Frymaster®

We Fit the Way You Fry™

YUM FPEL17

Oil Conserving Electric Fryer

Service and Parts Manual

This manual is updated as new information, and models are released. Visit our website for the latest manual.



8196686Y

Part Number: FRY_SP_8196685Y 11/2026

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NOTICE

IF, DURING THE WARRANTY PERIOD, THE CUSTOMER USES A PART FOR THIS FRYMASTER EQUIPMENT OTHER THAN AN UNMODIFIED NEW OR RECYCLED PART PURCHASED DIRECTLY FROM FRYMASTER, OR ANY OF ITS FACTORY AUTHORIZED SERVICERS, AND/OR THE PART BEING USED IS MODIFIED FROM ITS ORIGINAL CONFIGURATION, THIS WARRANTY WILL BE VOID. FURTHER, FRYMASTER AND ITS AFFILIATES WILL NOT BE LIABLE FOR ANY CLAIMS, DAMAGES OR EXPENSES INCURRED BY THE CUSTOMER WHICH ARISE DIRECTLY OR INDIRECTLY, IN WHOLE OR IN PART, DUE TO THE INSTALLATION OF ANY MODIFIED PART AND/OR PART RECEIVED FROM AN UNAUTHORIZED SERVICE CENTER.

⚠ DANGER

Prior to movement, testing, maintenance and any repair on your Frymaster fryer, disconnect all electrical power from the fryer.

ELECTRICAL POWER SPECIFICATIONS

Three (3) Phase Requirements								
			WIRE	MINIMUM SIZE		AMPS PER LEG		
kW	VOLTAGE	PHASE	SERVICE	AWG	mm^2	L1	L2	L3
17	208	3	3	6	16	48	48	48
17	240	3	3	6	16	41	41	41
17	480	3	3	6	16	21	21	21
17	220/380	3	4	6	16	26	26	26
17	240/415	3	4	6	16	24	24	24
17	230/400	3	4	6	16	25	25	25

Frymaster®

YUM FPEL17 SERIES ELECTRIC FRYERS
TABLE OF CONTENTS

CAUTIONARY STATEMENTS i
ELECTRICAL POWER SPECIFICATIONS ii
CHAPTER 1: Service Procedures
1.1 General 1-1
1.2 Replacing a Controller 1-1
1.3 Replacing Component Box Components 1-1
1.4 Replacing a High-Limit Thermostat 1-3
1.5 Replacing a Temperature Probe 1-3
1.6 Replacing a Heating Element 1-5
1.7 Replacing Contactor Box Components 1-6
1.8 Replacing a Frypot 1-7
1.9 Built-In Filtration System Service Procedures 1-9
1.9.1 Filtration System Problem Resolution 1-9
1.9.2 Replacing the Filter Motor, Filter Pump and Related Components 1-10
1.9.3 Replacing the Filter Transformer or Filter Relay 1-12
1.10 Basket Lift Service Procedures 1-12
1.11 Control Power Reset 1-14
1.12 K3000 Controller Service Procedures 1-15
1.12.1 K3000 Controller Troubleshooting 1-15
1.12.2 K3000 Controller Useful Codes 1-18
1.12.3 Service Required Errors 1-18
1.12.4 Error Log Codes 1-19
1.12.5 K3000 Menu Summary Tree 1-20
1.12.6 K3000 Controller Pin Positions and Harnesses 1-21
1.13 Loading and Updating Software 1-22
1.14 Interface Board Diagnostic Chart 1-23
1.15 Probe Resistance Chart 1-24
1.16 Wiring Diagrams 1-24
1.16.1 Series Data Network Flowchart 1-24

CHAPTER 2: Parts List
2.1 Accessories 2-1
2.2 Basket Lift Assembly and Associated Parts 2-2
2.2.1 Basket Lift Assembly and Associated Parts – 480V*(Modular)* 2-2
2.2.2 Basket Lift Assembly and Associated Parts – 200-250V*(Modular)* 2-4
2.3 Doors, Sides, Tilt Housings, Top Caps and Casters 2-6
2.4 Drain System Components 2-7
2.4.1 Drain Tube Sections and Associated Parts 2-7
2.4.2 Drain Valve Assembly 2-9
2.5 Electronics and Wiring Components 2-10
2.5.1 Component Boxes 2-10
2.5.2 Contactor Boxes 2-12
2.5.3 Fuse Boxes 2-13
2.5.4 Terminal Blocks 2-14
2.5.5 Heating Element Assemblies and Hardware 2-15
2.5.6 Element Tube Assemblies 2-17
2.5.7 Controller 2-17
2.5.8 Wiring 2-18
2.5.8.1 Contactor Box Wiring Assemblies 12-Pin Dual Vat 2-18
2.5.8.2 Contactor Box Wiring Assemblies 12-Pin Full Vat 2-18
2.5.8.3 Contactor Box Wiring Assemblies 6-Pin Left Element 2-19

2.5.8.4 Contactor Box Wiring Assemblies 9-Pin Right Element....2-19
2.5.8.5 Main Wiring Harnesses....2-20
2.5.8.6 Component Box, Filter Pump and Basket Lift Wiring Harnesses....2-21
2.5.8.7 Component Box to Filter Pump Harness....2-21
2.5.8.8 Basket Lift Harness....2-22
2.5.8.9 Interface Board to Controller Wiring Harness 15-Pin....2-22
2.5.8.10 Wiring Harnesses....2-22
2.6 Filtration System Components....2-23
2.7 Filter Pump, Motor and Associated Components....2-24
2.8 Frypot Assemblies and Associated Parts....2-25
2.9 Oil Return System Components....2-26
2.10 Bulk Oil Relay Box and Switch....2-27
2.11 Bulk Oil Plumbing....2-28
2.12 Bulk Oil Dispose Waste Valve....2-29
2.13 Wiring Connectors, Pin Terminals and Power Cords....2-30
2.14 Fasteners…....2-31

YUM FPEL17 SERIES ELECTRIC FRYERS
CHAPTER 1: SERVICE PROCEDURES

1.1 General

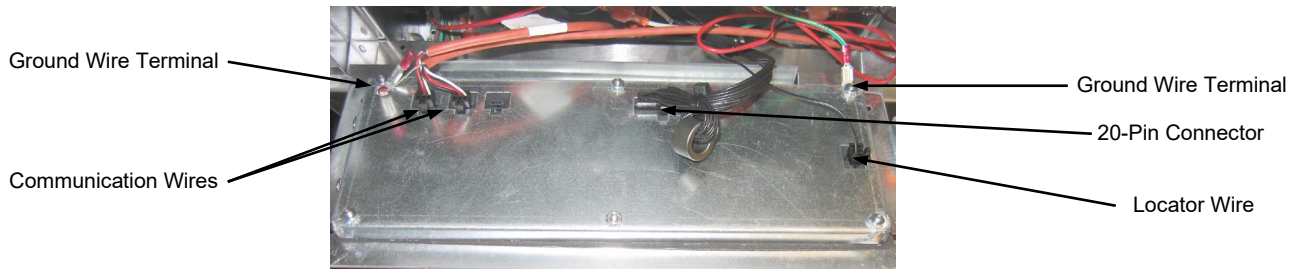
Before performing any maintenance on your Frymaster fryer, disconnect the fryer from the electrical power supply.

⚠ WARNING
To ensure the safe and efficient operation of the fryer and hood, the electrical plug must be fully engaged and locked in its pin and sleeve socket.

When electrical wires are disconnected, it is recommended that they be marked in such a way as to facilitate re-assembly.

1.2 Replacing the Controller

1. Disconnect the fryer from the electrical power supply.
2. Open the control panel by removing the screws on the bottom of the bezel. Carefully lower the bezel.
3. Remove the two screws from the upper corners of the controller. The controller is hinged at the bottom and will swing open from the top.
4. Unplug the wiring harnesses from the connectors on the back of the controller, marking their position for reassembly, and disconnect the grounding wires from the terminals. Remove the controller by lifting it from the hinged slots in the control panel frame.



5. Install the replacement controller. Reverse steps 1 thru 4.
6. Setup the controller following the instructions on page 4-3 in the Installation and Operation manual. Setup **MUST** be performed after replacement.
7. Once setup is complete on all replaced controllers, reset all control power following the instructions in section 1.11.7 on page 1-19 to readdress the new K3000 controller. Check software version and if necessary update the software. If a software update was necessary, follow the instructions to update the software in section 1.13 on page 1-26.

1.3 Replacing Component Box Components

1. Disconnect the fryer from the electrical power supply.

2. Open the control panel by removing the screws on the bottom of the bezel. Carefully lower the bezel.

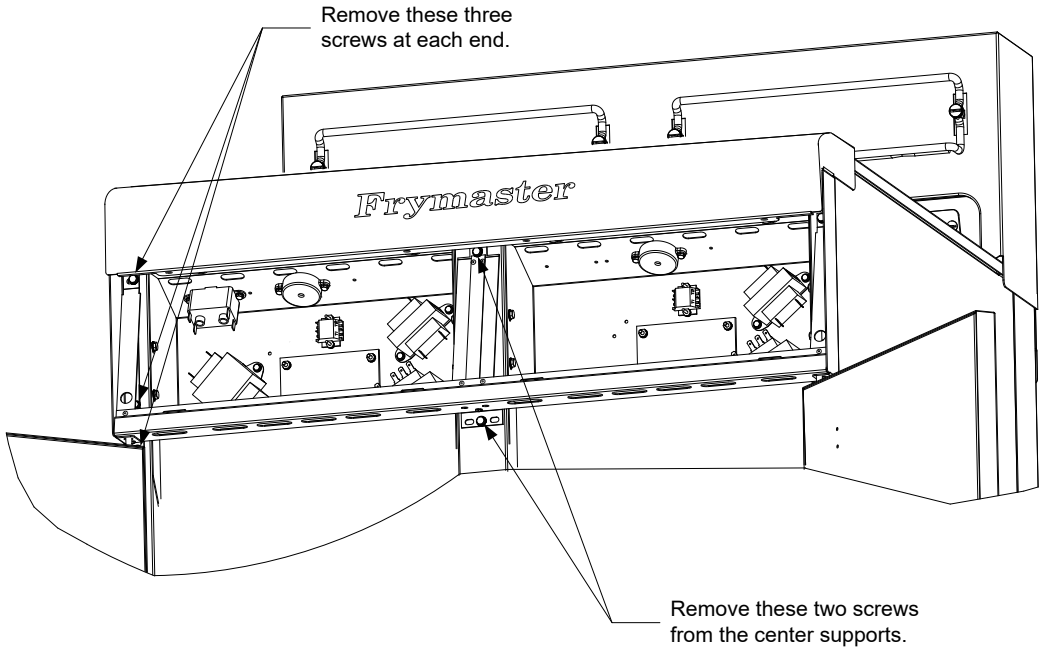
3. Remove the two screws from the upper corners of the control panel and allow the control panel to swing down.

4. Unplug the wiring harnesses and disconnect the grounding wires from the terminals on the back of the controller. Remove the control panel assembly by lifting it from the hinge slots in the control panel frame.

5. Disconnect the wiring from the component to be replaced, being sure to make a note of where each wire was connected.

6. Dismount the component to be replaced and install the new component, being sure that any required spacers, insulation, washers, etc. are in place.

   NOTE: If more room to work is required, the control panel frame assembly may be removed by removing the hex-head screws, which secure it to the fryer cabinet (see illustration below). If this option is chosen, all control panel assemblies must be removed per steps 1 and 2 above. The cover plate, on the lower front of the component box, may also be removed to allow additional access if desired. *Removing the component box itself from the fryer is not recommended due to the difficulty involved in disconnecting and reconnecting the oil-return valve rods, which pass through openings in the component box.*



Removing the Control Panel Frame and Top Cap Assembly

7. Reconnect the wiring disconnected in step 5, referring to your notes and the wiring diagrams on the fryer door to ensure that the connections are properly made. Also, verify that no other wiring was disconnected accidentally during the replacement process.

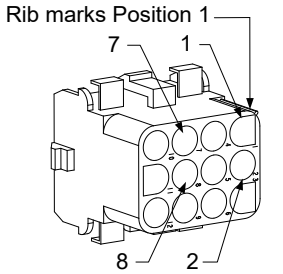
8. Reverse steps 1 through 4 to complete the replacement and return the fryer to service.

1.4 Replacing a High-Limit Thermostat

1. Drain the frypots into a Shortening Disposal Unit (SDU) or other appropriate **METAL** container.

> **⚠ DANGER**
> **DO NOT drain more than one full frypot into the SDU at one time.**

2. Disconnect the fryer from the electrical power supply and reposition it to gain access to the rear of the fryer.
3. Remove the screws from the bottom of the lower back panel attaching the contactor plug guards.
4. Remove each of the guards.
5. Remove the four screws from both the left and right sides of the lower back panel.
6. Locate the high-limit that is being replaced and follow the two-black wires to the 12-pin connector C-6. Note where the leads are connected prior to removing them from the connector. Unplug the 12-pin connector C-6 and using a pin-pusher push the pins of the high-limit out of the connector.
7. Carefully unscrew the high-limit thermostat to be replaced.
8. Apply Loctite™ PST 567 or equivalent sealant to the threads of the replacement and screw it securely into the frypot.
9. Insert the leads into the 12-pin connector C-6 (see illustration below). For full-vat units or the right half of a dual-vat unit the leads go into positions 1 and 2 of the connector. For the left half of a dual-vat unit, the leads go into positions 7 and 8. In either case, polarity does not matter.



High-Limit Lead Positions

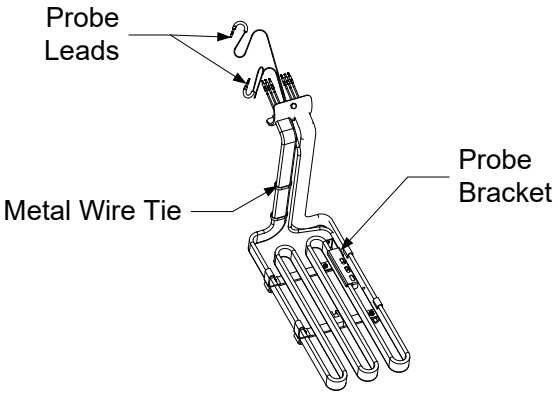
10. Reconnect the 12-pin connecting plug C-6. Use wire ties to secure any loose wires.
11. Reinstall the back panels, contactor plug guards, reposition the fryer under the exhaust hood, and reconnect it to the electrical power supply to return the fryer to service.

1.5 Replacing a Temperature Probe

1. Disconnect the fryer from the electrical power supply and reposition it to gain access to the rear of the fryer.
2. Remove each of the guards.
3. Remove the four screws from both sides of the lower back panel. Then remove the two screws on both the left and right sides of the back of the tilt housing. Lift the tilt housing straight up to remove from the fryer.

4. Locate the red and white wires of the temperature probe to be replaced. Note where the leads are connected prior to removing them from the connector. Unplug the 12-pin connector C-6 and using a pin-pusher push the pins of the temperature probe out of the connector.

5. Raise the element and remove the securing probe bracket and metal tie wraps that secure the probe to the element (see illustration below). Remove the ground clip on the probe shield.

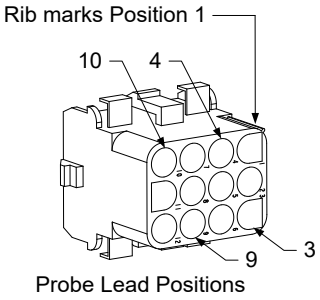


6. Gently pull on the temperature probe and grommet, pulling the wires up the rear of the fryer and through the element tube assembly.

7. Insert the replacement temperature probe (wires first) into the tube assembly ensuring that the grommet is in place. Secure the probe to the elements using the bracket which was removed in Step 5 and the metal tie wraps which were included in the replacement kit.

8. Route the probe wires out of the tube assembly following the element wires down the back of the fryer through the Heyco bushings to the 12-pin connector C-6. Secure the wires to the sheathing with wire ties. Attach the ground clip.

9. Insert the temperature probe leads into the 12-pin connector C-6 (see illustration below). For full-vat units or the right half of a dual-vat unit the red (or yellow) lead goes into position 3 and the white lead into position 4 of the connector. For the left half of a dual-vat unit, the red (or yellow) lead goes into position 9 and the white lead into position 10. **NOTE:** ***Right*** and ***left*** refer to the fryer as viewed from the front.



10. Secure any loose wires with wire ties, making sure there is no interference with the movement of the springs. Rotate the elements up and down, making sure movement is not restricted and that the wires are not pinched.

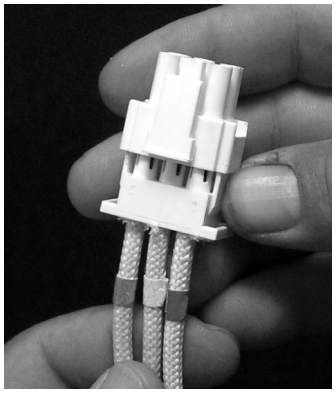
11. Reinstall the tilt housing, back panels and contactor plug guards. Reposition the fryer under the exhaust hood, and reconnect it to the electrical power supply to return the fryer to service.

1.6 Replacing a Heating Element

1. Perform steps 1-5 of section 1.5, *Replacing a Temperature Probe*.

2. Disconnect the wire harness containing the probe wiring. Using a pin pusher, disconnect the probe wires from the 12-pin connector C-6.

3. In the rear of the fryer, disconnect the 6-pin connector for the left element (as viewed from the front of the fryer) or the 9-pin connector for the right element from the contactor box. Press in on the tabs on each side of the connector while pulling outward on the free end to extend the connector and release the element leads (see photo below). Pull the leads out of the connector and out of the wire sleeving.

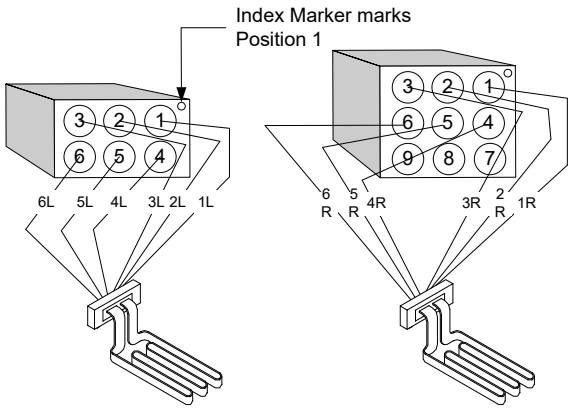


4. Raise the element to the full up position and support the elements.

5. Remove the hex head screws and nuts that secure the element to the tube assembly and pull the element out of the frypot. **NOTE:** The nuts inside the tube can be held and removed using the RE element tube nut spanner, PN# 2304028. Full-vat elements consist of two dual-vat elements clamped together. For full-vat units, remove the element clamps before removing the nuts and screws that secure the element to the tube assembly.

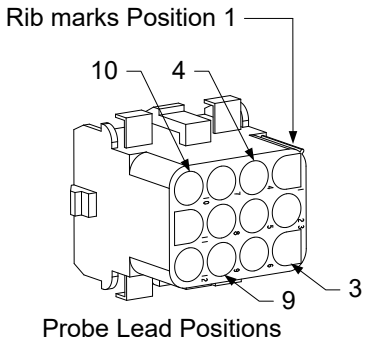
6. If applicable, recover the probe bracket and probe from the element being replaced and install them on the replacement element. Install the replacement element in the frypot, securing it with the nuts and screws removed in Step 5 to the tube assembly. Ensure the gasket is between the tube and element assembly.

7. Route the element leads through the element tube assembly and into the wire sleeving to prevent chafing. Ensure that the wire sleeving is routed back through the Heyco bushings, keeping it clear from the lift springs. Also ensure that the wire sleeving extends into the tube assembly, protecting the wires. Press the pins into the connector in accordance with the diagram on the following page, and then close the connector to lock the leads in place. **NOTE:** It is critical that the wires be routed through the sleeving to prevent chafing.



8. Reconnect the element connector ensuring that the latches lock.

9. Insert the temperature probe leads into the 12-pin wiring harness connector (see illustration below). For full-vat units or the right half of a dual-vat unit, the red lead goes into position 3 and the white into position 4. For the left half of a dual-vat unit, the red lead goes into position 9 and the white into position 10. **NOTE:** ***Right*** and ***left*** refer to the fryer as viewed from the front.



10. Reconnect the 12-pin connector C-6 of the wiring harness disconnected in Step 2.

11. Lower the element onto the basket rack.

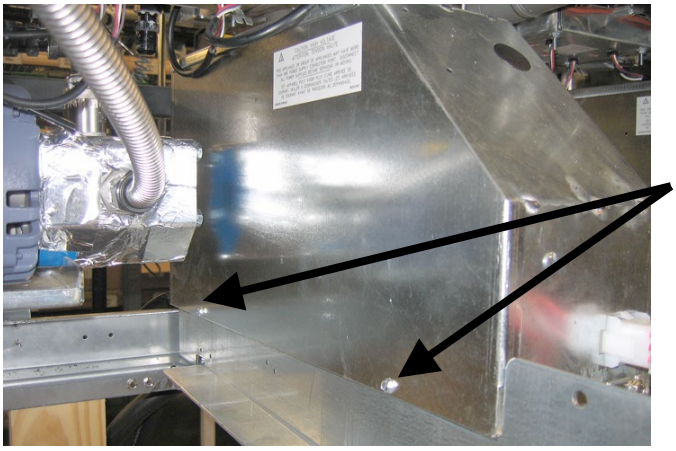
12. Reinstall the tilt housing, back panels and contactor plug guard. Reposition the fryer under the exhaust hood, and reconnect it to the electrical power supply.

1.7 Replacing Contactor Box Components

1. If replacing a contactor box component, remove the filter pan and lid from the unit.

2. Disconnect the fryer from the electrical power supply.

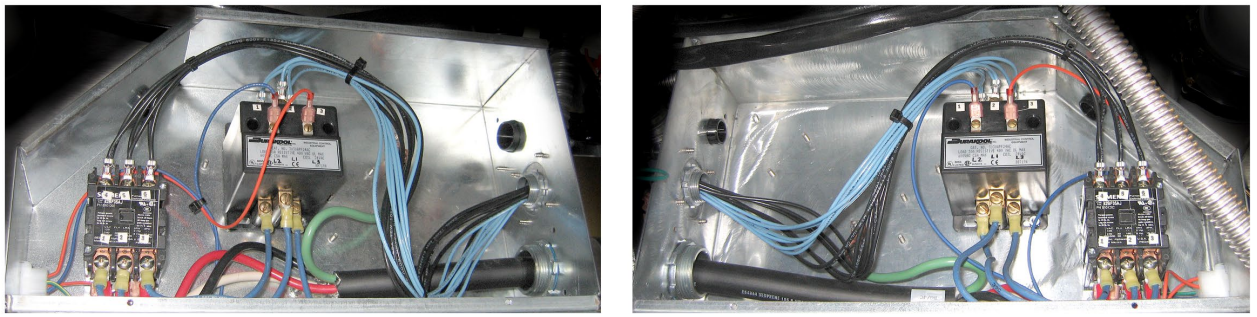
3. Remove the two screws securing the cover of the contactor box. The contactor boxes above the filter pan are accessed by sliding under the fryer. They are located to the left and right above the guide rails (see photo below). The contactor boxes for frypots not over the filter pan are accessed by opening the fryer door directly under the affected frypot (see photo on following page).



Remove two screws to access contactor box components above the filter pan.

4. The contactors and relays are held on by threaded pin studs so that only removal of the nut is required to replace the component.

5. After performing necessary service, reverse steps 1-4 to return the fryer to operation.



Left and right views of mechanical contactor box components.

1.8 Replacing a Frypot

1. Drain the frypot into the filter pan or, if replacing a frypot over the filter system, into a Shortening Disposal Unit (SDU) or other appropriate **METAL** container. If replacing a frypot over the filter system, remove the filter pan and lid from the unit.

⚠ DANGER
DO NOT drain more than one full frypot into the SDU at one time.

2. Disconnect the fryer from the electrical power supply and reposition it to gain access to both the front and rear.

3. Open the control panel by removing the two screws on the bottom of the bezel. Carefully lower the bezel.

4. Remove the two screws from the upper corners of the control panels and allow them to swing down (see photo on page 1-1).

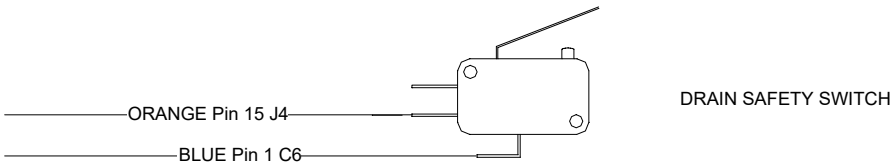
5. Unplug the wiring harnesses and ground wires from the backs of the controllers. Remove the controllers by lifting them from the hinge slots in the control panel frame.
6. Remove the screws from the bottom of the lower back panel attaching the contactor plug guards.
7. Remove each of the guards
8. Remove the tilt housing and back panels from the fryer. The tilt housing must be removed first in order to remove the upper back panel.
9. To remove the tilt housing, remove the hex head screws from the rear edge of the housing. The housing can be lifted straight up and off the fryer.
10. Remove the control panel by removing the screws on both sides.
11. Loosen the component boxes by removing the screws, which secure them in the cabinet.
12. Remove the top cap by removing the nuts at each end that secure it to the cabinetry.
13. Remove the hex head screw that secures the front of the frypot to the cabinet cross brace.
14. Remove the top-connecting strip that covers the joint with the adjacent frypot.
15. Unscrew the nut located on the front of each section of drain tube, and remove the tube assembly from the fryer.
16. Remove the covers from the drain safety switch(es) and disconnect the wiring at the switch(es).
17. Disconnect any auto top-off sensors if equipped and wiring.
18. At the rear of the fryer, unplug the 12-pin connector C-6 and, using a pin pusher, disconnect the high-limit thermostat leads.
19. Disconnect the oil return and top off flexline(s).
20. Raise the elements to the "up" position and disconnect the element springs.
21. Remove the machine screws and nuts that secure the element tube assembly to the frypot. Carefully lift the element assembly from the frypot and secure it to the cross brace on the rear of the fryer with wire ties or tape.
22. Carefully lift the frypot from the fryer and place it upside down on a stable work surface.
23. Recover the drain valve(s), oil return flexline connection fitting(s), auto top-off sensors if equipped and high-limit thermostat(s) from the frypot. Clean the threads and apply Loctite™ PST 567 or equivalent sealant to the threads of the recovered parts and install them in the replacement frypot.
24. Carefully lower the replacement frypot into the fryer. Reinstall the hex head screw removed in step 9 to attach the frypot to the fryer.
25. Position the element tube assembly in the frypot and reinstall the machine screws and nuts removed in step 21.

26. Reconnect the oil return and auto top off flexlines to the frypot, and replace aluminum tape, if necessary, to secure heater strips to the flexlines.

27. Insert the high-limit thermostat leads disconnected in step 18 (see illustration on page 1-3 for pin positions).

28. Reconnect the auto top-off sensors.

29. Reconnect the drain safety switch wiring to the switch(es) in accordance with the diagram below then reinstall the switch covers.



30. Reinstall the drain tube assembly.

31. Reinstall the top connecting strips, top cap, tilt housing, back panels and contactor plug guards.

32. Reinstall controllers in the control panel frame and reconnect the wiring harnesses and ground wires.

33. Reposition the fryer under the exhaust hood and reconnect it to the electrical power supply.

1.9 Built-in Filtration System Service Procedures

1.9.1 Filtration System Problem Resolution

One of the most common causes of filtration problems is placing the filter paper on the bottom of the filter pan rather than over the filter screen.

⚠ CAUTION

Ensure that filter screen is in place prior to filter paper placement and filter pump operation. Improper screen placement is the primary cause of filtration system malfunction.

Whenever the complaint is "the pump is running, but no oil is being filtered," check the installation of the filter paper, and ensure that the correct size is being used. While you are checking the filter paper, verify that the O-rings on the pick-up tube of the filter pan are in good condition. A missing or worn O-ring allows the pump to take in air and decrease its efficiency.

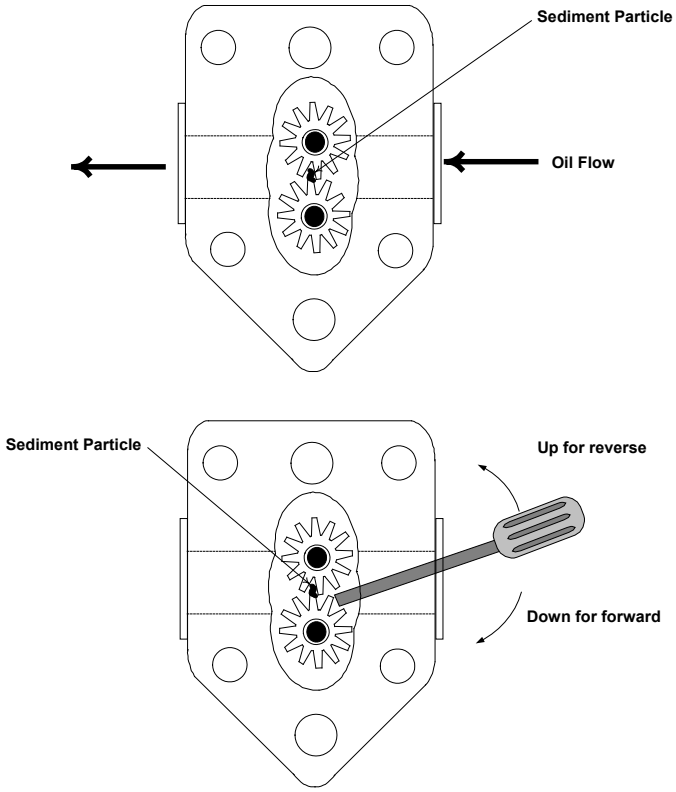
If the pump motor overheats, the thermal overload will trip and the motor will not start until it is reset. If the pump motor does not start, press the red reset switch (button) located on the rear of the motor.

If the pump starts after resetting the thermal overload switch, then something is causing the motor to overheat. A major cause of overheating is when several frypots are filtered sequentially, overheating the pump and motor. Allow the pump motor to cool at least 30 minutes before resuming operation. Pump overheating can be caused by:

- Solidified shortening in the pan or filter lines, or
- Attempting to filter unheated oil or shortening (cold oil and shortening are more viscous, overloading the pump motor and causing it to overheat).

If the motor runs but the pump does not return oil, there is a blockage in the pump. Incorrectly sized or installed paper will allow food particles and sediment to pass through the filter pan and into the pump. When sediment enters the pump, the gears bind, causing the motor to overload, again tripping the thermal overload. Shortening that has solidified in the pump will also cause it to seize, with the same result.

A pump seized by debris or hard shortening can usually be freed by manually moving the gears with a screwdriver or other instrument.



Disconnect power to the filter system, remove the input plumbing from the pump, and use a screwdriver to manually turn the gears.

- Turning the pump gears in reverse will release a hard particle.
- Turning the pump gears forward will push softer objects and solid shortening through the pump and allow free movement of the gears.

Incorrectly sized or installed paper/pads will also allow food particles and sediment to pass through and clog the suction tube on the bottom of the filter pan. Particles large enough to block the suction tube may indicate that the crumb tray is not being used. Pan blockage can also occur if shortening is left in the pan and allowed to solidify. Blockage removal can be accomplished by forcing the item out with an auger or drain snake. Compressed air or other pressurized gases should not be used to force out the blockage.

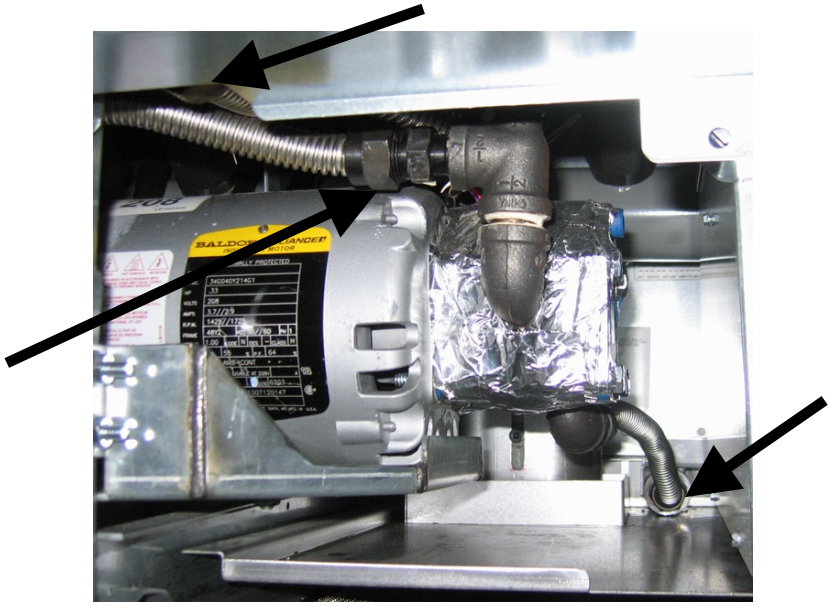
1.9.2 Replacing the Filter Motor, Filter Pump, and Related Components

1. Remove the filter pan and lid from the unit. Drain the frypots into a Shortening Disposal Unit (SDU) or other appropriate metal container.

⚠ DANGER
DO NOT drain more than one full frypot into the SDU at one time.

2. Disconnect the fryer from the electrical power supply and reposition it to gain access to both the front and rear.

3. Disconnect the flexline running to the oil-return manifold at the rear of the fryer as well as the pump suction flexline at the end of the filter pan connection (see photo below). On some models a third flexline may need to be disconnected.



Disconnect flexlines indicated by the arrows.

4. Loosen the nut and bolt that secures the bridge to the oil-return manifold.

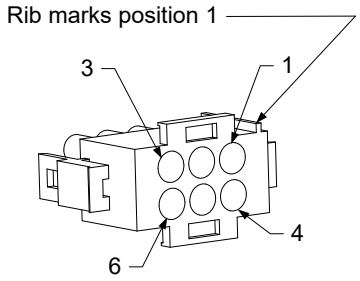
5. Remove the cover plate from the front of the motor and disconnect the motor wires.

6. Unplug the pump motor assembly 6-pin connector C-2.

7. Remove the two nuts and bolts which secure the front of the bridge to the cross brace and carefully slide the bridge rearward off the cross brace until its front end can be lowered to the floor. Undo the single nut holding it in place in back. Be careful not to let the rear of the bridge slip off the manifold at this point.

8. Get a good grip on the bridge, carefully pull it forward off the oil-return manifold, and lower the entire assembly to the floor. Once on the floor, pull the assembly out the front of the fryer.

9. When required service has been completed, reverse steps 3-8 to reinstall the bridge. **NOTE:** The black motor wires go on the top terminal, the white on the bottom. The red/black heater tape wires go into position 3 and the violet/white wires go into position 6 (see illustration below).



Heater Lead Positions

10. Reconnect the unit to the electrical power supply, and verify that the pump is functioning correctly (i.e., when a filter handle is placed in the ON position, the motor should start and there should be strong suction at the intake fitting and outflow at the rear flush port.)

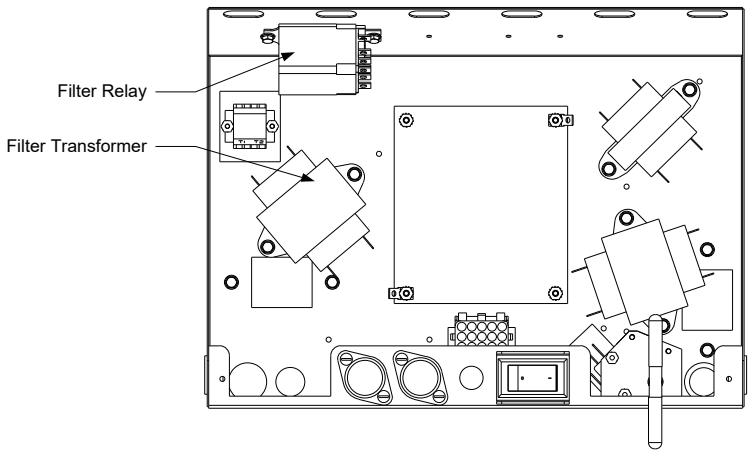
11. When proper operation has been verified, reinstall the back panels and the filter pan and lid.

12. Reposition the fryer under the exhaust hood and reconnect it to the electrical power supply, if necessary to return the fryer to service.

1.9.3 Replacing the Transformer or Filter Relay

Disconnect the fryer from the electrical power supply. Remove the left controller from the fryer to expose the interior of the left component box. The transformer and relay on the left are located as shown in the illustration below. **NOTE:** The right component box is identical to the left except that the transformer and relay on the left side are not present. Once replaced, reconnect the power.

When replacing a filter relay in the left component box, ensure the 24VAC relay (8070670) is used on 208-240V units and 8070012 is used on 120V units. This relay is the same relay used in the RE fryers.



1.10 Basket Lift Service Procedures

FPEL17 Series electric fryers may be equipped with automatic basket lifts. Basket lifts always come in pairs, although each operates independently.

A **modular basket lift** (illustrated on the following page) is a self-contained sub-assembly consisting of a pair of toothed rods, which support removable basket lift arms, a pair of reversible-drive gear motors, and four microswitches. The gear motors engage the teeth of the rods, moving them up or down depending upon the motors' direction of rotation. The microswitches at the upper and lower limits of movement stop the motors when the basket is in the full up or full down position.
Timing circuitry in the controller initiates and stops basket lift operation depending upon the variables programmed by the operator. When the product button is pressed, the timing circuitry activates a coil in the basket lift relay to supply power to the lower microswitch. The microswitches stop the motor at the lift's upper and lower travel limits and reverse the direction of current flow thus reversing the motor direction.

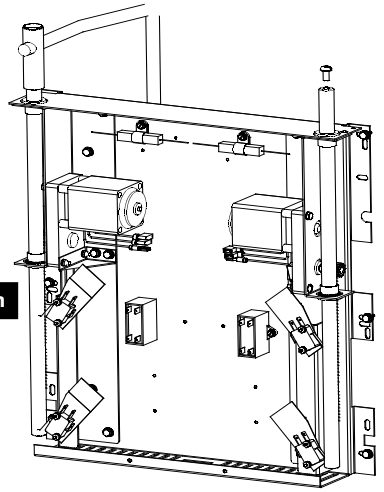
When the product button is pushed on the controller, current flows through a coil in the basket lift relay, causing the lower circuit to be activated. The basket lift lowers, closing the normally open upper-micro-switch. When the downward-moving rod opens the lower normally closed microswitch, the power to the motor ceases to flow. When the controller times out, the current to the relay coil is

cut, allowing the upper circuit to be activated. The basket lift rises and re-closes the lower microswitch. When the basket lift rod clears the upper microswitch, the microswitch reopens, power to the circuit is cut, and the motor stops. Pushing the product button restarts the cycle.

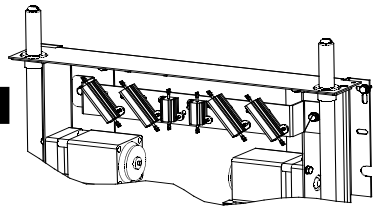
Problems with the basket lift can be grouped into three categories:

- Binding/jamming problems
- Motor and gear problems
- Electronic problems

100-120V Configuration



208-250V Configuration



Binding and Jamming Issues

Noisy, jerky or erratic movement of the lifts is usually due to lack of lubrication of the rods and their bushings. Apply a light coat of Lubriplate® or similar lightweight white grease to the rod and bushings to correct the problem.

With the modular basket lift, another possible cause of binding is improper positioning of the motor, which prevents the gear from correctly engaging the teeth in the rod. To correct the problem, loosen the screws that hold the motor in place and move it forward or backward until the rod has just enough slack to be rotated slightly.

Motor and Gear Issues

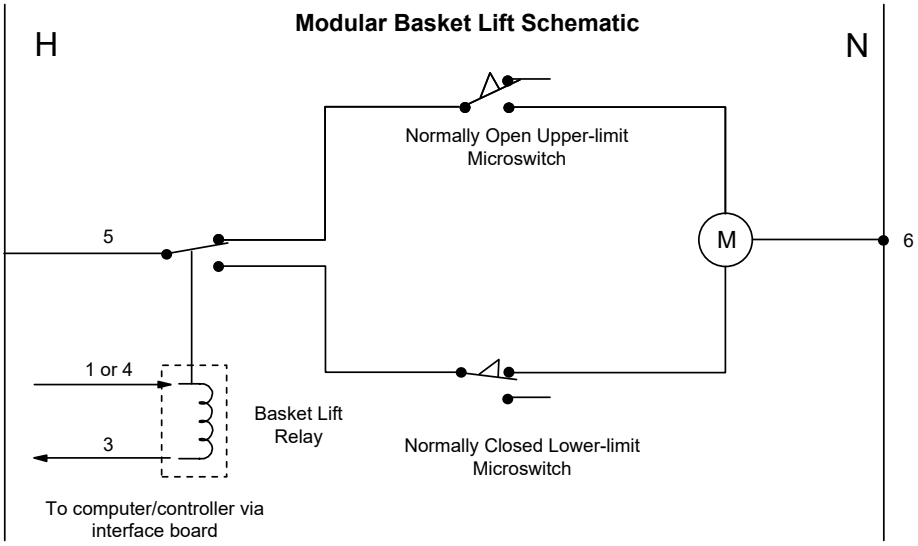
With the modular basket lift, the most likely problem to be encountered in this category is erratic motion of the lift due to a worn drive gear. Failure to keep the lift rod and bushings properly lubricated will cause unnecessary wear of the gear. The problem is corrected by replacing the worn gear.

If the lift cycles correctly but fails to remain in the up position (i.e., goes up, but then slowly settles back down into the frypot), the problem is a failed motor brake. A failed motor brake cannot be repaired and requires replacement of the motor itself.

If power is reaching the motor but the motor fails to run, the motor is burned out and must be replaced.

Electronic Issues

Within this category are problems associated with the relays, microswitches, capacitors, resistors, interface board, wiring, and controls. The most common problem in this category is a lift that continuously travels up and down. This is usually caused by a microswitch that is out of adjustment. Troubleshooting the electronics of a modular basket lift is simply a process of verifying current flow through the individual components up to and including the motor. Using a multimeter set to the 250 VAC range, check the connections on both sides of the component for the presence of the applied line voltage. The schematic below and the wiring diagrams in 8197224Y can identify the components and wiring connection points.



1.11 Control Power Reset Switch

The control power reset switch is a momentary rocker switch located behind the control box, (see Figures 6 and 7) above the JIB, which resets all power to all the controllers and boards in the fryer. It is necessary to reset all power after replacing any controller or board. Press and hold the switch for at least ten seconds when resetting the control power to ensure power has sufficiently drained from boards.

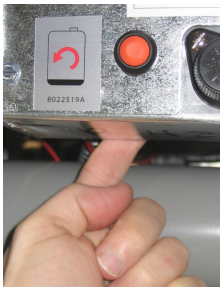


Figure 6

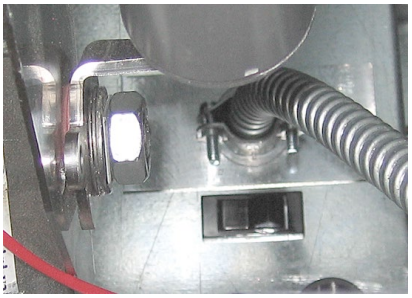


Figure 7 (Rear view of Control Box)

1.12 K3000 Controller Service Procedures

1.12.1 K3000 Controller Troubleshooting

Problem	Probable Causes	Corrective Action
No Display on Controller.	A. Controller not turned on. B. No power to the fryer. C. Power switch turned off. D. Loose fuse holder. E. Controller has failed. F. Damaged controller wiring harness. G. Power supply component or interface board has failed.	A. Press the ON/OFF switch to turn the controller on. B. Verify controller power cord is plugged in and that circuit breaker is not tripped. C. Some fryers have a rocker power switch inside the cabinet below the controller. Ensure the switch is turned on. D. Ensure fuse holder is screwed in properly. E. Swap the controller with a controller known to be good. If controller functions, replace the controller. F. Swap with a harness known to be good. If controller functions, replace the harness. G. If any component in the power supply system (including the transformer and interface board) fail, power will not be supplied to the controller and it will not function.
K3000 display shows FILTER BUSY.	A. Another filtration cycle is still in process.	A. Wait until the previous filtration cycle ends to start another filtration cycle. This may take up to one minute. If filter busy is still displayed with no activity, remove and restore **ALL** power to the fryer.
K3000 display shows RECOVERY FAULT.	Recovery time exceeded maximum time limit for two or more cycles.	Silence the alarm by pressing the ▲ button. Check that fryer is heating properly. Maximum recovery for an electric fryer is 1:40.
K3000 display is in wrong temperature scale (Fahrenheit or Celsius).	Incorrect display option programmed.	Fryers using the K3000 controller can toggle between F° to C° by pressing the ✓ button until Main Menu changing to Product setup is displayed. Press ▶ to scroll to Tech Mode and press ✓. Enter 1658. Press the scan button. The controller displays OFF. Turn the controller on to check temperature. If the desired scale is not displayed, repeat. Fryers using the CM3.5 should refer to the separate Fryer Controllers User's Manual.

Problem	Probable Causes	Corrective Action
K3000 displays SERVICE REQUIRED followed by the error .	An error has occurred.	Press YES to silence alarm. The error is displayed three times. See list of issues in section 1.12.4. Fix issue. The controller displays SYSTEM ERROR FIXED? YES/NO. Press YES. Pressing NO will allow the fryer to cook but the error will be redisplayed every 15 minutes.
Controller displays CHANGE FILTER PAPER?	Daily filter paper change prompt has occurred.	Press ▲ (YES), follow prompts and change the filter paper.
K3000 display shows HOT-HI-1.	Frypot temperature is more than 410ºF (210ºC) or, in CE countries, 395ºF (202ºC).	This in an indication of a malfunction in the temperature control circuitry, including a failure of the high-limit thermostat.
K3000 display shows HI-LIMIT.	Controller in high-limit test mode.	This is displayed only during a test of the high-limit circuit and indicates that the high-limit has opened properly.
K3000 display shows temperature alternating with MLT-CYCL.	Frypot temperature is below 180°F (82°C).	This display is normal when the fryer is first turned on while in the melt cycle mode. To bypass the melt cycle press and hold the EXIT COOL button for three seconds. EXIT MELT alternating with YES/NO is displayed. Press the YES button.
K3000 display shows LOW TEMP alternating with temperature.	Frypot temperature is between 180°F (82°C) and 315°F (157°C).	This display is normal when the fryer is heating and out of melt cycle until the temperature reaches ±2° of setpoint.
Controller displays LOW TEMP.	Frypot temperature has dropped more than 40°F (17°C) for K3000 controllers below setpoint in idle mode or 45°F (25°C) in cook mode.	This display is normal for a short while if a large batch of frozen product is added to the frypot or if the fryer is not heating properly.
K3000 display shows LOW TEMP, heating indicator cycles on and off normally but fryer does not heat.	A. Failed controller. B. Damaged controller wiring harness.	A. Replace controller. B. Replace controller wiring harness.
K3000 display shows TEMP PROBE FAILURE.	Problem with the temperature measuring circuitry including the probe.	This indicates a problem within the temperature probe circuitry. Check resistance of probe, if faulty replace probe.
K3000 display shows PROBE FAILURE with alarm sounding.	Damaged controller wiring harness or connector.	Swap the controller wiring harness with one known to be good. If problem is corrected replace harness.
Controller will not go into program mode or some buttons do not actuate.	Failed controller.	Replace controller

Problem	Probable Causes	Corrective Action
K3000 display shows HI 2 BAD.	Controller in high-limit test mode.	This is displayed only during a test of the high-limit circuit and indicates that the high-limit has failed.
K3000 display shows HEATING FAILURE with alarm sounding. Heating indicator is on, but fryer is not heating.	Failed controller, failed interface board or open high limit thermostat.	Check high limit thermostat, interface board and controller.
K3000 display shows HEATING FAILURE and alarm sounds, but fryer operates normally (false alarm).	Failed controller.	Replace controller.
K3000 display shows CLOSE DRAIN VALVE.	Drain valve is open or switch is out of adjustment or failed.	Ensure all drain valves are completely closed and that microswitches are adjusted and working.
K3000 display shows software for only K3000 or ATO board.	Loose or damaged harness	Check that all harnesses between K3000's and ATO are secure and no pins are pushed out or broken.
K3000 display shows ERROR RM SDCRD	Defective SD Card	Replace card with another card.
K3000 display shows CALL TECH	Typically shown during software update. Also may be that parameter data has been corrupted or lost.	Press the FILTER button to bypass and continue.

1.12.2 K3000 Controller Useful Codes

To enter any of the following codes: Press and hold the ✓ button until MAIN MENU changing to PRODUCT SETUP is displayed. Press ▶ to scroll to TECH MODE and press ✓. TECH MODE ENTER CODE is displayed. Enter a code number below:

- **Change Fryer Type, CE/Non-CE, Fresh Oil Setup, Waste Oil Setup and Energy Type – Enter 1628.**

- **Clear E-Log, Clear Passwords, Change Lane Count, Adjust Max Cook Temp and Perform High Limit Test, – Enter 1650.**

- **Reset Factory Menu** - Enter 3322. The controller display flashes and quickly counts from 1-40 and switches to OFF. (**NOTE**: This will delete any hand-entered menu items).

- **Reset BADCRC Message** - Disconnect board locator plug (J3). Reinsert plug. Enter 9988. Controller display switches to OFF. Remove and then restore power to the controller using the 20-pin plug.

- **Change from F° to C°** - Enter 1658. The controller displays OFF. Turn the controller on and check temperature to see the temperature scale. If the desired scale is not displayed, repeat.

- **Reset RECOVERY FAULT CALL SERVICE – Enter 0042.**

PASSWORDS

Product Setup Mode: Press and hold the ✓ button until MAIN MENU changing to PRODUCT SETUP is displayed. Press the ✓ button. ENTER CODE is displayed. Enter 1724.

Vat Setup Mode: Press and hold the ✓ button. MAIN MENU changing to PRODUCT SETUP is displayed. Press ▶ to scroll to VAT SETUP and press ✓. ENTER CODE is displayed. Enter 3228.

Tech Mode: Press and hold the ✓ button until MAIN MENU changing to PRODUCT SETUP is displayed. Press ▶ to scroll to TECH MODE and press ✓. TECH MODE is displayed. Press the ✓ button. ENTER CODE is displayed. Enter 1650 or a code from above.

1.12.3 Service Required Errors

A SERVICE REQUIRED error alternating with YES displays on the controller. After YES is pressed the alarm is silenced. The controller displays an error message from the list below three times with the location of the error. Then the controller displays SYSTEM ERROR FIXED? YES/NO. Press YES if error is fixed. If NO is chosen the system returns to cook mode for 15 minutes then redisplays error until issue is fixed.

1.12.4 Error Log Codes

Code	ERROR MESSAGE	EXPLANATION
E03	ERROR TEMP PROBE FAILURE	TEMP Probe reading out of range
E04	HI 2 BAD	High limit reading is out of range.
E05	HOT HI 1	High limit temperature is past more than 410°F (210°C), or in CE countries, 395°F (202°C)
E06	HEATING FAILURE	A component has failed in the high limit circuit such as controller, interface board, contactor or open-high limit.
E20	INVALID CODE LOCATION	SD card removed during update
E21	FILTER PAPER PROCEDURE ERROR (Change Filter Paper)	25-hour or customer-set timer has expired.
E22	OIL IN PAN ERROR	Oil may be present in the filter pan.
E25	RECOVERY FAULT	Recovery time exceeded maximum time limit. Recovery time should not exceed 1:40 for electric.
E27	LOW TEMP ALARM	Oil temperature has dropped 30°F (17°C) lower than setpoint in idle mode or 45°F (25°C) in cook mode. (This message may appear if a product is dropped and the start cook button is not pressed immediately or if too large of cook loads are dropped.)

1.12.5 K3000 Menu Summary Tree

Reflected below are the major programming sections in the K3000 and the order in which submenu headings will be found under the sections in the K3000 Operation Manual (8196647).

Adding New Product Menu Items

See section 1.7-1.10

- Filter Menu 1.5
  - [With computer ON, press and hold FILTER button]
  - Filter
  - Clean
  - Dispose
  - Drain to Pan
  - Fill Vat From Pan
- Info Mode 1.3
  - [With computer OFF, press and hold ✓(check) button]
  - Oil Stats
  - Filter Stats
  - Review Usage
  - Last Load
- Setup and Tech Modes
  - [With computer OFF, press and hold ✓(check) button 10 seconds, displays Product Setup]
  - Product Setup 1.4
    - [Enter 1724]
    - Select Product ..... 1.9 - 1.10
      - Long Name
      - Short Name
      - Cooking Mode
      - 1 Time
      - 1 Tempr
      - 1 Flex
      - 1 Pressure Solenoid
      - 2 Time
      - 1 Alarm Time
      - 1 Alarm Name
      - 1 Alarm Mode
      - 1 Alarm Tone
      - 2 Alarm Time
      - After Cooking Setpoint
      - Filter Lockout
      - Quantity
      - Head Count
      - Instant On [Only adjustable by Entering 3228]
  - Vat Setup
    - [Enter 3228]
    - System 1.4
      - Language
      - 2nd Language
      - Locale (CE or Non-CE)
      - Energy
      - Type (Vat)
      - System Volume (Level)
      - Tempr Format (F or C)
      - Exit Melt Tempr
      - Setback Tempr
      - Fresh Oil
      - Waste
      - Recovery Alarm
    - Time/Date 1.4
    - DST (Daylight Savings Time) Setup 1.4
    - Filter 1.4
      - Global Filter Count
      - EOD Filter Time
      - 1 Polish Timer
      - 1 Polish Time
      - 1 Polish Duration
      - 1 Polish Delay Time
      - 1 Polish Start Tempr
      - 2 Polish Timer
      - 2 Polish Time
      - 2 Polish Duration
      - 2 Polish Delay Time
      - 2 Polish Start Tempr
    - E-Log Log of last 10 error codes 1.4
    - Change Password 1.4
    - Edit Alarm Names 1.4
  - Tech Mode
    - [Enter 1650]
    - Clear E-Log
    - Clear Passwords
    - Lane Count
    - Hi-Limit Test

1.12.6 K3000 Controller Pin Positions and Harnesses

Connector	From/To	Harness PN	Pin #	Function	Voltage	Wire Color
J2	Interface Board to Controller	8074199 SMT Controller to Interface Board Harness	1	12VAC In	12VAC	Black
			2	Ground		
			3	12VAC In	12VAC	
			4	FV Heat Demand		
			5	V Relay	12VDC	
			6	DV Heat Demand		
			7	R/H B/L	12VDC	
			8	Analog Ground		
			9	L/H B/L	12VDC	
			10	ALARM		
			11	Sound Device	5VDC	
			12	ALARM		
			13	FV Probe		
			14	Common Probes		
			15	DV Probe		
			16			
			17			
			18			
			19			
			20			
J3	Locator Harness Interface Board Ground to Controller	1080485	1	Vat #1		Black
		1080486	2	Vat #2		
		1080487	3	Vat #3		
		1080488	4	Vat #4		
		1080489	5	Vat #5		
			6			
J4	Drain Switch	8075159 (FV) 8075160 (DV)	1	FV Drain		Black
			2	FV Drain		Red
			3	DV Drain		Black
			4	DV Drain		Red
J6	Previous K3000 J7 or Network Resistor	8074546 Controller Communication Harness	1	Ground		Black
			2	CAN Lo		Red
			3	CAN Hi		White
			4			
			5			
			6			
J7	Next K3000 J6	8074646 Controller Communication Harness	1	Ground		Black
			2	CAN Lo		Red
			3	CAN Hi		White
			4			
			5			
			6			

1.13 Loading and Updating Software Procedures

Updating the software takes approximately 30 minutes. The software only needs to be loaded in **ONE** controller and it will update **all** the controllers and boards in the system. Press the TEMP button to check current K3000 software version. Remove the bezel by removing the screws under the bottom of the bezel. Remove the two screws securing the controller allow it to swing down. Remove the two screws on the left side cover plate of the far left K3000 controller.

To update the software, follow these steps carefully:

Left Display	Right Display	Action
OFF	OFF	With the controller folded down, insert the SD card, with the contacts facing down and the notch on the bottom right (see Figure 8 and 9), into the slot on the left side of the K3000 controller. **ENSURE THE CARD IS FULLY INSERTED INTO THE SD CARD SLOT.**
UPGRADE IN PROGRESS	WAIT	None required.
CC UPDATING	PERCENTAGE COMPLETE	None required.
UPGRADE IN PROGRESS	WAIT	None required.
CALL	TECH	If this message is displayed, press the FILTER button and the software load will continue.
IF_COOK HEX.	PERCENTAGE COMPLETE	None required.
REMOVE SD CARD	100	Remove the SD card using the fingernail slot on the top of the SD card.
CYCLE POWER.	BLANK	Cycle the control power using the reset switch behind the far right control box. **ENSURE THE SWITCH IS HELD FOR 10 SECONDS. WAIT ANOTHER 20 SECONDS AFTER THE RESET BEFORE CONTINUING.**
OFF	BOOT	The left controller displays OFF. The remaining controllers display a flashing BOOT while the program is transferred.
LOCALE	NON-CE	Setup the locale, type of fryer, etc. Exit when finished. (Note it may be necessary to enter 7628 in Tech Mode to change fryer type from Legacy to OCF30. Ensure if a JIB is present that Fresh Oil is set for JIB.
OFF	OFF	Cycle the control power using the hidden reset switch under the left control box again. **ENSURE THE SWITCH IS HELD FOR 10 SECONDS WAIT ANOTHER 20 SECONDS AFTER THE RESET BEFORE CONTINUING.**
OFF	OFF	**With the controller displaying OFF, VERIFY software update by pressing the TEMP button to check updated K3000 version on each controller. IF ANY BOARDS DID NOT UPDATE, REPEAT THE PROCESS BY INSERTING THE SD CARD AGAIN.**
OFF	OFF	Once the software has been updated and the versions are correct, replace the cover and screws covering the SD card slot. Replace the screws attaching the controller and replace the bezel and screws.

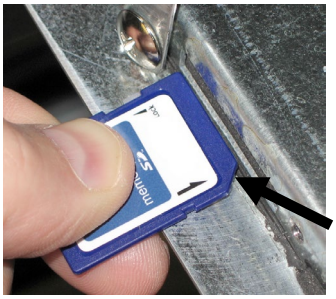


Figure 8

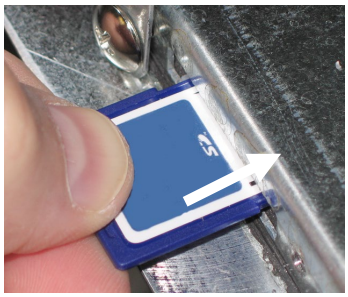
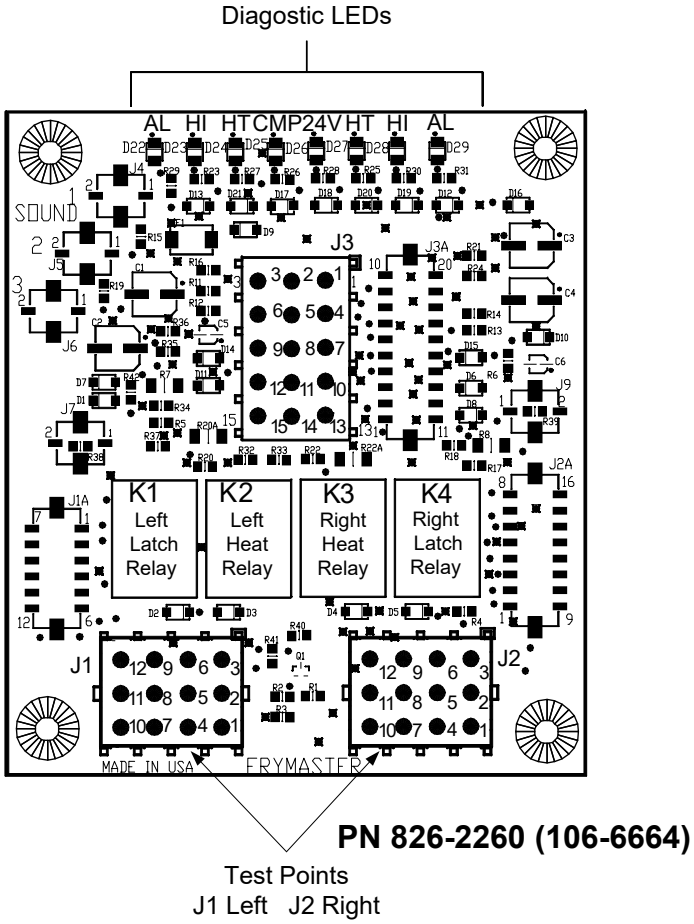


Figure 9

1.14 Interface Board Diagnostic Chart

The following diagram and charts provide ten quick system checks that can be performed using only a multimeter.



Diagnostic LED Legend

CMP	**indicates power from 12V transformer**
24	**indicates power from 24V transformer**
HI	**(RH) indicates output (closed) from right latch relay**
HI	**(LH) indicates output (closed) from left latch relay**
HT	**(RH) indicates output from right heat relay**
HT	**(LH) indicates output from left heat relay**
AL	**(RH) indicates output (open) from right latch relay**
AL	**(LH) indicates output (open) from left latch relay**

NOTE – Pin 1 is located in the bottom right corner of Both J1 and J2. These test points are ONLY for the FPEL17 Series boards with J1 and J2 plugs on the front of the board.

Meter Setting	Test	Pin	Pin	Results
12 VAC Power	50 VAC Scale	3 of J2	1 of J2	12-16 VAC
24 VAC Power	50 VAC Scale	2 of J2	Chassis	24-30 VAC
*Probe Resistance (RH)	R X 1000 OHMS	11 of J2	10 of J2	See Chart
*Probe Resistance (LH)	R X 1000 OHMS	1 of J1	2 of J1	See Chart
High-Limit Continuity (RH)	R X 1 OHMS	9 of J2	6 of J2	0 - OHMS
High-Limit Continuity (LH)	R X 1 OHMS	6 of J1	9 of J1	0 - OHMS
Latch Contactor Coil (RH)	R X 1 OHMS	8 of J2	Chassis	3-10 OHMS
Latch Contactor Coil (LH)	R X 1 OHMS	5 of J1	Chassis	3-10 OHMS
Heat Contactor Coil (RH)	R X 1 OHMS	7 of J2	Chassis	11-15 OHMS
Heat Contactor Coil (LH)	R X 1 OHMS	4 of J1	Chassis	11-15 OHMS

*** Disconnect 15-Pin harness from the controller/controller before testing the probe circuit.**

1.15 Probe Resistance Chart

Probe Resistance Chart

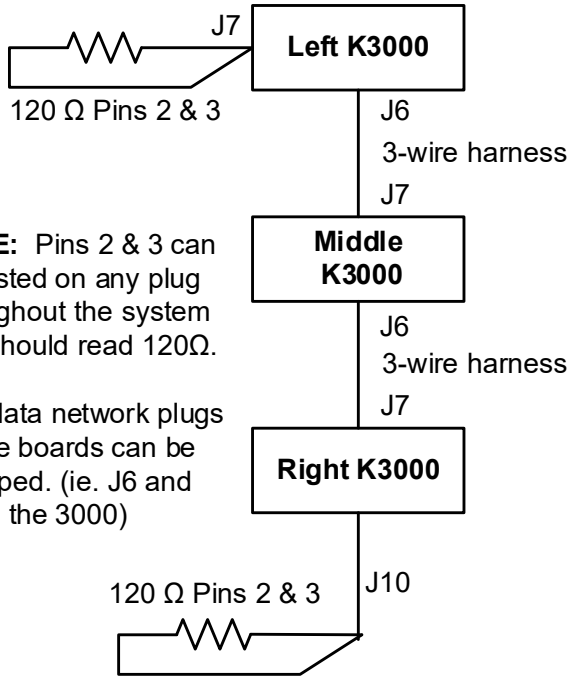
For use with fryers manufactured with Minco Thermistor probes only.

F	OHMS	C	F	OHMS	C	F	OHMS	C	F	OHMS	C	F	OHMS	C
60	1059	16	130	1204	54	200	1350	93	270	1493	132	340	1634	171
65	1070	18	135	1216	57	205	1361	96	275	1503	135	345	1644	174
70	1080	21	140	1226	60	210	1371	99	280	1514	138	350	1654	177
75	1091	24	145	1237	63	215	1381	102	285	1524	141	355	1664	179
80	1101	27	150	1247	66	220	1391	104	290	1534	143	360	1674	182
85	1112	29	155	1258	68	225	1402	107	295	1544	146	365	1684	185
90	1122	32	160	1268	71	230	1412	110	300	1554	149	370	1694	188
95	1133	35	165	1278	74	235	1422	113	305	1564	152	375	1704	191
100	1143	38	170	1289	77	240	1432	116	310	1574	154	380	1714	193
105	1154	41	175	1299	79	245	1442	118	315	1584	157	385	1724	196
110	1164	43	180	1309	82	250	1453	121	320	1594	160	390	1734	199
115	1174	46	185	1320	85	255	1463	124	325	1604	163	395	1744	202
120	1185	49	190	1330	88	260	1473	127	330	1614	166	400	1754	204
125	1195	52	195	1340	91	265	1483	129	335	1624	168	405	1764	207

1.16 Wiring Diagrams

See 8197224Y FPEL17 for complete FPEL17 Electric wiring diagrams.

1.16.1 FPEL17 Series Data Network Flowchart



NOTE: Pins 2 & 3 can be tested on any plug throughout the system and should read 120Ω.

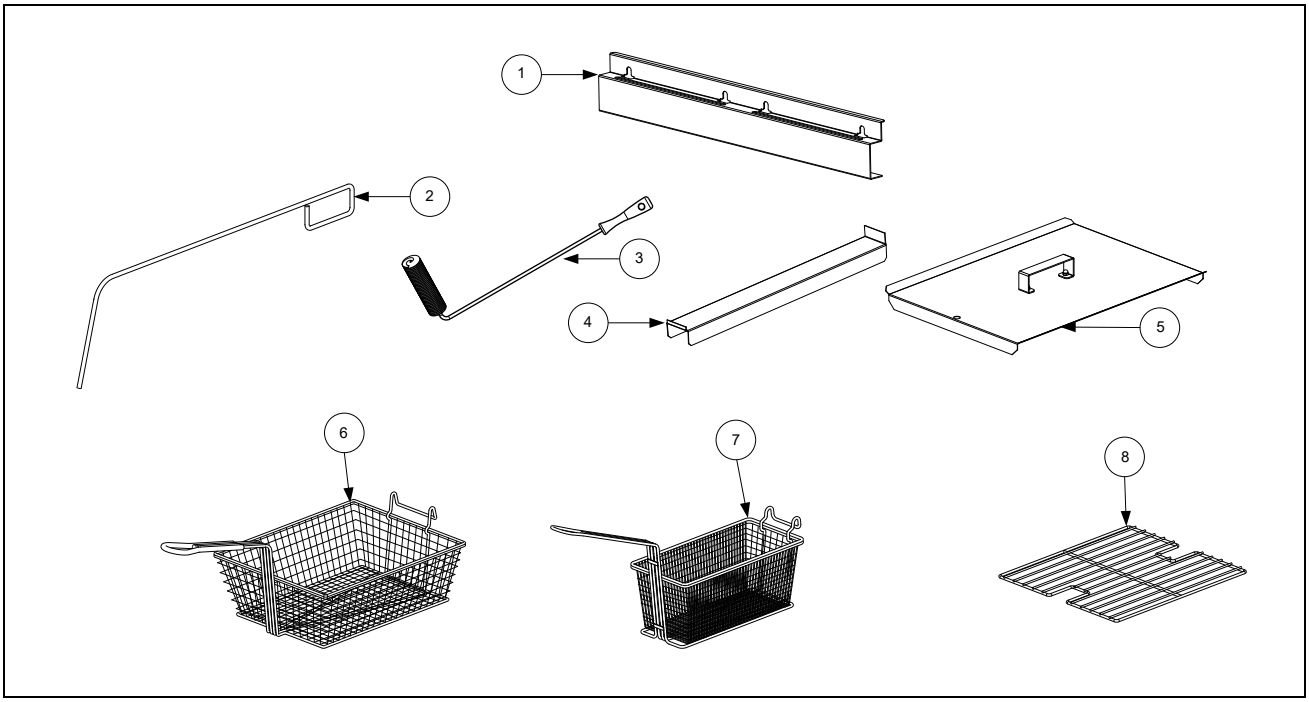
The data network plugs on the boards can be swapped. (ie. J6 and J7 on the 3000)

Harness	Pin #	Function	Voltage	Wire Color
3-wire harness	1	Ground		Black
	2	CAN Lo		Red
	3	CAN Hi		White
	4	NOT USED		
	5			
	6			

Turn each computer to OFF. Press the TEMP button on each computer and verify ALL software versions are present (K3000). A missing version may indicate an open connection.

YUM FPEL17 SERIES ELECTRIC FRYERS
CHAPTER 2: PARTS LIST

2.1 Accessories

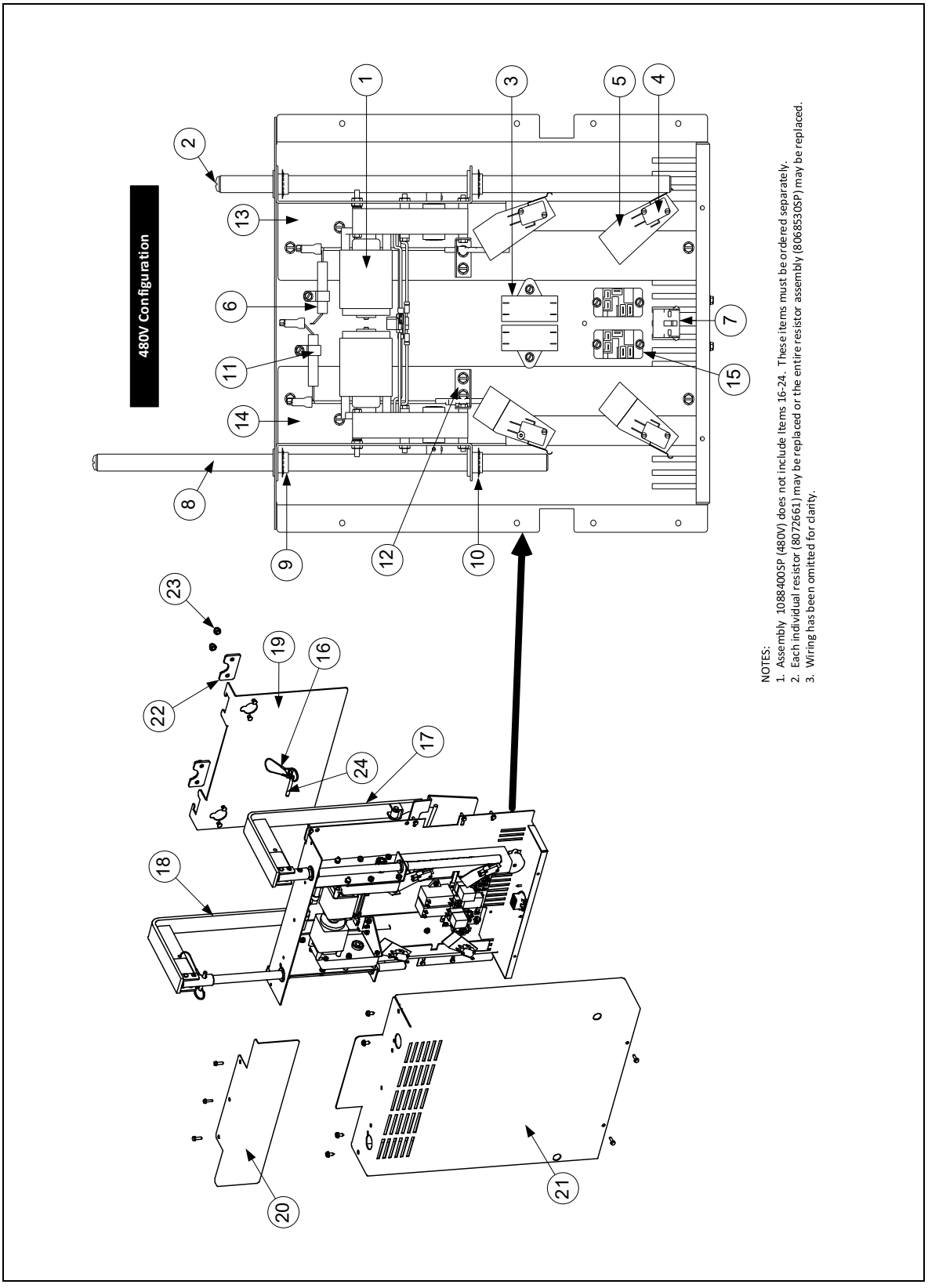


ITEM	PART #	COMPONENT
1	2308165	Hanger, Basket Single
	2307495	Hanger, Basket Two Station
	2307497	Hanger, Basket Three Station
	2307495 (2)	Hanger, Basket Four Station
2	8030197	Cleanout Rod, 27-inch
3	8030429	Brush, Frypot
4	1086157	Connecting Strip, Frypot
	1086166	Connecting Strip, Spreader LH Side
	1086167	Connecting Strip, Spreader RH Side
5	1068325	Cover, Full-Vat Frypot
	1068329	Cover, Dual-Vat Frypot
6	8030099	Basket, Full Size
7	8030271	Basket, Twin Size
8	8030132	Rack, Full-Vat Basket Support
	8030136	Rack, Dual-Vat Basket Support
*	8241664	Spreader Pan
*	8241720	Cover, Spreader Pan
*	8030002	Powder, Filter (80- 1-Cup Applications)
*	8030445	Pack, 100-Sheet Filter Paper 16.5” x 25.5”
*	8238065	Plate, Fish
*	8238224	Shield, Splash Frypot

*Not illustrated.

2.2 Basket Lift Assembly and Associated Parts

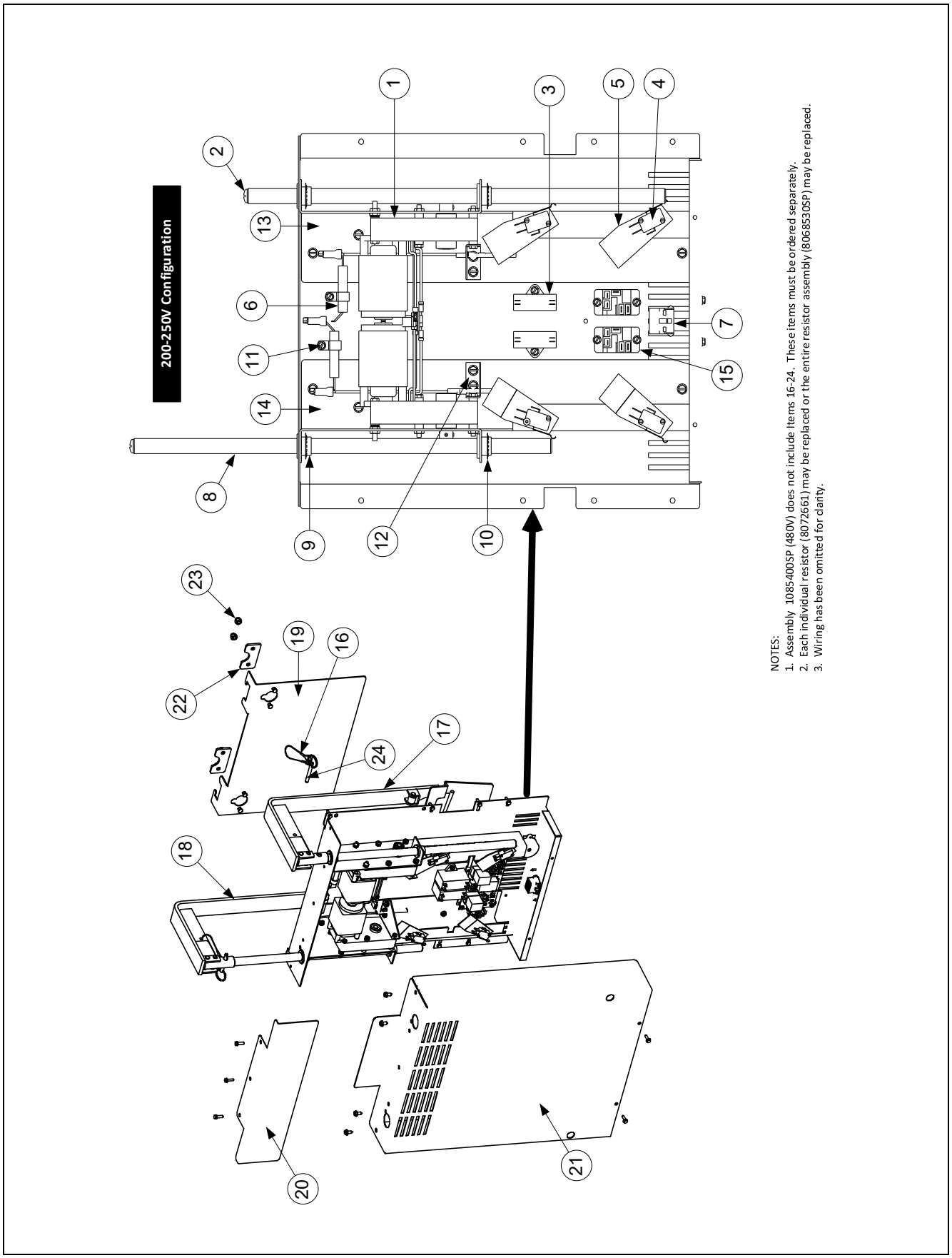
2.2.1 Basket Lift Assembly and Associated Parts – 480V - *(Modular)*



2.2.1 Basket Lift Assembly and Associated Parts – 480V - *(Modular)*

ITEM	PART #	COMPONENT
		Basket Lift Assemblies *(see **Note 1** in illustration)*
A	1088400SP	Basket Lift Assy, 480VAC *(Items 1-15)*
1	1084181SP	Motor Assy, 120VAC Modular Basket Lift
2	8090129	Screw, 1/4-20 X 5/8 Slotted Round Head
3	8072513	Capacitor, Motor Run 12.5 MFD 330VAC
4	8072572	Microswitch
5	8120442	Insulation, Microswitch Box
6	8068530SP	Resistor Assembly *(see **Note 2** in illustration)*
7	8070159	Connector, 12 Pin Plug Housing
8	8101012	Rod, Modular BL
9	8130035	Bushing, Bronze
10	8090082	Ring, Bushing Retainer ¾ Truarc
11	8090810	Clamp, Nylon
12	2209678	Gusset, Reversing Basket Lift Motor
13	2229461	Chassis, FPEL Basket Lift
14	2219461	Chassis, FPEL Basket Lift
15	8071683	Relay, 12VDC
16	8104854	Lanyard, w/Ring
17	8238844	Arm, Left *(Illustration May Slightly Differ)*
18	8238845	Arm, Right *(Illustration May Slightly Differ)*
19	1087760	Guide, B/L Arm *(Illustration May Slightly Differ)*
20	2401693	Shield, Rear Modular B/L Cover
21	2601709	Cover, Modular B/L *(Illustration May Slightly Differ)*
22	2601474	Cover, Basket Hanger Rivet B/L
23	8090047	Nut, Cap ¼" -20
24	8104852	Pin, ¼" X 1-5/16" Quick Release

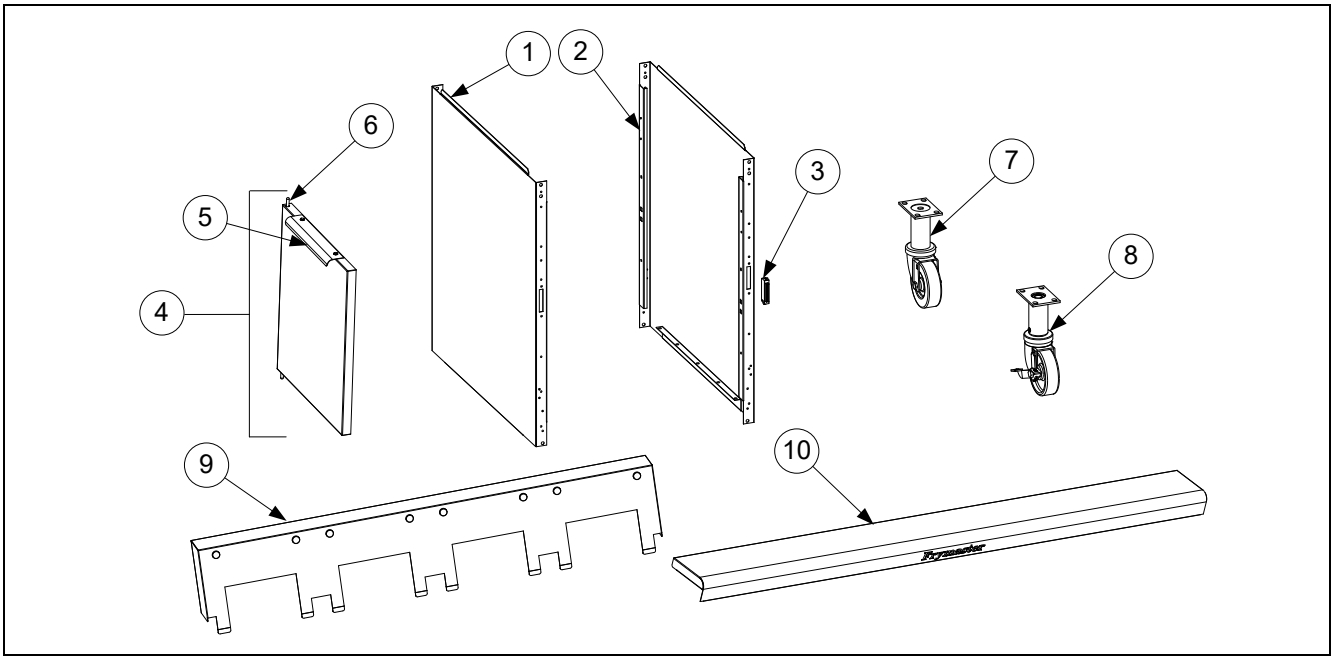
2.2.2 Basket Lift Assembly and Associated Parts – 200V-250V - *(Modular)*



2.2.2 Basket Lift Assembly and Associated Parts – 200V-250V - *(Modular)*

ITEM	PART #	COMPONENT
		Basket Lift Assemblies *(see **Note 1** in illustration)*
A	1085400SP	Basket Lift Assy, 200-250VAC *(Items 1-15)*
1	1085031SP	Motor Assy, 208-250VAC Modular Basket Lift w/Gear
2	8090129	Screw, 1/4-20 X 5/8 Slotted Round Head
3	8076253	Capacitor, Motor Run 4.0 MFD 440VAC
4	8072572	Microswitch
5	8120442	Insulation, Microswitch Box
6	8068530SP	Resistor Assembly *(see **Note 2** in illustration)*
7	8070159	Connector, 12 Pin Plug Housing
8	8101012	Rod, Modular BL
9	8130035	Bushing, Bronze
10	8090082	Ring, Bushing Retainer ¾ Truarc
11	8090810	Clamp, Nylon
12	2209678	Gusset, Reversing Basket Lift Motor
13	2229461	Chassis, FPEL Basket Lift
14	2219461	Chassis, FPEL Basket Lift
15	8071683	Relay, 12VDC
16	8104854	Lanyard, w/Ring
17	8238844	Arm, Left *(Illustration May Slightly Differ)*
18	8238845	Arm, Right *(Illustration May Slightly Differ)*
19	1087760	Guide, B/L Arm *(Illustration May Slightly Differ)*
20	2401693	Shield, Rear Modular B/L Cover
21	2601709	Cover, Modular B/L *(Illustration May Slightly Differ)*
22	2601474	Cover, Basket Hanger Rivet B/L
23	8090047	Nut, Cap ¼" -20
24	8104852	Pin, ¼" X 1-5/16" Quick Release

2.3 Doors, Sides, Tilt Housings, Top Caps and Casters

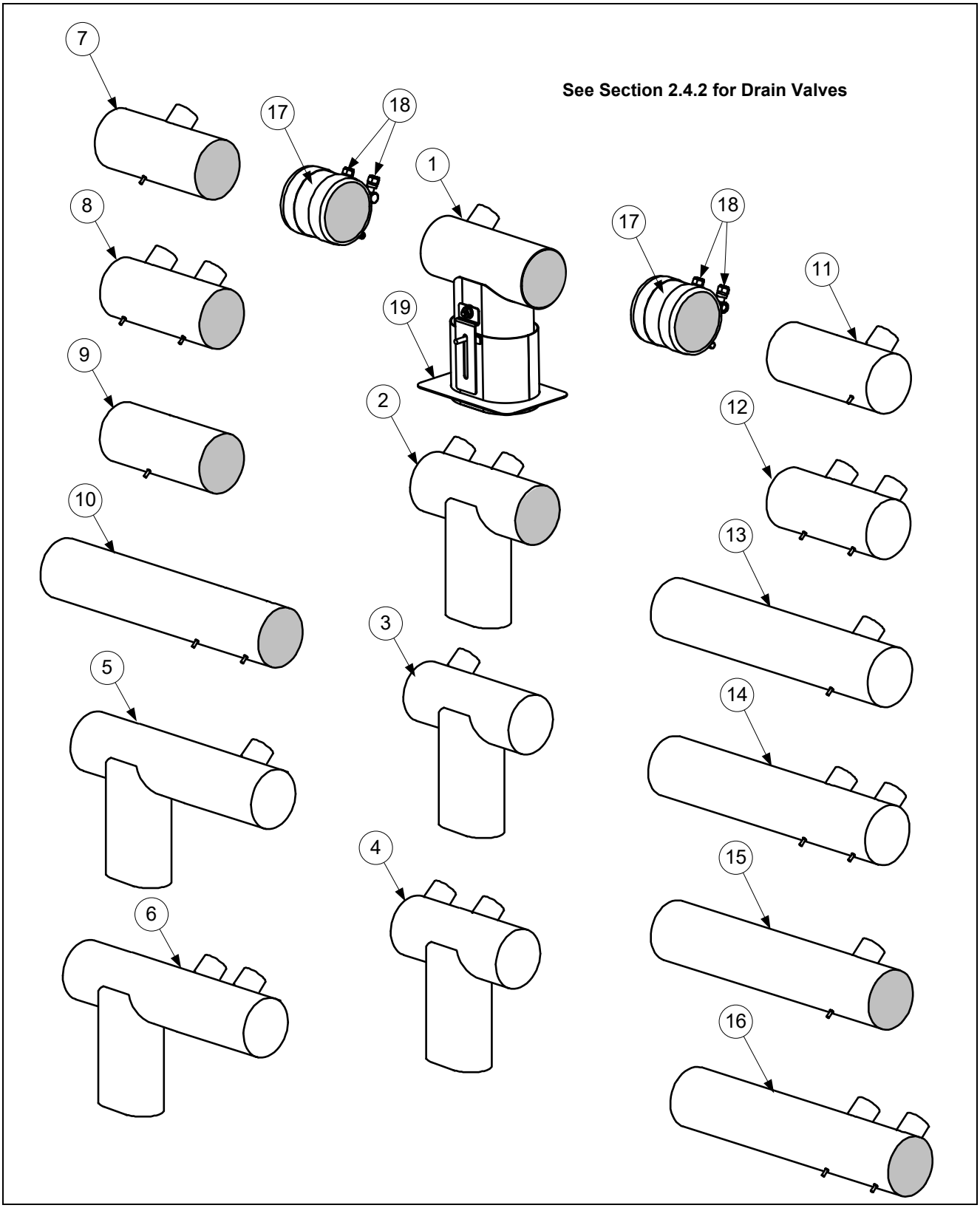


ITEM	PART #	COMPONENT
1	2310323	Side, Standard Cabinet Left SS
2	2320323	Side, Standard Cabinet Right SS
3	8101105	Magnet, Door (vertical) (use 8102346 for horizontal over filter pan)
4	1064397	Door, Left or Right (Left shown – move handle to bottom for right) (Larger Door)
	130253113	Door Assy, Universal FPP Elec Euro (Smaller Door)
5	2304960	Handle, Door
6	1064067	Pin Assembly, Door
*	8100275	Spring, Door Pin
*	8090970	Retaining Ring
*	2307192	Hinge, Door Lower
*	2108288	Panel, Universal Door (Larger Door)
	130253111	Panel, Door Universal FPP Elec (Smaller Door)
*	2206097	Holder, Manual
7	8100327	Caster adjustable 4” without Brake
8	8100944	Caster adjustable 3” with Brake
9	8237934	Tilt Housing Single (Housing for four station fryer shown)
	8238540	Two Station, S/S
	8238541	Three Station, S/S
	8238542	Four Station, S/S
10	1086169	Top Cap Single
	1086162	Two Station ***(Also requires four 8090078 10-32 Nutserts)***
	1086163	Three Station ***(Also requires six 8090078 10-32 Nutserts)***
	1086164	Four Station ***(Also requires eight 8090078 10-32 Nutserts)***

* Not illustrated.

2.4 Drain System Components

2.4.1 Drain Tube Sections and Associated Parts

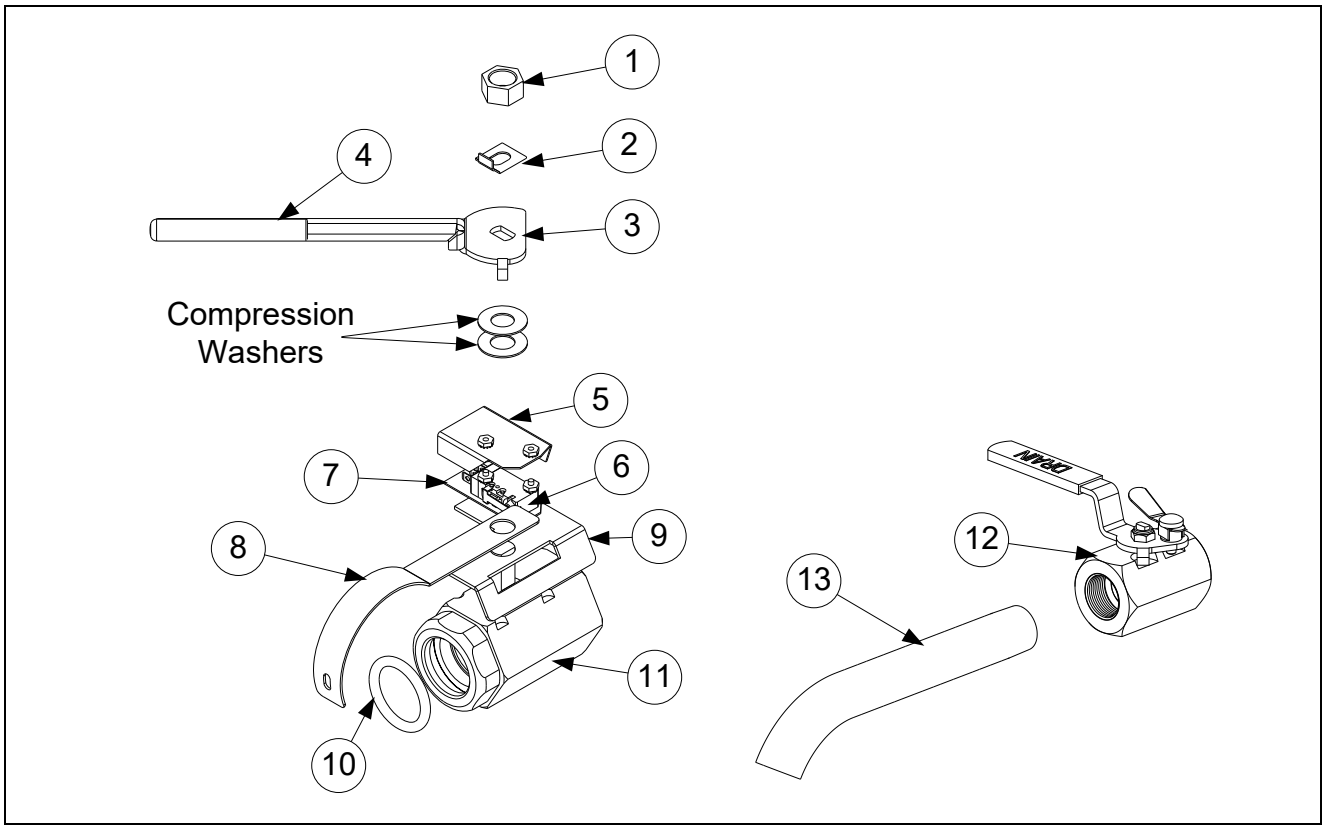


2.4.1 Drain Tube Sections and Associated Parts cont.

ITEM	PART#	COMPONENT
1	8238141	Drain Tube, Dump Full-Vat Left Closed/Right End Open
2	8238142	Drain Tube, Dump Dual-Vat Left Closed/Right End Open
3	8238143	Drain Tube, Dump Full-Vat Left Closed Both Ends
	8237939	Drain Tube, Dump Single Full-Vat Left Closed Both Ends
4	8238144	Drain Tube, Dump Dual-Vat Left Closed Both Ends
	8237936	Drain Tube, Dump Single Dual-Vat Left Closed Both Ends
5	8238145	Drain Tube, Dump Full-Vat Left Closed Both Ends
*	8238128	Drain Tube, Dump Full-Vat Left Closed/Right End Open
6	8238146	Drain Tube, Dump Dual-Vat Left Closed Both Ends
*	8238129	Drain Tube, Dump Dual-Vat Left Closed/Right End Open
7	8234643	Drain Tube, Full-Vat, Short, Open Both Ends
8	8237905	Drain Tube, Dual-Vat, Short, Open Both Ends
9	8103550	Drain Tube, Short, Open Both Ends
10	8103551	Drain Tube, Long, Open Both Ends
11	8234625	Drain Tube, Short Full-Vat Left Open/Right End Closed
12	8237906	Drain Tube, Short Dual-Vat Left Open/Right End Closed
13	8234639	Drain Tube, Long Full-Vat Left Open/Right End Closed
14	8237908	Drain Tube, Long Dual-Vat Left Open/Right End Closed
15	8234641	Drain Tube, Long Full-Vat Open Both Ends
16	8237907	Drain Tube, Long Dual-Vat Open Both Ends
17	8160772	Sleeve
18	8090969	Clamp
*	8160630	Vinyl Cap
*	8111071	Tubing, ¼-inch OD Teflon Vent (sold by the foot)
19	8237915	Guard, Filter Lid Splash

* Not illustrated.

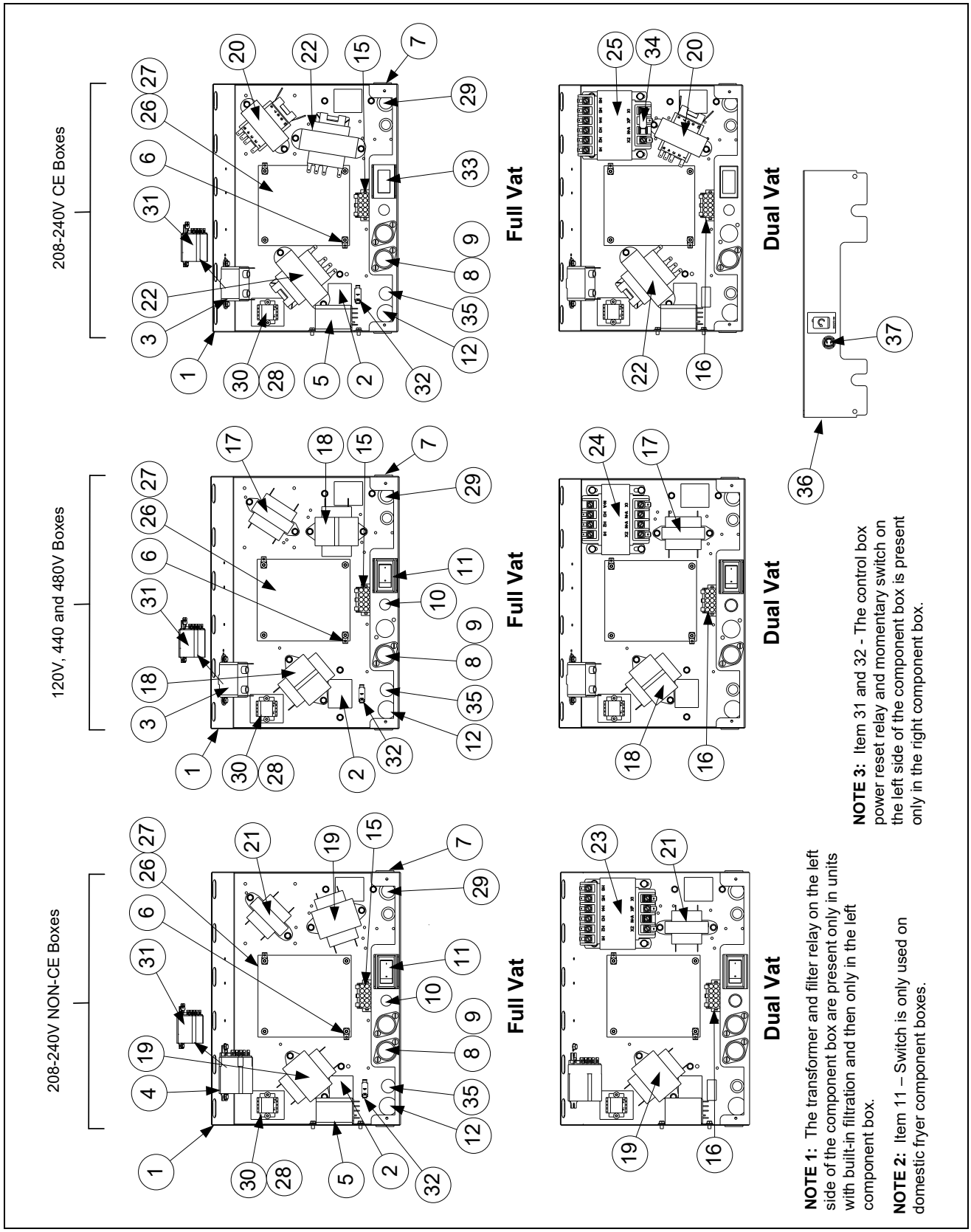
2.4.2 Drain Valve Assembly



ITEM	PART #	COMPONENT
	1082451	Valve, Assembly Drain FV FPEL17 with Filter
	1082452	Valve, Assembly Drain DV FPEL17 with Filter
	1082593	Valve, Assembly Drain FV FPEL17 Single with Filter
	1082450	Valve, Assembly Drain DV Right FPEL17 Single with Filter
	1082449	Valve, Assembly Drain DV Left FPEL17 Single with Filter
1	8090540	Nut, ½-13 2-Way Hex Lock
2	9002936	Retainer, Nut Drain Valve
3	8242188	Handle, Drain Valve FV, FV Single and DV Single Left with Filter
	8242189	Handle, Drain Valve DV and DV Single Right With Filter
4	8160639	Cap, Vinyl Red
5	9012348	Cover, Safety Switch
6	8074936	Switch, Micro Gold Plated
7	8160220	Insulation, RF Switch
8	2006496	Support, Drain Tube
	2208162	Bracket, Single 1¼-inch Drain Valve (used on FV Single with Filter)
9	1082453	Bracket Assy, Drain Switch
10	8160135	O-Ring, Round Drain Seal
11	8101018	Valve, 1¼-inch Drain with Filter
12	8101569	Valve, 1¼-inch Drain Non-Filter
13	8121226	Drain Extension 1¼-inch ***(use with 8101569)***
*	8075159	Harness, Drain FV ***(connects from drain switch to rear of controller)***
*	8075160	Harness, Drain DV ***(connects from drain switch to rear of controller)***

2.5 Electronics and Wiring Components

2.5.1 Component Boxes

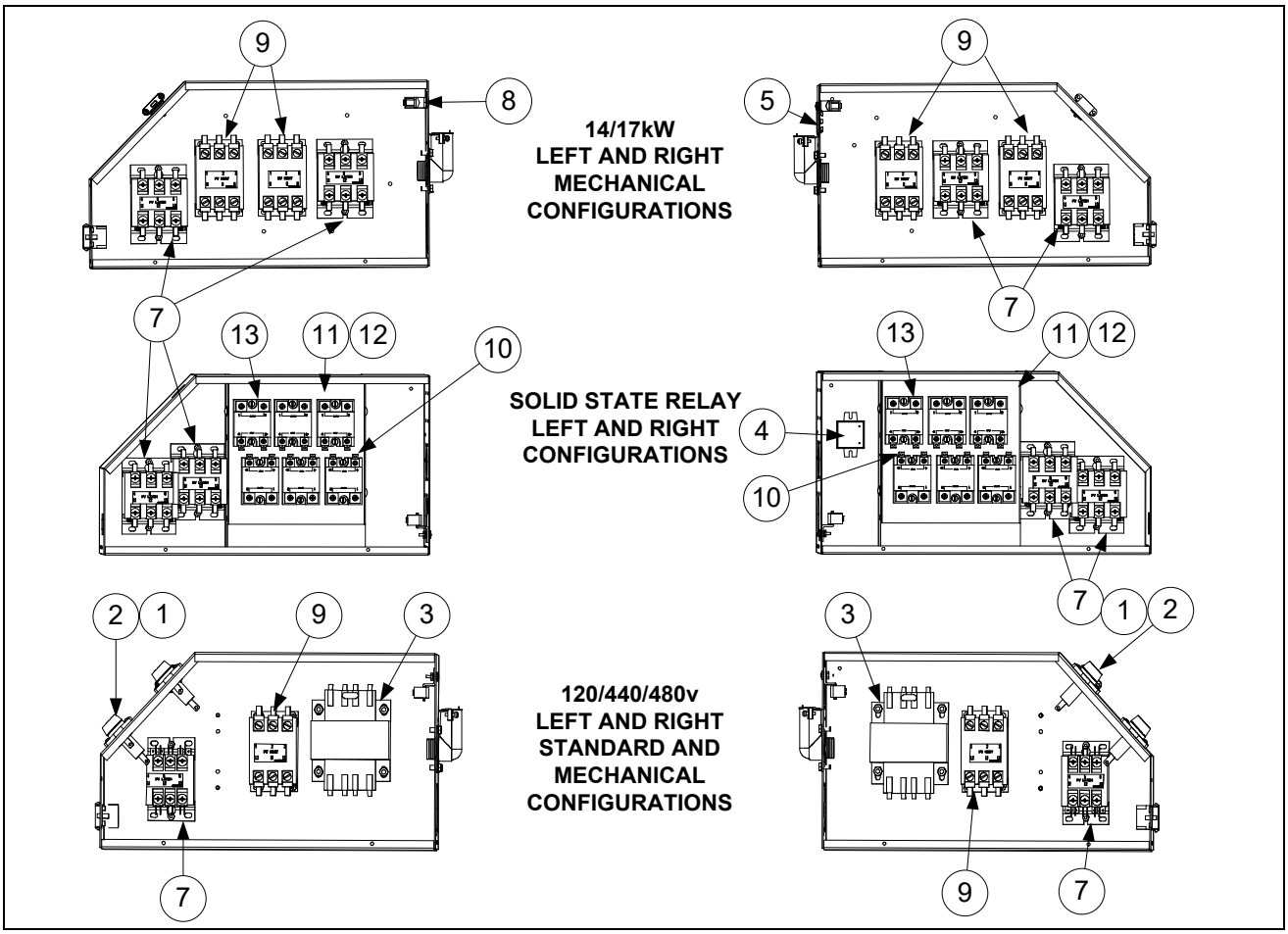


2.5.1 Component Boxes cont.

ITEM	PART #	COMPONENT
1	1065592	Box Assembly, Component
2	2003300	Bracket, Component Box Strain Relief
√ 3	8070012	Relay, Filter 18A, 1/3HP 24VAC
√ 4	8070670	Relay, Filter DPDT 20A 24VAC
√ 5	8074770	Relay, 240V DPDT 20A
√	8074346	Relay, 120V DPDT 20A ***(used in Canadian models only)***
6	8070037	Terminal, ¼-inch Push-on
7	8070121	Bushing, Heyco Plastic AB-625-500
8	8070922	Holder, Buss Fuse HPS Screw Type
√ 9	8072278	Fuse, 20 Amp
10	8102446	Plug, Button .50 Heyco Double "D"
√ 11	8074036	Switch, Power
	8073575	Plug, Carling Switch Hole *(used on some models without a switch)*
12	8071947	Plug, Button .875 Dome
13	8071321	Holder, AGC Panel Mount ¼" Fuse *(Some models use item 10 here.)*
14	8071597	Fuse, 3 AMP Slow-Blow
15	1065750	Harness Assembly, RE FV Control
16	1065751	Harness Assembly, RE DV Control
√ 17	8070855	Transformer, 100-120V 12V 20VA
√ 18	8070800	Transformer, 100-120V 24V 50VA Filter
√ 19	8070680	Transformer, 208-240V 24V 20VA Filter
√ 20	8072191	Transformer, 208-240V 12V 30VA
√ 21	8070979	Transformer, 208-240V 12V 43VA
√ 22	8072180	Transformer, 100-120V 50VA Filter
√ 23	8122126	Transformer, 208-250V 24V 75VA w/o Fuse ***(Used in DV component boxes)***
√ 24	8074967	Transformer, 100-120V 24V 75VA ***(Used in DV component boxes)***
√ 25	8074968	Transformer, 208-250V 24V 75VA ***(Used in DV component boxes)***
√ 26	8262260	Interface Board Standard Full or Dual Vat *(includes sound harness)*
*	1066501	Fallback Controller Assembly
*	8074403	Speaker, 4-Watt SMT
27	8090349	Spacer, 4mm X 6mm Aluminum
28	8160217	Paper, Insulating Terminal Block
29	8100045	Bushing, .875 Diameter 11/16"
30	8069495SP	Terminal Block
√ 31	8074346	Relay, DPDT 20A 120V *(used for control power reset in right hand boxes only in domestic and Canadian units)*
√	8074770	Relay, DPDT 20A 240V *(used for control power reset in right hand boxes only in international units; some international units have one located in each control box)*
32	8072659	Switch, Momentary (*used to reset control power; located in box over JIB only.*)
33	2305038	Guard, Switch
√ 34	8071174	Fuse, 250V 3 AMP Slow-Blow
35	8102445	Plug, Button .625 Heyco Double "D"
36	2205038	Guard Finger FPEL17
√ 37	8074678	Switch, Momentary JIB Reset
*	8262249	RE Hood/Ansul Interlock Kit (includes terminal block, wires and connectors)

* Not illustrated.
√ Recommended parts.

2.5.2 Contactor Boxes

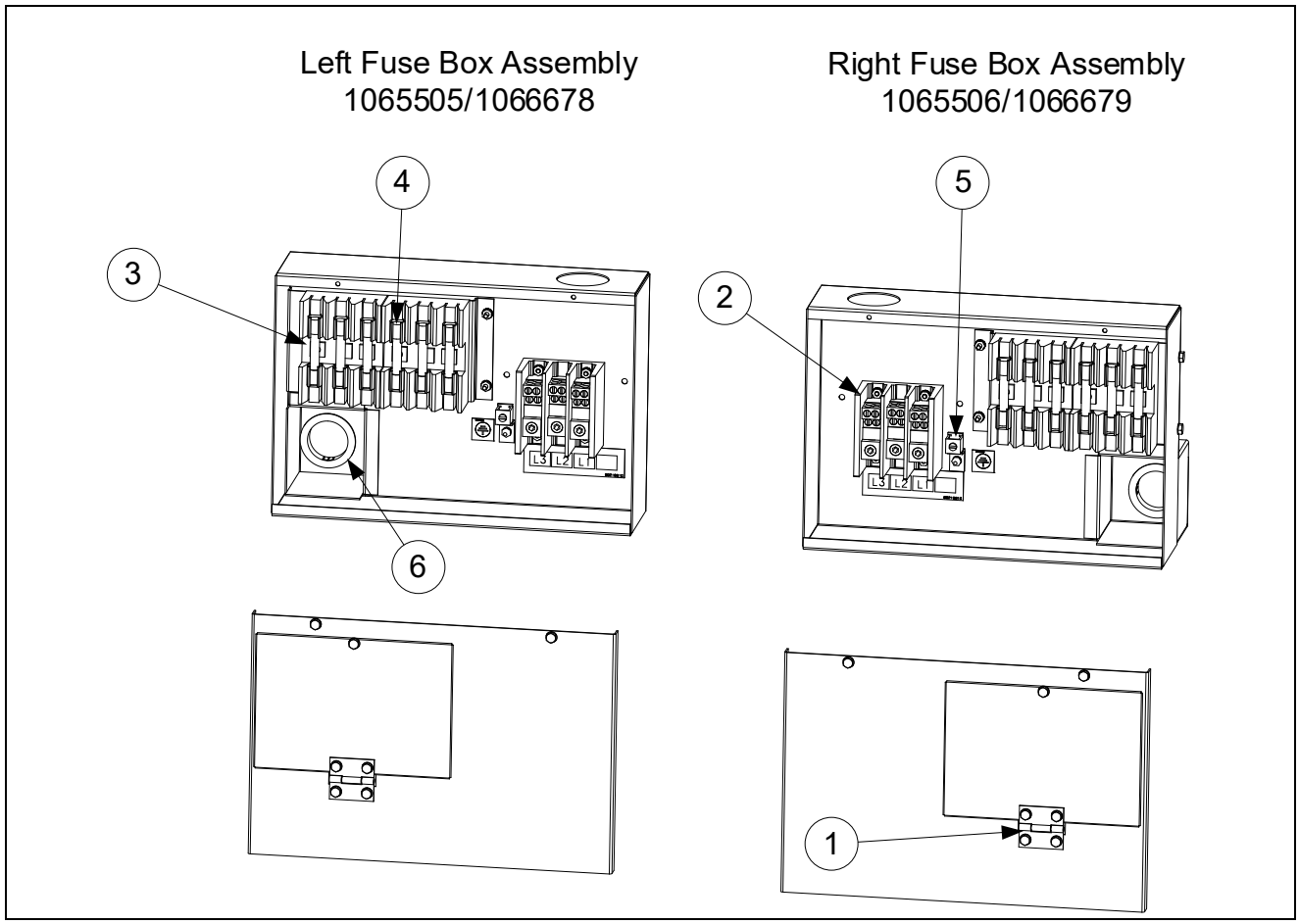


NOTES: The configurations illustrated show all possible components, but a particular configuration may not have all the components shown.

ITEM	PART #	COMPONENT
1	8072278	Fuse, 20 Amp
2	8070922	Holder, Bus Fuse
3	8070064	Transformer, 480V/120V 150VA
4	1066204	Filter Assembly, EPRI (Used on some CE WYE configurations)
5	8102554	Plug, Cord Cutout 1.125 Button
6	8071947	Plug, .875 Diameter Dome
7	8263417	Contactor, 24V 40 Amp Mechanical ***(Latch)***
8	8070070	Terminal, Ground Lug
9	8072284	Contactor, 24V 50 Amp Mechanical ***(Heat)***
10	8070037	Terminal, ¼-inch Push-on
11**	8068673	Heatsink Assembly, FV Solid State Relay (See components below)
		Components of Items 12 and 13
12	8261562	Kit Relay, Solid State 40 Amp 280V with Heatsink
13	8072749	Heatsink, Solid State
*	2210482	Cover, Left Contactor Box
*	2220482	Cover, Right Contactor Box
*	8070012	Relay, Tilt Switch 18 Amp 1/3 HP 24 V Coil

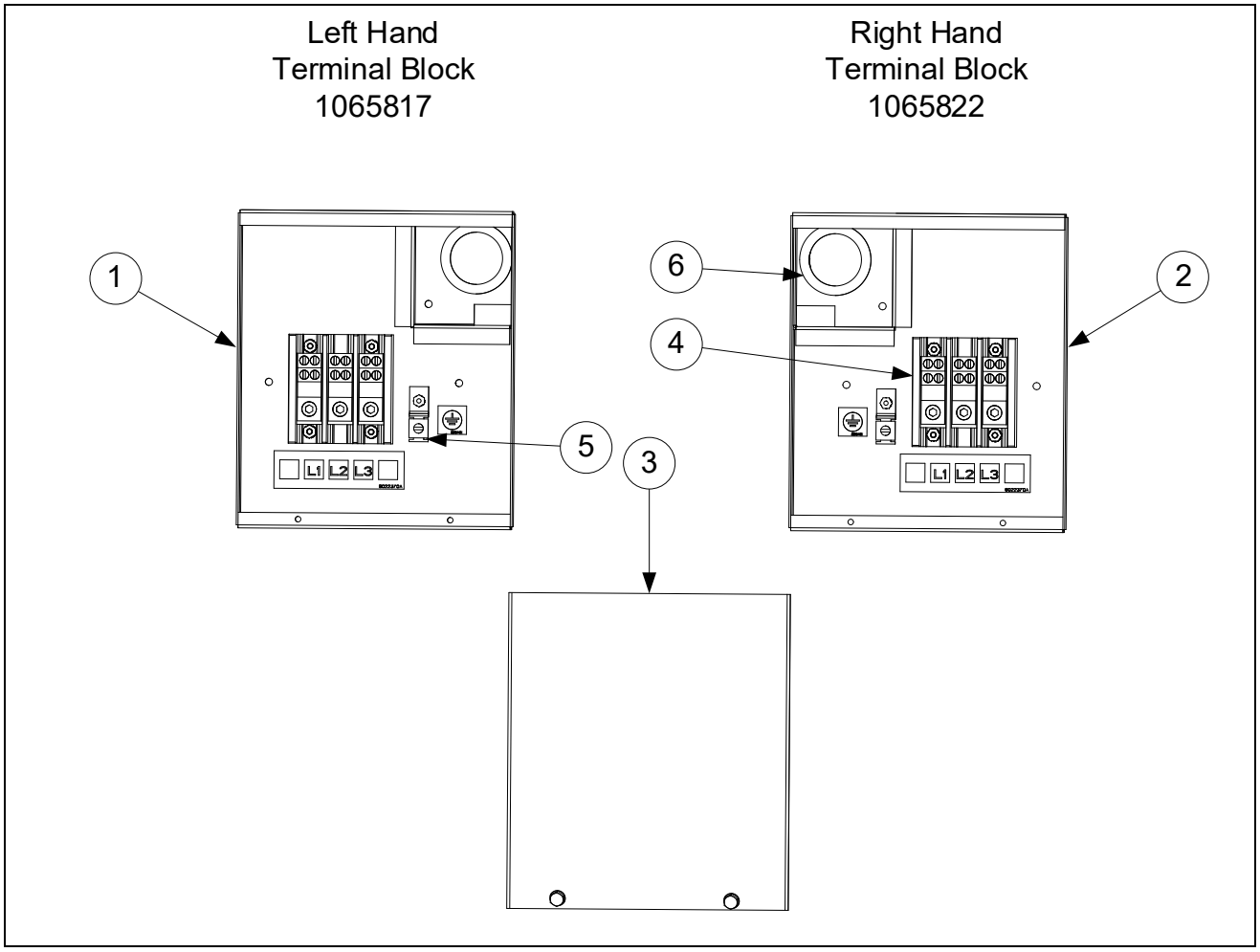
* Not illustrated. ** **Full Vat has three relays 8261562, Dual-Vat has six relays.**

2.5.3 Fuse Boxes



ITEM	PART #	COMPONENT
1	8100519	Hinge
2	8073970	Block, 3 Pole 600V 175A Terminal
3	8070501	Fuse Block, Buss #2968 3-Pole
4	8072240	Fuse, 60 AMP 300VAC
5	8070070	Terminal, Ground Lug
6	807128	Bushing, Insulating Heyco

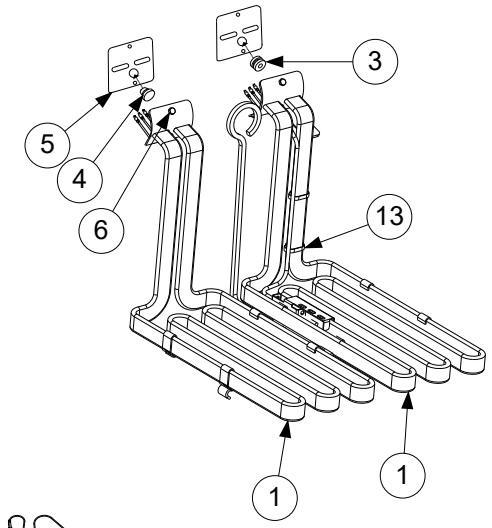
2.5.4 Terminal Blocks

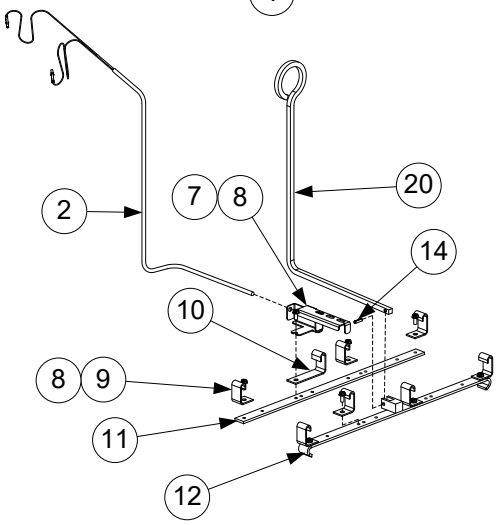


ITEM	PART #	COMPONENT
1	8235631	Box, LH Rear Terminal Block
2	8235632	Box, RH Rear Terminal Block
3	2200801	Cover, Rear Terminal Block Box
4	8073970	Block, 3 Pole 600V 175A
5	8070070	Terminal, Ground Lug
6	8070128	Bushing, Insulating Heyco

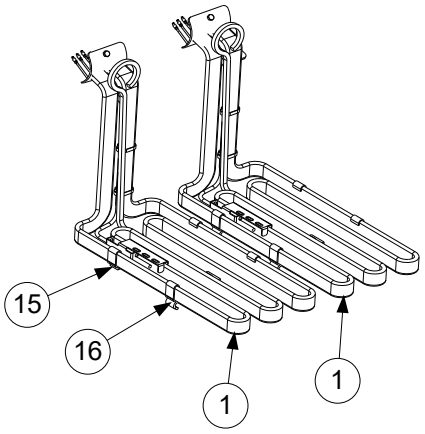
2.5.5 Heating Element Assemblies and Hardware

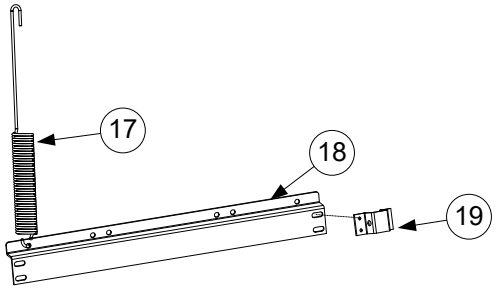
FULL-VAT ELEMENT ASSEMBLY





DUAL-VAT ELEMENT ASSEMBLY





NOTES:
The dual-vat assembly is almost the same as the full-vat assembly except for having two of Items 2, 3, 7, 14, 15, 16 and 20. The only difference between element assemblies for different voltage and kW ratings is the element itself (Item 1).

Items 17, 18 and 19 are shown as associated parts. The are not part of either assembly.

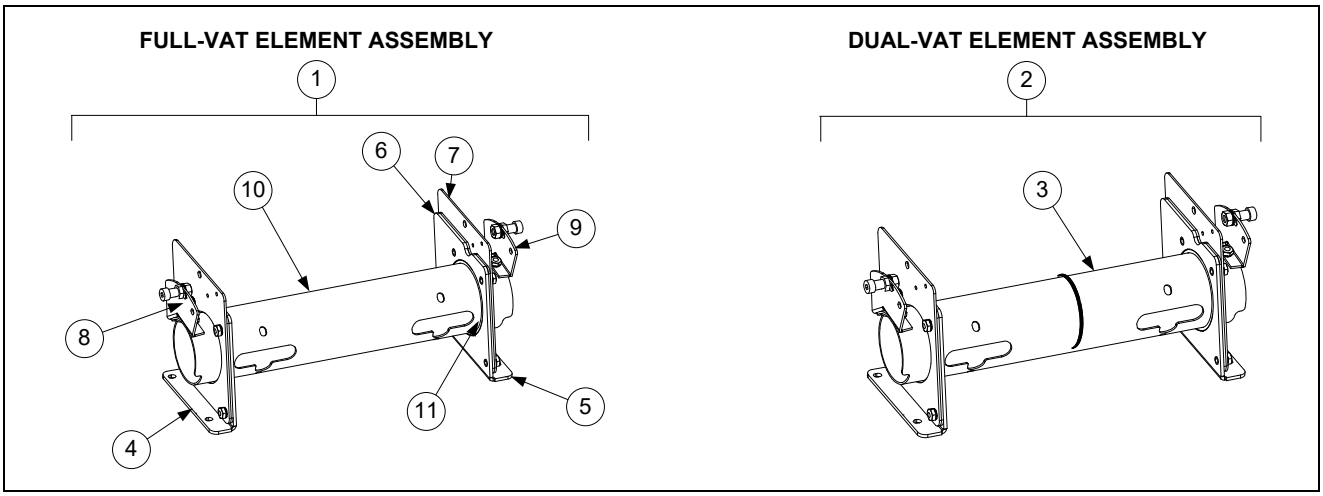
NOTE: These elements apply only to FPEL series fryers.

2.5.5 Element Assemblies and Hardware cont.

ITEM	PART #	COMPONENT
1		Element Kits – *includes gaskets, grommets, tie wraps, screws and nuts.*
	8262198	200V **8.5kW used in some export 3-phase 4-wire WYE units)**
	8262201	200V 8.5 kW
	8262197	208V 8.5 kW
	8262200	220V **8.5kW used in some export 3-phase 4-wire WYE units**
	8262199	230V/400V **8.5kW used in some export 3-phase 4-wire WYE units)**
	8262204	400V 8.5kW
	8262202	440V 8.5 kW
	8262203	480V 8.5 kW
√ 2	8262212	Probe, Temperature RE – *includes tie wraps and grommet.*
	8074324	Probe, Temperature Fast Ready
3	8160681	Grommet, Probe
4	8160480	Plug, .375-inch Dome
5	8160688	Gasket, Element
6	8091003	Screw, 10-32 X ⅜-inch Hex Head SS
*	8090766	Nut, 10-32 Keps Hex Head SS
*	2304028	Wrench, Element Tube Nut Spanner
7	2300784	Bracket, Temperature Probe 8.5kW
8	8090518	Screw, 8-32 X ⅜-inch Slotted Hex Head
9	9102042	Clamp, Element (Short)
10	2300781	Clamp, Element (Long)
11	2300780	Support, Full-Vat Element Rear
12	8235621	Support, Full-Vat Element Front
13	8090567	Tie-Wrap, Metal
14	8101212	Pin, .125 X .5-inch Split
15	2304903	Support, Dual-Vat Element Rear Dual Vat
16	8238086	Support, Dual-Vat Element Front Dual Vat 17kW
17	8103030	Spring, Element Lift Left
	8103131	Spring, Element Lift Right
18	2201190	Bracket, Lower Spring Single Foot Print
	2200464	Bracket, Lower Spring
19	2200733	Bracket, Lower Spring Mating
20	8101233	Handle, Element Lift

* Not illustrated.
√ Recommended parts.

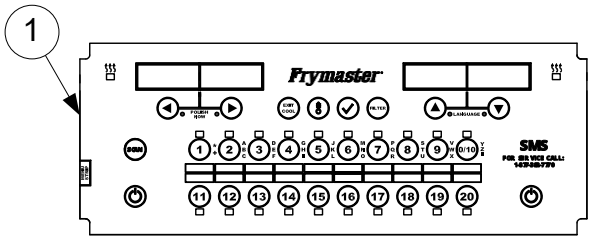
2.5.6 Element Tube Assemblies



ITEM	PART #	COMPONENT
1	1080293SP	Tube Assembly, Full-Vat 17kW
2	1080295SP	Tube Assembly, Dual-Vat 17kW
3	8103246	Bushing and Tube Assembly, Dual-Vat
4	1080315	Bracket Assembly, LH Element Tube Support
5	1080316	Bracket Assembly, RH Element Tube Support
6	2200122	Plate, Element Tube Support Inner
7	2200123	Plate, Element Tube Support Outer
8	1066569	Bracket Assembly, LH Upper Spring
9	1066570	Bracket Assembly, RH Upper Spring
10	8102992	Tube, Full Vat Element Mounting
11	8102993	Bushing, Tube End Teflon
*	8262598	Kit, Tilt Switch
*	8074742	Switch, Long Lever High Temp

* Not illustrated.

2.5.7 Controller



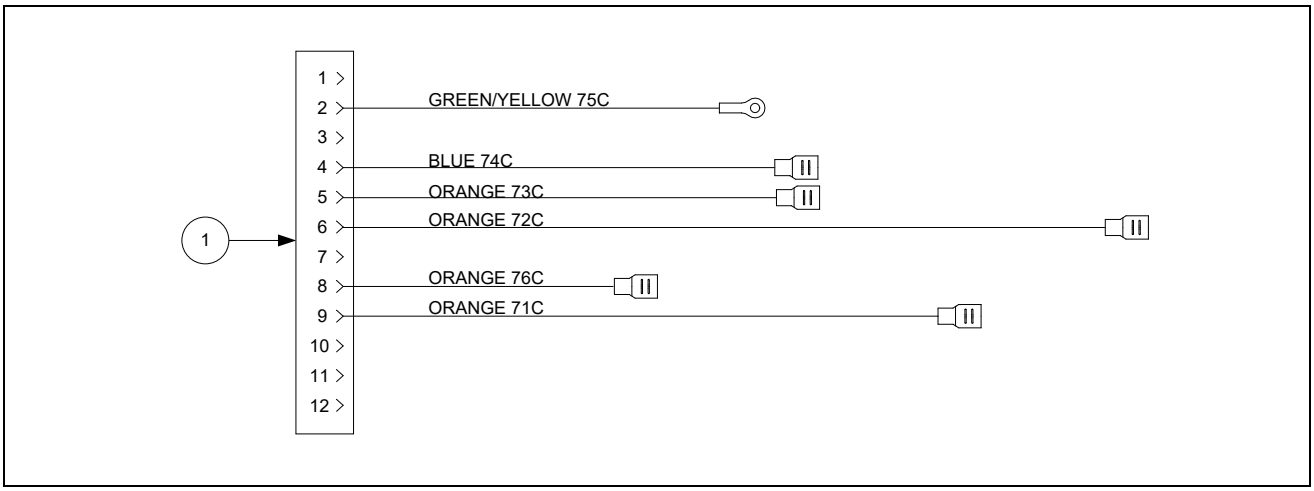
NOTE: See Page 2-20 for Interface Board to Controller Wiring Harness

ITEM	PART #	COMPONENT
√ 1	8262767	Kit, K3000 Controller

√ Recommended parts.

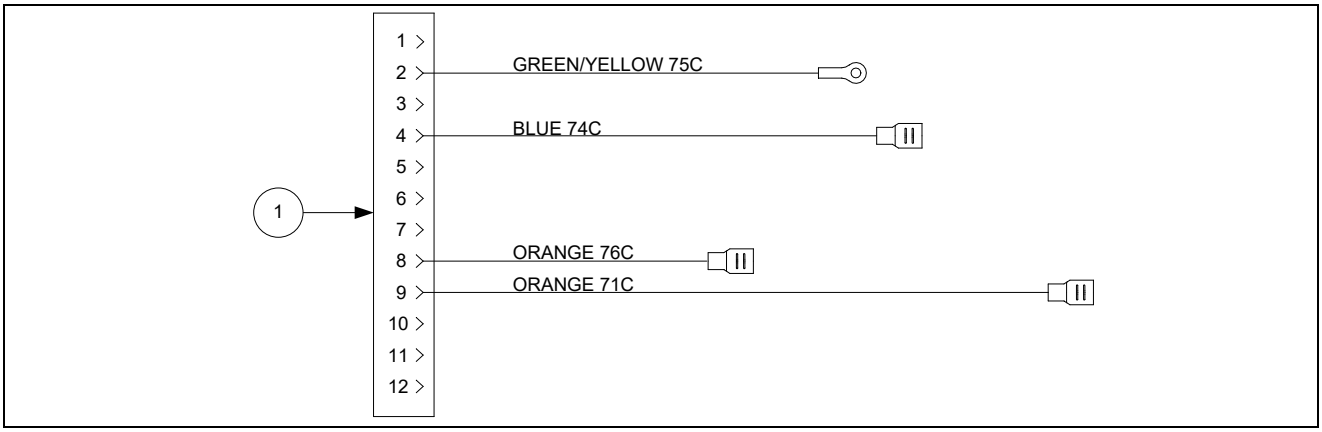
2.5.8 Wiring

2.5.8.1 Contactor Box Wiring Assemblies – 12-Pin Dual-Vat C-1



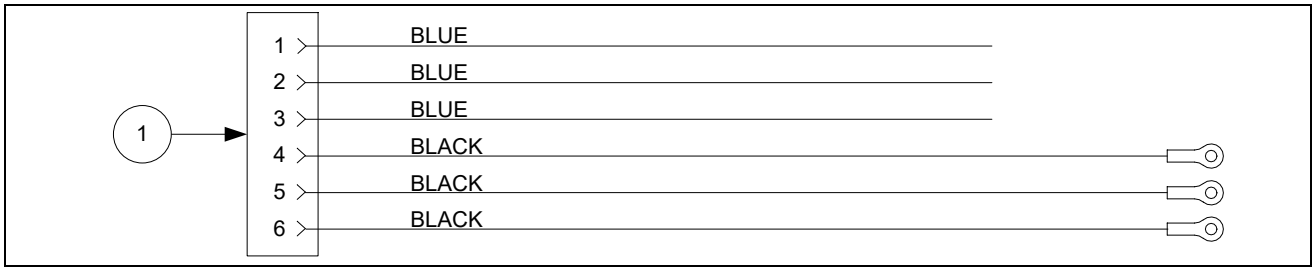
ITEM	PART #	COMPONENT
	1065980SP	Contactor Box Harness Assembly Dual Vat
1		Standard (See wiring diagrams on pages 1-35 thru 1-36.)

2.5.8.2 Contactor Box Wiring Assemblies – 12-Pin Full-Vat C-1



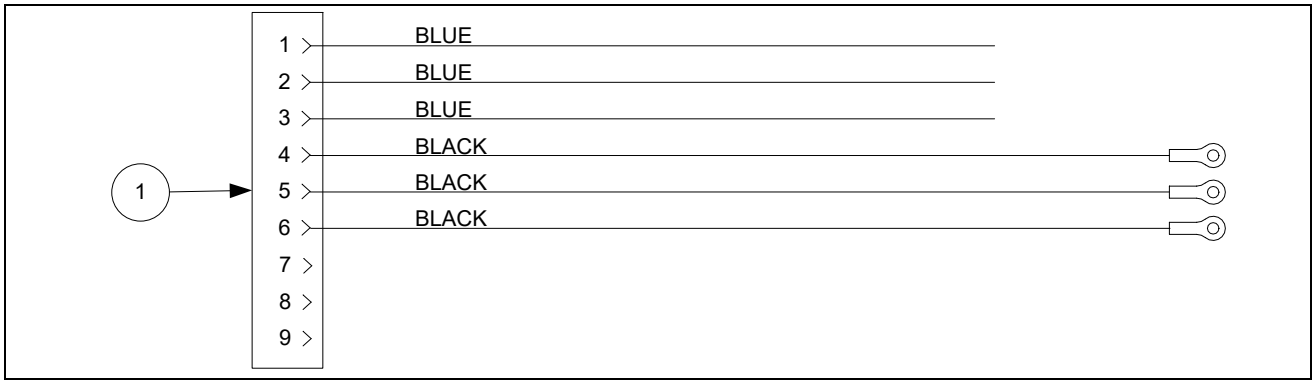
ITEM	PART #	COMPONENT
	1066031SP	Contactor Box Harness Assembly Full Vat
1		Standard (See wiring diagrams on pages 1-35 thru 1-36.)

2.5.8.3 Contactor Box Wiring Assembly – 6-Pin (Left Element)



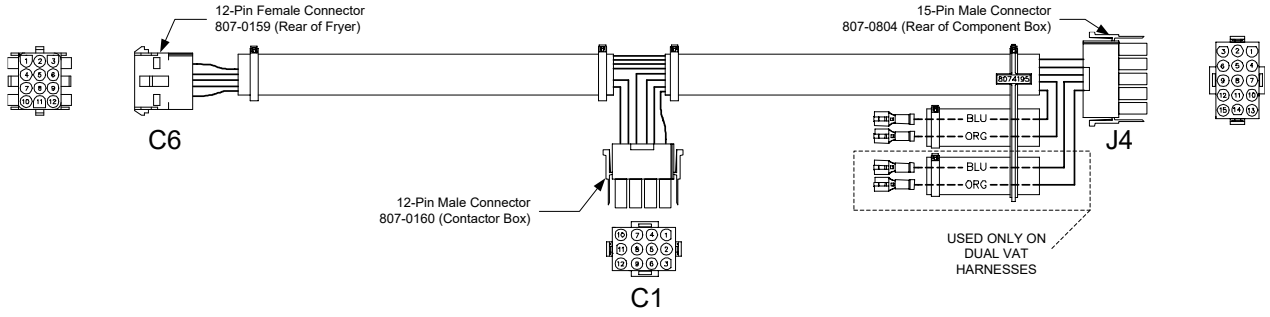
ITEM	PART #	COMPONENT
1	1068744SP	14/17 kW Mechanical Contactor
	1067851SP	High Amp Mechanical Contactor

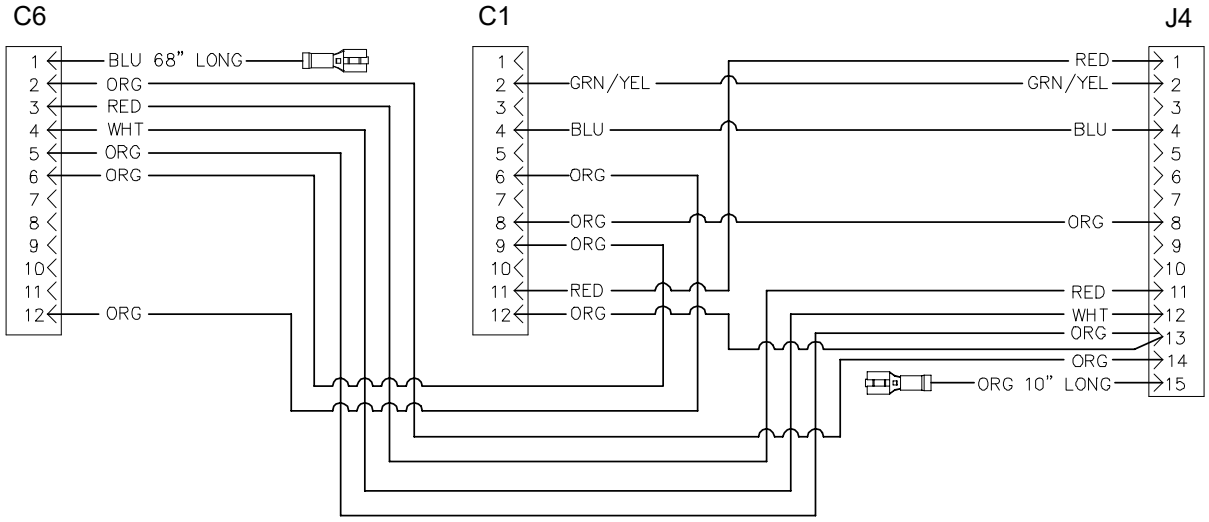
2.5.8.4 Contactor Box Wiring Assembly – 9-Pin (Right Element)



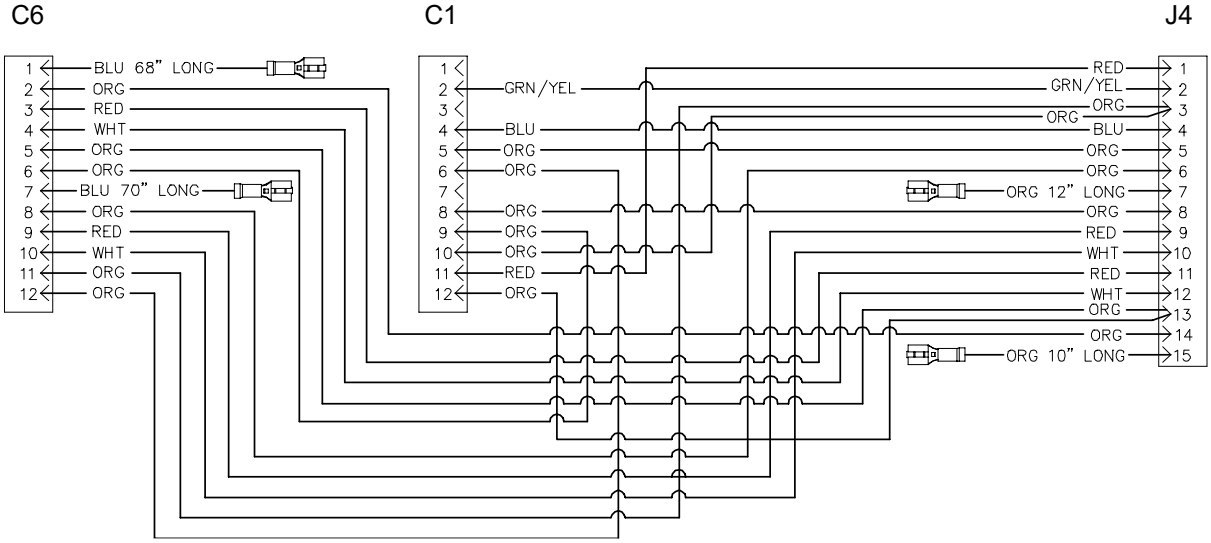
ITEM	PART #	COMPONENT
1	1068745SP	14/17 kW Mechanical Contactor
	1067852SP	High Amp Mechanical Contactor

2.5.8.5 Main Wiring Harnesses



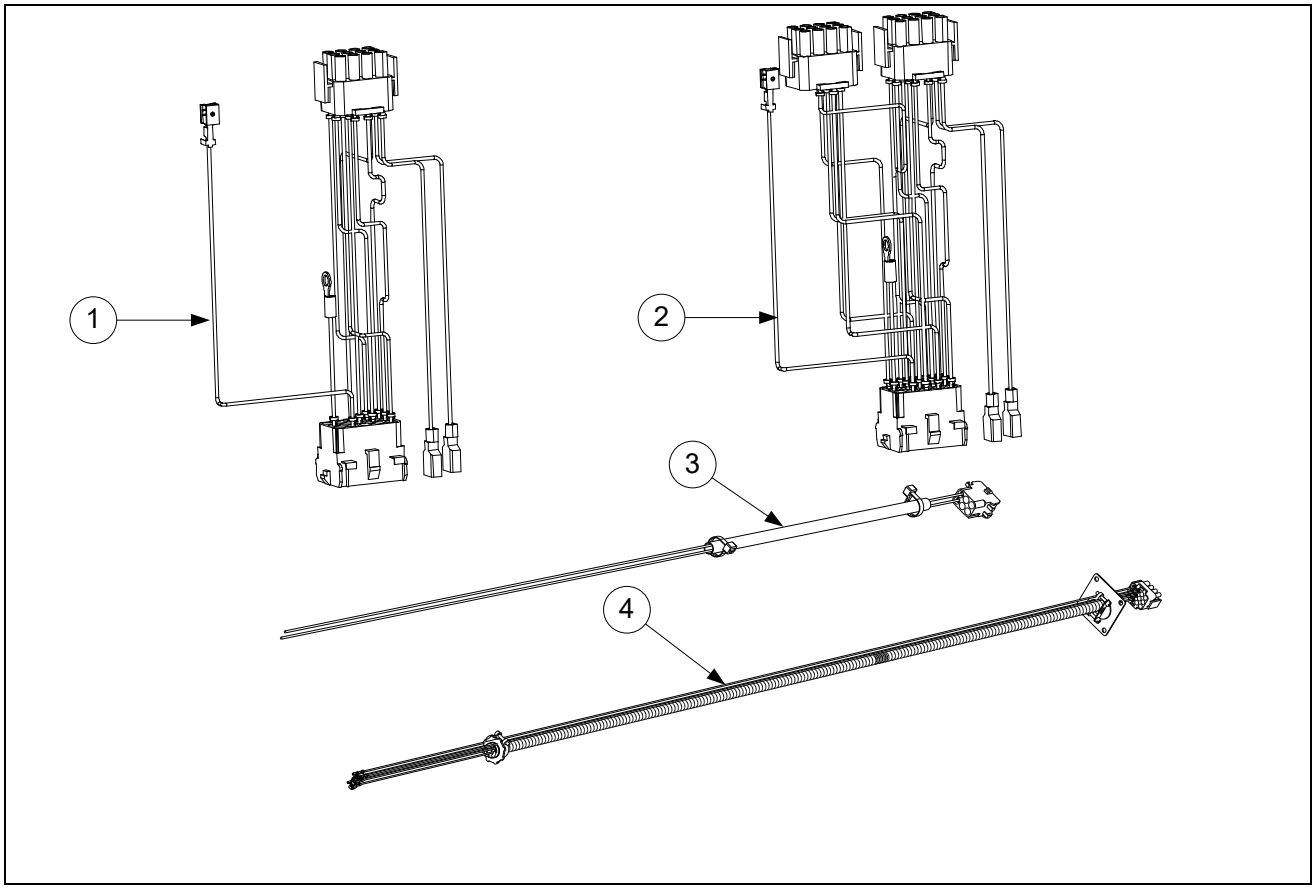


FULL VAT HARNESS
807-4194



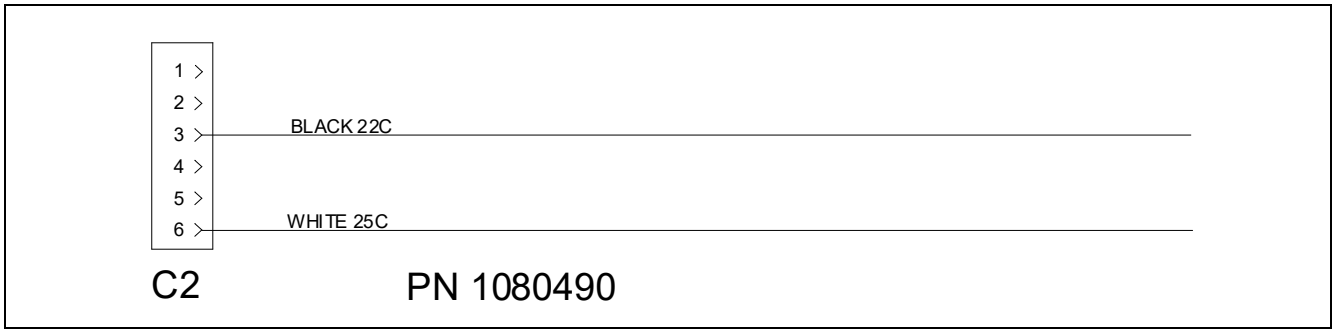
DUAL VAT HARNESS
807-4195

2.5.8.6 Component Box, Filter Pump and Basket Lift Wiring Harnesses

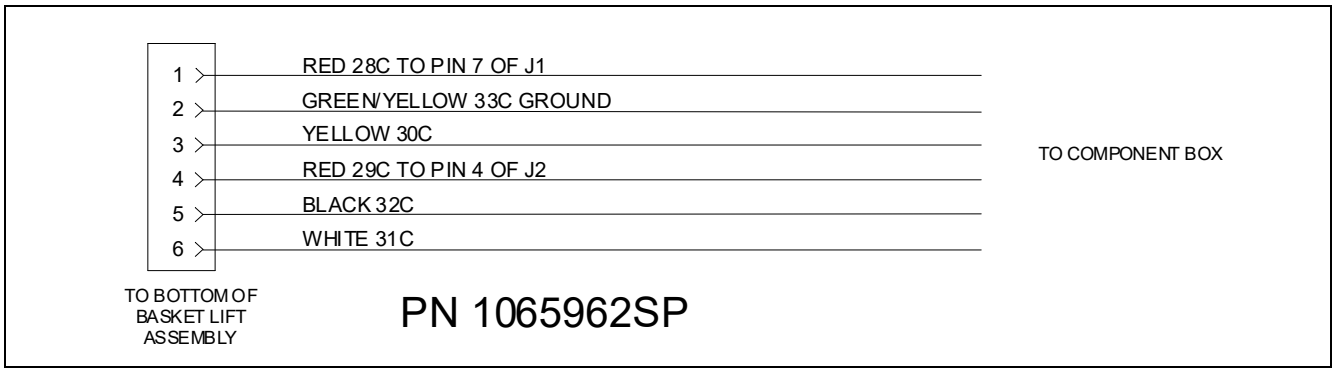


ITEM	PART #	COMPONENT
1	1065750SP	Full Vat Control Harness J4 to J2 ***(Standard)***
2	1065751SP	Dual Vat Control Harness J4 to J1 and J2 ***(Standard)***
3	1080490SP	Filter Pump C2 to Component Box Wiring Harness
4	1065962SP	Basket Lift Harness Assembly ***(Standard)***

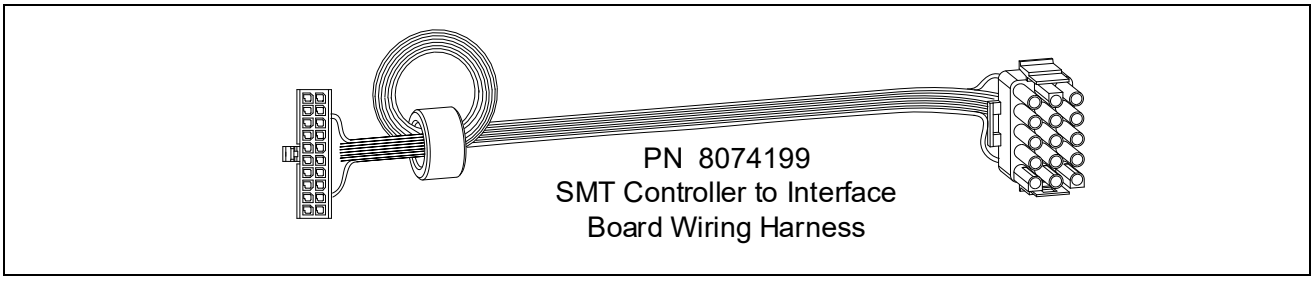
2.5.8.7 Component Box to Filter Pump Harness



2.5.8.8 Basket Lift Harness



2.5.8.9 Interface Board to Controller Wiring Harness – 15-Pin

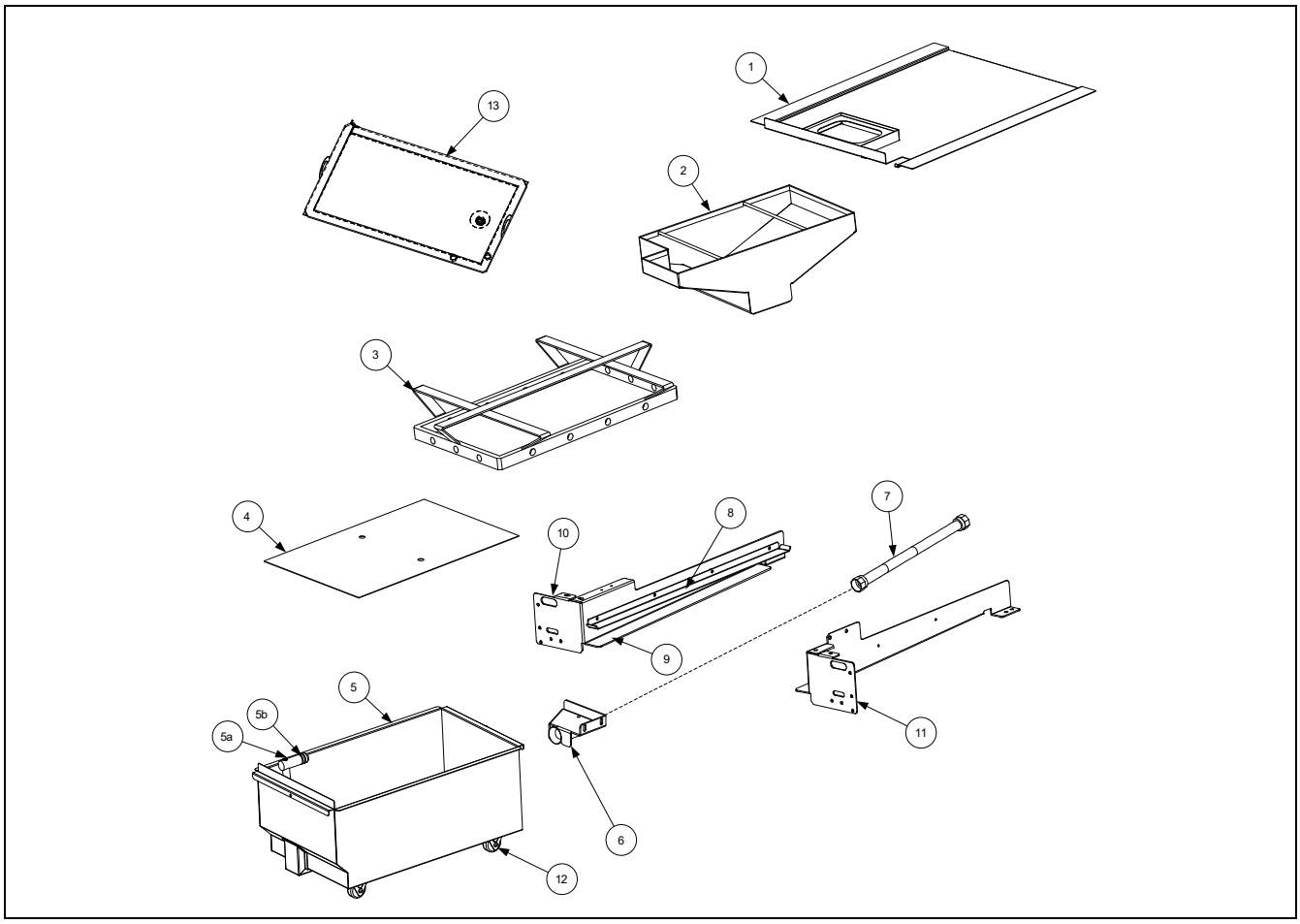


2.5.8.10 Wiring Harnesses

ITEM	PART #	COMPONENT
*	8074546	Controller Communication *(used from Controller to Controller)*
*	8074573	Controller Locator Wire *(used from Controller to Interface Board) See wiring diagram 8051856 on page 1-31 for locator pin positions.*
*	8074552	Communications Terminator *(used on Controller pin J6 to terminate network)*
√ *	8074660PK	SMT Pin Service Repair Kit
√ *	2302345	SMT Pin Extractor

* Not illustrated.
√ Recommended parts.
See page 1-17 and 1-25 for Pin Positions.

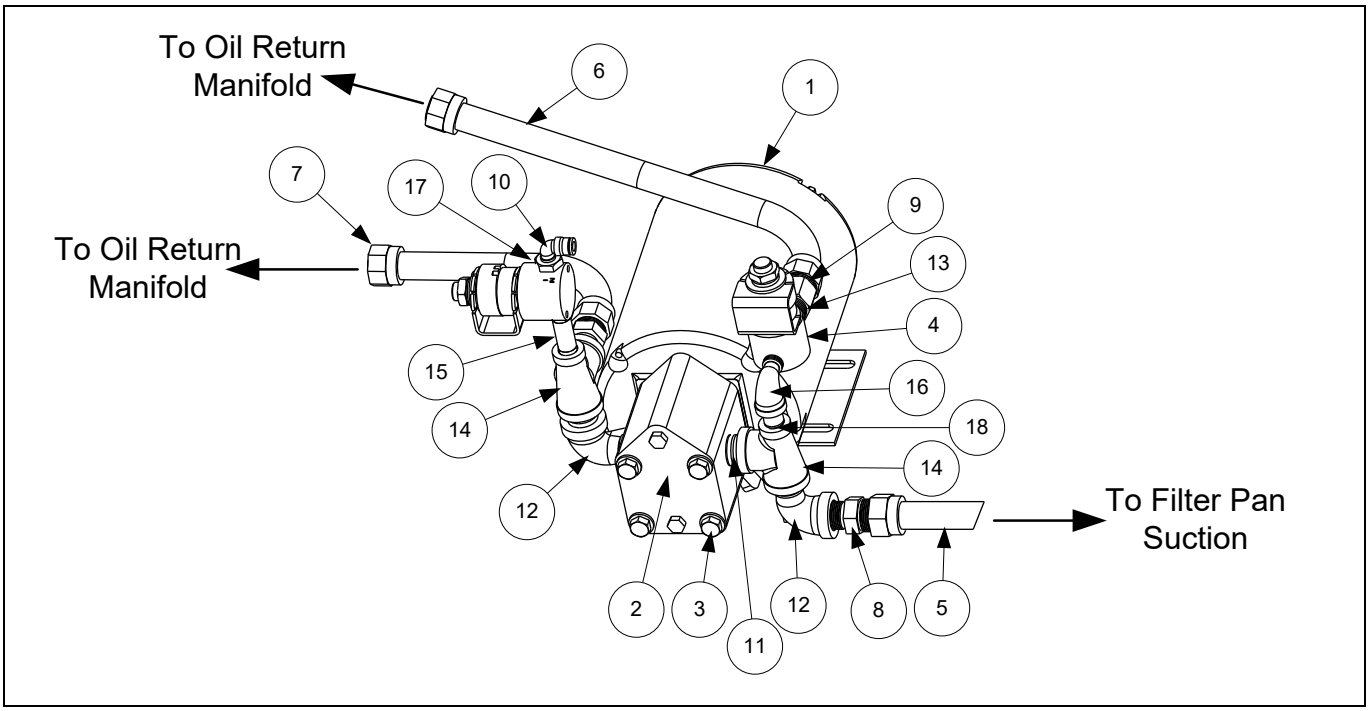
2.6 Filtration System Components



ITEM	PART #	COMPONENT
1	8237910	Lid, Half Size Filter Pan
2	130000991	Crumb Tray, Half Size Filter Pan
3	8103289	Hold-Down Ring 11.20 x 19.10, Half Size Filter Pan
4	8122025	SanaGrid Filter Screen, Half Size Filter Pan
5	1083872SP	Pan, Filter with casters
	1086977SP	Pan, Filter with casters **(Only for use with Filter Leaf 8104492)**
	1068211SP	Pan, Filter without casters
	1082610	Pan, Filter Single Fryer
5a	8130568	Plug, ⅛-inch Socket Head Pipe (used with Item 5)
√ 5b	8261392	O-Ring (Pkg. of 5; used with Item 5; two required)
6	8236458	Suction Tube Assembly
	8235591	Suction Tube Assembly ***(Single Fryer Only)***
7	8101055	Flexline, 11.50-inch Oil Return
8	2306616	Rail, Upper Filter Pan Left/Right
9	2306619	Rail, Lower Filter Pan Left/Right
10	2203275	Support, Left Filter Pan
11	2203710	Support, Right Filter Pan
12	8104137	Caster, 2”
13	8104492	Leaf Assy, Filter (**Only for use with Filter Pan 1086977SP**)

* Not illustrated.
√ Recommended parts.

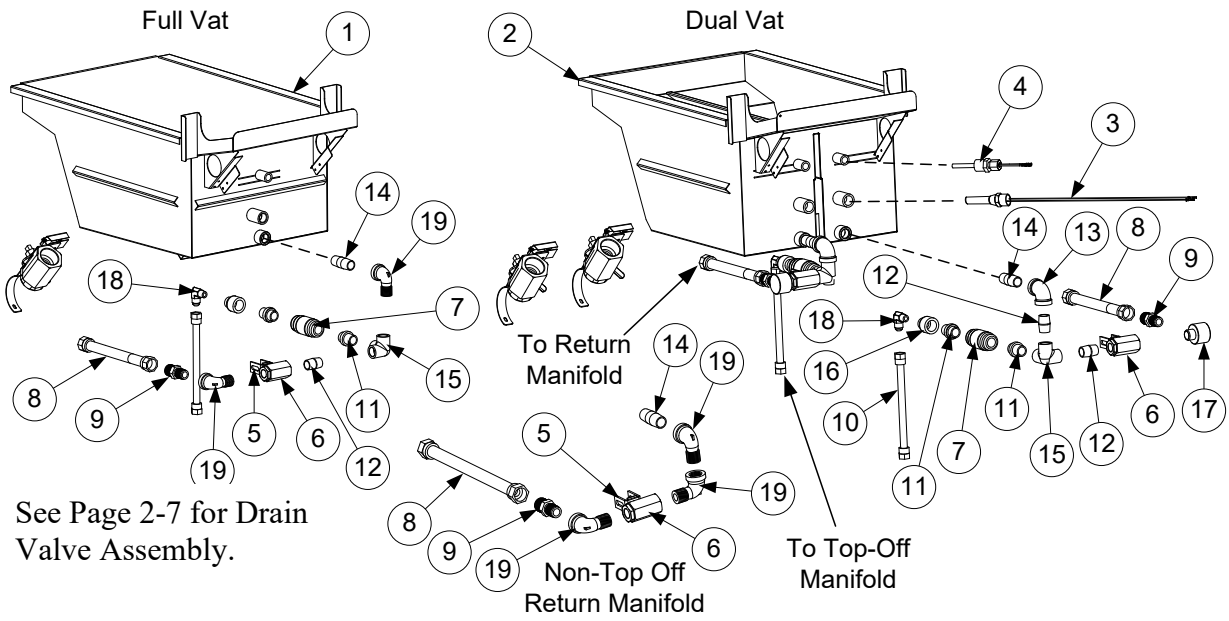
2.7 Filter Pump, Motor and Associated Components



ITEM	PART #	COMPONENT
1		Motor and Gasket Kit
	8261785	100V 50/60 Hz
√	8261712	115V 50/60 Hz
√	8261756	208V 50/60 Hz
	8261270	220-240V 50/60 Hz
	8261755	250V 50/60 Hz
2	8263191	Pump and Gasket Kit, Viking 4 GPM (includes gasket and cap screws below)
	8160093	Gasket, Pump/Motor
3	8091062	Cap Screw, 5/16-inch-18 4.00" NC Hex *(Connects pump to motor.)(use 8090194 washer)*
*	1080649	Heater Strip Assembly, 100-120V 25W 18"
*	1065912	Heater Strip Assembly, 208-250V 25W 18"
4	8072484	Valve, Solenoid ¼-inch" NPT
5	8101055	Flexline, 11.50-inch Oil Return
6	8101057	Flexline, 13-inch Oil Return
7	8101067	Flexline, 8.5-inch Oil Return
8	8101668	Adapter, ⅝-inch to ½-inch NPT Male
9	8101669	Adaptor, Female ⅞-inch OD x ½-inch
10	8102493	Fitting, ¼-inch x 90° Quick Connect Tube
*	8111071	Tubing, ¼-inch OD Teflon Vent (sold by the foot)
11	8130022	Nipple, ½-inch x Close NPT BM
12	8130165	Elbow, ST ½-inch x ½-inch NPT 90° BM
13	8130304	Bushing, ½-inch x ¼-inch BM Flush
14	8130530	Tee, Reducing ½-inch x ¼-inch x½-inch
15	8130537	Nipple, ¼-inch x 2-inch NPT BM
16	8130543	Elbow, Street ¼-inch NPT BM
17	8130807	Bushing, ¼-inch NPT x ⅛-inch NPT SS
18	8130838	Nipple, ¼-inch NPT BM Close

* Not illustrated.
√ Recommended parts.

2.8 Frypot Assemblies and Associated Parts



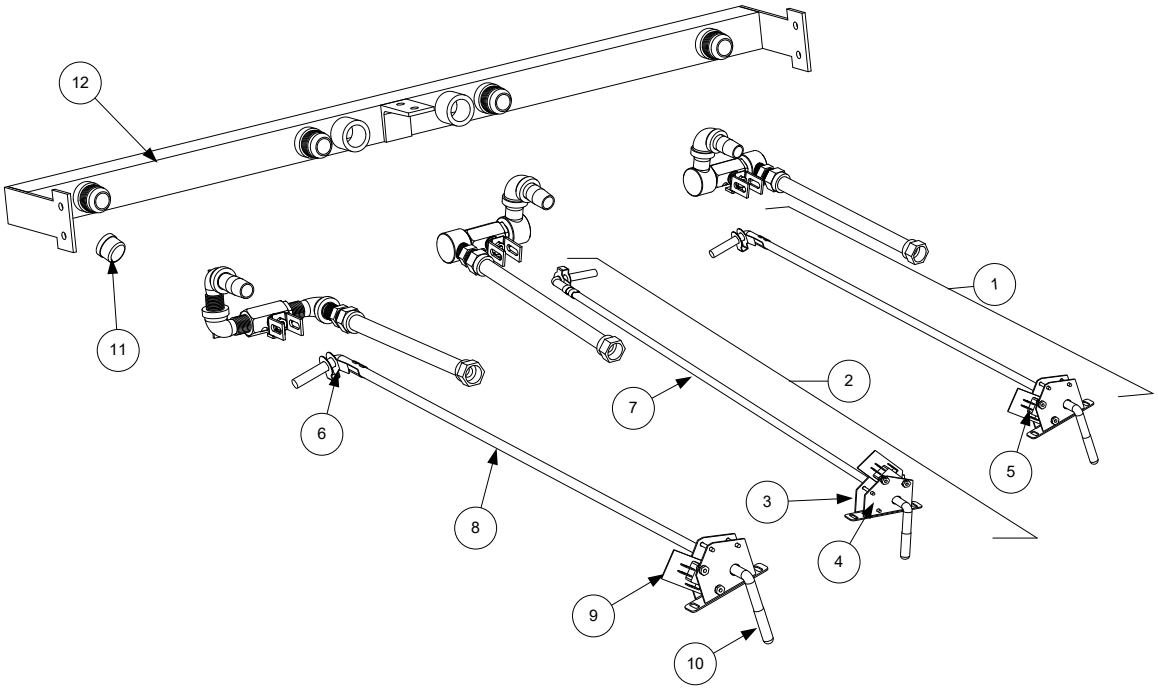
ITEM	PART #	COMPONENT
1	8238951	Frypot, Full-Vat FPEL17
2	8238956	Frypot, Dual-Vat FPEL17 no top off
	8242210	Riser, DV Frypot`
3		Thermostat Assembly, High-Limit Standard
	8262454	Non-CE Full Vat 425°F (218°C) (14 and 17kW FV) (Color Coded Black 806-7543)
	8262456	Non-CE Dual Vat 435°F (224°C) (17kW and 14kW DV) (Color Coded Red 806-8035)
	8262455	CE Full Vat 415°F (213°C) (14kW and 17kW CE) (Color-Coded Yellow 806-8132)
4	8262569	Probe, Temperature ATO RTD Kit
5	2005438	Handle, Valve Rear Flush
*	9002935	Retainer, Nut Oil Return Valve
6	8100278	Valve, Return ½" Ball
7	8100667	Valve, Check ½" 1 PSI
8	8101067	Flexline, ⅝" OD x 8.50" Long Return Oil
9	8101668	Adaptor, Male ⅝" OD x ½"
10	8103591	Flexline, ½" OD x 8.00" Long Top Off
11	8103738	Adaptor, Check Valve Close NPL
12	8130022	Nipple, ½" Close NPT BM
13	8130062	Elbow, ½" BM x 90°
14	8130298	Nipple, ½" x 2.00" NPT BM Pipe
15	8130331	Elbow, V-Side Outlet ½" NPT
16	8130555	Reducer, Bell ½" to ¼" NPT BM
17	8130908	Adapter, ½" NPT 90° ***(also used in DV non-Top Off manifolds in place of item 19)***
18	8130940	Elbow, ¼" NPT x ⅜" Flare
19	8130165	Elbow, St ½" x ½" NPT 90° BM

* Not illustrated.
√ Recommended parts.

2.9 Oil Return System Components

Typical
Rear-Flush Oil Return Plumbing

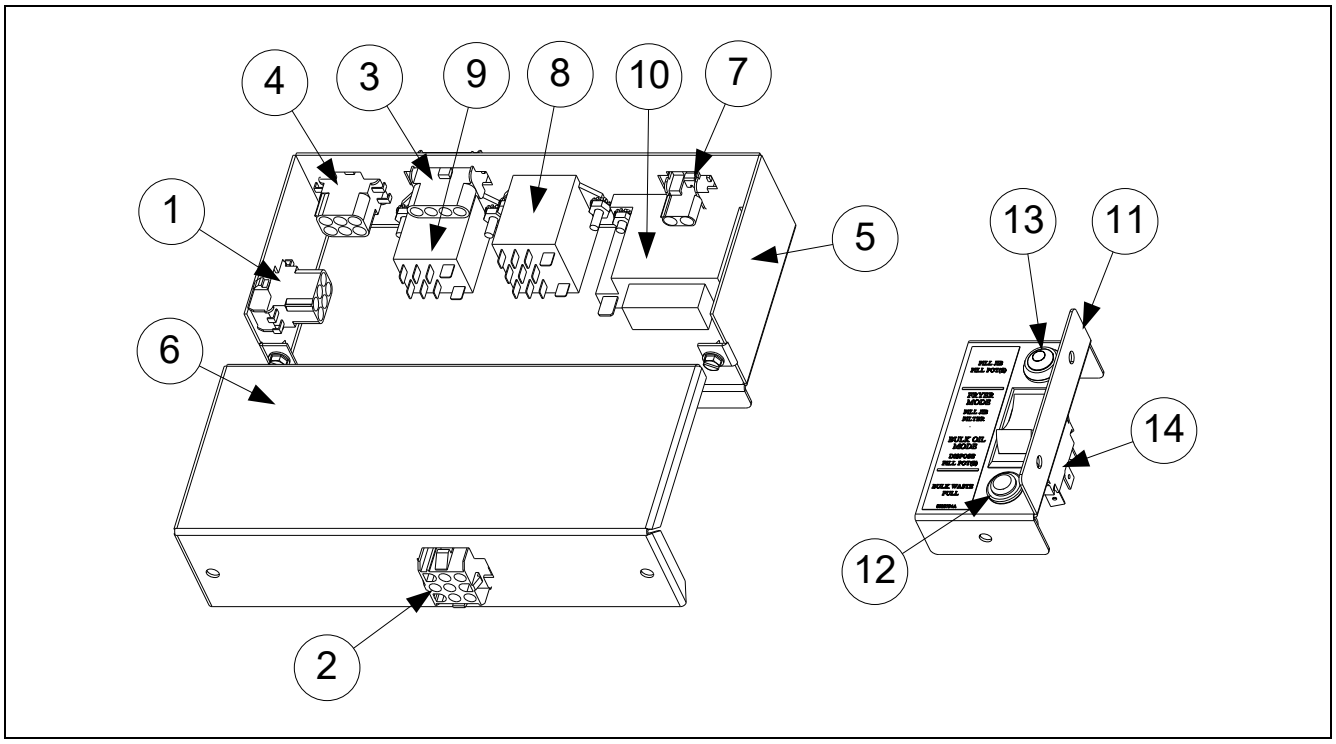
Full-vat rear-flush plumbing is shown on the left side of the oil return manifold; dual-vat plumbing is shown on the right side. Plumbing for a two-fryer battery is illustrated, most of the components except the oil return manifold and a few fittings are the same regardless of the number of fryers in the battery. Return valve assemblies are shown on preceding page.



ITEM	PART #	COMPONENT
1	1082433	Handle Assembly, Full-Vat and Right Dual-Vat Rear Flush Complete
2	1082432	Handle Assembly, Left Dual-Vat Rear Flush Complete
3	1065595	Bracket Assembly, Microswitch
4	2005401	Bracket, Handle Retainer
5	8072103	Microswitch, Straight Lever
6	8090601	Clip, Clevis
7	8103887	Handle, Oil Return Left Dual Vat Rod
8	8103886	Handle, Oil Return Right Dual Vat and Full Vat Rod
9	8160220	Insulation, Oil Return Microswitch
10	8160643	Grip, Oil Return Valve Handle
11	8130907	Cap, 15/16-inch Valve Safety
12		Manifolds
*	8103015	Manifold, Two-Station Fryer ***(use 8102543 for non-filter units)***
*	8103016	Manifold, Three-Station Fryer ***(use 8102544 for non-filter units)***
*	8103017	Manifold, Four-Station Fryer ***(use 8102545 for non-filter units)***

***** Not illustrated.

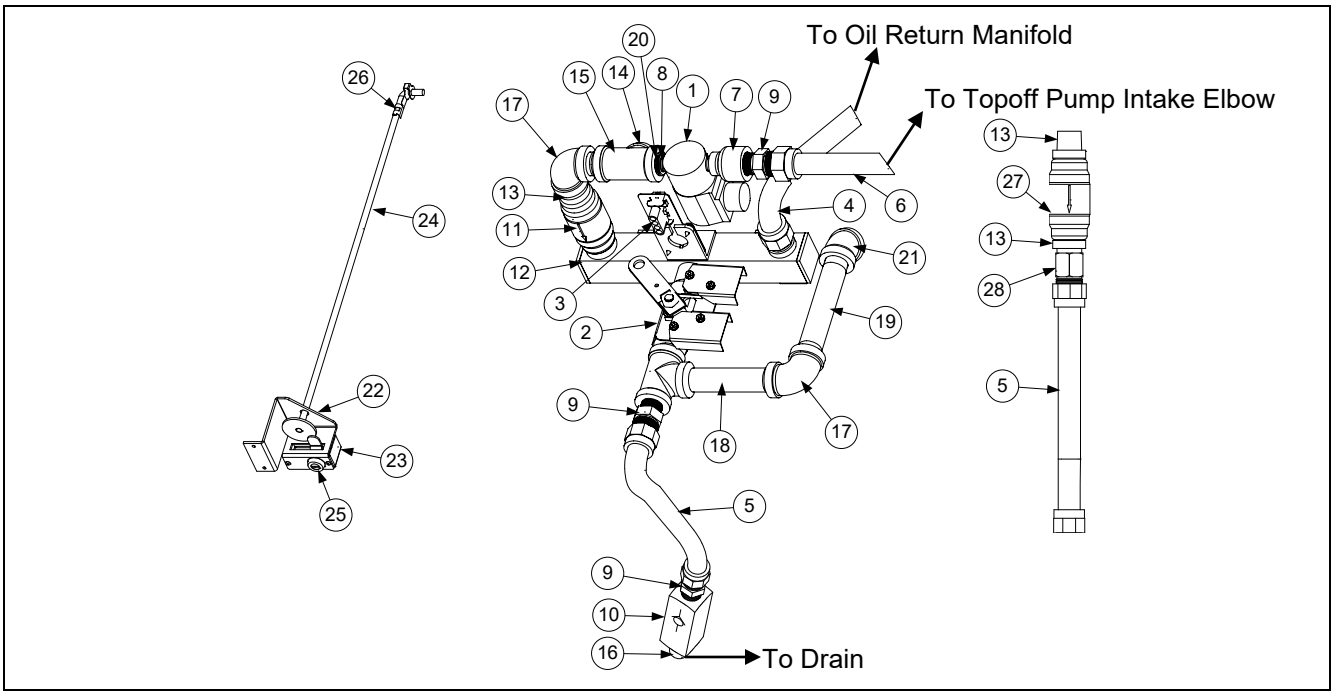
2.10 Bulk Oil Relay Box and Switch



ITEM	PART #	COMPONENT
1	1083409	Harness, Bulk Oil Power
2	1083410	Harness, Bulk Oil Control
3	1083412	Harness, Bulk Oil Switches
4	1083413	Harness, Bulk Oil Communication
5	2208665	Box, Bulk Oil Relay
6	2208666	Cover, Bulk Oil Relay Box
7	8071068	Connector, 2-pin
√ 8	8075303	Relay, 24VAC 3PDT
√ 9	8075304	Relay, 24VAC DPDT
√ 10	8075310	Relay, 2 Second Time Delay
11	2208706	Bracket, FPEL17 Bulk Oil Control
12	8075309	Light, Amber, 24VAC
√ 13	8074678	Switch, Momentary
√ 14	8075308	Switch, 3 Position

√ Recommended parts.

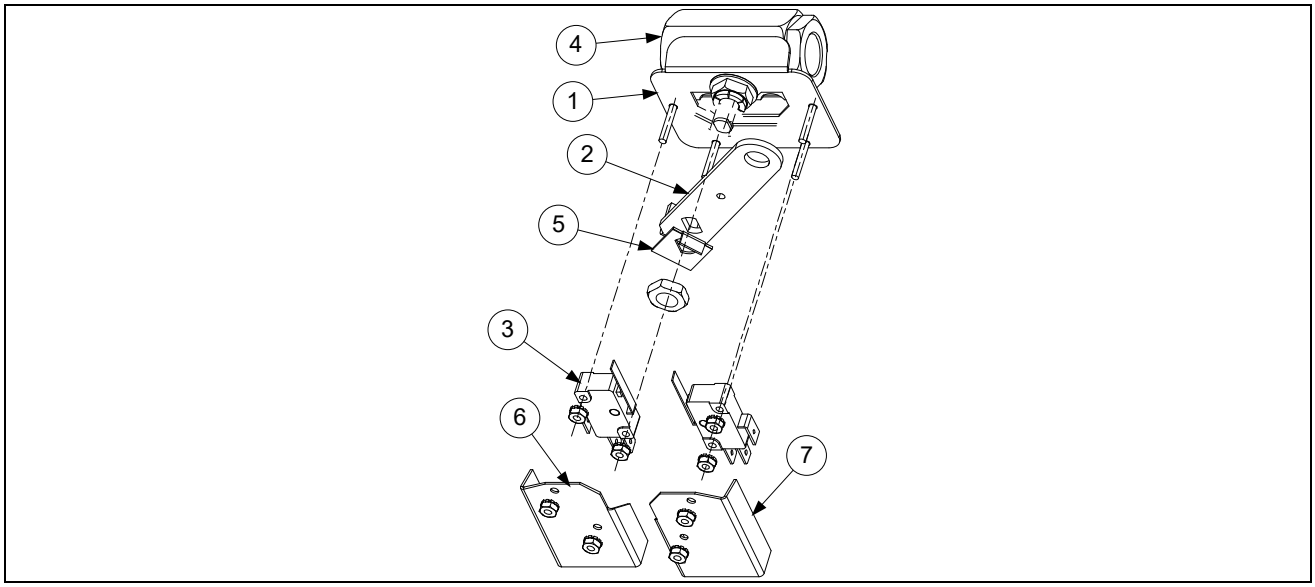
2.11 Bulk Oil Plumbing



ITEM	PART #	COMPONENT
√ 1	1066830	Solenoid Assy
2	1083368	Valve, Assy Waste Dispose (see next page for valve assembly)
3	8075318	Cable, Bulk Oil Communication
4	8101057	Flexline, ⅝" OD x 13.00"
5	8101067	Flexline, ⅝" OD x 8.50"
6	8101069	Flexline, ⅝" OD x 29.50" 3, 4 and 5 battery (use 8101057 for two battery)
7	8100555	Reduce, Bell ½" to ¼" NPT
8	8130838	Nipple, ¼" NPT
9	8101668	Adaptor, Male ⅝" OD x ½"
√ 10	8103531	Valve, Check 20 PSI (Bypass)
√ 11	8103583	Valve, Check 4 PSI (Manifold)
12	8103596	Manifold
13	8003738	Adapter, Check Valve
14	8130463	Plug, Counter Sink
15	8130003	Tee, ½" x ½" x ½"
16	8130022	Nipple, ½" x Close NPT
17	8130062	Elbow, ½" 90°
18	8130093	Nipple, ½" x 4.00"
19	8130281	Nipple, ½" x 5.00"
20	8130304	Bushing, ½" x ¼"
21	8130345	Elbow, ½" 45°
22	2205656	Brace, Handle
23	2205657	Cover, Handle
24	8237142	Handle, Waste Pull
25	8103587	Lock and Key, Waste Handle
26	8090601	Clip, Clevis Left Rod End
√ 27	8100667	Valve, Check 1 PSI (Pump Motor)
28	8101669	Adapter, Female ⅞" OD x ½"

* Not illustrated.
√ Recommended parts.

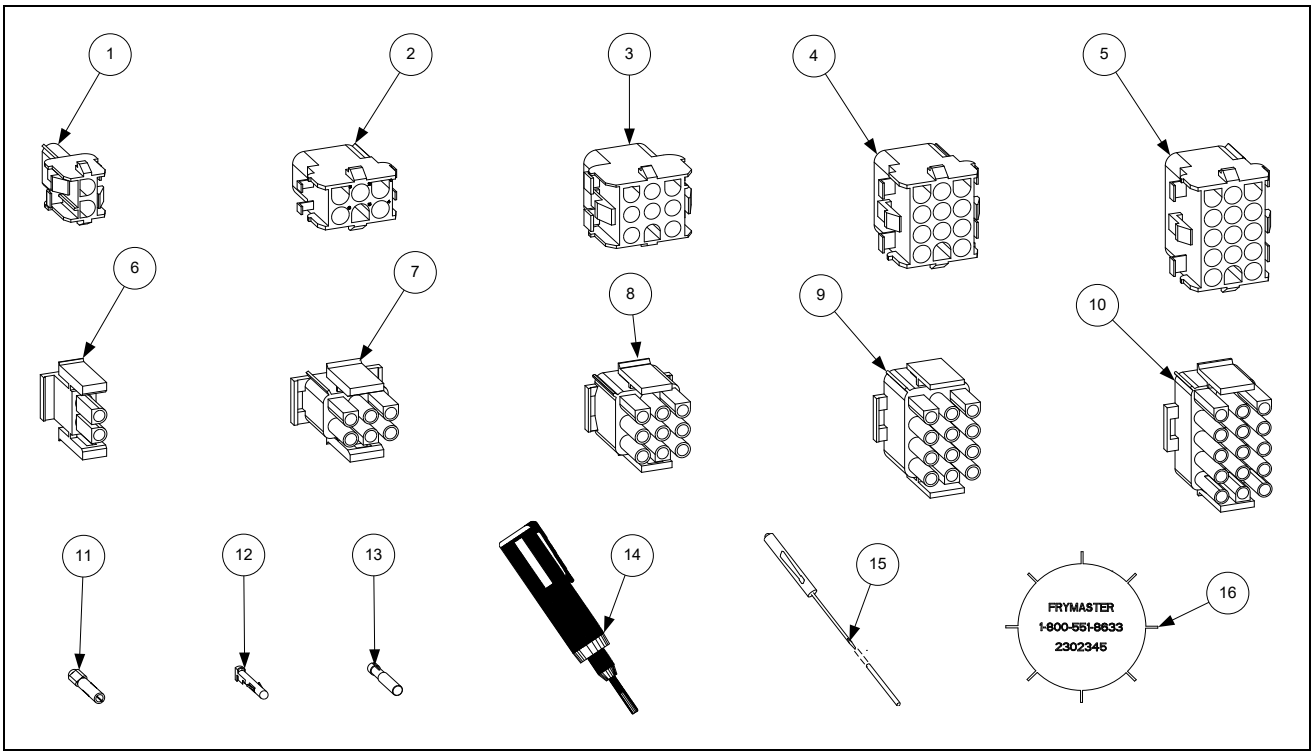
2.12 Bulk Oil Dispose Waste Valve



ITEM	PART #	COMPONENT
	1083368	Valve, Dispose Waste Assembly
1	1080445	Bracket, Waste Valve
2	2205615	Handle, Waste Valve
√ 3	8072103	Microswitch
4	8100278	Valve, ½" Ball
5	9002935	Retainer, Nut Return Valve
6	9012348	Cover, DV Safety Switch
7	9022348	Cover, DV Safety Switch

√ Recommended parts.

2.13 Wiring Connectors, Pin Terminals, and Power Cords



ITEM	PART #	COMPONENT
		Power Cords
*	8070154	100/120V–15A 3-wire, w/grounded plug
*	8071685	100/208/240V–18A 3-wire, w/o plug
*	8073817	208-250V/74A 3-Phase 4-wire w/plug 96” 8 awg
*	8074668	208-250V/84A 3-Phase 4-wire w/plug 96” 6 awg
*	8073834	208-250V/84A 3-Phase 4-wire w/plug 96” 6 awg
*	8073428	220V/15A 3-wire, w/o plug Export 96” 8 awg
*	8073836	240V/32A 3-Phase 5-wire w/plug Export 86.5”
*	8073835	220-250V 3-Phase 5-wire w/o plug Export 92”
*	8073867	220-250V/50A 3-Phase 5-wire w/plug Export 109”
		Connectors
1	8071068	2-Pin Female
2	8070158	6-Pin Female
3	8070156	9-Pin Female
5	8070159	12-Pin Female
5	8070875	15-Pin Female
6	8071067	2-Pin Male
7	8070157	6-Pin Male
8	8070155	9-Pin Male
9	8070160	12-Pin Male
10	8070804	15-Pin Male
11	8261341	Terminal, Female Split Pin (Pkg of 25)
12	8261342	Terminal, Male Split Pin (Pkg of 25)
13	8072518	Plug, Mate-N-Lock (Dummy Pin)
14	8070928	Extract Tool Pin Pusher
15	8064855	Pin Pusher Screwdriver Assembly
16	2302345	SMT Pin Extractor
*	8074660PK	SMT Pin Service Repair Kit

* Not illustrated.

2.14 Fasteners

ITEM	PART #	COMPONENT
*	8090429	Bolt, ¼-inch – 20 x 2.00-inch Hex Head ZP Tap
*	8090131	Bolt, ¼-inch -20 x ¾-inch Hex
*	8091020	Cap Screw, 5/16-inch-18 5.50" NC Hex *(Connects pump to motor.)*
*	8090448	Clip, Tinnerman
*	8261366	Nut, 4-40 Keps Hex (Pkg. of 25) (8090237)
*	8261358	Nut, 6-32 Keps Hex (Pkg. of 25) (8090049)
*	8090247	Nut, 8-32 Keps Hex
*	8261376	Nut, 10-32 Keps Hex (Pkg. of 10) (8090256)
*	8090766	Nut, 10-32 Keps Hex SS
*	8090581	Nut, ½ NPT Locking
*	8090020	Nut Cap 10-24 NP
*	8261372	Nut Grip ¼-inch ¼-20 Hex NP (Pkg. of 10) (8090059)
*	8090417	Nut Flange ¼-inch ¼-20 Serr
*	8090535	Nut, "T" ¼-inch-20 x 7/16 SS
*	8090495	Nut, ¼-inch – 20 Press
*	8090540	Nut, Lock ½-inch-13 Hex 2-Way ZP
*	8261359	Screw, 4-40 x ¾-inch Slotted Round Head (Pkg. of 25) (8090354)
*	8261365	Screw, 6-32 x ⅜-inch Slot Head (Pkg. of 25) (8090095)
*	8090357	Screw, 6 x ⅜-inch Phillips Head NP
*	8090359	Screw, 8 x ¼-inch Hex Washer Head
*	8090360	Screw, 8 x ⅜-inch Hex Washer Slot Head
*	8261371	Screw, 8 x ½-inch Hex Head ZP (Pkg. of 25) (8090361)
*	8090364	Screw, 8 x ⅝-inch Hex Washer Head ZP
*	8090518	Screw, 8-32 x ⅜-inch Hex Washer Slotted Head SS
*	8090104	Screw, 8-32 x ½-inch Slotted Head ZP
*	8261363	Screw, 8-32 x ½-inch NP (Pkg. of 25) (8090103)
*	8261360	Screw, 10-24 x 5/16-inch Round Slot Head ZP (Pkg. of 25) (8090024)
*	8261330	Screw, 10-32 x ⅜-inch Slot Head SS (Pkg. of 25) (8090117)
*	8091003	Screw, 10-32 x ⅜-inch Hex Trim Head SS
*	8090270	Screw, 10-32 x ½-inch Phillips Head ZP
*	8261375	Screw, 10-32 x ¾-inch Hex Trim Head SS (Pkg. of 5) (8090401)
*	8091000	Screw, 10-32 x 1¼-inch Hex Sck C/S
*	8261374	Screw, 10 x ½-inch Hex Head (Pkg. of 25) (8090412)
*	8090266	Screw, 10 x ½-inch Phillips Head ZP
*	8090434	Screw, 10 x ⅜-inch Hex Washer Head NP
*	8090123	Screw, 10 x ¾-inch Slot Head
*	8261389	Screw, 1/4-20 x ¾-inch Hex Head ZP (Pkg. of 10) (8090131)
*	8090582	Washer ½ NPT Locking
*	8090184	Washer, #10 LK ZP
*	8090190	Washer, .625 X .275 X 40 Flat SS
*	8090191	Washer, Lock ¼ Spring ZP
*	8090193	Washer, Flat ¼ Nylon
*	8090194	Washer, Flat 5/16 ZP

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