



45 Series Gas Fryers

Service and Parts Manual



Frymaster, a member of the Commercial Food Equipment Service Association, recommends using CFESA Certified Technicians.

24-Hour Service Hotline 1-800-551-8633

**819-5665
07-00**



DANGER
IMPROPER INSTALLATION, ADJUSTMENT, ALTERATION, SERVICE, OR MAINTENANCE CAN CAUSE PROPERTY DAMAGE, INJURY, OR DEATH. READ THE INSTALLATION, OPERATING, AND SERVICE INSTRUCTIONS THOROUGHLY BEFORE INSTALLING OR SERVICING THIS EQUIPMENT.



DANGER
FOR YOUR SAFETY, DO NOT STORE OR USE GASOLINE OR OTHER FLAMMABLE LIQUIDS OR VAPORS IN THE VICINITY OF THIS OR ANY OTHER APPLIANCE.



DANGER
POST IN A PROMINENT LOCATION THE INSTRUCTIONS TO BE FOLLOWED IN THE EVENT THE USER SMELLS GAS. THIS INFORMATION SHALL BE OBTAINED BY CONSULTING THE LOCAL GAS SUPPLIER.

THIS EQUIPMENT IS TO BE INSTALLED IN COMPLIANCE WITH THE BASIC PLUMBING CODE OF THE BUILDING OFFICIALS AND CODE ADMINISTRATORS INTERNATIONAL, INC. (BOCA) AND THE FOOD SERVICE SANITATION MANUAL OF THE FOOD AND DRUG ADMINISTRATION.

COMPUTERS

FCC

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: 1) This device may not cause harmful interference, and 2) This device must accept any interference received, including interference that may cause undesired operation. While this device is a verified Class A device, it has been shown to meet the Class B limits.

CANADA

This digital apparatus does not exceed the Class A or B limits for radio noise emissions as set out by the ICES-003 standard of the Canadian Department of Communications.

Cet appareil numérique n'émet pas de bruits radioélectriques dépassant les limites de classe A et B prescrites dans la norme NMB-003 édictée par le Ministre des Communications du Canada.



DANGER
THIS PRODUCT CONTAINS CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER AND/OR BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM. Operation, installation, and servicing of this product could expose you to airborne particles of glasswool or ceramic fibers, crystalline silica, and/or carbon monoxide. Inhalation of airborne particles of glasswool or ceramic fibers is known to the State of California to cause cancer. Inhalation of carbon monoxide is known to the State of California to cause birth defects or other reproductive harm.

FRYMASTER FRYERS EQUIPPED WITH LEGS ARE FOR PERMANENT INSTALLATION. FOR MOVEABLE OR PORTABLE INSTALLATION, FRYMASTER OPTIONAL EQUIPMENT CASTERS MUST BE USED.
QUESTIONS??? CALL 1-800-551-8633.

45 SERIES GAS FRYERS SERVICE AND PARTS MANUAL

TABLE OF CONTENTS

CHAPTER 1: Service Procedures

1.1	Functional Description	1-1
	Pilot Ignition System.....	1-1
	Control Options	1-1
	Interface Boards	1-1
	Thermostats and Temperature Probes	1-3
1.2	Accessing Fryers for Servicing	1-4
1.3	Checking the Burner Manifold Gas Pressure	1-4
1.4	Adjusting the Pilot Flame.....	1-5
1.5	Cleaning the Gas Valve Vent Tube.....	1-6
1.6	Adjusting Burner Ceramic Target Spacing and Alignment	1-6
1.7	Calibrating the Thermostat Control.....	1-6
1.8	Replacing Fryer Components.....	1-7
1.8.1	Replacing the Controller or Computer	1-7
1.8.2	Replacing the Operating Thermostat.....	1-8
1.8.3	Replacing the Temperature Probe	1-8
1.8.4	Replacing the Hi-Limit Thermostat in Fryers with Thermostat Controls.....	1-9
1.8.5	Replacing the Hi-Limit Thermostat in Fryers with Other Than Thermostat Controls.....	1-10
1.8.6	Replacing the Heat Mode Indicator Light in Fryers with Thermostat Controls	1-10
1.8.7	Replacing the Power or Melt Cycle Switch in Fryers with Thermostat Controls.....	1-11
1.8.8	Replacing the Melt Cycle Timer in Fryers with Thermostat Controls.....	1-11
1.8.9	Replacing Burner Ceramic Targets	1-12
1.8.10	Replacing the Gas Valve.....	1-12
1.8.11	Replacing the Pilot Assembly or Thermopile	1-13
1.8.12	Replacing the Frypot	1-14
1.9	Troubleshooting and Problem Isolation	1-15
1.9.1	Ignition Failures	1-16
1.9.2	Improper Burner Functioning.....	1-17
1.9.3	Improper Temperature Control	1-18
1.9.4	Computer-Related Problems	1-19
1.9.5	Filtration Problems	1-20
1.9.6	Leakage Problems	1-22
1.9.7	Basket Lift Malfunctions.....	1-22
1.9.8	Interpretation of Digital Controller Lights	1-29
1.10	Troubleshooting Guides	1-29
1.10.1	Troubleshooting the 24 VAC Circuit in Units without Interface Boards.....	1-30
1.10.2	Troubleshooting the 24 VAC Circuit in Units without Interface Boards.....	1-31
1.10.3	Troubleshooting the Gas Valve.....	1-33
1.10.4	Troubleshooting the Thermostat	1-34
1.10.5	Troubleshooting the Temperature Probe.....	1-35
	Probe Resistance Chart.....	1-36
1.11	Wiring Diagrams	1-38

CHAPTER 2: Parts List

Accessories.....	2-1
Basket Lift Assemblies and Component Parts	2-2
Bell Crank Basket Lift.....	2-2
Modular Basket Lift.....	2-3
Burner Assembly Component Parts	2-4
Cabinet Assemblies and Component Parts.....	2-6
Fryer and Spreader Cabinet Assembly Components	2-6
Filter Magic II Cabinet Components	2-8
Casters, Legs, and Associated Hardware	2-10
Component Shield and Filter Box Assemblies and Component Parts	2-11
Control Panel Assemblies, Flue Caps, Top Caps, and Related Items	2-14
Controller Assemblies (Thermostat Controllers)	2-16
Controller Assemblies (Other than Thermostat Controllers)	2-18
Door Assembly.....	2-19
Drain and Filtration System Components	2-20
Filter Magic II Square Drain Components	2-20
FM45 Drain Valve Assembly.....	2-21
MJ45 Drain Valve Assembly.....	2-21
Filter Magic II Filter Pan Assembly	2-22
Filter Magic II Filter Pump/Motor Assemblies and Associated Components.....	2-23
Frypot Assemblies and Component Parts	2-24
Oil Return Handle Assembly	2-26
Oil Return Plumbing	2-27
Power Shower Assembly	2-28
Temperature Probes, High-Limits, and Related Components.....	2-29
Wiring Assemblies, Wiring Harnesses, Cables, and Cable Assemblies	2-30
Miscellaneous Electrical Components	2-32

45 SERIES GAS FRYERS SERVICE AND PARTS MANUAL

CHAPTER 1: SERVICE PROCEDURES

1.1 Functional Description

The 45 Series fryers contain a welded steel (stainless or cold rolled) frypot that is directly heated by gas flames that are diffused evenly over its lower surface by ceramic targets.

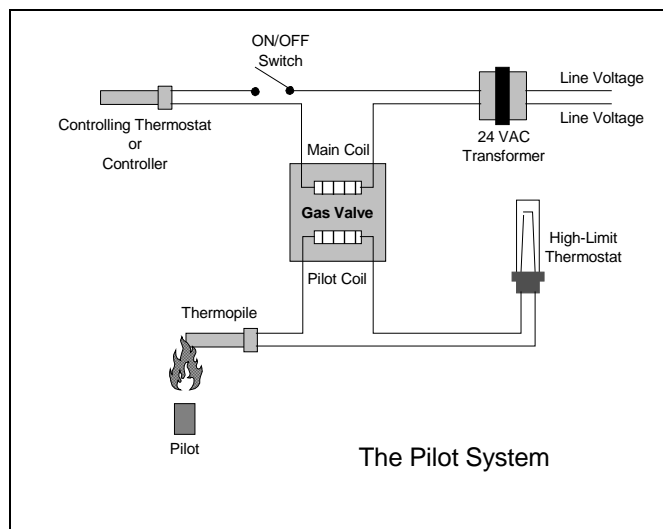
The flames originate from orifices in a U-shaped burner manifold positioned beneath the frypot. The orifice diameters differ for natural and propane gas as indicated in the table below (see Page 2-5 for a complete list of available orifices).

45 Series Orifice Sizes (0-1999 ft/609 m)		
Gas	Inches	Millimeters
Natural	0.057	1.45
Propane	0.034	0.86

Gas flow to the manifold is regulated by an electromechanical gas valve. This series of fryers is equipped with a 24-volt gas valve and all models use a pilot ignition system.

PILOT IGNITION SYSTEM

The pilot ignition system is comprised of the pilot orifice, pilot hood, and a thermopile. The pilot serves two purposes. The first is to light the burner, the second is to heat the thermopile. In operation, the thermopile is in contact with the pilot flame and generates millivolts. The millivolt output passes through a normally closed high-limit switch and energizes the gas valve pilot coil, which in turn opens the pilot valve. If the pilot flame is extinguished, voltage is lost to the gas valve pilot coil and the pilot valve closes. A separate 24-volt circuit, activated by the fryer ON/OFF switch, provides voltage through the thermostat or controller to the gas valve main coil, which opens the main valve. The gas valve is constructed so that the main valve will not open if the pilot valve is not open. The pilot flame must be manually lit (either with a match or with an optional built-in piezo igniter) when the fryer is first placed into operation.



CONTROL OPTIONS

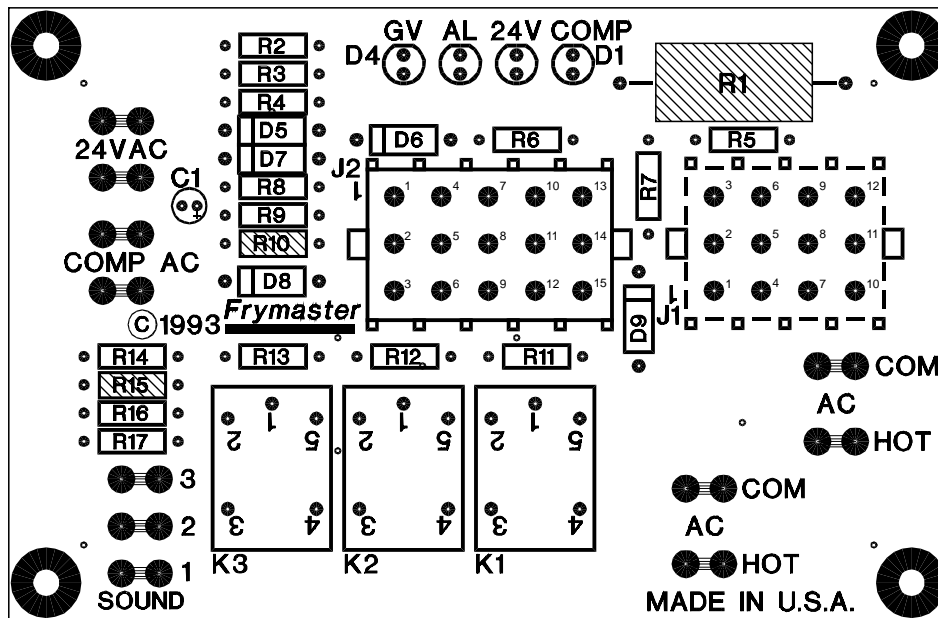
45 Series fryers may be equipped with thermostat controllers, analog controllers, digital controllers, basket lift timers, or Computer Magic III computers.

In fryers equipped with thermostat controls, the fryer and melt cycle are turned on and off by means of rocker switches and the temperature is set by means of a knob connected directly to the frypot-mounted thermostat. These units have no interface board. In this type of unit, when the melt cycle switch is placed in the ON position, the fryer stays in the melt cycle mode until the switch is manually placed in the OFF position, even if the frypot is at setpoint temperature.

Fryers equipped with other types of controllers have an interface board located in the component shield behind the control panel.

INTERFACE BOARDS

The interface board provides the link between the controller/computer and the fryer's individual components without requiring excessive wiring, and allows the controller to execute commands from one central point. When built, depending upon the configuration of the particular fryer, any one of three different boards may be used. ***Regardless of the particular board installed when the fryer was built, P/N 806-3548 is the universal replacement part.***



NOTES:

1. RELAYS K1 AND K2 ARE FOR BELL CRANK BASKET LIFTS. THEY ARE NOT PRESENT ON BOARDS 806-5490 (U.S. AND NON-CE EXPORT UNITS W/O BASKET LIFTS) OR 806-7501 (CE UNITS, WITH OR WITHOUT BASKET LIFTS).
2. RESISTORS R1, R10, AND R15 ARE NOT USED ON ANY OF THE THREE BOARDS.
3. RESISTORS R11 AND R12 ARE NOT USED ON 806-5490 BOARDS.

INTERFACE BOARDS 806-3548, 806-5490, AND 806-7505

FREQUENTLY USED TEST POINTS FOR 45 SERIES INTERFACE BOARDS			
Test	Meter Setting	Pins	Results
12 VAC Power to Controller	50 VAC Scale	1 and 3 of J2	12-18
24 VAC Power	50 VAC Scale	24 VAC Terminals	22-28
24 VAC Power to Gas Valve	50 VAC Scale	6 on J1 and GROUND	22-28
120 VAC Power	250 VAC Scale	7 and 12 of J1	110-125
Probe Resistance*	R x 1000 OHMS	2 and 3 of J1	**
* Disconnect 15-Pin harness from controller before testing probe circuit.			
** See Probe Resistance Chart at end of chapter.			

Four LEDs, arranged across the top of the boards and identified in the table below, are provided to assist in troubleshooting.

45 SERIES INTERFACE BOARD LED DIAGNOSTIC LIGHTS	
GV	Indicates 24 VAC to the gas valve
AL	Indicates open Drain Safety Switch (if installed)
24V	Indicates 24 VAC from transformer
COMP	Indicates 12 VAC to computer

Every board contains one heat relay (K3), and may contain two basket lift relays (K1 and K2). As shipped from the factory, fryers with bell crank basket lifts will have relays K1, K2, and K3. All other factory-original fryers will have boards with only relay K3.

THERMOSTATS AND TEMPERATURE PROBES

Different types of thermostats are used in 45 Series fryers, depending on the fryers' configuration.

Fryers equipped with Thermostat Controls have an adjustable *controlling (operating) thermostat*. The temperature at which the thermostat opens and closes is adjusted by physically changing the setting of the thermostat itself by means of an attached knob. When new, the Fenwal controlling thermostat used in 45 Series fryers is sensitive to one-degree changes in temperature.

 CAUTION Fenwal thermostats are used in a number of Frymaster™ products. The thermostat for the 45 Series is 4 inches long. Do not use 3-inch Fenwal thermostats in 45 Series fryers.

Fryers equipped with all other type controls have a *temperature probe*. In these units, the probe resistance varies directly with the temperature. That is, as the temperature rises, so does resistance at a rate of approximately 2 ohms for every 1° (F or C). Circuitry in the controller monitors the probe resistance and controls burner firing when the resistance exceeds or falls below programmed temperatures (setpoints). The temperatures are programmed by means of a keypad on the face of the controller.

All 45 Series fryers are equipped with a *high-limit thermostat*. In the event that the fryer fails to properly control the oil temperature, the high-limit thermostat prevents the fryer from overheating to the flash point. The high-limit thermostat acts as a normally closed power switch that opens when

exposed to temperatures in the range of 425°F to 450°F (218°C to 232°C). The high-limit thermostat is the same for CE and Non-CE applications, but the terminals for attaching it to Robertshaw and Honeywell gas valves differ. When a replacement high-limit thermostat is ordered, make sure the kit appropriate for the valve in use is ordered.

1.2 Accessing Fryers for Servicing

DANGER

Moving a fryer filled with cooking oil/shortening may cause spilling or splattering of the hot liquid. Follow the draining instructions in Chapter 4 of the 45 Series Gas Fryer Installation and Operation Manual before attempting to relocate a fryer for servicing.

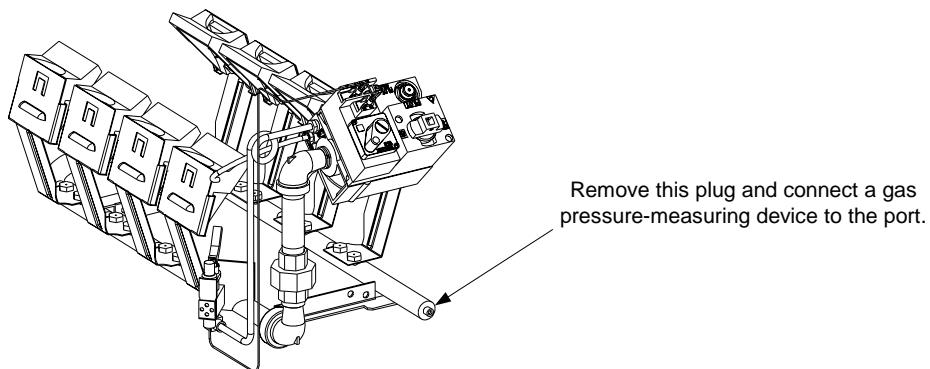
1. Shut off the gas supply to the unit. Unplug the power cord(s). Disconnect the unit from the gas supply.
2. Remove any attached restraining devices.
3. Relocate the fryer for service accessibility.
4. After servicing is complete, reconnect the unit to the gas supply, reattach restraining devices, and plug in the electrical cords.

1.3 Checking the Burner Manifold Gas Pressure

WARNING

This task should be performed by qualified service personnel only.

1. Ensure that the gas valve knob or button is in the OFF position.
2. Remove the pressure tap plug from the end of the manifold (see illustration below for location) and connect a gas pressure-measuring device to the port.



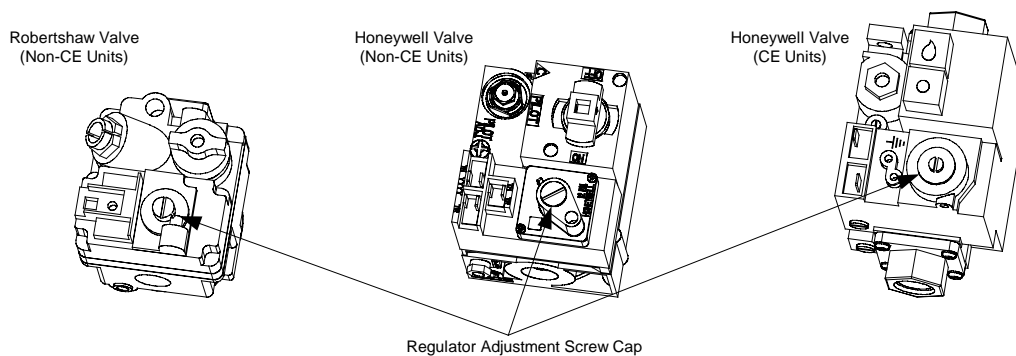
3. Place the gas valve in the ON position then place the fryer power switch in the ON position. When the burner lights and continues to burn, compare the pressure reading to that for the corresponding gas in the tables on the following page.

Non-CE Standard Burner Manifold Gas Pressures	
Gas	Pressure
Natural	3.5" W.C. 0.73 kPa
Propane	8.25" W.C. 2.05 kPa

CE Standard Burner Manifold Gas Pressures	
Gas	Pressure (mbar)
Natural Gas Lacq (G20) under 20 mbar	7,5
Natural Gas Gronique * (G25) under 25 mbar	10
Natural Gas Gronique (G20) under 20 mbar	10
Propane (G31) under 37 or 50 mbar	20,6

* Belgian G25 = 7,0 mbar

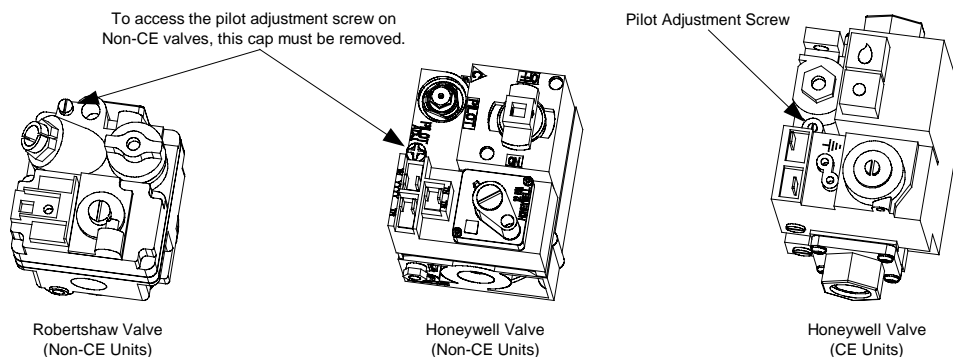
4. If the measured gas pressure does not match the appropriate pressure in the tables above, remove the cap from the gas valve regulator and adjust to the correct pressure.



5. Place the fryer power switch and the gas valve in the OFF position. Remove the fitting from the pressure tap hole and reinstall the plug. Place the gas valve in the ON position, and check for and eliminate any gas leaks. Place the gas valve in the OFF position.

1.4 Adjusting the Pilot Flame

1. On non-CE valves, remove the cap covering the pilot adjustment screw. On all valves, turn the pilot adjustment screw counterclockwise to increase the length of the flame or clockwise to decrease the length of the flame. Adjust the flame to a length of 1 to 1½ inches (25 to 38mm).



2. On Non-CE valves, reinstall the pilot adjustment screw cap.

1.5 Cleaning the Gas Valve Vent Tube

1. Carefully unscrew the vent tube from the gas valve. **NOTE:** The vent tube may be straightened for ease in removal.
2. Pass a piece of ordinary binding wire (.052 inch diameter) or equivalent through the tube to remove any obstruction.
3. Remove the wire, then blow through the tube to ensure it is clear.
4. Reinstall tube and bend it so that the opening is pointing downward.

1.6 Adjusting Burner Ceramic Target Spacing and Alignment



DANGER

Drain the frypot or remove the handle from the drain valve before proceeding further.

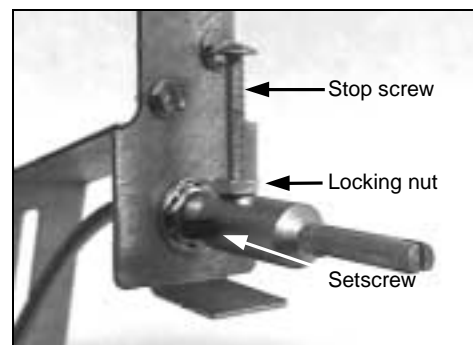
Proper spacing of the top edge of the burner ceramic targets is $\frac{3}{4}$ inch (13 mm) from the frypot side. To adjust target spacing, bend the brackets to which they are attached away or toward the frypot to the proper distance. (A length of board of the proper thickness is useful as a gauge to verify spacing and alignment.)

1.7 Calibrating the Thermostat Control

NOTE: The fryer control panel must be hinged down from the control panel mounting frame to perform thermostat calibration. In order to hinge the control panel down, the thermostat knob must be removed from its shaft. It is secured with a setscrew located opposite the index mark on the knob.

1. Fill the frypot to the lower OIL-LEVEL line with cooking oil/shortening. If solid shortening is used, it must be pre-melted before starting the calibration procedure.
2. Ensure the fryer ON/OFF Switch is in the OFF position, then light the pilot. (Refer to Chapter 3 of the 45 Series Gas Fryer Installation and Operation Manual for detailed lighting instructions.)
3. Insert a good grade thermometer or pyrometer into the frypot so that it touches the thermostat guard.
4. Loosen the setscrew and stop screw securing the thermostat shaft extension to the flexible shaft. Remove the extension to expose the slot in the end of the flexible shaft.
5. Place the fryer ON/OFF switch in the ON position.

NOTE: If the burner does not light at this time, it does not mean the thermostat is defective!



Use a small flat-tipped screwdriver to slowly turn the flexible shaft **counterclockwise** until the burner lights. *Turning the shaft counterclockwise causes the burner to light and clockwise causes it to shut off.*

- When the cooking oil/shortening temperature reaches 325°F (162°C), turn the flexible shaft slowly clockwise until the burner shuts off.
- Allow the fryer to sit for a few minutes, then slowly turn the flexible shaft **counterclockwise** until the burner lights.
- Repeat steps 6 and 7 at least three times to ensure an accurate setting is obtained. The Thermostat Control is considered to be properly calibrated when the burner lights as the cooking oil/shortening cools to 325°F (162°C)—not when the burner shuts off as the temperature rises.
- Once the calibration point of 325°F (162°C) is determined, allow the burner to cycle on and off at least 3 times to be sure it will light at the calibrated temperature.
- After the calibration is complete, place the fryer power switch in the OFF position and disconnect the fryer from the electrical supply.
- Carefully replace the thermostat shaft extension, ensuring that the stop screw is pointed straight up. Tighten the stop screw and locking nut and the setscrew, being careful not to rotate the flexible shaft.

⚠ CAUTION

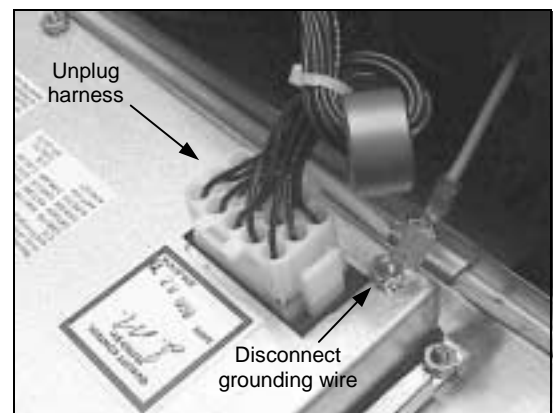
The thermostat flexible shaft must not be rotated while installing the thermostat shaft extension!
When handling the thermostat, do not rotate the shaft more than two turns in either direction. Doing so will cause damage to the thermostat.

- Close the fryer control panel and replace the screws the upper corners.
- Reinstall the thermostat knob with its pointer aligned with the 325°F (162°C) index mark on the temperature dial.
- Reconnect the fryer to the electrical supply.

1.8 Replacing Fryer Components

1.8.1 Replacing the Controller or Computer

- Disconnect the fryer from the electrical power supply.
- Unscrew the two control panel screws. The control panel is hinged at the bottom and will swing open from the top.
- Unplug the fryer wiring harness from the back of the controller/computer and disconnect the grounding wire.



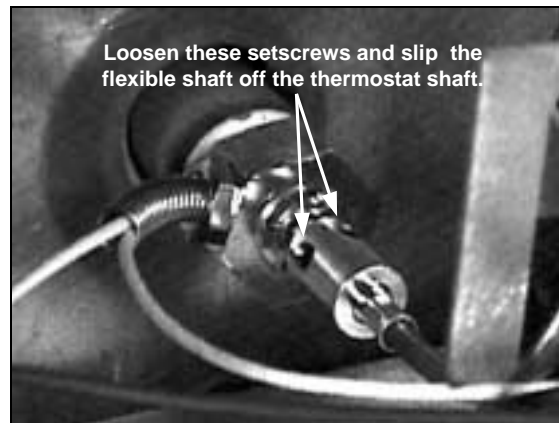
4. Remove the controller/computer by lifting it from the hinge slots in the fryer control panel frame.
5. Reverse the procedure to install a new controller/computer.

1.8.2 Replacing the Operating Thermostat

⚠ CAUTION

The thermostat must be calibrated after installation is complete. Refer to Section 1.7 for calibration instructions.
When handling the thermostat, do not rotate the shaft more than two turns in either direction. Doing so will cause damage to the thermostat.

1. Disconnect the fryer from the electrical supply and drain the frypot.
2. Loosen the setscrew securing the thermostat knob and remove the knob. Remove the screws from the upper left and right corners of the control panel. The control panel is hinged at the bottom and will swing open from the top.
3. Disconnect the 9-Pin connector and remove the control panel from the fryer by disengaging its tabs from the hinge slots in the mounting frame.
4. Loosen the setscrews securing the flexible shaft to the thermostat shaft and slip the flexible shaft off the thermostat shaft.
5. Remove the flexible shaft guide by removing the two sheet metal screws securing it to the upper frame.
6. Disconnect the thermostat leads from Pin 14 in the 20-pin terminal block and from the gas valve terminal.



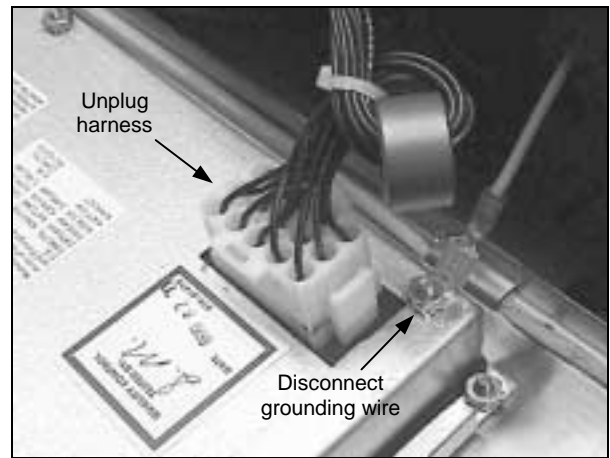
NOTE: If the fryer is configured with a melt cycle, the thermostat leads will be connected to the melt cycle timer motor or PC board rather than to the terminal block and gas valve. Disconnect the leads from the motor or PC board if this is the case.

7. Unscrew the thermostat from the frypot and remove.
5. Apply Loctite™ PST56765 thread sealant or equivalent to the replacement thermostat threads.
9. Reverse steps 1 through 7 to install the replacement.

1.8.3 Replacing the Temperature Probe

1. Disconnect the fryer from the electrical supply.
2. Drain the frypot.

3. Remove the screws from the upper left and right corners of the control panel. The panel is hinged at the bottom and will swing open from the top.
4. Unplug the wiring harness from the back of the controller and disconnect the grounding wire.
5. Remove the controller from the fryer by lifting it from the hinge slots in the control panel frame.



6. Remove the two screws from the base of the interface board mounting bracket.
7. Disconnect the 12-pin plug from the back of the interface board and lay the board in the left end of the compartment with all other wires still connected.
8. Remove the 12-volt transformer from the component shield and lay it in the left end of the compartment with wires still connected.
9. Using a pin-pusher, remove the temperature probe wires (pins 1 and 2) from the 12-pin plug disconnected in step 7.
10. Unscrew the temperature probe from the frypot and remove.
5. Apply Loctite™ PST56765 thread sealant or equivalent to new probe threads.
12. Reverse steps 1 through 10 to install the replacement probe.

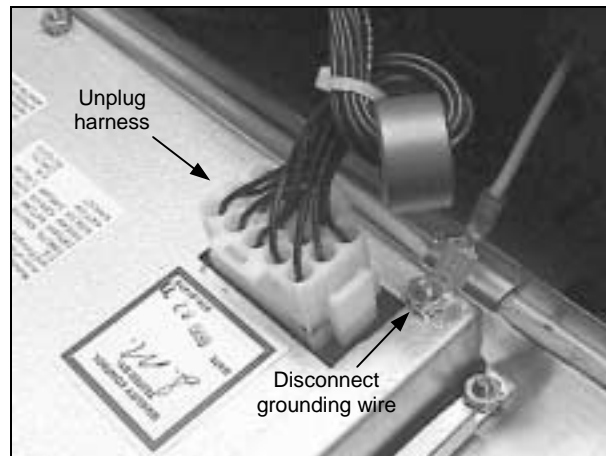
1.8.4 Replacing the High-Limit Thermostat in Fryers with Thermostat Controls

1. Disconnect the fryer from the electrical supply.
2. Drain the frypot.
3. Loosen the setscrew securing the thermostat knob and remove the knob. Remove the screws from the upper left and right corners of the control panel. The control panel is hinged at the bottom and will swing open from the top.
4. Disconnect the 9-Pin connector and remove the control panel from the fryer by disengaging its tabs from the hinge slots in the mounting frame.
6. Disconnect the high-limit thermostat leads from the gas valve pilot coil.
7. Unscrew the high-limit thermostat from the frypot and remove.
8. Apply Loctite™ PST56765 thread sealant or equivalent to the replacement thermostat threads.

9. Reverse steps 1 through 7 to install the replacement.

1.8.5 Replacing the High-Limit Thermostat in Fryers with Other Than Thermostat Controls

1. Disconnect the fryer from the electrical power supply.
2. Drain the frypot.
3. Remove the screws from the upper left and right corners of the controller panel. The controller is hinged at the bottom and will swing open from the top.
4. Unplug the wiring harness and disconnect the grounding wire from the the controller.



5. Remove the controller from the fryer by lifting it from the hinge slots in the fryer control panel frame.
6. Remove the two screws from the base of the interface board mounting bracket.
7. Disconnect the 12-pin plug from the back of the interface board and lay the board in the right end of the compartment with all other wires still connected.
8. Remove the 12-volt transformer and lay it in the right end of the compartment with wires still connected.
9. Remove the high-limit thermostat wires from the gas valve pilot coil and pull them up through the control shield.
10. Unscrew the high-limit thermostat from the frypot and remove.
9. Apply Loctite™ PST56765 thread sealant or equivalent to the replacement thermostat's threads and screw it into the frypot.
12. Attach the appropriate terminals (furnished in the replacement thermostat kit) to the thermostat leads.
13. Reverse steps 1 through 9 to complete installation of the replacement thermostat.

1.8.6 Replacing the Heat Mode Indicator Light in Fryers with Thermostat Controls

1. Disconnect the fryer from the electrical supply.
2. Loosen the setscrew securing the thermostat knob and remove the knob. Remove the screws from the upper left and right corners of the control panel. The control panel is hinged at the bottom and will swing open from the top.

3. Disconnect the 9-pin connector and remove the control panel from the fryer by disengaging its tabs from the hinge slots in the mounting frame.
4. Carefully press the light out from the back of the control panel. Disconnect one wire at a time and reconnect it to the replacement light until all wires are transferred.
5. Carefully press the light back into the control panel.
6. Reverse steps 1-3 to reassemble the fryer.

1.8.7 Replacing the Power or Melt Cycle Switch in Fryers with Thermostat Controls

1. Disconnect the fryer from the electrical supply.
2. Loosen the setscrew securing the thermostat knob and remove the knob. Remove the screws from the upper left and right corners of the control panel. The control panel is hinged at the bottom and will swing open from the top.
3. Disconnect the 9-pin connector and remove the control panel from the fryer by disengaging its tabs from the hinge slots in the mounting frame.
4. Using a flat-tipped screwdriver, disconnect the chrome bezel from the tabs on the switch and press the switch out from the front.
5. Carefully press the new switch back into the chrome bezel, making sure the tabs on the switch engage the slots in the bezel.
6. Disconnect one wire at a time from the old switch and reconnect it to the new switch until all wires have been transferred.
7. Reverse steps 1-3 to reassemble the fryer.

1.8.8 Replacing the Melt Cycle Timer in Fryers with Thermostat Controls

NOTE: In early 1999, PC board melt cycle timers replaced melt cycle timer motors in new fryers.

1. Disconnect the fryer from the electrical supply.
2. Loosen the setscrew securing the thermostat knob and remove the knob. Remove the screws from the upper left and right corners of the control panel. The control panel is hinged at the bottom and will swing open from the top.
3. Remove the screws securing the timer motor (or the PC board timer bracket) to the fryer (see illustration on Page 2-11).
4. Remove one wire at a time and reconnect it to the replacement PC board timer until all wires have been transferred.
5. Reverse steps 1-3 to reassemble the fryer.

1.8.9 Replacing Burner Ceramic Targets



Drain the frypot or remove the handle from the drain valve before proceeding further.

1. Disconnect fryer from electrical and gas supplies.
2. On FM45 fryers, remove square-drain sections as necessary to expose burner.
3. Disconnect the wires from the gas valve terminal block, marking each wire to facilitate recon-nections.
4. Remove the high-limit thermostat wires from the gas valve pilot coil.
5. Disconnect the pipe union collar at the right side of the gas valve.
6. Remove the burner heat shield hanger screws at the front of the burner and remove the heat shield.
7. Remove the burner hanger screws and lower the front of the main burner. Pull it forward to clear the rear burner hanger, then lower the burner to the floor.
8. Raise the front of the fryer enough to slide the burner from under the fryer cabinet.
9. To replace only the ceramic targets, straighten the target locking tabs with a pair of needle nose pliers or a screwdriver, and slide the target up and off the bracket. Slide the replacement target onto the bracket and bend the locking tabs down.

To replace the entire target assembly, use a ½-inch (13mm) box end wrench to remove the two brass orifices that hold the assembly to the burner manifold. Position the new assembly and re-
place the orifices.



Use extreme care to prevent cross-threading and stripping when reinstalling the brass orifices.

10. Reverse steps 1-8 to reinstall the burner assembly. Check spacing and alignment of targets in accordance with Section 1.5.

1.8.10 Replacing the Gas Valve



Drain the frypot or remove the handle from the drain valve before proceeding further.

1. Disconnect fryer from electrical and gas supplies

2. Disconnect the wires from the gas valve terminal block, marking each wire to facilitate recon-nections.
3. Remove the high-limit thermostat wire from the gas valve pilot coil.
4. Disconnect the pilot gas line fitting from the gas valve.
5. Disconnect the pipe union collars to the left and right of the gas valve and remove the valve.
6. Remove the pipe fittings from the old gas valve and install on the replacement valve, using Loc-tite™ PST56765 or equivalent pipe thread sealant on threads.
7. Reverse steps 1-5 to install the replacement gas valve.

1.8.11 Replacing the Pilot Assembly or Thermopile



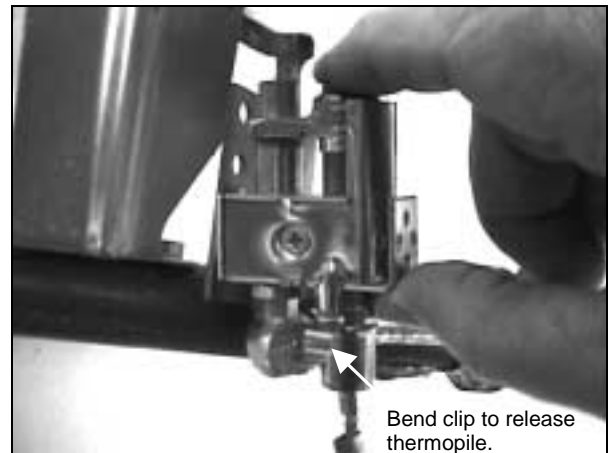
DANGER

Drain the frypot or remove the handle from the drain valve before proceeding further.

1. Remove the burner assembly in accordance with steps 1-8 of Section 1.8.9.

2. To replace only the thermopile:

- a. Bend the clip at the bottom of the pilot assembly and press the thermopile out of the pilot assembly from the top.
- b. Disconnect the thermopile fitting from the gas valve pilot coil.
- c. Reverse steps a and b to install the replacement thermopile.



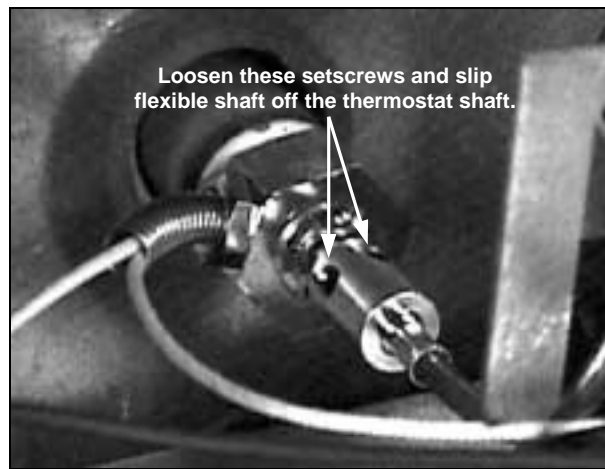
3. To replace the complete pilot assembly:

- a. Disconnect the pilot tubing from the bottom of the pilot assembly.
- b. Remove the screw from the pilot mounting bracket to release the pilot assembly.
- c. Disconnect the thermopile fitting from the gas valve pilot coil.
- d. Reverse steps a through c to install the replacement pilot assembly.

4. Reinstall the burner assembly by reversing steps 1-8 of Section 1.8.9.

1.8.12 Replacing the Frypot

1. Drain the frypot.
2. Remove all accessories (e.g., frypot covers, basket lift arms, etc.) from the fryer.
3. Disconnect the fryer from gas and electrical supplies.
4. Remove the screws from the top cap above the control panel and lift it up and off the fryer(s).
5. If the fryer is equipped with other than a Thermostat Control, skip to Step 10.
6. Loosen the setscrew securing the Thermostat Knob to the thermostat flexible shaft and remove the knob. Remove the screws from the upper left and right corners of the control panel. Disconnect the 9-Pin connector and remove the control panel from the fryer.
7. Loosen the setscrews securing the flexible shaft to the thermostat shaft and slip the flexible shaft off the thermostat shaft.
8. Remove the flexible shaft bracket from the fryer by removing the two sheet metal screws securing it to the upper frame.
9. Disconnect the thermostat leads from Pin 14 in the 20-pin terminal block and from the gas valve terminal. Mark each wire to facilitate reconnection. Skip to Step 14.

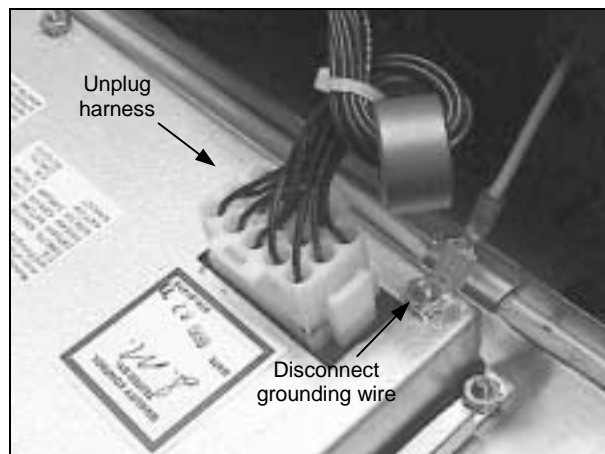


NOTE: If the fryer is configured with a melt cycle, the thermostat leads will be connected to the melt cycle timer motor rather than to the terminal block and gas valve. Disconnect the leads from the motor if this is the case.

CAUTION

When handling the thermostat, do not rotate the shaft more than two turns in either direction. Doing so will cause damage to the thermostat.

10. For fryers equipped with other than Thermostat Controls, remove the screws from the upper left and right corners of the control panel. Unplug the wiring harness from the back of the controller and disconnect the grounding wire. Remove it from the fryer by lifting it from the hinge slots in the fryer control frame.
11. Remove the two screws from the base of the interface board bracket.
12. Disconnect the 12-pin plug from the back of the interface board. Use a pin pusher to remove the temperature probe leads (pins 1 and



- 2) and the high-limit thermostat leads (pins 6 and 8) from the plug. Leave all other wires connected. Leave the interface board lying on the shield.
13. Remove the louvered frame above the control panel opening.
 14. Remove the screws securing the component shield to the fryer.
 15. Disconnect the wires from components in component shield and mark to facilitate reconnection.
 16. Disconnect the wires from the gas valve terminal block. Mark each wire to facilitate reconnection.
 17. Remove the cover from the safety drain switch, disconnect the wires from the switch, and pull them out of the switch box.
 18. Pull up and forward on the component shield to clear the rear mounting stud on the front of the frypot and remove it from the fryer by rotating its right side up and to the left.
 19. Disconnect the pipe union on the right side of the gas valve.
 20. On FM45 fryers, remove the section of square drain from the drain valve of the frypot to be removed.
 21. Remove the frypot hold down bracket.
 22. Remove the screws from the flue cap sides and back and lift it clear of the fryer(s).
 23. Remove the oil return line from the front of the frypot to be removed.
 24. Lift the complete frypot assembly (frypot, burner, gas valve, and flue) from the fryer cabinet.
 25. Transfer the burner heat shield and burner to the replacement frypot.
 26. Remove the drain valve, thermostat or temperature probe, and high-limit thermostat and install on replacement frypot.

 **CAUTION**

Before installing the thermostat/temperature probe, high-limit thermostat, and drain valve on the replacement frypot, clean their threads and apply Loctite™ PST56765 thread sealant or equivalent to the threads.

27. Reverse steps 1-25 to reassemble the fryer.

1.9 Troubleshooting and Problem Isolation

Because it is not feasible to attempt to include in this manual every conceivable problem or trouble condition that might be encountered, this section is intended to provide technicians with a general knowledge of the broad problem categories associated with this equipment, and the probable causes of each. With this knowledge, the technician should be able to isolate and correct any problem encountered.

Problems you are likely to encounter can be grouped into seven broad categories:

1. Ignition failures
2. Improper burner functioning
3. Improper temperature control
4. Computer-related problems
5. Filtration problems
6. Leakage problems
7. Basket Lift malfunctions.

The probable causes of each category are discussed in the following sections. A series of Troubleshooting Guides (decision trees) is also included at the end of the chapter to assist in identifying some of the more common problems.

1.9.1 Ignition Failures

Ignition failures occur when the 24VAC power supply to the gas valve is interrupted, when the gas supply is interrupted, or when the pilot flame is extinguished.

Solid-state controllers indicate ignition failure by illuminating the heat light and trouble light simultaneously. All other controllers give no specific indication of an ignition failure.

There are three primary reasons for ignition failure, listed in order of probability:

1. Problems related to the gas and/or electrical power supplies
2. Problems related to the electronic circuits
3. Problems related to the gas valve.

PROBLEMS RELATED TO THE GAS AND/OR ELECTRICAL POWER SUPPLIES

The main indicators of this are that an entire battery of fryers fails to light and/or there are no indicator lights illuminated on the fryer experiencing ignition failure. Verify that the quick disconnect hose is properly connected, the fryer is plugged in, the main gas supply valve is open, and the circuit breaker for the fryer electrical supply is not tripped.

PROBLEMS RELATED TO THE ELECTRONIC CIRCUITS

If gas and electrical power are being supplied to the fryer, the next most likely cause of ignition failure is a problem in the 24 VAC circuit of the pilot system. If the fryer is equipped with a Filter Magic II filtration system, first verify that the drain valve is fully closed. (The valve is attached to a microswitch that must be closed for power to reach the gas valve. Often, although the valve handle appears to be in the closed position, the microswitch is still open.) If the valve is fully closed, or the fryer does not have a filtration system, refer to the troubleshooting guides **TROUBLESHOOTING THE 24 VAC CIRCUIT**.

PROBLEMS RELATED TO THE GAS VALVE

If the problem is not in the 24 VAC circuit of the pilot system, it is most likely in the gas valve itself, but before replacing the gas valve refer to **TROUBLESHOOTING THE GAS VALVE** on page 1–33.

1.9.2 Improper Burner Functioning

With problems in this category, the burner ignites but exhibits abnormal characteristics such as “popping,” incomplete lighting of the burner, fluctuating flame intensity, and flames “rolling” out of the fryer.

“**Popping**” indicates delayed ignition. In this condition, the main gas valve is opening but the burner is not immediately lighting. When ignition does take place, the excess gas “explodes” into flame, rather than smoothly igniting.

The primary causes of popping are:

- Incorrect or fluctuating gas pressure
- Misdirected or weak pilot flame
- Burner deflector targets out of alignment or missing
- Clogged burner orifices
- Inadequate make-up air
- Clogged vent tube, causing incorrect gas pressure

If popping occurs only during peak operating hours, the problem may be incorrect or fluctuating gas pressure. Verify that the incoming gas pressure (pressure to the gas valve) is in accordance with the appropriate CE or Non-CE Standard found in the table that below, and that the pressure remains constant throughout all hours of usage. Refer to **Checking the Burner Manifold Pressure** (Section 1.3) for the procedure to checking the pressure of gas supplied to the burner.

Non-CE Standard for Incoming Gas Pressures		
Gas	Minimum	Maximum
Natural	6" W.C.	14" W.C.
	1.49 kPa 14.93 mbar	3.48 kPa 34.84 mbar
LP	11" W.C.	14" W.C.
	2.74 kPa 27.37 mbar	3.48 kPa 34.84 mbar

CE Standard for Incoming Gas Pressures				
Gas	Pressure (mbar) ⁽¹⁾	Orifice Diameter	Regulator Pressure	Consumption
G20	20	18 x 1,40 mm	7,5 mbar	3,00 m ³ /h
G25	20 - 25	18 x 1,40 mm	10 mbar	3,50 m ³ /h
G31	37 - 50	18 x 0,86 mm	20,6 mbar	2,21 kg/h

(1) mbar = 10,2 mm H²O

If popping is consistent during all hours of operation, verify that the pilot is properly positioned above the burner orifice and that the pilot pressure is correct. Correct pilot pressure is indicated by a flame 1 to 1½” (25 to 38 mm) long. Refer to Section 1.6 for the pilot flame adjustment procedure.

Clogged burner orifices, especially those near the pilot, are also likely causes of delayed ignition. Clogged orifices are indicated by no flame, flames that are orange-colored, and flames that shoot out at an angle from the rest.

Another cause of popping is an insufficient air supply or drafts that are blowing the pilot flame away from the burner. Check for “negative pressure” conditions in the kitchen area. If air is flowing into the kitchen area, this indicates that more air is being exhausted than is being replenished and the burners may be starved for air.

If the fryer's gas and air supplies are okay, the problem most likely is with one of the electrical components. Examine the controller for signs of melting/distortion and/or discoloration due to excessive heat build-up in the fryer. (This condition usually indicates improper flue performance.). A discolored or distorted controller is automatically suspect and should be replaced. However, unless the condition causing excessive heat in the fryer is corrected, the problem is likely to recur.

The ***burner lighting on one side only*** may be caused by a missing or misaligned rear deflector target or improper burner manifold pressure. Clogged burner orifices are usually the cause of ***gaps in burner firing***.

Fluctuating flame intensity is normally caused by either improper or fluctuating incoming gas pressure, but may also be the result of variations in the kitchen atmosphere. Verify incoming gas pressure in the same way as for "popping," discussed in the preceding paragraphs. Variations in the kitchen atmosphere are usually caused by air conditioning and/or ventilation units starting and stopping during the day. As they start and stop, the pressure in the kitchen may change from positive or neutral to negative, or vice versa. They may also cause changes in airflow patterns that may affect flame intensity.

Flames "rolling" out of the fryer are usually an indication of negative pressure in the kitchen. Air is being sucked out of the fryer enclosure and the flames are literally following the air. If negative pressure is not the cause, check for high burner manifold gas pressure in accordance with the procedures in Section 1.3, ***Checking the Burner Manifold Pressure***. An obstructed flue, which prevents the fryer from properly exhausting, may also be the cause.

An ***excessively noisy burner***, especially with ***flames visible above the flue opening***, may indicate that the burner gas pressure is too high, or it may simply be that the gas valve vent tube is blocked. If the gas pressure is correct and the vent tube is unobstructed, the gas valve regulator is probably defective.

Occasionally a burner may apparently be operating correctly; nevertheless, the fryer has a ***slow recovery rate***. (The recovery rate is the length of time required for the fryer to increase the oil temperature from 275°F to 325°F (135°C to 163°C)). The primary causes of this are low burner manifold pressure and/or misaligned or missing deflector targets. If both of these causes are ruled out, the probable cause is a gas valve regulator that is out of adjustment. Refer to ***Checking the Burner Manifold Pressure*** in Section 1.3.

1.9.3 Improper Temperature Control

Temperature control, including the melt cycle, is a function of several interrelated components, each of which must operate correctly. The principle component is the thermostat (in thermostat control units) or the temperature probe (in fryers equipped with other types of controllers). Depending upon the specific configuration of the fryer, other components may include the interface board and the controller.

Improper temperature control problems can be categorized into melt cycle problems and failure to control at setpoint problems.

MELT CYCLE PROBLEMS

In fryers equipped with thermostat controls, the melt cycle is controlled by a mechanical timer. There are three components that may fail: the melt cycle timer itself, the melt cycle timer microswitch, or the control panel melt cycle ON/OFF switch. In all cases, the defective component must be replaced.

In fryers equipped with other types of controllers, the problem may be with the controller itself, the temperature probe, or a malfunctioning heat relay on the interface board.

For problem isolation techniques, refer to the troubleshooting guides **TROUBLESHOOTING THE THERMOSTAT** and **TROUBLESHOOTING THE TEMPERATURE PROBE**.

FAILURE TO CONTROL AT SETPOINT

In fryers equipped with thermostat controls, the problem will be with the thermostat itself. Possible causes are that the thermostat is out of calibration, the knob or flexible shaft is loose on the thermostat shaft, a thermostat wire is disconnected or broken, or the thermostat is defective. Refer to Section 1.7 for instructions on calibrating the thermostat.

In fryers equipped with other types of controls, the problem may be with the temperature probe, the interface board, or the controller. Refer to the troubleshooting guide **TROUBLESHOOTING THE TEMPERATURE PROBE** for problem isolation techniques.

1.9.4 Computer-Related Problems

COMPUTER MAGIC III FEATURES

SENSITIVITY OR “*STRETCH AND SHRINK TIME*”

Sensitivity or stretch time is a programmable feature, patented by *Frymaster* that increases or decreases the cook time countdown based on variations in the oil temperature from the set point.

The sensitivity for each product button has ten settings (0 through 9). A zero sensitivity setting will disable the feature (no change in cooking time), while a nine will provide the highest sensitivity or most change. The correct sensitivity for any product is based on the product, its density, the set point temperature, and the customer’s own requirements.

RECOVERY TIME OR “*RATE OF RISE*”

Recovery time or rate of rise is a method of measuring a fryer’s performance. Put simply, it is the time required for the fryer to increase the oil temperature from 275°F to 325°F (135°C to 163°C). This range is used as a standard since ambient kitchen temperatures can effect the test if lower ranges are used.

The Computer Magic III performs the recovery test each day as the fryer warms up. An operator can view the results of the test any time the fryer is above the 325°F (163°C) point by pressing the button and entering the code 1652. The test results will be displayed in the computer’s LED panel in minutes and seconds. The acceptable recovery time for 45 Series fryers is 2 minutes and 25 seconds.

COMMON COMPUTER COMPLAINTS

Most problems concerning computers have to do with programming them. There are four common complaints. The complaints, their causes, and corrective actions are:

1. Fryer constantly displays “HI.”

Cause: Setpoint incorrect or missing.

Corrective Action: Press 1650, enter the correct setpoint using keypad, then press to lock in the setpoint.

2. Temperature is displayed in Celsius.

Cause: Computer is programmed to display in Celsius.

Corrective Action: Press 1658.

3. Temperature is constantly displayed.

Cause: Computer is programmed for constant temperature display.

Corrective Action: Press 165L.

4. Computer times down too slowly or too quickly.

Cause: Computer is compensating for oil temperature via the sensitivity setting.

Corrective Action: Reprogram sensitivity setting for each product in accordance with programming instructions in Chapter 3 of the 45 Series Gas Fryer Installation and Operation Manual.

1.9.5 Filtration Problems

The majority of filtration problems arise from operator error. One of the most common errors is placing the filter paper on the bottom of the filter pan rather than over the filter screen.

Whenever the complaint is “the pump is running, but no oil is being filtered,” check the installation of the filter paper, including that the correct size is being used. While you are checking the filter paper, verify that the O-rings on the bottom of the filter pan and on the male disconnect (at inside rear of filter cabinet) are present and in good condition. Missing or worn O-rings will allow the pump to suck air and decrease its efficiency.

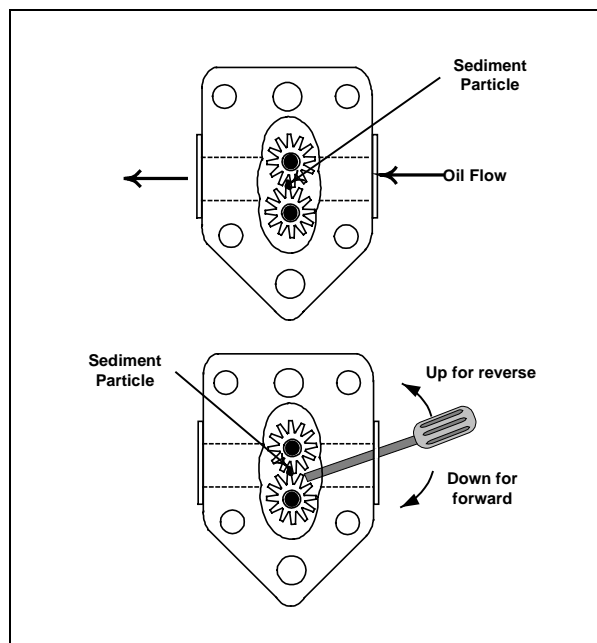
If the pump motor overheats, its thermal overload will trip and the motor will not start until it is reset. If the pump motor does not start, press the red reset switch located on the end of the motor nearest the operator. If the pump then starts, something caused the motor to overheat. It may be just that several frypots were being filtered one after the other and the pump got hot. Letting the pump cool down for at least a half-hour is all that is required in this case. More often, the pump overheated for one of the following reasons:

- Shortening was solidified in the pan or filter lines.
- The operator attempted to filter oil or shortening that was not heated. Cold oil and shortening are thicker and cause the pump motor to work harder and overheat.

If the motor tries to run but the pump does not, 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 can bind up causing the motor to overload, again tripping the thermal overload. Solidified shortening 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.

1. Disconnect power to the filter system.
2. Remove the input plumbing from the pump.
3. Use a screwdriver to manually turn the gears.
 - Turning the pump gears backwards will release a hard particle and allow its removal.
 - 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 will also allow food particles and sediment to pass through and clog the suction tube on the bottom of the filter carriage. Particles large enough to block the suction tube may indicate that the crumb tray is not being used.

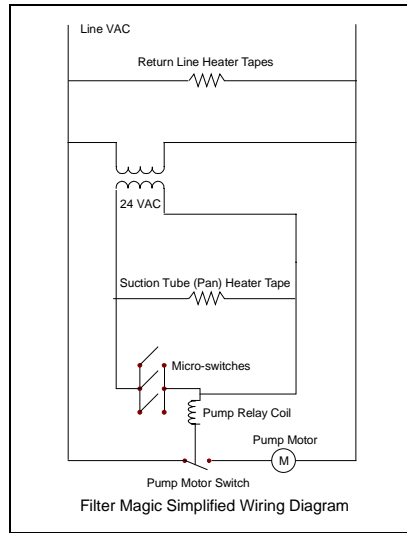
Pan blockage can also occur if shortening is left in the pan and allowed to solidify. The heater strip on the suction tube is designed to prevent solidification of residual shortening left in the tube. It will not melt or prevent solidification of shortening in the pan.

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.

Possible problems with the Power Shower include clogged openings, shortening solidified in the tubes, missing clean-out plugs, and missing or worn O-rings. Cleaning the unit and replacing missing plugs and missing or worn O-rings will correct these problems.

The electronics of the Filter Magic II are simple and straightforward. Microswitches, attached to the drain valve handles of each vat and wired in parallel, provide the 24 VAC needed to activate the pump relay coil when the handles are moved to the ON position. The activated coil pulls in the pump motor switch, supplying power to the motor.

The suction tube heater and flexible hose heater are wired directly into the 24VAC source. They remain energized as long as the unit is plugged in.



1.9.6 Leakage Problems

Leakage of the frypot almost always will be due to improperly sealed high limit switches, thermostats/temperature probes, and drain fittings. When installed or replaced, each of these components must be sealed with Loctite™ PST56765 sealant or equivalent to prevent leakage. In very rare cases, a leak may develop along one of the welded edges of the frypot. When this occurs, the frypot must be replaced.

If the sides and/or ends of the frypot are coated with oil/shortening, the most likely cause is spillage over the top of the frypot rather than leakage.

The clamps, which hold the drain tube sections together, may loosen over time as the tubes expand and contract with heating and cooling during use. If the section of drain tube connected to the drain valve is removed for whatever reason, make sure that its grommet is in good condition and properly fitted around the nipple of the drain when it is reinstalled. Also, check to insure that the drain tube runs downward from the drain along its whole length and has no low points where oil or shortening may accumulate.

1.9.7 Basket Lift Malfunctions

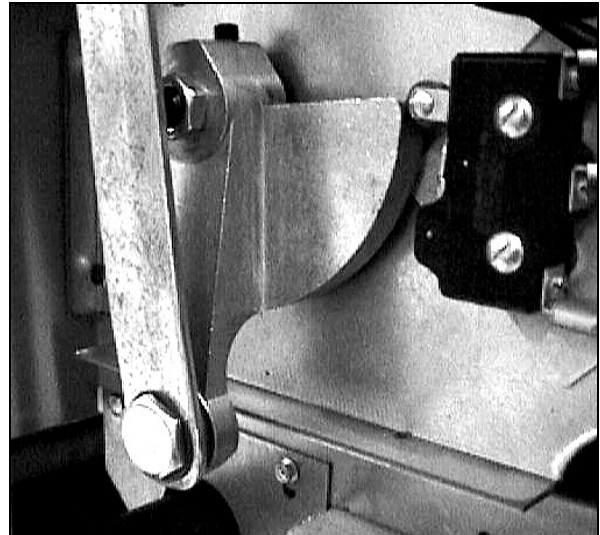
45 Series fryers may optionally be equipped with automatic basket lifts to ensure uniform cooking times. The lifts may be configured for manual control or for control via a Basket Lift Timer or Computer Magic III computer. Basket lifts will always come in pairs, although each operates independently.

In units configured for manual (push-button) controls, a mechanical or electrical timer controls voltage to the system. A rotary knob is turned to set the cook time, and pressing the button in the middle of the knob activates the motor.

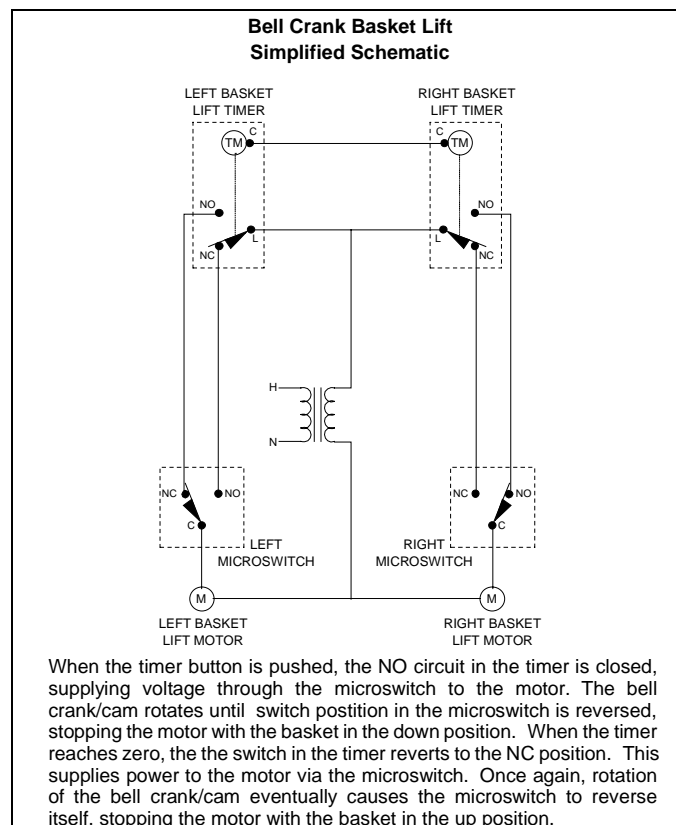
In units with Computer Magic III or Basket Lift Timers, timing circuitry in the controller initiates and stops basket lift operation depending upon the variables programmed by the operator. When the product button is pressed, the timing circuitry activates a coil in the basket lift relay to supply power to the motor.

There are two types of basket lifts: the “bell crank” design, and the “modular” design

A **bell crank** basket lift consists of a cam and bell crank that are connected to the basket lift arm by a flat metal link. The cam is attached to a drive motor. The motor rotates the cam, thus raising or lowering the lift arm linked to the bell crank. A roller-activated microswitch is used to limit travel. When the push-button in the manual timer or the product button for computers is pushed, the motor circuit is completed and the motor runs, lowering the basket. When the roller in the microswitch makes or loses contact with the cam, the switch is reversed and power to the motor is cut. At the end of the specified cooking time, the timer/controller reverses its switch position so that the motor circuit is again complete. The motor runs, raising the basket, until contact with the cam is again made or lost.



Left bell crank and cam with basket lift link shown in the down position. Note the microswitch in the upper right corner.



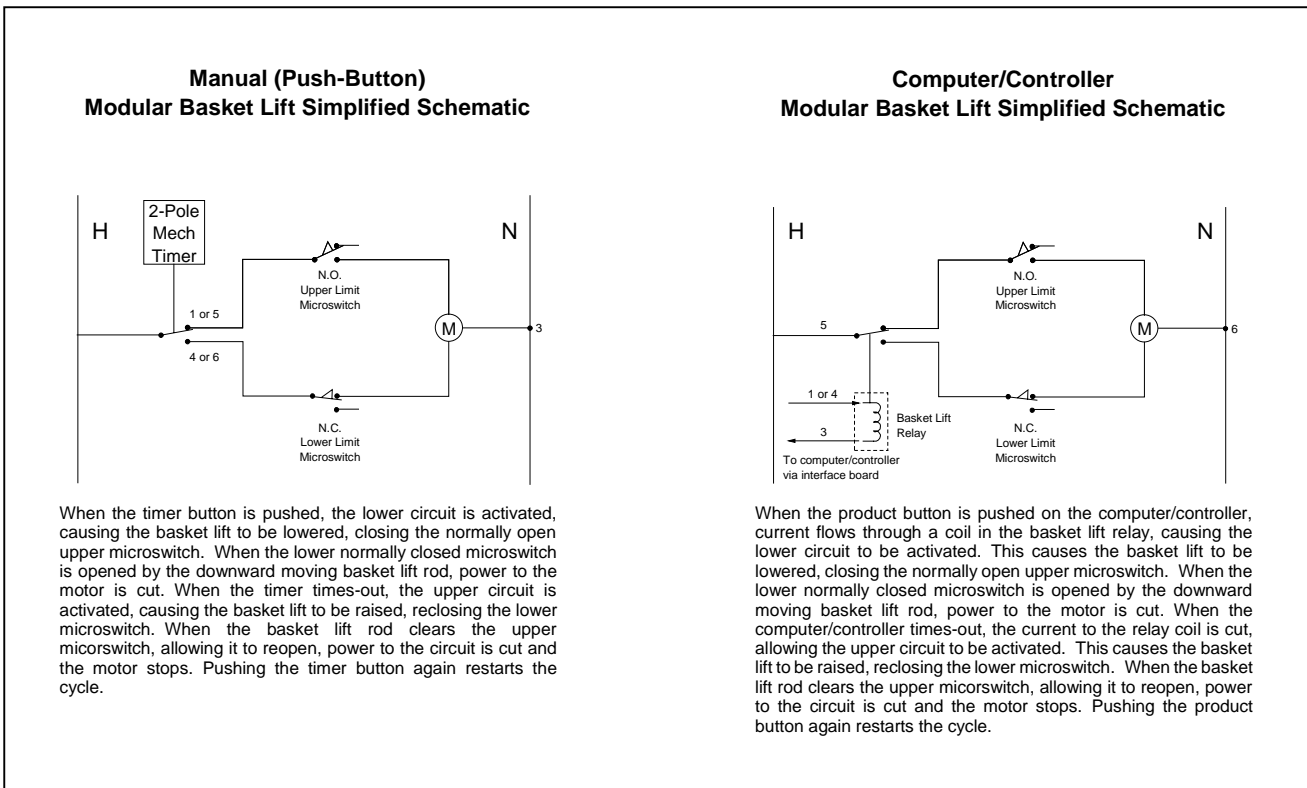
A **modular basket lift** consists of a toothed rod to which the basket lift arm is attached, a reversible-drive gear motor, and a pair of roller activated microswitches. The gear motor engages the teeth in the rod, moving it up or down depending upon the direction of rotation of the motor. Microswitches at the upper and lower limits of movement stop the motor when the basket is in the full up or full down position and also reverse the direction of current flow thus reversing the motor direction. When the manually set or programmed cooking time has elapsed, current is again supplied to the basket lift and the basket is raised.

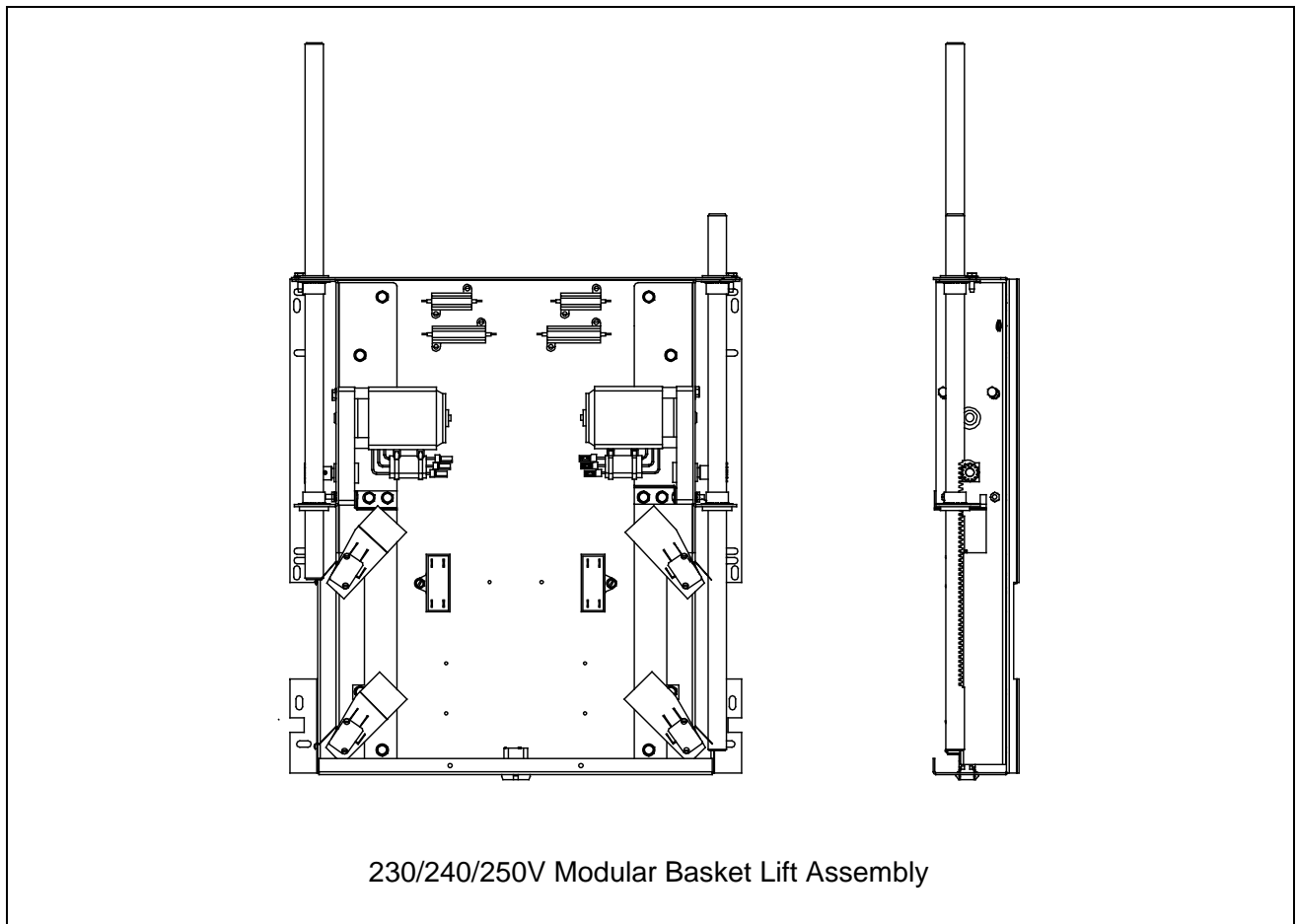
When the timer times-out, power is supplied to the opposite pole of the motor through the upper microswitch. The motor drives the rod upward until it loses contact with the upper microswitch, cutting power to the motor and stopping the lift.

In units configured for Basket Lift Timer Controllers or Computer Magic III computers, the process is almost identical. The difference is that the push button mechanical timer is replaced with timing circuitry in the computer or controller. The specific cook times (and other settings) are programmed into the computer or controller 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. As with the manually controlled units, 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.

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

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





BINDING/JAMMING PROBLEMS

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.

Another possible cause of binding, in the case of modular basket lifts, is the 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 PROBLEMS

In modular basket lift units, 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.

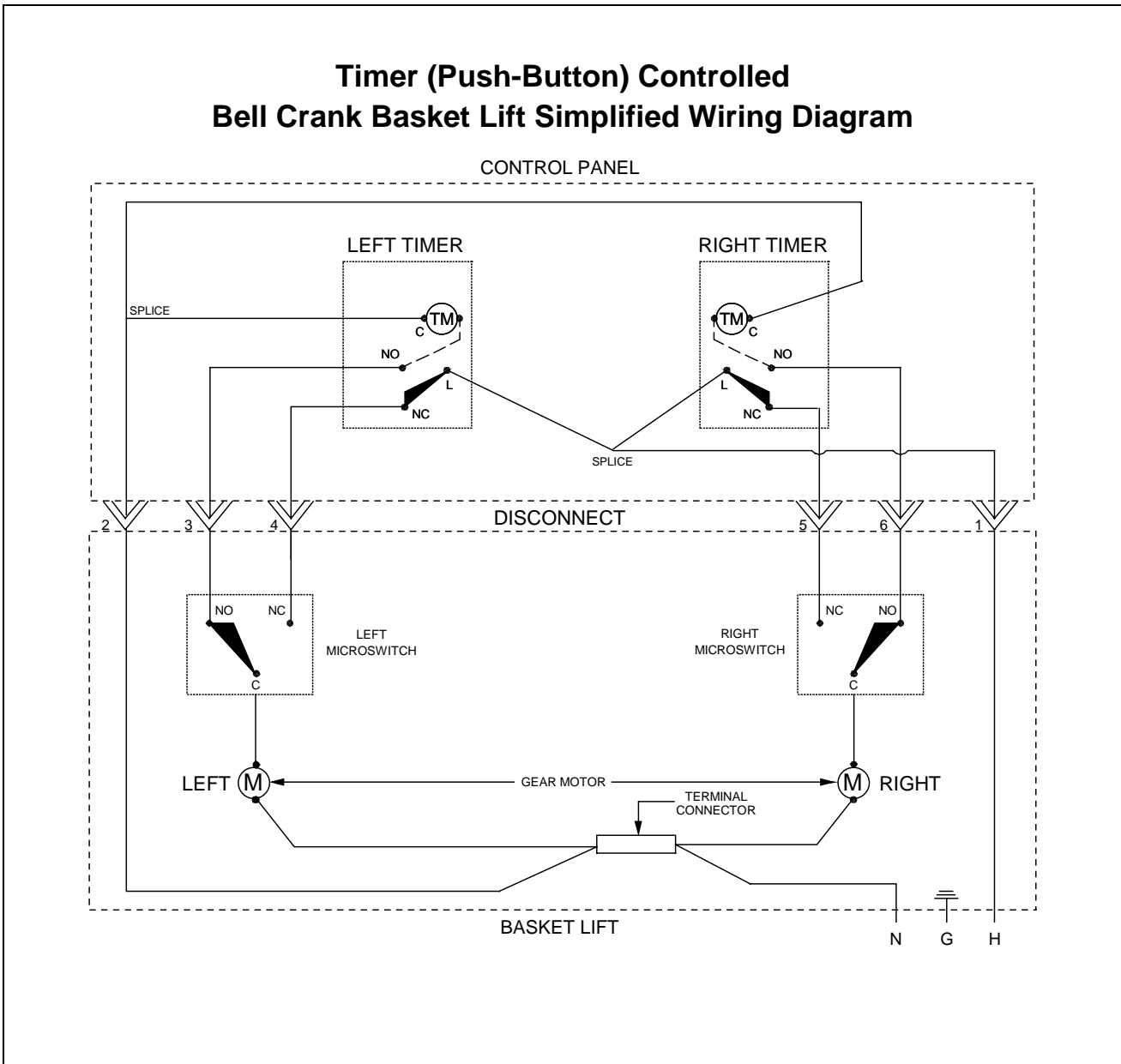
If the lift cycles correctly but fails to remain in the up position (i.e., goes up, but then slowly settles back down into the frypot), the problem is a failed motor brake. A failed motor brake cannot be repaired and requires replacement of the motor itself.

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

ELECTRONICS PROBLEMS

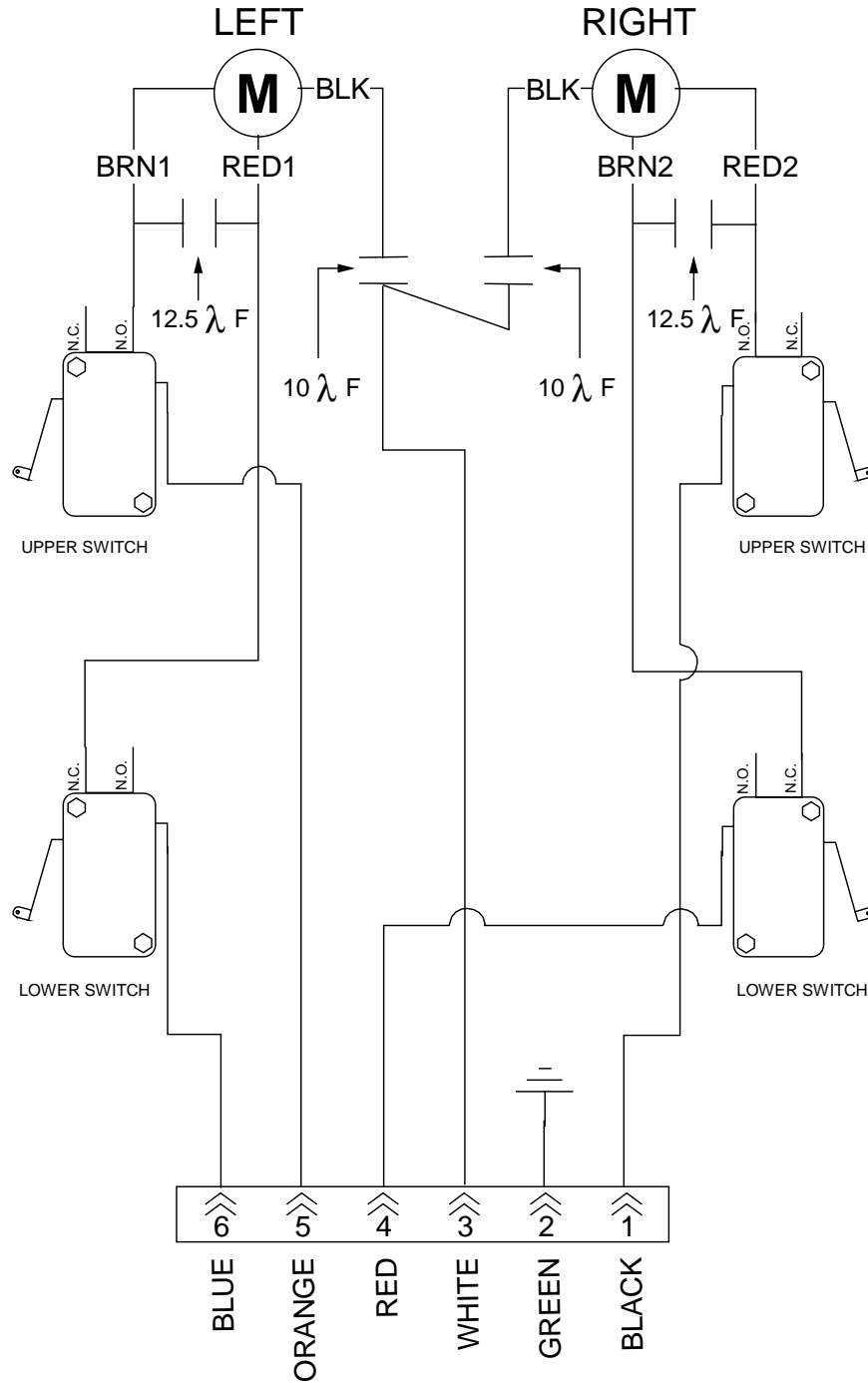
This category encompasses problems with the relays, microswitches, capacitors, resistors, interface board, wiring, and controls. Troubleshooting the electronics of both bell crank and modular basket lifts is simply a process of verifying current flow through the individual components up to and including the motor. Using a multimeter set to the 250 VAC range, check the connections on both sides of the component for the presence of 120 VAC.

The simplified wiring diagrams that follow identify the components and wiring connection points.



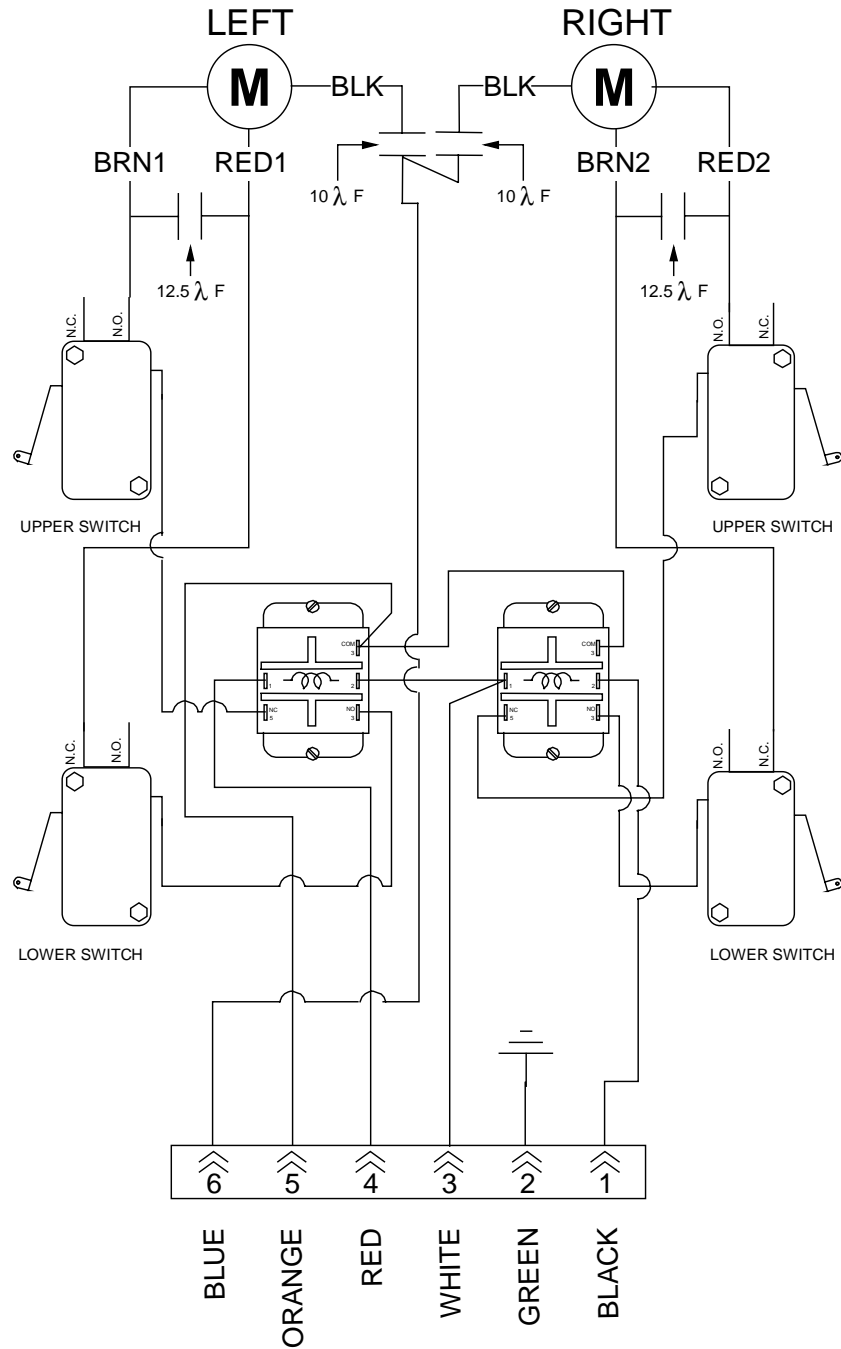
Timer (Push-Button) Controlled Modular Basket Lift Simplified Wiring Diagram (240V)

NOTE: References to right and left are from the rear of the fryer.



Computer/Controller Modular Basket Lift Simplified Wiring Diagram (240V)

NOTE: References to right and left are from the rear of the fryer.



1.9.8 Interpretation of Digital Controller Lights

Power light on, heat light cycling, trouble light off, and melt light on:

- If fryer oil temperature is below 180°F (82°C), the lights indicate the unit is operating normally.
- If the oil temperature is above 180°F (82°C) and the heat light continues to cycle as if in the melt cycle, this may indicate a defective probe circuit or low incoming 12VAC to the controller.

Power light on, heat light on, trouble light off, and melt light off:

- If the fryer oil temperature is above 180°F (82°C) and below the setpoint temperature, the lights indicate the unit is operating properly.
- If the oil temperature is above the temperature set on the control knob and the heat light remains lit, this may indicate a defective probe circuit.

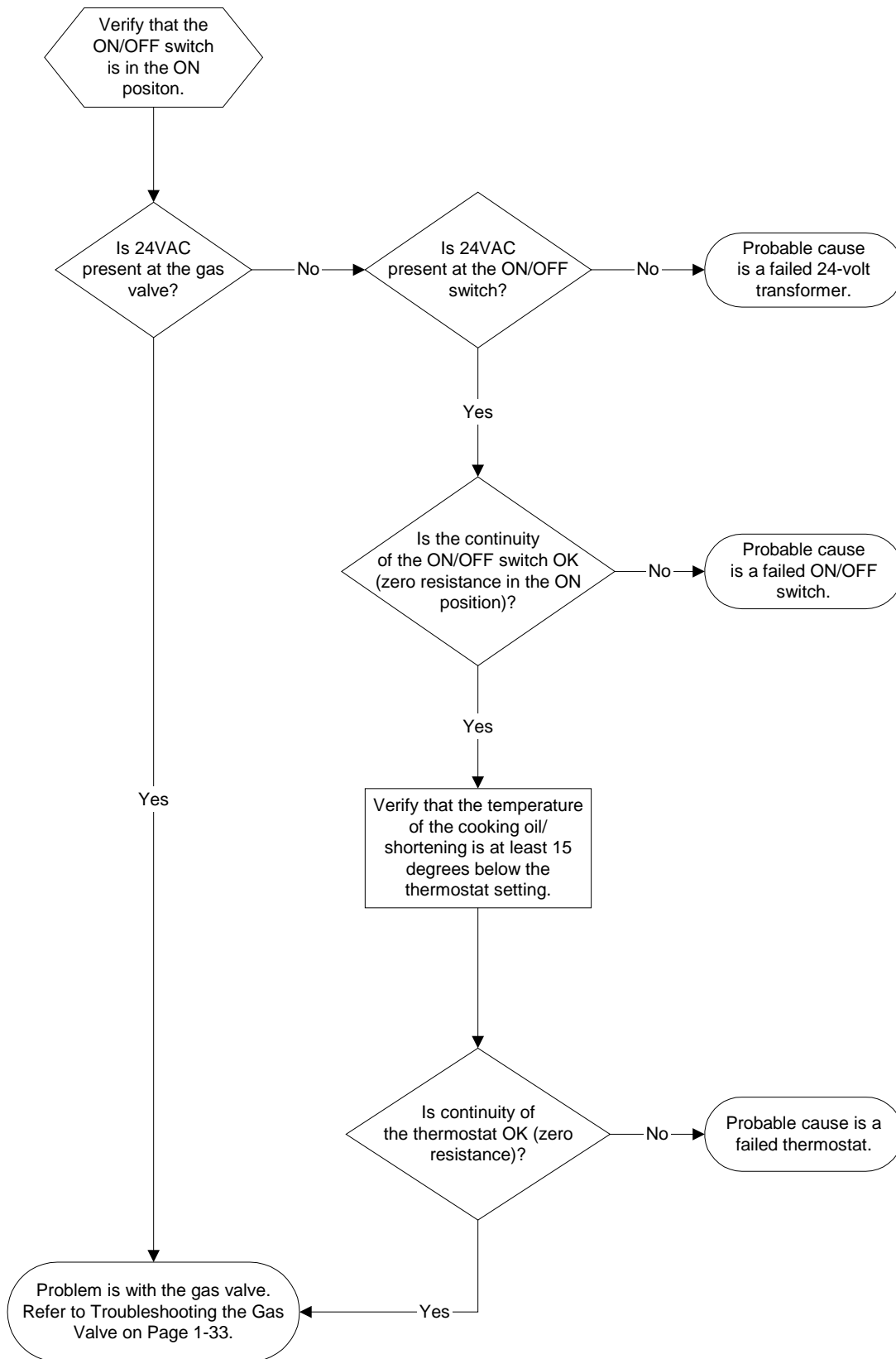
Power light on, heat light off, trouble light on, and melt light off:

- If the fryer oil temperature is below 410°F (210°C), the lights indicate one of the following:
 - a. The probe circuit is defective, or
 - b. There is a connection problem on pins 2 or 10 on the 15-pin wiring harness.
- If the fryer oil temperature is above 410°F (210°C), the lights indicate a run-away heating circuit.

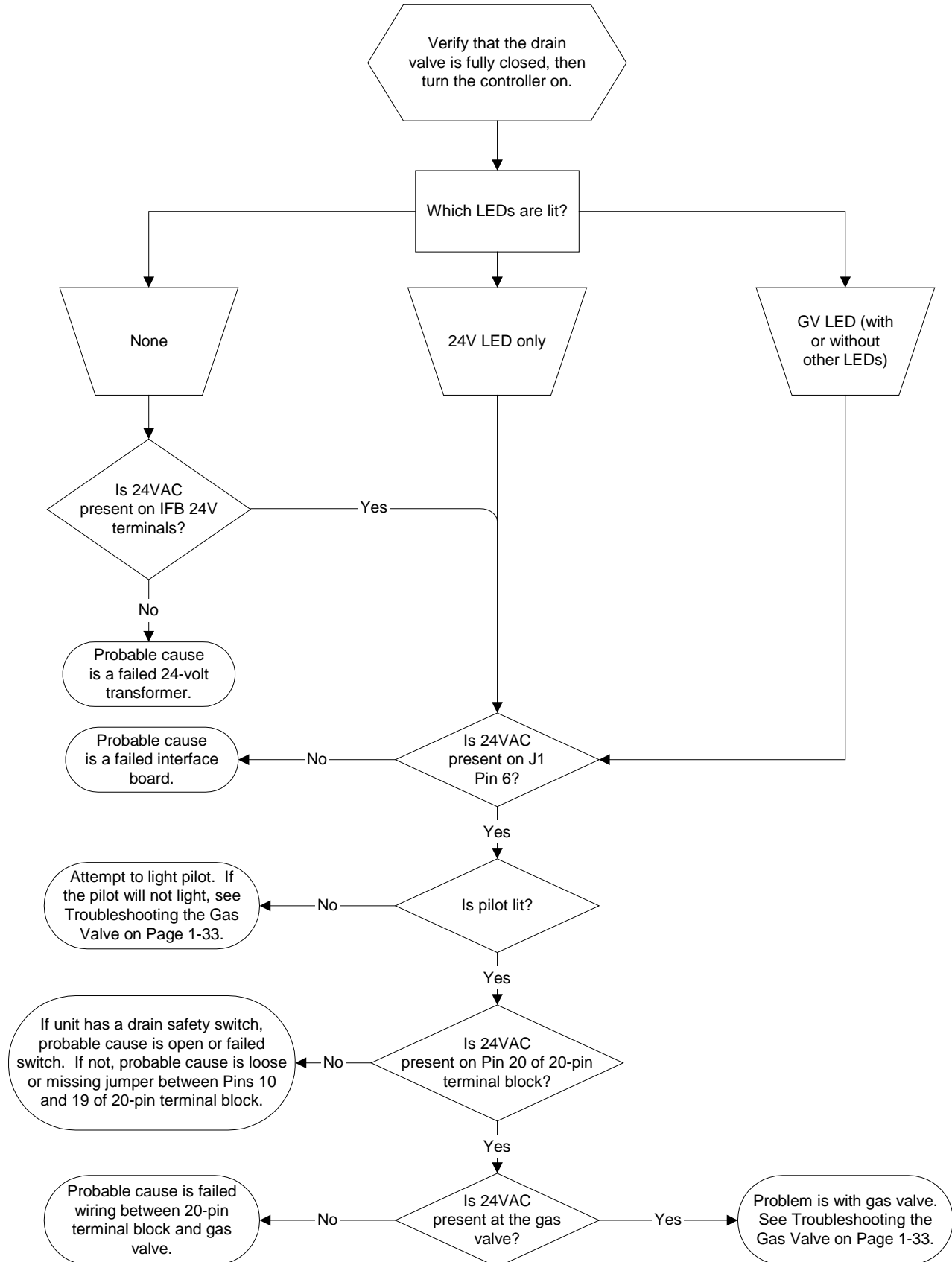
1.10 Troubleshooting Guides

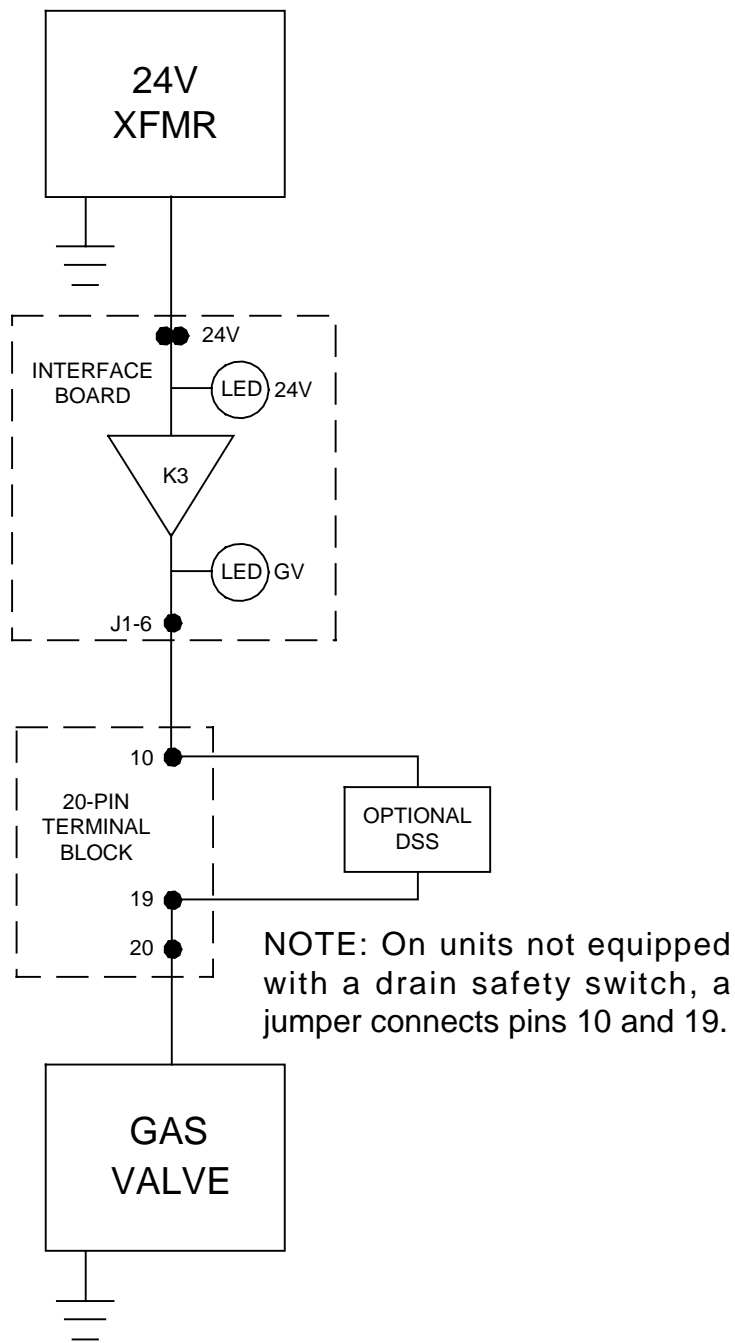
The troubleshooting guides found in the pages that follow are intended to assist service technicians in quickly isolating the probable causes of equipment malfunctions by following a logical, step-by-step process.

1.10.1 Troubleshooting the 24VAC Circuit in Units without Interface Boards



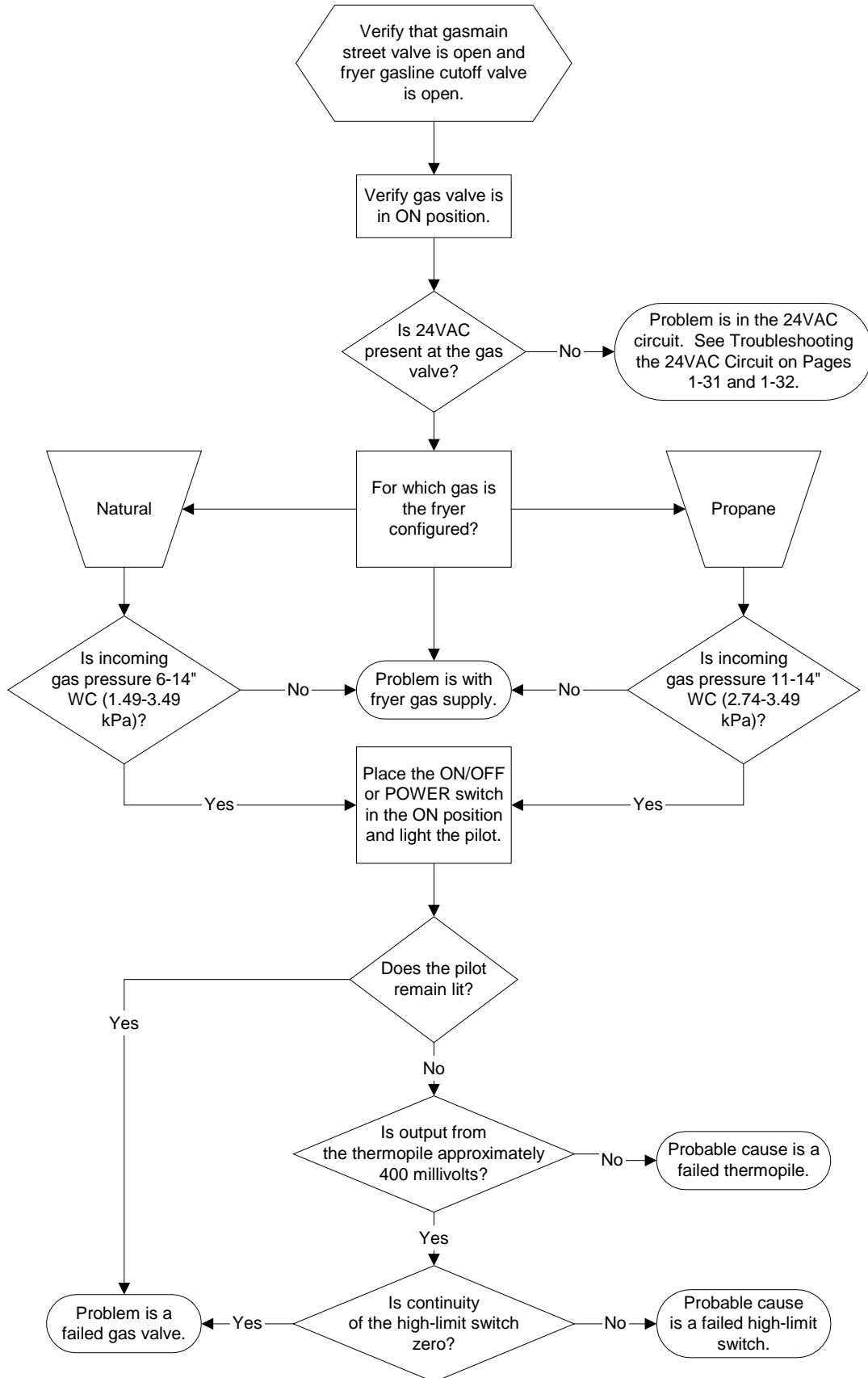
1.10.2 Troubleshooting the 24 VAC Circuit in Units with Interface Boards



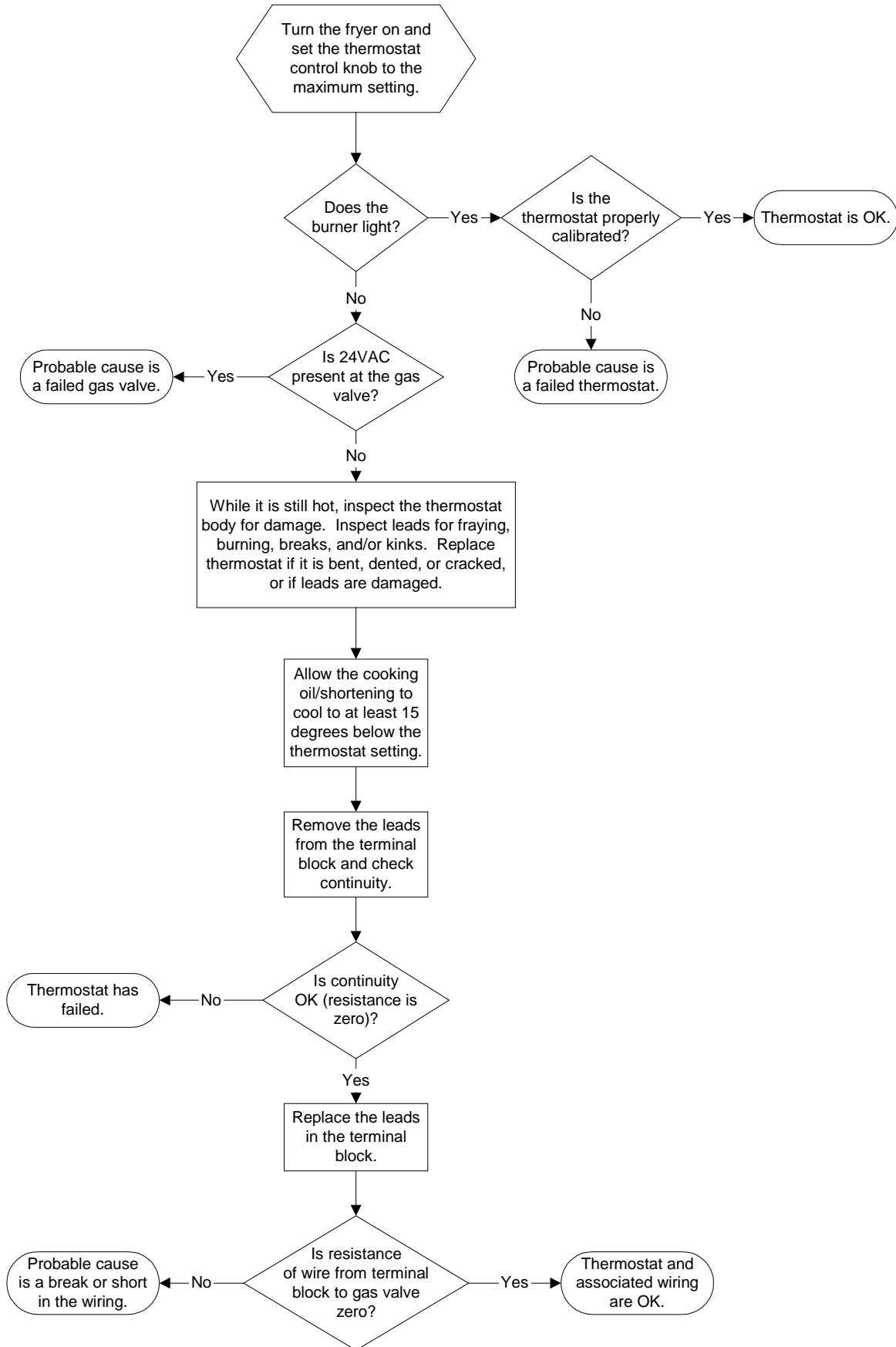


24 VOLT CIRCUIT
ON UNITS WITH INTERFACE BOARDS

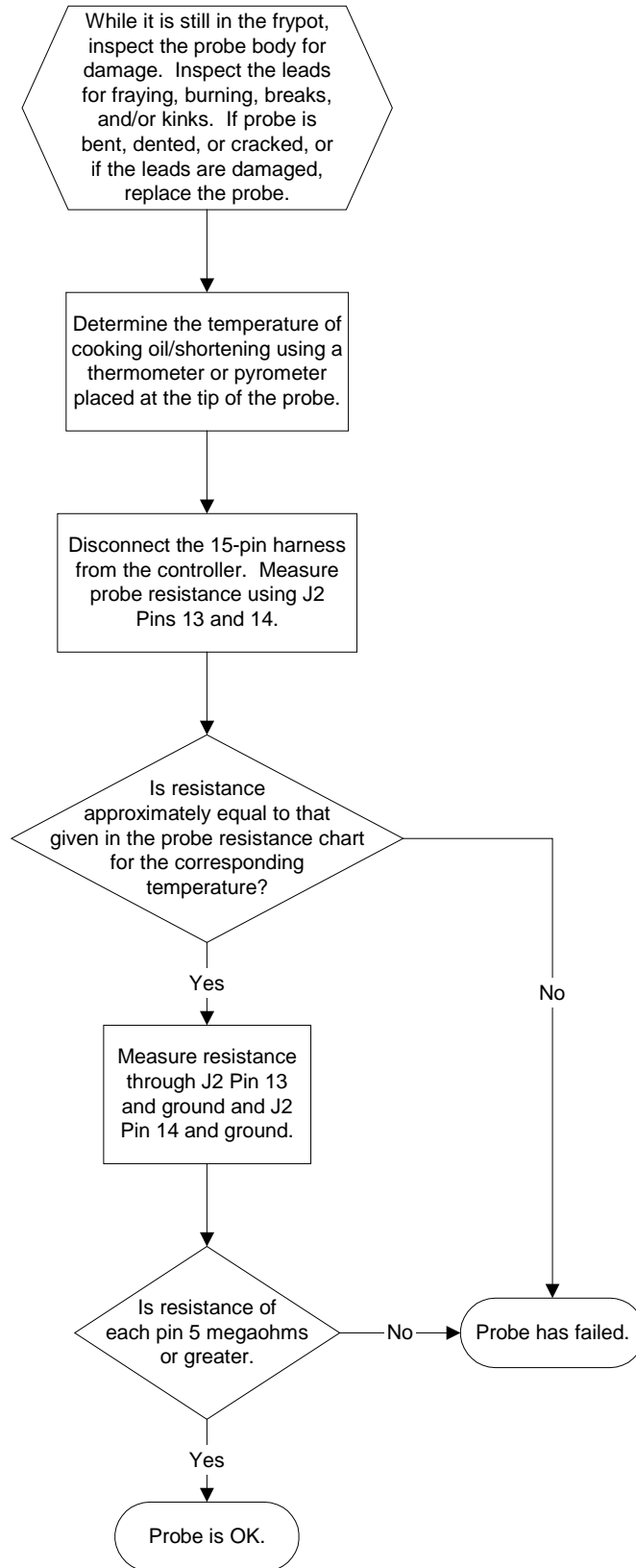
1.10.3 Troubleshooting the Gas Valve



1.10.4 Troubleshooting the Thermostat



1.10.5 Troubleshooting the Temperature Probe



Probe Resistance Chart

For use with 45 Series Frymaster fryers manufactured with Minco Thermistor Probes only.

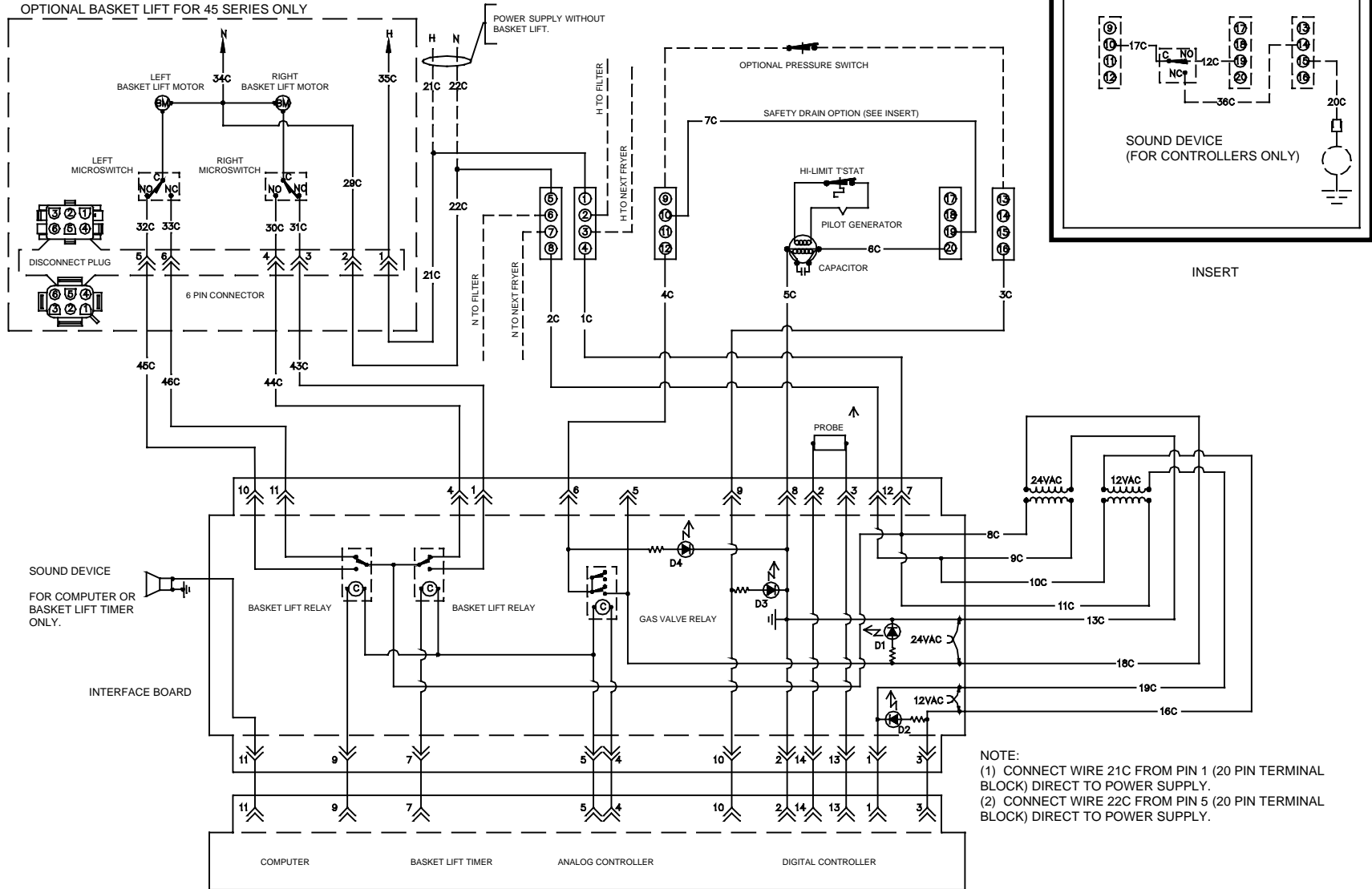
F	OHMS	C	F	OHMS	C	F	OHMS	C	F	OHMS	C	F	OHMS	C
32	1000	0	83	1107	28	134	1214	57	185	1320	85	236	1424	113
33	1002	1	84	1110	29	135	1216	57	186	1322	86	237	1426	114
34	1004	1	85	1112	29	136	1218	58	187	1324	86	238	1428	114
35	1006	2	86	1114	30	137	1220	58	188	1326	87	239	1430	115
36	1008	2	87	1116	31	138	1222	59	189	1328	87	240	1432	116
37	1011	3	88	1118	31	139	1224	59	190	1330	88	241	1434	116
38	1013	3	89	1120	32	140	1226	60	191	1332	88	242	1436	117
39	1015	4	90	1122	32	141	1229	61	192	1334	89	243	1438	117
40	1017	4	91	1124	33	142	1231	61	193	1336	89	244	1440	118
41	1019	5	92	1126	33	143	1233	62	194	1338	90	245	1442	118
42	1021	6	93	1128	34	144	1235	62	195	1340	91	246	1444	119
43	1023	6	94	1131	34	145	1237	63	196	1342	91	247	1447	119
44	1025	7	95	1133	35	146	1239	63	197	1344	92	248	1449	120
45	1030	7	96	1135	36	147	1241	64	198	1346	92	249	1451	121
46	1032	8	97	1137	36	148	1243	64	199	1348	93	250	1453	121
47	1034	8	98	1139	37	149	1245	65	200	1350	93	251	1455	122
48	1036	9	99	1141	37	150	1247	66	201	1352	94	252	1457	122
49	1038	9	100	1143	38	151	1249	66	202	1354	94	253	1459	123
50	1040	10	101	1145	38	152	1251	67	203	1357	95	254	1461	123
51	1042	11	102	1147	39	153	1253	67	204	1359	96	255	1463	124
52	1044	11	103	1149	39	154	1255	68	205	1361	96	256	1465	124
53	1046	12	104	1151	40	155	1258	68	206	1363	97	257	1467	125
54	1049	12	105	1154	41	156	1260	69	207	1365	97	258	1469	126
55	1051	13	106	1156	41	157	1262	69	208	1367	98	259	1471	126
56	1053	13	107	1158	42	158	1264	70	209	1369	98	260	1473	127
57	1055	14	108	1160	42	159	1266	71	210	1371	99	261	1475	127
58	1057	14	109	1162	43	160	1268	71	211	1373	99	262	1477	128
59	1059	15	110	1164	43	161	1270	72	212	1375	100	263	1479	128
60	1061	16	111	1166	44	162	1272	72	213	1377	101	264	1481	129
61	1063	16	112	1168	44	163	1274	73	214	1379	101	265	1483	129
62	1065	17	113	1170	45	164	1276	73	215	1381	102	266	1485	130
63	1067	17	114	1172	46	165	1278	74	216	1383	102	267	1487	131
64	1068	18	115	1174	46	166	1280	74	217	1385	103	268	1489	131
65	1070	18	116	1176	47	167	1282	75	218	1387	103	269	1491	132
66	1072	19	117	1179	47	168	1284	76	219	1389	104	270	1493	132
67	1074	19	118	1181	48	169	1287	76	220	1391	104	271	1495	133
68	1076	20	119	1183	48	170	1289	77	221	1393	105	272	1497	133
69	1078	21	120	1185	49	171	1291	77	222	1395	106	273	1499	134
70	1080	21	121	1187	49	172	1293	78	223	1398	106	274	1501	134
71	1082	22	122	1189	50	173	1295	78	224	1400	107	275	1503	135
72	1084	22	123	1191	51	174	1297	79	225	1402	107	276	1505	136
73	1086	23	124	1193	51	175	1299	79	226	1404	108	277	1507	136
74	1089	23	125	1195	52	176	1301	80	227	1406	108	278	1509	137
75	1091	24	126	1197	52	177	1303	81	228	1408	109	279	1512	137
76	1093	24	127	1199	53	178	1305	81	229	1410	109	280	1514	138
77	1095	25	128	1201	53	179	1307	82	230	1412	110	281	1516	138
78	1097	26	129	1204	54	180	1309	82	231	1414	111	282	1518	139
79	1099	26	130	1206	54	181	1311	83	232	1416	111	283	1520	139
80	1101	27	131	1208	55	182	1313	83	233	1418	112	284	1522	140
81	1103	27	132	1210	56	183	1315	84	234	1420	112	285	1524	141
82	1105	28	133	1212	56	184	1317	84	235	1422	113	286	1526	141

Probe Resistance Chart (Continued)

For use with 45 Series Frymaster fryers manufactured with Minco Thermistor Probes only.

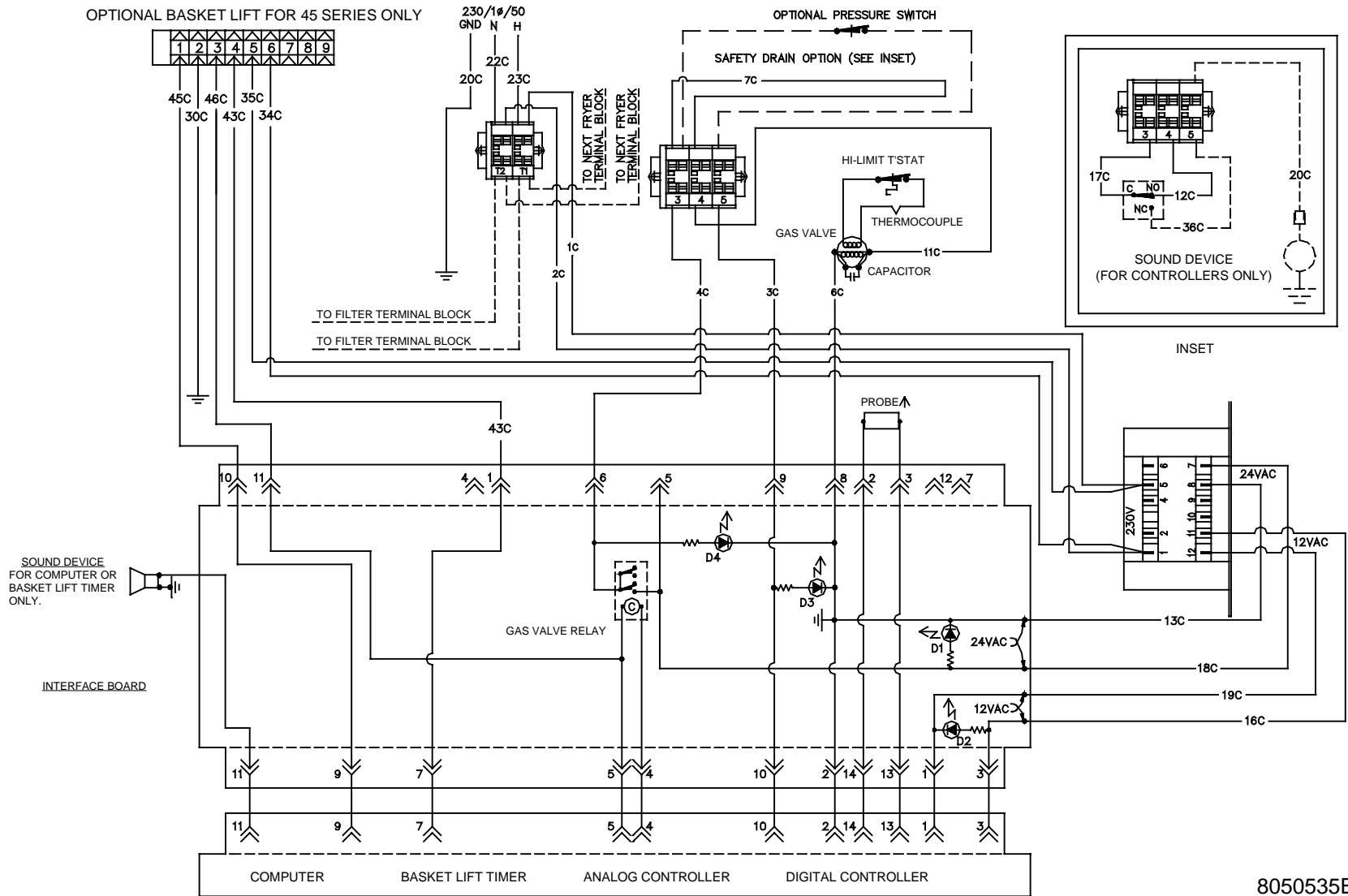
F	OHMS	C	F	OHMS	C	F	OHMS	C	F	OHMS	C	F	OHMS	C
287	1528	142	338	1630	170	389	1732	198	440	1833	227	491	1932	255
288	1530	142	339	1632	171	390	1734	199	441	1835	227	492	1934	256
289	1532	143	340	1634	171	391	1736	199	442	1837	228	493	1936	256
290	1534	143	341	1636	172	392	1738	200	443	1839	228	494	1938	257
291	1536	144	342	1638	172	393	1740	201	444	1841	229	495	1940	257
292	1538	144	343	1640	173	394	1742	201	445	1843	229	496	1942	258
293	1540	145	344	1642	173	395	1744	202	446	1845	230	497	1944	258
294	1542	146	345	1644	174	396	1746	202	447	1846	231	498	1946	259
295	1544	146	346	1646	174	397	1748	203	448	1848	231	499	1948	259
296	1546	147	347	1648	175	398	1750	203	449	1850	232	500	1950	260
297	1548	147	348	1650	176	399	1752	204	450	1852	232	501	1952	261
298	1550	148	349	1652	176	400	1754	204	451	1854	233	502	1954	261
299	1552	148	350	1654	177	401	1756	205	452	1856	233	503	1956	262
300	1554	149	351	1656	177	402	1758	206	453	1858	234	504	1958	262
301	1556	149	352	1658	178	403	1760	206	454	1860	234	505	1960	263
302	1558	150	353	1660	178	404	1762	207	455	1862	235	506	1962	263
303	1560	151	354	1662	179	405	1764	207	456	1864	236	507	1964	264
304	1562	151	355	1664	179	406	1766	208	457	1866	236	508	1965	264
305	1564	152	356	1666	180	407	1768	208	458	1868	237	509	1967	265
306	1566	152	357	1668	181	408	1770	209	459	1870	237	510	1969	266
307	1568	153	358	1670	181	409	1772	209	460	1872	238	511	1971	266
308	1570	153	359	1672	182	410	1774	210	461	1874	238	512	1973	267
309	1572	154	360	1674	182	411	1776	211	462	1876	239	513	1975	267
310	1574	154	361	1676	183	412	1778	211	463	1878	239	514	1977	268
311	1576	155	362	1678	183	413	1780	212	464	1880	240	515	1979	268
312	1578	156	363	1680	184	414	1781	212	465	1882	241	516	1981	269
313	1580	156	364	1682	184	415	1783	213	466	1884	241	517	1983	269
314	1582	157	365	1684	185	416	1785	213	467	1886	242	518	1985	270
315	1584	157	366	1686	186	417	1787	214	468	1888	242	519	1987	271
316	1586	158	367	1688	186	418	1789	214	469	1890	243	520	1989	271
317	1588	158	368	1690	187	419	1791	215	470	1892	243	521	1991	272
318	1590	159	369	1692	187	420	1793	216	471	1893	244	522	1993	272
319	1592	159	370	1694	188	421	1795	216	472	1895	244	523	1995	273
320	1594	160	371	1696	188	422	1797	217	473	1897	245	524	1996	273
321	1596	161	372	1698	189	423	1799	217	474	1899	246	525	1998	274
322	1598	161	373	1700	189	424	1801	218	475	1901	246	526	2000	274
323	1600	162	374	1702	190	425	1803	218	476	1903	247	527	2002	275
324	1602	162	375	1704	191	426	1805	219	477	1905	247	528	2004	276
325	1604	163	376	1706	191	427	1807	219	478	1907	248	529	2006	276
326	1606	163	377	1708	192	428	1809	220	479	1909	248	530	2008	277
327	1608	164	378	1710	192	429	1811	221	480	1911	249	531	2010	277
328	1610	164	379	1712	193	430	1813	221	481	1913	249	532	2012	278
329	1612	165	380	1714	193	431	1815	222	482	1915	250	533	2014	278
330	1614	166	381	1716	194	432	1817	222	483	1917	251	534	2016	279
331	1616	166	382	1718	194	433	1819	223	484	1919	251	535	2018	279
332	1618	167	383	1720	195	434	1821	223	485	1921	252	536	2020	280
333	1620	167	384	1722	196	435	1823	224	486	1923	252	537	2022	281
334	1622	168	385	1724	196	436	1825	224	487	1925	253	538	2025	281
335	1624	168	386	1726	197	437	1827	225	488	1927	253	539	2027	282
336	1626	169	387	1728	197	438	1829	226	489	1929	254	540	2029	282
337	1628	169	388	1730	198	439	1831	226	490	1931	254	541	2031	283

PLAN WIRING DIAGRAM
240/24V, 120/24V, 60HZ, 1Ø, 3 WIRE SERVICE



1-38

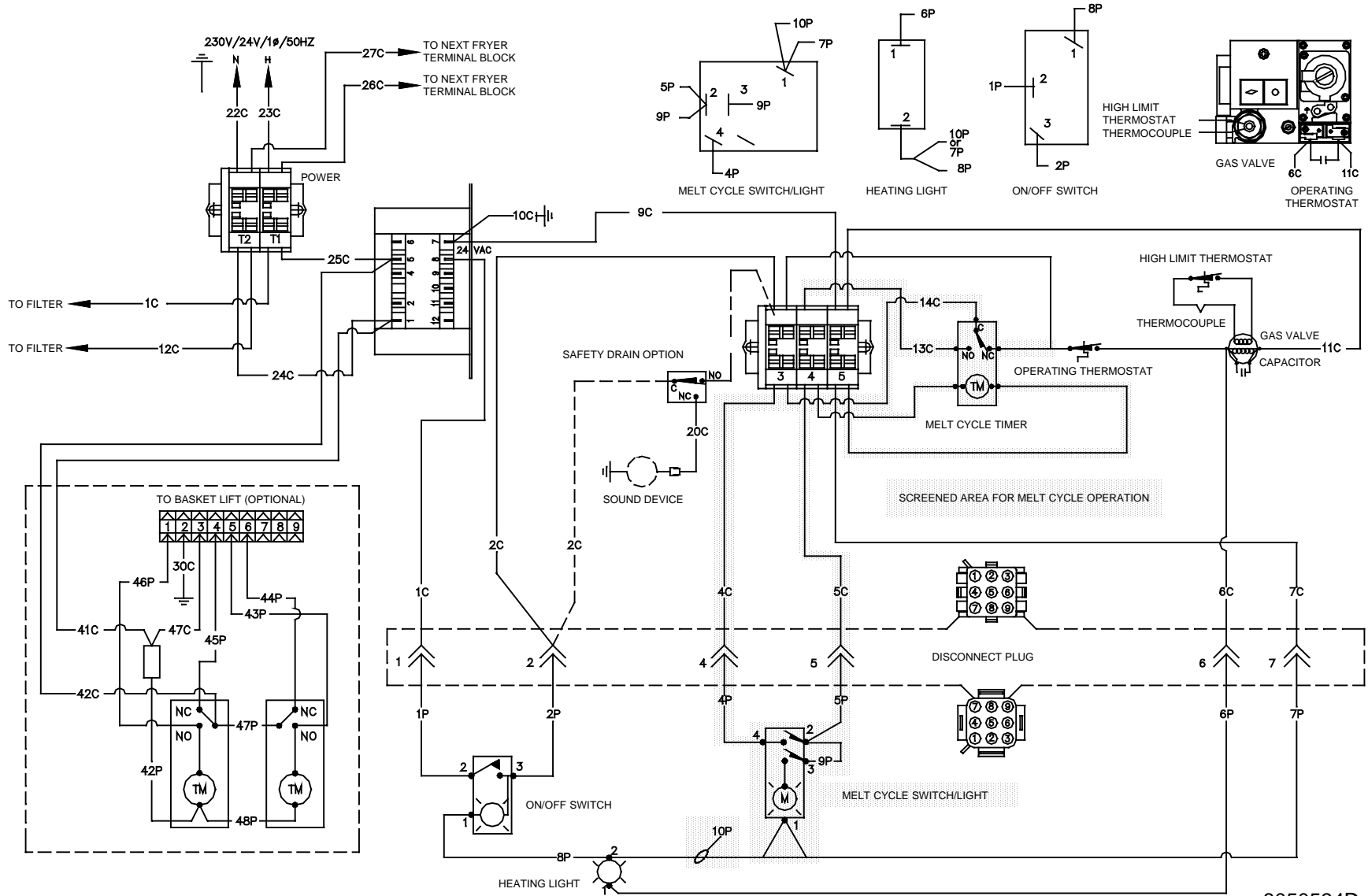
PLAN WIRING DIAGRAM CE 230V MJ45 W/COMPUTER AND BASKET LIFT



1-39

8050535B

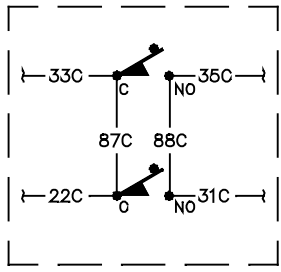
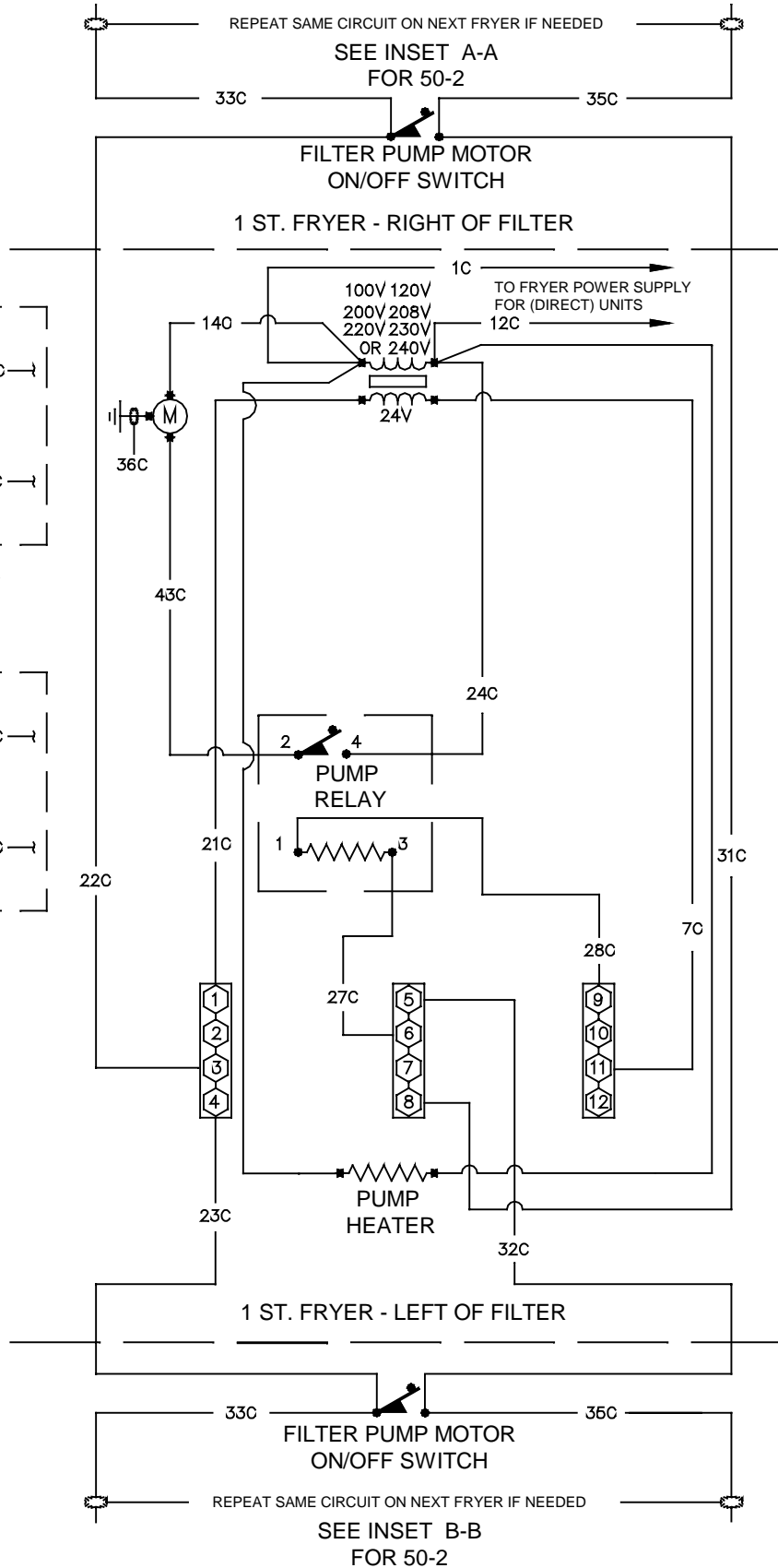
PLAN WIRING DIAGRAM CE FM/MJ 45 W/O COMPUTER



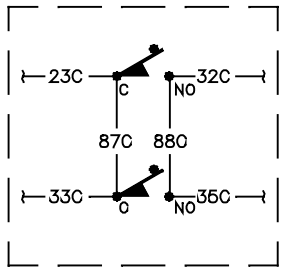
1-410

8050534D

PLAN WIRING DIAGRAM FOR FILTER MAGIC II
(DIRECT)



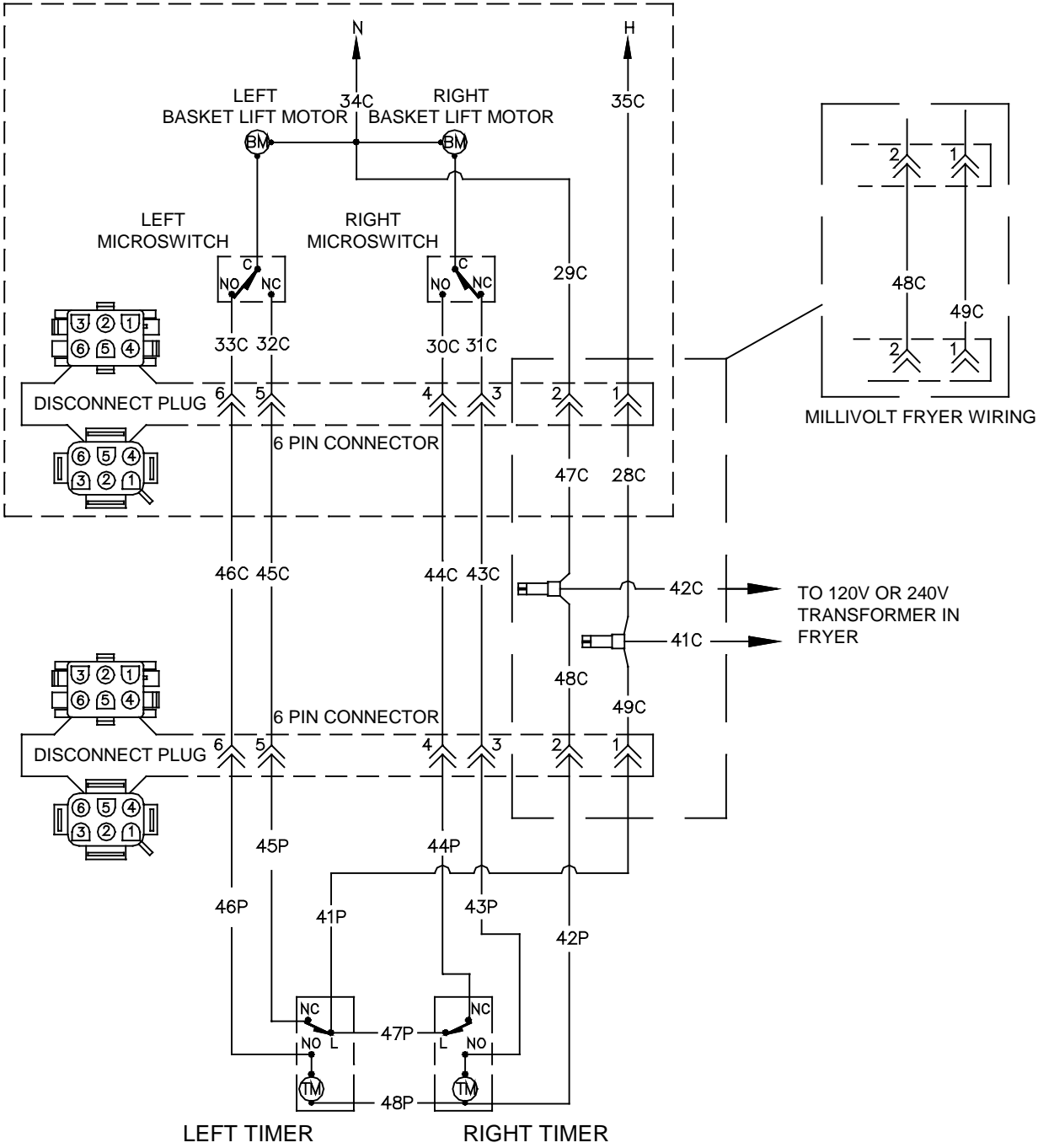
INSET A-A



INSET B-B

8050385D

PLAN WIRING DIAGRAM 45 SERIES BASKET LIFT SYSTEM

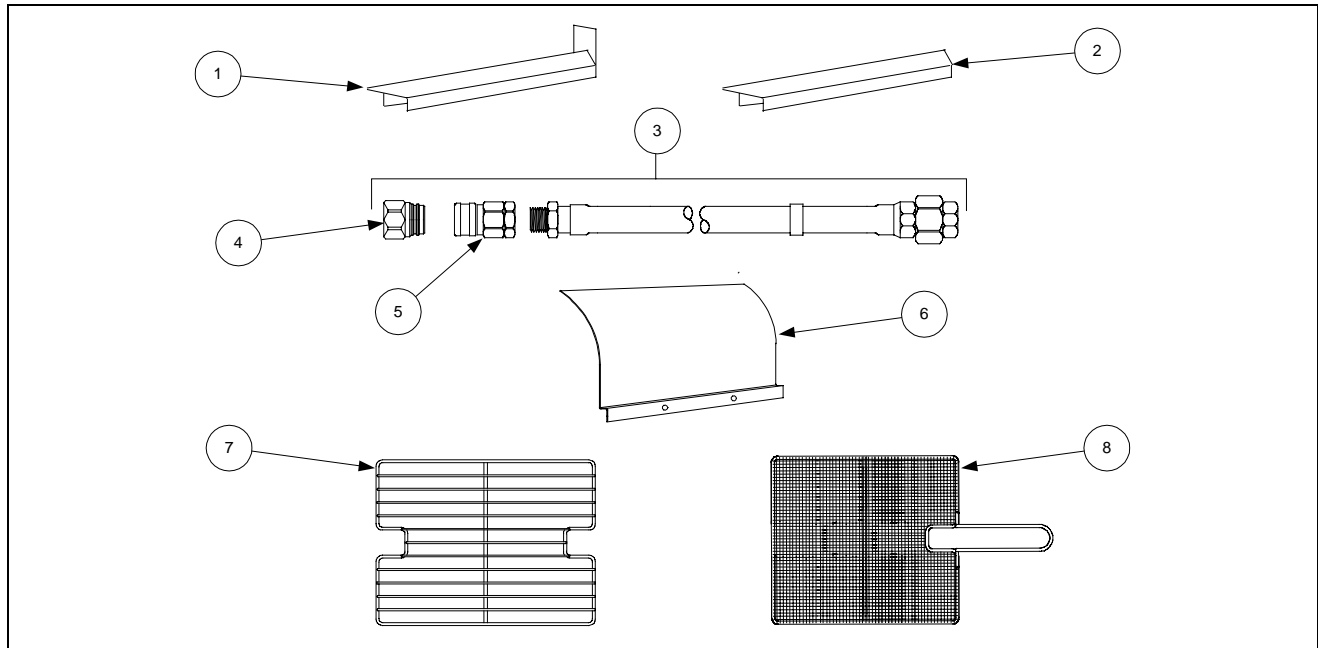


8050379E

45 SERIES GAS FRYERS SERVICE AND PARTS MANUAL

CHAPTER 2: PARTS LIST

ACCESSORIES

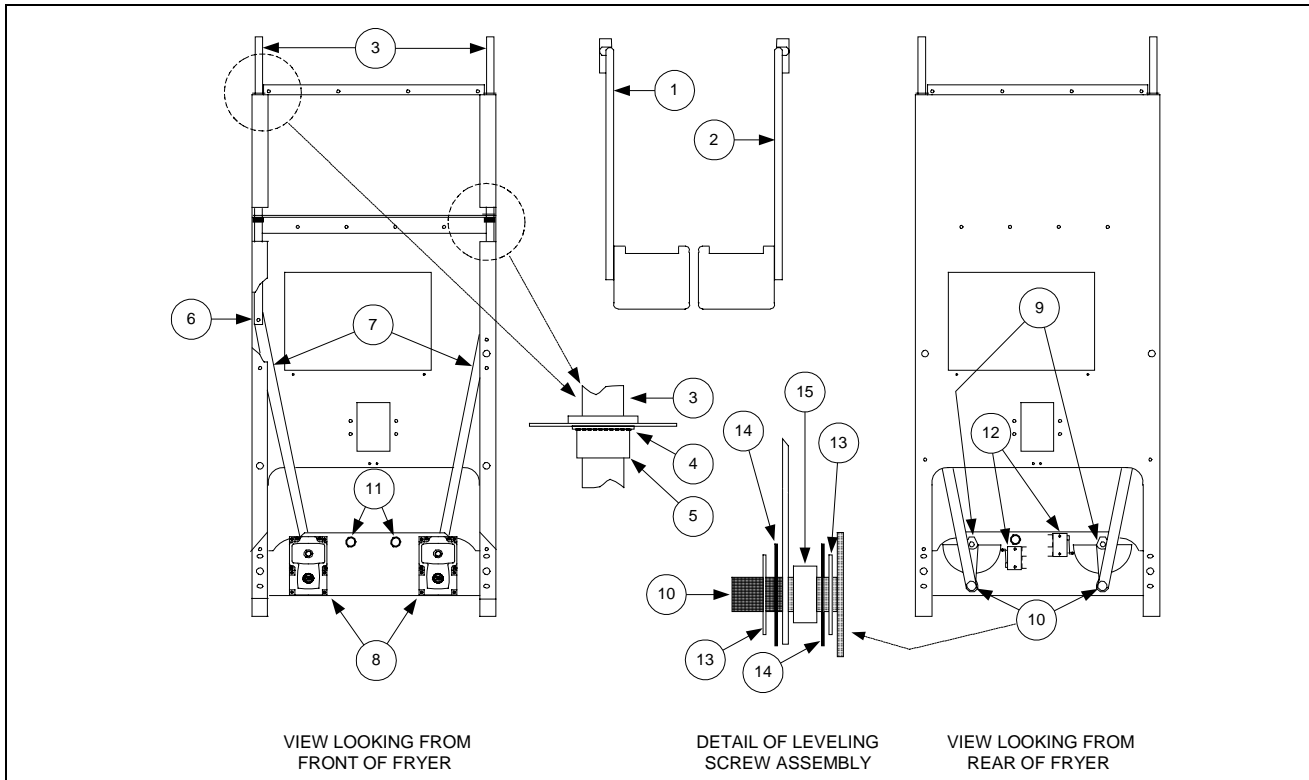


ITEM	PART #	COMPONENT
*	803-0099	Basket, Full (Cannot be used on fryers having basket lifts)
*	803-0022	Basket, Twin
1	823-1885	Connecting Strip, Burger King Frypot
2	910-7443	Connecting Strip, Standard Frypot
*	806-5518	Cover, Frypot
3	806-1698SP	Gasline, Dormont, w/quick disconnect, 1" x 36" (25.4mm x 91.4cm)
3	806-1699	Gasline, Dormont, w/quick disconnect, 1" x 48" (25.4mm x 121.9cm)
3	806-1701	Gasline, Dormont, w/quick disconnect, 3/4" x 36" (19.0mm x 91.4cm)
3	806-1700	Gasline, Dormont, w/quick disconnect, 3/4" x 48" (19.0mm x 121.9cm)
4	810-0074	Quick Disconnect Fitting, Male, 1" (25.4mm)
4	810-0072	Quick Disconnect Fitting, Male, 3/4" (19.0mm)
5	810-0073	Quick Disconnect Fitting, Female, 1" (25.4mm)
5	810-0070	Quick Disconnect Fitting, Female, 3/4" (19.0mm)
6	910-3557	Flue Deflector
7	803-0132	Rack, Basket Support (wireform w/o handle)
8	803-0136	Rack, Basket Support (screen w/handle)
*	803-0100	Sediment Screen

* Not illustrated.

BASKET LIFT ASSEMBLIES AND COMPONENT PARTS

Bell Crank Basket Lift

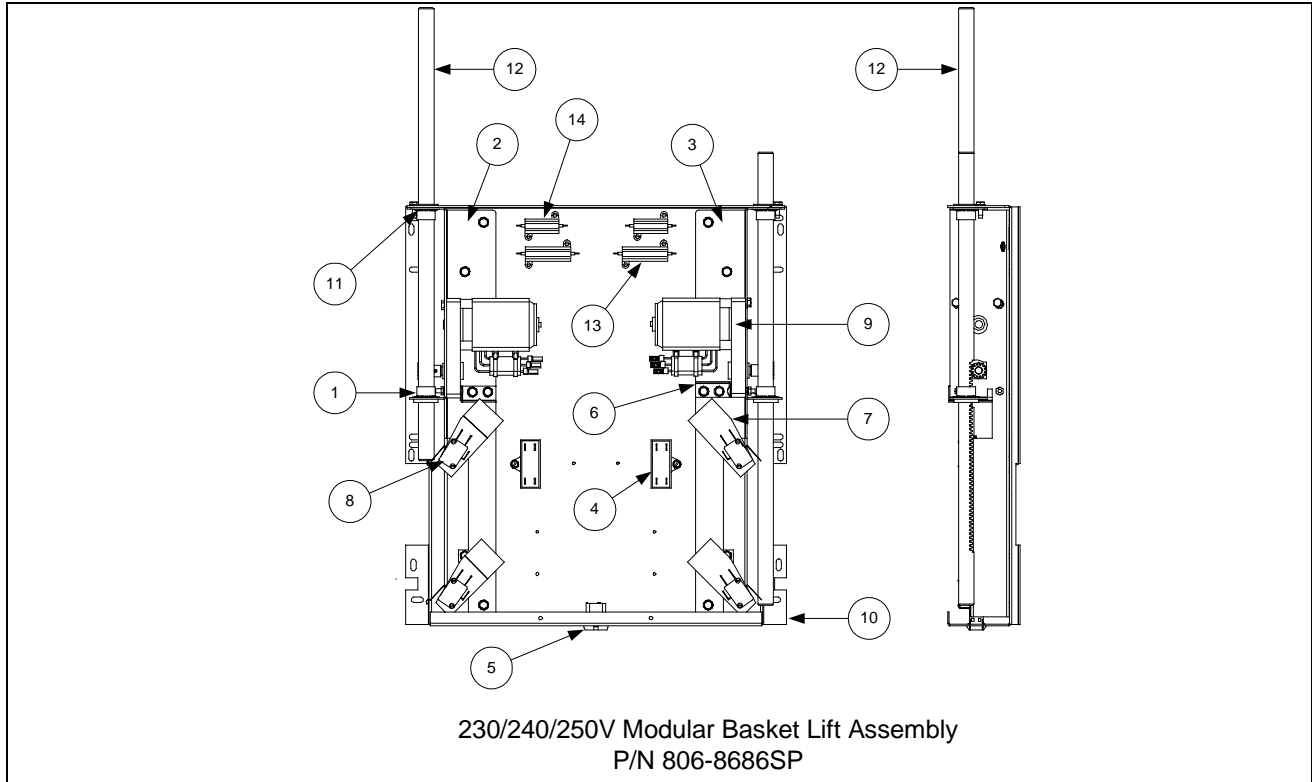


ITEM	PART #	COMPONENT
1	823-06931	Basket Lift Arm, Left
2	823-06932	Basket Lift Arm, Right
3	810-0192	Rod, Basket Lift
4	809-0082	Ring, Truarc Retaining
5	813-0035	Bushing, Bronze
6	810-0170	Pin, Connecting
7	920-6076	Link, Basket Lift
8	807-0107	Gearmotor, 120V Basket Lift
8	807-0108	Gearmotor, 240V Basket Lift
9	810-0052	Bellcrank and Cam
10	809-0155	Leveling Screw
11	807-0124	Bushing, Plastic
12	807-0240	Microswitch
13	809-0194	Washer, Steel, 5/16"
14	826-1381	Washer, Nylon (Pkg of 10)
15	810-0220	Spacer, Tubular
*	900-3783	Panel, Access, Enameled Steel
*	910-3783	Panel, Access, Stainless Steel
**	806-2079SP	Wiring Assembly, 120V Bell Crank Basket Lift Internal

* Not illustrated.

** See illustration on Page 2-30.

Modular Basket Lift



ITEM	PART #	COMPONENT
*	823-2704	Basket Lift Arm, Left
*	823-2705	Basket Lift Arm, Right
1	813-0035	Bushing, Bronze, .640" ID
2	901-5528	Chassis, Modular Basket Lift, Left
3	902-5528	Chassis, Modular Basket Lift, Right
4	807-2133	Capacitor, 12.5 μ Farad, 250VAC
5**	806-8555SP	Wiring Assembly, 208/240 Modular Basket Lift Internal
6	900-5529	Gusset, Modular Basket Lift Motor
7	812-0442	Insulation, Microswitch
8	807-2572	Microswitch
9	806-5964	Motor Assembly, Modular Basket Lift
10	900-7655	Mount, Modular Basket Lift
11	809-0082	Ring, Truarc Retaining
12	810-1012	Rod, Modular Basket Lift
13	807-2511	Resistor, 25 watt, 25 ohm
14	807-2512	Resistor, 50 watt, 100 ohm
***	900-4776	Rear Panel
****	807-2171	Cable Assembly, Controller to Modular Basket Lift
	806-8686SP	Modular Basket Lift Assembly (All components illustrated above)

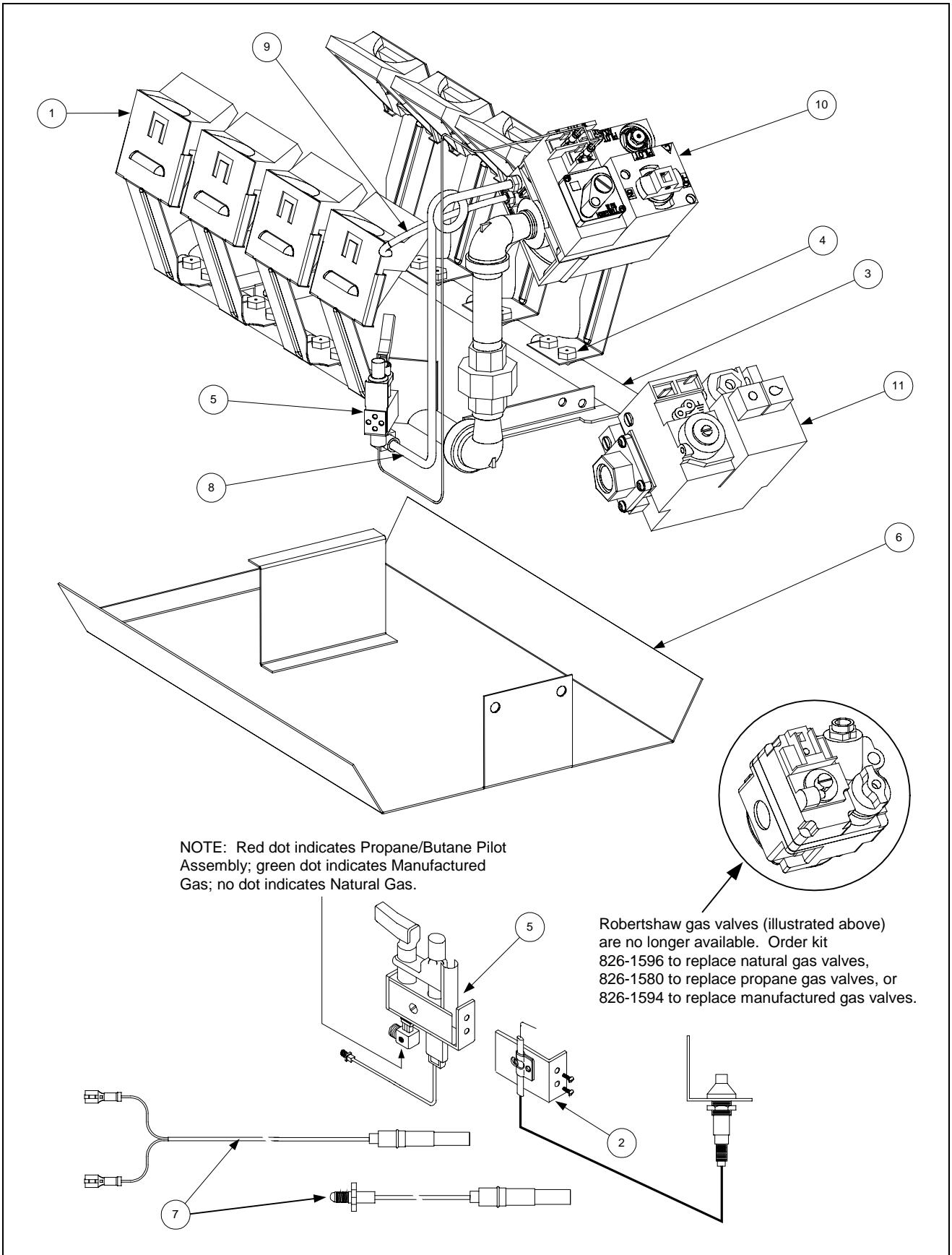
* See illustration on Page 2-2.

** See illustration on Page 2-30.

*** Not illustrated.

**** See illustration on Page 2-31.

BURNER ASSEMBLY COMPONENT PARTS



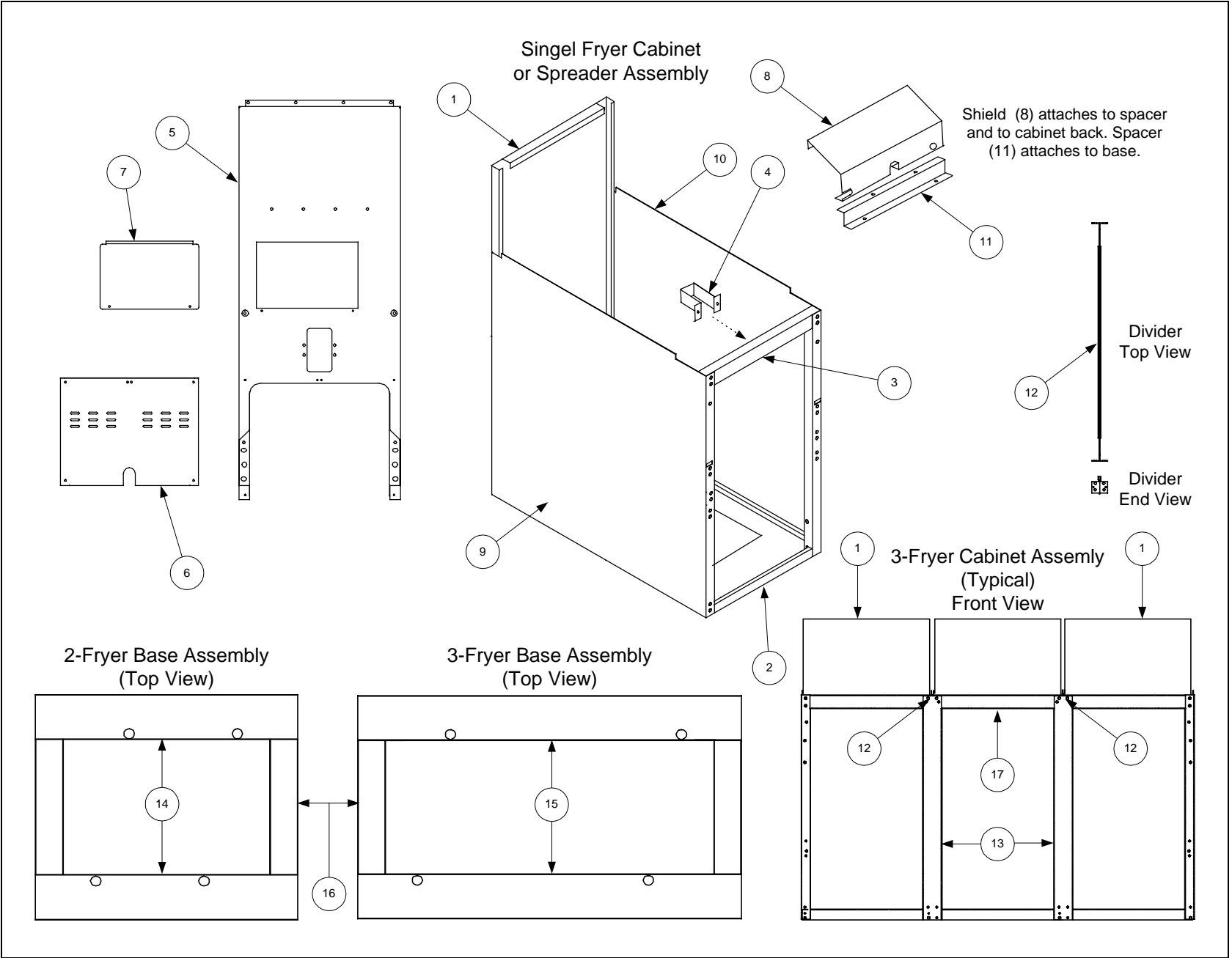
ITEM	PART #	COMPONENT
1	806-0225	Deflector Assembly (Target Assembly)
2	826-1155	Ignitor Kit, Optional Piezo
	807-1906	Electrode Assembly
	810-1001	Trigger
3	823-0496	Manifold, Burner
4		Orifice
	810-0407	Manufactured Gas, 2.15mm (0-1999 Ft)
		Natural Gas
	826-1357	1.45mm (0-1999 Ft) (Pkg of 10)
	826-1386	1.40mm (2000-3999 Ft) (Pkg of 10)
	810-0361	1.36mm (4000-5999 Ft)
	810-0131	1.30mm (6000-7999 Ft)
	812-1301	1.27mm (8000-8999 Ft)
	810-0343	1.25mm (9000-10,000 Ft)
		Propane/Butane Gas
	826-1387	0.86mm (0-1999 Ft) (Pkg of 10)
	810-0952	0.82mm (2000-3999 Ft)
	810-0339	0.81mm (4000-5999 Ft)
	812-0914	0.78mm (6000-7999 Ft)
	812-1302	0.76mm (8000-8999 Ft)
	812-0444	0.74mm (9000-10,000 Ft)
5		Pilot Assembly
	810-1830	Natural Gas, w/Thermopile (non-CE)
	806-8688SP	Natural Gas, w/Thermocouple (CE)
	810-0616	Propane or Butane Gas, w/Thermopile (non-CE)
	806-8689SP	Propane or Butane Gas, w/Thermocouple (CE)
	810-0683	Manufactured Gas, w/Thermocouple (CE and non-CE)
6	823-0574	Shield Assembly, Burner Heat
7		Thermopile/Thermocouple
	810-1873	Thermopile w/push-on terminals (used in non-CE Pilot Assemblies)
	812-1284	Thermocouple w/threaded terminal (used in CE Pilot Assemblies)
8		Tube, Pilot Gas
	810-0705	For use with all burner assemblies except Hong Kong export units
	812-0278	For use with Hong Kong export units only
9	810-0691	Tube, Vent
10		Valve, Gas (Non-CE)
	807-3294	Natural Gas
	807-3295	Propane/Butane Gas
	807-3354	Manufactured Gas (other than Hong Kong export units)
	810-0353	Manufactured Gas (Hong Kong export units only)
11		Valve, Gas (CE)
	806-6710SP	Natural Gas (see note below)
	807-6711SP	Propane Gas (see note below)

* Not illustrated.

NOTE: An adapter kit (part number 812-1256SP) is required to connect the high-limit thermostat to these valves. See Page 2-29 for details.

CABINET ASSEMBLIES AND COMPONENT PARTS

Fryer and Spreader Cabinet Assembly Components

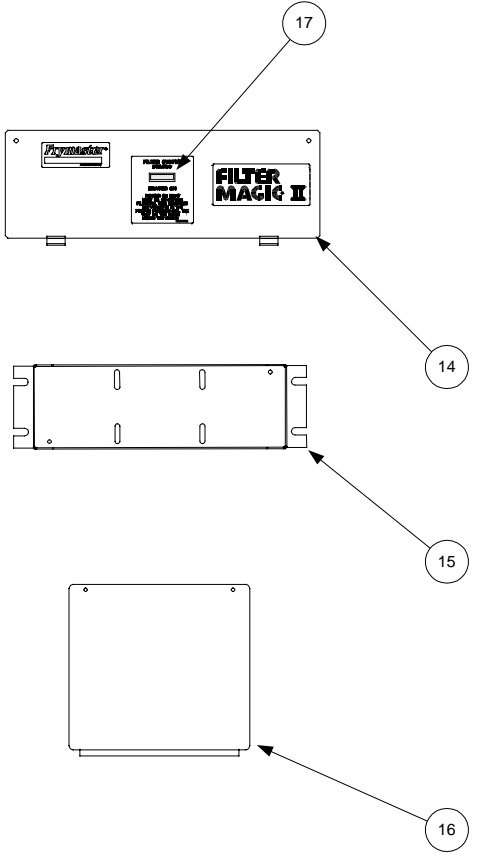
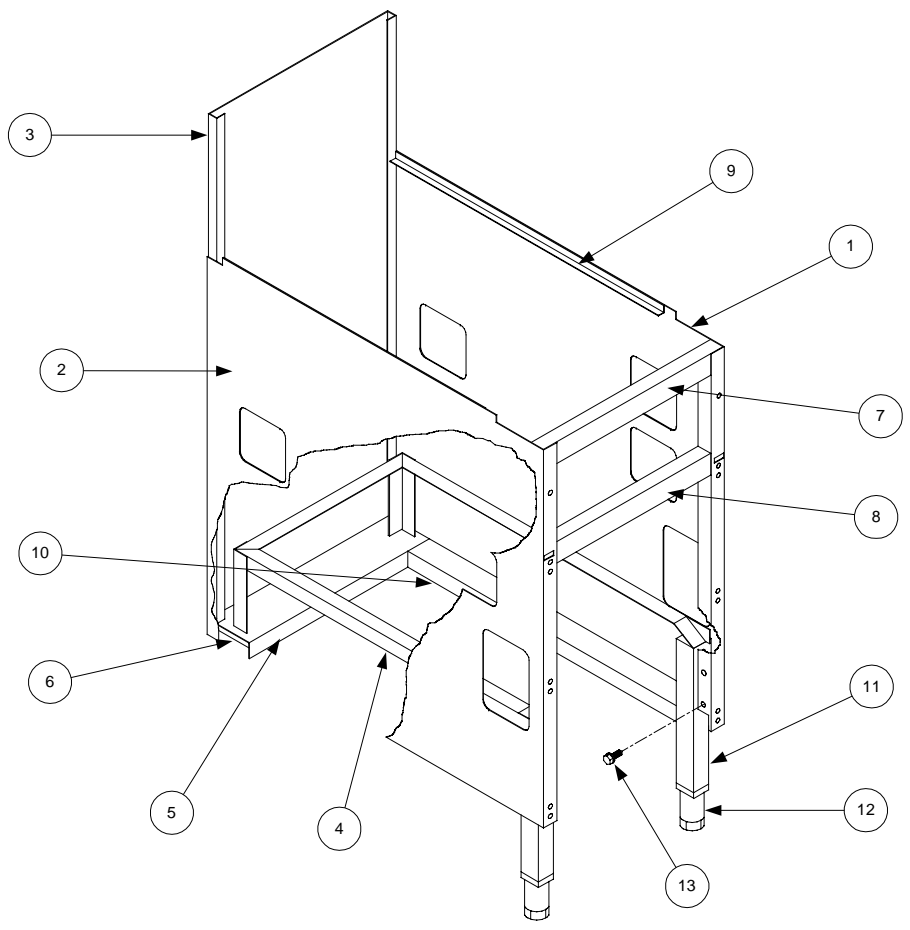


ITEM	PART #	COMPONENT
		Single Cabinet Assemblies, Complete
	806-7656	Enameled Steel
	806-7657	Stainless Steel
		Spreader Cabinet Assemblies, Complete
	806-7660	Enameled Steel
	806-7661	Stainless Steel
1		Back
	900-6983SP	Fryer Cabinet, Enameled Steel
	910-6983SP	Fryer Cabinet, Stainless Steel
	900-7213SP	Spreader Cabinet, Enameled Steel (no roll-over on top edge)
	910-7213SP	Spreader Cabinet, Stainless Steel (no roll-over on top edge)
2	900-2568SP	Base, Single Cabinet
3	900-4813SP	Brace, Single Cabinet Top
4	900-0857	Brace, Frypot to Cabinet (not used on spreader cabinets)
5		Extension, Basket Lift Cabinet
	900-9361	Enameled Steel
	910-9361	Stainless Steel
6		Panel, Basket Lift Lower Access
	900-3177	Enameled Steel
	910-3177	Stainless Steel
7		Panel, Basket Lift Upper Access
	900-3783	Enameled Steel
	910-3783	Stainless Steel
8	930-3657	Shield, Basket Lift Heat
9		Side, Cabinet, Left
	901-9323SP	Enameled Steel
	911-9323SP	Stainless Steel
10		Side, Cabinet, Right
	902-9323SP	Enameled Steel
	912-9323SP	Stainless Steel
11	900-5531	Spacer, Basket Lift Heat Shield
*	900-7277	Stiffener, Spreader Cabinet Side (slips over top edge of each side)
12	900-7314SP	Divider, Cabinet
13	900-6979SP	Post, Door
14	900-2395SP	Channel, Front and Rear (2-Fryer Base)
15	900-2396SP	Channel, Front and Rear (3-Fryer Base)
16	900-4426SP	Channel, Side
*	900-7730SP	Brace, 2-Cabinet Top
17	900-9430SP	Brace, 3-Cabinet Top

* Not illustrated.

NOTE: See Page 2-10 for Casters, Legs and Associated Hardware

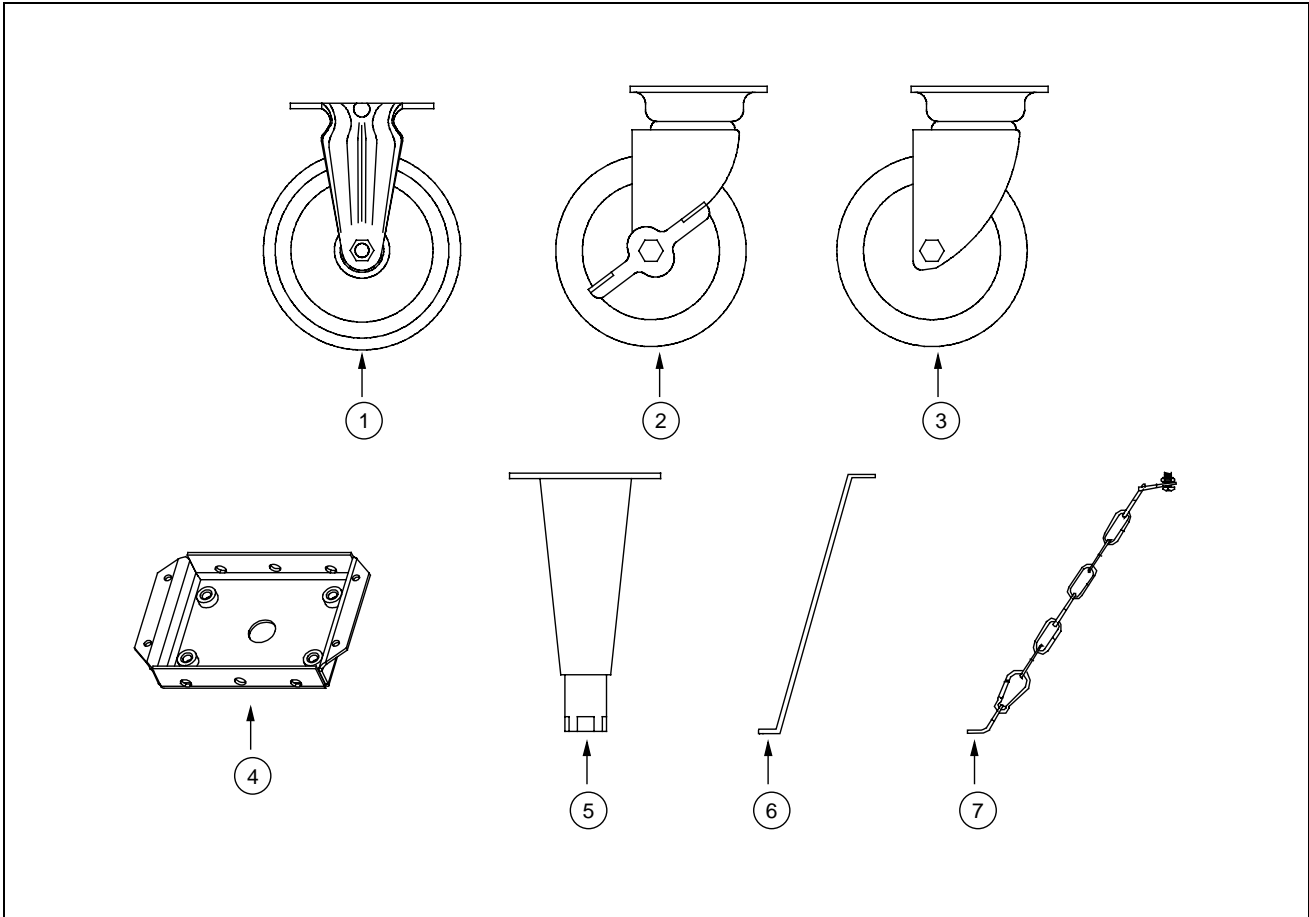
CABINET ASSEMBLIES
FILTER MAGIC II
806-6495 (Stainless) and 806-6496 (Enameled)



ITEM	PART #	COMPONENT
1		Side, Cabinet, Left
	901-9324SP	Enameled Steel
	911-9324SP	Stainless Steel
2		Side, Cabinet, Right
	902-9324SP	Enameled Steel
	912-9324SP	Stainless Steel
3		Back, Filter Magic II Cabinet
	900-7274	Enameled Steel
3	910-7274	Stainless Steel
4	806-5317	Rail Assembly, Filter Pan
5	900-4389SP	Channel, Rear Base
6	806-5209	Pad, Leg
7	900-4813	Brace, Single Cabinet Top
8	900-4391	Brace, Filter Cabinet Front
9	900-7277	Stiffener, Spreader Cabinet Side
10	902-4390	Channel, Right Base
*	901-4390	Channel, Left Base
11	910-1601	Leg, Filter Cabinet, Front
12	810-0007	Leg, Adjustable
13	809-0449	Screw, #10 Truss Head
14	910-4106	Panel, FM II Front
*	910-4107	Panel, FM II Front (Undercounter – 13-inches wide)
15	900-4175	Mount, Filter Pump Motor
16		Panel, Filter Pump Motor Access
	900-4089	Enameled Steel
	910-4089	Stainless Steel
17	807-1275	Light, Filter Pan Status
*	910-1832	Retainer, Leg Insert (L-shaped, with one large and one small hole)
*	900-1621	Plate, Rail Mount (.9-inch x 6.12-inch with two holes)
*	809-0412	Screw, #10 x ½-inch Hex Head
*		Cover, 4-inch x 4-inch Access Opening
	900-0889	Enameled Steel
	910-0889	Stainless Steel
*		Cover, 4-inch x 6-inch Access Opening
	900-0890	Enameled Steel
	910-0890	Stainless Steel
*	809-0359	Screw, #8 x ¼-inch Hex Washer Head (for access covers)

* Not illustrated.

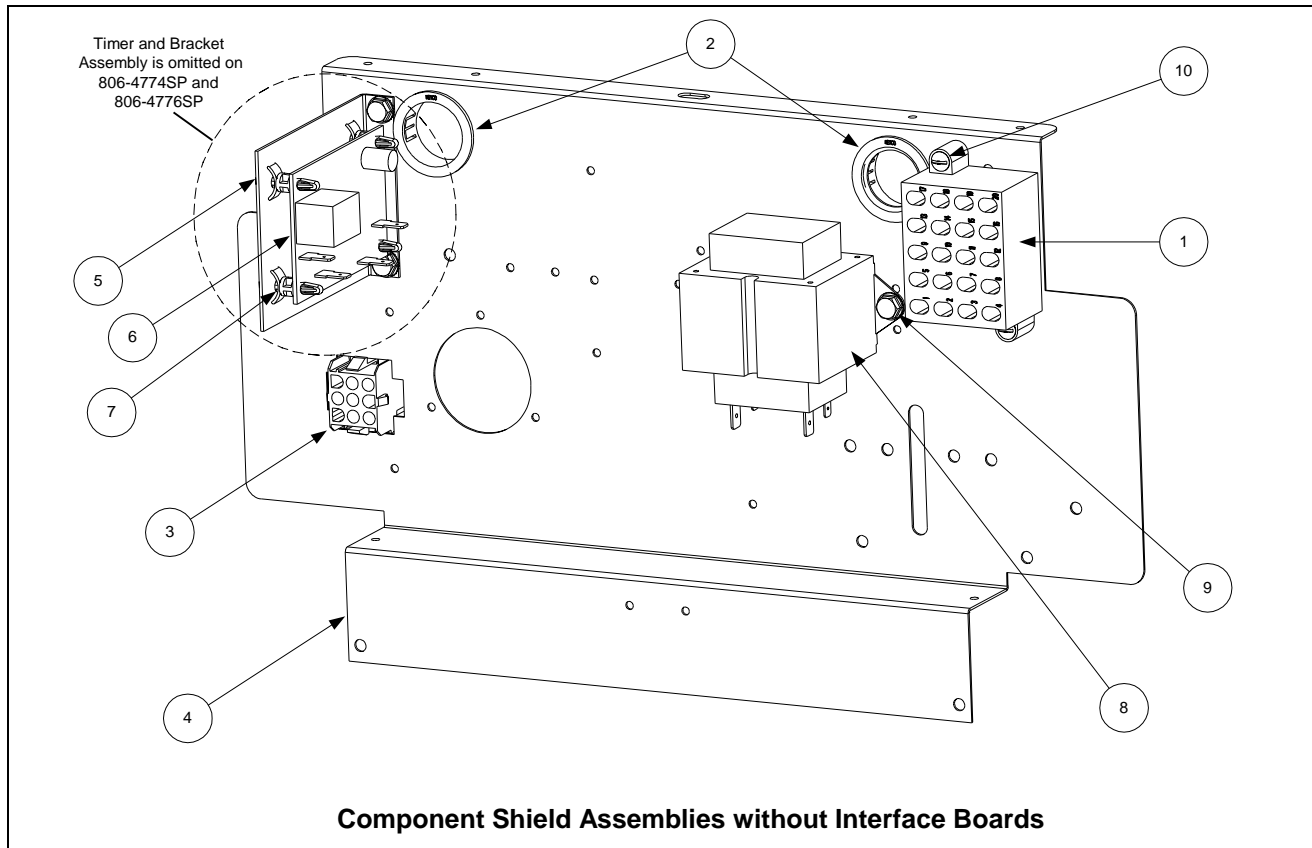
CASTERS, LEGS, AND ASSOCIATED HARDWARE



ITEM	PART #	COMPONENT
1	810-0378	Caster, Rigid, 5", w/o Brake
2	810-0357	Caster, Swivel, 5", w/Brake
3	810-0356	Caster, Swivel, 5", w/o Brake
4	806-5209	Caster/Leg Pad Assembly
5	806-3811	Leg Assembly, Nickel Plated
5	810-1205	Leg Assembly, SS
*	826-1119	Leg Assembly, Set of 4, Nickel Plated
*	826-1259	Leg Assembly, Set of 4, SS
6	826-1095	Anchor Strap Kit (for use on single fryers w/legs)
7	826-0900	Chain Restraint Kit (for use on fryers w/casters)
*	826-1113	Kit, Mounting Hardware, 1 Caster/Leg
*	826-1098	Kit, Mounting Hardware, 2 Casters/Legs
*	826-1043	Kit, Mounting Hardware, 4 Casters/Legs

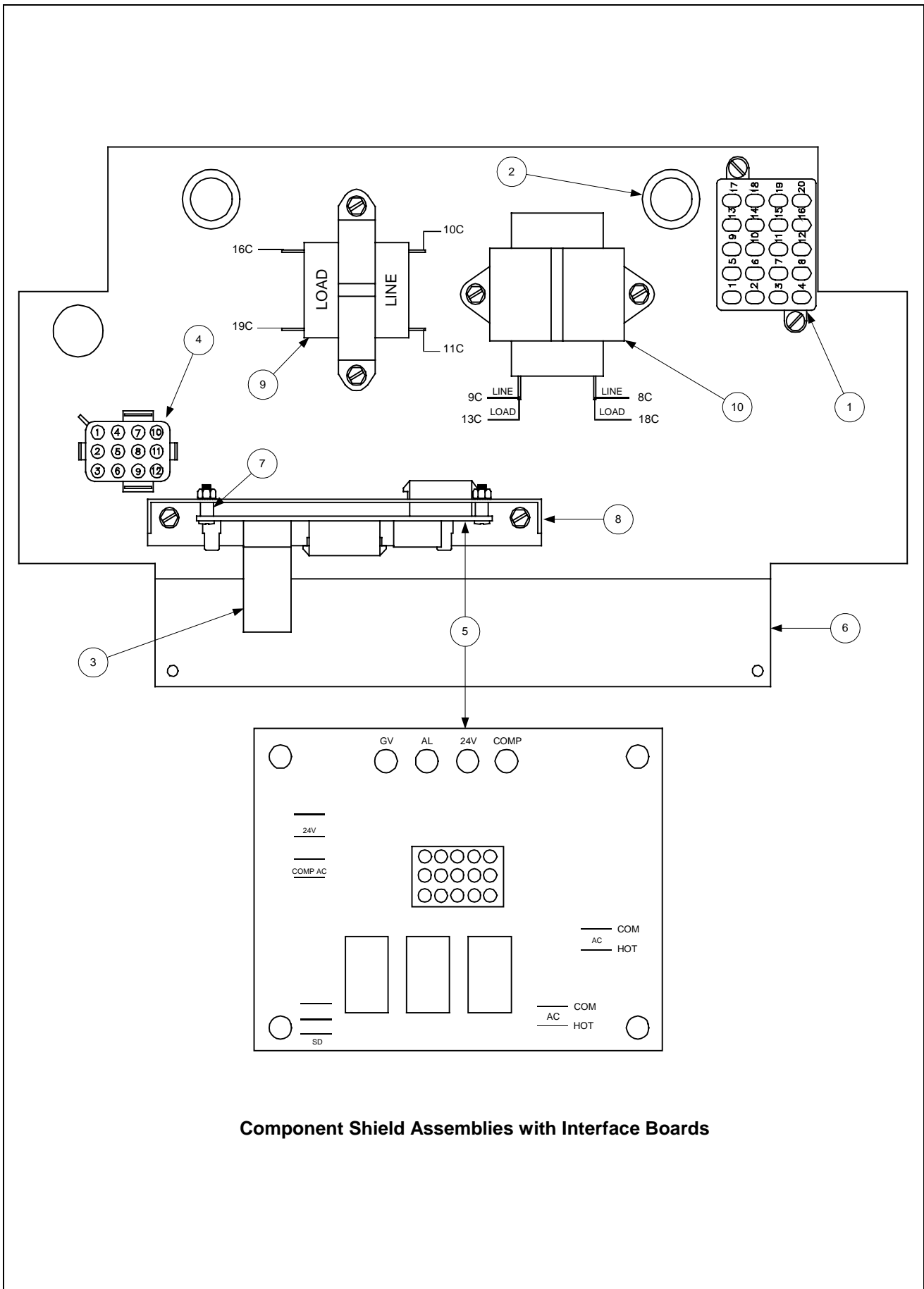
* Not illustrated.

COMPONENT SHIELD AND FILTER BOX ASSEMBLIES AND COMPONENT PARTS



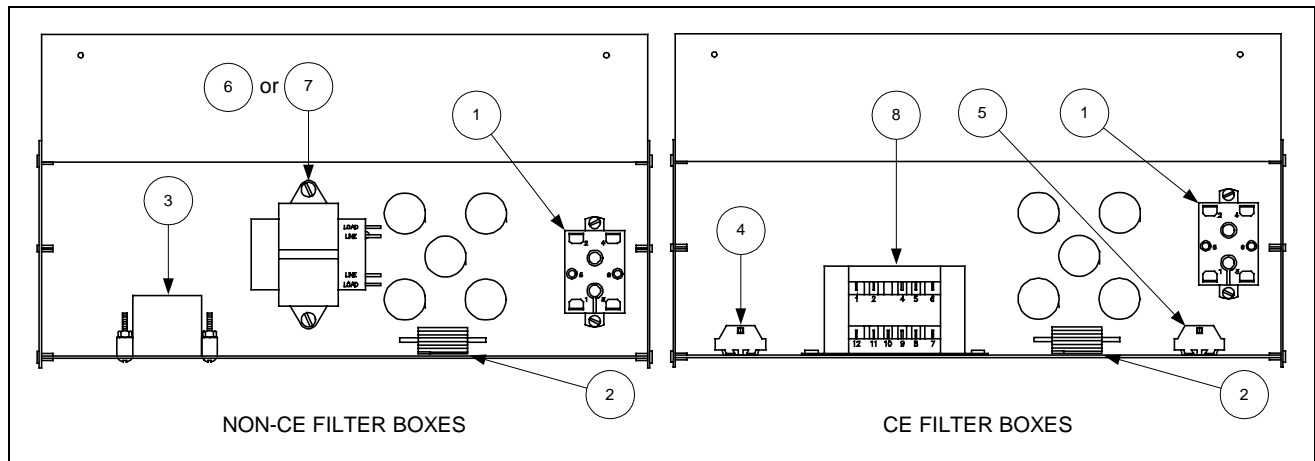
ITEM	PART #	COMPONENT
		Complete Shield Assemblies
	806-4774SP	120V, 50/60 Hz, w/o Interface Board
	806-4776SP	240V, 50/60 Hz, w/o Interface Board
	806-4772SP	120V, 50/60 Hz, w/o Interface Board, w/Melt Cycle Timer
	806-4777SP	240V, 50/60 Hz, w/o Interface Board, w/Melt Cycle Timer
		Components
1	807-0066	Block, Terminal, 20-Pin
2	807-2469	Bushing, Heyco, 1" ID
3	807-0156	Plug, 9-Pin
4	900-4340	Shield, Component
	826-1546	Kit, Melt Cycle Timer (Replacement for Melt Cycle Timer <i>Motor</i>) [Items 5,6, & 7]
5	900-8741	Bracket, Melt Cycle Timer
6	806-9613	PC Board Assembly, Melt Cycle Timer (50 and 60 Hz)
7	809-0580	Standoff, PC Board
8		Transformer, 24V
	807-0800	120V/50 and 60 Hz
	807-0680	240V/50 and 60 Hz
9	826-1374	Screw, #10 x 1/2-inch Hex Washer Head (Pkg of 25)
10	809-0097	Screw, 6-32 x 1-inch Slotted Truss Head
*	809-0049	Nut, 6-32 Hex

* Not illustrated.



Component Shield Assemblies with Interface Boards

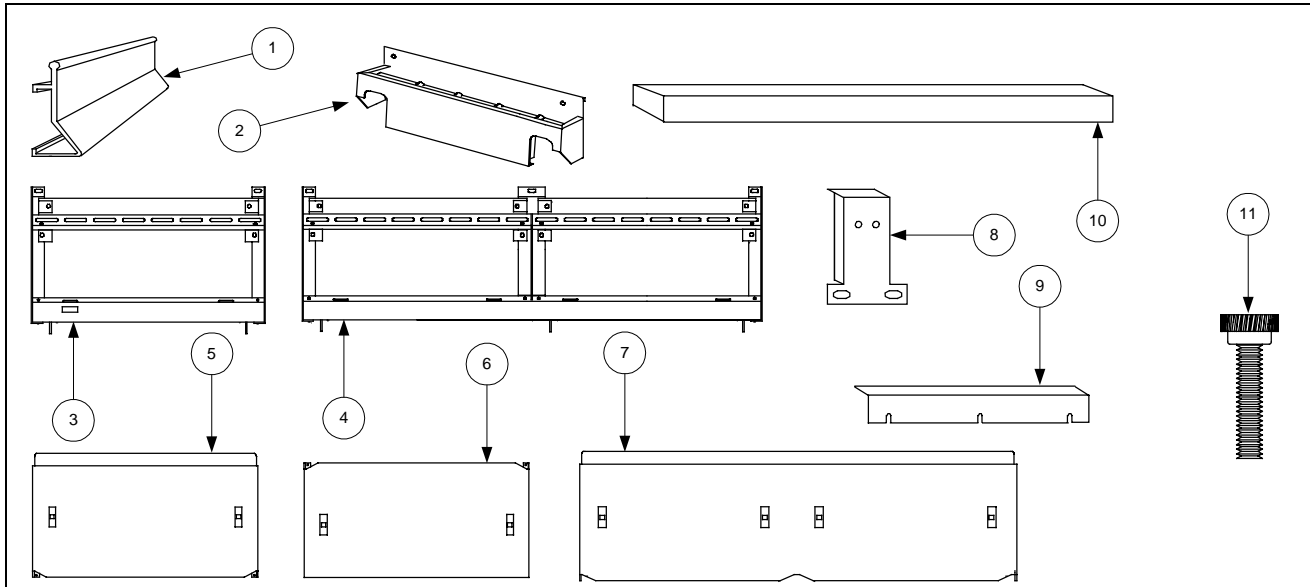
ITEM	PART #	COMPONENT
		Complete Shield Assemblies
	806-4773SP	120V, 50/60 Hz, w/Interface Board
	806-4775SP	240V, 50/60 Hz, w/Interface Board
		Components
1	807-0066	Block, Terminal, 20-Pin
2	807-2469	Bushing, Heyco, 1" ID
3	810-0448	Clip, Relay Retaining
4	807-0160	Connector, 12-Pin
5	806-3548	Interface Board, 45 Series Universal Replacement
6	900-4340	Shield, Component
7	809-0349	Spacer, 4 x 6 mm, Interface Board Standoff
8	824-0161	Support, Interface Board
9		Transformer, 12V
	807-0855	120V/60 Hz
	807-0979	240V/50 Hz
10		Transformer, 24V
	807-0800	120V/50 and 60 Hz
	807-0680	240V/50 and 60 Hz



ITEM	PART #	COMPONENT
1	807-0012	Relay, 15 Amp, SPST, Filter Box
2	806-4358	Resistor, FM II Heater Light
3	807-0276	Terminal Block, 12-Pin
4	810-1168	Terminal Block
5	810-1164	Terminal Block
6	807-0800	Transformer, 24V – 120V/50 and 60 Hz
7	807-0680	Transformer, 24V – 240V/50 and 60 Hz
8	807-1999	Transformer, 24V – 240V/50 and 60 Hz, CE
*		Light, Filter Pan Status (see page 9)

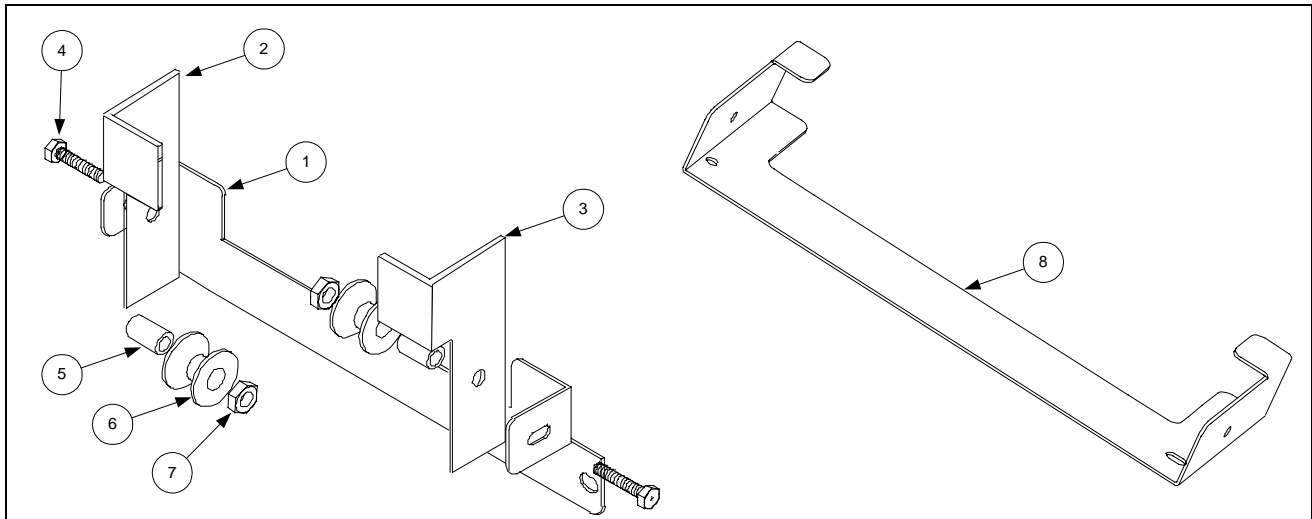
* Not illustrated.

CONTROL PANEL ASSEMBLIES, FLUE CAPS, TOP CAPS, and RELATED ITEMS



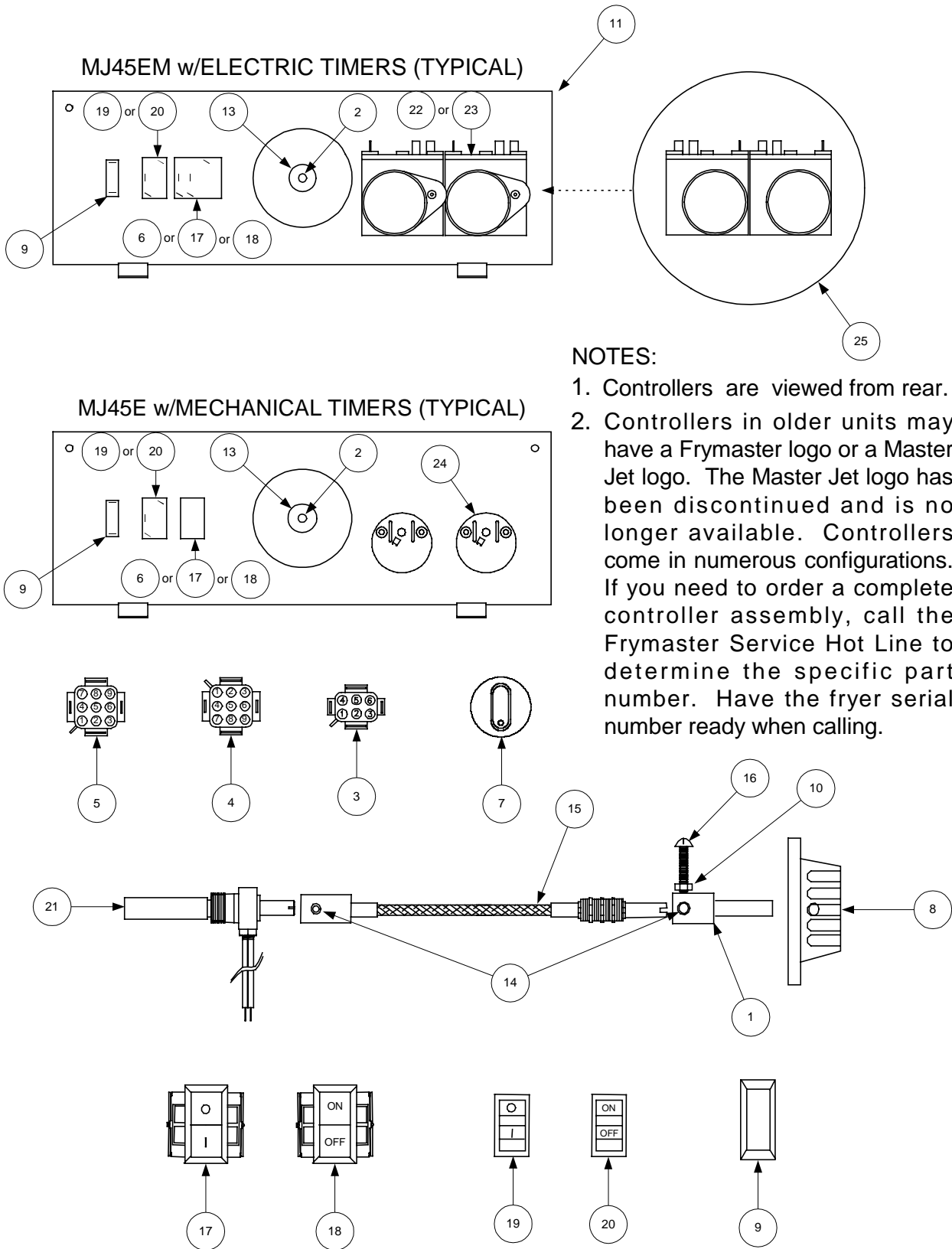
ITEM	PART #	COMPONENT
1	803-0028	Basket Hanger, Universal
2	823-1462	Basket Hanger, Burger King
3	806-4732SP	Control Panel Assembly, 1 Fryer
4	806-4733SP	Control Panel Assembly, 2-Fryer Battery
*	806-4734SP	Control Panel Assembly, 3-Fryer Battery
*	806-5018SP	Control Panel Assembly, 4-Fryer Battery
5	910-5018	Flue Cap, 1 Fryer, w/lip
6	910-6545	Flue Cap, 1 Fryer, w/o lip
7	910-5019	Flue Cap, 1 Fryer, Burger King
*	823-2540	Flue Cap, 2-Fryer Battery
*	823-2542	Flue Cap, 2-Fryer Battery, Burger King
*	823-2541	Flue Cap, 3-Fryer Battery
*	823-2543	Flue Cap, 3-Fryer Battery, Burger King
*	823-2569	Flue Cap, 4-Fryer Battery, Universal
8	900-5486	Flue Cap Support
9	900-4253	Flue Cap Retaining Strip, Burger King
*	824-0404	Top Cap, 1 Fryer
10	824-0405	Top Cap, 2-Fryer Battery
*	824-0406	Top Cap, 3-Fryer Battery
*	824-0407	Top Cap, 4-Fryer Battery
*	826-1351	Nut, Cage (receives Basket Hanger Thumbscrew) (Pkg of 10)
11	809-0171	Thumbscrew, Basket Hanger

* Not illustrated.



ITEM	PART #	COMPONENT
	806-0325	Basket Lift Roller Assembly, Complete (Items 1-7)
	806-9257	Basket Lift Roller Assembly, Complete (Items 4-8)
1	910-4830	Mount, Three-Piece Roller Guide Bracket
2	911-1001	Bracket, Roller Guide, Left
3	912-1001	Bracket, Roller Guide, Right
4	826-1334	Screw, ¼ – 20 x 1¼” (Pkg of 5)
5	810-0374	Spacer
6	810-0194	Roller, Basket Lift Guide
7	809-0047	Nut, ¼ – 20 Cap
8	910-8284	Mount, One-Piece Roller Guide Bracket

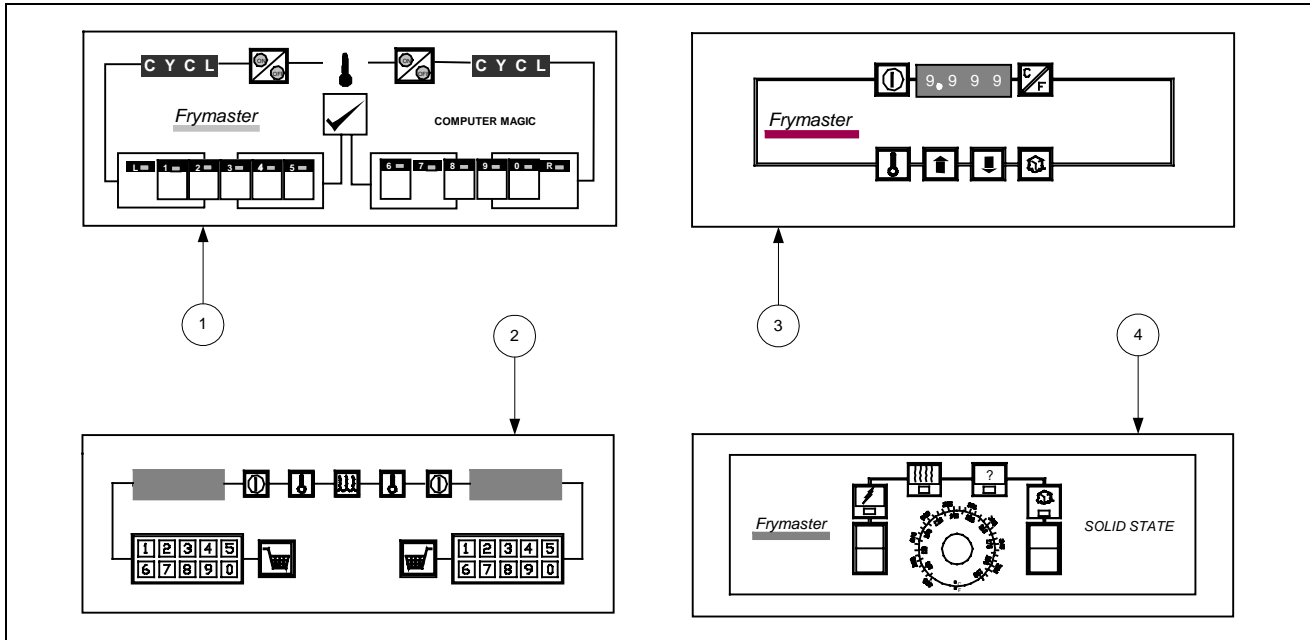
CONTROLLER ASSEMBLIES (Thermostat Controllers)



ITEM	PART #	COMPONENT
1	810-0276	Adapter, Shaft End
*	806-4797	Alarm, Open Drain (for use w/Thermostat Controllers only)
*	910-1551	Bezel, 15-minute Mechanical Timer
*	900-2241	Bracket, Thermostat
*	900-2071	Bracket, Thermostat Shaft Guide
2	826-1338	Bushing, Plastic, Thermostat Shaft (Pkg of 25)
*	806-4781	Capacitor (used on gas valve terminals w/Thermostat Controllers only)
3	807-0157	Connector, 6-Pin
4	807-0156	Connector, 9-Pin Female
5	807-0155	Connector, 9-Pin Male
6	810-0333	Insert, Blank Switch
*	950-0246	Insulation, Double Electric Timer
7	810-1287	Knob, 15-minute Mechanical Timer
8	810-0334	Knob, Thermostat
*	802-1473A	Label, 15-minute Mechanical Timer Bezel
*	802-0765A	Label, Control Panel
*	802-1470A	Label, Thermostat Dial
9	807-1525	Light, Melt Cycle, White, 24V
*	802-0336	Logo, Frymaster
10	809-0050	Nut, Hex
11	910-4346	Panel, Thermostat Control w/120V Electric Timers
12	910-4344	Panel, Thermostat Control w/240V Electric or w/Mechanical Timers
*	910-4345	Panel, Thermostat Control w/o Timers
13	826-1395	Plug, Snap-in Reducer, S/S (Pkg of 10)
14	809-0157	Set Screw
15	810-0999	Shaft, Flexible
16	826-1361	Stop Screw (Pkg of 25)
17	807-2197	Switch, Melt Cycle, Lighted Rocker, Amber, 24V (O/I)
18	807-0046	Switch, Melt Cycle, Lighted Rocker, Amber, 24V (ON/OFF)
19	807-2196	Switch, Power, Lighted Rocker, Green, 24V (O/I)
20	807-1404	Switch, Power, Lighted Rocker, Red, 24V (ON/OFF)
21	806-0183	Thermostat, Operating
22	807-0103	Timer, 5-minute, 120V/60 Hz
23	807-0104	Timer, 15-minute, 120V/60 Hz
24	810-0585	Timer, 15-minute, Mechanical
25	807-0401	Timer, 18-minute, 240V/50-60 Hz

* Not illustrated.

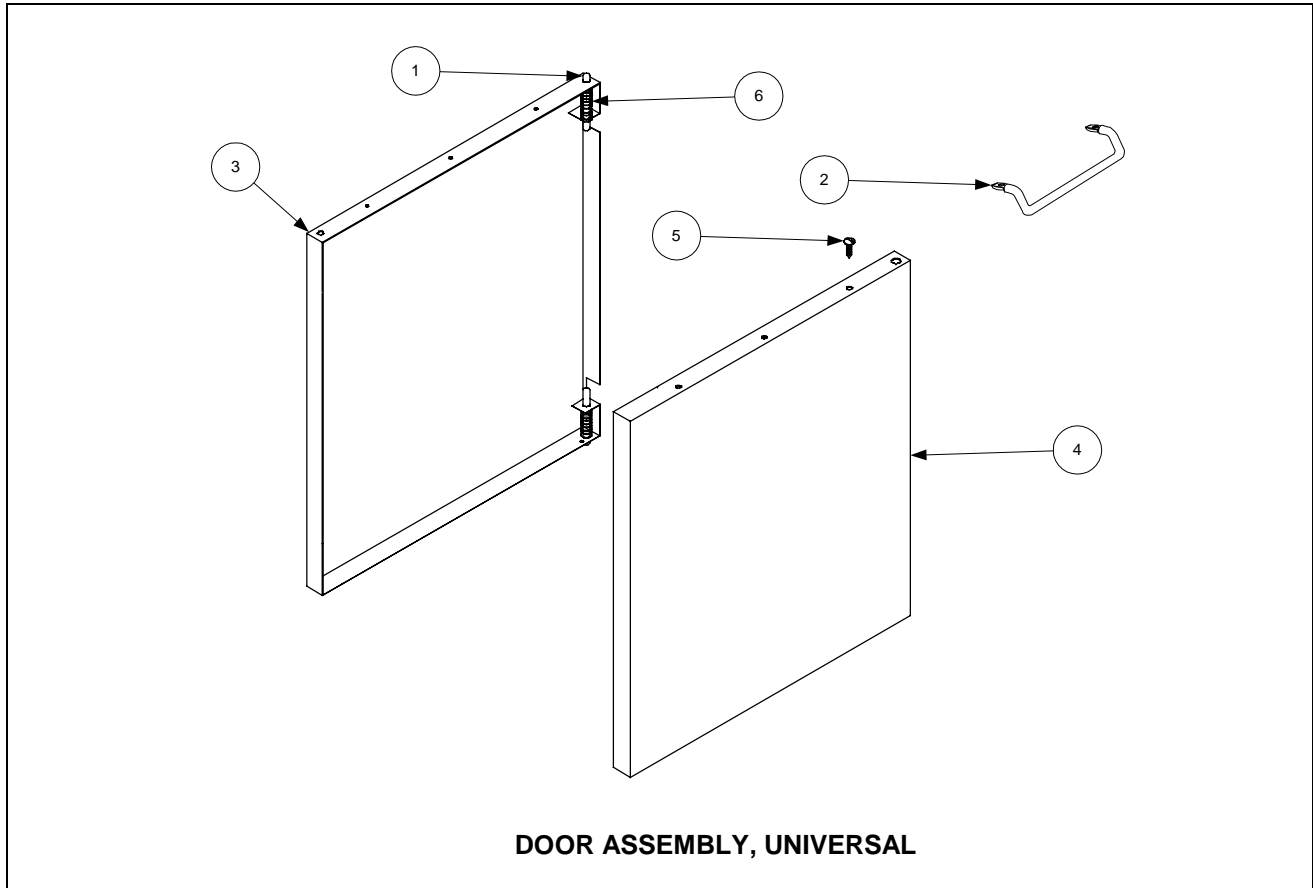
CONTROLLER ASSEMBLIES (Other than Thermostat Controllers)



ITEM	PART #	COMPONENT
1		Computer Magic III
	806-3705	Built-In
	806-4699	Remote In-Hood
	806-4698	Remote On-Hood
2		Controller, Basket Lift Timer
	806-4353	3 seconds on/24 seconds off Melt Cycle
	806-3722	8 seconds on/24 seconds off Melt Cycle
3	806-3797	Controller, Digital
4	806-3559	Controller, Solid State
*	810-0387	Knob, Solid State Controller
*	806-3660	Sound Device (for use w/all CM III Computers)

* Not illustrated.

DOOR ASSEMBLY

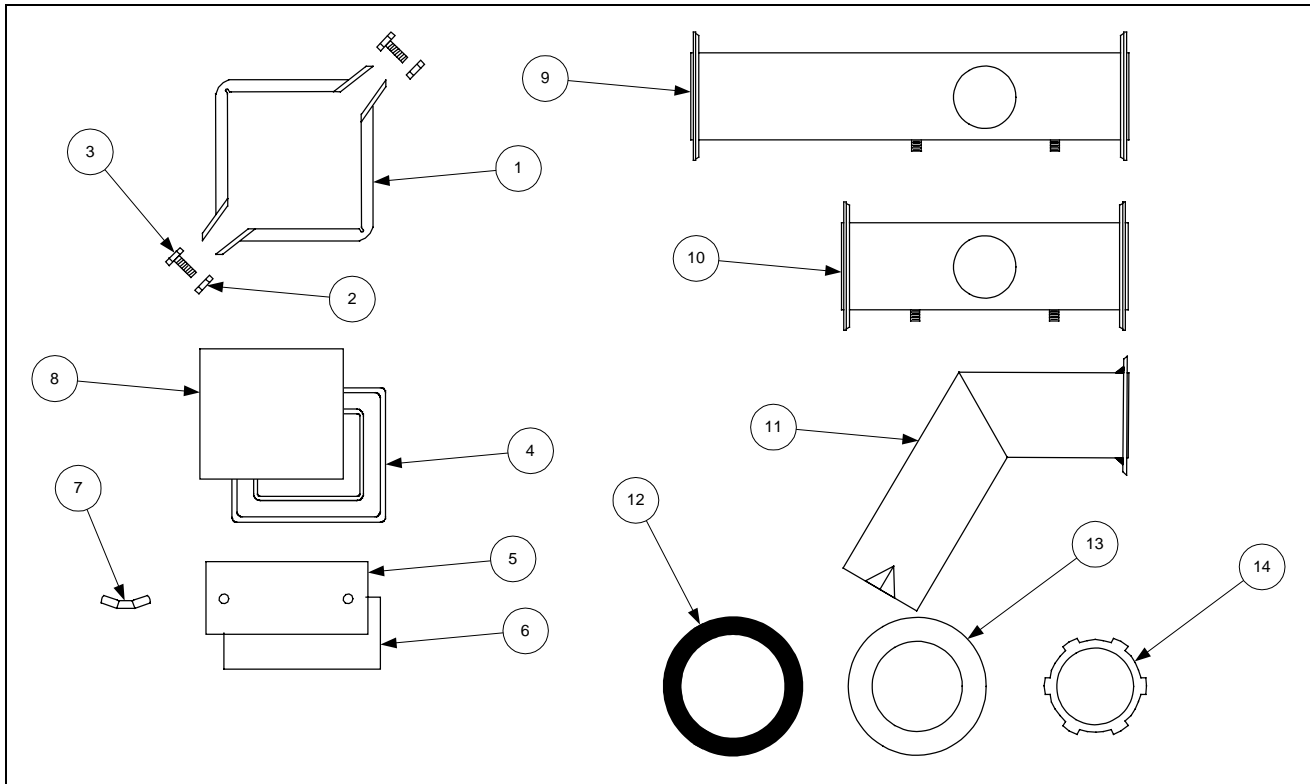


ITEM	PART #	COMPONENT
		Components
*	810-0066	Door Catch, Magnetic
1	806-4487	Door Pin Assembly
2	810-1392	Handle, Door, Wireform, SS (must be ordered separately)
*	810-1508	Hinge, Door, Universal (must be ordered separately)
3	900-6595	Liner, Door
4	824-0616	Panel, Door, Outer
5	826-1379	Screw, #10 x 1/2" Phillips Head, Zinc Plated (Pkg of 10)
6	826-1343	Spring, Door Pin (Pkg of 10)
	806-1961	Door Assembly, Enameled Steel (less handle and door hinge)
	806-1962	Door Assembly, Stainless Steel (less handle and door hinge)

* Not illustrated.

DRAIN AND FILTRATION SYSTEM COMPONENTS

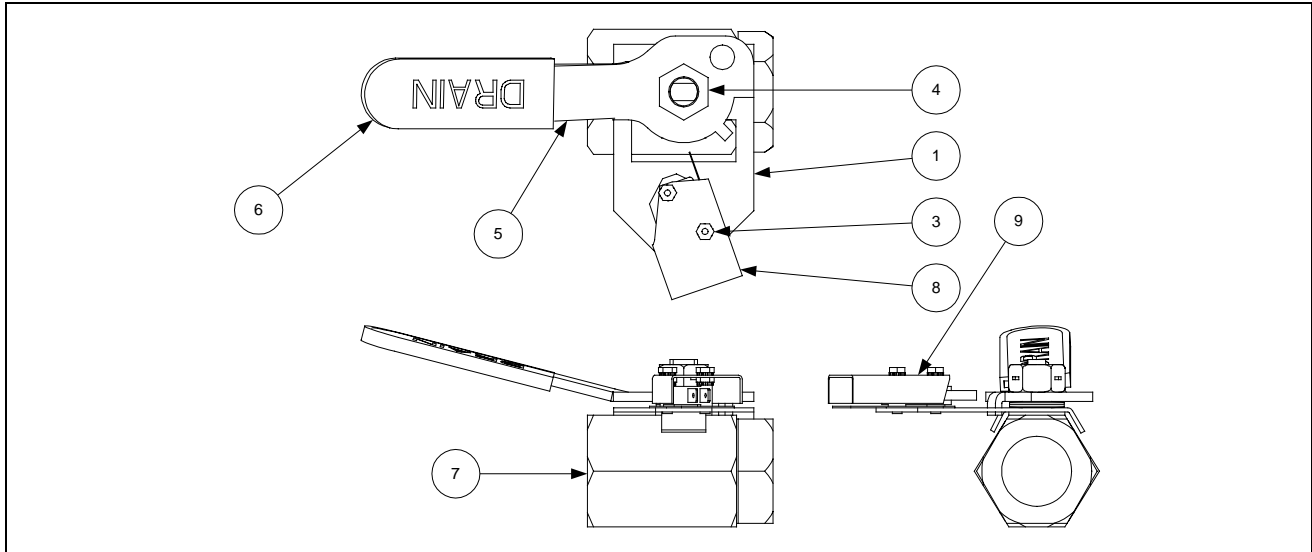
Filter Magic II Square Drain Components



ITEM	PART #	COMPONENT
1	810-0396	Clamp Section (requires 2 per connection)
2	826-1362	Nut, 1/4-20 (Pkg of 10)
3	826-1375	Screw, 10-32 x 3/4
4	816-0032	Seal (Connection Gasket)
5	826-1348	Cover, Cleanout (Pkg of 5)
6	816-0021	Gasket, Cleanout
7	826-1382	Wing Nut, Cleanout Cover Retaining
8	900-0757	Cover, Drain End
9	823-0717	Drain Section, 15.5" (39.37cm) Long
10	823-0718	Drain End, 8.12" (20.62cm) Long
*	823-0731	Drain Extension, Spreader Cabinet, 15.5" (39.37cm) Long
11	823-0719	Drain Outlet
12	816-0092	Grommet, Drain Tube
13	826-1345	Washer, Drain Tube Retaining
14	809-0347	Nut, Drain Tube Retaining

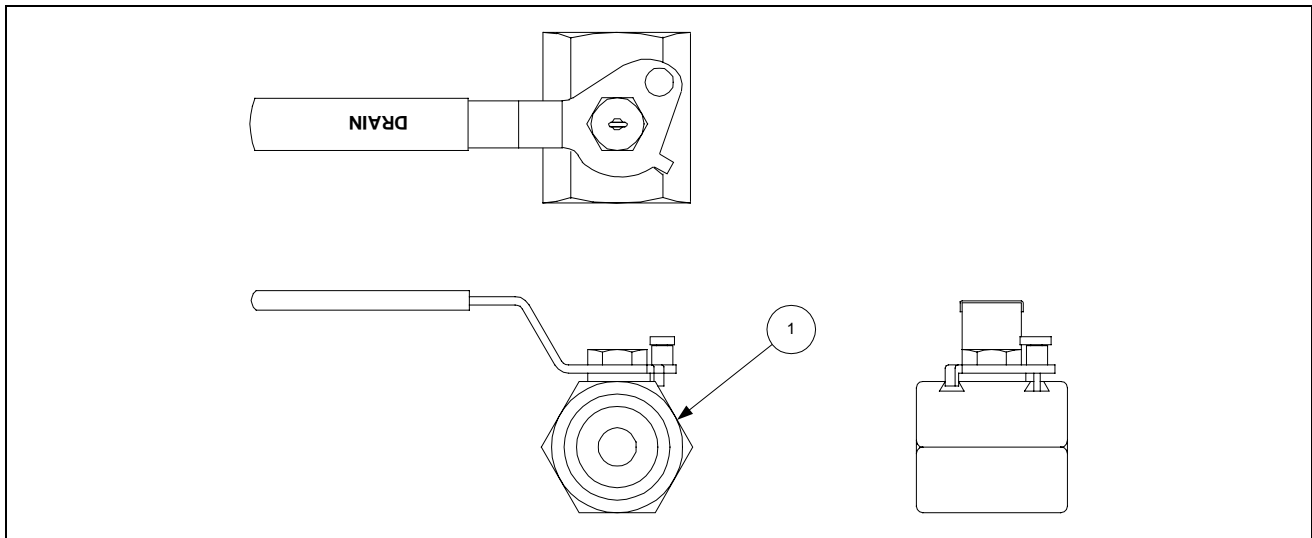
* Not illustrated.

FM45 Drain Valve Assembly



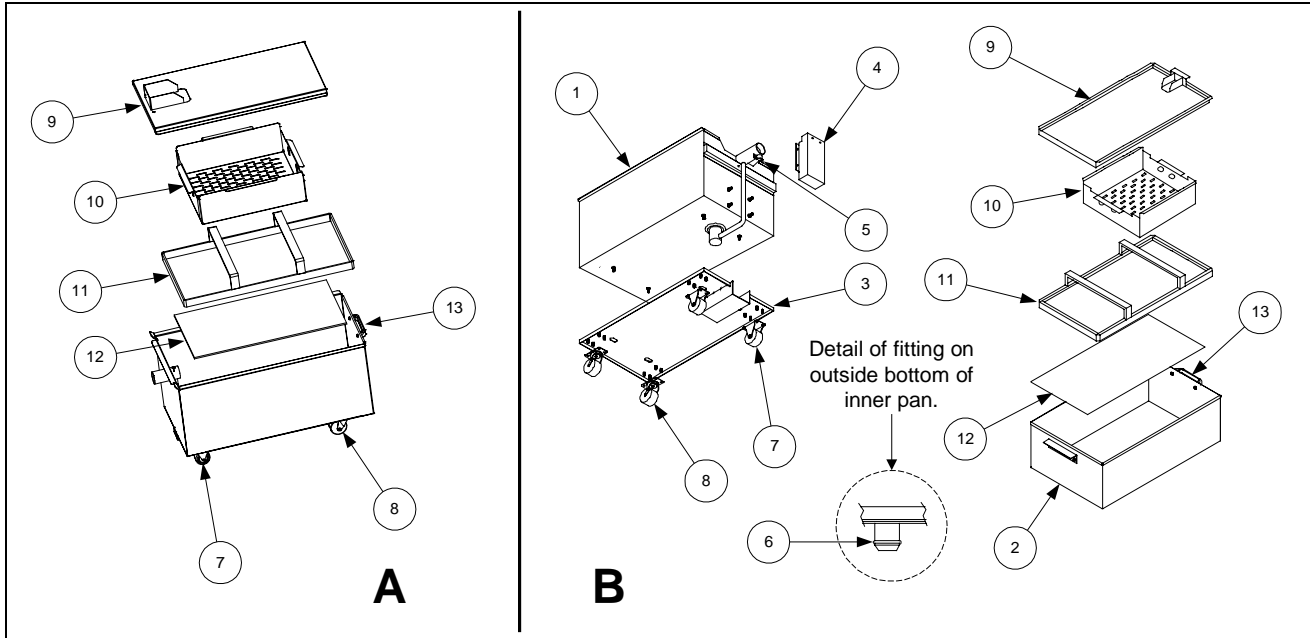
ITEM	PART #	COMPONENT
1	806-8137	Bracket, Drain Safety Microswitch
2	807-2103	Microswitch, Drain Safety
3	826-1366	Nut, 4-40 Keps w/External Teeth (Pkg of 25)
4	809-0540	Nut, 2-way Lock, 1/2-13
5	810-0820	Handle, Drain Valve
6	816-0211	Sleeve, Drain Valve Handle
7	810-1020	Valve, Gemini 1 1/4-inch Drain
8	816-0220	Insulation, RF Switch
9	900-2841	Cover, Drain Safety Microswitch

MJ45 Drain Valve Assembly



ITEM	PART #	COMPONENT
1	810-0885	Valve, Gemini 1 1/4-in Drain, w/Handle

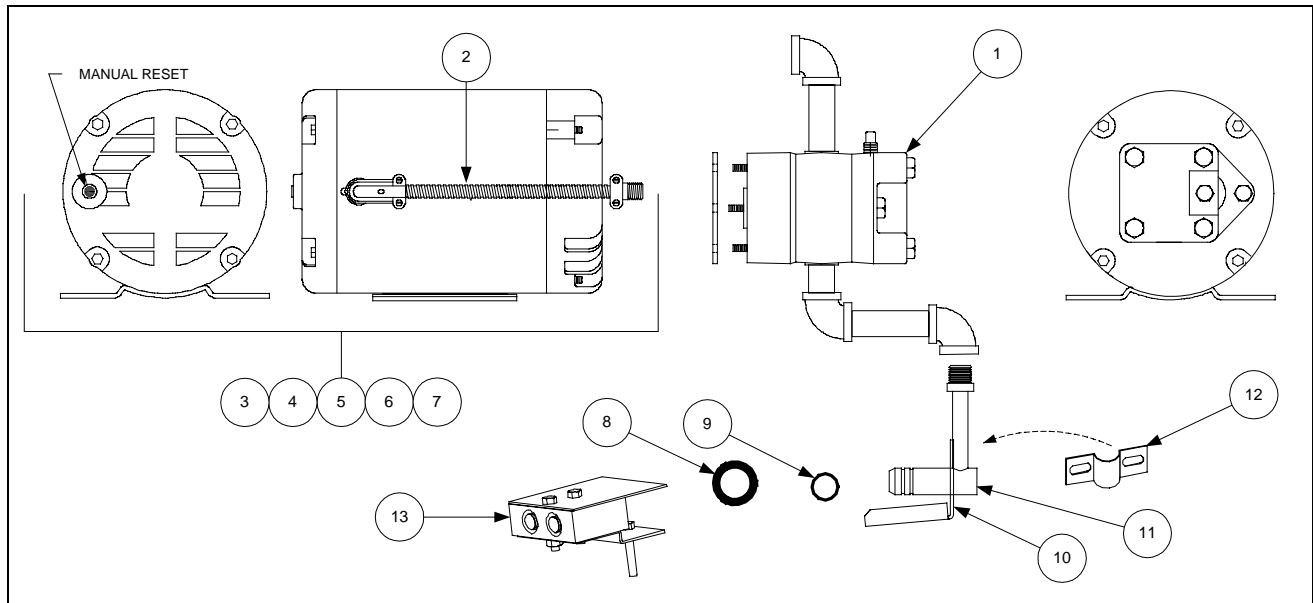
Filter Magic II Filter Pan Assembly



ITEM	PART #	COMPONENT
A	806-9255SP	One-Piece Filter Pan Assembly, Complete
	823-2751SP	One-Piece Pan Only
B	806-6093SP	Two-Piece Pan Assembly, Complete (Unique components are listed below.)
1	823-1360SP	Outer Pan Assembly
2	823-1731SP	Inner Pan Assembly
3	823-1361	Base, Filter Pan Assembly
4	824-0291	Cover, Suction Tube
5	910-1350	Clamp, Suction Tube
6	816-0117	O-Ring, .609 OD
*	806-4373	Heater Strip Assembly
*	811-0861	Insulation, Foam #9812
*	811-0746	Tape, Aluminum (50-yard (46m) roll)
		Components Used on Both Designs
7	810-0005	Caster, Rigid
8	810-0006	Caster, Swivel
9	823-1930	Cover, Drain Pan
10	824-0416	Crumb Screen
11	810-1406	Hold Down Ring Assembly
12	900-8827	SanaGrid Filter Screen
13	810-0180	Handle, Filter Pan
*	803-0170	Paper, Filter (100 sheets)
*	803-0002	Powder, Filter (100 1-cup applications)

* Not illustrated

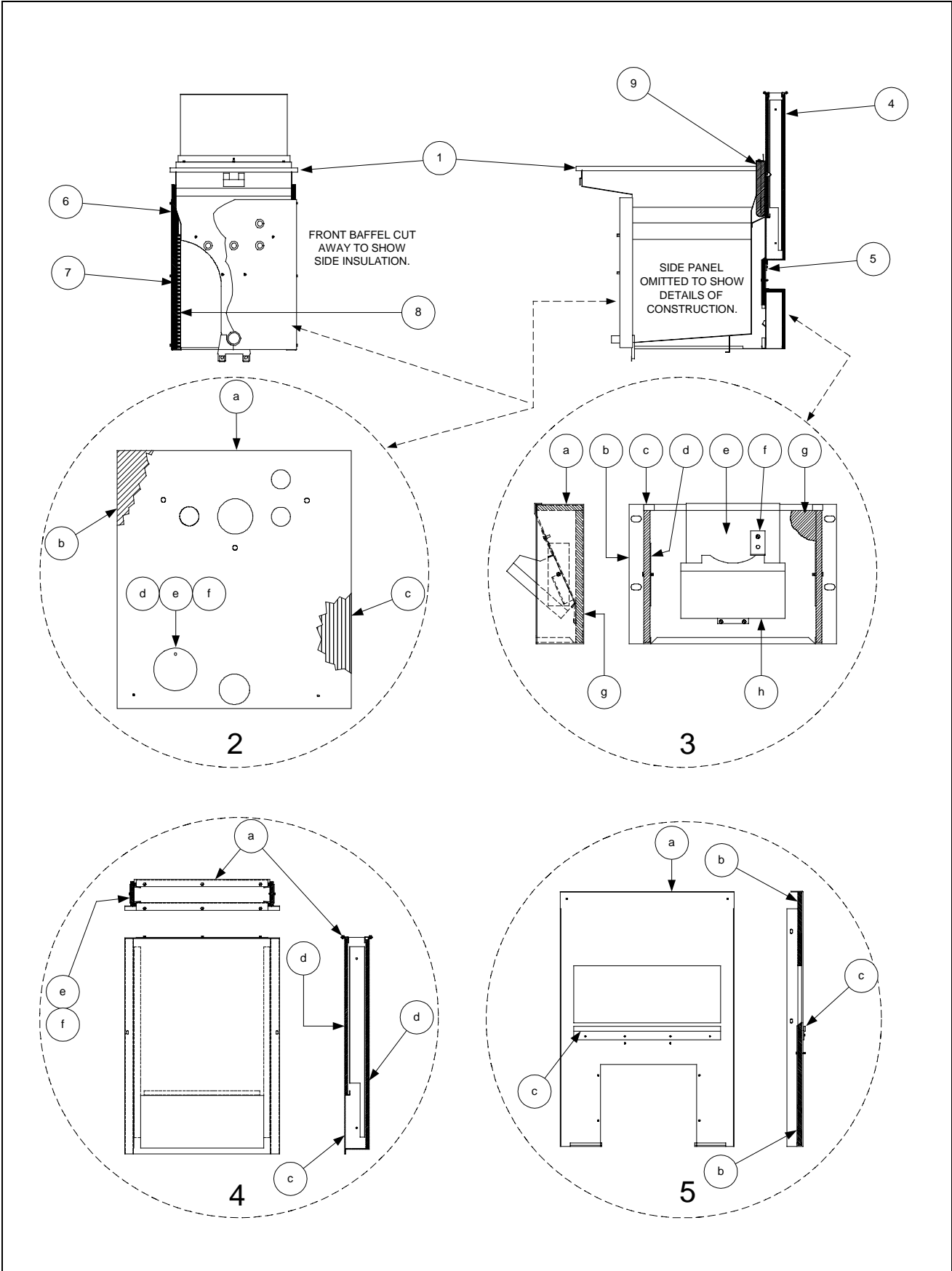
Filter Magic II Filter Pump/Motor Assemblies and Associated Components



ITEM	PART #	COMPONENT
*	900-7558SP	Cover, Motor
*	810-1159	Flexline, Steel, 7½" Oil Return (Pump to Filter Pan Outlet)
*	816-0093	Gasket, Pump/Motor
1	826-1261	Pump, Viking, 4 GPM (including Gasket 816-0093)
2	806-6728SP	Pump Wiring Assembly
3	826-1268	Kit, 100 VAC Motor and Gasket
4	826-1263	Kit, 115 VAC Motor and Gasket
5	826-1266	Kit, 208 VAC Motor and Gasket
6	826-1269	Kit, 230 VAC Motor and Gasket
7	826-1270	Kit, 250 VAC Motor and Gasket
8	816-0102	Grommet, Male Disconnect
9	826-1392	O-Ring, Male Disconnect (Pkg of 5)
10	900-1472	Oil Diverter
11	823-1356	Disconnect, Male
12	910-1627	Bracket, Male Disconnect Support
13	806-4694SP	Contacting Block Assembly
*	807-1600	Thermal Switch, Baldor Motors
*	807-1598	Thermal Switch, Magnatek Motors

* Not illustrated.

FRYPOT ASSEMBLIES AND COMPONENT PARTS



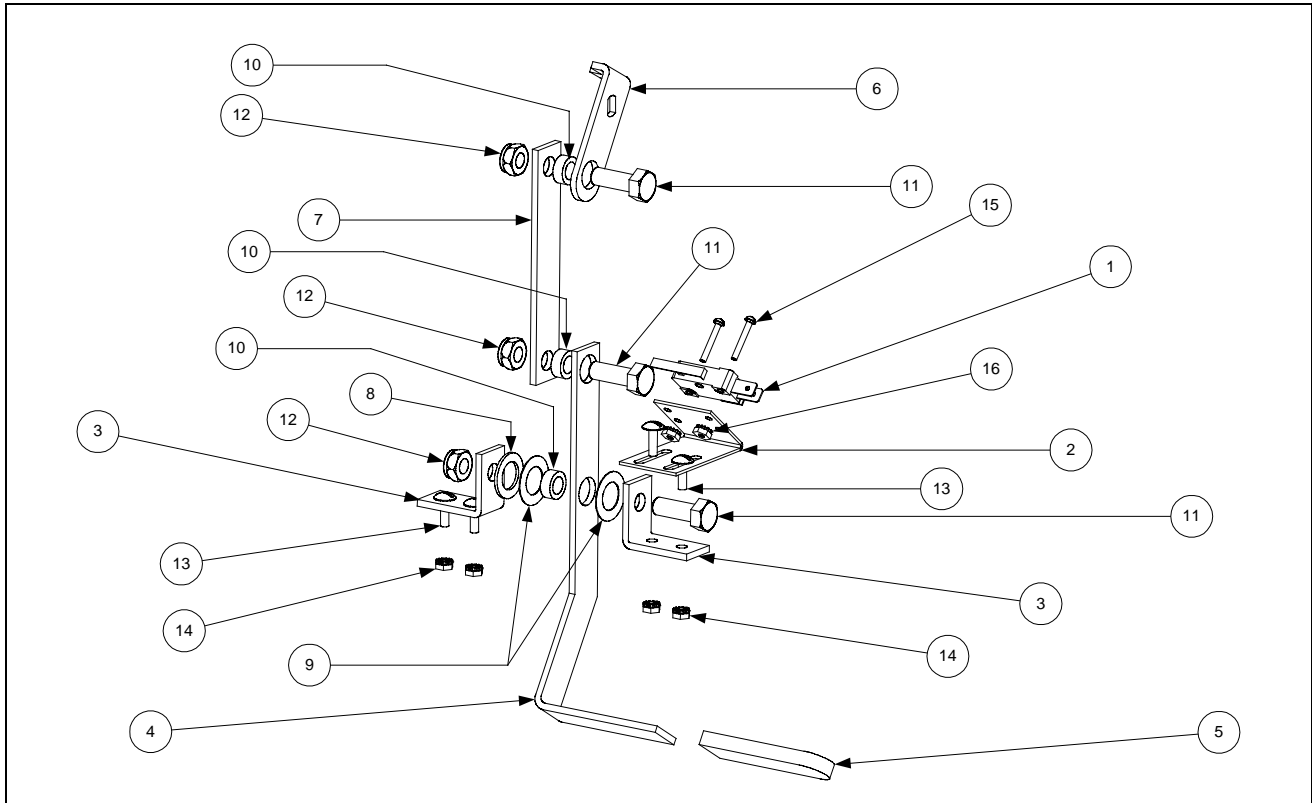
ITEM	PART #	COMPONENT
*	823-0359SP	Frypot Assembly, Stainless Steel, w/o Insulation
*	823-0921SP	Frypot Assembly, Cold Rolled Steel, w/o Insulation
1		Frypot Assemblies, Complete (See note below)
	806-1370SP	Stainless Steel
	806-3810SP	Cold Rolled Steel
2	806-1095SP	Front Baffle Assembly, Complete
2a	930-3419	Baffle, Outer Front
2b	812-0245	Insulation, Kaowool, ¼ x 15 x 16δ (layer closest to frypot)
2c	812-0246	Insulation, spun glass, 1 x 15 x 16δ
2d	900-1090	Cover, Pilot Light
2e	809-0409	Screw, Pilot Light Cover
2f	810-0647	Holder, Pilot Light Cover Screw
3	806-5778SP	Flue Deflector Box Assembly, Complete
3a	900-4685	Box, Flue Deflector
3b	816-0171	Insulation, Flue Deflector Box Side
3c	816-0172	Insulation, Flue Deflector Box Top
3d	900-0169	Retainer, Flue Deflector Box Side Insulation
3e	910-2030	Holder, Rear Target
3f	910-2068	Clip, Rear Target
3g	816-0173	Insulation, Flue Deflector Box Back
3h	810-0424	Rear Target
4	806-5567SP	Flue Assembly, Complete
4a	900-4664	Retainer, Flue Top Insulation
4b	816-0175	Insulation, Flue Front
4c	823-2018	Flue Weld Assembly
4d	816-0174	Insulation, Flue Back
4e	930-0474	Retainer, Flue Insulation
4f	812-0256	Insulation, Flue Side
5	806-5566SP	Rear Combustion Chamber Panel Assembly, Complete
5a	900-7553	Panel, Combustion Chamber
5b	816-0178	Insulation, Rear Combustion Chamber
5c	900-3420	Support, Flue Back
6	900-6441	Panel, Combustion Chamber Side
7	812-0249	Insulation, Frypot Side, Outer Layer
8	812-0248	Insulation, Frypot Side, Inner Layer
9	812-0269	Insulation, Kaowool Blanket, ½ x 14 x 14

NOTE: Complete Frypot Assemblies 806-1370SP and 806-3810SP each contain Items 2 through 9.

Complete Frypot Assembly 806-1370SP contains Frypot Assembly 823-0359SP.

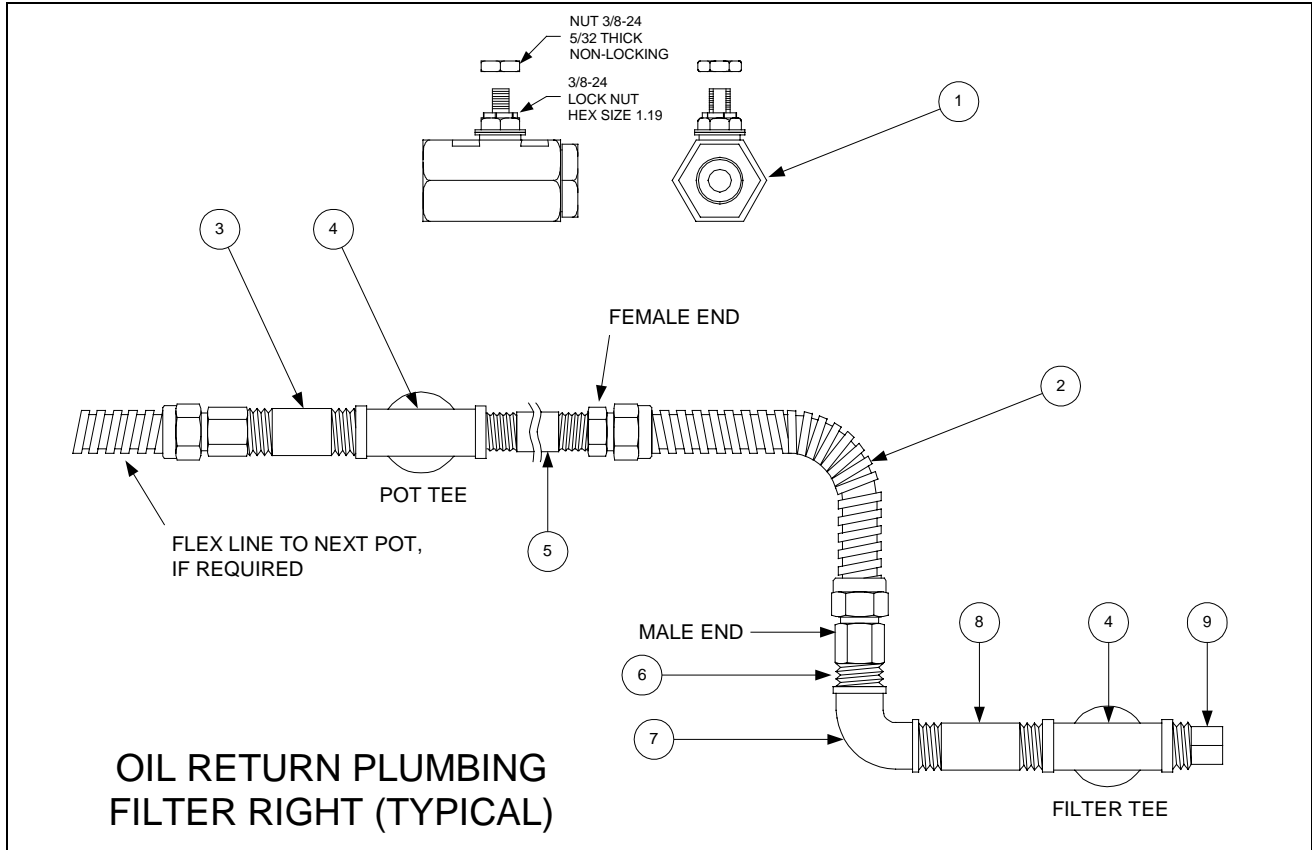
Complete Frypot Assembly 806-3810SP contains Frypot Assembly 823-0921SP.

OIL RETURN HANDLE ASSEMBLY



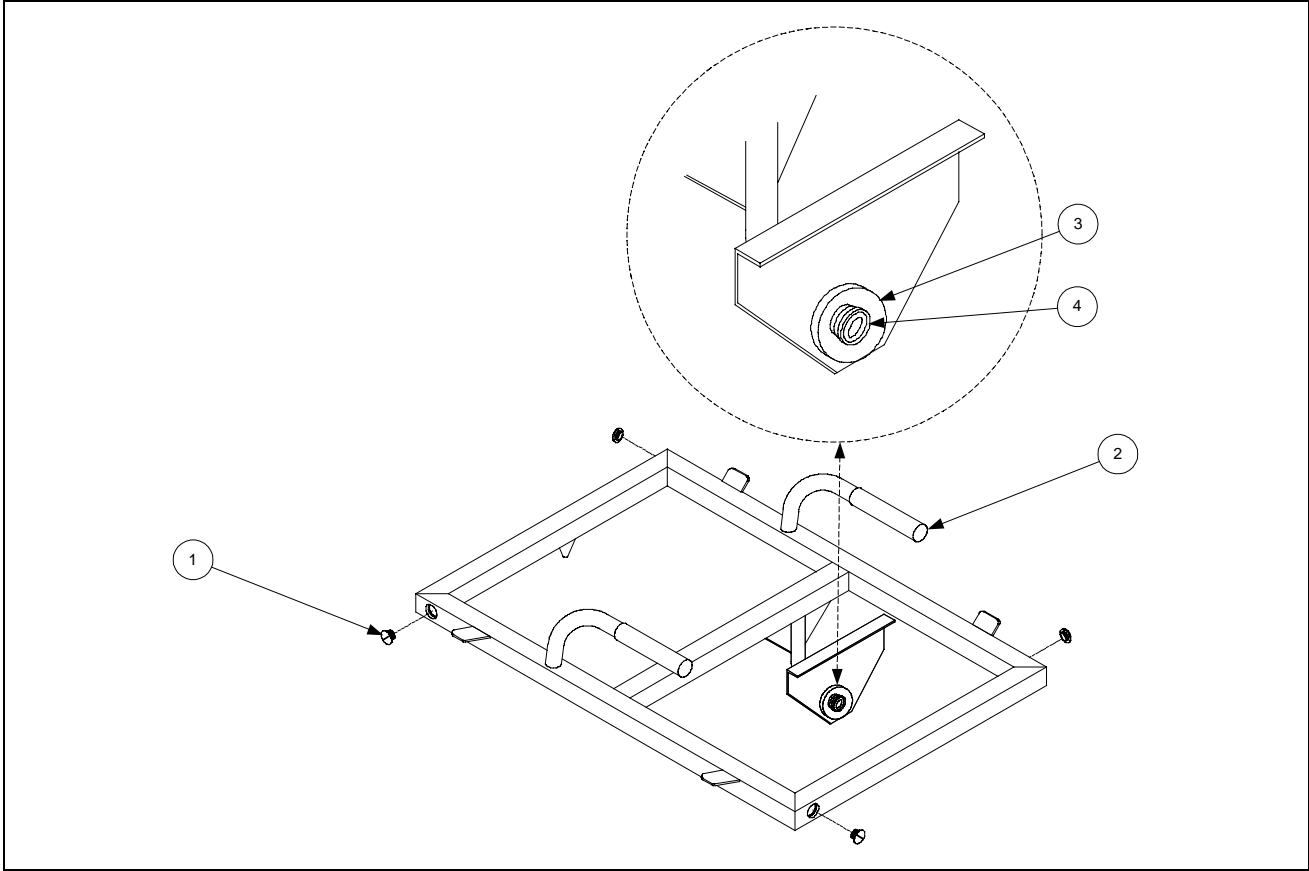
ITEM	PART #	COMPONENT
1	807-2103	Microswitch
2	930-0839	Bracket, Microswitch
3	920-0219	Bracket, Valve Handle
4	900-1853	Handle, Oil Return
5	814-0047	Sleeve, Handle
6	900-0239	Arm, Oil Return Valve
7	920-0220	Linkage, Oil Return Valve
8	809-0200	Washer, Flat
9	826-1381	Washer, Nylatron (Pkg of 10)
10	810-0220	Spacer, Tubular, .493 OD
11	809-0142	Screw, 5/16 – 24 x 3/4" Hex Head
12	809-0056	Nut, 5/16 – 24, Hex Head, Nylon Lock
13	809-0104	Screw, 4 – 32 x 1/2" Slotted Truss Head
14	809-0247	Nut, Keps Hex, 8 – 32
15	826-1359	Screw, 4 – 40 x 3/4" Slotted Pan Head (Pkg of 25)
16	826-1366	Nut, Keps Hex, 4 – 40 (Pkg of 25)

OIL RETURN PLUMBING



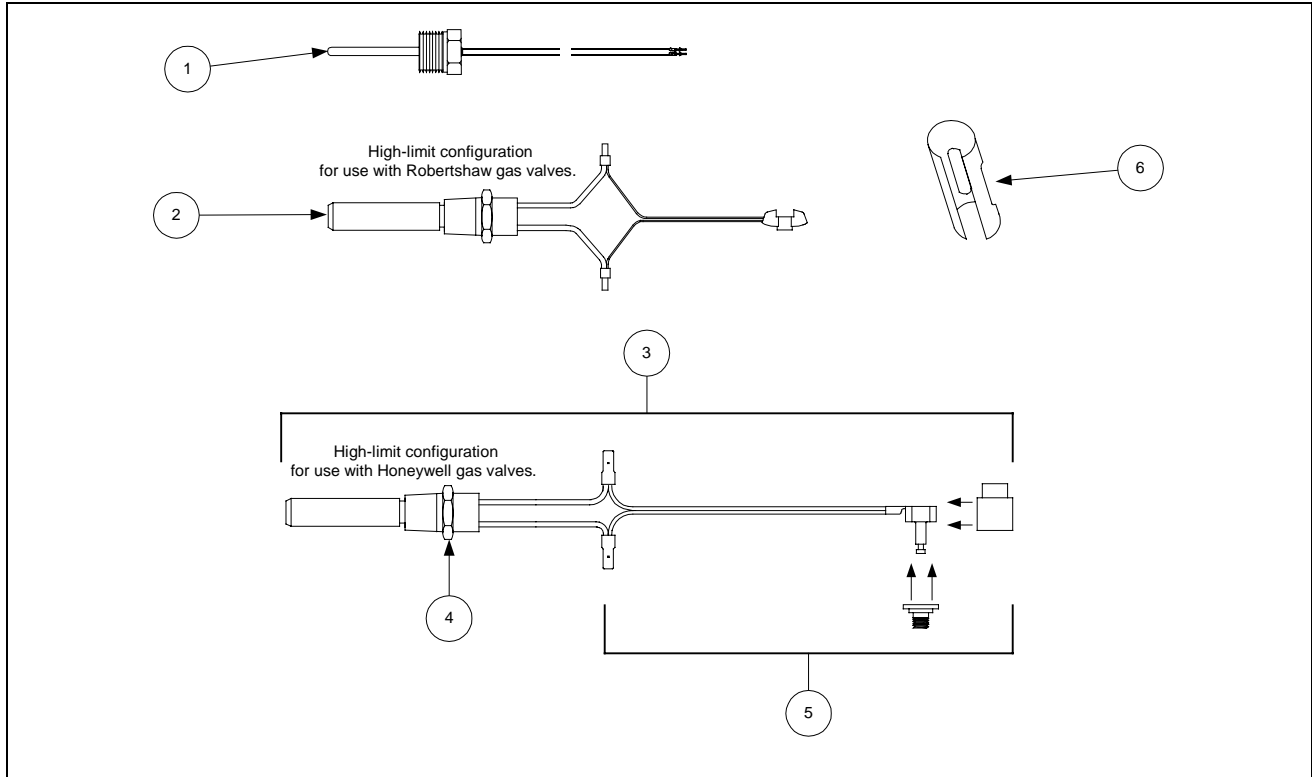
ITEM	PART #	COMPONENT
1	810-0278	Valve, Ball, 1/2"
2	810-1043	Flexline, Oil Return, 12.00"
3	813-0087	Nipple, BM, 1/2" NPT x 1 1/2"
4	813-0144	Tee, BM, 1/2" NPT
5	813-0320	Nipple, BM, 1/2" NPT x 8.00"
6	813-0022	Nipple, BM, 1/2" NPT Close
7	813-0062	Elbow, BM, 1/2" NPT, 90°
8	813-0265	Nipple, BM, 1/2" NPT x 2 1/2"
9	813-0156	Plug, BM, 1/2" NPT

POWER SHOWER ASSEMBLY



ITEM	PART #	COMPONENT
	806-4503SP	Power Shower Assembly, Full Vat, Complete
1	809-0415	Screw, Cleanout
2	814-0001	Grip, Handle
3	826-1390	Seal (Gasket) (Pkg of 5)
4	826-1344	O-Ring (Pkg of 5)

TEMPERATURE PROBES, HIGH LIMITS, AND RELATED COMPONENTS

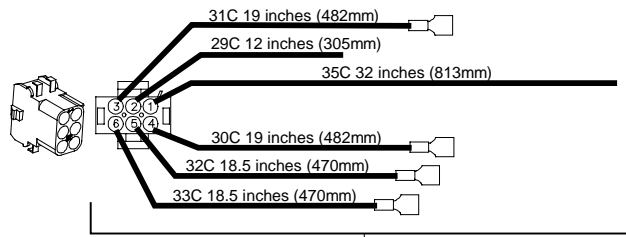


ITEM	PART #	COMPONENT
1	806-4206	Temperature Probe, Minco, w/Ultra-7 Element
2	826-1177	High-Limit Thermostat Kit (for use with Robertshaw valves)
3	806-7550	High-Limit Thermostat Assembly (for use with Honeywell valves)
4	807-2274	High Limit Thermostat
5	812-1256SP	Kit, High-Limit Thermostat to Honeywell Valve Adapter Kit
6	810-0625	Probe Guard

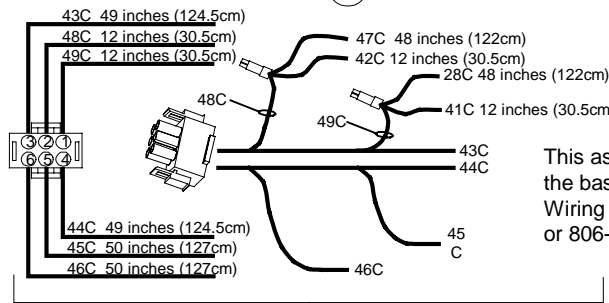
NOTE: Kit 826-1177 (Item 2) contains high-limit thermostat assembly 806-7545 and an assortment of connectors to allow it to be configured for use on several different Robertshaw valves.

NOTE: Assembly 806-7550 (Item 3) contains high-limit thermostat 807-2274 (Item 4) and adapter kit 812-1256SP (Item 5).

WIRING ASSEMBLIES, WIRING HARNESSSES, CABLES, AND CABLE ASSEMBLIES

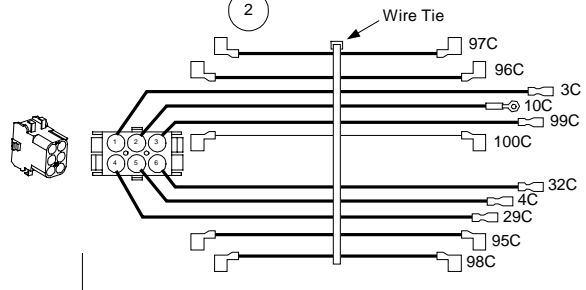


1

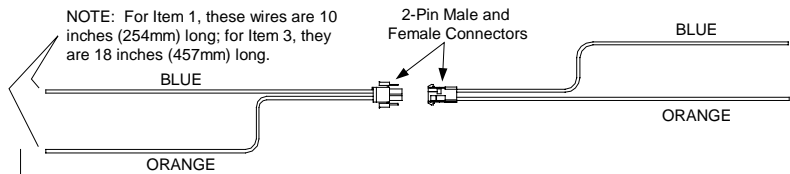


This assembly brings power to the basket lifts. It plugs into Wiring Assembly 806-2079SP or 806-8555SP (Item 1 or 3).

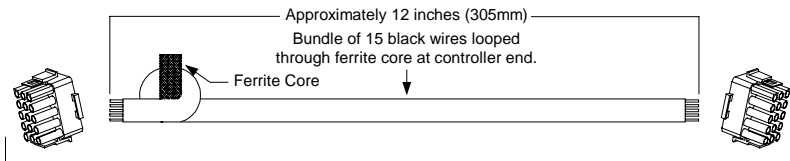
2



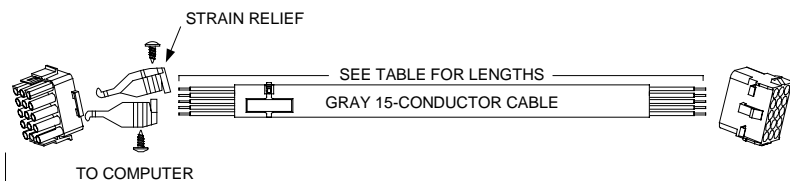
3



4 OR 5

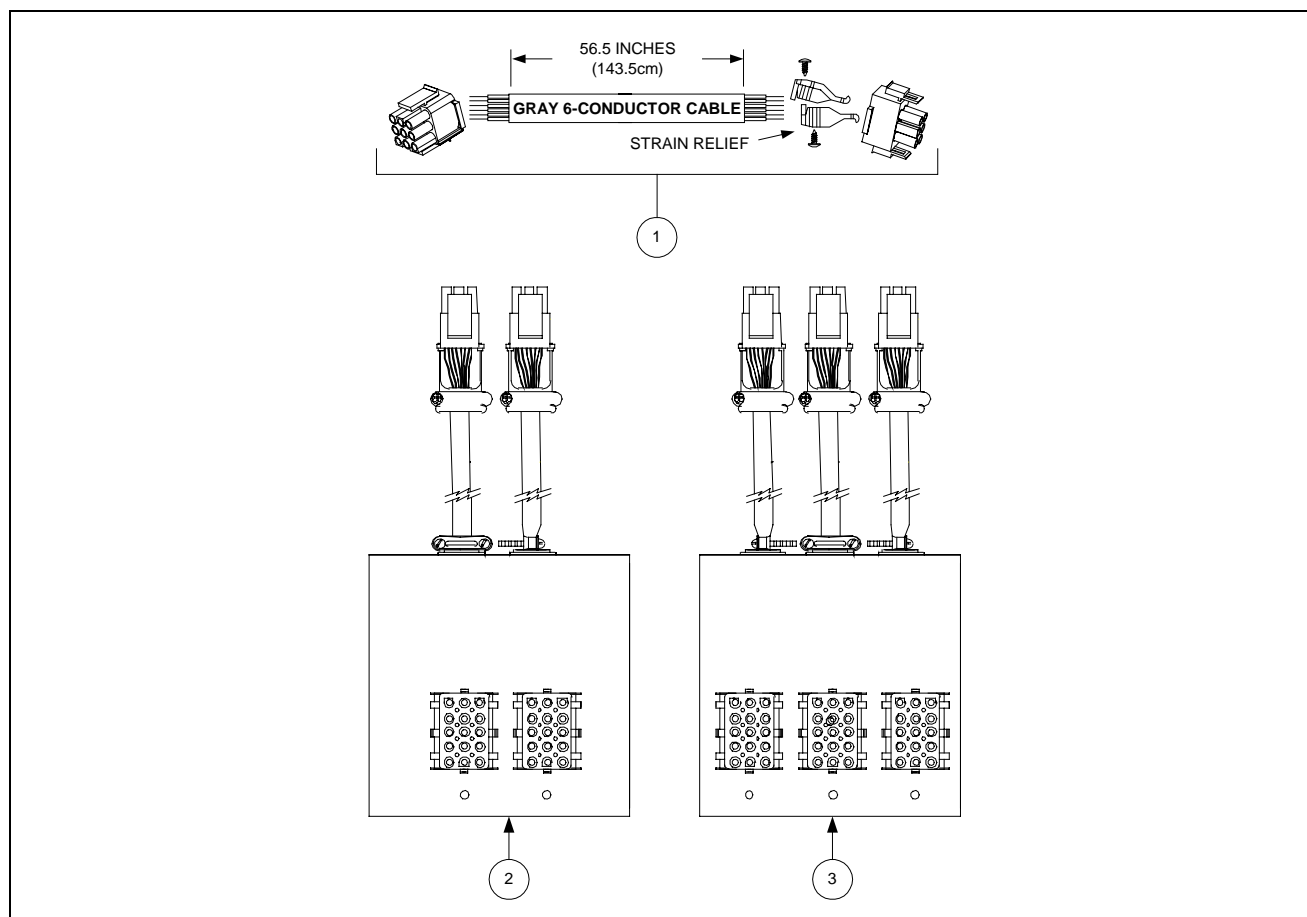


6



7

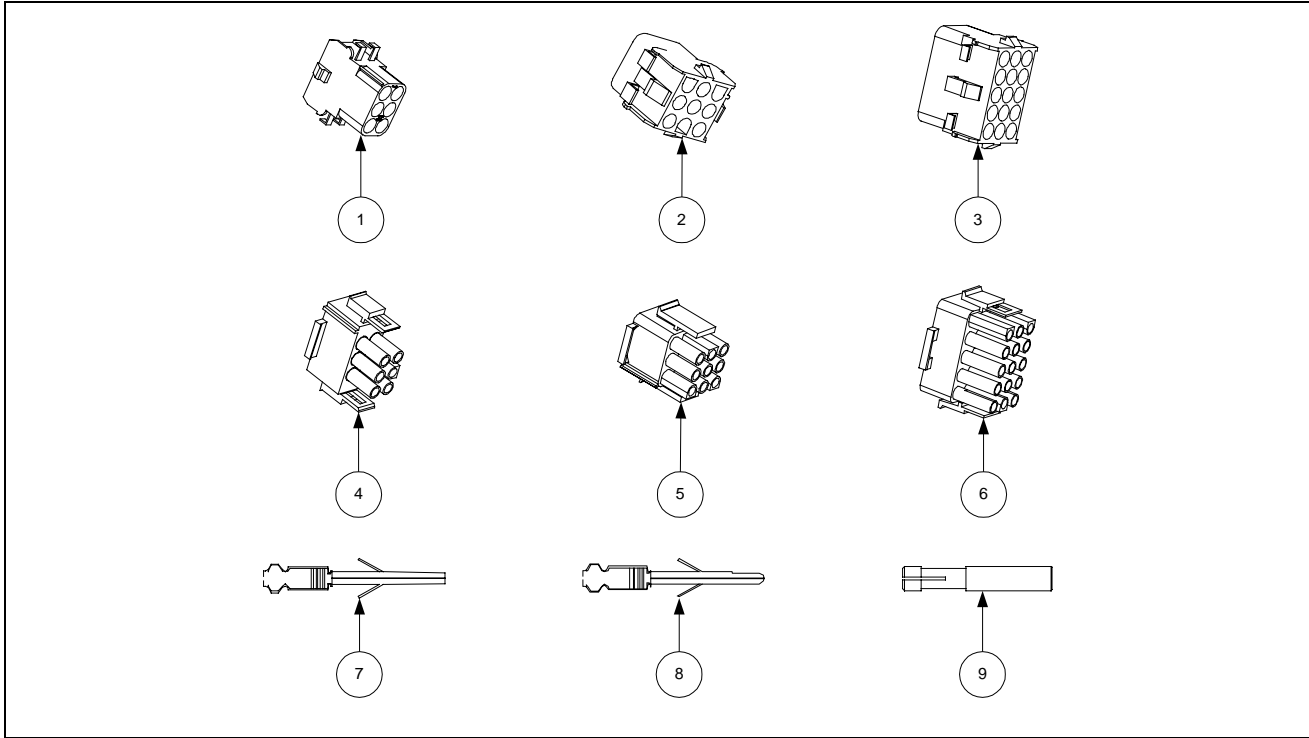
ITEM	PART #	COMPONENT
1	806-2079SP	Wiring Assembly, 120V Bell Crank Basket Lift Internal
2	806-4798SP	Wiring Assembly, Power to Bell Crank or Modular Basket Lift
3	806-8555SP	Wiring Assembly, 208/240V Modular Basket Lift Internal
4	806-4214	Wiring Assembly, Fryer to Fryer Drain Safety Switch Jumper
5	806-4215	Wiring Assembly, Fryer to Filter Drain Safety Switch Jumper
6	806-2071	Wiring Harness, Controller to Interface Board
7		Cable, Remote Computer
	806-3528	7.5 Feet (2.3m)
	806-3529	8.5 Feet (2.6m)
	806-3530	10.5 Feet (3.2m)
	806-3531	12.6 Feet (3.8m)
	806-3388	20 Feet (6.1m)
	806-4318	30 Feet (9.1m)



ITEM	PART #	COMPONENT
1	807-2171	Cable Assembly, Controller to Modular Basket Lift
*	806-8350	Cable Assembly, 1 Remote Computer/Controller
2	806-8349	Cable Assembly, 2 Remote Computers/Controllers
3	806-8348	Cable Assembly, 3 Remote Computers/Controllers
*	806-8351	Cable Assembly, 4 Remote Computers/Controllers

* Not illustrated.

MISCELLANEOUS ELECTRICAL COMPONENTS



ITEM	PART #	COMPONENT
		Power Cords
*	807-0154	100/120V–15A w/grounded plug
*	806-6229SP	100/208/240V–15A, w/o plug
*	807-1685	100/208/240V–18A, w/o plug
		Connectors
1	807-0158	6-Pin Female
2	807-0156	9-Pin Female
*	807-0159	12-Pin Female
3	807-0875	15-Pin Female
4	807-0157	6-Pin Male
5	807-0155	9-Pin Male
*	807-0160	12-Pin Male
6	807-0804	15-Pin Male
7	826-1341	Terminal, Female Split Pin (Pkg of 25)
8	826-1342	Terminal, Male Split Pin (Pkg of 25)
9	807-2518	Plug, Mate-N-Lock (Dummy Pin)

* Not illustrated.