SECTION 3
OPERATION

I. CONTROLS AND COMPONENTS

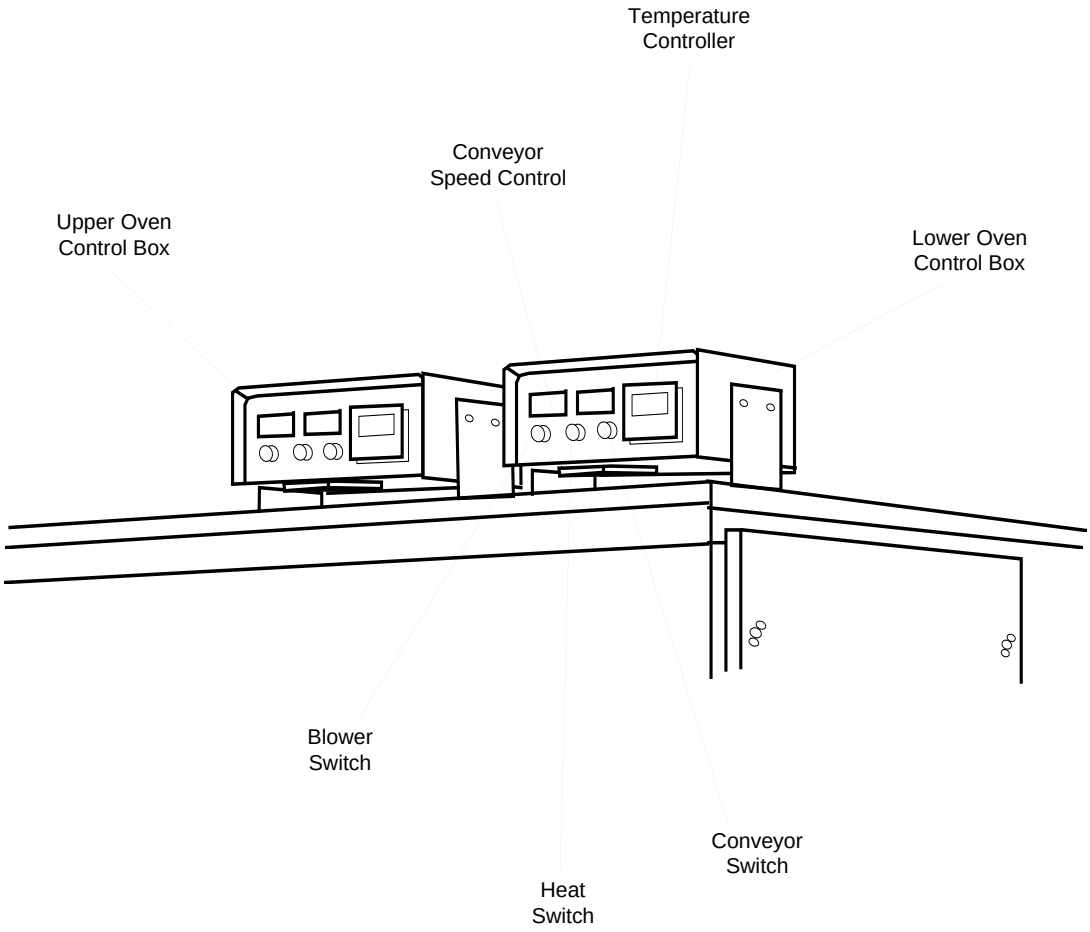

Figure 3-1.
PS200-R68 Series
Control Functions

II. COMPONENT INFORMATION AND LOCATION

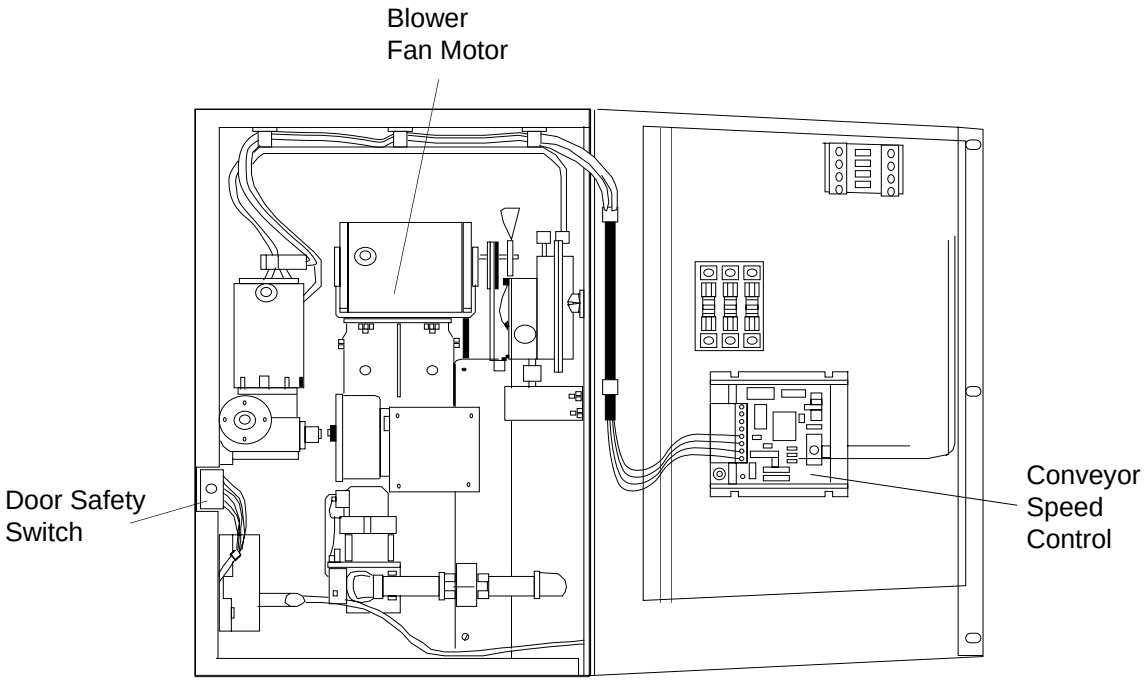

Figure 3-2

A. Door Safety Switch

The Door Safety Switch is located at upper left hand side of control cabinet. Opening the control cabinet door will permit the switch to open, disconnecting power to all electrical controls.

CAUTION: *DO NOT TOUCH WIRES GOING TO THIS SWITCH AS CURRENT IS ALWAYS PRESENT.*

B. Blower Fan

The blower switch located on the control box has two positions. The switch must be on (I) for the burner and conveyor 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 and conveyor will continue to run even when the blower switch is turned to the off position.

An air pressure switch monitors the air flow from the main blower, this acts as a safety interlock for the burner. The heat will not come on if the air switch does not sense air flow off the main blower fan.

C. Heat (Gas ovens only)

Turning the heat switch to on (I) will initially set up the oven purge circuit after approximately 30 seconds the pilot will light. After the pilot is lit the main control valve will open permitting gas to go to the burner and heat the oven.

This switch is in series with the burner blower motor centrifugal switch, high temperature safety switch and 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 located on the control box is a solid state on/off type which is used to maintain the desired set temperature. The temperature controller continuously monitors the oven temperature and turns high flame solenoid valve on in gas heated ovens. The heat is on for the time required to maintain a constant temperature.

The temperature controller contains a Hi-Limit switch which will shut down the oven when the oven reaches 650°F. (343° C.) and a low-limit switch which allows the oven to cool down to 180°F. (82° C.) before shutting off the blowers.

E. Heat (Electrically heated ovens only)

Turning the heat switch located on the control box to on (I) will energize the electric heating system. This switch is in series with the blower fan motor centrifugal switch and high temperature override switch. Both switches must be closed before the elements may be energized.

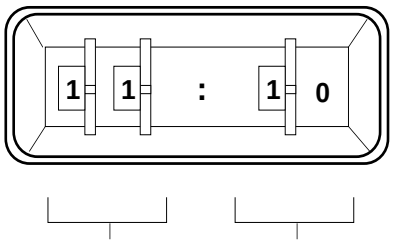

Figure 3-3. Conveyor Speed Digital Control

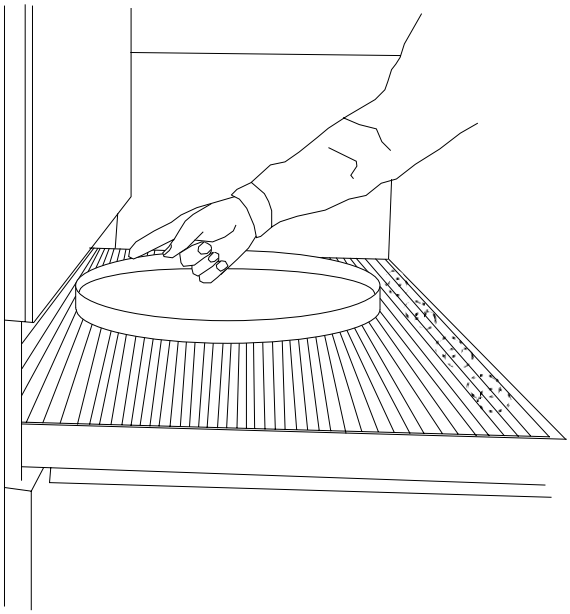

Figure 3-4. Product at entrance end of bake chamber- BEGIN TIMING.

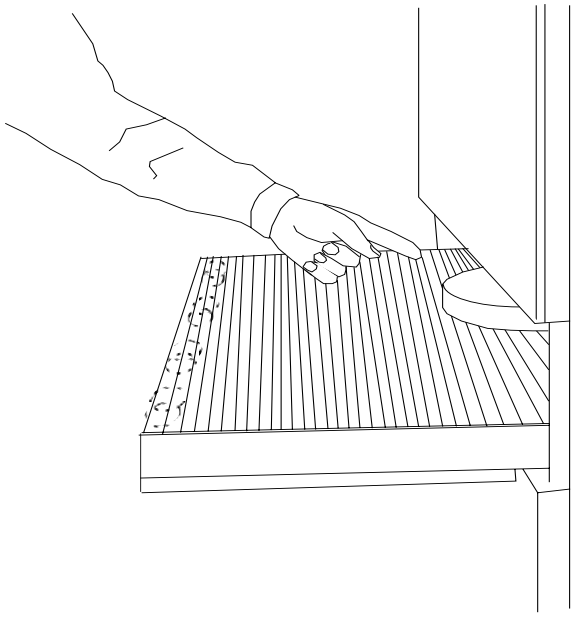

Figure 3-5. Product at exit end of bake chamber-END OF TIMING

F. Conveyor

The conveyor switch is on the control box. Also on the control box is the digital control for the conveyor speed. The digital control can be adjusted from 2 minutes 40 seconds to 29 minutes 50 seconds 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.
Refer to Figure 3-4 & 3-5.

To check conveyor speed place an item at the product entrance end of oven bake chamber as shown. Time how long it takes for the leading edge of the item to go from the entrance end of the bake chamber to the exit end and this will be your conveyor speed.

NOTE: *In Figures 3-4 & 3-5 the oven shown has the conveyor running right to left.*

CAUTION

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". Turn OFF and lockout or tagout all electrical power to the oven before attempting to clean or service this oven.

II. OPERATION

A. Start Up Procedures -- Gas Heated Ovens

Initial Start Up

1. Check that manual gas shutoff valve is on. Valve is located below machinery compartment. See Figure 2-12.

Daily Start Up

1. Turn blower switch to the on (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 fans (see Figures 1-4 and 1-6) are operating when the blower switch is turned on (I). The cooling fans cool the electrical components and burner blower motor. The cooling fan, located at the rear of the machinery cabinet blows air into and through the cabinet. Air is exhausted out the back of the oven. A cooling fan is also located in the bottom of the control box to draw air through the rear louvers and out the bottom.

Clean the cooling fan grills and louvers daily.

IMPORTANT NOTE: *The cooling fan will operate when the blower switch is turned on (I). It must operate to keep the machinery cabinet below 140°F. (60° C.).*

WARNING: *IF FAN BLADE IS NOT ROTATING, BROKEN OR IF 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 the solid state electrical components if oven is operated while cooling fan is not running or vent grill is plugged.*

3. Turn the conveyor switch to the on (I) position. This now starts the conveyor belt moving through the oven. Set conveyor speed digital control for desired bake time .

4. The temperature controller should be set at your desired baking temperature. See section on bake times to determine desired temperature.

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

5. Turn the heat switch to the on (I) position. This will complete a circuit which supplies 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 15 second purge cycle. The burner blower motor will not operate during the time the main fan is purging the oven. After 15 seconds the burner blower motor starts, which can be detected by feeling a slight vibration when touched. This should permit the burner to light.

When in operation, the burner is either on low or high flame. A flame sensing electrode must be satisfied to keep the pilot and gas valve open. If for some reason the pilot flame is extinguished, the pilot will try to relight for 90 seconds. If the pilot does not relight in 90 seconds the oven will go into automatic safety lockout.

To relight the oven the heat switch must be turned off for 5 minutes and then repeat the oven start-up procedure.

6. Close front window.

7. Oven will reach a baking temperature of 500° F (260° C) in approximately 10 minutes. Allow the oven to cycle for 30 minutes after it has reached desired bake temperature and 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 start-up 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.

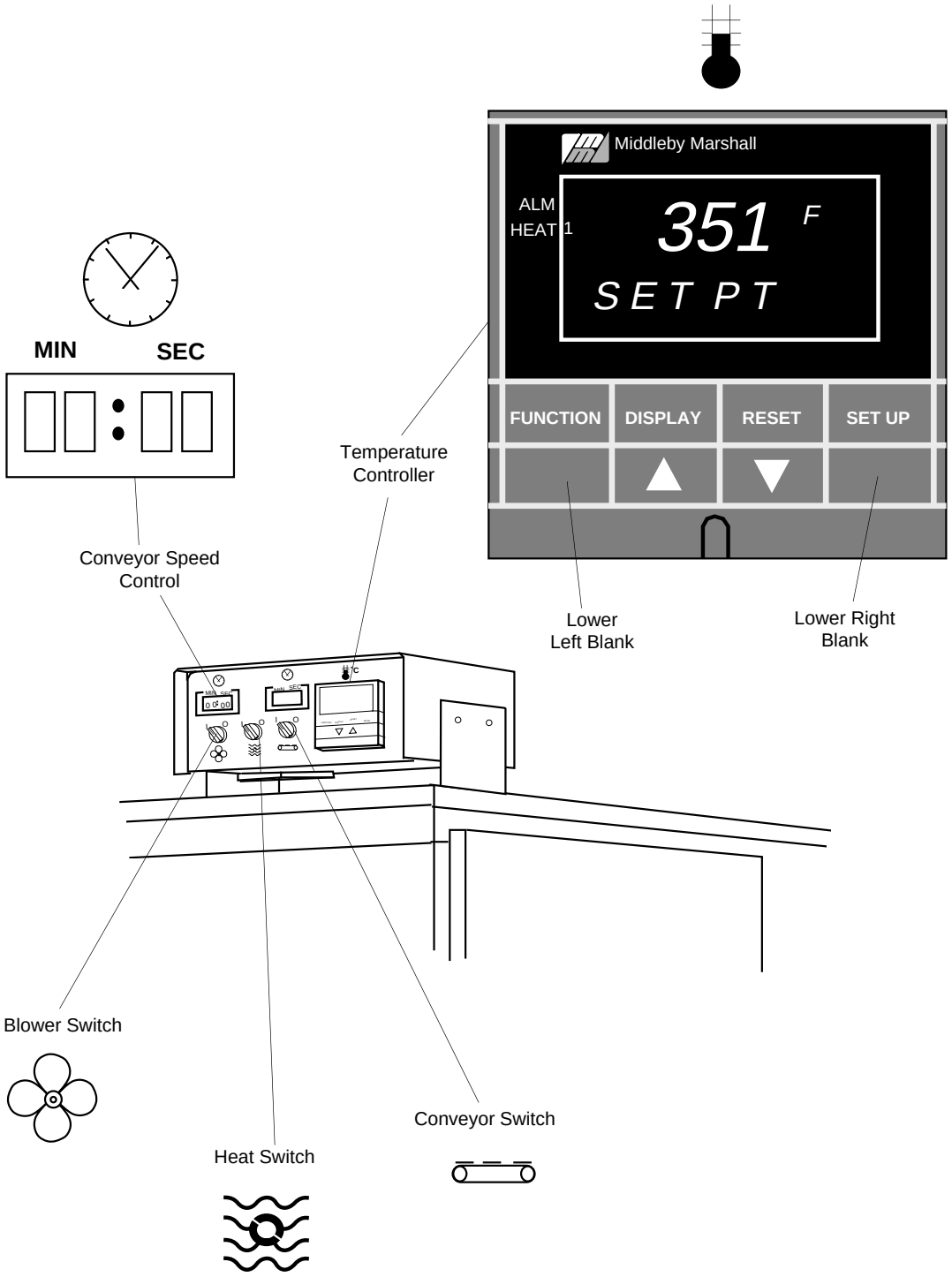

Figure 3-6. Control Panel

B. Temperature Controller Operation Instructions

1. **UNLOCKING SET POINT.** The temperature controller set point must be 450°F (232.2°C) for the upper oven and 350°F (176.7°C) for the lower oven. To raise or lower the set point on a Red Lobster oven the set point must first be unlocked by pressing the Lower Left Blank and the Lower Right Blank keys simultaneously. The set point will remain unlocked for 60 seconds or until the DISPLAY key is pressed.

a. Raising the temperature set point. Refer to Figure 3-7.

AA. Slow Method: 1 Degree increments.
Press the UP Arrow Button (▲). The temperature set point will increase one degree. If this button is kept depressed, the temperature set point will continue to increase in one degree increments.

BB. Fast Method: 10 Degree increments.
Press and hold the UP Arrow Button (▲). The temperature set point will begin to increase one degree at a time. With your other hand, press the DOWN Arrow Button (▼) and release. The temperature set point will begin increasing in 10 degree increments.

CC. Fast Method: 100 Degree increments.
Press and Hold the UP Arrow Button (▲). The temperature set point will begin to increase by one degree at a time. With your other hand, press the DOWN Arrow Button (▼) once and release. The temperature set point will begin increasing in 10 degree increments. Press the DOWN Arrow Button (▼) again and release. The temperature set point will begin increasing in 100 degree increments. See Figure 3-7.

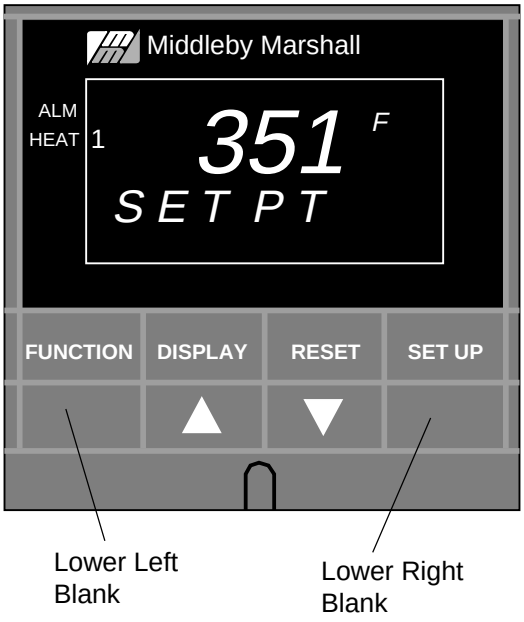

Figure 3-7

b. Lowering the temperature set point.

AA. Follow the previous steps AA through CC for raising the temperature set point but use the opposite UP/DOWN Arrow Buttons.

2. Displaying the actual oven temperature. Refer to Figure 3-8.

a. To check the oven temperature press the DISPLAY Button once and the actual oven temperature and the word "TEMP" will be displayed. See Figure 3-8.

b. Press the DISPLAY Button again and the display will return to the temperature set point. If the DISP key is not pressed, then the display will automatically return to the temperature set point after 60 seconds.

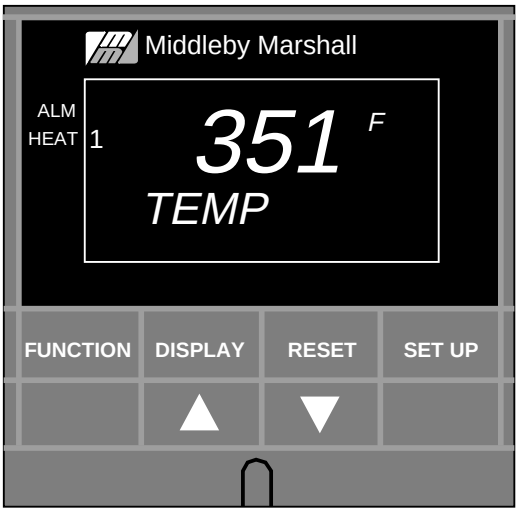

Figure 3-8

3. Display Messages

a. ALM - The ALM window will display either a “1” or “2” or will be blank.

AA. Refer to Figure 3-9. The “1” signals that the oven temperature is above 650°F (343°C) and therefore the high limit feature has been activated. The burner will then shut off and the oven will not function until the temperature cools down below 650°F (343°C).

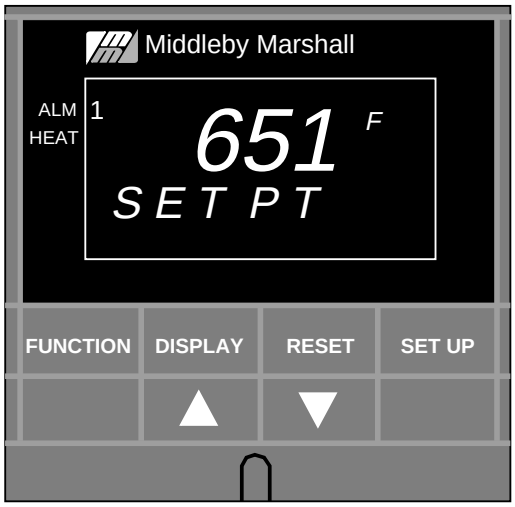

Figure 3-9

BB. Refer to Figure 3-10. The “2” signals that the oven temperature is below 180°F (82°C). The “2” will appear only when the oven is initially heating up and has not yet reached 180°F (82°C) or the heat switch is turned off and the oven has cooled down below 180°F (82°C).

CC. The ALM window is blank during normal operation when the oven temperature is 180°F to 650°F (82°C to 343°C).

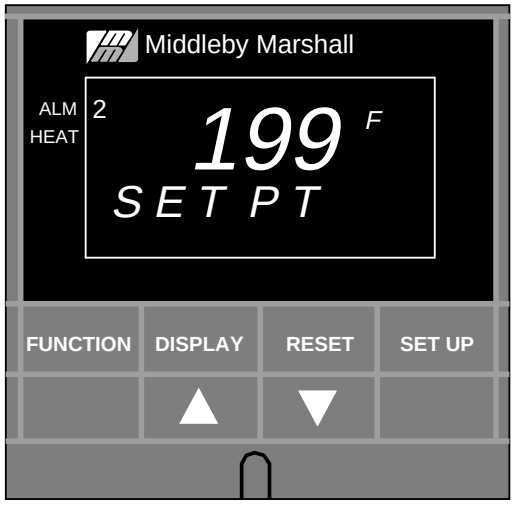

Figure 3-10

b. HEAT - The HEAT window will display either a “1” or will be blank. Refer to Figure 3-11.

AA. The “1” signals that the temperature controller is calling for heat and the burner is turned full on.

BB. When the HEAT window is blank the temperature set point has been reached and the burner is turned down to low flame.

CC. The “1” will continue to blink on and off every few seconds during normal operation. This indicates that the temperature controller is maintaining the correct temperature.

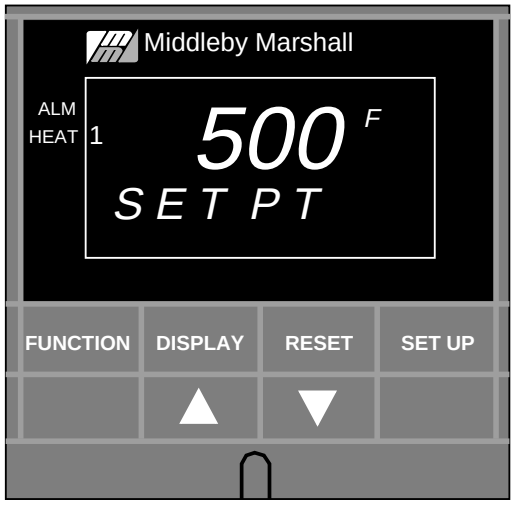

Figure 3-11

c. FAILSF (Failsafe)

AA. Refer to Figure 3-12. If the oven does not reach 200°F (93°C) in 15 minutes the temperature controller will shut off the high flame valve and begin flashing “FAILSF” and “SET PT” alternately. You will also note that the “2” in the ALM window stays on but the “1” in the HEAT window turns off. This condition signals a problem in oven heating or heat sensing.

BB. To reset the temperature controller, turn off the oven blower switch. Wait 10 seconds and turn the oven blower switch back on. The “2” in the ALM window, the “1” in the HEAT window, the current temperature set point, and the words “SET PT” will be displayed again. The temperature controller will now cycle through its normal procedures.

Figure 3-12

d. F/C - The F/C window will display either an “F” or a “C”.

AA. The “F” indicates that the temperature displayed is in degrees Fahrenheit.

BB. The “C” indicates that the temperature displayed is in degrees Celsius.

C. Start Up Procedures -- Electric Ovens

1. Turn blower switch to the"ON" position. This starts the main blower fan and cooling fan. The blower circulates air through the air fingers and must stay on during the cooking or baking process. The cooling fan cools the electrical components and blower fan motor of the oven.

2. Check to see if the cooling fans (see Figures 1-4 and 1-6) are operating when the blower switch is turned "ON". The cooling fans cool the electrical components and burner blower motor. The cooling fan, located at the rear of the machinery cabinet blows air into and through the cabinet. Air is exhausted out the back of the oven. A cooling fan is also located in the bottom of the control box to draw air through the rear louvers and out the bottom.

Clean the cooling fan grills and louvers daily.

IMPORTANT NOTE: *The cooling fan will operate when the blower switch is turned "ON". It must operate to keep the machinery cabinet below 140°F. (60° C.).*

WARNING: *IF FAN BLADE IS NOT ROTATING, BROKEN OR IF 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 the solid state electrical components if oven is operated while cooling fan is not running or vent grill is plugged.*

3. Turn conveyor switch to the "ON" position. This now starts the conveyor belt moving through the oven. Set conveyor speed digital control for desired bake time .

4. Set desired temperature on temperature controller. Refer to previous Section B for complete temperature controller operation instructions. See section on bake times to determine desired temperature.

5. Turn the heat switch to the "ON" position. This will complete a circuit which supplies power to the heater.

6. Close front window.

7. When oven reaches desired temperature, wait at least 30 minutes before 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 start-up procedure.

D. Shut Down (Gas or Electric Ovens)

1. Turn "OFF" heat switch and blower switch.

CAUTION: Blower fan and conveyor will remain on.

2. Open front window.

3. **Do not turn off conveyor switch.** The conveyor and blower fan will automatically shut off when temperature goes below 180°F (82°C) The conveyor switch is used only for emergency shut down of conveyor.

NOTE: *For oven servicing and complete shut down, turn OFF main gas shutoff valve located at rear of oven and main electric power supply.*

E. Conveyor Speed: Bake Time and Time of Delivery

BAKE TIME (CONVEYOR SPEED) - As stated in the previous paragraphs, bake time (conveyor speed) is defined as the amount of time elapsed between the time the Leading edge of a product enters the oven and the leading edge exits the oven. See Figure 3-13.

Bake Time (Conveyor Speed) is controlled by adjusting the digital speed controller. The setting on the digital speed control dial indicates the actual bake time (conveyor speed).

Bake Time will be the same for any size product

TIME OF DELIVERY- Time Of Delivery is the amount of elapsed time between the period when the Leading edge of a product enters the oven and the Trailing edge of the product is fully discharged and is ready to be delivered to the customer. See Figure 3-14. Time of delivery changes as the product size changes.

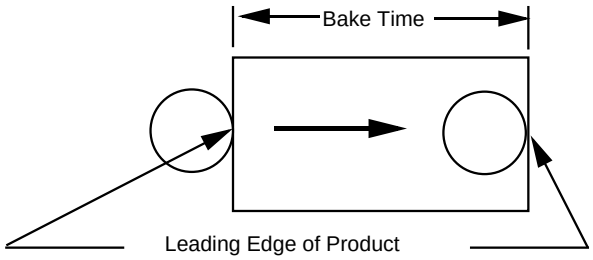

Figure 3-13. Bake time

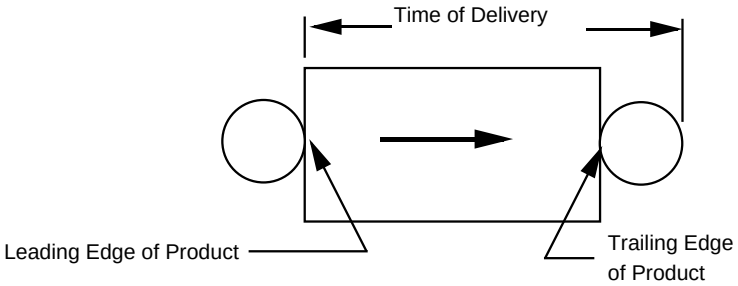

Figure 3-14. Time of Delivery

NOTES: