



**Figure 4-20.**

**SECTION 4  
MAINTENANCE**

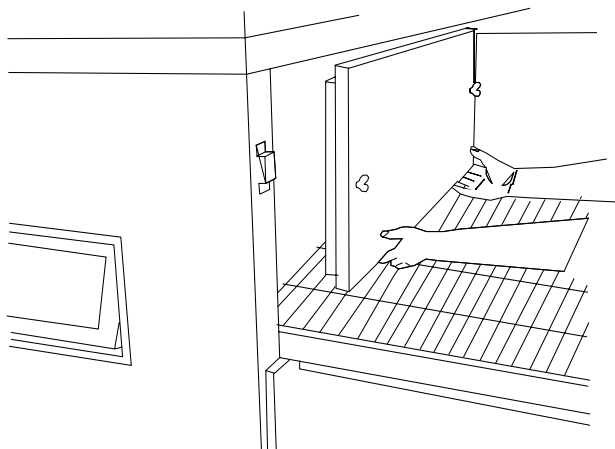
5. Install fingers and blank plates correctly with edges interlocked and no space between edges.



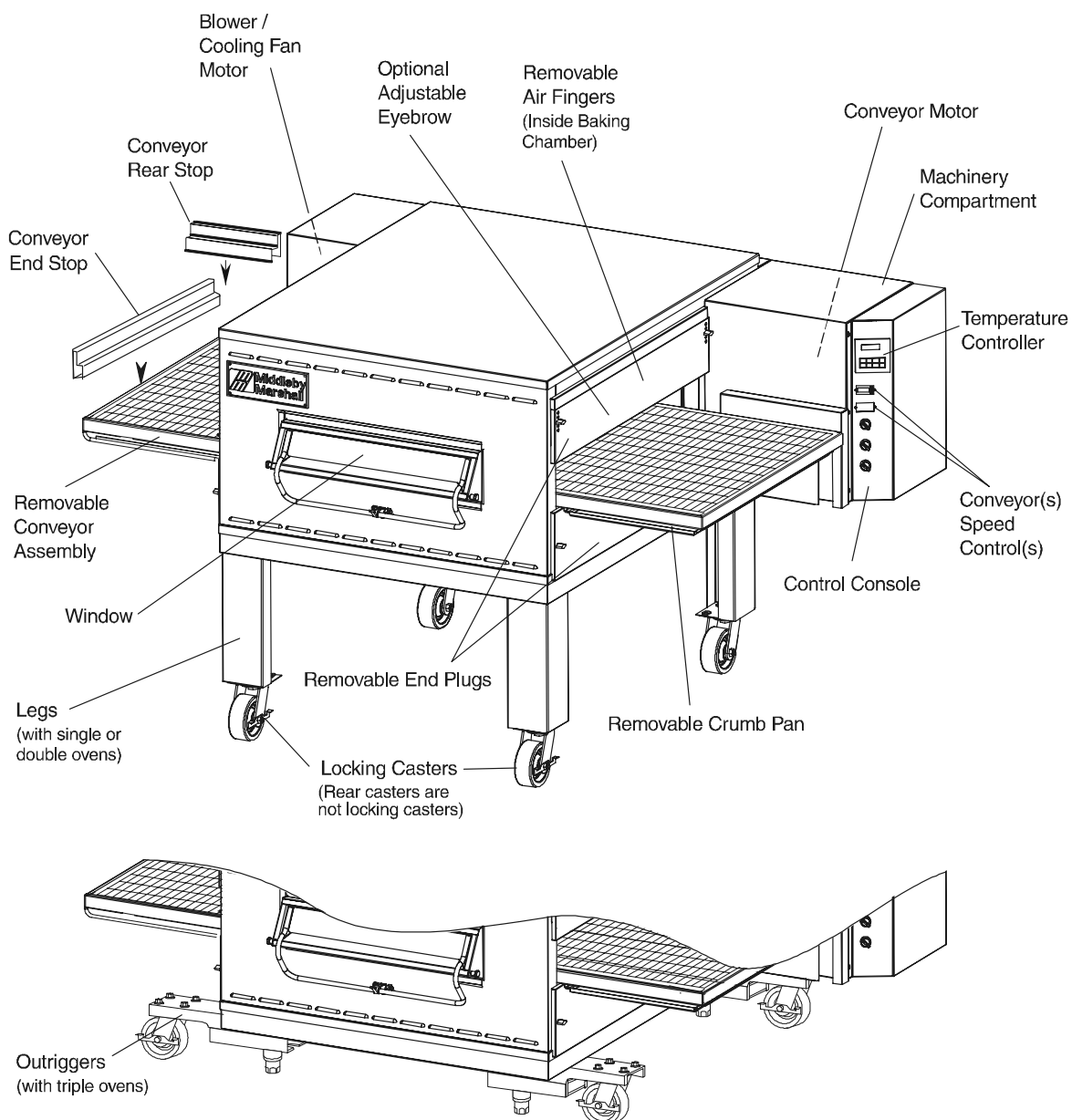
**Figure 4-21.**

**E. Reinstall End Plugs**

1. Reinstall lower end plug. Be sure to tighten two wing screws on the end plug.
2. Reinstall conveyor.
3. Reinstall upper end plug. Be sure to tighten two wing screws on the end plug.



**Figure 4-22.**



**Figure 4-23.**

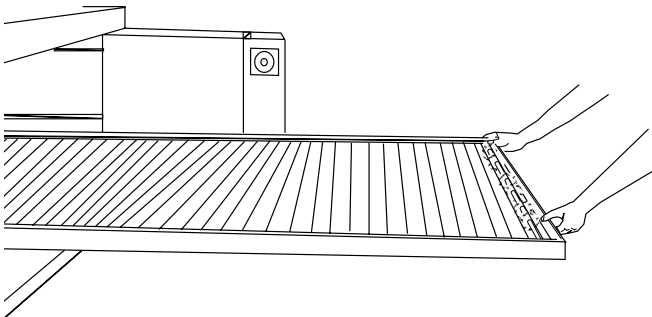
## SECTION 4 MAINTENANCE

### F. Conveyor Reassembly Into Oven

1. Lift conveyor and position it in oven as shown.

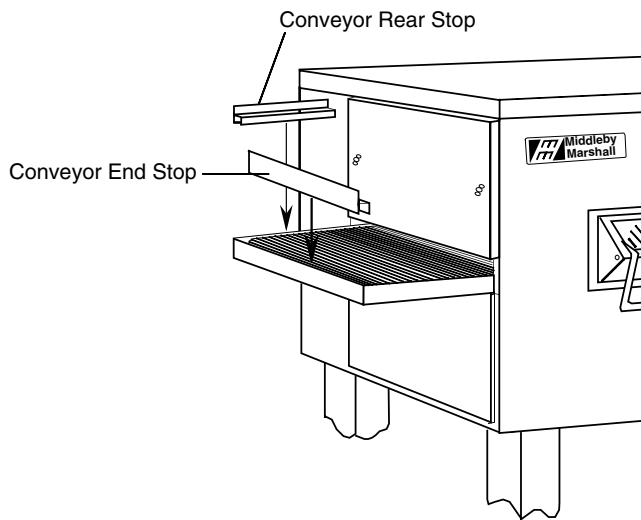
**NOTE:** Conveyor assembly may be inserted into either end of oven. If it is to be installed from the non-drive end of the oven the drive sprocket assembly must be removed as shown in conveyor disassembly section.

**NOTE:** Split belt conveyors can only be inserted from the drive end of the oven.



**Figure 4-24.**

2. Reinstall the conveyor rear stop. Reinstall the conveyor end stop.



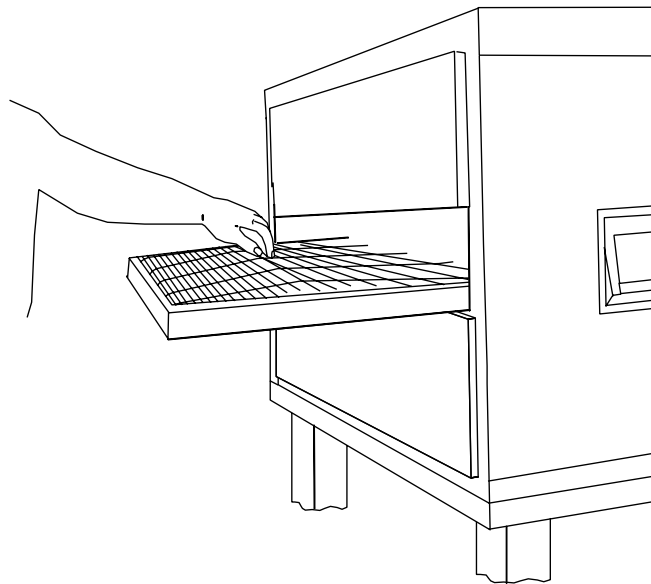
**Figure 4-25.**

### G. Checking Conveyor Belt Tension

#### **WARNING**

Oven conveyor belt must be cool when adjusting belt. Do not adjust belt if HOT.

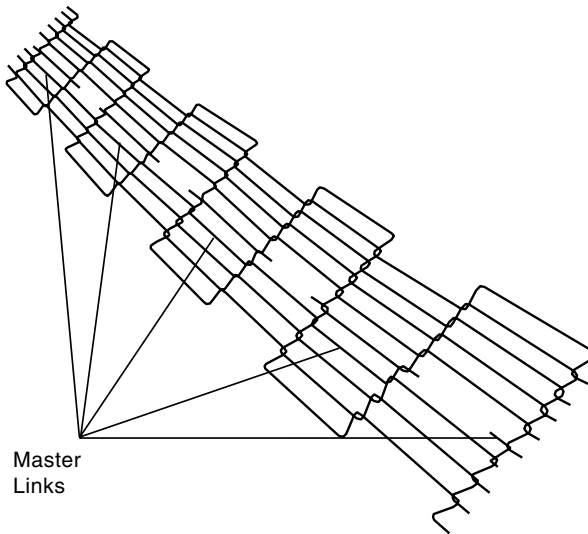
1. With the conveyor assembly in the oven, stand at one end of conveyor and check tension by lifting the conveyor belt at the center of the oven chamber opening. The belt should not lift higher than 3" to 4" (75mm to 102mm).
2. Adjust conveyor belt tension screws (located on left end of oven) for the 3" to 4" (75mm to 102mm) deflection as shown in Figure 4-26. If there is proper tension, proceed to "J. Attaching Drive Chain". If belt is still too loose, continue to step 3 below.
3. If conveyor belt is still not under proper tension, an entire link must be removed. Use the following procedure "H. Conveyor Belt Link Removal" to remove a link. If conveyor belt is under proper tension proceed directly to "J. Attaching Drive Chain".



**Figure 4-26.**

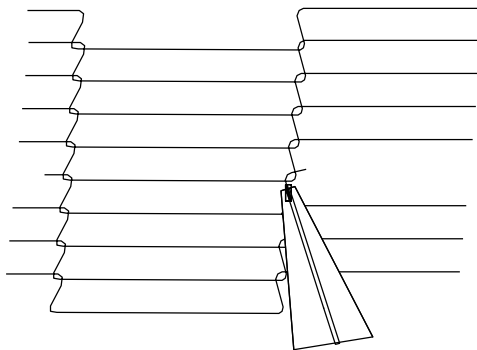
**H. Conveyor Belt Link Removal**

1. Using long nose pliers, an entire link can be removed with the conveyor assembly either in or out of the oven. Position master links at end of conveyor as shown in Figure 4-27.



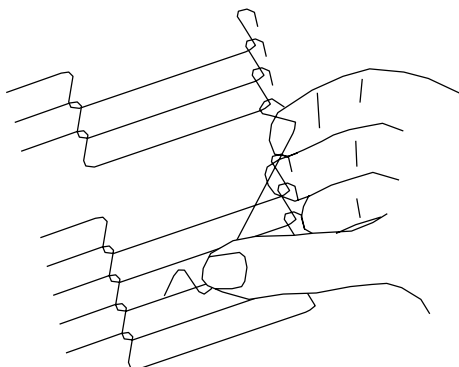
**Figure 4-27.**

2. Using long nose pliers, unhook master links at left end of conveyor as shown in Figure 4-28.



**Figure 4-28.**

3. Remove the outside master links on the right and left sides of the conveyor belt as shown in Figure 4-29.

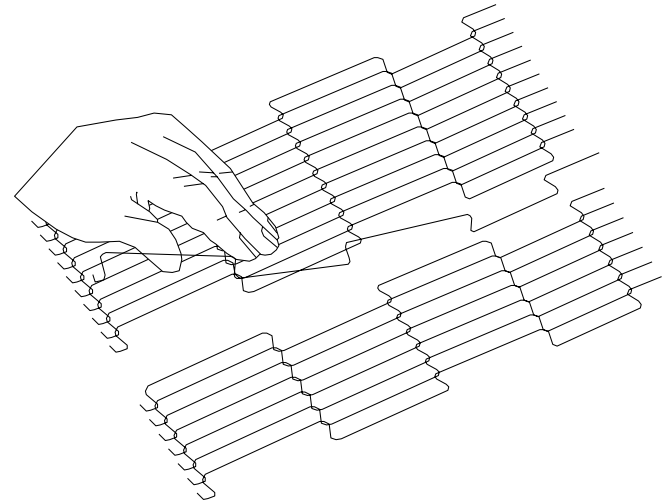


**Figure 4-29.**

4. Unhook the link to be removed.

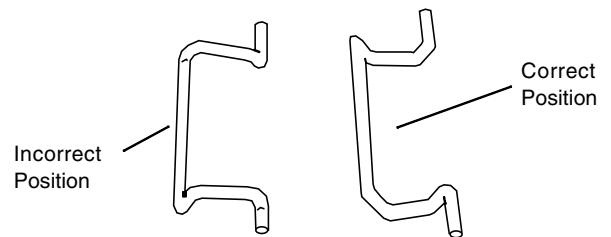
5. Pull up on the belt link section and remove. Do not discard the link removed as it may be used for making spare master links.

**NOTE:** If a section of the conveyor belt is being replaced it should be done now. Remove the links that need replacing and use the section of conveyor belt furnished in your installation kit to replace them.



**Figure 4-30.**

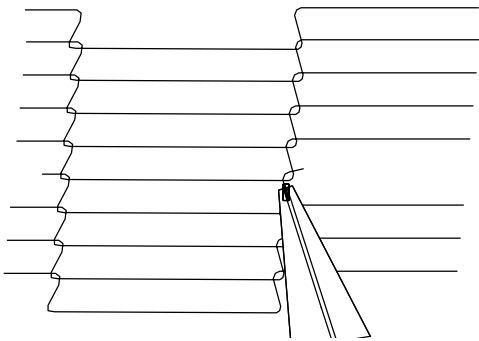
**NOTE:** Before connecting the inside master links, notice that these links have a correct position (Figure 4-31). The link at the right is in the correct (horns up) position for inserting into the conveyor belt. The horns facing down are in the incorrect position.



**Figure 4-31.**

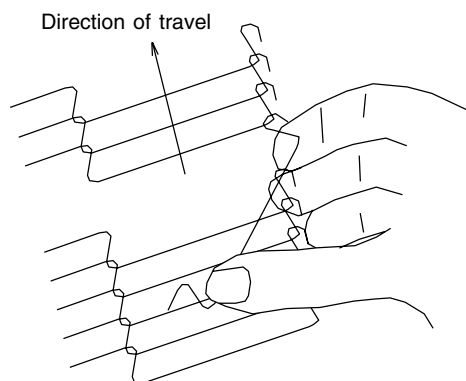
## SECTION 4 MAINTENANCE

6. Reconnect the inside master links (Figure 4-32.)



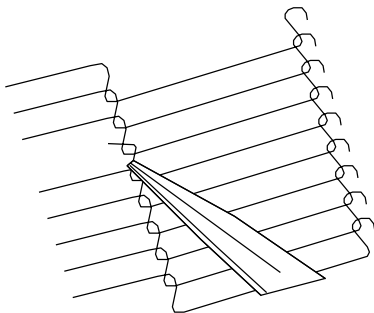
**Figure 4-32.**

**NOTE:** The outside master links have right and left sides to them. The right edge master link has an open hook facing you as shown in Figure 4-33. This will match up with the outer edges of the conveyor belt. Remember this hook travels backwards on the conveyor.



**Figure 4-33.**

7. Reconnect the outside master links.
8. Replace all parts removed from the oven.



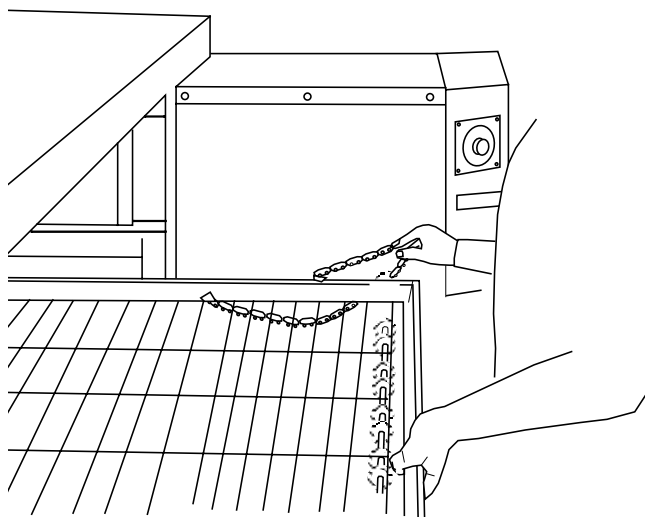
**Figure 4-34.**

### I. Replacing Conveyor Belt

If a section of the conveyor belt needs replacing it can be done with the conveyor assembly either in or out of the oven. The section of the conveyor belt furnished with the oven in the installation kit may then be used to replace a section. Follow the preceding procedure "H. Conveyor belt link removal" which outlines the disassembly procedure.

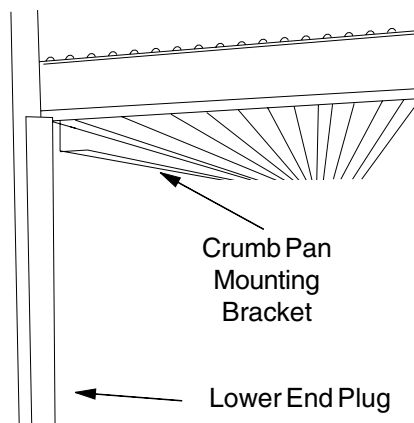
### J. Attaching Drive Chain

1. If drive sprocket assembly was removed reassemble it into the conveyor drive shaft. Be sure flat on end of drive shaft aligns with set screw in conveyor shaft collar. Once in place tighten 3/32" set screw.
2. Lift conveyor and install drive chain to conveyor drive sprocket and motor sprocket.



**Figure 4-35.**

3. The angle plate located on the underside of the conveyor must be against the lower end plug. This is true on both sides of oven.



**Figure 4-36.**

4. Reassemble conveyor drive chain cover and then reassemble the bottom cover to the drive chain cover.

Install both upper end plugs.

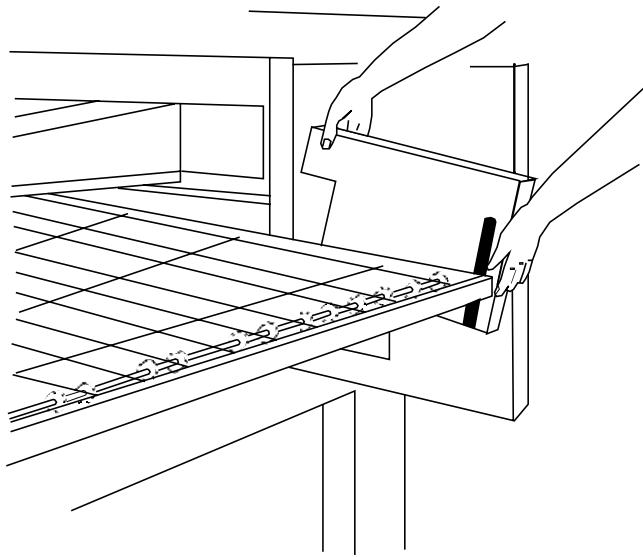


Figure 4-37.

### III. MAINTENANCE - EVERY 3 MONTHS

#### WARNING

Shut OFF all electrical power and lock/tag out the switch before attempting maintenance work.

Shut OFF gas supply to oven.

**NOTE:** It is recommended that the 3-month maintenance be performed by an authorized Middleby Marshall technician.

#### A. Cleaning the Blower/Fan Motor

To gain access to the blower/fan motor, open the control cabinet door by removing the three screws. Clean the motor, burner blower motor, the conveyor drive motor and the surrounding area, using either compressed air or CO<sub>2</sub>. Thoroughly blow out the motor compartment and vents inside the motor (Figure 4-38). Failure to do this can cause premature failure of blower fan motor.

#### CAUTION

Not cleaning the blower/fan motor properly can cause premature failure.

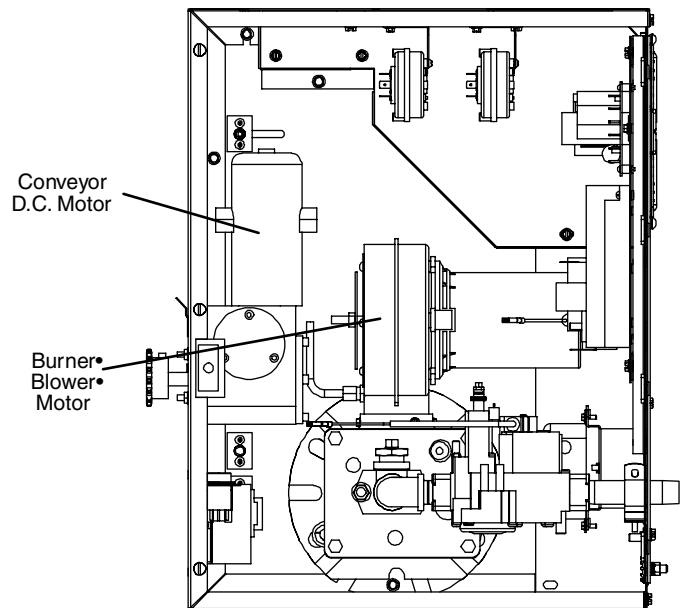
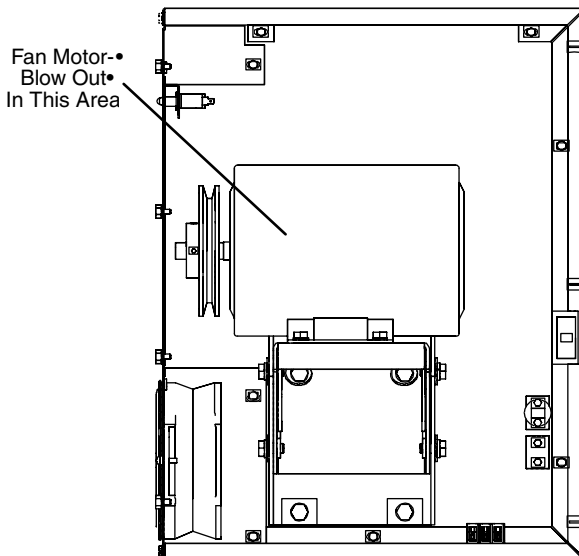


Figure 4-38.

## SECTION 4 MAINTENANCE

### B. Electrical Terminals

Open the control cabinet door by removing the three screws from the control cabinet door. Tighten all electrical control terminal screws including the electrical contactor terminal screws as shown in Figure 4-39.

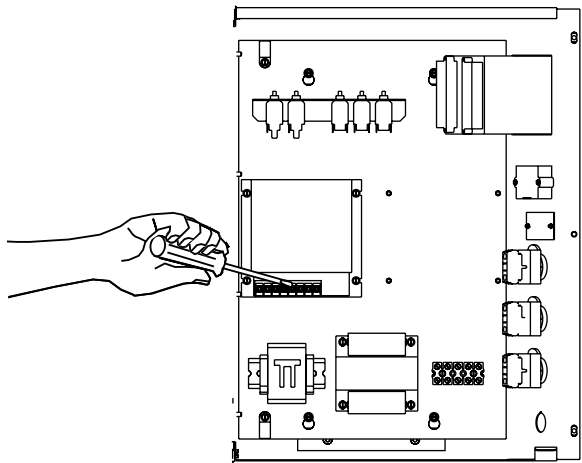


Figure 4-39.

### C. Ventilation

Check that the air circulation throughout the oven is not blocked and is working properly.

### D. Checking the Blower/Fan Belt

1. Check the main blower/fan belt for proper tension and wear. To gain access, loosen the six screws (Figure 4-40) of the rear shroud and lift shroud cover up and off.
2. The fan belt should deflect no less than 1" (25mm) at the center (Figure 4-41) and have no cracks or excessive wear.

**CAUTION**

Overtightening the belt will cause premature bearing failure and possible vibration problems. A spare belt is located inside the control compartment on the rear wall.

3. When replacing the belt, loosen the tension adjustment bolts (Figure 4-42) on the motor mounting bracket. Next, pull back on the motor. Retighten adjustment bolts. Do not overtighten because the fan bearings may be damaged.

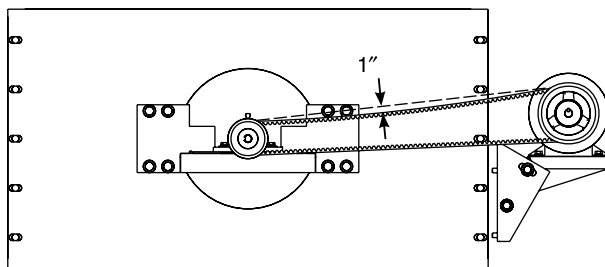
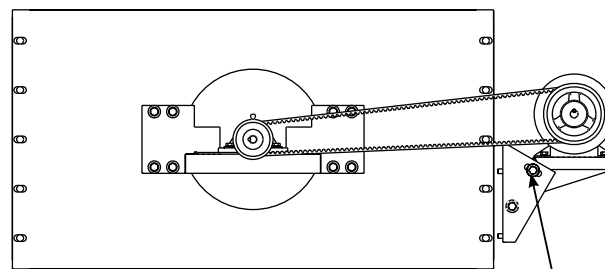


Figure 4-41.



Belt Tension  
Adjustment  
Bolts

Figure 4-42.

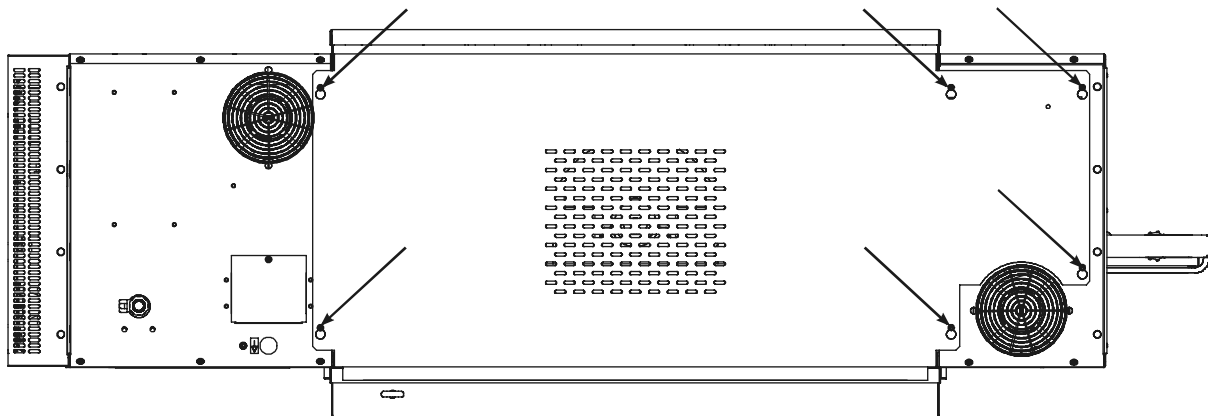


Figure 4-40.

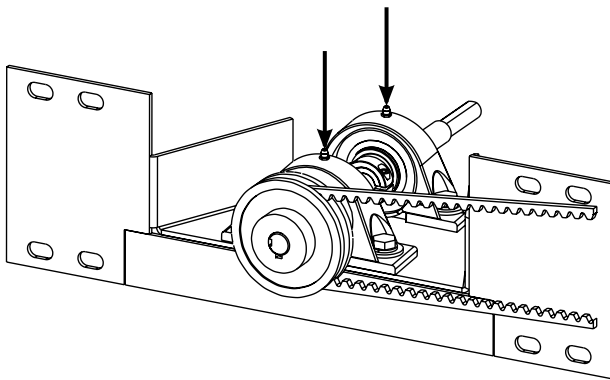


**E. Blower Fan Shaft Bearing Lubrication**

**CAUTION**

Over-greasing damages the bearing seals and accelerates grease loss, which shortens bearing life. Wipe off any excess grease on and around the bearing. Reinstall the rear shroud to allow the oven to operate

Grease the two (2) main blower fan shaft bearings (Figure 4-43), using a special grease (MMP/N 17110-0015 lithium-base, high-temperature grease). **ONLY ONE STROKE** of a grease gun is required for each bearing.



**Figure 4-43.**

Upon completing the fan belt check (or replacement) and the bearing lubrication, reinstall the rear shroud, fastening it with six screws of the rear shroud.

**F. Split-belt Conveyor Shaft Cleaning**

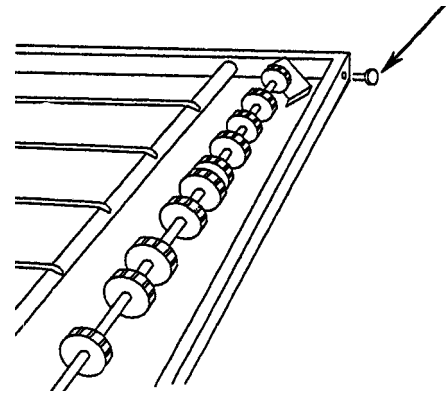
It is very important that the split-belt conveyor drive and idler shafts are removed from the conveyor frame for cleaning and lubrication.

**CAUTION**

Use a turbine oil or light machine oil. **DO NOT USE WD40 or similar product.** These oils evaporate and cause the shafts to seize.

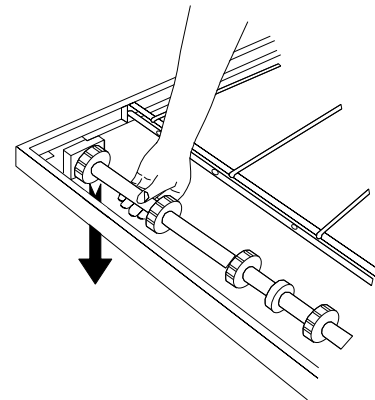
1. Perform the conveyor removal steps described in Monthly Maintenance, paragraph "A". After the conveyor is removed, lay it on a flat surface.
2. Remove the two conveyor belts by disassembling the conveyor master links, as described in Monthly Maintenance, paragraph "H". Then, remove the two conveyor belts by rolling them up.

3. Remove the conveyor adjustment bolts to allow the idler brackets to swing free.



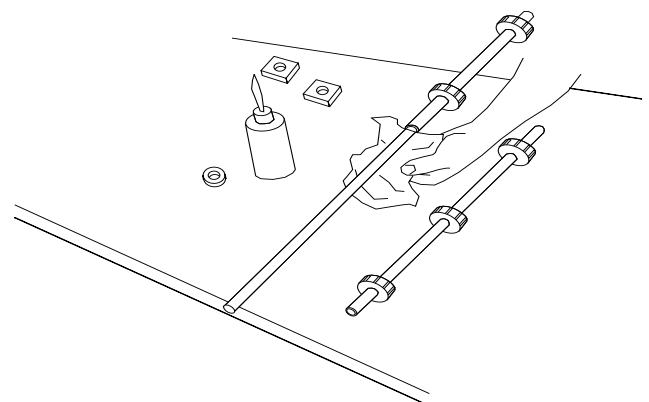
**Figure 4-44.**

4. Drop the idler shaft assembly clear of the frame through the front frame slot.



**Figure 4-45.**

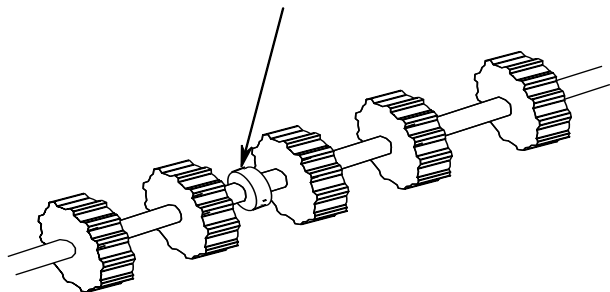
5. Pull the front and rear shafts apart and apply oil to both the extended shaft and the interior of the hollow shaft. Using a rag, wipe oil off parts. Repeat until shafts are clean. Apply more oil to shafts then reassemble.



**Figure 4-46.**

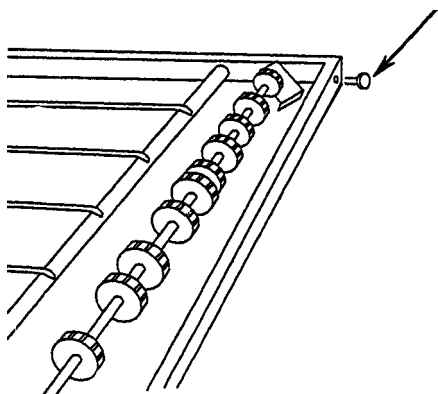
## SECTION 4 MAINTENANCE

6. Make sure bronze washer is in between the two halves.



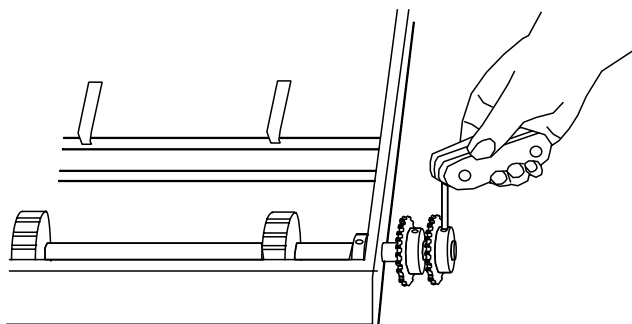
**Figure 4-47.**

7. Place the idler shaft assembly back into place and reinstall the adjustment screws.



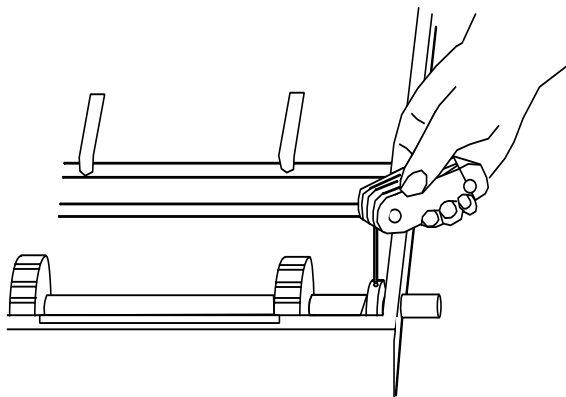
**Figure 4-48.**

8. Loosen the set screw on each conveyor drive sprocket and remove sprockets.



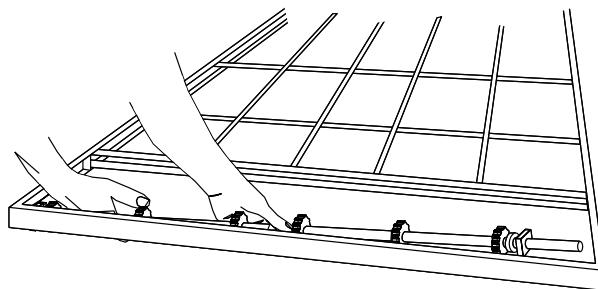
**Figure 4-49.**

9. Loosen the split locking collar.



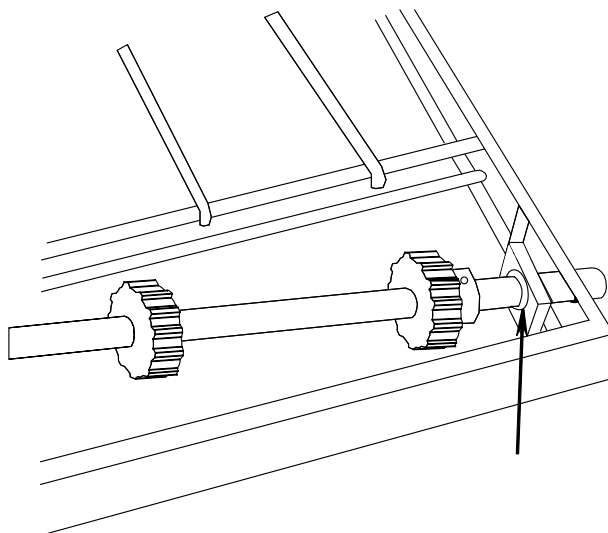
**Figure 4-50.**

10. Remove drive shafts by sliding to right then lifting the left side. Follow cleaning and lubricating procedures outlined in Steps 4-6.



**Figure 4-51.**

11. Reassemble conveyor drive shafts into frame, making sure nylon spacer is in place.



**Figure 4-52.**

12. Slide shaft assembly to right side, holding assembly in place. Slide split locking collar to the left side and tighten.

13. Slide rear conveyor drive sprocket onto shaft. Tighten the set screw of this drive sprocket until it extends into the hole of the hollow shaft. It **should NOT** touch the inner, solid shaft. Check to see that only the rear shaft moves when the sprocket is turned. If both shafts move, you have tightened the set screw too tight. Loosen the set screw until only the rear shaft moves when the sprocket is turning.

14. Insert adaptor bushing into remaining drive sprocket then place onto shaft. Make sure nylon spacer is in place. Tighten set screw making sure screw goes through slot in adaptor bushing and locks onto shaft.

15. Thread conveyor belts back onto frame making sure the links will be traveling in the proper direction.

16. Follow conveyor reassembly instructions in Monthly Maintenance Paragraph "F".

**NOTE:** It is recommended that the 6 Month Maintenance schedule be performed by a Middleby Marshall authorized service technician.

#### IV. MAINTENANCE - EVERY 6 MONTHS

A. Check brushes on D.C. conveyor motor, when worn to less than 1/10" (2.4mm), replace the brushes.

B. Clean and inspect the burner nozzle and electrode assembly. Also check your oven venting system.

C. Check conveyor shaft bushings and spacers. Replace them if they are worn. See Figure 6-5, Conveyor Exploded Drawing, items 15, 30 and 31 or Figure 6-6, Split Belt Conveyor, items 19, 23, 31, 35 and 36.

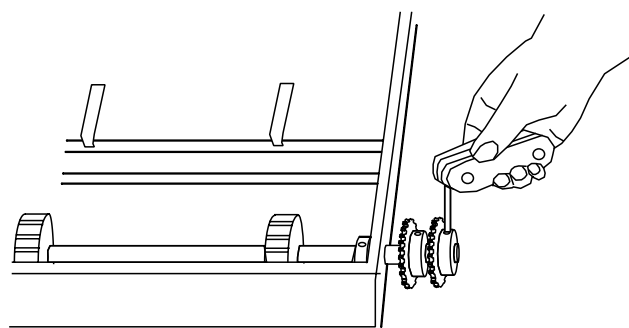


Figure 4-53.

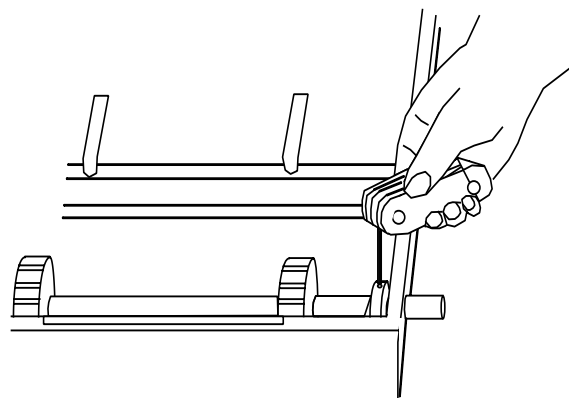


Figure 4-54.

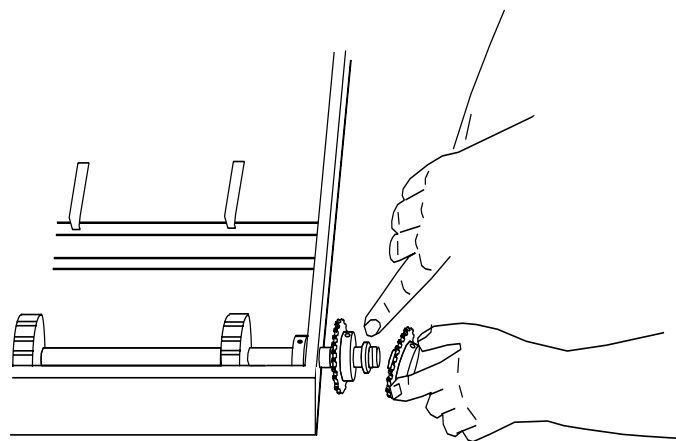


Figure 4-55.

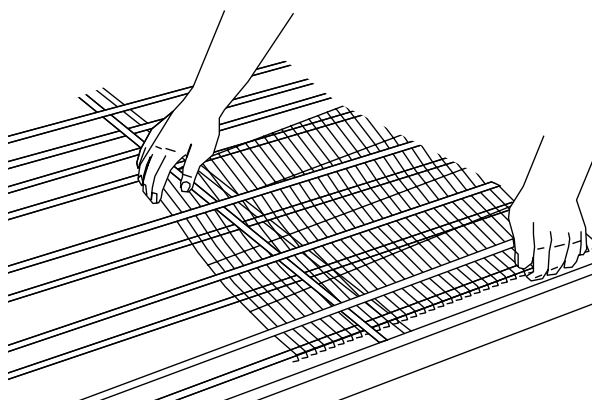


Figure 4-56.

#### IMPORTANT NOTICES:

- The installation, startup and changes required when changing from one gas type to another can be performed only by an authorized service technician. CANADIAN REGULATIONS PROHIBIT CHANGING AN OVEN'S OPERATION FROM ONE GAS TO ANOTHER.
- Installation of replacement parts requiring access to the interior of the oven is permitted only by an authorized service technician.
- If there are any problems with the operation of the oven, the authorized service technician must be called.
- It is suggested to obtain a service contract with a manufacturer's authorized service technician.

SECTION 4  
MAINTENANCE

**KEY SPARE PARTS KIT**

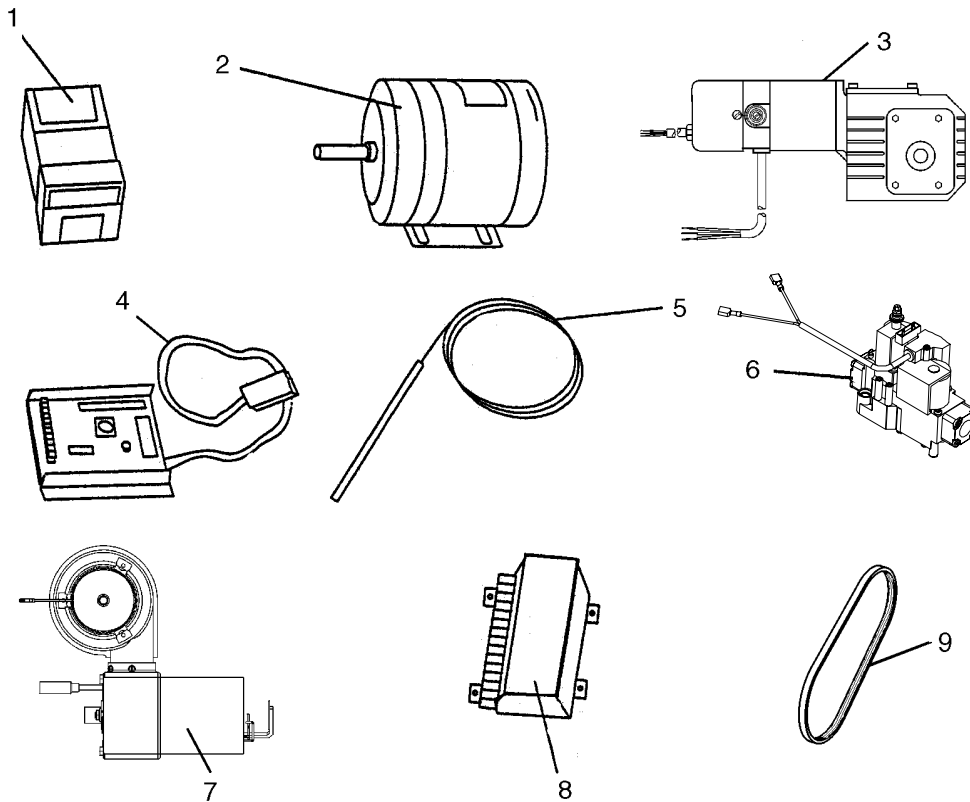
An oven can be purchased with a Key Spare Parts Kit (Figure 4-56). (The kit can be purchased when the oven is ordered, or later, from a Middleby Marshall Authorized Parts Distributor). The kit contains many of the crucial

parts that can reduce serious downtime and loss of production, if a failure occurs.

Replacement parts for this kit can be purchased from your Middleby Marshall Authorized Parts Distributor.

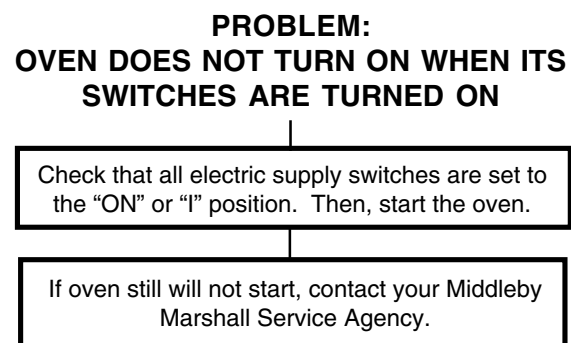
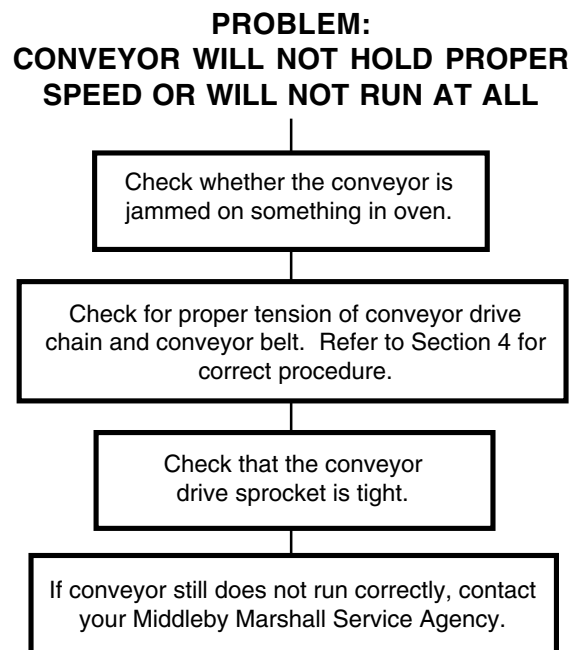
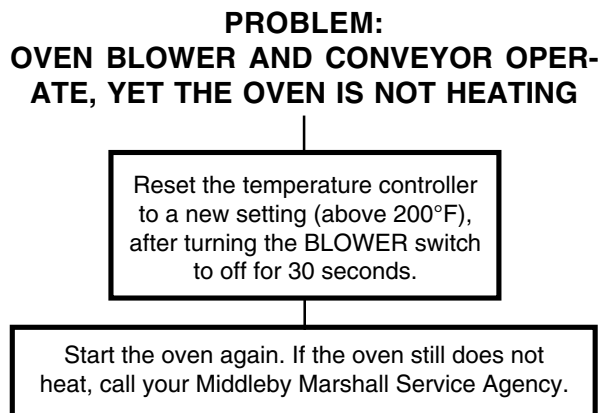
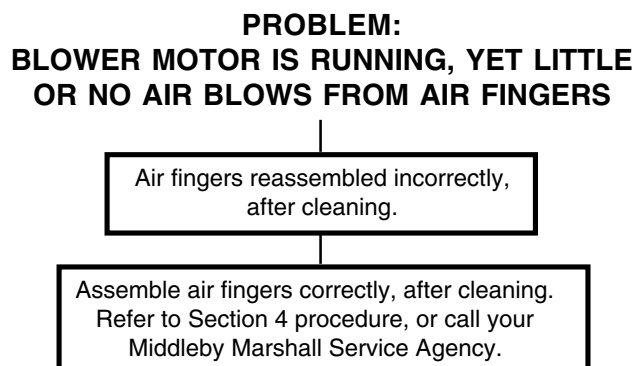
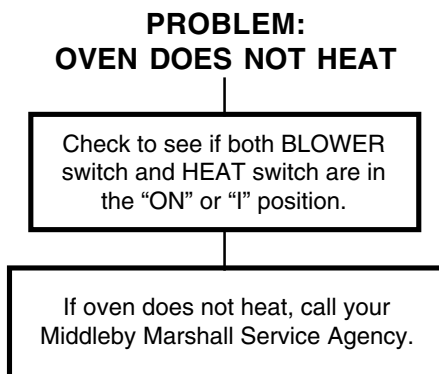
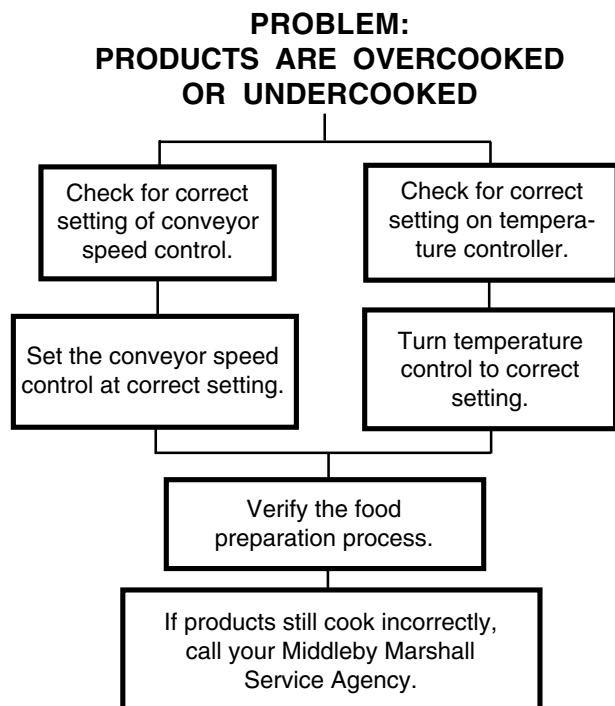
**PS540-SERIES GAS OVEN KEY SPARE PARTS (Figure 4-56)**

ITEM	PART NO.	ENGLISH DESCRIPTION	QUANTITY
1	47321	Temperature Controller	1
2	44687	Blower/Fan Motor	1
3	47797	Conveyor Drive Motor	1
4	60542	Conveyor Speed Control	1
5	33812-3	Thermocouple	1
6	60679	Assy, Valve Gas Module	1
7	50275	Burner & Motor Assembly	1
8	50239	Ignition Control Module (kit)	1



**Figure 4-56. Key Spare Parts**

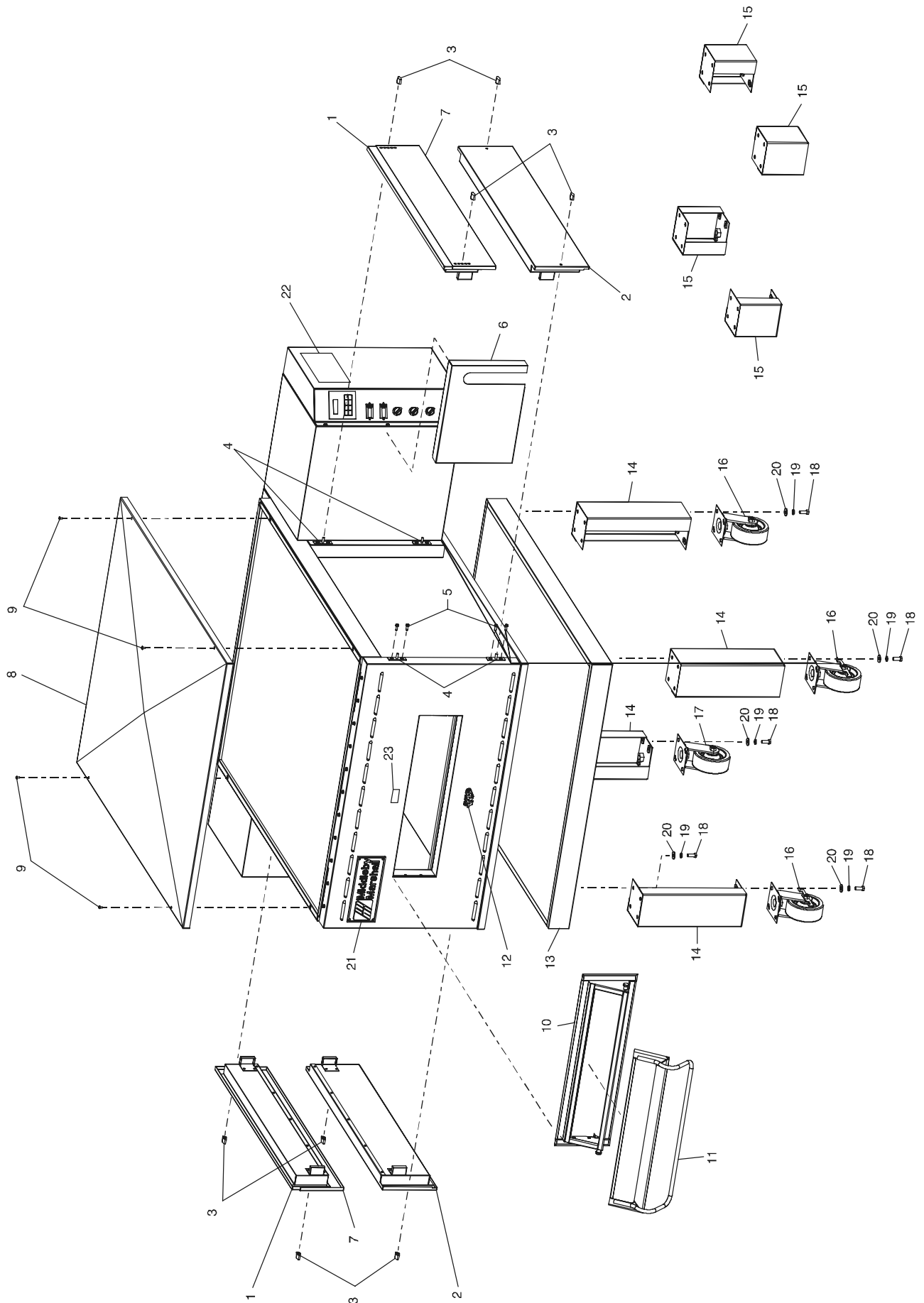
## SECTION 5 TROUBLESHOOTING



## NOTES

# SECTION 6 - PARTS LIST

SECTION 6  
PARTS LIST

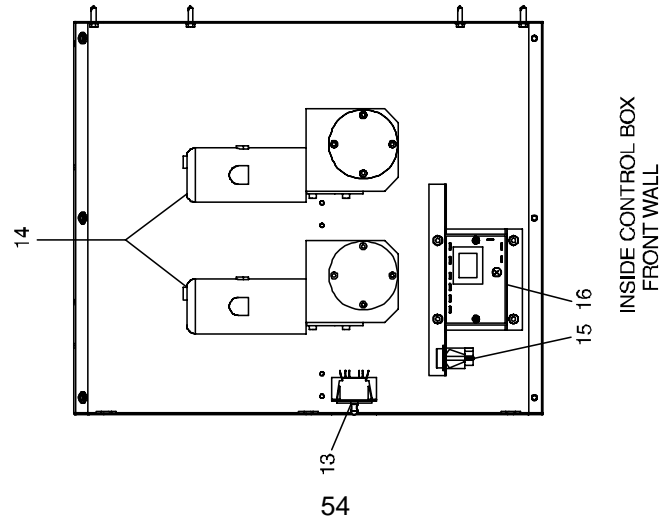
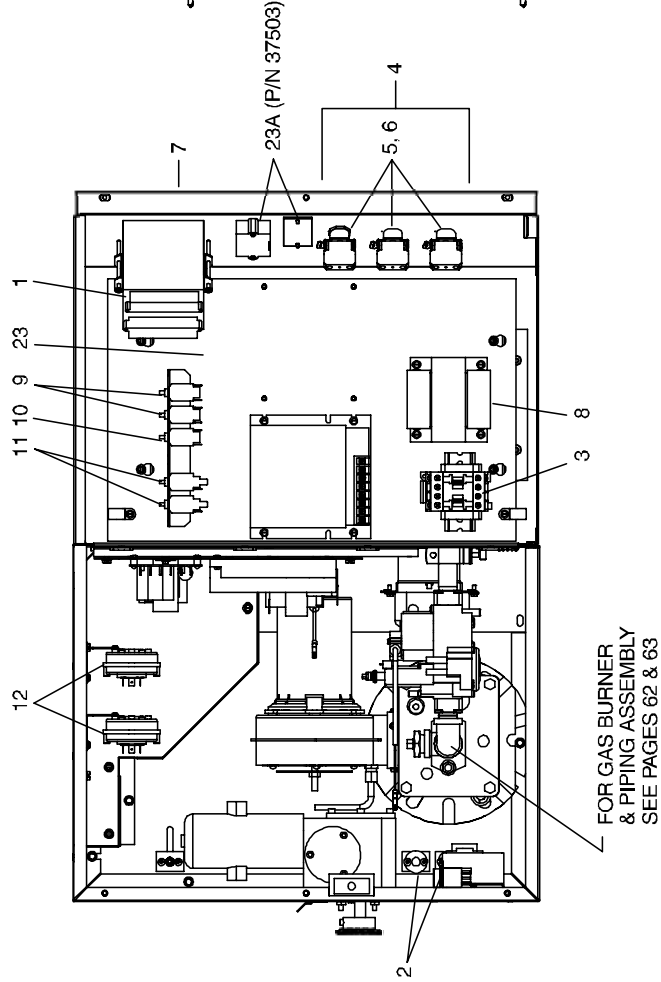
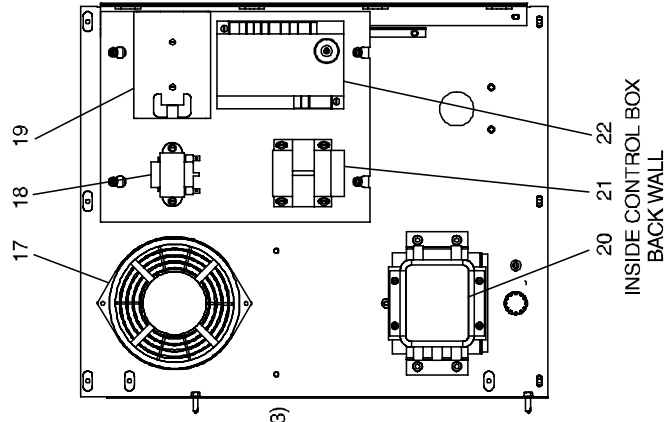




OVEN PANELS, WINDOW AND LEGS

ITEM	QTY.	P/N	DESCRIPTION
1	2	49947	UPPER END PLUG ASSEMBLY
2	2	49946	LOWER END PLUG ASSEMBLY
3	8	36452	WING NUT, PLASTIC 1/4-20
4	8	45449	END PLUG MOUNTING PLATE ASSEMBLY
5	16	21296-0005	SCREW, HEX WSHD12-14 x 3/4", SS BSD
6	1	49905	CONVEYOR CHAIN COVER
7	2	50637	EYEBROW
8	1	33486	COVER, TOP 304 PANEL
9	4	21256-0008	SCREW, 10-32 x 3/8" 18-8 SL TRUS S
10	1	37900-0103	WINDOW MOUNTING FRAME WELDMENT
11	1	30285	GLASS DOOR ASSEMBLY
12	1	42400-0087	WINDOW LATCH ASSEMBLY
13	1	54606	COMPLETE BASE WELDMENT
14	4	37900-0024	LEG/TOP PLATE WELDMENT
15	4	37900-0102	LEG 6" H/TOP PLATE WELDMENT
16	2	22290-0009	CASTER, SWVL W/BRAKE FLAT PLATE
17	2	22290-0010	CASTER SWVL FLAT PLATE
18	A/R	220373	SCREW, HEX HEAD, 3/8" - 16 x 1" SST
19	A/R	21422-0001	WASHER, LOCK SPLIT 3/8"
20	A/R	21416-0001	FLAT WASHER, 3/8" ZP
21	1	22500-0021	NAME PLATE
22	1	22500-0101	INSTRUCTION LABEL
23	1	22500-0041	LABEL, "CAUTION HOT SURFACE"
24	16	21172-0004	NUT, 3/8"-16 NYLON INSULATED L/N ZC
25	8	21416-0003	FLAT WASHER 1/2" 18-8
26	8	21426-0004	LOCK WASHER 1/2" 18-8
27	8	21216-0018	SCREW, HHCS 1/2-13 x 1-1/4" 18-8
28	4	45205	QUAD CASTER SPACER
29	4	45209	QUAD OUTRIGGER WELDMENT
30	4	45206	QUAD ADJUSTMENT FOOT INSERT

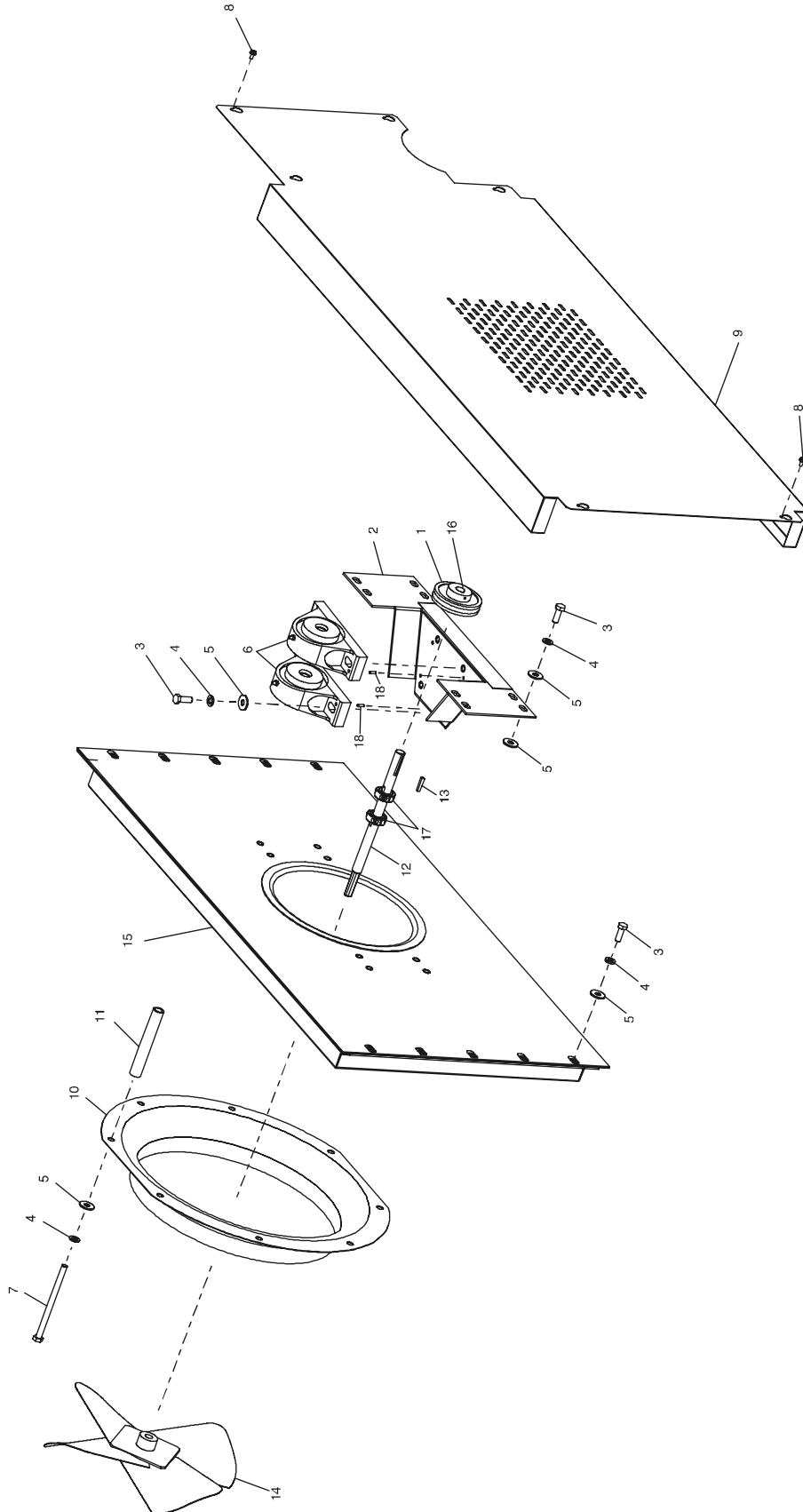
SECTION 6  
PARTS LIST



## CONTROL PANEL

ITEM	QTY.	P/N	DESCRIPTION
1	1	47321	COMBO BURST CONTROL, 4-20Ma
2	1	33812-3	THERMOCOUPLE, TYPE J SHIELDED 9.50 x 60"
3	1	28041-0011	CONTACTOR, 208/240V
4	3	46521	KIT, BLOWER SWITCH CONTAINS ((1) 44697, (1) 44696)
5	3	44697	CONTACT BLOCK
6	3	44696	SELECTOR SWITCH
7	1	49888	CONTROL DOOR LABEL
8	1	31504	TRANSFORMER, 230V (P)/120V (S) 200VA
9	2	45036	CIRCUIT BREAKER, 240V 3A
10	1	45644	CIRCUIT BREAKER, 240V 1A
11	2	46831	CIRCUIT BREAKER, 240V 8A
12	2	60598	AIR SWITCH, 0.13" WC
13	1	28021-0047	INTERLOCK SWITCH, 10A NO2P
14	A/R	47797	MOTOR, GEAR 1/50HP 1350:1
15	1	35145	SWITCH, PB MOLVENO 250V
16	1	33983	ELECTRIC HI-LIMIT CONTROL, 240V
17	1	36451	COOLING FAN, 230V AC
18	1	41872	TRANSFORMER, 240V (P)/24V (S) 25VA
19	1	60671	SIGNAL AMPLIFIER, 0-15VDC
20	1	33813	RFI FILTER, TYPE F1780DD20
21	1	32108	TRANSFORMER, 240V (P)/24V (S) 65VA
22	1	50239	SPARK IGNITION MODULE, 24VAC 50/60Hz
23	1	60542	CONVEYOR SPEED CONTROL W/DIGITAL SPEED DISPLAY
23A	1	37503	DIGITAL SPEED CONTROL (DISPLAY ONLY)

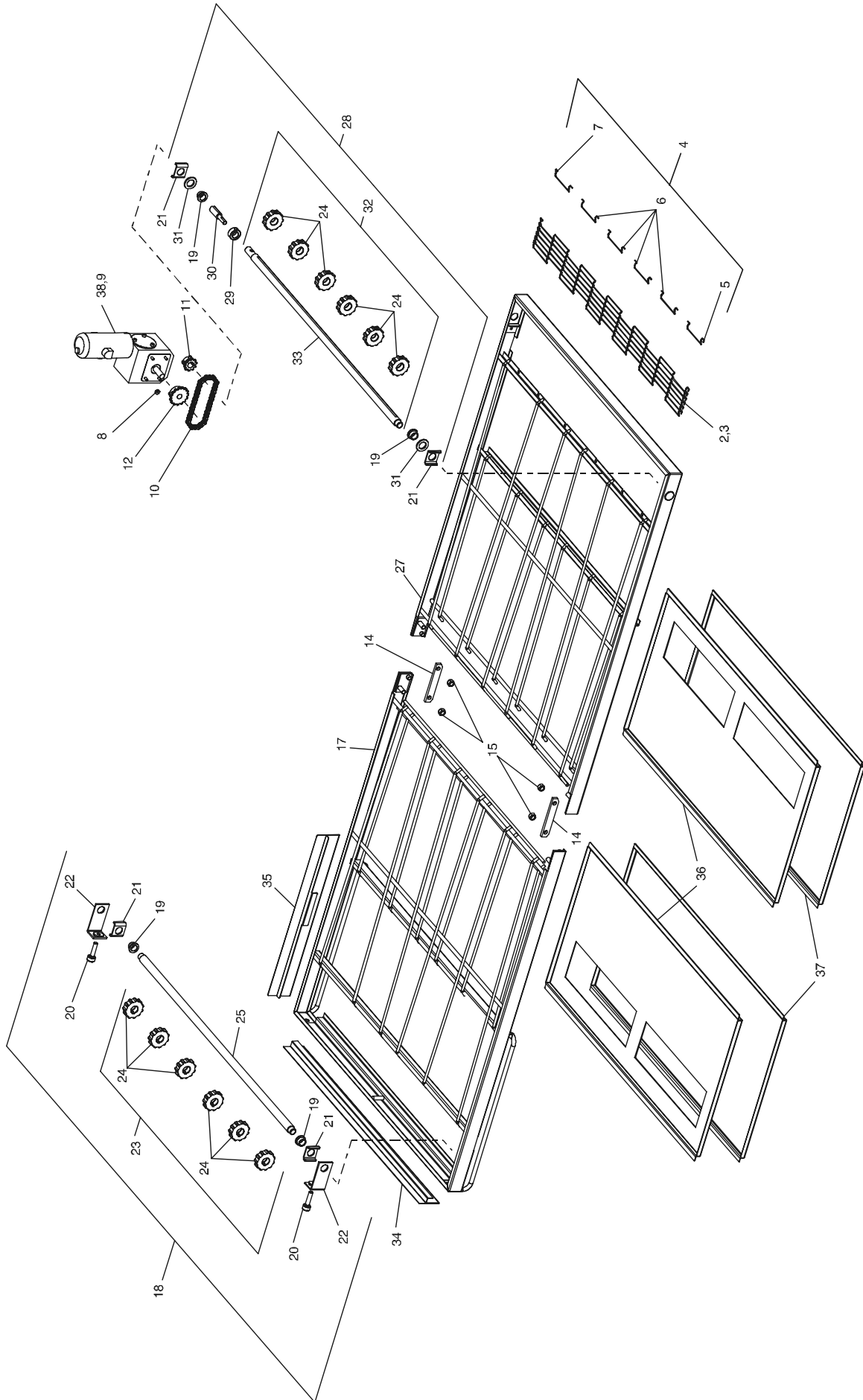
SECTION 6  
PARTS LIST



**BLOWER AND SHROUD**

<b>ITEM</b>	<b>QTY.</b>	<b>P/N</b>	<b>DESCRIPTION</b>
1	1	51157	PULLEY, 1GRV 3.0PD AK32H
2	1	48855	WELDMENT, BRG BRACKET PS540G
3	22	220373	SCREW, HH 3/8" - 16 x 1" SS T
3A	A/R	17110-0017	NEVER SEIZE LUBRICANT - USED ON ITEMS 3 & 7 APPLIED TO THREADS BEFORE REINSTALLING
4	30	21422-0001	SPLIT LOCK WASHER 3/8" ZP
5	38	21416-0001	FLAT WASHER 3/8" SS
6	2	22072-0025	BEARING, PILLOW BLOCK 5/8"
7	2	21326-0002	SCREW, HX HD GRS 3/8" - 16 x 5-1/2"
8	A/R	2000203	SCREW ,HX W/HD 10 - 32 x 3/8" ZC
9	1	48872	BACK WALL SHROUD
10	1	48803	AIR INLET RING
11	8	35900-0108	FANORIFICE STAND OFF TUBE
12	1	50643	FANDRIVE SHAFT
13	1	21651-0010	KEY, SQ 3/16" x 3/16" x 1.00" STL
14	1	48862	AXIAL FAN, 14" DIAMETER
15	1	51110	INR/OTR BACK WELDMENT
16	1	22031-0017	SPECIAL BUSHING, 5/8" ID - 3/16" x 3/32" KEY
17	2	35323	COUPLING, COLLAR SPLIT 5/8" DIAMETER
18	4	50271	ROLL PIN, PLN 5/32" x 7/16"

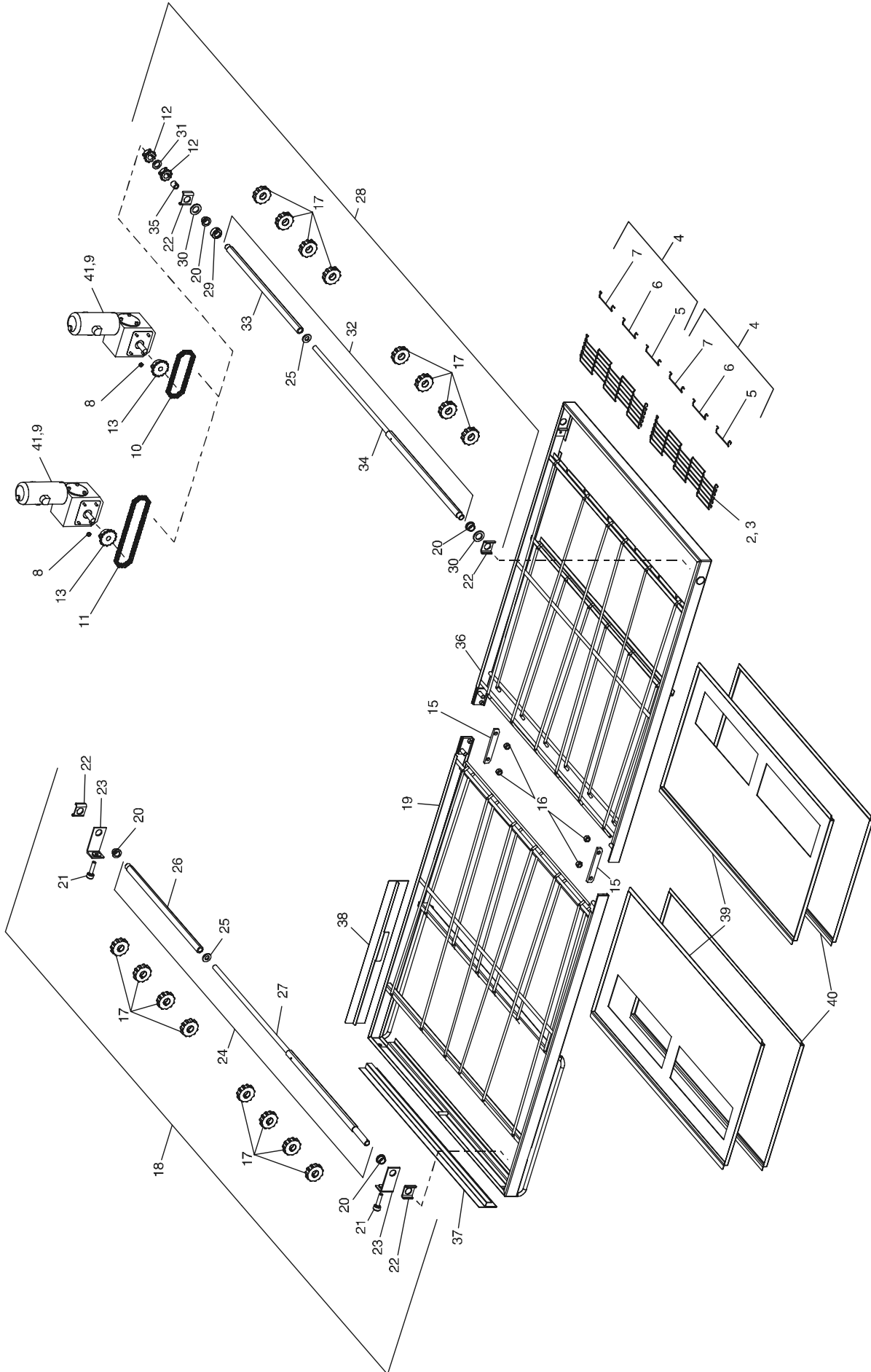
SECTION 6  
PARTS LIST



CONVEYOR

ITEM	QTY.	P/N	DESCRIPTION	ITEM	QTY.	P/N	DESCRIPTION
1	1	47042	SINGLE CONVEYOR 80" EXCLUDES ITEMS 7, 8, 9, 12, 36 & 37	19	2	22034-0003	BUSHING, FLANGE 3/4" OD, x 5/8" ID N/D
2	1	22450-0225	CONVEYORBELT, 1/2P 32" x 204" 2.84/11 S	20	2	35000-1008	SCREW, ADJ - CONVEYOR IDLER
3	1	33900-0032	CONVEYOR CHAIN, SS WIRE 1 FT	21	2	35900-0020	CONVEYOR SHAFT SUPPORT BRACKET
4	1	51380	KIT, MASTER LINK, CONTAINS ((1) 33900-0016, (4) 33900-0017, (1) 33900-0018)	22	2	37000-0413	IDLER WELDMENT
5	1	33900-0016	MASTER LINK - LEFT 1/2P x 32"	23	1	49400-0014	IDLER SHAFT ASSEMBLY INCLUDES ITEMS 24 & 25
6	1	33900-0017	MASTER LINK - MIDDLE 1/2P x 32"	24	12	22229-0003	CONVEYOR DRIVE SPROCKET 2.0" OD W/SCREW
7	1	33900-0018	MASTER LINK - RIGHT 1/2P x 32"	25	1	35000-1011	IDLER SHAFT - CONVEYOR
8	4	2001371	NUT, KEPS 10-32, ZP	26	1	49400-0073	CONVEYOR FRAME ASSEMBLY - DRIVE INCLUDES ITEMS 27 & 28
9	1	50265	CONVEYOR CONTROL PICKUP KIT (NOT SHOWN)	27	1	37900-0075	COMPLETE CONVEYOR FRAME WELDMENT - DRIVE
10	1	49400-0050	ROLLER CHAIN ASSEMBLY, SIB	28	1	49400-0011	DRIVE SIDE ASSEMBLY - CONVEYOR INCLUDES ITEMS 19, 21, 29, 30, 31 & 32
11	1	22151-0002	SPROCKET, #35-10T-5/8"	29	1	22011-0013	SHAFT COLLAR W/SCREW
12	1	22151-0003	SPROCKET, #35-15T-1/2"	30	1	35000-1013	DRIVE SHAFT ADAPTER
13	1	49400-0074	COMPLETE FOLDING CONVEYOR ASSY INCLUDES ITEMS 14, 15, 16 & 26	31	2	35000-1080	NYLON SPACER 3/4" ID 1-1/4" OD
14	2	35900-0398	PIVOT PLATE - CONVEYOR FRAME	32	1	49400-0012	DRIVE SHAFT ASSEMBLY INCLUDES ITEMS 24 & 33
15	4	21176-0002	LOCKNUT, HEX SS 3/8"-16	33	1	35000-1012	DRIVE SHAFT - CONVEYOR
16	1	49400-0072	CONVEYOR FRAME ASSEMBLY - IDLER INCLUDES ITEMS 17 & 18	34	1	35000-1103	STOP, SIDE END CONVEYOR EXT
17	1	37900-0071	COMPLETE CONVEYOR FRAME WELDMENT - IDLER	35	1	35900-0148	STOP, BACK SIDE CONVEYOR EXT
18	1	49400-0013	IDLER SIDE ASSEMBLY - CONVEYOR INCLUDES ITEMS 19, 20, 21, 22 & 23	36	2	35900-0255	CRUMB PAN W/SLOTS - CONVEYOR
				37	2	35900-0305	CRUMB PAN - CONVEYOR
				38	1	47797	MOTOR, GEAR 1/50HP 1350:1

SECTION 6  
PARTS LIST

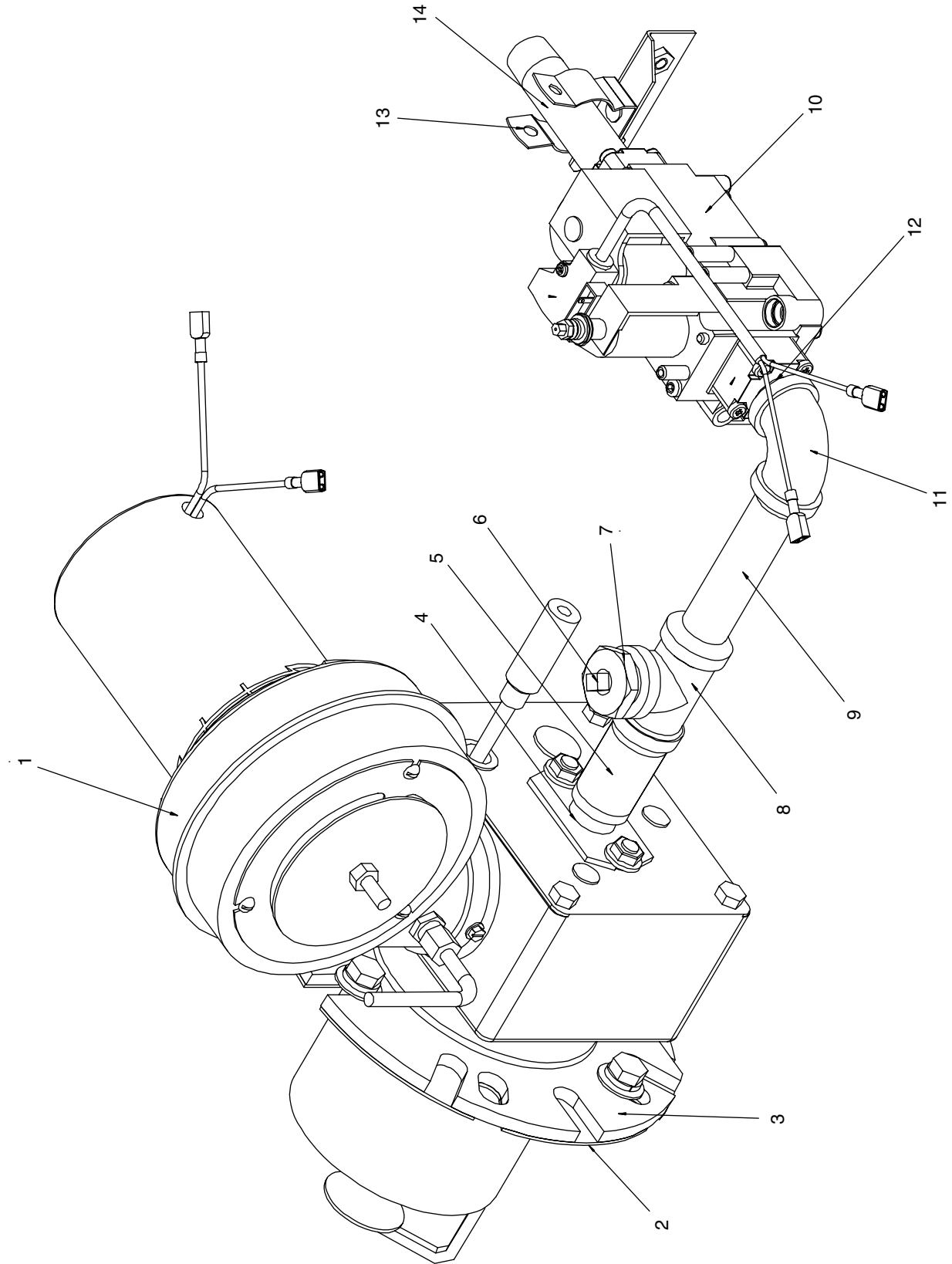




**SPLIT BELT CONVEYOR**

ITEM	QTY.	P/N	DESCRIPTION	ITEM	QTY.	P/N	DESCRIPTION
1	1	50646	SPLIT CONVEYOR 50/50 80" EXCLUDES ITEMS 7, 8, 9, 12, 36 & 37	21	2	35000-1008	SCREW, ADJ - CONVEYOR IDLER
2	1	22450-0226	CONVEYOR BELT, 1/2P 15" x 146" 2.86/5 SP	22	2	35900-0020	CONVEYOR SHAFT SUPPORT BRACKET
3	1	33900-0037	CONVEYOR CHAIN, SS WIRE 1 FT	23	2	37000-0413	IDLER WELDMENT
4	1	51382	KIT, MASTER LINK, CONTAINS ((1) 33900-0016, (1) 33900-0017, (1) 33900-0018)	24	1	35525	IDLER SHAFT ASSEMBLY, SPB INCLUDES ITEMS 25, 26 & 27
5	1	33900-0016	MASTER LINK - LEFT 1/2P x 32"	25	2	21415-0001	FLAT WASHER, BRONZE
6	1	33900-0017	MASTER LINK - MIDDLE 1/2P x 32"	26	1	35000-1535	REAR CONVEYOR IDLER SHAFT, SPB
7	1	33900-0018	MASTER LINK - RIGHT 1/2P x 32"	27	1	42400-0354	FRONT CONVEYOR IDLER SHAFT ASSEMBLY, SPB
8	4	2001371	NUT, KEPS 10-32, ZP	28	1	49400-0095	CONVEYOR FRAME-DRIVE ASSY, SPB INCLUDES ITEMS 12, 17, 20, 22, 29, 30, 31, 32, 35 & 36
9	2	50265	CONVEYOR CONTROL PICKUP KIT (NOT SHOWN)	29	1	22011-0014	SPLIT-SHAFT COLLAR
10	1	49400-0070	ROLLER CHAIN ASSEMBLY, SPB 15"	30	2	35000-1080	NYLON SPACER 3/4" ID 1-1/4" OD
11	1	49400-0051	ROLLER CHAIN ASSEMBLY, SPB 26-1/2"	31	1	35000-1531	NYLON SPACER
12	1	22159-0003	SPROCKET, #25-20T-5/8"	32	1	35524	DRIVE SHAFT ASSEMBLY, SPB INCLUDES ITEMS 25, 33 & 34
13	1	22159-0004	SPROCKET, #25-30T-1/2"	33	1	35900-0022	CONN-REAR CONVEYOR DRIVE SHAFT
14	1	49400-0092	COMPLETE FOLDING CONVEYOR SPB ASSY INCLUDES ITEMS 15, 16, 19 & 36	34	1	49400-0018	FRONT CONVEYOR DRIVESHAFT ASSY, SPB
15	2	35900-0398	PIVOT PLATE - CONVEYOR FRAME	35	1	35900-0023	BUSHING, SPROCKET-FRONT DRIVE
16	4	21176-0002	LOCKNUT, HEX SS 3/8"-16	36	1	37900-0075	COMPLETE CONVEYOR FRAME- DRIVE WELDMENT
17	16	22229-0003	CONVEYOR DRIVE SPROCKET 2.0" OD W/SCREW	37	1	35000-1103	STOP, SIDE END CONVEYOR EXT
18	1	49400-0093	CONVEYOR FRAME ASSEMBLY - IDLER INCLUDES ITEMS 17, 19, 20, 21, 22, 23 & 24	38	1	35900-0148	STOP, BACK SIDE CONVEYOR EXT
19	1	37900-0071	COMPLETE CONVEYOR FRAME WELDMENT - IDLER	39	2	35900-0255	CRUMB PAN W/SLOTS - CONVEYOR
20	2	22034-0003	BUSHING, FLANGE 3/4" OD, x 5/8" ID N/D	40	2	35900-0305	CRUMB PAN - CONVEYOR
				41	2	47797	MOTOR, GEAR 1/50HP 1350:1

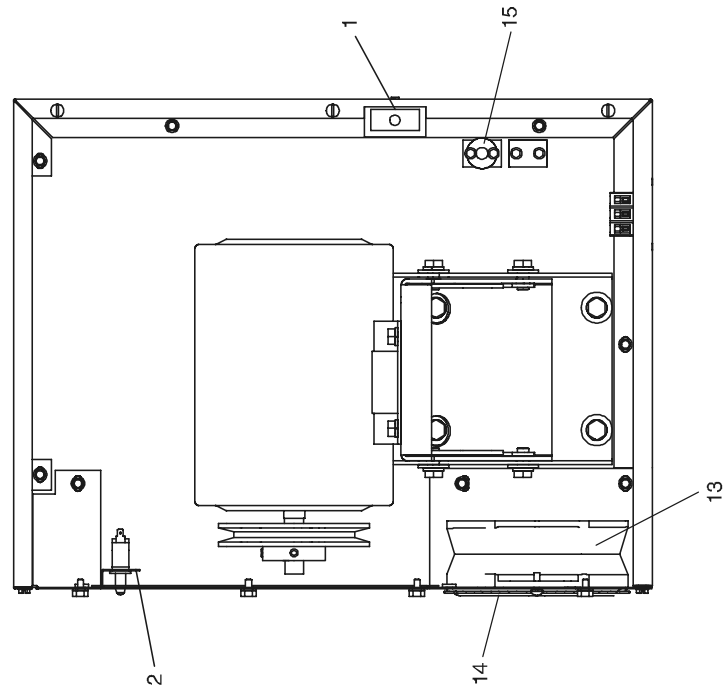
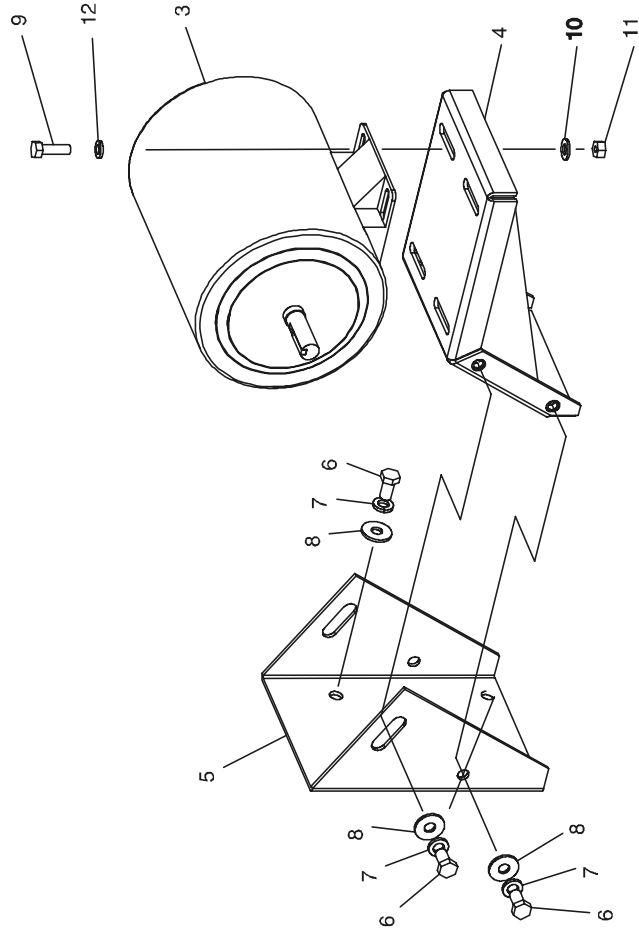
SECTION 6  
PARTS LIST



**GAS BURNER AND PIPING ASSEMBLY**

<b>ITEM</b>	<b>QTY.</b>	<b>P/N</b>	<b>DESCRIPTION</b>
1	1	50275	ASSY, BURNER/BLOWER
2	1	36937	GASKET, DS-22 BURNER FLANGE
3	1	22550-0006	FLANGE, DS-22 BURNER
4a	1	50640	ORIFICE, MAIN BURNER - 5/8 x 27 THD (0.1935" Ø) (NATURAL GAS)
4b	1	50641	ORIFICE, MAIN BURNER - 5/8 x 27 THD (0.120" Ø) (PROPANE GAS)
5	1	23015-0004	COUPLING, PIPE NPT 1/2"
6	1	30002	PLUG, SQ HD 1/8 NPT BR
7	1	48742	BUSHING, 1/2-1/8 NPT REDUCER
8	1	45667	TEE, PIPE 1/2" x 1/2" x 1/2"
9	1	31238	NIPPLE, 1/2 x 4 BLK PIPE
10	1	60679	ASSY, GAS VALVE
11	1	23122-0004	ELBOW, 90° PIPE (150#MI) 0.500
12	1	23153-0004	NIPPLE, CLOSE BLK 1/2
13	1	37000-0781	ASSY, 1/2" PIPE CLAMP PS200
14	1	37869	NIPPLE, BLK 1/2 x 3-1/2

SECTION 6  
PARTS LIST

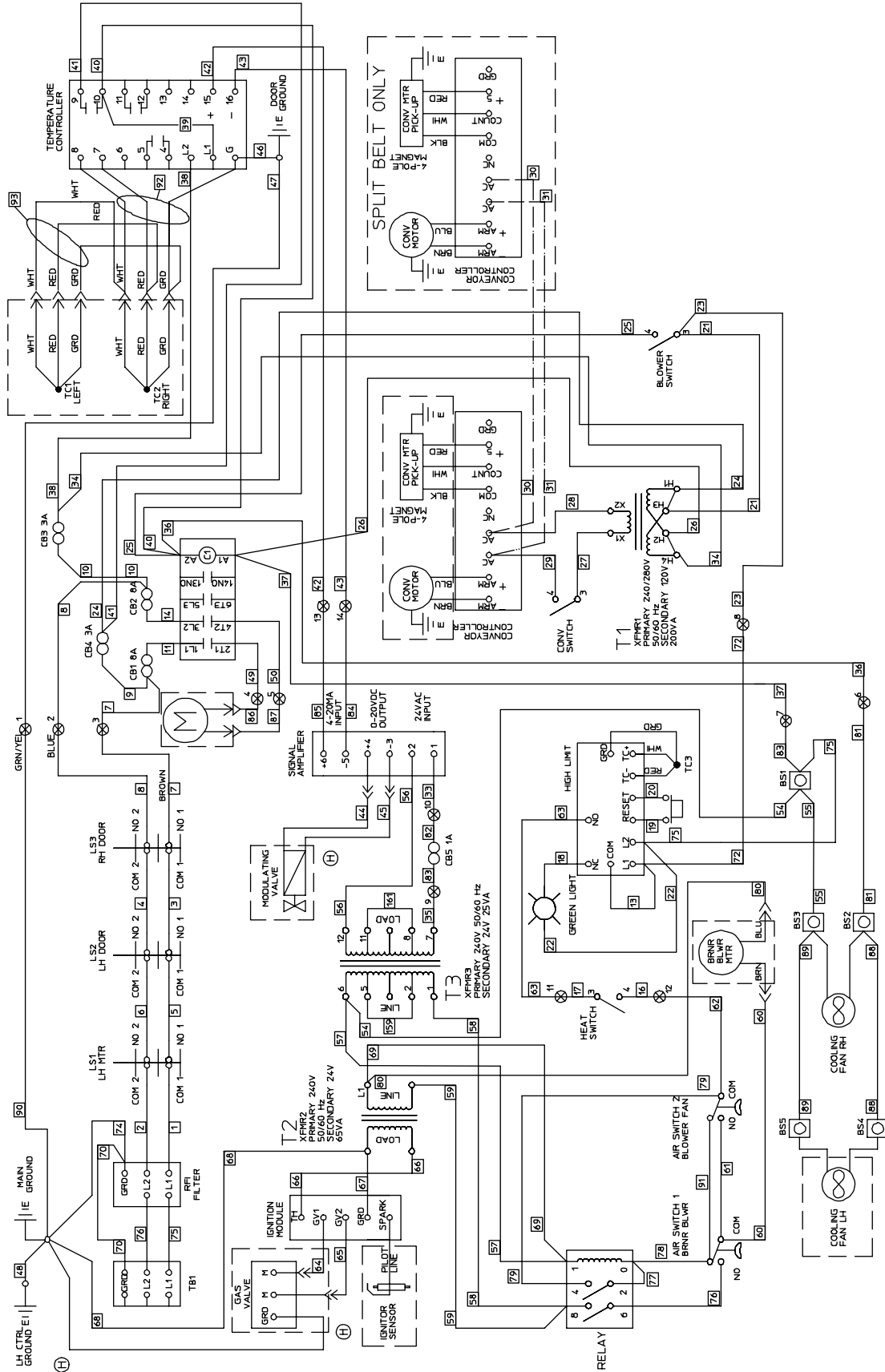


## MACHINERY COMPARTMENT

ITEM	QTY.	P/N	DESCRIPTION
1	1	28021-0047	INTERLOCK SWITCH 10A NO2P
2	1	28021-0061	MOMENTARY SWITCH - 10A NO 2 POLE
3	1	44687	MOTOR 1/2 HP
4	1	49953	MOTOR MOUNTING BRACKET WELDMENT
5	1	50449	MOTOR SUPPORT BRACKET
6	8	1513D8805	SCREW, HEX HD 3/8"-16 x 3/4" - NP
7	8	21422-0001	LOCK WASHER, SPLIT 3/8" ZP
8	8	21416-0001	FLAT WASHER SS 3/8"
9	4	A3896	MACHINE SCREW, HEX HD 5/16"-18 x 1" 18-8
10	4	3023A8807	FLAT WASHER 5/16" SAE NP
11	4	21126-0004	HEX NUT SS 5/16-18
12	4	A3682	LOCK WASHER 5/16"
13	1	36451	COOLING FAN 230V AC
14	1	31497	FINGER COOLING FAN GUARD
15	1	33812-3	THERMOCOUPLE, TYPE "J" SHIELDED 9.50 x 60"

## NOTES

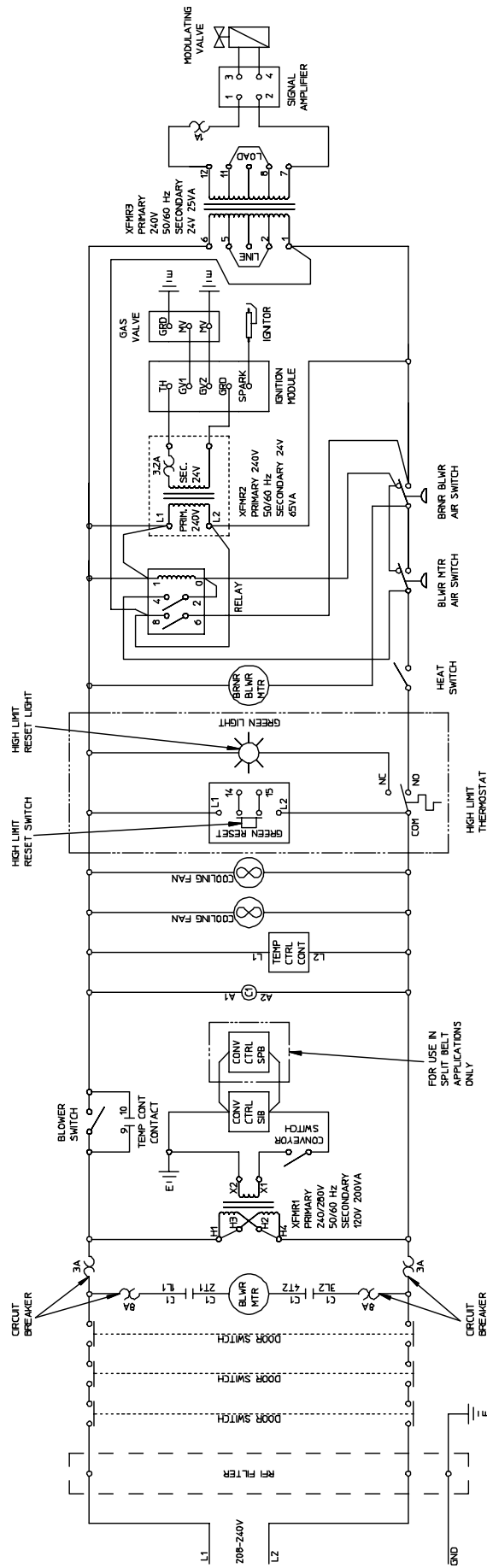
# SECTION 7 ELECTRICAL SCHEMATICS



Wiring Diagram, G208-240 50/60, 1PH 3W PS540

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SECTION 7  
ELECTRICAL SCHEMATICS



Wiring Diagram, G208-240 50/60, 1PH 3W PS540

50141H



# NOTES

**NOTES**

# NOTES

## **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.**

### **NOTICE**

During the warranty period, ALL parts replacement and servicing should be performed by your Middleby Marshall Authorized Service Agent. Service that is performed by parties other than your Middleby Marshall Authorized Service Agent may void your warranty.

### **NOTICE**

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

### **NOTICE**

Middleby Marshall reserves the right to change specifications at any time.

# **CFESA**

**Commercial Food Equipment Service Association**

Middleby is proud to support the Commercial Food Equipment Service Association (CFESA). We recognize and applaud CFESA's ongoing efforts to improve the quality of technical service in the industry.

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