

# Convection Ovens

# Model BXC Smartbake 4-Tray & 10-Tray

Belshaw Bros., Inc. 1750 22<sup>nd</sup> Ave. S. Seattle, WA 98144

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If you accept the machine from the shipping company, you are, in effect, saying that the machine is in good condition, and you must pay for the machine. Belshaw cannot pay for shipping damage, because the freight company has accepted the machine from Belshaw in good condition, and is responsible for its safe delivery. For your protection, inspect the machine to see that no parts are bent, scratched, or otherwise damaged. If any damage has occurred in shipping, file a freight claim with the shipping company immediately.

#### **WARNING**

Keep this manual available at all times for use.

EQUIPMENT RECORD		
Please provide the information below when you correspond with us about your machine.		
Purchased by		
Installed by		
Date of Installation		
Model number		
Serial number		

MN-1881EN
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# **Preface**

The Belshaw BX Smartbake convection oven is a computerized, compact, electric oven with a capacity for either four or 10 trays. Each tray is 26" x 18".

The convection oven is made of stainless steel and is fitted with a removable tray rack, allowing easy cleaning of its internal surfaces.

The 4-tray oven is designed to be stackable without separate support, allowing the system to grow with your business without taking up a large area.

The 10-tray oven is equipped with an integral, energy efficient steam system. A double glazed door also helps to increase energy efficiency, and the oven base is supplied with locking castors.

The high-speed fan and ring element provides efficient air circulation, helping produce a range of high-quality products.

To help ensure safe and efficient operation of the oven, the operator must work safely at all times, read this manual, and follow its instructions and warnings. A thorough understanding of how to install, maintain, and safely operate the convection oven will help prevent production delays and injuries.

To use the convection oven safely, heed the following warnings and all other warnings that appear in this manual.

- Use the oven only for baking bread, confectionery, and savory products. Do not use for any other items without consulting Belshaw.
- All repairs and maintenance of electrical units must be done by authorized electricians.

- Electrical access panels must not be opened unless the main supply to the oven is isolated.
- Any chimneys or ducts fitted above the ovens should be insulated.
- All connections must be made in accordance with the regulations of the country where the oven is installed.
- Do not touch the oven, its windows, or immediate surroundings during or shortly after use, as these surfaces may be hot.
- Use only Belshaw parts in this oven.
- Do not change the construction of this oven.
- The owner of the oven is legally obligated to instruct staff using the oven in its operation and in these safety regulations. The instructions must stay in the oven's working area.
- This oven uses a steam generator. Hard water must be properly treated before use.

Installation

# Unpacking the oven

- 1. Move the crate containing the oven to the workstation.
- 2. Remove the machine from the shipping crate, being careful not to lose, loosen or damage any parts.
- 3. Remove all packing materials from the machine.

4. Inspect the machine to see that no parts have been damaged during shipping. If any damage has occurred, file a freight claim with the shipping company immediately.

#### **IMPORTANT**

Keep this manual available for future reference.

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## **Dimensions and Specifications**

	2618 4 tray oven	2618 10 tray oven
Height	21 inches	74 inches
Depth, door closed, including handle	44 inches	53.5 inches
Width	33.5 inches	33.5 inches
Operational clearance*	2" back and sides, 10" top	2" back and sides, 10" top
Total power	7. 5 kW	17 kW
Electric	208 V, 3-phase + N + E, 60Hz, fused at 35A	208 V, 3-phase +N + E, 60Hz, fused at 58A
Supply cable	6 feet of cable provided	6 feet of cable provided
Loading	7 kW concentric ring element	16 kW (2 - 8 kW concentric ring elements)
Fan drive	Direct to motor	Direct to motor
Tray size	26" x 18"	26" x 18"
Tray capacity	4	5, 9, or 10
Damper	Butterfly type	Butterfly type
Noise level	Less than 85 dB	Less than 85 dB

<sup>\*</sup> Operational clearance is the amount of space required at the back, sides, and top of the oven to allow adequate air circulation.

# Water Supply

- The BX Smartbake oven is fitted with a steam generator. In areas with hard water, the water supply to the oven must be treated with an appropriate protecting water treatment device. It is the sole responsibility of the customer to provide and maintain an appropriate water treatment system.
- For stacked ovens, the water supply should be shut off by closing the shut-off valves. (See Figure 1-1)
- For non-stacked ovens, the water supply should be shut off at the nearest shut-off point.

The BX Smartbake oven needs the following for the water supply:

- 3/4" BSP female thread on the oven.
- 3 foot-long hose with ¾" B.S.P. female fittings at both ends (included)
- Inline backflow valve (customer must provide and fit)
- 15-60 p.s.i. water pressure

## **Installation**

The BX oven should be connected to a local means of isolation.

 To stop the oven in an emergency, switch off at the wall isolator.

# **Initial Cleaning**

Carefully wipe the interior of the oven and all accessories with a clean cloth soaked in warm soapy water and allow the oven to dry completely.

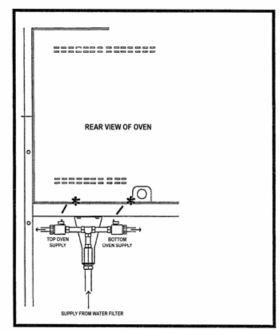
#### **IMPORTANT**

When cleaning the inside of the 4-tray oven, be careful not to damage the control probe protruding from the upper corner of the chamber's rear wall.

#### **WARNING**

Do not allow water to enter the control panel or rear access panel.

#### WATER SUPPLY



\*Turn appropriate valve 90° counterclockwise to turn off water supply

Figure 1-1. Turning off the water supply.

# Programming the control panel

The BX Smartbake oven is capable of storing 99 preset bake settings. To program these settings into the oven, follow these instructions.

1. Press the Stop button to get to the first screen (see Figure 1-2).



Figure 1-2

2. Press button 2 for the pass code screen (see Figure 1-3).

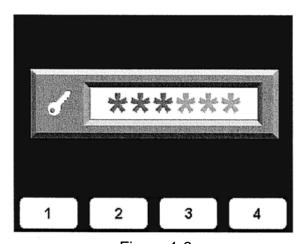


Figure 1-3

3. Enter the pass code using the numbered buttons (default is 111111). The following screen will appear (see Figure 1-4).

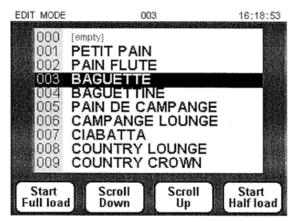
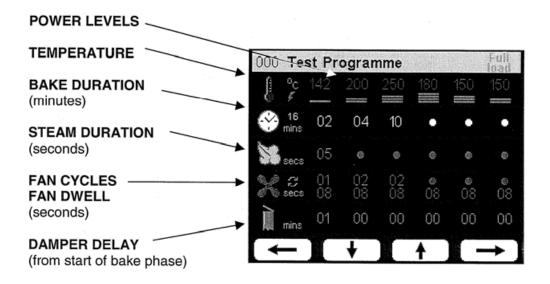


Figure 1-4

- 4. Press button 1 for full bake set-up or button 4 for ½ bake set-up. All parameters for the program can now be set.
- 5. The oven is capable of six different phases per bake, and if fewer are required, the time can be left at 0 to leave that phase inoperative.
  - To move across the screen, press button 4.
  - To move back, press button 1.
  - To increase the value of the parameter, press button 3.
  - To decrease the value of the parameter, press button 2.
- 6. Program Title: To set the program title, press button 6 to go up the alphabet and button 5 to go down the alphabet.

When all parameters are complete, press Stop three times to save the setting. Repeat this process for each program required.



# Function of settings:

**Power Levels**: Not used in current configuration.

**Temperature**: The temperature the oven will bake at for the specified phase. Can be set from 122°F to 482°F (50°C to 250°C)

**Bake Duration**: The length of time in minutes the oven will bake in the specified phase. For example, Phase 1 set at 2 min., Phase 2 set at 4 min., and Phase 3 set at 10 min. has a total bake time of 16 minutes.

**Steam Duration**: The length of time in seconds that steam will be injected into the oven at the beginning of the phase.

Note: Can be set from 0 to 20 seconds and will only operate if the temperature is above  $250^{\circ}$  F ( $120^{\circ}$  C).

**Fan Cycles**: The number of times the fan will reverse rotation from clockwise to counterclockwise and back.

Note: Can be set from 0 to 9. Do not set the fan cycles number higher than 1 cycle per minute of bake time.

**Fan Dwell**: The amount of time in seconds that the fan will stay off during a rotation change.

Note: Can be set from 8 to 15.

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Note: The heating elements are off during the Fan Dwell time.

**Damper Delay**: The amount of time in minutes the damper will wait before opening during one bake cycle.

#### Note:

- Can be set from 0 to 99.
- If this time is set higher than the total bake time, the damper will not open.
- The damper will only open once during a complete bake cycle and will close at the end of the bake cycle.

## **Operating conditions**

For the most efficient operation, the following instructions must be followed. Failure to comply with these guidelines may affect the warranty.

- The ambient temperature around the oven must not exceed 115°F (40°C).
- The ventilation around the oven should be enough to ensure that there is no condensation on or around the oven from steam.
- It is the customer's responsibility to arrange for adequate ventilation and operational clearance at the back and sides of the oven to allow circulation of air.

# Running Pre-set programs

- 1. Connect water ensuring there are no leaks.
- 2. Connect the power to a suitable outlet.
- 3. Turn on the oven by pressing the green button and the following screen will appear (Figure 2-1):



Figure 2-1

4. Press Button 4 (which corresponds to the "select product" option in Figure 2-1) and the program list will appear (Figure 2-2). If the oven has not been programmed, see the section on programming on page 3.

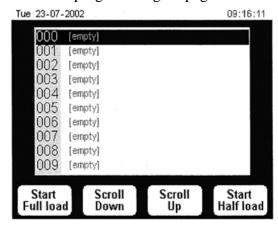


Figure 2-2

- 5. Highlight the desired program by pressing buttons 2, 3, 5, or 6 to scroll down, up, 10 down, or 10 up, respectively.
- 6. Start heating the oven by pressing button 4 for a ½ load bake or button 1 for a full load bake. The following screen will appear (Figure 2-3). To stop heating, press the stop/Back button at any time.

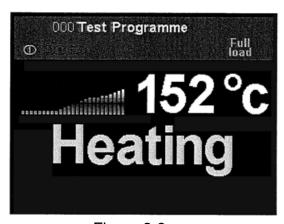


Figure 2-3

#### **WARNING**

Stand clear of the oven door when opening to avoid the hot steam and vapor. Hot steam or vapor may cause severe burns.

#### **WARNING**

Always preheat the oven to required temperature. Do not place product directly into a cold oven.

7. When the oven is ready, the following screen will appear (Figure 2-4). Load the product and press the button corresponding to the Start option (button 4).



Figure 2-4

8. When the bake time is over, the buzzer will sound and the screen will read "Bake Over" (Figure 2-5). Press stop and remove the product or press button 4 to extend the bake time by two minutes. The Stop button may be pressed at any time to stop the bake.



Figure 2-5

- 9. Upon pressing the Stop button, the screen will revert to the program screen (Figure 2-2).
- 10. To bake in a preheated oven, select a new program with keys 2 and 3. Then follow instructions 6-8.

#### **NOTE**

During heating, button 1 can be pressed at any time to check the settings. Press button 1 again or wait 10 seconds to return to the previous screen.

#### NOTE

Until the oven is up to the target temperature, the display will show "Heating;" then the display will show "Ready" and the oven will stay at the target temperature until baking starts or another program is selected.

# Cleaning and Maintenance 3

# **Daily Cleaning**

- 1. Disconnect the oven from main power supply and allow to cool completely before cleaning.
- 2. Use only approved chloride-free cleaning fluid for daily cleaning.
- 3. Sweep any debris (after the oven has been allowed to cool) onto removable oven trays and remove for cleaning.
- 4. Brush down and wipe oven front, back, and sides.
- 5. Carefully clean the oven with a damp cloth that has been soaked in a solution of mild detergent and hot water, being extra careful around control switches. In the 4-tray oven, be sure the control probe protruding from the upper rear corner inside the oven is not damaged (see page 9).
- 6. Do not let any liquid enter the control panel or rear access panel.
- 7. Do not remove the rear paneling inside the oven. This allows access to the fan assembly, which is not safety interlocked and could cause injury.
- 8. Dry completely.

# Weekly Cleaning

- 1. Complete the daily cleaning.
- 2. Carefully clean off any burnt-on debris using an appropriate oven cleaner, following the manufacturer's instructions. **Do not allow the oven cleaner to get in the control panel.**
- 3. Scrub the cabinet wheels (if fitted) with a mild detergent and hot water, using a nylon cleaning brush.

- 4. Open the oven door and remove the internal racking from the sides of the oven by lifting and unlatching the racking. Wipe the interior of the oven with a damp cloth.
- 5. On the BX-4, open the inner door glass by removing two screws shown in Figure 3-1. The glass is hinged to allow a more thorough cleaning.

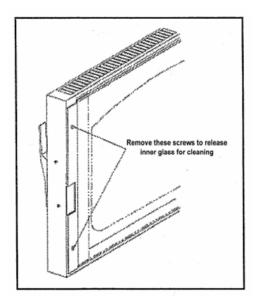


Figure 3-1. Removing the inner door glass (BX-4 only).

- 6. Clean the glass with a suitable glass cleaner.
- 7. Wipe down the oven and clean the racking with a damp cloth.
- 8. Reassemble all parts back in the oven after cleaning.

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#### **WARNING**

In the 4-tray oven, do not damage the control probe protruding from the upper corner of the inside rear wall of the oven chamber.

#### **WARNING**

Make sure water does not enter the control panel or rear access panel.

#### **WARNING**

Do not remove the rear paneling inside the oven. This allows access to the fan assembly and could cause injury.

## **Maintenance**

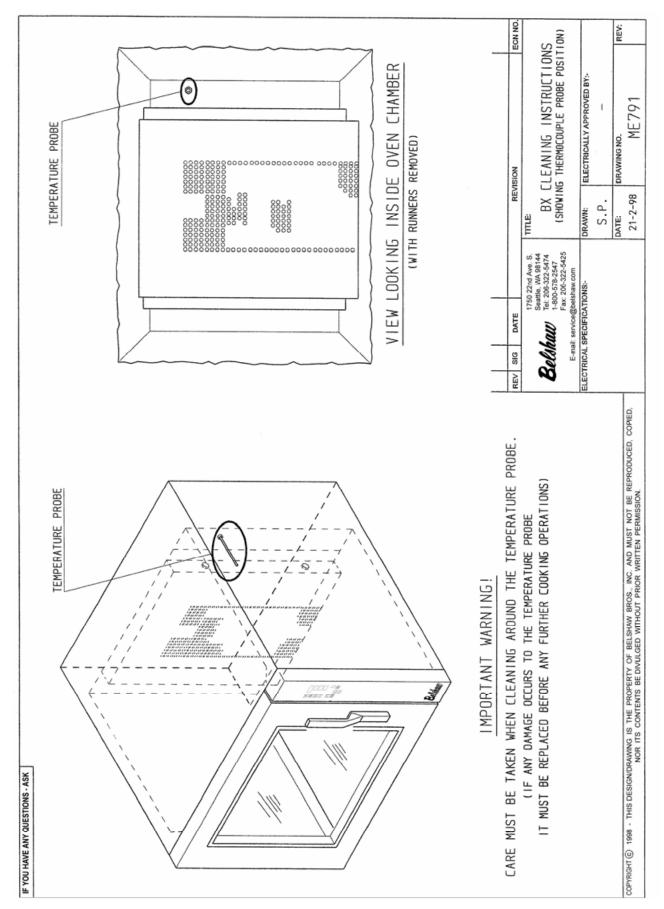
- Check for frayed or bare cables. The machine must not be used if there are frayed or bare cables.
- Follow cleaning instructions exactly.
- Check condition of the rubber door seal.
   Repair or replace if necessary.
- If the light bulb burns out, use the following instructions to replace it.
  - a. Disconnect the oven from the main power supply and allow to cool.
  - b. Remove the glass front from the lamp unit.
  - c. Remove the bulb by unscrewing counterclockwise and replace with a new bulb.
  - d. Refit the glass front.
  - e. Reconnect the oven to the main power supply and test the lights.

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• If the steaming operation deteriorates, clean the pipe aperture with a pin to remove any build-up.

### Lubrication

This machine does not require special lubrication.

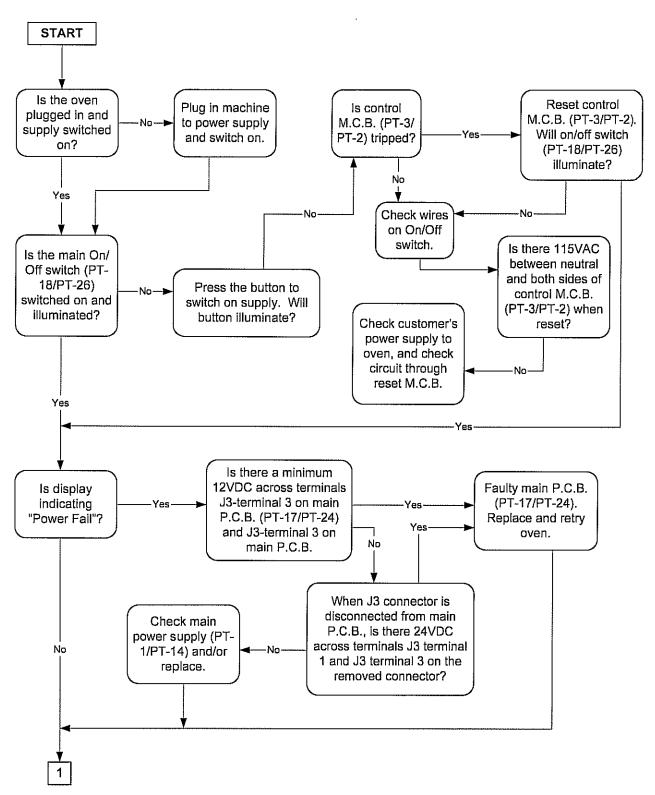


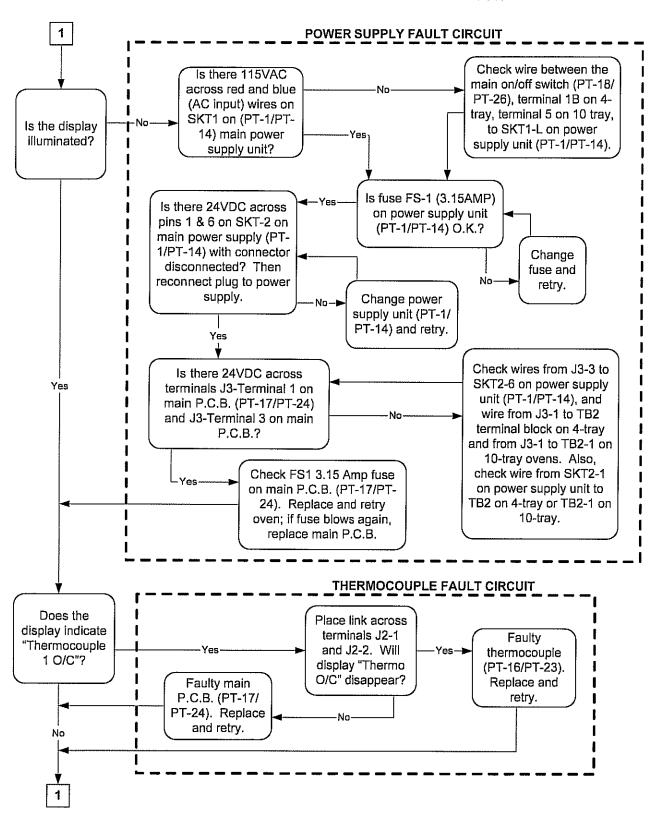
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# Troubleshooting

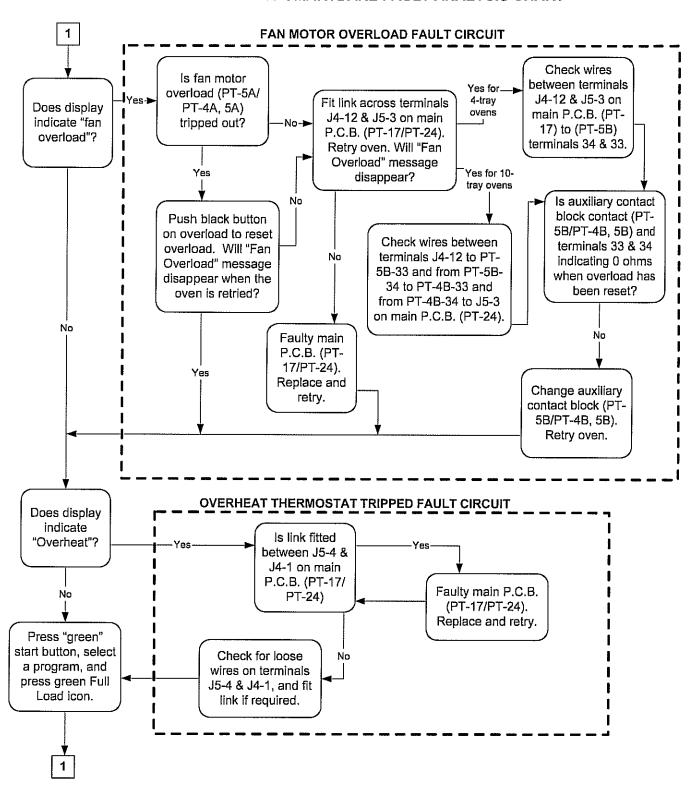
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The following pages contain troubleshooting/fault analysis charts for the Classic convection oven.

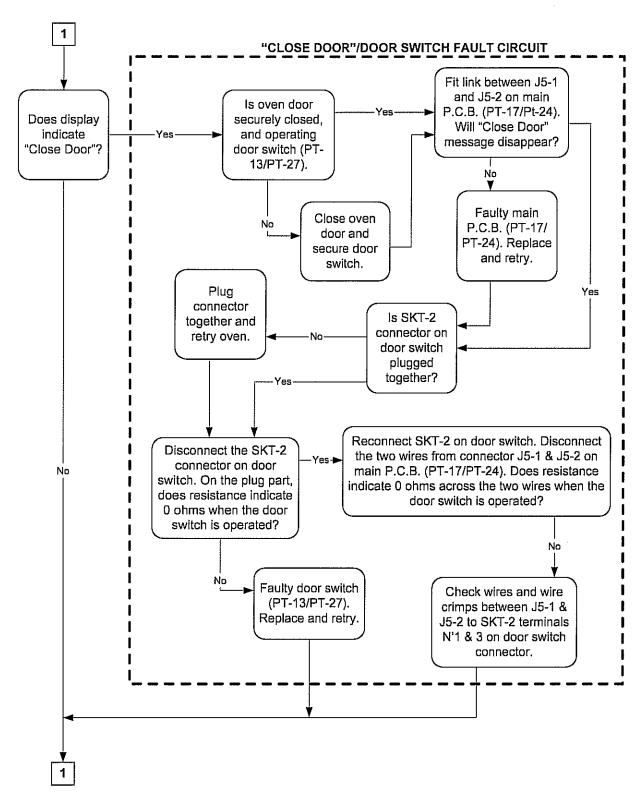


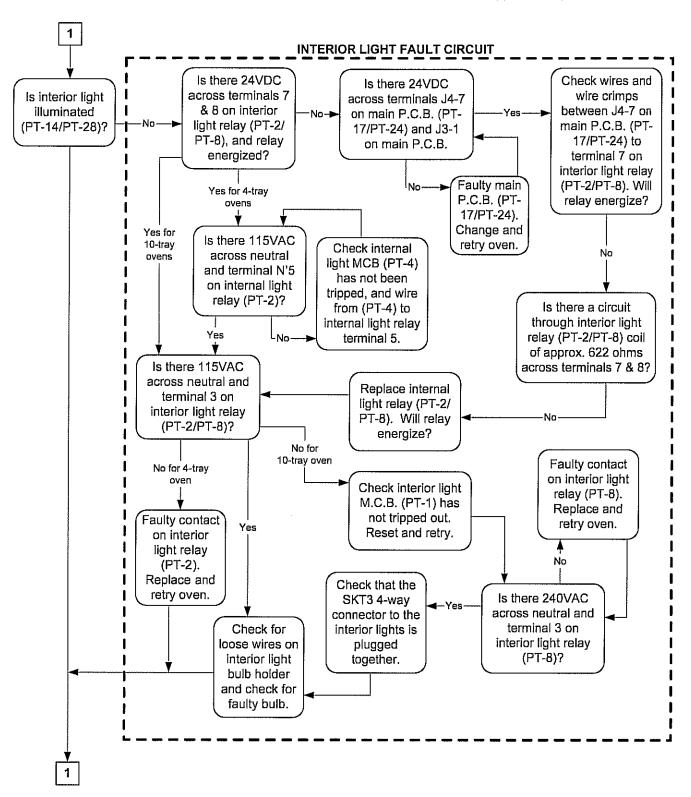


\*Note: Part (PT) numbers are indicated in parentheses; 4-tray oven PT numbers are listed first, then 10-tray oven PT numbers unless otherwise indicated.

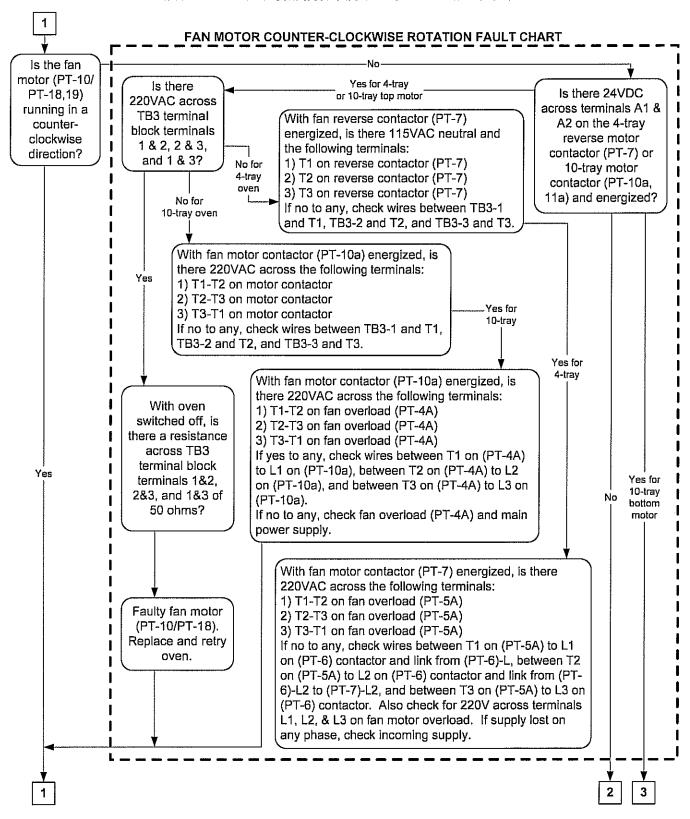


<sup>\*</sup>Note: Part (PT) numbers are indicated in parentheses; 4-tray oven PT numbers are listed first, then 10-tray oven PT numbers unless otherwise indicated.



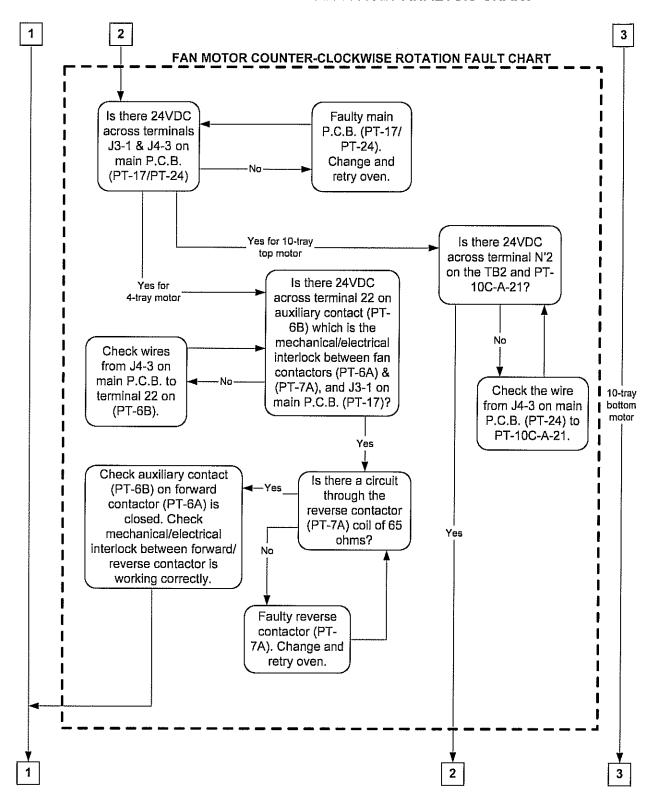


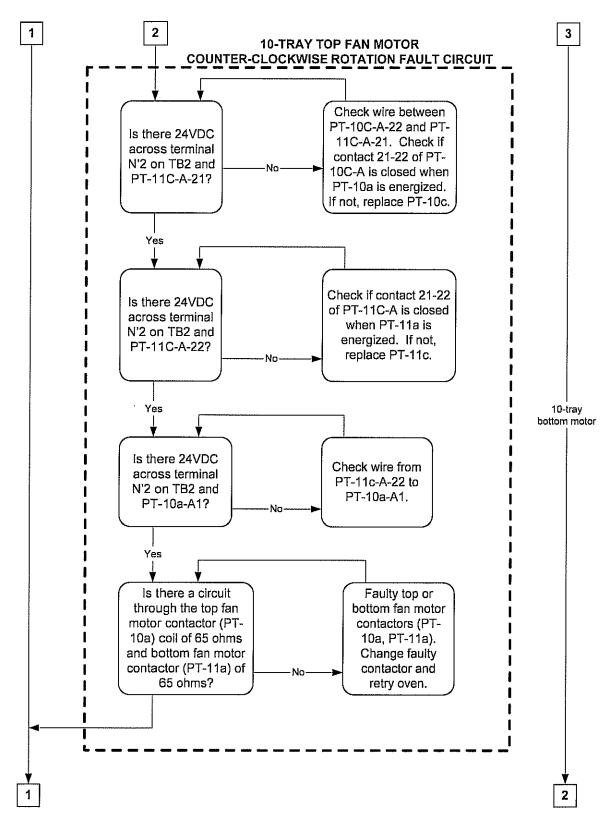
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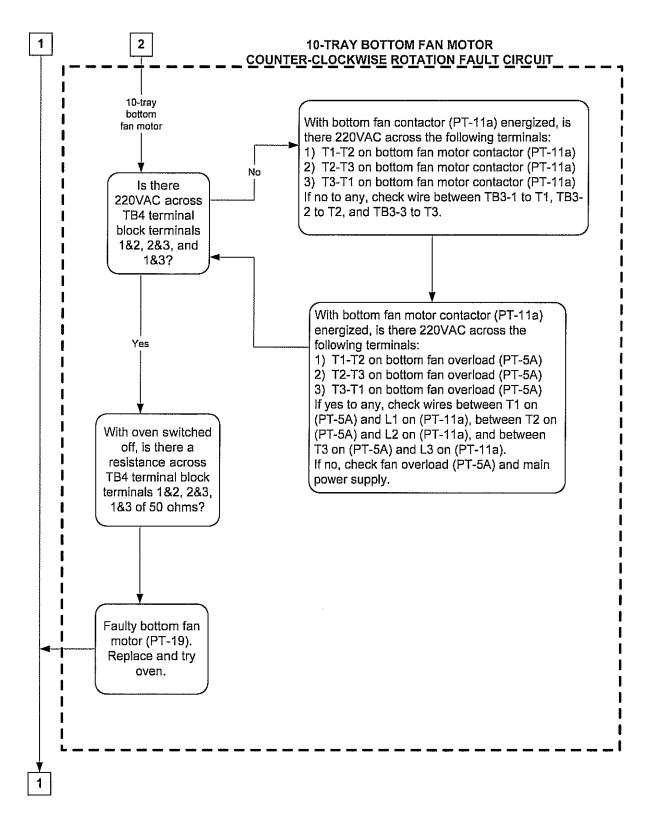
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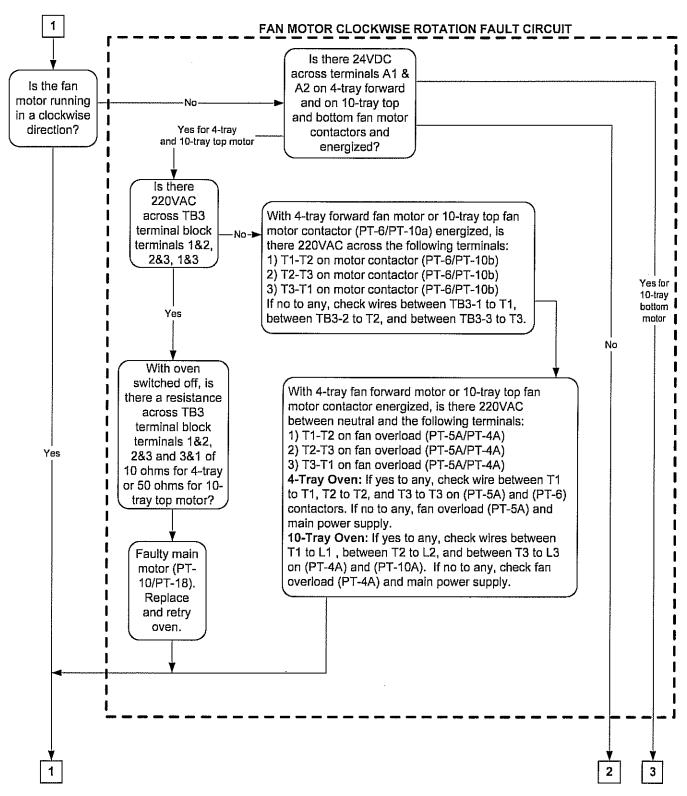
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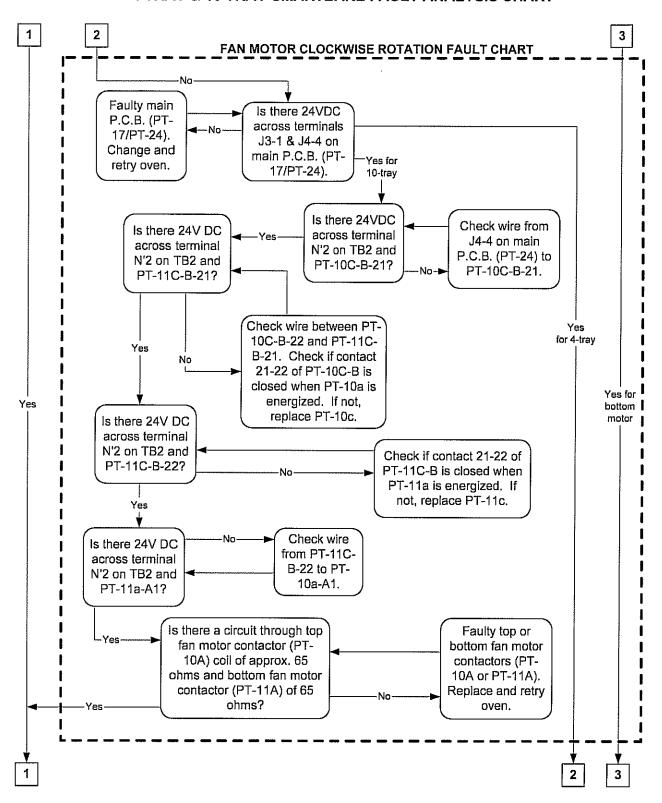


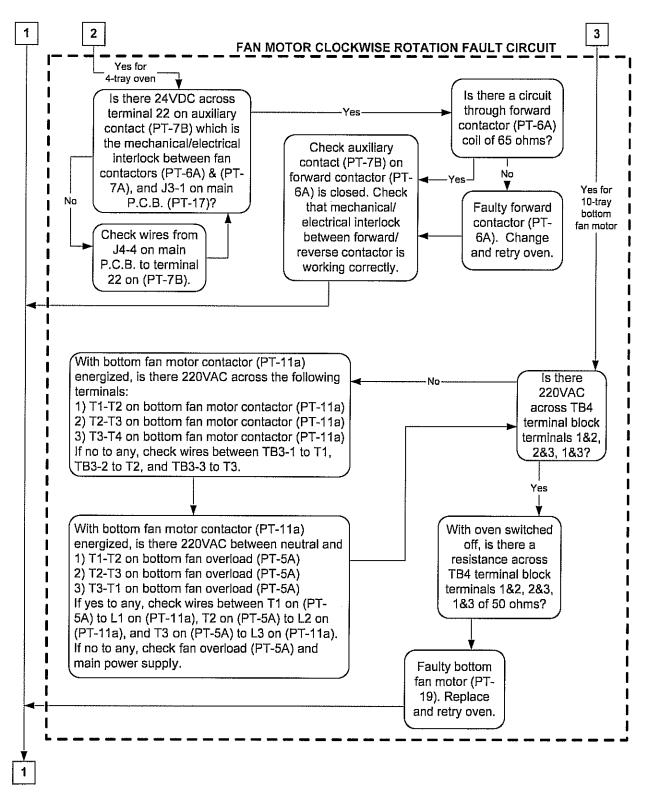
\*Note: Part (PT) numbers are indicated in parentheses; 4-tray oven PT numbers are listed first, then 10-tray oven PT numbers unless otherwise indicated.



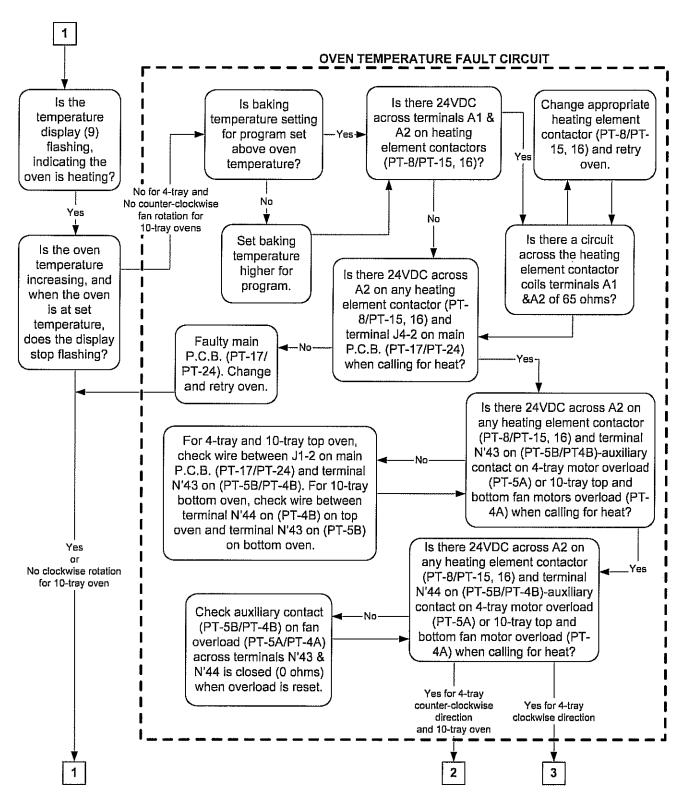


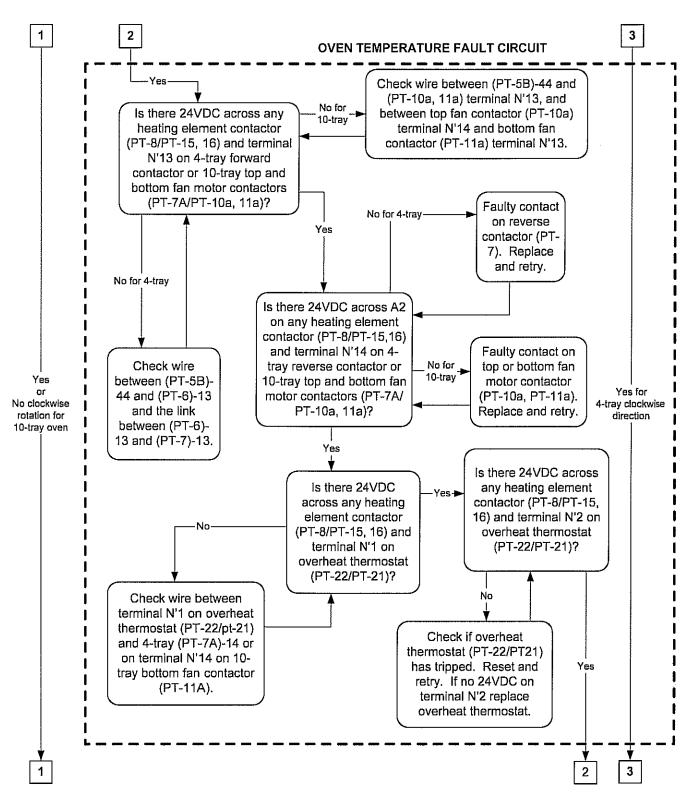
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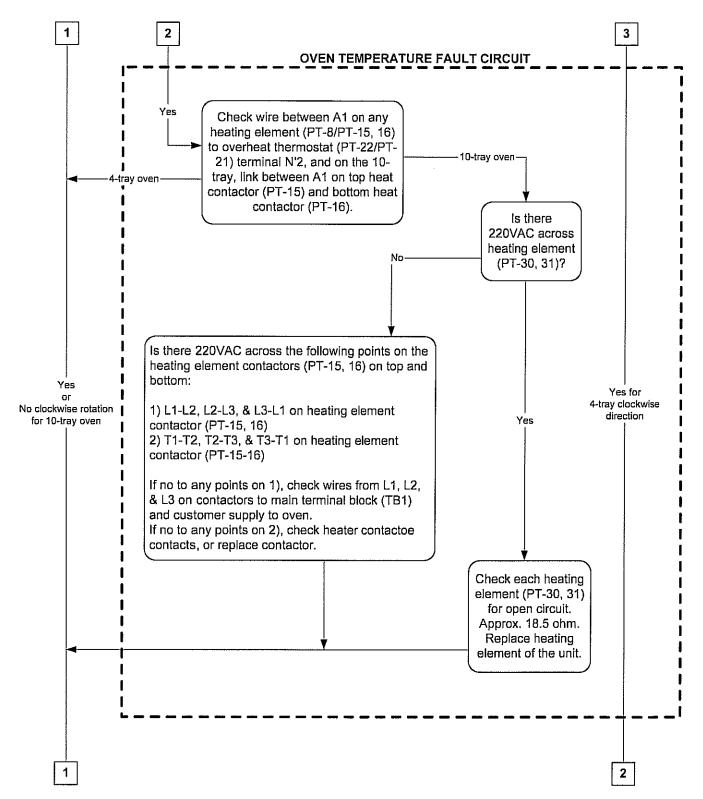


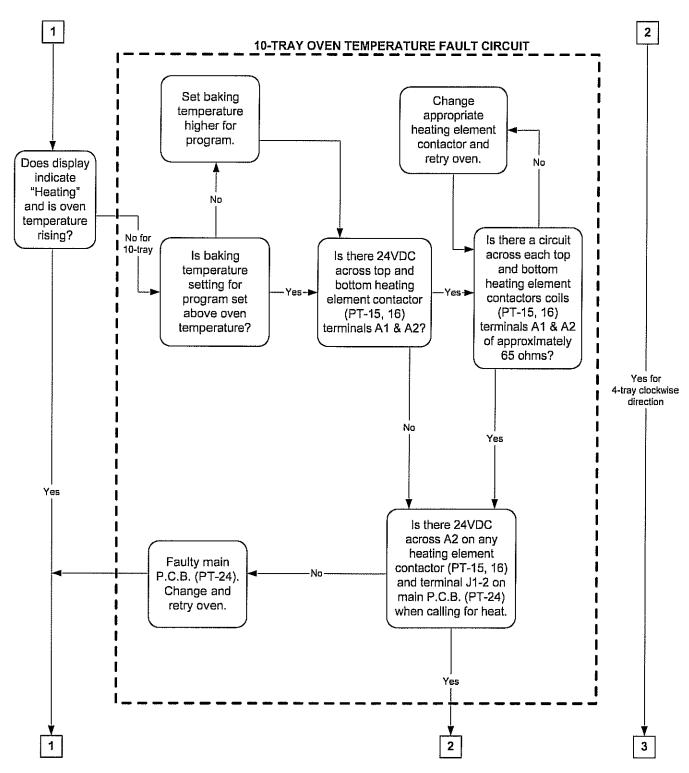
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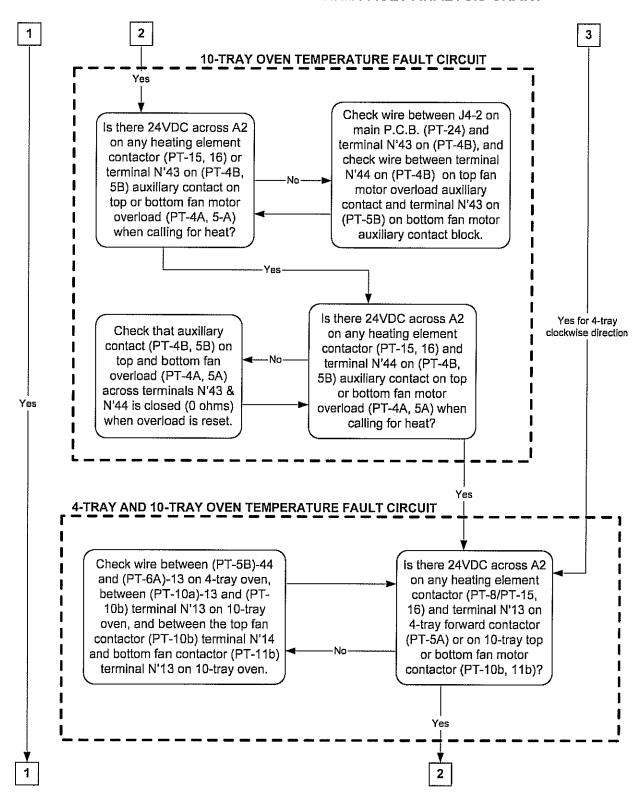


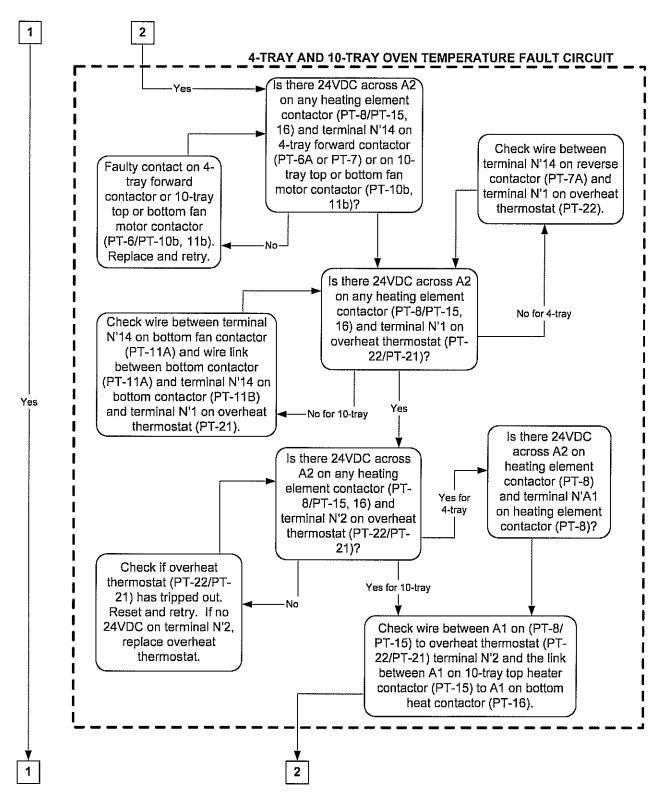
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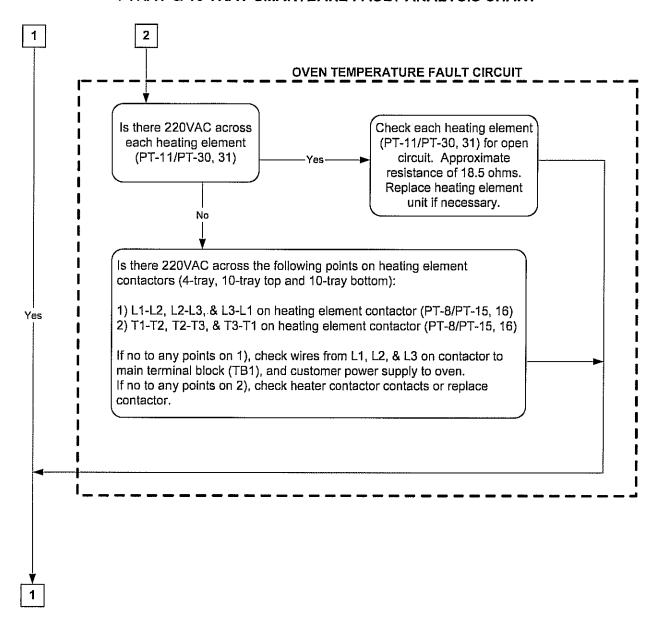
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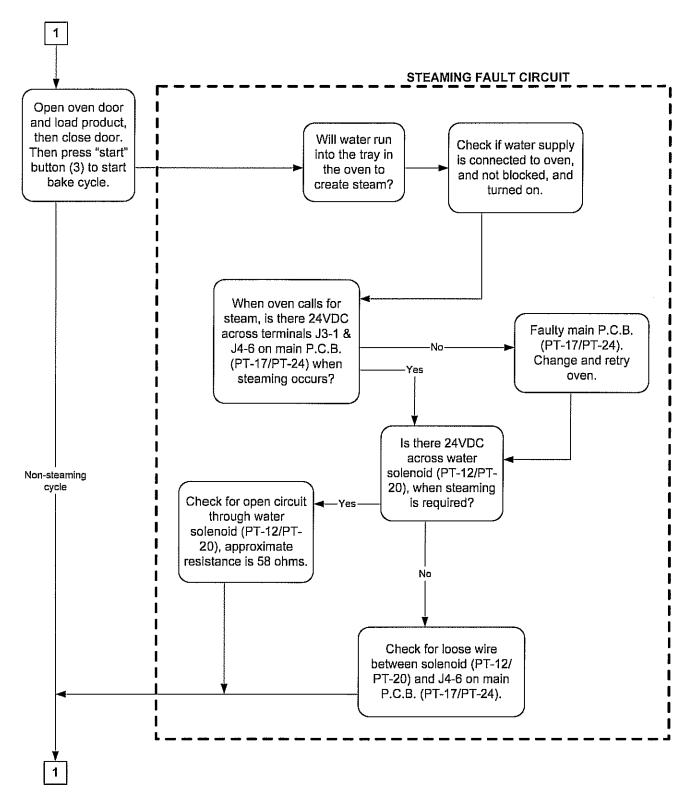




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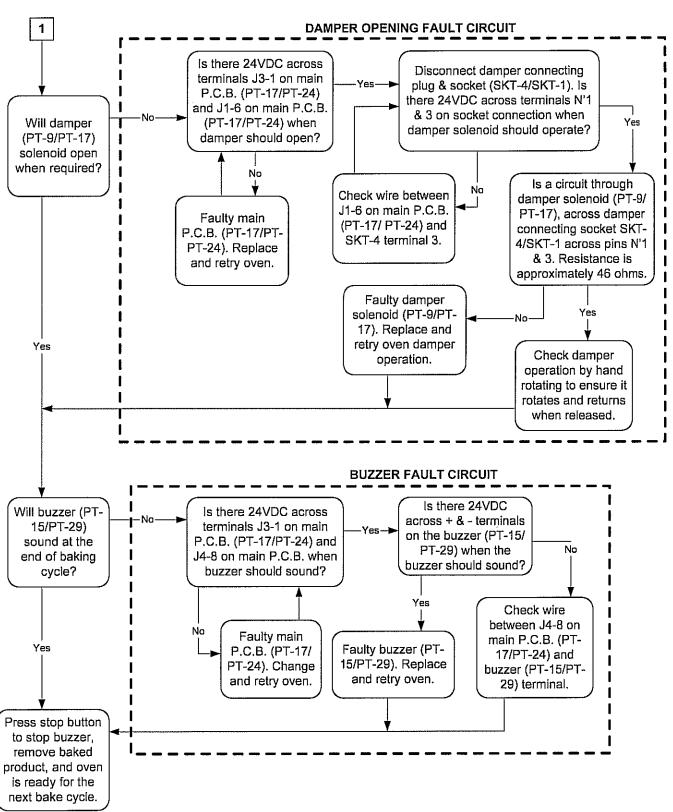


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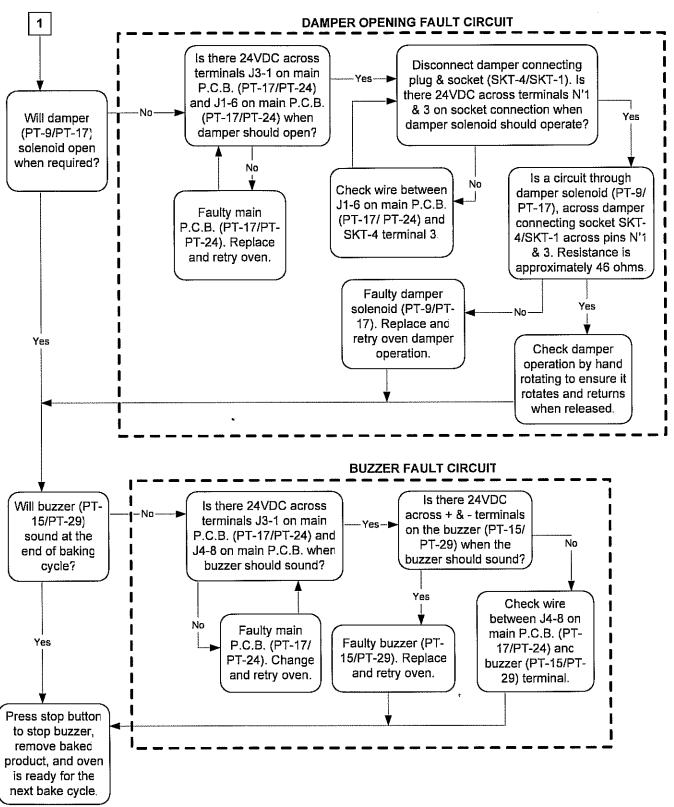
30

## 4 TRAY & 10 TRAY SMARTBAKE FAULT ANALYSIS CHART



\*Note: Part (PT) numbers are indicated in parentheses; 4-tray oven PT numbers are listed first, then 10-tray oven PT numbers unless otherwise indicated.

## 4 TRAY & 10 TRAY SMARTBAKE FAULT ANALYSIS CHART



\*Note: Part (PT) numbers are indicated in parentheses; 4-tray oven PT numbers are listed first, then 10-tray oven PT numbers unless otherwise indicated

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Diagrams

5

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This section contains diagrams detailing the electrical components of the 4-tray and 10-tray BXC convection ovens.

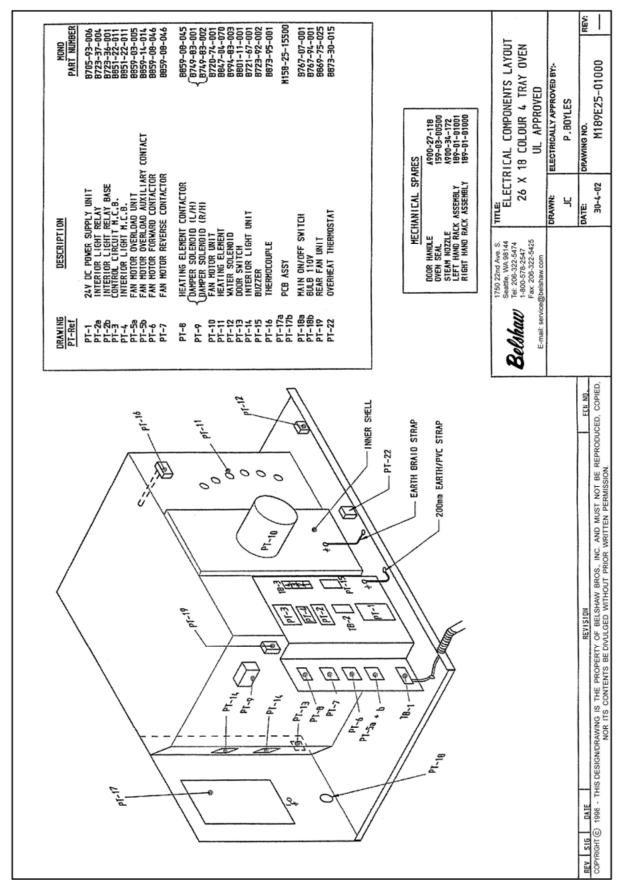
## **4-tray BXC Oven** (starts on page 34)

- Electrical Components, M189E25-01000
- PCB Connections, M158E25-21000
- PCB Outputs, M189E25-01100
- Power Circuit Diagram, M189E25-00100
- Control Circuit & 24V DC Power Supply, M189E25-00400
- Fan Motor Connections & Heating Element Wiring, M189E25-00500

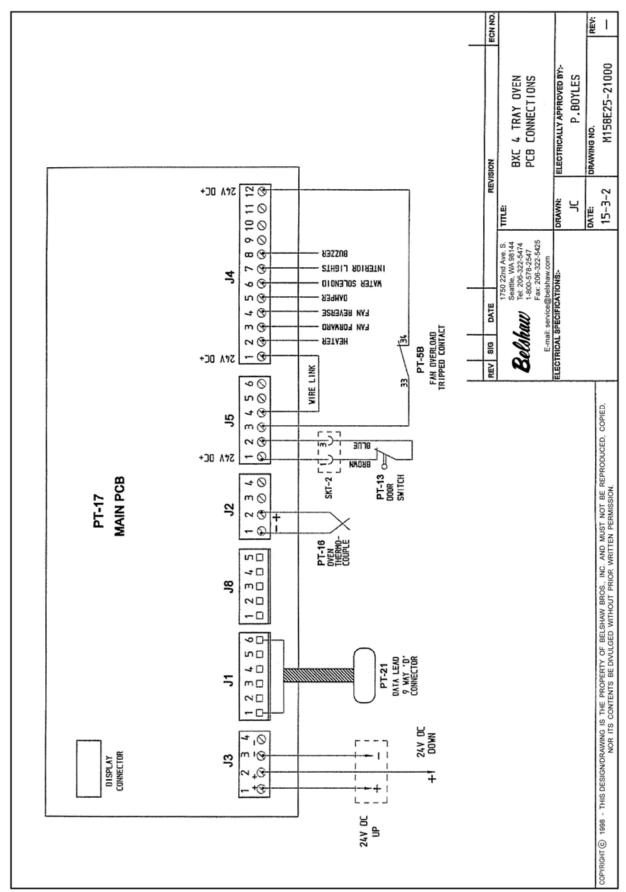
## **10-tray BXC Oven** (starts on page 40)

- Electrical Components, M150E25-55000
- Main Control Panel Layout, M150E25-20200
- PCB Connections, M150E25-51400
- PCB Outputs, M150E25-20400
- Interior Light & Power Supply Circuit, M150E25-20500
- Motor Power Circuit Diagram, M150E25-20600
- Heating Power Circuit Diagram, M150E25-20700
- Fan Motor Connections & Heating Element Wiring, M150E25-20300

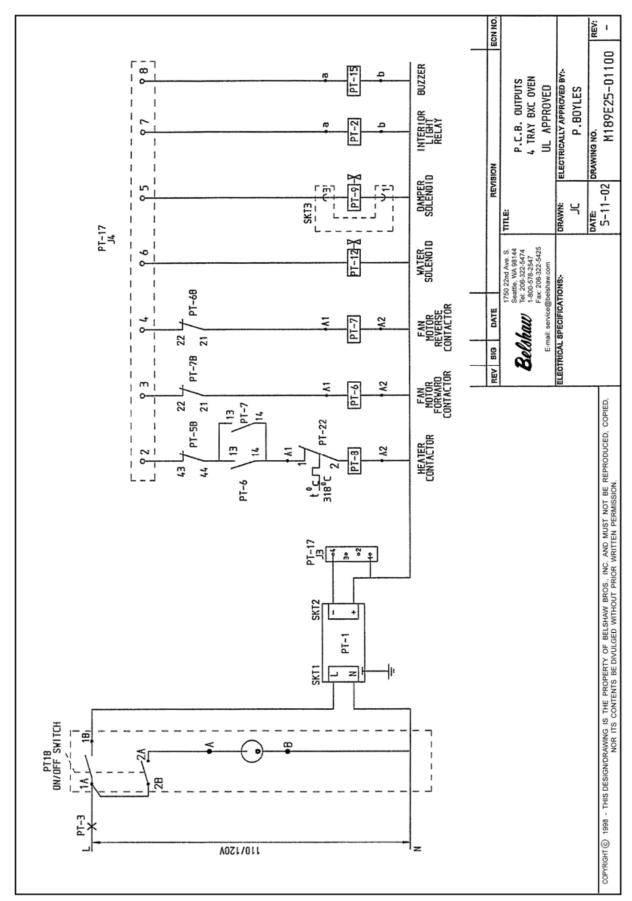
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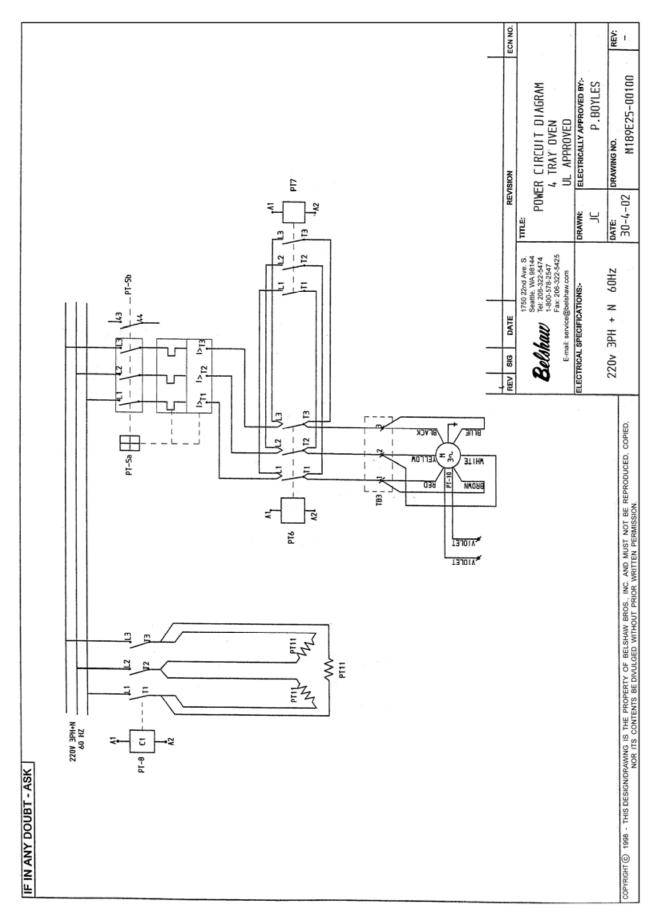
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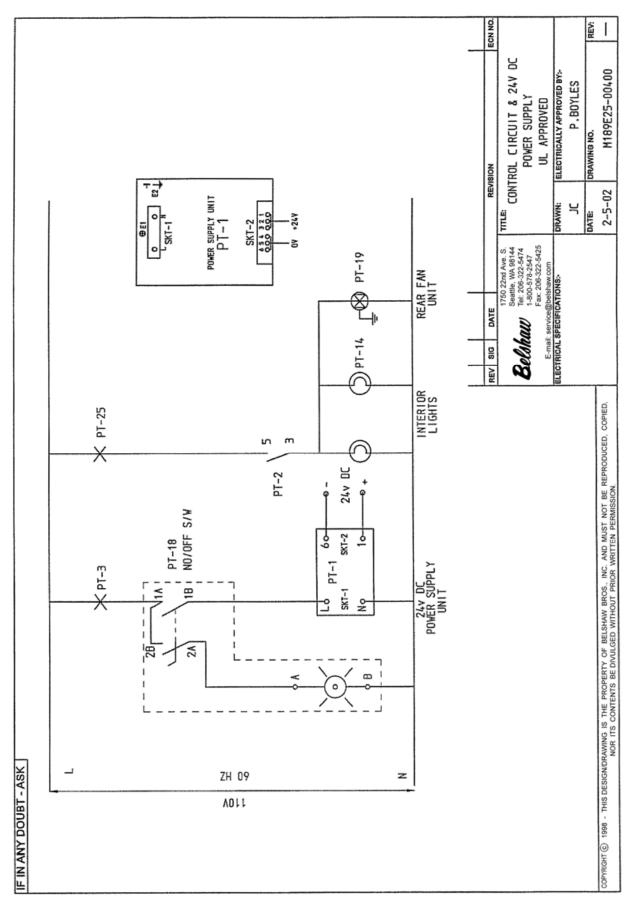
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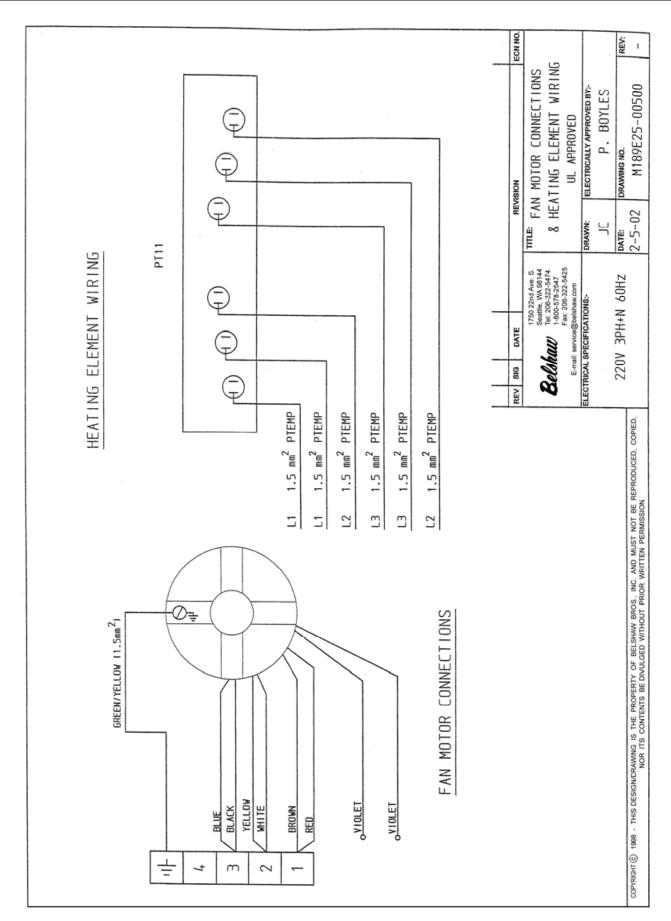
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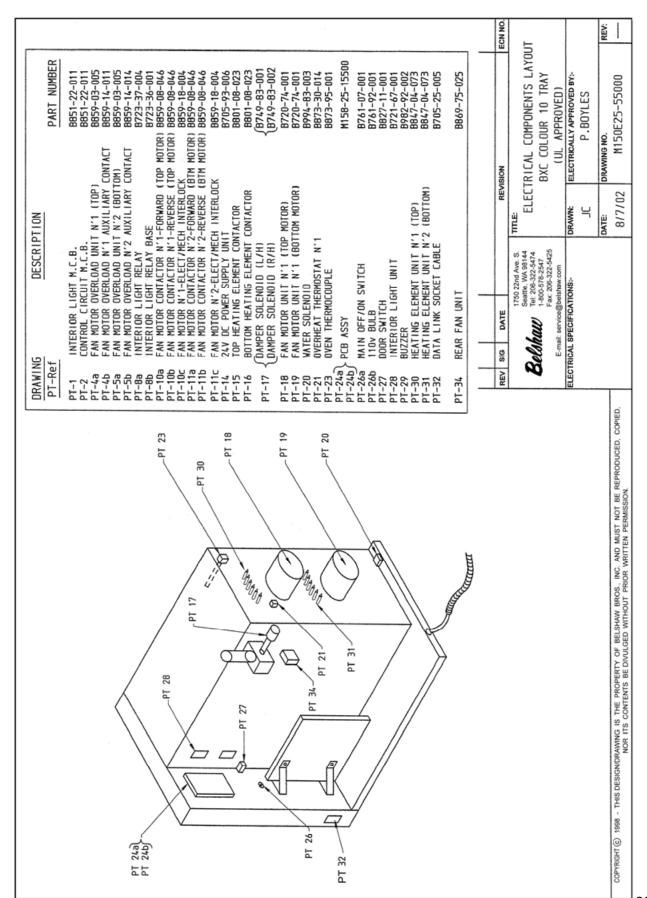
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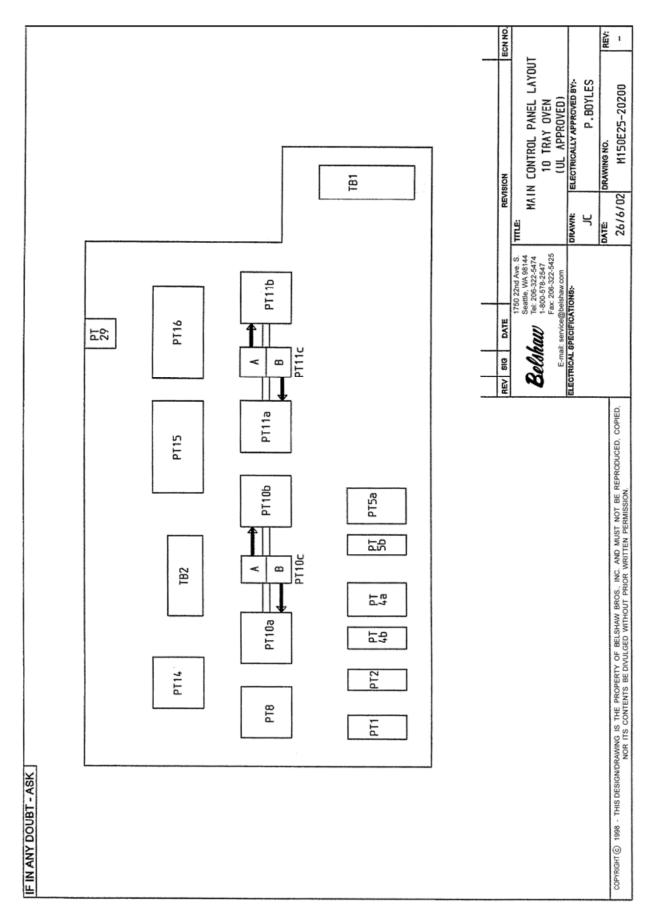
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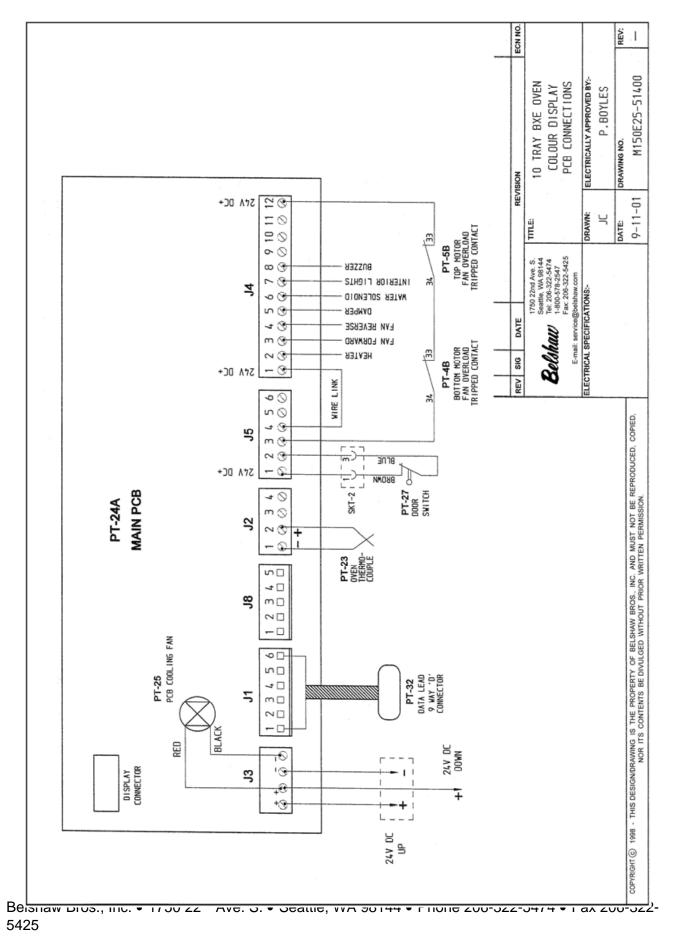
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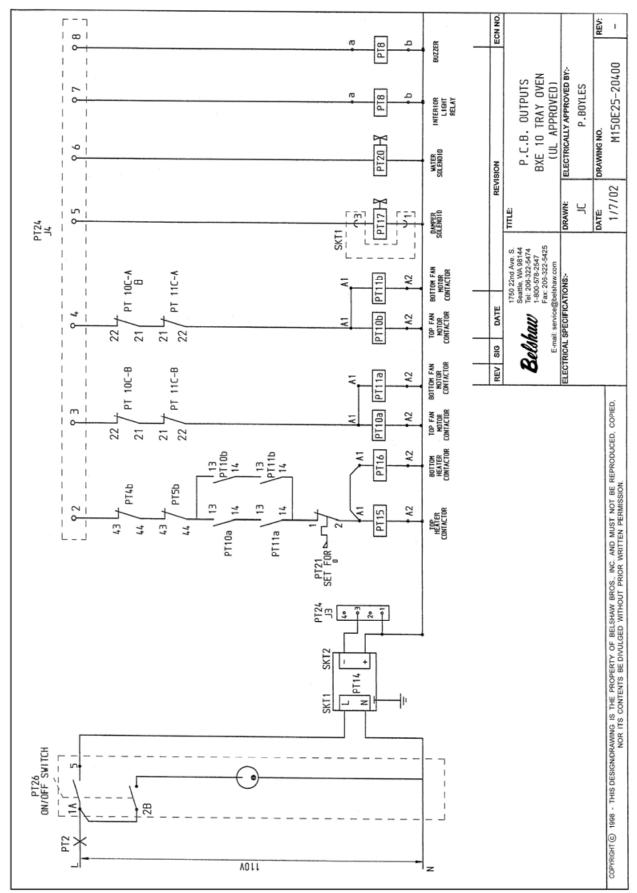


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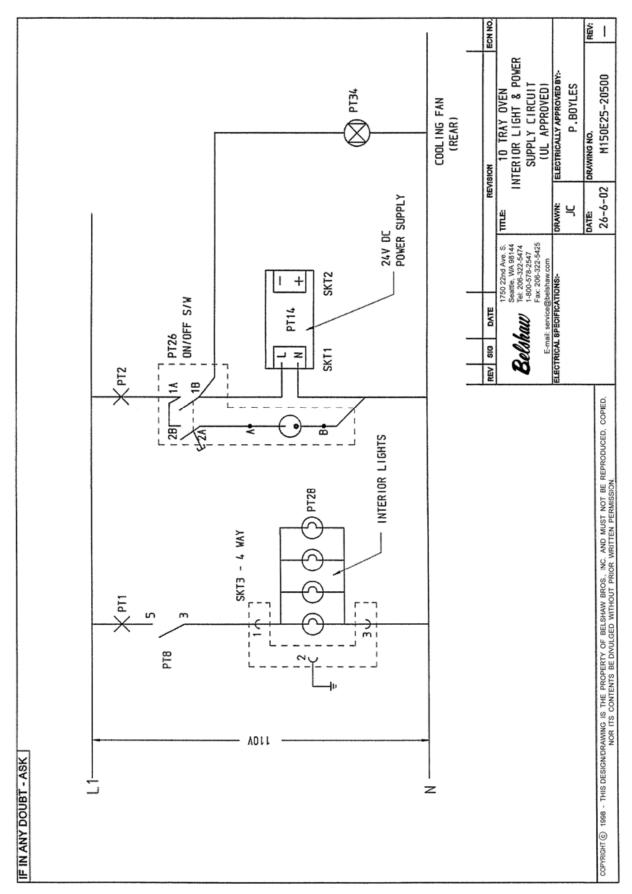


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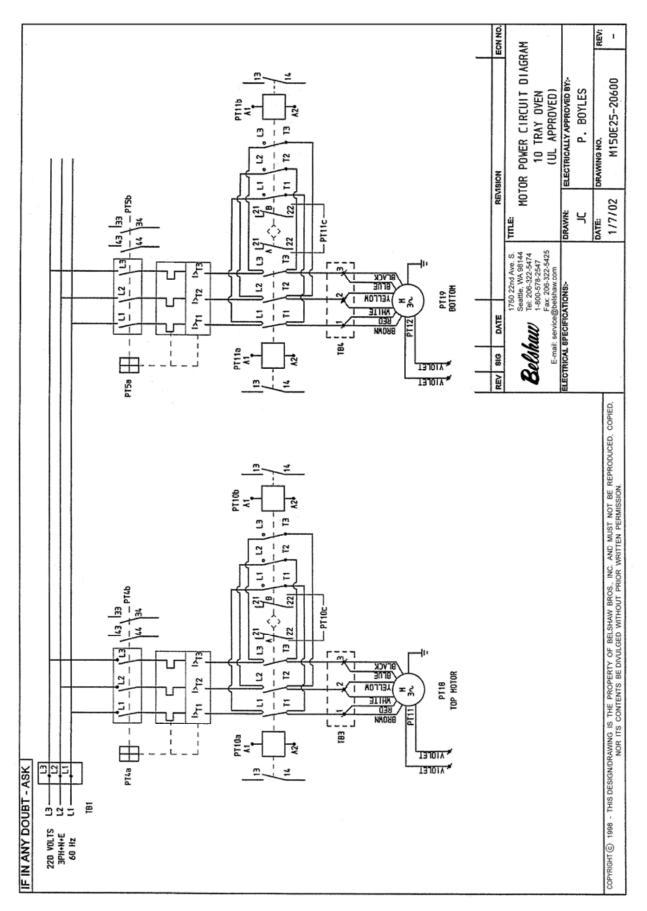




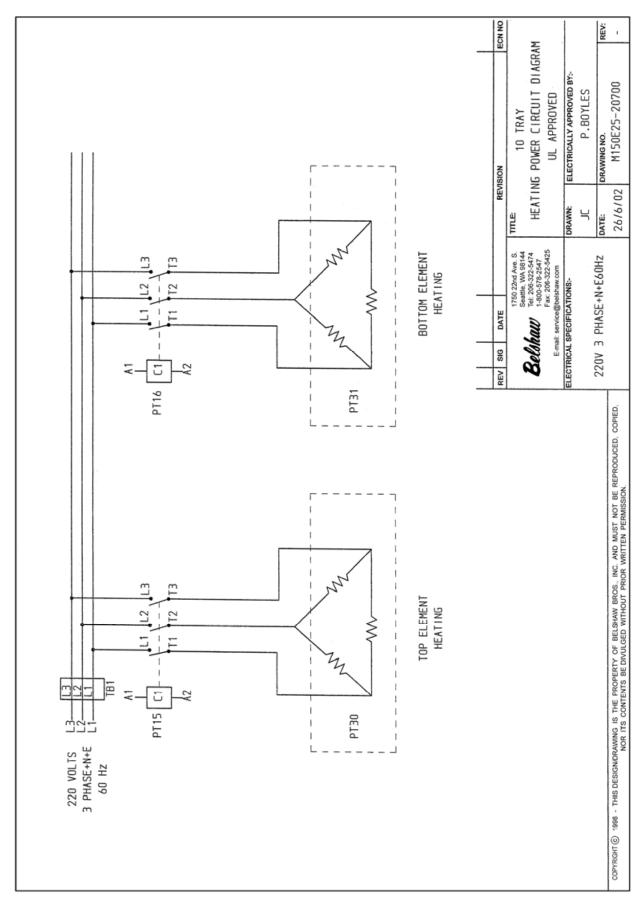
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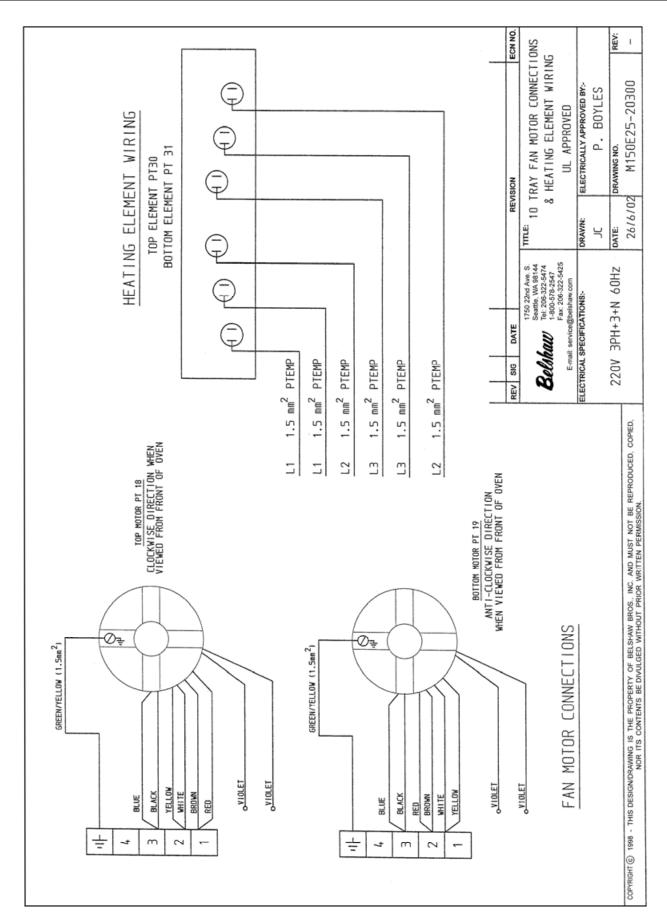
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