

# **BROASTER**<sup>®</sup>

EQUIPMENT

## **SERVICE & PARTS MANUAL**

**BROASTER<sup>®</sup> VF-2 & VF3i**  
**VENTLESS FRYER**

**Be sure ALL installers read, understand, and have access to this manual at all times.**



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608/365-0193 [broaster.com](http://broaster.com)



## FOR YOUR SAFETY

Do not use or store gasoline or other flammable vapors or liquids in the vicinity of this or any other appliance. Improper installation, adjustments, 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.

For the sake of safety and clarity, the following words used in this manual are defined as follows:



**Indicates an imminently hazardous situation which, if not avoided, will result in serious injury or death.**



**Indicates a hazardous situation which, if not avoided, could result in serious injury or death.**



**Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.**

All adjustments and repairs shall be made by an authorized Broaster Company representative.

If there is a power failure, turn cook/filter switch OFF. On the Model 2400GH, also slide switch on gas valve OFF. DO NOT attempt to operate unit during a power failure.

**2400GH:** Post, in prominent locations, instructions to be followed in the event that the user smells gas. This information can be obtained from your local gas supplier.

**WARNING** Failure to read and understand this manual completely could result in serious injury or death. Be sure ALL operators read, understand and have access to this manual at all times.



**Rags or paper containing cooking oil can catch fire if exposed to heat. Laundering will not remove the oil. Dispose of all oil-soiled papers and rags in a trash container that is in a ventilated area away from all cooking equipment or other heat sources such as direct sunlight.**



# TABLE OF CONTENTS

<b>1 - ELECTRIC POWER SUPPLY</b> .....	<b>1 - 1</b>
WIRING DIAGRAMS.....	1 - 2
VF2 .....	1 - 2
VF3i .....	1 - 6
VF2 EXPORT.....	1 - 10
VF3i EXPORT.....	1 - 13
<b>2 - FRONT PANEL</b> .....	<b>2 - 1</b>
DUAL DISPLAY FAMILIARIZATION.....	2 - 1
OPERATIONAL LOCKOUTS .....	2 - 2
CONTROLLER BASIC PROGRAMMING.....	2 - 2
Normal Operating Mode.....	2 - 2
Preset Cook Mode .....	2 - 3
Programming Procedure.....	2 - 3
WARNING DISPLAYS.....	2 - 4
DISPLAY ACTUAL TEMPERATURE.....	2 - 5
CALIBRATION .....	2 - 5
ACCESS FOR SERVICE .....	2 - 5
FRONT PANEL ASSEMBLY.....	2 - 6
DISPLAY BOARD (upper).....	2 - 6
DISPLAY BOARD POWER INPUT .....	2 - 6
CONTROL BOARD (lower).....	2 - 7
CONTROL BOARD POWER INPUT .....	2 - 8
SPEAKER .....	2 - 9
TRANSFORMER .....	2 - 10
SMART TOUCH DISPLAY .....	2 - 11
<b>3 - FIRE SUPPRESSION SYSTEM</b> .....	<b>3 - 1</b>
GENERAL DESCRIPTION.....	3 - 1
AUTOMATIC OPERATION .....	3 - 1
MANUAL OPERATION .....	3 - 1
INSPECTION & MAINTENANCE.....	3 - 1
Gaining Access .....	3 - 1
Monthly Inspection .....	3 - 2
Semi-Annually.....	3 - 2
Twelve Year.....	3 - 3
SEMI-ANNUAL INSPECTION & MAINTENANCE LOG.....	3 - 4
ACCESS FOR SERVICE .....	3 - 5
FIRE EXTINGUISHER REPLACEMENT .....	3 - 6
FUSIBLE LINK REPLACEMENT .....	3 - 7
BREAK ROD REPLACEMENT .....	3 - 7
<b>4 - COOKING AREA</b> .....	<b>4 - 1</b>
ELEMENT SHAFT REMOVAL .....	4 - 1
TEMPERATURE SENSOR PROBE.....	4 - 3
HI LIMIT CONTROL.....	4 - 4
HEATING ELEMENT.....	4 - 6

<b>5 - ELECTRICAL COMPONENTS.....</b>	<b>5 - 1</b>
VF2 & VF3i	
ACCESS FOR SERVICE.....	5 - 1
MOTOR REPLACEMENT.....	5 - 1
SWITCHES.....	5 - 3
MOTOR STOP SWITCH.....	5 - 3
BASKET DOWN SWITCH.....	5 - 4
PRODUCT DOOR SWITCH.....	5 - 5
AIR FILTER SWITCH.....	5 - 5
VF2	
ACCESS DOOR SWITCH.....	5 - 6
ELEMENT UP SWITCH.....	5 - 7
GREASE FILTER SWITCH.....	5 - 8
PRESSURE SWITCH REPLACEMENT.....	5 - 8
VF3i	
ACCESS DOOR SWITCH.....	5 - 9
ELEMENT UP SWITCH.....	5 - 10
GREASE FILTER SWITCH.....	5 - 10
PRESSURE SWITCH REPLACEMENT.....	5 - 12
<b>6 - TROUBLESHOOTING.....</b>	<b>6 - 1</b>
ELECTRICAL TIPS.....	6 - 1
INDICATOR LIGHTS.....	6 - 2
SOLID STATE CONTROLLER TIPS.....	6 - 3
FROZEN IQF PRODUCT.....	6 - 3
TROUBLESHOOTING FLOW CHART.....	6 - 4
<b>7 - PARTS.....</b>	<b>7 - 1</b>
PANELS AND DOORS.....	7 - 1
FILTER TRAY VF2.....	7 - 2
VF3i.....	7 - 3
CONTROLLER AND COMPONENTS.....	7 - 4
INTERLOCK SWITCHES AND ACTUATORS VF2.....	7 - 6
VF3i.....	7 - 9
CONTACTOR AND RELAY MOUNTING VF2.....	7 - 11
VF3i.....	7 - 13
HEATING ELEMENT AND LIFT MECHANISM VF2.....	7 - 15
VF3i.....	7 - 16
FIRE SUPPRESSION SYSTEM VF2.....	7 - 17
VF3i.....	7 - 18
BASKET LIFT MECHANISM.....	7 - 19
COOKING WELL GROUP.....	7 - 20
<b>8 - PART NUMBER LIST.....</b>	<b>8 - 1</b>

# 1 - ELECTRIC POWER SUPPLY

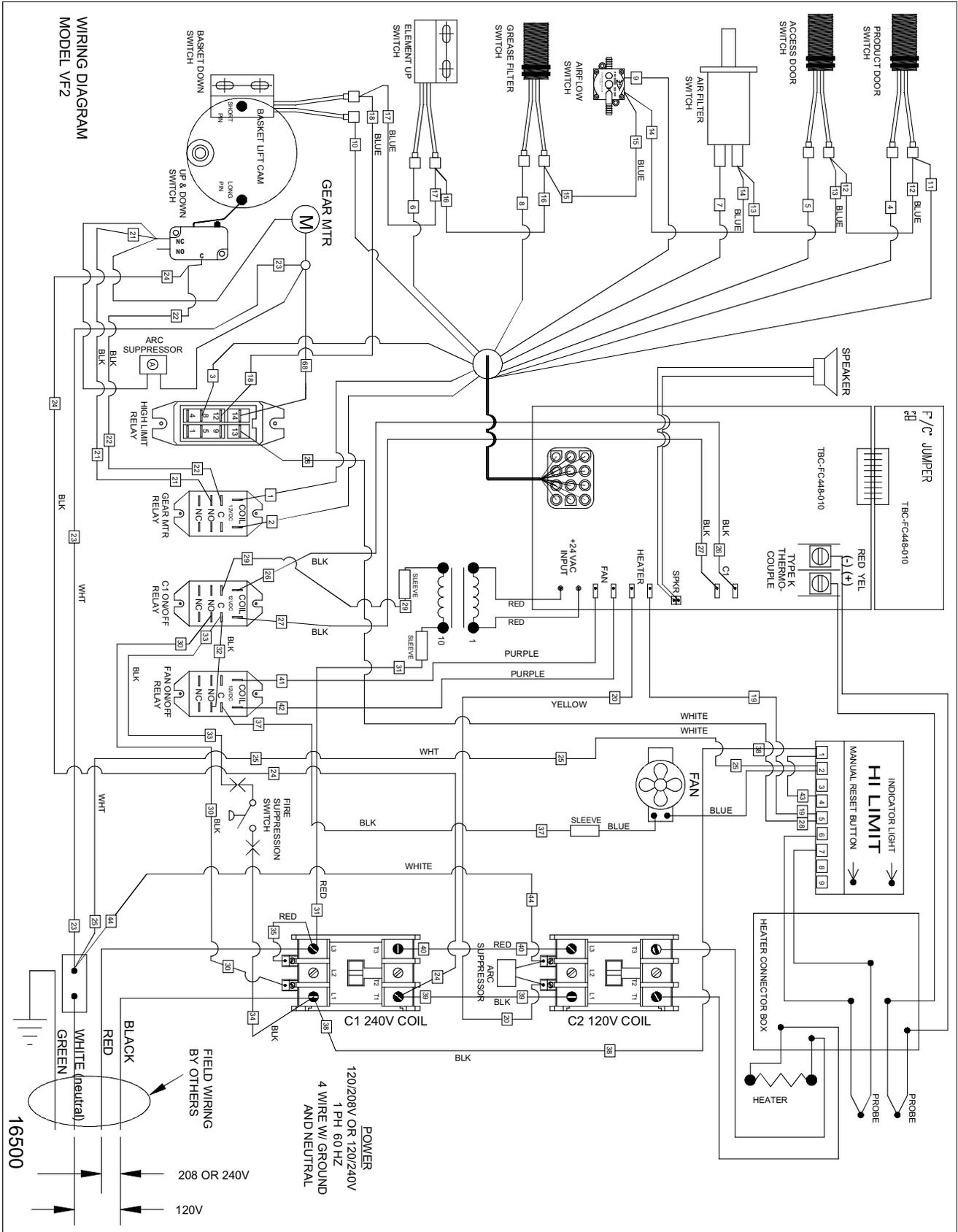
**⚠ DANGER** Many sections in this manual pertain to checking and repairing electrical components.

If no component operates, check main power supply. Be sure main circuit breaker is ON and main fuses are good.

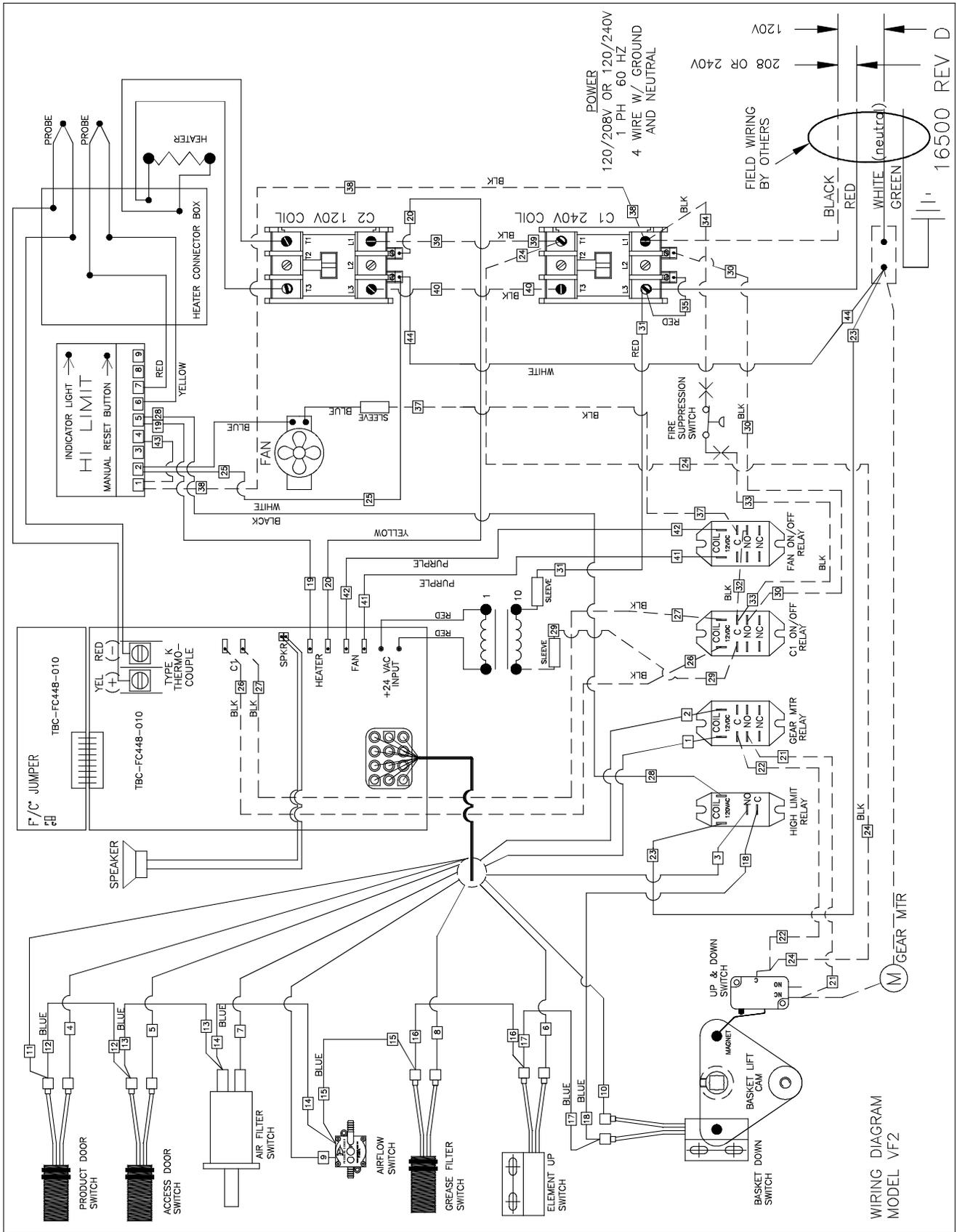
Perform the following if unit will not turn on:

1. Disconnect main power supply.
2. Be sure all connections are tight. If power supply is proper, see TROUBLESHOOTING section.

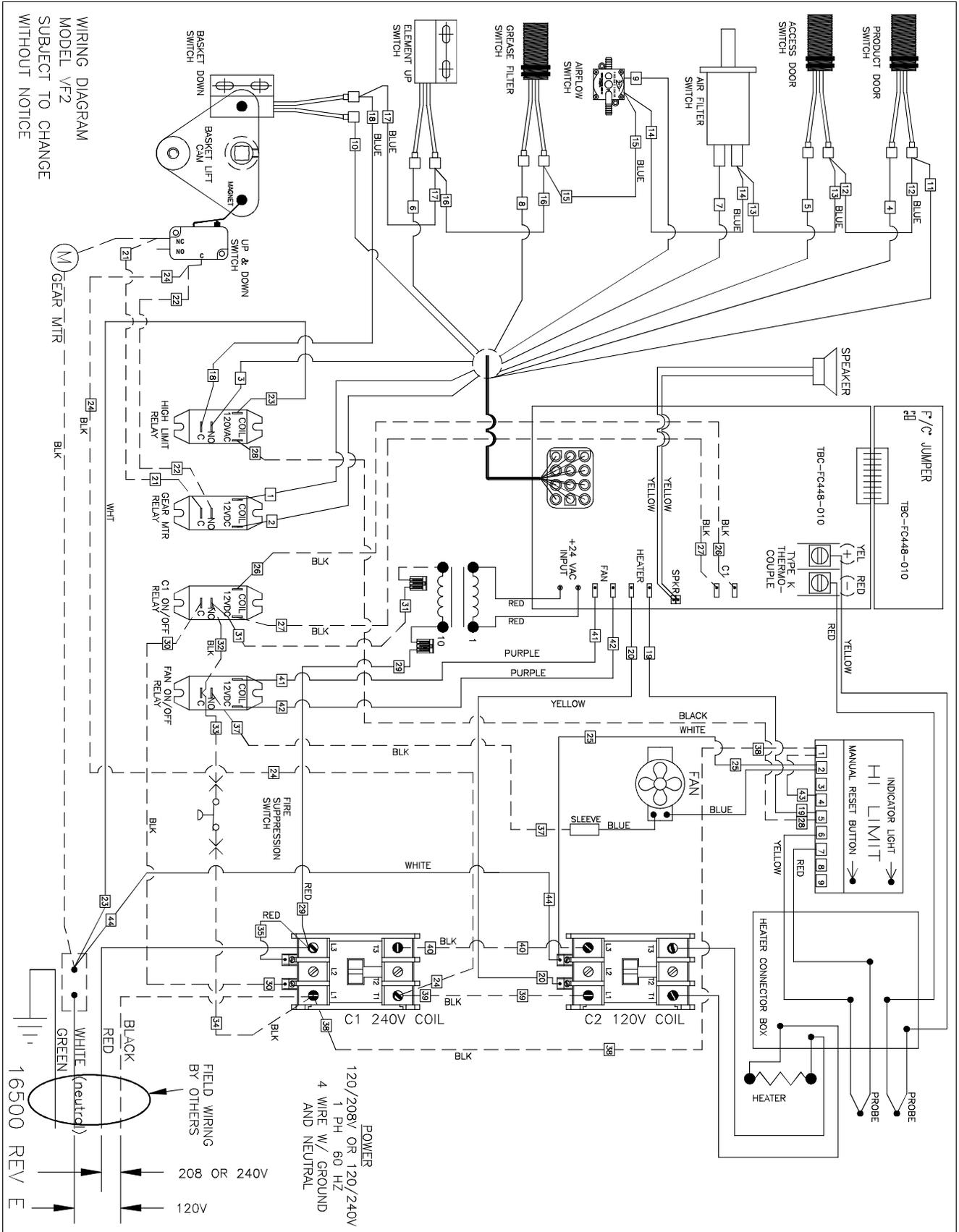
# WIRING DIAGRAM VF2:



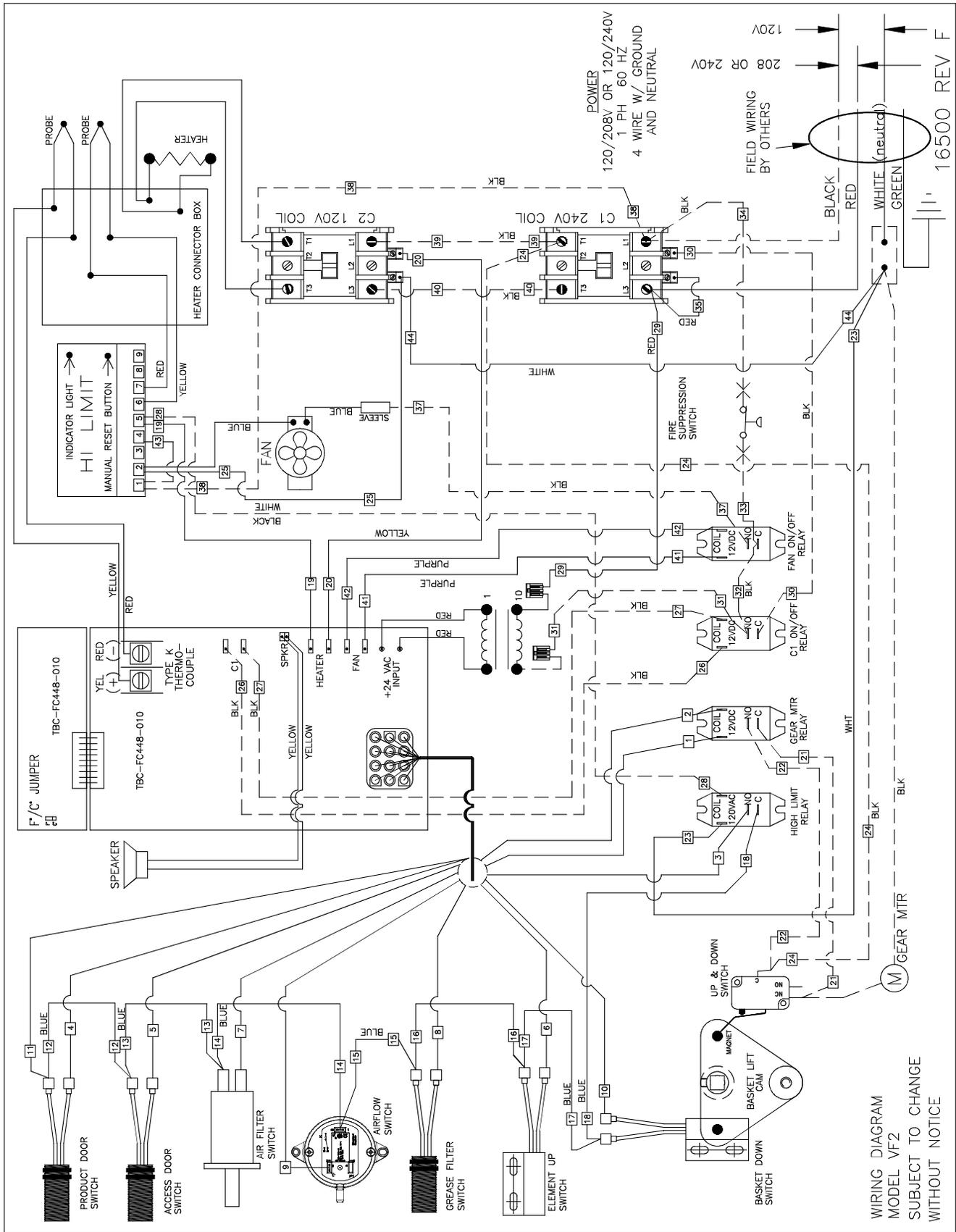
# WIRING DIAGRAM VF2: effective S/N VF2F70041x



# WIRING DIAGRAM VF2: effective S/N VF2F90XXXX

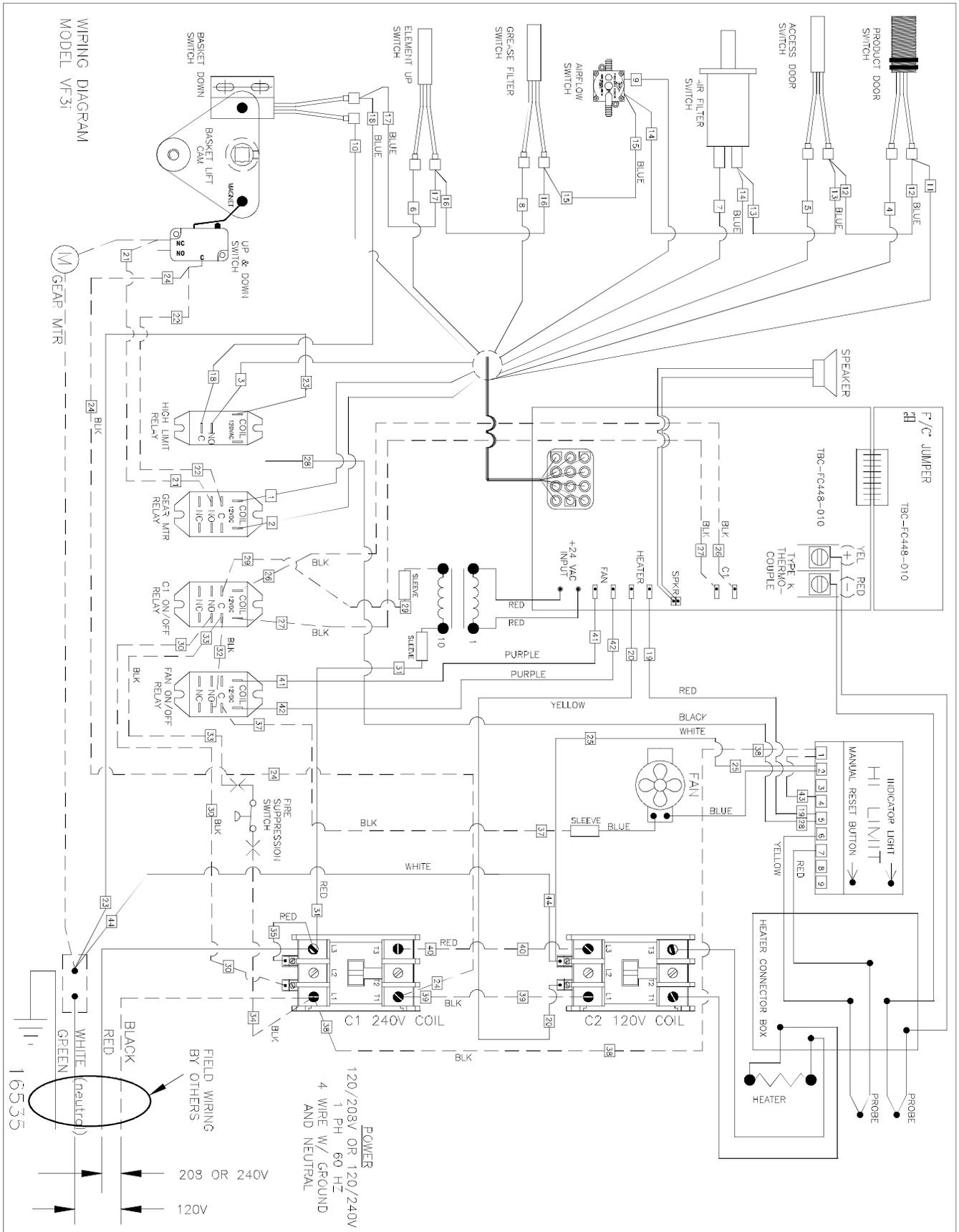


# WIRING DIAGRAM VF2: effective S/N VF2L90XXXX

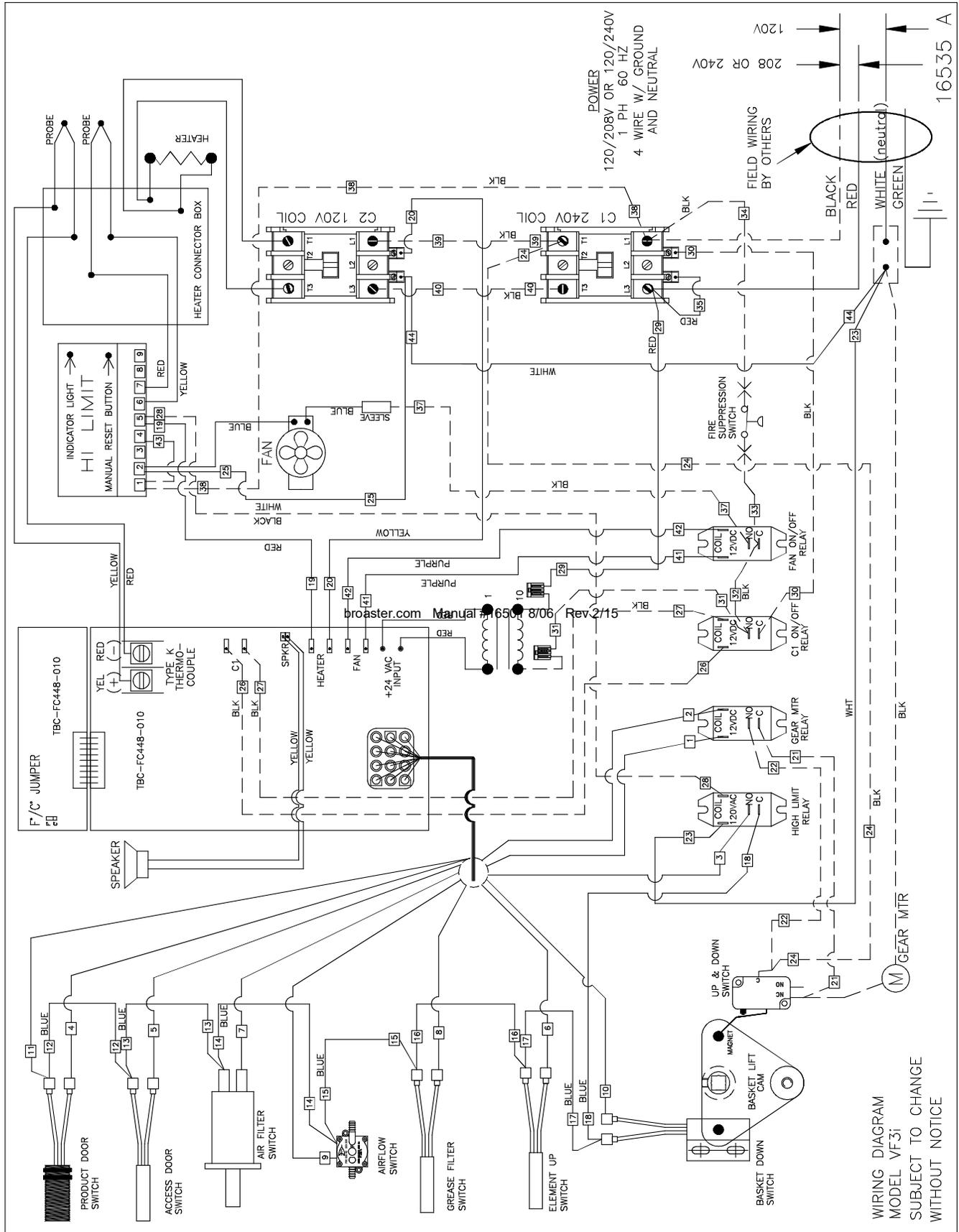


WIRING DIAGRAM  
 MODEL VF2  
 SUBJECT TO CHANGE  
 WITHOUT NOTICE

# WIRING DIAGRAM VF3i:



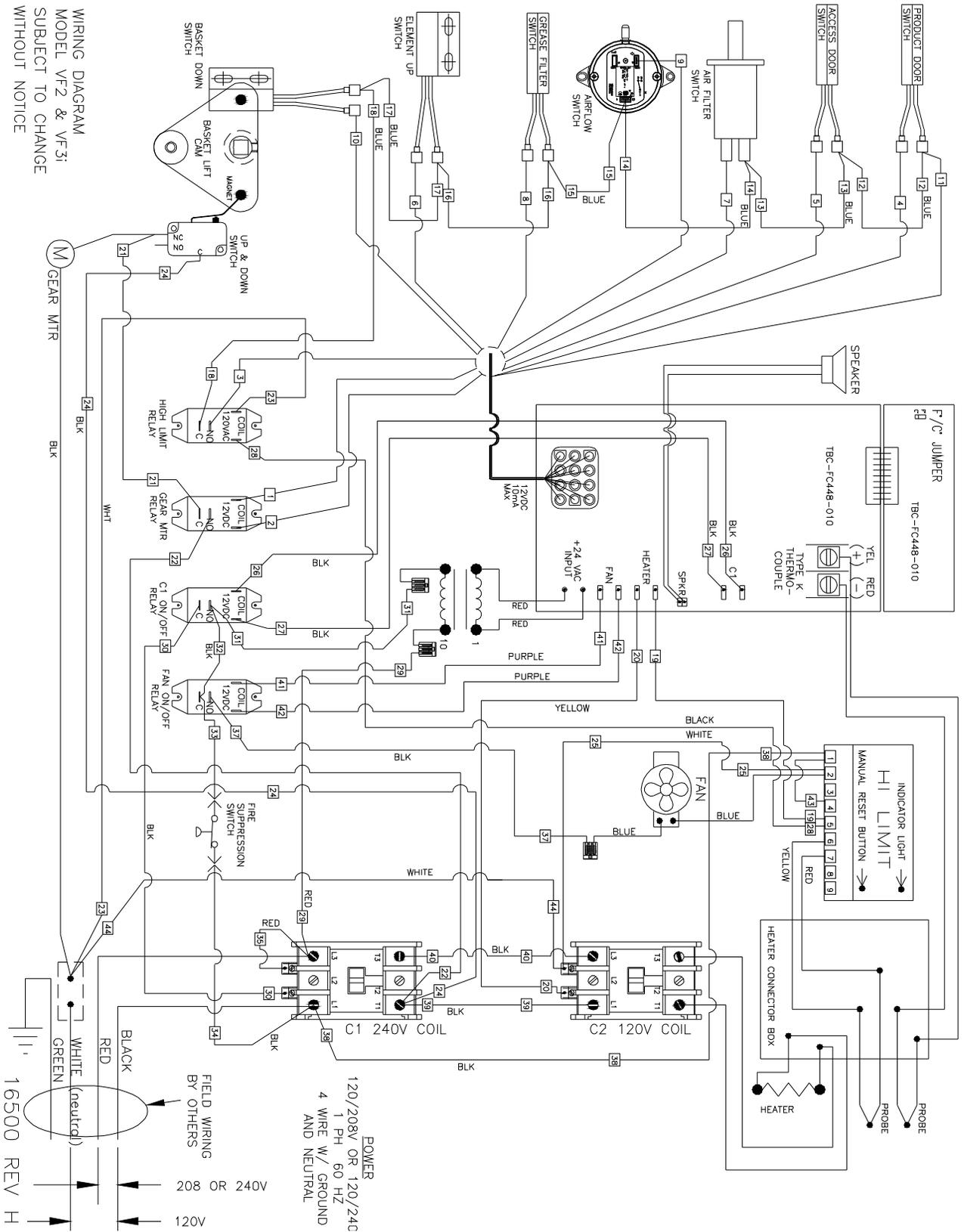
# WIRING DIAGRAM VF3i: effective S/N VF3G900320



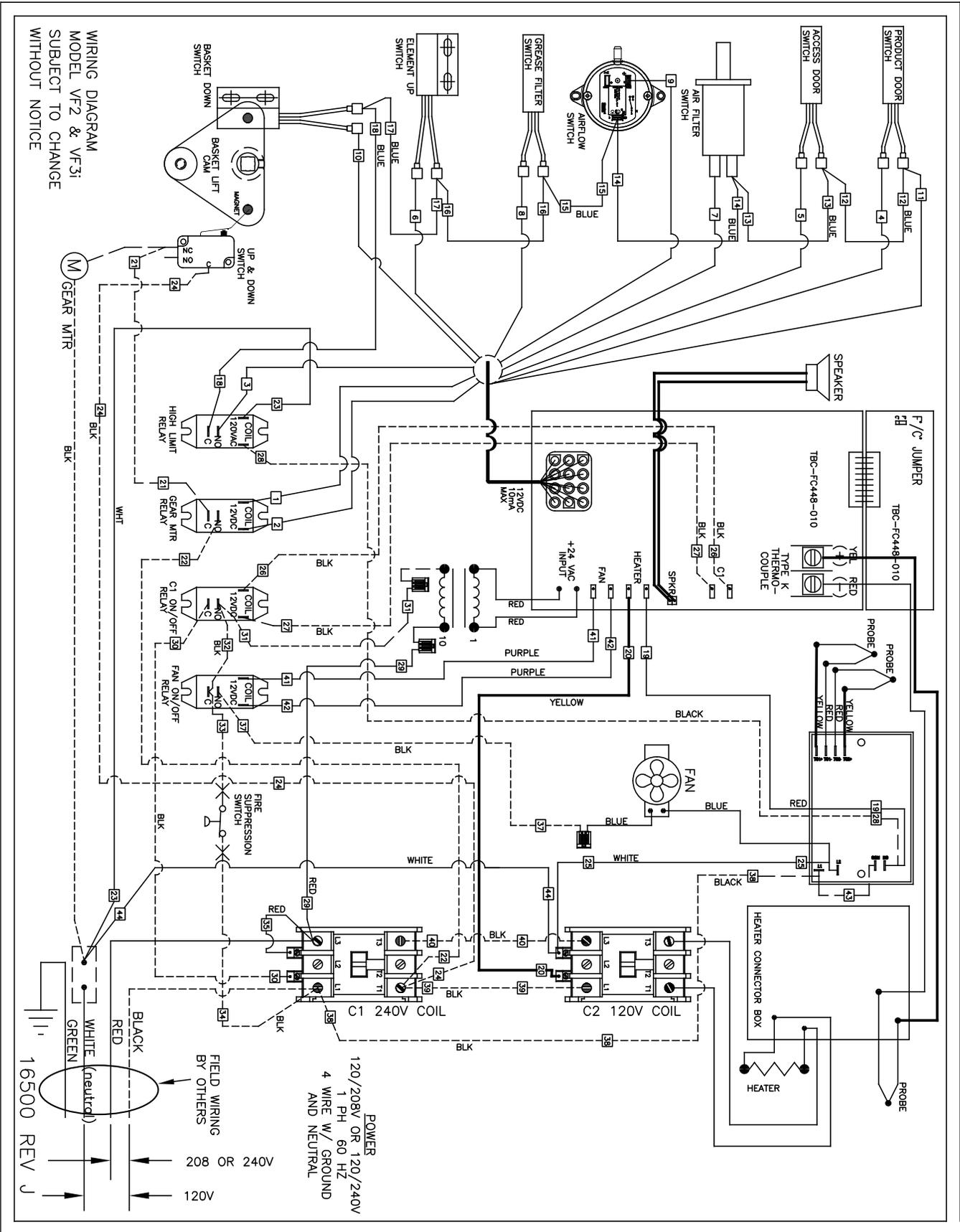
WIRING DIAGRAM  
 MODEL VF3i  
 SUBJECT TO CHANGE  
 WITHOUT NOTICE

# WIRING DIAGRAM VF3i: effective S/N VF3H90XXXX

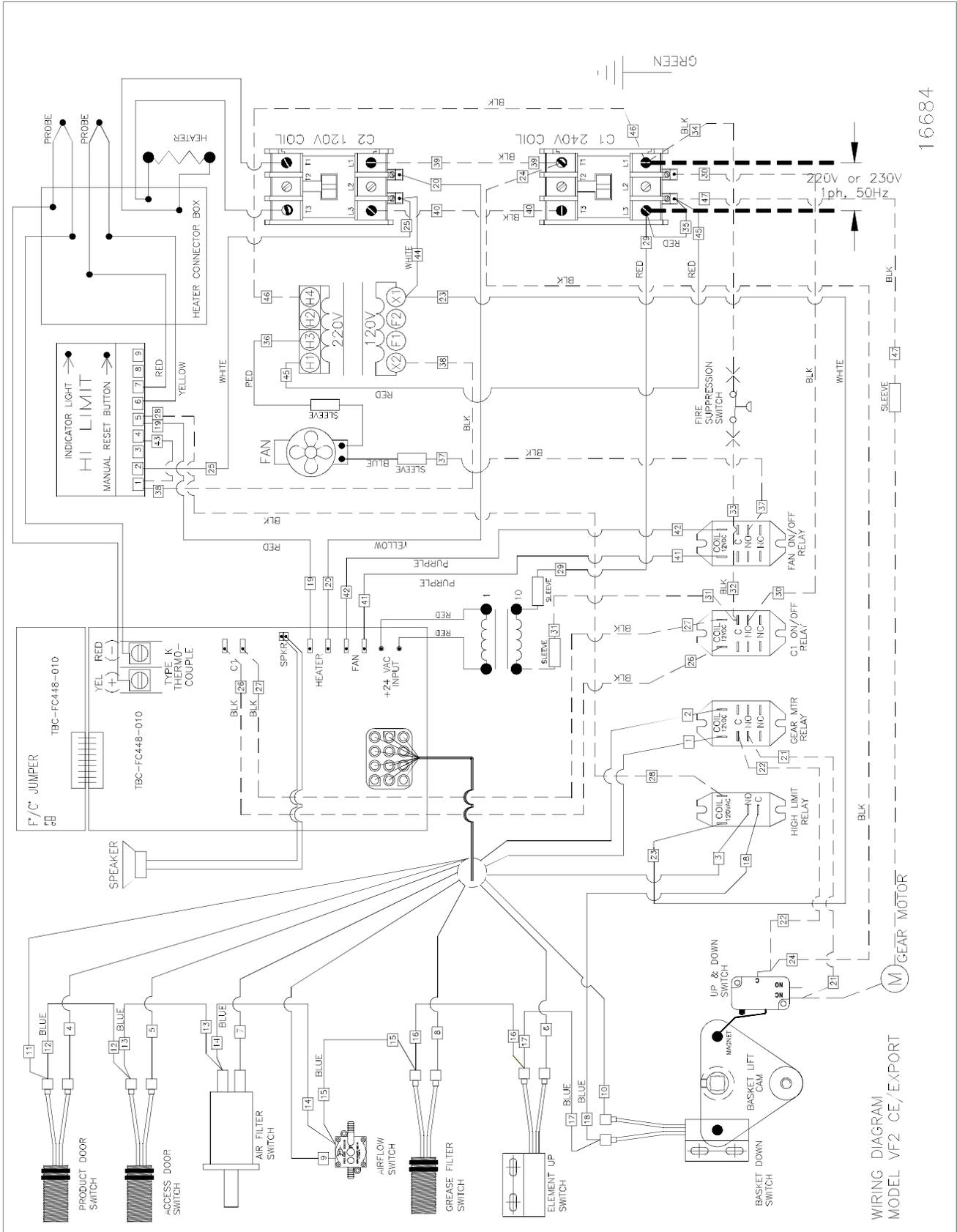
WIRING DIAGRAM  
 MODEL VF2 & VF3i  
 SUBJECT TO CHANGE  
 WITHOUT NOTICE



# WIRING DIAGRAM - VF-3 / VF-2 effective S/N VF3J02112 and VF2 02003G

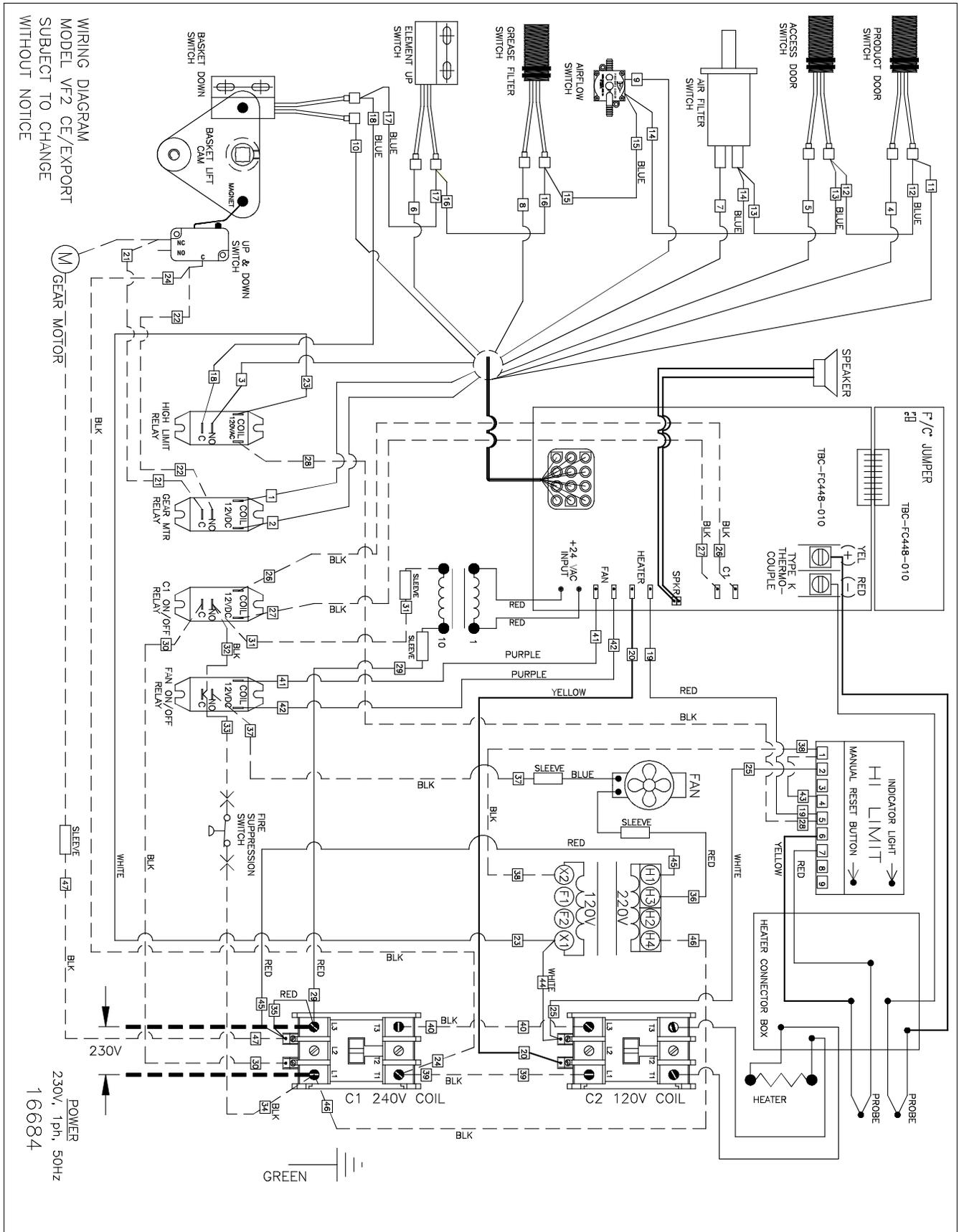


# WIRING DIAGRAM VF2 EXPORT:

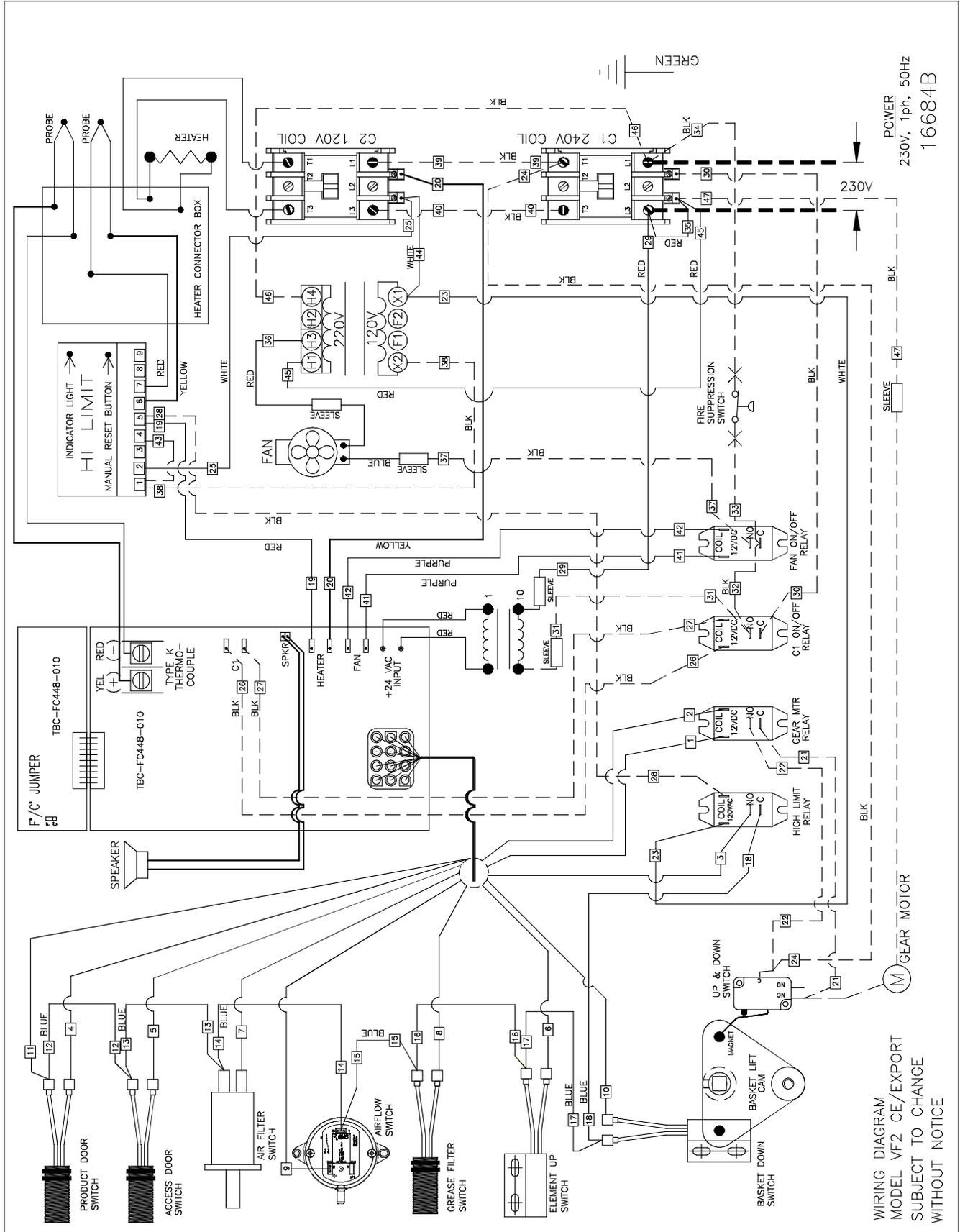


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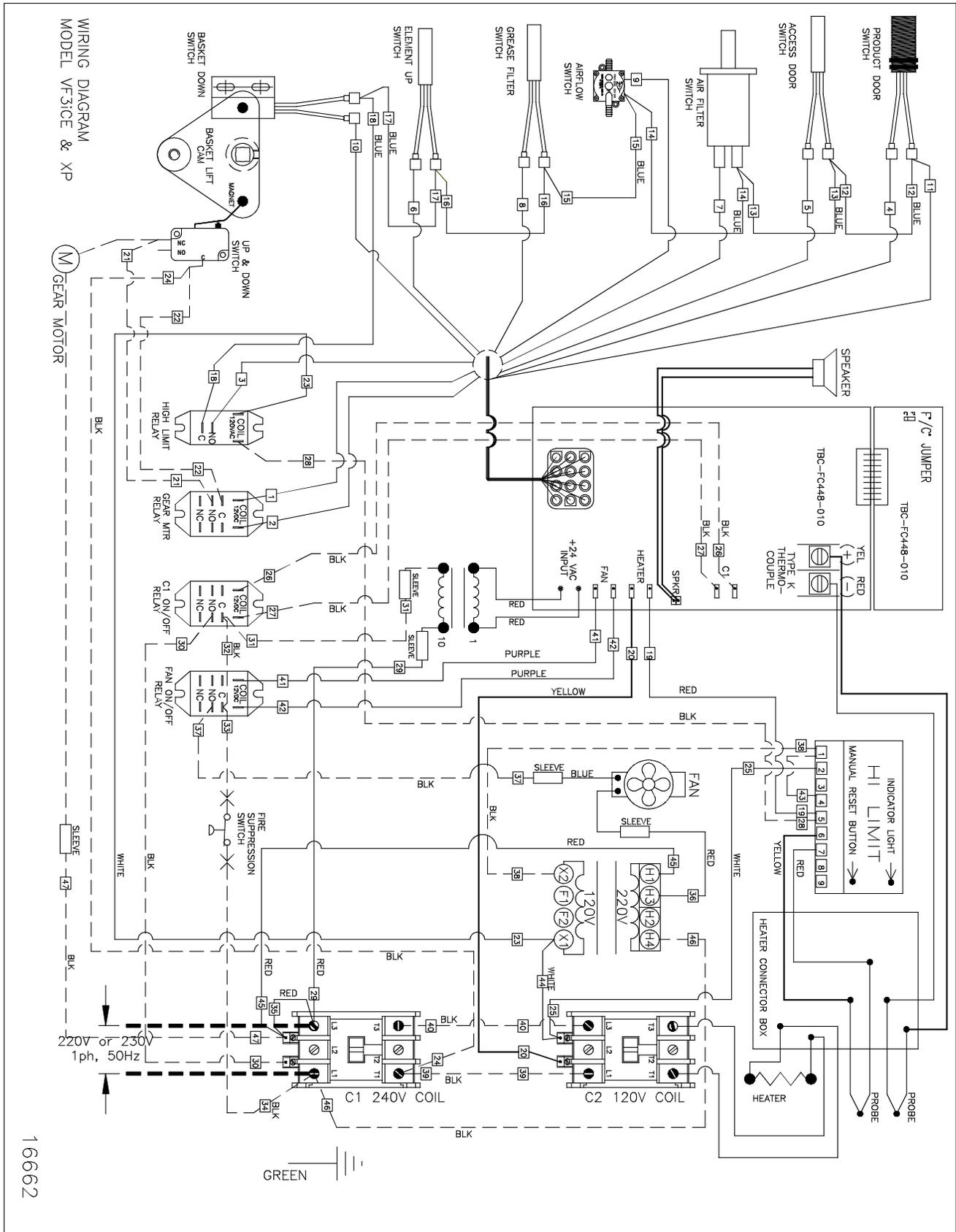
# WIRING DIAGRAM VF2 EXPORT: effective S/N VF2F90XXXX



# WIRING DIAGRAM VF2 EXPORT: effective S/N VF2L90XXXX

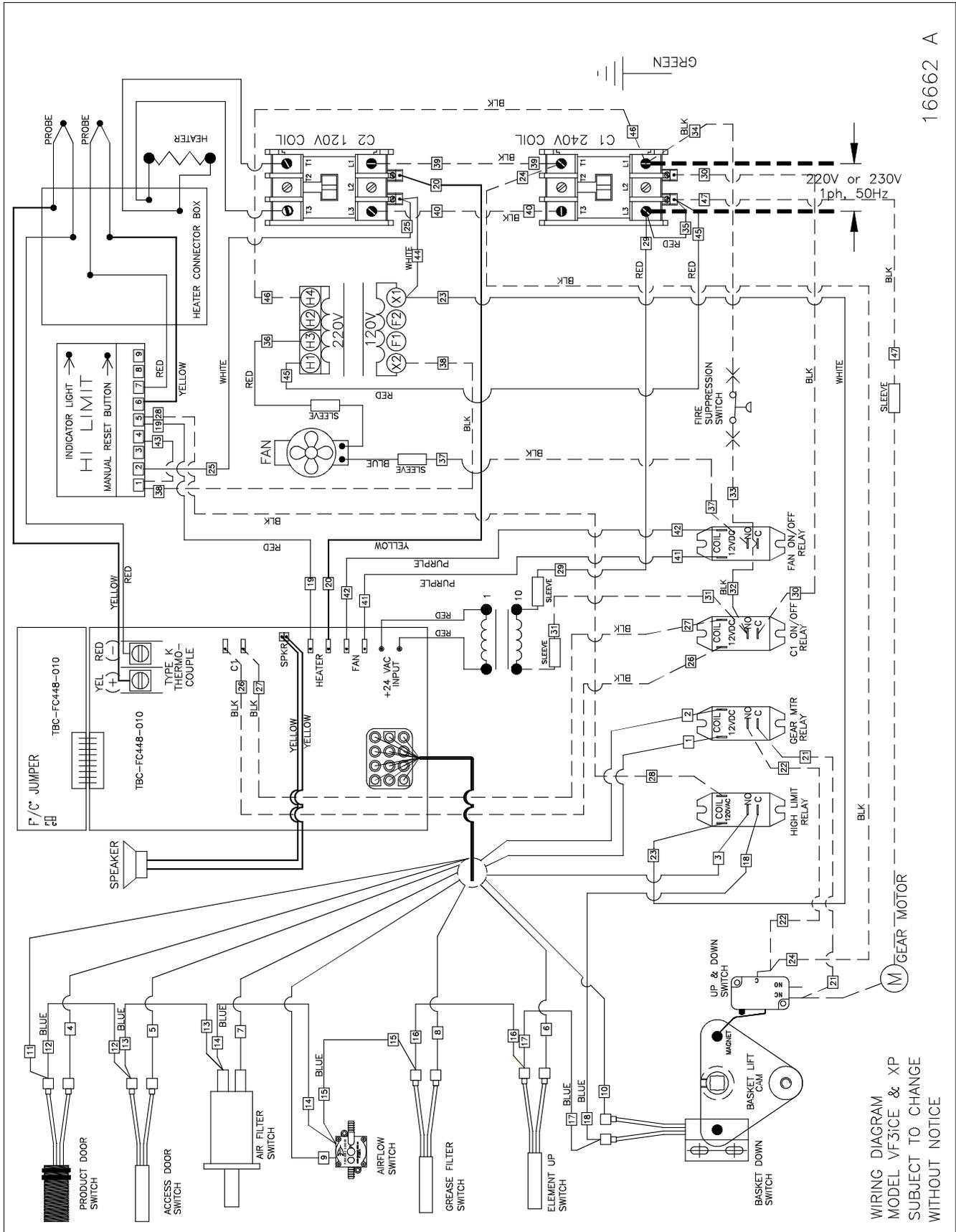


# WIRING DIAGRAM VF3i EXPORT:



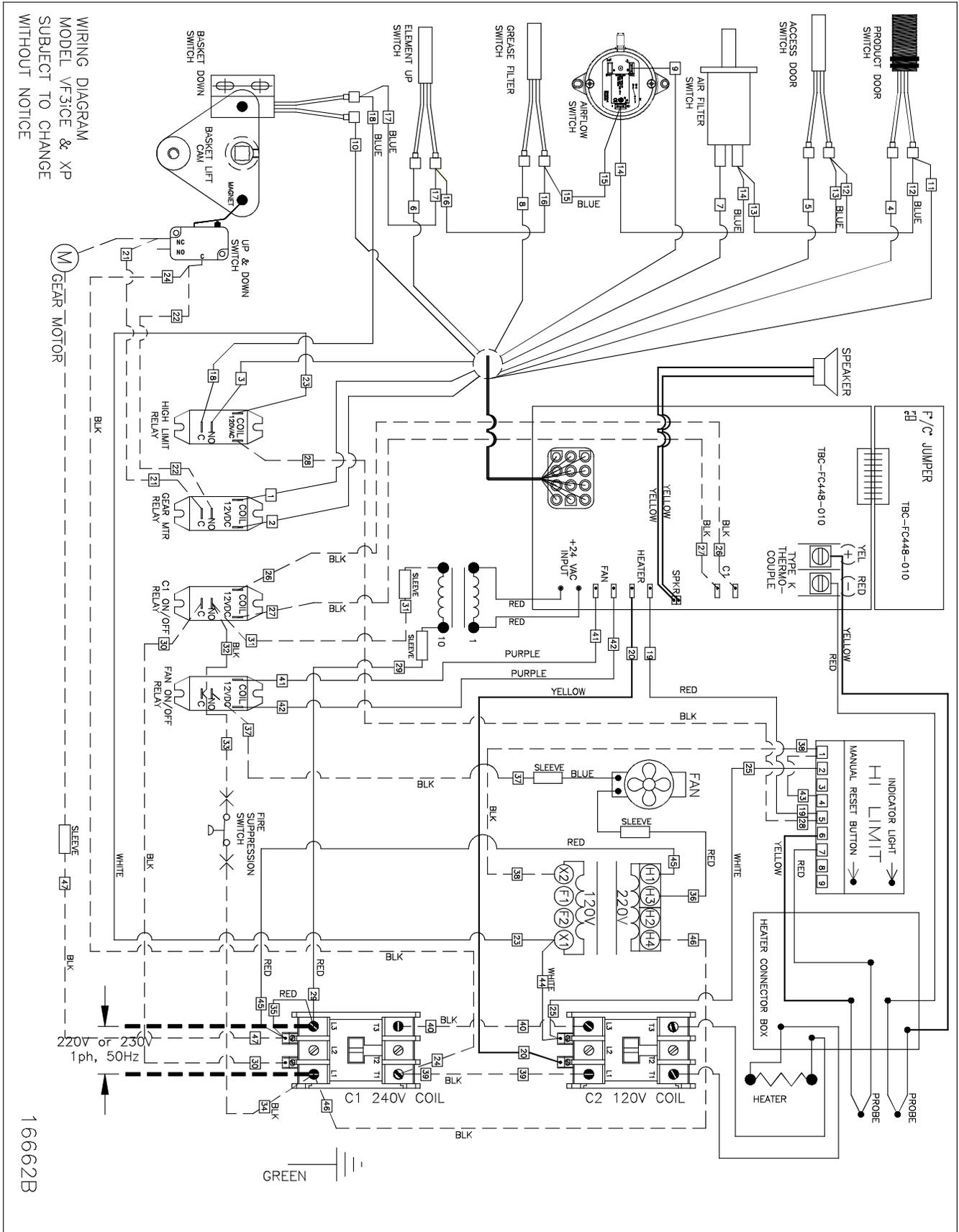
# WIRING DIAGRAM VF3i EXPORT: effective S/N VF3F90XXXX

16662 A



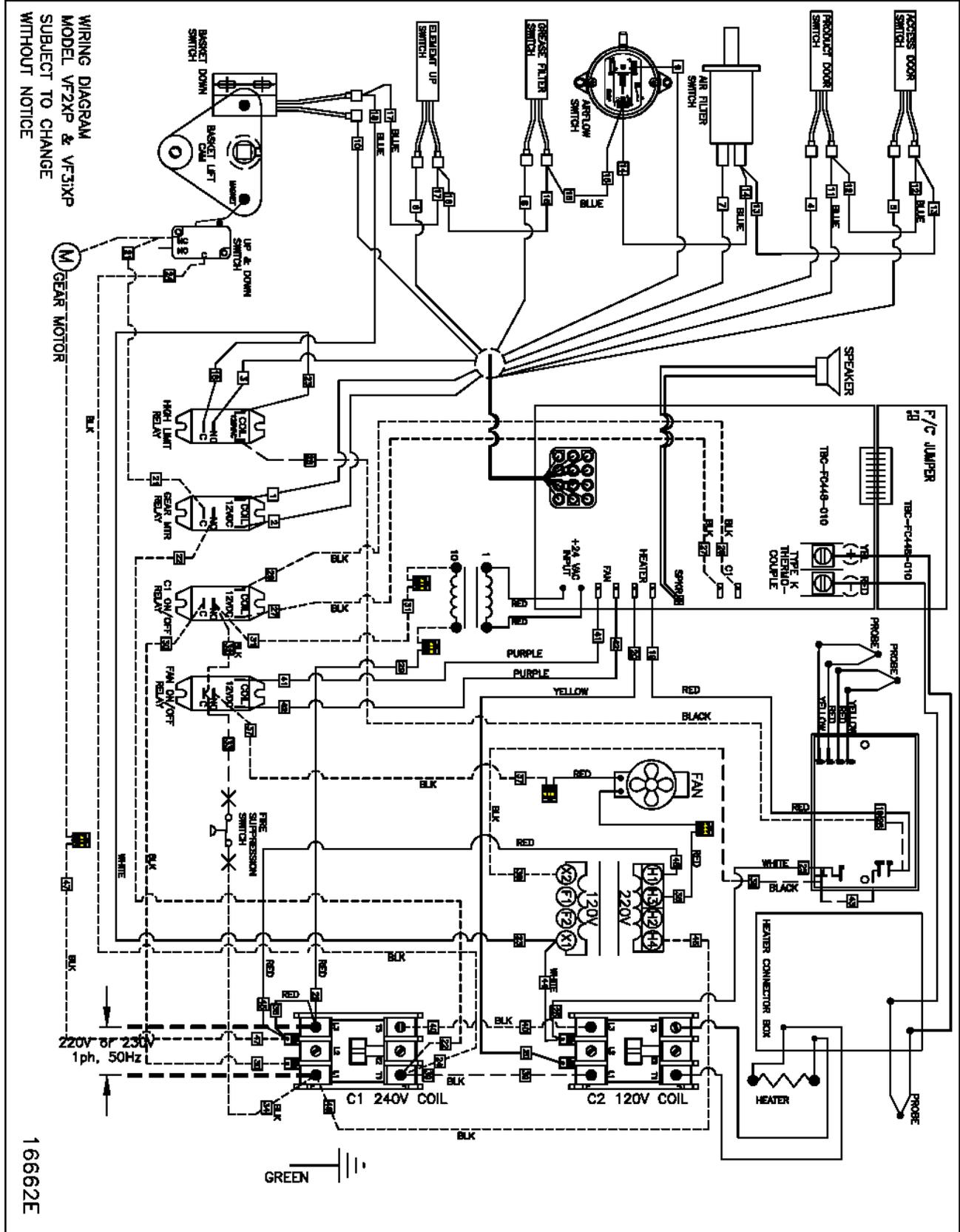
WIRING DIAGRAM  
 MODEL VF3ICE & XP  
 SUBJECT TO CHANGE  
 WITHOUT NOTICE

# WIRING DIAGRAM VF3i EXPORT: effective S/N VF3H90XXXX



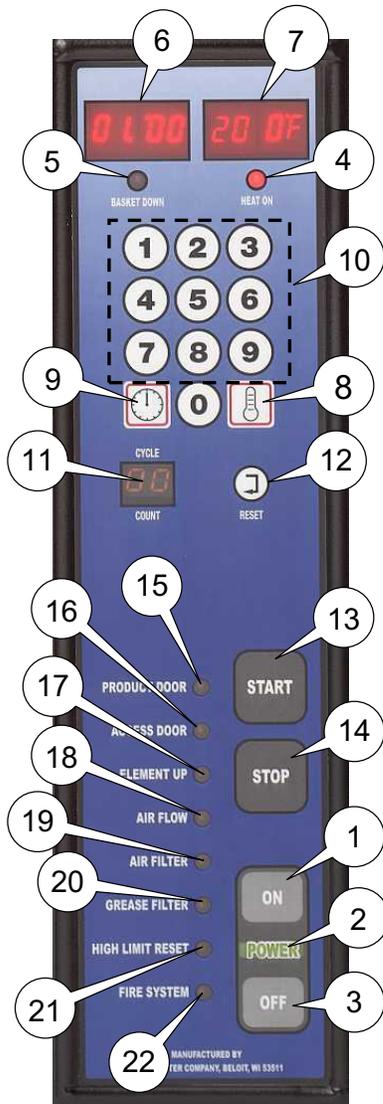
16662B

**WIRING DIAGRAM - VF2 Dom effective S/N- VF2C42002F,  
 VF3i Dom effective S/N- VF3C42010F,  
 VF2XP effective S/N-VF2F02002G,  
 VF3iXP effective S/N>VF3J02112**



## 2 - FRONT PANEL

### DUAL DISPLAY FAMILIARIZATION



1. **ON:** Turns power to unit on.
2. **Power On indicator Light:** The word 'POWER' illuminates green when unit is turned on.
3. **OFF:** Turns power to unit off.
4. **Heat On Indicator Light:** Illuminates when oil is being heated. Light goes off when oil reaches set temperature.

5. **Basket Down Indicator Light:** Illuminates when Food Basket is in lowered position.
6. **Time Display:** Shows time count-down during a cook cycle, program values during programming and programmed time during idle period.
7. **Temp Display:** Shows set temperature and actual temperature on demand.
8. **Cook Temperature Button:** Initiates temperature programming and displays actual temperature.
9. **Cook Time Button:** Initiates time programming.
10. **Numerical Keypad:** Enters and adjusts set point values.
11. **Cycle Count Display:** Increases in increments of one every time a cooking cycle is completed.
12. **Cycle Count Reset Button:** Resets the cycle count display to "zero".
13. **Start Button:** Starts a cooking cycle and lowers the platform.
14. **Stop Button:** At end of cooking cycle, silences the audible alert.

**NOTICE** Stop Button can be pushed at any time during a cooking cycle and cooking time will revert to the initial setting.

## OPERATIONAL LOCKOUTS

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Indicator lights illuminate to show “Operation Lockout” conditions that need to be corrected before unit will function. Unless noted otherwise, all control functions shut down.

15. **Product Door Indicator Light:** Illuminates when the Product Door is open. Note: All control functions are active except “Start” or “Stop” functions.
16. **Access Door Indicator Light:** Illuminates when the Access Door is open.
17. **Element Up Indicator Light:** Illuminates when the heating element is in the raised position.
18. **Air Flow Indicator Light:** Illuminates when the flow of air through the Air Filter area falls below acceptable level.

### NOTICE

**Replace Air Filter every 3 months.**

19. **Air Filter Indicator Light:** Illuminates when the air filter is not installed in the unit.
20. **Grease Filter Indicator Light:** Illuminates when the grease filter is not properly installed in the unit (magnet to the right).
21. **Hi-Limit Control Indicator Light:** Prevents oil temperature from exceeding 475° F. If power to control turns off due to Hi-Limit Control, this indicator light will illuminate, press the OFF button and DO NOT attempt to operate until it has been serviced by an authorized Broaster Company representative.

22. **Fire System Light:** Illuminates when 6 months have passed to indicate semi-annual maintenance is due on fire suppression system. See Section 7 “Fire Suppression System” in Installation & Operation Manual for proper procedure by certified service personnel.

### NOTICE

**All Control functions remain active if this light comes on. To reset light for 6 more months, press & hold “STOP” & “#6” buttons for 10 seconds.**

## CONTROLLER BASIC PROGRAMMING

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### NORMAL OPERATING MODE

### CAUTION

**Check oil level before pressing the ‘ON’ button.**

Action: Press ‘ON’ button.

Response: Green “Power On” light illuminates and Temp Display alternates between number values for cook temperature, and LO (idle mode). LO will disappear when oil temperature has reached cook temperature value. Time Display will show the set time in minutes and seconds.

### Set Temperature:

Action: Press Cook Temperature Button twice within 5 seconds.

Response: Programming mode has been entered. Flashing Temp Display reads “###F.” (### = temperature value ie: 360F)

Action: If desired, press keypad numbers to change displayed value then press Cook Temperature Button once to enter new value into memory.

Response: Controller returns to idle mode.

### Set Time:

Action: Press Cook Time Button twice within 5 seconds.

Response: Programming mode has been entered. Flashing Time Display reads “##:##.” (##:## = time value ie: 08:00)

Action: If desired, press key pad numbers to change displayed value in minutes and seconds then press Cook Time Button once to enter new value into memory.

Response: Controller returns to idle mode.

### Reset Cycle Counter:

Action: Press Reset Button twice in 5 seconds.

Response: Display will return to a setting of “00.”

#### **NOTICE**

**If counter is not reset before reaching “99.”**

**Upon the next cycle completion, the display will begin counting at “01.”**

Normal operating programming can be done at any time without affecting presets.

### PRESET COOK MODE

#### Choose Preset Cook Cycle:

Action: Press a button, 0 thru 9, corresponding to the desired preset.

Response: The TIME display will show “P\_X”, where X is the preset selected.

#### **NOTICE**

**If a button is not pressed in ten seconds, the display will revert to the previous display.**

Action: Press the same button again,

Response: The TIME display will show the preset time, the TEMP display will show the preset set point, and the temperature will now regulate to the new set point.

### PROGRAMMING PROCEDURE (PRESET MODE)

Action: Press and hold the TIME and TEMP buttons simultaneously for three seconds.

Response: The TIME display and TEMP display will begin flashing. The CYCLE COUNT display will show “-0” indicating that the preset #0 values are displayed. The preset values for the TIME and TEMP will be shown on the display.

#### Change Cook Time:

Action: Press the TIME button once.

Response: The TEMP display will turn off and only the TIME display will flash.

Action: Key in the desired cook time then press the TIME button to save the new setting.

#### **NOTICE**

**If a button is not pressed in ten seconds, the display will revert back to both the TIME and TEMP displays flashing.**

## Change Cook Temperature:

Action: Press the TEMP button once.

Response: The TIME display will turn off and the TEMP display will be flashing.

Action: Key in the desired temperature setting then press the TEMP button to save the new setting.

**NOTICE** If a button is not pressed in ten seconds, the display will revert back to both the TIME and TEMP displays flashing.

Advance to Next Preset:

Action: Press the CYCLE COUNT RESET button once.

Response: The CYCLE COUNT display will change to “-1” and the presets for #1 will be displayed.

Repeat the process as described. After the presets for #9 are displayed, pressing the RESET button again will cause the control to return to normal operation.

**NOTICE** Even if all presets are not programmed the reset button must be pressed until “-9” appears then press reset button once more to hold programs.

## WARNING DISPLAYS

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**HI** - Display will flash HI if cooking oil temperature exceeds 415° F. Audible alert will sound until power switch is turned OFF or hi-limit trips. All controller functions and heat source are disabled during this condition.

**PROB** - Display will flash PROB if there is a problem with temperature sensor probe. Audible alert will sound until power switch is turned OFF. All controller functions and heat source are disabled during this condition.

**CHEC** - Display will flash CHEC if cooking oil temperature does not rise 6° F within the first three minutes. Audible alert will sound until power switch is turned OFF. All controller functions and heat source are disabled during this condition.

**Note:** CHEC could appear if cooking oil temperature is below 45° F. Turn power switch OFF then ON for another three minute heating period. This may have to be repeated two or three times.

**FAIL** - Display will flash FAIL if controller detects a fault within itself. Audible alert will sound until power switch is turned OFF. All controller functions and heat source are disabled during this condition.

## DISPLAY ACTUAL TEMPERATURE

**Action:** Press and hold cook temperature button for three seconds.

**Response:** Display will show actual temperature and will vary as cooling and heating takes place.

**Action:** Press cook temperature button again to return to idle mode.

## CALIBRATION

Calibration will be necessary when temperature sensor probe or controller is replaced. Calibrate using an accurate non-mercury test thermometer.

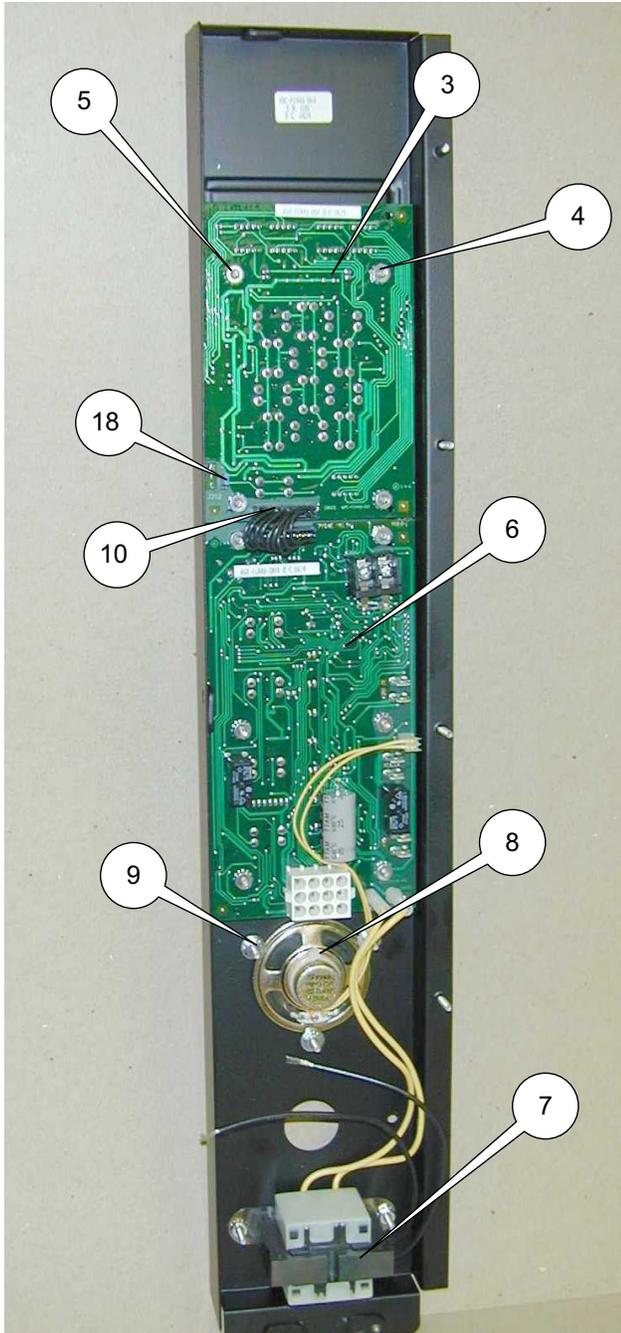
1. Thoroughly heat cooking oil. When HEAT ON light goes out, stir oil. If light illuminates, repeat process. This may have to be done several times.
2. Press and hold cook temperature button for ten seconds until OFF then SET is displayed twice. Release button.
3. Uncalibrated cooking oil temperature is displayed. Calibration must be performed.
4. Check cooking oil temperature one inch below oil surface in the center of cooking well.
5. Using keypad, enter temperature to match controller display with calibrating thermometer.
6. Press temp button to exit calibration.

## ACCESS FOR SERVICE

1. Disconnect main power supply.
2. Remove Access Panel Retaining Screw (1). Raise the Access Panel (2) and pull it outward.



## FRONT PANEL ASSEMBLY



### DISPLAY BOARD (upper)

The display board (3) displays time and temperature.

#### NOTICE

Remove F/C jumper (18) to display temperature in Celsius.

## DISPLAY BOARD POWER INPUT



To determine if there is power to the upper Display Board, pull the plug out of the socket on the Display Board as shown above.

Turn the unit on and check the voltage between pins 1 & 2. It should be +5 VDC.

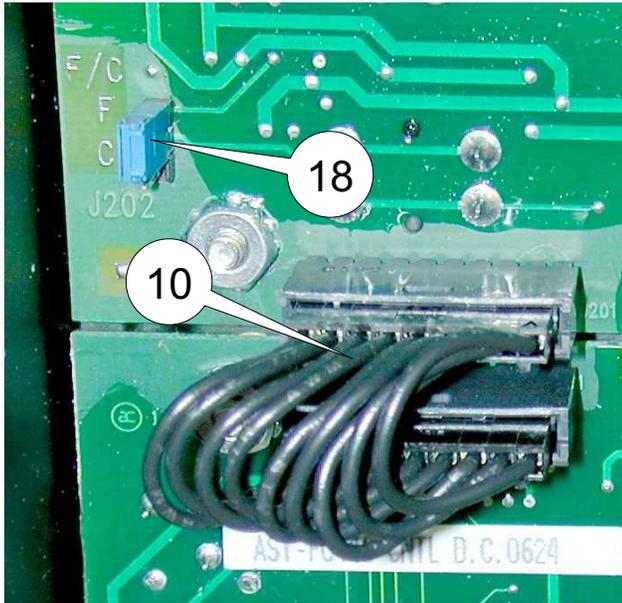
#### NOTICE

Make sure the red test lead is on pin 1 and the black test lead in on pin 2.

If there is 5 volts present then there is power available to the Display Board.

If the Display Board does not illuminate when the plug is put back into the socket then the Display Board is faulty and should be replaced.

If 5 volts are not present check the power input to the Control Board (bottom board).



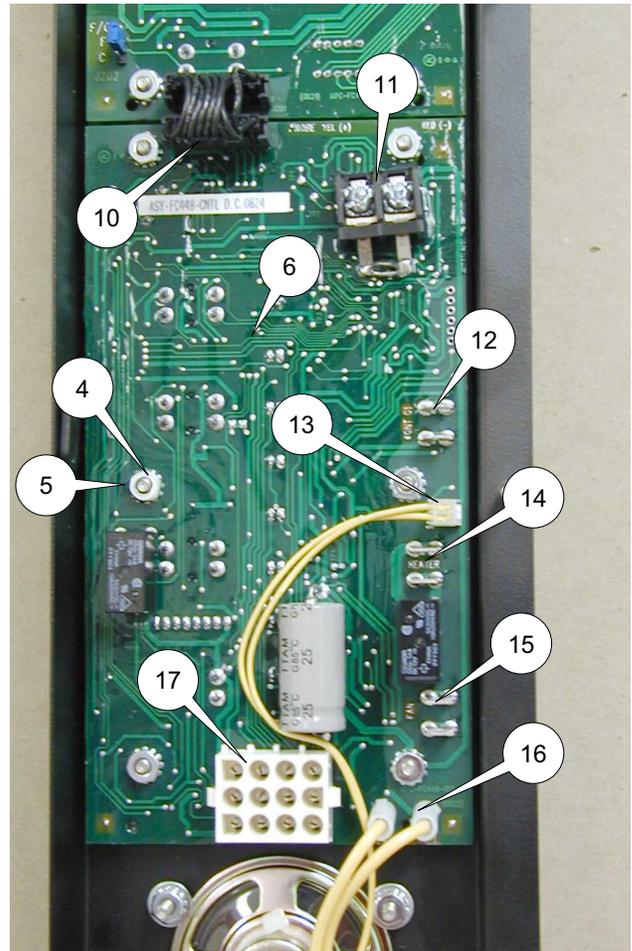
### Replacement:

1. See ACCESS FOR SERVICE.
2. Disconnect jumper cable (10) at lower edge of display board (3).
3. Loosen and remove four hex nuts (4) and remove display board.
4. Assemble in reverse order.

**NOTICE** During reassembly, be sure the four spacers (5) are between the main board and the front panel

### CONTROL BOARD (lower)

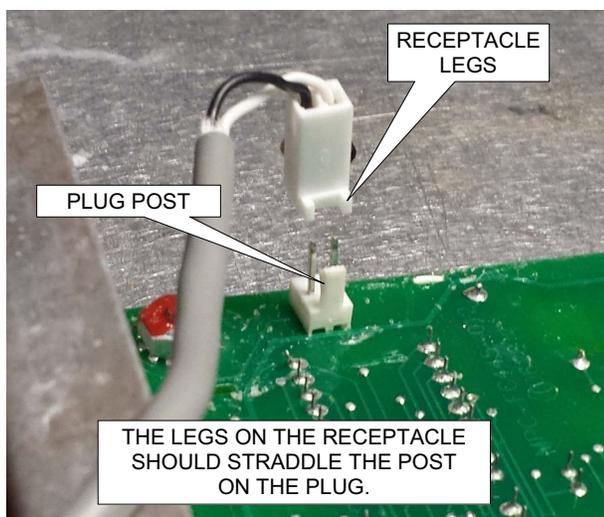
1. See ACCESS FOR SERVICE.



2. Disconnect jumper cable (10) at upper edge of control board.
3. Disconnect the red and yellow probe wires from terminal block (11).
4. Disconnect contactor wires #26 and #27 from terminals (12) using needle nose pliers.
5. Disconnect speaker plug (13) from control board (6).
6. Disconnect heater wires #19 & 20 from terminals (14) using needle nose pliers.
7. Disconnect fan wires #41 & 42 from terminals (15) using needle nose pliers.

8. Disconnect transformer wires (16) from control board (6).
9. Disconnect mate-n-lock multi-wire connector (17) from control board (6).
10. Loosen and remove 6 hex nuts (4) and remove control board (6).
11. Assemble in reverse order.

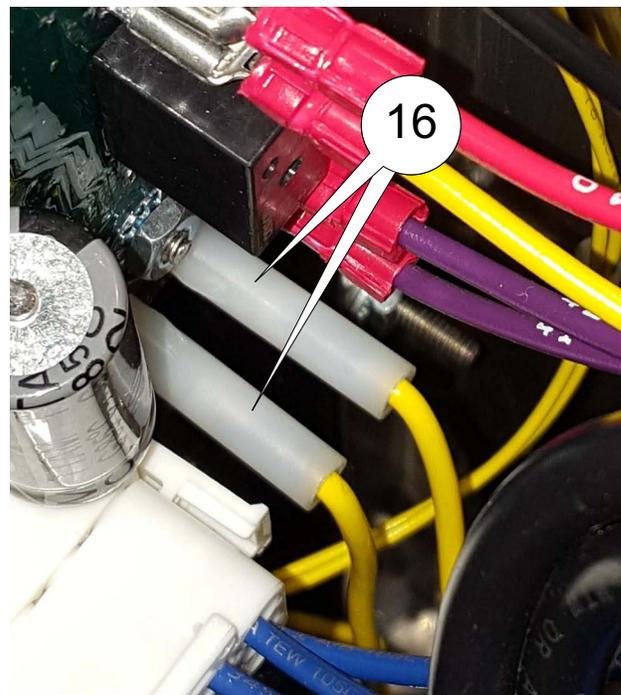
**NOTICE** During reassembly, be sure the six spacers (5) are between the control board (6) and the front panel.



**CAUTION** The plastic receptacle (13) on the speaker wire and the plastic terminal on the control board are polarized. Make sure the receptacle on the speaker wire is attached to the control board as shown above to eliminate any problems with operation of the unit.

## CONTROL BOARD POWER INPUT

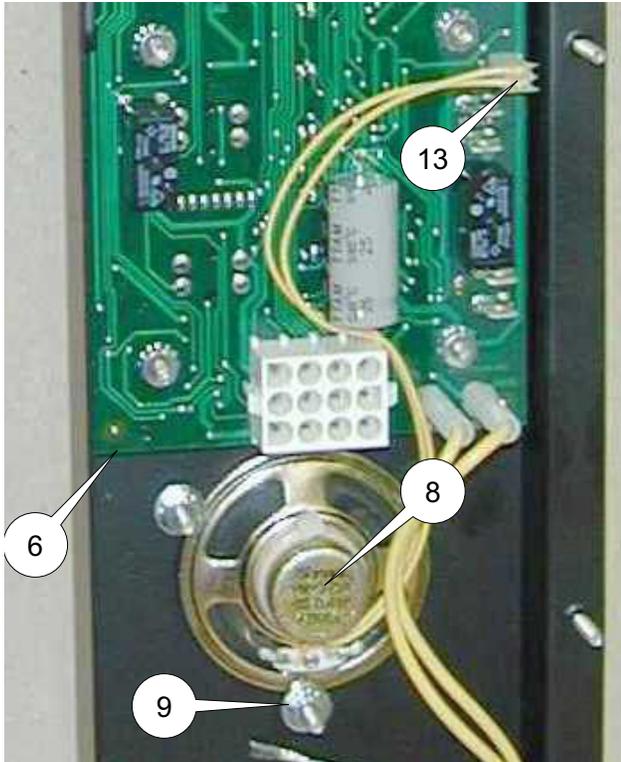
To check the power input to the lower Control Board, disconnect the transformer leads (16) from the lower Control Board.



Turn the unit on and check the output voltage from these leads. It should be 24 VAC.

## SPEAKER

1. See ACCESS FOR SERVICE.
2. Unplug speaker wire 13 from control board (6).



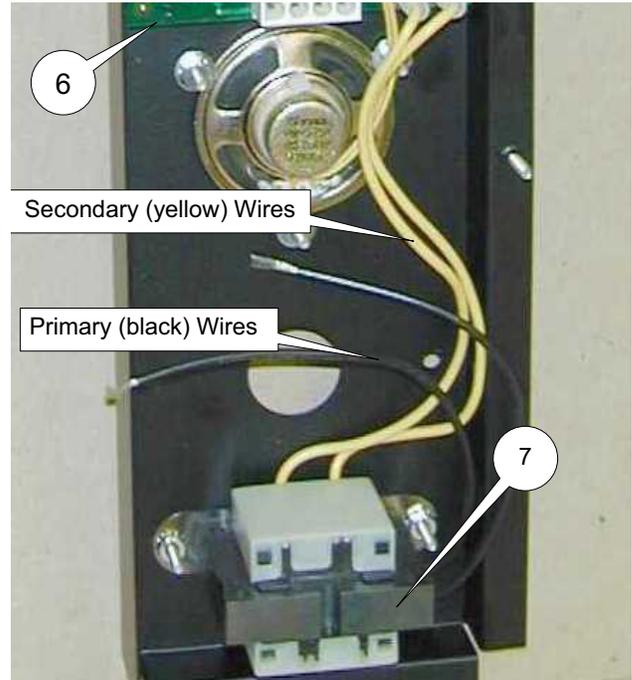
3. Check across the terminals in speaker wire receptacle with an ohmmeter. Meter should indicate a closed circuit. If not, speaker is faulty.

### Replacement:

1. See ACCESS FOR SERVICE.
2. Unplug speaker wire (13) from control board (6).
3. Loosen, but do not remove, the three hex nuts holding speaker (8) to the back of the control panel until speaker (8) can be slipped out from under washers (9).
4. Install new speaker in reverse order.

## TRANSFORMER

The Transformer (7) supplies power to the Control Board (6) and Display board (3).

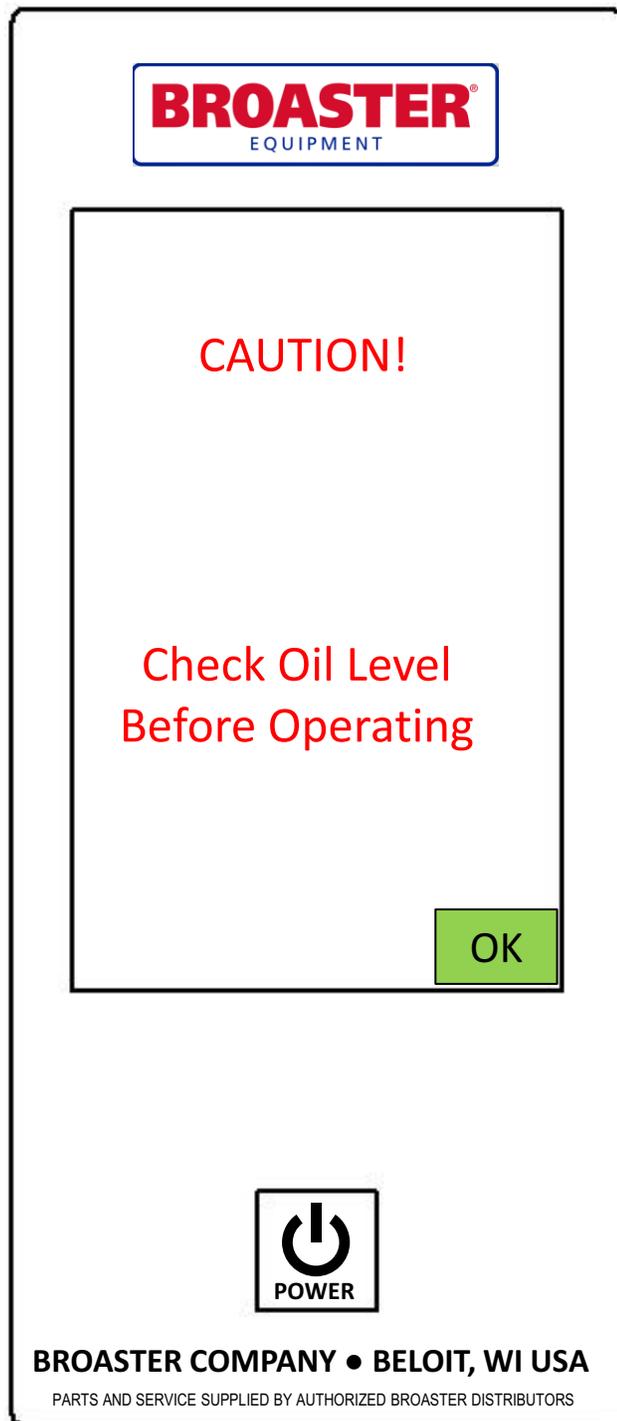


1. See ACCESS FOR SERVICE.
2. Disconnect both primary (black) wires of transformer (7) and unplug the secondary (yellow) wires from Control Board (6).
3. Check between the two primary (black) wires with an ohmmeter. Meter should indicate a closed circuit, If not, transformer is faulty.
4. Check between the two secondary (yellow) wires with an ohmmeter. Meter should indicate a closed circuit. If not, transformer is faulty.

**Replacement:**

1. See ACCESS FOR SERVICE.
2. Disconnect yellow transformer wires from Control Board (6).
3. Disconnect the black transformer wires.
4. Remove two hex nuts, then remove transformer (7).
5. Install new transformer.
6. Reassemble in reverse order.

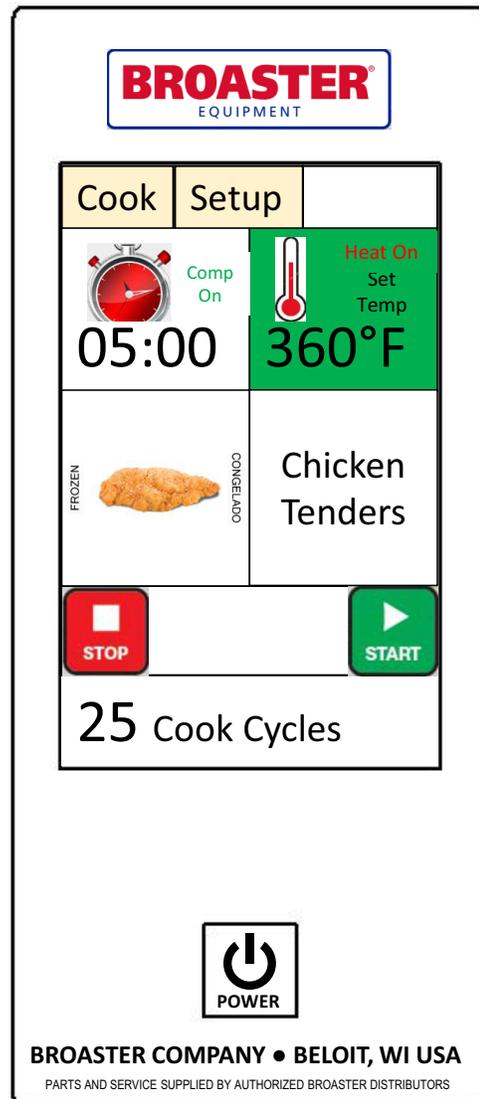
## SMARTTOUCH DISPLAY



Upon pressing the power button, the control will display a prompt to check the oil level. This message will also be displayed every 20th cook cycle as a reminder.

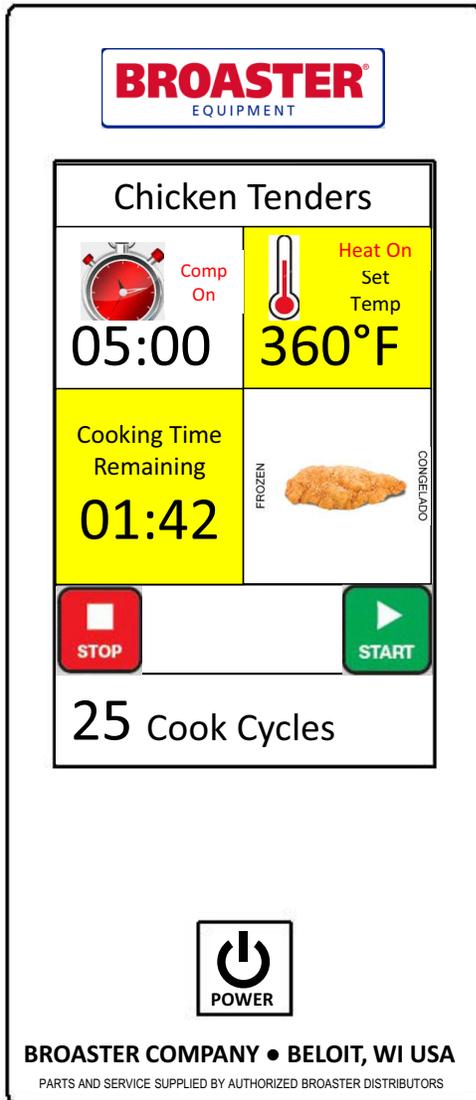
**CAUTION** Always ensure the oil level is properly filled.

## COOK SCREEN



The cooking idle screen displays the current settings for time and temperature along with the recipe item that is selected. The temperature display background will turn from yellow to green when the fryer reaches the set point temperature. The display also indicates when the heat is on.

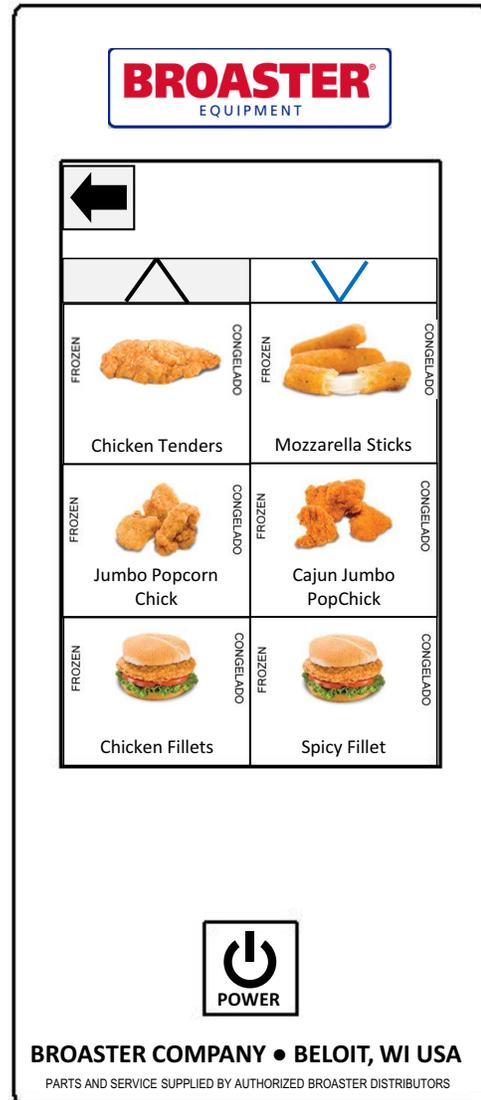
Press **START** to begin cooking. When the time expires, or if you wish to cancel the cooking cycle, press **STOP**. Alternatively, the audible alert, that occurs when the cook cycle is finished, may be acknowledged by opening the product door.



## COOKING

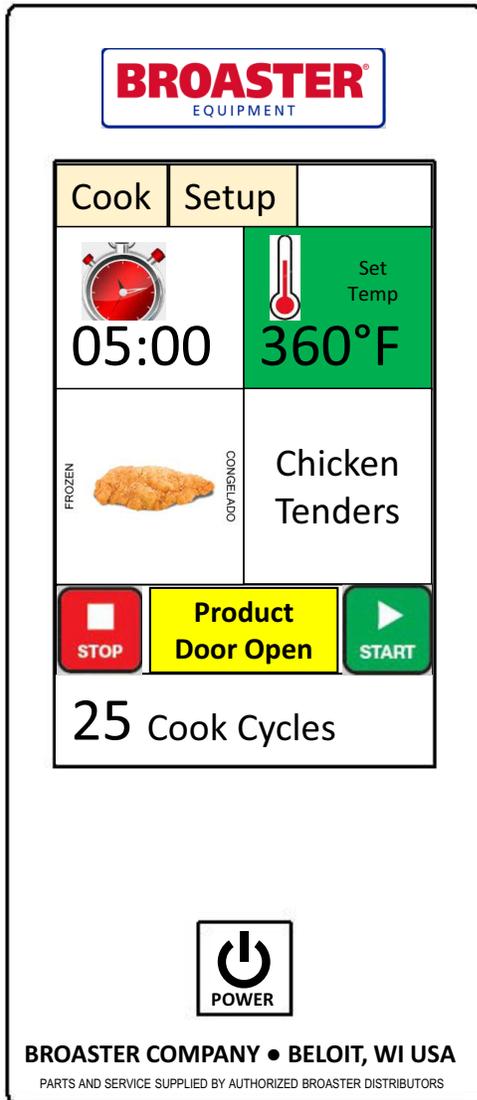
As cooking begins, the remaining cooking time will be displayed. If the wrong preset recipe was chosen, or the wrong amount of time or temperature was chosen, it can be changed within the first minute of the recipe to the desired setting. Press the recipe display to select the desired preset. The remaining cooking time will take into account the amount of time that has elapsed.

The actual oil temperature will be displayed if you press and hold the temperature setting area for 2 seconds. The set temperature can be redisplayed again by pressing and holding the temperature setting area for 2 seconds.



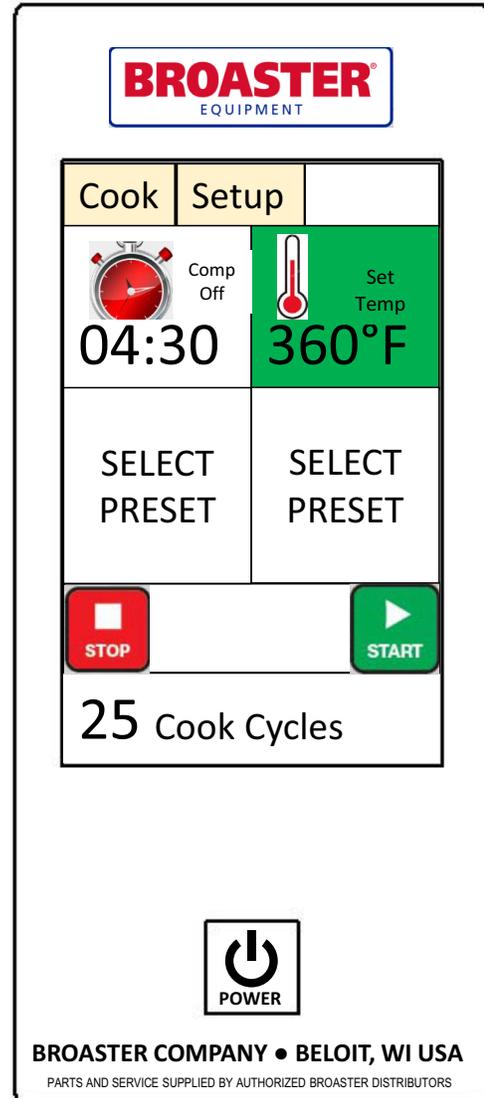
## PRESET SELECTION

Select the desired preset menu item by pressing on it. Use the up and down arrows to go to the next page of six preset recipes if you don't immediately find the item you are looking for.



### PRODUCT DOOR

If the product door is opened, a notice will be displayed on the screen as appears above. Opening the product door prevents one from starting or stopping a cook cycle and will prevent the basket from raising after the time has reached 00:00. Closing the door will then allow the basket to raise.

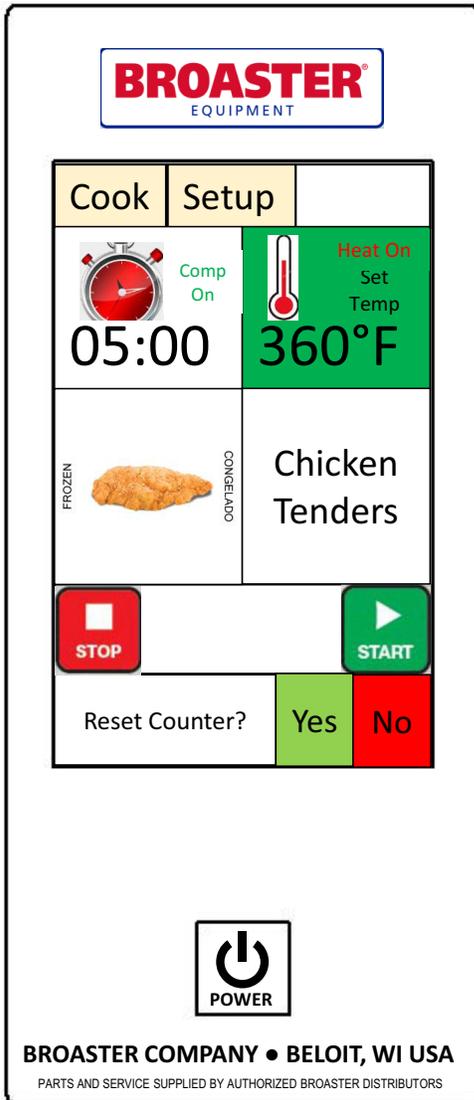


### MANUAL TIME/TEMP SETTING

If the Manual Time/Temp is enabled in Setup, a custom recipe can be created by double-tapping the time or temperature settings on the cooking screen. A keypad will be displayed where the desired value may be entered. The display will indicate SELECT PRESET. If the Manual Time/Temp is disabled, then only preset recipes may be used.

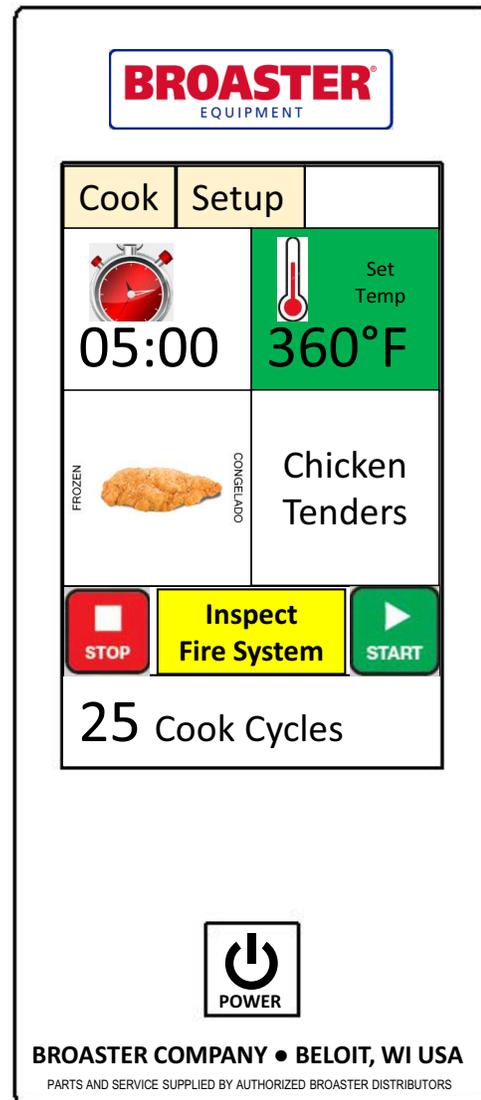
### AUTO COMPENSATION

The auto compensation feature allows consistent product temperatures for varying size loads of product. The timer compensates by stretching out the time proportional to how far the oil is from the set point temperature. Double-tap the time setting and select Comp ON or Comp OFF as desired.



### RESETTING THE COOK CYCLE COUNTER

The cook cycle counter may be reset by double tapping the display in this area. Press Yes to reset the counter, or No to keep the counter at the present value.



### FIRE SYSTEM INSECTION REMINDER

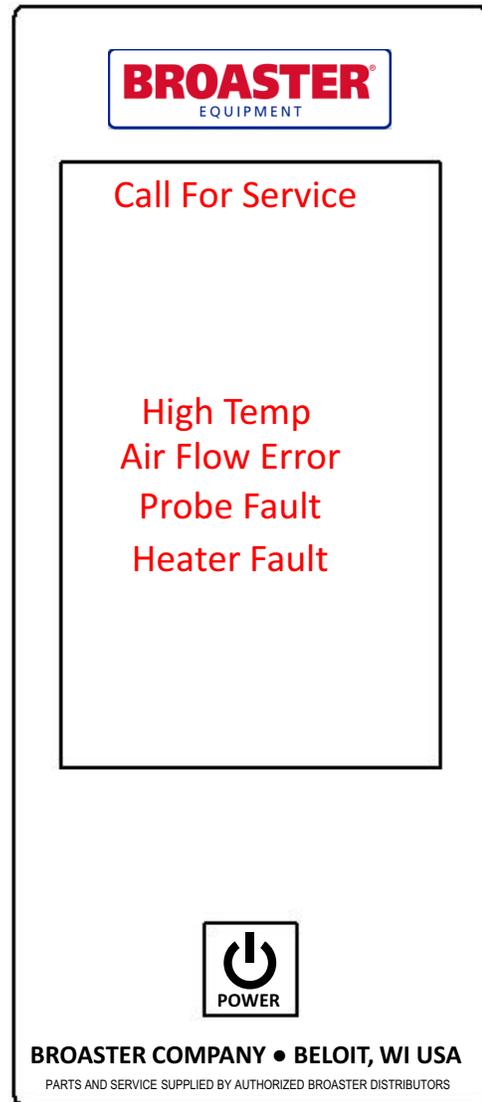
The display will provide a reminder when the semi-annual inspection is due. After the inspection is performed, the reminder may be dismissed by pressing on it and entering the proper PIN code. The reminder will continue to display until it has been reset by the inspecting authority.

Please refer to the Semi-Annual Inspection instructions on page 3-4.



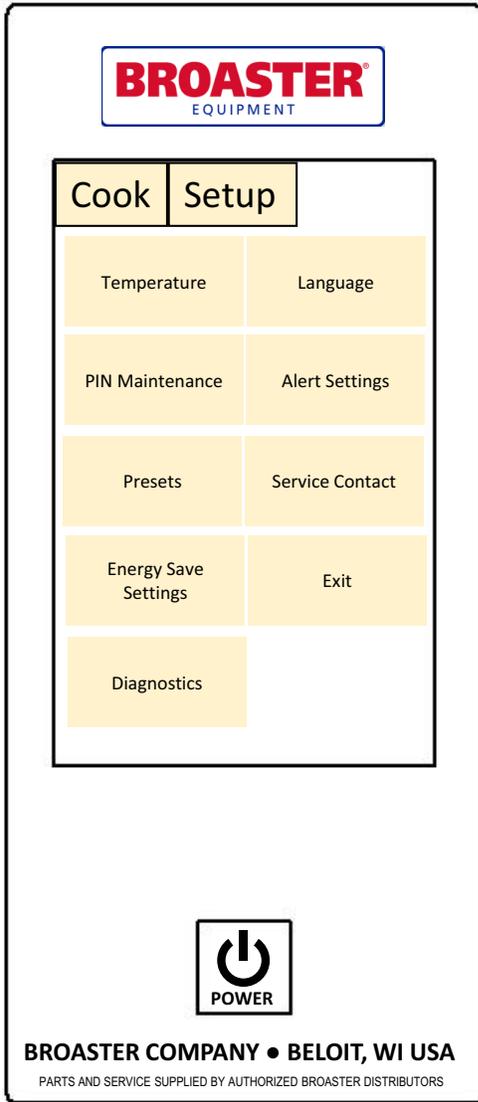
### STATUS MESSAGES

Status messages will be displayed whenever the control senses that something is not in its proper place for safe operation. Simply correct the condition of the item indicated to return to the cooking screen.



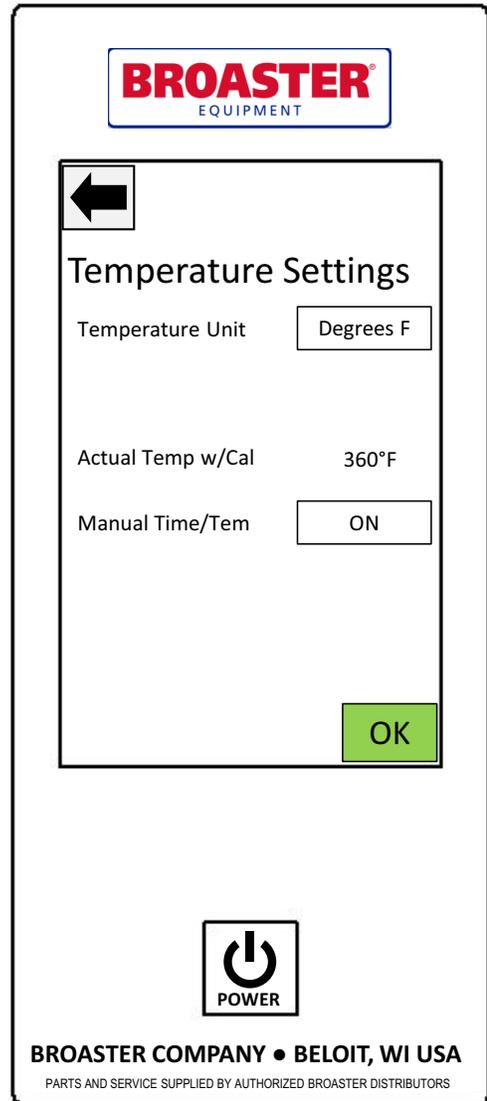
### SERVICE MESSAGES

The system will display the above messages when there is a problem with the unit that is preventing it from operating normally. Press the power button to turn the unit off and call your Broaster distributor to service the appliance.



## SETUP

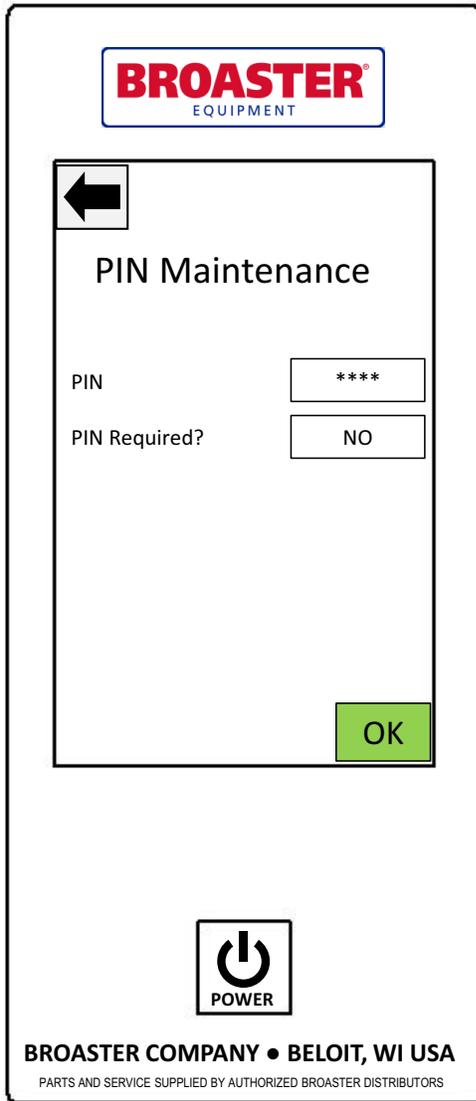
The Setup tab provides a means to change the control operating settings for temperature, PIN maintenance, alert settings, preset menu items, service contact information, error diagnostics, and energy savings features.



## TEMPERATURE SETTINGS

Temperature units are available to be displayed in degrees Fahrenheit or Celsius.

Enabling manual time and temperature allows the operator to customize a recipe on the go. Disabling this feature ensures that only preset menu items may be cooked.

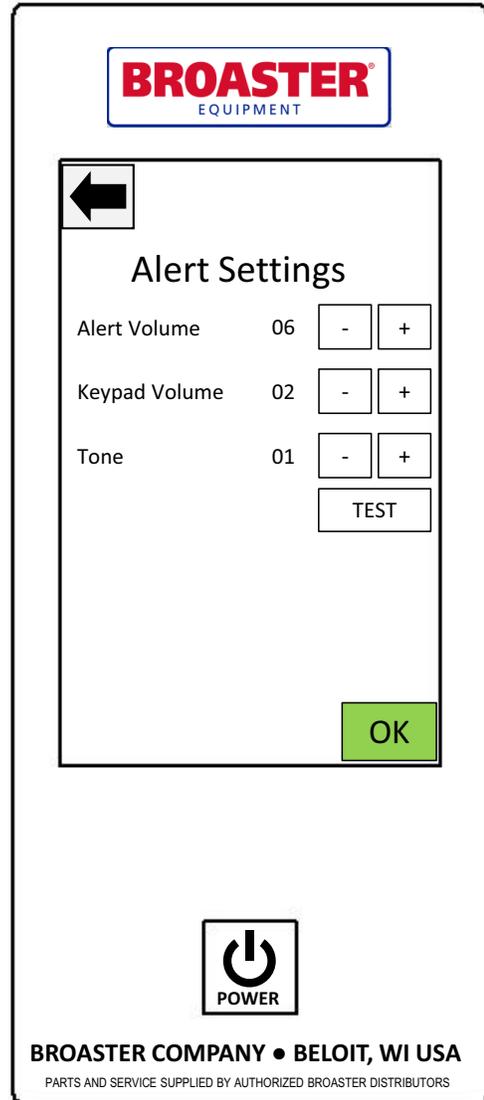


### PIN MAINTENANCE

A four digit PIN may be employed to limit the operators ability to change settings and recipes within the control. Select YES on the PIN required setting and enter the desired PIN.

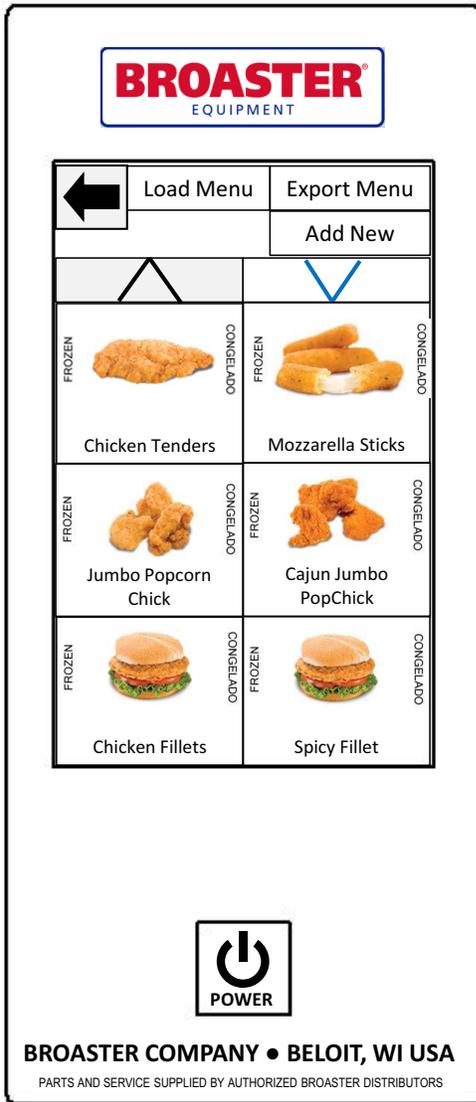
The PIN to enter the Setup in service mode is 0540.

If the PIN is forgotten, 2855 may be entered to get to the setup screen.



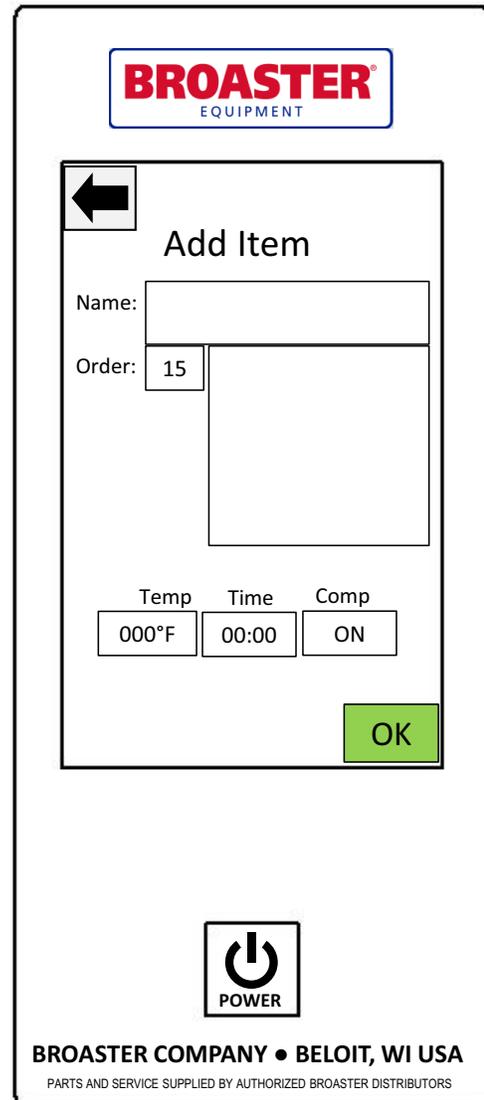
### ALERT SETTINGS

These settings allow the adjustment of alert volumes and touchscreen audio feedback. Set each to the desired comfort level.



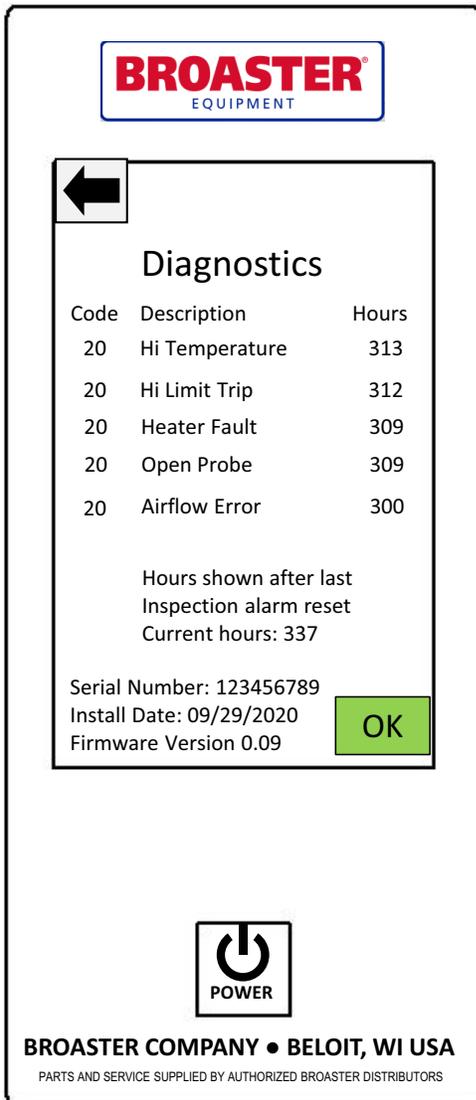
### EDITING PRESET MENU ITEMS

The control comes standard with many Broaster food item recipes and menu item images. This menu may be further customized by adding new recipes using the Load Menu and Add New commands. Menus may be exported to a USB stick and reloaded onto another Broaster ventless fryer. Press any menu item to edit its settings.



### EDITING PRESET MENU ITEMS

This screen allows the operator to edit an existing recipe or add a new item to the menu. Press the screen in the desired setting box and change it as required.



## ERROR CODE DIAGNOSTICS

This screen provides a history of any error messages that were generated. The control displays the current hours so an approximate time of occurrence may be determined. The hours counter is reset to zero after the semi-annual fire system inspection has been performed.



## SERVICING THE SMARTTOUCH DISPLAY

The display PCB may be replaced by removing the wire terminations and unscrewing the 6 keps nuts that attached it to the chassis. Order the following item:  
18107 CONTROL, TOUCHSCREEN, VF

If the touchscreen needs to be replaced, order one of the following items.  
K18108 ASM, CHASSIS, W/ OVERLAY, VF2  
K18109 ASM, CHASSIS, W/ OVERLAY, VF3

# 3 -FIRE SUPPRESSION SYSTEM

## GENERAL DESCRIPTION

The Fire Suppression system is specifically designed for controlling wet chemical fires in the fryer.

The system consists of a cylinder assembly (with pressure switch and gauge), actuating lever, (2) fusible link assemblies, manual pull station and two nozzles.

## AUTOMATIC OPERATION

Upon the detection of a fire, the system will automatically operate. The fusible link in the cooking area separates at a temperature of 280° F, which allows the spring to pull down on the actuating lever. The valve stem is pushed down releasing pressure and wet chemical to the nozzles. If the heat continues to rise the fusible link in the fan compartment separates and allows the fire damper to drop to prevent any flames, if present, from exiting the cabinet.

## MANUAL OPERATION

When the manual pull handle on the front panel is pulled, the system operates similarly by disconnecting the fusible link cable from the actuating lever. The spring pulls down on the lever releasing pressure and wet chemical to the nozzles.



**IMPORTANT:** The manual pull handle is to be pulled ONLY IN CASE OF FIRE in the fryer (use when the automatic system has failed).

### NOTICE

If the pressure in the cylinder drops below 195 psi, the pressure switch opens, deactivating the power relay cutting all power to the fryer.

## INSPECTION & MAINTENANCE

### NOTICE

Selected fire suppression maintenance procedures are detailed in Section 3, Fire Suppression Maintenance and Replacement of the VF-2/VF-3i Service & Parts Manual.

The Fire Suppression system must be serviced on a regular basis. Three types of servicing are required: Monthly, Semi-Annually, and 12 Year. Prior to any inspection, the Fire Suppression system needs to be exposed.

### Gaining Access

To gain access to the Fire Suppression system remove Electrical Control Access Panel.

1. Disconnect main power.
2. Remove retaining screw.
3. Slide the panel up to clear retaining tabs.
4. Pull the bottom toward the outside of the unit.

## **Monthly Inspection**

The fire suppression system must be inspected on a monthly basis. The inspection should be conducted by the owner/operator or authorized Broaster Company representative. The following items must be checked and verified during the monthly inspection:

1. The Fire Suppression system is in its proper location.
2. No obvious physical damage or condition exists that may prevent operation.
3. The pressure gauge is in green operating range.

**NOTICE** It is recommended that the pressure gauge be checked more frequently. This can be done without removing the Electrical Control Access Panel by viewing through the Fire Suppression Viewing Port in the panel.

4. The maintenance tag is in place and is up to date.
5. The manual pull is unobstructed.
6. The nozzle blow-off caps are intact and undamaged.

## **Semi-Annually**

The fire suppression system must be tested and maintained on a Semi-Annual basis. The system must be inspected by certified service personnel, as per NFPA 17A and include the following:

**NOTICE** The fryer has a light alert light on the touch screen that activates when 6 months have passed to indicate the semi-annual maintenance is due.

1. A check to see that the hazard has not changed.

2. Examination of the fusible links, cylinder piping, nozzles, and all auxiliary equipment. The fusible link in the cooking area must be replaced at least semi-annually from the date of installation with the proper rated link.
3. Examination of the fire extinguisher. If it is low or high, recharge the system.
4. Verification that the agent distribution piping is not obstructed. Remove blow-off caps from nozzles to ensure they are free of grease build-up and inspect for deterioration. Replace them as necessary. Blow-off caps must be replaced at least annually from the date of installation.

**NOTICE** All blow-off caps must be lubricated semi-annually using Broaster #16663 lubricant.

5. When semi-annual maintenance of any wet chemical container or system component reveals conditions such as but not limited to corrosion or pitting in excess of manufactured limits, structural damage or fire damage, repairs by soldering, welding, or brazing. The affected part(s) shall be replaced or hydrostatically tested in accordance with the recommendations of the manufacturer or the original certifying agency or both.
6. All fire suppression systems must be tested for proper electrical operation. A discharge of the extinguishing agent is not normally part of the test. Simply remove one lead from the pressure switch to initiate appliance shutdown.
7. When the maintenance of the Fire Suppression system reveals defective parts that could cause an impairment or failure of proper operation of the Fire Suppression system, the affected parts must be replaced or repaired.

8. The maintenance report, with recommendations if any, shall be filed with the owner or with the designated party responsible for the system.
9. The service personnel shall date and sign the Semi-Annual Inspection & Maintenance Log contained in this manual as an indication that the inspection has been completed.

### **Twelve Years**

Maintenance must be done on the fire suppression system every twelve years. The maintenance must be performed by certified service personnel as per NFPA 17A and include the following:

1. The wet chemical extinguishing agent must be removed and discarded.
2. The cylinder needs to be hydrostatically tested.

#### **NOTICE**

**Certified service personnel can generally be found locally through authorized suppliers of fire extinguishing equipment in yellow pages or call your Broaster Distributor for sources.**

3. If the cylinder shows no signs of rupture or distortion, recharge the Fire Suppression system in accordance with NFPA 17A guidelines.

# SEMI-ANNUAL INSPECTION & MAINTENANCE LOG

Fryer Serial No. \_\_\_\_\_

Date _____	I & M by _____	Date _____	I & M by _____
Date _____	I & M by _____	Date _____	I & M by _____
Date _____	I & M by _____	Date _____	I & M by _____
Date _____	I & M by _____	Date _____	I & M by _____
Date _____	I & M by _____	Date _____	I & M by _____
Date _____	I & M by _____	Date _____	I & M by _____
Date _____	I & M by _____	Date _____	I & M by _____
Date _____	I & M by _____	Date _____	I & M by _____
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Date _____	I & M by _____	Date _____	I & M by _____
Date _____	I & M by _____	Date _____	I & M by _____
Date _____	I & M by _____	Date _____	I & M by _____
Date _____	I & M by _____	Date _____	I & M by _____

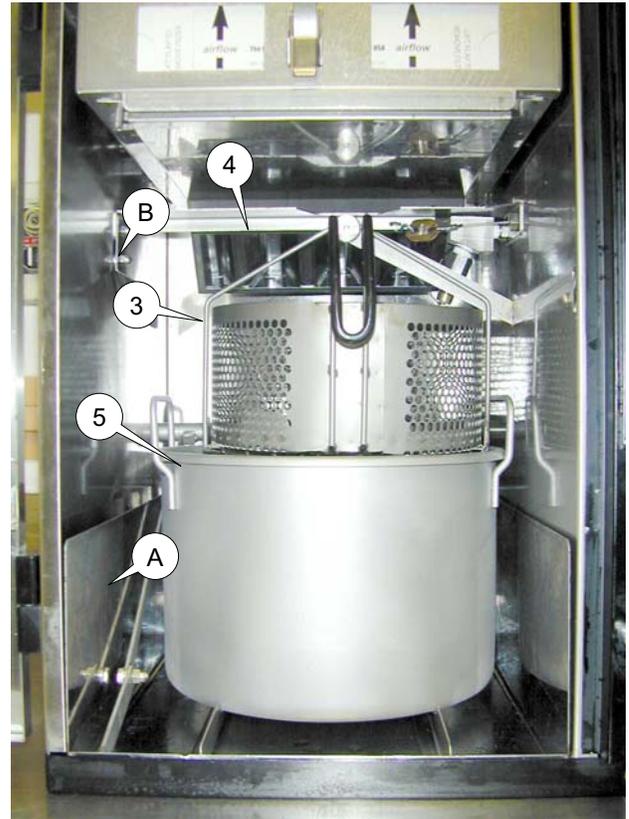


## ACCESS FOR SERVICE

1. Disconnect main power supply and allow unit to cool to room temperature before proceeding.
2. Remove Access Panel Retaining Screw (1). Raise the Access Panel (2) and pull it outward.



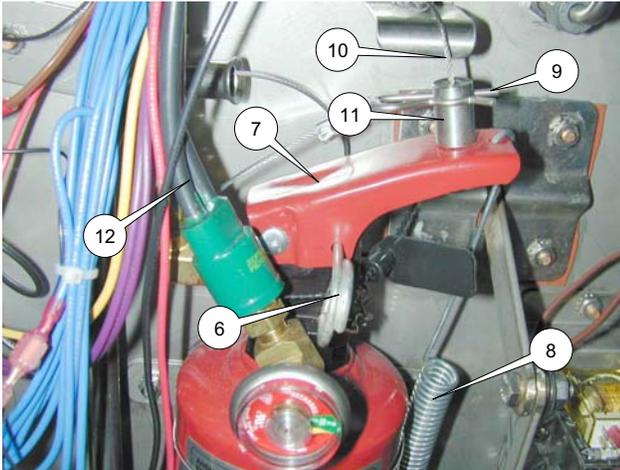
3. Open Access door by lifting door latch and turning CCW.
4. Remove food basket (3), platform (4).



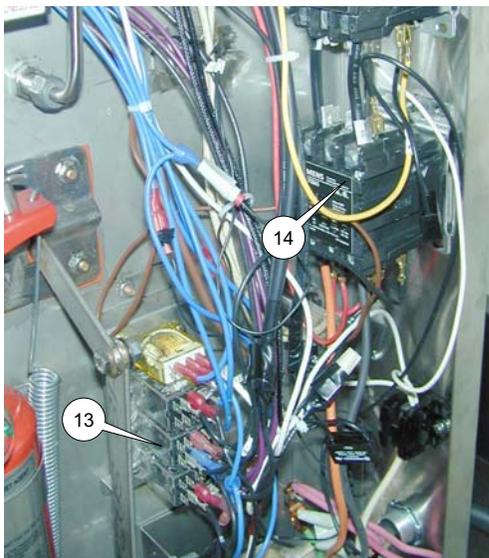
5. Raise the element by raising the element arm (A) and placing it above element retainer (B).
6. Remove cooking well (5).

## FIRE EXTINGUISHER REPLACEMENT

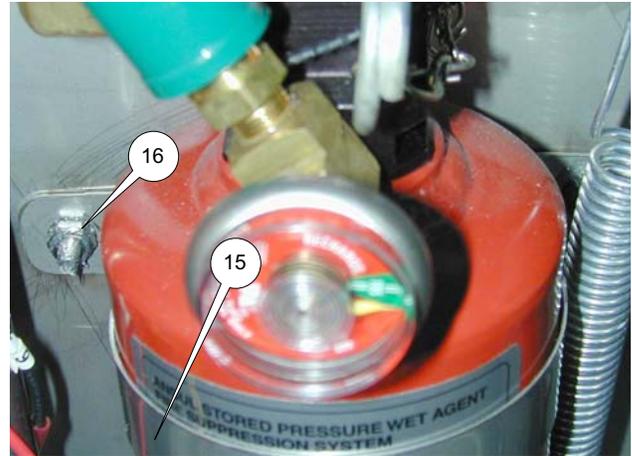
1. See Access For Service.
2. Insert the safety pin (6) into the hole in the actuating lever (7) of the fire extinguisher.



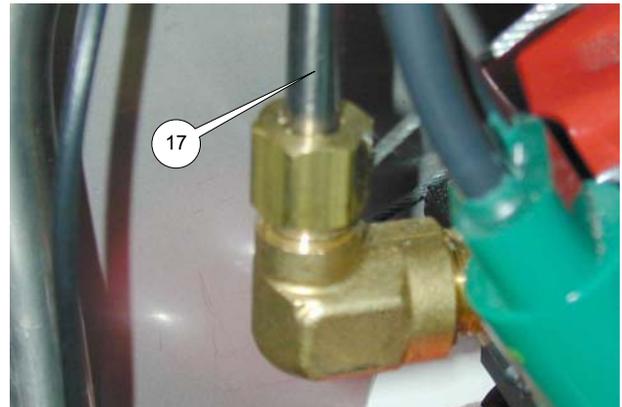
3. Release the extension spring (8) from the actuating lever (7).
4. Remove hitch pin clip (9) and pull fuse-link cable (10) out of cable receiver (11).
5. Disconnect the heavy black pressure switch wires (12) from the C1 ON/OFF Relay (13) and C1 Contactor (14).



6. Remove the mounting strap (15) by removing two nuts (16).

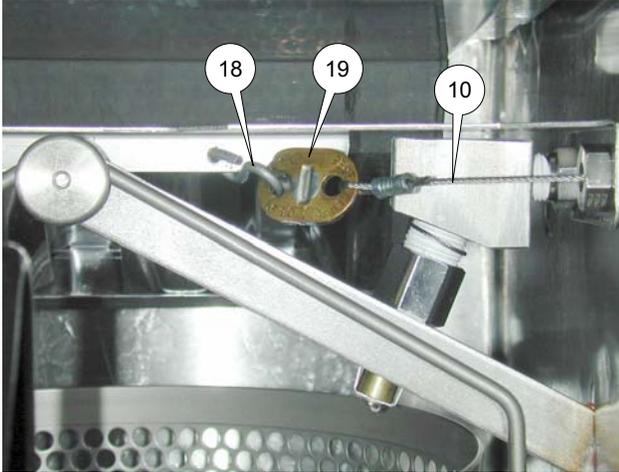


7. Disconnect the piping (17) from the fire extinguisher.



8. Remove the fire extinguisher from the fryer.
9. Clip off ball from fuse-link cable (10) and remove fuse-link (19) and cable.
10. Install the new Fire Extinguisher.
11. Reconnect piping (17) to the fire extinguisher.
12. Reinstall the mounting strap (15) using nuts (16).
13. Insert the ball end of the new "Fuse-Link" cable (10) into cable receiver (11) then insert hitch pin (9).

- Loop cable through side wall into cooking chamber and attach new fuse-link cable (10) using "S" hook (18) and new Fusible link (19). Draw the cable taut and crimp cable clamp to secure.



- Reattach spring (8) to lever arm (7).
- Reconnect the heavy black pressure switch wires (12) to C1 ON/OFF Relay (13) and C1 Contactor (14).
- Remove safety pin (6) to arm system.

## **FUSIBLE LINK REPLACEMENT**

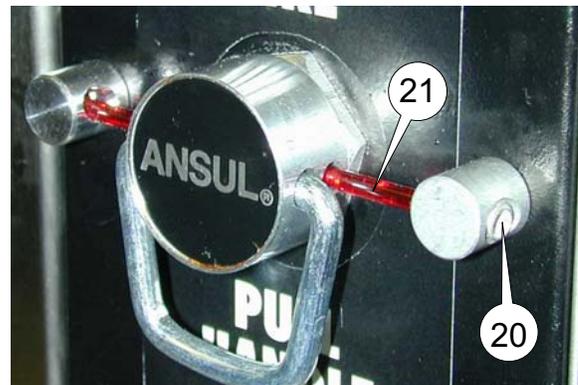
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- See Fire Extinguisher Replacement, Step 1-4.
- Remove fusible link. (19)
- For re-assembly see FIRE EXTINGUISHER REPLACEMENT steps 12 to 14.
- Remove safety pin (6) to arm system.

## **BREAK ROD REPLACEMENT**

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- See Fire Extinguisher Replacement, Step 1-2.
- Use a 1/8" Allen key to remove the allen screw (20) in the rod holder on the right hand side.



- Remove any remaining parts of the old break rod.
- Insert new break rod (21).
- Insert allen screw (20) and tighten until the rod is not sliding left or right. Be careful not to overtighten or the rod will break.
- Remove safety pin (6) from fire extinguisher.
- Replace Access Panel.



## 4 - COOKING AREA

### ELEMENT SHAFT REMOVAL

1. Disconnect main power supply.
2. OPEN Access Door (1) by lifting Access Door Latch (2) and turning CCW.



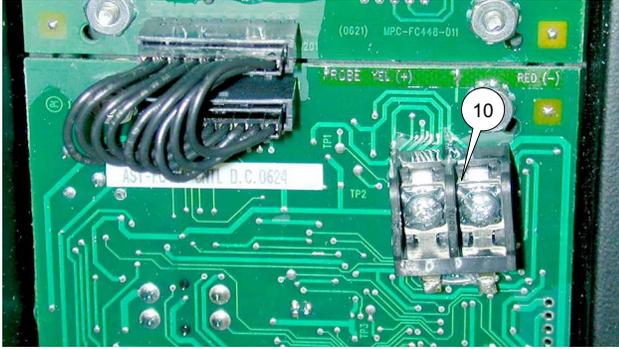
3. Remove food basket (3) and platform (4).
4. Raise the element by raising the element are (5) and placing it above the elemenn retainer (6).
5. Remove Cooking Pot (7).



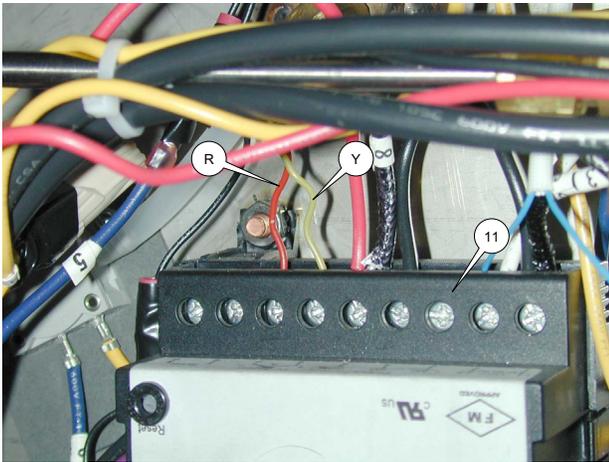
6. Remove Access Panel Retaining Screw (8). Raise the Access Panel (9) and pull outward.



7. Disconnect Temperature Probe wires from the I/O board terminals (10)



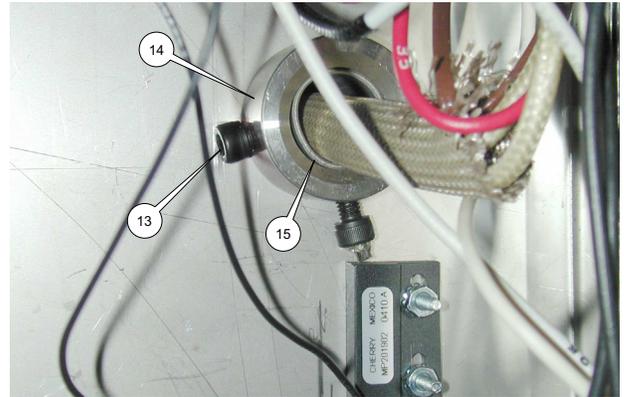
8. Disconnect Hi-Limit Probe wires (R & Y) from Hi-limit switch (11).



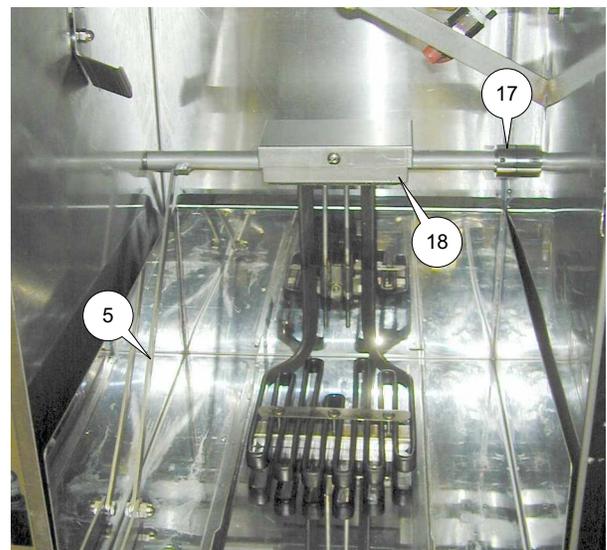
9. Disconnect the Heating Element wires from the C2 contactor (12).



10. With element in up position mark position of Set Screw (13) and loosen Set Screw (13) in the actuating collar (14). Slide collar off of element shaft (15) and wires.



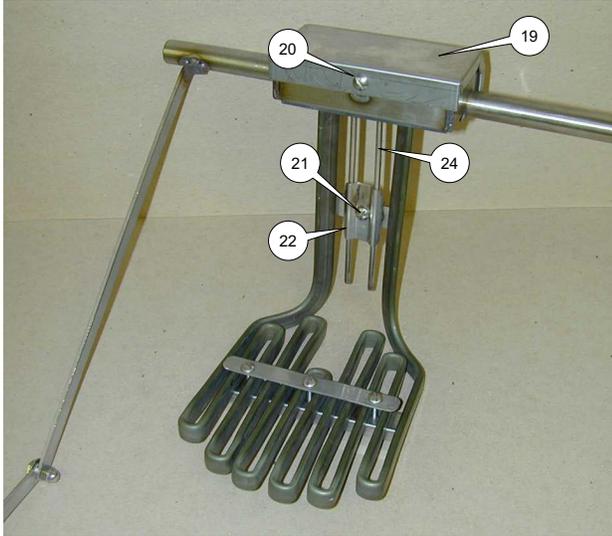
11. Lower the element arm (5).
12. Loosen set screw in shaft collar (17) and slide toward the connector box (18).
13. Move shaft assembly right to disengage the left end of the shaft assembly.
14. Remove the shaft assembly being careful not to damage the wire insulation as they pass through the right side panel.
15. Reassemble in reverse order.



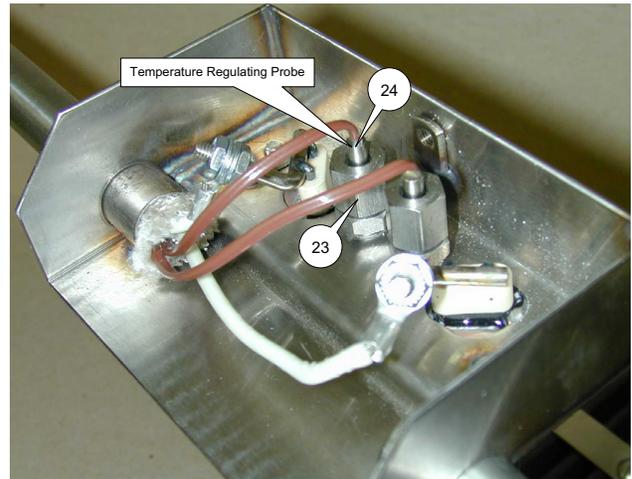
## TEMPERATURE SENSOR PROBE

This probe is a thermocouple. It sends fluctuating millivolts to the controller which translates them into degrees of temperature.

1. See ELEMENT SHAFT REMOVAL
2. Remove Connector Box Cover (19) by removing screw (20).



3. Remove screw (21) from probe retainer (22).
4. Remove nut (23).
5. Carefully pull probe (24) out of Connector Box. **DO NOT** allow wires being pulled out of Element Shaft to damage any of the remaining components.
6. Install new probe in the same location as old probe. End of probe sheath should be 1/8" above nut (23) when installed properly.



7. Tighten nut (2)
8. Carefully thread wires through Element Shaft.
9. Reassemble element shaft by reversing the ELEMENT SHAFT REMOVAL instructions.
10. See Calibration in Section 3 of this manual.
11. Run one cycle to check for proper function.

# HI-LIMIT CONTROL

## ACCESS FOR SERVICE

1. Remove Access Panel Retaining Screw (25). Raise the Access Panel (26) and pull it outward.



# HI-LIMIT CONTROL DIAGNOSTICS

There are 3 conditions which could cause the Hi-Limit control to trip.

Condition 1: The oil temperature has risen above 450° F (416° F on CE units).

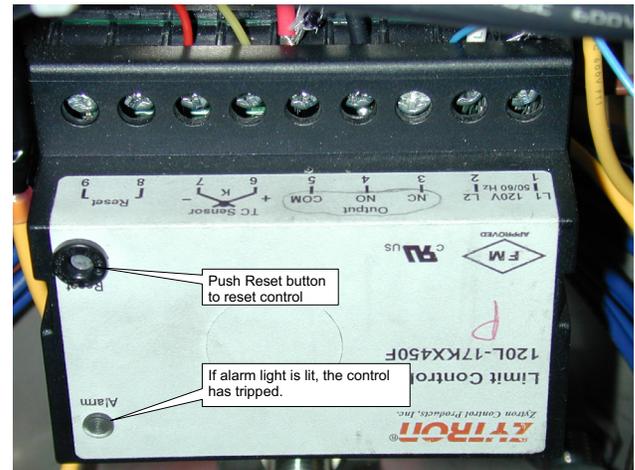
Condition 2: The probe has failed or a loose connection.

Condition 3: The control has failed or lost power.

1. See ACCESS FOR SERVICE

## CONDITION 1:

If the alarm light on the Hi-Limit Control is illuminated, push the Reset button to reset the control once the oil has cooled. If pushing the Reset button does not reset the control and turn the alarm light off, either condition 2 or 3 exists.



## CONDITION 2: Probe Failure

1. Disconnect power from the unit.
2. Disconnect probe wires from terminals 6 & 7 and connect a new probe. Yellow to + and Red to -.

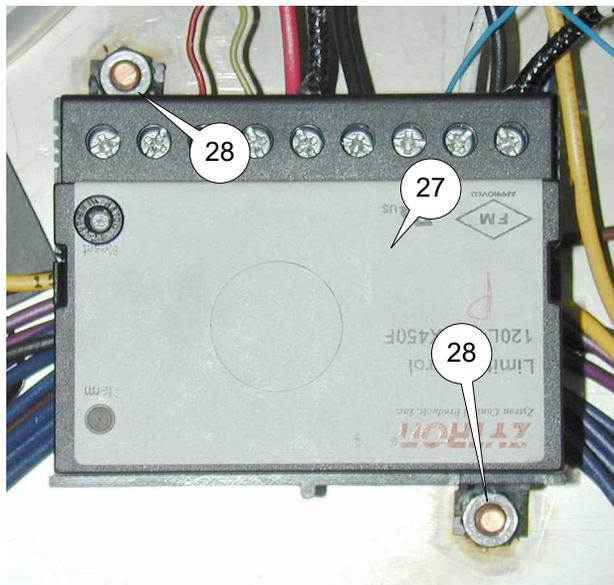
3. Reconnect power to the unit. If the alarm light goes out and the Control Panel energizes when the power on switch is pushed then the probe needs to be replaced. See HI-LIMIT PROBE REPLACEMENT.

If the alarm light does not go out with the new probe installed then the old probe is working properly and condition 3 exists. Disconnect the power from the unit and reconnect the old probe when finished with condition 3 below.

### CONDITION 3: Control Failure

Replace the Hi-Limit Control as follows:

1. See ACCESS FOR SERVICE.
2. Remove Hi-Limit control (27) by removing two coupling nuts (28).
3. Disconnect wires from Hi-Limit Control (27).

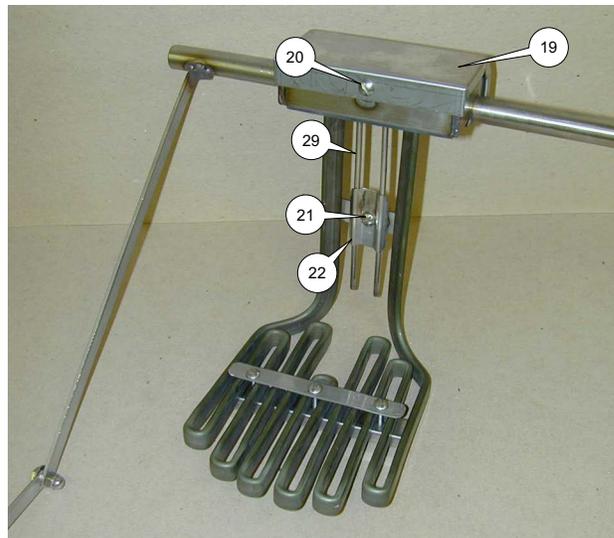


4. Install new control in reverse order.

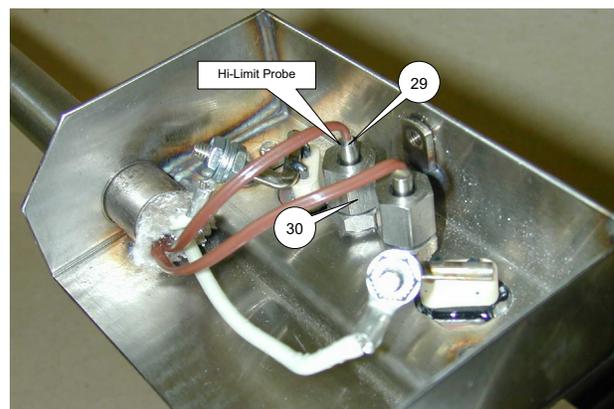
### HI-LIMIT PROBE REPLACEMENT

The probe is a thermocouple. It send fluctuating millivolts to the Hi-Limit Control which translates them into degrees of temperature.

1. See ELEMENT SHAFT REMOVAL
2. Remove Connector Box Cover (19) by removing screw (20).



3. Remove screw (21) from probe retainer (22).
4. Remove nut (30).
5. Carefully pull probe (29) out of Connector Box. **DO NOT** allow wires being pulled out of Element Shaft to damage any of the remaining components.



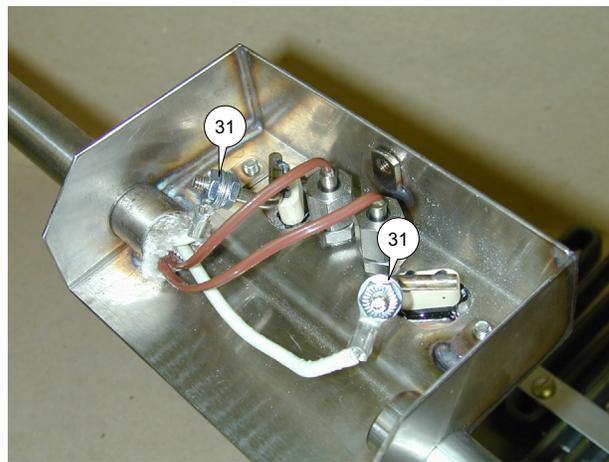
6. Install new probe in the same location as old probe. End of probe sheath should be 1/8" above nut (30) when installed properly.
7. Tighten nut (30).
8. Carefully thread wires through Element Shaft.
9. Reassemble Element Shaft by reversing the ELEMENT SHAFT REMOVAL instructions.
10. Reconnect power to unit.

### HI-LIMIT EFFECTIVE SERIAL NUMBERS VF3J02112 and VF2\_02003G

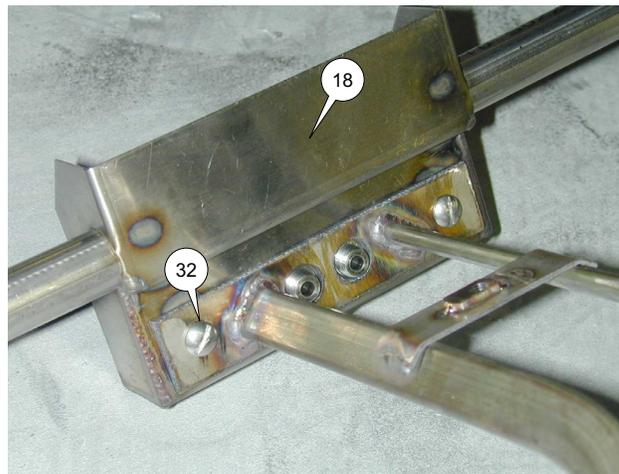
The hi-limit has a set point of 415F. If the hi-limit trips, the temperature must be brought below 375F and power must be removed from the device by unplugging the appliance for it to reset. The part number is 18025 CONTROL- HI LIMIT, 415F, 120VAC.

## HEAT ELEMENT

1. See Temperature Sensor Probe
2. Disconnect Heater wires (31).



3. Remove screws (32) and remove Heating Element from Connector box (18).



4. Reassemble in reverse order.

## 5 - ELECTRICAL COMPONENTS

### ACCESS FOR SERVICE

1. Disconnect main power supply.
2. Remove Access Panel Retaining Screw (1). Raise the Access Panel (2) and pull outward.

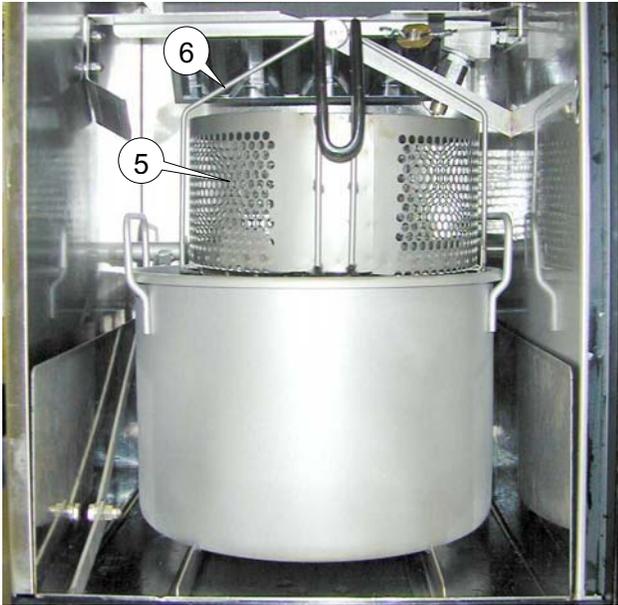


### MOTOR REPLACEMENT

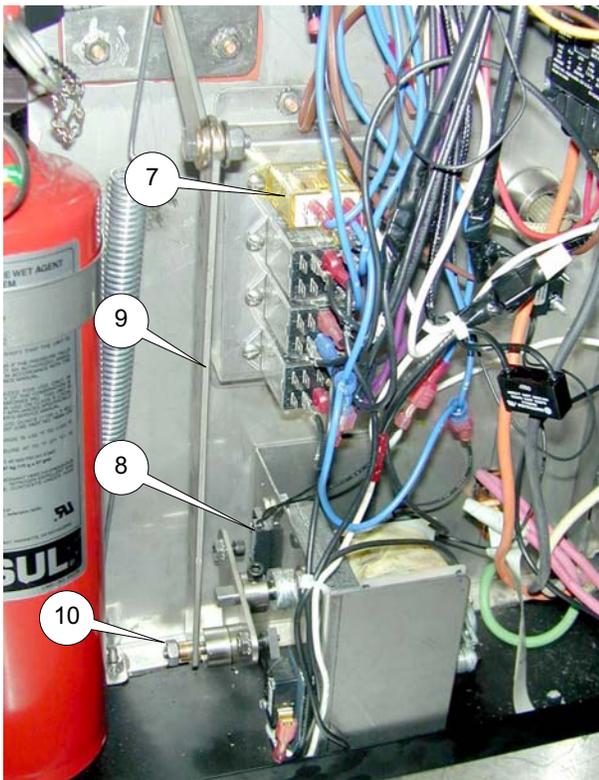
1. See Access For Service.
2. Open Access Door (3) by lifting Access Door Latch (4) and turning CCW.



- Remove Food Basket (5) and platform (6).



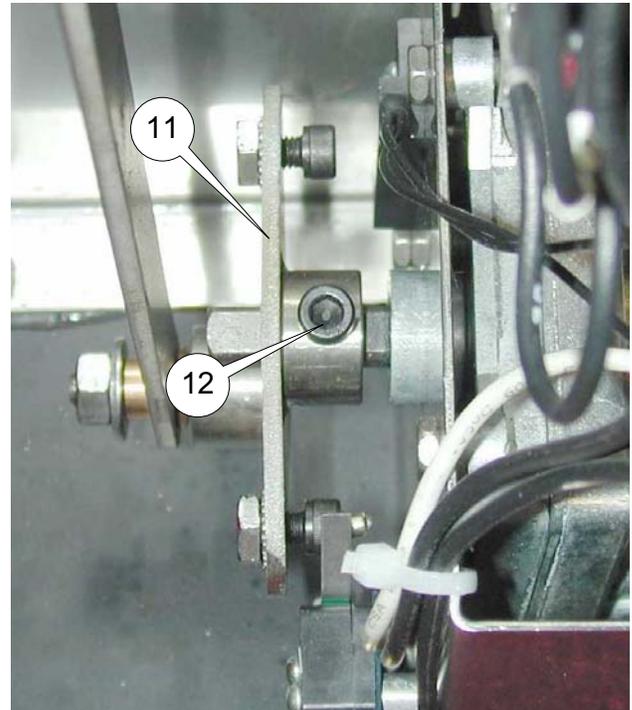
- Disconnect the Gear Motor wires from the High Limit Relay (7) and the UP & DOWN Switch (8).



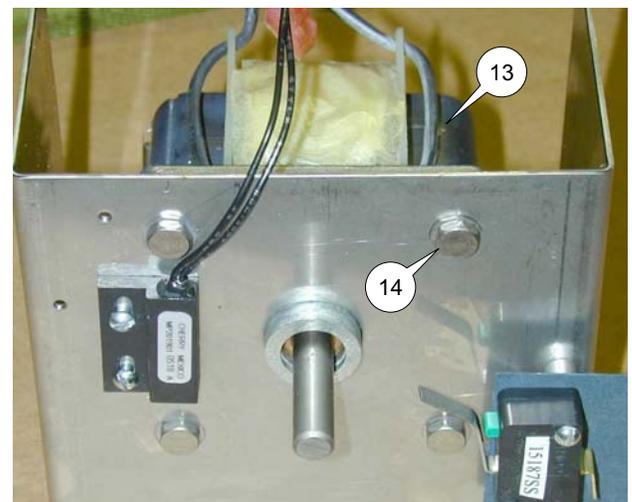
- Disconnect Basket Lift connector arm (9) by removing hex nut and washer (10).

- Remove Basket Lift Cam (11) by loosening set screw (12).

**NOTICE** On reassembly, make sure that set screws is on a flat on the motor shaft. Use Loctite "Blue" to secure set screw threads.

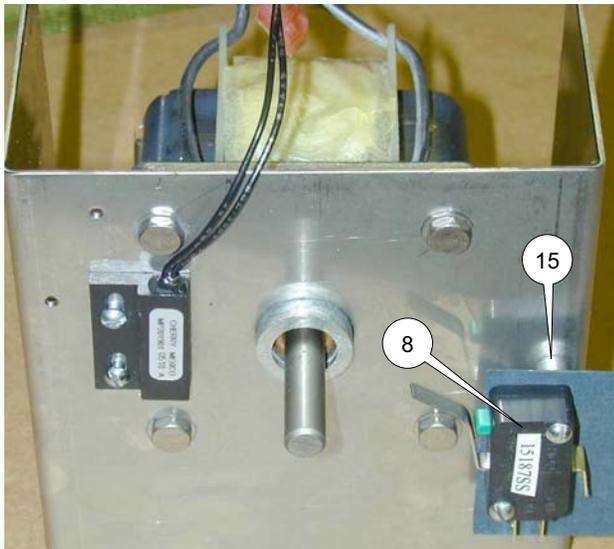


- Remove Motor (13) by removing four hex bolts (14).



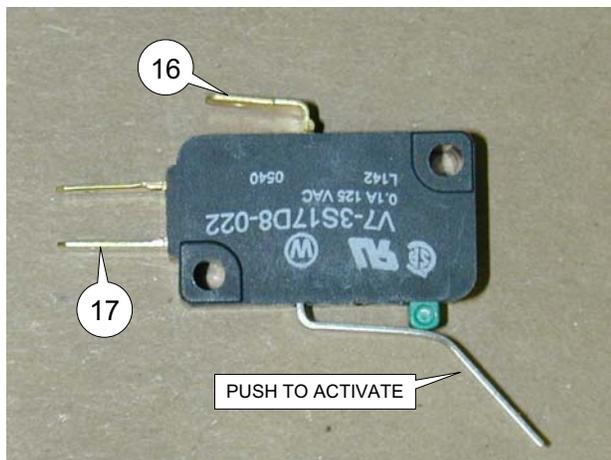
- Assemble in reverse order.

## SWITCHES



### Motor Stop Switch:

1. See Access For Service.
2. With needle nose pliers, disconnect both wires from switch (8).
3. With the switch in its unactuated (free) position, check across terminals (16) and (17) with an ohmmeter. Meter should indicate an open circuit. If not switch is faulty.



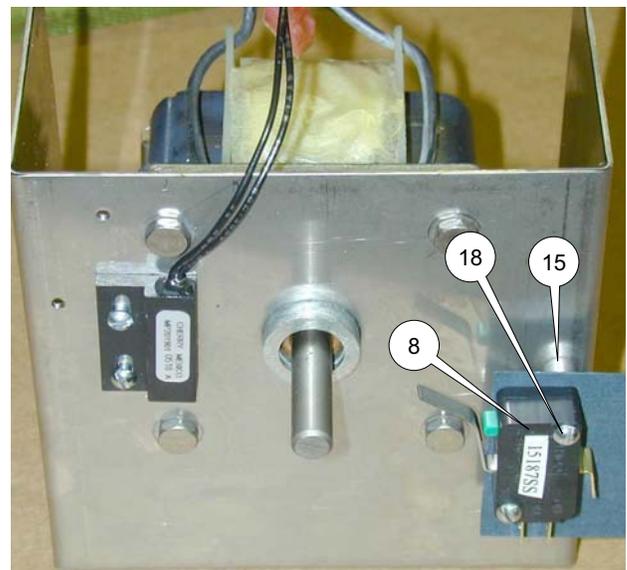
4. With the switch in its actuated position check across terminals (16) and (17) with an ohmmeter. Meter should indicate a closed circuit. If not, switch is faulty.

### Motor Stop Switch Replacement

1. See Motor Replacement, steps 1-6.
2. With needle nose pliers, disconnect both wires from switch (8).
3. Note mounting orientation of switch.
4. Remove mounting screws (18).

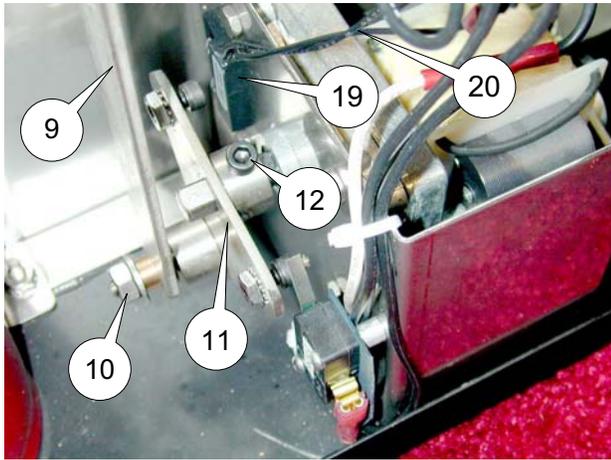
#### NOTICE

**Motor Stop Switch has spacers (15) placed between the motor mounting bracket and the switch.**



5. Reassemble in reverse order.
6. Check to be sure cam properly actuates the switch after assembly.

## Basket Down Switch:



1. See Motor Replacement, steps 1-3.
2. Disconnect Basket Lift connector arm (9) by removing hex nut and washer (10).
3. Loosen Basket Lift Cam (11) by loosening set screw (12).

**NOTICE** On reassembly make sure the set screw is on a flat of the motor shaft. Use Loctite “Blue” to secure set screw threads.

4. Disconnect both switch wire leads (20).
5. With Lift Cam (11) in the position shown above, check across wire leads (20). meter should indicate an open circuit. If not, switch is faulty.
6. With Lift Cam (11) turned so set screw (12) is pointing toward the floor (be sure magnet is near switch (19), check across wire leads (20). Meter should indicate a closed circuit. If not, switch is faulty.

## Basket Down Switch Replacement:

1. See Motor Replacement, step 1-3.

2. Disconnect Basket Lift connector arm (9) from Lift Cam (11) by removing hex nut and washer (10).
3. Loosen Basket Lift Cam (11) by loosening set screw (12).

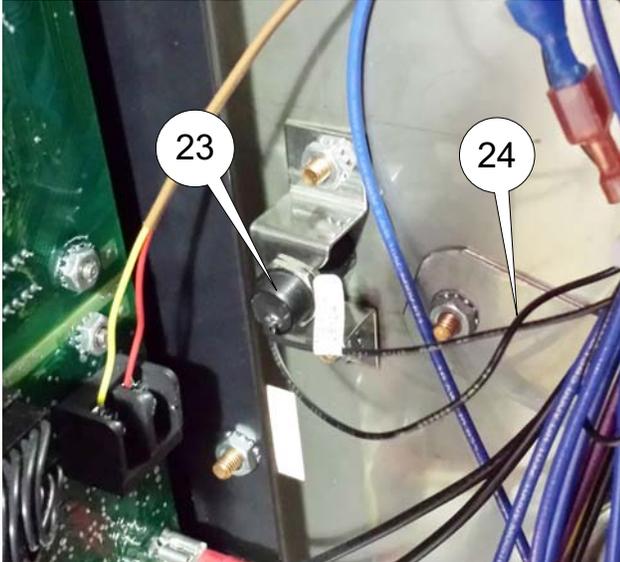
**NOTICE** On reassembly make sure that set screw is on a flat of the motor shaft. Use Loctite “Blue” to secure set screw threads.

4. Disconnect both switch wire leads (20).
5. Remove mounting screws from switch (19).
6. Reassemble in reverse order.
7. Check to be sure cam properly actuates the switch after assembly.

## Product Door Switch

The Product Door Switch (23) is located in the control compartment on the interior wall above the door latch slot.

1. See Access For Service.
2. Disconnect switch leads (24).



3. With product door propped open, check across wire leads (24). Meter should indicate an open circuit. If not switch is faulty.
4. With product door closed, check across wire leads (24). Meter should indicate a closed circuit. If not, switch is faulty.

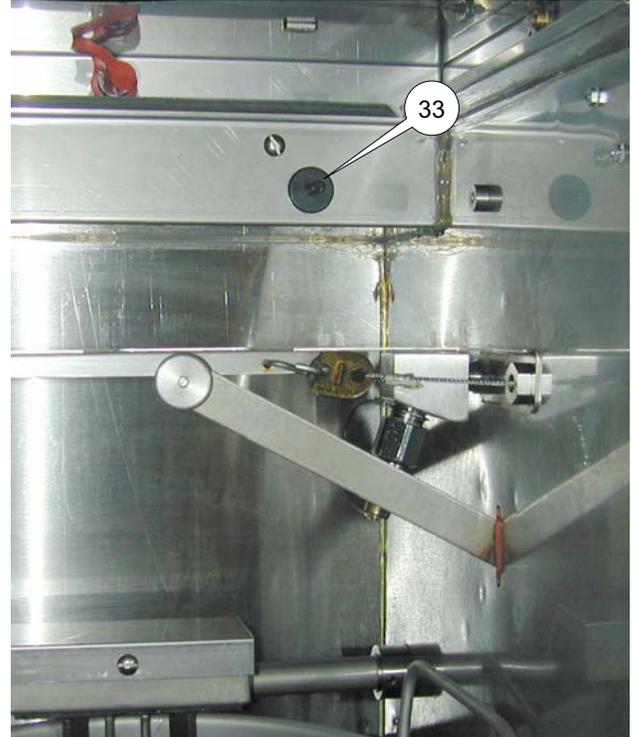
## Product Door Switch Replacement

1. See Access for Service.
2. Loosen the hex nut and slide switch out of bracket.
3. Disconnect switch lead wires (24) if not already disconnected.

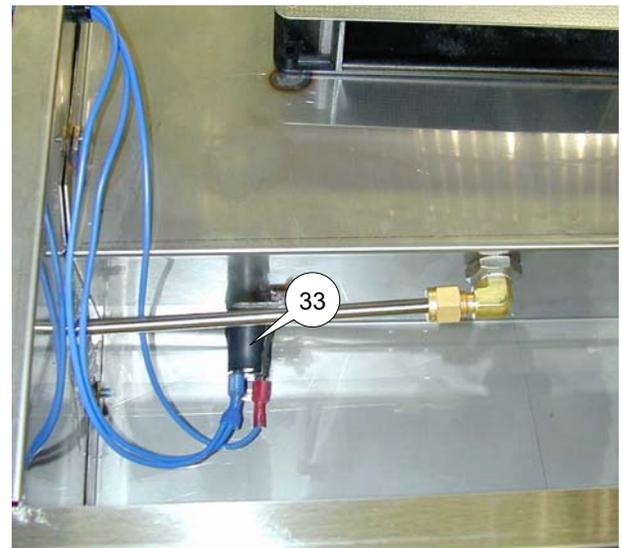
4. Reassemble in reverse order making sure end of switch is against the interior wall and slid fully into the bracket.

## Air Filter Switch:

The Air Filter Switch (33) is located in the cooking compartment at the top right corner in the back.



1. To access for service remove the top cover.



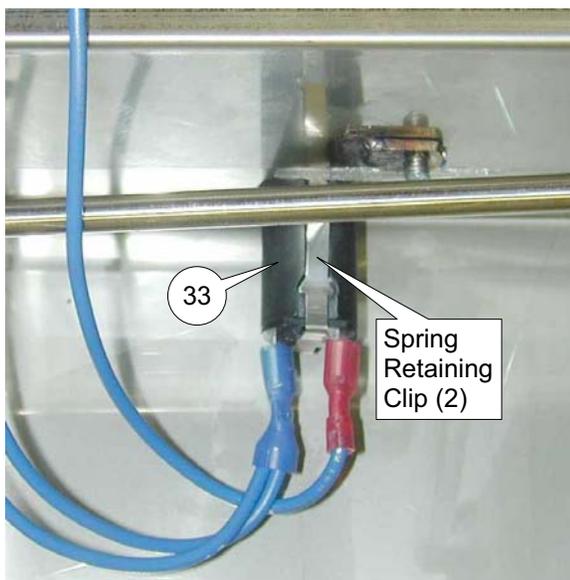
2. Disconnect wires from switch (33). Check across terminals. Meter should indicate an open circuit. If not, switch is faulty.



3. Unlatch filter cartridge (32) and pull out as shown. Check across terminals. Meter should indicate a closed circuit. If not, switch is faulty.

### Air Filter Switch Replacement.

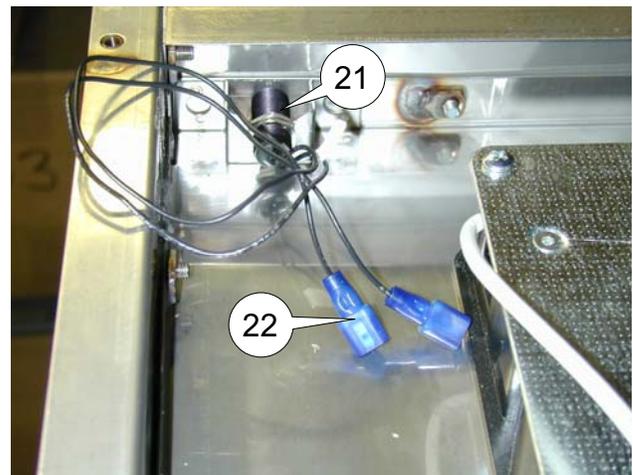
1. Disconnect main power supply.
2. To access for service remove the top cover.



3. Disconnect wires from Air Filter Switch (33).
4. Depress the two spring retaining clips on the switch and push switch into the cooking compartment.
5. Reassemble in reverse order.

### VF2 Access Door Switch:

The Access Door Switch (21) is located in the upper area where the fan is mounted. To access it remove the top cover.



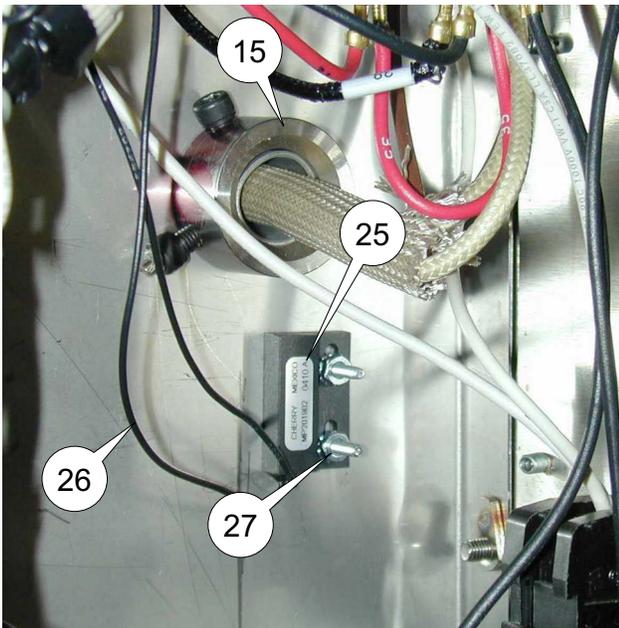
1. Disconnect both switch wire leads (22).
2. With Access Door open, check across wire leads (22). Meter should indicate an open circuit. If not, switch is faulty.
3. With Access Door closed and latched check across wire leads (22). Meter should indicate a closed circuit. If not, switch is faulty.

### VF2 Access Door Switch Replacement:

The Access Door Switch (21) is located in the upper area where the fan is mounted. To access it remove the top cover.

1. Loosen hex nut and slide switch out of bracket.
2. Disconnect switch lead wires (22) if not already disconnected.
3. Reassemble in reverse order making sure end of switch is against the front panel and slid fully into the bracket.

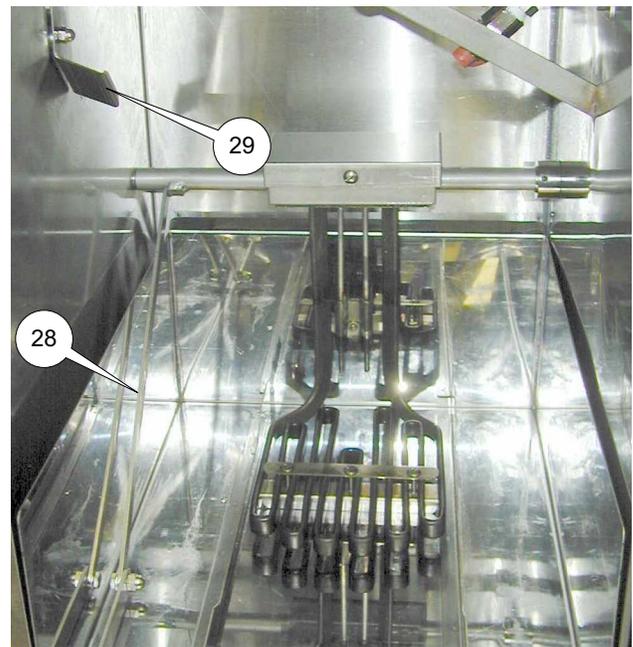
### VF2 Element Up Switch:



The Element Up Switch (25) is located in the control compartment on the interior wall below the element pivot shaft (15).

1. See Access For Service.
2. Disconnect switch leads (26).
3. With the Element in the down position, check across the wire leads (26). Meter should indicate an open circuit. If not, switch is faulty.

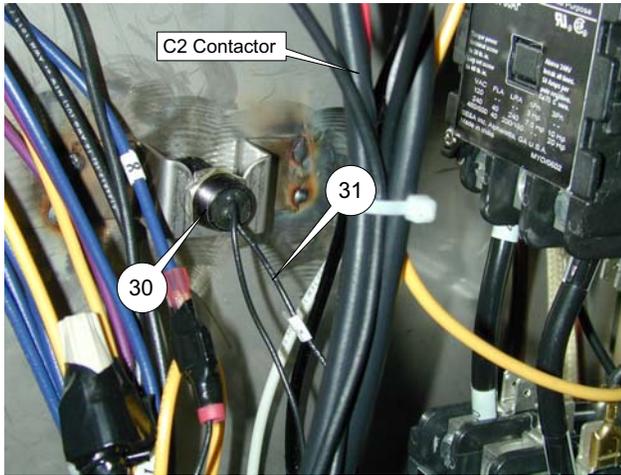
4. Raise Element Arm (28) and set it in the Element Retainer (29), check across wire leads (26). Meter should indicate an open circuit. If not, switch is faulty.



### VF2 Element Up Switch Replacement:

1. See Access For Service.
2. Remove hex nuts (27) and slide switch off of studs.
3. Disconnect switch lead wires (26) if not already disconnected.
4. Reassemble in reverse order making sure switch is mounted with the leads pointed down.

## VF2 Grease Filter Switch:



The Grease Filter Switch (30) is mounted to the interior wall in front of the C2 Contactor.

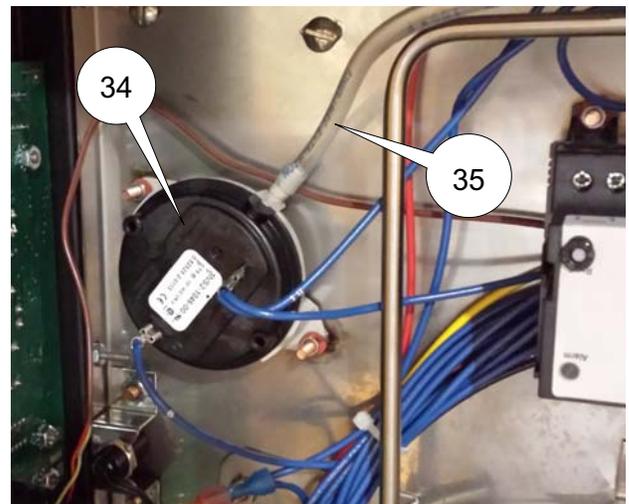
1. See Access For Service.
2. Disconnect both wire leads (31).
3. Check across wire leads (31). Meter should indicate a closed circuit. If not, switch is faulty.
4. Unlatch filter cartridge (32) and pull out as shown. Check across wire leads (31). Meter should indicate an open circuit. If not, switch is faulty.



## VF2 Grease Filter Switch Replacement:

1. See Access For Service.
2. Loosen hex nut and slide switch out of bracket.
3. Disconnect switch lead wires (31) if not already disconnected.
4. Reassemble in reverse order making sure end of switch is against the interior panel and slid fully into bracket.

## VF2 Pressure Switch:

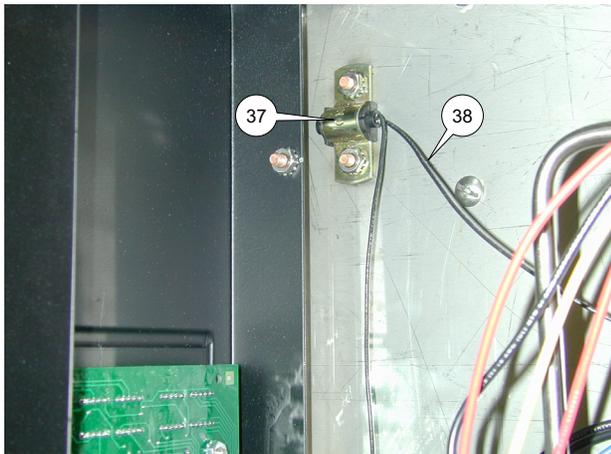


Pressure Switch (34) is mounted on two studs on the interior wall and held in place by two nuts.

1. See Access For Service.
2. With a needle nose pliers, disconnect bot wires form the terminals.
3. Remove Filter Cartridge (32) from unit.
4. Remove nuts holding pressure switch in place.
5. Carefully remove tubing (35) connected to switch.
6. Reassemble in reverse order.

## VF3i Access Door Switch

The Access Door Switch (37) is located in the upper left corner of the electrical control compartment.



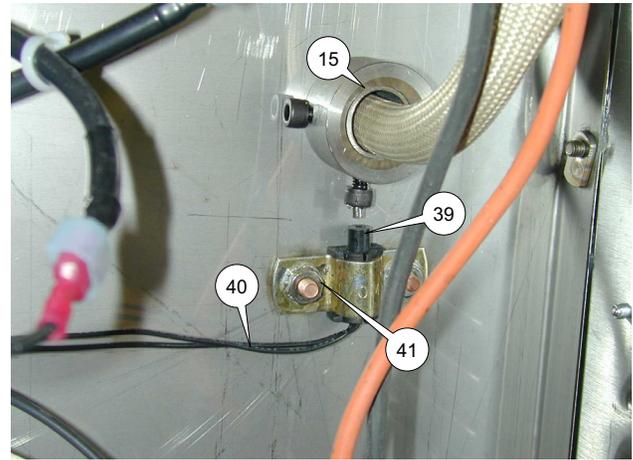
1. Disconnect both switch wire leads (38).
2. With Access Door open, check across wire leads (38). Meter should indicate an open circuit. If not, switch is faulty.
3. With Access Door closed, check across wire leads (38). Meter should indicate a closed circuit. If not, switch is faulty.

## VF3i Access Door Switch Replacement:

The Access Door Switch (37) is located in the upper left corner of the electrical control compartment.

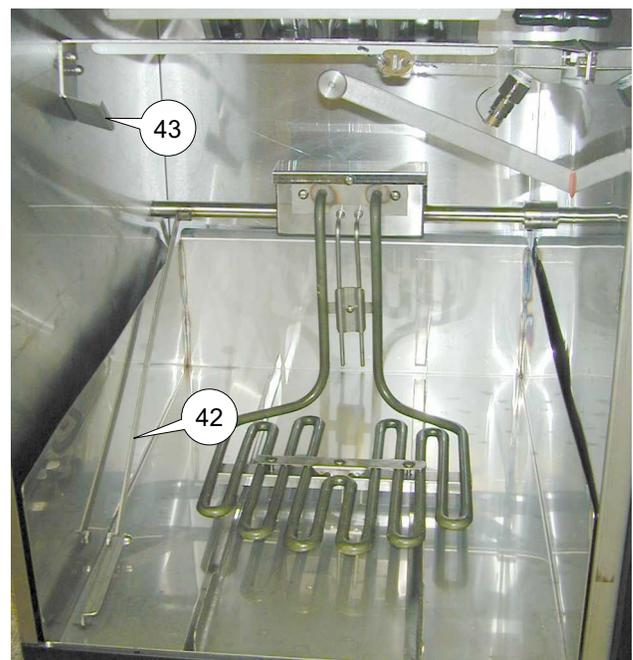
1. Loosen the hex nuts and slide switch out of bracket.
2. Disconnect lead wires (38) if not already disconnected.
3. Reassemble in reverse order making sure end of switch is against the front panel and slid fully into bracket.

## VF3i Element Up Switch:



The Element Up Switch (39) is located in the control compartment on the interior wall below the Element Pivot Shaft (15).

1. See Access For Service
2. Disconnect switch leads (40).
3. With the element in the down position check across wire leads (40). Meter should indicate a an open circuit. If not, switch is faulty.



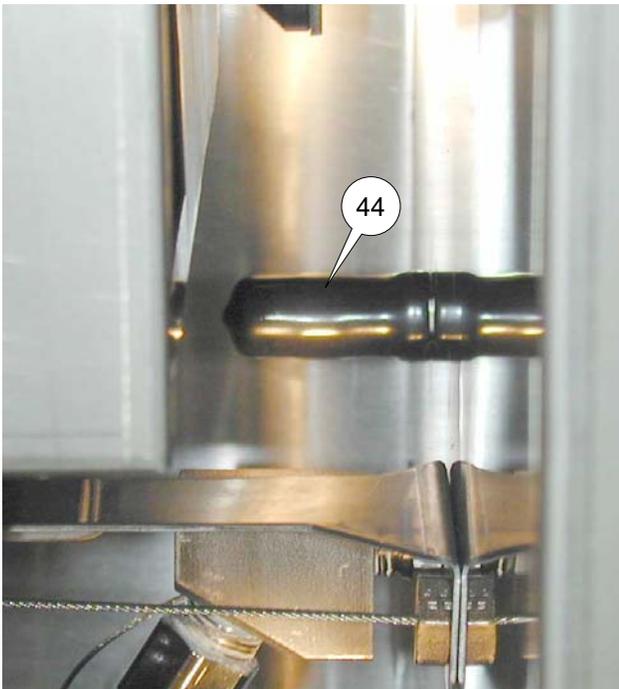
4. Raise Element Arm (42) and set it in Element Retainer (43). Check across wire leads (40). Meter should indicate an open circuit. If not, switch is faulty.

### VF3i Element Up Switch Replacement:

1. See Access For Service
2. Loosen nuts (41) and slide switch down out of bracket.
3. Disconnect switch lead wires (40) if not already disconnected.
4. Reassemble in reverse order making sure lead end of switch is flush with bottom of bracket.

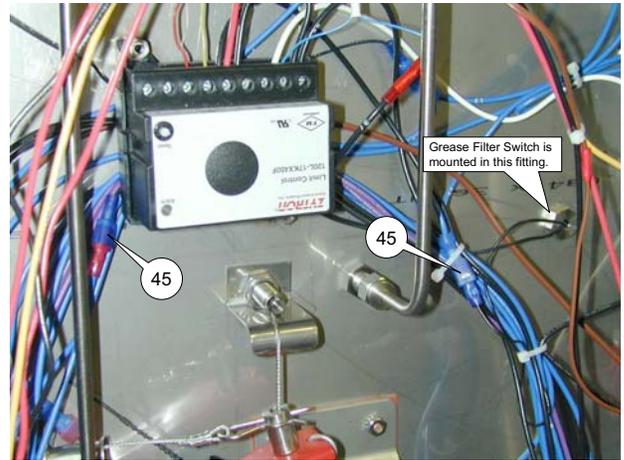
### VF3i Grease Filter Switch:

The grease filter switch is located in the cooking area on the right side of the filter tray inside boot (44).



The leads for this switch are in the electrical control compartment.

1. See Access For Service.
2. Disconnect switch leads (45). Check across wire lead. Meter should indicate a closed circuit. If not switch is faulty.

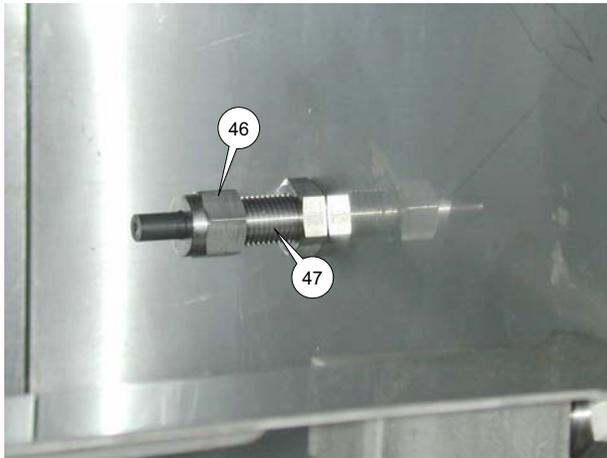


3. Unlatch Filter Tray (32) and remove from cooking compartment. Check across wire leads (45). Meter should indicate an open circuit. If not, switch is faulty.

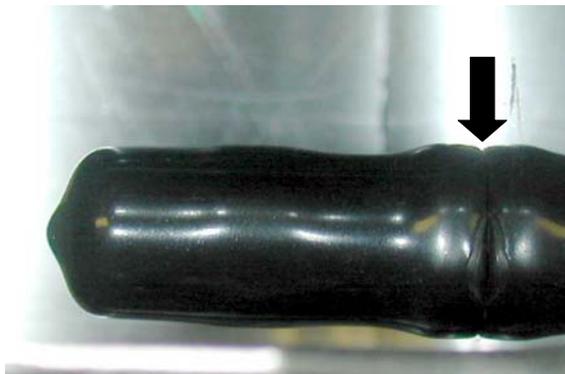


## VF3i Grease Filter Switch Replacement:

1. See Access For Service.
2. Disconnect lead wires (45) and clip off the terminals on the lead wires.
3. Unlatch and remove Filter Tray (32).
4. Remove boot (44) and loosen nut (46).



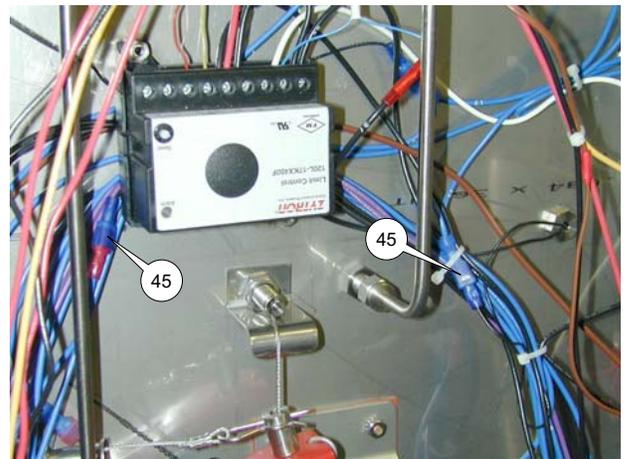
5. Pull switch and leads out of mounting fitting (47).
6. Thread lead wires of new switch through nut (46) and fitting (47).
7. Tighten nut (46) finger tight then 1/4 turn more. **DO NOT TIGHTEN NUT MORE THEN 1/4 TURN PAST FINGER TIGHT.**
8. Push boot (44) over fitting (47) until the end is touching the side wall as shown below.



9. Install terminal shown below on each wire lead.



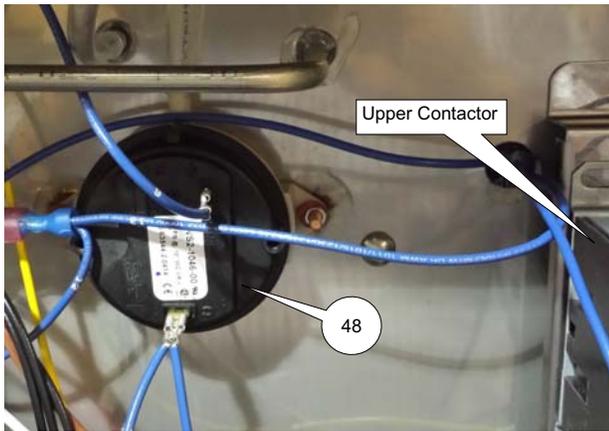
10. Plug terminals into receptacles (45).
11. Check across wire lead. Meter should indicate a closed circuit. If not switch is faulty.
12. Reinstall Filter Tray (32).
13. Check across wire leads (45). Meter should indicate an open circuit. If not, switch is faulty.
14. If test results are ok, plug lead wire into receptacles that they were removed from. See below.



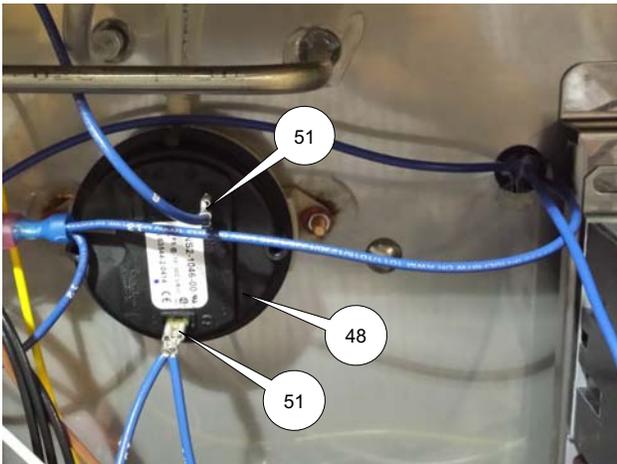
Unit is now ready to operate.

## VF3i Pressure Switch:

The VF3i Pressure Switch (48) is mounted in the electrical compartment near the top next to the upper contactor.



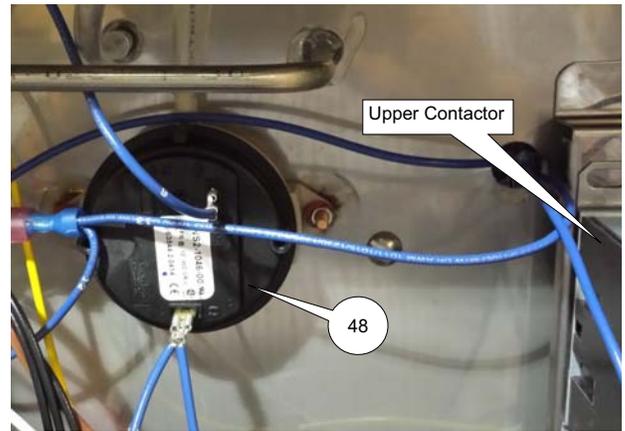
1. See Access For Service.
2. With a needle nose pliers disconnect wires (51) from Pressure Switch (48).



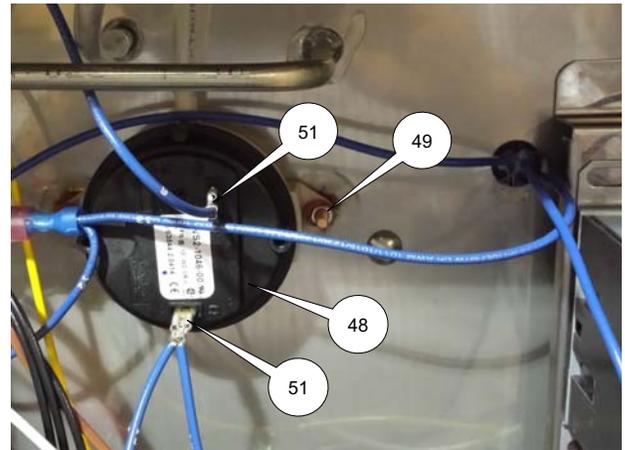
3. Remove hex nuts (49) and hose (50) from switch and remove switch from unit and clip meter leads to switch terminals (51).
4. Meter should indicate a closed circuit. If not, switch is faulty.
5. Apply a gentle vacuum to the vacuum port. Meter should indicate an open circuit. If not, switch is faulty.

## VF3i Pressure Switch Replacement:

The VF3i Pressure Switch (48) is mounted in the electrical compartment near the top next to the upper contactor.



1. See Access For Service.
2. With a needle nose pliers, disconnect both wire leads (51).



3. Remove hex nuts (49) and carefully remove tubing (50).
4. Install new switch in reverse order.

## 6 - TROUBLESHOOTING

All adjustments and repairs shall be made by an authorized Broaster Company representative.

### **ELECTRICAL TIPS**

<b>COMPLAINT</b>	<b>CAUSE</b>	<b>REMEDY</b>
POWER light not illuminated	<ol style="list-style-type: none"> <li>1. Unit OFF</li> <li>2. Main power OFF</li> <li>3. Unplugged</li> <li>4. Fire extinguisher pressure below low limit</li> </ol>	<ol style="list-style-type: none"> <li>1. Press ON button</li> <li>2. Turn ON</li> <li>3. Plug in</li> <li>4. Disconnect main power Contact certified fire suppression agent</li> </ol>
Cycle will not start	<ol style="list-style-type: none"> <li>1. Unit OFF</li> <li>2. Main power OFF</li> <li>3. Solid state controller in program mode</li> <li>4. Lockout Condition tripped</li> <li>5. Platform not lowered</li> </ol>	<ol style="list-style-type: none"> <li>1. Press ON button</li> <li>2. Turn ON</li> <li>3. Exit program mode</li> <li>4. See INDICATOR LIGHTS on next page</li> <li>5. Motor control failure</li> </ol>
HEAT ON light not illuminated	<ol style="list-style-type: none"> <li>1. Unit OFF</li> <li>2. Main power OFF</li> <li>3. Solid state controller in program mode</li> <li>4. Oil temperature has reached programmed temperature</li> </ol>	<ol style="list-style-type: none"> <li>1. Press ON button</li> <li>2. Turn ON</li> <li>3. Exit program mode</li> <li>4. Unit ready to cook</li> </ol>
Cycle stops in progress	<ol style="list-style-type: none"> <li>1. STOP button was pushed</li> <li>2. Lockout Condition tripped</li> </ol>	<ol style="list-style-type: none"> <li>1. Press START button</li> <li>2. See INDICATOR LIGHTS on next page</li> </ol>
Power Light illuminated but time and temp display does not light-up	<ol style="list-style-type: none"> <li>1. Lockout Condition tripped</li> <li>2. No power to Display Board</li> </ol>	<ol style="list-style-type: none"> <li>1. See INDICATOR LIGHTS on next page</li> <li>2. See Display Board Power Input in Section 2</li> </ol>

## INDICATOR LIGHTS

The series of indicator lights on the Display Panel check for specific conditions that make the VF-2 Fryer safe to operate. The unit will not start or continue a cook cycle if any of the following indicator lights are lit.

COMPLAINT	CAUSE	REMEDY
Product Door <sup>(A)</sup>	<ol style="list-style-type: none"> <li>1. Product Door Open</li> <li>2. Failed switch</li> </ol>	<ol style="list-style-type: none"> <li>1. Close product door</li> <li>2. Push power OFF button</li> </ol>
Access Door	<ol style="list-style-type: none"> <li>1. Access Door Open</li> <li>2. Failed switch</li> </ol>	<ol style="list-style-type: none"> <li>1. Close Access door</li> <li>2. Push power OFF button</li> </ol>
Element Up	<ol style="list-style-type: none"> <li>1. Element in raised position</li> <li>2. Failed switch</li> </ol>	<ol style="list-style-type: none"> <li>1. Lower element</li> <li>2. Push power OFF button</li> </ol>
Air Flow	<ol style="list-style-type: none"> <li>1. Plugged Air Filter</li> <li>2. Fan failure</li> <li>3. Failed switch</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace Air Filter<sup>(B)</sup></li> <li>2. Push power OFF button</li> <li>Contact service person</li> <li>3. Push power OFF button</li> </ol>
Air Filter	<ol style="list-style-type: none"> <li>1. Air Filter not in place</li> <li>2. Failed switch</li> </ol>	<ol style="list-style-type: none"> <li>1. Insert Air Filter</li> <li>2. Push power OFF button</li> </ol>
Grease Filter	<ol style="list-style-type: none"> <li>1. Grease Filter not in place</li> <li>2. Failed switch</li> </ol>	<ol style="list-style-type: none"> <li>1. Insert Grease Filter</li> <li>2. Push power OFF button</li> </ol>
High Limit Reset	<ol style="list-style-type: none"> <li>1. Oil exceeded maximum temperature</li> </ol>	<ol style="list-style-type: none"> <li>1. Push power OFF</li> </ol>

Note: Power to the controller and heating element are electronically disconnected when:

- Access Door is OPEN
- Element is in the UP position
- Air Flow is below acceptable level
- Air Filter is not in place
- Grease Filter is not in place
- High Limit Reset has been tripped

(A) The Product Door may be opened without interrupting the cooking cycle. However, cycle cannot be started or stopped until product door is closed.

(B) Air Filter should be replaced at least every 3 months or sooner if volume is high.

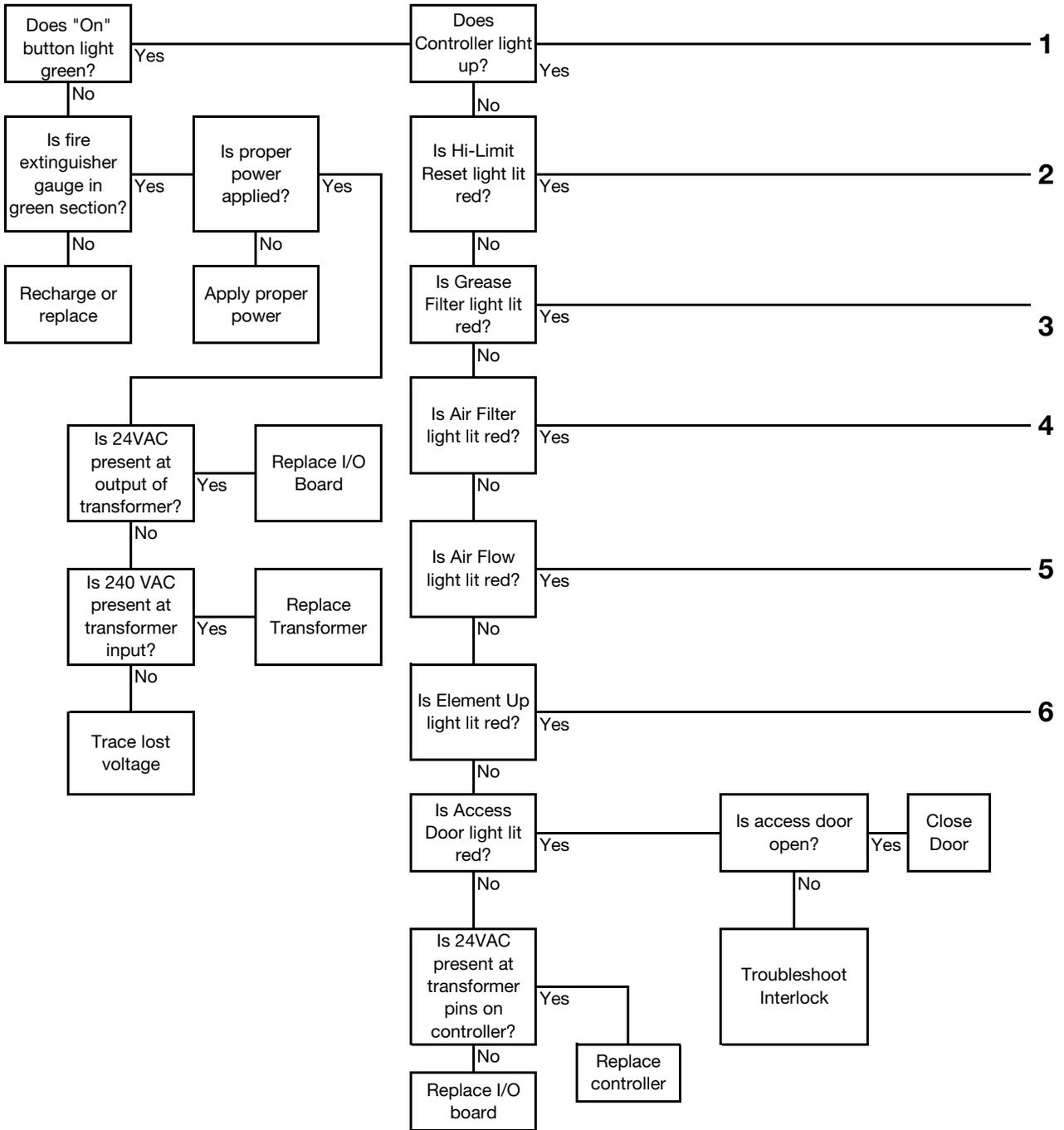
## SOLID STATE CONTROLLER TIPS

<b>COMPLAINT</b>	<b>CAUSE</b>	<b>REMEDY</b>
Display reads FAIL	1. There is a controller failure	1. Push power OFF button
Display reads HI	1. Oil temperature too high	1. Push power OFF button
Display reads PROB	1. There is a temperature sensor probe failure	1. Push power OFF button
Display reads CHEC	1. Oil temperature not rising properly	1a. Check wall fuse or circuit breaker 1b. Push power OFF button

## FROZEN IQF PRODUCT

<b>COMPLAINT</b>	<b>CAUSE</b>	<b>REMEDY</b>
Product too light	1. Low oil temperature 2. Not done 3. Food basket overloaded	1. Check cook temperature 2. Increase cook time 3. Decrease load
Product too dark	1. High oil temperature 2. Overcooked 3. Oil old 4. Thawed and refrozen	1. Check cook temperature 2. Decrease cook time 3. Change oil 4. Keep product at 0° F or below
Product not done	1. Low oil temperature 2. Food basket overloaded 3. Cook time too short	1. Check cook temperature 2. Decrease load 3. Increase cook time
No flavor	1. Overcooked 2. Old product	1. Check cook time 2. Discard
White spots	1. Product stuck together 2. Food basket overloaded	1. Distribute product evenly in basket while loading 2. Decrease load size
Dark spots	1. Dirty oil	1. Filter or replace

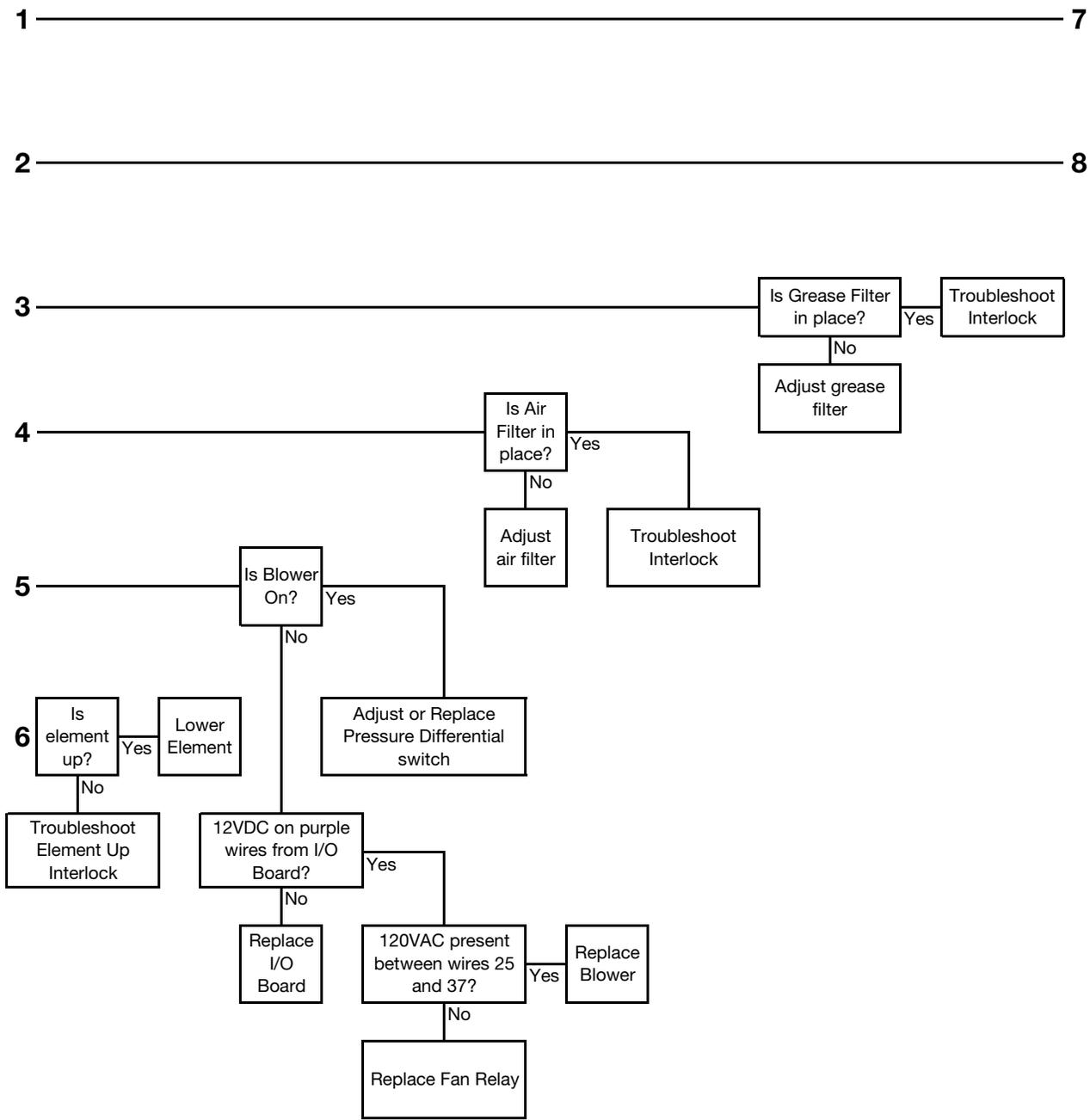
# Troubleshooting flow chart - sheet 1



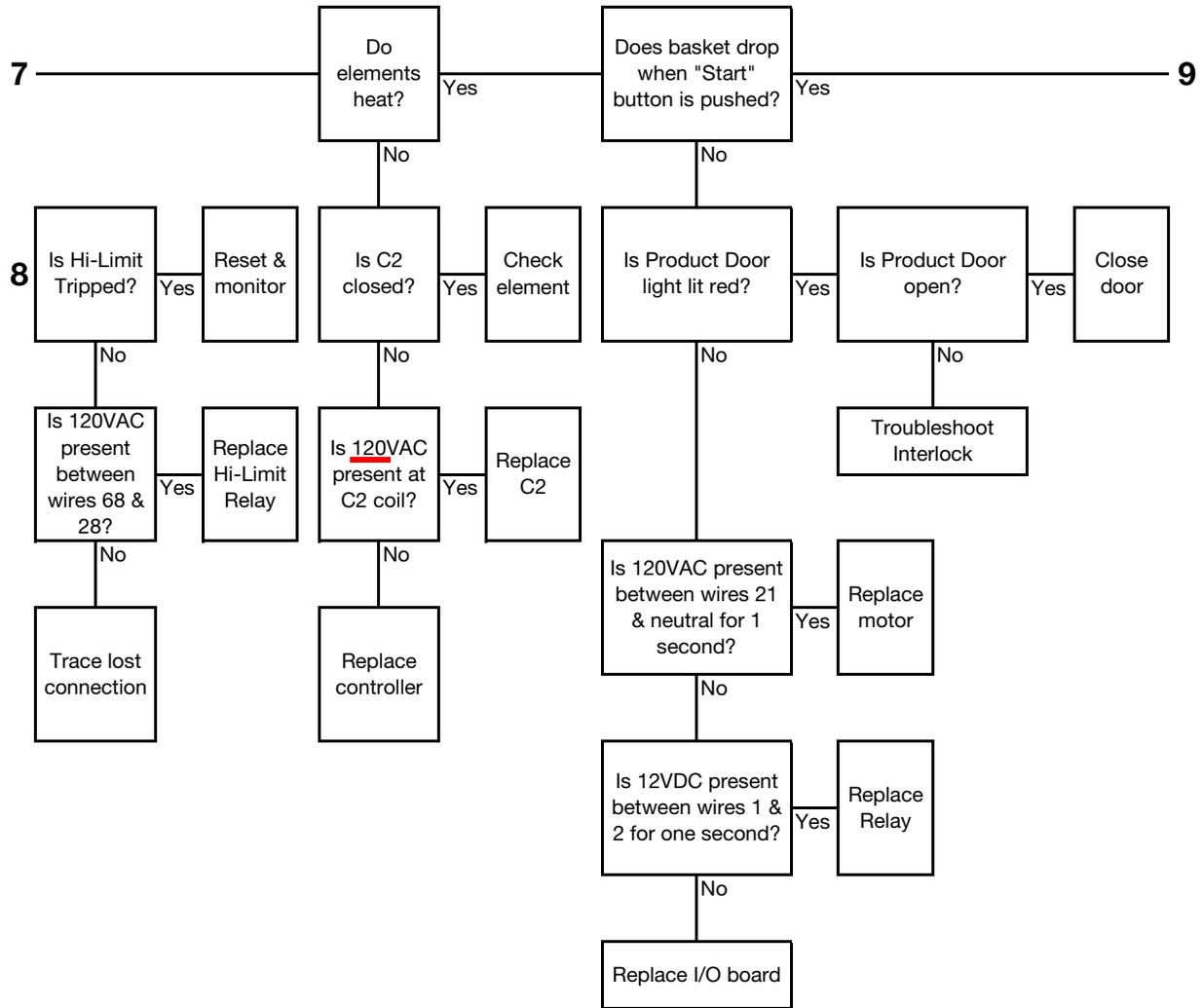
## Controller Alarms

- HI: Temperature exceeded 415 degrees. Check actual temperature, controller, C2.
- CHEC: Temperature didn't rise 6 degrees in 3 minutes. Check controller, C2, wiring and connections.
- PROB: Problem with temperature sensing. Check controller, probe, speaker.
- FAIL: Internal fault detected or temperature fluctuation. Check controller or probe.

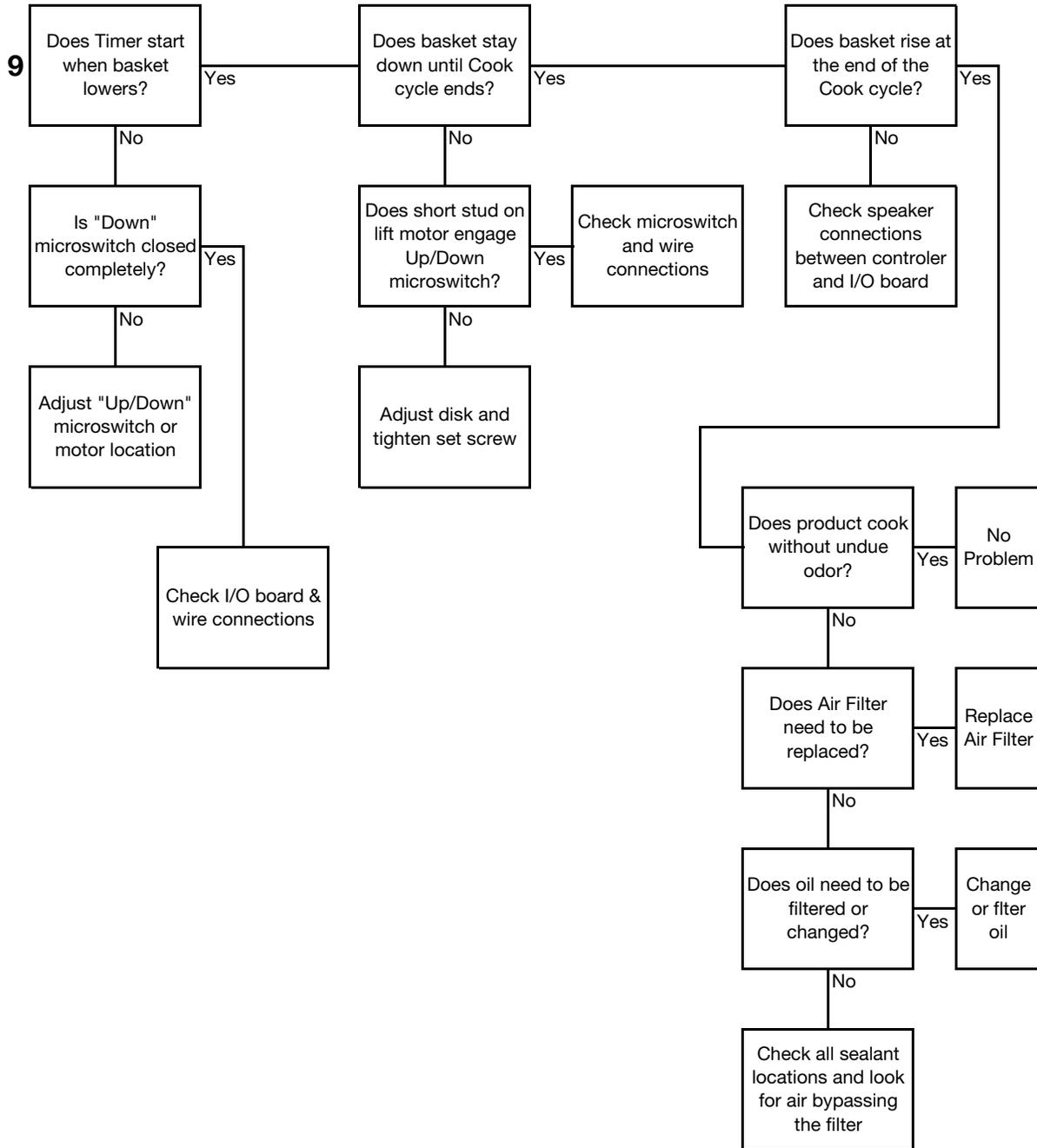
# Troubleshooting flow chart - sheet 2



# Troubleshooting flow chart - sheet 3



# Troubleshooting flow chart - sheet 4

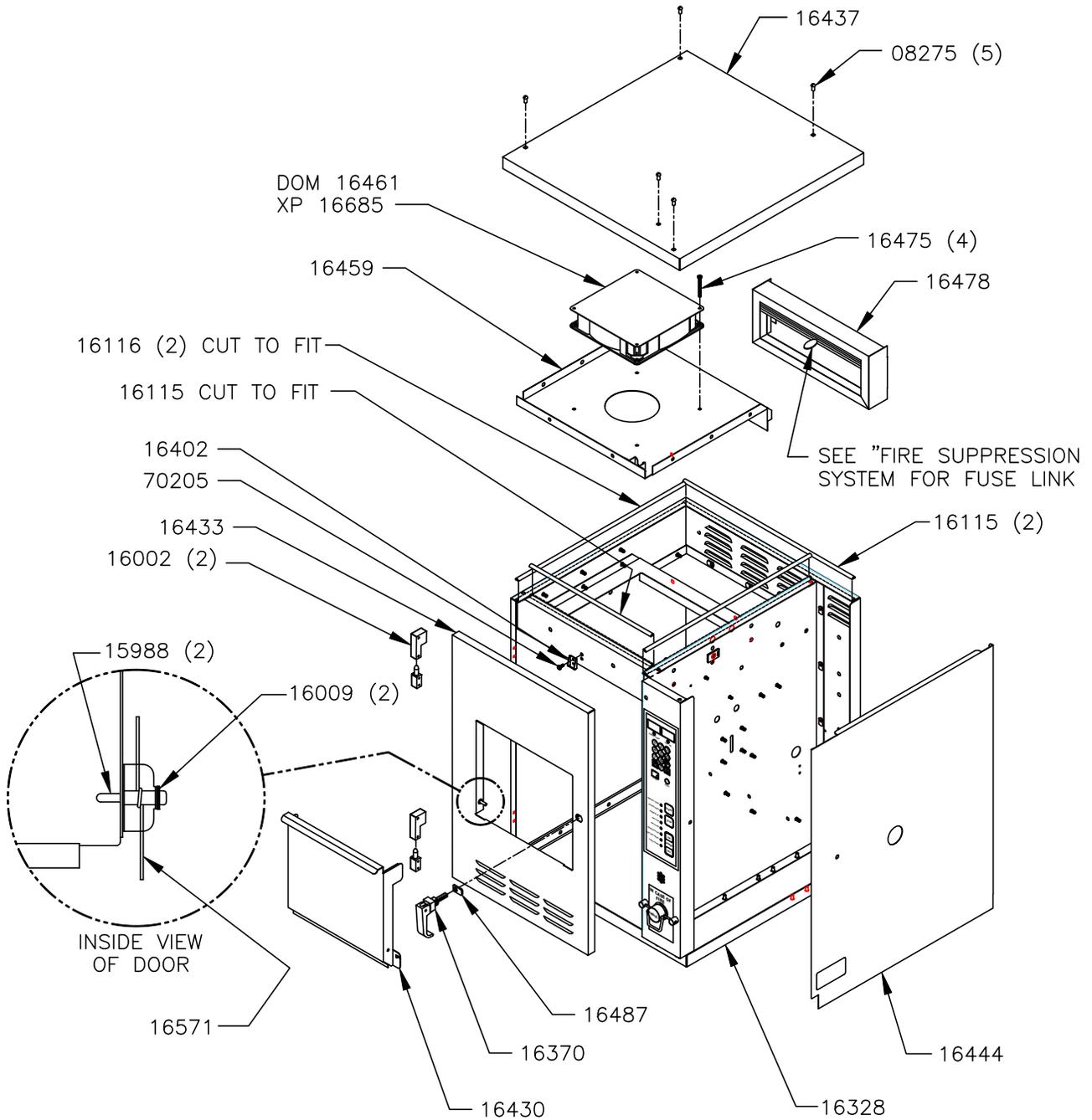




# 7 - PARTS

All adjustments and repairs shall be made by an authorized Broaster Company representative.

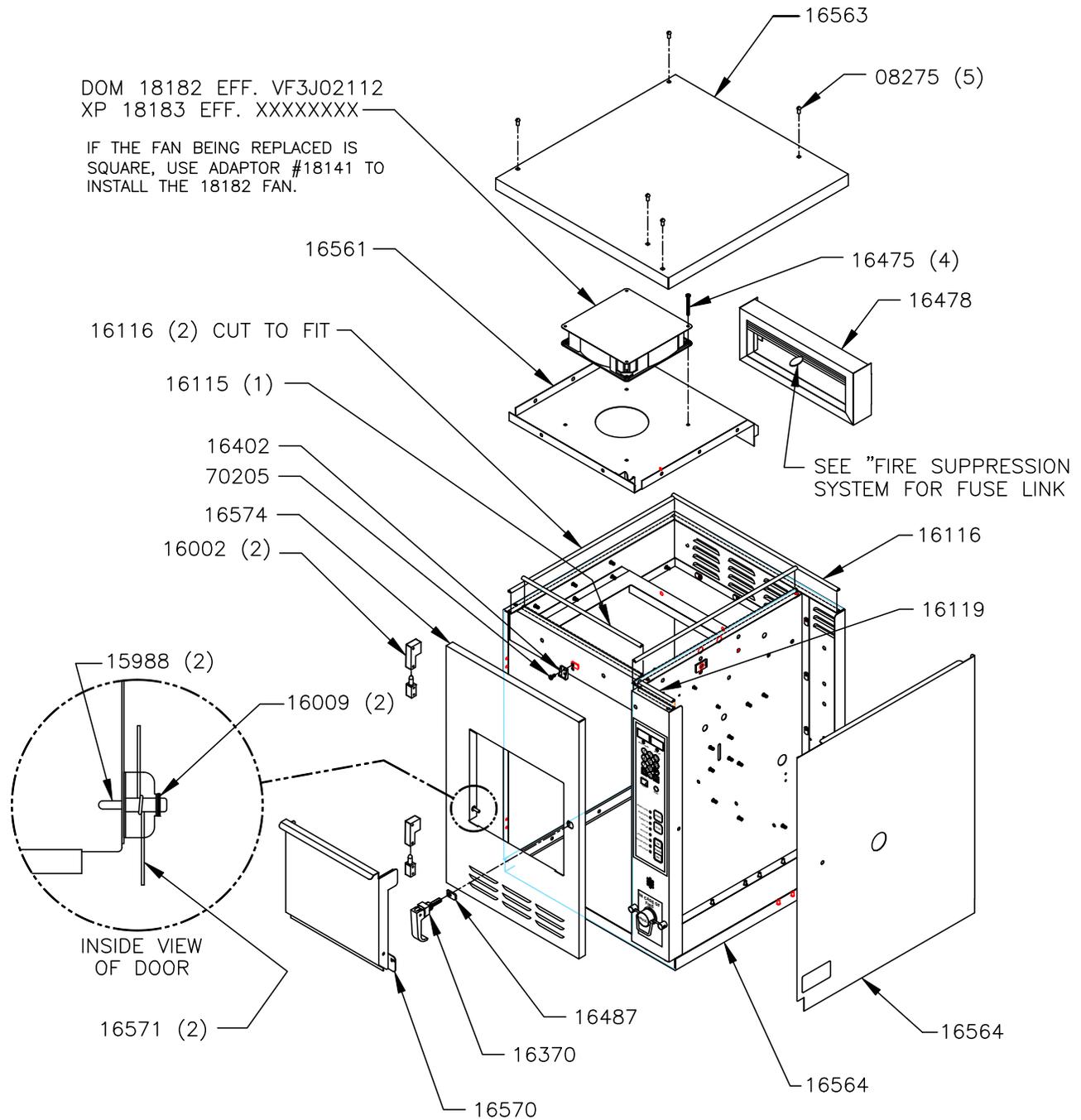
## **PANELS AND DOORS - VF2**



**NOT SHOWN**

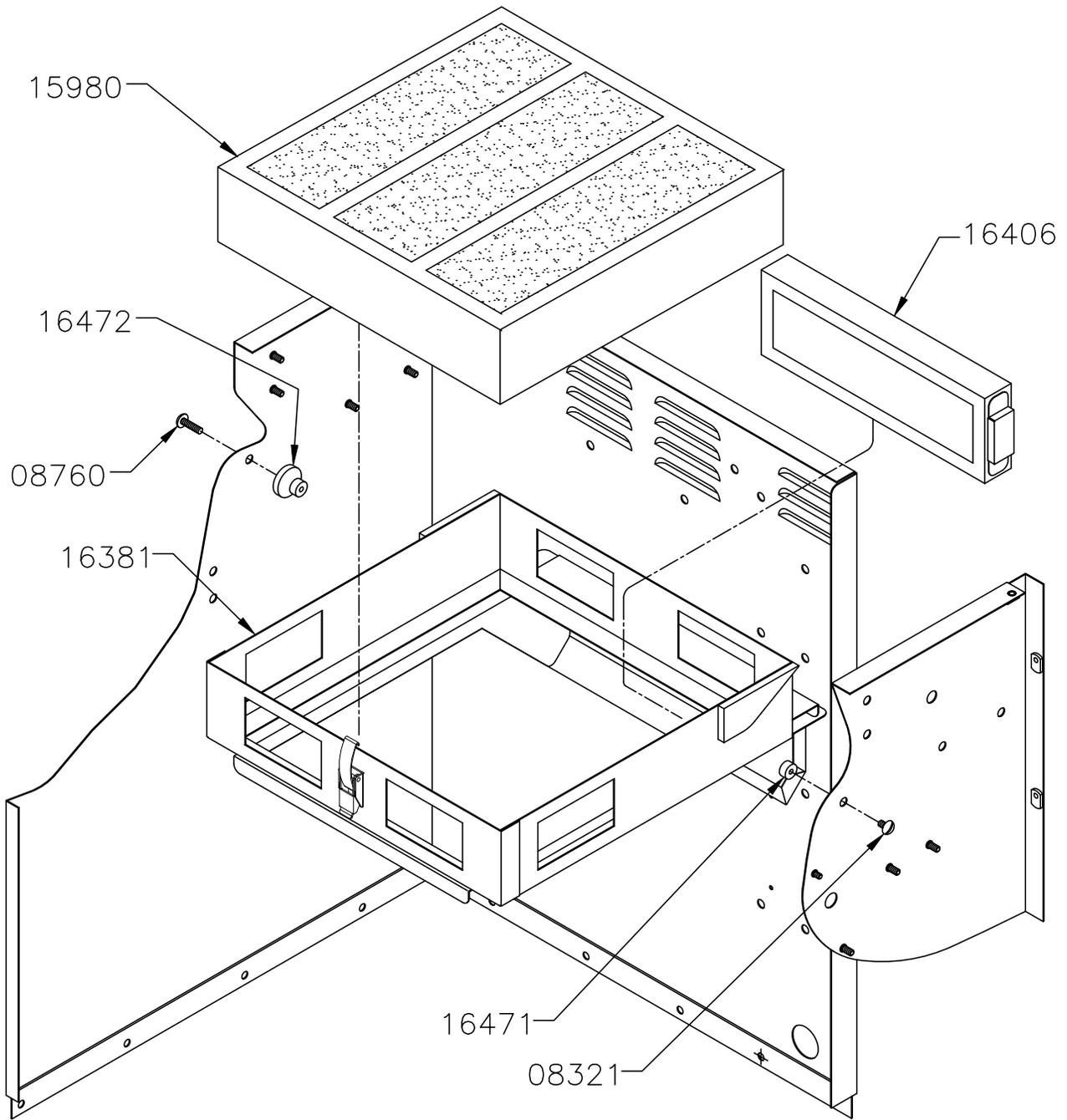
16416 SPEC PLATE 208V  
16417 SPEC PLATE 240V

# PANELS AND DOORS - VF3i

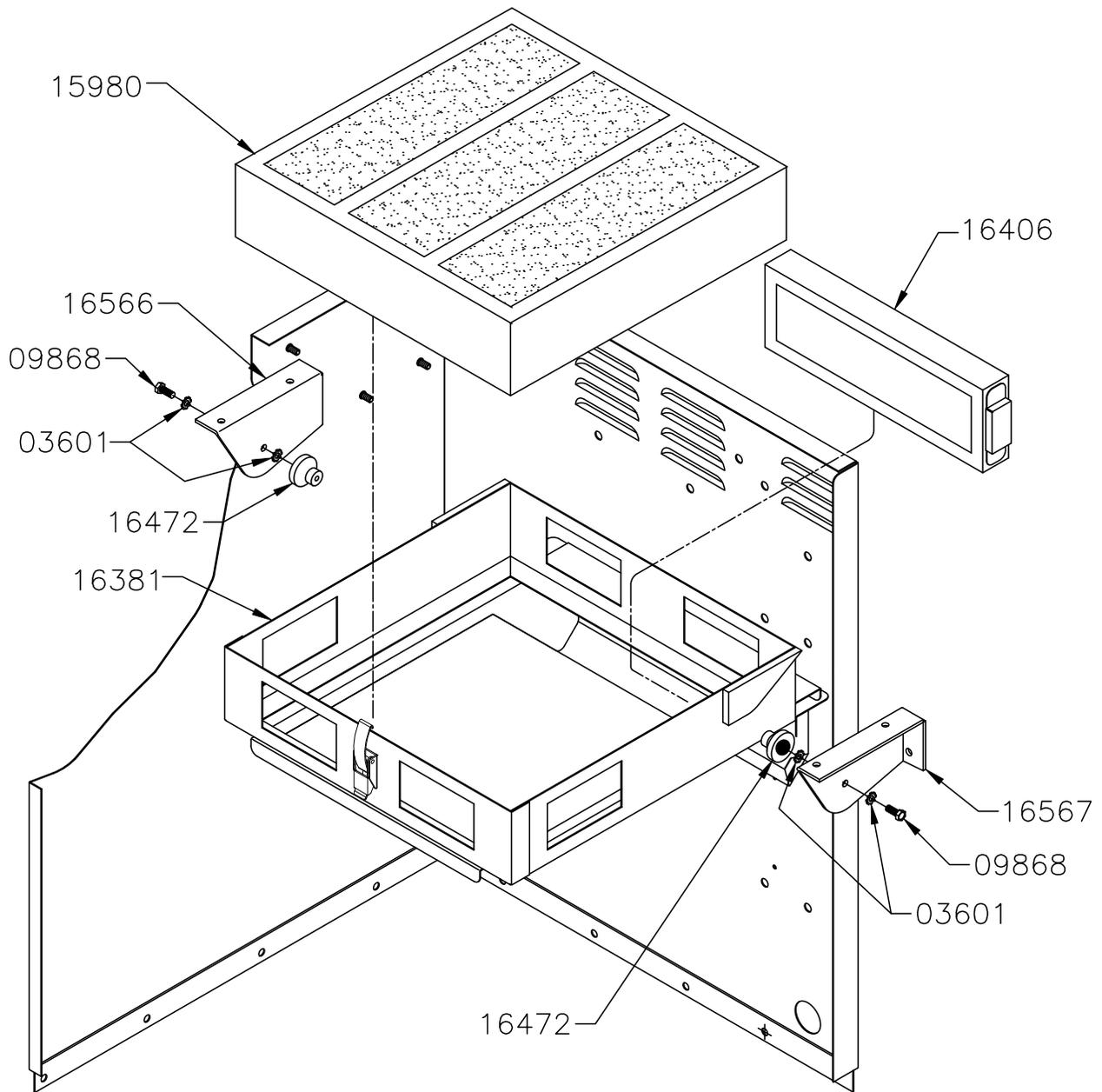


NOT SHOWN  
 VF3i-16604 SPEC PLATE 208V  
 VF3i-16605 SPEC PLATE 240V

# **FILTER TRAY - VF2**



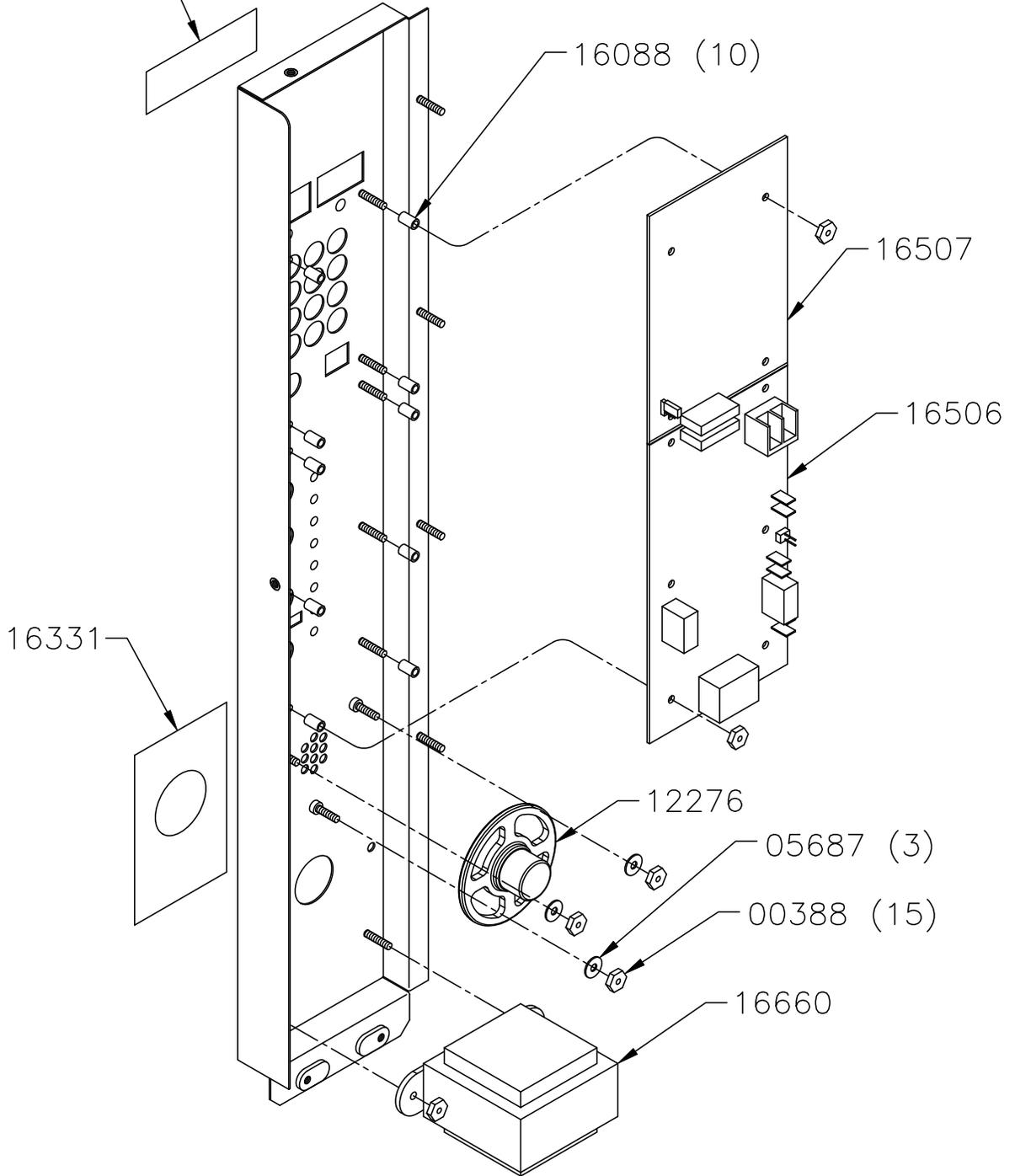
# **FILTER TRAY - VF3i**



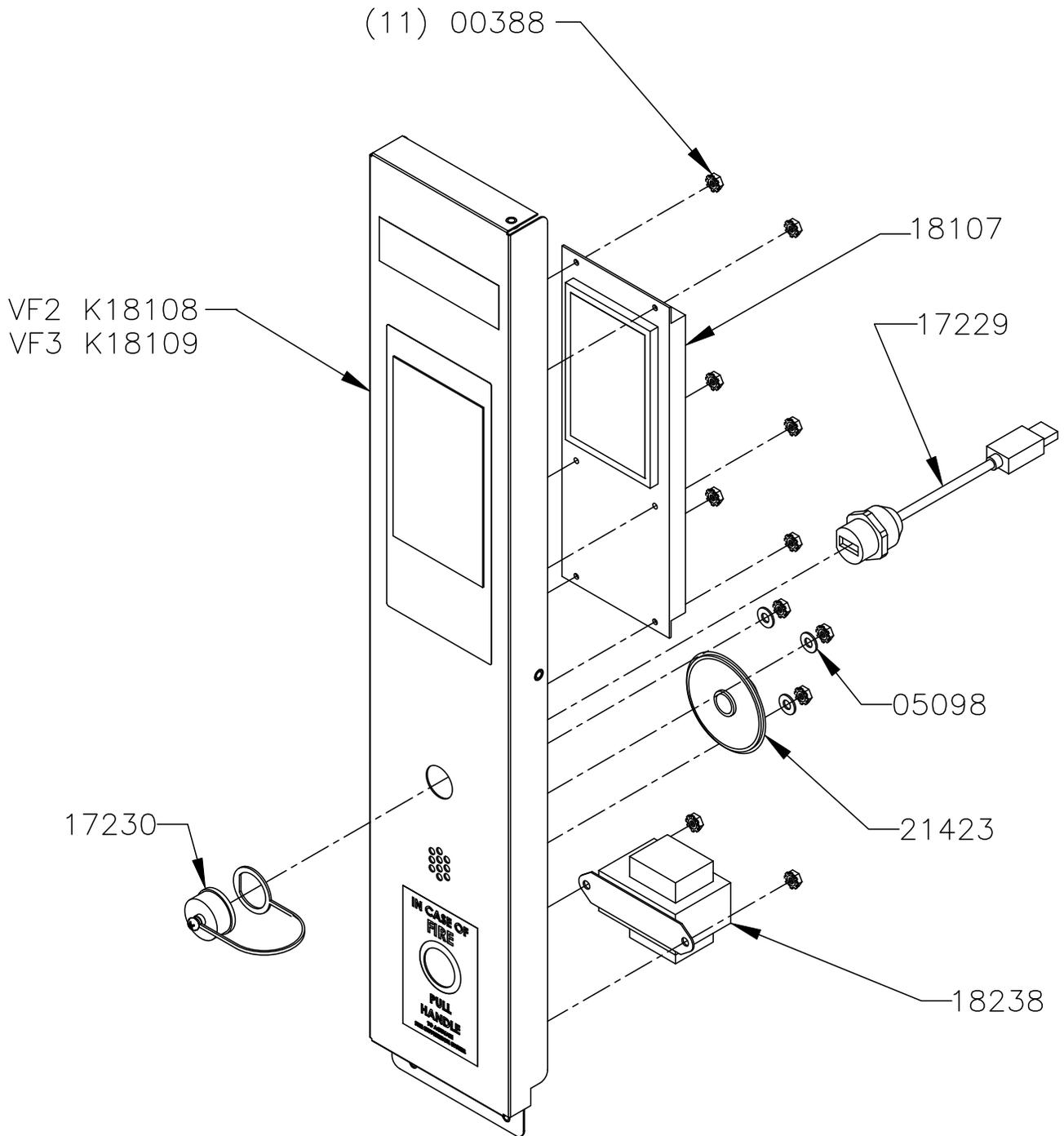
# **CONTROLLER AND COMPONENTS**

NOTE: COMPLETE CONTROLLER ASSEMBLY  
VF2 - 16419  
VF3i - 16542

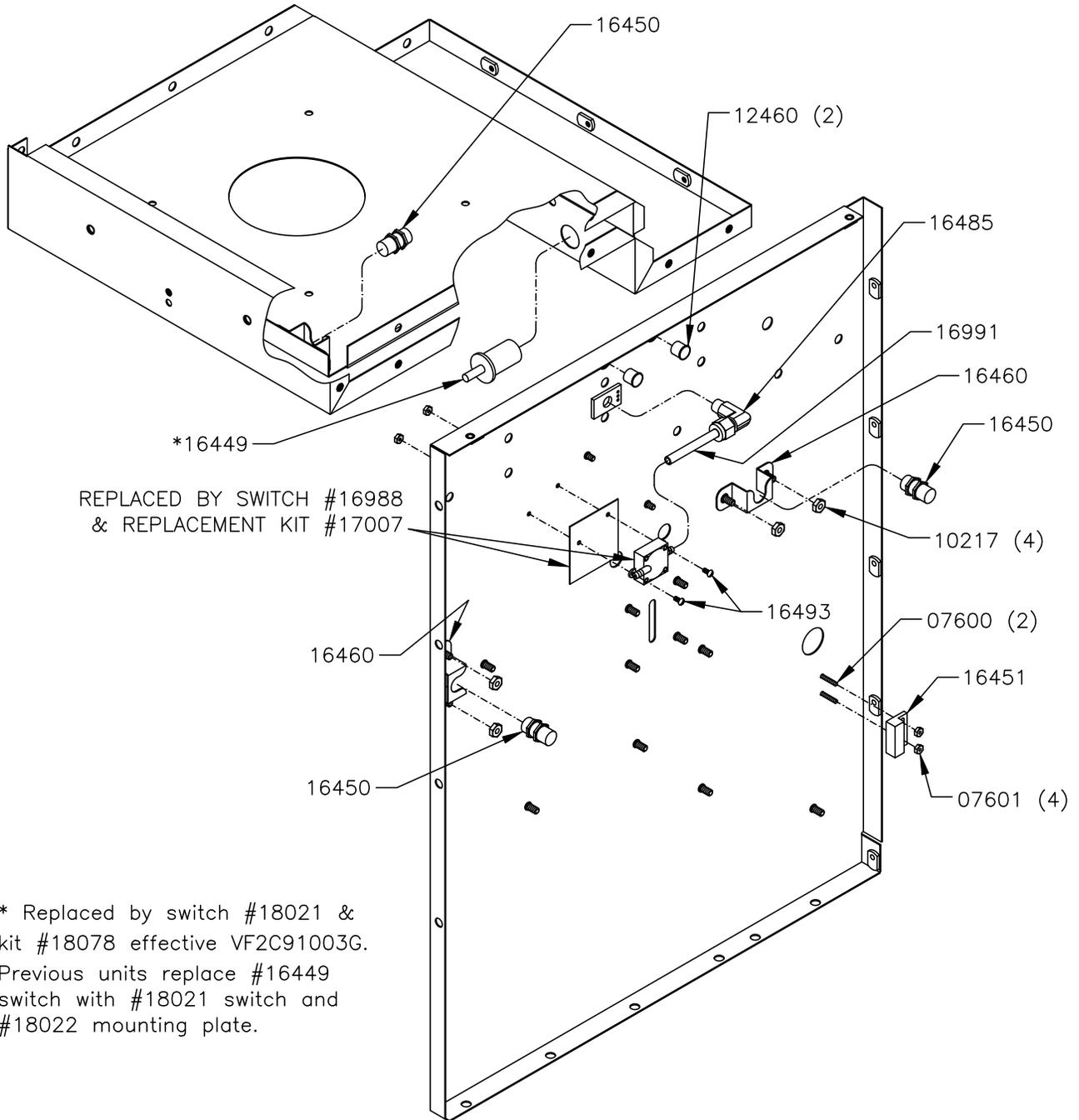
VF2-16448  
VF3i-16592



# CONTROLLER AND COMPONENTS

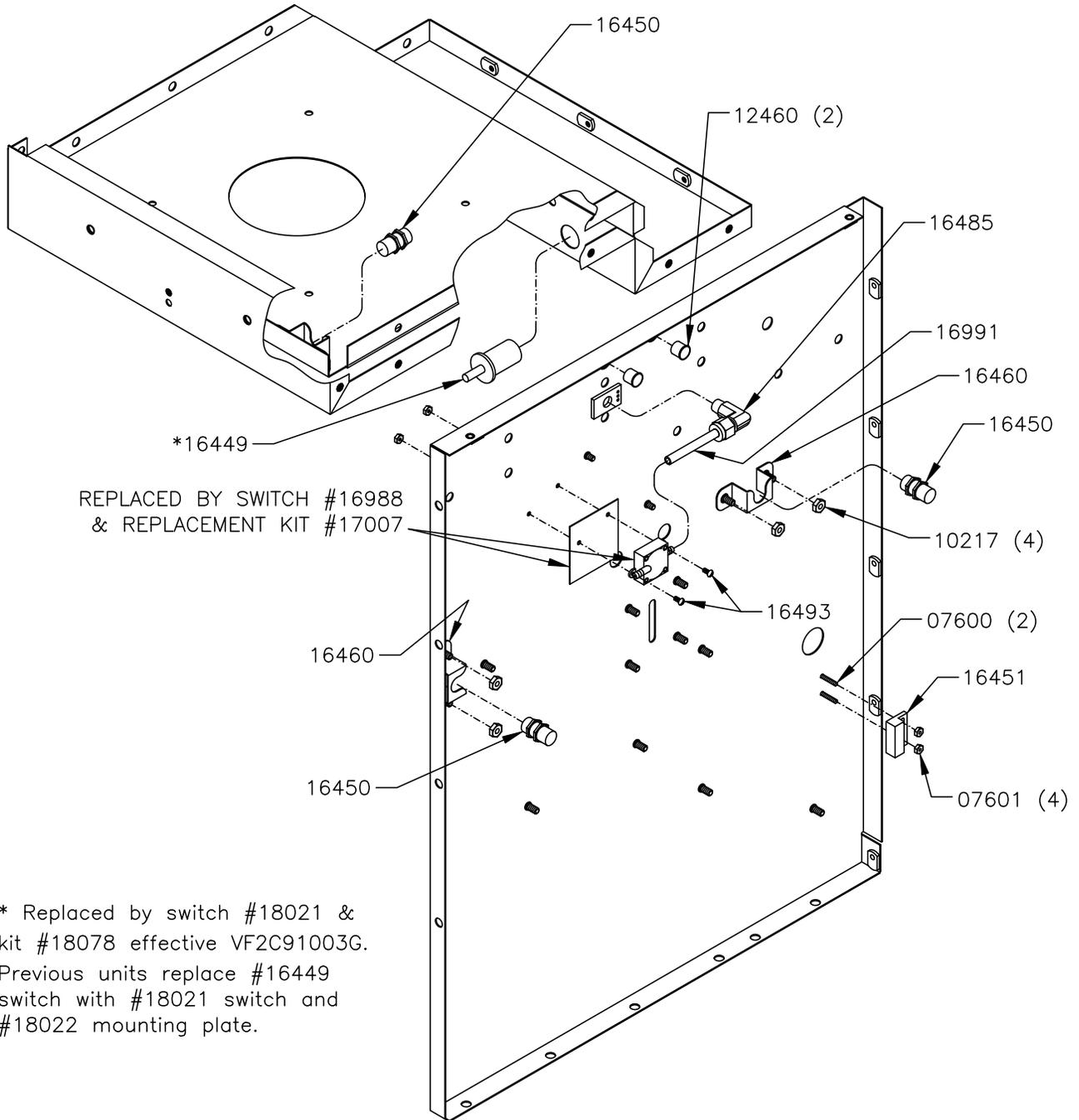


# INTERLOCK SWITCHES - VF2



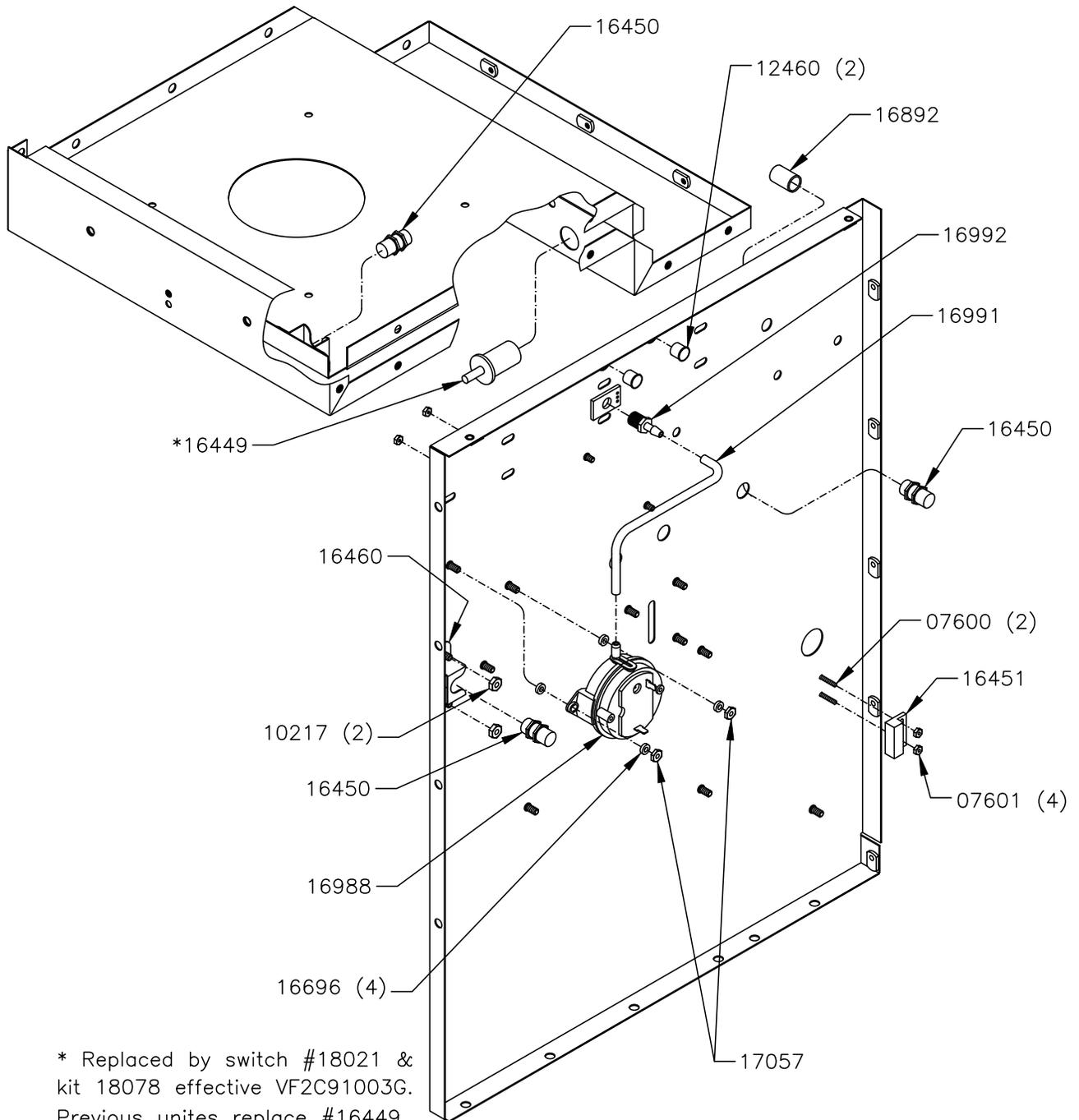
\* Replaced by switch #18021 & kit #18078 effective VF2C91003G. Previous units replace #16449 switch with #18021 switch and #18022 mounting plate.

**INTERLOCK SWITCHES - VF2 (effective S/N VF2L900172)**



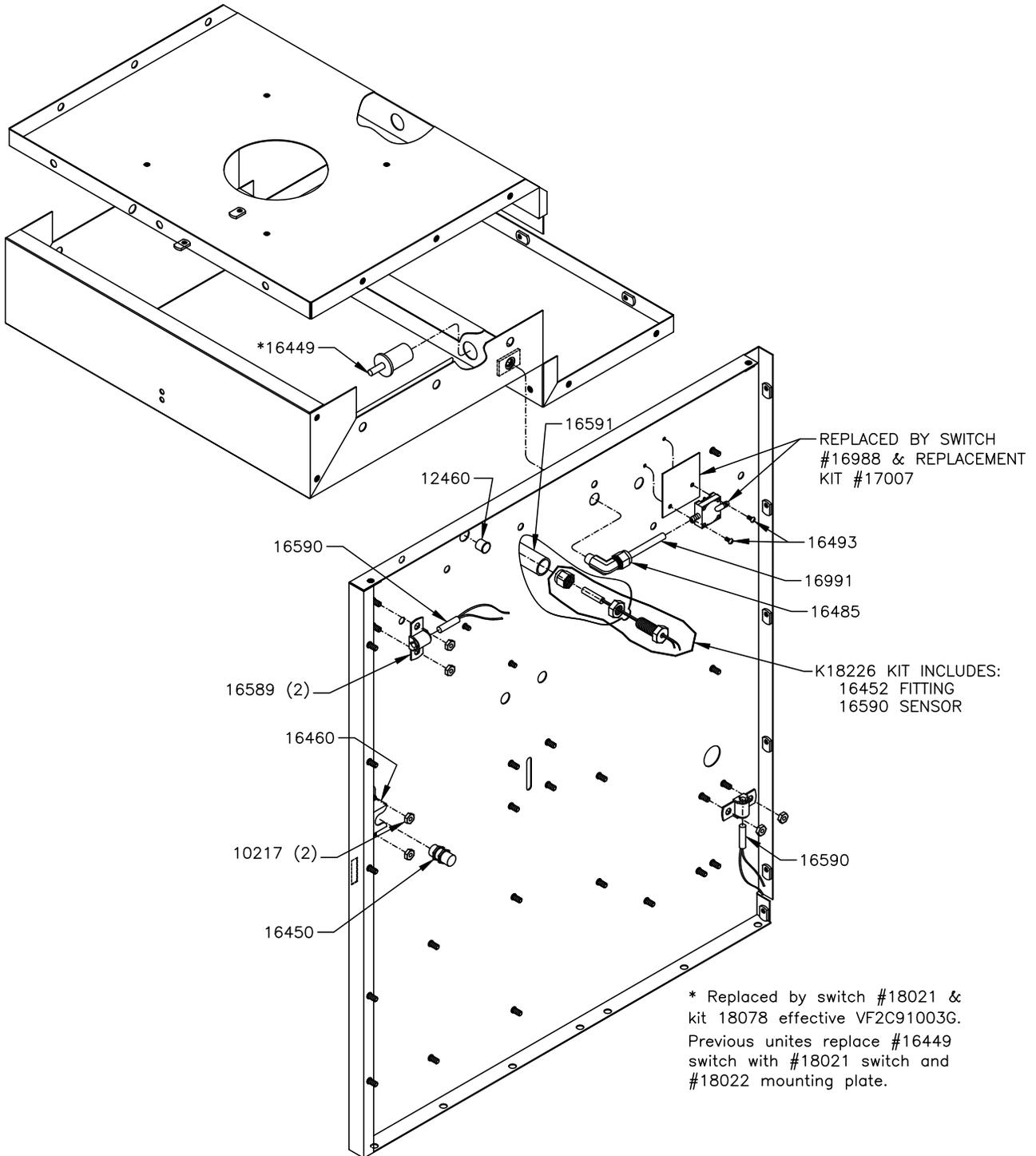
\* Replaced by switch #18021 & kit #18078 effective VF2C91003G. Previous units replace #16449 switch with #18021 switch and #18022 mounting plate.

# INTERLOCK SWITCHES - VF3i

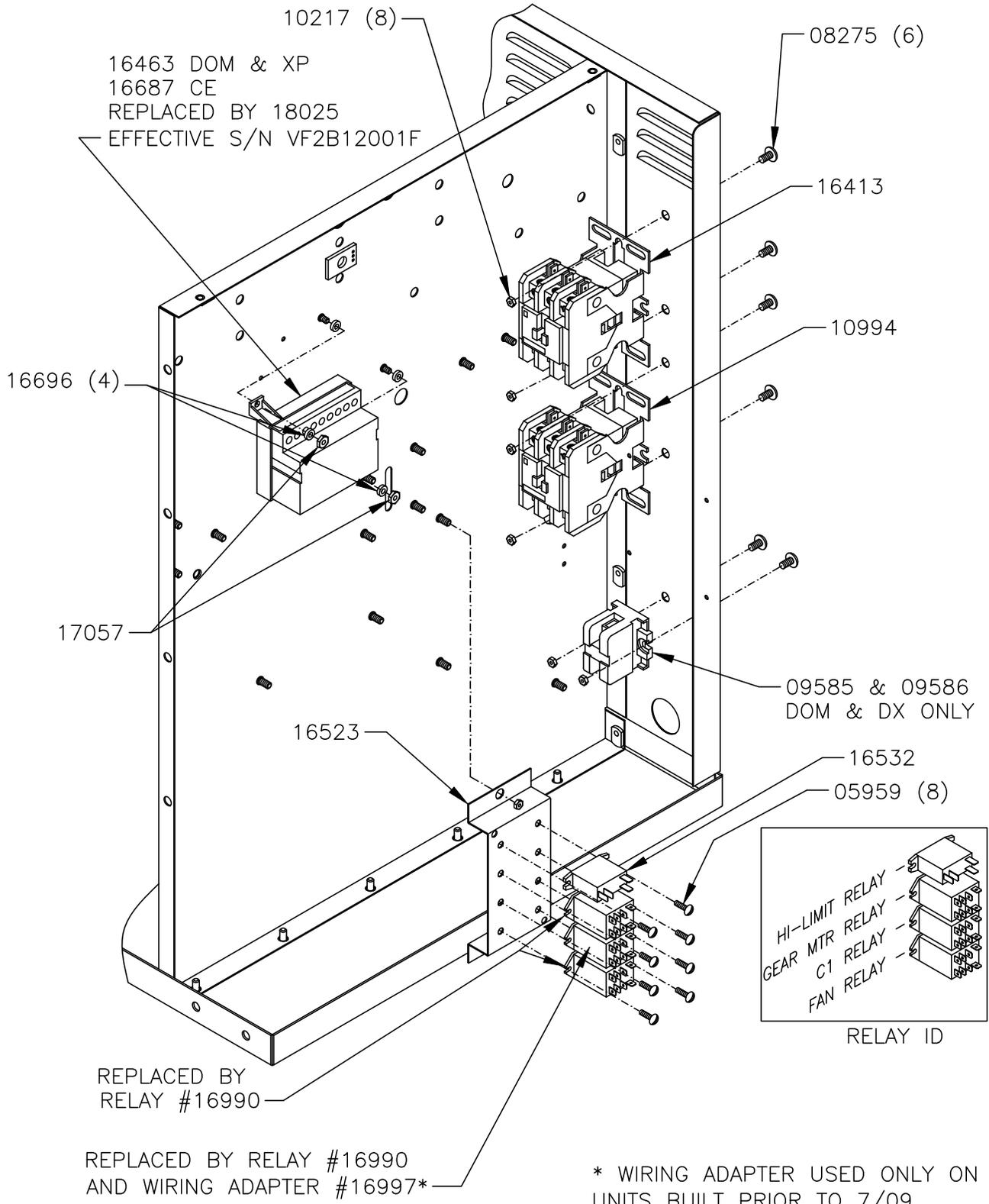


\* Replaced by switch #18021 & kit 18078 effective VF2C91003G. Previous unites replace #16449 switch with #18021 switch and #18022 mounting plate.

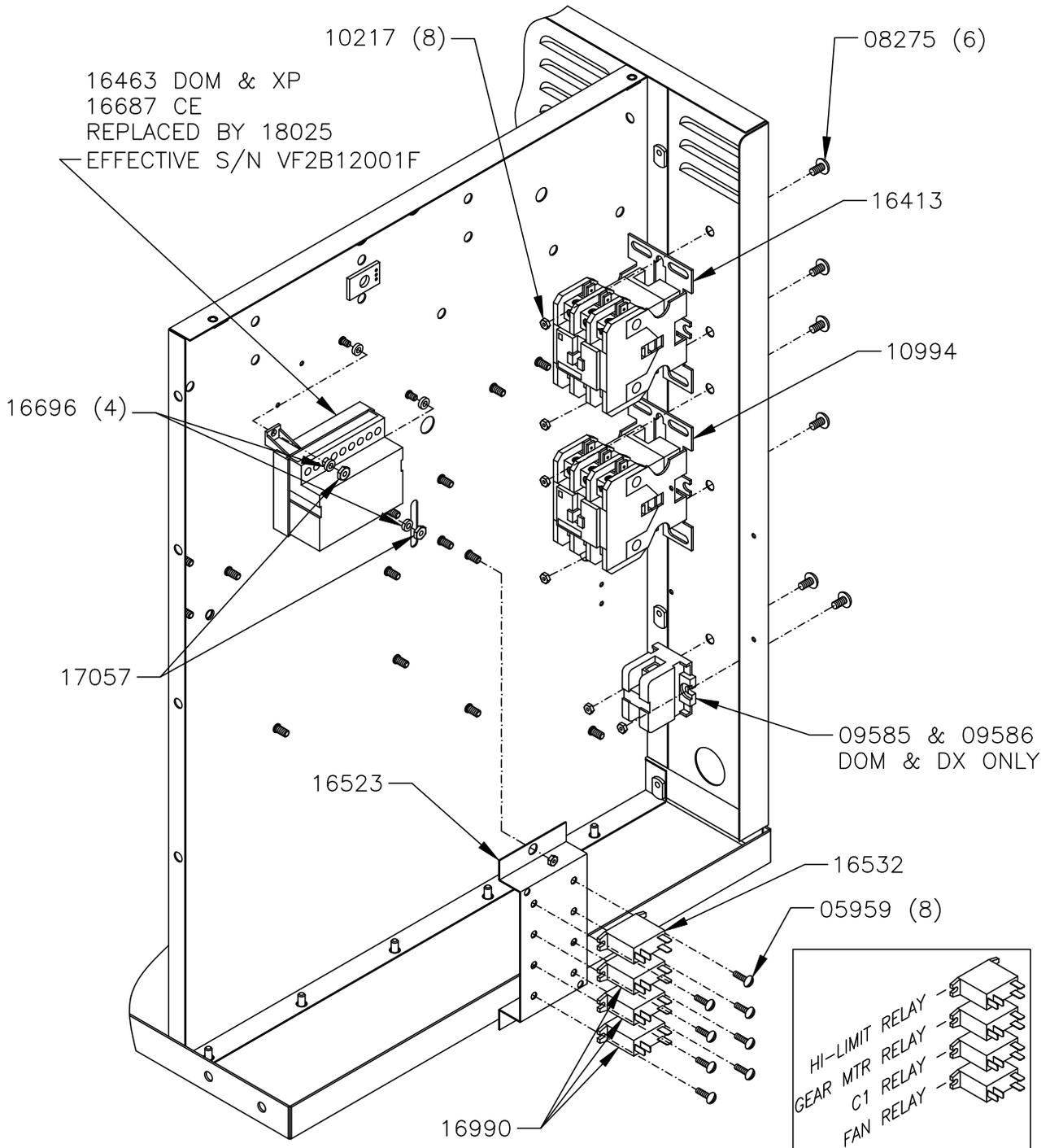
# INTERLOCK SWITCHES - VF3i (effective S/N VF3H900410)



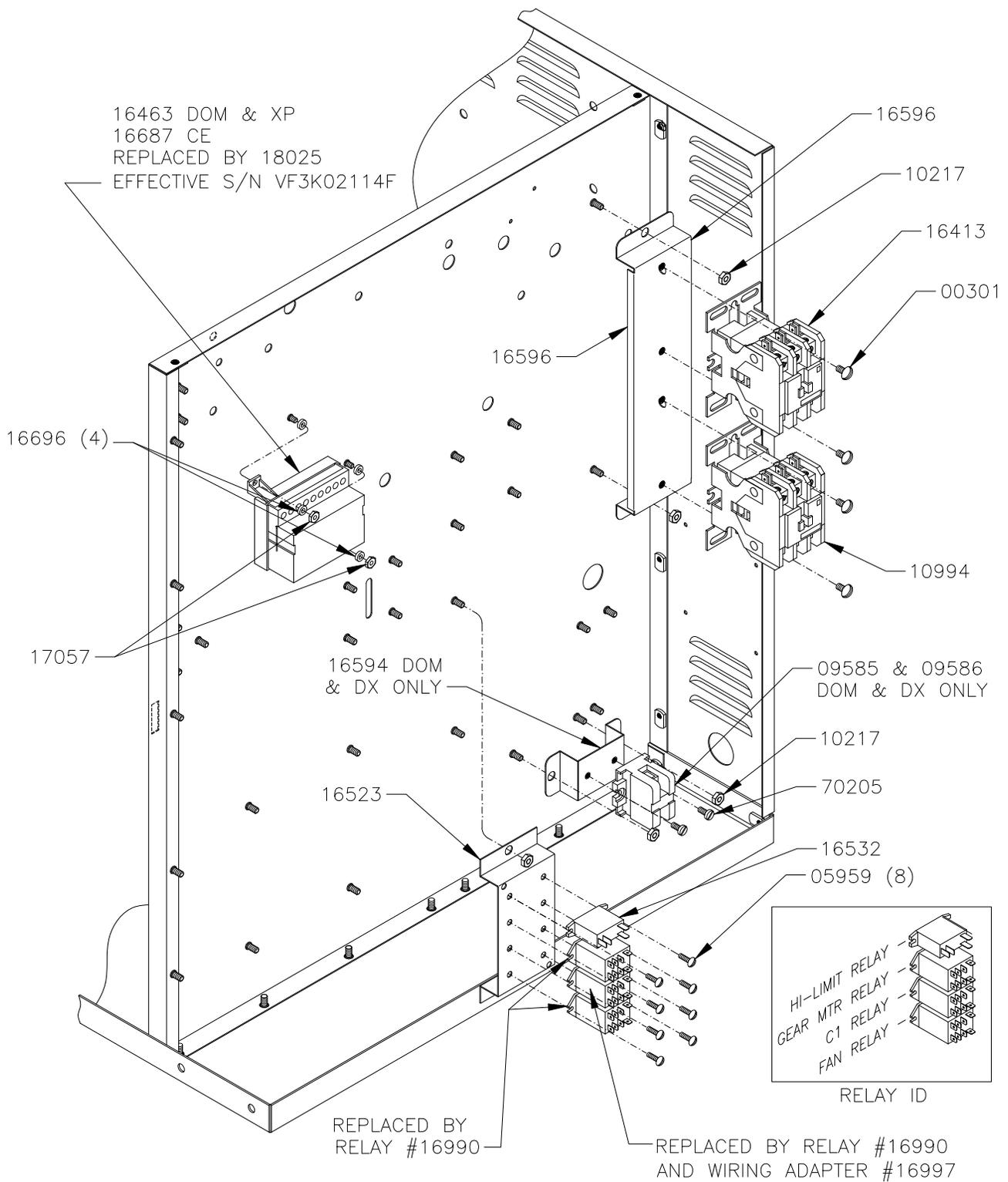
# CONTACTOR AND RELAY MOUNTING - VF2



# CONTACTOR AND RELAY MOUNTING - VF2 (effective S/N VF2L900172)

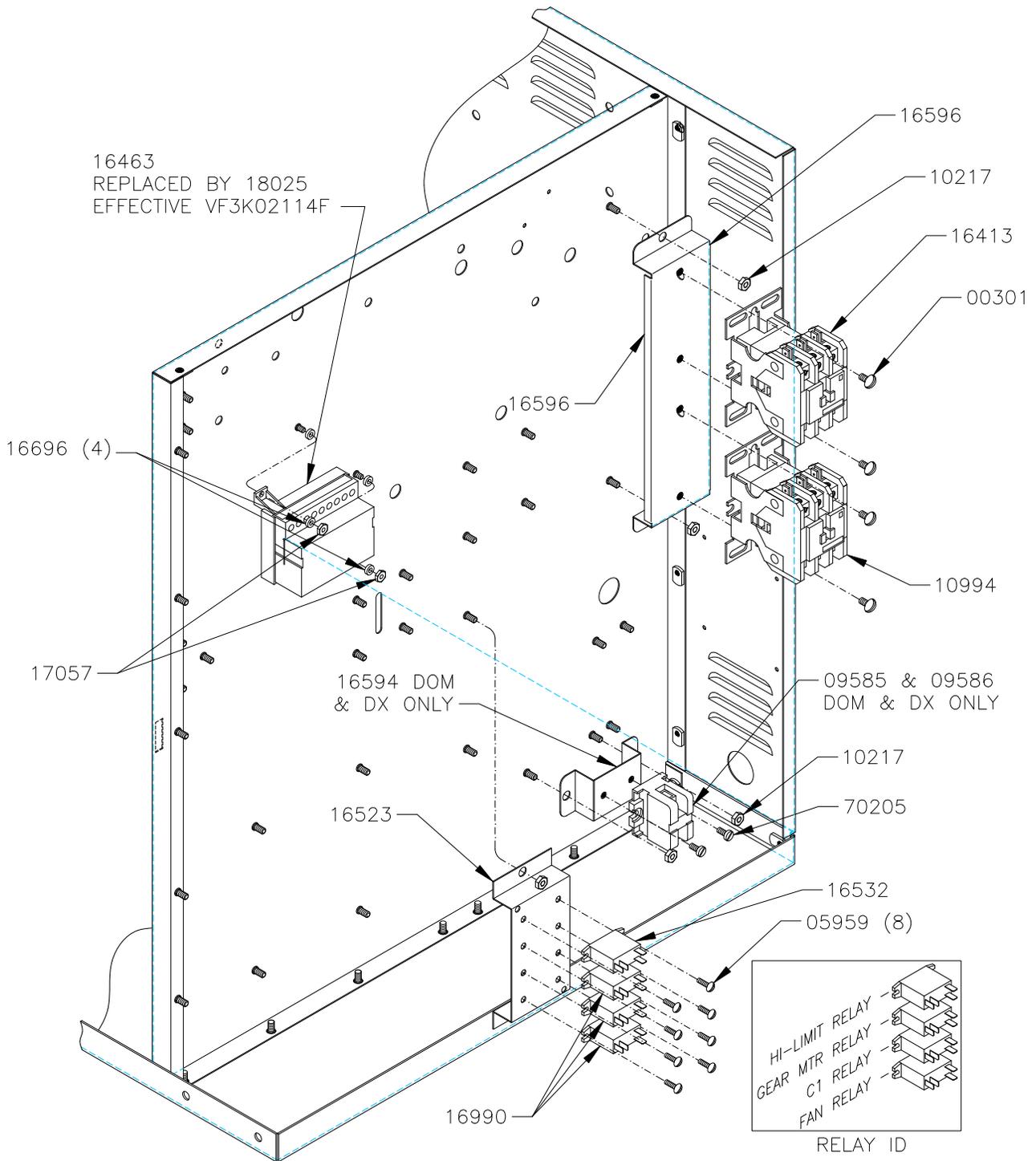


# CONTACTOR AND RELAY MOUNTING - VF3i



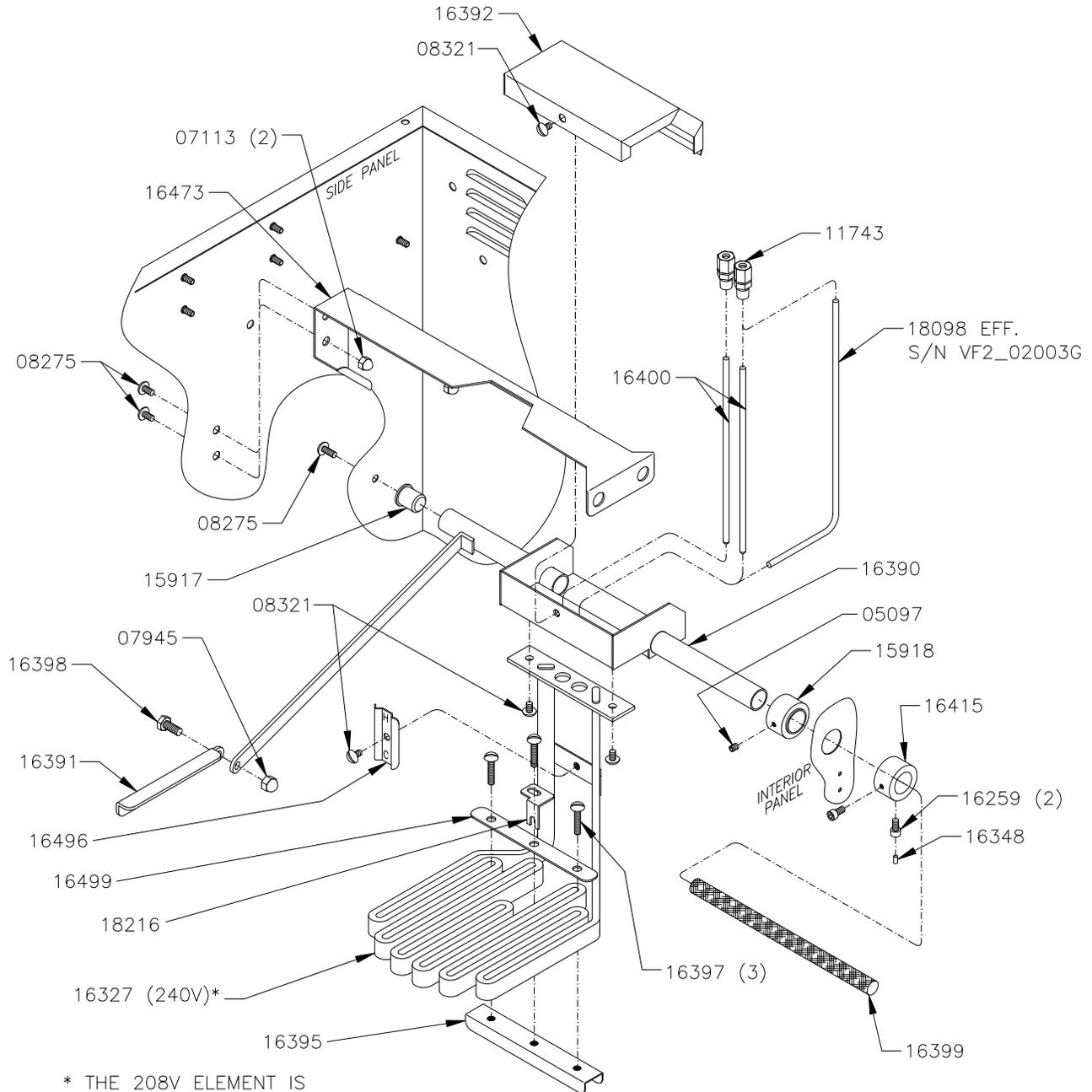
NOT SHOWN:  
16667 TRANSFORMER

# CONTACTOR AND RELAY MOUNTING - VF3i effective S/N VF3G900320



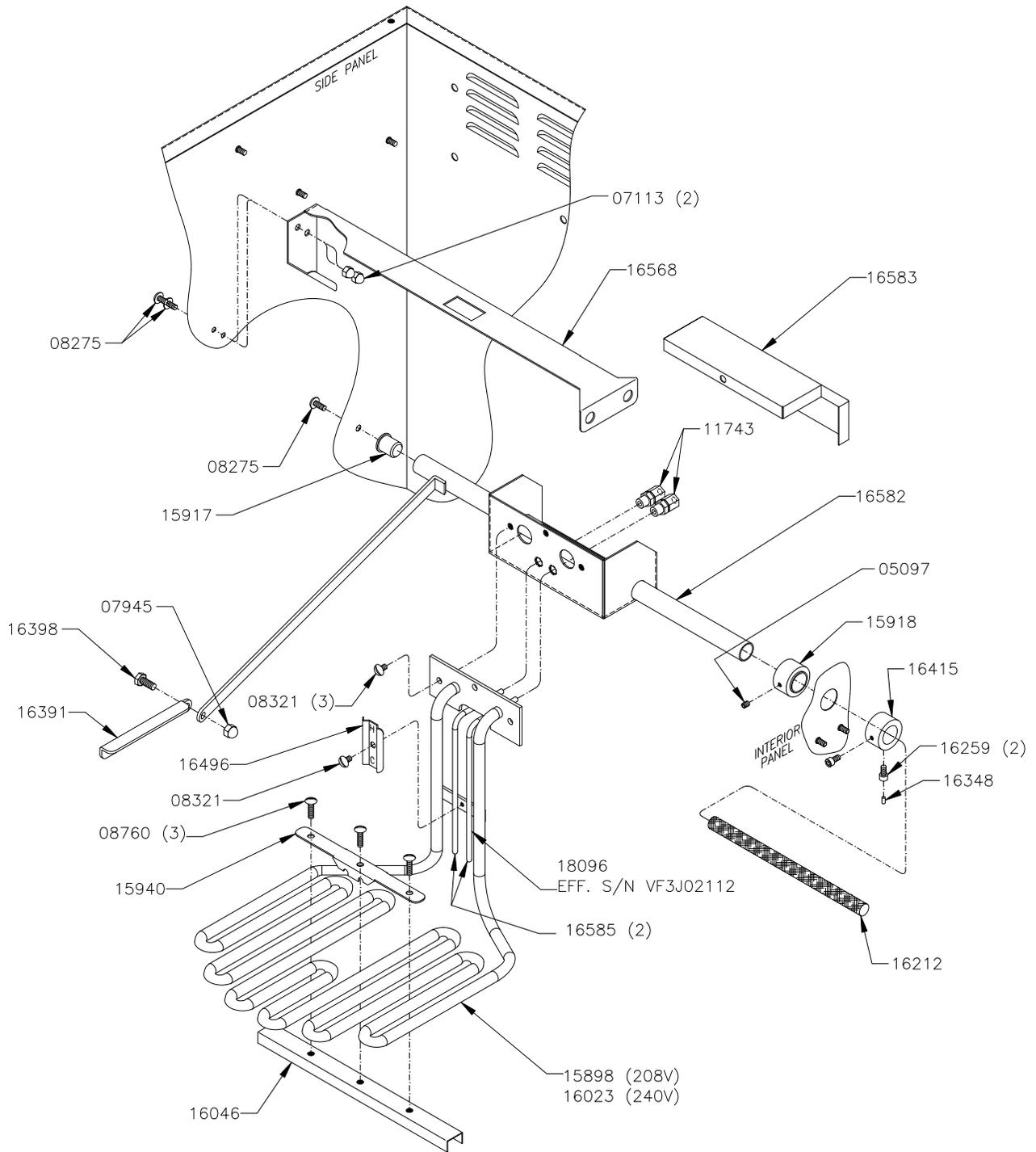
NOT SHOWN:  
16667 TRANSFORMER

# HEATING ELEMENT AND LIFT MECHANISM - VF2

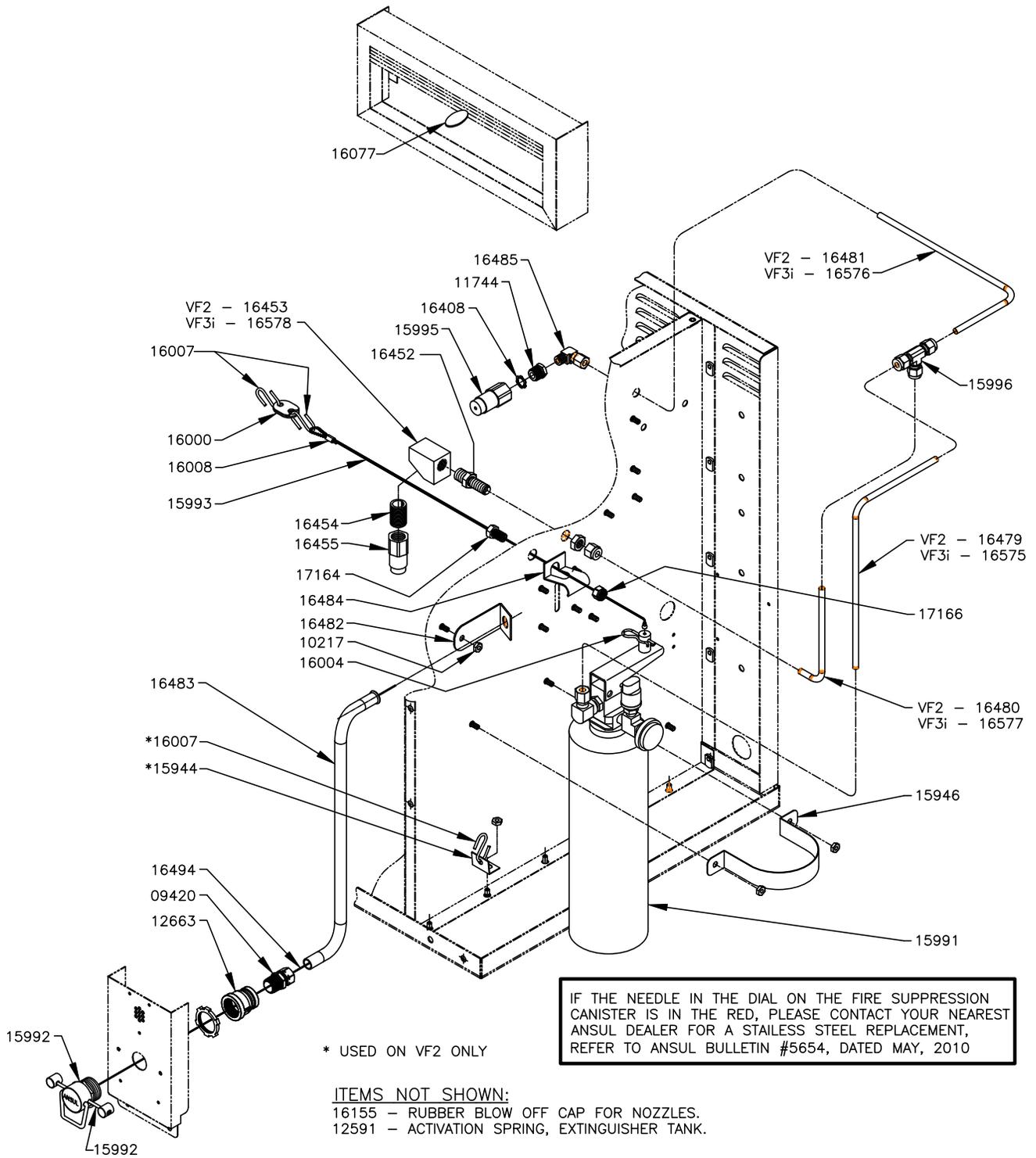


\* THE 208V ELEMENT IS NO LONGER AVAILABLE. USE THE 240V HEATING ELEMENT

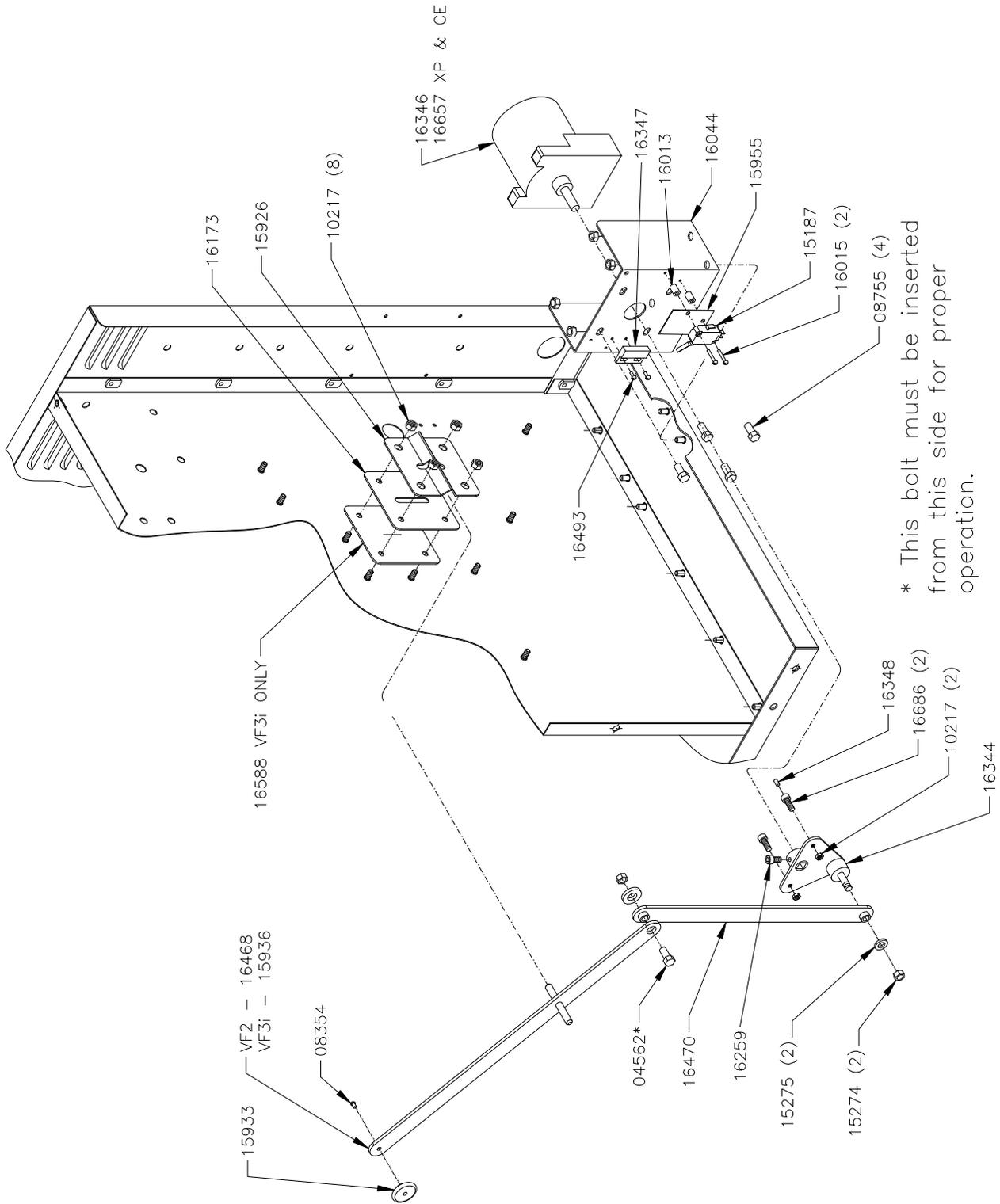
# HEATING ELEMENT AND LIFT MECHANISM - VF3i



# FIRE SUPPRESSION SYSTEM - VF2 & VF3i

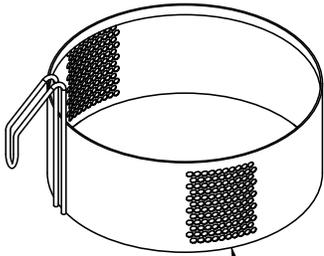
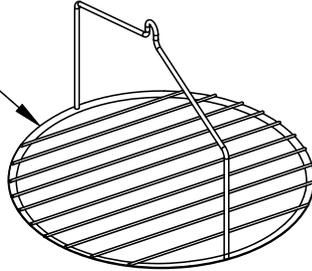


# BASKET LIFT MECHANISM

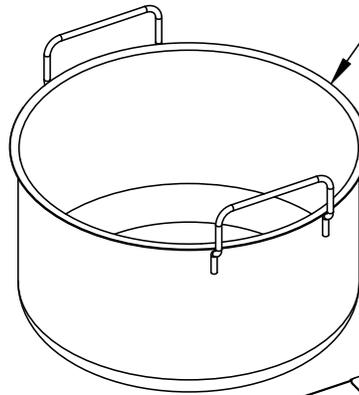


**COOKING WELL GROUP**

VF2 - 16427  
VF3i - 15984

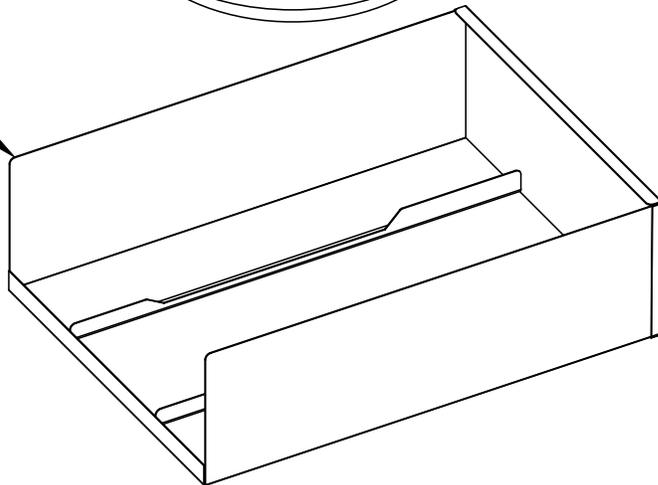


VF2 - 16429  
VF3i - 15960



VF2 - 16333  
VF3i - 16641

VF2 - 16426  
VF3i - 15906





## 8 - PARTS LIST

Part Number	Description	Qty Used	
		VF2	VF3i
00301	SCREW RD HD #10-32 X .375 SS		4
00388	NUT KEPS #6-32	4	
03601	LOCKWASHER #10 EXT TOOTH		1
03718	SCREW RD HD #10-32 X .250 SS		1
04562	SCREW HX HD 1/4-20 X .750 SS	1	
04562	SCREW HX HD 1/4-20 X .750 SS		1
05097	SCREW SET #10-32 X .250		1
05959	SCREW TR HD #6-32 X .500	8	8
06536	WASHER FLAT #10	1	
07113	NUT ACORN #10-32	9	9
07490	LUG- GROUNDING	1	1
07600	SCREW RD HD #4-40 X .625	2	
07601	NUT KEPS #4-40	4	2
07945	NUT ACORN 1/4-20	1	1
08275	SCREW TR HD #10-32 X .375 SS	49	50
08321	SCREW TR HD #10-32 X .312	4	5
08354	SCREW TR HD #10-32 X .500	2	1
08755	SCREW HX HD #10-32 X .250 SS	4	4
08760	SCREW TR HD #10-32 X .750	1	5
09420	CONN COMP 1/2 OD X 1/2 MPT	1	1
09585	TERMINAL BLOCK SECTION	1	1
09586	TERMINAL BLOCK END	1	1
10044	RIVET POP 1/8 DIA X .265 LG	4	4
10217	NUT KEPS #10-32 S.S.	40	50
10994	CONTACTOR- 50A 208/240V 1800	1	1
11743	CONNECTOR- MALE	2	2
11744	BUSHING- HX RED .375 X .125	1	1
12276	SPEAKER W/WIRE	1	1
12460	BUSHING- INSULAT'G .50" OD	2	2
12591	VH, ANSUL SPRING #79094	1	1
12598	ANSUL GLASS BREAK BAR	1	1
12663	COUPLING- RED, 3/4 X 1/2	1	1
14619	NUT- COUPLING #8-32 X .62" SS	2	2
15187	SWITCH- MINITURE LO VLT/LO AMP	1	1
15274	LOCKNUT- TOPLOCK, 1/4-20	2	2
15275	WASHER- FLAT, 1/4", EXH VALVE	2	2
15898	ELEMENT- 208V VF3		1
15906	TRAY WELD- SPLASH, VF3		1
15917	PIVOT- ELEMENT SWING	1	1
15918	BUSHING- ELEMENT SWING	1	1
15926	BRACKET- ARM PIVOT PIN	1	1

Part Number	Description	Qty Used	
		VF2	VF3i
15933	HOLDER-BASKET PLATFORM	1	1
15936	ARM WELD- UPPER LIFT VF3		1
15940	HOLDER- PROBE VF3		1
15944	BRACKET- LOUVER VF3	1	
15946	STRAP- CYLINDER	1	1
15955	INSULATOR- MICROSWITCH	1	1
15956	INSULATOR- AIRFLOW SWITCH	1	1
15960	BASKET WELD- VF3		1
15979	SWITCH- AIRFLOW (repl by 16988 and 17007)	1	1
15980	FILTER- AIR	1	1
15984	PLATFORM- BASKET LIFT, VF3		1
15988	PIN- STOP VF3		2
15991	TANK- FIRE SUPPRESSION	1	1
15992	ANSUL- PULL STATION	1	1
15993	CABLE- BALL	1	1
15995	NOZZLE- UPPER	1	1
15996	TEE 1/4 CC BRASS	1	1
16000	LINK- FUSIBLE	1	1
16002	HINGE- ACCESS DOOR	2	2
16004	PIN- HITCH	1	1
16006	TUBE- CLEAR	1	1
16007	S HOOK	2	2
16008	CABLE CRIMP	3	3
16009	RETAINING RING		2
16013	SPACER- MICROSWITCH	2	2
16015	SCREW RD HD #4-40 X 1.000	2	2
16023	ELEMENT- 240V 5500W		1
16044	BRACKET WELD- GEAR MOTOR	1	1
16046	SPACER WELD- ELEMENT VF3		1
16077	LINK- FUSIBLE, 212F	1	1
16088	STANDOFF- CONTROLLER	10	10
16115	GASKET EPDM 16"	2	2
16116	GASKET EPDM 21 3/4"		3
16119	GASKET EPDM 5"		1
16155	CAP- SILICONE, BLOW OFF	2	2
16173	GASKET SILICONE WIPER	1	1
16196	RELAY- BIFURCATED 120VAC, DPDT	1	
16212	SLEEVE- FIBERGLASS, VF3		1
16259	SCREW SOC HD CAP #10-32X .375	5	5
16263	INDICATOR - COLD OIL LEVEL	1	1
16277	ARC SUPPRESSOR ASSY	1	
16297	BLOWER GASKET	1	1
16327	HEATING ELEMENT- 240V 5500W	1	
16330	HEATING ELEMENT- 208V 5500W	1	
16331	OVERLAY- PULL STATION, VF2		1

Part Number	Description	Qty Used	
		VF2	VF3i
15933	HOLDER-BASKET PLATFORM	1	1
15936	ARM WELD- UPPER LIFT VF3		1
15940	HOLDER- PROBE VF3		1
15944	BRACKET- LOUVER VF3	1	
15946	STRAP- CYLINDER	1	1
15955	INSULATOR- MICROSWITCH	1	1
15956	INSULATOR- AIRFLOW SWITCH	1	1
15960	BASKET WELD- VF3		1
15979	SWITCH- AIRFLOW (repl by 16988 and 17007)	1	1
15980	FILTER- AIR	1	1
15984	PLATFORM- BASKET LIFT, VF3		1
15988	PIN- STOP VF3		2
15991	TANK- FIRE SUPPRESSION	1	1
15992	ANSUL- PULL STATION	1	1
15993	CABLE- BALL	1	1
15995	NOZZLE- UPPER	1	1
15996	TEE 1/4 CC BRASS	1	1
16000	LINK- FUSIBLE	1	1
16002	HINGE- ACCESS DOOR	2	2
16004	PIN- HITCH	1	1
16006	TUBE- CLEAR	1	1
16007	S HOOK	2	2
16008	CABLE CRIMP	3	3
16009	RETAINING RING		2
16013	SPACER- MICROSWITCH	2	2
16015	SCREW RD HD #4-40 X 1.000	2	2
16023	ELEMENT- 240V 5500W		1
16044	BRACKET WELD- GEAR MOTOR	1	1
16046	SPACER WELD- ELEMENT VF3		1
16077	LINK- FUSIBLE, 212F	1	1
16088	STANDOFF- CONTROLLER	10	10
16115	GASKET EPDM 16"	2	2
16116	GASKET EPDM 21 3/4"		3
16119	GASKET EPDM 5"		1
16155	CAP- SILICONE, BLOW OFF	2	2
16173	GASKET SILICONE WIPER	1	1
16196	RELAY- BIFURCATED 120VAC, DPDT	1	
16212	SLEEVE- FIBERGLASS, VF3		1
16259	SCREW SOC HD CAP #10-32X .375	5	5
16263	INDICATOR - COLD OIL LEVEL	1	1
16277	ARC SUPPRESSOR ASSY	1	
16297	BLOWER GASKET	1	1
16327	HEATING ELEMENT- 240V 5500W	1	
16330	HEATING ELEMENT- 208V 5500W	1	
16331	OVERLAY- PULL STATION, VF2		1

Part Number	Description	Qty Used	
		VF2	VF3i
16333	COOKING WELL WELD- VF2	1	
16344	DISC WELD- SQ DRV, GEARMTR	1	1
16346	GEARMOTOR ASSY- SQ DRV	1	1
16347	SWITCH- PROX, BSKT DWN	1	1
16348	MAGNET- PROX SWITCH	2	2
16370	LATCH- SMALL, ACCESS DOOR	1	1
16381	TRAY WELD- FILTER	1	1
16391	HANDLE- LIFT, ELEMENT	1	1
16392	COVER- ELEMENT BOX, VF2	1	
16395	SPACER WELD- ELEM, BOTTOM, VF2	1	
16397	SCREW TR HD #10-32 X 1.00 SS	3	
16398	SCREW HX HD 1/4-20 X .625 SS	1	1
16399	SLEEVE- FIBERGLASS, VF2	1	
16400	PROBE- (S-G EPOX)	2	2
16402	KEEPER- FILTER TRAY	1	1
16406	FILTER- GREASE	1	1
16408	LOCKNUT- CONDUIT, 3/8"	1	1
16413	CONTACTOR- 50A RES, 120V FRNAS	1	1
16415	BUSHING- ELEMENT SWING	1	1
16416	PLATE- SPEC, 208V, VF2	1	
16419	CONTROLLER- VF2	1	
16421	MANUAL- INSTALL/OPER	1	1
16426	TRAY WELD- SPLASH, VF2	1	
16427	PLATFORM - BASKET LIFT, VF2	1	
16429	BASKET WELD- VF2	1	
16430	DOOR WELD- PRODUCT, VF2	1	
16433	DOOR WELD- ACCESS, VF2	1	
16437	PANEL WELD- TOP, VF2	1	
16445	PANEL WELD- ELEC CONT, VF2	1	
16447	SPRING ASSY- PRODUCT DOOR, VF2	2	
16449	SWITCH - PLUNGER	1	1
16450	SWITCH- PROX, RD THD'D	3	1
16451	SWITCH- PROX, ELEM UP	1	
16452	FITTING- BLKHD, FIRE SYS	1	1
16453	FITTING- MTG, LOWR NOZZLE	1	
16454	NIPPLE 3/8" NPT X CL SS	1	1
16455	NOZZLE- LOWER	1	1
16457	FITTING- BLKHD, CABL GUID	1	2
16459	SHELF WELD- FAN, VF2	1	
16460	BRACKET- MTG, PROS SW	2	1
16461	FAN- MAIN VENTILATION	1	1
16463	CONTROL- HI LIMIT, 450F	1	1
16468	ARM WELD- UPPER LIFT, VF2	1	
16470	ARM ASSY- BASKT LFT, LOWR	1	1
16471	BUSHING- FILT SUPP, SMALL, VF2	1	

Part Number	Description	Qty Used	
		VF2	VF3i
16472	BUSHING- FILT SUPP, LARGE	1	2
16473	GUIDE- FILTER CARTRIDGE, VF2	1	
16474	SPACER- FAN	4	4
16475	SCREW- PNHD #8-32 X 1.75"	4	4
16476	HOLDER- ELEM LIFT HANDLE	1	
16478	DAMPER WELD	1	1
16479	TUBE- FIRE AGENT TANK/TEE, VF2	1	
16480	TUBE- FIRE AGENT TEE/BOTM, VF2	1	
16481	TUBE- FIRE AGENT TEE/TOP, VF2	1	
16482	BRACKET- PULL STATION	1	1
16483	TUBE- PULL STATION	1	1
16484	CABLE GUIDE/THERMAL LINK	1	1
16485	ELBOW- 1/4"CC X 1/8"MPT X 90 (before	2	2
16487	PAWL- LATCH, SMALL	1	1
16491	WIRE ASSY- LOW VOLTAGE	1	1
16493	SCREW RD HD #4-40 X .250	4	4
16494	CABLE- PULL	1	1
16496	CLAMP- TC+B25	1	1
16499	BRACKET- MTG, ELEM SPACER, VF2	1	
16506	CONTROL- LOWER	1	1
16507	CONTROL- UPPER	1	1
16523	BRACKET WELD- RELAY, VF2/3	1	1
16532	RELAY- 120V		1
16533	WIRE HARNESS- VF3i		1
16534	WIRE HARNESS- HI VOLTAGE, VF3i		1
16535	LABEL- WIRE DIAGRAM, VF3i		1
16538	PANEL WELD- BASE, VF3i		1
16542	CONTROLLER- VF3i		1
16553	PANEL WELD- SIDE, VF3i		1
16556	PANEL WELD- INTERIOR, VF3i		1
16559	SHELF WELD- AIRDUCT, VF3i		1
16561	SHELF WELD- FAN, VF3i		1
16563	PANEL WELD- TOP, VF3i		1
16564	PANEL- ELEC CONTRL, VF3i		1
16566	SUPPORT- FILTER, LH, VF3i		1
16567	SUPPORT- FILTER, RH, VF3i		1
16568	GUIDE- FILTER CARTRIDGE, VF3i		1
16570	DOOR WELD- PRODUCT, VF3i		1
16571	SPRING- PRODUCT DOOR, VF3i		2
16574	DOOR WELD- ACCESS, VF3i		1
16575	TUBE- FIRE AGNT, TNK/TEE, VF3i		1
16576	TUBE- FIRE AGNT, TEE/TOP, VF3i		1
16577	TUBE- FIRE AGNT, TEE/BTM, VF3i		1
16578	FITTING- LWR NOZL, 60 DG, VF3i		1
16582	LIFT WELD, VF3i		1

Part Number	Description	Qty Used	
		VF2	VF3i
16583	COVER- ELEMENT BOX, VF3i		1
16585	PROBE- FORMED, VF3i		2
16588	PLATE- LIFT WEAR, VF3i		1
16589	HOLDER- SENSOR, VF3i		2
16590	SENSOR- PROXIMITY, VF3i		3
16591	CAP- SENSOR, VF3i		1
16592	LABEL- VF3		1
16594	BRKT WELD- MTG, NEUT BLK, VF3i		1
16596	BRACKT WELD- MTG, CNTCTR, VF3i		1
16597	TERMINAL- .187, INSUL #22-18		6
16603	NOZZLE ASSY- LOWER, VF3i		1
16604	PLATE- SPEC, VF3i, 120/208V		1
16641	COOKING WELL WELD- VF3i		1
16660	TRANSFORMER- SS CONTROL	1	1
16988	SWITCH- AIR FLOW, 2K9 (effective 10/09)	1	1
16990	RELAY- 12V, SPST, NO (effective 07/09)	3	3
16997	WIRE ASSY- ADPT, C1 RELAY RT (for 16990 on C1)	1	1
17007	KIT- AIR FLOW SW REPL (for 16988 on earlier units only)	1	1
18025	CONTROL- HI LIMIT, 450F,120VAC	1	1
18086	PLATE- SPEC, VF3i, 120/208V		1
18087	PLATE- SPEC, VF3i, 120/240V		1
18088	PLATE- SPEC, VF2, 120/208V	1	
18089	PLATE- SPEC, VF2, 120/240V	1	
18096	PROBE - FORMED, VF HI-LIMIT		1
18098	PROBE - FORMED, VF2 HI-LIMIT	1	
18107	CONTROL, TOUCHSCREEN, VF	1	1
18108	ASM, CHASSIS, W/ OVERLAY, VF2	1	
18109	ASM, CHASSIS, W/ OVERLAY, VF3		1
18110	PLATE- SPEC. UNIVERSAL, VF	1	1
70205	SCREW PH HD #8-32 X .375 SS	1	2

# SERVICE NOTES

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